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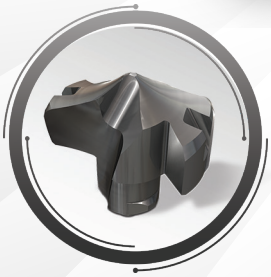
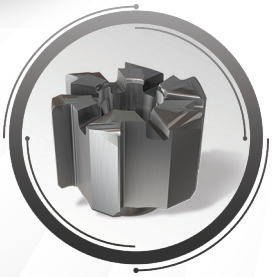
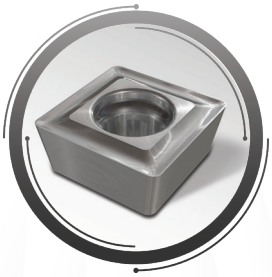
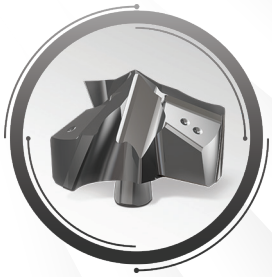
Metric Catalog









INDEXABLE DRILLS

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DEEP DRILLING

GUNDRILLS

REAMERS

TAPS

ITS BORE

GRADES

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HOLEMAKING

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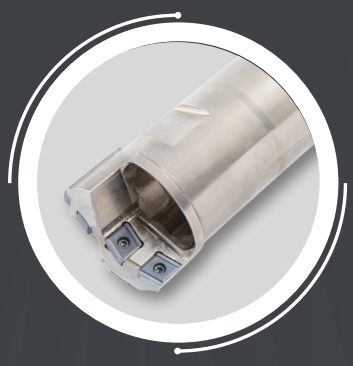

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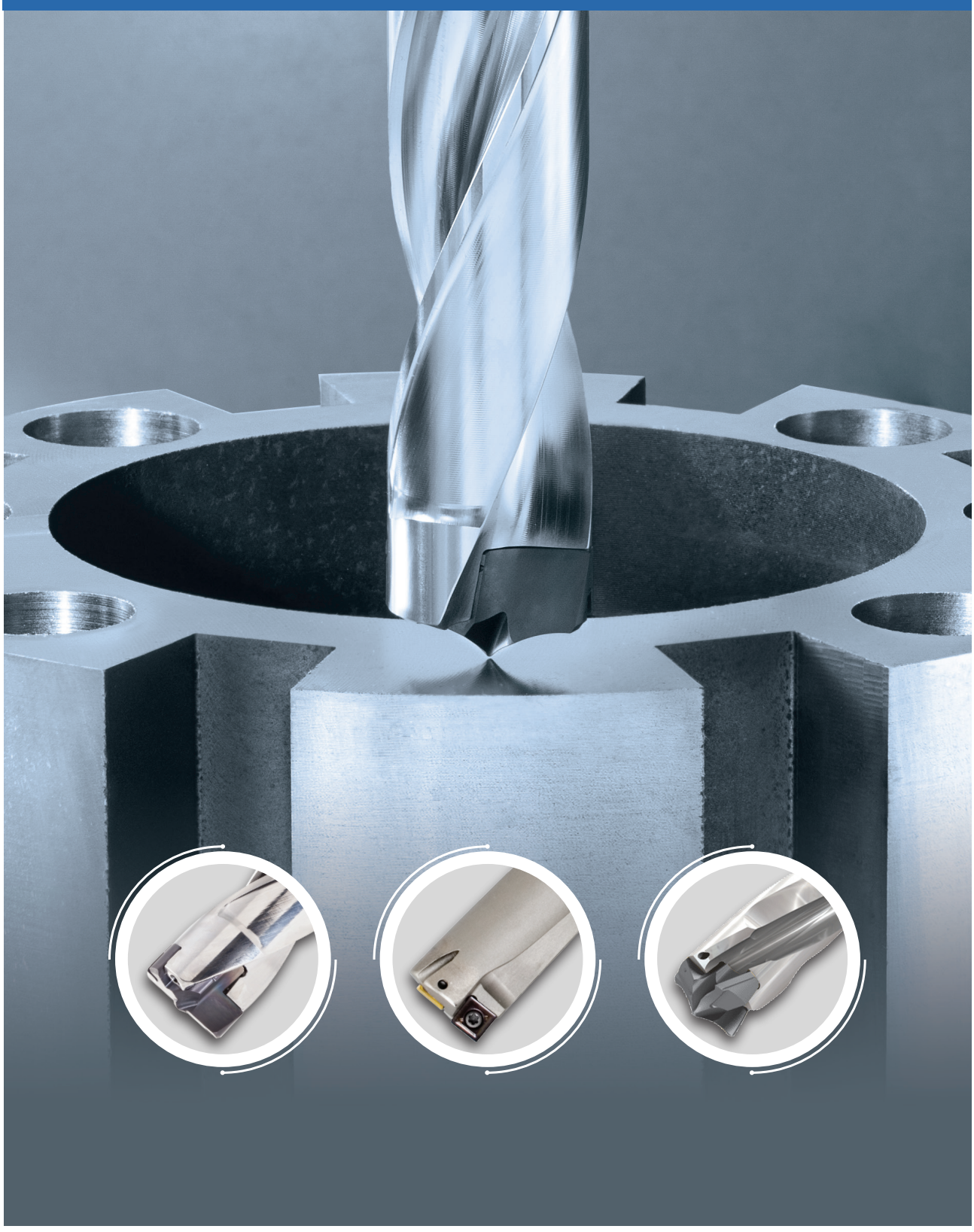

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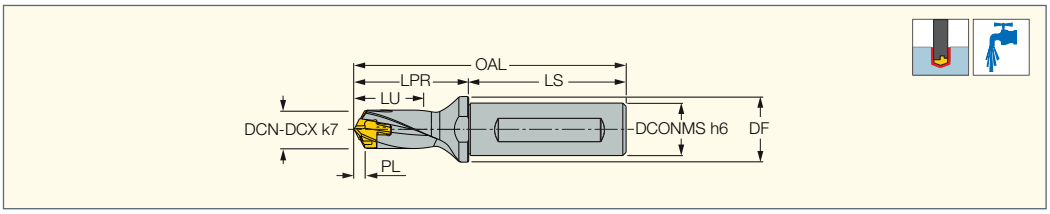
SUMOCHAM

DCN A-1.5D
Drill Body with Exchangeable Heads, Internal Coolant Holes and One Flat Shank, Drilling Depth 1.5xD



Designation	DCN[1]	DCX[2]	DCONMS	DF	LU	LPR	PL	LS	OAL	SSC[3]	MIID[4]	
DCN 060-009-12A-1.5D	6.00	6.49	12.00	16.00	9.96	23.00	0.960	45.0	68.00	6.0	ICP 060	K DCN 6-9.99-Y
DCN 065-010-12A-1.5D	6.50	6.99	12.00	16.00	10.93	24.10	1.180	45.0	69.05	6.5	ICP 065	K DCN 6-9.99-Y
DCN 070-011-12A-1.5D	7.00	7.49	12.00	16.00	11.51	25.10	1.010	45.0	70.10	7.0	ICP 070	K DCN 6-9.99
DCN 075-011-12A-1.5D	7.50	7.99	12.00	16.00	12.35	25.90	1.100	45.0	70.85	7.0	ICP 075	K DCN 6-9.99
DCN 080-012-12A-1.5D	8.00	8.49	12.00	16.00	13.20	27.40	1.200	45.0	72.40	8.0	ICP 080	K DCN 6-9.99
DCN 085-013-12A-1.5D	8.50	8.99	12.00	16.00	14.04	28.20	1.290	45.0	73.15	8.0	ICP 085	K DCN 6-9.99
DCN 090-014-12A-1.5D	9.00	9.49	12.00	16.00	14.85	29.30	1.350	45.0	74.30	9.0	ICP 090	K DCN 6-9.99
DCN 095-014-12A-1.5D	9.50	9.99	12.00	16.00	15.69	30.10	1.440	45.0	75.05	9.0	ICP 095	K DCN 6-9.99
DCN 100-015-16A-1.5D	10.00	10.49	16.00	20.00	16.50	31.20	1.500	48.0	79.20	10.0	ICP 100	K DCN 10-13.99
DCN 105-016-16A-1.5D	10.50	10.99	16.00	20.00	17.34	32.00	1.590	48.0	79.95	10.0	ICP 105	K DCN 10-13.99
DCN 110-017-16A-1.5D	11.00	11.49	16.00	20.00	18.17	33.10	1.670	48.0	81.10	11.0	ICP 110	K DCN 10-13.99
DCN 115-017-16A-1.5D	11.50	11.99	16.00	20.00	19.01	33.90	1.590	48.0	80.00	11.0	ICP 115	K DCN 10-13.99
DCN 120-018-16A-1.5D	12.00	12.49	16.00	20.00	19.82	35.00	1.820	48.0	83.00	12.0	ICP 120	K DCN 10-13.99
DCN 125-019-16A-1.5D	12.50	12.99	16.00	20.00	20.66	35.80	1.910	48.0	83.75	12.0	ICP 125	K DCN 10-13.99
DCN 130-020-16A-1.5D	13.00	13.49	16.00	20.00	21.46	37.10	1.960	48.0	85.10	13.0	ICP 130	K DCN 10-13.99
DCN 135-020-16A-1.5D	13.50	13.99	16.00	20.00	22.30	37.90	2.050	48.0	85.85	13.0	ICP 135	K DCN 10-13.99
DCN 140-021-16A-1.5D	14.00	14.49	16.00	20.00	23.12	41.20	2.120	48.0	89.15	14.0	ICP 140	K DCN 14-17.99
DCN 145-022-16A-1.5D	14.50	14.99	16.00	20.00	23.96	41.90	2.210	48.0	89.90	14.0	ICP 145	K DCN 14-17.99
DCN 150-023-20A-1.5D	15.00	15.99	20.00	25.00	24.77	46.20	2.270	50.0	96.23	15.0	ICP 150	K DCN 14-17.99
DCN 160-024-20A-1.5D	16.00	16.99	20.00	25.00	26.42	49.30	2.420	50.0	99.30	16.0	ICP 160	K DCN 14-17.99
DCN 170-026-20A-1.5D	17.00	17.99	20.00	25.00	28.09	52.40	2.590	50.0	102.40	17.0	ICP 170	K DCN 14-17.99
DCN 180-027-25A-1.5D	18.00	18.99	25.00	32.00	29.73	55.50	2.730	56.0	111.50	18.0	ICP 180	K DCN 18-21.99
DCN 190-029-25A-1.5D	19.00	19.99	25.00	32.00	31.38	58.50	2.880	56.0	114.50	19.0	ICP 190	K DCN 18-21.99
DCN 200-030-25A-1.5D	20.00	20.99	25.00	32.00	33.02	61.60	3.020	56.0	117.60	20.0	ICP 200	K DCN 18-21.99
DCN 210-032-25A-1.5D	21.00	21.99	25.00	32.00	34.68	64.70	3.180	56.0	120.68	21.0	ICP 210	K DCN 18-21.99
DCN 220-033-25A-1.5D	22.00	22.99	25.00	32.00	36.32	67.80	3.320	56.0	123.76	22.0	ICP 220	K DCN 22-26.99
DCN 230-035-32A-1.5D	23.00	23.99	32.00	42.00	37.96	70.80	3.460	60.0	130.83	23.0	ICP 230	K DCN 22-26.99
DCN 240-036-32A-1.5D	24.00	24.99	32.00	42.00	39.62	73.90	3.620	60.0	133.90	24.0	ICP 240	K DCN 22-26.99
DCN 250-038-32A-1.5D	25.00	25.99	32.00	42.00	41.30	77.00	3.800	60.0	137.00	25.0	ICP 250	K DCN 22-26.99
DCN 260-039-32A-1.5D	26.00	26.99	32.00	42.00	42.95	80.10	3.950	60.0	140.07	26.0	ICP 260	K DCN 22-26.99
DCN 270-041-32A-1.5D	27.00	27.99	32.00	42.00	44.60	83.20	4.100	60.0	143.15	27.0	ICP 270	K DCN 27-32.99
DCN 280-042-32A-1.5D	28.00	28.99	32.00	42.00	46.25	86.20	4.250	60.0	146.22	28.0	ICP 280	K DCN 27-32.99
DCN 290-044-32A-1.5D	29.00	29.99	32.00	42.00	47.93	89.30	4.430	60.0	149.30	29.0	ICP 290	K DCN 27-32.99
DCN 300-045-32A-1.5D	30.00	30.99	32.00	42.00	49.59	92.40	4.590	60.0	152.38	30.0	ICP 300	K DCN 27-32.99
DCN 310-047-32A-1.5D	31.00	31.99	32.00	42.00	51.26	95.50	4.760	60.0	155.46	31.0	ICP 310	K DCN 27-32.99
DCN 320-048-32A-1.5D	32.00	32.99	32.00	42.00	52.86	98.50	4.860	60.0	158.54	32.0	ICP 320	K DCN 27-32.99

• Do not mount smaller drilling heads other than the specified range of the drill body • For user guide and cutting conditions, see pages 68-76

[1] Cutting diameter minimum

[2] Cutting diameter maximum

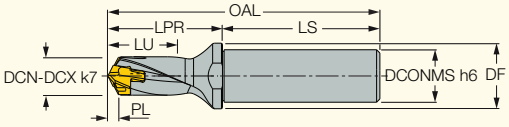
[3] Seat size code

[4] Master insert identification

For inserts, see pages: ICP (23) • ICP-2M (29) • ICK (37) • ICK-2M (41) • ICM (45) • ICN (50) • QCP-2M (51) • HCP-IQ (55) • FCP (61) • ICG (67) • IHP (33)

SUMOCHAM

DCN R-1.5D
Drill Body with Exchangeable Heads, Internal Coolant Holes and a Cylindrical Shank, Drilling Depth 1.5xD



Designation	DCN[1]	DCX[2]	DCONMS	DF	LU	LPR	PL	LS	OAL	SSC[3]	MIID[4]	
DCN 060-009-12R-1.5D	6.00	6.49	12.00	16.00	9.96	23.00	0.960	45.0	68.00	6.0	ICP 060	K DCN 6-9.99-Y
DCN 065-010-12R-1.5D	6.50	6.99	12.00	16.00	10.93	24.10	1.180	45.0	69.10	6.5	ICP 065	K DCN 6-9.99-Y
DCN 070-011-12R-1.5D	7.00	7.49	12.00	16.00	11.51	25.10	1.010	45.0	70.10	7.0	ICP 070	K DCN 6-9.99
DCN 075-011-12R-1.5D	7.50	7.99	12.00	16.00	12.35	25.90	1.100	45.0	70.90	7.0	ICP 075	K DCN 6-9.99
DCN 080-012-12R-1.5D	8.00	8.49	12.00	16.00	13.20	27.40	1.200	45.0	72.90	8.0	ICP 080	K DCN 6-9.99
DCN 085-013-12R-1.5D	8.50	8.99	12.00	16.00	14.04	28.20	1.290	45.0	73.20	8.0	ICP 085	K DCN 6-9.99
DCN 090-014-12R-1.5D	9.00	9.49	12.00	16.00	14.85	29.30	1.350	45.0	74.30	9.0	ICP 090	K DCN 6-9.99
DCN 095-014-12R-1.5D	9.50	9.99	12.00	16.00	15.69	30.10	1.440	45.0	75.10	9.0	ICP 095	K DCN 6-9.99
DCN 100-015-16R-1.5D	10.00	10.49	16.00	20.00	16.50	31.20	1.500	48.0	79.20	10.0	ICP 100	K DCN 10-13.99
DCN 105-016-16R-1.5D	10.50	10.99	16.00	20.00	17.34	32.00	1.590	48.0	80.00	10.0	ICP 105	K DCN 10-13.99
DCN 110-017-16R-1.5D	11.00	11.49	16.00	20.00	18.17	33.10	1.670	48.0	81.10	11.0	ICP 110	K DCN 10-13.99
DCN 115-017-16R-1.5D	11.50	11.99	16.00	20.00	19.01	33.90	1.760	48.0	81.90	11.0	ICP 115	K DCN 10-13.99
DCN 120-018-16R-1.5D	12.00	12.49	16.00	20.00	19.82	35.00	1.820	48.0	83.00	12.0	ICP 120	K DCN 10-13.99
DCN 125-019-16R-1.5D	12.50	12.99	16.00	20.00	20.66	35.80	1.910	48.0	83.80	12.0	ICP 125	K DCN 10-13.99
DCN 130-020-16R-1.5D	13.00	13.49	16.00	20.00	21.46	37.10	1.960	48.0	85.10	13.0	ICP 130	K DCN 10-13.99
DCN 135-020-16R-1.5D	13.50	13.99	16.00	20.00	22.30	37.90	2.050	48.0	85.90	13.0	ICP 135	K DCN 10-13.99
DCN 140-021-16R-1.5D	14.00	14.49	16.00	20.00	23.12	41.20	2.120	48.0	89.10	14.0	ICP 140	K DCN 14-17.99
DCN 145-022-16R-1.5D	14.50	14.99	16.00	20.00	23.96	41.90	2.210	48.0	89.90	14.0	ICP 145	K DCN 14-17.99
DCN 150-023-20R-1.5D	15.00	15.99	20.00	25.00	24.77	46.20	2.270	50.0	96.20	15.0	ICP 150	K DCN 14-17.99
DCN 160-024-20R-1.5D	16.00	16.99	20.00	25.00	26.42	49.30	2.420	50.0	99.30	16.0	ICP 160	K DCN 14-17.99
DCN 170-026-20R-1.5D	17.00	17.99	20.00	25.00	28.09	52.40	2.590	50.0	102.40	17.0	ICP 170	K DCN 14-17.99
DCN 180-027-25R-1.5D	18.00	18.99	25.00	32.00	29.73	55.50	2.730	56.0	111.50	18.0	ICP 180	K DCN 18-21.99
DCN 190-029-25R-1.5D	19.00	19.99	25.00	32.00	31.38	58.50	2.880	56.0	114.50	19.0	ICP 190	K DCN 18-21.99
DCN 200-030-25R-1.5D	20.00	20.99	25.00	32.00	33.02	61.60	3.020	56.0	117.60	20.0	ICP 200	K DCN 18-21.99
DCN 210-032-25R-1.5D	21.00	21.99	25.00	32.00	34.68	64.70	3.180	56.0	120.70	21.0	ICP 210	K DCN 18-21.99
DCN 220-033-25R-1.5D	22.00	22.99	25.00	32.00	36.32	67.80	3.320	56.0	123.80	22.0	ICP 220	K DCN 22-26.99
DCN 230-035-32R-1.5D	23.00	23.99	32.00	42.00	37.96	70.80	3.460	60.0	130.90	23.0	ICP 230	K DCN 22-26.99
DCN 240-036-32R-1.5D	24.00	24.99	32.00	42.00	39.62	73.90	3.620	60.0	134.00	24.0	ICP 240	K DCN 22-26.99
DCN 250-038-32R-1.5D	25.00	25.99	32.00	42.00	41.30	77.00	3.800	60.0	137.00	25.0	ICP 250	K DCN 22-26.99
DCN 260-039-32R-1.5D	26.00	26.99	32.00	42.00	42.95	80.10	3.950	60.0	140.10	26.0	ICP 260	K DCN 22-26.99
DCN 270-041-32R-1.5D	27.00	27.99	32.00	42.00	44.60	83.20	4.100	60.0	143.10	27.0	ICP 270	K DCN 27-32.99
DCN 280-042-32R-1.5D	28.00	28.99	32.00	42.00	46.25	86.20	4.250	60.0	146.20	28.0	ICP 280	K DCN 27-32.99
DCN 290-044-32R-1.5D	29.00	29.99	32.00	42.00	47.93	89.30	4.430	60.0	149.30	29.0	ICP 290	K DCN 27-32.99
DCN 300-045-32R-1.5D	30.00	30.99	32.00	42.00	49.59	92.40	4.590	60.0	152.40	30.0	ICP 300	K DCN 27-32.99
DCN 310-047-32R-1.5D	31.00	31.99	32.00	42.00	51.26	95.50	4.760	60.0	155.50	31.0	ICP 310	K DCN 27-32.99
DCN 320-048-32R-1.5D	32.00	32.99	32.00	42.00	52.86	98.50	4.860	60.0	158.50	32.0	ICP 320	K DCN 27-32.99

• Do not mount smaller drilling heads other than the specified range of the drill body • For user guide and cutting conditions, see pages 68-76

[1] Cutting diameter minimum

[2] Cutting diameter maximum

[3] Seat size code

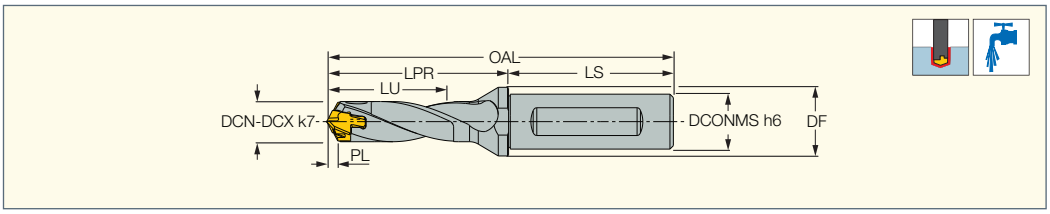
[4] Master insert identification

For inserts, see pages: ICP (23) • ICP-2M (29) • ICK (37) • ICK-2M (41) • ICM (45) • ICN (50) • QCP-2M (51) • HCP-IQ (55) • FCP (61) • ICG (67) • IHP (33)

SUMOCHAM

DCN A-3D

Drill Body with Exchangeable Heads, Internal Coolant Holes and One Flat Shank, Drilling Depth 3xD



Designation	DCN[1]	DCX[2]	DCONMS	DF	LU	LPR	PL	LS	OAL	SSC[3]	MIID[4]	
DCN 060-018-12A-3D	6.00	6.49	12.00	16.00	18.96	32.0	0.960	45.0	77.00	6.0	ICP 060	K DCN 6-9.99-Y
DCN 065-020-12A-3D	6.50	6.99	12.00	16.00	20.68	33.8	1.180	45.0	78.80	6.5	ICP 065	K DCN 6-9.99-Y
DCN 070-021-12A-3D	7.00	7.49	12.00	16.00	22.01	35.6	1.010	45.0	80.60	7.0	ICP 070	K DCN 6-9.99
DCN 075-023-12A-3D	7.50	7.99	12.00	16.00	23.60	37.1	1.100	45.0	82.10	7.0	ICP 075	K DCN 6-9.99
DCN 080-024-12A-3D	8.00	8.49	12.00	16.00	25.20	39.4	1.200	45.0	84.40	8.0	ICP 080	K DCN 6-9.99
DCN 085-025-12A-3D	8.50	8.99	12.00	16.00	26.79	40.9	1.290	45.0	85.90	8.0	ICP 085	K DCN 6-9.99
DCN 090-027-12A-3D	9.00	9.49	12.00	16.00	28.35	42.8	1.350	45.0	87.80	9.0	ICP 090	K DCN 6-9.99
DCN 095-029-12A-3D	9.50	9.99	12.00	16.00	29.94	44.3	1.440	45.0	89.30	9.0	ICP 095	K DCN 6-9.99
DCN 100-030-16A-3D	10.00	10.49	16.00	20.00	31.50	46.2	1.500	48.0	94.20	10.0	ICP 100	K DCN 10-13.99
DCN 105-032-16A-3D	10.50	10.99	16.00	20.00	33.09	47.7	1.590	48.0	95.70	10.0	ICP 105	K DCN 10-13.99
DCN 110-033-16A-3D	11.00	11.49	16.00	20.00	34.67	49.6	1.670	48.0	97.60	11.0	ICP 110	K DCN 10-13.99
DCN 115-035-16A-3D	11.50	11.99	16.00	20.00	36.26	51.1	1.760	48.0	99.10	11.0	ICP 115	K DCN 10-13.99
DCN 120-036-16A-3D	12.00	12.49	16.00	20.00	37.82	53.0	1.820	48.0	101.00	12.0	ICP 120	K DCN 10-13.99
DCN 125-037-16A-3D	12.50	12.99	16.00	20.00	39.41	54.5	1.910	48.0	102.50	12.0	ICP 125	K DCN 10-13.99
DCN 130-039-16A-3D	13.00	13.49	16.00	20.00	40.96	56.6	1.960	48.0	104.60	13.0	ICP 130	K DCN 10-13.99
DCN 135-041-16A-3D	13.50	13.99	16.00	20.00	42.55	58.1	2.050	48.0	106.10	13.0	ICP 135	K DCN 10-13.99
DCN 140-042-16A-3D	14.00	14.49	16.00	20.00	44.12	62.2	2.120	48.0	110.15	14.0	ICP 140	K DCN 14-17.99
DCN 145-044-16A-3D	14.50	14.99	16.00	20.00	45.71	63.6	2.210	48.0	111.65	14.0	ICP 145	K DCN 14-17.99
DCN 150-045-20A-3D	15.00	15.99	20.00	25.00	47.27	68.7	2.270	50.0	118.73	15.0	ICP 150	K DCN 14-17.99
DCN 160-048-20A-3D	16.00	16.99	20.00	25.00	50.42	73.3	2.420	50.0	123.30	16.0	ICP 160	K DCN 14-17.99
DCN 170-051-20A-3D	17.00	17.99	20.00	25.00	53.59	77.9	2.590	50.0	127.90	17.0	ICP 170	K DCN 14-17.99
DCN 180-054-25A-3D	18.00	18.99	25.00	32.00	56.73	82.5	2.730	56.0	138.50	18.0	ICP 180	K DCN 18-21.99
DCN 190-057-25A-3D	19.00	19.99	25.00	32.00	59.88	87.0	2.880	56.0	143.00	19.0	ICP 190	K DCN 18-21.99
DCN 200-060-25A-3D	20.00	20.99	25.00	32.00	63.02	91.6	3.020	56.0	147.60	20.0	ICP 200	K DCN 18-21.99
DCN 210-063-25A-3D	21.00	21.99	25.00	32.00	66.18	96.2	3.180	56.0	152.18	21.0	ICP 210	K DCN 18-21.99
DCN 220-066-25A-3D	22.00	22.99	25.00	32.00	69.32	100.8	3.320	56.0	156.76	22.0	ICP 220	K DCN 22-26.99
DCN 230-069-32A-3D	23.00	23.99	32.00	42.00	72.46	105.3	3.460	60.0	165.33	23.0	ICP 230	K DCN 22-26.99
DCN 240-072-32A-3D	24.00	24.99	32.00	42.00	75.62	109.9	3.620	60.0	169.90	24.0	ICP 240	K DCN 22-26.99
DCN 250-075-32A-3D	25.00	25.99	32.00	42.00	78.80	114.5	3.800	60.0	174.50	25.0	ICP 250	K DCN 22-26.99
DCN 260-078-32A-3D	26.00	26.99	32.00	42.00	81.95	119.1	3.950	60.0	179.07	26.0	ICP 260	K DCN 22-26.99
DCN 270-081-32A-3D	27.00	27.99	32.00	42.00	85.10	123.7	4.100	60.0	183.65	27.0	ICP 270	K DCN 27-32.99
DCN 270-081-40A-3D	27.00	27.99	40.00	50.00	85.10	123.7	4.100	68.0	191.65	27.0	ICP 270	K DCN 27-32.99
DCN 280-084-32A-3D	28.00	28.99	32.00	42.00	88.25	128.2	4.250	60.0	188.20	28.0	ICP 280	K DCN 27-32.99
DCN 280-084-40A-3D	28.00	28.99	40.00	50.00	88.25	128.2	4.250	68.0	196.22	28.0	ICP 280	K DCN 27-32.99
DCN 290-087-32A-3D	29.00	29.99	32.00	42.00	91.43	132.8	4.430	60.0	192.80	29.0	ICP 290	K DCN 27-32.99
DCN 290-087-40A-3D	29.00	29.99	40.00	50.00	91.43	132.8	4.430	68.0	200.80	29.0	ICP 290	K DCN 27-32.99
DCN 300-090-32A-3D	30.00	30.99	32.00	42.00	94.59	137.4	4.590	60.0	197.38	30.0	ICP 300	K DCN 27-32.99
DCN 300-090-40A-3D	30.00	30.99	40.00	50.00	94.59	137.4	4.590	68.0	205.38	30.0	ICP 300	K DCN 27-32.99
DCN 310-093-32A-3D	31.00	31.99	32.00	42.00	97.76	142.0	4.760	60.0	201.96	31.0	ICP 310	K DCN 27-32.99
DCN 320-096-32A-3D	32.00	32.99	32.00	42.00	100.86	146.5	4.860	60.0	206.54	32.0	ICP 320	K DCN 27-32.99
DCN 320-096-40A-3D	32.00	32.99	40.00	50.00	100.86	146.5	4.860	68.0	214.54	32.0	ICP 320	K DCN 27-32.99

• Do not mount smaller drilling heads other than the specified range of the drill body • For user guide and cutting conditions, see pages 68-76

[1] Cutting diameter minimum

[2] Cutting diameter maximum

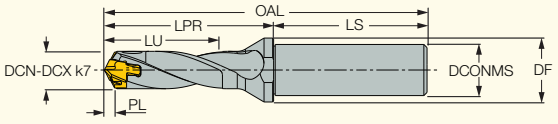
[3] Seat size code

[4] Master insert identification

For inserts, see pages: ICP (23) • ICP-2M (29) • ICK (37) • ICK-2M (41) • ICM (45) • ICN (50) • QCP-2M (51) • HCP-IQ (55) • FCP (61) • ICG (67) • IHP (33)

SUMOCHAM

DCN R-3D
Drill Body with Exchangeable Heads, Internal Coolant Holes and a Cylindrical Shank, Drilling Depth 3xD



Designation	DCN[1]	DCX[2]	DCONMS	DF	LU	LPR	PL	LS	OAL	SSC[3]	MIID[4]	
DCN 060-018-12R-3D	6.00	6.49	12.00	16.00	18.96	32.0	0.960	45.0	77.00	6.0	ICP 060	K DCN 6-9.99-Y
DCN 065-020-12R-3D	6.50	6.99	12.00	16.00	20.68	33.8	1.180	45.0	78.80	6.5	ICP 065	K DCN 6-9.99-Y
DCN 070-021-12R-3D	7.00	7.49	12.00	16.00	22.01	35.6	1.010	45.0	80.60	7.0	ICP 070	K DCN 6-9.99
DCN 075-023-12R-3D	7.50	7.99	12.00	16.00	23.60	37.1	1.100	45.0	82.10	7.0	ICP 075	K DCN 6-9.99
DCN 080-024-12R-3D	8.00	8.49	12.00	16.00	25.20	39.4	1.200	45.0	84.40	8.0	ICP 080	K DCN 6-9.99
DCN 085-025-12R-3D	8.50	8.99	12.00	16.00	26.79	40.9	1.290	45.0	85.90	8.0	ICP 085	K DCN 6-9.99
DCN 090-027-12R-3D	9.00	9.49	12.00	16.00	28.35	42.8	1.350	45.0	87.80	9.0	ICP 090	K DCN 6-9.99
DCN 095-029-12R-3D	9.50	9.99	12.00	16.00	29.94	44.3	1.440	45.0	89.30	9.0	ICP 095	K DCN 6-9.99
DCN 100-030-16R-3D	10.00	10.49	16.00	20.00	31.50	46.2	1.500	48.0	94.20	10.0	ICP 100	K DCN 10-13.99
DCN 105-032-16R-3D	10.50	10.99	16.00	20.00	33.09	47.7	1.590	48.0	95.70	10.0	ICP 105	K DCN 10-13.99
DCN 110-033-16R-3D	11.00	11.49	16.00	20.00	34.67	49.6	1.670	48.0	97.60	11.0	ICP 110	K DCN 10-13.99
DCN 115-035-16R-3D	11.50	11.99	16.00	20.00	36.26	51.1	1.760	48.0	99.10	11.0	ICP 115	K DCN 10-13.99
DCN 120-036-16R-3D	12.00	12.49	16.00	20.00	37.82	53.0	1.820	48.0	101.00	12.0	ICP 120	K DCN 10-13.99
DCN 125-037-16R-3D	12.50	12.99	16.00	20.00	39.41	54.5	1.910	48.0	102.50	12.0	ICP 125	K DCN 10-13.99
DCN 130-039-16R-3D	13.00	13.49	16.00	20.00	40.96	56.6	1.960	48.0	104.60	13.0	ICP 130	K DCN 10-13.99
DCN 135-041-16R-3D	13.50	13.99	16.00	20.00	42.55	58.1	2.050	48.0	106.10	13.0	ICP 135	K DCN 10-13.99
DCN 140-042-16R-3D	14.00	14.49	16.00	20.00	44.12	62.2	2.120	48.0	110.15	14.0	ICP 140	K DCN 14-17.99
DCN 145-044-16R-3D	14.50	14.99	16.00	20.00	45.71	63.7	2.210	48.0	111.65	14.0	ICP 145	K DCN 14-17.99
DCN 150-045-20R-3D	15.00	15.99	20.00	25.00	47.27	68.7	2.270	50.0	118.73	15.0	ICP 150	K DCN 14-17.99
DCN 160-048-20R-3D	16.00	16.99	20.00	25.00	50.42	73.3	2.420	50.0	123.30	16.0	ICP 160	K DCN 14-17.99
DCN 170-051-20R-3D	17.00	17.99	20.00	25.00	53.59	77.9	2.590	50.0	127.90	17.0	ICP 170	K DCN 14-17.99
DCN 180-054-25R-3D	18.00	18.99	25.00	32.00	56.73	82.5	2.730	56.0	138.50	18.0	ICP 180	K DCN 18-21.99
DCN 190-057-25R-3D	19.00	19.99	25.00	32.00	59.88	87.0	2.880	56.0	143.00	19.0	ICP 190	K DCN 18-21.99
DCN 200-060-25R-3D	20.00	20.99	25.00	32.00	63.02	91.6	3.020	56.0	147.60	20.0	ICP 200	K DCN 18-21.99
DCN 210-063-25R-3D	21.00	21.99	25.00	32.00	66.18	96.2	3.180	56.0	152.18	21.0	ICP 210	K DCN 18-21.99
DCN 220-066-25R-3D	22.00	22.99	25.00	32.00	69.32	100.8	3.320	56.0	156.76	22.0	ICP 220	K DCN 22-26.99
DCN 230-069-32R-3D	23.00	23.99	32.00	42.00	72.46	105.3	3.460	60.0	165.33	23.0	ICP 230	K DCN 22-26.99
DCN 240-072-32R-3D	24.00	24.99	32.00	42.00	75.62	109.9	3.620	60.0	169.90	24.0	ICP 240	K DCN 22-26.99
DCN 250-075-32R-3D	25.00	25.99	32.00	42.00	78.80	114.5	3.800	60.0	174.50	25.0	ICP 250	K DCN 22-26.99
DCN 260-078-32R-3D	26.00	26.99	32.00	42.00	81.95	119.1	3.950	60.0	179.07	26.0	ICP 260	K DCN 22-26.99
DCN 270-081-32R-3D	27.00	27.99	32.00	42.00	85.10	123.7	4.100	60.0	183.65	27.0	ICP 270	K DCN 27-32.99
DCN 280-084-32R-3D	28.00	28.99	32.00	42.00	88.25	128.2	4.250	60.0	188.22	28.0	ICP 280	K DCN 27-32.99
DCN 290-087-32R-3D	29.00	29.99	32.00	42.00	91.43	132.8	4.430	60.0	192.80	29.0	ICP 290	K DCN 27-32.99
DCN 300-090-32R-3D	30.00	30.99	32.00	42.00	94.59	137.4	4.590	60.0	197.38	30.0	ICP 300	K DCN 27-32.99
DCN 310-093-32R-3D	31.00	31.99	32.00	42.00	97.76	142.0	4.760	60.0	201.96	31.0	ICP 310	K DCN 27-32.99
DCN 320-096-32R-3D	32.00	32.99	32.00	42.00	100.86	146.5	4.860	60.0	206.54	32.0	ICP 320	K DCN 27-32.99

• Do not mount smaller drilling heads other than the specified range of the drill body • For user guide and cutting conditions, see pages 68-76

[1] Cutting diameter minimum

[2] Cutting diameter maximum

[3] Seat size code

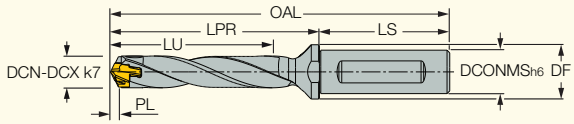
[4] Master insert identification

For inserts, see pages: ICP (23) • ICP-2M (29) • ICK (37) • ICK-2M (41) • ICM (45) • ICN (50) • QCP-2M (51) • HCP-IQ (55) • FCP (61) • ICG (67) • IHP (33)

SUMOCHAM

DCN A-5D

Drill Body with Exchangeable Heads, Internal Coolant Holes and One Flat Shank, Drilling Depth 5xD



Designation	DCN[1]	DCX[2]	DCONMS	DF	LU	LPR	PL	LS	OAL	SSC[3]	MIID[4]	
DCN 060-030-12A-5D	6.00	6.49	12.00	16.00	30.96	44.0	0.960	45.0	89.00	6.0	ICP 060	K DCN 6-9.99-Y
DCN 065-033-12A-5D	6.50	6.99	12.00	16.00	33.68	46.8	1.180	45.0	91.80	6.5	ICP 065	K DCN 6-9.99-Y
DCN 070-035-12A-5D	7.00	7.49	12.00	16.00	36.01	49.6	1.010	45.0	94.60	7.0	ICP 070	K DCN 6-9.99
DCN 075-038-12A-5D	7.50	7.99	12.00	16.00	38.60	52.1	1.100	45.0	97.10	7.0	ICP 075	K DCN 6-9.99
DCN 080-040-12A-5D	8.00	8.49	12.00	16.00	41.20	55.4	1.200	45.0	100.40	8.0	ICP 080	K DCN 6-9.99
DCN 085-042-12A-5D	8.50	8.99	12.00	16.00	43.79	57.9	1.290	45.0	102.90	8.0	ICP 085	K DCN 6-9.99
DCN 090-045-12A-5D	9.00	9.49	12.00	16.00	46.35	60.8	1.350	45.0	105.80	9.0	ICP 090	K DCN 6-9.99
DCN 095-048-12A-5D	9.50	9.99	12.00	16.00	48.94	63.3	1.440	45.0	108.30	9.0	ICP 095	K DCN 6-9.99
DCN 100-050-16A-5D	10.00	10.49	16.00	20.00	51.50	66.2	1.500	48.0	114.20	10.0	ICP 100	K DCN 10-13.99
DCN 105-053-16A-5D	10.50	10.99	16.00	20.00	54.09	68.7	1.590	48.0	116.70	10.0	ICP 105	K DCN 10-13.99
DCN 110-055-16A-5D	11.00	11.49	16.00	20.00	56.67	71.6	1.670	48.0	119.60	11.0	ICP 110	K DCN 10-13.99
DCN 115-058-16A-5D	11.50	11.99	16.00	20.00	59.26	74.1	1.760	48.0	122.10	11.0	ICP 115	K DCN 10-13.99
DCN 120-060-16A-5D	12.00	12.49	16.00	20.00	61.82	77.0	1.820	48.0	125.00	12.0	ICP 120	K DCN 10-13.99
DCN 125-062-16A-5D	12.50	12.99	16.00	20.00	64.41	79.5	1.910	48.0	127.50	12.0	ICP 125	K DCN 10-13.99
DCN 130-065-16A-5D	13.00	13.49	16.00	20.00	66.96	82.6	1.960	48.0	130.60	13.0	ICP 130	K DCN 10-13.99
DCN 135-068-16A-5D	13.50	13.99	16.00	20.00	69.55	85.1	2.050	48.0	133.10	13.0	ICP 135	K DCN 10-13.99
DCN 140-070-16A-5D	14.00	14.49	16.00	20.00	72.12	90.2	2.120	48.0	138.20	14.0	ICP 140	K DCN 14-17.99
DCN 145-073-16A-5D	14.50	14.99	16.00	20.00	74.71	92.7	2.210	48.0	140.70	14.0	ICP 145	K DCN 14-17.99
DCN 150-075-20A-5D	15.00	15.99	20.00	25.00	77.27	98.7	2.270	50.0	148.70	15.0	ICP 150	K DCN 14-17.99
DCN 160-080-20A-5D	16.00	16.99	20.00	25.00	82.42	105.3	2.420	50.0	155.30	16.0	ICP 160	K DCN 14-17.99
DCN 170-085-20A-5D	17.00	17.99	20.00	25.00	87.59	111.9	2.590	50.0	161.90	17.0	ICP 170	K DCN 14-17.99
DCN 180-090-25A-5D	18.00	18.99	25.00	32.00	92.73	118.5	2.730	56.0	174.50	18.0	ICP 180	K DCN 18-21.99
DCN 190-095-25A-5D	19.00	19.99	25.00	32.00	97.88	125.0	2.880	56.0	181.00	19.0	ICP 190	K DCN 18-21.99
DCN 200-100-25A-5D	20.00	20.99	25.00	32.00	103.02	131.6	3.020	56.0	187.60	20.0	ICP 200	K DCN 18-21.99
DCN 210-105-25A-5D	21.00	21.99	25.00	32.00	108.18	138.2	3.180	56.0	194.20	21.0	ICP 210	K DCN 18-21.99
DCN 220-110-25A-5D	22.00	22.99	25.00	32.00	113.32	144.8	3.320	56.0	200.80	22.0	ICP 220	K DCN 22-26.99
DCN 230-115-32A-5D	23.00	23.99	32.00	42.00	118.46	151.3	3.460	60.0	211.40	23.0	ICP 230	K DCN 22-26.99
DCN 240-120-32A-5D	24.00	24.99	32.00	42.00	123.62	157.9	3.620	60.0	218.00	24.0	ICP 240	K DCN 22-26.99
DCN 250-125-32A-5D	25.00	25.99	32.00	42.00	128.80	164.5	3.800	60.0	224.50	25.0	ICP 250	K DCN 22-26.99
DCN 260-130-32A-5D	26.00	26.99	32.00	42.00	133.95	171.1	3.950	60.0	231.00	26.0	ICP 260	K DCN 22-26.99
DCN 270-135-32A-5D	27.00	27.99	32.00	42.00	139.10	177.7	4.100	60.0	237.70	27.0	ICP 270	K DCN 27-32.99
DCN 270-135-40A-5D	27.00	27.99	40.00	50.00	139.10	177.7	4.100	68.0	245.70	27.0	ICP 270	K DCN 27-32.99
DCN 280-140-32A-5D	28.00	28.99	32.00	42.00	144.25	184.2	4.250	60.0	244.20	28.0	ICP 280	K DCN 27-32.99
DCN 280-140-40A-5D	28.00	28.99	40.00	50.00	144.25	184.2	4.250	68.0	252.20	28.0	ICP 280	K DCN 27-32.99
DCN 290-145-32A-5D	29.00	29.99	32.00	42.00	149.43	190.8	4.430	60.0	250.80	29.0	ICP 290	K DCN 27-32.99
DCN 290-145-40A-5D	29.00	29.99	40.00	50.00	149.43	190.8	4.430	68.0	258.80	29.0	ICP 290	K DCN 27-32.99
DCN 300-150-32A-5D	30.00	30.99	32.00	42.00	154.59	197.4	4.590	60.0	257.40	30.0	ICP 300	K DCN 27-32.99
DCN 300-150-40A-5D	30.00	30.99	40.00	50.00	154.59	197.4	4.590	68.0	265.40	30.0	ICP 300	K DCN 27-32.99
DCN 310-155-32A-5D	31.00	31.99	32.00	42.00	159.76	204.0	4.760	60.0	264.00	31.0	ICP 310	K DCN 27-32.99
DCN 310-155-40A-5D	31.00	31.99	40.00	50.00	159.76	204.0	4.760	68.0	272.00	31.0	ICP 310	K DCN 27-32.99
DCN 320-160-32A-5D	32.00	32.99	32.00	42.00	164.86	210.5	4.860	60.0	270.50	32.0	ICP 320	K DCN 27-32.99
DCN 320-160-40A-5D	32.00	32.99	40.00	50.00	164.86	210.5	4.860	68.0	278.50	32.0	ICP 320	K DCN 27-32.99

• Do not mount smaller drilling heads other than the specified range of the drill body • For user guide and cutting conditions, see pages 68-76

(1) Cutting diameter minimum

(2) Cutting diameter maximum

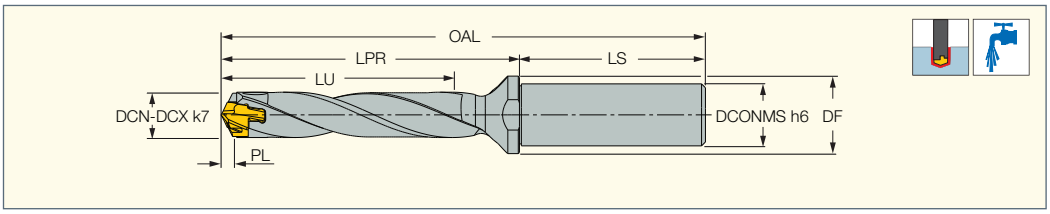
(3) Seat size code

(4) Master insert identification

For inserts, see pages: ICP (23) • ICP-2M (29) • ICK (37) • ICK-2M (41) • ICM (45) • ICN (50) • QCP-2M (51) • HCP-IQ (55) • FCP (61) • ICG (67) • IHP (33)

SUMOCHAM

DCN R-5D
Drill Body with Exchangeable Heads, Internal Coolant Holes and a Cylindrical Shank, Drilling Depth 5xD



Designation	DCN[1]	DCX[2]	DCONMS	DF	LU	LPR	PL	LS	OAL	SSC[3]	MIID[4]	
DCN 060-030-12R-5D	6.00	6.49	12.00	16.00	30.96	44.00	0.960	45.0	89.00	6.0	ICP 060	K DCN 6-9.99-Y
DCN 065-033-12R-5D	6.50	6.99	12.00	16.00	33.68	46.80	1.180	45.0	91.80	6.5	ICP 065	K DCN 6-9.99-Y
DCN 070-035-12R-5D	7.00	7.49	12.00	16.00	36.01	49.60	1.010	45.0	94.60	7.0	ICP 070	K DCN 6-9.99
DCN 075-038-12R-5D	7.50	7.99	12.00	16.00	38.60	52.10	1.100	45.0	97.10	7.0	ICP 075	K DCN 6-9.99
DCN 080-040-12R-5D	8.00	8.49	12.00	16.00	41.20	55.40	1.200	45.0	100.40	8.0	ICP 080	K DCN 6-9.99
DCN 085-042-12R-5D	8.50	8.99	12.00	16.00	43.79	57.90	1.290	45.0	102.90	8.0	ICP 085	K DCN 6-9.99
DCN 090-045-12R-5D	9.00	9.49	12.00	16.00	46.35	60.80	1.350	45.0	105.80	9.0	ICP 090	K DCN 6-9.99
DCN 095-048-12R-5D	9.50	9.99	12.00	16.00	48.94	63.30	1.440	45.0	108.30	9.0	ICP 095	K DCN 6-9.99
DCN 100-050-16R-5D	10.00	10.49	16.00	20.00	51.50	66.20	1.500	48.0	114.20	10.0	ICP 100	K DCN 10-13.99
DCN 105-053-16R-5D	10.50	10.99	16.00	20.00	54.09	68.70	1.590	48.0	116.70	10.0	ICP 105	K DCN 10-13.99
DCN 110-055-16R-5D	11.00	11.49	16.00	20.00	56.67	71.60	1.670	48.0	119.60	11.0	ICP 110	K DCN 10-13.99
DCN 115-058-16R-5D	11.50	11.99	16.00	20.00	59.26	74.10	1.760	48.0	122.10	11.0	ICP 115	K DCN 10-13.99
DCN 120-060-16R-5D	12.00	12.49	16.00	20.00	61.82	77.00	1.820	48.0	125.00	12.0	ICP 120	K DCN 10-13.99
DCN 125-062-16R-5D	12.50	12.99	16.00	20.00	64.41	79.50	1.910	48.0	127.50	12.0	ICP 125	K DCN 10-13.99
DCN 130-065-16R-5D	13.00	13.49	16.00	20.00	66.96	82.60	1.960	48.0	130.60	13.0	ICP 130	K DCN 10-13.99
DCN 135-068-16R-5D	13.50	13.99	16.00	20.00	69.55	85.10	2.050	48.0	133.10	13.0	ICP 135	K DCN 10-13.99
DCN 140-070-16R-5D	14.00	14.49	16.00	20.00	72.12	90.20	2.120	48.0	138.20	14.0	ICP 140	K DCN 14-17.99
DCN 145-073-16R-5D	14.50	14.99	16.00	20.00	74.71	92.70	2.210	48.0	140.70	14.0	ICP 145	K DCN 14-17.99
DCN 150-075-20R-5D	15.00	15.99	20.00	25.00	77.27	98.70	2.270	50.0	148.70	15.0	ICP 150	K DCN 14-17.99
DCN 160-080-20R-5D	16.00	16.99	20.00	25.00	82.42	105.30	2.420	50.0	155.30	16.0	ICP 160	K DCN 14-17.99
DCN 170-085-20R-5D	17.00	17.99	20.00	25.00	87.59	111.90	2.590	50.0	161.90	17.0	ICP 170	K DCN 14-17.99
DCN 180-090-25R-5D	18.00	18.99	25.00	32.00	92.73	118.50	2.730	56.0	174.50	18.0	ICP 180	K DCN 18-21.99
DCN 190-095-25R-5D	19.00	19.99	25.00	32.00	97.88	125.00	2.880	56.0	181.00	19.0	ICP 190	K DCN 18-21.99
DCN 200-100-25R-5D	20.00	20.99	25.00	32.00	103.02	131.60	3.020	56.0	187.60	20.0	ICP 200	K DCN 18-21.99
DCN 210-105-25R-5D	21.00	21.99	25.00	32.00	108.18	138.20	3.180	56.0	194.20	21.0	ICP 210	K DCN 18-21.99
DCN 220-110-25R-5D	22.00	22.99	25.00	32.00	113.32	144.80	3.320	56.0	200.80	22.0	ICP 220	K DCN 22-26.99
DCN 230-115-32R-5D	23.00	23.99	32.00	42.00	118.46	151.30	3.460	60.0	211.40	23.0	ICP 230	K DCN 22-26.99
DCN 240-120-32R-5D	24.00	24.99	32.00	42.00	123.62	157.90	3.620	60.0	218.00	24.0	ICP 240	K DCN 22-26.99
DCN 250-125-32R-5D	25.00	25.99	32.00	42.00	128.80	164.50	3.800	60.0	224.50	25.0	ICP 250	K DCN 22-26.99
DCN 260-130-32R-5D	26.00	26.99	32.00	42.00	133.95	171.10	3.950	60.0	231.00	26.0	ICP 260	K DCN 22-26.99
DCN 270-135-32R-5D	27.00	27.99	32.00	42.00	139.10	177.70	4.100	60.0	237.70	27.0	ICP 270	K DCN 27-32.99
DCN 280-140-32R-5D	28.00	28.99	32.00	42.00	144.25	184.20	4.250	60.0	244.20	28.0	ICP 280	K DCN 27-32.99
DCN 290-145-32R-5D	29.00	29.99	32.00	42.00	149.43	190.80	4.430	60.0	250.80	29.0	ICP 290	K DCN 27-32.99
DCN 300-150-32R-5D	30.00	30.99	32.00	42.00	154.59	197.40	4.590	60.0	257.40	30.0	ICP 300	K DCN 27-32.99
DCN 310-155-32R-5D	31.00	31.99	32.00	42.00	159.76	204.00	4.760	60.0	264.00	31.0	ICP 310	K DCN 27-32.99
DCN 320-160-32R-5D	32.00	32.99	32.00	42.00	164.86	210.50	4.860	60.0	270.50	32.0	ICP 320	K DCN 27-32.99

• Do not mount smaller drilling heads other than the specified range of the drill body • For user guide and cutting conditions, see pages 68-76

[1] Cutting diameter minimum

[2] Cutting diameter maximum

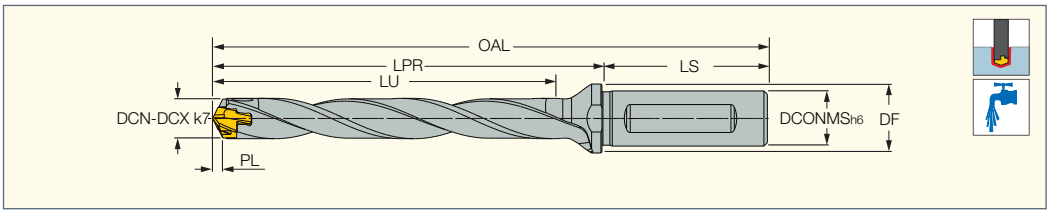
[3] Seat size code

[4] Master insert identification

For inserts, see pages: ICP (23) • ICP-2M (29) • ICK (37) • ICK-2M (41) • ICM (45) • ICN (50) • QCP-2M (51) • HCP-IQ (55) • FCP (61) • ICG (67) • IHP (33)

SUMOCHAM

DCN A-8D
Drill Body with Exchangeable Heads, Internal Coolant Holes and One Flat Shank, Drilling Depth 8xD



Designation	DCN[1]	DCX[2]	DCONMS	DF	LU	LPR	PL	LS	OAL	SSC[3]	MIID[4]	
DCN 060-048-12A-8D	6.00	6.49	12.00	16.00	48.96	62.00	0.960	45.0	107.00	6.0	ICP 060	K DCN 6-9.99-Y
DCN 065-052-12A-8D	6.50	6.99	12.00	16.00	53.18	66.30	1.180	45.0	111.30	6.5	ICP 065	K DCN 6-9.99-Y
DCN 070-056-12A-8D	7.00	7.49	12.00	16.00	57.01	70.60	1.010	45.0	115.60	7.0	ICP 070	K DCN 6-9.99
DCN 075-060-12A-8D	7.50	7.99	12.00	16.00	61.10	74.60	1.100	45.0	120.00	7.0	ICP 075	K DCN 6-9.99
DCN 080-064-12A-8D	8.00	8.49	12.00	16.00	65.20	79.40	1.200	45.0	124.40	8.0	ICP 080	K DCN 6-9.99
DCN 085-068-12A-8D	8.50	8.99	12.00	16.00	69.29	83.40	1.290	45.0	128.40	8.0	ICP 085	K DCN 6-9.99
DCN 090-072-12A-8D	9.00	9.49	12.00	16.00	73.35	87.80	1.350	45.0	132.80	9.0	ICP 090	K DCN 6-9.99
DCN 095-076-12A-8D	9.50	9.99	12.00	16.00	77.44	91.80	1.440	45.0	136.80	9.0	ICP 095	K DCN 6-9.99
DCN 100-080-16A-8D	10.00	10.49	16.00	20.00	81.50	96.20	1.500	48.0	144.20	10.0	ICP 100	K DCN 10-13.99
DCN 105-084-16A-8D	10.50	10.99	16.00	20.00	85.59	100.20	1.590	48.0	148.20	10.0	ICP 105	K DCN 10-13.99
DCN 110-088-16A-8D	11.00	11.49	16.00	20.00	89.67	104.60	1.670	48.0	152.60	11.0	ICP 110	K DCN 10-13.99
DCN 115-092-16A-8D	11.50	11.99	16.00	20.00	93.76	108.60	1.760	48.0	156.60	11.0	ICP 115	K DCN 10-13.99
DCN 120-096-16A-8D	12.00	12.49	16.00	20.00	97.82	113.00	1.820	48.0	161.00	12.0	ICP 120	K DCN 10-13.99
DCN 125-100-16A-8D	12.50	12.99	16.00	20.00	101.91	117.00	1.910	48.0	165.00	12.0	ICP 125	K DCN 10-13.99
DCN 130-104-16A-8D	13.00	13.49	16.00	20.00	105.96	121.60	1.960	48.0	169.60	13.0	ICP 130	K DCN 10-13.99
DCN 135-108-16A-8D	13.50	13.99	16.00	20.00	110.05	125.60	2.050	48.0	173.60	13.0	ICP 135	K DCN 10-13.99
DCN 140-112-16A-8D	14.00	14.49	16.00	20.00	114.12	132.20	2.120	48.0	180.10	14.0	ICP 140	K DCN 14-17.99
DCN 145-116-16A-8D	14.50	14.99	16.00	20.00	118.21	136.20	2.210	48.0	184.20	14.0	ICP 145	K DCN 14-17.99
DCN 150-120-20A-8D	15.00	15.99	20.00	25.00	122.27	143.70	2.270	50.0	193.70	15.0	ICP 150	K DCN 14-17.99
DCN 160-128-20A-8D	16.00	16.99	20.00	25.00	130.42	153.30	2.420	50.0	203.30	16.0	ICP 160	K DCN 14-17.99
DCN 170-136-20A-8D	17.00	17.99	20.00	25.00	138.59	162.90	2.590	50.0	212.90	17.0	ICP 170	K DCN 14-17.99
DCN 180-144-25A-8D	18.00	18.99	25.00	32.00	146.73	172.50	2.730	56.0	228.50	18.0	ICP 180	K DCN 18-21.99
DCN 190-152-25A-8D	19.00	19.99	25.00	32.00	154.88	182.00	2.880	56.0	238.00	19.0	ICP 190	K DCN 18-21.99
DCN 200-160-25A-8D	20.00	20.99	25.00	32.00	163.02	191.60	3.020	56.0	247.60	20.0	ICP 200	K DCN 18-21.99
DCN 210-168-25A-8D	21.00	21.99	25.00	32.00	171.18	201.20	3.180	56.0	257.20	21.0	ICP 210	K DCN 18-21.99
DCN 220-176-25A-8D	22.00	22.99	25.00	32.00	179.32	210.80	3.320	56.0	266.80	22.0	ICP 220	K DCN 22-26.99
DCN 230-184-32A-8D	23.00	23.99	32.00	42.00	187.46	220.30	3.460	60.0	280.40	23.0	ICP 230	K DCN 22-26.99
DCN 240-192-32A-8D	24.00	24.99	32.00	42.00	195.62	229.90	3.620	60.0	290.00	24.0	ICP 240	K DCN 22-26.99
DCN 250-200-32A-8D	25.00	25.99	32.00	42.00	203.80	239.50	3.800	60.0	299.50	25.0	ICP 250	K DCN 22-26.99
DCN 260-208-32A-8D	26.00	26.99	32.00	42.00	211.95	249.10	3.950	60.0	309.30	26.0	ICP 260	K DCN 22-26.99
DCN 270-216-32A-8D	27.00	27.99	32.00	42.00	220.10	258.70	4.100	60.0	318.60	27.0	ICP 270	K DCN 27-32.99
DCN 280-224-32A-8D	28.00	28.99	32.00	42.00	228.25	268.20	4.250	60.0	328.20	28.0	ICP 280	K DCN 27-32.99
DCN 290-232-32A-8D	29.00	29.99	32.00	42.00	236.43	277.80	4.430	60.0	337.80	29.0	ICP 290	K DCN 27-32.99
DCN 300-240-32A-8D	30.00	30.99	32.00	42.00	244.59	287.40	4.590	60.0	347.40	30.0	ICP 300	K DCN 27-32.99
DCN 310-248-32A-8D	31.00	31.99	32.00	42.00	252.76	297.00	4.760	60.0	357.00	31.0	ICP 310	K DCN 27-32.99
DCN 320-256-32A-8D	32.00	32.99	32.00	42.00	260.86	306.50	4.860	60.0	366.50	32.0	ICP 320	K DCN 27-32.99

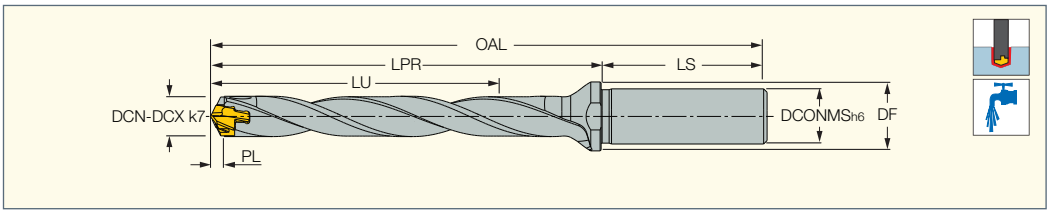
- Prior to using the 8xD drill, it is recommended to drill a pre-hole by using a DCN 1.5xD drill or a centering drill. Not required if HCP or QCP drilling head is used
- Do not mount smaller drilling heads other than the specified range of the drill body • For user guide and cutting conditions, see pages 68-76

[1] Cutting diameter minimum
[2] Cutting diameter maximum
[3] Seat size code
[4] Master insert identification

For inserts, see pages: ICP (23) • ICP-2M (29) • ICK (37) • ICK-2M (41) • ICM (45) • ICN (50) • QCP-2M (51) • HCP-IQ (55) • FCP (61) • ICG (67) • IHP (33)

SUMOCHAM

DCN R-8D
Drill Body with Exchangeable Heads, Internal Coolant Holes and a Cylindrical Shank, Drilling Depth 8xD



Designation	DCN[1]	DCX[2]	DCONMS	DF	LU	LPR	PL	LS	OAL	SSC[3]	MIID[4]	
DCN 060-048-12R-8D	6.00	6.49	12.00	16.00	48.96	62.0	0.960	45.0	107.00	6.0	ICP 060	K DCN 6-9.99-Y
DCN 065-052-12R-8D	6.50	6.99	12.00	16.00	53.18	66.3	1.180	45.0	111.30	6.5	ICP 065	K DCN 6-9.99-Y
DCN 070-056-12R-8D	7.00	7.49	12.00	16.00	57.01	70.6	1.010	45.0	115.60	7.0	ICP 070	K DCN 6-9.99
DCN 075-060-12R-8D	7.50	7.99	12.00	16.00	61.10	74.6	1.100	45.0	120.00	7.0	ICP 075	K DCN 6-9.99
DCN 080-064-12R-8D	8.00	8.49	12.00	16.00	65.20	79.4	1.200	45.0	124.40	8.0	ICP 080	K DCN 6-9.99
DCN 085-068-12R-8D	8.50	8.99	12.00	16.00	69.29	83.4	1.290	45.0	128.40	8.0	ICP 085	K DCN 6-9.99
DCN 090-072-12R-8D	9.00	9.49	12.00	16.00	73.35	87.8	1.350	45.0	132.80	9.0	ICP 090	K DCN 6-9.99
DCN 095-076-12R-8D	9.50	9.99	12.00	16.00	77.44	91.8	1.440	45.0	136.80	9.0	ICP 095	K DCN 6-9.99
DCN 100-080-16R-8D	10.00	10.49	16.00	20.00	81.50	96.2	1.500	48.0	144.20	10.0	ICP 100	K DCN 10-13.99
DCN 105-084-16R-8D	10.50	10.99	16.00	20.00	85.59	100.2	1.590	48.0	148.20	10.0	ICP 105	K DCN 10-13.99
DCN 110-088-16R-8D	11.00	11.49	16.00	20.00	89.67	104.6	1.670	48.0	152.60	11.0	ICP 110	K DCN 10-13.99
DCN 115-092-16R-8D	11.50	11.99	16.00	20.00	93.76	108.6	1.760	48.0	156.60	11.0	ICP 115	K DCN 10-13.99
DCN 120-096-16R-8D	12.00	12.49	16.00	20.00	97.82	113.0	1.820	48.0	161.00	12.0	ICP 120	K DCN 10-13.99
DCN 125-100-16R-8D	12.50	12.99	16.00	20.00	101.91	117.0	1.910	48.0	165.00	12.0	ICP 125	K DCN 10-13.99
DCN 130-104-16R-8D	13.00	13.49	16.00	20.00	105.96	121.6	1.960	48.0	169.60	13.0	ICP 130	K DCN 10-13.99
DCN 135-108-16R-8D	13.50	13.99	16.00	20.00	110.05	125.6	2.050	48.0	173.60	13.0	ICP 135	K DCN 10-13.99
DCN 140-112-16R-8D	14.00	14.49	16.00	20.00	114.12	132.2	2.120	48.0	180.10	14.0	ICP 140	K DCN 14-17.99
DCN 145-116-16R-8D	14.50	14.99	16.00	20.00	118.21	136.2	2.210	48.0	184.20	14.0	ICP 145	K DCN 14-17.99
DCN 150-120-20R-8D	15.00	15.99	20.00	25.00	122.27	143.7	2.270	50.0	193.70	15.0	ICP 150	K DCN 14-17.99
DCN 160-128-20R-8D	16.00	16.99	20.00	25.00	130.42	153.3	2.420	50.0	203.30	16.0	ICP 160	K DCN 14-17.99
DCN 170-136-20R-8D	17.00	17.99	20.00	25.00	138.59	162.9	2.590	50.0	212.90	17.0	ICP 170	K DCN 14-17.99
DCN 180-144-25R-8D	18.00	18.99	25.00	32.00	146.73	172.5	2.730	56.0	228.50	18.0	ICP 180	K DCN 18-21.99
DCN 190-152-25R-8D	19.00	19.99	25.00	32.00	154.88	182.0	2.880	56.0	238.00	19.0	ICP 190	K DCN 18-21.99
DCN 200-160-25R-8D	20.00	20.99	25.00	32.00	163.02	191.6	3.020	56.0	247.60	20.0	ICP 200	K DCN 18-21.99
DCN 210-168-25R-8D	21.00	21.99	25.00	32.00	171.18	201.2	3.180	56.0	257.20	21.0	ICP 210	K DCN 18-21.99
DCN 220-176-25R-8D	22.00	22.99	25.00	32.00	179.32	210.8	3.320	56.0	266.80	22.0	ICP 220	K DCN 22-26.99
DCN 230-184-32R-8D	23.00	23.99	32.00	42.00	187.46	220.3	3.460	60.0	280.40	23.0	ICP 230	K DCN 22-26.99
DCN 240-192-32R-8D	24.00	24.99	32.00	42.00	195.62	229.9	3.620	60.0	290.00	24.0	ICP 240	K DCN 22-26.99
DCN 250-200-32R-8D	25.00	25.99	32.00	42.00	203.80	239.5	3.800	60.0	299.50	25.0	ICP 250	K DCN 22-26.99
DCN 260-208-32R-8D	26.00	26.99	32.00	42.00	211.95	249.1	3.950	60.0	309.30	26.0	ICP 260	K DCN 22-26.99
DCN 270-216-32R-8D	27.00	27.99	32.00	42.00	220.10	258.7	4.100	60.0	318.60	27.0	ICP 270	K DCN 27-32.99
DCN 280-224-32R-8D	28.00	28.99	32.00	42.00	228.25	268.2	4.250	60.0	328.20	28.0	ICP 280	K DCN 27-32.99
DCN 290-232-32R-8D	29.00	29.99	32.00	42.00	236.43	277.8	4.430	60.0	337.80	29.0	ICP 290	K DCN 27-32.99
DCN 300-240-32R-8D	30.00	30.99	32.00	42.00	244.59	287.4	4.590	60.0	347.40	30.0	ICP 300	K DCN 27-32.99
DCN 310-248-32R-8D	31.00	31.99	32.00	42.00	252.76	297.0	4.760	60.0	357.00	31.0	ICP 310	K DCN 27-32.99
DCN 320-256-32R-8D	32.00	32.99	32.00	42.00	260.86	306.5	4.860	60.0	366.50	32.0	ICP 320	K DCN 27-32.99

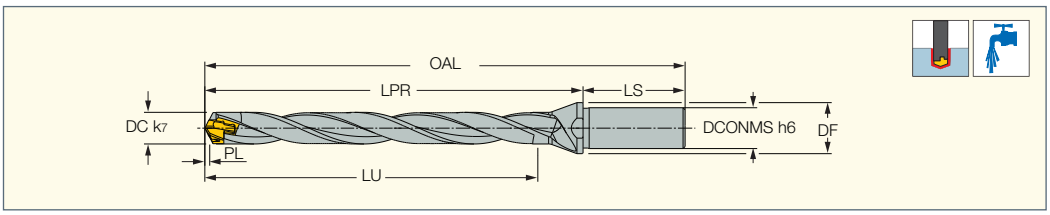
- Prior to using the 8xD drill, it is recommended to drill a pre-hole by using a DCN 1.5xD drill or a centering drill. Not required if HCP or QCP drilling head is used
- Do not mount smaller drilling heads other than the specified range of the drill body • For user guide and cutting conditions, see pages 68-76

[1] Cutting diameter minimum
[2] Cutting diameter maximum
[3] Seat size code
[4] Master insert identification

For inserts, see pages: ICP (23) • ICP-2M (29) • ICK (37) • ICK-2M (41) • ICM (45) • ICN (50) • QCP-2M (51) • HCP-IQ (55) • FCP (61) • ICG (67) • IHP (33)

SUMOCHAM

DCN R-10D
Drill Body with Exchangeable Heads, Internal Coolant Holes and a Cylindrical Shank, Drilling Depth 10xD



Designation	DCN[1]	DCX[2]	DCONMS	DF	LU	LPR	PL	LS	OAL	SSC[3]	MIID[4]	
DCN 160-160-20R-10D	16.00	16.99	20.00	25.00	162.40	185.30	2.420	50.0	235.30	16.0	ICP 160	K DCN 14-17.99
DCN 190-190-25R-10D	19.00	19.99	25.00	32.00	192.90	220.00	2.880	56.0	276.00	19.0	ICP 190	K DCN 18-21.99
DCN 250-250-32R-10D	25.00	25.99	32.00	42.00	253.80	289.50	3.800	60.0	349.50	25.0	ICP 250	K DCN 22-26.99

- Prior to using the 10xD drill, it is recommended to drill a pre-hole by using a DCN 1.5xD drill or a centering drill. Not required if HCP or QCP drilling head is used
- Do not mount smaller drilling heads other than the specified range of the drill body • For user guide and cutting conditions, see pages 68-76

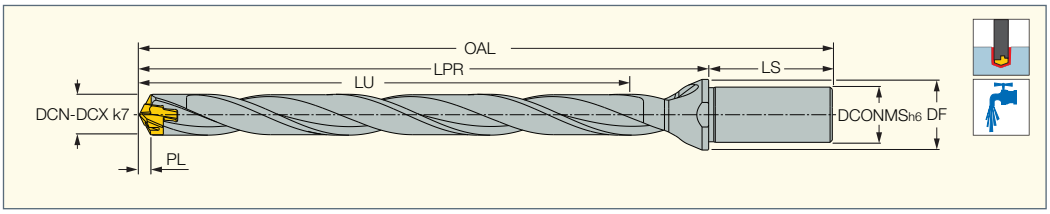
[1] Cutting diameter minimum
[2] Cutting diameter maximum
[3] Seat size code
[4] Master insert identification

For inserts, see pages: IHP (33) • ICP (23) • ICP-2M (29) • ICK (37) • ICK-2M (41) • ICM (45) • ICN (50) • QCP-2M (51) • HCP-IQ (55) • FCP (61) • ICG (67)

SUMOCHAM

DCN R-12D

Drill Body with Exchangeable Heads, Internal Coolant Holes and a Cylindrical Shank, Drilling Depth 12xD

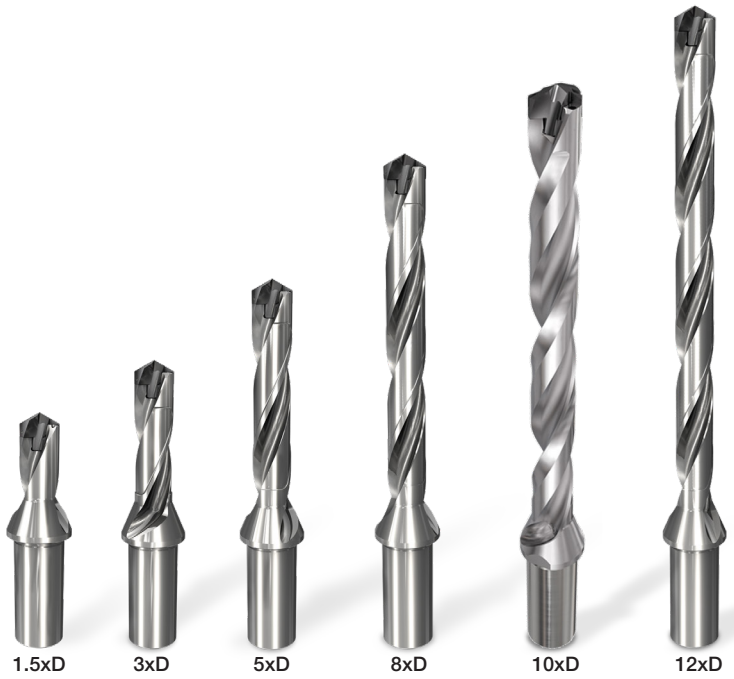


Designation	DCN[1]	DCX[2]	DCONMS	DF	LU	LPR	PL	LS	OAL	SSC[3]	MIID[4]	
DCN 080-096-12R-12D	8.00	8.49	12.00	16.00	97.20	111.4	1.200	45.0	156.40	8.0	ICP 080	K DCN 6-9.99
DCN 085-102-12R-12D	8.50	8.99	12.00	16.00	103.29	117.4	1.290	45.0	162.40	8.0	ICP 085	K DCN 6-9.99
DCN 090-108-12R-12D	9.00	9.49	12.00	16.00	109.35	123.8	1.350	45.0	168.80	9.0	ICP 090	K DCN 6-9.99
DCN 095-114-12R-12D	9.50	9.99	12.00	16.00	115.44	129.8	1.440	45.0	174.80	9.0	ICP 095	K DCN 6-9.99
DCN 100-120-16R-12D	10.00	10.49	16.00	20.00	121.50	136.2	1.500	48.0	184.20	10.0	ICP 100	K DCN 10-13.99
DCN 105-126-16R-12D	10.50	10.99	16.00	20.00	127.59	142.2	1.590	48.0	190.20	10.0	ICP 105	K DCN 10-13.99
DCN 110-132-16R-12D	11.00	11.49	16.00	20.00	133.67	148.6	1.670	48.0	196.60	11.0	ICP 110	K DCN 10-13.99
DCN 115-138-16R-12D	11.50	11.99	16.00	20.00	139.76	154.6	1.760	48.0	202.60	11.0	ICP 115	K DCN 10-13.99
DCN 120-144-16R-12D	12.00	12.49	16.00	20.00	145.82	161.0	1.820	48.0	209.00	12.0	ICP 120	K DCN 10-13.99
DCN 125-150-16R-12D	12.50	12.99	16.00	20.00	151.91	167.0	1.910	48.0	215.00	12.0	ICP 125	K DCN 10-13.99
DCN 130-156-16R-12D	13.00	13.49	16.00	20.00	157.96	173.6	1.960	48.0	221.60	13.0	ICP 130	K DCN 10-13.99
DCN 135-162-16R-12D	13.50	13.99	16.00	20.00	164.05	179.6	2.050	48.0	227.00	13.0	ICP 135	K DCN 10-13.99
DCN 140-168-16R-12D	14.00	14.49	16.00	20.00	170.12	188.2	2.120	48.0	236.00	14.0	ICP 140	K DCN 14-17.99
DCN 145-174-16R-12D	14.50	14.99	16.00	20.00	176.21	194.2	2.210	48.0	242.00	14.0	ICP 145	K DCN 14-17.99
DCN 150-180-20R-12D	15.00	15.99	20.00	25.00	182.27	203.7	2.270	50.0	253.73	15.0	ICP 150	K DCN 14-17.99
DCN 160-192-20R-12D	16.00	16.99	20.00	25.00	194.42	217.3	2.420	50.0	267.30	16.0	ICP 160	K DCN 14-17.99
DCN 170-204-20R-12D	17.00	17.99	20.00	25.00	206.59	230.9	2.590	50.0	280.90	17.0	ICP 170	K DCN 14-17.99
DCN 180-216-25R-12D	18.00	18.99	25.00	32.00	218.73	244.5	2.730	56.0	300.50	18.0	ICP 180	K DCN 18-21.99
DCN 190-228-25R-12D	19.00	19.99	25.00	32.00	230.88	258.0	2.880	56.0	314.00	19.0	ICP 190	K DCN 18-21.99
DCN 200-240-25R-12D	20.00	20.99	25.00	32.00	243.02	271.6	3.020	56.0	327.60	20.0	ICP 200	K DCN 18-21.99
DCN 210-252-25R-12D	21.00	21.99	25.00	32.00	255.18	285.2	3.180	56.0	341.20	21.0	ICP 210	K DCN 18-21.99
DCN 220-264-25R-12D	22.00	22.99	25.00	32.00	267.32	298.8	3.320	56.0	354.80	22.0	ICP 220	K DCN 22-26.99
DCN 230-276-32R-12D	23.00	23.99	32.00	42.00	279.46	312.3	3.460	60.0	362.40	23.0	ICP 230	K DCN 22-26.99
DCN 240-288-32R-12D	24.00	24.99	32.00	42.00	291.62	325.9	3.620	60.0	386.00	24.0	ICP 240	K DCN 22-26.99
DCN 250-300-32R-12D	25.00	25.99	32.00	42.00	303.80	339.5	3.800	60.0	399.50	25.0	ICP 250	K DCN 22-26.99
DCN 260-312-32R-12D	26.00	26.99	32.00	42.00	315.95	381.1	3.950	60.0	441.10	26.0	ICP 260	K DCN 22-26.99
DCN 270-324-32R-12D	27.00	27.99	32.00	42.00	328.10	393.7	4.100	60.0	453.60	27.0	ICP 270	K DCN 27-32.99
DCN 280-336-32R-12D	28.00	28.99	32.00	42.00	340.25	406.2	4.250	60.0	466.20	28.0	ICP 280	K DCN 27-32.99
DCN 290-348-32R-12D	29.00	29.99	32.00	42.00	352.43	418.8	4.430	60.0	478.80	29.0	ICP 290	K DCN 27-32.99
DCN 300-360-32R-12D	30.00	30.99	32.00	42.00	364.59	431.4	4.590	60.0	491.40	30.0	ICP 300	K DCN 27-32.99
DCN 310-372-32R-12D	31.00	31.99	32.00	42.00	376.76	444.0	4.760	60.0	504.00	31.0	ICP 310	K DCN 27-32.99
DCN 320-384-32R-12D	32.00	32.99	32.00	42.00	388.86	456.5	4.860	60.0	516.50	32.0	ICP 320	K DCN 27-32.99

- Prior to using the 12xD drill, it is recommended to drill a pre-hole by using a DCN 1.5xD drill or a centering drill
- The HCP or QCP drilling head may eliminate the need for a pre-hole
- Do not mount smaller drilling heads other than the specified range of the drill body • For user guide and cutting conditions, see pages 68-76

[1] Cutting diameter minimum
[2] Cutting diameter maximum
[3] Seat size code
[4] Master insert identification

For inserts, see pages: ICP (23) • ICP-2M (29) • ICK (37) • ICK-2M (41) • ICM (45) • ICN (50) • QCP-2M (51) • HCP-IQ (55) • FCP (61) • ICG (67) • IHP (33)

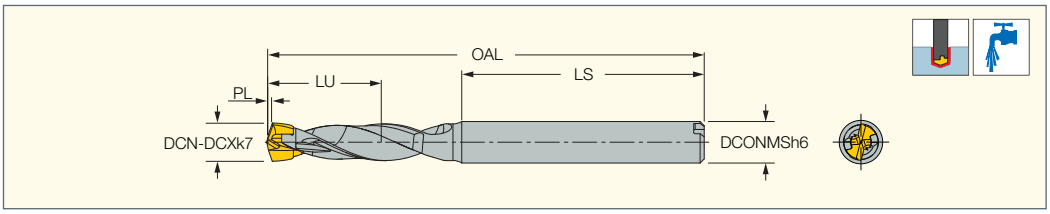


Standard Tools

SUMOCHAM

DCN C-3D

Drill Body with Exchangeable Heads, Internal Coolant Holes and a Cylindrical Shank, Drilling Depth 3xD



Designation	DCN[2]	DCX[3]	DCONMS	LU	PL	LS	OAL	SSC[4]	MIID[5]	
DCN 040-012-06C-3D [1]	4.00	4.49	6.00	12.62	0.620	35.0	57.70	4.0	ICP 040	
DCN 045-014-06C-3D [1]	4.50	4.99	6.00	14.16	0.660	35.0	59.65	4.5	ICP 045	
DCN 050-015-06C-3D [1]	5.00	5.49	6.00	15.73	0.730	35.0	61.30	5.0	ICP 050	
DCN 055-017-06C-3D [1]	5.50	5.99	6.00	17.31	0.810	35.0	63.15	5.5	ICP 055	
DCN 060-018-08C-3D	6.00	6.49	8.00	18.96	0.960	36.0	64.00	6.0	ICP 060	K DCN 6-9.99-Y
DCN 065-020-08C-3D	6.50	6.99	8.00	20.68	1.180	36.0	65.80	6.5	ICP 065	K DCN 6-9.99-Y
DCN 070-021-08C-3D	7.00	7.49	8.00	22.01	1.010	36.0	67.60	7.0	ICP 070	K DCN 6-9.99
DCN 075-023-08C-3D	7.50	7.99	8.00	23.60	1.100	36.0	69.10	7.0	ICP 075	K DCN 6-9.99
DCN 080-024-10C-3D	8.00	8.49	10.00	25.20	1.200	40.0	75.40	8.0	ICP 080	K DCN 6-9.99
DCN 085-026-10C-3D	8.50	8.99	10.00	26.79	1.290	40.0	76.90	8.0	ICP 085	K DCN 6-9.99
DCN 090-027-10C-3D	9.00	9.49	10.00	28.35	1.350	40.0	78.80	9.0	ICP 090	K DCN 6-9.99
DCN 095-029-10C-3D	9.50	9.99	10.00	29.94	1.440	40.0	80.30	9.0	ICP 095	K DCN 6-9.99

• Do not mount smaller drilling heads other than the specified range of the drill body • For user guide and cutting conditions, see pages 68-76

[1] The SK DCN key is supplied with the insert

[2] Cutting diameter minimum

[3] Cutting diameter maximum

[4] Seat size code

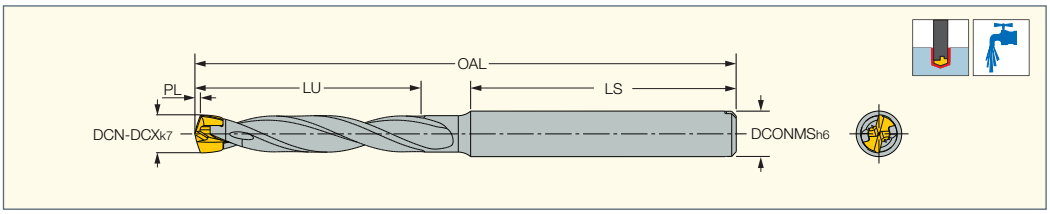
[5] Master insert identification

For inserts, see pages: ICP (23) • ICP-2M (29) • ICK (37) • ICK-2M (41) • ICM (45) • ICN (50) • QCP-2M (51) • HCP-IQ (55) • FCP (61)

SUMOCHAM

DCN C-5D

Drill Body with Exchangeable Heads, Internal Coolant Holes and a Cylindrical Shank, Drilling Depth 5xD



Designation	DCN[2]	DCX[3]	DCONMS	LU	PL	LS	OAL	SSC[4]	MIID[5]	
DCN 040-020-06C-5D [1]	4.00	4.49	6.00	20.62	0.620	35.0	65.70	4.0	ICP 040	
DCN 045-023-06C-5D [1]	4.50	4.99	6.00	23.16	0.660	35.0	68.65	4.5	ICP 045	
DCN 050-025-06C-5D [1]	5.00	5.49	6.00	25.73	0.730	35.0	71.30	5.0	ICP 050	
DCN 055-028-06C-5D [1]	5.50	5.99	6.00	28.31	0.810	35.0	74.15	5.5	ICP 055	
DCN 060-030-08C-5D	6.00	6.49	8.00	30.96	0.960	36.0	76.00	6.0	ICP 060	K DCN 6-9.99-Y
DCN 065-033-08C-5D	6.50	6.99	8.00	33.68	1.180	36.0	78.80	6.5	ICP 065	K DCN 6-9.99-Y
DCN 070-035-08C-5D	7.00	7.49	8.00	36.01	1.010	36.0	81.60	7.0	ICP 070	K DCN 6-9.99
DCN 075-038-08C-5D	7.50	7.99	8.00	38.60	1.100	36.0	84.10	7.0	ICP 075	K DCN 6-9.99
DCN 080-040-10C-5D	8.00	8.49	10.00	41.20	1.200	40.0	91.40	8.0	ICP 080	K DCN 6-9.99
DCN 085-043-10C-5D	8.50	8.99	10.00	43.79	1.290	40.0	93.90	8.0	ICP 085	K DCN 6-9.99
DCN 090-045-10C-5D	9.00	9.49	10.00	46.35	1.350	40.0	96.80	9.0	ICP 090	K DCN 6-9.99
DCN 095-048-10C-5D	9.50	9.99	10.00	48.94	1.440	40.0	99.30	9.0	ICP 095	K DCN 6-9.99

• Do not mount smaller drilling heads other than the specified range of the drill body • For user guide and cutting conditions, see pages 68-76

[1] The SK DCN key is supplied with the insert

[2] Cutting diameter minimum

[3] Cutting diameter maximum

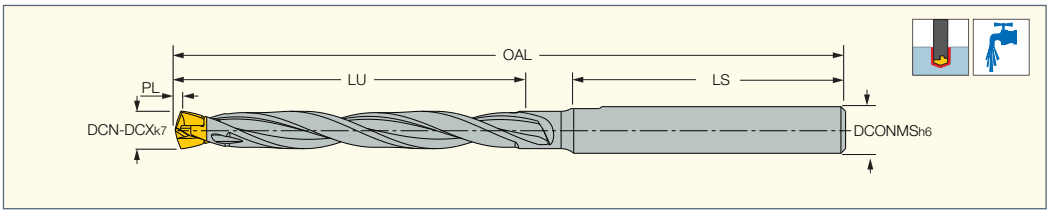
[4] Seat size code

[5] Master insert identification

For inserts, see pages: ICP (23) • ICP-2M (29) • ICK (37) • ICK-2M (41) • ICM (45) • ICN (50) • QCP-2M (51) • HCP-IQ (55) • FCP (61)

SUMOCHAM

DCN C-8D
Drill Body with Exchangeable Heads, Internal Coolant Holes and a Cylindrical Shank, Drilling Depth 8xD



Designation	DCN(1)	DCX(2)	DCONMS	LU	PL	LS	OAL	SSC(3)	MIID(4)
DCN 040-032-06C-8D	4.00	4.49	6.00	32.62	0.620	35.0	77.70	4.0	ICP 040
DCN 045-036-06C-8D	4.50	4.99	6.00	36.66	0.660	35.0	82.15	4.5	ICP 045
DCN 050-040-06C-8D	5.00	5.49	6.00	40.73	0.730	35.0	86.30	5.0	ICP 050
DCN 055-044-06C-8D	5.50	5.99	6.00	44.81	0.810	35.0	90.65	5.5	ICP 055

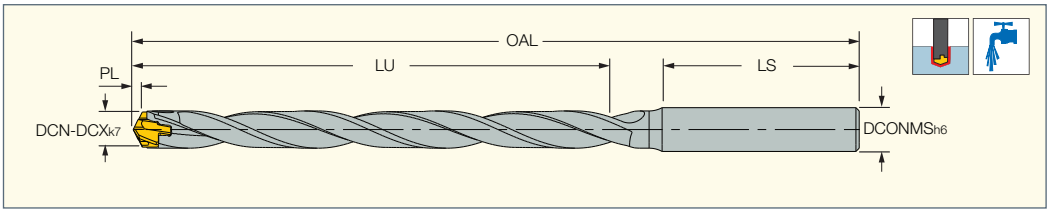
- Do not mount smaller drilling heads other than the specified range of the drill body • For user guide and cutting conditions, see pages 68-76

(1) Cutting diameter minimum
(2) Cutting diameter maximum
(3) Seat size code
(4) Master insert identification

For inserts, see pages: ICP (23) • ICK (37) • ICM (45) • ICN (50) • QCP-2M (51) • HCP-IQ (55) • FCP (61)

SUMOCHAM

DCN C-12D
Drill Body with Exchangeable Heads, Internal Coolant Holes and a Cylindrical Shank, Drilling Depth 12xD



Designation	DCN(1)	DCX(2)	DCONMS	LU	PL	LS	OAL	SSC(3)	MIID(4)	
DCN 060-072-08C-12D	6.00	6.49	8.00	72.96	0.960	36.0	120.00	6.0	ICP 060	K DCN 6-9.99-Y
DCN 065-078-08C-12D	6.50	6.99	8.00	79.18	1.180	36.0	126.30	6.5	ICP 065	K DCN 6-9.99-Y
DCN 070-084-08C-12D	7.00	7.49	8.00	85.01	1.010	36.0	132.60	7.0	ICP 070	K DCN 6-9.99
DCN 075-090-08C-12D	7.50	7.99	8.00	91.10	1.100	36.0	136.60	7.0	ICP 075	K DCN 6-9.99

- Prior to using the 12xD drill, it is recommended to drill a pre-hole by using a DCN 1.5xD drill or a centering drill
- The HCP or QCP drilling head may eliminate the need for a pre-hole
- Do not mount smaller drilling heads other than the specified range of the drill body • For user guide and cutting conditions, see pages 68-76

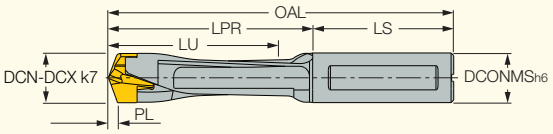
(1) Cutting diameter minimum
(2) Cutting diameter maximum
(3) Seat size code
(4) Master insert identification

For inserts, see pages: ICP (23) • ICP-2M (29) • ICK (37) • ICK-2M (41) • ICM (45) • ICN (50) • QCP-2M (51) • HCP-IQ (55) • FCP (61)

SUMO UNICHAM

DCNS-3D

Drill Body with Exchangeable Heads, without Flange, One Flat Shank, Drilling Depth 3xD, Suitable for Chamfering Holders



Designation	DCN[1]	DCX[2]	DCONMS	LU	LPR	PL	LS	OAL	SSC[3]	MIID[4]	
DCNS 075-022-080B-3D	7.50	7.99	8.00	23.60	34.2	1.100	36.0	70.20	7.0	ICP 075	K DCN 6-9.99
DCNS 080-024-080B-3D	8.00	8.49	8.00	25.20	34.7	1.200	36.0	70.70	8.0	ICP 080	K DCN 6-9.99
DCNS 085-025-090B-3D	8.50	8.99	9.00	26.79	36.8	1.290	36.0	72.90	8.0	ICP 085	K DCN 6-9.99
DCNS 090-027-090B-3D	9.00	9.49	9.00	28.35	38.8	1.350	36.0	74.80	9.0	ICP 090	K DCN 6-9.99
DCNS 095-029-100B-3D	9.50	9.99	10.00	29.94	40.3	1.440	36.0	76.30	9.0	ICP 095	K DCN 6-9.99
DCNS 100-030-100B-3D	10.00	10.49	10.00	31.50	45.2	1.500	41.0	86.20	10.0	ICP 100	K DCN 10-13.99
DCNS 105-032-110B-3D	10.50	10.99	11.00	33.09	46.7	1.590	41.0	87.70	10.0	ICP 105	K DCN 10-13.99
DCNS 110-033-110B-3D	11.00	11.49	11.00	34.67	48.6	1.670	41.0	89.60	11.0	ICP 110	K DCN 10-13.99
DCNS 115-035-120B-3D	11.50	11.99	12.00	36.26	50.1	1.760	41.0	91.10	11.0	ICP 115	K DCN 10-13.99
DCNS 120-036-120B-3D	12.00	12.49	12.00	37.82	52.0	1.820	41.0	93.00	12.0	ICP 120	K DCN 10-13.99
DCNS 125-037-130B-3D	12.50	12.99	13.00	34.41	53.5	1.910	46.0	99.50	12.0	ICP 125	K DCN 10-13.99
DCNS 130-039-130B-3D	13.00	13.49	13.00	40.96	55.6	1.960	47.0	102.60	13.0	ICP 130	K DCN 10-13.99
DCNS 135-041-140B-3D	13.50	13.99	14.00	42.55	57.2	2.050	43.0	100.10	13.0	ICP 135	K DCN 10-13.99
DCNS 140-042-140B-3D	14.00	14.49	14.00	44.12	59.2	2.120	44.0	103.20	14.0	ICP 140	K DCN 14-17.99
DCNS 145-044-150B-3D	14.50	14.99	15.00	45.71	60.7	2.210	45.0	105.70	14.0	ICP 145	K DCN 14-17.99
DCNS 150-045-150B-3D	15.00	15.99	15.00	47.27	62.7	2.270	45.0	107.70	15.0	ICP 150	K DCN 14-17.99
DCNS 160-048-160B-3D	16.00	16.99	16.00	50.42	69.6	2.420	48.0	117.70	16.0	ICP 160	K DCN 14-17.99
DCNS 170-051-170B-3D	17.00	17.99	17.00	53.59	71.9	2.590	48.0	119.90	17.0	ICP 170	K DCN 14-17.99
DCNS 180-054-180B-3D	18.00	18.99	18.00	56.73	75.5	2.730	48.0	123.50	18.0	ICP 180	K DCN 18-21.99
DCNS 190-057-190B-3D	19.00	19.99	19.00	59.88	78.6	2.880	54.0	132.60	19.0	ICP 190	K DCN 18-21.99
DCNS 200-060-200B-3D	20.00	20.99	20.00	63.02	88.1	3.020	54.0	142.10	20.0	ICP 200	K DCN 18-21.99
DCNS 210-063-210B-3D	21.00	21.99	21.00	66.18	90.7	3.180	60.0	150.70	21.0	ICP 210	K DCN 18-21.99
DCNS 220-066-220B-3D	22.00	22.99	22.00	69.32	94.3	3.320	60.0	154.30	22.0	ICP 220	K DCN 22-26.99
DCNS 230-069-230B-3D	23.00	23.99	23.00	72.46	97.8	3.460	60.0	157.80	23.0	ICP 230	K DCN 22-26.99
DCNS 240-072-240B-3D	24.00	24.99	24.00	75.62	101.3	3.620	60.0	161.40	24.0	ICP 240	K DCN 22-26.99
DCNS 250-075-250B-3D	25.00	25.99	25.00	78.80	105.0	3.800	60.0	165.00	25.0	ICP 250	K DCN 22-26.99

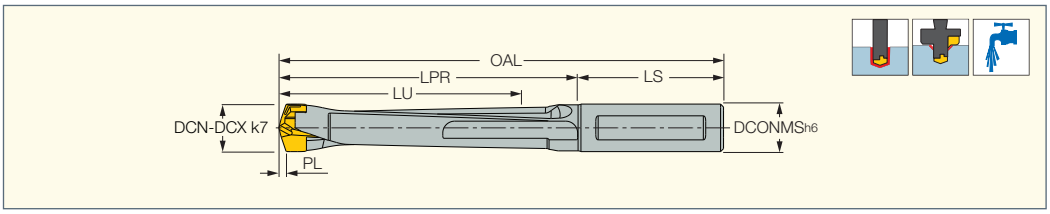
- Do not mount smaller drilling heads other than the specified range of the drill body • For user guide and cutting conditions, see pages 68-76
- For CHAMRING, see page 173

[1] Cutting diameter minimum
[2] Cutting diameter maximum
[3] Seat size code
[4] Master insert identification

For inserts, see pages: ICP (23) • ICP-2M (29) • ICK (37) • ICK-2M (41) • ICM (45) • ICN (50) • QCP-2M (51) • HCP-IQ (55) • FCP (61) • ICG (67) • IHP (33)

SUMO UNI CHAM

DCNS-5D
Drill Body with Exchangeable Heads, without Flange, One Flat Shank, Drilling Depth 5xD, Suitable for Chamfering Holders



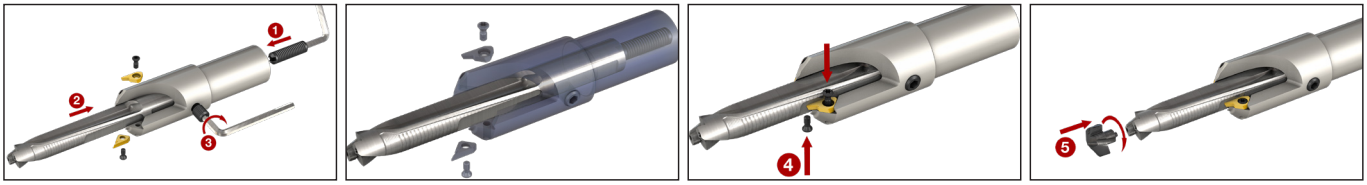
Designation	DCN(1)	DCX(2)	DCONMS	LU	LPR	PL	LS	OAL	SSC(3)	MIID(4)	
DCNS 075-037-080B-5D	7.50	7.99	8.00	38.60	49.2	1.100	36.0	85.20	7.0	ICP 075	K DCN 6-9.99
DCNS 080-040-080B-5D	8.00	8.49	8.00	41.20	56.4	1.200	36.0	92.40	8.0	ICP 080	K DCN 6-9.99
DCNS 085-042-090B-5D	8.50	8.99	9.00	43.79	53.9	1.290	36.0	89.90	8.0	ICP 085	K DCN 6-9.99
DCNS 090-045-090B-5D	9.00	9.49	9.00	46.35	56.8	1.350	36.0	92.80	9.0	ICP 090	K DCN 6-9.99
DCNS 095-048-100B-5D	9.50	9.99	10.00	48.94	59.2	1.440	36.0	95.30	9.0	ICP 095	K DCN 6-9.99
DCNS 100-050-100B-5D	10.00	10.49	10.00	51.50	65.2	1.500	41.0	106.20	10.0	ICP 100	K DCN 10-13.99
DCNS 105-053-110B-5D	10.50	10.99	11.00	54.09	67.7	1.590	41.0	108.70	10.0	ICP 105	K DCN 10-13.99
DCNS 110-055-110B-5D	11.00	11.49	11.00	56.67	70.6	1.670	41.0	111.60	11.0	ICP 110	K DCN 10-13.99
DCNS 115-058-120B-5D	11.50	11.99	12.00	59.26	73.1	1.760	41.0	114.10	11.0	ICP 115	K DCN 10-13.99
DCNS 120-060-120B-5D	12.00	12.49	12.00	61.82	75.9	1.820	41.0	117.00	12.0	ICP 120	K DCN 10-13.99
DCNS 125-062-130B-5D	12.50	12.99	13.00	64.41	78.5	1.910	46.0	124.50	12.0	ICP 125	K DCN 10-13.99
DCNS 130-065-130B-5D	13.00	13.49	13.00	66.96	81.5	1.960	47.0	128.60	13.0	ICP 130	K DCN 10-13.99
DCNS 135-068-140B-5D	13.50	13.99	14.00	69.55	84.1	2.050	43.0	127.10	13.0	ICP 135	K DCN 10-13.99
DCNS 140-070-140B-5D	14.00	14.49	14.00	72.12	87.1	2.120	44.0	131.20	14.0	ICP 140	K DCN 14-17.99
DCNS 145-073-150B-5D	14.50	14.99	15.00	74.71	89.7	2.210	45.0	134.70	14.0	ICP 145	K DCN 14-17.99
DCNS 150-075-150B-5D	15.00	15.99	15.00	77.27	92.7	2.270	45.0	137.70	15.0	ICP 150	K DCN 14-17.99
DCNS 160-080-160B-5D	16.00	16.99	16.00	82.42	101.7	2.420	48.0	149.70	16.0	ICP 160	K DCN 14-17.99
DCNS 170-085-170B-5D	17.00	17.99	17.00	87.59	105.9	2.590	48.0	153.90	17.0	ICP 170	K DCN 14-17.99
DCNS 180-090-180B-5D	18.00	18.99	18.00	92.73	111.5	2.730	48.0	159.50	18.0	ICP 180	K DCN 18-21.99
DCNS 190-095-190B-5D	19.00	19.99	19.00	97.88	116.6	2.880	54.0	170.60	19.0	ICP 190	K DCN 18-21.99
DCNS 200-100-200B-5D	20.00	20.99	20.00	103.02	128.1	3.020	54.0	182.10	20.0	ICP 200	K DCN 18-21.99
DCNS 210-105-210B-5D	21.00	21.99	21.00	108.18	132.6	3.180	60.0	192.70	21.0	ICP 210	K DCN 18-21.99
DCNS 220-110-220B-5D	22.00	22.99	22.00	113.32	138.3	3.320	60.0	198.30	22.0	ICP 220	K DCN 22-26.99
DCNS 230-115-230B-5D	23.00	23.99	23.00	118.46	143.8	3.460	60.0	203.80	23.0	ICP 230	K DCN 22-26.99
DCNS 240-120-240B-5D	24.00	24.99	24.00	123.62	149.4	3.620	60.0	209.40	24.0	ICP 240	K DCN 22-26.99
DCNS 250-125-250B-5D	25.00	25.99	25.00	128.80	155.0	3.800	60.0	215.00	25.0	ICP 250	K DCN 22-26.99

- Do not mount smaller drilling heads other than the specified range of the drill body • For user guide and cutting conditions, see pages 68-76
- For CHAMRING, see page 173

(1) Cutting diameter minimum
(2) Cutting diameter maximum
(3) Seat size code
(4) Master insert identification

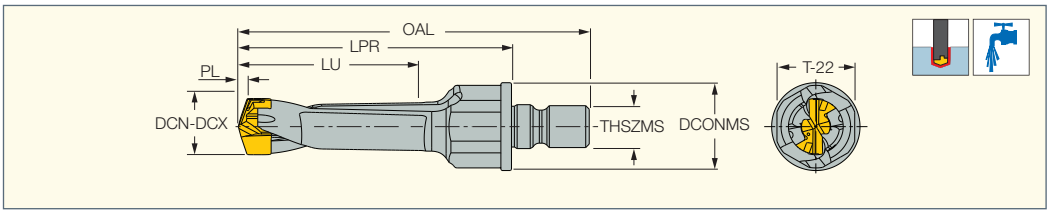
For inserts, see pages: ICP (23) • ICP-2M (29) • ICK (37) • ICK-2M (41) • ICM (45) • ICN (50) • QCP-2M (51) • HCP-IQ (55) • FCP (61) • ICG (67) • IHP (33)

SUMO-UNI-CHAM Assembly Process:



SUMOCHAM

DCNM
Modular SUMO-CHAM Drill with FLEX-FIT Connection for Multi-Spindle and Swiss-Type Machines



Designation	DCN(1)	DCX(2)	DCONMS	LU	LPR	PL	OAL	THSZMS	SSC(3)	MIID(4)	TQ_3(5)	
DCNM 060-018-M12-3D	6.00	6.49	25.00	22.00	42.0	0.960	64.00	M12	6.0	ICP 060	33	K DCN 6-9.99-Y
DCNM 065-020-M12-3D	6.50	6.99	25.00	24.30	44.3	1.180	66.30	M12	6.5	ICP 065	33	K DCN 6-9.99-Y
DCNM 070-021-M12-3D	7.00	7.49	25.00	25.60	45.6	1.010	67.60	M12	7.0	ICP 070	33	K DCN 6-9.99
DCNM 075-023-M12-3D	7.50	7.99	25.00	27.60	47.6	1.100	69.60	M12	7.0	ICP 075	33	K DCN 6-9.99
DCNM 080-024-M12-3D	8.00	8.49	25.00	29.40	49.4	1.200	71.40	M12	8.0	ICP 080	33	K DCN 6-9.99
DCNM 085-025-M12-3D	8.50	8.99	25.00	30.40	50.4	1.290	72.40	M12	8.0	ICP 085	33	K DCN 6-9.99
DCNM 090-027-M12-3D	9.00	9.49	25.00	32.80	52.8	1.350	74.80	M12	9.0	ICP 090	33	K DCN 6-9.99
DCNM 095-029-M12-3D	9.50	9.99	25.00	34.80	54.8	1.440	76.80	M12	9.0	ICP 095	33	K DCN 6-9.99
DCNM 100-030-M12-3D	10.00	10.49	25.00	36.20	56.2	1.500	78.20	M12	10.0	ICP 100	33	K DCN 10-13.99
DCNM 105-032-M12-3D	10.50	10.99	25.00	38.20	58.2	1.590	80.20	M12	10.0	ICP 105	33	K DCN 10-13.99
DCNM 110-033-M12-3D	11.00	11.49	25.00	39.60	59.6	1.670	81.60	M12	11.0	ICP 110	33	K DCN 10-13.99
DCNM 115-035-M12-3D	11.50	11.99	25.00	41.60	61.6	1.760	83.60	M12	11.0	ICP 115	33	K DCN 10-13.99
DCNM 120-036-M12-3D	12.00	12.49	25.00	43.00	63.0	1.820	85.00	M12	12.0	ICP 120	33	K DCN 10-13.99
DCNM 125-037-M12-3D	12.50	12.99	25.00	44.00	64.0	1.910	86.00	M12	12.0	ICP 125	33	K DCN 10-13.99
DCNM 130-039-M12-3D	13.00	13.49	25.00	46.60	66.6	1.960	88.60	M12	13.0	ICP 130	33	K DCN 10-13.99
DCNM 135-041-M12-3D	13.50	13.99	25.00	48.60	68.6	2.050	90.60	M12	13.0	ICP 135	33	K DCN 10-13.99
DCNM 140-042-M12-3D	14.00	14.49	25.00	50.20	70.2	2.120	92.15	M12	14.0	ICP 140	33	K DCN 14-17.99
DCNM 145-044-M12-3D	14.50	14.99	25.00	52.20	72.2	2.210	94.15	M12	14.0	ICP 145	33	K DCN 14-17.99
DCNM 150-045-M12-3D	15.00	15.99	25.00	53.70	73.7	2.270	95.73	M12	15.0	ICP 150	33	K DCN 14-17.99
DCNM 160-048-M12-3D	16.00	16.99	25.00	57.30	77.3	2.420	99.30	M12	16.0	ICP 160	33	K DCN 14-17.99
DCNM 170-051-M12-3D	17.00	17.99	25.00	60.90	80.9	2.590	102.90	M12	17.0	ICP 170	33	K DCN 14-17.99
DCNM 180-054-M12-3D	18.00	18.99	25.00	64.50	84.5	2.730	106.50	M12	18.0	ICP 180	33	K DCN 18-21.99
DCNM 190-057-M12-3D	19.00	19.99	25.00	68.00	88.0	2.880	110.00	M12	19.0	ICP 190	33	K DCN 18-21.99
DCNM 200-060-M12-3D	20.00	20.99	25.00	71.60	91.6	3.020	113.60	M12	20.0	ICP 200	33	K DCN 18-21.99

• Do not mount smaller drilling heads other than the specified range of the drill body • For user guide and cutting conditions, see pages 68-76

(1) Cutting diameter minimum

(2) Cutting diameter maximum

(3) Seat size code

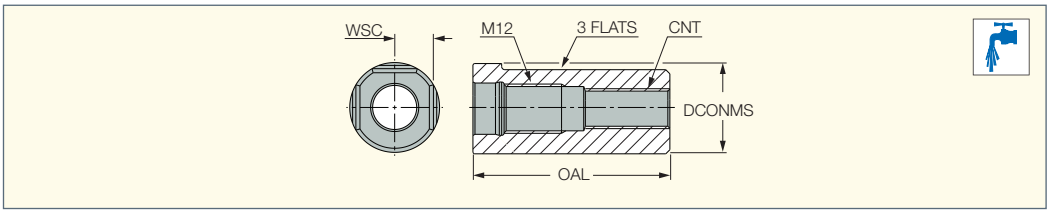
(4) Master insert identification

(5) Tool tightening torque Nxm (lbfxin)

For inserts, see pages: ICP (23) • ICP-2M (29) • ICK (37) • ICK-2M (41) • ICM (45) • ICN (50) • QCP-2M (51) • HCP-IQ (55) • FCP (61) • ICG (67) • IHP (33)
For holders, see • FLEX-FIT HOLDER on this page
For more holders, see ISCAR MILLING LINES catalog

FLEXFIT

FLEX-FIT HOLDER
FLEX-FIT Threaded Modular Shank with 3 Flats for Side Clamping



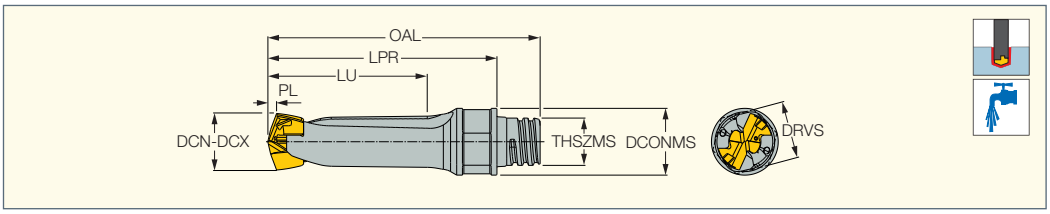
Designation	DCONMS	OAL	WSC(1)	CNT
FLEXFIT 160-HOLDER-DCN-MS	16.00	36.00	7.5	5/16"-24
FLEXFIT 1905-HOLDER-DCNMS	19.05	36.00	8.5	5/16"-24
FLEXFIT 200-HOLDER-DCN-MS	20.00	36.00	8.5	G1/8" BSP
FLEXFIT 220-HOLDER-DCN-MS	22.00	48.00	9.5	G1/8" BSP
FLEXFIT 250-HOLDER-DCN-MS	25.00	54.00	11.0	G1/8" BSP
FLEXFIT 254-HOLDER-DCN-MS	25.40	54.00	11.0	G1/8" BSP

(1) For all 3 flats

For tools, see DCNM on this page

SUMOCHAM

DCN-MM
Modular Drill Body with Exchangeable Heads, Internal Coolant Holes and MULTI-MASTER Connection, Drilling Depth 2xD



Designation	DCN[2]	DCX[3]	DCONMS	LU	LPR	PL	OAL	THSZMS	SSC[4]	MIID[5]	DRVS[6]	
DCN 040-008-MMT05-2D [1]	4.00	4.49	7.60	8.62	22.00	0.620	28.75	T05	4.0	ICP 040	5.5	
DCN 045-009-MMT05-2D [1]	4.50	4.99	7.60	9.66	23.30	0.660	30.05	T05	4.5	ICP 045	5.5	
DCN 050-010-MMT06-2D [1]	5.00	5.49	9.60	10.73	27.25	0.730	33.55	T06	5.0	ICP 050	8.0	
DCN 055-011-MMT06-2D [1]	5.50	5.99	9.60	11.81	27.50	0.810	33.80	T06	5.5	ICP 055	8.0	
DCN 060-012-MMT06-2D	6.00	6.49	9.60	12.96	27.90	0.960	34.20	T06	6.0	ICP 060	8.0	K DCN 6-9.99-Y
DCN 065-013-MMT06-2D	6.50	6.99	9.60	14.18	29.50	1.180	35.80	T06	6.5	ICP 065	8.0	K DCN 6-9.99-Y
DCN 070-014-MMT06-2D	7.00	7.49	9.60	15.01	30.10	1.010	36.39	T06	7.0	ICP 070	8.0	K DCN 6-9.99
DCN 075-015-MMT06-2D	7.50	7.99	9.60	16.01	31.10	1.100	37.40	T06	7.0	ICP 075	8.0	K DCN 6-9.99
DCN 080-016-MMT06-2D	8.00	8.49	9.60	17.18	32.90	1.200	39.19	T06	8.0	ICP 080	8.0	K DCN 6-9.99
DCN 085-017-MMT06-2D	8.50	8.99	9.60	18.29	33.90	1.290	40.19	T06	8.0	ICP 085	8.0	K DCN 6-9.99
DCN 090-018-MMT08-2D	9.00	9.49	11.60	19.35	37.40	1.350	44.90	T08	9.0	ICP 090	10.0	K DCN 6-9.99
DCN 095-019-MMT08-2D	9.50	9.99	11.60	20.44	38.40	1.440	45.90	T08	9.0	ICP 095	10.0	K DCN 6-9.99
DCN 100-020-MMT08-2D	10.00	10.49	11.60	21.50	39.80	1.500	47.30	T08	10.0	ICP 100	10.0	K DCN 10-13.99

NEW

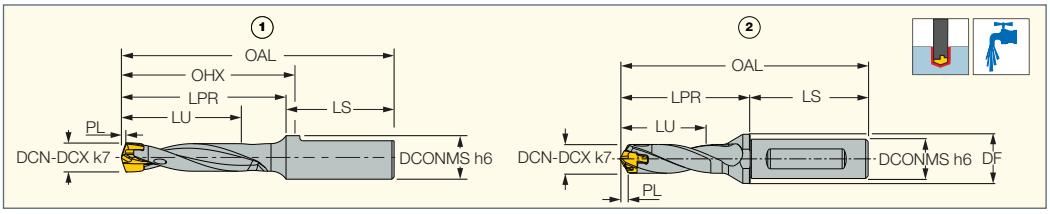
- Do not mount smaller drilling heads other than the specified range of the drill body

[1] The SK DCN key is supplied with the insert
[2] Cutting diameter minimum
[3] Cutting diameter maximum
[4] Seat size code
[5] Master insert identification
[6] Torque key size

For inserts, see pages: FCP (61) • HCP-IQ (55) • ICK (37) • ICK-2M (41) • ICM (45) • ICN (50) • ICP (23) • ICP-2M (29) • IHP (33) • QCP-2M (51)
For holders, see ISCAR MILLING LINES catalog

PICCOSUMOCHAM

DCN-PICCO
Drill Body with Exchangeable Heads, Internal Coolant Holes and PICCO Connection, Drilling Depth 3xD



Designation	DCN[2]	DCX[3]	DCONMS	DF	LU	LPR	OHX[4]	PL	LS	OAL	SSC[5]	Fig.	MIID[6]	
DCN 040-012-06-3D-PICCO [1]	4.00	4.49	6.00	-	12.62	22.70	23.2	0.620	14.9	37.60	4.0	1	ICP 040	
DCN 045-014-06-3D-PICCO [1]	4.50	4.99	6.00	-	14.66	24.65	25.1	0.660	14.9	39.55	4.5	1	ICP 045	
DCN 050-015-06-3D-PICCO [1]	5.00	5.49	6.00	-	15.73	26.30	26.8	0.730	14.9	41.20	5.0	1	ICP 050	
DCN 055-017-06-3D-PICCO [1]	5.50	5.99	6.00	-	17.81	27.95	28.6	0.810	14.9	42.85	5.5	1	ICP 055	
DCN 060-018-06-3D-PICCO	6.00	6.49	6.00	-	18.96	29.60	30.1	0.960	14.9	44.50	6.0	1	ICP 060	K DCN 6-9.99-Y
DCN 065-020-06-3D-PICCO	6.50	6.99	6.00	-	21.18	30.67	31.8	1.180	15.6	46.30	6.5	1	ICP 065	K DCN 6-9.99-Y
DCN 070-021-08-3D-PICCO	7.00	7.49	8.00	10.00	22.01	35.60	-	1.010	20.0	55.60	7.0	2	ICP 070	K DCN 6-9.99
DCN 075-023-08-3D-PICCO	7.50	7.99	8.00	10.00	24.10	37.10	-	1.100	20.0	57.10	7.0	2	ICP 075	K DCN 6-9.99
DCN 080-024-08-3D-PICCO	8.00	8.49	8.00	10.00	25.20	39.40	-	1.200	20.0	59.40	8.0	2	ICP 080	K DCN 6-9.99
DCN 085-026-08-3D-PICCO	8.50	8.99	8.00	10.00	26.35	40.90	-	1.350	20.0	60.90	8.0	2	ICP 085	K DCN 6-9.99
DCN 090-027-08-3D-PICCO	9.00	9.49	8.00	10.00	28.35	43.30	-	1.350	20.0	63.30	9.0	2	ICP 090	K DCN 6-9.99
DCN 095-029-08-3D-PICCO	9.50	9.99	8.00	11.00	30.44	44.30	-	1.440	20.0	64.30	9.0	2	ICP 095	K DCN 6-9.99
DCN 100-030-08-3D-PICCO	10.00	10.49	8.00	11.00	31.50	46.20	-	1.500	20.0	66.20	10.0	2	ICP 100	K DCN 10-13.99
DCN 105-032-08-3D-PICCO	10.50	10.99	8.00	11.00	33.00	47.70	-	1.590	20.0	67.69	10.5	2	ICP 105	K DCN 10-13.99

NEW

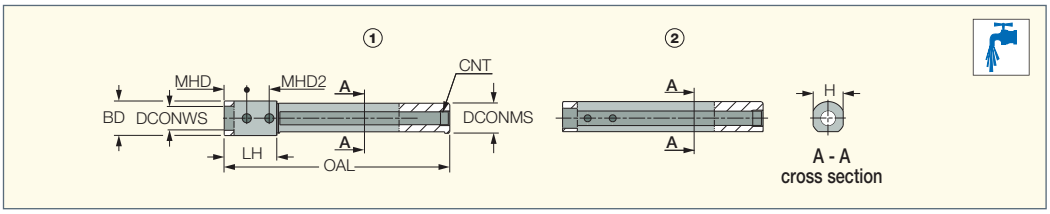
- Do not mount smaller drilling heads other than the specified range of the drill body • For user guide and cutting conditions, see pages 68-76

[1] The SK DCN key is supplied with the insert
[2] Cutting diameter minimum
[3] Cutting diameter maximum
[4] Maximum overhang
[5] Seat size code
[6] Master insert identification

For inserts, see pages: ICP (23) • ICK (37) • ICM (45) • ICN (50) • ICP-2M (29) • ICK-2M (41) • FCP (61) • HCP-IQ (55) • QCP-2M (51) • IHP (33)
For holders, see ISCAR TURNING TOOLS catalog

SUMOCHAM

SDH
Shanks for SUMO-CHAM
Exchangeable Head Drill



Designation	DCONMS	DCONWS	OAL	BD	H	MHD	MHD2	CNT	Fig.	S1[1]
SDH19-12LF	19.05	12.00	140.00	23.00	18.5	15.00	15.0	Rc1/8	1	DCN 12
SDH19-12SF	19.05	12.00	90.00	23.00	18.5	15.00	15.0	Rc1/8	1	DCN 12
SDH19-16LF	19.05	16.00	140.00	23.00	18.5	15.00	15.0	Rc1/8	1	DCN 16
SDH19-16SF	19.05	16.00	90.00	23.00	18.5	15.00	15.0	Rc1/8	1	DCN 16
SDH20-12LR	20.00	12.00	120.00	-	19.0	15.00	15.0	Rc1/8	2	DCN 12
SDH20-16LF	20.00	16.00	150.00	23.00	19.0	15.00	15.0	Rc1/8	1	DCN 16
SDH22-12LR	22.00	12.00	120.00	-	21.5	15.00	15.0	Rc1/8	2	DCN 12
SDH22-16LF	22.00	16.00	140.00	25.00	21.5	15.00	15.0	Rc1/8	1	DCN 16
SDH25-12LR	25.00	12.00	115.00	-	24.0	15.00	15.0	Rc1/8	2	DCN 12
SDH25-16LR	25.00	16.00	115.00	-	24.0	15.00	15.0	Rc1/8	2	DCN 16
SDH25-20LF	25.00	20.00	150.00	28.00	24.0	15.00	15.0	Rc1/8	1	DCN 20
SDH254-12LR	25.40	12.00	115.00	-	24.7	15.00	15.0	Rc1/8	2	DCN 12
SDH254-12SR	25.40	12.00	75.00	-	24.7	15.00	15.0	Rc1/8	2	DCN 12
SDH254-16LR	25.40	16.00	115.00	-	24.7	15.00	15.0	Rc1/8	2	DCN 16
SDH254-16SR	25.40	16.00	75.00	-	24.7	15.00	15.0	Rc1/8	2	DCN 16
SDH254-20LF	25.40	20.00	140.00	28.00	24.7	15.00	15.0	Rc1/8	1	DCN 20
SDH32-12LR	32.00	12.00	120.00	-	31.5	15.00	15.0	Rc1/8	2	DCN 12
SDH32-16LR	32.00	16.00	120.00	-	31.5	15.00	15.0	Rc1/8	2	DCN 16
SDH32-20LR	32.00	20.00	120.00	-	31.5	15.00	15.0	Rc1/8	2	DCN 20

NEW

[1] Related tool

For tools, see pages: DCN A-1.5D (7) • DCN A-3D (9) • DCN A-5D (11) • DCN A-8D (13) • DLN A-3D (77) • DLN A-5D (78)

Line up overview

Drill diameter (mm)	Drill body designation	Shank diameter of sleeve (mm)						
		Ø16	Ø19.05	Ø20	Ø22	Ø25	Ø25.4	Ø32
Ø6 - Ø9.9	DCN **12A**	O	O	O	O	O	O	O
Ø10 - Ø14.9	DCN **16A**		O	O	O	O	O	O
Ø15 - Ø17.9	DCN **20A**					O	O	O

O Suitable sleeve diameter

Designation System

SDH 25 - 16 L R

1 2 3 4

1 Shank Diameter of Sleeve (mm)	
25	Ø25

2 Shank Diameter of Drill (mm)	
16	Ø16

3 Length (mm)	
L	Long
S	Short

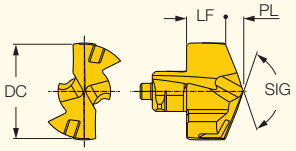
4 Shape of Sleeve	
F	Flange
R	Round

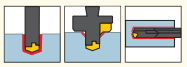
Spare Parts

Designation		
SDH19-12LF	SR M5X4 FLAT	P-2.5
SDH19-12SF	SR M5X4 FLAT	P-2.5
SDH19-16LF	SR M5X4 FLAT	P-2.5
SDH19-16SF	SR M5X4 FLAT	P-2.5
SDH20-12LR	SR M5X4 FLAT	P-2.5
SDH20-16LF	SR M5X4 FLAT	P-2.5
SDH22-12LR	SR M5X4 FLAT	P-2.5
SDH22-16LF	SR M5X4 FLAT	P-2.5
SDH25-12LR	SR M5X6 FLAT	P-2.5
SDH25-16LR	SR M5X4 FLAT	P-2.5
SDH25-20LF	SR M5X4 FLAT	P-2.5
SDH254-12LR	SR M5X6 FLAT	P-2.5
SDH254-12SR	SR M5X6 FLAT	P-2.5
SDH254-16LR	SR M5X4 FLAT	P-2.5
SDH254-16SR	SR M5X4 FLAT	P-2.5
SDH254-20LF	SR M5X4 FLAT	P-2.5
SDH32-12LR	SR M5X6 FLAT	P-2.5
SDH32-16LR	SR M5X6 FLAT	P-2.5
SDH32-20LR	SR M5X4 FLAT	P-2.5

SUMOCHAM

ICP
Exchangeable SUMO-CHAM Drilling Heads for Machining ISO P Materials





Designation	Dimensions DC	PL	LF	SIG	SSC(1)		IC908
ICP 040	4.00	0.620	2.48	140	4.0	SK DCN 4-4.99	•
ICP 041	4.10	0.640	2.46	140	4.0	SK DCN 4-4.99	•
ICP 042	4.20	0.660	2.44	140	4.0	SK DCN 4-4.99	•
ICP 043	4.30	0.670	2.43	140	4.0	SK DCN 4-4.99	•
ICP 044	4.40	0.690	2.41	140	4.0	SK DCN 4-4.99	•
ICP 045	4.50	0.660	2.89	140	4.5	SK DCN 4-4.99	•
ICP 046	4.60	0.680	2.87	140	4.5	SK DCN 4-4.99	•
ICP 047	4.70	0.700	2.85	140	4.5	SK DCN 4-4.99	•
ICP 048	4.80	0.710	2.84	140	4.5	SK DCN 4-4.99	•
ICP 049	4.90	0.730	2.82	140	4.5	SK DCN 4-4.99	•
ICP 050	5.00	0.730	2.97	140	5.0	SK DCN 5-5.99	•
ICP 051	5.10	0.750	2.95	140	5.0	SK DCN 5-5.99	•
ICP 052	5.20	0.770	2.93	140	5.0	SK DCN 5-5.99	•
ICP 053	5.30	0.780	2.92	140	5.0	SK DCN 5-5.99	•
ICP 054	5.40	0.800	2.90	140	5.0	SK DCN 5-5.99	•
ICP 055	5.50	0.810	3.04	140	5.5	SK DCN 5-5.99	•
ICP 056	5.60	0.830	3.02	140	5.5	SK DCN 5-5.99	•
ICP 057	5.70	0.850	3.00	140	5.5	SK DCN 5-5.99	•
ICP 058	5.80	0.860	2.99	140	5.5	SK DCN 5-5.99	•
ICP 059	5.90	0.880	2.97	140	5.5	SK DCN 5-5.99	•
ICP 060	6.00	0.960	3.04	140	6.0		•
ICP 061	6.10	0.980	3.02	140	6.0		•
ICP 062	6.20	1.000	3.00	140	6.0		•
ICP 063	6.30	1.010	2.99	140	6.0		•
ICP 0635	6.35	1.020	2.98	140	6.0		•
ICP 064	6.40	1.030	2.97	140	6.0		•
ICP 065	6.50	1.180	3.12	140	6.5		•
ICP 066	6.60	1.200	3.10	140	6.5		•
ICP 067	6.70	1.220	3.08	140	6.5		•
ICP 068	6.80	1.230	3.07	140	6.5		•
ICP 069	6.90	1.250	3.05	140	6.5		•
ICP 070	7.00	1.010	3.59	140	7.0		•
ICP 071	7.10	1.030	3.57	140	7.0		•
ICP 072	7.20	1.050	3.55	140	7.0		•
ICP 073	7.30	1.060	3.54	140	7.0		•
ICP 074	7.40	1.080	3.52	140	7.0		•
ICP 075	7.50	1.100	3.50	140	7.0		•
ICP 076	7.60	1.120	3.48	140	7.0		•
ICP 077	7.70	1.140	3.46	140	7.0		•
ICP 078	7.80	1.160	3.44	140	7.0		•
ICP 079	7.90	1.170	3.43	140	7.0		•
ICP 080	8.00	1.200	4.20	140	8.0		•
ICP 081	8.10	1.220	4.18	140	8.0		•
ICP 082	8.20	1.240	4.16	140	8.0		•
ICP 083	8.30	1.250	4.15	140	8.0		•
ICP 084	8.40	1.270	4.13	140	8.0		•
ICP 085	8.50	1.290	4.11	140	8.0		•
ICP 086	8.60	1.310	4.09	140	8.0		•
ICP 087	8.70	1.330	4.07	140	8.0		•
ICP 088	8.80	1.350	4.05	140	8.0		•
ICP 089	8.90	1.360	4.04	140	8.0		•
ICP 090	9.00	1.350	4.45	140	9.0		•
ICP 091	9.10	1.370	4.43	140	9.0		•
ICP 092	9.20	1.390	4.41	140	9.0		•
ICP 093	9.30	1.400	4.40	140	9.0		•
ICP 094	9.40	1.420	4.38	140	9.0		•
ICP 095	9.50	1.440	4.36	140	9.0		•

• The drill head has a honed cutting edge • For cutting conditions see pages 68-76

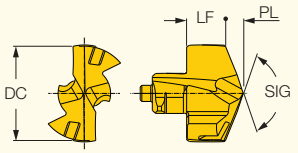
(1) Seat size code

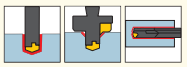
For tools, see pages: DCN-MM (21) • DCN A-1.5D (7) • DCN R-1.5D (8) • DCN A-3D (9) • DCN R-3D (10) • DCN A-5D (11) • DCN R-5D (12) • DCN A-8D (13) • DCN R-8D (14) • DCN R-10D (14) • DCN R-12D (15) • DCN C-3D (16) • DCN C-5D (16) • DCN C-8D (17) • DCN C-12D (17) • DCNS-3D (18) • DCNS-5D (19) • DCNM (20) • MNC-5D (111) • DCNT (M8-M24) (168) • MNSNT (358) • MNC-7/8D (112) • DCN-N-5D-BD (99) • DCN-N-8D-BD (99) • DCN-PICCO (21)

Continued

SUMOCHAM

ICP
Exchangeable SUMO-CHAM Drilling Heads for Machining ISO P Materials





Designation	Dimensions DC	PL	LF	SIG	SSC(1)	IC908
ICP 096	9.60	1.460	4.34	140	9.0	•
ICP 097	9.70	1.480	4.32	140	9.0	•
ICP 098	9.80	1.500	4.30	140	9.0	•
ICP 099	9.90	1.510	4.29	140	9.0	•
ICP 100	10.00	1.500	4.70	140	10.0	•
ICP 101	10.10	1.520	4.68	140	10.0	•
ICP 102	10.20	1.540	4.66	140	10.0	•
ICP 103	10.30	1.550	4.65	140	10.0	•
ICP 104	10.40	1.570	4.63	140	10.0	•
ICP 105	10.50	1.590	4.61	140	10.0	•
ICP 106	10.60	1.610	4.59	140	10.0	•
ICP 107	10.70	1.630	4.57	140	10.0	•
ICP 108	10.80	1.650	4.55	140	10.0	•
ICP 109	10.90	1.660	4.54	140	10.0	•
ICP 110	11.00	1.670	4.93	140	11.0	•
ICP 111	11.10	1.690	4.91	140	11.0	•
ICP 112	11.20	1.710	4.89	140	11.0	•
ICP 113	11.30	1.720	4.88	140	11.0	•
ICP 114	11.40	1.740	4.86	140	11.0	•
ICP 115	11.50	1.760	4.84	140	11.0	•
ICP 116	11.60	1.780	4.82	140	11.0	•
ICP 117	11.70	1.800	4.80	140	11.0	•
ICP 118	11.80	1.820	4.78	140	11.0	•
ICP 119	11.90	1.830	4.77	140	11.0	•
ICP 120	12.00	1.820	5.18	140	12.0	•
ICP 121	12.10	1.840	5.16	140	12.0	•
ICP 122	12.20	1.860	5.14	140	12.0	•
ICP 123	12.30	1.870	5.13	140	12.0	•
ICP 124	12.40	1.890	5.11	140	12.0	•
ICP 125	12.50	1.910	5.09	140	12.0	•
ICP 126	12.60	1.930	5.07	140	12.0	•
ICP 127	12.70	1.950	5.05	140	12.0	•
ICP 128	12.80	1.970	5.03	140	12.0	•
ICP 129	12.90	1.980	5.02	140	12.0	•
ICP 130	13.00	1.960	5.64	140	13.0	•
ICP 131	13.10	1.980	5.62	140	13.0	•
ICP 132	13.20	2.000	5.60	140	13.0	•
ICP 133	13.30	2.010	5.59	140	13.0	•
ICP 134	13.40	2.030	5.57	140	13.0	•
ICP 135	13.50	2.050	5.55	140	13.0	•
ICP 136	13.60	2.070	5.53	140	13.0	•
ICP 137	13.70	2.090	5.51	140	13.0	•
ICP 138	13.80	2.110	5.49	140	13.0	•
ICP 139	13.90	2.120	5.48	140	13.0	•
ICP 140	14.00	2.120	6.03	140	14.0	•
ICP 141	14.10	2.140	6.01	140	14.0	•
ICP 142	14.20	2.160	5.99	140	14.0	•
ICP 143	14.30	2.170	5.98	140	14.0	•
ICP 144	14.40	2.190	5.96	140	14.0	•
ICP 145	14.50	2.210	5.94	140	14.0	•
ICP 146	14.60	2.230	5.92	140	14.0	•
ICP 147	14.70	2.250	5.90	140	14.0	•
ICP 148	14.80	2.270	5.88	140	14.0	•
ICP 149	14.90	2.280	5.87	140	14.0	•
ICP 150	15.00	2.270	6.46	140	15.0	•
ICP 151	15.10	2.290	6.44	140	15.0	•

• The drill head has a honed cutting edge • For cutting conditions see pages 68-76

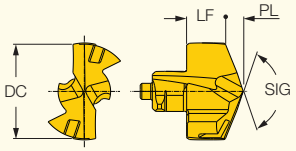
(1) Seat size code

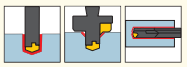
For tools, see pages: DCN-MM (21) • DCN A-1.5D (7) • DCN R-1.5D (8) • DCN A-3D (9) • DCN R-3D (10) • DCN A-5D (11) • DCN R-5D (12) • DCN A-8D (13) • DCN R-8D (14) • DCN R-10D (14) • DCN R-12D (15) • DCN C-3D (16) • DCN C-5D (16) • DCN C-8D (17) • DCN C-12D (17) • DCNS-3D (18) • DCNS-5D (19) • DCNM (20) • MNC-5D (111) • DCNT (M8-M24) (168) • MNSNT (358) • MNC-7/8D (112) • DCN-N-5D-BD (99) • DCN-N-8D-BD (99) • DCN-PICCO (21)

SUMOCHAM

ICP

Exchangeable SUMO-CHAM Drilling Heads for Machining ISO P Materials





Designation	Dimensions					IC908
	DC	PL	LF	SIG	SSC(1)	
ICP 152	15.20	2.310	6.42	140	15.0	•
ICP 153	15.30	2.320	6.41	140	15.0	•
ICP 154	15.40	2.340	6.39	140	15.0	•
ICP 155	15.50	2.360	6.37	140	15.0	•
ICP 156	15.60	2.380	6.35	140	15.0	•
ICP 157	15.70	2.400	6.33	140	15.0	•
ICP 158	15.80	2.420	6.31	140	15.0	•
ICP 159	15.90	2.430	6.30	140	15.0	•
ICP 160	16.00	2.420	6.88	140	16.0	•
ICP 161	16.10	2.440	6.86	140	16.0	•
ICP 162	16.20	2.460	6.84	140	16.0	•
ICP 163	16.30	2.470	6.83	140	16.0	•
ICP 164	16.40	2.490	6.81	140	16.0	•
ICP 165	16.50	2.510	6.79	140	16.0	•
ICP 166	16.60	2.530	6.77	140	16.0	•
ICP 167	16.70	2.550	6.75	140	16.0	•
ICP 168	16.80	2.570	6.73	140	16.0	•
ICP 169	16.90	2.580	6.72	140	16.0	•
ICP 170	17.00	2.590	7.31	140	17.0	•
ICP 171	17.10	2.610	7.29	140	17.0	•
ICP 172	17.20	2.630	7.27	140	17.0	•
ICP 173	17.30	2.640	7.26	140	17.0	•
ICP 174	17.40	2.660	7.24	140	17.0	•
ICP 175	17.50	2.680	7.22	140	17.0	•
ICP 176	17.60	2.700	7.20	140	17.0	•
ICP 177	17.70	2.720	7.18	140	17.0	•
ICP 178	17.80	2.740	7.16	140	17.0	•
ICP 179	17.90	2.750	7.15	140	17.0	•
ICP 180	18.00	2.730	7.77	140	18.0	•
ICP 181	18.10	2.750	7.75	140	18.0	•
ICP 182	18.20	2.770	7.73	140	18.0	•
ICP 183	18.30	2.780	7.72	140	18.0	•
ICP 184	18.40	2.800	7.70	140	18.0	•
ICP 185	18.50	2.820	7.68	140	18.0	•
ICP 186	18.60	2.840	7.66	140	18.0	•
ICP 187	18.70	2.860	7.64	140	18.0	•
ICP 188	18.80	2.880	7.62	140	18.0	•
ICP 189	18.90	2.890	7.61	140	18.0	•
ICP 190	19.00	2.880	8.12	140	19.0	•
ICP 1905	19.05	2.890	8.11	140	19.0	•
ICP 191	19.10	2.900	8.10	140	19.0	•
ICP 192	19.20	2.920	8.08	140	19.0	•
ICP 1927	19.27	2.930	8.07	140	19.0	•
ICP 193	19.30	2.930	8.07	140	19.0	•
ICP 194	19.40	2.950	8.05	140	19.0	•
ICP 195	19.50	2.970	8.03	140	19.0	•
ICP 196	19.60	2.990	8.01	140	19.0	•
ICP 197	19.70	3.010	7.99	140	19.0	•
ICP 198	19.80	3.030	7.97	140	19.0	•
ICP 199	19.90	3.040	7.96	140	19.0	•
ICP 200	20.00	3.020	8.58	140	20.0	•
ICP 201	20.10	3.040	8.56	140	20.0	•
ICP 202	20.20	3.060	8.54	140	20.0	•
ICP 203	20.30	3.070	8.53	140	20.0	•
ICP 204	20.40	3.090	8.51	140	20.0	•

• The drill head has a honed cutting edge • For cutting conditions see pages 68-76

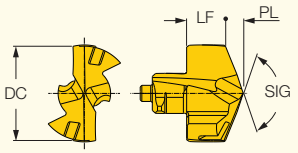
(1) Seat size code

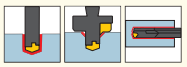
For tools, see pages: DCN-MM (21) • DCN A-1.5D (7) • DCN R-1.5D (8) • DCN A-3D (9) • DCN R-3D (10) • DCN A-5D (11) • DCN R-5D (12) • DCN A-8D (13) • DCN R-8D (14) • DCN R-10D (14) • DCN R-12D (15) • DCN C-3D (16) • DCN C-5D (16) • DCN C-8D (17) • DCN C-12D (17) • DCNS-3D (18) • DCNS-5D (19) • DCNM (20) • MNC-5D (111) • DCNT (M8-M24) (168) • MNSNT (358) • MNC-7/8D (112) • DCN-N-5D-BD (99) • DCN-N-8D-BD (99) • DCN-PICCO (21)

Continued

SUMOCHAM

ICP
Exchangeable SUMO-CHAM Drilling Heads for Machining ISO P Materials





Designation	Dimensions DC	PL	LF	SIG	SSC(1)	IC908
ICP 205	20.50	3.110	8.49	140	20.0	•
ICP 206	20.60	3.130	8.47	140	20.0	•
ICP 207	20.70	3.150	8.45	140	20.0	•
ICP 208	20.80	3.170	8.43	140	20.0	•
ICP 209	20.90	3.180	8.42	140	20.0	•
ICP 210	21.00	3.180	9.00	140	21.0	•
ICP 211	21.10	3.200	8.98	140	21.0	•
ICP 212	21.20	3.220	8.96	140	21.0	•
ICP 213	21.30	3.230	8.95	140	21.0	•
ICP 214	21.40	3.250	8.93	140	21.0	•
ICP 215	21.50	3.270	8.91	140	21.0	•
ICP 216	21.60	3.290	8.89	140	21.0	•
ICP 217	21.70	3.310	8.87	140	21.0	•
ICP 218	21.80	3.330	8.85	140	21.0	•
ICP 219	21.90	3.340	8.84	140	21.0	•
ICP 220	22.00	3.320	9.44	140	22.0	•
ICP 221	22.10	3.340	9.42	140	22.0	•
ICP 222	22.20	3.360	9.40	140	22.0	•
ICP 223	22.30	3.370	9.39	140	22.0	•
ICP 224	22.40	3.390	9.37	140	22.0	•
ICP 225	22.50	3.410	9.35	140	22.0	•
ICP 226	22.60	3.430	9.33	140	22.0	•
ICP 227	22.70	3.450	9.31	140	22.0	•
ICP 228	22.80	3.470	9.29	140	22.0	•
ICP 229	22.90	3.480	9.28	140	22.0	•
ICP 230	23.00	3.460	9.87	140	23.0	•
ICP 231	23.10	3.480	9.85	140	23.0	•
ICP 232	23.20	3.500	9.83	140	23.0	•
ICP 233	23.30	3.510	9.82	140	23.0	•
ICP 234	23.40	3.530	9.80	140	23.0	•
ICP 235	23.50	3.550	9.78	140	23.0	•
ICP 236	23.60	3.570	9.76	140	23.0	•
ICP 237	23.70	3.590	9.74	140	23.0	•
ICP 238	23.80	3.610	9.72	140	23.0	•
ICP 239	23.90	3.620	9.71	140	23.0	•
ICP 240	24.00	3.620	10.28	140	24.0	•
ICP 241	24.10	3.640	10.26	140	24.0	•
ICP 242	24.20	3.660	10.24	140	24.0	•
ICP 243	24.30	3.670	10.23	140	24.0	•
ICP 244	24.40	3.690	10.21	140	24.0	•
ICP 245	24.50	3.710	10.19	140	24.0	•
ICP 246	24.60	3.730	10.17	140	24.0	•
ICP 247	24.70	3.750	10.15	140	24.0	•
ICP 248	24.80	3.770	10.13	140	24.0	•
ICP 249	24.90	3.780	10.12	140	24.0	•
ICP 250	25.00	3.800	10.70	140	25.0	•
ICP 251	25.10	3.820	10.68	140	25.0	•
ICP 252	25.20	3.840	10.66	140	25.0	•
ICP 253	25.30	3.850	10.65	140	25.0	•
ICP 254	25.40	3.870	10.63	140	25.0	•
ICP 255	25.50	3.890	10.61	140	25.0	•
ICP 256	25.60	3.910	10.59	140	25.0	•
ICP 257	25.70	3.930	10.57	140	25.0	•
ICP 258	25.80	3.950	10.55	140	25.0	•
ICP 259	25.90	3.960	10.54	140	25.0	•
ICP 260	26.00	3.950	11.12	140	26.0	•
ICP 261	26.10	3.970	11.10	140	26.0	•

• The drill head has a honed cutting edge • For cutting conditions see pages 68-76

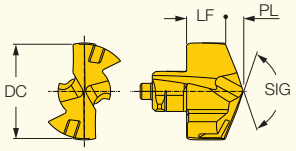
(1) Seat size code

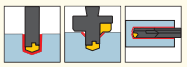
For tools, see pages: DCN-MM (21) • DCN A-1.5D (7) • DCN R-1.5D (8) • DCN A-3D (9) • DCN R-3D (10) • DCN A-5D (11) • DCN R-5D (12) • DCN A-8D (13) • DCN R-8D (14) • DCN R-10D (14) • DCN R-12D (15) • DCN C-3D (16) • DCN C-5D (16) • DCN C-8D (17) • DCN C-12D (17) • DCNS-3D (18) • DCNS-5D (19) • DCNM (20) • MNC-5D (111) • DCNT (M8-M24) (168) • MNSNT (358) • MNC-7/8D (112) • DCN-N-5D-BD (99) • DCN-N-8D-BD (99) • DCN-PICCO (21)

SUMOCHAM

ICP

Exchangeable SUMO-CHAM Drilling Heads for Machining ISO P Materials





Designation	Dimensions					IC908
	DC	PL	LF	SIG	SSC(1)	
ICP 262	26.20	3.990	11.08	140	26.0	•
ICP 263	26.30	4.000	11.07	140	26.0	•
ICP 264	26.40	4.020	11.05	140	26.0	•
ICP 265	26.50	4.040	11.03	140	26.0	•
ICP 266	26.60	4.060	11.01	140	26.0	•
ICP 267	26.70	4.080	10.99	140	26.0	•
ICP 268	26.80	4.100	10.97	140	26.0	•
ICP 269	26.90	4.110	10.96	140	26.0	•
ICP 270	27.00	4.100	11.55	140	27.0	•
ICP 271	27.10	4.120	11.53	140	27.0	•
ICP 272	27.20	4.140	11.51	140	27.0	•
ICP 273	27.30	4.150	11.50	140	27.0	•
ICP 274	27.40	4.170	11.48	140	27.0	•
ICP 275	27.50	4.190	11.46	140	27.0	•
ICP 276	27.60	4.210	11.44	140	27.0	•
ICP 277	27.70	4.230	11.42	140	27.0	•
ICP 278	27.80	4.250	11.40	140	27.0	•
ICP 279	27.90	4.260	11.39	140	27.0	•
ICP 280	28.00	4.250	11.97	140	28.0	•
ICP 281	28.10	4.270	11.95	140	28.0	•
ICP 282	28.20	4.290	11.93	140	28.0	•
ICP 283	28.30	4.300	11.92	140	28.0	•
ICP 284	28.40	4.320	11.90	140	28.0	•
ICP 285	28.50	4.340	11.88	140	28.0	•
ICP 2858	28.58	4.360	11.86	140	28.0	•
ICP 286	28.60	4.360	11.86	140	28.0	•
ICP 287	28.70	4.380	11.84	140	28.0	•
ICP 288	28.80	4.400	11.82	140	28.0	•
ICP 289	28.90	4.410	11.81	140	28.0	•
ICP 290	29.00	4.430	12.37	140	29.0	•
ICP 291	29.10	4.450	12.35	140	29.0	•
ICP 292	29.20	4.470	12.33	140	29.0	•
ICP 293	29.30	4.480	12.32	140	29.0	•
ICP 294	29.40	4.500	12.30	140	29.0	•
ICP 295	29.50	4.520	12.28	140	29.0	•
ICP 296	29.60	4.540	12.26	140	29.0	•
ICP 297	29.70	4.560	12.24	140	29.0	•
ICP 298	29.80	4.580	12.22	140	29.0	•
ICP 299	29.90	4.590	12.21	140	29.0	•
ICP 300	30.00	4.590	12.79	140	30.0	•
ICP 301	30.10	4.610	12.77	140	30.0	•
ICP 302	30.20	4.630	12.75	140	30.0	•
ICP 303	30.30	4.640	12.74	140	30.0	•
ICP 304	30.40	4.660	12.72	140	30.0	•
ICP 305	30.50	4.680	12.70	140	30.0	•
ICP 306	30.60	4.700	12.68	140	30.0	•
ICP 307	30.70	4.720	12.66	140	30.0	•
ICP 308	30.80	4.740	12.64	140	30.0	•
ICP 309	30.90	4.750	12.63	140	30.0	•
ICP 310	31.00	4.760	13.20	140	31.0	•
ICP 311	31.10	4.780	13.18	140	31.0	•
ICP 312	31.20	4.800	13.16	140	31.0	•
ICP 313	31.30	4.810	13.15	140	31.0	•
ICP 314	31.40	4.830	13.13	140	31.0	•
ICP 315	31.50	4.850	13.11	140	31.0	•

• The drill head has a honed cutting edge • For cutting conditions see pages 68-76

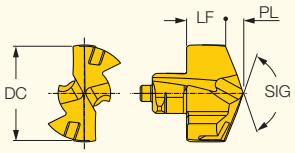
(1) Seat size code

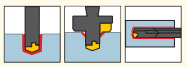
For tools, see pages: DCN-MM (21) • DCN A-1.5D (7) • DCN R-1.5D (8) • DCN A-3D (9) • DCN R-3D (10) • DCN A-5D (11) • DCN R-5D (12) • DCN A-8D (13) • DCN R-8D (14) • DCN R-10D (14) • DCN R-12D (15) • DCN C-3D (16) • DCN C-5D (16) • DCN C-8D (17) • DCN C-12D (17) • DCNS-3D (18) • DCNS-5D (19) • DCNM (20) • MNC-5D (111) • DCNT (M8-M24) (168) • MNSNT (358) • MNC-7/8D (112) • DCN-N-5D-BD (99) • DCN-N-8D-BD (99) • DCN-PICCO (21)

Continued

SUMOCHAM

ICP
Exchangeable SUMO-CHAM Drilling Heads for Machining ISO P Materials





Designation	Dimensions					IC908
	DC	PL	LF	SIG	SSC(1)	
ICP 316	31.60	4.870	13.09	140	31.0	●
ICP 317	31.70	4.890	13.07	140	31.0	●
ICP 3175	31.75	4.900	13.06	140	31.0	●
ICP 318	31.80	4.910	13.05	140	31.0	●
ICP 319	31.90	4.920	13.04	140	31.0	●
ICP 320	32.00	4.860	13.68	140	32.0	●
ICP 321	32.10	4.880	13.66	140	32.0	●
ICP 322	32.20	4.900	13.64	140	32.0	●
ICP 323	32.30	4.910	13.63	140	32.0	●
ICP 324	32.40	4.930	13.61	140	32.0	●
ICP 325	32.50	4.950	13.59	140	32.0	●
ICP 326	32.60	4.970	13.57	140	32.0	●
ICP 327	32.70	4.990	13.55	140	32.0	●
ICP 328	32.80	5.010	13.53	140	32.0	●
ICP 329	32.90	5.020	13.52	140	32.0	●

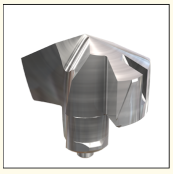
• The drill head has a honed cutting edge • For cutting conditions see pages 68-76

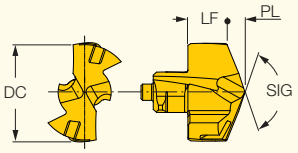
(1) Seat size code

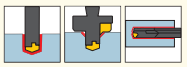
For tools, see pages: DCN-MM (21) • DCN A-1.5D (7) • DCN R-1.5D (8) • DCN A-3D (9) • DCN R-3D (10) • DCN A-5D (11) • DCN R-5D (12) • DCN A-8D (13) • DCN R-8D (14) • DCN R-10D (14) • DCN R-12D (15) • DCN C-3D (16) • DCN C-5D (16) • DCN C-8D (17) • DCN C-12D (17) • DCNS-3D (18) • DCNS-5D (19) • DCNM (20) • MNC-5D (111) • DCNT (M8-M24) (168) • MNSNT (358) • MNC-7/8D (112) • DCN-N-5D-BD (99) • DCN-N-8D-BD (99) • DCN-PICCO (21)

SUMOCHAM

ICP-2M
Exchangeable Double Margin SUMO-CHAM Drilling Heads, for Machining ISO P Materials with High Surface Finish Results







Designation	Dimensions DC	LF	PL	SIG	SSC(1)	IC908
ICP 060-2M	6.00	3.04	0.960	140	6.0	•
ICP 061-2M	6.10	3.02	0.980	140	6.0	•
ICP 062-2M	6.20	3.00	1.000	140	6.0	•
ICP 064-2M	6.40	2.97	1.030	140	6.0	•
ICP 065-2M	6.50	3.12	1.180	140	6.5	•
ICP 066-2M	6.60	3.10	1.200	140	6.5	•
ICP 067-2M	6.70	3.08	1.220	140	6.5	•
ICP 068-2M	6.80	3.07	1.230	140	6.5	•
ICP 069-2M	6.90	3.05	1.250	140	6.5	•
ICP 070-2M	7.00	3.59	1.010	140	7.0	•
ICP 071-2M	7.10	3.57	1.030	140	7.0	•
ICP 073-2M	7.30	3.54	1.060	140	7.0	•
ICP 074-2M	7.40	3.52	1.080	140	7.0	•
ICP 075-2M	7.50	3.50	1.100	140	7.0	•
ICP 077-2M	7.70	3.46	1.140	140	7.0	•
ICP 078-2M	7.80	3.44	1.160	140	7.0	•
ICP 079-2M	7.90	3.43	1.170	140	7.0	•
ICP 080-2M	8.00	4.20	1.200	140	8.0	•
ICP 081-2M	8.10	4.18	1.220	140	8.0	•
ICP 082-2M	8.20	4.16	1.240	140	8.0	•
ICP 083-2M	8.30	4.15	1.250	140	8.0	•
ICP 084-2M	8.40	4.13	1.270	140	8.0	•
ICP 085-2M	8.50	4.11	1.290	140	8.0	•
ICP 086-2M	8.60	4.09	1.310	140	8.0	•
ICP 087-2M	8.70	4.07	1.330	140	8.0	•
ICP 088-2M	8.80	4.05	1.350	140	8.0	•
ICP 089-2M	8.90	4.04	1.360	140	8.0	•
ICP 090-2M	9.00	4.45	1.350	140	9.0	•
ICP 091-2M	9.10	4.43	1.370	140	9.0	•
ICP 092-2M	9.20	4.41	1.390	140	9.0	•
ICP 093-2M	9.30	4.40	1.400	140	9.0	•
ICP 094-2M	9.40	4.38	1.420	140	9.0	•
ICP 095-2M	9.50	4.36	1.440	140	9.0	•
ICP 096-2M	9.60	4.34	1.460	140	9.0	•
ICP 097-2M	9.70	4.32	1.480	140	9.0	•
ICP 098-2M	9.80	4.30	1.500	140	9.0	•
ICP 099-2M	9.90	4.29	1.510	140	9.0	•
ICP 100-2M	10.00	4.70	1.500	140	10.0	•
ICP 101-2M	10.10	4.68	1.520	140	10.0	•
ICP 102-2M	10.20	4.66	1.540	140	10.0	•
ICP 103-2M	10.30	4.65	1.550	140	10.0	•
ICP 104-2M	10.40	4.63	1.570	140	10.0	•
ICP 105-2M	10.50	4.61	1.590	140	10.0	•
ICP 106-2M	10.60	4.59	1.610	140	10.0	•
ICP 107-2M	10.70	4.57	1.630	140	10.0	•
ICP 108-2M	10.80	4.55	1.650	140	10.0	•
ICP 109-2M	10.90	4.54	1.660	140	10.0	•
ICP 110-2M	11.00	4.93	1.670	140	11.0	•
ICP 111-2M	11.10	4.91	1.690	140	11.0	•
ICP 112-2M	11.20	4.89	1.710	140	11.0	•
ICP 113-2M	11.30	4.88	1.720	140	11.0	•
ICP 114-2M	11.40	4.86	1.740	140	11.0	•
ICP 115-2M	11.50	4.84	1.760	140	11.0	•
ICP 116-2M	11.60	4.82	1.780	140	11.0	•
ICP 117-2M	11.70	4.80	1.800	140	11.0	•
ICP 118-2M	11.80	4.78	1.820	140	11.0	•

• Provides high surface finish of up to 1.6 Ra hole cylindricity and straightness of up to 0.05 mm • For cutting conditions see pages 68-76

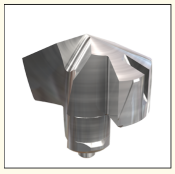
(1) Seat size code

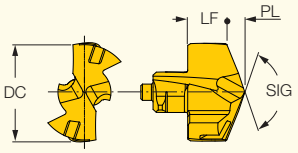
For tools, see pages: DCN-MM (21) • DCN-N-5D-BD (99) • DCN-N-8D-BD (99) • DCN-PICCO (21) • DCN A-1.5D (7) • DCN R-1.5D (8) • DCN A-3D (9) • DCN R-3D (10) • DCN A-5D (11) • DCN R-5D (12) • DCN A-8D (13) • DCN R-8D (14) • DCN R-10D (14) • DCN R-12D (15) • DCN C-3D (16) • DCN C-5D (16) • DCN C-12D (17) • DCNS-3D (18) • DCNS-5D (19) • DCNM (20) • DCNT (M8-M24) (168) • MNSNT (358)

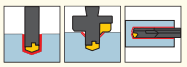
Continued

SUMOCHAM

ICP-2M
Exchangeable Double Margin SUMO-CHAM Drilling Heads, for Machining ISO P Materials with High Surface Finish Results







Designation	Dimensions					IC908
	DC	LF	PL	SIG	SSC(1)	
ICP 119-2M	11.90	4.77	1.830	140	11.0	•
ICP 120-2M	12.00	5.18	1.820	140	12.0	•
ICP 121-2M	12.10	5.16	1.840	140	12.0	•
ICP 122-2M	12.20	5.14	1.860	140	12.0	•
ICP 123-2M	12.30	5.13	1.870	140	12.0	•
ICP 124-2M	12.40	5.11	1.890	140	12.0	•
ICP 125-2M	12.50	5.09	1.910	140	12.0	•
ICP 126-2M	12.60	5.07	1.930	140	12.0	•
ICP 127-2M	12.70	5.05	1.950	140	12.0	•
ICP 128-2M	12.80	5.03	1.970	140	12.0	•
ICP 129-2M	12.90	5.02	1.980	140	12.0	•
ICP 130-2M	13.00	5.64	1.960	140	13.0	•
ICP 131-2M	13.10	5.62	1.980	140	13.0	•
ICP 132-2M	13.20	5.60	2.000	140	13.0	•
ICP 133-2M	13.30	5.59	2.010	140	13.0	•
ICP 134-2M	13.40	5.57	2.030	140	13.0	•
ICP 135-2M	13.50	5.55	2.050	140	13.0	•
ICP 136-2M	13.60	5.53	2.070	140	13.0	•
ICP 137-2M	13.70	5.51	2.090	140	13.0	•
ICP 138-2M	13.80	5.49	2.110	140	13.0	•
ICP 139-2M	13.90	5.48	2.120	140	13.0	•
ICP 140-2M	14.00	6.03	2.120	140	14.0	•
ICP 141-2M	14.10	6.01	2.140	140	14.0	•
ICP 142-2M	14.20	5.99	2.160	140	14.0	•
ICP 143-2M	14.30	5.98	2.170	140	14.0	•
ICP 144-2M	14.40	5.96	2.190	140	14.0	•
ICP 145-2M	14.50	5.94	2.210	140	14.0	•
ICP 146-2M	14.60	5.92	2.230	140	14.0	•
ICP 147-2M	14.70	5.90	2.250	140	14.0	•
ICP 148-2M	14.80	5.88	2.270	140	14.0	•
ICP 149-2M	14.90	5.87	2.280	140	14.0	•
ICP 150-2M	15.00	6.46	2.270	140	15.0	•
ICP 151-2M	15.10	6.44	2.290	140	15.0	•
ICP 152-2M	15.20	6.42	2.310	140	15.0	•
ICP 153-2M	15.30	6.41	2.320	140	15.0	•
ICP 154-2M	15.40	6.39	2.340	140	15.0	•
ICP 155-2M	15.50	6.37	2.360	140	15.0	•
ICP 156-2M	15.60	6.35	2.380	140	15.0	•
ICP 157-2M	15.70	6.33	2.400	140	15.0	•
ICP 158-2M	15.80	6.31	2.420	140	15.0	•
ICP 159-2M	15.90	6.30	2.430	140	15.0	•
ICP 160-2M	16.00	6.88	2.420	140	16.0	•
ICP 161-2M	16.10	6.86	2.440	140	16.0	•
ICP 162-2M	16.20	6.84	2.460	140	16.0	•
ICP 163-2M	16.30	6.83	2.470	140	16.0	•
ICP 165-2M	16.50	6.79	2.510	140	16.0	•
ICP 166-2M	16.60	6.77	2.530	140	16.0	•
ICP 167-2M	16.70	6.75	2.550	140	16.0	•
ICP 168-2M	16.80	6.73	2.570	140	16.0	•
ICP 169-2M	16.90	6.72	2.580	140	16.0	•
ICP 170-2M	17.00	7.31	2.590	140	17.0	•
ICP 171-2M	17.10	7.29	2.610	140	17.0	•
ICP 172-2M	17.20	7.27	2.630	140	17.0	•
ICP 173-2M	17.30	7.26	2.640	140	17.0	•
ICP 174-2M	17.40	7.24	2.660	140	17.0	•
ICP 175-2M	17.50	7.22	2.680	140	17.0	•

• Provides high surface finish of up to 1.6 Ra hole cylindricity and straightness of up to 0.05 mm • For cutting conditions see pages 68-76

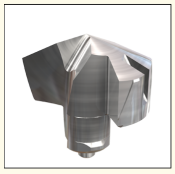
(1) Seat size code

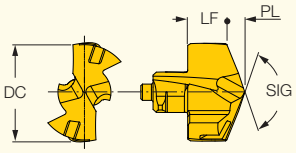
For tools, see pages: DCN-MM (21) • DCN-N-5D-BD (99) • DCN-N-8D-BD (99) • DCN-PICCO (21) • DCN A-1.5D (7) • DCN R-1.5D (8) • DCN A-3D (9) • DCN R-3D (10) • DCN A-5D (11) • DCN R-5D (12) • DCN A-8D (13) • DCN R-8D (14) • DCN R-10D (14) • DCN R-12D (15) • DCN C-3D (16) • DCN C-5D (16) • DCN C-12D (17) • DCNS-3D (18) • DCNS-5D (19) • DCNM (20) • DCNT (M8-M24) (168) • MNSNT (358)

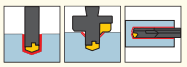
SUMOCHAM

ICP-2M

Exchangeable Double Margin SUMO-CHAM Drilling Heads, for Machining ISO P Materials with High Surface Finish Results







Designation	Dimensions DC	LF	PL	SIG	SSC(1)	IC908
ICP 177-2M	17.70	7.18	2.720	140	17.0	•
ICP 178-2M	17.80	7.16	2.740	140	17.0	•
ICP 179-2M	17.90	7.15	2.750	140	17.0	•
ICP 180-2M	18.00	7.77	2.730	140	18.0	•
ICP 181-2M	18.10	7.75	2.750	140	18.0	•
ICP 182-2M	18.20	7.73	2.770	140	18.0	•
ICP 183-2M	18.30	7.72	2.780	140	18.0	•
ICP 184-2M	18.40	7.70	2.800	140	18.0	•
ICP 185-2M	18.50	7.68	2.820	140	18.0	•
ICP 186-2M	18.60	7.66	2.840	140	18.0	•
ICP 187-2M	18.70	7.64	2.860	140	18.0	•
ICP 188-2M	18.80	7.62	2.880	140	18.0	•
ICP 189-2M	18.90	7.61	2.890	140	18.0	•
ICP 190-2M	19.00	8.12	2.880	140	19.0	•
ICP 1905-2M	19.05	8.11	2.890	140	19.0	•
ICP 191-2M	19.10	8.10	2.900	140	19.0	•
ICP 192-2M	19.20	8.08	2.920	140	19.0	•
ICP 1925-2M	19.25	8.07	2.930	140	19.0	•
ICP 1927-2M	19.27	8.07	2.930	140	19.0	•
ICP 193-2M	19.30	8.07	2.930	140	19.0	•
ICP 194-2M	19.40	8.05	2.950	140	19.0	•
ICP 195-2M	19.50	8.03	2.970	140	19.0	•
ICP 196-2M	19.60	8.01	2.990	140	19.0	•
ICP 197-2M	19.70	7.99	3.010	140	19.0	•
ICP 198-2M	19.80	7.97	3.030	140	19.0	•
ICP 199-2M	19.90	7.96	3.040	140	19.0	•
ICP 200-2M	20.00	8.58	3.020	140	20.0	•
ICP 201-2M	20.10	8.56	3.040	140	20.0	•
ICP 202-2M	20.20	8.54	3.060	140	20.0	•
ICP 203-2M	20.30	8.53	3.070	140	20.0	•
ICP 204-2M	20.40	8.51	3.090	140	20.0	•
ICP 205-2M	20.50	8.49	3.110	140	20.0	•
ICP 206-2M	20.60	8.47	3.130	140	20.0	•
ICP 207-2M	20.70	8.45	3.150	140	20.0	•
ICP 208-2M	20.80	8.43	3.170	140	20.0	•
ICP 209-2M	20.90	8.42	3.180	140	20.0	•
ICP 210-2M	21.00	9.00	3.180	140	21.0	•
ICP 211-2M	21.10	8.98	3.200	140	21.0	•
ICP 212-2M	21.20	8.96	3.220	140	21.0	•
ICP 213-2M	21.30	8.95	3.230	140	21.0	•
ICP 214-2M	21.40	8.93	3.250	140	21.0	•
ICP 215-2M	21.50	8.91	3.270	140	21.0	•
ICP 216-2M	21.60	8.89	3.290	140	21.0	•
ICP 217-2M	21.70	8.87	3.310	140	21.0	•
ICP 218-2M	21.80	8.85	3.330	140	21.0	•
ICP 219-2M	21.90	8.84	3.340	140	21.0	•
ICP 220-2M	22.00	9.44	3.320	140	22.0	•
ICP 221-2M	22.10	9.42	3.340	140	22.0	•
ICP 222-2M	22.20	9.40	3.360	140	22.0	•
ICP 223-2M	22.30	9.39	3.370	140	22.0	•
ICP 224-2M	22.40	9.37	3.390	140	22.0	•
ICP 225-2M	22.50	9.35	3.410	140	22.0	•
ICP 226-2M	22.60	9.33	3.430	140	22.0	•
ICP 227-2M	22.70	9.31	3.450	140	22.0	•
ICP 228-2M	22.80	9.29	3.470	140	22.0	•
ICP 229-2M	22.90	9.28	3.480	140	22.0	•

• Provides high surface finish of up to 1.6 Ra hole cylindricity and straightness of up to 0.05 mm • For cutting conditions see pages 68-76

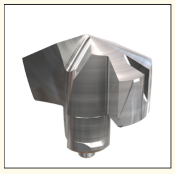
(1) Seat size code

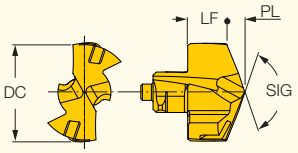
For tools, see pages: DCN-MM (21) • DCN-N-5D-BD (99) • DCN-N-8D-BD (99) • DCN-PICCO (21) • DCN A-1.5D (7) • DCN R-1.5D (8) • DCN A-3D (9) • DCN R-3D (10) • DCN A-5D (11) • DCN R-5D (12) • DCN A-8D (13) • DCN R-8D (14) • DCN R-10D (14) • DCN R-12D (15) • DCN C-3D (16) • DCN C-5D (16) • DCN C-12D (17) • DCNS-3D (18) • DCNS-5D (19) • DCNM (20) • DCNT (M8-M24) (168) • MNSNT (358)

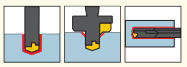
Continued

SUMOCHAM

ICP-2M
Exchangeable Double Margin SUMO-CHAM Drilling Heads, for Machining ISO P Materials with High Surface Finish Results







Designation	Dimensions					IC908
	DC	LF	PL	SIG	SSC(1)	
ICP 230-2M	23.00	9.87	3.460	140	23.0	●
ICP 231-2M	23.10	9.85	3.480	140	23.0	●
ICP 232-2M	23.20	9.83	3.500	140	23.0	●
ICP 233-2M	23.30	9.82	3.510	140	23.0	●
ICP 234-2M	23.40	9.80	3.530	140	23.0	●
ICP 235-2M	23.50	9.78	3.550	140	23.0	●
ICP 236-2M	23.60	9.76	3.570	140	23.0	●
ICP 237-2M	23.70	9.74	3.590	140	23.0	●
ICP 238-2M	23.80	9.72	3.610	140	23.0	●
ICP 239-2M	23.90	9.71	3.620	140	23.0	●
ICP 240-2M	24.00	10.28	3.620	140	24.0	●
ICP 241-2M	24.10	10.26	3.640	140	24.0	●
ICP 242-2M	24.20	10.24	3.660	140	24.0	●
ICP 243-2M	24.30	10.23	3.670	140	24.0	●
ICP 245-2M	24.50	10.19	3.710	140	24.0	●
ICP 246-2M	24.60	10.17	3.730	140	24.0	●
ICP 247-2M	24.70	10.15	3.750	140	24.0	●
ICP 248-2M	24.80	10.13	3.770	140	24.0	●
ICP 249-2M	24.90	10.12	3.780	140	24.0	●
ICP 250-2M	25.00	10.70	3.800	140	25.0	●
ICP 251-2M	25.10	10.68	3.820	140	25.0	●
ICP 252-2M	25.20	10.66	3.840	140	25.0	●
ICP 253-2M	25.30	10.65	3.850	140	25.0	●
ICP 254-2M	25.40	10.63	3.870	140	25.0	●
ICP 255-2M	25.50	10.61	3.890	140	25.0	●
ICP 256-2M	25.60	10.59	3.910	140	25.0	●
ICP 2565-2M	25.65	10.58	3.920	140	25.0	●
ICP 2567-2M	25.67	10.58	3.920	140	25.0	●
ICP 257-2M	25.70	10.57	3.930	140	25.0	●
ICP 258-2M	25.80	10.55	3.950	140	25.0	●
ICP 259-2M	25.90	10.54	3.960	140	25.0	●

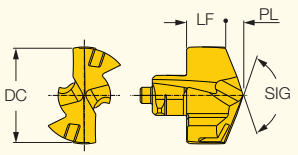
• Provides high surface finish of up to 1.6 Ra hole cylindricity and straightness of up to 0.05 mm • For cutting conditions see pages 68-76

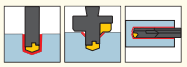
(1) Seat size code

For tools, see pages: DCN-MM (21) • DCN-N-5D-BD (99) • DCN-N-8D-BD (99) • DCN-PICCO (21) • DCN A-1.5D (7) • DCN R-1.5D (8) • DCN A-3D (9) • DCN R-3D (10) • DCN A-5D (11) • DCN R-5D (12) • DCN A-8D (13) • DCN R-8D (14) • DCN R-10D (14) • DCN R-12D (15) • DCN C-3D (16) • DCN C-5D (16) • DCN C-12D (17) • DCNS-3D (18) • DCNS-5D (19) • DCNM (20) • DCNT (M8-M24) (168) • MNSNT (358)

SUMOCHAM

IHP
Exchangeable Drilling Heads
For DCN Drills, for Machining
ISO P Materials
(Non-Alloy and Carbon Steel)





Designation	Dimensions					IC948
	DC	PL	LF	SIG	SSC(1)	
IHP 100	10.00	1.500	4.70	140	10.0	•
IHP 101	10.10	1.520	4.68	140	10.0	•
IHP 102	10.20	1.540	4.66	140	10.0	•
IHP 103	10.30	1.550	4.65	140	10.0	•
IHP 104	10.40	1.570	4.63	140	10.0	•
IHP 105	10.50	1.590	4.61	140	10.0	•
IHP 106	10.60	1.610	4.59	140	10.0	•
IHP 107	10.70	1.630	4.57	140	10.0	•
IHP 108	10.80	1.650	4.55	140	10.0	•
IHP 109	10.90	1.660	4.54	140	10.0	•
IHP 110	11.00	1.670	4.93	140	11.0	•
IHP 111	11.10	1.690	4.91	140	11.0	•
IHP 112	11.20	1.710	4.89	140	11.0	•
IHP 113	11.30	1.720	4.88	140	11.0	•
IHP 114	11.40	1.740	4.86	140	11.0	•
IHP 115	11.50	1.760	4.84	140	11.0	•
IHP 116	11.60	1.780	4.82	140	11.0	•
IHP 117	11.70	1.800	4.80	140	11.0	•
IHP 118	11.80	1.820	4.78	140	11.0	•
IHP 119	11.90	1.830	4.77	140	11.0	•
IHP 120	12.00	1.820	5.18	140	12.0	•
IHP 121	12.10	1.840	5.16	140	12.0	•
IHP 122	12.20	1.860	5.14	140	12.0	•
IHP 123	12.30	1.870	5.13	140	12.0	•
IHP 124	12.40	1.890	5.11	140	12.0	•
IHP 125	12.50	1.910	5.09	140	12.0	•
IHP 126	12.60	1.930	5.07	140	12.0	•
IHP 127	12.70	1.950	5.05	140	12.0	•
IHP 128	12.80	1.970	5.03	140	12.0	•
IHP 129	12.90	1.980	5.02	140	12.0	•
IHP 130	13.00	1.960	5.64	140	13.0	•
IHP 131	13.10	1.980	5.62	140	13.0	•
IHP 132	13.20	2.000	5.60	140	13.0	•
IHP 133	13.30	2.010	5.59	140	13.0	•
IHP 134	13.40	2.030	5.57	140	13.0	•
IHP 135	13.50	2.050	5.55	140	13.0	•
IHP 136	13.60	2.070	5.53	140	13.0	•
IHP 137	13.70	2.090	5.51	140	13.0	•
IHP 138	13.80	2.110	5.49	140	13.0	•
IHP 139	13.90	2.120	5.48	140	13.0	•
IHP 140	14.00	2.120	6.03	140	14.0	•
IHP 141	14.10	2.140	6.01	140	14.0	•
IHP 142	14.20	2.160	5.99	140	14.0	•
IHP 143	14.30	2.170	5.98	140	14.01	•
IHP 144	14.40	2.190	5.96	140	4.0	•
IHP 145	14.50	2.210	5.94	140	14.0	•
IHP 146	14.60	2.230	5.92	140	14.0	•
IHP 147	14.70	2.250	5.90	140	14.0	•
IHP 148	14.80	2.270	5.88	140	14.0	•
IHP 149	14.90	2.280	5.87	140	14.0	•
IHP 150	15.00	2.270	6.46	140	15.0	•
IHP 151	15.10	2.290	6.44	140	15.0	•
IHP 152	15.20	2.310	6.42	140	15.0	•
IHP 153	15.30	2.320	6.41	140	15.0	•
IHP 154	15.40	2.340	6.39	140	15.0	•
IHP 155	15.50	2.360	6.37	140	15.0	•

• Intermediate sizes can be supplied on request • For cutting conditions see pages 68-76

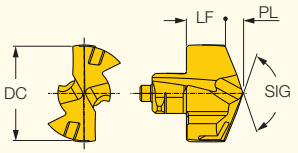
(1) Seat size code

For tools, see pages: DCN A-1.5D (7) • DCN A-3D (9) • DCN A-5D (11) • DCN A-8D (13) • DCN R-1.5D (8) • DCN R-10D (14) • DCN R-12D (15) • DCN R-3D (10) • DCN R-5D (12) • DCN R-8D (14) • DCN-MM (21) • DCN-N-5D-BD (99) • DCN-N-8D-BD (99) • DCN-PICCO (21) • DCNM (20) • DCNS-3D (18) • DCNS-5D (19) • DCNT (M8-M24) (168) • MNSNT (358)

Continued

SUMOCHAM

IHP
Exchangeable Drilling Heads
For DCN Drills, for Machining
ISO P Materials
(Non-Alloy and Carbon Steel)



Designation	Dimensions DC	PL	LF	SIG	SSC(1)	IC948
IHP 156	15.60	2.380	6.35	140	15.0	•
IHP 157	15.70	2.400	6.33	140	15.0	•
IHP 158	15.80	2.420	6.31	140	15.0	•
IHP 159	15.90	2.430	6.30	140	15.0	•
IHP 160	16.00	2.420	6.88	140	16.0	•
IHP 161	16.10	2.440	6.86	140	16.0	•
IHP 162	16.20	2.460	6.84	140	16.0	•
IHP 163	16.30	2.470	6.83	140	16.0	•
IHP 164	16.40	2.490	6.81	140	16.0	•
IHP 165	16.50	2.510	6.79	140	16.0	•
IHP 166	16.60	2.530	6.77	140	16.0	•
IHP 167	16.70	2.550	6.75	140	16.0	•
IHP 168	16.80	2.570	6.73	140	16.0	•
IHP 169	16.90	2.580	6.72	140	16.0	•
IHP 170	17.00	2.590	7.31	140	17.0	•
IHP 171	17.10	2.610	7.29	140	17.0	•
IHP 172	17.20	2.630	7.27	140	17.0	•
IHP 173	17.30	2.640	7.26	140	17.0	•
IHP 174	17.40	2.660	7.24	140	17.0	•
IHP 175	17.50	2.680	7.22	140	17.0	•
IHP 176	17.60	2.700	7.20	140	17.0	•
IHP 177	17.70	2.720	7.18	140	17.0	•
IHP 178	17.80	2.740	7.16	140	17.0	•
IHP 179	17.90	2.750	7.15	140	17.0	•
IHP 180	18.00	2.730	7.77	140	18.0	•
IHP 181	18.10	2.750	7.75	140	18.0	•
IHP 182	18.20	2.770	7.73	140	18.0	•
IHP 183	18.30	2.780	7.72	140	18.0	•
IHP 184	18.40	2.800	7.70	140	18.0	•
IHP 185	18.50	2.820	7.68	140	18.0	•
IHP 186	18.60	2.840	7.66	140	18.0	•
IHP 187	18.70	2.860	7.64	140	18.0	•
IHP 188	18.80	2.880	7.62	140	18.0	•
IHP 189	18.90	2.890	7.61	140	18.0	•
IHP 190	19.00	2.880	8.12	140	19.0	•
IHP 191	19.10	2.900	8.10	140	19.0	•
IHP 192	19.20	2.920	8.08	140	19.0	•
IHP 1925	19.25	2.930	8.07	140	19.0	•
IHP 1927	19.27	2.930	8.07	140	19.0	•
IHP 193	19.30	2.930	8.07	140	19.0	•
IHP 194	19.40	2.950	8.05	140	19.0	•
IHP 195	19.50	2.970	8.03	140	19.0	•
IHP 196	19.60	2.990	8.01	140	19.0	•
IHP 197	19.70	3.010	7.99	140	19.0	•
IHP 198	19.80	3.030	7.97	140	19.0	•
IHP 199	19.90	3.040	7.96	140	19.0	•
IHP 200	20.00	3.020	8.58	140	20.0	•
IHP 201	20.10	3.040	8.56	140	20.0	•
IHP 202	20.20	3.060	8.54	140	20.0	•
IHP 203	20.30	3.070	8.53	140	20.0	•
IHP 204	20.40	3.090	8.51	140	20.0	•
IHP 205	20.50	3.110	8.49	140	20.0	•
IHP 206	20.60	3.130	8.47	140	20.0	•
IHP 207	20.70	3.150	8.45	140	20.0	•
IHP 208	20.80	3.170	8.43	140	20.0	•
IHP 209	20.90	3.180	8.42	140	20.0	•

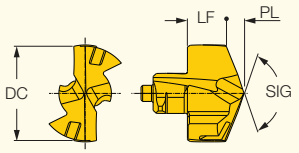
• Intermediate sizes can be supplied on request • For cutting conditions see pages 68-76

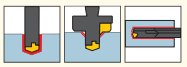
(1) Seat size code

For tools, see pages: DCN A-1.5D (7) • DCN A-3D (9) • DCN A-5D (11) • DCN A-8D (13) • DCN R-1.5D (8) • DCN R-10D (14) • DCN R-12D (15) • DCN R-3D (10) • DCN R-5D (12) • DCN R-8D (14) • DCN-MM (21) • DCN-N-5D-BD (99) • DCN-N-8D-BD (99) • DCN-PICCO (21) • DCNM (20) • DCNS-3D (18) • DCNS-5D (19) • DCNT (M8-M24) (168) • MNSNT (358)

SUMOCHAM

IHP
Exchangeable Drilling Heads
For DCN Drills, for Machining
ISO P Materials
(Non-Alloy and Carbon Steel)





Designation	Dimensions					IC948
	DC	PL	LF	SIG	SSC(1)	
IHP 210	21.00	3.180	9.00	140	21.0	•
IHP 211	21.10	3.200	8.98	140	21.0	•
IHP 212	21.20	3.220	8.96	140	21.0	•
IHP 213	21.30	3.230	8.95	140	21.0	•
IHP 214	21.40	3.250	8.93	140	21.0	•
IHP 215	21.50	3.270	8.91	140	21.0	•
IHP 216	21.60	3.290	8.89	140	21.0	•
IHP 217	21.70	3.310	8.87	140	21.0	•
IHP 218	21.80	3.330	8.85	140	21.0	•
IHP 219	21.90	3.340	8.84	140	21.0	•
IHP 220	22.00	3.320	9.44	140	22.0	•
IHP 221	22.10	3.340	9.42	140	22.0	•
IHP 222	22.20	3.360	9.40	140	22.0	•
IHP 223	22.30	3.370	9.39	140	22.0	•
IHP 224	22.40	3.390	9.37	140	22.0	•
IHP 225	22.50	3.410	9.35	140	22.0	•
IHP 226	22.60	3.430	9.33	140	22.0	•
IHP 227	22.70	3.450	9.31	140	22.0	•
IHP 228	22.80	3.470	9.29	140	22.0	•
IHP 229	22.90	3.480	9.28	140	22.0	•
IHP 230	23.00	3.460	9.87	140	23.0	•
IHP 231	23.10	3.480	9.85	140	23.0	•
IHP 232	23.20	3.500	9.83	140	23.0	•
IHP 233	23.30	3.510	9.82	140	23.0	•
IHP 234	23.40	3.530	9.80	140	23.0	•
IHP 235	23.50	3.550	9.78	140	23.0	•
IHP 236	23.60	3.570	9.76	140	23.0	•
IHP 237	23.70	3.590	9.74	140	23.0	•
IHP 238	23.80	3.610	9.72	140	23.0	•
IHP 239	23.90	3.620	9.71	140	23.0	•
IHP 240	24.00	3.620	10.28	140	24.0	•
IHP 241	24.10	3.640	10.26	140	24.0	•
IHP 242	24.20	3.660	10.24	140	24.0	•
IHP 243	24.30	3.670	10.23	140	24.0	•
IHP 244	24.40	3.690	10.21	140	24.0	•
IHP 245	24.50	3.710	10.19	140	24.0	•
IHP 246	24.60	3.730	10.17	140	24.0	•
IHP 247	24.70	3.750	10.15	140	24.0	•
IHP 248	24.80	3.770	10.13	140	24.0	•
IHP 249	24.90	3.780	10.12	140	24.0	•
IHP 250	25.00	3.800	10.70	140	25.0	•
IHP 251	25.10	3.820	10.68	140	25.0	•
IHP 252	25.20	3.840	10.66	140	25.0	•
IHP 253	25.30	3.850	10.65	140	25.0	•
IHP 254	25.40	3.870	10.63	140	25.0	•
IHP 255	25.50	3.890	10.61	140	25.0	•
IHP 256	25.60	3.910	10.59	140	25.0	•
IHP 257	25.70	3.930	10.57	140	25.0	•
IHP 258	25.80	3.950	10.55	140	25.0	•
IHP 259	25.90	3.960	10.54	140	25.0	•
IHP 260	26.00	3.950	11.12	140	26.0	•
IHP 261	26.10	3.970	11.10	140	26.0	•
IHP 262	26.20	3.990	11.08	140	26.0	•
IHP 263	26.30	4.000	11.07	140	26.0	•
IHP 264	26.40	4.020	11.05	140	26.0	•
IHP 265	26.50	4.040	11.03	140	26.0	•

• Intermediate sizes can be supplied on request • For cutting conditions see pages 68-76

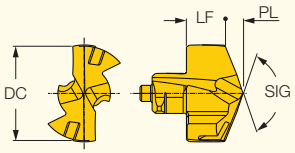
(1) Seat size code

For tools, see pages: DCN A-1.5D (7) • DCN A-3D (9) • DCN A-5D (11) • DCN A-8D (13) • DCN R-1.5D (8) • DCN R-10D (14) • DCN R-12D (15) • DCN R-3D (10) • DCN R-5D (12) • DCN R-8D (14) • DCN-MM (21) • DCN-N-5D-BD (99) • DCN-N-8D-BD (99) • DCN-PICCO (21) • DCNM (20) • DCNS-3D (18) • DCNS-5D (19) • DCNT (M8-M24) (168) • MNSNT (358)

Continued

SUMOCHAM

IHP
Exchangeable Drilling Heads
For DCN Drills, for Machining
ISO P Materials
(Non-Alloy and Carbon Steel)



Designation	Dimensions DC	PL	LF	SIG	SSC(1)	IC948
IHP 266	26.60	4.060	11.01	140	26.0	●
IHP 267	26.70	4.080	10.99	140	26.0	●
IHP 268	26.80	4.100	10.97	140	26.0	●
IHP 269	26.90	4.110	10.96	140	26.0	●

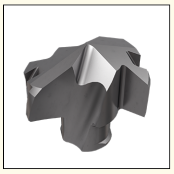
• Intermediate sizes can be supplied on request • For cutting conditions see pages 68-76

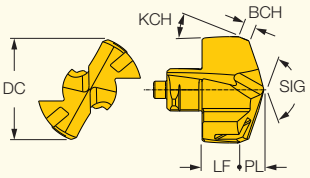
(1) Seat size code

For tools, see pages: DCN A-1.5D (7) • DCN A-3D (9) • DCN A-5D (11) • DCN A-8D (13) • DCN R-1.5D (8) • DCN R-10D (14) • DCN R-12D (15) • DCN R-3D (10) • DCN R-5D (12) • DCN R-8D (14) • DCN-MM (21) • DCN-N-5D-BD (99) • DCN-N-8D-BD (99) • DCN-PICCO (21) • DCNM (20) • DCNS-3D (18) • DCNS-5D (19) • DCNT (M8-M24) (168) • MNSNT (358)

SUMOCHAM

ICK
Exchangeable SUMO-CHAM
Drilling Heads for Machining
ISO K Materials





Designation	Dimensions								Tough ↔ Hard	
	DC	LF	PL	BCH	KCH	SIG	SSC(1)		IC908	IC907
ICK 050	5.00	2.45	1.250	0.60	30.0	140	5.0	SK DCN 5-5.99	•	
ICK 055	5.50	2.47	1.380	0.66	30.0	140	5.5	SK DCN 5-5.99	•	
ICK 059	5.90	2.47	1.380	0.66	30.0	140	5.5	SK DCN 5-5.99	•	
ICK 061	6.10	2.48	1.520	0.72	30.0	140	6.0		•	
ICK 062	6.20	2.48	1.520	0.72	30.0	140	6.0		•	
ICK 063	6.30	2.48	1.520	0.72	30.0	140	6.0		•	
ICK 0635	6.35	2.48	1.520	0.72	30.0	140	6.0		•	
ICK 064	6.40	2.48	1.520	0.72	30.0	140	6.0		•	
ICK 065	6.50	2.64	1.660	0.78	30.0	140	6.5		•	
ICK 066	6.60	2.64	1.660	0.78	30.0	140	6.5		•	
ICK 067	6.70	2.64	1.660	0.78	30.0	140	6.5		•	
ICK 068	6.80	2.64	1.660	0.78	30.0	140	6.5		•	
ICK 069	6.90	2.64	1.660	0.78	30.0	140	6.5		•	
ICK 070	7.00	3.02	1.580	0.84	30.0	140	7.0		•	
ICK 071	7.10	3.02	1.580	0.84	30.0	140	7.0		•	
ICK 072	7.20	3.02	1.580	0.84	30.0	140	7.0		•	
ICK 073	7.30	3.02	1.580	0.84	30.0	140	7.0		•	
ICK 074	7.40	3.02	1.580	0.84	30.0	140	7.0		•	
ICK 075	7.50	3.02	1.580	0.84	30.0	140	7.0		•	
ICK 076	7.60	3.02	1.580	0.84	30.0	140	7.0		•	
ICK 078	7.80	3.02	1.580	0.84	30.0	140	7.0		•	
ICK 079	7.90	3.02	1.580	0.84	30.0	140	7.0		•	
ICK 080	8.00	3.43	1.970	0.96	30.0	140	8.0		•	•
ICK 082	8.20	3.43	1.970	0.96	30.0	140	8.0		•	
ICK 083	8.30	3.43	1.970	0.96	30.0	140	8.0		•	
ICK 084	8.40	3.43	1.970	0.96	30.0	140	8.0		•	
ICK 085	8.50	3.43	1.970	0.96	30.0	140	8.0		•	•
ICK 086	8.60	3.43	1.970	0.96	30.0	140	8.0		•	
ICK 087	8.70	3.43	1.970	0.96	30.0	140	8.0		•	
ICK 088	8.80	3.43	1.970	0.96	30.0	140	8.0		•	
ICK 089	8.90	3.43	1.970	0.96	30.0	140	8.0		•	
ICK 090	9.00	3.60	2.200	1.08	30.0	140	9.0		•	•
ICK 091	9.10	3.60	2.200	1.08	30.0	140	9.0		•	•
ICK 092	9.20	3.60	2.200	1.08	30.0	140	9.0		•	
ICK 094	9.40	3.60	2.200	1.08	30.0	140	9.0		•	
ICK 095	9.50	3.60	2.200	1.08	30.0	140	9.0		•	•
ICK 098	9.80	3.60	2.200	1.08	30.0	140	9.0		•	
ICK 099	9.90	3.60	2.200	1.08	30.0	140	9.0		•	
ICK 100	10.00	3.77	2.430	1.20	30.0	140	10.0		•	
ICK 101	10.10	3.77	2.430	1.20	30.0	140	10.0		•	
ICK 102	10.20	3.77	2.430	1.20	30.0	140	10.0		•	•
ICK 103	10.30	3.77	2.430	1.20	30.0	140	10.0		•	•
ICK 104	10.40	3.77	2.430	1.20	30.0	140	10.0		•	
ICK 105	10.50	3.77	2.430	1.20	30.0	140	10.0		•	•
ICK 106	10.60	3.77	2.430	1.20	30.0	140	10.0		•	•
ICK 107	10.70	3.77	2.430	1.20	30.0	140	10.0		•	•
ICK 108	10.80	3.77	2.430	1.20	30.0	140	10.0		•	•
ICK 109	10.90	3.77	2.430	1.20	30.0	140	10.0		•	
ICK 110	11.00	3.94	2.660	1.32	30.0	140	11.0		•	
ICK 111	11.10	3.94	2.660	1.32	30.0	140	11.0		•	•
ICK 112	11.20	3.94	2.660	1.32	30.0	140	11.0		•	
ICK 113	11.30	3.94	2.660	1.32	30.0	140	11.0		•	•
ICK 114	11.40	3.94	2.660	1.32	30.0	140	11.0		•	
ICK 115	11.50	3.94	2.660	1.32	30.0	140	11.0		•	•
ICK 116	11.60	3.94	2.660	1.32	30.0	140	11.0		•	
ICK 117	11.70	3.94	2.660	1.32	30.0	140	11.0		•	•
ICK 118	11.80	3.94	2.660	1.32	30.0	140	11.0		•	

• The drill head is produced with a ground chamfer and a honed cutting edge • For cutting conditions see pages 68-76

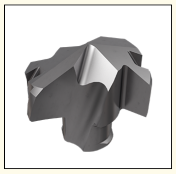
(1) Seat size code

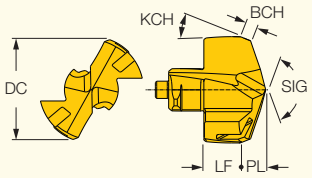
For tools, see pages: DCN-MM (21) • DCN-N-5D-BD (99) • DCN-N-8D-BD (99) • DCN-PICCO (21) • DCN A-1.5D (7) • DCN R-1.5D (8) • DCN A-3D (9) • DCN R-3D (10) • DCN A-5D (11) • DCN R-5D (12) • DCN A-8D (13) • DCN R-8D (14) • DCN R-10D (14) • DCN R-12D (15) • DCN C-3D (16) • DCN C-5D (16) • DCN C-8D (17) • DCN C-12D (17) • DCNS-3D (18) • DCNS-5D (19) • DCNM (20) • DCNT (M8-M24) (168) • MNSNT (358)

Continued

SUMOCHAM

ICK
Exchangeable SUMO-CHAM Drilling Heads for Machining ISO K Materials





Designation	Dimensions							Tough ↔ Hard	
	DC	LF	PL	BCH	KCH	SIG	SSC(1)	IC908	IC907
ICK 119	11.90	3.94	2.660	1.32	30.0	140	11.0	•	
ICK 120	12.00	4.10	2.900	1.44	30.0	140	12.0	•	•
ICK 121	12.10	4.10	2.900	1.44	30.0	140	12.0	•	
ICK 122	12.20	4.10	2.900	1.44	30.0	140	12.0	•	
ICK 123	12.30	4.10	2.900	1.44	30.0	140	12.0	•	
ICK 124	12.40	4.10	2.900	1.44	30.0	140	12.0	•	
ICK 125	12.50	4.10	2.900	1.44	30.0	140	12.0	•	•
ICK 126	12.60	4.10	2.900	1.44	30.0	140	12.0	•	
ICK 127	12.70	4.10	2.900	1.44	30.0	140	12.0	•	
ICK 128	12.80	4.10	2.900	1.44	30.0	140	12.0	•	•
ICK 129	12.90	4.10	2.900	1.44	30.0	140	12.0	•	
ICK 130	13.00	4.48	3.120	1.56	30.0	140	13.0	•	•
ICK 131	13.10	4.48	3.120	1.56	30.0	140	13.0	•	
ICK 132	13.20	4.48	3.120	1.56	30.0	140	13.0	•	•
ICK 133	13.30	4.48	3.120	1.56	30.0	140	13.0	•	
ICK 134	13.40	4.48	3.120	1.56	30.0	140	13.0	•	
ICK 135	13.50	4.48	3.120	1.56	30.0	140	13.0	•	•
ICK 136	13.60	4.48	3.120	1.56	30.0	140	13.0	•	•
ICK 137	13.70	4.48	3.120	1.56	30.0	140	13.0	•	•
ICK 138	13.80	4.48	3.120	1.56	30.0	140	13.0	•	•
ICK 139	13.90	4.48	3.120	1.56	30.0	140	13.0	•	
ICK 140	14.00	4.79	3.360	1.68	30.0	140	14.0	•	•
ICK 141	14.10	4.79	3.360	1.68	30.0	140	14.0	•	•
ICK 142	14.20	4.79	3.360	1.68	30.0	140	14.0	•	•
ICK 143	14.30	4.79	3.360	1.68	30.0	140	14.0	•	•
ICK 144	14.40	4.79	3.360	1.68	30.0	140	14.0	•	
ICK 145	14.50	4.79	3.360	1.68	30.0	140	14.0	•	•
ICK 146	14.60	4.79	3.360	1.68	30.0	140	14.0	•	
ICK 147	14.70	4.79	3.360	1.68	30.0	140	14.0	•	•
ICK 148	14.80	4.79	3.360	1.68	30.0	140	14.0	•	
ICK 149	14.90	4.79	3.360	1.68	30.0	140	14.0	•	
ICK 150	15.00	5.14	3.590	1.80	30.0	140	15.0	•	•
ICK 151	15.10	5.14	3.590	1.80	30.0	140	15.0	•	
ICK 152	15.20	5.14	3.590	1.80	30.0	140	15.0	•	
ICK 153	15.30	5.14	3.590	1.80	30.0	140	15.0	•	•
ICK 154	15.40	5.14	3.590	1.80	30.0	140	15.0	•	•
ICK 155	15.50	5.14	3.590	1.80	30.0	140	15.0	•	•
ICK 156	15.60	5.14	3.590	1.80	30.0	140	15.0	•	•
ICK 157	15.70	5.14	3.590	1.80	30.0	140	15.0	•	•
ICK 158	15.80	5.14	3.590	1.80	30.0	140	15.0	•	•
ICK 159	15.90	5.14	3.590	1.80	30.0	140	15.0	•	
ICK 160	16.00	5.55	3.750	1.92	30.0	140	16.0	•	
ICK 161	16.10	5.55	3.750	1.92	30.0	140	16.0	•	
ICK 162	16.20	5.55	3.750	1.92	30.0	140	16.0	•	
ICK 163	16.30	5.55	3.750	1.92	30.0	140	16.0	•	
ICK 164	16.40	5.55	3.750	1.92	30.0	140	16.0	•	•
ICK 165	16.50	5.55	3.750	1.92	30.0	140	16.0	•	•
ICK 166	16.60	5.55	3.750	1.92	30.0	140	16.0	•	
ICK 167	16.70	5.55	3.750	1.92	30.0	140	16.0	•	
ICK 168	16.80	5.55	3.750	1.92	30.0	140	16.0	•	•
ICK 170	17.00	5.84	4.060	2.04	30.0	140	17.0	•	•
ICK 171	17.10	5.84	4.060	2.04	30.0	140	17.0	•	•
ICK 172	17.20	5.84	4.060	2.04	30.0	140	17.0	•	•
ICK 173	17.30	5.84	4.060	2.04	30.0	140	17.0	•	
ICK 174	17.40	5.84	4.060	2.04	30.0	140	17.0	•	
ICK 175	17.50	5.84	4.060	2.04	30.0	140	17.0	•	•
ICK 176	17.60	5.84	4.060	2.04	30.0	140	17.0	•	

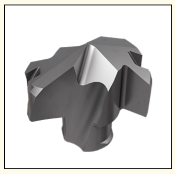
• The drill head is produced with a ground chamfer and a honed cutting edge • For cutting conditions see pages 68-76

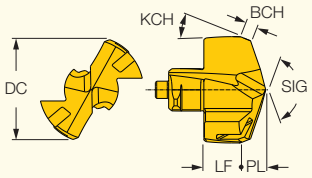
(1) **Seat size code For tools, see pages:** DCN-MM (21) • DCN-N-5D-BD (99) • DCN-N-8D-BD (99) • DCN-PICCO (21) • DCN A-1.5D (7) • DCN R-1.5D (8) • DCN A-3D (9) • DCN R-3D (10) • DCN A-5D (11) • DCN R-5D (12) • DCN A-8D (13) • DCN R-8D (14) • DCN R-10D (14) • DCN R-12D (15) • DCN C-3D (16) • DCN C-5D (16) • DCN C-8D (17) • DCN C-12D (17) • DCNS-3D (18) • DCNS-5D (19) • DCNM (20) • DCNT (M8-M24) (168) • MNSNT (358)

SUMOCHAM

ICK

Exchangeable SUMO-CHAM Drilling Heads for Machining ISO K Materials





Designation	Dimensions							Tough ↔ Hard	
	DC	LF	PL	BCH	KCH	SIG	SSC(1)	IC908	IC907
ICK 177	17.70	5.84	4.060	2.04	30.0	140	17.0	•	
ICK 178	17.80	5.84	4.060	2.04	30.0	140	17.0	•	•
ICK 179	17.90	5.84	4.060	2.04	30.0	140	17.0	•	•
ICK 180	18.00	6.21	4.290	2.16	30.0	140	18.0	•	•
ICK 181	18.10	6.21	4.290	2.16	30.0	140	18.0	•	•
ICK 182	18.20	6.21	4.290	2.16	30.0	140	18.0	•	
ICK 183	18.30	6.21	4.290	2.16	30.0	140	18.0	•	
ICK 184	18.40	6.21	4.290	2.16	30.0	140	18.0	•	
ICK 185	18.50	6.21	4.290	2.16	30.0	140	18.0	•	•
ICK 186	18.60	6.21	4.290	2.16	30.0	140	18.0	•	
ICK 187	18.70	6.21	4.290	2.16	30.0	140	18.0	•	•
ICK 189	18.90	6.21	4.290	2.16	30.0	140	18.0	•	
ICK 190	19.00	6.47	4.530	2.28	30.0	140	19.0	•	
ICK 1905	19.05	6.47	4.530	2.28	30.0	140	19.0	•	•
ICK 191	19.10	6.47	4.530	2.28	30.0	140	19.0	•	•
ICK 192	19.20	6.47	4.530	2.28	30.0	140	19.0	•	
ICK 193	19.30	6.47	4.530	2.28	30.0	140	19.0	•	
ICK 194	19.40	6.47	4.530	2.28	30.0	140	19.0	•	•
ICK 195	19.50	6.47	4.530	2.28	30.0	140	19.0	•	•
ICK 196	19.60	6.47	4.530	2.28	30.0	140	19.0	•	
ICK 197	19.70	6.47	4.530	2.28	30.0	140	19.0	•	
ICK 198	19.80	6.47	4.530	2.28	30.0	140	19.0	•	
ICK 199	19.90	6.47	4.530	2.28	30.0	140	19.0	•	
ICK 200	20.00	6.81	4.790	2.40	30.0	140	20.0	•	•
ICK 201	20.10	6.81	4.790	2.40	30.0	140	20.0	•	
ICK 204	20.40	6.81	4.790	2.40	30.0	140	20.0	•	
ICK 205	20.50	6.81	4.790	2.40	30.0	140	20.0	•	
ICK 206	20.60	6.81	4.790	2.40	30.0	140	20.0	•	
ICK 207	20.70	6.81	4.790	2.40	30.0	140	20.0	•	
ICK 208	20.80	6.81	4.790	2.40	30.0	140	20.0	•	
ICK 209	20.90	6.81	4.790	2.40	30.0	140	20.0	•	
ICK 210	21.00	7.20	4.980	2.52	30.0	140	21.0	•	•
ICK 211	21.10	7.20	4.980	2.52	30.0	140	21.0	•	
ICK 212	21.20	7.20	4.980	2.52	30.0	140	21.0	•	
ICK 213	21.30	7.20	4.980	2.52	30.0	140	21.0	•	
ICK 215	21.50	7.20	4.980	2.52	30.0	140	21.0	•	•
ICK 216	21.60	7.20	4.980	2.52	30.0	140	21.0	•	
ICK 217	21.70	7.20	4.980	2.52	30.0	140	21.0	•	
ICK 219	21.90	7.20	4.980	2.52	30.0	140	21.0	•	
ICK 220	22.00	7.54	5.220	2.64	30.0	140	22.0	•	•
ICK 221	22.10	7.54	5.220	2.64	30.0	140	22.0	•	
ICK 222	22.20	7.54	5.220	2.64	30.0	140	22.0	•	
ICK 223	22.30	7.54	5.220	2.64	30.0	140	22.0	•	
ICK 225	22.50	7.54	5.220	2.64	30.0	140	22.0	•	
ICK 226	22.60	7.54	5.220	2.64	30.0	140	22.0	•	
ICK 227	22.70	7.54	5.220	2.64	30.0	140	22.0	•	
ICK 230	23.00	7.88	5.450	2.76	30.0	140	23.0	•	
ICK 231	23.10	7.88	5.450	2.76	30.0	140	23.0	•	•
ICK 233	23.30	7.88	5.450	2.76	30.0	140	23.0	•	
ICK 234	23.40	7.88	5.450	2.76	30.0	140	23.0	•	
ICK 235	23.50	7.88	5.450	2.76	30.0	140	23.0	•	•
ICK 236	23.60	7.88	5.450	2.76	30.0	140	23.0	•	
ICK 238	23.80	7.88	5.450	2.76	30.0	140	23.0	•	
ICK 239	23.90	7.88	5.450	2.76	30.0	140	23.0	•	
ICK 240	24.00	8.21	5.690	2.88	30.0	140	24.0	•	

• The drill head is produced with a ground chamfer and a honed cutting edge • For cutting conditions see pages 68-76

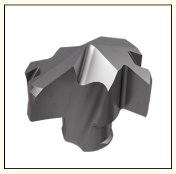
(1) Seat size code

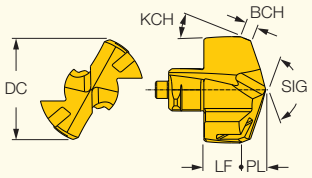
For tools, see pages: DCN-MM (21) • DCN-N-5D-BD (99) • DCN-N-8D-BD (99) • DCN-PICCO (21) • DCN A-1.5D (7) • DCN R-1.5D (8) • DCN A-3D (9) • DCN R-3D (10) • DCN A-5D (11) • DCN R-5D (12) • DCN A-8D (13) • DCN R-8D (14) • DCN R-10D (14) • DCN R-12D (15) • DCN C-3D (16) • DCN C-5D (16) • DCN C-8D (17) • DCN C-12D (17) • DCNS-3D (18) • DCNS-5D (19) • DCNM (20) • DCNT (M8-M24) (168) • MNSNT (358)

Continued

SUMOCHAM

ICK
Exchangeable SUMO-CHAM Drilling Heads for Machining ISO K Materials





Designation	Dimensions							Tough ↔ Hard	
	DC	LF	PL	BCH	KCH	SIG	SSC(1)	IC908	IC907
ICK 243	24.30	8.21	5.690	2.88	30.0	140	24.0	•	
ICK 245	24.50	8.21	5.690	2.88	30.0	140	24.0	•	
ICK 247	24.70	8.21	5.690	2.88	30.0	140	24.0	•	
ICK 248	24.80	8.21	5.690	2.88	30.0	140	24.0	•	
ICK 249	24.90	8.21	5.690	2.88	30.0	140	24.0	•	
ICK 250	25.00	8.56	5.940	3.00	30.0	140	25.0	•	•
ICK 251	25.10	8.56	5.940	3.00	30.0	140	25.0	•	
ICK 252	25.20	8.56	5.940	3.00	30.0	140	25.0	•	
ICK 253	25.30	8.56	5.940	3.00	30.0	140	25.0	•	
ICK 254	25.40	8.56	5.940	3.00	30.0	140	25.0	•	
ICK 255	25.50	8.56	5.940	3.00	30.0	140	25.0	•	
ICK 256	25.60	8.56	5.940	3.00	30.0	140	25.0	•	
ICK 258	25.80	8.56	5.940	3.00	30.0	140	25.0	•	•
ICK 259	25.90	8.56	5.940	3.00	30.0	140	25.0	•	
ICK 260	26.00	9.05	6.020	3.12	30.0	140	26.0	•	
ICK 264	26.40	9.05	6.020	3.12	30.0	140	26.0	•	
ICK 265	26.50	9.05	6.020	3.12	30.0	140	26.0	•	
ICK 269	26.90	9.05	6.020	3.12	30.0	140	26.0	•	
ICK 270	27.00	9.44	6.210	3.24	30.0	140	27.0	•	
ICK 275	27.50	9.44	6.210	3.24	30.0	140	27.0	•	
ICK 279	27.90	9.44	6.210	3.24	30.0	140	27.0	•	
ICK 280	28.00	9.78	6.440	3.36	30.0	140	28.0	•	
ICK 285	28.50	9.78	6.440	3.36	30.0	140	28.0	•	
ICK 289	28.90	9.78	6.440	3.36	30.0	140	28.0	•	
ICK 290	29.00	10.10	6.700	3.48	30.0	140	29.0	•	
ICK 295	29.50	10.10	6.700	3.48	30.0	140	29.0	•	
ICK 299	29.90	10.10	6.700	3.48	30.0	140	29.0	•	
ICK 300	30.00	10.43	6.950	3.60	30.0	140	30.0	•	
ICK 305	30.50	10.43	6.950	3.60	30.0	140	30.0	•	
ICK 309	30.90	10.43	6.950	3.60	30.0	140	30.0	•	
ICK 310	31.00	10.81	7.150	3.72	30.0	140	31.0	•	
ICK 315	31.50	10.81	7.150	3.72	30.0	140	31.0	•	
ICK 3175	31.75	10.81	7.150	3.72	30.0	140	31.0	•	
ICK 319	31.90	10.81	7.150	3.72	30.0	140	31.0	•	
ICK 320	32.00	11.18	7.290	3.84	30.0	140	32.0	•	
ICK 325	32.50	11.18	7.290	3.84	30.0	140	32.0	•	
ICK 329	32.90	11.18	7.290	3.84	30.0	140	32.0	•	

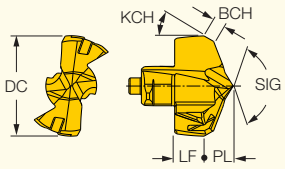
• The drill head is produced with a ground chamfer and a honed cutting edge • For cutting conditions see pages 68-76

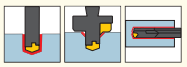
(1) Seat size code

For tools, see pages: DCN-MM (21) • DCN-N-5D-BD (99) • DCN-N-8D-BD (99) • DCN-PICCO (21) • DCN A-1.5D (7) • DCN R-1.5D (8) • DCN A-3D (9) • DCN R-3D (10) • DCN A-5D (11) • DCN R-5D (12) • DCN A-8D (13) • DCN R-8D (14) • DCN R-10D (14) • DCN R-12D (15) • DCN C-3D (16) • DCN C-5D (16) • DCN C-8D (17) • DCN C-12D (17) • DCNS-3D (18) • DCNS-5D (19) • DCNM (20) • DCNT (M8-M24) (168) • MNSNT (358)

SUMOCHAM

ICK-2M
Exchangeable Double Margin SUMO-CHAM Drilling Heads, for Machining ISO K Materials with High Surface Finish Results





Designation	Dimensions							Tough ↔ Hard	
	DC	LF	PL	BCH	KCH	SIG	SSC(1)	IC908	IC907
ICK 060-2M	6.00	2.48	1.520	0.72	30.0	140	6.0	•	
ICK 061-2M	6.10	2.48	1.520	0.72	30.0	140	6.0	•	
ICK 062-2M	6.20	2.48	1.520	0.72	30.0	140	6.0	•	
ICK 063-2M	6.30	2.48	1.520	0.72	30.0	140	6.0	•	
ICK 0635-2M	6.35	2.48	1.520	0.72	30.0	140	6.0	•	
ICK 064-2M	6.40	2.48	1.520	0.72	30.0	140	6.0	•	
ICK 065-2M	6.50	2.64	1.660	0.78	30.0	140	6.5	•	
ICK 066-2M	6.60	2.64	1.660	0.78	30.0	140	6.5	•	
ICK 067-2M	6.70	2.64	1.660	0.78	30.0	140	6.5	•	
ICK 068-2M	6.80	2.64	1.660	0.78	30.0	140	6.5	•	
ICK 069-2M	6.90	2.64	1.660	0.78	30.0	140	6.5	•	
ICK 070-2M	7.00	3.02	1.580	0.84	30.0	140	7.0	•	
ICK 071-2M	7.10	3.02	1.580	0.84	30.0	140	7.0	•	
ICK 072-2M	7.20	3.02	1.580	0.84	30.0	140	7.0	•	
ICK 073-2M	7.30	3.02	1.580	0.84	30.0	140	7.0	•	
ICK 074-2M	7.40	3.02	1.580	0.84	30.0	140	7.0	•	
ICK 075-2M	7.50	3.02	1.580	0.84	30.0	140	7.0	•	
ICK 076-2M	7.60	3.02	1.580	0.84	30.0	140	7.0	•	
ICK 077-2M	7.70	3.02	1.580	0.84	30.0	140	7.0	•	
ICK 078-2M	7.80	3.02	1.580	0.84	30.0	140	7.0	•	
ICK 079-2M	7.90	3.02	1.580	0.84	30.0	140	7.0	•	
ICK 080-2M	8.00	3.43	1.970	0.96	30.0	140	8.0	•	
ICK 081-2M	8.10	3.43	1.970	0.96	30.0	140	8.0	•	
ICK 083-2M	8.30	3.43	1.970	0.96	30.0	140	8.0	•	
ICK 084-2M	8.40	3.43	1.970	0.96	30.0	140	8.0	•	
ICK 085-2M	8.50	3.43	1.970	0.96	30.0	140	8.0	•	
ICK 086-2M	8.60	3.43	1.970	0.96	30.0	140	8.0	•	
ICK 087-2M	8.70	3.43	1.970	0.96	30.0	140	8.0	•	
ICK 088-2M	8.80	3.43	1.970	0.96	30.0	140	8.0	•	
ICK 089-2M	8.90	3.43	1.970	0.96	30.0	140	8.0	•	
ICK 090-2M	9.00	3.60	2.200	1.08	30.0	140	9.0	•	
ICK 091-2M	9.10	3.60	2.200	1.08	30.0	140	9.0	•	
ICK 093-2M	9.30	3.60	2.200	1.08	30.0	140	9.0	•	
ICK 094-2M	9.40	3.60	2.200	1.08	30.0	140	9.0	•	
ICK 095-2M	9.50	3.60	2.200	1.08	30.0	140	9.0	•	
ICK 096-2M	9.60	3.60	2.200	1.08	30.0	140	9.0	•	
ICK 097-2M	9.70	3.60	2.200	1.08	30.0	140	9.0	•	
ICK 098-2M	9.80	3.60	2.200	1.08	30.0	140	9.0	•	
ICK 099-2M	9.90	3.60	2.200	1.08	30.0	140	9.0	•	
ICK 100-2M	10.00	3.77	2.430	1.20	30.0	140	10.0	•	
ICK 101-2M	10.10	3.77	2.430	1.20	30.0	140	10.0	•	•
ICK 102-2M	10.20	3.77	2.430	1.20	30.0	140	10.0	•	
ICK 103-2M	10.30	3.77	2.430	1.20	30.0	140	10.0	•	
ICK 104-2M	10.40	3.77	2.430	1.20	30.0	140	10.0	•	
ICK 105-2M	10.50	3.77	2.430	1.20	30.0	140	10.0	•	
ICK 106-2M	10.60	3.77	2.430	1.20	30.0	140	10.0	•	•
ICK 107-2M	10.70	3.77	2.430	1.20	30.0	140	10.0	•	
ICK 108-2M	10.80	3.77	2.430	1.20	30.0	140	10.0	•	
ICK 109-2M	10.90	3.77	2.430	1.20	30.0	140	10.0	•	
ICK 110-2M	11.00	3.94	2.660	1.32	30.0	140	11.0	•	
ICK 111-2M	11.10	3.94	2.660	1.32	30.0	140	11.0	•	
ICK 112-2M	11.20	3.94	2.660	1.32	30.0	140	11.0	•	
ICK 113-2M	11.30	3.94	2.660	1.32	30.0	140	11.0	•	
ICK 114-2M	11.40	3.94	2.660	1.32	30.0	140	11.0	•	
ICK 116-2M	11.60	3.94	2.660	1.32	30.0	140	11.0	•	
ICK 117-2M	11.70	3.94	2.660	1.32	30.0	140	11.0	•	

• Provides high surface finish of up to 1.6 Ra hole cylindricity and straightness of up to 0.05 mm • For cutting conditions see pages 68-76

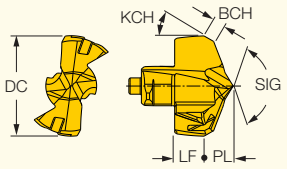
(1) Seat size code

For tools, see pages: DCN-MM (21) • DCN-N-5D-BD (99) • DCN-N-8D-BD (99) • DCN-PICCO (21) • DCN A-1.5D (7) • DCN R-1.5D (8) • DCN A-3D (9) • DCN R-3D (10) • DCN A-5D (11) • DCN R-5D (12) • DCN A-8D (13) • DCN R-8D (14) • DCN R-10D (14) • DCN R-12D (15) • DCN C-3D (16) • DCN C-5D (16) • DCN C-12D (17) • DCNS-3D (18) • DCNS-5D (19) • DCNM (20) • DCNT (M8-M24) (168) • MNSNT (358)

Continued

SUMOCHAM

ICK-2M
Exchangeable Double Margin SUMO-CHAM Drilling Heads, for Machining ISO K Materials with High Surface Finish Results



Designation	Dimensions							Tough ↔ Hard	
	DC	LF	PL	BCH	KCH	SIG	SSC(1)	IC908	IC907
ICK 118-2M	11.80	3.94	2.660	1.32	30.0	140	11.0	•	
ICK 119-2M	11.90	3.94	2.660	1.32	30.0	140	11.0	•	
ICK 120-2M	12.00	4.10	2.900	1.44	30.0	140	12.0	•	
ICK 121-2M	12.10	4.10	2.900	1.44	30.0	140	12.0	•	
ICK 122-2M	12.20	4.10	2.900	1.44	30.0	140	12.0	•	
ICK 123-2M	12.30	4.10	2.900	1.44	30.0	140	12.0	•	
ICK 124-2M	12.40	4.10	2.900	1.44	30.0	140	12.0	•	
ICK 125-2M	12.50	4.10	2.900	1.44	30.0	140	12.0	•	
ICK 126-2M	12.60	4.10	2.290	1.44	30.0	140	12.0	•	
ICK 127-2M	12.70	4.10	2.900	1.44	30.0	140	12.0	•	
ICK 128-2M	12.80	4.10	2.900	1.44	30.0	140	12.0	•	
ICK 131-2M	13.10	4.48	3.120	1.56	30.0	140	13.0	•	
ICK 132-2M	13.20	4.48	3.120	1.56	30.0	140	13.0	•	
ICK 133-2M	13.30	4.48	3.120	1.56	30.0	140	13.0	•	
ICK 134-2M	13.40	4.48	3.120	1.56	30.0	140	13.0	•	
ICK 135-2M	13.50	4.48	3.120	1.56	30.0	140	13.0	•	•
ICK 136-2M	13.60	4.48	3.120	1.56	30.0	140	13.0	•	
ICK 137-2M	13.70	4.48	3.120	1.56	30.0	140	13.0	•	
ICK 138-2M	13.80	4.48	3.120	1.56	30.0	140	13.0	•	
ICK 139-2M	13.90	4.48	3.120	1.56	30.0	140	13.0	•	
ICK 140-2M	14.00	4.79	3.360	1.68	30.0	140	14.0	•	
ICK 141-2M	14.10	4.79	3.360	1.68	30.0	140	14.0	•	•
ICK 142-2M	14.20	4.79	3.360	1.68	30.0	140	14.0	•	
ICK 144-2M	14.40	4.79	3.360	1.68	30.0	140	14.0	•	
ICK 145-2M	14.50	4.79	3.360	1.68	30.0	140	14.0	•	
ICK 146-2M	14.60	4.79	3.360	1.68	30.0	140	14.0	•	
ICK 147-2M	14.70	4.79	3.360	1.68	30.0	140	14.0	•	
ICK 148-2M	14.80	4.79	3.360	1.68	30.0	140	14.0	•	
ICK 149-2M	14.90	4.79	3.360	1.68	30.0	140	14.0	•	
ICK 150-2M	15.00	5.14	3.590	1.80	30.0	140	15.0	•	
ICK 151-2M	15.10	5.14	3.590	1.80	30.0	140	15.0	•	
ICK 152-2M	15.20	5.14	3.590	1.80	30.0	140	15.0	•	•
ICK 153-2M	15.30	5.14	3.590	1.80	30.0	140	15.0	•	
ICK 154-2M	15.40	5.14	3.590	1.80	30.0	140	15.0	•	
ICK 155-2M	15.50	5.14	3.590	1.80	30.0	140	15.0	•	
ICK 156-2M	15.60	5.14	3.590	1.80	30.0	140	15.0	•	
ICK 159-2M	15.90	5.14	3.590	1.80	30.0	140	15.0	•	
ICK 160-2M	16.00	5.55	3.750	1.92	30.0	140	16.0	•	•
ICK 161-2M	16.10	5.55	3.750	1.92	30.0	140	16.0	•	•
ICK 162-2M	16.20	5.55	3.750	1.92	30.0	140	16.0	•	
ICK 163-2M	16.30	5.55	3.750	1.92	30.0	140	16.0	•	
ICK 164-2M	16.40	5.55	3.750	1.92	30.0	140	16.0	•	
ICK 165-2M	16.50	5.55	3.750	1.92	30.0	140	16.0	•	
ICK 166-2M	16.60	5.55	3.750	1.92	30.0	140	16.0	•	
ICK 167-2M	16.70	5.55	3.750	1.92	30.0	140	16.0	•	•
ICK 168-2M	16.80	5.55	3.750	1.92	30.0	140	16.0	•	
ICK 169-2M	16.90	5.55	3.750	1.92	30.0	140	16.0	•	
ICK 170-2M	17.00	5.84	4.060	2.04	30.0	140	17.0	•	•
ICK 171-2M	17.10	5.84	4.060	2.04	30.0	140	17.0	•	
ICK 172-2M	17.20	5.84	4.060	2.04	30.0	140	17.0	•	
ICK 173-2M	17.30	5.84	4.060	2.04	30.0	140	17.0	•	
ICK 174-2M	17.40	5.84	4.060	2.04	30.0	140	17.0	•	
ICK 175-2M	17.50	5.84	4.060	2.04	30.0	140	17.0	•	•
ICK 176-2M	17.60	5.84	4.060	2.04	30.0	140	17.0	•	
ICK 178-2M	17.80	5.84	4.060	2.04	30.0	140	17.0	•	
ICK 179-2M	17.90	5.84	4.060	2.04	30.0	140	17.0	•	

• Provides high surface finish of up to 1.6 Ra hole cylindricity and straightness of up to 0.05 mm • For cutting conditions see pages 68-76

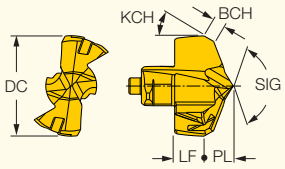
(1) Seat size code

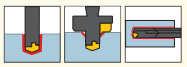
For tools, see pages: DCN-MM (21) • DCN-N-5D-BD (99) • DCN-N-8D-BD (99) • DCN-PICCO (21) • DCN A-1.5D (7) • DCN R-1.5D (8) • DCN A-3D (9) • DCN R-3D (10) • DCN A-5D (11) • DCN R-5D (12) • DCN A-8D (13) • DCN R-8D (14) • DCN R-10D (14) • DCN R-12D (15) • DCN C-3D (16) • DCN C-5D (16) • DCN C-12D (17) • DCNS-3D (18) • DCNS-5D (19) • DCNM (20) • DCNT (M8-M24) (168) • MNSNT (358)

SUMOCHAM

ICK-2M

Exchangeable Double Margin SUMO-CHAM Drilling Heads, for Machining ISO K Materials with High Surface Finish Results





Designation	Dimensions							Tough ↔ Hard	
	DC	LF	PL	BCH	KCH	SIG	SSC(1)	IC908	IC907
ICK 180-2M	18.00	6.21	4.290	2.16	30.0	140	18.0	•	
ICK 181-2M	18.10	6.21	4.290	2.16	30.0	140	18.0	•	
ICK 183-2M	18.30	6.21	4.290	2.16	30.0	140	18.0	•	
ICK 184-2M	18.40	6.21	4.290	2.16	30.0	140	18.0	•	
ICK 185-2M	18.50	6.21	4.290	2.16	30.0	140	18.0	•	
ICK 186-2M	18.60	6.21	4.290	2.16	30.0	140	18.0	•	
ICK 187-2M	18.70	6.21	4.290	2.16	30.0	140	18.0	•	
ICK 188-2M	18.80	6.21	4.290	2.16	30.0	140	18.0	•	
ICK 189-2M	18.90	6.21	4.290	2.16	30.0	140	18.0	•	
ICK 190-2M	19.00	6.47	4.530	2.28	30.0	140	19.0	•	
ICK 191-2M	19.10	6.47	4.530	2.28	30.0	140	19.0	•	•
ICK 192-2M	19.20	6.47	4.530	2.28	30.0	140	19.0	•	
ICK 193-2M	19.30	6.47	4.530	2.28	30.0	140	19.0	•	
ICK 195-2M	19.50	6.47	4.530	2.28	30.0	140	19.0	•	
ICK 196-2M	19.60	6.47	4.530	2.28	30.0	140	19.0	•	
ICK 197-2M	19.70	6.47	4.530	2.28	30.0	140	19.0	•	
ICK 198-2M	19.80	6.47	4.530	2.28	30.0	140	19.0	•	
ICK 199-2M	19.90	6.47	4.530	2.28	30.0	140	19.0	•	
ICK 200-2M	20.00	6.81	4.790	2.40	30.0	140	20.0	•	
ICK 201-2M	20.10	6.81	4.790	2.40	30.0	140	20.0	•	
ICK 202-2M	20.20	6.81	4.790	2.40	30.0	140	20.0	•	
ICK 203-2M	20.30	6.81	4.790	2.40	30.0	140	20.0	•	
ICK 204-2M	20.40	6.81	4.790	2.40	30.0	140	20.0	•	
ICK 205-2M	20.50	6.81	4.790	2.40	30.0	140	20.0	•	
ICK 206-2M	20.60	6.81	4.790	2.40	30.0	140	20.0	•	
ICK 207-2M	20.70	6.81	4.790	2.40	30.0	140	20.0	•	
ICK 208-2M	20.80	6.81	4.790	2.40	30.0	140	20.0	•	
ICK 209-2M	20.90	6.81	4.790	2.40	30.0	140	20.0	•	
ICK 210-2M	21.00	7.20	4.980	2.52	30.0	140	21.0	•	
ICK 211-2M	21.10	7.20	4.980	2.52	30.0	140	21.0	•	
ICK 212-2M	21.20	7.20	4.980	2.52	30.0	140	21.0	•	
ICK 213-2M	21.30	7.20	4.980	2.52	30.0	140	21.0	•	
ICK 214-2M	21.40	7.20	4.980	2.52	30.0	140	21.0	•	
ICK 215-2M	21.50	7.20	4.980	2.52	30.0	140	21.0	•	
ICK 216-2M	21.60	7.20	4.980	2.52	30.0	140	21.0	•	
ICK 217-2M	21.70	7.20	4.980	2.52	30.0	140	21.0	•	
ICK 218-2M	21.80	7.20	4.980	2.52	30.0	140	21.0	•	
ICK 219-2M	21.90	7.20	4.980	2.52	30.0	140	21.0	•	
ICK 220-2M	22.00	7.54	5.220	2.64	30.0	140	22.0	•	
ICK 221-2M	22.10	7.54	5.220	2.64	30.0	140	22.0	•	
ICK 222-2M	22.20	7.54	5.220	2.64	30.0	140	22.0	•	
ICK 223-2M	22.30	7.54	5.220	2.64	30.0	140	22.0	•	
ICK 224-2M	22.40	7.54	5.220	2.64	30.0	140	22.0	•	•
ICK 225-2M	22.50	7.54	5.220	2.64	30.0	140	22.0	•	
ICK 226-2M	22.60	7.54	5.220	2.64	30.0	140	22.0	•	
ICK 227-2M	22.70	7.54	5.220	2.64	30.0	140	22.0	•	
ICK 228-2M	22.80	7.54	5.220	2.64	30.0	140	22.0	•	
ICK 229-2M	22.90	7.54	5.220	2.64	30.0	140	22.0	•	
ICK 230-2M	23.00	7.88	5.450	2.76	30.0	140	23.0	•	
ICK 231-2M	23.10	7.88	5.450	2.76	30.0	140	23.0	•	
ICK 232-2M	23.20	7.88	5.450	2.76	30.0	140	23.0	•	
ICK 233-2M	23.30	7.88	5.450	2.76	30.0	140	23.0	•	
ICK 234-2M	23.40	7.88	5.450	2.76	30.0	140	23.0	•	
ICK 235-2M	23.50	7.88	5.450	2.76	30.0	140	23.0	•	
ICK 236-2M	23.60	7.88	5.450	2.76	30.0	140	23.0	•	
ICK 237-2M	23.70	7.88	5.450	2.76	30.0	140	23.0	•	

• Provides high surface finish of up to 1.6 Ra hole cylindricity and straightness of up to 0.05 mm • For cutting conditions see pages 68-76

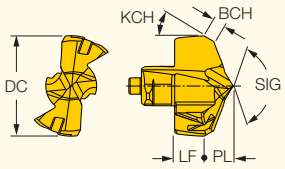
(1) Seat size code

For tools, see pages: DCN-MM (21) • DCN-N-5D-BD (99) • DCN-N-8D-BD (99) • DCN-PICCO (21) • DCN A-1.5D (7) • DCN R-1.5D (8) • DCN A-3D (9) • DCN R-3D (10) • DCN A-5D (11) • DCN R-5D (12) • DCN A-8D (13) • DCN R-8D (14) • DCN R-10D (14) • DCN R-12D (15) • DCN C-3D (16) • DCN C-5D (16) • DCN C-12D (17) • DCNS-3D (18) • DCNS-5D (19) • DCNM (20) • DCNT (M8-M24) (168) • MNSNT (358)

Continued

SUMOCHAM

ICK-2M
Exchangeable Double Margin SUMO-CHAM Drilling Heads, for Machining ISO K Materials with High Surface Finish Results



Designation	Dimensions							Tough ↔ Hard	
	DC	LF	PL	BCH	KCH	SIG	SSC(1)	IC908	IC907
ICK 238-2M	23.80	7.88	5.450	2.76	30.0	140	23.0	●	
ICK 239-2M	23.90	7.88	5.450	2.76	30.0	140	23.0	●	
ICK 240-2M	24.00	8.21	5.690	2.88	30.0	140	24.0	●	
ICK 241-2M	24.10	8.21	5.690	2.88	30.0	140	24.0	●	
ICK 242-2M	24.20	8.21	5.690	2.88	30.0	140	24.0	●	
ICK 243-2M	24.30	8.21	5.690	2.88	30.0	140	24.0	●	
ICK 244-2M	24.40	8.21	5.690	2.88	30.0	140	24.0	●	
ICK 245-2M	24.50	8.21	5.690	2.88	30.0	140	24.0	●	
ICK 246-2M	24.60	8.21	5.690	2.88	30.0	140	24.0	●	
ICK 247-2M	24.70	8.21	5.690	2.88	30.0	140	24.0	●	
ICK 249-2M	24.90	8.21	5.690	2.88	30.0	140	24.0	●	
ICK 250-2M	25.00	8.56	5.940	3.00	30.0	140	25.0	●	
ICK 251-2M	25.10	8.56	5.940	3.00	30.0	140	25.0	●	
ICK 252-2M	25.20	8.56	5.940	3.00	30.0	140	25.0	●	
ICK 253-2M	25.30	8.56	5.940	3.00	30.0	140	25.0	●	
ICK 254-2M	25.40	8.56	5.940	3.00	30.0	140	25.0	●	
ICK 255-2M	25.50	8.56	5.940	3.00	30.0	140	25.0	●	
ICK 256-2M	25.60	8.56	5.940	3.00	30.0	140	25.0	●	
ICK 257-2M	25.70	8.56	5.940	3.00	30.0	140	25.0	●	
ICK 258-2M	25.80	8.56	5.940	3.00	30.0	140	25.0	●	
ICK 259-2M	25.90	8.56	5.940	3.00	30.0	140	25.0	●	

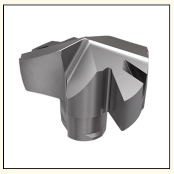
• Provides high surface finish of up to 1.6 Ra hole cylindricity and straightness of up to 0.05 mm • For cutting conditions see pages 68-76

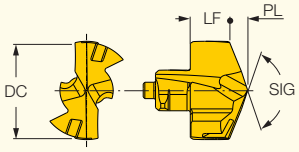
(1) Seat size code

For tools, see pages: DCN-MM (21) • DCN-N-5D-BD (99) • DCN-N-8D-BD (99) • DCN-PICCO (21) • DCN A-1.5D (7) • DCN R-1.5D (8) • DCN A-3D (9) • DCN R-3D (10) • DCN A-5D (11) • DCN R-5D (12) • DCN A-8D (13) • DCN R-8D (14) • DCN R-10D (14) • DCN R-12D (15) • DCN C-3D (16) • DCN C-5D (16) • DCN C-12D (17) • DCNS-3D (18) • DCNS-5D (19) • DCNM (20) • DCNT (M8-M24) (168) • MNSNT (358)

SUMOCHAM

ICM
Exchangeable SUMO-CHAM Drilling Heads for Machining ISO M and ISO S Materials





Designation	Dimensions DC	PL	LF	SIG	SSC(1)		Tough ↔ Hard IC908	IC907
ICM 050	5.00	0.700	3.00	140	5.0	SK DCN 5-5.99	•	
ICM 051	5.10	0.720	2.98	140	5.0	SK DCN 5-5.99	•	
ICM 052	5.20	0.740	2.96	140	5.0	SK DCN 5-5.99	•	
ICM 053	5.30	0.750	2.95	140	5.0	SK DCN 5-5.99	•	
ICM 054	5.40	0.770	2.93	140	5.0	SK DCN 5-5.99	•	
ICM 055	5.50	0.900	2.95	140	5.5	SK DCN 5-5.99	•	
ICM 056	5.60	0.920	2.93	140	5.5	SK DCN 5-5.99	•	
ICM 057	5.70	0.940	2.91	140	5.5	SK DCN 5-5.99	•	
ICM 058	5.80	0.960	2.89	140	5.5	SK DCN 5-5.99	•	
ICM 059	5.90	0.970	2.88	140	5.5	SK DCN 5-5.99	•	
ICM 060	6.00	0.960	3.04	140	6.0		•	
ICM 061	6.10	0.980	3.02	140	6.0		•	
ICM 062	6.20	1.000	3.00	140	6.0		•	
ICM 063	6.30	1.010	2.99	140	6.0		•	
ICM 0635	6.35	1.020	2.98	140	6.0		•	
ICM 064	6.40	1.030	2.97	140	6.0		•	
ICM 065	6.50	1.270	3.03	140	6.5		•	
ICM 066	6.60	1.290	3.01	140	6.5		•	
ICM 067	6.70	1.310	2.99	140	6.5		•	
ICM 068	6.80	1.330	2.97	140	6.5		•	
ICM 069	6.90	1.340	2.96	140	6.5		•	
ICM 070	7.00	1.010	3.59	140	7.0		•	
ICM 071	7.10	1.030	3.57	140	7.0		•	
ICM 072	7.20	1.050	3.55	140	7.0		•	
ICM 073	7.30	1.060	3.54	140	7.0		•	
ICM 074	7.40	1.080	3.52	140	7.0		•	
ICM 075	7.50	1.100	3.50	140	7.0		•	•
ICM 076	7.60	1.120	3.48	140	7.0		•	
ICM 077	7.70	1.140	3.46	140	7.0		•	
ICM 078	7.80	1.160	3.44	140	7.0		•	
ICM 079	7.90	1.170	3.43	140	7.0		•	
ICM 080	8.00	1.200	4.20	140	8.0		•	•
ICM 081	8.10	1.220	4.18	140	8.0		•	
ICM 082	8.20	1.240	4.16	140	8.0		•	
ICM 083	8.30	1.250	4.15	140	8.0		•	
ICM 084	8.40	1.270	4.13	140	8.0		•	
ICM 085	8.50	1.290	4.11	140	8.0		•	•
ICM 086	8.60	1.310	4.09	140	8.0		•	
ICM 087	8.70	1.330	4.07	140	8.0		•	•
ICM 088	8.80	1.350	4.05	140	8.0		•	
ICM 089	8.90	1.360	4.04	140	8.0		•	
ICM 090	9.00	1.360	4.44	140	9.0		•	•
ICM 091	9.10	1.380	4.42	140	9.0		•	•
ICM 092	9.20	1.400	4.40	140	9.0		•	
ICM 093	9.30	1.410	4.39	140	9.0		•	
ICM 094	9.40	1.430	4.37	140	9.0		•	•
ICM 095	9.50	1.450	4.35	140	9.0		•	•
ICM 096	9.60	1.470	4.33	140	9.0		•	
ICM 097	9.70	1.490	4.31	140	9.0		•	•
ICM 098	9.80	1.510	4.29	140	9.0		•	
ICM 099	9.90	1.520	4.28	140	9.0		•	•
ICM 100	10.00	1.500	4.70	140	10.0		•	•
ICM 101	10.10	1.520	4.68	140	10.0		•	
ICM 102	10.20	1.540	4.66	140	10.0		•	•
ICM 103	10.30	1.550	4.65	140	10.0		•	•
ICM 104	10.40	1.570	4.63	140	10.0		•	•

• The drill head features a T-land on the cutting edge • For cutting conditions see pages 68-76

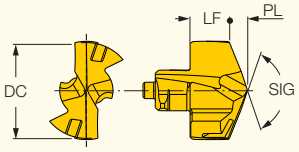
(1) Seat size code

For tools, see pages: DCN-MM (21) • DCN-N-5D-BD (99) • DCN-N-8D-BD (99) • DCN-PICCO (21) • MNC-5D (111) • MNC-7/8D (112) • DCN A-1.5D (7) • DCN R-1.5D (8) • DCN A-3D (9) • DCN R-3D (10) • DCN A-5D (11) • DCN R-5D (12) • DCN A-8D (13) • DCN R-8D (14) • DCN R-10D (14) • DCN R-12D (15) • DCN C-3D (16) • DCN C-5D (16) • DCN C-8D (17) • DCN C-12D (17) • DCNS-3D (18) • DCNS-5D (19) • DCNM (20) • DCNT (M8-M24) (168)

Continued

SUMOCHAM

ICM
Exchangeable SUMO-CHAM Drilling Heads for Machining ISO M and ISO S Materials



Designation	Dimensions DC	PL	LF	SIG	SSC(1)	Tough ↔ Hard IC908	IC907
ICM 105	10.50	1.590	4.61	140	10.0	•	•
ICM 106	10.60	1.610	4.59	140	10.0	•	•
ICM 107	10.70	1.630	4.57	140	10.0	•	•
ICM 108	10.80	1.650	4.55	140	10.0	•	
ICM 109	10.90	1.660	4.54	140	10.0	•	
ICM 110	11.00	1.660	4.94	140	11.0	•	•
ICM 111	11.10	1.680	4.92	140	11.0	•	•
ICM 112	11.20	1.700	4.90	140	11.0	•	•
ICM 113	11.30	1.710	4.89	140	11.0	•	
ICM 114	11.40	1.730	4.87	140	11.0	•	
ICM 115	11.50	1.750	4.85	140	11.0	•	•
ICM 116	11.60	1.770	4.83	140	11.0	•	
ICM 117	11.70	1.790	4.81	140	11.0	•	
ICM 118	11.80	1.810	4.79	140	11.0	•	•
ICM 119	11.90	1.820	4.78	140	11.0	•	•
ICM 120	12.00	1.810	5.19	140	12.0	•	•
ICM 121	12.10	1.830	5.17	140	12.0	•	
ICM 122	12.20	1.850	5.15	140	12.0	•	
ICM 123	12.30	1.860	5.14	140	12.0	•	•
ICM 124	12.40	1.880	5.12	140	12.0	•	•
ICM 125	12.50	1.900	5.10	140	12.0	•	•
ICM 126	12.60	1.920	5.08	140	12.0	•	
ICM 127	12.70	1.940	5.06	140	12.0	•	•
ICM 128	12.80	1.960	5.04	140	12.0	•	
ICM 129	12.90	1.970	5.03	140	12.0	•	•
ICM 130	13.00	1.950	5.65	140	13.0	•	•
ICM 131	13.10	1.970	5.63	140	13.0	•	•
ICM 132	13.20	1.990	5.61	140	13.0	•	
ICM 133	13.30	2.000	5.60	140	13.0	•	
ICM 134	13.40	2.020	5.58	140	13.0	•	
ICM 135	13.50	2.040	5.56	140	13.0	•	•
ICM 136	13.60	2.060	5.54	140	13.0	•	•
ICM 137	13.70	2.080	5.52	140	13.0	•	
ICM 138	13.80	2.100	5.50	140	13.0	•	
ICM 139	13.90	2.110	5.49	140	13.0	•	
ICM 140	14.00	2.110	6.04	140	14.0	•	•
ICM 141	14.10	2.130	6.02	140	14.0	•	
ICM 142	14.20	2.150	6.00	140	14.0	•	•
ICM 143	14.30	2.160	5.99	140	14.0	•	•
ICM 144	14.40	2.180	5.97	140	14.0	•	
ICM 145	14.50	2.200	5.95	140	14.0	•	•
ICM 146	14.60	2.220	5.93	140	14.0	•	
ICM 147	14.70	2.240	5.91	140	14.0	•	•
ICM 148	14.80	2.260	5.89	140	14.0	•	
ICM 149	14.90	2.270	5.88	140	14.0	•	
ICM 150	15.00	2.260	6.47	140	15.0	•	•
ICM 151	15.10	2.280	6.45	140	15.0	•	
ICM 152	15.20	2.300	6.43	140	15.0	•	
ICM 153	15.30	2.310	6.42	140	15.0	•	
ICM 154	15.40	2.330	6.40	140	15.0	•	
ICM 155	15.50	2.350	6.38	140	15.0	•	•
ICM 156	15.60	2.370	6.36	140	15.0	•	
ICM 157	15.70	2.390	6.34	140	15.0	•	•
ICM 158	15.80	2.410	6.32	140	15.0	•	
ICM 159	15.90	2.420	6.31	140	15.0	•	•
ICM 160	16.00	2.420	6.88	140	16.0	•	•

• The drill head features a T-land on the cutting edge • For cutting conditions see pages 68-76

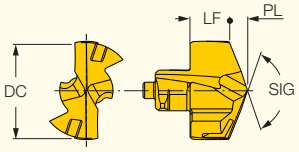
(1) Seat size code

For tools, see pages: DCN-MM (21) • DCN-N-5D-BD (99) • DCN-N-8D-BD (99) • DCN-PICCO (21) • MNC-5D (111) • MNC-7/8D (112) • DCN A-1.5D (7) • DCN R-1.5D (8) • DCN A-3D (9) • DCN R-3D (10) • DCN A-5D (11) • DCN R-5D (12) • DCN A-8D (13) • DCN R-8D (14) • DCN R-10D (14) • DCN R-12D (15) • DCN C-3D (16) • DCN C-5D (16) • DCN C-8D (17) • DCN C-12D (17) • DCNS-3D (18) • DCNS-5D (19) • DCNM (20) • DCNT (M8-M24) (168)

SUMOCHAM

ICM

Exchangeable SUMO-CHAM Drilling Heads for Machining ISO M and ISO S Materials



Designation	Dimensions					Tough ↔ Hard	
	DC	PL	LF	SIG	SSC(1)	IC908	IC907
ICM 1605	16.05	2.430	6.87	140	16.0	•	
ICM 161	16.10	2.440	6.86	140	16.0	•	
ICM 162	16.20	2.460	6.84	140	16.0	•	
ICM 163	16.30	2.470	6.83	140	16.0	•	
ICM 164	16.40	2.490	6.81	140	16.0	•	•
ICM 165	16.50	2.510	6.79	140	16.0	•	•
ICM 166	16.60	2.530	6.77	140	16.0	•	
ICM 167	16.70	2.550	6.75	140	16.0	•	•
ICM 168	16.80	2.570	6.73	140	16.0	•	
ICM 169	16.90	2.580	6.72	140	16.0	•	
ICM 170	17.00	2.570	7.33	140	17.0	•	•
ICM 171	17.10	2.590	7.31	140	17.0	•	•
ICM 172	17.20	2.610	7.29	140	17.0	•	
ICM 173	17.30	2.620	7.28	140	17.0	•	
ICM 174	17.40	2.640	7.26	140	17.0	•	
ICM 175	17.50	2.660	7.24	140	17.0	•	•
ICM 176	17.60	2.680	7.22	140	17.0	•	
ICM 177	17.70	2.700	7.20	140	17.0	•	
ICM 178	17.80	2.720	7.18	140	17.0	•	
ICM 179	17.90	2.730	7.17	140	17.0	•	•
ICM 180	18.00	2.720	7.78	140	18.0	•	•
ICM 182	18.20	2.760	7.74	140	18.0	•	
ICM 183	18.30	2.770	7.73	140	18.0	•	
ICM 184	18.40	2.790	7.71	140	18.0	•	
ICM 185	18.50	2.810	7.69	140	18.0	•	•
ICM 186	18.60	2.830	7.67	140	18.0	•	
ICM 187	18.70	2.850	7.65	140	18.0	•	
ICM 188	18.80	2.870	7.63	140	18.0	•	
ICM 189	18.90	2.880	7.62	140	18.0	•	
ICM 190	19.00	2.870	8.13	140	19.0	•	•
ICM 1905	19.05	2.880	8.12	140	19.0	•	•
ICM 191	19.10	2.890	8.11	140	19.0	•	
ICM 192	19.20	2.910	8.09	140	19.0	•	
ICM 1925	19.25	2.920	8.08	140	19.0	•	
ICM 1927	19.27	2.920	8.08	140	19.0	•	
ICM 193	19.30	2.920	8.08	140	19.0	•	
ICM 194	19.40	2.940	8.06	140	19.0	•	
ICM 195	19.50	2.960	8.04	140	19.0	•	
ICM 196	19.60	2.980	8.02	140	19.0	•	
ICM 197	19.70	3.000	8.00	140	19.0	•	•
ICM 198	19.80	3.020	7.98	140	19.0	•	
ICM 199	19.90	3.030	7.97	140	19.0	•	
ICM 200	20.00	3.020	8.58	140	20.0	•	•
ICM 201	20.10	3.040	8.56	140	20.0	•	
ICM 202	20.20	3.060	8.54	140	20.0	•	
ICM 203	20.30	3.070	8.53	140	20.0	•	
ICM 204	20.40	3.090	8.51	140	20.0	•	
ICM 205	20.50	3.110	8.49	140	20.0	•	•
ICM 206	20.60	3.130	8.47	140	20.0	•	
ICM 207	20.70	3.150	8.45	140	20.0	•	
ICM 208	20.80	3.170	8.43	140	20.0	•	
ICM 209	20.90	3.180	8.42	140	20.0	•	
ICM 210	21.00	3.200	8.98	140	21.0	•	•
ICM 211	21.10	3.220	8.96	140	21.0	•	
ICM 212	21.20	3.240	8.94	140	21.0	•	

• The drill head features a T-land on the cutting edge • For cutting conditions see pages 68-76

(1) Seat size code

For tools, see pages: DCN-MM (21) • DCN-N-5D-BD (99) • DCN-N-8D-BD (99) • DCN-PICCO (21) • MNC-5D (111) • MNC-7/8D (112) • DCN A-1.5D (7) • DCN R-1.5D (8) • DCN A-3D (9) • DCN R-3D (10) • DCN A-5D (11) • DCN R-5D (12) • DCN A-8D (13) • DCN R-8D (14) • DCN R-10D (14) • DCN R-12D (15) • DCN C-3D (16) • DCN C-5D (16) • DCN C-8D (17) • DCN C-12D (17) • DCNS-3D (18) • DCNS-5D (19) • DCNM (20) • DCNT (M8-M24) (168)

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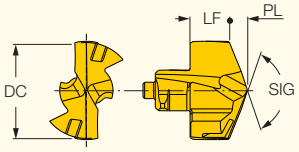
SUMOCHAM

ICM
Exchangeable SUMO-CHAM Drilling Heads for Machining ISO M and ISO S Materials



Designation	Dimensions					Tough ↔ Hard	
	DC	PL	LF	SIG	SSC(1)	IC908	IC907
ICM 213	21.30	3.250	8.93	140	21.0	•	
ICM 214	21.40	3.270	9.91	140	21.0	•	
ICM 215	21.50	3.290	9.89	140	21.0	•	
ICM 216	21.60	3.310	8.87	140	21.0	•	
ICM 217	21.70	3.330	8.85	140	21.0	•	
ICM 218	21.80	3.350	8.83	140	21.0	•	
ICM 219	21.90	3.360	8.82	140	21.0	•	
ICM 220	22.00	3.350	9.41	140	22.0	•	•
ICM 221	22.10	3.370	9.39	140	22.0	•	
ICM 222	22.20	3.390	9.37	140	22.0	•	
ICM 223	22.30	3.400	9.36	140	22.0	•	
ICM 224	22.40	3.420	9.34	140	22.0	•	
ICM 225	22.50	3.440	9.32	140	22.0	•	
ICM 226	22.60	3.460	9.30	140	22.0	•	
ICM 227	22.70	3.480	9.28	140	22.0	•	
ICM 228	22.80	3.500	9.26	140	22.0	•	
ICM 229	22.90	3.510	9.25	140	22.0	•	
ICM 230	23.00	3.510	9.82	140	23.0	•	
ICM 232	23.20	3.550	9.78	140	23.0	•	
ICM 233	23.30	3.560	9.77	140	23.0	•	
ICM 234	23.40	3.580	9.75	140	23.0	•	
ICM 235	23.50	3.600	9.73	140	23.0	•	
ICM 237	23.70	3.640	9.69	140	23.0	•	
ICM 238	23.80	3.660	9.67	140	23.0	•	
ICM 239	23.90	3.670	9.66	140	23.0	•	
ICM 240	24.00	3.640	10.26	140	24.0	•	
ICM 241	24.10	3.660	10.24	140	24.0	•	
ICM 242	24.20	3.680	10.22	140	24.0	•	
ICM 243	24.30	3.690	10.21	140	24.0	•	
ICM 244	24.40	3.710	10.19	140	24.0	•	
ICM 245	24.50	3.730	10.17	140	24.0	•	
ICM 246	24.60	3.750	10.15	140	24.0	•	
ICM 247	24.70	3.770	10.13	140	24.0	•	
ICM 248	24.80	3.790	10.11	140	24.0	•	
ICM 249	24.90	3.800	10.10	140	24.0	•	
ICM 250	25.00	3.840	10.66	140	25.0	•	
ICM 251	25.10	3.860	10.64	140	25.0	•	
ICM 252	25.20	3.880	10.62	140	25.0	•	
ICM 253	25.30	3.890	10.61	140	25.0	•	
ICM 254	25.40	3.910	10.59	140	25.0	•	
ICM 255	25.50	3.930	10.57	140	25.0	•	
ICM 256	25.60	3.950	10.55	140	25.0	•	
ICM 2565	25.65	3.960	10.54	140	25.0	•	
ICM 2567	25.67	3.960	10.54	140	25.0	•	
ICM 257	25.70	3.970	10.53	140	25.0	•	
ICM 258	25.80	3.990	10.51	140	25.0	•	
ICM 259	25.90	4.000	10.50	140	25.0	•	
ICM 260	26.00	3.970	11.10	140	26.0	•	
ICM 261	26.10	3.990	11.08	140	26.0	•	
ICM 262	26.20	4.010	11.06	140	26.0	•	
ICM 263	26.30	4.020	11.05	140	26.0	•	
ICM 264	26.40	4.040	11.03	140	26.0	•	
ICM 265	26.50	4.060	11.01	140	26.0	•	
ICM 266	26.60	4.080	10.99	140	26.0	•	
ICM 267	26.70	4.100	10.97	140	26.0	•	
ICM 268	26.80	4.120	10.95	140	26.0	•	
ICM 269	26.90	4.130	10.94	140	26.0	•	

• The drill head features a T-land on the cutting edge • For cutting conditions see pages 68-76

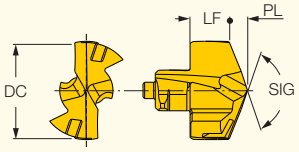
(1) Seat size code

For tools, see pages: DCN-MM (21) • DCN-N-5D-BD (99) • DCN-N-8D-BD (99) • DCN-PICCO (21) • MNC-5D (111) • MNC-7/8D (112) • DCN A-1.5D (7) • DCN R-1.5D (8) • DCN A-3D (9) • DCN R-3D (10) • DCN A-5D (11) • DCN R-5D (12) • DCN A-8D (13) • DCN R-8D (14) • DCN R-10D (14) • DCN R-12D (15) • DCN C-3D (16) • DCN C-5D (16) • DCN C-8D (17) • DCN C-12D (17) • DCNS-3D (18) • DCNS-5D (19) • DCNM (20) • DCNT (M8-M24) (168)

SUMOCHAM

ICM

Exchangeable SUMO-CHAM Drilling Heads for Machining ISO M and ISO S Materials



Designation	Dimensions DC	PL	LF	SIG	SSC(1)	Tough ↔ Hard IC908	IC907
ICM 270	27.00	4.130	11.52	140	27.0	•	
ICM 271	27.10	4.150	11.50	140	27.0	•	
ICM 272	27.20	4.170	11.48	140	27.0	•	
ICM 273	27.30	4.180	11.47	140	27.0	•	
ICM 274	27.40	4.200	11.45	140	27.0	•	
ICM 275	27.50	4.220	11.43	140	27.0	•	
ICM 276	27.60	4.240	11.41	140	27.0	•	
ICM 277	27.70	4.260	11.39	140	27.0	•	
ICM 278	27.80	4.280	11.37	140	27.0	•	
ICM 279	27.90	4.290	11.36	140	27.0	•	
ICM 280	28.00	4.280	11.94	140	28.0	•	
ICM 281	28.10	4.300	11.92	140	28.0	•	
ICM 282	28.20	4.320	11.90	140	28.0	•	
ICM 283	28.30	4.330	11.89	140	28.0	•	
ICM 284	28.40	4.350	11.87	140	28.0	•	
ICM 285	28.50	4.370	11.85	140	28.0	•	
ICM 286	28.60	4.390	11.83	140	28.0	•	
ICM 287	28.70	4.410	11.81	140	28.0	•	
ICM 288	28.80	4.430	11.79	140	28.0	•	
ICM 289	28.90	4.440	11.78	140	28.0	•	
ICM 290	29.00	4.460	12.34	140	29.0	•	
ICM 291	29.10	4.480	12.32	140	29.0	•	
ICM 292	29.20	4.500	12.30	140	29.0	•	
ICM 293	29.30	4.510	12.29	140	29.0	•	
ICM 294	29.40	4.530	12.27	140	29.0	•	
ICM 295	29.50	4.550	12.25	140	29.0	•	
ICM 296	29.60	4.570	12.23	140	29.0	•	
ICM 297	29.70	4.590	12.21	140	29.0	•	
ICM 298	29.80	4.610	12.19	140	29.0	•	
ICM 300	30.00	4.610	12.77	140	30.0	•	
ICM 301	30.10	4.630	12.75	140	30.0	•	
ICM 302	30.20	4.650	12.73	140	30.0	•	
ICM 303	30.30	4.660	12.72	140	30.0	•	
ICM 304	30.40	4.680	12.70	140	30.0	•	
ICM 305	30.50	4.700	12.68	140	30.0	•	
ICM 306	30.60	4.720	12.66	140	30.0	•	
ICM 307	30.70	4.740	12.64	140	30.0	•	
ICM 308	30.80	4.760	12.62	140	30.0	•	
ICM 309	30.90	4.770	12.61	140	30.0	•	
ICM 310	31.00	4.790	13.17	140	31.0	•	
ICM 311	31.10	4.810	13.15	140	31.0	•	
ICM 312	31.20	4.830	13.13	140	31.0	•	
ICM 315	31.50	4.880	13.08	140	31.0	•	
ICM 316	31.60	4.900	13.06	140	31.0	•	
ICM 317	31.70	4.920	13.04	140	31.0	•	
ICM 3175	31.75	4.930	13.03	140	31.0	•	
ICM 318	31.80	4.940	13.02	140	31.0	•	
ICM 319	31.90	4.950	13.01	140	31.0	•	
ICM 320	32.00	4.890	13.65	140	32.0	•	
ICM 321	32.10	4.910	13.63	140	32.0	•	
ICM 322	32.20	4.930	13.61	140	32.0	•	
ICM 323	32.30	4.940	13.60	140	32.0	•	
ICM 324	32.40	4.960	13.58	140	32.0	•	
ICM 325	32.50	4.980	13.56	140	32.0	•	
ICM 326	32.60	5.000	13.54	140	32.0	•	
ICM 327	32.70	5.020	13.52	140	32.0	•	
ICM 328	32.80	5.040	13.50	140	32.0	•	
ICM 329	32.90	5.050	13.49	140	32.0	•	

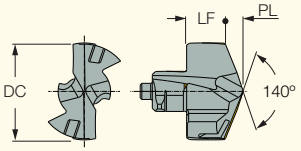
• The drill head features a T-land on the cutting edge • For cutting conditions see pages 68-76

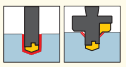
(1) Seat size code

For tools, see pages: DCN-MM (21) • DCN-N-5D-BD (99) • DCN-N-8D-BD (99) • DCN-PICCO (21) • MNC-5D (111) • MNC-7/8D (112) • DCN A-1.5D (7) • DCN R-1.5D (8) • DCN A-3D (9) • DCN R-3D (10) • DCN A-5D (11) • DCN R-5D (12) • DCN A-8D (13) • DCN R-8D (14) • DCN R-10D (14) • DCN R-12D (15) • DCN C-3D (16) • DCN C-5D (16) • DCN C-8D (17) • DCN C-12D (17) • DCNS-3D (18) • DCNS-5D (19) • DCNM (20) • DCNT (M8-M24) (168)

SUMOCHAM

ICN
Exchangeable SUMO-CHAM Drilling Heads for Machining ISO N Materials





Designation	Dimensions DC	PL	LF	SIG	SSC(1)		IC08
ICN 0476	4.76	0.710	2.84	140	4.0	SK DCN 4-4.99	•
ICN 051	5.10	0.750	2.95	140	5.0	SK DCN 5-5.99	•
ICN 054	5.40	0.730	2.97	140	5.0	SK DCN 5-5.99	•
ICN 0635	6.35	1.020	2.98	140	6.0		•
ICN 0794	7.94	1.180	3.42	140	7.0		•
ICN 0952	9.52	1.440	4.36	140	9.0		•
ICN 100	10.00	1.500	4.70	140	10.0		•
ICN 102	10.20	1.540	4.66	140	10.0		•
ICN 103	10.30	1.550	4.65	140	10.0		•
ICN 105	10.50	1.590	4.61	140	10.0		•
ICN 107	10.70	1.630	4.57	140	10.0		•
ICN 108	10.80	1.650	4.55	140	10.0		•
ICN 110	11.00	1.670	4.93	140	11.0		•
ICN 111	11.10	1.690	4.91	140	11.0		•
ICN 115	11.50	1.760	4.84	140	11.0		•
ICN 119	11.90	1.830	4.77	140	11.0		•
ICN 120	12.00	1.820	5.18	140	12.0		•
ICN 123	12.30	1.870	5.13	140	12.0		•
ICN 125	12.50	1.910	5.09	140	12.0		•
ICN 127	12.70	1.950	5.05	140	12.0		•
ICN 130	13.00	1.960	5.64	140	13.0		•
ICN 135	13.50	2.050	5.55	140	13.0		•
ICN 137	13.70	2.090	5.51	140	13.0		•
ICN 140	14.00	2.120	6.03	140	14.0		•
ICN 141	14.10	2.140	6.01	140	14.0		•
ICN 142	14.20	2.160	5.99	140	14.0		•
ICN 1427	14.27	2.170	5.98	140	14.0		•
ICN 145	14.50	2.210	5.94	140	14.0		•
ICN 147	14.70	2.250	5.90	140	14.0		•
ICN 150	15.00	2.270	6.46	140	15.0		•
ICN 157	15.70	2.400	6.33	140	15.0		•
ICN 158	15.80	2.420	6.31	140	15.0		•
ICN 1587	15.87	2.430	6.30	140	15.0		•
ICN 1588	15.88	2.430	6.30	140	15.0		•
ICN 160	16.00	2.420	6.88	140	16.0		•
ICN 165	16.50	2.510	6.79	140	16.0		•
ICN 167	16.70	2.550	6.75	140	16.0		•
ICN 170	17.00	2.590	7.31	140	17.0		•
ICN 175	17.50	2.680	7.22	140	17.0		•
ICN 180	18.00	2.730	7.77	140	18.0		•
ICN 185	18.50	2.820	7.68	140	18.0		•
ICN 190	19.00	2.880	8.12	140	19.0		•
ICN 1905	19.05	2.890	8.11	140	19.0		•
ICN 195	19.50	2.970	8.03	140	19.0		•
ICN 2062	20.62	3.130	8.47	140	20.0		•
ICN 2222	22.22	3.360	9.40	140	22.0		•
ICN 234	23.40	3.530	9.80	140	23.0		•
ICN 250	25.00	3.800	10.70	140	25.0		•
ICN 254	25.40	3.870	10.63	140	25.0		•
ICN 2857	28.57	4.350	11.87	140	28.0		•
ICN 3175	31.75	4.900	13.06	140	31.0		•

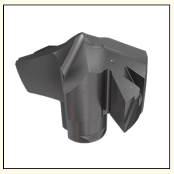
• The drill is manufactured with a sharp cutting edge and polished flutes • For cutting conditions see pages 68-76

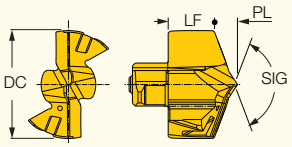
(1) Seat size code

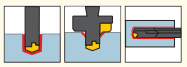
For tools, see pages: DCN-MM (21) • DCN-N-5D-BD (99) • DCN-N-8D-BD (99) • DCN-PICCO (21) • DCN A-1.5D (7) • DCN R-1.5D (8) • DCN A-3D (9) • DCN R-3D (10) • DCN A-5D (11) • DCN R-5D (12) • DCN A-8D (13) • DCN R-8D (14) • DCN R-10D (14) • DCN R-12D (15) • DCN C-3D (16) • DCN C-5D (16) • DCN C-8D (17) • DCN C-12D (17) • DCNS-3D (18) • DCNS-5D (19) • DCNM (20) • DCNT (M8-M24) (168)

SUMOCHAM

QCP-2M
Exchangeable Double Margin, Self-Centering SUMO-CHAM Drilling Heads, for ISO P Materials with High Surface Finish Results







Designation	Dimensions DC	LF	PL	SIG	SSC(2)		IC908
QCP 045 (1)	4.50	2.84	0.910	136	4.5	SK DCN 4-4.99	•
QCP 046 (1)	4.60	2.82	0.930	136	4.5	SK DCN 4-4.99	•
QCP 048 (1)	4.80	2.78	0.970	136	4.5	SK DCN 4-4.99	•
QCP 050 (1)	5.00	3.05	1.030	136	5.0	SK DCN 5-5.99	•
QCP 051 (1)	5.10	3.03	1.050	136	5.0	SK DCN 5-5.99	•
QCP 055 (1)	5.50	2.95	1.190	136	5.5	SK DCN 5-5.99	•
QCP 060-2M	6.00	2.79	1.210	136	6.0		•
QCP 061-2M	6.10	2.77	1.230	136	6.0		•
QCP 062-2M	6.20	2.75	1.250	136	6.0		•
QCP 063-2M	6.30	2.73	1.270	136	6.0		•
QCP 0635-2M	6.35	2.72	1.280	136	6.0		•
QCP 064-2M	6.40	2.71	1.290	136	6.0		•
QCP 065-2M	6.50	2.99	1.310	136	6.5		•
QCP 066-2M	6.60	2.97	1.330	136	6.5		•
QCP 067-2M	6.70	2.95	1.350	136	6.5		•
QCP 068-2M	6.80	2.93	1.370	136	6.5		•
QCP 069-2M	6.90	2.91	1.390	136	6.5		•
QCP 070-2M	7.00	3.25	1.350	136	7.0		•
QCP 071-2M	7.10	3.23	1.370	136	7.0		•
QCP 072-2M	7.20	3.21	1.390	136	7.0		•
QCP 073-2M	7.30	3.19	1.410	136	7.0		•
QCP 074-2M	7.40	3.17	1.430	136	7.0		•
QCP 075-2M	7.50	3.15	1.450	136	7.0		•
QCP 076-2M	7.60	3.13	1.470	136	7.0		•
QCP 077-2M	7.70	3.11	1.490	136	7.0		•
QCP 078-2M	7.80	3.09	1.510	136	7.0		•
QCP 079-2M	7.90	3.07	1.530	136	7.0		•
QCP 080-2M	8.00	3.78	1.620	136	8.0		•
QCP 081-2M	8.10	3.76	1.640	136	8.0		•
QCP 082-2M	8.20	3.74	1.660	136	8.0		•
QCP 083-2M	8.30	3.72	1.680	136	8.0		•
QCP 084-2M	8.40	3.70	1.700	136	8.0		•
QCP 085-2M	8.50	3.68	1.720	136	8.0		•
QCP 086-2M	8.60	3.66	1.740	136	8.0		•
QCP 087-2M	8.70	3.64	1.760	136	8.0		•
QCP 088-2M	8.80	3.62	1.780	136	8.0		•
QCP 090-2M	9.00	3.89	1.910	136	9.0		•
QCP 091-2M	9.10	3.87	1.930	136	9.0		•
QCP 092-2M	9.20	3.85	1.950	136	9.0		•
QCP 093-2M	9.30	3.83	1.970	136	9.0		•
QCP 094-2M	9.40	3.81	1.990	136	9.0		•
QCP 095-2M	9.50	3.79	2.010	136	9.0		•
QCP 096-2M	9.60	3.77	2.030	136	9.0		•
QCP 097-2M	9.70	3.75	2.050	136	9.0		•
QCP 098-2M	9.80	3.73	2.070	136	9.0		•
QCP 099-2M	9.90	3.71	2.090	136	9.0		•
QCP 100-2M	10.00	4.70	2.090	136	10.0		•
QCP 101-2M	10.10	4.68	2.110	136	10.0		•
QCP 102-2M	10.20	4.66	2.130	136	10.0		•
QCP 103-2M	10.30	4.64	2.150	136	10.0		•
QCP 104-2M	10.40	4.62	2.170	136	10.0		•
QCP 105-2M	10.50	4.60	2.190	136	10.0		•
QCP 106-2M	10.60	4.58	2.210	136	10.0		•
QCP 107-2M	10.70	4.56	2.230	136	10.0		•
QCP 108-2M	10.80	4.54	2.250	136	10.0		•

• Provides high surface finish of up to 1.6 Ra hole cylindricity and straightness of up to 0.05 mm • For cutting conditions see pages 68-76

(1) Single margin

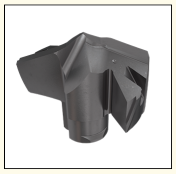
(2) Seat size code

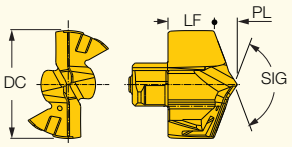
For tools, see pages: DCN-MM (21) • DCN-N-5D-BD (99) • DCN-N-8D-BD (99) • DCN-PICCO (21) • MNC-5D (111) • MNC-7/8D (112) • DCN A-1.5D (7) • DCN R-1.5D (8) • DCN A-3D (9) • DCN R-3D (10) • DCN A-5D (11) • DCN R-5D (12) • DCN A-8D (13) • DCN R-8D (14) • DCN R-10D (14) • DCN R-12D (15) • DCN C-3D (16) • DCN C-5D (16) • DCN C-8D (17) • DCN C-12D (17) • DCNS-3D (18) • DCNS-5D (19) • DCNM (20) • DCNT (M8-M24) (168) • MNSNT (358)

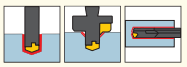
Continued

SUMOCHAM

QCP-2M
Exchangeable Double Margin, Self-Centering SUMO-CHAM Drilling Heads, for ISO P Materials with High Surface Finish Results







Designation	Dimensions DC	LF	PL	SIG	SSC[2]	IC908
QCP 109-2M	10.90	4.52	2.270	136	10.0	•
QCP 110-2M	11.00	4.93	2.320	136	11.0	•
QCP 111-2M	11.10	4.91	2.340	136	11.0	•
QCP 112-2M	11.20	4.89	2.360	136	11.0	•
QCP 113-2M	11.30	4.87	2.380	136	11.0	•
QCP 114-2M	11.40	4.85	2.400	136	11.0	•
QCP 115-2M	11.50	4.83	2.420	136	11.0	•
QCP 116-2M	11.60	4.81	2.440	136	11.0	•
QCP 117-2M	11.70	4.79	2.460	136	11.0	•
QCP 118-2M	11.80	4.77	2.480	136	11.0	•
QCP 119-2M	11.90	4.75	2.500	136	11.0	•
QCP 120-2M	12.00	5.18	2.450	136	12.0	•
QCP 121-2M	12.10	5.16	2.470	136	12.0	•
QCP 122-2M	12.20	5.14	2.490	136	12.0	•
QCP 123-2M	12.30	5.12	2.510	136	12.0	•
QCP 124-2M	12.40	5.10	2.530	136	12.0	•
QCP 125-2M	12.50	5.08	2.550	136	12.0	•
QCP 126-2M	12.60	5.06	2.570	136	12.0	•
QCP 127-2M	12.70	5.04	2.590	136	12.0	•
QCP 128-2M	12.80	5.02	2.610	136	12.0	•
QCP 129-2M	12.90	5.00	2.630	136	12.0	•
QCP 130-2M	13.00	5.64	2.710	136	13.0	•
QCP 131-2M	13.10	5.62	2.730	136	13.0	•
QCP 132-2M	13.20	5.60	2.750	136	13.0	•
QCP 133-2M	13.30	5.58	2.770	136	13.0	•
QCP 134-2M	13.40	5.56	2.790	136	13.0	•
QCP 135-2M	13.50	5.54	2.810	136	13.0	•
QCP 136-2M	13.60	5.52	2.830	136	13.0	•
QCP 137-2M	13.70	5.50	2.850	136	13.0	•
QCP 138-2M	13.80	5.48	2.870	136	13.0	•
QCP 139-2M	13.90	5.46	2.890	136	13.0	•
QCP 140-2M	14.00	6.03	2.930	136	14.0	•
QCP 141-2M	14.10	6.01	2.950	136	14.0	•
QCP 142-2M	14.20	5.99	2.970	136	14.0	•
QCP 143-2M	14.30	5.97	2.990	136	14.0	•
QCP 144-2M	14.40	5.95	3.010	136	14.0	•
QCP 145-2M	14.50	5.93	3.030	136	14.0	•
QCP 146-2M	14.60	5.91	3.050	136	14.0	•
QCP 147-2M	14.70	5.89	3.070	136	14.0	•
QCP 148-2M	14.80	5.87	3.090	136	14.0	•
QCP 149-2M	14.90	5.85	3.110	136	14.0	•
QCP 150-2M	15.00	6.46	3.180	136	15.0	•
QCP 151-2M	15.10	6.44	3.200	136	15.0	•
QCP 152-2M	15.20	6.42	3.220	136	15.0	•
QCP 153-2M	15.30	6.40	3.240	136	15.0	•
QCP 155-2M	15.50	6.36	3.280	136	15.0	•
QCP 156-2M	15.60	6.34	3.300	136	15.0	•
QCP 157-2M	15.70	6.32	3.320	136	15.0	•
QCP 158-2M	15.80	6.30	3.340	136	15.0	•
QCP 159-2M	15.90	6.28	3.360	136	15.0	•
QCP 160-2M	16.00	6.88	3.390	136	16.0	•
QCP 161-2M	16.10	6.86	3.410	136	16.0	•
QCP 162-2M	16.20	6.84	3.430	136	16.0	•
QCP 163-2M	16.30	6.82	3.450	136	16.0	•
QCP 165-2M	16.50	6.78	3.490	136	16.0	•

• Provides high surface finish of up to 1.6 Ra hole cylindricity and straightness of up to 0.05 mm • For cutting conditions see pages 68-76

(1) Single margin

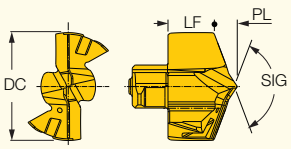
(2) Seat size code

For tools, see pages: DCN-MM (21) • DCN-N-5D-BD (99) • DCN-N-8D-BD (99) • DCN-PICCO (21) • MNC-5D (111) • MNC-7/8D (112) • DCN A-1.5D (7) • DCN R-1.5D (8) • DCN A-3D (9) • DCN R-3D (10) • DCN A-5D (11) • DCN R-5D (12) • DCN A-8D (13) • DCN R-8D (14) • DCN R-10D (14) • DCN R-12D (15) • DCN C-3D (16) • DCN C-5D (16) • DCN C-8D (17) • DCN C-12D (17) • DCNS-3D (18) • DCNS-5D (19) • DCNM (20) • DCNT (M8-M24) (168) • MNSNT (358)

SUMOCHAM

QCP-2M

Exchangeable Double Margin, Self-Centering SUMO-CHAM Drilling Heads, for ISO P Materials with High Surface Finish Results



Designation	Dimensions					IC908
	DC	LF	PL	SIG	SSC(2)	
QCP 166-2M	16.60	6.76	3.510	136	16.0	•
QCP 167-2M	16.70	6.74	3.530	136	16.0	•
QCP 170-2M	17.00	7.31	3.570	136	17.0	•
QCP 171-2M	17.10	7.29	3.590	136	17.0	•
QCP 172-2M	17.20	7.27	3.610	136	17.0	•
QCP 174-2M	17.40	7.23	3.650	136	17.0	•
QCP 175-2M	17.50	7.21	3.670	136	17.0	•
QCP 177-2M	17.70	7.17	3.710	136	17.0	•
QCP 178-2M	17.80	7.15	3.730	136	17.0	•
QCP 179-2M	17.90	7.13	3.750	136	17.0	•
QCP 180-2M	18.00	7.77	3.780	136	18.0	•
QCP 181-2M	18.10	7.75	3.800	136	18.0	•
QCP 183-2M	18.30	7.71	3.840	136	18.0	•
QCP 185-2M	18.50	7.67	3.880	136	18.0	•
QCP 186-2M	18.60	7.65	3.900	136	18.0	•
QCP 187-2M	18.70	7.63	3.920	136	18.0	•
QCP 188-2M	18.80	7.61	3.940	136	18.0	•
QCP 189-2M	18.90	7.59	3.960	136	18.0	•
QCP 190-2M	19.00	8.12	3.990	136	19.0	•
QCP 1905-2M	19.05	8.11	4.000	136	19.0	•
QCP 191-2M	19.10	8.10	4.010	136	19.0	•
QCP 192-2M	19.20	8.08	4.030	136	19.0	•
QCP 1927-2M	19.27	8.07	4.040	136	19.0	•
QCP 193-2M	19.30	8.06	4.050	136	19.0	•
QCP 194-2M	19.40	8.04	4.070	136	19.0	•
QCP 195-2M	19.50	8.02	4.090	136	19.0	•
QCP 197-2M	19.70	7.98	4.130	136	19.0	•
QCP 198-2M	19.80	7.96	4.150	136	19.0	•
QCP 199-2M	19.90	7.94	4.170	136	19.0	•
QCP 200-2M	20.00	8.58	4.240	136	20.0	•
QCP 201-2M	20.10	8.56	4.260	136	20.0	•
QCP 202-2M	20.20	8.54	4.280	136	20.0	•
QCP 203-2M	20.30	8.52	4.300	136	20.0	•
QCP 204-2M	20.40	8.50	4.320	136	20.0	•
QCP 205-2M	20.50	8.48	4.340	136	20.0	•
QCP 206-2M	20.60	8.46	4.360	136	20.0	•
QCP 207-2M	20.70	8.44	4.380	136	20.0	•
QCP 209-2M	20.90	8.40	4.420	136	20.0	•
QCP 210-2M	21.00	9.00	4.400	136	21.0	•
QCP 213-2M	21.30	8.94	4.460	136	21.0	•
QCP 215-2M	21.50	8.90	4.500	136	21.0	•
QCP 217-2M	21.70	8.86	4.540	136	21.0	•
QCP 218-2M	21.80	8.84	4.560	136	21.0	•
QCP 220-2M	22.00	9.44	4.600	136	22.0	•
QCP 221-2M	22.10	9.42	4.620	136	22.0	•
QCP 222-2M	22.20	9.40	4.640	136	22.0	•
QCP 223-2M	22.30	9.38	4.660	136	22.0	•
QCP 225-2M	22.50	9.34	4.700	136	22.0	•
QCP 226-2M	22.60	9.32	4.720	136	22.0	•
QCP 227-2M	22.70	9.30	4.740	136	22.0	•
QCP 230-2M	23.00	9.87	4.840	136	23.0	•
QCP 233-2M	23.30	9.81	4.900	136	23.0	•
QCP 234-2M	23.40	9.79	4.920	136	23.0	•
QCP 235-2M	23.50	9.77	4.940	136	23.0	•
QCP 237-2M	23.70	9.73	4.980	136	23.0	•
QCP 238-2M	23.80	9.71	5.000	136	23.0	•
QCP 240-2M	24.00	10.28	5.030	136	24.0	•
QCP 241-2M	24.10	10.26	5.050	136	24.0	•

• Provides high surface finish of up to 1.6 Ra hole cylindricity and straightness of up to 0.05 mm • For cutting conditions see pages 68-76

(1) Single margin

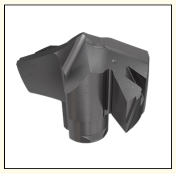
(2) Seat size code

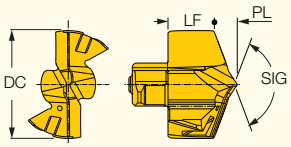
For tools, see pages: DCN-MM (21) • DCN-N-5D-BD (99) • DCN-N-8D-BD (99) • DCN-PICCO (21) • MNC-5D (111) • MNC-7/8D (112) • DCN A-1.5D (7) • DCN R-1.5D (8) • DCN A-3D (9) • DCN R-3D (10) • DCN A-5D (11) • DCN R-5D (12) • DCN A-8D (13) • DCN R-8D (14) • DCN R-10D (14) • DCN R-12D (15) • DCN C-3D (16) • DCN C-5D (16) • DCN C-8D (17) • DCN C-12D (17) • DCNS-3D (18) • DCNS-5D (19) • DCNM (20) • DCNT (M8-M24) (168) • MNSNT (358)

Continued

SUMOCHAM

QCP-2M
Exchangeable Double Margin, Self-Centering SUMO-CHAM Drilling Heads, for ISO P Materials with High Surface Finish Results





Designation	Dimensions DC	LF	PL	SIG	SSC(2)	IC908
QCP 242-2M	24.20	10.24	5.070	136	24.0	●
QCP 243-2M	24.30	10.22	5.090	136	24.0	●
QCP 245-2M	24.50	10.18	5.130	136	24.0	●
QCP 246-2M	24.60	10.16	5.150	136	24.0	●
QCP 247-2M	24.70	10.14	5.170	136	24.0	●
QCP 249-2M	24.90	10.10	5.210	136	24.0	●
QCP 250-2M	25.00	10.70	5.280	136	25.0	●
QCP 251-2M	25.10	10.68	5.300	136	25.0	●
QCP 252-2M	25.20	10.66	5.320	136	25.0	●
QCP 253-2M	25.30	10.64	5.340	136	25.0	●
QCP 254-2M	25.40	10.62	5.360	136	25.0	●
QCP 255-2M	25.50	10.60	5.380	136	25.0	●
QCP 256-2M	25.60	10.58	5.400	136	25.0	●
QCP 2567-2M	25.67	10.56	5.420	136	25.0	●
QCP 257-2M	25.70	10.56	5.420	136	25.0	●
QCP 258-2M	25.80	10.54	5.440	136	25.0	●
QCP 259-2M	25.90	10.52	5.460	136	25.0	●
QCP 260-IQ	26.00	11.12	5.500	136	26.0	●
QCP 265-IQ	26.50	11.02	5.610	136	26.0	●
QCP 270-IQ	27.00	11.55	5.720	136	27.0	●
QCP 275-IQ	27.50	11.45	5.820	136	27.0	●
QCP 280-IQ	28.00	11.97	5.930	136	28.0	●
QCP 285-IQ	28.50	11.87	6.030	136	28.0	●
QCP 290-IQ	29.00	12.37	6.140	136	29.0	●
QCP 295-IQ	29.50	12.27	6.240	136	29.0	●
QCP 300-IQ	30.00	12.79	6.360	136	30.0	●
QCP 305-IQ	30.50	12.69	6.460	136	30.0	●
QCP 310-IQ	31.00	13.20	6.570	136	31.0	●
QCP 315-IQ	31.50	13.10	6.670	136	31.0	●
QCP 320-IQ	32.00	13.68	6.780	136	32.0	●
QCP 325-IQ	32.50	13.58	6.880	136	32.0	●

NEW

• Provides high surface finish of up to 1.6 Ra hole cylindricity and straightness of up to 0.05 mm • For cutting conditions see pages 68-76

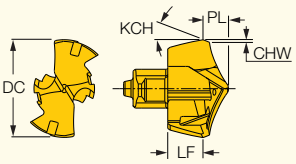
(1) Single margin

(2) Seat size code

For tools, see pages: DCN-MM (21) • DCN-N-5D-BD (99) • DCN-N-8D-BD (99) • DCN-PICCO (21) • MNC-5D (111) • MNC-7/8D (112) • DCN A-1.5D (7) • DCN R-1.5D (8) • DCN A-3D (9) • DCN R-3D (10) • DCN A-5D (11) • DCN R-5D (12) • DCN A-8D (13) • DCN R-8D (14) • DCN R-10D (14) • DCN R-12D (15) • DCN C-3D (16) • DCN C-5D (16) • DCN C-8D (17) • DCN C-12D (17) • DCNS-3D (18) • DCNS-5D (19) • DCNM (20) • DCNT (M8-M24) (168) • MNSNT (358)

SUMOCHAMIQ CHAMDRILL LINE

HCP-IQ
Exchangeable Self-Centering
SUMO-CHAM
Drilling Heads, for Machining
ISO P and ISO K Materials



Designation	Dimensions DC	LF	PL	CHW	KCH	SSC(1)		IC908
HCP 040-IQ	4.00	2.40	1.160	0.20	30.0	4.0	SK DCN 4-4.99	•
HCP 041-IQ	4.10	2.40	1.160	0.20	30.0	4.0	SK DCN 4-4.99	•
HCP 042-IQ	4.20	2.40	1.160	0.20	30.0	4.0	SK DCN 4-4.99	•
HCP 043-IQ	4.30	2.40	1.160	0.20	30.0	4.0	SK DCN 4-4.99	•
HCP 044-IQ	4.40	2.40	1.160	0.20	30.0	4.0	SK DCN 4-4.99	•
HCP 045-IQ	4.50	2.64	1.190	0.20	30.0	4.5	SK DCN 4-4.99	•
HCP 046-IQ	4.60	2.64	1.190	0.20	30.0	4.5	SK DCN 4-4.99	•
HCP 047-IQ	4.70	2.64	1.190	0.20	30.0	4.5	SK DCN 4-4.99	•
HCP 048-IQ	4.80	2.64	1.190	0.20	30.0	4.5	SK DCN 4-4.99	•
HCP 049-IQ	4.90	2.64	1.190	0.20	30.0	4.5	SK DCN 4-4.99	•
HCP 050-IQ	5.00	2.79	1.440	0.25	30.0	5.0	SK DCN 5-5.99	•
HCP 051-IQ	5.10	2.79	1.440	0.25	30.0	5.0	SK DCN 5-5.99	•
HCP 052-IQ	5.20	2.79	1.440	0.25	30.0	5.0	SK DCN 5-5.99	•
HCP 053-IQ	5.30	2.79	1.440	0.25	30.0	5.0	SK DCN 5-5.99	•
HCP 054-IQ	5.40	2.79	1.440	0.25	30.0	5.0	SK DCN 5-5.99	•
HCP 055-IQ	5.50	2.75	1.630	0.25	30.0	5.5	SK DCN 5-5.99	•
HCP 056-IQ	5.60	2.75	1.630	0.25	30.0	5.5	SK DCN 5-5.99	•
HCP 057-IQ	5.70	2.75	1.630	0.25	30.0	5.5	SK DCN 5-5.99	•
HCP 058-IQ	5.80	2.75	1.630	0.25	30.0	5.5	SK DCN 5-5.99	•
HCP 059-IQ	5.90	2.75	1.630	0.25	30.0	5.5	SK DCN 5-5.99	•
HCP 060-IQ	6.00	2.35	1.650	0.30	30.0	6.0		•
HCP 061-IQ	6.10	2.35	1.650	0.30	30.0	6.0		•
HCP 062-IQ	6.20	2.35	1.650	0.30	30.0	6.0		•
HCP 063-IQ	6.30	2.35	1.650	0.30	30.0	6.0		•
HCP 064-IQ	6.40	2.35	1.650	0.30	30.0	6.0		•
HCP 065-IQ	6.50	2.63	1.670	0.30	30.0	6.5		•
HCP 066-IQ	6.60	2.63	1.670	0.30	30.0	6.5		•
HCP 067-IQ	6.70	2.63	1.670	0.30	30.0	6.5		•
HCP 068-IQ	6.80	2.63	1.670	0.30	30.0	6.5		•
HCP 069-IQ	6.90	2.63	1.670	0.30	30.0	6.5		•
HCP 070-IQ	7.00	2.83	1.770	0.35	30.0	7.0		•
HCP 071-IQ	7.10	2.83	1.770	0.35	30.0	7.0		•
HCP 072-IQ	7.20	2.83	1.770	0.35	30.0	7.0		•
HCP 073-IQ	7.30	2.83	1.770	0.35	30.0	7.0		•
HCP 074-IQ	7.40	2.83	1.770	0.35	30.0	7.0		•
HCP 075-IQ	7.50	2.83	1.770	0.35	30.0	7.0		•
HCP 076-IQ	7.60	2.83	1.770	0.35	30.0	7.0		•
HCP 077-IQ	7.70	2.83	1.770	0.35	30.0	7.0		•
HCP 078-IQ	7.80	2.83	1.770	0.35	30.0	7.0		•
HCP 079-IQ	7.90	2.83	1.770	0.35	30.0	7.0		•
HCP 080-IQ	8.00	3.24	2.160	0.40	30.0	8.0		•
HCP 081-IQ	8.10	3.24	2.160	0.40	30.0	8.0		•
HCP 082-IQ	8.20	3.24	2.160	0.40	30.0	8.0		•
HCP 083-IQ	8.30	3.24	2.160	0.40	30.0	8.0		•
HCP 084-IQ	8.40	3.24	2.160	0.40	30.0	8.0		•
HCP 085-IQ	8.50	3.24	2.160	0.40	30.0	8.0		•
HCP 086-IQ	8.60	3.24	2.160	0.40	30.0	8.0		•
HCP 087-IQ	8.70	3.24	2.160	0.40	30.0	8.0		•
HCP 088-IQ	8.80	3.24	2.160	0.40	30.0	8.0		•
HCP 089-IQ	8.90	3.24	2.160	0.40	30.0	8.0		•
HCP 090-IQ	9.00	3.55	2.250	0.45	30.0	9.0		•
HCP 091-IQ	9.10	3.55	2.250	0.45	30.0	9.0		•
HCP 092-IQ	9.20	3.55	2.250	0.45	30.0	9.0		•
HCP 093-IQ	9.30	3.55	2.250	0.45	30.0	9.0		•
HCP 094-IQ	9.40	3.55	2.250	0.45	30.0	9.0		•
HCP 095-IQ	9.50	3.55	2.250	0.45	30.0	9.0		•
HCP 096-IQ	9.60	3.55	2.250	0.45	30.0	9.0		•

• Advance Self-Centering and high surface finish • For cutting conditions see pages 68-76

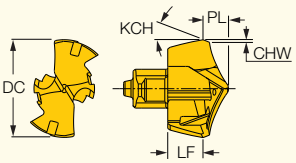
(1) Seat size code

For tools, see pages: DCN-MM (21) • DCN-N-5D-BD (99) • DCN-N-8D-BD (99) • DCN-PICCO (21) • DCN A-1.5D (7) • DCN R-1.5D (8) • DCN A-3D (9) • DCN R-3D (10) • DCN A-5D (11) • DCN R-5D (12) • DCN A-8D (13) • DCN R-8D (14) • DCN R-10D (14) • DCN R-12D (15) • DCN C-3D (16) • DCN C-5D (16) • DCN C-8D (17) • DCN C-12D (17) • DCNS-3D (18) • DCNS-5D (19) • DCNM (20) • MNC-5D (111) • MNC-7/8D (112) • DCNT (M8-M24) (168) • MNSNT (358)

Continued

SUMOCHAMIQ CHAMDRILL LINE

HCP-IQ
Exchangeable Self-Centering SUMO-CHAM Drilling Heads, for Machining ISO P and ISO K Materials



Designation	Dimensions DC	LF	PL	CHW	KCH	SSC(1)	IC908
HCP 097-IQ	9.70	3.55	2.250	0.45	30.0	9.0	•
HCP 098-IQ	9.80	3.55	2.250	0.45	30.0	9.0	•
HCP 099-IQ	9.90	3.55	2.250	0.45	30.0	9.0	•
HCP 100-IQ	10.00	3.48	2.720	0.49	30.0	10.0	•
HCP 101-IQ	10.10	3.48	2.720	0.49	30.0	10.0	•
HCP 102-IQ	10.20	3.48	2.720	0.49	30.0	10.0	•
HCP 103-IQ	10.30	3.48	2.720	0.49	30.0	10.0	•
HCP 104-IQ	10.40	3.48	2.720	0.49	30.0	10.0	•
HCP 105-IQ	10.50	3.48	2.720	0.49	30.0	10.0	•
HCP 106-IQ	10.60	3.48	2.720	0.49	30.0	10.0	•
HCP 107-IQ	10.70	3.48	2.720	0.49	30.0	10.0	•
HCP 108-IQ	10.80	3.48	2.720	0.49	30.0	10.0	•
HCP 109-IQ	10.90	3.48	2.720	0.49	30.0	10.0	•
HCP 110-IQ	11.00	3.85	2.750	0.49	30.0	11.0	•
HCP 111-IQ	11.10	3.85	2.750	0.49	30.0	11.0	•
HCP 112-IQ	11.20	3.85	2.750	0.49	30.0	11.0	•
HCP 113-IQ	11.30	3.85	2.750	0.49	30.0	11.0	•
HCP 114-IQ	11.40	3.85	2.750	0.49	30.0	11.0	•
HCP 115-IQ	11.50	3.85	2.750	0.49	30.0	11.0	•
HCP 116-IQ	11.60	3.85	2.750	0.49	30.0	11.0	•
HCP 117-IQ	11.70	3.85	2.750	0.49	30.0	11.0	•
HCP 118-IQ	11.80	3.85	2.750	0.49	30.0	11.0	•
HCP 119-IQ	11.90	3.85	2.750	0.49	30.0	11.0	•
HCP 120-IQ	12.00	3.84	3.160	0.51	30.0	12.0	•
HCP 121-IQ	12.10	3.84	3.160	0.51	30.0	12.0	•
HCP 122-IQ	12.20	3.84	3.160	0.51	30.0	12.0	•
HCP 123-IQ	12.30	3.84	3.160	0.51	30.0	12.0	•
HCP 124-IQ	12.40	3.84	3.160	0.51	30.0	12.0	•
HCP 125-IQ	12.50	3.84	3.160	0.51	30.0	12.0	•
HCP 126-IQ	12.60	3.84	3.160	0.51	30.0	12.0	•
HCP 127-IQ	12.70	3.84	3.160	0.51	30.0	12.0	•
HCP 128-IQ	12.80	3.84	3.160	0.51	30.0	12.0	•
HCP 129-IQ	12.90	3.84	3.160	0.51	30.0	12.0	•
HCP 130-IQ	13.00	4.09	3.510	0.60	30.0	13.0	•
HCP 131-IQ	13.10	4.09	3.510	0.60	30.0	13.0	•
HCP 132-IQ	13.20	4.09	3.510	0.60	30.0	13.0	•
HCP 133-IQ	13.30	4.09	3.510	0.60	30.0	13.0	•
HCP 134-IQ	13.40	4.09	3.510	0.60	30.0	13.0	•
HCP 135-IQ	13.50	4.09	3.510	0.60	30.0	13.0	•
HCP 136-IQ	13.60	4.09	3.510	0.60	30.0	13.0	•
HCP 137-IQ	13.70	4.09	3.510	0.60	30.0	13.0	•
HCP 138-IQ	13.80	4.09	3.510	0.60	30.0	13.0	•
HCP 139-IQ	13.90	4.09	3.510	0.60	30.0	13.0	•
HCP 140-IQ	14.00	4.52	3.630	0.66	30.0	14.0	•
HCP 141-IQ	14.10	4.52	3.630	0.66	30.0	14.0	•
HCP 142-IQ	14.20	4.52	3.630	0.66	30.0	14.0	•
HCP 143-IQ	14.30	4.52	3.630	0.66	30.0	14.0	•
HCP 144-IQ	14.40	4.52	3.630	0.66	30.0	14.0	•
HCP 145-IQ	14.50	4.52	3.630	0.66	30.0	14.0	•
HCP 146-IQ	14.60	4.52	3.630	0.66	30.0	14.0	•
HCP 147-IQ	14.70	4.52	3.630	0.66	30.0	14.0	•
HCP 148-IQ	14.80	4.52	3.630	0.66	30.0	14.0	•
HCP 149-IQ	14.90	4.52	3.630	0.66	30.0	14.0	•
HCP 150-IQ	15.00	4.85	3.880	0.73	30.0	15.0	•
HCP 151-IQ	15.10	4.85	3.880	0.73	30.0	15.0	•
HCP 152-IQ	15.20	4.85	3.880	0.73	30.0	15.0	•

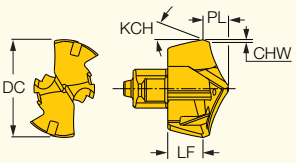
• Advance Self-Centering and high surface finish • For cutting conditions see pages 68-76

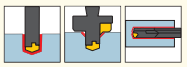
(1) Seat size code

For tools, see pages: DCN-MM (21) • DCN-N-5D-BD (99) • DCN-N-8D-BD (99) • DCN-PICCO (21) • DCN A-1.5D (7) • DCN R-1.5D (8) • DCN A-3D (9) • DCN R-3D (10) • DCN A-5D (11) • DCN R-5D (12) • DCN A-8D (13) • DCN R-8D (14) • DCN R-10D (14) • DCN R-12D (15) • DCN C-3D (16) • DCN C-5D (16) • DCN C-8D (17) • DCN C-12D (17) • DCNS-3D (18) • DCNS-5D (19) • DCNM (20) • MNC-5D (111) • MNC-7/8D (112) • DCNT (M8-M24) (168) • MNSNT (358)

SUMOCHAMIQ CHAMDRILL LINE

HCP-IQ
Exchangeable Self-Centering SUMO-CHAM Drilling Heads, for Machining ISO P and ISO K Materials





Designation	Dimensions						IC908
	DC	LF	PL	CHW	KCH	SSC(1)	
HCP 153-IQ	15.30	4.85	3.880	0.73	30.0	15.0	•
HCP 154-IQ	15.40	4.85	3.880	0.73	30.0	15.0	•
HCP 155-IQ	15.50	4.85	3.880	0.73	30.0	15.0	•
HCP 156-IQ	15.60	4.85	3.880	0.73	30.0	15.0	•
HCP 157-IQ	15.70	4.85	3.880	0.73	30.0	15.0	•
HCP 158-IQ	15.80	4.85	3.880	0.73	30.0	15.0	•
HCP 159-IQ	15.90	4.85	3.880	0.73	30.0	15.0	•
HCP 160-IQ	16.00	5.39	3.910	0.62	30.0	16.0	•
HCP 1605-IQ	16.05	5.39	3.910	0.62	30.0	16.0	•
HCP 161-IQ	16.10	5.39	3.910	0.62	30.0	16.0	•
HCP 162-IQ	16.20	5.39	3.910	0.62	30.0	16.0	•
HCP 163-IQ	16.30	5.39	3.910	0.62	30.0	16.0	•
HCP 164-IQ	16.40	5.39	3.910	0.62	30.0	16.0	•
HCP 165-IQ	16.50	5.39	3.910	0.62	30.0	16.0	•
HCP 166-IQ	16.60	5.39	3.910	0.62	30.0	16.0	•
HCP 167-IQ	16.70	5.39	3.910	0.62	30.0	16.0	•
HCP 168-IQ	16.80	5.39	3.910	0.62	30.0	16.0	•
HCP 169-IQ	16.90	5.39	3.910	0.62	30.0	16.0	•
HCP 170-IQ	17.00	5.33	4.570	0.88	30.0	17.0	•
HCP 171-IQ	17.10	5.33	4.570	0.88	30.0	17.0	•
HCP 172-IQ	17.20	5.33	4.570	0.88	30.0	17.0	•
HCP 173-IQ	17.30	5.33	4.570	0.88	30.0	17.0	•
HCP 174-IQ	17.40	5.33	4.570	0.88	30.0	17.0	•
HCP 175-IQ	17.50	5.33	4.570	0.88	30.0	17.0	•
HCP 176-IQ	17.60	5.33	4.570	0.88	30.0	17.0	•
HCP 177-IQ	17.70	5.33	4.570	0.88	30.0	17.0	•
HCP 178-IQ	17.80	5.33	4.570	0.88	30.0	17.0	•
HCP 179-IQ	17.90	5.33	4.570	0.88	30.0	17.0	•
HCP 180-IQ	18.00	5.84	4.660	0.84	30.0	18.0	•
HCP 181-IQ	18.10	5.84	4.660	0.84	30.0	18.0	•
HCP 182-IQ	18.20	5.84	4.660	0.84	30.0	18.0	•
HCP 183-IQ	18.30	5.84	4.660	0.84	30.0	18.0	•
HCP 184-IQ	18.40	5.84	4.660	0.84	30.0	18.0	•
HCP 185-IQ	18.50	5.84	4.660	0.84	30.0	18.0	•
HCP 186-IQ	18.60	5.84	4.660	0.84	30.0	18.0	•
HCP 187-IQ	18.70	5.84	4.660	0.84	30.0	18.0	•
HCP 188-IQ	18.80	5.84	4.660	0.84	30.0	18.0	•
HCP 189-IQ	18.90	5.84	4.660	0.84	30.0	18.0	•
HCP 190-IQ	19.00	6.34	4.660	0.71	30.0	19.0	•
HCP 191-IQ	19.10	6.34	4.660	0.71	30.0	19.0	•
HCP 192-IQ	19.20	6.34	4.660	0.71	30.0	19.0	•
HCP 1925-IQ	19.25	6.34	4.660	0.71	30.0	19.0	•
HCP 1927-IQ	19.27	6.34	4.660	0.71	30.0	19.0	•
HCP 193-IQ	19.30	6.34	4.660	0.71	30.0	19.0	•
HCP 194-IQ	19.40	6.34	4.660	0.71	30.0	19.0	•
HCP 195-IQ	19.50	6.34	4.660	0.71	30.0	19.0	•
HCP 196-IQ	19.60	6.34	4.660	0.71	30.0	19.0	•
HCP 197-IQ	19.70	6.34	4.660	0.71	30.0	19.0	•
HCP 198-IQ	19.80	6.34	4.660	0.71	30.0	19.0	•
HCP 199-IQ	19.90	6.34	4.660	0.71	30.0	19.0	•
HCP 200-IQ	20.00	6.79	4.810	0.57	30.0	20.0	•
HCP 201-IQ	20.10	6.79	4.810	0.57	30.0	20.0	•
HCP 202-IQ	20.20	6.79	4.810	0.57	30.0	20.0	•
HCP 203-IQ	20.30	6.79	4.810	0.57	30.0	20.0	•
HCP 204-IQ	20.40	6.79	4.810	0.57	30.0	20.0	•

• Advance Self-Centering and high surface finish • For cutting conditions see pages 68-76

(1) Seat size code

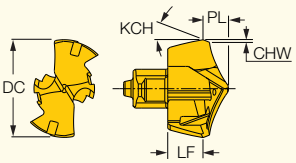
For tools, see pages: DCN-MM (21) • DCN-N-5D-BD (99) • DCN-N-8D-BD (99) • DCN-PICCO (21) • DCN A-1.5D (7) • DCN R-1.5D (8) • DCN A-3D (9) • DCN R-3D (10) • DCN A-5D (11) • DCN R-5D (12) • DCN A-8D (13) • DCN R-8D (14) • DCN R-10D (14) • DCN R-12D (15) • DCN C-3D (16) • DCN C-5D (16) • DCN C-8D (17) • DCN C-12D (17) • DCNS-3D (18) • DCNS-5D (19) • DCNM (20) • MNC-5D (111) • MNC-7/8D (112) • DCNT (M8-M24) (168) • MNSNT (358)

Continued

SUMOCHAMIQ CHAMDRILL LINE

HCP-IQ

Exchangeable Self-Centering SUMO-CHAM Drilling Heads, for Machining ISO P and ISO K Materials



Designation	Dimensions						IC908
	DC	LF	PL	CHW	KCH	SSC(1)	
HCP 205-IQ	20.50	6.79	4.810	0.57	30.0	20.0	●
HCP 206-IQ	20.60	6.79	4.810	0.57	30.0	20.0	●
HCP 207-IQ	20.70	6.79	4.810	0.57	30.0	20.0	●
HCP 208-IQ	20.80	6.79	4.810	0.57	30.0	20.0	●
HCP 209-IQ	20.90	6.79	4.810	0.57	30.0	20.0	●
HCP 210-IQ	21.00	7.24	4.940	0.69	30.0	21.0	●
HCP 211-IQ	21.10	7.24	4.940	0.69	30.0	21.0	●
HCP 212-IQ	21.20	7.24	4.940	0.69	30.0	21.0	●
HCP 213-IQ	21.30	7.24	4.940	0.69	30.0	21.0	●
HCP 214-IQ	21.40	7.24	4.940	0.69	30.0	21.0	●
HCP 215-IQ	21.50	7.24	4.940	0.69	30.0	21.0	●
HCP 216-IQ	21.60	7.24	4.940	0.69	30.0	21.0	●
HCP 217-IQ	21.70	7.24	4.940	0.69	30.0	21.0	●
HCP 218-IQ	21.80	7.24	4.940	0.69	30.0	21.0	●
HCP 219-IQ	21.90	7.20	4.940	0.69	30.0	21.0	●
HCP 220-IQ	22.00	7.56	5.200	0.71	30.0	22.0	●
HCP 221-IQ	22.10	7.56	5.200	0.71	30.0	22.0	●
HCP 222-IQ	22.20	7.56	5.200	0.71	30.0	22.0	●
HCP 223-IQ	22.30	7.56	5.200	0.71	30.0	22.0	●
HCP 224-IQ	22.40	7.56	5.200	0.71	30.0	22.0	●
HCP 225-IQ	22.50	7.56	5.200	0.71	30.0	22.0	●
HCP 226-IQ	22.60	7.56	5.200	0.71	30.0	22.0	●
HCP 227-IQ	22.70	7.56	5.200	0.71	30.0	22.0	●
HCP 228-IQ	22.80	7.56	5.200	0.71	30.0	22.0	●
HCP 229-IQ	22.90	7.56	5.200	0.71	30.0	22.0	●
HCP 230-IQ	23.00	8.05	5.280	0.75	30.0	23.0	●
HCP 231-IQ	23.10	8.05	5.280	0.75	30.0	23.0	●
HCP 232-IQ	23.20	8.05	5.280	0.75	30.0	23.0	●
HCP 233-IQ	23.30	8.05	5.280	0.75	30.0	23.0	●
HCP 234-IQ	23.40	8.05	5.280	0.75	30.0	23.0	●
HCP 235-IQ	23.50	8.05	5.280	0.75	30.0	23.0	●
HCP 236-IQ	23.60	8.05	5.280	0.75	30.0	23.0	●
HCP 237-IQ	23.70	8.05	5.280	0.75	30.0	23.0	●
HCP 238-IQ	23.80	8.05	5.280	0.75	30.0	23.0	●
HCP 239-IQ	23.90	8.05	5.280	0.75	30.0	23.0	●
HCP 240-IQ	24.00	8.27	5.630	0.79	30.0	24.0	●
HCP 241-IQ	24.10	8.27	5.630	0.79	30.0	24.0	●
HCP 242-IQ	24.20	8.27	5.630	0.79	30.0	24.0	●
HCP 243-IQ	24.30	8.27	5.630	0.79	30.0	24.0	●
HCP 244-IQ	24.40	8.27	5.630	0.79	30.0	24.0	●
HCP 245-IQ	24.50	8.27	5.630	0.79	30.0	24.0	●
HCP 246-IQ	24.60	8.27	5.630	0.79	30.0	24.0	●
HCP 247-IQ	24.70	8.27	5.630	0.79	30.0	24.0	●
HCP 248-IQ	24.80	8.27	5.630	0.79	30.0	24.0	●
HCP 249-IQ	24.90	8.27	5.630	0.79	30.0	24.0	●
HCP 250-IQ	25.00	8.80	5.700	0.63	30.0	25.0	●
HCP 251-IQ	25.10	8.80	5.700	0.63	30.0	25.0	●
HCP 252-IQ	25.20	8.80	5.700	0.63	30.0	25.0	●
HCP 253-IQ	25.30	8.80	5.700	0.63	30.0	25.0	●
HCP 254-IQ	25.40	8.80	5.700	0.63	30.0	25.0	●
HCP 255-IQ	25.50	8.80	5.700	0.63	30.0	25.0	●
HCP 256-IQ	25.60	8.80	5.700	0.63	30.0	25.0	●
HCP 2565-IQ	25.65	8.80	5.700	0.63	30.0	25.0	●
HCP 2567-IQ	25.67	8.80	5.700	0.63	30.0	25.0	●
HCP 257-IQ	25.70	8.80	5.700	0.63	30.0	25.0	●
HCP 258-IQ	25.80	8.80	5.700	0.63	30.0	25.0	●
HCP 259-IQ	25.90	8.80	5.700	0.63	30.0	25.0	●

• Advance Self-Centering and high surface finish • For cutting conditions see pages 68-76

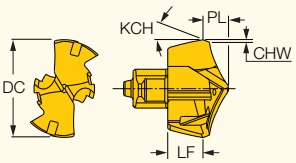
(1) Seat size code

For tools, see pages: DCN-MM (21) • DCN-N-5D-BD (99) • DCN-N-8D-BD (99) • DCN-PICCO (21) • DCN A-1.5D (7) • DCN R-1.5D (8) • DCN A-3D (9) • DCN R-3D (10) • DCN A-5D (11) • DCN R-5D (12) • DCN A-8D (13) • DCN R-8D (14) • DCN R-10D (14) • DCN R-12D (15) • DCN C-3D (16) • DCN C-5D (16) • DCN C-8D (17) • DCN C-12D (17) • DCNS-3D (18) • DCNS-5D (19) • DCNM (20) • MNC-5D (111) • MNC-7/8D (112) • DCNT (M8-M24) (168) • MNSNT (358)

Continued

SUMOCHAMIQ CHAMDRILL LINE

HCP-IQ
Exchangeable Self-Centering SUMO-CHAM Drilling Heads, for Machining ISO P and ISO K Materials



Designation	Dimensions						IC908
	DC	LF	PL	CHW	KCH	SSC(1)	
HCP 260-IQ	26.00	9.12	5.950	0.62	30.0	26.0	•
HCP 261-IQ	26.10	9.12	5.950	0.62	30.0	26.0	•
HCP 262-IQ	26.20	9.12	5.950	0.62	30.0	26.0	•
HCP 263-IQ	26.30	9.12	5.950	0.62	30.0	26.0	•
HCP 264-IQ	26.40	9.12	5.950	0.62	30.0	26.0	•
HCP 265-IQ	26.50	9.12	5.950	0.62	30.0	26.0	•
HCP 266-IQ	26.60	9.12	5.950	0.62	30.0	26.0	•
HCP 267-IQ	26.70	9.12	5.950	0.62	30.0	26.0	•
HCP 268-IQ	26.80	9.12	5.950	0.62	30.0	26.0	•
HCP 269-IQ	26.90	9.12	5.950	0.62	30.0	26.0	•
HCP 270-IQ	27.00	9.45	6.200	0.62	30.0	27.0	•
HCP 271-IQ	27.10	9.45	6.200	0.62	30.0	27.0	•
HCP 272-IQ	27.20	9.45	6.200	0.62	30.0	27.0	•
HCP 273-IQ	27.30	9.45	6.200	0.62	30.0	27.0	•
HCP 274-IQ	27.40	9.45	6.200	0.62	30.0	27.0	•
HCP 275-IQ	27.50	9.45	6.200	0.62	30.0	27.0	•
HCP 276-IQ	27.60	9.45	6.200	0.62	30.0	27.0	•
HCP 277-IQ	27.70	9.45	6.200	0.62	30.0	27.0	•
HCP 278-IQ	27.80	9.45	6.200	0.62	30.0	27.0	•
HCP 279-IQ	27.90	9.45	6.200	0.62	30.0	27.0	•
HCP 280-IQ	28.00	9.80	6.420	0.63	30.0	28.0	•
HCP 281-IQ	28.10	9.80	6.420	0.63	30.0	28.0	•
HCP 282-IQ	28.20	9.80	6.420	0.63	30.0	28.0	•
HCP 283-IQ	28.30	9.80	6.420	0.63	30.0	28.0	•
HCP 284-IQ	28.40	9.80	6.420	0.63	30.0	28.0	•
HCP 285-IQ	28.50	9.80	6.420	0.63	30.0	28.0	•
HCP 286-IQ	28.60	9.80	6.420	0.63	30.0	28.0	•
HCP 287-IQ	28.70	9.80	6.420	0.63	30.0	28.0	•
HCP 288-IQ	28.80	9.80	6.420	0.63	30.0	28.0	•
HCP 289-IQ	28.90	9.80	6.420	0.63	30.0	28.0	•
HCP 290-IQ	29.00	10.16	6.640	0.66	30.0	29.0	•
HCP 291-IQ	29.10	10.16	6.640	0.66	30.0	29.0	•
HCP 292-IQ	29.20	10.16	6.640	0.66	30.0	29.0	•
HCP 293-IQ	29.30	10.16	6.640	0.66	30.0	29.0	•
HCP 294-IQ	29.40	10.16	6.640	0.66	30.0	29.0	•
HCP 295-IQ	29.50	10.16	6.640	0.66	30.0	29.0	•
HCP 296-IQ	29.60	10.16	6.640	0.66	30.0	29.0	•
HCP 297-IQ	29.70	10.16	6.640	0.66	30.0	29.0	•
HCP 298-IQ	29.80	10.16	6.640	0.66	30.0	29.0	•
HCP 299-IQ	29.90	10.16	6.640	0.66	30.0	29.0	•
HCP 300-IQ	30.00	10.50	6.880	0.68	30.0	30.0	•
HCP 301-IQ	30.10	10.50	6.880	0.68	30.0	30.0	•
HCP 302-IQ	30.20	10.50	6.880	0.68	30.0	30.0	•
HCP 303-IQ	30.30	10.50	6.880	0.68	30.0	30.0	•
HCP 304-IQ	30.40	10.50	6.880	0.68	30.0	30.0	•
HCP 305-IQ	30.50	10.50	6.880	0.68	30.0	30.0	•
HCP 306-IQ	30.60	10.50	6.880	0.68	30.0	30.0	•
HCP 307-IQ	30.70	10.50	6.880	0.68	30.0	30.0	•
HCP 308-IQ	30.80	10.50	6.880	0.68	30.0	30.0	•
HCP 309-IQ	30.90	10.50	6.880	0.68	30.0	30.0	•
HCP 310-IQ	31.00	11.00	6.960	0.65	30.0	31.0	•
HCP 311-IQ	31.10	11.00	6.960	0.65	30.0	31.0	•
HCP 312-IQ	31.20	11.00	6.960	0.65	30.0	31.0	•
HCP 313-IQ	31.30	11.00	6.960	0.65	30.0	31.0	•
HCP 314-IQ	31.40	11.00	6.960	0.65	30.0	31.0	•

• Advance Self-Centering and high surface finish • For cutting conditions see pages 68-76

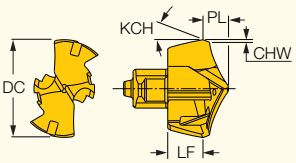
(1) Seat size code

For tools, see pages: DCN-MM (21) • DCN-N-5D-BD (99) • DCN-N-8D-BD (99) • DCN-PICCO (21) • DCN A-1.5D (7) • DCN R-1.5D (8) • DCN A-3D (9) • DCN R-3D (10) • DCN A-5D (11) • DCN R-5D (12) • DCN A-8D (13) • DCN R-8D (14) • DCN R-10D (14) • DCN R-12D (15) • DCN C-3D (16) • DCN C-5D (16) • DCN C-8D (17) • DCN C-12D (17) • DCNS-3D (18) • DCNS-5D (19) • DCNM (20) • MNC-5D (111) • MNC-7/8D (112) • DCNT (M8-M24) (168) • MNSNT (358)

Continued

SUMOCHAMIQ CHAMDRILL LINE

HCP-IQ
Exchangeable Self-Centering SUMO-CHAM Drilling Heads, for Machining ISO P and ISO K Materials



Designation	Dimensions						IC908
	DC	LF	PL	CHW	KCH	SSC[1]	
HCP 315-IQ	31.50	11.00	6.960	0.65	30.0	31.0	●
HCP 316-IQ	31.60	11.00	6.960	0.65	30.0	31.0	●
HCP 317-IQ	31.70	11.00	6.960	0.65	30.0	31.0	●
HCP 3175-IQ	31.75	11.00	6.960	0.65	30.0	31.0	●
HCP 318-IQ	31.80	11.00	6.960	0.65	30.0	31.0	●
HCP 319-IQ	31.90	11.00	6.960	0.65	30.0	31.0	●
HCP 320-IQ	32.00	11.20	7.340	0.75	30.0	32.0	●
HCP 321-IQ	32.10	11.20	7.340	0.75	30.0	32.0	●
HCP 322-IQ	32.20	11.20	7.340	0.75	30.0	32.0	●
HCP 323-IQ	32.30	11.20	7.340	0.75	30.0	32.0	●
HCP 324-IQ	32.40	11.20	7.340	0.75	30.0	32.0	●
HCP 325-IQ	32.50	11.20	7.340	0.75	30.0	32.0	●
HCP 326-IQ	32.60	11.20	7.340	0.75	30.0	32.0	●
HCP 327-IQ	32.70	11.20	7.340	0.75	30.0	32.0	●
HCP 328-IQ	32.80	11.20	7.340	0.75	30.0	32.0	●
HCP 329-IQ	32.90	11.20	7.340	0.75	30.0	32.0	●

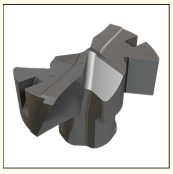
• Advance Self-Centering and high surface finish • For cutting conditions see pages 68-76

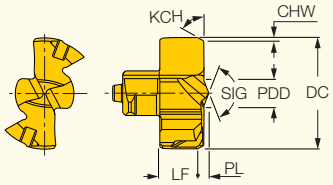
[1] Seat size code

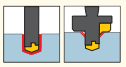
For tools, see pages: DCN-MM (21) • DCN-N-5D-BD (99) • DCN-N-8D-BD (99) • DCN-PICCO (21) • DCN A-1.5D (7) • DCN R-1.5D (8) • DCN A-3D (9) • DCN R-3D (10) • DCN A-5D (11) • DCN R-5D (12) • DCN A-8D (13) • DCN R-8D (14) • DCN R-10D (14) • DCN R-12D (15) • DCN C-3D (16) • DCN C-5D (16) • DCN C-8D (17) • DCN C-12D (17) • DCNS-3D (18) • DCNS-5D (19) • DCNM (20) • MNC-5D (111) • MNC-7/8D (112) • DCNT (M8-M24) (168) • MNSNT (358)

SUMOCHAM FLAT HEAD

FCP
Exchangeable Flat Bottom
SUMO-CHAM
Drilling Heads, for Machining
ISO P and ISO K Materials







Designation	Dimensions									IC908
	DC	PDD	LF	PL	CHW	KCH	SIG	SSC(1)		
FCP 040-IQ	4.00	1.45	2.50	0.450	0.17	60.0	140	4.0	SK DCN 4-4.99	•
FCP 041-IQ	4.10	1.45	2.50	0.450	0.17	60.0	140	4.0	SK DCN 4-4.99	•
FCP 042-IQ	4.20	1.45	2.50	0.450	0.17	60.0	140	4.0	SK DCN 4-4.99	•
FCP 043-IQ	4.30	1.45	2.50	0.450	0.17	60.0	140	4.0	SK DCN 4-4.99	•
FCP 044-IQ	4.40	1.45	2.50	0.450	0.17	60.0	140	4.0	SK DCN 4-4.99	•
FCP 045-IQ	4.50	1.56	2.80	0.480	0.17	60.0	140	4.5	SK DCN 4-4.99	•
FCP 046-IQ	4.60	1.56	2.80	0.480	0.17	60.0	140	4.5	SK DCN 4-4.99	•
FCP 047-IQ	4.70	1.56	2.80	0.480	0.17	60.0	140	4.5	SK DCN 4-4.99	•
FCP 048-IQ	4.80	1.56	2.80	0.480	0.17	60.0	140	4.5	SK DCN 4-4.99	•
FCP 049-IQ	4.90	1.56	2.80	0.480	0.17	60.0	140	4.5	SK DCN 4-4.99	•
FCP 050-IQ	5.00	1.98	2.90	0.610	0.23	60.0	140	5.0	SK DCN 5-5.99	•
FCP 051-IQ	5.10	1.98	2.90	0.610	0.23	60.0	140	5.0	SK DCN 5-5.99	•
FCP 052-IQ	5.20	1.98	2.90	0.610	0.23	60.0	140	5.0	SK DCN 5-5.99	•
FCP 053-IQ	5.30	1.98	2.90	0.610	0.23	60.0	140	5.0	SK DCN 5-5.99	•
FCP 054-IQ	5.40	1.98	2.90	0.610	0.23	60.0	140	5.0	SK DCN 5-5.99	•
FCP 055-IQ	5.50	2.02	2.90	0.610	0.23	60.0	140	5.5	SK DCN 5-5.99	•
FCP 056-IQ	5.60	2.02	2.90	0.610	0.23	60.0	140	5.5	SK DCN 5-5.99	•
FCP 057-IQ	5.70	2.02	2.90	0.610	0.23	60.0	140	5.5	SK DCN 5-5.99	•
FCP 058-IQ	5.80	2.02	2.90	0.610	0.23	60.0	140	5.5	SK DCN 5-5.99	•
FCP 059-IQ	5.90	2.02	2.90	0.610	0.23	60.0	140	5.5	SK DCN 5-5.99	•
FCP 060	6.00	2.03	2.40	0.610	0.23	60.0	140	6.0		•
FCP 061	6.10	2.03	2.40	0.610	0.23	60.0	140	6.0		•
FCP 062	6.20	2.03	2.40	0.610	0.23	60.0	140	6.0		•
FCP 063	6.30	2.03	2.40	0.610	0.23	60.0	140	6.0		•
FCP 064	6.40	2.03	2.40	0.610	0.23	60.0	140	6.0		•
FCP 065	6.50	2.64	2.60	0.680	0.23	60.0	140	6.5		•
FCP 066	6.60	2.64	2.60	0.680	0.23	60.0	140	6.5		•
FCP 067	6.70	2.64	2.60	0.680	0.23	60.0	140	6.5		•
FCP 068	6.80	2.64	2.60	0.680	0.23	60.0	140	6.5		•
FCP 069	6.90	2.64	2.60	0.680	0.23	60.0	140	6.5		•
FCP 070	7.00	2.25	2.90	0.680	0.23	60.0	140	7.0		•
FCP 071	7.10	2.25	2.90	0.680	0.23	60.0	140	7.0		•
FCP 072	7.20	2.25	2.90	0.680	0.23	60.0	140	7.0		•
FCP 073	7.30	2.25	2.90	0.680	0.23	60.0	140	7.0		•
FCP 074	7.40	2.25	2.90	0.680	0.23	60.0	140	7.0		•
FCP 075	7.50	2.25	2.90	0.680	0.23	60.0	140	7.0		•
FCP 076	7.60	2.25	2.90	0.680	0.23	60.0	140	7.0		•
FCP 077	7.70	2.25	2.90	0.680	0.23	60.0	140	7.0		•
FCP 078	7.80	2.25	2.90	0.680	0.23	60.0	140	7.0		•
FCP 079	7.90	2.25	2.90	0.680	0.23	60.0	140	7.0		•
FCP 080	8.00	2.43	3.30	1.090	0.40	60.0	140	8.0		•
FCP 081	8.10	2.43	3.30	1.090	0.40	60.0	140	8.0		•
FCP 082	8.20	2.43	3.30	1.090	0.40	60.0	140	8.0		•
FCP 083	8.30	2.43	3.30	1.090	0.40	60.0	140	8.0		•
FCP 084	8.40	2.43	3.30	1.090	0.40	60.0	140	8.0		•
FCP 085	8.50	2.43	3.30	1.090	0.40	60.0	140	8.0		•
FCP 086	8.60	2.43	3.30	1.090	0.40	60.0	140	8.0		•
FCP 087	8.70	2.43	3.30	1.090	0.40	60.0	140	8.0		•
FCP 088	8.80	2.43	3.30	1.090	0.40	60.0	140	8.0		•
FCP 089	8.90	2.43	3.30	1.090	0.40	60.0	140	8.0		•
FCP 090	9.00	2.82	3.50	1.110	0.40	60.0	140	9.0		•
FCP 091	9.10	2.82	3.50	1.110	0.40	60.0	140	9.0		•
FCP 092	9.20	2.82	3.50	1.110	0.40	60.0	140	9.0		•
FCP 093	9.30	2.82	3.50	1.110	0.40	60.0	140	9.0		•
FCP 094	9.40	2.82	3.50	1.110	0.40	60.0	140	9.0		•
FCP 095	9.50	2.82	3.50	1.110	0.40	60.0	140	9.0		•

• For nearly flat bottom hole applications • For cutting conditions see pages 68-76

(1) Seat size code

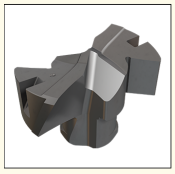
For tools, see pages: DCN-MM (21) • DCN-N-5D-BD (99) • DCN-N-8D-BD (99) • DCN-PICCO (21) • DCN A-1.5D (7) • DCN R-1.5D (8) • DCN A-3D (9) • DCN R-3D (10) • DCN A-5D (11) • DCN R-5D (12) • DCN A-8D (13) • DCN R-8D (14) • DCN R-10D (14) • DCN R-12D (15) • DCN C-3D (16) • DCN C-5D (16) • DCN C-8D (17) • DCN C-12D (17) • DCNS-3D (18) • DCNS-5D (19) • DCNM (20) • DCNT (M8-M24) (168)

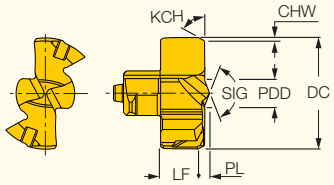
Continued

SUMOCHAM FLAT HEAD

FCP

Exchangeable Flat Bottom SUMO-CHAM Drilling Heads, for Machining ISO P and ISO K Materials





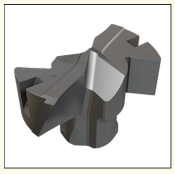
Designation	Dimensions								IC908
	DC	PDD	LF	PL	CHW	KCH	SIG	SSC(1)	
FCP 096	9.60	2.82	3.50	1.110	0.40	60.0	140	9.0	•
FCP 097	9.70	2.82	3.50	1.110	0.40	60.0	140	9.0	•
FCP 098	9.80	2.82	3.50	1.110	0.40	60.0	140	9.0	•
FCP 099	9.90	2.82	3.50	1.110	0.40	60.0	140	9.0	•
FCP 100	10.00	2.77	3.70	1.170	0.40	60.0	140	10.0	•
FCP 101	10.10	2.77	3.70	1.170	0.40	60.0	140	10.0	•
FCP 102	10.20	2.77	3.70	1.170	0.40	60.0	140	10.0	•
FCP 103	10.30	2.77	3.70	1.170	0.40	60.0	140	10.0	•
FCP 104	10.40	2.77	3.70	1.170	0.40	60.0	140	10.0	•
FCP 105	10.50	2.77	3.70	1.170	0.40	60.0	140	10.0	•
FCP 106	10.60	2.77	3.70	1.170	0.40	60.0	140	10.0	•
FCP 107	10.70	2.77	3.70	1.170	0.40	60.0	140	10.0	•
FCP 108	10.80	2.77	3.70	1.170	0.40	60.0	140	10.0	•
FCP 109	10.90	2.77	3.70	1.170	0.40	60.0	140	10.0	•
FCP 110	11.00	2.88	3.80	1.250	0.40	60.0	140	11.0	•
FCP 111	11.10	2.88	3.80	1.250	0.40	60.0	140	11.0	•
FCP 112	11.20	2.88	3.80	1.250	0.40	60.0	140	11.0	•
FCP 113	11.30	2.88	3.80	1.250	0.40	60.0	140	11.0	•
FCP 114	11.40	2.88	3.80	1.250	0.40	60.0	140	11.0	•
FCP 115	11.50	2.88	3.80	1.250	0.40	60.0	140	11.0	•
FCP 116	11.60	2.88	3.80	1.250	0.40	60.0	140	11.0	•
FCP 117	11.70	2.88	3.80	1.250	0.40	60.0	140	11.0	•
FCP 118	11.80	2.88	3.80	1.250	0.40	60.0	140	11.0	•
FCP 119	11.90	2.88	3.80	1.250	0.40	60.0	140	11.0	•
FCP 120	12.00	3.10	4.10	1.260	0.40	60.0	140	12.0	•
FCP 121	12.10	3.10	4.10	1.260	0.40	60.0	140	12.0	•
FCP 122	12.20	3.10	4.10	1.260	0.40	60.0	140	12.0	•
FCP 123	12.30	3.10	4.10	1.260	0.40	60.0	140	12.0	•
FCP 124	12.40	3.10	4.10	1.260	0.40	60.0	140	12.0	•
FCP 125	12.50	3.10	4.10	1.260	0.40	60.0	140	12.0	•
FCP 126	12.60	3.10	4.10	1.260	0.40	60.0	140	12.0	•
FCP 127	12.70	3.10	4.10	1.260	0.40	60.0	140	12.0	•
FCP 128	12.80	3.10	4.10	1.260	0.40	60.0	140	12.0	•
FCP 129	12.90	3.10	4.10	1.260	0.40	60.0	140	12.0	•
FCP 130	13.00	3.50	4.40	1.280	0.40	60.0	140	13.0	•
FCP 131	13.10	3.50	4.40	1.280	0.40	60.0	140	13.0	•
FCP 132	13.20	3.50	4.40	1.280	0.40	60.0	140	13.0	•
FCP 133	13.30	3.50	4.40	1.280	0.40	60.0	140	13.0	•
FCP 134	13.40	3.50	4.40	1.280	0.40	60.0	140	13.0	•
FCP 135	13.50	3.50	4.40	1.280	0.40	60.0	140	13.0	•
FCP 136	13.60	3.50	4.40	1.280	0.40	60.0	140	13.0	•
FCP 137	13.70	3.50	4.40	1.280	0.40	60.0	140	13.0	•
FCP 138	13.80	3.50	4.40	1.280	0.40	60.0	140	13.0	•
FCP 139	13.90	3.50	4.40	1.280	0.40	60.0	140	13.0	•
FCP 140	14.00	3.76	4.80	1.310	0.40	60.0	140	14.0	•
FCP 141	14.10	3.76	4.80	1.310	0.40	60.0	140	14.0	•
FCP 142	14.20	3.76	4.80	1.310	0.40	60.0	140	14.0	•
FCP 143	14.30	3.76	4.80	1.310	0.40	60.0	140	14.0	•
FCP 144	14.40	3.76	4.80	1.310	0.40	60.0	140	14.0	•
FCP 145	14.50	3.76	4.80	1.310	0.40	60.0	140	14.0	•
FCP 146	14.60	3.76	4.80	1.310	0.40	60.0	140	14.0	•
FCP 147	14.70	3.76	4.80	1.310	0.40	60.0	140	14.0	•
FCP 148	14.80	3.76	4.80	1.310	0.40	60.0	140	14.0	•
FCP 149	14.90	3.76	4.80	1.310	0.40	60.0	140	14.0	•
FCP 150	15.00	4.24	5.23	1.350	0.40	60.0	140	15.0	•
FCP 151	15.10	4.24	5.23	1.350	0.40	60.0	140	15.0	•

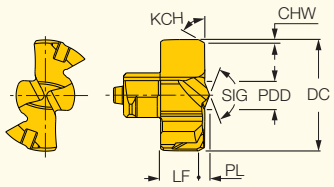
• For nearly flat bottom hole applications • For cutting conditions see pages 68-76

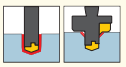
For tools, see pages: DCN-MM (21) • DCN-N-5D-BD (99) • DCN-N-8D-BD (99) • DCN-PICCO (21) • DCN A-1.5D (7) • DCN R-1.5D (8) • DCN A-3D (9) • DCN R-3D (10) • DCN A-5D (11) • DCN R-5D (12) • DCN A-8D (13) • DCN R-8D (14) • DCN R-10D (14) • DCN R-12D (15) • DCN C-3D (16) • DCN C-5D (16) • DCN C-8D (17) • DCN C-12D (17) • DCNS-3D (18) • DCNS-5D (19) • DCNM (20) • DCNT (M8-M24) (168) (1) Seat size code

SUMOCHAM FLAT HEAD

FCP
Exchangeable Flat Bottom SUMO-CHAM Drilling Heads, for Machining ISO P and ISO K Materials







Designation	Dimensions								IC908
	DC	PDD	LF	PL	CHW	KCH	SIG	SSC(1)	
FCP 152	15.20	4.24	5.23	1.350	0.40	60.0	140	15.0	•
FCP 153	15.30	4.24	5.23	1.350	0.40	60.0	140	15.0	•
FCP 154	15.40	4.24	5.23	1.350	0.40	60.0	140	15.0	•
FCP 155	15.50	4.24	5.23	1.350	0.40	60.0	140	15.0	•
FCP 156	15.60	4.24	5.23	1.350	0.40	60.0	140	15.0	•
FCP 157	15.70	4.24	5.23	1.350	0.40	60.0	140	15.0	•
FCP 158	15.80	4.24	5.23	1.350	0.40	60.0	140	15.0	•
FCP 159	15.90	4.24	5.23	1.350	0.40	60.0	140	15.0	•
FCP 160	16.00	4.06	5.60	1.390	0.40	60.0	140	16.0	•
FCP 161	16.10	4.06	5.60	1.390	0.40	60.0	140	16.0	•
FCP 162	16.20	4.06	5.60	1.390	0.40	60.0	140	16.0	•
FCP 163	16.30	4.06	5.60	1.390	0.40	60.0	140	16.0	•
FCP 164	16.40	4.06	5.60	1.390	0.40	60.0	140	16.0	•
FCP 165	16.50	4.06	5.60	1.390	0.40	60.0	140	16.0	•
FCP 166	16.60	4.06	5.60	1.390	0.40	60.0	140	16.0	•
FCP 167	16.70	4.06	5.60	1.390	0.40	60.0	140	16.0	•
FCP 168	16.80	4.06	5.60	1.390	0.40	60.0	140	16.0	•
FCP 169	16.90	4.06	5.60	1.390	0.40	60.0	140	16.0	•
FCP 170	17.00	4.13	5.90	1.400	0.40	60.0	140	17.0	•
FCP 171	17.10	4.13	5.90	1.400	0.40	60.0	140	17.0	•
FCP 172	17.20	4.13	5.90	1.400	0.40	60.0	140	17.0	•
FCP 173	17.30	4.13	5.90	1.400	0.40	60.0	140	17.0	•
FCP 174	17.40	4.13	5.90	1.400	0.40	60.0	140	17.0	•
FCP 175	17.50	4.13	5.90	1.400	0.40	60.0	140	17.0	•
FCP 176	17.60	4.13	5.90	1.400	0.40	60.0	140	17.0	•
FCP 177	17.70	4.13	5.90	1.400	0.40	60.0	140	17.0	•
FCP 178	17.80	4.13	5.90	1.400	0.40	60.0	140	17.0	•
FCP 179	17.90	4.13	5.90	1.400	0.40	60.0	140	17.0	•
FCP 180	18.00	4.08	6.18	1.420	0.40	60.0	140	18.0	•
FCP 181	18.10	4.08	6.18	1.420	0.40	60.0	140	18.0	•
FCP 182	18.20	4.08	6.18	1.420	0.40	60.0	140	18.0	•
FCP 183	18.30	4.08	6.18	1.420	0.40	60.0	140	18.0	•
FCP 184	18.40	4.16	6.18	1.420	0.40	60.0	140	18.0	•
FCP 185	18.50	4.08	6.18	1.420	0.40	60.0	140	18.0	•
FCP 186	18.60	4.08	6.18	1.420	0.40	60.0	140	18.0	•
FCP 187	18.70	4.08	6.18	1.420	0.40	60.0	140	18.0	•
FCP 188	18.80	4.08	6.18	1.420	0.40	60.0	140	18.0	•
FCP 189	18.90	4.08	6.18	1.420	0.40	60.0	140	18.0	•
FCP 190	19.00	4.26	6.50	1.440	0.40	60.0	140	19.0	•
FCP 191	19.10	4.26	6.50	1.440	0.40	60.0	140	19.0	•
FCP 192	19.20	4.26	6.50	1.440	0.40	60.0	140	19.0	•
FCP 193	19.30	4.26	6.50	1.440	0.40	60.0	140	19.0	•
FCP 194	19.40	4.26	6.50	1.440	0.40	60.0	140	19.0	•
FCP 195	19.50	4.26	6.50	1.440	0.40	60.0	140	19.0	•
FCP 196	19.60	4.26	6.50	1.440	0.40	60.0	140	19.0	•
FCP 197	19.70	4.26	6.50	1.440	0.40	60.0	140	19.0	•
FCP 198	19.80	4.26	6.50	1.440	0.40	60.0	140	19.0	•
FCP 199	19.90	4.26	6.50	1.440	0.40	60.0	140	19.0	•
FCP 200	20.00	6.62	7.50	1.770	0.40	60.0	140	20.0	•
FCP 201	20.10	6.62	7.50	1.770	0.40	60.0	140	20.0	•
FCP 202	20.20	6.62	7.50	1.770	0.40	60.0	140	20.0	•
FCP 203	20.30	6.62	7.50	1.770	0.40	60.0	140	20.0	•
FCP 204	20.40	6.62	7.50	1.770	0.40	60.0	140	20.0	•
FCP 205	20.50	6.62	7.50	1.770	0.40	60.0	140	20.0	•
FCP 206	20.60	6.62	7.50	1.770	0.40	60.0	140	20.0	•
FCP 207	20.70	6.62	7.50	1.770	0.40	60.0	140	20.0	•

• For nearly flat bottom hole applications • For cutting conditions see pages 68-76

(1) Seat size code

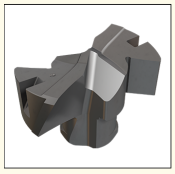
For tools, see pages: DCN-MM (21) • DCN-N-5D-BD (99) • DCN-N-8D-BD (99) • DCN-PICCO (21) • DCN A-1.5D (7) • DCN R-1.5D (8) • DCN A-3D (9) • DCN R-3D (10) • DCN A-5D (11) • DCN R-5D (12) • DCN A-8D (13) • DCN R-8D (14) • DCN R-10D (14) • DCN R-12D (15) • DCN C-3D (16) • DCN C-5D (16) • DCN C-8D (17) • DCN C-12D (17) • DCNS-3D (18) • DCNS-5D (19) • DCNM (20) • DCNT (M8-M24) (168)

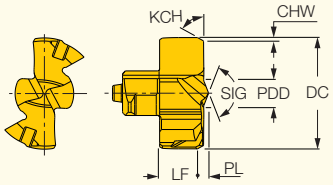
Continued

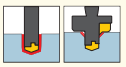
SUMOCHAM FLAT HEAD

FCP

Exchangeable Flat Bottom SUMO-CHAM Drilling Heads, for Machining ISO P and ISO K Materials







Designation	Dimensions								IC908
	DC	PDD	LF	PL	CHW	KCH	SIG	SSC[1]	
FCP 208	20.80	6.62	7.50	1.770	0.40	60.0	140	20.0	•
FCP 209	20.90	6.62	7.50	1.770	0.40	60.0	140	20.0	•
FCP 210	21.00	6.98	7.90	1.790	0.40	60.0	140	21.0	•
FCP 211	21.10	6.98	7.90	1.790	0.40	60.0	140	21.0	•
FCP 212	21.20	6.98	7.90	1.790	0.40	60.0	140	21.0	•
FCP 213	21.30	6.98	7.90	1.790	0.40	60.0	140	21.0	•
FCP 214	21.40	6.98	7.90	1.790	0.40	60.0	140	21.0	•
FCP 215	21.50	6.98	7.90	1.790	0.40	60.0	140	21.0	•
FCP 216	21.60	6.98	7.90	1.790	0.40	60.0	140	21.0	•
FCP 217	21.70	6.98	7.90	1.790	0.40	60.0	140	21.0	•
FCP 218	21.80	6.98	7.90	1.790	0.40	60.0	140	21.0	•
FCP 219	21.90	6.98	7.90	1.790	0.40	60.0	140	21.0	•
FCP 220	22.00	7.20	8.20	1.810	0.40	60.0	140	22.0	•
FCP 221	22.10	7.20	8.20	1.810	0.40	60.0	140	22.0	•
FCP 222	22.20	7.20	8.20	1.810	0.40	60.0	140	22.0	•
FCP 223	22.30	7.20	8.20	1.810	0.40	60.0	140	22.0	•
FCP 224	22.40	7.20	8.20	1.810	0.40	60.0	140	22.0	•
FCP 225	22.50	7.20	8.20	1.810	0.40	60.0	140	22.0	•
FCP 226	22.60	7.20	8.20	1.810	0.40	60.0	140	22.0	•
FCP 227	22.70	7.20	8.20	1.810	0.40	60.0	140	22.0	•
FCP 228	22.80	7.20	8.20	1.810	0.40	60.0	140	22.0	•
FCP 229	22.90	7.20	8.20	1.810	0.40	60.0	140	22.0	•
FCP 230	23.00	7.47	8.60	1.830	0.40	60.0	140	23.0	•
FCP 231	23.10	7.47	8.60	1.830	0.40	60.0	140	23.0	•
FCP 232	23.20	7.47	8.60	1.830	0.40	60.0	140	23.0	•
FCP 233	23.30	7.47	8.60	1.830	0.40	60.0	140	23.0	•
FCP 234	23.40	7.47	8.60	1.830	0.40	60.0	140	23.0	•
FCP 235	23.50	7.47	8.60	1.830	0.40	60.0	140	23.0	•
FCP 236	23.60	7.47	8.60	1.830	0.40	60.0	140	23.0	•
FCP 237	23.70	7.47	8.60	1.830	0.40	60.0	140	23.0	•
FCP 238	23.80	7.47	8.60	1.830	0.40	60.0	140	23.0	•
FCP 239	23.90	7.47	8.60	1.830	0.40	60.0	140	23.0	•
FCP 240	24.00	7.51	9.00	1.860	0.40	60.0	140	24.0	•
FCP 241	24.10	7.51	9.00	1.860	0.40	60.0	140	24.0	•
FCP 242	24.20	7.51	9.00	1.860	0.40	60.0	140	24.0	•
FCP 243	24.30	7.51	9.00	1.860	0.40	60.0	140	24.0	•
FCP 244	24.40	7.51	9.00	1.860	0.40	60.0	140	24.0	•
FCP 245	24.50	7.51	9.00	1.860	0.40	60.0	140	24.0	•
FCP 246	24.60	7.51	9.00	1.860	0.40	60.0	140	24.0	•
FCP 247	24.70	7.51	9.00	1.860	0.40	60.0	140	24.0	•
FCP 248	24.80	7.51	9.00	1.860	0.40	60.0	140	24.0	•
FCP 249	24.90	7.51	9.00	1.860	0.40	60.0	140	24.0	•
FCP 250	25.00	7.37	9.40	1.900	0.40	60.0	140	25.0	•
FCP 251	25.10	7.37	9.40	1.900	0.40	60.0	140	25.0	•
FCP 252	25.20	7.37	9.40	1.900	0.40	60.0	140	25.0	•
FCP 253	25.30	7.37	9.40	1.900	0.40	60.0	140	25.0	•
FCP 254	25.40	7.37	9.40	1.900	0.40	60.0	140	25.0	•
FCP 255	25.50	7.37	9.40	1.900	0.40	60.0	140	25.0	•
FCP 256	25.60	7.37	9.40	1.900	0.40	60.0	140	25.0	•
FCP 257	25.70	7.37	9.40	1.900	0.40	60.0	140	25.0	•
FCP 258	25.80	7.37	9.40	1.900	0.40	60.0	140	25.0	•
FCP 259	25.90	7.37	9.40	1.900	0.40	60.0	140	25.0	•
FCP 260	26.00	8.16	9.70	1.990	0.40	60.0	140	26.0	•
FCP 261	26.10	8.16	9.70	1.990	0.40	60.0	140	26.0	•
FCP 262	26.20	8.16	9.70	1.990	0.40	60.0	140	26.0	•
FCP 263	26.30	8.16	9.70	1.990	0.40	60.0	140	26.0	•

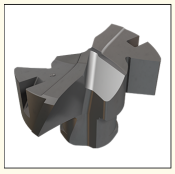
• For nearly flat bottom hole applications • For cutting conditions see pages 68-76

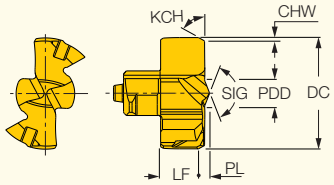
[1] Seat size code

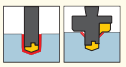
For tools, see pages: DCN-MM (21) • DCN-N-5D-BD (99) • DCN-N-8D-BD (99) • DCN-PICCO (21) • DCN A-1.5D (7) • DCN R-1.5D (8) • DCN A-3D (9) • DCN R-3D (10) • DCN A-5D (11) • DCN R-5D (12) • DCN A-8D (13) • DCN R-8D (14) • DCN R-10D (14) • DCN R-12D (15) • DCN C-3D (16) • DCN C-5D (16) • DCN C-8D (17) • DCN C-12D (17) • DCNS-3D (18) • DCNS-5D (19) • DCNM (20) • DCNT (M8-M24) (168)

SUMOCHAM FLAT HEAD

FCP
Exchangeable Flat Bottom SUMO-CHAM Drilling Heads, for Machining ISO P and ISO K Materials







Designation	Dimensions								IC908
	DC	PDD	LF	PL	CHW	KCH	SIG	SSC(1)	
FCP 264	26.40	8.16	9.70	1.990	0.40	60.0	140	26.0	•
FCP 265	26.50	8.16	9.70	1.990	0.40	60.0	140	26.0	•
FCP 266	26.60	8.16	9.70	1.990	0.40	60.0	140	26.0	•
FCP 267	26.70	8.16	9.70	1.990	0.40	60.0	140	26.0	•
FCP 268	26.80	8.16	9.70	1.990	0.40	60.0	140	26.0	•
FCP 269	26.90	8.16	9.70	1.990	0.40	60.0	140	26.0	•
FCP 270	27.00	8.19	10.40	2.050	0.40	60.0	140	27.0	•
FCP 271	27.10	8.19	10.40	2.050	0.40	60.0	140	27.0	•
FCP 272	27.20	8.19	10.40	2.050	0.40	60.0	140	27.0	•
FCP 273	27.30	8.19	10.40	2.050	0.40	60.0	140	27.0	•
FCP 274	27.40	8.19	10.40	2.050	0.40	60.0	140	27.0	•
FCP 275	27.50	8.19	10.40	2.050	0.40	60.0	140	27.0	•
FCP 276	27.60	8.19	10.40	2.050	0.40	60.0	140	27.0	•
FCP 277	27.70	8.19	10.40	2.050	0.40	60.0	140	27.0	•
FCP 278	27.80	8.19	10.40	2.050	0.40	60.0	140	27.0	•
FCP 279	27.90	8.19	10.40	2.050	0.40	60.0	140	27.0	•
FCP 280	28.00	8.77	10.50	2.150	0.40	60.0	140	28.0	•
FCP 281	28.10	8.77	10.50	2.150	0.40	60.0	140	28.0	•
FCP 282	28.20	8.77	10.50	2.150	0.40	60.0	140	28.0	•
FCP 283	28.30	8.77	10.50	2.150	0.40	60.0	140	28.0	•
FCP 284	28.40	8.77	10.50	2.150	0.40	60.0	140	28.0	•
FCP 285	28.50	8.77	10.50	2.150	0.40	60.0	140	28.0	•
FCP 286	28.60	8.77	10.50	2.150	0.40	60.0	140	28.0	•
FCP 287	28.70	8.77	10.50	2.150	0.40	60.0	140	28.0	•
FCP 288	28.80	8.77	10.50	2.150	0.40	60.0	140	28.0	•
FCP 289	28.90	8.77	10.50	2.150	0.40	60.0	140	28.0	•
FCP 290	29.00	8.99	10.80	2.200	0.40	60.0	140	29.0	•
FCP 291	29.10	8.99	10.80	2.200	0.40	60.0	140	29.0	•
FCP 292	29.20	8.99	10.80	2.200	0.40	60.0	140	29.0	•
FCP 293	29.30	8.99	10.80	2.200	0.40	60.0	140	29.0	•
FCP 294	29.40	8.99	10.80	2.200	0.40	60.0	140	29.0	•
FCP 295	29.50	8.99	10.80	2.200	0.40	60.0	140	29.0	•
FCP 296	29.60	8.99	10.80	2.200	0.40	60.0	140	29.0	•
FCP 297	29.70	8.99	10.80	2.200	0.40	60.0	140	29.0	•
FCP 298	29.80	8.99	10.80	2.200	0.40	60.0	140	29.0	•
FCP 299	29.90	8.99	10.80	2.200	0.40	60.0	140	29.0	•
FCP 300	30.00	8.97	11.40	2.150	0.40	60.0	140	30.0	•
FCP 301	30.10	8.97	11.40	2.150	0.40	60.0	140	30.0	•
FCP 302	30.20	8.97	11.40	2.150	0.40	60.0	140	30.0	•
FCP 303	30.30	8.97	11.40	2.150	0.40	60.0	140	30.0	•
FCP 304	30.40	8.97	11.40	2.150	0.40	60.0	140	30.0	•
FCP 305	30.50	8.97	11.40	2.150	0.40	60.0	140	30.0	•
FCP 306	30.60	8.97	11.40	2.150	0.40	60.0	140	30.0	•
FCP 307	30.70	8.97	11.40	2.150	0.40	60.0	140	30.0	•
FCP 308	30.80	8.97	11.40	2.150	0.40	60.0	140	30.0	•
FCP 309	30.90	8.97	11.40	2.150	0.40	60.0	140	30.0	•
FCP 310	31.00	9.28	11.70	2.180	0.40	60.0	140	31.0	•
FCP 311	31.10	9.28	11.70	2.180	0.40	60.0	140	31.0	•
FCP 312	31.20	9.28	11.70	2.180	0.40	60.0	140	31.0	•
FCP 313	31.30	9.28	11.70	2.180	0.40	60.0	140	31.0	•
FCP 314	31.40	9.28	11.70	2.180	0.40	60.0	140	31.0	•
FCP 315	31.50	9.28	11.70	2.180	0.40	60.0	140	31.0	•
FCP 316	31.60	9.28	11.70	2.180	0.40	60.0	140	31.0	•
FCP 317	31.70	9.28	11.70	2.180	0.40	60.0	140	31.0	•
FCP 318	31.80	9.28	11.70	2.180	0.40	60.0	140	31.0	•
FCP 319	31.90	9.28	11.70	2.180	0.40	60.0	140	31.0	•

• For nearly flat bottom hole applications • For cutting conditions see pages 68-76

(1) Seat size code

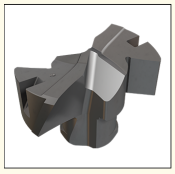
For tools, see pages: DCN-MM (21) • DCN-N-5D-BD (99) • DCN-N-8D-BD (99) • DCN-PICCO (21) • DCN A-1.5D (7) • DCN R-1.5D (8) • DCN A-3D (9) • DCN R-3D (10) • DCN A-5D (11) • DCN R-5D (12) • DCN A-8D (13) • DCN R-8D (14) • DCN R-10D (14) • DCN R-12D (15) • DCN C-3D (16) • DCN C-5D (16) • DCN C-8D (17) • DCN C-12D (17) • DCNS-3D (18) • DCNS-5D (19) • DCNM (20) • DCNT (M8-M24) (168)

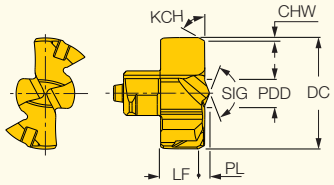
Continued

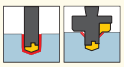
SUMOCHAM FLAT HEAD

FCP

Exchangeable Flat Bottom SUMO-CHAM Drilling Heads, for Machining ISO P and ISO K Materials







Designation	Dimensions								IC908
	DC	PDD	LF	PL	CHW	KCH	SIG	SSC(1)	
FCP 320	32.00	9.66	12.10	2.250	0.40	60.0	140	32.0	●
FCP 321	32.10	9.66	12.10	2.250	0.40	60.0	140	32.0	●
FCP 322	32.20	9.66	12.10	2.250	0.40	60.0	140	32.0	●
FCP 323	32.30	9.66	12.10	2.250	0.40	60.0	140	32.0	●
FCP 324	32.40	9.66	12.10	2.250	0.40	60.0	140	32.0	●
FCP 325	32.50	9.66	12.10	2.250	0.40	60.0	140	32.0	●
FCP 326	32.60	9.66	12.10	2.250	0.40	60.0	140	32.0	●
FCP 327	32.70	9.80	12.10	2.250	0.40	60.0	140	32.0	●
FCP 328	32.80	9.80	12.10	2.250	0.40	60.0	140	32.0	●
FCP 329	32.90	9.80	12.10	2.250	0.40	60.0	140	32.0	●

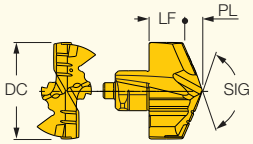
• For nearly flat bottom hole applications • For cutting conditions see pages 68-76

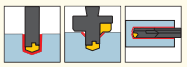
(1) Seat size code

For tools, see pages: DCN-MM (21) • DCN-N-5D-BD (99) • DCN-N-8D-BD (99) • DCN-PICCO (21) • DCN A-1.5D (7) • DCN R-1.5D (8) • DCN A-3D (9) • DCN R-3D (10) • DCN A-5D (11) • DCN R-5D (12) • DCN A-8D (13) • DCN R-8D (14) • DCN R-10D (14) • DCN R-12D (15) • DCN C-3D (16) • DCN C-5D (16) • DCN C-8D (17) • DCN C-12D (17) • DCNS-3D (18) • DCNS-5D (19) • DCNM (20) • DCNT (M8-M24) (168)

SUMOCHAM

ICG
Exchangeable Chip Splitting
SUMO-CHAM
Drilling Heads, for Machining
ISO M and ISO P Materials





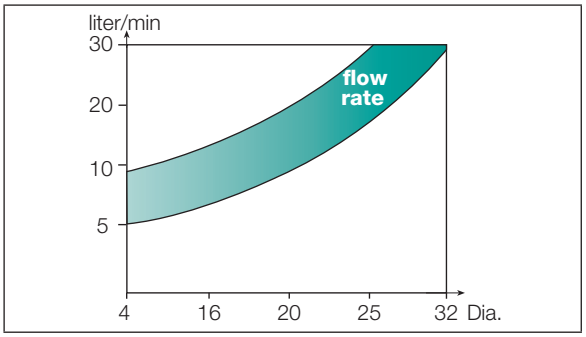
Designation	Dimensions DC	LF	PL	SIG	SSC(1)	IC908
ICG 140	14.00	5.08	2.770	130	14.0	•
ICG 141	14.10	5.06	2.790	130	14.0	•
ICG 142	14.20	5.04	2.810	130	14.0	•
ICG 143	14.30	5.01	2.840	130	14.0	•
ICG 145	14.50	4.97	2.880	130	14.0	•
ICG 146	14.60	4.95	2.900	130	14.0	•
ICG 147	14.70	4.92	2.930	130	14.0	•
ICG 150	15.00	5.45	2.980	130	15.0	•
ICG 151	15.10	5.43	3.000	130	15.0	•
ICG 152	15.20	5.40	3.030	130	15.0	•
ICG 153	15.30	5.38	3.050	130	15.0	•
ICG 155	15.50	5.33	3.100	130	15.0	•
ICG 157	15.70	5.28	3.150	130	15.0	•
ICG 159	15.90	5.23	3.200	130	15.0	•
ICG 160	16.00	5.81	3.190	130	16.0	•
ICG 162	16.20	5.76	3.240	130	16.0	•
ICG 163	16.30	5.74	3.260	130	16.0	•
ICG 165	16.50	5.69	3.310	130	16.0	•
ICG 166	16.60	5.67	3.330	130	16.0	•
ICG 167	16.70	5.64	3.360	130	16.0	•
ICG 168	16.80	5.62	3.380	130	16.0	•
ICG 170	17.00	6.20	3.400	130	17.0	•
ICG 172	17.20	6.16	3.440	130	17.0	•
ICG 173	17.30	6.14	3.460	130	17.0	•
ICG 175	17.50	6.09	3.510	130	17.0	•
ICG 176	17.60	6.07	3.530	130	17.0	•
ICG 177	17.70	6.05	3.550	130	17.0	•
ICG 178	17.80	6.02	3.580	130	17.0	•
ICG 180	18.00	6.60	3.600	130	18.0	•
ICG 183	18.30	6.53	3.670	130	18.0	•
ICG 185	18.50	6.48	3.720	130	18.0	•
ICG 190	19.00	6.71	3.990	130	19.0	•
ICG 193	19.30	6.64	4.060	130	19.0	•
ICG 195	19.50	6.59	4.110	130	19.0	•
ICG 200	20.00	7.19	4.010	130	20.0	•
ICG 201	20.10	7.17	4.030	130	20.0	•
ICG 203	20.30	7.12	4.080	130	20.0	•
ICG 204	20.40	7.09	4.110	130	20.0	•
ICG 205	20.50	7.07	4.130	130	20.0	•
ICG 210	21.00	7.41	4.170	130	21.0	•
ICG 215	21.50	7.29	4.290	130	21.0	•
ICG 219	21.90	7.19	4.390	130	21.0	•
ICG 220	22.00	7.99	4.370	130	22.0	•
ICG 221	22.10	7.97	4.390	130	22.0	•
ICG 222	22.20	7.95	4.410	130	22.0	•
ICG 225	22.50	7.87	4.490	130	22.0	•
ICG 228	22.80	7.80	4.560	130	22.0	•
ICG 230	23.00	8.38	4.550	130	23.0	•
ICG 235	23.50	8.26	4.670	130	23.0	•
ICG 237	23.70	8.22	4.710	130	23.0	•
ICG 240	24.00	8.81	4.690	130	24.0	•
ICG 245	24.50	8.70	4.800	130	24.0	•
ICG 248	24.80	8.63	4.870	130	24.0	•
ICG 250	25.00	8.86	5.040	130	25.0	•
ICG 253	25.30	8.79	5.110	130	25.0	•
ICG 254	25.40	8.77	5.130	130	25.0	•
ICG 255	25.50	8.74	5.160	130	25.0	•
ICG 257	25.70	8.70	5.200	130	25.0	•
ICG 259	25.90	8.65	5.250	130	25.0	•

• Drilling head equipped with chip breaker and chip splitter • For cutting conditions see pages 68-76
(1) Seat size code

For tools, see pages: DCN-N-5D-BD (99) • DCN-N-8D-BD (99) • DCN A-1.5D (7) • DCN R-1.5D (8) • DCN A-3D (9) • DCN R-3D (10) • DCN A-5D (11) • DCN R-5D (12) • DCN A-8D (13) • DCN R-8D (14) • DCN R-10D (14) • DCN R-12D (15) • DCNS-3D (18) • DCNS-5D (19) • DCNM (20) • DCNT (M8-M24) (168) • MNSNT (358)

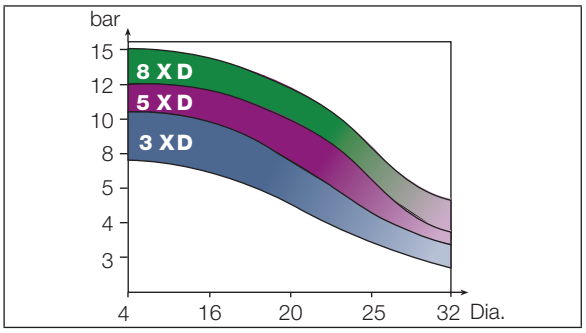
- When drilling stainless steel or high temperature alloys using the **ICM** drilling head, it is highly recommended to apply high-pressure oil or 7-10% mineral or vegetable based oil emulsion.
- Following is the recommended coolant flow rate and pressure.

Coolant Flow Rate (Liter/min)



Drill Diameter D (mm)

Minimum Coolant Pressure (Bar)

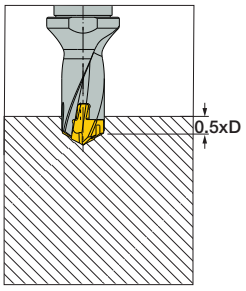


Drill Diameter D (mm)

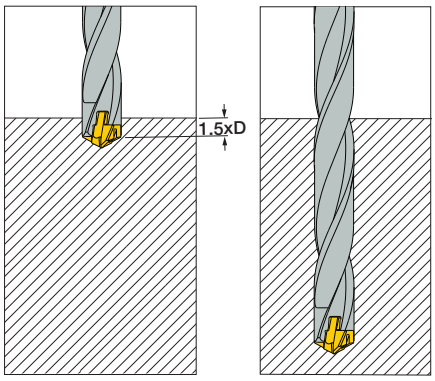
- For optimal performance, it is recommended to adjust runout of outer points or chisel with a maximum of 0.02mm. Large runout will influence drill performance tool life and hole quality.
- No setup time is needed after indexing the **SUMO-CHAM** drill head.
- **SUMO-CHAM** drills can be used either on milling centers or lathe machines.
- When using **SUMO-CHAM** drill in stationary (lathe) applications, we recommend using the **ISCAR** GYRO device or eccenter sleeve to reduce misalignment. Misalignment will cause poor performance of the **SUMO-CHAM** drill or even tool breakage.

- Prior to using 8D or 12D drills, it is recommended to drill a 0.5xD pre-hole using a short or centering drill. Enter the pre-hole at slow speed and feed until 2-5mm from its bottom. Start the cooling system and increase rotation to the recommended drilling speed. Hold for 2-3 seconds, then continue at the recommended drilling feed.

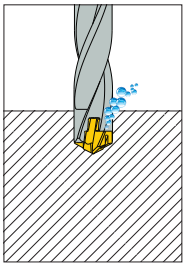
1 Pre-Hole 0.5xD Deep for Centering



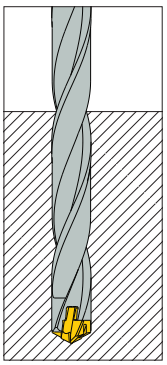
2 Slow Rotation and Feed While Entering the Pre-Hole



3 Maintain for 2-3 Seconds and Activate the Cooling System



4 Continue Drilling at Recommended Cutting Conditions

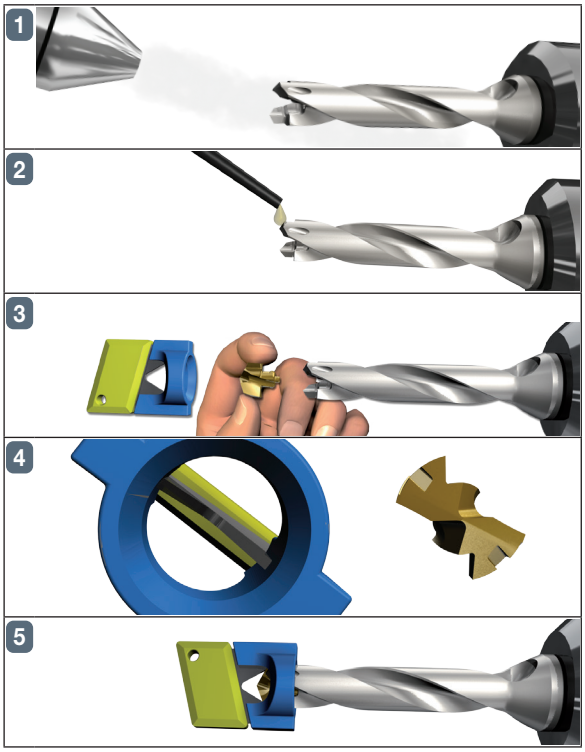


Prehole Adjustment

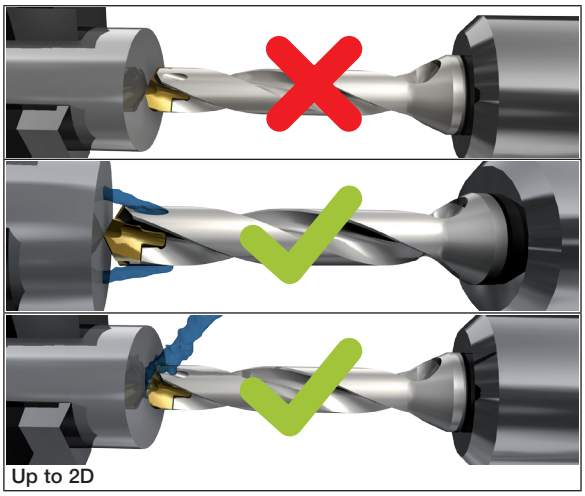
PreHole / Hole	ICP/ ICM/ ICN/ IHP	ICK	HCP/H3P	FCP/F3P	QCP	ICG
ICP/ ICM/ ICN/ IHP	IHP/ ICP/M/N PreHole ✓	ICK PreHole ✗	H#P PreHole ✗	FCP PreHole ✗	QCP PreHole ✗	ICG PreHole ✗
ICK	IHP/ ICP/M/N PreHole ✓	ICK PreHole ✓	H#P PreHole ✗	FCP PreHole ✗	QCP PreHole ✗	ICG PreHole ✗
HCP/ H3P	IHP/ ICP/M/N PreHole ✓	ICK PreHole ✗	H#P PreHole ✓	FCP PreHole ✓	QCP PreHole ✗	ICG PreHole ✗
FCP/ F3P	IHP/ ICP/M/N PreHole ✗	ICK PreHole ✗	H#P PreHole ✗	FCP PreHole ✓	QCP PreHole ✗	ICG PreHole ✗
QCP	IHP/ ICP/M/N PreHole ✓	ICK PreHole ✗	H#P PreHole ✗	FCP PreHole ✓	QCP PreHole ✓	ICG PreHole ✗
ICG	IHP/ ICP/M/N PreHole ✓	ICK PreHole ✗	H#P PreHole ✗	FCP PreHole ✗	QCP PreHole ✗	ICG PreHole ✓

*For proper insert performance and centering, a bigger insert within a 1.0 mm range of the same diameter may be used

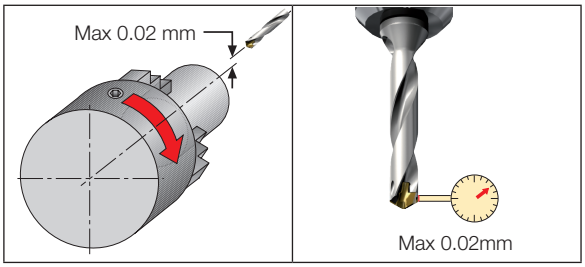
Drilling Head Mounting Procedure



Coolant Recommendations

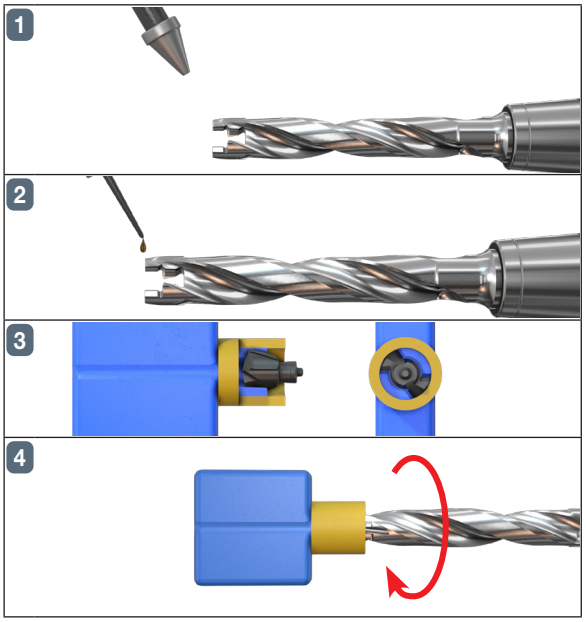


Maximum Runout, Misalignment

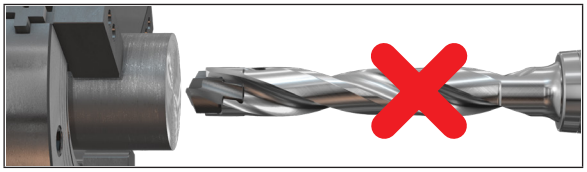


K DCN MULTI
The optional K DCN MULTI key enables clamping all **SUMO-CHAM** drilling heads geometry variety in 6-26.99 mm diameter range.

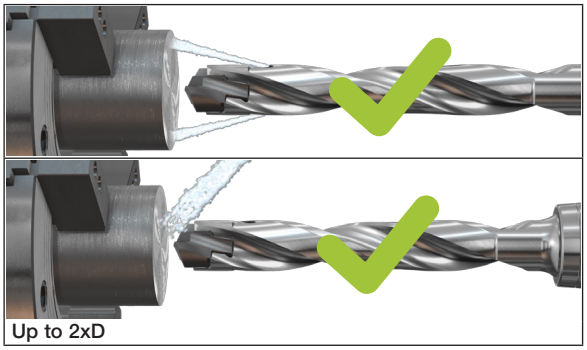
Drilling Head Dia. 4.0-5.99mm Mounting Procedure



Coolant Recommendations

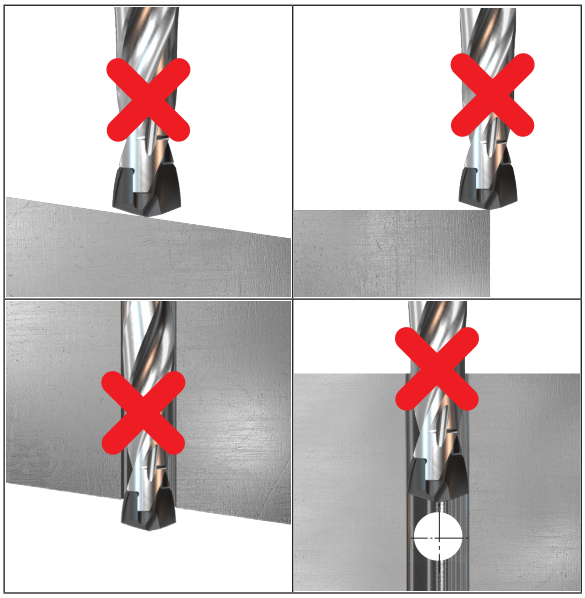


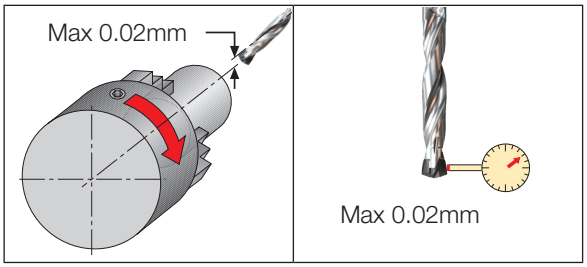
Dry machining



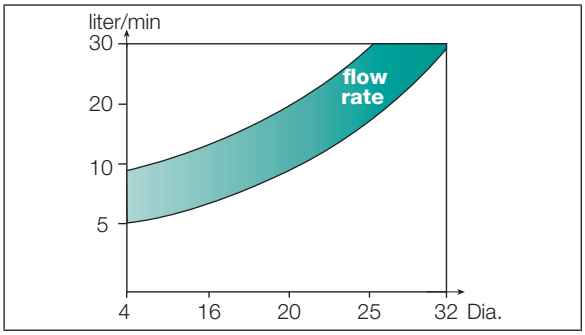
Up to 2xD

Drilling Limitations



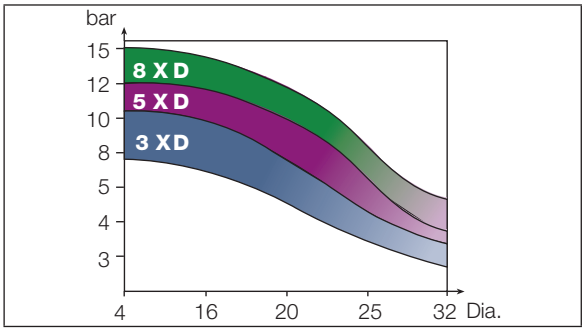


Coolant Flow Rate



Drill Diameter D (mm)

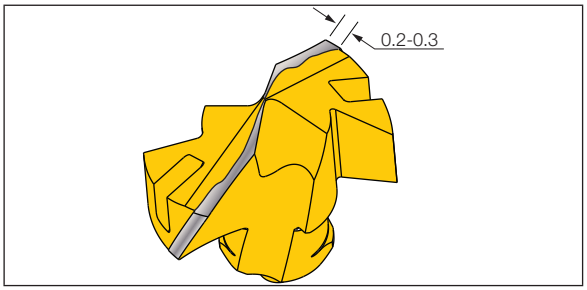
Minimum Coolant Pressure



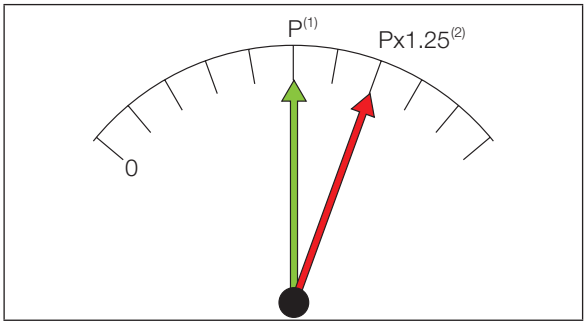
Drill Diameter D (mm)

Indication of Drill Head Wear

Wear Limit

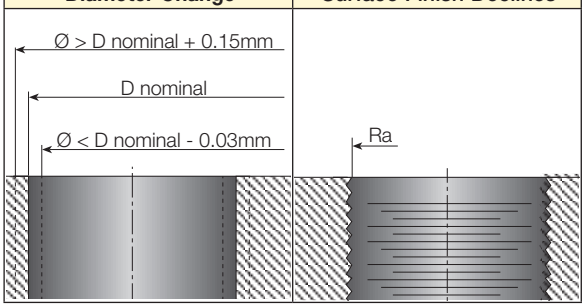


Power Restriction

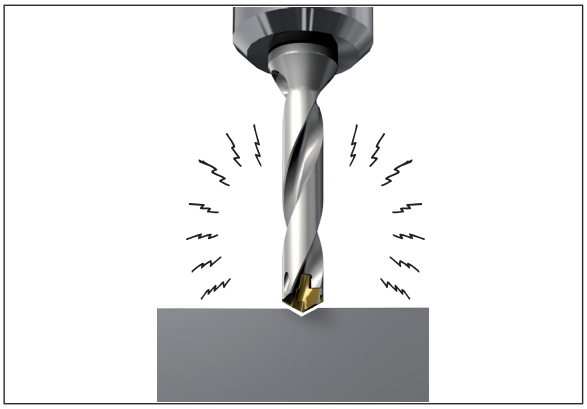


(1) New drilling head
(2) Worn-out drilling head

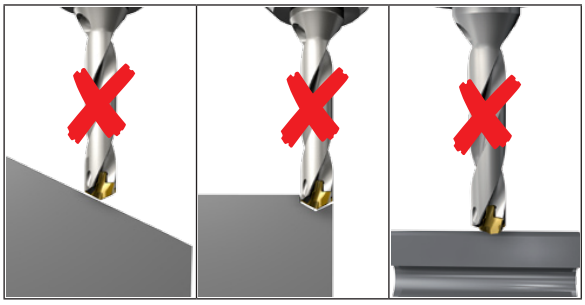
Diameter Change	Surface Finish Declines



Vibration Noise Drastically Increases



Drilling Limitations



SUMO-CHAM Cutting Parameters

Material Groups							Recommended Machining Conditions									
							Feed Vs. Drill Diameter									
ISO	Material	Condition	Tensile Strength [N/mm²]	Hardness HB	Material No.(1)	V m/min	D=4-4.9	D=5-5.9	D=6-7.9	D=8-9.9	D=10-11.9	D=12-13.9	D=14-15.9	D=16-19.9	D=20-25.9	D=26-32.9
							mm/rev									
P	non-alloy steel and cast steel, free cutting steel <0.25% C	annealed	420	125	1	80-**110**-140	0.04	0.07	0.09	0.12	0.15	0.18	0.20	0.25	0.25	0.30
P	non-alloy steel and cast steel, free cutting steel ≥0.25% C	annealed	650	190	2	80-**105**-130	**0.06**	**0.09**	**0.11**	**0.17**	**0.21**	**0.24**	**0.27**	**0.35**	**0.35**	**0.40**
P	non-alloy steel and cast steel, free cutting steel <0.55% C	quenched and tempered	850	250	3	80-**100**-120	0.08	0.11	0.13	0.22	0.28	0.30	0.35	0.45	0.45	0.50
P	non-alloy steel and cast steel, free cutting steel ≥0.55% C	annealed	750	220	4	70-**90**-110										
P	non-alloy steel and cast steel, free cutting steel ≥0.55% C	quenched and tempered	1000	300	5	50-**70**-90										
P	low alloy and cast steel (less than 5% of alloying elements)	annealed	600	200	6	80-**100**-120	0.04	0.07	0.09	0.12	0.14	0.16	0.18	0.23	0.25	0.30
P	low alloy and cast steel (less than 5% of alloying elements)	quenched and tempered	930	275	7	70-**90**-110	**0.06**	**0.10**	**0.12**	**0.18**	**0.21**	**0.24**	**0.26**	**0.31**	**0.35**	**0.40**
P	low alloy and cast steel (less than 5% of alloying elements)	quenched and tempered	1000	300	8	50-**70**-90	0.08	0.13	0.15	0.25	0.28	0.32	0.35	0.40	0.45	0.50
P	low alloy and cast steel (less than 5% of alloying elements)	quenched and tempered	1200	350	9	40-**55**-70										
P	high alloyed steel, cast steel and tool steel	annealed	680	200	10	50-**70**-90	0.06	0.07	0.09	0.12	0.12	0.15	0.18	0.20	0.22	0.25
P	high alloyed steel, cast steel and tool steel	quenched and tempered	1100	325	11	40-**60**-80	**0.07**	**0.09**	**0.11**	**0.16**	**0.17**	**0.20**	**0.23**	**0.25**	**0.27**	**0.30**
							0.08	0.10	0.12	0.20	0.22	0.25	0.28	0.30	0.33	0.35
P	stainless steel and cast steel	ferritic/martensitic	680	200	12	40-**55**-70	0.05	0.06	0.08	0.10	0.12	0.14	0.16	0.16	0.18	0.20
P	stainless steel and cast steel	martensitic	820	240	13	40-**55**-70	**0.06**	**0.07**	**0.09**	**0.12**	**0.15**	**0.17**	**0.20**	**0.21**	**0.24**	**0.27**
							0.07	0.08	0.10	0.15	0.18	0.20	0.24	0.26	0.30	0.35
M	stainless steel and cast steel	austenitic, duplex	600	180	14	30-**50**-70	0.05	0.06	0.08	0.10	0.12	0.14	0.16	0.16	0.18	0.20
							0.06	**0.07**	**0.09**	**0.12**	**0.15**	**0.17**	**0.20**	**0.21**	**0.24**	**0.27**
							0.07	0.08	0.10	0.15	0.18	0.20	0.24	0.26	0.30	0.35
K	gray cast iron (GG)	ferritic / pearlitic		180	15	90-**125**-160										
K	gray cast iron (GG)	pearlitic / martensitic		260	16	80-**110**-140										
K	nodular cast iron (GGG)	ferritic		160	17	90-**135**-180	0.04	0.10	0.12	0.15	0.20	0.25	0.30	0.35	0.35	0.40
K	nodular cast iron (GGG)	pearlitic		250	18	80-**110**-140	**0.06**	**0.13**	**0.15**	**0.22**	**0.27**	**0.32**	**0.37**	**0.45**	**0.47**	**0.50**
K	malleable cast iron	ferritic		130	19	90-**125**-160	0.08	0.15	0.18	0.30	0.35	0.40	0.45	0.55	0.60	0.60
K	malleable cast iron	pearlitic		230	20	80-**110**-140										
N	aluminum-wrought alloys	not hardenable		60	21	90-**155**-220										
N	aluminum-wrought alloys	hardenable		100	22											
N	aluminum-cast alloys ≤12% Si	not hardenable		75	23											
N	aluminum-cast alloys ≤12% Si	hardenable		90	24					0.20	0.25	0.30	0.35	0.40	0.45	0.50
N	aluminum-cast alloys >12% Si	high temperature		130	25	80-**120**-160				**0.27**	**0.32**	**0.37**	**0.42**	**0.50**	**0.57**	**0.67**
N	copper alloys >1% Pb	free cutting		110	26					0.35	0.40	0.45	0.50	0.60	0.70	0.75
N	copper alloys	brass		90	27	90-**155**-220										
N	copper alloys	electrolytic copper		100	28											
N	non metallic	duroplastics, fiber plastics			29											
N	non metallic	hard rubber			30											
S	high temperature alloys Fe based	annealed		200	31	30-**45**-60										
S	high temperature alloys Fe based	hardened		280	32	20-**35**-50			0.05	0.06	0.08	0.10	0.12	0.12	0.14	0.16
S	high temperature alloys Ni or Co based	annealed		250	33				**0.06**	**0.08**	**0.10**	**0.12**	**0.15**	**0.16**	**0.18**	**0.20**
S	high temperature alloys Ni or Co based	hardened		350	34				0.07	0.11	0.13	0.15	0.18	0.20	0.22	0.25
S	high temperature alloys Ni or Co based	cast		320	35											
S	titanium alloys	pure	400		36	20-**35**-50			0.05	0.06	0.08	0.10	0.12	0.14	0.16	0.18
S	titanium alloys	alpha+beta alloys, hardened	1050		37				**0.06**	**0.09**	**0.11**	**0.14**	**0.16**	**0.18**	**0.20**	**0.22**
									0.07	0.12	0.15	0.18	0.20	0.22	0.25	0.27
H	hardened steel	hardened		55 HRC	38	20-**35**-50			0.05	0.06	0.08	0.10	0.12	0.14	0.16	0.18
H	hardened steel	hardened		60 HRC	39				**0.06**	**0.09**	**0.11**	**0.14**	**0.16**	**0.18**	**0.20**	**0.22**
									0.07	0.12	0.15	0.18	0.20	0.22	0.25	0.27

Recommended cutting data

(1) For workpiece materials list, see pages 542-637. As a starting value, the middle of the recommended machining range should be used.

Then, according to the wear results, conditions can be changed to optimize performance.

The data refers to IC908

- When using external coolant supply only, reduce cutting speed by 10%
- Use internal coolant supply when machining austenitic stainless steel
- When using more than 5XD drill ratio, reduce cutting parameters by 10%
- Machining Steel Stainless is not recommended with QCP & HCP geometry

SUMO-CHAM-IQ Cutting Parameters

Material Groups							Recommended Machining Conditions									
							Feed Vs. Drill Diameter									
ISO	Material	Condition	Tensile Strength [N/mm²]	Hardness HB	Material No.(1)	V m/min	D=4-4.9	D=5-5.9	D=6-7.9	D=8-9.9	D=10-11.9	D=12-13.9	D=14-15.9	D=16-19.9	D=20-25.9	D=26-32.9
							mm/rev									
P	non-alloy steel and cast steel, free cutting steel <0.25% C	annealed	420	125	1	80-**110**-140	0.04	0.07	0.09	0.12	0.15	0.18	0.20	0.25	0.25	0.30
P	non-alloy steel and cast steel, free cutting steel ≥0.25% C	annealed	650	190	2	80-**105**-130	**0.06**	**0.09**	**0.11**	**0.17**	**0.21**	**0.24**	**0.27**	**0.35**	**0.35**	**0.40**
P	non-alloy steel and cast steel, free cutting steel <0.55% C	quenched and tempered	850	250	3	80-**100**-120	0.08	0.11	0.13	0.22	0.28	0.30	0.35	0.45	0.45	0.50
P	non-alloy steel and cast steel, free cutting steel ≥0.55% C	annealed	750	220	4	70-**90**-110										
P	non-alloy steel and cast steel, free cutting steel ≥0.55% C	quenched and tempered	1000	300	5	50-**70**-90										
P	low alloy and cast steel (less than 5% of alloying elements)	annealed	600	200	6	80-**100**-120	0.04	0.07	0.09	0.12	0.14	0.16	0.18	0.23	0.25	0.30
P	low alloy and cast steel (less than 5% of alloying elements)	quenched and tempered	930	275	7	70-**90**-110	**0.06**	**0.09**	**0.12**	**0.18**	**0.21**	**0.24**	**0.26**	**0.31**	**0.35**	**0.40**
P	low alloy and cast steel (less than 5% of alloying elements)	quenched and tempered	1000	300	8	50-**70**-90	0.08	0.11	0.15	0.25	0.28	0.32	0.35	0.40	0.45	0.50
P	low alloy and cast steel (less than 5% of alloying elements)	quenched and tempered	1200	350	9	40-**55**-70										
P	high alloyed steel, cast steel and tool steel	annealed	680	200	10	50-**70**-90	0.06	0.07	0.09	0.12	0.12	0.15	0.18	0.20	0.22	0.25
P	high alloyed steel, cast steel and tool steel	quenched and tempered	1100	325	11	40-**60**-80	**0.07**	**0.09**	**0.11**	**0.16**	**0.17**	**0.20**	**0.23**	**0.25**	**0.27**	**0.30**
P	high alloyed steel, cast steel and tool steel	quenched and tempered	1100	325	11	40-**60**-80	0.08	0.10	0.12	0.20	0.22	0.25	0.28	0.30	0.33	0.35
P	stainless steel and cast steel	ferritic/ martensitic	680	200	12	40-**55**-70	0.05	0.06	0.08	0.11	0.11	0.14	0.17	0.22	0.21	0.24
P	stainless steel and cast steel	ferritic/ martensitic	680	200	12	40-**55**-70	**0.06**	**0.07**	**0.10**	**0.15**	**0.16**	**0.19**	**0.22**	**0.24**	**0.26**	**0.29**
P	stainless steel and cast steel	martensitic	820	240	13		0.07	0.08	0.11	0.19	0.21	0.24	0.27	0.29	0.32	0.34
K	gray cast iron (GG)	ferritic / pearlitic		180	15	90-**125**-160	0.04	0.10	0.12	0.15	0.20	0.25	0.30	0.35	0.35	0.40
K	gray cast iron (GG)	pearlitic / martensitic		260	16	80-**110**-140	**0.06**	**0.13**	**0.15**	**0.22**	**0.27**	**0.32**	**0.37**	**0.45**	**0.47**	**0.50**
K	nodular cast iron (GGG)	ferritic		160	17	90-**135**-180	0.08	0.15	0.18	0.30	0.35	0.40	0.45	0.55	0.60	0.60
K	nodular cast iron (GGG)	pearlitic		250	18	80-**110**-140										
K	malleable cast iron	ferritic		130	19	90-**125**-160										
K	malleable cast iron	pearlitic		230	20	80-**110**-140										

Recommended cutting data

(1) For workpiece materials list, see pages 542-637. As a starting value, the middle of the recommended machining range should be used.

Then, according to the wear results, conditions can be changed to optimize performance.

The data refers to IC908

- When using external coolant supply only, reduce cutting speed by 10%
- For QCP or HCP geometry, no need to reduce the cutting parameters while using 8XD and up holders

Recommended Machining Conditions for ICG Inserts

Material group	Material number	Cutting Speed V_c m/min	Feed mm/rev		
			D=14-15.99	D=16-19.9	D=20-25.9
P	3	80-100-120	0.15 0.22 0.27	0.18 0.24 0.3	0.2 0.27 0.35
	4				
	5				
	6				
	7				
	8				
	9				
	10				
	11				
	12	60-80-100	0.12 0.2	0.16 0.23	0.18 0.26
	13				
M	14	60-80-100	0.12 0.2 0.27	0.16 0.23 0.3	0.18 0.26 0.35
N	21	80-200-300	0.35 0.45 0.5	0.4 0.5 0.6	0.45 0.57 0.65
	22				
	23				
	24				
	25				
	26				
	27				
	28				
S	31	25-30-35	0.10 0.14 0.22	0.12 0.18 0.25	0.12 0.18 0.25
	32				
	33				
	34				
	35				
	36				
	37				
H	38	20-35-50	0.12 0.15 0.2	0.14 0.18 0.22	0.16 0.2 0.25
	39				

Recommended cutting data

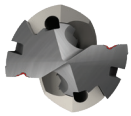
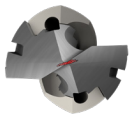
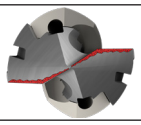
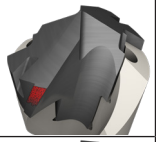
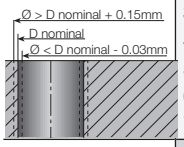
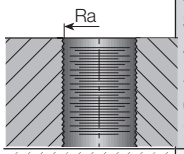
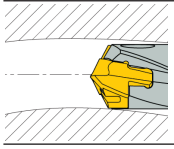
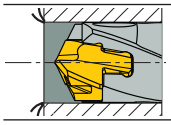
Recommended Machining Conditions for ICN Inserts

		SUMO-CHAM			
		Feed vs. Drill Diameter			
		D=10-11.9	D=12-13.9	D=14-15.9	D=16-19.9
Mtl. No.	V m/min	mm/rev			
21	90-**155**-220	0.25 **0.32** 0.40	0.30 **0.37** 0.45	0.35 **0.42** 0.50	0.40 **0.50** 0.60
22					
23					
24					
25	80-**120**-160				
26	90-**155**-220				
27					
28					

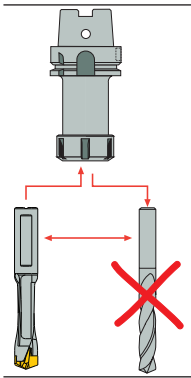
Recommended cutting data

According to the wear results, conditions can be changed to optimize performance.

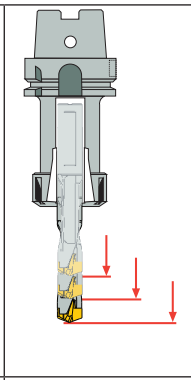
Troubleshooting

	**Cutting Edge Chipping** 1 Check the stability of the machine spindle, tool and workpiece clamping rigidity. 2 Reduce feed rate, increase speed. 3 If the drill vibrates, reduce cutting speed and increase feed rate. 4 When drilling rough, hard or sloped surfaces (up to 7°), reduce the feed rate by 30-50% when entering and exiting. 5 Check cooling lubricant and increase coolant pressure. In case of external coolant supply, improve jet direction and add cooling jets.
	**Chisel Area Chipping** 1 Reduce feed rate. 2 Increase coolant pressure. 3 Check the adaptation. Use hydraulic clamping chuck, MAXIN power chuck or side lock systems. 4 Increase workpiece chucking force.
	**Excessive Flank Wear** 1 Check that the correct geometry is used. 2 Reduce cutting speed. 3 Increase internal coolant pressure.
	**Excessive Flute Land Wear** 1 Check that the correct geometry is used. 2 Check the runout and make sure it is within 0.02mm T.I.R. (radial and axial). 3 Reduce cutting speed. 4 When drilling rough, hard or sloped surfaces (up to 7°), reduce the feed rate by 30-50% when entering and exiting. 5 Increase coolant pressure. 6 Check the chisel point runout and make sure it is within 0.02mm T.I.R. 7 Increase workpiece chucking force stability and rigidity. 8 If there is low pocket gripping force - replace drill body.
	Built-Up Edge 1 Increase cutting speed/feed. 2 Increase coolant pressure.
	**Deviation of Hole Tolerance** 1 Check the runout and make sure it is within 0.02mm T.I.R. (radial and axial cutting points). 2 Reduce feed rate. 3 Check the chisel point runout and make sure that it is within 0.02mm T.I.R. 4 Wrong cutting edge. Replace head. 5 Increase workpiece chucking force. 6 Check the adaptation. Use hydraulic clamping chuck, **MAXIN** power chuck or side clamping systems. 7 Increase internal coolant pressure.
	**Surface Finish Too Rough** 1 Check the runout and make sure it is within 0.02mm T.I.R. (radial and axial). 2 Adjust the feed for improved chip formation. 3 In case of chip jamming - increase the coolant flow and/or reduce the cutting speed. 4 Increase the coolant pressure. 5 Check the chisel point runout and make sure it is within 0.02mm T.I.R. 6 Use pecking cycle. 7 Use double margin geometry.
	**Hole Not Straight:** 1 Use 2M geometry. 2 Drill a pre-hole for centering (check recommendations for pre-hole operation). 3 Increase coolant pressure, improve jet direction in case of external coolant supply. 4 Increase the feed.
	Inaccurate Hole Position 1 Check the runout and make sure it is within 0.02mm T.I.R. (radial and axial). 2 Check the stability of the machine spindle, tool and workpiece clamping rigidity. 3 When drilling rough, hard or sloped surfaces (up to 7°), reduce the feed rate by 30% -50% when entering. 4 Drill a pre-hole with a 140° point angle for centering. 5 Check the chisel point runout and make sure it is within 0.02mm T.I.R.
	**Burrs on Exit** 1 Reduce the feed rate by 30% -50% when exiting. 2 Replace the worn head. 3 Check the adaptation. Use hydraulic clamping chuck, **MAXIN** power chuck or side clamping systems.

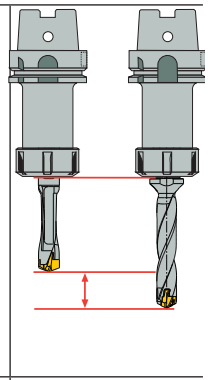
Applications for DCNS Drills



Replaces solid carbide drills without changing any holding components

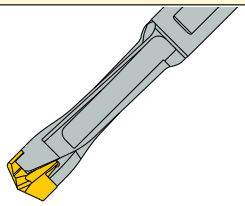
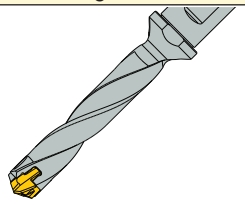
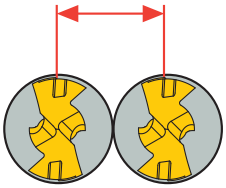
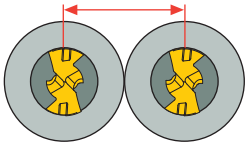


When using SUMO-UNI-CHAM, the drill's projection can be adjusted



Shorter projection compared to SUMO-CHAM, when required

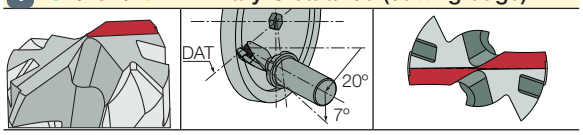
For Better Stability in Rough Applications and Interrupted Cuts

SUMO-UNI-CHAM Moderate Helix	SUMO-CHAM High Helix
	
SUMO-UNI-CHAM	**SUMO-CHAM**
	
Can be used on multi-spindle applications for close spacing between adjacent drills	

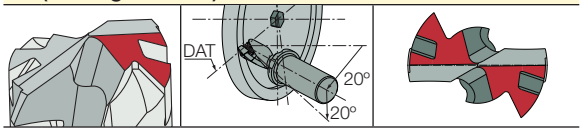
Regrinding Instructions

Regrinding Instructions ICP/ICK/ICM Inserts

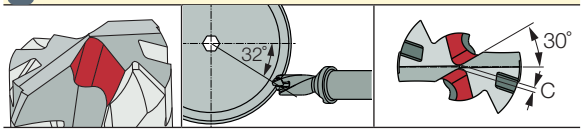
1 ICP/ICK/ICM Primary Clearance (cutting edge)



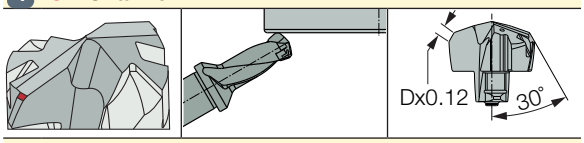
2 ICP/ICK/ICM Secondary Clearance (Cutting Release)



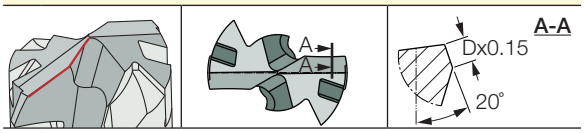
3 ICP/ICK/ICM Chisel



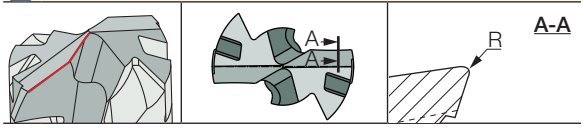
4 ICK Chamfer



ICM T-land



5 ICP/ICK/ICM Edge Preparation (honing)

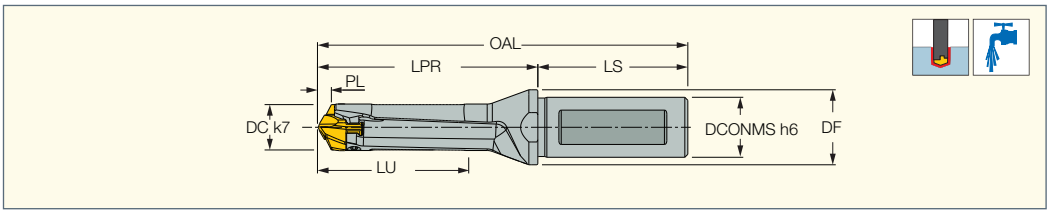


D Range	C	R		
		ICP	ICK	ICM
4.00-8.99	Not to be ground			
9.00-11.99	0.32	0.32	0.04	0.15
12.00-26.99	0.40	0.40	0.05	0.03
27.00-59.99	0.55	0.55	0.06	0.03

SUMOLDRILL

DLN A-3D

Exchangeable Head Drills with Screw Lock System for Interrupted Drilling Applications



Designation	DCN[1]	DCX[2]	DCONMS	DF	LU	LPR	PL	LS	OAL	SSC[3]	MIID[4]
DLN 120-036-16A-3D	12.00	12.49	16.00	20.00	38.26	53.0	2.260	48.0	101.00	12.0	ILP 120-2M
DLN 125-037-16A-3D	12.50	12.99	16.00	20.00	39.76	54.5	2.260	48.0	102.50	12.0	ILP 125-2M
DLN 130-039-16A-3D	13.00	13.49	16.00	20.00	41.45	56.6	2.450	48.0	104.60	13.0	ILP 130-2M
DLN 135-041-16A-3D	13.50	13.99	16.00	20.00	42.95	58.1	2.450	48.0	106.10	13.0	ILP 135-2M
DLN 140-042-16A-3D	14.00	14.49	16.00	20.00	44.55	62.1	2.550	48.0	110.15	14.0	ILP 140-2M
DLN 145-044-16A-3D	14.50	14.99	16.00	20.00	46.05	63.6	2.550	48.0	111.65	14.0	ILP 145-2M
DLN 150-045-20A-3D	15.00	15.99	20.00	25.00	47.69	68.7	2.690	50.0	118.73	15.0	ILP 150-2M
DLN 160-048-20A-3D	16.00	16.99	20.00	25.00	50.91	73.3	2.910	50.0	123.30	16.0	ILP 160-2M
DLN 170-051-20A-3D	17.00	17.99	20.00	25.00	54.01	77.9	3.010	50.0	127.90	17.0	ILP 170-2M
DLN 180-054-25A-3D	18.00	18.99	25.00	32.00	57.16	82.5	3.160	56.0	138.50	18.0	ILP 180-2M
DLN 190-057-25A-3D	19.00	19.99	25.00	32.00	60.35	87.0	3.350	56.0	143.00	19.0	ILP 190-2M
DLN 200-060-25A-3D	20.00	20.99	25.00	32.00	63.50	91.6	3.500	56.0	147.60	20.0	ILP 200-2M
DLN 210-063-25A-3D	21.00	21.99	25.00	32.00	66.67	96.2	3.670	56.0	152.18	21.0	ILP 210-2M
DLN 220-066-25A-3D	22.00	22.99	25.00	32.00	69.80	100.8	3.810	56.0	156.76	22.0	ILP 220-2M
DLN 230-069-32A-3D	23.00	23.99	32.00	42.00	72.94	105.3	3.950	60.0	165.33	23.0	ILP 230-2M
DLN 240-072-32A-3D	24.00	24.99	32.00	42.00	76.11	109.9	4.110	60.0	169.90	24.0	ILP 240-2M
DLN 250-075-32A-3D	25.00	25.99	32.00	42.00	79.29	114.5	4.290	60.0	174.50	25.0	ILP 250-2M

- Do not mount smaller drilling heads other than the specified range of the drill body
- For user guide and cutting conditions, see pages 80-81

[1] Cutting diameter minimum
[2] Cutting diameter maximum
[3] Seat size code
[4] Master insert identification

For inserts, see page: ILP (79)

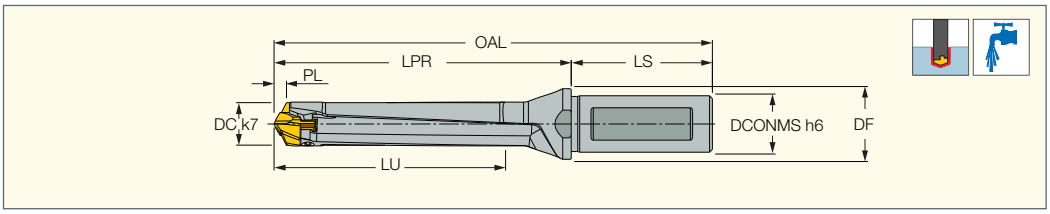
Spare Parts

Designation			
DLN 120-036-16A-3D	SR M2.5-L4.5-SL	HW 1.3	
DLN 125-037-16A-3D	SR M2.5-L4.5-SL	HW 1.3	
DLN 130-039-16A-3D	SR M2.5-L5.0-SL	HW 1.3	
DLN 135-041-16A-3D	SR M2.5-L5.0-SL	HW 1.3	
DLN 140-042-16A-3D	SR M3.0-L5.4-SL		L-KEY HEX SL 331 1.5X40MM
DLN 145-044-16A-3D	SR M3.0-L5.4-SL		L-KEY HEX SL 331 1.5X40MM
DLN 150-045-20A-3D	SR M3.0-L5.4-SL		L-KEY HEX SL 331 1.5X40MM
DLN 160-048-20A-3D	SR M3.0-L5.8-SL		L-KEY HEX SL 331 1.5X40MM
DLN 170-051-20A-3D	SR M3.0-L5.8-SL		L-KEY HEX SL 331 1.5X40MM
DLN 180-054-25A-3D	SR M3.0-L6.6-SL		L-KEY HEX SL 331 1.5X40MM
DLN 190-057-25A-3D	SR M3.0-L6.6-SL		L-KEY HEX SL 331 1.5X40MM
DLN 200-060-25A-3D	SR M3.0-L7.4-SL		L-KEY HEX SL 331 1.5X40MM
DLN 210-063-25A-3D	SR M3.0-L7.4-SL		L-KEY HEX SL 331 1.5X40MM
DLN 220-066-25A-3D	SR M4.0-L8.1-SL-HSS-HEX		L-KEY HEX SL 331 2.0X40MM
DLN 230-069-32A-3D	SR M4.0-L8.1-SL-HSS-HEX		L-KEY HEX SL 331 2.0X40MM
DLN 240-072-32A-3D	SR M4.0-L8.6-SL-HSS-HEX		L-KEY HEX SL 331 2.0X40MM
DLN 250-075-32A-3D	SR M4.0-L8.6-SL-HSS-HEX		L-KEY HEX SL 331 2.0X40MM

SUMOLDRILL

DLN A-5D

Exchangeable Head Drills with Screw Lock System for Interrupted Drilling Applications



Designation	DCN[1]	DCX[2]	DCONMS	DF	LU	LPR	PL	LS	OAL	SSC[3]	MIID[4]
DLN 120-060-16A-5D	12.00	12.49	16.00	20.00	62.26	77.0	2.280	48.0	125.00	12.0	ILP 120-2M
DLN 125-062-16A-5D	12.50	12.99	16.00	20.00	64.26	79.5	2.260	48.0	127.50	12.0	ILP 125-2M
DLN 130-065-16A-5D	13.00	13.49	16.00	20.00	67.45	82.6	2.450	48.0	130.60	13.0	ILP 130-2M
DLN 135-068-16A-5D	13.50	13.99	16.00	20.00	70.45	85.1	2.450	48.0	133.10	13.0	ILP 135-2M
DLN 140-070-16A-5D	14.00	14.49	16.00	20.00	72.55	90.2	2.550	48.0	138.15	14.0	ILP 140-2M
DLN 145-073-16A-5D	14.50	14.99	16.00	20.00	75.55	92.7	2.550	48.0	140.65	14.0	ILP 145-2M
DLN 150-075-20A-5D	15.00	15.99	20.00	25.00	77.69	98.7	2.690	50.0	148.73	15.0	ILP 150-2M
DLN 160-080-20A-5D	16.00	16.99	20.00	25.00	82.91	105.3	2.910	50.0	155.30	16.0	ILP 160-2M
DLN 170-085-20A-5D	17.00	17.99	20.00	25.00	88.01	111.9	3.010	50.0	161.90	17.0	ILP 170-2M
DLN 180-090-25A-5D	18.00	18.99	25.00	32.00	93.16	118.5	3.160	56.0	174.50	18.0	ILP 180-2M
DLN 190-095-25A-5D	19.00	19.99	25.00	32.00	98.35	125.0	3.350	56.0	181.00	19.0	ILP 190-2M
DLN 200-100-25A-5D	20.00	20.99	25.00	32.00	103.50	131.6	3.500	56.0	187.60	20.0	ILP 200-2M
DLN 210-105-25A-5D	21.00	21.99	25.00	32.00	108.67	138.2	3.670	56.0	194.18	21.0	ILP 210-2M
DLN 220-110-25A-5D	22.00	22.99	25.00	32.00	113.80	144.8	3.810	56.0	200.76	22.0	ILP 220-2M
DLN 230-115-32A-5D	23.00	23.99	32.00	42.00	118.94	151.3	3.950	60.0	211.33	23.0	ILP 230-2M
DLN 240-120-32A-5D	24.00	24.99	32.00	42.00	124.11	157.9	4.110	60.0	217.90	24.0	ILP 240-2M
DLN 250-125-32A-5D	25.00	25.99	32.00	42.00	129.29	164.5	4.290	60.0	224.50	25.0	ILP 250-2M

- Do not mount smaller drilling heads other than the specified range of the drill body
- For user guide and cutting conditions, see pages 80-81

[1] Cutting diameter minimum
[2] Cutting diameter maximum
[3] Seat size code
[4] Master insert identification

For inserts, see page: ILP (79)

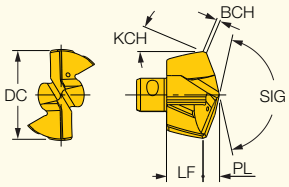
Spare Parts

Designation			
DLN 120-060-16A-5D	SR M2.5-L4.5-SL	HW 1.3	
DLN 125-062-16A-5D	SR M2.5-L4.5-SL	HW 1.3	
DLN 130-065-16A-5D	SR M2.5-L5.0-SL	HW 1.3	
DLN 135-068-16A-5D	SR M2.5-L5.0-SL	HW 1.3	
DLN 140-070-16A-5D	SR M3.0-L5.4-SL		L-KEY HEX SL 331 1.5X40MM
DLN 145-073-16A-5D	SR M3.0-L5.4-SL		L-KEY HEX SL 331 1.5X40MM
DLN 150-075-20A-5D	SR M3.0-L5.4-SL		L-KEY HEX SL 331 1.5X40MM
DLN 160-080-20A-5D	SR M3.0-L5.8-SL		L-KEY HEX SL 331 1.5X40MM
DLN 170-085-20A-5D	SR M3.0-L5.8-SL		L-KEY HEX SL 331 1.5X40MM
DLN 180-090-25A-5D	SR M3.0-L6.6-SL		L-KEY HEX SL 331 1.5X40MM
DLN 190-095-25A-5D	SR M3.0-L6.6-SL		L-KEY HEX SL 331 1.5X40MM
DLN 200-100-25A-5D	SR M3.0-L7.4-SL		L-KEY HEX SL 331 1.5X40MM
DLN 210-105-25A-5D	SR M3.0-L7.4-SL		L-KEY HEX SL 331 1.5X40MM
DLN 220-110-25A-5D	SR M4.0-L8.1-SL-HSS-HEX		L-KEY HEX SL 331 2.0X40MM
DLN 230-115-32A-5D	SR M4.0-L8.1-SL-HSS-HEX		L-KEY HEX SL 331 2.0X40MM
DLN 240-120-32A-5D	SR M4.0-L8.6-SL-HSS-HEX		L-KEY HEX SL 331 2.0X40MM
DLN 250-125-32A-5D	SR M4.0-L8.6-SL-HSS-HEX		L-KEY HEX SL 331 2.0X40MM

SUMOLDRILL

ILP

Exchangeable Drilling Heads for DLN Drills, for Machining ISO P and ISO K Materials



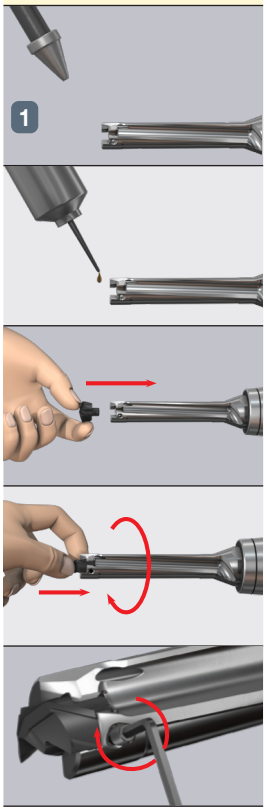
Designation	Dimensions							IC908
	DC	PL	LF	SIG	KCH	BCH	SSC(1)	
ILP 120-2M	12.00	2.260	4.74	140	30.0	0.70	12.0	•
ILP 123-2M	12.30	2.260	4.74	140	30.0	0.70	12.0	•
ILP 125-2M	12.50	2.260	4.74	140	30.0	0.70	12.0	•
ILP 127-2M	12.70	2.260	4.74	140	30.0	0.70	12.0	•
ILP 130-2M	13.00	2.450	5.15	140	30.0	0.70	13.0	•
ILP 135-2M	13.50	2.450	5.15	140	30.0	0.70	13.0	•
ILP 140-2M	14.00	2.550	5.60	140	30.0	0.70	14.0	•
ILP 145-2M	14.50	2.550	5.60	140	30.0	0.70	14.0	•
ILP 149-2M	14.90	2.550	5.60	140	30.0	0.70	14.0	•
ILP 150-2M	15.00	2.690	6.04	140	30.0	0.70	15.0	•
ILP 155-2M	15.50	2.690	6.04	140	30.0	0.70	15.0	•
ILP 1588-2M	15.88	2.690	6.04	140	30.0	0.70	15.0	•
ILP 160-2M	16.00	2.910	6.39	140	30.0	0.70	16.0	•
ILP 165-2M	16.50	2.910	6.39	140	30.0	0.70	16.0	•
ILP 167-2M	16.70	2.910	6.39	140	30.0	0.70	16.0	•
ILP 169-2M	16.90	3.200	6.39	140	30.0	0.70	16.0	•
ILP 170-2M	17.00	3.010	6.89	140	30.0	0.70	17.0	•
ILP 1746-2M	17.46	3.010	6.89	140	30.0	0.70	17.0	•
ILP 175-2M	17.50	3.010	6.89	140	30.0	0.70	17.0	•
ILP 180-2M	18.00	3.160	7.34	140	30.0	0.70	18.0	•
ILP 185-2M	18.50	3.160	7.34	140	30.0	0.70	18.0	•
ILP 190-2M	19.00	3.350	7.65	140	30.0	0.70	19.0	•
ILP 1905-2M	19.05	3.350	7.65	140	30.0	0.70	19.0	•
ILP 195-2M	19.50	3.350	7.65	140	30.0	0.70	19.0	•
ILP 200-2M	20.00	3.500	8.10	140	30.0	0.70	20.0	•
ILP 205-2M	20.50	3.600	8.10	140	30.0	0.70	20.0	•
ILP 210-2M	21.00	3.670	8.51	140	30.0	0.70	21.0	•
ILP 215-2M	21.50	3.760	8.51	140	30.0	0.70	21.0	•
ILP 220-2M	22.00	3.810	8.96	140	30.0	0.70	22.0	•
ILP 225-2M	22.50	3.900	8.96	140	30.0	0.70	22.0	•
ILP 230-2M	23.00	3.950	9.39	140	30.0	0.70	23.0	•
ILP 235-2M	23.50	4.040	9.39	140	30.0	0.70	23.0	•
ILP 240-2M	24.00	4.110	9.79	140	30.0	0.70	24.0	•
ILP 245-2M	24.50	4.200	9.79	140	30.0	0.70	24.0	•
ILP 250-2M	25.00	4.290	10.21	140	30.0	0.70	25.0	•
ILP 255-2M	25.50	4.380	10.21	140	30.0	0.70	25.0	•

• For cutting conditions see page 81

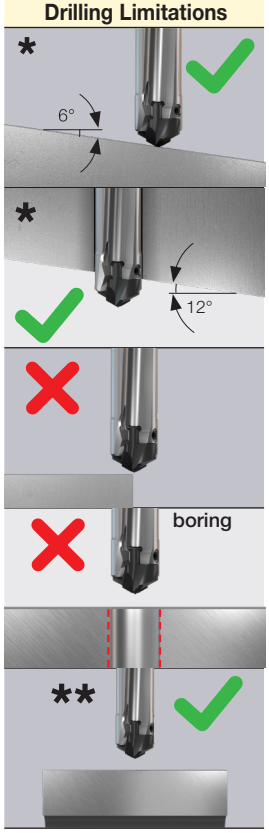
(1) Seat size code

For tools, see pages: DLN A-3D (77) • DLN A-5D (78)

Drilling Head Mounting Procedure

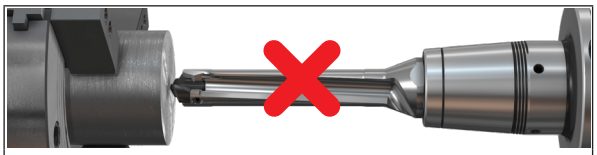


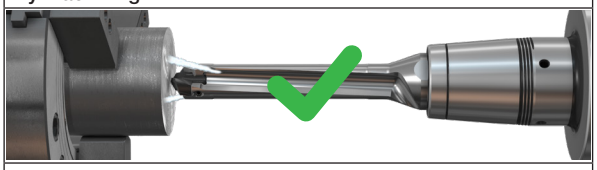
Drilling Limitations



* Up to 6° reduce feed by 20%
* 6°-12° reduce feed by 50%
** Reduce feed by 50 to 70% respectively

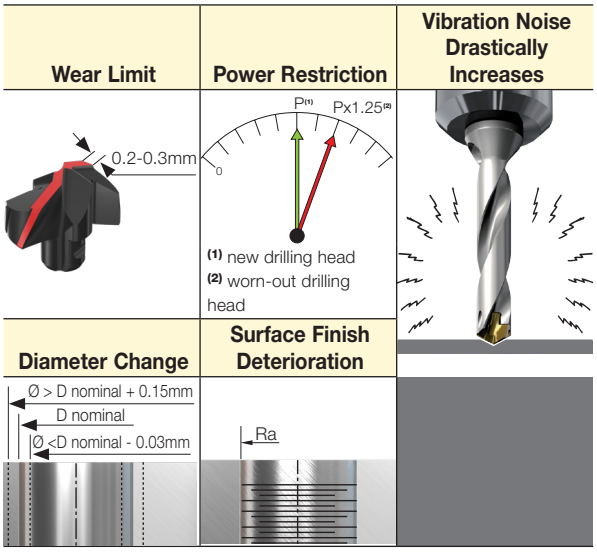
Coolant Recommendations


Dry machining

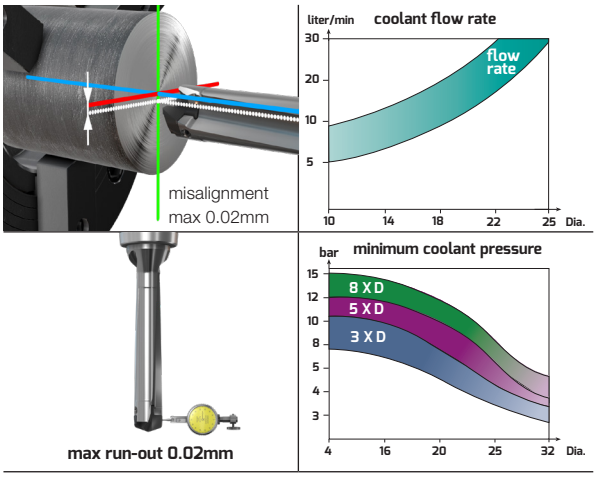

Internal coolant

Up to 2xD

Indication of Drill Head Wear



Basic Requirements

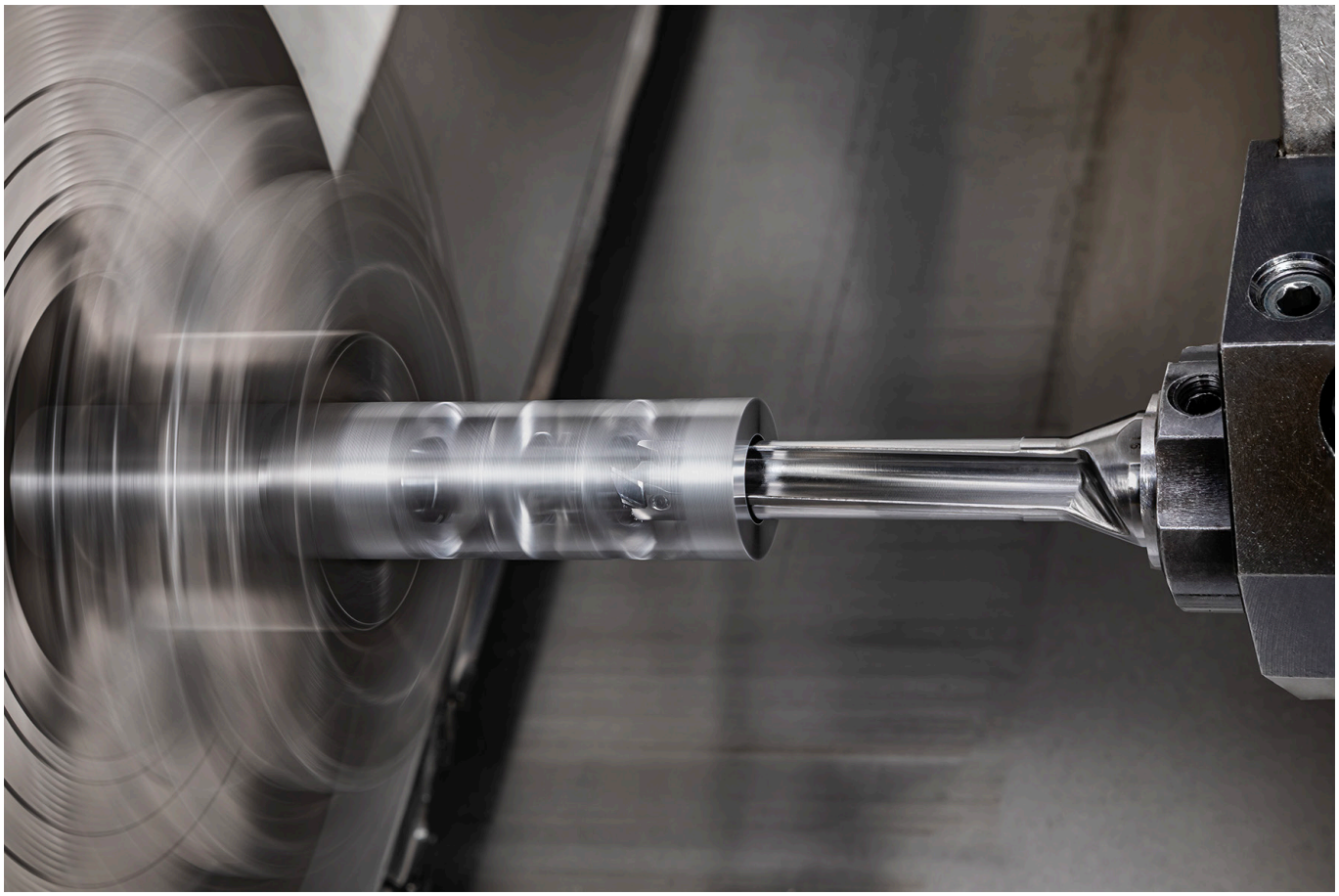


Screw Torque		
ØD Range (mm)	Screw	Torque (N.m)
12-13.5	M2.5	0.4
14-19	M3.0	0.8
20-25	M4.0	1.9

SUMO-L-DRILL Cutting Parameters

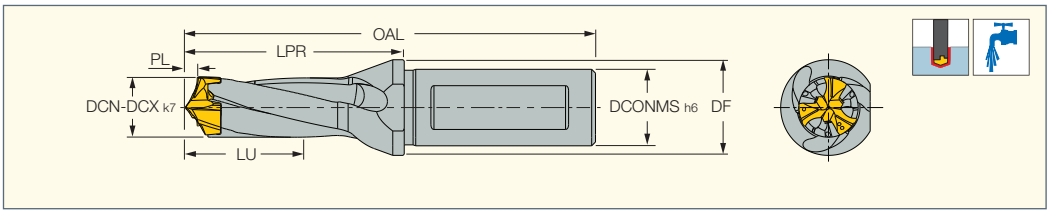
Material Groups								Recommended Machining Conditions			
								Diameter Range			
ISO	Material		Condition	Tensile Strength [N/mm²]	Hardness HB	Material No.	V m/min	D=12-13.9	D=14-15.9	D=16-19.9	D=20-25.9
P	non-alloy steel and cast steel, free cutting steel	<0.25% C	annealed	420	125	1	80-**110**-140	0.18 **0.24** 0.30	0.20 **0.27** 0.35	0.25 **0.35** 0.45	0.25 **0.35** 0.45
		≥0.25% C	annealed	650	190	2	80-**105**-130				
		<0.55% C	quenched and tempered	850	250	3	80-**100**-120				
		≥0.55% C	annealed	750	220	4	70-**90**-110				
			quenched and tempered	1000	300	5	50-**70**-90				
	low alloy and cast steel (less than 5% of alloying elements)		annealed	600	200	6	80-**100**-120	0.16 **0.24** 0.32	0.18 **0.26** 0.35	0.23 **0.31** 0.40	0.25 **0.35** 0.45
			quenched and tempered	930	275	7	70-**90**-110				
				1000	300	8	50-**70**-90				
				1200	350	9	40-**55**-70				
	high alloyed steel, cast steel and tool steel		annealed	680	200	10	50-**70**-90	0.15 **0.20** 0.25	0.18 **0.23** 0.28	0.20 **0.25** 0.30	0.22 **0.27** 0.33
			quenched and tempered	1100	325	11	40-**60**-80				
	stainless steel and cast steel		ferritic / martensitic	680	200	12	40-**55**-70	0.14 **0.17** 0.20	0.16 **0.20** 0.24	0.16 **0.21** 0.26	0.18 **0.24** 0.30
			martensitic	820	240	13	40-**55**-70				
K	gray cast iron (GG)		ferritic / pearlitic		180	15	90-**125**-160	0.25 **0.32** 0.40	0.30 **0.37** 0.45	0.35 **0.45** 0.55	0.35 **0.47** 0.60
			pearlitic / martensitic		260	16	80-**110**-140				
	nodular cast iron (GGG)		ferritic		160	17	90-**135**-180				
			pearlitic		250	18	80-**110**-140				
	malleable cast iron		ferritic		130	19	90-**125**-160				
			pearlitic		230	20	80-**110**-140				

■ Recommended cutting data.



QUICK3CHAM

D3N A-1.5D
Exchangeable Head 3 Flute Drills with Coolant Holes and One Flat Shank, Drilling Depth 1.5xD



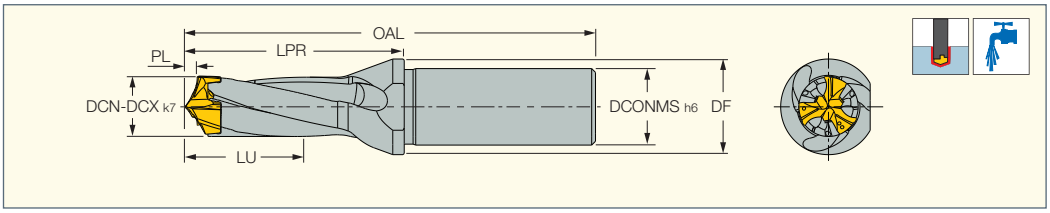
Designation	DCN(1)	DCX(2)	DCONMS	DF	LU	LPR	OAL	PL	SSC(3)	MIID(4)	
D3N 120-018-16A-1.5D	12.00	12.40	16.00	20.00	20.71	42.90	90.92	2.710	12	H3P 120	K D3N 12-13.99
D3N 125-019-16A-1.5D	12.50	12.90	16.00	20.00	21.46	44.40	92.42	2.710	12	H3P 125	K D3N 12-13.99
D3N 130-020-16A-1.5D	13.00	13.40	16.00	20.00	22.41	46.60	94.58	2.910	13	H3P 130	K D3N 12-13.99
D3N 135-020-16A-1.5D	13.50	13.90	16.00	20.00	23.16	48.10	96.08	2.910	13	H3P 135	K D3N 12-13.99
D3N 140-021-16A-1.5D	14.00	14.40	16.00	20.00	24.10	50.10	98.08	3.100	14	H3P 140	K D3N 14-15.99
D3N 145-022-16A-1.5D	14.50	14.90	16.00	20.00	24.85	51.60	99.58	3.100	14	H3P 145	K D3N 14-15.99
D3N 150-023-20A-1.5D	15.00	15.90	20.00	25.00	25.97	53.70	103.66	3.470	15	H3P 150	K D3N 14-15.99
D3N 160-024-20A-1.5D	16.00	16.90	20.00	25.00	27.44	57.20	107.25	3.440	16	H3P 160	K D3N 16-17.99
D3N 170-026-20A-1.5D	17.00	17.90	20.00	25.00	29.02	60.70	110.72	3.520	17	H3P 170	K D3N 16-17.99
D3N 180-027-25A-1.5D	18.00	18.90	25.00	32.00	30.90	64.40	120.36	3.900	18	H3P 180	K D3N 18-19.99
D3N 190-029-25A-1.5D	19.00	19.90	25.00	32.00	32.60	67.90	123.92	4.100	19	H3P 190	K D3N 18-19.99
D3N 200-030-25A-1.5D	20.00	20.90	25.00	32.00	34.32	71.20	127.24	4.320	20	H3P 200	K D3N 20-21.99
D3N 210-032-25A-1.5D	21.00	21.90	25.00	32.00	36.05	74.80	130.80	4.550	21	H3P 210	K D3N 20-21.99
D3N 220-033-25A-1.5D	22.00	22.90	25.00	32.00	37.69	78.60	134.62	4.690	22	H3P 220	K D3N 22-23.99
D3N 230-035-32A-1.5D	23.00	23.90	32.00	42.00	39.41	82.00	142.00	4.910	23	H3P 230	K D3N 22-23.99
D3N 240-036-32A-1.5D	24.00	24.90	32.00	42.00	41.21	85.50	145.54	5.210	24	H3P 240	K D3N 24-25.99
D3N 250-038-32A-1.5D	25.00	25.90	32.00	42.00	42.70	89.60	149.60	5.200	25	H3P 250	K D3N 24-25.99
D3N 260-039-32A-1.5D	26.00	26.90	32.00	40.00	44.18	92.40	153.30	5.200	26	H3P 260	K D3N 24-25.99

• Do not mount smaller drilling heads other than the specified range of the drill body • For user guide and cutting conditions, see pages 96-98
(1) Cutting diameter minimum
(2) Cutting diameter maximum
(3) Seat size code
(4) Master insert identification

For inserts, see pages: F3B (93) • H3P (87) • F3P (90)

QUICK3CHAM

D3N R-1.5D
Exchangeable Head 3 Flute Drills with Coolant Holes and Round Shank, Drilling Depth 1.5xD



Designation	DCN(1)	DCX(2)	DCONMS	DF	LU	LPR	OAL	PL	SSC(3)	MIID(4)	
D3N 120-018-16R-1.5D	12.00	12.40	16.00	20.00	20.71	42.90	90.92	2.710	12	H3P 120	K D3N 12-13.99
D3N 125-019-16R-1.5D	12.50	12.90	16.00	20.00	21.46	44.40	92.42	2.710	12	H3P 125	K D3N 12-13.99
D3N 130-020-16R-1.5D	13.00	13.40	16.00	20.00	22.41	46.60	94.58	2.910	13	H3P 130	K D3N 12-13.99
D3N 135-020-16R-1.5D	13.50	13.90	16.00	20.00	23.16	48.10	96.08	2.910	13	H3P 135	K D3N 12-13.99
D3N 140-021-16R-1.5D	14.00	14.40	16.00	20.00	24.10	50.10	98.08	3.100	14	H3P 140	K D3N 14-15.99
D3N 145-022-16R-1.5D	14.50	14.90	16.00	20.00	24.85	51.60	99.58	3.100	14	H3P 145	K D3N 14-15.99
D3N 150-023-20R-1.5D	15.00	15.90	20.00	25.00	25.97	53.70	103.66	3.470	15	H3P 150	K D3N 14-15.99
D3N 160-024-20R-1.5D	16.00	16.90	20.00	25.00	27.44	57.20	107.25	3.440	16	H3P 160	K D3N 16-17.99
D3N 170-026-20R-1.5D	17.00	17.90	20.00	25.00	29.02	60.70	110.72	3.520	17	H3P 170	K D3N 16-17.99
D3N 180-027-25R-1.5D	18.00	18.90	25.00	32.00	30.90	64.40	120.36	3.900	18	H3P 180	K D3N 18-19.99
D3N 190-029-25R-1.5D	19.00	19.90	25.00	32.00	32.60	67.90	123.92	4.100	19	H3P 190	K D3N 18-19.99
D3N 200-030-25R-1.5D	20.00	20.90	25.00	32.00	34.32	71.20	127.24	4.320	20	H3P 200	K D3N 20-21.99
D3N 210-032-25R-1.5D	21.00	21.90	25.00	32.00	36.05	74.80	130.80	4.550	21	H3P 210	K D3N 20-21.99
D3N 220-033-25R-1.5D	22.00	22.90	25.00	32.00	37.69	78.60	134.62	4.690	22	H3P 220	K D3N 22-23.99
D3N 230-035-32R-1.5D	23.00	23.90	32.00	42.00	39.41	82.00	142.00	4.910	23	H3P 230	K D3N 22-23.99
D3N 240-036-32R-1.5D	24.00	24.90	32.00	42.00	41.21	85.50	145.54	5.210	24	H3P 240	K D3N 24-25.99
D3N 250-038-32R-1.5D	25.00	25.90	32.00	42.00	42.70	89.60	149.60	5.200	25	H3P 250	K D3N 24-25.99
D3N 260-039-32R-1.5D	26.00	26.90	32.00	40.00	44.18	92.40	153.30	5.200	26	H3P 260	K D3N 24-25.99

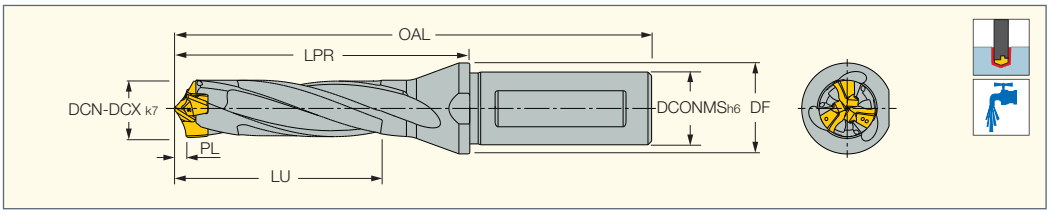
• Do not mount smaller drilling heads other than the specified range of the drill body • For user guide and cutting conditions, see pages 96-98
(1) Cutting diameter minimum
(2) Cutting diameter maximum
(3) Seat size code
(4) Master insert identification

For inserts, see pages: F3B (93) • H3P (87) • F3P (90)

QUICK 3 CHAM

D3N A-3D

Exchangeable Head 3 Flute Drills with Coolant Holes and One Flat Shank, Drilling Depth 3xD



Designation	DCN(1)	DCX(2)	DCONMS	DF	LU	LPR	PL	OAL	SSC(3)	MIID(4)	
D3N 120-036-16A-3D	12.00	12.40	16.00	20.00	38.71	60.90	2.710	108.92	12	H3P 120	K D3N 12-13.99
D3N 125-037-16A-3D	12.50	12.90	16.00	20.00	40.21	63.20	2.710	111.17	12	H3P 125	K D3N 12-13.99
D3N 130-039-16A-3D	13.00	13.40	16.00	20.00	41.91	66.10	2.910	114.08	13	H3P 130	K D3N 12-13.99
D3N 135-041-16A-3D	13.50	13.90	16.00	20.00	43.41	68.30	2.910	116.33	13	H3P 135	K D3N 12-13.99
D3N 140-042-16A-3D	14.00	14.40	16.00	20.00	45.10	71.10	3.100	119.08	14	H3P 140	K D3N 14-15.99
D3N 145-044-16A-3D	14.50	14.90	16.00	20.00	46.60	73.30	3.100	121.33	14	H3P 145	K D3N 14-15.99
D3N 150-045-20A-3D	15.00	15.90	20.00	25.00	48.47	76.20	3.470	126.16	15	H3P 150	K D3N 14-15.99
D3N 160-048-20A-3D	16.00	16.90	20.00	25.00	51.44	81.20	3.440	131.25	16	H3P 160	K D3N 16-17.99
D3N 170-051-20A-3D	17.00	17.90	20.00	25.00	54.52	86.20	3.520	136.22	17	H3P 170	K D3N 16-17.99
D3N 180-054-25A-3D	18.00	18.90	25.00	32.00	57.90	91.40	3.900	147.36	18	H3P 180	K D3N 18-19.99
D3N 190-057-25A-3D	19.00	19.90	25.00	32.00	61.10	96.40	4.100	152.42	19	H3P 190	K D3N 18-19.99
D3N 200-060-25A-3D	20.00	20.90	25.00	32.00	64.32	101.20	4.320	157.24	20	H3P 200	K D3N 20-21.99
D3N 210-063-25A-3D	21.00	21.90	25.00	32.00	67.55	106.30	4.550	162.30	21	H3P 210	K D3N 20-21.99
D3N 220-066-25A-3D	22.00	22.90	25.00	32.00	70.69	111.60	4.690	167.62	22	H3P 220	K D3N 22-23.99
D3N 230-069-32A-3D	23.00	23.90	32.00	42.00	73.91	116.50	4.910	176.50	23	H3P 230	K D3N 22-23.99
D3N 240-072-32A-3D	24.00	24.90	32.00	42.00	77.21	121.50	5.210	181.54	24	H3P 240	K D3N 24-25.99
D3N 250-075-32A-3D	25.00	25.90	32.00	42.00	80.20	127.10	5.200	187.10	25	H3P 250	K D3N 24-25.99
D3N 260-078-32A-3D	26.00	26.90	32.00	42.00	83.18	131.40	5.180	191.41	26	H3P 260	K D3N 24-25.99

• Do not mount smaller drilling heads other than the specified range of the drill body • For user guide and cutting conditions, see pages 96-98

(1) Cutting diameter minimum

(2) Cutting diameter maximum

(3) Seat size code

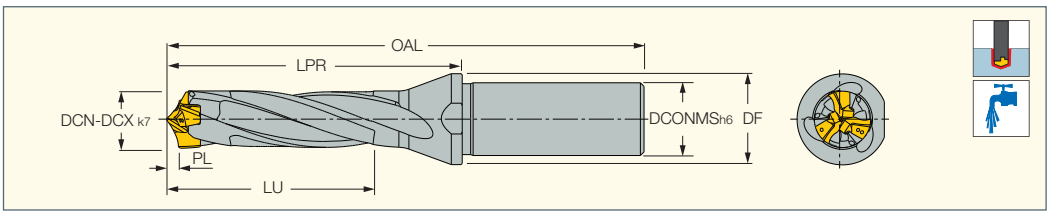
(4) Master insert identification

For inserts, see pages: F3B (93) • F3P (90) • H3P (87)

QUICK 3 CHAM

D3N R-3D

Exchangeable Head 3 Flute Drills with Coolant Holes and Round Shank, Drilling Depth 3xD



Designation	DCN(1)	DCX(2)	DCONMS	DF	LU	LPR	PL	OAL	SSC(3)	MIID(4)	
D3N 120-036-16R-3D	12.00	12.40	16.00	20.00	38.71	60.90	2.710	108.92	12	H3P 120	K D3N 12-13.99
D3N 125-037-16R-3D	12.50	12.90	16.00	20.00	40.21	63.20	2.710	111.17	12	H3P 125	K D3N 12-13.99
D3N 130-039-16R-3D	13.00	13.40	16.00	20.00	41.91	66.10	2.910	114.08	13	H3P 130	K D3N 12-13.99
D3N 135-041-16R-3D	13.50	13.90	16.00	20.00	43.41	68.30	2.910	116.33	13	H3P 135	K D3N 12-13.99
D3N 140-042-16R-3D	14.00	14.40	16.00	20.00	45.10	71.10	3.100	119.08	14	H3P 140	K D3N 14-15.99
D3N 145-044-16R-3D	14.50	14.90	16.00	20.00	46.60	73.30	3.100	121.33	14	H3P 145	K D3N 14-15.99
D3N 150-045-20R-3D	15.00	15.90	20.00	25.00	48.47	76.20	3.470	126.16	15	H3P 150	K D3N 14-15.99
D3N 160-048-20R-3D	16.00	16.90	20.00	25.00	51.44	81.20	3.440	131.25	16	H3P 160	K D3N 16-17.99
D3N 170-051-20R-3D	17.00	17.90	20.00	25.00	54.52	86.20	3.520	136.22	17	H3P 170	K D3N 16-17.99
D3N 180-054-25R-3D	18.00	18.90	25.00	32.00	57.90	91.40	3.900	147.36	18	H3P 180	K D3N 18-19.99
D3N 190-057-25R-3D	19.00	19.90	25.00	32.00	61.10	96.40	4.100	152.42	19	H3P 190	K D3N 18-19.99
D3N 200-060-25R-3D	20.00	20.90	25.00	32.00	64.32	101.20	4.320	157.24	20	H3P 200	K D3N 20-21.99
D3N 210-063-25R-3D	21.00	21.90	25.00	32.00	67.55	106.30	4.550	162.30	21	H3P 210	K D3N 20-21.99
D3N 220-066-25R-3D	22.00	22.90	25.00	32.00	70.69	111.60	4.690	167.82	22	H3P 220	K D3N 22-23.99
D3N 230-069-32R-3D	23.00	23.90	32.00	42.00	73.91	116.50	4.910	176.50	23	H3P 230	K D3N 22-23.99
D3N 240-072-32R-3D	24.00	24.90	32.00	42.00	77.21	121.50	5.210	181.54	24	H3P 240	K D3N 24-25.99
D3N 250-075-32R-3D	25.00	25.90	32.00	42.00	80.20	127.10	5.200	187.10	25	H3P 250	K D3N 24-25.99
D3N 260-078-32R-3D	26.00	26.90	32.00	42.00	83.18	131.40	5.180	191.41	26	H3P 260	K D3N 24-25.99

• Do not mount smaller drilling heads other than the specified range of the drill body • For user guide and cutting conditions, see pages 96-98

(1) Cutting diameter minimum

(2) Cutting diameter maximum

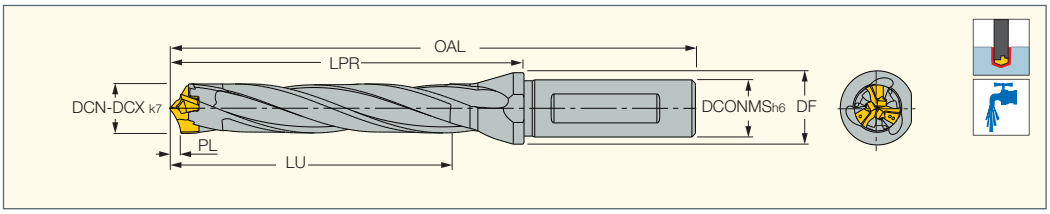
(3) Seat size code

(4) Master insert identification

For inserts, see pages: F3B (93) • H3P (87) • F3P (90)

QUICK3CHAM

D3N A-5D
Exchangeable Head 3 Flute Drills with Coolant Holes and One Flat Shank, Drilling Depth 5xD



Designation	DCN[1]	DCX[2]	DCONMS	DF	LU	LPR	OAL	PL	SSC[3]	MIID[4]	
D3N 120-060-16A-5D	12.00	12.40	16.00	20.00	62.71	84.90	132.92	2.710	12	H3P 120	K D3N 12-13.99
D3N 125-062-16A-5D	12.50	12.90	16.00	20.00	65.21	88.20	136.17	2.710	12	H3P 125	K D3N 12-13.99
D3N 130-065-16A-5D	13.00	13.40	16.00	20.00	67.91	92.10	140.08	2.910	13	H3P 130	K D3N 12-13.99
D3N 135-068-16A-5D	13.50	13.90	16.00	20.00	70.41	95.30	143.33	2.910	13	H3P 135	K D3N 12-13.99
D3N 140-070-16A-5D	14.00	14.40	16.00	20.00	73.10	99.10	147.08	3.100	14	H3P 140	K D3N 14-15.99
D3N 145-073-16A-5D	14.50	14.90	16.00	20.00	75.60	102.30	150.33	3.100	14	H3P 145	K D3N 14-15.99
D3N 150-075-20A-5D	15.00	15.90	20.00	25.00	78.47	106.20	156.16	3.470	15	H3P 150	K D3N 14-15.99
D3N 160-080-20A-5D	16.00	16.90	20.00	25.00	83.44	113.20	163.25	3.440	16	H3P 160	K D3N 16-17.99
D3N 170-085-20A-5D	17.00	17.90	20.00	25.00	88.52	120.20	170.22	3.520	17	H3P 170	K D3N 16-17.99
D3N 180-090-25A-5D	18.00	18.90	25.00	32.00	93.90	127.40	183.36	3.900	18	H3P 180	K D3N 18-19.99
D3N 190-095-25A-5D	19.00	19.90	25.00	32.00	99.10	134.40	190.42	4.100	19	H3P 190	K D3N 18-19.99
D3N 200-100-25A-5D	20.00	20.90	25.00	32.00	104.32	141.20	197.24	4.320	20	H3P 200	K D3N 20-21.99
D3N 210-105-25A-5D	21.00	21.90	25.00	32.00	109.55	148.30	204.30	4.550	21	H3P 210	K D3N 20-21.99
D3N 220-110-25A-5D	22.00	22.90	25.00	32.00	114.69	155.60	211.62	4.690	22	H3P 220	K D3N 22-23.99
D3N 230-115-32A-5D	23.00	23.90	32.00	42.00	119.91	162.50	222.50	4.910	23	H3P 230	K D3N 22-23.99
D3N 240-120-32A-5D	24.00	24.90	32.00	42.00	125.21	169.50	229.54	5.210	24	H3P 240	K D3N 24-25.99
D3N 250-125-32A-5D	25.00	25.90	32.00	42.00	130.20	177.10	237.10	5.200	25	H3P 250	K D3N 24-25.99
D3N 260-130-32A-5D	26.00	26.90	32.00	42.00	135.18	183.41	243.41	5.180	26	H3P 260	K D3N 24-25.99

• Do not mount smaller drilling heads other than the specified range of the drill body • For user guide and cutting conditions, see pages 96-98

[1] Cutting diameter minimum

[2] Cutting diameter maximum

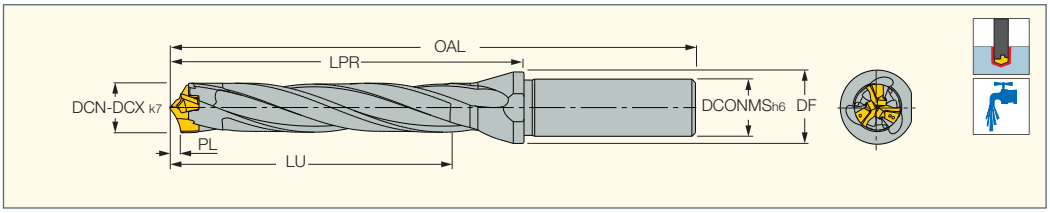
[3] Seat size code

[4] Master insert identification

For inserts, see pages: F3B (93) • H3P (87) • F3P (90)

QUICK3CHAM

D3N R-5D
Exchangeable Head 3 Flute Drills with Coolant Holes and Round Shank, Drilling Depth 5xD



Designation	DCN[1]	DCX[2]	DCONMS	DF	LU	LPR	OAL	PL	SSC[3]	MIID[4]	
D3N 120-060-16R-5D	12.00	12.40	16.00	20.00	62.71	84.90	132.92	2.710	12	H3P 120	K D3N 12-13.99
D3N 125-062-16R-5D	12.50	12.90	16.00	20.00	65.21	88.20	136.17	2.710	12	H3P 125	K D3N 12-13.99
D3N 130-065-16R-5D	13.00	13.40	16.00	20.00	67.91	92.10	140.08	2.910	13	H3P 130	K D3N 12-13.99
D3N 135-068-16R-5D	13.50	13.90	16.00	20.00	70.41	95.30	143.33	2.910	13	H3P 135	K D3N 12-13.99
D3N 140-070-16R-5D	14.00	14.40	16.00	20.00	73.10	99.10	147.08	3.100	14	H3P 140	K D3N 14-15.99
D3N 145-073-16R-5D	14.50	14.90	16.00	20.00	75.60	102.30	150.33	3.100	14	H3P 145	K D3N 14-15.99
D3N 150-075-20R-5D	15.00	15.90	20.00	25.00	78.47	106.20	156.16	3.470	15	H3P 150	K D3N 14-15.99
D3N 160-080-20R-5D	16.00	16.90	20.00	25.00	83.44	113.20	163.25	3.440	16	H3P 160	K D3N 16-17.99
D3N 170-085-20R-5D	17.00	17.90	20.00	25.00	88.52	120.20	170.22	3.520	17	H3P 170	K D3N 16-17.99
D3N 180-090-25R-5D	18.00	18.90	25.00	32.00	93.90	127.40	183.36	3.900	18	H3P 180	K D3N 18-19.99
D3N 190-095-25R-5D	19.00	19.90	25.00	32.00	99.10	134.40	190.42	4.100	19	H3P 190	K D3N 18-19.99
D3N 200-100-25R-5D	20.00	20.90	25.00	32.00	104.32	141.20	197.24	4.320	20	H3P 200	K D3N 20-21.99
D3N 210-105-25R-5D	21.00	21.90	25.00	32.00	109.55	148.30	204.30	4.550	21	H3P 210	K D3N 20-21.99
D3N 220-110-25R-5D	22.00	22.90	25.00	32.00	114.69	155.60	211.62	4.690	22	H3P 220	K D3N 22-23.99
D3N 230-115-32R-5D	23.00	23.90	32.00	42.00	119.91	162.50	222.50	4.910	23	H3P 230	K D3N 22-23.99
D3N 240-120-32R-5D	24.00	24.90	32.00	42.00	125.21	169.50	229.54	5.210	24	H3P 240	K D3N 24-25.99
D3N 250-125-32R-5D	25.00	25.90	32.00	42.00	130.20	177.10	237.10	5.200	25	H3P 250	K D3N 24-25.99
D3N 260-130-32R-5D	26.00	26.90	32.00	42.00	135.18	183.41	243.41	5.180	26	H3P 260	K D3N 24-25.99

• Do not mount smaller drilling heads other than the specified range of the drill body • For user guide and cutting conditions, see pages 96-98

[1] Cutting diameter minimum

[2] Cutting diameter maximum

[3] Seat size code

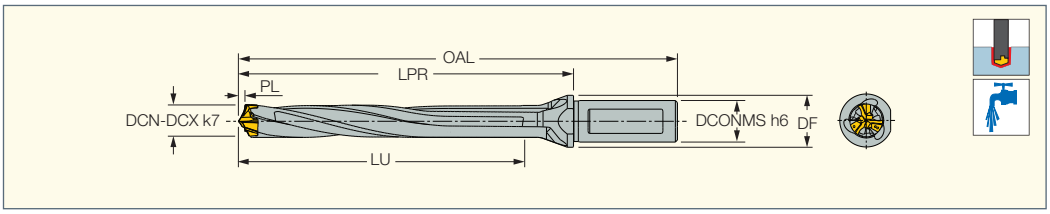
[4] Master insert identification

For inserts, see pages: F3B (93) • H3P (87) • F3P (90)

QUICK3CHAM

D3N A-8D

Exchangeable Head 3 Flute Drills with Coolant Holes and One Flat Shank, Drilling Depth 8xD



Designation	DCN(1)	DCX(2)	DCONMS	DF	LU	LPR	OAL	PL	SSC(3)	MIID(4)	
D3N 120-096-16A-8D	12.00	12.40	16.00	20.00	98.71	120.90	168.90	2.710	12	H3P 120-IQ	K D3N 12-13.99
D3N 125-100-16A-8D	12.50	12.90	16.00	20.00	102.71	125.70	173.70	2.710	12	H3P 125-IQ	K D3N 12-13.99
D3N 130-104-16A-8D	13.00	13.40	16.00	20.00	106.91	131.10	179.10	2.910	13	H3P 130-IQ	K D3N 12-13.99
D3N 135-108-16A-8D	13.50	13.90	16.00	20.00	110.91	135.80	183.80	2.910	13	H3P 135IQ	K D3N 12-13.99
D3N 140-112-16A-8D	14.00	14.40	16.00	20.00	115.10	141.10	189.10	3.100	14	H3P 140IQ	K D3N 14-15.99
D3N 145-116-16A-8D	14.50	14.90	16.00	20.00	119.10	145.80	193.80	3.100	14	H3P 145IQ	K D3N 14-15.99
D3N 150-120-20A-8D	15.00	15.90	20.00	25.00	123.47	151.20	201.20	3.470	15	H3P 150IQ	K D3N 14-15.99
D3N 160-128-20A-8D	16.00	16.90	20.00	25.00	131.44	161.20	211.30	3.440	16	H3P 160IQ	K D3N 16-17.99
D3N 170-136-20A-8D	17.00	17.90	20.00	25.00	139.52	171.20	221.30	3.520	17	H3P 170IQ	K D3N 16-17.99
D3N 180-144-25A-8D	18.00	18.90	25.00	32.00	147.90	181.40	237.40	3.900	18	H3P 180IQ	K D3N 18-19.99
D3N 190-152-25A-8D	19.00	19.90	25.00	32.00	156.10	191.40	247.40	4.100	19	H3P 190IQ	K D3N 18-19.99
D3N 200-160-25A-8D	20.00	20.90	25.00	32.00	164.32	201.20	257.20	4.320	20	H3P 200-IQ	K D3N 20-21.99
D3N 210-168-25A-8D	21.00	21.90	25.00	32.00	172.55	211.30	267.30	4.550	21	H3P 210IQ	K D3N 20-21.99
D3N 220-176-25A-8D	22.00	22.90	25.00	32.00	180.69	221.60	277.60	4.690	22	H3P 220IQ	K D3N 22-23.99
D3N 230-184-32A-8D	23.00	23.90	32.00	42.00	188.91	231.50	291.50	4.910	23	H3P 230IQ	K D3N 22-23.99
D3N 240-192-32A-8D	24.00	24.90	32.00	42.00	197.21	241.50	301.50	5.210	24	H3P 240IQ	K D3N 24-25.99
D3N 250-200-32A-8D	25.00	25.90	32.00	42.00	205.20	252.10	312.10	5.200	25	H3P 250-IQ	K D3N 24-25.99
D3N 260-208-32A-8D	26.00	26.90	32.00	42.00	213.18	261.41	321.41	5.180	26	H3P 260-IQ	K D3N 24-25.99

• Do not mount smaller drilling heads other than the specified range of the drill body • For user guide and cutting conditions, see pages 96-98

(1) Cutting diameter minimum

(2) Cutting diameter maximum

(3) Seat size code

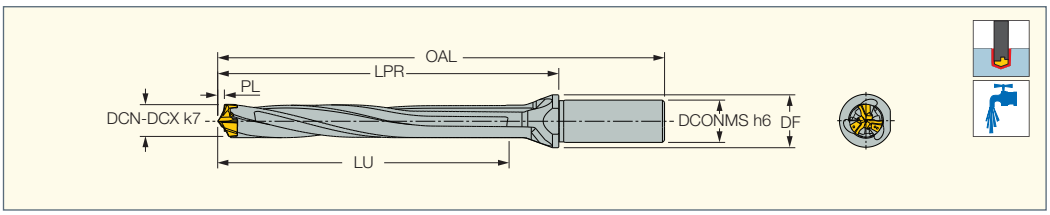
(4) Master insert identification

For inserts, see pages: F3B (93) • H3P (87) • F3P (90)

QUICK3CHAM

D3N R-8D

Exchangeable Head 3 Flute Drills with Coolant Holes and a Round Shank, Drilling Depth 8xD



Designation	DCN(1)	DCX(2)	DCONMS	DF	LU	LPR	OAL	PL	SSC(3)	MIID(4)	
D3N 120-096-16R-8D	12.00	12.40	16.00	20.00	98.71	120.90	168.90	2.710	12	H3P 120-IQ	K D3N 12-13.99
D3N 130-104-16R-8D	13.00	13.40	16.00	20.00	106.91	131.10	179.10	2.910	13	H3P 130-IQ	K D3N 12-13.99
D3N 135-108-16R-8D	13.50	13.90	16.00	20.00	110.91	135.80	183.80	2.910	13	H3P 135-IQ	K D3N 12-13.99
D3N 140-112-16R-8D	14.00	14.40	16.00	20.00	115.10	141.10	189.10	3.100	14	H3P 140-IQ	K D3N 14-15.99
D3N 145-116-16R-8D	14.50	14.90	16.00	20.00	119.10	145.80	193.80	3.100	14	H3P 145-IQ	K D3N 14-15.99
D3N 150-120-20R-8D	15.00	15.90	20.00	25.00	123.47	151.20	201.20	3.470	15	H3P 150-IQ	K D3N 14-15.99
D3N 160-128-20R-8D	16.00	16.90	20.00	25.00	131.44	161.20	211.30	3.440	16	H3P 160-IQ	K D3N 16-17.99
D3N 170-136-20R-8D	17.00	17.90	20.00	25.00	139.52	171.20	221.20	3.520	17	H3P 170-IQ	K D3N 16-17.99
D3N 180-144-25R-8D	18.00	18.90	25.00	32.00	147.90	181.40	237.40	3.900	18	H3P 180-IQ	K D3N 18-19.99
D3N 190-152-25R-8D	19.00	19.90	25.00	32.00	156.10	191.40	247.40	4.100	19	H3P 190-IQ	K D3N 18-19.99
D3N 200-160-25R-8D	20.00	20.90	25.00	32.00	164.32	201.20	257.20	4.320	20	H3P 200-IQ	K D3N 20-21.99
D3N 210-168-25R-8D	21.00	21.90	25.00	32.00	172.55	211.30	267.30	4.550	21	H3P 210-IQ	K D3N 20-21.99
D3N 220-176-25R-8D	22.00	22.90	25.00	32.00	180.69	221.60	277.60	4.690	22	H3P 220-IQ	K D3N 22-23.99
D3N 230-184-32R-8D	23.00	23.90	32.00	42.00	188.91	231.50	291.50	4.910	23	H3P 230-IQ	K D3N 22-23.99
D3N 240-192-32R-8D	24.00	24.90	32.00	42.00	197.21	241.50	301.50	5.210	24	H3P 240-IQ	K D3N 24-25.99
D3N 250-200-32R-8D	25.00	25.90	32.00	42.00	205.20	252.10	312.10	5.200	25	H3P 250-IQ	K D3N 24-25.99
D3N 260-208-32R-8D	26.00	26.90	32.00	42.00	213.18	261.41	321.41	5.180	26	H3P 260-IQ	K D3N 24-25.99

• Do not mount smaller drilling heads other than the specified range of the drill body • For user guide and cutting conditions, see pages 96-98

(1) Cutting diameter minimum

(2) Cutting diameter maximum

(3) Seat size code

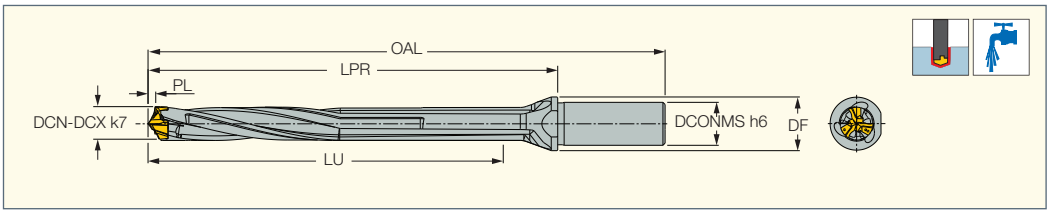
(4) Master insert identification

For inserts, see pages: F3B (93) • F3P (90) • H3P (87)

QUICK3CHAM

D3N R-10D

Exchangeable Head 3 Flute Drills with Coolant Holes and a Round Shank, Drilling Depth 10xD



Designation	DCN[1]	DCX[2]	DCONMS	DF	LU	LPR	PL	OAL	SSC[3]	MIID[4]	
D3N 120-120-16R-10D	12.00	12.49	16.00	20.00	122.71	144.90	2.710	192.90	12	H3P 120-IQ	K D3N 12-13.99
D3N 125-125-16R-10D	12.50	12.99	16.00	20.00	127.71	148.70	2.710	196.70	12	H3P 125-IQ	K D3N 12-13.99
D3N 130-130-16R-10D	13.00	13.49	16.00	20.00	132.91	155.00	2.910	203.00	13	H3P 130-IQ	K D3N 12-13.99
D3N 135-135-16R-10D	13.50	13.99	16.00	20.00	137.91	160.70	2.910	208.70	13	H3P 135-IQ	K D3N 12-13.99
D3N 140-140-16R-10D	14.00	14.49	16.00	20.00	143.10	166.60	3.100	214.60	14	H3P 140-IQ	K D3N 14-15.99
D3N 145-145-16R-10D	14.50	14.99	16.00	20.00	148.10	174.10	3.100	222.10	14	H3P 145-IQ	K D3N 14-15.99
D3N 150-150-20R-10D	15.00	15.99	20.00	25.00	153.47	181.20	3.470	231.20	15	H3P 150-IQ	K D3N 14-15.99
D3N 160-160-20R-10D	16.00	16.99	20.00	25.00	163.44	190.80	3.440	240.80	16	H3P 160-IQ	K D3N 16-17.99
D3N 170-170-20R-10D	17.00	17.99	20.00	25.00	173.52	202.40	3.520	252.40	17	H3P 170-IQ	K D3N 16-17.99
D3N 180-180-25R-10D	18.00	18.99	25.00	32.00	183.90	214.50	3.900	270.50	18	H3P 180-IQ	K D3N 18-19.99
D3N 190-190-25R-10D	19.00	19.99	25.00	32.00	194.10	226.40	4.100	282.40	19	H3P 190-IQ	K D3N 18-19.99
D3N 200-200-25R-10D	20.00	20.99	25.00	32.00	204.32	238.00	4.320	294.00	20	H3P 200-IQ	K D3N 20-21.99
D3N 210-210-25R-10D	21.00	21.99	25.00	32.00	214.55	249.90	4.550	305.90	21	H3P 210-IQ	K D3N 20-21.99
D3N 220-220-25R-10D	22.00	22.99	25.00	32.00	224.69	262.10	4.690	318.10	22	H3P 220-IQ	K D3N 22-23.99
D3N 230-230-32R-10D	23.00	23.99	32.00	42.00	234.91	271.20	4.910	331.20	23	H3P 230-IQ	K D3N 22-23.99
D3N 240-240-32R-10D	24.00	24.99	32.00	42.00	245.21	271.50	5.210	331.50	24	H3P 240-IQ	K D3N 24-25.99
D3N 250-250-32R-10D	25.00	25.99	32.00	42.00	255.20	277.40	5.200	337.40	25	H3P 250-IQ	K D3N 24-25.99

• Do not mount smaller drilling heads other than the specified range of the drill body • For user guide and cutting conditions, see pages 96-98

[1] Cutting diameter minimum

[2] Cutting diameter maximum

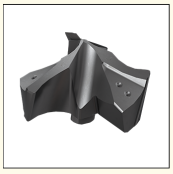
[3] Seat size code

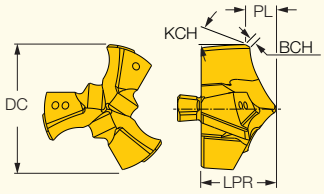
[4] Master insert identification

For inserts, see pages: F3B (93) • F3P (90) • H3P (87)

QUICK3CHAM

H3P
Exchangeable 3 Flute Drilling Heads for Machining Carbon and Alloy Steel (ISO P) And Cast Iron (ISO K)





Designation	Dimensions					IC908
	DC	LPR(1)	PL(2)	KCH	BCH	
H3P 120-IQ	12.00	6.92	2.710	15.0	0.40	•
H3P 121-IQ	12.10	6.92	2.710	15.0	0.40	•
H3P 122-IQ	12.20	6.92	2.710	15.0	0.40	•
H3P 123-IQ	12.30	6.92	2.710	15.0	0.40	•
H3P 124-IQ	12.40	6.92	2.710	15.0	0.40	•
H3P 125-IQ	12.50	6.92	2.710	15.0	0.40	•
H3P 126-IQ	12.60	6.92	2.710	15.0	0.40	•
H3P 127-IQ	12.70	6.92	2.710	15.0	0.40	•
H3P 128-IQ	12.80	6.92	2.710	15.0	0.40	•
H3P 129-IQ	12.90	6.92	2.710	15.0	0.40	•
H3P 130-IQ	13.00	7.58	2.910	15.0	0.40	•
H3P 131-IQ	13.10	7.58	2.910	15.0	0.40	•
H3P 132-IQ	13.20	7.58	2.910	15.0	0.40	•
H3P 133-IQ	13.30	7.58	2.910	15.0	0.40	•
H3P 134-IQ	13.40	7.58	2.910	15.0	0.40	•
H3P 135-IQ	13.50	7.58	2.910	15.0	0.40	•
H3P 136-IQ	13.60	7.58	2.910	15.0	0.40	•
H3P 137-IQ	13.70	7.58	2.910	15.0	0.40	•
H3P 138-IQ	13.80	7.58	2.910	15.0	0.40	•
H3P 139-IQ	13.90	7.58	2.910	15.0	0.40	•
H3P 140-IQ	14.00	8.08	3.100	15.0	0.40	•
H3P 141-IQ	14.10	8.08	3.100	15.0	0.40	•
H3P 142-IQ	14.20	8.08	3.100	15.0	0.40	•
H3P 143-IQ	14.30	8.08	3.100	15.0	0.40	•
H3P 144-IQ	14.40	8.08	3.100	15.0	0.40	•
H3P 145-IQ	14.50	8.08	3.100	15.0	0.40	•
H3P 146-IQ	14.60	8.08	3.100	15.0	0.40	•
H3P 147-IQ	14.70	8.08	3.100	15.0	0.40	•
H3P 148-IQ	14.80	8.08	3.100	15.0	0.40	•
H3P 149-IQ	14.90	8.08	3.100	15.0	0.40	•
H3P 150-IQ	15.00	8.66	3.470	15.0	0.40	•
H3P 151-IQ	15.10	8.66	3.470	15.0	0.40	•
H3P 152-IQ	15.20	8.66	3.470	15.0	0.40	•
H3P 153-IQ	15.30	8.66	3.470	15.0	0.40	•
H3P 154-IQ	15.40	8.66	3.470	15.0	0.40	•
H3P 155-IQ	15.50	8.66	3.470	15.0	0.40	•
H3P 156-IQ	15.60	8.66	3.470	15.0	0.40	•
H3P 157-IQ	15.70	8.66	3.470	15.0	0.40	•
H3P 158-IQ	15.80	8.66	3.470	15.0	0.40	•
H3P 159-IQ	15.90	8.66	3.470	15.0	0.40	•
H3P 160-IQ	16.00	9.25	3.440	15.0	0.40	•
H3P 161-IQ	16.10	9.25	3.440	15.0	0.40	•
H3P 162-IQ	16.20	9.25	3.440	15.0	0.40	•
H3P 163-IQ	16.30	9.25	3.440	15.0	0.40	•
H3P 164-IQ	16.40	9.25	3.440	15.0	0.40	•
H3P 165-IQ	16.50	9.25	3.440	15.0	0.40	•
H3P 166-IQ	16.60	9.25	3.440	15.0	0.40	•
H3P 167-IQ	16.70	9.25	3.440	15.0	0.40	•
H3P 168-IQ	16.80	9.25	3.440	15.0	0.40	•
H3P 169-IQ	16.90	9.25	3.440	15.0	0.40	•
H3P 170-IQ	17.00	9.72	3.520	15.0	0.40	•
H3P 171-IQ	17.10	9.72	3.520	15.0	0.40	•
H3P 172-IQ	17.20	9.72	3.520	15.0	0.40	•
H3P 173-IQ	17.30	9.72	3.520	15.0	0.40	•
H3P 174-IQ	17.40	9.72	3.520	15.0	0.40	•
H3P 175-IQ	17.50	9.72	3.520	15.0	0.40	•
H3P 176-IQ	17.60	9.72	3.520	15.0	0.40	•
H3P 177-IQ	17.70	9.72	3.520	15.0	0.40	•

• For user guide and cutting conditions, see pages 96-98
(1) LPR tolerance ±0.05 mm
(2) PL tolerance ±0.1 mm

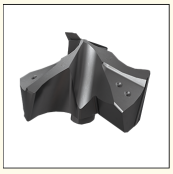
For tools, see pages: D3N R-10D (86) • D3N A-1.5D (82) • D3N R-1.5D (82) • D3N A-3D (83) • D3N R-3D (83) • D3N A-5D (84) • D3N R-5D (84) • D3N A-8D (85) • D3N R-8D (85)

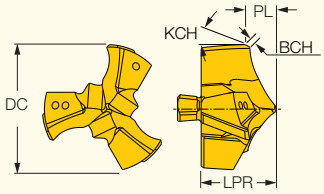
Continued

QUICK3CHAM

H3P

Exchangeable 3 Flute Drilling Heads for Machining Carbon and Alloy Steel (ISO P) And Cast Iron (ISO K)





Designation	Dimensions					IC908
	DC	LPR[1]	PL[2]	KCH	BCH	
H3P 178-IQ	17.80	9.72	3.520	15.0	0.40	•
H3P 179-IQ	17.90	9.72	3.520	15.0	0.40	•
H3P 180-IQ	18.00	10.36	3.900	15.0	0.40	•
H3P 181-IQ	18.10	10.36	3.900	15.0	0.40	•
H3P 182-IQ	18.20	10.36	3.900	15.0	0.40	•
H3P 183-IQ	18.30	10.36	3.900	15.0	0.40	•
H3P 184-IQ	18.40	10.36	3.900	15.0	0.40	•
H3P 185-IQ	18.50	10.36	3.900	15.0	0.40	•
H3P 186-IQ	18.60	10.36	3.900	15.0	0.40	•
H3P 187-IQ	18.70	10.36	3.900	15.0	0.40	•
H3P 188-IQ	18.80	10.36	3.900	15.0	0.40	•
H3P 189-IQ	18.90	10.36	3.900	15.0	0.40	•
H3P 190-IQ	19.00	10.92	4.100	15.0	0.40	•
H3P 1905-IQ	19.05	10.92	4.100	15.0	0.40	•
H3P 191-IQ	19.10	10.92	4.100	15.0	0.40	•
H3P 192-IQ	19.20	10.92	4.100	15.0	0.40	•
H3P 1927-IQ	19.27	10.92	4.100	15.0	0.40	•
H3P 193-IQ	19.30	10.92	4.100	15.0	0.40	•
H3P 194-IQ	19.40	10.92	4.100	15.0	0.40	•
H3P 195-IQ	19.50	10.92	4.100	15.0	0.40	•
H3P 196-IQ	19.60	10.92	4.100	15.0	0.40	•
H3P 197-IQ	19.70	10.92	4.100	15.0	0.40	•
H3P 198-IQ	19.80	10.92	4.100	15.0	0.40	•
H3P 199-IQ	19.90	10.92	4.100	15.0	0.40	•
H3P 200-IQ	20.00	11.24	4.320	15.0	0.40	•
H3P 201-IQ	20.10	11.24	4.320	15.0	0.40	•
H3P 202-IQ	20.20	11.24	4.320	15.0	0.40	•
H3P 203-IQ	20.30	11.24	4.320	15.0	0.40	•
H3P 204-IQ	20.40	11.24	4.320	15.0	0.40	•
H3P 205-IQ	20.50	11.24	4.320	15.0	0.40	•
H3P 206-IQ	20.60	11.24	4.320	15.0	0.40	•
H3P 207-IQ	20.70	11.24	4.320	15.0	0.40	•
H3P 208-IQ	20.80	11.24	4.320	15.0	0.40	•
H3P 209-IQ	20.90	11.24	4.320	15.0	0.40	•
H3P 210-IQ	21.00	11.80	4.550	15.0	0.40	•
H3P 211-IQ	21.10	11.80	4.550	15.0	0.40	•
H3P 212-IQ	21.20	11.80	4.550	15.0	0.40	•
H3P 213-IQ	21.30	11.80	4.550	15.0	0.40	•
H3P 214-IQ	21.40	11.80	4.550	15.0	0.40	•
H3P 215-IQ	21.50	11.80	4.550	15.0	0.40	•
H3P 216-IQ	21.60	11.80	4.550	15.0	0.40	•
H3P 217-IQ	21.70	11.80	4.550	15.0	0.40	•
H3P 218-IQ	21.80	11.80	4.550	15.0	0.40	•
H3P 219-IQ	21.90	11.80	4.550	15.0	0.40	•
H3P 220-IQ	22.00	12.62	4.690	15.0	0.40	•
H3P 221-IQ	22.10	12.62	4.690	15.0	0.40	•
H3P 222-IQ	22.20	12.62	4.690	15.0	0.40	•
H3P 223-IQ	22.30	12.62	4.690	15.0	0.40	•
H3P 224-IQ	22.40	12.62	4.690	15.0	0.40	•
H3P 225-IQ	22.50	12.62	4.690	15.0	0.40	•
H3P 226-IQ	22.60	12.62	4.690	15.0	0.40	•
H3P 227-IQ	22.70	12.62	4.690	15.0	0.40	•
H3P 228-IQ	22.80	12.62	4.690	15.0	0.40	•
H3P 229-IQ	22.90	12.62	4.690	15.0	0.40	•
H3P 230-IQ	23.00	13.00	4.910	15.0	0.40	•
H3P 231-IQ	23.10	13.00	4.910	15.0	0.40	•
H3P 232-IQ	23.20	13.00	4.910	15.0	0.40	•

• For user guide and cutting conditions, see pages 96-98

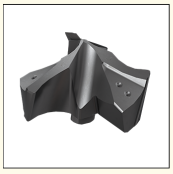
[1] LPR tolerance ±0.05 mm

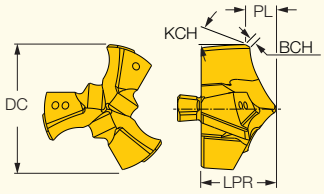
[2] PL tolerance ±0.1 mm

For tools, see pages: D3N R-10D (86) • D3N A-1.5D (82) • D3N R-1.5D (82) • D3N A-3D (83) • D3N R-3D (83) • D3N A-5D (84) • D3N R-5D (84) • D3N A-8D (85) • D3N R-8D (85)

QUICK3CHAM

H3P
Exchangeable 3 Flute Drilling Heads for Machining Carbon and Alloy Steel (ISO P)
And Cast Iron (ISO K)





Designation	Dimensions					IC908
	DC	LPR[1]	PL[2]	KCH	BCH	
H3P 233-IQ	23.30	13.00	4.910	15.0	0.40	●
H3P 234-IQ	23.40	13.00	4.910	15.0	0.40	●
H3P 235-IQ	23.50	13.00	4.910	15.0	0.40	●
H3P 236-IQ	23.60	13.00	4.910	15.0	0.40	●
H3P 237-IQ	23.70	13.00	4.910	15.0	0.40	●
H3P 238-IQ	23.80	13.00	4.910	15.0	0.40	●
H3P 239-IQ	23.90	13.00	4.910	15.0	0.40	●
H3P 240-IQ	24.00	13.54	5.210	15.0	0.40	●
H3P 241-IQ	24.10	13.54	5.210	15.0	0.40	●
H3P 242-IQ	24.20	13.54	5.210	15.0	0.40	●
H3P 243-IQ	24.30	13.54	5.210	15.0	0.40	●
H3P 244-IQ	24.40	13.54	5.210	15.0	0.40	●
H3P 245-IQ	24.50	13.54	5.210	15.0	0.40	●
H3P 246-IQ	24.60	13.54	5.210	15.0	0.40	●
H3P 247-IQ	24.70	13.54	5.210	15.0	0.40	●
H3P 248-IQ	24.80	13.54	5.210	15.0	0.40	●
H3P 249-IQ	24.90	13.54	5.210	15.0	0.40	●
H3P 250-IQ	25.00	14.60	5.200	15.0	0.40	●
H3P 251-IQ	25.10	14.60	5.200	15.0	0.40	●
H3P 252-IQ	25.20	14.60	5.200	15.0	0.40	●
H3P 253-IQ	25.30	14.60	5.200	15.0	0.40	●
H3P 254-IQ	25.40	14.60	5.200	15.0	0.40	●
H3P 255-IQ	25.50	14.60	5.200	15.0	0.40	●
H3P 256-IQ	25.60	14.60	5.200	15.0	0.40	●
H3P 2565-IQ	25.65	14.60	5.200	15.0	0.40	●
H3P 257-IQ	25.70	14.60	5.200	15.0	0.40	●
H3P 258-IQ	25.80	14.60	5.200	15.0	0.40	●
H3P 259-IQ	25.90	14.60	5.200	15.0	0.40	●
H3P 260-IQ	26.00	14.41	5.180	15.0	0.40	●
H3P 262-IQ	26.20	14.41	5.180	15.0	0.40	●
H3P 265-IQ	26.50	14.41	5.180	15.0	0.40	●

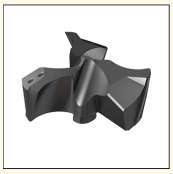
• For user guide and cutting conditions, see pages 96-98
[1] LPR tolerance ±0.05 mm
[2] PL tolerance ±0.1 mm

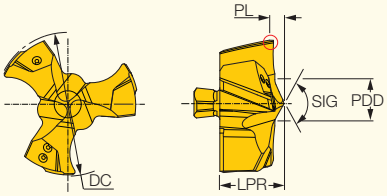
For tools, see pages: D3N R-10D (86) • D3N A-1.5D (82) • D3N R-1.5D (82) • D3N A-3D (83) • D3N R-3D (83) • D3N A-5D (84) • D3N R-5D (84) • D3N A-8D (85) • D3N R-8D (85)

QUICK3CHAM

F3P

Exchangeable 3 Flute Flat Drilling Heads for Machining Carbon and Alloy Steel (ISO P) And Cast Iron (ISO K)





Designation	Dimensions								IC908
	DC	LPR(1)	PL	PDD	SIG	BCH	KCH	SSC(2)	
F3P 120-IQ	12.00	4.90	0.790	2.96	133	0.40	15.0	12	•
F3P 121-IQ	12.10	4.90	0.790	2.96	133	0.40	15.0	12	•
F3P 122-IQ	12.20	4.90	0.790	2.96	133	0.40	15.0	12	•
F3P 123-IQ	12.30	4.90	0.790	2.96	133	0.40	15.0	12	•
F3P 124-IQ	12.40	4.90	0.790	2.96	133	0.40	15.0	12	•
F3P 125-IQ	12.50	4.90	0.790	2.96	133	0.40	15.0	12	•
F3P 126-IQ	12.60	4.90	0.790	2.96	133	0.40	15.0	12	•
F3P 127-IQ	12.70	4.90	0.790	2.96	133	0.40	15.0	12	•
F3P 128-IQ	12.80	4.90	0.790	2.96	133	0.40	15.0	12	•
F3P 129-IQ	12.90	4.90	0.790	2.96	133	0.40	15.0	12	•
F3P 130-IQ	13.00	5.39	0.990	3.52	130	0.40	15.0	13	•
F3P 131-IQ	13.10	5.39	0.990	3.52	130	0.40	15.0	13	•
F3P 132-IQ	13.20	5.39	0.990	3.52	130	0.40	15.0	13	•
F3P 133-IQ	13.30	5.39	0.990	3.52	130	0.40	15.0	13	•
F3P 134-IQ	13.40	5.39	0.990	3.52	130	0.40	15.0	13	•
F3P 135-IQ	13.50	5.39	0.990	3.52	130	0.40	15.0	13	•
F3P 136-IQ	13.60	5.39	0.990	3.52	130	0.40	15.0	13	•
F3P 137-IQ	13.70	5.39	0.990	3.52	130	0.40	15.0	13	•
F3P 138-IQ	13.80	5.39	0.990	3.52	130	0.40	15.0	13	•
F3P 139-IQ	13.90	5.39	0.990	3.52	130	0.40	15.0	13	•
F3P 140-IQ	14.00	6.14	1.440	4.90	125	0.40	15.0	14	•
F3P 141-IQ	14.10	6.14	1.440	4.90	125	0.40	15.0	14	•
F3P 142-IQ	14.20	6.14	1.440	4.90	125	0.40	15.0	14	•
F3P 143-IQ	14.30	6.14	1.440	4.90	125	0.40	15.0	14	•
F3P 144-IQ	14.40	6.14	1.440	4.90	125	0.40	15.0	14	•
F3P 145-IQ	14.50	6.14	1.440	4.90	125	0.40	15.0	14	•
F3P 146-IQ	14.60	6.14	1.440	4.90	125	0.40	15.0	14	•
F3P 147-IQ	14.70	6.14	1.440	4.90	125	0.40	15.0	14	•
F3P 148-IQ	14.80	6.14	1.440	4.90	125	0.40	15.0	14	•
F3P 149-IQ	14.90	6.14	1.440	4.90	125	0.40	15.0	14	•
F3P 150-IQ	15.00	6.51	1.450	4.91	125	0.40	15.0	15	•
F3P 151-IQ	15.10	6.51	1.450	4.91	125	0.40	15.0	15	•
F3P 152-IQ	15.20	6.51	1.450	4.91	125	0.40	15.0	15	•
F3P 153-IQ	15.30	6.51	1.450	4.91	125	0.40	15.0	15	•
F3P 154-IQ	15.40	6.51	1.450	4.91	125	0.40	15.0	15	•
F3P 155-IQ	15.50	6.51	1.450	4.91	125	0.40	15.0	15	•
F3P 156-IQ	15.60	6.51	1.450	4.91	125	0.40	15.0	15	•
F3P 157-IQ	15.70	6.51	1.450	4.91	125	0.40	15.0	15	•
F3P 158-IQ	15.80	6.51	1.450	4.91	125	0.40	15.0	15	•
F3P 159-IQ	15.90	6.51	1.450	4.91	125	0.40	15.0	15	•
F3P 160-IQ	16.00	7.23	1.590	5.36	127	0.40	15.0	16	•
F3P 161-IQ	16.10	7.23	1.590	5.36	127	0.40	15.0	16	•
F3P 162-IQ	16.20	7.23	1.590	5.36	127	0.40	15.0	16	•
F3P 163-IQ	16.30	7.23	1.590	5.36	127	0.40	15.0	16	•
F3P 164-IQ	16.40	7.23	1.590	5.36	127	0.40	15.0	16	•
F3P 165-IQ	16.50	7.23	1.590	5.36	127	0.40	15.0	16	•
F3P 166-IQ	16.60	7.23	1.590	5.36	127	0.40	15.0	16	•
F3P 167-IQ	16.70	7.23	1.590	5.36	127	0.40	15.0	16	•
F3P 168-IQ	16.80	7.23	1.590	5.36	127	0.40	15.0	16	•
F3P 169-IQ	16.90	7.23	1.590	5.36	127	0.40	15.0	16	•
F3P 170-IQ	17.00	7.35	1.650	5.72	122	0.40	15.0	17	•
F3P 171-IQ	17.10	7.35	1.650	5.72	122	0.40	15.0	17	•
F3P 172-IQ	17.20	7.35	1.650	5.72	122	0.40	15.0	17	•
F3P 173-IQ	17.30	7.35	1.650	5.72	122	0.40	15.0	17	•
F3P 174-IQ	17.40	7.35	1.650	5.72	122	0.40	15.0	17	•
F3P 175-IQ	17.50	7.35	1.650	5.72	122	0.40	15.0	17	•

• For nearly flat bottom hole applications • For user guide and cutting conditions, see pages 96-98

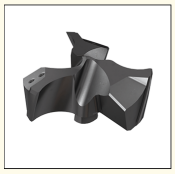
(1) LPR tolerance ±0.05 mm

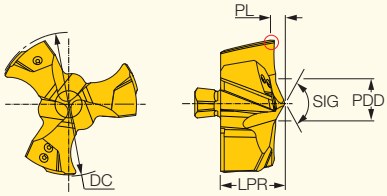
(2) Seat size code

For tools, see pages: D3N R-10D (86) • D3N A-1.5D (82) • D3N R-1.5D (82) • D3N A-3D (83) • D3N R-3D (83) • D3N A-5D (84) • D3N R-5D (84) • D3N A-8D (85) • D3N R-8D (85)

QUICK3CHAM

F3P
Exchangeable 3 Flute Flat Drilling Heads for Machining Carbon and Alloy Steel (ISO P)
And Cast Iron (ISO K)





Designation	Dimensions								IC908
	DC	LPR[1]	PL	PDD	SIG	BCH	KCH	SSC[2]	
F3P 176-IQ	17.60	7.35	1.650	5.72	122	0.40	15.0	17	•
F3P 177-IQ	17.70	7.35	1.650	5.72	122	0.40	15.0	17	•
F3P 178-IQ	17.80	7.35	1.650	5.72	122	0.40	15.0	17	•
F3P 179-IQ	17.90	7.35	1.650	5.72	122	0.40	15.0	17	•
F3P 180-IQ	18.00	7.65	1.660	5.75	125	0.40	15.0	18	•
F3P 181-IQ	18.10	7.65	1.660	5.75	125	0.40	15.0	18	•
F3P 182-IQ	18.20	7.65	1.660	5.75	125	0.40	15.0	18	•
F3P 183-IQ	18.30	7.65	1.660	5.75	125	0.40	15.0	18	•
F3P 184-IQ	18.40	7.65	1.660	5.75	125	0.40	15.0	18	•
F3P 185-IQ	18.50	7.65	1.660	5.75	125	0.40	15.0	18	•
F3P 186-IQ	18.60	7.65	1.660	5.75	125	0.40	15.0	18	•
F3P 187-IQ	18.70	7.65	1.660	5.75	125	0.40	15.0	18	•
F3P 188-IQ	18.80	7.65	1.660	5.75	125	0.40	15.0	18	•
F3P 189-IQ	18.90	7.65	1.660	5.75	125	0.40	15.0	18	•
F3P 190-IQ	19.00	8.07	1.590	6.35	133	0.40	15.0	19	•
F3P 191-IQ	19.10	8.07	1.590	6.35	133	0.40	15.0	19	•
F3P 192-IQ	19.20	8.07	1.590	6.35	133	0.40	15.0	19	•
F3P 193-IQ	19.30	8.07	1.590	6.35	133	0.40	15.0	19	•
F3P 194-IQ	19.40	8.07	1.590	6.35	133	0.40	15.0	19	•
F3P 195-IQ	19.50	8.07	1.590	5.35	133	0.40	15.0	19	•
F3P 196-IQ	19.60	8.07	1.590	6.35	133	0.40	15.0	19	•
F3P 197-IQ	19.70	8.07	1.590	6.35	133	0.40	15.0	19	•
F3P 198-IQ	19.80	8.07	1.590	6.35	133	0.40	15.0	19	•
F3P 199-IQ	19.90	8.07	1.590	6.35	133	0.40	15.0	19	•
F3P 200-IQ	20.00	8.82	1.800	6.54	132	0.40	15.0	20	•
F3P 201-IQ	20.10	8.82	1.800	6.54	132	0.40	15.0	20	•
F3P 202-IQ	20.20	8.82	1.800	6.54	132	0.40	15.0	20	•
F3P 203-IQ	20.30	8.82	1.800	6.54	132	0.40	15.0	20	•
F3P 204-IQ	20.40	8.82	1.800	6.54	132	0.40	15.0	20	•
F3P 205-IQ	20.50	8.82	1.800	6.54	132	0.40	15.0	20	•
F3P 206-IQ	20.60	8.82	1.800	6.54	132	0.40	15.0	20	•
F3P 207-IQ	20.70	8.82	1.800	6.54	132	0.40	15.0	20	•
F3P 208-IQ	20.80	8.82	1.800	6.54	132	0.40	15.0	20	•
F3P 209-IQ	20.90	8.82	1.800	6.54	132	0.40	15.0	20	•
F3P 210-IQ	21.00	9.23	1.740	6.94	132	0.40	15.0	21	•
F3P 211-IQ	21.10	9.23	1.740	6.94	132	0.40	15.0	21	•
F3P 212-IQ	21.20	9.23	1.740	6.94	132	0.40	15.0	21	•
F3P 213-IQ	21.30	9.23	1.740	6.94	132	0.40	15.0	21	•
F3P 214-IQ	21.40	9.23	1.740	6.94	132	0.40	15.0	21	•
F3P 215-IQ	21.50	9.23	1.740	6.94	132	0.40	15.0	21	•
F3P 216-IQ	21.60	9.23	1.740	6.94	132	0.40	15.0	21	•
F3P 217-IQ	21.70	9.23	1.740	6.94	132	0.40	15.0	21	•
F3P 218-IQ	21.80	9.23	1.740	6.94	132	0.40	15.0	21	•
F3P 219-IQ	21.90	9.23	1.740	6.94	132	0.40	15.0	21	•
F3P 220-IQ	22.00	9.67	1.810	7.19	132	0.40	15.0	22	•
F3P 221-IQ	22.10	9.67	1.810	7.19	132	0.40	15.0	22	•
F3P 222-IQ	22.20	9.67	1.810	7.19	132	0.40	15.0	22	•
F3P 223-IQ	22.30	9.67	1.810	7.19	132	0.40	15.0	22	•
F3P 224-IQ	22.40	9.67	1.810	7.19	132	0.40	15.0	22	•
F3P 225-IQ	22.50	9.67	1.810	7.19	132	0.40	15.0	22	•
F3P 226-IQ	22.60	9.67	1.810	7.19	132	0.40	15.0	22	•
F3P 227-IQ	22.70	9.67	1.810	7.19	132	0.40	15.0	22	•
F3P 228-IQ	22.80	9.67	1.810	7.19	132	0.40	15.0	22	•
F3P 229-IQ	22.90	9.67	1.810	7.19	132	0.40	15.0	22	•
F3P 230-IQ	23.00	9.78	1.830	7.84	134	0.40	15.0	23	•
F3P 231-IQ	23.10	9.78	1.830	7.84	134	0.40	15.0	23	•

• For nearly flat bottom hole applications • For user guide and cutting conditions, see pages 96-98

[1] LPR tolerance ±0.05 mm

[2] Seat size code

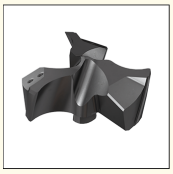
For tools, see pages: D3N R-10D (86) • D3N A-1.5D (82) • D3N R-1.5D (82) • D3N A-3D (83) • D3N R-3D (83) • D3N A-5D (84) • D3N R-5D (84) • D3N A-8D (85) • D3N R-8D (85)

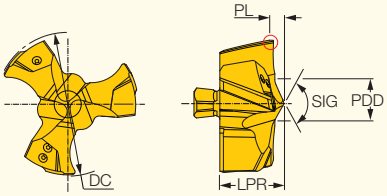
Continued

QUICK3CHAM

F3P

Exchangeable 3 Flute Flat Drilling Heads for Machining Carbon and Alloy Steel (ISO P)
And Cast Iron (ISO K)





Designation	Dimensions								IC908
	DC	LPR[1]	PL	PDD	SIG	BCH	KCH	SSC[2]	
F3P 232-IQ	23.20	9.78	1.830	7.84	134	0.40	15.0	23	●
F3P 233-IQ	23.30	9.78	1.830	7.84	134	0.40	15.0	23	●
F3P 234-IQ	23.40	9.78	1.830	7.84	134	0.40	15.0	23	●
F3P 235-IQ	23.50	9.78	1.830	7.84	134	0.40	15.0	23	●
F3P 236-IQ	23.60	9.78	1.830	7.84	134	0.40	15.0	23	●
F3P 237-IQ	23.70	9.78	1.830	7.84	134	0.40	15.0	23	●
F3P 238-IQ	23.80	9.78	1.830	7.84	134	0.40	15.0	23	●
F3P 239-IQ	23.90	9.78	1.830	7.84	134	0.40	15.0	23	●
F3P 240-IQ	24.00	9.91	1.830	7.42	132	0.40	15.0	24	●
F3P 241-IQ	24.10	9.91	1.830	7.42	132	0.40	15.0	24	●
F3P 242-IQ	24.20	9.91	1.830	7.42	132	0.40	15.0	24	●
F3P 243-IQ	24.30	9.91	1.830	7.42	132	0.40	15.0	24	●
F3P 244-IQ	24.40	9.91	1.830	7.42	132	0.40	15.0	24	●
F3P 245-IQ	24.50	9.91	1.830	7.42	132	0.40	15.0	24	●
F3P 246-IQ	24.60	9.91	1.830	7.42	132	0.40	15.0	24	●
F3P 247-IQ	24.70	9.91	1.830	7.42	132	0.40	15.0	24	●
F3P 248-IQ	24.80	9.91	1.830	7.42	132	0.40	15.0	24	●
F3P 249-IQ	24.90	9.91	1.830	7.42	132	0.40	15.0	24	●
F3P 250-IQ	25.00	10.27	1.960	7.98	132	0.40	15.0	25	●
F3P 251-IQ	25.10	10.27	1.960	7.98	132	0.40	15.0	25	●
F3P 252-IQ	25.20	10.27	1.960	7.98	132	0.40	15.0	25	●
F3P 253-IQ	25.30	10.27	1.960	7.98	132	0.40	15.0	25	●
F3P 254-IQ	25.40	10.27	1.960	7.98	132	0.40	15.0	25	●
F3P 255-IQ	25.50	10.27	1.960	7.98	132	0.40	15.0	25	●
F3P 256-IQ	25.60	10.27	1.960	7.98	132	0.40	15.0	25	●
F3P 257-IQ	25.70	10.27	1.960	7.98	132	0.40	15.0	25	●
F3P 258-IQ	25.80	10.27	1.960	7.98	132	0.40	15.0	25	●
F3P 259-IQ	25.90	10.27	1.960	7.98	132	0.40	15.0	25	●

• For nearly flat bottom hole applications • For user guide and cutting conditions, see pages 96-98

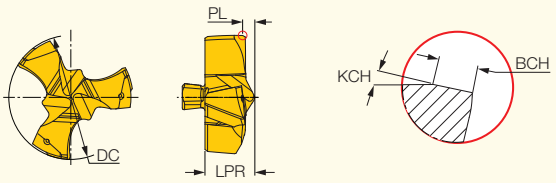
[1] LPR tolerance ±0.05 mm

[2] Seat size code

For tools, see pages: D3N R-10D (86) • D3N A-1.5D (82) • D3N R-1.5D (82) • D3N A-3D (83) • D3N R-3D (83) • D3N A-5D (84) • D3N R-5D (84) • D3N A-8D (85) • D3N R-8D (85)

QUICK3CHAM

F3B
Exchangeable 3 Flute
Counterboring Heads



Designation	Dimensions						IC908
	DC	LPR	PL	BCH	KCH	SSC(1)	
F3B 120-IQ	12.00	4.90	0.850	0.40	30.0	12	•
F3B 121-IQ	12.10	4.90	0.850	0.40	30.0	12	•
F3B 122-IQ	12.20	4.90	0.850	0.40	30.0	12	•
F3B 123-IQ	12.30	4.90	0.850	0.40	30.0	12	•
F3B 124-IQ	12.40	4.90	0.850	0.40	30.0	12	•
F3B 125-IQ	12.50	4.90	0.850	0.40	30.0	12	•
F3B 126-IQ	12.60	4.90	0.850	0.40	30.0	12	•
F3B 127-IQ	12.70	4.90	0.850	0.40	30.0	12	•
F3B 128-IQ	12.80	4.90	0.850	0.40	30.0	12	•
F3B 129-IQ	12.90	4.90	0.850	0.40	30.0	12	•
F3B 130-IQ	13.00	5.00	1.000	0.40	30.0	13	•
F3B 131-IQ	13.10	5.00	1.000	0.40	30.0	13	•
F3B 132-IQ	13.20	5.00	1.000	0.40	30.0	13	•
F3B 133-IQ	13.30	5.00	1.000	0.40	30.0	13	•
F3B 134-IQ	13.40	5.00	1.000	0.40	30.0	13	•
F3B 135-IQ	13.50	5.00	1.000	0.40	30.0	13	•
F3B 136-IQ	13.60	5.00	1.000	0.40	30.0	13	•
F3B 137-IQ	13.70	5.00	1.000	0.40	30.0	13	•
F3B 138-IQ	13.80	5.00	1.000	0.40	30.0	13	•
F3B 139-IQ	13.90	5.00	1.000	0.40	30.0	13	•
F3B 140-IQ	14.00	5.74	1.440	0.40	30.0	14	•
F3B 141-IQ	14.10	5.74	1.440	0.40	30.0	14	•
F3B 142-IQ	14.20	5.74	1.440	0.40	30.0	14	•
F3B 143-IQ	14.30	5.74	1.440	0.40	30.0	14	•
F3B 144-IQ	14.40	5.74	1.440	0.40	30.0	14	•
F3B 145-IQ	14.50	5.74	1.440	0.40	30.0	14	•
F3B 146-IQ	14.60	5.74	1.440	0.40	30.0	14	•
F3B 147-IQ	14.70	5.74	1.440	0.40	30.0	14	•
F3B 148-IQ	14.80	5.74	1.440	0.40	30.0	14	•
F3B 149-IQ	14.90	5.74	1.440	0.40	30.0	14	•
F3B 150-IQ	15.00	6.01	1.440	0.40	30.0	15	•
F3B 151-IQ	15.10	6.01	1.440	0.40	30.0	15	•
F3B 152-IQ	15.20	6.01	1.440	0.40	30.0	15	•
F3B 153-IQ	15.30	6.01	1.440	0.40	30.0	15	•
F3B 154-IQ	15.40	6.01	1.440	0.40	30.0	15	•
F3B 155-IQ	15.50	6.01	1.440	0.40	30.0	15	•
F3B 156-IQ	15.60	6.01	1.440	0.40	30.0	15	•
F3B 157-IQ	15.70	6.01	1.440	0.40	30.0	15	•
F3B 158-IQ	15.80	6.01	1.440	0.40	30.0	15	•
F3B 1588-IQ	15.88	6.01	1.440	0.40	30.0	15	•
F3B 159-IQ	15.90	6.01	1.440	0.40	30.0	15	•
F3B 160-IQ	16.00	6.43	1.580	0.40	30.0	16	•
F3B 1605-IQ	16.05	6.43	1.580	0.40	30.0	16	•
F3B 161-IQ	16.10	6.43	1.580	0.40	30.0	16	•
F3B 162-IQ	16.20	6.43	1.580	0.40	30.0	16	•
F3B 163-IQ	16.30	6.43	1.580	0.40	30.0	16	•
F3B 164-IQ	16.40	6.43	1.580	0.40	30.0	16	•
F3B 165-IQ	16.50	6.43	1.580	0.40	30.0	16	•
F3B 166-IQ	16.60	6.43	1.580	0.40	30.0	16	•
F3B 167-IQ	16.70	6.43	1.580	0.40	30.0	16	•
F3B 168-IQ	16.80	6.43	1.580	0.40	30.0	16	•
F3B 169-IQ	16.90	6.43	1.580	0.40	30.0	16	•
F3B 170-IQ	17.00	6.95	1.630	0.40	30.0	17	•
F3B 171-IQ	17.10	6.95	1.630	0.40	30.0	17	•
F3B 172-IQ	17.20	6.95	1.630	0.40	30.0	17	•
F3B 173-IQ	17.30	6.95	1.630	0.40	30.0	17	•

NEW

• For counterboring operations ONLY • For cutting conditions, see pages 96-98

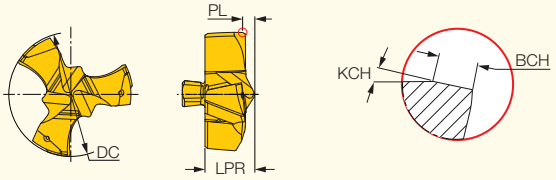
(1) Seat size code

For tools, see pages: D3N A-1.5D (82) • D3N R-1.5D (82) • D3N A-3D (83) • D3N R-3D (83) • D3N A-5D (84) • D3N R-5D (84) • D3N A-8D (85) • D3N R-8D (85) • D3N R-10D (86)

Continued

QUICK3CHAM

F3B
Exchangeable 3 Flute
Counterboring Heads



Designation	Dimensions						IC908
	DC	LPR	PL	BCH	KCH	SSC(1)	
F3B 174-IQ	17.40	6.95	1.630	0.40	30.0	17	●
F3B 1747-IQ	17.47	6.95	1.630	0.40	30.0	17	●
F3B 175-IQ	17.50	6.95	1.630	0.40	30.0	17	●
F3B 176-IQ	17.60	6.95	1.630	0.40	30.0	17	●
F3B 177-IQ	17.70	6.95	1.630	0.40	30.0	17	●
F3B 178-IQ	17.80	6.95	1.630	0.40	30.0	17	●
F3B 179-IQ	17.90	6.95	1.630	0.40	30.0	17	●
F3B 180-IQ	18.00	7.30	1.610	0.40	30.0	18	●
F3B 181-IQ	18.10	7.30	1.610	0.40	30.0	18	●
F3B 182-IQ	18.20	7.30	1.610	0.40	30.0	18	●
F3B 183-IQ	18.30	7.30	1.610	0.40	30.0	18	●
F3B 184-IQ	18.40	7.30	1.610	0.40	30.0	18	●
F3B 185-IQ	18.50	7.30	1.610	0.40	30.0	18	●
F3B 186-IQ	18.60	7.30	1.610	0.40	30.0	18	●
F3B 187-IQ	18.70	7.30	1.610	0.40	30.0	18	●
F3B 188-IQ	18.80	7.30	1.610	0.40	30.0	18	●
F3B 189-IQ	18.90	7.30	1.610	0.40	30.0	18	●
F3B 190-IQ	19.00	7.58	1.600	0.40	30.0	19	●
F3B 1905-IQ	19.05	7.58	1.600	0.40	30.0	19	●
F3B 191-IQ	19.10	7.58	1.600	0.40	30.0	19	●
F3B 192-IQ	19.20	7.58	1.600	0.40	30.0	19	●
F3B 1927-IQ	19.27	7.58	1.600	0.40	30.0	19	●
F3B 193-IQ	19.30	7.58	1.600	0.40	30.0	19	●
F3B 194-IQ	19.40	7.58	1.600	0.40	30.0	19	●
F3B 195-IQ	19.50	7.58	1.600	0.40	30.0	19	●
F3B 196-IQ	19.60	7.58	1.600	0.40	30.0	19	●
F3B 197-IQ	19.70	7.58	1.600	0.40	30.0	19	●
F3B 198-IQ	19.80	7.58	1.600	0.40	30.0	19	●
F3B 199-IQ	19.90	7.58	1.600	0.40	30.0	19	●
F3B 200-IQ	20.00	7.52	1.760	0.40	30.0	20	●
F3B 201-IQ	20.10	7.52	1.760	0.40	30.0	20	●
F3B 202-IQ	20.20	7.52	1.760	0.40	30.0	20	●
F3B 203-IQ	20.30	7.52	1.760	0.40	30.0	20	●
F3B 204-IQ	20.40	7.52	1.760	0.40	30.0	20	●
F3B 205-IQ	20.50	7.52	1.760	0.40	30.0	20	●
F3B 206-IQ	20.60	7.52	1.760	0.40	30.0	20	●
F3B 2064-IQ	20.64	7.52	1.760	0.40	30.0	20	●
F3B 207-IQ	20.70	7.52	1.760	0.40	30.0	20	●
F3B 208-IQ	20.80	7.52	1.760	0.40	30.0	20	●
F3B 209-IQ	20.90	7.52	1.760	0.40	30.0	20	●
F3B 210-IQ	21.00	7.98	1.740	0.40	30.0	21	●
F3B 211-IQ	21.10	7.98	1.740	0.40	30.0	21	●
F3B 212-IQ	21.20	7.98	1.740	0.40	30.0	21	●
F3B 213-IQ	21.30	7.98	1.740	0.40	30.0	21	●
F3B 214-IQ	21.40	7.98	1.740	0.40	30.0	21	●
F3B 215-IQ	21.50	7.98	1.740	0.40	30.0	21	●
F3B 216-IQ	21.60	7.98	1.740	0.40	30.0	21	●
F3B 217-IQ	21.70	7.98	1.740	0.40	30.0	21	●
F3B 218-IQ	21.80	7.98	1.740	0.40	30.0	21	●
F3B 219-IQ	21.90	7.98	1.740	0.40	30.0	21	●
F3B 220-IQ	22.00	8.67	1.830	0.40	30.0	22	●
F3B 221-IQ	22.10	8.67	1.830	0.40	30.0	22	●
F3B 222-IQ	22.20	8.67	1.830	0.40	30.0	22	●
F3B 2223-IQ	22.23	8.67	1.830	0.40	30.0	22	●
F3B 223-IQ	22.30	8.67	1.830	0.40	30.0	22	●
F3B 224-IQ	22.40	8.67	1.830	0.40	30.0	22	●

NEW

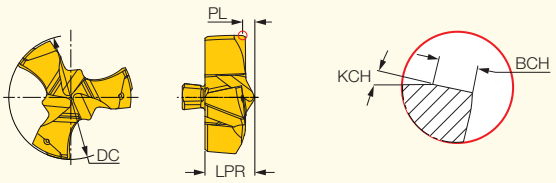
• For counterboring operations ONLY • For cutting conditions, see pages 96-98

(1) Seat size code

For tools, see pages: D3N A-1.5D (82) • D3N R-1.5D (82) • D3N A-3D (83) • D3N R-3D (83) • D3N A-5D (84) • D3N R-5D (84) • D3N A-8D (85) • D3N R-8D (85) • D3N R-10D (86)

QUICK3CHAM

F3B
Exchangeable 3 Flute
Counterboring Heads



Designation	Dimensions						IC908
	DC	LPR	PL	BCH	KCH	SSC(1)	
F3B 225-IQ	22.50	8.67	1.830	0.40	30.0	22	●
F3B 226-IQ	22.60	8.67	1.830	0.40	30.0	22	●
F3B 227-IQ	22.70	8.67	1.830	0.40	30.0	22	●
F3B 228-IQ	22.80	8.67	1.830	0.40	30.0	22	●
F3B 229-IQ	22.90	8.67	1.830	0.40	30.0	22	●
F3B 230-IQ	23.00	8.78	1.960	0.40	30.0	23	●
F3B 231-IQ	23.10	8.78	1.960	0.40	30.0	23	●
F3B 232-IQ	23.20	8.78	1.960	0.40	30.0	23	●
F3B 233-IQ	23.30	8.78	1.960	0.40	30.0	23	●
F3B 234-IQ	23.40	8.78	1.960	0.40	30.0	23	●
F3B 235-IQ	23.50	8.78	1.960	0.40	30.0	23	●
F3B 236-IQ	23.60	8.78	1.960	0.40	30.0	23	●
F3B 237-IQ	23.70	8.78	1.960	0.40	30.0	23	●
F3B 238-IQ	23.80	8.78	1.960	0.40	30.0	23	●
F3B 2381-IQ	23.81	8.78	1.960	0.40	30.0	23	●
F3B 239-IQ	23.90	8.78	1.960	0.40	30.0	23	●
F3B 240-IQ	24.00	8.91	1.800	0.40	30.0	24	●
F3B 241-IQ	24.10	8.91	1.800	0.40	30.0	24	●
F3B 242-IQ	24.20	8.91	1.800	0.40	30.0	24	●
F3B 243-IQ	24.30	8.91	1.800	0.40	30.0	24	●
F3B 244-IQ	24.40	8.91	1.800	0.40	30.0	24	●
F3B 245-IQ	24.50	8.91	1.800	0.40	30.0	24	●
F3B 246-IQ	24.60	8.91	1.800	0.40	30.0	24	●
F3B 247-IQ	24.70	8.91	1.800	0.40	30.0	24	●
F3B 248-IQ	24.80	8.91	1.800	0.40	30.0	24	●
F3B 249-IQ	24.90	8.91	1.800	0.40	30.0	24	●
F3B 250-IQ	25.00	9.87	1.970	0.40	30.0	25	●
F3B 251-IQ	25.10	9.87	1.970	0.40	30.0	25	●
F3B 252-IQ	25.20	9.87	1.970	0.40	30.0	25	●
F3B 253-IQ	25.30	9.87	1.970	0.40	30.0	25	●
F3B 254-IQ	25.40	9.87	1.970	0.40	30.0	25	●
F3B 255-IQ	25.50	9.87	1.970	0.40	30.0	25	●
F3B 256-IQ	25.60	9.87	1.970	0.40	30.0	25	●
F3B 2565-IQ	25.65	9.87	1.970	0.40	30.0	25	●
F3B 257-IQ	25.70	9.87	1.970	0.40	30.0	25	●
F3B 258-IQ	25.80	9.87	1.970	0.40	30.0	25	●
F3B 259-IQ	25.90	9.87	1.970	0.40	30.0	25	●

NEW

• For counterboring operations ONLY • For cutting conditions, see pages 96-98

(1) Seat size code

For tools, see pages: D3N A-1.5D (82) • D3N R-1.5D (82) • D3N A-3D (83) • D3N R-3D (83) • D3N A-5D (84) • D3N R-5D (84) • D3N A-8D (85) • D3N R-8D (85) • D3N R-10D (86)

User Guide Lines and Recommendations

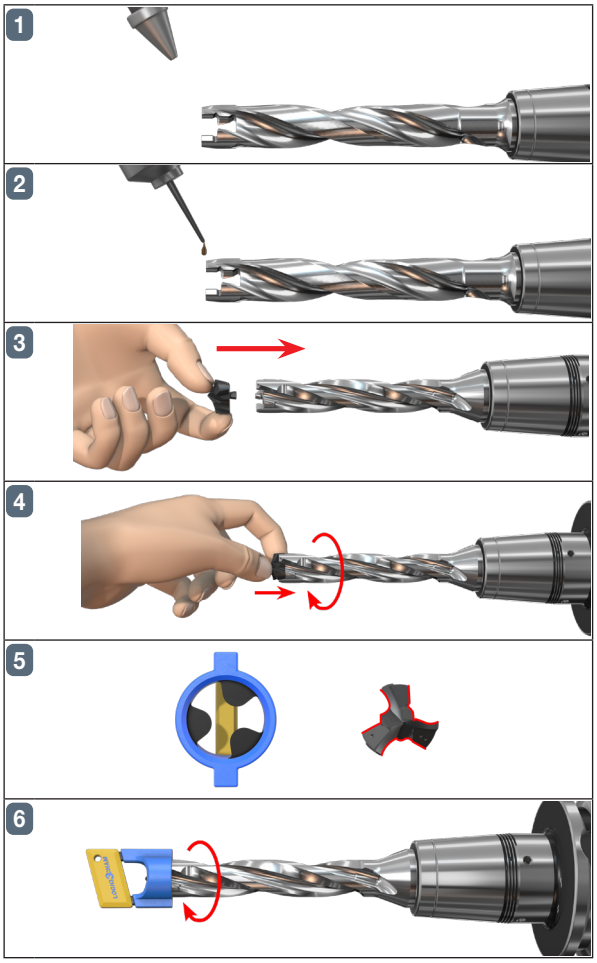
- When counterboring with F3B heads, the diameter of the hole being counterbored shall meet the following requirements:

1 The MINIMUM hole diameter must not be less than 70% of the selected F3B head diameter
An example: Final hole - 16mm
Calculation: 16 * 0.7 = 11.2
As result, for required counterboring diameter 16mm
the smallest possible pre-hole diameter is - 11.2mm.

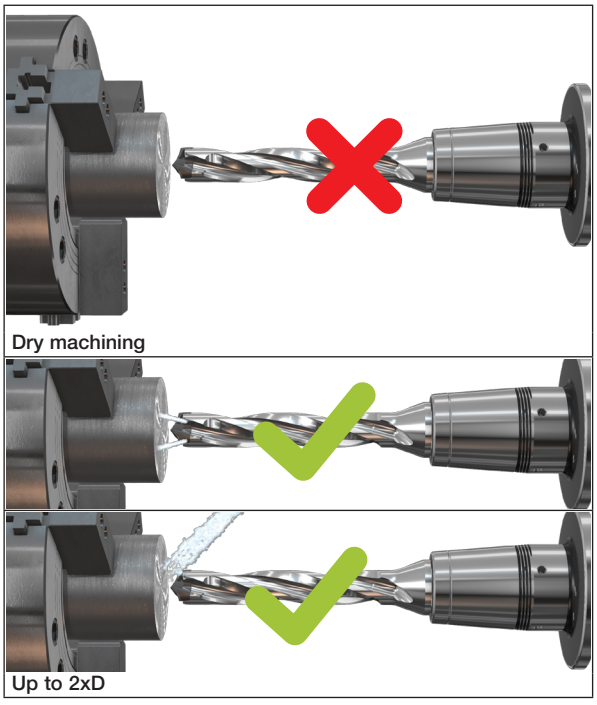
2 The MAXIMUM hole diameter should be smaller by 2mm than the F3B head diameter (1mm on each side).An example: Final hole - 16mm
Calculation: 16 - 2 = 14
As a result, for required counterboring diameter 16mm
the biggest possible pre-hole diameter is - 14mm.

- Therefore, the pre-hole diameter range for further counterboring operations with a diameter of 16mm can vary from 11.2mm to 14mm.
- For long-reach operations that require applying tools with a cutting depth exceeding 5×D, it is recommended to machine the hole using the same F3B head mounted on a tool with a shorter cutting depth (up to 3×D) to create a pilot hole with a depth of at least 1XD. Next, the machining can be continued using the long-reach tool.

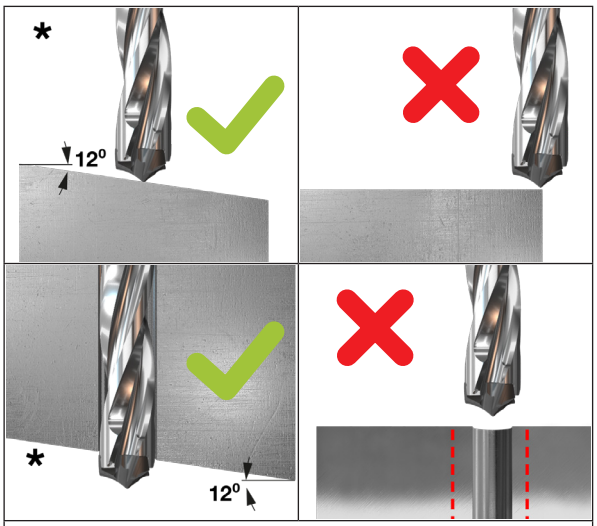
Drilling Head Mounting Procedure



Coolant Recommendations

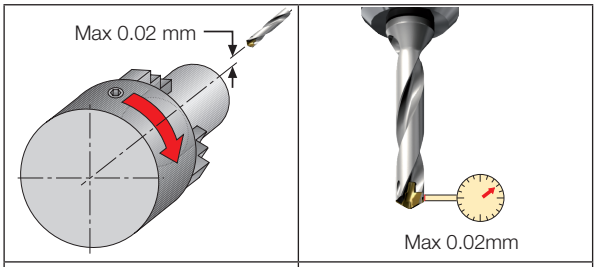


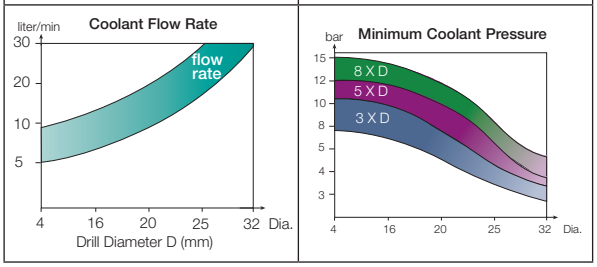
Drilling Limitations



* Up to 6° reduce feed by 20%
* 6°-12° reduce feed by 50%

Maximum Runout, Misalignment



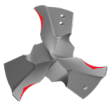
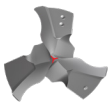
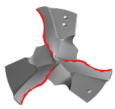
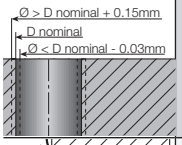
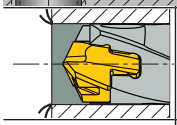
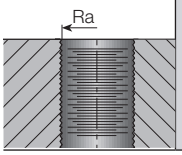


QUICK-3-CHAM Cutting Parameters

Material Groups								Recommended Machining Conditions						
								Feed Vs. Drill Diameter						
ISO	Material		Condition	Tensile Strength Rm [N/mm²]	Hardness HB	Mtl. No.	VC M/min	D=12-13.9	D=14-15.9	D=16-17.9	D=18-19.9	D=20-21.9	D=22-23.9	D=24-25.9
								mm/rev						
P	non-alloy steel and cast steel, free cutting steel	<0.25% C	annealed	420	125	1	80-**100**-120	0.30 **0.39** 0.45	0.36 **0.45** 0.51	0.45 **0.51** 0.57	0.48 **0.57** 0.63	0.51 **0.60** 0.66	0.54 **0.63** 0.69	0.57 **0.66** 0.72
		≥0.25% C	annealed	650	190	2								
		<0.55% C	quenched and tempered	850	250	3								
		≥0.55% C	annealed	750	220	4	70-**85**-100							
			quenched and tempered	1000	300	5	50-**65**-80							
	low alloy and cast steel (less than 5% of alloying elements)		annealed	600	200	6	70-**90**-110	0.33 **0.39** 0.42	0.36 **0.42** 0.48	0.39 **0.48** 0.54	0.42 **0.51** 0.60	0.45 **0.54** 0.63	0.48 **0.57** 0.66	0.51 **0.60** 0.69
			quenched and tempered	930	275	7	70-**85**-100							
				1000	300	8	50-**65**-80							
				1200	350	9	40-**50**-60							
	high alloyed steel, cast steel and tool steel		annealed	680	200	10	50-**70**-90	0.27 **0.33** 0.36	0.30 **0.36** 0.39	0.33 **0.39** 0.42	0.36 **0.42** 0.45	0.39 **0.45** 0.48	0.42 **0.48** 0.51	0.45 **0.51** 0.54
			quenched and tempered	1100	325	11	40-**60**-80							
K	gray cast iron (GG)		ferritic / pearlitic		180	15	90-**125**-140	0.40 **0.60** 0.78	0.45 **0.66** 0.84	0.54 **0.72** 0.90	0.60 **0.78** 0.96	0.66 **0.84** 1.02	0.72 **0.90** 1.08	0.78 **0.96** 1.14
			pearlitic / martensitic		260	16	80-**110**-120							
	nodular cast iron (GGG)		ferritic		160	17	90-**135**-160							
			pearlitic		250	18	80-**110**-120							
	malleable cast iron		ferritic		130	19	90-**125**-140							
			pearlitic		230	20	80-**110**-120							

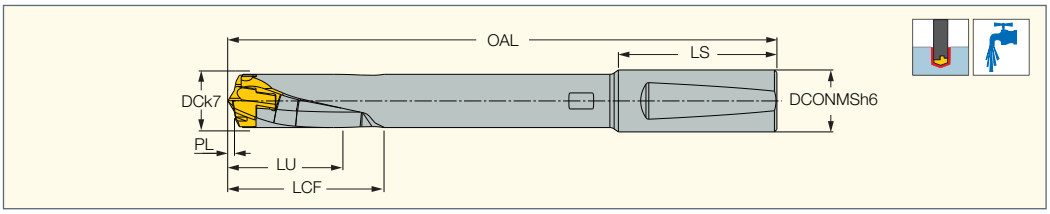
Recommended cutting data

Troubleshooting

	**Cutting Edge Chipping** 1 Check the stability of the machine spindle, tool and workpiece clamping rigidity. 2 Reduce feed rate, increase speed. 3 If the drill vibrates, reduce cutting speed and increase feed rate. 4 When drilling rough, hard or angled (up to 12° angular surface), reduce the feed rate by 30-50%. 5 Check cooling lubricant. Increase coolant pressure. In case of external coolant supply, improve jet direction and add cooling jets.
	**Chisel Area Chipping** 1 Reduce feed rate. 2 Increase coolant pressure. 3 Increase workpiece chucking force.
	**Excessive Flank Wear** 4 Reduce cutting speed. 5 Increase internal coolant pressure.
	Excessive Land Wear 1 Check the runout and make sure it is within 0.02mm T.I.R. (radial and axial). 2 Reduce cutting speed. 3 When drilling rough, hard or angled (up to 12° angular surface), reduce the feed rate by 30-50%. 4 Increase coolant pressure. 5 Check the chisel point runout and make sure it is within 0.02mm T.I.R. 6 Increase workpiece chucking force stability and rigidity.
	Built-Up Edge 1 Increase cutting speed/feed. 2 Increase
	Inaccurate Hole Position 1 Check the runout and make sure it is within 0.02mm T.I.R. (radial and axial). 2 Check the stability of the machine spindle, tool and workpiece clamping rigidity. 3 When drilling rough, hard or sloped surfaces (up to 7°), reduce the feed rate by 30% -50% when entering. 4 Drill a pre-hole with a 140° point angle for centering. 5 Check the chisel point runout and make sure it is within 0.02mm T.I.R.
	**Deviation of Hole Tolerance** 1 Check the runout and make sure it is within 0.02mm T.I.R. (radial and axial cutting points). 2 Reduce feed rate. 3 Check the chisel point runout and make sure that it is within 0.02mm T.I.R. 4 Wrong cutting edge. Replace head. 5 Increase workpiece chucking force. 6 Increase internal coolant pressure.
	**Burrs on Exit** 1 Reduce the feed rate by 50% -70% during exit. 2 Replace the worn head.
	**Surface Finish Too Rough** 1 Check the runout and make sure it is within 0.02mm T.I.R. (radial and axial). 2 Adjust the feed for improved chip formation. 3 In case of chip jamming - increase the coolant flow and/or reduce the cutting speed. 4 Increase the coolant pressure. 5 Check the chisel point runout and make sure it is within 0.02mm T.I.R. 6 Use pecking cycle. 7 Replace the drilling head.

SUMOCHAM

DCN-N-5D-BD
Exchangeable Head Drills with a Reinforced Body and a WN Shank, Diameter Ratio 5xD, for Construction Beam Industry



Designation	DCN(1)	DCX(2)	DCONMS	LU	OAL	PL	LCF	LS	SSC(3)	MIID(4)	
DCN 135-050-16N-5D-BD	13.50	13.99	16.00	40.00	153.60	1.600	50.0	57.0	13.0	IHP 135-BD	K DCN 10-13.99
DCN 140-050-16N-5D-BD	14.00	14.99	16.00	40.00	157.70	1.700	50.0	57.0	14.0	IHP 140-BD	K DCN 14-17.99
DCN 160-050-20N-5D-BD	16.00	16.99	20.00	40.00	175.00	1.950	50.0	59.0	16.0	IHP 160-BD	K DCN 14-17.99
DCN 170-050-20N-5D-BD	17.00	17.99	20.00	40.00	182.00	2.000	50.0	59.0	17.0	IHP 170-BD	K DCN 14-17.99
DCN 180-050-20N-5D-BD	18.00	18.99	20.00	40.00	189.40	2.400	50.0	59.0	18.0	IHP 180-BD	K DCN 18-21.99
DCN 190-050-20N-5D-BD	19.00	19.99	20.00	40.00	197.10	2.550	50.0	59.0	19.0	IHP 190-BD	K DCN 18-21.99
DCN 200-050-25N-5D-BD	20.00	20.99	25.00	40.00	207.60	2.600	50.0	64.0	20.0	IHP 200-BD	K DCN 18-21.99
DCN 210-050-25N-5D-BD	21.00	21.99	25.00	40.00	214.70	2.650	50.0	64.0	21.0	IHP 210-BD	K DCN 18-21.99
DCN 220-050-25N-5D-BD	22.00	22.99	25.00	40.00	221.80	2.750	50.0	64.0	22.0	IHP 220-BD	K DCN 22-26.99
DCN 230-050-25N-5D-BD	23.00	23.99	25.00	40.00	228.90	2.900	50.0	64.0	23.0	IHP 230-BD	K DCN 22-26.99
DCN 240-050-25N-5D-BD	24.00	24.99	25.00	40.00	236.00	3.000	50.0	64.0	24.0	IHP 240-BD	K DCN 22-26.99
DCN 250-050-32N-5D-BD	25.00	25.99	32.00	40.00	246.10	3.100	50.0	68.0	25.0	IHP 250-BD	K DCN 22-26.99
DCN 260-050-32N-5D-BD	26.00	26.99	32.00	40.00	253.30	3.300	50.0	68.0	26.0	IHP 260-BD	K DCN 22-26.99
DCN 270-050-32N-5D-BD	27.00	27.99	32.00	40.00	260.40	3.400	50.0	68.0	27.0	IHP 270-BD	K DCN 27-32.99
DCN 280-050-32N-5D-BD	28.00	28.99	32.00	40.00	267.60	3.550	50.0	68.0	28.0	IHP 280-BD	K DCN 27-32.99
DCN 300-070-32N-5D-BD	30.00	30.99	32.00	50.00	280.80	3.800	70.0	68.0	30.0	IHP 300-BD	K DCN 27-32.99
DCN 320-070-32N-5D-BD	32.00	32.99	32.00	50.00	295.00	3.950	70.0	68.0	32.0	IHP 320-BD	K DCN 27-32.99

NEW

• Do not mount smaller drilling heads other than the specified range of the drill body • For user guide and cutting conditions, see pages 68-72

(1) Cutting diameter minimum

(2) Cutting diameter maximum

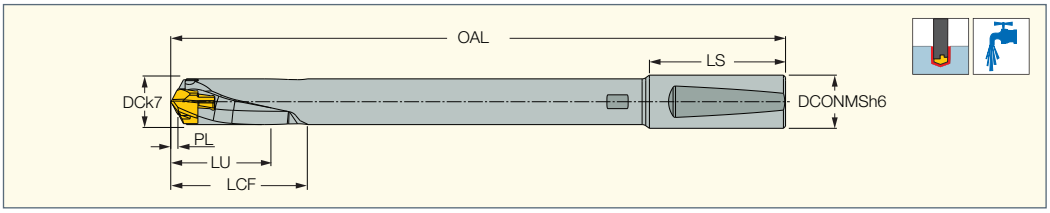
(3) Seat size code

(4) Master insert identification

For inserts, see pages: IHP-BD (100) • FCP (61) • HCP-IQ (55) • ICG (67) • ICK (37) • ICK-2M (41) • ICM (45) • ICN (50) • ICP (23) • ICP-2M (29) • IHP (33) • QCP-2M (51)

SUMOCHAM

DCN-N-8D-BD
Exchangeable Head Drills with a Reinforced Body and a WN Shank, Diameter Ratio 8xD, for Construction Beam Industry



Designation	DCN(1)	DCX(2)	DCONMS	LU	OAL	PL	LCF	LS	SSC(3)	MIID(4)	
DCN 135-050-16N-8D-BD	13.50	13.99	16.00	40.00	194.10	1.600	50.0	57.0	13.0	IHP 135-BD	K DCN 10-13.99
DCN 140-050-16N-8D-BD	14.00	14.99	16.00	40.00	199.70	1.700	50.0	57.0	14.0	IHP 140-BD	K DCN 14-17.99
DCN 160-050-20N-8D-BD	16.00	16.99	20.00	40.00	223.00	1.950	50.0	59.0	16.0	IHP 160-BD	K DCN 14-17.99
DCN 170-050-20N-8D-BD	17.00	17.99	20.00	40.00	233.00	2.000	50.0	59.0	17.0	IHP 170-BD	K DCN 14-17.99
DCN 180-050-20N-8D-BD	18.00	18.99	20.00	40.00	243.40	2.400	50.0	59.0	18.0	IHP 180-BD	K DCN 18-21.99
DCN 190-050-20N-8D-BD	19.00	19.99	20.00	40.00	254.10	2.550	50.0	59.0	19.0	IHP 190-BD	K DCN 18-21.99
DCN 200-050-25N-8D-BD	20.00	20.99	25.00	40.00	267.60	2.600	50.0	64.0	20.0	IHP 200-BD	K DCN 18-21.99
DCN 210-050-25N-8D-BD	21.00	21.99	25.00	40.00	277.70	2.650	50.0	64.0	21.0	IHP 210-BD	K DCN 18-21.99
DCN 220-050-25N-8D-BD	22.00	22.99	25.00	40.00	287.80	2.750	50.0	64.0	22.0	IHP 220-BD	K DCN 22-26.99
DCN 230-050-25N-8D-BD	23.00	23.99	25.00	40.00	297.90	2.900	50.0	64.0	23.0	IHP 230-BD	K DCN 22-26.99
DCN 240-050-25N-8D-BD	24.00	24.99	25.00	40.00	308.00	3.000	50.0	64.0	24.0	IHP 240-BD	K DCN 22-26.99
DCN 250-050-32N-8D-BD	25.00	25.99	32.00	40.00	321.10	3.100	50.0	68.0	25.0	IHP 250-BD	K DCN 22-26.99
DCN 260-050-32N-8D-BD	26.00	26.99	32.00	40.00	331.30	3.300	50.0	68.0	26.0	IHP 260-BD	K DCN 22-26.99
DCN 270-050-32N-8D-BD	27.00	27.99	32.00	40.00	341.40	3.400	50.0	68.0	27.0	IHP 270-BD	K DCN 27-32.99
DCN 280-050-32N-8D-BD	28.00	28.99	32.00	40.00	351.60	3.550	50.0	68.0	28.0	IHP 280-BD	K DCN 27-32.99
DCN 300-070-32N-8D-BD	30.00	30.99	32.00	50.00	370.80	3.800	70.0	68.0	30.0	IHP 300-BD	K DCN 27-32.99
DCN 320-070-32N-8D-BD	32.00	32.99	32.00	50.00	391.00	3.950	70.0	68.0	32.0	IHP 320-BD	K DCN 27-32.99

NEW

• Do not mount smaller drilling heads other than the specified range of the drill body • For user guide and cutting conditions, see pages 68-72

(1) Cutting diameter minimum

(2) Cutting diameter maximum

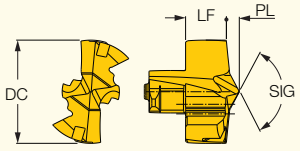
(3) Seat size code

(4) Master insert identification

For inserts, see pages: IHP-BD (100) • FCP (61) • HCP-IQ (55) • ICG (67) • ICK (37) • ICK-2M (41) • ICM (45) • ICN (50) • ICP (23) • ICP-2M (29) • IHP (33) • QCP-2M (51)

SUMOCHAM

IHP-BD
Exchangeable Drilling Heads for DCN Drills for Machining Construction Beams and Structural Steel Materials



Designation	Dimensions DC	LF	PL	SIG	SSC(1)	IC954
IHP 138-BD	13.80	5.40	1.700	128	13.0	•
IHP 140-BD	14.00	5.60	1.800	128	14.0	•
IHP 1429-BD	14.29	5.60	1.800	128	14.0	•
IHP 160-BD	16.00	6.10	1.950	128	16.0	•
IHP 170-BD	17.00	6.80	2.000	128	17.0	•
IHP 1746-BD	17.46	6.80	2.000	128	17.0	•
IHP 178-BD	17.80	6.80	2.000	128	17.0	•
IHP 180-BD	18.00	7.30	2.400	128	18.0	•
IHP 1905-BD	19.05	7.60	2.550	128	19.0	•
IHP 200-BD	20.00	8.10	2.600	128	20.0	•
IHP 2064-BD	20.64	8.10	2.600	128	20.0	•
IHP 210-BD	21.00	8.50	2.650	128	21.0	•
IHP 218-BD	21.80	8.50	2.650	128	21.0	•
IHP 220-BD	22.00	8.70	2.750	128	22.0	•
IHP 225-BD	22.50	8.70	2.750	128	22.0	•
IHP 230-BD	23.00	9.30	2.900	128	23.0	•
IHP 2381-BD	23.81	9.30	2.900	128	23.0	•
IHP 240-BD	24.00	10.00	3.000	128	24.0	•
IHP 250-BD	25.00	10.00	3.100	128	25.0	•
IHP 258-BD	25.80	10.00	3.100	128	25.0	•
IHP 260-BD	26.00	10.30	3.300	128	26.0	•
IHP 265-BD	26.50	10.30	3.300	128	26.0	•
IHP 2699-BD	26.99	10.30	3.300	128	26.0	•
IHP 270-BD	27.00	10.80	3.400	128	27.0	•
IHP 275-BD	27.50	10.80	3.400	128	27.0	•
IHP 280-BD	28.00	11.30	3.550	128	28.0	•
IHP 2858-BD	28.58	11.30	3.550	128	28.0	•
IHP 300-BD	30.00	12.00	3.800	128	30.0	•
IHP 3016-BD	30.16	12.00	3.800	128	30.0	•
IHP 320-BD	32.00	13.30	3.950	128	32.0	•

NEW

- Intermediate sizes can be supplied on request

(1) Seat size code

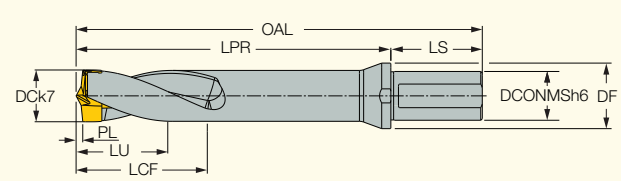
For tools, see pages: DCN-N-5D-BD (99) • DCN-N-8D-BD (99)

Cutting Parameters

Material Groups						Recommended Machining Conditions					
							Feed vs. Drill Diameter				
ISO	Material	Condition	Tensile Strength [N/mm²]	Hardness HB	Material No.(1)	V m/min	D=12-13.9	D=14-15.9	D=16-19.9	D=20-25.9	D=26-32.9
							mm/rev				
P	non-alloy steel and cast steel, free cutting steel < 0.25 %C	annealed	420	125	1	80-**110**-140	0.18 **0.24** 0.30	0.20 **0.27** 0.35	0.25 **0.35** 0.45	0.25 **0.35** 0.45	0.30 **0.40** 0.50
	non-alloy steel and cast steel, free cutting steel ≥ 0.25 %C	annealed	650	190	2	80-**105**-130					
	non-alloy steel and cast steel, free cutting steel < 0.55 %C	quenched and tempered	850	250	3	80-**100**-120					
	non-alloy steel and cast steel, free cutting steel ≥ 0.55 %C	annealed	750	220	4	70-**90**-110					
	non-alloy steel and cast steel, free cutting steel ≥ 0.55 %C	quenched and tempered	1000	300	5	50-**70**-90					
	low alloy and cast steel (less than 5% of alloying elements)	annealed	600	200	6	80-**100**-120	0.16 **0.24** 0.32	0.18 **0.26** 0.35	0.23 **0.31** 0.40	0.25 **0.35** 0.45	0.30 **0.40** 0.50
	low alloy and cast steel (less than 5% of alloying elements)	quenched and tempered	930	275	7	70-**90**-110					
	low alloy and cast steel (less than 5% of alloying elements)	quenched and tempered	1000	300	8	50-**70**-90					
	low alloy and cast steel (less than 5% of alloying elements)	quenched and tempered	1200	350	9	40-**55**-70					
	high alloyed steel, cast steel and tool steel	annealed	680	200	10	50-**70**-90	0.15 **0.20** 0.25	0.18 **0.23** 0.28	0.20 **0.25** 0.30	0.22 **0.27** 0.33	0.25 **0.30** 0.35
	high alloyed steel, cast steel and tool steel	quenched and tempered	1100	325	11	40-**60**-80					
	stainless steel and cast steel	ferritic/martensitic	680	200	12	40-**55**-70	0.14 **0.17** 0.20	0.16 **0.20** 0.24	0.16 **0.21** 0.26	0.18 **0.24** 0.30	0.20 **0.27** 0.35
	stainless steel and cast steel	martensitic	820	240	13	40-**55**-70					

SPADECHAM

DFN A-5D-BD
Exchangeable Head Drills with a Reinforced Body and a Flat Shank, Diameter Ratio 5xD, for the Construction Beam Industry



Designation	DCN(1)	DCX(2)	DCONMS	LU	OAL	LPR	PL	DF	LCF	LS	SSC(3)	
DFN 330-070-32A-5D-BD	33.00	33.99	32.00	50.00	259.60	199.60	4.250	43.00	70.0	60.0	33.0	K DFN 30-40
DFN 340-080-32A-5D-BD	34.00	34.99	32.00	50.00	265.70	205.70	4.510	43.00	80.0	60.0	34.0	K DFN 30-40
DFN 360-080-32A-5D-BD	36.00	36.99	32.00	50.00	277.90	217.90	4.760	43.00	80.0	60.0	36.0	K DFN 30-40
DFN 380-080-32A-5D-BD	38.00	38.99	32.00	50.00	291.00	231.00	5.030	43.00	80.0	60.0	38.0	K DFN 30-40
DFN 390-080-32A-5D-BD	39.00	39.99	32.00	50.00	296.60	236.60	5.160	43.00	80.0	60.0	39.0	K DFN 30-40

NEW

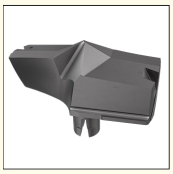
- Do not mount smaller drilling heads other than the specified range of the drill body

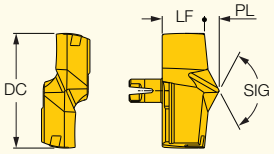
(1) Cutting diameter minimum
(2) Cutting diameter maximum
(3) Seat size code

For inserts, see pages: IFHP-BD (101) • HFP-IQ (104) • IFP-IQ (105)

SPADECHAM

IFHP-BD
Exchangeable DFN Drill Heads for Machining Construction Beams and Structural Steel Materials





Designation	Dimensions DC	LF	SSC(1)	PL	SIG	IC954
IFHP 330-SPADE-BD	33.00	10.80	33.0	4.250	137	●
IFHP 3334-SPADE-BD	33.34	10.80	33.0	4.250	137	●
IFHP 335-SPADE-BD	33.50	10.80	33.0	4.250	137	●
IFHP 340-SPADE-BD	34.00	11.60	34.0	4.510	137	●
IFHP 3493-SPADE-BD	34.93	11.60	34.0	4.510	137	●
IFHP 3651-SPADE-BD	36.51	12.40	36.0	4.760	137	●
IFHP 380-SPADE-BD	38.00	14.10	38.0	5.030	137	●
IFHP 381-SPADE-BD	38.10	14.10	38.0	5.030	137	●
IFHP 390-SPADE-BD	39.00	13.40	39.0	5.160	137	●
IFHP 397-SPADE-BD	39.70	13.40	39.0	5.160	137	●

NEW

- Intermediate sizes can be supplied on request

(1) Seat size code

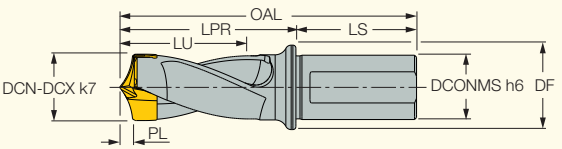
For tools, see pages: DFN A-1.5D-IQ (102) • DFN A-3D-IQ (102) • DFN A-5D-BD (101)

Cutting Conditions Recommendations

		IFHP-BD
		Feed Vs. Drill Diameter
Mtl. No.	V M/min	D=33.0-40.0 mm/rev
1	80-**110**-140	0.30 **0.40** 0.50
2	80-**105**-130	
3	80-**100**-120	
4	70-**90**-110	
5	50-**70**-90	
6	80-**100**-120	0.30 **0.40** 0.50
7	70-**90**-110	
8	50-**70**-90	
9	40-**55**-70	

SPADECHAM

DFN A-1.5D-IQ
Drill Body with Exchangeable Heads, Internal Coolant Holes and Flat Shank
Drilling Depth: 1.5xD



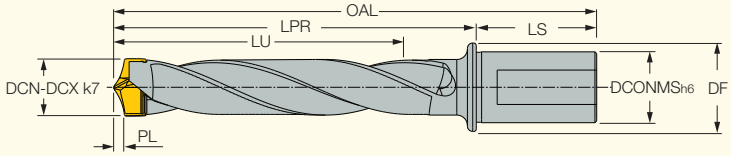
Designation	DCN[1]	DCX[2]	DCONMS	DF	LU	LPR	PL	LS	OAL	SSC[3]	
DFN 330-050-32A-1.5D-IQ	33.00	33.90	32.00	42.00	50.0	87.5	7.330	60.0	147.50	33.0	K DFN 30-40
DFN 340-051-32A-1.5D-IQ	34.00	34.93	32.00	42.00	51.0	90.2	7.620	60.0	150.20	34.0	K DFN 30-40
DFN 350-053-32A-1.5D-IQ	35.00	35.90	32.00	42.00	53.0	92.8	7.650	60.0	152.80	35.0	K DFN 30-40
DFN 360-054-32A-1.5D-IQ	36.00	36.90	32.00	42.00	54.0	95.5	8.150	60.0	155.50	36.0	K DFN 30-40
DFN 370-056-32A-1.5D-IQ	37.00	37.90	32.00	42.00	56.0	98.1	8.040	60.0	158.10	37.0	K DFN 30-40
DFN 380-057-32A-1.5D-IQ	38.00	38.90	32.00	42.00	57.0	100.8	8.200	60.0	160.80	38.0	K DFN 30-40
DFN 390-059-32A-1.5D-IQ	39.00	40.00	32.00	42.00	59.0	103.4	8.430	60.0	163.40	39.0	K DFN 30-40

• Do not mount smaller drilling heads other than the specified range of the drill body • For user guide and cutting conditions, see pages 107-110
(1) Cutting diameter minimum
(2) Cutting diameter maximum
(3) Seat size code

For inserts, see pages: HFP-IQ (104) • IFHP-BD (101) • IFP-IQ (105)

SPADECHAM

DFN A-3D-IQ
Drill Body with Exchangeable Heads, Internal Coolant Holes and Flat Shank
Drilling Depth: 3xD



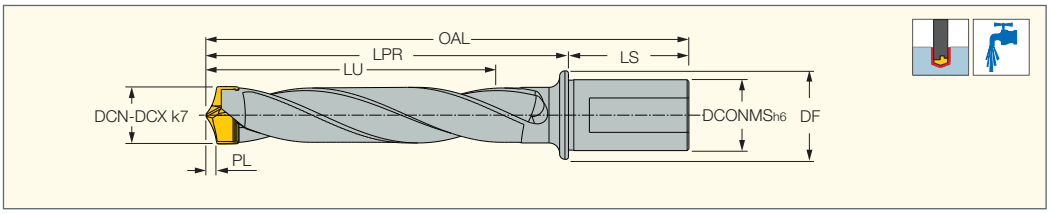
Designation	DCN[1]	DCX[2]	DCONMS	DF	LU	LPR	PL	LS	OAL	SSC[3]	MIID[4]	
DFN 330-099-32A-3D-IQ	33.00	33.90	32.00	42.00	99.0	137.0	7.330	60.0	197.00	33.0	HFP 330	K DFN 30-40
DFN 340-102-32A-3D-IQ	34.00	34.93	32.00	42.00	102.0	141.2	7.620	60.0	201.20	34.0	HFP 340	K DFN 30-40
DFN 350-105-32A-3D-IQ	35.00	35.90	32.00	42.00	105.0	145.3	7.650	60.0	205.30	35.0	HFP 350	K DFN 30-40
DFN 360-108-32A-3D-IQ	36.00	36.90	32.00	42.00	108.0	149.5	8.150	60.0	209.50	36.0	HFP 360	K DFN 30-40
DFN 370-111-32A-3D-IQ	37.00	37.90	32.00	42.00	111.0	153.6	8.040	60.0	213.60	37.0	HFP 370	K DFN 30-40
DFN 380-114-32A-3D-IQ	38.00	38.90	32.00	42.00	114.0	157.8	8.200	60.0	217.80	38.0	HFP 380	K DFN 30-40
DFN 390-117-32A-3D-IQ	39.00	40.00	32.00	42.00	117.0	161.9	8.430	60.0	221.90	39.0	HFP 390	K DFN 30-40

• Do not mount smaller drilling heads other than the specified range of the drill body • For user guide and cutting conditions, see pages 107-110
(1) Cutting diameter minimum
(2) Cutting diameter maximum
(3) Seat size code
(4) Master insert identification

For inserts, see pages: HFP-IQ (104) • IFHP-BD (101) • IFP-IQ (105)

SPADECHAM

DFN A-5D-IQ
Drill Body with Exchangeable Heads, Internal Coolant Holes and Flat Shank
Drilling Depth: 5xD



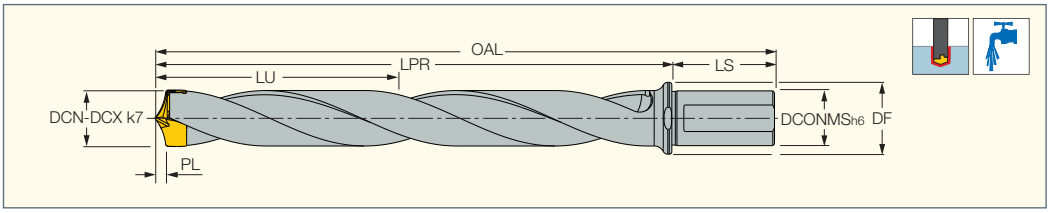
Designation	DCN[1]	DCX[2]	DCONMS	DF	LU	LPR	PL	LS	OAL	SSC[3]	MIID[4]	
DFN 330-165-32A-5D-IQ	33.00	33.90	32.00	42.00	165.00	203.00	7.330	60.0	263.00	33.0	HFP 330	K DFN 30-40
DFN 340-170-32A-5D-IQ	34.00	34.93	32.00	42.00	170.00	209.20	7.620	60.0	269.20	34.0	HFP 340	K DFN 30-40
DFN 350-175-32A-5D-IQ	35.00	35.90	32.00	42.00	175.00	215.30	7.650	60.0	275.30	35.0	HFP 350	K DFN 30-40
DFN 360-180-32A-5D-IQ	36.00	36.90	32.00	42.00	180.00	221.50	8.150	60.0	281.50	36.0	HFP 360	K DFN 30-40
DFN 370-185-32A-5D-IQ	37.00	37.90	32.00	42.00	185.00	227.60	8.040	60.0	287.60	37.0	HFP 370	K DFN 30-40
DFN 380-190-32A-5D-IQ	38.00	38.90	32.00	42.00	190.00	233.80	8.200	60.0	293.80	38.0	HFP 380	K DFN 30-40
DFN 390-195-32A-5D-IQ	39.00	40.00	32.00	42.00	195.00	239.90	8.430	60.0	299.90	39.0	HFP 390	K DFN 30-40

• Do not mount smaller drilling heads other than the specified range of the drill body • For user guide and cutting conditions, see pages 107-110
[1] Cutting diameter minimum
[2] Cutting diameter maximum
[3] Seat size code
[4] Master insert identification

For inserts, see pages: HFP-IQ (104) • IFP-IQ (105)

SPADECHAM

DFN A-8D-IQ
Drill Body with Exchangeable Heads, Internal Coolant Holes and Flat Shank
Drilling Depth: 8xD



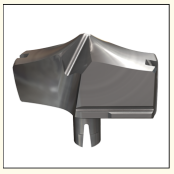
Designation	DCN[1]	DCX[2]	DCONMS	DF	LU	LPR	PL	LS	OAL	SSC[3]	
DFN 330-264-32A-8D-IQ	33.00	33.90	32.00	42.00	264.0	302.0	7.330	60.0	362.00	33.0	K DFN 30-40
DFN 340-272-32A-8D-IQ	34.00	34.93	32.00	42.00	272.0	311.2	7.620	60.0	371.20	34.0	K DFN 30-40
DFN 350-280-32A-8D-IQ	35.00	35.90	32.00	42.00	280.0	320.3	7.650	60.0	380.30	35.0	K DFN 30-40
DFN 360-288-32A-8D-IQ	36.00	36.90	32.00	42.00	288.0	329.5	8.150	60.0	389.50	36.0	K DFN 30-40
DFN 370-296-32A-8D-IQ	37.00	37.90	32.00	42.00	296.0	338.6	8.040	60.0	398.60	37.0	K DFN 30-40
DFN 380-304-32A-8D-IQ	38.00	38.90	32.00	42.00	304.0	347.8	8.200	60.0	407.80	38.0	K DFN 30-40
DFN 390-312-32A-8D-IQ	39.00	40.00	32.00	42.00	312.0	356.9	8.430	60.0	416.90	39.0	K DFN 30-40

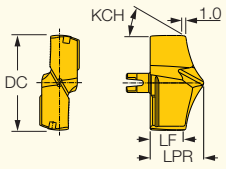
• Do not mount smaller drilling heads other than the specified range of the drill body • For user guide and cutting conditions, see pages 107-110
[1] Cutting diameter minimum
[2] Cutting diameter maximum
[3] Seat size code

For inserts, see pages: HFP-IQ (104) • IFP-IQ (105)

SPADECHAM

HFP-IQ
Exchangeable DFN Drill Heads
for Carbon and Alloy Steel
(ISO P) and Cast Iron (ISO K)





Designation	Dimensions DC	LPR	LF	SSC(1)	KCH	IC908
HFP 330-SPADE IQ	33.00	18.50	11.2	33.0	30.0	●
HFP 331-SPADE IQ	33.10	18.50	11.2	33.0	30.0	●
HFP 332-SPADE IQ	33.20	18.50	11.2	33.0	30.0	●
HFP 333-SPADE IQ	33.30	18.50	11.2	33.0	30.0	●
HFP 3335-SPADE IQ	33.35	18.50	11.2	33.0	30.0	●
HFP 334-SPADE IQ	33.40	18.50	11.2	33.0	30.0	●
HFP 335-SPADE IQ	33.50	18.50	11.2	33.0	30.0	●
HFP 339-SPADE IQ	33.90	18.50	11.2	33.0	30.0	●
HFP 340-SPADE IQ	34.00	19.70	12.1	34.0	30.0	●
HFP 341-SPADE IQ	34.10	19.70	12.1	34.0	30.0	●
HFP 343-SPADE IQ	34.30	19.70	12.1	34.0	30.0	●
HFP 345-SPADE IQ	34.50	19.70	12.1	34.0	30.0	●
HFP 349-SPADE IQ	34.90	19.70	12.1	34.0	30.0	●
HFP 3493-SPADE IQ	34.93	19.70	12.1	34.0	30.0	●
HFP 350-SPADE IQ	35.00	19.70	12.1	35.0	30.0	●
HFP 355-SPADE IQ	35.50	19.70	12.1	35.0	30.0	●
HFP 360-SPADE IQ	36.00	20.80	12.7	36.0	30.0	●
HFP 362-SPADE IQ	36.20	20.80	12.7	36.0	30.0	●
HFP 364-SPADE IQ	36.40	20.80	12.7	36.0	30.0	●
HFP 365-SPADE IQ	36.50	20.80	12.7	36.0	30.0	●
HFP 370-SPADE IQ	37.00	20.80	12.8	37.0	30.0	●
HFP 375-SPADE IQ	37.50	20.80	12.8	37.0	30.0	●
HFP 380-SPADE IQ	38.00	22.00	13.8	38.0	30.0	●
HFP 381-SPADE IQ	38.10	22.00	13.8	38.0	30.0	●
HFP 385-SPADE IQ	38.50	22.00	13.8	38.0	30.0	●
HFP 390-SPADE IQ	39.00	22.00	13.6	39.0	30.0	●
HFP 392-SPADE IQ	39.20	22.00	13.6	39.0	30.0	●
HFP 395-SPADE IQ	39.50	22.00	13.6	39.0	30.0	●
HFP 397-SPADE IQ	39.70	22.00	13.6	39.0	30.0	●
HFP 400-SPADE IQ	40.00	23.00	14.4	39.0	30.0	●

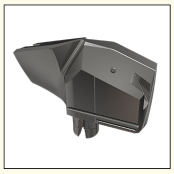
• Advance self centering, and high surface finish • Intermediate sizes can be supplied on request • For user guide and cutting conditions, see pages 107-110

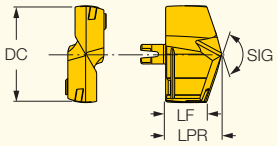
(1) Seat size code

For tools, see pages: DFN A-1.5D-IQ (102) • DFN A-3D-IQ (102) • DFN A-5D-BD (101) • DFN A-5D-IQ (103) • DFN A-8D-IQ (103) • MD-DFN-HEAD (121)

SPADECHAM

IFP-IQ
Exchangeable DFN Drill Heads for Machining ISO P, ISO M, and High Temp. Alloys (ISO S) Materials





Designation	Dimensions DC	LPR	LF	SSC(1)	SIG	IC908
IFP 330-SPADE IQ	33.00	18.50	13.48	33.0	140	•
IFP 331-SPADE IQ	33.10	18.50	13.47	33.0	140	•
IFP 332-SPADE IQ	33.20	18.50	13.45	33.0	140	•
IFP 333-SPADE IQ	33.30	18.50	13.44	33.0	140	•
IFP 334-SPADE IQ	33.40	18.50	13.42	33.0	140	•
IFP 335-SPADE IQ	33.50	18.50	13.41	33.0	140	•
IFP 336-SPADE IQ	33.60	18.50	13.39	33.0	140	•
IFP 337-SPADE IQ	33.70	18.50	13.38	33.0	140	•
IFP 338-SPADE IQ	33.80	18.50	13.36	33.0	140	•
IFP 339-SPADE IQ	33.90	18.50	13.35	33.0	140	•
IFP 340-SPADE IQ	34.00	19.70	14.53	34.0	140	•
IFP 341-SPADE IQ	34.10	19.70	14.52	34.0	140	•
IFP 342-SPADE IQ	34.20	19.70	14.50	34.0	140	•
IFP 343-SPADE IQ	34.30	19.70	14.49	34.0	140	•
IFP 344-SPADE IQ	34.40	19.70	14.47	34.0	140	•
IFP 345-SPADE IQ	34.50	19.70	14.46	34.0	140	•
IFP 346-SPADE IQ	34.60	19.70	14.44	34.0	140	•
IFP 347-SPADE IQ	34.70	19.70	14.43	34.0	140	•
IFP 348-SPADE IQ	34.80	19.70	14.41	34.0	140	•
IFP 349-SPADE IQ	34.90	19.70	14.40	34.0	140	•
IFP 350-SPADE IQ	35.00	19.70	14.38	35.0	140	•
IFP 351-SPADE IQ	35.10	19.70	14.36	35.0	140	•
IFP 352-SPADE IQ	35.20	19.70	14.35	35.0	140	•
IFP 353-SPADE IQ	35.30	19.70	14.33	35.0	140	•
IFP 354-SPADE IQ	35.40	19.70	14.32	35.0	140	•
IFP 355-SPADE IQ	35.50	19.70	14.30	35.0	140	•
IFP 356-SPADE IQ	35.60	19.70	14.29	35.0	140	•
IFP 357-SPADE IQ	35.70	19.70	14.27	35.0	140	•
IFP 358-SPADE IQ	35.80	19.70	14.26	35.0	140	•
IFP 359-SPADE IQ	35.90	19.70	14.24	35.0	140	•
IFP 360-SPADE IQ	36.00	20.80	15.33	36.0	140	•
IFP 361-SPADE IQ	36.10	20.80	15.31	36.0	140	•
IFP 362-SPADE IQ	36.20	20.80	15.30	36.0	140	•
IFP 365-SPADE IQ	36.50	20.80	15.25	36.0	140	•
IFP 367-SPADE IQ	36.70	20.80	15.22	36.0	140	•
IFP 370-SPADE IQ	37.00	20.80	15.18	37.0	140	•
IFP 371-SPADE IQ	37.10	20.80	15.16	37.0	140	•
IFP 372-SPADE IQ	37.20	20.80	15.15	37.0	140	•
IFP 373-SPADE IQ	37.30	20.80	15.13	37.0	140	•
IFP 374-SPADE IQ	37.40	20.80	15.12	37.0	140	•
IFP 375-SPADE IQ	37.50	20.80	15.10	37.0	140	•
IFP 376-SPADE IQ	37.60	20.80	15.08	37.0	140	•
IFP 377-SPADE IQ	37.70	20.80	15.07	37.0	140	•
IFP 378-SPADE IQ	37.80	20.80	15.05	37.0	140	•
IFP 379-SPADE IQ	37.90	20.80	15.04	37.0	140	•
IFP 380-SPADE IQ	38.00	22.00	16.22	38.0	140	•
IFP 381-SPADE IQ	38.10	22.00	16.21	38.0	140	•
IFP 382-SPADE IQ	38.20	22.00	16.19	38.0	140	•
IFP 385-SPADE IQ	38.50	22.00	16.15	38.0	140	•
IFP 387-SPADE IQ	38.70	22.00	16.12	38.0	140	•
IFP 388-SPADE IQ	38.80	22.00	16.10	38.0	140	•
IFP 389-SPADE IQ	38.90	22.00	16.09	38.0	140	•
IFP 390-SPADE IQ	39.00	22.00	16.07	39.0	140	•
IFP 391-SPADE IQ	39.10	22.00	16.06	39.0	140	•
IFP 392-SPADE IQ	39.20	22.00	16.04	39.0	140	•
IFP 393-SPADE IQ	39.30	22.00	16.03	39.0	140	•

- Intermediate sizes can be supplied on request
- Before using IFP geometry inserts with a drill above 5xD ratio, a pre-hole should be prepared by using a DFN 1.5xD to guide the drill (an endmill can be used)
- For user guide and cutting conditions, see pages 107-110

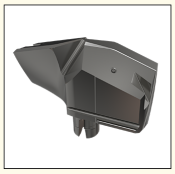
(1) Seat size code

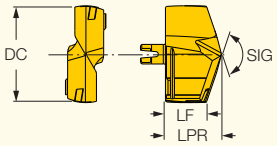
For tools, see pages: DFN A-1.5D-IQ (102) • DFN A-3D-IQ (102) • DFN A-5D-BD (101) • DFN A-5D-IQ (103) • DFN A-8D-IQ (103) • MD-DFN-HEAD (121)

Continued

SPADECHAM

IFP-IQ
Exchangeable DFN Drill Heads for Machining ISO P, ISO M, and High Temp. Alloys (ISO S) Materials



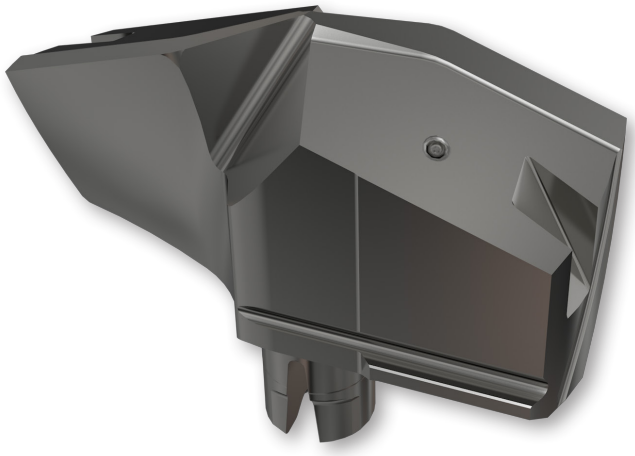


Designation	Dimensions					IC908
	DC	LPR	LF	SSC(1)	SIG	
IFP 394-SPADE IQ	39.40	22.00	16.01	39.0	140	●
IFP 395-SPADE IQ	39.50	22.00	16.00	39.0	140	●
IFP 396-SPADE IQ	39.60	22.00	15.98	39.0	140	●
IFP 397-SPADE IQ	39.70	22.00	15.97	39.0	140	●
IFP 398-SPADE IQ	39.80	22.00	15.95	39.0	140	●
IFP 399-SPADE IQ	39.90	22.00	15.94	39.0	140	●
IFP 400-SPADE IQ	40.00	22.00	15.92	39.0	140	●

- Intermediate sizes can be supplied on request
- Before using IFP geometry inserts with a drill above 5xD ratio, a pre-hole should be prepared by using a DFN 1.5xD to guide the drill (an endmill can be used)
- For user guide and cutting conditions, see pages 107-110

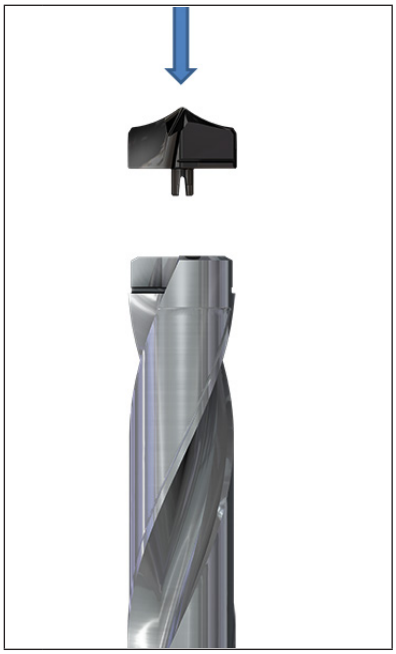
(1) Seat size code

For tools, see pages: DFN A-1.5D-IQ (102) • DFN A-3D-IQ (102) • DFN A-5D-BD (101) • DFN A-5D-IQ (103) • DFN A-8D-IQ (103) • MD-DFN-HEAD (121)

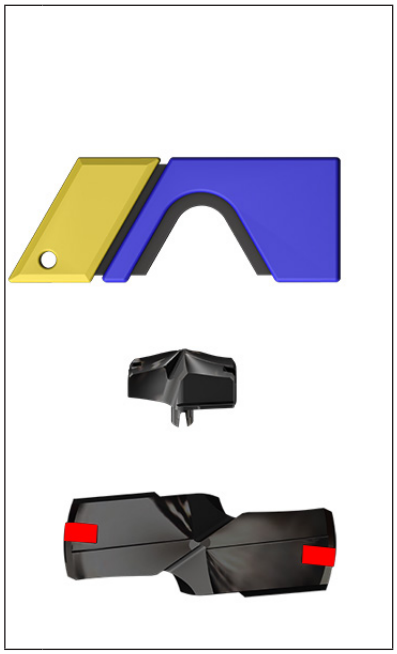


Insert Clamping Instructions

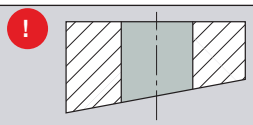
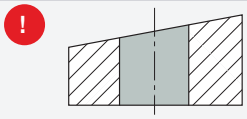
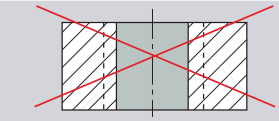
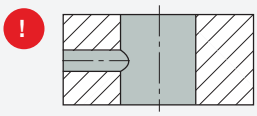
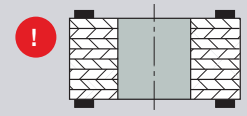
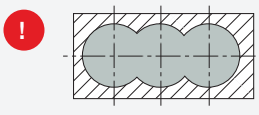
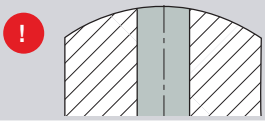
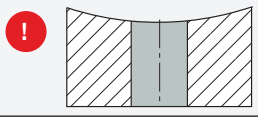
1



2



3

1		**Exiting Inclined Surface** Up to 7°, reduce feed by 50-70% during exiting
2		**Entering Inclined Surface** Up to 7°
3		**Boring** Not possible
4		**Cross Hole** Maximum cross hole diameter must be ¼ of drill diameter
5		**Stacked Plates** Requires a rigid clamping
6		**Chamber** Reduce feed by 50-70% , maximum depth 3XD
7		**Convex** The radius of the penetration surface must be 4X the CHAMIQDRILL head ØD. Short pre-hole is needed
8		**Concave** Spot facing operation is needed before drilling

Cutting Condition Recommendations

Material Group No.	V_c [m/min]	Feed Vs. Drill Diameter [mm/rev] DC=33.0-40.0 HFP-IQ	IFP-IQ
1	80-110-140	0.30-0.40-0.50	
2	80-105-130		
3	80-100-120		
4	70-90-110		
5	50-70-90		
6	80-100-120		
7	70-90-110		
8	50-70-90		
9	40-55-70		
10	50-70-90	0.25-0.30-0.35	
11	40-60-80		
12		-	0.20-0.25-0.35
13			
14	30-50-70	-	0.20-0.25-0.35
15	90-125-160	0.40-0.50-0.60	0.16-0.20-0.25
16	80-110-140		
17	90-135-180		
18	80-110-140		
19	90-125-160		
20	80-110-140		
31	30-45-60	-	0.16-0.20-0.25
32	20-35-50		
33			
34			
35			
36			0.18-0.22-0.27
37			

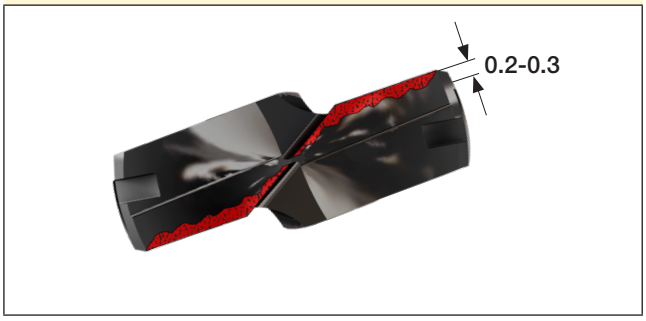
nn-nn-nn Recommended cutiing data

Flow Rate Vs. Pressure and Drill Diameter

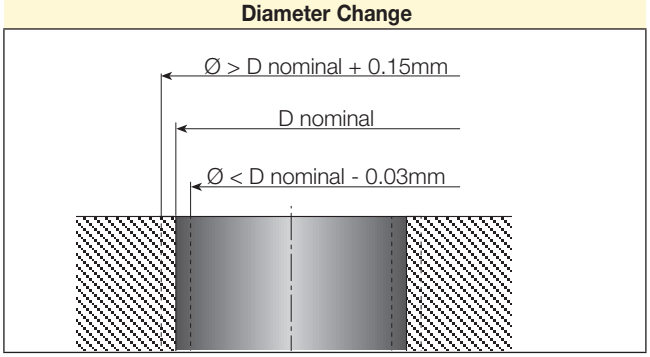
Drill Diameter (mm)	Pressure (bar)	Flow Rate (liter/min)
33	20	60
34	20	60
35	20	60
36	20	60
37	20	60
38	20	70
39	20	70
40	20	70

Indication of Drill Head Wear

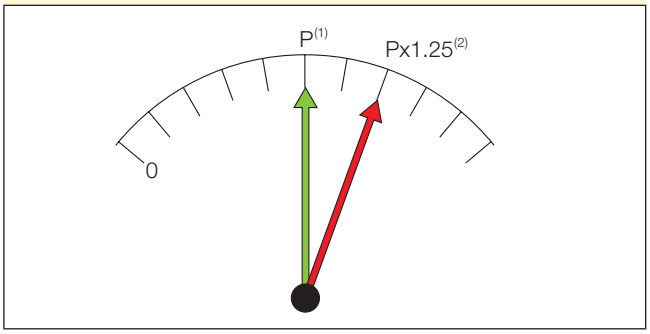
Wear Limit



Diameter Change

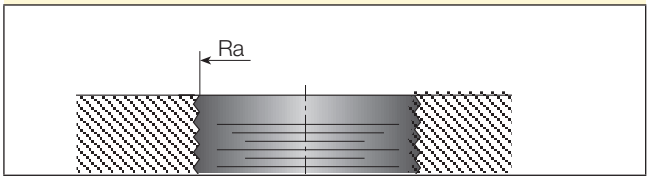


Power Restriction



(1) New drilling head
(2) Worn-out drilling head

Surface Finish Declines



Achievable Hole Tolerances

5xD Drills
Alloy and Carbon Steel and Cast Iron

Hole Geometrical Feature	What Should You Expect
Ø Diameter tolerance	+0.06mm
Circularity	0.035
Hole axis straightness (/100mm)	0.03-0.10
Surface finish ✓	0.6-3.2Ra

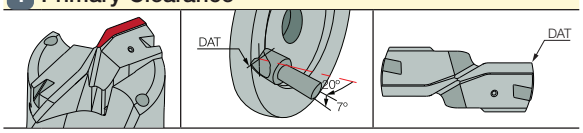
400mm Modular Drills Alloy and Carbon Steel and Cast Iron

Hole Geometrical Feature	What Should You Expect
Ø Diameter tolerance	+0.06mm
Circularity	0.035
Hole axis straightness (/100mm)	0.03-0.15
Surface finish ✓	0.6-3.2Ra

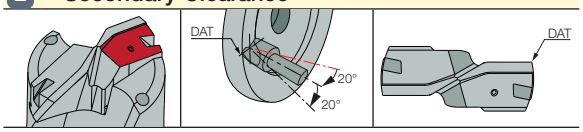
Regrinding Instructions for IFP Geometry

After each grinding operation, rotate the drill 180° and repeat the grinding procedure.

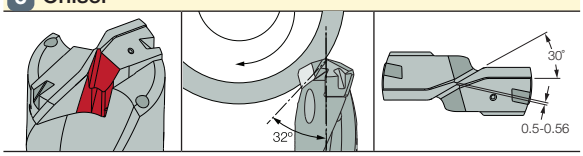
1 Primary Clearance



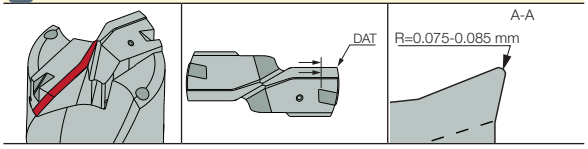
2 Secondary Clearance



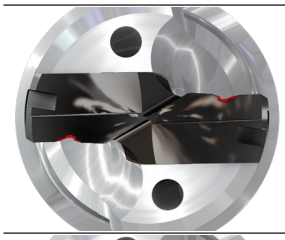
3 Chisel



4 Edge Preparation

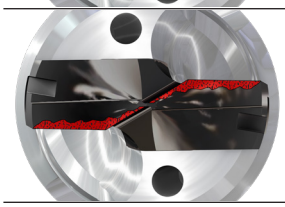


Troubleshooting

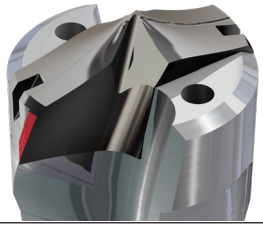


Cutting Edge Chipping
1 Check the stability of the machine spindle, tool and workpiece clamping rigidity.
2 Reduce feed rate, increase speed.
3 If the drill vibrates, reduce cutting speed and increase feed rate.
4 When drilling rough, hard or sloped surfaces (up to 7°), reduce the feed rate by 50-70% when entering and exiting.
5 Check cooling lubricant and increase coolant pressure. In case of external coolant supply, improve jet direction and add cooling jets.

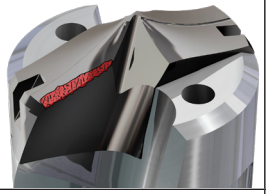
Chisel Area Chipping
1 Reduce feed rate.
2 Increase coolant pressure.
3 Increase workpiece chucking force.



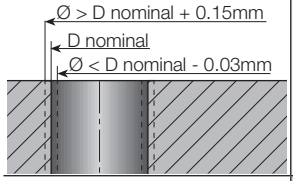
Excessive Flank Wear
1 Reduce cutting speed.
2 Increase internal coolant pressure.



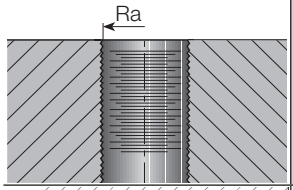
Excessive Land Wear
1 Check the runout and make sure it is within 0.03mm T.I.R. (radial and axial).
2 Reduce cutting speed.
3 When drilling rough, hard or sloped surfaces (up to 7°), reduce the feed rate by 50% -70% when entering and exiting.
4 Increase coolant pressure.
5 Check the chisel point runout and make sure it is within 0.03mm T.I.R.
6 Increase workpiece chucking force stability and rigidity.



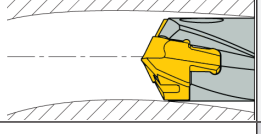
Built-Up Edge
1 Increase cutting speed/feed.
2 Increase coolant pressure.



Deviation of Hole Tolerance
1 Check the runout and make sure it is within 0.03mm T.I.R. (radial and axial cutting points).
2 Reduce feed rate.
3 Check the chisel point runout and make sure it is within 0.03mm T.I.R.
4 Worn cutting edge. Replace head.
5 Increase workpiece chucking force.
6 Increase internal coolant pressure.

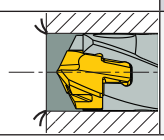


Surface Finish Too Rough
1 Check the runout and make sure it is within 0.03mm T.I.R. (radial and axial).
2 Adjust the feed for improved chip formation.
3 In case of chip jamming - increase the coolant flow and/or reduce the cutting speed.
4 Increase the coolant pressure.
5 Check the chisel point runout and make sure it is within 0.03mm T.I.R.
6 Use pecking cycle.
7 Replace the drilling head



Hole Not Straight
1 Drill a pre-hole for centering (check recommendations for pre-hole operation).
2 Increase coolant pressure, improve jet direction in case of external coolant supply.
3 Increase the feed.

Inaccurate Hole Position
1 Check the runout and make sure it is within 0.03mm T.I.R. (radial and axial).
2 Check the stability of the machine spindle, tool and workpiece clamping rigidity.
3 When drilling rough, hard or sloped surfaces (up to 7°), reduce the feed rate by 50% -70% when entering.
4 Drill a pre-hole with a 140° point angle for centering.
5 Check the chisel point runout and make sure it is within 0.03mm T.I.R.

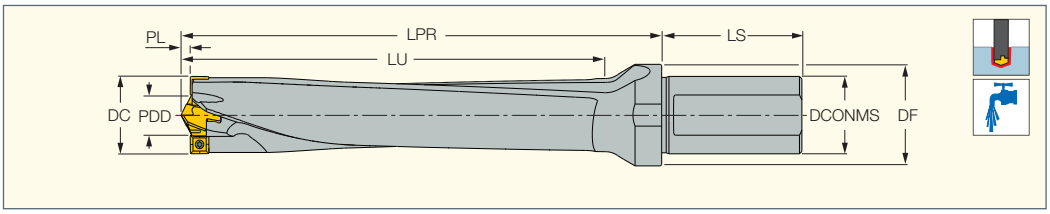


Burrs on Exit
1 Reduce the feed rate by 50% -70% when exiting.
2 Replace the worn head.

COMBICHAM

MNC-5D

Large Diameter Indexable Drills with a Pilot Drilling Head and One Flat Shank, Drilling Depth 5xD



Designation	DC	LU	PL	DCONMS	PDD	DF	LS	LPR	MIID[1]	MIID_2[2]
MNC 260-130 A32-150-06-5D	26.00	132.93	2.93	32.00	15.00	42.00	60.0	166.92	SOGX 060304-W	ICP 150
MNC 265-132 A32-155-06-5D	26.50	135.53	3.03	32.00	15.50	42.00	60.0	167.03	SOGX 060304-W	ICP 155
MNC 270-135 A32-160-06-5D	27.00	138.10	3.10	32.00	16.00	42.00	60.0	170.10	SOGX 060304-W	ICP 160
MNC 280-140 A32-170-06-5D	28.00	143.25	3.25	32.00	17.00	42.00	60.0	174.30	SOGX 060304-W	ICP 170
MNC 290-145 A32-160-07-5D	29.00	148.10	3.10	32.00	16.00	42.00	60.0	180.11	SOGX 070305-W	ICP 160
MNC 295-148 A32-165-07-5D	29.50	150.69	3.19	32.00	16.50	42.00	60.0	183.21	SOGX 070305-W	ICP 165
MNC 300-150 A32-165-07-5D	30.00	153.19	3.19	32.00	16.50	42.00	60.0	186.21	SOGX 070305-W	ICP 165
MNC 310-155 A32-175-07-5D	31.00	158.34	3.34	32.00	17.50	42.00	60.0	193.30	SOGX 070305-W	ICP 175
MNC 320-160 A32-185-07-5D	32.00	163.49	3.49	32.00	18.50	42.00	60.0	198.50	SOGX 070305-W	ICP 185
MNC 330-165 A32-175-09-5D	33.00	168.64	3.64	32.00	17.50	42.00	60.0	203.60	SOGT 09T306-W	ICP 175
MNC 340-170 A32-180-09-5D	34.00	173.70	3.70	32.00	18.00	42.00	60.0	208.70	SOGT 09T306-W	ICP 180
MNC 350-175 A32-189-09-5D	35.00	178.86	3.86	32.00	18.90	42.00	60.0	213.90	SOGT 09T306-W	ICP 189
MNC 360-180 A32-190-10-5D	36.00	183.85	3.85	32.00	19.00	42.00	60.0	218.80	SOGT 100408-W	ICP 190
MNC 370-185 A32-200-10-5D	37.00	189.01	4.01	32.00	20.00	42.00	60.0	224.00	SOGT 100408-W	ICP 200
MNC 375-188 A32-205-10-5D	37.50	191.60	4.10	32.00	20.50	42.00	60.0	227.11	SOGT 100408-W	ICP 205
MNC 380-190 A40-209-10-5D	38.00	194.17	4.17	40.00	20.90	50.00	68.0	231.21	SOGT 100408-W	ICP 209
MNC 390-195 A40-215-10-5D	39.00	199.26	4.26	40.00	21.50	50.00	68.0	237.28	SOGT 100408-W	ICP 215
MNC 400-200 A40-225-10-5D	40.00	204.41	4.41	40.00	22.50	50.00	68.0	244.36	SOGT 100408-W	ICP 225
MNC 405-203 A40-235-10-5D	40.50	207.07	4.57	40.00	23.50	50.00	68.0	247.53	SOGT 100408-W	ICP 235
MNC 410-205 A40-239-10-5D	41.00	209.64	4.64	40.00	23.90	50.00	68.0	249.64	SOGT 100408-W	ICP 239
MNC 420-210 A40-249-10-5D	42.00	214.77	4.77	40.00	24.90	50.00	68.0	254.80	SOGT 100408-W	ICP 249
MNC 430-215 A40-259-10-5D	43.00	219.99	4.99	40.00	25.90	50.00	68.0	263.00	SOGT 100408-W	ICP 259
MNC 440-220 A40-210-12-5D	44.00	225.18	5.18	40.00	21.00	50.00	68.0	264.18	SOGT 120408-W	ICP 210
MNC 450-225 A40-219-12-5D	45.00	230.33	5.33	40.00	21.90	50.00	68.0	269.38	SOGT 120408-W	ICP 219
MNC 460-230 A40-229-12-5D	46.00	235.48	5.48	40.00	22.90	50.00	68.0	274.46	SOGT 120408-W	ICP 229
MNC 470-235 A40-239-12-5D	47.00	240.64	5.64	40.00	23.90	50.00	68.0	280.63	SOGT 120408-W	ICP 239
MNC 480-240 A40-249-12-5D	48.00	245.77	5.77	40.00	24.90	50.00	68.0	284.80	SOGT 120408-W	ICP 249
MNC 490-245 A40-259-12-5D	49.00	250.99	5.99	40.00	25.90	50.00	68.0	292.00	SOGT 120408-W	ICP 259
MNC 500-250 A40-269-12-5D	50.00	256.11	6.11	40.00	26.90	50.00	68.0	297.07	SOGT 120408-W	ICP 269

- Hole tolerance: D+0.10/-0.05 in average conditions. However, it can be higher or lower according to machine and tooling conditions
- Intermediate sizes are available on request • For cutting conditions, see page 113

(1) Outer insert

(2) Central insert

For inserts, see pages: HCP-IQ (55) • ICM (45) • ICP (23) • QCP-2M (51) • SOGT-W (112) • SOGX-W (112)

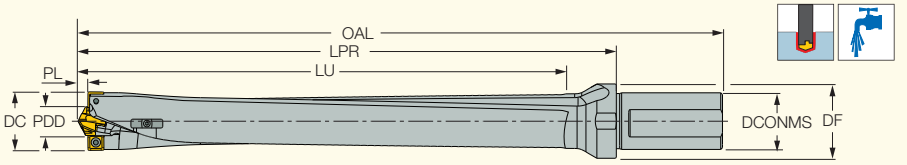
Spare Parts

Designation					
MNC 260-130 A32-150-06-5D	SR 34-508/L	T-7/51			K MNC MULTI
MNC 265-132 A32-155-06-5D	SR 34-508/L	T-7/51			K MNC MULTI
MNC 270-135 A32-160-06-5D	SR 34-508/L	T-7/51			K MNC MULTI
MNC 280-140 A32-170-06-5D	SR 34-508/L	T-7/51			K MNC MULTI
MNC 290-145 A32-160-07-5D	SR 14-560	T-8/53			K MNC MULTI
MNC 295-148 A32-165-07-5D	SR 14-560	T-8/53			K MNC MULTI
MNC 300-150 A32-165-07-5D	SR 14-560	T-8/53			K MNC MULTI
MNC 310-155 A32-175-07-5D	SR 14-560	T-8/53			K MNC MULTI
MNC 320-160 A32-185-07-5D	SR 14-560	T-8/53			K MNC MULTI
MNC 330-165 A32-175-09-5D	SR 34-506 M3X0.5		BLD T09/M7-SW4	SW4-SD	K MNC MULTI
MNC 340-170 A32-180-09-5D	SR 34-506 M3X0.5		BLD T09/M7-SW4	SW4-SD	K MNC MULTI
MNC 350-175 A32-189-09-5D	SR 34-506 M3X0.5		BLD T09/M7-SW4	SW4-SD	K MNC MULTI
MNC 360-180 A32-190-10-5D	SR 14-571		BLD T10/S7	SW6-SD	K MNC MULTI
MNC 370-185 A32-200-10-5D	SR 14-571		BLD T10/S7	SW6-SD	K MNC MULTI
MNC 375-188 A32-205-10-5D	SR 14-571		BLD T10/S7	SW6-SD	K MNC MULTI
MNC 380-190 A40-209-10-5D	SR 14-571		BLD T10/S7	SW6-SD	K MNC MULTI
MNC 390-195 A40-215-10-5D	SR 14-571		BLD T10/S7	SW6-SD	K MNC MULTI
MNC 400-200 A40-225-10-5D	SR 14-571		BLD T10/S7	SW6-SD	K MNC 22-33
MNC 405-203 A40-235-10-5D	SR 14-571		BLD T10/S7	SW6-SD	K MNC 22-33
MNC 410-205 A40-239-10-5D	SR 14-571		BLD T10/S7	SW6-SD	K MNC 22-33
MNC 420-210 A40-249-10-5D	SR 14-571		BLD T10/S7	SW6-SD	K MNC 22-33
MNC 430-215 A40-259-10-5D	SR 14-571		BLD T10/S7	SW6-SD	K MNC 22-33
MNC 440-220 A40-210-12-5D	SR 14-544/S		BLD T15/S7	SW6-SD	K MNC MULTI
MNC 450-225 A40-219-12-5D	SR 14-544/S		BLD T15/S7	SW6-SD	K MNC MULTI
MNC 460-230 A40-229-12-5D	SR 14-544/S		BLD T15/S7	SW6-SD	K MNC 22-33
MNC 470-235 A40-239-12-5D	SR 14-544/S		BLD T15/S7	SW6-SD	K MNC 22-33
MNC 480-240 A40-249-12-5D	SR 14-544/S		BLD T15/S7	SW6-SD	K MNC 22-33
MNC 490-245 A40-259-12-5D	SR 14-544/S		BLD T15/S7	SW6-SD	K MNC 22-33
MNC 500-250 A40-269-12-5D	SR 14-544/S		BLD T15/S7	SW6-SD	K MNC 22-33

* Optional, to be ordered separately

COMBICHAM

MNC-7/8D
Large Diameter Indexable Drills for the Wind Turbine Industry



Designation	DC	PDD	LU	PL	LPR	OAL	DCONMS	DF	MIID[1]	MIID_2[2]
MNC 332-265 A32-175-09-8D	33.20	17.50	270.60	5.570	304.30	364.30	32.00	42.00	SOGT 09T306-W	HCP 175-IQ
MNC 362-289 A32-190-10-8D	36.20	19.00	294.60	5.570	326.80	386.80	32.00	42.00	SOGT 100408-W	HCP 190-IQ
MNC 392-289 A40-219-10-7D	39.20	21.90	294.90	5.940	328.00	396.00	40.00	50.00	SOGT 100408-W	HCP 219-IQ

- Pre-centering is required when using ICP and ICM inserts
- Hole tolerance: D+0.10/-0.05 in average conditions. However, it can be higher or lower according to machine and tooling conditions
- Intermediate sizes are available on request • For cutting conditions, see page 113

[1] Outer insert
[2] Central insert

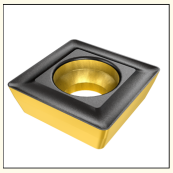
For inserts, see pages: HCP-IQ (55) • ICM (45) • ICP (23) • QCP-2M (51) • SOGT-W (112)

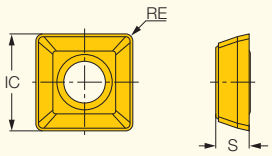
Spare Parts

Designation							
MNC 332-265 A32-175-09-8D	SR 34-506 M3X0.5	BLD T09/M7-SW4	SW4-SD	K MNC MULTI	SR 34-508 M2.2X0.45	T-7/51	GPS-05-18-060
MNC 362-289 A32-190-10-8D	SR 14-571	BLD T10/S7	SW6-SD	K MNC MULTI	SR 34-508 M2.2X0.45	T-7/51	GPS-05-18-060
MNC 392-289 A40-219-10-7D	SR 14-571	BLD T10/S7	SW6-SD	K MNC MULTI	SR 34-508 M2.2X0.45	T-7/51	GPS-05-18-060

COMBICHAM

SOGX-W
Precision Ground Inserts with DT General Use Chipformer and a Wiper for MNC Large Diameter Drills





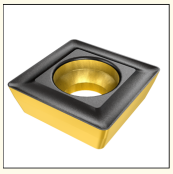
Designation	Dimensions			IC808
	IC	S	RE	
SOGX 050204-W	5.40	2.40	0.40	●
SOGX 060304-W	6.20	3.20	0.40	●
SOGX 070305-W	7.70	3.60	0.50	●

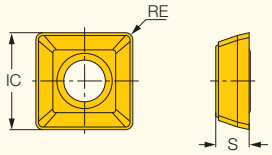
- For cutting conditions, see page 113

For tools, see page: MNC-5D (111)

COMBICHAM

SOGT-W
Precision Ground Inserts with DT General Use Chipformer and a Wiper for MNC Drills





Designation	Dimensions			IC808
	IC	S	RE	
SOGT 09T306-W	9.00	3.81	0.60	●
SOGT 100408-W	9.80	4.30	0.80	●
SOGT 120408-W	12.70	4.76	0.80	●

- For user guide and cutting conditions, see page 113

For tools, see pages: MNC-5D (111) • MNC-7/8D (112)

COMBI-CHAM Cutting Parameters

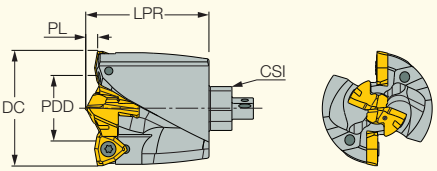
Material Groups							Recommended Machining Conditions											
									Feed Vs. Drill Diameter F [mm/rev]									
									26<ØD <28		29<ØD <32		33<ØD <35		36<ØD <43		44<ØD <50	
ISO	Material	Condition	Tensile Strength [N/mm²]	Hardness HB	Material No.(1)	Cutting Speed V_c [m/min]		f min	f max	f min	f max	f min	f max	f min	f max	f min	f max
						Vc min	Vc max										
P	non-alloy steel and cast steel, free cutting steel <0.25% C	annealed	420	125	1	120	200	0.25	0.35	0.25	0.35	0.25	0.40	0.25	0.40	0.28	0.45
P	non-alloy steel and cast steel, free cutting steel ≥0.25% C	annealed	650	190	2												
P	non-alloy steel and cast steel, free cutting steel <0.55% C	quenched and tempered	850	250	3	130	190										
P	non-alloy steel and cast steel, free cutting steel ≥0.55% C	annealed	750	220	4												
P	non-alloy steel and cast steel, free cutting steel ≥0.55% C	quenched and tempered	1000	300	5												
P	low alloy and cast steel (less than 5% of alloying elements)	annealed	600	200	6	120	180	0.25	0.33	0.25	0.33	0.25	0.38	0.25	0.38	0.26	0.43
P	low alloy and cast steel (less than 5% of alloying elements)	quenched and tempered	930	275	7												
P	low alloy and cast steel (less than 5% of alloying elements)	quenched and tempered	1000	300	8												
P	low alloy and cast steel (less than 5% of alloying elements)	quenched and tempered	1200	350	9												
P	high alloyed steel, cast steel and tool steel	annealed	680	200	10	100	160	0.25	0.33	0.25	0.33	0.25	0.36	0.25	0.36	0.26	0.41
P	high alloyed steel, cast steel and tool steel	quenched and tempered	1100	325	11												
P	stainless steel and cast steel	ferritic/ martensitic	680	200	12	90	140	0.12	0.24	0.12	0.24	0.16	0.25	0.18	0.25	0.18	0.30
P	stainless steel and cast steel	martensitic	820	240	13												
M	stainless steel and cast steel	austenitic, duplex	600	180	14	90	140	0.12	0.24	0.12	0.24	0.16	0.25	0.18	0.25	0.18	0.30
K	gray cast iron (GG)	ferritic / pearlitic		180	15	150	250	0.25	0.40	0.25	0.45	0.3	0.50	0.3	0.50	0.35	0.55
K	gray cast iron (GG)	pearlitic / martensitic		260	16												
K	nodular cast iron (GGG)	ferritic		160	17												
K	nodular cast iron (GGG)	pearlitic		250	18												
K	malleable cast iron	ferritic		130	19												
K	malleable cast iron	pearlitic		230	20												
N	aluminum-wrought alloys	not hardenable		60	21	160	260	0.3	0.50	0.3	0.50	0.35	0.55	0.35	0.55	0.4	0.60
N	aluminum-wrought alloys	hardenable		100	22												
N	aluminum-cast alloys ≤12% Si	not hardenable		75	23												
N	aluminum-cast alloys ≤12% Si	hardenable		90	24												
N	aluminum-cast alloys >12% Si	high temperature		130	25												
N	copper alloys >1% Pb	free cutting		110	26												
N	copper alloys	brass		90	27												
N	copper alloys	electrolytic copper		100	28												
S	high temperature alloys Fe based	annealed		200	31	30	60	0.1	0.16	0.1	0.18	0.15	0.20	0.15	0.22	0.16	0.24
S	high temperature alloys Fe based	hardened		280	32	20	30										
S	high temperature alloys Ni or Co based	annealed		250	33												
S	high temperature alloys Ni or Co based	hardened		350	34												
S	high temperature alloys Ni or Co based	cast		320	35												
S	titanium alloys	pure	400		36												
S	titanium alloys	alpha+beta alloys, hardened	1050		37												
H	hardened steel	hardened		55 HRC	38	20	50	0.1	0.16	0.12	0.18	0.14	0.2	0.14	0.2	0.16	0.22
H	hardened steel	hardened		60 HRC	39												

(1) For workpiece materials list, see pages 542-637. As a starting value, the middle of the recommended machining range should be used. Then, according to the wear results, conditions can be changed to optimize performance.

MODUDRILL

MD-MNC-IMH

Exchangeable IMH Drilling Heads with a Pilot SUMO-CHAM Head and Peripheral Trigon Inserts



Designation	DC	PDD	LPR	CSI	PL	MIID[1]	MIID_2[2]
MD-MNC 280-IMH28-119-W5	28.00	11.90	30.00	IMH28	3.300	ICP 119-MNC 4F	WCGX 05T308-W-DC
MD-MNC 290-IMH28-129-W5	29.00	12.90	30.30	IMH28	3.500	ICP 129-MNC 4F	WCGX 05T308-W-DC
MD-MNC 300-IMH28-139-W5	30.00	13.90	30.60	IMH28	3.700	ICP 139-MNC 4F	WCGX 05T308-W-DC
MD-MNC 310-IMH28-149-W5	31.00	14.90	30.70	IMH28	3.800	ICP 149-MNC 4F	WCGX 05T308-W-DC
MD-MNC 320-IMH32-159-W5	32.00	15.90	34.80	IMH32	4.100	ICP 159-MNC 4F	WCGX 05T308-W-DC
MD-MNC 330-IMH32-169-W5	33.00	16.90	35.00	IMH32	4.200	ICP 169-MNC 4F	WCGX 05T308-W-DC
MD-MNC 340-IMH32-189-W5	34.00	18.90	35.30	IMH32	4.500	ICP 189-MNC 4F	WCGX 05T308-W-DC
MD-MNC 350-IMH32-199-W5	35.00	19.90	35.30	IMH32	4.300	ICP 199-MNC 4F	WCGX 05T308-W-DC
MD-MNC 360-IMH36-209-W5	36.00	20.90	38.30	IMH36	4.600	ICP 209-MNC 4F	WCGX 05T308-W-DC
MD-MNC 370-IMH36-179-W6	37.00	17.90	38.00	IMH36	4.600	ICP 179-MNC 4F	WCGX 06T308-W-DC
MD-MNC 380-IMH36-189-W6	38.00	18.90	38.00	IMH36	4.600	ICP 189-MNC 4F	WCGX 06T308-W-DC
MD-MNC 390-IMH36-199-W6	39.00	19.90	38.00	IMH36	4.600	ICP 199-MNC 4F	WCGX 06T308-W-DC
MD-MNC 392-IMH36-199-W6	39.20	19.90	38.00	IMH36	4.600	ICP 199-MNC 4F	WCGX 06T308-W-DC
MD-MNC 400-IMH40-209-W6	40.00	20.90	43.30	IMH40	4.900	ICP 209-MNC 4F	WCGX 06T308-W-DC
MD-MNC 410-IMH40-219-W6	41.00	21.90	43.80	IMH40	5.400	ICP 219-MNC 4F	WCGX 06T308-W-DC
MD-MNC 420-IMH40-189-W7	42.00	18.90	43.30	IMH40	5.000	ICP 189-MNC 4F	WCGX 070408-W-DC
MD-MNC 430-IMH40-199-W7	43.00	19.90	43.10	IMH40	4.800	ICP 199-MNC 4F	WCGX 070408-W-DC
MD-MNC 440-IMH40-209-W7	44.00	20.90	43.30	IMH40	5.000	ICP 209-MNC 4F	WCGX 070408-W-DC
MD-MNC 450-IMH45-219-W7	45.00	21.90	43.70	IMH45	5.400	ICP 219-MNC 4F	WCGX 070408-W-DC
MD-MNC 460-IMH45-229-W7	46.00	22.90	43.80	IMH45	5.500	ICP 229-MNC 4F	WCGX 070408-W-DC
MD-MNC 470-IMH45-239-W7	47.00	23.90	43.90	IMH45	5.600	ICP 239-MNC 4F	WCGX 070408-W-DC
MD-MNC 480-IMH45-249-W7	48.00	24.90	44.10	IMH45	5.800	ICP 249-MNC 4F	WCGX 070408-W-DC
MD-MNC 490-IMH45-259-W7	49.00	25.90	44.30	IMH45	6.000	ICP 259-MNC 4F	WCGX 070408-W-DC
MD-MNC 500-IMH50-229-W8	50.00	22.90	53.80	IMH50	5.800	ICP 229-MNC 4F	WCGX 080508-W-DC
MD-MNC 510-IMH50-239-W8	51.00	23.90	53.90	IMH50	5.800	ICP 239-MNC 4F	WCGX 080508-W-DC
MD-MNC 520-IMH50-249-W8	52.00	24.90	54.10	IMH50	6.000	ICP 249-MNC 4F	WCGX 080508-W-DC
MD-MNC 530-IMH50-259-W8	53.00	25.90	54.30	IMH50	6.200	ICP 259-MNC 4F	WCGX 080508-W-DC
MD-MNC 540-IMH50-269-W8	54.00	26.90	54.40	IMH50	6.300	ICP 269-MNC 4F	WCGX 080508-W-DC
MD-MNC 550-IMH50-279-W8	55.00	27.90	54.60	IMH50	6.400	ICP 279-MNC 4F	WCGX 080508-W-DC
MD-MNC 560-IMH56-289-W8	56.00	28.90	54.90	IMH50	4.900	ICP 289-MNC 4F	WCGX 080508-W-DC

NEW

- For user guide and cutting conditions, see pages 118-120,123-124

[1] Master insert identification

[2] Master insert identification 2

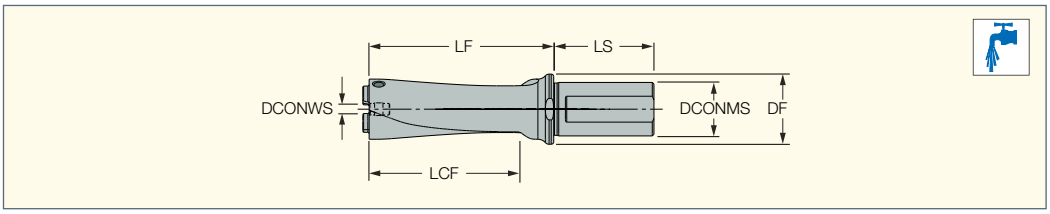
For inserts, see pages: WCGX (117) • ICP-MNC (117)

Spare Parts

Designation						
MD-MNC 280-IMH28-119-W5	K MNC 10-13.99		SR 34-506 M3X0.5	T-9/5		
MD-MNC 290-IMH28-129-W5	K MNC 10-13.99		SR 34-506 M3X0.5	T-9/5		
MD-MNC 300-IMH28-139-W5	K MNC 10-13.99		SR 34-506 M3X0.5	T-9/5		
MD-MNC 310-IMH28-149-W5		K MNC 14-21.99	SR 34-506 M3X0.5	T-9/5		
MD-MNC 320-IMH32-159-W5		K MNC 14-21.99	SR 34-506 M3X0.5	T-9/5		
MD-MNC 330-IMH32-169-W5		K MNC 14-21.99	SR 34-506 M3X0.5	T-9/5		
MD-MNC 340-IMH32-189-W5		K MNC 14-21.99	SR 34-506 M3X0.5	T-9/5		
MD-MNC 350-IMH32-199-W5		K MNC 14-21.99	SR 34-506 M3X0.5	T-9/5		
MD-MNC 360-IMH36-209-W5		K MNC 14-21.99	SR 34-506 M3X0.5	T-9/5		
MD-MNC 370-IMH36-179-W6		K MNC 14-21.99	SR 34-550-M2	T-10/5		
MD-MNC 380-IMH36-189-W6		K MNC 14-21.99	SR 34-550-M2	T-10/5		
MD-MNC 390-IMH36-199-W6		K MNC 14-21.99	SR 34-550-M2	T-10/5		
MD-MNC 392-IMH36-199-W6		K MNC 14-21.99	SR 34-550-M2	T-10/5		
MD-MNC 400-IMH40-209-W6		K MNC 14-21.99	SR 34-550-M2	T-10/5		
MD-MNC 410-IMH40-219-W6		K MNC 14-21.99	SR 34-550-M2	T-10/5		
MD-MNC 420-IMH40-189-W7		K MNC 14-21.99	SR 34-501..N		BLD T15/S7	SW6-SD
MD-MNC 430-IMH40-199-W7		K MNC 14-21.99	SR 34-501..N		BLD T15/S7	SW6-SD
MD-MNC 440-IMH40-209-W7		K MNC 14-21.99	SR 34-501..N		BLD T15/S7	SW6-SD
MD-MNC 450-IMH45-219-W7		K MNC 14-21.99	SR 34-501..N		BLD T15/S7	SW6-SD
MD-MNC 460-IMH45-229-W7		K MNC 22-33	SR 34-501..N		BLD T15/S7	SW6-SD
MD-MNC 470-IMH45-239-W7		K MNC 22-33	SR 34-501..N		BLD T15/S7	SW6-SD
MD-MNC 480-IMH45-249-W7		K MNC 22-33	SR 34-501..N		BLD T15/S7	SW6-SD
MD-MNC 490-IMH45-259-W7		K MNC 22-33	SR 34-501..N		BLD T15/S7	SW6-SD
MD-MNC 500-IMH50-229-W8		K MNC 22-33	SR 16-212		BLD T20/M7	SW6-T
MD-MNC 510-IMH50-239-W8		K MNC 22-33	SR 16-212		BLD T20/M7	SW6-T
MD-MNC 520-IMH50-249-W8		K MNC 22-33	SR 16-212		BLD T20/M7	SW6-T
MD-MNC 530-IMH50-259-W8		K MNC 22-33	SR 16-212		BLD T20/M7	SW6-T
MD-MNC 540-IMH50-269-W8		K MNC 22-33	SR 16-212		BLD T20/M7	SW6-T
MD-MNC 550-IMH50-279-W8		K MNC 22-33	SR 16-212		BLD T20/M7	SW6-T
MD-MNC 560-IMH56-289-W8		K MNC 22-33	SR 16-212		BLD T20/M7	SW6-T

MODUDRILL

MD-BODY-3D
Modular Drill Bodies, Each Can Carry a Variety of Exchangeable Drilling Heads with Different Diameters



Designation	DCONMS	DF	LS	LF	LCF	DCN(1)	DCX(2)	DCONWS			
MD-BODY-28-32-096-32A-3D	32.00	42.00	60.0	105.00	84.0	28.00	32.90	6.50	SET SCREW M5-MODUDRILL	BLD T15/S7	SW6-T-SH
MD-BODY-33-36-108-32A-3D	32.00	42.00	60.0	121.00	99.0	33.00	36.90	6.70	SET SCREW M6-MODUDRILL	BLD T15/S7	SW6-T-SH
MD-BODY-37-40-120-32A-3D	32.00	42.00	60.0	137.00	113.0	37.00	40.90	6.90	SET SCREW M6-MODUDRILL	BLD T15/S7	SW6-T-SH
MD-BODY-41-45-135-40A-3D	40.00	50.00	68.0	155.00	127.0	41.00	45.90	7.10	SET SCREW M6-MODUDRILL	BLD T15/S7	SW6-T-SH

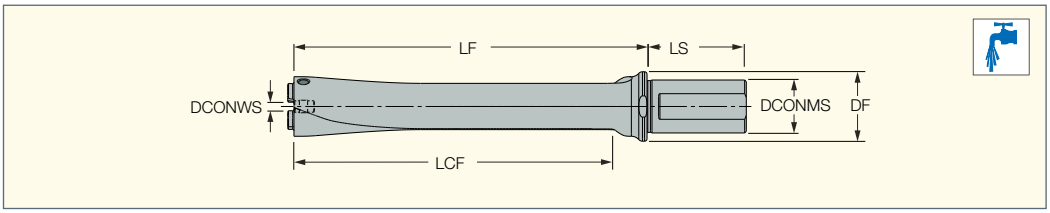
NEW

(1) Cutting diameter minimum
(2) Cutting diameter maximum

For tools, see pages: MD-MNC-HEAD (116)

MODUDRILL

MD-BODY-5D
Modular Drill Bodies, Each Can Carry a Variety of Exchangeable Drilling Heads with Different Diameters



Designation	DCONMS	DF	LS	LF	LCF	DCN(1)	DCX(2)	DCONWS			
MD-BODY-28-32-160-32A-5D	32.00	42.00	60.0	169.00	148.0	28.00	32.90	6.50	SET SCREW M5-MODUDRILL	BLD T15/S7	SW6-T-SH
MD-BODY-33-36-180-32A-5D	32.00	42.00	60.0	193.00	171.0	33.00	36.90	6.70	SET SCREW M6-MODUDRILL	BLD T15/S7	SW6-T-SH
MD-BODY-37-40-200-32A-5D	32.00	42.00	60.0	217.00	193.0	37.00	40.90	6.90	SET SCREW M6-MODUDRILL	BLD T15/S7	SW6-T-SH
MD-BODY-41-45-225-40A-5D	40.00	50.00	68.0	245.00	217.0	41.00	45.90	7.10	SET SCREW M6-MODUDRILL	BLD T15/S7	SW6-T-SH

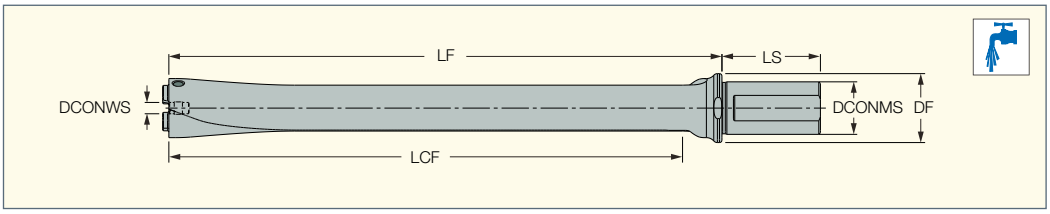
NEW

(1) Cutting diameter minimum
(2) Cutting diameter maximum

For tools, see pages: MD-MNC-HEAD (116)

MODUDRILL

MD-BODY-8D
Modular Drill Bodies, Each Can Carry a Variety of Exchangeable Drilling Heads with Different Diameters



Designation	DCONMS	DF	LS	LF	LCF	DCN(1)	DCX(2)	DCONWS			
MD-BODY-28-32-256-32A-8D	32.00	42.00	60.0	265.00	244.0	28.00	32.90	6.50	SET SCREW M5-MODUDRILL	BLD T15/S7	SW6-T-SH
MD-BODY-33-36-288-32A-8D	32.00	42.00	60.0	301.00	279.0	33.00	36.90	6.70	SET SCREW M6-MODUDRILL	BLD T15/S7	SW6-T-SH
MD-BODY-37-40-320-32A-8D	32.00	42.00	60.0	337.00	313.0	37.00	40.90	6.90	SET SCREW M6-MODUDRILL	BLD T15/S7	SW6-T-SH
MD-BODY-41-45-360-40A-8D	40.00	50.00	68.0	380.00	352.0	41.00	45.90	7.10	SET SCREW M6-MODUDRILL	BLD T15/S7	SW6-T-SH

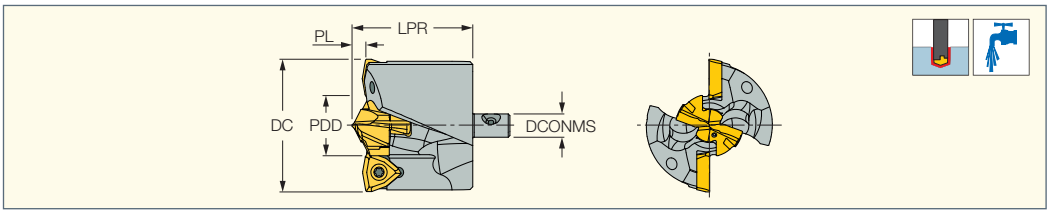
NEW

(1) Cutting diameter minimum
(2) Cutting diameter maximum

For tools, see pages: MD-MNC-HEAD (116)

MODUDRILL

MD-MNC-HEAD
Exchangeable Modular Drilling Heads with a Pilot SUMO-CHAM Head and Peripheral Triangular Inserts



Designation	DC	PDD	LPR	DCONMS	PL	MIID[1]	MIID_2[2]
MD-MNC 280-119-W5	28.00	11.90	30.00	6.50	3.300	ICP 119-MNC 4F	WCGX 05T308-W-DC
MD-MNC 290-129-W5	29.00	12.90	30.30	6.50	3.500	ICP 129-MNC 4F	WCGX 05T308-W-DC
MD-MNC 300-139-W5	30.00	13.90	30.60	6.50	3.700	ICP 139-MNC 4F	WCGX 05T308-W-DC
MD-MNC 310-149-W5	31.00	14.90	30.70	6.50	3.800	ICP 149-MNC 4F	WCGX 05T308-W-DC
MD-MNC 320-159-W5	32.00	15.90	34.80	6.50	4.100	ICP 159-MNC 4F	WCGX 05T308-W-DC
MD-MNC 330-169-W5	33.00	16.90	35.00	6.70	4.300	ICP 169-MNC 4F	WCGX 05T308-W-DC
MD-MNC 332-169-W5	33.20	16.90	35.00	6.70	4.300	ICP 169-MNC 4F	WCGX 05T308-W-DC
MD-MNC 340-189-W5	34.00	18.90	35.00	6.70	3.300	ICP 189-MNC 4F	WCGX 05T308-W-DC
MD-MNC 350-199-W5	35.00	19.90	35.00	6.70	3.300	ICP 199-MNC 4F	WCGX 05T308-W-DC
MD-MNC 360-209-W5	36.00	20.90	35.30	6.70	4.600	ICP 209-MNC 4F	WCGX 05T308-W-DC
MD-MNC 362-209-W5	36.20	20.90	35.30	6.70	3.300	ICP 209-MNC 4F	WCGX 05T308-W-DC
MD-MNC 370-179-W6	37.00	17.90	35.00	6.90	4.600	ICP 179-MNC 4F	WCGX 06T308-W-DC
MD-MNC 380-189-W6	38.00	18.90	35.00	6.90	4.600	ICP 189-MNC 4F	WCGX 06T308-W-DC
MD-MNC 390-199-W6	39.00	19.90	35.00	6.90	4.600	ICP 199-MNC 4F	WCGX 06T308-W-DC
MD-MNC 392-199-W6	39.20	19.90	35.60	6.90	4.600	ICP 199-MNC 4F	WCGX 06T308-W-DC
MD-MNC 400-209-W6	40.00	20.90	35.30	6.90	4.900	ICP 209-MNC 4F	WCGX 06T308-W-DC
MD-MNC 410-219-W6	41.00	21.90	35.80	7.10	5.400	ICP 219-MNC 4F	WCGX 06T308-W-DC
MD-MNC 420-189-W7	42.00	18.90	35.30	7.10	5.000	ICP 189-MNC 4F	WCGX 070408-W-DC
MD-MNC 430-199-W7	43.00	19.90	35.10	7.10	4.800	ICP 199-MNC 4F	WCGX 070408-W-DC
MD-MNC 440-209-W7	44.00	20.90	35.30	7.10	5.000	ICP 209-MNC 4F	WCGX 070408-W-DC
MD-MNC 450-219-W7	45.00	21.90	35.70	7.10	5.400	ICP 219-MNC 4F	WCGX 070408-W-DC

NEW

[1] Master insert identification
[2] Master insert identification 2

For inserts, see pages: ICP-MNC (117) • WCGX (117)
For holders, see pages: MD-EXTENSION (122) • MD-BODY-3D (115) • MD-BODY-5D (115) • MD-BODY-8D (115)

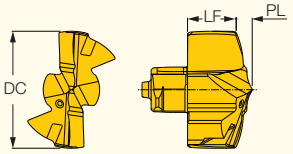
Spare Parts

Designation						
MD-MNC 280-119-W5	K MNC 10-13.99		SR 34-506 M3X0.5	T-9/5		
MD-MNC 290-129-W5	K MNC 10-13.99		SR 34-506 M3X0.5	T-9/5		
MD-MNC 300-139-W5	K MNC 10-13.99		SR 34-506 M3X0.5	T-9/5		
MD-MNC 310-149-W5		K MNC 14-21.99	SR 34-506 M3X0.5	T-9/5		
MD-MNC 320-159-W5		K MNC 14-21.99	SR 34-506 M3X0.5	T-9/5		
MD-MNC 330-169-W5		K MNC 14-21.99	SR 34-506 M3X0.5	T-9/5		
MD-MNC 332-169-W5		K MNC 14-21.99	SR 34-506 M3X0.5	T-9/5		
MD-MNC 340-189-W5		K MNC 14-21.99	SR 34-506 M3X0.5	T-9/5		
MD-MNC 350-199-W5		K MNC 14-21.99	SR 34-506 M3X0.5	T-9/5		
MD-MNC 360-209-W5		K MNC 14-21.99	SR 34-506 M3X0.5	T-9/5		
MD-MNC 362-209-W5		K MNC 14-21.99	SR 34-506 M3X0.5	T-9/5		
MD-MNC 370-179-W6		K MNC 14-21.99	SR 34-550-M2	T-10/5		
MD-MNC 380-189-W6		K MNC 14-21.99	SR 34-550-M2	T-10/5		
MD-MNC 390-199-W6		K MNC 14-21.99	SR 34-550-M2	T-10/5		
MD-MNC 392-199-W6		K MNC 14-21.99	SR 34-550-M2	T-10/5		
MD-MNC 400-209-W6		K MNC 14-21.99	SR 34-550-M2	T-10/5		
MD-MNC 410-219-W6		K MNC 14-21.99	SR 34-550-M2	T-10/5		
MD-MNC 420-189-W7		K MNC 14-21.99	SR 34-501..N		SW6-SD	BLD T15/S7
MD-MNC 430-199-W7		K MNC 14-21.99	SR 34-501..N		SW6-SD	BLD T15/S7
MD-MNC 440-209-W7		K MNC 14-21.99	SR 34-501..N		SW6-SD	BLD T15/S7
MD-MNC 450-219-W7		K MNC 14-21.99	SR 34-501..N		SW6-SD	BLD T15/S7

* Optional, to be ordered separately

MODUDRILL

ICP-MNC
Exchangeable SUMO-CHAM Drilling Heads for Modular Combi Drills



Designation	Dimensions DC	PL	LF	SSC(1)	IC908
ICP 119-MNC 4F	11.90	1.800	4.80	11.0	●
ICP 129-MNC 4F	12.90	2.000	5.00	12.0	●
ICP 139-MNC 4F	13.90	2.100	5.50	13.0	●
ICP 149-MNC 4F	14.90	2.250	5.90	14.0	●
ICP 159-MNC 4F	15.90	2.400	6.30	15.0	●
ICP 169-MNC 4F	16.90	2.600	6.70	16.0	●
ICP 179-MNC 4F	17.90	2.800	7.10	17.0	●
ICP 189-MNC 4F	18.90	2.900	7.60	18.0	●
ICP 199-MNC 4F	19.90	2.700	8.30	19.0	●
ICP 209-MNC 4F	20.90	3.000	8.60	20.0	●
ICP 219-MNC 4F	21.90	3.600	8.50	21.0	●
ICP 229-MNC 4F	22.90	3.500	9.30	22.0	●
ICP 239-MNC 4F	23.90	3.600	9.70	23.0	●
ICP 249-MNC 4F	24.90	3.780	10.12	24.0	●
ICP 259-MNC 4F	25.90	3.960	10.54	25.0	●
ICP 269-MNC 4F	26.90	4.110	10.96	26.0	●
ICP 279-MNC 4F	27.90	4.270	11.38	27.0	●
ICP 289-MNC 4F	28.90	4.620	11.60	28.0	●

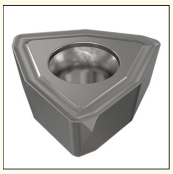
NEW

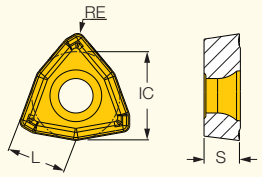
(1) Seat size code

For tools, see pages: MD-MNC-IMH (114) • MD-MNC-HEAD (116)

MODUDRILL

WCGX
Precision Ground Trigon Inserts for Modular MNC Drills





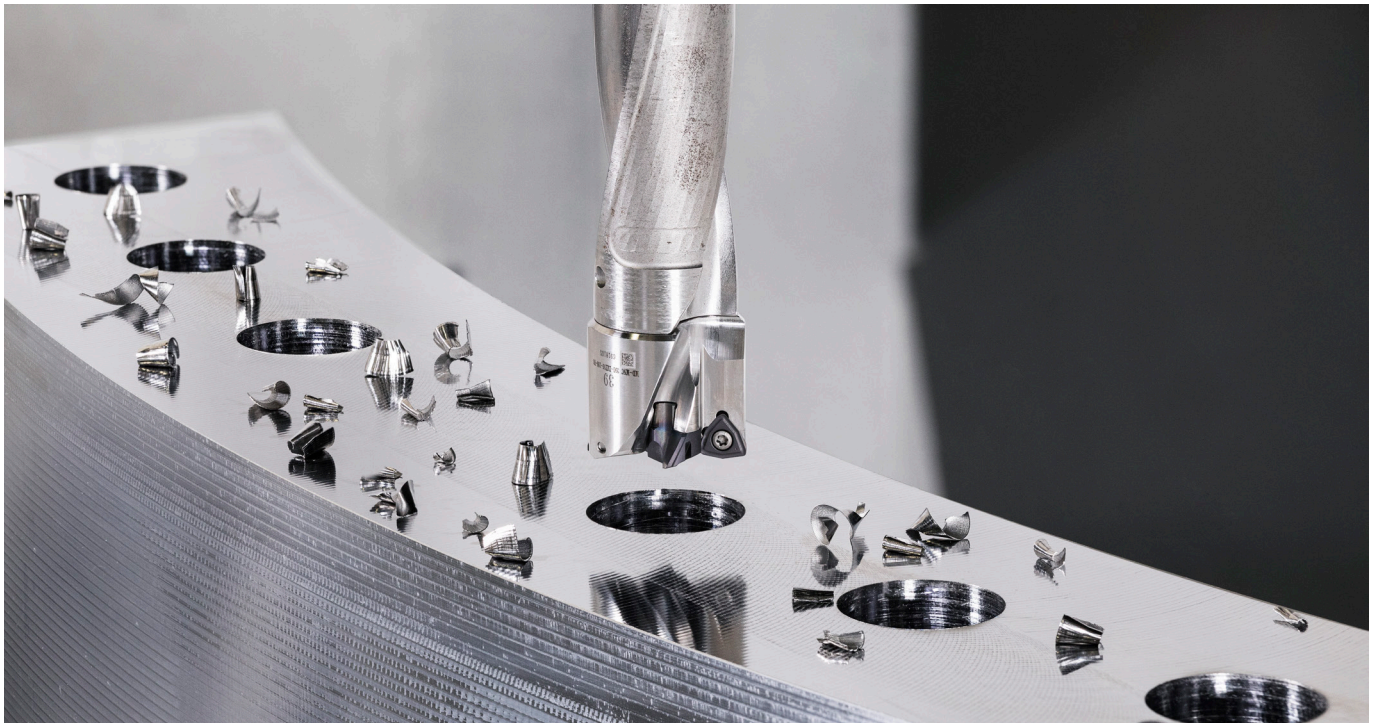
Designation	Dimensions L	IC	S	RE	IC918
WCGX 05T308-W-DC	5.35	7.94	3.88	0.80	●
WCGX 06T308-W-DC	6.38	9.47	3.80	0.80	●
WCGX 070408-W-DC	7.60	11.28	4.76	0.80	●
WCGX 080508-W-DC	8.58	12.74	5.56	0.80	●

For tools, see pages: MD-MNC-HEAD (116) • MD-MNC-IMH (114)

MD-MNC Cutting Parameters

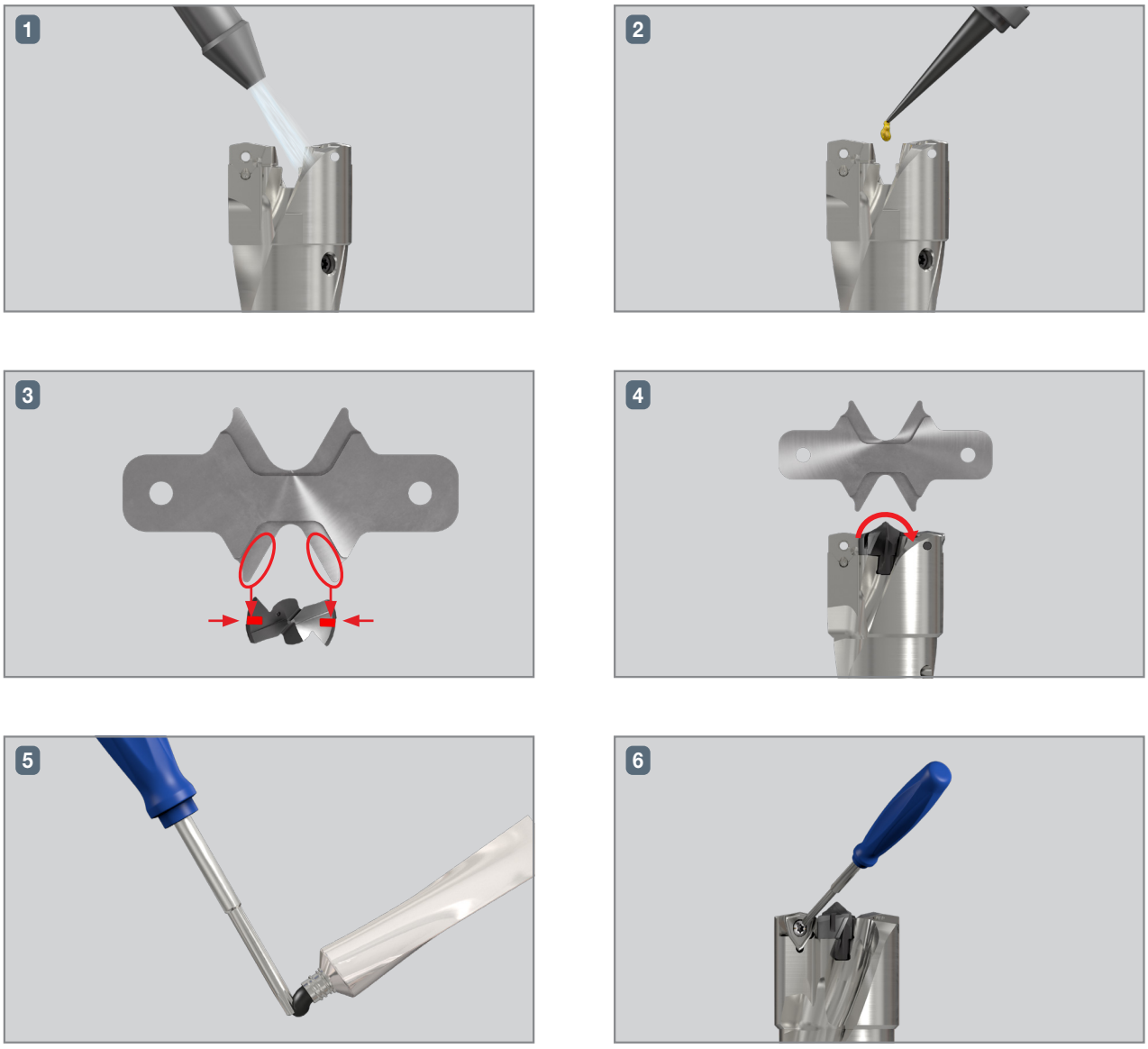
ISO	Material		Condition	Tensile Strength [N/mm²]	Hardness, HB	Group	Diameter Range, mm	D=28.0-36.9 W 05	D=37.0-41.9 W 06	D=42.0-49.9 W 07	D=50.0-56.0 W 08
							Cutting Speed, Vc [m/min]	Cutting Feed, f [mm/rev]			
P	non-alloy steel and cast steel, free cutting steel	<0.25% C	annealed	420	125	1	90-140-190	0.20 0.29 0.38	0.22 0.30 0.40	0.25 0.33 0.41	0.26 0.34 0.42
		≥0.25% C	annealed	650	190	2					
		<0.55% C	quenched and tempered	850	250	3	120-150-180				
		≥0.55% C	annealed	750	220	4					
			quenched and tempered	1000	300	5					
	low alloy and cast steel (less than 5% of alloying elements)		annealed	600	200	6	100-130-160	0.20 0.28 0.36	0.22 0.30 0.38	0.23 0.31 0.39	0.24 0.32 0.40
			quenched and tempered	930	275	7					
				1000	300	8					
				1200	350	9					
	high alloyed steel, cast steel and tool steel		annealed	680	200	10	80-110-140	0.20 0.26 0.32	0.22 0.28 0.34	0.24 0.30 0.36	0.24 0.31 0.38
			quenched and tempered	1100	325	11					
	stainless steel and cast steel		ferritic / martensitic	680	200	12	70-100-130	0.12 0.18 0.24	0.14 0.20 0.26	0.16 0.23 0.30	0.16 0.26 0.34
			martensitic	820	240	13					
K	gray cast iron (GG)		ferritic / pearlitic		180	15	120-170-220	0.22 0.32 0.42	0.24 0.34 0.44	0.26 0.36 0.46	0.28 0.38 0.48
			pearlitic / martensitic		260	16					
	nodular cast iron (GGG)		ferritic		160	17					
			pearlitic		250	18					
	malleable cast iron		ferritic		130	19					
			pearlitic		230	20					

Recommended Cutting Data



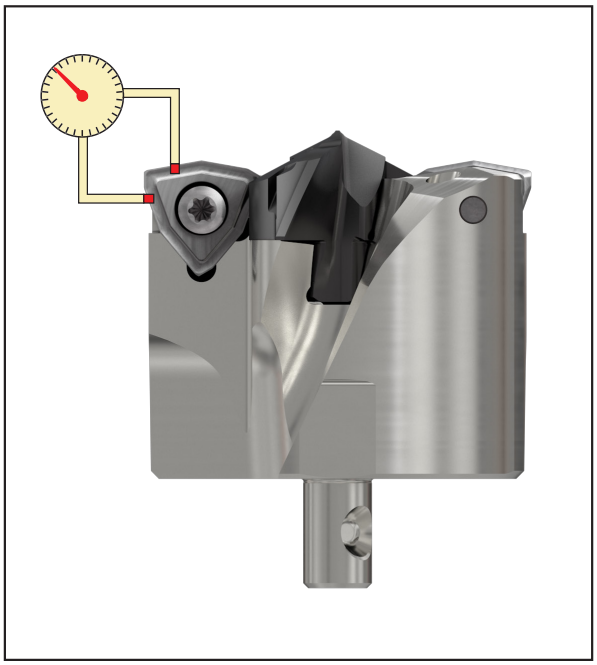
MD-MNC Head and Body Assembly

MD-MNC Inserts Mounting Instruction



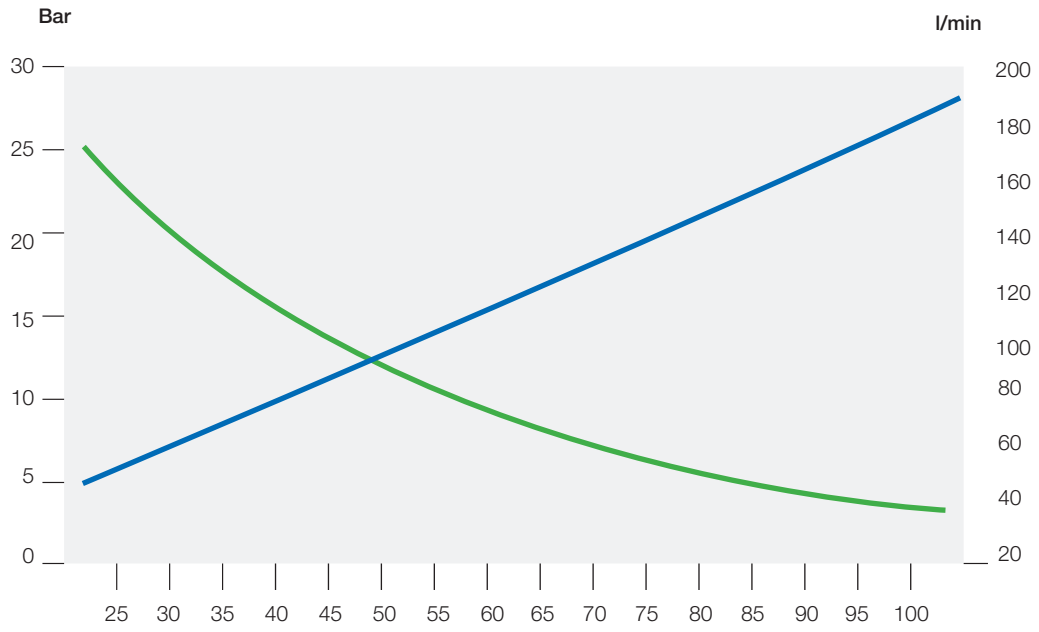
MD-MNC Inserts Runout Inspection

WCGX
Max Allowed Δ = 0.04mm
Axial Runout & Radial Runout



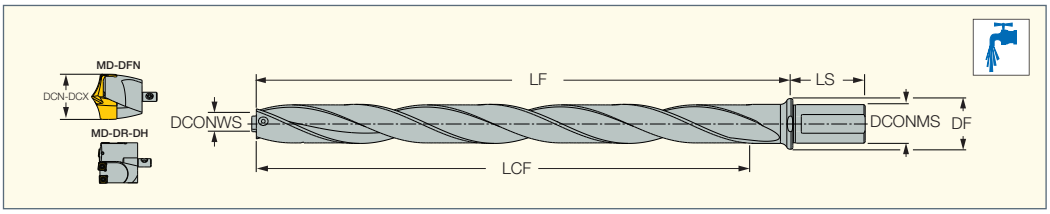
ICP-MNC
Max Allowed Δ =0.04mm
Axial Runout & Radial Runout

Flow Rate Vs. Pressure & Drill Diameter



MODUDRILL

MD-BODY
Modular Drill Bodies, Each Can Carry a Variety of Exchangeable Drilling Heads with Different Diameters



Designation	DCONMS	DF	LS	LF	LCF	DCN(1)	DCX(2)	DCONWS(3)			
MD-BODY-33-36-400-32A	32.00	42.00	60.0	445.00	393.3	33.00	36.90	6.70	SET SCREW M6-MODUDRILL	BLD T15/S7	SW6-T-SH
MD-BODY-37-40-400-32A	32.00	42.00	60.0	445.00	393.3	37.00	40.00	6.90	SET SCREW M6-MODUDRILL	BLD T15/S7	SW6-T-SH

(1) Cutting diameter minimum
(2) Cutting diameter maximum
(3) HEAD connection size

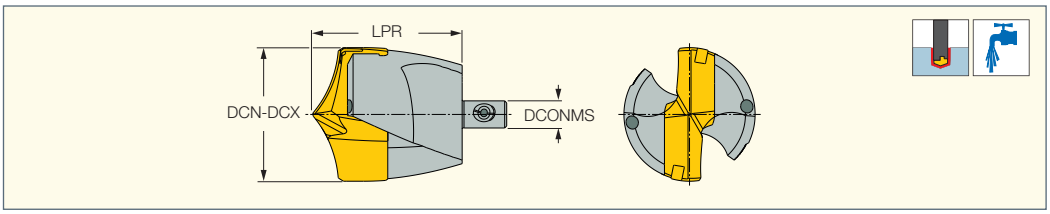
For tools, see pages: MD-DFN-HEAD (121) • MD-DR-DH-HEAD (122)

MD-BODY- ##-## - ### - ###

- ##-## → For head range
- ### → Length
- ### → Shank size

MODUDRILL

MD-DFN-HEAD
Exchangeable Drilling Heads Carry CHAM-IQ-DRILL Solid Carbide Inserts



Designation	DCN(1)	DCX(2)	LPR	DCONMS	PL	SSC(3)	MIID(4)	
MD-DFN 330 HEAD	33.00	33.90	36.90	6.70	7.330	33.0	HFP 330-IQ	K DFN 30-40
MD-DFN 340 HEAD	34.00	34.93	37.20	6.70	7.620	34.0	HFP 340-IQ	K DFN 30-40
MD-DFN 350 HEAD	35.00	35.90	37.20	6.70	7.650	35.0	HFP 350-IQ	K DFN 30-40
MD-DFN 360 HEAD	36.00	36.90	37.60	6.70	8.150	36.0	HFP 360-IQ	K DFN 30-40
MD-DFN 370 HEAD	37.00	37.90	37.60	6.90	8.040	37.0	HFP 370-IQ	K DFN 30-40
MD-DFN 380 HEAD	38.00	38.90	38.00	6.90	8.200	38.0	HFP 380-IQ	K DFN 30-40
MD-DFN 390 HEAD	39.00	40.00	38.00	6.90	8.430	39.0	HFP 390-IQ	K DFN 30-40

• Do not mount smaller drilling heads other than the specified range of the drill body • For user guide and cutting conditions, see pages 123-124
(1) Cutting diameter minimum
(2) Cutting diameter maximum
(3) Seat size code
(4) Master insert identification

For inserts, see pages: HFP-IQ (104) • IFP-IQ (105)
For holders, see pages: MD-BODY (121) • MD-EXTENSION (122)

Modular Head

MD-DFN ### **HEAD**

- ### → Modular Head Size

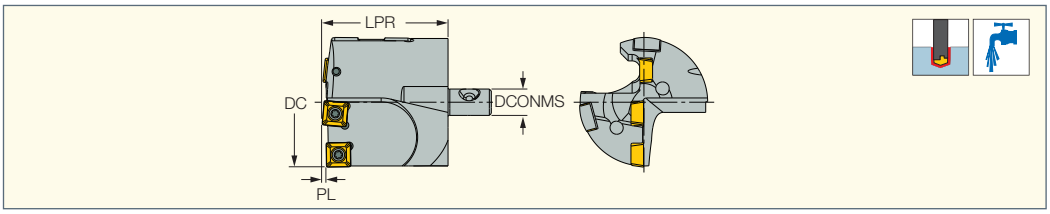
Drilling Head

HFP ### **- IQ IC908**

- ### → Drilling Head Size

MODUDRILL

MD-DR-DH-HEAD
Exchangeable Drilling Heads with Guide Pads Carry Square Inserts



Designation	DC	LPR	DCONMS	PL	MIID(1)	MIID_2(2)
MD-DR-DH 330 070606-06	33.00	33.00	6.70	1.000	SOMX 06	SOMX 07 (3)
MD-DR-DH 340 070606-06	34.00	33.00	6.70	1.000	SOMX 06	SOMX 07 (3)
MD-DR-DH 350 070606-06	35.00	33.00	6.70	1.000	SOMX 06	SOMX 07 (3)
MD-DR-DH 360 070707-06	36.00	33.00	6.70	1.000	SOMX 07	SOMX 07 (3)
MD-DR-DH 370 070707-06	37.00	39.00	6.90	1.000	SOMX 07	SOMX 07 (3)
MD-DR-DH 380 070707-06	38.00	39.00	6.90	1.000	SOMX 07	SOMX 07 (3)
MD-DR-DH 390 070707-06	39.00	39.00	6.90	1.000	SOMX 07	SOMX 07 (3)
MD-DR-DH 400 070707-06	40.00	40.00	6.90	1.000	SOMX 07	SOMX 07 (3)

- For user guide and cutting conditions, see pages 123-124

(1) Master insert identification
(2) Master insert identification 2
(3) Central insert

For inserts, see pages: SOMX-DT (150) • SOMX-GF (150) • SOMX-HD (151)
For holders, see pages: MD-BODY (121) • MD-EXTENSION (122)

Modular Head

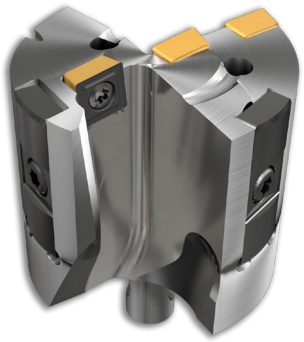
MD-DR-DH ### ## ## ## - ##

Modular Head size | Inner Insert size | Intermediate Insert size | Peripheral Insert size | Guide pad size

Inner/Intermediate/Peripheral Inserts

SOMX ## ## ## - ## IC ###

Insert size | Corner radius | Chip breaker | Grade



Guide Pads

GPS- ## - ## - ### IC ###

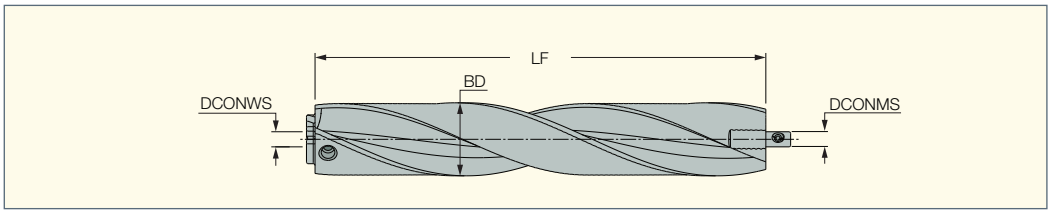
Pad width | Pad length | Pad radius | Grade

Spare Parts

Designation					
MD-DR-DH-HEAD	SR 14-560-HG	T-8/53	SR 22052/HG-P	IP-7/51	GPS-05-18-060

MODUDRILL

MD-EXTENSION
Modular Extension Holder to Extend the Overall Length by 200mm



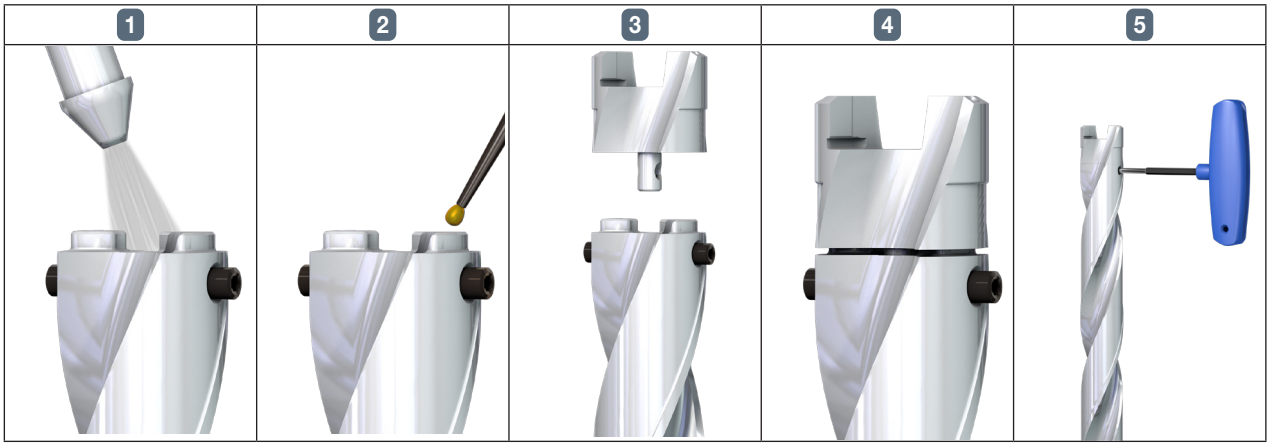
Designation	BD	LF	DCONWS	DCONMS
MD-EXTENSION-33-36-200	32.40	200.00	6.70	6.70
MD-EXTENSION-37-40-200	36.40	200.00	6.90	6.90

For tools, see pages: MD-DFN-HEAD (121) • MD-DR-DH-HEAD (122) • MD-MNC-HEAD (116)

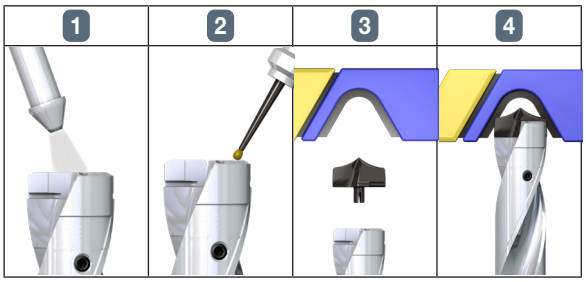
Spare Parts

Designation				
MD-EXTENSION	SET SCREW M6-MODUDRILL	SR M5X4 DIN913	BLD T15/S7	SW6-T-SH

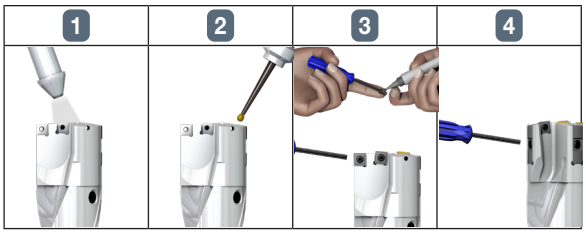
Head and Body Assembly



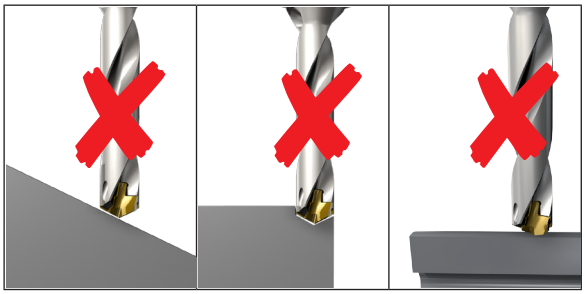
MD-DFN Insert Assembly



MD-DR-DH Inserts Assembly

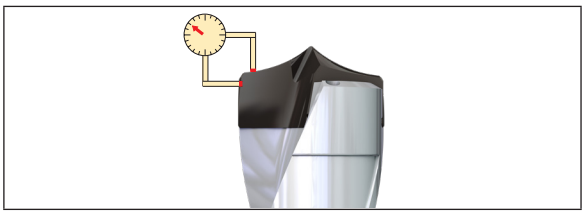


Drilling Limitations



For MD-DFN Head

Max allowed Δ = 0.04mm
Axial runout & radial runout



Important:

For MD-DR-DH Head

- A short pre-hole 1xD deep minimum with H8 hole tolerance and flat bottom must be prepared to guide the long drill (an endmill can be used)
- Use HD chip breaker for internal insert
- When using the MD-extension, a short pre-hole of 1xD deep minimum with H8 hole tolerance and flat bottom must be prepared to guide the long drill (an endmill can be used) for all drilling head types

Flow Rate vs. Pressure & Drill Diameter

Drill Diameter (mm)	Pressure (bar)	Flow Rate (liter/min)
33	20	60
34	20	60
35	20	60
36	20	60
37	20	60
38	20	70
39	20	70
40	20	70

- Internal coolant supply only

MD-DR-DH Cutting Parameters

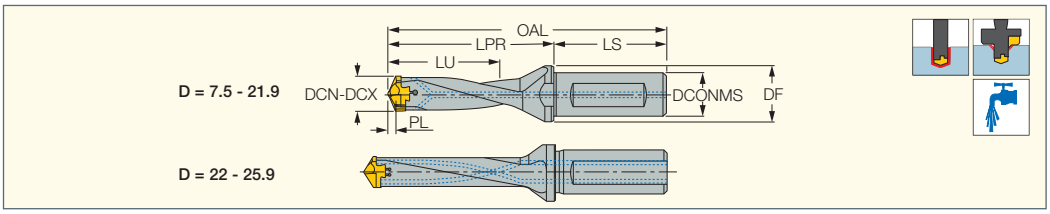
Material Groups							Recommended Machining Conditions	
ISO	Material		Condition	Tensile Strength Rm [N/mm²]	Hardness HB	Material No.	V_c [m/min]	Feed Vs. Drill Diameter 33<ØD<40 (mm) F [mm/rev]
P	non-alloy steel and cast steel, free cutting steel	<0.25% C	annealed	420	125	1	100-150	0.10-0.25
		≥0.25% C	annealed	650	190	2		
		<0.55% C	quenched and tempered	850	250	3	80-150	0.15-0.30
		≥0.55% C	annealed	750	220	4		
			quenched and tempered	1000	300	5		
	low alloy and cast steel (less than 5% of alloying elements)		annealed	600	200	6		
			quenched and tempered	930	275	7	70-120	
				1000	300	8		
				1200	350	9		
	high alloyed steel, cast steel and tool steel		annealed	680	200	10	80-150	0.10-0.25
			quenched and tempered	1100	325	11	70-120	
K	grey cast iron (GG)		ferritic / pearlitic		180	15	180-300	0.18-0.35
			pearlitic / martensitic		260	16		
	nodular cast iron (GGG)		ferritic		160	17	150-250	0.15-0.30
			pearlitic		250	18		
	malleable cast iron		ferritic		130	19		0.15-0.35
			pearlitic		230	20		

MD-DFN Cutting Parameters

Material Groups							Recommended Machining Conditions	
ISO	Material		Condition	Tensile Strength Rm [N/mm²]	Hardness HB	Material No.	V_c [m/min]	Feed Vs. Drill Diameter 33<ØD<40 (mm) F [mm/rev]
P	non-alloy steel and cast steel, free cutting steel	<0.25% C	annealed	420	125	1	80-110-140	0.30-0.40-0.50
		≥0.25% C	annealed	650	190	2	90-105-130	
		<0.55% C	quenched and tempered	850	250	3	80-100-120	
		≥0.55% C	annealed	750	220	4	70-90-110	
			quenched and tempered	1000	300	5	50-70-90	
	low alloy and cast steel (less than 5% of alloying elements)		annealed	600	200	6	80-100-120	
			quenched and tempered	930	275	7	70-90-110	
				1000	300	8	50-70-90	
				1200	350	9	40-55-70	
	high alloyed steel, cast steel and tool steel		annealed	680	200	10	50-70-90	0.25-0.30-0.35
			quenched and tempered	1100	325	11	40-60-80	
K	grey cast iron (GG)		ferritic / pearlitic		180	15	90-125-160	0.40-0.50-0.60
			pearlitic / martensitic		260	16	80-110-140	
	nodular cast iron (GGG)		ferritic		160	17	90-135-180	
			pearlitic		250	18	80-110-140	
	malleable cast iron		ferritic		130	19	90-125-160	
			pearlitic		230	20	80-110-140	

CHAMDRILL

DCM-3D (7.5-25.9 mm)
Drill Body with Exchangeable Heads, Internal Coolant Holes and One Flat Shank
Drilling Depth: 3xD



Designation	DCN[1]	DCX[2]	DCONMS	DF	LU	LPR	PL	LS	OAL	SSC[3]	MIID[4]	
DCM 075-022-12A-3D	7.50	7.90	12.00	16.00	22.0	33.1	1.360	45.0	78.10	8.0	IDI 075-SG	K DCM- 8
DCM 080-024-12A-3D	8.00	8.40	12.00	16.00	24.0	35.0	1.460	45.0	80.00	8.0	IDI 080-SG	K DCM- 8
DCM 085-025-12A-3D	8.50	8.90	12.00	16.00	25.0	37.0	1.550	45.0	82.00	8.0	IDI 085-SG	K DCM- 8
DCM 090-027-12A-3D	9.00	9.40	12.00	16.00	27.0	39.1	1.640	45.0	84.10	9.0	IDI 090-SG	K DCM- 9
DCM 095-028-12A-3D	9.50	9.90	12.00	16.00	28.0	41.1	1.730	45.0	86.10	9.0	IDI 095-SG	K DCM- 9
DCM 100-030-16A-3D	10.00	10.40	16.00	20.00	30.0	44.0	1.820	48.0	92.00	10.0	IDI 100-SG	K DCM-10
DCM 105-031-16A-3D	10.50	10.90	16.00	20.00	31.0	46.0	1.910	48.0	94.00	10.0	IDI 105-SG	K DCM-10
DCM 110-033-16A-3D	11.00	11.40	16.00	20.00	33.0	48.1	2.000	48.0	96.10	11.0	IDI 110-SG	K DCM-11
DCM 115-034-16A-3D	11.50	11.90	16.00	20.00	34.0	50.0	2.090	48.0	98.00	11.0	IDI 115-SG	K DCM-11
DCM 120-036-16A-3D	12.00	12.40	16.00	20.00	36.0	52.2	2.180	48.0	100.20	12.0	IDI 120-SG	K DCM-12
DCM 125-037-16A-3D	12.50	12.90	16.00	20.00	37.0	53.8	2.270	48.0	101.80	12.0	IDI 125-SG	K DCM-12
DCM 130-039-16A-3D	13.00	13.40	16.00	20.00	39.0	56.5	2.370	48.0	104.50	13.0	IDI 130-SG	K DCM-13
DCM 135-040-16A-3D	13.50	13.90	16.00	20.00	40.0	58.5	2.460	48.0	106.50	13.0	IDI 135-SG	K DCM-13
DCM 140-042-16A-3D	14.00	14.40	16.00	20.00	42.0	61.2	2.550	48.0	109.20	14.0	IDI 140-SG	K DCM-14
DCM 145-043-16A-3D	14.50	14.90	16.00	20.00	43.0	64.8	2.640	48.0	112.80	14.0	IDI 145-SG	K DCM-14
DCM 150-045-20A-3D	15.00	15.90	20.00	25.00	45.0	65.7	2.730	50.0	115.70	15.0	IDI 150-SG	K DCM-15
DCM 160-048-20A-3D	16.00	16.90	20.00	25.00	48.0	70.0	2.910	50.0	120.00	16.0	IDI 160-SG	K DCM-16
DCM 170-051-20A-3D	17.00	17.90	20.00	25.00	51.0	73.5	3.090	50.0	123.50	17.0	IDI 170-SG	K DCM-17
DCM 180-054-25A-3D	18.00	18.90	25.00	32.00	54.0	78.3	3.280	56.0	134.30	18.0	IDI 180-SG	K DCM-18
DCM 190-057-25A-3D	19.00	19.90	25.00	32.00	57.0	82.3	3.460	56.0	138.30	19.0	IDI 190-SG	K DCM-19
DCM 200-060-25A-3D	20.00	20.90	25.00	32.00	60.0	87.0	3.640	56.0	143.00	20.0	IDI 200-SG	K DCM-20
DCM 210-063-25A-3D	21.00	21.90	25.00	32.00	63.0	90.8	3.820	56.0	146.80	21.0	IDI 210-SG	K DCM-21
DCM 220-066-25A-3D	22.00	22.90	25.00	32.00	66.0	95.1	4.000	56.0	151.10	22.0	IDI 220-SG	K DCM-22
DCM 230-069-25A-3D	23.00	23.90	25.00	32.00	69.0	99.5	4.190	56.0	155.50	23.0	IDI 230-SG	K DCM-23
DCM 240-072-25A-3D	24.00	24.90	25.00	32.00	72.0	103.6	4.370	56.0	159.60	24.0	IDI 240-SG	K DCM-24
DCM 250-075-25A-3D	25.00	25.90	25.00	32.00	75.0	109.0	4.550	56.0	165.00	25.0	IDI 250-SG	K DCM-25

• Do not mount smaller drilling heads other than the specified range of the drill body • Drill tolerance: k7 • For user guide and cutting conditions, see pages 136-140

[1] Cutting diameter minimum

[2] Cutting diameter maximum

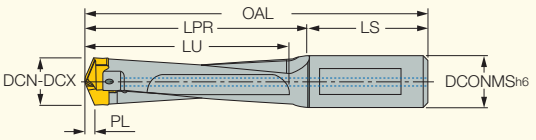
[3] Seat size code

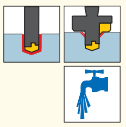
[4] Master insert identification

For inserts, see pages: IDI-SG (129) • IDI-SK (133)

UNICHAMDRILL

DCM-3.5D (7.5-20.9 mm)
Drill Body with Exchangeable Heads, Internal Coolant, Flat Shank, No Flange, Drilling Depth 3.5xD, for Chamfering Holders





Designation	DCN(1)	DCX(2)	DCONMS	LU	LPR	PL	LS	OAL	SSC(3)	MIID(4)	
DCM 075-026-8B-3.5D	7.50	7.90	8.00	26.0	33.7	1.360	43.0	76.70	8.0	IDI 075	K DCM- 8
DCM 080-028-8B-3.5D	8.00	8.40	8.00	28.0	35.9	1.460	43.0	78.90	8.0	IDI 080	K DCM- 8
DCM 085-029-9B-3.5D	8.50	8.90	9.00	29.0	36.8	1.549	43.0	79.90	8.0	IDI 085	K DCM- 8
DCM 090-031-9B-3.5D	9.00	9.40	9.00	31.0	39.1	1.640	43.0	82.10	9.0	IDI 090	K DCM- 9
DCM 095-033-10B-3.5D	9.50	9.90	10.00	33.0	40.3	1.730	43.0	83.30	9.0	IDI 095	K DCM- 9
DCM 100-033-10B-3.5D	10.00	10.40	10.00	33.0	42.9	1.829	43.0	86.00	10.0	IDI 100	K DCM-10
DCM 105-034-11B-3.5D	10.50	10.90	11.00	34.0	44.8	1.910	43.0	87.80	10.0	IDI 105	K DCM-10
DCM 110-036-11B-3.5D	11.00	11.40	11.00	36.0	46.9	2.000	43.0	89.90	11.0	IDI 110	K DCM-11
DCM 115-038-12B-3.5D	11.50	11.90	12.00	38.0	48.6	2.090	43.0	91.60	11.0	IDI 115	K DCM-11
DCM 120-042-12B-3.5D	12.00	12.40	12.00	42.0	50.8	2.184	43.0	93.80	12.0	IDI 120	K DCM-12
DCM 125-042-13B-3.5D	12.50	12.90	13.00	42.0	52.6	2.270	43.0	95.60	12.0	IDI 125	K DCM-12
DCM 130-042-13B-3.5D	13.00	13.40	13.00	42.0	54.6	2.362	45.0	99.50	13.0	IDI 130	K DCM-13
DCM 135-044-14B-3.5D	13.50	13.90	14.00	44.0	56.1	2.464	45.0	101.20	13.0	IDI 135	K DCM-13
DCM 140-048-14B-3.5D	14.00	14.40	14.00	48.0	59.2	2.540	45.0	104.20	14.0	IDI 140	K DCM-14
DCM 145-050-15B-3.5D	14.50	14.90	15.00	50.0	60.9	2.640	45.0	105.90	14.0	IDI 145	K DCM-14
DCM 150-052-15B-3.5D	15.00	15.90	15.00	52.0	63.0	2.718	45.0	108.10	15.0	IDI 150	K DCM-15
DCM 160-052-16B-3.5D	16.00	16.90	16.00	52.0	67.1	2.921	48.0	115.00	16.0	IDI 160	K DCM-16
DCM 170-055-17B-3.5D	17.00	17.90	17.00	55.0	73.6	3.090	48.0	121.60	17.0	IDI 170	K DCM-17
DCM 180-060-18B-3.5D	18.00	18.90	18.00	60.0	78.2	3.277	48.0	126.30	18.0	IDI 180	K DCM-18
DCM 190-062-19B-3.5D	19.00	19.90	19.00	62.5	81.8	3.460	54.0	135.80	19.0	IDI 190	K DCM-19
DCM 200-066-20B-3.5D	20.00	20.90	20.00	66.0	84.6	3.632	54.0	138.60	20.0	IDI 200	K DCM-20

• Do not mount smaller drilling heads other than the specified range of the drill body • Drill tolerance: k7 • For user guide and cutting conditions, see pages 136-140

(1) Cutting diameter minimum

(2) Cutting diameter maximum

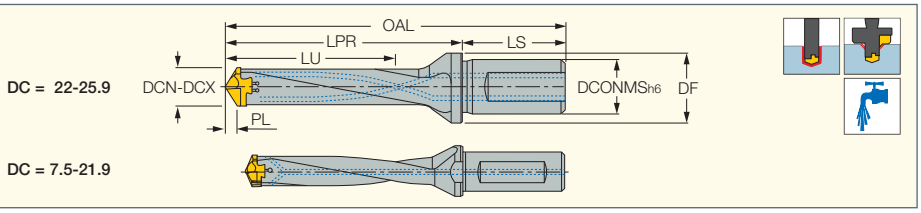
(3) Seat size code

(4) Master insert identification

For inserts, see pages: IDI-SG (129) • IDI-SK (133)

CHAMDRILL

DCM-5D (7.5-25.9 mm)
Drill Body with Exchangeable Heads, Internal Coolant Holes and One Flat Shank
Drilling Depth: 5xD



Designation	DCN[1]	DCX[2]	DCONMS	DF	LU	LPR	PL	LS	OAL	SSC[3]	MIID[4]	
DCM 075-037-12A-5D	7.50	7.90	12.00	16.00	37.0	48.1	1.360	45.0	93.10	8.0	IDI 075-SG	K DCM- 8
DCM 080-040-12A-5D	8.00	8.40	12.00	16.00	40.0	51.0	1.460	45.0	96.00	8.0	IDI 080-SG	K DCM- 8
DCM 085-042-12A-5D	8.50	8.90	12.00	16.00	42.0	54.0	1.550	45.0	99.00	8.0	IDI 085-SG	K DCM- 8
DCM 090-045-12A-5D	9.00	9.40	12.00	16.00	45.0	57.1	1.640	45.0	102.10	9.0	IDI 090-SG	K DCM- 9
DCM 095-047-12A-5D	9.50	9.90	12.00	16.00	47.0	60.1	1.730	45.0	105.10	9.0	IDI 095-SG	K DCM- 9
DCM 100-050-16A-5D	10.00	10.40	16.00	20.00	50.0	64.0	1.820	48.0	112.00	10.0	IDI 100-SG	K DCM-10
DCM 105-052-16A-5D	10.50	10.90	16.00	20.00	52.0	67.0	1.910	48.0	115.00	10.0	IDI 105-SG	K DCM-10
DCM 110-055-16A-5D	11.00	11.40	16.00	20.00	55.0	70.1	2.000	48.0	118.10	11.0	IDI 110-SG	K DCM-11
DCM 115-057-16A-5D	11.50	11.90	16.00	20.00	57.0	73.0	2.090	48.0	121.00	11.0	IDI 115-SG	K DCM-11
DCM 120-060-16A-5D	12.00	12.40	16.00	20.00	60.0	76.2	2.180	48.0	124.20	12.0	IDI 120-SG	K DCM-12
DCM 125-062-16A-5D	12.50	12.90	16.00	20.00	62.0	79.2	2.270	48.0	127.20	12.0	IDI 125-SG	K DCM-12
DCM 130-065-16A-5D	13.00	13.40	16.00	20.00	65.0	82.5	2.370	48.0	130.50	13.0	IDI 130-SG	K DCM-13
DCM 135-067-16A-5D	13.50	13.90	16.00	20.00	67.0	85.5	2.460	48.0	133.50	13.0	IDI 135-SG	K DCM-13
DCM 140-070-16A-5D	14.00	14.40	16.00	20.00	70.0	89.2	2.550	48.0	137.20	14.0	IDI 140-SG	K DCM-14
DCM 145-072-16A-5D	14.50	14.90	16.00	20.00	72.0	92.2	2.640	48.0	140.20	14.0	IDI 145-SG	K DCM-14
DCM 150-075-20A-5D	15.00	15.90	20.00	25.00	75.0	95.7	2.730	50.0	145.70	15.0	IDI 150-SG	K DCM-15
DCM 160-080-20A-5D	16.00	16.90	20.00	25.00	80.0	102.0	2.910	50.0	152.00	16.0	IDI 160-SG	K DCM-16
DCM 170-085-20A-5D	17.00	17.90	20.00	25.00	85.0	107.5	3.090	50.0	157.50	17.0	IDI 170-SG	K DCM-17
DCM 180-090-25A-5D	18.00	18.90	25.00	32.00	90.0	114.3	3.280	56.0	170.30	18.0	IDI 180-SG	K DCM-18
DCM 190-095-25A-5D	19.00	19.90	25.00	32.00	95.0	120.3	3.460	56.0	176.30	19.0	IDI 190-SG	K DCM-19
DCM 200-100-25A-5D	20.00	20.90	25.00	32.00	100.0	127.0	3.640	56.0	183.00	20.0	IDI 200-SG	K DCM-20
DCM 210-105-25A-5D	21.00	21.90	25.00	32.00	105.0	132.8	3.820	56.0	188.80	21.0	IDI 210-SG	K DCM-21
DCM 220-110-25A-5D	22.00	22.90	25.00	32.00	110.0	139.1	4.000	56.0	195.10	22.0	IDI 220-SG	K DCM-22
DCM 230-115-25A-5D	23.00	23.90	25.00	32.00	115.0	145.5	4.190	56.0	201.50	23.0	IDI 230-SG	K DCM-23
DCM 240-120-25A-5D	24.00	24.90	25.00	32.00	120.0	151.6	4.370	56.0	207.60	24.0	IDI 240-SG	K DCM-24
DCM 250-125-25A-5D	25.00	25.90	25.00	32.00	125.0	159.0	4.550	56.0	215.00	25.0	IDI 250-SG	K DCM-25

• Do not mount smaller drilling heads other than the specified range of the drill body • Drill tolerance: k7 • For user guide and cutting conditions, see pages 136-140

[1] Cutting diameter minimum

[2] Cutting diameter maximum

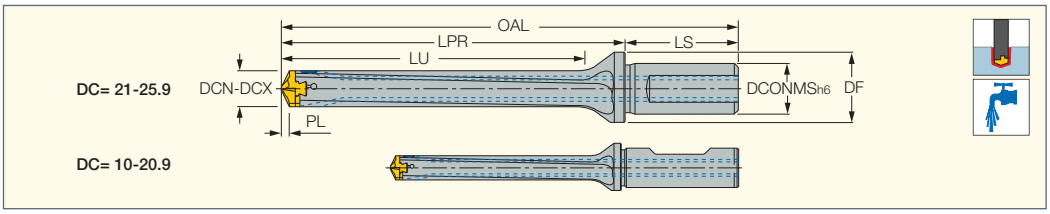
[3] Seat size code

[4] Master insert identification

For inserts, see pages: IDI-SG (129) • IDI-SK (133)

CHAMDRILL

DCM-8D (10-25.9 mm)
Drill Body with Exchangeable Heads, Internal Coolant Holes and One Flat Shank
Drilling Depth: 8xD



Designation	DCN[1]	DCX[2]	DCONMS	DF	LU	LPR	PL	LS	OAL	SSC[3]	MIID[4]	
DCM 100-080-16A-8D	10.00	10.90	16.00	20.00	80.0	94.0	1.820	48.0	142.00	10.0	IDI 100-SG	K DCM-10
DCM 110-088-16A-8D	11.00	11.90	16.00	20.00	88.0	103.2	2.000	48.0	151.20	11.0	IDI 110-SG	K DCM-11
DCM 120-096-16A-8D	12.00	12.90	16.00	20.00	96.0	112.3	2.180	48.0	160.30	12.0	IDI 120-SG	K DCM-12
DCM 130-104-16A-8D	13.00	13.90	16.00	20.00	104.0	121.5	2.370	48.0	169.50	13.0	IDI 130-SG	K DCM-13
DCM 140-112-16A-8D	14.00	14.90	16.00	20.00	112.0	131.2	2.550	48.0	179.20	14.0	IDI 140-SG	K DCM-14
DCM 150-120-20A-8D	15.00	15.90	20.00	25.00	120.0	140.7	2.730	50.0	190.70	15.0	IDI 150-SG	K DCM-15
DCM 160-128-20A-8D	16.00	16.90	20.00	25.00	128.0	150.0	2.910	50.0	200.00	16.0	IDI 160-SG	K DCM-16
DCM 170-136-20A-8D	17.00	17.90	20.00	25.00	136.0	158.5	3.090	50.0	208.50	17.0	IDI 170-SG	K DCM-17
DCM 180-144-25A-8D	18.00	18.90	25.00	32.00	144.0	168.3	3.280	56.0	224.30	18.0	IDI 180-SG	K DCM-18
DCM 190-152-25A-8D	19.00	19.90	25.00	32.00	152.0	177.3	3.460	56.0	233.30	19.0	IDI 190-SG	K DCM-19
DCM 200-160-25A-8D	20.00	20.90	25.00	32.00	160.0	187.2	3.640	56.0	243.20	20.0	IDI 200-SG	K DCM-20
DCM 210-168-25A-8D	21.00	21.90	25.00	32.00	168.0	196.2	3.820	56.0	252.20	21.0	IDI 210-SG	K DCM-21
DCM 220-176-25A-8D	22.00	22.90	25.00	32.00	176.0	205.2	4.000	56.0	261.20	22.0	IDI 220-SG	K DCM-22
DCM 230-184-25A-8D	23.00	23.90	25.00	32.00	184.0	215.1	4.190	56.0	271.10	23.0	IDI 230-SG	K DCM-23
DCM 240-192-25A-8D	24.00	24.90	25.00	32.00	192.0	224.5	4.370	56.0	280.50	24.0	IDI 240-SG	K DCM-24
DCM 250-200-25A-8D	25.00	25.90	25.00	32.00	200.0	233.7	4.550	56.0	289.70	25.0	IDI 250-SG	K DCM-25

• Do not mount smaller drilling heads other than the specified range of the drill body • Drill tolerance: k7 • For user guide and cutting conditions, see pages 136-140

[1] Cutting diameter minimum

[2] Cutting diameter maximum

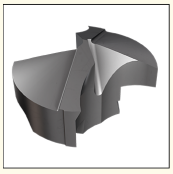
[3] Seat size code

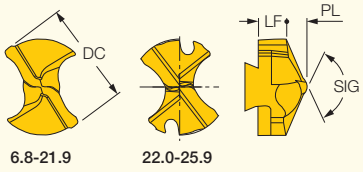
[4] Master insert identification

For inserts, see pages: IDI-SG (129) • IDI-SK (133)

CHAMDRILL

IDI-SG
General Use DCM Drill Heads





Designation	Dimensions					IC908
	DC	LF	PL	SIG	SSC(1)	
IDI 068-SG	6.70	2.86	1.240	140	6.8	•
IDI 075-SG	7.50	2.74	1.360	140	8.0	•
IDI 076-SG	7.60	2.72	1.380	140	8.0	•
IDI 077-SG	7.70	2.70	1.400	140	8.0	•
IDI 078-SG	7.80	2.68	1.420	140	8.0	•
IDI 079-SG	7.90	2.66	1.440	140	8.0	•
IDI 080-SG	8.00	2.64	1.460	140	8.0	•
IDI 081-SG	8.10	2.63	1.470	140	8.0	•
IDI 082-SG	8.20	2.61	1.490	140	8.0	•
IDI 083-SG	8.30	2.59	1.510	140	8.0	•
IDI 084-SG	8.40	2.57	1.530	140	8.0	•
IDI 085-SG	8.50	2.55	1.550	140	8.0	•
IDI 086-SG	8.60	2.53	1.570	140	8.0	•
IDI 087-SG	8.70	2.52	1.580	140	8.0	•
IDI 088-SG	8.80	2.50	1.600	140	8.0	•
IDI 089-SG	8.90	2.48	1.620	140	8.0	•
IDI 090-SG	9.00	2.66	1.640	140	9.0	•
IDI 100-SG	9.00	3.48	1.820	140	10.0	•
IDI 091-SG	9.10	2.64	1.660	140	9.0	•
IDI 092-SG	9.20	2.63	1.670	140	9.0	•
IDI 093-SG	9.30	2.61	1.690	140	9.0	•
IDI 094-SG	9.40	2.59	1.710	140	9.0	•
IDI 095-SG	9.50	2.57	1.730	140	9.0	•
IDI 096-SG	9.60	2.55	1.750	140	9.0	•
IDI 097-SG	9.70	2.53	1.770	140	9.0	•
IDI 098-SG	9.80	2.52	1.780	140	9.0	•
IDI 099-SG	9.90	2.50	1.800	140	9.0	•
IDI 255-SG	10.00	6.36	4.640	140	25.0	•
IDI 101-SG	10.10	3.46	1.840	140	10.0	•
IDI 102-SG	10.20	3.44	1.860	140	10.0	•
IDI 103-SG	10.30	3.43	1.870	140	10.0	•
IDI 104-SG	10.40	3.41	1.890	140	10.0	•
IDI 105-SG	10.50	3.39	1.910	140	10.0	•
IDI 106-SG	10.60	3.37	1.930	140	10.0	•
IDI 107-SG	10.70	3.35	1.950	140	10.0	•
IDI 108-SG	10.80	3.33	1.970	140	10.0	•
IDI 109-SG	10.90	3.32	1.980	140	10.0	•
IDI 110-SG	11.00	3.50	2.000	140	11.0	•
IDI 111-SG	11.10	3.48	2.020	140	11.0	•
IDI 112-SG	11.20	3.46	2.040	140	11.0	•
IDI 113-SG	11.30	3.44	2.060	140	11.0	•
IDI 114-SG	11.40	3.43	2.070	140	11.0	•
IDI 115-SG	11.50	3.41	2.090	140	11.0	•
IDI 116-SG	11.60	3.39	2.110	140	11.0	•
IDI 117-SG	11.70	3.37	2.130	140	11.0	•
IDI 118-SG	11.80	3.35	2.150	140	11.0	•
IDI 119-SG	11.90	3.33	2.170	140	11.0	•
IDI 120-SG	12.00	3.62	2.180	140	12.0	•
IDI 121-SG	12.10	3.60	2.200	140	12.0	•
IDI 122-SG	12.20	3.58	2.220	140	12.0	•
IDI 123-SG	12.30	3.56	2.240	140	12.0	•
IDI 124-SG	12.40	3.54	2.260	140	12.0	•
IDI 125-SG	12.50	3.53	2.270	140	12.0	•
IDI 126-SG	12.60	3.51	2.290	140	12.0	•
IDI 127-SG	12.70	3.49	2.310	140	12.0	•
IDI 128-SG	12.80	3.47	2.330	140	12.0	•
IDI 129-SG	12.90	3.45	2.350	140	12.0	•
IDI 130-SG	13.00	3.63	2.370	140	13.0	•

• For cutting conditions see pages 136-140

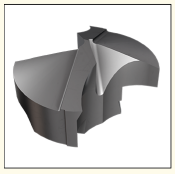
(1) Seat size code

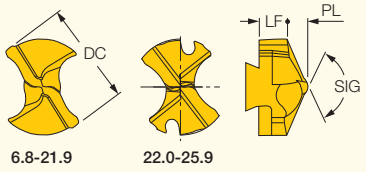
For tools, see pages: DCM-3.5D (7.5-20.9 mm) (126) • DCM-3D (7.5-25.9 mm) (125) • DCM-5D (7.5-25.9 mm) (127) • DCM-8D (10-25.9 mm) (128) • DCT (M8-M24) (169)

Continued

CHAMDRILL

IDI-SG
General Use DCM Drill Heads





6.8-21.9 22.0-25.9

Designation	Dimensions DC	LF	PL	SIG	SSC(1)	IC908
IDI 131-SG	13.10	3.62	2.380	140	13.0	•
IDI 132-SG	13.20	3.60	2.400	140	13.0	•
IDI 133-SG	13.30	3.58	2.420	140	13.0	•
IDI 134-SG	13.40	3.56	2.440	140	13.0	•
IDI 135-SG	13.50	3.54	2.460	140	13.0	•
IDI 136-SG	13.60	3.53	2.470	140	13.0	•
IDI 137-SG	13.70	3.51	2.490	140	13.0	•
IDI 138-SG	13.80	3.49	2.510	140	13.0	•
IDI 139-SG	13.90	3.47	2.530	140	13.0	•
IDI 140-SG	14.00	4.25	2.550	140	14.0	•
IDI 141-SG	14.10	4.23	2.570	140	14.0	•
IDI 142-SG	14.20	4.22	2.580	140	14.0	•
IDI 143-SG	14.30	4.20	2.600	140	14.0	•
IDI 144-SG	14.40	4.18	2.620	140	14.0	•
IDI 145-SG	14.50	4.16	2.640	140	14.0	•
IDI 146-SG	14.60	4.14	2.660	140	14.0	•
IDI 147-SG	14.70	4.12	2.680	140	14.0	•
IDI 148-SG	14.80	4.11	2.690	140	14.0	•
IDI 149-SG	14.90	4.09	2.710	140	14.0	•
IDI 150-SG	15.00	4.67	2.730	140	15.0	•
IDI 151-SG	15.10	4.65	2.750	140	15.0	•
IDI 152-SG	15.20	4.63	2.770	140	15.0	•
IDI 153-SG	15.30	4.62	2.780	140	15.0	•
IDI 154-SG	15.40	4.60	2.800	140	15.0	•
IDI 155-SG	15.50	4.58	2.820	140	15.0	•
IDI 156-SG	15.60	4.56	2.840	140	15.0	•
IDI 157-SG	15.70	4.54	2.860	140	15.0	•
IDI 158-SG	15.80	4.52	2.880	140	15.0	•
IDI 159-SG	15.90	4.51	2.890	140	15.0	•
IDI 160-SG	16.00	4.99	2.910	140	16.0	•
IDI 161-SG	16.10	4.97	2.930	140	16.0	•
IDI 162-SG	16.20	4.95	2.950	140	16.0	•
IDI 163-SG	16.30	4.93	2.970	140	16.0	•
IDI 164-SG	16.40	4.92	2.980	140	16.0	•
IDI 165-SG	16.50	4.90	3.000	140	16.0	•
IDI 166-SG	16.60	4.88	3.020	140	16.0	•
IDI 167-SG	16.70	4.86	3.040	140	16.0	•
IDI 168-SG	16.80	4.84	3.060	140	16.0	•
IDI 169-SG	16.90	4.82	3.080	140	16.0	•
IDI 170-SG	17.00	4.31	3.090	140	17.0	•
IDI 171-SG	17.10	4.29	3.110	140	17.0	•
IDI 172-SG	17.20	4.27	3.130	140	17.0	•
IDI 173-SG	17.30	4.25	3.150	140	17.0	•
IDI 174-SG	17.40	4.23	3.170	140	17.0	•
IDI 175-SG	17.50	4.22	3.180	140	17.0	•
IDI 176-SG	17.60	4.20	3.200	140	17.0	•
IDI 177-SG	17.70	4.18	3.220	140	17.0	•
IDI 178-SG	17.80	4.16	3.240	140	17.0	•
IDI 179-SG	17.90	4.14	3.260	140	17.0	•
IDI 180-SG	18.00	5.02	3.280	140	18.0	•
IDI 181-SG	18.10	5.01	3.290	140	18.0	•
IDI 182-SG	18.20	4.99	3.310	140	18.0	•
IDI 183-SG	18.30	4.97	3.330	140	18.0	•
IDI 184-SG	18.40	4.95	3.350	140	18.0	•
IDI 185-SG	18.50	4.93	3.370	140	18.0	•
IDI 186-SG	18.60	4.92	3.380	140	18.0	•
IDI 187-SG	18.70	4.90	3.400	140	18.0	•
IDI 188-SG	18.80	4.88	3.420	140	18.0	•

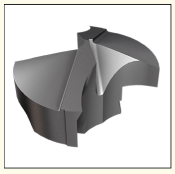
• For cutting conditions see pages 136-140

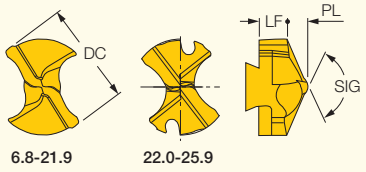
(1) Seat size code

For tools, see pages: DCM-3.5D (7.5-20.9 mm) (126) • DCM-3D (7.5-25.9 mm) (125) • DCM-5D (7.5-25.9 mm) (127) • DCM-8D (10-25.9 mm) (128) • DCT (M8-M24) (169)

CHAMDRILL

IDI-SG
General Use DCM Drill Heads





Designation	Dimensions					IC908
	DC	LF	PL	SIG	SSC(1)	
IDI 189-SG	18.90	4.86	3.440	140	18.0	•
IDI 190-SG	19.00	5.04	3.460	140	19.0	•
IDI 1905-SG	19.05	5.03	3.470	140	19.0	•
IDI 191-SG	19.10	5.02	3.480	140	19.0	•
IDI 192-SG	19.20	5.01	3.490	140	19.0	•
IDI 193-SG	19.30	4.99	3.510	140	19.0	•
IDI 194-SG	19.40	4.97	3.530	140	19.0	•
IDI 195-SG	19.50	4.95	3.550	140	19.0	•
IDI 196-SG	19.60	4.93	3.570	140	19.0	•
IDI 197-SG	19.70	4.91	3.590	140	19.0	•
IDI 198-SG	19.80	4.90	3.600	140	19.0	•
IDI 199-SG	19.90	4.88	3.620	140	19.0	•
IDI 200-SG	20.00	5.66	3.640	140	20.0	•
IDI 201-SG	20.10	5.64	3.660	140	20.0	•
IDI 202-SG	20.20	5.62	3.680	140	20.0	•
IDI 203-SG	20.30	5.61	3.690	140	20.0	•
IDI 204-SG	20.40	5.59	3.710	140	20.0	•
IDI 205-SG	20.50	5.57	3.730	140	20.0	•
IDI 206-SG	20.60	5.55	3.750	140	20.0	•
IDI 207-SG	20.70	5.53	3.770	140	20.0	•
IDI 208-SG	20.80	5.51	3.790	140	20.0	•
IDI 209-SG	20.90	5.50	3.800	140	20.0	•
IDI 210-SG	21.00	5.68	3.820	140	21.0	•
IDI 211-SG	21.10	5.66	3.840	140	21.0	•
IDI 212-SG	21.20	5.64	3.860	140	21.0	•
IDI 213-SG	21.30	5.62	3.880	140	21.0	•
IDI 214-SG	21.40	5.61	3.890	140	21.0	•
IDI 215-SG	21.50	5.59	3.910	140	21.0	•
IDI 216-SG	21.60	5.57	3.930	140	21.0	•
IDI 217-SG	21.70	5.55	3.950	140	21.0	•
IDI 218-SG	21.80	5.53	3.970	140	21.0	•
IDI 219-SG	21.90	5.51	3.990	140	21.0	•
IDI 220-SG	22.00	6.30	4.000	140	22.0	•
IDI 221-SG	22.10	6.28	4.020	140	22.0	•
IDI 222-SG	22.20	6.30	4.000	140	22.0	•
IDI 2222-SG	22.22	6.26	4.040	140	22.0	•
IDI 223-SG	22.30	6.24	4.060	140	22.0	•
IDI 224-SG	22.40	6.22	4.080	140	22.0	•
IDI 225-SG	22.50	6.21	4.090	140	22.0	•
IDI 226-SG	22.60	6.19	4.110	140	22.0	•
IDI 227-SG	22.70	6.17	4.130	140	22.0	•
IDI 228-SG	22.80	6.15	4.150	140	22.0	•
IDI 229-SG	22.90	6.13	4.170	140	22.0	•
IDI 230-SG	23.00	6.21	4.190	140	23.0	•
IDI 231-SG	23.10	6.20	4.200	140	23.0	•
IDI 232-SG	23.20	6.18	4.220	140	23.0	•
IDI 233-SG	23.30	6.16	4.240	140	23.0	•
IDI 234-SG	23.40	6.14	4.260	140	23.0	•
IDI 235-SG	23.50	6.12	4.280	140	23.0	•
IDI 237-SG	23.70	6.09	4.310	140	23.0	•
IDI 238-SG	23.80	6.07	4.330	140	23.0	•
IDI 239-SG	23.90	6.05	4.350	140	23.0	•
IDI 240-SG	24.00	6.43	4.370	140	24.0	•
IDI 241-SG	24.10	6.41	4.390	140	24.0	•
IDI 242-SG	24.20	6.40	4.400	140	24.0	•
IDI 243-SG	24.30	6.38	4.420	140	24.0	•
IDI 244-SG	24.40	6.36	4.440	140	24.0	•
IDI 245-SG	24.50	6.34	4.460	140	24.0	•

• For cutting conditions see pages 136-140

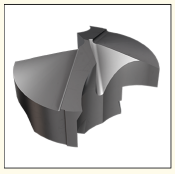
(1) Seat size code

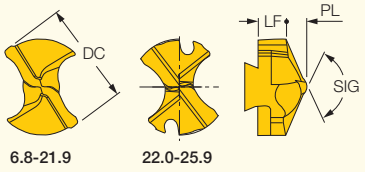
For tools, see pages: DCM-3.5D (7.5-20.9 mm) (126) • DCM-3D (7.5-25.9 mm) (125) • DCM-5D (7.5-25.9 mm) (127) • DCM-8D (10-25.9 mm) (128) • DCT (M8-M24) (169)

Continued

CHAMDRILL

IDI-SG
General Use DCM Drill Heads





6.8-21.9 22.0-25.9

Designation	Dimensions DC	LF	PL	SIG	SSC(1)	IC908
IDI 246-SG	24.60	6.32	4.480	140	24.0	●
IDI 247-SG	24.70	6.30	4.500	140	24.0	●
IDI 248-SG	24.80	6.29	4.510	140	24.0	●
IDI 249-SG	24.90	6.27	4.530	140	24.0	●
IDI 250-SG	25.00	6.45	4.550	140	25.0	●
IDI 251-SG	25.10	6.43	4.570	140	25.0	●
IDI 252-SG	25.20	6.41	4.590	140	25.0	●
IDI 253-SG	25.30	6.40	4.600	140	25.0	●
IDI 254-SG	25.40	6.38	4.620	140	25.0	●
IDI 256-SG	25.60	6.34	4.660	140	25.0	●
IDI 257-SG	25.70	6.32	4.680	140	25.0	●
IDI 258-SG	25.80	6.30	4.700	140	25.0	●
IDI 259-SG	25.90	6.29	4.710	140	25.0	●

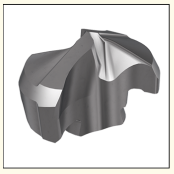
• For cutting conditions see pages 136-140

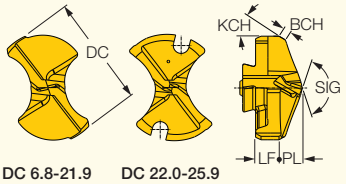
(1) Seat size code

For tools, see pages: DCM-3.5D (7.5-20.9 mm) (126) • DCM-3D (7.5-25.9 mm) (125) • DCM-5D (7.5-25.9 mm) (127) • DCM-8D (10-25.9 mm) (128) • DCT (M8-M24) (169)

CHAMDRILL

IDI-SK
DCM Drill Heads for Cast Iron





Designation	Dimensions							IC908
	DC	LF	PL	BCH	KCH	SIG	SSC(1)	
IDI 068-SK	6.80	2.86	1.240	0.48	30.0	140	6.8	•
IDI 080-SK	8.00	2.64	1.460	0.56	30.0	140	8.0	•
IDI 081-SK	8.10	2.63	1.470	0.57	30.0	140	8.0	•
IDI 085-SK	8.50	2.55	1.550	0.60	30.0	140	8.0	•
IDI 087-SK	8.70	2.52	1.580	0.61	30.0	140	8.0	•
IDI 088-SK	8.80	2.50	1.600	0.62	30.0	140	8.0	•
IDI 090-SK	9.00	2.66	1.640	0.63	30.0	140	9.0	•
IDI 095-SK	9.50	2.57	1.730	0.67	30.0	140	9.0	•
IDI 100-SK	10.00	3.48	1.820	0.70	30.0	140	10.0	•
IDI 102-SK	10.20	3.44	1.860	0.71	30.0	140	10.0	•
IDI 103-SK	10.30	3.43	1.870	0.72	30.0	140	10.0	•
IDI 105-SK	10.50	3.39	1.910	0.74	30.0	140	10.0	•
IDI 106-SK	10.60	3.37	1.930	0.74	30.0	140	10.0	•
IDI 107-SK	10.70	3.35	1.950	0.75	30.0	140	10.0	•
IDI 108-SK	10.80	3.33	1.970	0.76	30.0	140	10.0	•
IDI 109-SK	10.90	3.32	1.980	0.76	30.0	140	10.0	•
IDI 110-SK	11.00	3.50	2.000	0.77	30.0	140	11.0	•
IDI 111-SK	11.10	3.48	2.020	0.78	30.0	140	11.0	•
IDI 112-SK	11.20	3.46	2.040	0.78	30.0	140	11.0	•
IDI 113-SK	11.30	3.44	2.060	0.79	30.0	140	11.0	•
IDI 115-SK	11.50	3.41	2.090	0.81	30.0	140	11.0	•
IDI 116-SK	11.60	3.39	2.110	0.81	30.0	140	11.0	•
IDI 118-SK	11.80	3.35	2.150	0.83	30.0	140	11.0	•
IDI 120-SK	12.00	3.62	2.180	0.84	30.0	140	12.0	•
IDI 122-SK	12.20	3.58	2.220	0.85	30.0	140	12.0	•
IDI 123-SK	12.30	3.56	2.240	0.86	30.0	140	12.0	•
IDI 124-SK	12.40	3.54	2.260	0.87	30.0	140	12.0	•
IDI 125-SK	12.50	3.53	2.270	0.88	30.0	140	12.0	•
IDI 127-SK	12.70	3.49	2.310	0.89	30.0	140	12.0	•
IDI 130-SK	13.00	3.63	2.370	0.91	30.0	140	13.0	•
IDI 131-SK	13.10	3.62	2.380	0.92	30.0	140	13.0	•
IDI 132-SK	13.20	3.60	2.400	0.92	30.0	140	13.0	•
IDI 133-SK	13.30	3.58	2.420	0.93	30.0	140	13.0	•
IDI 135-SK	13.50	3.54	2.460	0.95	30.0	140	13.0	•
IDI 136-SK	13.60	3.53	2.470	0.95	30.0	140	13.0	•
IDI 137-SK	13.70	3.51	2.490	0.96	30.0	140	13.0	•
IDI 138-SK	13.80	3.49	2.510	0.97	30.0	140	13.0	•
IDI 140-SK	14.00	4.25	2.550	0.98	30.0	140	14.0	•
IDI 141-SK	14.10	4.23	2.570	0.99	30.0	140	14.0	•
IDI 142-SK	14.20	4.22	2.580	0.99	30.0	140	14.0	•
IDI 143-SK	14.30	4.20	2.600	1.00	30.0	140	14.0	•
IDI 144-SK	14.40	4.18	2.620	1.01	30.0	140	14.0	•
IDI 145-SK	14.50	4.16	2.640	1.02	30.0	140	14.0	•
IDI 146-SK	14.60	4.14	2.660	1.02	30.0	140	14.0	•
IDI 147-SK	14.70	4.12	2.680	1.03	30.0	140	14.0	•
IDI 148-SK	14.80	4.11	2.690	1.04	30.0	140	14.0	•
IDI 150-SK	15.00	4.67	2.730	1.05	30.0	140	15.0	•
IDI 151-SK	15.10	4.65	2.750	1.06	30.0	140	15.0	•
IDI 152-SK	15.20	4.63	2.770	1.06	30.0	140	15.0	•
IDI 153-SK	15.30	4.62	2.780	1.07	30.0	140	15.0	•
IDI 154-SK	15.40	4.60	2.800	1.08	30.0	140	15.0	•
IDI 155-SK	15.50	4.58	2.820	1.09	30.0	140	15.0	•
IDI 156-SK	15.60	4.56	2.840	1.09	30.0	140	15.0	•
IDI 157-SK	15.70	4.54	2.860	1.10	30.0	140	15.0	•
IDI 158-SK	15.80	5.02	2.880	1.11	30.0	140	15.0	•
IDI 159-SK	15.90	5.01	2.890	1.11	30.0	140	15.0	•
IDI 160-SK	16.00	4.99	2.910	1.12	30.0	140	16.0	•
IDI 161-SK	16.10	4.97	2.930	1.13	30.0	140	16.0	•

• For cutting conditions see pages 136-140

(1) Seat size code

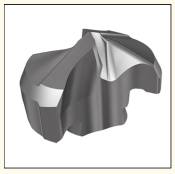
For tools, see pages: DCM-3.5D (7.5-20.9 mm) (126) • DCM-3D (7.5-25.9 mm) (125) • DCM-5D (7.5-25.9 mm) (127) • DCM-8D (10-25.9 mm) (128) • DCT (M8-M24) (169)

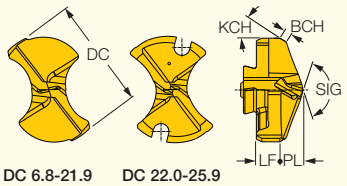
Continued

CHAMDRILL

IDI-SK

DCM Drill Heads for Cast Iron





Designation	Dimensions							IC908
	DC	LF	PL	BCH	KCH	SIG	SSC(1)	
IDI 162-SK	16.20	4.95	2.950	1.13	30.0	140	16.0	•
IDI 163-SK	16.30	4.93	2.970	1.14	30.0	140	16.0	•
IDI 165-SK	16.50	4.90	3.000	1.16	30.0	140	16.0	•
IDI 166-SK	16.60	4.88	3.020	1.16	30.0	140	16.0	•
IDI 167-SK	16.70	4.86	3.040	1.17	30.0	140	16.0	•
IDI 168-SK	16.80	4.84	3.060	1.18	30.0	140	16.0	•
IDI 169-SK	16.90	4.82	3.080	1.18	30.0	140	16.0	•
IDI 170-SK	17.00	4.31	3.090	1.19	30.0	140	17.0	•
IDI 171-SK	17.10	4.29	3.110	1.20	30.0	140	17.0	•
IDI 172-SK	17.20	4.27	3.130	1.20	30.0	140	17.0	•
IDI 173-SK	17.30	4.25	3.150	1.21	30.0	140	17.0	•
IDI 174-SK	17.40	4.23	3.170	1.22	30.0	140	17.0	•
IDI 175-SK	17.50	4.22	3.180	1.23	30.0	140	17.0	•
IDI 176-SK	17.60	4.20	3.200	1.23	30.0	140	17.0	•
IDI 177-SK	17.70	4.18	3.220	1.24	30.0	140	17.0	•
IDI 178-SK	17.80	4.16	3.240	1.25	30.0	140	17.0	•
IDI 179-SK	17.90	4.14	3.260	1.25	30.0	140	17.0	•
IDI 180-SK	18.00	5.02	3.280	1.26	30.0	140	18.0	•
IDI 181-SK	18.10	5.01	3.290	1.27	30.0	140	18.0	•
IDI 182-SK	18.20	4.99	3.310	1.27	30.0	140	18.0	•
IDI 183-SK	18.30	4.97	3.330	1.28	30.0	140	18.0	•
IDI 185-SK	18.50	4.93	3.370	1.30	30.0	140	18.0	•
IDI 186-SK	18.60	4.92	3.380	1.30	30.0	140	18.0	•
IDI 187-SK	18.70	4.90	3.400	1.31	30.0	140	18.0	•
IDI 188-SK	18.80	4.88	3.420	1.32	30.0	140	18.0	•
IDI 190-SK	19.00	5.04	3.460	1.33	30.0	140	19.0	•
IDI 1905-SK	19.05	5.03	3.470	1.33	30.0	140	19.0	•
IDI 191-SK	19.10	5.02	3.480	1.34	30.0	140	19.0	•
IDI 194-SK	19.40	4.97	3.530	1.36	30.0	140	19.0	•
IDI 195-SK	19.50	4.95	3.550	1.37	30.0	140	19.0	•
IDI 197-SK	19.70	4.91	3.590	1.38	30.0	140	19.0	•
IDI 198-SK	19.80	4.90	3.600	1.39	30.0	140	19.0	•
IDI 200-SK	20.00	5.66	3.640	1.40	30.0	140	20.0	•
IDI 201-SK	20.10	5.64	3.660	1.41	30.0	140	20.0	•
IDI 202-SK	20.20	5.62	3.680	1.41	30.0	140	20.0	•
IDI 203-SK	20.30	5.61	3.690	1.42	30.0	140	20.0	•
IDI 205-SK	20.50	5.57	3.730	1.44	30.0	140	20.0	•
IDI 206-SK	20.60	5.55	3.750	1.44	30.0	140	20.0	•
IDI 210-SK	21.00	5.68	3.820	1.47	30.0	140	21.0	•
IDI 211-SK	21.10	5.66	3.840	1.48	30.0	140	21.0	•
IDI 212-SK	21.20	5.64	3.860	1.48	30.0	140	21.0	•
IDI 214-SK	21.40	5.61	3.890	1.50	30.0	140	21.0	•
IDI 215-SK	21.50	5.59	3.910	1.51	30.0	140	21.0	•
IDI 216-SK	21.60	5.57	3.930	1.51	30.0	140	21.0	•
IDI 217-SK	21.70	5.55	3.950	1.52	30.0	140	21.0	•
IDI 219-SK	21.90	5.51	3.990	1.53	30.0	140	21.0	•
IDI 220-SK	22.00	6.30	4.000	1.54	30.0	140	22.0	•
IDI 221-SK	22.10	6.28	4.020	1.55	30.0	140	22.0	•
IDI 223-SK	22.30	6.24	4.060	1.56	30.0	140	22.0	•
IDI 224-SK	22.40	6.22	4.080	1.57	30.0	140	22.0	•
IDI 225-SK	22.50	6.21	4.090	1.58	30.0	140	22.0	•
IDI 230-SK	23.00	6.21	4.190	1.61	30.0	140	23.0	•
IDI 231-SK	23.10	6.20	4.200	1.62	30.0	140	23.0	•
IDI 232-SK	23.20	6.18	4.220	1.62	30.0	140	23.0	•
IDI 234-SK	23.40	6.14	4.260	1.64	30.0	140	23.0	•
IDI 236-SK	23.60	6.11	4.290	1.65	30.0	140	23.0	•
IDI 237-SK	23.70	6.09	4.310	1.66	30.0	140	23.0	•
IDI 238-SK	23.80	6.07	4.330	1.67	30.0	140	23.0	•

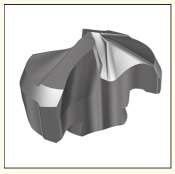
• For cutting conditions see pages 136-140

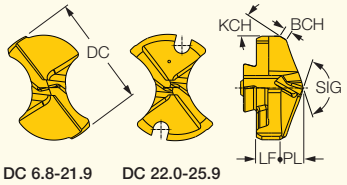
(1) Seat size code

For tools, see pages: DCM-3.5D (7.5-20.9 mm) (126) • DCM-3D (7.5-25.9 mm) (125) • DCM-5D (7.5-25.9 mm) (127) • DCM-8D (10-25.9 mm) (128) • DCT (M8-M24) (169)

CHAMDRILL

IDI-SK
DCM Drill Heads for Cast Iron





Designation	Dimensions							IC908
	DC	LF	PL	BCH	KCH	SIG	SSC(1)	
IDI 240-SK	24.00	6.43	4.370	1.68	30.0	140	24.0	●
IDI 241-SK	24.10	6.41	4.390	1.69	30.0	140	24.0	●
IDI 243-SK	24.30	6.38	4.420	1.70	30.0	140	24.0	●
IDI 244-SK	24.40	6.36	4.440	1.71	30.0	140	24.0	●
IDI 245-SK	24.50	6.34	4.460	1.72	30.0	140	24.0	●
IDI 249-SK	24.90	6.27	4.530	1.74	30.0	140	24.0	●
IDI 250-SK	25.00	6.45	4.550	1.75	30.0	140	25.0	●
IDI 251-SK	25.10	6.43	4.570	1.76	30.0	140	25.0	●
IDI 254-SK	25.40	6.38	4.620	1.78	30.0	140	25.0	●
IDI 255-SK	25.50	6.36	4.640	1.79	30.0	140	25.0	●
IDI 259-SK	25.90	6.29	4.710	1.81	30.0	140	25.0	●

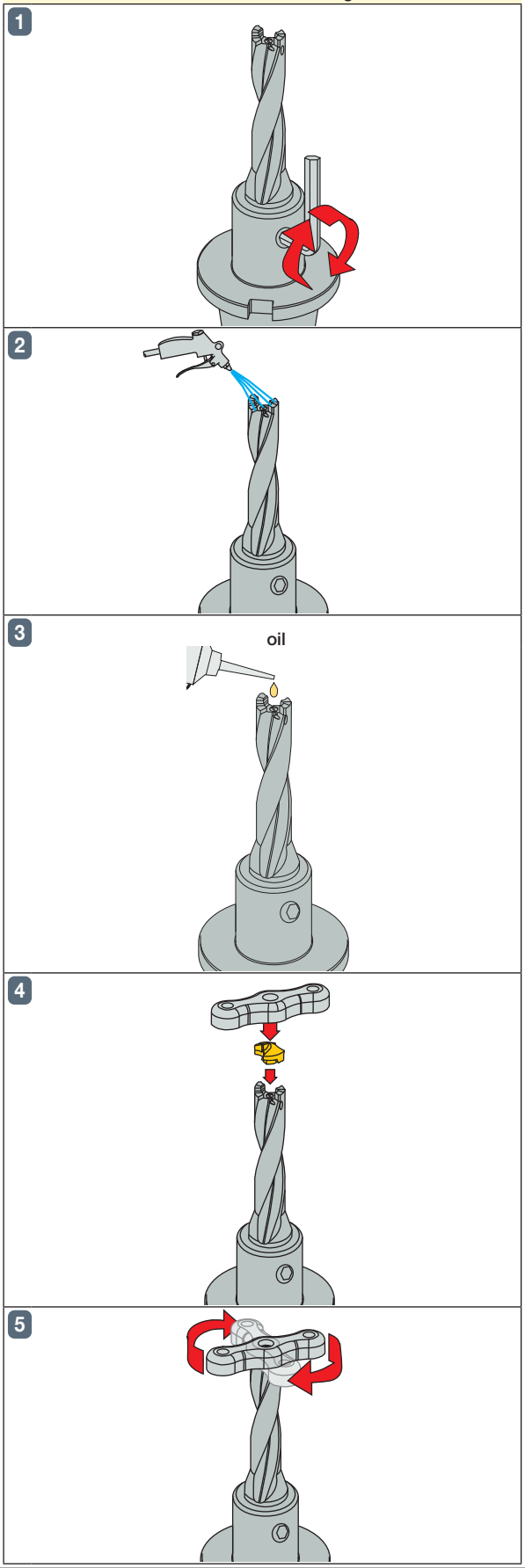
• For cutting conditions see pages 136-140

(1) Seat size code

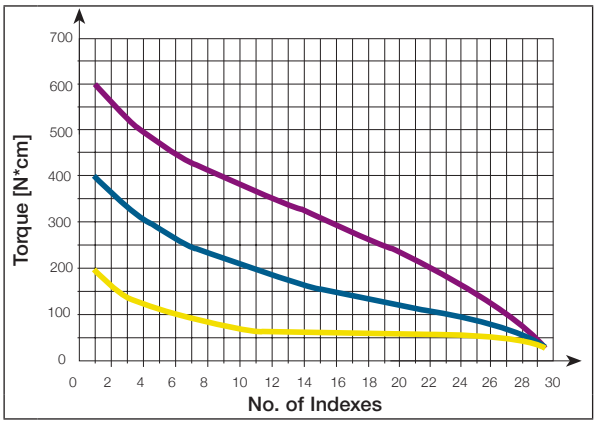
For tools, see pages: DCM-3.5D (7.5-20.9 mm) (126) • DCM-3D (7.5-25.9 mm) (125) • DCM-5D (7.5-25.9 mm) (127) • DCM-8D (10-25.9 mm) (128) • DCT (M8-M24) (169)

Drilling Head Mounting Procedure

CHAM-DRILL DCM Drilling Head



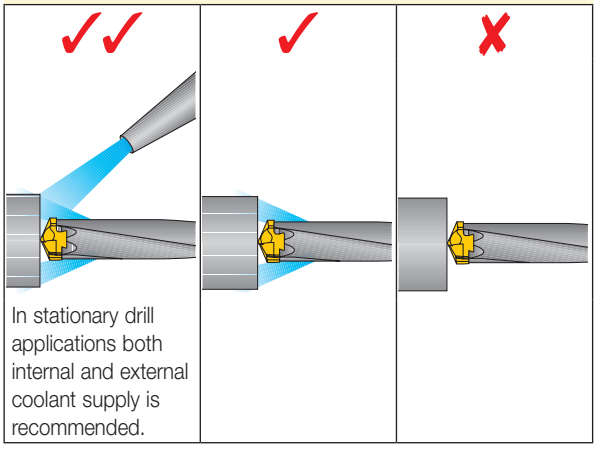
CHAM-DRILL Unlocking Change in Torque
Typical Unlocking Torque Range



- Dia. 17-25.9mm
- Dia. 11-16mm
- Dia. 7.5-10.5mm

The number of indexing changes according to machine/ clamping rigidity, machining conditions, workpiece material, coolant, cooling pressure and correct usage.

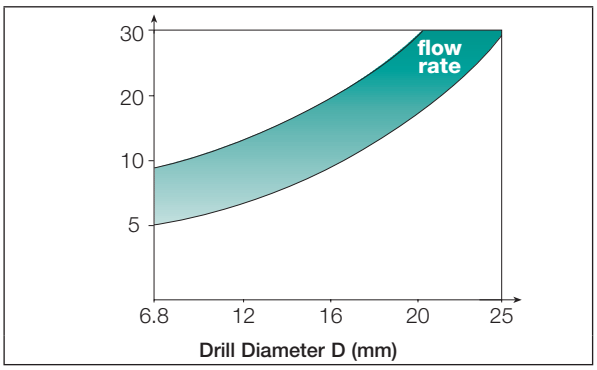
Coolant



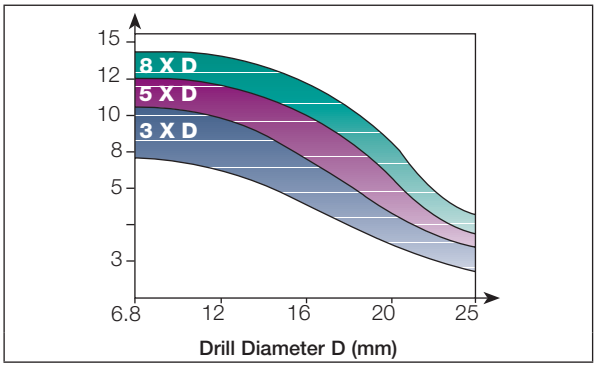
In stationary drill applications both internal and external coolant supply is recommended.

Recommended Coolant Pressure and Flow Rate

Coolant Flow Rate (Liter/min)



Minimum Coolant Pressure (Bar)



* For special drills more than 8xD, it is recommended to use higher coolant pressure 15–70 bar.

To guarantee chip evacuation, the coolant must always flow through the tool. If the machine is not equipped with coolant through the spindle, we recommend using a coolant inducer. External coolant supply can be used if hole depth is less than 1xD and reduced cutting data is applied. The diagram shows the coolant flow rates for different drills and pressures.

Coolant Mix

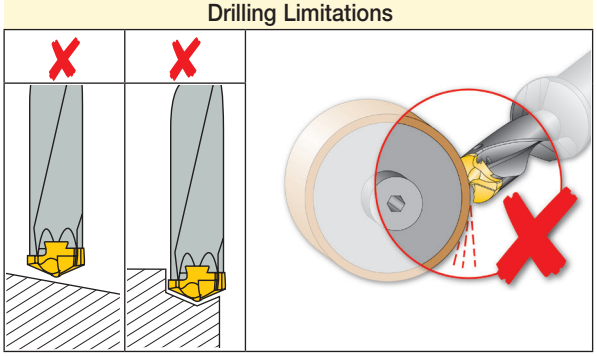
Recommended emulsion mix is 6-8%.
When drilling in stainless and high strength steels, a mix of 10% is recommended.

When using the IDI drilling head, high pressure oil or 7-15% mineral or vegetable based oil emulsion is highly recommended for drilling stainless steel and high temperature alloys.

Dry Drilling

It is possible to drill without coolant in cast iron.
Oil mist through the drill is then required (for 2xD max).

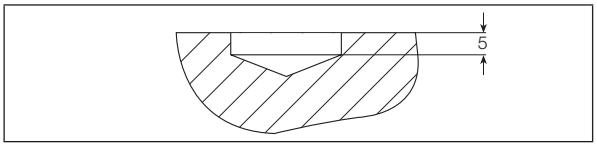
Drilling Limitations

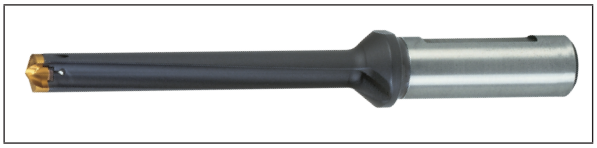


Regrinding of drill head is not recommended, it may cause drill malfunction.

Centering Hole Data for DCM 8xD

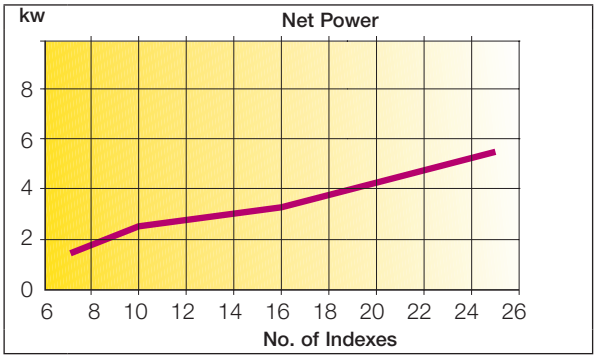
We strongly recommend the use of DCN 1.5D drill of the same diameter to drill a centering pre-hole. The use of the centering pre-hole improves hole location, accuracy, roundness, straightness and surface finish and reliability.





Use internal coolant with at least 15 bar pressure.

Power/Force Requirements



Material: AISI/SAE: 4340
EN: 34CrNiMo6
DIN: W-Nr. 1.6563
Speed: 100 m/min
Feed: 0.2mm/rev

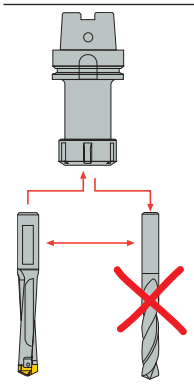
Values change for different materials and drilling conditions.

CHAM-DRILL Cutting Parameters

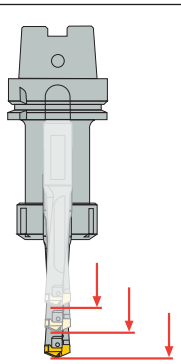
Material Groups								Recommended Machining Conditions					
								Feed Vs. Drill Diameter mm/rev					
ISO	Material		Condition	Tensile Strength [N/mm²]	Hardness HB	Material No.	Cutting Speed V_c m/min	D=6.8-10.9	D=11-12.9	D=13-14.9	D=15-16.9	D=17-20.9	D=21-25.9
P	non-alloy steel and cast steel, free cutting steel	<0.25% C	annealed	420	125	1	50-130	0.12-0.2	0.15-0.25	0.2-0.3	0.25-0.35	0.25-0.45	0.25-0.45
		≥0.25% C	annealed	650	190	2	100-120						
		<0.55% C	quenched and tempered	850	250	3	90-110						
		≥0.55% C	annealed	750	220	4	90-120						
			quenched and tempered	1000	300	5	70-90						
	low alloy and cast steel (less than 5% of alloying elements)		annealed	600	200	6	80-130	0.12-0.2	0.15-0.25	0.2-0.3	0.25-0.35	0.3-0.4	0.3-0.45
			quenched and tempered	930	275	7	70-110						
				1000	300	8	60-90						
				1200	350	9	40-70						
	high alloyed steel, cast steel and tool steel		annealed	680	200	10	50-80	0.12-0.2	0.12-0.22	0.15-0.25	0.2-0.28	0.25-0.33	0.25-0.35
			quenched and tempered	1100	325	11	40-70						
	stainless steel and cast steel		ferritic/martensitic	680	200	12	20-50	0.08-0.14	0.12-0.22	0.12-0.15	0.14-0.20	0.16-0.24	0.15-0.28
			martensitic	820	240	13							
M	stainless steel and cast steel		austenitic, duplex	600	180	14	20-50	0.08-0.14	0.12-0.22	0.12-0.15	0.14-0.20	0.16-0.24	0.15-0.28
K	gray cast iron (GG)		ferritic / pearlitic		180	15	90-140	0.2-0.3	0.25-0.35	0.3-0.4	0.35-0.45	0.4-0.5	0.4-0.6
			pearlitic / martensitic		260	16	80-130						
	nodular cast iron (GGG)		ferritic		160	17	100-180						
			pearlitic		250	18	90-160						
	malleable cast iron		ferritic		130	19							
			pearlitic		230	20							
N	aluminum-wrought alloys		not hardenable		60	21	90-160	0.2-0.35	0.25-0.4	0.3-0.45	0.35-0.5	0.4-0.6	0.4-0.65
			hardenable		100	22	80-120						
	aluminum-cast alloys	≤12% Si	not hardenable		75	23	90-160						
			hardenable		90	24							
		>12% Si	high temperature		130	25							
	copper alloys	>1% Pb	free cutting		110	26							
			brass		90	27							
			electrolytic copper		100	28							
	non metallic		duroplastics, fiber plastics			29							
			hard rubber			30							
S	high temperature alloys	Fe based	annealed		200	31	30-50	0.05-0.1	0.08-0.13	0.1-0.15	0.12-0.18	0.12-0.2	0.12-0.22
			hardened		280	32	20-40						
		Ni or Co based	annealed		250	33	20-50	0.06-0.12	0.09-0.15	0.12-0.18	0.15-0.2	0.15-0.23	0.15-0.25
			hardened		350	34							
			cast		320	35							
	titanium alloys		pure	400		36							
			alpha+beta alloys, hardened	1050		37							
H	hardened steel		hardened		55 HRC	38	20-50	0.06-0.12	0.09-0.15	0.12-0.18	0.15-0.2	0.15-0.23	0.15-0.25
			hardened		60 HRC	39							
	chilled cast iron		cast		400	40	20-50	0.06-0.12	0.09-0.15	0.12-0.18	0.15-0.2	0.15-0.23	0.15-0.25
	cast iron		hardened		55 HRC	41							

• When using external coolant supply only, reduce cutting speed by 10% • When using more than 5XD drill ratio, reduce cutting parameters by 10% As a starting value, the middle of the recommended machining range should be used. Then, according to the wear results, conditions can be changed to optimize performance. The data refers to IC908. For IC1008, cutting speed should be increased by 15%.

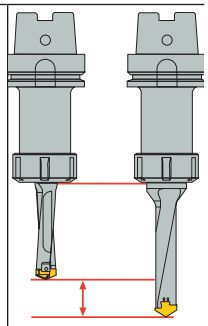
Applications for DCM



Replaces solid carbide drils without changing any holding components

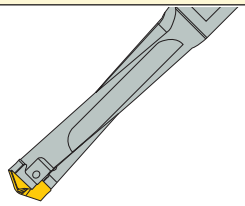
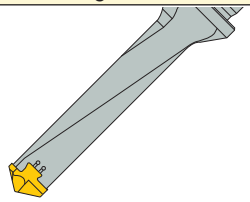


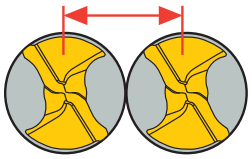
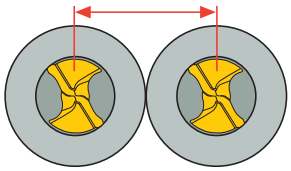
When using SUMO-UNI-CHAM, the drill's projection can be adjusted



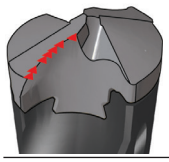
Shorter projection compared to CHAM-DRILL when required

For Better Stability In Rough Applications and Interrupted Cuts

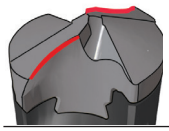
UNICHAM-DRILL Moderate Helix	CHAM-DRILL High Helix
	

UNICHAM-DRILL	CHAM-DRILL
	
Can be used on multi-spindle applications for close spacing between adjacent drills	

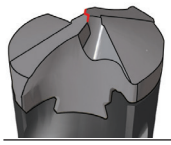
Troubleshooting



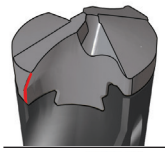
Cutting Edge Chipping
1 Check the stability of the machine spindle, tool and workpiece clamping rigidity.
2 Reduce feed rate, increase speed.
3 If the drill vibrates, reduce cutting speed and increase feed rate.
4 When drilling rough, hard or sloped surfaces (up to 6°), reduce the feed rate by 30-50% when entering and exiting.
5 Check cooling lubricant and increase coolant pressure. In case of external coolant supply, improve jet direction and add cooling jets.



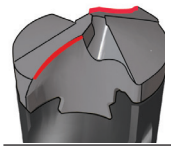
Excessive Flank Wear
1 Check that the correct geometry is used.
2 Reduce cutting speed.
3 Increase internal coolant pressure.



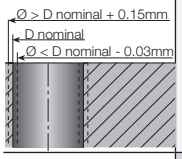
Chisel Area Chipping
1 Reduce feed rate.
2 Increase coolant pressure.
3 Check the adaptation. Use hydraulic clamping chuck, maxin power chuck or side lock systems.
4 Increase workpiece chucking force.



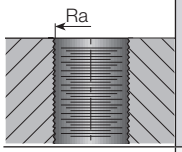
Excessive Flute Land Wear
1 Check that the correct geometry is used.
2 Check the runout and make sure it is within 0.02mm T.I.R. (radial and axial).
3 Reduce cutting speed.
4 When drilling rough, hard or sloped surfaces (up to 6°), reduce the feed rate by 30-50% when entering and exiting.
5 Increase coolant pressure.
6 Check the chisel point runout and make sure it is within 0.02mm T.I.R.
7 Increase workpiece chucking force stability and rigidity.
8 If there is low pocket gripping force - replace drill body.



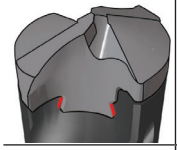
Built-Up Edge
1 Increase cutting speed.
2 Increase coolant pressure.



Deviation of Hole Tolerance
1 Check the runout and make sure it is within 0.02mm T.I.R. (radial and axial cutting points).
2 Reduce feed rate.
3 Check the chisel point runout and make sure that it is within 0.02mm T.I.R.
4 Wrong cutting edge. Replace head.
5 Increase workpiece chucking force.
6 Check the adaptation. Use hydraulic clamping chuck, maxin power chuck or side clamping systems.
7 Increase internal coolant pressure.

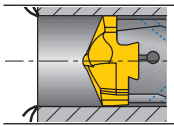


Surface Finish Too Rough
1 Check the runout and make sure it is within 0.02mm T.I.R. (radial and axial).
2 Adjust the feed for improved chip formation.
3 In case of chip jamming - increase the coolant flow and/or reduce the cutting speed.
4 Increase the coolant pressure.
5 Check the chisel point runout and make sure it is within 0.02mm T.I.R.
6 Use pecking cycle.



Insufficient Pocket Gripping Torque
1 Check unlocking gripping torque with TK DCM torque key. If there is no click indication - replace drill head.
2 Increase coolant pressure.

Inaccurate Hole Position
1 Check the runout and make sure it is within 0.02mm T.I.R. (radial and axial).
2 Check the stability of the machine spindle, tool and workpiece clamping rigidity.
3 When drilling rough, hard or sloped surfaces (up to 6°), reduce the feed rate by 30-50% when entering.
4 Drill a pre-hole with a 140° point angle for centering.
5 Check the chisel point runout and make sure it is within 0.02mm T.I.R.

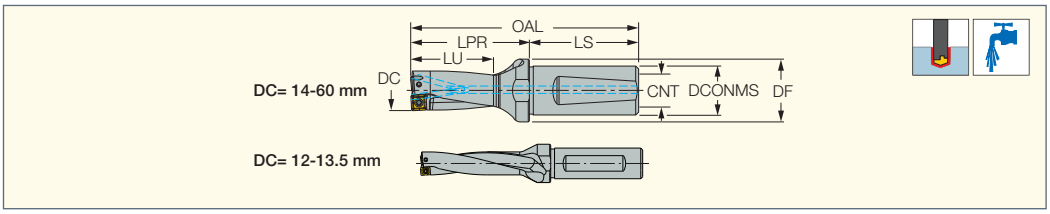


Burrs on Exit
1 Reduce the feed rate by 30-50% when exiting.
2 Replace the worn head.
3 Check the adaptation. Use hydraulic clamping chuck, maxin power chuck or side clamping systems.

DR-TWIST
INDEXABLE DRILL LINE

DR-2D-N

Indexable Square Insert Drills with Coolant Holes, Drilling Depth 2xD



Designation	DC	DCX[1]	LU	LPR	LS	OAL	DCONMS	DF	CNT	MIID[2]
DR120-024-16-04-2D-N	12.00	12.40	24.0	42.0	48.0	90.00	16.00	20.00	-	AOMT 04
DR125-025-16-04-2D-N	12.50	12.90	25.0	43.0	48.0	91.00	16.00	20.00	-	AOMT 04
DR130-026-16-04-2D-N	13.00	13.40	26.0	44.0	48.0	92.00	16.00	20.00	-	AOMT 04
DR135-027-16-04-2D-N	13.50	13.90	27.0	45.0	48.0	93.00	16.00	20.00	-	AOMT 04
DR140-028-20-05-2D-N	14.00	16.80	28.0	46.0	50.0	96.00	20.00	25.00	G1/4"	SOMX 05
DR145-029-20-05-2D-N	14.50	17.10	29.0	47.0	50.0	97.00	20.00	25.00	G1/4"	SOMX 05
DR150-030-20-05-2D-N	15.00	17.40	30.0	48.0	50.0	98.00	20.00	25.00	G1/4"	SOMX 05
DR155-031-20-05-2D-N	15.50	17.60	31.0	49.0	50.0	99.00	20.00	25.00	G1/4"	SOMX 05
DR160-032-20-05-2D-N	16.00	17.80	32.0	50.0	50.0	100.00	20.00	25.00	G1/4"	SOMX 05
DR165-033-20-05-2D-N	16.50	18.10	33.0	51.0	50.0	101.00	20.00	25.00	G1/4"	SOMX 05
DR170-034-20-05-2D-N	17.00	18.30	34.0	52.0	50.0	102.00	20.00	25.00	G1/4"	SOMX 05
DR175-035-20-05-2D-N	17.50	18.50	35.0	53.0	50.0	103.00	20.00	25.00	G1/4"	SOMX 05
DR180-036-25-06-2D-N	18.00	20.30	36.0	56.0	56.0	112.00	25.00	32.00	G3/8"	SOMX 06
DR185-037-25-06-2D-N	18.50	20.50	37.0	57.0	56.0	113.00	25.00	32.00	G3/8"	SOMX 06
DR190-038-25-06-2D-N	19.00	20.80	38.0	58.0	56.0	114.00	25.00	32.00	G3/8"	SOMX 06
DR195-039-25-06-2D-N	19.50	21.00	39.0	59.0	56.0	115.00	25.00	32.00	G3/8"	SOMX 06
DR200-040-25-06-2D-N	20.00	21.30	40.0	60.0	56.0	116.00	25.00	32.00	G3/8"	SOMX 06
DR205-041-25-06-2D-N	20.50	21.60	41.0	61.0	56.0	117.00	25.00	32.00	G3/8"	SOMX 06
DR210-042-25-07-2D-N	21.00	24.50	42.0	62.0	56.0	118.00	25.00	32.00	G3/8"	SOMX 07
DR215-043-25-07-2D-N	21.50	24.70	43.0	63.0	56.0	119.00	25.00	32.00	G3/8"	SOMX 07
DR220-044-25-07-2D-N	22.00	25.00	44.0	64.0	56.0	120.00	25.00	32.00	G3/8"	SOMX 07
DR225-045-25-07-2D-N	22.50	25.20	45.0	65.0	56.0	121.00	25.00	32.00	G3/8"	SOMX 07
DR230-046-25-07-2D-N	23.00	25.50	46.0	66.0	56.0	122.00	25.00	32.00	G3/8"	SOMX 07
DR235-047-25-07-2D-N	23.50	25.70	47.0	67.0	56.0	123.00	25.00	32.00	G3/8"	SOMX 07
DR240-048-25-07-2D-N	24.00	26.00	48.0	68.0	56.0	124.00	25.00	32.00	G3/8"	SOMX 07
DR025-050-32-09-2D-N	25.00	29.50	50.0	82.0	58.0	140.00	32.00	42.00	G1/2"	SOMT 09
DR026-052-32-09-2D-N	26.00	30.00	52.0	84.0	58.0	142.00	32.00	42.00	G1/2"	SOMT 09
DR027-054-32-09-2D-N	27.00	30.50	54.0	86.0	58.0	144.00	32.00	42.00	G1/2"	SOMT 09
DR028-056-32-09-2D-N	28.00	31.00	56.0	88.0	58.0	146.00	32.00	42.00	G1/2"	SOMT 09
DR029-058-32-09-2D-N	29.00	31.50	58.0	90.0	58.0	148.00	32.00	42.00	G1/2"	SOMT 09
DR030-060-32-09-2D-N	30.00	32.00	60.0	92.0	58.0	150.00	32.00	42.00	G1/2"	SOMT 09
DR031-062-32-09-2D-N	31.00	32.50	62.0	94.0	58.0	152.00	32.00	42.00	G1/2"	SOMT 09
DR032-064-32-09-2D-N	32.00	33.00	64.0	96.0	58.0	154.00	32.00	42.00	G1/2"	SOMT 09
DR033-066-32-09-2D-N	33.00	34.00	66.0	98.0	58.0	156.00	32.00	42.00	G1/2"	SOMT 09
DR034-068-32-09-2D-N	34.00	34.50	68.0	100.0	58.0	158.00	32.00	42.00	G1/2"	SOMT 09
DR035-070-32-12-2D-N	35.00	40.50	70.0	106.0	58.0	164.00	32.00	50.00	G1/2-1	SOMT 12
DR036-072-32-12-2D-N	36.00	41.00	72.0	108.0	58.0	166.00	32.00	50.00	G1/2-1	SOMT 12
DR037-074-32-12-2D-N	37.00	41.50	74.0	110.0	58.0	168.00	32.00	50.00	G1/2-1	SOMT 12
DR038-076-32-12-2D-N	38.00	42.00	76.0	112.0	58.0	170.00	32.00	50.00	G1/2-1	SOMT 12
DR039-078-32-12-2D-N	39.00	42.50	78.0	114.0	58.0	172.00	32.00	50.00	G1/2-1	SOMT 12
DR040-080-40-12-2D-N	40.00	43.00	80.0	116.0	68.0	184.00	40.00	50.00	G3/4-14	SOMT 12
DR041-082-40-12-2D-N	41.00	43.50	82.0	118.0	68.0	186.00	40.00	50.00	G3/4-14	SOMT 12
DR042-084-40-12-2D-N	42.00	44.00	84.0	120.0	68.0	188.00	40.00	50.00	G3/4-14	SOMT 12
DR043-086-40-12-2D-N	43.00	44.50	86.0	122.0	68.0	190.00	40.00	50.00	G3/4-14	SOMT 12
DR044-088-40-12-2D-N	44.00	45.00	88.0	124.0	68.0	192.00	40.00	50.00	G3/4-14	SOMT 12
DR045-090-40-16-2D-N	45.00	51.00	90.0	126.0	68.0	194.00	40.00	60.00	G3/4-14	SOMT 16
DR046-092-40-16-2D-N	46.00	51.50	92.0	128.0	68.0	196.00	40.00	60.00	G3/4-14	SOMT 16
DR047-094-40-16-2D-N	47.00	52.00	94.0	130.0	68.0	198.00	40.00	60.00	G3/4-14	SOMT 16
DR048-096-40-16-2D-N	48.00	52.50	96.0	132.0	68.0	200.00	40.00	60.00	G3/4-14	SOMT 16
DR049-098-40-16-2D-N	49.00	53.00	98.0	134.0	68.0	202.00	40.00	60.00	G3/4-14	SOMT 16
DR050-100-40-16-2D-N	50.00	54.00	100.0	136.0	68.0	204.00	40.00	60.00	G3/4-14	SOMT 16
DR051-102-40-16-2D-N	51.00	54.50	102.0	138.0	68.0	206.00	40.00	60.00	G3/4-14	SOMT 16
DR052-104-40-16-2D-N	52.00	55.00	104.0	140.0	68.0	208.00	40.00	60.00	G3/4-14	SOMT 16
DR053-106-40-16-2D-N	53.00	55.50	106.0	142.0	68.0	210.00	40.00	60.00	G3/4-14	SOMT 16
DR054-108-40-16-2D-N	54.00	56.00	108.0	144.0	68.0	212.00	40.00	60.00	G3/4-14	SOMT 16
DR055-110-40-16-2D-N	55.00	56.50	110.0	146.0	68.0	214.00	40.00	60.00	G3/4-14	SOMT 16
DR056-112-40-16-2D-N	56.00	57.00	112.0	148.0	68.0	216.00	40.00	60.00	G3/4-14	SOMT 16
DR057-114-40-16-2D-N	57.00	57.50	114.0	150.0	68.0	218.00	40.00	60.00	G3/4-14	SOMT 16
DR058-116-40-16-2D-N	58.00	58.00	116.0	152.0	68.0	220.00	40.00	60.00	G3/4-14	SOMT 16
DR059-118-40-16-2D-N	59.00	59.00	118.0	154.0	68.0	222.00	40.00	60.00	G3/4-14	SOMT 16
DR060-120-40-16-2D-N	60.00	60.00	120.0	156.0	68.0	224.00	40.00	60.00	G3/4-14	SOMT 16

- Hole tolerance D+0.15/-0.05 in average conditions applied. It can be higher or lower according to machine and tooling conditions
- For eccenter sleeves (used with tool diameter range of 14.00-60.00 only), see page 154 • For user guide and cutting conditions, see pages 155-167

[1] The hole diameter can be enlarged by shifting the drill center along the lathe X-axis, or by using eccentric sleeves in drill rotating applications

[2] Master insert identification

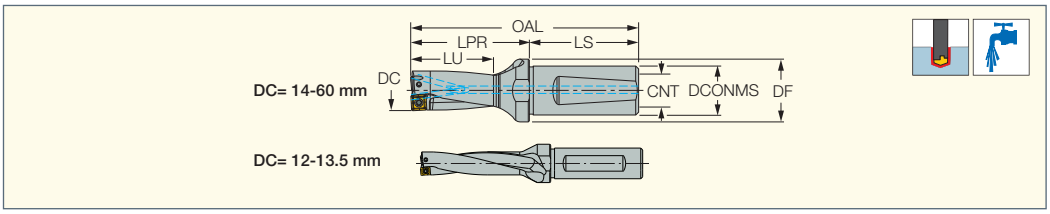
For inserts, see pages: AOMT/AOGT (150) • SOGX/T-AL (151) • SOMT-DT (152) • SOMT-GF (151) • SOMT-HD (152) • SOMX-DT (150) • SOMX-GF (150) • SOMX-HD (151)

Continued

DR-TWIST
INDEXABLE DRILL LINE

DR-2D-N

Indexable Square Insert Drills with Coolant Holes, Drilling Depth 2xD



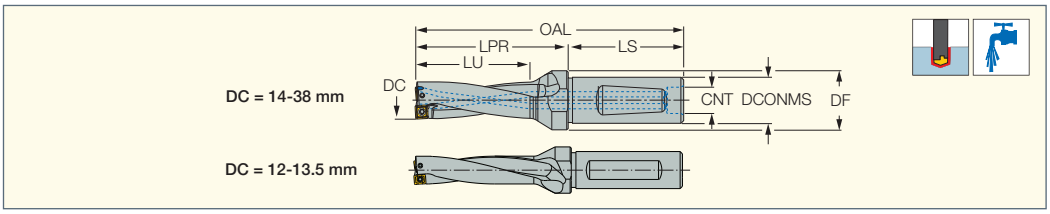
Spare Parts

Designation						
DR120-024-16-04-2D-N	SR 34-533	T-6/5				
DR125-025-16-04-2D-N	SR 34-533	T-6/5				
DR130-026-16-04-2D-N	SR 34-533	T-6/5				
DR135-027-16-04-2D-N	SR 34-533	T-6/5				
DR140-028-20-05-2D-N	SR 34-533/L	T-6/5				
DR145-029-20-05-2D-N	SR 34-533/L	T-6/5				
DR150-030-20-05-2D-N	SR 34-533/L	T-6/5				
DR155-031-20-05-2D-N	SR 34-533/L	T-6/5				
DR160-032-20-05-2D-N	SR 34-533/L	T-6/5				
DR165-033-20-05-2D-N	SR 34-533/L	T-6/5				
DR170-034-20-05-2D-N	SR 34-533/L	T-6/5				
DR175-035-20-05-2D-N	SR 34-533/L	T-6/5				
DR180-036-25-06-2D-N	SR 34-508/L		T-7/51			
DR185-037-25-06-2D-N	SR 34-508/L		T-7/51			
DR190-038-25-06-2D-N	SR 34-508/L		T-7/51			
DR195-039-25-06-2D-N	SR 34-508/L		T-7/51			
DR200-040-25-06-2D-N	SR 34-508/L		T-7/51			
DR205-041-25-06-2D-N	SR 34-508/L		T-7/51			
DR210-042-25-07-2D-N	SR 14-560		T-8/53			
DR215-043-25-07-2D-N	SR 14-560		T-8/53			
DR220-044-25-07-2D-N	SR 14-560		T-8/53			
DR225-045-25-07-2D-N	SR 14-560		T-8/53			
DR230-046-25-07-2D-N	SR 14-560		T-8/53			
DR235-047-25-07-2D-N	SR 14-560		T-8/53			
DR240-048-25-07-2D-N	SR 14-560		T-8/53			
DR025-050-32-09-2D-N	SR 34-506 M3X0.5			BLD T09/M7-SW4	SW4-SD	
DR026-052-32-09-2D-N	SR 34-506 M3X0.5			BLD T09/M7-SW4	SW4-SD	
DR027-054-32-09-2D-N	SR 34-506 M3X0.5			BLD T09/M7-SW4	SW4-SD	
DR028-056-32-09-2D-N	SR 34-506 M3X0.5			BLD T09/M7-SW4	SW4-SD	
DR029-058-32-09-2D-N	SR 34-506 M3X0.5			BLD T09/M7-SW4	SW4-SD	
DR030-060-32-09-2D-N	SR 34-506 M3X0.5			BLD T09/M7-SW4	SW4-SD	
DR031-062-32-09-2D-N	SR 34-506 M3X0.5			BLD T09/M7-SW4	SW4-SD	
DR032-064-32-09-2D-N	SR 34-506 M3X0.5			BLD T09/M7-SW4	SW4-SD	
DR033-066-32-09-2D-N	SR 34-506 M3X0.5			BLD T09/M7-SW4	SW4-SD	
DR034-068-32-09-2D-N	SR 34-506 M3X0.5			BLD T09/M7-SW4	SW4-SD	
DR035-070-32-12-2D-N	SR 14-544/S			BLD T15/S7	SW6-SD	
DR036-072-32-12-2D-N	SR 14-544/S			BLD T15/S7	SW6-SD	
DR037-074-32-12-2D-N	SR 14-544/S			BLD T15/S7	SW6-SD	
DR038-076-32-12-2D-N	SR 14-544/S			BLD T15/S7	SW6-SD	
DR039-078-32-12-2D-N	SR 14-544/S			BLD T15/S7	SW6-SD	
DR040-080-40-12-2D-N	SR 14-544/S			BLD T15/S7	SW6-SD	
DR041-082-40-12-2D-N	SR 14-544/S			BLD T15/S7	SW6-SD	
DR042-084-40-12-2D-N	SR 14-544/S			BLD T15/S7	SW6-SD	
DR043-086-40-12-2D-N	SR 14-544/S			BLD T15/S7	SW6-SD	
DR044-088-40-12-2D-N	SR 14-544/S			BLD T15/S7	SW6-SD	
DR045-090-40-16-2D-N	SR 76-961			BLD T15/M7		SW6-T
DR046-092-40-16-2D-N	SR 76-961			BLD T15/M7		SW6-T
DR047-094-40-16-2D-N	SR 76-961			BLD T15/M7		SW6-T
DR048-096-40-16-2D-N	SR 76-961			BLD T15/M7		SW6-T
DR049-098-40-16-2D-N	SR 76-961			BLD T15/M7		SW6-T
DR050-100-40-16-2D-N	SR 76-961			BLD T15/M7		SW6-T
DR051-102-40-16-2D-N	SR 76-961			BLD T15/M7		SW6-T
DR052-104-40-16-2D-N	SR 76-961			BLD T15/M7		SW6-T
DR053-106-40-16-2D-N	SR 76-961			BLD T15/M7		SW6-T
DR054-108-40-16-2D-N	SR 76-961			BLD T15/M7		SW6-T
DR055-110-40-16-2D-N	SR 76-961			BLD T15/M7		SW6-T
DR056-112-40-16-2D-N	SR 76-961			BLD T15/M7		SW6-T
DR057-114-40-16-2D-N	SR 76-961			BLD T15/M7		SW6-T
DR058-116-40-16-2D-N	SR 76-961			BLD T15/M7		SW6-T
DR059-118-40-16-2D-N	SR 76-961			BLD T15/M7		SW6-T
DR060-120-40-16-2D-N	SR 76-961			BLD T15/M7		SW6-T

DR-TWIST
INDEXABLE DRILL LINE

DR-3D-N

Indexable Square Insert Drills with Coolant Holes, Drilling Depth 3xD



Designation	DC	DCX[1]	LU	LPR	LS	OAL	DCONMS	DF	CNT	MIID[2]
DR120-036-16-04-3D-N	12.00	12.40	36.0	54.0	48.0	102.00	16.00	20.00	-	AOMT 040204-90DT
DR125-038-16-04-3D-N	12.50	12.90	38.0	55.5	48.0	103.50	16.00	20.00	-	AOMT 040204-90DT
DR130-039-16-04-3D-N	13.00	13.40	39.0	57.0	48.0	105.00	16.00	20.00	-	AOMT 040204-90DT
DR135-041-16-04-3D-N	13.50	13.90	41.0	58.5	48.0	106.50	16.00	20.00	-	AOMT 040204-90DT
DR140-042-20-05-3D-N	14.00	16.80	42.0	60.0	50.0	110.00	20.00	25.00	G1/4"	SOMX 050204-DT
DR145-044-20-05-3D-N	14.50	17.10	43.5	61.5	50.0	111.50	20.00	25.00	G1/4"	SOMX 050204-DT
DR150-045-20-05-3D-N	15.00	17.40	45.0	63.0	50.0	113.00	20.00	25.00	G1/4"	SOMX 050204-DT
DR155-047-20-05-3D-N	15.50	17.60	46.5	64.5	50.0	114.50	20.00	25.00	G1/4"	SOMX 050204-DT
DR160-048-20-05-3D-N	16.00	17.80	48.0	66.0	50.0	116.00	20.00	25.00	G1/4"	SOMX 050204-DT
DR165-050-20-05-3D-N	16.50	18.10	49.5	67.5	50.0	117.50	20.00	25.00	G1/4"	SOMX 050204-DT
DR170-051-20-05-3D-N	17.00	18.30	51.0	69.0	50.0	119.00	20.00	25.00	G1/4"	SOMX 050204-DT
DR175-053-20-05-3D-N	17.50	18.50	52.5	70.5	50.0	120.50	20.00	25.00	G1/4"	SOMX 050204-DT
DR180-054-25-06-3D-N	18.00	20.30	54.0	74.0	56.0	130.00	25.00	32.00	G3/8"	SOMX 060304-DT
DR185-056-25-06-3D-N	18.50	20.50	55.5	75.5	56.0	131.50	25.00	32.00	G3/8"	SOMX 060304-DT
DR190-057-25-06-3D-N	19.00	20.80	57.0	77.0	56.0	133.00	25.00	32.00	G3/8"	SOMX 060304-DT
DR195-059-25-06-3D-N	19.50	21.00	58.5	78.5	56.0	134.50	25.00	32.00	G3/8"	SOMX 060304-DT
DR200-060-25-06-3D-N	20.00	21.30	60.0	80.0	56.0	136.00	25.00	32.00	G3/8"	SOMX 060304-DT
DR205-062-25-06-3D-N	20.50	21.60	61.5	81.5	56.0	137.50	25.00	32.00	G3/8"	SOMX 060304-DT
DR210-063-25-07-3D-N	21.00	24.50	63.0	83.0	56.0	139.00	25.00	32.00	G3/8"	SOMX 070305-DT
DR215-065-25-07-3D-N	21.50	24.70	64.5	84.5	56.0	140.50	25.00	32.00	G3/8"	SOMX 070305-DT
DR220-066-25-07-3D-N	22.00	25.00	66.0	86.0	56.0	142.00	25.00	32.00	G3/8"	SOMX 070305-DT
DR225-068-25-07-3D-N	22.50	25.20	67.5	87.5	56.0	143.50	25.00	32.00	G3/8"	SOMX 070305-DT
DR230-069-25-07-3D-N	23.00	25.50	69.0	89.0	56.0	145.00	25.00	32.00	G3/8"	SOMX 070305-DT
DR235-071-25-07-3D-N	23.50	25.70	70.5	90.5	56.0	146.50	25.00	32.00	G3/8"	SOMX 070305-DT
DR240-072-25-07-3D-N	24.00	26.00	72.0	92.0	56.0	148.00	25.00	32.00	G3/8"	SOMX 070305-DT
DR025-075-32-09-3D-N	25.00	29.50	75.0	107.0	58.0	165.00	32.00	42.00	G1/2"	SOMT 09T306-DT
DR026-078-32-09-3D-N	26.00	30.00	78.0	110.0	58.0	168.00	32.00	42.00	G1/2"	SOMT 09T306-DT
DR027-081-32-09-3D-N	27.00	30.50	81.0	113.0	58.0	171.00	32.00	42.00	G1/2"	SOMT 09T306-DT
DR028-084-32-09-3D-N	28.00	31.00	84.0	116.0	58.0	174.00	32.00	42.00	G1/2"	SOMT 09T306-DT
DR029-087-32-09-3D-N	29.00	31.50	87.0	119.0	58.0	177.00	32.00	42.00	G1/2"	SOMT 09T306-DT
DR030-090-32-09-3D-N	30.00	32.00	90.0	122.0	58.0	180.00	32.00	42.00	G1/2"	SOMT 09T306-DT
DR031-093-32-09-3D-N	31.00	32.50	93.0	125.0	58.0	183.00	32.00	42.00	G1/2"	SOMT 09T306-DT
DR032-096-32-09-3D-N	32.00	33.00	96.0	128.0	58.0	186.00	32.00	42.00	G1/2"	SOMT 09T306-DT
DR033-099-32-09-3D-N	33.00	34.00	99.0	131.0	58.0	189.00	32.00	42.00	G1/2"	SOMT 09T306-DT
DR034-102-32-09-3D-N	34.00	34.50	102.0	134.0	58.0	192.00	32.00	42.00	G1/2"	SOMT 09T306-DT
DR035-105-32-12-3D-N	35.00	40.50	105.0	141.0	58.0	199.00	32.00	50.00	G1/2-14	SOMT 120408-DT
DR036-108-32-12-3D-N	36.00	41.00	108.0	144.0	58.0	202.00	32.00	50.00	G1/2-14	SOMT 120408-DT
DR037-111-32-12-3D-N	37.00	41.50	111.0	147.0	58.0	205.00	32.00	50.00	G1/2-14	SOMT 120408-DT
DR038-114-32-12-3D-N	38.00	42.00	114.0	150.0	58.0	208.00	32.00	50.00	G1/2-14	SOMT 120408-DT

- Hole tolerance D+0.25/-0.05 in average conditions applied. It can be higher or lower according to machine and tooling conditions
- For eccenter sleeves (used with tool diameter range of 14.00-38.00 only), see page 154 • For user guide and cutting conditions, see pages 155-167

[1] The hole diameter can be enlarged by shifting the drill center along the lathe X-axis, or by using eccentric sleeves in drill rotating applications

[2] Master insert identification

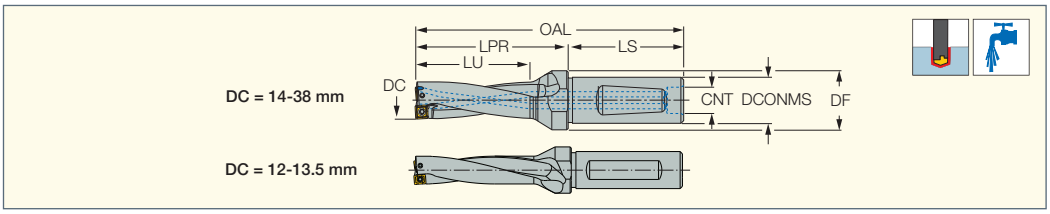
For inserts, see pages: AOMT/AOGT (150) • SOGX/T-AL (151) • SOMT-DT (152) • SOMT-GF (151) • SOMT-HD (152) • SOMX-DT (150) • SOMX-GF (150) • SOMX-HD (151)

Continued

DR-TWIST INDEXABLE DRILL LINE

DR-3D-N

Indexable Square Insert Drills with Coolant Holes, Drilling Depth 3xD



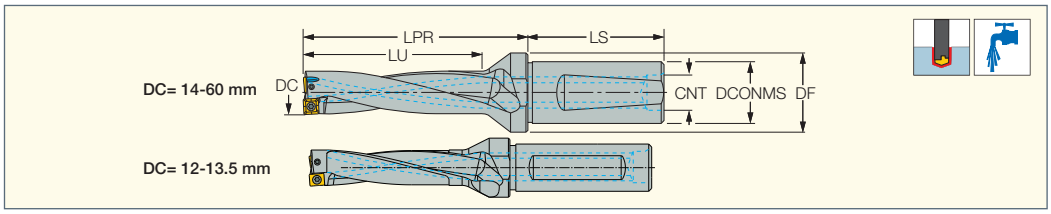
Spare Parts

Designation					
DR120-036-16-04-3D-N	SR 34-533	T-6/5			
DR125-038-16-04-3D-N	SR 34-533	T-6/5			
DR130-039-16-04-3D-N	SR 34-533	T-6/5			
DR135-041-16-04-3D-N	SR 34-533	T-6/5			
DR140-042-20-05-3D-N	SR 34-533/L	T-6/5			
DR145-044-20-05-3D-N	SR 34-533/L	T-6/5			
DR150-045-20-05-3D-N	SR 34-533/L	T-6/5			
DR155-047-20-05-3D-N	SR 34-533/L	T-6/5			
DR160-048-20-05-3D-N	SR 34-533/L	T-6/5			
DR165-050-20-05-3D-N	SR 34-533/L	T-6/5			
DR170-051-20-05-3D-N	SR 34-533/L	T-6/5			
DR175-053-20-05-3D-N	SR 34-533/L	T-6/5			
DR180-054-25-06-3D-N	SR 34-508/L		T-7/51		
DR185-056-25-06-3D-N	SR 34-508/L		T-7/51		
DR190-057-25-06-3D-N	SR 34-508/L		T-7/51		
DR195-059-25-06-3D-N	SR 34-508/L		T-7/51		
DR200-060-25-06-3D-N	SR 34-508/L		T-7/51		
DR205-062-25-06-3D-N	SR 34-508/L		T-7/51		
DR210-063-25-07-3D-N	SR 14-560		T-8/53		
DR215-065-25-07-3D-N	SR 14-560		T-8/53		
DR220-066-25-07-3D-N	SR 14-560		T-8/53		
DR225-068-25-07-3D-N	SR 14-560		T-8/53		
DR230-069-25-07-3D-N	SR 14-560		T-8/53		
DR235-071-25-07-3D-N	SR 14-560		T-8/53		
DR240-072-25-07-3D-N	SR 14-560		T-8/53		
DR025-075-32-09-3D-N	SR 34-506 M3X0.5			BLD T09/M7-SW4	SW4-SD
DR026-078-32-09-3D-N	SR 34-506 M3X0.5			BLD T09/M7-SW4	SW4-SD
DR027-081-32-09-3D-N	SR 34-506 M3X0.5			BLD T09/M7-SW4	SW4-SD
DR028-084-32-09-3D-N	SR 34-506 M3X0.5			BLD T09/M7-SW4	SW4-SD
DR029-087-32-09-3D-N	SR 34-506 M3X0.5			BLD T09/M7-SW4	SW4-SD
DR030-090-32-09-3D-N	SR 34-506 M3X0.5			BLD T09/M7-SW4	SW4-SD
DR031-093-32-09-3D-N	SR 34-506 M3X0.5			BLD T09/M7-SW4	SW4-SD
DR032-096-32-09-3D-N	SR 34-506 M3X0.5			BLD T09/M7-SW4	SW4-SD
DR033-099-32-09-3D-N	SR 34-506 M3X0.5			BLD T09/M7-SW4	SW4-SD
DR034-102-32-09-3D-N	SR 34-506 M3X0.5			BLD T09/M7-SW4	SW4-SD
DR035-105-32-12-3D-N	SR 14-544/S			BLD T15/S7	SW6-SD
DR036-108-32-12-3D-N	SR 14-544/S			BLD T15/S7	SW6-SD
DR037-111-32-12-3D-N	SR 14-544/S			BLD T15/S7	SW6-SD
DR038-114-32-12-3D-N	SR 14-544/S			BLD T15/S7	SW6-SD

DR-TWIST
INDEXABLE DRILL LINE

DR-4D-N

Indexable Square Insert Drills with Coolant Holes, Drilling Depth 4xD



Designation	DC	DCX[1]	LU	LPR	LS	DCONMS	DF	CNT	MIID[2]
DR120-048-16-04-4D-N	12.00	12.40	48.0	66.0	48.0	16.00	20.00	-	AOMT 040204-90DT
DR125-050-16-04-4D-N	12.50	12.90	50.0	68.0	48.0	16.00	20.00	-	AOMT 040204-90DT
DR130-052-16-04-4D-N	13.00	13.40	52.0	70.0	48.0	16.00	20.00	-	AOMT 040204-90DT
DR135-054-16-04-4D-N	13.50	13.90	54.0	72.0	48.0	16.00	20.00	-	AOMT 040204-90DT
DR140-056-20-05-4D-N	14.00	16.80	56.0	74.0	50.0	20.00	25.00	G1/4"	SOMX 050204-DT
DR145-058-20-05-4D-N	14.50	17.10	58.0	76.0	50.0	20.00	25.00	G1/4"	SOMX 050204-DT
DR150-060-20-05-4D-N	15.00	17.40	60.0	78.0	50.0	20.00	25.00	G1/4"	SOMX 050204-DT
DR155-062-20-05-4D-N	15.50	17.60	62.0	80.0	50.0	20.00	25.00	G1/4"	SOMX 050204-DT
DR160-064-20-05-4D-N	16.00	17.80	64.0	82.0	50.0	20.00	25.00	G1/4"	SOMX 050204-DT
DR165-066-20-05-4D-N	16.50	18.10	66.0	84.0	50.0	20.00	25.00	G1/4"	SOMX 050204-DT
DR170-068-20-05-4D-N	17.00	18.30	68.0	86.0	50.0	20.00	25.00	G1/4"	SOMX 050204-DT
DR175-070-20-05-4D-N	17.50	18.50	70.0	88.0	50.0	20.00	25.00	G1/4"	SOMX 050204-DT
DR180-072-25-06-4D-N	18.00	20.30	72.0	92.0	56.0	25.00	32.00	G3/8"	SOMX 060304-DT
DR185-074-25-06-4D-N	18.50	20.50	74.0	94.0	56.0	25.00	32.00	G3/8"	SOMX 060304-DT
DR190-076-25-06-4D-N	19.00	20.80	76.0	96.0	56.0	25.00	32.00	G3/8"	SOMX 060304-DT
DR195-078-25-06-4D-N	19.50	21.00	78.0	98.0	56.0	25.00	32.00	G3/8"	SOMX 060304-DT
DR200-080-25-06-4D-N	20.00	21.30	80.0	100.0	56.0	25.00	32.00	G3/8"	SOMX 060304-DT
DR205-082-25-06-4D-N	20.50	21.60	82.0	102.0	56.0	25.00	32.00	G3/8"	SOMX 060304-DT
DR210-084-25-07-4D-N	21.00	24.50	84.0	104.0	56.0	25.00	32.00	G3/8"	SOMX 070305-DT
DR215-086-25-07-4D-N	21.50	24.70	86.0	106.0	56.0	25.00	32.00	G3/8"	SOMX 070305-DT
DR220-088-25-07-4D-N	22.00	25.00	88.0	108.0	56.0	25.00	32.00	G3/8"	SOMX 070305-DT
DR225-090-25-07-4D-N	22.50	25.20	90.0	110.0	56.0	25.00	32.00	G3/8"	SOMX 070305-DT
DR230-092-25-07-4D-N	23.00	25.50	92.0	112.0	56.0	25.00	32.00	G3/8"	SOMX 070305-DT
DR235-094-25-07-4D-N	23.50	25.70	94.0	114.0	56.0	25.00	32.00	G3/8"	SOMX 070305-DT
DR240-096-25-07-4D-N	24.00	26.00	96.0	116.0	56.0	25.00	32.00	G3/8"	SOMX 070305-DT
DR025-100-32-09-4D-N	25.00	29.50	100.0	132.0	58.0	32.00	42.00	G1/2"	SOMT 09T306-DT
DR026-104-32-09-4D-N	26.00	30.00	104.0	136.0	58.0	32.00	42.00	G1/2"	SOMT 09T306-DT
DR027-108-32-09-4D-N	27.00	30.50	108.0	140.0	58.0	32.00	42.00	G1/2"	SOMT 09T306-DT
DR028-112-32-09-4D-N	28.00	31.00	112.0	144.0	58.0	32.00	42.00	G1/2"	SOMT 09T306-DT
DR029-116-32-09-4D-N	29.00	31.50	116.0	148.0	58.0	32.00	42.00	G1/2"	SOMT 09T306-DT
DR030-120-32-09-4D-N	30.00	32.00	120.0	152.0	58.0	32.00	42.00	G1/2"	SOMT 09T306-DT
DR031-124-32-09-4D-N	31.00	32.50	124.0	156.0	58.0	32.00	42.00	G1/2"	SOMT 09T306-DT
DR032-128-32-09-4D-N	32.00	33.00	128.0	160.0	58.0	32.00	42.00	G1/2"	SOMT 09T306-DT
DR033-132-32-09-4D-N	33.00	34.00	132.0	164.0	58.0	32.00	42.00	G1/2"	SOMT 09T306-DT
DR034-136-32-09-4D-N	34.00	34.50	136.0	168.0	58.0	32.00	42.00	G1/2"	SOMT 09T306-DT
DR035-140-32-12-4D-N	35.00	40.50	140.0	176.0	58.0	32.00	50.00	G 1/2"-14	SOMT 120408-DT
DR036-144-32-12-4D-N	36.00	41.00	144.0	180.0	58.0	32.00	50.00	G 1/2"-14	SOMT 120408-DT
DR037-148-32-12-4D-N	37.00	41.50	148.0	184.0	58.0	32.00	50.00	G 1/2"-14	SOMT 120408-DT
DR038-152-32-12-4D-N	38.00	42.00	152.0	188.0	58.0	32.00	50.00	G 1/2"-14	SOMT 120408-DT
DR039-156-32-12-4D-N	39.00	42.50	156.0	192.0	58.0	32.00	50.00	G 1/2"-14	SOMT 120408-DT
DR040-160-40-12-4D-N	40.00	43.00	160.0	196.0	68.0	40.00	50.00	G 3/4"-14	SOMT 120408-DT
DR041-164-40-12-4D-N	41.00	43.50	164.0	200.0	68.0	40.00	50.00	G 3/4"-14	SOMT 120408-DT
DR042-168-40-12-4D-N	42.00	44.00	168.0	204.0	68.0	40.00	50.00	G 3/4"-14	SOMT 120408-DT
DR043-172-40-12-4D-N	43.00	44.50	172.0	208.0	68.0	40.00	50.00	G 3/4"-14	SOMT 120408-DT
DR044-176-40-12-4D-N	44.00	45.00	176.0	212.0	68.0	40.00	50.00	G 3/4"-14	SOMT 120408-DT
DR045-180-40-16-4D-N	45.00	51.00	180.0	215.0	68.0	40.00	60.00	G 3/4"-14	SOMT 160512-DT
DR046-184-40-16-4D-N	46.00	51.50	184.0	219.0	68.0	40.00	60.00	G 3/4"-14	SOMT 160512-DT
DR047-188-40-16-4D-N	47.00	52.00	188.0	223.0	68.0	40.00	60.00	G 3/4"-14	SOMT 160512-DT
DR048-192-40-16-4D-N	48.00	52.50	192.0	227.0	68.0	40.00	60.00	G 3/4"-14	SOMT 160512-DT
DR049-196-40-16-4D-N	49.00	53.00	196.0	231.0	68.0	40.00	60.00	G 3/4"-14	SOMT 160512-DT
DR050-200-40-16-4D-N	50.00	54.00	200.0	235.0	68.0	40.00	60.00	G 3/4"-14	SOMT 160512-DT
DR051-204-40-16-4D-N	51.00	54.50	204.0	239.0	68.0	40.00	60.00	G 3/4"-14	SOMT 160512-DT
DR052-208-40-16-4D-N	52.00	55.00	208.0	243.0	68.0	40.00	60.00	G 3/4"-14	SOMT 160512-DT
DR053-212-40-16-4D-N	53.00	55.50	212.0	247.0	68.0	40.00	60.00	G 3/4"-14	SOMT 160512-DT
DR054-216-40-16-4D-N	54.00	56.00	216.0	251.0	68.0	40.00	60.00	G 3/4"-14	SOMT 160512-DT
DR055-220-40-16-4D-N	55.00	56.50	220.0	255.0	68.0	40.00	60.00	G 3/4"-14	SOMT 160512-DT
DR056-224-40-16-4D-N	56.00	57.00	224.0	259.0	68.0	40.00	60.00	G 3/4"-14	SOMT 160512-DT
DR057-228-40-16-4D-N	57.00	57.50	228.0	263.0	68.0	40.00	60.00	G 3/4"-14	SOMT 160512-DT
DR058-232-40-16-4D-N	58.00	58.00	232.0	267.0	68.0	40.00	60.00	G 3/4"-14	SOMT 160512-DT
DR059-236-40-16-4D-N	59.00	59.00	236.0	271.0	68.0	40.00	60.00	G 3/4"-14	SOMT 160512-DT
DR060-240-40-16-4D-N	60.00	60.00	240.0	275.0	68.0	40.00	60.00	G 3/4"-14	SOMT 160512-DT

- Hole tolerance D+0.35/-0.05 in average conditions applied. It can be higher or lower according to machine and tooling conditions
- For eccenter sleeves (used with tool diameter range of 14.00-60.00 only), see page 154 • For user guide and cutting conditions, see pages 155-167

[1] The hole diameter can be enlarged by shifting the drill center along the lathe X-axis, or by using eccentric sleeves in drill rotating applications

[2] Master insert identification

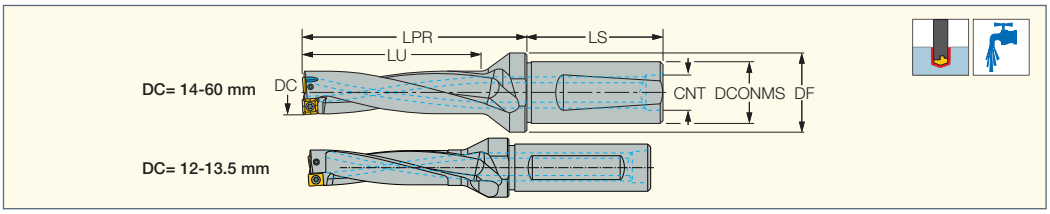
For inserts, see pages: AOMT/AOGT (150) • SOGX/T-AL (151) • SOMT-DT (152) • SOMT-GF (151) • SOMT-HD (152) • SOMX-DT (150) • SOMX-GF (150) • SOMX-HD (151)

Continued

DR-TWIST
INDEXABLE DRILL LINE

DR-4D-N

Indexable Square Insert Drills with Coolant Holes, Drilling Depth 4xD



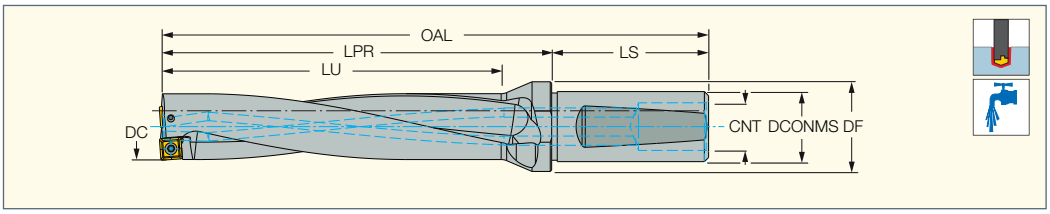
Spare Parts

Designation						
DR120-048-16-04-4D-N	SR 34-533	T-6/5				
DR125-050-16-04-4D-N	SR 34-533	T-6/5				
DR130-052-16-04-4D-N	SR 34-533	T-6/5				
DR135-054-16-04-4D-N	SR 34-533	T-6/5				
DR140-056-20-05-4D-N	SR 34-533/L	T-6/5				
DR145-058-20-05-4D-N	SR 34-533/L	T-6/5				
DR150-060-20-05-4D-N	SR 34-533/L	T-6/5				
DR155-062-20-05-4D-N	SR 34-533/L	T-6/5				
DR160-064-20-05-4D-N	SR 34-533/L	T-6/5				
DR165-066-20-05-4D-N	SR 34-533/L	T-6/5				
DR170-068-20-05-4D-N	SR 34-533/L	T-6/5				
DR175-070-20-05-4D-N	SR 34-533/L	T-6/5				
DR180-072-25-06-4D-N	SR 34-508/L		T-7/51			
DR185-074-25-06-4D-N	SR 34-508/L		T-7/51			
DR190-076-25-06-4D-N	SR 34-508/L		T-7/51			
DR195-078-25-06-4D-N	SR 34-508/L		T-7/51			
DR200-080-25-06-4D-N	SR 34-508/L		T-7/51			
DR205-082-25-06-4D-N	SR 34-508/L		T-7/51			
DR210-084-25-07-4D-N	SR 14-560		T-8/53			
DR215-086-25-07-4D-N	SR 14-560		T-8/53			
DR220-088-25-07-4D-N	SR 14-560		T-8/53			
DR225-090-25-07-4D-N	SR 14-560		T-8/53			
DR230-092-25-07-4D-N	SR 14-560		T-8/53			
DR235-094-25-07-4D-N	SR 14-560		T-8/53			
DR240-096-25-07-4D-N	SR 14-560		T-8/53			
DR025-100-32-09-4D-N	SR 34-506 M3X0.5			BLD T09/M7-SW4	SW4-SD	
DR026-104-32-09-4D-N	SR 34-506 M3X0.5			BLD T09/M7-SW4	SW4-SD	
DR027-108-32-09-4D-N	SR 34-506 M3X0.5			BLD T09/M7-SW4	SW4-SD	
DR028-112-32-09-4D-N	SR 34-506 M3X0.5			BLD T09/M7-SW4	SW4-SD	
DR029-116-32-09-4D-N	SR 34-506 M3X0.5			BLD T09/M7-SW4	SW4-SD	
DR030-120-32-09-4D-N	SR 34-506 M3X0.5			BLD T09/M7-SW4	SW4-SD	
DR031-124-32-09-4D-N	SR 34-506 M3X0.5			BLD T09/M7-SW4	SW4-SD	
DR032-128-32-09-4D-N	SR 34-506 M3X0.5			BLD T09/M7-SW4	SW4-SD	
DR033-132-32-09-4D-N	SR 34-506 M3X0.5			BLD T09/M7-SW4	SW4-SD	
DR034-136-32-09-4D-N	SR 34-506 M3X0.5			BLD T09/M7-SW4	SW4-SD	
DR035-140-32-12-4D-N	SR 14-544/S			BLD T15/S7	SW6-SD	
DR036-144-32-12-4D-N	SR 14-544/S			BLD T15/S7	SW6-SD	
DR037-148-32-12-4D-N	SR 14-544/S			BLD T15/S7	SW6-SD	
DR038-152-32-12-4D-N	SR 14-544/S			BLD T15/S7	SW6-SD	
DR039-156-32-12-4D-N	SR 14-544/S			BLD T15/S7	SW6-SD	
DR040-160-40-12-4D-N	SR 14-544/S			BLD T15/S7	SW6-SD	
DR041-164-40-12-4D-N	SR 14-544/S			BLD T15/S7	SW6-SD	
DR042-168-40-12-4D-N	SR 14-544/S			BLD T15/S7	SW6-SD	
DR043-172-40-12-4D-N	SR 14-544/S			BLD T15/S7	SW6-SD	
DR044-176-40-12-4D-N	SR 14-544/S			BLD T15/S7	SW6-SD	
DR045-180-40-16-4D-N	SR 76-961			BLD T15/M7		SW6-T
DR046-184-40-16-4D-N	SR 76-961			BLD T15/M7		SW6-T
DR047-188-40-16-4D-N	SR 76-961			BLD T15/M7		SW6-T
DR048-192-40-16-4D-N	SR 76-961			BLD T15/M7		SW6-T
DR049-196-40-16-4D-N	SR 76-961			BLD T15/M7		SW6-T
DR050-200-40-16-4D-N	SR 76-961			BLD T15/M7		SW6-T
DR051-204-40-16-4D-N	SR 76-961			BLD T15/M7		SW6-T
DR052-208-40-16-4D-N	SR 76-961			BLD T15/M7		SW6-T
DR053-212-40-16-4D-N	SR 76-961			BLD T15/M7		SW6-T
DR054-216-40-16-4D-N	SR 76-961			BLD T15/M7		SW6-T
DR055-220-40-16-4D-N	SR 76-961			BLD T15/M7		SW6-T
DR056-224-40-16-4D-N	SR 76-961			BLD T15/M7		SW6-T
DR057-228-40-16-4D-N	SR 76-961			BLD T15/M7		SW6-T
DR058-232-40-16-4D-N	SR 76-961			BLD T15/M7		SW6-T
DR059-236-40-16-4D-N	SR 76-961			BLD T15/M7		SW6-T
DR060-240-40-16-4D-N	SR 76-961			BLD T15/M7		SW6-T

DR-TWIST
INDEXABLE DRILL LINE

DR-5D-N

Indexable Square Insert Drills with Coolant Holes, Drilling Depth 5xD



Designation	DC	DCX[1]	LU	LPR	LS	OAL	DCONMS	DF	CNT	MIID[2]	Insert
DR140-070-20-05-5D-N	14.00	16.10	70.0	88.0	50.0	138.00	20.00	25.00	G1/4"	SOMX 050204-DT	SOMX 050204-DT
DR150-075-20-05-5D-N	15.00	16.80	75.0	93.0	50.0	143.00	20.00	25.00	G1/4"	SOMX 050204-DT	SOMX 050204-DT
DR160-080-20-05-5D-N	16.00	17.35	80.0	98.0	50.0	148.00	20.00	25.00	G1/4"	SOMX 050204-DT	SOMX 050204-DT
DR170-085-20-05-5D-N	17.00	17.98	85.0	103.0	50.0	153.00	20.00	25.00	G1/4"	SOMX 050204-DT	SOMX 050204-DT
DR180-090-25-06-5D-N	18.00	19.73	90.0	110.0	56.0	166.00	25.00	32.00	G3/8"	SOMX 060304-DT	SOMX 060304-DT
DR190-095-25-06-5D-N	19.00	20.35	95.0	115.0	56.0	171.00	25.00	32.00	G3/8"	SOMX 060304-DT	SOMX 060304-DT
DR200-100-25-06-5D-N	20.00	20.98	100.0	120.0	56.0	176.00	25.00	32.00	G3/8"	SOMX 060304-DT	SOMX 060304-DT
DR210-105-25-07-5D-N	21.00	23.63	105.0	125.0	56.0	181.00	25.00 [3]	32.00	G3/8"	SOMX 070305-DT	SOMX 070305-DT
DR220-110-25-07-5D-N	22.00	24.25	110.0	130.0	56.0	186.00	25.00 [3]	32.00	G3/8"	SOMX 070305-DT	SOMX 070305-DT
DR230-115-25-07-5D-N	23.00	24.88	115.0	135.0	56.0	191.00	25.00 [3]	32.00	G3/8"	SOMX 070305-DT	SOMX 070305-DT
DR240-120-25-07-5D-N	24.00	25.50	120.0	140.0	56.0	196.00	25.00 [3]	32.00	G3/8"	SOMX 070305-DT	SOMX 070305-DT

- Hole tolerance D+0.35/-0.05 in average conditions applied. It can be higher or lower according to machine and tooling conditions
- For eccenter sleeves, see page 154 • For user guide and cutting conditions, see pages 155-167

[1] The hole diameter can be enlarged by shifting the drill center along the lathe X-axis, or by using eccentric sleeves in drill rotating applications

[2] Master insert identification

[3] One flat shank

For inserts, see pages: SOGX/T-AL (151) • SOMX-DT (150) • SOMX-GF (150) • SOMX-HD (151)

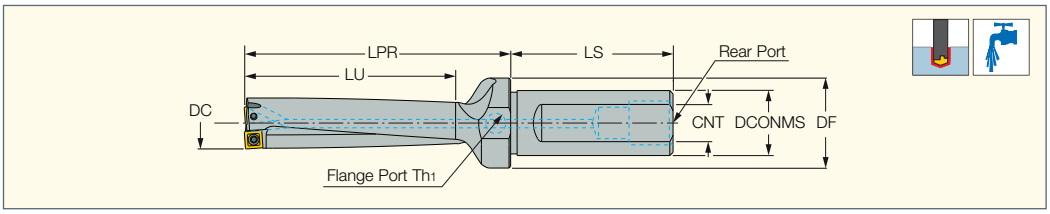
Spare Parts

Designation			
DR140-070-20-05-5D-N	SR 34-533/L	T-6/5	
DR150-075-20-05-5D-N	SR 34-533/L	T-6/5	
DR160-080-20-05-5D-N	SR 34-533/L	T-6/5	
DR170-085-20-05-5D-N	SR 34-533/L	T-6/5	
DR180-090-25-06-5D-N	SR 34-508/L		T-7/51
DR190-095-25-06-5D-N	SR 34-508/L		T-7/51
DR200-100-25-06-5D-N	SR 34-508/L		T-7/51
DR210-105-25-07-5D-N	SR 14-560		T-8/53
DR220-110-25-07-5D-N	SR 14-560		T-8/53
DR230-115-25-07-5D-N	SR 14-560		T-8/53
DR240-120-25-07-5D-N	SR 14-560		T-8/53

DR-TWIST
INDEXABLE DRILL LINE

DR-4D-T

Indexable Insert Drills for Non-Rotating Applications with Coolant Holes and One Flat Shank, Drilling Depth 4xD



Designation	DC	DCX[1]	LU	LPR	LS	DCONMS	DF	CNT	Th1	MIID[2]
DR140-056-20-05-4D-T	14.00	15.90	56.0	77.0	50.0	20.00	27.70	NPT 1/4-18	NPT 1/16-27	SOMX 050204-DT
DR160-064-20-05-4D-T	16.00	17.90	64.0	82.0	50.0	20.00	27.70	NPT 1/4-18	NPT 1/16-27	SOMX 050204-DT
DR180-072-25-06-4D-T	18.00	20.90	72.0	94.0	56.0	25.00	32.00	NPT 3/8-18	NPT 1/16-27	SOMX 060304-DT
DR210-084-25-07-4D-T	21.00	24.90	84.0	109.0	56.0	25.00	32.00	NPT 3/8-18	NPT 1/16-27	SOMX 070305-DT
DR250-100-32-09-4D-T	25.00	27.90	100.0	133.0	58.0	32.00	42.00	NPT 1/2-14	NPT 1/16-27	SOMT 09T306-DT
DR280-112-32-09-4D-T	28.00	30.90	112.0	144.0	58.0	32.00	42.00	NPT 1/2-14	NPT 1/16-27	SOMT 09T306-DT
DR310-124-32-09-4D-T	31.00	31.90	124.0	157.0	58.0	32.00	42.00	NPT 1/2-14	NPT 1/16-27	SOMT 09T306-DT
DR320-128-32-09-4D-T	32.00	32.90	128.0	161.0	58.0	32.00	42.00	NPT 1/2-14	NPT 1/16-27	SOMT 09T306-DT
DR350-140-32-12-4D-T	35.00	39.90	140.0	177.0	58.0	32.00	50.00	NPT 1/2-14	NPT 1/16-27	SOMT 120408-DT
DR400-160-40-12-4D-T	40.00	44.90	160.0	197.0	68.0	40.00	50.00	NPT 3/4-14	NPT 1/4-18	SOMT 120408-DT
DR450-180-40-16-4D-T	45.00	51.90	180.0	215.0	68.0	40.00	60.00	NPT 3/4-14	NPT 1/4-18	SOMT 160512-DT
DR560-224-40-16-4D-T	56.00	57.90	224.0	259.0	68.0	40.00	60.00	NPT 3/4-14	NPT 1/4-18	SOMT 160512-DT
DR580-232-40-16-4D-T	58.00	58.90	232.0	267.0	68.0	40.00	60.00	NPT 3/4-14	NPT 1/4-18	SOMT 160512-DT

- Hole tolerance D+0.35/-0.05 in average conditions. However it can be higher or lower according to machine and tooling conditions
- For eccenter sleeves, see page 154 • For user guide and cutting conditions, see pages 155-167

[1] The hole diameter can be enlarged by shifting the drill center along the lathe X-axis, or by using eccentric sleeves in drill rotating applications

[2] Master insert identification

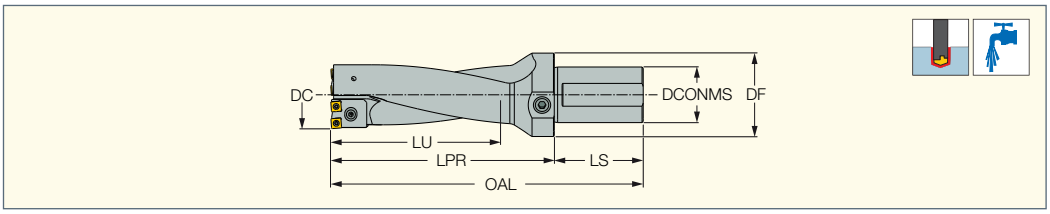
For inserts, see pages: SOGX/T-AL (151) • SOMT-DT (152) • SOMT-GF (151) • SOMT-HD (152) • SOMX-DT (150) • SOMX-GF (150) • SOMX-HD (151)

Spare Parts

Designation								
DR140-056-20-05-4D-T	SR 34-533/L	T-6/5					PLG 1/16PTF	PLG 1/4PTF Z C
DR160-064-20-05-4D-T	SR 34-533/L	T-6/5					PLG 1/16PTF	PLG 1/4PTF Z C
DR180-072-25-06-4D-T	SR 34-508/L		T-7/51				PLG 1/16PTF	PLG 3/8PTF
DR210-084-25-07-4D-T	SR 14-560		T-8/53				PLG 1/16PTF	PLG 3/8PTF
DR250-100-32-09-4D-T	SR 34-506 M3X0.5			BLD T09/M7-SW4	SW4-SD		PLG 1/16PTF	PLG 1/2PTF
DR280-112-32-09-4D-T	SR 34-506 M3X0.5			BLD T09/M7-SW4	SW4-SD		PLG 1/16PTF	PLG 1/2PTF
DR310-124-32-09-4D-T	SR 34-506 M3X0.5			BLD T09/M7-SW4	SW4-SD		PLG 1/16PTF	PLG 1/2PTF
DR320-128-32-09-4D-T	SR 34-506 M3X0.5			BLD T09/M7-SW4	SW4-SD		PLG 1/16PTF	PLG 1/2PTF
DR350-140-32-12-4D-T	SR 14-544/S			BLD T15/S7	SW6-SD		PLG 1/16PTF	PLG 1/2PTF
DR400-160-40-12-4D-T	SR 14-544/S			BLD T15/S7	SW6-SD		PLG 3/4PTF	PLG 1/4PTF Z C
DR450-180-40-16-4D-T	SR 76-961			BLD T15/M7		SW6-T	PLG 3/4PTF	PLG 1/4PTF Z C
DR560-224-40-16-4D-T	SR 76-961			BLD T15/M7		SW6-T	PLG 3/4PTF	PLG 1/4PTF Z C
DR580-232-40-16-4D-T	SR 76-961			BLD T15/M7		SW6-T	PLG 3/4PTF	PLG 1/4PTF Z C

DR-TWIST
INDEXABLE DRILL LINE

DR-CA
DR Large Diameter Drills (57-80mm) with Cartridges and One Flat Shank



Designation	DCN(1)	DCX(2)	DC_3(3)	LU	LPR	OAL	DCONMS	LS	DF	MIID(4)	MIID_2(5)
DR057>062-155-50-10/11CA	57.00	62.00	63.00	155.0	201.0	281.00	50.00	80.0	64.00	SOMT 10	SOMT 11 (6)
DR063>066-165-50-10/11CA	63.00	66.00	67.00	165.0	215.0	295.00	50.00	80.0	69.00	SOMT 10	SOMT 11 (6)
DR067>073-183-50-11/12CA	67.00	73.00	74.00	183.0	240.0	320.00	50.00	80.0	69.00	SOMT 11	SOMT 12 (6)
DR074>080-200-50-12/14CA	74.00	80.00	81.00	200.0	250.0	330.00	50.00	80.0	74.00	SOMT 12	SOMT 14 (6)

- Hole tolerance: D±0.5 in average conditions applied. It can be higher or lower according to machine and tooling conditions
- For user guide and cutting conditions, see pages 155-167

(1) Cutting diameter minimum
(2) Cutting diameter maximum
(3) Max. dia. on lathe, with the thickest shim plate
(4) Master insert identification
(5) Master insert identification 2
(6) External insert on external cartridge

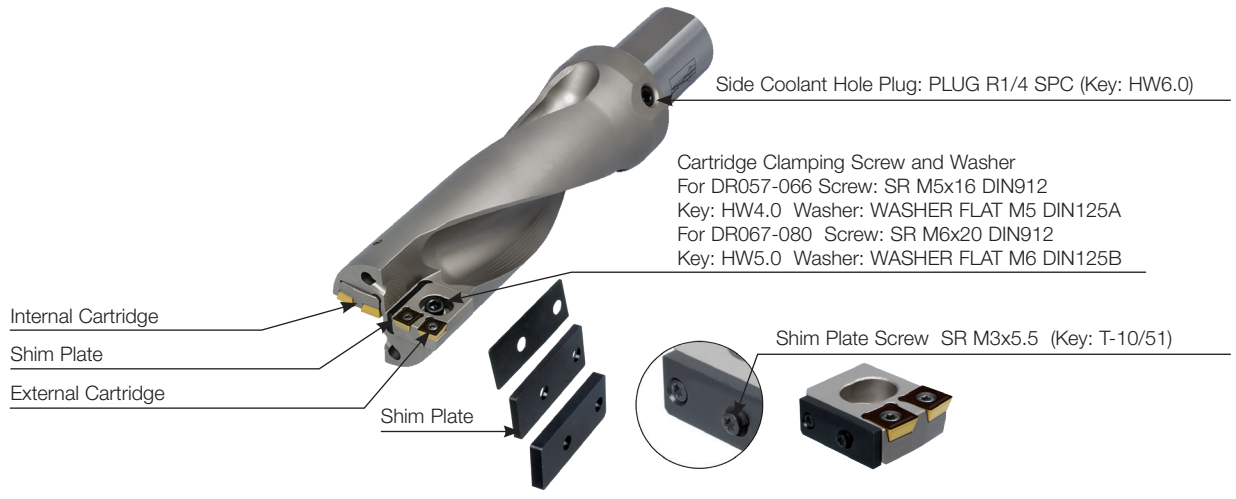
For inserts, see pages: SOMT-DT (152) • SOMT-GF (151) • SOMT-HD (152)

Spare Parts

Designation	Dimensions						DCX(1)	Shim Plate	Cartridges	Inserts	Insert Clamping Screw	Key Blade & Handle
	DC	LU	DCONMS	DF	LPR	LS						
DR057>062-155-50-10/11CA	57	155	50	75	201	80	63	ISP-10-D058 ISP-10-D059 ISP-10-D060 ISP-10-D061 ISP-10-D062	Internal: CA57>62-IN-10/10 External: CA57>62-EX-10/11	On internal cartridge: Ext.-SOMT 100408 Int.-SOMT 100408 On external cartridge: Ext.-SOMT 110408 Int.-SOMT 100408	On internal cartridge: Ext.&Int.-SR 14-571 On external cartridge: Ext.-SR 14-544/S Int.-SR 14-571	On internal cartridge: Ext.&Int.-BLD T10/S7 On external cartridge: Ext.-BLD T15/S7 Int.-BLD T10/S7
	58	155	50	75	201	80						
	59	155	50	75	201	80						
	60	155	50	75	201	80						
	61	155	50	75	201	80						
	62	155	50	75	201	80						
DR063>066-165-50-10/11CA	63	165	50	75	215	80	67	ISP-10-D064 ISP-10-D065 ISP-10-D066	Internal: CA63>66-IN-10/10 External: CA63>66-EX-10/11	On internal cartridge: Ext.-SOMT 100408 Int.-SOMT 100408 On external cartridge: Ext.-SOMT 110408 Int.-SOMT 100408	On internal cartridge: Ext.&Int.-SR 14-571 On external cartridge: Ext.-SR 14-544/S Int.-SR 14-571	On internal cartridge: Ext.&Int.-BLD T10/S7 On external cartridge: Ext.-BLD T15/S7 Int.-BLD T10/S7
	64	165	50	75	215	80						
	65	165	50	75	215	80						
	66	165	50	75	215	80						
DR067>073-183-50-11/12CA	67	183	50	75	240	80	74	ISP-11-D068 ISP-11-D069 ISP-11-D070 ISP-11-D071 ISP-11-D072 ISP-11-D073	Internal: CA67>73-IN-11/11 External: CA67>73-EX-11/12	On internal cartridge: Ext.-SOMT 110408 Int.-SOMT 110408 On external cartridge: Ext.-SOMT 120408 Int.-SOMT 110408	On internal cartridge: Ext. & Int. SR 14-544/S On external cartridge: Ext.-SR 14-544/S Int.-SR 14-544/S	On internal cartridge: Ext.&Int.-BLD T15/S7 On external cartridge: Ext.&Int.-BLD T15/S7
	68	183	50	75	240	80						
	69	183	50	75	240	80						
	70	183	50	75	240	80						
	71	183	50	75	240	80						
	72	183	50	75	240	80						
	73	183	50	75	240	80						
DR074>080-200-50-12/14CA	74	200	50	75	250	80	81	ISP-12-D075 ISP-12-D076 ISP-12-D077 ISP-12-D078 ISP-12-D079 ISP-12-D080	Internal: CA74>80-IN-12/12 External: CA74>80-EX-12/14	On internal cartridge: Ext.-SOMT 120408 Int.-SOMT 120408 On external cartridge: Ext.-SOMT 140512 Int.-SOMT 120408	On internal cartridge: Ext.&Int.-SR 14-544/S On external cartridge: SR 10402265 Int.-SR 14-544/S	On internal cartridge: Ext.&Int.-BLD T15/S7 On external cartridge: Ext.-BLD T20/S7 Int.-BLD T15/S7
	75	200	50	75	250	80						
	76	200	50	75	250	80						
	77	200	50	75	250	80						
	78	200	50	75	250	80						
	79	200	50	75	250	80						
	80	200	50	75	250	80						

(1) Max. dia. on lathe, with the thickest shim plate

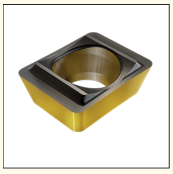
Drill Assembly

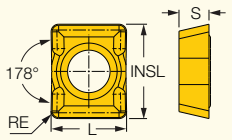


DR-TWIST INDEXABLE DRILL LINE

AOMT/AOGT

Inserts for DR Drills





Designation	Dimensions L	S	RE	INSL	Tough ↔ Hard IC08	IC1008	IC808	IC908
AOGT 040204-90AL	4.00	1.60	0.40	5.00	●			
AOMT 040204-90DT	4.00	1.60	0.40	5.00		●	●	●
AOMT 040204-90HD (1)	4.00	1.60	0.40	5.00			●	

• Used on 12-13.5 mm DR drills • For user guide and cutting conditions, see pages 155-167

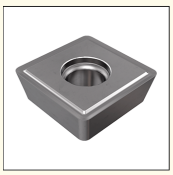
(1) For low carbon steel and soft materials.

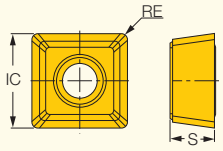
For tools, see pages: DR-2D-N (141) • DR-3D-N (143) • DR-4D-N (145)

DR-TWIST INDEXABLE DRILL LINE

SOMX-DT

Inserts for DR Drills with a DT General Use Chipformer





Designation	Dimensions IC	S	RE	Tough ↔ Hard IC5500	IC808	IC908	IC8080	IC9080
SOMX 050204-DT	5.40	2.40	0.35		●	●	●	●
SOMX 060304-DT	6.20	3.20	0.40	●	●	●	●	●
SOMX 070305-DT	7.70	3.60	0.50	●	●	●	●	●
SOMX 160512-DT	16.00	5.56	1.20			●		

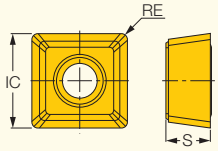
• DT - a general use chipformer for medium to high feed rates • For user guide and cutting conditions, see pages 155-167

For tools, see pages: DR-2D-N (141) • DR-3D-N (143) • DR-4D-N (145) • DR-4D-T (148) • DR-5D-N (147) • MD-DR-DH-HEAD (122)

DR-TWIST INDEXABLE DRILL LINE

SOMX-GF

Inserts with a GF Chipformer for Soft Materials Used on DR Drills



Designation	Dimensions IC	S	RE	IC908
SOMX 050204-GF	5.40	2.40	0.40	●
SOMX 060304-GF	6.20	3.20	0.40	●
SOMX 070305-GF	7.70	3.60	0.50	●

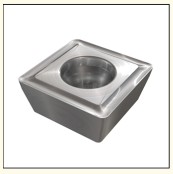
• GF - a narrow chipformer for use on soft materials at low to medium feed rates • For user guide and cutting conditions, see pages 155-167

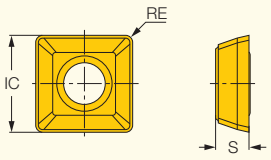
For tools, see pages: DR-2D-N (141) • DR-3D-N (143) • DR-4D-N (145) • DR-4D-T (148) • DR-5D-N (147) • MD-DR-DH-HEAD (122)

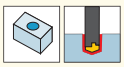
DR-TWIST INDEXABLE DRILL LINE

SOMT-GF

DR Drill Inserts for Soft Materials
At Low-to-Medium Feeds







Designation	Dimensions IC	S	RE	Tough ↔ Hard IC328	IC908
SOMT 09T306-GF	9.00	3.81	0.60	●	●
SOMT 120408-GF	12.70	4.76	0.80		●
SOMT 160512-GF	16.00	5.56	1.20		●

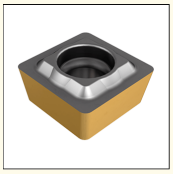
- For user guide and cutting conditions, see pages 155-167

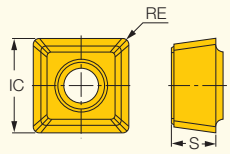
For tools, see pages: CR SOMT (472) • DR-2D-N (141) • DR-3D-N (143) • DR-4D-N (145) • DR-4D-T (148) • DR-CA (149)

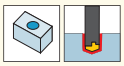
DR-TWIST INDEXABLE DRILL LINE

SOMX-HD

DR Drill Inserts for Carbon
Steel and Soft Materials







Designation	Dimensions IC	S	RE	IC808
SOMX 050204-HD	5.40	2.40	0.40	●
SOMX 060304-HD	6.20	3.20	0.40	●
SOMX 070305-HD	7.70	3.60	0.50	●

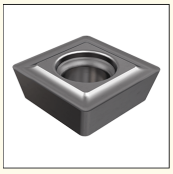
- For user guide and cutting conditions, see pages 155-167

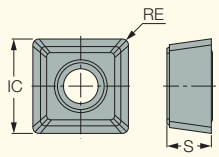
For tools, see pages: DR-2D-N (141) • DR-3D-N (143) • DR-4D-N (145) • DR-4D-T (148) • DR-5D-N (147) • MD-DR-DH-HEAD (122)

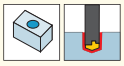
DR-TWIST INDEXABLE DRILL LINE

SOGX/T-AL

DR Drill Inserts for Aluminum







Designation	Dimensions IC	S	RE	IC08
SOGX 050204-AL	5.40	2.40	0.40	●
SOGX 060304-AL	6.20	3.20	0.40	●
SOGX 070305-AL	7.70	3.60	0.50	●
SOGT 09T306-AL	9.00	3.81	0.60	●
SOGT 120408-AL	12.70	4.76	0.80	●

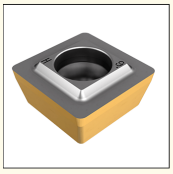
- For user guide and cutting conditions, see pages 155-167
- Sharp cutting edge with polished rake for aluminum

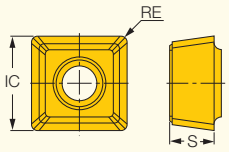
For tools, see pages: CR SOMT (472) • DR-2D-N (141) • DR-3D-N (143) • DR-4D-N (145) • DR-4D-T (148) • DR-5D-N (147)

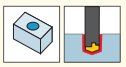
DR-TWIST
INDEXABLE DRILL LINE

SOMT-HD

DR Drill Inserts for Carbon Steel and Soft Materials







Designation	Dimensions IC	S	RE	IC808
SOMT 09T306-HD	9.00	3.81	0.60	●
SOMT 100408-HD	9.80	4.30	0.80	●
SOMT 110408-HD	11.50	4.80	0.80	●
SOMT 120408-HD	12.70	4.76	0.80	●
SOMT 160512-HD	16.00	5.56	1.20	●

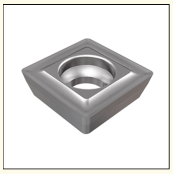
• For user guide and cutting conditions, see pages 155-167

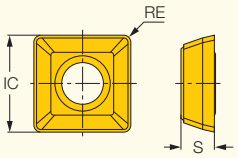
For tools, see pages: CR SOMT (472) • DR-2D-N (141) • DR-3D-N (143) • DR-4D-N (145) • DR-4D-T (148) • DR-CA (149)

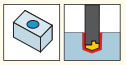
DR-TWIST
INDEXABLE DRILL LINE

SOMT-DT

DR Drill Inserts for General Applications At Medium-to-High Feeds







Designation	Dimensions IC	S	RE	Tough ↔ Hard IC328	IC5500	IC808	IC908	IC8080	IC9080
SOMT 060204-DT	6.00	1.96	0.40	●		●	●		
SOMT 09T306-DT	9.00	3.81	0.60		●	●	●	●	●
SOMT 100408-DT	9.80	4.30	0.80			●	●	●	
SOMT 110408-DT	11.50	4.80	0.80			●	●		
SOMT 120408-DT	12.70	4.76	0.80			●	●	●	●
SOMT 140512-DT	14.30	5.20	1.20			●	●	●	
SOMT 160512-DT	16.00	5.56	1.20			●	●		●

• For user guide and cutting conditions, see pages 155-167

For tools, see pages: CR SOMT (472) • DR-2D-N (141) • DR-3D-N (143) • DR-4D-N (145) • DR-4D-T (148) • DR-CA (149)

Specially Tailored Designation Code Key

Metric
MD - IDI Heads
MJ - Jet Heads
MR - XOMT/SOMT/SOMX/ ISO/Etc. Inserts
MZ - WOLH insert
MC - Assembly
MF - ChamIQ
MH - Combi Holder
MN - Sumo
MNC - COMBICHAM
M3N - 3 Cham

Metric
##.#

Metric
##.#

Other Characteristics
A - Adjustable Cartridge
B - Boring Tool
C - Frontal Coolant
F - Cartridge
H - Heavy Metal
L - Left-Hand Drill
M - Twisted
P - Combi Head
R - No Cartridge
S - Stacked Plates
T - Flat Bottom
Y - Combi Assembly
AM - Printed tool
BB - Back boring
HSS - High Speed Material
SL - Side Lock (SUMO) (2)
TR - Trepanning
(2) Additional (not instead), example:. ..N3R-SL

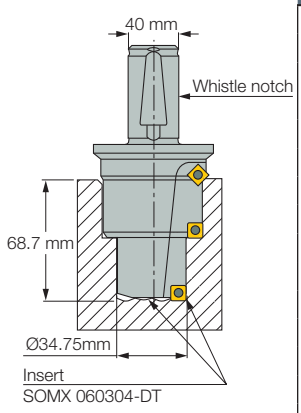
Inch
IC - Assembly
ID - IDI Heads
IH - Combi Holder
IJ - Jet Heads
IN - Sumo
INC - COMBICHAM
IR - XOMT/SOMT/SOMX/ ISO/Etc. Inserts
IZ - WOLH insert
I3N - 3 Cham
IF - ChamIQ

Inch
#.##

Inch
#.##

ANSI	ISO
A - 2	S/XOMT 06
B - 2.5	WOLH 05
C - 3	WOLH 06
D - 4	WOLH 08
E -	DCM Pocket
F - 3	SOMT/X 09
G -	ISO
H - 4	SOMT/X 12
I -	SOMT 11
J -	SOMT 10
K - 5	SOMT/X 16
L -	SOMT 14
N -	SUMO/3 CHAM
P -	SOMX 05
Q -	SOMX 06
R -	SOMX 07
T -	AOMT

Line	Drill Diameter	Drill Depth	Shank/ Flange Code	Insert Size	Insert Qty	Other
M	R	3	4	8		0	6	9	N	D	-	Q	4	R

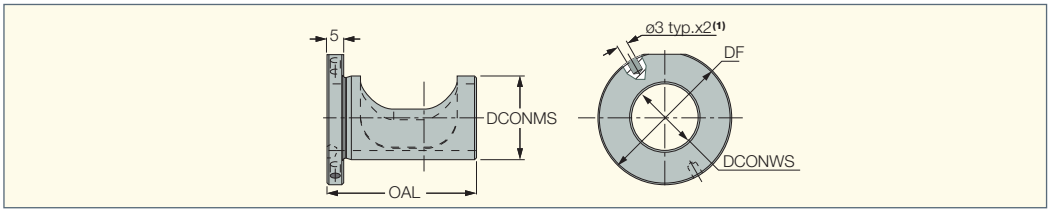


Shank Type Code
B - BBS (ABS Compatible) (1)
C - Capto / Camfix
D - Two Parallel Flats (DZ Metric Type)
E - Extended Lengh (For Coolant Ring)
F - One Parallel Flat
H - HSK
K - IM (ISO 2662-1 standard)
L - One Flat (ISO9766 Cham Shank)
N - Whistle Notch (DR Metric Type)
M - Morse
P - CLICKFIT
R - Round (Fully Rounded)
V - VDI
W - Weldon
X - Special
GP - GP shank
(1) The trademark ABS® is owned by the KOMET GROUP

Shank/Diameter Type Code	
I - 6 mm	Z - .375″
Y - 8 mm	T - .437″
P - 10 mm	V - .500″
S - 12 mm	W - .562″
Q - 14 mm	U - .625″
R - 16 mm	J - .750"
H - 18 mm	K - 1.000"
A - 20 mm	L - 1.250″
B - 25 mm	M - 1.500″
C - 32 mm	N - 2.000"
D - 40 mm	2 - MT2
E - 50 mm	3 - MT3
F - 63 mm	4 - MT4
G - 80 mm	5 - MT5
X - Special	

Accessories

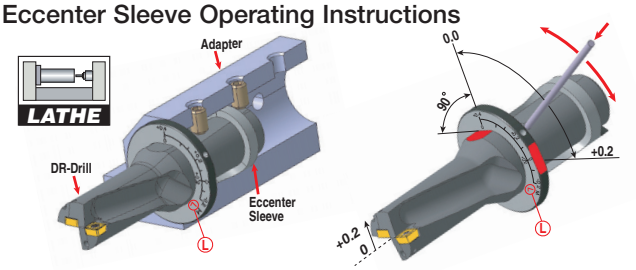
Drilling Eccenter Sleeves
Bushings for Enlarging
Or Reducing DR Nominal
Drilling Diameters by Shifting
the Drill Off-Center



Designation	DCONWS	DCONMS	DF	OAL
ECCENTER SLEEVE 20X25	20.00	25.00	40.00	44.00
ECCENTER SLEEVE 25X32	25.00	32.00	50.00	46.00
ECCENTER SLEEVE 32X40	32.00	40.00	65.00	55.00
ECCENTER SLEEVE 40X50	40.00	50.00	75.00	77.00

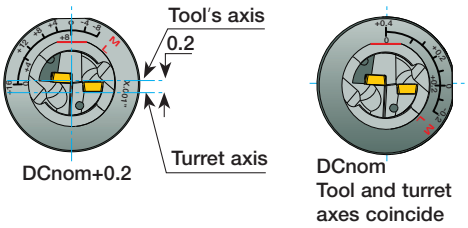
- (1) Holes for inserting a pin, used to facilitate radial adjustment of the sleeve (pin not supplied)

Eccenter Sleeve Operating Instructions

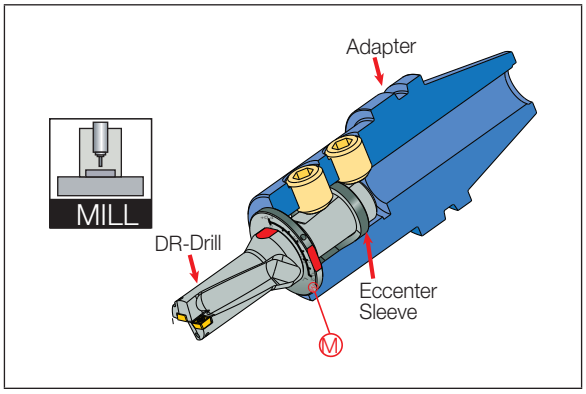


On a lathe, the eccenter sleeve can shift the drill's axis to coincide with the spindle axis. The eccentric sleeve enables alignment of the drill's axis with the spindle axis within a 0.2 mm range (turn the sleeve counterclockwise to raise it).

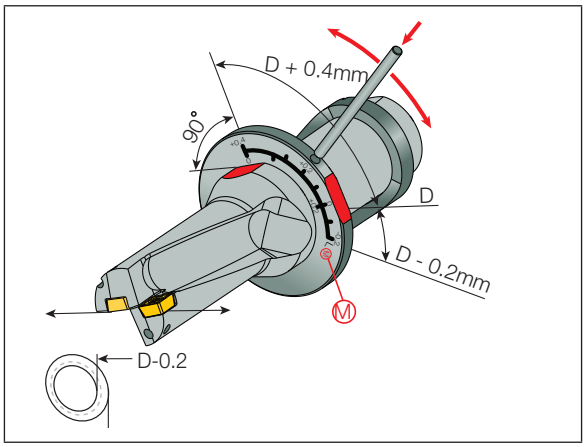
Operation on a Lathe



On a milling machine, the drill's nominal diameter can be changed by shifting the drill's axis out of the tool spindle.

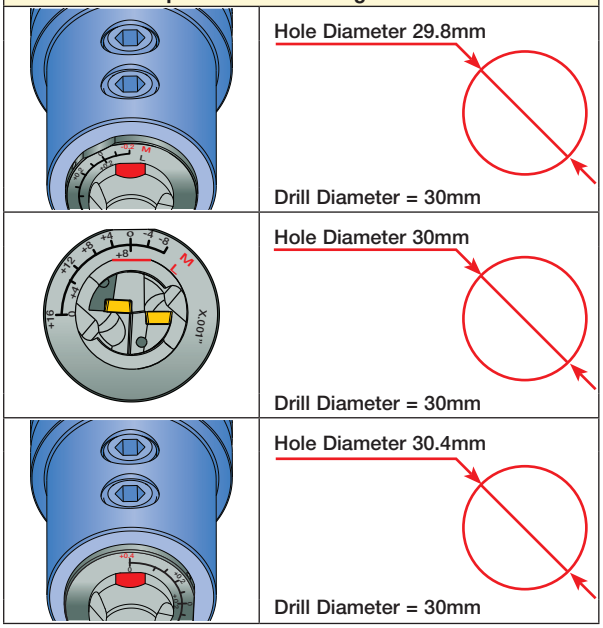


Radial adjustment pin (not supplied)

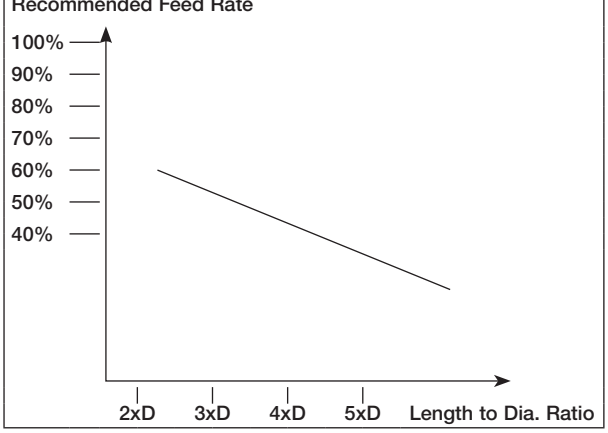


To enlarge the diameter, turn the sleeve clockwise

Operation on a Milling Machine



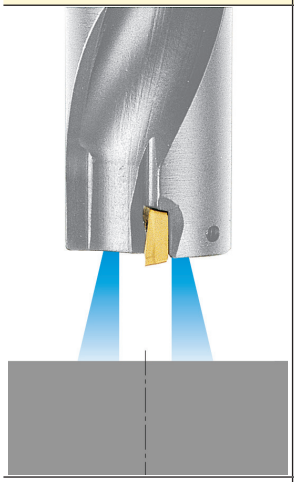
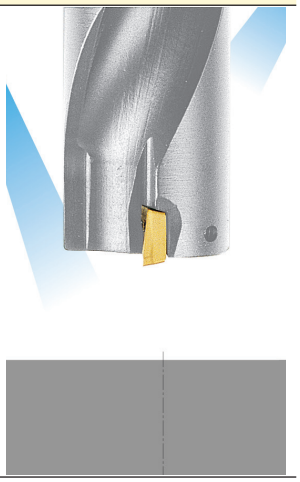
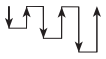
Recommended Feed When Using Eccenter Sleeves



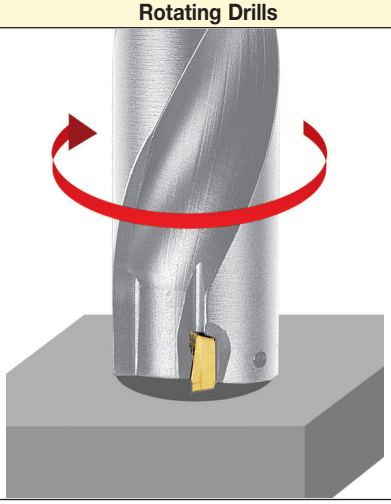
Machining Conditions

Cooling Methods

Directing the coolant through the tool is essential for reliable machining. This method prevents chip pile up, insert damage or breakage, and damage to the workpiece surface.

Internal Coolant	External Coolant
	
Apply standard cutting data.	Drilling depth is limited to 1.5xD. For larger depths, a pecking cycle is recommended. 

Rotating Drills



For Best Results:

1 Check adapter rigidity.
2 Minimize drill runout in relation to spindle center line.
3 Use recommended cutting conditions.

How to Select Cutting Parameters

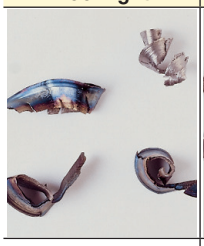
Step 1 - Prior to Drilling

- Use charts on pages 158-159 to select feed and speed according to workpiece material.
- For the first grade choice, in general we recommend selecting IC808.

Step 2 - Initial Test Hole Drilling

- Evaluate chip evacuation. If not satisfactory, adjust feed and speed, using example photos below.
- If chip evacuation is still a problem, i.e. chips are too long, change the chipbreaker to GF as shown below.

SOMT/SOMX

Too Tight	Optimal Shape	Too Long
		
may cause insert damage		may cause tool damage

Optimizing Chip Shape

Chip control is one of the most important factors for tool performance in order to facilitate chip evacuation and avoid tool damage.
Cutting conditions must be adjusted to achieve optimal chip shape.

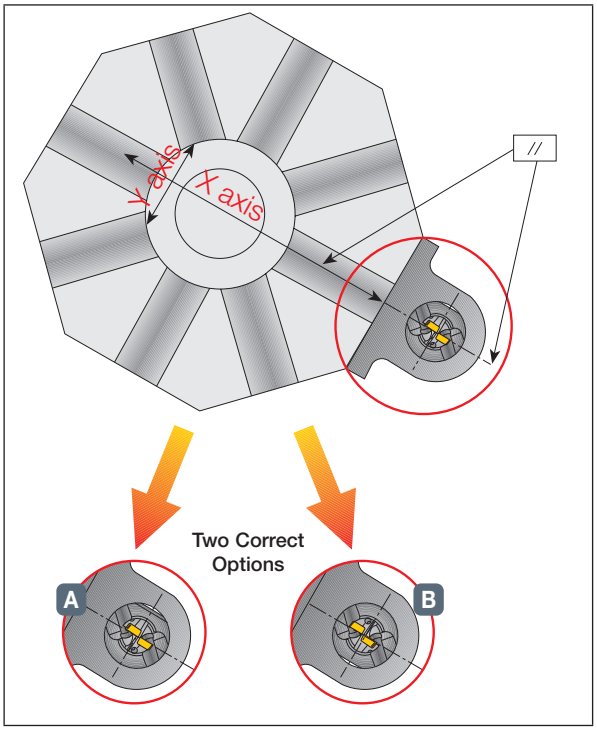
How to Achieve Optimal Chip Shape

Too Tight		Too Long
Increase speed within recommended limits. If not satisfactory, decrease feed.	→ Optimal Shape ←	If machining at high speed, first reduce speed. If unsatisfactory, increase feed, but do not exceed upper limit.

Setup of Non-Rotating Drills

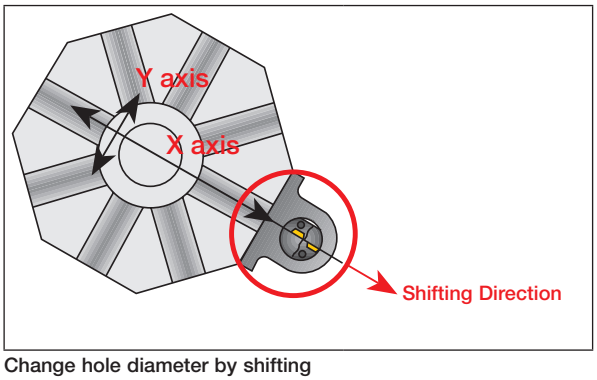
Drill Positioning on Turret Lathe

The peripheral insert cutting edge should be parallel to the machine X-axis.



The drill can be mounted on the X-axis or on a 180º rotation.

For better chip evacuation it is recommended to apply option **A** peripheral insert position.



Change hole diameter by shifting drill's center along lathe x-axis.

Diameter Change by Center Shift

DR-06	
D Nominal	**D Max. on Lathe**
16	19.5
17	20.0
18	20.5
19	21.0
20	21.5
21	22.0
22	23.0

DR-09	
D Nominal	**D Max. on Lathe**
23	28.5
24	29.0
25	29.5
26	30.0
27	30.5
28	31.0
29	31.5
30	32.0
31	32.5
32	33.3
33	34.0
34	34.5
35	35.0

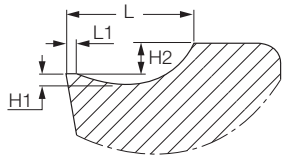
DR-12	
D Nominal	**D Max. on Lathe**
34	39.5
35	40.0
36	40.5
37	41.0
38	41.5
39	42.0
40	42.5
41	43.0
42	43.5
43	44.0
44	44.5
45	51.0
46	51.5
47	52.0
48	52.5
49	53.0
50	54.0
51	54.5
52	55.0
53	55.5
54	56.0
55	56.5
56	57.0
57	57.5
58	58.0
59	59.0
60	60.0

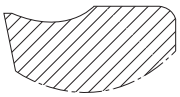
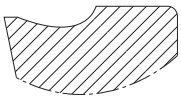
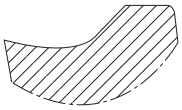
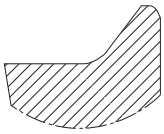
Applicable only when using SOMT inserts

Setup of Non-Rotating Drills

Machining Conditions

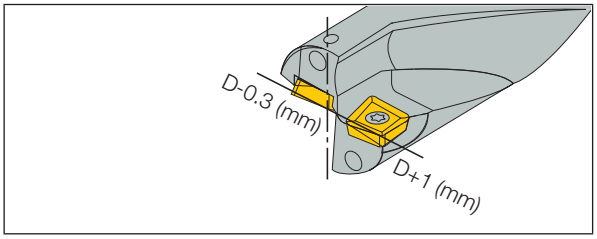
Optimizing Chip Shape for DR Drills



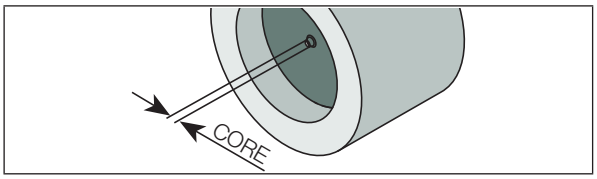
DT	GF
	
General use **For ISO – P/M/K/H/S materials** **For medium up to high feed rates** L – open H2 – low L1 – medium H1 – shallow	**For low up to medium feed rates** **For ISO – P material** L – close H2 – high L1 – small H1 – deep
AL	**HD**
	
For medium up to high feed rates **For ISO – N material** L – open H2 – high L1 – non H1 – deep	**For low up to medium feed rates** **For ISO – P material** L – open H2 – high L1 – non H1 – non

Make Sure the Center Line of the Drill Is Aligned with the Spindle Center Line. It Is Recommended to Verify the Setup According to the Instructions Shown Below.

DR-06



Under regular conditions it is possible to adjust the center line of the drill (X-axis of the machine) in order to change hole diameter size.

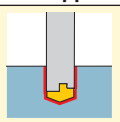


1 Drill a hole 6mm deep with the drill center line aligned with the spindle center line.
2 Check the existing core. If there is no core, check the alignment of the Y-axis of the drill and spindle. Correct by checking the adapter or adjusting the Y-axis.
3 Check that the hole diameter equals the drill diameter +0.0- +0.2mm. If not, adjust the X-axis.
4 Note: In some operations, part of the core may break. If this occurs, use finger contact to verify if any core remains

Warning: As the drill goes all the way through a workpiece, it ejects a disc.
For worker safety, guards should be used.

Drilling Insert Grades

Grades for Applications and Materials

Material Groups / Main Applications		ISO P		ISO M	ISO K	ISO N	ISO S	ISO H
		1-11	12-13	14	15-20	21-28	31-37	38-41
		Steel	Stainless Steel Ferritic & Martensitic	Stainless Steel Austenitic & Duplex (Ferritic-Austenitic)	Cast Iron	Nonferrous	High Temp	Hard Steel
 DRILLING	Harder							
		IC808 (908)	IC808 (908)	IC808 (908)	IC8080[1] (9080)	IC808 (908)	IC808 (908)	IC808 (908)
		IC5500			IC808 (908)			
	Tougher							

[1] Use for an outer insert on DR drills

Default recommendation

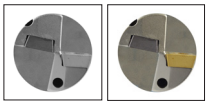
DR-TWIST Cutting Parameters

Material Groups						
ISO	Material		Condition	Tensile Strength [N/mm²]	Hardness HB	Group No.(1)
P	non-alloy steel and cast steel, free cutting steel	<0.25% C	annealed	420	125	1
		≥0.25% C	annealed	650	190	2
		<0.55% C	quenched and tempered	850	250	3
		≥0.55% C	annealed	750	220	4
			quenched and tempered	1000	300	5
	low alloy and cast steel (less than 5% of alloying elements)		annealed	600	200	6
			quenched and tempered	930	275	7
				1000	300	8
				1200	350	9
	high alloyed steel, cast steel and tool steel		annealed	680	200	10
			quenched and tempered	1100	325	11
	stainless steel and cast steel		ferritic/martensitic	680	200	12
			martensitic	820	240	13
M	stainless steel and cast steel		austenitic, duplex	600	180	14
K	gray cast iron (GG)		ferritic / pearlitic		180	15
			pearlitic / martensitic		260	16
	nodular cast iron (GGG)		ferritic		160	17
			pearlitic		250	18
	malleable cast iron		ferritic		130	19
			pearlitic		230	20
N	aluminum-wrought alloys		not hardenable		60	21
			hardenable		100	22
	aluminum-cast alloys	≤12% Si	not hardenable		75	23
			hardenable		90	24
		>12% Si	high temperature		130	25
	copper alloys	>1% Pb	free cutting		110	26
			brass		90	27
			electrolytic copper		100	28
	non metallic		duroplastics, fiber plastics			29
			hard rubber			30
S	high temperature alloys	Fe based	annealed		200	31
			hardened		280	32
		Ni or Co based	annealed		250	33
			hardened		350	34
			cast		320	35
	titanium alloys		pure	400		36
			alpha+beta alloys, hardened	1050		37
H	hardened steel		hardened		55 HRC	38
			hardened		60 HRC	39
	chilled cast iron		cast		400	40
	cast iron		hardened		55 HRC	41

- This table refers to 2/3xD drill ratio usage. For 4xD ratio decrease cutting data by 15%
- Chipformer should be selected based on our geometry range recommendations
- When using external coolant supply only, reduce cutting speed by 10%
- Use internal coolant supply when machining austenitic stainless steel

(1) For workpiece materials list, see pages 542-637

Recommended Machining Conditions



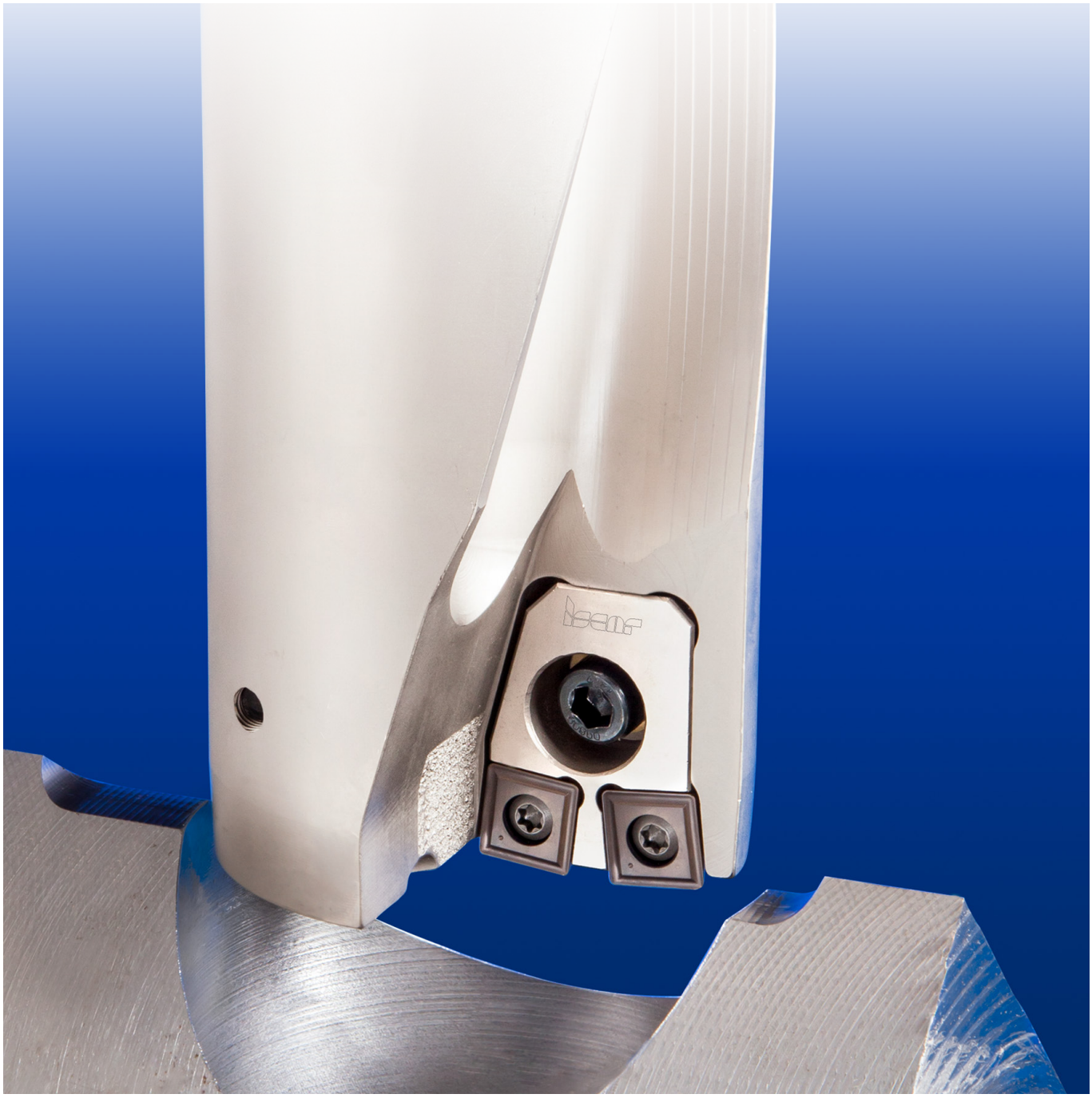
Mat.No.	Cutting Speed (1)			Feed Vs. Insert Size mm/rev						
	V_c m/min IC808 / 908 / 08 Central /external	V_c m/min IC8080 / 9080 External	V_c m/min IC5500 External	DR-04 AL/DT/ HD	DR-05 GF/DT/AL/HD	DR-06 GF/DT/AL/HD	DR-07 GF/DT/AL/HD	DR-09/10 GF/DT/AL/HD	DR-11/12 GF/DT/AL/HD	DR-14/16 GF/DT/AL/HD
1	200-300	260-390	150-240	0.04-0.08 0.02-0.06	0.06-0.10 0.10-0.15 0.04-0.08	0.07-0.12 0.10-0.16 0.04-0.08	0.08-0.12 0.12-0.18 0.05-0.10	0.10-0.15 0.14-0.22 0.05-0.10	0.12-0.16 0.15-0.25 0.08-0.15	0.14-0.17 0.16-0.26 0.08-0.15
2										
3	150-200	190-260								
4										
5					0.06-0.10 0.10-0.15 0.04-0.08	0.07-0.12 0.10-0.15 0.04-0.08	0.08-0.12 0.10-0.16 0.05-0.10	0.10-0.14 0.14-0.20 0.05-0.10	0.12-0.15 0.14-0.22 0.08-0.15	0.14-0.16 0.15-0.24 0.08-0.15
6	150-220	190-290	120-200							
7	120-180	160-230								
8										
9										
10	120-190	160-250			0.06-0.10 0.10-0.14 0.08-0.112	0.06-0.10 0.10-0.14 0.08-0.112	0.06-0.10 0.10-0.14 0.08-0.112	0.08-0.12 0.12-0.18 0.096-0.144	0.10-0.15 0.14-0.20 0.112-0.160	0.14-0.17 0.16-0.24 0.128-0.192
11	100-160	210-310								
12	160-240	210-310	150-240		0.06-0.10 0.048-0.08	0.06-0.10 0.048-0.08	0.06-0.12 0.048-0.096	0.08-0.12 0.064-0.096	0.10-0.14 0.08-0.112	0.12-0.20 0.096-0.160
13										
14	160-240	210-310		0.04-0.08	0.06-0.10	0.06-0.10	0.06-0.12	0.08-0.12	0.10-0.14	0.12-0.20
15	150-250	190-320		0.08-0.16	0.10-0.22	0.10-0.22	0.10-0.22	0.15-0.25	0.18-0.30	0.20-0.34
16										
17	120-180	160-230								
18										
19										
20										
21	150-300	190-390		0.08-0.24	0.12-0.25	0.12-0.25	0.12-0.25	0.20-0.30	0.2-0.35	0.28-0.45
22										
23										
24										
25										
26										
27										
28										
29										
30										
31	20-50	30-60		0.03-0.07	0.04-0.08	0.04-0.08	0.05-0.09	0.07-0.10	0.08-0.12	0.10-0.14
32										
33										
34										
35										
36	50-60	60-80								
37										
38	20-50	30-60		0.04-0.08	0.05-0.08	0.05-0.08	0.06-0.09	0.07-0.10	0.08-0.12	0.10-0.14
39										
40										
41										

(1) The center insert must be PVD coated (IC908/IC808)

- This table refers to 2/3xD drill lengths only, for 4xD and 5xD drills, decrease cutting parameters by 15-25%
- PVD grade (IC908/IC808) can be used with both peripheral and center inserts
- CVD grade (IC9080/IC8080/IC5500) to be used for peripheral inserts, not recommended to be used as center insert
- Mixing chipbreakers can be used to improve chip formation, i.e. peripheral insert „DT“ and center insert „HD“
- Chipformer should be selected based on our geometry range recommendations
- When using external coolant supply only, reduce cutting speed by 10%
- Use internal coolant supply when machining austenitic stainless steel

Machining Conditions for Large Diameter DR-TWIST Drills

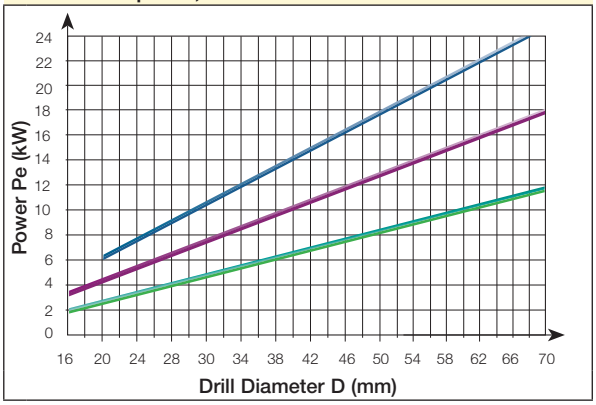
Material	V_c (m/min)	Feed (mm/rev)		
		57-66 Dia.	67-73 Dia.	74-80 Dia.
low Carbon Steel (<0.3% C)	180-250	0.08-0.12	0.08-0.12	0.09-0.14
Carbon Steel (>0.3% C)	160-220	0.12-0.18	0.12-0.18	0.14-0.21
Low Alloy Steel (<HB300)	150-220	0.10-0.18	0.10-0.18	0.12-0.21
High Alloy Steel (>HB300)	130-180	0.10-0.15	0.10-0.15	0.12-0.17
Stainless Steel	170-240	0.08-0.15	0.08-0.15	0.09-0.17
Cast Iron	180-250	0.15-0.22	0.15-0.22	0.17-0.25
Ductile Cast Iron	130-200	0.10-0.20	0.10-0.20	0.12-0.23
Aluminum	330-380	0.15-0.25	0.15-0.25	0.17-0.29
Ti Alloy (Ti 6Al)	30-60	0.12-0.16	0.12-0.16	0.14-0.18



Machining Conditions

Machine Power and Feed Force Requirements

Power Required, in Relation to Drill Diameter



f - cutting force:

- f=0.25
- f=0.18
- f=0.1

Required Machine Power

Material: AISI/SAE: 4140
EN: 42CrMo4
DIN: W-Nr. 1.7225

Cutting speed: 100 m/min

For different cutting speeds, use factor as follows:

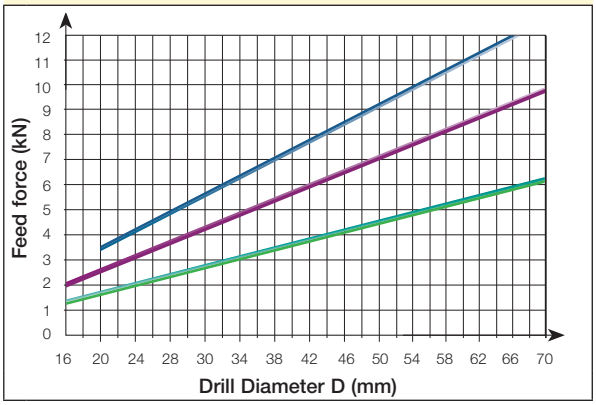
Machine Power

$$P = \frac{Pe \cdot C}{\eta}$$

V_c [m/min]	100	150	200
C	1.0	1.5	2.0

Pe - effective power
C - load factor
η - machine efficiency

Feed Force (thrust Force) Required, in Relation to Drill Diameter



f - cutting force:

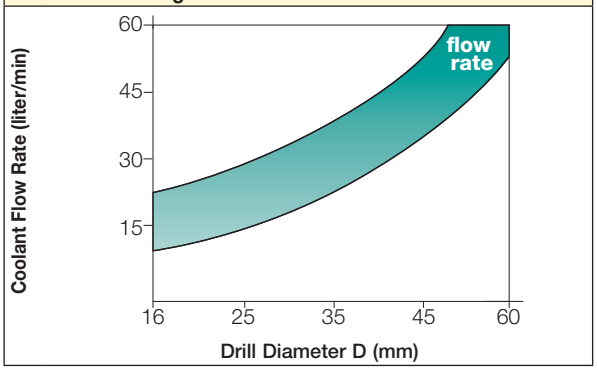
- f=0.25
- f=0.18
- f=0.1

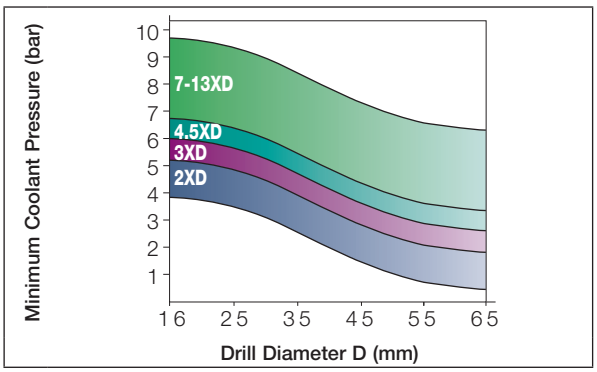
Required Feed Force

Material: AISI/SAE: 4140
EN: 42CrMo4
DIN: W-Nr. 1.7225

Internal Coolant Pressure

Selecting Coolant Pressure and Flow Rate



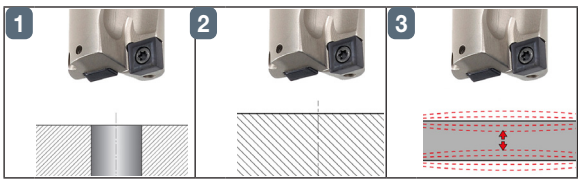


* For special drills more than 4xD, it is recommended to use high coolant pressure 15–70 bar

Troubleshooting

Irregular Conditions for DR Drills

If surface slope exceeds 5º, reduce feed by 50% during penetration or when exiting. It is preferred to pre-face the surface to eliminate slope.



1 Drilling into a pre-hole reduces feed to eliminate deflection(1) of the drill body.

2 Drilling an interrupted cut reduces feed during crossing to eliminate deflection(1) of the drill body.

3 Insufficient stability of workpiece requires additional support. Reduce feed.

(1) Deflection may be observed by a mark on the drill body.
Note: For irregular applications, use DR drills with XOMT inserts as a first priority.

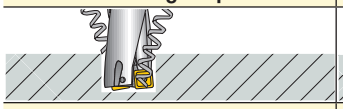
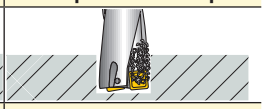
Stacked Plates

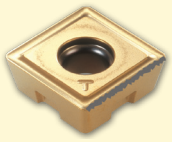
Drilling operation is not recommended, but may be done by specially designed drills in 16-60mm range.
Apply standard cutting data.

Regular Conditions for DR Drills

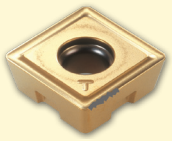
Note: For irregular applications, use DR drills with XOMT inserts as a first priority.

Indexable Insert Drills - Troubleshooting DR Chips

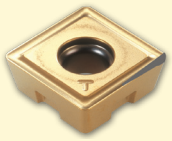
Chip Jamming Due to Long Chips	Chip Jamming Despite Short Chips
	
Solutions	**Solutions**
1 Increase feed. If drilling a very soft material, reduce feed and increase speed. 2 Choose a geometry with a tighter chipbreaker for lower feeds (GF). 3 Long chips that rotate around the drill are problematic. If chip formation can not be improved by changing the machining conditions, use a pecking cycle.	1 Increase coolant pressure/volume. 2 Reduce cutting speed.



Chipping Along Cutting Edge	Machine Troubleshooting Vibrations
Solutions	**Solutions**
1 Reduce entrance feed. 2 Choose a tougher grade. 3 Choose a geometry with open chip breaking for higher feeds. (SOMT, WOLH) 4 Reduce feed.* 5 Reduce cutting speed. 6 Increase coolant pressure.	1 Check mounting of drill. 2 Check mounting of workpiece. 3 Increase feed. If drilling a very soft material, reduce feed and increase speed.* 4 Reduce cutting speed.



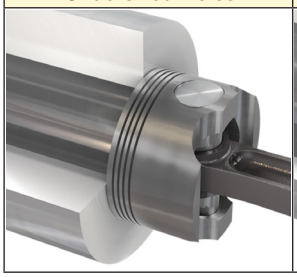
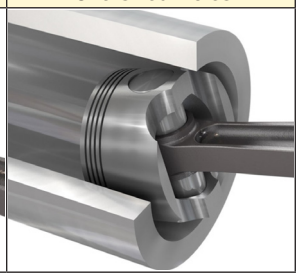
Chipping of Center Insert	Insufficient Torque
Solutions	**Solutions**
1 Check mounting of drill. 2 Check mounting of workpiece. 3 Reduce entrance feed. 4 Reduce cutting speed. 5 Check drill runout (should be 0.05mm maximum).	1 Reduce feed.* 2 Choose a geometry with a looser chipformer.



Excessive Flank Wear	Insufficient Power
Solutions	**Solutions**
1 Reduce cutting speed. 2 Increase coolant pressure/volume. 3 Choose a better wear resistant grade.	1 Reduce cutting speed. 2 Reduce feed.* 3 Choose a geometry with a looser chipformer.

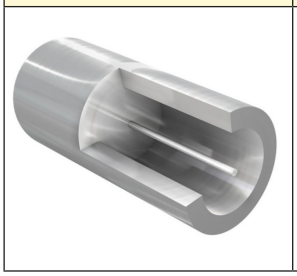
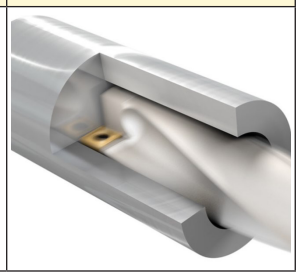
* Use GF chipformer

Troubleshooting

Undersized Holes	Oversized Holes
	

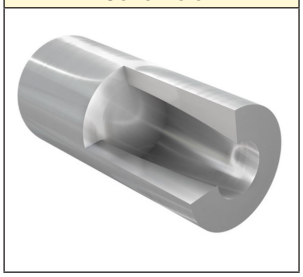
Rotating Drill
- Check that overlapping is correct between inner and outer inserts
- Check inner insert over center
- Increase coolant pressure
- Change the insert chipbreaker

Non-Rotating Drill
- Check misalignment
- Check that overlapping is correct between inner and outer inserts
- Check inner insert over center
- Rotate drill 180 degrees
- Increase coolant pressure
- Change the insert chipbreaker

Pin in Holes	Vibrations
	

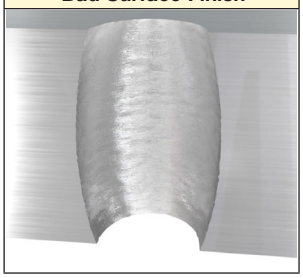
Rotating Drill
- Use shorter drill overhang (if possible)
- Reduce feed by 30-50%
- Check that overlapping is correct between inner and outer inserts
- Check inner insert is positioned over center within its limits
- Increase coolant pressure
- Change the insert chipbreaker

Non-Rotating Drill
- Check misalignment
- Check that overlapping is correct between inner and outer inserts
- Check inner insert over center
- Rotate drill 180 degrees
- Increase coolant pressure
- Change the insert chipbreaker

Cone Hole


Rotating Drill
- Use shorter drill overhang (if possible)
- Reduce feed by 30-50%
- Check that overlapping is correct between inner and outer inserts
- Check inner insert is positioned over center within its limits
- Increase coolant pressure
- Change the insert chipbreaker

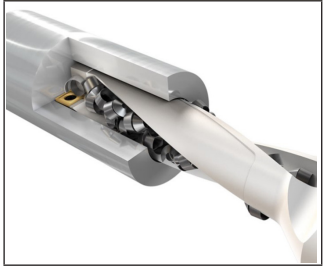
Non-Rotating Drill
- Check misalignment
- Check that overlapping is correct between inner and outer inserts
- Check inner insert is positioned over center within its limits
- Rotate drill 180 degrees
- Increase coolant pressure
- Change the insert chipbreaker

Bad Surface Finish


Rotating Drill
- Improve chip formation (change chipbreaker type or cutting condition)
- Increase coolant pressure
- Increase speed and reduce feed
- Stabilize clamping device

Non-Rotating Drill
- Improve chip formation (change chipbreaker type or cutting condition)
- Increase coolant pressure
- Increase speed and reduce feed
- Stabilize clamping device

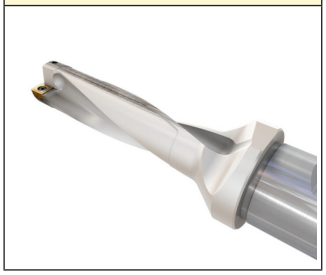
Chip Jamming



Rotating Drill
- Improve chip formation (change chipbreaker type or cutting condition)
- Increase coolant pressure

Non-Rotating Drill
- Improve chip formation (change chipbreaker type or cutting condition)
- Increase coolant pressure

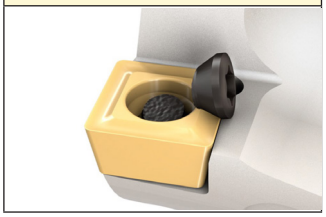
Deflection



Rotating Drill
- Use shorter drill overhang (if possible)
- Reduce feed by 30-50%
- Check that overlapping is correct between inner and outer inserts
- Check inner insert is positioned over center within its limits
- Increase coolant pressure
- Change the insert chipbreaker
- Stabilize clamping device

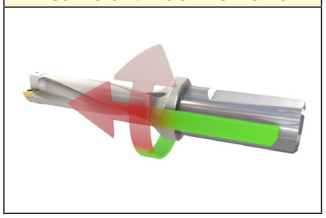
Non-Rotating Drill
- Check misalignment
- Check that overlapping is correct between inner and outer inserts
- Check inner insert is positioned over center within its limits
- Rotate drill 180 degrees
- Increase coolant pressure
- Change the insert chipbreaker

Broken Screw



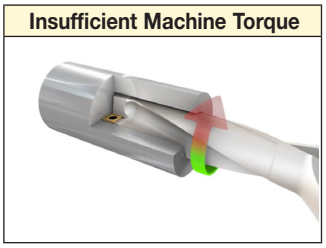
- Use recommended torque wrench
- Lubricate the screw before tightening

Insufficient Machine Power



- Reduce speed and feed
- Use recommended chipbreaker for low feed

Insufficient Machine Torque



- Reduce feed
- Use recommended chipbreaker for low feed

Chip Formation Problems

Long Chip/ Chip Jamming:
This typical problem with stainless or low carbon steel, can affect hole quality, especially on surface finish, and in some cases can cause insert or tool breakage.

Optimal Shape	Too Long	Too Tight
	If machining at high speed, first reduce speed. If unsatisfactory, increase feed, but do not exceed upper limit.	Increase speed within recommended limits. If not satisfactory, decrease feed.

DR-DH Deep Drills for Milling Centers and Lathe Machines

DR-DH are drills for a drilling depth-to-diameter ratio of 7xD and up, to be used on standard horizontal milling centers, turning, and multi-task machines. Use of supplementary machine and setup can be avoided. These drills can be used with the existing adaptations, not requiring any special coolant pressure or extra pump capacity.

DR-DH drills are available as semi-standard items in the diameter range of 25.4 to 69.5mm.

Features

- High feed drilling: up to 0.35mm/rev for high productivity
- Excellent surface quality: Ra = 0.6 – 2.0 [µm]
- Good hole cylindricity: 50-80 [µm]
- Hole tolerance: IT10
- Large drilling depth: L=7xD and higher – up to 800mm
- Carries standard SOMX/SOMT indexable inserts with 4 cutting edges
- No dedicated machine or extra setup needed
- Standard coolant pressure as used in general drilling
- Standard indexable, double-ended guide pads
- Used for steel (ISO P) and cast iron (ISO K) materials

ISCAR Offers Two Drill Versions:

Single Flute

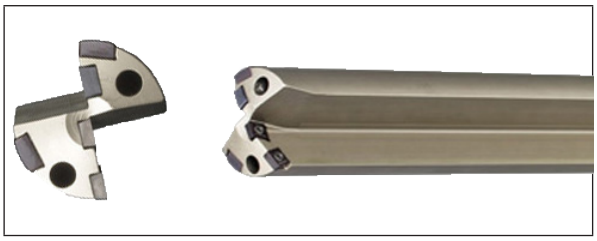
DR-DH-31.65-0350NC-2FS

- Very rigid tool
- Designed for easy to cut materials such as cast iron and low alloyed steel
- Patented chip gullet design

Double Flute

DR-DH-31.65-0350NC-2FD

- Double chip gullet for improved chip flow
- Designed for drilling gummy materials such as non-alloyed steel and high temperature alloys



Designation

Metric

DR - DH	-	31.65	-	0350	N	C	-	2	F	D
Family		Dia. (mm)		Drilling depth (mm)	Shank Type	Shank dia.		No. of Pads	F=Cartridge R= No cartridge	D=Double flute S=Single flute

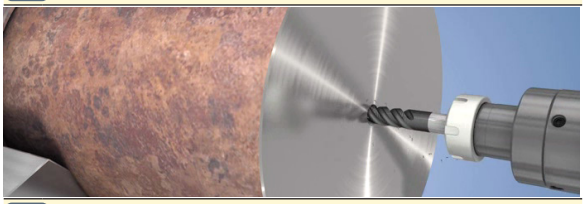
Inch

DR - DH	-	1.500	-	12.00	N	C	-	2	F	D

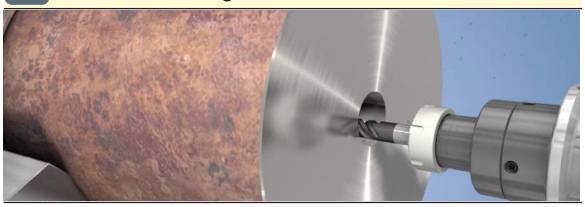
1 A short pre-hole 20mm long (minimum) with **H8** hole tolerance should be prepared to guide the long drill (a standard **DR** drill or an endmill can be used).

Option No.1

1.1 Penetration with an Endmill



1.2 Enlargement with the Endmill

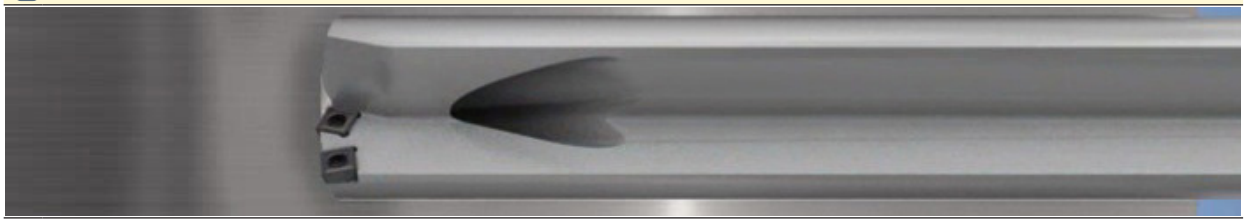


Option No.2

2.1 Penetration by Drilling

2.2 DRG-MF Boring

3 Deep Hole Drilling with DR-DH



2 The **DR-DH** drill should enter into the pre-hole at slow rotation speed and with coolant supply.

DR-DH Insert Mounting Configuration Vs. Drill Diameter

DR-DH ø##.# [mm]	Central Insert	Intermediate Insert	Peripheral Insert	Guiding Pad
25.4-28.5	SOMX 050204...	SOMX 050204...	SOMX 050204...	GPS-06-20-075
28.6-30.0	SOMX 050204...	SOMX 060304...	SOMX 050204...	GPS-07-20-120
30.1-33.0	SOMX 060304...	SOMX 060304...	SOMX 060304...	GPS-07-20-120
33.1-37.5	SOMX 060304...	SOMX 070305...	SOMX 060304...	GPS-08-25-155
37.6-40.5	SOMX 070305...	SOMX 070305...	SOMX 070305...	GPS-08-25-155
40.6-42.9	SOMX 070305...	SOMT 09T306...	SOMX 070305...	GPS-08-25-155
43.0-47.5	SOMT 09T306...	SOMT 09T306...	SOMT 09T306...	GPS-08-25-155
47.6-51.0	SOMT 100408...	SOMT 100408...	SOMT 100408...	GPS-10-30-200
51.1-54.0	SOMT 100408...	SOMT 110408...	SOMT 100408...	GPS-10-30-200
54.1-57.4	SOMT 100408...	SOMT 110408...	SOMT 110408...	GPS-10-30-200
57.5-61.0	SOMT 110408...	SOMT 110408...	SOMT 110408...	GPS-14-40-250
61.1-63.0	SOMT 110408...	SOMT 120408...	SOMT 110408...	GPS-14-40-250
63.1-69.5	SOMT 120408...	SOMT 120408...	SOMT 120408...	GPS-14-40-250

Spare Parts

Insert	Screw	Key
SOMX 050204...	SR 34-533/L	**T-6**/51
SOMX 060304...	SR 34-508/L	T-7/51
SOMX 070305...	SR 14-560	**T-8**/51
SOMT 09T306...	SR 34-506	T-9/51
SOMT 100408...	SR 14-571	T-10/51
SOMT 110408...	SR 14-544/S	T-15/51
SOMT 120408...	SR 14-544/S	T-15/51

Guiding Pad	Clamping Screw	Key
GPS-06-20-075	SR 11201753-1	T-7
GPS-06-20-085	SR 11201753-1	T-7
GPS-06-20-100	SR 11201753-1	T-7
GPS-14-40-250	SR 11201752-2	T-15
GPS-07-20-120	SR 11201753-4	T-9
GPS-10-30-200	SR 11201753-6	T-15

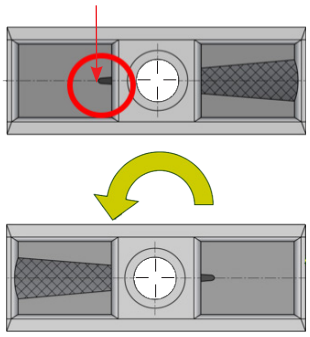
- DR-DH drills can be used with any type of adaptation. However, concentric adapters such as hydraulic chucks are advantageous for better runout. When machining high temperature alloys or applying very high machining loads, it is advisable to use strong gripping adapters such as: side lock adapters, power / hydraulic chucks.
- In case of chip formation or chip evacuation problems, the following sequence is recommended:

1 Reduce cutting speed by 10%
2 Increase internal coolant pressure
3 Apply a pecking cycle
4 Interrupted cut will have a direct influence on hole accuracy, quality and drill life. (Sometimes even tool breakage can occur).

Double-Ended Pad

Worn support pads provide poor surface finish in a drilled hole. In this case, pads should be rotated or replaced.

Rotate when wear shows on the back side of the pad

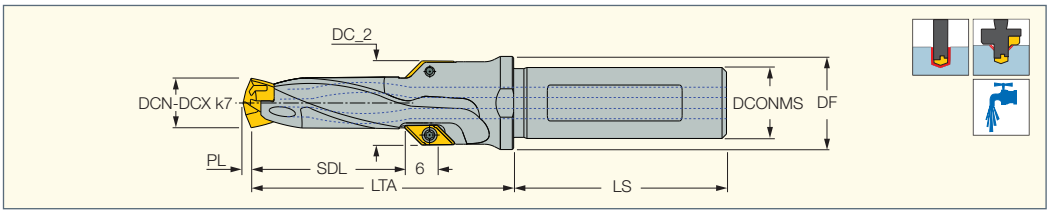


DR-TWIST Cutting Parameters

Material Groups							Recommended Machining Conditions	
ISO	Material		Condition	Tensile Strength Rm [N/mm²]	Hardness HB	Mtl. No.	Cutting Speed V_c m/min	Feed mm/rev
P	non-alloy steel and cast steel, free cutting steel	0.1 - 0.25% C	annealed	420	125	1	100-150	0.10-0.25
		0.25 - 0.25% C	annealed	650	190	2		0.10-0.25
		0.25 - 0.25% C	quenched and tempered	850	250	3	80-150	0.15-0.30
		0.55 - 0.80% C	annealed	750	220	4		0.15-0.30
		0.55 - 0.80% C	quenched and tempered	1000	300	5		0.15-0.30
	low alloy and cast steel (less than 5% of alloying elements)		annealed	600	200	6		0.15-0.30
			quenched and tempered	930	275	7	70-120	0.15-0.30
				1000	300	8		0.15-0.30
				1200	350	9		0.15-0.30
	high alloyed steel, cast steel and tool steel		annealed	680	200	10	80-150	0.10-0.25
			quenched and tempered	1100	325	11	70-120	0.10-0.25
K	grey cast iron (GG)		ferritic / pearlitic		180	15	180-300	0.18-0.35
			pearlitic / martensitic		260	16		0.18-0.35
	nodular cast iron (GGG)		ferritic		160	17	150-250	0.15-0.30
			pearlitic		250	18		0.15-0.30
	malleable cast iron		ferritic		130	19		0.15-0.35
			pearlitic		230	20		0.15-0.35

SUMOCHAM

DCNT (M8-M24)
Drill Body with Exchangeable Heads, Chamfering Inserts, Internal Coolant and One Flat Shank Used for Pre-Tread Holes



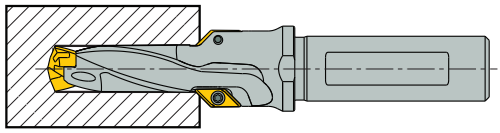
Designation	Dnominal[1]	FTDZ[2]	DCN[3]	DCX[4]	DC_2	SDL	PL	LTA	DCONMS	DF	LS	SSC[5]	MIID[6]	MIID_2[7]
DCNT 068-021-12A-M8	6.80	M8	6.50	6.90	13.50	21.00	1.240	43.80	12.00	16.00	45.0	6.5	ICP 068	AOMT 06
DCNT 085-026-12A-M10	8.50	M10	8.50	8.90	15.50	26.00	1.200	48.80	12.00	17.00	45.0	8.0	ICP 085	AOMT 06
DCNT 102-030-16A-M12	10.20	M12	10.00	10.40	17.00	30.00	1.500	52.50	16.00	20.00	48.0	10.0	ICP 102	AOMT 06
DCNT 120-035-16A-M14	12.00	M14	12.00	12.40	19.00	35.00	1.800	61.00	16.00	21.00	48.0	12.0	ICP 120	AOMT 06
DCNT 140-039-16A-M16	14.00	M16	14.00	14.40	21.00	39.00	2.100	66.90	16.00	23.00	48.0	14.0	ICP 140	AOMT 06
DCNT 175-042-20A-M20	17.50	M20	17.00	17.90	24.00	42.00	2.700	69.30	20.00	25.00	50.0	17.0	ICP 175	AOMT 06
DCNT 210-048-25A-M24	21.00	M24	21.00	21.90	28.00	48.00	3.200	80.00	25.00	32.00	56.0	21.0	ICP 210	AOMT 06

- Hole tolerance: D+0.05 in average conditions. However, it can be higher or lower according to machine and tooling conditions
- Do not mount smaller drilling heads other than the specified range of the drill body • For user guide, see page 170

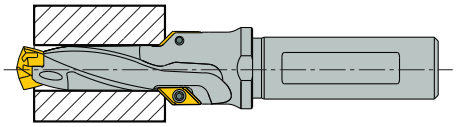
(1) Pre-thread hole diameter
(2) Used for standard thread size
(3) Cutting diameter minimum
(4) Cutting diameter maximum
(5) Seat size code
(6) Master insert identification
(7) Master insert identification 2

For inserts, see pages: ICP (23) • ICP-2M (29) • ICK (37) • ICK-2M (41) • ICM (45) • ICN (50) • QCP-2M (51) • HCP-IQ (55) • FCP (61) • ICG (67) • IHP (33) • AOMT-Chamfering (169)

1 Drilling pre-thread blind holes:
drilling with a 45° chamfer



2 Drilling pre-thread through holes:
drilling with a 45° chamfer



Pre-Thread Recommended Hole Diameters with DCNT Drills

Drill Designation	Dia. Range	M Thread	Head Dia.	MF Head	Head Dia.	TR Thread	Head Dia.	M Helicoil Thread	Head Dia.
DCNT 068-021-12A-M8	6.5-6.99	M8	6.8						
DCNT 085-026-12A-M10	8.5-8.99	M10	8.5	MF10x1 MF10x1.25	8.99 8.8	TR10x1.5	8.6		
DCNT 102-030-16A-M12	10.0-10.99	M12	10.2	MF11x1 MF12x1 MF12x1.25 MF12x1.5	10.0 10.99 10.8 10.5	TR12x2 TR14x4	10.2 10.5	M10	10.5
DCNT 120-035-16A-M14	12.0-12.99	M14	12.0	MF13x1 MF14x1 MF14x1.25 MF14x1.5	12.0 12.99 12.8 12.5	TR14x2 TR16x4	12.2 12.3	M12	12.5
DCNT 140-039-16A-M16	14.0-14.99	M16	14.0	MF16x1 MF16x1.5	14.0 14.99 14.5	TR18x4	14.3	M14	14.99
DCNT 175-042-20A-M20	17.0-17.99	M20	17.5	MF20x2	17.99	TR22x5	17.3		
DCNT 210-048-25A-M24	21.0-21.99	M24	21.0	MF22x1	21.0				

Drill Designation	Dia. Range	UNF Thread	Head Dia.	UNC Thread	Head Dia.	BSW Thread	Head Dia.	BSF Thread	Head Dia.
DCNT 068-021-12A-M8	6.5-6.99								
DCNT 085-026-12A-M10	8.5-8.99	UNF3/8-24	8.5						
DCNT 102-030-16A-M12	10.0-10.99			UNC1/2-13	10.8	BSW1/2-12	10.5	BSF1/2-16	10.99
DCNT 120-035-16A-M14	12.0-12.99			UNC9/16-12	12.3			BSF9/16-16	12.5
DCNT 140-039-16A-M16	14.0-14.99	UNF5/8-18	14.5						
DCNT 175-042-20A-M20	17.0-17.99	UNF3/4-16	17.5						
DCNT 210-048-25A-M24	21.0-21.99								

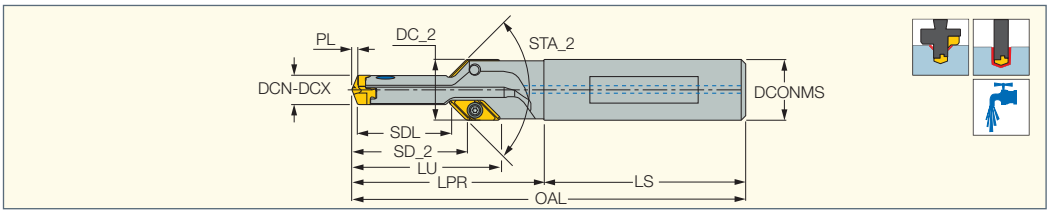
Drill Designation	Dia. Range	NPT Thread	Head Dia.	BSP Thread	Head Dia.	UNEF Thread	Head Dia.	UNJF Helicoil Thread	Head Dia.
DCNT 068-021-12A-M8	6.5-6.99								
DCNT 085-026-12A-M10	8.5-8.99	NPT1/8-27	8.5	G1/8-28	8.8	UNEF3/8-32	8.7	UNJF3/8-24	8.6
DCNT 102-030-16A-M12	10.0-10.99								
DCNT 120-035-16A-M14	12.0-12.99								
DCNT 140-039-16A-M16	14.0-14.99	NPT3/8-18	14.5			UNEF5/8-24	14.8	UNJF5/8-18	14.5
DCNT 175-042-20A-M20	17.0-17.99	NPT1/2-14	17.5			UNEF3/4-20	17.8		
DCNT 210-048-25A-M24	21.0-21.99								

Spare Parts

Designation			
DCNT 068-021-12A-M8	SR 34-508 M2.2X0.45	T-7/51	K DCN 6-9.99-Y
DCNT 085-026-12A-M10	SR 34-508 M2.2X0.45	T-7/51	K DCN 6-9.99
DCNT 102-030-16A-M12	SR 34-508 M2.2X0.45	T-7/51	K DCN 10-13.99
DCNT 120-035-16A-M14	SR 34-508 M2.2X0.45	T-7/51	K DCN 10-13.99
DCNT 140-039-16A-M16	SR 34-508 M2.2X0.45	T-7/51	K DCN 14-17.99
DCNT 175-042-20A-M20	SR 34-508 M2.2X0.45	T-7/51	K DCN 14-17.99
DCNT 210-048-25A-M24	SR 34-508 M2.2X0.45	T-7/51	K DCN 18-21.99

PRETHREAD

DCT (M8-M24)
Drill Body with Exchangeable Heads, Chamfering Inserts, Internal Coolant and One Flat Shank Used for Pre-Tread Holes



Designation	DCN[2]	Dnominal[3]	DCX[4]	DC_2	DCONMS	SDL	LU	LPR	OAL	LS	STA_2	PL	SSC[5]	FTDZ[6]	SD_2	MIID[7]	MIID_2[8]
DCT 068-021-14B-M8 [1]	6.80	6.80	7.40	13.90	14.00	20.9	31.70	43.10	88.14	45.0	90.0	1.240	6.8	M8	25.74	IDI 068	AOMT 06
DCT 085-026-14B-M10	8.30	8.50	8.90	14.00	14.00	26.3	36.60	48.00	93.05	45.0	90.0	1.550	8.0	M10	30.55	IDI 085	AOMT 06
DCT 102-030-14B-M12	10.00	10.20	10.90	14.00	14.00	30.0	39.80	53.90	98.86	45.0	90.0	1.860	10.0	M12	33.76	IDI 102	AOMT 06
DCT 120-035-16B-M14	12.00	12.00	12.90	16.00	16.00	34.9	45.10	60.20	108.18	48.0	90.0	2.180	12.0	M14	39.08	IDI 120	AOMT 06
DCT 140-039-18B-M16	14.00	14.00	14.90	18.00	18.00	39.0	49.60	62.50	110.55	48.0	90.0	2.550	14.0	M16	43.55	IDI 140	AOMT 06
DCT 175-042-20B-M20	17.30	17.50	17.90	21.00	20.00	42.0	53.00	66.20	116.18	50.0	90.0	3.180	17.0	M20	46.98	IDI 175	AOMT 06
DCT 210-048-25B-M24	21.00	21.00	21.90	25.50	25.00	48.2	60.30	72.80	128.82	56.0	90.0	3.820	21.0	M24	54.32	IDI 210	AOMT 06

- Hole tolerance: D+0.05 in average conditions. However, it can be higher or lower according to machine and tooling conditions
- Do not mount smaller drilling heads other than the specified range of the drill body • For user guide, see page 170

(1) Reduce recommended feed for DCT 6.8 mm drills by 10%
(2) Cutting diameter minimum
(3) Pre-thread hole diameter
(4) Cutting diameter maximum
(5) Seat size code
(6) Used for standard thread size
(7) Master insert identification
(8) Master insert identification 2

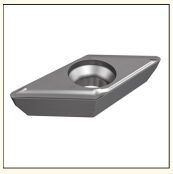
For inserts, see pages: AOMT-Chamfering (169) • IDI-SG (129) • IDI-SK (133)

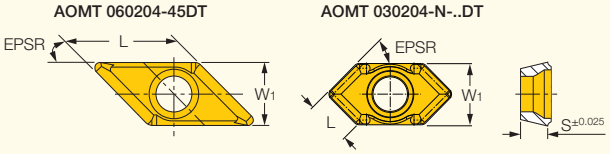
Spare Parts

Designation			
DCT 068-021-14B-M8	SR 34-508 M2.2X0.45	T-7/51	K DCM- 8
DCT 085-026-14B-M10	SR 34-508 M2.2X0.45	T-7/51	K DCM- 8
DCT 102-030-14B-M12	SR 34-508 M2.2X0.45	T-7/51	K DCM-10
DCT 120-035-16B-M14	SR 34-508 M2.2X0.45	T-7/51	K DCM-12
DCT 140-039-18B-M16	SR 34-508 M2.2X0.45	T-7/51	K DCM-14
DCT 175-042-20B-M20	SR 34-508 M2.2X0.45	T-7/51	K DCM-17
DCT 210-048-25B-M24	SR 34-508 M2.2X0.45	T-7/51	K DCM-21

PRETHREAD

AOMT-Chamfering
Chamfering Inserts





Designation	Dimensions L	W1	S	EPSR	Tough ↔ Hard IC1008	IC508	IC908
AOMT 060204-45DT	5.66	4.50	1.96	45.5		●	●
AOMT 060204-45HD [1]	5.66	4.50	1.96	45.5			●
AOMT 030204-N-45DT [2]	2.80	4.00	1.59	45.5	●		
AOMT 030204-N-30DT [2]	4.00	4.00	1.59	30.5	●		

- The cutting speed is dependent on the drilling insert being used

(1) For low carbon steel
(2) Used for specially tailored tools

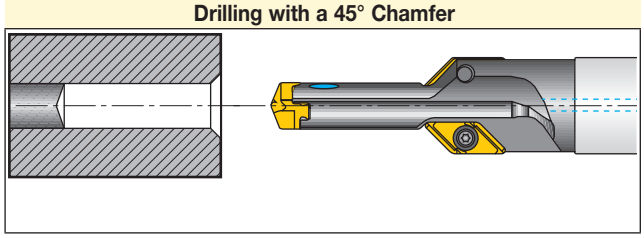
For tools, see pages: DCNT (M8-M24) (168) • DCT (M8-M24) (169)

Pre-Thread DCT Drills

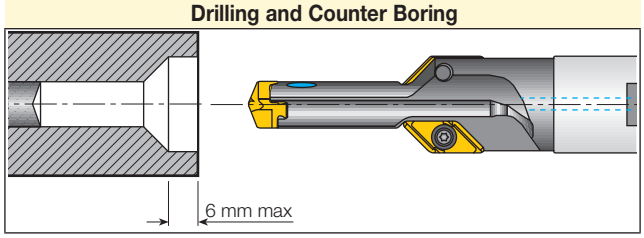
There are Two Main Applications for Pre-Thread Hole Drilling:

Drilling pre-thread **blind** and **through holes**:

Drilling with a 45° Chamfer



Drilling and Counter Boring



Pre-Thread DCT Metric Threads Recommended Diameters

Drill Designation	Dia. Range	M Thread	Head Dia.	MF Head	Head Dia.	TR Thread	Head Dia.	M Helicoil Thread	Head Dia.
DCT 068-021-14B-M8	6.80-7.49	M8	6.8	MF8X0.75	7.20	TR10X3	7.49		
				MF8X1	7.00				
DCT 085-026-14B-M10	8.30-8.99	M10	8.5	MF10X1	8.99	TR10X1.5	8.60	M8	8.40
				MF10X1.25	8.80				
DCT 102-030-14B-M12	10.0-10.99	M12	10.2	MF11X1	10.00	TR12X2	10.20	M10	10.50
				MF12X1	10.99	TR14X4	10.50		
				MF12X1.25	10.80				
				MF12X1.5	10.50				
DCT 120-035-16B-M14	12.0-12.99	M14	12.0	MF13X1	12.00	TR14X2	12.20	M12	12.50
				MF14X1	12.99	TR16X4	12.30		
				MF14X1.25	12.80				
				MF14X1.5	12.50				
DCT 140-039-18B-M16	14.0-14.99	M16	14.0	MF14X1	14.00	TR18X4	14.30	M14	14.99
				MF16X1	14.99				
				MF16X1.5	14.50				
DCT 175-042-20B-M20	17.3-17.99	M20	17.5			TR22X5	17.30		
				MF20X2	17.99				
DCT 210-048-25B-M24	21.0-21.99	M24	21.0	MF22X1	21.00				

Inch Threads

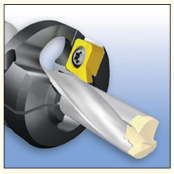
Drill Designation	Dia. Range	UNF Thread	Head Dia.	UNC Thread	Head Dia.	UNC Helicoil Thread	Head Dia.	BSW Thread	Head Dia.	BSF Thread	Head Dia.
DCT 085-026-14B-M10	8.30-8.99	UNF3/8-24	8.5			UNC5/16-18	8.4				
DCT 102-030-14B-M12	10.0-10.99			UNC1/2-13	10.8			BSW1/2-12	10.5	BSF1/2-16	10.99
DCT 120-035-16B-M14	12.0-12.99			UNC9/16-12	12.3					BSF9/16-16	12.50
DCT 140-039-18B-M16	14.0-14.99	UNF5/8-18	14.5								
DCT 175-042-20B-M20	17.3-17.99	UNF3/4-16	17.5								

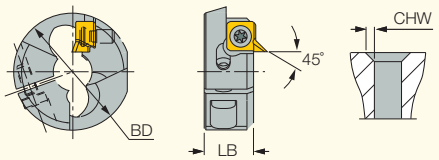
Inch Threads

Drill Designation	Dia. Range	NPT Thread	Head Dia.	BSF Thread	Head Dia.	BSP Thread	Head Dia.	UNEF Thread	Head Dia.	UNJF Helicoil Thread	Head Dia.
DCT 085-026-14B-M10	8.30-8.99	NPT1/8-27	8.5			G1/8-28	8.8	UNEF3/8-32	8.7	UNJF3/8-24	8.6
DCT 102-030-14B-M12	10.0-10.99			BSF1/2-16	10.99						
DCT 120-035-16B-M14	12.0-12.99			BSF9/16-16	12.50						
DCT 140-039-18B-M16	14.0-14.99	NPT3/8-18	14.5					UNEF5/8-24	14.8	UNJF5/8-18	14.5
DCT 175-042-20B-M20	17.3-17.99	NPT1/2-14	17.5					UNEF3/4-20	17.8		

CHAMDRILL

RING DCM
Chamfering Ring Mounted on CHAM-DRILL Drills for Drilling and Chamfering in One Operation





Designation	SS[1]	DCN[2]	DCX[3]	BD[4]	LB	Ch	CHW	MIID[5]
RING DCM 100	DCM 100	10.00	10.40	33.00	14.3	1.5	1.50	XOGX
RING DCM 105	DCM 105	10.50	10.90	33.00	14.3	1.5	1.50	XOGX
RING DCM 110	DCM 110	11.00	11.40	35.00	14.5	1.5	1.50	XOGX
RING DCM 115	DCM 115	11.50	11.90	35.00	14.5	1.5	1.50	XOGX
RING DCM 120	DCM 120	12.00	12.40	37.50	14.6	1.5	1.50	XOGX
RING DCM 125	DCM 125	12.50	12.90	37.50	14.6	1.5	1.50	XOGX
RING DCM 130	DCM 130	13.00	13.40	39.00	14.6	1.5	1.50	XOGX
RING DCM 135	DCM 135	13.50	13.90	39.00	14.6	1.5	1.50	XOGX
RING DCM 140	DCM 140	14.00	14.40	41.00	15.3	1.5	1.50	XOGX
RING DCM 145	DCM 145	14.50	14.90	41.00	15.3	1.5	1.50	XOGX
RING DCM 150	DCM 150	15.00	15.90	43.00	16.5	1.5	1.50	XOGX
RING DCM 160	DCM 160	16.00	16.90	45.00	17.0	2.0	2.00	XOGX
RING DCM 170	DCM 170	17.00	17.90	47.00	17.5	2.0	2.00	XOGX
RING DCM 180	DCM 180	18.00	18.90	48.00	18.0	2.0	2.00	XOGX
RING DCM 190	DCM 190	19.00	19.90	50.00	18.0	2.0	2.00	XOGX
RING DCM 200	DCM 200	20.00	20.90	52.00	18.0	2.0	2.00	XOGX

• RING DCM can be mounted only on DCM 3XD and DCM 5XD drills • For mounting instructions, see page 172

(1) Drill size
(2) Cutting diameter minimum
(3) Cutting diameter maximum
(4) BD=D ring
(5) Master insert identification

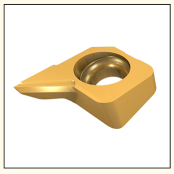
For inserts, see pages: XOGX-DT (171)

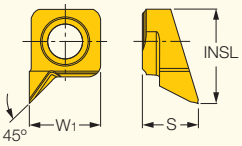
Spare Parts

Designation						
RING DCM 100	SR 14-544/S	BLD T15/S7	SR M5X15 TORX 25	BLD T25/S7		SW6-T
RING DCM 105	SR 14-544/S	BLD T15/S7	SR M5X15 TORX 25	BLD T25/S7		SW6-T
RING DCM 110	SR 14-544/S	BLD T15/S7	SR M5X15 TORX 25	BLD T25/S7		SW6-T
RING DCM 115	SR 14-544/S	BLD T15/S7	SR M5X15 TORX 25	BLD T25/S7		SW6-T
RING DCM 120	SR 14-544/S	BLD T15/S7	SR M5X15 TORX 25	BLD T25/S7		SW6-T
RING DCM 125	SR 14-544/S	BLD T15/S7	SR M5X15 TORX 25	BLD T25/S7		SW6-T
RING DCM 130	SR 14-544/S	BLD T15/S7	SR M5X15 TORX 25	BLD T25/S7		SW6-T
RING DCM 135	SR 14-544/S	BLD T15/S7	SR M5X15 TORX 25	BLD T25/S7		SW6-T
RING DCM 140	SR 14-544/S	BLD T15/S7	SR M5X15 TORX 25	BLD T25/S7		SW6-T
RING DCM 145	SR 14-544/S	BLD T15/S7	SR M5X15 TORX 25	BLD T25/S7		SW6-T
RING DCM 150	SR 14-544/S	BLD T15/S7	SR M5X15 TORX 25	BLD T25/S7		SW6-T
RING DCM 160	SR 14-544/S	BLD T15/S7	SR M6X20 DIN912		HEX BIT HW5	SW6-T
RING DCM 170	SR 14-544/S	BLD T15/S7	SR M6X20 DIN912		HEX BIT HW5	SW6-T
RING DCM 180	SR 14-544/S	BLD T15/S7	SR M6X20 DIN912		HEX BIT HW5	SW6-T
RING DCM 190	SR 14-544/S	BLD T15/S7	SR M6X20 DIN912		HEX BIT HW5	SW6-T
RING DCM 200	SR 14-544/S	BLD T15/S7	SR M6X20 DIN912		HEX BIT HW5	SW6-T

CHAMDRILL

XOGX-DT
Inserts Used on Chamfering Rings



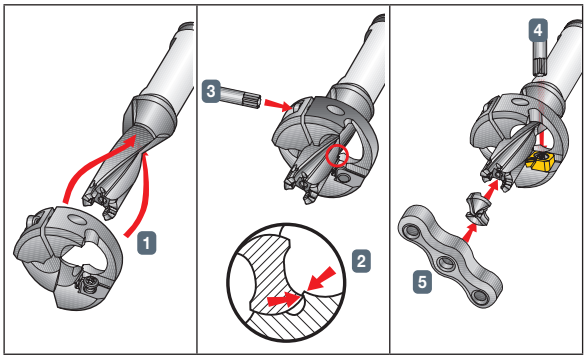


Designation	Dimensions			IC830
	W1	S	INSL	
XOGX 090700-45DT	9.00	7.00	12.00	•

For tools, see pages: RING DCM (171)

Chamfering Ring

Drilling and Chamfering in One Operation for DCM 3xD and 5xD Drills



Mounting Instructions

1. Insert the chamfering ring on the drill body and slide to the desired position(1).
2. Rotate the ring clockwise until the stopper engages the flute edge.
3. Tighten the ring screw according to the maximum tightening torque indicated on page 136.
4. Mount the chamfering insert.
5. Mount the **CHAM-DRILL** head.

Chamfering Ring Position Range

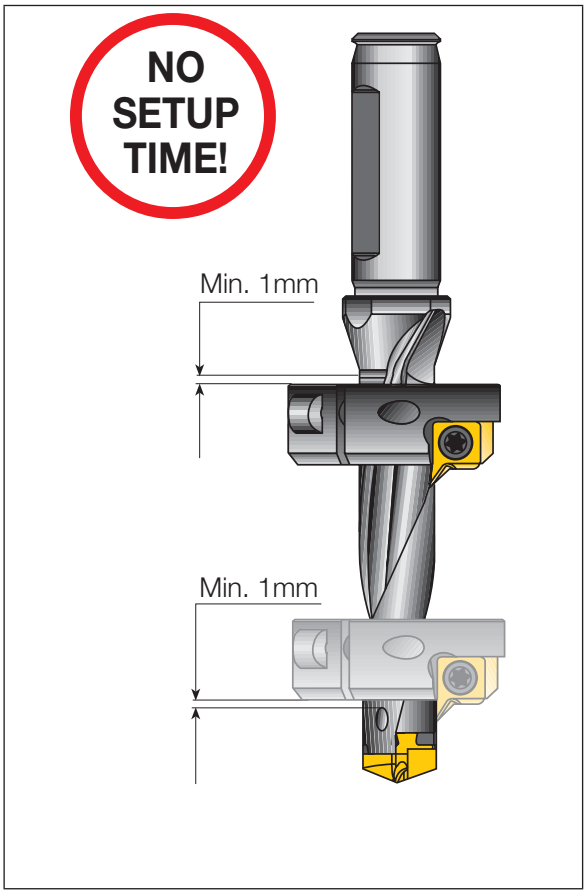
Drill Diameter	Drill Body 3xD L (min-Max)	Drill Body 5xD L (min-Max)	Maximum Chamfer Size
10	8-16	15-36	1.5
10.5	8-18	17-39	
11	8-19	18-41	
11.5	8-21	20-44	
12	8-22	21-46	
12.5	8-24	23-49	
13	8-25	24-51	
13.5	8-27	26-54	
14	9-29	28-57	
14.5	9-30	29-60	
15	9-31	30-60	
16	9-33	32-65	2.0
17	11-35	34-69	
18	11-38	34-74	
19	11-42	41-80	
20	11-45	44-85	

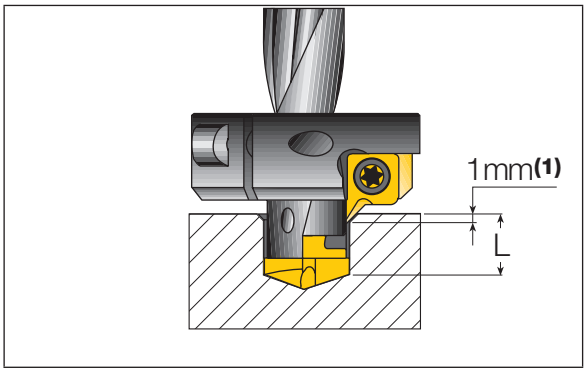
User Guide

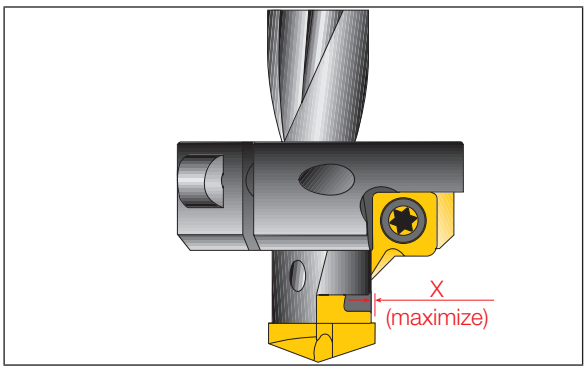
Recommendations for better stability:

1 Use 3xD drill instead of 5xD, if possible.
2 Mount the chamfering ring as close as possible to the drill shank.
3 For better chamfering insert life, apply a coolant to the chamfering insert, in addition to the internal and/or external coolant.
4 A wider gap "**X**" between the drill and the head size is preferred (i.e. for a 14.6mm head, use a 14mm body rather than 14.5mm). A slightly larger "**X**" dimension can dramatically increase the chamfering insert life.

(1) The "**L**" dimension shown is relative to the common 1mm chamfer. For other sizes, adjust "**L**" accordingly.

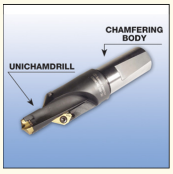


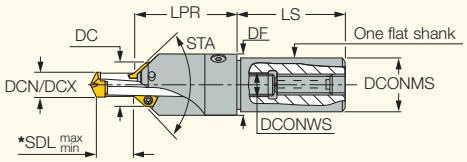


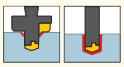


CHAMRING

CHAMRING
Drill Holders for Drilling and Chamfering in One Operation







Designation		DCN(1)	DCX(2)	DCNS 3D SDL min	DCNS 3D SDL max	DCM 3.5D SDL min	DCM 3.5D SDL max	DCNS 5D SDL min	DCNS 5D SDL max	DCONWS	DF	DC	LPR	LS	DCONMS	Inserts(3)
CHAMRING 080-WN20-06	DC... 075	7.5	7.9	12.7	18.6	12.4	21.9	15.7	33.6	8	25	18.8	47.4	50	20	XCGT 06...
	DC... 080	8	8.4	13.6	19.2	14	23	23.6	40.9							
CHAMRING 090-WN20-06	DC... 085	8.5	8.9	12.3	21.1	15.1	26.6	18.7	38.1	9	25	19.8	47.4	50	20	XCGT 06...
	DC... 090	9	9.4	12.8	23.1	15.6	27.1	21.8	41.1							
CHAMRING 100-WN32-09	DC... 095	9.5	9.9	12.2	22.8	17.2	29.2	26.8	42.2	10	38	24.9	67.3	60	32	XCGT 09...
	DC... 100	10	10.4	12.6	28.2	14.3	28.3	32.8	48.2							
CHAMRING 110-WN32-09	DC... 105	10.5	10.9	13.9	29.8	14.4	29.4	31.7	50.8	11	38	25.9	67.3	60	32	XCGT 09...
	DC... 110	11	11.4	14.4	31.4	18	31	34.7	53.4							
CHAMRING 120-WN32-09	DC... 115	11.5	11.9	14.1	31.4	15.6	33.1	34.0	54.4	12	38	26.9	67.3	60	32	XCGT 09...
	DC... 120	12	12.4	15.1	33.4	19.2	35.2	36.9	57.3							
CHAMRING 130-WN32-09	DC... 125	12.5	12.9	15.6	35.8	19.3	37.3	40.6	60.8	13	38	27.9	67.3	60	32	XCGT 09...
	DC... 130	13	13.4	17.8	37.6	21.4	38.4	43.8	64.1							
CHAMRING 140-WN32-09	DC... 135	13.5	13.9	16.1	38.2	19.5	39.5	42.8	65.2	14	38	28.4	67.3	60	32	XCGT 09...
	DC... 140	14	14.4	18.0	40.8	21.5	41.5	46.0	69.3							
CHAMRING 150-WN32-09	DC... 145	14.5	14.9	16.4	39.7	20.1	42.1	45.3	68.7	15	38	29.4	67.3	60	32	XCGT 09...
	DC... 150	15	15.9	18.5	41.9	25.2	43.7	48.5	71.9							
CHAMRING 160-WN32-09	DC... 160	16	16.9	26.2	51.6	26.3	49.3	58.2	83.6	16	38	30.4	67.3	60	32	XCGT 09...
CHAMRING 170-WN32-09	DC... 170	17	17.9	22.6	49.0	28.4	52.4	56.6	83.0	17	38	31.4	67.3	60	32	XCGT 09...
CHAMRING 180-WN32-09	DC... 180	18	18.9	25.1	52.5	31	57	61.1	88.5	18	38	32.4	67.3	60	32	XCGT 09...
CHAMRING 190-WN32-09	DC... 190	19	19.9	28.3	58.3	32.3	63.3	66.3	96.3	19	38	33.4	75	60	32	XCGT 09...
CHAMRING 200-WN32-09	DC... 200	20	20.9	38.3	68.4	36.6	67.1	78.3	108.3	20	38	34.4	75	60	32	XCGT 09...
CHAMRING 210-WN40-09	DC... 210	21	21.9	33.9	63.3			75.9	105.3	21	50	35.4	84.4	68	40	XCGT 09...
CHAMRING 220-WN40-09	DC... 220	22	22.9	37.3	66.7			81.3	110.7	22	50	36.4	84.4	68	40	XCGT 09...
CHAMRING 230-WN40-09	DC... 230	23	23.9	40.7	70.1			86.7	116.1	23	50	37.4	84.4	68	40	XCGT 09...
CHAMRING 240-WN40-09	DC... 240	24	24.9	44.2	73.6			92.2	121.6	24	50	38.4	84.4	68	40	XCGT 09...
CHAMRING 250-WN40-09	DC... 250	25	25.9	47.6	77.0			97.6	127.0	25	50	39.4	84.4	68	40	XCGT 09...

- It is recommended to apply external coolant on the chamfering inserts • Reduce the recommended feed and speed by 50% when machining maximum chamfer size
- *SDLmin & SDLmax dimensions are based on the 45° chamfering insert • Chamfering angle (STA) depends on the chamfering insert being used

(1) Cutting diameter minimum
(2) Cutting diameter maximum
(3) Master insert identification

For inserts, see pages: XCGT-DT (174)

Assembly Instructions

- Insert the **UNI-CHAM-DRILL** into the **CHAM-RING** prior to clamping the chamfering inserts
- Adjust the **UNI-CHAM-DRILL** protrusion by using the rear screw, then correct adjustment using the side clamping screw
- Attach the chamfering inserts

Adjustment of UNI-CHAM-DRILL Protrusion

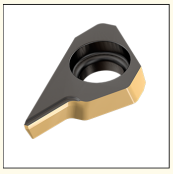
- Loosen the chamfering inserts clamping screws
- Loosen the side clamping screw
- Adjust the **UNI-CHAM-DRILL** protrusion by using the rear screw, then correct adjustment using the side clamping screw
- Re-tighten the chamfering inserts

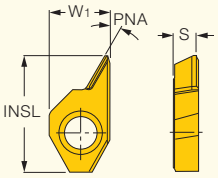
Spare Parts

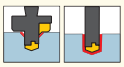
Designation									
CHAMRING 080-WN20-06	SR M6X6 DIN916	HW 3.0	SR M6X1S		SW6-T-SH	SR 14-560	T-8/53		
CHAMRING 090-WN20-06	SR M6X6 DIN916	HW 3.0	SR M6X1S		SW6-T-SH	SR 14-560	T-8/53		
CHAMRING 100-WN32-09	SR M10X10 DIN916	HW 5.0	SR M10X1.5S	BLD HW5	SW6-T-SH	SR 14-544/S		BLD T15/S7	SW6-SD
CHAMRING 110-WN32-09	SR M10X10 DIN916	HW 5.0	SR M10X1.5S	BLD HW5	SW6-T-SH	SR 14-544/S		BLD T15/S7	SW6-SD
CHAMRING 120-WN32-09	SR M10X10 DIN916	HW 5.0	SR M10X1.5S	BLD HW5	SW6-T-SH	SR 14-544/S		BLD T15/S7	SW6-SD
CHAMRING 130-WN32-09	SR M10X10 DIN916	HW 5.0	SR M10X1.5S	BLD HW5	SW6-T-SH	SR 14-544/S		BLD T15/S7	SW6-SD
CHAMRING 140-WN32-09	SR M10X10 DIN916	HW 5.0	SR M10X1.5S	BLD HW5	SW6-T-SH	SR 14-544/S		BLD T15/S7	SW6-SD
CHAMRING 150-WN32-09	SR M10X10 DIN916	HW 5.0	SR M10X1.5S	BLD HW5	SW6-T-SH	SR 14-544/S		BLD T15/S7	SW6-SD
CHAMRING 160-WN32-09	SR M10X10 DIN916	HW 5.0	SR M10X1.5S	BLD HW5	SW6-T-SH	SR 14-544/S		BLD T15/S7	SW6-SD
CHAMRING 170-WN32-09	SR M10X10 DIN916	HW 5.0	SR M10X1.5S	BLD HW5	SW6-T-SH	SR 14-544/S		BLD T15/S7	SW6-SD
CHAMRING 180-WN32-09	SR M10X10 DIN916	HW 5.0	SR M10X1.5S	BLD HW5	SW6-T-SH	SR 14-544/S		BLD T15/S7	SW6-SD
CHAMRING 190-WN32-09	SR M10X10 DIN916	HW 5.0	SR M10X1.5S	BLD HW5	SW6-T-SH	SR 14-544/S		BLD T15/S7	SW6-SD
CHAMRING 200-WN32-09	SR M10X10 DIN916	HW 5.0	SR M10X1.5S	BLD HW5	SW6-T-SH	SR 14-544/S		BLD T15/S7	SW6-SD
CHAMRING 210-WN40-09	SR M16X16 DIN1835-B	HW 8.0	SR M12X1.75S	BLD HW6	SW6-T-SH	SR 14-544/S		BLD T15/S7	SW6-SD
CHAMRING 220-WN40-09	SR M16X16 DIN1835-B	HW 8.0	SR M12X1.75S	BLD HW6	SW6-T-SH	SR 14-544/S		BLD T15/S7	SW6-SD
CHAMRING 230-WN40-09	SR M16X16 DIN1835-B	HW 8.0	SR M12X1.75S	BLD HW6	SW6-T-SH	SR 14-544/S		BLD T15/S7	SW6-SD
CHAMRING 240-WN40-09	SR M16X16 DIN1835-B	HW 8.0	SR M12X1.75S	BLD HW6	SW6-T-SH	SR 14-544/S		BLD T15/S7	SW6-SD
CHAMRING 250-WN40-09	SR M16X16 DIN1835-B	HW 8.0	SR M12X1.75S	BLD HW6	SW6-T-SH	SR 14-544/S		BLD T15/S7	SW6-SD

CHAMRING

XCGT-DT
Inserts Used on Chamfering Drill Holders for Chamfering and Drilling in One Operation





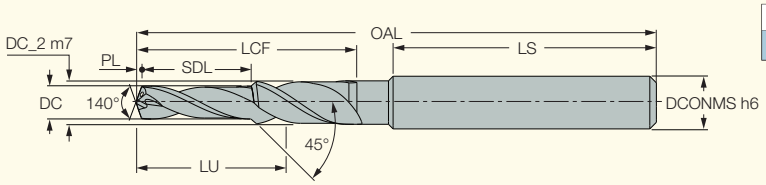


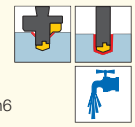
Designation	Dimensions W1	INSL	S	PNA	Tough ↔ Hard IC08	IC808
XCGT 060300-30DT	6.18	12.30	2.80	30.0	●	●
XCGT 060300-45DT	6.18	12.30	2.80	45.0	●	●
XCGT 060300-60DT	6.18	12.30	2.80	60.0	●	●
XCGT 090300-30DT	8.50	16.00	3.30	30.0	●	●
XCGT 090300-45DT	8.50	16.00	3.30	45.0	●	●
XCGT 090300-60DT	8.50	16.00	3.30	60.0	●	●

For tools, see page: CHAMRING (173)

SOLIDDRILL

SCDT
Pre-Thread Solid Carbide Drills with Coolant Holes





Designation	Dimensions DC	SDL	DCONMS	FTDZ(1)	DC_2	PL	LU	LCF	OAL	LS	IC908
SCDT 025-009-060-M3	2.50	8.8	6.00	M3	4.00	0.450	16.00	20.0	62.00	36.0	●
SCDT 033-011-060-M4	3.30	11.4	6.00	M4	4.50	0.600	19.00	24.0	62.00	36.0	●
SCDT 042-014-060-M5	4.20	13.6	6.00	M5	5.50	0.760	22.00	28.0	66.00	36.0	●
SCDT 050-017-080-M6	5.00	16.5	8.00	M6	6.60	0.910	27.00	34.0	79.00	40.0	●
SCDT 068-021-100-M8	6.80	21.0	10.00	M8	9.00	1.240	38.00	47.0	89.00	40.0	●
SCDT 085-026-120-M10	8.50	25.5	12.00	M10	11.00	1.550	45.00	55.0	102.00	40.0	●

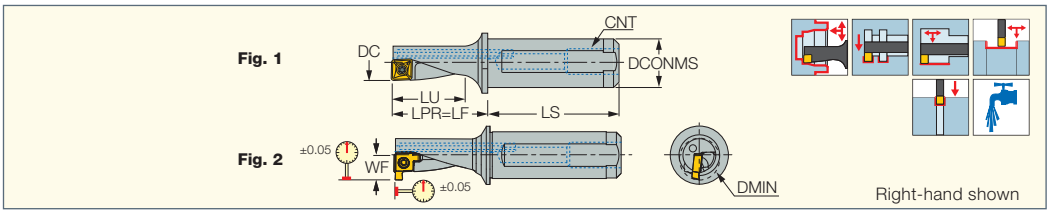
- For user guide and cutting conditions, see pages 221-232

(1) Used for standard thread size

MULTI-FUNCTION TOOLS

Multifunction Tools

DRG-MF
Multifunction Drilling, Boring, Facing, External Turning and Internal Grooving Tools

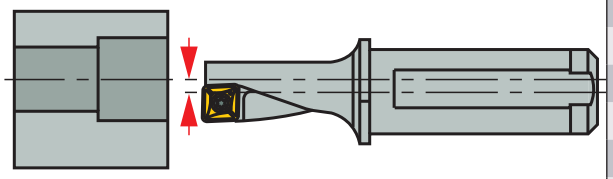


Designation	DC	DMIN	WF	LU	LPR	LS	DCONMS	CNT	Insert	Fig.		
DR-MF-08R/L-2.25D-12A-04	8.00	8.00	-	18.0	22.5	42.0	12.00	G 1/16	XCMT 04...	1	SR 18034/HG-P	IP-6/5
DRG-MF-10R/L-2.25D-12A-05	10.00	12.00	7.10	22.5	27.5	42.0	12.00	G 1/16	XCMT 05...	2	SR 20038/HG-P	IP-6/5
DRG-MF-12R/L-2.25D-16A-06	12.00	14.50	8.50	27.0	33.0	45.0	16.00	G 1/8	XCMT 06...	2	SR 22052/HG-P	IP-7/5
DRG-MF-14R/L-2.25D-16A-07	14.00	16.50	9.50	31.5	38.5	45.0	16.00	G 1/8	XCMT 07...	2	SR 25064/HG-P	IP-8/5
DRG-MF-16R/L-2.25D-20A-08	16.00	19.00	11.10	36.0	44.0	50.0	20.00	G 1/8	XCMT 08...	2	SR 30070/HG-P	IP-9/151
DRG-MF-20R/L-2.25D-25A-10	20.00	23.50	13.20	45.0	55.0	56.0	25.00	G 1/8	XCMT 10...	2	SR 35088I/HG-P	IP-10/151
DRG-MF-25R/L-2.25D-32A-13	25.00	29.00	16.50	56.5	69.0	61.0	32.00	G 1/8	XCMT 13...	2	SR 45A100I/HG	IP-20/51
DRG-MF-32R/L-2.25D-40A-17	32.00	36.50	20.50	72.0	86.0	74.0	40.00	G 1/8	XCMT 17...	2	SR 45A100I/HG	IP-20/51

- In non-rotating applications, hole diameter can be adjusted within the specified range by shifting drill's center line along machine's X-axis
- The tools feature internal coolant holes

For inserts, see pages: XCMT-MF (177) • XCMT-MG (177)

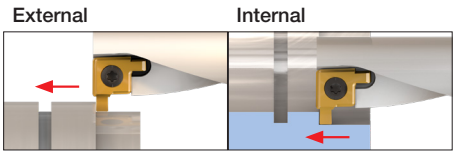
Radial Adjustment (off-center drilling)

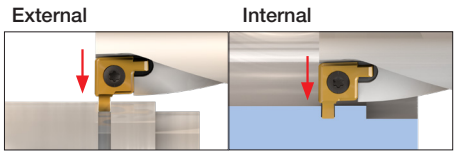


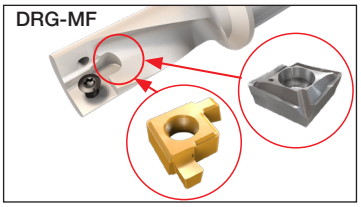
Radial Adjustment is Dependent on Drill Diameter

Holder	Drill dia.	Dmin	Dmax
DRG-MF 8	8	7.86	8.35
DRG-MF 10	10	9.82	10.60
DRG-MF 12	12	11.82	12.60
DRG-MF 14	14	13.80	14.60
DRG-MF16	16	15.76	16.50
DRG-MF 20	20	19.80	20.60
DRG-MF 25	25	24.80	25.80
DRG-MF 32	32	31.80	33.00

Typical Applications







Multifunction Tools

XCMT-MF
Inserts for DR-MF Multifunction Tools with Two Cutting Edges for Hard Materials and Interrupted Cut

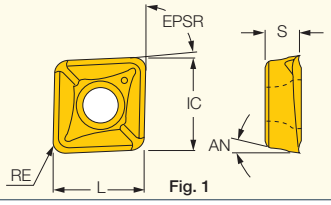


Fig. 1

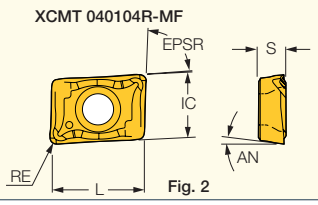


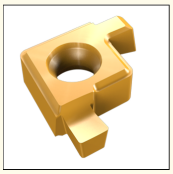
Fig. 2

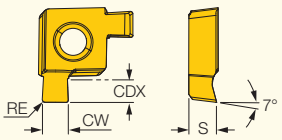
Designation	Dimensions IC	L	S	RE	AN	EPSR	Fig.	IC908
XCMT 040104R/L-MF	4.40	6.37	1.70	0.40	7.0	83.5	2	●
XCMT 050204-MF	5.60	5.60	2.10	0.40	7.0	83.5	1	●
XCMT 060204-MF	6.40	6.40	2.38	0.40	7.0	83.5	1	●
XCMT 070304-MF	7.50	7.50	3.18	0.40	7.0	83.5	1	●
XCMT 080304-MF	8.44	8.44	3.18	0.40	7.0	83.5	1	●
XCMT 10T304-MF	10.50	10.50	3.97	0.40	7.0	83.5	1	●
XCMT 10T308-MF	10.50	10.50	3.97	0.80	7.0	83.5	1	●
XCMT 130404-MF	13.40	13.40	4.76	0.40	7.0	83.5	1	●
XCMT 130408-MF	13.40	13.40	4.76	0.80	7.0	83.5	1	●
XCMT 170508-MF	17.40	17.40	5.56	0.80	7.0	83.5	1	●

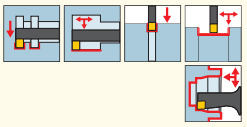
For tools, see pages: • DRG-MF (176)

Multifunction Tools

XCMT-MG
Two Cutting Edged Internal Grooving Inserts for DR-MF Multifunction Tools







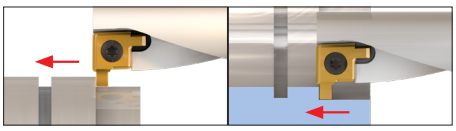
Designation	Dimensions CW	CDX(1)	CWTOL(2)	RE	S	IC808G	Recommended Machining Data f Turn (mm/rev)	f Goove (mm/rev)
XCMT 05R-201802-MG	2.00	1.80	0.020	0.20	2.28	●	0.05-0.10	0.04-0.07
XCMT 06R-202002-MG	2.00	2.00	0.020	0.20	2.65	●	0.05-0.10	0.04-0.07
XCMT 07R-252002-MG	2.50	2.00	0.020	0.20	3.41	●	0.07-0.12	0.05-0.10
XCMT 08R-252502-MG	2.50	2.50	0.020	0.20	3.50	●	0.07-0.12	0.05-0.10
XCMT 10R-303003-MG	3.00	3.00	0.020	0.30	4.34	●	0.14-0.18	0.06-0.12
XCMT 13R-353503-MG	3.50	3.50	0.020	0.30	5.25	●	0.14-0.20	0.07-0.14
XCMT 17R-404004-MG	4.00	4.00	0.020	0.40	6.00	●	0.15-0.21	0.08-0.15

(1) Cutting depth maximum
(2) Cutting width tolerance (+/-)

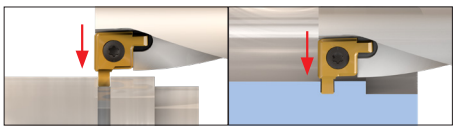
For tools, see pages: • DRG-MF (176)

Typical Applications

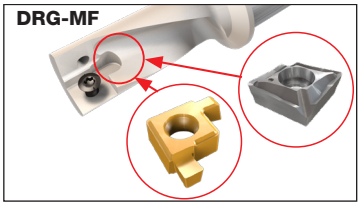
External Internal



External Internal



DRG-MF



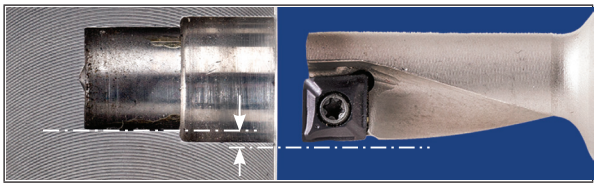
User Guide for DRG-MF

Coolant Pressure

- Apply above 6 Bar in 2.25xD tools (optimal pressure is above 10 Bar).

Radial Adjustment (Off-Center Drilling)

- Radial adjustment is dependent on drill diameter



Chip Shape Optimization

- Apply high-speed machining on low carbon steel
- Produce thin chips, as most problems are caused by thick chips
- Regulate chips produced by machining medium-to-high carbon steel
- If too tight, either increase speed and reduce feed, or reduce speed and increase feed
- If too long, reduce speed and increase feed

Tool	Drill Dia.	Dmin	Dmax
DRG-MF-10	10	9.82	10.60
DRG-MF-12	12	11.82	12.60
DRG-MF-14	14	13.80	14.60
DRG-MF-16	16	15.76	16.50
DRG-MF-20	20	19.80	20.60
DRG-MF-25	25	24.80	25.80
DRG-MF-32	32	31.80	33.00

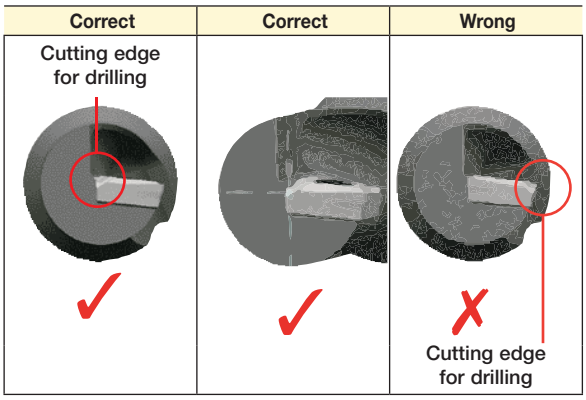
Troubleshooting

Problem	Solution
Chipping caused by built-up edge	• Increase cutting speed • Reduce feed • Check tool and workpiece rigidity • Reduce tool and workpiece overhang
Excessive flank wear	• Reduce cutting speed • Use a harder grade (special) • Increase coolant flow • Check cutting edge height
Edge deformation	• Reduce cutting speed • Use a harder grade (special) • Increase coolant flow • Reduce feed
Poor surface quality	• Reduce feed • Increase coolant flow • Check tool and workpiece rigidity • Increase cutting speed
Long chips	• Increase feed • Reduce cutting speed • Increase coolant flow
Tight chips	• Reduce feed
Vibrations	• Check tool and workpiece rigidity • Reduce tool and workpiece overhang • Reduce cutting speed • Increase feed • Check cutting edge height • Reduce feed and increase cutting speed on very soft materials

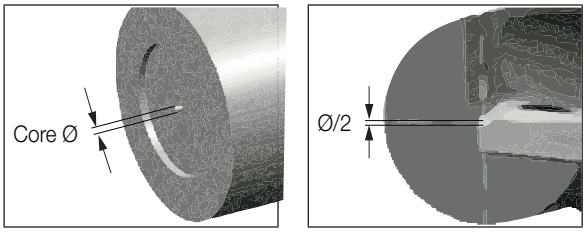
User Guide for Turn-Mill Machines

Insert Positioning

For drilling, cutting edge should be positioned in the center of tool body.

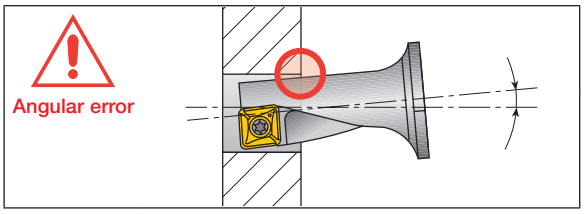


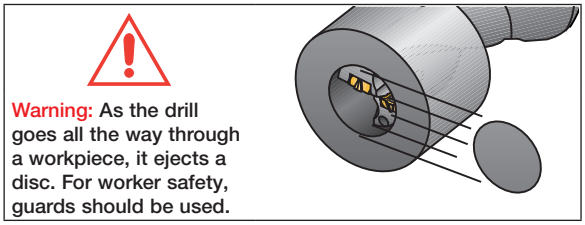
Setup



Check formation of core and its size after drilling 3mm to 6mm depth. The diameter of the core should be within 0.15-0.45mm.
Adjust Y-axis of the tool body by using the new adjustable clamping unit (if available) or rotate the tool body 180° and secure it into a turret. Check the core again.

Important: If a core does not appear, this can cause breakage of insert vibration when drilling or turning. If the size of the core is over the recommended size, it will cause overload and vibration.





Recommended Cutting Conditions for XCMT-MF Inserts

Cutting Speed (V_c)

Workpiece Materials	Material No. VDI 3323	Hardness (BHN)	Cutting speed: V_c (m/min) for IC908	
			Drilling	Turning & Boring
Low carbon steel (<0.25% C)	1	~150	130-240	150-270
Carbon steel (≥0.25% C)	2	150-250	90-160	100-180
Low alloy steel	6	~180	120-210	140-230
Medium alloy steel	7	200-250	70-140	80-160
High alloy steel	8, 9	250-350	50-100	60-120
Martensitic stainless steel	12	200	110-180	130-200
Austenitic stainless steel	14	200	90-160	100-180
Grey cast iron	17, 18	180-220	110-180	120-200
Ductile cast iron	15, 16	200-240	90-160	100-180
Aluminum alloy	21-24	60-130	100-500	150-600
Copper alloy	26-28	90-100	100-400	100-500

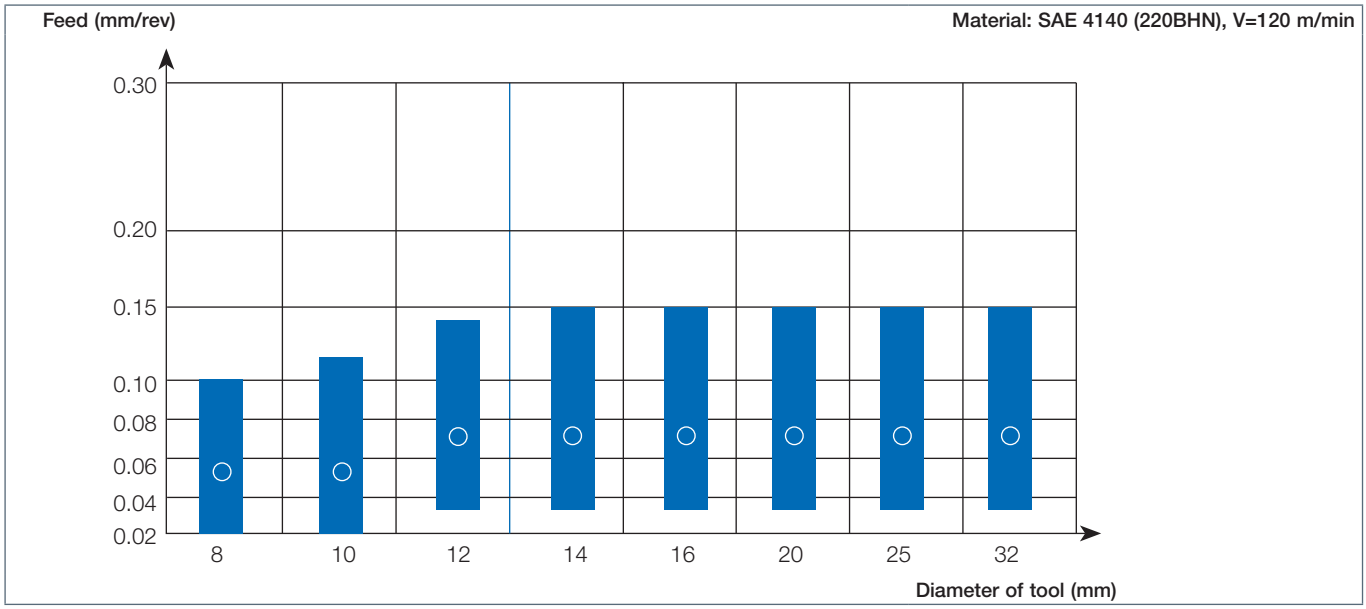
Recommended Cutting Conditions

Insert	Machining Type	Cutting Conditions	
		a_p (mm)	f (mm/rev)
XCMT 040104	External Turning	0.6 (0.2-1.8)	0.05 (0.02-0.15)
	Drilling	-	0.06 (0.02-0.10)
XCMT 050204	External Turning	0.8 (0.2-2.5)	0.08 (0.02-0.15)
	Face Turning	0.6 (0.2-1.7)	0.06 (0.02-0.13)
	Drilling	-	0.05 (0.02-0.10)
XCMT 060204	External Turning	1.0 (0.2-3.0)	0.10 (0.03-0.20)
	Face Turning	0.8 (0.2-2.5)	0.07 (0.03-0.15)
	Drilling	-	0.05 (0.02-0.10)
XCMT 070304	External Turning	1.3 (0.3-3.5)	0.12 (0.03-0.20)
	Face Turning	1.0 (0.25-3.0)	0.10 (0.03-0.18)
	Drilling	-	0.06 (0.03-0.12)
XCMT 0803..	Face Turning	1.5 (0.35-4.0)	0.14 (0.06-0.25)
	External Turning	1.2 (0.3-3.5)	0.12 (0.06-0.24)
	Drilling	-	0.08 (0.05-0.16)
XCMT 10T304	External Turning	1.8 (0.5-3.5)	0.12 (0.06-0.30)
	Face Turning	1.8 (0.5-3.5)	0.12 (0.06-0.30)
	Drilling	-	0.08 (0.03-0.15)
XCMT 10T308	External Turning	1.8 (0.5-3.5)	0.20 (0.10-0.40)
	Face Turning	1.8 (0.5-3.5)	0.20 (0.10-0.40)
	Drilling	-	0.08 (0.03-0.15)
XCMT 130404	External Turning	2.0 (0.6-4.3)	0.15 (0.07-0.32)
	Face Turning	2.0 (0.6-4.3)	0.15 (0.07-0.32)
	Drilling	-	0.08 (0.03-0.15)
XCMT 130408	External Turning	2.0 (0.6-4.3)	0.20 (0.10-0.40)
	Face Turning	2.0 (0.6-4.3)	0.20 (0.10-0.40)
	Drilling	-	0.08 (0.03-0.15)
XCMT 170508	External Turning	3.0 (0.7-5.3)	0.22 (0.10-0.40)
	Face Turning	3.0 (0.7-5.3)	0.22 (0.10-0.40)
	Drilling	-	0.08 (0.03-0.15)

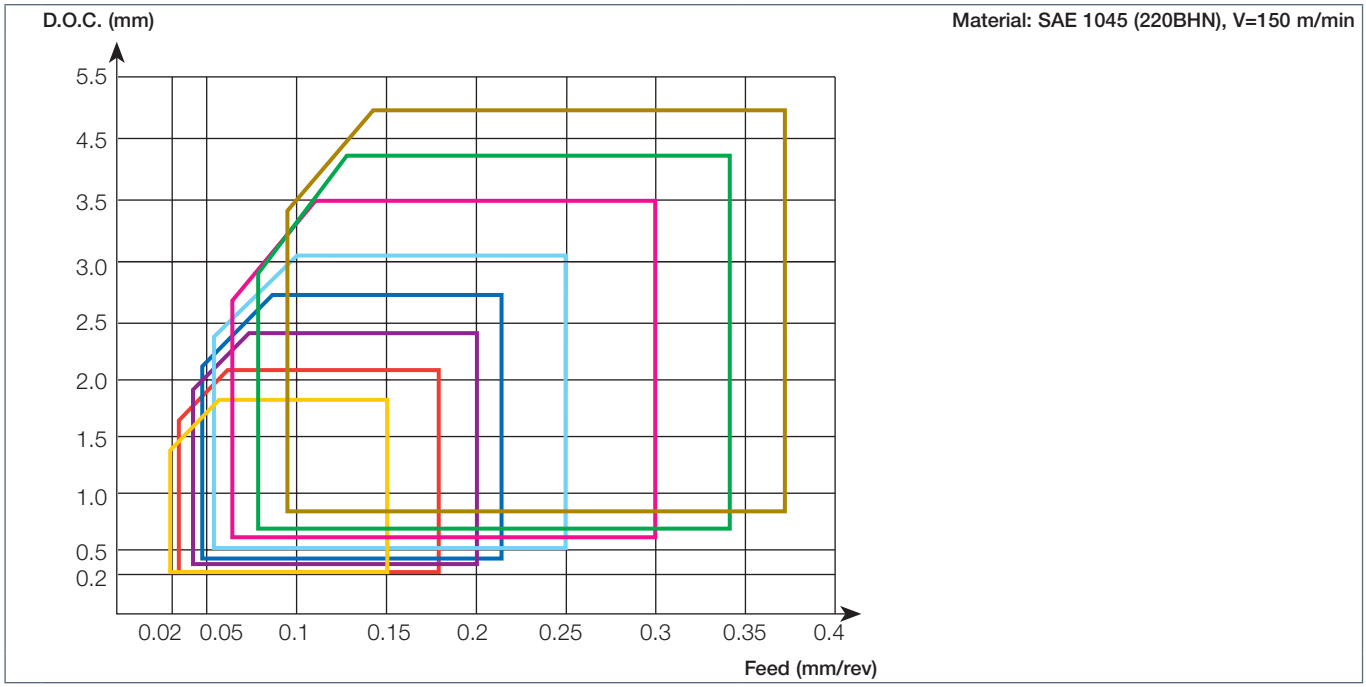
Cutting parameters are for 2.25xD steel shank
Internal coolant supply is recommended

Chip Control Range for DRG-MF

Drilling



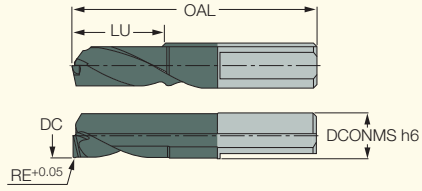
Turning



- XCMT 050204
- XCMT 050204
- XCMT 060204
- XCMT 070304
- XCMT 080304
- XCMT 100304
- XCMT 130304
- XCMT 170304

PICCOMF

PICCO-MF
Multifunction Solid Carbide Tools for Drilling, Facing, Internal and External Turning on Swiss and Small CNC Machines



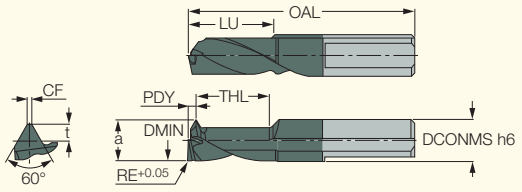
Right-hand shown

Designation	Dimensions DCONMS	DC	LU	OAL	RE	IC908
PICCO R-MF 6-3 L06	6.00	3.00	6.00	28.00	0.10	●
PICCO R/L-MF 6-4 L08	6.00	4.00	8.00	30.00	0.10	●
PICCO R/L-MF 6-4 L12	6.00	4.00	12.00	34.00	0.20	●
PICCO R/L-MF 6-5 L10	6.00	5.00	10.00	32.00	0.10	●
PICCO R/L-MF 6-5 L15	6.00	5.00	15.00	41.00	0.30	●
PICCO R/L-MF 6-6 L12	6.00	6.00	12.00	34.00	0.10	●
PICCO R/L-MF 6-6 L18	6.00	6.00	18.00	43.00	0.30	●
PICCO R/L-MF 8-7 L14	8.00	7.00	14.00	41.00	0.10	●
PICCO R/L-MF 8-7 L21	8.00	7.00	21.00	55.00	0.30	●
PICCO R/L-MF 8-8 L16	8.00	8.00	16.00	43.00	0.10	●
PICCO R/L-MF 8-8 L24	8.00	8.00	24.00	58.50	0.30	●

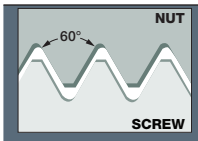
- Dmin can be 0.1mm smaller by shifting tool center
- Applications: drilling; face turning; internal chamfering; internal turning/ boring; internal profiling; external chamfering; external turning

PICCOMFT

PICCO-MFT
Solid Carbide Tools for Drilling, Facing, Internal / External Turning and Threading on Swiss and Small CNC Machines



Right-hand shown



Designation	Dimensions DCONMS	DMIN	LU	TPN(2)	TPX(3)	TPIN(4)	TPIX(5)	t	a	CF	THL	OAL	PDY	RE	IC908
PICCO R-MFT60 6-4 L08	6.00	4.00	8.00	0.500	0.750	32.00	48.00	0.46	3.90	0.06	7.3	30.00	1.30	0.10	●
PICCO R-MFT60 6-4 L12	6.00	4.00	12.00	0.500	0.750	32.00	48.00	0.46	3.90	0.06	11.6	34.00	1.20	0.20	●
PICCO R/L-MFT60 6-5 L10	6.00	5.00	10.00	0.500	1.000	24.00	48.00	0.61	4.90	0.06	9.0	32.00	1.40	0.10	●
PICCO R/L-MFT60 6-5 L15 (1)	6.00	5.00	15.00	0.500	1.000	24.00	48.00	0.61	4.90	0.06	14.4	37.00	1.40	0.30	●
PICCO R/L-MFT60 6-6 L18 (1)	6.00	6.00	18.00	0.500	1.000	24.00	48.00	0.61	5.90	0.06	17.3	43.00	1.40	0.30	●
PICCO R-MFT60 6-6 L12	6.00	6.00	12.00	0.500	1.000	24.00	48.00	0.61	5.90	0.06	11.0	34.00	1.40	0.10	●
PICCO R/L-MFT60 8-7 L14	8.00	7.00	14.00	0.750	1.250	20.00	32.00	0.76	6.90	0.09	13.0	41.00	1.50	0.10	●
PICCO R-MFT60 8-7 L21	8.00	7.00	21.00	0.750	1.250	20.00	32.00	0.76	6.90	0.09	20.0	55.00	1.50	0.30	●
PICCO R/L-MFT60 8-8 L16	8.00	8.00	16.00	0.900	1.500	16.00	28.00	0.92	7.90	0.11	15.0	43.00	1.50	0.10	●
PICCO L-MFT60 8-8 L24 (1)	8.00	8.00	24.00	0.900	1.500	16.00	28.00	0.92	7.90	0.11	23.0	57.00	1.50	0.30	●
PICCO R-MFT60 8-8 L24	8.00	8.00	24.00	0.900	1.500	16.00	28.00	0.92	7.90	0.11	23.0	51.00	1.50	0.30	●

- Applications: Drilling; face turning; internal chamfering; internal turning/boring; internal profiling; external chamfering; external turning; internal and external 60° threading (right- and left-hand)
- DIN13 , ISO 68-1, ISO 965 (1&2) - Internal tolerance: 6H, External tolerance: 6g • ANSI/ASME B1.1 - Internal tolerance: 2B, External tolerance: 2A

(1) Available on request
(2) Thread pitch minimum (mm)
(3) Thread pitch maximum (mm)
(4) Threads per inch minimum
(5) Threads per inch maximum

PICCO-MF Recommended Cutting Conditions

Recommended Cutting Conditions for XCMT-MF Inserts (Metric) - Based on ISO 513 and VDI 3323 Standards

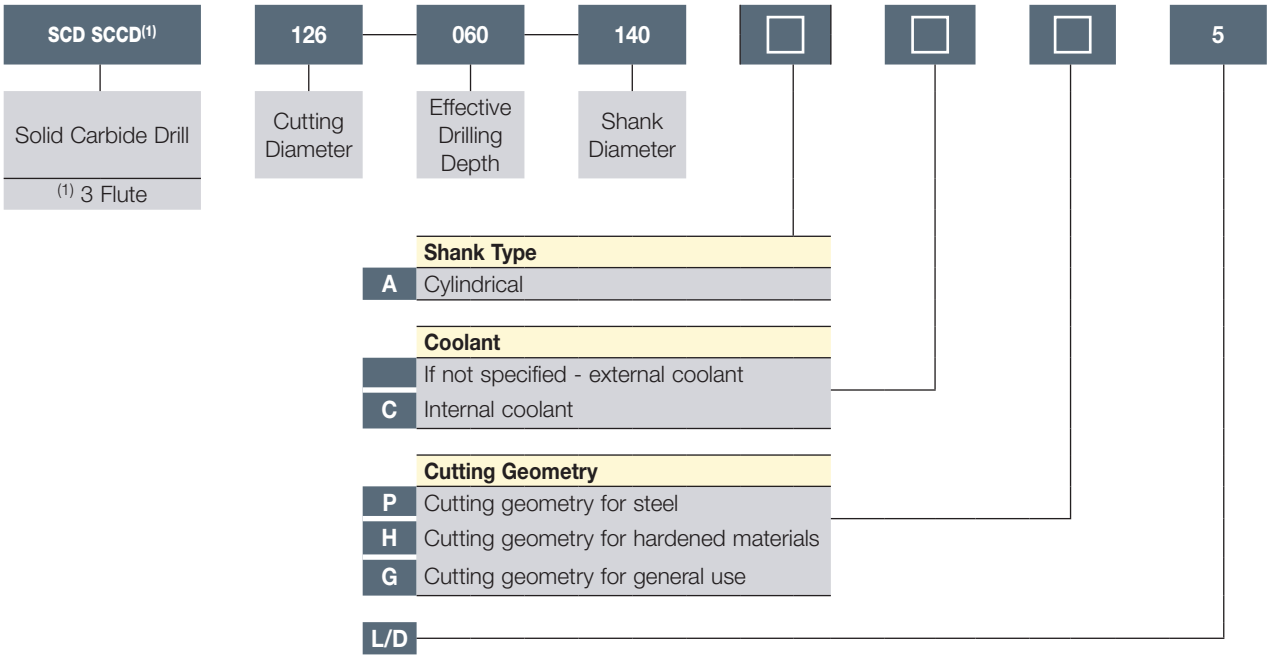
ISO	Material		Condition	TensileStrength (N/mm²)	Hardness HB	Material Group No.	Drilling		Turning & Boring		Grooving	
							v_c (m/min)	Feed (mm/rev)	v_c (m/min)	Feed (mm/rev)	v_c (m/min)	Feed (mm/rev)
P	non-alloy steel, cast steel, free cutting steel	<0.25%C	annealed	420	125	1	120-260	0.05-0.06	140-280	0.04-0.14	120-250	0.04-0.25
			annealed	650	190	2	80-190	0.05-0.15	90-200	0.04-0.12	80-180	
		≥0.25%C	quenched and tempered	850	250	3	100-280	0.06-0.18	100-200	0.04-0.15		
		>0.25%C	annealed	750	220	4						
		≥0.55%C	quenched and tempered	1000	300	5						
	low alloy steel and cast steel (less than 5% of alloying elements)		annealed	600	200	6	100-280	0.06-0.18	100-200	0.04-0.15	80-180	
			quenched and tempered	930	275	7	60-180	0.04-0.15	80-180	0.07-0.12	60-160	
				1000	300	8						
				1200	200	9						
	high alloy steel, cast steel and tool steel		annealed	680	200	10	80-190	0.04-0.15	80-200	0.04-0.12	80-160	
			quenched and tempered	1100	325	11	50-150	0.04-0.14	60-150		50-120	
	stainless steel and cast steel		ferritic / martensitic	680	200	12	50-210	0.04-0.15	60-230	0.07-0.12	50-200	
			martensitic	820	240	13						
M	stainless steel and cast steel		austenitic, duplex	600	180	14	50-210	0.04-0.15	60-230	0.07-0.12	50-200	0.04-0.25
K	gray cast iron (GG)		ferritic / pearlitic		180	15	100-300	0.06-0.23	120-230	0.07-0.20	100-200	0.04-0.25
			pearlitic / martensitic		260	16						
	nodular cast iron (GGG)		ferritic		160	17						
			pearlitic		250	18						
	malleable cast iron		ferritic		130	19	100-200	0.06-0.15		0.04-0.13		
			pearlitic		230	20						
N	aluminum-wrought alloys		not hardenable		60	21	120-500	0.05-0.30	120-700	0.04-0.25	100-700	0.04-0.25
			hardenable		100	22						
	aluminum-cast alloys	≤12% Si	not hardenable		75	23						
			hardenable		90	24						
		>12% Si	high temperature		130	25						
	copper alloys	>1% Pb	free cutting		110	26	80-380	0.05-0.23	80-500	0.04-0.20	80-350	
			brass		90	27						
			electrolitic copper		100	28						
	non metallic		duroplastics, fiber plastics		70 Shore D	29	50-140	0.04-0.14	50-160	0.04-0.12	50-140	
			hard rubber		55 Shore D	30						
S	high temperature alloys	Fe based	annealed		200	31	20-50	0.04-0.05	20-80	0.04-0.05	20-50	0.04-0.25
			hardened		280	32						
		Ni or Co based	annealed		250	33						
			hardened		350	34						
			cast		320	35						
	titanium alloys		pure	400	190	36	30-60		30-100		30-80	
			alpha+beta alloys, hardened	1050	310	37						
H	hardened steel		hardened		55 HRC	38	20-40	0.04-0.05	20-70	0.04-0.05	20-50	0.04-0.05
			hardened		60 HRC	39						
	chilled cast iron		cast		400	40						
	cast iron		hardened		55 HRC	41						

steel
stainless steel
cast iron
non-ferrous metals
superalloys and titanium
hard materials

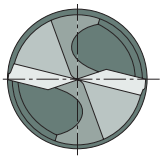
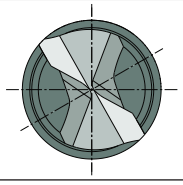
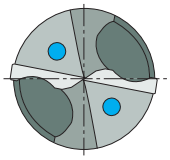
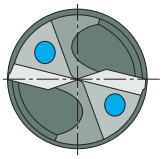
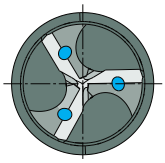
(1) Specific cutting force for 1 mm² chip section
(2) Chip thickness factor

SOLID CARBIDE DRILLS

Identification System



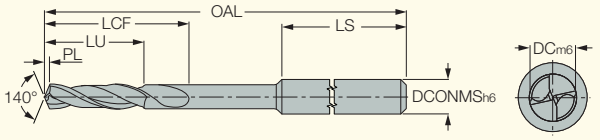
Cutting Edge Configurations

AP	AH	ACG	ACP	SCCD
				

SOLIDDRILL

SCD-AP4 (4xD)
DIN 6537 Solid Carbide
Drills without Coolant Holes,
Drilling Depth 4xD

DC	Tolerance m6
0.8-2.9	0.002-0.008



Designation	Dimensions								IC908
	DC	LU	LCF	LS	OAL	PL	FTDZ[1]	DCONMS	
SCD 008-003-030 AP4	0.80	3.20	4.8	37.2	46.00	0.150	-	3.00	●
SCD 009-003-030 AP4	0.90	3.60	5.4	36.6	46.00	0.160	-	3.00	●
SCD 010-004-030 AP4	1.00	4.00	6.0	36.0	46.00	0.180	-	3.00	●
SCD 011-004-030 AP4	1.10	4.40	6.6	35.4	46.00	0.200	M1.4	3.00	●
SCD 012-004-030 AP4	1.20	4.80	7.2	34.8	46.00	0.220	-	3.00	●
SCD 013-005-030 AP4	1.30	5.20	7.8	34.2	46.00	0.240	-	3.00	●
SCD 014-005-030 AP4	1.40	5.60	8.4	33.6	46.00	0.250	-	3.00	●
SCD 015-006-030 AP4	1.50	6.00	9.0	33.0	46.00	0.270	-	3.00	●
SCD 016-006-030 AP4	1.60	6.40	9.6	32.4	46.00	0.290	M2	3.00	●
SCD 017-006-030 AP4	1.70	6.80	10.2	31.8	46.00	0.310	-	3.00	●
SCD 018-007-030 AP4	1.80	7.20	10.8	31.2	46.00	0.330	-	3.00	●
SCD 019-007-030 AP4	1.90	7.60	11.4	30.6	46.00	0.350	-	3.00	●
SCD 020-008-030 AP4	2.00	8.00	12.0	44.0	60.00	0.360	-	3.00	●
SCD 021-008-030 AP4	2.10	8.40	12.6	43.4	60.00	0.380	-	3.00	●
SCD 022-008-030 AP4	2.20	8.80	13.2	42.8	60.00	0.400	-	3.00	●
SCD 023-009-030 AP4	2.30	9.20	13.8	42.2	60.00	0.420	-	3.00	●
SCD 024-009-030 AP4	2.40	9.60	14.4	41.6	60.00	0.440	-	3.00	●
SCD 025-010-030 AP4	2.50	10.00	15.0	41.0	60.00	0.450	M3	3.00	●
SCD 026-010-030 AP4	2.60	10.40	15.6	40.4	60.00	0.470	-	3.00	●
SCD 027-010-030 AP4	2.70	10.80	16.2	39.8	60.00	0.490	-	3.00	●
SCD 028-011-030 AP4	2.80	11.20	16.8	39.2	60.00	0.510	-	3.00	●
SCD 029-011-030 AP4	2.90	11.60	17.4	38.6	60.00	0.530	M3.5	3.00	●

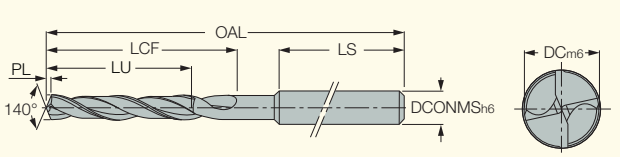
• For user guide and cutting conditions, see pages 221-226 • For regrinding instructions, see pages 227-231

(1) Used for standard thread size

SOLIDDRILL

SCD-AP6 (6xD)
DIN 6537 Solid Carbide
Drills without Coolant Holes,
Drilling Depth 6xD

DC	Tolerance m6
0.8-2.9	0.002-0.008



Designation	Dimensions								IC908
	DC	LU	LCF	LS	OAL	PL	FTDZ[1]	DCONMS	
SCD 008-004-030 AP6	0.80	4.80	6.4	35.5	46.00	0.150	-	3.00	●
SCD 009-005-030 AP6	0.90	5.40	7.2	34.5	46.00	0.160	-	3.00	●
SCD 010-006-030 AP6	1.00	6.00	8.0	33.8	46.00	0.180	-	3.00	●
SCD 011-006-030 AP6	1.10	6.60	8.8	33.0	46.00	0.200	M1.4	3.00	●
SCD 012-007-030 AP6	1.20	7.20	9.6	32.3	46.00	0.220	-	3.00	●
SCD 013-007-030 AP6	1.30	7.80	10.4	31.5	46.00	0.240	-	3.00	●
SCD 014-008-030 AP6	1.40	8.40	11.2	30.8	46.00	0.250	-	3.00	●
SCD 015-009-030 AP6	1.50	9.00	12.0	30.0	46.00	0.270	-	3.00	●
SCD 016-009-030 AP6	1.60	9.60	12.8	29.3	46.00	0.290	M2	3.00	●
SCD 017-010-030 AP6	1.70	10.20	13.6	42.5	60.00	0.310	-	3.00	●
SCD 018-010-030 AP6	1.80	10.80	14.4	41.8	60.00	0.330	-	3.00	●
SCD 019-011-030 AP6	1.90	11.40	15.2	41.1	60.00	0.350	-	3.00	●
SCD 020-012-030 AP6	2.00	12.00	16.0	40.3	60.00	0.360	-	3.00	●
SCD 021-012-030 AP6	2.10	12.60	16.8	39.6	60.00	0.380	-	3.00	●
SCD 022-013-030 AP6	2.20	13.20	17.6	38.9	60.00	0.400	-	3.00	●
SCD 023-013-030 AP6	2.30	13.80	18.4	38.2	60.00	0.420	-	3.00	●
SCD 024-014-030 AP6	2.40	14.40	19.2	37.5	60.00	0.440	-	3.00	●
SCD 025-015-030 AP6	2.50	15.00	20.0	36.8	60.00	0.450	M3	3.00	●
SCD 026-015-030 AP6	2.60	15.60	20.8	36.1	60.00	0.470	-	3.00	●
SCD 027-016-030 AP6	2.70	16.20	21.6	35.5	60.00	0.490	-	3.00	●
SCD 028-016-030 AP6	2.80	16.80	22.4	34.8	60.00	0.510	-	3.00	●
SCD 029-017-030 AP6	2.90	17.40	23.2	34.4	60.00	0.530	M3.5	3.00	●

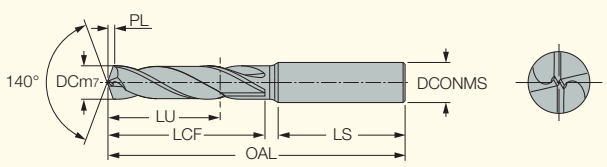
• For user guide and cutting conditions, see pages 221-226 • For regrinding instructions, see pages 227-231

[1] Used for standard thread size

SOLIDDRILL

SCD-AP3N (3xD)
DIN 6537 Solid Carbide
Drills without Coolant Holes,
Drilling Depth 3xD

DC	Tolerance m7
3.00-6	0.004-0.016
6.01-10	0.008-0.021
10.01-18	0.007-0.025
18.01-21	0.008-0.029



Designation	Dimensions								IC908
	DC	LU	LCF	LS	OAL	PL	FTDZ(1)	DCONMS	
SCD 030-014-060 AP3N	3.00	14.00	21.0	34.0	62.00	0.500	-	6.00	●
SCD 031-014-060 AP3N	3.10	14.00	21.0	34.0	62.00	0.500	-	6.00	●
SCD 032-014-060 AP3N	3.20	14.00	21.0	34.0	62.00	0.500	-	6.00	●
SCD 033-014-060 AP3N	3.30	14.00	21.0	34.0	62.00	0.500	M4	6.00	●
SCD 034-014-060 AP3N	3.40	14.00	21.0	34.0	62.00	0.500	-	6.00	●
SCD 035-014-060 AP3N	3.50	14.00	21.0	34.0	62.00	0.600	-	6.00	●
SCD 036-014-060 AP3N	3.60	14.00	21.0	34.0	62.00	0.600	-	6.00	●
SCD 037-014-060 AP3N	3.70	14.00	21.0	34.0	62.00	0.600	-	6.00	●
SCD 038-017-060 AP3N	3.80	17.00	25.0	35.0	66.00	0.600	-	6.00	●
SCD 039-017-060 AP3N	3.90	17.00	25.0	35.0	66.00	0.600	-	6.00	●
SCD 040-017-060 AP3N	4.00	17.00	25.0	35.0	66.00	0.600	-	6.00	●
SCD 041-017-060 AP3N	4.10	17.00	25.0	35.0	66.00	0.700	-	6.00	●
SCD 042-017-060 AP3N	4.20	17.00	25.0	35.0	66.00	0.700	M5	6.00	●
SCD 043-017-060 AP3N	4.30	17.00	25.0	35.0	66.00	0.700	-	6.00	●
SCD 044-017-060 AP3N	4.40	17.00	25.0	35.0	66.00	0.700	-	6.00	●
SCD 045-017-060 AP3N	4.50	17.00	25.0	35.0	66.00	0.700	-	6.00	●
SCD 046-017-060 AP3N	4.60	17.00	25.0	35.0	66.00	0.700	-	6.00	●
SCD 047-017-060 AP3N	4.70	17.00	25.0	35.0	66.00	0.800	-	6.00	●
SCD 048-020-060 AP3N	4.80	20.00	29.0	36.0	66.00	0.800	-	6.00	●
SCD 049-020-060 AP3N	4.90	20.00	29.0	36.0	66.00	0.800	-	6.00	●
SCD 050-020-060 AP3N	5.00	20.00	29.0	36.0	66.00	0.800	M6	6.00	●
SCD 051-020-060 AP3N	5.10	20.00	29.0	36.0	66.00	0.800	-	6.00	●
SCD 052-020-060 AP3N	5.20	20.00	29.0	36.0	66.00	0.800	-	6.00	●
SCD 053-020-060 AP3N	5.30	20.00	29.0	36.0	66.00	0.800	-	6.00	●
SCD 054-020-060 AP3N	5.40	20.00	29.0	36.0	66.00	0.800	-	6.00	●
SCD 055-020-060 AP3N	5.50	20.00	29.0	36.0	66.00	0.900	-	6.00	●
SCD 056-020-060 AP3N	5.60	20.00	29.0	36.0	66.00	0.900	-	6.00	●
SCD 057-020-060 AP3N	5.70	20.00	29.0	36.0	66.00	0.900	-	6.00	●
SCD 058-020-060 AP3N	5.80	20.00	29.0	36.0	66.00	0.900	-	6.00	●
SCD 059-020-060 AP3N	5.90	20.00	29.0	36.0	66.00	0.900	-	6.00	●
SCD 060-020-060 AP3N	6.00	20.00	29.0	36.0	66.00	0.900	M7	6.00	●
SCD 061-024-080 AP3N	6.10	24.00	35.0	36.0	79.00	1.000	-	8.00	●
SCD 062-024-080 AP3N	6.20	24.00	35.0	36.0	79.00	1.000	-	8.00	●
SCD 063-024-080 AP3N	6.30	24.00	35.0	36.0	79.00	1.000	-	8.00	●
SCD 064-024-080 AP3N	6.40	24.00	35.0	36.0	79.00	1.000	-	8.00	●
SCD 065-024-080 AP3N	6.50	24.00	35.0	36.0	79.00	1.000	-	8.00	●
SCD 066-024-080 AP3N	6.60	24.00	35.0	36.0	79.00	1.000	-	8.00	●
SCD 067-024-080 AP3N	6.70	24.00	35.0	36.0	79.00	1.100	-	8.00	●
SCD 068-024-080 AP3N	6.80	24.00	35.0	36.0	79.00	1.100	M8	8.00	●
SCD 069-024-080 AP3N	6.90	24.00	35.0	36.0	79.00	1.100	-	8.00	●
SCD 070-024-080 AP3N	7.00	24.00	35.0	36.0	79.00	1.100	-	8.00	●
SCD 071-029-080 AP3N	7.10	29.00	42.0	36.0	79.00	1.100	-	8.00	●
SCD 072-029-080 AP3N	7.20	29.00	42.0	36.0	79.00	1.100	-	8.00	●
SCD 073-029-080 AP3N	7.30	29.00	42.0	36.0	79.00	1.100	-	8.00	●
SCD 074-029-080 AP3N	7.40	29.00	42.0	36.0	79.00	1.200	-	8.00	●
SCD 075-029-080 AP3N	7.50	29.00	42.0	36.0	79.00	1.200	-	8.00	●
SCD 076-029-080 AP3N	7.60	29.00	42.0	36.0	79.00	1.200	-	8.00	●
SCD 077-029-080 AP3N	7.70	29.00	42.0	36.0	79.00	1.200	-	8.00	●
SCD 078-029-080 AP3N	7.80	29.00	42.0	36.0	79.00	1.200	M9	8.00	●
SCD 079-029-080 AP3N	7.90	29.00	42.0	36.0	79.00	1.300	-	8.00	●
SCD 080-029-080 AP3N	8.00	29.00	42.0	36.0	79.00	1.300	-	8.00	●
SCD 081-035-100 AP3N	8.10	35.00	48.0	40.0	89.00	1.300	-	10.00	●
SCD 082-035-100 AP3N	8.20	35.00	48.0	40.0	89.00	1.300	-	10.00	●
SCD 083-035-100 AP3N	8.30	35.00	48.0	40.0	89.00	1.300	-	10.00	●
SCD 084-035-100 AP3N	8.40	35.00	48.0	40.0	89.00	1.300	-	10.00	●
SCD 085-035-100 AP3N	8.50	35.00	48.0	40.0	89.00	1.300	M10	10.00	●
SCD 086-035-100 AP3N	8.60	35.00	48.0	40.0	89.00	1.400	-	10.00	●
SCD 087-035-100 AP3N	8.70	35.00	48.0	40.0	89.00	1.400	-	10.00	●
SCD 088-035-100 AP3N	8.80	35.00	48.0	40.0	89.00	1.400	-	10.00	●

• For user guide and cutting conditions, see pages 221-226 • For regrinding instructions, see pages 227-231

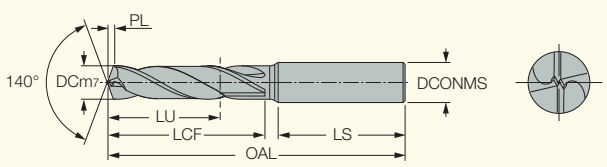
(1) Used for standard thread size

Continued

SOLIDDRILL

SCD-AP3N (3xD)
DIN 6537 Solid Carbide
Drills without Coolant Holes,
Drilling Depth 3xD

DC	Tolerance m7
3.00-6	0.004-0.016
6.01-10	0.008-0.021
10.01-18	0.007-0.025
18.01-21	0.008-0.029



Designation	Dimensions								IC908
	DC	LU	LCF	LS	OAL	PL	FTDZ[1]	DCONMS	
SCD 089-035-100 AP3N	8.90	35.00	48.0	40.0	89.00	1.400	-	10.00	●
SCD 090-035-100 AP3N	9.00	35.00	48.0	40.0	89.00	1.400	-	10.00	●
SCD 091-035-100 AP3N	9.10	35.00	48.0	40.0	89.00	1.400	-	10.00	●
SCD 092-035-100 AP3N	9.20	35.00	48.0	40.0	89.00	1.400	-	10.00	●
SCD 093-035-100 AP3N	9.30	35.00	48.0	40.0	89.00	1.500	-	10.00	●
SCD 094-035-100 AP3N	9.40	35.00	48.0	40.0	89.00	1.500	-	10.00	●
SCD 095-035-100 AP3N	9.50	35.00	48.0	40.0	89.00	1.500	M11	10.00	●
SCD 096-035-100 AP3N	9.60	35.00	48.0	40.0	89.00	1.500	-	10.00	●
SCD 097-035-100 AP3N	9.70	35.00	48.0	40.0	89.00	1.500	-	10.00	●
SCD 098-035-100 AP3N	9.80	35.00	48.0	40.0	89.00	1.600	-	10.00	●
SCD 099-035-100 AP3N	9.90	35.00	48.0	40.0	89.00	1.600	-	10.00	●
SCD 100-035-100 AP3N	10.00	35.00	48.0	40.0	89.00	1.600	-	10.00	●
SCD 101-040-120 AP3N	10.10	40.00	54.0	45.0	101.00	1.600	-	12.00	●
SCD 102-040-120 AP3N	10.20	40.00	54.0	45.0	101.00	1.600	M12	12.00	●
SCD 103-040-120 AP3N	10.30	40.00	54.0	45.0	101.00	1.600	-	12.00	●
SCD 104-040-120 AP3N	10.40	40.00	54.0	45.0	101.00	1.600	-	12.00	●
SCD 105-040-120 AP3N	10.50	40.00	54.0	45.0	101.00	1.600	-	12.00	●
SCD 106-040-120 AP3N	10.60	40.00	54.0	45.0	101.00	1.700	-	12.00	●
SCD 107-040-120 AP3N	10.70	40.00	54.0	45.0	101.00	1.700	-	12.00	●
SCD 108-040-120 AP3N	10.80	40.00	54.0	45.0	101.00	1.700	-	12.00	●
SCD 109-040-120 AP3N	10.90	40.00	54.0	45.0	101.00	1.700	-	12.00	●
SCD 110-040-120 AP3N	11.00	40.00	54.0	45.0	101.00	1.700	-	12.00	●
SCD 111-040-120 AP3N	11.10	40.00	55.0	45.0	101.00	1.700	-	12.00	●
SCD 112-040-120 AP3N	11.20	40.00	55.0	45.0	101.00	1.800	-	12.00	●
SCD 113-040-120 AP3N	11.30	40.00	55.0	45.0	101.00	1.800	-	12.00	●
SCD 114-040-120 AP3N	11.40	40.00	55.0	45.0	101.00	1.800	-	12.00	●
SCD 115-040-120 AP3N	11.50	40.00	55.0	45.0	101.00	1.800	-	12.00	●
SCD 116-040-120 AP3N	11.60	40.00	55.0	45.0	101.00	1.800	-	12.00	●
SCD 117-040-120 AP3N	11.70	40.00	55.0	45.0	101.00	1.900	-	12.00	●
SCD 118-040-120 AP3N	11.80	40.00	55.0	45.0	101.00	1.900	-	12.00	●
SCD 119-040-120 AP3N	11.90	40.00	55.0	45.0	101.00	1.900	-	12.00	●
SCD 120-040-120 AP3N	12.00	40.00	55.0	45.0	101.00	1.900	M14	12.00	●

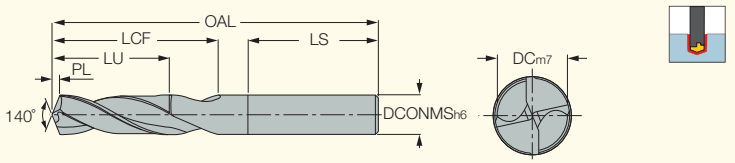
• For user guide and cutting conditions, see pages 221-226 • For regrinding instructions, see pages 227-231

[1] Used for standard thread size

SOLIDDRILL

SCD-AP3 (3xD)
DIN 6537 Solid Carbide
Drills without Coolant Holes,
Drilling Depth 3xD

DC	Tolerance m7
3.00- 6	0.004-0.016
6.01-10	0.006-0.021
10.01-18	0.007-0.025
18.01-21	0.008-0.029



Designation	Dimensions DC	LU	LCF	LS	OAL	PL	FTDZ(1)	DCONMS	IC908
SCD 121-043-140 AP3	12.10	43.00	60.0	45.0	107.00	2.200	-	14.00	●
SCD 122-043-140 AP3	12.20	43.00	60.0	45.0	107.00	2.220	-	14.00	●
SCD 123-043-140 AP3	12.30	43.00	60.0	45.0	107.00	2.240	-	14.00	●
SCD 124-043-140 AP3	12.40	43.00	60.0	45.0	107.00	2.260	-	14.00	●
SCD 125-043-140 AP3	12.50	43.00	60.0	45.0	107.00	2.270	-	14.00	●
SCD 126-043-140 AP3	12.60	43.00	60.0	45.0	107.00	2.290	-	14.00	●
SCD 127-043-140 AP3	12.70	43.00	60.0	45.0	107.00	2.310	-	14.00	●
SCD 128-043-140 AP3	12.80	43.00	60.0	45.0	107.00	2.330	-	14.00	●
SCD 129-043-140 AP3	12.90	43.00	60.0	45.0	107.00	2.350	-	14.00	●
SCD 130-043-140 AP3	13.00	43.00	60.0	45.0	107.00	2.370	-	14.00	●
SCD 131-043-140 AP3	13.10	43.00	60.0	45.0	107.00	2.380	-	14.00	●
SCD 132-043-140 AP3	13.20	43.00	60.0	45.0	107.00	2.400	-	14.00	●
SCD 133-043-140 AP3	13.30	43.00	60.0	45.0	107.00	2.420	-	14.00	●
SCD 135-043-140 AP3	13.50	43.00	60.0	45.0	107.00	2.460	-	14.00	●
SCD 136-043-140 AP3	13.60	43.00	60.0	45.0	107.00	2.470	-	14.00	●
SCD 137-043-140 AP3	13.70	43.00	60.0	45.0	107.00	2.490	-	14.00	●
SCD 138-043-140 AP3	13.80	43.00	60.0	45.0	107.00	2.510	-	14.00	●
SCD 139-043-140 AP3	13.90	43.00	60.0	45.0	107.00	2.530	-	14.00	●
SCD 140-043-140 AP3	14.00	43.00	60.0	45.0	107.00	2.550	M16	14.00	●
SCD 141-045-160 AP3	14.10	45.00	65.0	45.0	115.00	2.570	-	16.00	●
SCD 142-045-160 AP3	14.20	45.00	65.0	45.0	115.00	2.580	-	16.00	●
SCD 143-045-160 AP3	14.30	45.00	65.0	45.0	115.00	2.600	-	16.00	●
SCD 144-045-160 AP3	14.40	45.00	65.0	45.0	115.00	2.620	-	16.00	●
SCD 145-045-160 AP3	14.50	45.00	65.0	45.0	115.00	2.640	-	16.00	●
SCD 146-045-160 AP3	14.60	45.00	65.0	45.0	115.00	2.660	-	16.00	●
SCD 147-045-160 AP3	14.70	45.00	65.0	45.0	115.00	2.680	-	16.00	●
SCD 148-045-160 AP3	14.80	45.00	65.0	45.0	115.00	2.690	-	16.00	●
SCD 149-045-160 AP3	14.90	45.00	65.0	45.0	115.00	2.710	-	16.00	●
SCD 150-045-160 AP3	15.00	45.00	65.0	45.0	115.00	2.730	-	16.00	●
SCD 151-045-160 AP3	15.10	45.00	65.0	45.0	115.00	2.750	-	16.00	●
SCD 152-045-160 AP3	15.20	45.00	65.0	45.0	115.00	2.770	-	16.00	●
SCD 153-045-160 AP3	15.30	45.00	65.0	45.0	115.00	2.780	-	16.00	●
SCD 154-045-160 AP3	15.40	45.00	65.0	45.0	115.00	2.800	-	16.00	●
SCD 155-045-160 AP3	15.50	45.00	65.0	45.0	115.00	2.820	M18	16.00	●
SCD 156-045-160 AP3	15.60	45.00	65.0	45.0	115.00	2.840	-	16.00	●
SCD 157-045-160 AP3	15.70	45.00	65.0	45.0	115.00	2.860	-	16.00	●
SCD 158-045-160 AP3	15.80	45.00	65.0	45.0	115.00	2.880	-	16.00	●
SCD 159-045-160 AP3	15.90	45.00	65.0	45.0	115.00	2.890	-	16.00	●
SCD 160-045-160 AP3	16.00	45.00	65.0	45.0	115.00	2.910	-	16.00	●
SCD 161-051-180 AP3	16.10	51.00	73.0	48.0	123.00	2.930	-	18.00	●
SCD 162-051-180 AP3	16.20	51.00	73.0	48.0	123.00	2.950	-	18.00	●
SCD 164-051-180 AP3	16.40	51.00	73.0	48.0	123.00	2.980	-	18.00	●
SCD 165-051-180 AP3	16.50	51.00	73.0	48.0	123.00	3.000	-	18.00	●
SCD 166-051-180 AP3	16.60	51.00	73.0	48.0	123.00	3.020	-	18.00	●
SCD 167-051-180 AP3	16.70	51.00	73.0	48.0	123.00	3.040	-	18.00	●
SCD 168-051-180 AP3	16.80	51.00	73.0	48.0	123.00	3.060	-	18.00	●
SCD 169-051-180 AP3	16.90	51.00	73.0	48.0	123.00	3.080	-	18.00	●
SCD 170-051-180 AP3	17.00	51.00	73.0	48.0	123.00	3.090	-	18.00	●
SCD 171-051-180 AP3	17.10	51.00	73.0	48.0	123.00	3.110	-	18.00	●
SCD 172-051-180 AP3	17.20	51.00	73.0	48.0	123.00	3.130	-	18.00	●
SCD 173-051-180 AP3	17.30	51.00	73.0	48.0	123.00	3.150	-	18.00	●
SCD 174-051-180 AP3	17.40	51.00	73.0	48.0	123.00	3.170	-	18.00	●
SCD 175-051-180 AP3	17.50	51.00	73.0	48.0	123.00	3.180	M20	18.00	●
SCD 176-051-180 AP3	17.60	51.00	73.0	48.0	123.00	3.200	-	18.00	●
SCD 177-051-180 AP3	17.70	51.00	73.0	48.0	123.00	3.220	-	18.00	●
SCD 178-051-180 AP3	17.80	51.00	73.0	48.0	123.00	3.240	-	18.00	●
SCD 179-051-180 AP3	17.90	51.00	73.0	48.0	123.00	3.260	-	18.00	●
SCD 180-051-180 AP3	18.00	51.00	73.0	48.0	123.00	3.280	-	18.00	●
SCD 181-055-200 AP3	18.10	55.00	79.0	48.0	131.00	3.290	-	20.00	●

• For user guide and cutting conditions, see pages 221-226 • For regrinding instructions, see pages 227-231

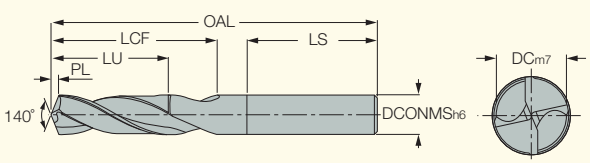
(1) Used for standard thread size

Continued

SOLIDDRILL

SCD-AP3 (3xD)
DIN 6537 Solid Carbide
Drills without Coolant Holes,
Drilling Depth 3xD

DC	Tolerance m7
3.00- 6	0.004-0.016
6.01-10	0.006-0.021
10.01-18	0.007-0.025
18.01-21	0.008-0.029



Designation	Dimensions DC	LU	LCF	LS	OAL	PL	FTDZ(1)	DCONMS	IC908
SCD 182-055-200 AP3	18.20	55.00	79.0	48.0	131.00	3.310	-	20.00	●
SCD 183-055-200 AP3	18.30	55.00	79.0	48.0	131.00	3.330	-	20.00	●
SCD 184-055-200 AP3	18.40	55.00	79.0	48.0	131.00	3.350	-	20.00	●
SCD 185-055-200 AP3	18.50	55.00	79.0	48.0	131.00	3.370	-	20.00	●
SCD 186-055-200 AP3	18.60	55.00	79.0	48.0	131.00	3.380	-	20.00	●
SCD 187-055-200 AP3	18.70	55.00	79.0	48.0	131.00	3.400	-	20.00	●
SCD 189-055-200 AP3	18.90	55.00	79.0	48.0	131.00	3.440	-	20.00	●
SCD 190-055-200 AP3	19.00	55.00	79.0	48.0	131.00	3.460	-	20.00	●
SCD 191-055-200 AP3	19.10	55.00	79.0	48.0	131.00	3.480	-	20.00	●
SCD 192-055-200 AP3	19.20	55.00	79.0	48.0	131.00	3.490	-	20.00	●
SCD 193-055-200 AP3	19.30	55.00	79.0	48.0	131.00	3.510	-	20.00	●
SCD 194-055-200 AP3	19.40	55.00	79.0	48.0	131.00	3.530	-	20.00	●
SCD 195-055-200 AP3	19.50	55.00	79.0	48.0	131.00	3.550	M22	20.00	●
SCD 197-055-200 AP3	19.70	55.00	79.0	48.0	131.00	3.590	-	20.00	●
SCD 198-055-200 AP3	19.80	55.00	79.0	48.0	131.00	3.600	-	20.00	●
SCD 199-055-200 AP3	19.90	55.00	79.0	48.0	131.00	3.620	-	20.00	●
SCD 200-055-200 AP3	20.00	55.00	79.0	48.0	131.00	3.640	-	20.00	●

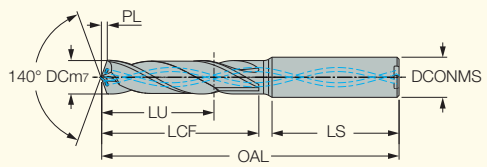
• For user guide and cutting conditions, see pages 221-226 • For regrinding instructions, see pages 227-231

(1) Used for standard thread size

SOLIDDRILL

SCD-ACP3N (3XD)
DIN 6537 Solid Carbide Drills with Coolant Holes, Drilling Depth 3xD

DC	Tolerance m7
3.00-6	0.004-0.016
6.01-10	0.008-0.021
10.01-18	0.007-0.025
18.01-21	0.008-0.029



Designation	Dimensions								IC908
	DC	LU	LCF	LS	OAL	PL	FTDZ[1]	DCONMS	
SCD 030-014-060 ACP3N	3.00	14.00	21.0	34.0	62.00	0.500	-	6.00	●
SCD 031-014-060 ACP3N	3.10	14.00	21.0	34.0	62.00	0.500	-	6.00	●
SCD 032-014-060 ACP3N	3.20	14.00	21.0	34.0	62.00	0.500	-	6.00	●
SCD 033-014-060 ACP3N	3.30	14.00	21.0	34.0	62.00	0.500	M4	6.00	●
SCD 034-014-060 ACP3N	3.40	14.00	21.0	34.0	62.00	0.500	-	6.00	●
SCD 035-014-060 ACP3N	3.50	14.00	21.0	34.0	62.00	0.600	-	6.00	●
SCD 036-014-060 ACP3N	3.60	14.00	21.0	34.0	62.00	0.600	-	6.00	●
SCD 037-014-060 ACP3N	3.70	14.00	21.0	34.0	62.00	0.600	-	6.00	●
SCD 038-017-060 ACP3N	3.80	17.00	25.0	35.0	66.00	0.600	-	6.00	●
SCD 039-017-060 ACP3N	3.90	17.00	25.0	35.0	66.00	0.600	-	6.00	●
SCD 040-017-060 ACP3N	4.00	17.00	25.0	35.0	66.00	0.600	-	6.00	●
SCD 041-017-060 ACP3N	4.10	17.00	25.0	35.0	66.00	0.700	-	6.00	●
SCD 042-017-060 ACP3N	4.20	17.00	25.0	35.0	66.00	0.700	M5	6.00	●
SCD 043-017-060 ACP3N	4.30	17.00	25.0	35.0	66.00	0.700	-	6.00	●
SCD 044-017-060 ACP3N	4.40	17.00	25.0	35.0	66.00	0.700	-	6.00	●
SCD 045-017-060 ACP3N	4.50	17.00	25.0	35.0	66.00	0.700	-	6.00	●
SCD 046-017-060 ACP3N	4.60	17.00	25.0	35.0	66.00	0.700	-	6.00	●
SCD 047-017-060 ACP3N	4.70	17.00	25.0	35.0	66.00	0.800	-	6.00	●
SCD 048-020-060 ACP3N	4.80	20.00	29.0	36.0	66.00	0.800	-	6.00	●
SCD 049-020-060 ACP3N	4.90	20.00	29.0	36.0	66.00	0.800	-	6.00	●
SCD 050-020-060 ACP3N	5.00	20.00	29.0	36.0	66.00	0.800	M6	6.00	●
SCD 051-020-060 ACP3N	5.10	20.00	29.0	36.0	66.00	0.800	-	6.00	●
SCD 052-020-060 ACP3N	5.20	20.00	29.0	36.0	66.00	0.800	-	6.00	●
SCD 053-020-060 ACP3N	5.30	20.00	29.0	36.0	66.00	0.800	-	6.00	●
SCD 054-020-060 ACP3N	5.40	20.00	29.0	36.0	66.00	0.800	-	6.00	●
SCD 055-020-060 ACP3N	5.50	20.00	29.0	36.0	66.00	0.900	-	6.00	●
SCD 056-020-060 ACP3N	5.60	20.00	29.0	36.0	66.00	0.900	-	6.00	●
SCD 057-020-060 ACP3N	5.70	20.00	29.0	36.0	66.00	0.900	-	6.00	●
SCD 058-020-060 ACP3N	5.80	20.00	29.0	36.0	66.00	0.900	-	6.00	●
SCD 059-020-060 ACP3N	5.90	20.00	29.0	36.0	66.00	0.900	-	6.00	●
SCD 060-020-060 ACP3N	6.00	20.00	29.0	36.0	66.00	0.900	M7	6.00	●
SCD 061-024-080 ACP3N	6.10	24.00	35.0	36.0	79.00	1.000	-	8.00	●
SCD 062-024-080 ACP3N	6.20	24.00	35.0	36.0	79.00	1.000	-	8.00	●
SCD 063-024-080 ACP3N	6.30	24.00	35.0	36.0	79.00	1.000	-	8.00	●
SCD 064-024-080 ACP3N	6.40	24.00	35.0	36.0	79.00	1.000	-	8.00	●
SCD 065-024-080 ACP3N	6.50	24.00	35.0	36.0	79.00	1.000	-	8.00	●
SCD 066-024-080 ACP3N	6.60	24.00	35.0	36.0	79.00	1.000	-	8.00	●
SCD 067-024-080 ACP3N	6.70	24.00	35.0	36.0	79.00	1.100	-	8.00	●
SCD 068-024-080 ACP3N	6.80	24.00	35.0	36.0	79.00	1.100	M8	8.00	●
SCD 069-024-080 ACP3N	6.90	24.00	35.0	36.0	79.00	1.100	-	8.00	●
SCD 070-024-080 ACP3N	7.00	24.00	35.0	36.0	79.00	1.100	-	8.00	●
SCD 071-029-080 ACP3N	7.10	29.00	42.0	36.0	79.00	1.100	-	8.00	●
SCD 072-029-080 ACP3N	7.20	29.00	42.0	36.0	79.00	1.100	-	8.00	●
SCD 073-029-080 ACP3N	7.30	29.00	42.0	36.0	79.00	1.100	-	8.00	●
SCD 074-029-080 ACP3N	7.40	29.00	42.0	36.0	79.00	1.200	-	8.00	●
SCD 075-029-080 ACP3N	7.50	29.00	42.0	36.0	79.00	1.200	-	8.00	●
SCD 076-029-080 ACP3N	7.60	29.00	42.0	36.0	79.00	1.200	-	8.00	●
SCD 077-029-080 ACP3N	7.70	29.00	42.0	36.0	79.00	1.200	-	8.00	●
SCD 078-029-080 ACP3N	7.80	29.00	42.0	36.0	79.00	1.200	M9	8.00	●
SCD 079-029-080 ACP3N	7.90	29.00	42.0	36.0	79.00	1.300	-	8.00	●
SCD 080-029-080 ACP3N	8.00	29.00	42.0	36.0	79.00	1.300	-	8.00	●
SCD 081-035-100 ACP3N	8.10	35.00	48.0	40.0	89.00	1.300	-	10.00	●
SCD 082-035-100 ACP3N	8.20	35.00	48.0	40.0	89.00	1.300	-	10.00	●
SCD 083-035-100 ACP3N	8.30	35.00	48.0	40.0	89.00	1.300	-	10.00	●
SCD 084-035-100 ACP3N	8.40	35.00	48.0	40.0	89.00	1.300	-	10.00	●
SCD 085-035-100 ACP3N	8.50	35.00	48.0	40.0	89.00	1.300	M10	10.00	●
SCD 086-035-100 ACP3N	8.60	35.00	48.0	40.0	89.00	1.400	-	10.00	●
SCD 087-035-100 ACP3N	8.70	35.00	48.0	40.0	89.00	1.400	-	10.00	●
SCD 088-035-100 ACP3N	8.80	35.00	48.0	40.0	89.00	1.400	-	10.00	●

• For user guide and cutting conditions, see pages 221-226 • For regrinding instructions, see pages 227-231

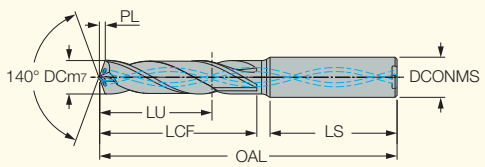
(1) Used for standard thread size

Continued

SOLIDDRILL

SCD-ACP3N (3XD)
DIN 6537 Solid Carbide Drills with Coolant Holes, Drilling Depth 3xD

DC	Tolerance m7
3.00-6	0.004-0.016
6.01-10	0.008-0.021
10.01-18	0.007-0.025
18.01-21	0.008-0.029



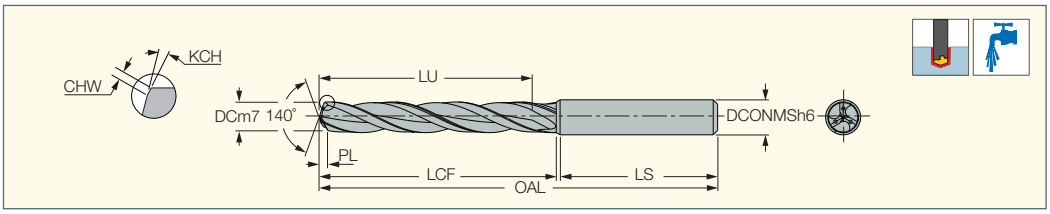
Designation	Dimensions DC	LU	LCF	LS	OAL	PL	FTDZ[1]	DCONMS	IC908
SCD 089-035-100 ACP3N	8.90	35.00	48.0	40.0	89.00	1.400	-	10.00	●
SCD 090-035-100 ACP3N	9.00	35.00	48.0	40.0	89.00	1.400	-	10.00	●
SCD 091-035-100 ACP3N	9.10	35.00	48.0	40.0	89.00	1.400	-	10.00	●
SCD 092-035-100 ACP3N	9.20	35.00	48.0	40.0	89.00	1.400	-	10.00	●
SCD 093-035-100 ACP3N	9.30	35.00	48.0	40.0	89.00	1.500	-	10.00	●
SCD 094-035-100 ACP3N	9.40	35.00	48.0	40.0	89.00	1.500	-	10.00	●
SCD 095-035-100 ACP3N	9.50	35.00	48.0	40.0	89.00	1.500	M11	10.00	●
SCD 096-035-100 ACP3N	9.60	35.00	48.0	40.0	89.00	1.500	-	10.00	●
SCD 097-035-100 ACP3N	9.70	35.00	48.0	40.0	89.00	1.500	-	10.00	●
SCD 098-035-100 ACP3N	9.80	35.00	48.0	40.0	89.00	1.600	-	10.00	●
SCD 099-035-100 ACP3N	9.90	35.00	48.0	40.0	89.00	1.600	-	10.00	●
SCD 100-035-100 ACP3N	10.00	35.00	48.0	40.0	89.00	1.600	-	10.00	●
SCD 101-040-120 ACP3N	10.10	40.00	55.0	45.0	102.00	1.600	-	12.00	●
SCD 102-040-120 ACP3N	10.20	40.00	55.0	45.0	102.00	1.600	M12	12.00	●
SCD 103-040-120 ACP3N	10.30	40.00	55.0	45.0	102.00	1.600	-	12.00	●
SCD 104-040-120 ACP3N	10.40	40.00	55.0	45.0	102.00	1.600	-	12.00	●
SCD 105-040-120 ACP3N	10.50	40.00	55.0	45.0	102.00	1.600	-	12.00	●
SCD 106-040-120 ACP3N	10.60	40.00	55.0	45.0	102.00	1.700	-	12.00	●
SCD 107-040-120 ACP3N	10.70	40.00	55.0	45.0	102.00	1.700		12.00	●
SCD 108-040-120 ACP3N	10.80	40.00	55.0	45.0	102.00	1.700	-	12.00	●
SCD 109-040-120 ACP3N	10.90	40.00	55.0	45.0	102.00	1.700	-	12.00	●
SCD 110-040-120 ACP3N	11.00	40.00	55.0	45.0	102.00	1.700	-	12.00	●
SCD 111-040-120 ACP3N	11.10	40.00	56.0	45.0	102.00	1.700	-	12.00	●
SCD 112-040-120 ACP3N	11.20	40.00	56.0	45.0	102.00	1.800	-	12.00	●
SCD 113-040-120 ACP3N	11.30	40.00	56.0	45.0	102.00	1.800	-	12.00	●
SCD 114-040-120 ACP3N	11.40	40.00	56.0	45.0	102.00	1.800	-	12.00	●
SCD 115-040-120 ACP3N	11.50	40.00	56.0	45.0	102.00	1.800	-	12.00	●
SCD 116-040-120 ACP3N	11.60	40.00	56.0	45.0	102.00	1.800	-	12.00	●
SCD 117-040-120 ACP3N	11.70	40.00	56.0	45.0	102.00	1.900	-	12.00	●
SCD 118-040-120 ACP3N	11.80	40.00	56.0	45.0	102.00	1.900	-	12.00	●
SCD 119-040-120 ACP3N	11.90	40.00	56.0	45.0	102.00	1.900	-	12.00	●
SCD 120-040-120 ACP3N	12.00	40.00	56.0	45.0	102.00	1.900	M14	12.00	●

• For user guide and cutting conditions, see pages 221-226 • For regrinding instructions, see pages 227-231

[1] Used for standard thread size

SOLIDDRILL

SCCD-ACP3
Three Flute Solid Carbide Drills with Coolant Holes, Drilling Depth 3xD



Designation	Dimensions										IC608
	DC	LU	LCF	LS	OAL	PL	KCH	CHW	FTDZ[1]	DCONMS	
SCCD 040-017-060 ACP3	4.00	17.00	25.0	35.0	66.00	0.820	30.0	0.30	-	6.00	•
SCCD 045-017-060 ACP3	4.50	17.00	25.0	35.0	66.00	0.880	30.0	0.30	-	6.00	•
SCCD 050-020-060 ACP3	5.00	20.00	29.0	36.0	66.00	0.960	30.0	0.30	M6	6.00	•
SCCD 051-020-060 ACP3	5.10	20.00	29.0	36.0	66.00	0.980	30.0	0.30	M7	6.00	•
SCCD 055-020-060 ACP3	5.50	20.00	29.0	36.0	66.00	1.080	30.0	0.40	-	6.00	•
SCCD 060-020-060 ACP3	6.00	20.00	29.0	36.0	66.00	1.170	30.0	0.40	-	6.00	•
SCCD 065-024-080 ACP3	6.50	24.00	35.0	36.0	79.00	1.260	30.0	0.40	-	8.00	•
SCCD 068-024-080 ACP3	6.80	24.00	35.0	36.0	79.00	1.310	30.0	0.40	M8	8.00	•
SCCD 070-024-080 ACP3	7.00	24.00	35.0	36.0	79.00	1.350	30.0	0.40	-	8.00	•
SCCD 075-029-080 ACP3	7.50	29.00	42.0	36.0	79.00	1.400	30.0	0.40	-	8.00	•
SCCD 080-029-080 ACP3	8.00	29.00	42.0	36.0	79.00	1.490	30.0	0.40	-	8.00	•
SCCD 085-035-100 ACP3	8.50	35.00	48.0	40.0	89.00	1.630	30.0	0.50	M10	10.00	•
SCCD 086-035-100 ACP3	8.60	35.00	48.0	40.0	89.00	1.650	30.0	0.50	-	10.00	•
SCCD 090-035-100 ACP3	9.00	35.00	48.0	40.0	89.00	1.720	30.0	0.50	-	10.00	•
SCCD 095-035-100 ACP3	9.50	35.00	48.0	40.0	89.00	1.750	30.0	0.50	M11	10.00	•
SCCD 100-035-100 ACP3	10.00	35.00	48.0	40.0	89.00	1.850	30.0	0.50	-	10.00	•
SCCD 103-040-120 ACP3	10.30	40.00	55.0	45.0	102.00	1.940	30.0	0.60	-	12.00	•
SCCD 105-040-120 ACP3	10.50	40.00	55.0	45.0	102.00	1.980	30.0	0.60	-	12.00	•
SCCD 110-040-120 ACP3	11.00	40.00	55.0	45.0	102.00	2.070	30.0	0.60	-	12.00	•
SCCD 115-040-120 ACP3	11.50	40.00	56.0	45.0	102.00	2.120	30.0	0.60	-	12.00	•
SCCD 120-040-120 ACP3	12.00	40.00	56.0	45.0	102.00	2.210	30.0	0.60	M14	12.00	•

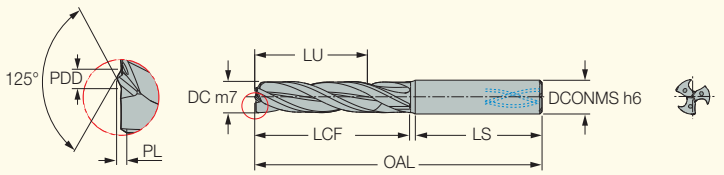
• For user guide and cutting conditions, see pages 221-226 • For regrinding instructions, see pages 227-231
[1] Used for standard thread size

Recommended Machining Conditions for SCCD-ACP Solid Carbide Drills

ISO	Material No.	Material		Material Condition	Cutting Speed V_c, m/min	Cutting Diameter Feed f, mm/rev				
						Ø4-5	Ø5.1-6	Ø6.1-8	Ø8.1-10	Ø10.1-12
P	1	non-alloy steel and cast steel, free cutting steel	<0.25% C	annealed	80-140	0.15-0.25	0.20-0.35	0.25-0.45	0.30-0.55	0.35-0.60
P	2	non-alloy steel and cast steel, free cutting steel	≥0.25% C	annealed	80-130					
P	3	non-alloy steel and cast steel, free cutting steel	<0.55% C	quenched and tempered	80-120					
P	4	non-alloy steel and cast steel, free cutting steel	≥0.55% C	annealed	70-110					
P	5	non-alloy steel and cast steel, free cutting steel	≥0.55% C	quenched and tempered	50-90					
P	6	low alloy steel and cast steel (less than 5% of alloying elements)		annealed	80-120			0.25-0.40	0.30-0.50	0.35-0.55
P	7	low alloy steel and cast steel (less than 5% of alloying elements)		quenched and tempered	70-110					
P	8	low alloy steel and cast steel (less than 5% of alloying elements)		quenched and tempered	50-90					
P	9	low alloy steel and cast steel (less than 5% of alloying elements)		quenched and tempered	40-70					
P	10	high alloyed steel, cast steel, and tool steel		annealed	50-90	0.15-0.20	0.20-0.30	0.25-0.35	0.30-0.45	0.35-0.50
P	11	high alloyed steel, cast steel, and tool steel		quenched and tempered	40-80					
K	15	grey cast iron		ferritic/pearlitic	80-140	0.20-0.30	0.25-0.45	0.35-0.55	0.40-0.60	0.45-0.65
K	16	grey cast iron		pearlitic	70-120					
K	17	nodular cast iron		ferritic	80-120		0.20-0.40	0.30-0.50	0.35-0.55	0.40-0.60
K	18	nodular cast iron		pearlitic	70-110					
K	19	malleable cast iron		ferritic	80-120					
K	20	malleable cast iron		pearlitic	70-110					

SOLIDDRILL

SCCD-ACF3
Three Flute Solid Carbide Flat Head Drills with Coolant Holes, Drilling Depth 3xD



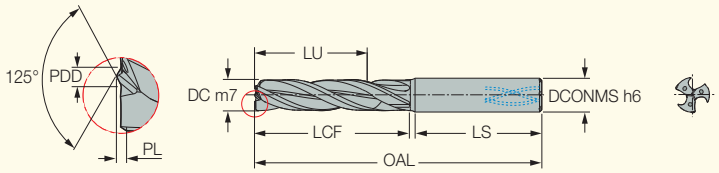
Designation	Dimensions								IC608
	DC	LU	LCF	LS	OAL	PDD	PL	DCONMS	
SCCD 040-017-060 ACF3	4.00	17.00	25.0	35.0	66.00	0.77	0.430	6.00	●
SCCD 041-017-060 ACF3	4.10	17.00	25.0	35.0	66.00	0.77	0.430	6.00	●
SCCD 042-017-060 ACF3	4.20	17.00	25.0	35.0	66.00	0.77	0.430	6.00	●
SCCD 043-017-060 ACF3	4.30	17.00	25.0	35.0	66.00	0.86	0.450	6.00	●
SCCD 044-017-060 ACF3	4.40	17.00	25.0	35.0	66.00	0.86	0.450	6.00	●
SCCD 045-017-060 ACF3	4.50	17.00	25.0	35.0	66.00	0.86	0.450	6.00	●
SCCD 046-017-060 ACF3	4.60	17.00	25.0	35.0	66.00	0.86	0.450	6.00	●
SCCD 047-017-060 ACF3	4.70	17.00	25.0	35.0	66.00	0.86	0.450	6.00	●
SCCD 048-020-060 ACF3	4.80	20.00	29.0	36.0	66.00	0.97	0.470	6.00	●
SCCD 049-020-060 ACF3	4.90	20.00	29.0	36.0	66.00	0.97	0.470	6.00	●
SCCD 050-020-060 ACF3	5.00	20.00	29.0	36.0	66.00	0.97	0.470	6.00	●
SCCD 051-020-060 ACF3	5.10	20.00	29.0	36.0	66.00	0.97	0.470	6.00	●
SCCD 052-020-060 ACF3	5.20	20.00	29.0	36.0	66.00	0.97	0.470	6.00	●
SCCD 053-020-060 ACF3	5.30	20.00	29.0	36.0	66.00	0.97	0.470	6.00	●
SCCD 054-020-060 ACF3	5.40	20.00	29.0	36.0	66.00	1.08	0.580	6.00	●
SCCD 055-020-060 ACF3	5.50	20.00	29.0	36.0	66.00	1.08	0.580	6.00	●
SCCD 056-020-060 ACF3	5.60	20.00	29.0	36.0	66.00	1.08	0.580	6.00	●
SCCD 057-020-060 ACF3	5.70	20.00	29.0	36.0	66.00	1.08	0.580	6.00	●
SCCD 058-020-060 ACF3	5.80	20.00	29.0	36.0	66.00	1.08	0.580	6.00	●
SCCD 059-020-060 ACF3	5.90	20.00	29.0	36.0	66.00	1.08	0.580	6.00	●
SCCD 060-020-060 ACF3	6.00	20.00	29.0	36.0	66.00	1.08	0.580	6.00	●
SCCD 061-024-080 ACF3	6.10	24.00	35.0	36.0	79.00	1.26	0.620	8.00	●
SCCD 062-024-080 ACF3	6.20	24.00	35.0	36.0	79.00	1.26	0.620	8.00	●
SCCD 063-024-080 ACF3	6.30	24.00	35.0	36.0	79.00	1.26	0.620	8.00	●
SCCD 064-024-080 ACF3	6.40	24.00	35.0	36.0	79.00	1.26	0.620	8.00	●
SCCD 065-024-080 ACF3	6.50	24.00	35.0	36.0	79.00	1.26	0.620	8.00	●
SCCD 066-024-080 ACF3	6.60	24.00	35.0	36.0	79.00	1.26	0.620	8.00	●
SCCD 067-024-080 ACF3	6.70	24.00	35.0	36.0	79.00	1.26	0.620	8.00	●
SCCD 068-024-080 ACF3	6.80	24.00	35.0	36.0	79.00	1.26	0.620	8.00	●
SCCD 069-024-080 ACF3	6.90	24.00	35.0	36.0	79.00	1.26	0.620	8.00	●
SCCD 070-024-080 ACF3	7.00	24.00	35.0	36.0	79.00	1.26	0.620	8.00	●
SCCD 071-029-080 ACF3	7.10	29.00	42.0	36.0	79.00	1.44	0.660	8.00	●
SCCD 072-029-080 ACF3	7.20	29.00	42.0	36.0	79.00	1.44	0.660	8.00	●
SCCD 073-029-080 ACF3	7.30	29.00	42.0	36.0	79.00	1.44	0.660	8.00	●
SCCD 074-029-080 ACF3	7.40	29.00	42.0	36.0	79.00	1.44	0.660	8.00	●
SCCD 075-029-080 ACF3	7.50	29.00	42.0	36.0	79.00	1.44	0.660	8.00	●
SCCD 076-029-080 ACF3	7.60	29.00	42.0	36.0	79.00	1.44	0.660	8.00	●
SCCD 077-029-080 ACF3	7.70	29.00	42.0	36.0	79.00	1.44	0.660	8.00	●
SCCD 078-029-080 ACF3	7.80	29.00	42.0	36.0	79.00	1.44	0.660	8.00	●
SCCD 079-029-080 ACF3	7.90	29.00	42.0	36.0	79.00	1.44	0.660	8.00	●
SCCD 080-029-080 ACF3	8.00	29.00	42.0	36.0	79.00	1.44	0.660	8.00	●
SCCD 081-035-100 ACF3	8.10	35.00	48.0	40.0	89.00	1.62	0.790	10.00	●
SCCD 082-035-100 ACF3	8.20	35.00	48.0	40.0	89.00	1.62	0.790	10.00	●
SCCD 083-035-100 ACF3	8.30	35.00	48.0	40.0	89.00	1.62	0.790	10.00	●
SCCD 084-035-100 ACF3	8.40	35.00	48.0	40.0	89.00	1.62	0.790	10.00	●
SCCD 085-035-100 ACF3	8.50	35.00	48.0	40.0	89.00	1.62	0.790	10.00	●
SCCD 086-035-100 ACF3	8.60	35.00	48.0	40.0	89.00	1.62	0.790	10.00	●
SCCD 087-035-100 ACF3	8.70	35.00	48.0	40.0	89.00	1.62	0.790	10.00	●
SCCD 088-035-100 ACF3	8.80	35.00	48.0	40.0	89.00	1.62	0.790	10.00	●
SCCD 089-035-100 ACF3	8.90	35.00	48.0	40.0	89.00	1.62	0.790	10.00	●
SCCD 090-035-100 ACF3	9.00	35.00	48.0	40.0	89.00	1.62	0.790	10.00	●
SCCD 091-035-100 ACF3	9.10	35.00	48.0	40.0	89.00	1.80	0.820	10.00	●
SCCD 092-035-100 ACF3	9.20	35.00	48.0	40.0	89.00	1.80	0.820	10.00	●
SCCD 093-035-100 ACF3	9.30	35.00	48.0	40.0	89.00	1.80	0.820	10.00	●
SCCD 094-035-100 ACF3	9.40	35.00	48.0	40.0	89.00	1.80	0.820	10.00	●
SCCD 095-035-100 ACF3	9.50	35.00	48.0	40.0	89.00	1.80	0.820	10.00	●
SCCD 096-035-100 ACF3	9.60	35.00	48.0	40.0	89.00	1.80	0.820	10.00	●
SCCD 097-035-100 ACF3	9.70	35.00	48.0	40.0	89.00	1.80	0.820	10.00	●
SCCD 098-035-100 ACF3	9.80	35.00	48.0	40.0	89.00	1.80	0.820	10.00	●

NEW

• For user guide and cutting conditions, see pages 221-226 • For regrinding instructions, see pages 227-231

SOLIDDRILL

SCCD-ACF3
Three Flute Solid Carbide Flat Head Drills with Coolant Holes, Drilling Depth 3xD



Designation	Dimensions								IC608
	DC	LU	LCF	LS	OAL	PDD	PL	DCONMS	
SCCD 099-035-100 ACF3	9.90	35.00	48.0	40.0	89.00	1.80	0.820	10.00	●
SCCD 100-035-100 ACF3	10.00	35.00	48.0	40.0	89.00	1.80	0.820	10.00	●
SCCD 101-040-120 ACF3	10.10	40.00	55.0	45.0	102.00	1.98	0.950	12.00	●
SCCD 102-040-120 ACF3	10.20	40.00	55.0	45.0	102.00	1.98	0.950	12.00	●
SCCD 103-040-120 ACF3	10.30	40.00	55.0	45.0	102.00	1.98	0.950	12.00	●
SCCD 104-040-120 ACF3	10.40	40.00	55.0	45.0	102.00	1.98	0.950	12.00	●
SCCD 105-040-120 ACF3	10.50	40.00	55.0	45.0	102.00	1.98	0.950	12.00	●
SCCD 106-040-120 ACF3	10.60	40.00	55.0	45.0	102.00	1.98	0.950	12.00	●
SCCD 107-040-120 ACF3	10.70	40.00	55.0	45.0	102.00	1.98	0.950	12.00	●
SCCD 108-040-120 ACF3	10.80	40.00	55.0	45.0	102.00	1.98	0.950	12.00	●
SCCD 109-040-120 ACF3	10.90	40.00	55.0	45.0	102.00	1.98	0.950	12.00	●
SCCD 110-040-120 ACF3	11.00	40.00	55.0	45.0	102.00	1.98	0.950	12.00	●
SCCD 111-040-120 ACF3	11.10	40.00	56.0	45.0	102.00	2.16	0.980	12.00	●
SCCD 112-040-120 ACF3	11.20	40.00	56.0	45.0	102.00	2.16	0.980	12.00	●
SCCD 113-040-120 ACF3	11.30	40.00	56.0	45.0	102.00	2.16	0.980	12.00	●
SCCD 114-040-120 ACF3	11.40	40.00	56.0	45.0	102.00	2.16	0.980	12.00	●
SCCD 115-040-120 ACF3	11.50	40.00	56.0	45.0	102.00	2.16	0.980	12.00	●
SCCD 116-040-120 ACF3	11.60	40.00	56.0	45.0	102.00	2.16	0.980	12.00	●
SCCD 117-040-120 ACF3	11.70	40.00	56.0	45.0	102.00	2.16	0.980	12.00	●
SCCD 118-040-120 ACF3	11.80	40.00	56.0	45.0	102.00	2.16	0.980	12.00	●
SCCD 119-040-120 ACF3	11.90	40.00	56.0	45.0	102.00	2.16	0.980	12.00	●
SCCD 120-040-120 ACF3	12.00	40.00	56.0	45.0	102.00	2.16	0.980	12.00	●

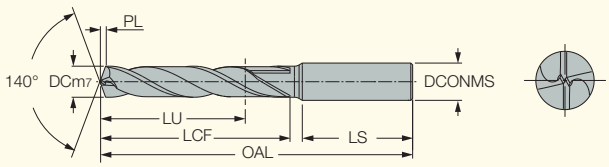
NEW

• For user guide and cutting conditions, see pages 221-226 • For regrinding instructions, see pages 227-231

SOLIDDRILL

SCD-AP5N (5xD)
DIN 6537 Solid Carbide
Drills without Coolant Holes,
Drilling Depth 5xD

DC	Tolerance m7
3.00-6	0.004-0.016
6.01-10	0.008-0.021
10.01-18	0.007-0.025
18.01-21	0.008-0.029



Designation	Dimensions								IC908
	DC	LU	LCF	LS	OAL	PL	FTDZ[1]	DCONMS	
SCD 030-023-060 AP5N	3.00	23.00	29.0	34.0	66.00	0.500	-	6.00	•
SCD 031-023-060 AP5N	3.10	23.00	29.0	34.0	66.00	0.500	-	6.00	•
SCD 032-023-060 AP5N	3.20	23.00	29.0	34.0	66.00	0.500	-	6.00	•
SCD 033-023-060 AP5N	3.30	23.00	29.0	34.0	66.00	0.500	M4	6.00	•
SCD 034-023-060 AP5N	3.40	23.00	29.0	34.0	66.00	0.500	-	6.00	•
SCD 035-023-060 AP5N	3.50	23.00	29.0	34.0	66.00	0.600	-	6.00	•
SCD 036-023-060 AP5N	3.60	23.00	29.0	34.0	66.00	0.600	-	6.00	•
SCD 037-023-060 AP5N	3.70	23.00	29.0	34.0	66.00	0.600	-	6.00	•
SCD 038-029-060 AP5N	3.80	29.00	37.0	35.0	74.00	0.600	-	6.00	•
SCD 039-029-060 AP5N	3.90	29.00	37.0	35.0	74.00	0.600	-	6.00	•
SCD 040-029-060 AP5N	4.00	29.00	37.0	35.0	74.00	0.600	-	6.00	•
SCD 041-029-060 AP5N	4.10	29.00	37.0	35.0	74.00	0.700	-	6.00	•
SCD 042-029-060 AP5N	4.20	29.00	37.0	35.0	74.00	0.700	M5	6.00	•
SCD 043-029-060 AP5N	4.30	29.00	37.0	35.0	74.00	0.700	-	6.00	•
SCD 044-029-060 AP5N	4.40	29.00	37.0	35.0	74.00	0.700	-	6.00	•
SCD 045-029-060 AP5N	4.50	29.00	37.0	35.0	74.00	0.700	-	6.00	•
SCD 046-029-060 AP5N	4.60	29.00	37.0	35.0	74.00	0.700	-	6.00	•
SCD 047-029-060 AP5N	4.70	29.00	37.0	35.0	74.00	0.800	-	6.00	•
SCD 048-035-060 AP5N	4.80	35.00	45.0	36.0	82.00	0.800	-	6.00	•
SCD 049-035-060 AP5N	4.90	35.00	45.0	36.0	82.00	0.800	-	6.00	•
SCD 050-035-060 AP5N	5.00	35.00	45.0	36.0	82.00	0.800	M6	6.00	•
SCD 051-035-060 AP5N	5.10	35.00	45.0	36.0	82.00	0.800	-	6.00	•
SCD 052-035-060 AP5N	5.20	35.00	45.0	36.0	82.00	0.800	-	6.00	•
SCD 053-035-060 AP5N	5.30	35.00	45.0	36.0	82.00	0.800	-	6.00	•
SCD 054-035-060 AP5N	5.40	35.00	45.0	36.0	82.00	0.800	-	6.00	•
SCD 055-035-060 AP5N	5.50	35.00	45.0	36.0	82.00	0.900	-	6.00	•
SCD 056-035-060 AP5N	5.60	35.00	45.0	36.0	82.00	0.900	-	6.00	•
SCD 057-035-060 AP5N	5.70	35.00	45.0	36.0	82.00	0.900	-	6.00	•
SCD 058-035-060 AP5N	5.80	35.00	45.0	36.0	82.00	0.900	-	6.00	•
SCD 059-035-060 AP5N	5.90	35.00	45.0	36.0	82.00	0.900	-	6.00	•
SCD 060-035-060 AP5N	6.00	35.00	45.0	36.0	82.00	0.900	M7	6.00	•
SCD 061-043-080 AP5N	6.10	43.00	54.0	36.0	91.00	1.000	-	8.00	•
SCD 062-043-080 AP5N	6.20	43.00	54.0	36.0	91.00	1.000	-	8.00	•
SCD 063-043-080 AP5N	6.30	43.00	54.0	36.0	91.00	1.000	-	8.00	•
SCD 064-043-080 AP5N	6.40	43.00	54.0	36.0	91.00	1.000	-	8.00	•
SCD 065-043-080 AP5N	6.50	43.00	54.0	36.0	91.00	1.000	-	8.00	•
SCD 066-043-080 AP5N	6.60	43.00	54.0	36.0	91.00	1.000	-	8.00	•
SCD 067-043-080 AP5N	6.70	43.00	54.0	36.0	91.00	1.100	-	8.00	•
SCD 068-043-080 AP5N	6.80	43.00	54.0	36.0	91.00	1.100	M8	8.00	•
SCD 069-043-080 AP5N	6.90	43.00	54.0	36.0	91.00	1.100	-	8.00	•
SCD 070-043-080 AP5N	7.00	43.00	54.0	36.0	91.00	1.100	-	8.00	•
SCD 071-043-080 AP5N	7.10	43.00	54.0	36.0	91.00	1.100	-	8.00	•
SCD 072-043-080 AP5N	7.20	43.00	54.0	36.0	91.00	1.100	-	8.00	•
SCD 073-043-080 AP5N	7.30	43.00	54.0	36.0	91.00	1.100	-	8.00	•
SCD 074-043-080 AP5N	7.40	43.00	54.0	36.0	91.00	1.200	-	8.00	•
SCD 075-043-080 AP5N	7.50	43.00	54.0	36.0	91.00	1.200	-	8.00	•
SCD 076-043-080 AP5N	7.60	43.00	54.0	36.0	91.00	1.200	-	8.00	•
SCD 077-043-080 AP5N	7.70	43.00	54.0	36.0	91.00	1.200	-	8.00	•
SCD 078-043-080 AP5N	7.80	43.00	54.0	36.0	91.00	1.200	M9	8.00	•
SCD 079-043-080 AP5N	7.90	43.00	54.0	36.0	91.00	1.300	-	8.00	•
SCD 080-043-080 AP5N	8.00	43.00	54.0	36.0	91.00	1.300	-	8.00	•
SCD 081-049-100 AP5N	8.10	49.00	62.0	40.0	103.00	1.300	-	10.00	•
SCD 082-049-100 AP5N	8.20	49.00	62.0	40.0	103.00	1.300	-	10.00	•
SCD 083-049-100 AP5N	8.30	49.00	62.0	40.0	103.00	1.300	-	10.00	•
SCD 084-049-100 AP5N	8.40	49.00	62.0	40.0	103.00	1.300	-	10.00	•
SCD 085-049-100 AP5N	8.50	49.00	62.0	40.0	103.00	1.300	M10	10.00	•
SCD 086-049-100 AP5N	8.60	49.00	62.0	40.0	103.00	1.400	-	10.00	•
SCD 087-049-100 AP5N	8.70	49.00	62.0	40.0	103.00	1.400	-	10.00	•
SCD 088-049-100 AP5N	8.80	49.00	62.0	40.0	103.00	1.400	-	10.00	•

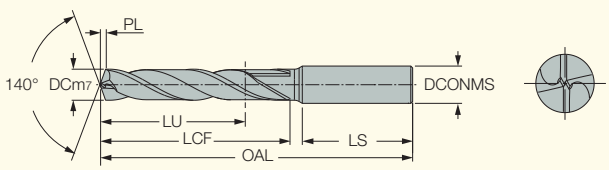
• For user guide and cutting conditions, see pages 221-226 • For regrinding instructions, see pages 227-231

[1] Used for standard thread size

SOLIDDRILL

SCD-AP5N (5xD)
DIN 6537 Solid Carbide
Drills without Coolant Holes,
Drilling Depth 5xD

DC	Tolerance m7
3.00-6	0.004-0.016
6.01-10	0.008-0.021
10.01-18	0.007-0.025
18.01-21	0.008-0.029



Designation	Dimensions								IC908
	DC	LU	LCF	LS	OAL	PL	FTDZ(1)	DCONMS	
SCD 089-049-100 AP5N	8.90	49.00	62.0	40.0	103.00	1.400	-	10.00	●
SCD 090-049-100 AP5N	9.00	49.00	62.0	40.0	103.00	1.400	-	10.00	●
SCD 091-049-100 AP5N	9.10	49.00	62.0	40.0	103.00	1.400	-	10.00	●
SCD 092-049-100 AP5N	9.20	49.00	62.0	40.0	103.00	1.400	-	10.00	●
SCD 093-049-100 AP5N	9.30	49.00	62.0	40.0	103.00	1.500	-	10.00	●
SCD 094-049-100 AP5N	9.40	49.00	62.0	40.0	103.00	1.500	-	10.00	●
SCD 095-049-100 AP5N	9.50	49.00	62.0	40.0	103.00	1.500	M11	10.00	●
SCD 096-049-100 AP5N	9.60	49.00	62.0	40.0	103.00	1.500	-	10.00	●
SCD 097-049-100 AP5N	9.70	49.00	62.0	40.0	103.00	1.500	-	10.00	●
SCD 098-049-100 AP5N	9.80	49.00	62.0	40.0	103.00	1.600	-	10.00	●
SCD 099-049-100 AP5N	9.90	49.00	62.0	40.0	103.00	1.600	-	10.00	●
SCD 100-049-100 AP5N	10.00	49.00	62.0	40.0	103.00	1.600	-	10.00	●
SCD 101-056-120 AP5N	10.10	56.00	71.0	45.0	118.00	1.600	-	12.00	●
SCD 102-056-120 AP5N	10.20	56.00	71.0	45.0	118.00	1.600	M12	12.00	●
SCD 103-056-120 AP5N	10.30	56.00	71.0	45.0	118.00	1.600	-	12.00	●
SCD 104-056-120 AP5N	10.40	56.00	71.0	45.0	118.00	1.600	-	12.00	●
SCD 105-056-120 AP5N	10.50	56.00	71.0	45.0	118.00	1.600	-	12.00	●
SCD 106-056-120 AP5N	10.60	56.00	71.0	45.0	118.00	1.700	-	12.00	●
SCD 107-056-120 AP5N	10.70	56.00	71.0	45.0	118.00	1.700	-	12.00	●
SCD 108-056-120 AP5N	10.80	56.00	71.0	45.0	118.00	1.700	-	12.00	●
SCD 109-056-120 AP5N	10.90	56.00	71.0	45.0	118.00	1.700	-	12.00	●
SCD 110-056-120 AP5N	11.00	56.00	71.0	45.0	118.00	1.700	-	12.00	●
SCD 111-056-120 AP5N	11.10	56.00	72.0	45.0	118.00	1.700	-	12.00	●
SCD 112-056-120 AP5N	11.20	56.00	72.0	45.0	118.00	1.800	-	12.00	●
SCD 113-056-120 AP5N	11.30	56.00	72.0	45.0	118.00	1.800	-	12.00	●
SCD 114-056-120 AP5N	11.40	56.00	72.0	45.0	118.00	1.800	-	12.00	●
SCD 115-056-120 AP5N	11.50	56.00	72.0	45.0	118.00	1.800	-	12.00	●
SCD 116-056-120 AP5N	11.60	56.00	72.0	45.0	118.00	1.800	-	12.00	●
SCD 117-056-120 AP5N	11.70	56.00	72.0	45.0	118.00	1.900	-	12.00	●
SCD 118-056-120 AP5N	11.80	56.00	72.0	45.0	118.00	1.900	-	12.00	●
SCD 119-056-120 AP5N	11.90	56.00	72.0	45.0	118.00	1.900	-	12.00	●
SCD 120-056-120 AP5N	12.00	56.00	72.0	45.0	118.00	1.900	M14	12.00	●

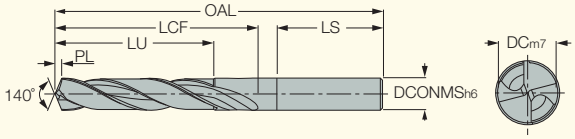
• For user guide and cutting conditions, see pages 221-226 • For regrinding instructions, see pages 227-231

(1) Used for standard thread size

SOLIDDRILL

SCD-AP5 (5xD)
Solid Carbide Drills without Coolant Holes,
Drilling Depth 5xD

DC	Tolerance m7
3.00-6	0.004-0.016
6.01-10	0.008-0.021
10.01-18	0.007-0.025
18.01-21	0.008-0.029



Designation	Dimensions DC	LU	LCF	LS	OAL	PL	FTDZ[1]	DCONMS	IC908
SCD 121-060-140 AP5	12.10	60.00	77.0	45.0	124.00	2.200	-	14.00	•
SCD 122-060-140 AP5	12.20	60.00	77.0	45.0	124.00	2.220	-	14.00	•
SCD 124-060-140 AP5	12.40	60.00	77.0	45.0	124.00	2.260	-	14.00	•
SCD 125-060-140 AP5	12.50	60.00	77.0	45.0	124.00	2.270	-	14.00	•
SCD 127-060-140 AP5	12.70	60.00	77.0	45.0	124.00	2.310	-	14.00	•
SCD 128-060-140 AP5	12.80	60.00	77.0	45.0	124.00	2.330	-	14.00	•
SCD 130-060-140 AP5	13.00	60.00	77.0	45.0	124.00	2.370	-	14.00	•
SCD 131-060-140 AP5	13.10	60.00	77.0	45.0	124.00	2.380	-	14.00	•
SCD 132-060-140 AP5	13.20	60.00	77.0	45.0	124.00	2.400	-	14.00	•
SCD 133-060-140 AP5	13.30	60.00	77.0	45.0	124.00	2.420	-	14.00	•
SCD 135-060-140 AP5	13.50	60.00	77.0	45.0	124.00	2.460	-	14.00	•
SCD 136-060-140 AP5	13.60	60.00	77.0	45.0	124.00	2.470	-	14.00	•
SCD 137-060-140 AP5	13.70	60.00	77.0	45.0	124.00	2.490	-	14.00	•
SCD 138-060-140 AP5	13.80	60.00	77.0	45.0	124.00	2.510	-	14.00	•
SCD 139-060-140 AP5	13.90	60.00	77.0	45.0	124.00	2.530	-	14.00	•
SCD 140-060-140 AP5	14.00	60.00	77.0	45.0	124.00	2.550	M16	14.00	•
SCD 141-063-160 AP5	14.10	63.00	83.0	45.0	133.00	2.570	-	16.00	•
SCD 142-063-160 AP5	14.20	63.00	83.0	45.0	133.00	2.580	-	16.00	•
SCD 143-063-160 AP5	14.30	63.00	83.0	45.0	133.00	2.600	-	16.00	•
SCD 145-063-160 AP5	14.50	63.00	83.0	45.0	133.00	2.640	-	16.00	•
SCD 146-063-160 AP5	14.60	63.00	83.0	45.0	133.00	2.660	-	16.00	•
SCD 147-063-160 AP5	14.70	63.00	83.0	45.0	133.00	2.680	-	16.00	•
SCD 148-063-160 AP5	14.80	63.00	83.0	45.0	133.00	2.690	-	16.00	•
SCD 149-063-160 AP5	14.90	63.00	83.0	45.0	133.00	2.710	-	16.00	•
SCD 150-063-160 AP5	15.00	63.00	83.0	45.0	133.00	2.730	-	16.00	•
SCD 152-063-160 AP5	15.20	63.00	83.0	45.0	133.00	2.770	-	16.00	•
SCD 153-063-160 AP5	15.30	63.00	83.0	45.0	133.00	2.780	-	16.00	•
SCD 155-063-160 AP5	15.50	63.00	83.0	45.0	133.00	2.820	M18	16.00	•
SCD 157-063-160 AP5	15.70	63.00	83.0	45.0	133.00	2.860	-	16.00	•
SCD 158-063-160 AP5	15.80	63.00	83.0	45.0	133.00	2.880	-	16.00	•
SCD 159-063-160 AP5	15.90	63.00	83.0	45.0	133.00	2.890	-	16.00	•
SCD 160-063-160 AP5	16.00	63.00	83.0	45.0	133.00	2.910	-	16.00	•
SCD 161-071-180 AP5	16.10	71.00	93.0	48.0	143.00	2.930	-	18.00	•
SCD 164-071-180 AP5	16.40	71.00	93.0	48.0	143.00	2.980	-	18.00	•
SCD 165-071-180 AP5	16.50	71.00	93.0	48.0	143.00	3.000	-	18.00	•
SCD 166-071-180 AP5	16.60	71.00	93.0	48.0	143.00	3.020	-	18.00	•
SCD 167-071-180 AP5	16.70	71.00	93.0	48.0	143.00	3.040	-	18.00	•
SCD 168-071-180 AP5	16.80	71.00	93.0	48.0	143.00	3.060	-	18.00	•
SCD 169-071-180 AP5	16.90	71.00	93.0	48.0	143.00	3.080	-	18.00	•
SCD 170-071-180 AP5	17.00	71.00	93.0	48.0	143.00	3.090	-	18.00	•
SCD 171-071-180 AP5	17.10	71.00	93.0	48.0	143.00	3.110	-	18.00	•
SCD 172-071-180 AP5	17.20	71.00	93.0	48.0	143.00	3.130	-	18.00	•
SCD 173-071-180 AP5	17.30	71.00	93.0	48.0	143.00	3.150	-	18.00	•
SCD 174-071-180 AP5	17.40	71.00	93.0	48.0	143.00	3.170	-	18.00	•
SCD 175-071-180 AP5	17.50	71.00	93.0	48.0	143.00	3.180	M20	18.00	•
SCD 176-071-180 AP5	17.60	71.00	93.0	48.0	143.00	3.200	-	18.00	•
SCD 177-071-180 AP5	17.70	71.00	93.0	48.0	143.00	3.220	-	18.00	•
SCD 178-071-180 AP5	17.80	71.00	93.0	48.0	143.00	3.240	-	18.00	•
SCD 179-071-180 AP5	17.90	71.00	93.0	48.0	143.00	3.260	-	18.00	•
SCD 180-071-180 AP5	18.00	71.00	93.0	48.0	143.00	3.280	-	18.00	•
SCD 182-077-200 AP5	18.20	77.00	101.0	48.0	153.00	3.310	-	20.00	•
SCD 183-077-200 AP5	18.30	77.00	101.0	48.0	153.00	3.330	-	20.00	•
SCD 184-077-200 AP5	18.40	77.00	101.0	48.0	153.00	3.350	-	20.00	•
SCD 185-077-200 AP5	18.50	77.00	101.0	48.0	153.00	3.370	-	20.00	•
SCD 186-077-200 AP5	18.60	77.00	101.0	48.0	153.00	3.380	-	20.00	•
SCD 187-077-200 AP5	18.70	77.00	101.0	48.0	153.00	3.400	-	20.00	•
SCD 188-077-200 AP5	18.80	77.00	101.0	48.0	153.00	3.420	-	20.00	•
SCD 189-077-200 AP5	18.90	77.00	101.0	48.0	153.00	3.440	-	20.00	•
SCD 190-077-200 AP5	19.00	77.00	101.0	48.0	153.00	3.460	-	20.00	•

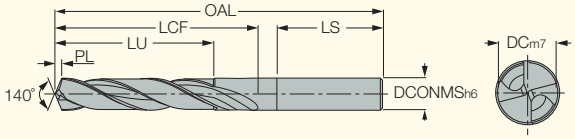
• For user guide and cutting conditions, see pages 221-226 • For regrinding instructions, see pages 227-231

[1] Used for standard thread size

SOLIDDRILL

SCD-AP5 (5xD)
Solid Carbide Drills without Coolant Holes,
Drilling Depth 5xD

DC	Tolerance m7
3.00-6	0.004-0.016
6.01-10	0.008-0.021
10.01-18	0.007-0.025
18.01-21	0.008-0.029



Designation	Dimensions								IC908
	DC	LU	LCF	LS	OAL	PL	FTDZ(1)	DCONMS	
SCD 191-077-200 AP5	19.10	77.00	101.0	48.0	153.00	3.480	-	20.00	●
SCD 192-077-200 AP5	19.20	77.00	101.0	48.0	153.00	3.490	-	20.00	●
SCD 193-077-200 AP5	19.30	77.00	101.0	48.0	153.00	3.510	-	20.00	●
SCD 194-077-200 AP5	19.40	77.00	101.0	48.0	153.00	3.530	-	20.00	●
SCD 195-077-200 AP5	19.50	77.00	101.0	48.0	153.00	3.550	M22	20.00	●
SCD 196-077-200 AP5	19.60	77.00	101.0	48.0	153.00	3.570	-	20.00	●
SCD 197-077-200 AP5	19.70	77.00	101.0	48.0	153.00	3.590	-	20.00	●
SCD 198-077-200 AP5	19.80	77.00	101.0	48.0	153.00	3.600	-	20.00	●
SCD 199-077-200 AP5	19.90	77.00	101.0	48.0	153.00	3.620	-	20.00	●
SCD 200-077-200 AP5	20.00	77.00	101.0	48.0	153.00	3.640	-	20.00	●

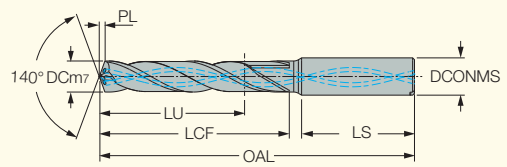
• For user guide and cutting conditions, see pages 221-226 • For regrinding instructions, see pages 227-231

(1) Used for standard thread size

SOLIDDRILL

SCD-ACP5N (5xD)
DIN 6537 Solid Carbide Drills with Coolant Holes, Drilling Depth 5xD

DC	Tolerance m7
3.00-6	0.004-0.016
6.01-10	0.008-0.021
10.01-18	0.007-0.025
18.01-21	0.008-0.029



Designation	Dimensions DC	LU	LCF	LS	OAL	PL	FTDZ[1]	DCONMS	IC908
SCD 030-023-060 ACP5N	3.00	23.00	29.0	34.0	66.00	0.500	-	6.00	•
SCD 031-023-060 ACP5N	3.10	23.00	29.0	34.0	66.00	0.500	-	6.00	•
SCD 032-023-060 ACP5N	3.20	23.00	29.0	34.0	66.00	0.500	-	6.00	•
SCD 033-023-060 ACP5N	3.30	23.00	29.0	34.0	66.00	0.500	M4	6.00	•
SCD 034-023-060 ACP5N	3.40	23.00	29.0	34.0	66.00	0.500	-	6.00	•
SCD 035-023-060 ACP5N	3.50	23.00	29.0	34.0	66.00	0.600	-	6.00	•
SCD 036-023-060 ACP5N	3.60	23.00	29.0	34.0	66.00	0.600	-	6.00	•
SCD 037-023-060 ACP5N	3.70	23.00	29.0	34.0	66.00	0.600	-	6.00	•
SCD 038-029-060 ACP5N	3.80	29.00	37.0	35.0	74.00	0.600	-	6.00	•
SCD 039-029-060 ACP5N	3.90	29.00	37.0	35.0	74.00	0.600	-	6.00	•
SCD 040-029-060 ACP5N	4.00	29.00	37.0	35.0	74.00	0.600	-	6.00	•
SCD 041-029-060 ACP5N	4.10	29.00	37.0	35.0	74.00	0.700	-	6.00	•
SCD 042-029-060 ACP5N	4.20	29.00	37.0	35.0	74.00	0.700	M5	6.00	•
SCD 043-029-060 ACP5N	4.30	29.00	37.0	35.0	74.00	0.700	-	6.00	•
SCD 044-029-060 ACP5N	4.40	29.00	37.0	35.0	74.00	0.700	-	6.00	•
SCD 045-029-060 ACP5N	4.50	29.00	37.0	35.0	74.00	0.700	-	6.00	•
SCD 046-029-060 ACP5N	4.60	29.00	37.0	35.0	74.00	0.700	-	6.00	•
SCD 047-029-060 ACP5N	4.70	29.00	37.0	35.0	74.00	0.800	-	6.00	•
SCD 048-035-060 ACP5N	4.80	35.00	45.0	36.0	82.00	0.800	-	6.00	•
SCD 049-035-060 ACP5N	4.90	35.00	45.0	36.0	82.00	0.800	-	6.00	•
SCD 050-035-060 ACP5N	5.00	35.00	45.0	36.0	82.00	0.800	M6	6.00	•
SCD 051-035-060 ACP5N	5.10	35.00	45.0	36.0	82.00	0.800	-	6.00	•
SCD 052-035-060 ACP5N	5.20	35.00	45.0	36.0	82.00	0.800	-	6.00	•
SCD 053-035-060 ACP5N	5.30	35.00	45.0	36.0	82.00	0.800	-	6.00	•
SCD 054-035-060 ACP5N	5.40	35.00	45.0	36.0	82.00	0.800	-	6.00	•
SCD 055-035-060 ACP5N	5.50	35.00	45.0	36.0	82.00	0.900	-	6.00	•
SCD 056-035-060 ACP5N	5.60	35.00	45.0	36.0	82.00	0.900	-	6.00	•
SCD 057-035-060 ACP5N	5.70	35.00	45.0	36.0	82.00	0.900	-	6.00	•
SCD 058-035-060 ACP5N	5.80	35.00	45.0	36.0	82.00	0.900	-	6.00	•
SCD 059-035-060 ACP5N	5.90	35.00	45.0	36.0	82.00	0.900	-	6.00	•
SCD 060-035-060 ACP5N	6.00	35.00	45.0	36.0	82.00	0.900	M7	6.00	•
SCD 061-043-080 ACP5N	6.10	43.00	54.0	36.0	91.00	1.000	-	8.00	•
SCD 062-043-080 ACP5N	6.20	43.00	54.0	36.0	91.00	1.000	-	8.00	•
SCD 063-043-080 ACP5N	6.30	43.00	54.0	36.0	91.00	1.000	-	8.00	•
SCD 064-043-080 ACP5N	6.40	43.00	54.0	36.0	91.00	1.000	-	8.00	•
SCD 065-043-080 ACP5N	6.50	43.00	54.0	36.0	91.00	1.000	-	8.00	•
SCD 066-043-080 ACP5N	6.60	43.00	54.0	36.0	91.00	1.000	-	8.00	•
SCD 067-043-080 ACP5N	6.70	43.00	54.0	36.0	91.00	1.100	-	8.00	•
SCD 068-043-080 ACP5N	6.80	43.00	54.0	36.0	91.00	1.100	M8	8.00	•
SCD 069-043-080 ACP5N	6.90	43.00	54.0	36.0	91.00	1.100	-	8.00	•
SCD 070-043-080 ACP5N	7.00	43.00	54.0	36.0	91.00	1.100	-	8.00	•
SCD 071-043-080 ACP5N	7.10	43.00	54.0	36.0	91.00	1.100	-	8.00	•
SCD 072-043-080 ACP5N	7.20	43.00	54.0	36.0	91.00	1.100	-	8.00	•
SCD 073-043-080 ACP5N	7.30	43.00	54.0	36.0	91.00	1.100	-	8.00	•
SCD 074-043-080 ACP5N	7.40	43.00	54.0	36.0	91.00	1.200	-	8.00	•
SCD 075-043-080 ACP5N	7.50	43.00	54.0	36.0	91.00	1.200	-	8.00	•
SCD 076-043-080 ACP5N	7.60	43.00	54.0	36.0	91.00	1.200	-	8.00	•
SCD 077-043-080 ACP5N	7.70	43.00	54.0	36.0	91.00	1.200	-	8.00	•
SCD 078-043-080 ACP5N	7.80	43.00	54.0	36.0	91.00	1.200	M9	8.00	•
SCD 079-043-080 ACP5N	7.90	43.00	54.0	36.0	91.00	1.300	-	8.00	•
SCD 080-043-080 ACP5N	8.00	43.00	54.0	36.0	91.00	1.300	-	8.00	•
SCD 081-049-100 ACP5N	8.10	49.00	62.0	40.0	103.00	1.300	-	10.00	•
SCD 082-049-100 ACP5N	8.20	49.00	62.0	40.0	103.00	1.300	-	10.00	•
SCD 083-049-100 ACP5N	8.30	49.00	62.0	40.0	103.00	1.300	-	10.00	•
SCD 084-049-100 ACP5N	8.40	49.00	62.0	40.0	103.00	1.300	-	10.00	•
SCD 085-049-100 ACP5N	8.50	49.00	62.0	40.0	103.00	1.300	M10	10.00	•
SCD 086-049-100 ACP5N	8.60	49.00	62.0	40.0	103.00	1.400	-	10.00	•
SCD 087-049-100 ACP5N	8.70	49.00	62.0	40.0	103.00	1.400	-	10.00	•
SCD 088-049-100 ACP5N	8.80	49.00	62.0	40.0	103.00	1.400	-	10.00	•

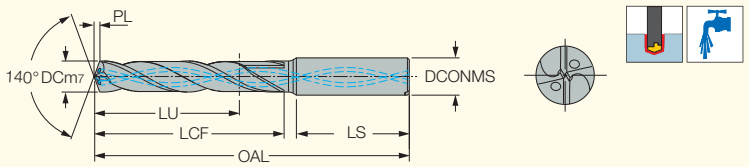
• For user guide and cutting conditions, see pages 221-226 • For regrinding instructions, see pages 227-231

[1] Used for standard thread size

SOLIDDRILL

SCD-ACP5N (5xD)
DIN 6537 Solid Carbide Drills with Coolant Holes, Drilling Depth 5xD

DC	Tolerance m7
3.00-6	0.004-0.016
6.01-10	0.008-0.021
10.01-18	0.007-0.025
18.01-21	0.008-0.029



Designation	Dimensions								IC908
	DC	LU	LCF	LS	OAL	PL	FTDZ[1]	DCONMS	
SCD 089-049-100 ACP5N	8.90	49.00	62.0	40.0	103.00	1.400	-	10.00	●
SCD 090-049-100 ACP5N	9.00	49.00	62.0	40.0	103.00	1.400	-	10.00	●
SCD 091-049-100 ACP5N	9.10	49.00	62.0	40.0	103.00	1.400	-	10.00	●
SCD 092-049-100 ACP5N	9.20	49.00	62.0	40.0	103.00	1.400	-	10.00	●
SCD 093-049-100 ACP5N	9.30	49.00	62.0	40.0	103.00	1.500	-	10.00	●
SCD 094-049-100 ACP5N	9.40	49.00	62.0	40.0	103.00	1.500	-	10.00	●
SCD 095-049-100 ACP5N	9.50	49.00	62.0	40.0	103.00	1.500	M11	10.00	●
SCD 096-049-100 ACP5N	9.60	49.00	62.0	40.0	103.00	1.500	-	10.00	●
SCD 097-049-100 ACP5N	9.70	49.00	62.0	40.0	103.00	1.500	-	10.00	●
SCD 098-049-100 ACP5N	9.80	49.00	62.0	40.0	103.00	1.600	-	10.00	●
SCD 099-049-100 ACP5N	9.90	49.00	62.0	40.0	103.00	1.600	-	10.00	●
SCD 100-049-100 ACP5N	10.00	49.00	62.0	40.0	103.00	1.600	-	10.00	●
SCD 101-056-120 ACP5N	10.10	56.00	71.0	45.0	118.00	1.600	-	12.00	●
SCD 102-056-120 ACP5N	10.20	56.00	71.0	45.0	118.00	1.600	M12	12.00	●
SCD 103-056-120 ACP5N	10.30	56.00	71.0	45.0	118.00	1.600	-	12.00	●
SCD 104-056-120 ACP5N	10.40	56.00	71.0	45.0	118.00	1.600	-	12.00	●
SCD 105-056-120 ACP5N	10.50	56.00	71.0	45.0	118.00	1.600	-	12.00	●
SCD 106-056-120 ACP5N	10.60	56.00	71.0	45.0	118.00	1.700	-	12.00	●
SCD 107-056-120 ACP5N	10.70	56.00	71.0	45.0	118.00	1.700	-	12.00	●
SCD 108-056-120 ACP5N	10.80	56.00	71.0	45.0	118.00	1.700	-	12.00	●
SCD 109-056-120 ACP5N	10.90	56.00	71.0	45.0	118.00	1.700	-	12.00	●
SCD 110-056-120 ACP5N	11.00	56.00	71.0	45.0	118.00	1.700	-	12.00	●
SCD 111-056-120 ACP5N	11.10	56.00	72.0	45.0	118.00	1.700	-	12.00	●
SCD 112-056-120 ACP5N	11.20	56.00	72.0	45.0	118.00	1.800	-	12.00	●
SCD 113-056-120 ACP5N	11.30	56.00	72.0	45.0	118.00	1.800	-	12.00	●
SCD 114-056-120 ACP5N	11.40	56.00	72.0	45.0	118.00	1.800	-	12.00	●
SCD 115-056-120 ACP5N	11.50	56.00	72.0	45.0	118.00	1.800	-	12.00	●
SCD 116-056-120 ACP5N	11.60	56.00	72.0	45.0	118.00	1.800	-	12.00	●
SCD 117-056-120 ACP5N	11.70	56.00	72.0	45.0	118.00	1.900	-	12.00	●
SCD 118-056-120 ACP5N	11.80	56.00	72.0	45.0	118.00	1.900	-	12.00	●
SCD 119-056-120 ACP5N	11.90	56.00	72.0	45.0	118.00	1.900	-	12.00	●
SCD 120-056-120 ACP5N	12.00	56.00	72.0	45.0	118.00	1.900	M14	12.00	●

• For user guide and cutting conditions, see pages 221-226 • For regrinding instructions, see pages 227-231

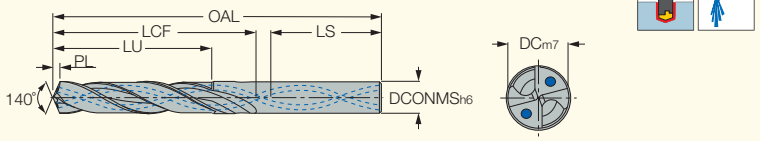
(1) Used for standard thread size

SOLIDDRILL

SCD-ACP5 (5xD)

Solid Carbide Drills with Coolant Holes, Drilling Depth 5xD

DC	Tolerance m7
3.00-6	0.004-0.016
6.01-10	0.008-0.021
10.01-18	0.007-0.025
18.01-21	0.008-0.029



Designation	Dimensions									IC908
	DC	LU	LCF	LS	OAL	PL	FTDZ[1]	ZEFF	DCONMS	
SCD 121-060-140 ACP5	12.10	60.00	77.0	45.0	124.00	2.200	-	2	14.00	•
SCD 122-060-140 ACP5	12.20	60.00	77.0	45.0	124.00	2.220	M14	2	14.00	•
SCD 124-060-140 ACP5	12.40	60.00	77.0	45.0	124.00	2.260	-	2	14.00	•
SCD 125-060-140 ACP5	12.50	60.00	77.0	45.0	124.00	2.270	-	2	14.00	•
SCD 126-060-140 ACP5	12.60	60.00	77.0	45.0	124.00	2.290	-	2	14.00	•
SCD 127-060-140 ACP5	12.70	60.00	77.0	45.0	124.00	2.310	-	2	14.00	•
SCD 128-060-140 ACP5	12.80	60.00	77.0	45.0	124.00	2.330	-	2	14.00	•
SCD 129-060-140 ACP5	12.90	60.00	77.0	45.0	124.00	2.350	-	2	14.00	•
SCD 130-060-140 ACP5	13.00	60.00	77.0	45.0	124.00	2.370	-	2	14.00	•
SCD 131-060-140 ACP5	13.10	60.00	77.0	45.0	124.00	2.380	-	2	14.00	•
SCD 132-060-140 ACP5	13.20	60.00	77.0	45.0	124.00	2.400	-	2	14.00	•
SCD 133-060-140 ACP5	13.30	60.00	77.0	45.0	124.00	2.420	-	2	14.00	•
SCD 135-060-140 ACP5	13.50	60.00	77.0	45.0	124.00	2.460	-	2	14.00	•
SCD 136-060-140 ACP5	13.60	60.00	77.0	45.0	124.00	2.470	-	2	14.00	•
SCD 137-060-140 ACP5	13.70	60.00	77.0	45.0	124.00	2.490	-	2	14.00	•
SCD 138-060-140 ACP5	13.80	60.00	77.0	45.0	124.00	2.510	-	2	14.00	•
SCD 140-060-140 ACP5	14.00	60.00	77.0	45.0	124.00	2.550	M16	2	14.00	•
SCD 141-063-160 ACP5	14.10	63.00	83.0	45.0	133.00	2.570	-	2	16.00	•
SCD 142-063-160 ACP5	14.20	63.00	83.0	45.0	133.00	2.580	-	2	16.00	•
SCD 143-063-160 ACP5	14.30	63.00	83.0	45.0	133.00	2.600	-	2	16.00	•
SCD 145-063-160 ACP5	14.50	63.00	83.0	45.0	133.00	2.640	-	2	16.00	•
SCD 146-063-160 ACP5	14.60	63.00	83.0	45.0	133.00	2.660	-	2	16.00	•
SCD 147-063-160 ACP5	14.70	63.00	83.0	45.0	133.00	2.680	-	2	16.00	•
SCD 148-063-160 ACP5	14.80	63.00	83.0	45.0	133.00	2.690	-	2	16.00	•
SCD 149-063-160 ACP5	14.90	63.00	83.0	45.0	133.00	2.710	-	2	16.00	•
SCD 150-063-160 ACP5	15.00	63.00	83.0	45.0	133.00	2.730	-	2	16.00	•
SCD 151-063-160 ACP5	15.10	63.00	83.0	45.0	133.00	2.750	-	2	16.00	•
SCD 152-063-160 ACP5	15.20	63.00	83.0	45.0	133.00	2.770	-	2	16.00	•
SCD 153-063-160 ACP5	15.30	63.00	83.0	45.0	133.00	2.780	-	2	16.00	•
SCD 155-063-160 ACP5	15.50	63.00	83.0	45.0	133.00	2.820	M18	2	16.00	•
SCD 156-063-160 ACP5	15.60	63.00	83.0	45.0	133.00	2.840	-	2	16.00	•
SCD 157-063-160 ACP5	15.70	63.00	83.0	45.0	133.00	2.860	-	2	16.00	•
SCD 158-063-160 ACP5	15.80	63.00	83.0	45.0	133.00	2.880	-	2	16.00	•
SCD 160-063-160 ACP5	16.00	63.00	83.0	45.0	133.00	2.910	-	2	16.00	•
SCD 161-071-180 ACP5	16.10	71.00	93.0	48.0	143.00	2.930	-	2	18.00	•
SCD 162-071-180 ACP5	16.20	71.00	93.0	48.0	143.00	2.950	-	2	18.00	•
SCD 163-071-180 ACP5	16.30	71.00	93.0	48.0	143.00	2.970	-	2	18.00	•
SCD 164-071-180 ACP5	16.40	71.00	93.0	48.0	143.00	2.980	-	2	18.00	•
SCD 165-071-180 ACP5	16.50	71.00	93.0	48.0	143.00	3.000	-	2	18.00	•
SCD 167-071-180 ACP5	16.70	71.00	93.0	48.0	143.00	3.040	-	2	18.00	•
SCD 168-071-180 ACP5	16.80	71.00	93.0	48.0	143.00	3.060	-	2	18.00	•
SCD 169-071-180 ACP5	16.90	71.00	93.0	48.0	143.00	3.080	-	2	18.00	•
SCD 170-071-180 ACP5	17.00	71.00	93.0	48.0	143.00	3.090	-	2	18.00	•
SCD 171-071-180 ACP5	17.10	71.00	93.0	48.0	143.00	3.110	-	2	18.00	•
SCD 172-071-180 ACP5	17.20	71.00	93.0	48.0	143.00	3.130	-	2	18.00	•
SCD 174-071-180 ACP5	17.40	71.00	93.0	48.0	143.00	3.170	-	2	18.00	•
SCD 175-071-180 ACP5	17.50	71.00	93.0	48.0	143.00	3.180	-	2	18.00	•
SCD 176-071-180 ACP5	17.60	71.00	93.0	48.0	143.00	3.200	-	2	18.00	•
SCD 177-071-180 ACP5	17.70	71.00	93.0	48.0	143.00	3.220	-	2	18.00	•
SCD 178-071-180 ACP5	17.80	71.00	93.0	48.0	143.00	3.240	-	2	18.00	•
SCD 179-071-180 ACP5	17.90	71.00	93.0	48.0	143.00	3.260	-	2	18.00	•
SCD 180-071-180 ACP5	18.00	71.00	93.0	48.0	143.00	3.280	-	2	18.00	•
SCD 181-077-200 ACP5	18.10	77.00	101.0	48.0	153.00	3.290	-	2	20.00	•
SCD 182-077-200 ACP5	18.20	77.00	101.0	48.0	153.00	3.310	-	2	20.00	•
SCD 183-077-200 ACP5	18.30	77.00	101.0	48.0	153.00	3.330	-	2	20.00	•
SCD 184-077-200 ACP5	18.40	77.00	101.0	48.0	153.00	3.350	-	2	20.00	•
SCD 185-077-200 ACP5	18.50	77.00	101.0	48.0	153.00	3.370	-	2	20.00	•
SCD 186-077-200 ACP5	18.60	77.00	101.0	48.0	153.00	3.380	-	2	20.00	•
SCD 187-077-200 ACP5	18.70	77.00	101.0	48.0	153.00	3.400	-	2	20.00	•

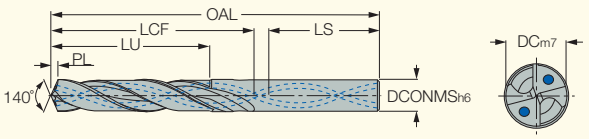
• For user guide and cutting conditions, see pages 221-226 • For regrinding instructions, see pages 227-231

[1] Used for standard thread size

SOLIDDRILL

SCD-ACP5 (5xD)
Solid Carbide Drills with Coolant Holes, Drilling Depth 5xD

DC	Tolerance m7
3.00-6	0.004-0.016
6.01-10	0.008-0.021
10.01-18	0.007-0.025
18.01-21	0.008-0.029



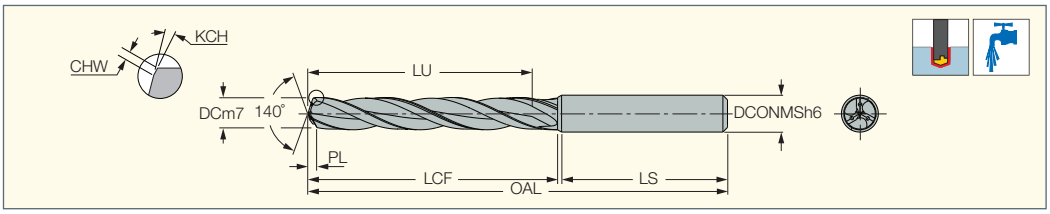
Designation	Dimensions									IC908
	DC	LU	LCF	LS	OAL	PL	FTDZ[1]	ZEFF	DCONMS	
SCD 188-077-200 ACP5	18.80	77.00	101.0	48.0	153.00	3.420	-	2	20.00	●
SCD 189-077-200 ACP5	18.90	77.00	101.0	48.0	153.00	3.440	-	2	20.00	●
SCD 191-077-200 ACP5	19.10	77.00	101.0	48.0	153.00	3.480	-	2	20.00	●
SCD 192-077-200 ACP5	19.20	77.00	101.0	48.0	153.00	3.490	-	2	20.00	●
SCD 193-077-200 ACP5	19.30	77.00	101.0	48.0	153.00	3.510	-	2	20.00	●
SCD 194-077-200 ACP5	19.40	77.00	101.0	48.0	153.00	3.530	-	2	20.00	●
SCD 195-077-200 ACP5	19.50	77.00	101.0	48.0	153.00	3.550	M22	2	20.00	●
SCD 196-077-200 ACP5	19.60	77.00	101.0	48.0	153.00	3.570	-	2	20.00	●
SCD 197-077-200 ACP5	19.70	77.00	101.0	48.0	153.00	3.590	-	2	20.00	●
SCD 198-077-200 ACP5	19.80	77.00	101.0	48.0	153.00	3.600	-	2	20.00	●
SCD 199-077-200 ACP5	19.90	77.00	101.0	48.0	153.00	3.620	-	2	20.00	●
SCD 200-077-200 ACP5	20.00	77.00	101.0	48.0	153.00	3.640	-	2	20.00	●

• For user guide and cutting conditions, see pages 221-226 • For regrinding instructions, see pages 227-231

[1] Used for standard thread size

SOLIDDRILL

SCCD-ACP5
Three Flute Solid Carbide Drills with Coolant Holes, Drilling Depth 5xD



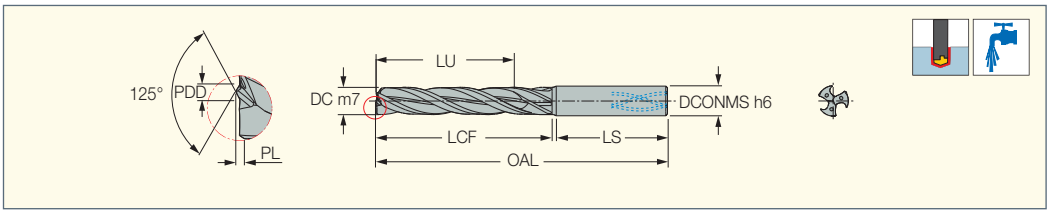
Designation	Dimensions										IC608
	DC	LU	LCF	LS	OAL	PL	KCH	CHW	FTDZ[1]	DCONMS	
SCCD 040-029-060 ACP5	4.00	29.00	37.0	35.0	74.00	0.820	30.0	0.30	-	6.00	●
SCCD 045-029-060 ACP5	4.50	29.00	37.0	35.0	74.00	0.880	30.0	0.30	-	6.00	●
SCCD 050-035-060 ACP5	5.00	35.00	45.0	36.0	82.00	0.960	30.0	0.30	M6	6.00	●
SCCD 051-035-060 ACP5	5.10	35.00	45.0	36.0	82.00	0.980	30.0	0.30	-	6.00	●
SCCD 055-035-060 ACP5	5.50	35.00	45.0	36.0	82.00	1.080	30.0	0.40	-	6.00	●
SCCD 060-035-060 ACP5	6.00	35.00	45.0	36.0	82.00	1.170	30.0	0.40	M7	6.00	●
SCCD 065-043-080 ACP5	6.50	43.00	54.0	36.0	91.00	1.260	30.0	0.40	-	8.00	●
SCCD 068-043-080 ACP5	6.80	43.00	54.0	36.0	91.00	1.310	30.0	0.40	M8	8.00	●
SCCD 070-043-080 ACP5	7.00	43.00	54.0	36.0	91.00	1.350	30.0	0.40	-	8.00	●
SCCD 075-043-080 ACP5	7.50	43.00	54.0	36.0	91.00	1.400	30.0	0.40	-	8.00	●
SCCD 080-043-080 ACP5	8.00	43.00	54.0	36.0	91.00	1.490	30.0	0.40	-	8.00	●
SCCD 085-049-100 ACP5	8.50	49.00	62.0	40.0	103.00	1.630	30.0	0.50	M10	10.00	●
SCCD 086-049-100 ACP5	8.60	49.00	62.0	40.0	103.00	1.650	30.0	0.50	-	10.00	●
SCCD 090-049-100 ACP5	9.00	49.00	62.0	40.0	103.00	1.720	30.0	0.50	-	10.00	●
SCCD 095-049-100 ACP5	9.50	49.00	62.0	40.0	103.00	1.750	30.0	0.50	M11	10.00	●
SCCD 100-049-100 ACP5	10.00	49.00	62.0	40.0	103.00	1.850	30.0	0.50	-	10.00	●
SCCD 103-056-120 ACP5	10.30	56.00	71.0	45.0	118.00	1.940	30.0	0.60	-	12.00	●
SCCD 105-056-120 ACP5	10.50	56.00	71.0	45.0	118.00	1.980	30.0	0.60	-	12.00	●
SCCD 110-056-120 ACP5	11.00	56.00	71.0	45.0	118.00	2.070	30.0	0.60	-	12.00	●
SCCD 115-056-120 ACP5	11.50	56.00	72.0	45.0	118.00	2.120	30.0	0.60	-	12.00	●
SCCD 120-056-120 ACP5	12.00	56.00	72.0	45.0	118.00	2.210	30.0	0.60	M14	12.00	●

• For user guide and cutting conditions, see pages 221-226 • For regrinding instructions, see pages 227-231

[1] Used for standard thread size

SOLIDDRILL

SCCD-ACF5
Three Flute Solid Carbide
Flat Head Drills with Coolant
Holes, Drilling Depth 5xD



Designation	Dimensions								IC608
	DC	LU	LCF	LS	OAL	PL	PDD	DCONMS	
SCCD 040-029-060 ACF5	4.00	29.00	37.0	35.0	74.00	0.430	0.77	6.00	•
SCCD 041-029-060 ACF5	4.10	29.00	37.0	35.0	74.00	0.430	0.77	6.00	•
SCCD 042-029-060 ACF5	4.20	29.00	37.0	35.0	74.00	0.430	0.77	6.00	•
SCCD 043-029-060 ACF5	4.30	29.00	37.0	35.0	74.00	0.450	0.86	6.00	•
SCCD 044-029-060 ACF5	4.40	29.00	37.0	35.0	74.00	0.450	0.86	6.00	•
SCCD 045-029-060 ACF5	4.50	29.00	37.0	35.0	74.00	0.450	0.86	6.00	•
SCCD 046-029-060 ACF5	4.60	29.00	37.0	35.0	74.00	0.450	0.86	6.00	•
SCCD 047-029-060 ACF5	4.70	29.00	37.0	35.0	74.00	0.450	0.86	6.00	•
SCCD 048-035-060 ACF5	4.80	35.00	45.0	36.0	82.00	0.470	0.97	6.00	•
SCCD 049-035-060 ACF5	4.90	35.00	45.0	36.0	82.00	0.470	0.97	6.00	•
SCCD 050-035-060 ACF5	5.00	35.00	45.0	36.0	82.00	0.470	0.97	6.00	•
SCCD 051-035-060 ACF5	5.10	35.00	45.0	36.0	82.00	0.470	0.97	6.00	•
SCCD 052-035-060 ACF5	5.20	35.00	45.0	36.0	82.00	0.470	0.97	6.00	•
SCCD 053-035-060 ACF5	5.30	35.00	45.0	36.0	82.00	0.470	0.97	6.00	•
SCCD 054-035-060 ACF5	5.40	35.00	45.0	36.0	82.00	0.580	1.08	6.00	•
SCCD 055-035-060 ACF5	5.50	35.00	45.0	36.0	82.00	0.580	1.08	6.00	•
SCCD 056-035-060 ACF5	5.60	35.00	45.0	36.0	82.00	0.580	1.08	6.00	•
SCCD 057-035-060 ACF5	5.70	35.00	45.0	36.0	82.00	0.580	1.08	6.00	•
SCCD 058-035-060 ACF5	5.80	35.00	45.0	36.0	82.00	0.580	1.08	6.00	•
SCCD 059-035-060 ACF5	5.90	35.00	45.0	36.0	82.00	0.580	1.08	6.00	•
SCCD 060-035-060 ACF5	6.00	35.00	45.0	36.0	82.00	0.580	1.08	6.00	•
SCCD 061-043-080 ACF5	6.10	43.00	54.0	36.0	91.00	0.620	1.26	8.00	•
SCCD 062-043-080 ACF5	6.20	43.00	54.0	36.0	91.00	0.620	1.26	8.00	•
SCCD 063-043-080 ACF5	6.30	43.00	54.0	36.0	91.00	0.620	1.26	8.00	•
SCCD 064-043-080 ACF5	6.40	43.00	54.0	36.0	91.00	0.620	1.26	8.00	•
SCCD 065-043-080 ACF5	6.50	43.00	54.0	36.0	91.00	0.620	1.26	8.00	•
SCCD 066-043-080 ACF5	6.60	43.00	54.0	36.0	91.00	0.620	1.26	8.00	•
SCCD 067-043-080 ACF5	6.70	43.00	54.0	36.0	91.00	0.620	1.26	8.00	•
SCCD 068-043-080 ACF5	6.80	43.00	54.0	36.0	91.00	0.620	1.26	8.00	•
SCCD 069-043-080 ACF5	6.90	43.00	54.0	36.0	91.00	0.620	1.26	8.00	•
SCCD 070-043-080 ACF5	7.00	43.00	54.0	36.0	91.00	0.620	1.26	8.00	•
SCCD 071-043-080 ACF5	7.10	43.00	54.0	36.0	91.00	0.660	1.44	8.00	•
SCCD 072-043-080 ACF5	7.20	43.00	54.0	36.0	91.00	0.660	1.44	8.00	•
SCCD 073-043-080 ACF5	7.30	43.00	54.0	36.0	91.00	0.660	1.44	8.00	•
SCCD 074-043-080 ACF5	7.40	43.00	54.0	36.0	91.00	0.660	1.44	8.00	•
SCCD 075-043-080 ACF5	7.50	43.00	54.0	36.0	91.00	0.660	1.44	8.00	•
SCCD 076-043-080 ACF5	7.60	43.00	54.0	36.0	91.00	0.660	1.44	8.00	•
SCCD 077-043-080 ACF5	7.70	43.00	54.0	36.0	91.00	0.660	1.44	8.00	•
SCCD 078-043-080 ACF5	7.80	43.00	54.0	36.0	91.00	0.660	1.44	8.00	•
SCCD 079-043-080 ACF5	7.90	43.00	54.0	36.0	91.00	0.660	1.44	8.00	•
SCCD 080-043-080 ACF5	8.00	43.00	54.0	36.0	91.00	0.660	1.44	8.00	•
SCCD 081-049-100 ACF5	8.10	49.00	62.0	40.0	103.00	0.790	1.62	10.00	•
SCCD 082-049-100 ACF5	8.20	49.00	62.0	40.0	103.00	0.790	1.62	10.00	•
SCCD 083-049-100 ACF5	8.30	49.00	62.0	40.0	103.00	0.790	1.62	10.00	•
SCCD 084-049-100 ACF5	8.40	49.00	62.0	40.0	103.00	0.790	1.62	10.00	•
SCCD 085-049-100 ACF5	8.50	49.00	62.0	40.0	103.00	0.790	1.62	10.00	•
SCCD 086-049-100 ACF5	8.60	49.00	62.0	40.0	103.00	0.790	1.62	10.00	•
SCCD 087-049-100 ACF5	8.70	49.00	62.0	40.0	103.00	0.790	1.62	10.00	•
SCCD 088-049-100 ACF5	8.80	49.00	62.0	40.0	103.00	0.790	1.62	10.00	•
SCCD 089-049-100 ACF5	8.90	49.00	62.0	40.0	103.00	0.790	1.62	10.00	•
SCCD 090-049-100 ACF5	9.00	49.00	62.0	40.0	103.00	0.790	1.62	10.00	•
SCCD 091-049-100 ACF5	9.10	49.00	62.0	40.0	103.00	0.820	1.80	10.00	•
SCCD 092-049-100 ACF5	9.20	49.00	62.0	40.0	103.00	0.820	1.80	10.00	•
SCCD 093-049-100 ACF5	9.30	49.00	62.0	40.0	103.00	0.820	1.80	10.00	•
SCCD 094-049-100 ACF5	9.40	49.00	62.0	40.0	103.00	0.820	1.80	10.00	•
SCCD 095-049-100 ACF5	9.50	49.00	62.0	40.0	103.00	0.820	1.80	10.00	•
SCCD 096-049-100 ACF5	9.60	49.00	62.0	40.0	103.00	0.820	1.80	10.00	•
SCCD 097-049-100 ACF5	9.70	49.00	62.0	40.0	103.00	0.820	1.80	10.00	•
SCCD 098-049-100 ACF5	9.80	49.00	62.0	40.0	103.00	0.820	1.80	10.00	•

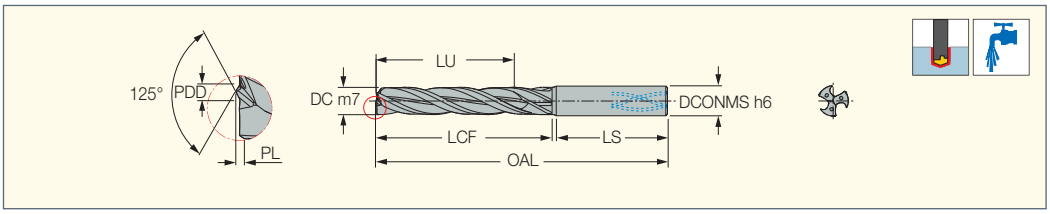
NEW

• For user guide and cutting conditions, see pages 221-226 • For regrinding instructions, see pages 227-231

Continued

SOLIDDRILL

SCCD-ACF5
Three Flute Solid Carbide Flat Head Drills with Coolant Holes, Drilling Depth 5xD



Designation	Dimensions								IC608
	DC	LU	LCF	LS	OAL	PL	PDD	DCONMS	
SCCD 099-049-100 ACF5	9.90	49.00	62.0	40.0	103.00	0.820	1.80	10.00	●
SCCD 100-049-100 ACF5	10.00	49.00	62.0	40.0	103.00	0.820	1.80	10.00	●
SCCD 101-056-120 ACF5	10.10	56.00	71.0	45.0	118.00	0.950	1.98	12.00	●
SCCD 102-056-120 ACF5	10.20	56.00	71.0	45.0	118.00	0.950	1.98	12.00	●
SCCD 103-056-120 ACF5	10.30	56.00	71.0	45.0	118.00	0.950	1.98	12.00	●
SCCD 104-056-120 ACF5	10.40	56.00	71.0	45.0	118.00	0.950	1.98	12.00	●
SCCD 105-056-120 ACF5	10.50	56.00	71.0	45.0	118.00	0.950	1.98	12.00	●
SCCD 106-056-120 ACF5	10.60	56.00	71.0	45.0	118.00	0.950	1.98	12.00	●
SCCD 107-056-120 ACF5	10.70	56.00	71.0	45.0	118.00	0.950	1.98	12.00	●
SCCD 108-056-120 ACF5	10.80	56.00	71.0	45.0	118.00	0.950	1.98	12.00	●
SCCD 109-056-120 ACF5	10.90	56.00	71.0	45.0	118.00	0.950	1.98	12.00	●
SCCD 110-056-120 ACF5	11.00	56.00	71.0	45.0	118.00	0.950	1.98	12.00	●
SCCD 111-056-120 ACF5	11.10	56.00	72.0	45.0	118.00	0.980	2.16	12.00	●
SCCD 112-056-120 ACF5	11.20	56.00	72.0	45.0	118.00	0.980	2.16	12.00	●
SCCD 113-056-120 ACF5	11.30	56.00	72.0	45.0	118.00	0.980	2.16	12.00	●
SCCD 114-056-120 ACF5	11.40	56.00	72.0	45.0	118.00	0.980	2.16	12.00	●
SCCD 115-056-120 ACF5	11.50	56.00	72.0	45.0	118.00	0.980	2.16	12.00	●
SCCD 116-056-120 ACF5	11.60	56.00	72.0	45.0	118.00	0.980	2.16	12.00	●
SCCD 117-056-120 ACF5	11.70	56.00	72.0	45.0	118.00	0.980	2.16	12.00	●
SCCD 118-056-120 ACF5	11.80	56.00	72.0	45.0	118.00	0.980	2.16	12.00	●
SCCD 119-056-120 ACF5	11.90	56.00	72.0	45.0	118.00	0.980	2.16	12.00	●
SCCD 120-056-120 ACF5	12.00	56.00	72.0	45.0	118.00	0.980	2.16	12.00	●

NEW

• For user guide and cutting conditions, see pages 221-226 • For regrinding instructions, see pages 227-231

Recommended cutting data for SCCD-ACF

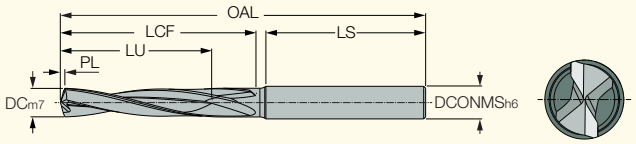
ISO	Material No.	Material		Material Condition	Cutting Speed V_c, m/min	Cutting Diameter Feed f, mm/rev Ø4-Ø5	Ø5.1-Ø6	Ø6.1-Ø8	Ø8.1-Ø10	Ø10.1-Ø12
P	1	Non-alloy steel and cast steel, free cutting steel	<0.25% C	Annealed	80-140	0.15-0.25	0.20-0.35	0.25-0.45	0.30-0.55	0.35-0.60
	2		≥0.25% C	Annealed	80-130					
	3		<0.55% C	Quenched and tempered	80-120					
	4		≥0.55% C	Annealed	70-110					
	5			Quenched and tempered	50-90					
	6	Low alloy steel and cast steel (less than 5% of alloying elements)		Annealed	80-120			0.25-0.40	0.30-0.50	0.35-0.55
	7			Quenched and tempered	70-110					
	8				50-90					
	9				40-70					
	10	High alloyed steel, cast steel, and tool steel		Annealed	50-90	0.15-0.20	0.20-0.30	0.25-0.35	0.30-0.45	0.35-0.50
	11			Quenched and tempered	40-80					
K	15	Grey cast iron (GG)		Ferritic/pearlitic	80-140	0.20-0.30	0.25-0.45	0.35-0.55	0.40-0.60	0.45-0.65
	16			Pearlitic/martensitic	70-120					
	17	Nodular cast iron (GGG)		Ferritic	80-120		0.20-0.40	0.30-0.50	0.35-0.55	0.40-0.60
	18			Pearlitic	70-110					
	19	Malleable cast iron		Ferritic	80-120					
	20			Pearlitic	70-110					

SOLIDDRILL

SCD-AH5 (5xD)

Solid Carbide Drills for Hard Materials, Drilling Depth 5xD

DC	Tolerance m7
3.00-6	0.004-0.016
6.01-10	0.008-0.021
10.01-18	0.007-0.025
18.01-21	0.008-0.029



Designation	Dimensions								IC903
	DC	LU	LCF	LS	OAL	PL	FTDZ[1]	DCONMS	
SCD 030-015-060 AH5	3.00	15.00	26.0	35.0	66.00	0.550	-	6.00	●
SCD 033-017-060 AH5	3.30	16.50	26.0	35.0	66.00	0.600	M4	6.00	●
SCD 040-020-060 AH5	4.00	20.00	29.0	32.0	66.00	0.730	-	6.00	●
SCD 042-021-060 AH5	4.20	21.00	32.0	46.0	82.00	0.760	M5	6.00	●
SCD 045-023-060 AH5	4.50	22.50	32.0	46.0	82.00	0.820	-	6.00	●
SCD 050-025-060 AH5	5.00	25.00	37.0	41.0	82.00	0.910	M6	6.00	●
SCD 053-027-060 AH5	5.30	26.50	39.0	37.0	82.00	0.960	-	6.00	●
SCD 060-030-060 AH5	6.00	30.00	43.0	37.0	82.00	1.090	M7	6.00	●
SCD 068-034-080 AH5	6.80	34.00	49.0	39.0	91.00	1.240	M8	8.00	●
SCD 070-035-080 AH5	7.00	35.00	49.0	39.0	91.00	1.270	-	8.00	●
SCD 078-039-080 AH5	7.80	42.00	55.0	34.0	91.00	1.420	M9	8.00	●
SCD 080-040-080 AH5	8.00	40.00	55.0	34.0	91.00	1.460	-	8.00	●
SCD 085-043-100 AH5	8.50	42.50	59.0	46.0	112.00	1.550	M10	10.00	●
SCD 088-044-100 AH5	8.80	44.00	63.0	46.0	112.00	1.600	-	10.00	●
SCD 090-045-100 AH5	9.00	45.00	63.0	46.0	112.00	1.640	-	10.00	●
SCD 100-050-100 AH5	10.00	50.00	70.0	39.0	112.00	1.820	-	10.00	●
SCD 105-053-120 AH5	10.50	52.50	71.0	45.0	122.00	1.910	-	12.00	●

• For user guide see pages 221-226 • For regrinding instructions, see pages 227-231

[1] Used for standard thread size

Recommended Machining Conditions for SCD-AH5 Solid Carbide Drills

ISO	Material	Hardness	Material No.	Cutting Speed	Feed vs. Drill Diameter (mm/rev)		
				V_c (m/min)	Ø3-5	Ø5.1-8	Ø8.1-12
H	hardened steel	50-55 HRC	38	25-40	0.04-0.07	0.05-0.08	0.06-0.10
	hardened steel	56-60 HRC	39	15-25	0.03-0.06	0.04-0.07	0.05-0.08
	hardened steel	61-70 HRC	39	10-15	0.02-0.04	0.03-0.05	0.03-0.05

Materials over 50 HRC must be used with external coolant while machining.

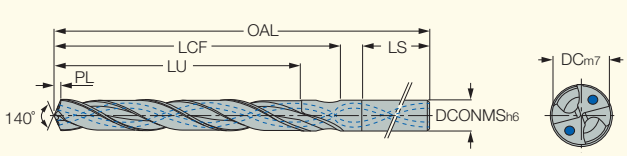
Use of semi-synthetic or emulsion with more than 6% oil concentration is highly recommended to extend tool life and hole quality.

SOLIDDRILL

SCD-ACP8N (8xD)

Solid Carbide Drills with Coolant Holes, Drilling Depth 8xD

DC	Tolerance m7
3.00-6	0.004-0.016
6.01-10	0.006-0.021
10.01-18	0.007-0.025
18.01-21	0.008-0.029



Designation	Dimensions								IC908
	DC	LU	LCF	LS	OAL	PL	FTDZ[1]	DCONMS	
SCD 030-029-060 ACP8N	3.00	29.00	34.0	34.0	72.00	0.500	-	6.00	●
SCD 031-029-060 ACP8N	3.10	29.00	34.0	34.0	72.00	0.500	-	6.00	●
SCD 032-029-060 ACP8N	3.20	29.00	34.0	34.0	72.00	0.500	-	6.00	●
SCD 033-029-060 ACP8N	3.30	29.00	34.0	34.0	72.00	0.500	M4	6.00	●
SCD 034-029-060 ACP8N	3.40	29.00	34.0	34.0	72.00	0.500	-	6.00	●
SCD 035-029-060 ACP8N	3.50	29.00	34.0	34.0	72.00	0.600	-	6.00	●
SCD 036-029-060 ACP8N	3.60	29.00	34.0	34.0	72.00	0.600	-	6.00	●
SCD 037-029-060 ACP8N	3.70	29.00	34.0	34.0	72.00	0.600	-	6.00	●
SCD 038-036-060 ACP8N	3.80	36.00	43.0	35.0	81.00	0.600	-	6.00	●
SCD 039-036-060 ACP8N	3.90	36.00	43.0	35.0	81.00	0.600	-	6.00	●
SCD 040-036-060 ACP8N	4.00	36.00	43.0	35.0	81.00	0.600	-	6.00	●
SCD 041-036-060 ACP8N	4.10	36.00	43.0	35.0	81.00	0.700	-	6.00	●
SCD 042-036-060 ACP8N	4.20	36.00	43.0	35.0	81.00	0.700	M5	6.00	●
SCD 043-036-060 ACP8N	4.30	36.00	43.0	35.0	81.00	0.700	-	6.00	●
SCD 044-036-060 ACP8N	4.40	36.00	43.0	35.0	81.00	0.700	-	6.00	●
SCD 045-036-060 ACP8N	4.50	36.00	43.0	35.0	81.00	0.700	-	6.00	●
SCD 046-036-060 ACP8N	4.60	36.00	43.0	35.0	81.00	0.700	-	6.00	●
SCD 047-036-060 ACP8N	4.70	36.00	43.0	35.0	81.00	0.800	-	6.00	●
SCD 048-048-060 ACP8N	4.80	48.00	57.0	36.0	95.00	0.800	-	6.00	●
SCD 049-048-060 ACP8N	4.90	48.00	57.0	36.0	95.00	0.800	-	6.00	●
SCD 050-048-060 ACP8N	5.00	48.00	57.0	36.0	95.00	0.800	M6	6.00	●
SCD 051-048-060 ACP8N	5.10	48.00	57.0	36.0	95.00	0.800	-	6.00	●
SCD 052-048-060 ACP8N	5.20	48.00	57.0	36.0	95.00	0.800	-	6.00	●
SCD 053-048-060 ACP8N	5.30	48.00	57.0	36.0	95.00	0.800	-	6.00	●
SCD 054-048-060 ACP8N	5.40	48.00	57.0	36.0	95.00	0.800	-	6.00	●
SCD 055-048-060 ACP8N	5.50	48.00	57.0	36.0	95.00	0.900	-	6.00	●
SCD 056-048-060 ACP8N	5.60	48.00	57.0	36.0	95.00	0.900	-	6.00	●
SCD 057-048-060 ACP8N	5.70	48.00	57.0	36.0	95.00	0.900	-	6.00	●
SCD 058-048-060 ACP8N	5.80	48.00	57.0	36.0	95.00	0.900	-	6.00	●
SCD 059-048-060 ACP8N	5.90	48.00	57.0	36.0	95.00	0.900	-	6.00	●
SCD 060-048-060 ACP8N	6.00	48.00	57.0	36.0	95.00	0.900	M7	6.00	●
SCD 061-064-080 ACP8N	6.10	64.00	76.0	36.0	114.00	1.000	-	8.00	●
SCD 062-064-080 ACP8N	6.20	64.00	76.0	36.0	114.00	1.000	-	8.00	●
SCD 063-064-080 ACP8N	6.30	64.00	76.0	36.0	114.00	1.000	-	8.00	●
SCD 064-064-080 ACP8N	6.40	64.00	76.0	36.0	114.00	1.000	-	8.00	●
SCD 065-064-080 ACP8N	6.50	64.00	76.0	36.0	114.00	1.000	-	8.00	●
SCD 066-064-080 ACP8N	6.60	64.00	76.0	36.0	114.00	1.000	-	8.00	●
SCD 067-064-080 ACP8N	6.70	64.00	76.0	36.0	114.00	1.100	-	8.00	●
SCD 068-064-080 ACP8N	6.80	64.00	76.0	36.0	114.00	1.100	M8	8.00	●
SCD 069-064-080 ACP8N	6.90	64.00	76.0	36.0	114.00	1.100	-	8.00	●
SCD 070-064-080 ACP8N	7.00	64.00	76.0	36.0	114.00	1.100	-	8.00	●
SCD 071-064-080 ACP8N	7.10	64.00	76.0	36.0	114.00	1.100	-	8.00	●
SCD 072-064-080 ACP8N	7.20	64.00	76.0	36.0	114.00	1.100	-	8.00	●
SCD 073-064-080 ACP8N	7.30	64.00	76.0	36.0	114.00	1.100	-	8.00	●
SCD 074-064-080 ACP8N	7.40	64.00	76.0	36.0	114.00	1.200	-	8.00	●
SCD 075-064-080 ACP8N	7.50	64.00	76.0	36.0	114.00	1.200	-	8.00	●
SCD 076-064-080 ACP8N	7.60	64.00	76.0	36.0	114.00	1.200	-	8.00	●
SCD 077-064-080 ACP8N	7.70	64.00	76.0	36.0	114.00	1.200	-	8.00	●
SCD 078-064-080 ACP8N	7.80	64.00	76.0	36.0	114.00	1.200	M9	8.00	●
SCD 079-064-080 ACP8N	7.90	64.00	76.0	36.0	114.00	1.300	-	8.00	●
SCD 080-064-080 ACP8N	8.00	64.00	76.0	36.0	114.00	1.300	-	8.00	●
SCD 081-080-100 ACP8N	8.10	80.00	95.0	40.0	142.00	1.300	-	10.00	●
SCD 082-080-100 ACP8N	8.20	80.00	95.0	40.0	142.00	1.300	-	10.00	●
SCD 083-080-100 ACP8N	8.30	80.00	95.0	40.0	142.00	1.300	-	10.00	●
SCD 084-080-100 ACP8N	8.40	80.00	95.0	40.0	142.00	1.300	-	10.00	●
SCD 085-080-100 ACP8N	8.50	80.00	95.0	40.0	142.00	1.300	M10	10.00	●
SCD 086-080-100 ACP8N	8.60	80.00	95.0	40.0	142.00	1.400	-	10.00	●
SCD 087-080-100 ACP8N	8.70	80.00	95.0	40.0	142.00	1.400	-	10.00	●
SCD 088-080-100 ACP8N	8.80	80.00	95.0	40.0	142.00	1.400	-	10.00	●

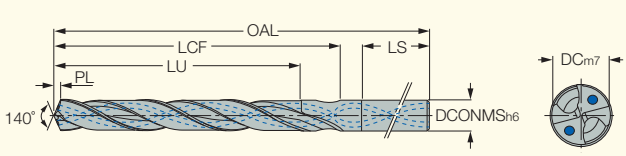
• For user guide and cutting conditions, see pages 221-226 • For regrinding instructions, see pages 227-231

[1] Used for standard thread size

SOLIDDRILL

SCD-ACP8N (8xD)
Solid Carbide Drills with Coolant Holes, Drilling Depth 8xD

DC	Tolerance m7
3.00-6	0.004-0.016
6.01-10	0.006-0.021
10.01-18	0.007-0.025
18.01-21	0.008-0.029



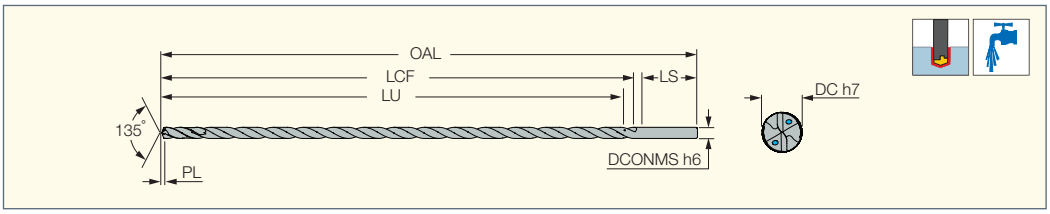
Designation	Dimensions								IC908
	DC	LU	LCF	LS	OAL	PL	FTDZ(1)	DCONMS	
SCD 089-080-100 ACP8N	8.90	80.00	95.0	40.0	142.00	1.400	-	10.00	●
SCD 090-080-100 ACP8N	9.00	80.00	95.0	40.0	142.00	1.400	-	10.00	●
SCD 091-080-100 ACP8N	9.10	80.00	95.0	40.0	142.00	1.400	-	10.00	●
SCD 092-080-100 ACP8N	9.20	80.00	95.0	40.0	142.00	1.400	-	10.00	●
SCD 093-080-100 ACP8N	9.30	80.00	95.0	40.0	142.00	1.500	-	10.00	●
SCD 094-080-100 ACP8N	9.40	80.00	95.0	40.0	142.00	1.500	-	10.00	●
SCD 095-080-100 ACP8N	9.50	80.00	95.0	40.0	142.00	1.500	M11	10.00	●
SCD 096-080-100 ACP8N	9.60	80.00	95.0	40.0	142.00	1.500	-	10.00	●
SCD 097-080-100 ACP8N	9.70	80.00	95.0	40.0	142.00	1.500	-	10.00	●
SCD 098-080-100 ACP8N	9.80	80.00	95.0	40.0	142.00	1.600	-	10.00	●
SCD 100-080-100 ACP8N	10.00	80.00	95.0	40.0	142.00	1.600	-	10.00	●

• For user guide and cutting conditions, see pages 221-226 • For regrinding instructions, see pages 227-231

(1) Used for standard thread size

SOLIDDRILL

SCD-SXC16
Solid Carbide Drills with Internal Coolant Channels, Drilling Depth 16xD

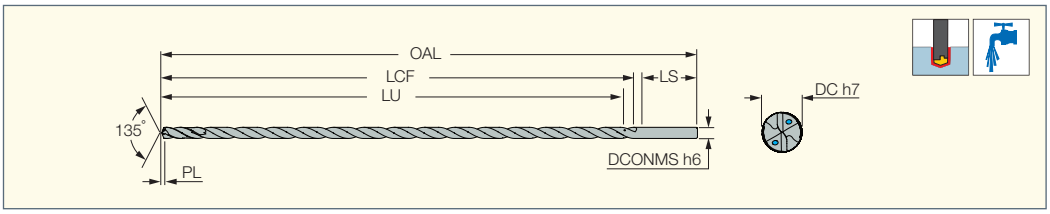


Designation	Dimensions							IC908
	DC	LU	LCF	LS	OAL	PL	DCONMS	
SCD 030-055-060 SXC16	3.00	55.00	60.0	36.0	100.00	0.495	6.00	●
SCD 032-055-060 SXC16	3.20	55.00	60.0	36.0	100.00	0.528	6.00	●
SCD 033-055-060 SXC16	3.30	55.00	60.0	36.0	100.00	0.545	6.00	●
SCD 035-054-060 SXC16	3.50	54.00	60.0	36.0	100.00	0.578	6.00	●
SCD 038-069-060 SXC16	3.80	69.00	75.0	36.0	115.00	0.627	6.00	●
SCD 040-069-060 SXC16	4.00	69.00	75.0	36.0	115.00	0.660	6.00	●
SCD 042-068-060 SXC16	4.20	68.00	75.0	36.0	115.00	0.693	6.00	●
SCD 045-083-060 SXC16	4.50	83.00	90.0	36.0	130.00	0.743	6.00	●
SCD 047-082-060 SXC16	4.70	82.00	90.0	36.0	130.00	0.776	6.00	●
SCD 048-082-060 SXC16	4.80	82.00	90.0	36.0	130.00	0.792	6.00	●
SCD 050-082-060 SXC16	5.00	82.00	90.0	36.0	130.00	0.825	6.00	●
SCD 055-099-060 SXC16	5.50	99.00	108.0	36.0	150.00	0.908	6.00	●
SCD 058-099-060 SXC16	5.80	99.00	108.0	36.0	150.00	0.957	6.00	●
SCD 060-099-060 SXC16	6.00	99.00	108.0	36.0	150.00	0.990	6.00	●
SCD 065-115-080 SXC16	6.50	115.00	125.0	36.0	165.00	1.073	8.00	●
SCD 068-114-080 SXC16	6.80	114.00	125.0	36.0	165.00	1.122	8.00	●
SCD 070-114-080 SXC16	7.00	114.00	125.0	36.0	165.00	1.155	8.00	●
SCD 075-128-080 SXC16	7.50	128.00	140.0	36.0	180.00	1.238	8.00	●
SCD 078-128-080 SXC16	7.80	128.00	140.0	36.0	180.00	1.287	8.00	●
SCD 080-128-080 SXC16	8.00	128.00	140.0	36.0	180.00	1.320	8.00	●
SCD 085-147-100 SXC16	8.50	147.00	160.0	40.0	205.00	1.403	10.00	●
SCD 088-146-100 SXC16	8.80	146.00	160.0	40.0	205.00	1.452	10.00	●
SCD 090-146-100 SXC16	9.00	146.00	160.0	40.0	205.00	1.485	10.00	●
SCD 098-165-100 SXC16	9.80	165.00	180.0	40.0	225.00	1.617	10.00	●
SCD 100-165-100 SXC16	10.00	165.00	180.0	40.0	225.00	1.650	10.00	●
SCD 102-174-120 SXC16	10.20	174.00	190.0	45.0	240.00	1.683	12.00	●
SCD 108-173-120 SXC16	10.80	173.00	190.0	45.0	240.00	1.782	12.00	●
SCD 110-173-120 SXC16	11.00	173.00	190.0	45.0	240.00	1.815	12.00	●
SCD 115-197-120 SXC16	11.50	197.00	215.0	45.0	265.00	1.898	12.00	●
SCD 120-197-120 SXC16	12.00	197.00	215.0	45.0	265.00	1.980	12.00	●
SCD 123-211-140 SXC16	12.30	211.00	230.0	45.0	280.00	2.030	14.00	●
SCD 130-210-140 SXC16	13.00	210.00	230.0	45.0	280.00	2.145	14.00	●
SCD 133-225-140 SXC16	13.30	225.00	245.0	45.0	295.00	2.195	14.00	●
SCD 135-224-140 SXC16	13.50	224.00	245.0	45.0	295.00	2.228	14.00	●
SCD 140-224-140 SXC16	14.00	224.00	245.0	45.0	295.00	2.310	14.00	●
SCD 145-233-160 SXC16	14.50	233.00	255.0	48.0	305.00	2.393	16.00	●
SCD 150-232-160 SXC16	15.00	232.00	255.0	48.0	305.00	2.475	16.00	●
SCD 155-251-160 SXC16	15.50	251.00	275.0	48.0	325.00	2.558	16.00	●
SCD 160-251-160 SXC16	16.00	251.00	275.0	48.0	325.00	2.640	16.00	●
SCD 165-295-180 SXC16	16.50	295.00	320.0	48.0	370.00	2.723	18.00	●
SCD 170-294-180 SXC16	17.00	294.00	320.0	48.0	370.00	2.805	18.00	●
SCD 175-293-180 SXC16	17.50	293.00	320.0	48.0	370.00	2.888	18.00	●
SCD 180-293-180 SXC16	18.00	293.00	320.0	48.0	370.00	2.970	18.00	●
SCD 185-302-200 SXC16	18.50	302.00	330.0	50.0	380.00	3.053	20.00	●
SCD 195-320-200 SXC16	19.50	320.00	350.0	50.0	400.00	3.218	20.00	●
SCD 200-320-200 SXC16	20.00	320.00	350.0	50.0	400.00	3.300	20.00	●

• For user guide and cutting conditions, see pages 221-226

SOLIDDRILL

SCD-SXC20
Solid Carbide Drills with Internal Coolant Channels, Drilling Depth 20xD



Designation	Dimensions							IC908
	DC	LU	LCF	LS	OAL	PL	DCONMS	
SCD 030-075-060 SXC20	3.00	75.00	80.0	36.0	120.00	0.495	6.00	•
SCD 032-075-060 SXC20	3.20	75.00	80.0	36.0	120.00	0.528	6.00	•
SCD 033-075-060 SXC20	3.30	75.00	80.0	36.0	120.00	0.545	6.00	•
SCD 035-074-060 SXC20	3.50	74.00	80.0	36.0	120.00	0.578	6.00	•
SCD 038-084-060 SXC20	3.80	84.00	90.0	36.0	130.00	0.627	6.00	•
SCD 040-084-060 SXC20	4.00	84.00	90.0	36.0	130.00	0.660	6.00	•
SCD 042-103-060 SXC20	4.20	103.00	110.0	36.0	160.00	0.693	6.00	•
SCD 045-103-060 SXC20	4.50	103.00	110.0	36.0	160.00	0.743	6.00	•
SCD 047-112-060 SXC20	4.70	112.00	120.0	36.0	160.00	0.776	6.00	•
SCD 048-112-060 SXC20	4.80	112.00	120.0	36.0	160.00	0.792	6.00	•
SCD 050-112-060 SXC20	5.00	112.00	120.0	36.0	160.00	0.825	6.00	•
SCD 055-131-060 SXC20	5.50	131.00	140.0	36.0	185.00	0.908	6.00	•
SCD 058-131-060 SXC20	5.80	131.00	140.0	36.0	185.00	0.957	6.00	•
SCD 060-131-060 SXC20	6.00	131.00	140.0	36.0	185.00	0.990	6.00	•
SCD 065-150-080 SXC20	6.50	150.00	160.0	36.0	210.00	1.073	8.00	•
SCD 068-149-080 SXC20	6.80	149.00	160.0	36.0	210.00	1.122	8.00	•
SCD 070-149-080 SXC20	7.00	149.00	160.0	36.0	210.00	1.155	8.00	•
SCD 075-168-080 SXC20	7.50	168.00	180.0	36.0	230.00	1.238	8.00	•
SCD 078-168-080 SXC20	7.80	168.00	180.0	36.0	230.00	1.287	8.00	•
SCD 080-168-080 SXC20	8.00	168.00	180.0	36.0	230.00	1.320	8.00	•
SCD 085-182-100 SXC20	8.50	182.00	195.0	40.0	260.00	1.403	10.00	•
SCD 088-216-100 SXC20	8.80	216.00	230.0	40.0	290.00	1.452	10.00	•
SCD 090-216-100 SXC20	9.00	216.00	230.0	40.0	290.00	1.485	10.00	•
SCD 098-215-100 SXC20	9.80	215.00	230.0	40.0	290.00	1.617	10.00	•
SCD 100-215-100 SXC20	10.00	215.00	230.0	40.0	290.00	1.650	10.00	•
SCD 102-252-120 SXC20	10.20	252.00	268.0	45.0	315.00	1.683	12.00	•
SCD 108-251-120 SXC20	10.80	251.00	268.0	45.0	315.00	1.782	12.00	•
SCD 110-251-120 SXC20	11.00	251.00	268.0	45.0	315.00	1.815	12.00	•
SCD 115-250-120 SXC20	11.50	250.00	268.0	45.0	315.00	1.898	12.00	•
SCD 120-250-120 SXC20	12.00	250.00	268.0	45.0	315.00	1.980	12.00	•
SCD 123-261-140 SXC20	12.30	261.00	280.0	45.0	325.00	2.030	14.00	•
SCD 130-260-140 SXC20	13.00	260.00	280.0	45.0	325.00	2.145	14.00	•
SCD 133-285-140 SXC20	13.30	285.00	305.0	45.0	355.00	2.195	14.00	•
SCD 135-284-140 SXC20	13.50	284.00	305.0	45.0	355.00	2.228	14.00	•
SCD 140-284-140 SXC20	14.00	284.00	305.0	45.0	355.00	2.310	14.00	•
SCD 145-298-160 SXC20	14.50	298.00	320.0	48.0	370.00	2.393	16.00	•
SCD 155-326-160 SXC20	15.50	326.00	350.0	48.0	400.00	2.558	16.00	•
SCD 160-326-160 SXC20	16.00	326.00	350.0	48.0	400.00	2.640	16.00	•

• For user guide and cutting conditions, see pages 221-226

Recommended Machining Conditions for SCD-SXC16 & SCD-SXC20 Solid Carbide Drills

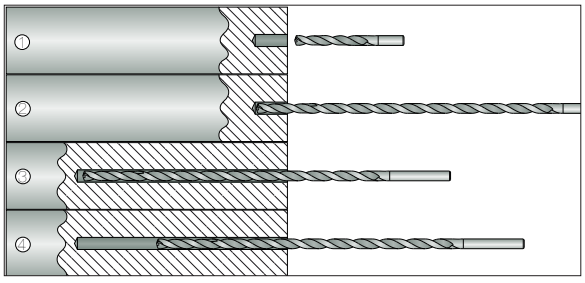
ISO	Material		Condition	Material Group No.	Tensile Strength [N/mm²]	Hardness HB	Cutting Speed V_c (m/min)	Cutting Diameter Feed (mm/rev) 3.0-5.0	5.1-8.0	8.1-10.0	10.1-16	16.1-20
P	non-alloy steel and cast steel, free cutting steel	<0.25% C	annealed	1	420	125	70-90	0.1-0.18	0.14-0.24	0.16-0.26	0.18-0.3	0.2-0.35
		≥0.25% C	annealed	2	650	190						
		<0.55% C	quenched and tempered	3	850	250						
		≥0.55% C	annealed	4	750	220						
			quenched and tempered	5	1000	300						
	low alloy and cast steel (less than 5% of alloying elements)		annealed	6	600	200						
			quenched and tempered	7	930	275						
				8	1000	300						
				9	1200	350						
	high alloyed steel, cast steel and tool steel		annealed	10	680	200	75-85					
			quenched and tempered	11	1100	325						
	stainless steel and cast steel		ferritic/martensitic	12	680	200	60-70	0.08-0.14	0.1-0.18	0.12-0.2	0.14-0.22	0.16-0.24
			martensitic	13	820	240						
M	stainless steel and cast steel		austenitic, duplex	14	600	180	55-65	0.06-0.14	0.08-0.16	0.1-0.18	0.12-0.2	0.14-0.24
K	gray cast iron (GG)		ferritic / pearlitic	15		180	80-100	0.14-0.24	0.16-0.26	0.18-0.0.3	0.2-0.35	0.25-0.45
			pearlitic / martensitic	16		260						
	nodular cast iron (GGG)		ferritic	17		160						
			pearlitic	18		250						
	malleable cast iron		ferritic	19		130						
			pearlitic	20		230						
S	high temperature alloys	Fe based	annealed	31		200	35-45	0.06-0.12	0.08-0.16	0.1-0.18	0.12-0.2	0.12-0.22
			hardened	32		280						
		Ni or Co based	annealed	33		250	30-40	0.06-0.12	0.08-0.16	0.1-0.18	0.12-0.2	0.12-0.22
			hardened	34		350						
			cast	35		320						
	titanium alloys		pure	36	RM 400	190	35-45	0.06-0.12	0.08-0.16	0.1-0.18	0.12-0.2	0.12-0.22
			alpha+beta alloys, hardened	37	RM 1050	310						

TIPS & TRICKS for DEEP HOLE DRILLING

Using a G73 peck cycle helps Chip evacuation in deep hole drilling & materials which have a poor chip formation.
16xD - 50xD must utilize a Pilot hole drill.
40xD - 50xD can utilize a 20xD intermediary drill if deemed necessary.
TIR & tool alignment with material are the most important factors in deep hole Drilling.
Use high pressure coolant when deep hole drilling.
Slow the feedrate to 50% when breaking through the material.
In through holes, the tool exit should not exceed 2-3 mm.

Recommended Drilling Procedure for Deep Hole Drilling

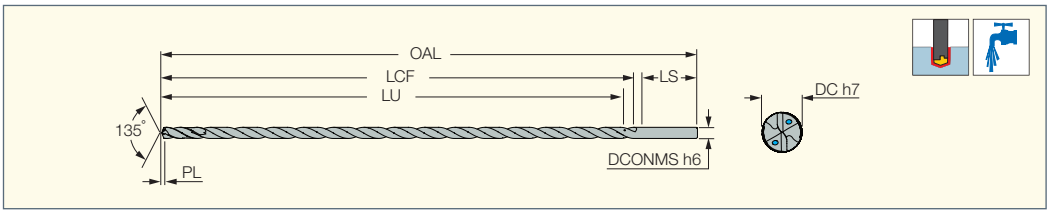
1 Drill a pilot hole 1-2xD deep with a short drill. The pilot drill should be 0.03-0.05 mm larger than the long drill and its point angle should also be larger (over 135°).
2 Enter the pre-hole using low feed and rotate at low speed (50-100 RPM) to within 1 - 2 mm of pre-hole depth.
3 Activate the coolant system and increase rotation speed to the recommended cutting parameter, maintain for 2-3 seconds, then continue at recommended drilling feed. **No pecking is required.**
4 After having reached the required depth, reduce speed to 50-100 RPM before retracting from the hole.



- 40xD & 50xD Must Utilize a 20xD Intermediary Drill Along With Pilot Drill.
- In through holes, the tool exit should not exceed 2-3 mm.

SOLIDDRILL

SCD-SXC30
Solid Carbide Drills with Internal Coolant Channels, Drilling Depth 30xD



Designation	Dimensions DC	LU	LCF	LS	OAL	PL	DCONMS	IC908
SCD 030-097-060 SXC30	3.00	97.00	105.0	40.0	150.00	0.495	6.00	•
SCD 032-097-060 SXC30	3.20	97.00	105.0	40.0	150.00	0.528	6.00	•
SCD 033-127-060 SXC30	3.30	127.00	135.0	45.0	185.00	0.544	6.00	•
SCD 035-127-060 SXC30	3.50	127.00	135.0	45.0	185.00	0.578	6.00	•
SCD 038-127-060 SXC30 (1)	3.80	127.00	135.0	45.0	185.00	0.627	6.00	•
SCD 040-127-060 SXC30	4.00	127.00	135.0	45.0	185.00	0.660	6.00	•
SCD 042-127-060 SXC30	4.20	127.00	135.0	45.0	185.00	0.693	6.00	•
SCD 045-157-060 SXC30	4.50	157.00	165.0	45.0	215.00	0.743	6.00	•
SCD 047-157-060 SXC30 (1)	4.70	157.00	165.0	45.0	215.00	0.775	6.00	•
SCD 048-157-060 SXC30	4.80	157.00	165.0	45.0	215.00	0.792	6.00	•
SCD 050-157-060 SXC30	5.00	157.00	165.0	45.0	215.00	0.825	6.00	•
SCD 055-172-060 SXC30	5.50	172.00	180.0	45.0	230.00	0.907	6.00	•
SCD 058-172-060 SXC30 (1)	5.80	172.00	180.0	45.0	230.00	0.957	6.00	•
SCD 060-172-060 SXC30	6.00	172.00	180.0	45.0	230.00	0.990	6.00	•
SCD 065-207-080 SXC30	6.50	207.00	215.0	60.0	280.00	1.072	8.00	•
SCD 068-222-080 SXC30	6.80	222.00	230.0	45.0	280.00	1.122	8.00	•
SCD 070-222-080 SXC30	7.00	222.00	230.0	45.0	280.00	1.155	8.00	•
SCD 075-222-080 SXC30 (1)	7.50	222.00	230.0	45.0	280.00	1.238	8.00	•
SCD 078-257-080 SXC30 (1)	7.80	257.00	265.0	45.0	315.00	1.287	8.00	•
SCD 080-257-080 SXC30	8.00	257.00	265.0	45.0	315.00	1.320	8.00	•
SCD 085-287-100 SXC30	8.50	287.00	295.0	50.0	350.00	1.402	10.00	•
SCD 088-322-100 SXC30 (1)	8.80	322.00	330.0	45.0	380.00	1.452	10.00	•
SCD 090-322-100 SXC30	9.00	322.00	330.0	45.0	380.00	1.485	10.00	•
SCD 098-322-100 SXC30	9.80	322.00	330.0	45.0	380.00	1.617	10.00	•
SCD 100-322-100 SXC30	10.00	322.00	330.0	45.0	380.00	1.650	10.00	•

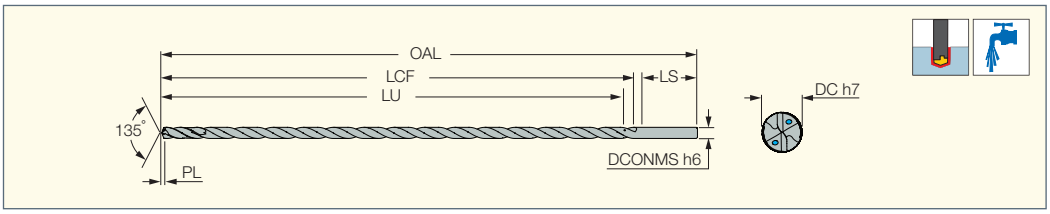
• For user guide and cutting conditions, see pages 221-226
(1) On request

Recommended Machining Conditions for SCD-SXC30 Solid Carbide Drills

ISO	Material		Condition	Tensile Strength [N/mm²]	Hardness HB	Material No.	Cutting Speed V_c (m/min)	Cutting Diameter Feed (mm/rev) 3.0-5.0	5.0-8.0	8.0-10.0
P	non-alloy steel and cast steel, free cutting steel	<0.25% C	annealed	420	125	1	65-75	0.08-0.16	0.12-0.2	0.16-0.24
		≥0.25% C	annealed	650	190	2				
		<0.55% C	quenched and tempered	850	250	3				
		≥0.55% C	annealed	750	220	4				
			quenched and tempered	1000	300	5				
	low alloy steel and cast steel (less than 5% of alloying elements)		annealed	600	200	6				
			quenched and tempered	930	275	7				
				1000	300	8				
				1200	350	9				
	high alloyed steel, cast steel, and tool steel		annealed	680	200	10	60-70			
			quenched and tempered	1100	325	11				
	stainless steel and cast steel		ferritic/martensitic	680	200	12	45-55	0.06-0.12	0.08-0.16	0.1-0.18
			martensitic	820	240	13				
M	stainless steel and cast steel		austenitic, duplex	600	180	14	35-45	0.06-0.12	0.08-0.16	0.1-0.18
K	grey cast iron (GG)		ferritic / pearlitic		180	15	75-85	0.14-0.22	0.18-0.30	0.22-0.40
			pearlitic / martensitic		260	16				
	cast iron nodular (GGG)		ferritic		160	17				
			pearlitic		250	18				
	malleable cast iron		ferritic		130	19				
			pearlitic		230	20				
S	high temperature alloys	Fe based	annealed		200	31	35-50	0.06-0.12	0.08-0.16	0.1-0.18
			hardened		280	32				
		Ni or Co based	annealed		250	33	30-45	0.06-0.12	0.08-0.16	0.1-0.18
			hardened		350	34				
			cast		320	35				
	titanium alloys		pure	400	190	36	35-50	0.06-0.12	0.08-0.16	0.1-0.18
			alpha+beta alloys, hardened	1050	310	37				

SOLIDDRILL

SCD-SXC40
Solid Carbide Drills with Internal Coolant Channels, Drilling Depth 40xD



Designation	Dimensions DC	LU	LCF	LS	OAL	PL	DCONMS	IC908
SCD 030-132-060 SXC40	3.00	132.00	140.0	45.0	190.00	0.495	6.00	●
SCD 038-172-060 SXC40 (1)	3.80	172.00	180.0	45.0	230.00	0.627	6.00	●
SCD 040-172-060 SXC40	4.00	172.00	180.0	45.0	230.00	0.660	6.00	●
SCD 042-172-060 SXC40	4.20	172.00	180.0	45.0	230.00	0.693	6.00	●
SCD 045-212-060 SXC40	4.50	212.00	220.0	45.0	270.00	0.743	6.00	●
SCD 047-212-060 SXC40 (1)	4.70	212.00	220.0	45.0	270.00	0.775	6.00	●
SCD 048-212-060 SXC40	4.80	212.00	220.0	45.0	270.00	0.792	6.00	●
SCD 050-212-060 SXC40	5.00	212.00	220.0	45.0	270.00	0.825	6.00	●
SCD 055-232-060 SXC40	5.50	232.00	240.0	45.0	290.00	0.907	6.00	●
SCD 058-232-060 SXC40 (1)	5.80	232.00	240.0	45.0	290.00	0.957	6.00	●
SCD 060-232-060 SXC40	6.00	232.00	240.0	45.0	290.00	0.990	6.00	●
SCD 065-282-080 SXC40	6.50	282.00	290.0	45.0	340.00	1.072	8.00	●
SCD 068-312-080 SXC40	6.80	312.00	320.0	45.0	370.00	1.122	8.00	●
SCD 070-312-080 SXC40	7.00	312.00	320.0	45.0	370.00	1.155	8.00	●
SCD 075-312-080 SXC40 (1)	7.50	312.00	320.0	45.0	370.00	1.238	8.00	●
SCD 078-342-080 SXC40 (1)	7.80	342.00	350.0	45.0	400.00	1.287	8.00	●
SCD 080-342-080 SXC40	8.00	342.00	350.0	45.0	400.00	1.320	8.00	●

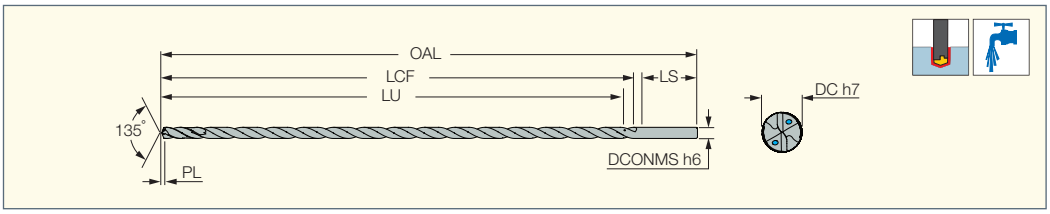
• For user guide and cutting conditions, see pages 221-226
(1) On request

Recommended Machining Conditions for SCD-SXC40 & SCD-SXC50 Solid Carbide Drills

ISO	Material		Condition	Tensile Strength [N/mm²]	Hardness HB	Material No.	Cutting Speed V_c (m/min)	Cutting Diameter Feed (mm/rev) 3.0-4.0	4.1-5.0	5.1-6.0	6.1-7.0	7.1-8.0
P	non-alloy steel and cast steel, free cutting steel	<0.25% C	annealed	420	125	1	55-65	0.06-0.12	0.06-0.14	0.08-0.16	0.10-0.18	0.12-0.2
		≥0.25% C	annealed	650	190	2						
		<0.55% C	quenched and tempered	850	250	3						
		≥0.55% C	annealed	750	220	4						
			quenched and tempered	1000	300	5						
	low alloy steel and cast steel (less than 5% of alloying elements)		annealed	600	200	6	45-65	0.06-0.10	0.06-0.12	0.08-0.14	0.10-0.16	0.12-0.18
			quenched and tempered	930	275	7						
				1000	300	8						
				1200	350	9						
	high alloyed steel, cast steel, and tool steel		annealed	680	200	10	35-55	0.04-0.08	0.06-0.10	0.06-0.12	0.08-0.14	0.10-0.16
			quenched and tempered	1100	325	11						
	stainless steel and cast steel		ferritic/martensitic	680	200	12	30-45	0.04-0.08	0.06-0.10	0.06-0.12	0.08-0.14	0.10-0.16
			martensitic	820	240	13						
M	stainless steel and cast steel		austenitic, duplex	600	180	14	25-45	0.04-0.08	0.06-0.10	0.06-0.12	0.08-0.14	0.10-0.16
K	grey cast iron (GG)		ferritic / pearlitic		180	15	60-70	0.10-0.18	0.12-0.20	0.14-0.22	0.14-0.24	0.16-0.26
			pearlitic / martensitic		260	16						
	cast iron nodular (GGG)		ferritic		160	17	55-65					
			pearlitic		250	18						
	malleable cast iron		ferritic		130	19	50-60					
			pearlitic		230	20						
S	high temperature alloys	Fe based	annealed		200	31	30-35	0.04-0.08	0.06-0.10	0.06-0.12	0.08-0.14	0.10-.0.16
			hardened		280	32						
		Ni or Co based	annealed		250	33	25-30	0.04-0.08	0.06-0.10	0.06-0.12	0.08-0.14	0.10-.0.16
			hardened		350	34						
			cast		320	35						
	titanium alloys		pure	400	190	36	30-35	0.04-0.08	0.06-0.10	0.06-0.12	0.08-0.14	0.10-.0.16
			alpha+beta alloys, hardened	1050	310	37						

SOLIDDRILL

SCD-SXC50
Solid Carbide Drills with Internal Coolant Channels, Drilling Depth 50xD

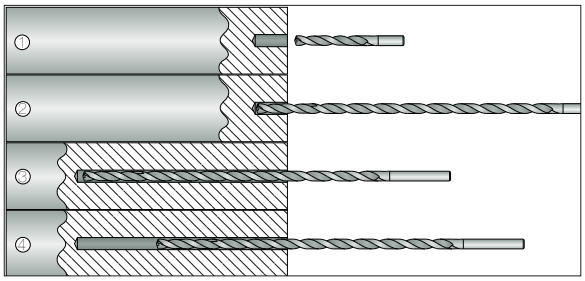


Designation	Dimensions							IC908
	DC	LU	LCF	LS	OAL	PL	DCONMS	
SCD 040-217-060 SXC50	4.00	217.00	225.0	40.0	270.00	0.660	6.00	●
SCD 042-217-060 SXC50	4.20	217.00	225.0	40.0	270.00	0.693	6.00	●
SCD 045-267-060 SXC50	4.50	267.00	275.0	40.0	320.00	0.743	6.00	●
SCD 047-267-060 SXC50 (1)	4.70	267.00	275.0	40.0	320.00	0.775	6.00	●
SCD 048-267-060 SXC50	4.80	267.00	275.0	40.0	320.00	0.792	6.00	●
SCD 050-267-060 SXC50	5.00	267.00	275.0	40.0	320.00	0.825	6.00	●
SCD 055-302-060 SXC50	5.50	302.00	310.0	45.0	360.00	0.907	6.00	●
SCD 058-302-060 SXC50 (1)	5.80	302.00	310.0	45.0	360.00	0.957	6.00	●
SCD 060-302-060 SXC50	6.00	302.00	310.0	45.0	360.00	0.990	6.00	●

• For user guide and cutting conditions, see pages 221-226
(1) On request

Recommended Drilling Procedure for Deep Hole Drilling

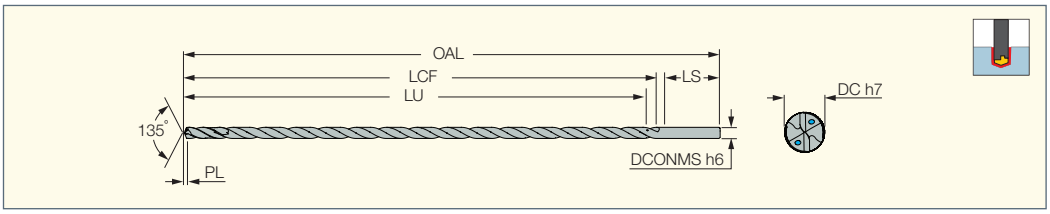
1 Drill a pilot hole 1-2xD deep with a short drill. The pilot drill should be 0.03-0.05 mm larger than the long drill and its point angle should also be larger (over 135°).
2 Enter the pre-hole using low feed and rotate at low speed (50-100 RPM) to within 1 - 2 mm of pre-hole depth.
3 Activate the coolant system and increase rotation speed to the recommended cutting parameter, maintain for 2-3 seconds, then continue at recommended drilling feed. **No pecking is required.**
4 After having reached the required depth, reduce speed to 50-100 RPM before retracting from the hole.



- 40xD & 50xD must utilize a 20xD intermediary drill along with pilot drill.
- In through holes, the tool exit should not exceed 2-3 mm.

SOLIDDRILL

SCD-IXC16
Solid Carbide Drills with Internal Coolant Channels, Drilling Depth 16xD, for Machining ISO K Materials



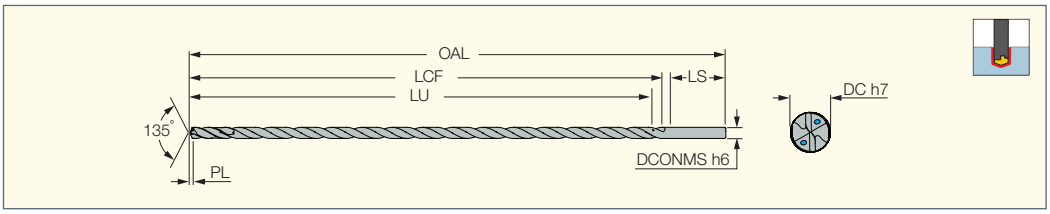
Designation	Dimensions							IC908
	DC	LU	LCF	LS	OAL	PL	DCONMS	
SCD 030-056-060 IXC16	3.00	56.00	60.0	36.0	100.00	0.620	6.00	●
SCD 032-055-060 IXC16	3.20	55.00	60.0	36.0	100.00	0.660	6.00	●
SCD 033-055-060 IXC16	3.30	55.00	60.0	36.0	100.00	0.680	6.00	●
SCD 035-055-060 IXC16	3.50	55.00	60.0	36.0	100.00	0.730	6.00	●
SCD 038-069-060 IXC16	3.80	69.00	75.0	36.0	115.00	0.790	6.00	●
SCD 040-069-060 IXC16	4.00	69.00	75.0	36.0	115.00	0.830	6.00	●
SCD 042-069-060 IXC16	4.20	69.00	75.0	36.0	115.00	0.870	6.00	●
SCD 045-083-060 IXC16	4.50	83.00	90.0	36.0	130.00	0.930	6.00	●
SCD 047-083-060 IXC16	4.70	83.00	90.0	36.0	130.00	0.970	6.00	●
SCD 048-083-060 IXC16	4.80	83.00	90.0	36.0	130.00	0.990	6.00	●
SCD 050-082-060 IXC16	5.00	82.00	90.0	36.0	130.00	1.040	6.00	●
SCD 055-100-060 IXC16	5.50	100.00	108.0	36.0	150.00	1.140	6.00	●
SCD 058-099-060 IXC16	5.80	99.00	108.0	36.0	150.00	1.200	6.00	●
SCD 060-099-060 IXC16	6.00	99.00	108.0	36.0	150.00	1.240	6.00	●
SCD 065-115-080 IXC16	6.50	115.00	125.0	36.0	165.00	1.350	8.00	●
SCD 068-115-080 IXC16	6.80	115.00	125.0	36.0	165.00	1.410	8.00	●
SCD 070-115-080 IXC16	7.00	115.00	125.0	36.0	165.00	1.450	8.00	●
SCD 075-129-080 IXC16	7.50	129.00	140.0	36.0	180.00	1.550	8.00	●
SCD 078-128-080 IXC16	7.80	128.00	140.0	36.0	180.00	1.620	8.00	●
SCD 080-128-080 IXC16	8.00	128.00	140.0	36.0	180.00	1.660	8.00	●
SCD 085-147-100 IXC16	8.50	147.00	160.0	40.0	205.00	1.760	10.00	●
SCD 088-147-100 IXC16	8.80	147.00	160.0	40.0	205.00	1.820	10.00	●
SCD 090-147-100 IXC16	9.00	147.00	160.0	40.0	205.00	1.860	10.00	●
SCD 098-165-100 IXC16	9.80	165.00	180.0	40.0	225.00	2.030	10.00	●
SCD 100-165-100 IXC16	10.00	165.00	180.0	40.0	225.00	2.070	10.00	●
SCD 102-175-120 IXC16	10.20	175.00	190.0	45.0	240.00	2.110	12.00	●
SCD 108-174-120 IXC16	10.80	174.00	190.0	45.0	240.00	2.240	12.00	●
SCD 115-198-120 IXC16	11.50	198.00	215.0	45.0	265.00	2.380	12.00	●
SCD 120-197-120 IXC16	12.00	197.00	215.0	45.0	265.00	2.490	12.00	●

NEW

• Based on DIN 6537 standard • For user guide and cutting conditions, see pages 221-226 • For regrinding instructions, see pages 227-231

SOLIDDRILL

SCD-IXC20
Solid Carbide Drills with Internal Coolant Channels, Drilling Depth 20xD, for Machining ISO K Materials



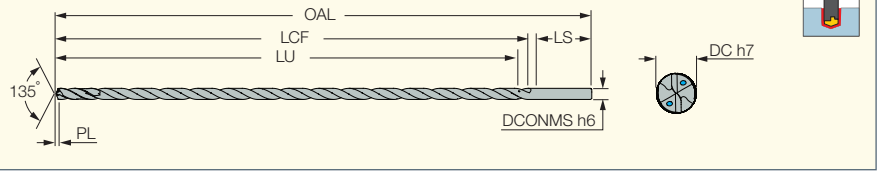
Designation	Dimensions							IC908
	DC	LU	LCF	LS	OAL	PL	DCONMS	
SCD 030-076-060 IXC20	3.00	76.00	80.0	36.0	120.00	0.620	6.00	●
SCD 032-075-060 IXC20	3.20	75.00	80.0	36.0	120.00	0.660	6.00	●
SCD 033-075-060 IXC20	3.30	75.00	80.0	36.0	120.00	0.680	6.00	●
SCD 035-075-060 IXC20	3.50	75.00	80.0	36.0	120.00	0.730	6.00	●
SCD 038-084-060 IXC20	3.80	84.00	90.0	36.0	130.00	0.790	6.00	●
SCD 040-084-060 IXC20	4.00	84.00	90.0	36.0	130.00	0.830	6.00	●
SCD 042-104-060 IXC20	4.20	104.00	110.0	36.0	160.00	0.870	6.00	●
SCD 045-103-060 IXC20	4.50	103.00	110.0	36.0	160.00	0.930	6.00	●
SCD 047-113-060 IXC20	4.70	113.00	120.0	36.0	160.00	0.970	6.00	●
SCD 048-113-060 IXC20	4.80	113.00	120.0	36.0	160.00	0.990	6.00	●
SCD 050-112-060 IXC20	5.00	112.00	120.0	36.0	160.00	1.040	6.00	●
SCD 055-132-060 IXC20	5.50	132.00	140.0	36.0	185.00	1.140	6.00	●
SCD 058-131-060 IXC20	5.80	131.00	140.0	36.0	185.00	1.200	6.00	●
SCD 060-131-060 IXC20	6.00	131.00	140.0	36.0	185.00	1.240	6.00	●
SCD 065-150-080 IXC20	6.50	150.00	160.0	36.0	210.00	1.350	8.00	●
SCD 068-150-080 IXC20	6.80	150.00	160.0	36.0	210.00	1.410	8.00	●
SCD 070-149-080 IXC20	7.00	149.00	160.0	36.0	210.00	1.450	8.00	●
SCD 075-169-080 IXC20	7.50	169.00	180.0	36.0	230.00	1.550	8.00	●
SCD 078-168-080 IXC20	7.80	168.00	180.0	36.0	230.00	1.620	8.00	●
SCD 080-168-080 IXC20	8.00	168.00	180.0	36.0	230.00	1.660	8.00	●
SCD 085-182-100 IXC20	8.50	182.00	195.0	40.0	260.00	1.760	10.00	●
SCD 088-217-100 IXC20	8.80	217.00	230.0	40.0	290.00	1.820	10.00	●
SCD 090-217-100 IXC20	9.00	217.00	230.0	40.0	290.00	1.860	10.00	●
SCD 098-215-100 IXC20	9.80	215.00	230.0	40.0	290.00	2.030	10.00	●
SCD 100-215-100 IXC20	10.00	215.00	230.0	40.0	290.00	2.070	10.00	●
SCD 102-253-120 IXC20	10.20	253.00	268.0	45.0	315.00	2.110	12.00	●
SCD 108-252-120 IXC20	10.80	252.00	268.0	45.0	315.00	2.240	12.00	●
SCD 110-252-120 IXC20	11.00	252.00	268.0	45.0	315.00	2.280	12.00	●
SCD 115-251-120 IXC20	11.50	251.00	268.0	45.0	315.00	2.380	12.00	●
SCD 120-250-120 IXC20	12.00	250.00	268.0	45.0	315.00	2.490	12.00	●

NEW

• Based on DIN 6537 standard • For user guide and cutting conditions, see pages 221-226 • For regrinding instructions, see pages 227-231

SOLIDDRILL

SCD-IXC30
Solid Carbide Drills with Internal Coolant Channels, Drilling Depth 30xD, for Machining ISO K Materials



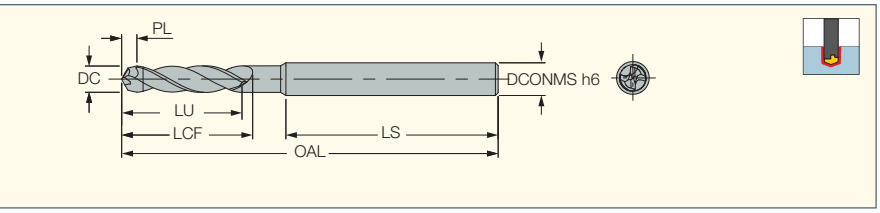
Designation	Dimensions DC	LU	LCF	LS	OAL	PL	DCONMS	IC908
SCD 030-101-060 IXC30	3.00	101.00	105.0	36.0	150.00	0.620	6.00	●
SCD 032-100-060 IXC30	3.20	100.00	105.0	36.0	150.00	0.660	6.00	●
SCD 033-130-060 IXC30	3.30	130.00	135.0	36.0	185.00	0.680	6.00	●
SCD 035-130-060 IXC30	3.50	130.00	135.0	36.0	185.00	0.730	6.00	●
SCD 038-129-060 IXC30	3.80	129.00	135.0	36.0	185.00	0.790	6.00	●
SCD 040-129-060 IXC30	4.00	129.00	135.0	36.0	185.00	0.830	6.00	●
SCD 042-129-060 IXC30	4.20	129.00	135.0	36.0	185.00	0.870	6.00	●
SCD 045-158-060 IXC30	4.50	158.00	165.0	36.0	215.00	0.930	6.00	●
SCD 047-158-060 IXC30	4.70	158.00	165.0	36.0	215.00	0.970	6.00	●
SCD 048-158-060 IXC30	4.80	158.00	165.0	36.0	215.00	0.990	6.00	●
SCD 050-158-060 IXC30	5.00	158.00	165.0	36.0	215.00	1.040	6.00	●
SCD 055-172-060 IXC30	5.50	172.00	180.0	36.0	230.00	1.140	6.00	●
SCD 058-171-060 IXC30	5.80	171.00	180.0	36.0	230.00	1.200	6.00	●
SCD 060-171-060 IXC30	6.00	171.00	180.0	36.0	230.00	1.240	6.00	●
SCD 065-205-080 IXC30	6.50	205.00	215.0	36.0	280.00	1.350	8.00	●
SCD 068-220-080 IXC30	6.80	220.00	230.0	36.0	280.00	1.410	8.00	●
SCD 070-219-080 IXC30	7.00	219.00	230.0	36.0	280.00	1.450	8.00	●
SCD 075-219-080 IXC30	7.50	219.00	230.0	36.0	280.00	1.550	8.00	●
SCD 078-253-080 IXC30	7.80	253.00	265.0	36.0	315.00	1.620	8.00	●
SCD 080-253-080 IXC30	8.00	253.00	265.0	36.0	315.00	1.660	8.00	●
SCD 085-282-100 IXC30	8.50	282.00	295.0	40.0	350.00	1.760	10.00	●
SCD 088-317-100 IXC30	8.80	317.00	330.0	40.0	380.00	1.820	10.00	●
SCD 090-317-100 IXC30	9.00	317.00	330.0	40.0	380.00	1.860	10.00	●
SCD 098-315-100 IXC30	9.80	315.00	330.0	40.0	380.00	2.030	10.00	●
SCD 100-315-100 IXC30	10.00	315.00	330.0	40.0	380.00	2.070	10.00	●

NEW

• Based on DIN 6537 standard • For user guide and cutting conditions, see pages 221-226 • For regrinding instructions, see pages 227-231

SOLIDDRILL

SCD-FNPCD
Solid Carbide Drills with PCD Full Nib Insert for Composite Materials (CFRP) and Stack Machining

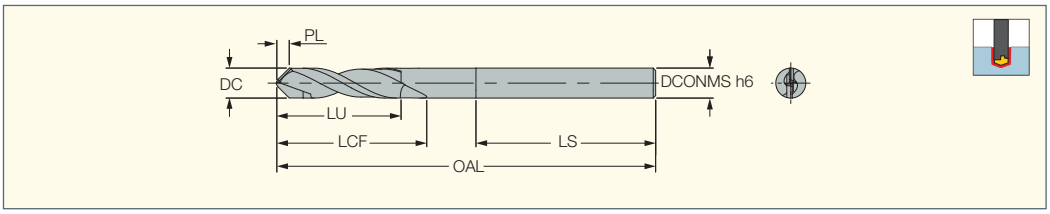


Designation	DC	LU	LCF	LS	OAL	PL	DCONMS
SCD 0330-025-040 FNPCD	3.30	25.00	30.0	36.0	70.00	3.000	4.00
SCD 0419-028-060 FNPCD	4.19	28.00	34.3	34.0	70.00	2.100	6.00
SCD 0485-028-060 FNPCD	4.85	28.00	35.3	34.0	70.00	2.430	6.00
SCD 0637-032-080 FNPCD	6.37	32.00	41.6	32.0	76.00	3.190	8.00

• For user guide and cutting conditions, see pages 221-226 • For regrinding instructions, see pagess 227-231

SOLIDDRILL

SCD-WPCD
Solid Carbide Drills with PCD Insert for Composite Materials (CFRP) and Stack Machining

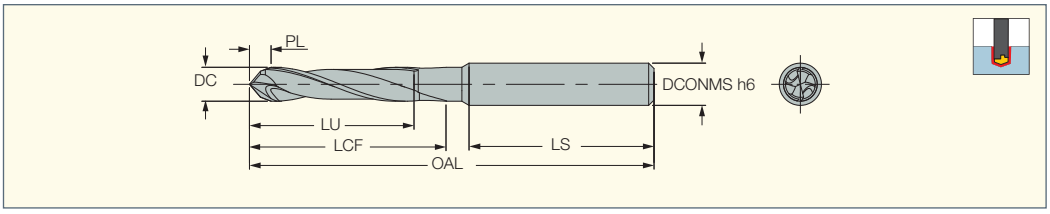


Designation	DC	LU	LCF	LS	OAL	PL	DCONMS
SCD 0419-028-060 WPCD	4.19	28.00	34.3	34.0	70.00	2.100	6.00
SCD 0485-028-060 WPCD	4.85	28.00	35.3	34.0	70.00	2.430	6.00
SCD 0637-032-080 WPCD	6.37	32.00	41.6	32.0	75.00	3.190	8.00
SCD 0794-032-080 WPCD	7.94	32.00	43.9	30.0	75.00	3.970	8.00
SCD 1000-040-100 WPCD	10.00	40.00	50.0	40.0	84.00	5.000	10.00
SCD 1200-045-120 WPCD	12.00	45.00	55.0	40.0	89.00	6.000	12.00

• For user guide and cutting conditions, see pages 221-226 • For regrinding instructions, see pages 227-231

SOLIDDRILL

SCD-CVD
Solid Carbide Drills with CVD Coating for Composite Materials (CFRP) and Stack Machining

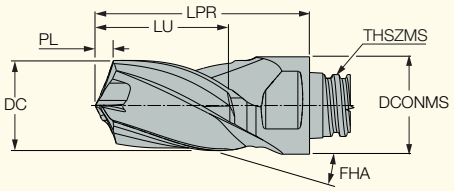


Designation	DC	LU	LCF	LS	OAL	PL	DCONMS
SCD 0330-025-040 CVD	3.30	25.00	30.0	36.0	70.00	3.000	4.00
SCD 0419-028-060 CVD	4.19	28.00	34.0	32.0	70.00	3.500	6.00
SCD 0485-028-060 CVD	4.85	28.00	35.0	32.0	70.00	4.000	6.00
SCD 0637-032-080 CVD	6.37	32.00	42.0	32.0	76.00	5.400	8.00
SCD 0794-032-080 CVD	7.94	32.00	44.0	30.0	76.00	6.700	8.00

• For user guide and cutting conditions, see pages 221-226 • For regrinding instructions, see pages 227-231

SOLIDDRILL
MULTI-MASTER

MM SPD-3T
Three-Flute Exchangeable Solid Carbide Drilling Heads



Designation	Dimensions DC	LU	LPR	PL	FHA	THSZMS	DCONMS	IC908
MM SPD080-08-3T06	8.00	12.10	22.00	1.590	15.0	T06	10.00	•
MM SPD085-09-3T06	8.50	12.20	22.00	1.680	15.0	T06	10.00	•
MM SPD090-09-3T06	9.00	12.30	22.00	1.780	15.0	T06	10.00	•
MM SPD0925-10-3T06	9.25	13.80	22.00	1.830	15.0	T06	10.00	•
MM SPD095-10-3T06	9.50	13.90	22.00	1.870	15.0	T06	10.00	•
MM SPD100-10-3T08	10.00	15.00	27.00	1.970	15.0	T08	12.00	•
MM SPD105-11-3T08	10.50	15.00	27.00	2.050	15.0	T08	12.00	•
MM SPD1075-11-3T08	10.75	15.10	27.00	2.120	15.0	T08	12.00	•
MM SPD110-11-3T08	11.00	15.10	27.00	2.160	15.0	T08	12.00	•
MM SPD1125-12-3T08	11.25	16.20	27.00	2.200	15.0	T08	12.00	•
MM SPD115-12-3T08	11.50	16.20	27.00	2.260	15.0	T08	12.00	•
MM SPD120-12-3T08	12.00	16.60	27.00	2.350	15.0	T08	12.70	•
MM SPD125-13-3T08	12.50	16.60	27.00	2.430	15.0	T08	12.70	•
MM SPD1275-13-3T10	12.75	20.00	33.50	2.500	15.0	T10	16.00	•
MM SPD130-13-3T10	13.00	20.00	33.50	2.540	15.0	T10	16.00	•
MM SPD140-14-3T10	14.00	19.70	33.50	2.730	15.0	T10	16.00	•
MM SPD145-15-3T10	14.50	20.80	33.50	2.810	15.0	T10	16.00	•
MM SPD150-15-3T10	15.00	20.40	33.50	2.930	15.0	T10	16.00	•
MM SPD1525-16-3T10	15.25	20.50	33.50	2.970	15.0	T10	16.00	•
MM SPD155-16-3T10	15.50	20.50	33.50	3.020	15.0	T10	16.00	•
MM SPD160-16-3T12	16.00	25.10	41.00	3.100	15.0	T12	18.43	•

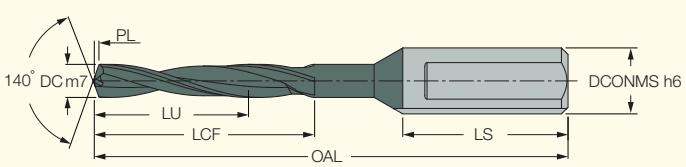
NEW

For holders, keys, tightening torques and clamping instructions, see ISCAR MILLING LINES catalog

• Do not apply lubricant to the threaded connection. • For user guide, see pages 221-226

PICCODRILL

SCD-PICCO 3D
Solid Carbide Drills for Swiss and Small CNC Machines



Designation	Dimensions							IC908
	DC	LU	LCF	LS	OAL	PL	DCONMS	
SCD0118-0551-0236-PICCO3D	3.00	14.00	21.0	15.0	43.00	0.500	6.00	●
SCD 035-014-060 PICCO 3D	3.50	14.00	21.0	15.0	43.00	0.600	6.00	●
SCD 040-017-060 PICCO 3D	4.00	17.00	25.0	15.0	46.00	0.600	6.00	●
SCD 045-017-060 PICCO 3D	4.50	17.00	25.0	15.0	46.00	0.700	6.00	●
SCD0197-0787-0236-PICCO3D	5.00	20.00	29.0	15.0	46.00	0.800	6.00	●
SCD 055-020-060 PICCO 3D	5.50	20.00	29.0	15.0	46.00	0.900	6.00	●
SCD 060-020-060 PICCO 3D	6.00	20.00	29.0	15.0	46.00	0.900	6.00	●
SCD0256-0945-0315-PICCO3D	6.50	24.00	35.0	19.0	62.00	1.000	8.00	●
SCD 065-024-080 PICCO 3D	6.50	24.00	35.0	19.0	62.00	1.000	8.00	●
SCD 070-024-080 PICCO 3D	7.00	24.00	35.0	19.0	62.00	1.100	8.00	●
SCD 075-029-080 PICCO 3D	7.50	29.00	42.0	19.0	62.00	1.200	8.00	●
SCD 080-029-080 PICCO 3D	8.00	29.00	42.0	19.0	62.00	1.300	8.00	●

NEW

• For user guide and cutting conditions, see pages 221-226 • For regrinding instructions, see pages 227-231

General Recommendations

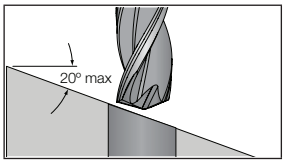
- It is mostly recommended to use an external coolant jet at a minimum pressure of 10 to15 bar during drilling for prolonged tool life and to facilitate chip evacuation.
- When machining alloy and stainless steel, it is mostly recommended to use **ER JET** 2 collet to prolong tool life and prevent built-up edge.
- Semi-synthetic or emulsion lubricants should be used to extend tool life.
- Drilling stainless steel or high temperature alloys requires high oil pressure and 7-15% mineral or vegetable based oil emulsion for prolonged tool life. Dry machining may badly affect hole quality and drill tool life.
- In case of chip evacuation problems or when poor surface finish is obtained, it is most recommended to use pecking cycle.
- For optimal performance, it is recommended to use the 3 flute, 5xD solid carbide drills in rotating or stationary applications with a maximum of 0.02mm runout. Larger runout will reduce drill performance and badly affect hole quality.
- The solid drills can be clamped into any of **ISCAR**'s tooling systems such as:

1 Collet chucks
2 Thermal shrink chucks
3 **ISCAR MAXIN** power chucks

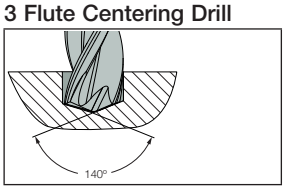
- It is recommended to use the solid drills in **SHORT-IN** adapters with AA super precision collets to obtain a high level of hole quality and prolonged drill tool life. Balanceable adapters should be used for applications above 10,000 RPM in order to minimize vibrations and gain a reliable and prolonged cutting edge life.
- Interrupted cut applications reduce hole accuracy, quality and drill life.
- See pages 225-226 for troubleshooting guide for common problems.
- Solid carbide drills can be used on a wide range of materials and different cutting conditions with high reliability and performance repeatability. This can reduce tool inventory and logistic costs.

3 Flute Solid Carbide Drills

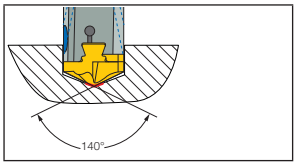
Three flute drills are used extensively on nonferrous metals because of their excellent performance on these materials. These solid carbide drills were designed with a special cutting edge geometry that can be used on a broad spectrum of materials including steel, stainless steel, high temperature alloys, cast iron and nonferrous materials. Their dimensions are according to DIN 6537 standard.
The SCCD drills are manufactured in m7 diameter tolerance, with cylindrical shanks according to DIN 6535 HA standard, 30° spiral flute helix, 140° head point angle and a reinforced web taper.
The drills can be used on surface applications of up to 20° sloped entry/exit. (In this case, the drill should be held in a thermal shrink collet or a **MAXIN** power chuck). The 3 flute solid carbide drills cannot be used on radial drill adjustment diameter devices such as our **FIT-BORE** adapter.



3 Flute Centering Drill



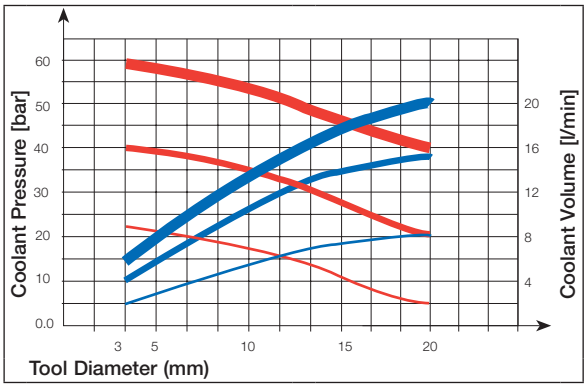
Followed by a CHAM-DRILL SUMO-CHAM/CHAM-GUN



Advantages

The drills provide higher hole cylindricity, roundness, straightness, concentricity and surface finish when compared to 2 flute solid carbide drills.
The 3 flute solid carbide drills with a 140° point head can serve as centering drills for **CHAM-DRILL**/ **SUMO-CHAM** or **CHAM-GUN** if necessary.

Coolant Pressure and Volume Recommendations

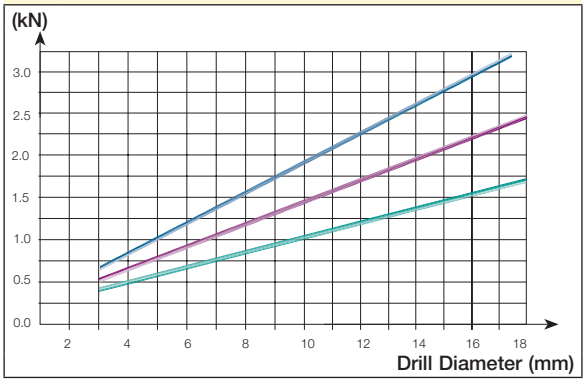


Required Coolant Pressure	Required Coolant Volume
Optimum pressure	Optimum volume
Good pressure	Good volume
Minimum pressure	Minimum pressure

Required coolant pressure and volume for SCD drills with internal coolant spiral nozzles.

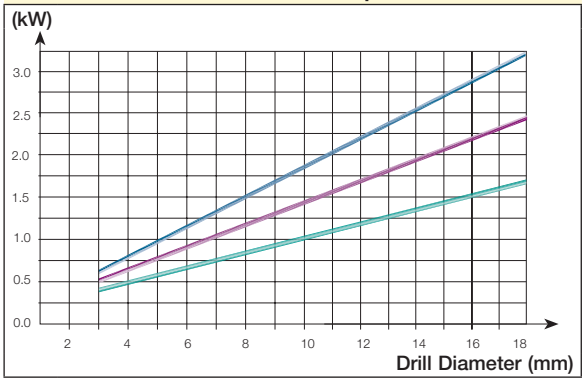
Force and Power Characteristics

Feed Force



f=0.30mm/rev
f=0.25mm/rev
f=0.20mm/rev

Net Power Consumption



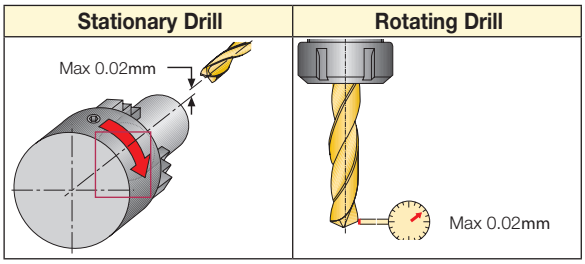
f=0.30mm/rev
f=0.25mm/rev
f=0.20mm/rev

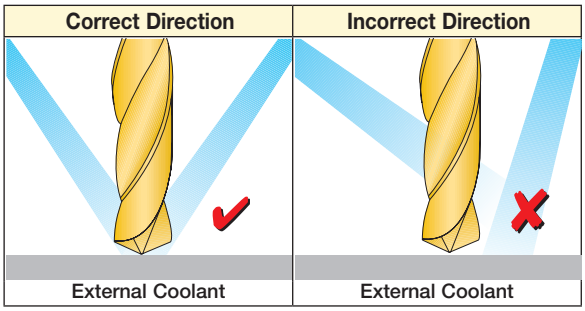
Material: SAE 4340
Speed: 100 m/min

Values may change for different materials and drilling conditions.

Stability

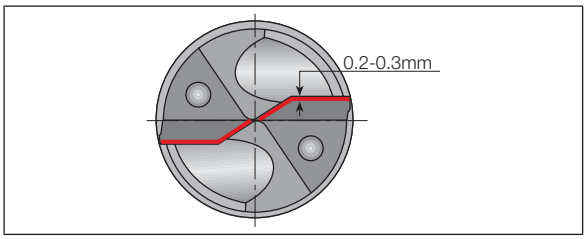
The stability of the application volume is important in order to obtain the very best tool life and hole accuracy. Check the condition of the machine spindle, fixture and fixturing of the component to secure maximum stability and rigidity. Unstable conditions can cause tool breakage.





Tool Life

Drills should not be used with flank wear exceeding 0.2-0.3mm.



Recommended Machining Conditions for Solid Carbide Drills D=0.8-2.9mm

ISO	Material		Condition	Tensile Strength [N/mm²]	Hardness HB	Material No.(1)	Cutting Speed V_c (m/min)	Feed (mm/rev) vs. Drill Diameter			
								Ø0.8-1.4	Ø1.5-1.9	Ø2-2.4	Ø2.5-2.9
P	non-alloy steel and cast steel, free cutting steel	<0.25% C	annealed	420	125	1	50-100	0.03-0.10	0.05-0.15	0.07-0.17	0.08-0.20
		≥0.25% C	annealed	650	190	2	40-100	0.03-0.10	0.05-0.15	0.07-0.17	0.08-0.20
		<0.55% C	quenched and tempered	850	250	3	40-85	0.03-0.10	0.05-0.15	0.07-0.17	0.08-0.20
		≥0.55% C	annealed	750	220	4	40-85	0.03-0.10	0.05-0.15	0.07-0.17	0.08-0.20
			quenched and tempered	1000	300	5	40-85	0.03-0.10	0.05-0.15	0.07-0.17	0.08-0.20
	low alloy and cast steel (less than 5% of alloying elements)		annealed	600	200	6	40-75	0.03-0.10	0.05-0.15	0.07-0.17	0.08-0.20
			quenched and tempered	930	275	7	40-60	0.03-0.10	0.05-0.15	0.07-0.17	0.08-0.20
				1000	300	8	40-60	0.03-0.10	0.05-0.15	0.07-0.17	0.08-0.20
				1200	350	9	40-60	0.03-0.10	0.05-0.15	0.07-0.17	0.08-0.20
	high alloyed steel, cast steel and tool steel		annealed	680	200	10	30-50	0.03-0.10	0.05-0.15	0.07-0.17	0.08-0.20
			quenched and tempered	1100	325	11	30-50	0.03-0.10	0.05-0.15	0.07-0.17	0.08-0.20
	stainless steel and cast steel		ferritic / martensitic	680	200	12	20-35	0.03-0.06	0.04-0.08	0.05-0.10	0.06-0.10
			martensitic	820	240	13	20-35	0.03-0.06	0.04-0.08	0.05-0.10	0.06-0.10
M	stainless steel and cast steel		austenitic, duplex	600	180	14	20-35	0.03-0.06	0.04-0.08	0.05-0.10	0.06-0.10
K	gray cast iron (GG)		ferritic / pearlitic		180	15	40-80	0.03-0.10	0.05-0.15	0.07-0.17	0.08-0.20
			pearlitic / martensitic		260	16	40-70	0.03-0.10	0.05-0.15	0.07-0.17	0.08-0.20
	nodular cast iron (GGG)		ferritic		160	17	40-95	0.03-0.10	0.05-0.15	0.07-0.17	0.08-0.20
			pearlitic		250	18	50-95	0.03-0.10	0.05-0.15	0.07-0.17	0.08-0.20
	malleable cast iron		ferritic		130	19	40-80	0.03-0.10	0.05-0.15	0.07-0.17	0.08-0.20
			pearlitic		230	20	40-80	0.03-0.10	0.05-0.15	0.07-0.17	0.08-0.20
N	aluminum-wrought alloys		not hardenable		60	21	80-150	0.03-0.10	0.05-0.15	0.07-0.17	0.08-0.20
			hardenable		100	22	80-150	0.03-0.10	0.05-0.15	0.07-0.17	0.08-0.20
	aluminum-cast alloys	≤12% Si	not hardenable		75	23	80-150	0.03-0.10	0.05-0.15	0.07-0.17	0.08-0.20
			hardenable		90	24	80-150	0.03-0.10	0.05-0.15	0.07-0.17	0.08-0.20
		>12% Si	high temperature		130	25	80-150	0.03-0.10	0.05-0.15	0.07-0.17	0.08-0.20
	copper alloys	>1% Pb	free cutting		110	26	80-150	0.03-0.10	0.05-0.15	0.07-0.17	0.08-0.20
			brass		90	27	50-150	0.05-0.12	0.07-0.15	0.08-0.18	0.09-0.18
			electrolytic copper		100	28	60-160	0.05-0.15	0.07-0.18	0.08-0.20	0.09-0.22
	non metallic		duroplastics, fiber plastics			29					
			hard rubber			30					
S	high temperature alloys	Fe based	annealed		200	31	10-20	0.02-0.04	0.03-0.06	0.04-0.07	0.04-0.08
			hardened		280	32	10-20	0.02-0.04	0.03-0.06	0.04-0.07	0.04-0.08
		Ni or Co based	annealed		250	33	10-20	0.02-0.04	0.03-0.06	0.04-0.07	0.04-0.08
			hardened		350	34	10-20	0.02-0.04	0.03-0.06	0.04-0.07	0.04-0.08
			cast		320	35	10-20	0.02-0.04	0.03-0.06	0.04-0.07	0.04-0.08
	titanium alloys		pure	RM 400		36	10-20	0.02-0.03	0.02-0.03	0.03-0.04	0.03-0.04
			alpha+beta alloys, hardened	RM 1050		37	10-20	0.02-0.03	0.02-0.03	0.03-0.04	0.03-0.04
H	hardened steel		hardened		55 HRC	38	10-20	0.01-0.02	0.01-0.02	0.02-0.03	0.02-0.03
			hardened		60 HRC	39	10-20	0.01-0.02	0.01-0.02	0.02-0.03	0.02-0.03
	chilled cast iron		cast		400	40	10-20	0.01-0.02	0.01-0.02	0.02-0.03	0.02-0.03
	cast iron		hardened		55 HRC	41	10-20	0.01-0.02	0.01-0.02	0.02-0.03	0.02-0.03

- For drill with lengh to diameter ratio larger than 6xD, reduce feed by 20%
- If the RPM exceeds 10,000, a dynamic balance should be done to the system
- Maximal radial and axial runout should not exceed 0.01mm
- As a starting value, the middle of the recommended machining range should be used, then (according to wear results), conditions can be changed in order to optimize performance.

(1) For workpiece materials list, see pages 542-637

Recommended Machining Conditions for Solid Carbide Drills D=3.0-20.0mm

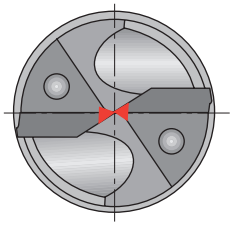
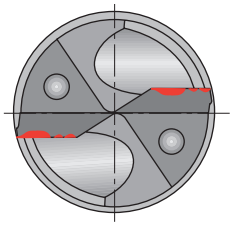
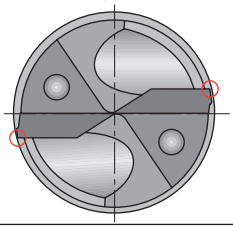
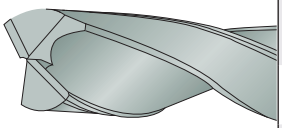
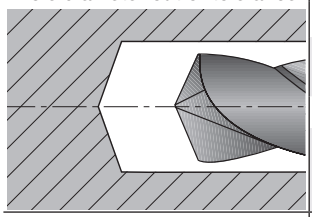
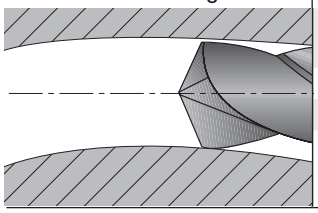
ISO	Material		Condition	Tensile Strength [N/mm²]	Hardness HB	Material No.(1)	Cutting Speed V_c m/min	Feed (mm/rev) vs. Drill Diameter				
								Ø3-5	Ø5.1-8	Ø8.1-12	Ø12.1-16	Ø16.1-20
P	non-alloy steel and cast steel, free cutting steel	<0.25% C	annealed	420	125	1	80-120	0.10-0.18	0.15-0.25	0.2-0.30	0.20-0.35	0.25-0.40
		≥0.25% C	annealed	650	190	2	80-110	0.10-0.18	0.15-0.25	0.2-0.30	0.20-0.35	0.25-0.40
		<0.55% C	quenched and tempered	850	250	3	70-100	0.10-0.20	0.15-0.28	0.2-0.35	0.20-0.38	0.25-0.42
		≥0.55% C	annealed	750	220	4						
			quenched and tempered	1000	300	5						
	low alloy and cast steel (less than 5% of alloying elements)		annealed	600	200	6	70-90	0.10-0.18	0.15-0.25	0.2-0.30	0.20-0.35	0.25-0.40
			quenched and tempered	930	275	7						
				1000	300	8	60-80	0.10-0.18	0.15-0.25	0.2-0.30	0.20-0.35	0.25-0.40
				1200	350	9	50-70	0.10-0.20	0.15-0.28	0.2-0.35	0.20-0.38	0.25-0.42
	high alloyed steel, cast steel and tool steel		annealed	680	200	10	60-80	0.10-0.20	0.15-0.28	0.18-0.35	0.20-0.38	0.25-0.42
			quenched and tempered	1100	325	11	50-70	0.10-0.15	0.12-0.20	0.14-0.25	0.16-0.30	0.18-0.32
	stainless steel and cast steel		ferritic / martensitic	680	200	12	25-75	0.04-0.10	0.05-0.15	0.05-0.18	0.08-0.20	0.10-0.20
			martensitic	820	240	13	25-75	0.04-0.10	0.05-0.15	0.05-0.18	0.08-0.20	0.10-0.20
M	stainless steel and cast steel		austenitic, duplex	600	180	14	25-75	0.04-0.10	0.05-0.15	0.05-0.18	0.08-0.20	0.10-0.20
K	gray cast iron (GG)		ferritic / pearlitic		180	15	85-105	0.15-0.25	0.20-0.35	0.25-0.45	0.30-0.50	0.35-0.55
			pearlitic / martensitic		260	16	75-90	0.15-0.25	0.20-0.35	0.25-0.45	0.30-0.50	0.35-0.55
	nodular cast iron (GGG)		ferritic		160	17	65-80	0.12-0.20	0.15-0.25	0.20-0.35	0.25-0.40	0.30-0.45
			pearlitic		250	18						
	malleable cast iron		ferritic		130	19						
			pearlitic		230	20						
N	aluminum-wrought alloys		not hardenable		60	21	70-300	0.10-0.25	0.15-0.35	0.25-0.45	0.30-0.50	0.35-0.55
			hardenable		100	22	70-200					
	aluminum-cast alloys	≤12% Si	not hardenable		75	23	70-300	0.07-0.18	0.12-0.25	0.20-0.35	0.25-0.45	0.30-0.50
			hardenable		90	24						
		>12% Si	high temperature		130	25						
	copper alloys	>1% Pb	free cutting		110	26						
			brass		90	27						
			electrolytic copper		100	28						
	non metallic		duroplastics, fiber plastics			29						
			hard rubber			30						
S	high temperature alloys	Fe based	annealed		200	31						
			hardened		280	32						
		Ni or Co based	annealed		250	33						
			hardened		350	34						
			cast		320	35						
	titanium alloys		pure	RM 400		36						
			alpha+beta alloys, hardened	RM 1050		37	15-35	0.02-0.07	0.04-0.10	0.06-0.12	0.08-0.15	0.08-0.18
H	hardened steel		hardened		55 HRC	38	40-70	0.06-0.10	0.08-0.12	0.10-0.14	0.12-0.16	0.14-0.18
			hardened		60 HRC	39						
	chilled cast iron		cast		400	40						
	cast iron		hardened		55 HRC	41						

As a starting value, the middle of the recommended machining range should be used, then (according to wear results), conditions can be changed in order to optimize performance.

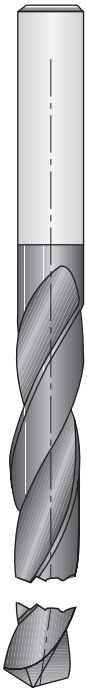
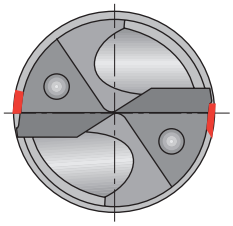
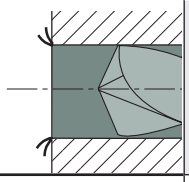
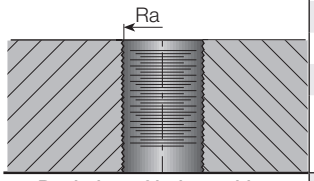
- When using external coolant supply only, reduce cutting speed by 10%
- Use internal coolant supply when machining austenitic stainless steel

(1) For workpiece materials list, see pages 542-637

Troubleshooting

Problem	Cause	Solution
Chipping on the chisel edge 	• Poor clamping of the chuck	• Check the clamping. Use hydraulic clamping chuck, maxin power chuck or a shrink system.
	• Unsuitable cutting conditions	• Decrease feed, increase coolant pressure.
	• Chisel runout	• Check or replace the clamping adaptation.
	• Workpiece movement	• Increase workpiece chucking force.
Chipping on the cutting edges / built-up edge 	• Poor clamping of the chuck	• Check the clamping. Use hydraulic clamping chuck, maxin power chuck or a shrink system.
	• Unsuitable cutting conditions	• Increase cutting speed, reduce feed rate.
	• Insufficient coolant	• Check cooling lubricant. Increase coolant pressure. In the case of external coolant supply, improve jet direction and add cooling jets.
	• Rough application	• Reduce feed rate by 30-50% during entry and exiting.
Excessive wear on the cutting corners 	• Insufficient coolant	• Check cooling lubricant. Increase coolant pressure. In the case of external coolant supply, improve jet direction and add coolant jets.
	• Large runout	• Check if the runout is within 0.02mm T.I.R. (radial & axial)
	• Unsuitable cutting conditions	• Reduce cutting speed, increase feed.
	• Rough application	• Reduce feed rate by 30-50% during entry and exit.
	• Poor clamping of the chuck	• Check the clamping. Use hydraulic clamping chuck, maxin power chuck or a shrink system.
Chipping on the lands 	• Workpiece movement	• Increase workpiece chucking force.
	• Insufficient coolant	• Check cooling lubricant. Increase coolant pressure. In the case of external coolant supply, improve jet direction and add coolant jets.
	• Wrong drill	• Check drill type, drilling depth, cooling system and workpiece material.
	• Unsuitable cutting conditions	• Increase feed. When spot drilling, reduce feed.
Hole diameter out of tolerance 	• Unsuitable cutting conditions	• If hole size is too large, increase cutting speed or reduce feed. If hole size is too small, reduce cutting speed or increase feed.
	• Poor clamping of the chuck	• Check the clamping. Use hydraulic clamping chuck, maxin power chuck or a shrink system.
	• Large runout	• Make sure that the drill's runout is within 0.02mm (radial & axial).
	• Worn out center point (chisel)	• Regrind cutting edge or replace the drill.
Hole not straight 	• Insufficient chip evacuation	• Use pecking cycle.
	• Poor clamping of the chuck	• Check the clamping. Use hydraulic clamping chuck, maxin power chuck or a shrink system.
	• Workpiece rigidity	• Increase workpiece chucking force.
	• Worn out drill center point (chisel)	• Regrind cutting edge.
	• Unsuitable cutting conditions	• Increase feed. When spot drilling, reduce feed.

Troubleshooting

Problem	Cause	Solution
Drill breakage 	• Poor clamping of the chuck	• Check the clamping. Use hydraulic clamping chuck, maxin power chuck or a shrink system.
	• Workpiece movement	• Increase workpiece chucking force.
	• Wrong drill	• Check drill type and drilling depth, cooling system and workpiece material.
	• Insufficient coolant	• Check cooling lubricant. Increase coolant pressure. In the case of external coolant supply, improve jet direction and add cooling jets.
	• Unsuitable cutting conditions	• Reduce feed.
	• Worn out drill center point (chisel)	• Regrind cutting edge.
	• Insufficient chip evacuation	• Use pecking cycle.
Chipping on the cutting corners 	• Poor clamping of the chuck	• Check the clamping and adaptation. Use hydraulic clamping chuck, maxin power chuck or a shrink system.
	• Workpiece movement	• Increase workpiece chucking force.
	• Wrong drill	• Check drill type and drilling depth, cooling system and workpiece material. Possibly use longer drill.
	• Insufficient coolant	• Check cooling lubricant. Increase coolant pressure. In the case of external coolant supply, improve jet direction and add cooling jets.
	• Unsuitable cutting conditions	• Check cutting parameters, and possibly reduce feed.
	• Worn out or broken cutting corner	• Replace drill or regrind cutting edge.
Problem: Burrs on exit 	• Unsuitable cutting conditions	• Reduce feed by 30-50% during exit.
	• Worn out drill	• Replace drill.
Rough surface finish 	• Unsuitable cutting conditions	• Adjust feed to improve chip flow.
	• Large runout	• Make sure that the drill's runout is within 0.02mm (radial & axial).
	• Chip jamming	• Reduce cutting speed.
		• Increase coolant pressure.
		• Apply pecking procedure.
Deviation of hole position	• Large runout	• Make sure that the drill runout is within 0.02mm (radial & axial).
	• Poor stability	• Check and improve drill and workpiece clamping rigidity.
	• Rough application	• When drilling hard materials or sloped surfaces, reduce feed by 30-50% during entrance.
		• Use a short pilot drill with 140° point angle.

Regrinding Instructions

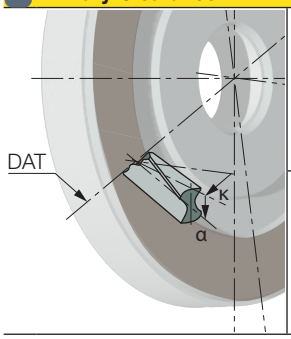
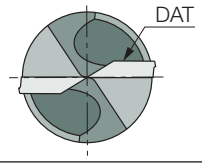
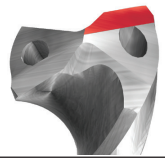
Recommendations:

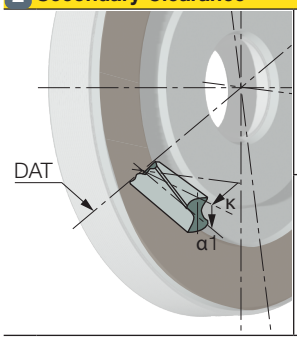
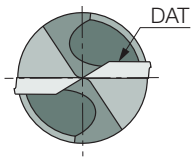
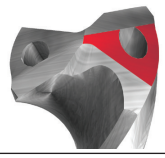
1 After mounting on the spindle, the wheel must be balanced and should rotate with a runout of less than 0.01mm.
2 Optimal grain size: FEPA grit designation - D46, ANSI US Standard Mesh - 325/400.
3 Grain concentration: C75-C100 (3.3-4.4 carat/cm^3) (54.1-72.1 carat/in^3).
4 Grinding diamond wheel bond: synthetic resin.
5 Direct the coolant stream (synthetic oil) directly into the treatment area.
6 For each grinding operation, rotate the drill 180° (for 3 flutes - 120°) and repeat the grinding procedure.

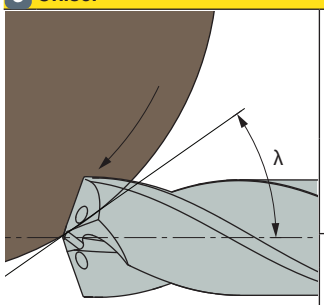
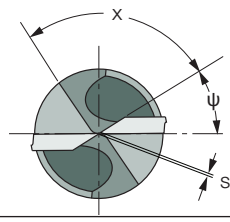
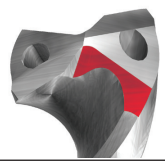
α	clearance angle, °
α1	clearance angle 1, °
κ	cutting edge angle, °
λ	rellef angle, °
χ	chisel edge angle, °
ψ	gash angle, °
S	chisel width, mm
D	drill diameter, mm
r	rounding radius, mm
L	chamfer length, mm
A	chamfer angle, °
R	sharp edge radius, mm

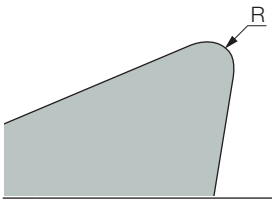
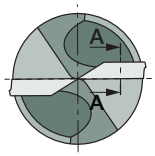
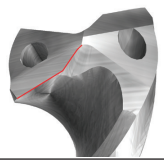
Regrinding Instructions

Working Operations

	SCD-AP / ACP			SCDT		SCD-AH	
1 Primary Clearance	D Range	κ°	α°	κ°	α°	κ°	α°
 	0.8-6.0	20	7	20	4-6	20	4-6
	> 6.1	20	10				

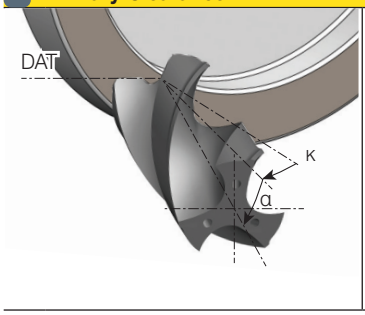
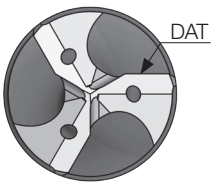
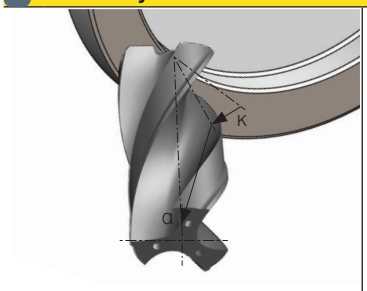
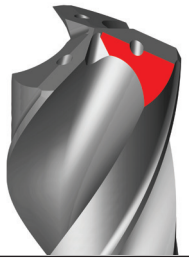
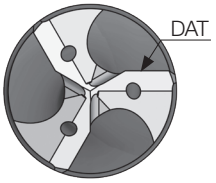
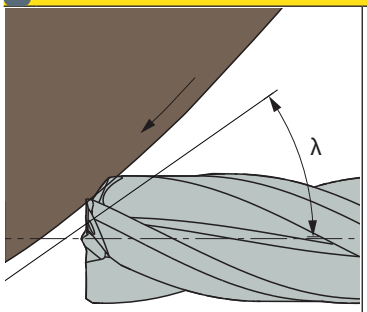
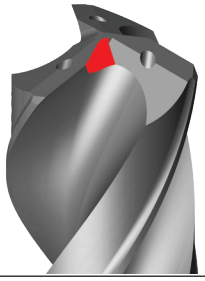
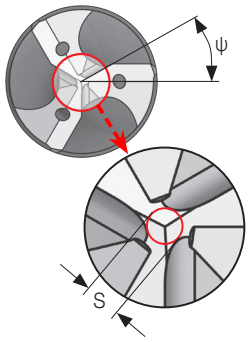
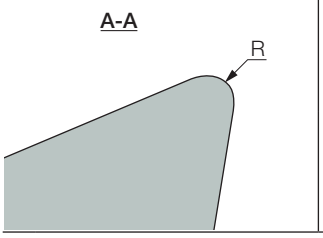
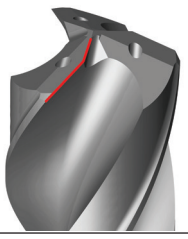
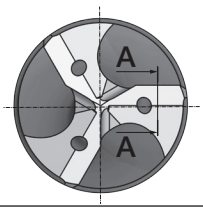
2 Secondary Clearance	κ°	α1°	κ°	α1°	κ°	α1°
  	20	7	20	14-16	20	25

3 Chisel	D Range	λ°	x°	S	λ°	ψ°	S	λ°	ψ°	S
 	3.0-4.8	35	100	0	39-41	30-33	0.04×D	39-41	30-33	0.04×D
	4.9-10.0		105							
	10.1-20.0		95							

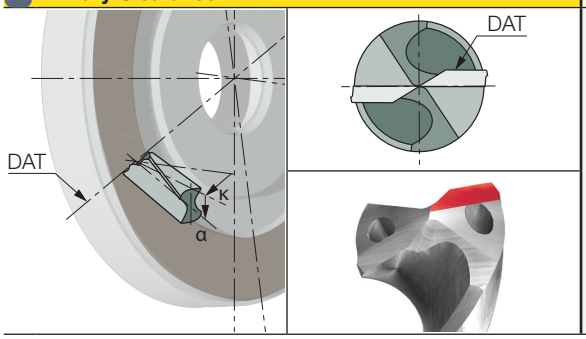
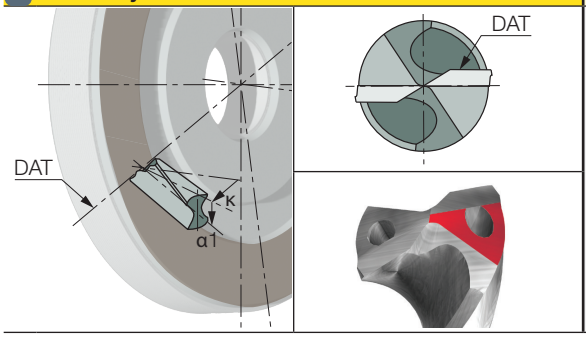
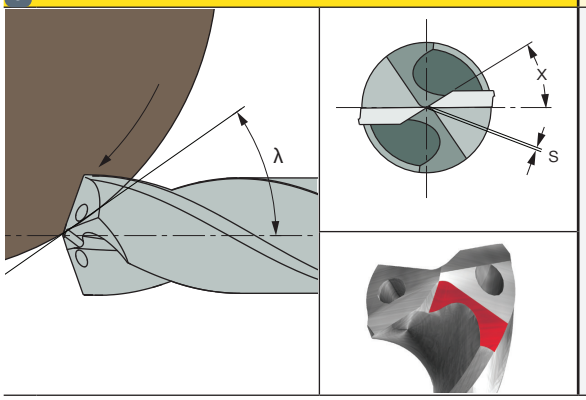
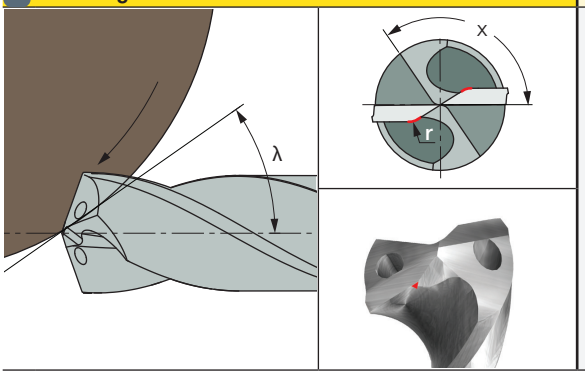
4 Edge Preparation (Honing)	D Range	R	R	R
A-A  	0.8-6.0	0.02	0.01-0.02	0.01-0.02
	6.1-18.0	0.03		
	18.1>UP	0.04		

Regrinding Instructions

Working Operations

	SCCD - 3 Flute	
1 Primary Clearance	**κ°**	**α°**
 	20	10
2 Secondary Clearance	**κ°**	**α1°**
  	20	25
3 Chisel	**λ°**	**ψ°**	**S**
  	30	30	0.25...0.55
4 Edge Preparation (Honing)	**D Range**	**R**
  	4.0-6.0	0.035 ... 0.045
	6.01-12.0	0.045 ... 0.055

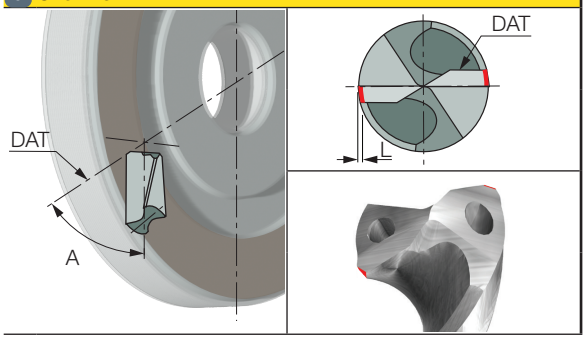
Regrinding Instructions

Working Operations			SCD-SXC		SCD-IXC	
1 Primary Clearance			κ°	α°	κ°	α°
			22.5	12	22.5	12
2 Secondary Clearance			κ°	α1°	κ°	α1°
			22.5	32	22.5	32
3 Chisel			λ°	x°	S	λ°	x°	S
			35	30	D×0.02	35	30	D×0.02
4 Rounding Radius			λ°	x°	S	λ°	x°	S
			6	115	D×0.5	6	115	D×0.5

Regrinding Instructions (Continued)

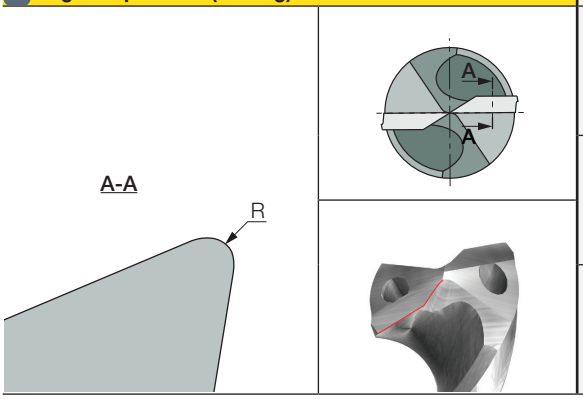
Working Operations

5 Chamfer



SCD-SXC		SCD-IXC	
D Range	L	D Range	A°
3.0 ... 6.0	$0.1^{+0.1}$	3.0 ... 6.0	45
6.01 ... 10.0	$0.2^{+0.1}$	6.01 ... 10.0	45
10.01 ... 16.0	$0.3^{+0.1}$	10.01 ... 16.0	45
16.01 ... 20.0	$0.4^{+0.1}$	16.01 ... 20.0	45

6 Edge Preparation (Honing)

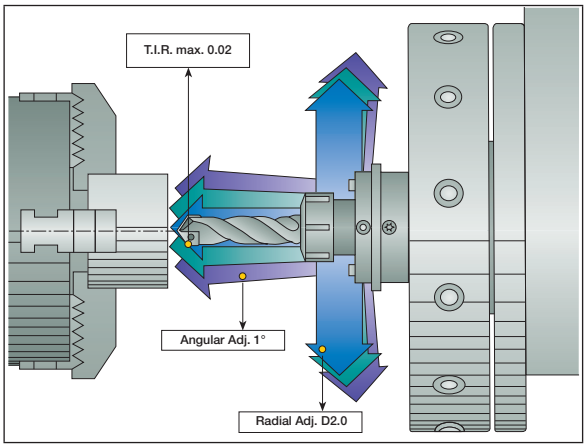


D Range	R	D Range	R
3.0 ... 6.0	0.020 ... 0.030	3.0 ... 6.0	0.030 ... 0.045
6.01 ... 12.0	0.030 ... 0.045	6.01 ... 12.0	0.035 ... 0.045
12.01 ... 20.0	0.035 ... 0.050	12.01 ... 20.0	0.040 ... 0.060

GYRO Auxiliary Devices for Lathe Machines

Designed to Correct Misalignment on Stationary Operation

Drills can be used on sloped surfaces up to 6°. When drilling sloped surfaces of more than 6°, reduce feed by 30-50% during penetration of up to 5mm depth, or use a spot or pre-hole drill to avoid drill deviation or poor drill performance.



Drilling Calculations

Spindle Speed (min^{-1})

$$n = \frac{v_c \cdot 1000}{\pi \cdot D}$$

Cutting Speed (m/min)

$$v_c = \frac{\pi \cdot D \cdot n}{1000}$$

Speed Feed (mm/min)

$$v_f = f \cdot n$$

Material Removal Rate (cm^3/min)

$$Q = \frac{v_f \cdot \pi \cdot D^2}{4000}$$

Cutting Power Requirement (kW)

$$P_c = \frac{Q}{60000 \cdot \eta} \cdot kc \cdot \sin k$$

Cutting Torque (Nm)

$$M_c = \frac{f \cdot k_c}{1000} \cdot \frac{D^2}{8} \cdot \sin k \cdot km$$

Feed Force (approx.) (N)

$$F_f = 0.63 \cdot \frac{D}{2} \cdot f \cdot kc \cdot \sin k \cdot kf$$

Machining Time (min/piece)

$$T_c = \frac{L+h}{v_f}$$

Machining Cost ($/piece)

$$C_c = \frac{C_{Mh}}{60} \cdot Tc$$

f	Feed, mm/rev
k_c	Material specific force, N/mm^2
h	Distance from drill point to workpiece before feeding, mm
L	Depth of hole, mm
C_{Mh}	Cost/machine hour, $/h
η	Machine efficiency, %
k	Half drill point angle k=90° and sin k=1 for flat bottom drills (like DR-drills, for example), k=700 and sin k=0.94 for 140° -point angle drills etc.

	Drill Geometry Coefficients for Drill Types		
	DCM	DCN	SCD
km	1	0.85	0.85
kf	0.85	0.85	0.85

Example

Drill DR 220-044-25-07-2D-N (Ø22mm) - Material Group No. 4

k_c=2200 N/mm^2 k=90°, sin k=1
v_c=200 m/min C_{Mh}=50 $/h η=0.75
km=1 kf=1 f=0.15mm/rev L=25mm h=10mm

$$n = \frac{v_c \cdot 1000}{\pi \cdot D} \cdot \frac{200 \cdot 1000}{\pi \cdot 22} = 2894\ min^{-1}$$

$$v_f = f \cdot n = 0.15 \cdot 2894 = 434 mm/min$$

$$Q = \frac{v_f \cdot \pi \cdot D_2}{4000} = \frac{434 \cdot 3.14 \cdot 22_2}{4000} = 165\ cm^3/min$$

$$P_c = \frac{Q}{60000 \cdot \eta} \cdot k_c \cdot \sin k =$$

$$= \frac{65}{60000 \cdot 0.75} \cdot 2200 \cdot 1 = 8.06\ kW$$

$$M_c = \frac{f \cdot K_c}{10000} \cdot \frac{D^2}{8} \cdot \sin k =$$

$$= \frac{0.15 \cdot 2200}{10000} \cdot \frac{222}{8} \cdot 1 \cdot 1 = 20\ Nm$$

$$F_f = 0.63 \cdot \frac{D}{2} \cdot f \cdot k_c \cdot \sin k =$$

$$= 0.63 \cdot \frac{22}{2} \cdot 0.15 \cdot 2200 \cdot 1 \cdot 1 = 2286\ N$$

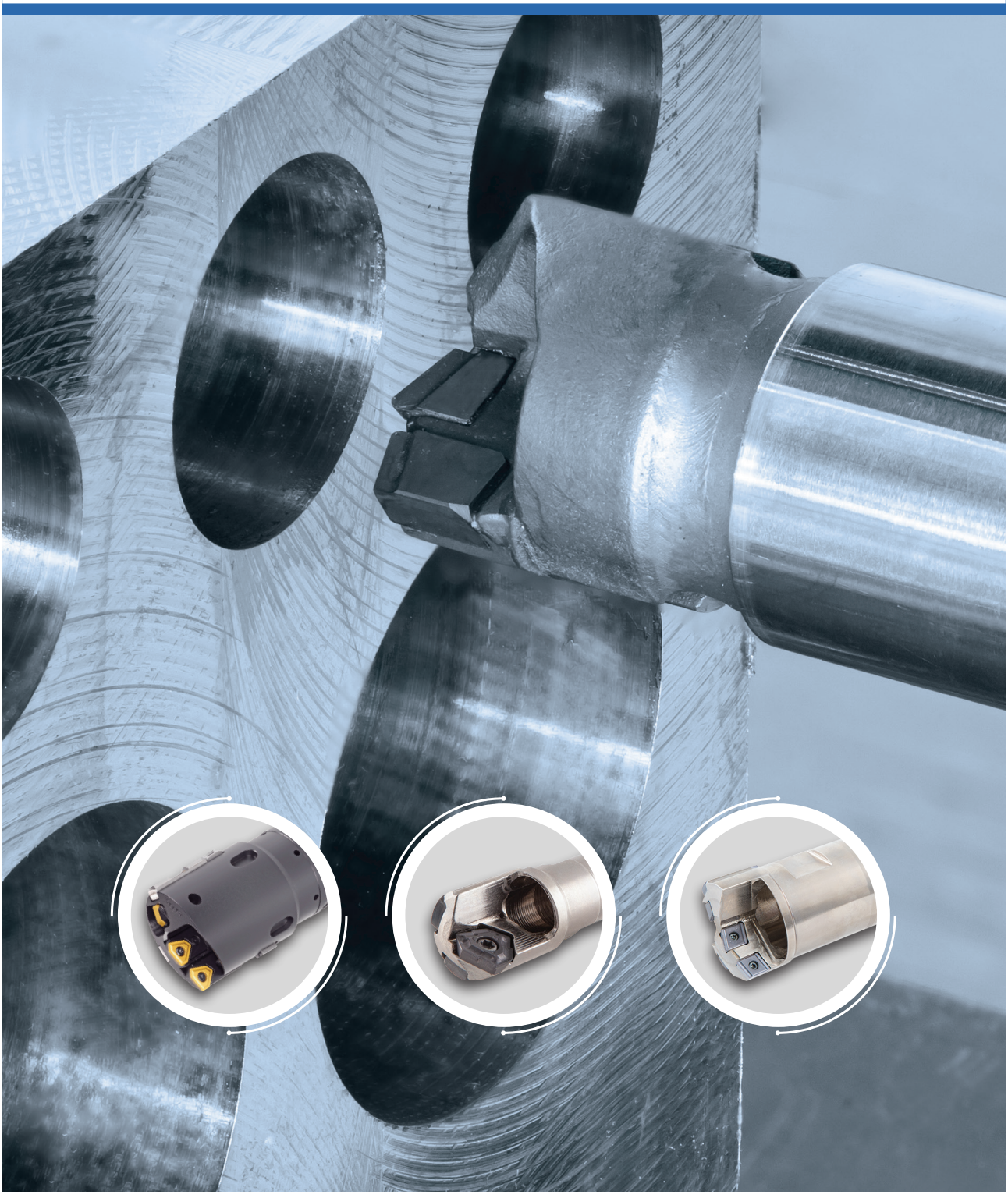
$$T_c = \frac{L+h}{V_f} = \frac{25+10}{434} = 0.08\ min/piece$$

$$C_c = \frac{C_{Mh}}{60} \cdot Tc = \frac{50 \cdot 0.08}{60} = 0.067\ \$/piece$$

Material Specific Cutting Force k_c, N/mm^2

Material Group	k_c Value	Material Group	k_c Value
1	2000	20	1000
2	2100	21	500
3	2150	22	800
4	2200	23	800
5	2200	26	700
6	2100	27	700
7	2100	28	1700
8	2100	31	3000
9	2100	32	3100
10	2500	33	3300
11	3250	34	3300
12	2300	35	3200
13	2800	36	1700
14	2600	37	1700
15	1100	38	4600
16	1300	39	4700
17	1100	40	4600
18	1800	41	4500
19	900		

DEEP DRILLING
BTA SYSTEM



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ISCAR DEEP-DRILL

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Indexable Drill Heads

Applications			STS (Single Tube System)			DTS (Double Tube System)		
			TRIDEEP DEEP DRILLING	FINEBEAM	ISCARDEEPDRILL	TRIDEEP DEEP DRILLING	FINEBEAM	ISCARDEEPDRILL
			DSD-EF/IF...FT	DSD-EF/IF...FB	DSD-EC\IC	DDD...FT	DDD...FB	DDD-EC
Drill Heads for Solid Drilling								
Drill Diameter (mm)			Ø14 - 40	Ø25 - 89	Ø38 - 291.99	Ø18.4 - 40	Ø25 - 65	Ø38 - 183.99
Thread Types	External 4-Start Thread		✓	✓	✓	✓	✓	✓
	Internal Single-Start Thread		✓	✓	✓	-	-	-
Hole Tolerance			IT10	IT10	IT10	IT10	IT10	IT10
Surface Finish Ra (µm)			2	2	3	2	2	3
Machines	Deep Hole Drilling Machines		✓	✓	✓	✓	✓	✓
	NC Machines		-	-	-	✓	✓	✓
	Lathes		-	-	-	✓	✓	✓
	Machining Centers M/C		-	-	-	✓	✓	✓
Workpiece Materials	P	Steel	•••	•••	•••	•••	•••	•••
	M	Stainless	•••	•••	•••	•••	•••	•••
	K	Cast Iron	•••	•••	•••	•••	•••	•••
	N	Non-Ferrous	•••	•••	•••	•••	•••	•••
	S	Superalloys	••	••	••	••	••	••
	H	Hard Materials (≥40HRC)	••	••	••	••	••	••
Insert Type			TOGT	NPHT / NPMT	NPMX / TPMX	TOGT	NPHT / NPMT	NPMX / TPMX
Plus Cartridge and Guide Pad +1mm - +5mm			-	-	✓	-	-	✓
Page			239	248	257	240	250	259

••• (Excellent) ◄—► • (Standard)

Brazed Drill Heads

Applications			STS (Single Tube System)			DTS (Double Tube System)
			DSD-E0	DSD-E1	DSD-E2/E3	DDD-E3
Brazed Drill Heads						
Drill Diameter (mm)			Ø8 - 14.79	Ø12.6 - 20	Ø12.6 - 65	Ø18.4 - 65
Thread Type	External Single-Start Thread		✓	-	-	-
	External 2-Start Thread		-	ø12.6 - 15.59mm	ø12.6 - 15.59mm	-
	External 4-Start Thread		-	ø15.6 - 20mm	ø15.6 - 65mm	✓
Hole Tolerance			IT9	IT9	IT9	IT9
Surface Finish Ra (µm)			2	2	2	2
Machine	Deep Hole Drilling Machines		✓	✓	✓	✓
	NC Machines		-	-	-	✓
	Lathes		-	-	-	✓
	Machining Centers M/C		-	-	-	✓
Workpiece Material	P	Steel	•••	•••	•••	•••
	M	Stainless	•••	•••	•••	•••
	K	Cast Iron	•••	•••	•••	•••
	N	Non-Ferrous	•••	•••	•••	•••
	S	Superalloys	••	••	••	••
	H	Hard Materials (≥40HRC)	••	••	••	••
Page			277	277	279	282

••• (Excellent) ◄► • (Standard)

Indexable Counterboring Heads

Applications			STS (Single Tube System)				DTS (Double Tube System)	
			DSC - EA	DSC - EC	DSC – IA/IC		DDC - EA/EC	
Drill Head								
Drill Diameter (mm)			Ø25 - 39.99	Ø40 - 291.99	Ø25 - 39.99	Ø40 - 293.99	Ø25 - 39.99	Ø40 - 183.99
Thread Type	External 4-Start Thread		✓	✓	-	-	✓	✓
	Internal Single-Start Thread		-	-	✓	✓	-	-
Hole Tolerance			IT10	IT10	IT10	IT10	IT10	IT10
Surface Finish Ra (µm)			2	2	2	2	2	2
Machine	Deep Hole Drilling Machines		✓	✓	✓	✓	✓	✓
	NC Machines		-	-	-	-	✓	✓
	Lathes		-	-	-	-	✓	✓
	Machining Centers M/C		-	-	-	-	✓	✓
Workpiece Material	P	Steel	●●●	●●●	●●●	●●●	●●●	●●●
	M	Stainless	●●●	●●●	●●●	●●●	●●●	●●●
	K	Cast Iron	●●●	●●●	●●●	●●●	●●●	●●●
	N	Non-Ferrous	●●●	●●●	●●●	●●●	●●●	●●●
	S	Superalloys	●●	●●	●●	●●	●●	●●
	H	Hard Materials (≥40HRC)	●●	●●	●●	●●	●●	●●
Insert Type			XPMT	TPMX	XPMT	TPMX	XPMT	TPMX
Plus Cartridge and Guide Pad +1mm - +5mm			-	✓	-	✓	-	✓
Page			289	292	298	302	307	310

●●●(Excellent) ◄——► ●(Standard)

Indexable Trepanning Heads

Applications			STS (Single Tube System)	
			DSTR	
			EC	IC
Drill Head				
Drill Diameter (mm)			Ø100 - 328	Ø100 - 305.99
Thread Type		External 4-Start Thread	✓	-
		Internal Single-Start Thread	-	✓
Hole Tolerance			IT10	IT10
Surface Finish Ra (µm)			2	2
Machine		Deep Hole Drilling Machines	✓	✓
		Lathes	-	-
		Machining Centers M/C	-	-
Workpiece Material	P	Steel	•••	•••
	M	Stainless	•••	•••
	K	Cast Iron	•••	•••
	N	Non-Ferrous	•••	•••
	S	Superalloys	••	••
	H	Hard Materials (≥40HRC)	••	••
Insert Type			TPMX	TPMX
Page			317	319

•••(Excellent) ◄—► •(Standard)

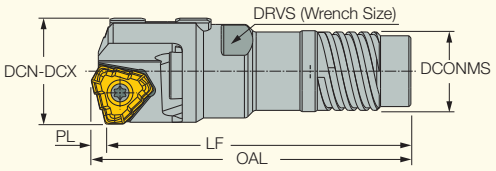
TRI-DEEP Ø14 – 40mm

DSD/DDD...FT

TRIDEEP DEEP DRILLING

DSD-EF-FT

Deep Single Tube Drills with External Thread Connection with Triangular Inserts (16-40 dia.)



Designation	DCN(1)	DCX(2)	LF	OAL	PL	DCONMS	THOD(3)
DSD-EF 14.00-14.60-FT	14.00	14.60	57.00	59.00	2.00	10.60	TS-I02
DSD-EF 14.61-15.59-FT	14.61	15.59	57.00	59.00	2.00	11.60	TS-I03
DSD-EF 15.60-15.99-FT	15.60	15.99	57.00	59.00	2.00	12.60	TS-I0
DSD-EF 16.00-16.70-FT	16.00	16.70	55.00	57.20	2.20	12.60	TS-I0
DSD-EF 16.71-17.70-FT	16.71	17.70	55.00	57.20	2.20	13.60	TS-I1
DSD-EF 17.71-18.90-FT	17.71	18.90	56.00	59.00	3.00	14.50	TS-I2
DSD-EF 18.91-20.00-FT	18.91	20.00	56.00	59.00	3.00	15.50	TS-I3
DSD-EF 20.01-21.80-FT	20.01	21.80	60.00	63.20	3.20	16.00	TS-I4
DSD-EF 21.81-21.99-FT	21.81	21.99	63.50	66.70	3.20	18.00	TS-I5
DSD-EF 22.00-24.10-FT	22.00	24.10	65.50	68.90	3.40	18.00	TS-I5
DSD-EF 24.11-25.00-FT	24.11	25.00	65.50	68.90	3.40	19.50	TS-I6
DSD-EF 25.01-26.40-FT	25.01	26.40	67.50	71.10	3.60	19.50	TS-I6
DSD-EF 26.41-28.00-FT	26.41	28.00	67.50	71.10	3.60	21.00	TS-I7
DSD-EF 28.01-28.70-FT	28.01	28.70	70.00	74.57	4.57	21.00	TS-I7
DSD-EF 28.71-31.00-FT	28.71	31.00	75.00	79.57	4.57	23.50	TS-I8
DSD-EF 31.01-32.00-FT	31.01	32.00	75.00	79.57	4.57	25.50	TS-I9
DSD-EF 32.01-33.30-FT	32.01	33.30	74.50	74.93	5.43	25.50	TS-I9
DSD-EF 33.31-36.20-FT	33.31	36.20	79.50	84.93	5.43	28.00	TS-I10
DSD-EF 36.21-39.60-FT	36.21	39.60	89.50	94.93	5.43	30.00	TS-I11
DSD-EF 39.61-40.00-FT	39.61	40.00	94.50	99.93	5.43	33.00	TS-I12

- Each item in the attached catalog page represents a diameter range • For spare parts, insert information and user guide, see pages 243-247
- Inserts and guide pads to be ordered separately • Ordering example: DSD-EF 16.50-FT • Tube designation: D14.00 - 15.59mm, External 2-start thread
- D15.60 - 40.00mm, External 4-start thread

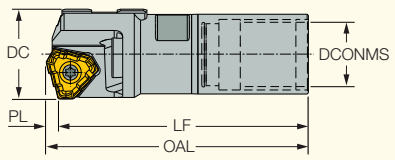
(1) Cutting diameter minimum
(2) Cutting diameter maximum
(3) Tube designation

For inserts, see pages: TOGT-DT (241) • TOGT-GF (241)
For holders, see pages: TS-I** (327)

TRIDEEP DEEP DRILLING

DSD-IF-FT

Deep Single Tube Drills with Internal Single-Start Thread Connection with Triangular Inserts (14.5-40 dia.)



Designation	DCN(1)	DCX(2)	LF	OAL	PL	DCONMS	THID(3)
DSD-IF 14.50-15.00-FT	14.50	15.00	57.00	59.00	1.900	11.50	TS-O0
DSD-IF 15.01-15.50-FT	15.01	15.50	57.00	59.00	1.900	11.80	TS-O1
DSD-IF 15.51-15.99-FT	15.51	15.99	57.00	59.00	1.900	11.80	TS-O2
DSD-IF 16.00-16.00-FT	16.00	16.00	53.50	55.70	2.200	11.10	TS-O_3
DSD-IF 16.01-16.50-FT	16.01	16.50	53.50	55.70	2.200	11.10	TS-O_3
DSD-IF 16.51-17.25-FT	16.51	17.25	53.50	55.70	2.200	11.80	TS-O4
DSD-IF 17.26-18.00-FT	17.26	18.00	53.50	55.70	2.200	12.10	TS-O5
DSD-IF 18.01-19.00-FT	18.01	19.00	53.50	56.50	3.000	12.80	TS-O6
DSD-IF 19.01-19.99-FT	19.01	19.99	53.50	56.70	3.200	13.80	TS-O7
DSD-IF 20.00-21.99-FT	20.00	21.99	58.00	61.20	3.200	14.50	TS-O8
DSD-IF 22.00-24.99-FT	22.00	24.99	60.00	63.40	3.400	16.00	TS-O9
DSD-IF 25.00-26.99-FT	25.00	26.99	65.00	68.60	3.600	17.00	TS-O10
DSD-IF 27.00-28.00-FT	27.00	28.00	65.00	68.60	3.600	19.00	TS-O11
DSD-IF 28.01-29.99-FT	28.01	29.99	75.00	79.57	4.570	22.00	TS-O11
DSD-IF 30.00-31.99-FT	30.00	31.99	75.00	79.57	4.570	24.00	TS-O12
DSD-IF 32.00-32.00-FT	32.00	32.00	75.00	79.57	4.570	26.00	TS-O13
DSD-IF 32.01-33.99-FT	32.01	33.99	74.50	79.90	5.400	26.00	TS-O13
DSD-IF 34.00-36.99-FT	34.00	36.99	89.50	94.90	5.400	27.00	TS-O14
DSD-IF 37.00-39.00-FT	37.00	39.00	94.50	99.90	5.400	30.00	TS-O15
DSD-IF 39.01-39.99-FT	39.01	39.99	94.50	99.90	5.400	30.00	TS-O15
DSD-IF 40.00-40.00-FT	40.00	40.00	99.50	104.90	5.400	33.00	TS-O16

- Note: Each item in the attached catalog page represents a diameter range • For spare parts, insert information and user guide, see pages 243-247
- Inserts and guide pads to be ordered separately • Ordering example: DSD-IF 18.50-FT

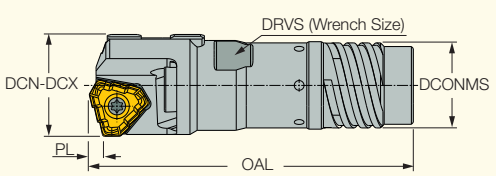
(1) Cutting diameter minimum
(2) Cutting diameter maximum
(3) Tube designation

For inserts, see pages: TOGT-DT (241) • TOGT-GF (241)
For holders, see pages: TS-O** (328)

TRIDEEP DEEP DRILLING

DDD-EF-FT

Deep Double Tube Drills with External 4-Start Thread Connection Carrying Triangular Inserts (18.4-40 dia.)



Designation	DCN(1)	DCX(2)	PL	OAL	DCONMS	THOD(3)	THID(4)
DDD-EF 18.40-20.00-FT	18.40	20.00	3.00	64.00	16.00	TDO-I0	TDI-N0
DDD-EF 20.01-21.80-FT	20.01	21.80	3.20	66.70	18.00	TDO-I1	TDI-N1
DDD-EF 21.81-21.99-FT	21.81	21.99	3.20	66.70	19.50	TDO-I2	TDI-N2
DDD-EF 22.00-24.10-FT	22.00	24.10	3.40	68.90	19.50	TDO-I2	TDI-N2
DDD-EF 24.11-25.00-FT	24.11	25.00	3.40	68.90	21.00	TDO-I3	TDI-N3
DDD-EF 25.01-26.40-FT	25.01	26.40	3.60	71.10	21.00	TDO-I3	TDI-N3
DDD-EF 26.41-28.00-FT	26.41	28.00	3.60	74.10	23.50	TDO-I4	TDI-N4
DDD-EF 28.01-28.70-FT	28.01	28.70	4.60	79.60	23.50	TDO-I4	TDI-N4
DDD-EF 28.71-29.99-FT	28.71	29.99	4.60	79.60	25.50	TDO-I5	TDI-N5
DDD-EF 30.00-31.00-FT	30.00	31.00	4.60	79.60	25.50	TDO-I5	TDI-N5
DDD-EF 31.01-32.00-FT	31.01	32.00	4.60	84.60	28.00	TDO-I6	TDI-N6
DDD-EF 32.01-33.30-FT	32.01	33.30	5.40	84.90	28.00	TDO-I6	TDI-N6
DDD-EF 33.31-36.20-FT	33.31	36.20	5.40	94.90	30.00	TDO-I7	TDI-N7
DDD-EF 36.21-39.00-FT	36.21	39.00	5.40	99.90	33.00	TDO-I8	TDI-N8
DDD-EF 39.01-39.60-FT	39.01	39.60	5.40	99.90	33.00	TDO-I8	TDI-N8
DDD-EF 39.61-40.00-FT	39.61	40.00	5.40	104.90	36.00	TDO-I9	TDI-N9

- Note: Each item in the attached catalog page represents a diameter range. • For spare parts, insert information and user guide, see pages 243-247
- Inserts and guide pads to be ordered separately • Ordering example: DDD-EF 18.50-FT

(1) Cutting diameter minimum
(2) Cutting diameter maximum
(3) Outer tube designation
(4) Inner tube designation

For inserts, see pages: TOGT-DT (241) • TOGT-GF (241)
For holders, see pages: TDO-I (D18.41-65.00) (329)

Universal Marking for Deep Drilling Tools

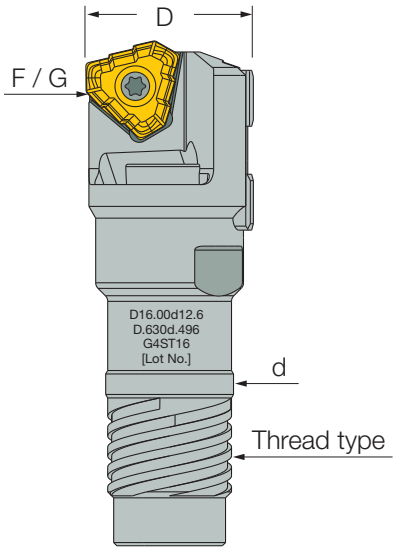
D- Tool diameter
Metric- D16.00
Inch- D.630

d- Pilot diameter
Metric- d12.6
Inch- d.496

Tool style
F- Fixed pocket 3-5 cutting edges
G- Fixed pocket single cutting edge

Thread type
2ST- Two start thread single tube
4ST- Four start thread single tube
1ST- Single start thread single tube
4DT- Four start thread double tube

16- Tube diameter

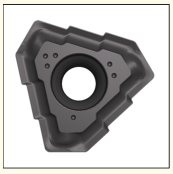


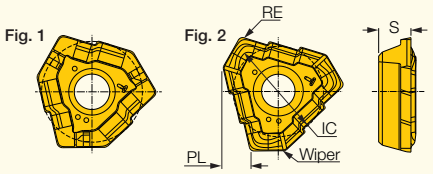
D16.00d12.6
D.630d.496
G4ST16
[Lot No.]

TRIDEEP DEEP DRILLING

TOGT-DT

Deep Drilling Inserts with 3 Chip Splitting Cutting Edges, a Positive Rake Chipbreaker and a Wiper





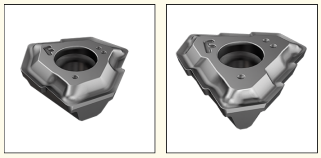
Designation	Dimensions IC	RE	PL	S	Fig.	Tough ↔ Hard IC08	IC908	IC948
TOGT 070304-DT	7.69	0.40	1.95	2.30	1		●	●
TOGT 070304-DT-P	7.69	0.40	1.95	2.30	1	●		
TOGT 080305-DT	8.55	0.50	2.20	2.80	1		●	●
TOGT 080305-DT-P	8.55	0.50	2.20	2.80	1	●		
TOGT 090305-DT	8.32	0.50	3.00	3.00	2		●	●
TOGT 090305-DT-P	8.32	0.50	3.00	3.00	2	●		
TOGT 100305-DT	9.23	0.50	3.20	3.30	2		●	●
TOGT 100305-DT-P	9.23	0.50	3.20	3.30	2	●		
TOGT 110405-DT	10.40	0.50	3.40	3.80	2		●	●
TOGT 110405-DT-P	10.40	0.50	3.40	3.80	2	●		
TOGT 120405-DT	11.59	0.50	3.60	4.30	2		●	●
TOGT 120405-DT-P	11.59	0.50	3.60	4.30	2	●		
TOGT 130408-DT	12.85	0.80	4.57	4.76	2		●	
TOGT 130408-DT-P	12.85	0.80	4.57	4.76	2	●		
TOGT 140510-DT	16.85	1.00	5.43	5.26	2		●	

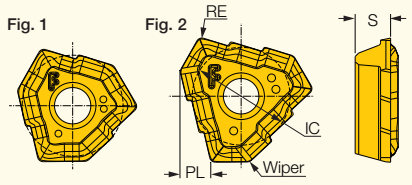
For tools, see pages: DDD-EF-FT (240) • DSD-EF-FT (239) • DSD-IF-FT (239) • GD-DH (348) • GDH-MKT (350)

TRIDEEP DEEP DRILLING

TOGT-GF

Deep Drilling Inserts with 3 Chip Splitting Cutting Edges, a Positive Rake Chipbreaker and a Wiper





Designation	Dimensions IC	RE	PL	S	Fig.	IC908
TOGT 070304-GF	7.69	0.40	1.95	2.30	1	●
TOGT 080305-GF	8.55	0.50	2.20	2.80	1	●
TOGT 090305-GF	8.32	0.50	3.00	3.00	2	●
TOGT 100305-GF	9.23	0.50	3.20	3.30	2	●
TOGT 110405-GF	10.40	0.50	3.40	3.80	2	●
TOGT 120405-GF	11.59	0.50	3.60	4.30	2	●
TOGT 130408-GF	12.85	0.80	4.57	4.76	2	●

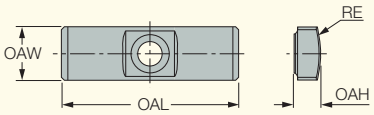
For tools, see pages: DDD-EF-FT (240) • DSD-EF-FT (239) • DSD-IF-FT (239) • GD-DH (348) • GDH-MKT (350)

Chipbreaker Appearances

		GF	DT
1	rake angle a°	a°=25°	a°=20°
2	ID mark	F	T

TRIDEEP DEEP DRILLING

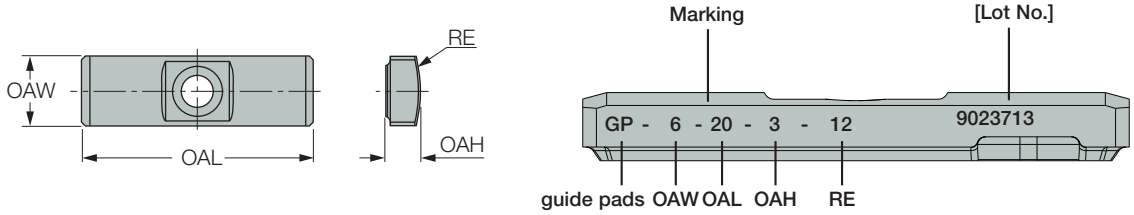
GPS
Deep Drilling Solid Carbide Guide Pads



Designation	Dimensions OAW	OAL	OAH	RE	Tough ↔ Hard IC928	IC950	IC908
GPS-04-16-045-DC (1)	4.00	16.00	1.80	4.50			●
GPS-04-16-050-DC (1)	4.00	16.00	1.80	5.00			●
GPS-04-16-055-DC (1)	4.00	16.00	2.00	5.50	●		●
GPS-05-18-060-DC (1)	5.00	18.00	2.50	6.00	●		●
GPS-05-18-060	5.00	18.00	2.50	6.00		●	
GPS-05-18-075-DC (1)	5.00	18.00	2.50	7.50	●		●
GPS-06-20-075-DC (1)	6.00	20.00	3.00	7.50			●
GPS-06-20-075	6.00	20.00	3.00	7.50		●	
GPS-06-20-085-DC (1)	6.00	20.00	3.00	8.50	●		●
GPS-06-20-085	6.00	20.00	3.00	8.50		●	
GPS-06-20-100-DC (1)	6.00	20.00	3.00	10.00	●		●
GPS-06-20-100	6.00	20.00	3.00	10.00		●	
GPS-06-20-120-DC (1)	6.00	20.00	3.00	12.00	●		●
GPS-06-20-120	6.00	20.00	3.00	12.00		●	
GPS-07-20-120-DC (1)	7.00	20.00	3.50	12.00	●		●
GPS-07-20-120	7.00	20.00	3.50	12.00		●	
GPS-08-25-155-DC (1)	8.00	25.00	4.50	15.50	●		●
GPS-08-25-155	8.00	25.00	4.50	15.50		●	
GPS-10-30-200-DC (1)	10.00	30.00	4.50	20.00	●		●
GPS-10-30-200	10.00	30.00	4.50	20.00		●	
GPS-10-35-200-DC (1)	10.00	35.00	6.00	20.00	●		●
GPS-10-35-200	10.00	35.00	6.00	20.00		●	
GPS-12-35-250-DC (1)	12.00	35.00	5.50	25.00	●		●
GPS-12-35-250	12.00	35.00	5.50	25.00		●	
GPS-14-40-250-DC (1)	14.00	40.00	7.50	25.00	●		●
GPS-14-40-250	14.00	40.00	7.50	25.00		●	
GPS-18-40-300-DC (1)	18.00	40.00	9.00	30.00	●		●

(1) DC- Double Chamfer

Universal Marking for Deep Drilling Tools



Guide Pad Grade Recommendation

	Oil Coolant			Water Based Coolant		
Priority	**1**	**2**	**3**	**1**	**2**	**3**
ISO-P	IC950	IC908	IC928	IC928	IC908	-
ISO-K	IC950	IC908	IC928	IC928	IC908	-
ISO-M	IC928	IC908	IC950	IC928	IC908	-
ISO-S	IC928	IC908	IC950	IC928	IC908	-

When ordering guide pad clamping screws, below before choosing the screw size, first confirm the drill body design according to the procedure shown.

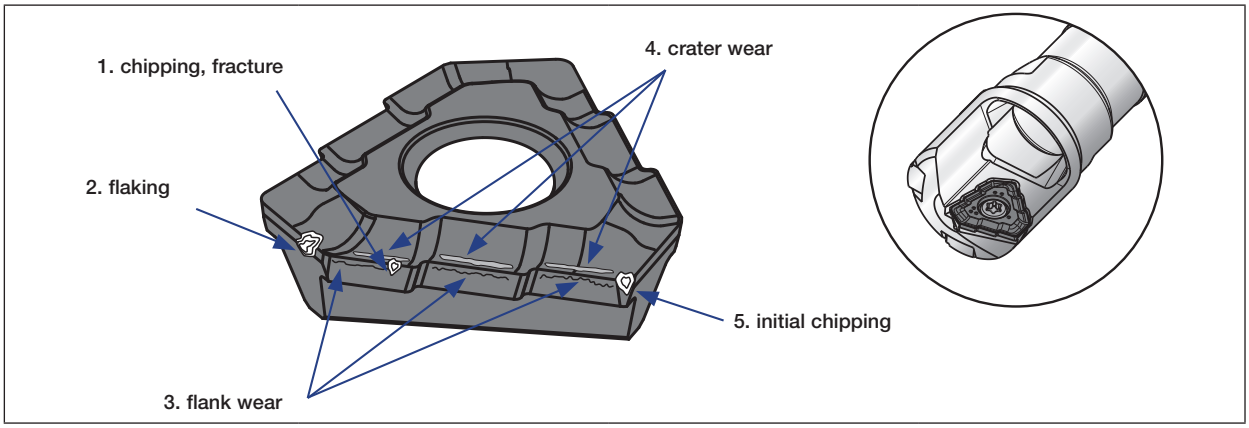
if the drill head has the protector: use a screw in the new design	if the drill head has no protector: use a screw in the previous design
New Design	**Conventional Design**
with guide pad protector	without guide pad protector

Spare Parts

Tool Dia.	Body	Insert	Guide Pad	Insert Screw	Key	N*m	GP Screw	Key
D14.00-15.99	DSD-****-**.**	TOGT 070304-***	GPS-05-18-060-DC	SR 14-560/S M2.5X0.45	T-8/5	1.2	SR 34-508 M2.2X0.45	T-7/5
D16.00-18.00	DSD-****-**.**A	TOGT 080305-***	GPS-05-18-075-DC	SR 14-560/S M2.5X0.45			SR 34-508 M2.2X0.45	
D18.01-20.00	DSD-****-**.**	TOGT 090305-***	GPS-06-20-085-DC					
D20.01-21.99		TOGT 100305-***	GPS-06-20-085-DC	SR 34-506 M3X0.5	T-9/5	2.0		
D22.00-25.00		TOGT 110405-***	GPS-06-20-100-DC	SR 14-571/S M3.5X0.6	T-10/5	4.8		
D25.01-28.00		TOGT 120405-***	GPS-06-20-120-DC	SR 14-506 M4X0.7	T-15/5	4.8		
D28.01-29.99		TOGT 130408-***		SR 16-212/L10 M5X0.8	T-20/5	10	SR 34-508 M2.2X0.45	
D30.00-32.00			GPS-07-20-120-DC				CSTB-3S	T-9/5
D32.01-39.00		TOGT 140510-***						
D39.01-40.00			GPS-08-25-155-DC				CSTB-3S	

Troubleshooting for Insert Damage

Examples of Trouble with the Cutting Edge



Problem	Cause	Solution	
		Grade	Cutting Conditions / Other
1. Chipping, Fracture	• excessive vibration or impact • torn away built-up edge	• use a tough grade	• reduce the feed rate • eliminate the vibration
2. Flaking	• excessive vibration or impact	• use a tough grade	• reduce the feed rate • eliminate the vibration
3. Flank Wear	• cutting speed too high • inadequate tool toughness	• use a grade with high wear resistance • use a coated grade	• reduce the cutting speed • reduce the feed rate • use coolant properly
4. Crater Wear	• cutting speed too high • feed rate too high • inadequate tool toughness	• use a grade with high wear resistance • use a coated grade	• reduce the cutting speed • reduce the feed rate • use coolant properly
5. Initial Chipping	• inappropriate guide bush or pilot hole • misalignment	• use a tough grade	• adjust or change the guide bushing or pilot hole • reduce the feed rate • correct the misalignment

Machining Recommendations for TRIDEEP BTA Drilling Heads

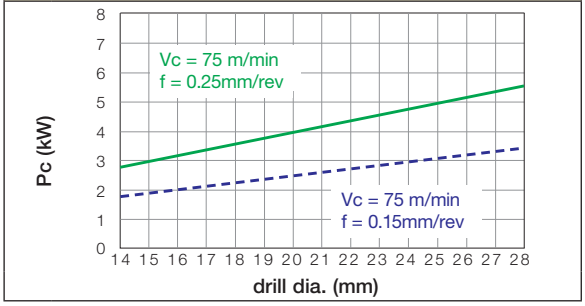
ISO	Material		Condition	Tensile Strength [N/mm²]	Material Group No. (1)	Hardness (HB)	Chipbreaker	Cutting Speed V_c (m/min)	Feed : F (mm/rev) Drill Dia. (mm) Ø14-18	Ø18.01-40
P	non-alloy steel and cast steel, free cutting steel	<0.25% C	annealed	420	1	125	GF	50-100	0.03-0.10	0.03-0.10
							DT	80-140	0.05-0.10	0.05-0.10
		≥0.25% C	annealed	650	2	190	GF	50-100	0.03-0.10	0.03-0.10
							DT	80-140	0.05-0.10	0.05-0.10
		<0.55% C	quenched and tempered	850	3	250	GF	50-100	0.03-0.10	0.03-0.12
							DT	80-140	0.05-0.16	0.05-0.20
		≥0.55% C	annealed	750	4	220	GF	50-100	0.03-0.10	0.03-0.12
							DT	80-140	0.05-0.16	0.05-0.20
			quenched and tempered	1000	5	300	GF	50-100	0.03-0.10	0.03-0.12
							DT	80-140	0.05-0.16	0.05-0.20
	low alloy and cast steel (less than 5% of alloying elements)		annealed	600	6	200	GF	50-100	0.03-0.10	0.03-0.10
							DT	80-140	0.05-0.10	0.05-0.10
			quenched and tempered	930	7	275	GF	50-100	0.03-0.10	0.03-0.10
							DT	80-140	0.05-0.10	0.05-0.10
				1000	8	300	GF	50-100	0.03-0.10	0.03-0.10
							DT	80-140	0.05-0.10	0.05-0.10
				1200	9	350	GF	50-100	0.03-0.10	0.03-0.10
							DT	80-140	0.05-0.10	0.05-0.10
	high alloyed steel, cast steel and tool steel		annealed	680	10	200	GF	50-100	0.03-0.10	0.03-0.12
							DT	80-120	0.05-0.16	0.05-0.20
			quenched and tempered	1100	11	325	GF	50-100	0.03-0.10	0.03-0.12
							DT	80-120	0.05-0.16	0.05-0.20
	stainless steel and cast steel		ferritic/martensitic	680	12	200	GF	50-100	0.03-0.06	0.03-0.06
							DT	60-100	0.05-0.10	0.05-0.10
			Martensitic	820	13	240	GF	50-100	0.03-0.06	0.03-0.06
							DT	60-100	0.05-0.10	0.05-0.10
M	stainless steel and cast steel		Austenitic, duplex	600	14	180	GF	50-100	0.03-0.06	0.03-0.06
							DT	60-100	0.05-0.10	0.05-0.10
K	grey cast iron (GG)		ferritic/pearlitic		15	180	GF	50-100	0.03-0.15	0.05-0.18
							DT	80-140	0.05-0.25	0.05-0.3
			pearlitic/martensitic		16	260	GF	50-100	0.03-0.15	0.05-0.18
							DT	80-140	0.05-0.25	0.05-0.3
	nodular cast iron (GGG)		ferritic		17	160	GF	50-100	0.03-0.15	0.05-0.18
							DT	80-140	0.05-0.25	0.05-0.3
			pearlitic		18	250	GF	50-100	0.03-0.15	0.05-0.18
							DT	80-140	0.05-0.25	0.05-0.3
	malleable cast iron		ferritic		19	130	GF	50-100	0.03-0.15	0.05-0.18
							DT	80-140	0.05-0.25	0.05-0.3
			pearlitic		20	230	GF	50-100	0.03-0.15	0.05-0.18
							DT	80-140	0.05-0.25	0.05-0.3
N	aluminum-wrought alloys		not hardenable		21	60	GF	80-160	0.03-0.15	0.03-0.15
							DT	100-200	0.05-0.20	0.05-0.20
			hardenable		22	100	GF	80-160	0.03-0.15	0.03-0.15
							DT	100-200	0.05-0.20	0.05-0.20
	aluminum-cast alloys	≤12% Si	not hardenable		23	75	GF	80-160	0.03-0.15	0.03-0.15
							DT	100-200	0.05-0.20	0.05-0.20
			hardenable		24	90	GF	80-160	0.03-0.15	0.03-0.15
							DT	100-200	0.05-0.20	0.05-0.20
		>12% Si	high temperature		25	130	GF	80-160	0.03-0.15	0.03-0.15
							DT	100-200	0.05-0.20	0.05-0.20
	copper alloys	>1% Pb	free cutting		26	110	GF	80-160	0.03-0.15	0.03-0.15
							DT	100-200	0.05-0.20	0.05-0.20
			brass		27	90	GF	80-160	0.03-0.15	0.03-0.15
							DT	100-200	0.05-0.20	0.05-0.20
			electrolitic copper		28	100	GF	80-160	0.03-0.15	0.03-0.15
							DT	100-200	0.05-0.20	0.05-0.20
S	high temp. alloys	Fe based	annealed		31	200	GF	50-100	0.03-0.06	0.03-0.06
							DT	60-100	0.05-0.10	0.05-0.10
			hardened		32	280	GF	50-100	0.03-0.06	0.03-0.06
							DT	60-100	0.05-0.10	0.05-0.10
		Ni / Co based	annealed		33	250	GF	20-50	0.03-0.06	0.03-0.08
							DT	20-50	0.04-0.08	0.04-0.10
			hardened		34	350	GF	20-50	0.03-0.06	0.03-0.08
							DT	20-50	0.04-0.08	0.04-0.10
			cast		35	320	GF	20-50	0.03-0.06	0.03-0.08
							DT	20-50	0.04-0.08	0.04-0.10
	titanium alloys		pure	400	36		GF	30-60	0.03-0.10	0.03-0.12
							DT	30-60	0.05-0.13	0.05-0.15
			alpha+beta alloys hardened	1050	37		GF	30-60	0.03-0.10	0.03-0.12
							DT	30-60	0.05-0.13	0.05-0.15
H	hardened steel	≥ 40HRC	hardened		38		GF	40-100	0.03-0.08	0.03-0.08
							DT	50-100	0.04-0.08	0.04-0.10

(1) Based on ISO 513 and VDI 3323 standards

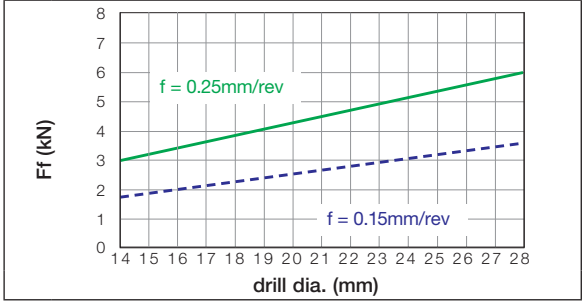
Technical Guide

STS - Machine Setting for Single Tube System

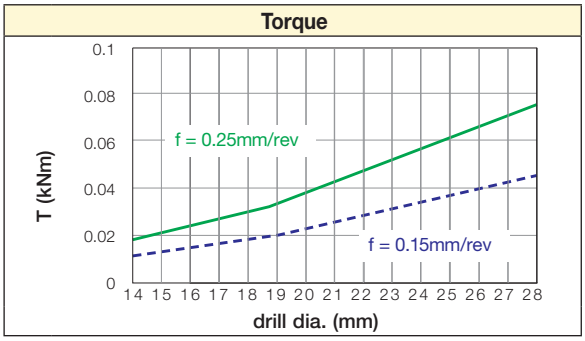
Net Power



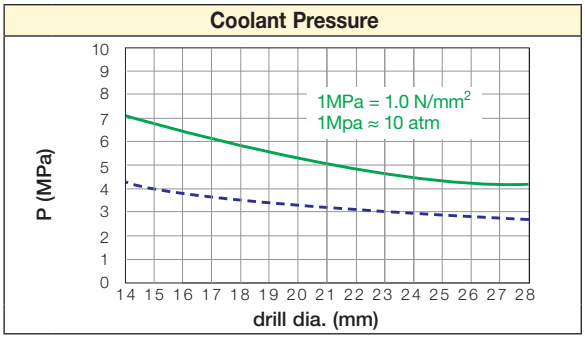
Feed Force



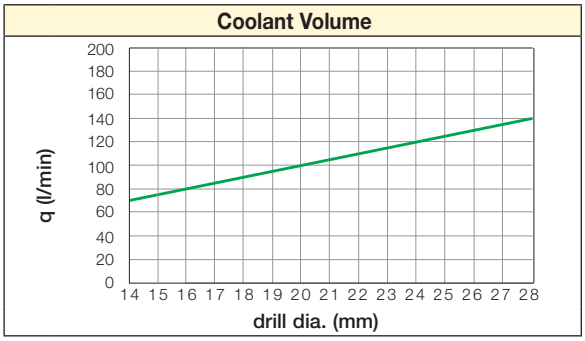
Torque



Coolant Pressure

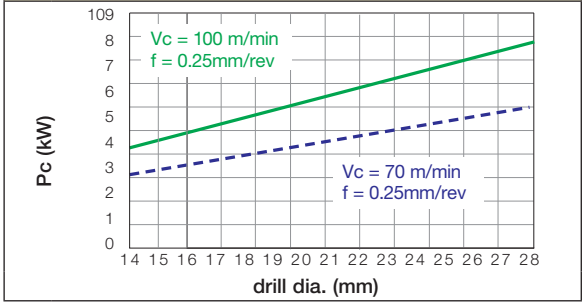


Coolant Volume

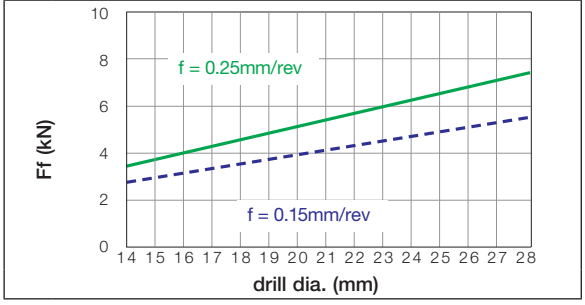


DTS - Machine Setting for Double Tube System

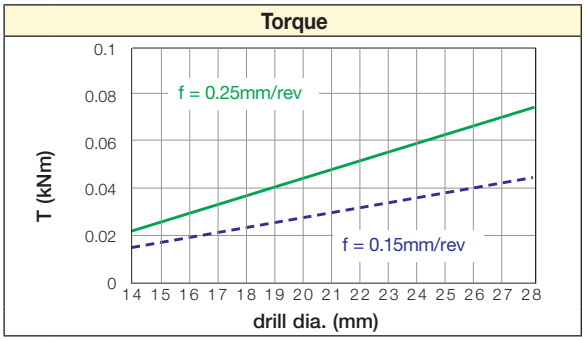
Net Power



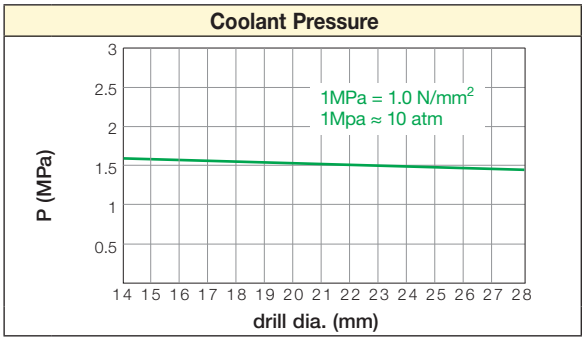
Feed Force



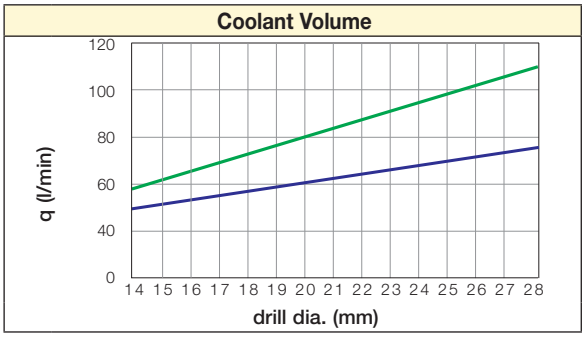
Torque



Coolant Pressure



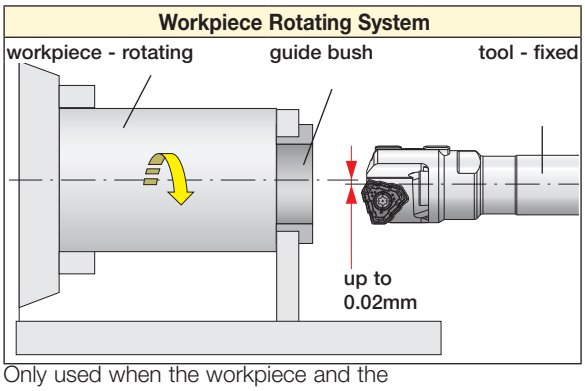
Coolant Volume



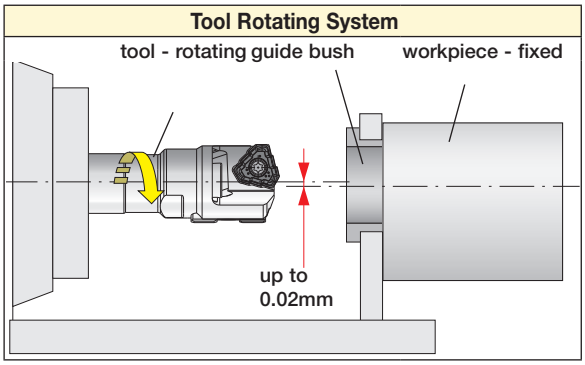
The above values should not be used as the exact recommendations.
They may need modification depending on the machining conditions, materials, etc.

Machine Setup

STS and DTS



- Only used when the workpiece and the tool axis are on the same line.
- Better hole straightness and wear resistance on guide bush are provided compared to the tool rotating system.
- Keep the alignment between guide bush and spindle within 0.02mm.

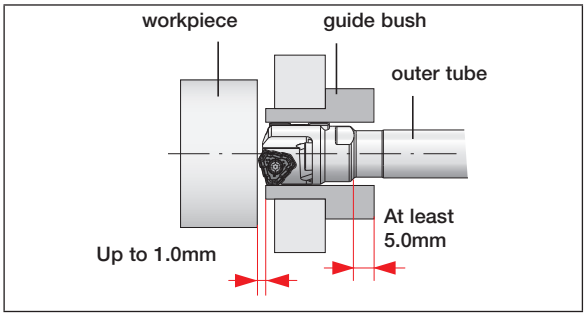


- Can be used when the workpiece and the tool axis are not on the same line.
- Keep the alignment between guide bush and spindle within 0.02mm.

DTS

Positioning of Outer Tube and Guide Bush
Be sure to set the outer tube more than 5.0mm into the guide bush to properly supply the coolant.

Positioning of Workpiece Material and Guide Bush
Sealing is not required for DTS because of the vacuum effect, but keep the gap between workpiece material and guide bush within 1.0mm.



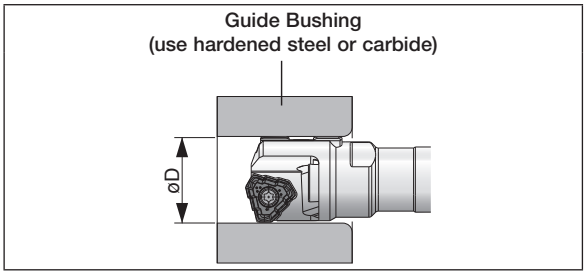
Guide Bush

Tolerance
Guide bush tolerance should be G6 in order to keep consistent tool life and cutting accuracy. Diameters for G6 tolerance are shown on the right.

ØD (mm)	G6 Tolerance (mm)
14.00 - 18.00	+0.006 - +0.017
18.01 - 30.00	+0.007 - +0.020
30.01 - 40.00	+0.009 - +0.025

Material

Guide Bush Material	System	Advantage
Hardened Steel	workpiece rotating	cost efficient (inexpensive)
Tungsten Carbide	tool rotating workpiece rotating	long life guide bush



Coolant

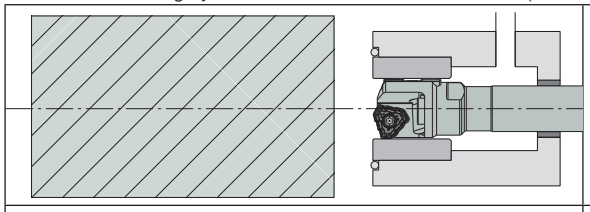
Temperature
The proper coolant temperature is 30 - 40°C (90 - 100°F). If the temperature exceeds this range, the coolant will deteriorate easily and may shorten tool life and generate poor surface finish.

Filtration
The coolant must be filtered properly in order to protect guide pads and workpiece surface.

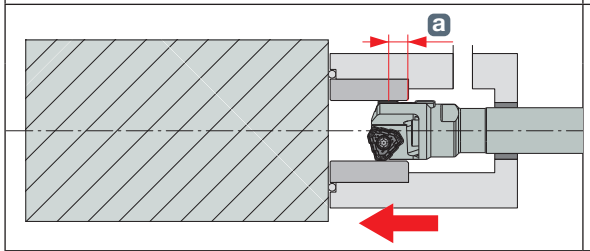
Water-Soluble Type
Around 10% (dilution rate 1/10) is recommended for the concentration of water-soluble coolant in order to protect guide pads.

CNC Drilling Cycle Operations

Use the CNC drilling cycle as instructed below in order to optimize the tool performance safely.

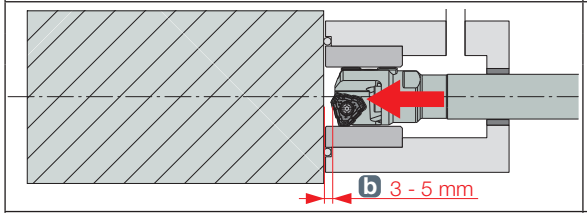


1. Start the CNC cycle operation



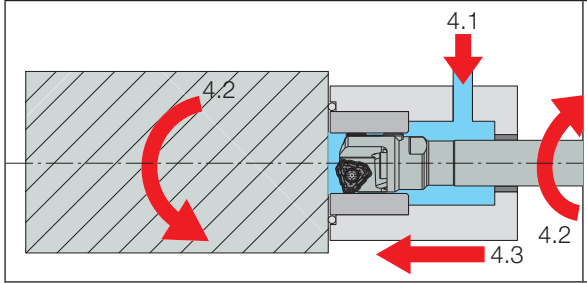
2. Move the oil pressure head and securely seal onto the face of the workpiece

a Make sure to position the drill so that the guide pads remain inside the guide bushing when the pressure head is moved towards the workpiece face



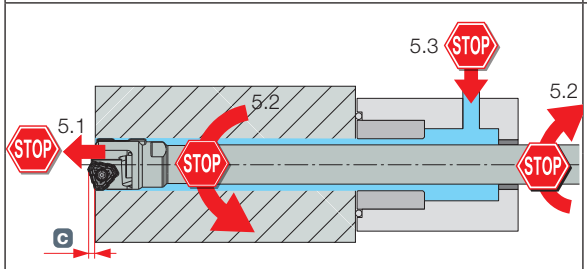
3. Move the BTA drill toward the workpiece

b Keep the drill 3 - 5mm* off the face of the workpiece.
* If the machine allows this drill setting in Step 1, move on to Step 4



4. Start the Cutting

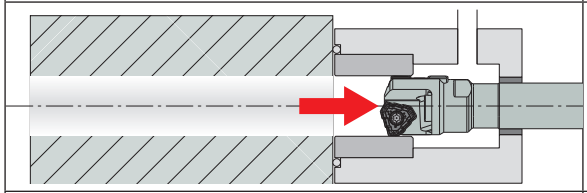
4.1 Activate the coolant supply
4.2 Start the rotation (of the drill, the workpiece, or the drill+workpiece)
4.3 Start the drill feed



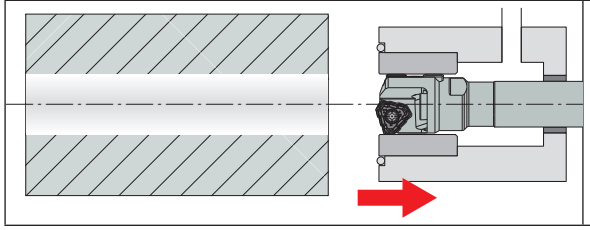
5. Stop the Cutting

5.1 Stop the drill feed
5.2 Stop the rotation
5.3 Stop the coolant supply

c Stop the cutting when the drill shoulder is completely through the end face of the workpiece



6. Return the drill to the starting point

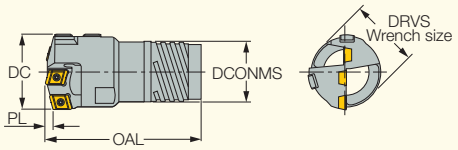


7. Return the oil pressure head to the starting point

FINE-BEAM Ø25 – 89mm
DSD/DDD...FB

FINEBEAM

DSD-EF-FB
Deep Single Tube Drills with External 4-Start Thread Connection for High Feed (25-89 dia.)



Designation	DCN(1)	DCX(2)	OAL	PL	DCONMS	DRVS(3)	Ts(4)
DSD-EF 25.00-26.40-FB	25.00	26.40	73.00	3.00	19.50	22.0	TS-I6
DSD-EF 26.41-28.70-FB	26.41	28.70	73.00	3.00	21.00	23.0	TS-I7
DSD-EF 28.71-31.00-FB	28.71	31.00	78.00	3.00	23.50	24.0	TS-I8
DSD-EF 31.01-33.30-FB	31.01	33.30	78.00	3.00	25.50	27.0	TS-I9
DSD-EF 33.31-36.20-FB	33.31	36.20	83.00	3.00	28.00	29.0	TS-I10
DSD-EF 36.21-39.60-FB	36.21	39.60	93.00	3.00	30.00	32.0	TS-I11
DSD-EF 39.61-43.00-FB	39.61	43.00	99.00	4.00	33.00	35.0	TS-I12
DSD-EF 43.01-47.00-FB	43.01	47.00	104.00	4.00	36.00	38.0	TS-I13
DSD-EF 47.01-51.70-FB	47.01	51.70	104.00	4.00	39.00	41.0	TS-I14
DSD-EF 51.71-56.20-FB	51.71	56.20	114.00	4.00	43.00	46.0	TS-I15
DSD-EF 56.21-60.60-FB	56.21	60.60	120.00	5.00	47.00	50.0	TS-I16
DSD-EF 60.61-65.00-FB	60.61	65.00	120.00	5.00	51.00	55.0	TS-I17
DSD-EF 65.01-66.99-FB	65.01	66.99	149.00	8.00	52.00	63.0	TS-I18
DSD-EF 67.00-72.99-FB	67.00	72.99	149.00	8.00	58.00	69.0	TS-I19
DSD-EF 73.00-79.99-FB	73.00	79.99	150.00	9.00	63.00	76.0	TS-I20
DSD-EF 80.00-86.99-FB	80.00	86.99	173.00	9.00	70.00	83.0	TS-I21
DSD-EF 87.00-89.00-FB	87.00	89.00	173.00	9.00	77.00	86.0	TS-I22

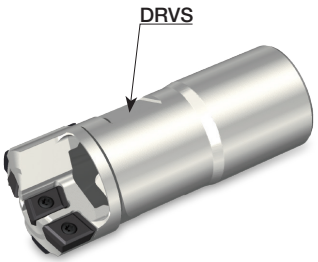
- For spare parts and insert information, see page 254 • For user guide see pages 255-256 • Inserts and guide pads to be ordered separately
- Ordering example: DSD-EF 43.10-FB

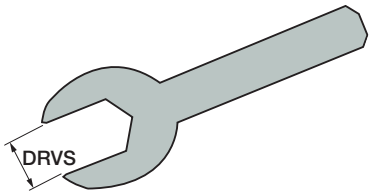
(1) Cutting diameter minimum
(2) Cutting diameter maximum
(3) Torque key size
(4) Tube designation

For inserts, see pages: NPHT (251) • NPMT (252)
For holders, see pages: TS-I** (327)

Wrench Size

Designation	Wrench size DRVS (mm)
DSD-EF 25.00-26.40-FB	22 (.866")
DSD-EF 26.41-28.70-FB	23 (.906")
DSD-EF 28.71-31.00-FB	24 (15/16")
DSD-EF 31.01-33.30-FB	27 (1.063")
DSD-EF 33.31-36.20-FB	29 (1-1/8")
DSD-EF 36.21-39.60-FB	32 (1.260")
DSD-EF 39.61-43.00-FB	35 (1.378")
DSD-EF 43.01-47.00-FB	38 (1-1/2")
DSD-EF 47.01-51.70-FB	41 (1.614")
DSD-EF 51.71-56.20-FB	46 (1.811")
DSD-EF 56.21-60.60-FB	50 (1.968")
DSD-EF 60.61-65.00-FB	55 (2.165")
DSD-EF 65.01-66.99-FB	63 (2.480")
DSD-EF 67.00-72.99-FB	69 (2.717")
DSD-EF 73.00-79.99-FB	76 (2.992")
DSD-EF 80.00-86.99-FB	83 (3.268")
DSD-EF 87.00-89.00-FB	86 (3-3/8")

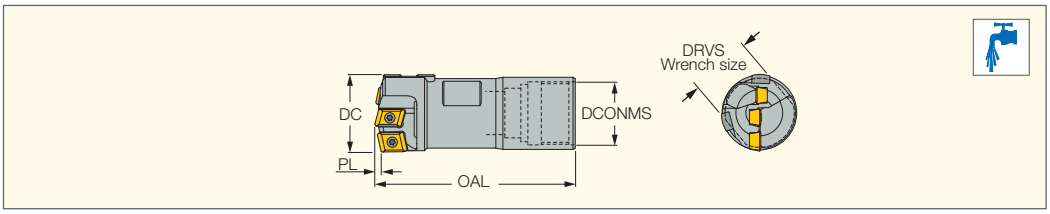




For diameter DC range larger than 65 mm use hook spanner

FINEBEAM

DSD-IF-FB
Deep Single Tube Drills with Internal Single-Start Thread Connection (25-89 dia.)



Designation	DCN(1)	DCX(2)	OAL	PL	DCONMS	DRVS(3)	Ts(4)
DSD-IF 25.00-26.99-FB	25.00	26.99	73.00	3.00	20.00	19.0	TS-010
DSD-IF 27.00-29.00-FB	27.00	29.00	73.00	3.00	22.00	21.0	TS-011
DSD-IF 29.01-29.99-FB	29.01	29.99	73.00	3.00	22.00	24.0	TS-011
DSD-IF 30.00-31.99-FB	30.00	31.99	78.00	3.00	24.00	24.0	TS-012
DSD-IF 32.00-33.99-FB	32.00	33.99	78.00	3.00	26.00	26.0	TS-013
DSD-IF 34.00-36.99-FB	34.00	36.99	93.00	3.00	27.00	28.0	TS-014
DSD-IF 37.00-39.99-FB	37.00	39.99	98.00	3.00	30.00	30.0	TS-015
DSD-IF 40.00-43.99-FB	40.00	43.99	104.00	4.00	33.00	32.0	TS-016
DSD-IF 44.00-46.99-FB	44.00	46.99	109.00	4.00	37.00	36.0	TS-017
DSD-IF 47.00-51.99-FB	47.00	51.99	109.00	4.00	41.00	36.0	TS-018
DSD-IF 52.00-56.99-FB	52.00	56.99	114.00	4.00	44.00	46.0	TS-019
DSD-IF 57.00-60.99-FB	57.00	60.99	120.00	5.00	49.00	46.0	TS-020
DSD-IF 61.00-65.00-FB	61.00	65.00	120.00	5.00	53.00	54.0	TS-021
DSD-IF 65.01-67.99-FB	65.01	67.99	112.00	8.00	53.00	64.0	TS-021
DSD-IF 68.00-74.99-FB	68.00	74.99	113.00	9.00	59.00	71.0	TS-022
DSD-IF 75.00-80.99-FB	75.00	80.99	143.00	9.00	65.00	77.0	TS-023
DSD-IF 81.00-89.00-FB	81.00	89.00	143.00	9.00	71.00	86.0	TS-024

- For spare parts and insert information, see page 254 • For user guide, see pages 255-256 • Inserts and guide pads to be ordered separately
- Ordering example: DSD-IF 43.10-FB

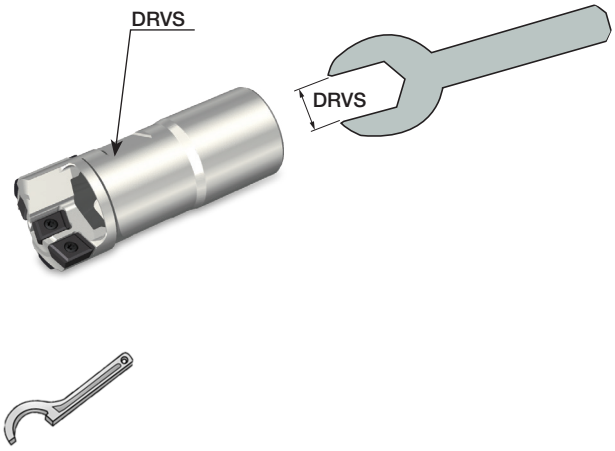
(1) Cutting diameter minimum
(2) Cutting diameter maximum
(3) Torque key size
(4) Tube designation

For inserts, see pages: NPHT (251) • NPMT (252)
For holders, see pages: TS-O** (328)

Wrench Size

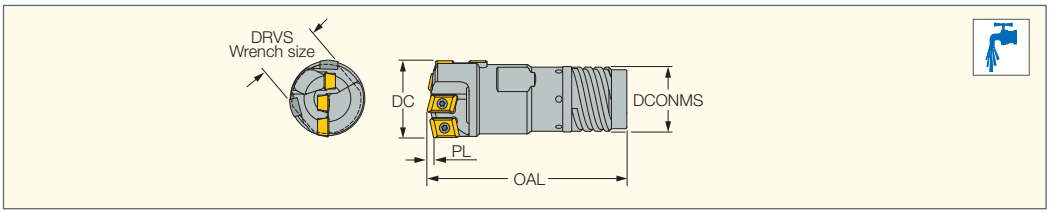
Designation	Wrench Size DRVS mm (inch)
DSD-IF 25.00-26.99-FB	19 (3/4")
DSD-IF 27.00-29.00-FB	21 (13/16")
DSD-IF 29.01-31.99-FB	24 (15/16")
DSD-IF 32.00-33.99-FB	26 (1.024")
DSD-IF 34.00-36.99-FB	28 (1.102")
DSD-IF 37.00-39.99-FB	30 (1.181")
DSD-IF 40.00-43.99-FB	32 (1.260")
DSD-IF 44.00-51.99-FB	36 (1.417")
DSD-IF 52.00-60.99-FB	46 (1.811")
DSD-IF 61.00-65.00-FB	54 (2-1/8")
DSD-IF 65.01-67.99-FB	64 (2.520")
DSD-IF 68.00-74.99-FB	71 (2.795")
DSD-IF 75.00-80.99-FB	77 (3")
DSD-IF 81.00-89.00-FB	86 (3-3/8")

For diameter DC range larger than 65mm use hook spanner



FINEBEAM

DDD-EF-FB
Deep Double Tube Drills with External 4-Start Thread Connection for High Feed (25-65 dia.)



Designation	DCN(1)	DCX(2)	OAL	PL	DCONMS	DRVS(3)	Ts(4)	Tsi(5)
DDD-EF 25.00-26.40-FB	25.00	26.40	73.00	3.00	21.00	22.0	TDO-I3	TDI-N3
DDD-EF 26.41-28.70-FB	26.41	28.70	78.00	3.00	23.50	23.0	TDO-I4	TDI-N4
DDD-EF 28.71-31.00-FB	28.71	31.00	78.00	3.00	25.50	24.0	TDO-I5	TDI-N5
DDD-EF 31.01-33.30-FB	31.01	33.30	83.00	3.00	28.00	27.0	TDO-I6	TDI-N6
DDD-EF 33.31-36.20-FB	33.31	36.20	93.00	3.00	30.00	29.0	TDO-I7	TDI-N7
DDD-EF 36.21-39.60-FB	36.21	39.60	99.00	4.00	33.00	32.0	TDO-I8	TDI-N8
DDD-EF 39.61-43.00-FB	39.61	43.00	104.00	4.00	36.00	35.0	TDO-I9	TDI-N9
DDD-EF 43.01-47.00-FB	43.01	47.00	104.00	4.00	39.00	38.0	TDO-I10	TDI-N10
DDD-EF 47.01-51.70-FB	47.01	51.70	114.00	4.00	43.00	41.0	TDO-I11	TDI-N11
DDD-EF 51.71-56.20-FB	51.71	56.20	120.00	5.00	47.00	46.0	TDO-I12	TDI-N12
DDD-EF 56.21-60.60-FB	56.21	60.60	120.00	5.00	51.00	50.0	TDO-I13	TDI-N13
DDD-EF 60.61-65.00-FB	60.61	65.00	120.00	5.00	51.00	55.0	TDO-I13	TDI-N13

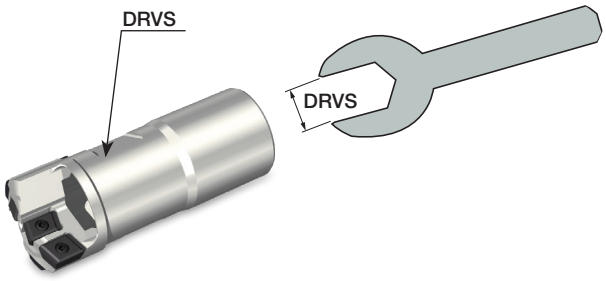
- For spare parts and insert information, see page 254 • For user guide see pages 255-256 • Inserts and guide pads to be ordered separately
- Ordering example: DDD-EF 43.00-FB

(1) Cutting diameter minimum
(2) Cutting diameter maximum
(3) Torque key size
(4) Outer tube designation
(5) Inner tube designation

For inserts, see pages: NPHT (251) • NPMT (252)
For holders, see pages: TDO-I (D18.41-65.00) (329)

Wrench Size

Designation	Wrench Size DRVS mm (inch)
DDD-EF 25.00-26.40-FB	22 (.866")
DDD-EF 26.41-28.70-FB	23 (.906")
DDD-EF 28.71-31.00-FB	24 (15/16")
DDD-EF 31.01-33.30-FB	27 (1.063")
DDD-EF 33.31-36.20-FB	29 (1-1/8")
DDD-EF 36.21-39.60-FB	32 (1.260")
DDD-EF 39.61-43.00-FB	35 (1.378")
DDD-EF 43.01-47.00-FB	38 (1-1/2")
DDD-EF 47.01-51.70-FB	41 (1.614")
DDD-EF 51.71-56.20-FB	46 (1.811")
DDD-EF 56.21-60.60-FB	50 (1.968")
DDD-EF 60.61-65.00-FB	55 (2.165")



Universal Marking for Deep Drilling Tools

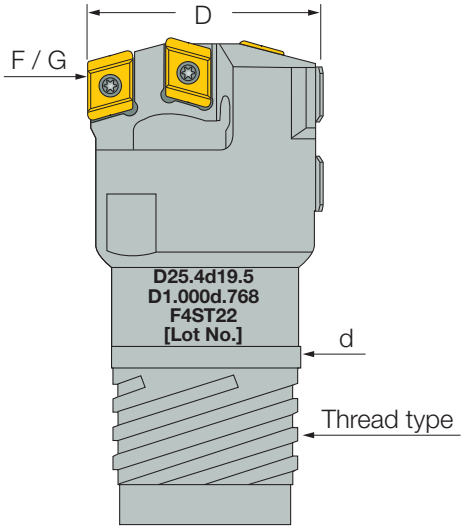
D- **Tool Diameter**
Metric- D25.4
Inch- D1.000

d- pilot diameter
Metric- d19.5
Inch- d.768

Tool Style
F- fixed pocket 3-5 cutting edge
G- fixed pocket single cutting edge

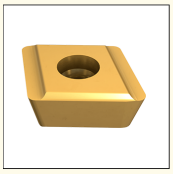
Thread Type
4ST- four-start thread single tube
1ST- single-start thread single tube
4DT- four-start thread double tube

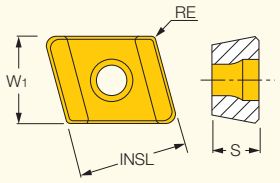
22- tube diameter



FINEBEAM

NPHT
Peripheral Precision Inserts
for Drilling Heads DSD-EF-FB
/ DDD-EF-FB / DSD-IF-FB





Designation	Dimensions W1	INSL	S	RE	Tough ↔ Hard IC908	IC948	IC806
NPHT 060304R-G-P	6.00	8.00	3.00	0.40	●		
NPHT 070404R-G-P	7.50	10.00	4.00	0.40	●		
NPHT 090404R-G-P	9.00	10.00	4.00	0.40	●		
NPHT 110404R-G-P	11.00	10.00	4.00	0.40	●		
NPHT 130404R-G-P	13.00	10.00	4.00	0.40	●		
NPHT 060308R-G-P	6.00	8.00	3.00	0.80	●	●	●
NPHT 070408R-G-P	7.50	10.00	4.00	0.80	●	●	●
NPHT 090408R-G-P	9.00	10.00	4.00	0.80	●	●	●
NPHT 110408R-G-P	11.00	10.00	4.00	0.80	●	●	●
NPHT 130408R-G-P	13.00	10.00	4.00	0.80	●	●	●
NPHT 060308R-HF-P	6.00	8.00	3.00	0.80	●	●	●
NPHT 070408R-HF-P	7.50	10.00	4.00	0.80	●	●	●
NPHT 090408R-HF-P	9.00	10.00	4.00	0.80	●	●	●
NPHT 110408R-HF-P	11.00	10.00	4.00	0.80	●	●	●
NPHT 130408R-HF-P	13.00	10.00	4.00	0.80	●	●	●

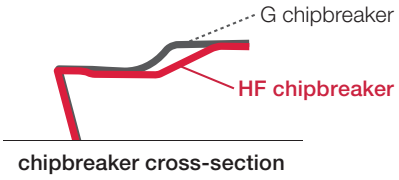
For tools, see pages: DDD-EF-FB (250) • DSD-EF-FB (248) • DSD-IF-FB (249)

	NPHT Peripheral Inserts IC948	IC806	IC908
P	●●●	●●	●
M	●●●	●●	●
K	●●●	●●	●
N	●●●	●●	●
S	●●	●●●	●
H	●●	●●●	●

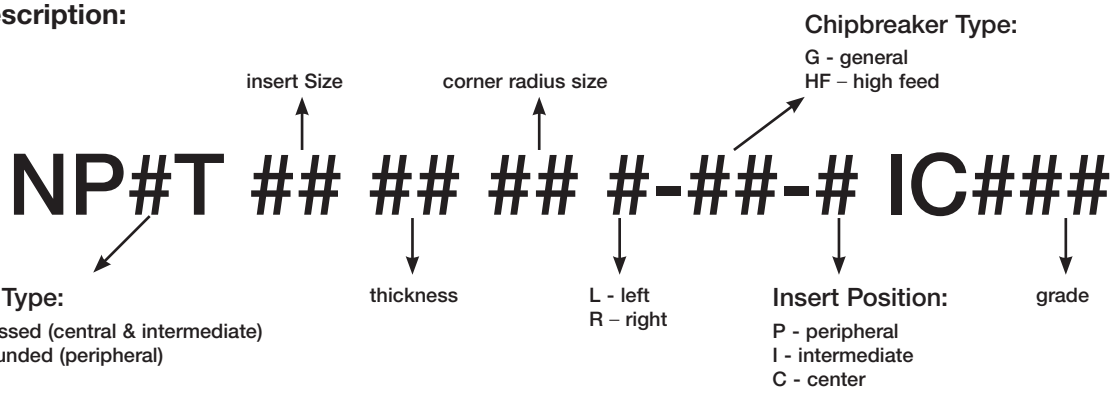
●●● First priority
●● Second priority
● Third priority

Chipbreaker Comparison

HF - provides drilling stability
at high feed rates

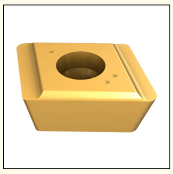


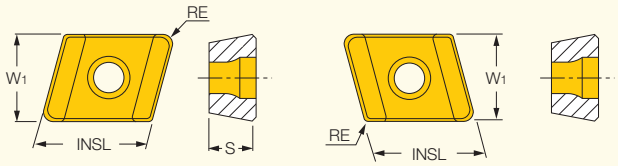
Insert Description:



FINEBEAM

NPMT
Internal and Central Inserts for Drilling Heads DSD-EF-FB / DDD-EF-FB





Designation	Dimensions W1	INSL	S	RE	Tough ↔ Hard IC908	IC948	IC806
NPMT 050304R-G-I	5.50	8.00	3.00	0.40	●	●	●
NPMT 060404R-G-I	6.50	10.00	4.00	0.40	●	●	●
NPMT 080404R-G-I	8.00	10.00	4.00	0.40	●	●	●
NPMT 090404R-G-I	9.50	10.00	4.00	0.40	●	●	●
NPMT 120404R-G-I	12.50	10.00	4.00	0.40	●	●	●
NPMT 050304R-HF-I	5.50	8.00	3.00	0.40	●	●	●
NPMT 060404R-HF-I	6.50	10.00	4.00	0.40	●	●	●
NPMT 080404R-HF-I	8.00	10.00	4.00	0.40	●	●	●
NPMT 090404R-HF-I	9.50	10.00	4.00	0.40	●	●	●
NPMT 120404R-HF-I	12.50	10.00	4.00	0.40	●	●	●
NPMT 050308L-G-C	5.50	8.00	3.00	0.80	●	●	●
NPMT 060408L-G-C	6.50	10.00	4.00	0.80	●	●	●
NPMT 080408L-G-C	8.00	10.00	4.00	0.80	●	●	●
NPMT 090408L-G-C	9.50	10.00	4.00	0.80	●	●	●
NPMT 120408L-G-C	12.50	10.00	4.00	0.80	●	●	●
NPMT 050308L-HF-C	5.50	8.00	3.00	0.80	●	●	●
NPMT 060408L-HF-C	6.50	10.00	4.00	0.80	●	●	●
NPMT 080408L-HF-C	8.00	10.00	4.00	0.80	●	●	●
NPMT 090408L-HF-C	9.50	10.00	4.00	0.80	●	●	●
NPMT 120408L-HF-C	12.50	10.00	4.00	0.80	●	●	●

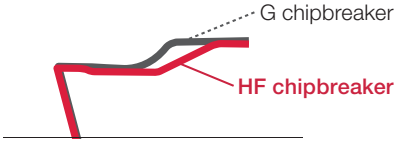
For tools, see pages: DDD-EF-FB (250) • DSD-EF-FB (248) • DSD-IF-FB (249)

	NPMT Intermediate/Central Inserts IC948	IC806	IC908
P	●●●	●●	●
M	●●●	●●	●
K	●●●	●●	●
N	●●●	●●	●
S	●●	●●●	●
H	●●	●●●	●

●●● First priority
●● Second priority
● Third priority

Chipbreaker Comparison

HF - provides drilling stability at high feed rates



chipbreaker cross-section

Insert Description:

Chipbreaker Type:
G - general
HF – high feed

insert size | corner radius size

NP#T ## ## ## #-##-# IC###

Insert Type:
M – pressed (central & intermediate)
H – grounded (peripheral)

thickness

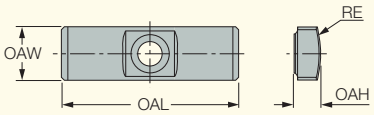
L -left
R -right

Insert Position:
P - peripheral
I - intermediate
C - center

grade

FINEBEAM

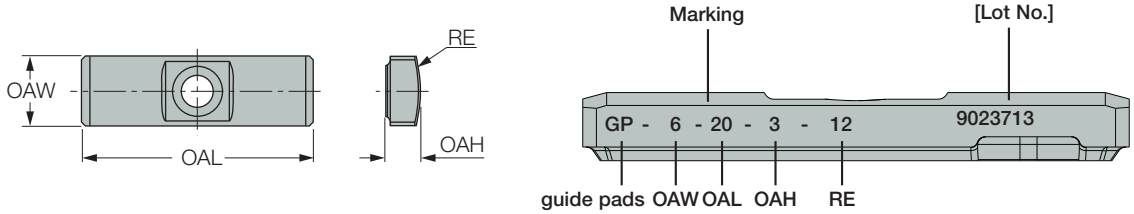
GPS
Deep Drilling Solid
Carbide Guide Pads



Designation	Dimensions				Tough ↔ Hard		
	OAW	OAL	OAH	RE	IC928	IC950	IC908
GPS-04-16-045-DC (1)	4.00	16.00	1.80	4.50			●
GPS-04-16-050-DC (1)	4.00	16.00	1.80	5.00			●
GPS-04-16-055-DC (1)	4.00	16.00	2.00	5.50	●		●
GPS-05-18-060-DC (1)	5.00	18.00	2.50	6.00	●		●
GPS-05-18-060	5.00	18.00	2.50	6.00		●	
GPS-05-18-075-DC (1)	5.00	18.00	2.50	7.50	●		●
GPS-06-20-075-DC (1)	6.00	20.00	3.00	7.50			●
GPS-06-20-075	6.00	20.00	3.00	7.50		●	
GPS-06-20-085-DC (1)	6.00	20.00	3.00	8.50	●		●
GPS-06-20-085	6.00	20.00	3.00	8.50		●	
GPS-06-20-100-DC (1)	6.00	20.00	3.00	10.00	●		●
GPS-06-20-100	6.00	20.00	3.00	10.00		●	
GPS-06-20-120-DC (1)	6.00	20.00	3.00	12.00	●		●
GPS-06-20-120	6.00	20.00	3.00	12.00		●	
GPS-07-20-120-DC (1)	7.00	20.00	3.50	12.00	●		●
GPS-07-20-120	7.00	20.00	3.50	12.00		●	
GPS-08-25-155-DC (1)	8.00	25.00	4.50	15.50	●		●
GPS-08-25-155	8.00	25.00	4.50	15.50		●	
GPS-10-30-200-DC (1)	10.00	30.00	4.50	20.00	●		●
GPS-10-30-200	10.00	30.00	4.50	20.00		●	
GPS-10-35-200-DC (1)	10.00	35.00	6.00	20.00	●		●
GPS-10-35-200	10.00	35.00	6.00	20.00		●	
GPS-12-35-250-DC (1)	12.00	35.00	5.50	25.00	●		●
GPS-12-35-250	12.00	35.00	5.50	25.00		●	
GPS-14-40-250-DC (1)	14.00	40.00	7.50	25.00	●		●
GPS-14-40-250	14.00	40.00	7.50	25.00		●	
GPS-18-40-300-DC (1)	18.00	40.00	9.00	30.00	●		●

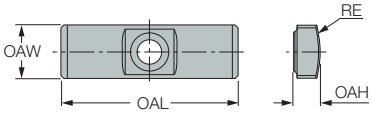
(1) DC- Double Chamfer

Universal Marking for Deep Drilling Tools



Guide Pad Grade Recommendation

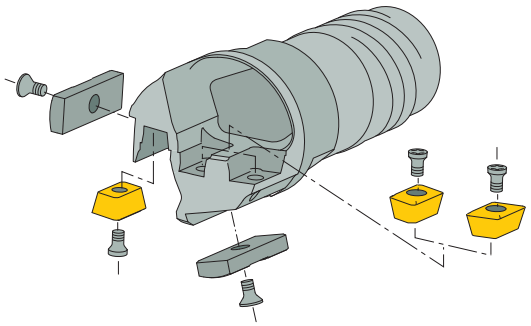
	Oil Coolant			Water Based Coolant		
Priority	1	2	3	1	2	3
ISO-P	IC950	IC908	IC928	IC928	IC908	-
ISO-K	IC950	IC908	IC928	IC928	IC908	-
ISO-M	IC928	IC908	IC950	IC928	IC908	-
ISO-S	IC928	IC908	IC950	IC928	IC908	-

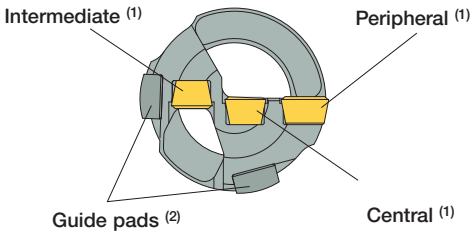


	Tool Diameter		Dimensions (mm)				Solid Carbide
	Min	Max	OAW	OAL	RE	OAH	Description
FINEBEAM	25.00	29.99	6	20	12	3	GPS-06-20-120-DC
	30.00	39.00	7	20	12	3.5	GPS-07-20-120-DC
	39.01	45.00	8	25	15.5	4.5	GPS-08-25-155-DC
	45.01	57.00	10	30	20	4.5	GPS-10-30-200-DC
	57.01	89.00	12	35	25	5.5	GPS-12-35-250-DC

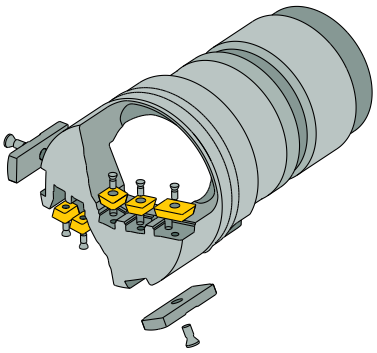
DSD-EF-FB / DDD-EF-FB / DSD-IF-FB

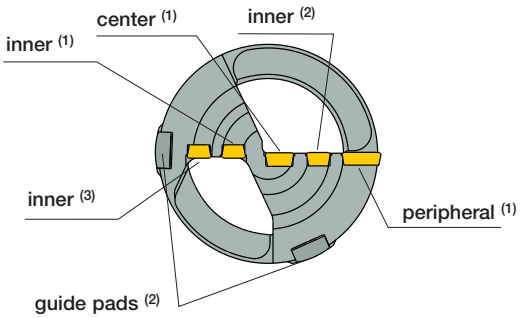
Spare Parts List





Drill Diameter	Insert									Guide Pad		
	Peripheral Insert	Screw	Key	Intermediate Insert	Screw	Key	Central Insert	Screw	Key		Screw	Key
25.00 - 28.00	NPHT 060308R-G-P	SR11201753-2	T-7/5	NPMT 050304R-G-I	SR11201753-2	T-7/5	NPMT 050308L-G-C	SR11201753-2	T-7/5	GPS-06	SR11201753-1	T-7/5
	NPHT 060308R-HF-P	SR11201753-2	T-7/5	NPMT 050304R-HF-I	SR11201753-2	T-7/5	NPMT 050308L-HF-C	SR11201753-2	T-7/5	GPS-06	SR11201753-1	T-7/5
28.01 - 29.99	NPHT 060308R-G-P	SR11201753-2	T-7/5	NPMT 050304R-G-I	SR11201753-2	T-7/5	NPMT 060408L-G-C	SR 14-560-HG	T-8/5	GPS-06	SR11201753-1	T-7/5
	NPHT 060308R-HF-P	SR11201753-2	T-7/5	NPMT 050304R-HF-I	SR11201753-2	T-7/5	NPMT 060408L-HF-C	SR 14-560-HG	T-8/5	GPS-06	SR11201753-1	T-7/5
30.00 - 35.00	NPHT 070408R-G-P	SR 14-560-HG	T-8/5	NPMT 060404R-G-I	SR 14-560-HG	T-8/5	NPMT 060408L-G-C	SR 14-560-HG	T-8/5	GPS-07	SR11201753-4	T-9/5
	NPHT 070408R-HF-P	SR 14-560-HG	T-8/5	NPMT 060404R-HF-I	SR 14-560-HG	T-8/5	NPMT 060408L-HF-C	SR 14-560-HG	T-8/5	GPS-07	SR11201753-4	T-9/5
35.01 - 38.00	NPHT 070408R-G-P	SR 14-560-HG	T-8/5	NPMT 060404R-G-I	SR 14-560-HG	T-8/5	NPMT 080408L-G-C	SR 14-560-HG	T-8/5	GPS-07	SR11201753-4	T-9/5
	NPHT 070408R-HF-P	SR 14-560-HG	T-8/5	NPMT 060404R-HF-I	SR 14-560-HG	T-8/5	NPMT 080408L-HF-C	SR 14-560-HG	T-8/5	GPS-07	SR11201753-4	T-9/5
38.01 - 39.00	NPHT 090408R-G-P	SR 14-560-HG	T-8/5	NPMT 060404R-G-I	SR 14-560-HG	T-8/5	NPMT 080408L-G-C	SR 14-560-HG	T-8/5	GPS-07	SR11201753-4	T-9/5
	NPHT 090408R-HF-P	SR 14-560-HG	T-8/5	NPMT 060404R-HF-I	SR 14-560-HG	T-8/5	NPMT 080408L-HF-C	SR 14-560-HG	T-8/5	GPS-07	SR11201753-4	T-9/5
39.01 - 41.00	NPHT 090408R-G-P	SR 14-560-HG	T-8/5	NPMT 060404R-G-I	SR 14-560-HG	T-8/5	NPMT 080408L-G-C	SR 14-560-HG	T-8/5	GPS-08	SR11201753-4	T-9/5
	NPHT 090408R-HF-P	SR 14-560-HG	T-8/5	NPMT 060404R-HF-I	SR 14-560-HG	T-8/5	NPMT 080408L-HF-C	SR 14-560-HG	T-8/5	GPS-08	SR11201753-4	T-9/5
41.01 - 44.00	NPHT 090408R-G-P	SR 14-560-HG	T-8/5	NPMT 080404R-G-I	SR 14-560-HG	T-8/5	NPMT 080408L-G-C	SR 14-560-HG	T-8/5	GPS-08	SR11201753-4	T-9/5
	NPHT 090408R-HF-P	SR 14-560-HG	T-8/5	NPMT 080404R-HF-I	SR 14-560-HG	T-8/5	NPMT 080408L-HF-C	SR 14-560-HG	T-8/5	GPS-08	SR11201753-4	T-9/5
44.01 - 45.00	NPHT 090408R-G-P	SR 14-560-HG	T-8/5	NPMT 080404R-G-I	SR 14-560-HG	T-8/5	NPMT 090408L-G-C	SR 14-560-HG	T-8/5	GPS-08	SR11201753-4	T-9/5
	NPHT 090408R-HF-P	SR 14-560-HG	T-8/5	NPMT 080404R-HF-I	SR 14-560-HG	T-8/5	NPMT 090408L-HF-C	SR 14-560-HG	T-8/5	GPS-08	SR11201753-4	T-9/5
45.01 - 47.00	NPHT 090408R-G-P	SR 14-560-HG	T-8/5	NPMT 080404R-G-I	SR 14-560-HG	T-8/5	NPMT 090408L-G-C	SR 14-560-HG	T-8/5	GPS-10	SR11201753-6	T-15/5
	NPHT 090408R-HF-P	SR 14-560-HG	T-8/5	NPMT 080404R-HF-I	SR 14-560-HG	T-8/5	NPMT 090408L-HF-C	SR 14-560-HG	T-8/5	GPS-10	SR11201753-6	T-15/5
47.01 - 51.00	NPHT 110408R-G-P	SR 14-560-HG	T-8/5	NPMT 080404R-G-I	SR 14-560-HG	T-8/5	NPMT 090408L-G-C	SR 14-560-HG	T-8/5	GPS-10	SR11201753-6	T-15/5
	NPHT 110408R-HF-P	SR 14-560-HG	T-8/5	NPMT 080404R-HF-I	SR 14-560-HG	T-8/5	NPMT 090408L-HF-C	SR 14-560-HG	T-8/5	GPS-10	SR11201753-6	T-15/5
51.01 - 54.00	NPHT 110408R-G-P	SR 14-560-HG	T-8/5	NPMT 090404R-G-I	SR 14-560-HG	T-8/5	NPMT 090408L-G-C	SR 14-560-HG	T-8/5	GPS-10	SR11201753-6	T-15/5
	NPHT 110408R-HF-P	SR 14-560-HG	T-8/5	NPMT 090404R-HF-I	SR 14-560-HG	T-8/5	NPMT 090408L-HF-C	SR 14-560-HG	T-8/5	GPS-10	SR11201753-6	T-15/5
54.01 - 57.00	NPHT 110408R-G-P	SR 14-560-HG	T-8/5	NPMT 090404R-G-I	SR 14-560-HG	T-8/5	NPMT 120408L-G-C	SR 14-560-HG	T-8/5	GPS-10	SR11201753-6	T-15/5
	NPHT 110408R-HF-P	SR 14-560-HG	T-8/5	NPMT 090404R-HF-I	SR 14-560-HG	T-8/5	NPMT 120408L-HF-C	SR 14-560-HG	T-8/5	GPS-10	SR11201753-6	T-15/5
57.01 - 60.00	NPHT 110408R-G-P	SR 14-560-HG	T-8/5	NPMT 090404R-G-I	SR 14-560-HG	T-8/5	NPMT 120408L-G-C	SR 14-560-HG	T-8/5	GPS-12	SR11201753-6	T-15/5
	NPHT 110408R-HF-P	SR 14-560-HG	T-8/5	NPMT 090404R-HF-I	SR 14-560-HG	T-8/5	NPMT 120408L-HF-C	SR 14-560-HG	T-8/5	GPS-12	SR11201753-6	T-15/5
60.01 - 64.00	NPHT 130408R-G-P	SR 14-560-HG	T-8/5	NPMT 090404R-G-I	SR 14-560-HG	T-8/5	NPMT 120408L-G-C	SR 14-560-HG	T-8/5	GPS-12	SR11201753-6	T-15/5
	NPHT 130408R-HF-P	SR 14-560-HG	T-8/5	NPMT 090404R-HF-I	SR 14-560-HG	T-8/5	NPMT 120408L-HF-C	SR 14-560-HG	T-8/5	GPS-12	SR11201753-6	T-15/5
64.01 - 65.00	NPHT 130408R-G-P	SR 14-560-HG	T-8/5	NPMT 120404R-G-I	SR 14-560-HG	T-8/5	NPMT 120408L-G-C	SR 14-560-HG	T-8/5	GPS-12	SR11201753-6	T-15/5
	NPHT 130408R-HF-P	SR 14-560-HG	T-8/5	NPMT 120404R-HF-I	SR 14-560-HG	T-8/5	NPMT 120408L-HF-C	SR 14-560-HG	T-8/5	GPS-12	SR11201753-6	T-15/5





Tool Dia		Insert						Guide Pad		Wrench	
Min	Max	Center	Inner 1	Inner 2	Inner 3	Peripheral	Screw X 5 Pcs	GPS X 2 Pcs	Screw X 2 Pcs	Insert	Pad
65.01	71.00	NPMT09....L-**-C	NPMT08....R-**-I	NPMT08....R-**-I	NPMT06....R-**-I	NPHT11....R-**-P	SR 14-560-HG	GPS12	SR 11201753-6	T-8/5	T-15/5
71.01	83.00				NPMT08....R-**-I	NPHT13....R-**-P					
83.01	90.00	NPMT12....L-**-C	NPMT08....R-**-I	NPMT08....R-**-I	NPMT08....R-**-I	NPHT13....R-**-P					

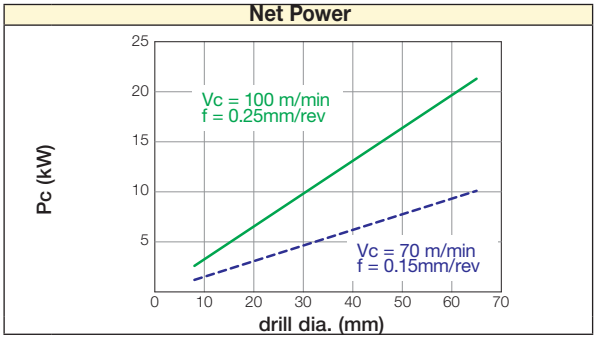
Machining Recommendations for FINEBEAM Drills

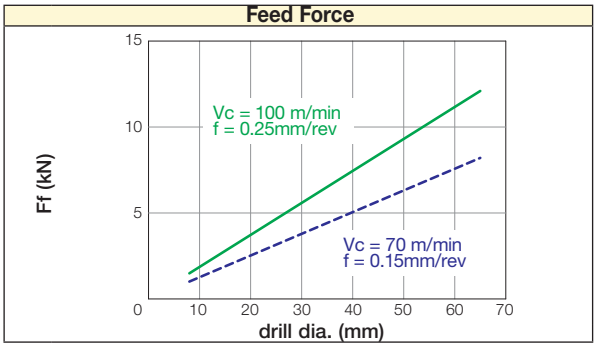
ISO	Material		Condition	Tensile Strength [N/mm²]	Material Group No.(1)	Hardness (HB)	Chipbreaker	Cutting Speed V_c (m/min)	Feed : F (mm/rev) Drill Dia. (mm) 25.00 - 43.00	Feed : F (mm/rev) Drill Dia. (mm) 43.01 - 89.00
P	non-alloy steel and cast steel, free cutting steel	<0.25% C	annealed	420	1	125	HF	70-130	0.11-0.41	0.14-0.45
							G	70-130	0.10-0.30	0.12-0.35
		≥0.25% C	annealed	650	2	190	HF	70-130	0.11-0.41	0.14-0.45
							G	70-130	0.10-0.30	0.12-0.35
		<0.55% C	quenched and tempered	850	3	250	HF	70-130	0.11-0.41	0.14-0.45
							G	70-130	0.10-0.30	0.12-0.35
		≥0.55% C	annealed	750	4	220	HF	70-130	0.11-0.41	0.14-0.45
							G	70-130	0.10-0.30	0.12-0.35
			quenched and tempered	1000	5	300	HF	70-130	0.11-0.41	0.14-0.45
							G	70-130	0.10-0.30	0.12-0.35
	low alloy and cast steel (less than 5% of alloying elements)		annealed	600	6	200	HF	70-120	0.11-0.41	0.20-0.45
							G	70-120	0.10-0.30	0.12-0.35
			quenched and tempered	930	7	275	HF	55-110	0.11-0.41	0.20-0.45
							G	60-120	0.10-0.30	0.12-0.35
				1000	8	300	HF	55-110	0.11-0.41	0.20-0.45
							G	60-120	0.10-0.30	0.12-0.35
				1200	9	350	HF	55-110	0.11-0.41	0.20-0.45
							G	60-120	0.10-0.30	0.12-0.35
	high alloyed steel, cast steel and tool steel		annealed	680	10	200	HF	55-110	0.11-0.38	0.20-0.40
							G	70-130	0.10-0.30	0.12-0.35
			quenched and tempered	1100	11	325	HF	55-110	0.11-0.38	0.20-0.40
							G	70-130	0.10-0.30	0.12-0.35
	stainless steel and cast steel		ferritic/martensitic	680	12	200	HF	40-110	0.11-0.41	0.20-0.45
							G	70-130	0.10-0.30	0.12-0.35
			martensitic	820	13	240	HF	40-110	0.11-0.41	0.20-0.45
							G	70-130	0.10-0.30	0.12-0.35
M	stainless steel and cast steel		austenitic, duplex	600	14	180	HF	40-110	0.11-0.41	0.20-0.45
							G	70-130	0.10-0.30	0.12-0.35
K	grey cast iron (GG)		ferritic/pearlitic		15	180	HF	50-110	0.11-0.38	0.24-0.41
							G	50-110	0.10-0.25	0.12-0.35
			pearlitic/martensitic		16	260	HF	50-110	0.11-0.38	0.24-0.41
							G	50-110	0.10-0.25	0.12-0.35
	nodular cast iron (GGG)		ferritic		17	160	HF	50-110	0.11-0.38	0.24-0.41
							G	50-110	0.10-0.25	0.12-0.35
			pearlitic		18	250	HF	50-110	0.11-0.38	0.24-0.41
							G	50-110	0.10-0.25	0.12-0.35
	malleable cast iron		ferritic		19	130	HF	50-110	0.11-0.38	0.24-0.41
							G	50-110	0.10-0.25	0.12-0.35
			pearlitic		20	230	HF	50-110	0.11-0.38	0.24-0.41
							G	50-110	0.10-0.25	0.12-0.35
N	aluminum-wrought alloys		not hardenable		21	60	HF	65-150	0.09-0.33	0.24-0.35
							G	65-130	0.10-0.25	0.12-0.35
			hardenable		22	100	HF	65-150	0.09-0.33	0.24-0.35
							G	65-130	0.08-0.23	0.12-0.27
	aluminum-cast alloys	≤ 12% Si	not hardenable		23	75	HF	65-150	0.09-0.33	0.24-0.35
							G	65-130	0.08-0.23	0.12-0.27
			hardenable		24	90	HF	65-150	0.09-0.33	0.24-0.35
							G	65-130	0.08-0.23	0.12-0.27
		>12% Si	high temperature		25	130	HF	65-150	0.09-0.33	0.24-0.35
							G	65-130	0.08-0.23	0.12-0.27
	copper alloys	>1% Pb	free cutting		26	110	HF	65-150	0.09-0.33	0.24-0.35
							G	65-130	0.08-0.23	0.12-0.27
			brass		27	90	HF	65-150	0.09-0.33	0.24-0.35
							G	65-130	0.08-0.23	0.12-0.27
			electrolitic copper		28	100	HF	65-150	0.09-0.33	0.24-0.35
							G	65-130	0.08-0.23	0.12-0.27
S	high temp. alloys	Fe based	annealed		31	200	HF	20-55	0.09-0.30	0.20-0.33
							G	20-50	0.08-0.23	0.12-0.27
			hardened		32	280	HF	20-55	0.09-0.30	0.20-0.33
							G	20-50	0.08-0.23	0.12-0.27
		Ni / Co based	annealed		33	250	HF	20-55	0.09-0.30	0.20-0.33
							G	20-50	0.08-0.23	0.12-0.27
			hardened		34	350	HF	20-55	0.09-0.30	0.20-0.33
							G	20-50	0.08-0.23	0.12-0.27
			cast		35	320	HF	20-55	0.09-0.30	0.20-0.33
							G	20-50	0.08-0.23	0.12-0.27
	titanium alloys		pure	400	36		HF	30-60	0.09-0.30	0.20-0.33
							G	30-60	0.08-0.23	0.12-0.27
			alpha+beta alloys hardened	1050	37		HF	30-60	0.09-0.30	0.20-0.33
							G	30-60	0.08-0.23	0.12-0.27
H	hardened steel	≥ 40HRC	hardened		38		HF	30-60	0.09-0.30	0.20-0.33
							G	30-60	0.08-0.23	0.12-0.27

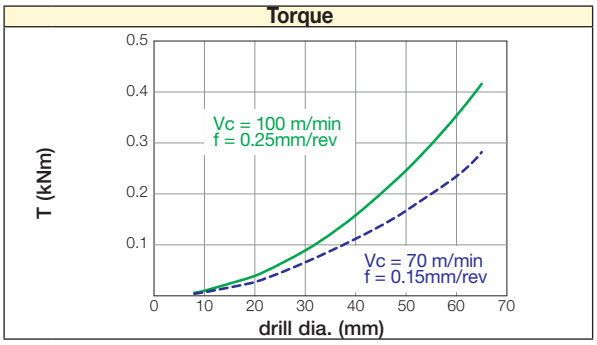
(1) Based on ISO 513 and VDI 3323 standards

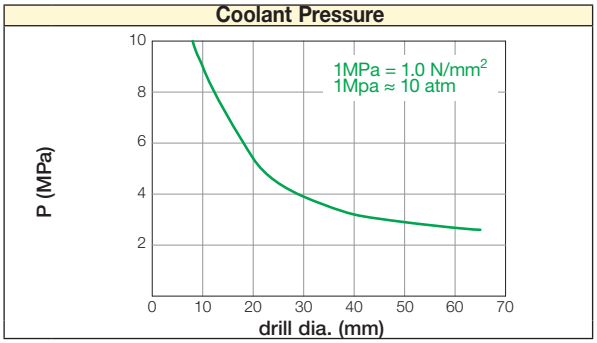
Technical Guide

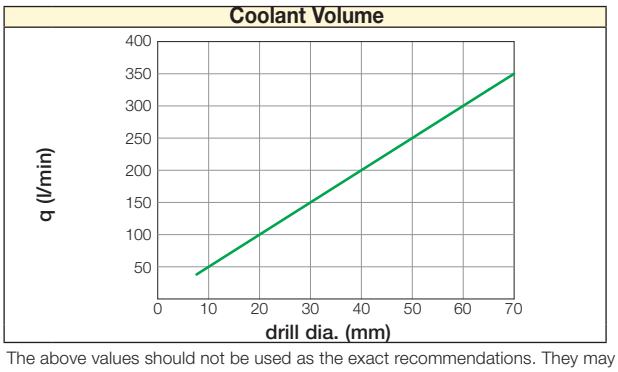
STS - Setting Guidelines for Cutting Loads, Fluid Pressure and Flow Rate During STS Operation



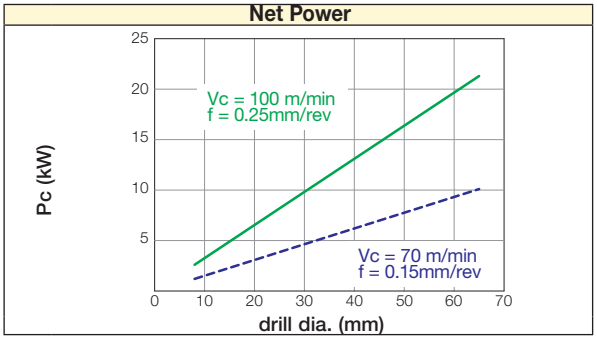


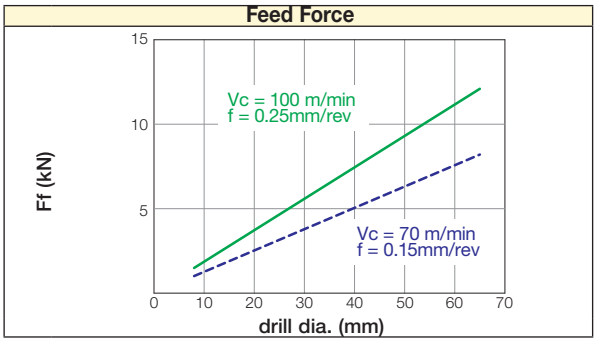


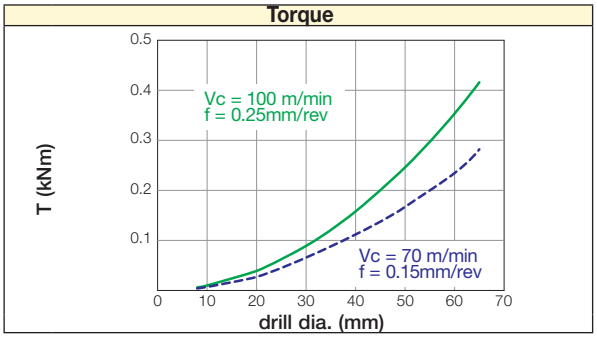


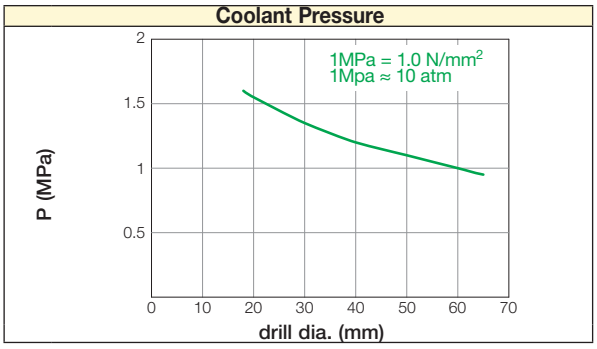


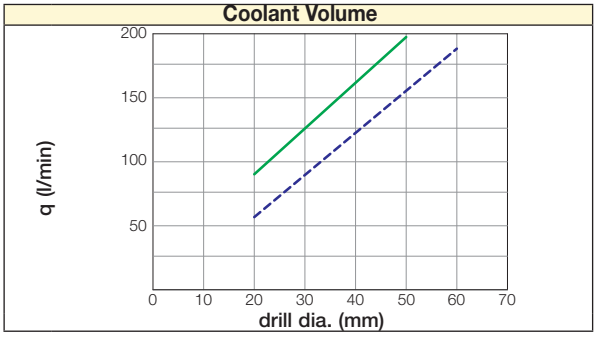
DTS - Setting Guidelines for Cutting Loads, Fluid Pressure and Flow Rate During DTS Operation







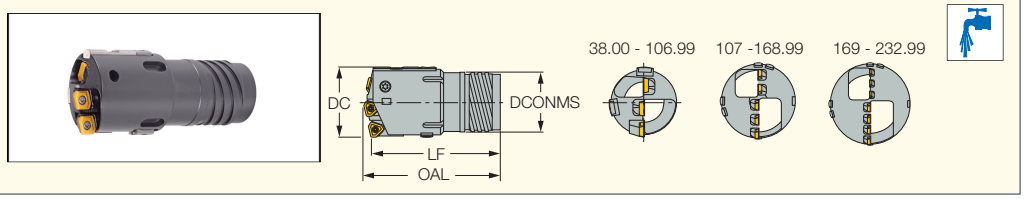




The above values should not be used as the exact recommendations. They may need modification depending on the machining conditions, materials, etc.

ISCARDEEPDRILL

DSD-EC
Deep Single Tube Drills with External 4-Start Thread Connection and Cartridges (38-292 dia.)



Designation	DCN(1)	DCX(2)	OAL	LF	DCONMS	Ts(3)
DSD-EC 38.00-39.60	38.00	39.60	90.00	85.00	30.00	TS-I11
DSD-EC 39.61-43.00	39.61	43.00	91.00	85.00	33.00	TS-I12
DSD-EC 43.01-47.00	43.01	47.00	101.00	95.00	36.00	TS-I13
DSD-EC 47.01-51.70	47.01	51.70	102.00	95.00	39.00	TS-I14
DSD-EC 51.71-56.20	51.71	56.20	107.00	100.00	43.00	TS-I15
DSD-EC 56.21-60.60	56.21	60.60	118.00	110.00	47.00	TS-I16
DSD-EC 60.61-64.99	60.61	64.99	119.00	110.00	51.00	TS-I17
DSD-EC 65.00-66.99	65.00	66.99	159.00	150.00	52.00	TS-I18
DSD-EC 67.00-72.99	67.00	72.99	159.00	150.00	58.00	TS-I19
DSD-EC 73.00-79.99	73.00	79.99	160.00	150.00	63.00	TS-I20
DSD-EC 80.00-86.99	80.00	86.99	191.00	180.00	70.00	TS-I21
DSD-EC 87.00-99.99	87.00	99.99	193.00	180.00	77.00	TS-I22
DSD-EC 100.00-106.99	100.00	106.99	193.00	180.00	89.00	TS-I23
DSD-EC 107.00-111.99	107.00	111.99	197.00	180.00	89.00	TS-I23
DSD-EC 112.00-123.99	112.00	123.99	221.00	205.00	101.00	TS-I24
DSD-EC 124.00-135.99	124.00	135.99	222.00	205.00	113.00	TS-I25
DSD-EC 136.00-147.99	136.00	147.99	223.00	205.00	125.00	TS-I26
DSD-EC 148.00-159.99	148.00	159.99	245.00	225.00	137.00	TS-I27
DSD-EC 160.00-168.99	160.00	168.99	246.00	225.00	149.00	TS-I28
DSD-EC 169.00-171.994	169.00	171.99	246.00	225.00	149.00	TS-I28
DSD-EC 172.00-183.99	172.00	183.99	247.00	225.00	161.00	TS-I29
DSD-EC 184.00-195.99	184.00	195.99	267.00	245.00	173.00	TS-I30
DSD-EC 196.00-207.99	196.00	207.99	270.00	245.00	185.00	TS-I31
DSD-EC 208.00-219.99	208.00	219.99	271.00	245.00	197.00	TS-I32
DSD-EC 220.00-231.99	220.00	231.99	293.00	265.00	208.00	TS-I33
DSD-EC 232.00-232.99	232.00	232.99	293.00	265.00	220.00	TS-I34
DSD-EC 233.00-243.99	233.00	243.99	294.00	265.00	220.00	TS-I34
DSD-EC 244.00-255.99	244.00	255.99	294.00	265.00	232.00	TS-I35
DSD-EC 256.00-267.99	256.00	267.99	322.00	290.00	244.00	TS-I36
DSD-EC 268.00-279.99	268.00	279.99	323.00	290.00	256.00	TS-I37
DSD-EC 280.00-291.99	280.00	291.99	325.00	290.00	268.00	TS-I38

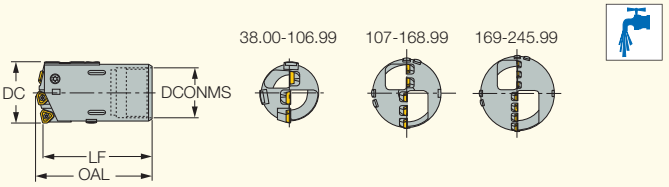
- Important: The specified drilling range using the original outer cartridge and pad may be enlarged by using optional outer cartridges and pads as specified on page 270
- For user guide, see pages 265-267, 272-276 • For spare parts, see pages 268-269 • Ordering example: DSD-EC 67.30

(1) Cutting diameter minimum
(2) Cutting diameter maximum
(3) Tube designation

For inserts, see pages: NPMX 0803 RB/RG (260) • TPMX (260)
For holders, see pages: TS-I** (327)

ISCARDEEPDRILL

DSD-IC
Deep Single Tube Drills with Internal Single-Start Thread Connection and Cartridges (38-294 dia.)



Designation	DCN(1)	DCX(2)	OAL	LF	DCONMS	Ts(3)
DSD-IC 38.00-39.99	38.00	39.99	85.00	80.00	30.00	TS-O15
DSD-IC 40.00-43.99	40.00	43.99	86.00	80.00	33.00	TS-O16
DSD-IC 44.00-46.99	44.00	46.99	96.00	90.00	37.00	TS-O17
DSD-IC 47.00-51.99	47.00	51.99	97.00	90.00	41.00	TS-O18
DSD-IC 52.00-56.99	52.00	56.99	107.00	100.00	44.00	TS-O19
DSD-IC 57.00-60.99	57.00	60.99	118.00	110.00	49.00	TS-O20
DSD-IC 61.00-67.99	61.00	67.99	119.00	110.00	53.00	TS-O21
DSD-IC 68.00-74.99	68.00	74.99	129.00	120.00	59.00	TS-O22
DSD-IC 75.00-80.99	75.00	80.99	161.00	150.00	65.00	TS-O23
DSD-IC 81.00-90.99	81.00	90.99	162.00	150.00	71.00	TS-O24
DSD-IC 91.00-98.99	91.00	98.99	162.00	150.00	79.00	TS-O25
DSD-IC 99.00-106.99	99.00	106.99	163.00	150.00	90.00	TS-O26
DSD-IC 107.00-110.99	107.00	110.99	164.00	150.00	90.00	TS-O26
DSD-IC 111.00-122.99	111.00	122.99	165.00	150.00	102.00	TS-O27
DSD-IC 123.00-134.99	123.00	134.99	167.00	150.00	114.00	TS-O28
DSD-IC 135.00-148.99	135.00	148.99	168.00	150.00	126.00	TS-O29
DSD-IC 149.00-161.99	149.00	161.99	170.00	150.00	139.00	TS-O30
DSD-IC 162.00-168.99	162.00	168.99	211.00	190.00	151.00	TS-O31
DSD-IC 169.00-173.99	169.00	173.99	211.00	190.00	151.00	TS-O31
DSD-IC 174.00-185.99	174.00	185.99	213.00	190.00	163.00	TS-O32
DSD-IC 186.00-197.99	186.00	197.99	212.00	190.00	175.00	TS-O33
DSD-IC 198.00-209.99	198.00	209.99	215.00	190.00	187.00	TS-O34
DSD-IC 210.00-221.99	210.00	221.99	217.00	190.00	199.00	TS-O35
DSD-IC 222.00-232.99	222.00	232.99	218.00	190.00	211.00	TS-O36
DSD-IC 233.00-233.99	233.00	233.99	217.00	190.00	211.00	TS-O36
DSD-IC 234.00-245.99	234.00	245.99	219.00	190.00	223.00	TS-O37
DSD-IC 246.00-257.99	246.00	257.99	221.00	190.00	235.00	TS-O38
DSD-IC 258.00-269.99	258.00	269.99	242.00	210.00	245.00	TS-O39
DSD-IC 270.00-281.99	270.00	281.99	244.00	210.00	259.00	TS-O40
DSD-IC 282.00-293.99	282.00	293.99	245.00	210.00	271.00	TS-O41

- Important: The specified drilling range using the original outer cartridge and pad may be enlarged by using optional outer cartridges and pads as specified on page 270
- For spare parts and insert information, see pages 268-269 • For user guide, see pages 265-267, 272-276 • Ordering example: DSD-IC 67.30

(1) Cutting diameter minimum
(2) Cutting diameter maximum
(3) Tube designation

For inserts, see pages: NPMX 0803 RB/RG (260) • TPMX (260)
For holders, see pages: TS-O** (328)

Universal Marking for Deep Drilling Tools

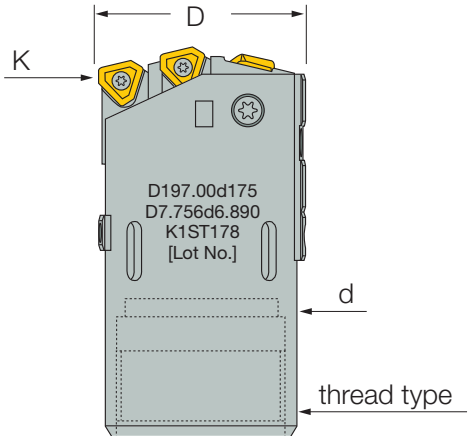
D- **Tool Diameter**
Metric- D197.00
Inch- D7.756

d- Pilot Diameter
Metric- d175
Inch- d6.890

Tool Style
K- solid drill cartridge style

Thread Type
4ST- four-start thread single tube
1ST- single-start thread single tube
4DT- four-start thread double tube

178- tube diameter



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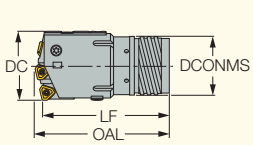
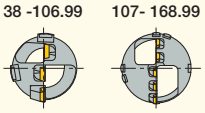
DDD-EC
Deep Double Tube Drills with External 4-Start Thread Connection and Cartridges (38-184 dia.)





Designation	DCN(1)	DCX(2)	OAL	LF	DCONMS	Ts(3)	Tsi(4)
DDD-EC 38.00-39.60	38.00	39.60	90.00	85.00	33.00	TDO-I8	TDI-N8
DDD-EC 39.61-43.00	39.61	43.00	91.00	85.00	36.00	TDO-I9	TDI-N9
DDD-EC 43.01-47.00	43.01	47.00	101.00	95.00	39.00	TDO-I10	TDI-N10
DDD-EC 47.01-51.70	47.01	51.70	102.00	100.00	43.00	TDO-I11	TDI-N11
DDD-EC 51.71-56.20	51.71	56.20	107.00	100.00	47.00	TDO-I12	TDI-N12
DDD-EC 56.21-64.99	56.21	65.00	119.00	110.00	51.00	TDO-I13	TDI-N13
DDD-EC 65.00-66.99	65.00	66.99	159.00	150.00	52.00	TDO-I14	TDI-N14
DDD-EC 67.00-72.99	67.00	72.99	159.00	150.00	58.00	TDO-I15	TDI-N15
DDD-EC 73.00-79.99	73.00	79.99	160.00	150.00	63.00	TDO-I16	TDI-N16
DDD-EC 80.00-86.99	80.00	86.99	191.00	180.00	70.00	TDO-I17	TDI-N17
DDD-EC 87.00-99.99	87.00	99.99	193.00	180.00	77.00	TDO-I18	TDI-N18
DDD-EC 100.00-106.99	100.00	106.99	193.00	180.00	89.00	TDO-I19	TDI-N19
DDD-EC 107.00-111.99	107.00	111.99	197.00	180.00	89.00	TDO-I19	TDI-N19
DDD-EC 112.00-123.99	112.00	123.99	221.00	205.00	101.00	TDO-I20	TDI-N20
DDD-EC 124.00-135.99	124.00	135.99	222.00	205.00	113.00	TDO-I21	TDI-N21
DDD-EC 136.00-147.99	136.00	147.99	223.00	205.00	125.00	TDO-I22	TDI-N22
DDD-EC 148.00-159.99	148.00	159.99	245.00	225.00	137.00	TDO-I23	TDI-N23
DDD-EC 160.00-168.99	160.00	168.99	246.00	225.00	149.00	TDO-I24	TDI-N24
DDD-EC 169.00-171.99	169.00	171.99	246.00	225.00	149.00	TDO-I24	TDI-N24
DDD-EC 172.00-183.99	172.00	183.99	247.00	225.00	161.00	TDO-I25	TDI-N25

- Important: The specified drilling range using the original outer cartridge and pad may be enlarged by using optional outer cartridges and pads as specified on page 270
- For spare parts and insert information, see pages 268-269 • For user guide see pages 265-267, 272-276 • Ordering example: DDD-EC 148.00

(1) Cutting diameter minimum
(2) Cutting diameter maximum
(3) Outer tube designation
(4) Inner tube designation

For inserts, see pages: NPMX 0803 RB/RG (260) • TPMX (260)
For holders, see pages: TDO-I (D18.41-65.00) (329) • TDO-I (D65.00-171.99) (330)

Universal Marking for Deep Drilling Tools

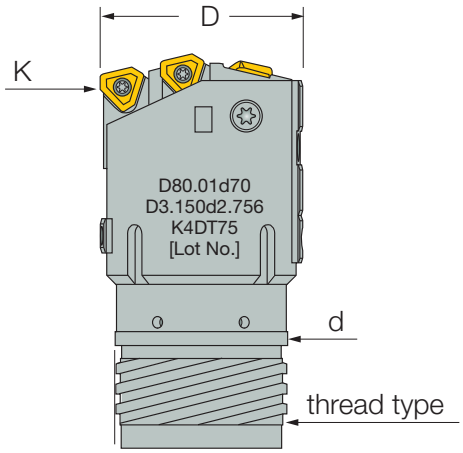
D- **Tool Diameter**
Metric- D80.0
Inch- D3.150

d- Pilot Diameter
Metric- d70
Inch- d2.756

Tool Style
K- cartridge style solid drill

Thread Type
4ST- four-start thread single tube
1ST- single-start thread single tube
4DT- four-start thread double tube

75- tube diameter



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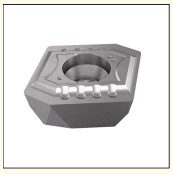
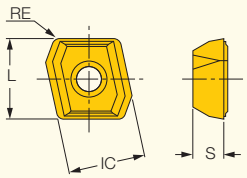
NPMX 0803 RB/RG
Inserts for Drilling Heads
DSD-EC / DDD-EC / DSD-IC





Designation	Dimensions IC	S	RE	L	Tough ↔ Hard IC8355	IC908	IC948
NPMX 080304R-B	8.00	3.18	0.40	8.36		●	
NPMX 080308R-G	8.00	3.18	0.80	8.36	●	●	●

For tools, see pages: DDD-EC (259) • DSD-EC (257) • DSD-IC (258)

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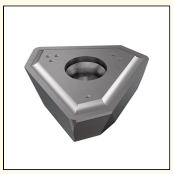
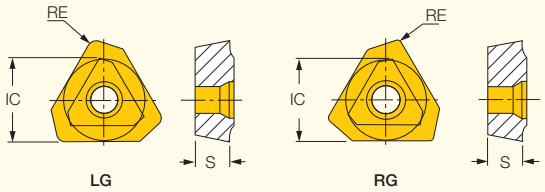
TPMX
Inserts for Drilling / Counterboring / Trepanning Tools

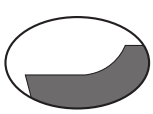
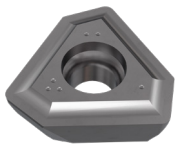
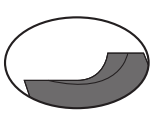
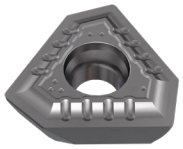
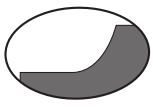
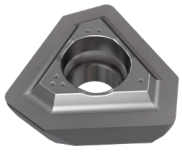
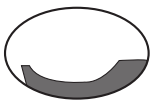
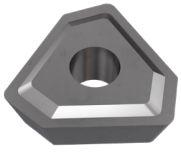




Designation	Dimensions IC	S	RE	Tough ↔ Hard IC8355	IC908	IC948	IC806
TPMX 140304R-B	8.45	3.50	0.40		●		●
TPMX 140308L-G	8.45	3.50	0.80		●		
TPMX 140308R-B	8.45	3.50	0.80			●	●
TPMX 140308R-DT	8.45	3.50	0.80		●	●	
TPMX 140308R-G	8.45	3.50	0.80	●	●	●	●
TPMX 170404L-BG	10.30	4.00	0.40		●		
TPMX 170404R-B	10.30	4.00	0.40		●		●
TPMX 170408L-DT	10.30	4.00	0.80		●		
TPMX 170408L-G	10.30	4.00	0.80		●	●	
TPMX 170408R-B	10.30	4.00	0.80			●	●
TPMX 170408R-BG	10.30	4.00	0.80		●	●	●
TPMX 170408R-DT	10.30	4.00	0.80		●	●	
TPMX 170408R-G	10.30	4.00	0.80	●	●	●	●
TPMX 240504R-B	14.20	5.50	0.40		●		●
TPMX 240512L-BG	14.20	5.50	1.20		●		
TPMX 240512L-DT	14.20	5.50	1.20		●		
TPMX 240512L-G	14.20	5.50	1.20		●	●	
TPMX 240512R-B	14.20	5.50	1.20			●	●
TPMX 240512R-BG	14.20	5.50	1.20		●	●	●
TPMX 240512R-DT	14.20	5.50	1.20		●	●	
TPMX 240512R-G	14.20	5.50	1.20	●	●	●	●
TPMX 280708R-B	17.00	7.50	0.80		●		●
TPMX 280716L-BG	17.00	7.50	1.60		●		
TPMX 280716L-G	17.00	7.50	1.60		●	●	
TPMX 280716R-B	17.00	7.50	1.60			●	●
TPMX 280716R-BG	17.00	7.50	1.60		●	●	●
TPMX 280716R-DT	17.00	7.50	1.60		●	●	
TPMX 280716R-G	17.00	7.50	1.60	●	●	●	●

For tools, see pages: DDC-EC (310) • DDD-EC (259) • DSC-EC (292) • DSC-IC (302) • DSD-EC (257) • DSD-IC (258) • DSTR-EC (317) • DSTR-IC (319)

Chipbreaker Selection

G			B		
	versatile			good chip control for heat-resistant alloy	
BG			DT		
	chip control for difficult-to-cut steel			to reduce machine load	

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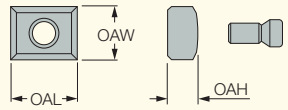
SGP
Drilling Head Sub-Guide Pads



Designation	OAL	OAW	OAH
SGP-01	10.00	6.00	3.00
SGP-02	10.00	8.00	4.50
SGP-03	10.00	10.00	5.00
SGP-04	20.00	14.00	7.00

- Select an outer cartridge and pad for the required enlarged diameter.

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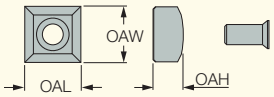
GPP
Drilling Head Guide
Pad Protectors



Designation	OAL	OAW	OAH
GPP-06	8.00	8.00	4.50
GPP-07	10.00	10.00	6.00
GPP-08	14.00	14.00	7.50
GPP-09	18.00	18.00	9.00

- Select an outer cartridge and pad for the required enlarged diameter.

Recommended Claming Torque

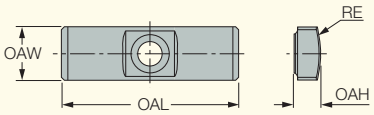
Insert Screw	
	(N·m)
SR 11201753-2	1
SR 11201753-3	1.3
SR 11201753-7	2.3
SR 11201753-9	3.5
SR 11201753-7	5

Cartridge Screw	
	(N·m)
SR 11201752-1	3.5
SR 11201753-5	2.3
SR 11201753-5	3.5
SR 11201756-7	3
SR 11201756-10	2.2
SR 11201756-11	2.2
SR 11201756-12	3
SR 11201756-15	5

Guide Pad Screw	
	(N·m)
SR 14-571/5	3.5
SR 34-506-C	2.3
LS1206SSS	3

ISCARDEEPDRILL

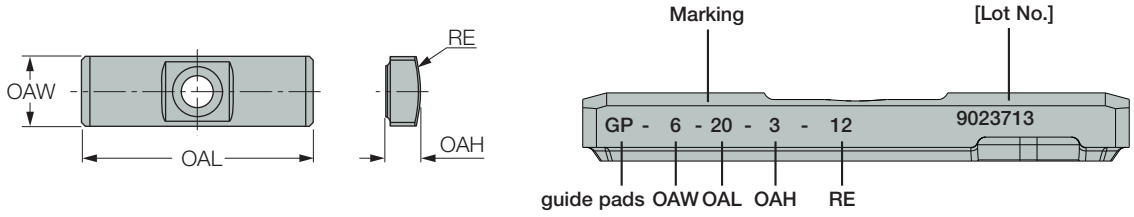
GPS
Deep Drilling Solid
Carbide Guide Pads



Designation	Dimensions				Tough ↔ Hard		
	OAW	OAL	OAH	RE	IC928	IC950	IC908
GPS-04-16-045-DC (1)	4.00	16.00	1.80	4.50			●
GPS-04-16-050-DC (1)	4.00	16.00	1.80	5.00			●
GPS-04-16-055-DC (1)	4.00	16.00	2.00	5.50	●		●
GPS-05-18-060-DC (1)	5.00	18.00	2.50	6.00	●		●
GPS-05-18-060	5.00	18.00	2.50	6.00		●	
GPS-05-18-075-DC (1)	5.00	18.00	2.50	7.50	●		●
GPS-06-20-075-DC (1)	6.00	20.00	3.00	7.50			●
GPS-06-20-075	6.00	20.00	3.00	7.50		●	
GPS-06-20-085-DC (1)	6.00	20.00	3.00	8.50	●		●
GPS-06-20-085	6.00	20.00	3.00	8.50		●	
GPS-06-20-100-DC (1)	6.00	20.00	3.00	10.00	●		●
GPS-06-20-100	6.00	20.00	3.00	10.00		●	
GPS-06-20-120-DC (1)	6.00	20.00	3.00	12.00	●		●
GPS-06-20-120	6.00	20.00	3.00	12.00		●	
GPS-07-20-120-DC (1)	7.00	20.00	3.50	12.00	●		●
GPS-07-20-120	7.00	20.00	3.50	12.00		●	
GPS-08-25-155-DC (1)	8.00	25.00	4.50	15.50	●		●
GPS-08-25-155	8.00	25.00	4.50	15.50		●	
GPS-10-30-200-DC (1)	10.00	30.00	4.50	20.00	●		●
GPS-10-30-200	10.00	30.00	4.50	20.00		●	
GPS-10-35-200-DC (1)	10.00	35.00	6.00	20.00	●		●
GPS-10-35-200	10.00	35.00	6.00	20.00		●	
GPS-12-35-250-DC (1)	12.00	35.00	5.50	25.00	●		●
GPS-12-35-250	12.00	35.00	5.50	25.00		●	
GPS-14-40-250-DC (1)	14.00	40.00	7.50	25.00	●		●
GPS-14-40-250	14.00	40.00	7.50	25.00		●	
GPS-18-40-300-DC (1)	18.00	40.00	9.00	30.00	●		●

(1) DC- Double Chamfer

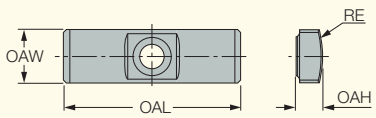
Universal Marking for Deep Drilling Tools



Guide Pad Grade Recommendation

	Oil Coolant			Water Based Coolant		
Priority	1	2	3	1	2	3
ISO-P	IC950	IC908	IC928	IC928	IC908	-
ISO-K	IC950	IC908	IC928	IC928	IC908	-
ISO-M	IC928	IC908	IC950	IC928	IC908	-
ISO-S	IC928	IC908	IC950	IC928	IC908	-

GPS-PLUS
Deep Drilling Solid Carbide
Plus Size Guide Pads

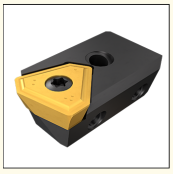


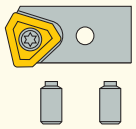
Designation	Dimensions						IC908
	DCN(1)	DCX(2)	OAW	OAL	OAH	RE	
GPS-08-25-160-DC+1	38.00	44.99	8.00	25.00	5.00	16.00	●
GPS-08-25-165-DC+2	38.00	44.99	8.00	25.00	5.50	16.50	●
GPS-08-25-170-DC+3	38.00	44.99	8.00	25.00	6.00	17.00	●
GPS-10-35-205-DC+1	45.00	59.99	10.00	35.00	6.50	20.50	●
GPS-10-35-210-DC+2	45.00	59.99	10.00	35.00	7.00	21.00	●
GPS-10-35-215-DC+3	45.00	59.99	10.00	35.00	7.50	21.50	●
GPS-10-35-220-DC+4	45.00	59.99	10.00	35.00	8.00	22.00	●
GPS-14-40-255-DC+1	60.00	98.99	14.00	40.00	8.00	25.50	●
GPS-14-40-260-DC+2	60.00	98.99	14.00	40.00	8.50	26.00	●
GPS-14-40-265-DC+3	60.00	98.99	14.00	40.00	9.00	26.50	●
GPS-14-40-270-DC+4	60.00	98.99	14.00	40.00	9.50	27.00	●
GPS-14-40-275-DC+5	60.00	98.99	14.00	40.00	10.00	27.50	●
GPS-18-40-305-DC+1	99.00	293.99	18.00	40.00	9.50	30.50	●
GPS-18-40-310-DC+2	99.00	293.99	18.00	40.00	10.00	31.00	●
GPS-18-40-315-DC+3	99.00	293.99	18.00	40.00	10.50	31.50	●
GPS-18-40-320-DC+4	99.00	293.99	18.00	40.00	11.00	32.00	●
GPS-18-40-325-DC+5	99.00	293.99	18.00	40.00	11.50	32.50	●

(1) Cutting diameter minimum
(2) Cutting diameter maximum

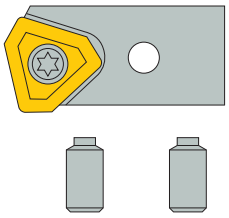
ISCARDEEPDRILL

CAOD
Drilling / Boring / Trepanning
Head Peripheral Cartridge





Universal Marking for Deep Drilling Tools



CA - P - DR - 0800 - R

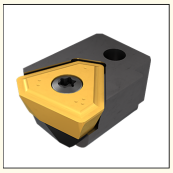
- CA - P: Peripheral Cartridge
- DR: DR : Drilling / CB : Counter Bore
- 0800: IC
- R: L/R HAND

Spare Parts

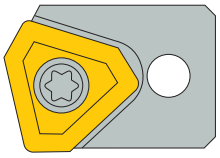
Designation	Adjustment Screw	Key	Locking Screw	Key	Insert	Insert Clamping Screw
CAOD-080	SR 11201755-4	HW 1.5	SR 11201756-11	HW 2.0	NPMX 0803..R-G	SR 11201753-2
CAOD-0845	SR 11201755-6	HW 2.0	SR 11201756-10	HW 2.5	TPMX 1403..R-G	SR 11201753-3
CAOD-085	SR 11201755-7	HW 1.5	SR 11201756-11	HW 2.0	NPMX 0803..R-G	SR 11201753-2
CAOD-103	SR 11201755-8	HW 2.5	SR 11201756-12	HW 3.0	TPMX 1704..R-G	SR 11201753-7
CAOD-142	SR 11201755-9	HW 2.5	SR 11201756-15	HW 4.0	TPMX 2405..R-G	SR 11201753-9
CAOD-170	SR 11201755-11	HW 3.0	SR 11201756-15	HW 4.0	TPMX 2807..R-G	SR 11201753-10

ISCARDEEPDRILL

CAID
Drilling head Inner Cartridge



Universal Marking for Deep Drilling Tools



CA - I - 0845 - R

- CA - I: Internal Cartridge
- 0845: IC
- R: L/R HAND

Spare Parts

Designation	Locking Screw	Key	Insert	Insert Clamping Screw	Key
CAID-080	SR 11201753-5	T-9/51	NPMX 0803..R-G	SR 11201753-2	T-7/51
CAID-0845	SR 11201753-6	T-15/51	TPMX 1403..R-G	SR 11201753-3	T-8/51
CAID-085	SR 11201753-5	T-9/51	NPMX 0803..R-G	SR 11201753-2	T-7/51
CAID-103	SR 11201752-1	T-15/51	TPMX 1704..R-G	SR 11201753-7	T-9/51
CAID-142	SR 11201756-7	HW 3.0	TPMX 2405..R-G	SR 11201753-9	T-15/51
CAID-170	SR 11201756-7	HW 3.0	TPMX 2807..R-G	SR 11201753-10	T-20/51

Chip Form General Information

Chip Form in Deep Hole Drilling

Chip form plays a key role in STS (Single tube system) and DTS (Double tube system) while large-volume and high-pressure coolant do so as well. Because chips are removed through the tube with coolant, proper chip formation is essential for smooth and steady evacuation.

Chip Formation

Chip formation is affected by multiple factors, such as workpiece material, chipbreaker geometry, cutting speed, feed, type of coolant, and coolant temperature. Suitable chip formation depends on cutting operation but is controllable by changing the cutting conditions.

How to Decide the Chip Form

Generally the chip length should be 3 - 4 times its width, but tends to be longer with difficult-to-cut materials. In this case, chip evacuation can be improved by making the chips thinner, which is normally done by reducing the feed rate.

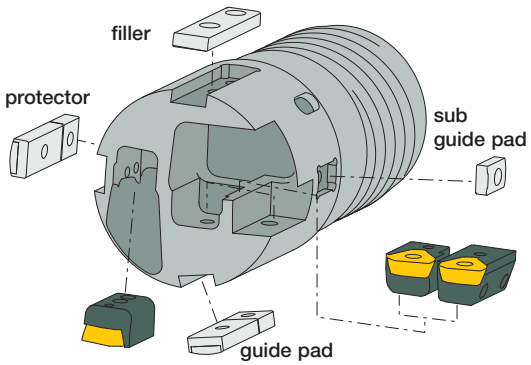
The graph below shows chip formation for different cutting speeds and feeds. Short chips are created by reducing the cutting speed or increasing the feed.

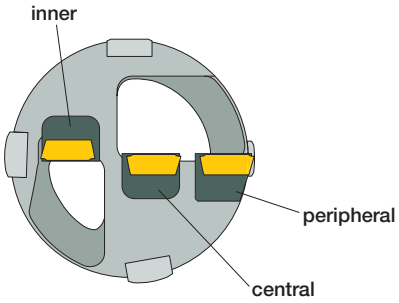
Table 1

		Central	Intermediate	Peripheral
Cutting Speed: V_c (m/min)	110			
	90			
	70			
	50			
Condition		0.10	0.15	0.20
		Feed: F (mm/rev)		

From left to right in each box the order is central, intermediate and peripheral chip.

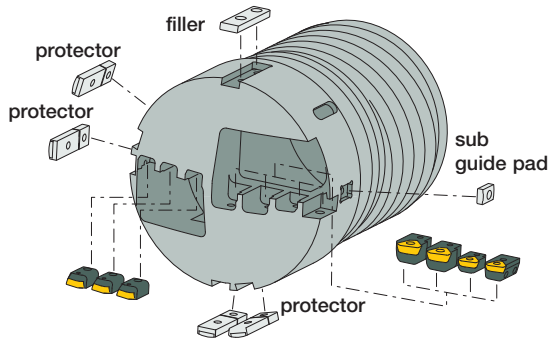
Ø38.00-106.99mm

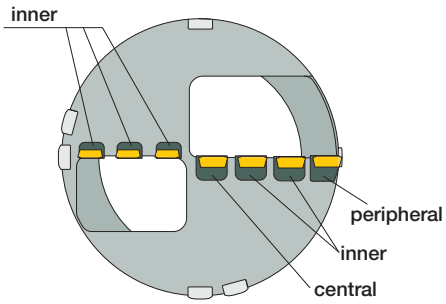




Part positions may vary depending on the drill size.

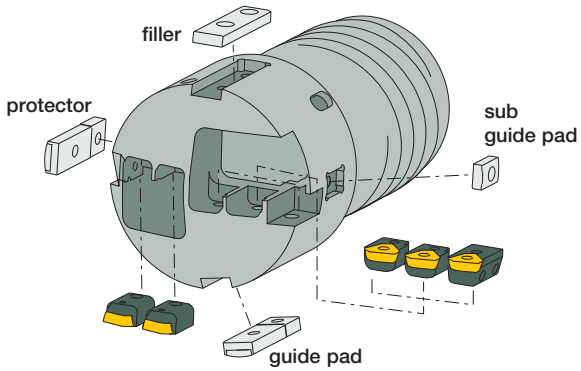
Ø169.00-232.99mm

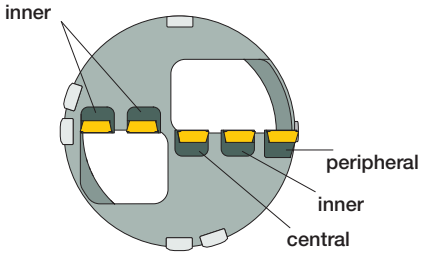




Part positions may vary depending on the drill size.

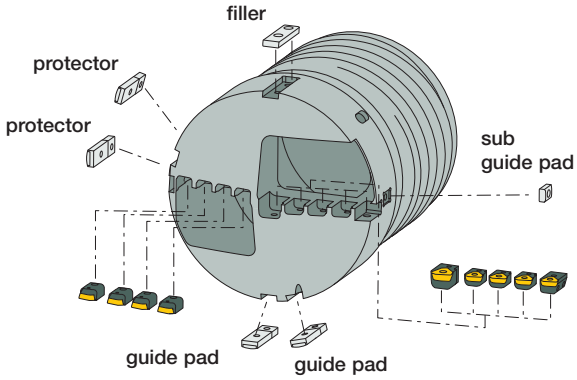
Ø107.00-168.99mm

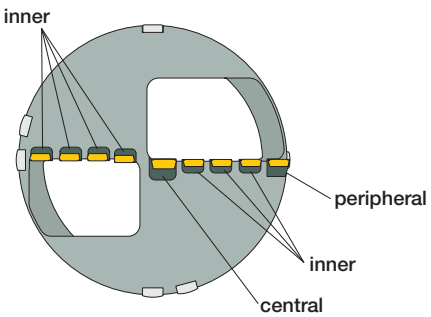




Part positions may vary depending on the drill size.

Ø233.00-291.99mm





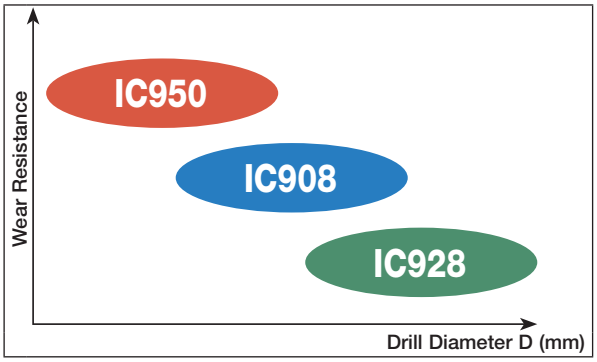
Part positions may vary depending on the drill size.

* For more information regarding the filler please see page 267

Guide Pads

Guide pads are subject to wear, like inserts.

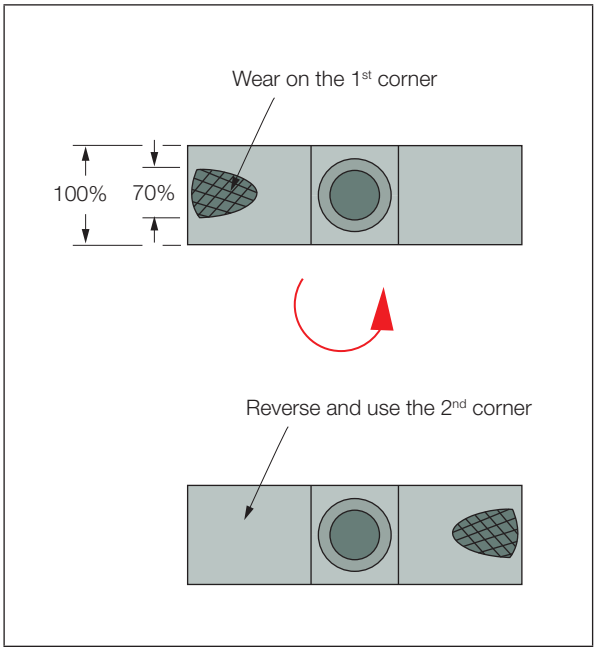
- Each guide pad can be used on two sides. When the first corner wears out 70% of the width, reverse the guide pad to use the second corner.
- Replace with a new guide pad when the second corner wears out.



For higher wear resistance
- High wear-resistant grade.

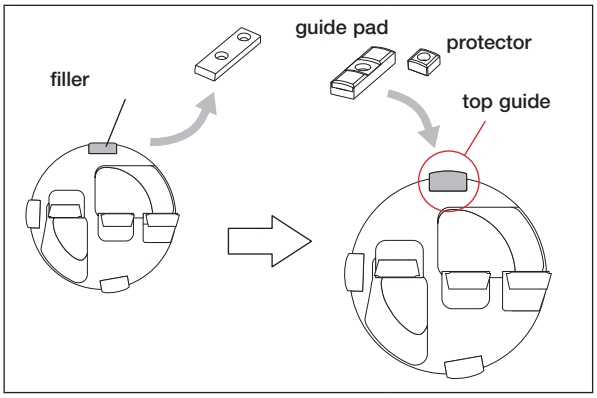
First recommendation
- Suitable for various workpiece materials.
- Long tool life due to unique substrate and coating.

For higher fracture resistance
- High fracture-resistant grade.



Please replace the filler with the top guide pad when:

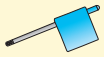
- High hole accuracy is required.
- L/D (hole length-to-diameter) ratio is greater than 50:1.
- Drilling a workpiece which has a tail stock hole.
- The DOC required is greater than the range of the peripheral insert for counterboring. *See chart below.



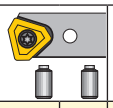
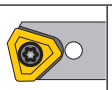
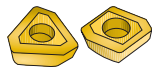
*Maximum DOC of peripheral insert.

Cartridge	DOC (mm)	Guide Pad
CAOD-0845	6.4	GPS-08.../GPS-10...
CAOD-103	7.2	GPS-10.../GPS-14...
CAOD-142	10.4	GPS-14.../GPS-18...
CAOD-170	12.0	GPS-18...

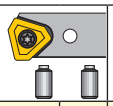
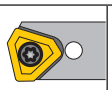
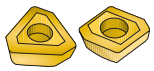
For diameter less than 92mm, the drill head is semi-standard using the top guide pad.
Please contact your dealer for further information.

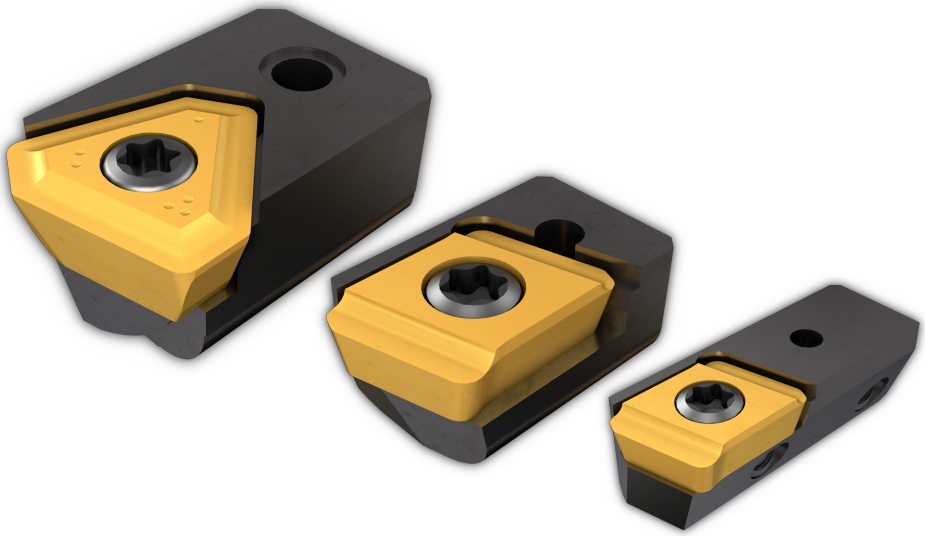
Guide Pad		
	Screw	Key
		
GPS-05	SR 34-508 M2.2X0.45	T-7/5
GPS-06	SR 11201753-1	T-7/5
GPS-07	SR 11201753-4	T-9/5
GPS-08	SR 11201753-4	T-9/5
GPS-10	SR 11201753-8	T-15/5
GPS-12	SR 11201753-8	T-15/5
GPS-14	SR 11201752-2	T-15/5
GPS-18	SR 11201756-7S	T-15/5

Spare Parts

DSD-EC / DDD-EC / DSD-IC														
Diameter	Peripheral	Qty.	Inner/ Central	Qty.	Guide Pad	Qty.	Guide Pad Protectors	Qty.	Sub Guide Pad	Qty.	Peripheral Insert	Qty.	Inner/ Central Insert	Qty.
38.00-39.99	CAOD-080	1	CAID-080	1	GPS-08-25-155-DC	2	GPP-06	2	SGP-02	1	NPMX 08**R..	1	NPMX 08**R..	1
			CAID-080	1									NPMX 08**R..	1
40.00-44.99	CAOD-0845	1	CAID-080	1	GPS-08-25-155-DC	2	GPP-06	2	SGP-02	1	TPMX 14**R..	1	NPMX 08**R..	1
			CAID-080	1									NPMX 08**R..	1
45.00-47.99	CAOD-0845	1	CAID-080	1	GPS-10-35-200-DC	2	GPP-07	2	SGP-02	1	TPMX 14**R..	1	NPMX 08**R..	1
			CAID-0845	1									TPMX 14**R..	1
48.00-51.99	CAOD-0845	1	CAID-0845	1	GPS-10-35-200-DC	2	GPP-07	2	SGP-02	1	TPMX 14**R..	1	TPMX 14**R..	1
			CAID-0845	1									TPMX 14**R.	1
52.00-54.99	CAOD-103	1	CAID-0845	1	GPS-10-35-200-DC	2	GPP-07	2	SGP-02	1	TPMX 17**R..	1	TPMX 14**R..	1
			CAID-0845	1									TPMX 14**R..	1
55.00-57.99	CAOD-103	1	CAID-0845	1	GPS-10-35-200-DC	2	GPP-07	2	SGP-02	1	TPMX 17**R..	1	TPMX 14**R..	1
			CAID-103	1									TPMX 17**R..	1
58.00-59.99	CAOD-103	1	CAID-103	1	GPS-10-35-200-DC	2	GPP-07	2	SGP-02	1	TPMX 17**R..	1	TPMX 17**R..	1
			CAID-103	1									TPMX 17**R..	1
60.00-63.99	CAOD-103	1	CAID-103	1	GPS-14-40-250-DC	2	GPP-08	2	SGP-02	1	TPMX 17**R..	1	TPMX 17**R..	1
			CAID-103	1									TPMX 17**R..	1
64.00-67.99	CAOD-142	1	CAID-103	1	GPS-14-40-250-DC	2	GPP-08	2	SGP-03	1	TPMX 24**R..	1	TPMX 17**R..	1
			CAID-103	1									TPMX 17**R..	1
68.00-77.99	CAOD-103	1	CAID-142	1	GPS-14-40-250-DC	2	GPP-08	2	SGP-03	1	TPMX 17**R..	1	TPMX 24**R..	1
			CAID-142	1									TPMX 24**R..	1
78.00-84.99	CAOD-142	1	CAID-142	1	GPS-14-40-250-DC	2	GPP-08	2	SGP-03	1	TPMX 24**R..	1	TPMX 24**R..	1
			CAID-142	1									TPMX 24**R..	1
85.00-91.99	CAOD-170	1	CAID-142	1	GPS-14-40-250-DC	2	GPP-08	2	SGP-03	1	TPMX 28**R..	1	TPMX 24**R..	1
			CAID-142	1									TPMX 24**R..	1
92.00-98.99	CAOD-142	1	CAID-170	1	GPS-14-40-250-DC	2	GPP-08	2	SGP-03	1	TPMX 24**R..	1	TPMX 28**R..	1
			CAID-170	1									TPMX 28**R..	1
99.00-106.99	CAOD-170	1	CAID-170	1	GPS-18-40-300-DC	2	GPP-09	2	SGP-04	1	TPMX 28**R..	1	TPMX 28**R..	1
			CAID-170	1									TPMX 28**R..	1
107.00-117.99	CAOD-142	1	CAID-103	3	GPS-18-40-300-DC	2	GPP-09	2	SGP-04	1	TPMX 24**R..	1	TPMX 17**R..	3
			CAID-142	1									TPMX 24**R..	1
118.00-135.99	CAOD-142	1	CAID-142	3	GPS-18-40-300-DC	2	GPP-09	2	SGP-04	1	TPMX 24**R..	1	TPMX 24**R..	3
			CAID-142	1									TPMX 24**R..	1
136.00-144.99	CAOD-142	1	CAID-142	3	GPS-18-40-300-DC	4	GPP-09	4	SGP-04	1	TPMX 24**R..	1	TPMX 24**R..	3
			CAID-170	1									TPMX 28**R..	1
145.00-150.99	CAOD-142	1	CAID-142	2	GPS-18-40-300-DC	4	GPP-09	4	SGP-04	1	TPMX 24**R..	1	TPMX 24**R..	2
			CAID-170	1									TPMX 28**R..	1
			CAID-170	1									TPMX 28**R..	1
151.00-156.99	CAOD-170	1	CAID-142	2	GPS-18-40-300-DC	4	GPP-09	4	SGP-04	1	TPMX 28**R..	1	TPMX 24**R..	2
			CAID-170	1									TPMX 28**R..	1
			CAID-170	1									TPMX 28**R..	1
157.00-162.99	CAOD-170	1	CAID-142	1	GPS-18-40-300-DC	4	GPP-09	4	SGP-04	1	TPMX 28**R..	1	TPMX 24**R..	1
			CAID-170	2									TPMX 28**R..	2
			CAID-170	1									TPMX 28**R..	1
163.00-168.99	CAOD-170	1	CAID-170	3	GPS-18-40-300-DC	4	GPP-09	4	SGP-04	1	TPMX 28**R..	1	TPMX 28**R..	3
			CAID-170	1									TPMX 28**R..	1
169.00-188.99	CAOD-142	1	CAID-142	5	GPS-18-40-300-DC	4	GPP-09	4	SGP-04	1	TPMX 24**R..	1	TPMX 24**R..	5
			CAID-142	1									TPMX 24**R..	1
189.00-196.99	CAOD-142	1	CAID-142	5	GPS-18-40-300-DC	4	GPP-09	4	SGP-04	1	TPMX 24**R..	1	TPMX 24**R..	5
			CAID-170	1									TPMX 28**R..	1
197.00-202.99	CAOD-142	1	CAID-142	4	GPS-18-40-300-DC	4	GPP-09	4	SGP-04	1	TPMX 24**R..	1	TPMX 24**R..	4
			CAID-170	1									TPMX 28**R..	1
			CAID-170	1									TPMX 28**R..	1
203.00-208.99	CAOD-142	1	CAID-142	3	GPS-18-40-300-DC	4	GPP-09	4	SGP-04	1	TPMX 24**R..	1	TPMX 24**R..	3
			CAID-170	2									TPMX 28**R..	2
			CAID-170	1									TPMX 28**R..	1

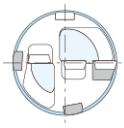
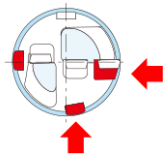
Spare Parts

DSD-EC / DDD-EC / DSD-IC														
Diameter	Peripheral	Qty.	Inner/ Central	Qty.	Guide Pad	Qty.	Guide Pad Protectors	Qty.	Sub Guide Pad	Qty.	Peripheral Insert	Qty.	Inner/ Central Insert	Qty.
209.00-214.99	CAOD-170	1	CAID-142	3	GPS-18-40-300-DC	4	GPP-09	4	SGP-04	1	TPMX 28**R..	1	TPMX 24**R..	3
			CAID-170	2									TPMX 28**R..	2
			CAID-170	1									TPMX 28**R..	1
215.00-220.99	CAOD-170	1	CAID-142	2	GPS-18-40-300-DC	4	GPP-09	4	SGP-04	1	TPMX 28**R..	1	TPMX 24**R..	2
			CAID-170	3									TPMX 28**R..	3
			CAID-170	1									TPMX 28**R..	1
221.00-226.99	CAOD-170	1	CAID-142	1	GPS-18-40-300-DC	4	GPP-09	4	SGP-04	1	TPMX 28**R..	1	TPMX 24**R..	1
			CAID-170	4									TPMX 28**R..	4
			CAID-170	1									TPMX 28**R..	1
227.00-232.99	CAOD-170	1	CAID-170	5	GPS-18-40-300-DC	4	GPP-09	4	SGP-04	1	TPMX 28**R..	1	TPMX 28**R..	5
			CAID-170	1									TPMX 28**R..	1
233.00-247.99	CAOD-142	1	CAID-142	7	GPS-18-40-300-DC	4	GPP-09	4	SGP-04	1	TPMX 24**R..	1	TPMX 24**R..	7
			CAID-170	1									TPMX 28**R..	1
248.00-253.99	CAOD-170	1	CAID-142	7	GPS-18-40-300-DC	4	GPP-09	4	SGP-04	1	TPMX 28**R..	1	TPMX 24**R..	7
			CAID-170	1									TPMX 28**R..	1
254.00-258.99	CAOD-170	1	CAID-142	6	GPS-18-40-300-DC	4	GPP-09	4	SGP-04	1	TPMX 28**R..	1	TPMX 24**R..	6
			CAID-170	1									TPMX 28**R..	1
			CAID-170	1									TPMX 28**R..	1
259.00-264.99	CAOD-170	1	CAID-142	5	GPS-18-40-300-DC	4	GPP-09	4	SGP-04	1	TPMX 28**R..	1	TPMX 24**R..	5
			CAID-170	2									TPMX 28**R..	2
			CAID-170	1									TPMX 28**R..	1
265.00-271.99	CAOD-170	1	CAID-142	4	GPS-18-40-300-DC	4	GPP-09	4	SGP-04	1	TPMX 28**R..	1	TPMX 24**R..	4
			CAID-170	3									TPMX 28**R..	3
			CAID-170	1									TPMX 28**R..	1
272.00-275.99	CAOD-170	1	CAID-142	3	GPS-18-40-300-DC	4	GPP-09	4	SGP-04	1	TPMX 28**R..	1	TPMX 24**R..	3
			CAID-170	4									TPMX 28**R..	4
			CAID-170	1									TPMX 28**R..	1
276.00-284.99	CAOD-170	1	CAID-142	2	GPS-18-40-300-DC	4	GPP-09	4	SGP-04	1	TPMX 28**R..	1	TPMX 24**R..	2
			CAID-170	5									TPMX 28**R..	5
			CAID-170	1									TPMX 28**R..	1
285.00-289.99	CAOD-170	1	CAID-142	1	GPS-18-40-300-DC	4	GPP-09	4	SGP-04	1	TPMX 28**R..	1	TPMX 24**R..	1
			CAID-170	6									TPMX 28**R..	6
			CAID-170	1									TPMX 28**R..	1
290.00-293.99	CAOD-170	1	CAID-170	7	GPS-18-40-300-DC	4	GPP-09	4	SGP-04	1	TPMX 28**R..	1	TPMX 28**R..	7
			CAID-170	1									TPMX 28**R..	1



(+) Plus Parts for Diameter Enlargement

By exchanging only the peripheral cartridge and guide pads, the original head diameter can be increased up to 5mm.
(Standard plus parts = 1mm, 2mm , 3mm , 4mm , 5mm)

+ Plus						
	+1	+2	+3	+4	+5	
	0.039″	0.079″	0.118″	0.157″	0.197″	

Plus Cartidge - CAOD

Original	+1mm	+2mm	+3mm	+4mm	+5mm
CAOD-080	CAOD-080+1	CAOD-080+2	-	-	-
CAOD-0845	CAOD-0845+1	CAOD-0845+2	CAOD-0845+3	-	-
CAOD-103	CAOD-103+1	CAOD-103+2	CAOD-103+3	CAOD-103+4	-
CAOD-142	CAOD-142+1	CAOD-142+2	CAOD-142+3	CAOD-142+4	CAOD-142+5
CAOD-170	CAOD-170+1	CAOD-170+2	CAOD-170+3	CAOD-170+4	CAOD-170+5

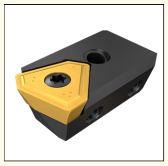
Plus Cartidge - CAORC

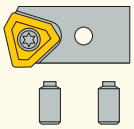
Original Cartridge	+1mm	+2mm	+3mm	+4mm	+5mm
CAORC-0845	CAORC-0845+1	CAORC-0845+2	CAORC-0845+3	-	-
CAORC-103	CAORC-103+1	CAORC-103+2	CAORC-103+3	CAORC-103+4	-
CAORC-142	CAORC-142+1	CAORC-142+2	CAORC-142+3	CAORC-142+4	CAORC-142+5
CAORC-170	CAORC-170+1	CAORC-170+2	CAORC-170+3	CAORC-170+4	CAORC-170+5

Plus Guide Pad

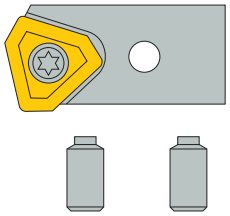
Original Pad	+1mm	+2mm	+3mm	+4mm	+5mm
GPS-08-25-155	GPS-08-25-160-DC+1	GPS-08-25-165-DC+2	GPS-08-25-170-DC+3	-	-
GPS-10-35-200	GPS-10-35-205-DC+1	GPS-10-35-210-DC+2	GPS-10-35-215-DC+3	GPS-10-35-220-DC+4	-
GPS-14-40-250	GPS-14-40-255-DC+1	GPS-14-40-260-DC+2	GPS-14-40-265-DC+3	GPS-14-40-270-DC+4	GPS-14-40-275-DC+5
GPS-18-40-300	GPS-18-40-305-DC+1	GPS-18-40-310-DC+2	GPS-18-40-315-DC+3	GPS-18-40-320-DC+4	GPS-18-40-325-DC+5

CAOD
Drilling Head Peripheral Cartridge





Universal Marking for Deep Drilling Tools

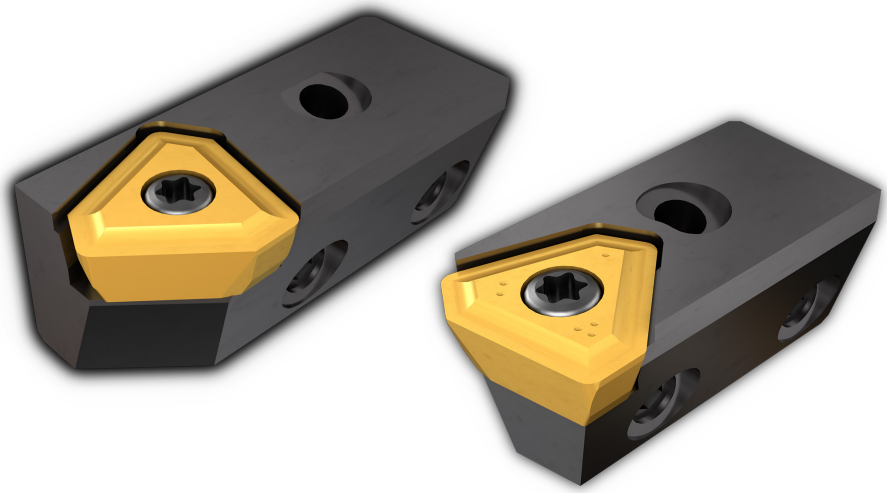


CA - P - DR - 0800 - R

- CA - P: Peripheral Cartridge
- DR: DR : Drilling / CB : Counter Bore
- 0800: IC
- R: L/R HAND

Spare Parts

Designation	Adjustment Screw	Key	Locking Screw	Key	Insert	Insert Clamping Screw
CAOD-080+1	SR 11201755-4	HW 1.5	SR 11201756-11	HW 2.0	NPMX 0803..R-G	SR 11201753-2
CAOD-080+2	SR 11201755-4	HW 1.5	SR 11201756-11	HW 2.0	NPMX 0803..R-G	SR 11201753-2
CAOD-085+1	SR 11201755-7	HW 1.5	SR 11201756-11	HW 2.0	NPMX 0803..R-G	SR 11201753-2
CAOD-085+2	SR 11201755-7	HW 1.5	SR 11201756-11	HW 2.0	NPMX 0803..R-G	SR 11201753-2
CAOD-085+3	SR 11201755-7	HW 1.5	SR 11201756-11	HW 2.0	NPMX 0803..R-G	SR 11201753-2
CAOD-103+1	SR 11201755-8	HW 2.5	SR 11201756-12	HW 3.0	TPMX 1704..R-G	SR 11201753-7
CAOD-103+2	SR 11201755-8	HW 2.5	SR 11201756-12	HW 3.0	TPMX 1704..R-G	SR 11201753-7
CAOD-103+3	SR 11201755-8	HW 2.5	SR 11201756-12	HW 3.0	TPMX 1704..R-G	SR 11201753-7
CAOD-103+4	SR 11201755-8	HW 2.5	SR 11201756-12	HW 3.0	TPMX 1704..R-G	SR 11201753-7
CAOD-142+1	SR 11201755-9	HW 2.5	SR 11201756-15	HW 4.0	TPMX 2405..R-G	SR 11201753-9
CAOD-142+2	SR 11201755-9	HW 2.5	SR 11201756-15	HW 4.0	TPMX 2405..R-G	SR 11201753-9
CAOD-142+3	SR 11201755-9	HW 2.5	SR 11201756-15	HW 4.0	TPMX 2405..R-G	SR 11201753-9
CAOD-142+4	SR 11201755-9	HW 2.5	SR 11201756-15	HW 4.0	TPMX 2405..R-G	SR 11201753-9
CAOD-142+5	SR 11201755-9	HW 2.5	SR 11201756-15	HW 4.0	TPMX 2405..R-G	SR 11201753-9
CAOD-170+1	SR 11201755-11	HW 3.0	SR 11201756-15	HW 4.0	TPMX 2807..R-G	SR 11201753-10
CAOD-170+2	SR 11201755-11	HW 3.0	SR 11201756-15	HW 4.0	TPMX 2807..R-G	SR 11201753-10
CAOD-170+3	SR 11201755-11	HW 3.0	SR 11201756-15	HW 4.0	TPMX 2807..R-G	SR 11201753-10
CAOD-170+4	SR 11201755-11	HW 3.0	SR 11201756-15	HW 4.0	TPMX 2807..R-G	SR 11201753-10
CAOD-170+5	SR 11201755-11	HW 3.0	SR 11201756-15	HW 4.0	TPMX 2807..R-G	SR 11201753-10



Deep Hole Drilling Index

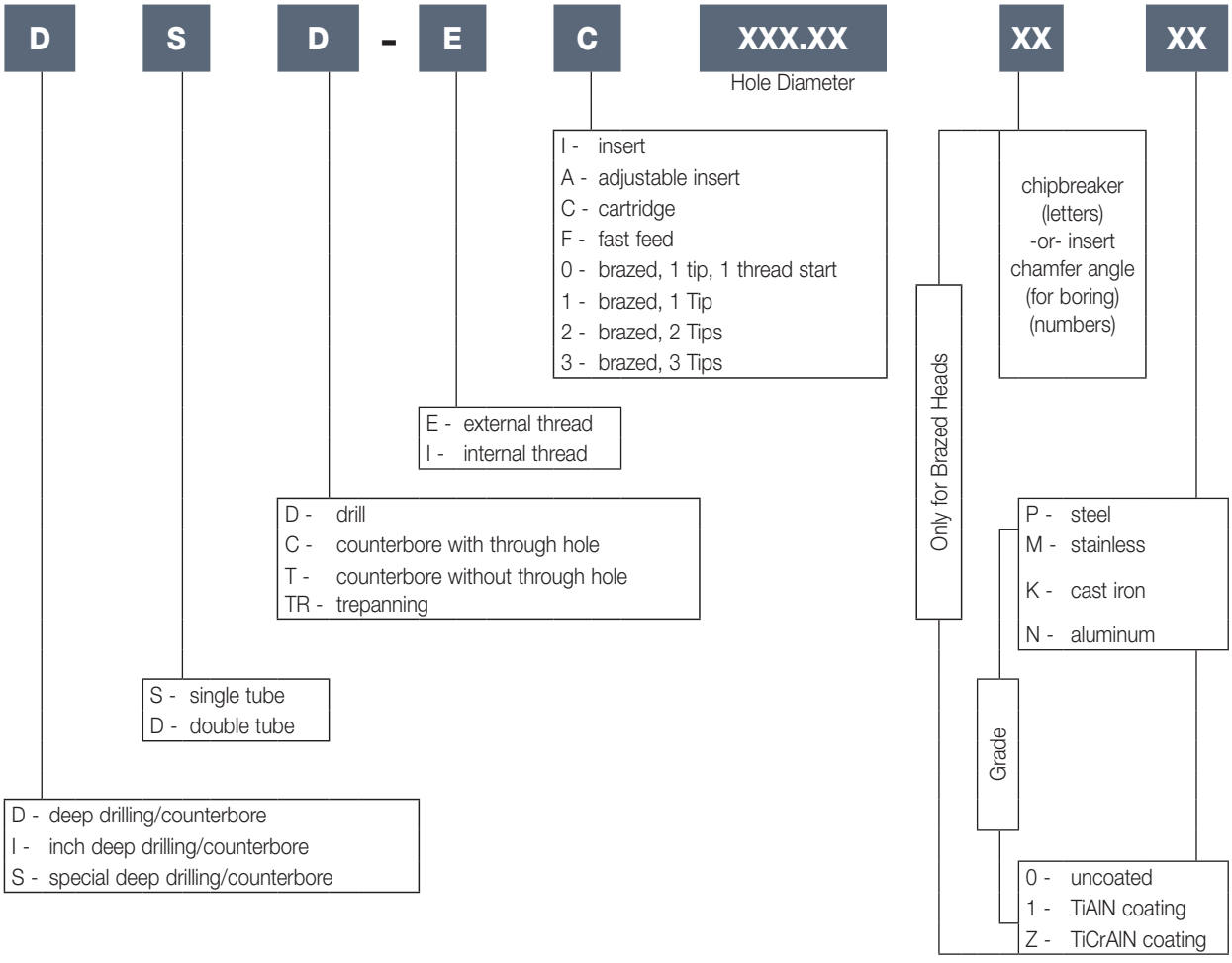
Single Tube System

Single Tube System (STS) –
Cooling fluid is induced through the gap between the drill and the hole. Conveying the chips through the tube requires the use of dedicated machines.

Double Tube System

Double Tube System (DTS) -
Cooling fluid is induced between the coaxial tubes, conveying the chips through the inner tube and can be applied on standard machines.

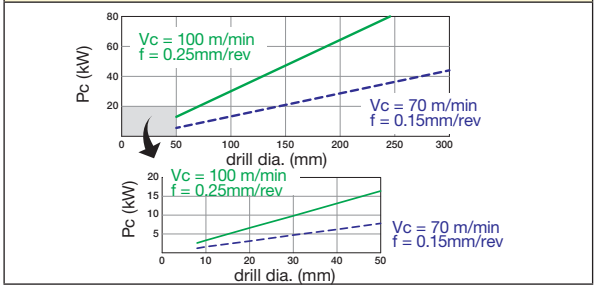
Deep Drilling Heads Identification System



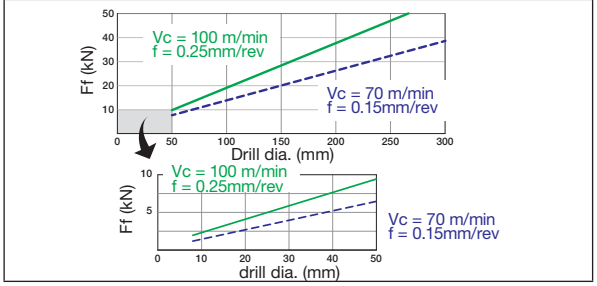
Technical Guide

Setting Guidelines for Cutting Loads, Fluid Pressure and Flow Rate During STS Operation

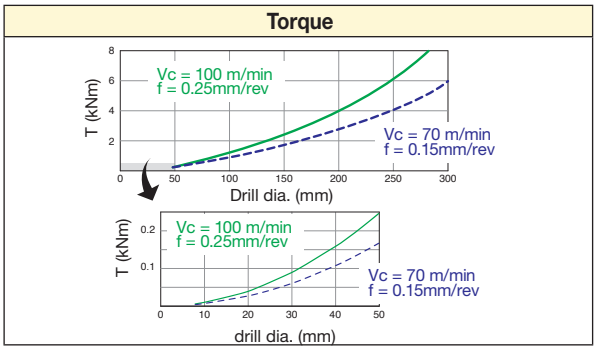
Net Power



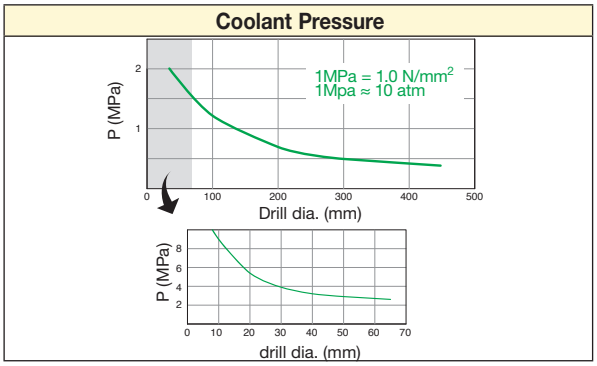
Feed Force



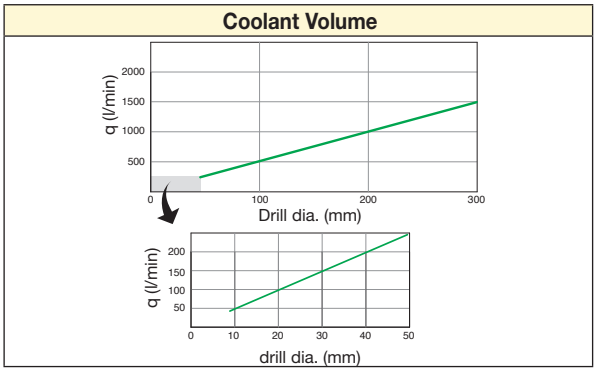
Torque



Coolant Pressure

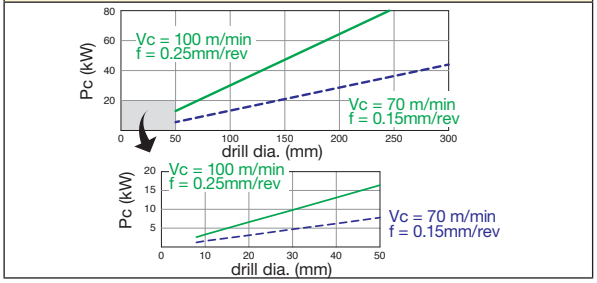


Coolant Volume

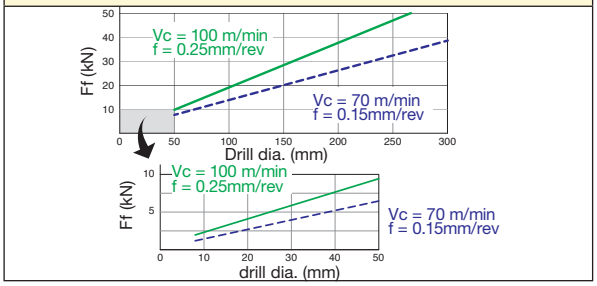


Setting Guidelines for Cutting Loads, Fluid Pressure and Flow Rate During DTS Operation

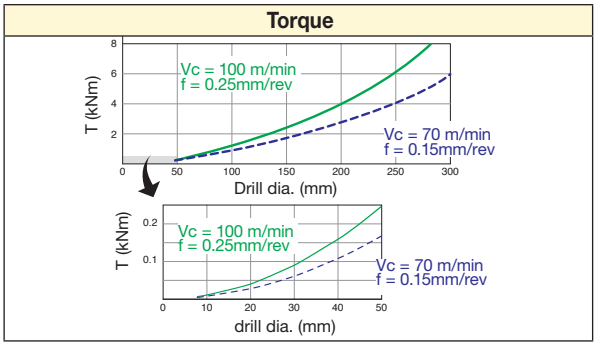
Net Power



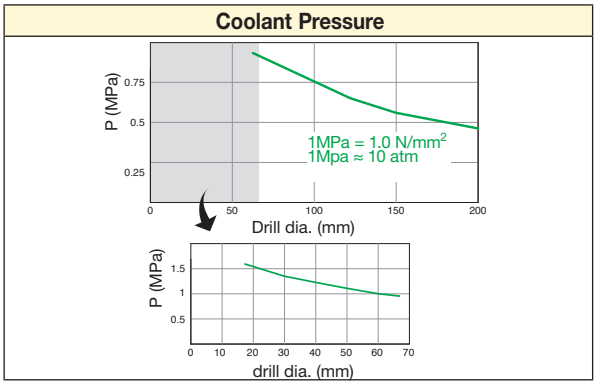
Feed Force



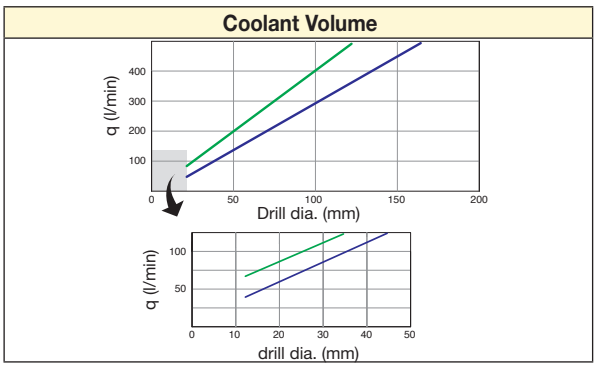
Torque



Coolant Pressure



Coolant Volume



Machining Recommendations

ISO	Material		Condition	Tensile Strength [N/mm²]	Material Group No.(1)	Hardness HB	Chipbreaker Troubleshooting		
							First Choice	Fracture	Wear
P	non-alloy steel and cast steel, free cutting steel	<0.25% C	annealed	420	1	125	G IC908	BG IC806	B IC9025
		≥0.25% C	annealed	650	2	190			
		<0.55% C	quenched and tempered	850	3	250			
		≥0.55% C	annealed	750	4	220			
			quenched and tempered	1000	5	300			
	low alloy and cast steel (less than 5% of alloying elements)		annealed	600	6	200	G IC908	BG IC806	B IC9025
			quenched and tempered	930	7	275			
				1000	8	300			
				1200	9	350			
	high alloyed steel, cast steel and tool steel		annealed	680	10	200	G IC908	BG IC806	B IC9025
			quenched and tempered	1100	11	325			
	stainless steel and cast steel		ferritic/martensitic	680	12	200	G IC908	BG IC806	B IC9025
			martensitic	820	13	240			
M	stainless steel and cast steel		austenitic, duplex	600	14	180	G IC806	B IC908	B IC9025
K	grey cast iron (GG)		ferritic/pearlitic		15	180	G IC908	G IC806	B IC9025
			pearlitic/martensitic		16	260			
	nodular cast iron (GGG)		ferritic		17	160			
			pearlitic		18	250			
	malleable cast iron		ferritic		19	130			
			pearlitic		20	230			
N	aluminum-wrought alloys		not hardenable		21	60	G IC908	G IC806	B IC9025
			hardenable		22	100			
	aluminum-cast alloys	≤12% Si	not hardenable		23	75			
			hardenable		24	90			
		>12% Si	high temperature		25	130			
	copper alloys	>1% Pb	free cutting		26	110			
			brass		27	90			
			electrolitic copper		28	100			
	non-metallic		duroplastics, fiber plastics		29				
			hard rubber		30				
S	high temp. alloys	Fe based	annealed		31	200	B IC806	B IC908	B IC9025
			hardened		32	280			
		Ni or Co based	annealed		33	250			
			hardened		34	350			
			cast		35	320			
	titanium alloys		pure	400	36				
			alpha+beta alloys hardened	1050	37				
H	hardened steel		hardened 55 HRC		38		B IC806	B IC908	B IC908
			hardened 60 HRC		39				
	chilled cast iron		cast		40	400			
	cast iron		hardened 55 HRC		41				

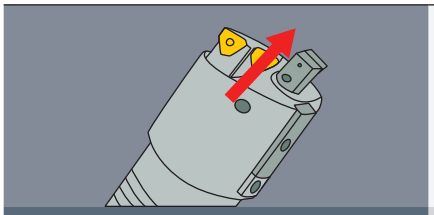
(1) Based on ISO 513 and VDI 3323 standards

Indexable Drill Heads DSD-EC, DDD-EC, DSD-IC					
Dia. Range	**38.00-39.99**	**40.00-51.99**	**52.00-63.99**	**64.00-84.99**	**85.00-293.00**
V_c (m/min)	**Feed Rate f (mm/rev)**				
60-120	0.08-0.15	0.1-0.2	0.13-0.23	0.15-0.25	0.18-0.3
60-120	0.08-0.15	0.1-0.2	0.13-0.23	0.15-0.25	0.18-0.3
60-120	0.08-0.15	0.1-0.2	0.13-0.23	0.15-0.25	0.18-0.3
60-120	0.08-0.15	0.1-0.2	0.13-0.23	0.15-0.25	0.18-0.3
60-120	0.08-0.15	0.1-0.2	0.13-0.23	0.15-0.25	0.18-0.3
60-100	0.08-0.15	0.1-0.2	0.13-0.23	0.15-0.25	0.18-0.3
60-100	0.08-0.15	0.1-0.2	0.13-0.23	0.15-0.25	0.18-0.3
50-100	0.08-0.15	0.1-0.2	0.13-0.23	0.15-0.25	0.18-0.3
50-100	0.08-0.15	0.1-0.2	0.13-0.23	0.15-0.25	0.18-0.3
60-120	0.08-0.15	0.1-0.2	0.13-0.23	0.15-0.25	0.18-0.3
60-120	0.08-0.15	0.1-0.2	0.13-0.23	0.15-0.25	0.18-0.3
60-110	0.08-0.15	0.1-0.2	0.13-0.23	0.15-0.25	0.18-0.3
60-110	0.08-0.15	0.1-0.2	0.13-0.23	0.15-0.25	0.18-0.3
60-110	0.08-0.15	0.1-0.2	0.13-0.23	0.15-0.25	0.18-0.3
80-140	0.20-0.30	0.20-0.30	0.24-0.32	0.24-0.32	0.25-0.40
80-140	0.20-0.30	0.20-0.30	0.24-0.32	0.24-0.32	0.25-0.40
80-140	0.20-0.30	0.20-0.30	0.24-0.32	0.24-0.32	0.25-0.40
80-140	0.20-0.30	0.20-0.30	0.24-0.32	0.24-0.32	0.25-0.40
80-140	0.20-0.30	0.20-0.30	0.24-0.32	0.24-0.32	0.25-0.40
80-140	0.20-0.30	0.20-0.30	0.24-0.32	0.24-0.32	0.25-0.40
100-200	0.08-0.2	0.1-0.25	0.13-0.28	0.15-0.3	0.18-0.33
100-200	0.08-0.2	0.1-0.25	0.13-0.28	0.15-0.3	0.18-0.33
100-200	0.08-0.2	0.1-0.25	0.13-0.28	0.15-0.3	0.18-0.33
100-200	0.08-0.2	0.1-0.25	0.13-0.28	0.15-0.3	0.18-0.33
100-200	0.08-0.2	0.1-0.25	0.13-0.28	0.15-0.3	0.18-0.33
100-200	0.08-0.2	0.1-0.25	0.13-0.28	0.15-0.3	0.18-0.33
100-200	0.08-0.2	0.1-0.25	0.13-0.28	0.15-0.3	0.18-0.33
100-200	0.08-0.2	0.1-0.25	0.13-0.28	0.15-0.3	0.18-0.33
60-130	0.08-0.2	0.1-0.25	0.13-0.28	0.15-0.3	0.18-0.33
60-130	0.08-0.2	0.1-0.25	0.13-0.28	0.15-0.3	0.18-0.33
20-65	0.06-0.13	0.08-0.18	0.13-0.23	0.13-0.23	0.18-0.28
20-65	0.06-0.13	0.08-0.18	0.13-0.23	0.13-0.23	0.18-0.28
20-65	0.06-0.13	0.08-0.18	0.13-0.23	0.13-0.23	0.18-0.28
30-100	0.06-0.13	0.08-0.18	0.13-0.23	0.13-0.23	0.18-0.28
30-100	0.06-0.13	0.08-0.18	0.13-0.23	0.13-0.23	0.18-0.28
30-60	0.06-0.13	0.08-0.18	0.13-0.23	0.13-0.23	0.18-0.28
30-60	0.06-0.13	0.08-0.18	0.13-0.23	0.13-0.23	0.18-0.28
30-80	0.06-0.13	0.08-0.18	0.13-0.23	0.13-0.23	0.15-0.28
30-80	0.06-0.13	0.08-0.18	0.13-0.23	0.13-0.23	0.15-0.28
30-80	0.06-0.13	0.08-0.18	0.13-0.23	0.13-0.23	0.15-0.28
30-80	0.06-0.13	0.08-0.18	0.13-0.23	0.13-0.23	0.15-0.28

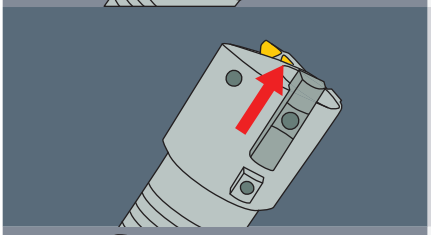
Technical Information - Cartridge Style Drill Head Diameter Settings

The drill head diameter is set and inspected with a master insert in our final inspection. However, the inserts in the market have a tolerance fluctuation so each time you index the insert, the diameter must be adjusted as per the following method.

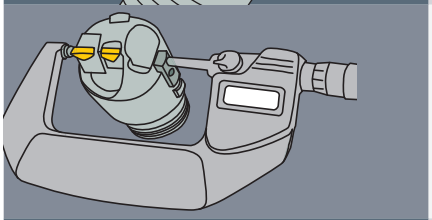
Note: When a corner change is made on the insert, it must be adjusted to the correct size or damage can be caused to the head / body or workpiece material.



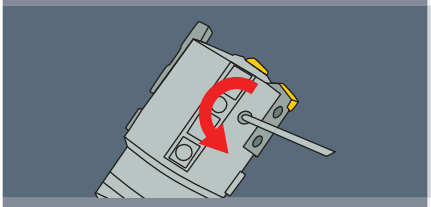
1. Remove the inner cartridge to avoid interference with the guide screw



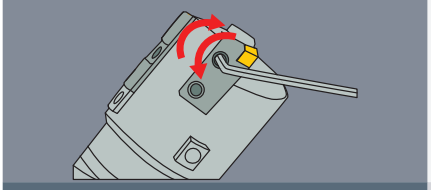
2. The dimensional guide pad must be slid forward to measure the diameter
   2.1 Loosen the lock screw and slide the guide pad forward
   2.2 Re-tighten the lock screw at the measuring position



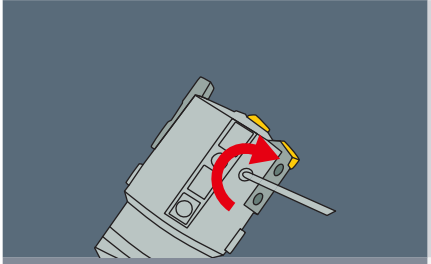
3. Measure the diameter with a micrometer. We recommend setting the tool diameter at h8 tolerance to the cutting diameter. If the diameter is incorrect, go to step 4 below. If it's correct, go to step 5 below



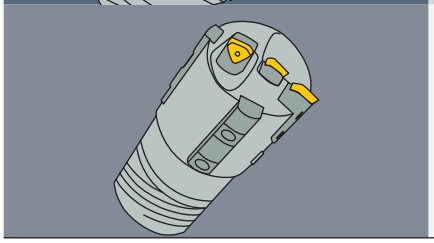
4. Adjust the outer cartridge
   4.1 First loosen the lock screw of the outer cartridge and then tighten it slightly



4.2 Proceed to adjust the diameter, using the 2 adjustment screws and measure with a micrometer



4.3 When set to the size, re-tighten the lock screw
4.4 Recheck the diameter with a micrometer. If it is still out of tolerance, repeat the procedure from steps 1-4
Note: Please make sure to tighten the lock screw firmly before use. If loose, the cartridge may move and cause serious problems during machining



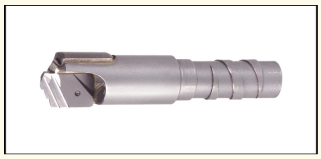
5. Slide the dimensional guide pad back to the original position and tighten the lock screw
6. Replace the inner cartridge and tighten the lock screw
   Note: Please check that all lock screws are firmly tightened, as they may come loose if vibration occurs during drilling

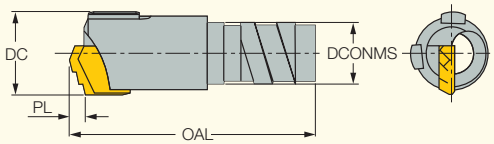
ISCAR DEEP-DRILL

DSD/DDD...E0/E1/E2/E3, DDD... E3

ISCARDEEPDRILL

DSD-E0
Deep Single Tube Drills with External Single Thread Connection and a Brazed Single Tip (8-14.8 dia.)





NOM 0 refers to non-coated drill head, NOM 2 refers to coated drill head

Designation	DCN(1)	DCX(2)	OAL	DCONMS	PL	Ts(3)
DSD-E0 8.00-8.99 NOM 0	8.00	8.99	35.00	6.00	2.00	TS001
DSD-E0 8.00-8.99 NOM 2	8.00	8.99	35.00	6.00	2.00	TS001
DSD-E0 9.00-9.99 NOM 0	9.00	9.99	35.00	7.20	2.00	TS002
DSD-E0 9.00-9.99 NOM 2	9.00	9.99	35.00	7.20	2.00	TS002
DSD-E0 10.00-10.99 NOM 0	10.00	10.99	35.20	7.60	2.20	TS003
DSD-E0 10.00-10.99 NOM 2	10.00	10.99	35.20	7.60	2.20	TS003
DSD-E0 11.00-11.99 NOM 0	11.00	11.99	35.20	8.60	2.20	TS004
DSD-E0 11.00-11.99 NOM 2	11.00	11.99	35.20	8.60	2.20	TS004
DSD-E0 12.00-13.49 NOM 0	12.00	13.49	35.30	9.10	2.30	TS005
DSD-E0 12.00-13.49 NOM 2	12.00	13.49	35.30	9.10	2.30	TS005
DSD-E0 13.50-14.79 NOM 0	13.50	14.79	35.40	10.80	2.40	TS006
DSD-E0 13.50-14.79 NOM 2	13.50	14.79	35.40	10.80	2.40	TS006

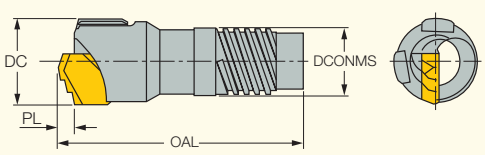
- The drill tip is supplied in a grade that is suitable to machine the material group indicated in the drill head designation: P-Steel, M-Stainless Steel, K-Cast Iron.
- For user guide, see pages 331-333, 338-342 • Ordering example: DSD-E0 11.30 DT-PO

(1) Cutting diameter minimum
(2) Cutting diameter maximum
(3) Tube designation

For holders, see pages: TS*** (326)

ISCARDEEPDRILL

DSD-E1
Deep Single Tube Drills with External 2 and 4 Start Thread Connections and a Single Brazed Tip (12.6-20 dia.)



NOM 0 refers to non-coated drill head, NOM 2 refers to coated drill head.

Designation	DCN(1)	DCX(2)	OAL	DCONMS	PL	Threads(3)	Ts(4)
DSD-E1 12.60-13.60 NOM 0	12.60	13.60	42.50	9.60	2.30	2	TS-I01
DSD-E1 12.60-13.60 NOM 2	12.60	13.60	42.50	9.60	2.30	2	TS-I01
DSD-E1 13.61-14.60 NOM 0	13.61	14.60	42.70	10.60	2.40	2	TS-I02
DSD-E1 13.61-14.60 NOM 2	13.61	14.60	42.70	10.60	2.40	2	TS-I02
DSD-E1 14.61-15.59 NOM 0	14.61	15.59	42.70	11.60	3.00	2	TS-I03
DSD-E1 14.61-15.59 NOM 2	14.61	15.59	42.70	11.60	3.00	2	TS-I03
DSD-E1 15.60-16.70 NOM 0	15.60	16.70	42.70	11.60	2.40	4	TS-I0
DSD-E1 15.60-16.70 NOM 2	15.60	16.70	42.70	11.60	2.40	4	TS-I0
DSD-E1 15.60-16.70-DTH	15.60	16.70	43.39	12.60	3.39	4	TS-I0
DSD-E1 16.71-17.70 NOM 0	16.71	17.70	43.20	13.60	3.00	4	TS-I1
DSD-E1 16.71-17.70 NOM 2	16.71	17.70	43.20	13.60	3.00	4	TS-I1
DSD-E1 17.71-18.90 NOM 0	17.71	18.90	43.60	14.50	3.30	4	TS-I2
DSD-E1 17.71-18.90 NOM 2	17.71	18.90	43.60	14.50	3.30	4	TS-I2
DSD-E1 18.91-20.00 NOM 0	18.91	20.00	43.60	15.50	3.30	4	TS-I3
DSD-E1 18.91-20.00 NOM 2	18.91	20.00	43.60	15.50	3.30	4	TS-I3

- The drill tip is supplied in a grade that is suitable to machine the material group indicated in the drill head designation: P-Steel, M-Stainless Steel, K-Cast Iron.
- For user guide, see pages 331-333, 338-342 • Ordering example: DSD-E1 14.50 DT-PO

(1) Cutting diameter minimum
(2) Cutting diameter maximum
(3) No. of thread starts
(4) Tube designation

For holders, see pages: TS-I** (327)

Universal Marking for Deep Drilling Tools

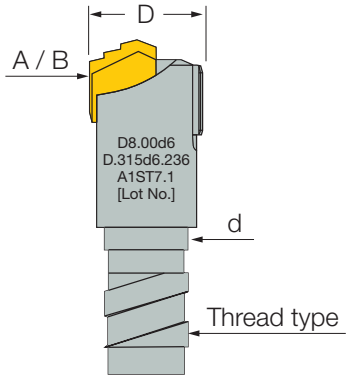
D- Tool diameter
Metric- D8.00
Inch- D.315

d- Pilot diameter
Metric- d6
Inch- d.236

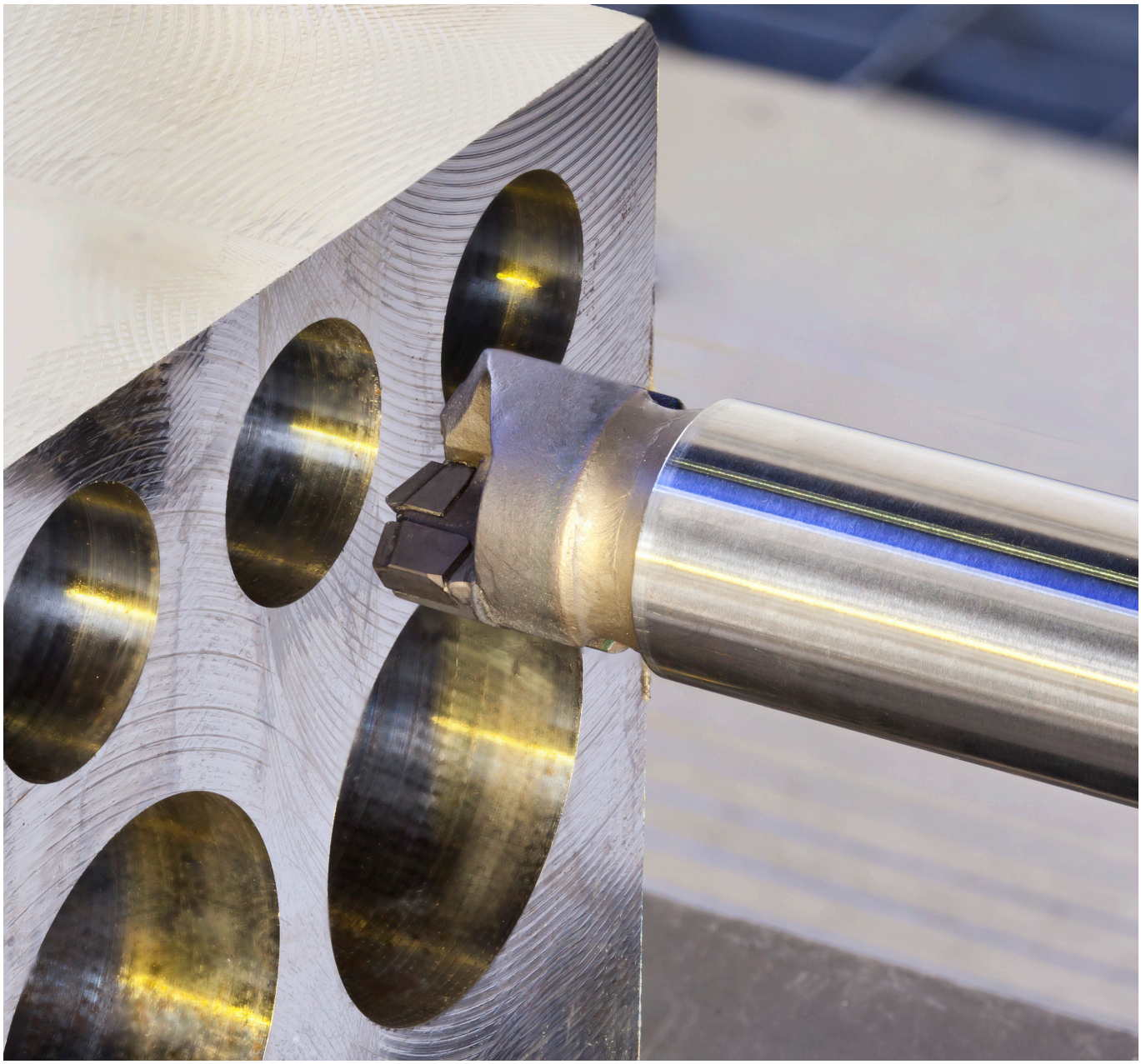
Tool style
A- Single cutting edge
B- Multiple cutting edges

Thread type
1ST- Single start thread single tube
2ST- Two start thread single tube
4ST- Four start thread single tube
4DT- Four start thread double tube

7.1- Tube diameter

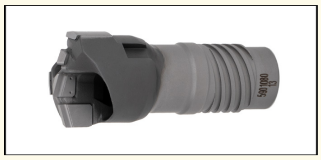


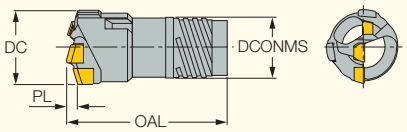
D8.00d6
D.315d.236
A1ST7.1
[Lot No.]



ISCARDEEPDRILL

DSD-E2/E3
Deep Single Tube Drills with External 2 and 4 Start Thread Connections and 2 or 3 Brazed Tips (12.6-65 dia.)





NOM 0 refers to non-coated drill head, NOM 2 refers to coated drill head.

Designation	DCN(1)	DCX(2)	OAL	DCONMS	PL	Threads(3)	Ts(4)
DSD-E2 12.60-13.60 NOM 0	12.60	13.60	43.00	9.60	1.100	2	TS-I01
DSD-E2 12.60-13.60 NOM 2	12.60	13.60	43.00	9.60	1.100	2	TS-I01
DSD-E2 13.61-14.60 NOM 0	13.61	14.60	43.00	10.60	1.200	2	TS-I02
DSD-E2 13.61-14.60 NOM 2	13.61	14.60	43.00	10.60	1.200	2	TS-I02
DSD-E2 14.61-15.59 NOM 0	14.61	15.59	43.00	11.60	1.300	2	TS-I03
DSD-E2 14.61-15.59 NOM 2	14.61	15.59	43.00	11.60	1.300	2	TS-I03
DSD-E3 15.60-16.20-DTG	15.60	16.20	43.00	12.60	2.700	4	TS-I0
DSD-E3 15.60-16.20-DTL	15.60	16.20	43.00	12.60	2.700	4	TS-I0
DSD-E3 15.60-16.70 NOM 0	15.60	16.70	43.00	12.60	2.700	4	TS-I0
DSD-E3 15.60-16.70 NOM 2	15.60	16.70	43.00	12.60	2.700	4	TS-I0
DSD-E3 16.21-16.70-DTG	16.21	16.70	43.00	12.60	2.700	4	TS-I0
DSD-E3 16.21-16.70-DTL	16.21	16.70	43.00	12.60	2.700	4	TS-I0
DSD-E3 16.71-17.20-DTG	16.71	17.20	43.00	13.60	2.700	4	TS-I1
DSD-E3 16.71-17.20-DTL	16.71	17.20	43.00	13.60	2.700	4	TS-I1
DSD-E3 16.71-17.70 NOM 0	16.71	17.70	43.00	13.60	2.700	4	TS-I1
DSD-E3 16.71-17.70 NOM 2	16.71	17.70	43.00	13.60	2.700	4	TS-I1
DSD-E3 17.21-17.70-DTG	17.21	17.70	43.00	13.60	2.700	4	TS-I1
DSD-E3 17.21-17.70-DTL	17.21	17.70	43.00	13.60	2.700	4	TS-I1
DSD-E3 17.71-18.40-DTG	17.71	18.40	47.00	14.50	2.800	4	TS-I2
DSD-E3 17.71-18.40-DTL	17.71	18.40	47.00	14.50	2.800	4	TS-I2
DSD-E3 17.71-18.40 NOM 0	17.71	18.40	47.00	14.50	2.700	4	TS-I2
DSD-E3 17.71-18.40 NOM 2	17.71	18.40	47.00	14.50	2.700	4	TS-I2
DSD-E3 18.41-18.90-DTG	18.41	18.90	47.00	14.50	2.900	4	TS-I2
DSD-E3 18.41-18.90-DTL	18.41	18.90	47.00	14.50	2.900	4	TS-I2
DSD-E3 18.41-18.90 NOM 0	18.41	18.90	47.00	14.50	2.900	4	TS-I2
DSD-E3 18.41-18.90 NOM 2	18.41	18.90	47.00	14.50	2.900	4	TS-I2
DSD-E3 18.91-19.20-DTG	18.91	19.20	47.00	15.50	2.900	4	TS-I3
DSD-E3 18.91-19.20-DTL	18.91	19.20	47.00	15.50	2.900	4	TS-I3
DSD-E3 18.91-20.00 NOM 0	18.91	20.00	47.00	15.50	2.900	4	TS-I3
DSD-E3 18.91-20.00 NOM 2	18.91	20.00	47.00	15.50	2.900	4	TS-I3
DSD-E3 19.21-20.00-DTG	19.21	20.00	47.00	15.50	3.000	4	TS-I3
DSD-E3 19.21-20.00-DTL	19.21	20.00	47.00	15.50	3.000	4	TS-I3
DSD-E3 20.01-20.90-DTG	20.01	20.90	52.50	16.00	3.100	4	TS-I4
DSD-E3 20.01-20.90-DTL	20.01	20.90	52.50	16.00	3.100	4	TS-I4
DSD-E3 20.01-21.80 NOM 0	20.01	21.80	52.50	16.00	3.200	4	TS-I4
DSD-E3 20.01-21.80 NOM 2	20.01	21.80	52.50	16.00	3.200	4	TS-I4
DSD-E3 20.91-21.80-DTG	20.91	21.80	52.50	16.00	3.100	4	TS-I4
DSD-E3 20.91-21.80-DTL	20.91	21.80	52.50	16.00	3.100	4	TS-I4
DSD-E3 21.81-22.90-DTG	21.81	22.90	56.00	18.00	3.200	4	TS-I5
DSD-E3 21.81-22.90-DTL	21.81	22.90	56.00	18.00	3.200	4	TS-I5
DSD-E3 21.81-24.10 NOM 0	21.81	24.10	56.00	18.00	3.200	4	TS-I5
DSD-E3 21.81-24.10 NOM 2	21.81	24.10	56.00	18.00	3.200	4	TS-I5
DSD-E3 22.91-24.10-DTG	22.91	24.10	56.00	18.00	3.400	4	TS-I5
DSD-E3 22.91-24.10-DTL	22.91	24.10	56.00	18.00	3.400	4	TS-I5
DSD-E3 24.11-25.20-DTG	24.11	25.20	57.50	19.50	3.500	4	TS-I6
DSD-E3 24.11-25.20-DTL	24.11	25.20	57.50	19.50	3.500	4	TS-I6
DSD-E3 24.11-26.40 NOM 0	24.11	26.40	57.50	19.50	3.500	4	TS-I6
DSD-E3 24.11-26.40 NOM 2	24.11	26.40	57.50	19.50	3.500	4	TS-I6
DSD-E3 25.21-26.40-DTG	25.21	26.40	57.50	19.50	3.500	4	TS-I6
DSD-E3 25.21-26.40-DTL	25.21	26.40	57.50	19.50	3.500	4	TS-I6
DSD-E3 26.41-27.50-DTG	26.41	27.50	57.50	21.00	3.700	4	TS-I7
DSD-E3 26.41-27.50-DTL	26.41	27.50	57.50	21.00	3.700	4	TS-I7
DSD-E3 26.41-28.70 NOM 0	26.41	28.70	57.50	21.00	3.700	4	TS-I7
DSD-E3 26.41-28.70 NOM 2	26.41	28.70	57.50	21.00	3.700	4	TS-I7
DSD-E3 27.51-28.70-DTG	27.51	28.70	57.50	21.00	3.700	4	TS-I7
DSD-E3 27.51-28.70-DTL	27.51	28.70	57.50	21.00	3.700	4	TS-I7
DSD-E3 28.71-29.80-DTG	28.71	29.80	63.50	23.50	4.000	4	TS-I8
DSD-E3 28.71-29.80-DTL	28.71	29.80	63.50	23.50	4.000	4	TS-I8
DSD-E3 28.71-31.00 NOM 0	28.71	31.00	63.50	23.50	4.000	4	TS-I8
DSD-E3 28.71-31.00 NOM 2	28.71	31.00	63.50	23.50	4.000	4	TS-I8

- The drill tip is supplied in a grade that is suitable to machine the material group indicated in the drill head designation: ISO P, K, M, N materials
- Ordering example: DSD-E3 43.30 DT-PO • For user guide, see pages 331-333, 338-342

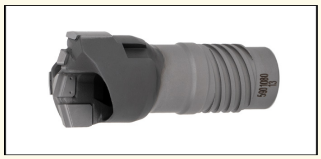
(1) Cutting diameter minimum
(2) Cutting diameter maximum
(3) Number of thread starts
(4) Tube designation

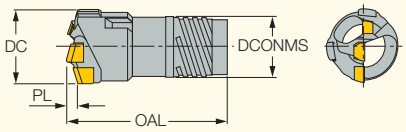
For holders, see pages: TS-I** (327)

Continued

ISCARDEEPDRILL

DSD-E2/E3
Deep Single Tube Drills with External 2 and 4 Start Thread Connections and 2 or 3 Brazed Tips (12.6-65 dia.)





NOM 0 refers to non-coated drill head, NOM 2 refers to coated drill head.

Designation	DCN(1)	DCX(2)	OAL	DCONMS	PL	Threads(3)	Ts(4)
DSD-E3 29.81-31.00-DTG	29.81	31.00	63.50	23.50	4.200	4	TS-I8
DSD-E3 29.81-31.00-DTL	29.81	31.00	63.50	23.50	4.200	4	TS-I8
DSD-E3 31.01-32.10-DTG	31.01	32.10	63.50	25.50	4.100	4	TS-I9
DSD-E3 31.01-32.10-DTL	31.01	32.10	63.50	25.50	4.100	4	TS-I9
DSD-E3 31.01-33.30 NOM 0	31.01	33.30	63.50	25.50	4.300	4	TS-I9
DSD-E3 31.01-33.30 NOM 2	31.01	33.30	63.50	25.50	4.300	4	TS-I9
DSD-E3 32.11-33.30-DTG	32.11	33.30	63.50	25.50	4.400	4	TS-I9
DSD-E3 32.11-33.30-DTL	32.11	33.30	63.50	25.50	4.400	4	TS-I9
DSD-E3 33.31-34.80-DTG	33.31	34.80	63.50	28.00	4.500	4	TS-I10
DSD-E3 33.31-34.80-DTL	33.31	34.80	63.50	28.00	4.500	4	TS-I10
DSD-E3 33.31-36.20 NOM 0	33.31	36.20	63.50	28.00	4.500	4	TS-I10
DSD-E3 33.31-36.20 NOM 2	33.31	36.20	63.50	28.00	4.500	4	TS-I10
DSD-E3 34.81-36.20-DTG	34.81	36.20	63.50	28.00	4.600	4	TS-I10
DSD-E3 34.81-36.20-DTL	34.81	36.20	63.50	28.00	4.600	4	TS-I10
DSD-E3 36.21-37.30-DTG	36.21	37.30	73.50	30.00	4.800	4	TS-I11
DSD-E3 36.21-37.30-DTL	36.21	37.30	73.50	30.00	4.800	4	TS-I11
DSD-E3 36.21-39.60 NOM 0	36.21	39.60	73.50	30.00	4.800	4	TS-I11
DSD-E3 36.21-39.60 NOM 2	36.21	39.60	73.50	30.00	4.800	4	TS-I11
DSD-E3 37.31-38.40-DTG	37.31	38.40	73.50	30.00	5.000	4	TS-I11
DSD-E3 37.31-38.40-DTL	37.31	38.40	73.50	30.00	5.000	4	TS-I11
DSD-E3 38.41-39.60-DTG	38.41	39.60	73.50	30.00	5.200	4	TS-I11
DSD-E3 38.41-39.60-DTL	38.41	39.60	73.50	30.00	5.200	4	TS-I11
DSD-E3 39.61-40.60-DTG	39.61	40.60	73.50	33.00	5.300	4	TS-I12
DSD-E3 39.61-40.60-DTL	39.61	40.60	73.50	33.00	5.300	4	TS-I12
DSD-E3 39.61-43.00 NOM 0	39.61	43.00	73.50	33.00	5.600	4	TS-I12
DSD-E3 39.61-43.00 NOM 2	39.61	43.00	73.50	33.00	5.600	4	TS-I12
DSD-E3 40.61-41.80-DTG	40.61	41.80	73.50	33.00	5.500	4	TS-I12
DSD-E3 40.61-41.80-DTL	40.61	41.80	73.50	33.00	5.500	4	TS-I12
DSD-E3 41.81-43.00-DTG	41.81	43.00	73.50	33.00	5.700	4	TS-I12
DSD-E3 41.81-43.00-DTL	41.81	43.00	73.50	33.00	5.700	4	TS-I12
DSD-E3 43.01-44.30-DTG	43.01	44.30	75.00	36.00	5.500	4	TS-I13
DSD-E3 43.01-44.30-DTL	43.01	44.30	75.00	36.00	5.500	4	TS-I13
DSD-E3 43.01-47.00 NOM 0	43.01	47.00	75.00	36.00	5.400	4	TS-I13
DSD-E3 43.01-47.00 NOM 2	43.01	47.00	75.00	36.00	5.400	4	TS-I13
DSD-E3 44.31-45.60-DTG	44.31	45.60	75.00	36.00	5.700	4	TS-I13
DSD-E3 44.31-45.60-DTL	44.31	45.60	75.00	36.00	5.700	4	TS-I13
DSD-E3 45.61-47.00-DTG	45.61	47.00	75.00	36.00	5.900	4	TS-I13
DSD-E3 45.61-47.00-DTL	45.61	47.00	75.00	36.00	5.900	4	TS-I13
DSD-E3 47.01-48.50-DTG	47.01	48.50	75.00	39.00	6.200	4	TS-I14
DSD-E3 47.01-48.50-DTL	47.01	48.50	75.00	39.00	6.200	4	TS-I14
DSD-E3 47.01-51.70 NOM 0	47.01	51.70	75.00	39.00	6.100	4	TS-I14
DSD-E3 47.01-51.70 NOM 2	47.01	51.70	75.00	39.00	6.100	4	TS-I14
DSD-E3 48.51-50.10-DTG	48.51	50.10	75.00	39.00	6.300	4	TS-I14
DSD-E3 48.51-50.10-DTL	48.51	50.10	75.00	39.00	6.300	4	TS-I14
DSD-E3 50.11-51.70-DTG	50.11	51.70	75.00	39.00	6.500	4	TS-I14
DSD-E3 50.11-51.70-DTL	50.11	51.70	75.00	39.00	6.500	4	TS-I14
DSD-E3 51.71-53.20-DTG	51.71	53.20	82.00	43.00	6.800	4	TS-I15
DSD-E3 51.71-53.20-DTL	51.71	53.20	82.00	43.00	6.800	4	TS-I15
DSD-E3 51.71-56.20 NOM 0	51.71	56.20	82.00	43.00	6.500	4	TS-I15
DSD-E3 51.71-56.20 NOM 2	51.71	56.20	82.00	43.00	6.500	4	TS-I15
DSD-E3 53.21-54.70-DTG	53.21	54.70	82.00	43.00	6.800	4	TS-I15
DSD-E3 53.21-54.70-DTL	53.21	54.70	82.00	43.00	6.800	4	TS-I15
DSD-E3 54.71-56.20-DTG	54.71	56.20	82.00	43.00	6.800	4	TS-I15
DSD-E3 54.71-56.20-DTL	54.71	56.20	82.00	43.00	6.800	4	TS-I15
DSD-E3 56.21-58.40-DTG	56.21	58.40	84.00	47.00	6.600	4	TS-I16
DSD-E3 56.21-58.40-DTL	56.21	58.40	84.00	47.00	6.600	4	TS-I16
DSD-E3 56.21-60.60 NOM 0	56.21	60.60	84.00	47.00	6.600	4	TS-I16
DSD-E3 56.21-60.60 NOM 2	56.21	60.60	84.00	47.00	6.600	4	TS-I16
DSD-E3 58.41-60.60-DTG	58.41	60.60	84.00	47.00	7.100	4	TS-I16

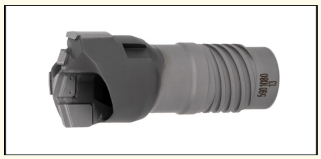
- The drill tip is supplied in a grade that is suitable to machine the material group indicated in the drill head designation: ISO P, K, M, N materials
- Ordering example: DSD-E3 43.30 DT-PO • For user guide, see pages 331-333, 338-342

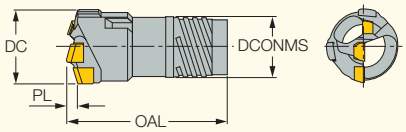
(1) Cutting diameter minimum
(2) Cutting diameter maximum
(3) Number of thread starts
(4) Tube designation

For holders, see pages: TS-I** (327)

ISCARDEEPDRILL

DSD-E2/E3
Deep Single Tube Drills with External 2 and 4 Start Thread Connections and 2 or 3 Brazed Tips (12.6-65 dia.)





NOM 0 refers to non-coated drill head, NOM 2 refers to coated drill head.

Designation	DCN(1)	DCX(2)	OAL	DCONMS	PL	Threads(3)	Ts(4)
DSD-E3 58.41-60.60-DTL	58.41	60.60	84.00	47.00	7.100	4	TS-I16
DSD-E3 60.61-62.80-DTG	60.61	62.80	84.00	47.00	7.200	4	TS-I16
DSD-E3 60.61-62.80-DTL	60.61	62.80	84.00	47.00	7.200	4	TS-I16
DSD-E3L 60.61-62.80-DTG	60.61	62.80	84.00	51.00	7.200	4	TS-I17
DSD-E3L 60.61-62.80-DTL	60.61	62.80	84.00	51.00	7.200	4	TS-I17
DSD-E3 60.61-65.00 NOM 0	60.61	65.00	84.00	47.00	7.000	4	TS-I17
DSD-E3 60.61-65.00 NOM 2	60.61	65.00	84.00	47.00	7.000	4	TS-I17
DSD-E3 62.81-65.00-DTG	62.81	65.00	84.00	47.00	7.500	4	TS-I16
DSD-E3 62.81-65.00-DTL	62.81	65.00	84.00	47.00	7.500	4	TS-I16
DSD-E3L 62.81-65.00-DTG	62.81	65.00	84.00	51.00	7.500	4	TS-I17
DSD-E3L 62.81-65.00-DTL	62.81	65.00	84.00	51.00	7.500	4	TS-I17

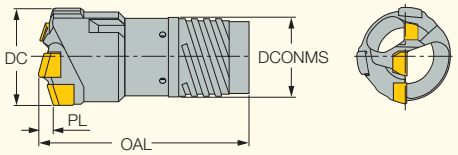
- The drill tip is supplied in a grade that is suitable to machine the material group indicated in the drill head designation: ISO P, K, M, N materials
- Ordering example: DSD-E3 43.30 DT-PO • For user guide, see pages 331-333, 338-342

(1) Cutting diameter minimum
(2) Cutting diameter maximum
(3) Number of thread starts
(4) Tube designation

For holders, see pages: TS-I** (327)

ISCARDEEPDRILL

DDD-E3
Deep Double Tube Drills with External 4 Start Thread Connection and Brazed Tips (18.4-65 dia.)



NOM 0 refers to non-coated drill head, NOM 2 refers to coated drill head.

Designation	DCN(1)	DCX(2)	OAL	DCONMS	PL	Ts(3)	Tsi(4)
DDD-E3 18.40-19.20-DTG	18.40	19.20	50.00	16.00	2.90	TDO-I0	TDI-N0
DDD-E3 18.40-19.20-DTL	18.40	19.20	50.00	16.00	2.90	TDO-I0	TDI-N0
DDD-E3 18.41-20.00 NOM 0	18.41	20.00	50.00	16.00	2.90	TDO-I0	TDI-N0
DDD-E3 18.41-20.00 NOM 2	18.41	20.00	50.00	16.00	2.90	TDO-I0	TDI-N0
DDD-E3 19.21-20.00-DTG	19.21	20.00	50.00	16.00	3.00	TDO-I0	TDI-N0
DDD-E3 19.21-20.00-DTL	19.21	20.00	50.00	16.00	3.00	TDO-I0	TDI-N0
DDD-E3 20.01-20.90-DTG	20.01	20.90	56.00	18.00	3.20	TDO-I1	TDI-N1
DDD-E3 20.01-20.90-DTL	20.01	20.90	56.00	18.00	3.20	TDO-I1	TDI-N1
DDD-E3 20.01-21.80 NOM 0	20.01	21.80	56.00	18.00	3.20	TDO-I1	TDI-N1
DDD-E3 20.01-21.80 NOM 2	20.01	21.80	56.00	18.00	3.20	TDO-I1	TDI-N1
DDD-E3 20.91-21.80-DTG	20.91	21.80	56.00	18.00	3.30	TDO-I1	TDI-N1
DDD-E3 20.91-21.80-DTL	20.91	21.80	56.00	18.00	3.30	TDO-I1	TDI-N1
DDD-E3 21.81-22.90-DTG	21.81	22.90	56.00	19.50	3.20	TDO-I2	TDI-N2
DDD-E3 21.81-22.90-DTL	21.81	22.90	56.00	19.50	3.20	TDO-I2	TDI-N2
DDD-E3 21.81-24.10 NOM 0	21.81	24.10	56.00	19.50	3.20	TDO-I2	TDI-N2
DDD-E3 21.81-24.10 NOM 2	21.81	24.10	56.00	19.50	3.20	TDO-I2	TDI-N2
DDD-E3 22.91-24.10-DTG	22.91	24.10	56.00	19.50	3.40	TDO-I2	TDI-N2
DDD-E3 22.91-24.10-DTL	22.91	24.10	56.00	19.50	3.40	TDO-I2	TDI-N2
DDD-E3 24.11-25.20-DTG	24.11	25.20	57.50	21.00	3.50	TDO-I3	TDI-N3
DDD-E3 24.11-25.20-DTL	24.11	25.20	57.50	21.00	3.50	TDO-I3	TDI-N3
DDD-E3 24.11-26.40 NOM 0	24.11	26.40	57.50	21.00	3.50	TDO-I3	TDI-N3
DDD-E3 24.11-26.40 NOM 2	24.11	26.40	57.50	21.00	3.50	TDO-I3	TDI-N3
DDD-E3 25.21-26.40-DTG	25.21	26.40	57.50	21.00	3.50	TDO-I3	TDI-N3
DDD-E3 25.21-26.40-DTL	25.21	26.40	57.50	21.00	3.50	TDO-I3	TDI-N3
DDD-E3 26.41-27.50-DTG	26.41	27.50	60.50	23.50	3.70	TDO-I4	TDI-N4
DDD-E3 26.41-27.50-DTL	26.41	27.50	60.50	23.50	3.70	TDO-I4	TDI-N4
DDD-E3 26.41-28.70 NOM 0	26.41	28.70	60.50	23.50	3.70	TDO-I4	TDI-N4
DDD-E3 26.41-28.70 NOM 2	26.41	28.70	60.50	23.50	3.70	TDO-I4	TDI-N4
DDD-E3 27.51-28.70-DTG	27.51	28.70	60.50	23.50	3.70	TDO-I4	TDI-N4
DDD-E3 27.51-28.70-DTL	27.51	28.70	60.50	23.50	3.70	TDO-I4	TDI-N4
DDD-E3 28.71-29.80-DTG	28.71	29.80	63.50	25.50	4.00	TDO-I5	TDI-N5
DDD-E3 28.71-29.80-DTL	28.71	29.80	63.50	25.50	4.00	TDO-I5	TDI-N5
DDD-E3 28.71-31.00 NOM 0	28.71	31.00	63.50	25.50	4.00	TDO-I5	TDI-N5
DDD-E3 28.71-31.00 NOM 2	28.71	31.00	63.50	25.50	4.00	TDO-I5	TDI-N5
DDD-E3 29.81-31.00-DTG	29.81	31.00	63.50	25.50	4.20	TDO-I5	TDI-N5
DDD-E3 29.81-31.00-DTL	29.81	31.00	63.50	25.50	4.20	TDO-I5	TDI-N5
DDD-E3 31.01-32.10-DTG	31.01	32.10	63.50	28.00	4.10	TDO-I6	TDI-N6
DDD-E3 31.01-32.10-DTL	31.01	32.10	63.50	28.00	4.10	TDO-I6	TDI-N6
DDD-E3 31.01-33.30 NOM 0	31.01	33.30	63.50	28.00	4.10	TDO-I6	TDI-N6
DDD-E3 31.01-33.30 NOM 2	31.01	33.30	63.50	28.00	4.10	TDO-I6	TDI-N6
DDD-E3 32.11-33.30-DTG	32.11	33.30	63.50	28.00	4.30	TDO-I6	TDI-N6
DDD-E3 32.11-33.30-DTL	32.11	33.30	63.50	28.00	4.30	TDO-I6	TDI-N6
DDD-E3 33.31-34.80-DTG	33.31	34.80	70.50	30.00	4.50	TDO-I7	TDI-N7
DDD-E3 33.31-34.80-DTL	33.31	34.80	70.50	30.00	4.50	TDO-I7	TDI-N7
DDD-E3 33.31-36.20 NOM 0	33.31	36.20	70.50	30.00	4.50	TDO-I7	TDI-N7
DDD-E3 33.31-36.20 NOM 2	33.31	36.20	70.50	30.00	4.50	TDO-I7	TDI-N7
DDD-E3 34.81-36.20-DTG	34.81	36.20	70.50	30.00	4.70	TDO-I7	TDI-N7
DDD-E3 34.81-36.20-DTL	34.81	36.20	70.50	30.00	4.70	TDO-I7	TDI-N7
DDD-E3 36.21-37.30-DTG	36.21	37.30	73.50	33.00	4.80	TDO-I8	TDI-N8
DDD-E3 36.21-37.30-DTL	36.21	37.30	73.50	33.00	4.80	TDO-I8	TDI-N8
DDD-E3 36.21-39.60 NOM 0	36.21	39.60	73.50	33.00	4.80	TDO-I8	TDI-N8
DDD-E3 36.21-39.60 NOM 2	36.21	39.60	73.50	33.00	4.80	TDO-I8	TDI-N8
DDD-E3 37.31-38.40-DTG	37.31	38.40	73.50	33.00	5.00	TDO-I8	TDI-N8
DDD-E3 37.31-38.40-DTL	37.31	38.40	73.50	33.00	5.00	TDO-I8	TDI-N8
DDD-E3 38.41-39.60-DTG	38.41	39.60	73.50	33.00	5.20	TDO-I8	TDI-N8
DDD-E3 38.41-39.60-DTL	38.41	39.60	73.50	33.00	5.20	TDO-I8	TDI-N8
DDD-E3 39.61-40.60-DTG	39.61	40.60	73.50	36.00	5.30	TDO-I9	TDI-N9
DDD-E3 39.61-40.60-DTL	39.61	40.60	73.50	36.00	5.30	TDO-I9	TDI-N9
DDD-E3 39.61-43.00 NOM 0	39.61	43.00	73.50	36.00	5.30	TDO-I9	TDI-N9
DDD-E3 39.61-43.00 NOM 2	39.61	43.00	73.50	36.00	5.30	TDO-I9	TDI-N9
DDD-E3 40.61-41.80-DTG	40.61	41.80	73.50	36.00	5.50	TDO-I9	TDI-N9
DDD-E3 40.61-41.80-DTL	40.61	41.80	73.50	36.00	5.50	TDO-I9	TDI-N9
DDD-E3 41.81-43.00-DTG	41.81	43.00	73.50	36.00	5.60	TDO-I9	TDI-N9
DDD-E3 41.81-43.00-DTL	41.81	43.00	73.50	36.00	5.60	TDO-I9	TDI-N9
DDD-E3 43.01-44.30-DTG	43.01	44.30	75.00	39.00	5.50	TDO-I10	TDI-N10

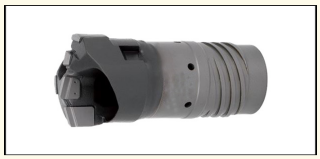
- The drill tip is supplied in a grade that is suitable to machine the material group indicated in the drill head designation: ISO P, K, M, N materials
- Ordering example: DDD-E3 47.10 OT-P0 • For user guide, see pages 331-333, 338-342

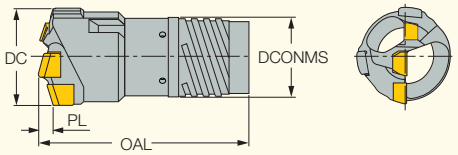
(1) Cutting diameter minimum
(2) Cutting diameter maximum
(3) Outer tube designation
(4) Inner tube designation

For holders, see pages: TDO-I (D18.41-65.00) (329)

ISCARDEEPDRILL

DDD-E3
Deep Double Tube Drills with External 4 Start Thread Connection and Brazed Tips (18.4-65 dia.)





NOM 0 refers to non-coated drill head, NOM 2 refers to coated drill head.

Designation	DCN(1)	DCX(2)	OAL	DCONMS	PL	Ts(3)	Tsi(4)
DDD-E3 43.01-44.30-DTL	43.01	44.30	75.00	39.00	5.50	TDO-I10	TDI-N10
DDD-E3 43.01-47.00 NOM 0	43.01	47.00	75.00	39.00	5.50	TDO-I10	TDI-N10
DDD-E3 43.01-47.00 NOM 2	43.01	47.00	75.00	39.00	5.50	TDO-I10	TDI-N10
DDD-E3 44.31-45.60-DTG	44.31	45.60	75.00	39.00	5.70	TDO-I10	TDI-N10
DDD-E3 44.31-45.60-DTL	44.31	45.60	75.00	39.00	5.70	TDO-I10	TDI-N10
DDD-E3 45.61-47.00-DTG	45.61	47.00	75.00	39.00	5.90	TDO-I10	TDI-N10
DDD-E3 45.61-47.00-DTL	45.61	47.00	75.00	39.00	5.90	TDO-I10	TDI-N10
DDD-E3 47.01-48.50-DTG	47.01	48.50	79.00	43.00	6.10	TDO-I11	TDI-N11
DDD-E3 47.01-48.50-DTL	47.01	48.50	79.00	43.00	6.10	TDO-I11	TDI-N11
DDD-E3 47.01-51.70 NOM 0	47.01	51.70	79.00	43.00	6.10	TDO-I11	TDI-N11
DDD-E3 47.01-51.70 NOM 2	47.01	51.70	79.00	43.00	6.10	TDO-I11	TDI-N11
DDD-E3 48.51-50.10-DTG	48.51	50.10	79.00	43.00	6.20	TDO-I11	TDI-N11
DDD-E3 48.51-50.10-DTL	48.51	50.10	79.00	43.00	6.20	TDO-I11	TDI-N11
DDD-E3 50.11-51.70-DTG	50.11	51.70	79.00	43.00	6.50	TDO-I11	TDI-N11
DDD-E3 50.11-51.70-DTL	50.11	51.70	79.00	43.00	6.50	TDO-I11	TDI-N11
DDD-E3 51.71-53.20-DTG	51.71	53.20	82.00	47.00	6.70	TDO-I12	TDI-N12
DDD-E3 51.71-53.20-DTL	51.71	53.20	82.00	47.00	6.70	TDO-I12	TDI-N12
DDD-E3 51.71-56.20 NOM 0	51.71	56.20	82.00	47.00	6.50	TDO-I12	TDI-N12
DDD-E3 51.71-56.20 NOM 2	51.71	56.20	82.00	47.00	6.50	TDO-I12	TDI-N12
DDD-E3 53.21-54.70-DTG	53.21	54.70	82.00	47.00	6.70	TDO-I12	TDI-N12
DDD-E3 53.21-54.70-DTL	53.21	54.70	82.00	47.00	6.70	TDO-I12	TDI-N12
DDD-E3 54.71-56.20-DTG	54.71	56.20	82.00	47.00	6.70	TDO-I12	TDI-N12
DDD-E3 54.71-56.20-DTL	54.71	56.20	82.00	47.00	6.70	TDO-I12	TDI-N12
DDD-E3 56.21-58.40-DTG	56.21	58.40	84.00	51.00	6.60	TDO-I13	TDI-N13
DDD-E3 56.21-58.40-DTL	56.21	58.40	84.00	51.00	6.60	TDO-I13	TDI-N13
DDD-E3 56.21-65.00 NOM 0	56.21	65.00	84.00	51.00	6.60	TDO-I13	TDI-N13
DDD-E3 56.21-65.00 NOM 2	56.21	65.00	84.00	51.00	6.60	TDO-I13	TDI-N13
DDD-E3 58.41-60.60-DTG	58.41	60.60	84.00	51.00	7.10	TDO-I13	TDI-N13
DDD-E3 58.41-60.60-DTL	58.41	60.60	84.00	51.00	7.10	TDO-I13	TDI-N13
DDD-E3 60.61-62.80-DTG	60.61	62.80	84.00	51.00	7.00	TDO-I13	TDI-N13
DDD-E3 60.61-62.80-DTL	60.61	62.80	84.00	51.00	7.00	TDO-I13	TDI-N13
DDD-E3 62.81-65.00-DTG	62.81	65.00	84.00	51.00	7.40	TDO-I13	TDI-N13
DDD-E3 62.81-65.00-DTL	62.81	65.00	84.00	51.00	7.40	TDO-I13	TDI-N13

- The drill tip is supplied in a grade that is suitable to machine the material group indicated in the drill head designation: ISO P, K, M, N materials
- Ordering example: DDD-E3 47.10 OT-P0 • For user guide, see pages 331-333, 338-342

(1) Cutting diameter minimum
(2) Cutting diameter maximum
(3) Outer tube designation
(4) Inner tube designation

For holders, see pages: TDO-I (D18.41-65.00) (329)

Universal Marking for Deep Drilling Tools

D- Tool diameter
Metric- D18.40
Inch- D.724

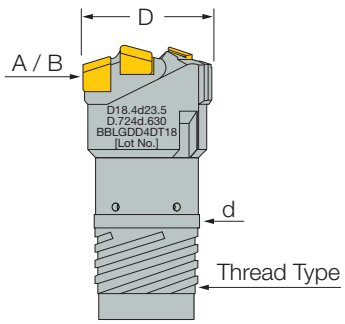
d- Pilot diameter
Metric- d23.5
Inch- d.630

Tool style
A- Single cutting edge
B- Multiple cutting edges

B	multiple cutting edges
BGDD	peripheral tip, inner tip with shorter CB
BDDD	ALL TIPS with shorter CB
BBL	T-land
BBLGDD	T-land & peripheral tip, inner tip with shorter CB
BBLDDD	T-land & ALL TIPS with shorter CB

Thread type
1ST- Single start thread single tube
2ST- Two start thread single tube
4ST- Four start thread single tube
4DT- Four start thread double tube

18- Tube diameter



D18.4d23.5
D.724d.630
BBLGDD4DT18
[Lot No.]

Brazed Drilling Heads

Single Tube System – External Thread

DSD-E0 - deep single tube drills with external single thread connection and a brazed single tip (8-14.8 dia.)

DSD-E1 - deep single tube drills with external 2 and 4 start thread connections and a single brazed tip (12.6-20 dia.)

DSD-E2/E3 - deep single tube drills with external 2 and 4 start thread connections and 2 or 3 brazed tips (12.6-65 dia.)

Double Tube System:

DDD-E3 - deep double tube drills with external 4 start thread connection and brazed tips (18.4-65 dia.)

Grade of Brazed Heads

D	S	D	-	E	1	15.86	DTH/G	-	PX

D	deep drilling / counterboring
I	inch - deep drilling / counterboring
S	special - deep drilling / counterboring

S	single tube
D	double tube

D	drill
C	counterbore with through hole
T	counterbore w/o through hole
TR	trepanning

E	external thread
I	internal thread

A	adjustable insert
C	cartridge
F	fast feed
0	brazed, 1 tip, 1 thread start (MBU type)
1	brazed, 1 tip (UTE type)
2	brazed, 2 tip (BTU type)
3	brazed, 3 tip (BTU, ETU type)

Drill Diameter

Chipbreaker
Brazed Drill

DSD-E1**.**DTH-PX
DSD-E3 **.** DTG-PX

P	steel
M	stainless
K	cast iron
N	aluminum

grade

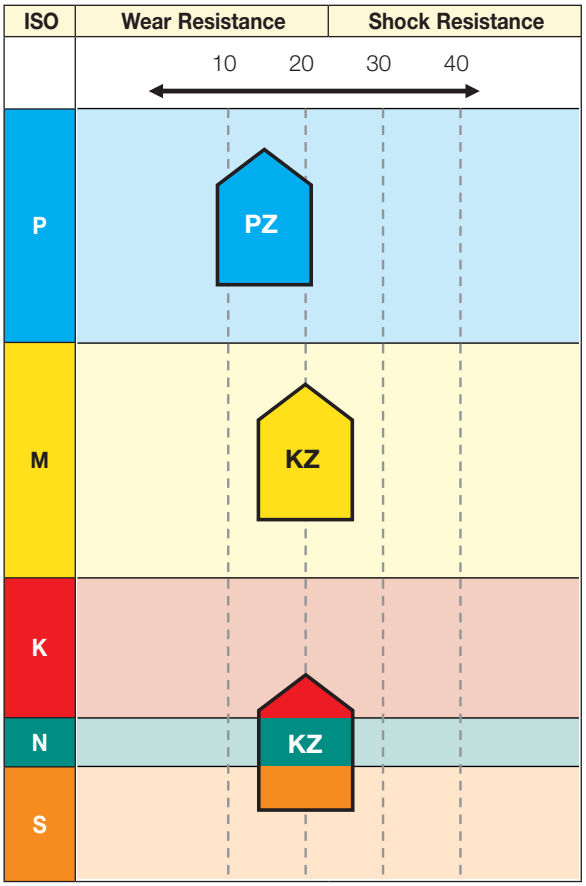
0	uncoated
1	TiAlN coating
Z	TiCrAlN coating
X	multilayer TiAlN coating

Grade of Brazed Heads

DSD-E0

DSD-E0 (MBU Style) STS

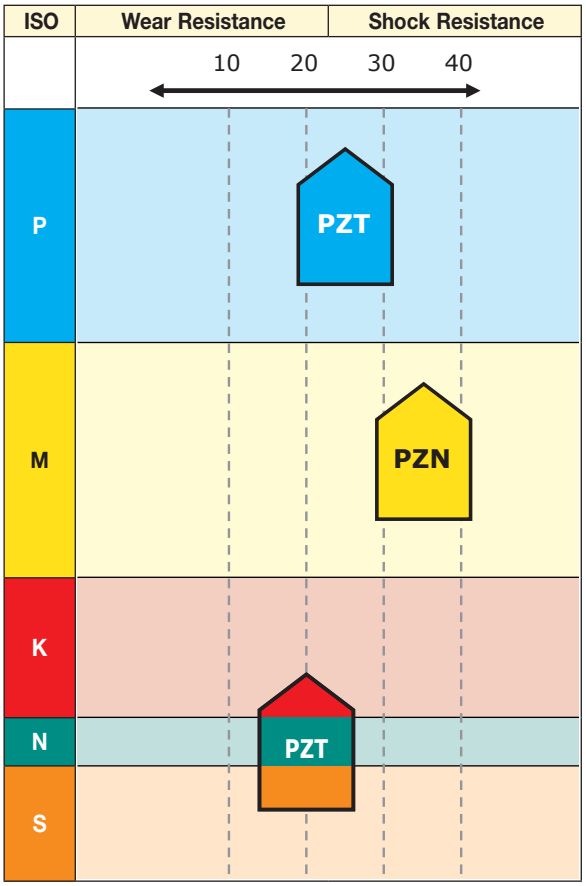
Ø8 -14.79mm
(Ø.315– .582")



DSD-E2

DSD-E2 (BTU 2tip Style) STS

Ø12.60 ~ 20.00mm
(Ø.496" ~ .787")

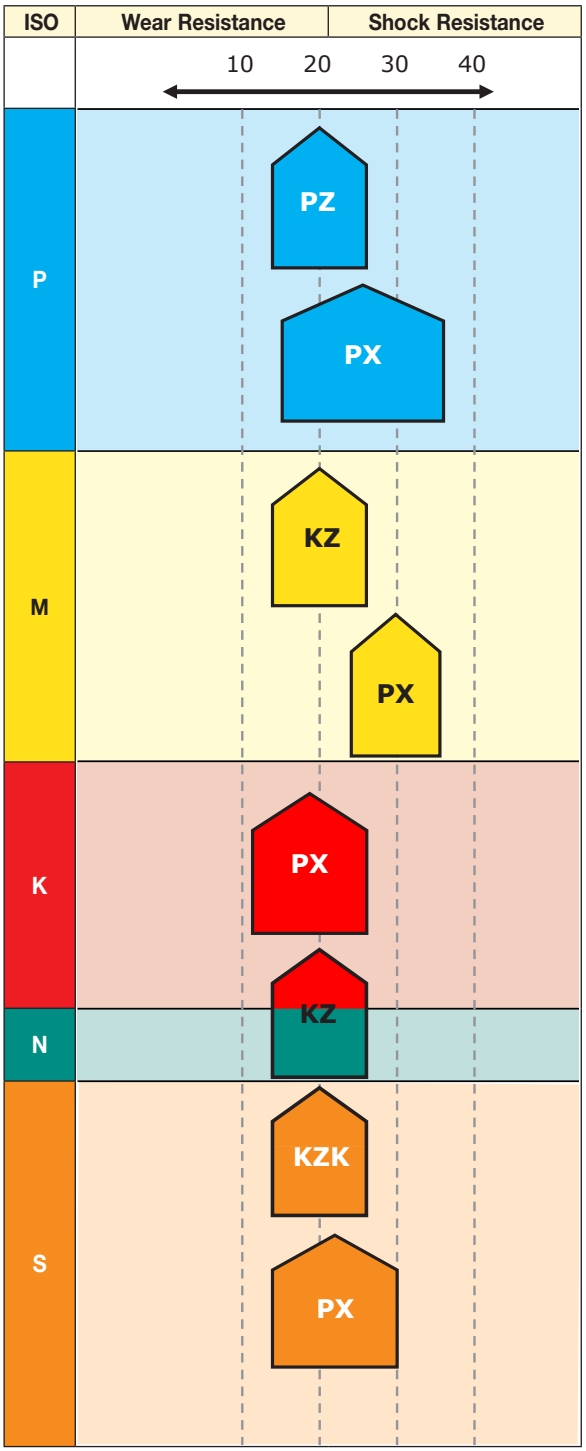


Grade of Brazed Heads (Continued)

DSD-E1

DSD-E1 (UTE Style) STS

Ø12.60 ~ 20.00mm
(Ø.496″ ~ .787″)

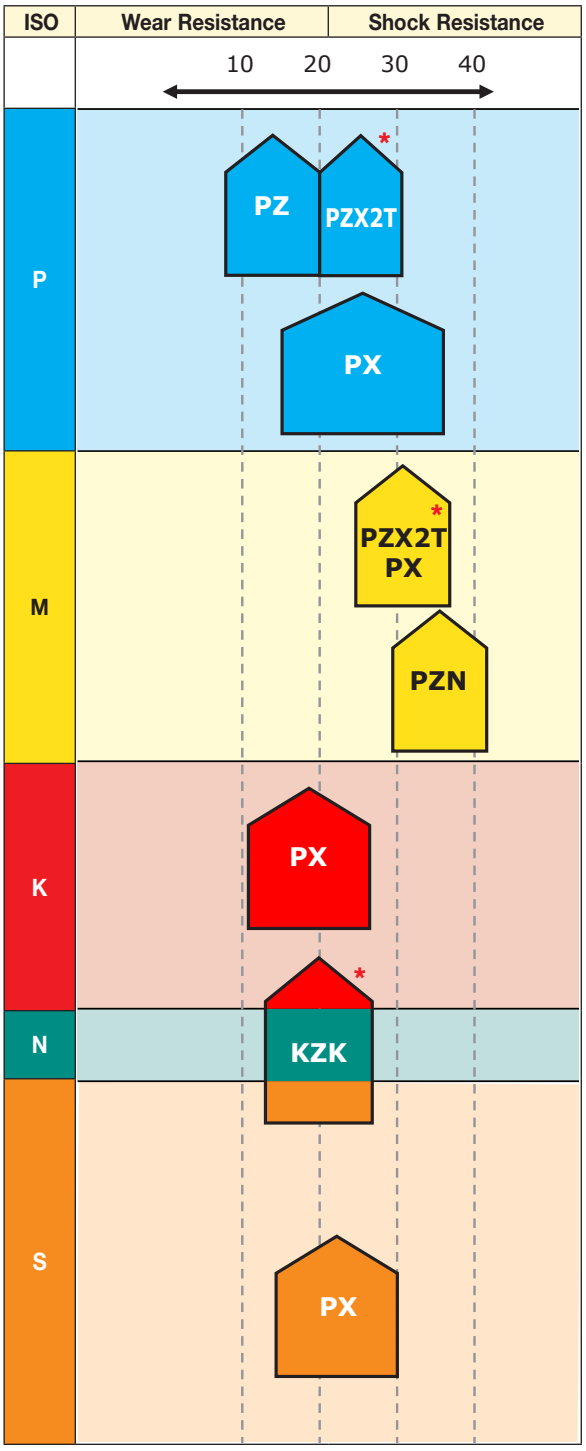


DSD-E3

DSD-E3 (BTU Style) STS	DDD-E3 (ETU Style) STS

Ø15.60 ~ 65.00mm
(Ø.615″ ~ 2.559″)

Ø18.40 ~ 65.00mm
(Ø.725″ ~ 2.559″)



* indicates the first recommendation

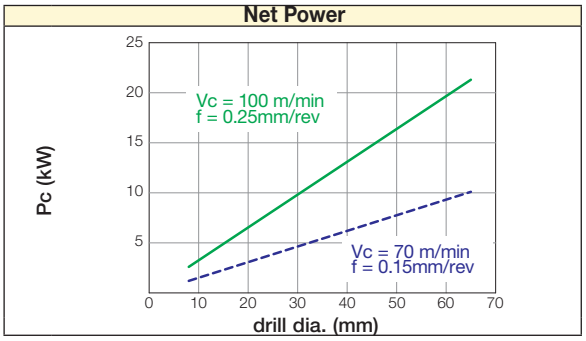
Tool Grades

Application	Grade	Coating: Main Composition	Coating: Thickness / µm	Features	Brazed Drill Heads: DSD-E0	DSD-E1	DSD-E2/E3	DDD-E3
PZ/PZT		TiAlCr	2.5	• high wear resistance • suitable for steel, cast iron, and difficult-to-cut material * PZ is for DSD-E0, DSD-E1 * PZT is for DSD-E2/E3, DDD-E3	✓	✓	✓	✓
P	P10 - P30							
K	K15 - K25							
N	N15 - N25							
S	S15 - S25							
H	H15 - H25							
PZX2T		TiAlCr	2.5	• good balance between wear and chipping resistance • suitable for steel and stainless steel under general cutting conditions			✓	✓
P	P20 - P30							
M	M25 - M35							
PZN		TiAlCr	2.5	• high fracture resistance • suitable for stainless steel			✓	✓
M	M30 - M40							
KZ		TiAlCr	2.5	• good balance between wear and fracture resistance	✓	✓		
M	M15 - M25							
K	K10 - K20							
N	N15 - N25							
S	S15 - S25							
H	H15 - H25							
KZK		TiAlCr	2.5	• first choice for heat-resistant alloy under general cutting conditions		✓	✓	✓
K	K15 - K25							
N	N10 - N20							
S	S15 - S25							
H	H15 - H25							
PX		(Ti, Al)N	4.5	• high wear resistance • designed for drilling various materials		✓	✓	✓
P	P15 - P35							
M	M25 - M35							
K	K10 - K25							
S	S15 - S30							

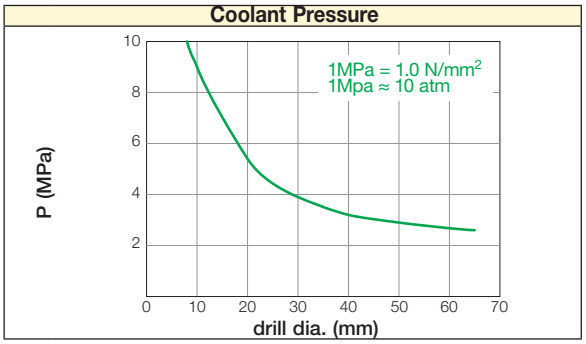
Note: Being brazed tools, the grade codes represent the grade combination of the brazed carbide tip and guide pad grades
They do not represent the individual grade of carbide tips or guide pads

STS - Machine Setting for the Single Tube System

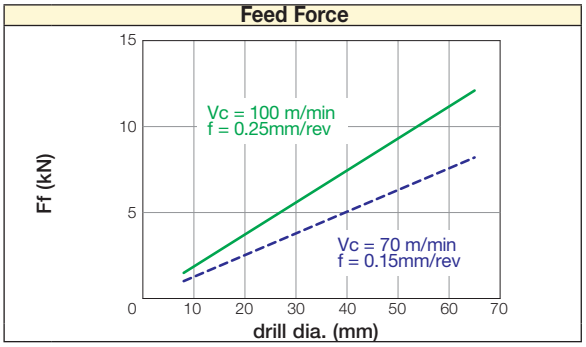
Net Power



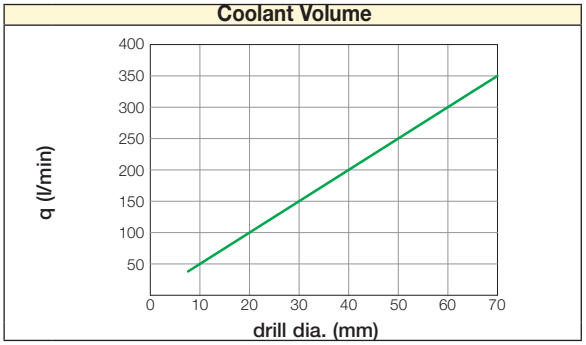
Coolant Pressure



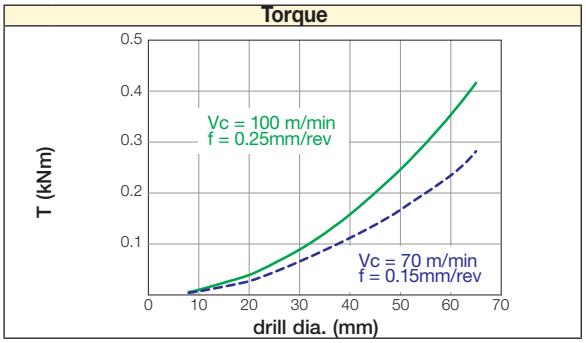
Feed Force



Coolant Volume



Torque

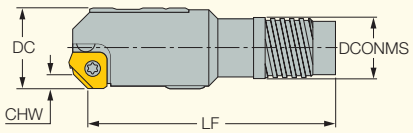


The above values should not be used as the exact recommendations. They may need modification depending on the machining conditions, materials, etc.

INDEXABLE COUNTERBORING
DSC-EA/EC/IA/IC, DDC-EA/EC

ISCARDEEPDRILL

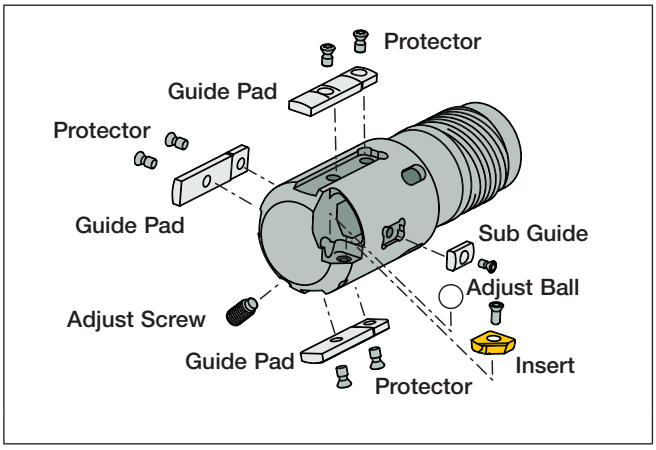
DSC-EA
Deep Single Tube Counterbore with Through Hole, External 4 Start Thread and Adjustable Diameter (25-40 dia.)

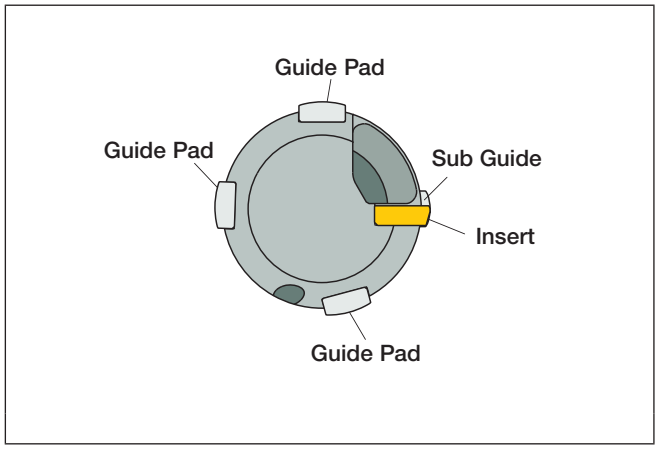


Designation	DCN(1)	DCX(2)	CHW	LF	DCONMS	Ts(3)
DSC-EA 25.00-26.40	25.00	26.40	3.5	70.00	19.50	TS-I6
DSC-EA 26.41-28.70	26.41	28.70	3.5	70.00	21.00	TS-I7
DSC-EA 28.71-31.00	28.71	31.00	3.5	75.00	23.50	TS-I8
DSC-EA 31.01-33.30	31.01	33.30	3.5	75.00	25.50	TS-I9
DSC-EA 33.31-36.20	33.31	36.20	3.5	75.00	28.00	TS-I10
DSC-EA 36.21-39.60	36.21	39.60	3.5	90.00	30.00	TS-I11
DSC-EA 39.61-39.99	39.61	39.99	3.5	90.00	33.00	TS-I12

• For user guide, see pages 336-342 • Ordering example: DSC-EA 33.20
(1) Cutting diameter minimum
(2) Cutting diameter maximum
(3) Tube designation

For inserts, see pages: XPMT-45 (290)
For holders, see pages: TS-I** (327)





Spare Parts
DSC-EA

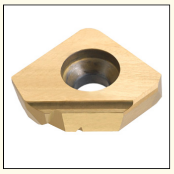
Diameter range	Adjustment ball	Adjustment screw	Wrench	Insert	Insert screw	Wrench
25.00-39.99	ADJUST BALL	SR11201755-7	HW 2.5	XPMT 16002-45	SR 11201754-4-4.5	T-9/51

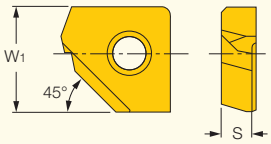
Spare Parts (continued)
DSC-EA

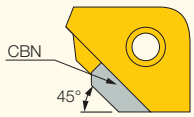
Diameter range	Guide Pads	Qty	Lock screw	Qty	Wrench	Sub Guide Pads	Qty	Lock screw	Qty	Wrench	Protectors	Qty	Lock screw	Qty	Wrench
25.00-29.99	GPS-06-20-120-DC	2	SR 34-508	2	T-7/51	SGP-01	1	SR11201753-1	1	T-7/51	-	-	-	-	-
30.00-37.99	GPS-07-20-120-DC	3	CSTB-3L065	3	T-9/51	SGP-01	1	SR11201753-1	1	T-7/51	-	-	-	-	-
38.00-39.99	GPS-08-25-155-DC	3	CSTB-3L065	3	T-9/51	SGP-02	1	SR11201753-4	1	T-9/51	GPP-06	3	SR11201753-4	3	T-9/51

ISCARDEEPDRILL

XPMT-45
Inserts for DSC Boring Heads







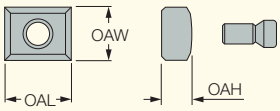
XPMT 16002-45 IB55

Designation	Dimensions W1	Dimensions S	Tough ↔ Hard IC950	Tough ↔ Hard IB55
XPMT 16002-45	9.50	2.80	•	•

For tools, see pages: DDC-EA (307) • DSC-EA (289) • DSC-IA (298)

ISCARDEEPDRILL

SGP
Drilling Head Sub-Guide Pads

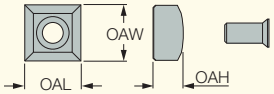


Designation	OAL	OAW	OAH
SGP-01	10.00	6.00	3.00
SGP-02	10.00	8.00	4.50
SGP-03	10.00	10.00	5.00
SGP-04	20.00	14.00	7.00

• Select an outer cartridge and pad for the required enlarged diameter.

ISCARDEEPDRILL

GPP
Drilling Head Guide Pad Protectors



Designation	OAL	OAW	OAH
GPP-06	8.00	8.00	4.50
GPP-07	10.00	10.00	6.00
GPP-08	14.00	14.00	7.50
GPP-09	18.00	18.00	9.00

• Select an outer cartridge and pad for the required enlarged diameter.

Recommended Claming Torque

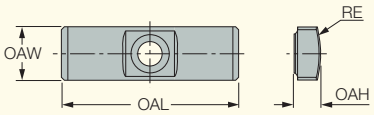
Insert Screw	
	(N·m)
SR 11201753-2	1
SR 11201753-3	1.3
SR 11201753-7	2.3
SR 11201753-9	3.5
SR 11201753-7	5

Cartridge Screw	
	(N·m)
SR 11201752-1	3.5
SR 11201753-5	2.3
SR 11201753-5	3.5
SR 11201756-7	3
SR 11201756-10	2.2
SR 11201756-11	2.2
SR 11201756-12	3
SR 11201756-15	5

Guide Pad Screw	
	(N·m)
SR 14-571/5	3.5
SR 34-506-C	2.3
LS1206SSS	3

ISCARDEEPDRILL

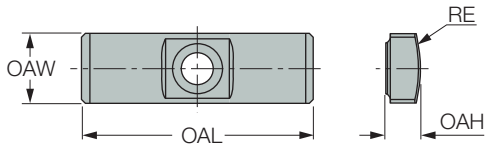
GPS
Deep Drilling Solid
Carbide Guide Pads

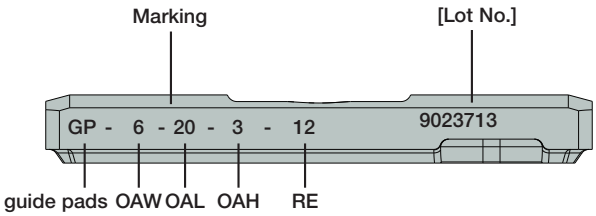


Designation	Dimensions				Tough ↔ Hard		
	OAW	OAL	OAH	RE	IC928	IC950	IC908
GPS-04-16-045-DC (1)	4.00	16.00	1.80	4.50			●
GPS-04-16-050-DC (1)	4.00	16.00	1.80	5.00			●
GPS-04-16-055-DC (1)	4.00	16.00	2.00	5.50	●		●
GPS-05-18-060-DC (1)	5.00	18.00	2.50	6.00	●		●
GPS-05-18-060	5.00	18.00	2.50	6.00		●	
GPS-05-18-075-DC (1)	5.00	18.00	2.50	7.50	●		●
GPS-06-20-075-DC (1)	6.00	20.00	3.00	7.50			●
GPS-06-20-075	6.00	20.00	3.00	7.50		●	
GPS-06-20-085-DC (1)	6.00	20.00	3.00	8.50	●		●
GPS-06-20-085	6.00	20.00	3.00	8.50		●	
GPS-06-20-100-DC (1)	6.00	20.00	3.00	10.00	●		●
GPS-06-20-100	6.00	20.00	3.00	10.00		●	
GPS-06-20-120-DC (1)	6.00	20.00	3.00	12.00	●		●
GPS-06-20-120	6.00	20.00	3.00	12.00		●	
GPS-07-20-120-DC (1)	7.00	20.00	3.50	12.00	●		●
GPS-07-20-120	7.00	20.00	3.50	12.00		●	
GPS-08-25-155-DC (1)	8.00	25.00	4.50	15.50	●		●
GPS-08-25-155	8.00	25.00	4.50	15.50		●	
GPS-10-30-200-DC (1)	10.00	30.00	4.50	20.00	●		●
GPS-10-30-200	10.00	30.00	4.50	20.00		●	
GPS-10-35-200-DC (1)	10.00	35.00	6.00	20.00	●		●
GPS-10-35-200	10.00	35.00	6.00	20.00		●	
GPS-12-35-250-DC (1)	12.00	35.00	5.50	25.00	●		●
GPS-12-35-250	12.00	35.00	5.50	25.00		●	
GPS-14-40-250-DC (1)	14.00	40.00	7.50	25.00	●		●
GPS-14-40-250	14.00	40.00	7.50	25.00		●	
GPS-18-40-300-DC (1)	18.00	40.00	9.00	30.00	●		●

(1) DC- Double Chamfer

Universal Marking for Deep Drilling Tools





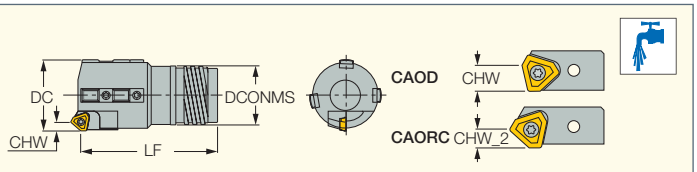
Guide Pad Grade Recommendation

	Oil Coolant			Water Based Coolant		
Priority	1	2	3	1	2	3
ISO-P	IC950	IC908	IC928	IC928	IC908	-
ISO-K	IC950	IC908	IC928	IC928	IC908	-
ISO-M	IC928	IC908	IC950	IC928	IC908	-
ISO-S	IC928	IC908	IC950	IC928	IC908	-

ISCARDEEPDRILL

DSC-EC

Deep Single Tube Counterbore with Through Hole, External 4 Start Thread Connection and a Cartridge (40-292 dia.)



Designation	DCN(1)	DCX(2)	CHW	CHW_2	LF	DCONMS	Ts(3)
DSC-EC 40.00-43.00	40.00	43.00	6.4	4.0	90.00	33.00	TS-I12
DSC-EC 43.01-47.00	43.01	47.00	6.4	4.0	95.00	36.00	TS-I13
DSC-EC 47.01-51.70	47.01	51.70	6.4	4.0	100.00	39.00	TS-I14
DSC-EC 51.71-56.20	51.71	56.20	6.4	4.0	100.00	43.00	TS-I15
DSC-EC 56.21-60.60	56.21	60.60	7.2	4.8	105.00	47.00	TS-I16
DSC-EC 60.61-64.99	60.61	65.00	7.2	4.8	110.00	51.00	TS-I17
DSC-EC 65.00-66.99	65.00	66.99	7.2	4.8	150.00	52.00	TS-I18
DSC-EC 67.00-72.99	67.00	72.99	10.4	6.4	150.00	58.00	TS-I19
DSC-EC 73.00-79.99	73.00	79.99	10.4	6.4	150.00	63.00	TS-I20
DSC-EC 80.00-86.99	80.00	86.99	10.4	6.4	180.00	70.00	TS-I21
DSC-EC 87.00-99.99	87.00	99.99	10.4	6.4	180.00	77.00	TS-I22
DSC-EC 100.00-111.99	100.00	111.99	10.4	6.4	180.00	89.00	TS-I23
DSC-EC 112.00-123.99	112.00	123.99	10.4	6.4	205.00	101.00	TS-I24
DSC-EC 124.00-135.99	124.00	135.99	10.4	6.4	205.00	113.00	TS-I25
DSC-EC 136.00-147.99	136.00	147.99	10.4	6.4	205.00	125.00	TS-I26
DSC-EC 148.00-159.99	148.00	159.99	10.4	6.4	225.00	137.00	TS-I27
DSC-EC 160.00-171.99	160.00	171.99	10.4	6.4	225.00	149.00	TS-I28
DSC-EC 172.00-183.99	172.00	183.99	10.4	6.4	225.00	161.00	TS-I29
DSC-EC 184.00-195.99	184.00	195.99	10.4	6.4	245.00	173.00	TS-I30
DSC-EC 196.00-207.99	196.00	207.99	10.4	6.4	245.00	185.00	TS-I31
DSC-EC 208.00-219.99	208.00	219.99	10.4	6.4	245.00	197.00	TS-I32
DSC-EC 220.00-231.99	220.00	231.99	10.4	6.4	265.00	208.00	TS-I33
DSC-EC 232.00-243.99	232.00	243.99	10.4	6.4	265.00	220.00	TS-I34
DSC-EC 244.00-255.99	244.00	255.99	10.4	6.4	265.00	232.00	TS-I35
DSC-EC 256.00-267.99	256.00	267.99	10.4	6.4	290.00	244.00	TS-I36
DSC-EC 268.00-279.99	268.00	279.99	10.4	6.4	290.00	256.00	TS-I37
DSC-EC 280.00-291.99	280.00	291.99	10.4	6.4	290.00	268.00	TS-I38

• CAOD - Rough boring cartridge (for large D.O.C.), supplied with the cartridge, unless ordered differently • CAORC - Precision boring cartridge

• For user guide, see pages 336-342 • Ordering example: DSC-EC 87.30

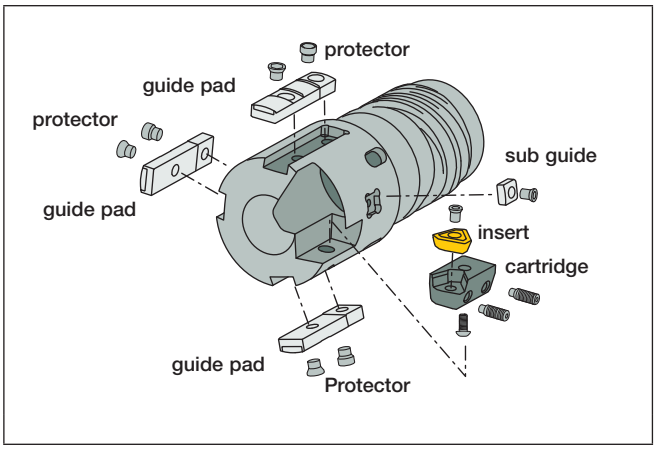
(1) Cutting diameter minimum

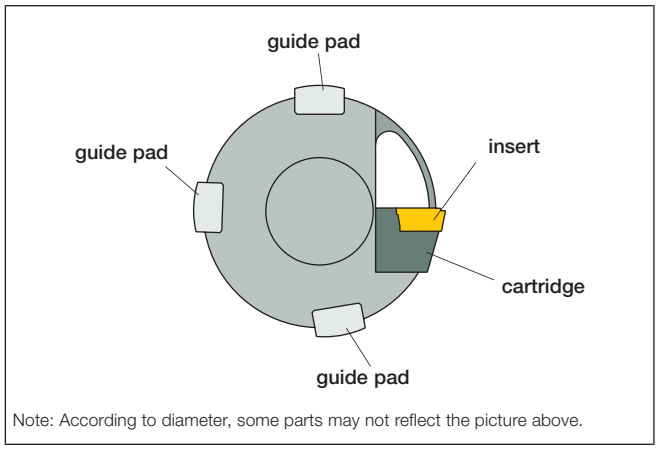
(2) Cutting diameter maximum

(3) Tube designation

For inserts, see pages: TPMX (260)

For holders, see pages: TS-I** (327)





Note: According to diameter, some parts may not reflect the picture above.

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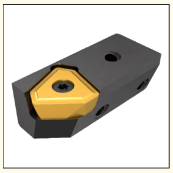
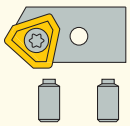
CAORC
Boring Head Peripheral Cartridge





Adjustment Cartridge for Shallow Depth of Cut

Diameter range	Adjustment Cartridge	Adjustment Screw (2 pcs)	Wrench	Lock Screw	Wrench	Insert	Insert Screw	Wrench
40.00-51.99	CAORC-0845	SR11201755-6	HW 2.0	SR11201756-10	HW 2.5	TPMX 1403..L..	SR11201753-3	T-8/53
52.00-66.99	CAORC-103	SR11201755-8	HW 2.5	SR11201756-12	HW 3.0	TPMX 1704..L..	SR11201753-7	T-9/51
67.00-291.99	CAORC-142	SR11201755-9	HW 2.5	SR11201756-15	HW 4.0	TPMX 2405..L..	SR11201753-9	T-15/51

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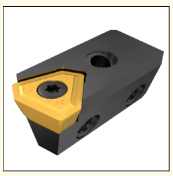
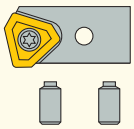
CAOD
Drilling / Boring Head
Peripheral Cartridge





Adjustment Cartridge for Large Depth of Cut

Diameter range	Adjustment Cartridge	Adjustment Screw (2 pcs)	Wrench	Lock Screw	Wrench	Insert	Insert Screw	Wrench
40.00-51.99	CAOD-0845	SR11201755-6	HW 2.0	SR11201756-10	HW 2.5	TPMX 1403..R..	SR11201753-3	T-8/53
52.00-66.99	CAOD-103	SR11201755-8	HW 2.5	SR11201756-12	HW 3.0	TPMX 1704..R..	SR11201753-7	T-9/51
67.00-291.99	CAOD-142	SR11201755-9	HW 2.5	SR11201756-15	HW 4.0	TPMX 2405..R..	SR11201753-9	T-15/51

Guide Pads and Other Spare Parts

DSC-EC

Diameter range	Guide Pads	Qty	Lock Screw	Qty	Wrench	Sub Guide Pads	Qty	Lock Screw	Qty	Wrench	Protectors	Qty	Lock Screw	Qty	Wrench
40.00-45.99	GPS-08-25-155-DC	3	CSTB-3L065	3	T-9/51	SGP-02	1	SR11201753-4	1	T-9/51	GPP-06	3	SR11201753-4	3	T-9/51
46.00-59.99	GPS-10-35-200-DC	3	SR11201753-8	3	T-15/51	SGP-02	1	SR11201753-4	1	T-9/51	GPP-07	3	SR11201753-8	3	T-15/51
60.00-99.99	GPS-14-40-250-DC	3	SR11201752-2	3	T-15/51	SGP-03	1	SR11201753-4	1	T-9/51	GPP-08	3	SR11201752-2	3	T-15/51
100.00-135.99	GPS-18-40-300-DC	3	SR11201756-7S	3	HW 3.0	SGP-04	1	SR11201752-2	1	T-15/51	GPP-09	3	SR11201756-7S	3	HW 3.0
136.00-291.99	GPS-18-40-300-DC	5	SR11201756-7S	5	HW 3.0	SGP-04	1	SR11201752-2	1	T-15/51	GPP-09	5	SR11201756-7S	5	HW 3.0

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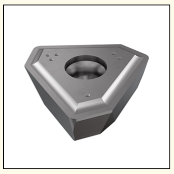
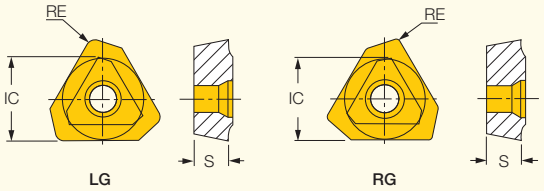
TPMX
Inserts for Drilling / Counterboring / Trepanning Tools

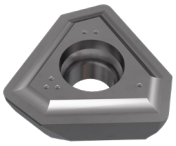
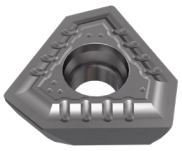
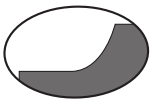
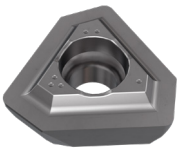
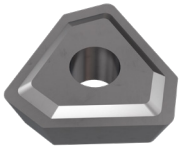




Designation	Dimensions IC	S	RE	Tough ↔ Hard IC8355	IC908	IC948	IC806
TPMX 140304R-B	8.45	3.50	0.40		●		●
TPMX 140308L-G	8.45	3.50	0.80		●		
TPMX 140308R-B	8.45	3.50	0.80			●	●
TPMX 140308R-DT	8.45	3.50	0.80		●	●	
TPMX 140308R-G	8.45	3.50	0.80	●	●	●	●
TPMX 170404L-BG	10.30	4.00	0.40		●		
TPMX 170404R-B	10.30	4.00	0.40		●		●
TPMX 170408L-DT	10.30	4.00	0.80		●		
TPMX 170408L-G	10.30	4.00	0.80		●	●	
TPMX 170408R-B	10.30	4.00	0.80			●	●
TPMX 170408R-BG	10.30	4.00	0.80		●	●	●
TPMX 170408R-DT	10.30	4.00	0.80		●	●	
TPMX 170408R-G	10.30	4.00	0.80	●	●	●	●
TPMX 240504R-B	14.20	5.50	0.40		●		●
TPMX 240512L-BG	14.20	5.50	1.20		●		
TPMX 240512L-DT	14.20	5.50	1.20		●		
TPMX 240512L-G	14.20	5.50	1.20		●	●	
TPMX 240512R-B	14.20	5.50	1.20			●	●
TPMX 240512R-BG	14.20	5.50	1.20		●	●	●
TPMX 240512R-DT	14.20	5.50	1.20		●	●	
TPMX 240512R-G	14.20	5.50	1.20	●	●	●	●
TPMX 280708R-B	17.00	7.50	0.80		●		●
TPMX 280716L-BG	17.00	7.50	1.60		●		
TPMX 280716L-G	17.00	7.50	1.60		●	●	
TPMX 280716R-B	17.00	7.50	1.60			●	●
TPMX 280716R-BG	17.00	7.50	1.60		●	●	●
TPMX 280716R-DT	17.00	7.50	1.60		●	●	
TPMX 280716R-G	17.00	7.50	1.60	●	●	●	●

For tools, see pages: DDC-EC (310) • DDD-EC (259) • DSC-EC (292) • DSC-IC (302) • DSD-EC (257) • DSD-IC (258) • DSTR-EC (317) • DSTR-IC (319)

Chipbreaker Selection

G			**B**		
	versatile			good chip control for heat-resistant alloy	
BG			**DT**		
	chip control for difficult-to-cut steel			to reduce machine load	

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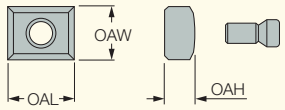
SGP
Drilling Head Sub-Guide Pads



Designation	OAL	OAW	OAH
SGP-01	10.00	6.00	3.00
SGP-02	10.00	8.00	4.50
SGP-03	10.00	10.00	5.00
SGP-04	20.00	14.00	7.00

- Select an outer cartridge and pad for the required enlarged diameter.

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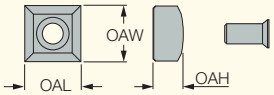
GPP
Drilling Head Guide
Pad Protectors



Designation	OAL	OAW	OAH
GPP-06	8.00	8.00	4.50
GPP-07	10.00	10.00	6.00
GPP-08	14.00	14.00	7.50
GPP-09	18.00	18.00	9.00

- Select an outer cartridge and pad for the required enlarged diameter.

Recommended Claming Torque

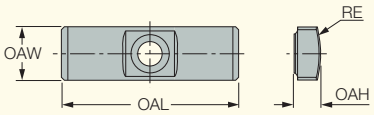
Insert Screw	
	(N·m)
SR 11201753-2	1
SR 11201753-3	1.3
SR 11201753-7	2.3
SR 11201753-9	3.5
SR 11201753-7	5

Cartridge Screw	
	(N·m)
SR 11201752-1	3.5
SR 11201753-5	2.3
SR 11201753-5	3.5
SR 11201756-7	3
SR 11201756-10	2.2
SR 11201756-11	2.2
SR 11201756-12	3
SR 11201756-15	5

Guide Pad Screw	
	(N·m)
SR 14-571/5	3.5
SR 34-506-C	2.3
LS1206SSS	3

ISCARDEEPDRILL

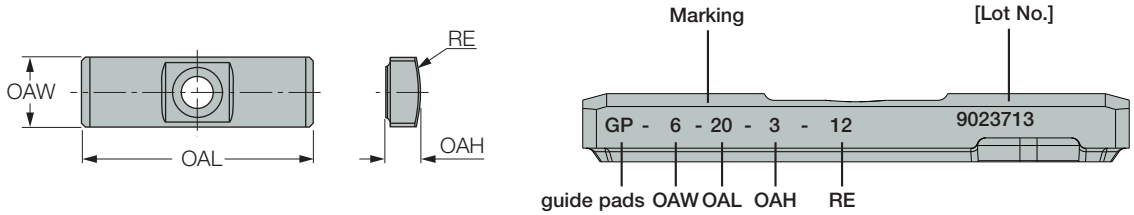
GPS
Deep Drilling Solid
Carbide Guide Pads



Designation	Dimensions OAW	OAL	OAH	RE	Tough ↔ Hard IC928	IC950	IC908
GPS-04-16-045-DC (1)	4.00	16.00	1.80	4.50			●
GPS-04-16-050-DC (1)	4.00	16.00	1.80	5.00			●
GPS-04-16-055-DC (1)	4.00	16.00	2.00	5.50	●		●
GPS-05-18-060-DC (1)	5.00	18.00	2.50	6.00	●		●
GPS-05-18-060	5.00	18.00	2.50	6.00		●	
GPS-05-18-075-DC (1)	5.00	18.00	2.50	7.50	●		●
GPS-06-20-075-DC (1)	6.00	20.00	3.00	7.50			●
GPS-06-20-075	6.00	20.00	3.00	7.50		●	
GPS-06-20-085-DC (1)	6.00	20.00	3.00	8.50	●		●
GPS-06-20-085	6.00	20.00	3.00	8.50		●	
GPS-06-20-100-DC (1)	6.00	20.00	3.00	10.00	●		●
GPS-06-20-100	6.00	20.00	3.00	10.00		●	
GPS-06-20-120-DC (1)	6.00	20.00	3.00	12.00	●		●
GPS-06-20-120	6.00	20.00	3.00	12.00		●	
GPS-07-20-120-DC (1)	7.00	20.00	3.50	12.00	●		●
GPS-07-20-120	7.00	20.00	3.50	12.00		●	
GPS-08-25-155-DC (1)	8.00	25.00	4.50	15.50	●		●
GPS-08-25-155	8.00	25.00	4.50	15.50		●	
GPS-10-30-200-DC (1)	10.00	30.00	4.50	20.00	●		●
GPS-10-30-200	10.00	30.00	4.50	20.00		●	
GPS-10-35-200-DC (1)	10.00	35.00	6.00	20.00	●		●
GPS-10-35-200	10.00	35.00	6.00	20.00		●	
GPS-12-35-250-DC (1)	12.00	35.00	5.50	25.00	●		●
GPS-12-35-250	12.00	35.00	5.50	25.00		●	
GPS-14-40-250-DC (1)	14.00	40.00	7.50	25.00	●		●
GPS-14-40-250	14.00	40.00	7.50	25.00		●	
GPS-18-40-300-DC (1)	18.00	40.00	9.00	30.00	●		●

(1) DC- Double Chamfer

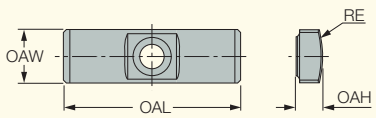
Universal Marking for Deep Drilling Tools



Guide Pad Grade Recommendation

	Oil Coolant			Water Based Coolant		
Priority	1	2	3	1	2	3
ISO-P	IC950	IC908	IC928	IC928	IC908	-
ISO-K	IC950	IC908	IC928	IC928	IC908	-
ISO-M	IC928	IC908	IC950	IC928	IC908	-
ISO-S	IC928	IC908	IC950	IC928	IC908	-

GPS-PLUS
Deep Drilling Solid Carbide
Plus Size Guide Pads

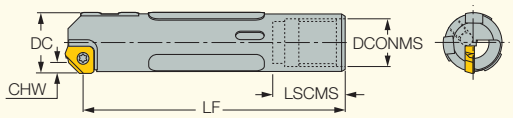


Designation	Dimensions						IC908
	DCN(1)	DCX(2)	OAW	OAL	OAH	RE	
GPS-08-25-160-DC+1	38.00	44.99	8.00	25.00	5.00	16.00	●
GPS-08-25-165-DC+2	38.00	44.99	8.00	25.00	5.50	16.50	●
GPS-08-25-170-DC+3	38.00	44.99	8.00	25.00	6.00	17.00	●
GPS-10-35-205-DC+1	45.00	59.99	10.00	35.00	6.50	20.50	●
GPS-10-35-210-DC+2	45.00	59.99	10.00	35.00	7.00	21.00	●
GPS-10-35-215-DC+3	45.00	59.99	10.00	35.00	7.50	21.50	●
GPS-10-35-220-DC+4	45.00	59.99	10.00	35.00	8.00	22.00	●
GPS-14-40-255-DC+1	60.00	98.99	14.00	40.00	8.00	25.50	●
GPS-14-40-260-DC+2	60.00	98.99	14.00	40.00	8.50	26.00	●
GPS-14-40-265-DC+3	60.00	98.99	14.00	40.00	9.00	26.50	●
GPS-14-40-270-DC+4	60.00	98.99	14.00	40.00	9.50	27.00	●
GPS-14-40-275-DC+5	60.00	98.99	14.00	40.00	10.00	27.50	●
GPS-18-40-305-DC+1	99.00	293.99	18.00	40.00	9.50	30.50	●
GPS-18-40-310-DC+2	99.00	293.99	18.00	40.00	10.00	31.00	●
GPS-18-40-315-DC+3	99.00	293.99	18.00	40.00	10.50	31.50	●
GPS-18-40-320-DC+4	99.00	293.99	18.00	40.00	11.00	32.00	●
GPS-18-40-325-DC+5	99.00	293.99	18.00	40.00	11.50	32.50	●

(1) Cutting diameter minimum
(2) Cutting diameter maximum

ISCARDEEPDRILL

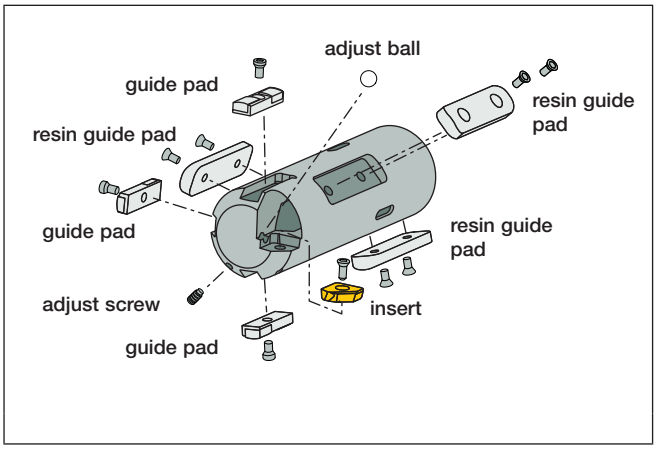
DSC-IA
Deep Single Tube Counterbore with a Through Hole, Internal Single-Start Thread and Adjustable Diameter (25-40 dia.)

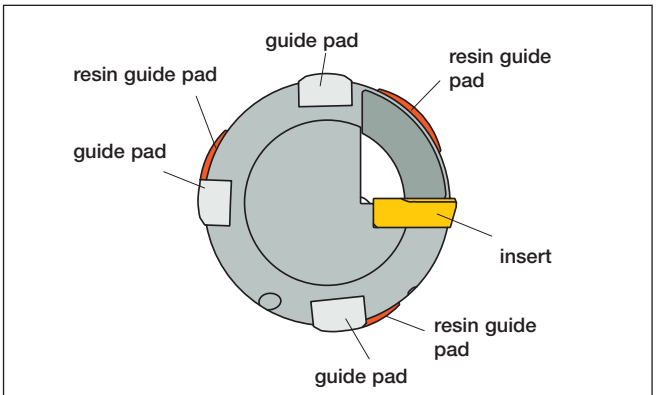


Designation	DCN(1)	DCX(2)	CHW	LF	LSCMS	DCONMS	Ts(3)
DSC-IA 25.00-26.99	25.00	26.99	2.8	110.00	25.00	20.00	TS-O10
DSC-IA 27.00-29.99	27.00	29.99	2.8	110.00	25.00	22.00	TS-O11
DSC-IA 30.00-31.99	30.00	31.99	2.8	110.00	25.00	24.00	TS-O12
DSC-IA 32.00-33.99	32.00	33.99	2.8	110.00	25.00	26.00	TS-O13
DSC-IA 34.00-36.99	34.00	36.99	2.8	135.00	40.00	27.00	TS-O14
DSC-IA 37.00-39.99	37.00	39.99	2.8	135.00	40.00	30.00	TS-O15

• For user guide, see pages 336-342 • Ordering example: DSC-IA 30.35
(1) Cutting diameter minimum
(2) Cutting diameter maximum
(3) Tube designation

For inserts, see pages: XPMT-45 (290)
For holders, see pages: TS-O** (328)





Note: According to diameter, some parts may not reflect the picture above

Spare Parts

DSC-IA

Diameter range	Adjustment Ball	Adjustment Screw	Wrench	Insert	Insert Screw	Wrench
25.00-39.99	ADJUST BALL	SR11201755-7	HW 2.5	XPMT 16002-45	SR 11201754-4-4.5	T-9/51

Spare Parts (continued)

DSC-IA

Diameter range	Guide Pads	Qty	Lock Screw	Qty	Wrench	Resin Guide Pad	Qty	Lock Screw	Qty	Wrench
25.00-29.99	GPS-06-20-120-DC	2	SR 34-508	2	T-7/51	RGP01	3	SR11201756-2	6	HW 2.0
30.00-36.99	GPS-07-20-120-DC	3	CSTB-3L065	3	T-9/51	RGP02	3	SR11201756-3	6	HW 2.0
37.00-39.99	GPS-08-25-155-DC	3	CSTB-3L065	3	T-9/51	RGP03	3	SR11201756-4	6	HW 2.5

Universal Marking for Deep Drilling Tools

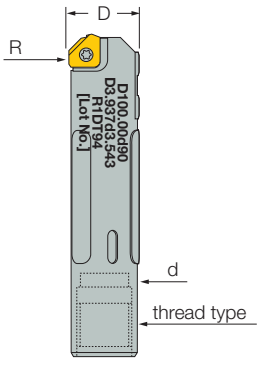
D- **Tool diameter**
Metric- D100.00
Inch- D3.937

d- pilot diameter
Metric- d90
Inch- d3.543

Tool style
R- cartridge style counter boring

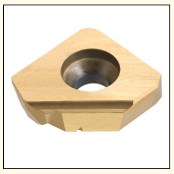
Thread type
4ST- four-start thread single tube
1ST- single-start thread single tube
4DT- four-start thread double tube

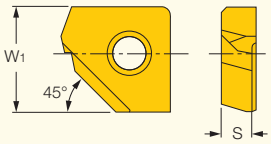
94- tube diameter

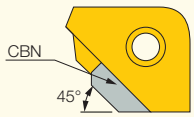


ISCARDEEPDRILL

XPMT-45
Inserts for DSC Boring Heads







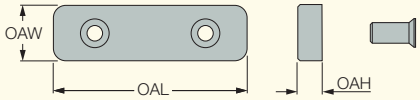
XPMT 16002-45 IB55

Designation	Dimensions W1	Dimensions S	Tough ↔ Hard IC950	Tough ↔ Hard IB55
XPMT 16002-45	9.50	2.80	•	•

For tools, see pages: DDC-EA (307) • DSC-EA (289) • DSC-IA (298)

ISCARDEEPDRILL

RGP
Boring Head Resin Pads

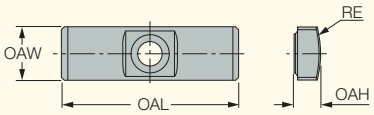


Designation	OAL	OAW	OAH
RGP01	40.00	10.00	4.00
RGP02	45.00	12.00	5.00
RGP03	50.00	15.00	5.80
RGP04	70.00	20.00	7.50
RGP05	80.00	30.00	12.50
RGP06	100.00	35.00	15.50
RGP07	120.00	40.00	18.50
RGP08	140.00	50.00	22.50
RGP09	150.00	60.00	23.50
RGP10	150.00	70.00	26.50

• Select an outer cartridge and pad for the required enlarged diameter.

ISCARDEEPDRILL

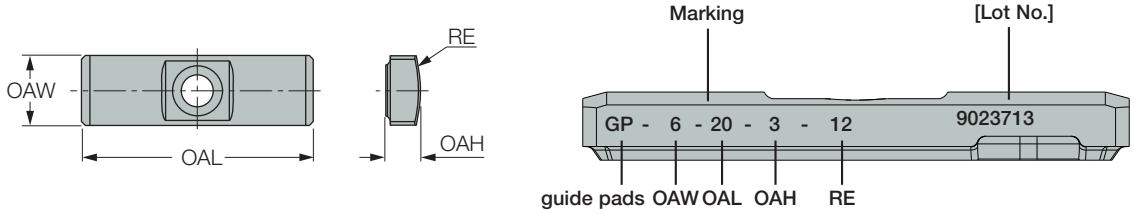
GPS
Deep Drilling Solid
Carbide Guide Pads



Designation	Dimensions				Tough ↔ Hard		
	OAW	OAL	OAH	RE	IC928	IC950	IC908
GPS-04-16-045-DC (1)	4.00	16.00	1.80	4.50			●
GPS-04-16-050-DC (1)	4.00	16.00	1.80	5.00			●
GPS-04-16-055-DC (1)	4.00	16.00	2.00	5.50	●		●
GPS-05-18-060-DC (1)	5.00	18.00	2.50	6.00	●		●
GPS-05-18-060	5.00	18.00	2.50	6.00		●	
GPS-05-18-075-DC (1)	5.00	18.00	2.50	7.50	●		●
GPS-06-20-075-DC (1)	6.00	20.00	3.00	7.50			●
GPS-06-20-075	6.00	20.00	3.00	7.50		●	
GPS-06-20-085-DC (1)	6.00	20.00	3.00	8.50	●		●
GPS-06-20-085	6.00	20.00	3.00	8.50		●	
GPS-06-20-100-DC (1)	6.00	20.00	3.00	10.00	●		●
GPS-06-20-100	6.00	20.00	3.00	10.00		●	
GPS-06-20-120-DC (1)	6.00	20.00	3.00	12.00	●		●
GPS-06-20-120	6.00	20.00	3.00	12.00		●	
GPS-07-20-120-DC (1)	7.00	20.00	3.50	12.00	●		●
GPS-07-20-120	7.00	20.00	3.50	12.00		●	
GPS-08-25-155-DC (1)	8.00	25.00	4.50	15.50	●		●
GPS-08-25-155	8.00	25.00	4.50	15.50		●	
GPS-10-30-200-DC (1)	10.00	30.00	4.50	20.00	●		●
GPS-10-30-200	10.00	30.00	4.50	20.00		●	
GPS-10-35-200-DC (1)	10.00	35.00	6.00	20.00	●		●
GPS-10-35-200	10.00	35.00	6.00	20.00		●	
GPS-12-35-250-DC (1)	12.00	35.00	5.50	25.00	●		●
GPS-12-35-250	12.00	35.00	5.50	25.00		●	
GPS-14-40-250-DC (1)	14.00	40.00	7.50	25.00	●		●
GPS-14-40-250	14.00	40.00	7.50	25.00		●	
GPS-18-40-300-DC (1)	18.00	40.00	9.00	30.00	●		●

(1) DC- Double Chamfer

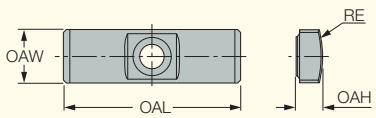
Universal Marking for Deep Drilling Tools



Guide Pad Grade Recommendation

	Oil Coolant			Water Based Coolant		
Priority	1	2	3	1	2	3
ISO-P	IC950	IC908	IC928	IC928	IC908	-
ISO-K	IC950	IC908	IC928	IC928	IC908	-
ISO-M	IC928	IC908	IC950	IC928	IC908	-
ISO-S	IC928	IC908	IC950	IC928	IC908	-

GPS-PLUS
Deep Drilling Solid Carbide
Plus Size Guide Pads



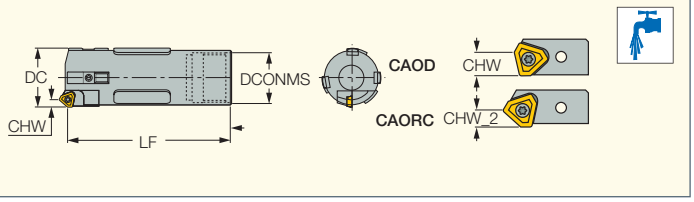
Designation	Dimensions						IC908
	DCN(1)	DCX(2)	OAW	OAL	OAH	RE	
GPS-08-25-160-DC+1	38.00	44.99	8.00	25.00	5.00	16.00	●
GPS-08-25-165-DC+2	38.00	44.99	8.00	25.00	5.50	16.50	●
GPS-08-25-170-DC+3	38.00	44.99	8.00	25.00	6.00	17.00	●
GPS-10-35-205-DC+1	45.00	59.99	10.00	35.00	6.50	20.50	●
GPS-10-35-210-DC+2	45.00	59.99	10.00	35.00	7.00	21.00	●
GPS-10-35-215-DC+3	45.00	59.99	10.00	35.00	7.50	21.50	●
GPS-10-35-220-DC+4	45.00	59.99	10.00	35.00	8.00	22.00	●
GPS-14-40-255-DC+1	60.00	98.99	14.00	40.00	8.00	25.50	●
GPS-14-40-260-DC+2	60.00	98.99	14.00	40.00	8.50	26.00	●
GPS-14-40-265-DC+3	60.00	98.99	14.00	40.00	9.00	26.50	●
GPS-14-40-270-DC+4	60.00	98.99	14.00	40.00	9.50	27.00	●
GPS-14-40-275-DC+5	60.00	98.99	14.00	40.00	10.00	27.50	●
GPS-18-40-305-DC+1	99.00	293.99	18.00	40.00	9.50	30.50	●
GPS-18-40-310-DC+2	99.00	293.99	18.00	40.00	10.00	31.00	●
GPS-18-40-315-DC+3	99.00	293.99	18.00	40.00	10.50	31.50	●
GPS-18-40-320-DC+4	99.00	293.99	18.00	40.00	11.00	32.00	●
GPS-18-40-325-DC+5	99.00	293.99	18.00	40.00	11.50	32.50	●

(1) Cutting diameter minimum
(2) Cutting diameter maximum

ISCARDEEPDRILL

DSC-IC

Deep Single Tube Counterbore with a Through Hole, Internal Single Start Thread and a Cartridge (40-294 dia.)



Designation	DCN(1)	DCX(2)	CHW	CHW_2	LF	DCONMS	Ts(3)
DSC-IC 40.00-43.99	40.00	43.99	6.4	4.0	135.00	33.00	TS-O16
DSC-IC 44.00-46.99	44.00	46.99	6.4	4.0	135.00	37.00	TS-O17
DSC-IC 47.00-51.99	47.00	51.99	6.4	4.0	145.00	41.00	TS-O18
DSC-IC 52.00-56.99	52.00	56.99	7.2	4.8	145.00	44.00	TS-O19
DSC-IC 57.00-60.99	57.00	60.99	7.2	4.8	170.00	49.00	TS-O20
DSC-IC 61.00-67.99	61.00	67.99	7.2	4.8	170.00	53.00	TS-O21
DSC-IC 68.00-74.99	68.00	74.99	10.4	6.4	170.00	59.00	TS-O22
DSC-IC 75.00-80.99	75.00	80.99	10.4	6.4	205.00	65.00	TS-O23
DSC-IC 81.00-90.99	81.00	90.99	10.4	6.4	205.00	71.00	TS-024
DSC-IC 91.00-98.99	91.00	98.99	10.4	6.4	215.00	79.00	TS-O25
DSC-IC 99.00-110.99	99.00	110.99	10.4	6.4	225.00	90.00	TS-O26
DSC-IC 111.00-122.99	111.00	122.99	10.4	6.4	235.00	102.00	TS-O27
DSC-IC 123.00-134.99	123.00	134.99	10.4	6.4	265.00	104.00	TS-O28
DSC-IC 135.00-148.99	135.00	148.99	10.4	6.4	265.00	126.00	TS-O29
DSC-IC 149.00-161.99	149.00	161.99	10.4	6.4	265.00	139.00	TS-O30
DSC-IC 162.00-173.99	162.00	173.99	10.4	6.4	285.00	151.00	TS-O31
DSC-IC 174.00-185.99	174.00	185.99	10.4	6.4	285.00	163.00	TS-O32
DSC-IC 186.00-197.99	186.00	197.99	10.4	6.4	310.00	175.00	TS-O33
DSC-IC 198.00-209.99	198.00	209.99	10.4	6.4	310.00	187.00	TS-O34
DSC-IC 210.00-221.99	210.00	221.99	10.4	6.4	320.00	199.00	TS-O35
DSC-IC 222.00-233.99	222.00	233.99	10.4	6.4	325.00	211.00	TS-O36
DSC-IC 234.00-245.99	234.00	245.99	10.4	6.4	325.00	223.00	TS-O37
DSC-IC 246.00-257.99	246.00	257.99	10.4	6.4	325.00	235.00	TS-O38
DSC-IC 258.00-269.99	258.00	269.99	10.4	6.4	360.00	245.00	TS-O39
DSC-IC 270.00-281.99	270.00	281.99	10.4	6.4	360.00	259.00	TS-O40
DSC-IC 282.00-293.99	282.00	293.99	10.4	6.4	360.00	271.00	TS-O41

• CAOD - Rough boring cartridge (for large D.O.C.) supplied with the cartridge, unless ordered differently • CAORC - Precision boring cartridge

• For user guide, see pages 336-342 • Ordering example: DSC-IC 91.10

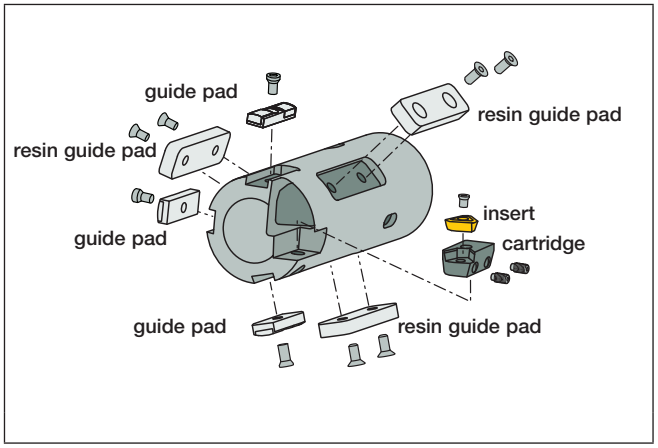
(1) Cutting diameter minimum

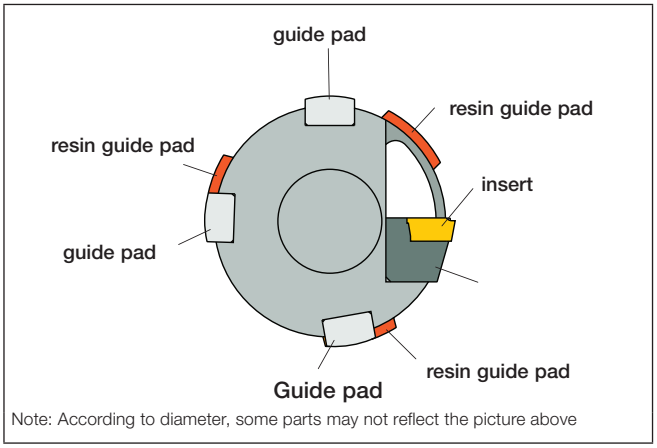
(2) Cutting diameter maximum

(3) Tube designation

For inserts, see pages: TPMX (260)

For holders, see pages: TS-O** (328)

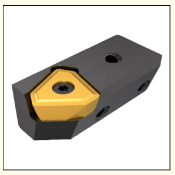


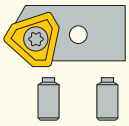


Note: According to diameter, some parts may not reflect the picture above

ISCARDEEPDRILL

CAORC
Boring Head Peripheral Cartridge





Adjustment Cartridge for Shallow Depth of Cut

Diameter range	Adjustment Cartridge	Adjustment screw (2 pcs)	Wrench	Lock screw	Wrench	Insert	Insert screw	Wrench
40.00-51.99	CAORC-0845	SR11201755-6	HW 2.0	SR11201756-10	HW 2.5	TPMX 140308L-G	SR11201753-3	T-8/53
52.00-66.99	CAORC-103	SR11201755-8	HW 2.5	SR11201756-12	HW 3.0	TPMX 170408L-G	SR11201753-7	T-9/51
67.00-293.99	CAORC-142	SR11201755-9	HW 2.5	SR11201756-15	HW 4.0	TPMX 240512L-G	SR11201753-9	T-15/51

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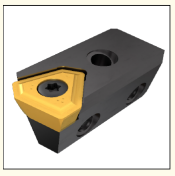
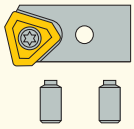
CAOD
Drilling / Boring Head
Peripheral Cartridge





Adjustment Cartridge for Large Depth of Cut

Diameter range	Adjustment Cartridge	Adjustment screw (2 pcs)	Wrench	Lock screw	Wrench	Insert	Insert screw	Wrench
40.00-51.99	CAOD-0845	SR11201755-6	HW 2.0	SR11201756-10	HW 2.5	TPMX 140308R-G	SR11201753-3	T-8/53
52.00-66.99	CAOD-103	SR11201755-8	HW 2.5	SR11201756-12	HW 3.0	TPMX 170408R-G	SR11201753-7	T-9/51
67.00-293.99	CAOD-142	SR11201755-9	HW 2.5	SR11201756-15	HW 4.0	TPMX 240512R-G	SR11201753-9	T-15/51

Guide Pads

DSC-IC

Diameter range	Guide Pads	Qty	Lock screw	Qty	Wrench	Resin guide pad	Qty	Lock screw	Qty	Wrench
40.00-45.99	GPS-08-25-155-DC	3	CSTB-3L065	3	T-9/51	RGP03	3	SR11201756-4	6	HW 2.5
46.00-56.99	GPS-10-35-200-DC	3	SR11201753-8	3	T-15/51	RGP03	3	SR11201756-4	6	HW 2.5
57.00-59.99	GPS-10-35-200-DC	3	SR11201753-8	3	T-15/51	RGP04	3	SR11201756-5	6	HW 3.0
60.00-80.99	GPS-14-40-250-DC	3	SR11201752-2	3	T-15/51	RGP04	3	SR11201756-5	6	HW 3.0
81.00-90.99	GPS-14-40-250-DC	3	SR11201752-2	3	T-15/51	RGP05	3	SR11201756-6	6	HW 4.0
91.00-99.99	GPS-14-40-250-DC	3	SR11201752-2	3	T-15/51	RGP06	3	SR11201756-6	6	HW 4.0
100.00-122.99	GPS-18-40-300-DC	3	SR11201756-7S	3	HW 3.0	RGP06	3	SR11201756-6	6	HW 4.0
123.00-185.99	GPS-18-40-300-DC	3	SR11201756-7S	3	HW 3.0	RGP07	3	LS0906-20	6	HW 5.0
186.00-209.99	GPS-18-40-300-DC	5	SR11201756-7S	5	HW 3.0	RGP08	3	LS0906-25	6	HW 8.0
210.00-245.99	GPS-18-40-300-DC	5	SR11201756-7S	5	HW 3.0	RGP09	3	LS0906-25	6	HW 8.0
246.00-293.99	GPS-18-40-300-DC	5	SR11201756-7S	5	HW 3.0	RGP10	3	LS0906-25	6	HW 10.0

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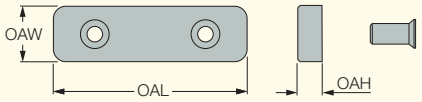
RGP
Boring Head Resin Pads

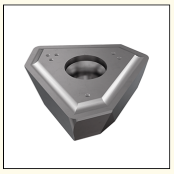


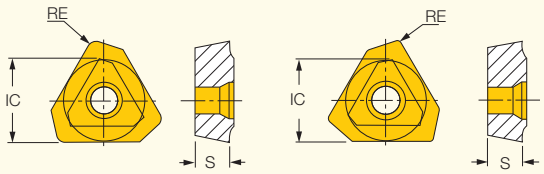
Designation	OAL	OAW	OAH
RGP01	40.00	10.00	4.00
RGP02	45.00	12.00	5.00
RGP03	50.00	15.00	5.80
RGP04	70.00	20.00	7.50
RGP05	80.00	30.00	12.50
RGP06	100.00	35.00	15.50
RGP07	120.00	40.00	18.50
RGP08	140.00	50.00	22.50
RGP09	150.00	60.00	23.50
RGP10	150.00	70.00	26.50

- Select an outer cartridge and pad for the required enlarged diameter.

ISCARDEEPDRILL

TPMX
Inserts for Drilling / Counterboring / Trepanning Tools

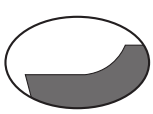
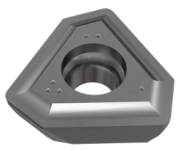
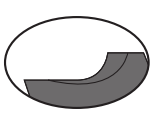
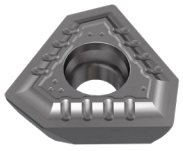
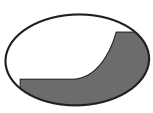
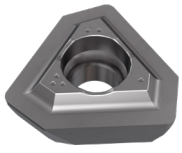
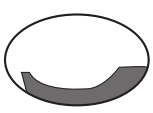
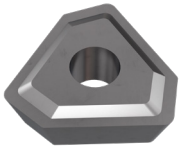




Designation	Dimensions IC	S	RE	Tough ↔ Hard IC8355	IC908	IC948	IC806
TPMX 140304R-B	8.45	3.50	0.40		●		●
TPMX 140308L-G	8.45	3.50	0.80		●		
TPMX 140308R-B	8.45	3.50	0.80			●	●
TPMX 140308R-DT	8.45	3.50	0.80		●	●	
TPMX 140308R-G	8.45	3.50	0.80	●	●	●	●
TPMX 170404L-BG	10.30	4.00	0.40		●		
TPMX 170404R-B	10.30	4.00	0.40		●		●
TPMX 170408L-DT	10.30	4.00	0.80		●		
TPMX 170408L-G	10.30	4.00	0.80		●	●	
TPMX 170408R-B	10.30	4.00	0.80			●	●
TPMX 170408R-BG	10.30	4.00	0.80		●	●	●
TPMX 170408R-DT	10.30	4.00	0.80		●	●	
TPMX 170408R-G	10.30	4.00	0.80	●	●	●	●
TPMX 240504R-B	14.20	5.50	0.40		●		●
TPMX 240512L-BG	14.20	5.50	1.20		●		
TPMX 240512L-DT	14.20	5.50	1.20		●		
TPMX 240512L-G	14.20	5.50	1.20		●	●	
TPMX 240512R-B	14.20	5.50	1.20			●	●
TPMX 240512R-BG	14.20	5.50	1.20		●	●	●
TPMX 240512R-DT	14.20	5.50	1.20		●	●	
TPMX 240512R-G	14.20	5.50	1.20	●	●	●	●
TPMX 280708R-B	17.00	7.50	0.80		●		●
TPMX 280716L-BG	17.00	7.50	1.60		●		
TPMX 280716L-G	17.00	7.50	1.60		●	●	
TPMX 280716R-B	17.00	7.50	1.60			●	●
TPMX 280716R-BG	17.00	7.50	1.60		●	●	●
TPMX 280716R-DT	17.00	7.50	1.60		●	●	
TPMX 280716R-G	17.00	7.50	1.60	●	●	●	●

For tools, see pages: DDC-EC (310) • DDD-EC (259) • DSC-EC (292) • DSC-IC (302) • DSD-EC (257) • DSD-IC (258) • DSTR-EC (317) • DSTR-IC (319)

Chipbreaker Selection

G			B		
	versatile			good chip control for heat-resistant alloy	
BG			DT		
	chip control for difficult-to-cut steel			to reduce machine load	

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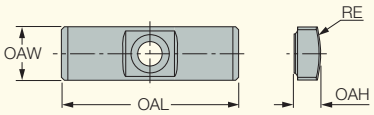
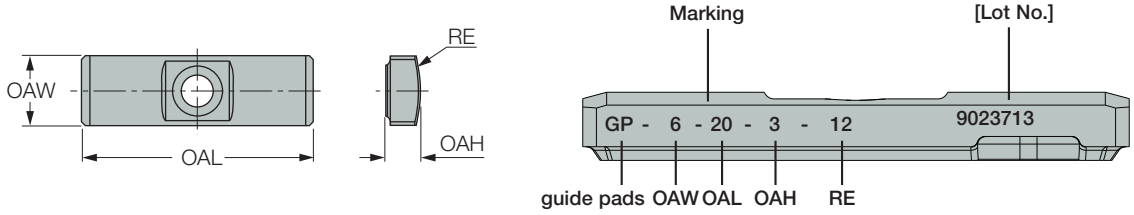
GPS
Deep Drilling Solid
Carbide Guide Pads



Designation	Dimensions				Tough ↔ Hard		
	OAW	OAL	OAH	RE	IC928	IC950	IC908
GPS-04-16-045-DC (1)	4.00	16.00	1.80	4.50			●
GPS-04-16-050-DC (1)	4.00	16.00	1.80	5.00			●
GPS-04-16-055-DC (1)	4.00	16.00	2.00	5.50	●		●
GPS-05-18-060-DC (1)	5.00	18.00	2.50	6.00	●		●
GPS-05-18-060	5.00	18.00	2.50	6.00		●	
GPS-05-18-075-DC (1)	5.00	18.00	2.50	7.50	●		●
GPS-06-20-075-DC (1)	6.00	20.00	3.00	7.50			●
GPS-06-20-075	6.00	20.00	3.00	7.50		●	
GPS-06-20-085-DC (1)	6.00	20.00	3.00	8.50	●		●
GPS-06-20-085	6.00	20.00	3.00	8.50		●	
GPS-06-20-100-DC (1)	6.00	20.00	3.00	10.00	●		●
GPS-06-20-100	6.00	20.00	3.00	10.00		●	
GPS-06-20-120-DC (1)	6.00	20.00	3.00	12.00	●		●
GPS-06-20-120	6.00	20.00	3.00	12.00		●	
GPS-07-20-120-DC (1)	7.00	20.00	3.50	12.00	●		●
GPS-07-20-120	7.00	20.00	3.50	12.00		●	
GPS-08-25-155-DC (1)	8.00	25.00	4.50	15.50	●		●
GPS-08-25-155	8.00	25.00	4.50	15.50		●	
GPS-10-30-200-DC (1)	10.00	30.00	4.50	20.00	●		●
GPS-10-30-200	10.00	30.00	4.50	20.00		●	
GPS-10-35-200-DC (1)	10.00	35.00	6.00	20.00	●		●
GPS-10-35-200	10.00	35.00	6.00	20.00		●	
GPS-12-35-250-DC (1)	12.00	35.00	5.50	25.00	●		●
GPS-12-35-250	12.00	35.00	5.50	25.00		●	
GPS-14-40-250-DC (1)	14.00	40.00	7.50	25.00	●		●
GPS-14-40-250	14.00	40.00	7.50	25.00		●	
GPS-18-40-300-DC (1)	18.00	40.00	9.00	30.00	●		●

(1) DC- Double Chamfer

Universal Marking for Deep Drilling Tools



Guide Pad Grade Recommendation						
	Oil Coolant			Water Based Coolant		
Priority	1	2	3	1	2	3
ISO-P	IC950	IC908	IC928	IC928	IC908	-
ISO-K	IC950	IC908	IC928	IC928	IC908	-
ISO-M	IC928	IC908	IC950	IC928	IC908	-
ISO-S	IC928	IC908	IC950	IC928	IC908	-

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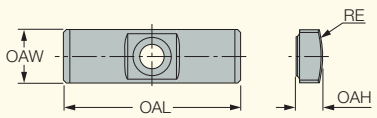
GPS-PLUS
Deep Drilling Solid Carbide
Plus Size Guide Pads



Designation	Dimensions						IC908
	DCN(1)	DCX(2)	OAW	OAL	OAH	RE	
GPS-08-25-160-DC+1	38.00	44.99	8.00	25.00	5.00	16.00	●
GPS-08-25-165-DC+2	38.00	44.99	8.00	25.00	5.50	16.50	●
GPS-08-25-170-DC+3	38.00	44.99	8.00	25.00	6.00	17.00	●
GPS-10-35-205-DC+1	45.00	59.99	10.00	35.00	6.50	20.50	●
GPS-10-35-210-DC+2	45.00	59.99	10.00	35.00	7.00	21.00	●
GPS-10-35-215-DC+3	45.00	59.99	10.00	35.00	7.50	21.50	●
GPS-10-35-220-DC+4	45.00	59.99	10.00	35.00	8.00	22.00	●
GPS-14-40-255-DC+1	60.00	98.99	14.00	40.00	8.00	25.50	●
GPS-14-40-260-DC+2	60.00	98.99	14.00	40.00	8.50	26.00	●
GPS-14-40-265-DC+3	60.00	98.99	14.00	40.00	9.00	26.50	●
GPS-14-40-270-DC+4	60.00	98.99	14.00	40.00	9.50	27.00	●
GPS-14-40-275-DC+5	60.00	98.99	14.00	40.00	10.00	27.50	●
GPS-18-40-305-DC+1	99.00	293.99	18.00	40.00	9.50	30.50	●
GPS-18-40-310-DC+2	99.00	293.99	18.00	40.00	10.00	31.00	●
GPS-18-40-315-DC+3	99.00	293.99	18.00	40.00	10.50	31.50	●
GPS-18-40-320-DC+4	99.00	293.99	18.00	40.00	11.00	32.00	●
GPS-18-40-325-DC+5	99.00	293.99	18.00	40.00	11.50	32.50	●

(1) Cutting diameter minimum
(2) Cutting diameter maximum

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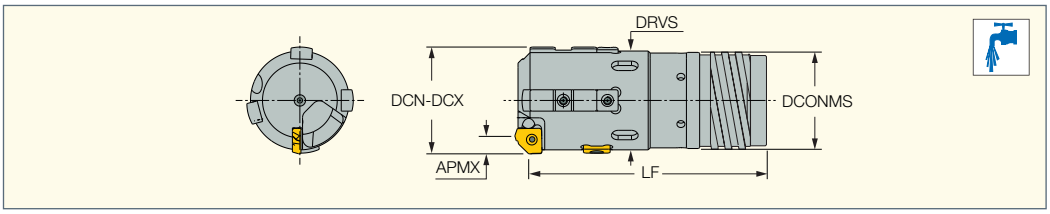
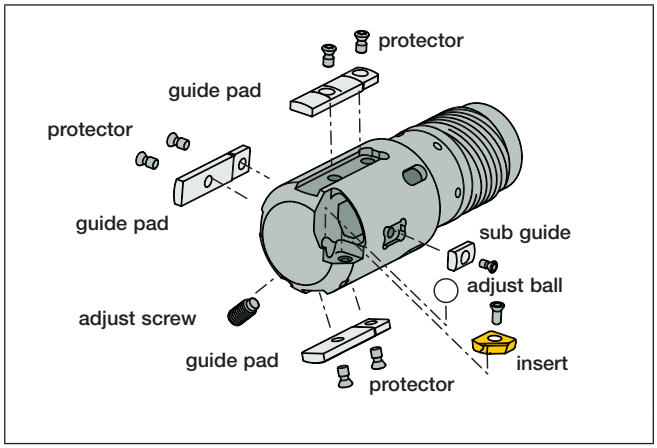
DDC-EA
Double Tube Counterboring Drills with Outer 4-Start Thread, Cartridges and Adjustable Diameter (25-40mm dia.)

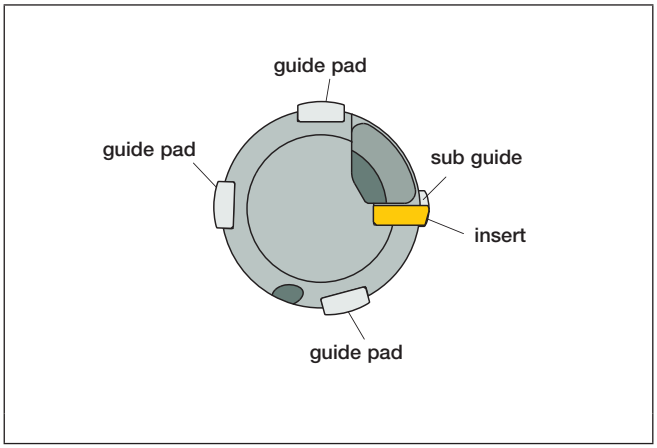


Designation	DCN(1)	DCX(2)	APMX	DRVS(3)	LF	DCONMS
DDC-EA 25.00-26.40	25.00	26.40	2.80	24.0	72.50	21.00
DDC-EA 26.41-28.70	26.41	28.70	2.80	26.0	72.50	23.50
DDC-EA 28.71-31.00	28.71	31.00	2.80	28.0	75.50	25.50
DDC-EA 31.01-33.30	31.01	33.30	2.80	31.0	75.50	28.00
DDC-EA 33.31-36.20	33.31	36.20	2.80	34.0	75.50	30.00
DDC-EA 36.21-39.60	36.21	39.60	2.80	37.0	90.50	33.00
DDC-EA 39.61-39.99	39.61	39.99	2.80	37.0	90.50	36.00

• For user guide, see pages 336-342 • Ordering example: DDC-EA 30.55
(1) Cutting diameter minimum
(2) Cutting diameter maximum
(3) Wrench size

For inserts, see pages: XPMT-45 (290)
For holders, see pages: TDO-I (D18.41-65.00) (329)





Spare Parts

DDC-EA

Diameter range	Adjustment Ball	Adjustment Screw	Wrench	Insert	Insert Screw	Wrench
25.00-39.99	ADJUST BALL	SR11201755-7	HW 2.5	XPMT 16002-45	SR 11201754-4-4.5	T-9/51

Spare Parts (continued)

DDC-EA

Diameter range	Guide Pads	Qty	Lock Screw	Qty	Wrench	Sub Guide Pads	Qty	Lock Screw	Qty	Wrench	Protectors	Qty	Lock Screw	Qty	Wrench
25.00-29.99	GPS-06-20-120-DC	2	SR 34-508	2	T-7/51	SGP-01	1	SR11201753-1	1	T-7/51	-	-	-	-	-
30.00-37.99	GPS-07-20-120-DC	3	CSTB-3L065	3	T-9/51	SGP-01	1	SR11201753-1	1	T-7/51	-	-	-	-	-
38.00-39.99	GPS-08-25-155-DC	3	CSTB-3L065	3	T-9/51	SGP-02	1	SR11201753-4	1	T-9/51	GPP-06	3	SR11201753-4	3	T-9/51

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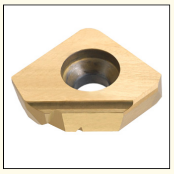
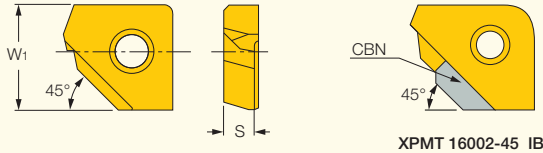
XPMT-45
Inserts for DSC Boring Heads





XPMT 16002-45 IB55

Designation	Dimensions W1	Dimensions S	Tough ↔ Hard IC950	Tough ↔ Hard IB55
XPMT 16002-45	9.50	2.80	•	•

For tools, see pages: DDC-EA (307) • DSC-EA (289) • DSC-IA (298)

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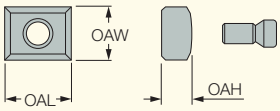
SGP
Drilling Head Sub-Guide Pads

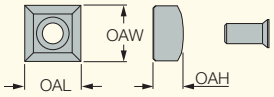


Designation	OAL	OAW	OAH
SGP-01	10.00	6.00	3.00
SGP-02	10.00	8.00	4.50
SGP-03	10.00	10.00	5.00
SGP-04	20.00	14.00	7.00

• Select an outer cartridge and pad for the required enlarged diameter.

ISCARDEEPDRILL

GPP
Drilling Head Guide Pad Protectors



Designation	OAL	OAW	OAH
GPP-06	8.00	8.00	4.50
GPP-07	10.00	10.00	6.00
GPP-08	14.00	14.00	7.50
GPP-09	18.00	18.00	9.00

• Select an outer cartridge and pad for the required enlarged diameter.

Recommended Claming Torque

Insert Screw	
	(N·m)
SR 11201753-2	1
SR 11201753-3	1.3
SR 11201753-7	2.3
SR 11201753-9	3.5
SR 11201753-7	5

Cartridge Screw	
	(N·m)
SR 11201752-1	3.5
SR 11201753-5	2.3
SR 11201753-5	3.5
SR 11201756-7	3
SR 11201756-10	2.2
SR 11201756-11	2.2
SR 11201756-12	3
SR 11201756-15	5

Guide Pad Screw	
	(N·m)
SR 14-571/5	3.5
SR 34-506-C	2.3
LS1206SSS	3

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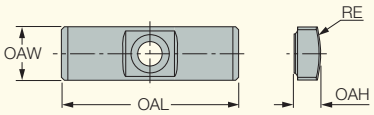
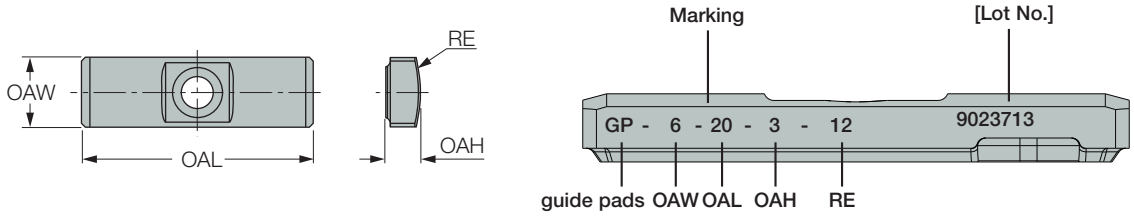
GPS
Deep Drilling Solid
Carbide Guide Pads



Designation	Dimensions				Tough ↔ Hard		
	OAW	OAL	OAH	RE	IC928	IC950	IC908
GPS-04-16-045-DC (1)	4.00	16.00	1.80	4.50			●
GPS-04-16-050-DC (1)	4.00	16.00	1.80	5.00			●
GPS-04-16-055-DC (1)	4.00	16.00	2.00	5.50	●		●
GPS-05-18-060-DC (1)	5.00	18.00	2.50	6.00	●		●
GPS-05-18-060	5.00	18.00	2.50	6.00		●	
GPS-05-18-075-DC (1)	5.00	18.00	2.50	7.50	●		●
GPS-06-20-075-DC (1)	6.00	20.00	3.00	7.50			●
GPS-06-20-075	6.00	20.00	3.00	7.50		●	
GPS-06-20-085-DC (1)	6.00	20.00	3.00	8.50	●		●
GPS-06-20-085	6.00	20.00	3.00	8.50		●	
GPS-06-20-100-DC (1)	6.00	20.00	3.00	10.00	●		●
GPS-06-20-100	6.00	20.00	3.00	10.00		●	
GPS-06-20-120-DC (1)	6.00	20.00	3.00	12.00	●		●
GPS-06-20-120	6.00	20.00	3.00	12.00		●	
GPS-07-20-120-DC (1)	7.00	20.00	3.50	12.00	●		●
GPS-07-20-120	7.00	20.00	3.50	12.00		●	
GPS-08-25-155-DC (1)	8.00	25.00	4.50	15.50	●		●
GPS-08-25-155	8.00	25.00	4.50	15.50		●	
GPS-10-30-200-DC (1)	10.00	30.00	4.50	20.00	●		●
GPS-10-30-200	10.00	30.00	4.50	20.00		●	
GPS-10-35-200-DC (1)	10.00	35.00	6.00	20.00	●		●
GPS-10-35-200	10.00	35.00	6.00	20.00		●	
GPS-12-35-250-DC (1)	12.00	35.00	5.50	25.00	●		●
GPS-12-35-250	12.00	35.00	5.50	25.00		●	
GPS-14-40-250-DC (1)	14.00	40.00	7.50	25.00	●		●
GPS-14-40-250	14.00	40.00	7.50	25.00		●	
GPS-18-40-300-DC (1)	18.00	40.00	9.00	30.00	●		●

(1) DC- Double Chamfer

Universal Marking for Deep Drilling Tools



Guide Pad Grade Recommendation

	Oil Coolant			Water Based Coolant		
Priority	**1**	**2**	**3**	**1**	**2**	**3**
ISO-P	IC950	IC908	IC928	IC928	IC908	-
ISO-K	IC950	IC908	IC928	IC928	IC908	-
ISO-M	IC928	IC908	IC950	IC928	IC908	-
ISO-S	IC928	IC908	IC950	IC928	IC908	-

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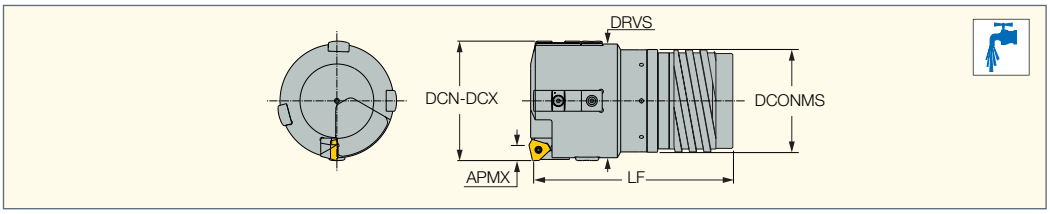
DDC-EC
Double Tube Counterboring Drills with Outer 4-Start Thread, Cartridges and Adjustable Diameter (40-184mm dia.)



Designation	DCN(1)	DCX(2)	DRVS(3)	LF	DCONMS	APMX	APMX_2
DDC-EC 40.00-43.00	40.00	43.00	40.0	91.00	36.00	6.40	4.00
DDC-EC 43.01-47.00	43.01	47.00	43.0	95.00	39.00	6.40	4.00
DDC-EC 47.01-51.70	47.01	51.70	48.0	100.00	43.00	6.40	4.00
DDC-EC 51.71-56.20	51.71	56.20	53.0	100.00	47.00	6.40	4.00
DDC-EC 56.21-65.00	56.21	65.00	61.0	110.00	51.00	7.20	4.80
DDC-EC 65.00-66.99	65.00	66.99	63.0	150.00	52.00	7.20	4.80
DDC-EC 67.00-72.99	67.00	72.99	69.0	150.00	58.00	10.40	6.40
DDC-EC 73.00-79.99	73.00	79.99	76.0	150.00	63.00	10.40	6.40
DDC-EC 80.00-86.99	80.00	86.99	83.0	180.00	70.00	10.40	6.40
DDC-EC 87.00-99.99	87.00	99.99	96.0	180.00	77.00	10.40	6.40
DDC-EC 100.00-111.99	100.00	111.99	107.0	180.00	89.00	10.40	6.40
DDC-EC 112.00-123.99	112.00	123.99	119.0	205.00	101.00	10.40	6.40
DDC-EC 124.00-135.99	124.00	135.99	131.0	205.00	113.00	10.40	6.40
DDC-EC 136.00-147.99	136.00	147.99	143.0	205.00	125.00	10.40	6.40
DDC-EC 148.00-159.99	148.00	159.99	155.0	225.00	137.00	10.40	6.40
DDC-EC 160.00-171.99	160.00	171.99	167.0	225.00	149.00	10.40	6.40
DDC-EC 172.00-183.99	172.00	183.99	179.0	225.00	161.00	10.40	6.40

• For user guide, see pages 336-342 • Ordering example: DDC-EC 130.35

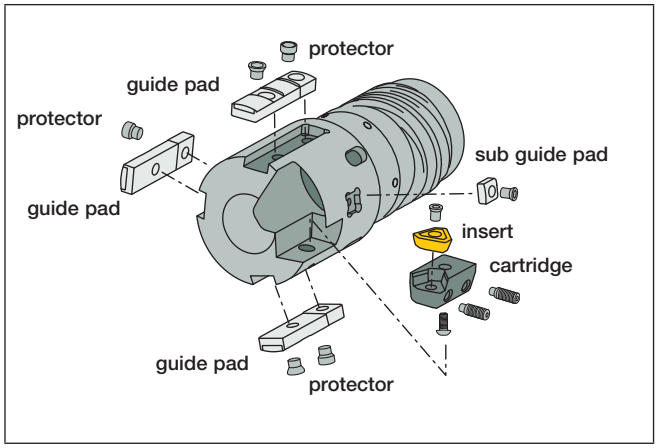
(1) Cutting diameter minimum

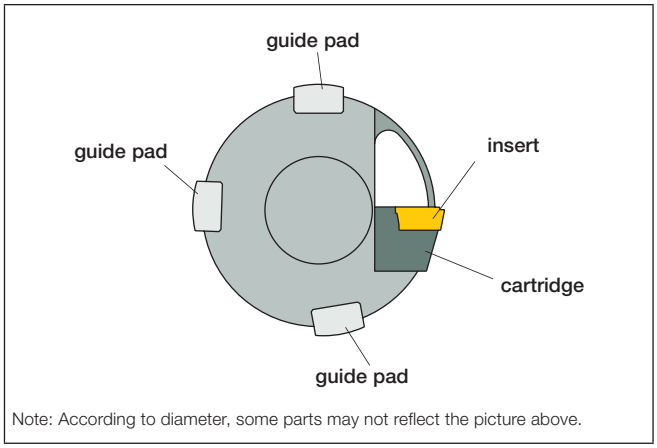
(2) Cutting diameter maximum

(3) Wrench size

For inserts, see pages: TPMX (260)

For holders, see pages: TDO-I (D18.41-65.00) (329) • TDO-I (D65.00-171.99) (330)

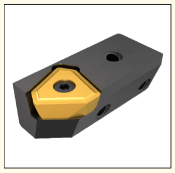


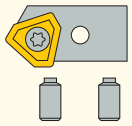


Note: According to diameter, some parts may not reflect the picture above.

ISCARDEEPDRILL

CAORC
Boring Head Peripheral Cartridge



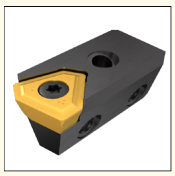


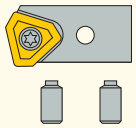
Adjustment Cartridge for Shallow Depth of Cut

Diameter Range	Adjustment Cartridge	Adjustment Screw (2 pcs)	Wrench	Lock Screw	Wrench	Insert	Insert Screw	Wrench
40.00-51.99	CAORC-0845	SR11201755-6	HW 2.0	SR11201756-10	HW 2.5	TPMX 140308L-G	SR11201753-3	T-8/53
52.00-66.99	CAORC-103	SR11201755-8	HW 2.5	SR11201756-12	HW 3.0	TPMX 170408L-G	SR11201753-7	T-9/51
67.00-183.99	CAORC-142	SR11201755-9	HW 2.5	SR11201756-15	HW 4.0	TPMX 240512L-G	SR11201753-9	T-15/51

ISCARDEEPDRILL

CAOD
Drilling / Boring Head
Peripheral Cartridge





Adjustment Cartridge for Large Depth of Cut

Diameter Range	Adjustment Cartridge	Adjustment Screw (2 pcs)	Wrench	Lock Screw	Wrench	Insert	Insert Screw	Wrench
40.00-51.99	CAOD-0845	SR11201755-6	HW 2.0	SR11201756-10	HW 2.5	TPMX 140308R-G	SR11201753-3	T-8/53
52.00-66.99	CAOD-103	SR11201755-8	HW 2.5	SR11201756-12	HW 3.0	TPMX 170408R-G	SR11201753-7	T-9/51
67.00-183.99	CAOD-142	SR11201755-9	HW 2.5	SR11201756-15	HW 4.0	TPMX 240512R-G	SR11201753-9	T-15/51

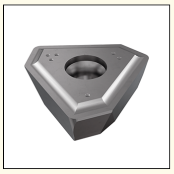
Guide Pads and Other Spare Parts

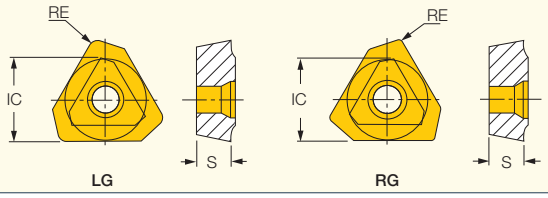
DDC-EC

Diameter Range	Guide Pads	Qty	Lock Screw	Qty	Wrench	Sub Guide Pads	Qty	Lock Screw	Qty	Wrench	Protectors	Qty	Lock Screw	Qty	Wrench
40.00-45.99	GPS-08-25-155-DC	3	CSTB-3L065	3	T-9/51	SGP-02	3	SR11201753-4	1	T-9/51	GPP-06	3	SR11201753-4	3	T-9/51
46.00-59.99	GPS-10-35-200-DC	3	SR11201753-8	3	T-15/51	SGP-02	3	SR11201753-4	1	T-9/51	GPP-07	3	SR11201753-8	3	T-15/51
60.00-99.99	GPS-14-40-250-DC	3	SR11201752-2	3	T-15/51	SGP-03	3	SR11201753-4	1	T-9/51	GPP-08	3	SR11201752-2	3	T-15/51
100.00-135.99	GPS-18-40-300-DC	3	SR11201756-7S	3	HW 3.0	SGP-04	3	SR11201752-2	1	T-15/51	GPP-09	3	SR11201756-7S	3	HW 3.0
136.00-183.99	GPS-18-40-300-DC	5	SR11201756-7S	5	HW 3.0	SGP-04	5	SR11201752-2	1	T-15/51	GPP-09	5	SR11201756-7S	5	HW 3.0

ISCARDEEPDRILL

TPMX
Inserts for Drilling / Counterboring / Trepanning Tools

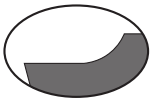
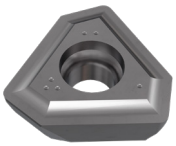
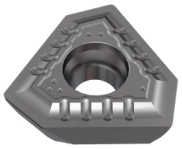
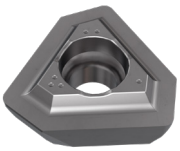
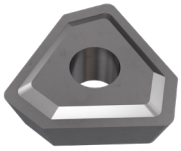




Designation	Dimensions IC	S	RE	Tough ↔ Hard IC8355	IC908	IC948	IC806
TPMX 140304R-B	8.45	3.50	0.40		●		●
TPMX 140308L-G	8.45	3.50	0.80		●		
TPMX 140308R-B	8.45	3.50	0.80			●	●
TPMX 140308R-DT	8.45	3.50	0.80		●	●	
TPMX 140308R-G	8.45	3.50	0.80	●	●	●	●
TPMX 170404L-BG	10.30	4.00	0.40		●		
TPMX 170404R-B	10.30	4.00	0.40		●		●
TPMX 170408L-DT	10.30	4.00	0.80		●		
TPMX 170408L-G	10.30	4.00	0.80		●	●	
TPMX 170408R-B	10.30	4.00	0.80			●	●
TPMX 170408R-BG	10.30	4.00	0.80		●	●	●
TPMX 170408R-DT	10.30	4.00	0.80		●	●	
TPMX 170408R-G	10.30	4.00	0.80	●	●	●	●
TPMX 240504R-B	14.20	5.50	0.40		●		●
TPMX 240512L-BG	14.20	5.50	1.20		●		
TPMX 240512L-DT	14.20	5.50	1.20		●		
TPMX 240512L-G	14.20	5.50	1.20		●	●	
TPMX 240512R-B	14.20	5.50	1.20			●	●
TPMX 240512R-BG	14.20	5.50	1.20		●	●	●
TPMX 240512R-DT	14.20	5.50	1.20		●	●	
TPMX 240512R-G	14.20	5.50	1.20	●	●	●	●
TPMX 280708R-B	17.00	7.50	0.80		●		●
TPMX 280716L-BG	17.00	7.50	1.60		●		
TPMX 280716L-G	17.00	7.50	1.60		●	●	
TPMX 280716R-B	17.00	7.50	1.60			●	●
TPMX 280716R-BG	17.00	7.50	1.60		●	●	●
TPMX 280716R-DT	17.00	7.50	1.60		●	●	
TPMX 280716R-G	17.00	7.50	1.60	●	●	●	●

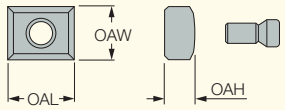
For tools, see pages: DDC-EC (310) • DDD-EC (259) • DSC-EC (292) • DSC-IC (302) • DSD-EC (257) • DSD-IC (258) • DSTR-EC (317) • DSTR-IC (319)

Chipbreaker Selection

G			**B**		
	versatile			good chip control for heat-resistant alloy	
BG			**DT**		
	chip control for difficult-to-cut steel			to reduce machine load	

ISCARDEEPDRILL

SGP
Drilling Head Sub-Guide Pads

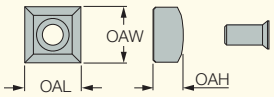


Designation	OAL	OAW	OAH
SGP-01	10.00	6.00	3.00
SGP-02	10.00	8.00	4.50
SGP-03	10.00	10.00	5.00
SGP-04	20.00	14.00	7.00

- Select an outer cartridge and pad for the required enlarged diameter.

ISCARDEEPDRILL

GPP
Drilling Head Guide Pad Protectors



Designation	OAL	OAW	OAH
GPP-06	8.00	8.00	4.50
GPP-07	10.00	10.00	6.00
GPP-08	14.00	14.00	7.50
GPP-09	18.00	18.00	9.00

- Select an outer cartridge and pad for the required enlarged diameter.

Recommended Claming Torque

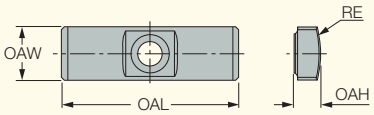
Insert Screw	
	(N·m)
SR 11201753-2	1
SR 11201753-3	1.3
SR 11201753-7	2.3
SR 11201753-9	3.5
SR 11201753-7	5

Cartridge Screw	
	(N·m)
SR 11201752-1	3.5
SR 11201753-5	2.3
SR 11201753-5	3.5
SR 11201756-7	3
SR 11201756-10	2.2
SR 11201756-11	2.2
SR 11201756-12	3
SR 11201756-15	5

Guide Pad Screw	
	(N·m)
SR 14-571/5	3.5
SR 34-506-C	2.3
LS1206SSS	3

ISCARDEEPDRILL

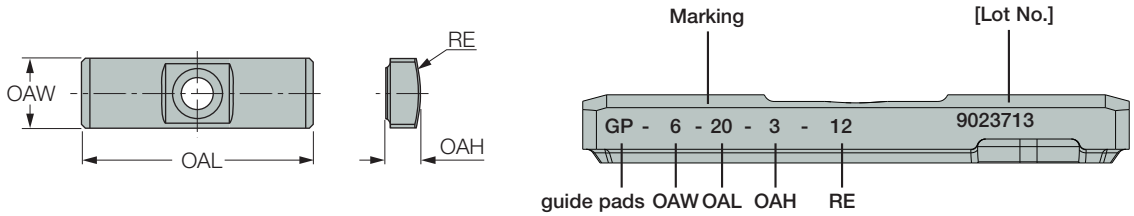
GPS
Deep Drilling Solid
Carbide Guide Pads



Designation	Dimensions				Tough ↔ Hard		
	OAW	OAL	OAH	RE	IC928	IC950	IC908
GPS-04-16-045-DC (1)	4.00	16.00	1.80	4.50			●
GPS-04-16-050-DC (1)	4.00	16.00	1.80	5.00			●
GPS-04-16-055-DC (1)	4.00	16.00	2.00	5.50	●		●
GPS-05-18-060-DC (1)	5.00	18.00	2.50	6.00	●		●
GPS-05-18-060	5.00	18.00	2.50	6.00		●	
GPS-05-18-075-DC (1)	5.00	18.00	2.50	7.50	●		●
GPS-06-20-075-DC (1)	6.00	20.00	3.00	7.50			●
GPS-06-20-075	6.00	20.00	3.00	7.50		●	
GPS-06-20-085-DC (1)	6.00	20.00	3.00	8.50	●		●
GPS-06-20-085	6.00	20.00	3.00	8.50		●	
GPS-06-20-100-DC (1)	6.00	20.00	3.00	10.00	●		●
GPS-06-20-100	6.00	20.00	3.00	10.00		●	
GPS-06-20-120-DC (1)	6.00	20.00	3.00	12.00	●		●
GPS-06-20-120	6.00	20.00	3.00	12.00		●	
GPS-07-20-120-DC (1)	7.00	20.00	3.50	12.00	●		●
GPS-07-20-120	7.00	20.00	3.50	12.00		●	
GPS-08-25-155-DC (1)	8.00	25.00	4.50	15.50	●		●
GPS-08-25-155	8.00	25.00	4.50	15.50		●	
GPS-10-30-200-DC (1)	10.00	30.00	4.50	20.00	●		●
GPS-10-30-200	10.00	30.00	4.50	20.00		●	
GPS-10-35-200-DC (1)	10.00	35.00	6.00	20.00	●		●
GPS-10-35-200	10.00	35.00	6.00	20.00		●	
GPS-12-35-250-DC (1)	12.00	35.00	5.50	25.00	●		●
GPS-12-35-250	12.00	35.00	5.50	25.00		●	
GPS-14-40-250-DC (1)	14.00	40.00	7.50	25.00	●		●
GPS-14-40-250	14.00	40.00	7.50	25.00		●	
GPS-18-40-300-DC (1)	18.00	40.00	9.00	30.00	●		●

(1) DC- Double Chamfer

Universal Marking for Deep Drilling Tools



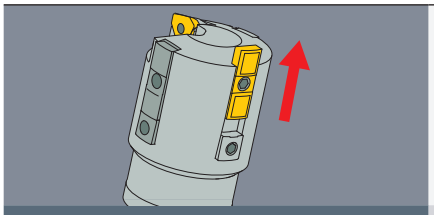
Guide Pad Grade Recommendation

	Oil Coolant			Water Based Coolant		
Priority	1	2	3	1	2	3
ISO-P	IC950	IC908	IC928	IC928	IC908	-
ISO-K	IC950	IC908	IC928	IC928	IC908	-
ISO-M	IC928	IC908	IC950	IC928	IC908	-
ISO-S	IC928	IC908	IC950	IC928	IC908	-

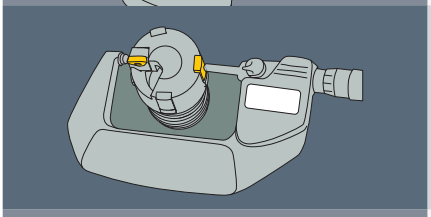
Technical Information - Cartridge Style Counterboring Head Diameter Settings

The drill head diameter is set and inspected with a master insert in our final inspection. However, the inserts in the market have a tolerance fluctuation so each time you change or index the insert, the diameter must be adjusted as per the following method.

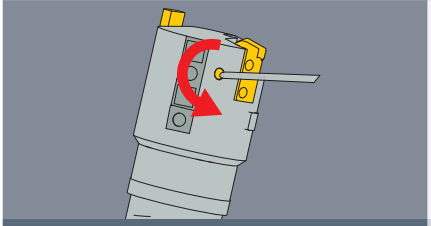
Note: When a corner change is made on the insert, it must be adjusted to the correct size or damage can be caused to the head body or work piece material.



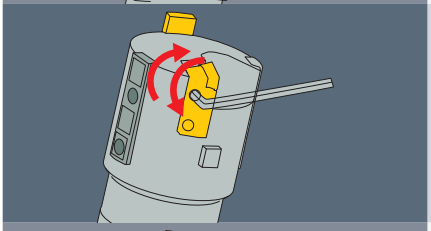
1. The dimensional guide pad must be slid forward to measure the diameter
   - 1.1 Loosen the lock screw and slide the guide pad forward
   - 1.2 Retighten the lock screw at the measuring position



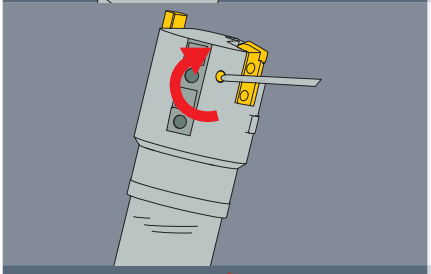
Measure the diameter with a micrometer. We recommend setting the tool diameter at h8 tolerance to the cutting diameter
Note: If the diameter is incorrect, go to step 3. If it's correct, go to step 4



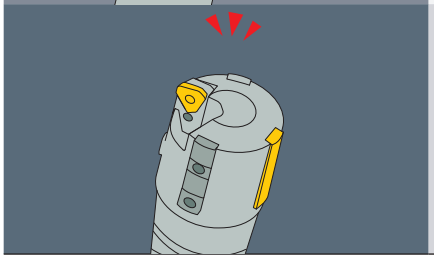
2. Adjust the outer cartridge
   - 2.1 First loosen the lock screw of the outer cartridge and then tighten it slightly



- 2.2 Proceed to adjust the diameter, using the 2 adjustment screws and measure with a micrometer



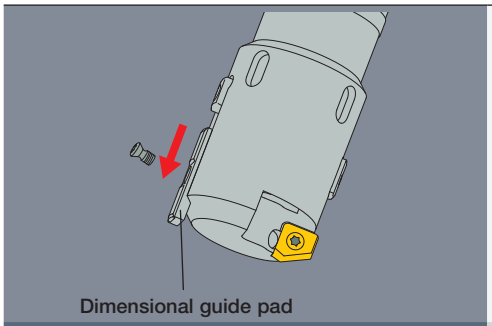
- 2.3 When set to the size, re-tighten the lock screw
- 2.4 Recheck the diameter with a micrometer. If it remains out of tolerance, repeat the procedure from step 3.1
  Note: Please make sure to tighten the lock screw firmly before using. If loose, the cartridge may move and cause serious problems during machining



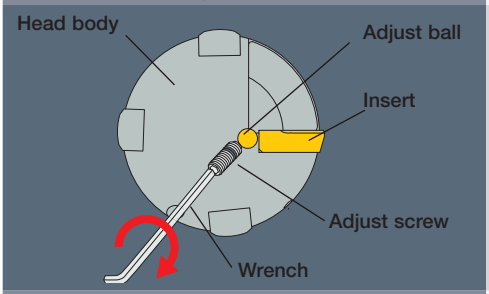
3. Slide the dimensional guide pad back to the original position and tighten the lock screw
   Please check all the lock screws are firmly tightened as they may come loose if vibration occurs during drilling

Technical Information - Adjustable Counterboring Head Diameter Settings

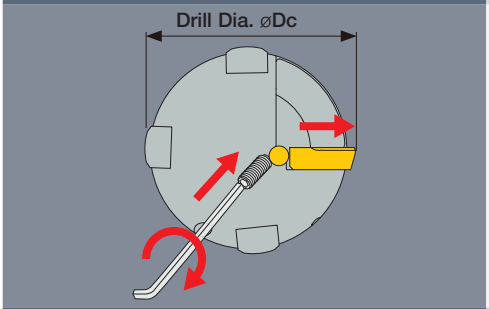
Drill diameter is adjusted with an adjust ball for diameter ø25 - ø39.99mm with the following method.



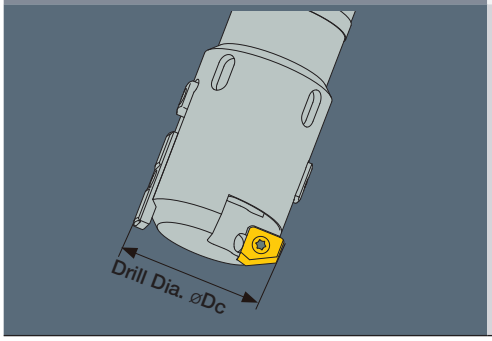
1. Slide the dimensional guide pad forward and then re-tighten the lock screw at the measuring position



2. Tighten the adjust screw



3. As the adjust screw moves forward, insert moves in a peripheral direction



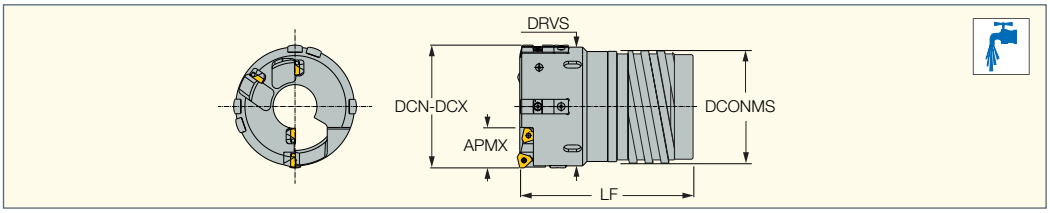
4. Measure the diameter with a micrometer. If the diameter is larger than expected, loosen the adjust screw and insert screw, then re-tighten the insert screw. Repeat the procedure from step 2

INDEXABLE TREPANNING (SPECIAL)

DSTR EC/IC

ISCARDEEPDRILL

DSTR-EC
Single Tube Trepanning Drills with Outer 4-Start Thread, Cartridges, and Adjustable Diameter (100-328mm dia.)



Designation	DCN(1)	DCX(2)	APMX	DRVS(3)	LF	DCONMS
DSTR-EC 100.00-111.99	100.00	111.99	38.00	107.0	174.00	89.00
DSTR-EC 112.00-123.99	112.00	123.99	38.00	119.0	204.00	101.00
DSTR-EC 124.00-135.99	124.00	135.99	49.50	131.0	204.00	113.00
DSTR-EC 136.00-147.99	136.00	147.99	49.50	143.0	204.00	125.00
DSTR-EC 148.00-159.99	148.00	159.99	49.50	155.0	229.00	137.00
DSTR-EC 160.00-171.99	160.00	171.99	49.50	167.0	229.00	149.00
DSTR-EC 172.00-183.99	172.00	183.99	49.50	179.0	229.00	161.00
DSTR-EC 184.00-195.99	184.00	195.99	49.50	191.0	249.00	173.00
DSTR-EC 196.00-207.99	196.00	207.99	56.50	203.0	249.00	185.00
DSTR-EC 208.00-219.99	208.00	219.99	56.50	215.0	249.00	197.00
DSTR-EC 220.00-231.99	220.00	231.99	56.50	227.0	284.00	208.00
DSTR-EC 232.00-243.99	232.00	243.99	56.50	239.0	284.00	220.00
DSTR-EC 244.00-255.99	244.00	255.99	56.50	251.0	284.00	232.00
DSTR-EC 256.00-267.99	256.00	267.99	56.50	263.0	304.00	244.00
DSTR-EC 268.00-279.99	268.00	279.99	56.50	275.0	304.00	256.00
DSTR-EC 280.00-291.99	280.00	291.99	56.50	287.0	304.00	268.00
DSTR-EC 292.00-303.99	292.00	303.99	56.50	299.0	324.00	280.00
DSTR-EC 304.00-315.99	304.00	315.99	56.50	311.0	324.00	292.00
DSTR-EC 316.00-328.00	316.00	328.00	56.50	323.0	324.00	304.00

• For user guide, see pages 336-342 • Ordering example: DSTR-EC 120.55

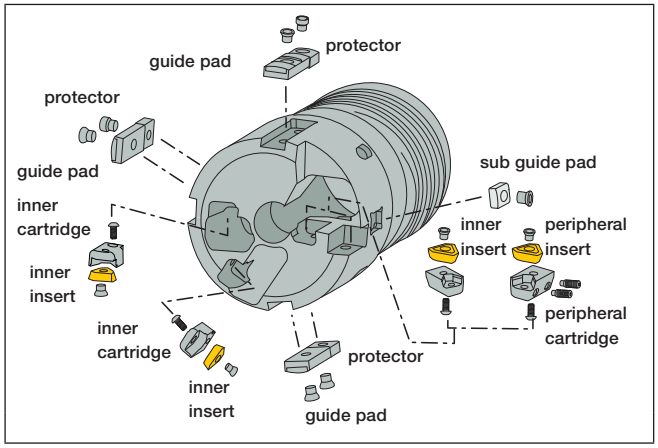
(1) Cutting diameter minimum

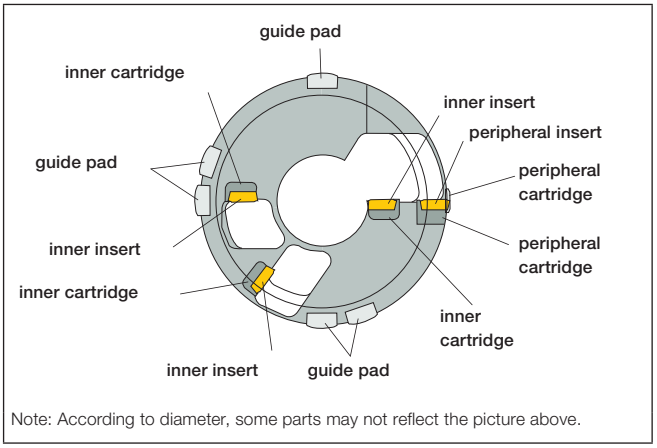
(2) Cutting diameter maximum

(3) Wrench size

For inserts, see pages: TPMX (260)

For holders, see pages: TS-I** (327)

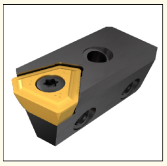


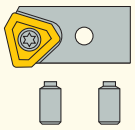


Note: According to diameter, some parts may not reflect the picture above.

ISCARDEEPDRILL

CAOD
Peripheral Cartridge



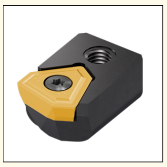


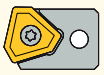
Peripheral Cartridge

Diameter Range	Adjustment Cartridge	Adjustment screw (2 pcs)	Wrench	Lock screw	Wrench	Insert	Insert screw	Wrench
100.00-123.99	CAOD-103	SR11201755-8	HW 2.5	SR11201756-12	HW 3.0	TPMX 1704..R..	SR11201753-7	T-9/51
124.00-195.99	CAOD-142	SR11201755-9	HW 2.5	SR11201756-15	HW 4.0	TPMX 2405..R..	SR11201753-9	T-15/51
196.00-328.00	CAOD-170	SR11201755-11	HW 3.0	SR 11201756-15	HW 4.0	TPMX 2807..R..	SR11201753-10	T-20/51

ISCARDEEPDRILL

CAID
Inner Cartridge





Inner Cartridge

DSTR-EC / DSTR-IC

Diameter Range	Cartridge	Lock screw	Wrench	Insert	Insert Screw	Wrench
100.00-123.99	CAID-103L	SR11201752-1	T-15/51	TPMX 1704..L..	SR11201753-7	T-9/51
124.00-135.99	CAID-142L	SR11201756-7	HW 3.0	TPMX 2405..L..	SR11201753-9	T-15/51
136.00-328.00	CAID-142L	SR11201756-7	HW 3.0L	TPMX 2405..L..	SR11201753-9	T-15/51

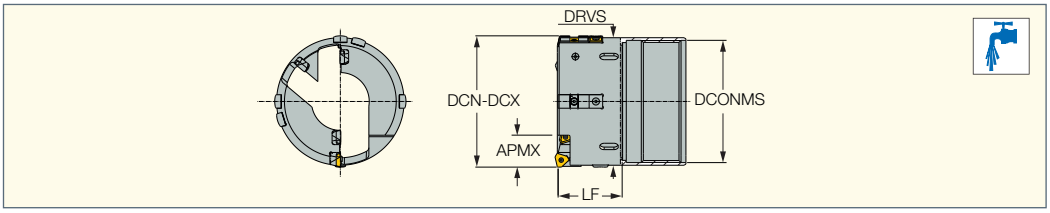
Guide Pads

DSTR-EC / DSTR-IC

Diameter Range	Guide Pads	Qty	Lock screw	Wrench	Guide Pad Protectors	Qty	Lock screw	Wrench	Sub Guide Pad	Qty	Lock screw	Wrench
100.00-135.99	GPS-18-40-300-DC	3	SR11201756-7S	HW 3.0	GPP-09	3	SR11201756-7S	HW 3.0	SGP-04	1	SR11201752-2	T-15/51
136.00-207.99	GPS-18-40-300-DC	3	SR11201756-7S	HW 3.0	GPP-09	3	SR11201756-7S	HW 3.0	SGP-04	1	SR11201752-2	T-15/51
208.00-328.00	GPB-22-50-750	3	SR11201752-2	T-15/51	GPP-10	3	SR11201756-7S	HW 3.0	SGP-04	1	SR11201752-2	T-15/51

ISCARDEEPDRILL

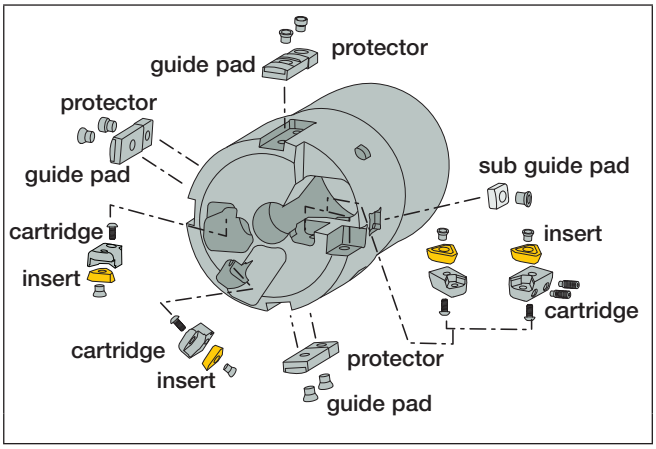
DSTR-IC
Single Tube Trepanning Drills with Inner Single Start Thread, Cartridges and Adjustable Diameter (100-306mm dia.)

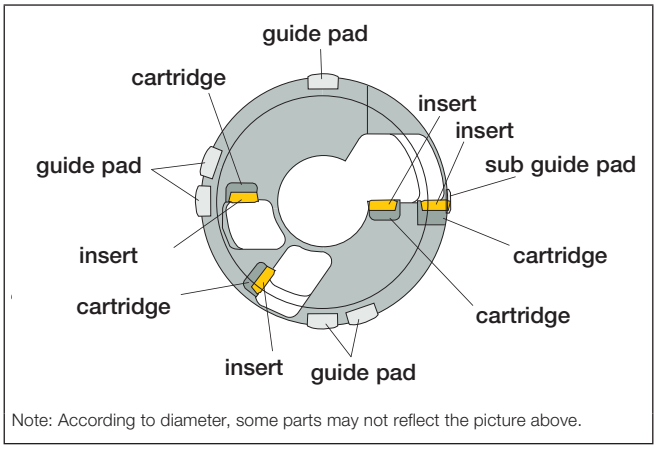


Designation	DCN(1)	DCX(2)	APMX	DRVS(3)	LF	DCONMS
DSTR-IC 100.00-110.99	100.00	110.99	38.00	106.0	139.00	90.00
DSTR-IC 111.00-122.99	111.00	122.99	38.00	118.0	149.00	102.00
DSTR-IC 123.00-123.99	123.00	123.99	38.00	119.0	149.00	114.00
DSTR-IC 124.00-134.99	124.00	134.99	49.50	130.0	149.00	114.00
DSTR-IC 135.00-148.99	135.00	148.99	49.50	144.0	149.00	126.00
DSTR-IC 149.00-161.99	149.00	161.99	49.50	157.0	149.00	139.00
DSTR-IC 162.00-173.99	162.00	173.99	49.50	169.0	169.00	151.00
DSTR-IC 174.00-185.99	174.00	185.99	49.50	181.0	169.00	163.00
DSTR-IC 186.00-195.99	186.00	195.99	49.50	191.0	169.00	175.00
DSTR-IC 196.00-197.99	196.00	197.99	56.50	193.0	169.00	175.00
DSTR-IC 198.00-209.99	198.00	209.99	56.50	205.0	169.00	187.00
DSTR-IC 210.00-221.99	210.00	221.99	56.50	217.0	189.00	199.00
DSTR-IC 222.00-233.99	222.00	233.99	56.50	229.0	189.00	211.00
DSTR-IC 234.00-245.99	234.00	245.99	56.50	241.0	189.00	223.00
DSTR-IC 246.00-257.99	246.00	257.99	56.50	253.0	189.00	235.00
DSTR-IC 258.00-266.99	258.00	266.99	56.50	262.0	209.00	245.00
DSTR-IC 267.00-281.99	267.00	281.99	56.50	277.0	209.00	259.00
DSTR-IC 282.00-293.99	282.00	293.99	56.50	289.0	209.00	271.00
DSTR-IC 294.00-305.99	294.00	305.99	56.50	301.0	209.00	283.00

• For user guide, see pages 336-342 • Ordering example: DSTR-IC 120.55
(1) Cutting diameter minimum
(2) Cutting diameter maximum
(3) Wrench size

For inserts, see pages: TPMX (260)
For holders, see pages: TS-O** (328)

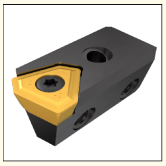


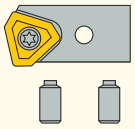


Note: According to diameter, some parts may not reflect the picture above.

ISCARDEEPDRILL

CAOD
Peripheral Cartridge



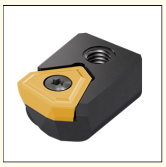


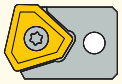
Peripheral Cartridge

Diameter Range	Adjustment Cartridge	Adjustment screw (2 pcs)	Wrench	Lock screw	Wrench	Insert	Insert screw	Wrench
100.00-123.99	CAOD-103	SR11201755-8	HW 2.5	SR11201756-12	HW 3.0	TPMX 1704..R..	SR11201753-7	T-9/51
124.00-195.99	CAOD-142	SR11201755-9	HW 2.5	SR11201756-15	HW 4.0	TPMX 2405..R..	SR11201753-9	T-15/51
196.00-305.99	CAOD-170	SR11201755-11	HW 3.0	SR 11201756-15	HW 4.0	TPMX 2807..R..	SR11201753-10	T-20/51

ISCARDEEPDRILL

CAID
Inner Cartridge





Inner Cartridge

Diameter Range	Cartridge	Lock screw	Wrench	Insert	Insert screw	Wrench
100.00-123.99	CAID-103L	SR11201752-1	T-15/51	TPMX 1704..L..	SR11201753-7	T-9/51
124.00-135.99	CAID-142L	SR11201756-7	HW 3.0	TPMX 2405..L..	SR11201753-9	T-15/51
136.00-305.99	CAID-142L	SR11201756-7	HW 3.0L	TPMX 2405..L..	SR11201753-9	T-15/51

Guide Pads

DSTR-EC / DSTR-IC

Diameter Range	Guide Pads	Qty	Lock screw	Wrench	Guide Pad Protectors	Qty	Lock screw	Wrench	Sub Guide Pads	Qty	Lock screw	Wrench
100.00-135.99	GPS-18-40-300-DC	3	SR11201756-7S	HW 3.0	GPP-09	3	SR11201756-7S	HW 3.0	SGP-04	1	SR11201752-2	T-15/51
136.00-207.99	GPS-18-40-300-DC	3	SR11201756-7S	HW 3.0	GPP-09	3	SR11201756-7S	HW 3.0	SGP-04	1	SR11201752-2	T-15/51
208.00-305.99	GPB-22-50-750	3	SR11201752-2	T-15/51	GPP-10	3	SR11201756-7S	HW 3.0	SGP-04	1	SR11201752-2	T-15/51

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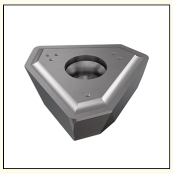
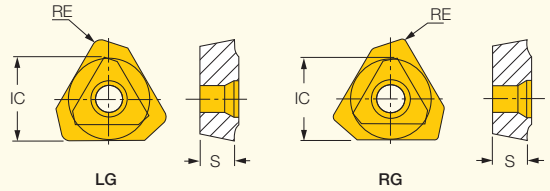
TPMX
Inserts for Drilling / Counterboring / Trepanning Tools

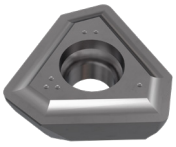
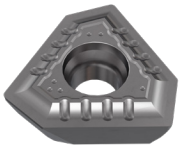
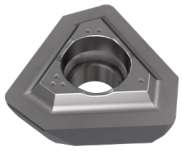
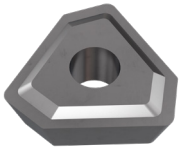




Designation	Dimensions IC	S	RE	Tough ↔ Hard IC8355	IC908	IC948	IC806
TPMX 140304R-B	8.45	3.50	0.40		●		●
TPMX 140308L-G	8.45	3.50	0.80		●		
TPMX 140308R-B	8.45	3.50	0.80			●	●
TPMX 140308R-DT	8.45	3.50	0.80		●	●	
TPMX 140308R-G	8.45	3.50	0.80	●	●	●	●
TPMX 170404L-BG	10.30	4.00	0.40		●		
TPMX 170404R-B	10.30	4.00	0.40		●		●
TPMX 170408L-DT	10.30	4.00	0.80		●		
TPMX 170408L-G	10.30	4.00	0.80		●	●	
TPMX 170408R-B	10.30	4.00	0.80			●	●
TPMX 170408R-BG	10.30	4.00	0.80		●	●	●
TPMX 170408R-DT	10.30	4.00	0.80		●	●	
TPMX 170408R-G	10.30	4.00	0.80	●	●	●	●
TPMX 240504R-B	14.20	5.50	0.40		●		●
TPMX 240512L-BG	14.20	5.50	1.20		●		
TPMX 240512L-DT	14.20	5.50	1.20		●		
TPMX 240512L-G	14.20	5.50	1.20		●	●	
TPMX 240512R-B	14.20	5.50	1.20			●	●
TPMX 240512R-BG	14.20	5.50	1.20		●	●	●
TPMX 240512R-DT	14.20	5.50	1.20		●	●	
TPMX 240512R-G	14.20	5.50	1.20	●	●	●	●
TPMX 280708R-B	17.00	7.50	0.80		●		●
TPMX 280716L-BG	17.00	7.50	1.60		●		
TPMX 280716L-G	17.00	7.50	1.60		●	●	
TPMX 280716R-B	17.00	7.50	1.60			●	●
TPMX 280716R-BG	17.00	7.50	1.60		●	●	●
TPMX 280716R-DT	17.00	7.50	1.60		●	●	
TPMX 280716R-G	17.00	7.50	1.60	●	●	●	●

For tools, see pages: DDC-EC (310) • DDD-EC (259) • DSC-EC (292) • DSC-IC (302) • DSD-EC (257) • DSD-IC (258) • DSTR-EC (317) • DSTR-IC (319)

Chipbreaker Selection

G			**B**		
	versatile			good chip control for heat-resistant alloy	
BG			**DT**		
	chip control for difficult-to-cut steel			to reduce machine load	

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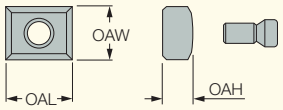
SGP
Drilling Head Sub-Guide Pads



Designation	OAL	OAW	OAH
SGP-01	10.00	6.00	3.00
SGP-02	10.00	8.00	4.50
SGP-03	10.00	10.00	5.00
SGP-04	20.00	14.00	7.00

- Select an outer cartridge and pad for the required enlarged diameter.

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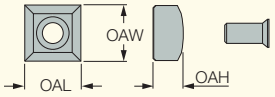
GPP
Drilling Head Guide
Pad Protectors



Designation	OAL	OAW	OAH
GPP-06	8.00	8.00	4.50
GPP-07	10.00	10.00	6.00
GPP-08	14.00	14.00	7.50
GPP-09	18.00	18.00	9.00

- Select an outer cartridge and pad for the required enlarged diameter.

Recommended Claming Torque

Insert Screw	
	(N·m)
SR 11201753-2	1
SR 11201753-3	1.3
SR 11201753-7	2.3
SR 11201753-9	3.5
SR 11201753-7	5

Cartridge Screw	
	(N·m)
SR 11201752-1	3.5
SR 11201753-5	2.3
SR 11201753-5	3.5
SR 11201756-7	3
SR 11201756-10	2.2
SR 11201756-11	2.2
SR 11201756-12	3
SR 11201756-15	5

Guide Pad Screw	
	(N·m)
SR 14-571/5	3.5
SR 34-506-C	2.3
LS1206SSS	3

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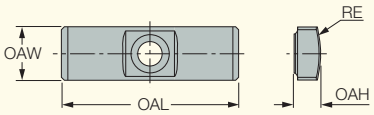
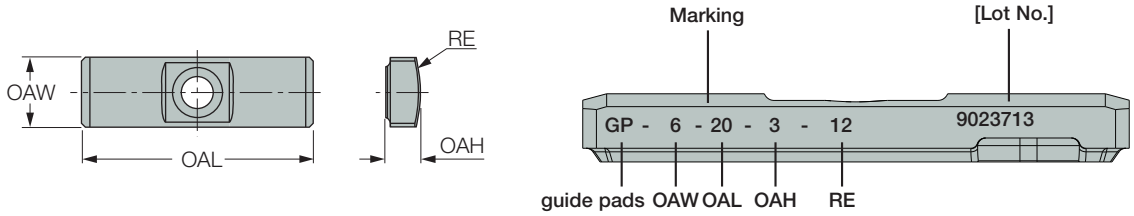
GPS
Deep Drilling Solid
Carbide Guide Pads



Designation	Dimensions				Tough ↔ Hard		
	OAW	OAL	OAH	RE	IC928	IC950	IC908
GPS-04-16-045-DC (1)	4.00	16.00	1.80	4.50			●
GPS-04-16-050-DC (1)	4.00	16.00	1.80	5.00			●
GPS-04-16-055-DC (1)	4.00	16.00	2.00	5.50	●		●
GPS-05-18-060-DC (1)	5.00	18.00	2.50	6.00	●		●
GPS-05-18-060	5.00	18.00	2.50	6.00		●	
GPS-05-18-075-DC (1)	5.00	18.00	2.50	7.50	●		●
GPS-06-20-075-DC (1)	6.00	20.00	3.00	7.50			●
GPS-06-20-075	6.00	20.00	3.00	7.50		●	
GPS-06-20-085-DC (1)	6.00	20.00	3.00	8.50	●		●
GPS-06-20-085	6.00	20.00	3.00	8.50		●	
GPS-06-20-100-DC (1)	6.00	20.00	3.00	10.00	●		●
GPS-06-20-100	6.00	20.00	3.00	10.00		●	
GPS-06-20-120-DC (1)	6.00	20.00	3.00	12.00	●		●
GPS-06-20-120	6.00	20.00	3.00	12.00		●	
GPS-07-20-120-DC (1)	7.00	20.00	3.50	12.00	●		●
GPS-07-20-120	7.00	20.00	3.50	12.00		●	
GPS-08-25-155-DC (1)	8.00	25.00	4.50	15.50	●		●
GPS-08-25-155	8.00	25.00	4.50	15.50		●	
GPS-10-30-200-DC (1)	10.00	30.00	4.50	20.00	●		●
GPS-10-30-200	10.00	30.00	4.50	20.00		●	
GPS-10-35-200-DC (1)	10.00	35.00	6.00	20.00	●		●
GPS-10-35-200	10.00	35.00	6.00	20.00		●	
GPS-12-35-250-DC (1)	12.00	35.00	5.50	25.00	●		●
GPS-12-35-250	12.00	35.00	5.50	25.00		●	
GPS-14-40-250-DC (1)	14.00	40.00	7.50	25.00	●		●
GPS-14-40-250	14.00	40.00	7.50	25.00		●	
GPS-18-40-300-DC (1)	18.00	40.00	9.00	30.00	●		●

(1) DC- Double Chamfer

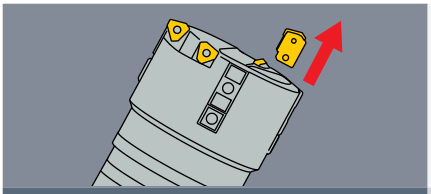
Universal Marking for Deep Drilling Tools



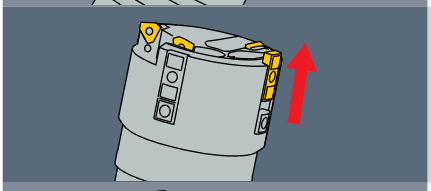
Guide Pad Grade Recommendation						
	Oil Coolant			Water Based Coolant		
Priority	1	2	3	1	2	3
ISO-P	IC950	IC908	IC928	IC928	IC908	-
ISO-K	IC950	IC908	IC928	IC928	IC908	-
ISO-M	IC928	IC908	IC950	IC928	IC908	-
ISO-S	IC928	IC908	IC950	IC928	IC908	-

Technical Information - Cartridge Style Trepanning Head Diameter Settings

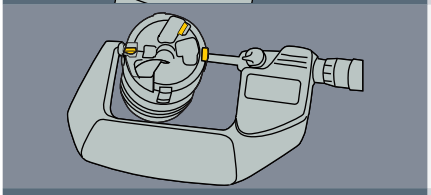
The Drill Head diameter is set and inspected with a master insert in our final inspection. However, the inserts in the market have a tolerance fluctuation so each time you change or index the insert, the diameter must be adjusted as per the following method.



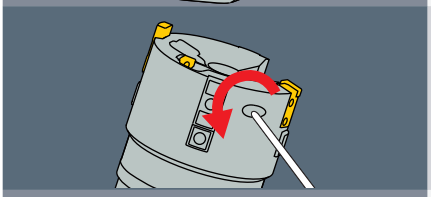
1. When a corner change is made on the insert, it must be adjusted to the correct size or damage can be caused to the head body or work piece material



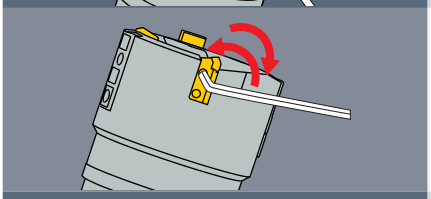
2. The dimensional guide pad must be slid forward to measure the diameter
   - 2.1 Loosen the lock screw and slide the guide pad forward
   - 2.2 Re-tighten the lock screw at the measuring position



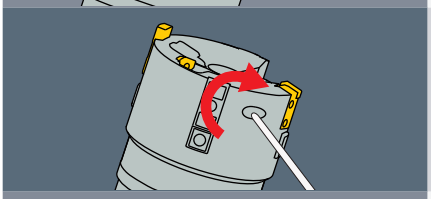
3. Measure the diameter with a micrometer
   We recommend setting the tool diameter at h8 tolerance to the cutting diameter
   If the diameter is incorrect, go to step 4
   If it's correct, go to step 5



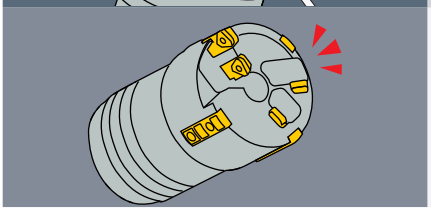
4. Adjust the peripheral cartridge
   - 4.1 First loosen the lock screw of the peripheral cartridge and then tighten it slightly



- 4.2 Proceed to adjust the diameter, using the 2 adjust screws and measure with a micrometer



- 4.3 When set to the size, retighten the lock screw
- 4.4 Recheck the diameter with a micrometer. If it remains out of tolerance, repeat the procedure from step 4-1
  Please make sure to tighten the lock screw firmly before using. If loose, the cartridge may move and cause serious problems during machining



5. Slide the dimensional guide pad back to the original position and tighten the lock screw
6. Replace the inner cartridge and tighten the lock screw
   Please check that all the lock screws are firmly tightened as they may come loose if vibration occurs during drilling

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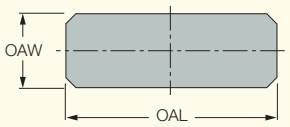
SHIM GPS
Shims for GPS Pads



Designation	OAW	OAL
SHIMSET-GP04	4.00	15.90
SHIMSET-GP05	5.00	18.00
SHIMSET-GP06	6.00	20.00

- A shim set contains 5 shims in thicknesses of 0.01mm, 0.02mm, 0.03mm, 0.04mm and 0.05mm respectively
- Adjusting shims are sold by set only, and are not to be sold separately

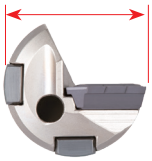
Shim Combinations for Various Diameters

Diameter Adjustmemts (mm)	Shim(s) for Measuring Guide Pad	Shim(s) for Supporting Guide Pad	Number of Shim Sets Needed
+0.01	0.01	0.01	2
+0.02	0.02	0.02	2
+0.03	0.03	0.01+0.02	1
+0.04	0.04	0.01+0.03	1
+0.05	0.05	0.02+0.03	1
+0.06	0.01+0.05	0.02+0.04	1
+0.07	0.02+0.05	0.03+0.04	1
+0.08	0.03+0.05	0.04+0.04	2
+0.09	0.04+0.05	0.04+0.05	2
+0.10	0.05+0.05	0.04+0.04+0.02	2

Assembly Instructions

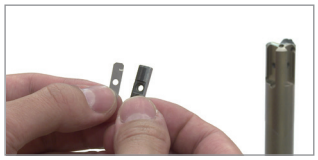
STEP 1

Measure the DTD drill diameter between the measuring guide pad and the insert cutting edge. If a pre setter is not available, use a micrometer or caliper. For a precise drill diameter measurement, it is recommended to test drill a hole and measure the hole diameter.



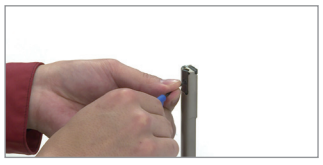
STEP 2

Select the shim combinations according to the chart above to obtain the required hole diameter. Take into consideration that the actual diameter of the drilled hole tends to be slightly larger (usually +20 µm to +30 µm) than the drill's nominal diameter — i.e. add 20 µm-30 µm to the measured drill diameter in Step 1 before the final drill diameter.



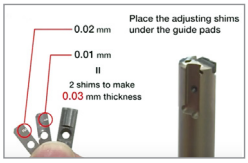
STEP 3

Remove the guide pads.



STEP 4

Install the adjusting shims underneath the guide pads, respectively. Put the guide pads back on the tool.

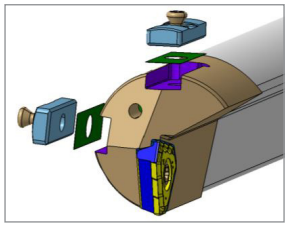


STEP 5

Measure the drill diameter again to confirm that the required diameter is obtained on the DTD.

STEP 6

Drill a hole to confirm that the required hole diameter is achieved.



Drill Tubes

TS***, TS-I**, TS-O**, TDO-I

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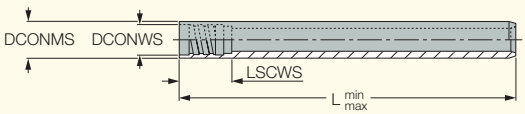
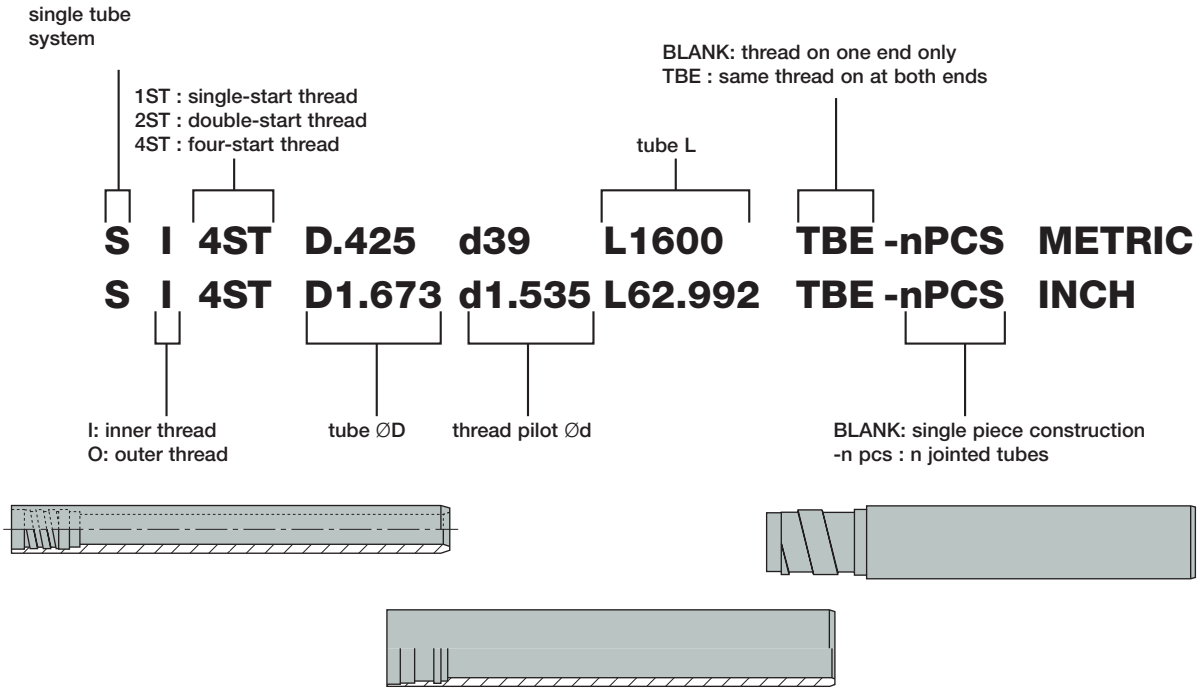
TS***
Drill Tubes - STS System - Inner Single-Start Thread Connection



Designation	d Range	DCONMS	DCONWS	LSCWS	L min	L max
TS001 L=(0-2950)MM	8.00-8.99	7.10	6.00	16.00	0.0	2950.0
TS002 L=(0-2950)MM	9.00-9.99	8.30	7.20	16.00	0.0	2950.0
TS003 L=(0-2950)MM	10.00-10.99	9.00	7.60	16.00	0.0	2950.0
TS004 L=(0-2950)MM	11.00-11.99	10.00	8.60	16.00	0.0	2950.0
TS005 L=(0-2950)MM	12.00-13.49	11.00	9.10	16.00	0.0	2950.0
TS006 L=(0-2950)MM	13.50-14.79	12.00	10.80	16.00	0.0	2950.0

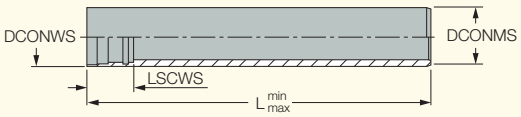
• These products are made to order on request • Indicate overall length (L) when ordering • Ordering example: TS004-L1500

Universal Marking for Deep Drilling Tools



ISCARDEEPDRILL

TS-I**
Drill Tubes - STS System - Inner
2 or 4- Start Thread Connection

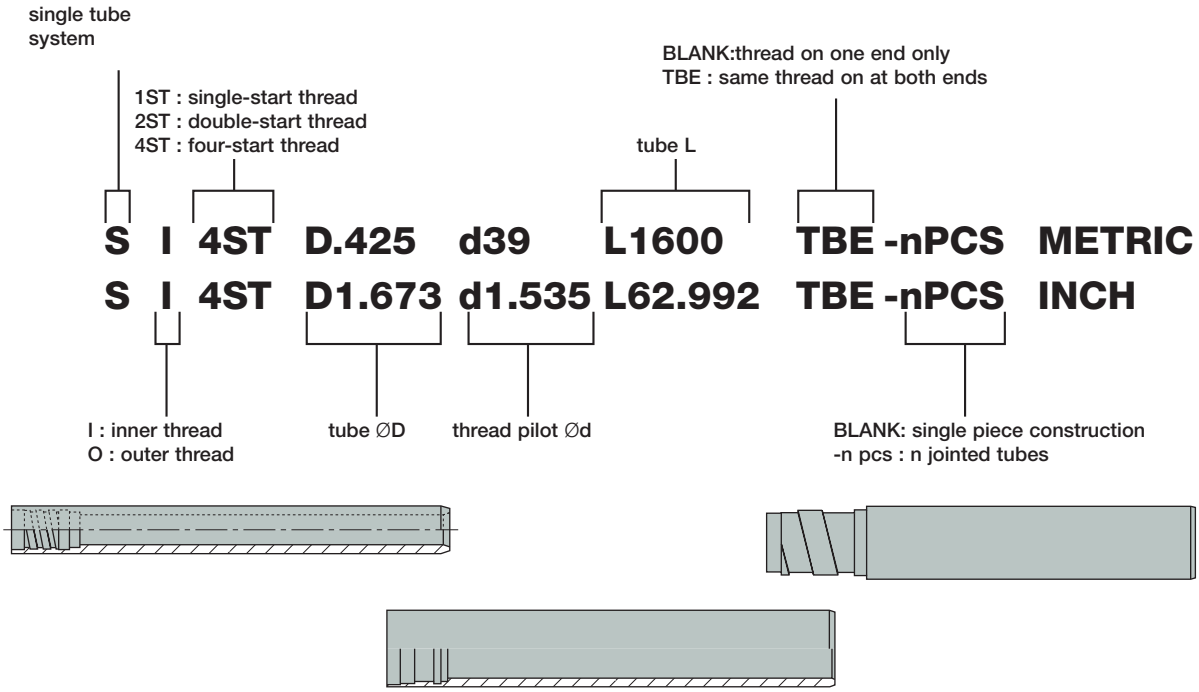


Designation	d Range	DCONMS	DCONWS	LSCWS	L min	L max
TS-I01 L=(0-3700)MM (1)	12.60-13.60	11.00	9.60	22.00	0.0	3700.0
TS-I02 L=(0-3700)MM (1)	13.61-14.60	12.00	10.60	22.00	0.0	3700.0
TS-I03 L=(0-3700)MM (1)	14.61-15.59	13.00	11.60	22.00	0.0	3700.0
TS-I0 L=(0-3700)MM	15.60-16.70	14.00	12.60	21.00	0.0	3700.0
TS-I1 L=(0-3700)MM	16.71-17.70	15.00	13.60	21.00	0.0	3700.0
TS-I2 L=(0-3700)MM	17.71-18.90	16.00	14.50	22.00	0.0	3700.0
TS-I3 L=(0-3700)MM	18.91-20.00	17.00	15.50	22.00	0.0	3700.0
TS-I4 L=(0-3700)MM	20.01-21.80	18.00	16.00	27.50	0.0	3700.0
TS-I5 L=(0-3700)MM	21.81-24.10	20.00	18.00	30.00	0.0	3700.0
TS-I6 L=(0-3700)MM	24.11-26.40	22.00	19.50	30.00	0.0	3700.0
TS-I7 L=(0-3700)MM	26.41-28.70	24.00	21.00	30.00	0.0	3700.0
TS-I8 L=(0-3700)MM	28.71-31.00	26.00	23.50	33.00	0.0	3700.0
TS-I9 L=(0-3700)MM	31.01-33.30	28.00	25.50	33.00	0.0	3700.0
TS-I11 L=(0-3700)MM	36.21-39.60	33.00	30.00	40.00	0.0	3700.0
TS-I12 L=(0-3700)MM	39.61-43.00	36.00	33.00	40.00	0.0	3700.0
TS-I13 L=(0-3700)MM	43.01-47.00	39.00	36.00	40.00	0.0	3700.0
TS-I14 L=(0-3700)MM	47.01-51.70	43.00	39.00	40.00	0.0	3700.0
TS-I15 L=(0-3700)MM	51.71-56.20	47.00	43.00	44.00	0.0	3700.0
TS-I16 L=(0-3700)MM	56.21-60.60	51.00	47.00	44.00	0.0	3700.0
TS-I17 L=(0-3700)MM	60.61-64.99	56.00	51.00	44.00	0.0	3700.0
TS-I18 L=(0-3700)MM	65.00-66.99	56.00	52.00	75.00	0.0	3700.0
TS-I19 L=(0-3700)MM	67.00-72.99	62.00	58.00	75.00	0.0	3700.0
TS-I20 L=(0-3700)MM	73.00-79.99	68.00	63.00	75.00	0.0	3700.0
TS-I21 L=(0-3700)MM	80.00-86.99	75.00	70.00	97.00	0.0	3700.0
TS-I22 L=(0-3700)MM	87.00-99.99	82.00	77.00	97.00	0.0	3700.0
TS-I23 L=(0-3700)MM	100.00-111.99	94.00	89.00	97.00	0.0	3700.0
TS-I24 L=(0-3700)MM	112.00-123.99	106.00	101.00	118.00	0.0	3700.0
TS-I25 L=(0-3700)MM	124.00-135.99	118.00	113.00	118.00	0.0	3700.0
TS-I26 L=(0-3700)MM	136.00-147.99	130.00	125.00	118.00	0.0	3700.0
TS-I27 L=(0-3700)MM	148.00-159.99	142.00	137.00	139.00	0.0	3700.0
TS-I28 L=(0-3700)MM	160.00-171.99	154.00	149.00	139.00	0.0	3700.0
TS-I29 L=(0-3700)MM	172.00-183.99	166.00	161.00	139.00	0.0	3700.0
TS-I30 L=(0-3700)MM	184.00-195.99	178.00	173.00	144.00	0.0	3700.0
TS-I31 L=(0-3700)MM	196.00-207.99	190.00	185.00	144.00	0.0	3700.0
TS-I32 L=(0-3700)MM	208.00-219.99	202.00	197.00	144.00	0.0	3700.0
TS-I33 L=(0-3700)MM	220.00-231.99	214.00	208.00	164.00	0.0	3700.0
TS-I34 L=(0-3700)MM	232.00-243.99	226.00	220.00	164.00	0.0	3700.0

• These products are made to order on request • Indicate overall length (L) when ordering • Ordering example: TS-I12-L2000
(1) 2 Start thread connection

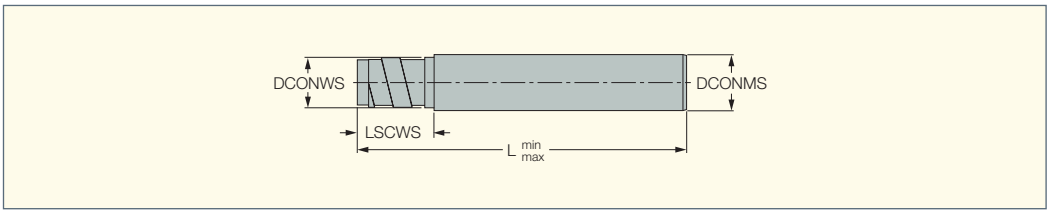
For tools, see pages: DSD-EF-FB (248) • DSD-EF-FT (239) • DSTR-EC (317)

Universal Marking for Deep Drilling Tools



ISCARDEEPDRILL

TS-O**
Drill Tubes - STS System - Outer Single-Start Thread Connection

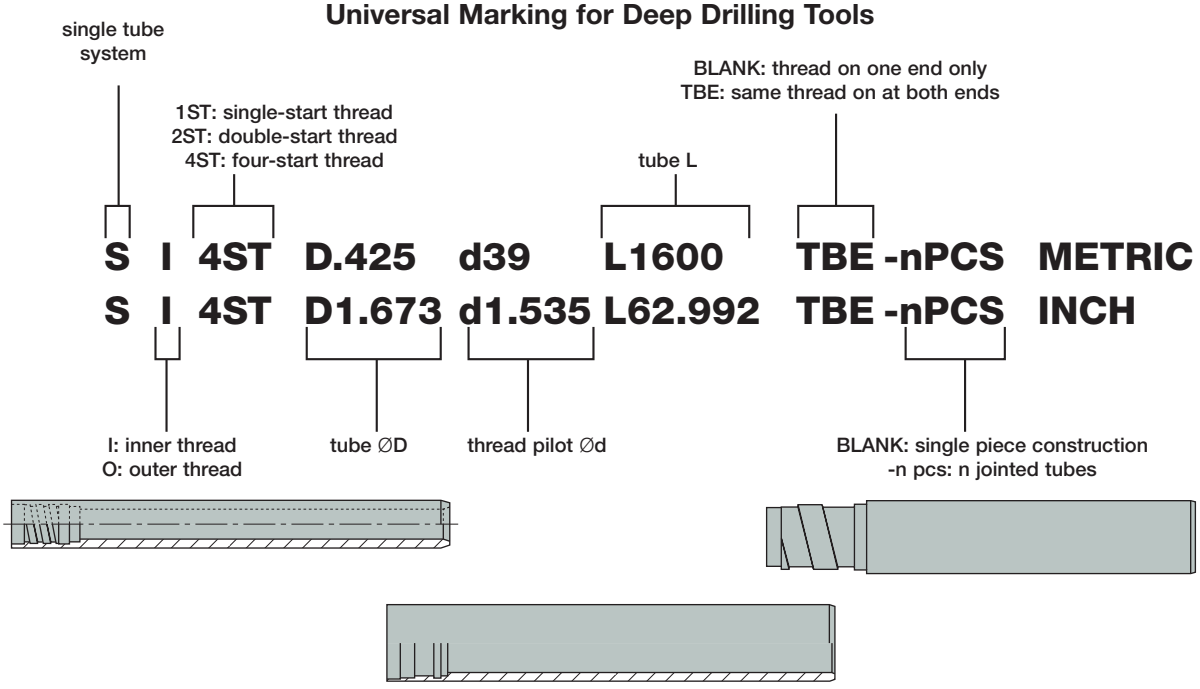


Designation	d Range	DCONMS	DCONWS	LSCWS	L min	L max
TS-00 L=(0-3700)MM	14.50-15.00	12.00	11.50	23.00	0.0	3700.0
TS-01 L=(0-3700)MM	15.01-15.50	12.00	11.80	23.00	0.0	3700.0
TS-02 L=(0-3700)MM	15.51-16.00	13.00	12.40	23.00	0.0	3700.0
TS-03 L=(0-3700)MM	16.01-16.50	13.00	12.70	23.00	0.0	3700.0
TS-04 L=(0-3700)MM	16.51-17.25	14.00	13.40	23.00	0.0	3700.0
TS-05 L=(0-3700)MM	17.26-18.00	14.00	13.70	23.00	0.0	3700.0
TS-06 L=(0-3700)MM	18.01-19.00	15.00	14.40	23.00	0.0	3700.0
TS-07 L=(0-3700)MM	19.01-19.99	16.50	15.40	23.00	0.0	3700.0
TS-08 L=(0-3700)MM	20.00-21.99	18.00	16.50	26.00	0.0	3700.0
TS-09 L=(0-3700)MM	22.00-24.99	20.00	19.00	26.00	0.0	3700.0
TS-010 L=(0-3700)MM	25.00-26.99	22.00	20.00	26.00	0.0	3700.0
TS-011 L=(0-3700)MM	27.00-29.99	24.00	22.00	26.00	0.0	3700.0
TS-012 L=(0-3700)MM	30.00-31.99	26.00	24.00	26.00	0.0	3700.0
TS-013 L=(0-3700)MM	32.00-33.99	30.00	27.00	26.00	0.0	3700.0
TS-014 L=(0-3700)MM	34.00-36.99	30.00	27.00	41.00	0.0	3700.0
TS-015 L=(0-3700)MM	37.00-39.99	33.00	30.00	41.00	0.0	3700.0
TS-016 L=(0-3700)MM	40.00-43.99	36.00	33.00	41.00	0.0	3700.0
TS-017 L=(0-3700)MM	44.00-46.99	39.00	37.00	41.00	0.0	3700.0
TS-018 L=(0-3700)MM	47.00-51.99	43.00	41.00	41.00	0.0	3700.0
TS-019 L=(0-3700)MM	52.00-56.99	47.00	44.00	41.00	0.0	3700.0
TS-020 L=(0-3700)MM	57.00-60.99	51.00	49.00	41.00	0.0	3700.0
TS-021 L=(0-3700)MM	61.00-67.99	56.00	53.00	41.00	0.0	3700.0
TS-022 L=(0-2950)MM	68.00-74.99	62.00	59.00	41.00	0.0	2950.0
TS-023 L=(0-3700)MM	75.00-80.99	68.00	65.00	71.00	0.0	3700.0
TS-024 L=(0-3700)MM	81.00-90.99	75.00	71.00	71.00	0.0	3700.0
TS-025 L=(0-3700)MM	91.00-98.99	82.00	79.00	71.00	0.0	3700.0
TS-026 L=(0-3700)MM	99.00-110.99	94.00	90.00	71.00	0.0	3700.0
TS-027 L=(0-3700)MM	111.00-122.99	106.00	102.00	71.00	0.0	3700.0
TS-028 L=(0-3700)MM	123.00-134.99	118.00	114.00	71.00	0.0	3700.0
TS-029 L=(0-3700)MM	135.00-148.99	130.00	126.00	71.00	0.0	3700.0
TS-030 L=(0-3700)MM	149.00-161.99	142.00	139.00	71.00	0.0	3700.0
TS-031 L=(0-3700)MM	162.00-173.99	154.00	151.00	86.00	0.0	3700.0
TS-032 L=(0-3700)MM	174.00-185.99	166.00	163.00	86.00	0.0	3700.0
TS-033 L=(0-3700)MM	186.00-197.99	178.00	175.00	86.00	0.0	3700.0
TS-034 L=(0-3700)MM	198.00-209.99	190.00	187.00	86.00	0.0	3700.0
TS-035 L=(0-3700)MM	210.00-221.99	202.00	199.00	86.00	0.0	3700.0
TS-036 L=(0-3700)MM	222.00-233.99	214.00	211.00	86.00	0.0	3700.0
TS-037 L=(0-3700)MM	234.00-245.99	226.00	223.00	86.00	0.0	3700.0

• These products are made to order on request • Indicate overall length (L) when ordering • Ordering example: TS-036-L1100

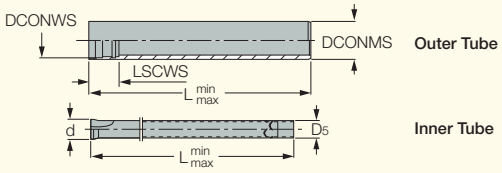
For tools, see pages: DSD-IF-FB (249) • DSD-IF-FT (239) • DSTR-IC (319)

Universal Marking for Deep Drilling Tools



ISCARDEEPDRILL

TDO-I (D18.41-65.00)
Double Tube Drill System
with 4-Start Thread
Connection Outer Tubes

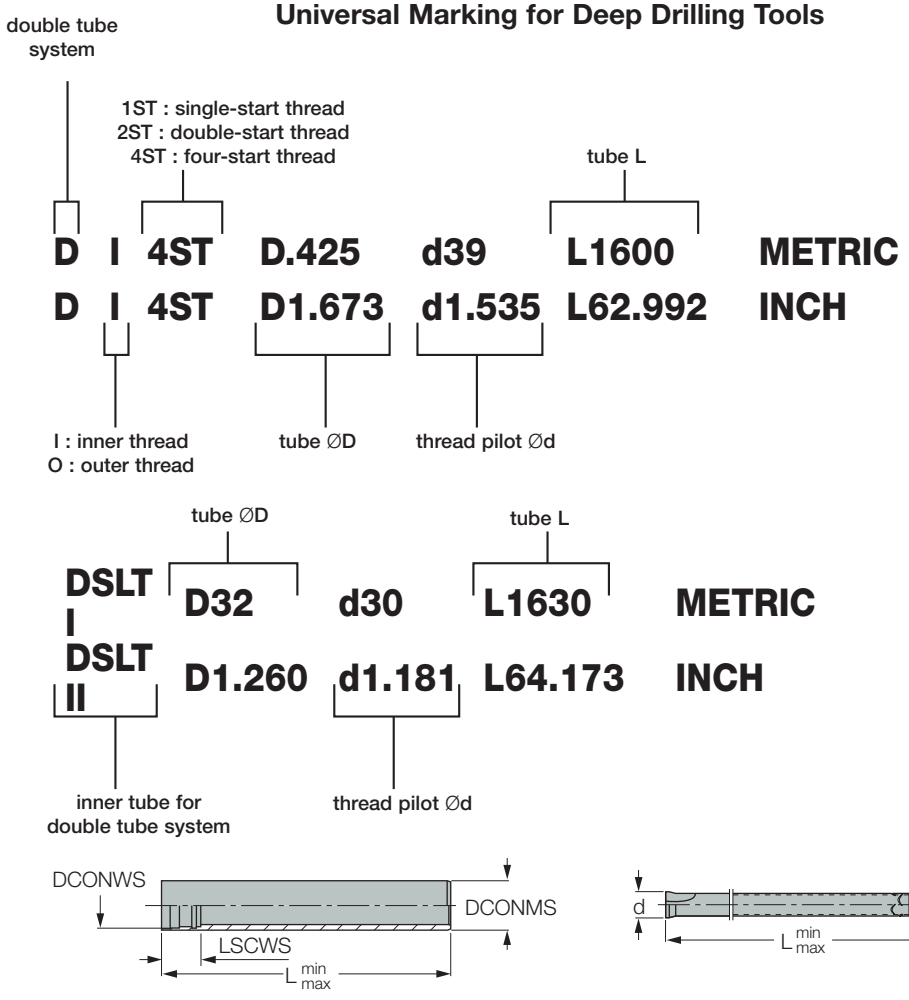


Designation	d Range	DCONMS	DCONWS	LSCWS	Int Tube	d	D5	L min	L max
TDO-I0 L=(0-3700)MM	18.41-20.00	18.00	16.00	27.50	TDI-N0	12.00	10.00	0.0	3700.0
TDO-I1 L=(0-3700)MM	20.01-21.80	19.50	18.00	30.00	TDI-N1	14.00	12.00	0.0	3700.0
TDO-I2 L=(0-3700)MM	21.81-24.10	21.50	19.50	30.00	TDI-N2	15.00	13.00	0.0	3700.0
TDO-I3 L=(0-3700)MM	24.11-26.40	23.50	21.00	30.00	TDI-N3	16.00	14.00	0.0	3700.0
TDO-I4 L=(0-3700)MM	26.41-28.70	26.00	23.50	33.00	TDI-N4	18.00	16.00	0.0	3700.0
TDO-I5 L=(0-3700)MM	28.71-31.00	28.00	25.50	33.00	TDI-N5	20.00	18.00	0.0	3700.0
TDO-I6 L=(0-3700)MM	31.01-33.30	30.50	28.00	33.00	TDI-N6	22.00	20.00	0.0	3700.0
TDO-I7 L=(0-3700)MM	33.31-36.20	33.00	30.00	40.00	TDI-N7	24.00	22.00	0.0	3700.0
TDO-I8 L=(0-3700)MM	36.21-39.60	35.50	33.00	40.00	TDI-N8	26.00	24.00	0.0	3700.0
TDO-I9 L=(0-3700)MM	39.61-43.00	39.00	36.00	40.00	TDI-N9	29.00	27.00	0.0	3700.0
TDO-I10 L=(0-3700)MM	43.01-47.00	42.50	39.00	40.00	TDI-N10	32.00	30.00	0.0	3700.0
TDO-I11 L=(0-3700)MM	47.01-51.70	46.50	43.00	44.00	TDI-N11	35.00	32.00	0.0	3700.0
TDO-I12 L=(0-3700)MM	51.71-56.20	51.00	47.00	44.00	TDI-N12	39.00	36.00	0.0	3700.0
TDO-I13 L=(0-3700)MM	56.21-65.00	55.50	51.00	44.00	TDI-N13	43.00	40.00	0.0	3700.0

- These products are made to order on request • Please indicate overall length (L) when ordering • Ordering example: TDO-I13-L1100
- For 18.41-65.00 diameter range, the inner tube should be 30mm longer than the outer tube

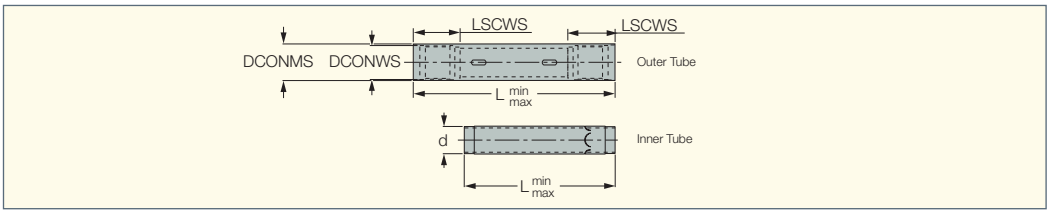
For tools, see pages: DDC-EA (307) • DDC-EC (310)

Universal Marking for Deep Drilling Tools



ISCARDEEPDRILL

TDO-I (D65.00-171.99)
Double Tube Drill System
with 4-Start Thread
Connection Outer Tubes

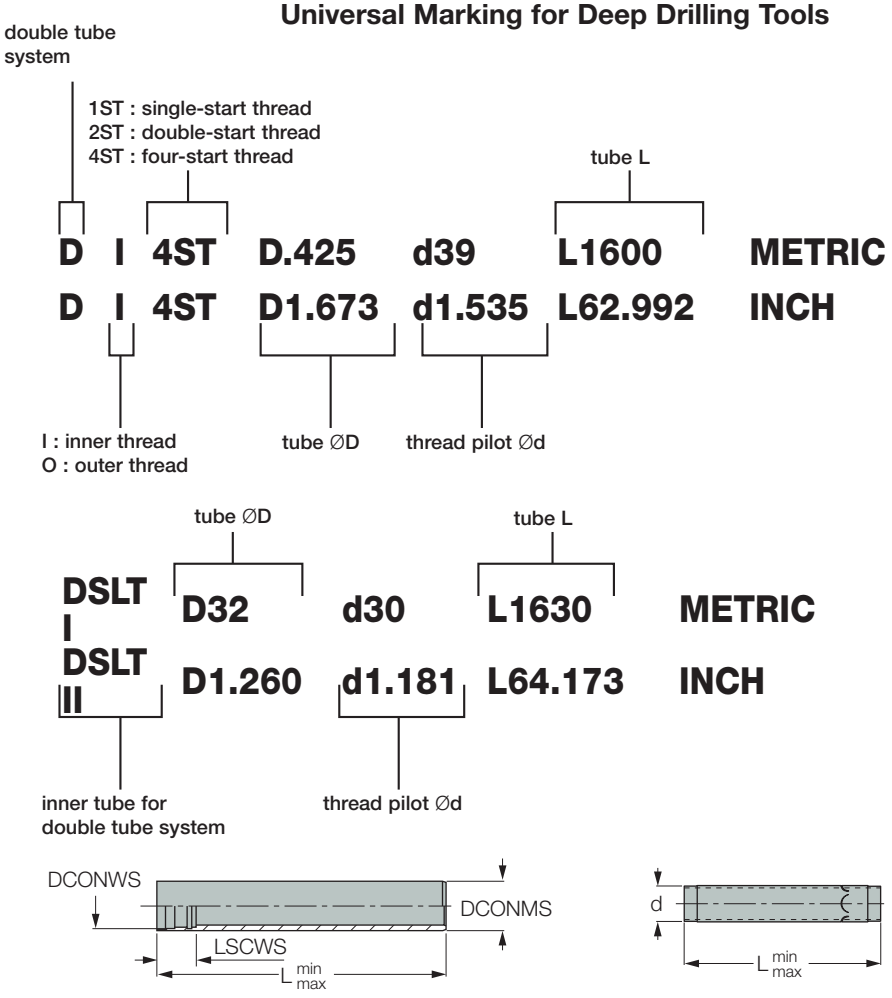


Designation	d Range	DCONMS	DCONWS	LSCWS	Int Tube	d	L min	L max
TDO-I14 L=(0-3700)MM	65.00-66.99	56.00	52.00	75.00	TDI-N14	40.00	0.0	3700.0
TDO-I15 L=(0-2950)MM	67.00-72.99	62.00	58.00	75.00	TDI-N15	44.00	0.0	2950.0
TDO-I16 L=(0-3700)MM	73.00-79.99	68.00	63.00	75.00	TDI-N16	48.00	0.0	3700.0
TDO-I17 L=(0-3700)MM	80.00-86.99	75.00	70.00	97.00	TDI-N17	54.00	0.0	3700.0
TDO-I18 L=(0-3700)MM	87.00-99.99	82.00	77.00	97.00	TDI-N18	60.00	0.0	3700.0
TDO-I19 L=(0-3700)MM	100.00-111.99	94.00	89.00	97.00	TDI-N19	70.00	0.0	3700.0
TDO-I20 L=(0-3700)MM	112.00-123.99	106.00	101.00	118.00	TDI-N20	80.00	0.0	3700.0
TDO-I21 L=(0-3700)MM	124.00-135.99	118.00	113.00	118.00	TDI-N21	80.00	0.0	3700.0
TDO-I22 L=(0-3700)MM	136.00-147.99	130.00	125.00	118.00	TDI-N22	90.00	0.0	3700.0
TDO-I23 L=(0-3700)MM	148.00-159.99	142.00	137.00	139.00	TDI-N23	100.00	0.0	3700.0
TDO-I24 L=(0-3700)MM	160.00-171.99	154.00	149.00	139.00	TDI-N24	120.00	0.0	3700.0

• These products are made to order on request • Indicate overall length (L) when ordering • Ordering example: TDO-I18-L1150
• For 65.00-123.99 diameter range, the inner tube should be 190mm longer than the outer tube • For 124.00-183.99 diameter range, the inner tube should be 220mm longer than the outer tube

For tools, see pages: DDC-EC (310) • DDD-EC (259)

Universal Marking for Deep Drilling Tools



Machining Recommendations

Ground Brazed Solid Drill Heads DSD-E1 DTH							Dia. Range 15.6-16.70	
ISO	Material		Condition	Tensile Strength [N/mm²]	Hardness HB	Material Group No.(1)	Cutting Speed V_c [m/min]	Feed Rate F (mm/rev)
P	non-alloy steel and cast steel, free cutting steel	<0.25% C	annealed	420	125	1	70-130	0.1-0.16
		≥0.25% C	annealed	650	190	2	70-130	0.1-0.16
		<0.55% C	quenched and tempered	850	250	3	70-130	0.1-0.16
		≥0.55% C	annealed	750	220	4	70-130	0.1-0.16
			quenched and tempered	1000	300	5	70-130	0.1-0.12
	low alloy and cast steel (less than 5% of alloying elements)		annealed	600	200	6	70-110	0.1-0.16
			quenched and tempered	930	275	7	60-110	0.1-0.12
				1000	300	8	60-110	0.1-0.12
				1200	350	9	60-110	0.1-0.12
	high alloyed steel, cast steel and tool steel		annealed	680	200	10	70-130	0.1-0.16
			quenched and tempered	1100	325	11	70-130	0.1-0.12
	stainless steel and cast steel		ferritic/martensitic	680	200	12	40-110	0.04-0.16
			martensitic	820	240	13	40-110	0.04-0.16
M	stainless steel and cast steel		austenitic, duplex	600	180	14	40-110	0.04-0.14
K	grey cast iron (GG)		ferritic/pearlitic		180	15	50-110	0.05-0.16
			pearlitic/martensitic		260	16	50-110	0.05-0.16
	nodular cast iron (GGG)		ferritic		160	17	60-110	0.06-0.16
			pearlitic		250	18	60-110	0.05-0.16
	malleable cast iron		ferritic		130	19	70-110	0.05-0.10
			pearlitic		230	20	70-110	0.05-0.16
N	aluminum-wrought alloys		not hardenable		60	21	65-130	0.08-0.16
			hardenable		100	22	65-100	0.08-0.16
	aluminum-cast alloys	≤12% Si	not hardenable		75	23	65-130	0.05-0.10
			hardenable		90	24	65-130	0.08-0.16
		>12% Si	high temperature		130	25	65-130	0.05-0.10
	copper alloys	>1% Pb	free cutting		110	26	65-130	0.08-0.16
			brass		90	27	65-130	0.05-0.16
			electrolitic copper		100	28	65-130	0.08-0.16
	non-metallic		duroplastics, fiber plastics			29		
			hard rubber			30		
S	high temp. alloys	Fe based	annealed		200	31	20-50	0.05-0.14
			hardened		280	32	20-50	0.06-0.14
		Ni or Co based	annealed		250	33	20-50	0.05-0.14
			hardened		350	34	20-50	0.06-0.14
			cast		320	35	20-50	0.05-0.14
	titanium alloys		pure	400		36	30-60	0.05-0.12
			alpha+beta alloys hardened	1050		37	30-60	0.06-0.12
H	hardened steel		hardened		55 HRC	38		
			hardened		60 HRC	39		
	chilled cast iron		cast		400	40		
	cast iron		hardened		55 HRC	41		

(1) Based on ISO 513 and VDI 3323 standards

Machining Recommendations

Ground Brazed Solid Drill Heads DSD-E0, DSD-E1, DSD-E2/E3, DDD-E3

ISO	Material		Condition	Tensile Strength [N/mm²]	Hardness HB	Material Group No.(1)
P	non-alloy steel and cast steel, free cutting steel	<0.25% C	annealed	420	125	1
		≥0.25% C	annealed	650	190	2
		<0.55% C	quenched and tempered	850	250	3
		≥0.55% C	annealed	750	220	4
			quenched and tempered	1000	300	5
	low alloy and cast steel (less than 5% of alloying elements)		annealed	600	200	6
			quenched and tempered	930	275	7
				1000	300	8
				1200	350	9
	high alloyed steel, cast steel and tool steel		annealed	680	200	10
			quenched and tempered	1100	325	11
	stainless steel and cast steel		ferritic/martensitic	680	200	12
			martensitic	820	240	13
M	stainless steel and cast steel		austenitic, duplex	600	180	14
K	grey cast iron (GG)		ferritic/pearlitic		180	15
			pearlitic/martensitic		260	16
	nodular cast iron (GGG)		ferritic		160	17
			pearlitic		250	18
	malleable cast iron		ferritic		130	19
			pearlitic		230	20
N	aluminum-wrought alloys		not hardenable		60	21
			hardenable		100	22
	aluminum-cast alloys	≤12% Si	not hardenable		75	23
			hardenable		90	24
		>12% Si	high temperature		130	25
	copper alloys	>1% Pb	free cutting		110	26
			brass		90	27
			electrolitic copper		100	28
	non-metallic		duroplastics, fiber plastics			29
			hard rubber			30
S	high temp. alloys	Fe based	annealed		200	31
			hardened		280	32
		Ni or Co based	annealed		250	33
			hardened		350	34
			cast		320	35
	titanium alloys		pure	400		36
			alpha+beta alloys hardened	1050		37
H	hardened steel		hardened		55 HRC	38
			hardened		60 HRC	39
	chilled cast iron		cast		400	40
	cast iron		hardened		55 HRC	41

(1) Based on ISO 513 and VDI 3323 standards

Ground Brazed Solid Drill Heads DSD-E0, DSD-E1, DSD-E2/E3, DDD-E3					
Dia. Range	**8.00-20.00**	**12.60-20.00**	**20.01-31.00**	**31.01-43.00**	**43.01-65.00**
Drill Type	**DSD-E0/E1**	**DSD-E2/E3, DDD-E3**			
V_c (m/min)	**Feed Rate f (mm/rev)**				
70-120	0.05-0.13	0.08-0.15	0.10-0.17	0.13-0.20	0.16-0.30
70-120	0.05-0.13	0.08-0.15	0.10-0.17	0.13-0.20	0.16-0.30
40-70	0.05-0.13	0.08-0.15	0.10-0.17	0.13-0.20	0.16-0.30
70-120	0.05-0.13	0.08-0.15	0.10-0.17	0.13-0.20	0.16-0.30
55-100	0.05-0.10	0.08-0.12	0.10-0.15	0.13-0.17	0.15-0.28
70-100	0.05-0.13	0.08-0.15	0.10-0.17	0.13-0.20	0.16-0.30
55-100	0.05-0.10	0.08-0.12	0.10-0.15	0.13-0.17	0.15-0.28
55-100	0.05-0.10	0.08-0.12	0.10-0.15	0.13-0.17	0.15-0.28
55-100	0.05-0.10	0.08-0.12	0.10-0.15	0.13-0.17	0.15-0.28
50-85	0.05-0.13	0.08-0.15	0.10-0.17	0.13-0.20	0.16-0.30
55-100	0.05-0.10	0.08-0.12	0.10-0.15	0.13-0.17	0.15-0.28
60-100	0.05-0.13	0.08-0.15	0.10-0.28	0.13-0.30	0.16-0.35
60-100	0.05-0.13	0.08-0.15	0.10-0.28	0.13-0.30	0.16-0.35
60-100	0.05-0.12	0.05-0.12	0.08-0.25	0.10-0.28	0.15-0.33
80-100	0.05-0.13	0.08-0.15	0.10-0.17	0.13-0.20	0.16-0.30
80-100	0.05-0.13	0.08-0.15	0.10-0.17	0.13-0.20	0.16-0.30
60-100	0.05-0.13	0.06-0.13	0.08-0.18	0.10-0.20	0.15-0.25
60-100	0.05-0.13	0.06-0.13	0.08-0.18	0.10-0.20	0.15-0.25
50-100	0.05-0.13	0.06-0.13	0.08-0.18	0.10-0.20	0.15-0.25
50-100	0.05-0.13	0.06-0.13	0.08-0.18	0.10-0.20	0.15-0.25
65-130	0.05-0.13	0.08-0.15	0.10-0.20	0.15-0.25	0.16-0.30
65-100	0.05-0.13	0.08-0.15	0.10-0.20	0.15-0.25	0.16-0.30
65-130	0.05-0.13	0.08-0.15	0.10-0.20	0.15-0.25	0.16-0.30
65-130	0.05-0.13	0.08-0.15	0.10-0.20	0.15-0.25	0.16-0.30
65-130	0.05-0.13	0.08-0.15	0.10-0.20	0.15-0.25	0.16-0.30
65-130	0.05-0.13	0.08-0.15	0.10-0.20	0.15-0.25	0.16-0.30
65-130	0.05-0.13	0.08-0.15	0.10-0.20	0.15-0.25	0.16-0.30
65-130	0.05-0.13	0.08-0.15	0.10-0.20	0.15-0.25	0.16-0.30
10-50	0.05-0.12	0.06-0.12	0.08-0.15	0.12-0.18	0.15-0.25
10-50	0.05-0.12	0.06-0.12	0.08-0.15	0.12-0.18	0.15-0.25
10-50	0.05-0.12	0.06-0.12	0.08-0.15	0.12-0.18	0.15-0.25
10-50	0.05-0.12	0.06-0.12	0.08-0.15	0.12-0.18	0.15-0.25
10-50	0.05-0.12	0.06-0.12	0.08-0.15	0.12-0.18	0.15-0.25
30-50	0.05-0.10	0.05-0.10	0.08-0.12	0.10-0.15	0.12-0.20
30-50	0.05-0.10	0.05-0.10	0.08-0.12	0.10-0.15	0.12-0.20
30-50	0.05-0.10	0.05-0.10	0.08-0.12	0.10-0.15	0.12-0.20
30-50	0.05-0.10	0.05-0.10	0.08-0.12	0.10-0.15	0.12-0.20
30-50	0.05-0.10	0.05-0.10	0.08-0.12	0.10-0.15	0.12-0.20
30-50	0.05-0.10	0.05-0.10	0.08-0.12	0.10-0.15	0.12-0.20

Machining Recommendations

Indexable Drill Heads DSD-EC, DDD-EC, DSD-IC

ISO	Material		Condition	Tensile Strength [N/mm²]	Material Group No.(1)	Hardness HB	Chipbreaker		
								Troubleshooting	
							First Choice	Fracture	Wear
P	non-alloy steel and cast steel, free cutting steel	<0.25% C	annealed	420	1	125	G IC908	BG IC806	B IC9025
		≥0.25% C	annealed	650	2	190			
		<0.55% C	quenched and tempered	850	3	250			
		≥0.55% C	annealed	750	4	220			
			quenched and tempered	1000	5	300			
	low alloy and cast steel (less than 5% of alloying elements)		annealed	600	6	200	G IC908	BG IC806	B IC9025
			quenched and tempered	930	7	275			
				1000	8	300			
				1200	9	350			
	high alloyed steel, cast steel and tool steel		annealed	680	10	200	G IC908	BG IC806	B IC9025
			quenched and tempered	1100	11	325			
	stainless steel and cast steel		ferritic/martensitic	680	12	200	G IC908	BG IC806	B IC9025
			martensitic	820	13	240			
M	stainless steel and cast steel		austenitic, duplex	600	14	180	G IC806	B IC908	B IC9025
K	grey cast iron (GG)		ferritic/pearlitic		15	180	G IC908	G IC806	B IC9025
			pearlitic/martensitic		16	260			
	nodular cast iron (GGG)		ferritic		17	160			
			pearlitic		18	250			
	malleable cast iron		ferritic		19	130			
			pearlitic		20	230			
N	aluminum-wrought alloys		not hardenable		21	60	G IC908	G IC806	B IC9025
			hardenable		22	100			
	aluminum-cast alloys	≤12% Si	not hardenable		23	75			
			hardenable		24	90			
		>12% Si	high temperature		25	130			
	copper alloys	>1% Pb	free cutting		26	110			
			brass		27	90			
			electrolitic copper		28	100			
	non-metallic		duroplastics, fiber plastics		29				
			hard rubber		30				
S	high temp. alloys	Fe based	annealed		31	200	B IC806	B IC908	B IC9025
			hardened		32	280			
		Ni or Co based	annealed		33	250			
			hardened		34	350			
			cast		35	320			
	titanium alloys		pure	400	36				
			alpha+beta alloys hardened	1050	37				
H	hardened steel		hardened 55 HRC		38		B IC806	B IC908	B IC908
			hardened 60 HRC		39				
	chilled cast iron		cast		40	400			
	cast iron		hardened 55 HRC		41				

(1) Based on ISO 513 and VDI 3323 standards

Indexable Drill Heads DSD-EC, DDD-EC, DSD-IC					
Dia. Range	**38.00-39.99**	**40.00-51.99**	**52.00-63.99**	**64.00-84.99**	**85.00-293.00**
V_c (m/min)	**Feed Rate f (mm/rev)**				
60-120	0.08-0.15	0.10-0.20	0.13-0.23	0.15-0.25	0.18-0.30
60-120	0.08-0.15	0.10-0.20	0.13-0.23	0.15-0.25	0.18-0.30
60-120	0.08-0.15	0.10-0.20	0.13-0.23	0.15-0.25	0.18-0.30
60-120	0.08-0.15	0.10-0.20	0.13-0.23	0.15-0.25	0.18-0.30
60-120	0.08-0.15	0.10-0.20	0.13-0.23	0.15-0.25	0.18-0.30
60-100	0.08-0.15	0.10-0.20	0.13-0.23	0.15-0.25	0.18-0.30
60-100	0.08-0.15	0.10-0.20	0.13-0.23	0.15-0.25	0.18-0.30
50-100	0.08-0.15	0.10-0.20	0.13-0.23	0.15-0.25	0.18-0.30
50-100	0.08-0.15	0.10-0.20	0.13-0.23	0.15-0.25	0.18-0.30
60-120	0.08-0.15	0.10-0.20	0.13-0.23	0.15-0.25	0.18-0.30
60-120	0.08-0.15	0.10-0.20	0.13-0.23	0.15-0.25	0.18-0.30
60-110	0.08-0.15	0.10-0.20	0.13-0.23	0.15-0.25	0.18-0.30
60-110	0.08-0.15	0.10-0.20	0.13-0.23	0.15-0.25	0.18-0.30
60-110	0.08-0.15	0.10-0.20	0.13-0.23	0.15-0.25	0.18-0.30
80-140	0.20-0.30	0.20-0.30	0.24-0.32	0.24-0.32	0.25-0.40
80-140	0.20-0.30	0.20-0.30	0.24-0.32	0.24-0.32	0.25-0.40
80-140	0.20-0.30	0.20-0.30	0.24-0.32	0.24-0.32	0.25-0.40
80-140	0.20-0.30	0.20-0.30	0.24-0.32	0.24-0.32	0.25-0.40
80-140	0.20-0.30	0.20-0.30	0.24-0.32	0.24-0.32	0.25-0.40
80-140	0.20-0.30	0.20-0.30	0.24-0.32	0.24-0.32	0.25-0.40
100-200	0.08-0.20	0.10-0.25	0.13-0.28	0.15-0.30	0.18-0.33
100-200	0.08-0.20	0.10-0.25	0.13-0.28	0.15-0.30	0.18-0.33
100-200	0.08-0.20	0.10-0.25	0.13-0.28	0.15-0.30	0.18-0.33
100-200	0.08-0.20	0.10-0.25	0.13-0.28	0.15-0.30	0.18-0.33
100-200	0.08-0.20	0.10-0.25	0.13-0.28	0.15-0.30	0.18-0.33
100-200	0.08-0.20	0.10-0.25	0.13-0.28	0.15-0.30	0.18-0.33
100-200	0.08-0.20	0.10-0.25	0.13-0.28	0.15-0.30	0.18-0.33
100-200	0.08-0.20	0.10-0.25	0.13-0.28	0.15-0.30	0.18-0.33
20-65	0.06-0.13	0.08-0.18	0.13-0.23	0.13-0.23	0.18-0.28
20-65	0.06-0.13	0.08-0.18	0.13-0.23	0.13-0.23	0.18-0.28
20-65	0.06-0.13	0.08-0.18	0.13-0.23	0.13-0.23	0.18-0.28
30-100	0.06-0.13	0.08-0.18	0.13-0.23	0.13-0.23	0.18-0.28
30-100	0.06-0.13	0.08-0.18	0.13-0.23	0.13-0.23	0.18-0.28
30-100	0.06-0.13	0.08-0.18	0.13-0.23	0.13-0.23	0.18-0.28
30-100	0.06-0.13	0.08-0.18	0.13-0.23	0.13-0.23	0.18-0.28
30-80	0.06-0.13	0.08-0.18	0.13-0.23	0.13-0.23	0.15-0.28
30-80	0.06-0.13	0.08-0.18	0.13-0.23	0.13-0.23	0.15-0.28
30-80	0.06-0.13	0.08-0.18	0.13-0.23	0.13-0.23	0.15-0.28
30-80	0.06-0.13	0.08-0.18	0.13-0.23	0.13-0.23	0.15-0.28

Machining Recommendations

Indexable Counterboring Heads DSC-EA, DSC-EC, DSC-IA, DSC-IC, DDC-EA / Trepanning Heads DSTR-EC, DSTR-IC

ISO	Material		Condition	Tensile Strength [N/mm²]	Hardness HB	Material Group No.(1)
P	non-alloy steel and cast steel, free cutting steel	<0.25% C	annealed	420	125	1
		≥0.25% C	annealed	650	190	2
		<0.55% C	quenched and tempered	850	250	3
		≥0.55% C	annealed	750	220	4
			quenched and tempered	1000	300	5
	low alloy and cast steel (less than 5% of alloying elements)		annealed	600	200	6
			quenched and tempered	930	275	7
				1000	300	8
				1200	350	9
	high alloyed steel, cast steel and tool steel		annealed	680	200	10
			quenched and tempered	1100	325	11
	stainless steel and cast steel		ferritic/martensitic	680	200	12
			martensitic	820	240	13
M	stainless steel and cast steel		austenitic, duplex	600	180	14
K	grey cast iron (GG)		ferritic/pearlitic		180	15
			pearlitic/martensitic		260	16
	nodular cast iron (GGG)		ferritic		160	17
			pearlitic		250	18
	malleable cast iron		ferritic		130	19
			pearlitic		230	20
N	aluminum-wrought alloys		not hardenable		60	21
			hardenable		100	22
	aluminum-cast alloys	≤12% Si	not hardenable		75	23
			hardenable		90	24
		>12% Si	high temperature		130	25
	copper alloys	>1% Pb	free cutting		110	26
			brass		90	27
			electrolitic copper		100	28
	non-metallic		duroplastics, fiber plastics			29
			hard rubber			30
S	high temp. alloys	Fe based	annealed		200	31
			hardened		280	32
		Ni or Co based	annealed		250	33
			hardened		350	34
			cast		320	35
	titanium alloys		pure	400		36
			alpha+beta alloys hardened	1050		37
H	hardened steel		hardened		55 HRC	38
			hardened		60 HRC	39
	chilled cast iron		cast		400	40
	cast iron		hardened		55 HRC	41

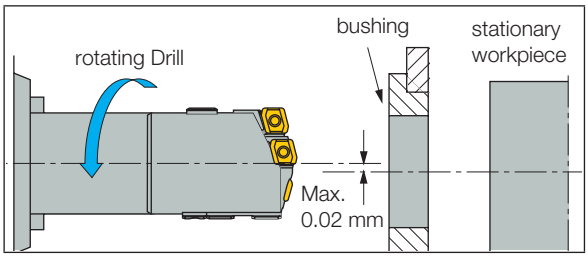
(1) Based on ISO 513 and VDI 3323 standards

Indexable Counterboring Heads DSC-EA, DSC-EC, DSC-IA, DSC-IC, DDC-EA				Trepanning Heads DSTR-EC, DSTR-IC	
Width of Cut (mm)	1-3	3-8	8-23	Dia. Range	120-400
V_c (m/min)	Feed Rate f (mm/rev)			V_c (m/min)	Feed Rate f (mm/rev)
60-140	0.10-0.30	0.15-0.30	0.10-0.30	80-100	0.12-0.30
60-120	0.10-0.30	0.15-0.30	0.10-0.30	80-100	0.12-0.30
60-120	0.10-0.30	0.15-0.30	0.10-0.30	80-100	0.12-0.30
50-100	0.10-0.30	0.15-0.30	0.10-0.30	80-100	0.12-0.30
50-100	0.10-0.30	0.15-0.30	0.10-0.30	80-100	0.12-0.30
60-130	0.10-0.30	0.15-0.30	0.10-0.30	70-100	0.12-0.30
60-120	0.10-0.30	0.15-0.30	0.10-0.30	70-100	0.12-0.30
60-100	0.10-0.30	0.15-0.30	0.10-0.30	60-100	0.12-0.30
60-100	0.10-0.30	0.15-0.30	0.10-0.30	60-100	0.12-0.30
50-100	0.10-0.30	0.15-0.30	0.10-0.30	70-100	0.12-0.30
60-100	0.10-0.30	0.15-0.30	0.10-0.30	60-100	0.12-0.30
60-100	0.10-0.30	0.15-0.30	0.10-0.30	50-90	0.12-0.30
60-100	0.10-0.30	0.15-0.30	0.10-0.30	50-90	0.12-0.30
60-100	0.10-0.30	0.15-0.30	0.10-0.30	50-90	0.12-0.30
60-120	0.10-0.30	0.15-0.30	0.10-0.30	80-100	0.12-0.30
50-120	0.10-0.30	0.15-0.30	0.10-0.30	60-100	0.12-0.30
60-120	0.10-0.30	0.15-0.30	0.10-0.30	50-100	0.12-0.30
60-120	0.10-0.30	0.15-0.30	0.10-0.30	50-100	0.12-0.30
60-120	0.10-0.30	0.15-0.30	0.10-0.30	80-100	0.12-0.30
60-120	0.10-0.30	0.15-0.30	0.10-0.30	80-100	0.12-0.30
70-200	0.10-0.40	0.15-0.30	0.10-0.30	65-130	0.10-0.30
60-200	0.10-0.40	0.10-0.40	0.10-0.40	65-130	0.10-0.30
60-200	0.10-0.40	0.10-0.40	0.10-0.40	65-130	0.10-0.30
60-200	0.10-0.40	0.10-0.40	0.10-0.40	65-130	0.10-0.30
60-200	0.10-0.40	0.10-0.40	0.10-0.40	65-130	0.10-0.30
60-200	0.10-0.40	0.10-0.40	0.10-0.40	65-130	0.10-0.30
60-200	0.10-0.40	0.10-0.40	0.10-0.40	65-130	0.10-0.30
60-200	0.10-0.40	0.10-0.40	0.10-0.40	65-130	0.10-0.30
40-80	0.10-0.30	0.15-0.30	0.10-0.30	20-65	0.10-0.20
40-80	0.10-0.30	0.15-0.30	0.10-0.30	20-65	0.10-0.20
40-80	0.10-0.30	0.15-0.30	0.10-0.30	20-65	0.10-0.20
60-100	0.10-0.30	0.15-0.30	0.10-0.30	30-100	0.10-0.20
60-100	0.10-0.30	0.15-0.30	0.10-0.30	30-100	0.10-0.20
50-100	0.10-0.30	0.15-0.30	0.10-0.30	70-100	0.12-0.30
50-100	0.10-0.30	0.15-0.30	0.10-0.30	70-100	0.12-0.30
60-100	0.10-0.30	0.15-0.30	0.10-0.30	30-100	0.10-0.20
60-100	0.10-0.30	0.15-0.30	0.10-0.30	30-100	0.10-0.20
60-100	0.10-0.30	0.15-0.30	0.10-0.30	30-100	0.10-0.20
60-100	0.10-0.30	0.15-0.30	0.10-0.30	30-100	0.10-0.20

Technical Information - Drill Setup

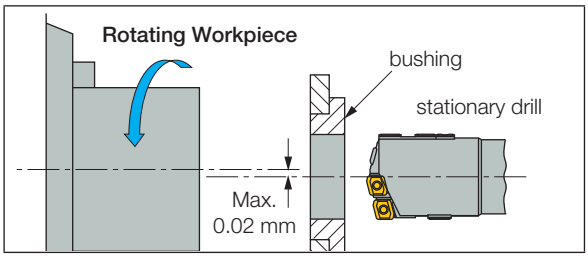
Rotating Drill

- Can be applied on symmetrical and non-symmetrical workpieces
- Drill to bushing center misalignment should not exceed 0.02mm



Stationary Drill

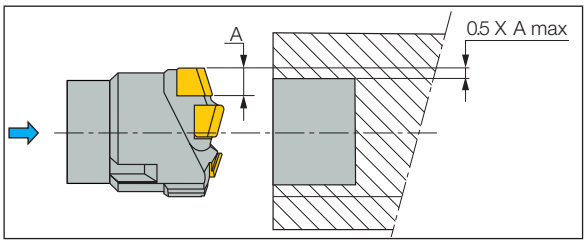
- Applied on symmetrical workpieces
- Improved hole straightness and bushing wear
- Drill to bushing center misalignment should not exceed 0.02mm

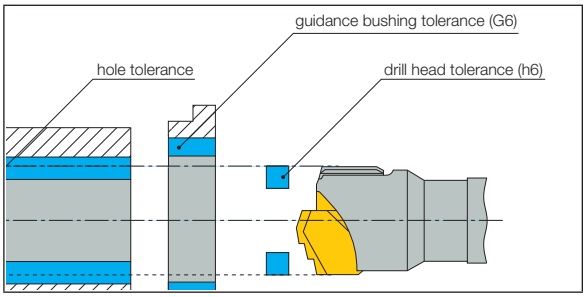


Drill Bushing and Workpiece Tolerance Relative Positioning

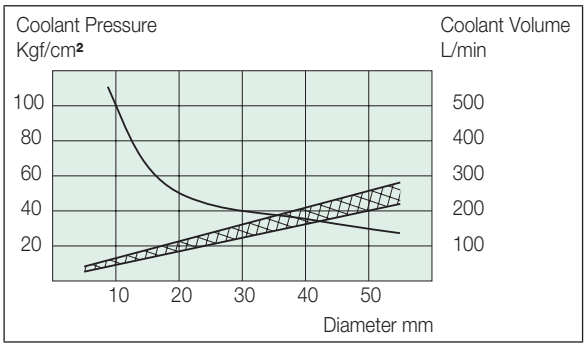
Pre-Drilled Hole

A large pre-drilled hole (larger than D-A) ensures precise hole size and center location.

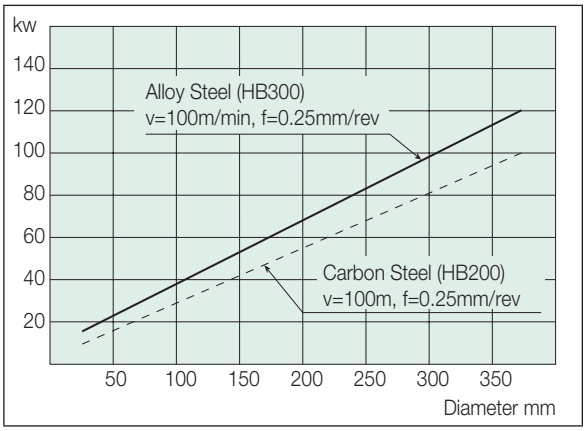




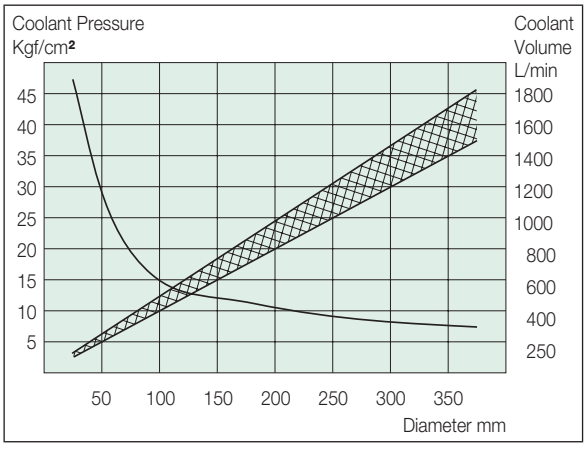
Recommended Coolant Pressure and Volume ≤50mm



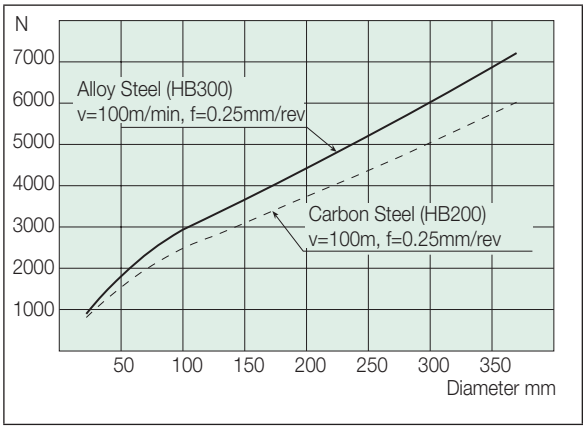
Machine Power



Recommended Coolant Pressure and Volume >50mm

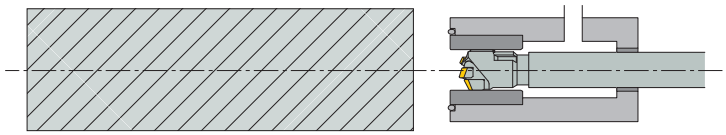
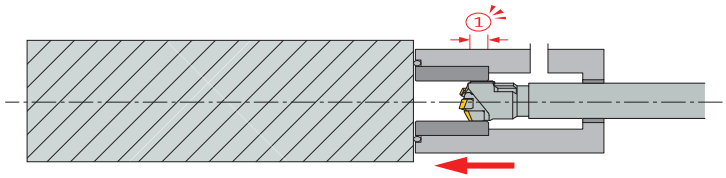
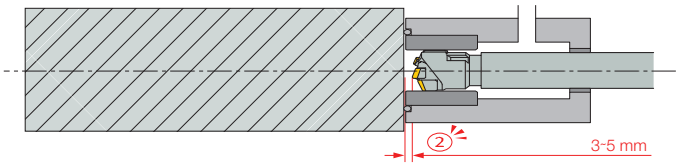
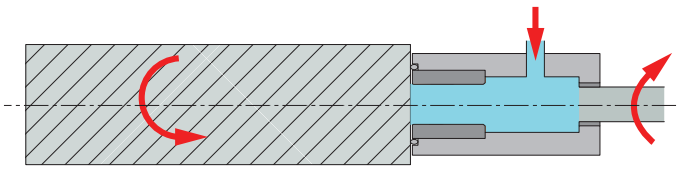
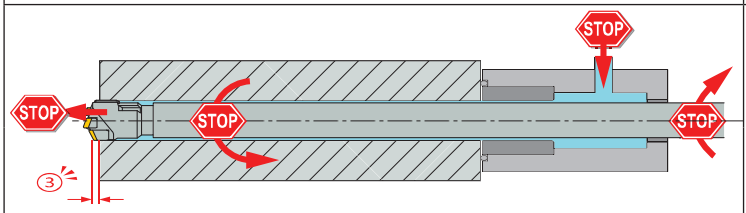
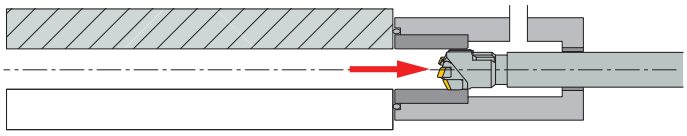
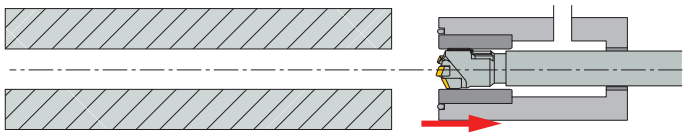


Machine Thrust Force



Technical Information - NC Cycle

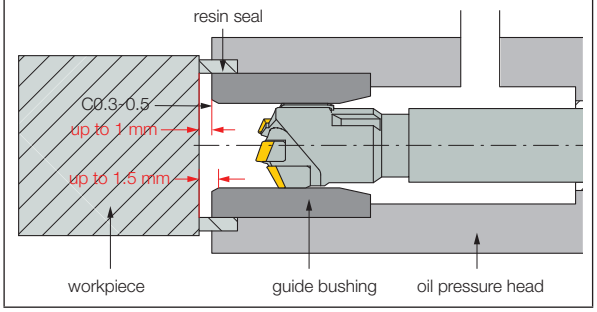
Use the NC cycle as instructed below to optimize tool performance more safely.

	**1 Start NC operation cycle**
	**2 Oil pressure head moves until it touches the workpiece** **① Set the starting point of the main axis of the tool so that the guide pad remains inside the guide bush when the oil pressure head moves forward**
	**3 Move tool workpiece** **② Move the tool 3 to 5mm from the edge of the workpiece** **If the available NC machine can support this approach, the operation process may start from this point**
	**4 Start cutting** • Start coolant supply • Start rotating (tool / workpiece / tool & workpiece) • Start feeding
	**5 Stop cutting** • Stop feeding • Stop rotating (tool / workpiece / tool & workpiece) • Stop coolant supply **③ Stop rotation when the outer tip is at the edge of the workpiece**
	**6 Tool main axis back to starting point**
	**7 Oil pressure head back to starting point**

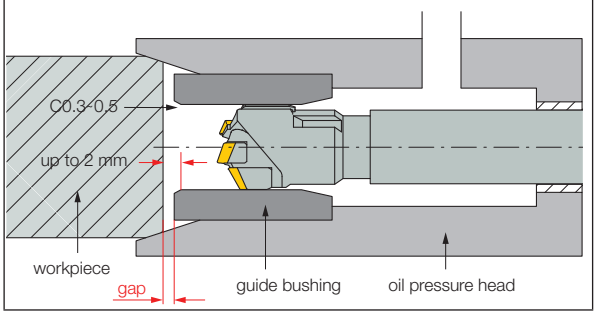
Technical Information - Notes for Guide Bushing Installation

Many of the problems in BTA drilling are caused by incorrect use of the guide bushing.
The shape, type and tolerance greatly affect cutting accuracy and tool life. Please note the following when using one in your application.

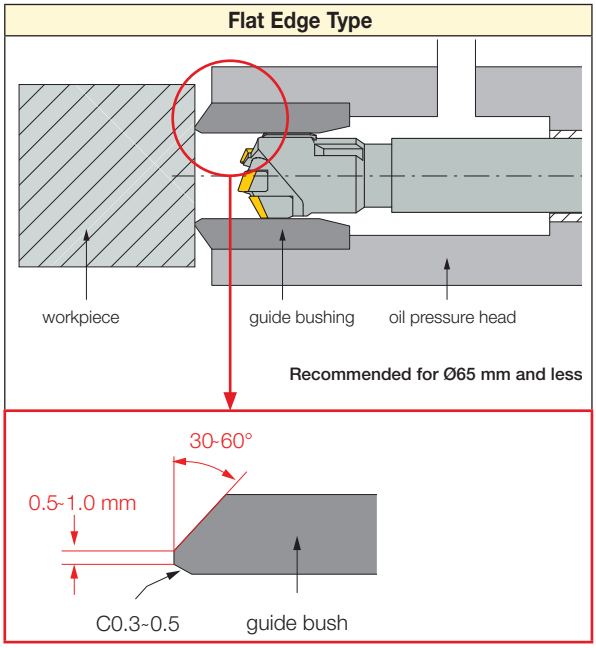
Resin Seal Type



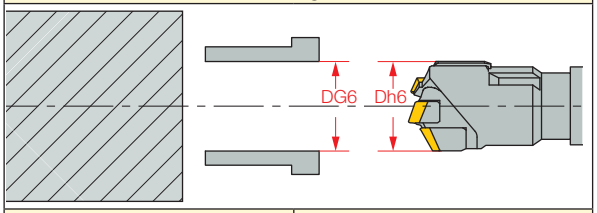
Taper Cone Type



Flat Edge Type



Guide Bushing Tolerance

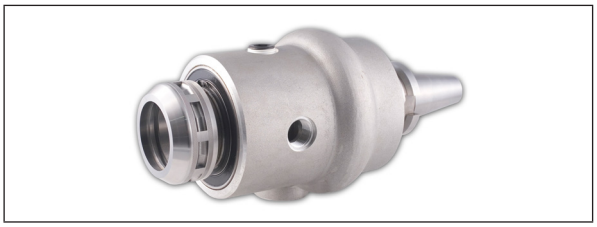


Tool Diameter D (mm)	G6 Tolerance (mm)
8.00 - 10.00	+0.005 ~ +0.014
10.01 - 18.00	+0.006 ~ +0.017
18.01 - 30.00	+0.007 ~ +0.020
30.01 - 50.00	+0.009 ~ +0.025
50.01 - 80.00	+0.010~ +0.029
80.01 - 120.00	+0.012 ~ +0.034
120.01 - 180.00	+0.014 ~ +0.039
180.01 - 245.99	+0.015 ~ +0.044

Deep Hole Drilling Systems

Connection Adapters

Various kinds of rotating and non-rotating drill connectors are available upon request.



Oil Pressure Heads

Oil pressure heads are available on request.

Special Heads

Special form heads for trepanning or any other special contours can be produced on request.

Troubleshooting

Problem	Possible Cause	Solution
The Drill Breaks or Insert Chips	• chip evacuation problems • center misalignment of drill to workpiece	• check that the coolant passages are clear and that the venturi slots are not damaged • check center alignment of drill to workpiece • check workpiece and drill clamping rigidity
Poor Surface Finish	• workpiece or drill clamping rigidity problem • inadequate coolant oil • cutting speed too low	• improve workpiece or drill clamping • check the coolant oil and replace if necessary • increase the cutting speed
Excessive Leakage of the Coolant	• chips block the fluid passages • the drill was incorrectly assembled, or the venturi slots of the internal tube are located in the wrong direction	• clear the chips • check all connections and the direction of the internal tube
Insufficient Coolant Flow at the Cutting Zone, Despite Correct Fluid Supply	• chips block the fluid passages • worn bushing or sealing device • venturi slots are too wide (worn) • internal tube shorter than the external tube	• clear the chips • check the bushing and seal and replace if necessary • replace the internal tube • replace the internal tube to one with a correct length
Chips Jam in the Front end of the Drill	• insufficient coolant flow	• adjust the fluid flow by raising the pressure; check the filter and fluid quality

Coolant

Successful deep hole drilling is achieved by an optimal combination of the tool, the machine and the coolant. Coolant plays an essential role in achieving secure and cost-efficient deep hole drilling operations. Therefore, it is very important to choose the correct type of coolant and use it appropriately.

Coolant

Coolant plays an essential role in lubricating tools, cooling cutting edges, chips and guide pads, as well as evacuating chips when drilling. It also improves tool life, surface finish and cutting accuracy when continuously supplied during the machining process.

1 Lubrication

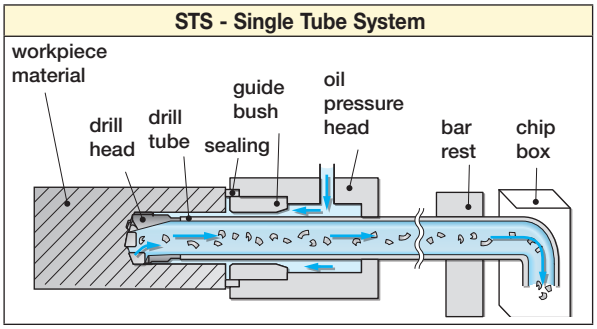
Lubrication of cutting edges and guide pads is necessary in deep hole drilling. For efficient lubrication, it is recommended to use EP (Extreme Pressure) additives which contain sulfur or chlorine.

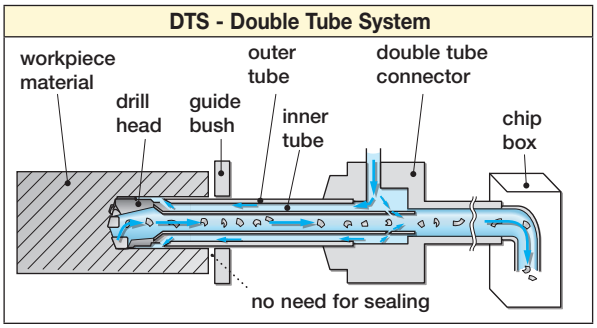
2 Temperature reduction

The ability to cool down the cutting edge and chips depends on such characteristics as thermal conductivity and relative heat. Coolant with good cooling ability increases tool life, but water-soluble coolant is not preferred in deep hole drilling because it reduces effectiveness. If water-soluble coolant is used, the recommended concentration is 10% (dilution rate 1/10) or more.

3 Chip evacuation

Coolant helps push chips through the back end of the boring bar (for STS) or inner tube (for DTS) until the chips are separated from the workpiece in general cutting conditions. The flow and the pressure of coolant are also important in order to control chip evacuation.





Coolant Unit

A coolant unit is also important to obtain the best effect from the coolant.

1 Coolant pressure and volume should be fixed and continuous.

An ideal coolant unit sets the coolant pressure valves and volume while monitoring the condition with gauges. A system that can detect trapped chips by a pressure gauge and the screw pumps with an inverter controller are both recommended.

2 Coolant temperature should be maintained

Coolant is heated by factors, such as:

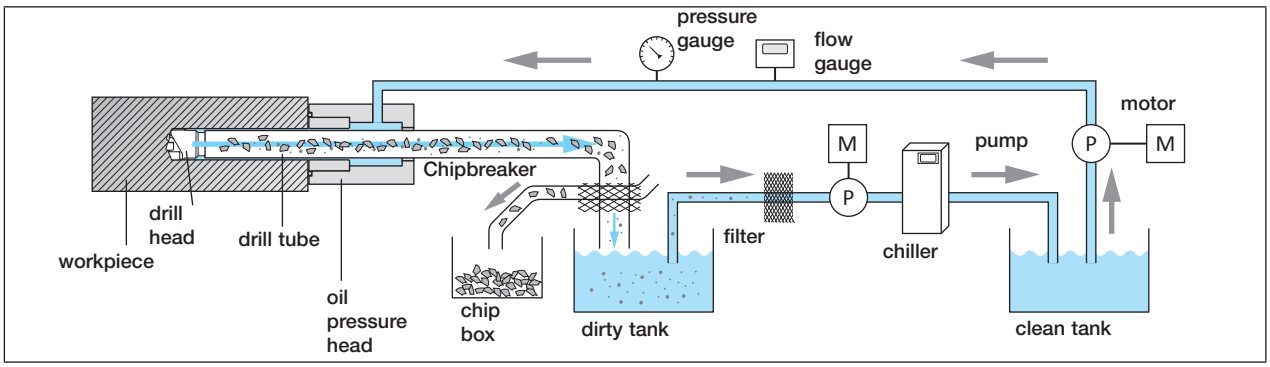
- cutting edge
- friction on guide pad
- contact time of heated chips and coolant
- pump

Maintaining coolant temperature is important to keeping stable cutting conditions, chip formation and cutting accuracy. The temperature should be lower than 40°C (100°F) for EP additives to provide sufficient lubrication. Therefore, the coolant temperature should be kept between 30 - 40°C (90 - 100°F) throughout the cutting operation.

3 Filtering

Unwanted particles are contained in coolant after the cutting operations, thus filtration is necessary to remove them. The filter size should be selected carefully to catch particles but not EP additives. Filter size depends on the coolant, but around 10 - 20 µm is generally suggested. For iron-based workpieces, a magnetic separator is helpful as it decreases the frequency of filter maintenance.

Flow Chart of Coolant in Deep Hole Drilling



GUNDRILLS

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GD-DH, GD-DHL, GDH-MKT 345

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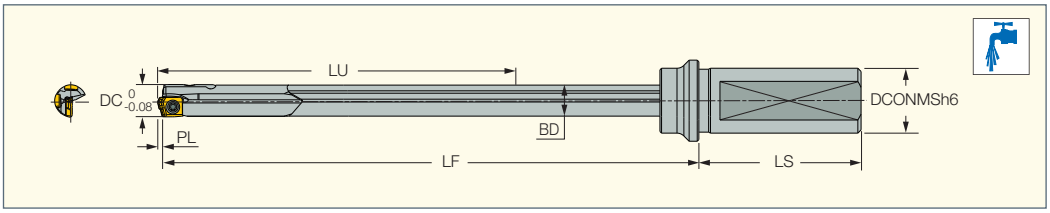
MNSNT 358

Solid Carbide Gundrills 363

TRIDEEP DEEP DRILLING

GD-DH (10.00-11.50)
Gundrills Carrying Indexable Inserts with Single Chip Splitting Cutting Edge and a Wiper for High Hole Surface Quality



Designation	DC	LU	BD	LF	PL	LS	DCONMS	MIID[1]
GD-DH 10.00-15D-M20-06	10.00	159.30	9.60	184.50	1.800	50.0	20.00	ZSGT 06
GD-DH 10.00-20D-M20-06	10.00	211.80	9.60	237.00	1.800	50.0	20.00	ZSGT 06
GD-DH 10.00-25D-M20-06	10.00	264.30	9.60	289.50	1.800	50.0	20.00	ZSGT 06
GD-DH 10.50-15D-M20-06	10.50	166.80	10.00	193.00	1.800	50.0	20.00	ZSGT 06
GD-DH 10.50-20D-M20-06	10.50	221.80	10.00	248.00	1.800	50.0	20.00	ZSGT 06
GD-DH 10.50-25D-M20-06	10.50	276.80	10.00	303.00	1.800	50.0	20.00	ZSGT 06
GD-DH 11.00-15D-M20-06	11.00	181.80	10.60	209.00	1.800	50.0	20.00	ZSGT 06
GD-DH 11.00-20D-M20-06	11.00	241.80	10.60	269.00	1.800	50.0	20.00	ZSGT 06
GD-DH 11.00-25D-M20-06	11.00	301.80	10.60	329.00	1.800	50.0	20.00	ZSGT 06
GD-DH 11.50-15D-M20-06	11.50	181.80	11.10	209.00	1.800	50.0	20.00	ZSGT 06
GD-DH 11.50-20D-M20-06	11.50	241.80	11.10	269.00	1.800	50.0	20.00	ZSGT 06
GD-DH 11.50-25D-M20-06	11.50	301.80	11.10	329.00	1.800	50.0	20.00	ZSGT 06

• Note: gundrills supplied with up to 1650mm length on request. • Inserts and guide pads to be ordered separately (not included with the tools).
• For user guide and cutting conditions, see pages 353-357 • Preventative measures: Do NOT operate the deep hole drill at full speed before engaging the guide hole. Enter the guide hole slowly at a speed of 50 - 100 rpm.
[1] Master insert identification

For inserts, see pages: ZSGT (351)

Spare Parts

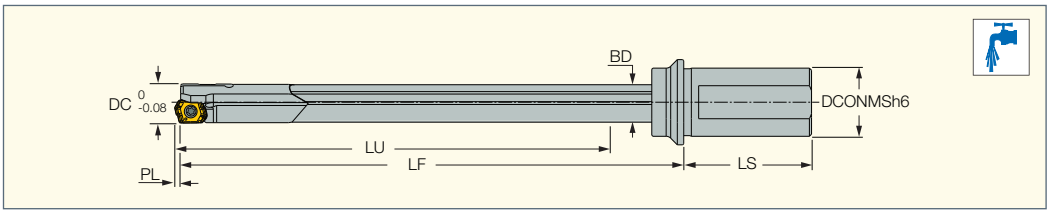
Tool Diameter		Insert			Guide Pad		
Min	Max	Insert	Screw	Wrench	GP X 2pcs	Screw X 2pcs	Wrench
10.00	10.99	ZSGT 060204R-DT	SR-M2.5X0.35L3.8	T-7/5	GPS-04-16-045-DC	CSTB-2	T-6/5
11.00	11.80				GPS-04-16-050-DC		
11.81	11.99	LOGT 060204R-DT	SR 10503833L040				

Recommended tightening torque: SR-M2.5X0.35L3.8=1.1 Nm, SR 10503833L040=1.3 Nm, CSTB-2=0.6 Nm

TRIDEEP DEEP DRILLING

GD-DH (12-13.5)

Gundrills Carrying Indexable Inserts with 2 Chip Splitting Cutting Edges and a Wiper for High Hole Surface Quality



Designation	DC	LF	PL	LU	DCONMS	BD	LS	MIID[1]
GD-DH 12.00-15D-M20-06	12.00	225.00	1.800	196.80	20.00	11.50	50.0	LOGT 060204R-DT
GD-DH 12.00-20D-M20-06	12.00	290.00	1.800	251.80	20.00	11.50	50.0	LOGT 060204R-DT
GD-DH 12.00-25D-M20-06	12.00	355.00	1.800	314.80	20.00	11.50	50.0	LOGT 060204R-DT
GD-DH 12.50-15D-M20-06	12.50	226.00	1.800	196.80	20.00	12.00	50.0	LOGT 060204R-DT
GD-DH 12.50-20D-M20-06	12.50	291.00	1.800	261.80	20.00	12.00	50.0	LOGT 060204R-DT
GD-DH 12.50-25D-M20-06	12.50	356.00	1.800	326.80	20.00	12.00	50.0	LOGT 060204R-DT
GD-DH 13.00-15D-M25-06	13.00	245.00	1.800	204.80	25.00	12.50	56.0	LOGT 060204R-DT
GD-DH 13.00-20D-M25-06	13.00	315.00	1.800	271.80	25.00	12.50	56.0	LOGT 060204R-DT
GD-DH 13.00-25D-M25-06	13.00	385.00	1.800	339.80	25.00	12.50	56.0	LOGT 060204R-DT
GD-DH 13.50-15D-M25-06	13.50	245.00	1.800	211.80	25.00	13.00	56.0	LOGT 060204R-DT
GD-DH 13.50-20D-M25-06	13.50	315.00	1.800	281.80	25.00	13.00	56.0	LOGT 060204R-DT

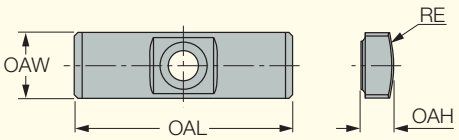
- Note: gundrills can be supplied with up to 2400mm length on request.
- Inserts and guide pads to be ordered separately (not included with the tools).
- For user guide and cutting conditions, see pages 353-357
- Preventative measures: Do NOT operate the deep hole drill at full speed before engaging the guide hole. Enter the guide hole slowly at a speed of 50 - 100 rpm.

[1] Master insert identification

For inserts, see pages: LOGT (351)

GPS

Deep Drilling Solid Carbide Guide Pads

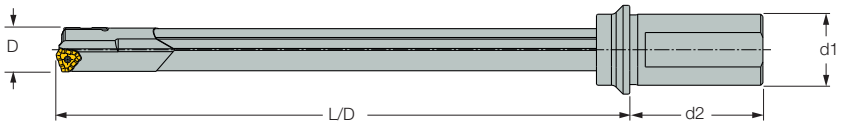


Designation	Dimensions				Tough ↔ Hard	
	OAW	RE	OAL	OAH	IC928	IC908
GPS-04-16-055-DC	4.0	5.50	16.00	2.0	•	•

Spare Parts

Diameter Range	Insert	Insert Clamping Screw	Key	N·m	Solid Carbide Guide Pad	Guide Pad Clamping Screw	Key	N·m
12.00-13.99	LOGT 060204R-DT	SR 10503833L040	T-7F	0.9	GPS-04-16-055-DC	TS 20043I/HG-P M2X0.4	Wrench IP-6/5	0.65

Universal Marking for Deep Drilling Tools



D.**** **L/D**** **d**** **X**** **XX**

D L/D d1 d2 driver type

******* [Lot no.]

Example:

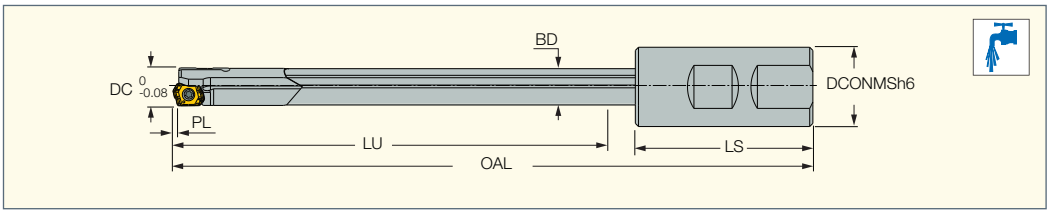
Metric: D14.00 L/D15 d25X56M

Inch: D0.551 L/D15 d0.984X2.205M

TRIDEEP DEEP DRILLING

GD-DHL (12-13)

Gundrills Carrying Indexable Inserts with 2 Chip Splitting Cutting Edges and a Wiper for High Hole Surface Quality



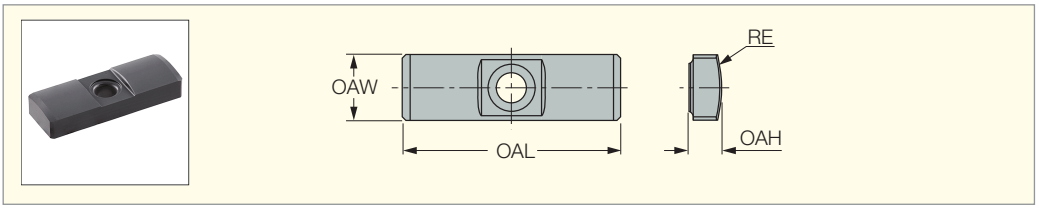
Designation	DC	LU	OAL	DCONMS	BD	PL	LS	MIID[1]
GD-DHL 12.00X800-U03	12.00	713.80	801.80	19.05	11.50	1.80	70.0	LOGT 060204R..
GD-DHL 12.00X800-22	12.00	733.80	801.80	20.00	11.50	1.80	50.0	LOGT 060204R..
GD-DHL 12.00X800-34	12.00	733.80	801.80	20.00	11.50	1.80	50.0	LOGT 060204R..
GD-DHL 12.00X1000-U03	12.00	913.80	1001.80	19.05	11.50	1.80	70.0	LOGT 060204R..
GD-DHL 12.00X1000-22	12.00	933.80	1001.80	20.00	11.50	1.80	50.0	LOGT 060204R..
GD-DHL 12.00X1000-34	12.00	933.80	1001.80	20.00	11.50	1.80	50.0	LOGT 060204R..
GD-DHL 12.00X1650-U03	12.00	1563.80	1651.80	19.05	11.50	1.80	70.0	LOGT 060204R..
GD-DHL 12.00X1650-22	12.00	1583.80	1651.80	20.00	11.50	1.80	50.0	LOGT 060204R..
GD-DHL 12.00X1650-34	12.00	1583.80	1651.80	20.00	11.50	1.80	50.0	LOGT 060204R..
GD-DHL 13.00X800-U04	13.00	711.80	801.80	25.40	12.50	1.80	70.0	LOGT 060204R..
GD-DHL 13.00X800-23	13.00	725.80	801.80	25.00	12.50	1.80	56.0	LOGT 060204R..
GD-DHL 13.00X800-35	13.00	725.80	801.80	25.00	12.50	1.80	56.0	LOGT 060204R..
GD-DHL 13.00X1000-U04	13.00	911.80	1001.80	25.40	12.50	1.80	70.0	LOGT 060204R..
GD-DHL 13.00X1000-23	13.00	925.80	1001.80	25.00	12.50	1.80	56.0	LOGT 060204R..
GD-DHL 13.00X1000-35	13.00	925.80	1001.80	25.00	12.50	1.80	56.0	LOGT 060204R..
GD-DHL 13.00X1650-U04	13.00	1561.80	1651.80	25.40	12.50	1.80	70.0	LOGT 060204R..
GD-DHL 13.00X1650-23	13.00	1575.80	1651.80	25.00	12.50	1.80	56.0	LOGT 060204R..
GD-DHL 13.00X1650-35	13.00	1575.80	1651.80	25.00	12.50	1.80	56.0	LOGT 060204R..

• Note: gundrills can be supplied with up to 2400mm length on request. • Inserts and guide pads to be ordered separately (not included with the tools).
• For user guide and cutting conditions, see pages 353-357 • Preventative measures: Do NOT operate the deep hole drill at full speed before engaging the guide hole. Enter the guide hole slowly at a speed of 50 - 100 rpm.
[1] Master insert identification

For inserts, see pages: LOGT (351)

GPS

Deep Drilling Solid Carbide Guide Pads

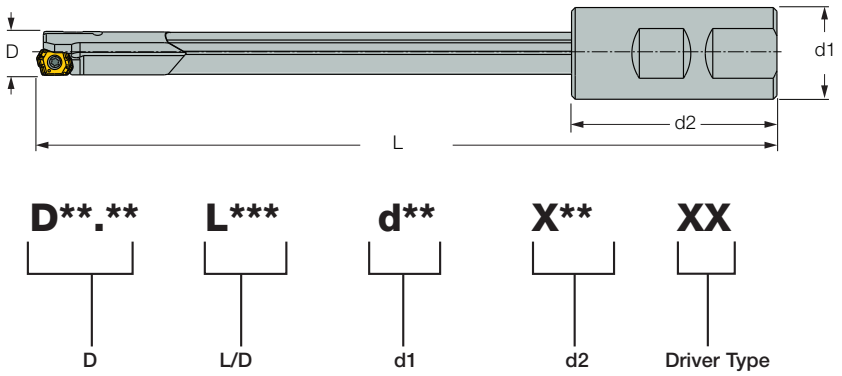


Designation	Dimensions				Tough ↔ Hard	
	OAW	RE	OAL	OAH	IC928	IC908
GPS-04-16-055-DC	4.0	5.50	16.00	2.0	•	•

Spare Parts

Diameter Range	Insert	Insert Clamping Screw	Key	N·m	Solid Carbide Guide Pad	Guide Pad Clamping Screw	Key	N·m
12.00-13.99	LOGT 060204R-DT	SR 10503833L040	T-7F	0.9	GPS-04-16-055-DC	TS 20043I/HG-P M2X0.4	Wrench IP-6/5	0.65

Universal Marking for Deep Drilling Tools



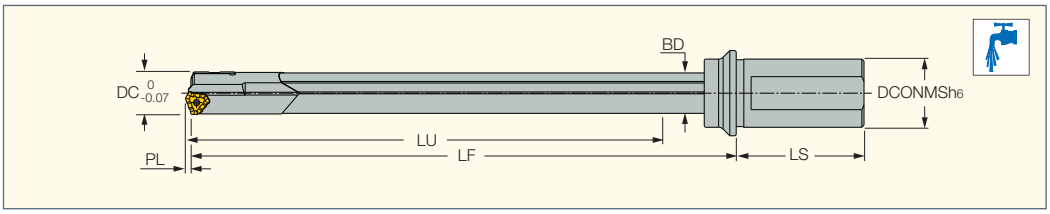
Example:
Metric: D14.00 L1000 d25X56WD
Inch: D0.551 L39.37 d0.984X2.205WD

******* [Lot no.]

TRIDEEP DEEP DRILLING

GD-DH

Gundrills Carrying Triangular Inserts with 3 Chip Splitting Cutting Edges and a Wiper for High Hole Surface Quality



Designation	DC	LU	DCONMS	BD	LF	PL	LS	MIID(1)
GD-DH 14.00-15D-M25-07	14.00	227.00	25.00	13.50	261.00	1.95	56.0	TOGT 070304..
GD-DH 14.00-20D-M25-07	14.00	302.00	25.00	13.50	336.00	1.95	56.0	TOGT 070304..
GD-DH 14.00-25D-M25-07	14.00	377.00	25.00	13.50	411.00	1.95	56.0	TOGT 070304..
GD-DH 14.50-15D-M25-07	14.50	227.00	25.00	14.00	262.00	1.95	56.0	TOGT 070304..
GD-DH 14.50-20D-M25-07	14.50	302.00	25.00	14.00	337.00	1.95	56.0	TOGT 070304..
GD-DH 14.50-25D-M25-07	14.50	377.00	25.00	14.00	412.00	1.95	56.0	TOGT 070304..
GD-DH 15.00-15D-M25-07	15.00	242.00	25.00	14.50	278.00	1.95	56.0	TOGT 070304..
GD-DH 15.00-20D-M25-07	15.00	322.00	25.00	14.50	358.00	1.95	56.0	TOGT 070304..
GD-DH 15.00-25D-M25-07	15.00	402.00	25.00	14.50	438.00	1.95	56.0	TOGT 070304..
GD-DH 16.00-10D-M25-08-N	16.00	172.20	25.00	15.50	209.00	2.20	56.0	TOGT 080305..
GD-DH 16.00-15D-M25-08-N	16.00	257.20	25.00	15.50	294.00	2.20	56.0	TOGT 080305..
GD-DH 16.00-25D-M25-08-N	16.00	427.20	25.00	15.50	464.00	2.20	56.0	TOGT 080305..
GD-DH 16.50-10D-M25-08-N	16.50	172.20	25.00	15.50	209.00	2.20	56.0	TOGT 080305..
GD-DH 16.50-15D-M25-08-N	16.50	257.20	25.00	15.50	294.00	2.20	56.0	TOGT 080305..
GD-DH 16.50-25D-M25-08-N	16.50	427.20	25.00	15.50	464.00	2.20	56.0	TOGT 080305..
GD-DH 17.00-10D-M25-08-N	17.00	182.20	25.00	16.20	220.00	2.20	56.0	TOGT 080305..
GD-DH 17.00-15D-M25-08-N	17.00	272.20	25.00	16.20	310.00	2.20	56.0	TOGT 080305..
GD-DH 17.00-25D-M25-08-N	17.00	452.20	25.00	16.20	490.00	2.20	56.0	TOGT 080305..
GD-DH 17.50-15D-M25-08-N	17.50	272.20	25.00	16.20	310.00	2.20	56.0	TOGT 080305..
GD-DH 17.50-25D-M25-08-N	17.50	452.20	25.00	16.20	490.00	2.20	56.0	TOGT 080305..
GD-DH 18.00-10D-M25-08-N	18.00	193.00	25.00	16.20	232.00	2.20	56.0	TOGT 080305..
GD-DH 18.00-15D-M25-08-N	18.00	288.00	25.00	17.20	327.00	2.20	56.0	TOGT 080305..
GD-DH 18.00-25D-M25-08-N	18.00	478.00	25.00	17.20	517.00	2.20	56.0	TOGT 080305..
GD-DH 18.50-15D-M25-09	18.50	288.00	25.00	17.20	327.00	3.00	56.0	TOGT 090305..
GD-DH 18.50-25D-M25-09	18.50	478.00	25.00	17.20	517.00	3.00	56.0	TOGT 090305..
GD-DH 19.00-10D-M25-09	19.00	203.00	25.00	18.20	243.00	3.00	56.0	TOGT 090305..
GD-DH 19.00-15D-M25-09	19.00	303.00	25.00	18.20	343.00	3.00	56.0	TOGT 090305..
GD-DH 19.00-25D-M25-09	19.00	503.00	25.00	18.20	543.00	3.00	56.0	TOGT 090305..
GD-DH 19.50-15D-M25-09	19.50	303.00	25.00	18.20	343.00	3.00	56.0	TOGT 090305..
GD-DH 19.50-25D-M25-09	19.50	503.00	25.00	18.20	543.00	3.00	56.0	TOGT 090305..
GD-DH 20.00-10D-M32-09	20.00	213.20	32.00	19.00	255.00	3.00	60.0	TOGT 090305..
GD-DH 20.00-15D-M32-09	20.00	318.20	32.00	19.00	360.00	3.00	60.0	TOGT 090305..
GD-DH 20.00-25D-M32-09	20.00	528.20	32.00	19.00	570.00	3.00	60.0	TOGT 090305..
GD-DH 21.00-10D-M32-10	21.00	223.20	32.00	20.00	266.00	3.20	60.0	TOGT 100305..
GD-DH 21.00-15D-M32-10	21.00	333.20	32.00	20.00	376.00	3.20	60.0	TOGT 100305..
GD-DH 21.00-25D-M32-10	21.00	553.20	32.00	20.00	596.00	3.20	60.0	TOGT 100305..
GD-DH 22.00-10D-M32-11	22.00	233.40	32.00	21.00	278.00	3.40	60.0	TOGT 110405..
GD-DH 22.00-15D-M32-11	22.00	348.40	32.00	21.00	393.00	3.40	60.0	TOGT 110405..
GD-DH 22.00-25D-M32-11	22.00	578.40	32.00	21.00	623.00	3.40	60.0	TOGT 110405..
GD-DH 23.00-10D-M32-11	23.00	243.40	32.00	22.00	289.00	3.40	60.0	TOGT 110405..
GD-DH 23.00-15D-M32-11	23.00	363.40	32.00	22.00	409.00	3.40	60.0	TOGT 110405..
GD-DH 23.00-25D-M32-11	23.00	603.40	32.00	22.00	649.00	3.40	60.0	TOGT 110405..
GD-DH 24.00-10D-M32-11	24.00	253.40	32.00	23.00	301.00	3.40	60.0	TOGT 110405..
GD-DH 24.00-15D-M32-11	24.00	378.40	32.00	23.00	426.00	3.40	60.0	TOGT 110405..
GD-DH 24.00-25D-M32-11	24.00	628.40	32.00	23.00	676.00	3.40	60.0	TOGT 110405..
GD-DH 25.00-10D-M32-11	25.00	263.60	32.00	24.00	312.00	3.40	60.0	TOGT 110405..
GD-DH 25.00-15D-M32-11	25.00	393.60	32.00	24.00	442.00	3.40	60.0	TOGT 110405..
GD-DH 25.00-25D-M32-11	25.00	653.60	32.00	24.00	702.00	3.40	60.0	TOGT 110405..
GD-DH 26.00-10D-M40-12	26.00	273.60	40.00	25.00	324.00	3.60	70.0	TOGT 120405..
GD-DH 26.00-15D-M40-12	26.00	408.60	40.00	25.00	459.00	3.60	70.0	TOGT 120405..
GD-DH 26.00-25D-M40-12	26.00	678.60	40.00	25.00	729.00	3.60	70.0	TOGT 120405..
GD-DH 27.00-10D-M40-12	27.00	283.60	40.00	26.00	335.00	3.60	70.0	TOGT 120405..
GD-DH 27.00-15D-M40-12	27.00	423.60	40.00	26.00	475.00	3.60	70.0	TOGT 120405..
GD-DH 27.00-25D-M40-12	27.00	703.60	40.00	26.00	755.00	3.60	70.0	TOGT 120405..
GD-DH 28.00-10D-M40-12	28.00	283.60	40.00	27.00	337.00	3.60	70.0	TOGT 120405..
GD-DH 28.00-15D-M40-12	28.00	423.60	40.00	27.00	477.00	3.60	70.0	TOGT 120405..
GD-DH 28.00-25D-M40-12	28.00	703.60	40.00	27.00	757.00	3.60	70.0	TOGT 120405..
GD-DH 29.00-10D-M40-13	29.00	294.57	40.00	27.00	360.00	4.57	69.0	TOGT 130408..
GD-DH 29.00-20D-M40-13	29.00	584.57	40.00	27.00	650.00	4.57	69.0	TOGT 130408..
GD-DH 30.00-10D-M40-13	30.00	314.57	40.00	29.00	383.00	4.57	69.0	TOGT 130408..
GD-DH 30.00-20D-M40-13	30.00	624.57	40.00	29.00	693.00	4.57	69.0	TOGT 130408..
GD-DH 31.00-10D-M40-13	31.00	314.57	40.00	29.00	383.00	4.57	69.0	TOGT 130408..
GD-DH 31.00-20D-M40-13	31.00	624.57	40.00	29.00	693.00	4.57	69.0	TOGT 130408..
GD-DH 32.00-10D-M40-13	32.00	324.57	40.00	30.00	395.00	4.57	69.0	TOGT 130408..
GD-DH 32.00-20D-M40-13	32.00	644.57	40.00	30.00	715.00	4.57	69.0	TOGT 130408..

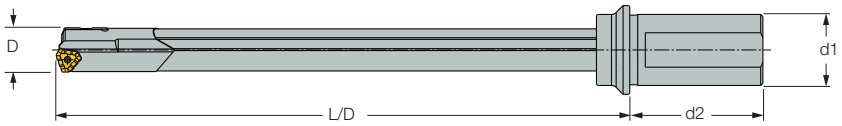
• Note: gundrills can be supplied with up to 2400mm length on request. • Inserts and guide pads to be ordered separately (not included with the tools).

• For user guide and cutting conditions, see pages 353-357 • Preventative measures: Do NOT operate the deep hole drill at full speed before engaging the guide hole. Enter the guide hole slowly at a speed of 50 - 100 rpm.

(1) Master insert identification

For inserts, see pages: TOGT-DT (241) • TOGT-GF (241)

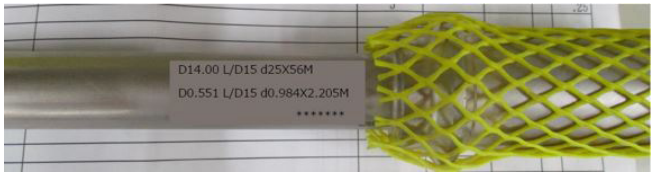
Universal Marking for Deep Drilling Tools



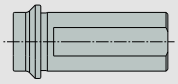
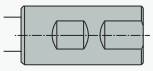
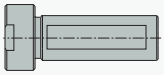
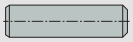
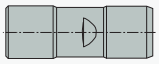
D.**** **L/D**** **d**** **X**** **XX**

D L/D d1 d2 driver type

******* [Lot no.]



Driver Type

M	machining	M20,M25,M32,M40,U19.05,U25.4,U31.75,U38.1,FU31.75,FU38.1	
WD	weldon	22,23,24,25,26,99	
WN	whistle notch	U03,U04,U05,U06,34,35,36	
F	flat	FD50C25,FD37C25,C25,FM32,FM40	
C	cylindrical	95	
CCL	cylindrical clamping	57	

Example:
Metric: D14.00 L/D15 d25X56M
Inch: D0.551 L/D15 d0.984X2.205M
****

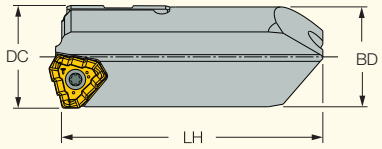
Spare Parts

Diameter Range	Insert	Insert Clamping Screw	Key	N*m	Solid Carbide Guide Pad	Guide Pad Clamping Screw	Key
14.00-15.99	TOGT 070304-DT/GF	SR 14-560/S M2.5X0.45	T-8/5	1.2	GPS-05-18-060-DC	SR 34-508 M2.2X0.45	T-7/5
16.00-18.00	TOGT 080305-DT/GF		T-8/5	1.2	GPS-05-18-075-DC		
18.01-20.00	TOGT 090305-DT/GF		T-8/5	1.2	GPS-06-20-085-DC		
20.01-21.00	TOGT 100305-DT/GF	SR 34-506 M3X0.5	T-9/5	2.0	GPS-06-20-085-DC		
21.01-21.99	TOGT 100305-DT/GF				GPS-06-20-100-DC		
22.00-25.00	TOGT 110405-DT/GF	SR 14-571/S M3.5X0.6	T-10/5	4.8	GPS-06-20-100-DC		
25.01-28.00	TOGT 120405-DT/GF	SR 14-506 M4X0.7	T-15/5	4.8	GPS-06-20-120-DC		
28.01-29.99	TOGT 130408-DT/GF	SR 16-212/L10 M5X0.8	T20/5	10	GPS-06-20-120-DC	SR 34-508 M2.2X0.45	T-7/5
30.00-32.00	TOGT 130408-DT/GF				GPS-07-20-120-DC	SR 11201753-4	T-9/5

TRIDEEP DEEP DRILLING

GDH-MKT

Gundrill Heads Carrying Triangular Inserts with 3 Chip Splitting Cutting Edges and a Wiper for High Hole Surface Quality



Designation	DC	BD	LH
GDH-14.00 MKT	14.00	13.70	50.1
GDH-14.50 MKT	14.50	14.20	50.1
GDH-15.00 MKT	15.00	14.70	50.1
GDH-16.00 MKT	16.00	15.70	50.2
GDH-16.50 MKT	16.50	16.00	50.2
GDH-17.00 MKT	17.00	16.50	50.2
GDH-17.50 MKT	17.50	17.20	50.2
GDH-18.00 MKT	18.00	17.40	50.2
GDH-18.50 MKT	18.50	18.00	50.3
GDH-19.00 MKT	19.00	18.40	50.3
GDH-19.50 MKT	19.50	18.90	50.3
GDH-20.00 MKT	20.00	19.40	50.3
GDH-21.00 MKT	21.00	20.40	50.3
GDH-22.00 MKT	22.00	21.70	50.3
GDH-23.00 MKT	23.00	22.40	50.3
GDH-24.00 MKT	24.00	23.40	50.3
GDH-25.00 MKT	25.00	24.40	50.3
GDH-26.00 MKT	26.00	25.40	50.3
GDH-27.00 MKT	27.00	26.40	50.3
GDH-28.00 MKT	28.00	27.40	50.3

• Inserts and guide pads to be ordered separately (not included with the tools). • For user guide and cutting conditions, see pages 353-357

For inserts, see pages: LOGT (351) • TOGT-DT (241) • TOGT-GF (241)

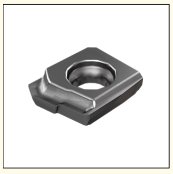
Spare Parts

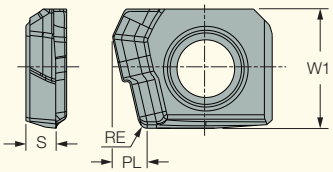
Gundrill Head	Solid Carbide Guide Pad	Guide Pad Screw		Guide Pad Key	Insert Screw		Insert Key
Description	Description	Description	Qty.	Description	Description	Qty.	Description
GDH-14.00 MKT	GPS-05-18-060-DC	SR 34-508 M2.2X0.45	2	T-7/5	SR 14-560/S M2.5X0.45	1	T-8/5
GDH-14.50 MKT	GPS-05-18-060-DC	SR 34-508 M2.2X0.45	2	T-7/5	SR 14-560/S M2.5X0.45	1	T-8/5
GDH-15.00 MKT	GPS-05-18-060-DC	SR 34-508 M2.2X0.45	2	T-7/5	SR 14-560/S M2.5X0.45	1	T-8/5
GDH-16.00 MKT	GPS-05-18-075-DC	SR 34-508 M2.2X0.45	2	T-7/5	SR 14-560/S M2.5X0.45	1	T-8/5
GDH-16.50 MKT	GPS-05-18-075-DC	SR 34-508 M2.2X0.45	2	T-7/5	SR 14-560/S M2.5X0.45	1	T-8/5
GDH-17.00 MKT	GPS-05-18-075-DC	SR 34-508 M2.2X0.45	2	T-7/5	SR 14-560/S M2.5X0.45	1	T-8/5
GDH-17.50 MKT	GPS-05-18-075-DC	SR 34-508 M2.2X0.45	2	T-7/5	SR 14-560/S M2.5X0.45	1	T-8/5
GDH-18.00 MKT	GPS-05-18-075-DC	SR 34-508 M2.2X0.45	2	T-7/5	SR 14-560/S M2.5X0.45	1	T-8/5
GDH-18.50 MKT	GPS-06-20-085-DC	SR 34-508 M2.2X0.45	2	T-7/5	SR 14-560/S M2.5X0.45	1	T-8/5
GDH-19.00 MKT	GPS-06-20-085-DC	SR 34-508 M2.2X0.45	2	T-7/5	SR 14-560/S M2.5X0.45	1	T-8/5
GDH-19.50 MKT	GPS-06-20-085-DC	SR 34-508 M2.2X0.45	2	T-7/5	SR 14-560/S M2.5X0.45	1	T-8/5
GDH-20.00 MKT	GPS-06-20-085-DC	SR 34-508 M2.2X0.45	2	T-7/5	SR 34-506 M3X0.5	1	T-9/5
GDH-21.00 MKT	GPS-06-20-100-DC	SR 34-508 M2.2X0.45	2	T-7/5	SR 34-506 M3X0.5	1	T-9/5
GDH-22.00 MKT	GPS-06-20-100-DC	SR 34-508 M2.2X0.45	2	T-7/5	SR 14-571/S M3.5X0.6	1	T-10/5
GDH-22.50 MKT	GPS-06-20-100-DC	SR 34-508 M2.2X0.45	2	T-7/5	SR 14-571/S M3.5X0.6	1	T-10/5
GDH-23.00 MKT	GPS-06-20-100-DC	SR 34-508 M2.2X0.45	2	T-7/5	SR 14-571/S M3.5X0.6	1	T-10/5
GDH-23.50 MKT	GPS-06-20-100-DC	SR 34-508 M2.2X0.45	2	T-7/5	SR 14-571/S M3.5X0.6	1	T-10/5
GDH-24.00 MKT	GPS-06-20-100-DC	SR 34-508 M2.2X0.45	2	T-7/5	SR 14-571/S M3.5X0.6	1	T-10/5
GDH-25.00 MKT	GPS-06-20-120-DC	SR 34-508 M2.2X0.45	2	T-7/5	SR 14-571/S M3.5X0.6	1	T-10/5
GDH-26.00 MKT	GPS-06-20-120-DC	SR 34-508 M2.2X0.45	2	T-7/5	SR 14-506 M4X0.7	1	T-15/5
GDH-27.00 MKT	GPS-06-20-120-DC	SR 34-508 M2.2X0.45	2	T-7/5	SR 14-506 M4X0.7	1	T-15/5
GDH-28.00 MKT	GPS-06-20-120-DC	SR 34-508 M2.2X0.45	2	T-7/5	SR 14-506 M4X0.7	1	T-15/5

TRIDEEP DEEP DRILLING

ZSGT

Deep Drilling Inserts with Single Chip Splitting Cutting Edge and a Wiper





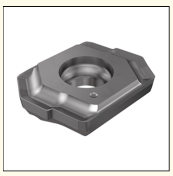
Designation	Dimensions W1	RE	PL	S	IC948
ZSGT 060204R-DT	6.00	0.40	1.800	1.50	●

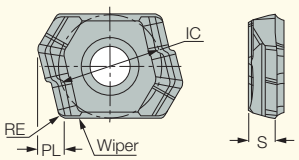
For tools, see pages: GD-DH (10.00-11.50) (345)

TRIDEEP DEEP DRILLING

LOGT

Deep Drilling Inserts with 2 Chip Splitting Cutting Edges, Positive Rake Chipbreaker and a Wiper





Designation	Dimensions IC	RE	PL	S	Tough ↔ Hard IC908	IC948
LOGT 060204R-DT	7.00	0.40	1.80	2.00	●	●

For tools, see pages: GD-DH (12-13.5) (346) • GD-DHL (12-13) (347) • GDH-MKT (350)

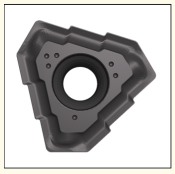
Spare Parts

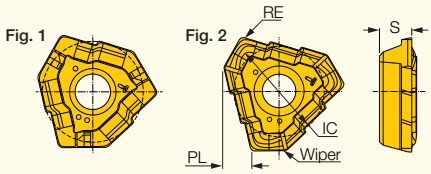
Designation	Insert screw	Insert key	N·m
LOGT 060204R-DT	SR 10503833L040	T-7F	0.9

TRIDEEP DEEP DRILLING

TOGT-DT

Deep Drilling Inserts with 3 Chip Splitting Cutting Edges, a Positive Rake Chipbreaker and a Wiper





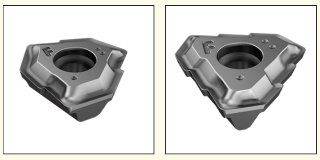
Designation	Dimensions IC	RE	PL	S	Fig.	Tough ↔ Hard IC08	IC908	IC948
TOGT 070304-DT	7.69	0.40	1.95	2.30	1		●	●
TOGT 070304-DT-P	7.69	0.40	1.95	2.30	1	●		
TOGT 080305-DT	8.55	0.50	2.20	2.80	1		●	●
TOGT 080305-DT-P	8.55	0.50	2.20	2.80	1	●		
TOGT 090305-DT	8.32	0.50	3.00	3.00	2		●	●
TOGT 090305-DT-P	8.32	0.50	3.00	3.00	2	●		
TOGT 100305-DT	9.23	0.50	3.20	3.30	2		●	●
TOGT 100305-DT-P	9.23	0.50	3.20	3.30	2	●		
TOGT 110405-DT	10.40	0.50	3.40	3.80	2		●	●
TOGT 110405-DT-P	10.40	0.50	3.40	3.80	2	●		
TOGT 120405-DT	11.59	0.50	3.60	4.30	2		●	●
TOGT 120405-DT-P	11.59	0.50	3.60	4.30	2	●		
TOGT 130408-DT	12.85	0.80	4.57	4.76	2		●	
TOGT 130408-DT-P	12.85	0.80	4.57	4.76	2	●		
TOGT 140510-DT	16.85	1.00	5.43	5.26	2		●	

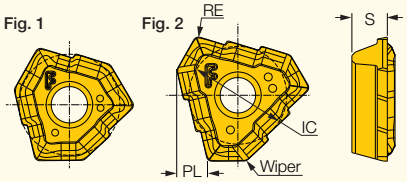
For tools, see pages: DDD-EF-FT (240) • DSD-EF-FT (239) • DSD-IF-FT (239) • GD-DH (348) • GDH-MKT (350)

TRIDEEP DEEP DRILLING

TOGT-GF

Deep Drilling Inserts with 3 Chip Splitting Cutting Edges, a Positive Rake Chipbreaker and a Wiper

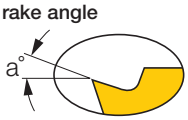




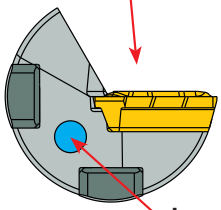
Designation	Dimensions IC	RE	PL	S	Fig.	IC908
TOGT 070304-GF	7.69	0.40	1.95	2.30	1	●
TOGT 080305-GF	8.55	0.50	2.20	2.80	1	●
TOGT 090305-GF	8.32	0.50	3.00	3.00	2	●
TOGT 100305-GF	9.23	0.50	3.20	3.30	2	●
TOGT 110405-GF	10.40	0.50	3.40	3.80	2	●
TOGT 120405-GF	11.59	0.50	3.60	4.30	2	●
TOGT 130408-GF	12.85	0.80	4.57	4.76	2	●

For tools, see pages: DDD-EF-FT (240) • DSD-EF-FT (239) • DSD-IF-FT (239) • GD-DH (348) • GDH-MKT (350)

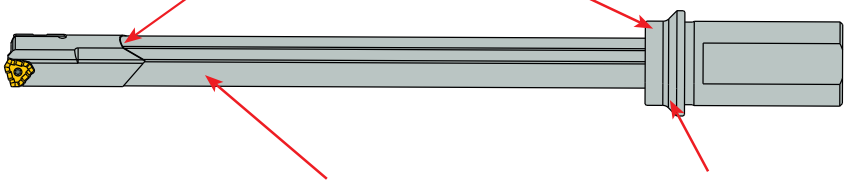
Chipbreaker Appearances

		GF	DT
1	rake angle 	a°=25°	a°=20°
2	ID mark	F	T

Wide Flute Angle
- Smooth chip evacuation



Brazed Body



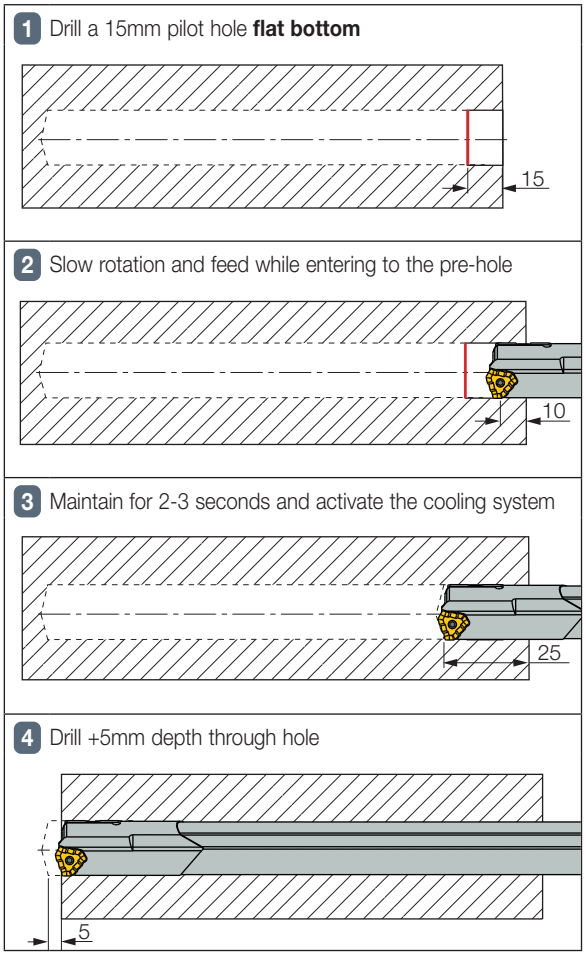
Large Oil Hole
- efficient lubrication
- longer tool life for inserts and guide pads

Steel Body Tool
- extremely high rigidity
- simple direct mounting setup

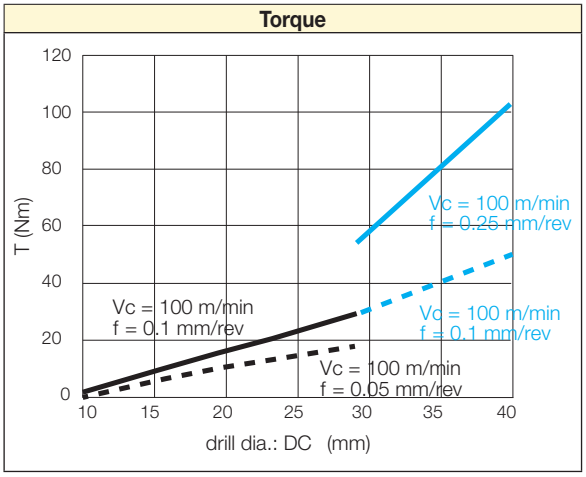
Flange
- superior rigidity for higher speeds and feeds

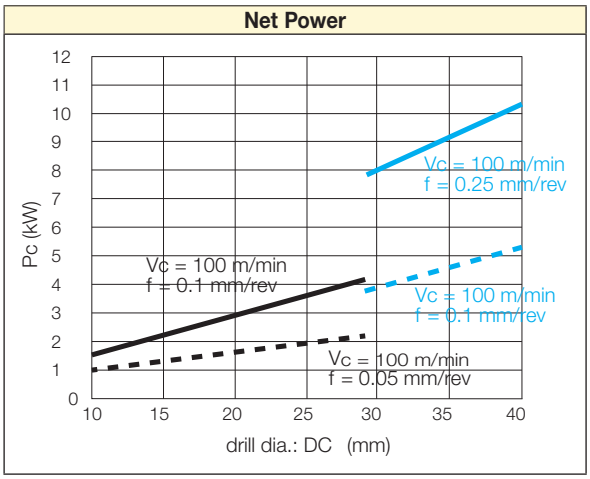
Drilling Process on Machining Centers and Lathe Machines

1 drill a 15mm pilot hole $D^{+0.05}_{+0.03}$ **flat bottom**
2 Set the **TRI-DEEP** drill into the pilot hole (10mm depth). V_c=5-10 m/min f=0.5-1.0mm/rev
3 initial cutting at a 25mm DOC (80% feed rate), verify activated coolant (V_c=100%)
4 in case of through hole, drill the full hole to a depth of +5mm
5 retract with slow rotation (5-10 m/min)

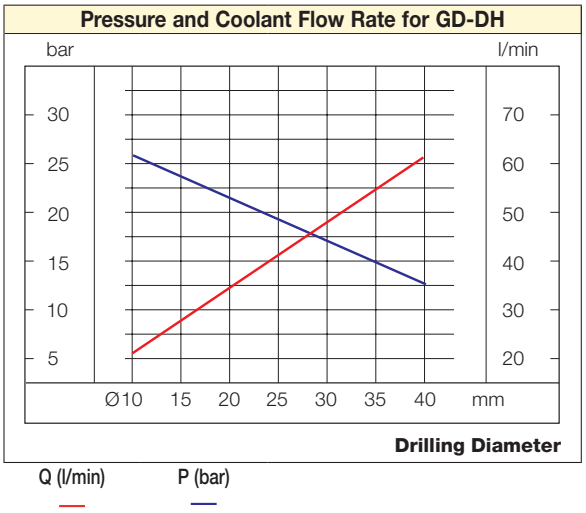


Required Power



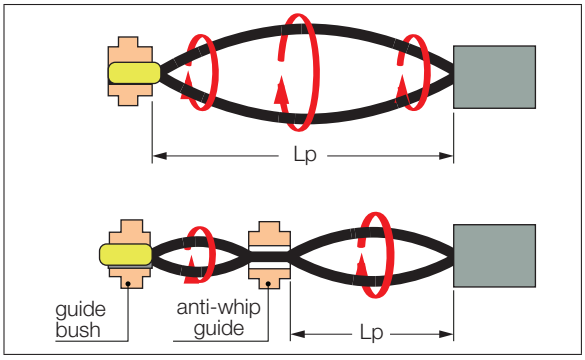


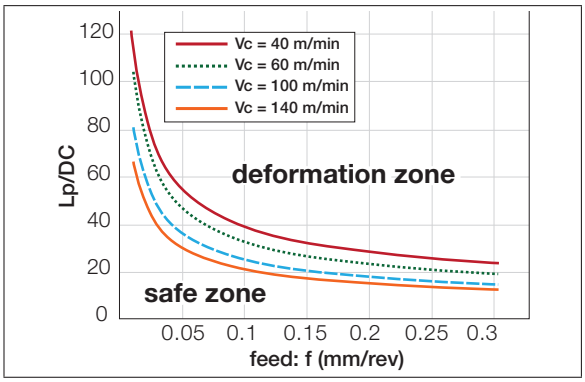
Required Coolant Pressure



Deformation by Centrifugal Force

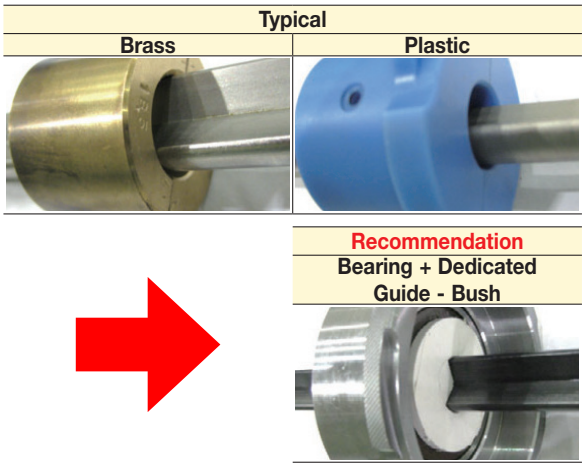
When using gundrill tools for deep drilling, a "whip" phenomenon can occur. This can be predicted based on tool length and cutting speed. If the parameters are in the deformation zone as shown below, cutting speed amending or use of guides for support should be considered to avoid the whip phenomenon.





Recommended Support Guide Shape

A support guide may be needed to assure a stable drilling process. The use of a dedicated shaped guide bush is recommended.



Cutting Conditions for GD-DH (10.00-11.50)

ISO	Material		Condition	Tensile Strength [N/mm²]	Hardness HB	Material Group No.(1)	Cutting Speed V_c m/min	ZSGT 06 Feed [mm/rev]
P	non-alloy steel and cast steel, free cutting steel	<0.25% C	annealed	420	125	1	80-140	0.05-0.08
		≥0.25% C	annealed	650	190	2		
		<0.55% C	quenched and tempered	850	250	3		0.05-0.14
		≥0.55% C	annealed	750	220	4		
			quenched and tempered	1000	300	5		
	low alloy and cast steel (less than 5% of alloying elements)		annealed	600	200	6		0.05-0.08
			quenched and tempered	930	275	7		
				1000	300	8		
				1200	350	9		
	high alloyed steel, cast steel and tool steel		annealed	680	200	10	80-120	0.05-0.14
			quenched and tempered	1100	325	11		
	stainless steel and cast steel		ferritic/martensitic	680	200	12	60-100	0.05-0.08
			martensitic	820	240	13		
M	stainless steel and cast steel		austenitic, duplex	600	180	14	60-100	0.05-0.08
K	grey cast iron (GG)		ferritic/pearlitic		180	15	80-140	0.05-0.2
			pearlitic/martensitic		260	16		
	nodular cast iron (GGG)		ferritic		160	17		
			pearlitic		250	18		
	malleable cast iron		ferritic		130	19		
			pearlitic		230	20		
N	aluminum-wrought alloys		not hardenable		60	21	100-200	0.05-0.18
			hardenable		100	22		
	aluminum-cast alloys	≤12% Si	not hardenable		75	23		
			hardenable		90	24		
		>12% Si	high temperature		130	25		
	copper alloys	>1% Pb	free cutting		110	26		
			brass		90	27		
			electrolitic copper		100	28		
	non-metallic		duroplastics, fiber plastics			29		
			hard rubber			30		
S	high temp. alloys	Fe based	annealed		200	31	20-50	0.04-0.06
			hardened		280	32		
		Ni or Co based	annealed		250	33		
			hardened		350	34		
			cast		320	35		
	titanium alloys		pure	400		36	30-60	0.04-0.1
			alpha+beta alloys hardened	1050		37		
H	hardened steel		hardened		55 HRC	38	50-100	0.04-0.06
			hardened		60 HRC	39		
	chilled cast iron		cast		400	40		
	cast iron		hardened		55 HRC	41		

* Coolant recommendations for drilling stainless steel:
- Oil coolant is first choice
- Water soluble coolant requires at least 20% oil concentration

(1) Based on ISO 513 and VDI 3323 standards

Machining Recommendations for TRIDEEP Drills (12.00-32.00mm)

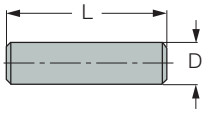
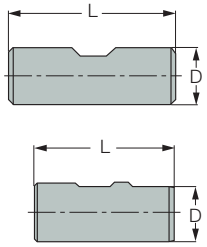
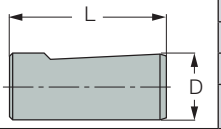
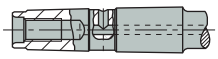
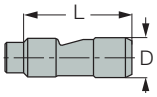
ISO	Material	Condition	Tensile Strength [N/mm²]	Hardness HB	Material Group No.	LOGT / TOGT V m/min	Feed Per Insert Size "GF" & "DT" mm/rev 06	07	08	09	10	11	12	13
P	non-alloy steel and cast steel, free cutting steel <0.25% C	annealed	420	125	1	80-120 80-120	0.04-0.08 0.08-0.14			0.04-0.10 0.08-0.16	0.06-0.10 0.08-0.16	0.06-0.10 0.08-0.16	0.06-0.12 0.08-0.18	
P	non-alloy steel and cast steel, free cutting steel ≥0.25% C	annealed	650	190	2									
P	non-alloy steel and cast steel, free cutting steel <0.55% C	quenched and tempered	850	250	3									
P	non-alloy steel and cast steel, free cutting steel ≥0.55% C	annealed	750	220	4									
P	non-alloy steel and cast steel, free cutting steel ≥0.55% C	quenched and tempered	1000	300	5		0.04-0.12 0.06-0.20							
P	low alloy and cast steel (less than 5% of alloying elements)	annealed	600	200	6									
P	low alloy and cast steel (less than 5% of alloying elements)	quenched and tempered	930	275	7									
P	low alloy and cast steel (less than 5% of alloying elements)	quenched and tempered	1000	300	8									
P	low alloy and cast steel (less than 5% of alloying elements)	quenched and tempered	1200	350	9									
P	high alloyed steel, cast steel and tool steel	annealed	680	200	10		0.04-0.08 0.08-0.14			0.04-0.10 0.08-0.16	0.06-0.10 0.08-0.16	0.06-0.10 0.08-0.16	0.06-0.12 0.08-0.18	
P	high alloyed steel, cast steel and tool steel	quenched and tempered	1100	325	11									
P	stainless steel and cast steel	ferritic/ martensitic	680	200	12									
P	stainless steel and cast steel	martensitic	820	240	13									
M	stainless steel and cast steel	austenitic, duplex	600	180	14	50-100 50-100	0.02-0.06 0.04-0.12			0.02-0.06 0.04-0.12	0.02-0.06 0.04-0.12	0.02-0.06 0.04-0.12	0.02-0.06 0.04-0.12	
K	grey cast iron (GG)	ferritic/pearlitic		180	15	50-100 80-120	0.03-0.15 0.08-0.25			0.03-0.15 0.08-0.25	0.05-0.18 0.08-0.25	0.05-0.18 0.08-0.30	0.05-0.18 0.08-0.30	
K	grey cast iron (GG)	pearlitic / martensitic		260	16									
K	cast iron nodular (GGG)	ferritic		160	17									
K	cast iron nodular (GGG)	pearlitic		250	18									
K	malleable cast iron	ferritic		130	19									
K	malleable cast iron	pearlitic		230	20									
N	aluminum-wrought alloys	not hardenable		60	21	80-160 80-160	0.03-0.15 0.08-0.20			0.03-0.15 0.08-0.20	0.03-0.18 0.08-0.20	0.05-0.18 0.08-0.20	0.05-0.18 0.08-0.20	
N	aluminum-wrought alloys	hardenable		100	22									
N	aluminum-cast alloys ≤12% Si	not hardenable		75	23									
N	aluminum-cast alloys ≤12% Si	hardenable		90	24									
N	aluminum-cast alloys >12% Si	high temperature		130	25									
N	copper alloys >1% Pb	free cutting		110	26									
N	copper alloys	brass		90	27									
N	copper alloys	electrolitic copper		100	28									
N	non metallic	duroplastics, fiber plastics			29									
N	non metallic	hard rubber			30									
S	high temp. alloys Fe based	annealed		200	31	20-50 20-50	0.04-0.08 0.08-0.14			0.04-0.10 0.08-0.16	0.06-0.10 0.08-0.16	0.06-0.10 0.08-0.16	0.06-0.12 0.08-0.18	
S	high temp. alloys Fe based	hardened		280	32									
S	high temp. alloys Ni or Co based	annealed		250	33									
S	high temp. alloys Ni or Co based	hardened		350	34									
S	high temp. alloys Ni or Co based	cast		320	35									
S	titanium alloys	pure	400		36									
S	titanium alloys	alpha+beta alloys hardened	1050		37									
H	hardened steel	hardened 55 HRC			38	20-50 20-50	0.04-0.08 0.08-0.14			0.04-0.10 0.08-0.16	0.06-0.10 0.08-0.16	0.06-0.10 0.08-0.16	0.06-0.12 0.08-0.18	
H	hardened steel	hardened 60 HRC			39									
H	chilled cast iron	cast		400	40									
H	cast iron	hardened 55 HRC			41									

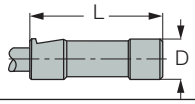
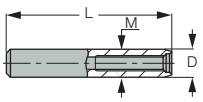
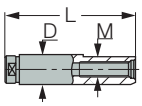
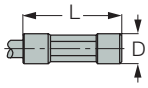
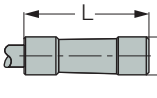
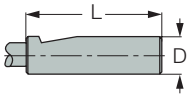
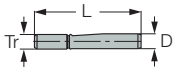
Standard Gundrill Drivers for Machining Centers and Lathes

Drivers

Drivers are available for dedicated deep drilling type machines and CNC machines, for any specified diameter and length.
Below are the driver codes and technical data.

Standard Drivers for Gundrill Machines

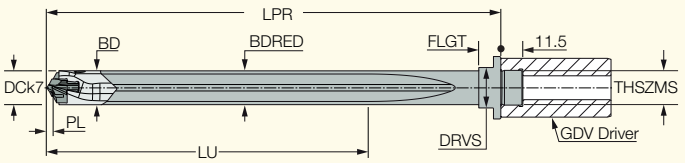
Driver Type	Drawing	ØD x L	Driver Code
Cylindrical DIN1835A DIN6535HA		.75x2.03″	95
		20x50	10
		25x56	11
		1.00x2.28″	96
		1.25x2.28″	97
		32x60	12
		40x70	13
Weldon DIN1835B DIN6535HB		.75x2.03″	99
		20x50	22
		25x56	23
		1.00x2.28″	100
		1.25x2.28″	101
		32x60	24
		40x70	25
Whistle Notch DIN1835E		20x50	34
		25x56	35
		32x60	36
		40x70	37
DIN228AK		CM1	45
		CM2	46
		CM3	47
		CM4	48
DIN228BK		CM1	49
		CM2	50
		CM3	51
		CM4	52
Central Clamping Surface 15°		.750x2.75″	56
		25x70	57
		1.00x2.75″	58
		1.25x2.75″	59
		1.50x2.75″	60

Driver Type	Drawing	ØD x L	Driver Code
Frontal Clamping Surface 15°		16x50	61
Cylindrical with Thread		25x100 M16x1.5	66
		36x120 M24x1.5	67
VDI Design		25x112 M16x1.5	70
		36x135 M24x1.5	71
Central Clamping Hexagonal		25x70	72
		32x70	73
Central Clamping Tapered		.75x2.75″	76
		20x70	77
Frontal Clamping Surface 2°		1.00x2.75″	80
		1.00x3.94″	81
		1.25x2.75″	82
		1.25x3.94″	83
		1.50x2.75″	84
		1.50x3.94″	85
Trapezoidal Thread		28x126 Tr 28x2	88
		36x162 Tr 36x2	89
Spraymist Driver		25x50	91
		35x60	92

SUMOGUN

MNSNT

MNSNT
Indexable SUMOCHAM Inserts and Modular Shank Gundrills



Designation	DCN[1]	DCX[2]	LU	PL	THSZMS	BD	BDRED	LPR	FLGT	DRVS[3]	SSC[4]	MIID[5]	
MNSNT 100-200-MF16X1	10.00	10.49	200.00	2.720	MF16X1	9.70	9.60	274.00	10.00	16.0	10.0	HCP 100	K DCN 10-13.99
MNSNT 105-200-MF16X1	10.50	10.99	200.00	2.720	MF16X1	10.20	10.10	274.00	10.00	16.0	10.0	HCP 105	K DCN 10-13.99
MNSNT 110-200-MF16X1	11.00	11.49	200.00	2.750	MF16X1	10.70	10.60	275.00	10.00	16.0	11.0	HCP 110	K DCN 10-13.99
MNSNT 115-200-MF16X1	11.50	11.99	200.00	2.750	MF16X1	11.20	11.10	275.00	10.00	16.0	11.0	HCP 115	K DCN 10-13.99
MNSNT 120-200-MF16X1	12.00	12.49	200.00	3.160	MF16X1	11.70	11.60	275.00	10.00	16.0	12.0	HCP 120	K DCN 10-13.99
MNSNT 125-200-MF16X1	12.50	12.99	200.00	3.160	MF16X1	12.20	12.10	275.00	12.00	16.0	12.0	HCP 125	K DCN 10-13.99
MNSNT 130-200-MF16X1	13.00	13.49	200.00	3.510	MF16X1	12.70	12.60	276.00	12.00	16.0	13.0	HCP 130	K DCN 10-13.99
MNSNT 135-200-MF16X1	13.50	13.99	200.00	3.510	MF16X1	13.20	13.10	276.00	12.00	16.0	13.0	HCP 135	K DCN 10-13.99
MNSNT 140-200-MF16X1	14.00	14.49	200.00	3.630	MF16X1	13.70	13.60	276.00	12.00	16.0	14.0	HCP 140	K DCN 14-17.99
MNSNT 145-200-MF16X1	14.50	14.99	200.00	3.630	MF16X1	14.20	14.10	276.00	12.00	16.0	14.0	HCP 145	K DCN 14-17.99
MNSNT 130-250-MF16X1	13.00	13.49	250.00	3.510	MF16X1	12.70	12.60	326.00	12.00	16.0	13.0	HCP 130	K DCN 10-13.99
MNSNT 135-250-MF16X1	13.50	13.99	250.00	3.510	MF16X1	13.20	13.10	326.00	12.00	16.0	13.0	HCP 135	K DCN 10-13.99
MNSNT 140-250-MF16X1	14.00	14.49	250.00	3.630	MF16X1	13.70	13.60	326.00	12.00	16.0	14.0	HCP 140	K DCN 14-17.99
MNSNT 145-250-MF16X1	14.50	14.99	250.00	3.630	MF16X1	14.20	14.10	326.00	12.00	18.0	14.0	HCP 145	K DCN 14-17.99
MNSNT 100-400-MF16X1	10.00	10.49	400.00	2.720	MF16X1	9.70	9.60	474.00	10.00	16.0	10.0	HCP 100	K DCN 10-13.99
MNSNT 105-400-MF16X1	10.50	10.99	400.00	2.720	MF16X1	10.20	10.10	474.00	10.00	16.0	10.0	HCP 105	K DCN 10-13.99
MNSNT 110-400-MF16X1	11.00	11.49	400.00	2.750	MF16X1	10.70	10.60	474.00	10.00	16.0	11.0	HCP 110	K DCN 10-13.99
MNSNT 115-400-MF16X1	11.50	11.99	400.00	2.750	MF16X1	11.20	11.10	474.00	10.00	16.0	11.0	HCP 115	K DCN 10-13.99
MNSNT 120-400-MF16X1	12.00	12.49	400.00	3.160	MF16X1	11.70	11.60	475.00	10.00	16.0	12.0	HCP 120	K DCN 10-13.99
MNSNT 125-400-MF16X1	12.50	12.99	400.00	3.160	MF16X1	12.20	12.10	475.00	12.00	16.0	12.0	HCP 125	K DCN 10-13.99
MNSNT 130-400-MF16X1	13.00	13.49	400.00	3.510	MF16X1	12.70	12.60	476.00	12.00	16.0	13.0	HCP 130	K DCN 10-13.99
MNSNT 135-400-MF16X1	13.50	13.99	400.00	3.510	MF16X1	13.20	13.10	476.00	12.00	16.0	13.0	HCP 135	K DCN 10-13.99
MNSNT 140-400-MF16X1	14.00	14.49	400.00	3.630	MF16X1	13.70	13.60	476.00	12.00	16.0	14.0	HCP 140	K DCN 14-17.99
MNSNT 145-400-MF16X1	14.50	14.99	400.00	3.630	MF16X1	14.20	14.10	476.00	12.00	18.0	14.0	HCP 145	K DCN 14-17.99
MNSNT 150-400-MF16X1	15.00	15.99	400.00	3.880	MF16X1	14.70	14.60	484.00	12.00	18.0	15.0	HCP 150	K DCN 14-17.99
MNSNT 160-400-MF20X1	16.00	16.99	400.00	3.910	MF20X1	15.50	15.40	484.00	12.00	18.0	16.0	HCP 160	K DCN 14-17.99
MNSNT 170-400-MF20X1	17.00	17.99	400.00	4.570	MF20X1	16.50	16.40	485.00	12.00	22.0	17.0	HCP 170	K DCN 14-17.99
MNSNT 180-400-MF20X1	18.00	18.99	400.00	4.660	MF20X1	17.50	17.40	486.00	12.00	22.0	18.0	HCP 180	K DCN 18-21.99
MNSNT 190-400-MF20X1	19.00	19.99	400.00	4.660	MF20X1	18.50	18.40	486.00	12.00	22.0	19.0	HCP 190	K DCN 18-21.99
MNSNT 200-400-MF20X1	20.00	20.99	400.00	4.810	MF20X1	19.50	19.40	487.00	12.00	22.0	20.0	HCP 200	K DCN 18-21.99
MNSNT 210-400-MF20X1	21.00	21.99	400.00	4.940	MF20X1	20.50	20.40	503.00	21.00	28.0	21.0	HCP 210	K DCN 18-21.99
MNSNT 220-400-MF20X1	22.00	22.99	400.00	5.200	MF20X1	21.50	21.40	504.00	21.00	28.0	22.0	HCP 220	K DCN 22-26.99
MNSNT 230-400-MF20X1	23.00	23.99	400.00	5.280	MF20X1	22.50	22.40	504.00	21.00	28.0	23.0	HCP 230	K DCN 22-26.99
MNSNT 240-400-MF20X1	24.00	24.99	400.00	5.630	MF20X1	23.50	23.40	505.00	21.00	28.0	24.0	HCP 240	K DCN 22-26.99
MNSNT 250-400-MF20X1	25.00	25.99	400.00	5.700	MF20X1	24.50	24.40	506.00	21.00	28.0	25.0	HCP 250	K DCN 22-26.99
MNSNT 120-780-MF16X1	12.00	12.49	780.00	3.160	MF16X1	11.70	11.60	856.00	10.00	16.0	12.0	HCP 120	K DCN 10-13.99
MNSNT 125-780-MF16X1	12.50	12.99	780.00	3.160	MF16X1	12.20	12.10	856.00	12.00	16.0	12.0	HCP 125	K DCN 10-13.99
MNSNT 130-780-MF16X1	13.00	13.49	780.00	3.510	MF16X1	12.70	12.60	857.00	12.00	16.0	13.0	HCP 130	K DCN 10-13.99
MNSNT 135-780-MF16X1	13.50	13.99	780.00	3.510	MF16X1	13.20	13.10	857.00	12.00	16.0	13.0	HCP 135	K DCN 10-13.99
MNSNT 140-780-MF16X1	14.00	14.49	780.00	3.630	MF16X1	13.70	13.60	857.00	12.00	16.0	14.0	HCP 140	K DCN 10-13.99
MNSNT 145-780-MF16X1	14.50	14.99	780.00	3.630	MF16X1	14.20	14.10	857.00	12.00	18.0	14.0	HCP 145	K DCN 14-17.99
MNSNT 150-780-MF16X1	15.00	15.99	780.00	3.880	MF16X1	14.70	14.60	862.00	12.00	18.0	15.0	HCP 150	K DCN 14-17.99
MNSNT 160-780-MF20X1	16.00	16.99	780.00	3.910	MF20X1	15.50	15.40	862.00	12.00	18.0	16.0	HCP 160	K DCN 14-17.99
MNSNT 170-780-MF20X1	17.00	17.99	780.00	4.570	MF20X1	16.50	16.40	863.00	12.00	22.0	17.0	HCP 170	K DCN 14-17.99
MNSNT 180-780-MF20X1	18.00	18.99	780.00	4.660	MF20X1	17.50	17.40	864.00	12.00	22.0	18.0	HCP 180	K DCN 14-17.99
MNSNT 190-780-MF20X1	19.00	19.99	780.00	4.660	MF20X1	18.50	18.40	864.00	12.00	22.0	19.0	HCP 190	K DCN 18-21.99
MNSNT 200-780-MF20X1	20.00	20.99	780.00	4.810	MF20X1	19.50	19.40	865.00	12.00	22.0	20.0	HCP 200	K DCN 18-21.99
MNSNT 210-780-MF20X1	21.00	21.99	780.00	4.940	MF20X1	20.50	20.40	879.00	21.00	28.0	21.0	HCP 210	K DCN 18-21.99
MNSNT 220-780-MF20X1	22.00	22.99	780.00	5.200	MF20X1	21.50	21.40	880.00	21.00	28.0	22.0	HCP 220	K DCN 18-21.99
MNSNT 230-780-MF20X1	23.00	23.99	780.00	5.280	MF20X1	22.50	22.40	880.00	21.00	28.0	23.0	HCP 230	K DCN 22-26.99
MNSNT 240-780-MF20X1	24.00	24.99	780.00	5.630	MF20X1	23.50	23.40	881.00	21.00	28.0	24.0	HCP 240	K DCN 22-26.99
MNSNT 250-780-MF20X1	25.00	25.99	780.00	5.700	MF20X1	24.50	24.40	882.00	21.00	28.0	25.0	HCP 250	K DCN 22-26.99

NEW

- For user guide and cutting conditions, see pages 359-362

(1) Do not mount smaller drilling heads than the specified range of the drill body
(2) Cutting diameter maximum
(3) Torque key size
(4) Seat size code
(5) Master insert identification

For inserts, see pages: HCP-IQ (55) • ICG (67) • ICK (37) • ICK-2M (41) • ICP (23) • ICP-2M (29) • IHP (33) • QCP-2M (51)
For holders, see pages: GDV (359)

Machining Conditions for MNSNT

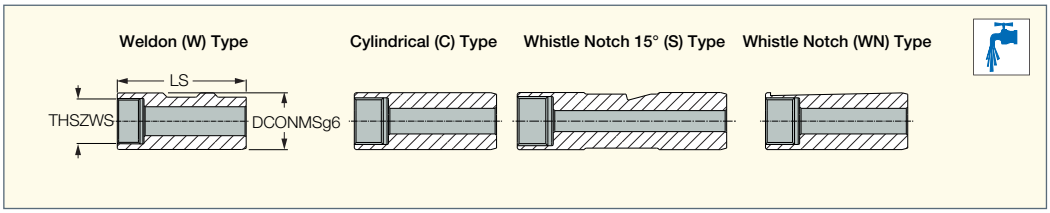
ISO	Material		Condition	Tensile Strength [N/mm²]	Hardness HB	Material Group No.	V (m/min)	SUMOGUN Feed vs. Drill Diameter mm/rev D=10-11.9	D=12-13.9	D=14-15.9	D=16-19.9	D=20-25.9
P	non-alloy steel and cast steel, free cutting steel	<0.25% C	annealed	420	125	1	80-110-140	0.15 0.18 0.21	0.18 0.21 0.24	0.20 0.23 0.27	0.25 0.30 0.35	0.25 0.30 0.35
		≥0.25% C	annealed	650	190	2	80-105-130					
		<0.55% C	quenched and tempered	850	250	3	80-100-120					
		≥0.55% C	annealed	750	220	4	70-90-110					
			quenched and tempered	1000	300	5	50-70-90					
	low alloy steel and cast steel (less than 5% of alloying elements)		annealed	600	200	6	80-100-120	0.14 0.17 0.21	0.16 0.20 0.24	0.18 0.22 0.26	0.23 0.27 0.31	0.25 0.30 0.35
			quenched and tempered	930	275	7	70-90-110					
				1000	300	8	50-70-90					
				1200	350	9	40-55-70					
	high alloyed steel, cast steel, and tool steel		annealed	680	200	10	50-70-90	0.12 0.14 0.17	0.15 0.17 0.20	0.18 0.20 0.23	0.20 0.22 0.25	0.22 0.24 0.27
			quenched and tempered	1100	325	11	40-60-80					
	stainless steel and cast steel		ferritic/ martensitic.	680	200	12	40-55-70	0.12 0.13 0.15	0.14 0.15 0.17	0.16 0.18 0.20	0.16 0.19 0.21	0.18 0.21 0.24
			martensitic	820	240	13						
K	cast iron nodular (GG)		ferritic/pearlitic		180	15	90-125-160	0.20 0.23 0.27	0.25 0.28 0.32	0.30 0.33 0.37	0.35 0.40 0.45	0.35 0.42 0.47
			pearlitic/ martensitic		260	16	80-110-140					
	grey cast iron (GGG)		ferritic		160	17	90-135-180					
			pearlitic		250	18	80-110-140					
	malleable cast iron		ferritic		130	19	90-125-160					
			pearlitic		230	20	80-110-140					
N	aluminum-wrought alloys		not hardenable		60	21	90-155-220	0.25 0.28 0.32	0.30 0.33 0.37	0.35 0.38 0.42	0.40 0.45 0.50	0.45 0.50 0.57
			hardenable		100	22						
	aluminum-cast alloys	≤12% Si	not hardenable		75	23						
			hardenable		90	24						
		>12% Si	high temperature		130	25	80-120-160					

Recommended cutting data

- Mandatory use of emulsion or oil when drilling
- For the 400mm long tools please reduce the cutting speed by 20%.

SUMOGUN

GDV
Shanks for SUMO-GUN Modular gundrills with Threaded Connection



Designation	THSZWS	DCONMS	Shank[1]	LS
GDV56-MF16X1-I-WN.75"	MF16X1	19.05	S	69.8
GDV99-MF16X1-I-W.75"	MF16X1	19.05	W	69.8
GDV10-MF16X1-M-C20	MF16X1	20.00	C	50.0
GDV22-MF16X1-M-W20	MF16X1	20.00	W	50.0
GDV80-MF16X1-I-WN1.00"	MF16X1	25.40	WN	69.8
GDV11-MF20X1-M-C25	MF20X1	25.00	C	56.0
GDV23-MF20X1-M-W25	MF20X1	25.00	W	56.0
GDV57-MF20X1-M-WN25	MF20X1	25.00	S	70.0
GDV100-MF20X1-I-W1.00"	MF20X1	25.40	W	57.9
GDV58-MF20X1-I-WN1.00"	MF20X1	25.40	S	69.8
GDV101-MF20X1-I-W1.25"	MF20X1	31.75	W	57.9
GDV97-MF20X1-I-C1.25"	MF20X1	31.75	C	57.9
GDV12-MF20X1-M-C32	MF20X1	32.00	C	60.0
GDV24-MF20X1-M-W32	MF20X1	32.00	W	60.0
GDV13-MF20X1-M-C40	MF20X1	40.00	C	70.0
GDV25-MF20X1-M-W40	MF20X1	40.00	W	70.0

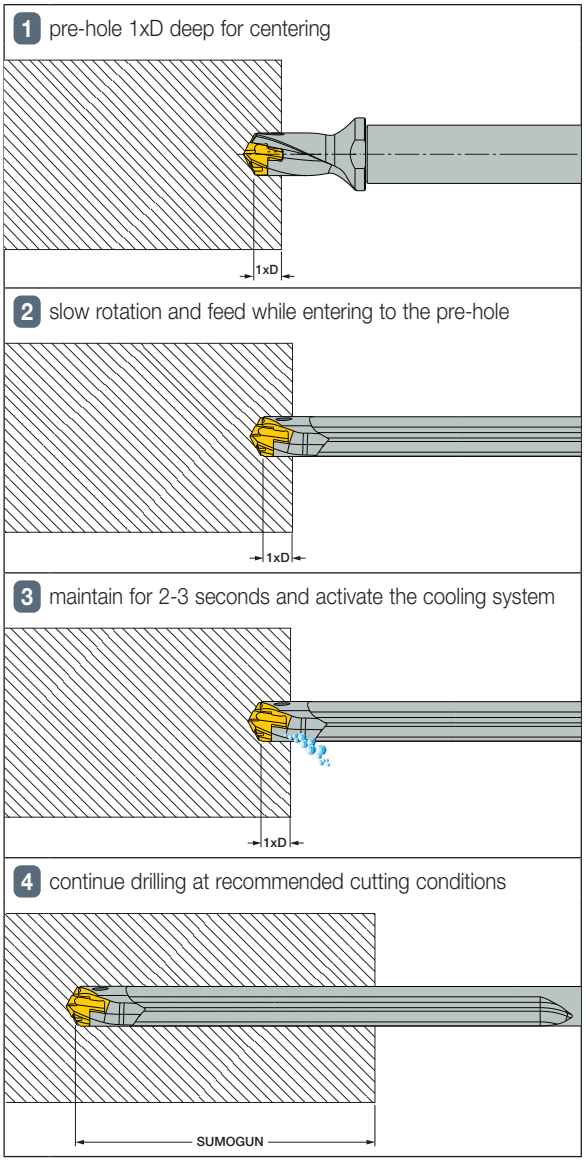
[1] W-Weldon, C-Cylindrical, S-Whistle notch 15°, WN-Whistle notch

For tools, see pages: • MNSNT (358)

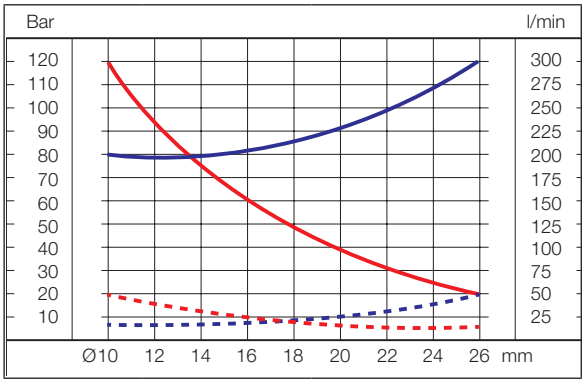
Drill Penetration Instructions on Horizontal Milling and Lathe Machines

Note: The following procedure (1-4) is recommended for up to 400mm hole depths using MNSNT ...-400... drill.

1 Drill a pilot hole 1xD deep with a short drill in the same diameter as of the **SUMO-GUN** drill.
2 Enter the pre-hole at slow speed (50 RPM) and reduced feed rate to within 1 - 2mm of pre-hole depth.
3 Activate the cooling system and increase rotation speed to recommended drilling speed, maintain for 2-3 seconds, then continue at recommended drilling feed. **No pecking is required**. Apply maximum possible coolant flow rate.
4 After having reached the required depth, reduce speed to 50-100 RPM while exiting from the hole.



Pressure and Coolant Flow Rate for SUMO-GUN



SUMO-GUN Drilling Range **Drilling Diameter**

Q l/min P bar

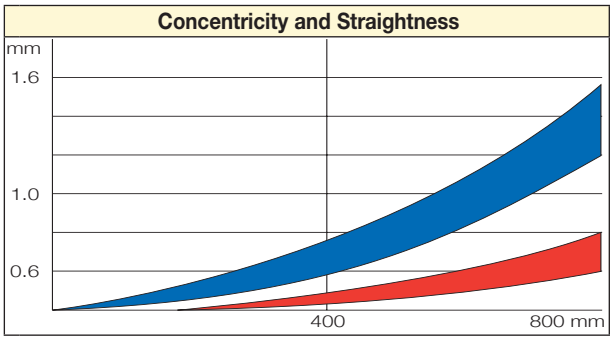
Gundrill Machines
Milling and Turning Machines

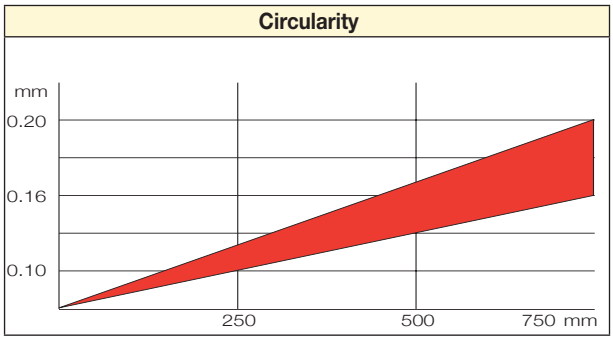
Gundrill Lubrication and Cooling

The best performance is obtained by using oil.
On equipment that uses water-soluble fluids (i.e. machining centers and CNC machines) a concentration between 10% and 15% is recommended.

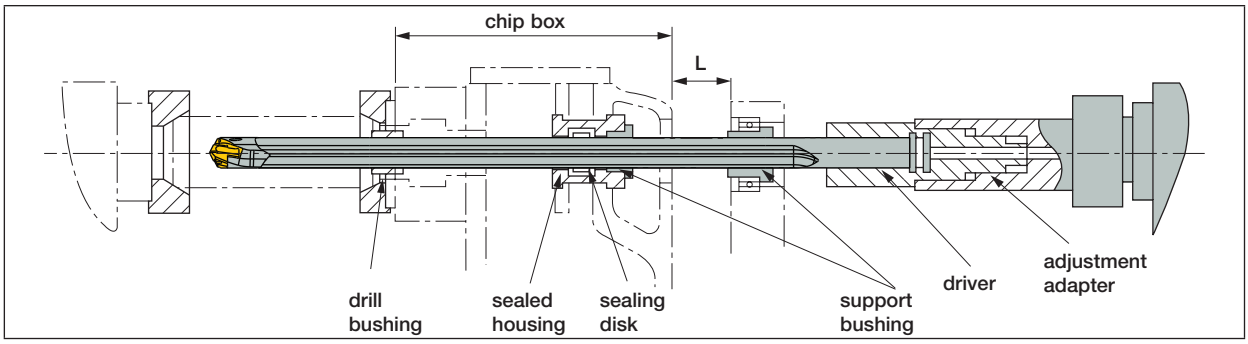
Guidelines for Optimal Gundrill Performance

- Coolant pressure and flow.
- It is recommended to use a strong coolant flow for efficient chip flushing and cooling of the cutting edge.
- Filtration: It is recommended to use a filter under 20 µm.
- **Note:** Improper filtration may result in interrupted flow of the lubricating oil. This creates a sticky surface on the bearing pads and leads to premature wear of the tool and overloading the coolant pump and spindle seals.
- The coolant temperature should be between 20 and 22º C.
  Note: Above 50º C the viscosity of the coolant is reduced by 50% and becomes ineffective.





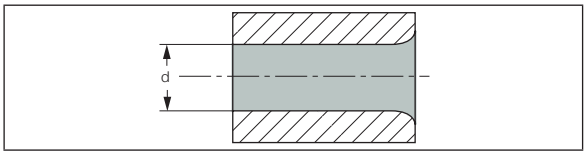
stationary workpiece – rotating tool
rotating workpiece – stationary tool



L = 20xD
1- The support bushing should be according to tube diameter (D3) (see below)

Bushing

Based on modified DIN 179 specify the "d" diameter of the drill head. Carbide bushing is delivered only on request.



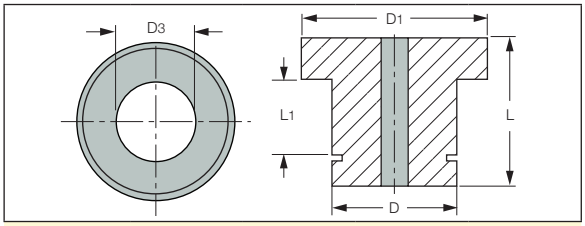
d = Drill diameter +0.02

Guide Bushing

A guide bushing is an essential component for a proper gundrill operation. The function of the guide bushing is to direct the Sumogun into the material during penetration. The diameter of the guide bushing should be within 20 microns larger than the diameter of the drill. Dedicated gundrill machines are equipped with a guide bushing system.

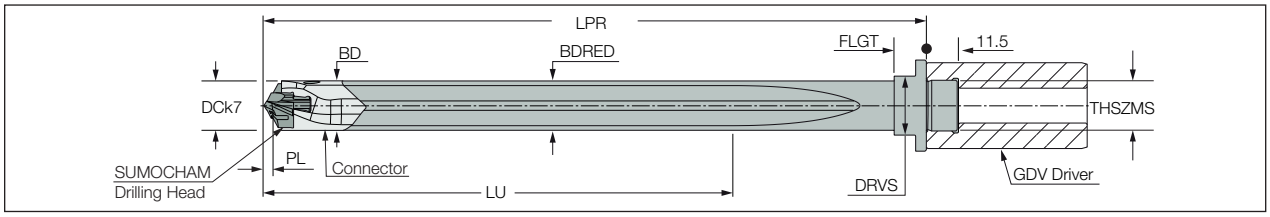
Support Bushing

D3 indicate the tube diameter



Support Bushing				
D3	Ext. Ø "D"	Ext. Ø "D1"	Length "L"	Length "L1"
9.6 - 16,399	20	26	20	12
9.6 - 25,999	30	38	26	16
9.6 - 25,999	45	50	26	16

SUMO-GUN Inquiry Form



1. Tool

Quantity _____

Nominal diameter and tolerance _____

Please fill in dimensions on the sketch.

Driver

For standard drivers please use designation from page 359

Special Driver

☐ Code No. _____

☐ Special, please attach sketch and specifications.

2. Workpiece

(If possible, please attach a drawing)

2.1 Material

Material description (DIN material number or any other standard):

_____

Hardness and Properties: _____

☐ Short Chips ☐ Long Chips

2.2 Hole Type

☐ Blind Hole ☐ Drilling into Pre-hole

☐ Angled Entry ☐ Drilling into Solid

☐ Boring ☐ Angled Exit

Drilling Depth _____ mm Hole Tolerance _____

2.3 Application:

Workpiece: ☐ Stationary ☐ Rotating

Tool: ☐ Stationary ☐ Rotating

Sketch of Drilling Application

Note: It may be necessary to change several of the parameters that you indicated, based on our experience with your application.

3. Machine

3.1 Technical Data

Machine Type _____

Power: _____kW

3.2 Cutting Data:

Cutting Speed V_c _____ m/min

Revolutions Nmin _____ RPM, Nmax _____RPM

Feed Fmin _____ mm/rev,

Fmax _____ mm/rev

Feed Rate VF _____ mm/min

Coolant:

☐ Oil ☐ Soluble Oil ☐ Other

Coolant Pressure: _____ Bar

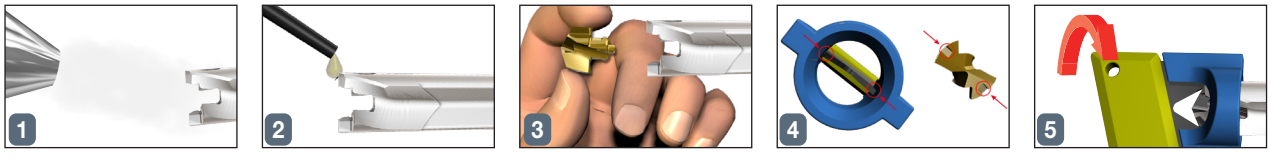
Drill body Type		Hole Diameter	Length
SNT	Steel body	Ø10.00-25.99	Drilling Depth

Metric Fine Pitch	Dwg. Number
1=M16 1=M20	4 last digits

Tool Type	
Code	Type
No code	Standard shape and size
GP	Guide Pads
SC	Special Connector
PT	P-Tube

MN	###	-	XXX	-	XXX	-	MF	1	GP	-	XXXX

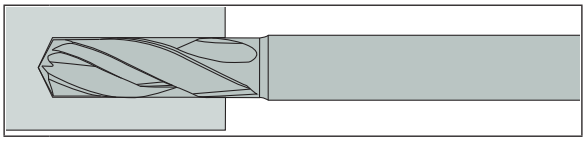
Drilling Head Mounting Procedure



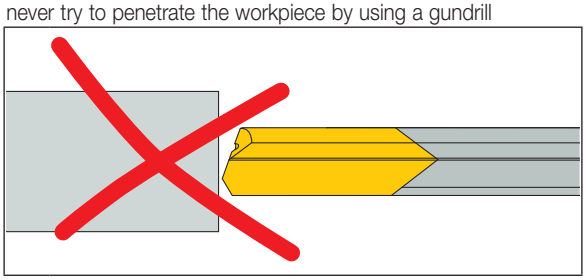
ISCARGUNDRILLS

When using a gundrill on a lathe machine, a short solid carbide centering drill should be used prior to the gundrill. Once the gundrill enters the pre-drilled hole, it is self-guided.

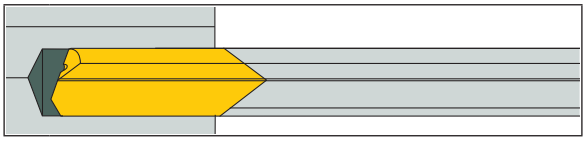
1 drilling a pre-hole (drill diameter +0.02mm)



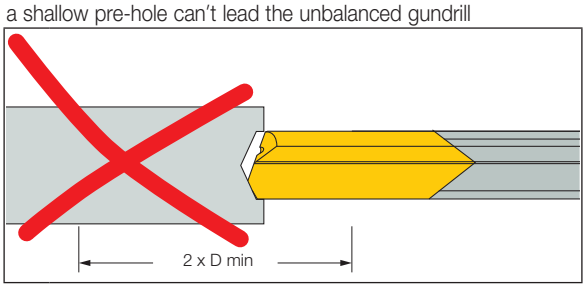
never try to penetrate the workpiece by using a gundrill



2 gundrill penetration through the pre-hole

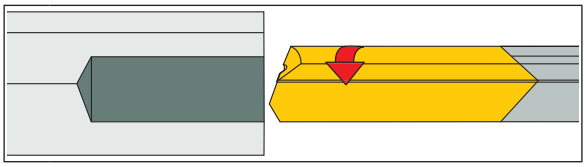


a shallow pre-hole can't lead the unbalanced gundrill

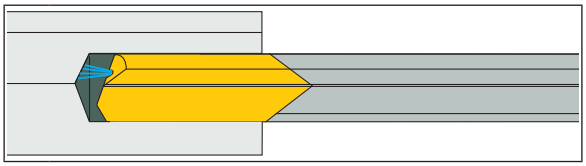


Drill Penetration Instructions

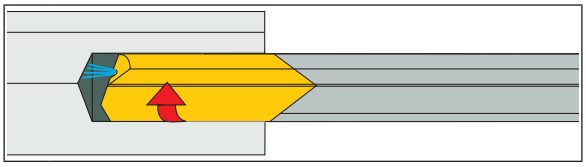
1 rotate the drill counterclockwise prior to and during hole penetration



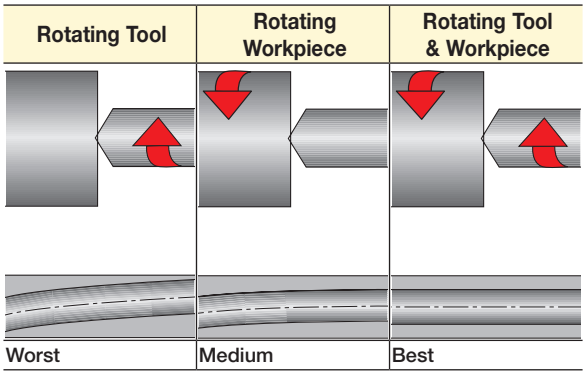
2 stop the drill rotation and start the coolant



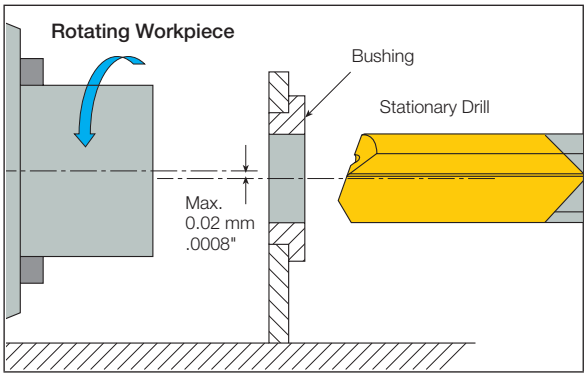
3 rotate the drill clockwise prior to drilling operation



The Influence of a Tool Vs. Workpiece Rotation



The maximum misalignment between the drill bushing and the workpiece center line should not exceed 0.02mm (.0008").



Single Flute Gundrill

ISCAR's gundrill consists of a single-piece carbide head, a flute and a driver through which coolant flows to the working end where it is most needed. Chips are evacuated along the V-shaped external flute.

Drilling Head

The carbide head is tapered on its length to reduce friction. The taper angle depends on the type of material to be drilled. For high precision drilling, the taper should be reduced to a minimum.
Note that when the head is resharpened, the diameter of the drill changes, affecting the hole tolerance.

Flute

The cross-section of the flute is V-shaped with coolant holes. It is made of hardened steel that is highly resistant to twisting. This cross-section provides the optimal conditions for twist resistance, coolant flow and chip evacuation.

Driver

The driver ensures the connection between the gundrill and the machine tool, (see page 366 for detailed driver information).

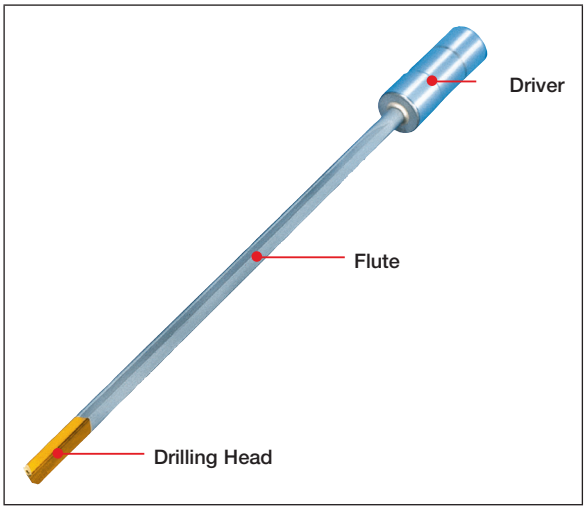
Advantages

- Drilling precision of IT7 to IT9 tolerances can be reached
- Excellent straightness and concentricity
- Maintains high precision hole center alignment
- Surface roughness of R0.4 - R1.6 is easily obtained
- Reboring operations are often unnecessary

Carbide Tipped Gundrill Range

Drill Diameter	Max. Flute Length
2.50 to 3.09	1100
3.10 to 5.99	2500
6.00 to 11.39	3000
11.40 to 40.00	3500

Overall length=flute length+driver length (see page 368)



ISCAR's advanced gundrill technology provides superior geometric and dimensional quality for both deep and shallow drilling. The drills are available in the range of 2.5 to 40mm.

Single Flute Solid Carbide Gundrills

Another type of gundrill is made with an integral tip and flute, made of solid carbide with either a steel or a carbide driver. These drills are designed for conventional machines, machining centers and lathes. This style of gundrill is available from 0.9-16mm and can be used on various types of materials. It provides superior rigidity and optimal coolant flow rates. As a result of its rigidity, up to 100% higher feed rate can be reached.
When using the small diameter drills, it is crucial to adhere closely to the recommended drilling parameters.

Solid Carbide Gundrill Range

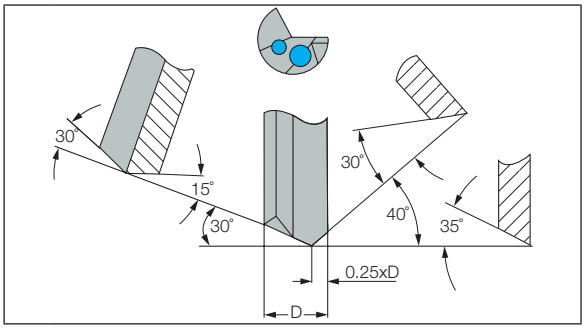
(with or without brazed steel driver)

Drill Diameter	Max. Flute Length
0.9 to 16.00	300mm

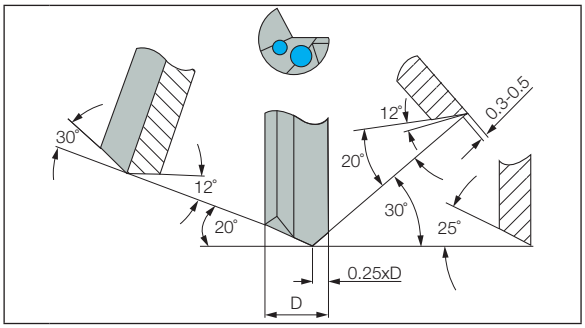
Standard Gundrill Head Sharpening Angles

Subject to the required tolerance, cutting performance and desired chip shape, the following standard sharpening angles are recommended (shown in figures 1 and 2).

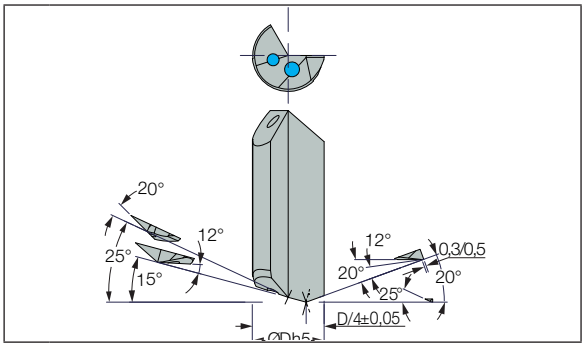
1 standard sharpening for 0.9 to 4mm drill diameters



2 standard sharpening for 4 to 32mm drill diameters



3 standard sharpening for 32 to 40mm drill diameters

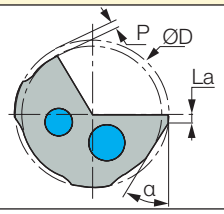


Note: For special or semi-standard gundrills, special geometries will be offered to match the application.

Standard Gundrill Head Profiles

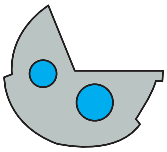
Drilling capacity and finish of the drilled hole are dependent on the geometrical shape of the drill head. Both the profile and the sharpening must be matched to the workpiece material. The profile is defined when the tool is manufactured. Although regrinding may change the cutting geometry, the profile should remain the same.

General Sketch



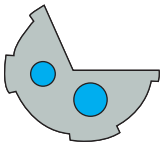
All cross section profile parameters such as: P, La and must be precisely matched to the workpiece material properties.

Profile G (Universal)



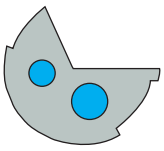
Standard form for most material types, particularly for materials with a tendency to shrink. Recommended for high precision bore tolerance and straightness. Maintains precise exit hole size. Recommended when extra burnishing is required.

Profile A



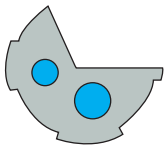
Suitable for cast iron (usually coated) and aluminum alloys. Can be used for cross drilling, angular entry or exit and for interrupted cut. Large coolant gaps between pads.

Profile B



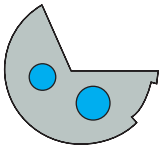
Excellent size control, for high precision hole tolerance. Used for cast iron and aluminum alloys.

Profile C



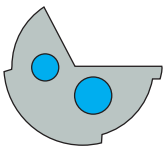
Used for angled entry or exit. Large back taper, for shrinking materials such as high temperature and titanium alloys and stainless steel. Large coolant gaps between pads.

Profile D



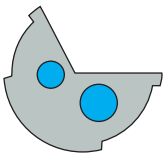
Suitable for cast iron only. Very effective in grey cast iron (usually coated).

Profile E



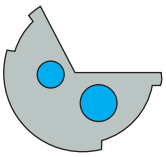
General use, for alloys and stainless steel.
This profile eliminates the problem of the tool sticking in the hole after the outer corner dulls. Especially suitable for crankshaft and other forged materials. Recommended for accurate hole straightness.

Profile H



Recommended for all nonferrous and cast iron materials up 5mm diameter. Sometimes used for wood and plastic with larger back taper.

Profile I

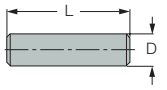
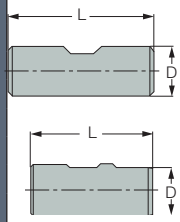
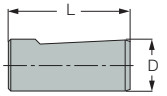
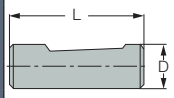


Used for aluminum and brass for best hole finish.
For intersecting holes and interrupted cut or when extra outer diameter support and burnishing is required.

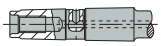
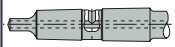
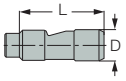
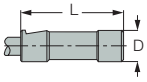
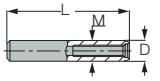
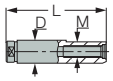
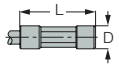
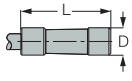
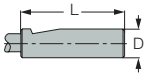
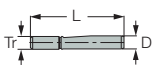
Standard Gundrill Drivers for Machining Centers and Lathes

Drivers

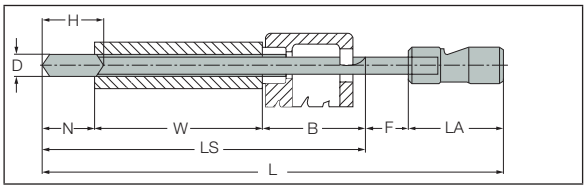
Drivers are available for dedicated and CNC machines for any specified diameter and length.
Below are the driver codes and technical data.

Driver Type	Drawing	DXL	Driver Code	BRAZED Gundrill: Max. Cutting Diameter	BRAZED Gundrill: F = CYLINDRICAL TUBE: Equal Or Less Than Max. Cutting Diameter	BRAZED Gundrill: F = CYLINDRICAL TUBE: More Than Max. Diameter	SOLID CARBIDE Gundrill: F = Straightening Extension
Cylindrical DIN1835A DIN6535HA		4x28	N°1	2.749	10	20	18
		5x28	N°2	3.249	10	20	15
		6x36	N°3	4.249	10	20	14
		8x36	N°4	5.749	10	20	14
		10x40	N°5	7.299	10	20	15
		12x45	N°6	8.999	10	20	15
		.50x1.78″	N°94	9.699	10	20	15
		14x45	N°7	10.999	10	20	15
		16x48	N°8	12.399	10	20	15
		18x48	N°9	14.399	10	20	15
		.75x2.03″	N°95	14.899	10	20	15
		20x50	N°10	15.899	10	20	
		25x56	N°11	19.509	10	25	
		1.00x2.28″	N°96	19.509	10	25	
		1.25x2.28″	N°97	25.609	10	25	
		32x60	N°12	25.609	10	25	
		40x70	N°13	32.609	10	25	
		50x80	N°14	40	10	25	
		63x90	N°15	40	10	25	
Weldon DIN1835B DIN6535HB		6x36	N°16	2.749	10	20	15
		8x36	N°17	3.249	10	20	15
		10x40	N°18	7.299	10	20	15
		12x45	N°19	8.999	10	20	15
		.50x1.78″	N°98	9.699	10	20	15
		16x48	N°20	12.399	10	20	15
		18x48	N°21	14.399	10	20	15
		.75x2.03″	N°99	14.899	10	20	15
		20x50	N°22	15.899	10	20	15
		25x56	N°23	19.509	10	25	
		1.00x2.28″	N°100	19.509	10	25	
		1.25x2.28″	N°101	25.609	10	25	
		32x60	N°24	25.609	10	25	
		40x70	N°25	32.609	10	25	
		50x80	N°26	40	10	25	
		63x90	N°27	40	10	25	
Whistle Notch DIN1835E		6x36	N°28	2.749	10	20	
		8x36	N°29	3.249	10	20	
		10x40	N°30	7.299	10	20	15
		12x45	N°31	8.999	10	20	15
		16x48	N°32	12.399	10	20	15
		18x48	N°33	14.399	10	20	15
		20x50	N°34	15.899	10	20	15
		25x56	N°35	19.509	10	25	
		32x60	N°36	25.609	10	25	
		40x70	N°37	32.609	10	25	
Whistle Notch DIN6535HE		6x36	N°38	2.749	10	20	15
		8x36	N°39	3.249	10	20	15
		10x40	N°40	7.299	10	20	15
		12x45	N°41	8.999	10	20	15
		16x48	N°42	12.399	10	20	15
		18x48	N°43	14.399	10	20	15
		20x50	N°44	15.899	10	20	15

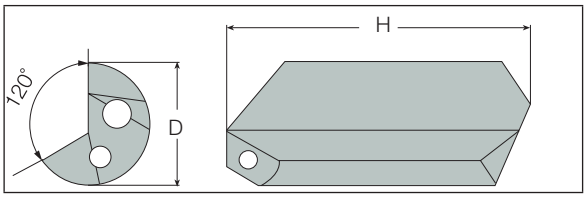
Standard Drivers for Gundrill Machines

Driver Type	Drawing	DXL	Driver Code	BRAZED Gundrill			SOLID CARBIDE Gundrill
				Max. Cutting Diameter	F = CYLINDRICAL TUBE		
					Equal Or Less Than Max. Cutting Diameter	More Than Max. Diameter	F = Straightening Extension
DIN228AK		CM1	N°45	9.599	10	20	
		CM2	N°46	14.599	10	20	
		CM3	N°47	21.499	10	25	
		CM4	N°48	29.499	10	25	
DIN228BK		CM1	N°49	9.599	10	20	
		CM2	N°50	14.599	10	20	
		CM3	N°51	21.499	10	25	
		CM4	N°52	29.499	10	25	
Central Clamping Surface 15°		6x30	N°53	2.749	10	20	20
		10x40	N°54	7.299	10	20	15
		16x45	N°55	12.399	10	20	
		.750x2.75″	N°56	14.899	10	20	
		25x70	N°57	19.509	10	25	
		1.00x2.75″	N°58	19.509	10	25	
		1.25x2.75″	N°59	25.609	10	25	
		1.50x2.75″	N°60	32.609	10	25	
Frontal Clamping Surface 15°		16x50	N°61	12.399	10	20	
Cylindrical with Thread		10x50 M6X0.5	N°62	7.299	10	20	15
		10x60 M6X0.5	N°63	7.299	10	20	
		.50x1.97″ M6x0.5	N°64	8.999	10	20	15
		16x80 M10X1	N°65	12.399	10	20	15
		25x100 M16x1.5	N°66	19.509	10	25	
		36x120 M24x1.5	N°67	30.609	10	25	
VDI Design		10x68 M6x0.5	N°68	6.749	10	20	
		16x90 M10x1	N°69	10.799	10	20	15
		25x112 M16x1.5	N°70	19.509	10	25	
		36x135 M24x1.5	N°71	30.609	10	25	
Central Clamping Hexagonal		25x70	N°72	19.509	10	25	
		32x70	N°73	25.609	10	25	
Central Clamping Tapered		.50x1.50″	N°74	8.599	10	20	15
		16x70	N°75	12.099	10	20	15
		.75x2.75″	N°76	14.099	10	20	
		20x70	N°77	16.099	10	20	15
Frontal Clamping Surface 2°		.50x1.50″	N°78	9.699	10	20	
		.75x2.75″	N°79	14.899	10	20	
		1.00x2.75″	N°80	19.509	10	25	
		1.00x3.94″	N°81	19.509	10	25	
		1.25x2.75″	N°82	25.609	10	25	
		1.25x3.94″	N°83	25.609	10	25	
		1.50x2.75″	N°84	32.609	10	25	
		1.50x3.94″	N°85	32.609	10	25	
Trapezoidal Thread		16x112 Tr 16x1.5	N°86	13.599	10	20	
		20x126 Tr 20x2	N°87	17.099	10	20	
		28x126 Tr 28x2	N°88	25.599	10	25	
		36x162 Tr 36x2	N°89	32.599	10	25	
Spraymist Driver		16x40	N°90	12.399	10	20	
		25x50	N°91	19.509	10	25	
		35x60	N°92	26.599	10	25	

Standard Gundrill Length Calculations



Standard Gundrill Carbide Head Length



D= cutting diameter
H= carbide length
N= regrinding area = H-D
W= hole depth
B= chip evacuation area = For typical gundrill machines, 250mm
= for machining centers, 2xD (minimum 15mm)
F= 10mm.
LA = driver length
LS = flute length
L= overall length

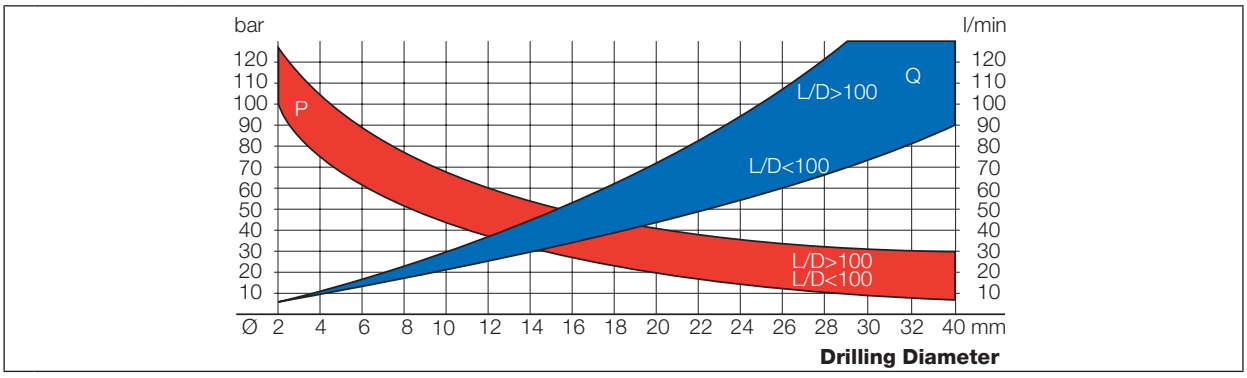
Example
Drilling of a ø10x500 depth hole on a gundrill machine with ø25x70mm driver code No. 57 (See page 367)
D=10 W=500 LA=70 B=250 (or per experience)
L=N+W+B+F+LA
L=(35-10)+500+250+13+70=858 (OAL)
Ls=N+W+B=770 (flute length)

Ordering Code
For example:
D and Ls are available as standard
STGD-10000-0858-57-IC08

Diameter Range	Head Length
2.50-3.80	20
3.80-4.05	23
4.05-5.05	25
5.05-6.55	30
6.55-11.05	35
11.05-18.35	40
18.35-21.35	45
21.35-23.35	50
23.35-26.35	55
26.35-32.00	65

Note: regrindable length=H-D

Pressure and Coolant Flow Rate for Gundrills



Q l/min P bar

Gundrill Lubrication and Cooling
The best performance is obtained by using oil.
On equipment that uses water-soluble fluids (i.e. machining centers and CNC machines), a concentration between 10% and 15% is recommended.

Guidelines for Optimal Gundrill Performance
- It is recommended to use a strong coolant flow for efficient chip flushing and cooling of the cutting edge.
- It is recommended to use a filter under 20 µm.
- Note: Improper filtration may result in interrupted flow of lubricating oil. This creates a sticky surface on the bearing pads and leads to premature wear of the tool and overloading the coolant pump and spindle seals.
- The coolant temperature should be between 20 and 22º C.
  Note: Above 50º C the viscosity of the coolant is reduced by 50% and becomes ineffective.

Drilling Tolerances Obtainable In Deep Hole Drilling

Deep Drilling Tolerances

Gundrill configurations when used under recommended conditions can produce holes with tolerances of IT8-IT9.
When operating under optimal conditions, even better tolerances can be achieved.

Nonferrous materials	Machinability of Metals									
Aluminum										
Tool steel										
Cast iron										
High alloy steel>800N/mm2										
Hardened steel										
Low alloy steel<800N/mm2										
Carbon steel										
Sintered steel										
Drilling Quality	**IT**	**13**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**

Tolerance range under normal conditions

Tolerance range under optimal conditions

Surface Quality

Surface quality of 0.2 Ra can be achieved when using gundrills under recommended conditions.

		▼		▼▼				▼▼▼			▼▼▼▼		
		N12	N11	N10	N9	N8	N7	N6	N5	N4	N3	N2	N1
Indexable Drills													
Reaming													
Honing													
Deep drilling													
Degree of Roughness (Ra Roughness Index)	**Mm**	**50**	**25**	**12.5**	**6.30**	**3.20**	**1.60**	**0.80**	**0.40**	**0.20**	**0.10**	**0.05**	**0.025**
	Min	**2000**	**1000**	**500**	**250**	**125**	**63**	**32**	**16**	**8**	**4**	**2**	**1**

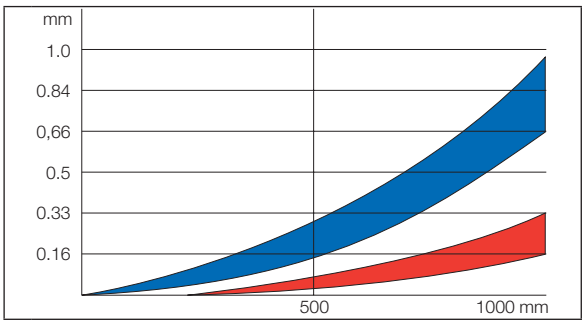
Tolerance range under normal conditions

Tolerance range under optimal conditions

Concentricity and Straightness

The resulting quality depends on different factors such as:

- Drilling depth and diameter
- Type of machining and cutting parameters
- Quality and uniformity of the workpiece material
- Machine tool conditions
- Gundrill support

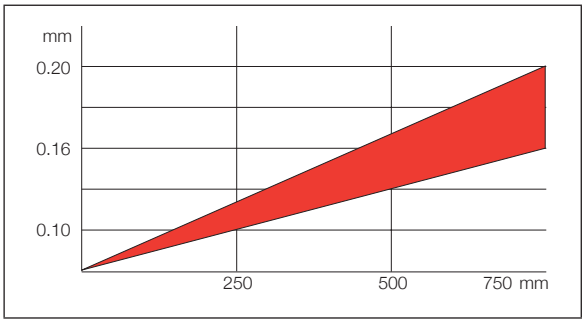


Drilling Depth

stationary workpiece – rotating tool
rotating workpiece – stationary tool

Circularity

The geometric quality of bores obtained from deep hole drill bits is clearly higher than that obtained with the use of twist drills. It is possible to obtain precision with deviations of less than 4 µm.



Drilling Depth

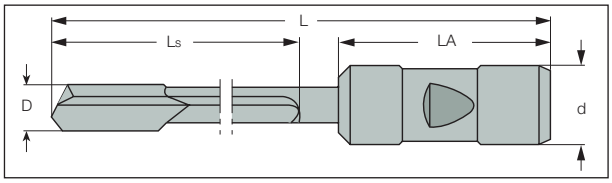
Gundrill Inquiry Form

1. Tool

Quantity _____

Nominal diameter and tolerance _____

Please fill in dimensions on the sketch below.



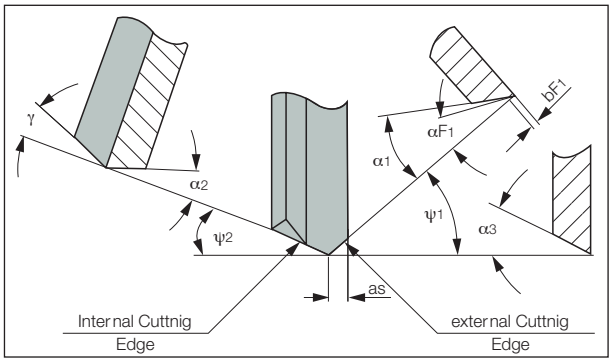
Driver

For standard drivers please use codes from page 366

☐ Code No.

☐ Special, please attach sketch and specifications.

Grind: ☐ special (fill in the dimensions and angles below).



α1= _____ αF1= _____ Ψ1= _____

α2= _____ bF1= _____ Ψ2= _____

α3= _____ as= _____ γ= _____

☐ Standard (see page 364)

Coating:

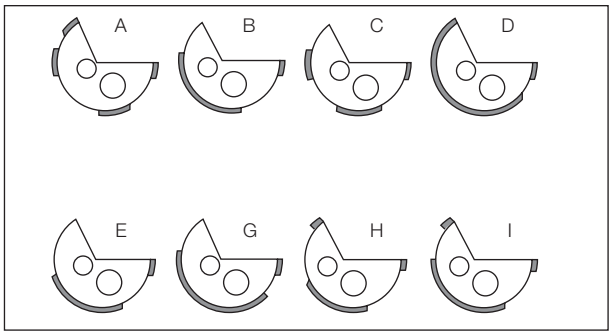
☐ TiN ☐ TiCN ☐ TiN+TiCN ☐ Other

☐ IC208 (TiN) ☐ IC308 (TiCN) ☐ IC508 (TiCN+TiN)

☐ IC908 (TiAlN) ☐ TiAlN

Type:

Please circle the required type. See page 365.



2. Workpiece

(If possible, please attach a drawing)

2.1 Material

Material description (DIN material number or any other standard):

_____

Hardness and Properties:

_____

☐ Short Chips ☐ Long Chips

2.2 Hole Type

☐ Blind Hole ☐ Drilling into Pre-hole

☐ Angled Entry ☐ Drilling into Solid

☐ Boring ☐ Angled Exit

Drilling Depth _____ mm Hole Tolerance _____

2.3 Application:

Workpiece: ☐ Stationary ☐ Rotating

Tool: ☐ Stationary ☐ Rotating

3. Machine

3.1 Technical Data

Machine Type. _____

Power _____ kW

3.2 Cutting Data:

Cutting Speed V_c _____ m/min

Revolutions Nmin _____ RPM, Nmax _____RPM

Feed Fmin _____ mm/rev,

Fmax _____ mm/rev

Feed Rate VF _____ mm/min

Coolant:

☐ Oil ☐ Soluble Oil ☐ Other

Coolant Pressure _____ Bar

Sketch of Drilling Application

Note: It may be necessary to change several of the parameters that you indicated based on our experience with your application.

Typical Gundrill Applications - Main Drilling Methods

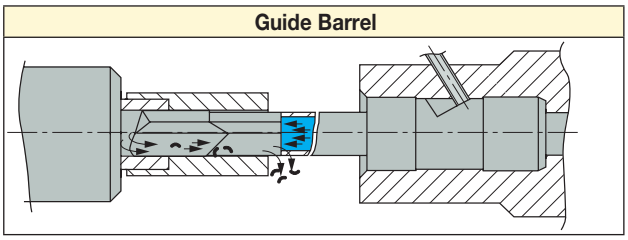


Figure 1

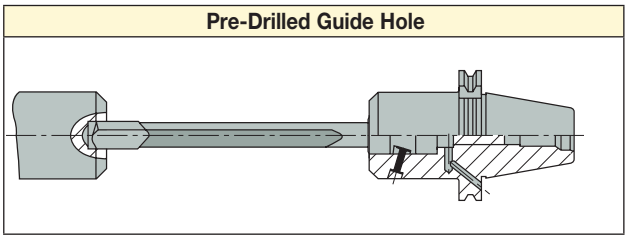


Figure 2

User Guide

The gundrill is not a self-centering tool. Therefore, an external means must be used to guide it to the point of entry into the workpiece. It is recommended that the machine tool be equipped with a means for guiding the gundrill, preferably during the entire drilling process.
An alternative method is a pre-drilled guide hole (figure 2), which is common for machining centers. Once the drill has been fully engaged into this hole, it continues to be self-guided. The guide pads contribute to the high degree of accuracy and provide burnishing of the drilled hole.

Typical Gundrill Applications - Chip Evacuation and Coolant Flow

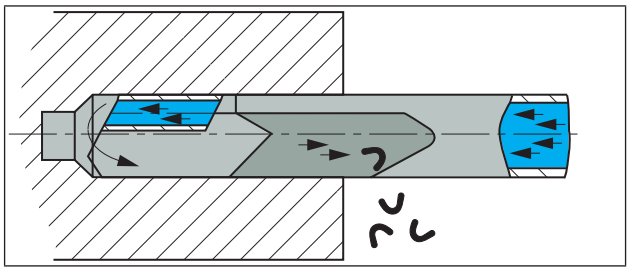


Figure 3

Boring with chip evacuation and coolant flowing opposite the boring direction.

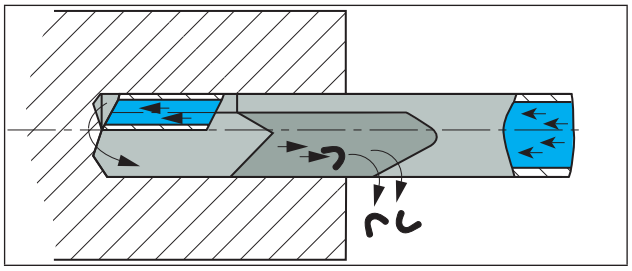


Figure 4

Drilling solid material with chip evacuation and coolant flow opposite the drilling direction.

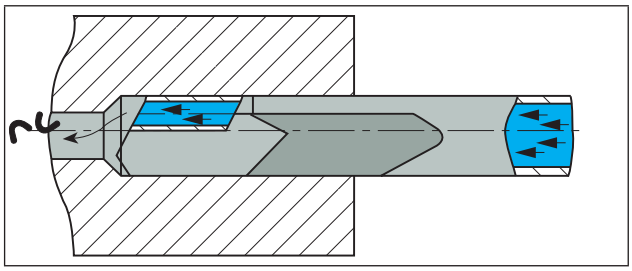


Figure 5

Boring with chip evacuation in the boring direction.

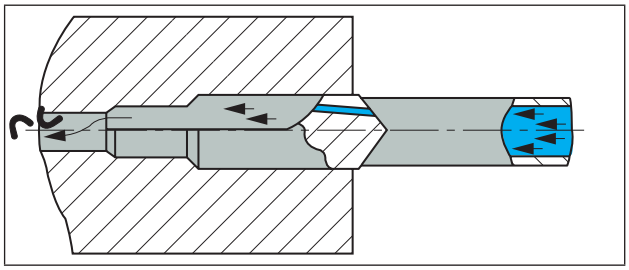
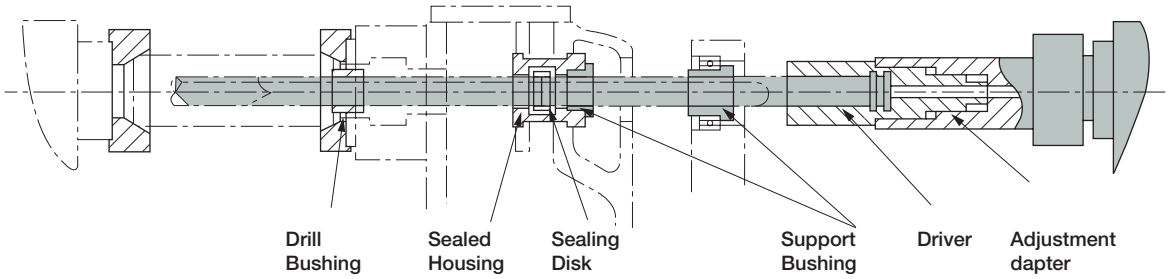


Figure 6

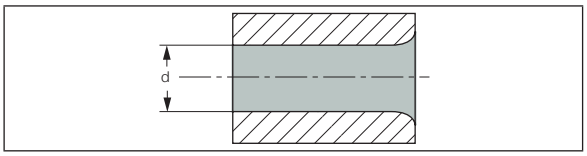
Boring with a staged tool chip evacuation and coolant flow in the boring direction.

Deep Hole Machine Accessories



Bushing

Based on modified DIN 179 specify the "d" diameter of the drill. Carbide bushing is delivered only on request.



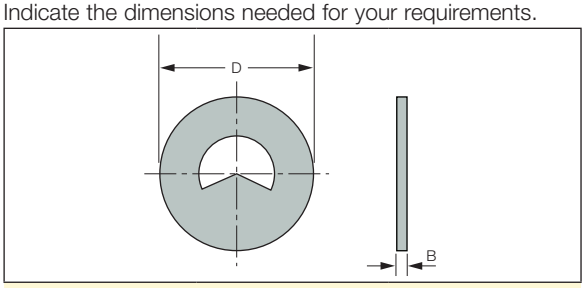
d = Drill diameter +0.02

Guide Bushings

As the gundrill is not a self-centering tool and its radial rigidity is low (due to diameter to length ratio), a guide bushing is an essential component for a proper gundrill operation. The function of the guide bushing is to direct the gundrill into the material during penetration. The diameter of the guide bushing should be within 20 microns larger than the diameter of the drill. Dedicated gundrill machines are equipped with a guide bushing system.

Sealing Disk

Supplied with a single sealing disk or a protection sheet. Indicate the dimensions needed for your requirements.

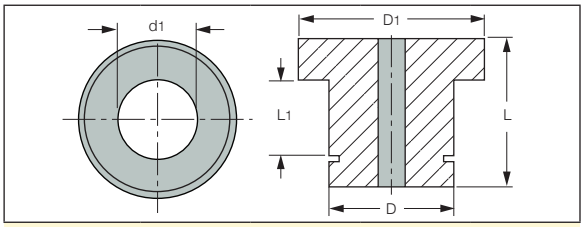


Sealing Disk		
Tool Ø "d"	**Ext. Ø "D"**	**Thick. " B"**
2 to 6	20	3
3,1 to 15,559	32	4
15,6 to 25,999	40	4
26 to 40	90	4

Sealing Disk With Protection		
Tool Ø "d1"	**Ext. Ø "D"**	**Thick. " B"**
2,9 - 5,249	20	7
5,25 - 14,449	32	11
14,45 - 25,999	40	12
26 - 41	90	12

Support Bushing

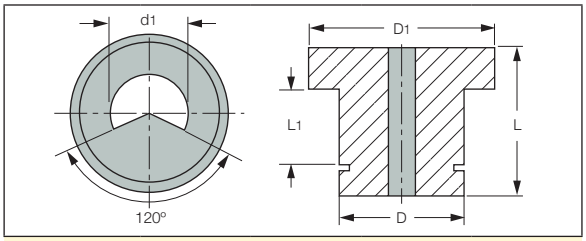
Indicate the "d" diameter of the drill.



Support Bushing				
Tool Ø "d1"	**Ext. Ø "D"**	**Ext. Ø "D1"**	**Length "L"**	**Length "L1"**
1,9 - 16,399	20	26	20	12
1,9 - 25,999	30	38	26	16
1,9 - 34	45	50	26	16

Support Bushing with "V" Form

Indicate the "d" diameter of the drill.



Support Bushing With "V" Form				
Tool Ø "d1"	**Ext. Ø "D"**	**Ext. Ø "D1"**	**Length " L"**	**Length " L1"**
1,9 - 16,399	20	26	20	12
1,9 - 23,799	30	38	26	16

Gundrill Recommended Machining Conditions

ISO	Material		Condition	Tensile Strength [N/mm²]	Hardness HB	Material Group No.(1)
P	non-alloy steel and cast steel, free cutting steel	<0.25% C	annealed	420	125	1
		≥0.25% C	annealed	650	190	2
		<0.55% C	quenched and tempered	850	250	3
		≥0.55% C	annealed	750	220	4
			quenched and tempered	1000	300	5
	low alloy and cast steel (less than 5% of alloying elements)		annealed	600	200	6
			quenched and tempered	930	275	7
				1000	300	8
				1200	350	9
	high alloyed steel, cast steel and tool steel		annealed	680	200	10
			quenched and tempered	1100	325	11
	stainless steel and cast steel		ferritic/martensitic	680	200	12
			martensitic	820	240	13
M	stainless steel and cast steel		austenitic, duplex	600	180	14
K	grey cast iron (GG)		ferritic/pearlitic		180	15
			pearlitic/martensitic		260	16
	nodular cast iron (GGG)		ferritic		160	17
			pearlitic		250	18
	malleable cast iron		ferritic		130	19
			pearlitic		230	20
N	aluminum-wrought alloys		not hardenable		60	21
			hardenable		100	22
	aluminum-cast alloys	≤12% Si	not hardenable		75	23
			hardenable		90	24
		>12% Si	high temperature		130	25
	copper alloys	>1% Pb	free cutting		110	26
			brass		90	27
			electrolitic copper		100	28
	non-metallic		duroplastics, fiber plastics			29
			hard rubber			30
S	high temp. alloys	Fe based	annealed		200	31
			hardened		280	32
		Ni or Co based	annealed		250	33
			hardened		350	34
			cast		320	35
	titanium alloys		pure	400		36
			alpha+beta alloys hardened	1050		37
H	hardened steel		hardened		55 HRC	38
			hardened		60 HRC	39
	chilled cast iron		cast		400	40
	cast iron		hardened		55 HRC	41

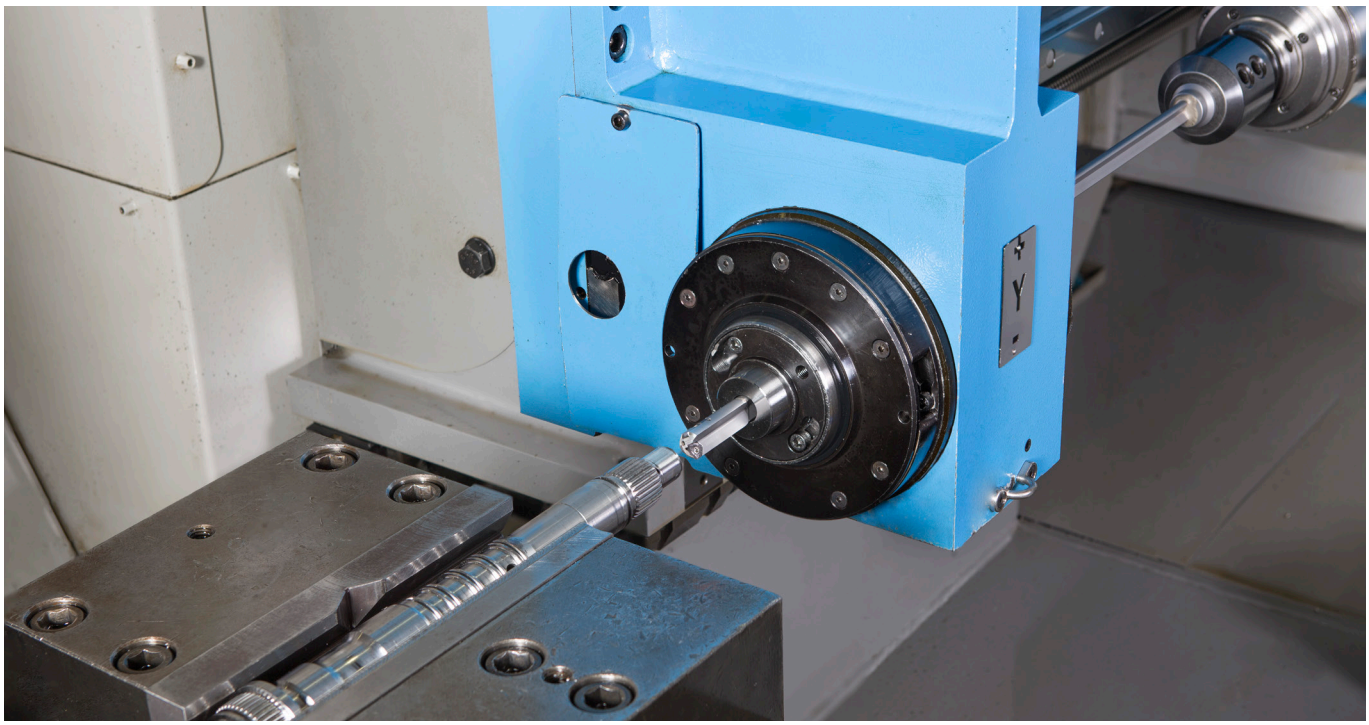
(1) Based on ISO 513 and VDI 3323 standards

Cutting Speed V_c (m/min)	Feed (mm/rev) Vs. Drill Diameter (mm)					
	Ø2.5-4	Ø4-6	Ø6-10	Ø10-15	Ø15-30	Ø30 and more
70-100	0.0033-0.012 / 0.0089-0.024	0.0089-0.024 / 0.015-0.039	0.015-0.039 / 0.025-0.071	0.025-0.071 / 0.037-0.11	0.037-0.11 / 0.055-0.19	0.061-0.23
60-80	0.0025-0.0094 / 0.0056-0.021	0.0056-0.021 / 0.011-0.036	0.011-0.036 / 0.023-0.063	0.023-0.063 / 0.034-0.097	0.034-0.097 / 0.063-0.16	0.078-0.2
60-80 40-60	0.0025-0.0094 / 0.0056-0.021	0.0056-0.021 / 0.011-0.036	0.011-0.036 / 0.023-0.063	0.023-0.063 / 0.034-0.097	0.034-0.097 / 0.063-0.16	0.078-0.2
40-60	0.0038-0.0064 / 0.008-0.016	0.008-0.016 / 0.014-0.028	0.014-0.028 / 0.026-0.053	0.026-0.053 / 0.042-0.084	0.042-0.084 / 0.087-0.15	0.11-0.18
40-60	0.0038-0.0064 / 0.008-0.016	0.008-0.016 / 0.014-0.028	0.014-0.028 / 0.026-0.053	0.026-0.053 / 0.042-0.084	0.042-0.084 / 0.087-0.15	0.11-0.18
70-100	0.0034-0.013 / 0.0092-0.031	0.0092-0.031 / 0.017-0.056	0.017-0.056 / 0.031-0.1	0.031-0.1 / 0.045-0.16	0.045-0.16 / 0.076-0.24	0.092-0.29
100-150	0.0029-0.037 / 0.011-0.12	0.011-0.12 / 0.019-0.22	0.019-0.22 / 0.042-0.4	0.042-0.4 / 0.067-0.6	0.067-0.6 / 0.11-0.9	0.14-1
80-120	0.0041-0.013 / 0.008-0.029	0.008-0.029 / 0.012-0.057	0.012-0.057 / 0.023-0.1	0.023-0.1 / 0.035-0.16	0.035-0.16 / 0.063-0.25	0.078-0.3
40-60	0.0019-0.0022 / 0.0052-0.0056	0.0052-0.0056 / 0.012-0.013	0.012-0.013 / 0.024-0.027	0.024-0.027 / 0.036-0.043	0.036-0.043 / 0.065-0.076	0.079-0.093
25-50	0.0019-0.0022 / 0.0052-0.0056	0.0052-0.0056 / 0.012-0.013	0.012-0.013 / 0.024-0.027	0.024-0.027 / 0.036-0.043	0.036-0.043 / 0.065-0.076	0.079-0.093
25-50	0.0019-0.0022 / 0.0052-0.0056	0.0052-0.0056 / 0.012-0.013	0.012-0.013 / 0.024-0.027	0.024-0.027 / 0.036-0.043	0.036-0.043 / 0.065-0.076	0.079-0.093

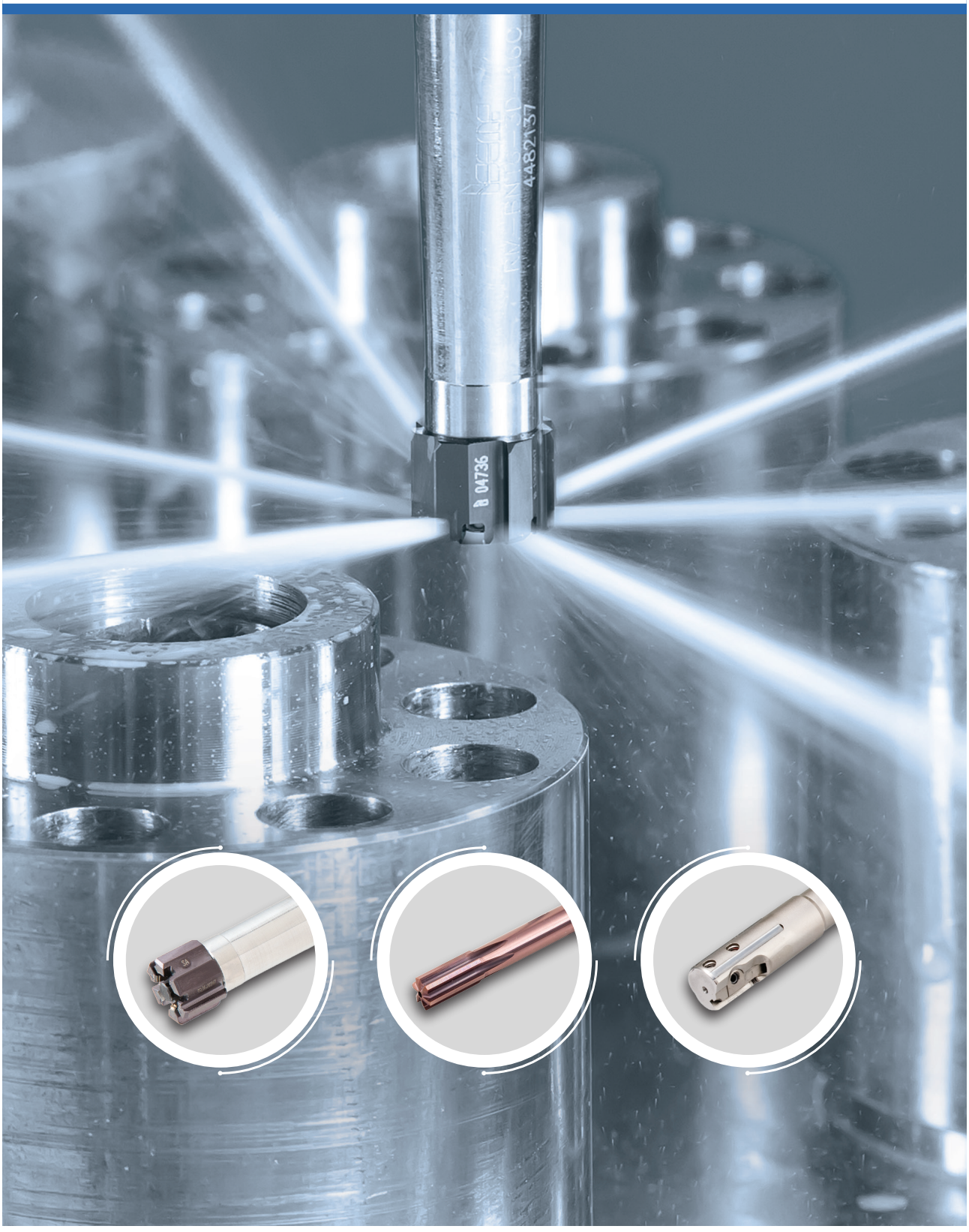
Gundrill Troubleshooting Guide

	Possible Causes																														
Hole Problems	Poor clamping	Insufficient coolant flow	Low coolant pressure	Incorrect coolant type	Feed fluctuations	Too high feed	Too low feed	Spindle speed too high	Spindle speed too low	Material structure	Material shrinking due to heat	Workpiece thin wall section	Misalignment	Undersized hole	Rough cutting edge finish	Built up edge	Worn out edge	Interrupted chip flow	Too small flute clearance	Incorrect drill profile	Incorrect head angles	Vibrations	Oversized bushing	A gap between bushing and workpiece	Bushing undersize	Loss of coolant pressure	High coolant pressure	Overheating coolant	Insufficent coolant	Head inside angle excessive wear	Head outside angle excessive wear	Too short carbide head	Tool heal drag	Worn supporting pads
Oversize	+	+				+							+			+		+		+	+	+	+	+			+		+	+		+	+	+
Undersize			+								+									+	+			+	+	+					+	+		
Rough surface finish		+	+	+	+	+			+		+			+		+	+	+		+	+	+		+		+		+	+	+	+	+	
Runout	+				+	+			+	+	+	+	+		+		+	+	+	+	+	+	+	+	+				+	+	+	+	+	+
Conical entrance						+															+	+	+	+		+								
Curved hole axis	+				+	+				+		+	+		+		+	+	+	+	+	+	+	+			+		+			+	+	

Drill Problems																																	
Breakage	+	+	+		+	+		+		+	+	+	+	+	+	+	+	+		+	+	+	+	+	+	+			+			+	+	+
Chipping					+		+			+					+		+		+		+	+									+		
Poor drill life		+	+	+	+	+	+	+		+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+		+	+	+	+	+	+	+
Excessive margin wear	+			+				+					+	+			+	+	+	+					+			+				+	+	
Excessive corner wear				+				+		+	+				+	+	+			+	+	+							+			+		+
Excessive flank wear		+		+		+		+					+	+				+	+		+			+	+			+				+	+	
Drill heat		+				+		+			+			+					+							+		+	+			+	+	+
Flute bending					+	+		+					+					+		+	+	+			+	+			+	+	+	+	+	+
Damaged wear pad				+				+		+	+		+	+				+	+	+		+			+	+		+	+	+		+	+	+
Built-up edge				+	+	+	+		+	+					+		+			+	+	+				+			+		+	+		
Cratering				+		+			+	+					+		+			+	+	+						+	+			+		+

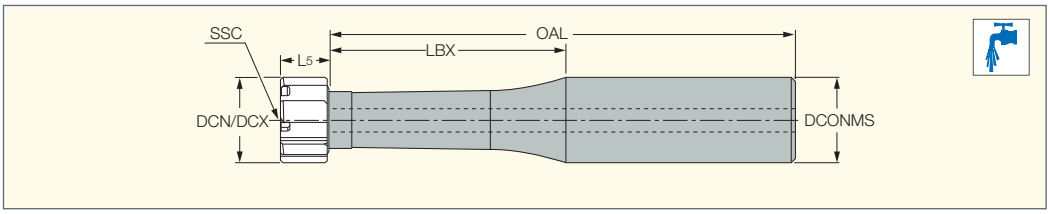


REAMERS



BAYO T-REAM

RM-BNT (Shanks)
Shanks for BAYO T-REAM
Interchangeable Head Reamers



Designation	ULDR(1)	DCN(2)	DCX(3)	LBX	OAL	L5	DCONMS	SSC(4)		
RM-BNT5-1.5D-16C	1.5	11.501	13.500	20.3	68.25	9.50	16.00	BN5	RM-BN5-SR	RM-BN5-K
RM-BNT6-1.5D-16C	1.5	13.501	16.000	24.0	72.00	9.50	16.00	BN6	RM-BN6-SR	RM-BN6-K
RM-BNT7-1.5D-20C	1.5	16.001	20.000	30.0	80.00	10.70	20.00	BN7	RM-BN7-SR	RM-BN7-K
RM-BNT8-1.5D-20C	1.5	20.001	25.400	38.1	88.10	12.90	20.00	BN8	RM-BN8-SR	RM-BN8-K
RM-BNT9-1.5D-25C	1.5	25.401	32.000	48.0	104.00	12.90	25.00	BN9	RM-BN9-SR	RM-BN9-K
RM-BNT9-1.5D-32C	1.5	25.401	32.000	48.0	108.00	12.90	32.00	BN9	RM-BN9-SR	RM-BN9-K
RM-BNT5-3D-16C	3.0	11.501	13.500	40.5	88.50	9.50	16.00	BN5	RM-BN5-SR	RM-BN5-K
RM-BNT6-3D-16C	3.0	13.501	16.000	48.0	96.00	9.50	16.00	BN6	RM-BN6-SR	RM-BN6-K
RM-BNT7-3D-20C	3.0	16.001	20.000	60.0	110.00	10.70	20.00	BN7	RM-BN7-SR	RM-BN7-K
RM-BNT8-3D-20C	3.0	20.001	25.400	75.0	125.00	12.90	20.00	BN8	RM-BN8-SR	RM-BN8-K
RM-BNT9-3D-25C	3.0	25.401	32.000	94.2	150.20	12.90	25.00	BN9	RM-BN9-SR	RM-BN9-K
RM-BNT9-3D-32C	3.0	25.401	32.000	94.2	154.20	12.90	32.00	BN9	RM-BN9-SR	RM-BN9-K
RM-BNT5-5D-16C	5.0	11.501	13.500	67.7	115.70	9.50	16.00	BN5	RM-BN5-SR	RM-BN5-K
RM-BNT6-5D-16C	5.0	13.501	16.000	80.0	128.00	9.50	16.00	BN6	RM-BN6-SR	RM-BN6-K
RM-BNT7-5D-20C	5.0	16.001	20.000	100.0	150.00	10.70	20.00	BN7	RM-BN7-SR	RM-BN7-K
RM-BNT8-5D-20C	5.0	20.001	25.400	125.0	175.00	12.90	20.00	BN8	RM-BN8-SR	RM-BN8-K
RM-BNT9-5D-32C	5.0	25.401	32.000	158.2	218.20	12.90	32.00	BN9	RM-BN9-SR	RM-BN9-K
RM-BNT5-8D-16C	8.0	11.501	13.500	108.2	156.20	9.50	16.00	BN5	RM-BN5-SR	RM-BN5-K
RM-BNT6-8D-16C	8.0	13.501	16.000	128.0	176.00	9.50	16.00	BN6	RM-BN6-SR	RM-BN6-K
RM-BNT7-8D-20C	8.0	16.001	20.000	160.0	210.00	10.70	20.00	BN7	RM-BN7-SR	RM-BN7-K
RM-BNT8-8D-20C	8.0	20.001	25.400	200.0	250.00	12.90	20.00	BN8	RM-BN8-SR	RM-BN8-K
RM-BNT9-8D-32C	8.0	25.401	32.000	254.2	314.20	12.90	32.00	BN9	RM-BN9-SR	RM-BN9-K

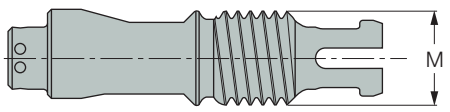
(1) Usable length diameter ratio
(2) Reamer min. diameter
(3) Reamer max. diameter
(4) Connection size

Holder Designation Code Key

RM	-	BNT6	-	3D	-	16	-	C (1)	-	□ (2)
Reamer		Bayonet Tool Size		Functional Length		Shank Diameter		Shank Type		Shank Material

(1) C- cylindrical, W-Weldon, M-Morse
(2) No letter - Steel (default), C-Carbide, W- Heavy metal

Bayonet Screw



Designation	Head Diameter	Bayonet Size	M
RM-BN5-SR	11.501-13.500	BN5	M5
RM-BN6-SR	13.501-16.000	BN6	M6
RM-BN7-SR	16.001-20.000	BN7	M7
RM-BN8-SR	20.001-25.400	BN8	M8
RM-BN9-SR	25.401-32.000	BN9	M9

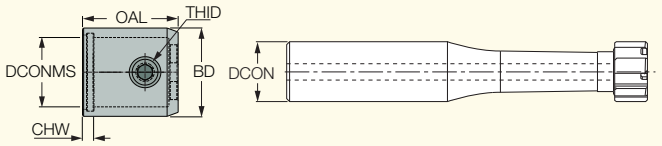
Clamping Key

Designation	Head Diameter	Bayonet Size
RM-BN5-K	11.501-13.500	BN5
RM-BN6-K	13.501-16.000	BN6
RM-BN7-K	16.001-20.000	BN7
RM-BN8-K	20.001-25.400	BN8
RM-BN9-K	25.401-32.000	BN9

BAYO T-REAM

RM-BN-RC-RING

Runout Adjustment Rings for
RM-BNT Reamer Holders



Designation	BD	OAL	DCONMS	THID	SS(1)	DCON(2)	CHW	
RM-BN5-RC-RING	20.00	20.00	16.20	M5x0.5	RM-BNT5	16.00	3.10	RM-BN5-RC-SR
RM-BN6-RC-RING	20.00	22.00	16.20	M6x0.5	RM-BNT6	16.00	3.10	RM-BN6-RC-SR
RM-BN7-RC-RING	24.00	26.00	20.20	M8x0.5	RM-BNT7	20.00	3.10	RM-BN7/8/9-RC-SR
RM-BN8-RC-RING	27.00	33.00	20.20	M8x0.5	RM-BNT8	20.00	3.10	RM-BN7/8/9-RC-SR
RM-BN9-RC-RING	39.00	35.00	32.20	M8x0.5	RM-BNT9	32.00	3.10	RM-BN7/8/9-RC-SR

(1) Reamer bayonet size
(2) RM-BNT reamer holder shank size

The **RM-BN-RC-RING** adjustment rings for **BAYO T-REAM** holders have been designed to reduce runout caused by the machine spindle, holder weight (in horizontal applications) or long overhang.

By reducing the runout, the **RM-BN-RC-RING** adjustment rings improve hole roundness, straightness and surface quality. Low runout, especially in high cutting conditions, provides higher process stability and prolongs tool life.

Advantages and Benefits

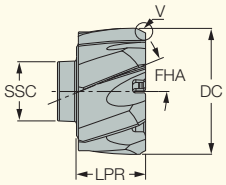
- Easy, user-friendly adjustment.
- Suitable for standard 3D, 5D & 8D RM-BNT holders.
- Improved process control and tool life.

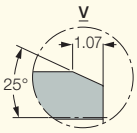
Maximum Runout Correction Values of Each Standard BAYO T-REAM Holder

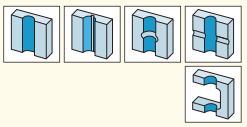
RM-BNT L/D	Holder Connection Size	Runout Correction Range	
		Min	Max
3D	BNT5	0.02	0.030
	BNT6		0.035
	BNT7		0.043
	BNT8		0.054
	BNT9		0.065
5D	BNT5		0.047
	BNT6		0.055
	BNT7		0.068
	BNT8		0.084
	BNT9		0.090
8D	BNT5		0.072
	BNT6		0.080
	BNT7		0.080
	BNT8		0.085
	BNT9		0.090

BAYOT-REAM

RM-BN-H7LB
Quick Change Left-Hand Flute Interchangeable Solid Carbide Reamers Heads for High Speed Reamers Through Holes







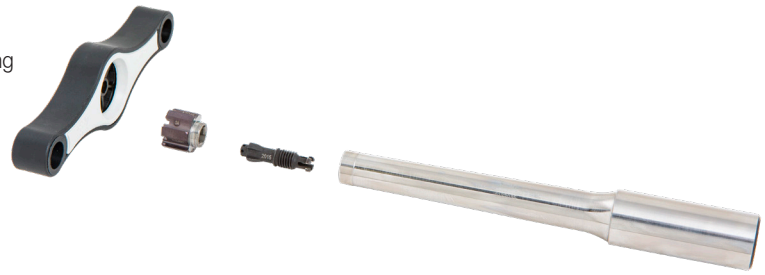
Designation	Dimensions					Tough ↔ Hard	
	SSC(2)	DC	LPR	NOF(3)	FHA	IC08	IC908
RM-BN5-11.501-H7LB	BN5	11.501	9.50	6	20.0	•	•
RM-BN5-12.000-H7LB	BN5	12.000	9.50	6	20.0	•	•
RM-BN5-13.000-H7LB	BN5	13.000	9.50	6	20.0	•	•
RM-BN5-13.500-H7LB	BN5	13.500	9.50	6	20.0	•	•
RM-BN6-13.501-H7LB	BN6	13.501	9.50	6	20.0	•	•
RM-BN6-14.000-H7LB	BN6	14.000	9.50	6	20.0	•	•
RM-BN6-15.000-H7LB	BN6	15.000	9.50	6	20.0	•	•
RM-BN6-16.000-H7LB	BN6	16.000	9.50	6	20.0	•	•
RM-BN7-16.001-H7LB	BN7	16.001	10.70	6	20.0	•	•
RM-BN7-17.000-H7LB	BN7	17.000	10.70	6	20.0	•	•
RM-BN7-18.000-H7LB	BN7	18.000	10.70	6	20.0	•	•
RM-BN7-19.000-H7LB	BN7	19.000	10.70	6	20.0	•	•
RM-BN7-20.000-H7LB	BN7	20.000	10.70	6	20.0	•	•
RM-BN8-20.001-H7LB	BN8	20.001	12.90	8	20.0	•	•
RM-BN8-21.000-H7LB	BN8	21.000	12.90	8	20.0	•	•
RM-BN8-22.000-H7LB	BN8	22.000	12.90	8	20.0	•	•
RM-BN8-23.000-H7LB	BN8	23.000	12.90	8	20.0	•	•
RM-BN8-24.000-H7LB	BN8	24.000	12.90	8	20.0	•	•
RM-BN8-25.000-H7LB	BN8	25.000	12.90	8	20.0	•	•
RM-BN9-26.000-H7LB (1)	BN9	26.000	12.90	8	20.0		•
RM-BN9-27.000-H7LB (1)	BN9	27.000	12.90	8	20.0		•
RM-BN9-28.000-H7LB (1)	BN9	28.000	12.90	8	20.0		•
RM-BN9-29.000-H7LB (1)	BN9	29.000	12.90	8	20.0		•
RM-BN9-30.000-H7LB (1)	BN9	30.000	12.90	8	20.0		•
RM-BN9-31.000-H7LB (1)	BN9	31.000	12.90	8	20.0		•
RM-BN9-32.000-H7LB (1)	BN9	32.000	12.90	8	20.0		•

• For user guide, see pages
(1) The uncoated fine grain IC08 is available on request
(2) Seat size code
(3) Number of flutes

Complementary Grades (on request):

IC30N cermet tipped, recommended for reaming the following materials: non-alloyed (mild) steel,low alloyed steel (<5% of alloying elements), free cutting steel, tempered steel (tensile strength <1100 N/mm^2) and nodular iron (GGG40, GGG60, etc.)

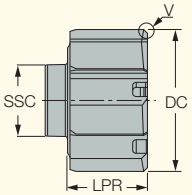
ID5 (PCD) recommended for high speed reaming aluminum (special cases).
RN01 (DLC coating) recommended for reaming the following materials: aluminum alloys (cast, wrought, etc.), brass, bronze and other nonferrous materials.

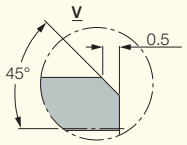


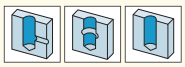
BAYOT-REAM

RM-BN-H7SA

Quick Change Straight Flute Interchangeable Solid Carbide Reamers Heads for High Speed Reamers Blind Holes







Designation	Dimensions				Tough ↔ Hard	
	SSC(2)	DC	LPR	NOF(3)	IC08	IC908
RM-BN5-11.501-H7SA	BN5	11.501	9.50	6	•	•
RM-BN5-12.000-H7SA	BN5	12.000	9.50	6	•	•
RM-BN5-13.000-H7SA	BN5	13.000	9.50	6	•	•
RM-BN5-13.500-H7SA	BN5	13.500	9.50	6	•	•
RM-BN6-13.501-H7SA	BN6	13.501	9.50	6	•	•
RM-BN6-14.000-H7SA	BN6	14.000	9.50	6	•	•
RM-BN6-15.000-H7SA	BN6	15.000	9.50	6	•	•
RM-BN6-16.000-H7SA	BN6	16.000	9.50	6	•	•
RM-BN7-16.001-H7SA	BN7	16.001	10.70	6	•	•
RM-BN7-17.000-H7SA	BN7	17.000	10.70	6	•	•
RM-BN7-18.000-H7SA	BN7	18.000	10.70	6	•	•
RM-BN7-19.000-H7SA	BN7	19.000	10.70	6	•	•
RM-BN7-20.000-H7SA	BN7	20.000	10.70	6	•	•
RM-BN8-20.001-H7SA	BN8	20.001	12.90	8	•	•
RM-BN8-21.000-H7SA	BN8	21.000	12.90	8	•	•
RM-BN8-22.000-H7SA	BN8	22.000	12.90	8	•	•
RM-BN8-23.000-H7SA	BN8	23.000	12.90	8		•
RM-BN8-24.000-H7SA	BN8	24.000	12.90	8	•	•
RM-BN8-25.000-H7SA	BN8	25.000	12.90	8	•	•
RM-BN9-26.000-H7SA	BN9	26.000	12.90	8	•	•
RM-BN9-27.000-H7SA (1)	BN9	27.000	12.90	8		•
RM-BN9-28.000-H7SA (1)	BN9	28.000	12.90	8		•
RM-BN9-29.000-H7SA (1)	BN9	29.000	12.90	8		•
RM-BN9-30.000-H7SA (1)	BN9	30.000	12.90	8		•
RM-BN9-31.000-H7SA (1)	BN9	31.000	12.90	8		•
RM-BN9-32.000-H7SA (1)	BN9	32.000	12.90	8		•

• For user guide, see pages

(1) The uncoated fine grain IC08 is available on request

(2) Seat size code

(3) Number of flutes

Complementary Grades (on request):

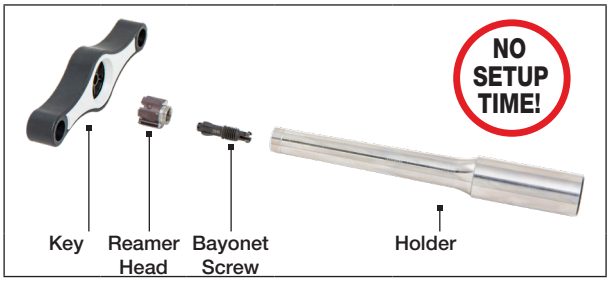
IC30N cermet tipped, recommended for reaming the following materials: non-alloyed (mild) steel,low alloyed steel (<5% of alloying elements), free cutting steel, tempered steel (tensile strength <1100 N/mm^2) and nodular iron (GGG40, GGG60, etc.).

ID5 (PCD) recommended for high speed reaming aluminum (special cases).

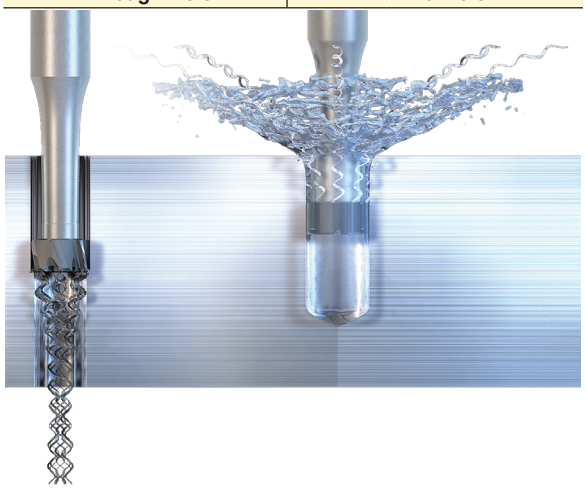
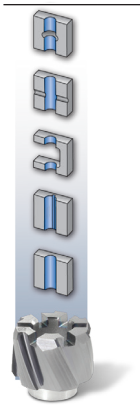
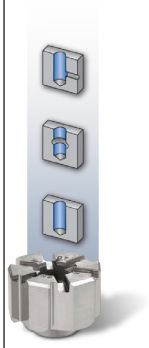
RN01 (DLC coating) recommended for reaming the following materials: aluminum alloys (cast, wrought, etc.), brass, bronze and other nonferrous materials.

The BAYO T-REAM Line Is Available in 5 Sizes

Each size has its own diameter range and holder.
For example:
The same RM-BN7 holder can hold any head between Ø16.001–20.000mm



RM-BN9	RM-BN8	RM-BN7	RM-BN6	RM-BN5
Ø25.401-32.000 mm	Ø20.001-25.400 mm	Ø16.001-20.000 mm	Ø13.501-16.000 mm	Ø11.500-13.500 mm

Through Hole	Blind Hole
	
	
Left-Hand Flute The left-hand spiral is designed especially for through hole Reamers. Due to this design, the chips are being pushed forward immediately after formation.	**Straight Flute** The coolant flow assists the chip evacuation process. It directs the just-formed chips backwards. The chips pass through the straight flutes and are thrown out of the hole, without causing any damage to the reamer or hole surface.

ATTENTION: Cutting tools can break during use.
To avoid injury always use safety precautions
such as gloves, shields and eye protection.

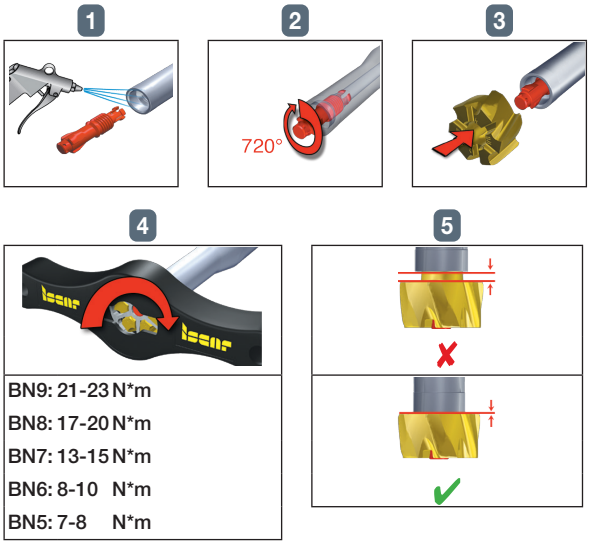
Assembly Instructions (BN5-BN9)

First Assembly

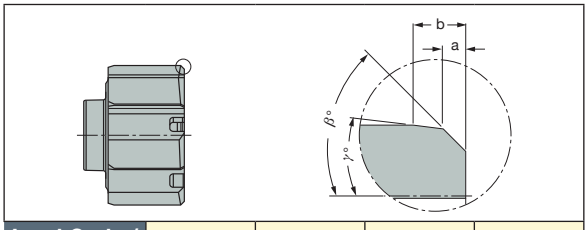
- Clean the toolholder pocket (Fig. 1)
- Clean the reamer head clamping cone
- Insert the clamping screw into the holder and rotate it 2-3 turns in a clockwise direction (Fig. 2)
- Clamp the Reamers head on the screw; note, BN8 and BN9 can be assembled only in a specific position relative to the screw (rotate the head until locating the correct position) (Fig. 3)
- Manually rotate the Reamers head until it sits firmly in the pocket
- Tighten with the special key (Fig. 4)
- Make sure there is no face gap between the toolholder and the Reamers head (Fig. 5)

Indexing

- Release the Reamers head with the key, turning in a counterclockwise direction until it rotates freely
- Rotate another one turn by hand
- Remove the reamer head from the tool; the clamping screw should remain inside!!!
- Clean the pocket of the toolholder (Fig. 1)
- Clean the cone on the new reamer head
- Clamp the Reamers head on the screw; note, BN8 and BN9 can be assembled only in a specific position relative to the screw (rotate the head until locating the correct position) (Fig. 3)
- Manually rotate the Reamers head. In the beginning it should rotate without the screw and then (after 1/6 of a turn) it should engage with the screw. Rotate until it sits firmly in the pocket. If the screw rotates together with the Reamers head from the beginning, remove the Reamers head and open the screw another one turn.
- Tighten with the special key (Fig. 4)
- Make sure that there is no face gap between the toolholder and the Reamers head (Fig. 5)



BN9: 21-23 N*m
BN8: 17-20 N*m
BN7: 13-15 N*m
BN6: 8-10 N*m
BN5: 7-8 N*m



Lead Code / Parameter	B°	A [mm]	G°	B [mm]
A	45°	0.5	-	-
B	25°	1.07	-	-
C	45°	0.5	8°	0.75
D	30°	0.5	4°	1.85
E	45°	0.2	-	-
F	90°	-	-	-
G	75°	0.15	-	-
X	Specially Tailored (undesignated)			

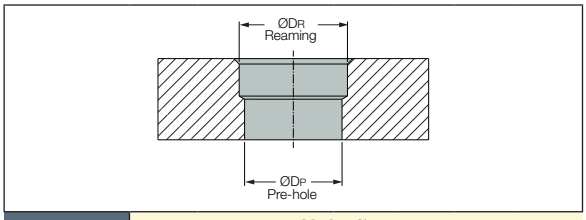
When choosing a reamer, it is important to select a lead geometry that covers the Reamers allowance.

Reamers Allowance

Reamers allowance is the stock material which should be removed by Reamers. It is recommended to leave different Reamers allowances depending on the workpiece material and the pre-hole quality. Pre-hole should be smooth and straight, without deep scratches on it.

Complementary Grades (On Request):

IC30N cermet tipped, recommended for Reamers the following materials: non-alloyed (mild) steel, low alloyed steel (<5% of alloying elements), free cutting steel, tempered steel (tensile strength <1100 N/mm^2) and nodular iron (GGG40, GGG60, etc.) ID5 (PCD) recommended for high speed Reamers of aluminum (special cases). RN01 (DLC coating) recommended for Reamers the following materials: aluminum alloys (cast, wrought, etc.), brass, bronze and other nonferrous materials.



Material	Hole Ø mm						
	< 9.5	9.5 - 11.5	11.5 - 13.5	13.5 - 16	16 - 32	>32	
Steel and Cast Iron	0.07-0.10	0.07-0.15	0.10-0.20	0.10-0.30	0.10-0.30	0.20-0.40	mm/Ø
Aluminum and Brass	0.07-0.10	0.10-0.15	0.15-0.25	0.20-0.30	0.20-0.40	0.20-0.50	mm/Ø
Δ - Reamers allowance						Δ = ØDR - ØDP	

* For best performance of the reamer, it is advised to create at least a minimal chamfer on the top of the pre-hole to eliminate sharp edges and burrs.

Recommeded Cutting Conditions for BAYO T-REAM High Speed Reamers Heads

ISO	Material	Condition	Material No.(1)	Through Hole				Interrupted Through Hole			
				First Choice		Second Choice		First Choice		Second Choice	
P	non-alloy steel and cast steel, free cutting steel	annealed	1	IC908	LB	IC30N	LA	IC908	LB	IC908	SA
		annealed	2	V_c = 80 - 200		V_c = 90 - 240		V_c = 60 - 120		V_c = 60 - 120	
		quenched & tempered	3	BN4 - BN6	f_z = 0.08 - 0.21	BN4 - BN6	f_z = 0.08 - 0.21	BN4 - BN6	f_z = 0.06 - 0.18	BN4 - BN6	f_z = 0.05 - 0.15
		annealed	4								
		quenched & tempered	5	BN7 - BN9	f_z = 0.12 - 0.27	BN7 - BN9	f_z = 0.12 - 0.27	BN7 - BN9	f_z = 0.09 - 0.21	BN7 - BN9	f_z = 0.07 - 0.16
	low alloy and cast steel (less than 5% of alloying elements)	annealed	6	IC908	LB	IC30N	LA	IC908	LB	IC908	SA
			7	V_c = 80 - 200		V_c = 90 - 240		V_c = 60 - 120		V_c = 60 - 120	
		quenched & tempered	8	BN4 - BN6	f_z = 0.08 - 0.21	BN4 - BN6	f_z = 0.08 - 0.21	BN4 - BN6	f_z = 0.06 - 0.18	BN4 - BN6	f_z = 0.05 - 0.15
			9	BN7 - BN9	f_z = 0.12 - 0.27	BN7 - BN9	f_z = 0.12 - 0.27	BN7 - BN9	f_z = 0.09 - 0.21	BN7 - BN9	f_z = 0.07 - 0.16
	high alloyed steel, cast steel and tool steel	annealed	10	IC908	LB	IC908	SA	IC908	LB	IC908	SA
				V_c = 20 - 60		V_c = 20 - 60		V_c = 20 - 60		V_c = 20 - 60	
		quenched & tempered	11	BN4 - BN6	f_z = 0.05 - 0.13	BN4 - BN6	f_z = 0.04 - 0.11	BN4 - BN6	f_z = 0.04 - 0.11	BN4 - BN6	f_z = 0.03 - 0.09
				BN7 - BN9	f_z = 0.07 - 0.17	BN7 - BN9	f_z = 0.06 - 0.14	BN7 - BN9	f_z = 0.05 - 0.14	BN7 - BN9	f_z = 0.04 - 0.11
	stainless steel	ferritic / martensitic	12	IC908	LB	IC908	SA	IC908	LB	IC908	SA
				V_c = 20 - 40		V_c = 20 - 40		V_c = 20 - 40		V_c = 20 - 40	
		martensitic	13	BN4 - BN6	f_z = 0.05 - 0.13	BN4 - BN6	f_z = 0.04 - 0.11	BN4 - BN6	f_z = 0.04 - 0.11	BN4 - BN6	f_z = 0.03 - 0.09
M	stainless steel	austentic	14	BN7 - BN9	f_z = 0.07 - 0.17	BN7 - BN9	f_z = 0.06 - 0.14	BN7 - BN9	f_z = 0.05 - 0.14	BN7 - BN9	f_z = 0.04 - 0.11
K	grey iron (GG)	ferritic	15	IC908	LB	IC908	SA	IC908	LB	IC908	SA
				V_c = 120 - 220		V_c = 120 - 220		V_c = 80 - 200		V_c = 80 - 200	
		pearlitic	16	BN4 - BN6	f_z = 0.08 - 0.18	BN4 - BN6	f_z = 0.08 - 0.16	BN4 - BN6	f_z = 0.05 - 0.13	BN4 - BN6	f_z = 0.05 - 0.13
				BN7 - BN9	f_z = 0.10 - 0.24	BN7 - BN9	f_z = 0.10 - 0.22	BN7 - BN9	f_z = 0.07 - 0.17	BN7 - BN9	f_z = 0.07 - 0.17
	nodular iron (GGG)	pearlitic / ferritic	17	IC908	SA or LB	IC30N	LA	IC908	LB	IC908	SA
				V_c = 160 - 280		V_c = 160 - 300		V_c = 150 - 250		V_c = 150 - 250	
		pearlitic / martensitic	18	BN4 - BN6	f_z = 0.11 - 0.20	BN4 - BN6	f_z = 0.11 - 0.20	BN4 - BN6	f_z = 0.06 - 0.15	BN4 - BN6	f_z = 0.06 - 0.15
				BN7 - BN9	f_z = 0.11 - 0.24	BN7 - BN9	f_z = 0.11 - 0.24	BN7 - BN9	f_z = 0.08 - 0.19	BN7 - BN9	f_z = 0.08 - 0.19
	malleable iron, nodular iron ferritic / pearlitic	ferritic	19	IC908	SA or LB	IC30N	LA or SA	IC908	LB	IC908	SA
				V_c = 100 - 220		V_c = 100 - 240		V_c = 100 - 220		V_c = 100 - 220	
		pearlitic	20	BN4 - BN6	f_z = 0.11 - 0.20	BN4 - BN6	f_z = 0.11 - 0.20	BN4 - BN6	f_z = 0.06 - 0.15	BN4 - BN6	f_z = 0.06 - 0.15
				BN7 - BN9	f_z = 0.11 - 0.24	BN7 - BN9	f_z = 0.11 - 0.24	BN7 - BN9	f_z = 0.08 - 0.20	BN7 - BN9	f_z = 0.08 - 0.19
N	aluminum wrought alloy	not cureable	21	RN01	LG or SG	ID5	SG	RN01	LG	ID5	SG
		cured	22	V_c = 150 - 400		V_c = 200 - 500		V_c = 150 - 350		V_c = 200 - 500	
	aluminum - cast, alloyed	not cureable	23								
		cured	24	BN4 - BN6	f_z = 0.08 - 0.16	BN4 - BN6	f_z = 0.08 - 0.2	BN4 - BN6	f_z = 0.08 - 0.16	BN4 - BN6	f_z = 0.08 - 0.2
		high temperature	25	BN7 - BN9	f_z = 0.10 - 0.20	BN7 - BN9	f_z = 0.11 - 0.24	BN7 - BN9	f_z = 0.10 - 0.20	BN7 - BN9	f_z = 0.11 - 0.24
	copper alloys brass, bronze	free cutting	26	IC30N	SA or SG	IC08	SG or SA	IC08	SG or SA		
				V_c = 180 - 240		V_c = 30 - 100		V_c = 30 - 100			
		brass	27	BN4 - BN6	f_z = 0.05 - 0.16	BN4 - BN6	f_z = 0.04 - 0.13	BN4 - BN6	f_z = 0.04 - 0.13		
		electrolitic copper	28	BN7 - BN9	f_z = 0.04 - 0.20	BN7 - BN9	f_z = 0.05 - 0.16	BN7 - BN9	f_z = 0.05 - 0.16		
	non-metallic	duroplastics, fiber plastics	29	IC908	SA	IC908	LB	IC908	SA	IC908	LB
				V_c = 25 - 80		V_c = 25 - 80		V_c = 25 - 80		V_c = 25 - 80	
		hard rubber	30	BN4 - BN6	f_z = 0.05 - 0.10	BN4 - BN6	f_z = 0.05 - 0.12	BN4 - BN6	f_z = 0.05 - 0.10	BN4 - BN6	f_z = 0.05 - 0.12
				BN7 - BN9	f_z = 0.10 - 0.20	BN7 - BN9	f_z = 0.10 - 0.23	BN7 - BN9	f_z = 0.10 - 0.20	BN7 - BN9	f_z = 0.10 - 0.23
S	* high temp. alloys	annealed	31	IC908	L *	IC908	S*	IC908	L*	IC908	S*
		cured	32	V_c = 15 - 50		V_c = 15 - 50		V_c = 15 - 50		V_c = 15 - 50	
		annealed	33								
		cured	34	BN4 - BN6	f_z = 0.04 - 0.10	BN4 - BN6	f_z = 0.04 - 0.10	BN4 - BN6	f_z = 0.03 - 0.08	BN4 - BN6	f_z = 0.03 - 0.08
		cast	35								
				BN7 - BN9	f_z = 0.05 - 0.13	BN7 - BN9	f_z = 0.05 - 0.13	BN7 - BN9	f_z = 0.04 - 0.11	BN7 - BN9	f_z = 0.04 - 0.11
H	hardened steel	hardened	38	IC908	LB	IC908	SA	IC908	LB	IC908	SA
		hardened	39	V_c = 25 - 50		V_c = 25 - 50		V_c = 25 - 50		V_c = 25 - 50	
		cast	40	BN4 - BN6	f_z = 0.06 - 0.15	BN4 - BN6	f_z = 0.05 - 0.13	BN4 - BN6	f_z = 0.06 - 0.15	BN4 - BN6	f_z = 0.05 - 0.13
		hardened	41	BN7 - BN9	f_z = 0.10 - 0.20	BN7 - BN9	f_z = 0.10 - 0.20	BN7 - BN9	f_z = 0.10 - 0.20	BN7 - BN9	f_z = 0.10 - 0.20

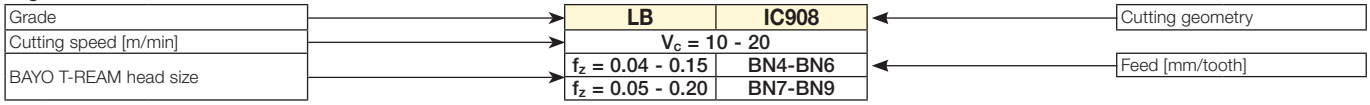
* Standard edge geometries are not suitable for Reamers titanium and high temperature alloys. In order to choose a proper geometry, please ask for our recommendations.

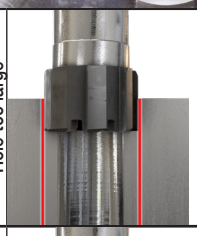
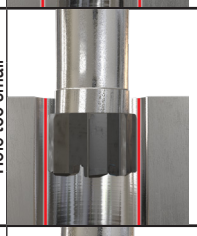
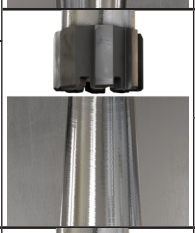
- The given cutting data recommendations refer to the short holders (3xD effective Reamers overhang). For longer holders, the cutting speed should be reduced proportionally.
- For relatively large leading angles (spot-facing geometries), the feed should be reduced up to 30%.
- All the given cutting data recommendations refer to the machines with spindle through coolant supply.

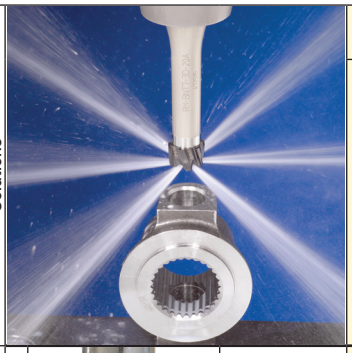
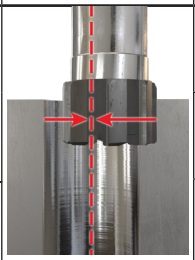
(1) For workpiece materials list, see pages 491-520

Material No.	Blind Hole				Interrupted Blind Hole				IC08	
	First Choice		Second Choice		First Choice		Second Choice		Through Hole - LB Blind Hole - SA	
1	IC908	SA	IC30N	SA	IC908	SA			V_c = 6 - 10	
2	V_c = 60-160		V_c = 90 - 200		V_c = 60 - 120					
3	BN_4 - BN6	f_z = 0.06 - 0.18	BN_4 - BN6	f_z = 0.06 - 0.18	BN_4 - BN6	f_z = 0.05 - 0.15			BN_4 - BN6	f_z = 0.05 - 0.17
4										
5	BN7 - BN9	f_z = 0.08 - 0.20	BN7 - BN9	f_z = 0.08 - 0.21	BN7 - BN9	f_z = 0.07 - 0.16			BN7 - BN9	f_z = 0.07 - 0.20
6	IC908	SA	IC30N	SA	IC908	SA			V_c = 6 - 10	
7	V_c = 60-160		V_c = 90 - 200		V_c = 60 - 120					
8	BN_4 - BN6	f_z = 0.06 - 0.18	BN_4 - BN6	f_z = 0.06 - 0.18	BN_4 - BN6	f_z = 0.05 - 0.15			BN_4 - BN6	f_z = 0.05 - 0.17
9	BN7 - BN9	f_z = 0.08 - 0.20	BN7 - BN9	f_z = 0.08 - 0.21	BN7 - BN9	f_z = 0.07 - 0.16			BN7 - BN9	f_z = 0.07 - 0.20
10	IC908	SA			IC908	SA			V_c = 6 - 10	
	V_c = 20 - 60				V_c = 20 - 60					
11	BN_4 - BN6	f_z = 0.04 - 0.10			BN_4 - BN6	f_z = 0.03 - 0.08			BN_4 - BN6	f_z = 0.03 - 0.08
	BN7 - BN9	f_z = 0.05 - 0.13			BN7 - BN9	f_z = 0.04 - 0.10			BN7 - BN9	f_z = 0.05 - 0.10
12	IC908	SA			IC908	SA			V_c = 4 - 8	
	V_c = 20 - 40				V_c = 20 - 40					
13	BN_4 - BN6	f_z = 0.04 - 0.10			BN_4 - BN6	f_z = 0.03 - 0.08			BN_4 - BN6	f_z = 0.03 - 0.08
14	BN7 - BN9	f_z = 0.05 - 0.13			BN7 - BN9	f_z = 0.05 - 0.10			BN7 - BN9	f_z = 0.05 - 0.10
15	IC908	SA			IC908	SA			V_c = 8 - 20	
	V_c = 80 - 200				V_c = 60 - 120					
16	BN_4 - BN6	f_z = 0.06 - 0.18			BN_4 - BN6	f_z = 0.05 - 0.13			BN_4 - BN6	f_z = 0.08 - 0.16
	BN7 - BN9	f_z = 0.08 - 0.23			BN7 - BN9	f_z = 0.08 - 0.18			BN7 - BN9	f_z = 0.10 - 0.20
17	IC908	SA	IC30N	SA	IC908	SA			V_c = 9 - 20	
	V_c = 160 - 280		V_c = 160 - 280		V_c = 160 - 240					
18	BN_4 - BN6	f_z = 0.06 - 0.18	BN_4 - BN6	f_z = 0.06 - 0.18	BN_4 - BN6	f_z = 0.06 - 0.16			BN_4 - BN6	f_z = 0.06 - 0.16
	BN7 - BN9	f_z = 0.08 - 0.23	BN7 - BN9	f_z = 0.08 - 0.24	BN7 - BN9	f_z = 0.08 - 0.18			BN7 - BN9	f_z = 0.08 - 0.20
19	IC908	SA	IC30N	SA	IC908	SA			V_c = 10 - 20	
	V_c = 100 - 220		V_c = 100 - 240		V_c = 100 - 220					
20	BN_4 - BN6	f_z = 0.06 - 0.18	BN_4 - BN6	f_z = 0.06 - 0.18	BN_4 - BN6	f_z = 0.05 - 0.15			BN_4 - BN6	f_z = 0.05 - 0.15
	BN7 - BN9	f_z = 0.08 - 0.23	BN7 - BN9	f_z = 0.08 - 0.23	BN7 - BN9	f_z = 0.08 - 0.20			BN7 - BN9	f_z = 0.08 - 0.15
21	RN01	SG or SA	ID5	SG or SA	RN01	SG or SA	ID5	SG or SA	V_c = 10 - 30	
22	V_c = 150 - 400		V_c = 200 - 400		V_c = 150 - 300		V_c = 200 - 400			
23										
24	BN_4 - BN6	f_z = 0.08 - 0.16	BN_4 - BN6	f_z = 0.08 - 0.16	BN_4 - BN6	f_z = 0.07 - 0.15	BN_4 - BN6	f_z = 0.08 - 0.16	BN_4 - BN6	f_z = 0.05 - 0.12
25	BN7 - BN9	f_z = 0.11 - 0.20	BN7 - BN9	f_z = 0.11 - 0.24	BN7 - BN9	f_z = 0.11 - 0.20	BN7 - BN9	f_z = 0.11- 0.24	BN7 - BN9	f_z = 0.08 - 0.15
26	IC30N	SG or SA	IC08	SG or SA	IC08	SG or SA			V_c = 30 - 100	
	V_c = 180 - 240		V_c = 30 - 100		V_c = 30 - 100					
27	BN_4 - BN6	f_z = 0.05 - 0.16	BN_4 - BN6	f_z = 0.04 - 0.13	BN_4 - BN6	f_z = 0.04 - 0.13			BN_4 - BN6	f_z = 0.04 - 0.13
28	BN7 - BN9	f_z = 0.05 - 0.21	BN7 - BN9	f_z = 0.05 - 0.16	BN7 - BN9	f_z = 0.05 - 0.16			BN7 - BN9	f_z = 0.05 - 0.16
29	IC908	SA			IC908	SA			V_c = 10 - 20	
	V_c = 25 - 80				V_c = 25 - 80					
30	BN_4 - BN6	f_z = 0.05 - 0.10			BN_4 - BN6	f_z = 0.05 - 0.10			BN_4 - BN6	f_z = 0.05 - 0.12
	BN7 - BN9	f_z = 0.10 - 0.20			BN7 - BN9	f_z = 0.10 - 0.20			BN7 - BN9	f_z = 0.08 - 0.16
31	IC908	S*			IC908	S*				
32	V_c = 15 - 50				V_c = 15 - 50					
33										
34	BN_4 - BN6	f_z = 0.03 - 0.08			BN_4 - BN6	f_z = 0.03 - 0.08				
35										
—	BN7 - BN9	f_z = 0.04 - 0.11			BN7 - BN9	f_z = 0.04 - 0.11				
38	IC908	SA			IC908	SA				
39	V_c = 25 - 50				V_c = 25 - 50					
40	BN_4 - BN6	f_z = 0.05 - 0.13			BN_4 - BN6	f_z = 0.05 - 0.13				
41	BN7 - BN9	f_z = 0.10 - 0.20			BN7 - BN9	f_z = 0.10 - 0.20				

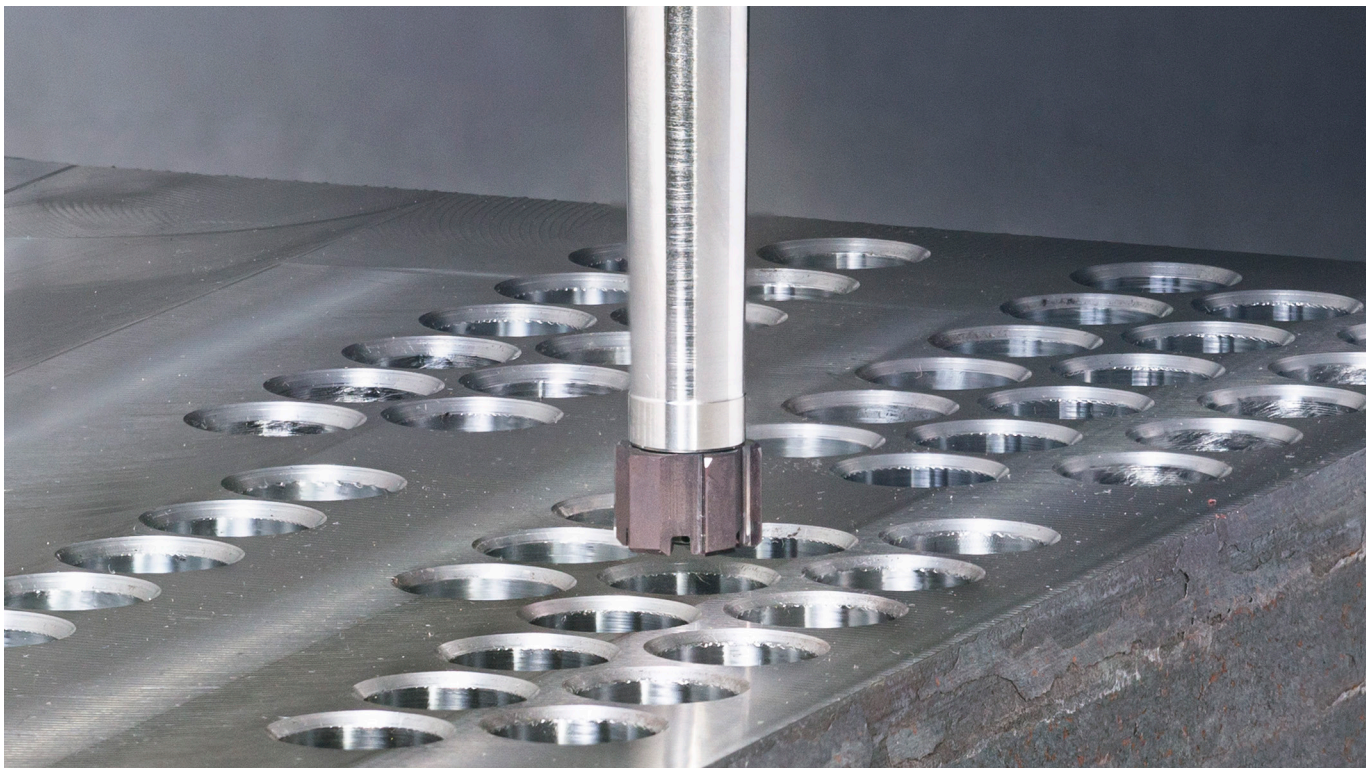
Legend:



Solutions				Cutting Data/ Allowance			Tool; Toolholder						Workpiece	Machine			Machining Process			
				Feed fZ	Spindle speed min^{-1}	Diameter allowance	Geometry angle	Runout maximum 5µm	Wear check / Change insert	Optimize tool length and diameter	Floating chuck GFIS	ADJ chuck FineFit/RC RING	Workpiece fixture / Pressure	Coolant mixture	Coolant pressure	Angle error / Centic error / Axis deviation	Spindle speed on entry	Entry geomerty / Chamfer / Oblique surface at entry	Feed in and out same	Chip evacuation
Problem	Hole too large		Vibration	●			●						●	●	●		●	●		
			Runout error					●			●	●								
			Built up edge	●	●	●			●								●			
			Diameter allowance			●														●
	Hole too small		Tool wear						●				● ●	● ●	● ●			●		
			Compression of material				●		●				● ●					●	●	
			Compression of clamping			●	●													
			Diameter allowance			●														
	Tapered hole		Deformation by clamping			●							● ●							
			Unequal wall thickness			●	●													
			Machine					●		●	●	●				●				
			Chip flow											●	●					●
	Hole shows chatter marks		Vibration	●	●	●	●		●	●			●	●	●		●	●		
			Rumout error					●		●	●	●				●				
	Insufficient surface		Vibration	●	●		●		●	●			●	●			●	●		
			Built up edge	●	●				●					●	●					
			Runout error					●			●	●								
			Cutting geometry						●	●										●
			Machine										●	●		●				

Problem			Solutions	Cutting Data/ Allowance			Tool; Toolholder						Workpiece	Machine			Machining Process			
				Feed fZ	Spindle speed min^{-1}	Diameter allowance	Geometry angle	Runout maximum 5µm	Wear check / Change insert	Optimize tool length and diameter	Floating chuck GFIS	ADJ chuck FineFit/RC RING	Workpiece fixture / Pressure	Coolant mixture	Coolant pressure	Angle error / Centic error / Axis deviation	Spindle speed on entry	Entry geomerty / Chamfer / Oblique surface at entry	Feed in and out same	Chip evacuation
Retraction marks		Built up edge		●	●			●	●	●	●	●		●		●		●		
		Compression of material				●	●		●	●	●	●	●					●	●	
		Compression of clamping																		
Slight defect in shape / noncircular hole		Tool wear				●			●											●
		Chip flow				●								●	●					●
		Machine					●	●	●	●	●	●				●		● ●		●
		Compression of clamping				●							●							

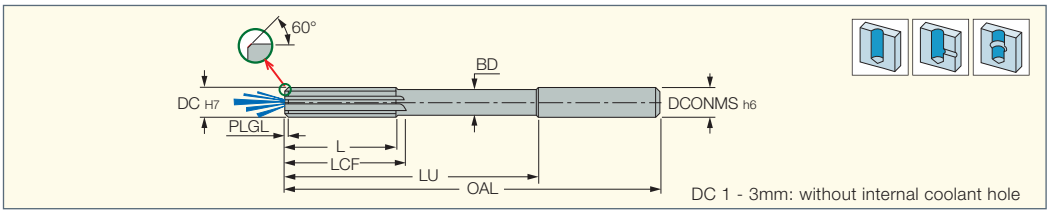
● check / optimize
● increase / improve
● reduce / decrease
● apply / use



SOLIDH-REAM

RM-MTR-H7S-CS-C

UOP Solid Carbide Reamers with Straight Flutes, Unequal Pitch and Coolant Holes for High Speed Reamers Blind Holes

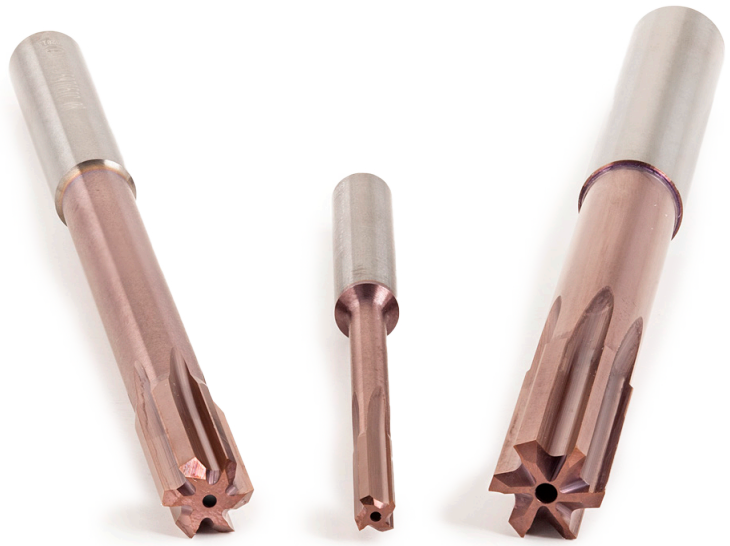


Designation	Dimensions										EVO
	DC	L	PLGL	LCF	BD	LU	OAL	NOF(1)	DCONMS	CSP(2)	
RM-MTR-0100-H7S-CS-C	1.000	6.00	0.100	11.0	0.90	21.0	50.00	3	4.00	0	●
RM-MTR-0150-H7S-CS-C	1.500	9.00	0.150	15.0	1.10	21.0	50.00	3	4.00	0	●
RM-MTR-0200-H7S-CS-C	2.000	12.00	0.150	16.0	1.60	21.0	50.00	4	4.00	0	●
RM-MTR-0250-H7S-CS-C	2.500	12.00	0.200	19.0	2.10	31.0	60.00	4	4.00	0	●
RM-MTR-0300-H7S-CS-C	3.000	12.00	0.250	21.0	2.40	31.0	60.00	4	4.00	0	●
RM-MTR-0350-H7S-CS-C	3.500	12.00	0.250	21.0	2.90	40.0	68.00	4	4.00	1	●
RM-MTR-0400-H7S-CS-C	4.000	12.00	0.400	17.0	3.40	40.0	68.00	4	6.00	1	●
RM-MTR-0450-H7S-CS-C	4.500	12.00	0.400	17.0	3.40	40.0	76.00	4	6.00	1	●
RM-MTR-0500-H7S-CS-C	5.000	12.00	0.400	17.0	3.80	40.0	76.00	4	6.00	1	●
RM-MTR-0550-H7S-CS-C	5.500	12.00	0.400	17.0	4.10	40.0	76.00	4	6.00	1	●
RM-MTR-0600-H7S-CS-C	6.000	12.00	0.400	17.0	4.50	40.0	76.00	4	6.00	1	●
RM-MTR-0650-H7S-CS-C	6.500	15.00	0.400	20.0	5.20	65.0	101.00	6	8.00	1	●
RM-MTR-0700-H7S-CS-C	7.000	15.00	0.400	20.0	5.60	65.0	101.00	6	8.00	1	●
RM-MTR-0750-H7S-CS-C	7.500	15.00	0.400	20.0	6.00	65.0	101.00	6	8.00	1	●
RM-MTR-0800-H7S-CS-C	8.000	15.00	0.400	20.0	6.40	65.0	101.00	6	8.00	1	●
RM-MTR-0850-H7S-CS-C	8.500	18.00	0.400	23.0	6.80	61.0	101.00	6	10.00	1	●
RM-MTR-0900-H7S-CS-C	9.000	18.00	0.400	23.0	7.20	61.0	101.00	6	10.00	1	●
RM-MTR-0950-H7S-CS-C	9.500	18.00	0.400	23.0	7.60	61.0	101.00	6	10.00	1	●
RM-MTR-1000-H7S-CS-C	10.000	18.00	0.500	23.0	8.00	61.0	101.00	6	10.00	1	●
RM-MTR-1050-H7S-CS-C	10.500	18.00	0.500	23.0	8.40	85.0	130.00	6	12.00	1	●
RM-MTR-1100-H7S-CS-C	11.000	18.00	0.500	23.0	8.80	85.0	130.00	6	12.00	1	●
RM-MTR-1150-H7S-CS-C	11.500	18.00	0.500	23.0	9.20	85.0	130.00	6	12.00	1	●
RM-MTR-1200-H7S-CS-C	12.000	18.00	0.500	23.0	9.60	85.0	130.00	6	12.00	1	●

• EVO is a hard submicron IC07 carbide substrate with an ultra-thin silicon based PVD coating, obtained by High Density Plasma (HDP) technology • Hole tolerance: H7 manufacturing tolerance according to DIN 1420

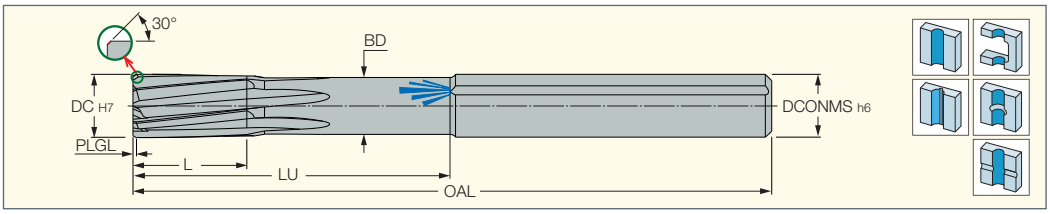
(1) Number of flutes

(2) 0 - Without coolant supply, 1 - With coolant supply



SOLIDH-REAM

RM-MTR-H7N-CS-C
Solid Carbide Reamers with Helical Flutes, Unequal Pitch and Coolant Grooves for High Speed Reamers of Through Holes



Designation	Dimensions									EVO
	DC	L	PLGL	BD	LU	OAL	NOF(1)	DCONMS	CSP(2)	
RM-MTR-0100-H7N-CS-C	1.000	6.00	0.200	0.80	21.0	50.00	3	4.00	0	●
RM-MTR-0150-H7N-CS-C	1.500	7.00	0.350	1.10	21.0	50.00	3	4.00	0	●
RM-MTR-0200-H7N-CS-C	2.000	9.00	0.450	1.50	21.0	50.00	4	4.00	0	●
RM-MTR-0250-H7N-CS-C	2.500	12.00	0.550	1.90	31.0	60.00	4	4.00	0	●
RM-MTR-0300-H7N-CS-C	3.000	12.00	0.700	2.20	31.0	60.00	4	4.00	0	●
RM-MTR-0350-H7N-CS-C	3.500	12.00	0.700	2.60	40.0	68.00	4	4.00	0	●
RM-MTR-0400-H7N-CS-C	4.000	12.00	0.700	3.00	40.0	68.00	4	6.00	1	●
RM-MTR-0450-H7N-CS-C	4.500	12.00	0.900	3.40	40.0	76.00	4	6.00	1	●
RM-MTR-0500-H7N-CS-C	5.000	12.00	0.900	3.80	40.0	76.00	4	6.00	1	●
RM-MTR-0550-H7N-CS-C	5.500	12.00	0.900	4.10	40.0	76.00	4	6.00	1	●
RM-MTR-0600-H7N-CS-C	6.000	12.00	0.900	4.50	40.0	76.00	4	6.00	1	●
RM-MTR-0650-H7N-CS-C	6.500	15.00	0.900	5.20	65.0	101.00	6	8.00	1	●
RM-MTR-0700-H7N-CS-C	7.000	15.00	0.900	5.60	65.0	101.00	6	8.00	1	●
RM-MTR-0750-H7N-CS-C	7.500	15.00	0.900	6.00	65.0	101.00	6	8.00	1	●
RM-MTR-0800-H7N-CS-C	8.000	15.00	0.900	6.40	65.0	101.00	6	8.00	1	●
RM-MTR-0850-H7N-CS-C	8.500	18.00	0.950	6.80	61.0	101.00	6	10.00	1	●
RM-MTR-0900-H7N-CS-C	9.000	18.00	0.950	7.20	61.0	101.00	6	10.00	1	●
RM-MTR-0950-H7N-CS-C	9.500	18.00	0.950	7.60	61.0	101.00	6	10.00	1	●
RM-MTR-1000-H7N-CS-C	10.000	18.00	0.950	8.00	61.0	101.00	6	10.00	1	●
RM-MTR-1050-H7N-CS-C	10.500	18.00	1.050	8.40	85.0	130.00	6	12.00	1	●
RM-MTR-1100-H7N-CS-C	11.000	18.00	1.050	8.80	85.0	130.00	6	12.00	1	●
RM-MTR-1150-H7N-CS-C	11.500	18.00	1.050	9.20	85.0	130.00	6	12.00	1	●
RM-MTR-1200-H7N-CS-C	12.000	18.00	1.050	9.60	85.0	130.00	6	12.00	1	●

• EVO is a hard submicron IC07 carbide substrate with an ultra-thin silicon based PVD coating, obtained by High Density Plasma (HDP) technology • Hole tolerance: H7 manufacturing tolerance according to DIN 1420

(1) Number of flutes

(2) 0 - Without coolant supply, 1 - With coolant supply

RM-MTR Cutting Speed Recommendations

ISO	Main Material Group	Material Type	ISCAR Material Group	V_c (m/min)
P	steel	non-alloy and alloy steel	1-10	120-250
		high alloy and tool steel	11	70-120
		ferritic and martensitic stainless steel	12,13	60-120
M	stainless steel	austenitic stainless steel	14	60-120
		duplex and super duplex stainless steel		25-60
K	cast iron	grey cast iron	15-16	70-120
		nodular cast iron	17-18	60-110
		malleable cast iron	19-20	60-110
N	non-ferrous metals	aluminium alloys	21-24	150-300
S	superalloys and titanium	Fe- based HRSA	31-32	40-80
		Ni- or Co- based HRSA	33-35	25-50
		titanium or titanium alloys	36-37	30-80
H	hard materials	hardened steel and cast iron, chilled cast iron	38,40-41	25-60

Feed Recommendations

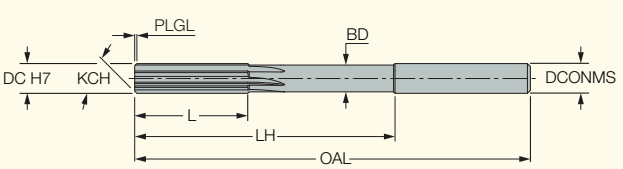
Reamer Diameter mm	Feed mm/rev
1.00-1.50	0.05-0.10
2.00-3.50	0.10-0.20
4.00-5.00	0.10-0.40
5.50-7.50	0.15-0.70
8.00-10.0	0.50-1.40
10.5-12.0	0.80-1.60

Runout max 0.005 mm

SOLIDH-REAM

RM-FCR-H7S-CS-C

DIN 212C Solid Carbide Reamers with Straight Flutes and a Cylindrical Shank for Blind Holes



Designation	Dimensions											IC07
	DC	L	LH	BD	OAL	PLGL	MinTol(1)	MaxTol(2)	KCH	NOF(3)	DCONMS	
RM-FCR-0300-H7S-CS-C	3.00	15.00	30.0	-	61.00	0.300	0.000	0.100	45.0	6	3.00	●
RM-FCR-0320-H7S-CS-C	3.20	18.00	33.0	-	70.00	0.300	0.000	0.100	45.0	6	3.20	●
RM-FCR-0350-H7S-CS-C	3.50	18.00	33.0	-	70.00	0.300	0.000	0.100	45.0	6	3.50	●
RM-FCR-0400-H7S-CS-C	4.00	19.00	44.0	3.50	75.00	0.400	0.000	0.100	45.0	6	4.00	●
RM-FCR-0450-H7S-CS-C	4.50	21.00	46.0	4.00	80.00	0.400	0.000	0.100	45.0	6	4.50	●
RM-FCR-0500-H7S-CS-C	5.00	23.00	53.0	4.30	86.00	0.400	0.000	0.100	45.0	6	5.00	●
RM-FCR-0550-H7S-CS-C	5.50	26.00	56.0	4.50	93.00	0.400	0.000	0.100	45.0	6	5.60	●
RM-FCR-0600-H7S-CS-C	6.00	26.00	56.0	5.00	93.00	0.500	-0.100	0.100	45.0	6	5.60	●
RM-FCR-0650-H7S-CS-C	6.50	28.00	63.0	5.50	101.00	0.500	-0.100	0.100	45.0	6	6.30	●
RM-FCR-0700-H7S-CS-C	7.00	31.00	69.0	6.50	109.00	0.500	-0.100	0.100	45.0	6	7.10	●
RM-FCR-0750-H7S-CS-C	7.50	31.00	69.0	6.50	109.00	0.500	-0.100	0.100	45.0	6	7.10	●
RM-FCR-0800-H7S-CS-C	8.00	33.00	75.0	7.00	117.00	0.600	-0.100	0.100	45.0	6	8.00	●
RM-FCR-0850-H7S-CS-C	8.50	33.00	75.0	7.00	117.00	0.600	-0.100	0.100	45.0	6	8.00	●
RM-FCR-0900-H7S-CS-C	9.00	36.00	81.0	8.00	125.00	0.600	-0.100	0.100	45.0	6	9.00	●
RM-FCR-0950-H7S-CS-C	9.50	36.00	81.0	8.00	125.00	0.600	-0.100	0.100	45.0	6	9.00	●
RM-FCR-1000-H7S-CS-C	10.00	38.00	87.0	9.00	133.00	0.700	-0.100	0.100	45.0	6	10.00	●
RM-FCR-1050-H7S-CS-C	10.50	38.00	87.0	9.00	133.00	0.700	-0.100	0.100	45.0	6	10.00	●
RM-FCR-1100-H7S-CS-C	11.00	41.00	96.0	9.00	142.00	0.700	-0.100	0.100	45.0	6	10.00	●
RM-FCR-1200-H7S-CS-C	12.00	44.00	105.0	9.00	151.00	0.800	-0.100	0.100	45.0	6	10.00	●
RM-FCR-1300-H7S-CS-C	13.00	44.00	105.0	9.00	151.00	0.800	-0.100	0.100	45.0	6	10.00	●
RM-FCR-1400-H7S-CS-C	14.00	47.00	110.0	11.50	160.00	0.800	-0.100	0.100	45.0	8	12.50	●
RM-FCR-1500-H7S-CS-C	15.00	50.00	112.0	11.50	162.00	0.800	-0.100	0.100	45.0	8	12.50	●
RM-FCR-1600-H7S-CS-C	16.00	52.00	120.0	11.50	170.00	0.800	-0.100	0.100	45.0	8	12.50	●

• Hole tolerance: H7 manufacturing tolerance according to DIN1420 • Available grades: IC07 - uncoated, optional: IC907 - TiAlN PVD coated • Special diameters are available on request • For user guide and cutting conditions, see pages

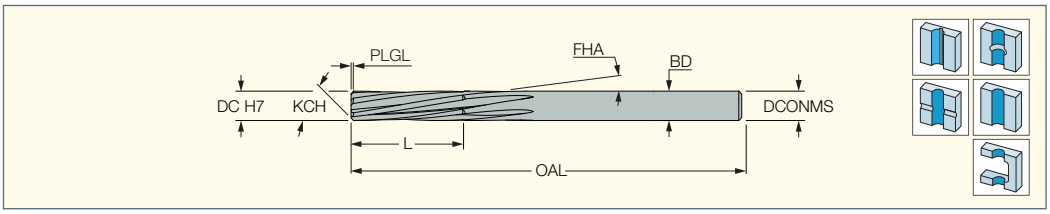
(1) PLGL upper tolerance

(2) PLGL upper tolerance

(3) Number of flutes

SOLIDH-REAM

RM-FCR-H7N-CS-C
DIN 212B Solid Carbide Reamers with Helical Flutes and a Cylindrical Shank for Through Holes



Designation	Dimensions										IC07
	DC	L	OAL	PLGL	MinTol(1)	MaxTol(2)	KCH	FHA	NOF(3)	DCONMS	
RM-FCR-0300-H7N-CS-C	3.00	15.00	61.00	0.300	0.000	0.100	45.0	10.0	5	3.00	●
RM-FCR-0350-H7N-CS-C	3.50	18.00	70.00	0.300	0.000	0.100	45.0	10.0	5	3.50	●
RM-FCR-0400-H7N-CS-C	4.00	19.00	75.00	0.400	0.000	0.100	45.0	10.0	5	4.00	●
RM-FCR-0450-H7N-CS-C	4.50	21.00	80.00	0.400	0.000	0.100	45.0	10.0	5	4.50	●
RM-FCR-0500-H7N-CS-C	5.00	23.00	86.00	0.400	0.000	0.100	45.0	10.0	5	5.00	●
RM-FCR-0550-H7N-CS-C	5.50	26.00	93.00	0.400	0.000	0.100	45.0	10.0	6	5.50	●
RM-FCR-0600-H7N-CS-C	6.00	26.00	93.00	0.500	-0.100	0.100	45.0	10.0	6	6.00	●
RM-FCR-0650-H7N-CS-C	6.50	28.00	101.00	0.500	-0.100	0.100	45.0	10.0	6	6.50	●
RM-FCR-0700-H7N-CS-C	7.00	31.00	109.00	0.500	-0.100	0.100	45.0	10.0	6	7.00	●
RM-FCR-0750-H7N-CS-C	7.50	33.00	117.00	0.500	-0.100	0.100	45.0	10.0	6	7.50	●
RM-FCR-0800-H7N-CS-C	8.00	33.00	117.00	0.600	-0.100	0.100	45.0	10.0	6	8.00	●
RM-FCR-0850-H7N-CS-C	8.50	36.00	125.00	0.600	-0.100	0.100	45.0	10.0	6	8.50	●
RM-FCR-0900-H7N-CS-C	9.00	36.00	125.00	0.600	-0.100	0.100	45.0	10.0	6	9.00	●
RM-FCR-0950-H7N-CS-C	9.50	38.00	133.00	0.600	-0.100	0.100	45.0	10.0	6	9.50	●
RM-FCR-1000-H7N-CS-C	10.00	38.00	133.00	0.700	-0.100	0.100	45.0	10.0	6	10.00	●
RM-FCR-1050-H7N-CS-C	10.50	41.00	142.00	0.700	-0.100	0.100	45.0	10.0	7	10.50	●
RM-FCR-1100-H7N-CS-C	11.00	41.00	142.00	0.700	-0.100	0.100	45.0	10.0	7	11.00	●
RM-FCR-1200-H7N-CS-C	12.00	44.00	151.00	0.800	-0.100	0.100	45.0	10.0	7	12.00	●
RM-FCR-1300-H7N-CS-C	13.00	44.00	151.00	0.800	-0.100	0.100	45.0	10.0	7	13.00	●
RM-FCR-1400-H7N-CS-C	14.00	47.00	160.00	0.800	-0.100	0.100	45.0	10.0	7	14.00	●
RM-FCR-1500-H7N-CS-C	15.00	50.00	162.00	0.800	-0.100	0.100	45.0	10.0	7	15.00	●
RM-FCR-1600-H7N-CS-C	16.00	52.00	170.00	0.800	-0.100	0.100	45.0	10.0	7	16.00	●

• Hole tolerance: H7 manufacturing tolerance according to DIN1420 • Available grades: IC07 - uncoated, optional: IC907 - TiAlN PVD coated • Special diameters are available on request • For user guide and cutting conditions, see pages

(1) PLGL lower tolerance

(2) PLGL upper tolerance

(3) Number of flutes

Machining Conditions for Solid Carbide Reamers

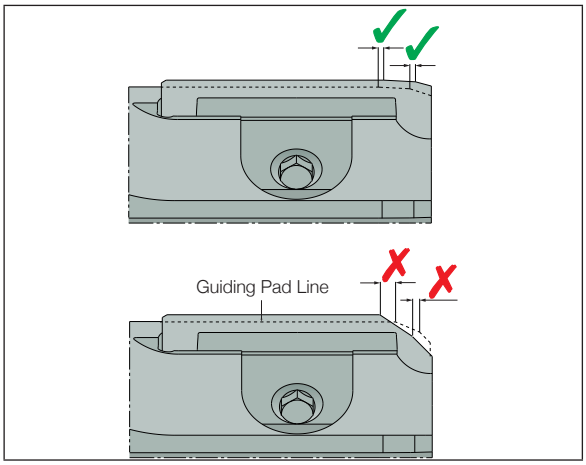
Material	Tensile Strength or Brinell Hardness N/mm² Bzw. HB	Reamer Diameter mm	Reamers Allowance Relative to Diameter mm	Feed mm/rev	Cutting Speed m/min
Steel	up to 1000	up to 10 10-25 25-40	0.04-0.10 0.10-0.25 0.25-0.40	0.15-0.25 0.20-0.35 0.30-0.50	6-20
	1000-1400	up to 10 10-25 25-40	0.04-0.10 0.10-0.25 0.25-0.40	0.12-0.20 0.15-0.30 0.20-0.40	6-15
Cast Steel	400-500	up to 10 10-25 25-40	0.05-0.10 0.10-0.25 0.25-0.40	0.15-0.25 0.20-0.40 0.30-0.50	10-20
	500-700	up to 10 10-25 25-40	0.04-0.10 0.10-0.25 0.25-0.40	0.12-0.20 0.15-0.30 0.20-0.40	6-15
Titanium Titanium Alloy	500-1300	up to 10 10-25 25-40	0.06-0.12 0.10-0.25 0.25-0.40	0.12-0.20 0.15-0.30 0.20-0.40	6-15
Grey Cast Iron	up to 220 HB	up to 10 10-25 25-40	0.06-0.12 0.10-0.30 0.30-0.50	0.20-0.30 0.30-0.45 0.40-0.70	10-25
	over 220 HB	up to 10 10-25 25-40	0.06-0.12 0.10-0.30 0.30-0.50	0.15-0.25 0.20-0.35 0.30-0.50	10-20
Spheroidal Graphite Cast Iron Malleable Cast Iron		up to 10 10-25 25-40	0.06-0.12 0.10-0.25 0.25-0.40	0.15-0.25 0.20-0.40 0.30-0.60	8-15
Aluminum Alloy	over 80 HB	up to 10 10-25 25-40	0.06-0.12 0.10-0.30 0.30-0.50	0.20-0.30 0.30-0.50 0.40-0.70	Si<7% 10-30 Si<7% 30-60
Copper		up to 10 10-25 25-40	0.10-0.20 0.20-0.40 0.40-0.60	0.30-0.60 0.40-0.80 0.50-1.00	20-60
Brass Red Bronze Cast Bronze		up to 10 10-25 25-40	0.06-0.12 0.10-0.30 0.30-0.50	0.20-0.30 0.30-0.50 0.40-0.70	15-50
Thermoset Polymers		up to 10 10-25 25-40	0.10-0.25 0.20-0.40 0.40-0.60	0.30-0.60 0.40-0.80 0.50-1.00	15-30

High Speed Reamers System with Internal Coolant Holes

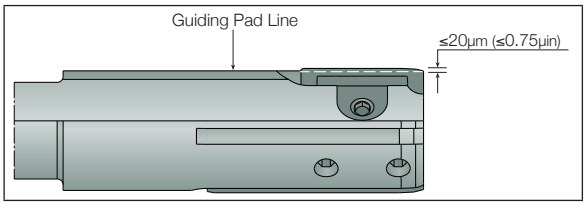
The **INDEX-H-REAM** standard line covers Reamers applications of 8-32mm hole diameters. The indexable cutting insert has two cutting corners with 4 lead angle options and 3 rake angle variations, covering most workpiece material types.
The **INDEX-H-REAM** single indexable insert with carbide pads provides a combination of economical and high precision results on a very wide range of materials.

Important

Lead type of the tool (pads) should be compatible with the lead type of the insert. Using an improper insert will damage the tool and the reamed part.



The guiding pads are precisely ground for a specific diameter, and therefore, can only be used for Reamers on appropriate hole sizes. The adjustment mechanism is designed for a specific diameter setting and for wear compensation (a few microns only). The same tool can not be used for Reamers different diameters.



Tool Designation Code Key

RM	SET	12.000[1]	H6	T	B	C16	S
Reamer	Single Edged Tool	Hole Diameter	Hole Tolerance				

Hole Type

B	Blind
T	Through

Lead Type[2]

A, B, C, D
(see page 351)
Note: A, C,
D - optional

Shank Type

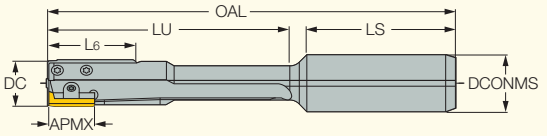
C	Cylindrical
W	Weldon
F	Flat

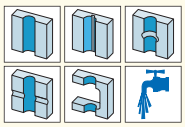
Reamer Length S-Short

(1) To be ordered for each specific diameter and tolerance
(2) Tool lead type - according to insert's lead type

INDEXH-REAM

RM-SET-T-B
Single Edged Indexable
Reamers for Through Holes

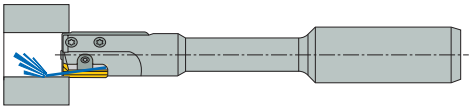




Designation	DC	APMX	L6[1]	LU	LS	OAL	DCONMS	SSC[2]
RM-SET8.000H6T-B-C16S	8.000	15.50	30.00	75.0	45.0	123.50	16.00	1.0
RM-SET9.000H6T-B-C16S	9.000	15.50	30.00	75.0	45.0	123.50	16.00	1.0
RM-SET10.000H6T-B-C16S	10.000	15.50	30.00	75.0	45.0	123.50	16.00	2.0
RM-SET11.000H6T-B-C16S	11.000	15.50	30.00	75.0	45.0	123.50	16.00	2.0
RM-SET12.000H6T-B-C16S	12.000	17.00	30.00	85.0	45.0	135.00	16.00	3.0
RM-SET13.000H6T-B-C16S	13.000	17.00	30.00	85.0	45.0	135.00	16.00	3.0
RM-SET14.000H6T-B-C16S	14.000	17.00	30.00	85.0	45.0	135.00	16.00	3.0
RM-SET15.000H6T-B-C16S	15.000	17.00	30.00	85.0	45.0	135.00	16.00	3.0
RM-SET16.000H6T-B-C20S	16.000	17.00	30.00	110.0	50.0	165.00	20.00	3.0
RM-SET17.000H6T-B-C20S	17.000	17.00	30.00	110.0	50.0	165.00	20.00	3.0
RM-SET18.000H6T-B-C20S	18.000	17.00	30.00	110.0	50.0	165.00	20.00	3.0
RM-SET19.000H6T-B-C20S	19.000	17.00	30.00	110.0	50.0	165.00	20.00	3.0
RM-SET20.000H6T-B-C25S	20.000	17.00	30.00	110.0	56.0	171.00	25.00	3.0
RM-SET21.000H6T-B-C25S	21.000	17.00	30.00	110.0	56.0	171.00	25.00	3.0
RM-SET22.000H6T-B-C25S	22.000	17.00	30.00	130.0	56.0	191.00	25.00	3.0
RM-SET23.000H6T-B-C25S	23.000	17.00	30.00	130.0	56.0	191.00	25.00	3.0
RM-SET24.000H6T-B-C25S	24.000	17.00	30.00	130.0	56.0	191.00	25.00	3.0
RM-SET25.000H6T-B-C25S	25.000	17.00	30.00	130.0	56.0	191.00	25.00	3.0
RM-SET26.000H6T-B-C25S	26.000	22.50	30.00	160.0	56.0	221.00	25.00	4.0
RM-SET27.000H6T-B-C25S	27.000	22.50	30.00	160.0	56.0	221.00	25.00	4.0
RM-SET28.000H6T-B-C25S	28.000	22.50	30.00	160.0	56.0	221.00	25.00	4.0
RM-SET29.000H6T-B-C25S	29.000	22.50	30.00	160.0	56.0	221.00	25.00	4.0
RM-SET30.000H6T-B-C25S	30.000	22.50	30.00	160.0	56.0	221.00	25.00	4.0
RM-SET31.000H6T-B-C25S	31.000	22.50	30.00	160.0	56.0	221.00	25.00	4.0
RM-SET32.000H6T-B-C25S	32.000	22.50	30.00	160.0	56.0	221.00	25.00	4.0

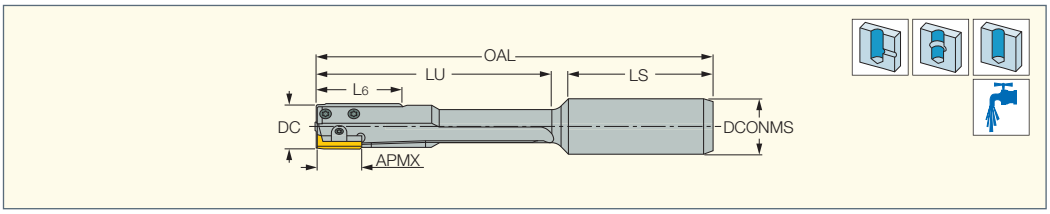
• For spare parts, see page • For user guide and cutting conditions, see pages
[1] Pad length
[2] Insert size

For inserts, see pages: RM-SEI-B ()
For holders, see pages: BT-HYDRO SF () • C#-HYDRO SF () • DIN69871-HYDRO SF () • HSK A-HYDRO SF () • HSK A-SRKIN FL () • SC-HYDRO-HP ()



INDEXH-REAM

RM-SET-B-B
Single Edged Indexable
Reamers for Blind Holes



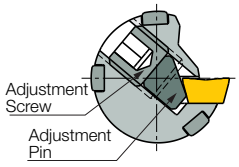
Designation	DC	APMX	OAL	LS	LU	L6(1)	DCONMS	SSC(2)
RM-SET10.000H6B-B-C16S	10.000	15.50	123.50	45.0	75.0	30.00	16.00	2.0
RM-SET11.000H6B-B-C16S	11.000	15.50	123.50	45.0	75.0	30.00	16.00	2.0
RM-SET12.000H6B-B-C16S	12.000	17.00	135.00	45.0	85.0	30.00	16.00	3.0
RM-SET13.000H6B-B-C16S	13.000	17.00	135.00	45.0	85.0	30.00	16.00	3.0
RM-SET14.000H6B-B-C16S	14.000	17.00	135.00	45.0	85.0	30.00	16.00	3.0
RM-SET15.000H6B-B-C16S	15.000	17.00	135.00	45.0	85.0	30.00	16.00	3.0
RM-SET16.000H6B-B-C20S	16.000	17.00	165.00	50.0	110.0	30.00	20.00	3.0
RM-SET17.000H6B-B-C20S	17.000	17.00	165.00	50.0	110.0	30.00	20.00	3.0
RM-SET18.000H6B-B-C20S	18.000	17.00	165.00	50.0	110.0	30.00	20.00	3.0
RM-SET19.000H6B-B-C20S	19.000	17.00	165.00	50.0	110.0	30.00	20.00	3.0
RM-SET20.000H6B-B-C25S	20.000	17.00	171.00	56.0	110.0	30.00	25.00	3.0
RM-SET21.000H6B-B-C25S	21.000	17.00	171.00	56.0	110.0	30.00	25.00	3.0
RM-SET22.000H6B-B-C25S	22.000	17.00	191.00	56.0	130.0	30.00	25.00	3.0
RM-SET23.000H6B-B-C25S	23.000	17.00	191.00	56.0	130.0	30.00	25.00	3.0
RM-SET24.000H6B-B-C25S	24.000	17.00	191.00	56.0	130.0	30.00	25.00	3.0
RM-SET25.000H6B-B-C25S	25.000	17.00	191.00	56.0	130.0	30.00	25.00	3.0
RM-SET26.000H6B-B-C25S	26.000	22.50	221.00	56.0	160.0	30.00	25.00	4.0
RM-SET27.000H6B-B-C25S	27.000	22.50	221.00	56.0	160.0	30.00	25.00	4.0
RM-SET28.000H6B-B-C25S	28.000	22.50	221.00	56.0	160.0	30.00	25.00	4.0
RM-SET29.000H6B-B-C25S	29.000	22.50	221.00	56.0	160.0	30.00	25.00	4.0
RM-SET30.000H6B-B-C25S	30.000	22.50	221.00	56.0	160.0	30.00	25.00	4.0
RM-SET31.000H6B-B-C25S	31.000	22.50	221.00	56.0	160.0	30.00	25.00	4.0
RM-SET32.000H6B-B-C25S	32.000	22.50	221.00	56.0	160.0	30.00	25.00	4.0

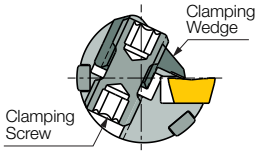
• For user guide and cutting conditions, see pages
(1) Pad length
(2) Insert size

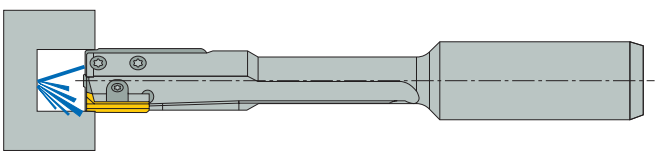
For inserts, see pages: RM-SEI-B ()
For holders, see pages: BT-HYDRO SF () • C#-HYDRO SF () • DIN69871-HYDRO SF () • HSK A-HYDRO SF () • HSK A-SRKIN FL () • SC-HYDRO-HP ()

Spare Parts

D [mm]	Clamping Wedge	Clamping Screw	Adjustment Screw	Adjustment Pin	Insert Size
8	WDG-RM-SE-1	SR-CL-RM-SE-1	SR-ADJ-M3x2.5	PIN-ADJ-RM-SE-1	1
9	WDG-RM-SE-1	SR-CL-RM-SE-1	SR-ADJ-M3x3	PIN-ADJ-RM-SE-1	1
10	WDG-RM-SE-2	SR-CL-RM-SE-1	SR-ADJ-M3x3	PIN-ADJ-RM-SE-2	2
11	WDG-RM-SE-2	SR-CL-RM-SE-1	SR-ADJ-M3x4	PIN-ADJ-RM-SE-2	2
12	WDG-RM-SE-3	SR-CL-RM-SE-3	SR-ADJ-M4x4	PIN-ADJ-RM-SE-3	3
13	WDG-RM-SE-3	SR-CL-RM-SE-3	SR-ADJ-M4x4	PIN-ADJ-RM-SE-3	3
14	WDG-RM-SE-3	SR-CL-RM-SE-3	SR-ADJ-M4x4	PIN-ADJ-RM-SE-3	3
15	WDG-RM-SE-3	SR-CL-RM-SE-3	SR-ADJ-M4x6	PIN-ADJ-RM-SE-3	3
16	WDG-RM-SE-3	SR-CL-RM-SE-3	SR-ADJ-M4x6	PIN-ADJ-RM-SE-3	3
17	WDG-RM-SE-3	SR-CL-RM-SE-3	SR-ADJ-M4x8	PIN-ADJ-RM-SE-3	3
18	WDG-RM-SE-3	SR-CL-RM-SE-3	SR-ADJ-M4x8	PIN-ADJ-RM-SE-3	3
19	WDG-RM-SE-3	SR-CL-RM-SE-3	SR-ADJ-M4x8	PIN-ADJ-RM-SE-3	3
20	WDG-RM-SE-3	SR-CL-RM-SE-3	SR-ADJ-M4x10	PIN-ADJ-RM-SE-3	3
21	WDG-RM-SE-3	SR-CL-RM-SE-3	SR-ADJ-M4x10	PIN-ADJ-RM-SE-3	3
22	WDG-RM-SE-3	SR-CL-RM-SE-3	SR-ADJ-M4x10	PIN-ADJ-RM-SE-3	3
23	WDG-RM-SE-3	SR-CL-RM-SE-3	SR-ADJ-M4x10	PIN-ADJ-RM-SE-3	3
24	WDG-RM-SE-3	SR-CL-RM-SE-3	SR-ADJ-M4x10	PIN-ADJ-RM-SE-3	3
25	WDG-RM-SE-3	SR-CL-RM-SE-3	SR-ADJ-M4x10	PIN-ADJ-RM-SE-3	3
26	WDG-RM-SE-4	SR-CL-RM-SE-4	SR-ADJ-M4x10	PIN-ADJ-RM-SE-4	4
27	WDG-RM-SE-4	SR-CL-RM-SE-4	SR-ADJ-M4x10	PIN-ADJ-RM-SE-4	4
28	WDG-RM-SE-4	SR-CL-RM-SE-4	SR-ADJ-M4x10	PIN-ADJ-RM-SE-4	4
29	WDG-RM-SE-4	SR-CL-RM-SE-4	SR-ADJ-M4x10	PIN-ADJ-RM-SE-4	4
30	WDG-RM-SE-4	SR-CL-RM-SE-4	SR-ADJ-M4x10	PIN-ADJ-RM-SE-4	4
31	WDG-RM-SE-4	SR-CL-RM-SE-4	SR-ADJ-M4x10	PIN-ADJ-RM-SE-4	4
32	WDG-RM-SE-4	SR-CL-RM-SE-4	SR-ADJ-M4x10	PIN-ADJ-RM-SE-4	4

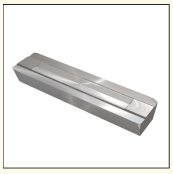


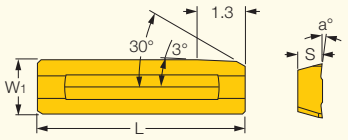


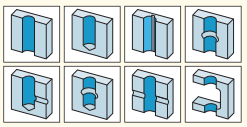


INDEXH-REAM

RM-SEI-B
Single Edge Reamer Inserts for General Applications at High Cutting Speeds







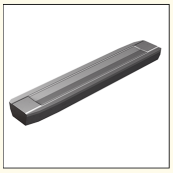
Designation	SSC(1)	a°	L	W1	S	Tough ↔ Hard IC30N	IC07	IC507	IC907
RM-SEI-1B-00	1.0	0	15.50	2.80	1.50				•
RM-SEI-1B-06	1.0	6	15.50	2.80	1.50			•	•
RM-SEI-1B-12	1.0	12	15.50	2.80	1.50		•		•
RM-SEI-2B-00	2.0	0	15.50	3.60	1.50				•
RM-SEI-2B-06	2.0	6	15.50	3.60	1.50			•	•
RM-SEI-2B-12	2.0	12	15.50	3.60	1.50		•		•
RM-SEI-3B-00	3.0	0	17.00	4.40	2.00				•
RM-SEI-3B-06	3.0	6	17.00	4.40	2.00			•	•
RM-SEI-3B-12	3.0	12	17.00	4.40	2.00		•		•
RM-SEI-4B-06	4.0	6	22.50	6.60	3.00	•		•	•
RM-SEI-4B-12	4.0	12	22.50	6.60	3.00		•		•

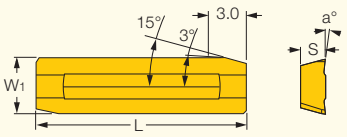
• Lead type of insert should be compatible with lead type of the tool
(1) Insert size

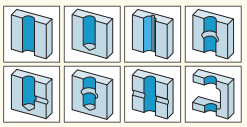
For tools, see pages: RM-SET-B-B () • RM-SET-T-B ()

INDEXH-REAM

RM-SEI-A
Single Edged Reamers Inserts for High Surface Quality at Low Cutting Conditions







Designation	SSC(1)	a°	L	W1	S	Tough ↔ Hard IC507	IC907
RM-SEI-1A-06	1.0	6	15.50	2.80	1.50	•	
RM-SEI-2A-06	2.0	6	15.50	3.60	1.50	•	
RM-SEI-3A-06	3.0	6	15.50	4.40	2.00	•	
RM-SEI-3A-12	3.0	12	17.00	4.40	2.00		•
RM-SEI-4A-06	4.0	6	22.50	6.60	3.00	•	

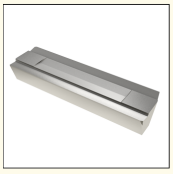
• Lead type of insert should be compatible with lead type of the tool • Available on request
(1) Insert size

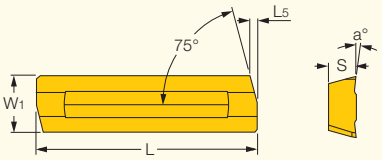
Insert Designation Code Key

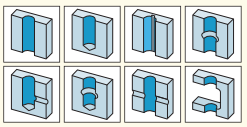
RM	SEI	4	B	12	IC907
Reamer	Single Edge Insert	Insert Size	Lead Type A, B, C	Rake Angle	Carbide Grade

INDEXH-REAM

RM-SEI-C
Single Edged Reamers Inserts
for Aluminum and Brass



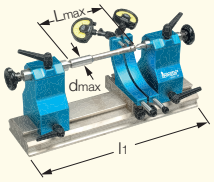




Designation	Dimensions						IC07
	SSC(1)	a°	L	W1	S	PLGL	
RM-SEI-1C-12	1.0	12	15.50	2.80	1.50	0.550	●
RM-SEI-2C-12	2.0	12	15.50	3.60	1.50	0.550	●
RM-SEI-3C-12	3.0	12	17.00	4.40	2.00	0.550	●
RM-SEI-4C-12	4.0	12	22.50	6.60	3.00	0.550	●

• Lead type of insert should be compatible with lead type of the tool • Available on request
(1) Insert size

RM SETTING DEVICE
Reamer Setting Device

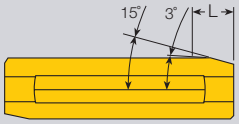
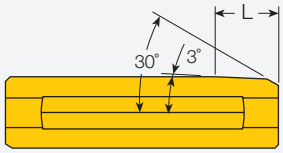
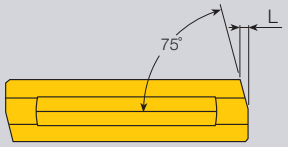
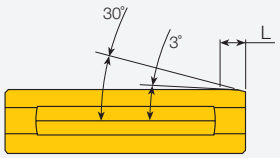


Designation	L max	l1	d max(1)	kg
RM SETTING DEVICE	265.0	450.00	170.0	25.00

(1) Maximum workpiece diameter for grooving operation

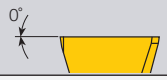
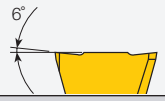
Front Angles and Cutting Geometries

4 Standard Lead Angles Are Available:

Lead	L [mm]	Use
A	3	higher surface quality, lower cutting conditions (not recommended for nonferrous materials) 
B	1.3	universal use, high speed cutting conditions. can be used on a wide range of materials 
C	0.55	suitable for aluminum and brass at high cutting speed 
D(1)	0.6	when needed for blind hole - lower feed 

(1) On request

3 Standard Cutting Angles Are Available:

	Angle [deg.]	Use
00		for cast iron applications
06		general use
12		for stainless steel and aluminum

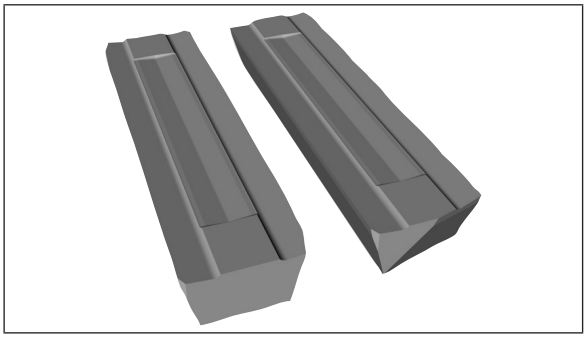
Carbide Grades

IC07 grade is the basic substrate for Reamers inserts. It is a very versatile submicron grade. IC07 features very high fracture toughness and wear resistance, which is required for efficient high speed Reamers. An uncoated IC07 can be used for machining nonferrous (N type material group) applications. Two types of standard coatings are available:

- **IC907** – a TiAlN PVD coating for steel (P) and stainless steel (M) workpiece material groups
- **IC507** - a TiCN+TiN PVD coating for cast iron (K) workpiece material group.

The following grades can be provided on request:

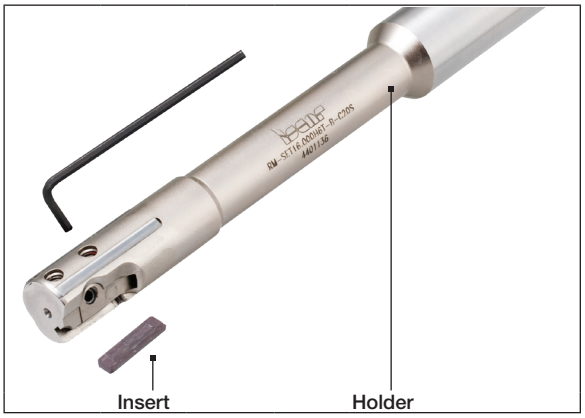
- **PCD** grade for machining aluminum
- **PCBN** grade for machining cast iron
- **IC30N** (cermet) for machining steel



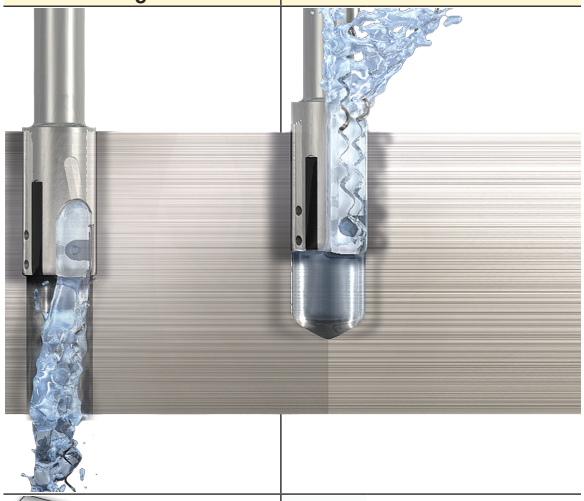
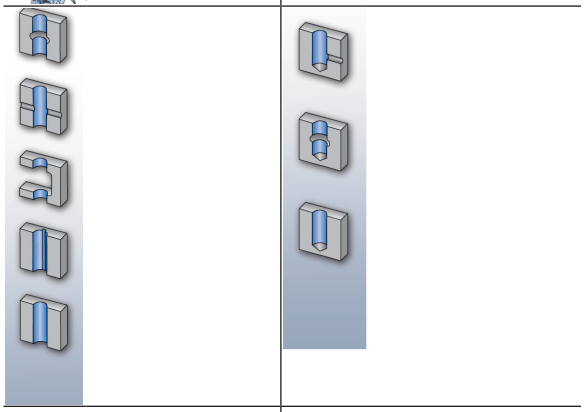
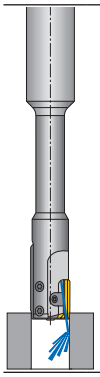
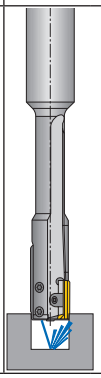
Concept

The **INDEX-H-REAM** Line is available in 4 sizes and features two different holder geometries (short flute and long flute). The holder selection depends on the hole type (through or blind).

RM-SEI-1	RM-SEI-2	RM-SEI-3	RM-SEI-4
Ø8.00-9.99mm (Ø.315-.393")	Ø10.00-11.99mm (Ø.393-.472")	Ø12.00-25.99mm (Ø.472-1.024")	Ø26.00-32.00mm (Ø1.024-1.260")

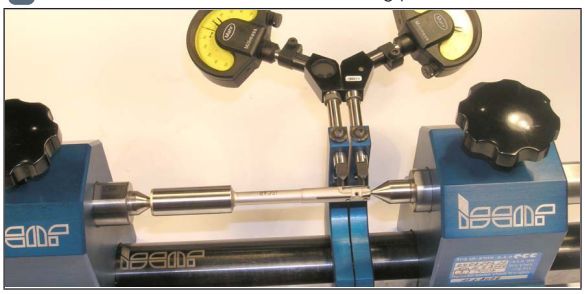


Applications

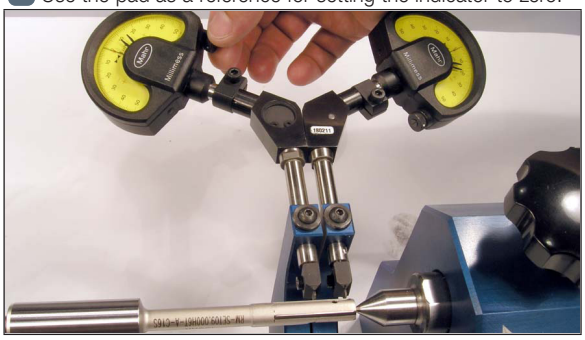
Through Hole	Blind Hole
	
	
Through Hole Short Flute Holder. This holder has a lateral coolant outlet located right above the insert. The coolant is pointed directly to the cutting edge to lubricate it and divert the chips forward. Additional coolant outlets are located behind the guiding pads. Their purpose is to reduce high friction that is created between the pads and the reamed surface during machining.	**Blind Hole** Long Flute Holder. This holder has a frontal coolant outlet. The liquid reaches the bottom of the blind hole and evacuates the formed chips. These chips are conveyed backwards through the long chip gullet (flute) of the holder.
	

Setting Procedure

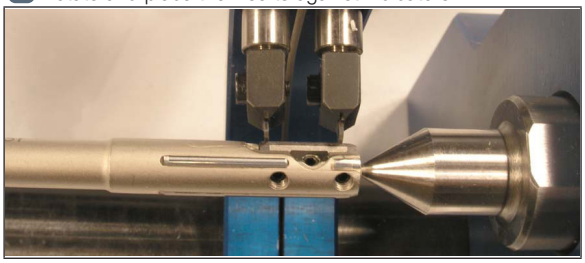
1 Place the reamer between the centering pins of the device.



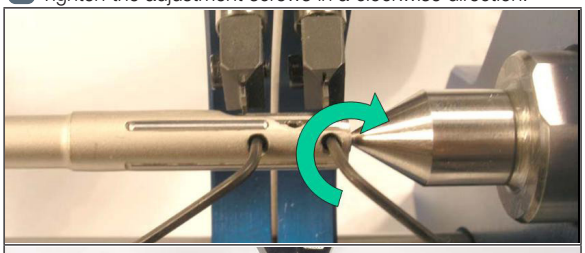
2 Use the pad as a reference for setting the indicator to zero.

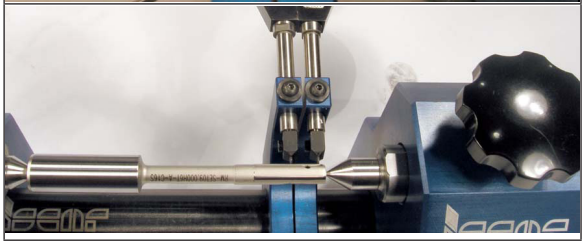


3 Rotate and place the inserts against indicators.



4 Tighten the adjustment screws in a clockwise direction.





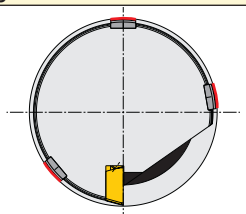
5 Adjust the frontal side of the insert to:
+15 µm (+0.6 µin) on D≤9.99,
+20 µm (+0.8 µin) on D≤10.00

6 Adjust the rear side of insert to:
+5 µm (+0.2 µin) on D≤9.99,
+10 µm (+0.4 µin) on D≤10.00

Back Taper

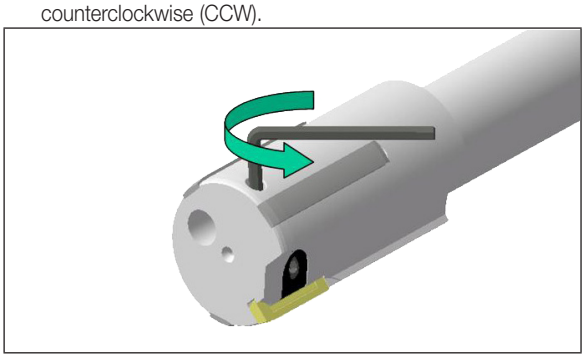
The back taper prevents the reamer from jamming, as well as lowering Reamers forces and improving surface quality. Incorrect back taper may cause unstable Reamers, accelerated wear and rough surface finish.

High Friction Lubricated Zones

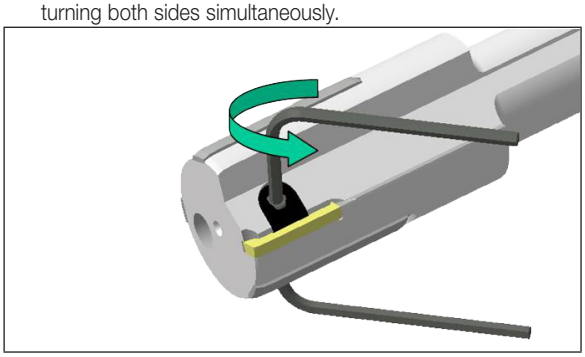


Insert Indexing

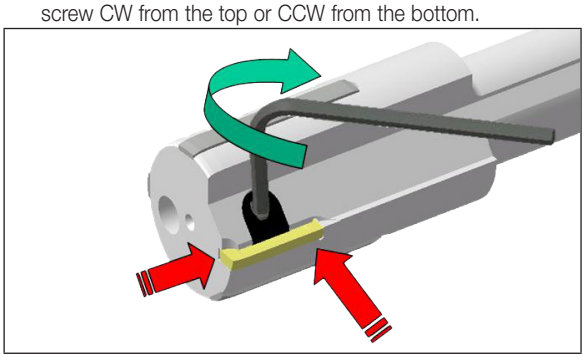
1 Rotate the adjustment screws one turn counterclockwise (CCW).



2 Rotate the clamping screw CCW from the top and/or clockwise (CW) from the bottom, turning both sides simultaneously.



3 Remove the insert. Clean the insert and the pocket. Place the sharp edge on the outer position. Press the insert against the back stopper and the two adjustment pins. Tighten the clamping wedge by rotating the clamping screw CW from the top or CCW from the bottom.



Setting Methods

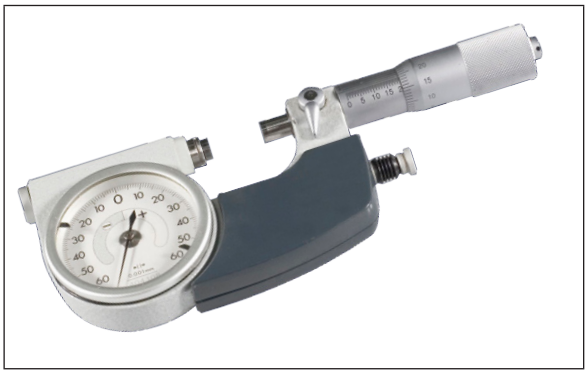
There are two optional setting methods - comparison micrometer and setting device. Comparison micrometer with dial gauge, although a low cost solution and readily available for small workshops, is prone to damaging the cutting edge and therefore not recommended.

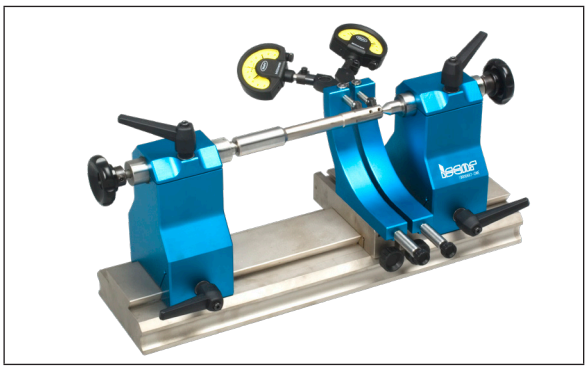
Using a Comparison Micrometer
Set the micrometer to the correct diameter using the precision blocks. Adjust the frontal diameter and back taper by turning the adjustment screw clockwise. The frontal diameter should be larger than the rear diameter by approximately 0.015mm.(0.6 µin).

Using a Setting Device
ISCAR's mechanical setting device enables easy, quick and accurate adjustment. Due to its modular construction, it can be used for standard, special and more complicated reamer adjustments.

Setting Device Located Between Centers

- shorter setting time
- modular system
- higher accuracy
- no risk of damaging the cutting edge





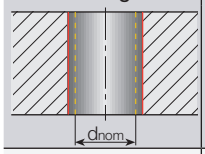
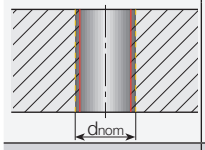
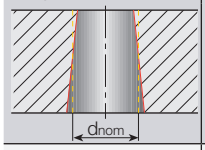
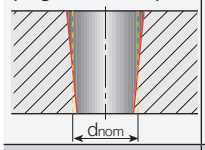
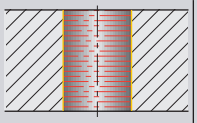
H-REAM Cutting Conditions

The cutting conditions in the table below should be used to start a new application.
Optimal conditions for a specific application should be evaluated by examining the results and changing the machining conditions accordingly.

Material No.	Material	Lead A=15°/3° L3 (Reamers Allowance = 0.1-0.3)							Lead B=30°/3° L1.3 (Reamers Allowance = 0.1-0.3)						
		Feed [mm/rev]	Rake [°]	Cutting Speed V_c [m/min]					Feed [mm/rev]	Rake [°]	Cutting Speed V_c [m/min]				
				Carbide	Coated Carbide	Cermet	PCD	CBN			Carbide	Coated Carbide	Cermet	PCD	CBN
1-5	non-alloy steel and cast steel, free cutting steel	0.1-0.4	6	40-60	60-80	110-160			0.1-0.3	6	60-80	80-120	110-160		
6-9	low alloy and cast steel (less than 5% of alloying elements)	0.1-0.4	6	20-40	40-60	110-160			0.1-0.3	6	60-80	80-120	110-160		
10-11	high alloyed steel, cast steel and tool steel	0.1-0.4	6	20-40	20-60	20-60			0.1-0.3	6	40-60	40-80	40-80		
12-13	stainless steel and cast steel	0.1-0.3	12	20-40	40-60	40-60			0.1-0.2	12	40-60	60-80	60-80		
15-16	grey cast iron (GG)	0.1-0.3	0/6	40-60	60-100			please ask	0.1-0.3	0/6	60-80	80-120			please ask
17-18	nodular cast iron (GGG)	0.1-0.3	0/6	40-60	60-100				0.1-0.3	0/6	60-80	80-120			
19-20	malleable cast iron	0.1-0.3	0/6	40-60	60-100				0.1-0.3	0/6	60-80	80-120			
21-22	aluminum wrought alloy						please ask		0.1-0.3	12	160-200			please ask	
23-25	aluminum -cast, alloyed								0.1-0.3	12	160-200				
26-28	copper alloys								0.1-0.2	0	80-100				
29-30	non-metallic								0.1-0.3	0	10-70				

Material No.	Material	Lead D=30°/3° L0.6 (Reamers Allowance = 0.1-0.2)							Lead C=75°/3° L0.55 (Reamers Allowance = 0.2-0.4)						
		Feed [mm/rev]	Rake [°]	Cutting Speed V_c [m/min]					Feed [mm/rev]	Rake [°]	Cutting Speed V_c [m/min]				
				Carbide	Coated Carbide	Cermet	PCD	CBN			Carbide	Coated Carbide	Cermet	PCD	CBN
1-5	non-alloy steel and cast steel, free cutting steel	0.05-0.2	6	60-80	80-120	110-160									
6-9	low alloy and cast steel (less than 5% of alloying elements)	0.05-0.2	6	60-80	80-120	110-160									
10-11	high alloyed steel, cast steel and tool steel and tool steel	0.05-0.2	6	40-60	40-80	40-80									
12-13	stainless steel and cast steel	0.05-0.2	12	40-60	60-80	60-80									
15-16	grey cast iron (GG)	0.05-0.2	0/6	60-80	80-120			please ask							please ask
17-18	nodular cast iron (GGG)	0.05-0.2	0/6	60-80	80-120										
19-20	malleable cast iron	0.05-0.2	0/6	60-80	80-120										
21-22	aluminum wrought alloy	0.05-0.2	12	110-200			please ask		0.15-0.3	12	150-250			please ask	
23-25	aluminum -cast, alloyed	0.05-0.2	12	180-200					0.15-0.3	12	150-250				
26-28	copper alloys	0.05-0.2	0	80-100											
29-30	non-metallic														

Troubleshooting

Problem	Cause	Solution
Hole too large 	• Reamer or pilot hole not centered. • Reamer too large. • Cooling / lubrication problems.	• Use a floating reamer chuck or correct pilot hole. • Check size of reamer and correct if necessary. • Change lubricant and increase coolant pressure.
Hole too small 	• Worn reamer. • Reamers allowance too small. • Cooling / lubrication problems.	• Replace the reamer. • Increase Reamers allowance. • Change lubricant and increase coolant pressure.
Conical hole (larger bottom) 	• Misalignment between pre hole and reamer centers.	• Re-align or use a floating reamer chuck.
Conical hole (larger entrance) 	• Misalignment between pre-hole. and reamer centers. • Material jammed between reamer and hole in the upper hole section.	• Re-align or use a floating reamer chuck. • Secure the tool axially.
Poor surface finish 	• Worn reamer. • Misalignment between pre-hole and reamer centers. • Problems with chip evacuation. • Incorrect cutting parameters. • Built-up edge.	• Replace the tool. • Re-align or use a floating reamer chuck. • Increase coolant pressure. • Change cutting parameters. • Change cutting parameters or coolant conditions.

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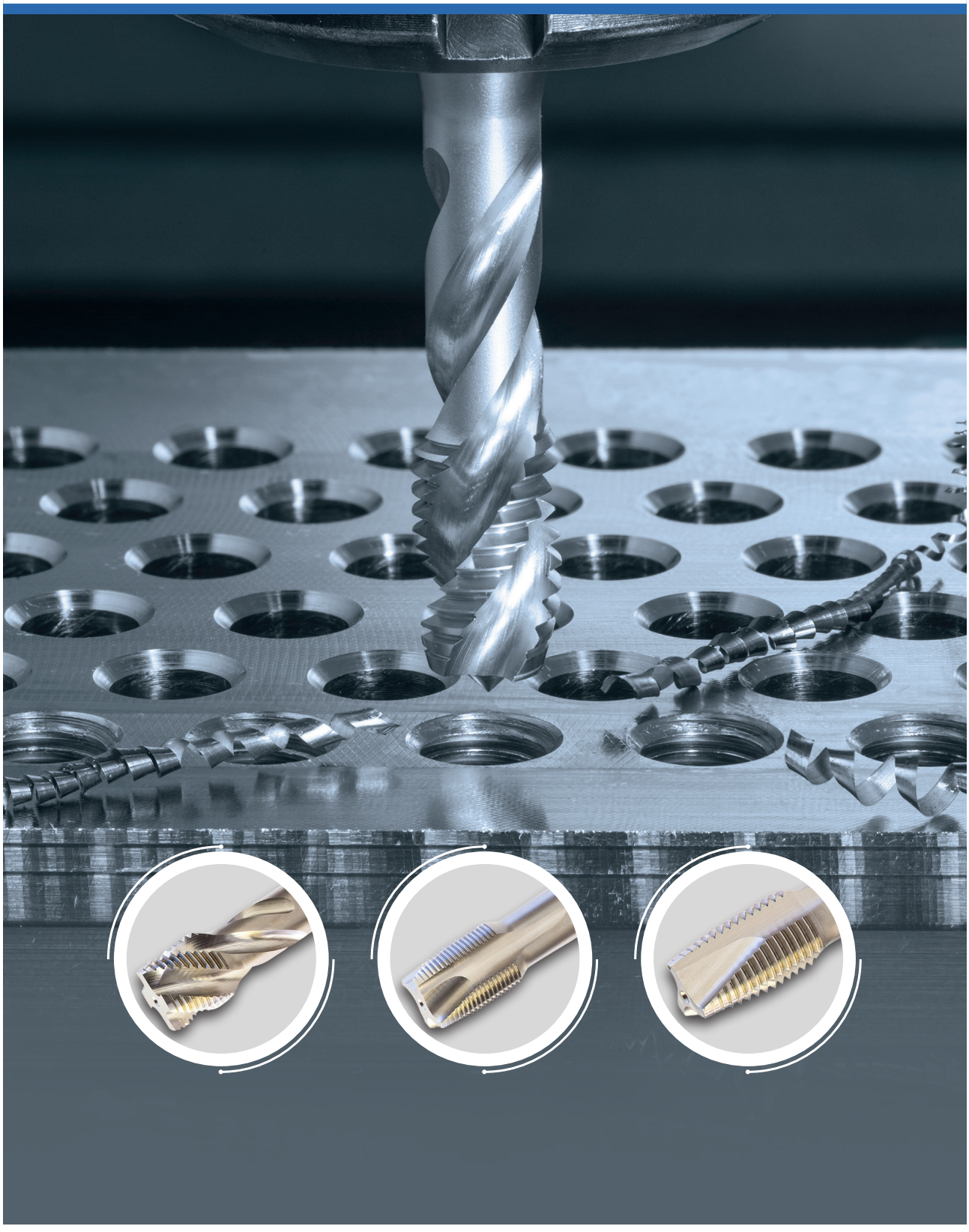
TAPS



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Tap Designation Code Key

TPGN	UNC	1/4-20	M	□	HE

Tap Style

TPH	-	hand tap
TPF	-	forming tap
TPG	-	gun point
TPS	-	spiral flute
TPST	-	straight flute

D	-	TPI
D	-	pitch

B - Bore for Coolant

(on request)

Coating Types*

HE	-	uncoated
HS	-	uncoated
HETI	-	TiN PVD coated
HENI	-	nitrated
HEST	-	steam tempered
PM	-	Uncoated
PMTC	-	TiCN PVD coated
PMTA	-	TiAlN PVD coated
PMST	-	Steam tempered
PMTI	-	TiN PVD coated
PMNI	-	Nitrated
HEDLC	-	DLC-coating
HETA	-	TiAlN PVD coated
HETC	-	TiCN PVD coated

Thread Standard

M	-	ISO metric coars thread DIN-13
MF	-	ISO metric fine thread DIN-13
UNF	-	unfied fine thread
UNC	-	unfied coarse thread

Tap Color Codes(1)

M	-	Multi-Material application
W	-	steel with good machinability Rm<750 N/mm^2
S	-	stainless steel
H	-	hardened steel and high temp./ super alloys Rm>750 N/mm^2
G	-	grey cast iron
N	-	low alloy steel Rm<600 N/mm^2
A	-	aluminum and aluminum alloys
F	-	any material with at least 8~10% elongation
Y	-	nickel alloys

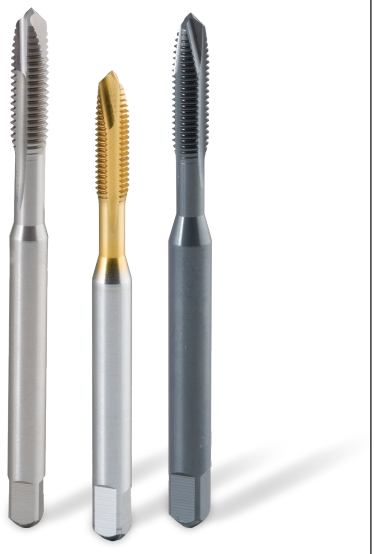
(1) The tools have a matching colored ring around the shank

Tap Materials

HS	-	H.S.S. (M2)
HE	-	H.S.S- E 5% Co. HSS (M35)
PM	-	compacted powder
HM	-	solid carbide

Chamfer Lead According to DIN2197 (specified for each tool family)

- **A** form a (chamfer lead 5-6 threads)
- **B** form b (with gun-nose and chamfer lead 4-5 threads)
- **C** form c (chamfer lead 2-3 threads)
- **D** form d (chamfer lead 4-5 threads)
- **E** form e (chamfer lead 1.5-2 threads)
- **F** form f (chamfer lead 1-1.5 threads)



Tap Selection Guide and Cutting Speed Recommendations

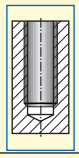
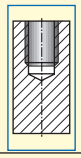
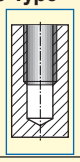
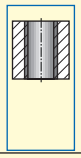
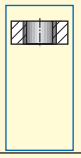
Material No.	Material		Condition	Tensile Strength [N/mm²]	Hardness HB	Chip	Coolant
	Hole Type[4]					tap color code[1]	
						tool material[1]	
						surface treatment/coating[2]	
						flute hand and angle	
						lead according to DIN 2197[3]	
	1	2	3	4	5	Hole Type[4]	
1	non-alloy steel and cast steel, free cutting steel	<0.25% C	annealed	420	125	ext. long	T
2		≥0.25% C	annealed	650	190	medium	T
3		<0.55% C	quenched and tempered	850	250	long	T
4		≥0.55% C	annealed	750	220	long	T
7	low alloy and cast steel (less than 5% of alloying elements)		quenched and tempered	930	275	long	X
8				1000	300	long	X
9				1200	350	long	A
10	high alloyed steel, cast steel and tool steel		annealed	680	200	long	X
11			quenched and tempered	1100	325	long	X
12	stainless steel and cast steel		ferritic/martensitic	680	200	medium	A
13			martensitic	820	240	long	A
14	stainless steel and cast steel		austenitic, duplex	600	180	long	A
15	gray cast iron (gg)		ferritic / pearlitic		180	ext. short	X
16			pearlitic / martensitic		260	ext. short	X
17	nodular cast iron (ggg)		ferritic		160	short	X
18			pearlitic		250	ext. short	X
19	malleable cast iron		ferritic		130	short	X
20			pearlitic		230	short	X
21	aluminum-wrought alloys		not hardenable		60	medium	T
22			hardenable		100	medium	T
23	aluminum-cast alloys	≤12% Si	not hardenable		75	short	T
24			hardenable		90	short	T
25		>12% Si	high temperature		130	short	T
26	copper alloys	>1% Pb	free cutting		110	med/short	T
27			brass		90	long	T
28			electrolytic copper		100	long	T
29	non metallic		duroplastics, fiber plastics		70 Shore D	short	Z
31	high temperature alloys	Fe based	annealed		200	long	A
32			hardened		280	long	A
33		Ni or Co based	annealed		250	long	A
34			hardened		350	long	A
35			cast		320	long	A
36	titanium alloys		pure	400	190	med/short	A
37			alpha+beta alloys, hardened	1050	310	med/short	A

(1) See page 4
(2) See page 4
(3) See page 10
(4) See page 6

Coolant
A - Cutting oil
T - Oil emulsion
X - Oil or emulsion
Z - Dry or emulsion

W(1)	M		M		M		M		M		M		S		H		N		H		G		F
HSS	HSS-E		HSS-E		HSS-E		HSS-E		HSS-E		HSS-E		HSS-E		HSS-E		HSS-E		HSS-E		HSS-E		HSS-E	
-	-		TI		ST		-		TI		ST		ST		-		ST		ST		NI		TI	
-	-		-		-		R40°		R40°		R40°		-		-		R40°		R40°		-		-	
1\2\3	B		B		B		C		C		C		B		B		C		C		C		C	
1-2-3-4-5	4-5		4-5		4-5		1-2-3		1-2-3		1-2-3		4-5		4-5		1-2-3		1-2-3		1-2-3-4-5		1-2-3-4-5	
M/min		M/min		M/min		M/min		M/min		M/min		M/min		M/min		M/min		M/min		M/min		M/min	
	•	10-25	••	15-45	•	8-25	••	20-25	••	15-45	•	8-25	••			20-25	••	8-25	•	20-25	••			20-60
	•	10-20	••	12-40	•	10-35	••	15-20	••	12-40	•	10-35	••			15-20	••	10-35	••	15-20	••			20-60
	•	12-18	••	15-25	•	6-12	••	12-18	••	15-25	•	6-12	••			12-18	••			12-18	••			17-55
	•	12-18	••	15-40	•	6-20	••	12-18	••	15-40	•	6-20	••			12-18	••			12-18	••			17-55
	•	10-15	••	5-25	•	4-10	••	10-15	••	5-25	•	4-10	••			10-15	••			10-15	••			
	•	6-10	••	5-25	•	4-10	••	6-10	••	5-25	•	4-10	••			6-10	••			6-10	••			
	•	3-5	••	5-20	•	3-5	••	3-5	••	5-20	•	3-5	••			3-5	••			3-5	••			
	•	10-15	••	20-30	•	7-12	••	10-15	••	20-30	•	7-12	••			10-15	••			10-15	••			10-30
	•	7-13	••	12-25	•	5-10	••	7-13	••	12-25	•	5-10	••			7-13	••			7-13	••			
	•	5-9	••	8-18	•	1-5	•	5-9	••	2-10	•	1-5	•	2-10	•					5-9	••			7-15
	•	4-6	••	8-15	•	1-5	•	4-6	••	2-10	•	1-5	•	2-10	•					4-6	••			
	•	5-9	••	8-15	•	1-4	•	5-9	••	2-10	•	1-4	•	2-10	•					5-9	••			
	•	10-15	••	15-45	••	13-20	•	10-15	••	15-45	••	13-20	•							10-15	••	10-30	•	
	•	8-12	••	10-40	••	21-31	•	8-12	••	10-40	••	21-31	•							8-12	••	10-30	•	
	•	8-12	•	10-25	••	21-31	•	8-12	•	10-25	•	21-31	•							8-12	••	10-40	•	
	•	8-12	••	10-20	••	21-31	•	8-12	••	10-20	••	21-31	•							8-12	••	10-35	•	
	•	10-15	•	15-45	••	13-20	•	10-15	••	15-45	••	13-20	•							10-15	••	10-45	•	
	•	10-15	•	10-40	••	13-20	•	10-15	••	10-40	••	13-20	•							10-15	••	10-40	•	
	•	25-35	•	50-70	•	12-25	••	25-35	•	30-60	•	12-25	••					12-25	••	25-35	••			
	•	25-35	•	50-70	•	12-25	••	25-35	•	30-60	•	12-25	••					12-25	••	25-35	••			
	•	10-15	•	10-40	•	10-25	••	10-15	•	15-40	•	10-25	••					10-25	••	10-15	••			
	•	10-15	•	10-40	•	10-25	••	10-15	•	15-40	•	10-25	••					10-25	••	10-15	••			
	•	10-15	•	10-30	•	10-20	••	10-15	•	15-30	•	10-20	••					10-20	••	10-15	••			
	•	25-35	•	50-70	•	20-40	••	25-35	•	30-65	•	20-40	••					20-40	••	25-35	••			17-40
	•	15-20	•	5-60	•	13-30	••	15-20	•	20-45	•	13-30	••					13-30	••	15-20	••			20-60
	•	15-20	•	5-25	•	10-17	••	15-20	•	15-30	•	10-17	••					10-17	••	15-20	••			20-60
	•	6-10	•	5-25	•	6-13	••	6-10	•	10-20	•	6-13	••					6-13	••	6-10	••			
	•	2-4	••	4-8	•			2-4	•	3-7	••					2-4				2-4	•			
	•	2-4	••	4-8	•			2-4		3-7	••					2-4				2-4	•			
	•	2-4	••	4-8	•			2-4		3-7	••					2-4				2-4	•			
	•	2-4	••	4-8	•			2-4		3-7	••					2-4				2-4	•			
	•	2-4	••	4-8	•			2-4		3-7	••					2-4				2-4	•			
	•	6-10	••					6-10	••							6-10				6-10	•			
	•	6-10	•					6-10	••							6-10				6-10	•			

• Recommended
•• Suitable
(1) Hand Tap

Material Group No.	Hole Type[4]					tap color code[1]	
						tool material[1]	
						surface treatment/coating[2]	
						flute hand and angle	
						lead according to DIN 2197[3]	
	1	2	3	4	5	Hole Type[4]	
	Material		Condition	Tensile Strength [ksi]	Hardness HB	Chip	Coolant
1	non-alloy steel and cast steel, free cutting steel	<0.25% C	annealed	61	125	Ext. Long	T
2		≥0.25% C	annealed	94	190	Medium	T
3		<0.55% C	quenched and tempered	123	250	Long	T
4		≥0.55% C	annealed	109	220	Long	T
7	low alloy and cast steel (less than 5% of alloying elements)		quenched and tempered	135	275	Long	X
8				145	300	Long	X
9				174	350	Long	A
10	high alloyed steel, cast steel and tool steel		annealed	99	200	Long	X
11			quenched and tempered	160	325	Long	X
12	stainless steel and cast steel		ferritic/martensitic	99	200	Medium	A
13			martensitic	119	240	Long	A
14	stainless steel and cast steel		austenitic, duplex	87	180	Long	A
15	gray cast iron (GG)		ferritic / pearlitic		180	Ext. Short	X
16			pearlitic / martensitic		260	Ext. Short	X
17	nodular cast iron (GGG)		ferritic		160	Short	X
18			pearlitic		250	Ext. Short	X
19	malleable cast iron		ferritic		130	Short	X
20			pearlitic		230	Short	X
21	aluminum-wrought alloys		not hardenable		60	Medium	T
22			hardenable		100	Medium	T
23	aluminum-cast alloys	≤12% Si	not hardenable		75	Short	T
24			hardenable		90	Short	T
25		>12% Si	high temperature		130	Short	T
26	copper alloys	>1% Pb	free cutting		110	Med/Short	T
27			brass		90	Long	T
28			electrolytic copper		100	Long	T
29	non metallic		duroplastics, fiber plastics		70 Shore D	Short	Z
31	high temperature alloys	Fe based	annealed		200	Long	A
32			hardened		280	Long	A
33		Ni or Co based	annealed		250	Long	A
34			hardened		350	Long	A
35			cast		320	Long	A
36	titanium alloys		pure	58	190	Med/Short	A
37			alpha+beta alloys, hardened	152	310	Med/Short	A

• Recommended
•• Suitable
(1) See page 4
(2) See page 4
(3) See page 10
(4) See page 6

Coolant
A - Cutting oil
T - Oil emulsion
X - Oil or emulsion
Z - Dry or emulsion

W(1)	M	M	M	M	M	M	S	H	N	H	G	F
HSS	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E
-	-	TI	ST	-	TI	ST	ST	-	ST	ST	NI	TI
-	-	-	-	R40°	R40°	R40°	-	-	R40°	R40°	-	-
1\2\3	B	B	B	C	C	C	B	B	C	C	C	C
1-2-3-4-5	4-5	4-5	4-5	1-2-3	1-2-3	1-2-3	4-5	4-5	1-2-3	1-2-3	1-2-3-4-5	1-2-3-4-5
SFM	SFM	SFM	SFM	SFM	SFM	SFM	SFM	SFM	SFM	SFM	SFM	SFM
•	35-80	15-150	25-80	65-80	50-150	25-80		65-80	25-80	65-80		65-195
•	35-65	40-130	35-115	60-65	40-130	35-115		50-65	35-115	50-65		65-195
•	40-60	50-80	20-40	40-60	50-80	20-40		40-60		40-60		55-180
•	40-60	50-130	20-65	40-60	50-130	15-35		40-60		40-60		55-180
•	35-50	15-80	15-35	35-50	15-80	15-35		35-50		35-50		
•	20-35	15-80	15-35	20-35	15-80	15-35		20-35		20-35		
•	10-15	15-65	10-15	10-15	15-65	10-15		10-15		10-15		
•	35-50	65-100	25-40	35-50	65-100	25-40		35-50		35-50		35-100
•	25-45	40-80	15-35	25-45	40-80	15-35		25-45		25-45		
•	15-30	25-60	5-15	15-30	5-35	5-16	5-35			15-30		25-50
•	15-20	25-50	5-15	15-20	5-35	5-16	5-35			15-20		
•	15-30	25-50	5-15	15-30	5-35	5-15	5-35			15-30		
•	35-50	50-150	45-65	35-50	50-150	45-65				35-50	35-100	
•	25-40	35-130	70-100	25-40	35-130	70-100				25-40	35-100	
•	25-40	35-80	70-100	25-40	35-80	70-100				25-40	35-130	
•	25-40	35-65	70-100	25-40	35-65	70-100				25-40	35-100	
•	35-50	50-150	45-65	35-50	50-150	45-65				35-50	35-150	
•	35-50	35-130	45-65	35-50	35-130	45-65				35-50	35-130	
•	80-115	165-230	40-80	80-115	100-195	40-80			40-80	80-115		
•	80-115	165-230	40-80	80-115	100-195	40-80			40-80	80-115		
•	35-50	35-130	35-80	35-50	50-130	35-80			35-80	35-50		
•	35-50	35-100	35-80	35-50	50-130	35-80			35-80	35-50		
•	35-50	35-100	35-65	35-50	50-100	35-65			35-65	35-50		
•	80-115	65-230	65-130	80-115	100-215	65-130			65-130	80-115		55-130
•	50-65	15-195	45-100	50-65	65-150	45-100			45-100	50-65		65-195
•	50-65	15-80	35-55	50-65	50-100	35-55			35-55	50-65		65-195
•	20-35	15-80	25-45	20-35	35-65	20-45			20-45	20-35		
•	5-15	15-25		5-15	10-25			5-15		5-15		
•	5-15	15-25		5-15	10-25			5-15		5-15		
•	5-15	15-25		5-15	10-25			5-15		5-15		
•	5-15	15-25		5-15	10-25			5-15		5-15		
•	5-15	15-25		5-15	10-25			5-15		5-15		
•	20-35			20-35				20-35		20-35		
•	20-35			20-35				20-35		20-35		

• Recommended
•• Suitable
(1) Hand Tap

Tap Surface Treatments and Coating Types

The high speed steels used by **ISCAR** grant high wear resistance and toughness. For machining certain materials, various surface treatments are an advantage.

Steam Tempered (ST)

The steam tempered is a Fe3O4 oxide coating which reduces the friction between the tool and workpiece and prevents cold welding.

Nitriding (NI)

Recommended surface treatment for machining hard wear/abrasive materials such as grey cast iron, aluminum alloys with high silicon percentage (more than 10%).

TiN Coating (TI)

The TiN coating has a hardness of approximately 2,300 HV and is temperature resistant up to approximately 600°C. This is an excellent golden colored coating for general applications.

TiCN-Coating – TiCN

TiCN takes place of TiN when the conditions require the coating to have a different hardness and toughness. The TiCN brings an advantage to machining very difficult steels or cutting interrupted bores. The TiCN-coating has a hardness of approx. 3,000 HV, but is temperature-resistant up to approx. 400° only. That means TiCN needs excellent cooling for long service life.
Color: Blue-grey coefficient of friction against steel : 0.4

DLC-Coating

With its high wear resistance and slight adhesion on nonferrous metals DLC (Diamond-Like Carbon) coating is perfectly recommended for cutting Aluminium and Aluminium alloys.

TiAlN-Coating – TiAlN

This is a special coating for machining abrasive materials such as: gray cast iron, alu-alloys with silicon, fiber reinforced plastics, etc., or machining under high temperatures, which means with insufficient cooling, or high speeds ≥ 600m/min. The TiAlN has a hardness of approx. 3,000 HV and is temperature resistant up to approx. 800°.
Color: Violet-grey coefficient of friction against steel : 0.4

Hardslick-Coating – Hardslick

Hardslick combines in a novel way the advantages of an extremely hard, thermally stable TiAlN-coating with the sliding and lubricating properties of an outer WC/C (Tungsten carbide/carbon) coating. The hardslick coating has a hardness of approx. 3,000 HV and is temperature-resistant up to approx. 800°.
Color: Violet-grey coefficient of friction against steel : 0.2

Tolerances According to DIN EN 22857

Intended for taps with ISO metric threads. The following chart gives a comparison between the new standard DIN EN 22857 and the withdrawn standard DIN 802 part 1. An important change is the re-classification from tap tolerance to tap application class.

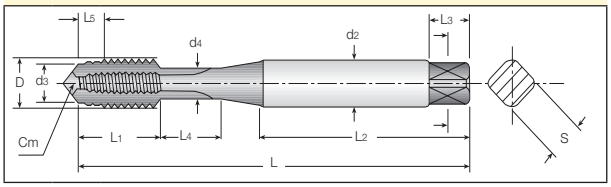
Application Class for Taps to DIN EN 22857		Tolerance Class to Withdrawn Standard DIN 802 Part 1	Allotment of the Tolerance Zones of the Nut Thread to Be Cut				
class 1	ISO 1	4H	4H	5H	-	-	-
class 2	ISO 2	6H	5G	5G	6H	-	-
class 3	ISO 3	6G	-	-	6G	7H	8H
-	-	7G	-	-	-	7G	8G

A suitable transition period is to be expected.

Codes for tolerance classes 7G/8G and <X> tolerance zones have yet to be standardized within DIN EN 22857, and the values from DIN 802 part will remain valid.

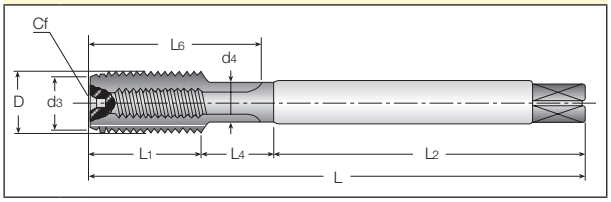
Tap Nomenclature and Standards

DIN 371



D - major diameter
d2 - shank diameter
d3 - chamfer diameter
d4 - neck diameter

DIN 376

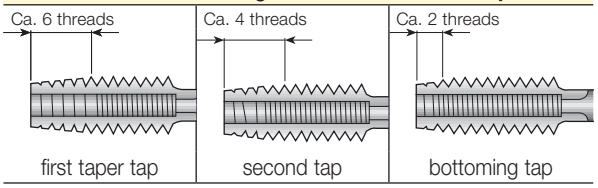


L - total length
L1 - thread length
L2 - shank length
L3 - square length
L4 - neck length
L5 - chamfer length
L6 - flute length
S - square size
Cm - center male
Cf - center female

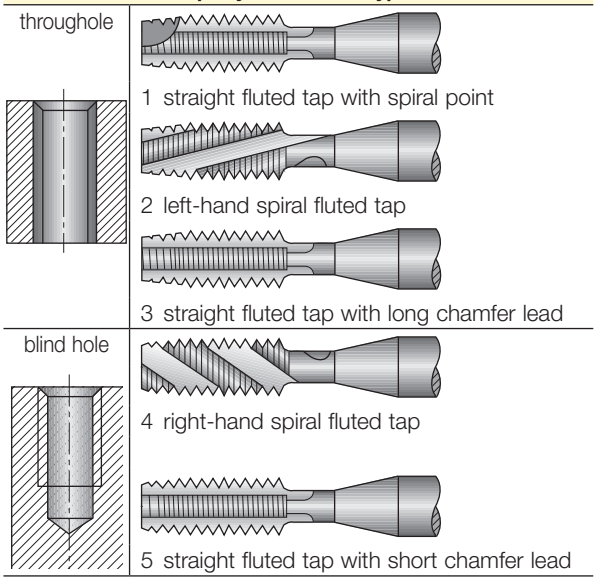
Chamfer Lead Forms According to DIN 2197

A	6-8 threads	**Form A** long, 6-8 threads for short through holes.
B	3.5-5 threads	**Form B** medium, 3.5-5 threads, with spiral point for all through holes and deep tapping holes.
C	2-3 threads	**Form C** long, 2-3 threads for blind holes and generally for aluminum grey cast iron and brass.
D	3.5-5 threads	**Form D** medium, 3.5-5 threads for through and blind holes with sufficient runout.
E	1.5-2 threads	**Form E** extremely short, 1.5-2 threads for blind holes with little runout depth. Avoid use if possible.
F	1-1.5 threads	**Form F** extremely short, 1-1.5 threads for blind holes with little runout depth. Avoid use if possible.

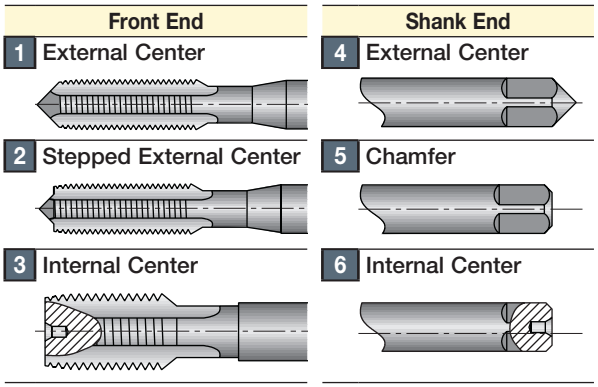
Chamfer Lead Length for Sets of 3 Hand Taps



Tap Styles for Hole Types



Front and end configurations according to **DIN2197**



Thread Dia. Range (mm)	Front End	Shank End	Tap Standard
≤Ø6	1	4 5	DIN352
Ø7	1 2	4 5 6	DIN371
≥Ø8	1 2 3	5 6	DIN376

Pre-Tapping Hole Sizes

ISO Metric Threads Coarse Pitch			
M	Pitch mm	Max Core Dia. mm	Drill Size mm
1	0.25	0.785	0.75
1.1	0.25	0.885	0.85
1.2	0.25	0.985	0.95
1.4	0.30	1.160	1.10
1.6	0.35	1.321	1.25
1.7	0.35	1.346	1.30
1.8	0.35	1.521	1.45
2	0.40	1.679	1.60
2.2	0.45	1.838	1.75
2.3	0.40	1.920	1.90
2.5	0.45	2.138	2.05
2.6	0.45	2.176	2.10
3	0.50	2.599	2.50
3.5	0.60	3.010	2.90
4	0.70	3.422	3.30
4.5	0.75	3.878	3.70
5	0.80	4.334	4.20
6	1.00	5.153	5.00
7	1.00	6.153	6.00
8	1.25	6.912	6.80
9	1.25	7.912	7.80
10	1.50	8.676	8.50
11	1.50	9.676	9.50
12	1.75	10.441	10.20
14	2.00	12.210	12.00
16	2.00	14.210	14.00
18	2.50	15.744	15.50
20	2.50	17.744	17.50
22	2.50	19.744	19.50
24	3.00	21.252	21.00
27	3.00	24.252	24.00
30	3.50	26.771	26.50
33	3.50	29.771	29.50
36	4.00	32.270	32.00
39	4.00	35.270	35.00
42	4.50	37.799	37.50
45	4.50	40.799	40.50
48	5.00	43.297	43.00
52	5.00	47.297	47.00
56	5.50	50.796	50.50
60	5.50	54.796	54.50
64	6.00	58.305	58.00
68	6.00	62.305	62.00

ISO Metric Threads Fine Pitch			
MF	Pitch mm	Max Core Dia. mm	Drill Size mm
2.5	0.35	2.221	2.15
3	0.35	2.271	2.65
3.5	0.35	3.221	3.15
4	0.50	3.599	3.50
4.5	0.50	4.099	4.00
5	0.50	4.599	4.50
5.5	0.50	5.099	5.00
6	0.75	5.378	5.20
7	0.75	6.378	6.20
8	0.75	7.378	7.20
8	1.00	7.153	7.00
9	0.75	8.378	8.20
9	1.00	8.153	8.00
10	0.75	9.378	9.20
10	1.00	9.153	9.00
10	1.25	8.912	8.80
11	0.75	10.378	10.20
11	1.00	10.153	10.00
12	1.00	11.153	11.00
12	1.25	10.912	10.80
12	1.50	10.676	10.50
14	1.00	13.153	13.00
14	1.25	12.912	12.80
14	1.50	12.676	12.50
15	1.00	14.153	14.00
15	1.50	13.676	13.50
16	1.00	15.153	15.00
16	1.50	14.676	14.50
17	1.00	16.153	16.00
17	1.50	15.676	15.50
18	1.00	17.153	17.00
18	1.50	16.676	16.50
18	2.00	16.210	16.00
20	1.00	19.153	19.00
20	1.50	18.676	18.50
20	2.00	18.210	18.00
22	1.00	21.153	21.00
22	1.50	20.676	20.50
22	2.00	20.210	20.00
24	1.00	23.153	23.00
24	1.50	22.676	22.50
24	2.00	22.210	22.00
25	1.00	24.153	24.00
25	1.50	23.676	23.50

ISO Metric Threads Fine Pitch			
MF	Pitch mm	Max Core Dia. mm	Drill Size mm
25	2.00	23.210	23.00
26	1.50	24.676	24.50
27	1.00	26.153	26.00
27	1.50	25.676	25.50
27	2.00	25.210	25.00
28	1.00	27.153	27.00
28	1.50	26.676	26.50
28	2.00	26.210	26.00
30	1.00	29.153	29.00
30	1.50	28.676	28.50
30	2.00	28.210	28.00
30	3.00	27.252	27.00
32	1.50	30.675	30.50
32	2.00	30.210	30.00
33	1.50	31.676	31.50
33	2.00	31.210	31.00
33	3.00	30.252	30.00
35	1.50	33.676	33.50
36	1.50	34.676	34.50
36	2.00	34.210	34.00
36	3.00	33.252	33.00
38	1.50	36.676	36.50
39	1.50	37.676	37.50
39	2.00	37.210	37.00
39	3.00	36.252	36.00
40	1.50	38.676	38.50
40	2.00	38.210	38.00
40	3.00	37.252	37.00
42	1.50	40.676	40.50
42	2.00	40.210	40.00
42	3.00	39.252	39.00
45	1.50	43.676	43.50
45	2.00	43.210	43.00
45	3.00	42.252	42.00
48	1.50	46.676	46.50
48	2.00	46.210	46.00
48	3.00	45.252	45.00
50	1.50	48.676	48.50
50	2.00	48.210	48.00
50	3.00	47.252	47.00
52	1.50	50.676	50.50
52	2.00	50.210	50.00
52	3.00	49.252	49.00

Recommended Tap Drill Size		
M	Pitch mm	Drill Size mm
1	0.25	0.9
1.1	0.25	1
1.2	0.25	1.1
1.4	0.3	1.28
1.6	0.35	1.47
1.7	0.35	1.57
1.8	0.35	1.67
2	0.4	1.85
2.2	0.45	2.03
2.3	0.4	2.15
2.5	0.45	2.33
2.6	0.45	2.43
3	0.5	2.8
3.5	0.6	3.25
4	0.7	3.7
4.5	0.75	4.2
5	0.8	4.65
6	1	5.55
7	1	6.55
8	1.25	6.6
9	1.25	7.45
10	1.5	8.45
11	1.5	9.35
12	1.75	11.25
14	2	13.1
16	2	15.1
18	2.5	16.85
20	2.5	18.85
22	2.5	20.85
24	3	22.65
27	3	25.65
30	3.5	28.4
33	3.5	31.4
36	4	34.15
39	4	37.15
42	4.5	39.9
45	4.5	42.9
48	5	45.65

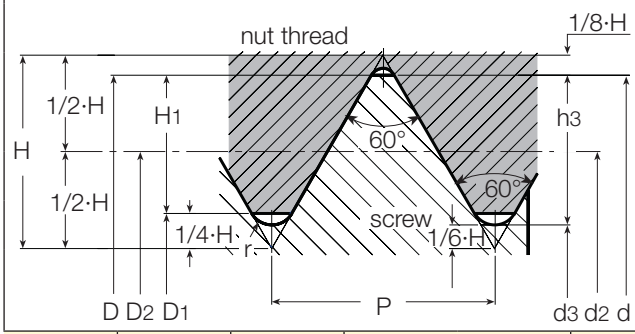
Recommended Tap Drill Size		
MF	Pitch mm	Drill Size mm
2.5	0.35	2.37
2.6	0.35	2.47
3	0.35	2.88
3.5	0.35	3.38
4	0.5	3.8
5	0.5	4.8
6	0.5	5.8
6	0.75	5.7
7	0.75	6.7
8	0.75	7.7
8	1	7.6
9	0.75	8.7
9	1	8.6
10	0.75	9.7
10	1	9.6
10	1.25	9.45
11	1	10.6
12	1	11.6
12	1.25	11.45
12	1.5	11.35
14	1	13.6
14	1.25	13.45
14	1.5	13.35
15	1	14.6
15	1.5	14.35
16	1	15.6
16	1.5	15.35
18	4	17.6
18	1.5	17.35
18	2	17.1
20	1	19.6
20	1.5	19.35
20	2	19.1
24	2	23.1
30	2	29.1
36	3	34.65
42	4	40.15
48	3	46.65

American Unified Coarse Threads			
UNC	T.P.I.	Max. Core Dia. Inch	Drill Size mm
#1	64	1.585	1.5
#2	56	1.872	1.8
#3	48	2.146	2.1
#4	40	2.385	2.3
#5	40	2.697	2.6
#6	32	2.896	2.85
#8	32	3.528	3.5
#10	24	3.95	3.9
#12	24	4.59	4.5
1/4"	20	5.25	5.2
5/16"	18	6.68	6.6
3/8"	16	8.082	8
7/16"	14	9.441	9.4
1/2"	13	10.881	10.75
9/16"	12	12.301	12.25
5/8"	11	13.693	13.5
3/4"	10	16.624	16.5
7/8"	9	19.52	19.5
1"	8	22.344	22.25
1 1/8"	7	25.082	25
1 1/4"	7	28.258	28.25
1 3/8"	6	30.851	30.75
1 1/2"	6	34.026	34
1 3/4"	5	39.56	39.5
2"	4.5	45.367	45.25

American Unified Fine Threads			
UNF	T.P.I	Max. Core Dia. Inch	Drill Size mm
#0	80	1.306	1.3
#1	72	1.613	1.6
#2	64	1.913	1.9
#3	56	2.197	2.1
#4	48	2.459	2.4
#5	44	2.741	2.7
#6	40	3.012	3
#8	36	3.597	3.5
#10	32	4.168	4.1
#12	28	4.717	4.7
1/4"	28	5.563	5.5
5/16"	24	6.995	6.9
3/8"	24	8.565	8.5
7/16"	20	9.947	9.9
1/2"	20	11.524	11.5
9/16"	18	12.969	12.9
5/8"	18	14.554	14.5
3/4"	16	17.546	17.5
7/8"	14	20.493	20.5
1"	12	23.363	23.25
1 1/8"	12	26.538	26.5
1 1/4"	12	29.713	29.5
1 3/8"	12	32.888	32.7
1 1/2"	12	36.063	36

ISO Metric Thread Nominal Dimensions According to UNI 4535-64

tap flank diameter production tolerances for ISO 6H Nut threads limit dimensions - nut threads ISO 6H



coarse pitch threads dimensions in mm

$H = 0.86603P$

$H_1 = \frac{5}{8} H = 0.54127P$

$h_3 = \frac{17}{24} H = 0.61343P$

$d_2 = D_2 = d - \frac{3}{4} H = d - 0.64952P$

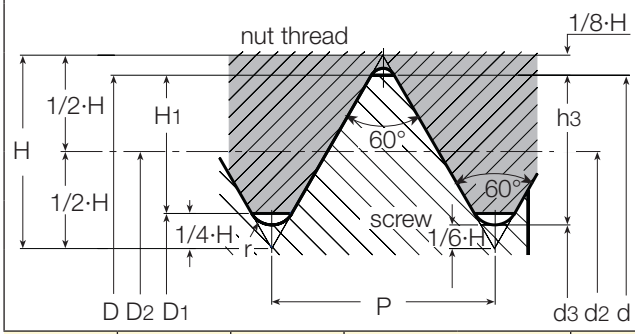
$d_3 = d - 2h_3 = d - 1.22687P$

$r = \frac{H}{6} = 0.14434P$

Nominal Dia. d=D	Pitch P	Flank Dia. D2=D2	Minor Diameter		Thread Depth		Radius r	Flank Dia. Tap Tolerance 6H D2		Flank Dia. Tap Tolerance 6H	
			Screw D3	Nut D1	Screw H3	Nut H1		Min.	Max.	Min.	Max.
M1.6	0.35	1.373	1.171	1.221	0.215	0.189	0.051	1.393	1.407	1.373	1.458
M1.8	0.35	1.573	1.371	1.421	0.215	0.189	0.051	1.593	1.607	1.573	1.658
M2	0.4	1.740	1.509	1.567	0.245	0.217	0.058	1.761	1.776	1.740	1.830
M2.2	0.45	1.908	1.648	1.713	0.276	0.244	0.065	1.931	1.946	1.908	2.003
M2.5	0.45	2.208	1.948	2.013	0.276	0.244	0.065	2.231	2.246	2.208	2.303
M3	0.5	2.675	2.387	2.459	0.307	0.271	0.072	2.699	2.715	2.675	2.775
M3.5	0.6	3.110	2.764	2.850	0.368	0.325	0.087	3.137	3.155	3.110	3.222
M4	0.7	3.545	3.141	3.242	0.429	0.379	0.101	3.574	3.593	3.545	3.663
M4.5	0.75	4.013	3.580	3.688	0.460	0.406	0.108	4.042	4.061	4.013	4.131
M5	0.8	4.480	4.019	4.134	0.491	0.433	0.115	4.510	4.530	4.480	4.605
M6	1	5.350	4.773	4.917	0.613	0.541	0.144	5.385	5.409	5.350	5.500
M7	1	6.350	5.773	5.917	0.613	0.541	0.144	6.385	6.409	6.350	6.500
M8	1.25	7.188	6.466	6.647	0.767	0.677	0.180	7.226	7.251	7.188	7.348
M9	1.25	8.188	7.466	7.647	0.767	0.677	0.180	8.226	8.251	8.188	8.348
M10	1.5	9.026	8.160	8.376	0.920	0.812	0.217	9.068	9.096	9.026	9.206
M11	1.5	10.026	9.160	9.376	0.920	0.812	0.217	10.068	10.096	10.026	10.206
M12	1.75	10.863	9.853	10.106	1.074	0.947	0.253	10.911	10.943	10.863	11.063
M14	2	12.701	11.546	11.835	1.227	1.083	0.289	12.752	12.786	12.701	12.913
M16	2	14.701	13.546	13.835	1.227	1.083	0.289	14.752	14.786	14.701	14.913
M18	2.5	16.376	14.933	15.294	1.534	1.353	0.361	16.430	16.466	16.376	16.600
M20	2.5	18.376	16.933	17.294	1.534	1.353	0.361	18.430	18.466	18.376	18.600
M22	2.5	20.376	18.933	19.294	1.534	1.353	0.361	20.430	20.466	20.376	20.600
M24	3	22.051	20.319	20.752	1.840	1.624	0.433	22.115	22.157	22.051	22.316
M27	3	25.051	23.319	23.752	1.840	1.624	0.433	25.115	25.157	25.051	25.316
M30	3.5	27.727	25.706	26.211	2.147	1.894	0.505	27.794	27.839	27.727	28.007
M33	3.5	30.727	28.706	29.211	2.147	1.894	0.505	30.794	30.839	30.727	31.007
M36	4	33.402	31.093	31.670	2.454	2.165	0.577	33.473	33.520	33.402	33.702
M39	4	36.402	34.093	34.670	2.454	2.165	0.577	36.473	36.520	36.402	36.702
M42	4.5	39.077	36.479	37.129	2.760	2.436	0.650	39.152	39.202	39.077	39.392
M45	4.5	42.077	39.479	40.129	2.760	2.436	0.650	42.152	42.202	42.077	42.392
M48	5	44.752	41.866	42.587	3.067	2.706	0.722	44.832	44.885	44.752	45.087
M52	5	48.752	45.866	46.587	3.067	2.706	0.722	48.832	48.885	48.752	49.087
M56	5.5	52.428	49.252	50.046	3.374	2.977	0.794	52.512	52.568	52.428	52.783
M60	5.5	56.428	53.252	54.046	3.374	2.977	0.794	56.512	56.568	56.428	56.783
M64	6	60.103	56.639	57.505	3.681	3.248	0.866	60.193	60.253	60.103	60.478
M68	6	64.103	60.639	61.505	3.681	3.248	0.866	64.193	64.253	64.103	64.478
Metric Thread MA (old UNI 159 Profile)								**Nut Tolerance SH8**			
M1.7	0.35	1.473	1.246	1.246	0.227	0.227	0.040	1.493	1,507	1.473	1.529
M2.3	0.4	2.040	1.780	1.780	0.260	0.260	0.040	2.061	2.076	2.040	2.120
M2.6	0.45	2.308	2.016	2.016	0.292	0.292	0.050	2.331	2.346	2.308	2.388

ISO Metric Fine Thread Nominal Dimensions According to UNI 4535-64

tap flank diameter production tolerances for ISO 6H Nut threads limit dimensions - nut threads ISO 6H



coarse pitch threads dimensions in mm

$H = 0.86603P$

$H_1 = \frac{5}{8} H = 0.54127P$

$h_3 = \frac{17}{24} H = 0.61343P$

$d_2 = D_2 = d - \frac{3}{4} H = d - 0.64952P$

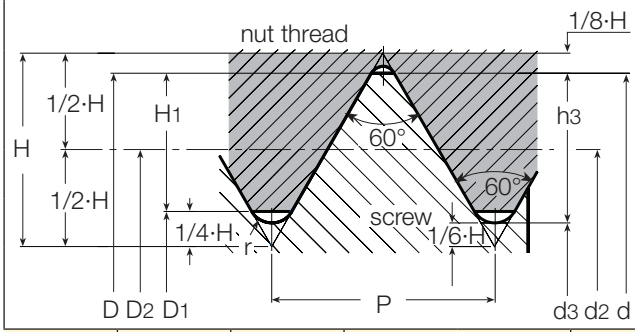
$d_3 = d - 2h_3 = d - 1.22687P$

$r = \frac{H}{6} = 0.14434P$

Nominal Dia. d=D	Pitch P	Flank Dia. D2=D2	Minor Diameter		Thread Depth		Radius r	Flank Dia. Tap Tolerance 6H D2		Flank Dia. Tap Tolerance 6H	
			Screw D3	Nut D1	Screw H3	Nut H1		Min.	Max.	Min.	Max.
M 2	0.25	1.838	1.693	1.729	0.153	0.135	0.036	1.844	1.856	1.838	1.886
M 2.5	0.35	2.273	2.701	2.121	0.215	0.189	0.051	2.293	2.307	2.273	2.358
M 3	0.35	2.773	2.571	2.621	0.215	0.189	0.051	2.794	2.809	2.773	2.863
M 3.5	0.35	3.273	3.071	3.121	0.215	0.189	0.051	3.294	3.309	3.273	3.363
M 4	0.5	3.675	3.387	3.459	0.307	0.271	0.072	3.699	3.715	3.675	3.775
M 4.5	0.5	4.175	3.887	3.959	0.307	0.271	0.072	4.199	4.215	4.175	4.275
M 5	0.5	4.675	4.387	4.459	0.307	0.271	0.072	4.699	4.715	4.675	4.775
M 5.5	0.5	5.175	4.887	4.959	0.307	0.271	0.072	5.199	5.215	5.175	5.275
M 6	0.5	5.675	5.387	5.459	0.307	0.271	0.072	5.702	5.72	5.675	5.787
M 6	0.75	5.513	5.08	5.188	0.46	0.406	0.108	5.545	5.566	5.513	5.645
M 7	0.75	6.513	6.08	6.188	0.46	0.406	0.108	6.545	6.566	6.513	6.645
M 8	0.5	7.675	7.387	7.459	0.307	0.271	0.072	7.702	7.72	7.675	7.787
M 8	0.75	7.513	7.08	7.188	0.46	0.406	0.108	7.545	7.566	7.513	7.645
M 8	1	7.35	6.773	6.917	0.613	0.541	0.144	7.835	7.409	7.35	7.5
M 9	0.75	8.513	8.08	8.188	0.46	0.406	0.108	8.545	8.566	8.513	8.645
M 9	1	8.35	7.773	7.917	0.613	0.541	0.144	8.385	8.409	8.35	8.5
M 10	0.5	9.675	9.387	9.459	0.307	0.271	0.072	9.702	9.72	9.675	9.787
M 10	0.75	9.513	9.08	9.188	0.46	0.406	0.108	9.545	9.566	9.513	9.645
M 10	1	9.35	8.773	8.917	0.613	0.541	0.144	9.385	9.409	9.35	9.5
M 10	1.25	9.188	8.466	8.647	0.767	0.677	0.18	9.226	9.251	9.188	9.348
M 11	0.75	10.513	10.08	10.188	0.46	0.406	0.108	10.545	10.566	10.513	10.645
M 11	1	10.35	9.773	9.917	0.613	0.541	0.144	10.385	10.409	10.35	10.5
M 12	0.75	11.513	11.08	11.188	0.46	0.406	0.108	11.547	11.569	11.513	11.653
M 12	1	11.35	10.773	10.917	0.613	0.541	0.144	11.388	11.413	11.35	11.51
M 12	1.25	11.188	10.466	10.647	0.767	0.677	0.18	11.23	11.258	11.188	11.368
M 12	1.5	11.026	10.16	10.376	0.92	0.812	0.217	11.071	11.101	11.026	11.216
M 13	1	12.35	11.773	11.917	0.613	0.541	0.144	12.388	12.413	12.35	12.51
M 14	1	13.35	12.773	12.917	0.613	0.541	0.144	13.388	13.413	13.35	13.51
M 14	1.25	13.188	12.466	12.647	0.767	0.677	0.18	13.23	13.258	13.188	13.368
M 14	1.5	13.026	12.16	12.376	0.92	0.812	0.217	13.071	13.101	13.026	13.216
M 15	1	14.35	13.773	13.917	0.613	0.541	0.144	14.388	14.413	14.35	14.51
M 15	1.5	14.026	13.16	13.376	0.92	0.812	0.217	14.071	14.101	14.026	14.216
M 16	1	15.35	14.773	14.917	0.613	0.541	0.144	15.388	15.413	15.35	15.51
M 16	1.25	15.188	14.466	14.647	0.767	0.677	0.18	15.23	15.258	15.188	15.368
M 16	1.5	15.026	14.16	14.376	0.92	0.812	0.217	15.071	15.101	15.026	15.216
M 17	1	16.35	15.773	15.917	0.613	0.541	0.144	16.388	16.413	16.35	16.51
M 17	1.5	16.026	15.16	15.376	0.92	0.812	0.217	16.071	16.101	16.026	16.216
M 18	1	17.350	16.773	16.917	0.613	0.541	0.144	17.388	17.413	17.35	17.51
M 18	1.5	17.026	16.16	16.376	0.92	0.812	0.217	17.071	17.101	17.026	17.216
M 18	2	16.701	15.546	15.835	1.227	1.083	0.289	16.752	16.786	16.701	16.913

ISO Metric Fine Thread
Nominal Dimensions According to UNI 4535-64

tap flank diameter production tolerances for ISO 6H Nut threads limit dimensions - nut threads ISO 6H



coarse pitch threads dimensions in mm

$H = 0.86603P$

$H_1 = \frac{5}{8} H = 0.54127P$

$h_3 = \frac{17}{24} H = 0.61343P$

$d_2 = D_2 = d - \frac{3}{4} H = d - 0.64952P$

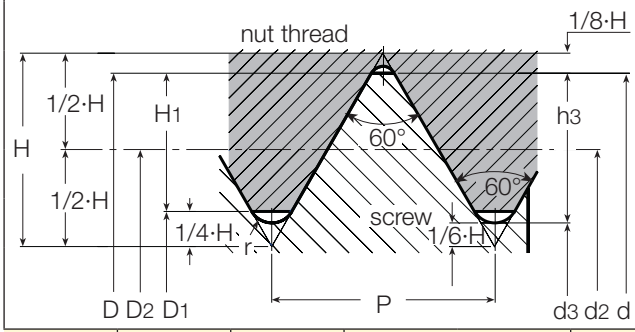
$d_3 = d - 2h_3 = d - 1.22687P$

$r = \frac{H}{6} = 0.14434P$

Nominal Dia. d=D	Pitch P	Flank Dia. D2=D2	Minor Diameter		Thread Depth		Radius r	Flank Dia. Tap Tolerance 6H D2		Flank Dia. Tap Tolerance 6H	
			Screw D3	Nut D1	Screw H3	Nut H1		Min.	Max.	Min.	Max.
M 20	1	19.35	18.773	18.917	0.613	0.541	0.144	19.388	19.413	19.35	19.51
M 20	1.5	19.026	18.16	18.376	0.92	0.812	0.217	19.071	19.101	19.026	19.216
M 20	2	18.701	17.546	17.835	1.227	1.083	0.289	18.752	18.786	18.701	18.913
M 22	1	21.35	20.773	20.917	0.613	0.541	0.144	21.388	21.413	21.35	21.51
M 22	1.5	21.026	20.16	20.376	0.92	0.812	0.217	21.071	21.101	21.026	21.216
M 22	2	20.701	19.546	19.835	1.227	1.083	0.289	20.752	20.786	20.701	20.913
M 24	1	23.350	22.773	22.917	0.613	0.541	0.144	23.390	23.416	23.350	23.520
M 24	1.5	23.026	22.160	22.376	0.920	0.812	0.217	23.074	23.106	23.026	23.226
M 24	2	22.701	21.546	21.835	1.227	1.083	0.289	22.754	22.791	22.701	22.925
M 25	1	24.350	23.773	23.917	0.613	0.541	0.144	24.390	24.416	24.350	24.520
M 25	1.5	24.026	23.160	23.376	0.920	0.812	0.217	24.074	24.106	24.026	24.226
M 25	2	23.701	22.546	22.835	1.227	1.083	0.289	23.754	23.791	23.701	23.925
M 26	1	25.350	24.773	24.917	0.613	0.541	0.144	25.390	25.416	25.350	25.520
M 26	1.5	25.026	24.160	24.376	0.920	0.812	0.217	25.074	25.106	25.026	25.226
M 26	2	24.701	23.546	23.835	1.227	1.083	0.289	24.754	24.791	24.701	24.925
M 27	1	26.350	25.773	25.917	0.613	0.541	0.144	26.390	26.416	26.350	26.520
M 27	1.5	26.026	25.160	25.376	0.920	0.812	0.217	26.074	26.106	26.026	26.226
M 27	2	25.701	24.546	24.835	1.227	1.083	0.289	25.754	25.791	25.701	25.925
M 28	1	27.350	26.773	26.917	0.613	0.541	0.144	27.390	27.416	27.350	27.520
M 28	1.5	27.026	26.160	26.376	0.920	0.812	0.217	27.074	27.106	27.026	27.226
M 28	2	26.701	25.546	25.835	1.227	1.083	0.289	26.754	26.791	26.701	26.925
M 30	1	29.350	28.773	28.917	0.613	0.541	0.144	29.390	29.416	29.350	29.520
M 30	1.5	29.026	28.160	28.376	0.920	0.812	0.217	29.074	29.106	29.026	29.226
M 30	2	28.701	27.546	27.835	1.227	1.083	0.289	28.754	28.791	28.701	28.925
M 30	3	28.051	26.319	26.752	1.840	1.624	0.433	28.115	28.157	28.051	28.316
M 32	1.5	31.026	30.160	30.376	0.920	0.812	0.217	31.074	31.106	31.026	31.226
M 32	2	30.701	29.546	29.835	1.227	1.083	0.289	30.754	30.791	30.701	30.925
M 33	1.5	32.026	31.160	31.376	0.920	0.812	0.217	32.074	32.106	32.026	32.226
M 33	2	31.701	30.546	30.835	1.227	1.083	0.289	31.754	31.791	31.701	31.925
M 33	3	31.051	29.319	29.752	1.840	1.624	0.433	31.115	31.157	31.051	31.316
M 35	1.5	34.026	33.160	33.376	0.920	0.812	0.217	34.074	34.106	34.026	34.226
M 35	2	33.701	32.546	32.835	1.227	1.083	0.289	33.754	33.791	33.701	33.925
M 36	1.5	35.026	34.160	34.376	0.920	0.812	0.217	35.074	35.106	35.026	35.226
M 36	2	34.701	33.546	33.835	1.227	1.083	0.289	34.754	34.791	34.701	34.925
M 36	3	34.051	32.319	32.752	1.840	1.624	0.433	34.115	34.157	34.051	34.316
M 38	1.5	37.026	36.160	36.376	0.920	0.812	0.217	37.074	37.106	37.026	37.226
M 39	1.5	38.026	37.160	37.376	0.920	0.812	0.217	38.074	38.106	38.026	38.226
M 39	2	37.701	36.546	36.835	1.227	1.083	0.289	37.754	37.791	37.701	37.925
M 39	3	37.051	35.319	35.752	1.840	1.624	0.433	37.115	37.157	37.051	37.316
M 40	1.5	39.026	38.160	38.376	0.920	0.812	0.217	39.074	39.106	39.026	39.226
M 40	2	38.701	37.546	37.835	1.227	1.083	0.289	38.754	38.791	38.701	38.925

ISO Metric Fine Thread
Nominal Dimensions According to UNI 4535-64

tap flank diameter production tolerances for ISO 6H Nut threads limit dimensions - nut threads ISO 6H



coarse pitch threads dimensions in mm

$H = 0.86603P$

$H_1 = \frac{5}{8} H = 0.54127P$

$h_3 = \frac{17}{24} H = 0.61343P$

$d_2 = D_2 = d - \frac{3}{4} H = d - 0.64952P$

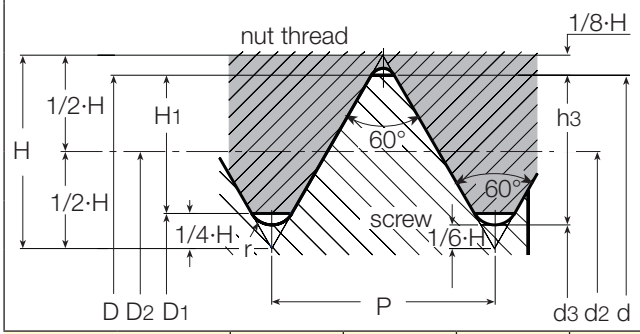
$d_3 = d - 2h_3 = d - 1.22687P$

$r = \frac{H}{6} = 0.14434P$

Nominal Dia. d=D	Pitch P	Flank Dia. D2=D2	Minor Diameter		Thread Depth		Radius r	Flank Dia. Tap Tolerance 6H D2		Flank Dia. Tap Tolerance 6H	
			Screw D3	Nut D1	Screw H3	Nut H1		Min.	Max.	Min.	Max.
M 40	3	38.051	36.319	36.752	1.840	1.624	0.433	38.115	38.157	38.051	38.316
M 42	1.5	41.026	40.160	40.376	0.920	0.812	0.217	41.074	41.106	41.026	41.226
M 42	2	40.701	39.546	39.835	1.227	1.083	0.289	40.754	40.791	40.701	40.925
M 42	3	40.051	38.319	38.752	1.840	1.624	0.433	40.115	40.157	40.051	40.316
M 45	1.5	44.026	43.160	43.376	0.920	0.812	0.217	44.074	44.106	44.026	44.226
M 45	2	43.701	42.546	42.835	1.227	1.083	0.289	43.754	43.791	43.701	43.925
M 45	3	43.051	41.319	41.752	1.840	1.624	0.433	43.115	43.157	43.051	43.316
M 48	1.5	47.026	46.160	46.376	0.920	0.812	0.217	47.077	47.111	47.026	47.238
M 48	2	46.701	45.546	45.835	1.227	1.083	0.289	46.758	46.796	46.701	46.937
M 48	3	46.051	44.319	44.752	1.840	1.624	0.433	46.118	46.163	46.051	46.331
M 50	1.5	49.026	48.160	48.376	0.920	0.812	0.217	49.077	49.111	49.026	49.238
M 50	2	48.701	47.546	47.835	1.227	1.083	0.289	48.758	48.796	48.701	48.937
M 50	3	48.051	46.319	46.752	1.840	1.624	0.433	48.118	48.163	48.051	48.331
M 52	1.5	51.026	50.160	50.376	0.920	0.812	0.217	51.077	51.111	51.026	51.238
M 52	2	50.701	49.546	49.835	1.227	1.083	0.289	50.758	50.796	50.701	50.937
M 52	3	50.051	48.319	48.752	1.840	1.624	0.433	50.118	50.163	50.051	50.331
M 55	1.5	54.026	53.160	53.376	0.920	0.812	0.217	54.077	54.111	54.026	54.238
M 55	2	53.701	52.546	52.835	1.227	1.083	0.289	53.758	53.796	53.701	53.937
M 55	3	53.051	51.319	51.752	1.840	1.624	0.433	53.118	53.163	53.051	53.331
M 56	1.5	55.026	54.160	54.376	0.920	0.812	0.217	55.077	55.111	55.026	55.238
M 56	2	54.701	53.546	53.835	1.227	1.083	0.289	54.758	54.796	54.701	54.937
M 56	3	54.051	52.319	52.752	1.840	1.624	0.433	54.118	54.163	54.051	54.331
M 58	1.5	57.026	56.160	56.376	0.920	0.812	0.217	57.077	57.111	57.026	57.238
M 58	2	56.701	55.546	55.835	1.227	1.083	0.289	56.758	56.796	56.701	56.937
M 58	3	56.051	54.319	54.752	1.840	1.624	0.433	56.118	56.163	56.051	56.331
M 60	1.5	59.026	58.160	58.376	0.920	0.812	0.217	59.077	59.111	59.026	59.238
M 60	2	58.701	57.546	57.835	1.227	1.083	0.289	58.758	58.796	58.701	58.937
M 60	3	58.051	56.319	56.752	1.840	1.624	0.433	58.118	58.163	58.051	58.331
Metric Thread MA (old UNI 160 Profile)								**Nut Tolerance SH8**			
M 2,3	0.25	2.138	1.976	1.976	0.162	0.162	0.03	2.144	2.156	2.138	2.194
M 2,6	0.35	2.373	2.146	2.146	0.227	0.227	0.04	2.393	2.407	2.373	2.429

UNIFIED Coarse Thread
Nominal Dimensions According to ANSI B1.1

Tap flank diameter production tolerances for ISO 2B
Nut threads limit dimensions - nut threads ANSI B1.1, 2B-3B



Coarse Pitch Threads Dimensions in mm

$H = 0.86603P$

$H_1 = \frac{5}{8} H = 0.54127P$

$h_3 = \frac{17}{24} H = 0.61343P$

$d_2 = D_2 = d - \frac{3}{4} H = d - 0.64952P$

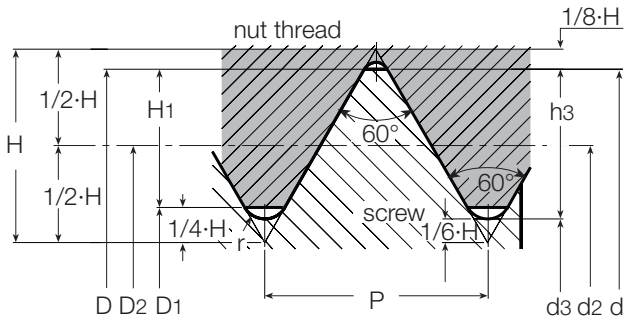
$d_3 = d - 2h_3 = d - 1.22687P$

$r = \frac{H}{6} = 0.14434P$

Nominal T.P.I Dia.		Pitch P	External Dia. d=D	Flank Dia. D2=D2	Minor Diameter		Pitch Diameter Tap Tolerance 2B		Pitch Diameter Nut Tolerance		
					Nut D1	Screw H3	Min.	Max.	Max. 2B/3B	Max. 2B	Max. 3B
UNC#1	- 64	0.397	1.854	1.598	1.425	1.367	1.610	1.623	1.598	1.664	1.646
UNC# 2	- 64	0.454	2.184	1.890	1.694	1.628	1.902	1.915	1.890	1.961	1.943
UNC#3	- 48	0.529	2.515	2.172	1.941	1.864	2.184	2.197	2.172	2.248	2.228
UNC# 4	- 40	0.635	2.845	2.433	2.156	2.065	2.446	2.459	2.433	2.517	2.494
UNC# 5	- 40	0.635	3.175	2.764	2.487	2.395	2.776	2.789	2.764	2.847	2.827
UNC# 6	- 32	0.794	3.505	2.990	2.647	2.532	3.105	3.028	2.990	3.084	3.058
UNC# 8	- 32	0.794	4.166	3.650	3.307	3.193	3.675	3.688	3.650	3.746	3.721
UNC# 10	- 24	1.058	4.826	4.138	3.680	3.528	4.163	4.176	4.138	4.247	4.219
UNC# 12	- 24	1.058	5.486	4.798	4.341	4.188	4.823	4.836	4.798	4.910	4.882
UNC 1/4"	- 20	1.270	6.350	5.524	4.976	4.793	5.575	5.588	5.524	5.646	5.616
UNC 5/16"	- 18	1.411	7.938	7.021	6.411	6.205	7.071	7.084	7.021	7.155	7.120
UNC 3/8"	- 16	1.588	9.525	8.494	7.805	7.577	8.545	8.557	8.494	8.639	8.603
UNC 7/16"	- 14	1.814	11.112	9.934	9.149	8.887	9.985	9.997	9.934	10.089	10.051
UNC 1/2"	- 13	1.954	12.700	11.430	10.584	10.302	11.481	11.494	11.430	11.595	11.552
UNC 9/16"	- 12	2.117	14.288	12.913	11.996	11.692	12.964	12.977	12.913	13.086	13.043
UNC 5/8"	- 11	2.309	15.875	14.376	13.376	13.043	14.427	14.440	14.376	14.559	14.514
UNC 3/4"	- 10	2.540	19.050	17.399	16.229	15.933	17.450	17.463	17.399	17.595	17.544
UNC 7/8"	- 9	2.822	22.225	20.391	19.169	18.763	20.455	20.467	20.391	20.599	20.546
UNC 1"	- 8	3.175	25.400	23.338	21.963	21.504	23.401	23.414	23.338	23.561	23.505
UNC 1 1/8"	- 7	3.629	28.575	26.218	24.648	24.122	26.294	26.319	26.218	26.457	26.398
UNC 1 1/4"	- 7	3.629	31.750	29.393	27.823	27.297	29.469	29.494	29.393	29.637	29.576
UNC 1 3/8"	- 6	4.233	34.925	32.174	30.343	29.731	32.250	32.276	32.174	32.438	32.372
UNC 1 1/2"	- 6	4.233	38.100	35.349	33.518	32.906	35.425	35.451	35.349	35.616	35.550
UNC 1 3/4"	- 5	5.080	44.450	41.151	38.951	38.217	41.241	41.266	41.151	41.445	41.372
UNC 2"	- 4 1/2	5.644	50.800	47.135	44.689	43.876	47.235	47.260	47.135	47.450	47.371
UNC 2 1/4"	- 4 1/2	5.644	57.150	53.485	51.039	50.226			53.485	53.805	53.726
UNC 2 1/2"	- 4	6.350	63.500	59.375	56.627	55.710			59.375	59.718	59.632
UNC 2 3/4"	- 4	6.350	69.850	65.725	62.977	62.060			65.725	66.073	65.987
UNC 3"	- 4	6.350	76.200	72.075	69.327	68.410			72.075	72.428	72.339
UNC 3 1/4"	- 4	6.350	82.550	78.425	75.677	74.760			78.425	78.783	78.694
UNC 3 1/2"	- 4	6.350	88.900	84.775	82.027	81.110			84.775	85.183	85.049
UNC 3 3/4"	- 4	6.350	95.250	91.125	88.377	87.460			91.125	91.493	91.402
UNC 4"	- 4	6.350	101.600	97.475	94.727	93.810			97.475	97.848	97.757

UNIFIED Fine Thread
Nominal Dimensions According to ANSI B1.1

Tap flank diameter production tolerances for ISO 2B Nut threads limit dimensions - nut threads ANSI B1.1, 2B-3B



Coarse Pitch Threads Dimensions in mm

$H = 0.86603P$

$H_1 = \frac{5}{8} H = 0.54127P$

$h_3 = \frac{17}{24} H = 0.61343P$

$d_2 = D_2 = d - \frac{3}{4} H = d - 0.64952P$

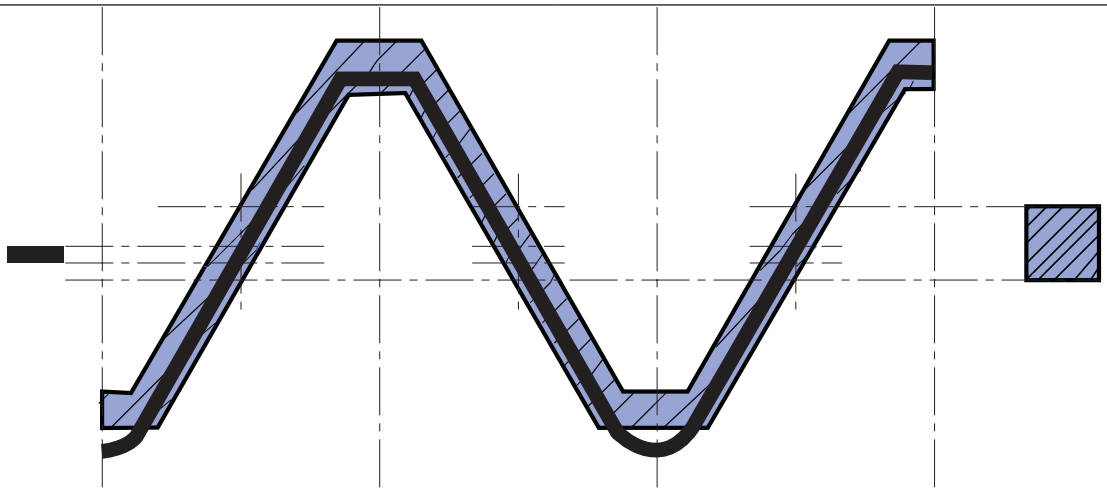
$d_3 = d - 2h_3 = d - 1.22687P$

$r = \frac{H}{6} = 0.14434P$

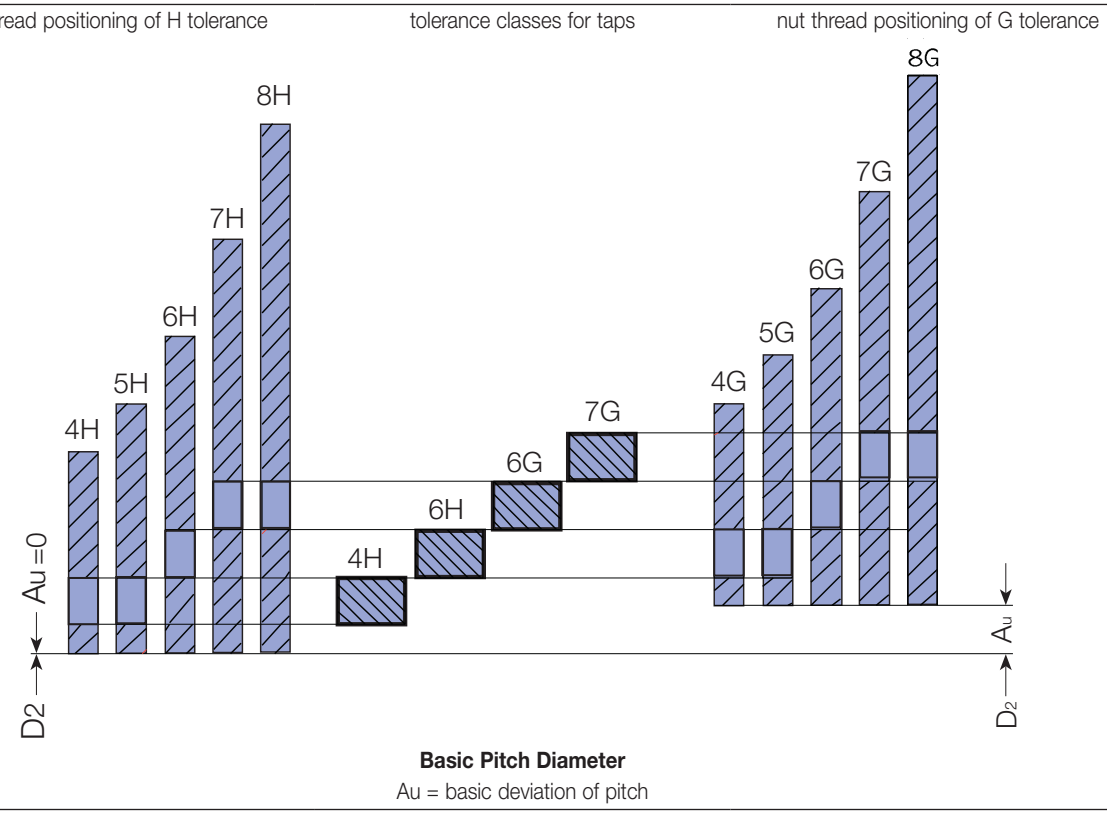
Nominal T.P.I Dia.		Pitch P	External Dia. d=D	Flank Di a. D2=D2	Minor Diameter		Pitch Diameter Tap Tolerance 2B		Pitch Diameter Nut Tolerance		
					Nut D1	Screw H3	Min.	Max.	Max. 2B/3B	Max. 2B	Max. 3B
UNF#0	- 80	0.318	1.524	1.318	1.181	1.135	1.331	1.344	1.318	1.377	1.361
UNF#1	- 72	0.353	1.854	1.626	1.473	1.422	1.638	1.651	1.626	1.689	1.674
UNF#2	- 64	0.397	2.184	1.928	1.755	1.697	1.941	1.953	1.928	1.996	1.979
UNF#3	- 56	0.454	2.515	2.220	2.024	1.958	2.233	2.245	2.220	2.291	2.273
UNF#4	- 48	0.529	2.845	2.502	2.271	2.195	2.515	2.527	2.502	2.581	2.560
UNF#5	- 44	0.577	3.175	2.799	2.550	2.466	2.812	2.824	2.799	2.880	2.860
UNF#6	- 40	0.635	3.505	3.094	2.817	2.725	3.108	3.119	3.094	3.180	3.157
UNF#8	- 36	0.706	4.166	3.708	3.401	3.299	3.721	3.734	3.708	3.800	3.777
UNF#10	- 32	0.794	4.826	4.310	3.967	3.853	4.336	4.348	4.310	4.409	4.384
UNF#12	- 28	0.907	5.486	4.897	4.503	4.374	4.923	4.935	4.897	5.004	4.976
UNF 1/4"	- 28	0.907	6.350	5.761	5.367	5.237	5.799	5.812	5.761	5.870	5.842
UNF 5/16"	- 24	1.058	7.938	7.249	6.792	6.640	7.287	7.300	7.249	7.371	7.341
UNF 3/8"	- 24	1.058	9.525	8.837	8.379	8.227	8.875	8.887	8.837	8.961	8.931
UNF 7/16"	- 20	1.270	11.112	10.287	9.738	9.555	10.338	10.351	10.287	10.424	10.391
UNF 1/2"	- 20	1.270	12.700	11.874	11.326	11.143	11.925	11.938	11.874	12.017	11.981
UNF 9/16"	- 18	1.411	14.288	13.371	12.761	12.555	13.421	13.434	13.371	13.520	13.482
UNF 5/8"	- 18	1.411	15.875	14.958	14.348	14.143	15.009	15.022	14.958	15.110	15.072
UNF 3/4"	- 16	1.588	19.050	18.019	17.330	17.102	18.070	18.082	18.019	18.184	18.143
UNF 7/8"	- 14	1.814	22.225	21.046	20.262	20.000	21.110	21.123	21.046	21.224	21.181
UNF 1"	- 12	2.117	25.400	24.026	23.109	22.804	24.089	24.102	24.026	24.219	24.171
UNF 1*1/8"	- 12	2.117	28.575	27.201	26.284	25.979	27.252	27.277	27.201	27.339	27.351
UNF 1*1/4"	- 12	2.117	31.750	30.376	29.459	29.154	30.427	30.452	30.376	30.579	30.528
UNF 1*3/8"	- 12	2.117	34.925	33.551	32.634	32.329	33.602	33.627	33.551	33.759	33.706
UNF 1*1/2"	- 12	2.117	38.100	36.726	35.809	35.504	36.777	36.802	36.726	36.937	36.886

Tap Tolerances

Tolerance classes of taps and tolerance positions for screw threads as per ISO metric standard.



tap tolerance — nut threads according to H tolerance



Basic Pitch Diameter

Au = basic deviation of pitch

For Optimum Tapping Conditions, Reduced Machining Times and Increased Tap Life

Selection of the Most Suitable Tap

As a general rule, materials with deformation capability of at least 10% can be cold-formed. To decide on the most suitable tap, please refer to the tap recommendation table on pages 4-5.

Pre-Tapping Holes

Check that the holes are within the prescribed size range depending on the application (see table on pages 11-13).
The holes should be clean and swarf-free.

Lubrication

Frequently the lubricant content of the coolant used for general machining is too low for tapping.

- If it is not possible to increase the lubricant content, following are some possible solutions:
- A separate lubricating unit can be connected to the machine control, to deliver the required quantity of concentrated emulsion into the core hole or onto the tap.Tapping in separate operations allows the use of the ideal tapping lubricant.

Tapping Speeds

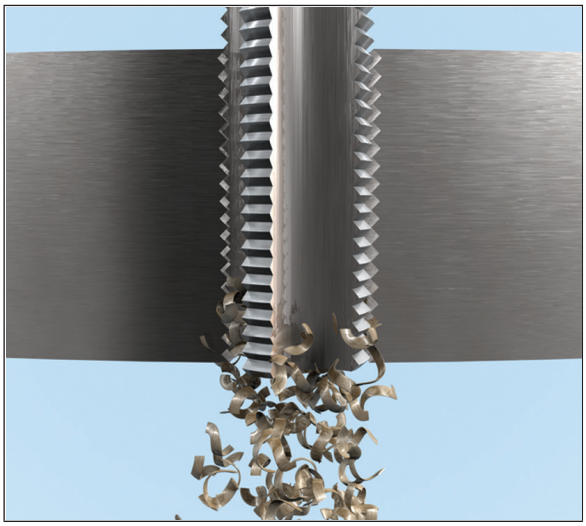
The tapping speed has a great influence on chip flow and the life of the tap. It is worthwhile to establish the ideal speed by tapping trials. For recommended initial values, see table on page 9. In addition, the following should be taken into consideration: characteristics of the material, machine and clamping method.

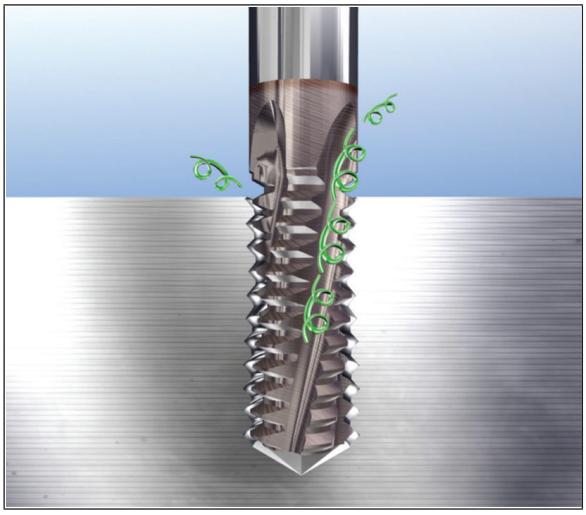
Effects of Unsuitable Tapping Speed

- Forced tapping.
- Tap lead chipping caused by overloaded cutting tooth.
- Torn threads.
- Unsatisfactory tap life.
- Rejected threads.

Chip Explusion

Tap selection is also influenced by the type of hole being threaded. Through hole tapping usually requires a tap that pushes the chips out in front of the cutting edge and through the other end of the hole. A bottom hole tap must pull chips up and out of the hole.





Tap Jamming

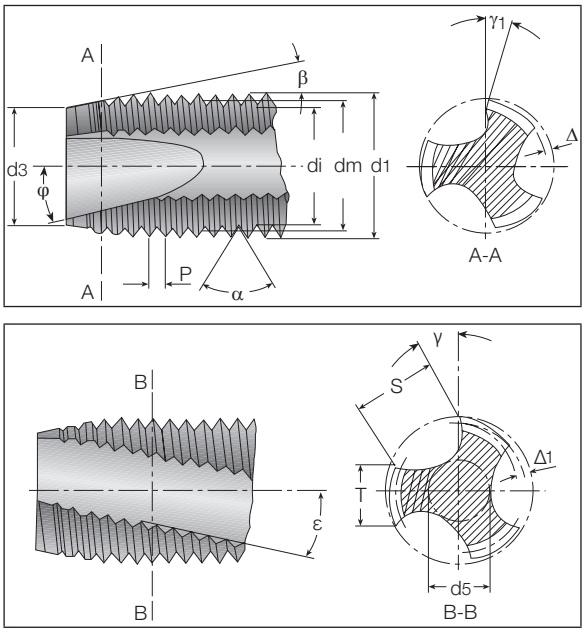
Some possible causes of tap jamming are:

- Unsuitable tap.
- Tap with incorrect cutting geometry.
- Unsuitable coolant for material.
- Insufficient coolant.
- Axial pressure (pull or push) on the tap.
- Core hole too small.
- Breaks in walls of core hole.
- Speed too high or too low.
- Swarf trapped in the hole.
- Incorrect alignment of tap and core hole.
- Tap eccentricity.

Troubleshooting

Problem	Cause	Solution
Tapped Hole Oversized	incorrect tap (cutting geometry unsuitable for application)	use tap selected from the relevant material group
	faulty alignment	ensure that the tap is correctly aligned with the core hole axis
	tap jamming	improve lubrication and direction of coolant adjust cutting speed
	incorrectly reground tap (lead tip is not concentric)	regrind tap
Stripped Threads	incorrect tap (cutting geometry incorrect for application)	use a tap from the relevant material group
	spindle speed and feed rate are not synchronized	check feed rate programming and/or pitch of leading spindle. use a tapping spindle with axial float (gti/gtin)
	insufficient starting pressure exerted on tap (causes peeling)	increase starting pressure
Bell Mouthed Tapped Hole	incorrect starting pressure	use a tapping spindle with axial float (gti/gtin)
Unsatisfactory Thread Surface Finish	incorrect tap (cutting geometry unsuitable for application)	select tap for the relevant material group
	the tap is blunt	replace or regrind tap
	tap badly re-ground	regrind tap, check that cutting geometry is suitable for material
	incorrect lubricant, concentration or quantity	ensure the use of a suitable coolant and an ample supply
Partial Chipping of Tap	swarf jamming	check cutting speed. use alternative tap
	tap has jammed against bottom of pre-hole	check hole and thread depths. drill a deeper pre-hole
	tap incorrectly reground (lead-in diameter too short, therefore too few cutting teeth)	ensure that correct dimensions are maintained when regrinding
	irregular workpiece material structure	adjust cutting speed. improve lubricant quality of coolant
Excessive Tap Wear	incorrect cutting speed	adjust cutting speed to suit workpiece material
	coolant lacking in lubricating qualities and/or quantity	ensure the use of a suitable coolant and an ample supply. check that the coolant is reaching the cutting zone
	surface of the pre-hole is compacted	check pre-hole drilling conditions (drill carefully to reduce risk of surface compacting). check drill cutting edges
Tap Breakage	incorrect tap in use (cutting geometry unsuitable for application)	use tap from the relevant material group
	centering error	ensure that axes of tap and pre-hole are aligned
	blunt tap	regrind tap
	tap has reached bottom of pre-hole	use tapping spindle with axial float and slipping clutch (**GTI**/**GTIN**)
	pre-hole too small	check for correct pre-hole size, see pages 11-13

Tap Nomenclature (Regrinding)



d1	major diameter	ϒ	gun nose front rake angle
dm	flank diameter	Δ	chamfer relief
di	minor diameter	Δ 1	pitch diameter relief on the land
d3	chamfer diameter	ϒ1	rake angle
P	pitch	T	width of land
α	flank angle	S	flute width
ß	chamfer angle	d5	web thickness
φ	gun nose angle	ε	angle of spiral flute

Regrinding

Tap regrinding is performed in two steps:

1 regrinding of relieved chamfer
2 regrinding of flutes (see picture 1)

Regrinding of Relieved Chamfer

It is recommended that the resharpening should be executed either on specific tap regrinding machines or on conventional resharpening machines equipped with an auxiliary device to generate the circular back relief.

Picture 2 shows the regrinding done with the cylindrical surface of a grinding wheel. Before regrinding, verify that the tap, fixed between points or on the pincer, runs concentrical. Also ensure that angle B is in the correct order to keep the same number of threads on chamfer.

Resharpening of Flutes

The rake angle g is obtained by moving the tap axis, in relation to the regrinding surface, of an amount X to be calculated with the formula: X = 1/2 d1 sin (ϒ) (see picture 3).(d1 =tap major diameter).

Example:
Tap 10 X 1,5 to cut on steel strength = 600 N/mm²

d1 = 10 mm ; ϒ = 15° ; sin (ϒ) = 0,25882;

$$X = \frac{0.25885}{2} \text{ x10 ; X=1.29 mm}$$

On all taps with spiral flutes, it is possible to find the pitch of the spiral in reference to the lead screw necessary for resharpening. In case of using taps equipped with a deburring tool, it is necessary to extend the flutes according to the supplier's recommendation. As the wear on a tap is mainly on the chamfer area, for taps with a gun nose, regrinding the flutes can be done on the front area only (see picture 4).

In cases where the thread flanks are worn (in addition to the active edges), regrinding as described above is impractical.

In this case restoration is done, by cutting the chamfer away (thus creating a shorter tap) and then reproducing the chamfer with same angle and relief.
(see picture 5).

In the absence of special regrinding machines, such restoration is advisable for regrinding taps with spiral flutes. This is because regrinding the flutes becomes unnecessary.

General Recommendations (Regrinding)

Maintenance

It is important to periodically regrind the worn tap.
This is to avoid permanent damage or even tool breakage.

The Grinding Wheels

The structure and grain of grinding wheels must be appropriate for the tap to be resharpened.

Taps for Cast Iron

Taps used on cast iron can rarely be resharpened, as it is very abrasive and tends to wear the flank in such a manner that it becomes grossly out of tolerance.

Taps for Aluminun

After regrinding it is advisable to remove the steel burrs with a wire brush.

Tap Inspection

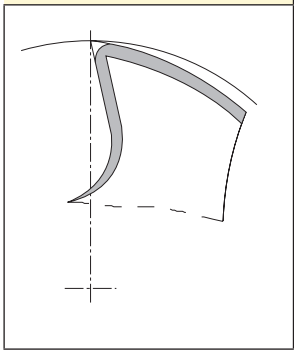
It is important to inspect the tap after regrinding to ensure that all of the dimensions and angles have remained according to the specifications.

Controls (tests)

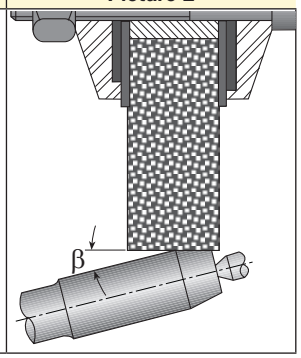
Once the tap is resharpened, it is always best to test it to correctly to obtain the same threads as when the tap was new.

- The chamfer must be perfectly on axis in order to avoid the effects of picture 6.
  The cutters must have correct divisions.
- The results of resharpening with an incorrect division is shown in picture 7.
- The length and number of threads in a chamfer must be precisely identical to those of the new tap.

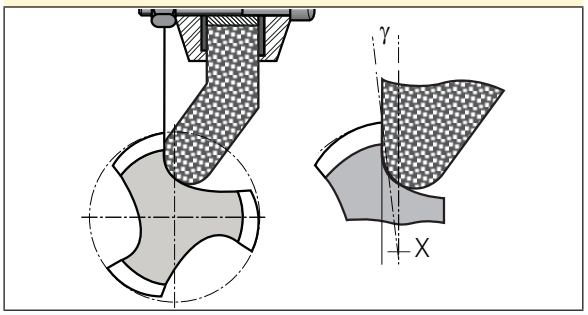
Picture 1



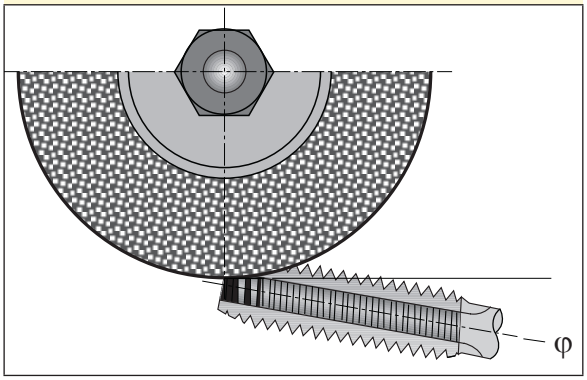
Picture 2



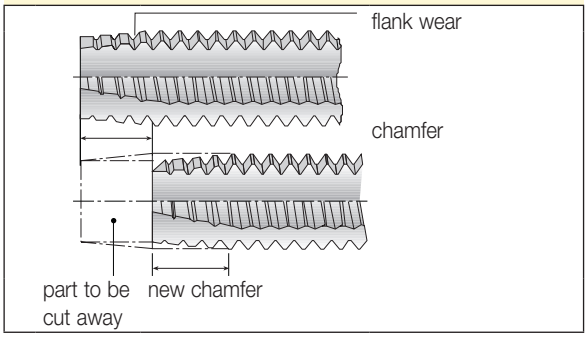
Picture 3



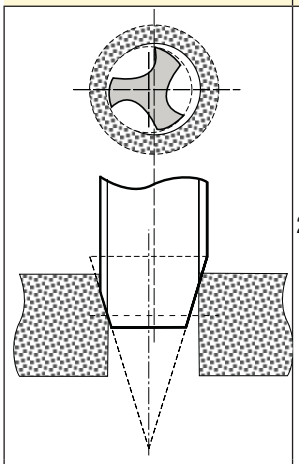
Picture 4



Picture 5

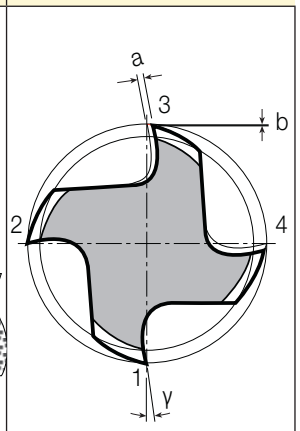


Picture 6



chamfer out of center

Picture 7



incorrect division-cutters not concentric

Test Report Form

Company _____ **Department** _____

Address _____ **Phone** _____

_____

Tool

description of the tap being used at present thread diameter and pitch

make _____ type _____

_____ class of tolerance

☐ right-hand cutting ☐ left-hand cutting _____

☐ fluteless ☐ right-hand spiral flutes _____ degrees _____

☐ straight flutes ☐ left-hand spiral flutes _____ degrees _____

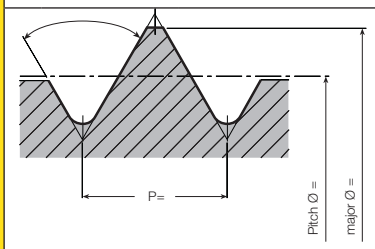
☐ spiral point ☐ length of chamfer _____ mm _____

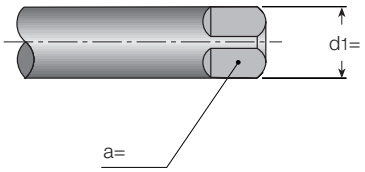
additional information for special pitches or thread forms

major diameter _____

pitch diameter _____ flank angle _____ degrees _____

minor diameter _____





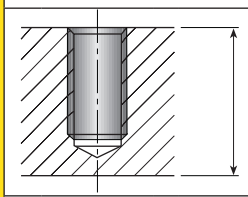
Hole

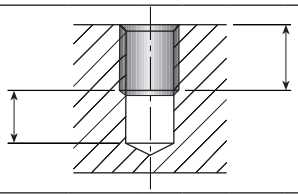
tap drill diameter _____ length of hole _____

☐ through hold depth of full thread _____

☐ blind hole

special requirements or unusual characteristics of the threaded product _____





unusual characteristics of the threaded product or of the tapping method. _____

ie. counterbore, tapping on an angle, etc. _____

Tapping Speed	_____ m/min _____ rPM
Lubricant	☐ none ☐ emulsion _____ % ☐ cutting oil ☐ other _____ ☐ under pressure ☐ vaporization _____
Machine	type _____ ☐ horizontal tapping ☐ vertical tapping
Driving	☐ tap revolvers number of spindles _____ ☐ workpiece revolvers
Feed	☐ without ☐ power ☐ CNC _____ %
Toolholder	☐ rigid ☐ floating ☐ safety clutch make _____ type _____
Material to Be Tapped	material no. or designation _____ composition, if known _____ tensile strength or hardness _____ N/mm^2 _____ HB _____ HRc chip form ☐ short ☐ long ☐ annealed steel ☐ hardened steel ☐ heat treated steel

more details: _____

_____

_____

_____

_____

_____

_____

contact person _____

date _____ signature _____

Thread Standards

Cylindrical Threads	
UNC	unified coarse thread series
UNF	unified fine thread series
UNEF	unified extra-fine thread series
UN	constant pitch series - threads with constant pitch of t.p.i. 4, 6, 8, 12, 16, 20, 28, 32
UNS	selected combinations - threads with special dia. - pitch combinations
UNJ	unified threads with constant pitch with radius on minor diameter from 0.15011 pitch to 0.18042 pitch
UNJC	unified coarse thread with radius on minor diameter from 0.15011 pitch to 0.18042 pitch
UNJEF	unified extra-fine thread with radius on minor diameter from 0.15011 pitch to 0.18042 pitch
UNJF	unified fine threads with radius on minor diameter from 0.15011 pitch to 0.18042 pitch

Pipe Cylindrical Threads	
NPS	cylindrical threads for pipe
NPSC	american standard for pipe coupling
NPSF	american standard for internal threads on pipe, dryseal
NPSH	american standard for cylindrical threads for pipes, joints and nipples
NPSI	american standard for internal cylindrical threads on pipe (dryseal)
NPSL	american standard for cylindrical threads on pipes for nuts
NPSM	american standard for cylindrical threads on pipes for mechanical joints
NGO	american national pipe threads for gas exhaust
NGS	american national pipe threads for gas

Taper Pipe Threads	
ANPT	taper pipe threads for army, navy and airforce
F-PTE	taper pipe fine threads (dryseal)

Trapezoidal and Saw Tooth Threads	
ACME-C ACME	self-centering threads
ACME-G ACME	generical application
STUB-ACME	acme flat threads with reduced thread depth
60º STUB-ACME	acme flat threads with 60º flank angle
N BUTT	american national saw tooth threads

British Standard	
BSW	whitworth british standard coarse pitch
BSF	whitworth british standard fine pitch
WHIT	whitworth standard special pitch
R	british standard external threading for taper pipe (dryseal) (already BSP-Tr)
Rc	british standard internal threading taper thread for pipe (BSP-Tr)
Rp	british standard cylindrical thread for pipe (already BSP.Pl)
BA	british standard association threads
BSC	british standard threads for bicycles
CEI	british standard for bicycles

GTI / GTIN - Tapping Attachment

Compact tapping collet with tension and compression floating mechanism for ER32 collet chucks.
A tapping collet for standard and rigid tapping operations. The **GTIN** ER32 collet makes tap removal and replacement easy, quick and reliable. Designed for stationary and rotating applications, the **GTIN** ER32 collets are economical and efficient due to the ability to use existing ER32 collet chucks (with various shank sizes and types).

Applications

The **GTIN** ER32 tapping collet is designed especially for CNC mill/turn centers, for regular and rigid tapping.

Advantages

Quick tap change with a front clamping nut.

- Compact design for minimal clearance between the turret and chuck.
- Fits every type of stationary and rotating ER32 collet chuck.
- Positive tap drive with internal square driver.
- Compensates for machine feed and tap pitch variance, resulting in greater thread accuracy.
- Floating mechanism compensates for misalignment between tap and workpiece.
- High accuracy due to tension and compression mechanism.
- Available for all tap shank standards (DIN, ISO, ANSI, JIS).
- Tapping range M1-M16 (#0 to 5/8″).
- Saves setup time by quick tap changing without removing **GTIN** from the machine.
- Optimal for machines which have limited space between the turret and workpiece.

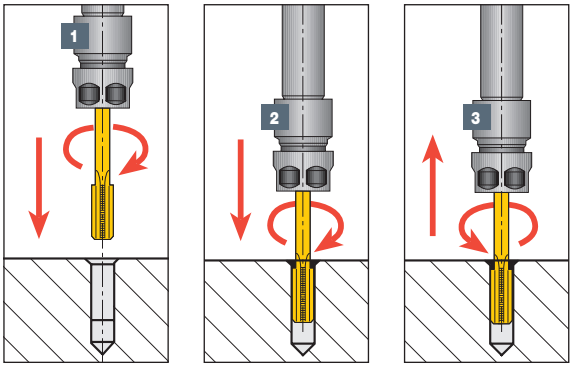
Operation

For through- and blind-hole tapping:

1 enter feed rate according to thread pitch (or 1-2 % lower). Set spindle to starting point with 0.08 mm clearance.

2 start spindle forward with right hand rotation until reaching desired depth.

3 stop feed and rotation and reverse to starting point.



Description

Short tap chucks for ER collets.

Application

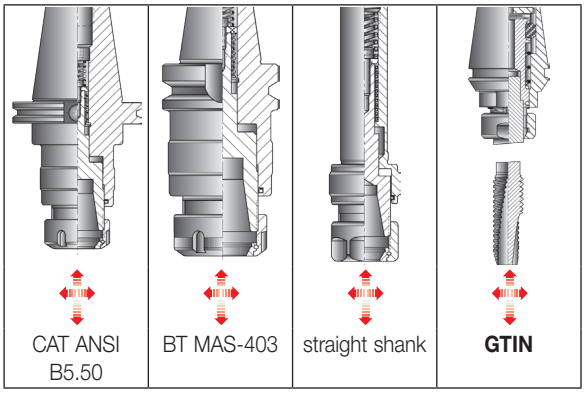
Axial float/tension/compression type for CNC milling machines and lathes with reversing motors and rigid tapping.

Features

- Compensates for machine feed and tap pitch variance.
- Floating mechanism compensates for misalignment between tap and workpiece.
- Right- and left-hand tapping.

Advantages

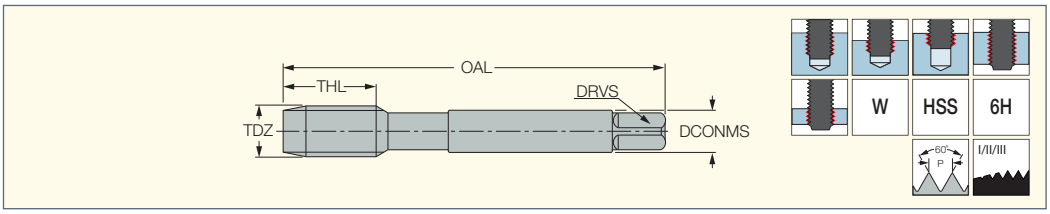
- Practical and efficient tap holding by the ER spring collet without using jaw drive.
- Compact design for minimal clearance applications.
- Heavy duty design for high torque drive ensures the same accuracy as the tap itself.



ISCAR TAPS

TPHN M-W

DIN 13 HSS Hand Tap Set for ISO Metric Coarse Threads



Designation	Dimensions									HS
	TDZ	TP(1)	OAL	THL	DCONMS	NOF(2)	DRVS(3)	Pre-hole	Standard	
TPHN M-2X0.4-W	M2	0.400	36.00	8.0	2.80	3	2.10	1.60	DIN 352	●
TPHN M-2.2X0.45-W	M2.2	0.450	36.00	9.0	2.80	3	2.10	1.75	DIN 352	●
TPHN M-2.5X0.45-W	M2.5	0.450	40.00	9.0	2.80	3	2.10	2.05	DIN 352	●
TPHN M-3X0.5-W	M3	0.500	42.00	12.0	3.50	3	2.70	2.50	DIN 352	●
TPHN M-3.5X0.6-W	M3.5	0.600	45.00	14.0	4.00	3	3.00	2.90	DIN 352	●
TPHN M-4X0.7-W	M4	0.700	46.00	14.0	4.50	3	3.40	3.30	DIN 352	●
TPHN M-5X0.8-W	M5	0.800	50.00	16.0	6.00	3	4.90	4.20	DIN 352	●
TPHN M-6X1.0-W	M6	1.000	52.00	18.0	6.00	3	4.90	5.00	DIN 352	●
TPHN M-8X1.25-W	M8	1.250	63.00	18.0	6.00	3	4.90	6.80	DIN 352	●
TPHN M-10X1.5-W	M10	1.500	70.00	23.0	7.00	3	5.50	8.50	DIN 352	●
TPHN M-12X1.75-W	M12	1.750	75.00	28.0	9.00	3	7.00	10.20	DIN 352	●
TPHN M-14X2.0-W	M14	2.000	80.00	30.0	11.00	4	9.00	12.00	DIN 352	●
TPHN M-16X2.0-W	M16	2.000	80.00	30.0	12.00	4	9.00	14.00	DIN 352	●
TPHN M-18X2.5-W	M18	2.500	95.00	35.0	14.00	4	11.00	15.50	DIN 352	●
TPHN M-20X2.5-W	M20	2.500	95.00	34.0	16.00	4	12.00	17.50	DIN 352	●

• NOTE: Each set contains 2 or 3 taps • For user guide and cutting conditions, see pages

(1) Thread pitch

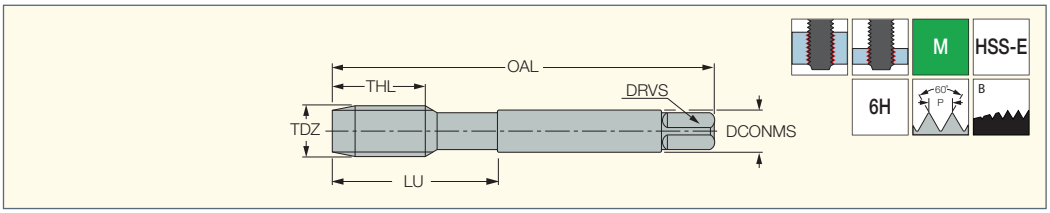
(2) Number of flutes

(3) Torque key size

ONETAP

TPGN M-M

DIN 13 HSSE 5% Co Gun Point Machine Taps - ISO Metric Coarse Threads for a Wide Range of Materials



Designation	Dimensions										Tough ↔ Hard	
	TDZ	TP(1)	OAL	THL	LU(2)	DCONMS	NOF(3)	DRVS(4)	Pre-hole	Standard	HE	HETI
TPGN M-2X0.4-M	M2	0.400	45.00	8.0	-	2.80	2	2.10	1.60	DIN 371	●	●
TPGN M-2.2X0.45-M	M2.2	0.450	45.00	9.0	-	2.80	2	2.10	1.75	DIN 371	●	●
TPGN M-2.5X0.45-M	M2.5	0.450	50.00	9.0	-	2.80	2	2.10	2.05	DIN 371	●	●
TPGN M-3X0.5-M	M3	0.500	56.00	10.0	18.0	3.50	3	2.70	2.50	DIN 371	●	●
TPGN M-3.5X0.6-M	M3.5	0.600	56.00	10.0	20.0	4.00	3	3.00	2.90	DIN 371	●	●
TPGN M-4X0.7-M	M4	0.700	63.00	12.0	21.0	4.50	3	3.40	3.30	DIN 371	●	●
TPGN M-5X0.8-M	M5	0.800	70.00	14.0	25.0	6.00	3	4.90	4.20	DIN 371	●	●
TPGN M-6X1.0-M	M6	1.000	80.00	16.0	30.0	6.00	3	4.90	5.00	DIN 371	●	●
TPGN M-8X1.25-M	M8	1.250	90.00	18.0	35.0	8.00	3	6.20	6.80	DIN 371	●	●
TPGN M-10X1.5-M	M10	1.500	100.00	20.0	39.0	10.00	3	8.00	8.50	DIN 371	●	●
TPGN M-12X1.75-M	M12	1.750	110.00	22.0	-	9.00	4	7.00	10.20	DIN 376	●	●
TPGN M-14X2.0-M	M14	2.000	110.00	24.0	-	11.00	4	9.00	12.00	DIN 376	●	●
TPGN M-16X2.0-M	M16	2.000	110.00	26.0	-	12.00	4	9.00	14.00	DIN 376	●	●
TPGN M-18X2.5-M	M18	2.500	125.00	30.0	-	14.00	4	11.00	15.50	DIN 376	●	●
TPGN M-20X2.5-M	M20	2.500	140.00	30.0	-	16.00	4	12.00	17.50	DIN 376	●	●
TPGN M-22X2.5-M	M22	2.500	140.00	30.0	-	18.00	4	14.50	19.50	DIN 376	●	●
TPGN M-24X3.0-M	M24	3.000	160.00	36.0	-	18.00	4	14.50	21.00	DIN 376	●	●
TPGN M-27X3.0-M	M27	3.000	160.00	36.0	-	20.00	4	16.00	24.00	DIN 376	●	●
TPGN M-30X3.5-M	M30	3.500	180.00	40.0	-	22.00	4	18.00	26.50	DIN 376	●	●

• For user guide and cutting conditions, see pages

(1) Thread pitch

(2) DIN376 (M12+) and DIN374 (all MF) taps do not have a neck, meaning the shank diameter is smaller than the core hole. Therefore, the usable length isn't restricted by a neck.

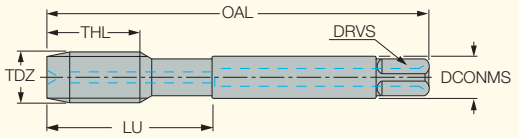
(3) Number of flutes

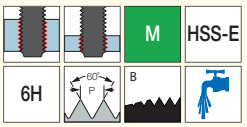
(4) Torque key size

ONETAP

TPGN M-M-B

DIN 13 HSS Gun Point Machine Taps - ISO Metric Coarse Threads for a Wide Range of Materials





Designation	Dimensions											HETI
	TDZ	TP(1)	OAL	THL	LU(2)	DCONMS	NOF(3)	DRVS(4)	Pre-hole	CSP(5)	Standard	
TPGN M-8X1.25-M-B	M8	1.250	90.00	18.0	35.0	8.00	3	6.20	6.80	1	DIN 371	●
TPGN M-10X1.5-M-B	M10	1.500	100.00	20.0	39.0	10.00	3	8.00	8.50	1	DIN 371	●
TPGN M-12X1.75-M-B	M12	1.750	110.00	22.0	-	9.00	4	7.00	10.20	1	DIN 376	●
TPGN M-14X2.0-M-B	M14	2.000	110.00	24.0	-	11.00	4	9.00	12.00	1	DIN 376	●
TPGN M-16X2.0-M-B	M16	2.000	110.00	26.0	-	12.00	4	9.00	14.00	1	DIN 376	●

• For user guide and cutting conditions, see pages

(1) Thread pitch

(2) DIN376 (M12+) and DIN374 (all MF) taps do not have a neck, meaning the shank diameter is smaller than the core hole. Therefore, the usable length isn't restricted by a neck.

(3) Number of flutes

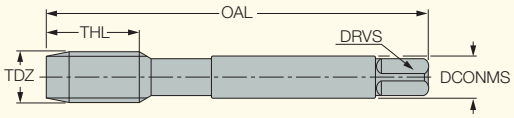
(4) Torque key size

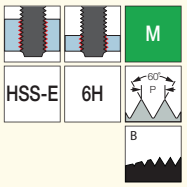
(5) 0 - Without coolant supply, 1 - With coolant supply

ONETAP

TPGN MF-M

DIN 13 HSSE 5% Co Gun Point Machine Taps - ISO Metric Fine Threads for a Wide Range of Materials





Designation	Dimensions									Tough ↔ Hard	
	TDZ	TP(1)	OAL	THL	DCONMS	NOF(2)	DRVS(3)	Pre-hole	Standard	HE	HETI
TPGN MF-4X0.5-M	MF4	0.500	63.00	10.0	2.80	3	2.10	3.50	DIN 374	●	●
TPGN MF-5X0.5-M	MF5	0.500	70.00	12.0	3.50	3	2.70	4.50	DIN 374	●	●
TPGN MF-6X0.75-M	MF6	0.750	80.00	12.0	4.50	3	3.40	5.20	DIN 374	●	●
TPGN MF-8X1.0-M	MF8	1.000	90.00	15.0	6.00	3	4.90	7.00	DIN 374	●	●
TPGN MF-10X1.0-M	MF10	1.000	90.00	18.0	7.00	3	5.50	9.00	DIN 374	●	●
TPGN MF-10X1.25-M	MF10	1.250	100.00	18.0	7.00	3	5.50	8.80	DIN 374	●	●
TPGN MF-12X1.0-M	MF12	1.000	100.00	18.0	9.00	4	7.00	11.00	DIN 374	●	●
TPGN MF-12X1.25-M	MF12	1.250	100.00	18.0	9.00	4	7.00	10.80	DIN 374	●	●
TPGN MF-12X1.5-M	MF12	1.500	100.00	18.0	9.00	4	7.00	10.50	DIN 374	●	●
TPGN MF-14X1.0-M	MF14	1.000	100.00	18.0	11.00	4	9.00	13.00	DIN 374	●	●
TPGN MF-14X1.25-M	MF14	1.250	100.00	18.0	11.00	4	9.00	12.80	DIN 374	●	●
TPGN MF-14X1.5-M	MF14	1.500	100.00	18.0	11.00	4	9.00	12.50	DIN 374	●	●
TPGN MF-16X1.5-M	MF16	1.500	100.00	18.0	12.00	4	9.00	14.50	DIN 374	●	●
TPGN MF-18X1.5-M	MF18	1.500	110.00	20.0	14.00	4	11.00	16.50	DIN 374	●	●
TPGN MF-20X1.5-M	MF20	1.500	125.00	24.0	16.00	4	12.00	18.50	DIN 374	●	●
TPGN MF-22X1.5-M	MF22	1.500	125.00	24.0	18.00	4	14.50	20.50	DIN 374	●	●
TPGN MF-24X1.5-M	MF24	1.500	140.00	24.0	18.00	4	14.50	22.50	DIN 374	●	●

• For user guide and cutting conditions, see pages

(1) Thread pitch

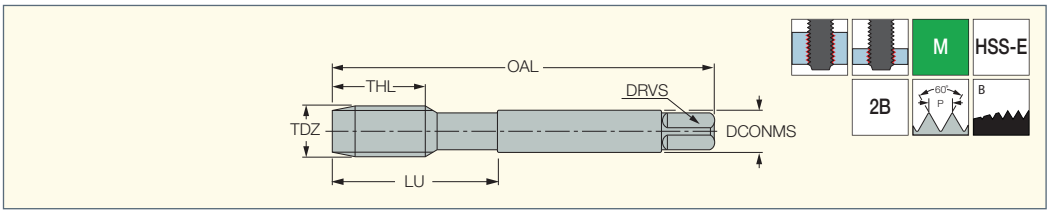
(2) Number of flutes

(3) Torque key size

ONETAP

TPGN UNC-M

HSSE 5% Co Gun Point Machine Taps - Unified Coarse Threads for a Wide Range of Materials



Designation	Dimensions										Tough ↔ Hard	
	TDZ	TPI[1]	OAL	THL	LU[2]	DCONMS	NOF[3]	DRVS[4]	Pre-hole	Standard	HE	HETI
TPGN UNC #4 40-M	UNC No.4	40.0	56.00	10.0	18.0	3.50	2	2.70	2.35	DIN 371	•	•
TPGN UNC #5-40-M	UNC No.5	40.0	56.00	10.0	18.0	3.50	3	2.70	2.65	DIN 371	•	•
TPGN UNC #6-32-M	UNC No.6	32.0	56.00	10.0	20.0	4.00	3	3.00	2.85	DIN 371	•	•
TPGN UNC #8-32-M	UNC No.8	32.0	63.00	12.0	21.0	4.50	3	3.40	3.50	DIN 371	•	•
TPGN UNC #10-24-M	UNC No.10	24.0	70.00	14.0	25.0	6.00	3	4.90	3.90	DIN 371	•	•
TPGN UNC #12-24-M	UNC No.12	24.0	80.00	16.0	30.0	6.00	3	4.90	4.50	DIN 371	•	•
TPGN UNC 1/4-20-M	UNC 1/4	20.0	80.00	16.0	30.0	7.00	3	5.50	5.10	DIN 371	•	•
TPGN UNC 5/16-18-M	UNC 5/16	18.0	90.00	18.0	35.0	8.00	3	6.20	6.60	DIN 371	•	•
TPGN UNC 3/8-16-M	UNC 3/8	16.0	100.00	20.0	39.0	10.00	3	8.00	8.00	DIN 371	•	•
TPGN UNC 7/16-14-M	UNC 7/16	14.0	100.00	20.0	-	8.00	4	6.20	9.40	DIN 376	•	•
TPGN UNC 1/2-13-M	UNC 1/2	13.0	110.00	22.0	-	9.00	4	7.00	10.80	DIN 376	•	•
TPGN UNC 9/16-12-M	UNC 9/16	12.0	110.00	24.0	-	11.00	4	9.00	12.20	DIN 376	•	•
TPGN UNC 5/8-11-M	UNC 5/8	11.0	110.00	26.0	-	12.00	4	9.00	13.50	DIN 376	•	•
TPGN UNC 3/4-10-M	UNC 3/4	10.0	125.00	30.0	-	14.00	4	11.00	16.50	DIN 376	•	•
TPGN UNC 7/8-9-M	UNC 7/8	9.0	140.00	30.0	-	18.00	4	14.50	19.50	DIN 376	•	•
TPGN UNC 1"-8-M	UNC 1"	8.0	160.00	36.0	-	18.00	4	14.50	22.25	DIN 376	•	•

• For user guide and cutting conditions, see pages

(1) Threads per inch

(2) DIN376 (UNC 7/16) taps do not have a neck, meaning the shankdiameter is smaller than the core hole. Therefore, the usable length isn't restricted by a neck.

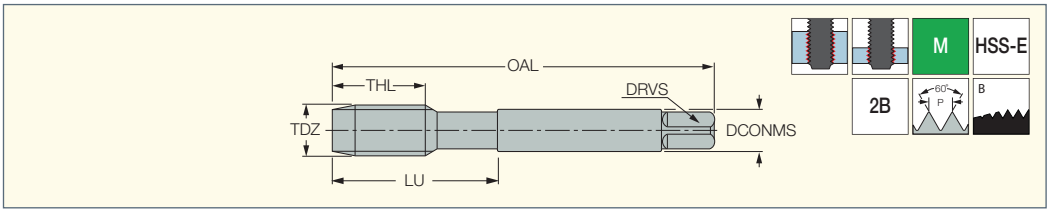
(3) Number of flutes

(4) Torque key size

ONETAP

TPGN UNF-M

HSSE 5% Co Spiral Flute Machine Taps - Unified Fine Threads, for a Wide Range of Materials



Designation	Dimensions										Tough ↔ Hard	
	TDZ	TPI[1]	OAL	THL	LU[2]	DCONMS	NOF[3]	DRVS[4]	Pre-hole	Standard	HE	HETI
TPGN UNF #4-48-M	UNF No.4	48.0	56.00	8.0	18.0	3.50	2	2.70	2.40	DIN 371	•	•
TPGN UNF #5-44-M	UNF No.5	44.0	56.00	9.0	18.0	3.50	3	2.70	2.70	DIN 371	•	•
TPGN UNF #6-40-M	UNF No.6	40.0	56.00	10.0	20.0	4.00	3	3.00	2.95	DIN 371	•	•
TPGN UNF #8-36-M	UNF No.8	36.0	63.00	12.0	21.0	4.50	3	3.40	3.50	DIN 371	•	•
TPGN UNF #10-32-M	UNF No.10	32.0	70.00	12.0	25.0	6.00	3	4.90	4.10	DIN 371	•	•
TPGN UNF #12-28-M	UNF No.12	28.0	80.00	12.0	30.0	6.00	3	4.90	4.60	DIN 371	•	•
TPGN UNF 1/4-28-M	UNF 1/4	28.0	80.00	12.0	30.0	7.00	3	5.50	5.50	DIN 371	•	•
TPGN UNF 5/16-24-M	UNF 5/16	24.0	90.00	15.0	35.0	8.00	3	6.20	6.90	DIN 371	•	•
TPGN UNF 3/8-24-M	UNF 3/8	24.0	90.00	18.0	39.0	10.00	3	8.00	8.50	DIN 371	•	•
TPGN UNF 7/16-20-M	UNF 7/16	20.0	100.00	18.0	-	8.00	4	6.20	9.90	DIN 376	•	•
TPGN UNF 1/2-20-M	UNF 1/2	20.0	100.00	18.0	-	9.00	4	7.00	11.50	DIN 376	•	•
TPGN UNF 9/16-18-M	UNF 9/16	18.0	100.00	18.0	-	11.00	4	9.00	12.90	DIN 376	•	•
TPGN UNF 5/8-18-M	UNF 5/8	18.0	100.00	18.0	-	12.00	4	9.00	14.50	DIN 376	•	•
TPGN UNF 3/4-16-M	UNF 3/4	16.0	110.00	24.0	-	14.00	4	11.00	17.50	DIN 376	•	•
TPGN UNF 7/8-14-M	UNF 7/8	14.0	125.00	24.0	-	18.00	4	14.50	20.50	DIN 376	•	•
TPGN UNF 1"-12-M	UNF 1"	12.0	140.00	28.0	-	18.00	4	14.50	23.25	DIN 376	•	•

• For user guide and cutting conditions, see pages

(1) Threads per inch

(2) DIN376 (UNF 7/16) taps do not have a neck, meaning the shankdiameter is smaller than the core hole. Therefore, the usable length isn't restricted by a neck.

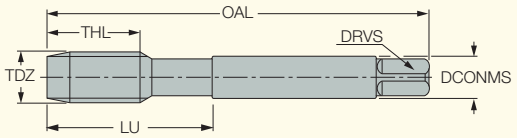
(3) Number of flutes

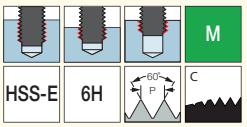
(4) Torque key size

ONETAP

TPSN M-M

DIN 13 HSSE 5% Co Spiral Flute Machine Taps ISO Metric Coarse Threads for a Wide Range of Materials





Designation	Dimensions										Tough ↔ Hard	
	TDZ	TP[1]	OAL	THL	LU[2]	DCONMS	NOF[3]	DRVS[4]	Pre-hole	Standard	HE	HETI
TPSN M-2X0.4-M	M2	0.400	45.00	6.0	10.0	2.80	3	2.10	1.60	DIN 371	•	•
TPSN M-2.2X0.45-M	M2.2	0.450	45.00	6.0	10.0	2.80	3	2.10	1.75	DIN 371	•	•
TPSN M-2.5X0.45-M	M2.5	0.450	50.00	6.0	12.0	2.80	3	2.10	2.05	DIN 371	•	•
TPSN M-3X0.5-M	M3	0.500	56.00	7.0	18.0	3.50	3	2.70	2.50	DIN 371	•	•
TPSN M-3.5X0.6-M	M3.5	0.600	56.00	7.0	20.0	4.00	3	3.00	2.90	DIN 371	•	•
TPSN M-4X0.7-M	M4	0.700	63.00	8.0	21.0	4.50	3	3.40	3.30	DIN 371	•	•
TPSN M-5X0.8-M	M5	0.800	70.00	10.0	25.0	6.00	3	4.90	4.20	DIN 371	•	•
TPSN M-6X1.0-M	M6	1.000	80.00	12.0	30.0	6.00	3	4.90	5.00	DIN 371	•	•
TPSN M-8X1.25-M	M8	1.250	90.00	15.0	35.0	8.00	3	6.20	6.80	DIN 371	•	•
TPSN M-10X1.5-M	M10	1.500	100.00	18.0	39.0	10.00	3	8.00	8.50	DIN 371	•	•
TPSN M-12X1.75-M	M12	1.750	110.00	18.0	-	9.00	3	7.00	10.20	DIN 376	•	•
TPSN M-14X2.0-M	M14	2.000	110.00	20.0	-	11.00	3	9.00	12.00	DIN 376	•	•
TPSN M-16X2.0-M	M16	2.000	110.00	20.0	-	12.00	4	9.00	14.00	DIN 376	•	•
TPSN M-18X2.5-M	M18	2.500	125.00	25.0	-	14.00	4	11.00	15.50	DIN 376	•	•
TPSN M-20X2.5-M	M20	2.500	140.00	25.0	-	16.00	4	12.00	17.50	DIN 376	•	•
TPSN M-22X2.5-M	M22	2.500	140.00	25.0	-	18.00	4	14.50	19.50	DIN 376	•	•
TPSN M-24X3.0-M	M24	3.000	160.00	30.0	-	18.00	4	14.50	21.00	DIN 376	•	•
TPSN M-27X3.0-M	M27	3.000	160.00	30.0	-	20.00	4	16.00	24.00	DIN 376	•	•
TPSN M-30X3.5-M	M30	3.500	180.00	35.0	-	22.00	4	18.00	26.50	DIN 376	•	•

• For user guide and cutting conditions, see pages

[1] Thread pitch

[2] DIN376 (M12+) and DIN374 (all MF) taps do not have a neck, meaning the shank diameter is smaller than the core hole. Therefore, the usable length isn't restricted by a neck.

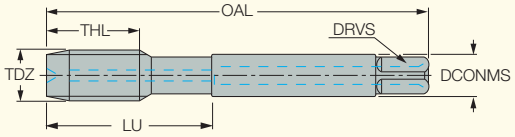
[3] Number of flutes

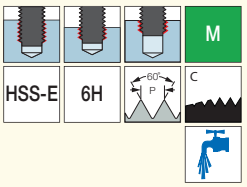
[4] Torque key size

ONETAP

TPSN M-M-B

DIN 13 HSS Spiral Flute Machine Taps - Metric Coarse Threads for a Wide Range of Materials





Designation	Dimensions											HETI
	TDZ	TP[1]	OAL	THL	LU[2]	DCONMS	NOF[3]	DRVS[4]	Pre-hole	Standard	CSP[5]	
TPSN M-6X1.0-M-B	M6	1.000	80.00	12.0	30.0	6.00	3	4.90	5.00	DIN 371	1	•
TPSN M-8X1.25-M-B	M8	1.250	90.00	15.0	35.0	8.00	3	6.20	6.80	DIN 371	1	•
TPSN M-10X1.5-M-B	M10	1.500	100.00	18.0	39.0	10.00	3	8.00	8.50	DIN 371	1	•
TPSN M-12X1.75-M-B	M12	1.750	110.00	18.0	-	9.00	3	7.00	10.20	DIN 376	1	•
TPSN M-14X2.0-M-B	M14	2.000	110.00	20.0	-	11.00	3	9.00	12.00	DIN 376	1	•
TPSN M-16X2.0-M-B	M16	2.000	110.00	20.0	-	12.00	4	9.00	14.00	DIN 376	1	•

• For user guide and cutting conditions, see pages

[1] Thread pitch

[2] DIN376 (M12+) and DIN374 (all MF) taps do not have a neck, meaning the shank diameter is smaller than the core hole. Therefore, the usable length isn't restricted by a neck.

[3] Number of flutes

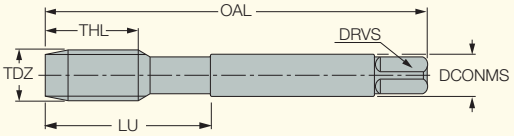
[4] Torque key size

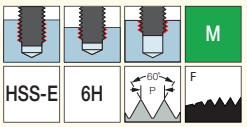
[5] 0 - Without coolant supply, 1 - With coolant supply

ONETAP

TPSN M-M-F

DIN 13 HSSE. 5% Co Spiral Flute Machine Taps ISO Metric Coarse Threads for a Wide Range of Materials





Designation	Dimensions										HE
	TDZ	TP(1)	OAL	THL	LU(2)	DCONMS	NOF(3)	DRVS(4)	Pre-hole	Standard	
TPSN M-4X0.7-M-F	M4	0.700	63.00	8.0	21.0	4.50	3	3.40	3.30	DIN 371	●
TPSN M-5X0.8-M-F	M5	0.800	70.00	10.0	25.0	6.00	3	4.90	4.20	DIN 371	●
TPSN M-6X1.0-M-F	M6	1.000	80.00	12.0	30.0	6.00	3	4.90	5.00	DIN 371	●
TPSN M-8X1.25-M-F	M8	1.250	90.00	15.0	35.0	8.00	3	6.20	6.80	DIN 371	●
TPSN M-10X1.5-M-F	M10	1.500	100.00	18.0	39.0	10.00	3	8.00	8.50	DIN 371	●
TPSN M-12X1.75-M-F	M12	1.750	110.00	18.0	-	9.00	3	7.00	10.20	DIN 376	●
TPSN M-14X2.0-M-F	M14	2.000	110.00	20.0	-	11.00	3	9.00	12.00	DIN 376	●
TPSN M-16X2.0-M-F	M16	2.000	110.00	20.0	-	12.00	4	9.00	14.00	DIN 376	●

• For user guide and cutting conditions, see pages

(1) Thread pitch

(2) DIN376 (M12+) and DIN374 (all MF) taps do not have a neck, meaning the shank diameter is smaller than the core hole. Therefore, the usable length isn't restricted by a neck.

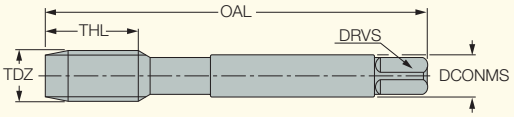
(3) Number of flutes

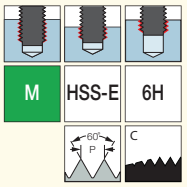
(4) Torque key size

ONETAP

TPSN MF-M

DIN 13 HSSE 5% Co Spiral Flute Machine Taps ISO Metric Fine Threads for a Wide Range of Materials





Designation	Dimensions									Tough ↔ Hard	
	TDZ	TP(1)	OAL	THL	DCONMS	NOF(2)	DRVS(3)	Pre-hole	Standard	HE	HETI
TPSN MF-4X0.5-M	MF4	0.500	63.00	10.0	2.80	3	2.10	3.50	DIN 374	●	●
TPSN MF-5X0.5-M	MF5	0.500	70.00	12.0	3.50	3	2.70	4.50	DIN 374	●	●
TPSN MF-6X0.75-M	MF6	0.750	80.00	12.0	4.50	3	3.40	5.20	DIN 374	●	●
TPSN MF-8X1.0-M	MF8	1.000	90.00	15.0	6.00	3	4.90	7.00	DIN 374	●	●
TPSN MF-10X1.25-M	MF10	1.250	100.00	18.0	7.00	3	5.50	8.80	DIN 374	●	●
TPSN MF-10X1.0-M	MF10	1.000	90.00	18.0	7.00	3	5.50	9.00	DIN 374	●	●
TPSN MF-12X1.5-M	MF12	1.500	100.00	18.0	9.00	4	7.00	10.50	DIN 374	●	●
TPSN MF-12X1.25-M	MF12	1.250	100.00	18.0	9.00	4	7.00	10.80	DIN 374	●	●
TPSN MF-12X1.0-M	MF12	1.000	100.00	18.0	9.00	4	7.00	11.00	DIN 374	●	●
TPSN MF-14X1.5-M	MF14	1.500	100.00	18.0	11.00	4	9.00	12.50	DIN 374	●	●
TPSN MF-14X1.25-M	MF14	1.250	100.00	18.0	11.00	4	9.00	12.80	DIN 374	●	●
TPSN MF-14X1.0-M	MF14	1.000	100.00	18.0	11.00	4	9.00	13.00	DIN 374	●	●
TPSN MF-16X1.5-M	MF16	1.500	100.00	18.0	12.00	4	9.00	14.50	DIN 374	●	●
TPSN MF-18X1.5-M	MF18	1.500	110.00	20.0	14.00	4	11.00	16.50	DIN 374	●	●
TPSN MF-20X1.5-M	MF20	1.500	125.00	24.0	16.00	4	12.00	18.50	DIN 374	●	●
TPSN MF-22X1.5-M	MF22	1.500	125.00	24.0	18.00	4	14.50	20.50	DIN 374	●	●
TPSN MF-24X1.5-M	MF24	1.500	140.00	24.0	18.00	4	14.50	22.50	DIN 374	●	●

• For user guide and cutting conditions, see pages

(1) Thread pitch

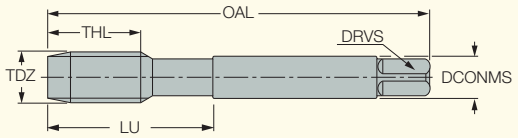
(2) Number of flutes

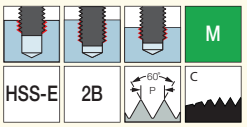
(3) Torque key size

ONETAP

TPSN UNC-M

HSSE 5% Co Spiral Flute Machine Taps Unified Coarse Threads, for a Wide Range of Materials





Designation	Dimensions										Tough ↔ Hard	
	TDZ	TPI[1]	OAL	THL	LU[2]	DCONMS	NOF[3]	DRVS[4]	Pre-hole	Standard	HE	HETI
TPSN UNC #4-40-M	UNC No.4	40.0	56.00	10.0	18.0	3.50	3	2.70	2.35	DIN 371	●	●
TPSN UNC #5-40-M	UNC No.5	40.0	56.00	10.0	18.0	3.50	3	2.70	2.65	DIN 371	●	●
TPSN UNC #6-32-M	UNC No.6	32.0	56.00	10.0	20.0	4.00	3	3.00	2.85	DIN 371	●	●
TPSN UNC #8-32-M	UNC No.8	32.0	63.00	12.0	21.0	4.50	3	3.40	3.50	DIN 371	●	●
TPSN UNC #10-24-M	UNC No.10	24.0	70.00	14.0	25.0	6.00	3	4.90	3.90	DIN 371	●	●
TPSN UNC #12-24-M	UNC No.12	24.0	80.00	16.0	30.0	6.00	3	4.90	4.50	DIN 371	●	●
TPSN UNC 1/4-20-M	UNC 1/4	20.0	80.00	16.0	30.0	7.00	3	5.50	5.10	DIN 371	●	●
TPSN UNC 5/16-18-M	UNC 5/16	18.0	90.00	18.0	35.0	8.00	3	6.20	6.60	DIN 371	●	●
TPSN UNC 3/8-16-M	UNC 3/8	16.0	100.00	20.0	39.0	10.00	3	8.00	8.00	DIN 371	●	●
TPSN UNC 7/16-14-M	UNC 7/16	14.0	100.00	20.0	-	8.00	3	6.20	9.40	DIN 376	●	●
TPSN UNC 1/2-13-M	UNC 1/2	13.0	110.00	22.0	-	9.00	3	7.00	10.80	DIN 376	●	●
TPSN UNC 9/16-12-M	UNC 9/16	12.0	110.00	24.0	-	11.00	4	9.00	12.20	DIN 376	●	●
TPSN UNC 5/8-11-M	UNC 5/8	11.0	110.00	26.0	-	12.00	4	9.00	13.50	DIN 376	●	●
TPSN UNC 3/4-10-M	UNC 3/4	10.0	125.00	30.0	-	14.00	4	11.00	16.50	DIN 376	●	●
TPSN UNC 7/8-9-M	UNC 7/8	9.0	140.00	30.0	-	18.00	4	14.50	19.50	DIN 376	●	●
TPSN UNC 1"-8-M	UNC 1"	8.0	160.00	35.0	-	18.00	4	14.50	22.25	DIN 376	●	●

• For user guide and cutting conditions, see pages...

(1) Threads per inch

(2) DIN376 (UNC 7/16) taps do not have a neck, meaning the shankdiameter is smaller than the core hole. Therefore, the usable length isn't restricted by a neck.

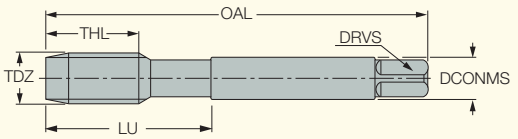
(3) Number of flutes

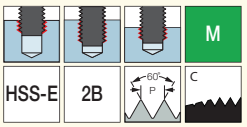
(4) Torque key size

ONETAP

TPSN UNF-M

HSSE 5% Co Spiral Flute Machine Taps Unified Fine Threads, for a Wide Range of Materials





Designation	Dimensions										Tough ↔ Hard	
	TDZ	TPI[1]	OAL	THL	LU[2]	DCONMS	NOF[3]	DRVS[4]	Pre-hole	Standard	HE	HETI
TPSN UNF #4-48-M	UNF No.4	48.0	56.00	8.0	18.0	3.50	3	2.70	2.40	DIN 371	●	●
TPSN UNF #5-44-M	UNF No.5	44.0	56.00	9.0	18.0	3.50	3	2.70	2.70	DIN 371	●	●
TPSN UNF #6-40-M	UNF No.6	40.0	56.00	10.0	20.0	4.00	3	3.00	2.95	DIN 371	●	●
TPSN UNF #8-36-M	UNF No.8	36.0	63.00	12.0	21.0	4.50	3	3.40	3.50	DIN 371	●	●
TPSN UNF #10-32-M	UNF No.10	32.0	70.00	12.0	25.0	6.00	3	4.90	4.10	DIN 371	●	●
TPSN UNF #12-28-M	UNF No.12	28.0	80.00	12.0	30.0	6.00	3	4.90	4.60	DIN 371	●	●
TPSN UNF 1/4-28-M	UNF 1/4	28.0	80.00	12.0	30.0	7.00	3	5.50	5.50	DIN 371	●	●
TPSN UNF 5/16-24-M	UNF 5/16	24.0	90.00	15.0	35.0	8.00	3	6.20	6.90	DIN 371	●	●
TPSN UNF 3/8-24-M	UNF 3/8	24.0	90.00	18.0	39.0	10.00	3	8.00	8.50	DIN 371	●	●
TPSN UNF 7/16-20-M	UNF 7/16	20.0	100.00	18.0	-	8.00	4	6.20	9.90	DIN 376	●	●
TPSN UNF 1/2-20-M	UNF 1/2	20.0	100.00	18.0	-	9.00	4	7.00	11.50	DIN 376	●	●
TPSN UNF 9/16-18-M	UNF 9/16	18.0	100.00	18.0	-	11.00	4	9.00	12.90	DIN 376	●	●
TPSN UNF 5/8-18-M	UNF 5/8	18.0	100.00	18.0	-	12.00	4	9.00	14.50	DIN 376	●	●
TPSN UNF 3/4-16-M	UNF 3/4	16.0	110.00	24.0	-	14.00	4	11.00	17.50	DIN 376	●	●
TPSN UNF 7/8-14-M	UNF 7/8	14.0	125.00	24.0	-	18.00	4	14.50	20.50	DIN 376	●	●
TPSN UNF 1"-12-M	UNF 1"	12.0	140.00	28.0	-	18.00	4	14.50	23.25	DIN 376	●	●

• For user guide and cutting conditions, see pages

(1) Threads per inch

(2) DIN376 (UNF 7/16) taps do not have a neck, meaning the shankdiameter is smaller than the core hole. Therefore, the usable length isn't restricted by a neck.

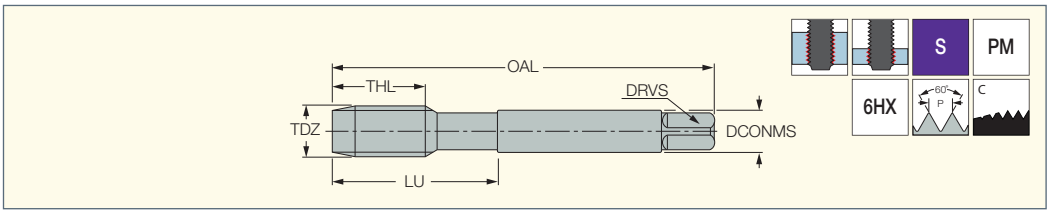
(3) Number of flutes

(4) Torque key size

ISCARTAPS

TPGN M-S

PM Gun Point Machine Taps According to DIN 13 - ISO Metric Coarse Threads for Machining Stainless Steel



Designation	Dimensions										Tough ↔ Hard	
	TDZ	TP[1]	OAL	THL	LU[2]	DCONMS	NOF[3]	DRVS[4]	Pre-hole	Standard	PMST	PMTC
TPGN M-2X0.4-S	M2	0.400	45.00	8.0	-	2.80	2	2.10	1.60	DIN 371	●	●
TPGN M-2.5X0.45-S	M2.5	0.450	50.00	9.0	30.0	2.80	2	2.10	2.05	DIN 371	●	●
TPGN M-3X0.5-S	M3	0.500	56.00	10.0	18.0	3.50	3	2.70	2.50	DIN 371	●	●
TPGN M-4X0.7-S	M4	0.700	63.00	12.0	21.0	4.50	3	3.40	3.30	DIN 371	●	●
TPGN M-5X0.8-S	M5	0.800	70.00	14.0	25.0	6.00	3	4.90	4.20	DIN 371	●	●
TPGN M-6X1.0-S	M6	1.000	80.00	16.0	30.0	6.00	3	4.90	5.00	DIN 371	●	●
TPGN M-8X1.25-S	M8	1.250	90.00	18.0	35.0	8.00	3	6.20	6.80	DIN 371	●	●
TPGN M-10X1.5-S	M10	1.500	100.00	20.0	39.0	10.00	3	8.00	8.50	DIN 371	●	●
TPGN M-12X1.75-S	M12	1.750	110.00	22.0	-	9.00	4	7.00	10.20	DIN 376	●	●
TPGN M-14X2.0-S	M14	2.000	110.00	24.0	-	11.00	4	9.00	12.00	DIN 376	●	●
TPGN M-16X2.0-S	M16	2.000	110.00	26.0	-	12.00	4	9.00	14.00	DIN 376	●	●
TPGN M-18X2.5-S	M18	2.500	125.00	30.0	-	14.00	4	11.00	15.50	DIN 376	●	●
TPGN M-20X2.5-S	M20	2.500	140.00	30.0	21.0	16.00	4	12.00	17.50	DIN 376	●	●

• For user guide and cutting conditions, see pages

[1] Thread pitch

[2] DIN376 (M12+) and DIN374 (all MF) taps do not have a neck, meaning the shank diameter is smaller than the core hole. Therefore, the usable length isn't restricted by a neck.

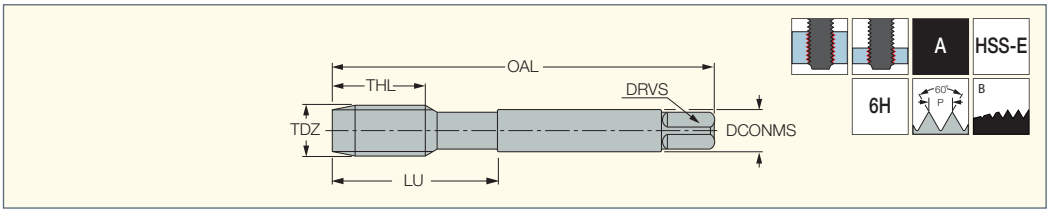
[3] Number of flutes

[4] Torque key size

ISCARTAPS

TPGN M-A

DIN 13 HSSE 5% Co Gun Point Machine Taps - ISO Metric Coarse Threads for Machining Aluminum



Designation	Dimensions										HEDLC
	TDZ	TP[1]	OAL	THL	LU[2]	DCONMS	NOF[3]	DRVS[4]	Pre-hole	Standard	
TPGN M-2X0.4-A	M2	0.400	45.00	8.0	-	2.80	2	2.10	1.60	DIN 371	●
TPGN M-3X0.5-A	M3	0.500	56.00	10.0	18.0	3.50	3	2.70	2.50	DIN 371	●
TPGN M-4X0.7-A	M4	0.700	63.00	12.0	21.0	4.50	3	3.40	3.30	DIN 371	●
TPGN M-5X0.8-A	M5	0.800	70.00	14.0	25.0	6.00	3	4.90	4.20	DIN 371	●
TPGN M-6X1.0-A	M6	1.000	80.00	16.0	30.0	6.00	3	4.90	5.00	DIN 371	●
TPGN M-8X1.25-A	M8	1.250	90.00	18.0	35.0	8.00	3	6.20	6.80	DIN 371	●
TPGN M-10X1.5-A	M10	1.500	100.00	20.0	39.0	10.00	3	8.00	8.50	DIN 371	●
TPGN M-12X1.75-A	M12	1.750	110.00	22.0	-	9.00	4	7.00	10.20	DIN 376	●
TPGN M-14X2.0-A	M14	2.000	110.00	24.0	-	11.00	4	9.00	12.00	DIN 376	●
TPGN M-16X2.0-A	M16	2.000	110.00	26.0	-	12.00	4	9.00	14.00	DIN 376	●
TPGN M-18X2.5-A	M18	2.500	125.00	30.0	-	14.00	4	11.00	15.50	DIN 376	●
TPGN M-20X2.5-A	M20	2.500	140.00	30.0	-	16.00	4	12.00	17.50	DIN 376	●

• For user guide and cutting conditions, see pages

[1] Thread pitch

[2] DIN376 (M12+) and DIN374 (all MF) taps do not have a neck, meaning the shank diameter is smaller than the core hole. Therefore, the usable length isn't restricted by a neck.

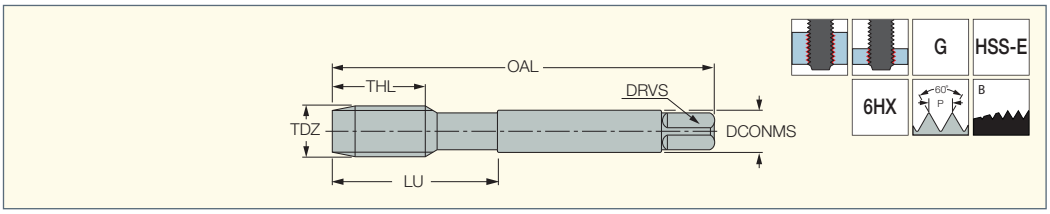
[3] Number of flutes

[4] Torque key size

ISCARTAPS

TPGN M-G

DIN 13 HSSE 5% Co Gun Point Machine Taps - ISO Metric Coarse Threads for Machining Cast Iron



Designation	Dimensions										HETA
	TDZ	TP[1]	OAL	THL	LU[2]	DCONMS	NOF[3]	DRVS[4]	Pre-hole	Standard	
TPGN M-3X0.5-G	M3	0.500	56.00	10.0	18.0	3.50	3	2.70	2.50	DIN 371	●
TPGN M-4X0.7-G	M4	0.700	63.00	12.0	21.0	4.50	3	3.40	3.30	DIN 371	●
TPGN M-5X0.8-G	M5	0.800	70.00	14.0	25.0	6.00	3	4.90	4.20	DIN 371	●
TPGN M-6X1.0-G	M6	1.000	80.00	16.0	30.0	6.00	3	4.90	5.00	DIN 371	●
TPGN M-8X1.25-G	M8	1.250	90.00	18.0	35.0	8.00	3	6.20	6.80	DIN 371	●
TPGN M-10X1.5-G	M10	1.500	100.00	20.0	39.0	10.00	3	8.00	8.50	DIN 371	●
TPGN M-12X1.75-G	M12	1.750	110.00	22.0	-	9.00	4	7.00	10.20	DIN 376	●
TPGN M-14X2.0-G	M14	2.000	110.00	24.0	-	11.00	4	9.00	12.00	DIN 376	●
TPGN M-16X2.0-G	M16	2.000	110.00	26.0	-	12.00	4	9.00	14.00	DIN 376	●
TPGN M-18X2.5-G	M18	2.500	125.00	30.0	-	14.00	4	11.00	15.50	DIN 376	●
TPGN M-20X2.5-G	M20	2.500	140.00	30.0	-	16.00	4	12.00	17.50	DIN 376	●

- For user guide and cutting conditions, see pages

[1] Thread pitch

[2] DIN376 (M12+) and DIN374 (all MF) taps do not have a neck, meaning the shank diameter is smaller than the core hole. Therefore, the usable length isn't restricted by a neck.

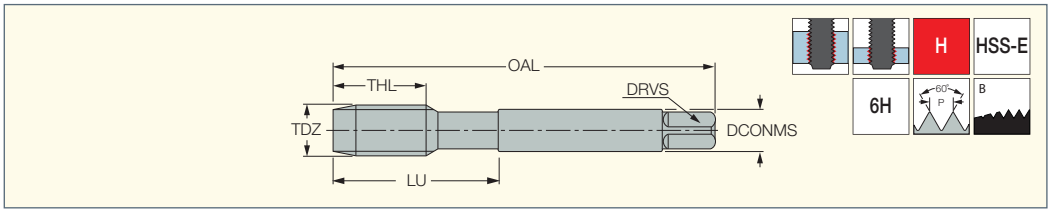
[3] Number of flutes

[4] Torque key size

ISCARTAPS

TPGN M-H

DIN 13 HSSE 5% Co Gun Point Machine Taps - ISO Metric Coarse Threads, for Hardened Steel and High Temperature Alloys



Designation	Dimensions										Tough ↔ Hard	
	TDZ	TP[1]	OAL	THL	LU[2]	DCONMS	NOF[3]	DRVS[4]	Pre-hole	Standard	HENI	HETC
TPGN M-2X0.4-H	M2	0.400	45.00	8.0	-	2.80	2	2.10	1.60	DIN 371	●	●
TPGN M-2.2X0.45-H	M2.2	0.450	45.00	9.0	-	2.80	2	2.10	1.75	DIN 371	●	●
TPGN M-2.5X0.45-H	M2.5	0.450	50.00	9.0	-	2.80	2	2.10	2.05	DIN 371	●	●
TPGN M-3X0.5-H	M3	0.500	56.00	10.0	18.0	3.50	3	2.70	2.50	DIN 371	●	●
TPGN M-3.5X0.6-H	M3.5	0.600	56.00	10.0	20.0	4.00	3	3.00	2.90	DIN 371	●	●
TPGN M-4X0.7-H	M4	0.700	63.00	12.0	21.0	4.50	3	3.40	3.30	DIN 371	●	●
TPGN M-5X0.8-H	M5	0.800	70.00	14.0	25.0	6.00	3	4.90	4.20	DIN 371	●	●
TPGN M-6X1.0-H	M6	1.000	80.00	16.0	30.0	6.00	3	4.90	5.00	DIN 371	●	●
TPGN M-8X1.25-H	M8	1.250	90.00	18.0	35.0	8.00	3	6.20	6.80	DIN 371	●	●
TPGN M-10X1.5-H	M10	1.500	100.00	20.0	39.0	10.00	3	8.00	8.50	DIN 371	●	●
TPGN M-12X1.75-H	M12	1.750	110.00	22.0	-	9.00	4	7.00	10.20	DIN 376	●	●
TPGN M-14X2.0-H	M14	2.000	110.00	24.0	-	11.00	4	9.00	12.00	DIN 376	●	●
TPGN M-16X2.0-H	M16	2.000	110.00	26.0	-	12.00	4	9.00	14.00	DIN 376	●	●
TPGN M-18X2.5-H	M18	2.500	125.00	30.0	-	14.00	4	11.00	15.50	DIN 376	●	●
TPGN M-20X2.5-H	M20	2.500	140.00	30.0	-	16.00	4	12.00	17.50	DIN 376	●	●

- For user guide and cutting conditions, see pages

[1] Thread pitch

[2] DIN376 (M12+) and DIN374 (all MF) taps do not have a neck, meaning the shank diameter is smaller than the core hole. Therefore, the usable length isn't restricted by a neck.

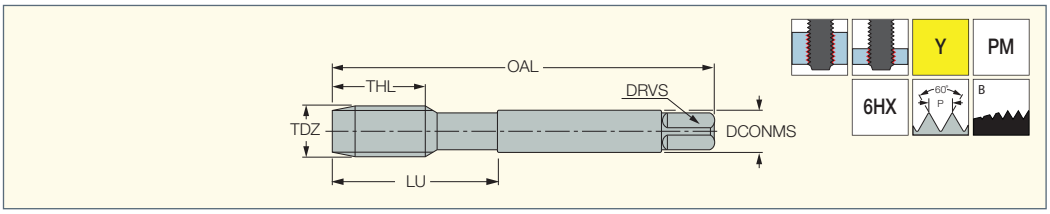
[3] Number of flutes

[4] Torque key size

ISCARTAPS

TPGN M-Y

DIN 13 HSS Gun Point Machine Taps - ISO Metric Coarse Threads for Machining Nickel Alloys



Designation	Dimensions										PMTC
	TDZ	TP[1]	OAL	THL	LU[2]	DCONMS	NOF[3]	DRVS[4]	Pre-hole	Standard	
TPGN M-2X0.4-Y	M2	0.400	45.00	8.0	-	2.80	2	2.10	1.60	DIN 371	●
TPGN M-2.2X0.45-Y	M2.2	0.450	45.00	9.0	-	2.80	2	2.10	1.75	DIN 371	●
TPGN M-2.5X0.45-Y	M2.5	0.450	50.00	9.0	-	2.80	2	2.10	2.05	DIN 371	●
TPGN M-3X0.5-Y	M3	0.500	56.00	10.0	18.0	3.50	3	2.70	2.50	DIN 371	●
TPGN M-3.5X0.6-Y	M3.5	0.600	56.00	10.0	20.0	4.00	3	3.00	2.90	DIN 371	●
TPGN M-4X0.7-Y	M4	0.700	63.00	12.0	21.0	4.50	3	3.40	3.30	DIN 371	●
TPGN M-5X0.8-Y	M5	0.800	70.00	14.0	25.0	6.00	3	4.90	4.20	DIN 371	●
TPGN M-6X1.0-Y	M6	1.000	80.00	16.0	30.0	6.00	3	4.90	5.00	DIN 371	●
TPGN M-8X1.25-Y	M8	1.250	90.00	18.0	35.0	8.00	3	6.20	6.80	DIN 371	●
TPGN M-10X1.5-Y	M10	1.500	100.00	20.0	39.0	10.00	3	8.00	8.50	DIN 371	●
TPGN M-12X1.75-Y	M12	1.750	110.00	22.0	-	9.00	4	7.00	10.20	DIN 376	●
TPGN M-14X2.0-Y	M14	2.000	110.00	24.0	-	11.00	4	9.00	12.00	DIN 376	●
TPGN M-16X2.0-Y	M16	2.000	110.00	26.0	-	12.00	4	9.00	14.00	DIN 376	●
TPGN M-18X2.5-Y	M18	2.500	125.00	30.0	-	14.00	4	11.00	15.50	DIN 376	●
TPGN M-20X2.5-Y	M20	2.500	140.00	30.0	-	16.00	4	12.00	17.50	DIN 376	●

- For user guide and cutting conditions, see pages

[1] Thread pitch

[2] DIN376 (M12+) and DIN374 (all MF) taps do not have a neck, meaning the shank diameter is smaller than the core hole. Therefore, the usable length isn't restricted by a neck.

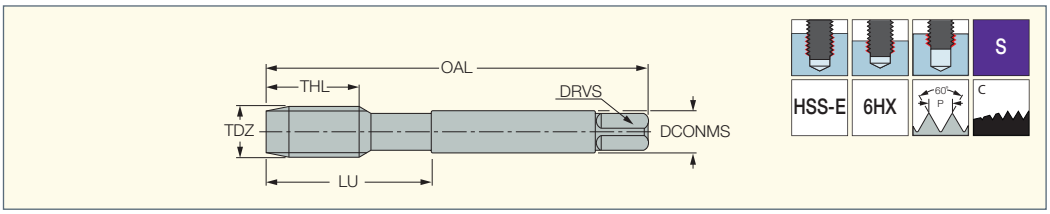
[3] Number of flutes

[4] Torque key size

ISCARTAPS

TPSN M-S

PM Right-Hand 40° Spiral Flute Machine Taps - ISO Metric Coarse Threads, According to DIN 13, for Stainless Steel



Designation	Dimensions										Tough ↔ Hard	
	TDZ	TP[1]	OAL	THL	LU[2]	DCONMS	NOF[3]	DRVS[4]	Pre-hole	Standard	PMST	PMTC
TPSN M-2X0.4-S	M2	0.400	45.00	6.0	10.0	2.80	3	2.10	1.60	DIN 371	●	●
TPSN M-2.5X0.45-S	M2.5	0.450	50.00	6.0	12.0	2.80	3	2.10	2.05	DIN 371	●	●
TPSN M-3X0.5-S	M3	0.500	56.00	7.0	18.0	3.50	3	2.70	2.50	DIN 371	●	●
TPSN M-4X0.7-S	M4	0.700	63.00	8.0	21.0	4.50	3	3.40	3.30	DIN 371	●	●
TPSN M-5X0.8-S	M5	0.800	70.00	10.0	25.0	6.00	3	4.90	4.20	DIN 371	●	●
TPSN M-6X1.0-S	M6	1.000	80.00	12.0	30.0	6.00	3	4.90	5.00	DIN 371	●	●
TPSN M-8X1.25-S	M8	1.250	90.00	15.0	35.0	8.00	3	6.20	6.80	DIN 371	●	●
TPSN M-10X1.5-S	M10	1.500	100.00	18.0	39.0	10.00	3	8.00	8.50	DIN 371	●	●
TPSN M-12X1.75-S	M12	1.750	110.00	18.0	-	9.00	3	7.00	10.20	DIN 376	●	●
TPSN M-14X2.0-S	M14	2.000	110.00	20.0	-	11.00	3	9.00	12.00	DIN 376	●	●
TPSN M-16X2.0-S	M16	2.000	110.00	20.0	-	12.00	4	9.00	14.00	DIN 376	●	●
TPSN M-18X2.5-S	M18	2.500	125.00	25.0	-	14.00	4	11.00	15.50	DIN 371	●	●
TPSN M-20X2.5-S	M20	2.500	140.00	25.0	-	16.00	4	12.00	17.50	DIN 376	●	●

- For user guide and cutting conditions, see pages

[1] Thread pitch

[2] DIN376 (M12+) and DIN374 (all MF) taps do not have a neck, meaning the shank diameter is smaller than the core hole. Therefore, the usable length isn't restricted by a neck.

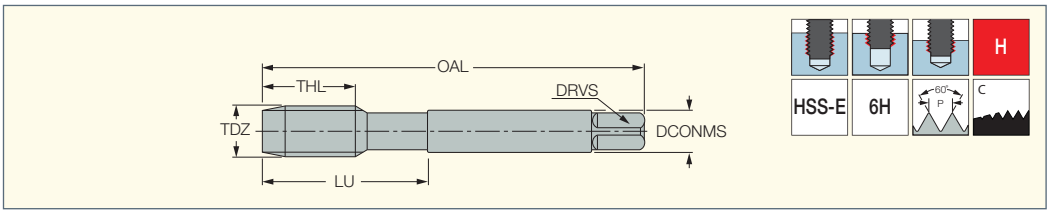
[3] Number of flutes

[4] Torque key size

ISCARTAPS

TPSN M-H

DIN 13 HSS Right-Hand 40° Spiral Flute Machine Taps - ISO Metric Coarse Threads for H.T.A.



Designation	Dimensions										Tough ↔ Hard	
	TDZ	TP[1]	OAL	THL	LU[2]	DCONMS	NOF[3]	DRVS[4]	Pre-hole	Standard	HE	HETC
TPSN M-2X0.4-H	M2	0.400	45.00	6.0	10.0	2.80	3	2.10	1.60	DIN 371	●	●
TPSN M-2.2X0.45-H	M2.2	0.450	45.00	6.0	10.0	2.80	3	2.10	1.75	DIN 371	●	●
TPSN M-2.5X0.45-H	M2.5	0.450	50.00	6.0	12.0	2.80	3	2.10	2.05	DIN 371	●	●
TPSN M-3X0.5-H	M3	0.500	56.00	7.0	18.0	3.50	3	2.70	2.50	DIN 371	●	●
TPSN M-3.5X0.6-H	M3.5	0.600	56.00	7.0	20.0	4.00	3	3.00	2.90	DIN 371	●	●
TPSN M-4X0.7-H	M4	0.700	63.00	8.0	21.0	4.50	3	3.40	3.30	DIN 371	●	●
TPSN M-5X0.8-H	M5	0.800	70.00	10.0	25.0	6.00	3	4.90	4.20	DIN 371	●	●
TPSN M-6X1.0-H	M6	1.000	80.00	12.0	30.0	6.00	3	4.90	5.00	DIN 371	●	●
TPSN M-8X1.25-H	M8	1.250	90.00	15.0	35.0	8.00	3	6.20	6.80	DIN 371	●	●
TPSN M-10X1.5-H	M10	1.500	100.00	18.0	39.0	10.00	3	8.00	8.50	DIN 371	●	●
TPSN M-12X1.75-H	M12	1.750	110.00	18.0	-	9.00	3	7.00	10.20	DIN 376	●	●
TPSN M-14X2.0-H	M14	2.000	110.00	20.0	-	11.00	3	9.00	12.00	DIN 376	●	●
TPSN M-16X2.0-H	M16	2.000	110.00	20.0	-	12.00	4	9.00	14.00	DIN 376	●	●
TPSN M-18X2.5-H	M18	2.500	125.00	25.0	-	14.00	4	11.00	15.50	DIN 376	●	●
TPSN M-20X2.5-H	M20	2.500	140.00	25.0	-	16.00	4	12.00	17.50	DIN 376	●	●

- For user guide and cutting conditions, see pages

[1] Thread pitch

[2] DIN376 (M12+) and DIN374 (all MF) taps do not have a neck, meaning the shank diameter is smaller than the core hole. Therefore, the usable length isn't restricted by a neck.

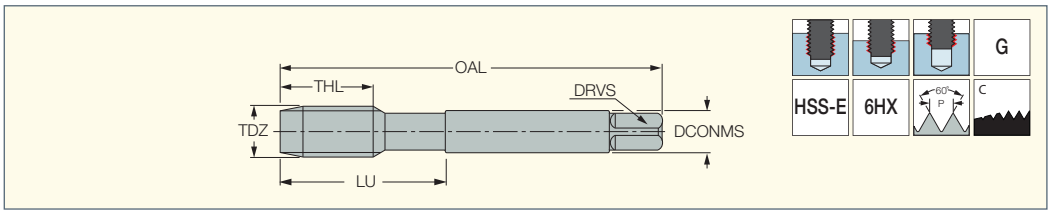
[3] Number of flutes

[4] Torque key size

ISCARTAPS

TPSN M-G

HSS Straight Flute Machine Taps - ISO Metric Coarse Threads, According to DIN 13, for Grey Cast Iron



Designation	Dimensions										HETA
	TDZ	TP[1]	OAL	THL	LU[2]	DCONMS	NOF[3]	DRVS[4]	Pre-hole	Standard	
TPSN M-3X0.5-G	M3	0.500	56.00	7.0	18.0	3.50	3	2.70	2.50	DIN 371	●
TPSN M-4X0.7-G	M4	0.700	63.00	8.0	21.0	4.50	3	3.40	3.30	DIN 371	●
TPSN M-5X0.8-G	M5	0.800	70.00	10.0	25.0	6.00	3	4.90	4.20	DIN 371	●
TPSN M-6X1.0-G	M6	1.000	80.00	12.0	30.0	6.00	3	4.90	5.00	DIN 371	●
TPSN M-8X1.25-G	M8	1.250	90.00	15.0	35.0	8.00	3	6.20	6.80	DIN 371	●
TPSN M-10X1.5-G	M10	1.500	100.00	18.0	39.0	10.00	3	8.00	8.50	DIN 371	●
TPSN M-12X1.75-G	M12	1.750	110.00	18.0	-	9.00	3	7.00	10.20	DIN 376	●
TPSN M-14X2.0-G	M14	2.000	110.00	20.0	-	11.00	3	9.00	12.00	DIN 376	●
TPSN M-16X2.0-G	M16	2.000	110.00	20.0	-	12.00	4	9.00	14.00	DIN 376	●
TPSN M-18X2.5-G	M18	2.500	125.00	25.0	-	14.00	4	11.00	15.50	DIN 376	●
TPSN M-20X2.5-G	M20	2.500	140.00	25.0	-	16.00	4	12.00	17.50	DIN 376	●

- For user guide and cutting conditions, see pages

[1] Thread pitch

[2] DIN376 (M12+) and DIN374 (all MF) taps do not have a neck, meaning the shank diameter is smaller than the core hole. Therefore, the usable length isn't restricted by a neck.

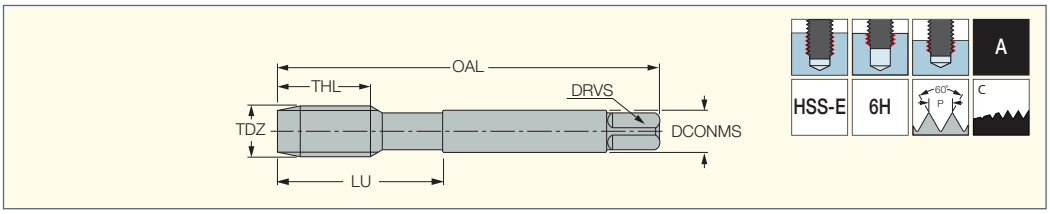
[3] Number of flutes

[4] Torque key size

ISCARTAPS

TPSN M-A

DIN 13 HSS Right-Hand 40° Spiral Flute Machine Taps for ISO Metric Coarse Threads on Aluminum and Aluminum Alloys



Designation	Dimensions										HEDLC
	TDZ	TP[1]	OAL	THL	LU[2]	DCONMS	NOF[3]	DRVS[4]	Pre-hole	Standard	
TPSN M-2X0.4-A	M2	0.400	45.00	6.0	10.0	2.80	3	2.10	1.60	DIN 371	●
TPSN M-3X0.5-A	M3	0.500	56.00	7.0	18.0	3.50	3	2.70	2.50	DIN 371	●
TPSN M-4X0.7-A	M4	0.700	63.00	8.0	21.0	4.50	3	3.40	3.30	DIN 371	●
TPSN M-5X0.8-A	M5	0.800	70.00	10.0	25.0	6.00	3	4.90	4.20	DIN 371	●
TPSN M-6X1.0-A	M6	1.000	80.00	12.0	30.0	6.00	3	4.90	5.00	DIN 371	●
TPSN M-8X1.25-A	M8	1.250	90.00	15.0	35.0	8.00	3	6.20	6.80	DIN 371	●
TPSN M-10X1.5-A	M10	1.500	100.00	18.0	39.0	10.00	3	8.00	8.50	DIN 371	●
TPSN M-12X1.75-A	M12	1.750	110.00	18.0	-	9.00	3	7.00	10.20	DIN 376	●
TPSN M-14X2.0-A	M14	2.000	110.00	20.0	-	11.00	3	9.00	12.00	DIN 376	●
TPSN M-16X2.0-A	M16	2.000	110.00	20.0	-	12.00	4	9.00	14.00	DIN 376	●
TPSN M-18X2.5-A	M18	2.500	125.00	25.0	-	14.00	4	11.00	15.50	DIN 376	●
TPSN M-20X2.5-A	M20	2.500	140.00	25.0	-	16.00	4	12.00	17.50	DIN 376	●

- For user guide and cutting conditions, see pages

(1) Thread pitch

(2) DIN376 (M12+) and DIN374 (all MF) taps do not have a neck, meaning the shank diameter is smaller than the core hole. Therefore, the usable length isn't restricted by a neck.

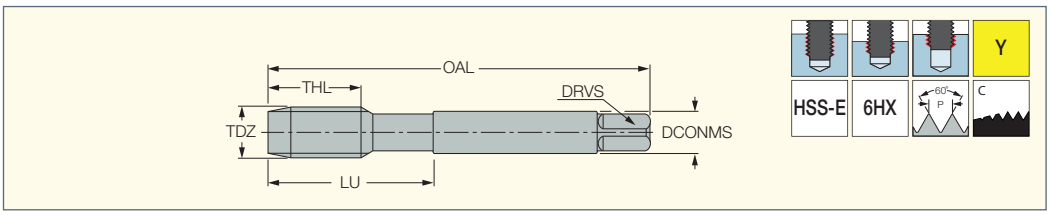
(3) Number of flutes

(4) Torque key size

ISCARTAPS

TPSN M-Y

DIN 13 HSS Spiral Flute Machine Taps - Metric Coarse Threads for Machining Nickel Alloys



Designation	Dimensions										PMTI
	TDZ	TP[1]	OAL	THL	LU[2]	DCONMS	NOF[3]	DRVS[4]	Pre-hole	Standard	
TPSN M-2X0.4-Y	M2	0.400	45.00	8.0	-	2.80	3	2.10	1.60	DIN 371	●
TPSN M-2.2X0.45-Y	M2.2	0.450	45.00	9.0	-	2.80	3	2.10	1.75	DIN 376	●
TPSN M-2.5X0.45-Y	M2.5	0.450	50.00	9.0	-	2.80	3	2.10	2.05	DIN 371	●
TPSN M-3 0.5-Y	M3	0.500	56.00	10.0	18.0	3.50	3	2.70	2.50	DIN 371	●
TPSN M-3.5X0.6-Y	M3.5	0.600	56.00	10.0	20.0	4.00	3	3.00	2.90	DIN 371	●
TPSN M-4X0.7-Y	M4	0.700	63.00	12.0	21.0	4.50	3	3.40	3.30	DIN 371	●
TPSN M-5X0.8-Y	M5	0.800	70.00	14.0	25.0	6.00	3	4.90	4.20	DIN 371	●
TPSN M-6X1.0-Y	M6	1.000	80.00	16.0	30.0	6.00	3	4.90	5.00	DIN 371	●
TPSN M-8X1.25-Y	M8	1.250	90.00	18.0	35.0	8.00	3	6.20	6.80	DIN 371	●
TPSN M-10X1.5-Y	M10	1.500	100.00	20.0	39.0	10.00	3	8.00	8.50	DIN 371	●
TPSN M-12X1.75-Y	M12	1.750	110.00	22.0	-	9.00	4	7.00	10.20	DIN 376	●
TPSN M-14X2.0-Y	M14	2.000	110.00	24.0	-	11.00	4	9.00	12.00	DIN 376	●
TPSN M-16X2.0-Y	M16	2.000	110.00	26.0	-	12.00	4	9.00	14.00	DIN 376	●
TPSN M-18X2.5-Y	M18	2.500	125.00	30.0	-	14.00	4	11.00	15.50	DIN 376	●
TPSN M-20X2.5-Y	M20	2.500	140.00	30.0	-	16.00	4	12.00	17.50	DIN 376	●

- For user guide and cutting conditions, see pages

(1) Thread pitch

(2) DIN376 (M12+) and DIN374 (all MF) taps do not have a neck, meaning the shank diameter is smaller than the core hole. Therefore, the usable length isn't restricted by a neck.

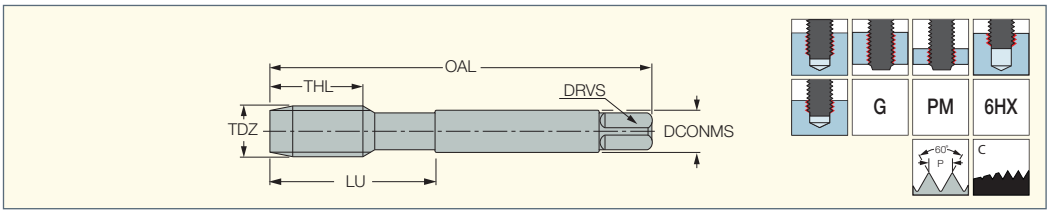
(3) Number of flutes

(4) Torque key size

ISCARTAPS

TPSTN M-G

PM Straight Flute Machine Taps - ISO Metric Coarse Threads, According to DIN 13, for Gray Cast Iron



Designation	Dimensions										Tough ↔ Hard	
	TDZ	TP[1]	OAL	THL	LU[2]	DCONMS	NOF[3]	DRVS[4]	Pre-hole	Standard	PMNI	PMTA
TPSTN M-2X0.4-G	M2	0.400	45.00	8.0	-	2.80	3	2.10	1.60	DIN 371	●	●
TPSTN M-3X0.5-G	M3	0.500	56.00	10.0	18.0	3.50	3	2.70	2.50	DIN 371	●	●
TPSTN M-4X0.7-G	M4	0.700	63.00	12.0	21.0	4.50	3	3.40	3.30	DIN 371	●	●
TPSTN M-5X0.8-G	M5	0.800	70.00	14.0	25.0	6.00	4	4.90	4.20	DIN 371	●	●
TPSTN M-6X1.0-G	M6	1.000	80.00	16.0	30.0	6.00	4	4.90	5.00	DIN 371	●	●
TPSTN M-8X1.25-G	M8	1.250	90.00	18.0	35.0	8.00	4	6.20	6.80	DIN 371	●	●
TPSTN M-10X1.5-G	M10	1.500	100.00	20.0	39.0	10.00	4	8.00	8.50	DIN 371	●	●
TPSTN M-12X1.75-G	M12	1.750	110.00	22.0	-	9.00	4	7.00	10.20	DIN 376	●	●
TPSTN M-14X2.0-G	M14	2.000	110.00	24.0	-	11.00	4	9.00	12.00	DIN 376	●	●
TPSTN M-16X2.0-G	M16	2.000	110.00	26.0	-	12.00	4	9.00	14.00	DIN 376	●	●
TPSTN M-18X2.5-G	M18	2.500	125.00	30.0	-	14.00	4	11.00	15.50	DIN 376	●	●
TPSTN M-20X2.5-G	M20	2.500	140.00	30.0	-	16.00	4	12.00	17.50	DIN 376	●	●

• For user guide and cutting conditions, see pages

(1) Thread pitch

(2) DIN376 (M12+) and DIN374 (all MF) taps do not have a neck, meaning the shank diameter is smaller than the core hole. Therefore, the usable length isn't restricted by a neck.

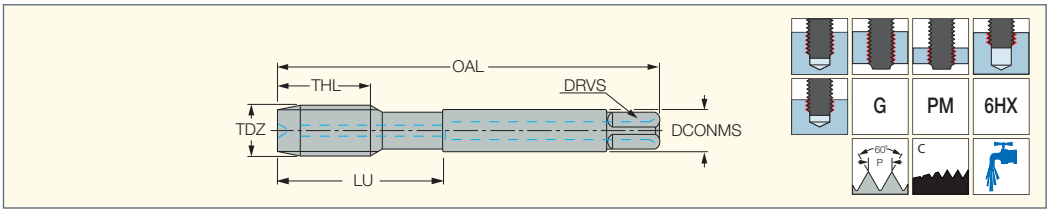
(3) Number of flutes

(4) Torque key size

ISCARTAPS

TPSTN M-G-B

DIN 13 HSS Straight Flute Machine Taps - ISO Metric Coarse Threads for Grey Cast Iron



Designation	Dimensions											PMTA
	TDZ	TP[1]	OAL	THL	LU[2]	DCONMS	NOF[3]	DRVS[4]	Pre-hole	CSP[5]	Standard	
TPSTN M-6X1.0-G-B	M6	1.000	80.00	16.0	30.0	6.00	4	4.90	5.00	1	DIN 371	●
TPSTN M-8X1.25-G-B	M8	1.250	90.00	18.0	35.0	8.00	4	6.20	6.80	1	DIN 371	●
TPSTN M-10X1.5-G-B	M10	1.500	100.00	20.0	39.0	10.00	4	8.00	8.50	1	DIN 371	●
TPSTN M-12X1.75-G-B	M12	1.750	110.00	22.0	-	9.00	4	7.00	10.20	1	DIN 376	●
TPSTN M-14X2.0-G-B	M14	2.000	110.00	26.0	-	12.00	4	9.00	14.11	1	DIN 376	●
TPSTN M-16X2.0-G-B	M16	2.000	110.00	26.0	-	12.00	4	9.00	14.00	1	DIN 376	●

• For user guide and cutting conditions, see pages

(1) Thread pitch

(2) DIN376 (M12+) and DIN374 (all MF) taps do not have a neck, meaning the shank diameter is smaller than the core hole. Therefore, the usable length isn't restricted by a neck.

(3) Number of flutes

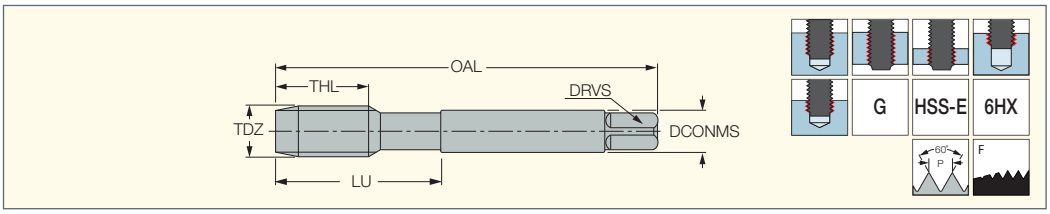
(4) Torque key size

(5) 0 - Without coolant supply, 1 - With coolant supply

ISCARTAPS

TPSTN M-G-F

PM Straight Flute Machine Taps - ISO Metric Coarse Threads, According to DIN 13, for Gray Cast Iron



Designation	Dimensions										PMTA
	TDZ	TP(1)	OAL	THL	LU(2)	DCONMS	NOF(3)	DRVS(4)	Pre-hole	Standard	
TPSTN M-4X0.7-G-F	M4	0.700	63.00	12.0	21.0	4.50	3	3.40	3.30	DIN 371	●
TPSTN M-5X0.8-G-F	M5	0.800	70.00	14.0	25.0	6.00	4	4.90	4.20	DIN 371	●
TPSTN M-6X1.0-G-F	M6	1.000	80.00	16.0	30.0	6.00	4	4.90	5.00	DIN 371	●
TPSTN M-8X1.25-G-F	M8	1.250	90.00	18.0	35.0	8.00	4	6.20	6.80	DIN 371	●
TPSTN M-10X1.5-G-F	M10	1.500	100.00	20.0	39.0	10.00	4	8.00	8.50	DIN 371	●
TPSTN M-12X1.75-G-F	M12	1.750	110.00	22.0	-	9.00	4	7.00	10.20	DIN 376	●
TPSTN M-14X2.0-G-F	M14	2.000	110.00	24.0	-	11.00	4	9.00	12.00	DIN 376	●
TPSTN M-16X2.0-G-F	M16	2.000	110.00	26.0	-	12.00	4	9.00	14.00	DIN 376	●

- For user guide and cutting conditions, see pages

(1) Thread pitch

(2) DIN376 (M12+) and DIN374 (all MF) taps do not have a neck, meaning the shank diameter is smaller than the core hole. Therefore, the usable length isn't restricted by a neck.

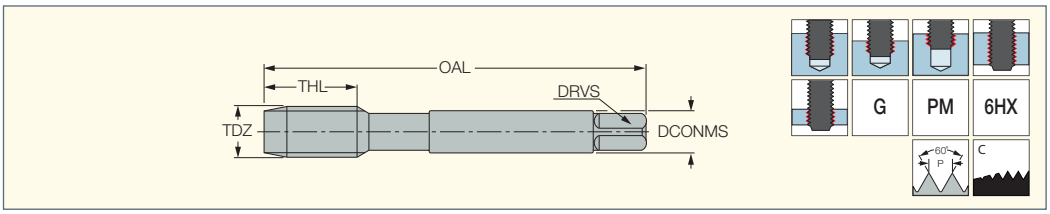
(3) Number of flutes

(4) Torque key size

ISCARTAPS

TPSTN MF-G

PM Straight Flute Machine Taps - ISO Metric Fine Threads, According to DIN 13, for Gray Cast Iron



Designation	Dimensions									PMTA
	TDZ	TP(1)	OAL	THL	DCONMS	NOF(2)	DRVS(3)	Pre-hole	Standard	
TPSTN MF-8X1.0-G	MF8	1.000	90.00	15.0	6.00	4	4.90	7.00	DIN 374	●
TPSTN MF-10X1.25-G	MF10	1.250	100.00	18.0	7.00	4	5.50	8.80	DIN 374	●
TPSTN MF-10X1.0-G	MF10	1.000	90.00	18.0	7.00	4	5.50	9.00	DIN 374	●
TPSTN MF-12X1.5-G	MF12	1.500	100.00	18.0	9.00	4	7.00	10.50	DIN 374	●
TPSTN MF-12X1.25-G	MF12	1.250	100.00	18.0	9.00	4	7.00	10.80	DIN 374	●
TPSTN MF-12X1.0-G	MF12	1.000	100.00	18.0	9.00	4	7.00	11.00	DIN 374	●
TPSTN MF-14X1.5-G	MF14	1.500	100.00	18.0	11.00	4	9.00	12.50	DIN 374	●
TPSTN MF-14X1.25-G	MF14	1.250	100.00	18.0	11.00	4	9.00	12.80	DIN 374	●
TPSTN MF-14X1.0-G	MF14	1.000	100.00	18.0	11.00	4	9.00	13.00	DIN 374	●
TPSTN MF-16X1.5-G	MF16	1.500	100.00	18.0	12.00	4	9.00	14.50	DIN 374	●

- For user guide and cutting conditions, see pages

(1) Thread pitch

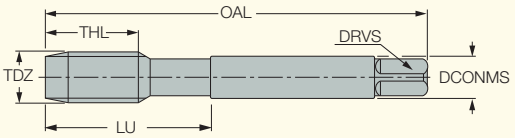
(2) Number of flutes

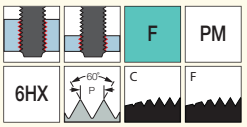
(3) Torque key size

ISCARTAPS

TPFN M-F (PM)

PM Cold Forming Machine Taps - ISO Metric Coarse Threads, According to DIN 13





Designation	Dimensions										Tough ↔ Hard	
	TDZ	TP[2]	OAL	THL	LU[3]	DCONMS	NOF[4]	DRVS[5]	Pre-hole	Standard	PMTI	PMTC
TPFN M-3X0.5-F	M3	0.500	56.00	10.0	18.0	3.50	3	2.70	2.80	DIN 371	●	●
TPFN M-4X0.7-F	M4	0.700	63.00	12.0	21.0	4.50	3	3.40	3.70	DIN 371	●	●
TPFN M-5X0.8 F	M5	0.800	70.00	14.0	25.0	6.00	5	4.90	4.65	DIN 371	●	
TPFN M-5X0.8-F [1]	M5	0.800	70.00	14.0	25.0	6.00	5	4.90	4.65	DIN 371		●
TPFN M-6X1.0-F	M6	1.000	80.00	16.0	30.0	6.00	5	4.90	5.60	DIN 371	●	●
TPFN M-8X1.25-F	M8	1.250	90.00	18.0	35.0	8.00	5	6.20	7.40	DIN 371	●	●
TPFN M-10X1.5-F	M10	1.500	100.00	20.0	39.0	10.00	5	8.00	9.35	DIN 371	●	●
TPFN M-12X1.75-F	M12	1.750	110.00	22.0	-	9.00	6	7.00	11.25	DIN 376	●	●
TPFN M-14X2.0-F	M14	2.000	110.00	24.0	-	11.00	6	9.00	13.10	DIN 376	●	●
TPFN M-16X2.0-F	M16	2.000	110.00	26.0	-	12.00	6	9.00	15.10	DIN 376	●	●
TPFN M-18X2.5-F [1]	M18	2.500	125.00	30.0	-	14.00	6	11.00	16.85	DIN 376		●
TPFN M-20X2.5-F [1]	M20	2.500	140.00	30.0	-	16.00	6	12.00	18.85	DIN 376		●

• For user guide and cutting conditions, see pages

[1] Form C champfer lead

[2] Thread pitch

[3] DIN376 (M12+) and DIN374 (all MF) taps do not have a neck, meaning the shank diameter is smaller than the core hole. Therefore, the usable length isn't restricted by a neck.

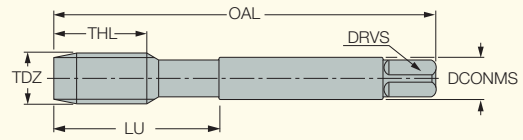
[4] Number of flutes

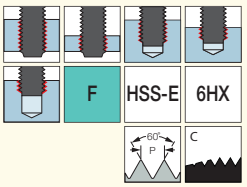
[5] Torque key size

ISCARTAPS

TPFN M-F

HSSE 5% Co Cold Forming Machine Taps - ISO Metric Coarse Threads, According to DIN 13





Designation	Dimensions										HETI
	TDZ	TP[1]	OAL	THL	LU[2]	DCONMS	NOF[3]	DRVS[4]	Pre-hole	Standard	
TPFN M-3X0.5-F	M3	0.500	56.00	10.0	18.0	3.50	3	2.70	2.80	DIN 371	●
TPFN M-4X0.7-F	M4	0.700	63.00	12.0	21.0	4.50	3	3.40	3.70	DIN 371	●
TPFN M-5X0.8-F	M5	0.800	70.00	14.0	25.0	6.00	5	4.90	4.65	DIN 371	●
TPFN M-6X1.0-F	M6	1.000	80.00	16.0	30.0	6.00	5	4.90	5.60	DIN 371	●
TPFN M-8X1.25-F	M8	1.250	90.00	18.0	35.0	8.00	5	6.20	7.45	DIN 371	●
TPFN M-10X1.5-F	M10	1.500	100.00	20.0	39.0	10.00	5	8.00	9.35	DIN 371	●
TPFN M-12X1.75-F	M12	1.750	110.00	22.0	-	9.00	6	7.00	11.25	DIN 376	●
TPFN M-14X2.0-F	M14	2.000	110.00	24.0	-	11.00	6	9.00	13.10	DIN 376	●
TPFN M-16X2.0-F	M16	2.000	110.00	26.0	-	12.00	6	9.00	15.10	DIN 376	●
TPFN M-18X2.5-F	M18	2.500	125.00	30.0	-	14.00	6	11.00	16.85	DIN 376	●
TPFN M-20X2.5-F	M20	2.500	140.00	30.0	-	16.00	6	12.00	18.85	DIN 376	●

• For user guide and cutting conditions, see pages

[1] Thread pitch

[2] DIN376 (M12+) and DIN374 (all MF) taps do not have a neck, meaning the shank diameter is smaller than the core hole. Therefore, the usable length isn't restricted by a neck.

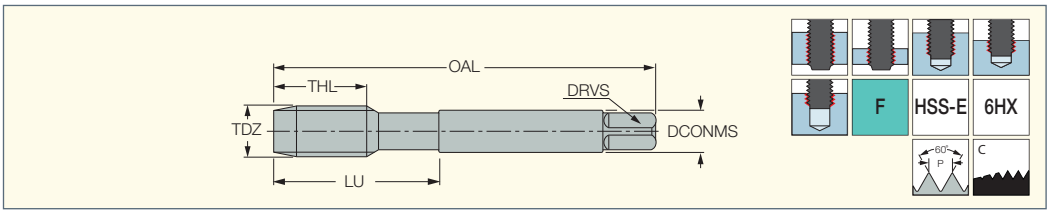
[3] Number of flutes

[4] Torque key size

ISCARTAPS

TPFN MF-F

HSSE 5% Co Cold Forming Machine Taps - ISO Metric Fine Threads, According to DIN 13



Designation	Dimensions										HETI
	TDZ	TP[1]	OAL	THL	LU[2]	DCONMS	NOF[3]	DRVS[4]	Pre-hole	Standard	
TPFN MF-8X1.0-F	MF8	1.000	90.00	15.0	-	6.00	5	4.90	7.60	DIN 374	●
TPFN MF-10X1.0-F	MF10	1.000	90.00	18.0	-	7.00	5	5.50	9.60	DIN 374	●
TPFN MF-10X1.25-F	MF10	1.250	100.00	18.0	-	7.00	5	5.50	9.45	DIN 374	●
TPFN MF-12X1.0-F	MF12	1.000	100.00	18.0	-	9.00	6	7.00	11.60	DIN 374	●
TPFN MF-12X1.25-F	MF12	1.250	100.00	18.0	-	9.00	6	7.00	11.45	DIN 374	●
TPFN MF-12X1.5-F	MF12	1.500	100.00	18.0	-	9.00	6	7.00	11.35	DIN 374	●
TPFN MF-14X1.0-F	MF14	1.000	100.00	18.0	-	11.00	6	9.00	13.60	DIN 374	●
TPFN MF-14X1.25-F	MF14	1.250	100.00	18.0	-	11.00	6	9.00	13.45	DIN 374	●
TPFN MF-14X1.5-F	MF14	1.500	100.00	18.0	-	11.00	6	9.00	13.35	DIN 374	●
TPFN MF-16X1.5-F	MF16	1.500	100.00	18.0	-	12.00	6	9.00	15.35	DIN 374	●
TPFN MF-18X1.5-F	MF18	1.500	110.00	18.0	-	14.00	6	11.00	17.35	DIN 374	●
TPFN MF-20X1.5-F	MF20	1.500	125.00	18.0	-	16.00	6	12.00	19.35	DIN 374	●

- For user guide and cutting conditions, see pages

(1) Thread pitch

(2) DIN376 (M12+) and DIN374 (all MF) taps do not have a neck, meaning the shank diameter is smaller than the core hole. Therefore, the usable length isn't restricted by a neck.

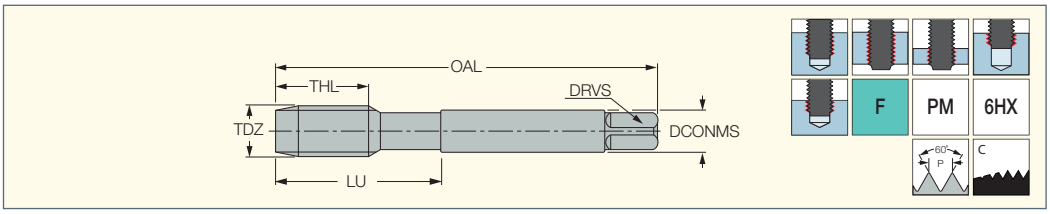
(3) Number of flutes

(4) Torque key size

ISCARTAPS

TPFN MF-F (PM)

PM Cold Forming Machine Taps - ISO Metric Fine Threads, According to DIN 13



Designation	Dimensions										PMTC
	TDZ	TP[1]	OAL	THL	LU[2]	DCONMS	NOF[3]	DRVS[4]	Pre-hole	Standard	
TPFN MF-8X1.0-F	MF8	1.000	90.00	15.0	-	6.00	5	4.90	7.60	DIN 374	●
TPFN MF-10X1.25-F	MF10	1.250	100.00	18.0	-	7.00	5	5.50	9.45	DIN 374	●
TPFN MF-10X1.0-F	MF10	1.000	90.00	18.0	-	7.00	5	5.50	9.60	DIN 374	●
TPFN MF-12X1.5-F	MF12	1.500	100.00	18.0	-	9.00	6	7.00	11.35	DIN 374	●
TPFN MF-12X1.25-F	MF12	1.250	100.00	18.0	-	9.00	6	7.00	11.45	DIN 374	●
TPFN MF-12X1.0-F	MF12	1.000	100.00	18.0	-	9.00	6	7.00	11.60	DIN 374	●
TPFN MF-14X1.5-F	MF14	1.500	100.00	18.0	-	11.00	6	9.00	13.35	DIN 374	●
TPFN MF-14X1.25-F	MF14	1.250	100.00	18.0	-	11.00	6	9.00	13.45	DIN 374	●
TPFN MF-14X1.0-F	MF14	1.000	100.00	18.0	-	11.00	6	9.00	13.60	DIN 374	●
TPFN MF-16X1.5-F	MF16	1.500	100.00	18.0	-	12.00	6	9.00	15.35	DIN 374	●
TPFN MF-18X1.5-F	MF18	1.500	110.00	18.0	-	14.00	6	11.00	17.35	DIN 374	●
TPFN MF-20X1.5-F	MF20	1.500	125.00	18.0	-	16.00	6	12.00	19.35	DIN 374	●

- For user guide and cutting conditions, see pages

(1) Thread pitch

(2) DIN376 (M12+) and DIN374 (all MF) taps do not have a neck, meaning the shank diameter is smaller than the core hole. Therefore, the usable length isn't restricted by a neck.

(3) Number of flutes

(4) Torque key size

ITS BORE

RE MB63-MB50x40
ITS-BORE
ETM
BHE MB50-50x80
ø2.5-110
0.5 ø
0.01 ø
Non. 0.002 ø
LOCK
ETM
BHEH 24x75
CW 32

Contents

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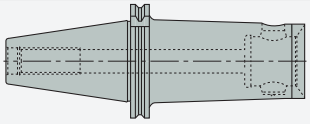
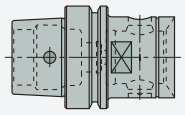
The ITS BORE System

Shanks

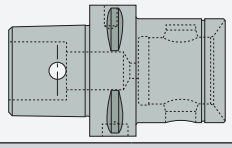
SKA/SKB SKA-FC Page 454



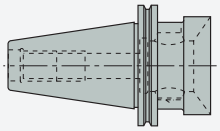
HSK Page 455



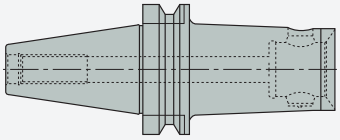
CAMFIX Page 456



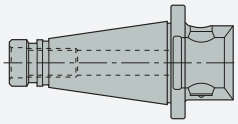
CATM Page 454



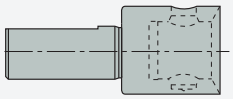
BT/BT-FC Pages 456-457



ISOM/ISO Page 457

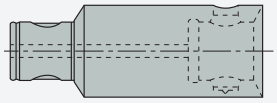


ST Pages 458-459



Extensions and Reducers

EX Page 460



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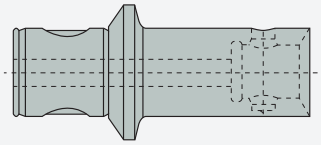
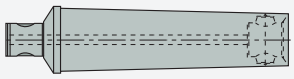
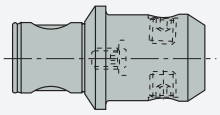


RE AVI Page 461

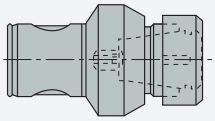


Toolholders

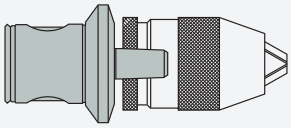
EMH Page 462



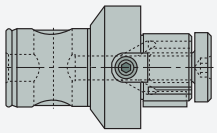
CC Page 462



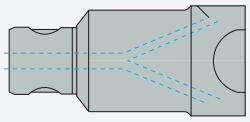
DC Page 462



SMH Page 463



BHR Page 464



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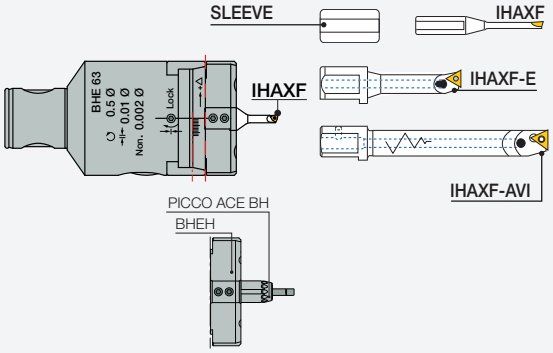
The ITS BORE System

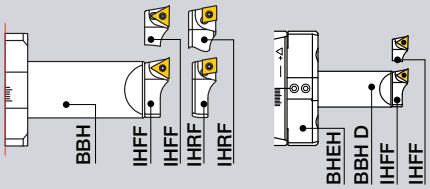
Fine Boring Heads (10 Mm)

BHE MB 50, 63, 80

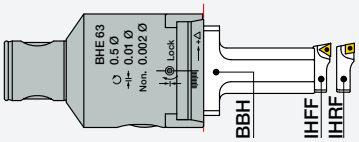
(ø2.5-30)



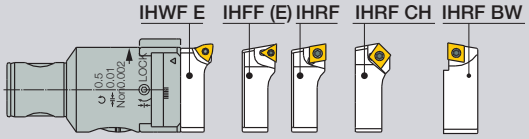
(ø28-56)



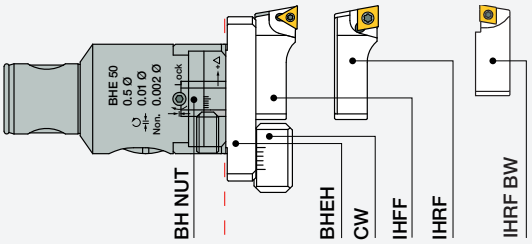
(ø40-90)



(ø54-132)



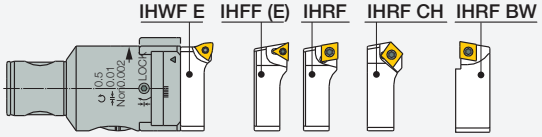
(ø72-200)



Pages 474-478

BHE MB 16, 20, 25, 32, 40

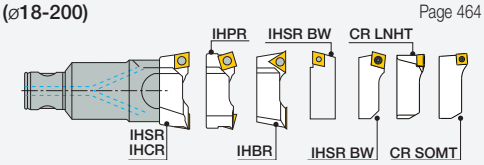
(ø18-66) Pages 475-476



Rough Boring Heads

BHR MB 16, 20, 25, 32, 40, 50, 63, 80

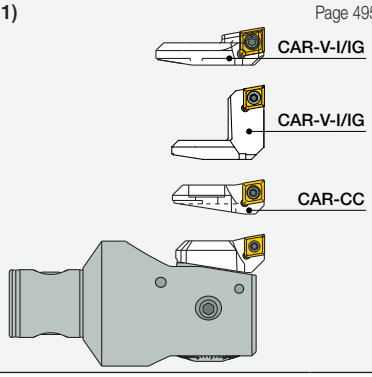
(ø18-200) Page 464



Fine Boring Heads (1 Mm)

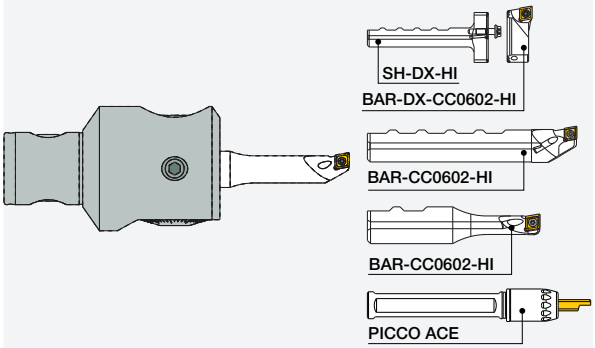
BSFD MB 20, 25, 32, 40, 50, 63, 80

(ø23.9-203.1) Page 495



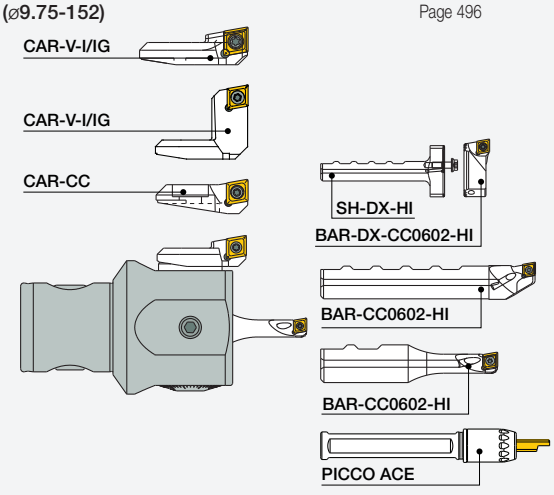
BSFD MB-H 50

(ø3-88.1) Page 496



BSFD-V MB-I 50

(ø9.75-152) Page 496



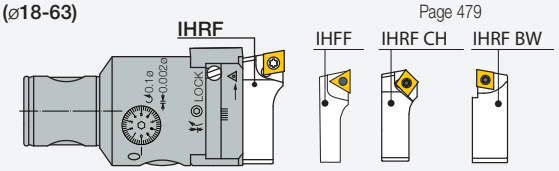
The ITS BORE System

Fine Boring Heads (2 Mm)

BHF MB 16, 20, 25, 32, 40

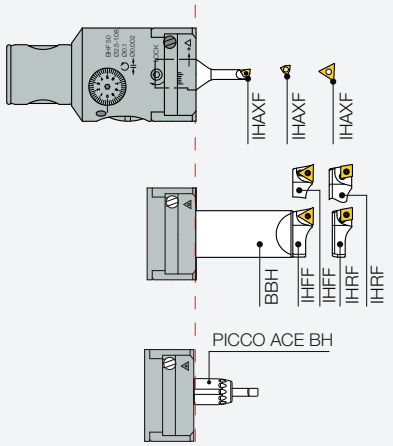
(ø18-63)

Page 479

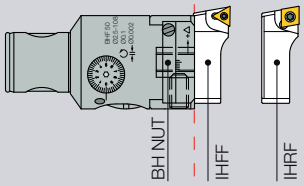


BHF MB 50-50X60

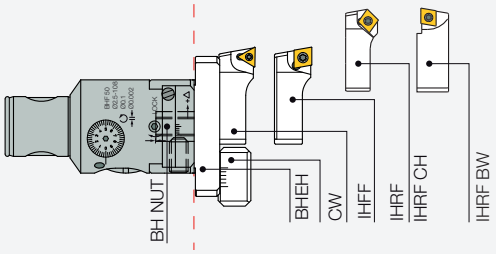
(ø2.5-30)



(ø28-54)



(ø54-108)

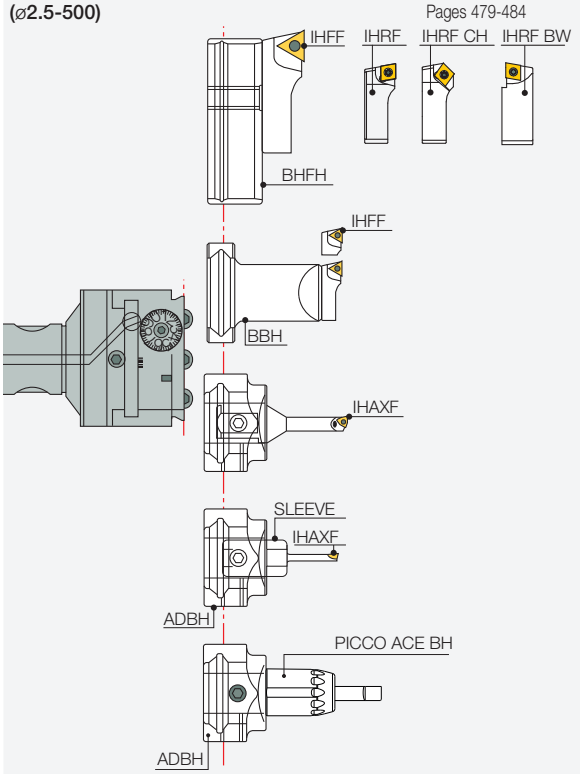


pages 479,481

BHF MB 50, 63, 80

(ø2.5-500)

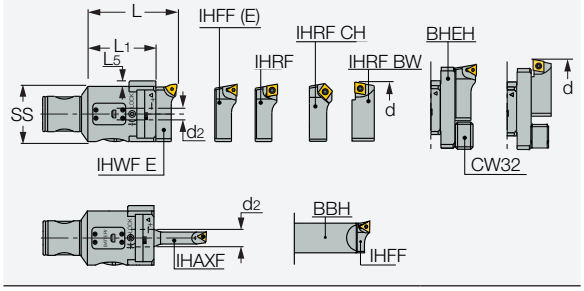
Pages 479-484



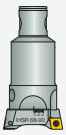
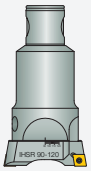
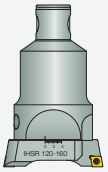
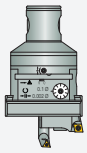
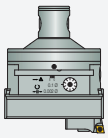
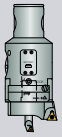
BHD

(ø2.5-110)

Pages 472-473

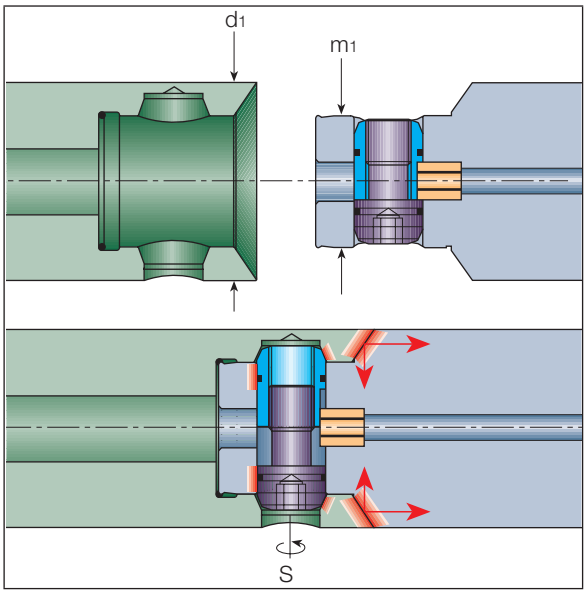


ITS BORE Boring Heads Selection Guide

	MB Size	16	20	25	32	40	50	63	80	
Rough	BHR-TCH Ø18-1202	BHR MB16-16 Ø18-22 Page 464	BHR MB20-20 Ø22-28 Page 464	BHR MB25-25 Ø28-38 Page 464	BHR MB32-32 Ø35.5-50 Page 464	BHR MB40-40 Ø50-68 Page 464	BHR MB50-50 Ø68-90 MB50-63 Ø90-120  Page 464	BHR MB63-63 Ø90-120  Page 464	BHR MB80-80 Ø120-200  Page 464	
Finish	BHE Ø6-200 10 Mm	BHE MB16-16 Ø18-24 Page 474	BHE MB20-20 Ø22-30 Page 474	BHE MB25-25 Ø28-40 Page 474	BHE MB32-32 Ø35-53 Page 474	BHE MB40-40 Ø48-66 Page 474	BHE MB50-50 Ø2.5-110 Page 474	BHE MB63-63 Ø6-125 Page 474	BHE MB80-80 Ø6-200 Page 474	
	BHF Ø2.5-1202 2 Mm	BHF MB16-16 Ø18-23 Page 479	BHF MB20-20 Ø22-29 Page 479	BHF MB25-25 Ø28-38 Page 479	BHF MB32-32 Ø35.5-50 Page 479	BHF MB40-40 Ø48-63 Page 479	BHF MB50-50 Ø2.5-108 BHF MB50-80 Ø2.5-160 BHF MB50-63 Page 479	BHF MB63-63 Ø2.5-125 Page 479	BHF MB80-80 Ø2.5-160  Page 479	BHF MB80-125 Ø135-500  Page 479
	BHD MB Ø2-1202 2 Mm						BHD MB50-50X60 Ø2.5-110  Page 472			

MB Connection

ITS-BORE is a modular toolholder system for boring, milling, drilling and tapping. This rigid, high-precision system is manufactured in one of the world's most advanced production facilities. The system is designed with extreme flexibility and simplicity, making it suitable for machine tools, machining centers and flexible manufacturing systems. It is recommended for machining strict tolerances with a high degree of surface finish. Its cylindrical-conical coupling and radial-expanding pin ensure maximum rigidity and concentricity in boring and milling. The system has an internal coolant supply in all components.

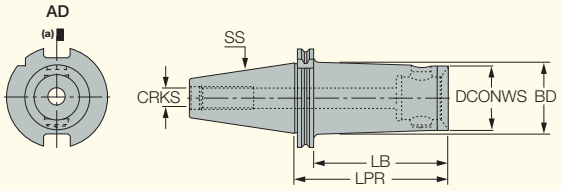


Designation	D_1	$Øm_1$	Size Allen Key (mm)	Tightening Torque (Nm) ⚠	Maximum Driving Torque (Nm)
MB14	14	10	2.5	2-2.5	40
MB16	16	10	2.5	2-2.5	40
MB20	20	13	3	4-4.5	70
MB25	25	16	3	6.5-7.5	120
MB32	32	20	4	7-8	200
MB40	40	25	5	16-18	400
MB50	50	32	6	30-35	700
MB63	63	42	8	70-80	1600
MB80	80	42	8	70-80	1600
MB110	110	76	14	200-220	6300

ITSBORE

SKA-MB

MB Modular Connection System with DIN69871 Form AD ISO 7388/1 Taper Shanks



(a)Cutting edge position

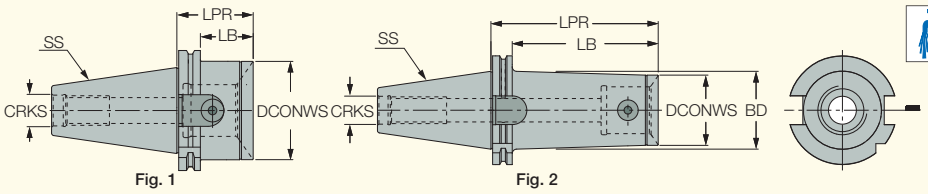
Designation	SS	DCONWS	LPR	LB	BD	CRKS	kg	
SKA 30-MB50	30	50.00	60.00	41.0	-	M12	0.67	HW 6.0
SKA 40-MB40	40	40.00	45.00	26.0	-	M16	0.95	HW 5.0
SKA 40-MB40X120	40	40.00	120.00	101.0	44.50	M16	1.74	HW 5.0
SKA 40-MB50	40	50.00	48.00	29.0	-	M16	0.99	HW 6.0
SKA 40-MB50X120	40	50.00	120.00	101.0	-	M16	2.04	HW 6.0
SKA 40-MB63	40	63.00	80.00	61.0	-	M16	1.52	HW 8.0
SKA 50-MB50	50	50.00	48.00	29.0	-	M24	2.82	HW 6.0
SKA 50-MB50X120	50	50.00	120.00	101.0	60.00	M24	4.03	HW 6.0
SKA 50-MB63	50	63.00	56.00	37.0	-	M24	2.95	HW 8.0
SKA 50-MB63X150	50	63.00	150.00	131.0	70.00	M24	2.81	HW 8.0
SKA 50-MB80	50	80.00	62.00	43.0	-	M24	3.51	HW 8.0
SKA 50-MB80X180	50	80.00	180.00	161.0	-	M24	7.90	HW 8.0

- Verify that the weight of the entire tool assembly does not exceed the machine spindle's carrying capability
- The coolant passages of holders with A/B suffix are plugged with screws so they can be used either as SKA or SKB (through coolant).

ITSBORE

SKA-FC-MB

MB Modular Boring Connection System with DIN 69871 Face Contact AD Tapered Shanks

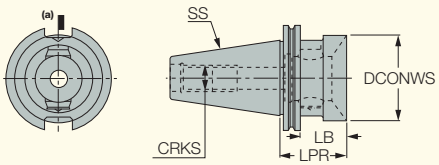


Designation	SS	DCONWS	LPR	BD	LB	CRKS	Fig.	kg	
SKA 40 FC MB50	40	50.00	48.00	-	29.0	M16	1.	0.90	HW 6.0
SKA 40 FC MB50X120	40	50.00	120.00	-	101.0	M16	2.	1.70	HW 6.0
SKA 40 FC MB63	40	63.00	80.00	-	-	M16	1.	1.50	HW 8.0
SKA 50 FC MB50	50	50.00	48.00	-	29.0	M24	1.	2.70	HW 6.0
SKA 50 FC MB50X120	50	50.00	120.00	60.00	101.0	M24	2.	3.50	HW 6.0
SKA 50 FC MB63	50	63.00	56.00	-	37.0	M24	1.	2.80	HW 8.0
SKA 50 FC MB63X150	50	63.00	150.00	75.50	131.0	M24	2.	5.00	HW 8.0
SKA 50 FC MB80	50	80.00	62.00	-	43.0	M24	1.	3.40	HW 8.0
SKA 50 FC MB80X180	50	80.00	180.00	-	161.0	M24	2.	6.90	HW 8.0

ITSBORE

CATM-MB

MB Modular Boring Connection System with CATM FORM AD ANSIB5.5 Caterpillar Tapered Shanks and Metric Pull Stud Threads



(a)Cutting edge position

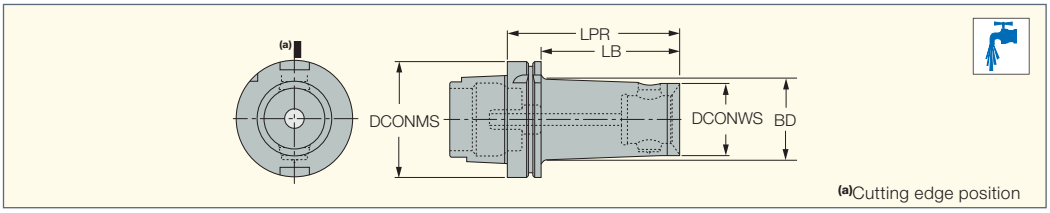
Designation	SS	DCONWS	LB	LPR	CRKS	kg	
CATM 40 MB50	40	50.00	47.0	66.00	M16	1.21	HW 6.0
CATM 40 MB63	40	63.00	-	100.00	M16	1.91	HW 8.0
CATM 45 MB50	45	50.00	29.0	48.00	M20	1.83	HW 6.0
CATM 50 MB50	50	50.00	29.0	48.00	M24	3.06	HW 6.0
CATM 50 MB80	50	80.00	43.0	62.00	M24	3.38	HW 8.0

- Verify that the weight of the entire tool assembly does not exceed the machine spindle's carrying capability.

ITSBORE

HSK A-MB

MB Modular Connection System with DIN 69893 HSK A Taper Shanks



(a)Cutting edge position

Designation	DCONMS	DCONWS	LB	LPR	BD	kg			
HSK A40 MB32 (1)	40.00	32.00	28.0	48.00	-	0.32	COOLING TUBE HSK A40	WRENCH COOL TUBE HSK40*	HW 4.0
HSK A50 MB50	50.00	50.00	-	66.00	-	0.69	COOLING TUBE HSK A50	WRENCH COOL TUBE HSK50*	HW 6.0
HSK A63 MB40	63.00	40.00	34.0	60.00	-	0.90	COOLING TUBE HSK A63	WRENCH COOL TUBE HSK63*	HW 5.0
HSK A63 MB40X120	63.00	40.00	94.0	120.00	46.00	1.62	COOLING TUBE HSK A63	WRENCH COOL TUBE HSK63*	HW 5.0
HSK A63 MB50	63.00	50.00	40.0	66.00	-	1.04	COOLING TUBE HSK A63	WRENCH COOL TUBE HSK63*	HW 6.0
HSK A63 MB50X120	63.00	50.00	94.0	120.00	-	1.05	COOLING TUBE HSK A63	WRENCH COOL TUBE HSK63*	HW 6.0
HSK A63 MB63	63.00	63.00	-	75.00	-	1.15	COOLING TUBE HSK A63	WRENCH COOL TUBE HSK63*	HW 8.0
HSK A80 MB50	80.00	50.00	44.0	70.00	-	1.61	COOLING TUBE HSK A 80	WRENCH COOL TUBE HSK80*	HW 6.0
HSK A80 MB63	80.00	63.00	54.0	80.00	-	1.50	COOLING TUBE HSK A 80	WRENCH COOL TUBE HSK80*	HW 8.0
HSK A80 MB80	80.00	80.00	-	86.00	-	2.54	COOLING TUBE HSK A 80	WRENCH COOL TUBE HSK80*	HW 8.0
HSK A100 MB50	100.00	50.00	43.0	72.00	-	2.58	COOLING TUBE HSK A100	WRENCH COOL TUBE HSK100*	HW 6.0
HSK A100 MB50X120	100.00	50.00	91.0	120.00	60.00	1.05	COOLING TUBE HSK A100	WRENCH COOL TUBE HSK100*	HW 6.0
HSK A100 MB63	100.00	63.00	53.0	81.85	-	2.86	COOLING TUBE HSK A100	WRENCH COOL TUBE HSK100*	HW 8.0
HSK A100 MB63X150	100.00	63.00	121.0	150.00	70.00	4.71	COOLING TUBE HSK A100	WRENCH COOL TUBE HSK100*	HW 8.0
HSK A100 MB80	100.00	80.00	59.0	88.00	-	3.60	COOLING TUBE HSK A100	WRENCH COOL TUBE HSK100*	HW 8.0
HSK A100 MB80X180	100.00	80.00	151.0	180.00	-	6.50	COOLING TUBE HSK A100	WRENCH COOL TUBE HSK100*	HW 8.0

- A cooling tube must be used with all coolant through HSK spindles
- Verify that the weight of the entire tool assembly does not exceed the machine spindle's carrying capability.

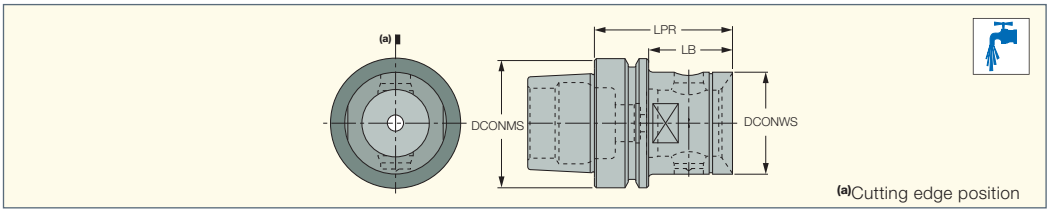
(1) Holder supplied without hole for manual clamping

* Optional, to be ordered separately

ITSBORE

HSK E-MB

MB Modular Connection System with DIN 69893 E Taper Shanks



(a)Cutting edge position

Designation	DCONMS	DCONWS	LB	LPR	DCP(1)	kg	
HSK E40 MB32	40.00	32.00	22.0	42.00	0	0.30	HW 4.0
HSK E50 MB50	50.00	50.00	-	66.00	0	0.70	HW 6.0
HSK E63 MB50	63.00	50.00	40.0	66.00	0	1.87	HW 6.0

- A cooling tube must be used with all coolant through HSK spindles
- Verify that the weight of the entire tool assembly does not exceed the machine spindle's carrying capability.

(1) 1 - Slot for data chip, 0 - Without slot for data chip

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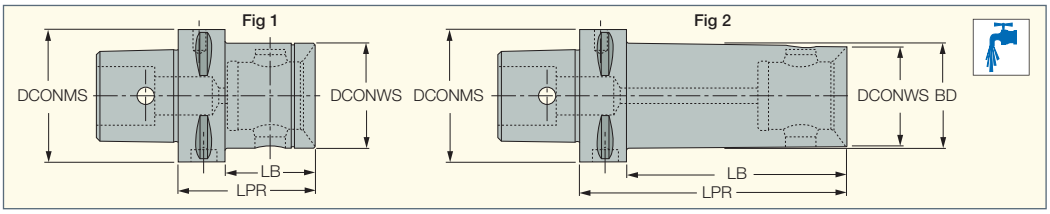
C#-MB

MB Modular Boring Connection System with CAMFIX Exchangeable Shanks



Designation	DCONMS	DCONWS	LPR	LB	BD	Fig.	kg			
C4 MB32X42	40.00	32.00	42.00	22.0	-	1.	0.30	HW 4.0	COOLING TUBE C4*	WRENCH COOL TUBE C4*
C4 MB40X45	40.00	40.00	45.00	-	-	1.	0.40	HW 5.0	COOLING TUBE C4*	WRENCH COOL TUBE C4*
C5 MB50X55	50.00	50.00	55.00	-	-	1.	0.72	HW 6.0	COOLING TUBE C5*	WRENCH COOL TUBE C5*
C6 MB40X50	63.00	40.00	50.00	28.0	-	1.	0.90	HW 5.0	COOLING TUBE C6*	WRENCH COOL TUBE C6*
C6 MB40X120	63.00	40.00	120.00	98.0	44.00	2.	1.50	HW 5.0	COOLING TUBE C6*	WRENCH COOL TUBE C6*
C6 MB50X55	63.00	50.00	55.00	33.0	50.00	2.	0.80	HW 6.0	COOLING TUBE C6*	WRENCH COOL TUBE C6*
C6 MB50X67	63.00	50.00	67.00	45.0	-	1.	1.10	HW 6.0	COOLING TUBE C6*	WRENCH COOL TUBE C6*
C6 MB50X120	63.00	50.00	120.00	98.0	54.00	2.	1.90	HW 6.0	COOLING TUBE C6*	WRENCH COOL TUBE C6*
C6 MB63X77	63.00	63.00	77.00	-	-	1.	1.54	HW 8.0	COOLING TUBE C6*	WRENCH COOL TUBE C6*
C8 MB50X60	80.00	50.00	60.00	30.0	-	1.	1.99	HW 6.0	COOLING TUBE C8*	WRENCH COOL TUBE C8*
C8 MB50X120	80.00	50.00	120.00	90.0	54.00	2.	2.80	HW 6.0	COOLING TUBE C8*	WRENCH COOL TUBE C8*
C8 MB63X70	80.00	63.00	70.00	40.0	-	1.	2.16	HW 8.0	COOLING TUBE C8*	WRENCH COOL TUBE C8*
C8 MB63X150	80.00	63.00	150.00	120.0	67.00	2.	4.00	HW 8.0	COOLING TUBE C8*	WRENCH COOL TUBE C8*
C8 MB80X75	80.00	80.00	75.00	-	-	1.	2.60	HW 8.0	COOLING TUBE C8*	WRENCH COOL TUBE C8*

- Verify that the weight of the entire tool assembly does not exceed the machine spindle's carrying capability.

* Optional, to be ordered separately

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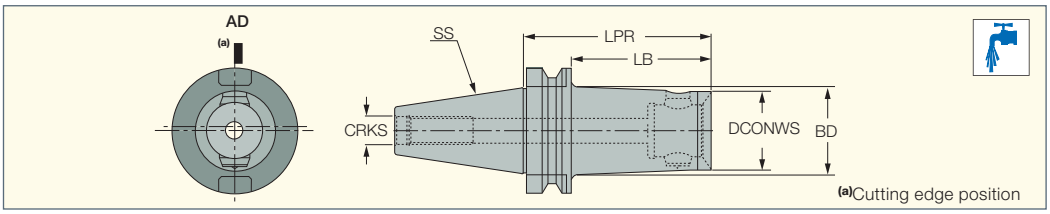
BT-MB

MB Modular Connection System with BT MAS-403 FORM AD Taper Shanks



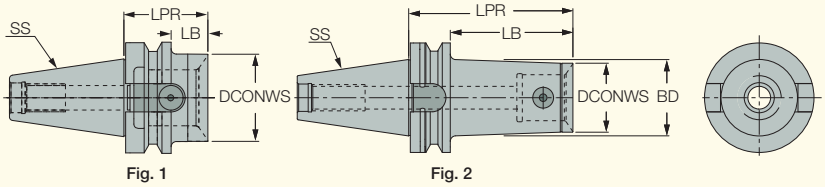
Designation	SS	DCONWS	LB	LPR	BD	CRKS	kg	
BT30 MB32	30	32.00	10.6	32.00	-	M12	0.38	HW 4.0
BT30 MB50	30	50.00	38.6	60.00	-	M12	0.70	HW 6.0
BT40 MB40	40	40.00	18.0	45.00	-	M16	0.99	HW 5.0
BT40 MB40X120	40	40.00	93.0	120.00	44.50	M16	1.83	HW 5.0
BT40 MB50	40	50.00	21.0	48.00	-	M16	1.00	HW 6.0
BT40 MB50X120	40	50.00	93.0	120.00	-	M16	2.08	HW 6.0
BT40 MB63	40	63.00	39.0	66.00	-	M16	1.35	HW 8.0
BT45 MB50	45	50.00	29.0	62.00	-	M20	2.32	HW 6.0
BT50 MB50	50	50.00	28.0	66.00	-	M24	3.78	HW 6.0
BT50 MB50X120	50	50.00	82.0	120.00	60.00	M24	4.64	HW 6.0
BT50 MB63	50	63.00	37.0	75.00	-	M24	4.02	HW 8.0
BT50 MB63X150	50	63.00	112.0	150.00	70.00	M24	5.85	HW 8.0
BT50 MB80	50	80.00	37.0	75.00	-	M24	4.36	
BT50 MB80X180	50	80.00	142.0	180.00	-	M24	8.19	HW 8.0
BT50 MB110X140	50	110.00	102.0	140.00	-	M24	6.80	HW 10.0

- Verify that the weight of the entire tool assembly does not exceed the machine spindle's carrying capability.

ITSBORE

BT-FC-MB

MB Modular Boring System
with BT MAS-403 Face
Contact AD Tapered Shanks

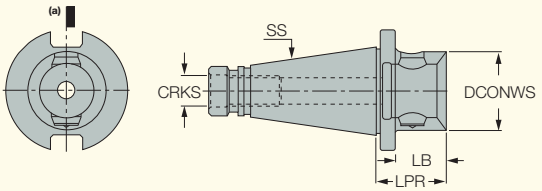


Designation	SS	DCONWS	LPR	BD	LB	Fig.	kg	
BT40 FC MB50	40	50.00	48.00	-	21.0	1.	0.90	HW 6.0
BT40 FC MB50X120	40	50.00	120.00	-	93.0	2.	1.90	HW 5.0
BT40 FC MB63	40	63.00	66.00	-	-	1.	1.20	HW 8.0
BT50 FC MB50	50	50.00	66.00	-	28.0	1.	3.30	HW 6.0
BT50 FC MB50X120	50	50.00	120.00	60.00	82.0	2.	4.20	HW 6.0
BT50 FC MB63	50	63.00	75.00	-	37.0	1.	3.70	HW 8.0
BT50 FC MB63X150	50	63.00	150.00	70.00	112.0	2.	5.80	HW 8.0
BT50 FC MB80	50	80.00	75.00	-	37.0	1.	4.00	HW 8.0
BT50 FC MB80X180	50	80.00	180.00	-	142.0	2.	7.50	HW 8.0

ITSBORE

ISOM-MB

MB Modular Connection System
with DIN 2080-A Taper Shanks



(a)Cutting edge position

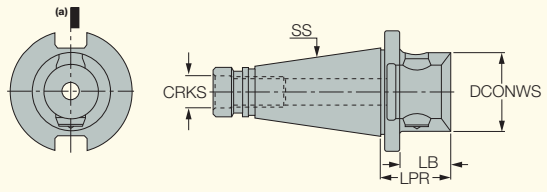
Designation	SS	DCONWS	LB	LPR	CRKS	kg	
ISOM 30-MB50	30	50.00	-	58.00	M12	0.78	HW 6.0
ISOM 40-MB50	40	50.00	36.0	48.00	M16	0.95	HW 6.0
ISOM 40-MB63	40	63.00	-	60.00	M16	1.35	HW 8.0
ISOM 45-MB50	45	50.00	33.0	48.00	M20	1.78	HW 6.0
ISOM 50-MB50	50	50.00	33.0	48.00	M24	2.82	HW 6.0
ISOM 50-MB63	50	63.00	41.0	56.00	M24	3.05	HW 8.0
ISOM 50-MB80	50	80.00	45.0	60.00	M24	3.59	HW 8.0

- Verify that the weight of the entire tool assembly does not exceed the machine spindle's carrying capability.

ITSBORE

ISO-MB

MB Modular Connection System
with ISO 297 Taper Shanks



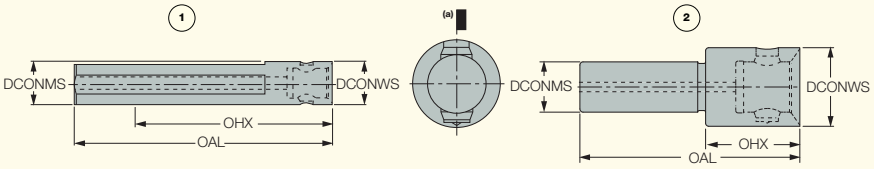
(a)Cutting edge position

Designation	SS	DCONWS	LB	LPR	CRKS	kg	
ISO 40-MB50	40	50.00	36.0	48.00	UNC 5/8"-11	1.03	HW 6.0
ISO 40-MB63	40	63.00	-	60.00	UNC 5/8"-11	1.35	HW 8.0
ISO 50-MB50	50	50.00	33.0	48.00	UNC 1.0"-8	2.83	HW 6.0
ISO 50-MB63	50	63.00	41.0	56.00	UNC 1.0"-8	2.94	HW 8.0
ISO 50-MB80	50	80.00	45.0	60.00	UNC 1.0"-8	3.56	HW 8.0

- Verify that the weight of the entire tool assembly does not exceed the machine spindle's carrying capability.

ITSBORE

ST-MB
MB Modular Connection
System with Straight Shanks



(a)Cutting edge position

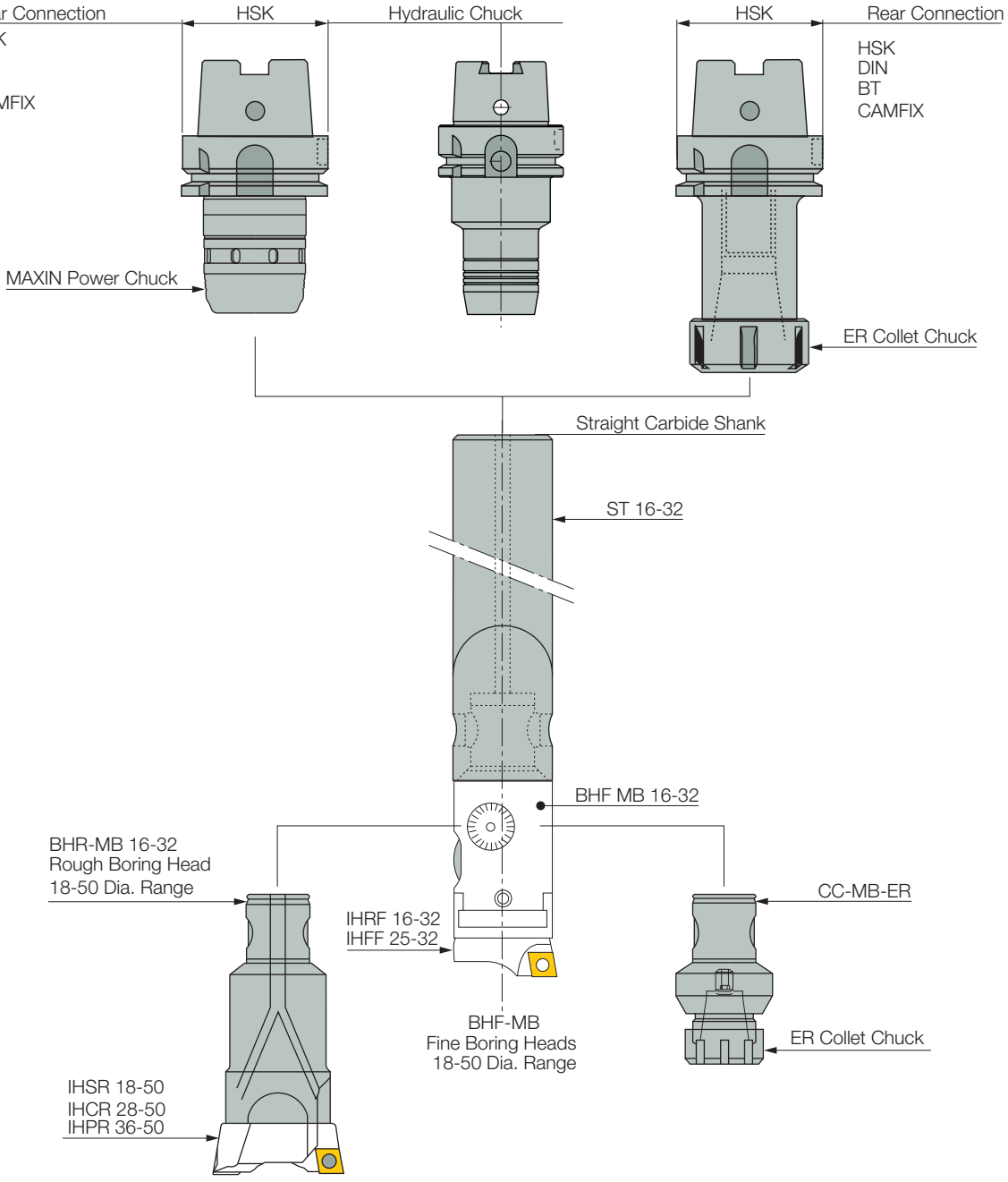
Designation	DCONMS	DCONWS	OAL	OHX(1)	CSP(2)	Fig.	kg	
ST 16-MB16	16.00	16.00	100.00	66.0	1	1.	0.15	HW 2.5
ST 20-MB20	20.00	20.00	125.00	85.0	1	1.	0.27	HW 3.0
ST 25-MB32	25.00	32.00	100.00	35.0	0	2.	0.41	HW 4.0
ST 32-MB50	32.00	50.00	140.00	60.0	0	2.	0.42	HW 6.0

- Verify that the weight of the entire tool assembly does not exceed the machine spindle's carrying capability

(1) Maximum overhang (2) 0 - Without coolant supply, 1 - With coolant supply

ST-MB Straight Carbide Shank with MB Connection Assembly Options

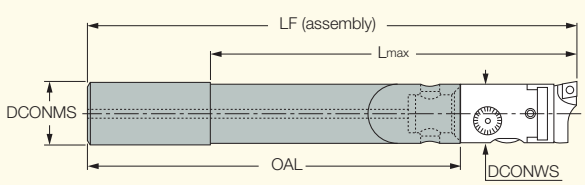
ST16-32 MB16-MB32 Diameter Range: 18-50mm



ITSBORE

ST-MB-E

MB Modular Connection System
with Cylindrical Carbide Shanks



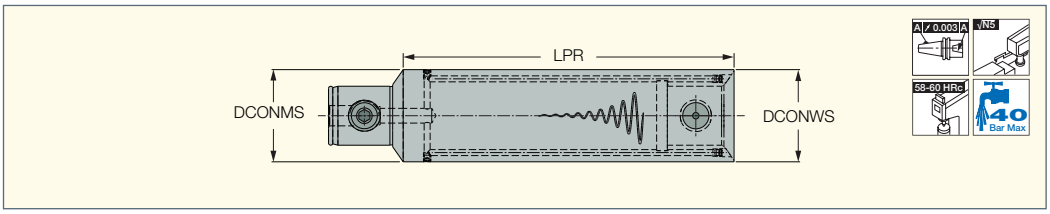
Designation	DCONMS	DCONWS	OAL	LF	L max	kg	
ST 16-MB16X110E	16.00	16.00	110.00	144.00	100.0	0.28	HW 2.5
ST 16-MB16X140E	16.00	16.00	140.00	174.00	125.0	0.17	HW 2.5
ST 16-MB16X170E	16.00	16.00	170.00	204.00	160.0	0.42	HW 2.5
ST 20-MB20X135E	20.00	20.00	135.00	175.00	125.0	0.40	HW 3.0
ST 20-MB20X170E	20.00	20.00	170.00	210.00	160.0	0.69	HW 3.0
ST 20-MB20X210E	20.00	20.00	210.00	250.00	200.0	0.40	HW 3.0
ST 25-MB25X160E	25.00	25.00	160.00	210.00	160.0	0.40	HW 3.0
ST 25-MB25X205E	25.00	25.00	205.00	255.00	200.0	1.28	HW 3.0
ST 25-MB25X255E	25.00	25.00	255.00	305.00	125.0	1.55	HW 3.0
ST 32-MB32X195E	32.00	32.00	195.00	258.00	200.0	1.96	HW 4.0
ST 32-MB32X250E	32.00	32.00	250.00	313.00	250.0	2.50	HW 4.0
ST 32-MB32X315E	32.00	32.00	315.00	378.00	320.0	3.30	HW 4.0

- Verify that the weight of the entire tool assembly does not exceed the machine spindle's carrying capability.

WHISPERLINE

AV-EX-MB

MB Modular System
Anti Vibration Extensions



Designation	DCONMS	DCONWS	LPR	kg
AV EX MB50X180	50.00	50.00	180.00	4.29
AV EX MB63X230	63.00	63.00	230.00	0.01
AV EX MB80X280	80.00	80.00	280.00	8.70

NEW

- Verify that the weight of the entire tool assembly does not exceed the machine spindle's carrying capability.

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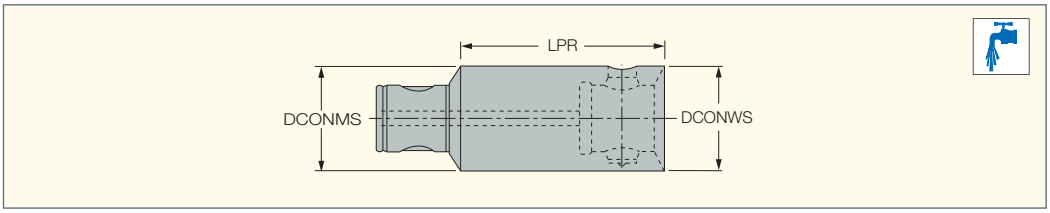
EX-MB

Extensions for the MB Modular Connection System



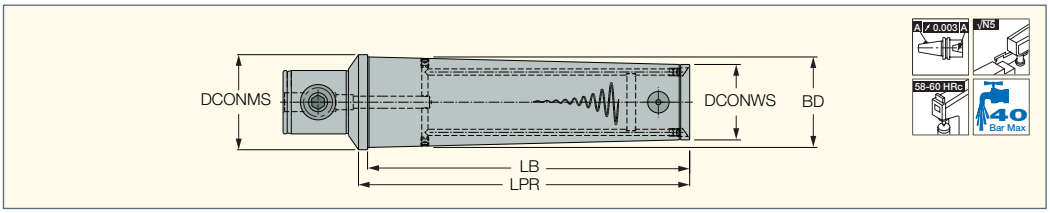
Designation	DCONMS	LPR	DCONWS	kg
EX 16X25-MB16	16.00	25.00	16.00	0.06
EX 20X32-MB20	20.00	32.00	20.00	0.09
EX 25X25-MB25	25.00	25.00	25.00	0.10
EX 25X40-MB25	25.00	40.00	25.00	0.16
EX 32X32-MB32	32.00	32.00	32.00	0.20
EX 32X50-MB32	32.00	50.00	32.00	0.31
EX 40X40-MB40	40.00	40.00	40.00	0.39
EX 40X63-MB40	40.00	63.00	40.00	0.61
EX 50X50-MB50	50.00	50.00	50.00	0.70
EX 50X80-MB50	50.00	80.00	50.00	1.21
EX 50X100-MB50	50.00	100.00	50.00	1.53
EX 63X63-MB63	63.00	63.00	63.00	1.49
EX 63X100-MB63	63.00	100.00	63.00	2.39
EX 63X125-MB63	63.00	125.00	63.00	2.99
EX 80X80-MB80	80.00	80.00	80.00	3.10
EX 80X125-MB80	80.00	125.00	80.00	4.89
EX 80X160-MB80	80.00	160.00	80.00	6.25

- Verify that the weight of the entire tool assembly does not exceed the machine spindle's carrying capability.

WHISPERLINE

AV-RE-MB

MB Modular System
Anti Vibration Reducers



Designation	DCONMS	DCONWS	LPR	BD	LB	kg
AV RE MB50 MB40X176	50.00	40.00	176.00	47.00	170.0	3.67
AV RE MB63 MB50X220	63.00	50.00	220.00	60.00	214.0	4.66
AV RE MB80 MB63X280	80.00	63.00	280.00	77.00	272.0	8.40

NEW

- Verify that the weight of the entire tool assembly does not exceed the machine spindle's carrying capability.

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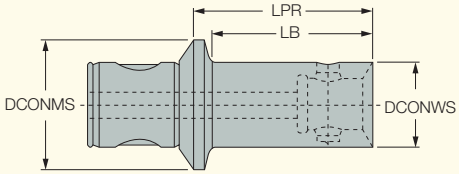
RE MB-MB

Reducers for the MB Modular Connection System



Designation	DCONMS	DCONWS	LPR	LB	kg
RE MB20-MB16X20	20.00	16.00	20.00	16.0	0.06
RE MB25-MB16X20	25.00	16.00	20.00	15.0	0.08
RE MB25-MB20X25	25.00	20.00	25.00	20.0	0.09
RE MB32-MB16X24	32.00	16.00	24.00	18.0	0.13
RE MB32-MB20X25	32.00	20.00	25.00	20.0	0.14
RE MB32-MB25X28	32.00	25.00	28.00	23.0	0.16
RE MB40-MB16X24	40.00	16.00	24.00	17.0	0.22
RE MB40-MB20X26	40.00	20.00	26.00	20.0	0.23
RE MB40-MB25X28	40.00	25.00	28.00	22.0	0.26
RE MB40-MB32X32	40.00	32.00	32.00	27.0	0.29
RE MB50-MB16X24	50.00	16.00	24.00	15.0	0.40
RE MB50-MB16X40	50.00	16.00	40.00	31.0	0.41
RE MB50-MB16X74	50.00	16.00	74.00	65.0	0.47
RE MB50-MB20X26	50.00	20.00	26.00	18.0	0.40
RE MB50-MB20X70	50.00	20.00	70.00	62.0	0.50
RE MB50-MB20X93	50.00	20.00	93.00	85.0	0.57
RE MB50-MB25X117	50.00	25.00	117.00	110.0	0.68
RE MB50-MB25X28	50.00	25.00	28.00	21.0	0.42
RE MB50-MB25X87	50.00	25.00	87.00	80.0	0.65
RE MB50-MB32X144	50.00	32.00	144.00	137.0	1.09
RE MB50-MB32X32	50.00	32.00	32.00	25.0	0.46
RE MB50-MB32X87	50.00	32.00	87.00	80.0	0.71
RE MB50-MB40X176	50.00	40.00	176.00	170.0	1.87
RE MB50-MB40X36	50.00	40.00	36.00	30.0	0.51
RE MB50-MB40X87	50.00	40.00	87.00	80.0	0.97
RE MB63-MB50X40	63.00	50.00	40.00	34.0	0.97
RE MB80-MB50X45	80.00	50.00	45.00	36.0	1.37
RE MB80-MB63X60	80.00	63.00	60.00	52.0	1.76

- Verify that the weight of the entire tool assembly does not exceed the machine spindle's carrying capability.

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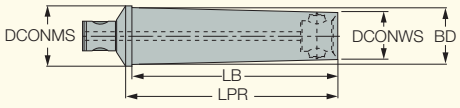
RE MB-AVI

MB Modular System with Carbide Core Reducers



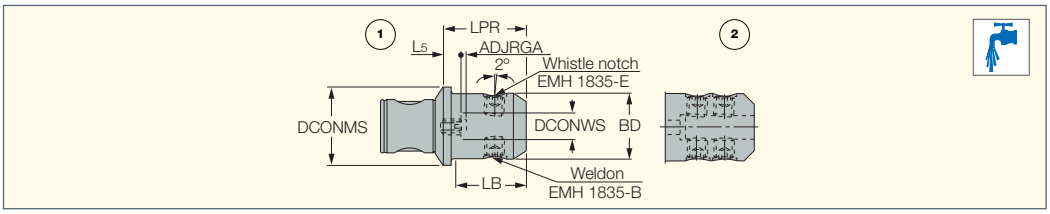
Designation	DCONMS	DCONWS	LPR	BD	LB	kg
RE MB50-MB16X74-AVI	50.00	16.00	74.00	17.50	65.0	0.51
RE MB50-MB20X93-AVI	50.00	20.00	93.00	21.50	85.0	0.65
RE MB50-MB25X117-AVI	50.00	25.00	117.00	27.00	110.0	0.92
RE MB50-MB32X144-AVI	50.00	32.00	144.00	35.00	138.0	1.47
RE MB50-MB40X176-AVI	50.00	40.00	176.00	47.00	170.0	2.66
RE MB63-MB50X220-AVI	63.00	50.00	220.00	60.00	214.0	5.00
RE MB80-MB63X280-AVI	80.00	63.00	280.00	77.00	272.0	10.40

- Verify that the weight of the entire tool assembly does not exceed the machine spindle's carrying capability.

ITSBORE

EMH MB

Weldon and Whistle Notch Side-Lock Holders with the MB Modular Boring Connection System



Designation	DCONMS	DCONWS	BD	LB	LPR	L5	ADJRGA	Fig.	kg		
EMH MB50-6	50.00	6.00	25.00	32.5	44.00	7.00	2.0	1.	0.51		
EMH MB50-8	50.00	8.00	28.00	33.0	44.00	7.00	2.0	1.	0.54		
EMH MB50-10	50.00	10.00	35.00	42.0	52.00	11.00	3.0	1.	0.68	BH EMH M10X11.5	BH EMH PRST M8X10B
EMH MB50-12	50.00	12.00	42.00	48.0	57.00	11.00	3.0	1.	0.85	BH EMH M12X15.5	BH EMH PRST M8X10B
EMH MB50-14	50.00	14.00	42.00	48.0	57.00	11.00	3.0	1.	0.84	BH EMH M12X15.5	BH EMH PRST M8X10B
EMH MB50-16	50.00	16.00	48.00	61.0	67.00	17.00	4.0	1.	1.12	BH EMH M14X15.5	BH EMH PRST M12X16B
EMH MB50-20	50.00	20.00	51.00	-	67.00	16.00	4.0	1.	1.08	BH EMH M16X15.5	BH EMH PRST M12X16B
EMH MB50-25	50.00	25.00	63.00	-	80.00	22.00	4.0	2.	1.21	BH EMH M18X19.5	BH EMH PRST M16X16B
EMH MB63-16	63.00	16.00	48.00	53.0	64.00	14.00	4.0	1.	1.45	BH EMH M14X15.5	BH EMH PRST M12X16B
EMH MB63-20	63.00	20.00	52.00	56.0	66.00	14.00	4.0	1.	1.55	BH EMH M16X15.5	BH EMH PRST M12X16B
EMH MB63-25	63.00	25.00	64.00	-	74.00	16.00	4.0	2.	2.11	BH EMH M18X19.5	BH EMH PRST M16X16B
EMH MB63-32	63.00	32.00	72.00	-	76.00	14.00	4.0	2.	2.42	BH EMH M20X19.5	BH EMH PRST M16X16B
EMH MB80-40	80.00	40.00	80.00	-	83.00	12.00	4.0	2.	3.21	BH EMH M20X19.5	

- Verify that the weight of the entire tool assembly does not exceed the machine spindle's carrying capability.

* Optional, to be ordered separately

For tools, see pages: DFN A-5D-BD (101) • DLN A-3D (77) • DLN A-5D (78)

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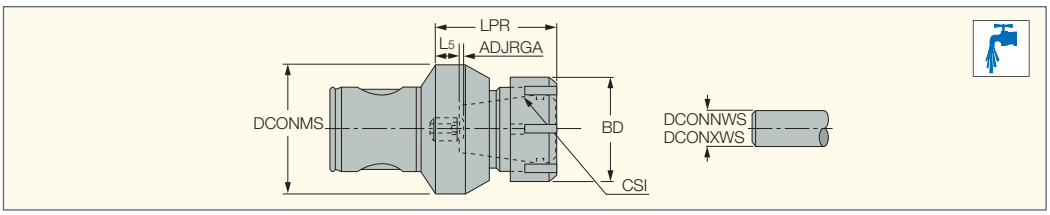
CC MB-ER

DIN 6499 ER Collet Chuck with the MB Modular Boring Connection System



Designation	DCONMS	CSI	DCONNWS(1)	DCONXWS(2)	BD	LPR	L5	ADJRGA	kg		
CC MB16 ER11M	16.00	ER11	0.5	7.0	16.00	25.00	2.50	2.0	0.05	NUT ER11 MINI	WRENCH ER11 MINI*
CC MB20 ER16M	20.00	ER16	0.5	10.0	22.00	32.00	1.00	2.0	0.05	NUT ER16 MINI	WRENCH ER16 MINI*
CC MB25 ER20M	25.00	ER20	1.0	13.0	28.00	40.00	2.50	2.0	0.14	NUT ER20 MINI	WRENCH ER20 MINI*
CC MB32 ER25M	32.00	ER25	1.0	16.0	35.00	42.00	1.50	2.0	0.23	NUT ER25 MINI	WRENCH ER25 MINI*
CC MB40 ER25	40.00	ER25	1.0	16.0	42.00	45.00	5.00	2.0	0.45	NUT ER25 TOP	WRENCH ER25*
CC MB50 ER25	50.00	ER25	1.0	16.0	42.00	48.00	7.00	2.0	0.67	NUT ER25 TOP	WRENCH ER25*
CC MB50 ER32	50.00	ER32	2.0	20.0	50.00	55.00	7.00	2.0	0.79	NUT ER32 TOP	WRENCH ER32*
CC MB63 ER32	63.00	ER32	2.0	20.0	50.00	59.00	12.00	2.0	1.35	NUT ER32 TOP	WRENCH ER32*

- For ER collets, see ISCAR Tooling Systems Catalog.

(1) Minimum diameter

(2) Maximum diameter

* Optional, to be ordered separately

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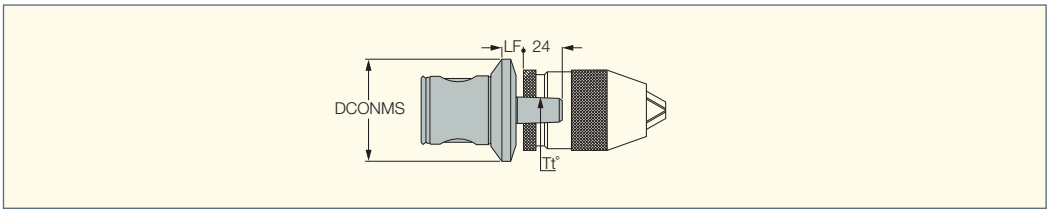
DC MB

DIN238 DC Drill Chuck Arbor with the MB Modular Connection System



Designation	DCONMS	Tt°	LF	kg
DC MB50 B16	50.00	B16	10.00	0.40
DC MB63 B16	63.00	B16	13.50	0.41

- Without drill chuck.

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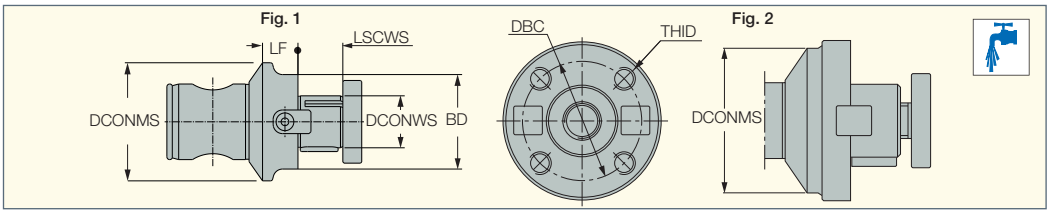
SMH MB

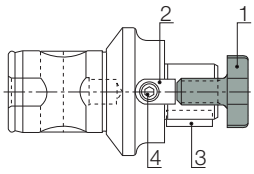
Shell Mill Holders with the MB Modular Boring Connection System



Designation	DCONMS	DCONWS	BD	DBC	THID	LF	LSCWS	Fig.	kg
SMH MB40-16	40.00	16.00	32.00	-	-	15.00	17.00	1.	0.32
SMH MB40-22	40.00	22.00	40.00	-	-	13.00	19.00	1.	0.38
SMH MB50-16	50.00	16.00	32.00	-	-	15.00	17.00	1.	0.48
SMH MB50-22	50.00	22.00	40.00	-	-	15.00	19.00	1.	0.55
SMH MB50-27	50.00	27.00	50.00	-	-	15.00	21.00	1.	0.66
SMH MB50-32	50.00	32.00	60.00	-	-	15.00	24.00	1.	0.79
SMH MB63-22	63.00	22.00	60.00	-	-	15.00	19.00	1.	1.01
SMH MB63-27	63.00	27.00	60.00	-	-	15.00	21.00	1.	1.09
SMH MB63-32	63.00	32.00	70.00	-	-	15.00	24.00	1.	1.24
SMH MB80-32	80.00	32.00	88.00	-	-	24.00	24.00	1.	2.09
SMH MB80-40	80.00	40.00	88.00	66.70	M12	24.00	27.00	2.	2.25
SMH MB80-50	80.00	50.00	90.00	-	-	24.00	30.00	2.	2.58
SMH MB80-60 (1)	80.00	60.00	128.50	101.60	M16	31.50	40.00	2.	4.19

- When mounting slitting cutters, remove the drive dogs and use spacer rings.
- Verify that the weight of the entire tool assembly does not exceed the machine spindle's carrying capability.

(1) Shell locking screw not supplied



Spare Parts

Designation	(1)	(2)	(3)	(4)
SMH MB40-16	M 8 CLAMP SCREW SEM 16	BH DOG DRIVE SMH 16	KEY SMH 16	M3X8 SMH KEY SCREW
SMH MB40-22	M 10 CLAMP SCREW SEM 22	BH DOG DRIVE SMH 22	KEY SMH 22	M4X10SMH KEY SCREW
SMH MB50-16	M 8 CLAMP SCREW SEM 16	BH DOG DRIVE SMH 16	KEY SMH 16	M3X8 SMH KEY SCREW
SMH MB50-22	M 10 CLAMP SCREW SEM 22	BH DOG DRIVE SMH 22	KEY SMH 22	M4X10SMH KEY SCREW
SMH MB50-27	M 12 CLAMP SCREW SEM 27	BH DOG DRIVE SMH 27	KEY SMH 27	M5X12SMH KEY SCREW
SMH MB50-32	M 16 CLAMP SCREW SEM 32	BH DOG DRIVE SMH 32	KEY SMH 32	M6X16SMH KEY SCREW
SMH MB63-27	M 12 CLAMP SCREW SEM 27	BH DOG DRIVE SMH 27	KEY SMH 27	M5X12SMH KEY SCREW
SMH MB63-32	M 16 CLAMP SCREW SEM 32	BH DOG DRIVE SMH 32	KEY SMH 32	M6X16SMH KEY SCREW
SMH MB80-32	M 16 CLAMP SCREW SEM 32	BH DOG DRIVE SMH 32	KEY SMH 32	M6X16SMH KEY SCREW
SMH MB80-40	M 20 CLAMP SCREW SEM 40	BH DOG DRIVE SMH 40	KEY SMH 40	M6X18SMH KEY SCREW

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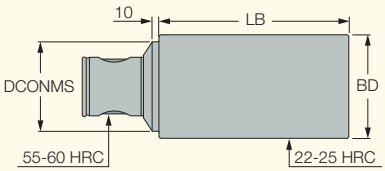
BLANK MB

Blanks with MB Modular Connection System



Designation	DCONMS	BD	LB	kg
BLANK MB50-63X160	50.00	63.00	160.00	4.44
BLANK MB63-80X200	63.00	80.00	200.00	8.77
BLANK MB80-100X250	80.00	100.00	250.00	16.62
BLANK MB110-130X250	110.00	130.00	250.00	18.00

- Material: 39NiCrMo3

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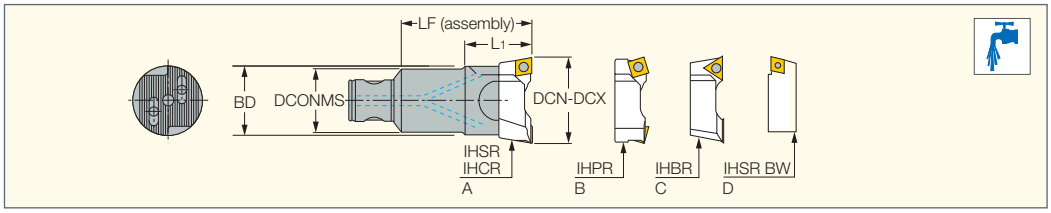
BHR MB

Rough Boring Heads for Diameter Range 18-200mm



Designation	BD	DCONMS	LF	DCN(1)	DCX(2)	L1	IH(3)	RPMX(4)	kg
BHR MB16-16X34	16.00	16.00	34.00	18.0	22.0	-	IH...18-22	12000	0.06
BHR MB20-20X40	20.00	20.00	40.50	22.0	28.0	-	IH...22-28	12000	0.10
BHR MB25-25X50	26.00	25.00	50.00	28.0	38.0	-	IH...28-38	10000	0.18
BHR MB32-32X63	34.00	32.00	63.00	35.5	50.0	-	IH...36-50	10000	0.36
BHR MB40-40X75	45.00	40.00	75.00	50.0	68.0	-	IH...50-68	8000	0.70
BHR MB50-50X90	65.00	50.00	90.00	68.0	90.0	50.0	IH...68-90	8000	1.49
BHR MB50-63X105	85.00	50.00	105.00	90.0	120.0	60.0	IH...90-120	8000	1.54
BHR MB63-63X105	85.00	63.00	105.00	90.0	120.0	63.0	IH...90-120	6000	3.03
BHR MB80-80X115	110.00	80.00	115.00	120.0	200.0	75.0	IH...120-800	5000	5.38

- Verify that the weight of the entire tool assembly does not exceed the machine spindle's carrying capability.

(1) Cutting diameter minimum

(2) Cutting diameter maximum

(3) Insert holders (4) Maximum RPM

Spare Parts

Designation				
BHR MB16-16X34	BH NUT BHR MB16	PLT 16*	SR M3X14 DIN912	SR M3X8 DIN913
BHR MB20-20X40	BH NUT BHR MB20	PLT 20*	SR M4X15DIN912	BH M3X5UNI5923
BHR MB25-25X50	BH NUT BHR MB25	PLT 25*	SR M4X20 DIN912	SR M3X8 DIN913
BHR MB32-32X63	BH NUT BHR MB32	PLT 32*	SR M5X25DIN912	SR M4X12 DIN913
BHR MB40-40X75	BH NUT BHR MB40	PLT 40*	SR M6X30 DIN912	SR M5X14 DIN913
BHR MB50-63X105	BH NUT BHR MB50	PLT 50*	SR M10X40DIN912	SR M5X12 DIN913
BHR MB63-63X105	BH NUT BHR MB63	PLT 63*	SR M10X40DIN912	SR M6X16 DIN913
BHR MB80-80X115	BH NUT BHR MB80	PLT 80*	SR M12X45DIN912	SR M8X25 DIN913

* Optional, to be ordered separately

Rough Boring Options

Roughing With High Feed			Roughing With High Cutting Depth	Light Roughing Or Semi-Finishing Applications

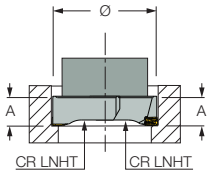
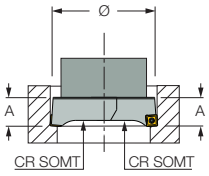
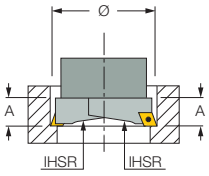
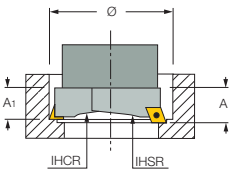
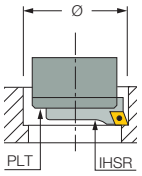

				

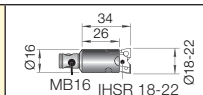
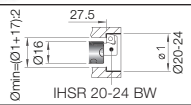
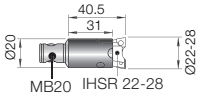
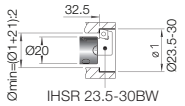
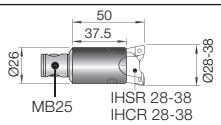
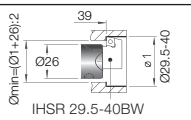
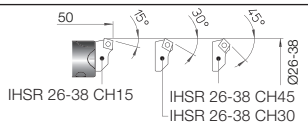
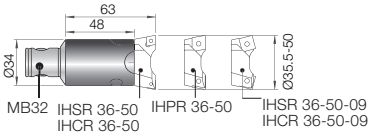
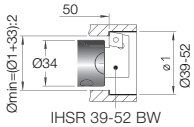
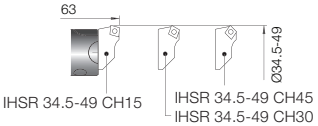
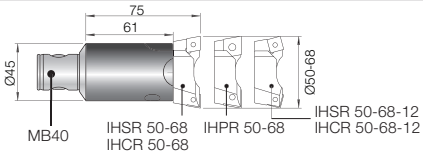
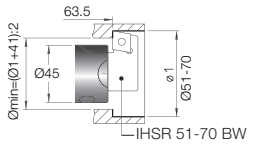
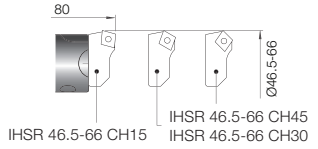
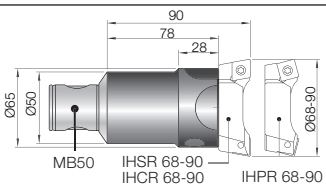
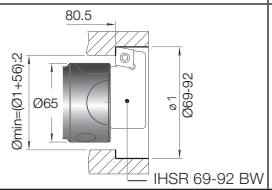
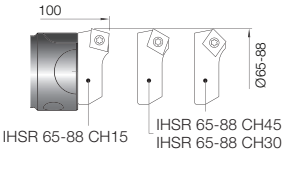
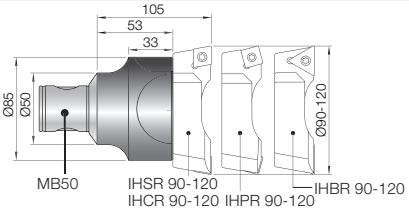
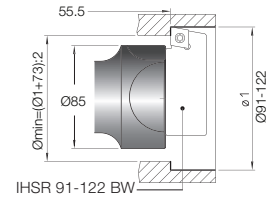
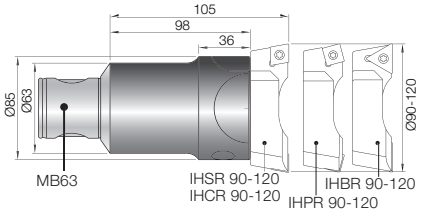
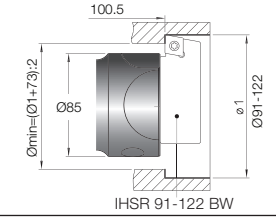
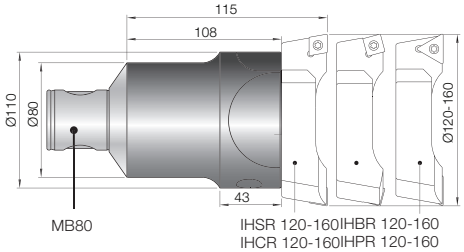
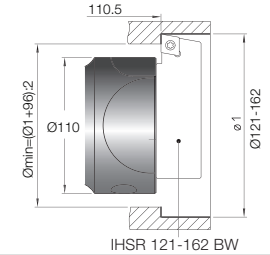
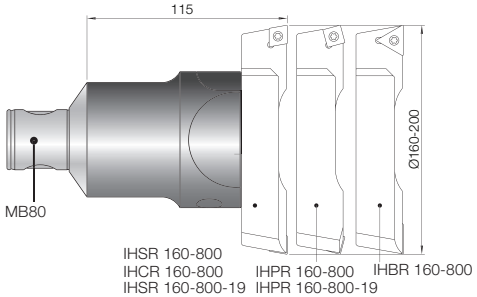
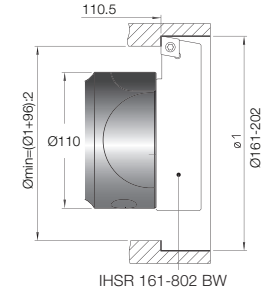
Fig. a			Fig. b	Fig. c

1 Radial setting of the cutting edges should be carried out with tool presetting equipment.
2 Boring bars fitted with two insert pockets are for roughing operations involving heavy chip removal.
The double-insert boring bars include:
- Two IHSR/CR SOMT/CR LNHT insert holders on the same plane with the two cutting edges set at an identical radial distance for high feed rate roughing operations (Fig. a).
- An IHCR insert holder and an IHSR insert holder not on the same plane with the two cutting edges set at different radial distances for high-depth roughing operations (Fig. b).
3 Boring bars fitted with a single insert holder are for roughing and finishing operations involving normal chip removal. The serrated surface protection plate PLT should always be used (Fig. c).

Rough Boring Head Diameter Range

	10	20	30	40	50	60	70	80	90	100	110	120	130	200	300	400	500	600	700	800	900	1000	1100	1200	Assembly Reference Page
BHR MB16-16x34			18-22																						
BHR MB20-20x40				22-28																					
BHR MB25-25x50					28-38																				
BHR MB32-32x63						35.5-50																			
BHR MB40-40x80								50-68																	466
BHR MB50-50x100										68-90															
BHR MB50-63x80													90-120												
BHR MB63-63x125													90-120												
BHR MB80-80x140															120-200										

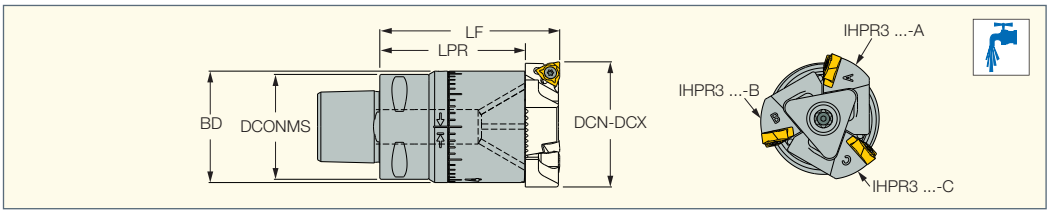
BHR MB - Additional Information

BHR MB16- 16X34 Ø18 ~ 22			
BHR MB20- 20X40 Ø22 ~ 28			
BHR MB25- 25X50 Ø28 ~ 38			
BHR MB32- 32X63 Ø35.5 ~ 50			
BHR MB40- 40X75 Ø50 ~ 68			
BHR MB50- 50X90 Ø68 ~ 90			
BHR MB50- 63X105 Ø90 ~ 120			
BHR MB63- 63X105 Ø90 ~ 120			
BHR MB80- 80X115 Ø120 ~ 200			
			

NEOBORE
MODULAR BORING HEADS

BHR3-C#

Three Cutting Edges
Roughing Boring Head



Designation	DCONMS	BD	DCN(1)	DCX(2)	LF	LPR	RPMX(3)	kg
BHR3-C3X55-D40-50-14	32.00	34.00	40.00	50.00	55.00	45.60	10000	0.33
BHR3-C4X70-D50-60-17	40.00	41.00	50.00	60.00	70.00	61.50	8000	0.66

NEW

- Verify that the weight of the entire tool assembly does not exceed the machine spindle's carrying capability.

(1) Cutting diameter minimum
(2) Cutting diameter maximum
(3) Maximum RPM

For tools, see pages: IHPR3 (468)

NEO-BORE Cutting Parameters

ISO	Material		Condition	Tensile Strength [N/mm²]	Hardness HB	Material Group No.	V_c M/min	Width of Cut, mm	F_z mm/rev
P	non-alloy steel and cast steel, free cutting steel	<0.25% C	annealed	420	125	1	100-160	Ap=1 1<Ap≤2	0.10 - 0.14 0.06 - 0.12
		≥0.25% C	annealed	650	190	2			
		<0.55% C	quenched and tempered	850	250	3			
		≥0.55% C	annealed	750	220	4			
			quenched and tempered	1000	300	5			
	low alloy and cast steel (less than 5% of alloying elements)		annealed	600	200	6			
			quenched and tempered	930	275	7			
				1000	300	8			
				1200	350	9			
	high alloyed steel, cast steel and tool steel		annealed	680	200	10			
			quenched and tempered	1100	325	11			
	stainless steel and cast steel		ferritic / martensitic	680	200	12			
			martensitic	820	240	13			
M	stainless steel and cast steel		austenitic, duplex	600	180	14	60-100	Ap=1 1<Ap≤2	0.08 - 0.12 0.06 - 0.12
K	gray cast iron (GG)		ferritic / pearlitic		180	15	100-180	1<Ap≤2.5	0.10 - 0.15
			pearlitic / martensitic		260	16			
	nodular cast iron (GGG)		ferritic		160	17			
			pearlitic		250	18			
	malleable cast iron		ferritic		130	19			
			pearlitic		230	20			

Operating Instructions

Setup

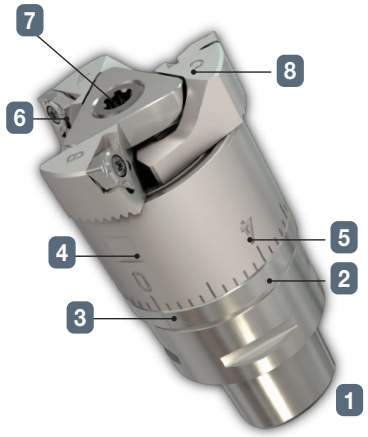
Loosen screw (7) before making slide adjustments.

1 Adjust the required diameter by turning the slide ring (4).
2 Rotate dial ring (5) until it aligns with zero slide adjustment range.
3 The tool slide (4) allows a 10mm radial adjustment with 0.1 mm step.
4 After positioning, lock the tool slide with tool slide locking screw (7) - see torque recommendation.

Setup Video

Assembly Video

1 Body
2 Dial Ring
3 Dial Ring Locking Screw
4 Slide Ring
5 Slide Adjustment Range
6 Tool Slide
7 Tool Slide Locking Screw
8 Cartridge x3



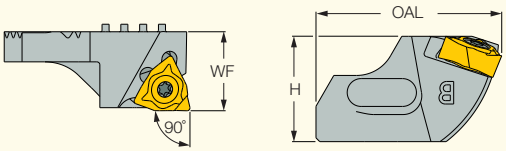
Assembly

1 Place the body on even surface or suitable adaptor.
2 Place the cartridges on the serrated rails according to the marked letters.
A to A
B to B
C to C
3 Make sure the cartridges are placed with a uniform gap between.
4 Take the plastic assembly accessory and place the toolholder triangle inside firmly.
5 Place the two components on top of the cartridges so that the toolholder triangle is in the middle of the three cartridges.
6 Drop in the screw and start turning it with the provided TORX PLUS bit and a bit holder or other suitable tool.
7 Remove the plastic assembly accessory.
8 Do not make diameter adjustments if TORX PLUS screw was tightened.

NEOBORE MODULAR BORING HEADS

IHPR3

90° Rough Boring Toolholders



Designation	WF	OAL	H	MIID[1]		
IHPR3 14-WNGP-A	10.50	24.70	14.0	WNGP 0403..L	SR 34-514	T-7/5
IHPR3 14-WNGP-B	10.50	24.70	14.0	WNGP 0403..L	SR 34-514	T-7/5
IHPR3 14-WNGP-C	10.50	24.70	14.0	WNGP 0403..L	SR 34-514	T-7/5
IHPR3 17-WNGP-A	12.90	30.70	17.0	WNGP 0403..L	SR 34-514	T-7/5
IHPR3 17-WNGP-B	12.90	30.70	17.0	WNGP 0403..L	SR 34-514	T-7/5
IHPR3 17-WNGP-C	12.90	30.70	17.0	WNGP 0403..L	SR 34-514	T-7/5

NEW

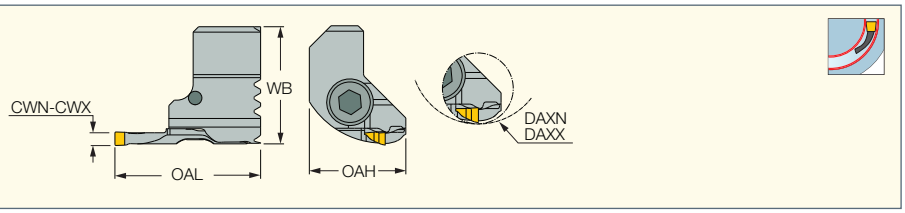
(1) Master insert identification

For inserts, see pages: WNGP-F2M (507) • WNGP-F2P (508)
For holders, see page: BHR3-C# (467)

MINCUT MINI FACE LINE

IHSR-MIFR

Trepanning Cartridges Carrying MINCUT Inserts Mounted on a BHR MB32-32X63 Boring Head



Designation	DAXN[1]	DAXX[2]	CWN[3]	CWX[4]	OAL	WB	OAH	Insert		
IHSR 8-21 MIFR8	8.0	21.0	1.50	2.20	32.00	23.00	17.50	MI.R 8	SR 14-297	T-8/5
IHSR 19-34 MIFR10	19.0	34.0	2.00	3.00	27.00	22.00	17.80	MI.R 10	SR 34-506 M3X0.5	T-9/5

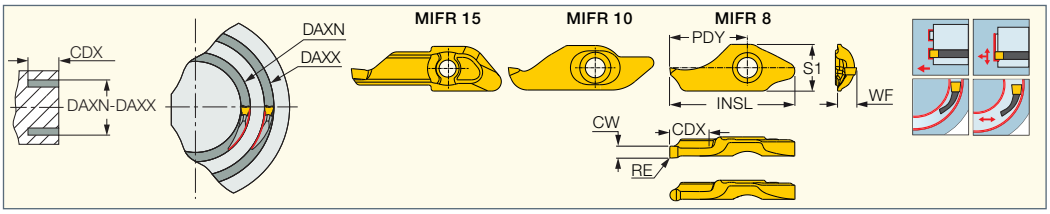
(1) Minimum axial grooving diameter
(2) Maximum axial grooving diameter
(3) Minimum cutting width
(4) Maximum cutting width

For inserts, see page: MIFR (469)
For holders, see page: BHR MB (464)

MIN CUT MINI FACE LINE

MIFR

Screw-Clamped Inserts
for Internal Face Grooving
and Turning



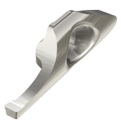
Designation	Dimensions											IC908	Recommended Machining Data	
	CW	RE	CWTOL(1)	RETOL(2)	CDX	DAXN(3)	DAXX(4)	WF	S1	INSL	PDY		f face-groove (mm/rev)	f face-turn (mm/rev)
MIFR 8-1.50-0.20	1.50	0.20	0.020	0.020	5.50	8.0	11.5	2.60	6.50	17.70	11.00	●	0.02-0.10	0.02-0.06
MIFR 8-1.60-0.80	1.60	0.80	0.020	0.020	5.50	8.0	12.1	2.60	6.50	17.70	11.00	●	0.02-0.10	0.02-0.06
MIFR 10-2.00-0.20	2.00	0.20	0.020	0.020	9.00	10.0	-	3.00	7.60	25.10	14.80	●	0.02-0.10	0.02-0.06
MIFR 8-2.00-0.20	2.00	0.20	0.020	0.020	5.50	8.0	16.0	2.80	6.50	17.70	11.00	●	0.02-0.10	0.02-0.06
MIFR 10-2.00-1.00	2.00	1.00	0.020	0.020	9.00	10.0	-	3.00	7.60	25.10	14.80	●	0.02-0.10	0.02-0.06
MIFR 8-2.20-0.20	2.20	0.20	0.020	0.020	5.50	8.0	21.0	2.90	6.50	17.70	11.00	●	0.02-0.10	0.02-0.06
MIFR 10-2.50-0.20	2.50	0.20	0.020	0.020	9.00	10.0	30.0	3.10	7.60	25.10	14.80	●	0.02-0.10	0.02-0.06
MIFR 15-2.50-0.20	2.50	0.20	0.020	0.020	15.00	15.0	60.0	5.55	9.00	30.00	19.30	●	0.03-0.05	0.03-0.04
MIFR 10-2.50-1.25	2.50	1.25	0.020	0.020	9.00	10.0	-	3.30	7.60	25.10	14.80	●	0.02-0.10	0.02-0.06
MIFR 15-2.50-1.25	2.50	1.25	0.020	0.020	15.00	12.0	47.0	5.55	9.00	30.00	19.30	●	0.03-0.05	0.03-0.04
MIFR 10-3.00-0.20	3.00	0.20	0.020	0.020	9.00	10.0	30.0	3.40	7.60	25.10	14.80	●	0.02-0.10	0.02-0.06
MIFR 15-3.00-0.20	3.00	0.20	0.020	0.020	15.00	15.0	60.0	5.85	9.00	30.00	19.30	●	0.03-0.05	0.03-0.04
MIFR 10-3.00-1.50	3.00	1.50	0.020	0.020	9.00	10.0	34.0	3.30	7.60	25.10	14.80	●	0.02-0.10	0.02-0.06
MIFR 15-3.00-1.50	3.00	1.50	0.020	0.020	15.00	10.0	-	5.85	9.00	30.00	19.30	●	0.03-0.05	0.03-0.04
MIFR 15-3.50-0.20	3.50	0.20	0.020	0.020	15.00	10.0	-	6.00	9.00	30.00	19.30	●	0.03-0.05	0.03-0.04

- Recommended cutting speeds and feeds can be increased by 20-30% for aluminim, and reduced by 20-30% for titanium and Inconel

(1) Cutting width tolerance (+/-)
(2) Corner radius tolerance (+/-)
(3) Minimum axial grooving diameter
(4) Maximum axial grooving diameter

For tools, see page: IHSR-MIFR (468)

MIFR 8



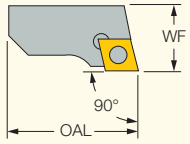
MIFR 10

MIFR 15

ITSBORE

IHSR

Rough Boring Tools
For Twin Radial / Axial
Edge Cutters Positioned
Opposite Finishing Tools



Designation	DCN(1)	DCX(2)	WF	OAL	MIID(3)			
IHSR 18-22	18.0	22.0	8.00	15.00	CCMT 0602...	SR 14-548	T-7/5	
IHSR 22-28	22.0	28.0	9.50	19.00	CCMT 0602...	SR 14-548	T-7/5	
IHSR 28-38	28.0	38.0	12.50	23.00	CCMT 0602...	SR 14-548	T-7/5	
IHSR 36-50	35.5	50.0	15.00	32.00	CCMT 0602...	SR 14-548	T-7/5	
IHSR 36-50-09	35.5	50.0	15.00	32.00	CCMT 09T3...	SR 16-236	T-15/5	
IHSR 50-68	50.0	68.0	19.00	40.00	CCMT 09T3...	SR 16-236	T-15/5	
IHSR 50-68-12	50.0	68.0	19.00	40.00	CCMT 1204...	SR 16-212	T-20/5	
IHSR 68-90	68.0	90.0	22.00	54.00	CCMT 1204...	SR 16-212	T-20/5	
IHSR 90-120	90.0	120.0	27.00	70.50	CCMT 1204...	SR 16-212	T-20/5	
IHSR 120-160	120.0	160.0	32.00	94.50	CCMT 1204...	SR 16-212	T-20/5	
IHSR 160-800	160.0	800.0	32.00	130.00	CCMT 1204...	SR 16-212	T-20/5	
IHSR 160-800-19	160.0	800.0	40.00	130.00	CNMG 1906...	SR 10402352		HW 4.0

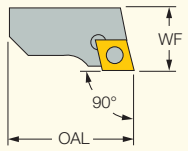
- For user guide, see pages 465,523-527

(1) Cutting diameter minimum
(2) Cutting diameter maximum
(3) Master insert identification

For inserts, see pages: CCET-WF (500) • CCGT-AF (503) • CCGT-AS (502) • CCGW/CCMT (CBN) (502) • CCMT-14 (500) • CCMT-PF (500) • CCMT-WG (501) • CCMT/CCGT (501) • CCMT/CCGT-SM (499)
For holders, see page: BHR MB (464)

ITSBORE

IHCR
Boring Toolholders for MB
Modular Boring System



Designation	DCN(1)	DCX(2)	WF	OAL	MIID(3)		
IHCR 28-38	28.0	38.0	12.30	23.00	CCMT 0602...	SR 14-548	T-7/5
IHCR 36-50	35.5	50.0	14.80	32.00	CCMT 0602...	SR 14-548	T-7/5
IHCR 36-50-09	36.0	50.0	14.80	32.00	CCMT 09T3...	SR 16-236	T-15/5
IHCR 50-68	50.0	68.0	18.70	40.00	CCMT 09T3...	SR 16-236	T-15/5
IHCR 50-68-12	50.0	68.0	18.70	40.00	CCMT 1204...	SR 16-212	T-20/5
IHCR 68-90	68.0	90.0	21.70	54.00	CCMT 1204...	SR 16-212	T-20/5
IHCR 90-120	90.0	120.0	26.70	70.50	CCMT 1204...	SR 16-212	T-20/5
IHCR 120-160	120.0	160.0	31.70	94.50	CCMT 1204...	SR 16-212	T-20/5
IHCR 160-800	160.0	800.0	31.70	130.00	CCMT 1204...	SR 16-212	T-20/5

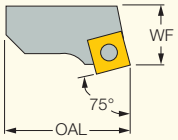
- For user guide, see pages 465,523-527

(1) Cutting diameter minimum
(2) Cutting diameter maximum
(3) Master insert identification

For inserts, see pages: CCET-WF (500) • CCGT-AF (503) • CCGT-AS (502) • CCGW/CCMT (CBN) (502) • CCMT-14 (500) • CCMT-PF (500) • CCMT-WG (501) • CCMT/CCGT (501) • CCMT/CCGT-SM (499)
For holders, see page: BHR MB (464)

ITSBORE

IHPR
75° Rough Boring Toolholders



Designation	DCN(1)	DCX(2)	WF	OAL	MIID(3)		
IHPR 36-50	35.5	50.0	15.00	32.00	SCMT 09T3...	SR 16-236	T-15/5
IHPR 50-68	50.0	68.0	19.00	40.00	SCMT 09T3...	SR 16-236	T-15/5
IHPR 68-90	68.0	90.0	22.00	53.90	SCMT 1204...	SR 16-212	T-20/5
IHPR 90-120	90.0	120.0	27.00	70.50	SCMT 1204...	SR 16-212	T-20/5
IHPR 120-160	120.0	160.0	32.00	94.50	SCMT 1204...	SR 16-212	T-20/5
IHPR 160-800	160.0	800.0	32.00	130.00	SCMT 1204...	SR 16-212	T-20/5
IHPR 160-800-19	160.0	800.0	40.00	129.00	SNMG 1906...		

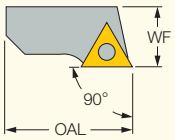
- For user guide, see pages 465,523-527

(1) Cutting diameter minimum
(2) Cutting diameter maximum
(3) Master insert identification

For inserts, see pages: SCGT-AS (506) • SCMT-14 (505) • SCMT-19 (506) • SCMT-SM (505)
For holders, see page: BHR MB (464)

ITSBORE

IHBR
Rough Boring Toolholders



Designation	DCN(1)	DCX(2)	WF	OAL	MIID(3)		
IHBR 90-120	90.0	120.0	27.00	70.50	TCMT 2205...	SR 16-212	T-20/5
IHBR 120-160	120.0	160.0	32.00	94.50	TCMT 2205...	SR 16-212	T-20/5
IHBR 160-800	160.0	800.0	32.00	130.00	TCMT 2205...	SR 16-212	T-20/5

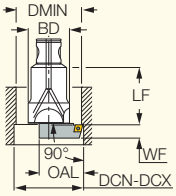
- For user guide, see pages 465,523-527

(1) Cutting diameter minimum
(2) Cutting diameter maximum
(3) Master insert identification

For inserts, see pages: TCMT-19 (506) • TCMT-SM (507)
For holders, see page: BHR MB (464)

ITSBORE

IHSR-BW
Back Face Turning Tools for BHR Rough Boring Heads



Designation	SS(1)	BD	LF	WF	OAL	DCN(2)	DCX(3)	MIID(4)
IHSR 20-24 BW	BHR MB16-16	16.00	27.5	10.00	16.00	20.00	24.00	CCMT 0602...
IHSR 23.5-30BW	BHR MB20-20	20.00	32.5	11.00	19.50	23.50	30.00	CCMT 0602...
IHSR 29.5-40BW	BHR MB25-25	26.00	39.0	14.50	24.00	29.50	40.00	CCMT 0602...
IHSR 39-52 BW	BHR MB32-32	34.00	50.0	17.00	32.00	39.00	52.00	CCMT 09T3...
IHSR 51-70 BW	BHR MB40-40	45.00	63.5	21.00	42.00	51.00	70.00	CCMT 1204...
IHSR 69-92 BW	BHR MB50-50	65.00	80.5	24.50	57.00	69.00	92.00	CCMT 1204...
IHSR 91-122 BW	BHR MB63-63	85.00	100.5	28.50	76.00	91.00	122.00	CCMT 1204...
IHSR 121-162 BW	BHR MB80-80	110.00	110.5	31.50	101.00	121.00	162.00	CCMT 1204...
IHSR 161-802 BW	BHR MB80-80	110.00	110.5	31.50	122.00	161.00	202.00	CCMT 1204...

- DMIN=(min bore diameter)=(DCN+BD+1)/2 • BD=Size of the boring head being used • For user guide, see pages 465,523-527

(1) Suitable boring heads
(2) Cutting diameter minimum
(3) Cutting diameter maximum (4) Master insert identification

For inserts, see pages: CCET-WF (500) • CCGT-AF (503) • CCGT-AS (502) • CCGW/CCMT (CBN) (502) • CCMT-14 (500) • CCMT-PF (500) • CCMT-WG (501) • CCMT/CCGT (501) • CCMT/CCGT-SM (499)
For holders, see page: BHR MB (464)

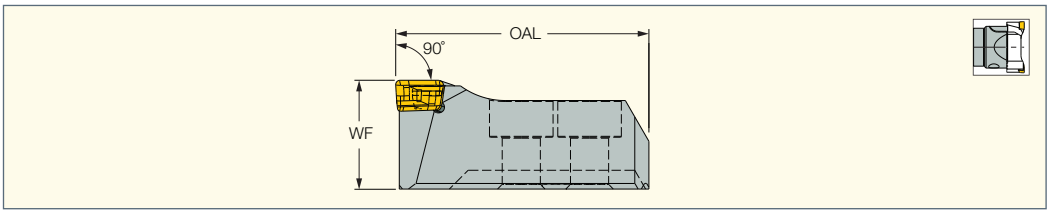
Spare Parts

Designation		
IHSR 20-24 BW	SR 14-548	T-7/5
IHSR 23.5-30BW	SR 14-548	T-7/5
IHSR 29.5-40BW	SR 14-548	T-7/5
IHSR 39-52 BW	SR 16-236	T-15/5
IHSR 51-70 BW	SR 16-212	T-20/5
IHSR 69-92 BW	SR 16-212	T-20/5
IHSR 91-122 BW	SR 16-212	T-20/5
IHSR 121-162 BW	SR 16-212	T-20/5
IHSR 161-802 BW	SR 16-212	T-20/5

ITSBORE

CR LNHT

Boring Cartridge with A Tangential Insert for BHR MB50-50X100 Boring Head



Designation	DCN(1)	DCX(2)	WF	OAL	MIID(3)
CR LNHT10 68-90-CP	68.00	90.00	23.10	53.76	HTP LN.. 1006

- For user guide, see pages 465,523-527

(1) Cutting diameter minimum
(2) Cutting diameter maximum
(3) Master insert identification

For inserts, see page: HTP LN.. 1006 (498)
For holders, see page: BHR MB (464)

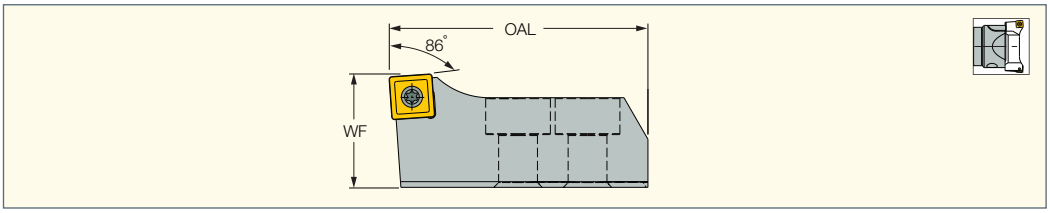
Spare Parts

Designation			
CR LNHT	SR 34-550	BLD T10/S7	SW6-SD

ITSBORE

CR SOMT

Boring Cartridge with a Square Insert for BHR MB50-50X100 Boring Head



Designation	DCN(1)	DCX(2)	WF	OAL	MIID(3)
CR SOMT09 68-90-CP	68.00	90.00	23.60	54.00	SO.T 09...

- For user guide, see pages 465,523-527

(1) Cutting diameter minimum
(2) Cutting diameter maximum
(3) Master insert identification

For inserts, see pages: SOGX/T-AL (151) • SOMT-DT (152) • SOMT-GF (151) • SOMT-HD (152)
For holders, see page: BHR MB (464)

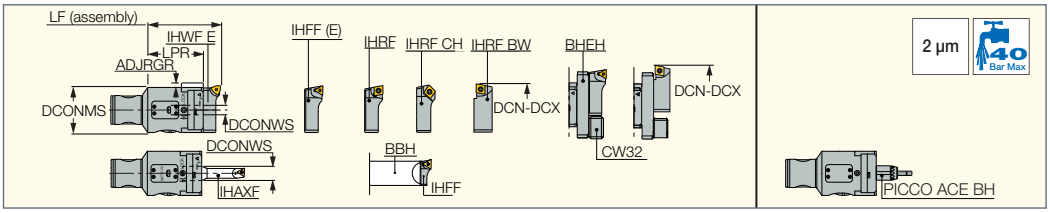
Spare Parts

Designation			
CR SOMT	SR 34-506 M3X0.5	SW4-SD	BLD T09/M7-SW4

ITSBORE

BHD MB

Fine Boring Heads with Digital 2 Mm Direct Adjustment Diametric Display



Designation	LF	DCONMS	DCN(1)	DCX(2)	LPR	ADJRGR	DCONWS	RPMX(3)	kg
BHD MB50-50-60	80.00	50.00	2.5	110.0	61.0	5.00	16.00	20000	1.10

- For user guide, see pages 473,536-540
- Note that a protruding reset button dictates the enlargement of the actual DCONMS by 2mm in each size respectively.

This is important when the tool is being used for back-boring applications where you must clear any obstacles inside the machine/workpiece.

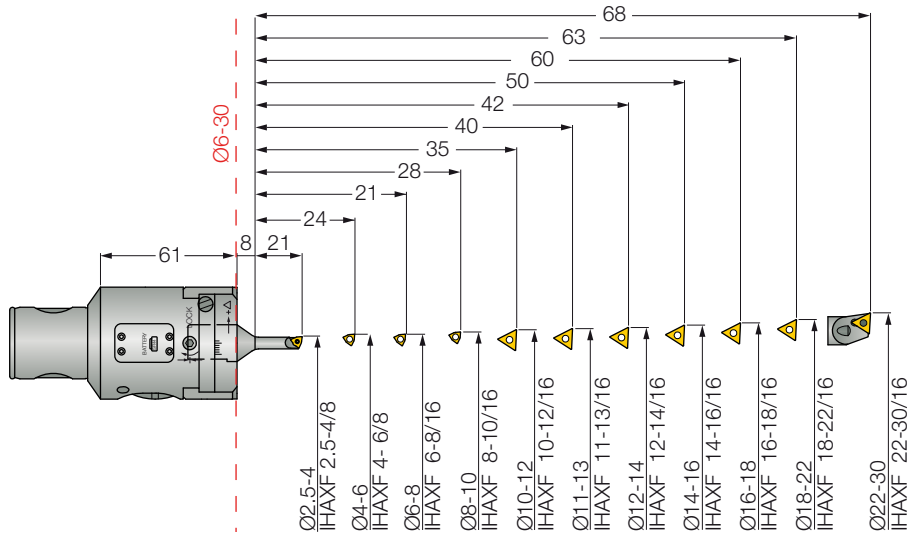
(1) Cutting diameter minimum
(2) Cutting diameter maximum
(3) Maximum RPM

For tools, see pages: IHAXF (485) • IHAXF-AVI (486) • IHAXF-E (487) • IHFF (488) • IHRF (489) • IHRF-BW (489) • IHRF-CH (490)

Fine Boring Head Range 2 µm Direct Diametric Adjustment

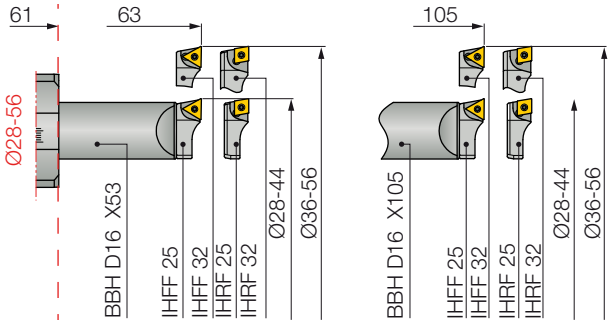
BHD MB50-50X60 ø2.5-110

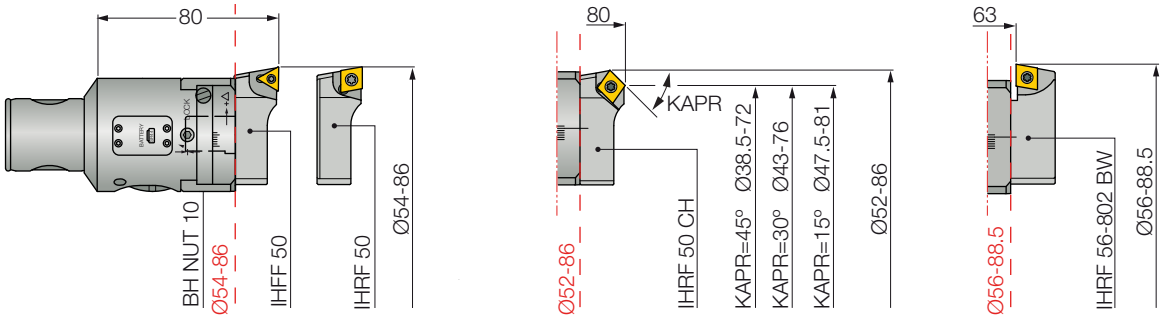
2 µm

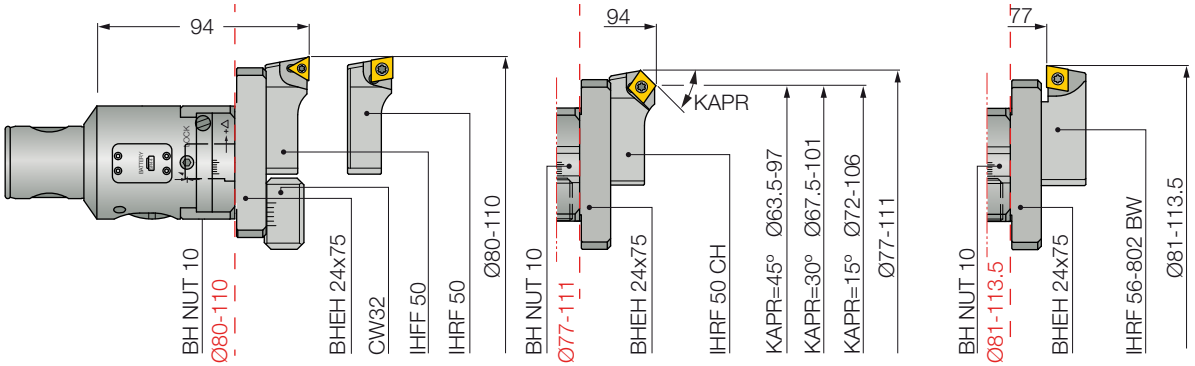


SLEEVE D8-D16

REQUIRED FOR IHAXF.../8



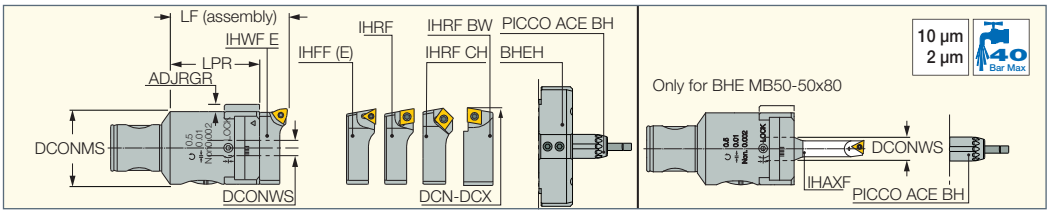




ITSBORE

BHE MB

Fine Boring Heads with the MB Connection, 10 Mm Direct Diametric Adjustment and 2 Mm by a Vernier Scale



Designation	DCONMS	LF	DCN(1)	DCX(2)	LPR	ADJRGR	DCONWS	RPMX(3)	kg
BHE MB16-16-34	16.00	34.00	18.0	24.0	26.0	2.00	-	12000	0.08
BHE MB20-20-40	20.00	40.00	22.0	30.0	31.5	3.00	-	12000	0.13
BHE MB25-25-50	25.00	50.00	28.0	40.0	40.0	3.00	-	10000	0.20
BHE MB32-32-63	32.00	63.00	35.0	53.0	51.5	4.00	-	10000	0.42
BHE MB40-40-80	40.00	80.00	48.0	66.0	66.0	5.00	-	8000	0.79
BHE MB50-50-80	50.00	80.00	2.5	110.0	61.0	5.00	16.00	8000	1.04
BHE MB63-63-89	63.00	89.00	6.0	125.0	69.5	10.00	-	6000	2.14
BHE MB80-80-104	80.00	104.00	6.0	200.0	84.5	12.00	-	5000	3.85

• For boring options, see pages 452,475-478 • For spare parts, see page 518

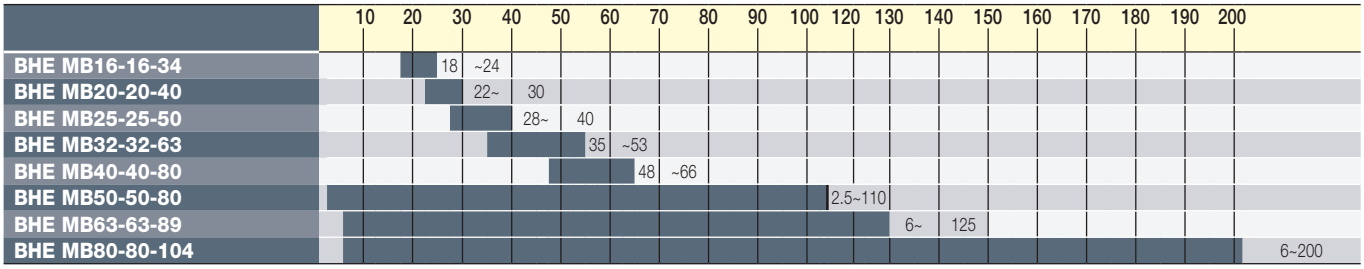
(1) Cutting diameter minimum

(2) Cutting diameter maximum

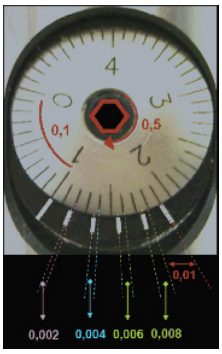
(3) Maximum RPM

For tools, see pages: IHAXF (485) • IHAXF-AVI (486) • IHAXF-E (487) • IHFF (488) • IHRF (489) • IHRF-BW (489) • IHRF-CH (490)

Boring Head Diameter Range

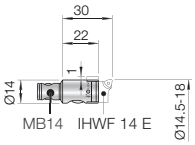
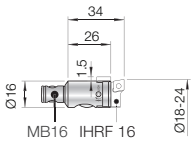
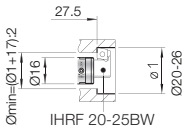
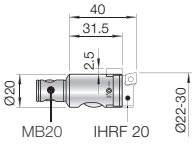
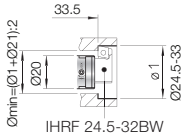
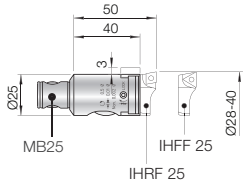
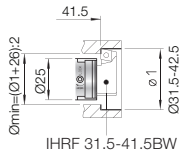
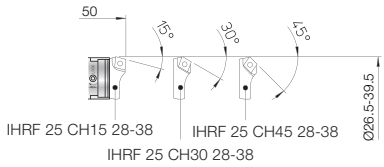
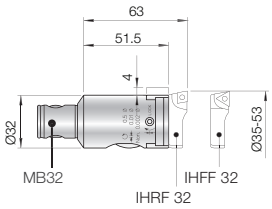
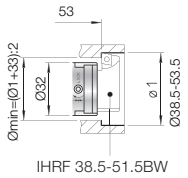
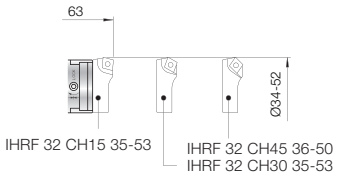
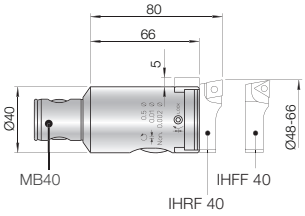
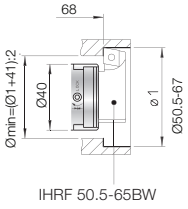
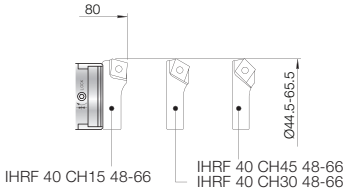


BHE MB50-50-80



Graduated dial of 0.01 mm with circular vernier of 0.002 mm

BHE MB - Additional Information

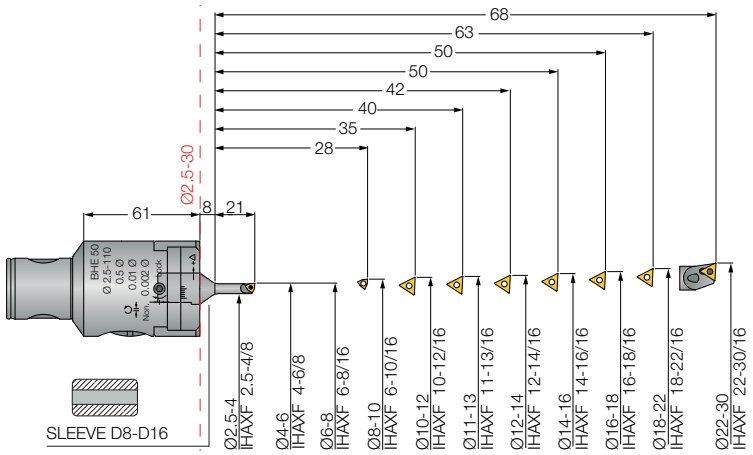
BHE MB14-14-30 **Ø14.5 ~ 18**			
BHE MB16-16-34 **Ø18 ~ 24**			
BHE MB20-20-40 **Ø22 ~ 30**			
BHE MB25-25-50 **Ø28 ~ 40**			
BHE MB32-32-63 **Ø35 ~ 53**			
BHE MB40-40-80 **Ø48 ~ 66**			

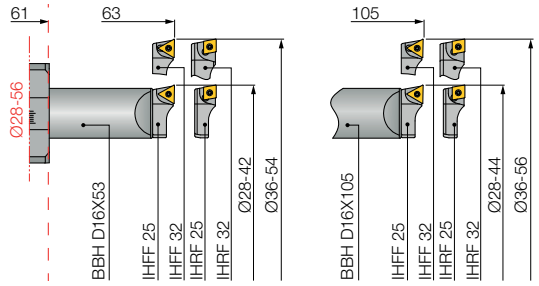
Fine Boring Head Range

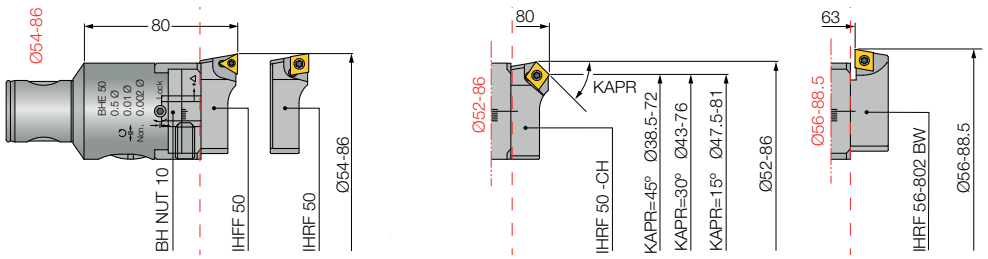
10 µm Direct Diametric Adjustment and 2 µm by a Vernier Scale

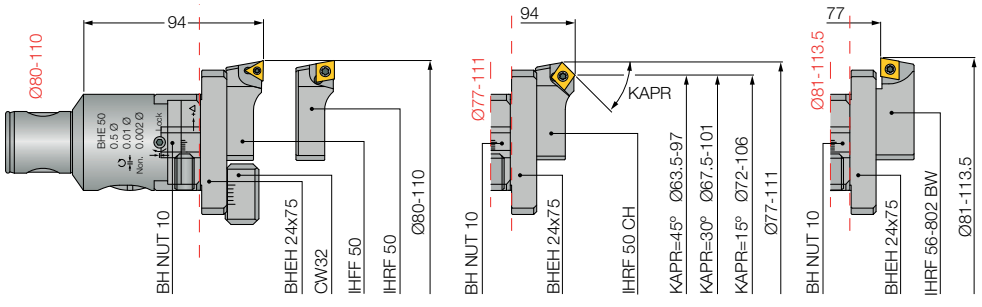
BHE MB50-50x80 ø2.5-113.5

2 µm
10 µm







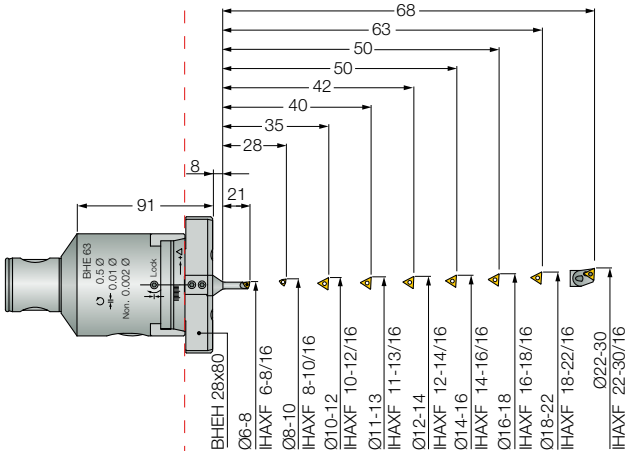


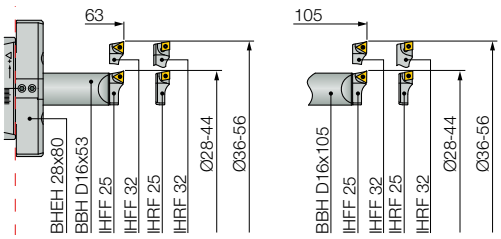
Fine Boring Head Range

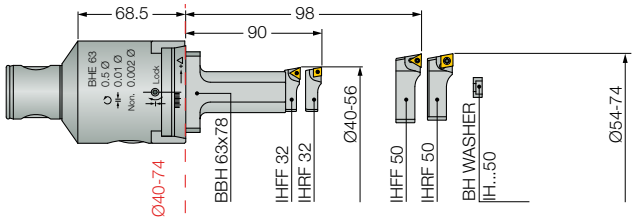
10 µm Direct Diametric Adjustment and 2 µm by a Vernier Scale

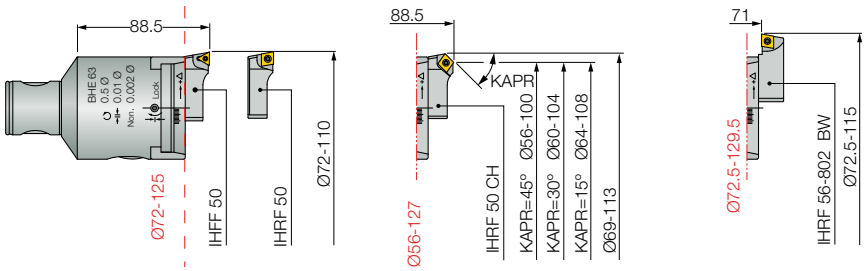
BHE MB63-63x89 ø6-129.5

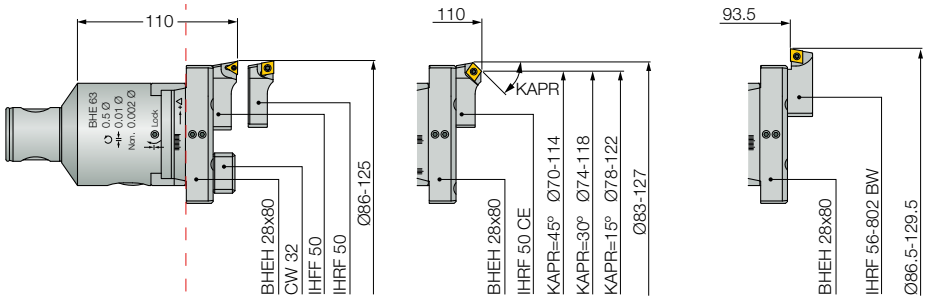
2 µm
10 µm









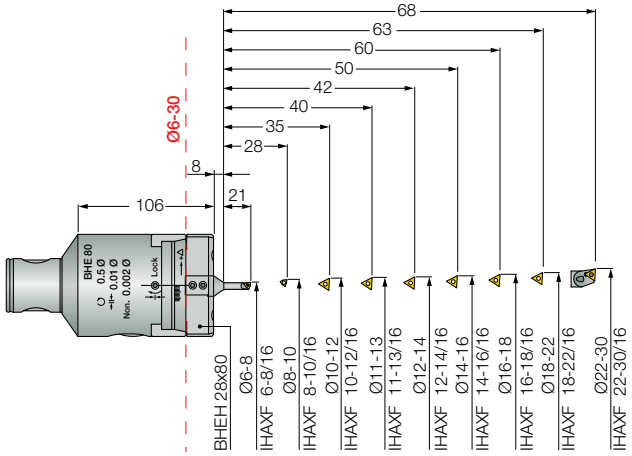


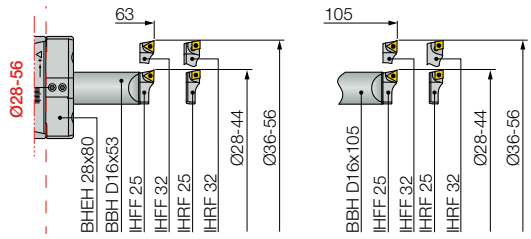
Fine Boring Head Range

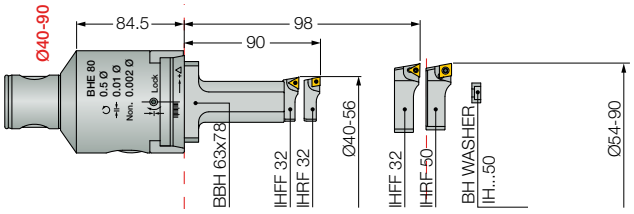
10 µm Direct Diametric Adjustment and 2 µm by a Vernier Scale

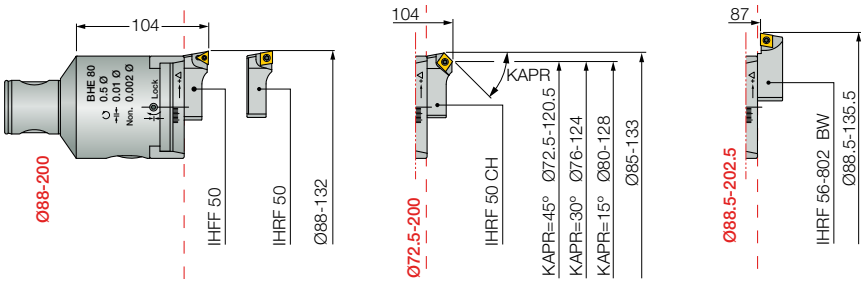
BHE MB80-80x104 ø6-202.5

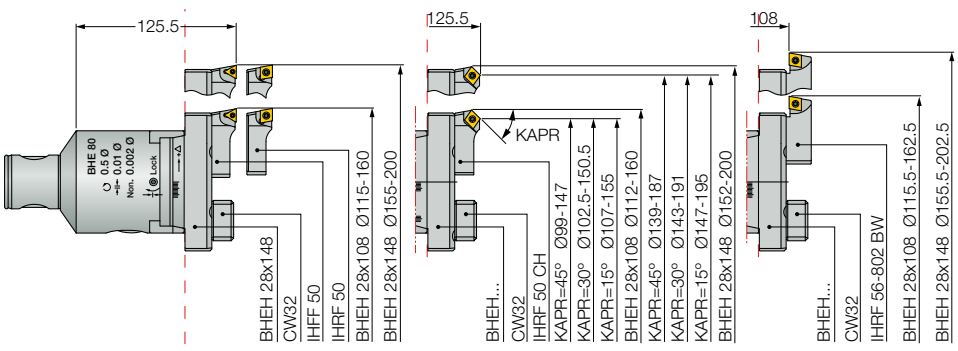
2 µm
10 µm







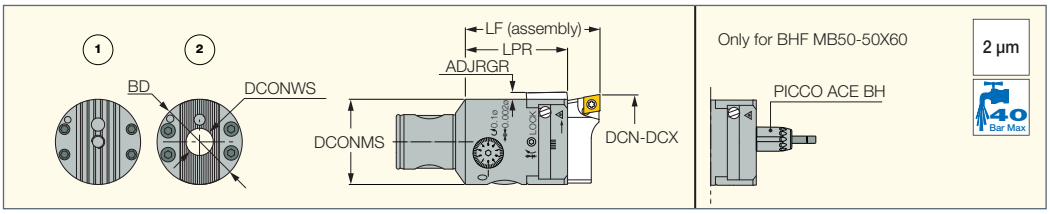




ITSBORE

BHF MB16-MB50
Dia. 2.5-108

Fine Boring Heads with a 2 Mm Direct Diametric Adjustment for a Diameter Range of 2.5 Up to 108mm



Designation	DCONMS	BD	LF	LPR	ADJRGR	DCN(1)	DCX(2)	DCONWS	Fig.	IH	RPMX(3)	kg		
BHF MB16-16X34 RV	16.00	16.00	34.0	26.00	1.00	18.0	23.0	-	1.	IH.. 16..	12000	0.09	BH LOCK NUT 14/16	BH LOCK SR 14/16
BHF MB20-20X40 RV	20.00	20.00	40.0	32.60	2.00	22.0	29.0	-	1.	IH.. 20..	12000	0.14	BH LOCK NUT 20	BH LOCK SR 20
BHF MB25-25X50	25.00	25.00	50.0	40.00	2.00	28.0	38.0	-	1.	IH.. 25..	10000	0.21	BH LOCK NUT 25	BH LOCK SR 25
BHF MB32-32X63	32.00	32.00	63.0	51.50	3.00	35.5	50.0	-	1.	IH.. 32..	10000	0.43	BH LOCK NUT 32	BH LOCK SR 32
BHF MB40-40X80	40.00	40.00	80.0	66.00	4.00	48.0	63.0	-	1.	IH.. 40..	8000	0.79	BH LOCK NUT 40	BH LOCK SR 40
BHF MB50-50X60	50.00	50.00	79.0	60.00	4.00	2.5	108.0	16.00	2.	IH.. 50..	8000	1.09	BH NUT 10	BH LOCK SR 50

• For user guide, see pages 480-481 • For spare parts, see page 517

(1) Cutting diameter minimum

(2) Cutting diameter maximum

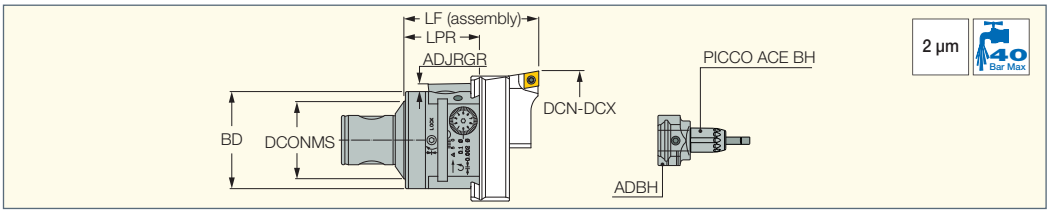
(3) Maximum RPM

For tools, see pages: IHAXF (485) • IHAXF-AVI (486) • IHAXF-E (487) • IHFF (488) • IHRF (489) • IHRF-BW (489) • IHRF-CH (490)

ITSBORE

BHF MB50-MB80
Dia. 2.5-500

Fine Boring Heads with a 2 Mm Direct Diametric Adjustment for a Diameter Range of 2.5 Up to 500mm



Designation	DCONMS	BD	LF	DCN(4)	DCX(5)	LPR	ADJRGR	RPMX(6)	kg
BHF MB50-63X87 (1)	50.00	63.00	87.0	2.5	125.0	49.00	5.00	8000	1.28
BHF MB50-80X94 (2)	50.00	80.00	94.0	2.5	160.0	58.00	5.00	8000	2.22
BHF MB63-63X87 (1)	63.00	63.00	87.0	2.5	125.0	49.00	5.00	6000	1.57
BHF MB80-80X94 (2)	80.00	80.00	94.0	2.5	220.0	58.00	5.00	5000	2.63
BHF MB80-125X114 (3)	80.00	125.00	114.0	135.0	500.0	63.00	5.00	4000	5.72

• For user guide, see pages 482-484,531-536 • For spare parts, see page 517

(1) Use with slide BHFH 30X75 or BHFH 30X93.

(2) Use with slide BHFH 30X93 or BHFH 30X135.

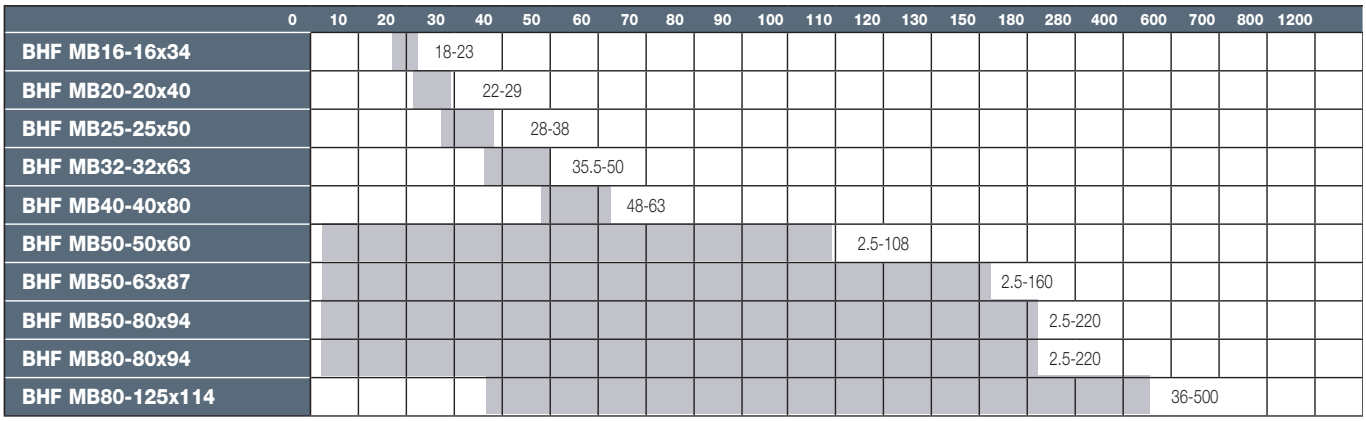
(3) Use with slide BHFH 40X133, BHFH 40X200, BHFH 40X300 and BHFH 40X400.

(4) Cutting diameter minimum

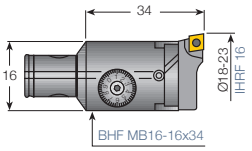
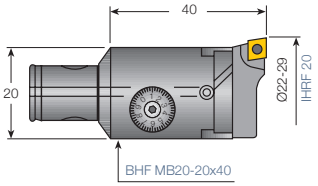
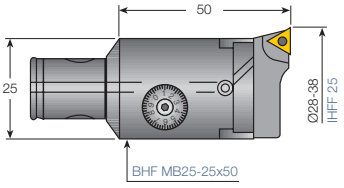
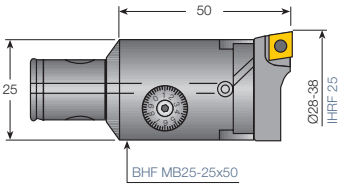
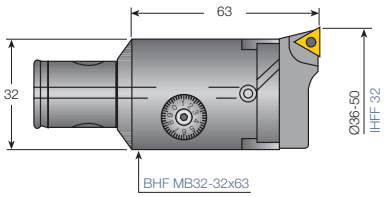
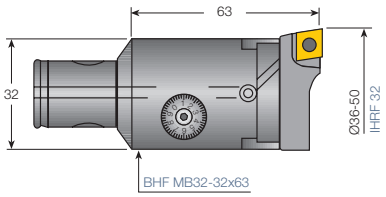
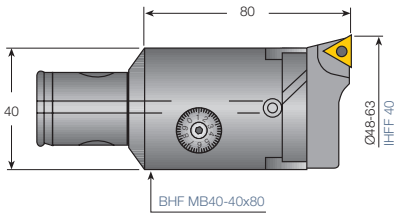
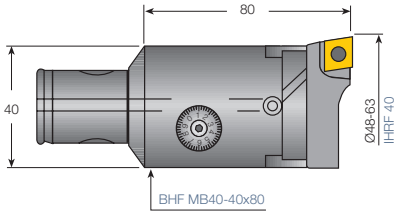
(5) Cutting diameter maximum

(6) Maximum RPM

Fine Boring Head Diameter Range



BHF Fine Boring Heads high precision machining to a close tolerance with high surface quality.
These heads enable a fine diametric adjustment as small as 2 µm with a direct reading.

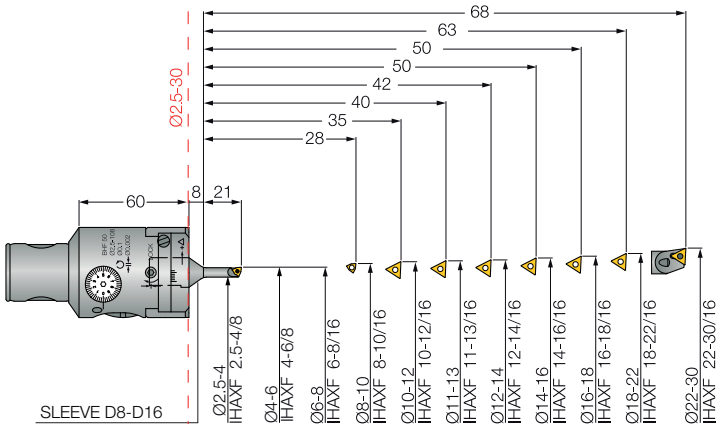
BHF MB16-MB40 Diameter Range: 18-63	
Ø18-23 **BHF MB16-16X34 RV**	
Ø22-29 **BHF MB20-20X40 RV**	
Ø28-38 **BHF MB25-25x50**	 
BHF MB16-MB40 Diameter Range: 18-63	
Ø36-50 **BHF MB32-32x63**	 
Ø48-63 **BHF MB40-40x80**	 

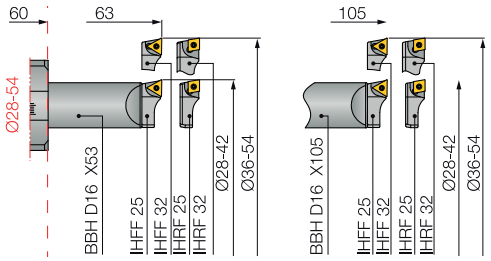
Fine Boring Head Range

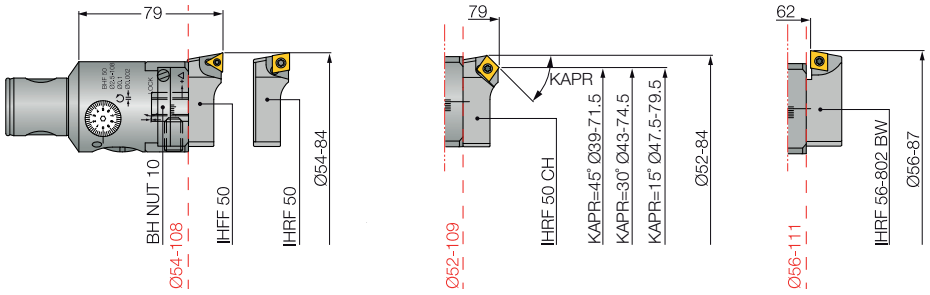
2 µm Direct Diametric Adjustment

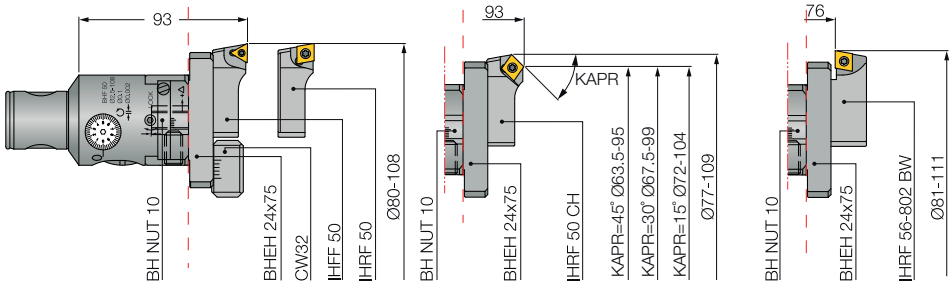
BHF MB50-50x60 ø2.5-108

2 µm









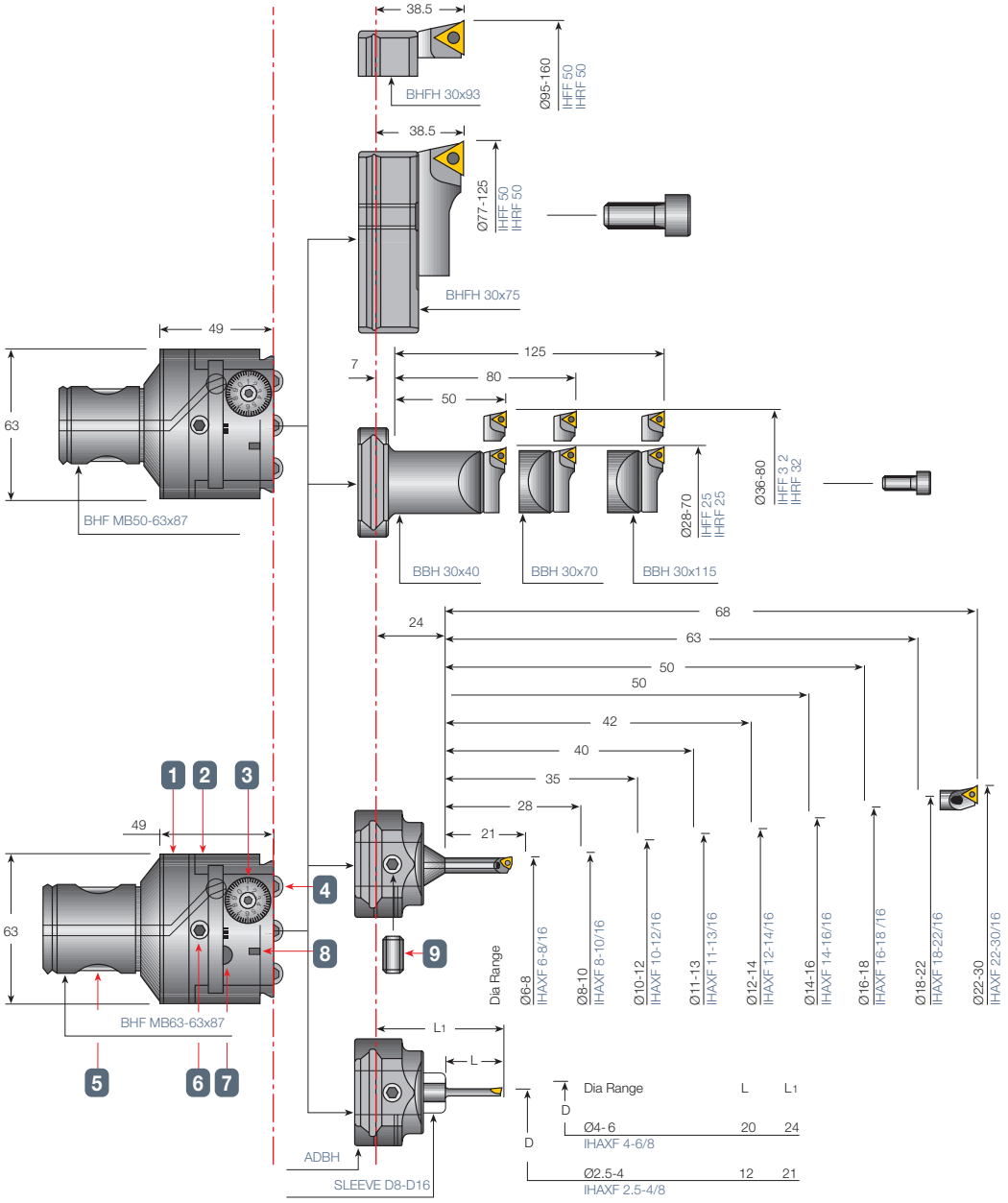
See pages 534-535

Fine Boring Head Range

2 µm Direct Diametric Adjustment

BHF MB50-63x87 ø2.5-160
BHF MB63-63x87 ø2.5-160

2 µm



1. Body
2. Tool Slide
3. Graduated Dial
4. Toolholder Locking Screw
5. Expanding Pin
6. Slide Locking Screw
7. Coolant Nozzle
8. Oiling Nipple
9. Toolholder Locking Screw

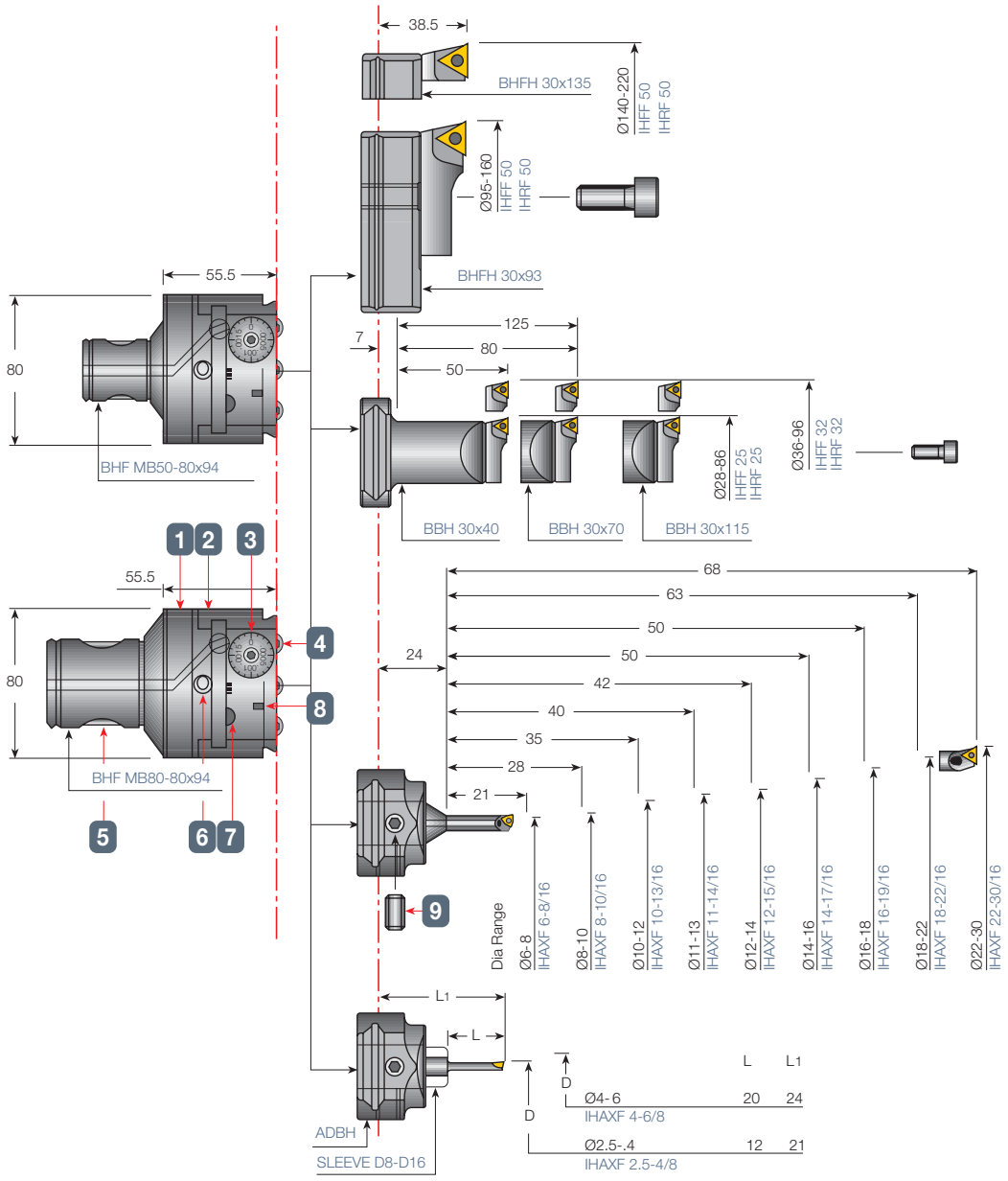
See pages 534-535

Fine Boring Head Range

2 µm Direct Diametric Adjustment

BHF MB50-80x94 ø2.5-220
BHF MB80-80x94 ø2.5-220

2 µm



1. Body
2. Tool Slide
3. Graduated Dial
4. Toolholder Locking Screw
5. Expanding Pin
6. Slide Locking Screw
7. Coolant Nozzle
8. Oiling Nipple
9. Toolholder Locking Screw

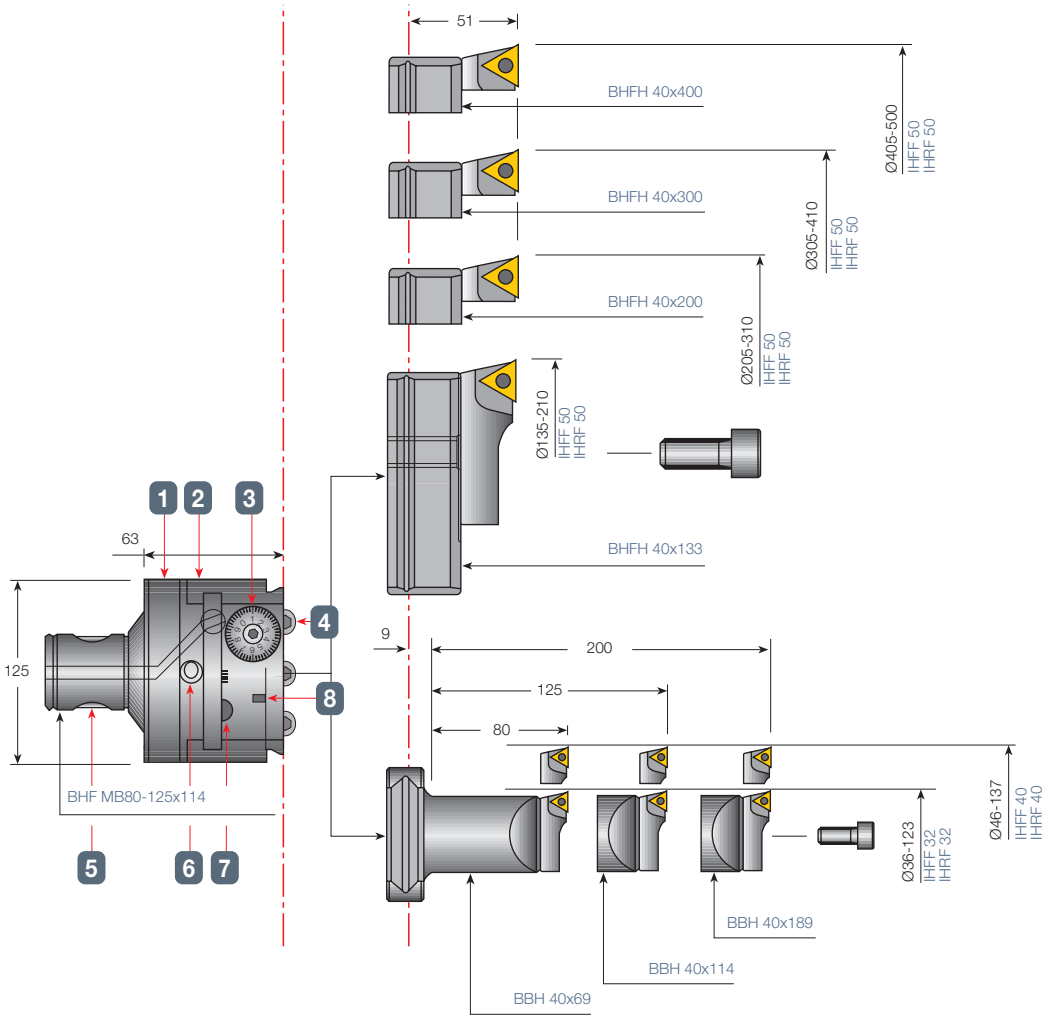
See pages 534-535

Fine Boring Head Range

2 µm Direct Diametric Adjustment

BHF MB80-125x114 ø36-500

2 µm



1. Body
2. Tool Slide
3. Graduated Dial
4. Toolholder Locking Screw
5. Expanding Pin
6. Slide Locking Screw
7. Coolant Nozzle
8. Oiling Nipple

See pages 534-535

ITSBORE

IHAXF

Brazed and Indexable Boring Bars for the MB Modular Boring System

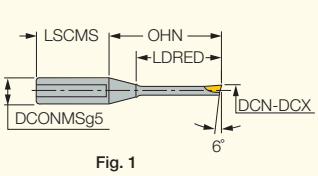


Fig. 1

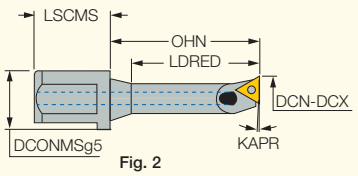


Fig. 2

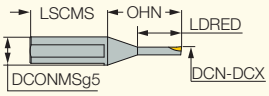


Fig. 3

Designation	DCN(2)	DCX(3)	LDRED	OHN(4)	LSCMS	DCONMS(5)	Fig.	KAPR(6)	MIID(7)	CSP(8)		
IHAXF 2.5-4/8 (1)	2.50	4.00	12.5	21.00	22.00	8.00	1.	3.0	SOLID	0		
IHAXF 4- 6/8 (1)	4.00	6.00	20.0	24.00	24.00	8.00	1.	3.0	SOLID	0		
IHAXF 6- 8/16	6.00	8.00	21.0	29.00	22.00	16.00	2.	3.0	WCGT 0201...	1	SR 14-299	T-6/5
IHAXF 6- 8/8	6.00	8.00	21.0	23.00	16.00	8.00	3.	5.0		1	SR 14-299	T-6/5
IHAXF 8-10/16	8.00	10.00	28.0	36.00	22.00	16.00	2.	3.0	WCGT 0201...	1	SR 14-299	T-6/5
IHAXF 8-10/8	8.00	10.00	-	28.00	16.00	8.00	3.	5.0	WCGT 0201...	1	SR 14-299	T-6/5
IHAXF 10-12/16	10.00	12.00	35.0	43.00	22.00	16.00	2.	3.0	TPGX 0902...	1	SR 14-298	T-8/5
IHAXF 10-12/8	10.00	12.00	-	36.00	16.00	8.00	3.	5.0	TPGX 0902...	1	SR 14-298	T-8/5
IHAXF 11-13/16	11.00	13.00	40.0	48.00	22.00	16.00	2.	3.0	TPGX 0902...	1	SR 14-298	T-8/5
IHAXF 12-14/16	12.00	14.00	42.0	48.00	22.00	16.00	2.	3.0	TPGX 0902...	1	SR 14-298	T-8/5
IHAXF 14-16/16	14.00	16.00	50.0	52.00	22.00	16.00	2.	3.0	TPGX 0902...	1	SR 14-298	T-8/5
IHAXF 16-18/16	16.00	18.00	50.0	58.00	22.00	16.00	2.	3.0	TPGX 0902...	1	SR 14-298	T-8/5
IHAXF 18-22/16	18.00	22.00	-	63.00	22.00	16.00	2.	3.0	TPGX 0902...	1	SR 14-298	T-8/5
IHAXF 22-30/16	22.00	30.00	-	68.00	22.00	16.00	2.	3.0	TPGX 0902...	1	SR 14-298	T-8/5

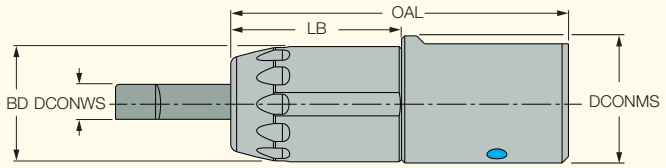
(1) Brazed tool
(2) Cutting diameter minimum
(3) Cutting diameter maximum
(4) Minimum overhang
(5) For DCONMS=8mm, 16mm O.D. sleeves should be used
(6) Tool cutting edge angle
(7) Master insert identification
(8) 0 - Without coolant supply, 1 - With coolant supply

For inserts, see pages: TPGX (508) • WCGT (507)
For holders, see pages: ADBH (488) • BHD MB (472) • BHE MB (474) • BHF MB16-MB50 Dia. 2.5-108 (479) • SLEEVE (486)

PICCOACE

PICCO ACE-BH

Holders with Short Shanks for ITS BORE System Tools on Which PICCO Inserts Are Mounted



Designation	DCONMS	DCONWS	BD	OAL	LB	
PICCO ACE-BH 16-4	16.00	4.00	14.50	42.50	21.50	WRENCH ACE 4-5
PICCO ACE-BH 16-5	16.00	5.00	14.50	42.50	21.50	WRENCH ACE 4-5
PICCO ACE-BH 16-6	16.00	6.00	19.90	43.50	21.50	WRENCH ACE 6-7
PICCO ACE-BH 16-7	16.00	7.00	19.90	43.50	21.50	WRENCH ACE 6-7

- Holders are suitable for right- and left-hand PICCO inserts

The PICCO-ACE-BH Holders Can Carry a Wide Range of PICCOCUT & PICCOJET Insert Geometries

PICCO 050

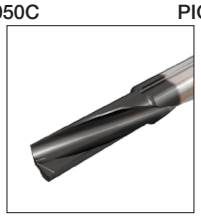
PICCO 050C

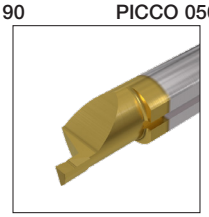
PICJ 90

PICCO 050 IB55 (CBN)

PICJ CH

PICJ 45


PICCO MF

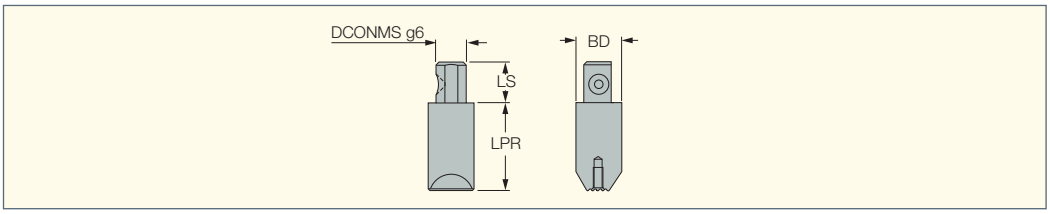

PICCO 010

PICCO 020

ITSBORE

BBH D16

Extension Slides for MB
Modular Fine Boring Holders



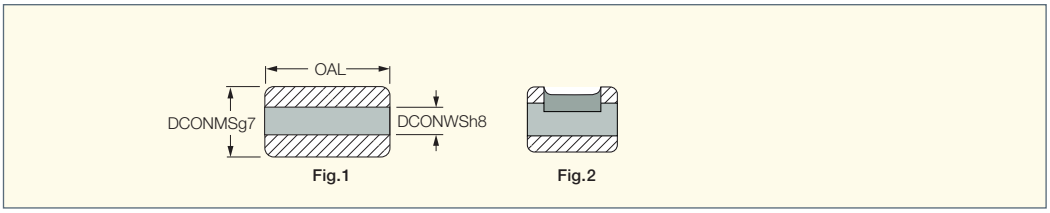
Designation	DCONMS	LPR	BD	LS	kg
BBH D16-53	16.00	53.00	25.00	21.50	0.50
BBH D16-105	16.00	95.00	25.00	21.50	0.80

For tools, see pages: IHFF (488) • IHRF (489)

ITSBORE

SLEEVE

Reduction Sleeves for
Boring Bars on the MB
Modular Boring System



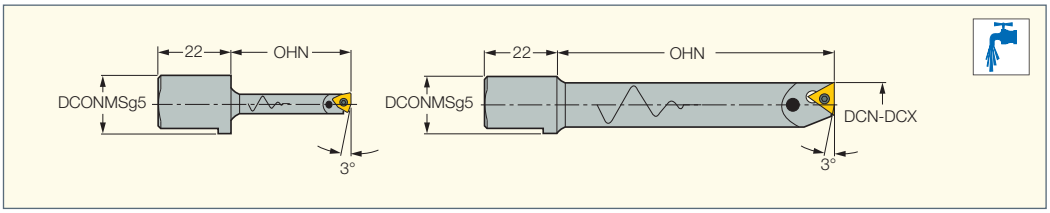
Designation	DCONMS	DCONWS	OAL	Fig.
SLEEVE D 8-D16	16.00	8.00	23.00	2.

For tools, see pages: IHAXF (485)

ITSBORE

IHAXF-AVI

Heavy Metal Vibration
Damping Boring Bars



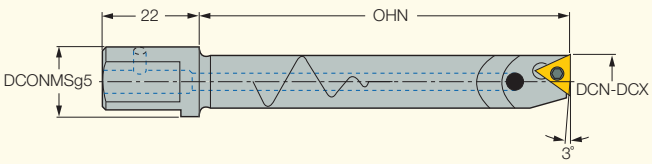
Designation	DCN(1)	DCX(2)	OHN(3)	DCONMS	MIID(4)		
IHAXF 6- 8-AVI	6.00	8.00	36.0	16.00	WCGT 0201...	SR 14-299	T-6/5
IHAXF 8-10-AVI	8.00	10.00	48.0	16.00	WCGT 0201...	SR 14-299	T-6/5
IHAXF 10-12-AVI	10.00	12.00	60.0	16.00	TPGX 0902...	SR 14-298	T-8/5
IHAXF 12-14-AVI	12.00	14.00	72.0	16.00	TPGX 0902...	SR 14-298	T-8/5
IHAXF 14-16-AVI	14.00	16.00	84.0	16.00	TPGX 0902...	SR 14-298	T-8/5
IHAXF 16-18-AVI	16.00	18.00	96.0	16.00	TPGX 0902...	SR 14-298	T-8/5

• Note: Not recommended to be used on balanceable BHF-BL fine boring heads.
(1) Cutting diameter minimum
(2) Cutting diameter maximum
(3) Minimum overhang (4) Master insert identification

For inserts, see pages: TPGX (508) • WCGT (507)
For holders, see pages: ADBH (488) • BHD MB (472) • BHE MB (474) • BHF MB16-MB50 Dia. 2.5-108 (479)

ITSBORE

IHAXF-E
Carbide Vibration
Dampening Boring Bars



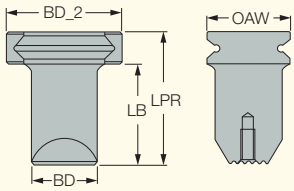
Designation	DCN(1)	DCX(2)	OHN(3)	DCONMS	MIID(4)		
IHAXF 6- 8-E	6.00	8.00	45.0	16.00	WCGT 0201...	SR 14-299	T-6/5
IHAXF 8-10-E	8.00	10.00	60.0	16.00	WCGT 0201...	SR 14-299	T-6/5
IHAXF 10-12-E	10.00	12.00	75.0	16.00	TPGX 0902...	SR 14-298	T-8/5
IHAXF 12-14-E	12.00	14.00	90.0	16.00	TPGX 0902...	SR 14-298	T-8/5
IHAXF 14-16-E	14.00	16.00	105.0	16.00	TPGX 0902...	SR 14-298	T-8/5
IHAXF 16-18-E	16.00	18.00	120.0	16.00	TPGX 0902...	SR 14-298	T-8/5

• Note: Not recommended to be used on balanceable BHF-BL fine boring heads.
(1) Cutting diameter minimum
(2) Cutting diameter maximum
(3) Minimum overhang (4) Master insert identification

For inserts, see pages: TPGX (508) • WCGT (507)
For holders, see pages: ADBH (488) • BHD MB (472) • BHE MB (474) • BHF MB16-MB50 Dia. 2.5-108 (479)

ITSBORE

BBH 30/40
Extension Slides for MB
Modular Fine Boring Holders

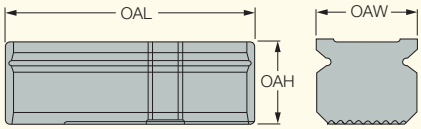


Designation	OAW	LB	BD	LPR	BD_2	kg
BBH 30X40	30.5	40.0	25.00	52.50	43.00	0.27
BBH 30X70	30.5	70.0	25.00	82.50	43.00	0.39
BBH 30X115	30.5	115.0	27.00	127.50	43.00	0.64
BBH 40X69	40.0	69.0	32.00	86.00	56.00	0.69
BBH 40X114	40.0	114.0	32.00	131.00	56.00	0.98
BBH 40X189	40.0	189.0	38.00	206.00	56.00	1.94

For tools, see pages: IHFF (488) • IHRF (489)

ITSBORE

BHFH
Counter Weight Slides for MB
Modular Fine Boring Holders

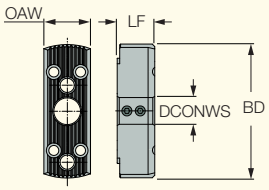


Designation	OAW	OAL	OAH	kg	
BHFH 30X75	30.5	75.00	24.50	0.44	SR M10X25 DIN912
BHFH 30X93	30.5	93.00	24.50	0.54	
BHFH 30X135	30.5	135.00	25.00	0.76	SR M10X25 DIN912
BHFH 40X133	40.0	133.00	40.00	1.52	SR M10X25 DIN912
BHFH 40X200	40.0	200.00	40.00	2.30	
BHFH 40X300	40.0	300.00	40.00	3.47	SR M10X25 DIN912
BHFH 40X400	40.0	400.00	40.00	4.56	SR M10X25 DIN912

For tools, see pages: IHFF (488) • IHRF (489) • IHRF-BW (489) • IHRF-CH (490)

ITSBORE

BHEH
Slides for MB Modular BHE
Fine Boring Holders



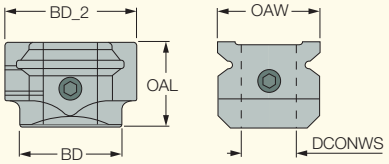
Designation	OAW	BD	LF	DCONWS	kg				
BHEH 24X75	24.0	75.00	14.50	-	0.20				
BHEH 24X100	24.0	100.00	14.50	-	0.00				
BHEH 28X80	28.0	80.00	22.50	16.00	0.35	SR M6X6 DIN913*	SR M5X25DIN912*	HW 4.0*	HW 3.0*
BHEH 28X108	28.0	108.00	22.50	-	0.51				
BHEH 28X148	28.0	148.00	22.50	-	0.71				

* Optional, to be ordered separately

For tools, see pages: IHFF (488) • IHRF (489) • IHRF-BW (489) • IHRF-CH (490)

ITSBORE

ADBH
Sleeve for MB Modular
Fine Boring Holders

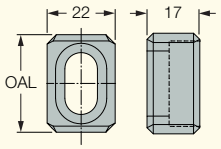


Designation	BD	DCONWS	OAL	BD_2	OAW	kg
ADBH 30XD16	30.00	16.00	25.00	39.00	30.5	0.15

For tools, see pages: IHAXF (485) • IHAXF-AVI (486) • IHAXF-E (487)

ITSBORE

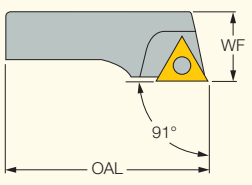
CW32
Counter Balancing Weight
Used on BHEH Slide for
Fine Boring Holders



Designation	OAL	kg
CW32	31.50	0.05

ITSBORE

IHFF
Triangular Insert Holders
for Mounting on MB
Fine Boring Heads



Designation	WF	OAL	DCN(1)	DCX(2)	MIID(3)		
IHFF 25	10.00	26.50	28.0	40.0	TPGX 0902...	SR 14-298	T-8/5
IHFF 32	11.50	34.50	35.5	51.5	TPGX 0902...	SR 14-298	T-8/5
IHFF 40	14.00	44.60	48.0	66.0	TPGX 1103...	SR-17979 M3X8	T-8/5
IHFF 50	19.00	52.00	54.0	86.0	TPGX 1103...	SR-17979 M3X8	T-8/5

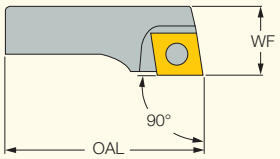
(1) Cutting diameter minimum
(2) Cutting diameter maximum
(3) Master insert identification

For inserts, see pages: TPGX (508)
For holders, see pages: BBH 30/40 (487) • BBH D16 (486) • BHD MB (472) • BHE MB (474) • BHEH (488) • BHF MB16-MB50 Dia. 2.5-108 (479) • BHFH (487)

ITSBORE

IHRF

80° Rhombic Insert Holders for Mounting on MB Fine Boring Heads



Designation	WF	OAL	DCN(1)	DCX(2)	MIID(3)		
IHRF 16	8.00	17.00	18.0	24.0	CCGT 0602...	SR 14-548	T-7/5
IHRF 20	8.50	21.00	22.0	30.0	CCGT 0602...	SR 14-548	T-7/5
IHRF 25	10.00	26.50	28.0	40.0	CCGT 0602...	SR 14-548	T-7/5
IHRF 32	11.50	34.50	35.0	53.0	CCGT 0602...	SR 14-548	T-7/5
IHRF 40	14.00	44.00	48.0	66.0	CCGT 09T3...	SR 16-236	T-15/5
IHRF 50	19.00	52.00	54.0	86.0	CCGT 09T3...	SR 16-236	T-15/5

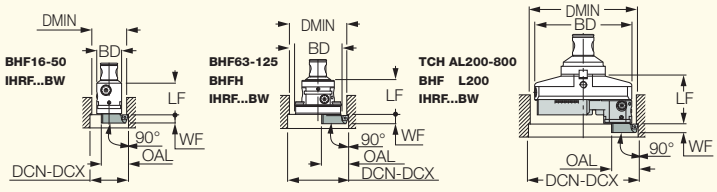
(1) Cutting diameter minimum
(2) Cutting diameter maximum
(3) Master insert identification

For inserts, see pages: CCET-WF (500) • CCGT-AF (503) • CCGT-AS (502) • CCGW/CCMT (CBN) (502) • CCMT-14 (500) • CCMT-PF (500) • CCMT-WG (501) • CCMT/CCGT (501) • CCMT/CCGT-SM (499)
For holders, see pages: BBH 30/40 (487) • BBH D16 (486) • BHD MB (472) • BHE MB (474) • BHEH (488) • BHF MB16-MB50 Dia. 2.5-108 (479) • BHFH (487)

ITSBORE

IHRF-BW

Back Face Turning Toolholders for BHF Fine Boring Heads



Designation	SS (1)	BD	DCN(2)	LF	DCX(3)	WF	OAL	Insert
IHRF 20-25BW	BHF MB16-16x34	16	20	27.5	25	8	18	CCMT 0602...
IHRF 24.5-32BW	BHF MB20-20x40	20	24.5	33.5	32	8.5	22.5	CCMT 0602...
IHRF 31.5-41.5BW	BHF MB25-25x50	25	31.5	41.5	40.5	9.5	28.5	CCMT 0602...
IHRF 38.5-51.5BW	BHF MB32-32x63	32	38.5	53	51.5	11	35.5	CCMT 0602...
IHRF 50.5-65BW	BHF MB40-40X80	40	50.5	68	65	13.5	46	CCMT 09T3...
IHRF 56-802BW	BHF MB50-50X60	50	56	62	87	17.5	53	CCMT 09T3...
	BHF MB63-63X87+BHFH...	75-93	82	70.5	127	17.5	53	CCMT 09T3...
	BHF MB80-80X94+BHFH...	93-135	100	79.5	162	17.5	53	CCMT 09T3...
	BHF MB80-125X114+BHFH...	133-400	140	98	502	17.5	53	CCMT 09T3...

• DMIM=(min bore diameter)=(DCN+BD+1)/2 • BD=Size of the boring head being used
(1) Master insert identification
(2) Cutting diameter minimum
(3) Cutting diameter maximum

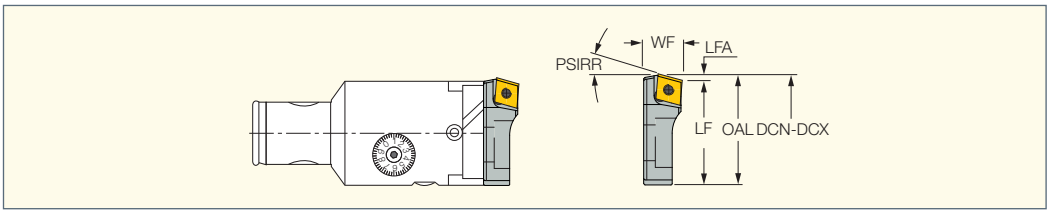
For inserts, see pages: • CCGT-AS (502) • CCGW/CCMT (CBN) (502) • CCMT-14 (500) • CCMT-PF (500) • CCMT-WG (501) • CCMT/CCGT (501) • CCMT/CCGT-SM (499)
For holders, see pages: BHD MB (472) • BHE MB (474) • BHEH (488) • BHF MB16-MB50 Dia. 2.5-108 (479) • BHFH (487)

Spare Parts

Designation		
IHRF-BW	SR 16-236	T-15/5

ITSBORE

IHRF-CH
Chamfering Tools for BHF Boring Heads



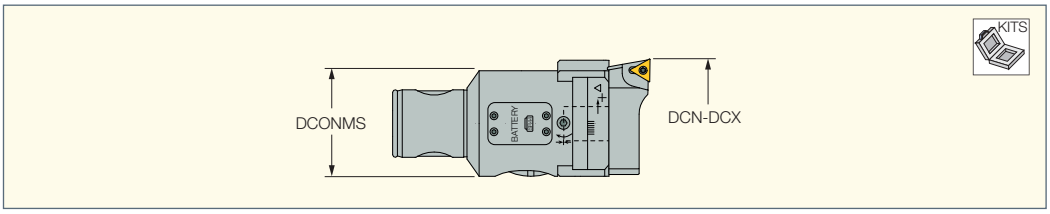
Designation	DCN(1)	DCX(2)	LF	OAL	WF	LFA	PSIRR	MIID(3)
IHRF 20 CH15 22-29	22.00	29.00	22.30	24.00	11.00	1.70	15.0	CCGT 0602...
IHRF 20 CH30 22-29	22.00	29.00	20.80	24.00	9.00	3.20	30.0	CCGT 0602...
IHRF 40 CH60 48-63	48.00	63.00	39.10	47.50	16.50	8.40	60.0	CCGT 09T3...
IHRF 50 CH45 54-800	54.00	800.00	44.00	50.60	19.00	6.70	45.0	CCGT 09T3...

(1) Cutting diameter minimum
(2) Cutting diameter maximum
(3) Master insert identification

For inserts, see pages: • CCGT-AS (502) • CCGW/CCMT (CBN) (502) • CCMT-14 (500) • CCMT-PF (500) • CCMT-WG (501) • CCMT/CCGT (501) • CCMT/CCGT-SM (499)
For holders, see pages: BHD MB (472) • BHE MB (474) • BHEH (488) • BHF MB16-MB50 Dia. 2.5-108 (479) • BHFH (487)

ITSBORE

KIT BHD-MB
Digital Display Fine Boring Head and Various Boring Tools and Inserts

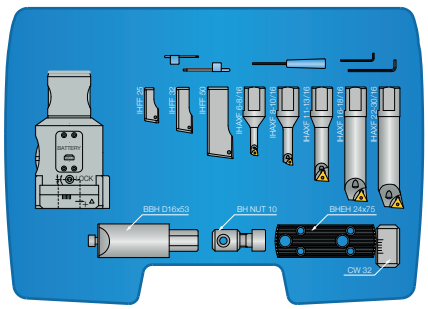


Designation	DCN(1)	DCONMS	DCX(2)
KIT BHD MB50-50 6-142	6.00	50.00	142.00

(1) Cutting diameter minimum (2) Cutting diameter maximum

Boring Kit BHD MB50-50 Metric/inch (Ø6-142mm)

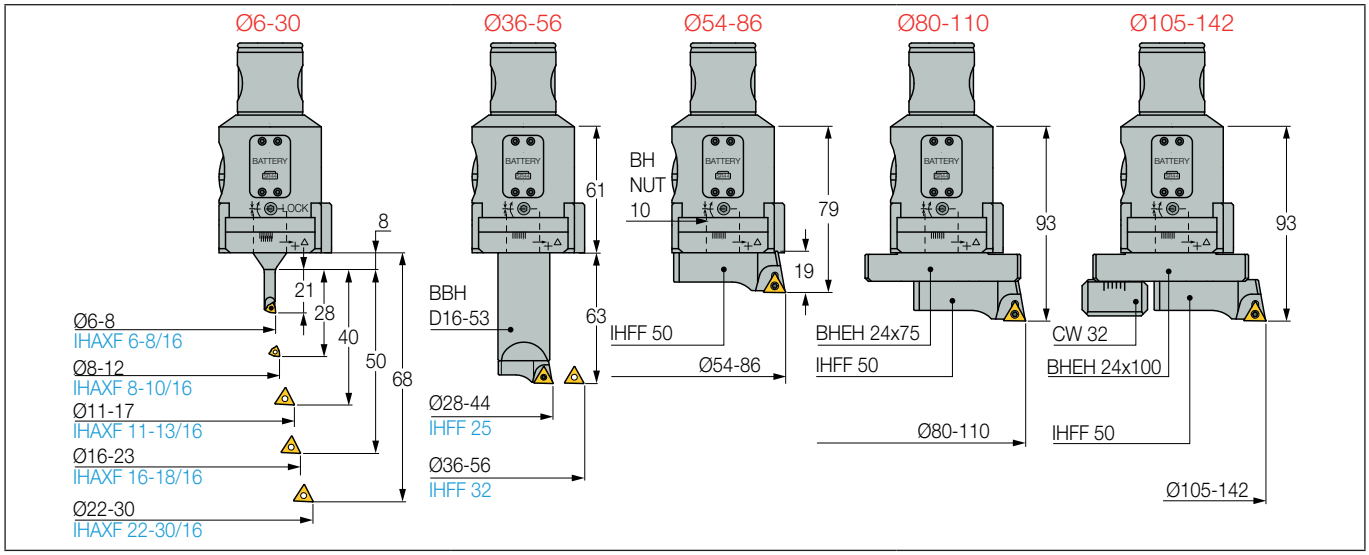
Fine Boring Head with a 2 µm Direct Diametric Adjustment Resolution and a Built-in Digital Display



2 µm

Tools	Inserts
1 BHD MB50-50x60	2 WCGT 020102L
1 IHFF 25	5 TPGX 730-L
1 IHFF 32	1 TPGX 220-L
1 IHFF 50	
1 IHAXF 6-8/16	
1 IHAXF 8-10/16	
1 IHAXF 11-13/16	
1 IHAXF 16-18/16	
1 IHAXF 22-30/16	
1 BBH D16-53	
1 BHEH 24X100	
1 BH NUT 10	
1 CW 32	

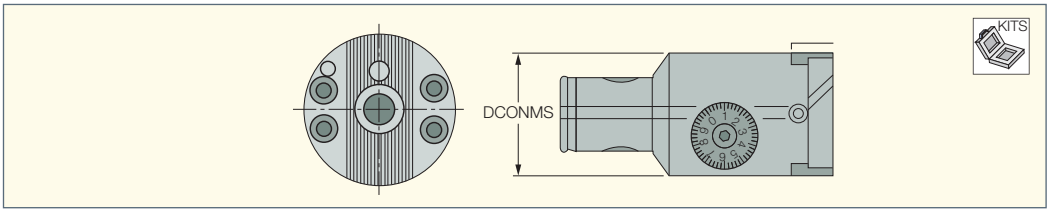
Designation	MB	Boring Range
KIT BHD MB50-50 6-142	50	6-142



ITSBORE

KIT BHF-MB

Contains a Fine Boring Head and Various Boring Tools and Inserts

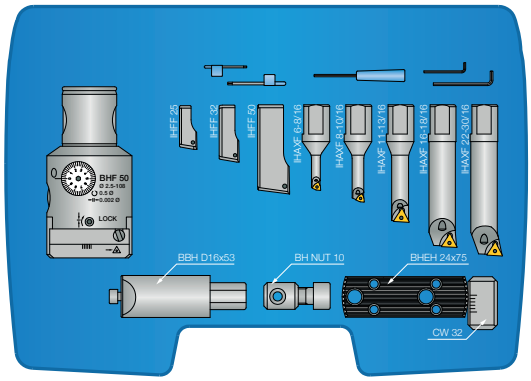


Designation	DCN(1)	DCX(2)	DCONMS	RPMX(3)
KIT BHF MB50-50 6-140	6.00	140.00	50.00	8000
KIT BHF MB50-63 6-155	6.00	155.00	50.00	8000
KIT BHF MB50-80 6-220	6.00	220.00	50.00	8000
KIT BHF MB63-63 6-155	6.00	155.00	63.00	6000
KIT BHF MB80-80 6-220	6.00	220.00	80.00	5000

(1) Cutting diameter minimum
(2) Cutting diameter maximum
(3) Maximum RPM

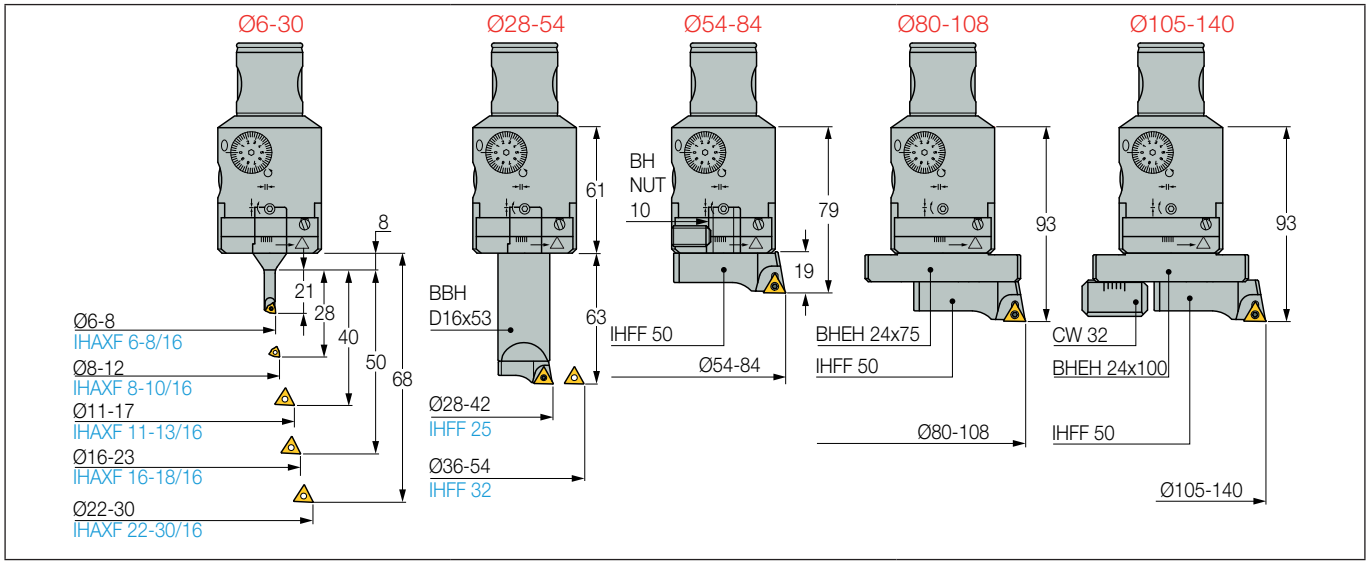
Boring KIT BHF MB50-50 6-140 (Ø6-140mm)

2 µm

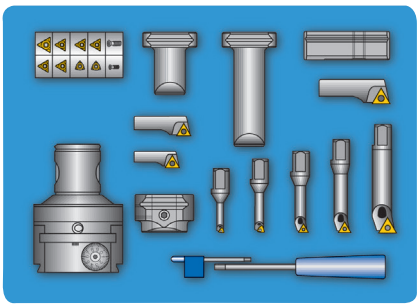


Tools	Inserts
1 BHF MB50-50x60	2 WCGT 020102L
1 IHFF 25	5 TPGX 730-L
1 IHFF 32	1 TPGX 220-L
1 IHFF 50	
1 IHAXF 6-8/16	
1 IHAXF 8-10/16	
1 IHAXF 11-13/16	
1 IHAXF 16-18/16	
1 IHAXF 22-30/16	
1 BBH D16x53	
1 BHEH 24x100	
1 BH NUT 10	
1 CW 32	

Designation	MB	Boring Range
KIT BHF MB50-50 6-140	50	6-140



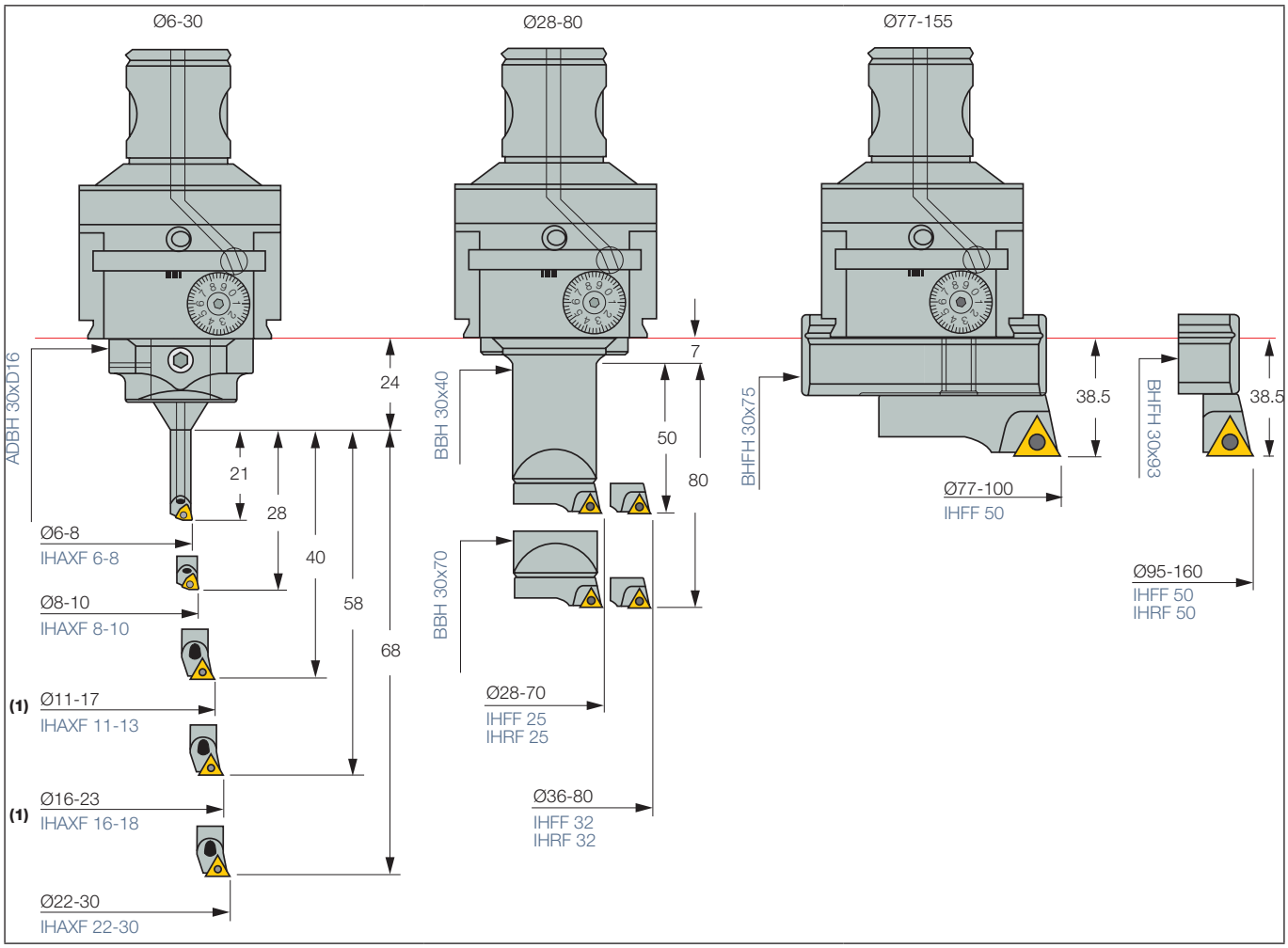
Boring KIT BHF MB50-63 6-155 / Boring KIT BHF MB63-63 6-155 (Ø6-155mm)



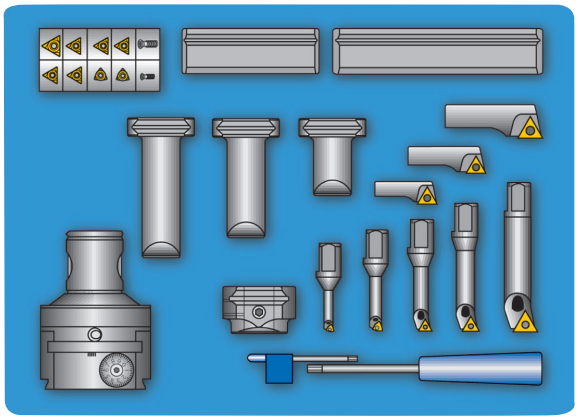
2 µm	Tools	Inserts
	1 BHF MB...-63x87	5 TPGX 090202L
	1 IHAXF 6-8/16	1 TPGX 110302L
	1 IHAXF 8-10/16	2 WCGT 020102L
	1 IHAXF 11-13/16	
	1 IHAXF 16-18/16	
	1 IHAXF 22-30/16	
	1 ADBH 30xD16	
	1 BBH 30x40	
	1 BBH 30x70	
	1 BHFH 30x93	
	1 IHFF 25	
	1 IHFF 32	
	1 IHFF 50	

Designation	MB	Boring Range
KIT BHF MB50-63 6-155	50	6-155
KIT BHF MB63-63 6-155	63	6-155

(1) The specified boring range differs from the one specified for the boring bar. The extra range is not recommended for high rotational speeds.



Boring KIT BHF MB50-80 6-220 / KIT BHF MB80-80 6-220 (Ø6-220mm)

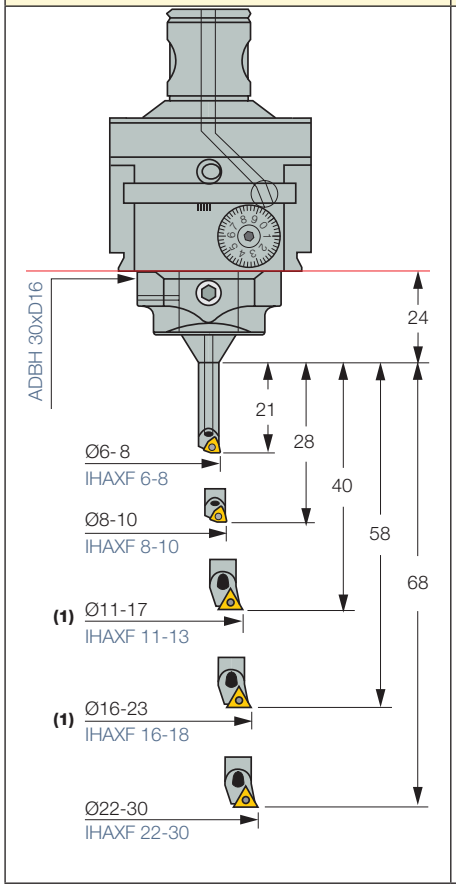


2 µm	Tools	Inserts
	1 BHF MB..-80x94	5 TPGX 090202L
	1 IHAXF 6-8/16	1 TPGX 110302L
	1 IHAXF 8-10/16	2 WCGT 020102L
	1 IHAXF 11-13/16	
	1 IHAXF 16-18/16	
	1 IHAXF 22-30/16	
	1 ADBH 30xD16	
	1 BBH 30x40	
	1 BBH 30x70	
	1 BBH 30x115	
	1 BHFH 30x93	
	1 BHFH 30x135	
	1 IHFF 25	
	1 IHFF 32	
	1 IHFF 50	

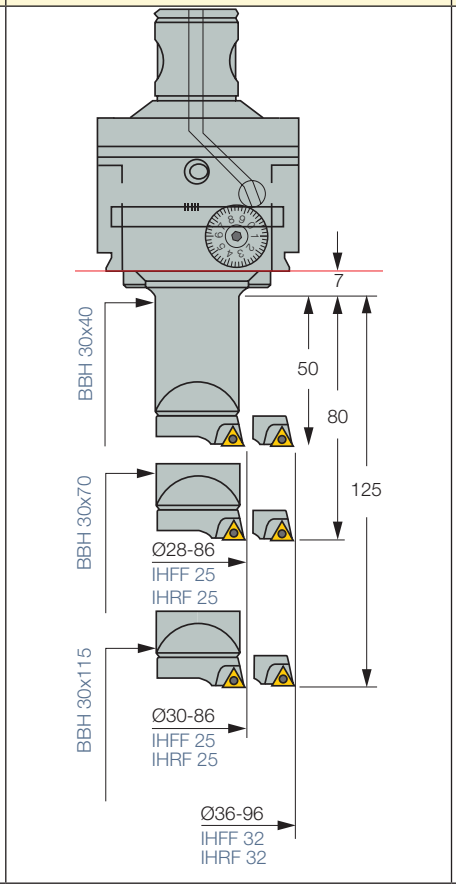
Designation	MB	Boring Range
KIT BHF MB50-80 6-220	50	6-220
KIT BHF MB80-80 6-220	80	6-220

(1) The specified boring range differs from the one specified for the boring bar. The extra range is not recommended for high rotational speeds.

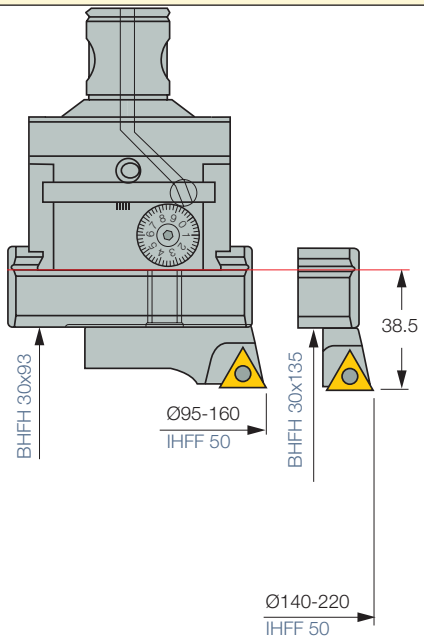
Ø6-30



Ø28-96



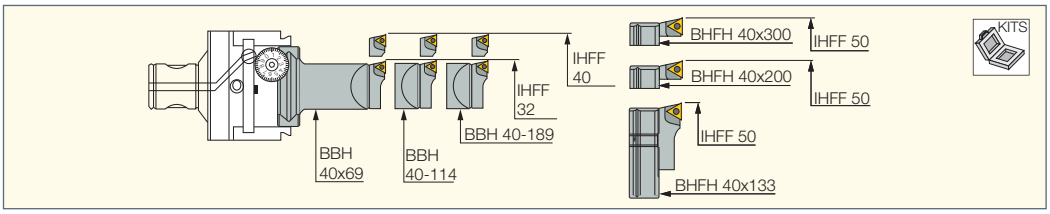
Ø95-220



ITSBORE

KIT BHFH-MB

Contains Adapters, Extensions and Boring Bars for 36 to 410mm Boring Range

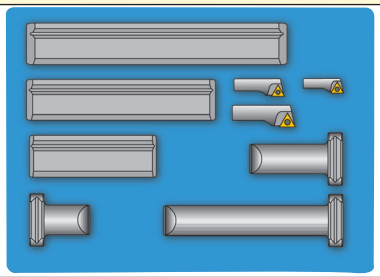


Designation	DCONMS	DCN(1)	DCX(2)
KIT BHFH MB80-125	80.00	36.00	410.00

(1) Cutting diameter minimum (2) Cutting diameter maximum

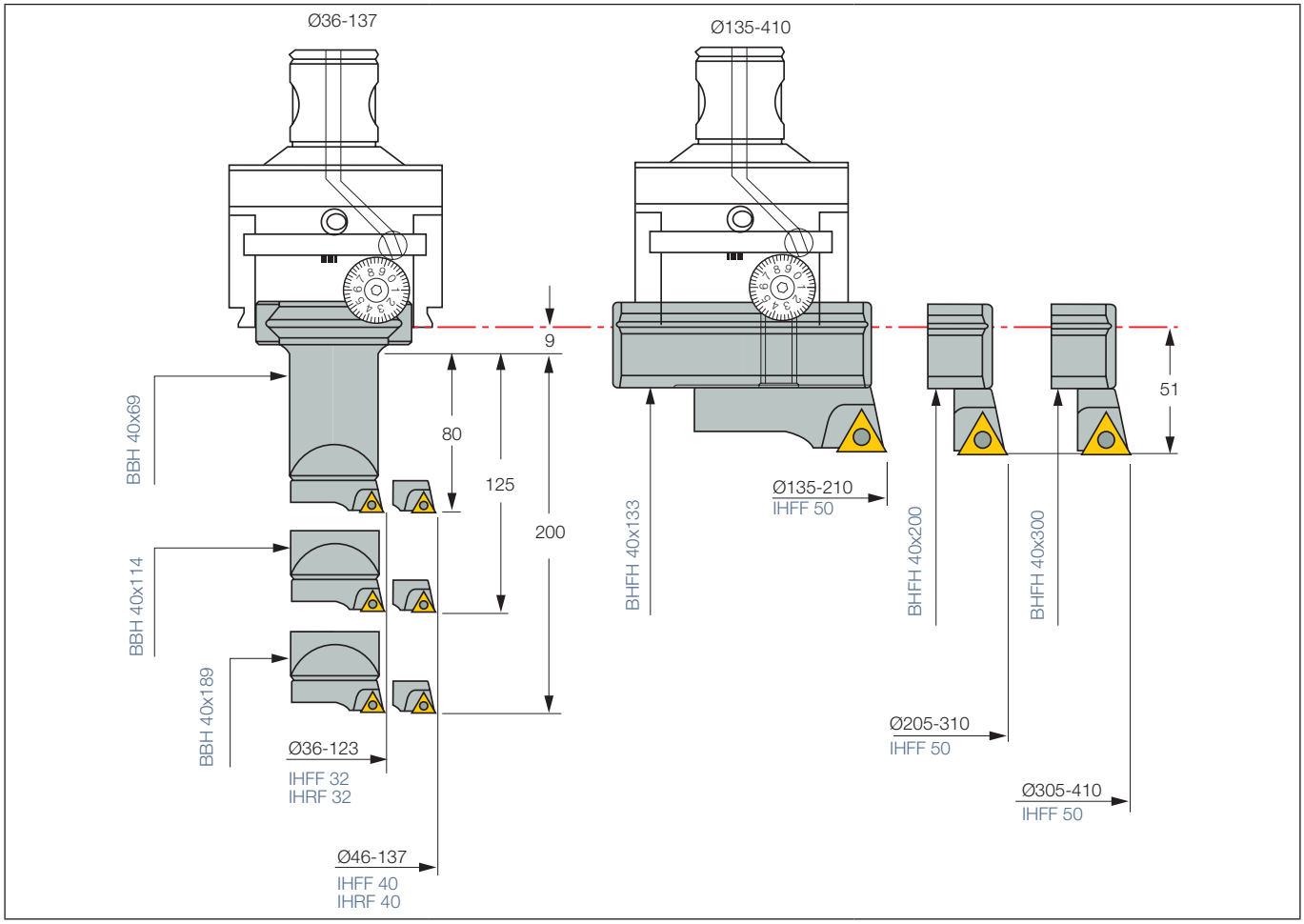
KIT BHFH MB80-125 36-410

Holder for BHF MB80-125x114 ø36-410



ACCESSORIES
1 BBH 40x69
1 BBH 40x114
1 BBH 40x189
1 BHFH 40x133
1 BHFH 40x200
1 BHFH 40x300
1 IHFF 32
1 IHFF 40
1 IHFF 50

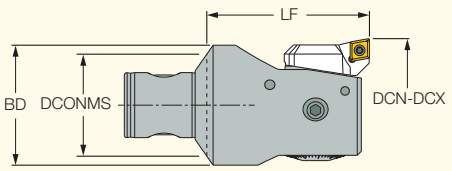
Designation	MB	Boring Range
KIT BHFH MB80-125 36-410	80	36-410



ITSBORE

BSFD MB

Digital Fine Boring Heads with 1 Mm Accurate Adjustment and Detachable Display



Designation	DCONMS	DCN(1)	DCX(2)	LF	BD	RPMX(3)	RPMX_2(4)	kg
BSFD MB20-24-37-A	20.00	23.90	37.10	40.00	22.50	12000	9000	0.13
BSFD MB25-31-47-B	25.00	30.90	47.10	50.00	29.00	10000	7500	0.25
BSFD MB32-40-59-C	32.00	39.90	59.10	63.00	37.00	6500	4000	0.53
BSFD MB40-51-81-D	40.00	50.90	81.10	80.00	47.00	5000	3000	1.08
BSFD MB50-67-105-E	50.00	66.90	105.10	80.00	59.00	4000	2500	1.64
BSFD MB63-87-134-F	63.00	86.90	134.10	88.00	72.00	3000	1750	3.08
BSFD MB80-115-203-G	80.00	115.90	203.10	104.00	94.00	3000	1750	5.00

NEW

- For user guide, see pages 450,453,528-529,536

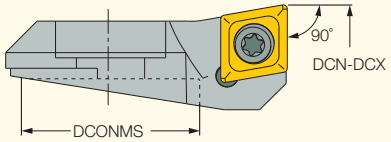
(1) Cutting diameter minimum
(2) Cutting diameter maximum
(3) Balanced (4) Unbalanced

For tools, see pages: CAR-CC (495) • CAR-V-I/IG (497)

ITSBORE

CAR-CC

Side Lock Insert Holders for BSFD MB Boring Heads



Designation	DCN(1)	DCX(2)	DCN_2(3)	DCX_2(4)	DCN_3(5)	DCX_3(6)	DCONMS	MIID(7)
CAR-CC0602-1-A	23.90	31.10	-	-	-	-	11.00	CC..0602..
CAR-CC0602-2-A	29.60	37.10	-	-	-	-	11.00	CC..0602..
CAR-CC0602-1-B	30.90	40.10	-	-	-	-	13.00	CC..0602..
CAR-CC0602-2-B	37.90	47.10	-	-	-	-	13.00	CC..0602..
CAR-CC0602-1-C	39.90	51.10	-	-	-	-	17.00	CC..0602..
CAR-CC0602-2-C	47.90	59.10	-	-	-	-	17.00	CC..0602..
CAR-CC0602-1-D	50.90	67.10	-	-	-	-	22.00	CC..0602..
CAR-CC0602-2-D	64.90	81.10	-	-	-	-	22.00	CC..0602..
CAR-CC0602-1-EFG	66.90	87.10	86.90	116.10	115.90	153.10	30.00	CC..0602..
CAR-CC09T3-1-EFG	66.90	87.10	86.90	116.10	115.90	153.10	30.00	CC..09T3..
CAR-CC0602-2-EFG	84.90	105.10	104.90	134.10	133.90	171.10	30.00	CC..0602..
CAR-CC09T3-2-EFG	84.90	105.10	104.90	134.10	133.90	171.10	30.00	CC..09T3..

NEW

- A-Suitable for BSFD MB20-24-37-A • B-Suitable for BSFD MB25-31-47-B • C-Suitable for BSFD MB32-40-59-C • D-Suitable for BSFD MB40-51-81-D
- E-Suitable for BSFD MB50-67-105-E • F-Suitable for BSFD MB63-87-134-F • G-Suitable for BSFD MB80-115-203-G

(1) Cutting diameter minimum
(2) Cutting diameter maximum
(3) For BSFD MB63-87-134-F
(4) For BSFD MB63-87-134-F
(5) For BSFD MB80-115-203-G
(6) For BSFD MB80-115-203-G
(7) Master insert identification

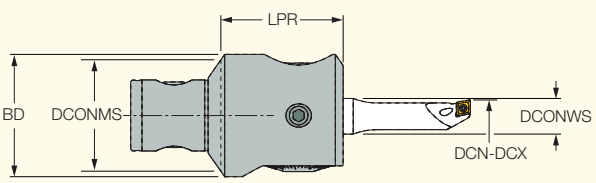
For inserts, see pages: CCET-WF (500) • CCGT-AF (503) • CCGT-AS (502) • CCGW/CCMT (CBN) (502) • CCMT-14 (500) • CCMT-PF (500) • CCMT-WG (501) • CCMT/CCGT (501) • CCMT/CCGT-SM (499)

For holders, see page: BSFD MB (495)

ITSBORE

BSFD MB-H

Digital Fine Boring Head with 1 Mm Accurate Adjustment and Detachable Display



Designation	DCONMS	DCN(1)	DCX(2)	LPR	BD	DCONWS	kg
BSFD MB50-03-88-H	50.00	3.00	88.10	55.00	50.15	16.00	1.10

NEW

- For user guide, see pages 450,453,528-529,536

(1) Cutting diameter minimum

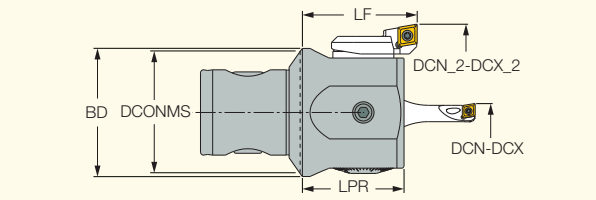
(2) Cutting diameter maximum

For tools, see page: BAR-CC0602-HI (496)

ITSBORE

BSFD-V MB-I

Digital Fine Boring Vario Head with 1 Mm Accurate Adjustment and Detachable Display



Designation	LF	DCONMS	DCN(1)	DCX(2)	DCN_2	DCX_2	LPR	BD	kg
BSFD-V MB63-03-152-I	56.50	63.00	9.75	88.10	87.75	152.00	50.00	63.15	1.64

NEW

- For user guide, see pages 450,453,528-529,536

(1) Cutting diameter minimum

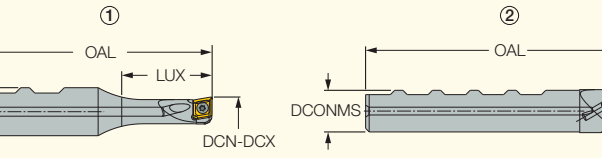
(2) Cutting diameter maximum

For tools, see pages: BAR-CC0602-HI (496) • CAR-V-I/IG (497)

ITSBORE

BAR-CC0602-HI

Indexable Boring Bars for the BSFD-H/I Boring Heads



Designation	DCN(1)	DCX(2)	LUX	DCONMS	OAL	Fig.	MIID(3)	CSP(4)
BAR-CC0602-1-HI	9.75	15.10	30.00	16.00	75.00	1	CC..0602..	1
BAR-CC0602-2-HI	14.75	20.10	51.00	16.00	90.00	1	CC..0602..	1
BAR-CC0602-3-HI	19.75	25.10	72.00	16.00	105.00	2	CC..0602..	1
BAR-CC0602-4-HI	24.75	30.10	82.00	16.00	115.00	2	CC..0602..	1

NEW

(1) Cutting diameter minimum

(2) Cutting diameter maximum

(3) Master insert identification (4) 0 - Without coolant supply, 1 - With coolant supply

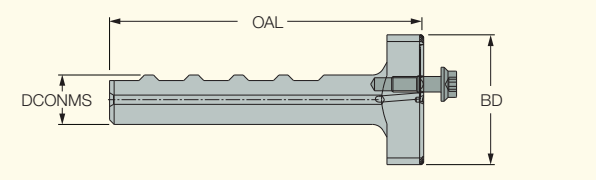
For inserts, see pages: CCET-WF (500) • CCGT-AS (502) • CCGW/CCMT (CBN) (502) • CCMT-14 (500) • CCMT-PF (500) • CCMT-WG (501) • CCMT/CCGT (501) • CCMT/CCGT-SM (499)

For holders, see pages: BSFD MB-H (496) • BSFD-V MB-I (496)

ITSBORE

SH-DX-HI

Extension Shanks for Sliding Insert Holders for BSFD-H/I Boring Heads



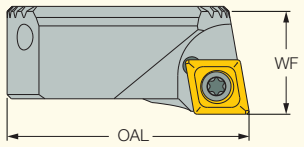
Designation	BD	OAL	DCONMS	kg
SH-DX-30-48-1-HI	25.00	103.00	16.00	0.18
SH-DX-48-88-2-HI	42.00	101.00	16.00	0.22

For tools, see page: BAR-DX-CC0602-HI (497)

ITSBORE

BAR-DX-CC0602-HI

Sliding Insert Holders for BSFD-H/I Boring Heads



Designation	WF	OAL	DCN(1)	DCX(2)	MIID(3)
BAR-DX-CC0602-1-HI	12.00	28.20	29.75	48.10	CC..0602..
BAR-DX-CC0602-2-HI	14.00	46.00	47.75	88.10	CC..0602..

NEW

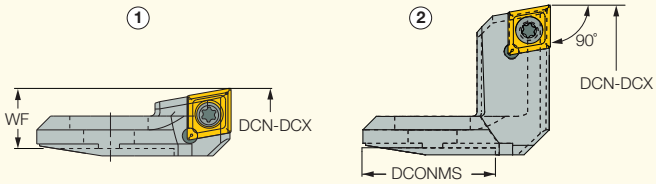
(1) Cutting diameter minimum
(2) Cutting diameter maximum
(3) Master insert identification

For inserts, see pages: CCET-WF (500) • CCGT-AS (502) • CCGW/CCMT (CBN) (502) • CCMT-14 (500) • CCMT-PF (500) • CCMT-WG (501) • CCMT/CCGT (501) • CCMT/CCGT-SM (499)
For holders, see page: SH-DX-HI (496)

ITSBORE

CAR-V-I/IG

Side Lock Insert Holders for BSFD-V-I Boring Heads



Designation	WF	DCN(1)	DCX(2)	DCONMS	MIID(3)	Fig.
CAR-V-CC09T3-1-I	13.05	87.75	101.10	30.00	CC..09T3..	1
CAR-V-CC09T3-2-I	22.05	105.75	119.00	30.00	CC..09T3..	1
CAR-V-CC09T3-3-IG	32.05	153.90	191.10	30.00	CC..09T3..	2

NEW

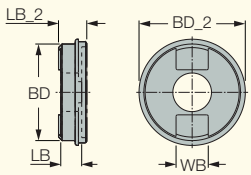
• I-Suitable for BSFD-V MB63-03-152-I • G-Suitable for BSFD MB80-115-203-G
(1) Cutting diameter minimum
(2) Cutting diameter maximum
(3) Master insert identification

For inserts, see pages: CCET-WF (500) • CCGT-AF (503) • CCGT-AS (502) • CCGW/CCMT (CBN) (502) • CCMT-14 (500) • CCMT-PF (500) • CCMT-WG (501) • CCMT/CCGT (501) • CCMT/CCGT-SM (499)
For holders, see pages: BSFD MB (495) • BSFD-V MB-I (496)

Accessories

ADP-V-IG

Adapter Plate for Diameter Range Extension of the CAR-V-I/IG Insert Holders



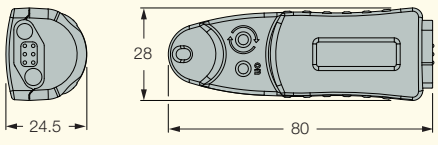
Designation	BD	BD_2	LB	LB_2	WB
ADP-V-114-166-IG	30.00	33.00	6.50	8.80	10.00

NEW

ITSBORE

BSFD DISPLAY UNIT

Digital Display Unit for BSFD Boring Heads with 1 Mm Accurate Adjustment



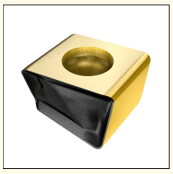
Designation	Accuracy
BSFD DISPLAY UNIT	0.001

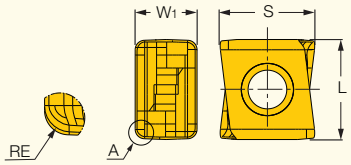
NEW

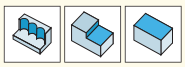
TANGPLUNGE
PLUNGING LINE

HTP LN.. 1006

Tangentially Clamped Inserts with 4 Cutting Edges for Plungers





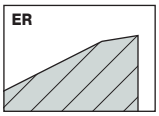


Designation	Dimensions W1	L	S	RE	Tough ↔ Hard IC330	IC830	IC808	IC810	IC07	Recommended Machining Data f_z (mm/t)
HTP LNAR 1006 FR (1)	6.50	10.50	10.13	1.00			●			0.05-0.15
HTP LNAR 1006 FR-P	6.50	10.50	10.13	1.00					●	0.05-0.15
HTP LNHT 1006 ER	6.50	10.50	9.93	1.00	●	●	●	●		0.10-0.15
HTP LNHT 1006 ETR	6.50	10.50	9.93	1.00	●	●	●			0.12-0.20
HTP LNMT 1006 ER (2)	6.50	10.50	9.96	1.00	●	●	●			0.08-0.15

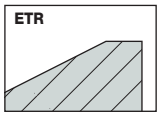
• FR-P - For machining aluminum, ER- For general applications, ETR- First priority for hardened steel

(1) FR - Sharp cutting edge for unstable conditions and for ISO S material (2) Mounting this insert increases tool diameter by 0.1mm

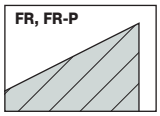
For tools, see pages: CR LNHT (472)



ER- for general applications



ETR- first priority for hardened steel

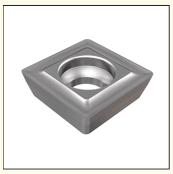


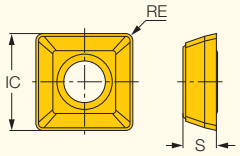
FR-P- for machining aluminum

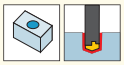
DR-TWIST
INDEXABLE DRILL LINE

SOMT-DT

DR Drill Inserts for General Applications At Medium-to-High Feeds







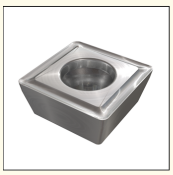
Designation	Dimensions IC	S	RE	Tough ↔ Hard IC328	IC5500	IC808	IC908	IC8080	IC9080
SOMT 060204-DT	6.00	1.96	0.40	●		●	●		
SOMT 09T306-DT	9.00	3.81	0.60		●	●	●	●	●
SOMT 100408-DT	9.80	4.30	0.80			●	●	●	
SOMT 110408-DT	11.50	4.80	0.80			●	●		
SOMT 120408-DT	12.70	4.76	0.80			●	●	●	●
SOMT 140512-DT	14.30	5.20	1.20			●	●	●	
SOMT 160512-DT	16.00	5.56	1.20			●	●		●

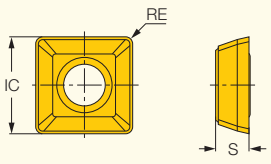
For tools, see pages: CR SOMT (472) • DR-2D-N (141) • DR-3D-N (143) • DR-4D-N (145) • DR-4D-T (148) • DR-CA (149)

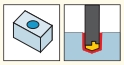
DR-TWIST
INDEXABLE DRILL LINE

SOMT-GF

DR Drill Inserts for Soft Materials At Low-to-Medium Feeds







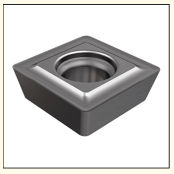
Designation	Dimensions IC	S	RE	Tough ↔ Hard IC328	IC908
SOMT 09T306-GF	9.00	3.81	0.60	●	●
SOMT 120408-GF	12.70	4.76	0.80		●
SOMT 160512-GF	16.00	5.56	1.20		●

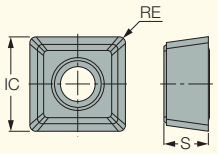
For tools, see pages: CR SOMT (472) • DR-2D-N (141) • DR-3D-N (143) • DR-4D-N (145) • DR-4D-T (148) • DR-CA (149)

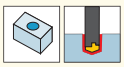
DR-TWIST
INDEXABLE DRILL LINE

SOGX/T-AL

DR Drill Inserts for Aluminum







Designation	Dimensions IC	S	RE	IC08
SOGX 050204-AL	5.40	2.40	0.40	●
SOGX 060304-AL	6.20	3.20	0.40	●
SOGX 070305-AL	7.70	3.60	0.50	●
SOGT 09T306-AL	9.00	3.81	0.60	●
SOGT 120408-AL	12.70	4.76	0.80	●

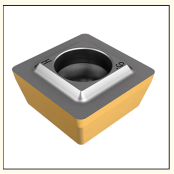
• Sharp cutting edge with polished rake for aluminum

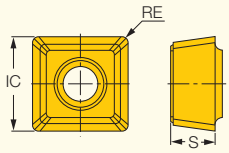
For tools, see pages: CR SOMT (472) • DR-2D-N (141) • DR-3D-N (143) • DR-4D-N (145) • DR-4D-T (148) • DR-5D-N (147)

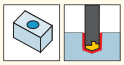
DR-TWIST
INDEXABLE DRILL LINE

SOMT-HD

DR Drill Inserts for Carbon Steel and Soft Materials







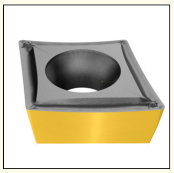
Designation	Dimensions IC	S	RE	IC808
SOMT 09T306-HD	9.00	3.81	0.60	●
SOMT 100408-HD	9.80	4.30	0.80	●
SOMT 110408-HD	11.50	4.80	0.80	●
SOMT 120408-HD	12.70	4.76	0.80	●
SOMT 160512-HD	16.00	5.56	1.20	●

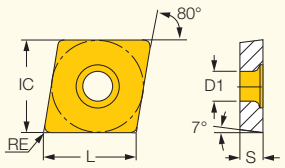
For tools, see pages: CR SOMT (472) • DR-2D-N (141) • DR-3D-N (143) • DR-4D-N (145) • DR-4D-T (148) • DR-CA (149)

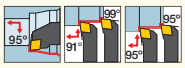
ISOTURN

CCMT/CCGT-SM

Single-Sided Turning Inserts for Semi-Finishing and Finishing on Soft Materials and Exotic Alloys







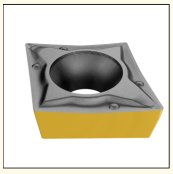
Designation	Dimensions L	IC	S	RE	D1	Tough ↔ Hard IC6025	IC8250	IC6015	IC8150	IC20	IC5010	IC428	IC5005	IC806	IC1017	IC807	IC907	Recommended Machining Data a_p (mm)	f (mm/rev)
CCGT 060201-SM	6.45	6.35	2.38	0.10	2.80												●	0.25-2.00	0.05-0.20
CCGT 060202-SM	6.45	6.35	2.38	0.20	2.80												●	0.25-2.00	0.05-0.25
CCMT 060202-SM	6.45	6.35	2.38	0.20	2.80		●		●					●				0.25-2.00	0.05-0.25
CCMT 060204-SM	6.45	6.35	2.38	0.40	2.80	●	●	●	●					●		●	●	0.50-2.50	0.07-0.25
CCMT 060208-SM	6.45	6.35	2.38	0.80	2.80	●		●								●	●	0.50-2.50	0.07-0.25
CCMT 09T302-SM	9.70	9.52	3.97	0.20	4.40	●	●	●						●	●	●	●	0.50-2.50	0.06-0.25
CCMT 09T304-SM	9.70	9.52	3.97	0.40	4.40	●	●		●	●	●	●	●	●		●	●	0.50-2.50	0.06-0.25
CCMT 09T308-SM	9.70	9.52	3.97	0.80	4.40	●	●	●	●		●		●	●		●	●	0.50-3.00	0.07-0.25
CCMT 120404-SM	12.90	12.70	4.76	0.40	5.50		●		●					●		●	●	0.70-3.50	0.07-0.25
CCMT 120408-SM	12.90	12.70	4.76	0.80	5.50	●	●	●	●							●	●	0.70-3.50	0.07-0.30

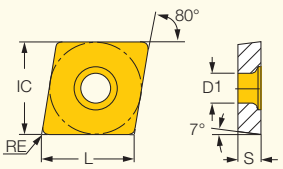
For tools, see pages: • BAR-CC0602-HI (496) • BAR-DX-CC0602-HI (497) • CAR-CC (495) • CAR-V-I/IG (497) • IHCR (470) • IHRF (489) • IHRF-BW (489) • IHRF-CH (490) • IHSR (469) • IHSR-BW (471)

ISOTURN

CCMT-PF

80° Rhombic Inserts with a Positive Flank for Semi-Finishing and Finishing on Soft Materials and Exotic Alloys





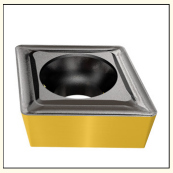
Designation	Dimensions L	IC	S	RE	D1	Tough ↔ Hard IC830	IC6025	IC6015	IC806	IC1017	IC807	IC907	IC804	Recommended Machining Data a_p (mm)	f (mm/rev)
CCMT 060202-PF	6.45	6.35	2.38	0.20	2.85	●	●	●			●	●	●	0.20-2.50	0.04-0.25
CCMT 060204-PF	6.45	6.35	2.38	0.40	2.85	●	●	●	●		●	●		0.40-2.50	0.04-0.30
CCMT 09T302-PF	9.70	9.52	3.97	0.20	4.40	●			●	●	●	●	●	0.50-3.00	0.05-0.30
CCMT 09T304-PF	9.70	9.52	3.97	0.40	4.40	●	●	●	●	●	●	●	●	0.50-3.50	0.05-0.35

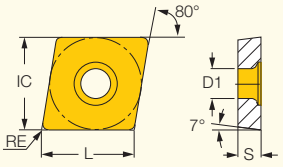
For tools, see pages: • BAR-CC0602-HI (496) • BAR-DX-CC0602-HI (497) • CAR-CC (495) • CAR-V-I/IG (497) • IHCR (470) • IHRF (489) • IHRF-BW (489) • IHRF-CH (490) • IHSR (469) • IHSR-BW (471)

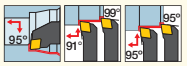
ISOTURN

CCMT-14

80° Rhombic Inserts with a 7° Positive Flank for Semi-Finish And Finish Turning







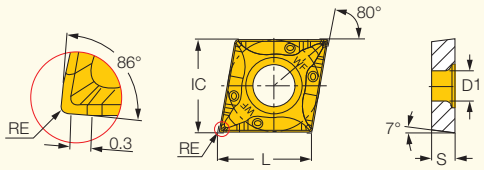
Designation	Dimensions L	IC	S	RE	D1	Tough ↔ Hard IC830	IC8250	IC20	IC428	IC5005	IC807	IC907	Recommended Machining Data a_p (mm)	f (mm/rev)
CCMT 060204-14	6.30	6.35	2.38	0.40	2.80	●		●	●	●	●	●	0.50-2.50	0.14-0.25
CCMT 09T304-14	9.70	9.52	3.97	0.40	4.40		●				●	●	0.50-3.00	0.14-0.25
CCMT 09T308-14	9.70	9.52	3.97	0.80	4.40	●	●	●	●	●			0.80-3.00	0.14-0.30
CCMT 120408-14	12.90	12.70	4.76	0.80	5.50	●		●					0.80-3.00	0.14-0.30

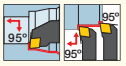
For tools, see pages: • BAR-CC0602-HI (496) • BAR-DX-CC0602-HI (497) • CAR-CC (495) • CAR-V-I/IG (497) • IHCR (470) • IHRF (489) • IHRF-BW (489) • IHRF-CH (490) • IHSR (469) • IHSR-BW (471)

ISOTURN

CCET-WF

80° Rhombic Inserts with a 7° Positive Flank and a Wiper Near the Corner for High Feed Finishing





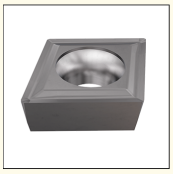
Designation	Dimensions L	IC	S	RE	D1	IC907	Recommended Machining Data a_p (mm)	f (mm/rev)
CCET 0602005-WF	6.30	6.35	2.38	0.05	2.80	●	0.05-2.00	0.01-0.20
CCET 09T3005-WF	9.50	9.52	3.97	0.05	4.40	●	0.05-2.00	0.01-0.20

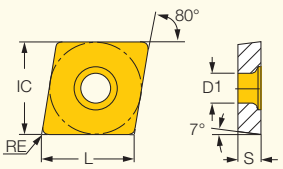
For tools, see pages: • BAR-CC0602-HI (496) • BAR-DX-CC0602-HI (497) • CAR-CC (495) • CAR-V-I/IG (497) • IHCR (470) • IHRF (489) • IHSR (469) • IHSR-BW (471)

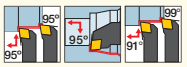
ISOTURN

CCMT/CCGT

80° Rhombic Inserts with a 7° Positive Flank for Semi-Finish and Finish Turning







Designation	Dimensions L	IC	S	RE	D1	Tough ↔ Hard IC8250	IC30N	IC20	IC20N	IC520N	Recommended Machining Data a_p (mm)	f (mm/rev)
CCGT 060202	6.45	6.35	2.38	0.20	2.80		●				0.50-2.00	0.10-0.20
CCGT 060202L (1)	6.45	6.35	2.38	0.20	2.80		●	●			0.50-2.00	0.10-0.20
CCGT 060204	6.45	6.35	2.38	0.40	2.80		●				0.50-2.00	0.10-0.20
CCGT 060204L (1)	6.45	6.35	2.38	0.40	2.80		●				0.50-2.00	0.10-0.20
CCMT 060202	6.45	6.35	2.38	0.20	2.80	●			●		0.50-2.00	0.10-0.20
CCMT 060204	6.45	6.35	2.38	0.40	2.80		●		●	●	0.50-2.00	0.12-0.22
CCMT 09T302	9.70	9.52	3.97	0.20	4.40				●	●	0.50-2.50	0.12-0.25
CCMT 09T304	9.70	9.52	3.97	0.40	4.40				●	●	0.50-2.50	0.12-0.25
CCMT 09T308	9.70	9.52	3.97	0.80	4.40				●	●	0.80-3.00	0.14-0.25

• Use left-hand inserts for left-hand external tools and for right-hand internal tools

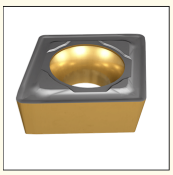
(1) Left-hand insert

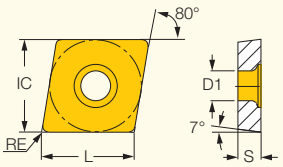
For tools, see pages: • BAR-CC0602-HI (496) • BAR-DX-CC0602-HI (497) • CAR-CC (495) • CAR-V-I/IG (497) • IHCR (470) • IHRF (489) • IHRF-BW (489) • IHRF-CH (490) • IHSR (469) • IHSR-BW (471)

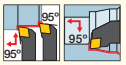
ISOTURN

CCMT-WG

80° Rhombic Inserts with a 7° Positive Flank and a Wiper Near the Corner for High Feed Finishing







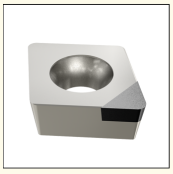
Designation	Dimensions L	IC	S	RE	D1	Tough ↔ Hard IC8250	IC807	IC907	Recommended Machining Data a_p (mm)	f (mm/rev)
CCMT 060204-WG	6.30	6.35	2.38	0.40	2.80		●	●	0.40-2.00	0.10-0.35
CCMT 09T304-WG	9.70	9.52	3.97	0.40	4.40	●			0.40-2.00	0.14-0.30
CCMT 09T308-WG	9.70	9.52	3.97	0.80	4.40	●			0.50-2.50	0.20-0.38
CCMT 120408-WG	12.90	12.70	4.76	0.80	5.50	●			0.50-3.00	0.20-0.36

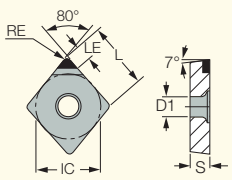
For tools, see pages: • BAR-CC0602-HI (496) • BAR-DX-CC0602-HI (497) • CAR-CC (495) • CAR-V-I/IG (497) • IHCR (470) • IHRF (489) • IHRF-BW (489) • IHRF-CH (490) • IHSR (469) • IHSR-BW (471)

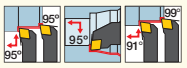
ISOTURN

CCGW/CCMT (CBN)

80° Rhombic Inserts with a Single CBN Top Corner Tip and 7° Clearance for Machining Hardened Steel







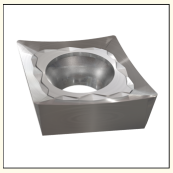
Designation	Dimensions L	IC	S	RE	LE	D1	Tough ↔ Hard IB55	IB10H	IB05H	Recommended Machining Data a_p (mm)	f (mm/rev)
CCGW 03X102T01015-1	3.63	3.57	1.39	0.20	2.0	1.90		●	●	0.05-0.50	0.05-0.20
CCGW 03X104T01015-1	3.63	3.57	1.39	0.40	2.3	1.90		●	●	0.05-0.50	0.05-0.20
CCGW 04T102T01015-1	4.44	4.37	1.79	0.20	2.0	2.30		●	●	0.05-0.50	0.05-0.20
CCGW 04T104T01015-1	4.44	4.37	1.79	0.40	2.3	2.30		●	●	0.05-0.50	0.05-0.20
CCMT 060202T	6.30	6.35	2.38	0.20	2.6	2.80	●			0.05-0.50	0.05-0.20
CCMT 060204T	6.30	6.35	2.38	0.40	2.7	2.80	●			0.05-0.50	0.05-0.20
CCMT 09T304T	9.70	9.52	3.97	0.40	2.9	4.40	●			0.05-0.50	0.05-0.20
CCMT 09T308T	9.70	9.52	3.97	0.80	3.6	4.40	●			0.05-0.50	0.05-0.20

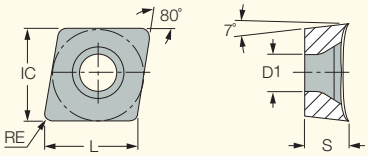
For tools, see pages: • BAR-CC0602-HI (496) • BAR-DX-CC0602-HI (497) • CAR-CC (495) • CAR-V-I/IG (497) • IHCR (470) • IHRF (489) • IHRF-BW (489) • IHRF-CH (490) • IHSR (469) • IHSR-BW (471)

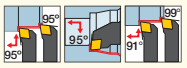
ISOTURN

CCGT-AS

80° Rhombic Inserts with a 7° Positive Flank, Very Positive Rake Angle and Sharp Cutting Edge for Machining Aluminum







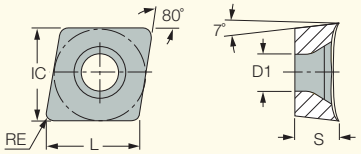
Designation	Dimensions L	IC	S	RE	D1	Tough ↔ Hard IC1520	IC20	Recommended Machining Data a_p (mm)	f (mm/rev)
CCGT 060201-AS	6.40	6.35	2.38	0.10	2.80	●	●	0.50-2.00	0.10-0.20
CCGT 060202-AS	6.40	6.35	2.38	0.20	2.80	●	●	0.50-2.00	0.10-0.20
CCGT 060204-AS	6.40	6.35	2.38	0.40	2.80	●	●	0.50-2.00	0.10-0.25
CCGT 09T301-AS	9.70	9.52	3.97	0.10	4.40	●	●	0.50-2.50	0.10-0.25
CCGT 09T302-AS	9.70	9.52	3.97	0.20	4.40	●	●	0.50-2.50	0.10-0.25
CCGT 09T304-AS	9.70	9.52	3.97	0.40	4.40	●	●	0.50-2.50	0.10-0.25
CCGT 09T308-AS	9.70	9.52	3.97	0.80	4.40	●	●	0.80-3.00	0.10-0.30
CCGT 120402-AS	12.90	12.70	4.76	0.20	5.50	●	●	0.50-2.50	0.10-0.25
CCGT 120404-AS	12.90	12.70	4.76	0.40	5.50		●	0.50-2.50	0.10-0.25
CCGT 120408-AS	12.90	12.70	4.76	0.80	5.50	●	●	1.00-3.50	0.10-0.30

For tools, see pages: • BAR-CC0602-HI (496) • BAR-DX-CC0602-HI (497) • CAR-CC (495) • CAR-V-I/IG (497) • IHCR (470) • IHRF (489) • IHRF-BW (489) • IHRF-CH (490) • IHSR (469) • IHSR-BW (471)

ISOTURN

CCGT-AF

80° Rhombic Inserts with a 7° Positive Flank, Very Positive Rake Angle and Sharp Cutting Edge for Machining Aluminum



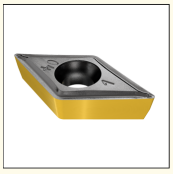
Designation	Dimensions L	IC	S	RE	D1	IC20	Recommended Machining Data a_p (mm)	f (mm/rev)
CCGT 09T308-AF	9.70	9.52	3.97	0.80	4.40	●	0.80-3.00	0.15-0.25
CCGT 120408-AF	12.90	12.70	4.76	0.80	5.50	●	1.00-3.50	0.15-0.30

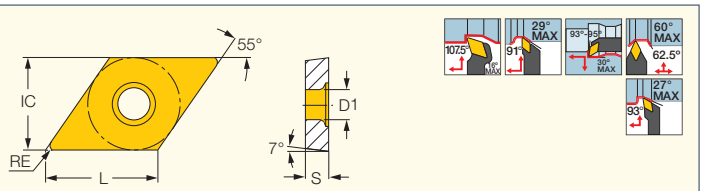
For tools, see pages: • CAR-CC (495) • CAR-V-I/IG (497) • IHCR (470) • IHRF (489) • IHSR (469) • IHSR-BW (471)

ISOTURN

DCMT/DCGT-SM

55° Rhombic Inserts with a 7° Positive Flank for Semi-Finishing and Finish Turning on Soft Materials and Exotic Alloys



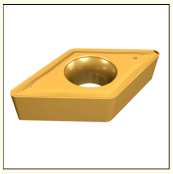


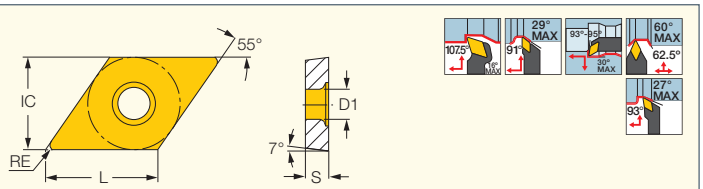
Designation	Dimensions L	IC	S	RE	D1	Tough ↔ Hard IC8350	IC6025	IC8250	IC530N	IC6015	IC8150	IC520N	IC806	IC807	IC907	Recommended Machining Data a_p (mm)	f (mm/rev)
DCMT 070202-SM	7.70	6.35	2.38	0.20	2.80		●			●				●	●	0.50-2.00	0.04-0.20
DCMT 070204-SM	7.70	6.35	2.38	0.40	2.80		●	●		●	●		●	●	●	0.50-2.50	0.05-0.25
DCMT 070208-SM	7.70	6.35	2.38	0.80	2.80			●								0.50-3.00	0.07-0.25
DCGT 11T302-SM	11.60	9.52	3.97	0.20	4.40										●	0.50-2.50	0.05-0.25
DCGT 11T304-SM	11.60	9.52	3.97	0.40	4.40										●	0.50-2.50	0.05-0.25
DCMT 11T302-SM	11.60	9.52	3.97	0.20	4.40		●	●	●	●				●	●	0.50-2.50	0.05-0.25
DCMT 11T304-SM	11.60	9.52	3.97	0.40	4.40	●	●	●	●		●		●	●	●	0.50-2.50	0.07-0.25
DCMT 11T308-SM	11.60	9.52	3.97	0.80	4.40	●	●	●		●	●			●	●	1.00-3.00	0.07-0.25
DCMT 11T312-SM	11.60	9.52	3.97	1.20	4.40							●				1.00-3.50	0.10-0.28

ISOTURN

DCMT-14

55° Rhombic Inserts with a Positive Flank for Semi-Finish and Finish Turning on Soft Materials and Exotic Alloys



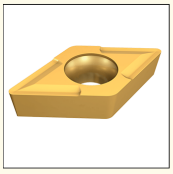


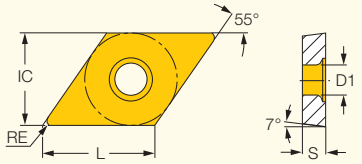
Designation	Dimensions L	IC	S	RE	D1	Tough ↔ Hard IC830	IC8150	IC20	IC428	IC5005	Recommended Machining Data a_p (mm)	f (mm/rev)
DCMT 11T304-14	11.60	9.52	3.97	0.40	4.40	●	●	●			1.00-2.50	0.14-0.25
DCMT 11T308-14	11.60	9.52	3.97	0.80	4.40		●	●	●	●	1.50-3.00	0.14-0.29

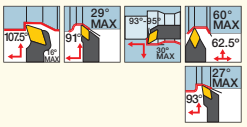
ISOTURN

DCMT/DCGT

55° Rhombic Inserts with a 7° Positive Clearance for Finishing Applications







Designation	Dimensions L	IC	S	RE	D1	Tough ↔ Hard IC830	IC8250	IC908	IC30N	IC530N	IC8150	IC20N	IC520N	Recommended Machining Data a_p (mm)	f (mm/rev)
DCGT 070201R [1]	7.70	6.35	2.38	0.10	2.80			•						0.25-1.50	0.05-0.15
DCGT 070202	7.70	6.35	2.38	0.20	2.80				•					0.50-2.00	0.08-0.20
DCGT 070204	7.70	6.35	2.38	0.40	2.80				•					0.80-2.50	0.10-0.25
DCMT 070202	7.70	6.35	2.38	0.20	2.80	•	•				•	•	•	0.50-2.00	0.08-0.20
DCMT 070204	7.70	6.35	2.38	0.40	2.80	•			•		•	•	•	0.50-2.00	0.08-0.22
DCGT 11T302	11.60	9.52	3.97	0.20	4.40				•					0.50-2.00	0.08-0.20
DCGT 11T304	11.60	9.52	3.97	0.40	4.40				•			•		1.00-2.50	0.12-0.25
DCMT 11T302	11.60	9.52	3.97	0.20	4.40				•	•		•	•	0.50-2.00	0.08-0.20
DCMT 11T304	11.60	9.52	3.97	0.40	4.40				•			•	•	0.50-2.00	0.12-0.25
DCMT 11T308	11.60	9.52	3.97	0.80	4.40	•						•	•	1.50-3.00	0.14-0.29

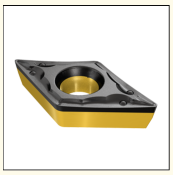
• Right-hand inserts for right-hand external tools and for left-hand internal tools

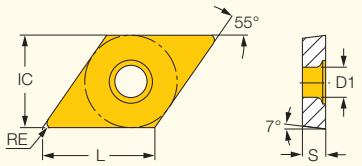
[1] Right-hand insert

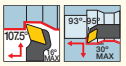
ISOTURN

DCMT/DCGT-PF

55° Rhombic Inserts with a Positive Flank for Semi-Finish and Finishing on Soft Materials and Exotic Alloys





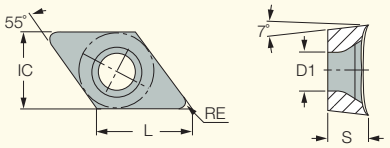


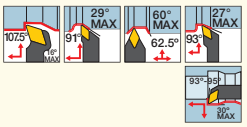
Designation	Dimensions L	IC	S	RE	D1	Tough ↔ Hard IC830	IC6025	IC8250	IC908	IC6015	IC806	IC807	IC907	IC804	Recommended Machining Data a_p (mm)	f (mm/rev)
DCGT 070201-PF	7.70	6.35	2.38	0.10	2.80				•						0.30-3.00	0.02-0.25
DCGT 070202-PF	7.70	6.35	2.38	0.20	2.80				•						0.40-3.00	0.03-0.25
DCGT 070204-PF	7.70	6.35	2.38	0.40	2.80				•						0.50-3.00	0.05-0.25
DCMT 070201-PF	7.70	6.35	2.38	0.10	2.80							•	•		0.30-3.00	0.02-0.25
DCMT 070202-PF	7.70	6.35	2.38	0.20	2.80	•									0.40-3.00	0.03-0.25
DCMT 070204-PF	7.70	6.35	2.38	0.40	2.80	•									0.50-3.00	0.05-0.25
DCMT 070208-PF	7.70	6.35	2.38	0.80	2.80							•	•		0.70-3.00	0.08-0.25
DCGT 11T301-PF	11.60	9.52	3.97	0.10	4.40				•						0.30-3.00	0.03-0.25
DCGT 11T302-PF	11.60	9.52	3.97	0.20	4.40				•						0.40-3.00	0.04-0.25
DCGT 11T304-PF	11.60	9.52	3.97	0.40	4.40				•						0.50-3.00	0.05-0.25
DCGT 11T308-PF	11.60	9.52	3.97	0.80	4.40				•						0.70-3.00	0.10-0.25
DCMT 11T302-PF	11.60	9.52	3.97	0.20	4.40	•					•	•	•	•	0.30-3.00	0.04-0.25
DCMT 11T304-PF	11.60	9.52	3.97	0.40	4.40	•	•	•		•	•	•	•	•	0.50-3.00	0.05-0.25
DCMT 11T308-PF	11.60	9.52	3.97	0.80	4.40	•	•	•		•	•	•	•	•	0.70-3.00	0.10-0.25

ISOTURN

DCGT-AS

55° Rhombic Inserts with a 7° Positive Flank, Very Positive Rake Angle and Sharp Cutting Edge for Machining Aluminum



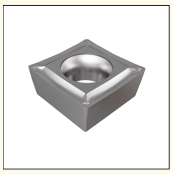


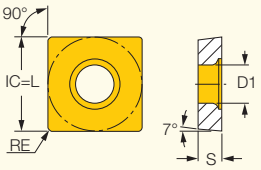
Designation	Dimensions L	IC	S	RE	D1	Tough ↔ Hard IC1520	IC20	IC920	IC320	IC907	Recommended Machining Data a_p (mm)	f (mm/rev)
DCGT 070201-AS	7.75	6.35	2.38	0.10	2.80		●				0.50-2.00	0.03-0.20
DCGT 070202-AS	7.75	6.35	2.38	0.20	2.80	●	●	●			0.50-2.00	0.05-0.20
DCGT 070204-AS	7.75	6.35	2.38	0.40	2.80	●	●				0.50-2.50	0.05-0.25
DCGT 11T301-AS	11.60	9.52	3.97	0.10	4.40		●				0.50-2.50	0.05-0.25
DCGT 11T302-AS	11.60	9.52	3.97	0.20	4.40	●	●		●	●	0.50-2.50	0.05-0.26
DCGT 11T304-AS	11.60	9.52	3.97	0.40	4.40	●	●		●	●	0.50-2.50	0.05-0.25
DCGT 11T308-AS	11.60	9.52	3.97	0.80	4.40	●	●		●		0.80-3.00	0.08-0.30

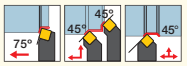
ISOTURN

SCMT-SM

Square Inserts with a 7° Positive Flank for Semi-Finishing and Finish Turning on Soft Materials and Exotic Alloys







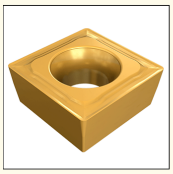
Designation	Dimensions L	S	RE	D1	Tough ↔ Hard IC830	IC6025	IC8250	IC8150	IC5005	IC807	IC907	Recommended Machining Data a_p (mm)	f (mm/rev)
SCMT 09T304-SM	9.52	3.97	0.40	4.40			●	●		●	●	0.50-3.00	0.07-0.25
SCMT 09T308-SM	9.52	3.97	0.80	4.40	●	●	●	●	●	●	●	0.50-3.00	0.10-0.30
SCMT 120404-SM	12.70	4.76	0.40	5.50				●				0.50-3.50	0.10-0.25
SCMT 120408-SM	12.70	4.76	0.80	5.50			●	●		●	●	1.00-4.00	0.10-0.30

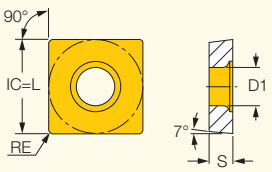
For tools, see page: IHPR (470)

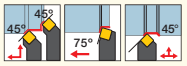
ISOTURN

SCMT-14

Square Inserts with a 7° Positive Flank for Semi-Finishing and Finish Turning on Soft Materials and Exotic Alloys







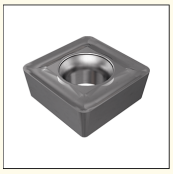
Designation	Dimensions L	S	RE	D1	Tough ↔ Hard IC8250	IC807	IC907	Recommended Machining Data a_p (mm)	f (mm/rev)
SCMT 09T304-14	9.52	3.97	0.40	4.40		●	●	1.00-3.50	0.12-0.30
SCMT 120404-14	12.70	4.76	0.40	5.50	●			1.00-4.00	0.12-0.30

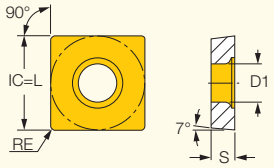
For tools, see page: IHPR (470)

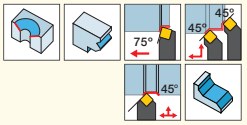
ISOTURN

SCMT-19

Square Inserts with a 7° Positive Flank for Semi-Roughing At Medium to High Feeds







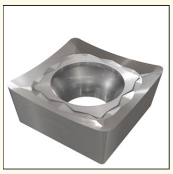
Designation	Dimensions L	S	RE	D1	Tough ↔ Hard IC830	IC20	IC5005	IC807	IC907	Recommended Machining Data a_p (mm)	f_z (mm/rev)
SCMT 120408-19	12.70	4.76	0.80	5.50	●	●	●	●	●	3.00-8.00	0.08-0.15
SCMT 120412-19	12.70	4.76	1.20	5.50		●				3.00-8.00	0.08-0.15

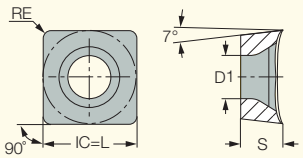
For tools, see page: • IHPR (470)

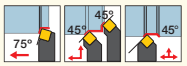
ISOTURN

SCGT-AS

Square Inserts with a 7° Positive Flank, Very Positive Rake Angle and Sharp Cutting Edge for Machining Aluminum







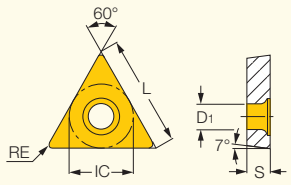
Designation	Dimensions IC	S	RE	D1	Tough ↔ Hard IC1520	IC20	Recommended Machining Data a_p (mm)	f (mm/rev)
SCGT 09T308-AS	9.52	3.97	0.80	4.40	●	●	0.50-3.00	0.10-0.30
SCGT 120404-AS	12.70	4.76	0.40	5.50		●	1.00-4.00	0.10-0.30
SCGT 120408-AS	12.70	4.76	0.80	5.50	●	●	1.00-4.00	0.10-0.30

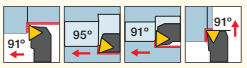
For tools, see page: IHPR (470)

ISOTURN

TCMT-19

Triangular Inserts with a 7° Positive Flat Rake for Semi-Roughing Applications At Medium to High Feeds





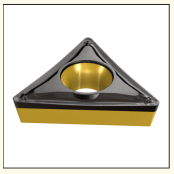
Designation	Dimensions L	IC	S	RE	D1	Tough ↔ Hard IC830	IC50M	IC8150	IC20	Recommended Machining Data a_p (mm)	f (mm/rev)
TCMT 110204-19	11.00	6.35	2.38	0.40	2.80		●	●	●	0.50-3.00	0.10-0.30
TCMT 16T308-19	16.50	9.52	3.97	0.80	4.40	●	●		●	1.00-4.00	0.20-0.35
TCMT 220508-19	22.00	12.70	5.00	0.80	5.50		●			1.00-4.00	0.20-0.35

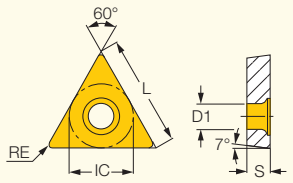
For tools, see page: • IHBR (471)

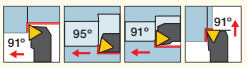
ISOTURN

TCMT-SM

Triangular Inserts with a 7° Positive Flank for Semi-Finishing and Finish Turning on Soft Materials and Exotic Alloys







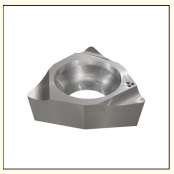
Designation	Dimensions L	IC	S	RE	D1	Tough ↔ Hard IC830	IC8350	IC8250	IC908	IC8150	IC5010	IC428	IC5005	IC807	IC907	Recommended Machining Data a_p (mm)	f (mm/rev)
TCMT 110204-SM	11.00	6.35	2.38	0.40	2.80		●	●	●	●	●		●	●	●	0.20-3.00	0.05-0.25
TCMT 110208-SM	11.00	6.35	2.38	0.80	2.80									●	●	0.50-2.50	0.07-0.25
TCMT 16T304-SM	16.50	9.52	3.97	0.40	4.40	●		●		●		●	●	●	●	0.50-3.00	0.06-0.25
TCMT 16T308-SM	16.50	9.52	3.97	0.80	4.40	●		●		●			●	●	●	0.50-3.00	0.08-0.28

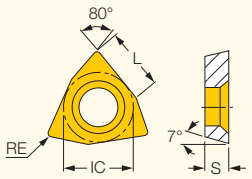
For tools, see page: • IHBR (471)

ISOTURN

WCGT

Trigon Inserts with a 7° Positive Flank and Chipformer for Finish Turning





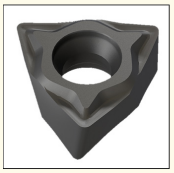
Designation	Dimensions L	IC	S	RE	Tough ↔ Hard IC908	IC30N	Recommended Machining Data a_p (mm)	f (mm/rev)
WCGT 020102L	2.18	3.97	1.59	0.20	●	●	0.40-2.00	0.05-0.10
WCGT 020104L	2.18	3.97	1.59	0.40	●	●	0.40-2.00	0.10-0.15

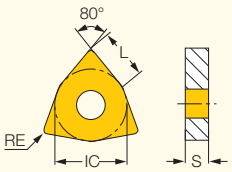
For tools, see pages: • IHAXF (485) • IHAXF-AVI (486) • IHAXF-E (487)

MINIPTURN POSITIVE DOUBLE SIDED

WNGP-F2M

Double-Sided Trigon Inserts for Super Finish Machining Conditions on Stainless Steel





Designation	Dimensions L	IC	S	RE	IC908	Recommended Machining Data a_p (mm)	f (mm/rev)
WNGP 040302L-F2M	4.35	6.35	3.18	0.20	●	0.30-2.00	0.08-0.30
WNGP 040304L-F2M	4.35	6.35	3.18	0.40	●	0.30-2.00	0.08-0.30
WNGP 040308L-F2M	4.35	6.35	3.18	0.80	●	0.30-2.00	0.08-0.30

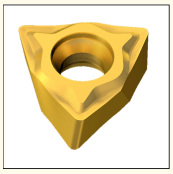
NEW

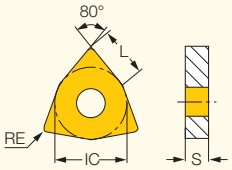
For tools, see page: • IHPR3 (468)

MINIPTURN POSITIVE DOUBLE SIDED

WNGP-F2P

Double-Sided Trigon Inserts for Super Finish Machining Conditions on Alloyed Steel





Designation	Dimensions L	IC	S	RE	IC530N	Recommended Machining Data a_p (mm)	f (mm/rev)
WNGP 040302L-F2P	4.35	6.35	3.18	0.20	●	0.30-2.00	0.08-0.30
WNGP 040304L-F2P	4.35	6.35	3.18	0.40	●	0.30-2.00	0.08-0.30
WNGP 040308L-F2P	4.35	6.35	3.18	0.80	●	0.30-2.00	0.08-0.30

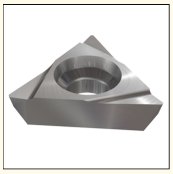
NEW

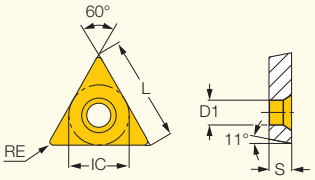
For tools, see page: • IHPR3 (468)

ISOTURN

TPGX

Triangular Inserts with an 11° Positive Flank and Ground Chipformer for Finish Turning





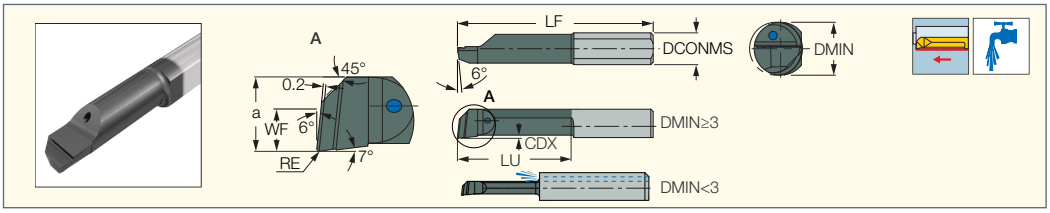
Designation	Dimensions L	IC	S	RE	D1	Tough ↔ Hard IC54	IC908	IC20	IC20N	IC520N	Recommended Machining Data a_p (mm)	f (mm/rev)
TPGX 090202-L	9.60	5.56	2.38	0.20	3.00		●	●	●	●	1.00-2.00	0.10-0.20
TPGX 090204-L	9.60	5.56	2.38	0.40	3.00	●	●	●	●	●	1.00-2.50	0.15-0.20
TPGX 110302-L	11.00	6.35	3.18	0.20	3.50		●	●	●	●	1.00-2.50	0.10-0.20
TPGX 110304-L	11.00	6.35	3.18	0.40	3.50	●	●	●	●	●	1.00-3.00	0.15-0.20
TPGX 110308-L	11.00	6.35	3.18	0.80	3.50			●			1.00-3.50	0.15-0.25

For tools, see pages: • IHAXF (485) • IHAXF-AVI (486) • IHAXF-E (487) • IHFF (488)

PICCOCUT

PICCO R/LX050

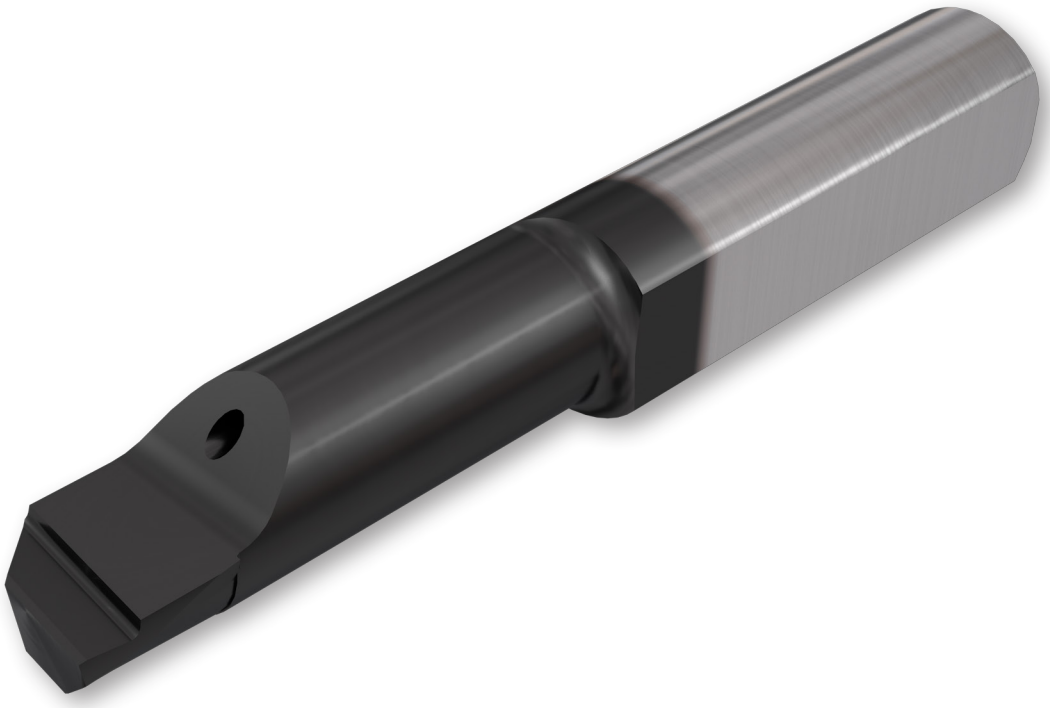
Reinforced Boring Inserts
with Internal Coolant Holes



Designation	Dimensions								IC908
	DCONMS	DMIN	CDX(1)	LU	RE	LF	a	WF	
PICCO R/LX050.2-5R15	4.00	2.00	0.10	5.00	0.15	19.00	1.80	-	•
PICCO R/LX050.2-10R05	4.00	2.00	0.10	10.00	0.05	24.00	1.80	-	•
PICCO R/LX050.2-10R15	4.00	2.00	0.10	10.00	0.15	24.00	1.80	-	•
PICCO R/LX050.3-16R10	4.00	3.00	0.15	16.00	0.10	30.00	2.70	0.70	•
PICCO R/LX050.3-16R20	4.00	3.00	0.15	16.00	0.20	30.00	2.70	0.70	•
PICCO R/LX050.4-10R10	4.00	4.00	0.20	10.00	0.10	24.00	3.60	1.60	•
PICCO R/LX050.4-10R20	4.00	4.00	0.20	10.00	0.20	24.00	3.60	1.60	•
PICCO R/LX050.4-16R10	4.00	4.00	0.20	16.00	0.10	30.00	3.60	1.60	•
PICCO R/LX050.4-16R20	4.00	4.00	0.20	16.00	0.20	30.00	3.60	1.60	•
PICCO R/LX050.5-15R10	5.00	5.00	0.30	15.00	0.10	30.00	4.60	2.10	•
PICCO R/LX050.5-15R20	5.00	5.00	0.30	15.00	0.20	30.00	4.60	2.10	•
PICCO R/LX050.5-25R10	5.00	5.00	0.30	25.00	0.10	40.00	4.60	2.10	•
PICCO R/LX050.5-25R20	5.00	5.00	0.30	25.00	0.20	40.00	4.60	2.10	•
PICCO R/LX050.6-15R10	6.00	6.00	0.40	15.00	0.10	30.00	5.50	2.50	•
PICCO R/LX050.6-15R20	6.00	6.00	0.40	15.00	0.20	30.00	5.50	2.50	•
PICCO R/LX050.6-22R20	6.00	6.00	0.40	22.00	0.20	37.00	5.50	2.50	•
PICCO R/LX050.6-35R20	6.00	6.00	0.40	35.00	0.20	50.00	5.50	2.50	•

• Left-hand inserts on request

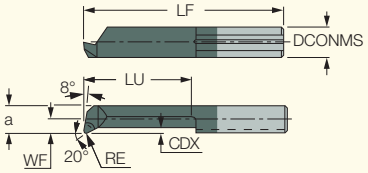
(1) Cutting depth maximum

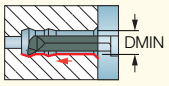


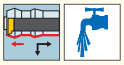
PICCOCUT

PICCO R/L 050, 053, 055

Inserts for Internal Turning and Chamfering







Right-hand shown

Designation	Dimensions								Tough ↔ Hard	
	DCONMS	DMIN	CDX[2]	LU	RE	LF	a	WF	IC228	IC908
PICCO R 050.06-2 [1]	4.00	0.60	0.08	2.00	0.04	20.00	0.50	-	•	•
PICCO R 050.06-3 [1]	4.00	0.60	0.08	3.00	0.04	20.00	0.50	-	•	•
PICCO R 050.08-4	4.00	0.80	0.08	4.00	0.04	20.00	0.70	-		•
PICCO R/L 050.1-5	4.00	1.00	0.10	4.50	0.05	20.00	0.90	-	•	•
PICCO R/L 050.1-7	4.00	1.00	0.10	6.50	0.05	22.00	0.90	-	•	•
PICCO R 050.15-5	4.00	1.50	0.10	5.00	0.05	19.00	1.30	-		•
PICCO R 050.15-10	4.00	1.50	0.10	10.00	0.06	24.00	1.30	-		•
PICCO R/L 050.2-5	4.00	2.00	0.10	4.00	0.05	19.00	1.70	-	•	•
PICCO R 055.2-5	4.00	2.00	0.10	5.00	0.05	19.00	1.70	-		•
PICCO R/L 050.2-10	4.00	2.00	0.10	9.00	0.05	24.00	1.70	-	•	•
PICCO R 055.2-10	4.00	2.00	0.10	10.00	0.05	24.00	1.70	-		•
PICCO L 050.2-15	4.00	2.00	0.10	15.00	0.05	29.00	1.70	-	•	•
PICCO R 050.2-15	4.00	2.00	0.10	14.00	0.05	29.00	1.70	-	•	•
PICCO R 055.2-15	4.00	2.00	0.10	15.00	0.05	29.00	1.70	-		•
PICCO R 050.25-5	4.00	2.50	0.15	5.00	0.05	19.00	2.20	0.20		•
PICCO R 050.25-10	4.00	2.50	0.15	10.00	0.07	24.00	2.20	0.20		•
PICCO R 050.25-16	4.00	2.50	0.15	16.00	0.07	30.00	2.20	0.20		•
PICCO R 053.3-10	4.00	2.80	0.20	9.00	0.03	24.00	2.60	0.60		•
PICCO R 055.3-10	4.00	2.80	0.20	10.00	0.05	24.00	2.60	0.60		•
PICCO R/L 050.3-10	4.00	2.80	0.20	9.00	0.10	24.00	2.60	0.60	•	•
PICCO R 053.3-16	4.00	2.80	0.20	15.00	0.03	30.00	2.60	0.60		•
PICCO R 055.3-16	4.00	2.80	0.20	16.00	0.05	30.00	2.60	0.60		•
PICCO R/L 050.3-16	4.00	2.80	0.20	15.00	0.10	30.00	2.60	0.60	•	•
PICCO R 053.3-20	4.00	2.80	0.20	19.00	0.03	34.00	2.60	0.60		•
PICCO R/L 050.3-20	4.00	2.80	0.20	19.00	0.10	34.00	2.60	0.60	•	•
PICCO R 050.35-10	4.00	3.50	0.25	10.00	0.10	24.00	3.10	1.10		•
PICCO R 050.35-16	4.00	3.50	0.25	16.00	0.10	30.00	3.10	1.10		•
PICCO R 050.35-20	4.00	3.50	0.25	20.00	0.10	34.00	3.10	1.10		•
PICCO R 050.35-24	4.00	3.50	0.25	24.00	0.10	38.00	3.10	1.10		•
PICCO R 053.4-10	4.00	4.00	0.30	9.00	0.03	24.00	3.50	1.50		•
PICCO R 055.4-10	4.00	4.00	0.30	10.00	0.05	24.00	3.50	1.50		•
PICCO R/L 050.4-10	4.00	4.00	0.30	9.00	0.10	24.00	3.50	1.50	•	•
PICCO R 053.4-16	4.00	4.00	0.30	15.00	0.03	30.00	3.50	1.50		•
PICCO R 055.4-16	4.00	4.00	0.30	16.00	0.05	30.00	3.50	1.50		•
PICCO R/L 050.4-16	4.00	4.00	0.30	15.00	0.10	30.00	3.50	1.50	•	•
PICCO R 053.4-20	4.00	4.00	0.30	19.00	0.03	34.00	3.50	1.50		•
PICCO R 055.4-20	4.00	4.00	0.30	20.00	0.05	34.00	3.50	1.50		•
PICCO R/L 050.4-20	4.00	4.00	0.30	19.00	0.10	34.00	3.50	1.50	•	•
PICCO R/L 050.4-24	4.00	4.00	0.30	23.00	0.10	38.00	3.50	1.50	•	•
PICCO R/L 050.4-28	4.00	4.00	0.30	27.00	0.10	42.00	3.50	1.50	•	•
PICCO R 055.4-28	4.00	4.00	0.50	28.00	0.05	42.00	3.50	1.50		•
PICCO R 055.5-10	5.00	5.00	0.50	9.00	0.05	25.00	4.40	1.90		•
PICCO R/L 050.5-10	5.00	5.00	0.50	9.00	0.15	25.00	4.40	1.90	•	•
PICCO R 055.5-15	5.00	5.00	0.50	14.00	0.05	30.00	4.40	1.90		•
PICCO R/L 050.5-15	5.00	5.00	0.50	14.00	0.15	30.00	4.40	1.90	•	•
PICCO R 055.5-20	5.00	5.00	0.50	19.00	0.05	35.00	4.40	1.90		•
PICCO R/L 050.5-20	5.00	5.00	0.50	19.00	0.15	35.00	4.40	1.90	•	•
PICCO R 055.5-25	5.00	5.00	0.50	24.00	0.05	40.00	4.40	1.90		•
PICCO R/L 050.5-25	5.00	5.00	0.50	24.00	0.15	40.00	4.40	1.90	•	•
PICCO R 055.5-30	5.00	5.00	0.50	29.00	0.05	45.00	4.40	1.90		•
PICCO R/L 050.5-30	5.00	5.00	0.50	29.00	0.15	45.00	4.40	1.90	•	•
PICCO R/L 050.5-35	5.00	5.00	0.50	34.00	0.15	50.00	4.40	1.90	•	•
PICCO R 055.6-15	6.00	6.00	0.50	14.00	0.05	30.00	5.30	2.30		•
PICCO R/L 050.6-15	6.00	6.00	0.50	14.00	0.15	30.00	5.30	2.30	•	•
PICCO R 055.6-22	6.00	6.00	0.50	21.00	0.05	37.00	5.30	2.30		•
PICCO R/L 050.6-22	6.00	6.00	0.50	21.00	0.15	37.00	5.30	2.30	•	•
PICCO R 055.6-25	6.00	6.00	0.50	24.00	0.05	40.00	5.30	2.30		•
PICCO R/L 050.6-25	6.00	6.00	0.50	24.00	0.15	40.00	5.30	2.30	•	•
PICCO R 055.6-30	6.00	6.00	0.50	29.00	0.05	45.00	5.30	2.30		•

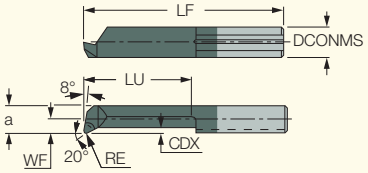
• Specify right- or left-hand bars

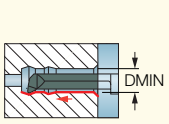
[1] Maximum D.O.C.=0.01-0.03mm, maximum feed=0.01mm/rev. [2] Cutting depth maximum

PICCOCUT

PICCO R/L 050, 053, 055

Inserts for Internal Turning and Chamfering





Right-hand shown

Designation	Dimensions								Tough ↔ Hard	
	DCONMS	DMIN	CDX(2)	LU	RE	LF	a	WF	IC228	IC908
PICCO R/L 050.6-30	6.00	6.00	0.50	29.00	0.15	45.00	5.30	2.30	●	●
PICCO R/L 050.6-35	6.00	6.00	0.50	34.00	0.15	50.00	5.30	2.30	●	●
PICCO R/L 050.6-42	6.00	6.00	0.50	41.00	0.15	57.00	5.30	2.30	●	●
PICCO R/L 050.7-20	7.00	6.80	0.60	19.00	0.15	35.00	6.30	2.80	●	●
PICCO R/L 050.7-25	7.00	6.80	0.60	24.00	0.15	40.00	6.30	2.80	●	●
PICCO R/L 050.7-30	7.00	6.80	0.60	29.00	0.15	45.00	6.30	2.80	●	●
PICCO R/L 050.7-35	7.00	6.80	0.60	34.00	0.15	50.00	6.30	2.80	●	●
PICCO R/L 050.7-40	7.00	6.80	0.60	39.00	0.15	55.00	6.30	2.80	●	●
PICCO R/L 050.7-45	7.00	6.80	0.60	44.00	0.15	60.00	6.30	2.80	●	●
PICCO R/L 050.7-50	7.00	6.80	0.60	49.00	0.15	65.00	6.30	2.80	●	●

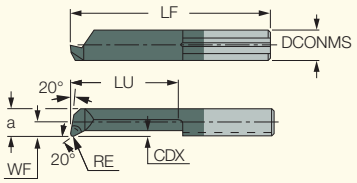
• Specify right- or left-hand bars

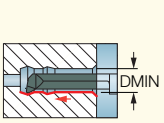
(1) Maximum D.O.C.=0.01-0.03mm, maximum feed=0.01mm/rev. (2) Cutting depth maximum

PICCOCUT

PICCO R 050.20

Inserts for Internal Turning and Chamfering Next to the Bottom of Blind Holes





Right-hand shown

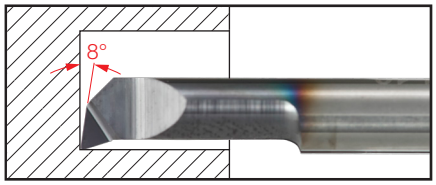
Designation	Dimensions								IC908
	DCONMS	DMIN	CDX[1]	LU	RE	LF	a	WF	
PICCO R 050.20.2-10	4.00	2.00	0.10	10.00	0.05	24.00	1.70	-	●
PICCO R 050.20.3-10	4.00	2.80	0.20	10.00	0.10	24.00	2.60	0.60	●
PICCO R 050.20.4-16	4.00	4.00	0.30	16.00	0.10	30.00	3.50	1.50	●
PICCO R 050.20.5-20	5.00	5.00	0.50	19.00	0.15	35.00	4.40	1.90	●

• Specify right- or left-hand bars

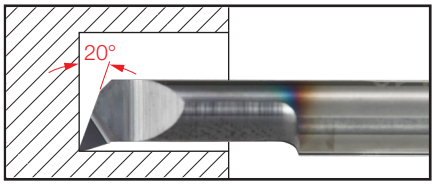
[1] Cutting depth maximum

For holders, see pages: • PICCO ACE-BH (485)

PICCO 050...



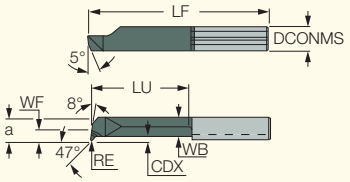
PICCO 050.20...



PICCOCUT

PICCO R/L 047

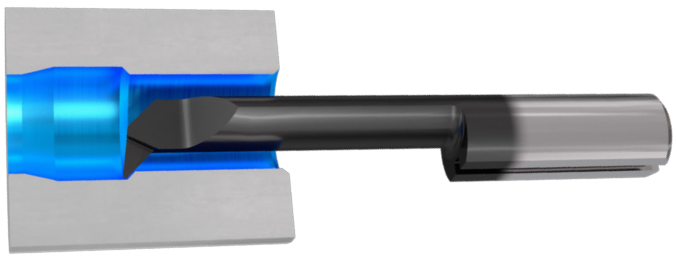
Inserts for Internal Deep Profiling



Right-hand shown

Designation	Dimensions									IC908
	DCONMS	DMIN	CDX	LU	RE	LF	a	WF	WB	
PICCO L 047.4-20	4.00	4.00	0.30	20.00	0.15	34.00	3.50	1.50	3.00	●
PICCO R 047.4-20	4.00	4.00	0.30	20.00	0.15	34.00	3.50	1.50	3.00	●
PICCO L 047.5-25	5.00	5.00	0.50	25.00	0.15	40.00	4.40	1.90	3.80	●
PICCO R 047.5-25	5.00	5.00	0.50	25.00	0.15	40.00	4.40	1.90	3.80	●
PICCO L 047.6-30	6.00	6.00	0.50	30.00	0.15	45.00	5.30	2.30	4.50	●
PICCO R 047.T6-22	6.00	6.00	1.80	22.00	0.15	37.00	5.30	2.30	3.40	●
PICCO R 047.T6-30	6.00	6.00	1.80	30.00	0.15	45.00	5.30	2.30	3.40	●
PICCO R 047.6-30	6.00	6.00	0.50	30.00	0.15	45.00	5.30	2.30	4.50	●

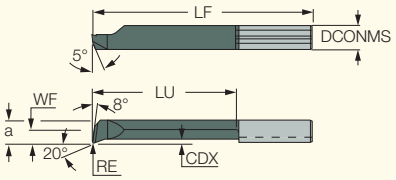
• Left hand inserts on request

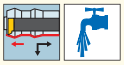


PICCOCUT

PICCO R/L 050-C

Inserts with Chipformers for Internal Boring and Profiling





Right-hand shown

Designation	Dimensions								IC908
	DCONMS	DMIN	CDX(1)	LU	RE	LF	a	WF	
PICCO R/L 050.4-10C	4.00	4.00	0.30	10.00	0.10	24.00	3.50	1.50	●
PICCO R/L 050.4-20C	4.00	4.00	0.30	20.00	0.10	34.00	3.50	1.50	●
PICCO R/L 050.4-24C	4.00	4.00	0.30	24.00	0.10	38.00	3.50	1.50	●
PICCO R/L 050.4-28C	4.00	4.00	0.30	28.00	0.10	42.00	3.50	1.50	●
PICCO R 050.4-16C	4.00	4.00	0.30	16.00	0.10	30.00	3.50	1.50	●
PICCO R/L 050.5-10C	5.00	5.00	0.50	10.00	0.15	25.00	4.40	1.90	●
PICCO R/L 050.5-20C	5.00	5.00	0.50	20.00	0.15	35.00	4.40	1.90	●
PICCO R/L 050.5-25C	5.00	5.00	0.50	25.00	0.15	40.00	4.40	1.90	●
PICCO R/L 050.5-30C	5.00	5.00	0.50	30.00	0.15	45.00	4.40	1.90	●
PICCO R 050.5-15C	5.00	5.00	0.50	15.00	0.15	30.00	4.40	1.90	●
PICCO R 050.5-35C	5.00	5.00	0.50	35.00	0.15	50.00	4.40	1.90	●
PICCO R/L 050.6-15C	6.00	6.00	0.50	15.00	0.15	30.00	5.30	2.30	●
PICCO R/L 050.6-22C	6.00	6.00	0.50	22.00	0.15	37.00	5.30	2.30	●
PICCO R/L 050.6-25C	6.00	6.00	0.50	25.00	0.15	40.00	5.30	2.30	●
PICCO R/L 050.6-30C	6.00	6.00	0.50	30.00	0.15	45.00	5.30	2.30	●
PICCO R/L 050.6-35C	6.00	6.00	0.50	35.00	0.15	50.00	5.30	2.30	●
PICCO R/L 050.6-42C	6.00	6.00	0.50	42.00	0.15	57.00	5.30	2.30	●
PICCO R/L 050.7-20C	7.00	6.80	0.60	20.00	0.15	35.00	6.30	2.80	●
PICCO R/L 050.7-35C	7.00	6.80	0.60	35.00	0.15	50.00	6.30	2.80	●
PICCO R/L 050.7-40C	7.00	6.80	0.60	40.00	0.15	55.00	6.30	2.80	●
PICCO L 050.7-50C	7.00	6.80	0.60	50.00	0.15	65.00	6.30	2.80	●
PICCO R 050.7-25C	7.00	6.80	0.60	25.00	0.15	40.00	6.30	2.80	●
PICCO R 050.7-30C	7.00	6.80	0.60	30.00	0.15	45.00	6.30	2.80	●

• All left-hand inserts on request

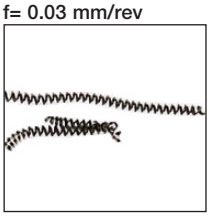
(1) Cutting depth maximum

For holders, see page: • PICCO ACE-BH (485)

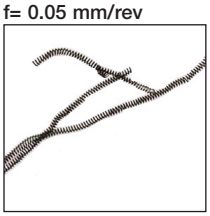
Stainless Steel 316L

PICCO R 050.6-35C with Chipbreaker

f= 0.03 mm/rev

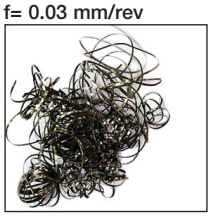


f= 0.05 mm/rev

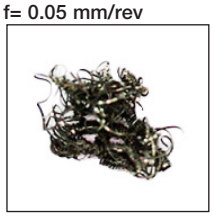


PICCO R 050.6-35 Standard

f= 0.03 mm/rev



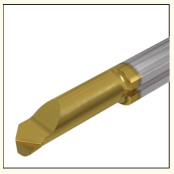
f= 0.05 mm/rev

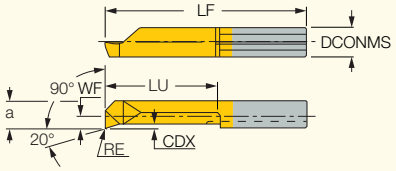


PICCOCUT

PICCO R/L 090

Inserts for Internal Turning and Profiling





Right-hand shown

Designation	Dimensions								IC228
	DCONMS	DMIN	CDX(1)	LU	RE	LF	a	WF	
PICCO R/L 090.3-10	4.00	2.80	0.20	9.00	0.10	24.00	2.60	0.60	●
PICCO R/L 090.3-16	4.00	2.80	0.20	15.00	0.10	30.00	2.60	0.60	●
PICCO R/L 090.4-10	4.00	4.00	0.30	9.00	0.10	24.00	3.50	1.50	●
PICCO R/L 090.4-16	4.00	4.00	0.30	15.00	0.10	30.00	3.50	1.50	●
PICCO R/L 090.5-10	5.00	5.00	0.50	9.00	0.15	25.00	4.40	1.90	●
PICCO R 090.5-15	5.00	5.00	0.50	14.00	0.15	30.00	4.40	1.90	●
PICCO R/L 090.5-20	5.00	5.00	0.50	19.00	0.15	35.00	4.40	1.90	●

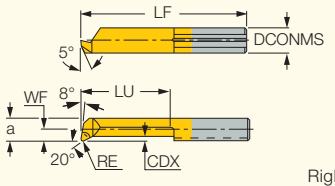
• Specify right- or left-hand bars

(1) Cutting depth maximum

PICCOCUT

PICCO R 050 (CBN)

CBN Tipped Inserts for Internal Turning, Profiling and Chamfering Hard Steel



Right-hand shown • HARD MATERIALS

Designation	Dimensions								IB55
	DCONMS	WF	a	LF	LU	CDX(1)	DMIN	RE	
PICCO R 050.3-10B	4.00	0.60	2.60	25.50	10.00	0.20	2.80	0.10	●
PICCO R 050.4-10B	4.00	1.50	3.50	25.50	10.00	0.30	4.00	0.10	●
PICCO R 050.5-15B	5.00	1.90	4.40	31.50	15.00	0.50	5.00	0.15	●
PICCO R 050.6-15B	6.00	2.30	5.30	31.50	15.00	0.50	6.00	0.15	●
PICCO R 050.7-20B	7.00	2.80	6.30	36.50	20.00	0.60	6.80	0.15	●

• It is not recommended to use coolant when machining with CBN tipped tools • Available on request only

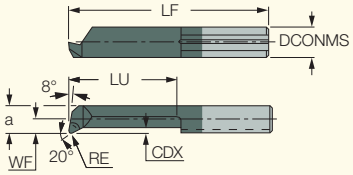
(1) Cutting depth maximum

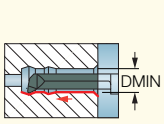
For holders, see pages: • PICCO ACE-BH (485)

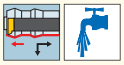
PICCOCUT

PICCO R/LHD 050

Inserts for Internal Turning and Chamfering Hard Steel - Up to 65 HRC







Designation	Dimensions								IC902
	DCONMS	DMIN	CDX(1)	LU	RE	LF	a	WF	
PICCO R/LHD 050.2-5	4.00	2.00	0.10	4.00	0.05	19.00	1.70	-	●
PICCO RHD 050.3-10	4.00	2.80	0.20	9.00	0.10	24.00	2.60	0.60	●
PICCO RHD 050.3-16	4.00	2.80	0.20	15.00	0.10	30.00	2.60	0.60	●
PICCO RHD 050.4-10	4.00	4.00	0.30	9.00	0.10	24.00	3.50	1.50	●
PICCO RHD 050.4-20	4.00	4.00	0.30	19.00	0.10	34.00	3.50	1.50	●
PICCO RHD 050.5-15	5.00	5.00	0.50	14.00	0.15	30.00	4.40	1.90	●
PICCO R/LHD 050.6-15	6.00	6.00	0.50	14.00	0.15	30.00	5.30	2.30	●
PICCO RHD 050.7-20	7.00	6.80	0.60	19.00	0.15	35.00	6.30	2.80	●
PICCO RHD 050.7-25	7.00	6.80	0.60	24.00	0.15	40.00	6.30	2.80	●
PICCO RHD 050.7-35	7.00	6.80	0.60	34.00	0.15	50.00	6.30	2.80	●

• Specify right- or left-hand bars

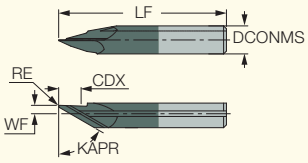
(1) Cutting depth maximum

For holders, see pages: • PICCO ACE-BH (485)

PICCOCUT

PICCO R/L 520

Inserts for Internal Chamfering



Right-hand shown

Designation	Dimensions							IC908
	DCONMS	DMIN	CDX	RE	LF	WF	KAPR(1)	
PICCO R/L 520.0045-15	5.00	1.00	3.50	0.20	30.00	1.50	45.0	●
PICCO R/L 520.0060-15	5.00	1.00	4.00	0.20	30.00	1.50	60.0	●

• Left hand inserts on request

(1) Tool cutting edge angle

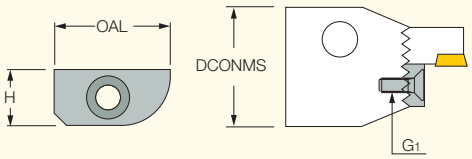
For holders, see pages: • PICCO ACE-BH (485)

ITSBORE

Accessories

PLT

Cover Plate Protects the Serrated Faces When a Single Toolholder Is Used



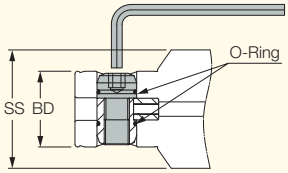
Designation	DCONMS	H	OAL	G1
PLT 16	16.00	7.0	14.00	SR M3x12 DIN912
PLT 20	20.00	8.5	17.00	SR M4x14 DIN912
PLT 32	32.00	13.9	28.00	SR M5x20 DIN7991
PLT 40	40.00	17.4	35.00	SR M6x25 DIN7991
PLT 50	50.00	21.4	47.50	SR M8x25 DIN7991
PLT 63	63.00	26.4	62.00	SR M10x30 DIN7991

ITSBORE

Accessories

BH MB COUPLING SET

Coupling Set for ITS-BORE MB Connections



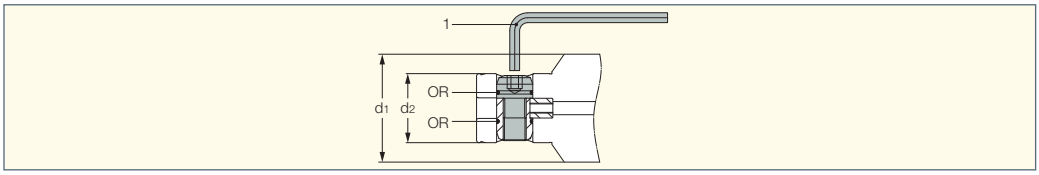
Designation	SS	BD
BH MB14/16 COUPLING SET	MB14/MB16	10.00
BH MB20 COUPLING SET	MB20	13.00
BH MB25 COUPLING SET	MB25	16.00
BH MB32 COUPLING SET	MB32	20.00
BH MB40 COUPLING SET	MB40	25.00
BH MB50 COUPLING SET	MB50	32.00
BH MB63/80 COUPLING SET	MB63/MB80	42.00
BH MB110/140 COUPLING SET	MB110/MB140	76.00

Spare Parts

Designation				
BH MB14/16 COUPLING SET	BH LOCK SR 14/16	BH LOCK GEAR 14/16	BH LOCK NUT 14/16	HW 2.5*
BH MB20 COUPLING SET	BH LOCK SR 20	BH LOCK GEAR 20	BH LOCK NUT 20	HW 3.0*
BH MB25 COUPLING SET	BH LOCK SR 25	BH LOCK GEAR 25	BH LOCK NUT 25	HW 3.0*
BH MB32 COUPLING SET	BH LOCK SR 32	BH LOCK GEAR 32	BH LOCK NUT 32	HW 4.0*
BH MB40 COUPLING SET	BH LOCK SR 40		BH LOCK NUT 40	HW 5.0*
BH MB50 COUPLING SET	BH LOCK SR 50	BH LOCK GEAR 50	BH LOCK NUT 50	HW 6.0*
BH MB63/80 COUPLING SET	BH LOCK SR 63/80	BH LOCK GEAR 63/80		HW 8.0*
BH MB110/140 COUPLING SET	BH LOCK SR 110/140	BH LOCK GEAR 110/140	BH LOCK NUT 110/140	HW 14.0*

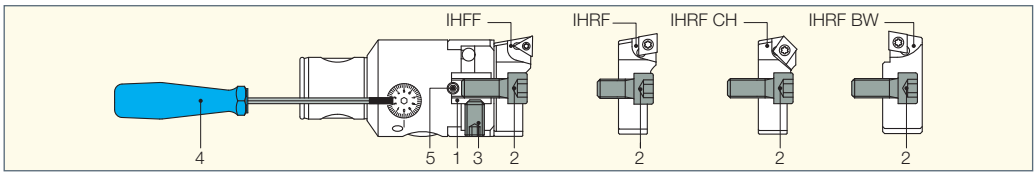
* Optional, to be ordered separately

BH MB Coupling Set



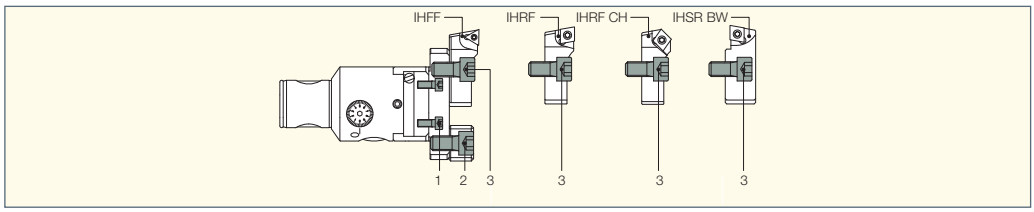
Designation	d1	d2	1	OR
BH MB14 COUPLING SET	14	10	2.5	-
BH MB16 COUPLING SET	16	10	2.5	-
BH MB20 COUPLING SET	20	13	3	-
BH MB25 COUPLING SET	25	16	3	-
BH MB32 COUPLING SET	32	20	4	ORM 0075-10
BH MB40 COUPLING SET	40	25	5	ORM 0100-10
BH MB50 COUPLING SET/M5	50	32	6	ORM 0130-10
BH MB63-80 COUPLING SET	63 - 80	42	8	OR 2075
BH MB110 COUPLING SET	110	76	14	OR 3112

BHF - Spare Parts



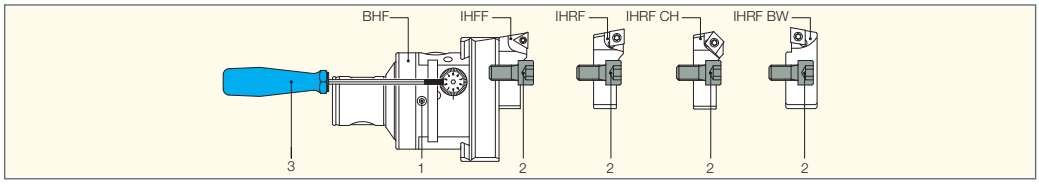
Designation	1	2	3	4	5
BHF...-16...	-	SR M3X6 DIN 912	-	BH HW 1.5 HANDLE	SR M3X4.5 DIN 913
BHF...-20...	-	SR M4X8 DIN 912	-	BH HW 1.5 HANDLE	SR M3X4.5 DIN 913
BHF...-25...	-	SR M5X1O DIN 912	-	BH HW 2.0 HANDLE	SR M4X4 DIN 913
BHF...-32...	-	SR M6X12 DIN 912	-	BH HW 2.0 HANDLE	SR M4X5 DIN 913
BHF...-40...	-	SR M8X14 DIN 912	-	BH HW 2.5 HANDLE	SR M5X6 DIN 913 SR
BHF...-50-60	BH NUT 10	SR M1OX25 DIN 912	SR M10X16 DIN 913	BH HW 2.5 HANDLE	SR M5X8 DIN 913

BHF - Spare Parts



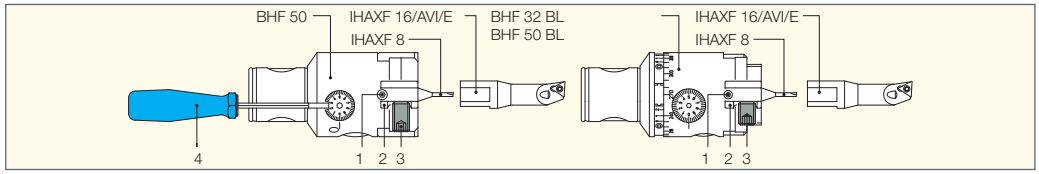
Designation	1	2	3
BHF...-50...	SR M5X12 DIN 912	SR M1OX20 DIN 912	SR M1OX25 DIN 912

BHF - Spare Parts



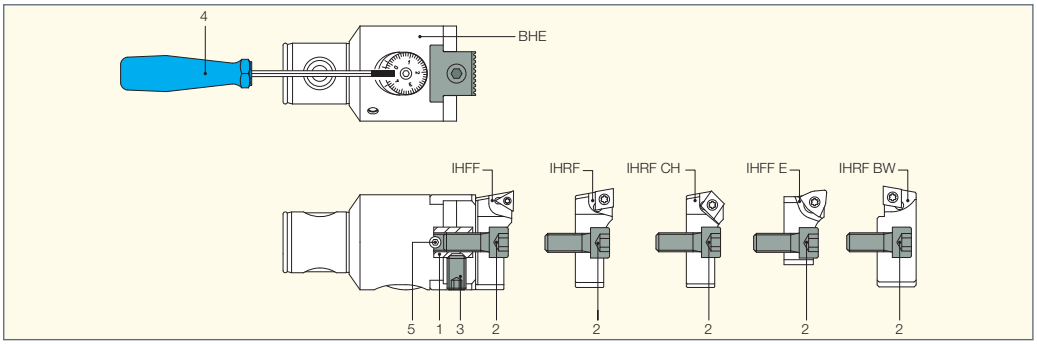
Designation	1	2	3
BHF...-63...	SR M6X10 DIN 915		
BHF...-80...	SR M6X14 DIN 915	SR M1OX25 DIN 912	BH HW 3.0 HANDLE
BHF...-125...	SR M6X22 DIN 915		

BHF - Spare Parts



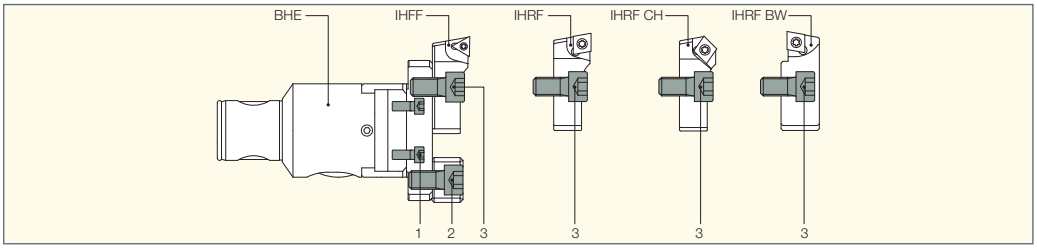
Designation	1	2	3	4
BHF...-50...	SR M5X8 DIN 913	SLEEVE D 8-D16	SR M10X10 DIN 913	BH HW 2.5 HANDLE
BHF...-32... BL	SR M4X5 DIN 913	-	SR M5X8 DIN 913 SR M5X12 DIN 913	BH HW 2.0 HANDLE
BHF...-50... BL	SR M5X8 DIN 913	SLEEVE D 8-D16	SR M10X10 DIN 913	BH HW 2.5 HANDLE

BHE MB - Spare Parts



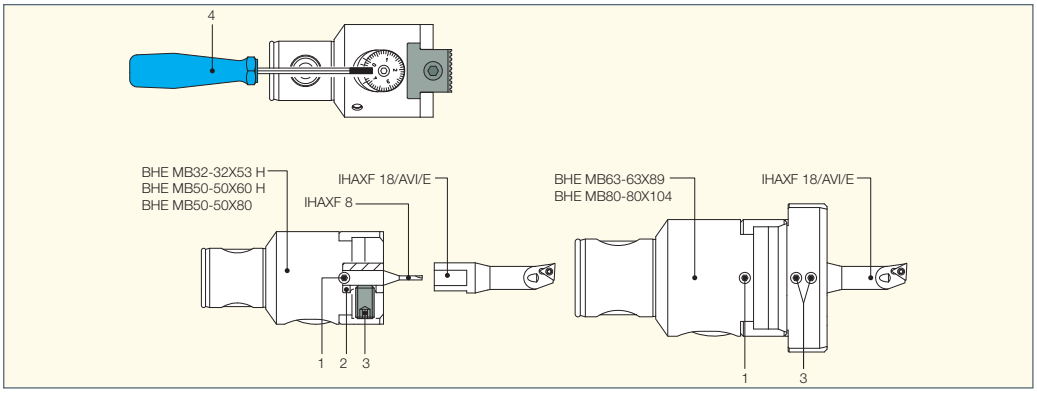
Designation	1	2	3	4	5
BHE MB14-14X30	-	SR M3X6 DIN 912	-	BH HW 1.5 HANDLE	SR M3X3.5 DIN 913
BHE MB16-16X34	-	SR M3X6 DIN 912	-	BH HW 1.5 HANDLE	SR M3X4.5 DIN 913
BHE MB20-20X40	-	SR M4X8 DIN 912	-	BH HW 1.5 HANDLE	SR M3X4.5 DIN 913
BHE MB25-25X50	-	SR M5X1O DIN 912	-	BH HW 1.5 HANDLE	SR M4X4 DIN 913
BHE MB32-32X63	-	SR M6X12 DIN 912	-	BH HW 2.5 HANDLE	SR M5X5 DIN 913
BHE MB40-40X80	-	SR M8X14 DIN 912	-	BH HW 3.0 HANDLE	SR M6X6 DIN 913
BHE MB50-50X80	BH NUT 10	SR M1OX25 DIN 912	SR M10X16 DIN 913	BH HW 3.0 HANDLE	SR M6X8 DIN 913
BHE MB63-63X89	-	SR M1OX20 DIN 912	-	BH HW 3.0 HANDLE	SR M6X8 DIN 913
BHE MB80-80X104	-	SR M1OX25 DIN 912	-	BH HW 3.0 HANDLE	SR M6X12 DIN 913

BHE - Spare Parts



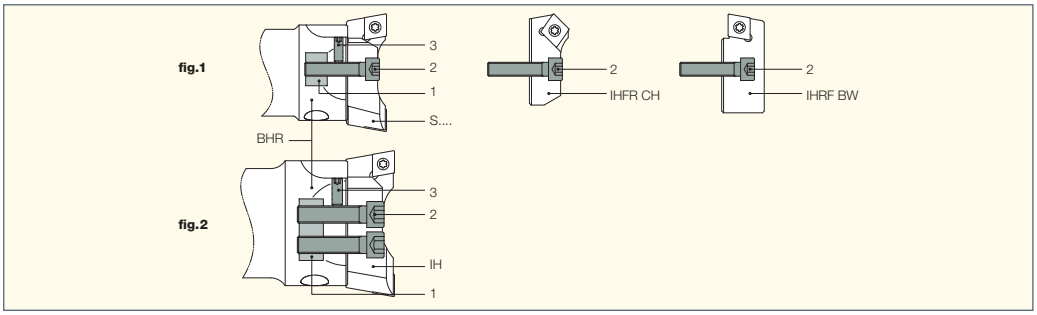
Designation	1	2	3
BHE MB50-50X80	SR M5X12 DIN 912	SR M1OX20 DIN 912	SR M1OX25 DIN 912
BHE MB63-63X89	SR M5X25 DIN 912		
BHE MB80-80X104			

BHE - Spare Parts



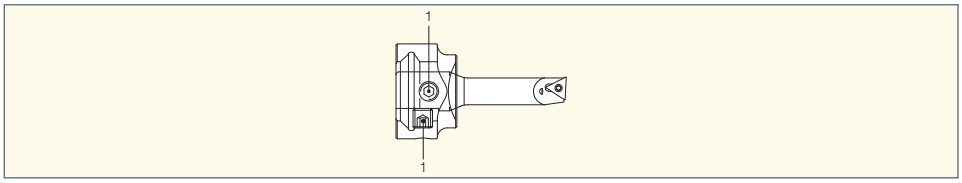
Designation	1	2	3	4
BHE MB32-32X53 H	SR M5X5 DIN 913	-	SR M5X8 DIN 913	BH HW 2.5 HANDLE
	SR M5X5 DIN 913	-	SR M5X12 DIN 913	
BHE MB50-50X60 H	SR M6X8 DIN 913	SLEEVE D 8-D16	SR M10X10 DIN 913	BH HW 3.0 HANDLE
BHE MB50-50X80	SR M6X8 DIN 913	SLEEVE D 8-D16	SR M10X10 DIN 913	
BHE MB63-63X89	SR M6X8 DIN 913	-	SR M6X6 DIN 913	
BHE MB80-80X104	SR M6X12 DIN 913	-	SR M6X6 DIN 913	

BHR - Spare Parts



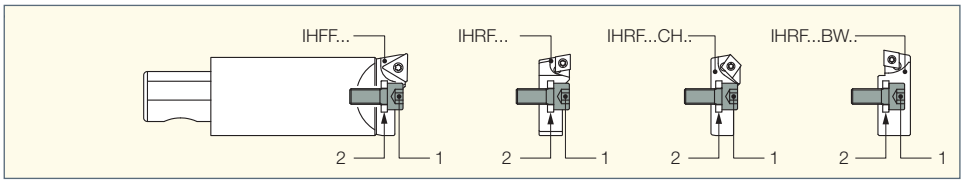
Designation	1	2	3
BHR MB16...16	BH NUT BHR MB16	SR M3X14 DIN912	SR M3X4 DIN913
BHR MB20...20	BH NUT BHR MB20	SR M4X15 DIN912	SR M3X5 DIN913
BHR MB25...25	BH NUT BHR MB25	SR M4X20 DIN912	SR M3X8 DIN913
BHR MB32...32	BH NUT BHR MB32	SR M5X25 DIN912	SR M4X12 DIN913
BHR MB40...50	BH NUT BHR MB40	SR M6X30 DIN912	SR M5X14 DIN913
BHR MB50...50	BH NUT BHR MB50	SR M8X35 DIN912	SR M5X12 DIN913
BHR MB50...63	BH NUT BHR MB63	SR M10X40 DIN912	SR M6X16 DIN913
BHR MB63...63	BH NUT BHR MB63	SR M10X40 DIN912	SR M6X16 DIN913
BHR MB80...80	BH NUT BHR MB80	SR M12X45 DIN912	SR M8X25 DIN913

ADBH - Spare Parts



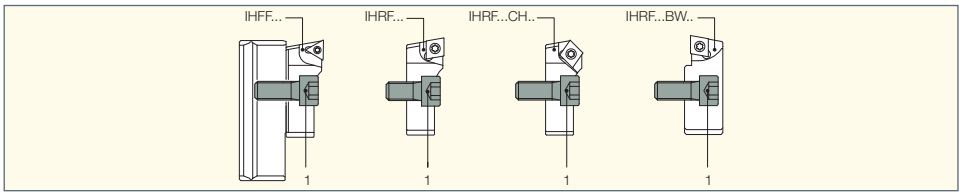
Designation	1
ADBH 30XD16	TSR M8X8 DIN 915

BBH-D - Spare Parts



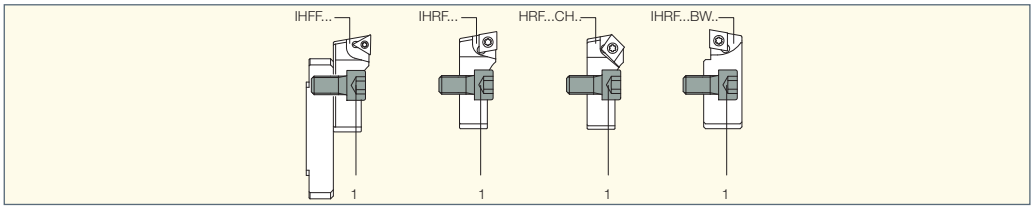
Designation	1	2
BBH D16-53	SR M5X12 DIN 912	WASHER DIN 125A M5
BBH D16-105	SR M5X12 DIN 912	WASHER DIN 125A M5

BHFH - Spare Parts



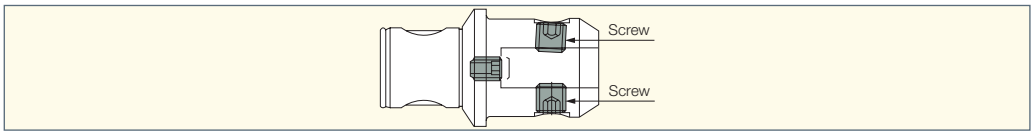
Designation	1
BHFH 30X75	SR M1OX18 DIN 912
BHFH 40X133	
BHFH 30X93	
BHFH 40X200	SR M1OX25 DIN 912
BHFH 30X135	
BHFH 40X300	
BHFH 40X400	

BHEH - Spare Parts



Designation	1
BHEH 24x75	SR M1OX20 DIN 912
BHEH 28x80	SR M1OX25 DIN 912
BHEH 28x108	
BHEH 28x148	

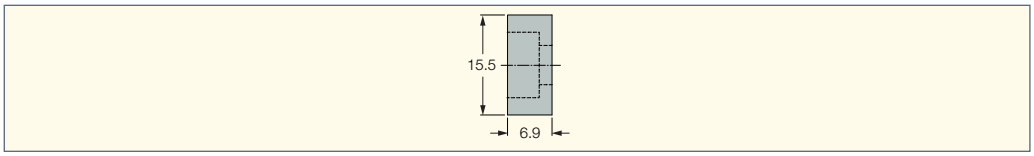
EMH - Spare Parts



Designation	Screw #1	Screw # 2
EMH MB 50-6	EMH 50-6 SCREW	M6x10 EM SCREW
EMH MB 50-8	EMH 50-8 SCREW	M8x10 EM SCREW
EMH MB 50-10	EMH 50-10 SCREW	M10x12 EM SCREW
EMH MB 50-12	EMH 50-12 SCREW	M12x16 EM SCREW
EMH MB 50-14	EMH 50-14 SCREW	M14x16 EM SCREW
EMH MB 50-16	EMH 50-16 SCREW	M14x16 EM SCREW
EMH MB 50-20	EMH 50-20 SCREW	M16x16 EM SCREW
EMH MB 63-16	EMH 63-16 SCREW	M14x16 EM SCREW
EMH MB 63-20	EMH 63-20 SCREW	M16x16 EM SCREW
EMH MB 63-25	EMH 63-25 SCREW	M18x20 EM SCREW
EMH MB 63-32	EME 63-32 SCREW	M18x20 EM SCREW
EMH MB 80-40	EMH 80-40 SCREW	M20x20 EM SCREW

BH WASHER - Spare Parts

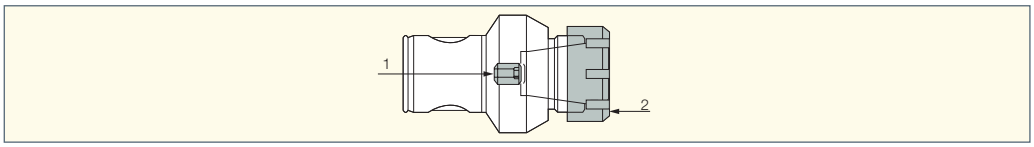
For Kit BHE



Designation	For Kit BHE
BH WASHER IH..50	KIT BHE MB50-50X80
	KIT BHE MB63-63X89
	KIT BHE MB80-80X104
	KIT BHF MB50-50X80 6-108

CC - Spare Parts

Components for CC MB



Designation	1	2	Wrench
CC MB16-ER11M	CC MB16 SCREW	NUT ER11 MINI	WRENCH ER11 MINI
CC MB20-ER16M	CC MB20 SCREW	NUT ER16 MINI	WRENCH ER16 MINI
CC MB25-ER20M	CC MB25 SCREW	NUT ER20 MINI	WRENCH ER20 MINI
CC MB32-ER25M	CC MB32 SCREW	NUT ER25 MINI	WRENCH ER25 MINI
CC MB40-ER25	CC MB40 SCREW	NUT ER25 TOP	WRENCH ER25
CC MB50-ER25	CC MB50 SCREW	NUT ER25 TOP	WRENCH ER25
CC MB50-ER32	CC MB50 SCREW	NUT ER32 TOP	WRENCH ER32
CC MB63-ER32	CC MB63 SCREW	NUT ER32 TOP	WRENCH ER32
CC MB63-ER40	CC MB63 SCREW	NUT ER40 TOP	WRENCH ER40

User Guide and Cutting Conditions

ISO	Workpiece Material	Hardness HB	Overhang LDRED/BDRED	a_p (mm) RE (Radius)	Boring Range 18-28		Boring Range 28-50		Boring Range 50-68	
					0.5-1.2	1.2-2.5	0.8-1.5	1.5-2.5	0.8-1.5	1.5-3.0
					0.2	0.4	0.2-0.4	0.4	0.2-0.4	0.4-0.8
P	carbon steel	HB<200	2.5	V_c (m/min)	150-180	120-150	160-200	140-170	160-200	140-180
			●●●	f (mm/rev)	0.1-0.2	0.08-0.2	0.15-0.2	0.15-0.2	0.15-0.25	0.08-0.2
			4	V_c (m/min)	140-160	100-140	160-180	120-150	160-180	120-150
			●●	f (mm/rev)	0.1-0.18	0.08-0.15	0.1-0.12	0.08-0.1	0.1-0.12	0.08-0.1
			6.3	V_c (m/min)	60-80	40-60	60-90	50-60	70-90	50-70
			●	f (mm/rev)	0.06-0.12	0.06-0.1	0.06-0.12	0.06-0.1	0.06-0.1	0.06-0.1
	carbon steel	HB>200	2.5	V_c (m/min)	130-160	100-130	140-180	120-160	140-180	120-160
			●●●	f (mm/rev)	0.08-0.15	0.08-0.12	0.08-0.2	0.06-0.12	0.08-0.25	0.08-0.18
			4	V_c (m/min)	110-140	80-110	100-140	80-120	100-140	80-120
			●●	f (mm/rev)	0.08-0.12	0.08-0.1	0.08-0.15	0.06-0.15	0.08-0.2	0.06-0.15
			6.3	V_c (m/min)	70-90	60-70	80-100	60-80	80-100	60-80
			●	f (mm/rev)	0.08-0.1	0.06-0.08	0.06-0.1	0.06-0.08	0.08-0.15	0.06-0.1

ISO	Workpiece Material	Hardness HB	Overhang LDRED/BDRED	a_p (mm) RE (Radius)	Boring Range 68-120		Boring Range 120-200		Boring Range 200-500	
					0.8-1.5	1.5-3.5	0.8-2.0	2.0-3.5	0.8-2.0	2.0-4.0
					0.2-0.4	0.4-0.8	0.2-0.4	R=0.4-0.8	R=0.2-0.4	R=0.4-0.8
P	carbon steel	HB<200	2.5	V_c (m/min)	160-220	150-180	180-250	160-200	220-280	200-220
			●●●	f (mm/rev)	0.15-0.25	0.08-0.2	0.15-0.3	0.1-0.2	0.15-0.3	0.1-0.15
			4	V_c (m/min)	140-180	120-150	160-200	140-180	N.R.	N.R.
			●●	f (mm/rev)	0.08-0.2	0.08-0.15	0.1-0.2	0.08-0.15		
			6.3	V_c (m/min)	70-100	50-70	N.R.	N.R.	N.R.	N.R.
			●	f (mm/rev)	0.06-0.1	0.06-0.1				
	carbon steel	HB>200	2.5	V_c (m/min)	140-180	120-160	150-170	100-140	100-140	80-120
			●●●	f (mm/rev)	0.15-0.3	0.12-0.2	0.15-0.25	0.1-0.2	0.15-0.3	0.1-0.2
			4	V_c (m/min)	120-150	100-140	100-130	80-110	N.R.	N.R.
			●●	f (mm/rev)	0.1-0.2	0.1-0.18	0.08-0.2	0.08-0.12		
			6.3	V_c (m/min)	80-100	60-80	N.R.	N.R.	N.R.	N.R.
			●	f (mm/rev)	0.08-0.12	0.08-0.12				

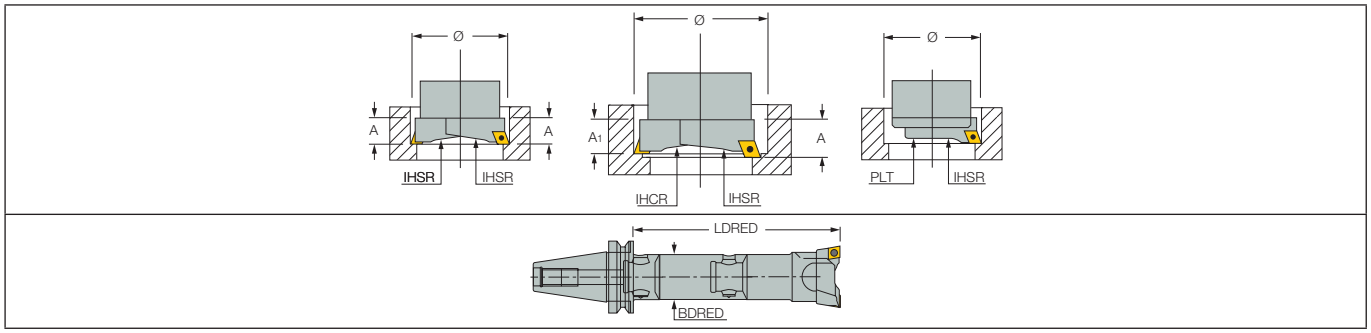
N.R. = Not Recommended

Stability

●●● Good

●● Normal

● Poor



In case of a single or a stepped boring cutter configuration, only half the feed should be applied.

BHR Rough Boring Cutting Data

ISO	Workpiece Material	Hardness HB	Overhang LDRED/BDRED	a_p (mm) RE (Radius)	Boring Range 18-28		Boring Range 28-50		Boring Range 50-68	
					0.5-1.0	1.0-1.8	0.5-1.0	1.0-1.8	0.5-1.2	1.2-2.0
					0.2	0.4	0.2-0.4	0.4	0.2-0.4	0.4-0.8
P	carbon steel	HB<200	2.5	V_c (m/min)	140-160	90-120	150-180	100-130	160-200	140-180
			●●●	f (mm/rev)	0.08-0.18	0.08-0.15	0.08-0.2	0.08-0.18	0.1-0.25	0.1-0.15
			4	V_c (m/min)	100-130	70-100	110-150	90-120	140-180	100-130
			●●	f (mm/rev)	0.08-0.15	0.06-0.12	0.08-0.18	0.08-0.15	0.8-0.18	0.08-0.12
			6.3	V_c (m/min)	80-100	60-90	80-100	70-90	100-140	80-120
			●	f (mm/rev)	0.08-0.15	0.06-0.1	0.06-0.12	0.06-0.12	0.6-0.15	0.08-0.1
	carbon steel	HB>200	2.5	V_c (m/min)	130-150	120-140	130-150	120-140	140-170	120-150
			●●●	f (mm/rev)	0.08-0.18	0.06-0.15	0.08-0.18	0.06-0.15	0.08-0.2	0.08-0.18
			4	V_c (m/min)	100-130	100-120	100-130	100-120	120-150	100-120
			●●	f (mm/rev)	0.08-0.15	0.06-0.13	0.08-0.15	0.06-0.13	0.08-0.18	0.08-0.15
			6.3	V_c (m/min)	80-100	70-90	80-100	70-90	100-120	70-90
			●	f (mm/rev)	0.08-0.12	0.06-0.11	0.08-0.12	0.06-0.11	0.08-0.12	0.06-0.11

ISO	Workpiece Material	Hardness HB	Overhang LDRED/BDRED	a_p (mm) RE (Radius)	Boring Range 68-120		Boring Range 120-200		Boring Range 200-500	
					1.8	2.5	0.8-2.0	2.0-3.5	0.8-2.0	2.0-4.0
					0.2-0.4	0.4-0.8	0.2-0.4	0.4-0.8	0.2-0.4	0.4-0.8
P	carbon steel	HB<200	2.5	V_c (m/min)	160-220	140-180	160-220	140-180	160-220	140-180
			●●●	f (mm/rev)	0.1-0.3	0.1-0.25	0.1-0.3	0.1-0.25	0.1-0.35	0.1-0.3
			4	V_c (m/min)	150-200	120-160	120-160	120-160	N.R	N.R
			●●	f (mm/rev)	0.1-0.2	0.08-0.18	0.1-0.2	0.08-0.18		
			6.3	V_c (m/min)	100-140	100-140	N.R	N.R	N.R	N.R
			●	f (mm/rev)	0.08-0.18	0.08-0.15				
	carbon steel	HB>200	2.5	V_c (m/min)	160-200	140-180	140-200	140-180	140-200	140-180
			●●●	f (mm/rev)	0.1-0.3	0.01-0.25	0.01-0.35	0.01-0.3	0.01-0.35	0.01-0.3
			4	V_c (m/min)	140-160	120-140	150-180	120-140	N.R	N.R
			●●	f (mm/rev)	0.08-0.2	0.08-0.15	0.08-0.12	0.08-0.12		
			6.3	V_c (m/min)	100-120	70-90	N.R	N.R	N.R	N.R
			●	f (mm/rev)	0.08-0.16	0.08-0.12				

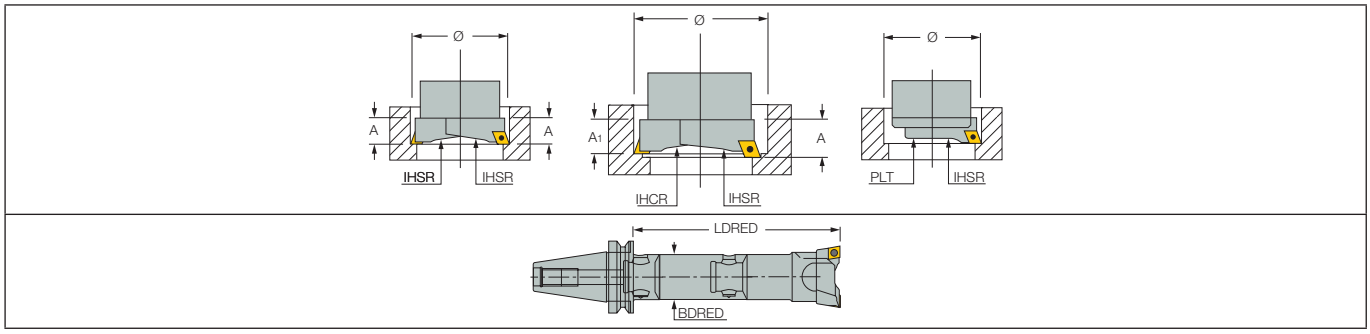
N.R. = Not Recommended

Stability

●●● Good

●● Normal

● Poor



In case of a single or a stepped boring cutter configuration, only half the feed should be applied.

BHR Rough Boring Cutting Data

ISO	Workpiece Material	Hardness HB	Overhang LDRED/BDRED	a_p (mm) RE (Radius)	Boring Range 18-28		Boring Range 28-50		Boring Range 50-68	
					0.5-1.0	1.0-1.8	0.5-1.0	1.0-1.8	0.5-1.2	1.2-2.0
					0.2	0.4	0.2-0.4	0.4	0.2-0.4	0.4-0.8
M	stainless steel	ferritic & martensitic	2.5	V_c (m/min)	100-150	110-130	120-160	100-150	120-160	110-160
			●●●	f (mm/rev)	0.08-0.15	0.06-0.12	0.08-0.18	0.06-0.12	0.08-0.25	0.08-0.18
			4	V_c (m/min)	90-130	90-120	100-140	90-140	100-150	80-120
			●●	f (mm/rev)	0.08-0.12	0.06-0.1	0.08-0.12	0.06-0.1	0.08-0.18	0.08-0.12
			6.3	V_c (m/min)	60-90	50-70	60-90	50-70	70-100	50-70
			●	f (mm/rev)	0.06-0.1	0.06-0.1	0.06-0.12	0.06-0.1	0.06-0.15	0.08-0.1
	stainless steel	austenitic	2.5	V_c (m/min)	110-130	100-130	120-150	110-140	110-160	100-150
			●●●	f (mm/rev)	0.08-0.15	0.06-0.12	0.08-0.18	0.06-0.12	0.08-0.25	0.06-0.12
			4	V_c (m/min)	80-110	80-110	90-130	90-120	100-150	90-130
			●●	f (mm/rev)	0.08-0.12	0.06-0.1	0.08-0.12	0.06-0.1	0.08-0.18	0.06-0.1
			6.3	V_c (m/min)	60-90	50-70	60-90	50-70	70-100	50-70
			●	f (mm/rev)	0.06-0.1	0.06-0.1	0.06-0.12	0.06-0.1	0.06-0.15	0.06-0.1
	cast stainless steel	ferritic & martensitic	2.5	V_c (m/min)	90-130	100-130	120-150	110-140	120-160	100-150
			●●●	f (mm/rev)	0.08-0.15	0.06-0.12	0.08-0.18	0.06-0.12	0.08-0.25	0.06-0.12
			4	V_c (m/min)	70-110	80-110	90-130	90-120	100-150	90-130
			●●	f (mm/rev)	0.08-0.12	0.06-0.1	0.08-0.12	0.06-0.1	0.08-0.18	0.06-0.1
			6.3	V_c (m/min)	60-90	50-70	60-90	50-70	70-100	50-70
			●	f (mm/rev)	0.06-0.1	0.06-0.1	0.06-0.12	0.06-0.1	0.06-0.15	0.06-0.1
	cast stainless steel	austenitic	2.5	V_c (m/min)	80-120	70-110	100-150	90-140	110-150	100-150
			●●●	f (mm/rev)	0.08-0.15	0.06-0.12	0.08-0.18	0.06-0.1	0.08-0.25	0.06-0.12
			4	V_c (m/min)	70-100	70-100	80-130	70-120	90-140	90-130
			●●	f (mm/rev)	0.08-0.12	0.06-0.1	0.08-0.12	0.06-0.1	0.08-0.18	0.06-0.1
			6.3	V_c (m/min)	60-90	50-70	60-90	50-70	70-100	50-70
			●	f (mm/rev)	0.06-0.1	0.06-0.1	0.06-0.12	0.06-0.1	0.06-0.15	0.06-0.1

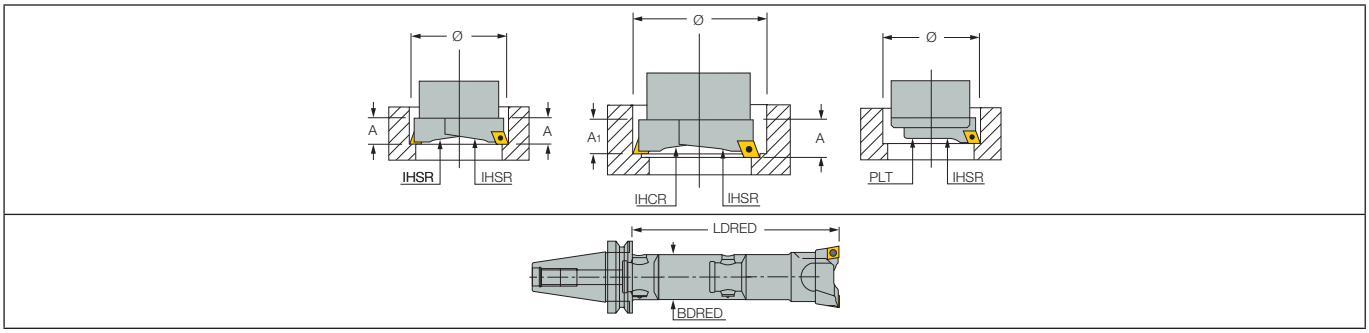
N.R. = Not Recommended

Stability

●●● Good

●● Normal

● Poor



In case of a single or a stepped boring cutter configuration, only half the feed should be applied.

BHR Rough Boring Cutting Data

ISO	Workpiece Material	Hardness HB	Overhang LDRED/BDRED	a_p (mm) RE (Radius)	Boring Range 68-120		Boring Range 120-200		Boring Range 200-500	
					0.8-1.8	1.8-2.5	0.8-2.0	2.0-3.0	0.8-2.0	2.0-3.5
					0.2-0.4	0.4-0.8	0.2-0.4	0.4-0.8	0.2-0.4	0.4-0.8
M	stainless steel	ferritic & martensitic	2.5	V_c (m/min)	130-220	120-200	140-220	120-180	150-220	120-20
			●●●	f (mm/rev)	0.08-0.3	0.08-0.25	0.08-0.3	0.08-0.25	0.08-0.3	0.08-0.25
			4	V_c (m/min)	100-160	90-140	120-180	90-140	N.R	N.R
			●●	f (mm/rev)	0.08-0.25	0.08-0.18	0.08-0.25	0.08-0.18		
			6.3	V_c (m/min)	70-100	50-70	N.R	N.R	N.R	N.R
			●	f (mm/rev)	0.08-0.2	0.08-0.15				
	stainless steel	austenitic	2.5	V_c (m/min)	120-200	100-160	120-200	100-160	120-200	100-180
			●●●	f (mm/rev)	0.08-0.3	0.08-0.25	0.08-0.3	0.08-0.25	0.08-0.3	0.08-0.25
			4	V_c (m/min)	100-150	90-140	100-160	90-140	N.R	N.R
			●●	f (mm/rev)	0.08-0.25	0.08-0.18	0.08-0.25	0.08-0.18		
			6.3	V_c (m/min)	70-100	50-70	N.R	N.R	N.R	N.R
			●	f (mm/rev)	0.08-0.2	0.08-0.15				
	cast stainless steel	ferritic & martensitic	2.5	V_c (m/min)	130-200	120-180	140-200	120-160	140-200	120-180
			●●●	f (mm/rev)	0.08-0.3	0.08-0.25	0.08-0.3	0.08-0.25	0.08-0.3	0.08-0.25
			4	V_c (m/min)	110-150	90-150	100-160	90-140	N.R	N.R
			●●	f (mm/rev)	0.08-0.25	0.08-0.18	0.08-0.25	0.08-0.18		
			6.3	V_c (m/min)	70-100	50-70	N.R	N.R	N.R	N.R
			●	f (mm/rev)	0.08-0.2	0.08-0.15				
	cast stainless steel	austenitic	2.5	V_c (m/min)	130-180	120-180	120-200	100-160	120-200	100-180
			●●●	f (mm/rev)	0.08-0.3	0.08-0.25	0.08-0.3	0.08-0.25	0.08-0.3	0.08-0.25
			4	V_c (m/min)	100-140	90-140	100-160	90-140	N.R	N.R
			●●	f (mm/rev)	0.08-0.25	0.08-0.18	0.08-0.25	0.08-0.18		
			6.3	V_c (m/min)	70-190	50-70	N.R	N.R	N.R	N.R
			●	f (mm/rev)	0.08-0.2	0.08-0.15				

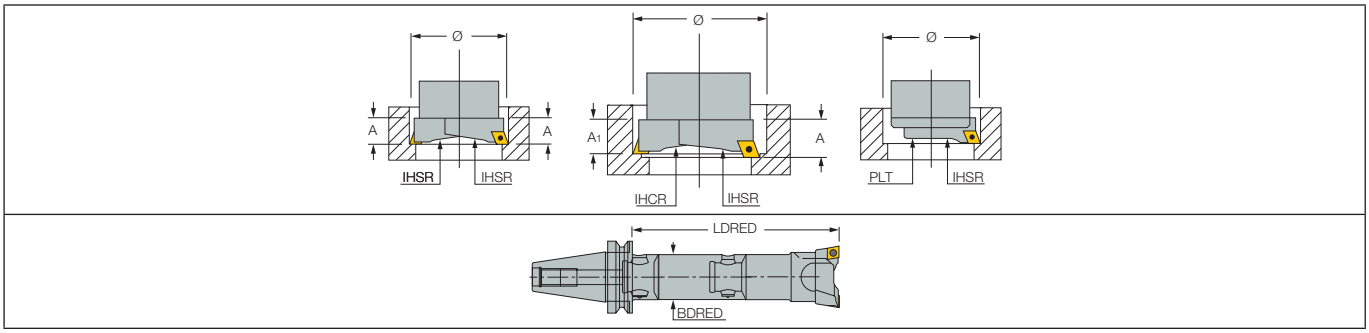
N.R. = Not Recommended

Stability

●●● Good

●● Normal

● Poor



In case of a single or a stepped boring cutter configuration, only half the feed should be applied.

BHR Rough Boring Cutting Data

ISO	Workpiece Material	Hardness HB	Overhang LDRED/BDRED	a_p (mm) RE (Radius)	Boring Range 18-28		Boring Range 28-50		Boring Range 50-68	
					0.5-1.0	1.0-1.8	0.5-1.0	1.0-1.8	0.5-1.2	1.2-2.0
					0.2-0.4	0.4	0.2-0.4	0.4	0.2-0.4	0.4-0.8
K	gray cast iron GG 10-25	HB<200	2.5	V_c (m/min)	120-160	100-140	120-180	110-150	120-180	110-150
			●●●	f (mm/rev)	0.06-0.15	0.06-0.18	0.06-0.15	0.06-0.12	0.08-0.2	0.08-0.12
			4	V_c (m/min)	100-140	80-120	100-150	80-120	100-150	80-120
			●●	f (mm/rev)	0.06-0.12	0.06-0.1	0.06-0.12	0.06-0.1	0.08-0.12	0.08-0.1
			6.3	V_c (m/min)	70-100	60-90	70-100	60-90	70-100	60-90
			●	f (mm/rev)	0.06-0.1	0.06-0.1	0.06-0.1	0.06-0.1	0.08-0.1	0.08-0.1
	gray cast iron GG 25-40		2.5	V_c (m/min)	140-200	140-200	140-220	160-250	180-220	200-280
			●●●	f (mm/rev)	0.06-0.15	0.06-0.18	0.06-0.15	0.06-0.18	0.08-0.2	0.1-0.25
			4	V_c (m/min)	120-160	120-160	120-180	140-200	140-180	180-220
			●●	f (mm/rev)	0.06-0.12	0.06-0.14	0.06-0.12	0.06-0.14	0.08-0.12	0.08-0.2
			6.3	V_c (m/min)	70-100	60-90	70-100	60-90	60-100	60-120
			●	f (mm/rev)	0.06-0.1	0.06-0.1	0.06-0.1	0.06-0.1	0.08-0.1	0.08-0.1
	cast iron GGG	spheroidal & graphite	2.5	V_c (m/min)	120-180	120-180	120-200	140-220	180-220	180-240
			●●●	f (mm/rev)	0.06-0.15	0.06-0.18	0.06-0.15	0.06-0.18	0.08-0.18	0.1-0.2
			4	V_c (m/min)	120-160	120-160	120-180	140-200	140-200	160-220
			●●	f (mm/rev)	0.06-0.12	0.06-0.14	0.06-0.12	0.06-0.14	0.08-0.12	0.08-0.18
			6.3	V_c (m/min)	60-100	60-90	60-100	60-90	60-90	60-100
			●	f (mm/rev)	0.06-0.1	0.06-0.1	0.06-0.1	0.06-0.1	0.08-0.1	0.08-0.1

ISO	Workpiece Material	Hardness HB	Overhang LDRED/BDRED	a_p (mm) RE (Radius)	Boring Range 68-120		Boring Range 120-200		Boring Range 50-68	
					0.8-1.8	1.8-2.5	0.8-2.0	2.0-3.0	0.8-2.0	2.0-3.5
					0.2-0.4	0.4-0.8	0.2-0.4	0.4-0.8	0.2-0.4	0.4-0.8
K	gray cast iron GG 10-25	HB<200	2.5	V_c (m/min)	120-200	110-150	150-250	180-280	150-250	180-280
			●●●	f (mm/rev)	0.08-0.25	0.08-0.3	0.08-0.25	0.08-0.35	0.08-0.25	0.08-0.35
			4	V_c (m/min)	100-150	80-120	120-170	120-170	N.R	N.R
			●●	f (mm/rev)	0.08-0.18	0.08-0.2	0.08-0.18	0.08-0.25		
			6.3	V_c (m/min)	70-100	60-90	N.R	N.R	N.R	N.R
			●	f (mm/rev)	0.08-0.15	0.08-0.12				
	gray cast iron GG 25-40		2.5	V_c (m/min)	250-300	250-350	250-350	250-350	250-350	250-350
			●●●	f (mm/rev)	0.12-0.35	0.12-0.35	0.15-0.3	0.15-0.4	0.15-0.3	0.15-0.4
			4	V_c (m/min)	200-270	230-300	200-300	200-270	N.R	N.R
			●●	f (mm/rev)	0.1-0.25	0.12-0.3	0.15-0.3	0.15-0.35		
			6.3	V_c (m/min)	70-150	60-120	N.R	N.R	N.R	N.R
			●	f (mm/rev)	0.1-0.15	0.12-0.25				
	cast iron GGG	spheroidal & graphite	2.5	V_c (m/min)	200-240	200-280	200-280	220-300	220-300	220-300
			●●●	f (mm/rev)	0.12-0.3	0.12-0.3	0.15-0.3	0.15-0.35	0.15-0.3	0.15-0.35
			4	V_c (m/min)	160-220	180-240	180-250	200-270	N.R	N.R
			●●	f (mm/rev)	0.1-0.2	0.12-0.25	0.12-0.2	0.15-0.35		
			6.3	V_c (m/min)	60-100	60-100	N.R	N.R	N.R	N.R
			●	f (mm/rev)	0.1-0.15	0.12-0.2				

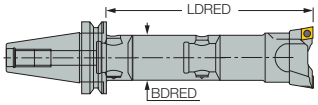
N.R. = Not Recommended

Stability

●●● Good

●● Normal

● Poor



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BHR Rough Boring Cutting Data

ISO	Workpiece Material	Hardness HB	Overhang LDRED/BDRED	a_p (mm) RE (Radius)	Boring Range 18-28		Boring Range 28-50		Boring Range 50-68	
					0.5-1.5	1.5-2.5	0.5-1.5	1.5-2.5	0.5-2.0	1.2-3.0
					0.2-0.4	0.4	0.2-0.4	0.4	0.2-0.4	0.4-0.8
N	aluminum / cast	>12si	2.5 ●●●	V_c (m/min)	200-300	240-350	200-300	240-350	200-300	240-35
				f (mm/rev)	0.06-0.2	0.06-0.25	0.06-0.2	0.06-0.25	0.06-0.25	0.06-0.3
			4 ●●	V_c (m/min)	150-220	150-220	150-220	150-220	150-220	150-220
				f (mm/rev)	0.06-0.2	0.06-0.2	0.06-0.2	0.06-0.2	0.06-0.2	0.06-0.2
			6.3 ●	V_c (m/min)	60-100	60-100	60-100	60-100	60-100	60-100
				f (mm/rev)	0.06-0.1	0.06-0.1	0.06-0.1	0.06-0.1	0.06-0.1	0.06-0.1
	aluminum / cast	<12si	2.5 ●●●	V_c (m/min)	180-250	220-280	180-250	220-280	180-250	220-280
				f (mm/rev)	0.06-0.2	0.06-0.25	0.06-0.25	0.06-0.25	0.06-0.25	0.06-0.3
			4 ●●	V_c (m/min)	120-220	120-220	120-220	120-220	120-220	120-220
				f (mm/rev)	0.06-0.2	0.06-0.2	0.06-0.2	0.06-0.2	0.06-0.2	0.06-0.25
			6.3 ●	V_c (m/min)	60-100	60-100	60-100	60-100	60-100	60-100
				f (mm/rev)	0.06-0.1	0.06-0.1	0.06-0.1	0.06-0.1	0.06-0.1	0.06-0.1

ISO	Workpiece Material	Hardness HB	Overhang LDRED/BDRED	a_p (mm) RE (Radius)	Boring Range 68-120		Boring Range 120-200		Boring Range 200-500	
					0.8-3.0	1.8-4.0	0.8-3.0	2.0-4.0	0.8-3.0	2.0-4.5
					0.2-0.4	0.4-0.8	0.2-0.4	0.4-0.8	0.2-0.4	0.4-0.8
N	aluminum / cast	>12si	2.5 ●●●	V_c (m/min)	200-300	240-350	200-300	240-350	200-300	240-350
				f (mm/rev)	0.06-0.25	0.06-0.3	0.06-0.25	0.06-0.4	0.06-0.25	0.06-0.4
			4 ●●	V_c (m/min)	150-220	150-220	150-220	150-220	N.R	N.R
				f (mm/rev)	0.06-0.2	0.06-0.2	0.06-0.2	0.06-0.2		
			6.3 ●	V_c (m/min)	60-100	60-100	N.R	N.R	N.R	N.R
				f (mm/rev)	0.06-0.1	0.06-0.1				
	aluminum / cast	<12si	2.5 ●●●	V_c (m/min)	180-250	220-280	180-250	220-280	180-250	220-280
				f (mm/rev)	0.06-0.25	0.06-0.3	0.06-0.3	0.06-0.4	0.06-0.3	0.06-0.4
			4 ●●	V_c (m/min)	120-220	120-220	120-220	120-220	N.R	N.R
				f (mm/rev)	0.06-0.2	0.06-0.2	0.06-0.2	0.06-0.2		
			6.3 ●	V_c (m/min)	60-100	60-100	N.R	N.R	N.R	N.R
				f (mm/rev)	0.06-0.1	0.06-0.1				

N.R. = Not Recommended

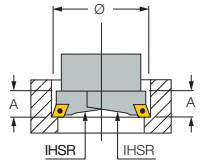
Stability

●●● Good

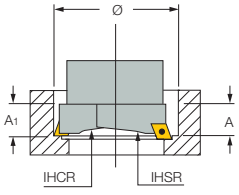
●● Normal

● Poor

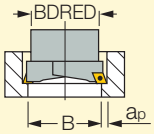
Cutting Conditions Cutting Conditions for BHR Rough Boring Heads



Twin boring cutters with the same cutting diameter



Twin boring cutters with different cutting diameters and heights (Z=1)



B Working Range	a_p Steel	a_p Cast Iron, Aluminum
18-28	a_p - 1.5-2	a_p - 2-2.5
28-50	a_p - 2-3	a_p - 2.5-3.5
50-68	a_p - 3-4	a_p - 3.5-5
68-200	a_p - 4-5	a_p - 5-7
200-500	a_p - 5-6	a_p - 6-8

It's advisable to start with B hole≥boring bar diameter d

BSFD Cutting Parameters

Cutting Speed $V=V_o \times Ks$

where Vo - basic cutting speed (Table 1) Ks - stability factor (Table 2) Table 1 - Basic cutting speed Vo and feed f

ISO	Material		Condition	Tensile Strength [N/mm²]	Hardness HB	Material Group No.(1)	Feed f, mm/rev Insert Radius R=0.2	Feed f, mm/rev Insert Radius R=0.4 *
P	non-alloy steel and cast steel, free cutting steel	<0.25% C	annealed	420	125	1	0.05 - 0.08	0.08 - 0.10
		≥0.25% C	annealed	650	190	2		
		<0.55% C	quenched and tempered	850	250	3		
		≥0.55% C	annealed	750	220	4		
			quenched and tempered	1000	300	5		
	low alloy and cast steel (less than 5% of alloying elements)		annealed	600	200	6		
			quenched and tempered	930	275	7		
				1000	300	8		
				1200	350	9		
	high alloyed steel, cast steel and tool steel		annealed	680	200	10		
			quenched and tempered	1100	325	11		
	stainless steel and cast steel		ferritic / martensitic	680	200	12		
			martensitic	820	240	13		
M	stainless steel and cast steel		austenitic, duplex	600	180	14	0.05 - 0.08	0.08 - 0.10
K	gray cast iron (GG)		ferritic / pearlitic		180	15	0.05 - 0.08	0.08 - 0.10
			pearlitic / martensitic		260	16		
	nodular cast iron (GGG)		ferritic		160	17		
			pearlitic		250	18		
	malleable cast iron		ferritic		130	19		
			pearlitic		230	20		
N	aluminum-wrought alloys		not hardenable		60	21	0.05 - 0.08	0.08 - 0.10
			hardenable		100	22		
	aluminum-cast alloys	≤12% Si	not hardenable		75	23		
			hardenable		90	24		
		>12% Si	high temperature		130	25		
	copper alloys	>1% Pb	free cutting		110	26		
			brass		90	27		
			electrolytic copper		100	28		
	non metallic		duroplastics, fiber plastics		70 Shore D	29		
			hard rubber		55 Shore D	30		
S	high temperature alloys	Fe based	annealed		200	31	0.05 - 0.08	0.08 - 0.10
			hardened		280	32		
		Ni or Co based	annealed		250	33		
			hardened		350	34		
			cast		320	35		
	titanium alloys		pure	Rm = 400 (2)	190	36		
			alpha+beta alloys, hardened	Rm = 1050	310	37		
H	hardened steel		hardened		55 HRC	38	0.04 - 0.065	0.06 - 0.08
			hardened		60 HRC	39		
	chilled cast iron		cast		400	40		
	cast iron		hardened		55 HRC	41		

Steel
Stainless steel
Cast iron
Non-ferrous metals
Superalloys and titanium
Hard materials

(1) In accordance with VDI3323 standard
(2) Rm - ultimate tensile strength, MPa
* Not recommended for work in poor stability conditions

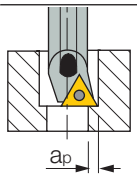
Basic Cutting Speed Vo , m/min

IC20N	IC30N IC8250 IC9250 IC520N	IC54	IC20	IB55	IC8150 IC9150	IC6015	IC806	IC6025	ID5	IC1520	IC804	IC830	IC807	IC907	IC1008
175-280	170-270	120-190			175-280							140-210	170-270	170-270	120-190
170-260	160-250	115-175			170-260							125-200	160-250	160-250	115-175
160-250	155-240	110-170			160-250							120-185	155-240	155-240	110-170
150-240	140-230	100-165			150-240							110-180	140-230	140-230	100-165
150-235	140-225	100-160			150-235							115-175	140-225	140-225	100-160
140-220	135-210	95-150			140-220							105-160	135-210	135-210	95-150
135-210	130-200	90-140			135-210							100-150	130-200	130-200	90-140
135-210	130-200	90-140			135-210							100-150	130-200	130-200	90-140
120-190	115-180	80-130			120-190							90-140	115-180	115-180	80-130
115-180	110-170	75-120			115-180							80-130	110-170	110-170	75-120
105-160	100-155	70-110			105-160							105-170	100-155	100-155	70-110
135-215	130-205	90-145			135-215							145-220	130-205	130-205	90-145
120-200	115-190	80-135			120-200							90-140	115-190	115-190	80-135
110-180	100-140	70-100	90-125			100-140		75-105				70-100	110-180	100-140	70-100
			110-155	125-175	125-175								100-140	100-140	90-125
			100-140	110-155	110-155								90-130	90-130	80-120
			90-135	100-150	100-150								80-120	80-120	70-105
			80-110	90-125	90-125								70-100	70-100	60-95
			100-140	110-155	110-155								90-130	90-130	80-120
			90-135	100-150	100-150								80-120	80-120	70-120
			250-350						325-455	300-420				280-380	280-380
			215-305						270-400	250-365				240-330	240-330
			250-350						325-455	300-420				280-380	280-380
			225-305						290-400	275-365				260-340	260-340
			125-175						160-225	150-205				155-205	155-205
			140-200						180-260	170-240				170-230	170-230
			140-200						180-260	170-240				170-230	170-230
			100-140						130-180	120-170				125-165	125-165
			90-170						120-220	110-205				115-190	115-190
			125-275						150-360	150-355				140-340	140-340
			60-70				75-85				60-70	75-85	60-70	60-70	75-85
			50-60				55-75				50-60	55-75	50-60	50-60	55-75
			35-40				45-50				35-40	45-50	35-40	35-40	45-50
			25-30				30-35				25-30	30-35	25-30	25-30	30-35
			30-35				35-40				30-35	35-40	30-35	30-35	35-40
			65-75				80-90				65-75	80-90	65-75	65-75	80-90
			45-50				55-60				45-50	55-60	45-50	45-50	55-60
			80-90	90-180									80-90	80-90	70-160
			65-75	70-150									65-75	65-75	55-125
			120-135	130-270									120-135	120-135	90-110
			80-90	90-180									80-90	80-90	70-160

Table 2 - Stability factor Ks

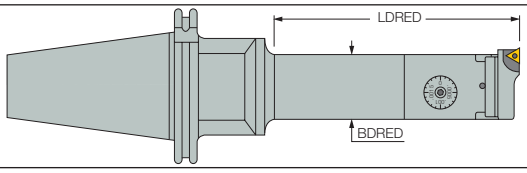
Stability	High	Normal	Poor
Ks	1.2	1	0.4

Cutting Conditions for BHD / BHF / BHE Fine Boring Heads



ISO	Material	LDRED/BDRED		Cutting Speed V_c=m/min	Feed f=mm/rev Insert Radius RE=0.2	Feed f=mm/rev Insert Radius RE=0.4	Insert Grade
P	carbon steel HB<200	LDRED/BDRED=2.5	good	200-300	0.05-0.08	0.08-0.10	IC20N
		LDRED/BDRED=4	normal	160-250	0.05-0.08	0.08-0.10	IC30N
		LDRED/BDRED=6.3	difficult	70-100	0.05-0.08	-	IC54
	carbon steel HB<200	LDRED/BDRED=2.5	good	160-250	0.05-0.08	0.08-0.10	IC20N
		LDRED/BDRED=4	normal	150-200	0.05-0.08	0.08-0.10	IC30N
		LDRED/BDRED=6.3	difficult	70-100	0.05-0.08	-	
M	stainless steel AISI 304-316	LDRED/BDRED=2.5	good	120-160	0.05-0.08	0.08-0.10	IC54
		LDRED/BDRED=4	normal	100-140	0.05-0.08	0.08-0.10	
		LDRED/BDRED=6.3	difficult	70-100	0.05-0.08	-	
K	cast iron	LDRED/BDRED=2.5	good	120-160	0.05-0.08	0.08-0.10	IC20
		LDRED/BDRED=4	normal	100-140	0.05-0.08	0.08-0.10	
		LDRED/BDRED=6.3	difficult	70-100	0.05-0.08	-	
N	aluminum	LDRED/BDRED=2.5	good	300-400	0.05-0.08	0.08-0.10	IC20
		LDRED/BDRED=4	normal	250-350	0.05-0.08	0.08-0.10	
		LDRED/BDRED=6.3	difficult	100-150	0.05-0.08	-	

(1) a_p=0.1 min

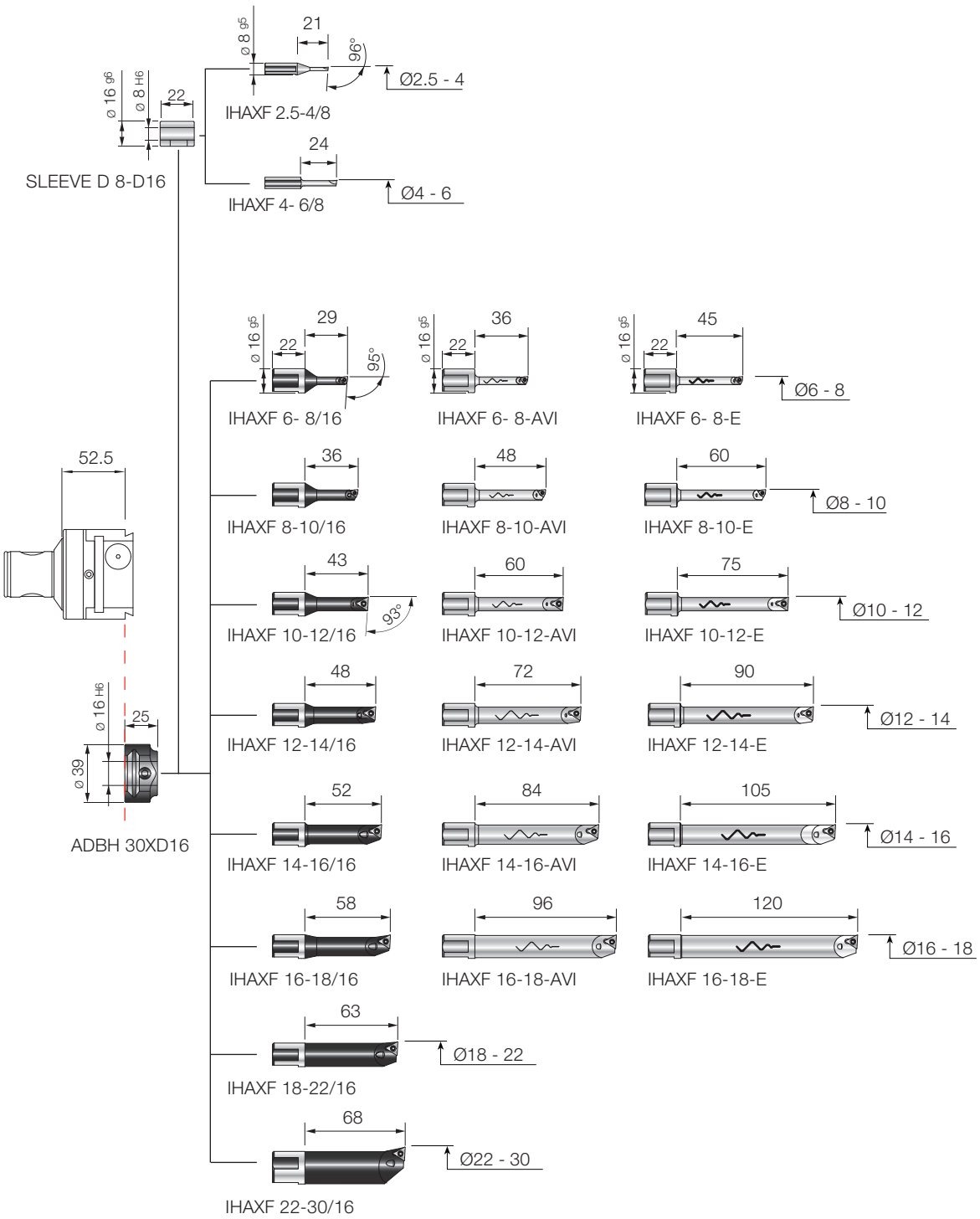


Fine Boring Head Range

2 µm Direct Diametric Adjustment

BHF MB50-80x94
BHF MB80-80x94 ø2.5-160

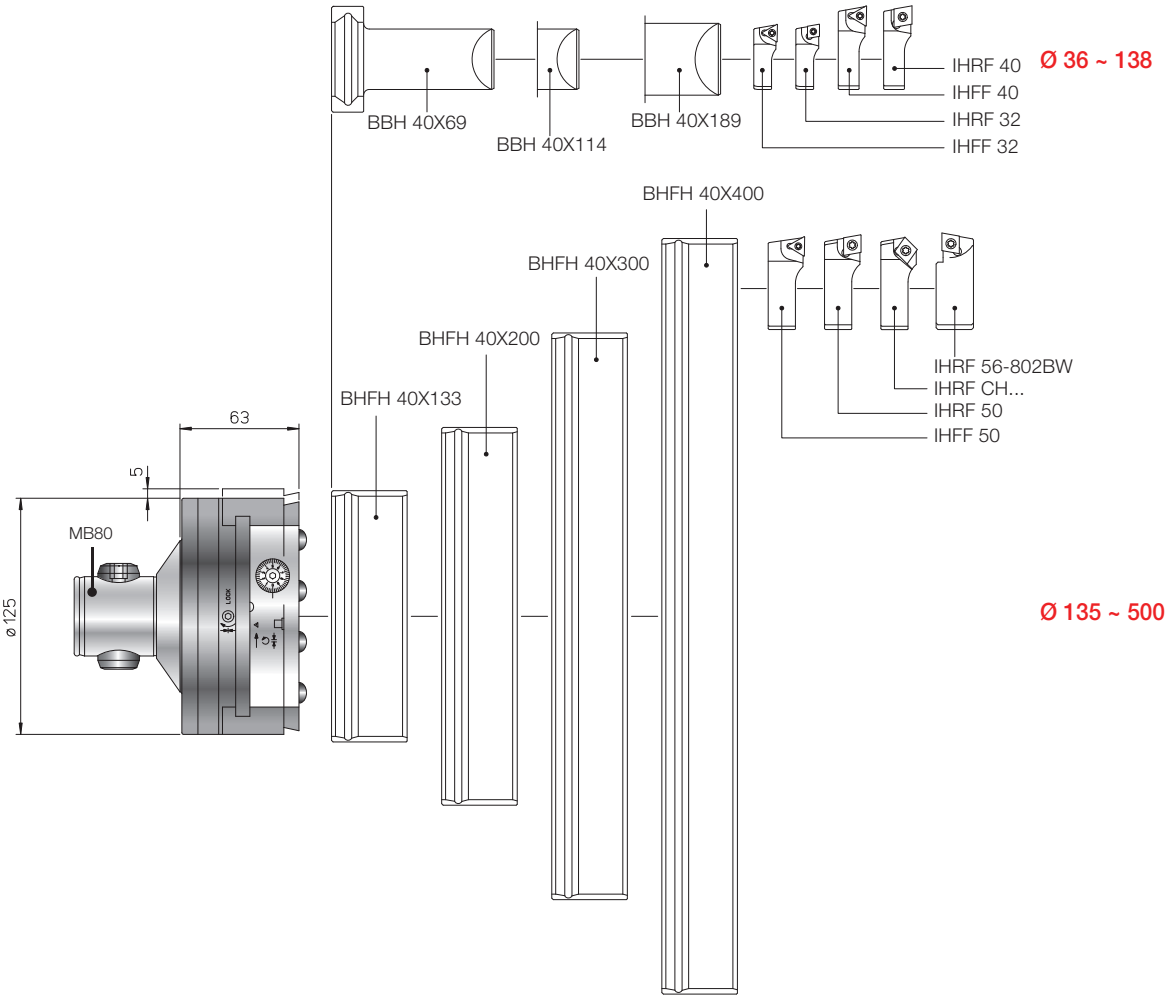
2 µm



Fine Boring Head Range

2 µm Direct Diametric Adjustment

BHF MB80-125x114
ø36-500

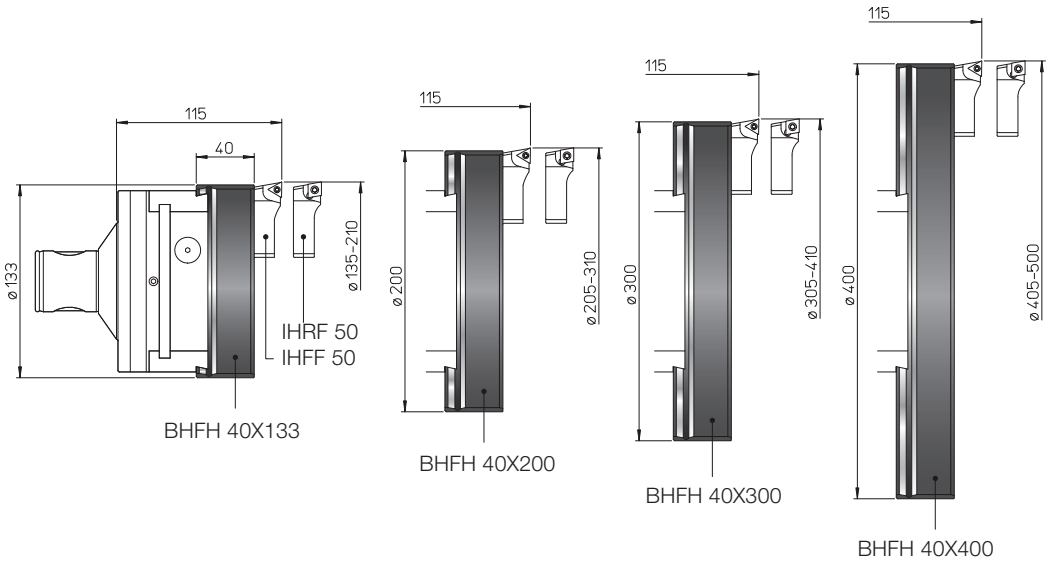


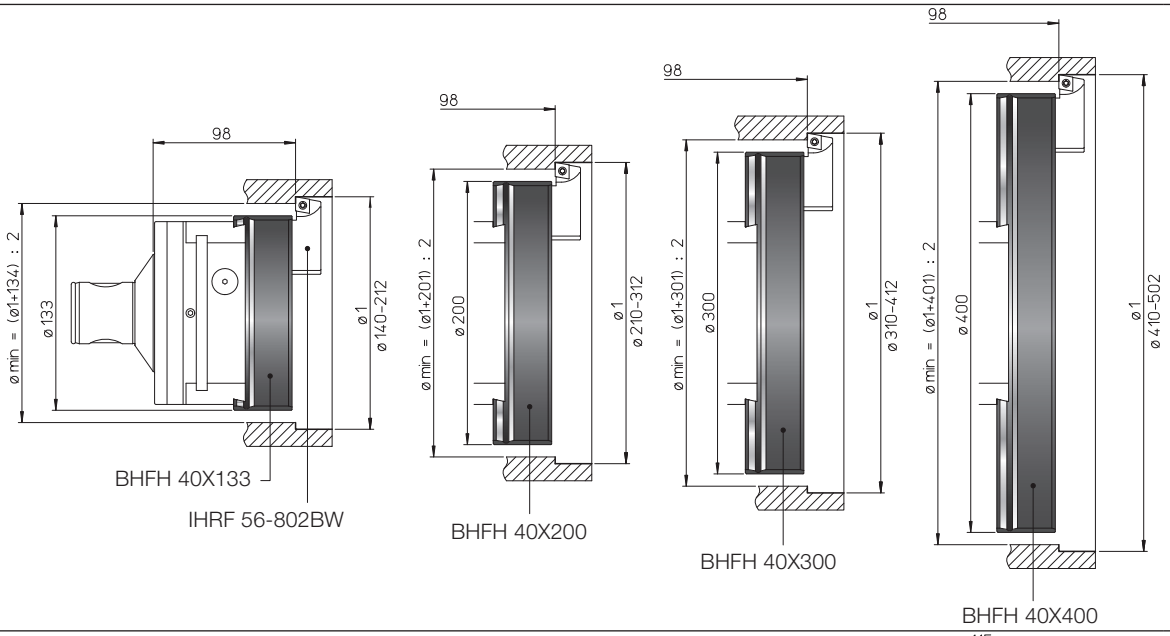
Fine Boring Head Range

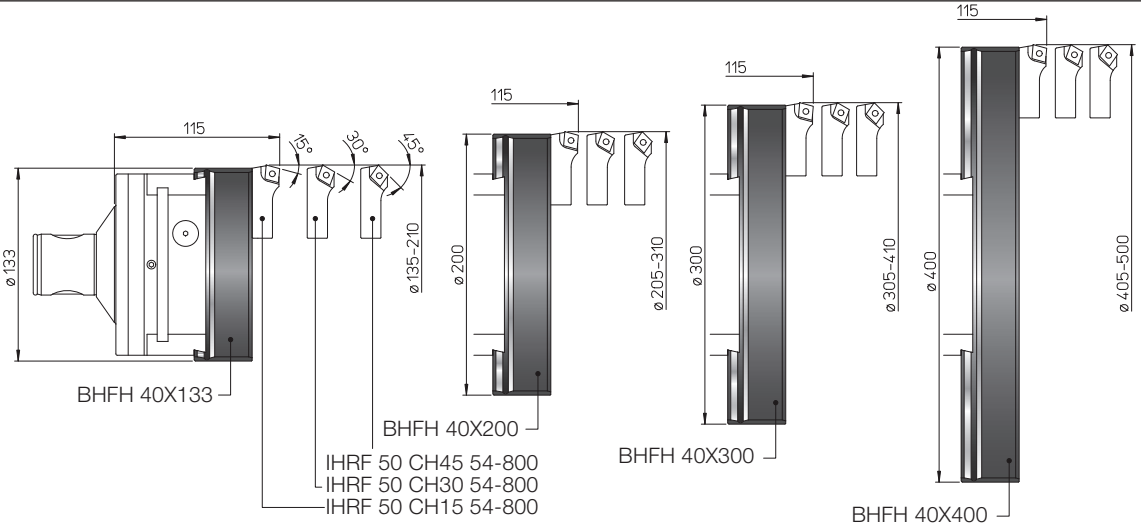
2 µm Direct Diametric Adjustment

BHF MB80-125x114
ø2.5-160

2 µm



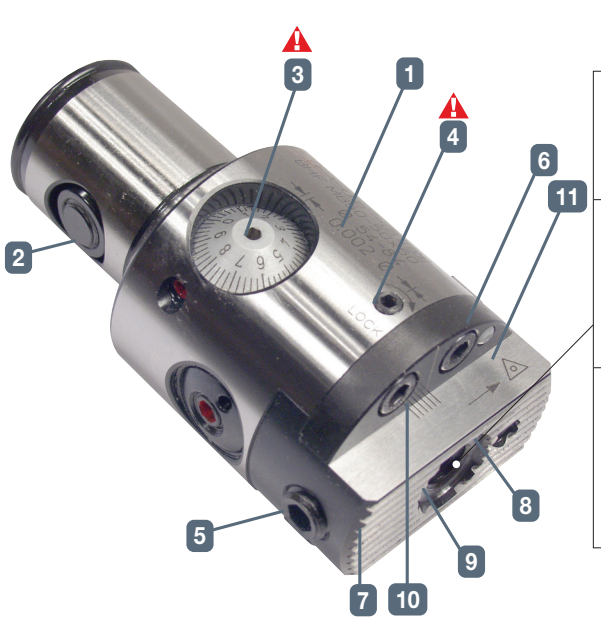


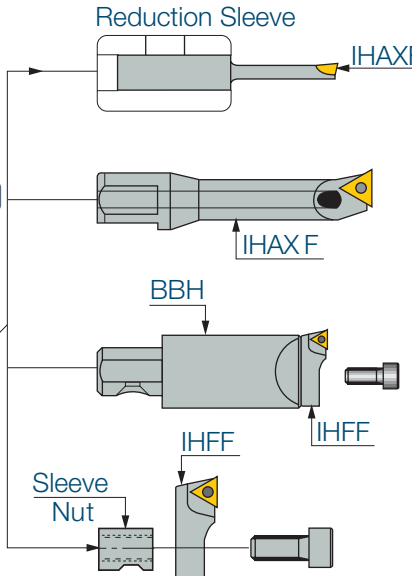


Fine Boring Head BHF 16-50

Operating Instructions

BHF 50 Shown





1. Body
2. Expanding pin
3. Graduated dial
4. Slide locking screw
5. Toolholder locking screw
6. Coolant nozzle
7. Serrated face
8. Oiling nipple
9. Tool bore 16H7
10. Slide adjustment range
    Do not exceed the range marks!!
11. Cutting edge position mark

Assembly

- Before mounting the BHF boring head, make sure the expanding pin **[2]** does not protrude from the cylindrical body part.
- Insert BHF into the shank.
- **Tighten pin [2] by turning clockwise** following the recommended tightening torque guidelines below:

Recommended torque:	(N.m)
BHF MB16-16x34	2.0 - 2.5
BHF MB20-20x40	4.0 - 4.5
BHF MB25-25x50	6.5 - 7.5
BHF MB32-32x63	7.0 - 8.0
BHF MB40-40x80	16.0 - 18.0
BHF MB50-50x60	30.0 - 35.0

- Insert the screw **[5]**. If it protrudes, the sleeve should be rotated until the screw can enter the recess in the sleeve nut, reduction sleeve or boring bar.

Disassembly

In order to separate the BHF from the shank, loosen the expanding pin [2] by turning counterclockwise.

Positioning

- The tool slide **[7]** allows for a 4mm adjustment by turning graduated dial **[3]** counterclockwise. When changing the direction of the dial rotation, backlash must be compensated for.
- After positioning, lock the tool slide by means of the screw **[4]**.
- **Loosen screw [4] before making any slide adjustment.**

Maintenance

Weekly:

- Lubricate through the nipple **[8]** with ISO UN G220 oil.

Periodically:

- Clean and lubricate the conical and cylindrical matching surfaces.
- Treat expanding pin **[2]** with an anti-friction lubricant.
- Clean and lubricate the tool slide guideway.

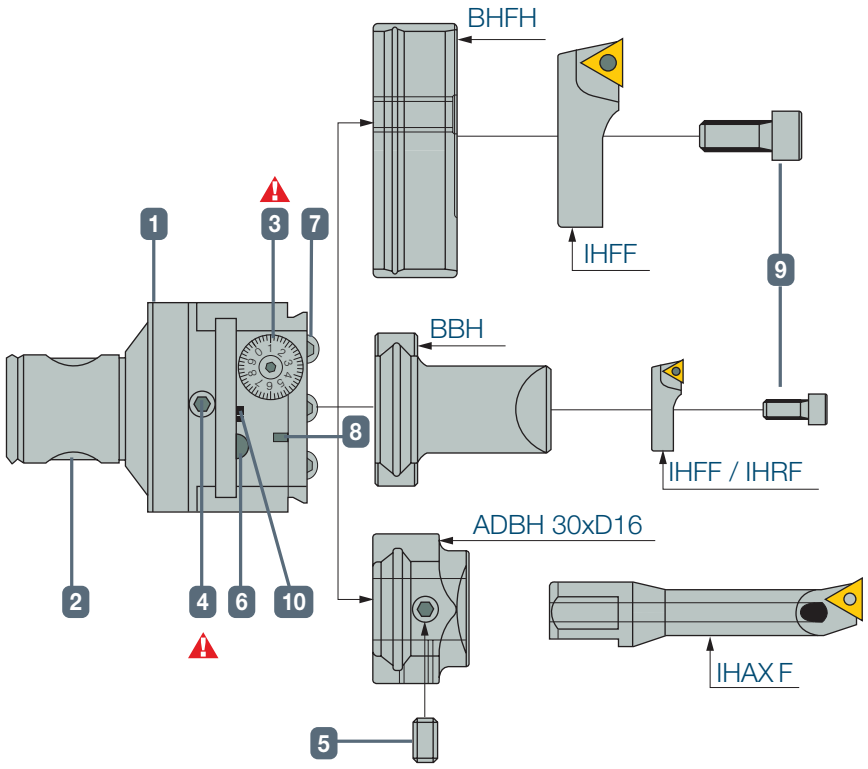
Important Note:

Toolholder should be firmly affixed to the slide.

Fine Boring Head BHF 63-125

Operating Instructions

BHF 50 Shown



1. Body
2. Expanding pin
3. Graduated dial
4. Slide locking screw
5. Toolholder locking screw
6. Coolant nozzle
7. Slide holder
8. Oiling nipple
9. Toolholder locking screws
10. Slide adjustment range Do not exceed the range marks

Assembly

- Before mounting the BHF boring head, make sure the expanding pin **[2]** does not protrude from the cylindrical body part.
- Insert BHF into the shank.
- **Tighten pin [2] by turning clockwise** following the recommended tightening torque guidelines below:

Recommended torque:	(N.m)
BHF MB50- 63x87	30-35
BHF MB50- 80x94	30-35
BHF MB63- 63x87	80-90
BHF MB80- 80x94	80-90
BHF MB80-125x94	80-90

- Insert the screw **[5]**. If it protrudes, the sleeve should be rotated until the screw can enter the recess in the sleeve nut or boring bar.

Disassembly

In order to separate the BHF from the shank, loosen the expanding pin [2] by turning counterclockwise.

Positioning

- The tool slide **[7]** allows for a 5mm adjustment by turning graduated dial **[3]** counterclockwise. When changing the direction of the dial rotation, backlash must be compensated for.
- After positioning, lock the tool slide by means of the screw **[4]**.
- **Loosen screw [4] before making any slide adjustment.**

Maintenance

Weekly:

- Lubricate through the nipple **[8]** with ISO UN G220 oil.

Periodically:

- Clean and lubricate the conical and cylindrical matching surfaces.
- Treat expanding pin **[2]** with an anti-friction lubricant.
- Clean and lubricate the tool slide guideway.

Important Note:

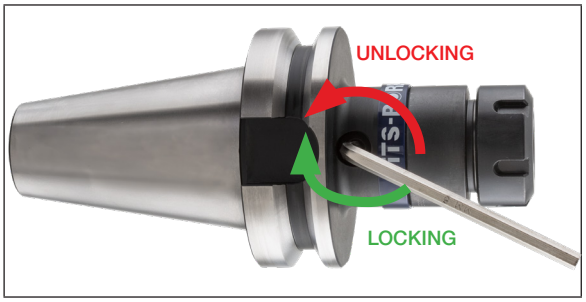
Toolholder should be firmly affixed to the slide.

Operation and Maintenance

MB Connection

To LOCK, rotate the radial pin clockwise

To UNLOCK, rotate the radial pin counter-clockwise
Table shows the recommended tightening torques:



Before assembling the MB connection elements, make sure the radial pin is not projected from the cylindrical parts.

CORRECT ✔	WRONG ✗

Stages for adjusting boring heads with dial:

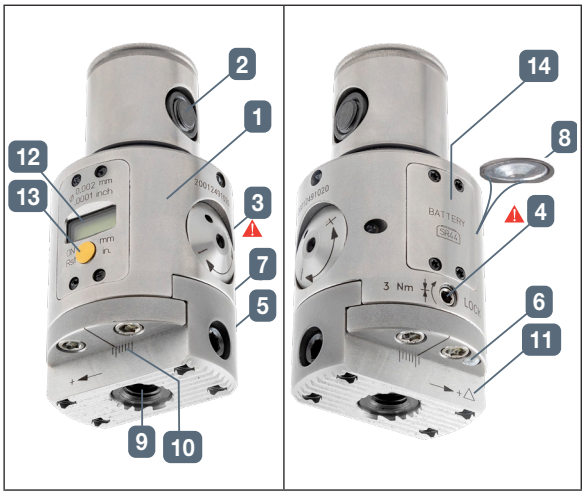
1. Loosen slide adjustment screw
2. Adjust the dial screw
3. Tighten slide adjustment screw

1	2	3

Driving Torque	
MB	**Nm**
MB14	2-2.5
MB16	2-2.5
MB20	4-4.5
MB25	6.5-7.5
MB32	7-8
MB40	16-18
MB50	30-35
MB63	70-80
MB80	70-80
MB110	200-220

BHD Digital Fine Boring Head Metric/Inch Operating Instructions

BHD MB 80-32



Tighten Pin [2] by Turning Clockwise
Following the recommended tightening torque guidelines below:

Designation	(Nm)	(Lbf.ft)	Allen Key (mm)
BHD MB32-32-83	7.0-8.0	5.16-5.90	4
BHD MB40-40-90	16.0-18.0	11.80-13.28	5
BHD MB50-50-60	30.0-35.0	22.13-25.81	6
BHD MB63-63-89	70.0-80.0	51.63-59.0	8
BHD MB80-80-104	70.0-80.0	51.63-59.0	8

1. Body
2. Expanding pin
3. Dial
4. Slide locking screw
5. Toolholder locking screw
6. Coolant nozzle
7. Slide holder
8. Oiling nipple
9. Tool bore 16H7
10. Slide adjustment range
11. Cutting edge position mark
12. Digital display
13. Selection button
14. Battery cover

Assembly

- Before mounting the BHD boring head, make sure the expanding pin **[2]** does not protrude from the cylindrical body part.
- Insert BHD boring head into the shank.

⚠ Tighten Pin [2] by Turning Clockwise. **Tighten Screw [5]. If It Protrudes, the Sleeve Should Be Rotated Until the Screw Can Enter the Recess in the Sleeve Nut Or Boring Bar.**

Disassembly To Separate the BHD from the Shank, Loosen the Expanding Pin [2] by Turning Counterclockwise. Positioning
The display [12] shows the value of the adjustment diameter with a 2µm screen resolution. Switch on the BHD boring head by pushing the selection button **[13]**. The display **[12]** will show the value of the previous adjustment. To reset the value displayed, press and hold the button [13]. After 2 seconds, the display will show. Release the button. The display will show the value 0.000.

⚠ Loosen screw **[4]** before making any slide adjustment to the dial **[3]**.

- Adjust the required diameter by turning the dial **[3]** counterclockwise. The tool slide **[7]** allows a 5mm radial adjustment. The display **[12]** will show the new value in diameter. The absolute value CANNOT be viewed, only the relative value.
- After positioning, lock the tool slide by means of the screw **[4]** see torque recommendation. If unused for more than 30 seconds, the display switches off automatically.

WARNING
⚠ DO NOT perform any slide movement when the display is switched off.
⚠ DO NOT exceed the range marks **[10]**.

Before Carrying Out a Fine Adjustment (Described in FIG.3):

1 Loosen screw **[4]** of slide adjustment.
2 Adjust dial **[3]** to required diameter.
3 Tighten screw **[4]**.

Setting Metric/inch
To change unit readout from metric to inch: Press and hold the button **[13]**. The display shows "---", after 10 sec the new unit readout appears on the left of the display. Release the button.

BHD Digital Fine Boring Head Metric/Inch Operating Instructions

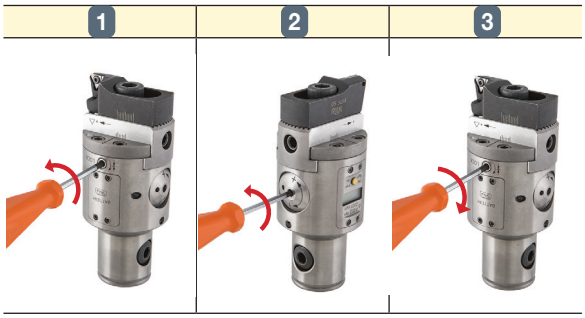


Fig. 3

Locking Screw Tightening Torques (Nm)

Designation:	(Nm)
BHD MB32-32-83	2.0
BHD MB40-40-90	2.5
BHD MB50-50-60	3.0
BHD MB63-63-89	3.5
BHD MB80-80-104	4.0

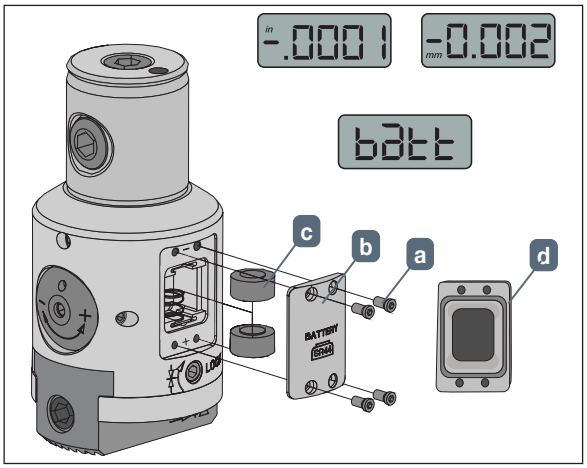


Fig. 4

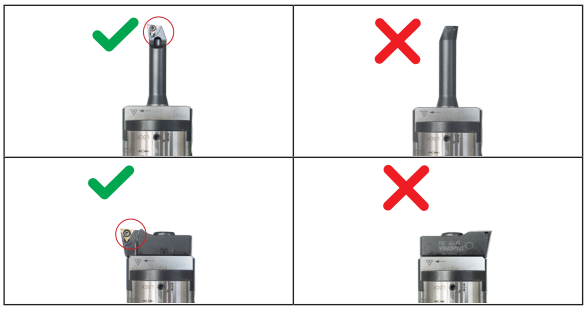


Fig. 5

Battery Replacement

When the batteries are low the display will show a warning sign "batt" for a few seconds (FIG.4). It is recommended to replace the batteries as soon as possible.

To replace the batteries (FIG.5):

- Remove the battery compartment cover **[b]** by unscrewing the 4 screws **[a]**. Replace the two batteries using type SR44 1.55V
  and position them in the correct direction.
- Tighten the 4 screws **[a]**.
- The integrated seal **[d]** is now secured on the battery cover.

Maintenance Weekly: Lubricate Through the Nipple [8] with ISO UN G220 Oil.

Periodically:
Clean and lubricate the conical and cylindrical matching surfaces. Treat the expanding pin [2] with an anti-friction lubricant. Clean and lubricate the tool slide guide way.

WARNING

- The only maneuvering and adjustment screws to be used are those listed in the components section.
- The screws not listed in the components section should not be touched so as to avoid malfunction of the boring bars and heads.
- Bit holders and boring bars should be assembled with the insert turned in the same direction as the screw **[4]**. The use of coolant on the BHD boring head double-bit heads should be 40 BAR max.
- The machine tool must be equipped with all of the active and passive safety devices that will assure safe use of the BHD boring head.
- ISCAR requires that the machine tools where the BHD boring head is mounted comply with the provisions of the 2006/42/CE directive.

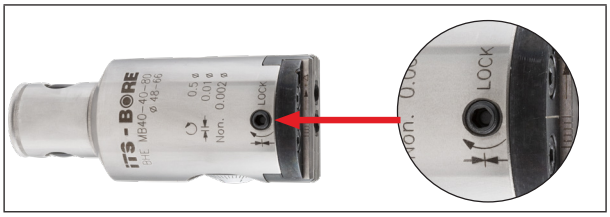
Inserts
We advise you to use the inserts proposed by Iscar. The use of different inserts can affect ultimate machining results.

Cartridge Should Be Mounting According to the Insert Symbol Direction

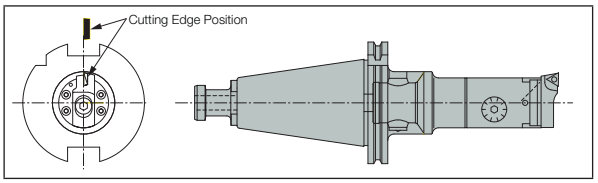
CORRECT ✔	WRONG ✗

CORRECT ✔	WRONG ✗

Warning: slide position must be adjusted within the indicated limits. Excess movements damage internal kinematics



When BHF is assembled, the cutting edge should be positioned in relation to the arbor key slots.



Maintenance

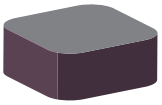
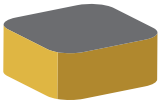
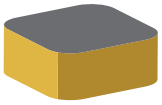
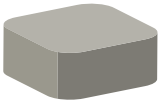
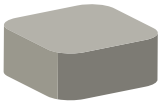
Boring heads should be lubricated with ISO UN G220 oil weekly

MATERIALS AND GRADES

YOU DRILLING INTELLIGENTLY?

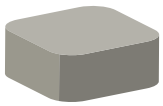
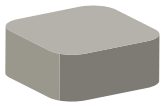
Member IMC Group

Holemaking Materials Grades Chart

	Grade	ISO	Grade Description	Coating Layers	Coating Color*
PVD COATED	IC508	P20-P40 M20-M30 K20-K30 N10-N30 S10-S25 H20-H30	A broad-spectrum grade with a tough submicron grain substrate and PVD coating. Designed for machining main types of engineering materials at various cutting speeds. Features excellent notch wear and built-up edge resistance. Suitable for interrupted cutting and machining under unfavorable conditions.	TiN TiCN Base	
	IC806	P10-P20 M10-M20 K10-K25	A hard submicron grain substrate, PVD coated grade followed by a SUMOTEC surface treatment. Applied mainly for machining heat-resistant superalloys at moderate cutting speeds.	TiAlN AlTiN Base	
	IC808	P15-P30 M20-M30 K20-K30 S10-S25 H20-H30	A tough, submicron grain size substrate with excellent chipping resistance, combined with a SUMOTEC PVD coating. Provides high wear resistance. Recommended for a very wide range of materials.	TiN TiAlN Base	
	IC808G	P15-P30 M20-M30 K15-K25 S10-S25 H10-H20	A tough, submicron grain size substrate with PVD coating. Features high resistance to chipping and abrasive wear. Designed for machining a wide variety of engineering materials.	TiN TiAlN Base	
	IC830	P20-P40 M25-M35 S15-S30	A tough substrate with PVD coating and a special SUMOTEC surface treatment. Suitable for machining steel and stainless steel at low to medium cutting speeds and moderate to high feeds. The grade features high toughness and recommended for interrupted cuts and machining under unstable conditions. May be used on high temperature alloys at low cutting speeds.	TiN TiAlN Base	
	IC903	P10-P20 M15-M25 K10-K20 S10-S20 H10-H20	Ultra-fine grain size, PVD coated. High wear resistance and toughness. High speed, medium feed. Used for machining up to 62 HRC hardened steel, Titanium, nickel-based alloys and stainless steel.	AlTiN Base	
	IC907	P10-P20 M05-M15 K15-K30 S10-S20 H05-H15	A hard submicron grain size substrate with a PVD coating, suitable for a wide range of a materials such as steels, alloy steels, hard steels, austenitic stainless steel and heat resistant alloys at moderate to relatively high cutting speeds under stable conditions. Features high wear resistance and plastic deformation durability.	TiAlN Base	

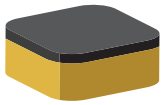
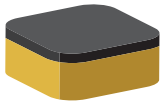
* For coated grades

Holemaking Materials Grades Chart

	Grade	ISO	Grade Description	Coating Layers	Coating Color*
PVD COATED	IC908	P15-P30 M20-M30 K20-K30 S10-S25 H20-H30	A tough submicron grain size substrate with PVD coating, recommended for general use in a large variety of operations and materials such as steels, alloy steels, austenitic stainless steel and high temperature alloys at moderate cutting speeds. Features high wear resistance and chipping durability.	TiAlN Base	
	IC928	P20-P40 M25-M35 S15-S30 	A tough substrate with PVD coating, suitable for machining steel and stainless steel at low to medium cutting speeds and moderate to high feeds. The grade is recommended for interrupted cuts and machining under unstable conditions.	TiAlN Base	
	IC948	P15-P35 M25-M35 K10-K25 S15-S30 	A hard cemented carbide substrate, combined with a new PVD coating. The sub-micron substrate has superior wear resistant properties, and the coating has high oxidation and chipping resistance due to special TiAlCrN multilayered structure. The advantageous combination of the above, substantially improves the efficiency and reliability of the insert.	TiAlCrN Base	
	IC954	P20-P40 	A tough substrate, PVD coated. Used for general applications in machining steel, alloy and martensitic and ferritic stainless steel at medium to high cutting speeds.	TiAlN Base	
	IC1008	P10-P20 M05-M15 K15-K30 S10-S20 H05-H15	A tough submicron grain size substrate with coating. Recommended for general use on a wide range of applications and materials as steels, alloy steels, austenitic stainless steel and high temperature alloys at moderate cutting speeds.	TiN TiAlN Base	

* For coated grades

Holemaking Materials Grades Chart

	Grade	ISO	Grade Description	Coating Layers	Coating Color*
CVD COATED	IC5500	P20-P35	A tough substrate with SUMOTEC CVD coating. Recommended for high speed drilling of steel. Provides excellent tool life.	TiN Al_2O_3 TiCN Base	
	IC8080	P10-P20 K10-K20	A submicron grain size substrate with SUMOTEC MTCVD coating. Features excellent chipping and wear resistance. Recommended for high speed drilling of cast iron and steel, to be used for the peripheral insert on DR drills.	TiN Al_2O_3 TiCN Base	
	IC8355	P10-P25	A CVD-coated carbide grade, primarily designed for machining carbon and alloyed steel, as well as ferritic and martensitic stainless steel, at medium to high cutting speeds.	TiN Al_2O_3 TiCN Base	
	IC9080	P10-P20 K10-K20	A submicron grain size substrate with a CVD coating. Features excellent chipping and wear resistance. Recommended for high speed drilling of cast iron and steel, to be used for the peripheral insert on DR drills.	TiN Al_2O_3 TiCN Base	

* For coated grades

	Grade	ISO	Grade Description	Uncoated Layers	Uncoated
UNCOATED	IC07	M10-M20 N05-N20 S10-S30	A hard uncoated submicron grain size carbide grade, suitable for machining aluminum alloys and other non-ferrous materials at high cutting speeds.	Base	
	IC08	M10-M30 N10-N25 S10-S30	A tough uncoated submicron grain size carbide grade, suitable for steels, stainless steel and high temperature alloys at low cutting speeds. Good choice for non-ferrous materials.	Base	

Material Groups

Based on ISO 513 and VDI 3323 standards

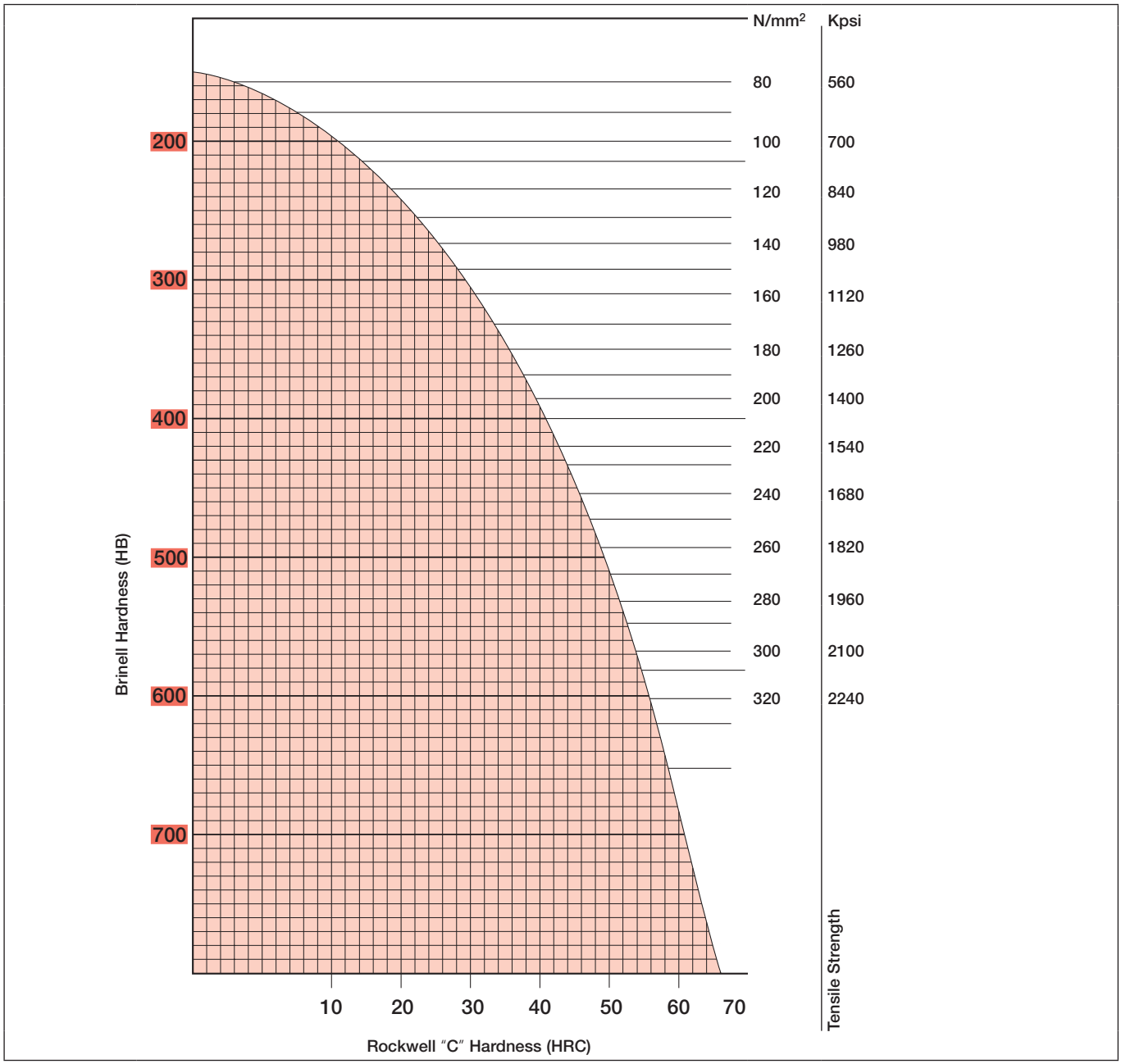
ISO	Material		Condition	Tensile Strength [N/mm²]	Kc1(1) [N/mm²]	mc(2)	Hardness HB	Material Group No.
P	non-alloy steel and cast steel, free cutting steel	< 0.25 %C	annealed	420	1350	0.21	125	1
		≥ 0.25 %C	annealed	650	1500	0.22	190	2
		< 0.55 %C	quenched and tempered	850	1675	0.24	250	3
		≥ 0.55 %C	annealed	750	1700	0.24	220	4
			quenched and tempered	1000	1900	0.24	300	5
	low alloy and cast steel (less than 5% of alloying elements)		annealed	600	1775	0.24	200	6
			quenched and tempered	930	1675	0.24	275	7
				1000	1725	0.24	300	8
				1200	1800	0.24	350	9
	high alloyed steel, cast steel and tool steel		annealed	680	2450	0.23	200	10
			quenched and tempered	1100	2500	0.23	325	11
	stainless steel and cast steel		ferritic/martensitic	680	1875	0.21	200	12
			martensitic	820	1875	0.21	240	13
M	stainless steel and cast steel		austenitic, duplex	600	2150	0.20	180	14
K	gray cast iron (GG)		ferritic / pearlitic		1150	0.20	180	15
			pearlitic / martensitic		1350	0.28	260	16
	nodular cast iron (GGG)		ferritic		1225	0.25	160	17
			pearlitic		1350	0.28	250	18
	malleable cast iron		ferritic		1225	0.25	130	19
			pearlitic		1420	0.3	230	20
N	aluminum-wrought alloys		not hardenable		700	0.25	60	21
			hardenable		800	0.25	100	22
	aluminum-cast alloys	≤12% Si	not hardenable		700	0.25	75	23
			hardenable		700	0.25	90	24
		>12% Si	high temperature		750	0.25	130	25
	copper alloys	>1% Pb	free cutting		700	0.27	110	26
			brass		700	0.27	90	27
			electrolytic copper		700	0.27	100	28
	non metallic		duroplastics, fiber plastics					29
			hard rubber					30
S	high temperature alloys	Fe based	annealed		2600	0.24	200	31
			hardened		3100	0.24	280	32
		Ni or Co based	annealed		3300	0.24	250	33
			hardened		3300	0.24	350	34
			cast		3300	0.24	320	35
	titanium alloys		pure	400	1160	0.24		36
			alpha+beta alloys, hardened	1050	1245	0.24		37
H	hardened steel		hardened		4600		55 HRC	38
			hardened		4700		60 HRC	39
	chilled cast iron		cast		4600		400	40
	cast iron		hardened		4500		55 HRC	41

Steel
Stainless Steel
Cast Iron
Non-ferrous
High Temp. and Titanium Alloys
Hardened Steel and Cast Iron

(1) Specific cutting force for 1 mm² chip section.
(2) Chip thickness factor.

MATERIAL GROUPS

Hardness Conversion Table



Material Designation in Accordance with Selected Standards

Standards		Material Group No.									
		1	1	1	1	1	1	1	1	1	1
	NF/AFNOR (FRANCE)	E 28-2	A 50-2	E 36-2	E 28-3	SPH 265; A 42 AP	E	E 28-3; E 28-4	C; TC	E 24-2	A 33
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)	1020; G10200; K02301; K02595; K02596; K02597; K02598; K02599; K02702; K0300		K02404; K02702	K02702		A 619	K02601; K03000; A 573 Gr. 70; A 611 Gr.D	1008; G10080; A 621	1015; G10150; K02401	
	BS (UK)	En 43 B; Fe 430 B FN; 43/25 HR; 43/25HS; 43 B; HFW4; HFS4; ERW 3	Fe 490-2 FN; 50 B	50 B; 4360-50 B	43C; 4360-43C	164-400B LT 20	2 CR; 3 CR	Fe 430 D1 FF; 4360-43 C; 4360-43 D	CR 4; CS 4	Fe 360 B; 4360-40 B; ERW 3; CEW 3; 37/23 HR; 37/23 HS; 37/23 CR; 37/23 CS	Fe 310-0; 15 HR; 15 HS; 1449 15 HR; 1449 15 HS
	DIN (GERMANY)	S275JR; St 44-2; Fe 430 B; S275J2G3	E295; St 50-2; Fe 490-2; ST 50-2 G (E295+CR)	S355JR; Fe 510 B	S275J0; St 44-3 U; Fe 430 C	P265S; SPH 265	DC03G1; USt 3; USt 13	S275J2G3 (S275J2); St 44-3 (Fe 430 D 1)	DC01; DC 01; St 2; St 12	S235JR (Fe 360 B); St 37-2	S185 (Fe 310-0); St 33
	Werkstoff (GERMANY)	1.0044	1.0050	1.0045	1.0143	1.0130	1.0333	1.0144	1.0330	1.0037	1.0035
	EN (EUROPE)	S275JR		S355JR	S275J0	P265S	DC03G1		DC01 (FeP 05)		S185
	GOST (RUSSIA)	St4ps; St4sp	St5ps; St5sp					St4kp; St4ps; St4sp			St0
	JIS (JAPAN)	SN 400 B; SN 400 C; SN 490 B; SN 490 C; SS 400; STK 400; STKM 19 C; STKR 400; 19 C; SS 41; STK 41	SS 490; SS 50	SN 400 B; SN 400 C; SN 490 B; SN 490 C; SS 490; SS 50			SPCD	SM 400 A; SM 400 B; SM 400 C; SS 400; STK 400; STKR 400; SM 41 A; SM 41 B; SM 41 C	SPCC; CR 1	STKM 12 A; STKM 12 AC	SGP; SS 330; SS 34
	SS (SWEDEN)	1411; 1412	1550; 2172		1414-01			1411; 1412; 1414	1142	1311	1300
	UNE (SPAIN)	AE 275 B; Fe 430 B FN	A 490-2; Fe 490-2 FN	AE 355 B	AE 275 D	SPH 265	AP 02	AE 275 D; Fe 430 D1 FF	AP 11; FeP 01; AP 00	AE 235 B; Fe 360 B	Fe 310-0; A 310-0
	UNI (ITALY)	Fe 430 B FN; Fe 430 B	Fe 490	Fe 510 B FN	Fe 430 C FN		FeP 02	Fe 430 B; Fe 430 C (FN); Fe 430 D (FF)	FeP 01; FeP 00	Fe 360 B; 1449 37/23 HR	Fe 320
	IS (INDIA)		Fe 490	IS 961	Fe410WA			Fe410WC	IS 513/94 O		
	KS (REP. of KOREA)	SB 41	SS 490	SS 490			SPCD	SWS 41C; SWS 4 B; SWS 41A; SM 400A; SM 400B; SM 400C		STKM 12A; STKM 12C	SS 330
	GB/YB/JB/ SY/NB (PRC)	Q255A; Q255D	Q295A	Q345B	Q275	20	10F	Q275	8	15	Q195

Material Designation in Accordance with Selected Standards

Standards		Material Group No. 1	1	1	1	1	1	1	1	1	1
	NF/AFNOR (FRANCE)	A 34-2 NE	2 C	3 C	ES	A 37 CP	C10RR; XC 10; C 10; AF 34 C 10	E 28-3	GC	E 24-3	
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)	K02502		1006; G10060	A 620	K01700; K02001; K02200; K02201; K02203; K02503; K02601; K02801	1010; G10100			A 1011 (SS Grade 36 (230) Type 2); A1011 (SS Grade 36 (250) Type 1)	A572-60
	BS (UK)	CEW 2; 34/20 HR; 34/20 HS; 34/20 CR; 1449 34/20CS		1 CR; 1 CS; 1 HR; 2 HR; 2 HS; 2 CR; 2 CS	CR 1; CR 2	141-360; 151-360; 154-360; 161-360; 164-360	040 A 10; 045 M 10; En 2 A; En 2 A/1; En 2 B; En 32 A; 10 CS	43 C; 4360-43C	Z2	40 C; 4360-40C	4360 55 E
	DIN (GERMANY)	E195; RSt 34-2	DD12G1; UStW 23	DD13; StW 24	DC04; St 4; St 14	P235GH; HI; H I	C10; C 10	S275JOH; St 44-3 U; RoSt 44-2	DX51D; St 02 Z	S235JO; St 37-3 U; Fe 360 C	S380N; StE 380
	Werkstoff (GERMANY)	1.0034	1.0334	1.0335	1.0338	1.0345	1.0301	1.0149	1.0226		1.8900
	EN (EUROPE)	E195		DD13	DC04 (FeP 04)	P235GH	C10	S275JOH		S235JO	S380N
	GOST (RUSSIA)	St2ps; St2sp	10kp	08kp	08JuA		10				
	JIS (JAPAN)		SPHD	SPHE	SPCE; HR 4	SGV 410; SGV 450; SGV 480; SPV 235; SPV 450; SPV 490; SGV 42; SGV 46; SGV 49; SPV 24; SPV 46; SPV 50	S 10C		SGC C	SS 330; SS 34	S 25 C
	SS (SWEDEN)				1147	1330; 1331		1412-04	1151 10		2145
	UNE (SPAIN)		AP 12	AP13	AP 04; FeP 04	A 37 Grado RA II; A 37 Grado RC I	F.151; F.151.A	Fe 430 C; AE 275 C	FeP 02 G	AE 235 C	
	UNI (ITALY)	Fe 330 BFN	FeP 12	FeP 13	FeP 04	FeE 235; Fe 360 1 KW; Fe 360 1 KG; Fe 360 2 KW; Fe 360 2 KG	1 C 10; C 10	Fe 430 C	FeP 02 G	Fe 360 C FN	FeE 390 KG
	IS (INDIA)					IS 2002 Grade 1	5C4			Fe410-S	
	KS (REP. of KOREA)		SPHD	SPHE	SPCE	SPV 24; SGV 49; SGV 46; SGV 42; SGV 410; SGV 450; SGV 480	SM 10C			SS 330	SM 25C
	GB/YB/JB/ SY/NB (PRC)	Q215B	Q195	08F		A3R	10			Q195	

Material Designation in Accordance with Selected Standards

Standards		Material Group No.								
		1	1	1	1	1	1	1	1	1
	NF/AFNOR (FRANCE)	A 60-2	A 34-2	A 37 AP; SPH 235	10 PbF 2	10 F 2	S 250 Pb	S 250	XC 25; XC 18; 2 C 22	E 560 D; S 560 MC
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)	A 572 Gr. 65		K01700; K02200; K02801		1108; 1109; 1111; B1111; B 1111; G11080; G11090	12L13; 12L14; 12 L 13; 12 L 14; G12134; G12144	1213; 1215; G12130; G12150	1020; 1023; G10200; G10230	A 1008 (HSLAS-F Grade 80 [550]); A 1011 (HLAS-F Grade 80 [550])
	BS (UK)	En 55 C; Fe 590-2-FN; 55 E; 4360-55 E		164-360B LT20; 1501-164-360B LT20			230 M 07 Pb; En 1A Pb	230 M 07; En 1 A	055 M 15; 070 M 20; En 3 A; En 3 C; En 2	60F55 HR; 60F55 HS; 60F55 CS
	DIN (GERMANY)	E335; St 60-2 (Fe 590-2 B)	S250G1T; USt 34-2	P235S; SPH 235	10SPb20; 10 SPb 20	10S20; 10 S 20	11SMnPb30; 9 SMnPb 28	11SMn30; 9 SMn 28	C22E; Ck 22	S500MC; QStE 500 TM
	Werkstoff (GERMANY)	1.0060	1.0028	1.0112	1.0722	1.0721	1.0718	1.0715	1.1151	1.0986
	EN (EUROPE)	E335		P235S	10SPb20	10S20	11SMnPb30	11SMn30	C22E	S500MC
	GOST (RUSSIA)	St6ps; St6sp							20	
	JIS (JAPAN)	SM 570; SM 58	SS 330; SS 34				SUM 22 L; SUM 23 L; SUM 24 L	SUM 22	S 20 C; S 20 CK; S 22 C	
	SS (SWEDEN)	1650					1914	1912	1450	
	UNE (SPAIN)	A 590; Fe 590-2 FN		AE 235 C	10 SPb 20; F.2122	10 S 20; F. 2121	F.210.C; F.210.M; 11 SMnPb 28; F.2112	F.210.A; F.210.L; 11 SMn 28; F.2111	F.1120; C 25 K	
	UNI (ITALY)	Fe 590; Fe 60-2	Fe 330; Fe 330 B FU	Fe 360 C	CF 10 SPb 20	CF 10 S 20	CF 9 SMnPb 28	CF 9 S 22	C 20; C 25	FeE 560 TM
	IS (INDIA)	St 58						10C14S14	20C8	
	KS (REP. of KOREA)	SM 570	SS 330				SUM 23 L; SUM 24 L	SUM 22; SUM 24L	S 20C; S 22C; S 20CK	
	GB/YB/JB/ SY/NB (PRC)	Q235C	Q215A			Y12		Y15	20	

Material Designation in Accordance with Selected Standards

Standards		Material Group No. 1	1	1	1
	NF/AFNOR (FRANCE)	E 490 D; S 490 MC		E 355 D	E 315 D
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)	A 1008 (HSLAS-F Grade 70 [480]); A 1008 (HSLAS Grade 70 [480] Class 1)	A 1008 (HSLAS Grade 65 [450] Class 1); A 1008 (HSLAS Grade 65 [450] Class 2)	A 1008 (HSLAS Grade 50 [340] Class 1); A 1008 (HSLAS Grade 50 [340] Class 2)	A 1008 (HSLAS Grade 50 [340]); A 1008 (HSLAS Grade45 [310] Class 2); A 1011 (HSLAS-F Grade 50 [340])
	BS (UK)		1501-50F45; 50F45 HR; 50F45 HS; 50F45 CS	46F40 HR; 46F40 HS; 46F40 CS	1501-40F30; 43F35 HR; 43F35 HS; 43F35 CS
	DIN (GERMANY)	S500MC; QStE 500 TM	S460MC; QStE 460 TM	S355MC; QStE 360 TM	S315MC; QStE 300 TM
	Werkstoff (GERMANY)	1.0984	1.0982	1.0976	1.0972
	EN (EUROPE)	S500MC	S460MC	S355MC	
	GOST (RUSSIA)				
	JIS (JAPAN)				
	SS (SWEDEN)	2662		2642	
	UNE (SPAIN)				
	UNI (ITALY)	FeE 490 TM		FeE 355 TM	
	IS (INDIA)				
	KS (REP. of KOREA)				
	GB/YB/JB/ SY/NB (PRC)				

Material Designation in Accordance with Selected Standards

Standards		Material Group No.								
		1	1	1	1	1	1	1	1	1
	NF/AFNOR (FRANCE)	FeE 355 KG N; E 355 R/FP; A 510 AP		A 510 FP	A 510 AP		E 36-3	TSE 355-3; E 36-3		AF 42 C 20; XC 25; 1 C 22
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)	K01600; K02007; K02700; K02701; K02803; K02900; K03009; K03300; K11803; K12000; K12001; K12037	1024; K03011; K03014; K12037; K12709	K01600; K02302; K02700; K02701; K02803; K03301; K11803; K12037; K12609; A 299 (A); A 299 (B)	K01600; K02007; K02701; K02803; K117803; K12001; K12037; K12609	K12037	K12000	A 252 (1); A 252 (2); A 252 (3)	K02502	1020; 1022; 1023; G10200; G10220; G10230
	BS (UK)	225-490A		225-490 A	225/490; 225-490 A; 500 Nb	50 EE	50 C; 4360-50C	50 C; 4360-50C	Fe 360 B FU; Fe 360 B FN	055 M 15; 070 M 20; En 3 A; En 3 B; En 3 C; En 2; 22 HS; 22 CS
	DIN (GERMANY)	P355N; StE 355	S355J2G3 (S355J2); St 52-3 N (Fe 510 D1)	P355NL1; TStE 355	P355NH; WStE 355	S355 NLH; TStE 355	S355JO; St 52-3 U; Fe 510 C	S355JOH; St 52-3 U	S235JRG1; S235JR; Fe 360 B; USt 37-2	C22
	Werkstoff (GERMANY)	1.0562	1.0570	1.0566	1.0565	1.0549	1.0553	1.0547	1.0036	1.0402
	EN (EUROPE)	P355N	S355J2G3	P355NL1	P355NH	S355 NLH	S355JO	S355JOH		C22; 2C/2D
	GOST (RUSSIA)	15GF	17GS; 17G1S						16D; St3Kp	20
	JIS (JAPAN)	SM 490 A; SM 490 B; SM 490 C; SM 490 YA; SM 490YB STK 490 YB; STK 490; STK 500; SM 50 A; SM 50 B	SM 490 A; SM 490 B; SM 490 C; SM 490 YA; SM 490 YB; SM 520 B; SM 520 C; STK 490; STK 500; STKM 16 C	SLA 365; STK 490; STK 500; SLA 37; STK 50; STK 51			SCC 3			S 20 C; S 22 C
	SS (SWEDEN)	2106	2132; 2134	2107	2106	2135			1311; 1312	1450
	UNE (SPAIN)	AE 355 KG; AE 355 DD	AE 355 D; Fe 510 D1 FF			FeE 355 KTM	AE 355 C	AE 355 C; Fe 510 C	AE 235 B; Fe 360 B	F.112; 1 C 22
	UNI (ITALY)	FeE 355; FeE 355 KG; FeE 355 KW	fE 510	Fe E 355 KT	FeE 355-2; FeE 355 KW	Fe 510 D	Fe 510 C FN	Fe 510 C	Fe 360 B; Fe 360 C; Fe 360 D	C 20; C 21
	IS (INDIA)		Fe540WHT						IS226	
	KS (REP. of KOREA)	SM 490A; SM 490 ; SM 490C; YA; YB	SM 490A; SM 490B; SM 490C; YA; YB							SM 20C; SM 20CK
	GB/YB/JB/ SY/NB (PRC)		20Mn2				Q345C		Q235B	20Mn

Material Designation in Accordance with Selected Standards

Standards		Material Group No.									
		1	1	1	1	1	1	1	1	1	1
	NF/AFNOR (FRANCE)	A 42 CP; A 42 AP	E 23-45 M	E 355 FP	E 355 R	S355NH; TSE 355-4	S 250	10 PbF 2	S 300	S 300 Pb	C10RR; XC 10
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)	K01701; K02505; K02704; K02801	A27 65-35	K12000; K12037	K12709	K02705; K02305; K12709	1213; 1215; G12130; G12150		1215; G12150; A 29 (1215); A 108 (1215); A 510 (1215); A 510 (1215); A 519 (1215); A 521 (1215)	12L14; 12 L 14; G12144	1010; G10100
	BS (UK)	151-400; 154-400; 161-400; 164-400		50 EE; 4360-50EE	50 E; 4360-50E	S355NH	230 M 07; 220 M 07				040 A 10; 045 M 10; En 2 A; En 2 A/1; En 2 B; En 32 A
	DIN (GERMANY)	P265GH; H II	HX300PD; H300PD; H 300 PD	S355NL; TStE 355	S355N; StE 355	S355NH; StE 335 N	11SMn30; 9 SMn 28	10SPb20; 10 SPb 20	11SMn37; 9 SMn 36	11SMnPb37; 9 SMnPb 36	C10E; Ck 10
	Werkstoff (GERMANY)	1.0425	1.0443	1.0546	1.0545	1.0539	1.0715	1.0722	1.0736	1.0737	1.1121
	EN (EUROPE)	P265GH	HX300PD		S355N	S355NH	11SMn30	10SPb20	11SMn37	11SMnPb37	C10E
	GOST (RUSSIA)	16K; 20K									08; 10
	JIS (JAPAN)	SG 295; SGV 410; SGV 450; SGV 480; SPV 315; SPV 355; SG 30; SGV 42; SGV 46; SGV 49; SPV 32; SPV 36			SM 490 A; SM 490 B; SM 490 C; SM 490 YA; SM 490 YB; SM 50 A; SM 50 B; SM 50 C; SM 50 YA; SM 50 YB		SUM 22		SUM 25		S 09 CK; S 10 C
	SS (SWEDEN)	1431; 1430; 1432	1305	2135; 2135-01	2134	2134-04	1912			1926	1265
	UNE (SPAIN)	A 42 Grado RC I; A 42 Grado RC II; F.6306; F.6307		AE 355 Grado KT	AE 355 Grado KG	Fe 355 KGN	F.210.A; F.210.L; 11 SMn 28; F.2111	10 SPb 20; F.2122	12 SMn 35; F.2113	12 SMnPb 35; F.2114	C 10 k; F.1510
	UNI (ITALY)	Fe 410 1 KW; Fe 410 1 KG; Fe 410 1 KT; Fe 410 2 KW; Fe 410 2 KG		FeE 355 KT	FeE 355 KG	Fe 510 B	CF 9 S 22	CF 10 SPb 20	CF 9 Mn 36	CF 9 SMnPb 36	2 C 10; 2 C 15; 1 C 10; C 10
	IS (INDIA)	IS 2002 Grade 2B					11C10S25				10C4
	KS (REP. of KOREA)	SPPV 32; SGV 49; SGV 46; SGV 42; SGV 410; SGV 450; SGV 48; SPV 450; SPV 480					SUM 22		SUM 25		S 10 C
	GB/YB/JB/ SY/NB (PRC)	16Mn					Y15		Y13		08

Material Designation in Accordance with Selected Standards

Standards		Material Group No.										
		1	1	1	1	1	1	1	1	1	1	
	NF/AFNOR (FRANCE)	XC 12; XC 15; XC 18	E 28 A; NFA 35-501 E 28	S 320 GD		ES	E 24-3; E 24-4; E 24-U	C18RR; XC 18; C 18; AF 37 C 12	E	E 24-2 NE		
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)	1015; 1017; G10150; G10170	1020; G10200; K02301; K02595; K02596; K02597; K02598; K02599; K02702; K03000				K02001; K02601; K02701	1015; 1017; G10150; G10170		K01500; K01702; K02401; K02502; K03000; A570.36	J03001	1117; C1117; G11170
	BS (UK)	080 A 15; 080 M 15; En 32 C	En 43 B; Fe 430 B; 43/25 HR; 43/25 HS; 43 B; HFW 4; HFS 4; ERW 3; CEW 4; SAW 4			CR 1; CS 2	Fe 360 D1 FF; 37/23 CR; 37/23 CS; 37/23 HR; 37/23 HS; 40 D; HFW 4; HFS 4	080 A 15; 080 M 15; En32 C; 17 CS; 17 HS	CR2; CR3; CS3; 1449 3 CR; 1449 2 CR	Fe 360 B FU; 37/23 CR; 37/23 CS; 37/23 HR; 37/23 HS; HFW 3; HFS 3; 40 B	A 1	
	DIN (GERMANY)	C15E; Ck 15	S275JR; St 44-2; Fe 430 B	S320GD; StE 320-3 Z	P265NL; P 265 NL	DC04; St 4; St 14	S235J2G3 (S235J2); St 37-3 N; Fe 360 D 1	C15; C 15	DC03; RRSt; RRSt 13	S235JR; S235JRG2; RSt 37-2; Fe 360 B	GE240; GS-45	18S10; 15SMn13
	Werkstoff (GERMANY)	1.1141	1.0044	1.0250	1.0453	1.0338	1.0116	1.0401	1.0347	1.0038	1.0446	1.0712; 1.0725
	EN (EUROPE)	C15E	S275JR	S320GD	P265NL	DC04	S235J2G3	C15	DC03	S235JR	GE240	18S10; 15SMn13
	GOST (RUSSIA)	15	St4ps; St4sp			08JuA	16D; St3sp		08Ju	St3ps; St3sp	25L-3	
	JIS (JAPAN)	S 15 C; S 15 CK	SN 400 B; SN 400 C; SN 490 B; SN 490 C; SS 400; STK 400; STKM 19 C; STKR 400; 19 C; SS 41; STK 41	SGC 440; SZAC 440; SZAH 440; SGLH 440		SPCE; HR 4	SS 330; SS 34	S 15 C	SPCD; CR 3	SS 330; SS 34	230-450; 230-450 W	
	SS (SWEDEN)	1370	1411; 1412			1147	1312; 1313	1350	1146	1312		
	UNE (SPAIN)	C 16 k; F.1511; F.1110; C 15 k	AE 275 B; Fe 430 B FN			AP 04; FeP 04		F.111	AP 02; AP02; FeP03	AE 235 B FN; AE 235 B FU; Fe 360 B FN; Fe 360 B FU		
	UNI (ITALY)	1 C 15; C 15	Fe 430 B FN			FeP 04	Fe 360 C; D; Fe 360 C FN; Fe 360 D FF; Fe 37-2	1 C 15; C15; C16	FeP 02; FeP 03	Fe 360 B FN		
	IS (INDIA)	15C4						15C4				
	KS (REP. of KOREA)	SM 15C; SM 15CK	SB 41			SPCE	SS 330	SM 15C	SPCD	SS 330		SS 330
	GB/YB/JB/ SY/NB (PRC)	15	Q255A ; Q255D				Q195	15		Q235C	ZG230-450	Q215A

Material Designation in Accordance with Selected Standards

Standards		Material Group No.												
		1	1	1	2	2	2	2	2	2	2	2	2	2
	NF/AFNOR (FRANCE)	E24-4	14-13-12E		C 35; AF 55; 1 C 35; XC 38	XC 38 TS	35 M 5	AF 60; C 40; 1 C 40	C45RR; XC 45; XC 48 H-1	2 C 25; XC 25	C 45; AF 65; C 45; 1 C 45	XC 48 TS	35 MF 4	45 MF 4
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)	A 36	1018; G10180; 5069D		1035; G10350	1035; G10350	1039; G10390	1040; G10400	1045; 1045 H; 1042; G10450; H10450; G10420	1025; G10250	1043; 1045; G10430; G10450	1050; 1055; G10500; G10550	1140; G11400	1139; 1146; G11390; G11460
	BS (UK)	En 40 D	43A		080 M 30; En 5; 080 M 36	080 A 35		En 8; 080 M 40	080 H 46; 080 M 46	070 M 26	080 M 46		212 M 36	
	DIN (GERMANY)	S235J2; S235J2G4	L355; RSt 44-2	C15R; C15RPb; Cm 15	C35G; C 35 G	C35G; C 35 G; Cf 35	40Mn4; 40 Mn 4	C40; C 40	C45E; Ck 45	C25E; Ck 25	C45; C 45	C53G; C53E; Cf 53	35S20; 35 S 20	46S20; 45 S 20
	Werkstoff (GERMANY)	1.0117	1.0419	1.1140	1.0501	1.1183	1.1157	1.0511	1.1191	1.1158	1.0503	1.1213	1.0726	1.0727
	EN (EUROPE)	S235J2	L355	C15R; C15RPb	C35G	C35G		C40	C45E	C25E	C45		35S20; 8M	46S20
	GOST (RUSSIA)		St3sp			35	40G		45	25	45	50		
	JIS (JAPAN)	SS 330; SS 34	SWRCH 18 A; SWRCH 18 K; SWRCH 19 A		S 35 C; S 35 CM	S 35 C; S 35 CM			S 45 C; S 45 CM; S 48 C	S 25 C; S 28 C	S 45 C; S 45 CM	S 50 C; S 50 CM		
	SS (SWEDEN)	1313			1572; 1550	1572			1672		1650		1957	
	UNE (SPAIN)				F.113	F.1130; C 35 k		F.114.A	F.1140; F.1142; C 45 k; C48 k	F.1120; C 25 k	F.114		F.210.G; 35 MnS 6; F.2131	
	UNI (ITALY)	Fe 360 D			C 35; 1 C 35	C 36; C 38		C 40; 1 C 40	C 45	C 25	C 45; 1 C 45	C 53		
	IS (INDIA)		15C8		35C8		40C8		45C8				40C10S18	40C15S12
	KS (REP. of KOREA)				SM 35C	SM 35C			SM 45C; S 48C	SM 25C	SM 45C	SM 50C; SB 450M		
	GB/YB/JB/ SY/NB (PRC)				35	35Mn	40Mn	40Mn	45	25	45	50Mn		Y40Mn

Material Designation in Accordance with Selected Standards

Standards		Material Group No.													
		2	2	2	2	2	2	2	2	2	2	2	2	2	2
	NF/AFNOR (FRANCE)	E 36-3		A 52 CP	20-400 M	A 52 FP	XC 50; 2 C 50	20 M 5	XC35RR; XC32; XC 35; XC 38 H 2; XC 38 H 1; 2 C 35	XC 38 H 1 u; Cm 35	XC 32	C50		1 C 25	
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)	K12000		K02700; K02803; K03103; K03300; K12437		K12447	1049; 1050; G10490; G10500	1330; 1527; G13300; G15270	1034; 1035; 1038; G10340; G10350; G10380; C 1034		1030; G10300	1049; 1050; G10490; G10500	1536; G15360	1025; G10250	
	BS (UK)	50 C					080 M 50	150 M 19; En 14 A; En 14 B	080 M 30; En 5; 080 M 36	080 A 35	080 M 30; En 5	En 43 A; 080 M 50		070 M 26	210 A 15; 210 M 15
	DIN (GERMANY)	S355J0; St 52-3 U; Fe 510-C	S355JRC	P355GH; 19 Mn 6	C18D; GS-38	S355J2; S355J2G4; Fe 510 D2	C50E; Ck 50	28Mn6	C35E; Ck 35	C35R; Cm 35	C30E; Ck 30	C50	34Mn5	C25	15S22; 15 S 20
	Werkstoff (GERMANY)	1.0553	1.0551	1.0473	1.0416	1.0577	1.1206	1.1170	1.1181	1.1180	1.1178	1.0540	1.1166	1.0406	1.0723
	EN (EUROPE)	S355J0	S355JRC	P355GH	C18D		C50E	28Mn6	C35E	C35R	C30E	C50			
	GOST (RUSSIA)						50	30G	35						
	JIS (JAPAN)	SCC 3		SGV 410; SGV 450; SGV 480				SCMn 1	S 35 C; S 35 CM; S 38 C		S 30 C; S 30 CM	S 50 C	SMn 433 H; SMn 433 HRCH; SMn 433 RCH; SMn 1 H		SUM 32
	SS (SWEDEN)			2101; 2102	1306	2107	1674		1572			1674			1922
	UNE (SPAIN)	AE 355 C		A 52 RC I, RA II		A 52 RB II; AE 355 D			F.1130; C 35 k	F.1135; C 35 k-1	2 C 30	1 C 50	TO.B		F.210F; F.210.F
	UNI (ITALY)	Fe 510 C FN		Fe E 355-2			C 50	C 28 Mn	C 35	C 35	C 30	C 50		C 25; 1 C 25	
	IS (INDIA)	Fe570HT						27C15	35C8		30C8	50C4	37C15	25C4	
	KS (REP. of KOREA)			SGV 410; SGV 450; SGV 480				SCMn 1	SM 35C; SGV 480			SM 50C	SMn 433H		SUM 32
	GB/YB/JB/ SY/NB (PRC)	Q345C			ZG15	Q345D	50Mn	30Mn2	35		30Mn	50Mn	30Mn2	25	Y20

Material Designation in Accordance with Selected Standards

Standards		Material Group No.												
		2	2	2	3	3	3	3	3	3	3	3	3	3
	NF/AFNOR (FRANCE)				3 C 45; XC 42 H 1; XC 48 H 1 u	2 C 40; XC 42 H 1	XC 75	XC 90	XC 80		A 48 CP; A 48 AP	C 45; AF 65; C 45; 1 C 45	40 M 5; 35 Mn 5	C45RR; XC 45; XC 48 H 1
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)		K03504; A105; SA-105		1045; 1049; G10450; G10490	1040; G10400	1074; 1075; G10740; G10750	1095; G10950	1086; G10860		K01700; K02001; K02200; K02201; A 516 Gr.70; A 515 Gr. 70; A 414 Gr.F; A 414 Gr.G	1043; 1045; G10430; G10450	1335; 1335 H; 1541; 1541 H; G13350; G15410; H13350; H15410	1045; 1045 H; 1042; G10450; H10450; G10420
	BS (UK)				080 M 46	080 M 40; En 8		95 HS; 95 CS	80 HS; 80 CS	A 5; A 6	224-469 B	080 M 46	150 M 36	089 H 46; 080 M 46
	DIN (GERMANY)	C45U; C45W; C 45 U; C 45 U	A105; C21; P250GH; C22.8; C22 G2	C53E; C 53 E; Ck 53	C45R; Cm 45	C40E; Ck 40	C76D; C 76 D; D 75-2	C92D; C 92 D; D 95-2	C86D; C 86 D; D 85-2	G28Mn6; GS-30 Mn 5	P295GH; 17Mn4; 17 Mn 4	C45; C 45	36Mn5; 36 Mn 5	C45E; Ck 45
	Werkstoff (GERMANY)	1.1730	1.9443; 1.0432; 1.0460	1.1210	1.1201	1.1186	1.0614	1.0618	1.0616	1.1165	1.0481	1.0503	1.1167	1.1191
	EN (EUROPE)	C45U	P250GH		C45R	C40E	C76D	C92D	C86D	G28Mn6	P295GH	C45	36Mn5	C45E
	GOST (RUSSIA)				45	40	75			27ChGSNMDTL; 30GSL	14G2		35G2; 35GL	45
	JIS (JAPAN)			S 53 C	S 45 C; S 45 CM	S 40 C				SCMn 2	SG 365; SGV 410; SGV 450; SGV 480; SPV 315; SG 37; SGV 42; SGV 46; SGV 49; SPV 32	S 45 C; S 45 CM	SMn 438; SMn 438H; SCMn 3	S 45 C; S 45 CM; S 48 C
	SS (SWEDEN)				1660						2102	1650	2120	1672
	UNE (SPAIN)				F.1145; F.1147; C 45 k-1; C 48 k-1					30 Mn 5; AM 30 Mn 5; F.120.D; F.8211; F.8311	A 47 RC I; RA II	F.114	F. 1203-36 Mn 6; F. 8212-36 Mn 5	F.1140; F.1142; C 45 k; C 48 k
	UNI (ITALY)				C 45	C 40	3 CD 75	3 CD 95	C 85; 3 CD 85		Fe 295	C 45; 1 C 45		C 45
	IS (INDIA)			55C4; C55	45C8								37C15	45C8
	KS (REP. of KOREA)				SM 45C	SM 40C				SCMn 2	SPPV 32; SGV 49; SGV 46; SGV 42; SGV 410; SGV 450; SGV 48; SPV 450; SPV 480	SM 45C	SMn 438H; SCMn 3	SM 45C; S 48C
	GB/YB/JB/ SY/NB (PRC)				45	40Mn	75	1A95		20Mn2	16Mn	45	35Mn2	45

Material Designation in Accordance with Selected Standards

Standards		Material Group No.												
		3	3		4	4	4	4	4	4	4	4	4	4
	NF/AFNOR (FRANCE)		44SMn28; 45 MF 6.3	P355GH	C54; 1 C 55; AF 70; C 55	C50RR; XC 54; XC 50; 2 C 55; XC 55 H 1	C60; 1 C 60	C68RR; XC 68	C75RR; XC 75	C100RR; XC 100	Y2 120; C120E3U	C90RR; XC 90	3 C 55; XC 55 H 1	C 75
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)		1144; G11440	K11852; K12437; AH36; DH36; EH36	1055; G10550	1055; G10550	1060; G10600	1070; G10700	1074; 1075; 1078; G10700; G10750; G10780	1095; G10950	W112; W1; T72301	1086; G10860	1055; G10550	1074; 1075; G10740; G10750
	BS (UK)		44SMn28; 226 M 44		070 M 55; En 9	070 M 55; En 9	060 A 62; En 43 D	060 A 67; 080 A 67; En 43 E	060 A 78; 80	95			070 M 55; En 9	060 A 78
	DIN (GERMANY)	38MnVS6; 38 MnVS 6	44SMn28	GL-A 36; GL-AH 36; S 355 G 1 S	C55	C55E; Ck 55	C60	C67S; Ck 67	C75S; Ck 75	C100S; Ck 101	C125U; C 125 W	C80S; Ck 85; C 85 E	C55R; Cm 55	C75
	Werkstoff (GERMANY)	1.1303	1.0762	1.0583	1.0535	1.1203	1.0601	1.1231	1.1248	1.1274	1.1563	1.1269	1.1209	1.0605
	EN (EUROPE)	38MnVS6	44SMn28		C55	C55E	C60; 43D	C67S	C75S	C100S	C125U	C80S	C55R	
	GOST (RUSSIA)		A40G	A36	55	55	60; 60G	65GA; 68GA	75A		U12-1	85A		75
	JIS (JAPAN)		SUM 43	SPV 36	S 55 C; S 55 C-CSP; S 55 CM	S 55 C; S 55 C-CSP; S 55 CM	S 58 C; S 60-C-CSP; S 60 CM; S 65 C-CSP; S 65 CM	S 70 C-CSP; S 70 CM	S 75 CM	SK 95 -CSP	SK 120; SK 120 M; SK 2; SK 2 M; TC 120	SK 85-CP		
	SS (SWEDEN)				1655	1655		1770	1774	1870				
	UNE (SPAIN)				F.115	F.1150; C 55 K					F.5123; C 120		F.1155; C 55 k-1	
	UNI (ITALY)		CF 44 SMn 28		C 55; 1 C 55	C 55	C 60; 1 C 60	C 67	C 75	C 100	C 120 KU	C 85	C 55	C 75
	IS (INDIA)				55C4		60C4		80C6			85C6		75C6
	KS (REP. of KOREA)		SUM 43		SM 55C	SM 55C	SM 58C							
	GB/YB/JB/ SY/NB (PRC)		Y40Mn		55	55	60	65	75	1A95	T12	T8A	55	75

Material Designation in Accordance with Selected Standards

Standards		Material Group No.												
		4	4	5	5	5	5	6	6	6	6	6	6	6
	NF/AFNOR (FRANCE)	C68; XC 65		C 56 D 2	C90RR; XC 90; XC90; C90E2U	C60RR; XC 60; X 65; 2 C 60	C50RR; XC 54; XC 50; XC 55 H 1; 2 C 55	60 S 7	60 S 7	55 S 7	50S7; 51 Si 7	45 S 7; Y 46 S 7; 46 SI 7	100C2	12 CD 9-10; 10 CD 9.10
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)	1070; G10700		1055; G10550		1060; 1064; G10600; G10640	1055; G10550	9260; G92600	9260 H; H92600; 9260; G92600	9255; G92550	9255; G22550		G50986; ASTM Grade E50100; ASTM Grade G15116; SAE E50100	K21390; K21590; ASTM A182 F22; ASTM A387 Grade 22; A387-22-2
	BS (UK)	060 A 67; 080 A 67; En 43 E; 1449 70 HS			CS95	060 A 62; 070 M 60; En 43 D	070 M 55; En 9		251 A 60; 251 H 60	251 A 58; En 45 A			GCr6; B00040; GCr4	622; 622-490; 622/515; 622/690
	DIN (GERMANY)	C67	C56E2; Cf 54	C56D2; C 56 D 2	C90S; C 90 S	C60E; Ck 60	C55E; Ck 55	65Si7; 65 Si 7	60Si7	56Si7; 56 Si 7; 55Si7; 55 Si 7	51Si7; 51 S 7	46Si7	100Cr2; 100 Cr 2	10CrMo9-10; 10 CrMo 9 10
	Werkstoff (GERMANY)	1.0603	1.1219	1.1220	1.1217	1.1221	1.1203	1.5028	1.5027	1.5026	1.5025	1.5024	1.3501	1.7380
	EN (EUROPE)	C67	C56E2	C56D2	C90S	C60E	C55E			565Si7; 55Si7	51Si7	46Si7		10CrMo9-10
	GOST (RUSSIA)					60GA	55	60S2G	60S2	55S2; 60S2			SchCh4	12Ch8
	JIS (JAPAN)	S 70 C-CSP; S 70 CM	C56E2; S55C		SK 95	S 58 C; S 60 C-CSP; S 60 CM; C 65 C-CSP; C 60 CM	S 55 C; S 55 C-CSP; S 55 CM	50 P 7; SUP 6; SUP 6 M; SUP 7; SWOSM						SCMQ4E; SCMV 4; SFVA F 22.A; SFVA F 22.B; SFVCM F22B; STBA 24; STFA 24; STPA 24
	SS (SWEDEN)					1678	1655			2085; 2090				2218
	UNE (SPAIN)						F.1150; C 55 k		F.144.B; F.1441	F.144; F.144.A; 56 Si 7; F.1440	F.145.B	F.1451		TU.H
	UNI (ITALY)	C 67				C 60	C 55		60 Si 7	55 Si 7	48 Si 7; 50 Si 7			12 CrMo 9 10
	IS (INDIA)	65C6					55C4	65Si7	60Si7	55Si7				
	KS (REP. of KOREA)		S 55C			SM 58C	SM 55C	SPS 6						SPA 24
	GB/YB/JB/ SY/NB (PRC)	70		55		60Mn	55	60Si2Mn	60Si2Mn	55Si2Mn	55Si2Mn		GCr6	12Cr2Mo1

Material Designation in Accordance with Selected Standards

Standards		Material Group No. 6	6	6	6	6	6	6	6	6	6	6	6
	NF/AFNOR (FRANCE)	90 MnV 8; 90 MV 8	55 WC 20		100 C 3	105 WCr 5; 105 WC 13	20 MC 5	55 S 7	55 S 7	60 SC 6	34 CD 4; 34CrMo4RR; 35 CD 4;		100Cr6RR; 100 C 6; 100Cr6; Y 100 C 6
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)	O2; T31502			L2; T61202		4820; 5120; 5120H; G48200; G51200; H51200	9255; G92550	9254; G92550	9262; G95620	4135; 4137; 4135H; 4137H; G41350; G41370; H41350; H41370		L3; T61203
	BS (UK)	BO 2; BO2	BS1; BS 1			105WC 13	150 M 19	250A53	250 A 53		708 A 30		BL 3; BL3
	DIN (GERMANY)	90MnCrV8; 90 MnCrV 8	60WCrV7; 60 WCrV 7	51CrMnV4; 51 CrV 4; 50 CrV 4	115CrV3; 115 CrV 3	105WCr6; 105 WCr 6	20MnCr5; 20 MnCr 5	55Si7; 55 Si 7	55Si7; 55 Si 7	HDT 450 F; S340 MGC	34CrMo4; GS34 CrMo 4; G34 CrMo 4	38MnSi4; 38 MnSi 4	102Cr6; 102 Cr 6; 100Cr6
	Werkstoff (GERMANY)	1.2842	1.2550	1.2241	1.2210	1.2419	1.7147	1.0904	1.0904	1.0961	1.7220	1.5120	1.2067
	EN (EUROPE)	90MnCrV8	60WCrV7		115CrV3	105WCr6	20MnCr5				34CrMo4		102Cr6
	GOST (RUSSIA)					ChW1G; ChWG	18ChG			60S2; 55S2; 50ChFA	35ChM; AS38ChGM		Ch
	JIS (JAPAN)					SKS 2; SKS 2 M; SKS 3; SKS 31	SMnC 420 H; SMnC 420 RCH; SMnC 21 H				SCM 435 H; SCM 435 HRCH; SCM 435 M; SCM 435 RCH; SCM 435TK; SCM 3 H; STKS 3		SUJ 2
	SS (SWEDEN)		2710			2140	2172	2085	2090		2234		
	UNE (SPAIN)	90 MnCrV 8; F.5229	60 WCrSiV 8; F.5242		F.520.L; F.5125	F.5233; 105 WCr 5	F.150.D	56 Si 7		60 SiCr 8; F.1442	35 CrMo 4 DF; F.125.A; F.125.B; F.1254; F.1250		F.5230; 100 Cr 6
	UNI (ITALY)	90 MnVCr 8 KU	55 WCrV 8 KU; 58 WCr 9 KU		107 CrV 3 KU	107 WCr 5 KU	20 MnCr 5; Fe52	55 Si 8		60 SiCr 8	34 CrMo 4 KB; 35 CrMo 4		102 Cr 6 KU
	IS (INDIA)					T110W2Cr1	20MnCr1	55Si2Mn90					
	KS (REP. of KOREA)					STS 31					SCM 435 TK		STB 2
	GB/YB/JB/ SY/NB (PRC)	9Mn2V				9CrWMo	15CrMn	55Si2Mn	55Si2Mn		35CrMo	42SiMn	Cr2

Material Designation in Accordance with Selected Standards

Standards		Material Group No.											
		6	6	6	6	6	6	6	6	6	6	6	6
	NF/AFNOR (FRANCE)		34 CD 4	90MnWCrV5; 90 MWCV 5; 8 MO 8	45 WCrV 8; 45 WCrV 20	55 NCDV 7	55 NCV 6	100Cr6RR; 100 C 6; 100Cr6	15 D 3		16 N 6	14 NC 11	10 NC 12; 12 NC 15; 14 NC 12; 16 NC 12; 16 NCD 13
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)	L1	P20; T51620	O1; T31501	S1; T41901	L6; T61206		E52100; G52986	K11820; K12020; K12320; A204 Grade A; A182 Grade F1	4422; G44220; J12522	A 350-LF 5; K13050; K21703; K22103	3415	3310; 3310 RH; 3312; 3316; 9315; E 3310; E 3316; E9315; G33106
	BS (UK)		708 A 37	BO1; BO0; BO 1; BO 0	BS1; BS 1	BH 224; BH 225		2 S.135; 535 A 99	1503-243 B	245; B 1; B1			655 M 13; 655 H 13; En 36 A
	DIN (GERMANY)	90CrSi5; 90 CrSi 5	35CrMo4; 35 CrMo 4	100MnCrW4; 100 MnCrW 4	45WCrV7; 45 WCrV 7	55NiCrMoV6; 56NiCrMoV6; 55 NiCrMoV 6; 56 NiCrMoV 6	50NiCr13	100Cr6; 100 Cr 6	16Mo3; 15 Mo 3	G20Mo5; 20Mo4; GS-22 Mo 4	14Ni6; 14 Ni 6	14NiCr10; 14 NiCr 10	15NiCr13; 14NiCr14; 15 NiCr 13; 14NiCr14
	Werkstoff (GERMANY)	1.2108	1.2330	1.2510	1.2542	1.2713	1.2721	1.3505	1.5415	1.5419	1.5622	1.5732	1.5752
	EN (EUROPE)	90CrSi5	35CrMo4	100MnCrW4	45WCrV7	55NiCrMoV6		100Cr6		G20Mo5	14Ni6	14NiCr10	15NiCr13
	GOST (RUSSIA)				5ChW25F	5ChNM		SchCh 15				12ChN3A	
	JIS (JAPAN)			SKS 31		SKT 4		SUJ 2; SUJ 4	STBA 12; STFA 12; STPA 12	SCPH 11		SNC 415; SNC 415 H; SNC 415 M	SNC 815 H; SNC 815 HRCH; SNC 815 RCH; SNC 22 H
	SS (SWEDEN)	2092	2234	2140	2710		2550	2258	2912; 16Mo3				
	UNE (SPAIN)			F.522.A; F.5220; 95 MnCrW5; 105 WCr 5	F.524; F.5241; 45 WCrSi 8	F.520.S	F.528	F.131; 100 Cr 6; F.1310	F. 2601; 16 Mo 3		F.2641; 15 Ni 6	15 NiCr 11	15 NiCr 11; F.1540
	UNI (ITALY)	105 WCr 5	35 CrMo 4	95 MnWCr 5 KU; 10 WCr 6	45 WCrV 8 KU			100 Cr 6	16 Mo 3 KG; 16 Mo 3 KW; 16 Mo 5 KG; 16 Mo 5 KW		14 Ni 6 KG; 14 Ni 6 KT	16 NiCr 11	
	IS (INDIA)							105Cr1Mn60					13Ni3Cr80
	KS (REP. of KOREA)		SCM 435 TK	STS 31		STF 4		STB 2	SPA 10	SCPH 11			
	GB/YB/JB/ SY/NB (PRC)	9SiCr	3CrMo	CrWMn	5CrW2Si	5CrNiMo		Gr15; 45G	16Mo			12CrNi2	12CrNi3A

Material Designation in Accordance with Selected Standards

Standards		Material Group No.										
		6	6	6	6	6	6	6	6	6	6	6
	NF/AFNOR (FRANCE)	12 CD 4	18 NCD 6	16 NCD 13	12 C 3; 15Cr2RR; 15 C 2	32 C 4	42 C 4	42 C 4 TS	16MnCr5RR; 16 MC 5	16MnCrS5	55 C 3; 55Cr3	MOC 2; V320
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)			9310; 9310H; 9310 RH; E 9310 H; G93106; H93106; H93100; H93106; AMS 6265	5015; G50150	5132; 5132 H; G51320; H51320	5140; 5140 H; 5140 RH; G51400; H51400	5140; G51400	5115; 5117; G51150; G51170		5155; 5155 H; 5150; G51550; H51550; G51600	4142; G41420
	BS (UK)		820A16	832 H 13; 832 M 13; S.157; En 36 C	523 M 15	530 A 32; 530 H 32; 530 M 32	530 A 40; 530 M 40; 530 H 40; En 18	530 A 40	527 M 17; 590 H 17; 590 M 17		525 A 58; 525 A 60; En 48	
	DIN (GERMANY)	15CrMo5; 15 CrMo 5	17CrNiMo6; 17 CrNiMo 6	14NiCrMo13-4; 14 NiCrMo 13 4	15Cr3; 15 Cr 3	34Cr4; 34 Cr 4	41Cr4; 41 Cr 4	42Cr4; 42 Cr 4	16MnCr5; 16 MnCr 5	16MnCrS5; 16 MnCrS 5	55Cr3; 55 Cr 3	41CrMo4; 41 CrMo 4
	Werkstoff (GERMANY)	1.7262	1.6587	1.6657	1.7015	1.7033	1.7035	1.7045	1.7131	1.7139	1.7176	1.7223
	EN (EUROPE)	15CrMo5			15Cr3	34Cr4	41Cr4		16MnCrS5	16MnCrS5	55Cr3	
	GOST (RUSSIA)				15Ch	35Ch	40Ch		18ChG		50ChGA	40ChFA
	JIS (JAPAN)	SCM 415 H; SCM 415 HRCH; SCM 415 M; SCM 415 RCH; SCM 415 TK; SCM 21 H			SCr 415; SCr 415 H; SCr 415 HRCH; SCr 415 RCH; SCr 21 H	SCr 430; SCr 430 H; SCr 430 HRCH; SCr 430 RCH; SCr 2 H	SCr 440; SCr 440 H	SCr 440			SUP 9; SUP 9 A; SUP 9 M	SNB 22-1
	SS (SWEDEN)							2245	2173	2127	2253	
	UNE (SPAIN)	12 CrMo 4; F.150.J; F155; F.1551	14 NiCrMo 13	14 NiCrMo 13; 14 NiCrMo 13-1; F.1560; F.1569		35 Cr 4; F.8221	41 Cr 4 DF; F.1211; F.1202	42 Cr 4	F.1516		F.1431	42 CrMo 4
	UNI (ITALY)			15 NiCrMo 13; 16 NiCrMo 12		34 Cr 4; 34 Cr KB	41 Cr 4; 41 Cr 4 KB	41 Cr 4	16 MnCr 5		55 Cr 3	41 CrMo 4
	IS (INDIA)		15Ni2Cr1Mo15		15Cr3		40Cr1		17Mn1Cr95		55Cr3	
	KS (REP. of KOREA)					SCr 430; SCr 430H	SCr 440	SCr 440			SPS 9A	SNB 22-1
	GB/YB/JB/ SY/NB (PRC)	15CrMnMo			15Cr	35Cr	40Cr	40Cr	15Cr		50CrMn	40CrMoA

Material Designation in Accordance with Selected Standards

Standards		Material Group No. 6	6	6	6	6	6	6	6	6	6
	NF/AFNOR (FRANCE)	42 CD 4; 40 CD 4; 42CrMo4RR			15 CD 4-05	12 CD 9-10; 10 CD 9.10		40 CAD 6.12		40 CMD 8 S	
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)	4140; 4140 H; 4140 RH; 4142; 4142 H; 4145; G41400; H41400; G41420; H41420; K14248; K14047	4147; 4147 H; 4150; 4150 H; 8650; 8650 H; G41470; G41500; G86500; H41470; H41500; H86500	4118; 4118H; G41180; H41180	K11547; K11562; K11564; K11757; K11789; K12052; ASTM A182 F12	K21390; K21590; ASTM A182 F22		E71400; K24065; K24728; A355 Class A		P20+S	
	BS (UK)	708 M 40; 709 M 40; En 19; En 19 A	708 M 40; 708 A 47		620; 620-440; 620-470; 620-540; 621	622; 622-490; 622/515; 622/690; 1502-622	1503-660-440	905 M 39; En 41 B			
	DIN (GERMANY)	42CrMo4; 42CrMo4V; 42 CrMo 4; 42 CrMo 4 V	50CrMo4; 50 CrMo 4	20MoCr4; 20 MoCr 4	13CrMo4-5; 13 CrMo4 4	10CrMo9-10; 10 CrMo 9 10; GS-12CrMo9-10; GS-12 CrMo 9 10; G 12 CrMo9-12	14MoV6-3; 14 MoV 6 3	41CrAlMo7-10; 41CrAlMo7; 41 CrAlMo 7	17NiCrMo6-4	40CrMnMoS8-6	20MnCrS5; 20 MnCrS 5
	Werkstoff (GERMANY)	1.7225; 1.7227	1.7228	1.7321	1.7335	1.7380	1.7715	1.8509	1.6566	1.2312	1.7149
	EN (EUROPE)	42CrMo4	50CrMo4	20MoCr4	13CrMo4-5	10CrMo9-10		41B	17NiCrMo6-4		20MnCrS5
	GOST (RUSSIA)	40ChFA		BGH 7321; E320; SIQUAL 7321	12ChM; 15ChM	12Ch8		38Ch2MJuA			
	JIS (JAPAN)	SCM 440 H; SCM 440 HRCH; SCM 440 M; SCM 440 RCH; SCM 440 TK; SNB 7 Class 2; SCM 4 H; SNB 22-1	SCM 445 H; SCM 445 HRCH; SCM 445 RCH; SCM 5 H		SCMV 2; SFVA 12; STBA 22; STFA 22; STPA 20; STPA 22	SCMQ 4 E; SCMV 4; SFVA F 22 A; SFVA F 22 B; SFVCM F 22 B; STBA 24; STFA 24; STPA 24		SACM 645; SACM 1			
	SS (SWEDEN)	2244; 42CrMo4	2512	2625	2216	2218		2940			
	UNE (SPAIN)	TO.D; TU.L			TU.E; TU.F; F.2631; 14 CrMo 4 5	TU.H	13 MoCrV 6	F.174; 41 CrAlMo 7; F1740			
	UNI (ITALY)	42 CrMo 4; 38 CrMo 4 KB; 41 CrMo 4	653 M 31		14 CrMo 3; 14CrMo4 5	12 CrMo 9; 12 CrMo 10		41 CrAlMo 7			
	IS (INDIA)	40Cr4Mo3						40Cr2Al1Mo18			
	KS (REP. of KOREA)	SNB 22-1			SPA 22	SPA 24					
	GB/YB/JB/ SY/NB (PRC)	42CrMo; 42CrMnMo		20CrMo	12CrMo	12Cr2Mo1		38CrMoAl			

Material Designation in Accordance with Selected Standards

Standards	Material Group No. 6	6	6	6	6	6	6	6	6	6
NF/AFNOR (FRANCE)	40 CMND 8	40 CMD 8		51 CDV 4; 51CrMoV4		15 CD 3.5				
AISI/ASM/ ASTM/SAE/ UNS/AA (US)	P20+Ni			4150; G41500			4419; 4419 H; 4520; G44190; H44190; G45200; K11522; K11820; K12020; K12023; K12320; K12821		HY-80; HY 80; HY80; K31820; MIL-S-21952	
BS (UK)										605 M 36; En 16; En 16T
DIN (GERMANY)	40CrMnNiMo8-6-4; 40 CrMnNiMo 8 6 4	40CrMnMo7; 40 CrMnMo 7	49CrMo4; 49 CrMo 4	52CrMoV4; 51CrMoV4; 51 CrMoV 4	16CrMo4-4; 16 CrMo 4 4	16CrMo4; 16 CrMo 4	16Mo5			
Werkstoff (GERMANY)	1.2738	1.2311	1.7238	1.7701	1.7337	1.7242	1.5423			
EN (EUROPE)	40CrMnNiMo8-6-4	40CrMnMo7		51CrMoV4		16CrMo4				
GOST (RUSSIA)	40Ch2GNM							30ChGSA		
JIS (JAPAN)					SCM 415 M; SCM 415; STBA 22; SFVA F12	SCM 418 H; SCM 418 HRCH; SCM 418 RCH; SCM 418 TK	SB 450 M; SB 480 M; SB 46 M SB 49 M			
SS (SWEDEN)										
UNE (SPAIN)		F.5302				F.1550; 18 CrMo 4	TU.D; F.2602			
UNI (ITALY)		35 CrMo 8 KU		51 CrMoV 4	A 18 CrMo 45 KW	18 CrMo 4	16 Mo 5 KG; 16 Mo 5 KW			
IS (INDIA)										
KS (REP. of KOREA)							SB 450M			
GB/YB/JB/ SY/NB (PRC)		5CrMnMo			15CrMo		15Mn			

Material Designation in Accordance with Selected Standards

Standards		Material Group No.												
		6	6	6	6	6	6	6	6	6	6	6	6	6
	NF/AFNOR (FRANCE)		16 NC 6		35 C 2; 38 C 2						E 690 D		38 B 3; 38B3	
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)	K52440	4320; 4320H; G43200; H43200		5140; G51400	E51100; E52100; G51986; G52986		P6; T51606			A514 Grade B; K11630	A709-100; A709 Grade 100		
	BS (UK)		815 M 17		120 M 36						75 F 70			
	DIN (GERMANY)	34CrAlNi7-10; 34CrAlNi7; 34 CrAlNi 7	15 CrNi 6	17CrNi6-6	38Cr2; 38 Cr 2	105Cr4; 105 Cr 4	140Cr2; 140 Cr 3	15NiCr14; 15 NiCr 14	S690QL1; EStE 690V	26CrMo4-2; 26 CrMo 4	S700MC; QStE 690 TM	S690QL; TStE 690 V		20MnB4; 20 MnB 4
	Werkstoff (GERMANY)	1.8550; 1.2891	1.5919	1.5918	1.7003	1.2057	1.2008	1.2735	1.8988	1.7219	1.8974	1.8928		1.5525
	EN (EUROPE)	34CrAlNi7-10		17CrNi6-6	38Cr2				S690QL1	26CrMo4-2	S700MC	S690QL		20MnB4
	GOST (RUSSIA)		12ChN2				13Ch							
	JIS (JAPAN)		SNCM 415			SUJ 1								
	SS (SWEDEN)		2511; 2512									2625		
	UNE (SPAIN)				F.1200	F.120.J								
	UNI (ITALY)	34 CrAlNi 7			41 Cr 2 KB									
	IS (INDIA)		15NiCr1Mo12		40Cr1	105Cr1								
	KS (REP. of KOREA)													
	GB/YB/JB/ SY/NB (PRC)				40Cr	GCr9	Cr06							

Material Designation in Accordance with Selected Standards

Standards		Material Group No.								
		6	6	6	6	6	7	7	7	7
	NF/AFNOR (FRANCE)	P460NL1; A 590 FP			18 NCD 6		25 CD 4			20 CDV 6
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)	K12202	A217 WC6; A372 Grade J; J12072; J12073; K11598	ASTM A387 Grade 11 Ckass 2; A 387 Grade 11 Class 2; SA387 GR 11 CLASS 2; SA387 Gr.11 CL2; SA387-11-2; K11789		5120; G51200	4130; 4130 H; 4130 RH; G41300; H41300			
	BS (UK)			621 A; 621 B			708 A 25			
	DIN (GERMANY)	P460NL1; P460 NL1; TStE 460	G17CrMo5-5; GS-17 CrMo 5 5	13CrMoSi5-5	18CrNiMo7-6; 17CrNiMo6; 17 CrNiMo 6	20Cr4; 20 Cr 4	25CrMo4; 25 CrMo 4; GS-25 CrMo 4; G 25 CrMo 4	21CrMoV5-11; 21 CrMoV 5 11	GS-35 CrMoV 10 4; G35 CrMoV 10-4	24CrMoV5-5
	Werkstoff (GERMANY)	1.8915	1.7357	1.7336	1.6587	1.7027	1.7218	1.8070	1.7755	1.7733
	EN (EUROPE)	P460NL1; P460 NL1	G17CrMo5-5	13CrMoSi5-5	18CrNiMo7-6	20Cr4	25CrMo4			
	GOST (RUSSIA)					20Ch	20ChM; 30ChM			
	JIS (JAPAN)	SHY 685 N; SHY 685 NS	SCPH 21			SCr 420	SCM 420 TK; SCM 430 M; SCM 430 RCH; SCM 430 TK; STKS 1			
	SS (SWEDEN)						2225			
	UNE (SPAIN)	P460NL1			F.1560; 14 NiCrMo 13		F.222; F.1256			
	UNI (ITALY)				18 NiCrMo 7		25 CrMo 4; 25 CrMo KB	35 NiCr 9		21 CrMoV 5 11
	IS (INDIA)									
	KS (REP. of KOREA)					SCr 420	SCM 420; SCM 430			
	GB/YB/JB/ SY/NB (PRC)					20Cr; A20202	30CrMo			12Cr1MoV

Material Designation in Accordance with Selected Standards

Standards		Material Group No. 7	7	7	7	7	7	7	7	7	7	7
	NF/AFNOR (FRANCE)		40 NCD 2; 40 NCD TS	20 NCD 2	18 NC 13	35 NC 6	34 CrNiMo 8; 35 NCD 6		30 NCD 2	30 CND 8; 30 NCD 8	20MV6; TS E 455 4; TU E 455 4	
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)	4340; 4340 H; 9850; G43400; G98500; H43400; K23028	8640; 8640 H; 8740; 8740 H; 8742; G86400; G87400; G87420; H86400; H87400; K11640	8617; 8617 H; 8620; 8620 H; 8620 RH; 8617; G86170; G86200; H86170; H86200; K12147		3135	4340; G43400; 4337; G43370		8630	4340; G43400	K01907	300M; 4340M; K44220
	BS (UK)	817 M 40; En 24		805 H 20; 805 M 20; 806 M 20; En 362	653 M 31	640 A 35	816 M 6; 817 M 40			823 M 30	55 C; GR 55; Grade 55	S 155
	DIN (GERMANY)	40NiCrMo6; 40 NiCrMo 6	40NiCrMo2-2; 40 NiCrMo 2 2	20NiCrMo2-2; 21NiCrMo2; 21 NiCrMo 2	31NiCr14; 31 NiCr 14	36NiCr6; 36 NiCr 6	34CrNiMo6; 34 CrNiMo 6	31CrMoV9; 31 CrMoV 9	30NiCrMo2-2; 30 NiCrMo 2 2	30CrNiMo8	20MnV6; 20MnVS6; 20 MnV 6 N	41SiNiCrMoV7-6
	Werkstoff (GERMANY)	1.6565		1.6523	1.5755	1.5710	1.6582	1.8519	1.6545	1.6580	1.5217	1.6928
	EN (EUROPE)	40NiCrMo6		20NiCrMo2-2		36NiCr6	34CrNiMo6	31CrMoV9			20MnV6; S460	
	GOST (RUSSIA)	40Ch2N2MA	38ChGNM	20ChGNM			38Ch2N2MA	30Ch3MF				
	JIS (JAPAN)	SNB 24-1; SNB 24-2; SNB 24-3; SNB 24-4; SNB 24-5; SNCM 439 RCH	SNCM 240; SNCM 240 RCH	SNCM 220; SNCM 220 H; SNCM 220 HRCH; SNCM 220 M; SNCM 220 RCH; SNCM 21 H		SNC 236				SNCM 431		
	SS (SWEDEN)			2506			2541					
	UNE (SPAIN)	F.1275; 40 NiCrMo 7	40 NiCrMo 2 DF; F.1205; F.1204; TO.E	20 NiCrMo 2; 20 NiCrMo 3-1; F.1522; F.1534			F.1272			30 CrNi Mo 8		
	UNI (ITALY)		40 NiCrMo 2; 40 NiCrMo 2 KB	20 NiCrMo 2			35 NiCrMo 6 KB		30 NiCrMo 2 KB			
	IS (INDIA)	40Ni2Cr1Mo28		20NiCrMo2								
	KS (REP. of KOREA)	SNB 24-1; SNB 24-2; SNB 24-3; SNB 24-4; SNB 24-5	SNCM 240	SNCM 220; SNCM 220H		SNC 236						
	GB/YB/JB/ SY/NB (PRC)	40CrNiMoA		21NiCrMo2	30CrNi3A	40CrNi	40CrNiMoA				20MnV	

Material Designation in Accordance with Selected Standards

Standards		Material Group No. 7	7	7	7	7	7	7	7	7	7	7
	NF/AFNOR (FRANCE)	E690D	20 NCD 2; 20NiCrMo2				15 CDV 6; 9160/C 33; 9160 C 073					
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)	A514; A514/T-1; K11630							WC5; A217 grade WC5			E4340; G43406
	BS (UK)	75 F 70									S 153; S 154	
	DIN (GERMANY)	S700MC; QStE 690 TM	20NiCrMo2	47CrMo4; 47 CrMo 4	38MnSiVS5; 38 MnSiVS 5	20NiCrMoS2-2; 21NiCrMoS2	12CrMoV6-9; 12 CrMoV 6 9		G22NiMoCr5-6	St 145/160	32NiCrMo10-4; 32 NiCrMo 10 4	30CrMoV9; 30 CrMoV 9
	Werkstoff (GERMANY)	1.8974; 1.0966	1.6522	1.2332	1.5231	1.6526	1.7734; 1.7736		1.6760	1.8863	1.6743	1.7707
	EN (EUROPE)	S700MC	20NiCrMo2			20NiCrMoS2-2	15CrMnMoV5-4-9-3; 4334; FE-WL 1806; FE-PL 52 S	19MnV6; E470		St 145/160		30CrMoV9
	GOST (RUSSIA)										38ChN3MA	
	JIS (JAPAN)		SNCM 220 H; SNCM 21 H									
	SS (SWEDEN)					92506		2142				
	UNE (SPAIN)		20 NiCrMo 2; F.1527								F.127	
	UNI (ITALY)						15CrMoV6					
	IS (INDIA)											
	KS (REP. of KOREA)											
	GB/YB/JB/ SY/NB (PRC)			42CrMo ; 42CrMnMo								

Material Designation in Accordance with Selected Standards

Standards		Material Group No. 8	8	8	8	8	8	8	8	8	8	8
	NF/AFNOR (FRANCE)		30 CD 12		30 CD 12	40 NCD 3; 35 NCD 5	50CrV4RR; 50 CV 4; 51 CV 4	30 NC 11	Z 120 M 12	42 CD 4		
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)					9840; G98400	6145; 6150; 6150 H; G61500; H61500	3435	A128 Grade A; J91109; J91129; J91139; J91149	4142; G41420	4140 H; 4140 RH; 4140 HT	
	BS (UK)	897 M 39	722 M 24		722 M 24	817 M 37; 816 M 40	735 A 50; 735 A 51; 735 H 51; 735 M 50; En 47		BW 10	708 M 40		
	DIN (GERMANY)	40CrMoV13-9; 39CrMoV13-9; 39 CrMoV 13 9	31CrMo12; 31 CrMo 12	58CrV4; 58 CrV 4	32CrMo12; 32 CrMo 12	36CrNiMo4; 36 CrNiMo 4	51CrV4; 50CrV4; 50 CrV 4	36NiCr10; 36 NiCr 10	X120Mn12; X 120 Mn 12; G-X120 Mn 12	47CrMo4	42CrMo4+QT	21MnCr6-5
	Werkstoff (GERMANY)	1.8523	1.8515	1.8161	1.7361	1.6511	1.8159	1.5736	1.3401; 1.3403	1.2332		1.8705
	EN (EUROPE)	40CrMoV13-9	31CrMo12; 40B		32CrMo12	36CrNiMo4	51CrV4			47CrMo4		
	GOST (RUSSIA)					40ChGNM; 40ChN2MA	50ChFA; 50ChGFA		110G13L			
	JIS (JAPAN)					SUP 10	SUP 10; SUP 10-CSP; SUP 10 M	SNC 631; SNC 631 H; SNC 631 M	SCMnH 1; SCMnH 11	SCM; SCM 440		
	SS (SWEDEN)		2240		2240		2230		2183	2244		
	UNE (SPAIN)		F.1712; F.124.A		F.124.A	F.128; F.1280; 35 NiCrMo 4	F.143; F.143.A; 51 CrV 4; F.1430		F.240.A; F.240.A1; AM-X 120 Mn 12; F.8251	42 CrMo 4		
	UNI (ITALY)	36 CrMoV 12	32 CrMo 12		30 CrMo 12	39 NiCrMo 4; 39 NiCrMo 4 KB	50 CrV 4		GX 120 Mn 12	42 CrMo 4		
	IS (INDIA)						T50Cr1V23					
	KS (REP. of KOREA)					SPS 10	SPS 10		SCMnH 1, SCMn H 11			
	GB/YB/JB/ SY/NB (PRC)					40CrNiMo	50CrVA	20CrNi3A	ZGMn13	42CrMo; 42CrMnMo	42CrMo; 42CrMnMo	

Material Designation in Accordance with Selected Standards

Standards		Material Group No.											
		8	8	8	9	9	9	9	9	9	9	9	9
	NF/AFNOR (FRANCE)	45 SCV 6						42 C 2; 45 C 2					16 NCD 17
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)							5045; 5046; 5150; 5150 H; G50460; G51500; H51500					
	BS (UK)				830 M 31								5 S.82; 835 H 15; 835 N 15; En 39 B
	DIN (GERMANY)	45SiCrV6; 45 SiCrV 6	S890Q	45B2	31NiCrMo13-4	35NiCr18	17MnCr5-3	46Cr2; 46 Cr 2; 45 Cr 2	62SiMnCr4; 62 SiMnCr 4	48CrMoV6-7; 48 CrMoV 6 7	65MnCrMo4; 65 MnCrMo 4	80CrV2; 80 CrV 2; 80 CrV 2 3	15NiCrMo16-5; 15 NiCrMo 16 5
	Werkstoff (GERMANY)	1.2249	1.8940	1.5513	1.6659	1.5864	1.8715	1.7006; 1.7005	1.2101	1.2323	1.2309	1.2235; 1.2236	1.6723
	EN (EUROPE)		S890Q				17MnCr5-3	46Cr2				80CrV2	
	GOST (RUSSIA)											8ChF; 9ChF	
	JIS (JAPAN)												
	SS (SWEDEN)				2534								
	UNE (SPAIN)				F.270							F.520.J	F.156
	UNI (ITALY)							45 Cr 2					
	IS (INDIA)					30Ni4Cr1							
	KS (REP. of KOREA)												
	GB/YB/JB/ SY/NB (PRC)	4SiCrV						50Cr					

Material Designation in Accordance with Selected Standards

Standards		Material Group No.								
		9	10	10	10	10	10	10	10	10
	NF/AFNOR (FRANCE)	55 NCDV 7; 55 NiCrMoV7	9 Ni; Z 8 N 09	Z 18 N 5; Z 10 N 05; 5 Ni	Z 200 CD 12; Z 210 CW 12-01; X210CrW12-1	X 40 CrMoV 5; Z 40 CDV 5	X 100 CrMoV 5; Z 100 CDW 5	Z 30 WCV 9		
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)	L6; T61206	K71340; K81340	2515; A2515; 2517; E2517; K41583	D4; T30404; D6; T30406	H13; T20813	A2; T30102	H21; T20821		
	BS (UK)		1501-509; 1501-510; 502-650; 509-690		BD6	BH 13	BA 2	BH 21		
	DIN (GERMANY)	55NiCrMoV7; 56 NiCrMoV 7	X8Ni9	X12Ni5; 12Ni19;	X210CrW12; X 210 CrW 12	X40CrMoV5-1; X40 CrMoV 5 1	X100CrMoV5; X100CrMoV5-1; X 100 CrMoV 5 1	X30WCrV9-3; X30WCrV9 3	X165CrMoV12; X 165 CrMoV 12	X36CrMo17; X38CrMo16
	Werkstoff (GERMANY)	1.2714	1.5662	1.5680	1.2436	1.2344	1.2363	1.2581	1.2601	1.2316
	EN (EUROPE)	55NiCrMoV7	X8Ni9	X12Ni5	X210CrW12	X40CrMoV5-1	X100CrMoV5	X30WCrV9-3; X30WCrV9 3	X165CrMoV12	X38CrMo16
	GOST (RUSSIA)	5ChGNM				4Ch5MF1S		3Ch2W8F		
	JIS (JAPAN)	SKT 4	SL9N520; SL9N590; STBL 690; STPL 690; SL9N53; SL9N60; STBL 70; STPL 70	SL5N590; SL5N60	SKD 2	SKD 61	SKD 12	SKD 5		
	SS (SWEDEN)				2312	2242	2260		2310	
	UNE (SPAIN)	F.520.B; 55 NiCrMoV 7; F.5307	F.2645; XBNi 09		F.5213; X210 CrW 12	F.5318; X 40 CrMoSiV 5	F.536; F.5227; X 100 CrMoV 5	F.5323; X 30 WCrV 9		
	UNI (ITALY)	55 NiCrMoV 7 KU; 56 NiCrMoV 7 KU	X 10 Ni 9; X 12 Ni 09		X 215 CrW 12 1 KU	X 40 CrMoV 5 1 1 KU	X 100 CrMoV 5 1 KU	X 30 WCrV 9 3 KU	X165CrMoW12KU	
	IS (INDIA)									
	KS (REP. of KOREA)	STF 4	SL9N590; SL9N520			STD 61	STD 12	STD 5		
	GB/YB/JB/ SY/NB (PRC)	5CrNiMo				40CrMoV5	Cr5Mo1V	3Cr2W8V	Cr12MoV	

Material Designation in Accordance with Selected Standards

Standards		Material Group No. 10	10	10	10	10	10	10	10
	NF/AFNOR (FRANCE)	Z 85 WDCV 06-05-04-02; 6-5-2; HS6-5-2	Z 38 CDV 5; X38CrMoV	Z 35 CWDV 5; X35CrWMoV5	X 160 CrMoV 12; Z 160 CDV 12	Z 35 V CD 17.S	20 MC 5	45 NCD 16	
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)	M2; T11302	H11; T20811	H12; T20812	D2; T30402				
	BS (UK)	BM 2; BM2	BH 11	BH 12	BD 2				
	DIN (GERMANY)	HS6-5-2; HS 6-5-2; S 6-5-2	X37CrMoV5-1; X38CrMoV5-1	X37CrMoW5-1; X 37 CrMoW 5 1; X35CrWMoV5; X 35 CrWMoV 5	X153CrMoV12; X155CrVMo12-1; X155 CrVMo 12 1	X33CrS16; X 33 CrS 16	21MnCr5; 21 MnCr 5	X45NiCrMo4; 45NiCrMo16; X 45 NiCrMo 4	X19NiCrMo4; X 19 NiCrMo 4; GX19NiCrMo4
	Werkstoff (GERMANY)	1.3343	1.2343	1.2606; 1.2605	1.2379	1.2085	1.2162	1.2767	1.2764
	EN (EUROPE)	HS6-5-2	X37CrMoV5-1	X37CrMoW5-1; X35CrWMoV5	X153CrMoV12	X33CrS16	21MnCr5	X45NiCrMo4	X19NiCrMo4
	GOST (RUSSIA)	R6M5	4Ch5MFS						
	JIS (JAPAN)	SKH 51	SKD 6	SKD 62	SKD 10; SKD 11				
	SS (SWEDEN)	2722			2310				
	UNE (SPAIN)	F.550.A; F.5604	F.520.G; F.5137; X 37 CrMoSiV 5	F.537	F.520.A				
	UNI (ITALY)		X 37 CrMoV 5 1 KU	X 35 CrMoW 05 KU	X 155 CrVMo 12 1 KU			40 NiCrMoV 8 KU	
	IS (INDIA)								
	KS (REP. of KOREA)	SKH 51							
	GB/YB/JB/ SY/NB (PRC)	W6Mo5Cr4V2	4Cr5MoVS	4Cr5W2VSi	Cr12MoV				

Material Designation in Accordance with Selected Standards

Standards		Material Group No. 10	10	10	10	10	10	10	10
	NF/AFNOR (FRANCE)	X200Cr12; Z 200 C 12				80 DCV 40; 80MoCrV42-16			Z 120 WDCV 06-05-04-03; HS6-5-3; Z 120 WDCV 06-05-04-04; HS6-5-4
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)	D3; T30403			501; 502; S50100; S50200; K41545; SA213 T5	M50; T11350	K91231; AMS 6278	S7; T41907	M3 Class 2; T11323
	BS (UK)	BD 3							
	DIN (GERMANY)	X210Cr12; X 210 Cr 12	X38CrMoV5-3; X 38 CrMoV 5 3	27NiCrMoV15-6; 26NiCrMoV14-5; 26 NiCrMoV 14 5	X12CrMo5; X 11 CrMo 5; 12CrMo19-5; 12 CrMo 19 5; X16CrMo5-1	80MoCrV42-16; 80 MoCrV 42 16	M50NiL	50CrMoV13-4; 50 CrMoV 13 4; 50CrMoV13-15	HS6-5-3; HS 6-5-3; S 6-5-3
	Werkstoff (GERMANY)	1.2080	1.2367	1.6957	1.7362; 1.7366	1.3551	1.3590	1.2357; 1.2355	1.3344
	EN (EUROPE)	X210Cr12	X38CrMoV5-3		X12CrMo5; X16CrMo5-1	80MoCrV42-16	13MoCrNiV42-16-14	50CrMoV13-15	HS6-5-3
	GOST (RUSSIA)	Ch12							
	JIS (JAPAN)	SKD 1			SCMV 6; SFVA F 5 A; SFVA F 5 B; SFVA F 5 C; SFVA 5 D; SNB 5 Class 1; STBA 29; STFA 25; STPA 25				SKH 52; SKH 53
	SS (SWEDEN)								2725
	UNE (SPAIN)	F.521; F.5212; X 210 Cr 12			F.240.B; TU.J	80 MoCrV 40-16; F.1351			F.5605; 6-5-3
	UNI (ITALY)	X 205 Cr 12 KU							
	IS (INDIA)	T215Cr12							
	KS (REP. of KOREA)								
	GB/YB/JB/ SY/NB (PRC)	Cr12			1Cr5Mo				

Material Designation in Accordance with Selected Standards

Standards		Material Group No. 10	11	11	11	11	11
	NF/AFNOR (FRANCE)			Z 110 WKCDV 07-05-04-04-02	Z 110 DKCWV 09-08-04-02-01; 2-9-1-8; HS2-9-1-8	Z 130 WKCDV 10-10-04-04-03; 10-4-3-10; HS10-4-3-10	HS12-1-4-5
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)		M33; T11333; M34; T11334	M41; T11341	M42; T11342		T15; T12015
	BS (UK)		BM 34		BM 42	BT 42	BT 15
	DIN (GERMANY)	HS6-5-3C; HS 6-5-3 C	HS2-9-2-8; S 2-9-2-8	HS7-4-2-5; S 7-4-2-5	HS2-10-1-8; S 2-10-1-8	HS10-4-3-10; S 10-4-3-10	HS12-1-4-5; S 12-1-4-5
	Werkstoff (GERMANY)	1.3345	1.3249	1.3246	1.3247	1.3207	1.3202
	EN (EUROPE)	HS6-5-3C		HS7-4-2-5	HS2-10-1-8	HS10-4-3-10	
	GOST (RUSSIA)					R12F3K10M3-SCh	R13F4K5
	JIS (JAPAN)				SKH 59	SKH 57	
	SS (SWEDEN)				2716		
	UNE (SPAIN)		2-9-2-8; F.5611	F.5615; HS 7-4-2-5	F.5617; HS 2-10-1-8	F.550.B; F.5553; HS 10-4-3-10	F.5563; HS 12-1-5-5
	UNI (ITALY)				HS 2-9-1-8	HS 10-4-3-10	HS 12-1-5-5
	IS (INDIA)						
	KS (REP. of KOREA)						
	GB/YB/JB/ SY/NB (PRC)			W7Mo4Cr4V2Co5	W2Mo9Cr4VCo8		W12Cr4V5Co5

Material Designation in Accordance with Selected Standards

Standards		Material Group No. 11	11	11	11	11	11	11
	NF/AFNOR (FRANCE)	6-5-2-5; 6-5-2-5 HC; HS6-5-2-5; HS6-5-2-5HC; Z 85 WDKCV 06-05-05-04-02; Z 90 WDKCV 06-05-05-04-02	Z 100 DCWV 09-04-02-02; 2-9-2; HS2-9-2	Z 80 WKCV 19-05-04-01; HS 18-1-1-5	18-0-1; HS 18-0-1; Z 80 WCV 18-04-01			
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)		M7; T11307	T4; T12004	T1; T12001	HY 130; UNS K51255	H19; T20819	HY 100; K32045; J42240
	BS (UK)	BM 35		BT 4	BT 1			
	DIN (GERMANY)	HS6-5-2-5; S 6-5-2-5	HS2-9-2; S 2-9-2	HS18-1-2-5; S 18-1-2-5	HS18-0-1; S 18-0-1	X10NiMoCrV6	38CrCoWV18-17-17; 38 CrCoWV 18 17 17	20NiCrMo14-6; G19NiCrMo12-6; GS-19 NiCrMo 12 6
	Werkstoff (GERMANY)	1.3243	1.3348	1.3255	1.3355		1.2661	1.6742; 1.6783
	EN (EUROPE)	HS6-5-2-5	HS2-9-2	HS18-1-2-5	HS18-0-1		38CrCoWV18-17-17	
	GOST (RUSSIA)	R6M5K5			R18			12ChN3MD; 12ChN3MDF; AB2
	JIS (JAPAN)	SKH 55	SKH 58	SKH 3	SKH 2			
	SS (SWEDEN)	2723	2782		2750			
	UNE (SPAIN)	F.550.C; F.5613; HS 6-5-2-5	F.5607; HS 2-9-2	F.5530; HS 18-1-1-5	F.5520; HS 18-0-1			
	UNI (ITALY)	HS 6-5-2-5	HS 2 9 2	HS 18-1-1-5	HS 18-0-1			
	IS (INDIA)			T75W18Co6Cr4V1Mo75				
	KS (REP. of KOREA)	SKH 55						
	GB/YB/JB/ SY/NB (PRC)		W2Mo9Cr4V2	W18Cr4VCo5	W18Cr4V			

Material Designation in Accordance with Selected Standards

Standards		Material Group No.								
		11	11	11	11	11	12	12	12	12
	NF/AFNOR (FRANCE)		Z 2 CN 18-10 M				Z 13 CF 17	Z 12 CAS 18		Z 8 CD 17-01
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)	M62, T11362	K92710	K92890; AMS 6512	K93120; AMS 6514	K93540; AMS 6515	430 F; S43020			434; S43400
	BS (UK)			BS S162						434 S 17
	DIN (GERMANY)		X2NiCoMo18-8-5	X2NiCoMo18-9-5; X2NiCoMo18-8-5	X2NiCoMo18-8-5	X2NiCoMo18-12; X2NiCoMoTi18-12-4	X12CrMoS17; X 12 CrMoS 17	X10CrAlSi18; X10CrAl18	X10CrAlSi13; X10CrAl13; X 10 CrAl 13	X6CrMo17-1; X 6 CrMo 17 1
	Werkstoff (GERMANY)		1.636	1.6358; 1.6359	1.6354; 1.6359	1.6355; 1.6356	1.4104	1.4742	1.4724	1.4113
	EN (EUROPE)	HS 6-10-2	X2NiCoMo18-8-5	X2NiCoMo18-8-5	X2NiCoMo18-8-5		X12CrMoS17	X10CrAlSi18	X10CrAlSi13	X6CrMo17-1
	GOST (RUSSIA)							15Ch18SJu	10Ch13SJu	
	JIS (JAPAN)						SUS 430 F	SUS 21		SUS 434
	SS (SWEDEN)						2383			2325
	UNE (SPAIN)						F.3413	F.3113; X 10 CrAl 18	F.3152; X 10 CrAl 13	F.3116
	UNI (ITALY)						X 10 CrS 17		X 10 CrAl 12	
	IS (INDIA)									
	KS (REP. of KOREA)									STS 434
	GB/YB/JB/ SY/NB (PRC)						Y1Cr17	Cr17	1Cr13SiAl	1Cr17Mo

Material Designation in Accordance with Selected Standards

Standards		Material Group No. 12	12	12	12	12	12	12	12	12	12
	NF/AFNOR (FRANCE)	Z 80 CSN 20-02	Z 10 CAS 24	Z 8 C 13 FF	X 89 CrMoV 18-1	Z 8 C 12	Z 10 C 13; Z 13 C 13	Z 8 CA 12	Z 11 CF 13		Z 8 C 17
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)	HNV-6; HNV6; S65006	446; S44600	429; S42900	440B; S44003	410S; 403; S41008; S40300	410; S41000; S41001; CA-15; ASTM A182 Fa	405; S40500	416; S41600		430; S43000
	BS (UK)	443 S 65				403 S 17	410 S 21; ANC 1 grade A; En 56 A	405 S 17	416 S 21; En 56 AM		430 S 17; 430 S 15; 430 S 18
	DIN (GERMANY)	X80CrNiSi20; X 80 CrNiSi 20	X10CrAlSi25; X10CrAl24; X 10 CrAl 24	X7Cr14; X 7 Cr 14; G-X 7 Cr 13	X90CrMoV18	X6Cr13; X 6 Cr 13	X12Cr13; GX12Cr13; X 12 Cr 13; X 10 Cr 13	X6CrAl13; X 6 CrAl 13	X12CrS13; X 12 CrS 13	X8Cr17	X6Cr17; X 6 Cr 17
	Werkstoff (GERMANY)	1.4747	1.4762	1.4001	1.4112	1.4000	1.4006	1.4002	1.4005	1.4015	1.4016
	EN (EUROPE)		X10CrAlSi25	X7Cr14	X90CrMoV18	X6Cr13	X13Cr13	X6CrAl13	X12CrS13		X6Cr17
	GOST (RUSSIA)					08Ch13	12Ch13; 15Ch13L				12Ch17
	JIS (JAPAN)	SUH 4	SUH 446	SUS 4105		SUS 403; SUS 403 FB; SUS 410 S	SUS 410; SUS 410 FB; SUS 410 TB; SUS 410 TKA; SUS 410 TKC; SUS F 410-A; SUS F 410-B; SUS F 410-C	SUS 405; SUS 405 TB; SUS 405 TP	SUS 416		SUS 430; SUS 430 TB; SUS 430 TKA; SUS 430 TKC; SUS 430 TP
	SS (SWEDEN)		2322			2301	2302		2380		2320
	UNE (SPAIN)	F.320B	F.3154		SUS 440B	F.3110	F.3401	F.3111	F.3411		F.310.D; F.3113
	UNI (ITALY)	X 80 CrSiNi 20				X 6 Cr 13	X 12 Cr 13 KG; X 12 Cr 13 KW	X 6 CrAl 13	X12 CrS 13		X 8 Cr 17
	IS (INDIA)	X80Cr20Si2Ni1									
	KS (REP. of KOREA)	STR 1	STR 446			STS 403	STS 410	STS 405	STS 416		STS 430
	GB/YB/JB/ SY/NB (PRC)		2Cr25N	MI0Cr18Ni12	9Cr18MoV	1Cr13; 1Cr12	1Cr13	0Cr13Al	Y1Cr13		1Cr17

Material Designation in Accordance with Selected Standards

Standards		Material Group No. 12	12	12	12	12	12	12	12	12
	NF/AFNOR (FRANCE)	Z 20 C 13 M	Z 33 C 13 Cl; Z 33 C 13; Z 30 C 13			Z 4 CT 17	Z 12 C 25	Z 4 CNb 17	Z 3 CT 12	Z 6 CND 16-04-01
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)		420F; S42020			439; 430 Ti; S43035; S43036; XM 8	446-1		409; S40900	
	BS (UK)	ANC 1 grade B; ANC 1 grade C; 420 C 24; 420 C 29	420 S 37; 420 S 45; En 56 C; En 56 D	452 C 11					LW 19; 409 S 19	
	DIN (GERMANY)	GX20Cr14	X30Cr13; X 30 Cr 13	GX120Cr29; G-X 120 Cr 29	X20CrMo13; X 20 CrMo 13	X3CrTi17; X 6 CrTi 17	X18CrN28	X3CrNb17; X 6 CrNb 17	X2CrTi12; X 6 CrTi 12	X4CrNiMo16-5-1; X 4 CrNiMo 16 5
	Werkstoff (GERMANY)	1.4027	1.4028	1.4086	1.4720	1.4510	1.4749	1.4511	1.4512	1.4418
	EN (EUROPE)		X30Cr13			X3CrTi17	X18CrN28	X3CrNb17	X2CrTi12	X4CrNiMo16-5-1
	GOST (RUSSIA)	20Ch13L	30Ch13			08Ch17T				
	JIS (JAPAN)	SCS 2	SUS 420 F; SUS 420 J 2; SUS 420 J 2-CSP; SUS 420 J 2 FB; SUS 420 J 2 TKA			SUS 430 LX; SUS 430 LXTB; SUS XM8TB		SUS 430 LX; SUS 430 LXTB	SUH 409 L; SUS 409 LTB; SUS 409 TB	
	SS (SWEDEN)		2304							2387
	UNE (SPAIN)		F.3403			F.3115; X 5 CrTi 17		F.3122; X 5 CrNb 17	F.3121	
	UNI (ITALY)		X 30 Cr 13			X 6 CrTi 17		X 6 CrNb 17	X 6 CrTi 12	
	IS (INDIA)		X30Cr13							
	KS (REP. of KOREA)		STS 420J2			STS 430LX		STS 430LX	SUH 409	
	GB/YB/JB/ SY/NB (PRC)	ZG2Cr13	3Cr13			1Cr17Ti		1Cr17		

Material Designation in Accordance with Selected Standards

Standards		Material Group No. 12	12	12	13	13	13	13	13
	NF/AFNOR (FRANCE)	Z 20 C 13 Cl; Z 20 C 13	TU Z 10 CDVNA 49-213; TU Z 10 CDVNA 49-219	Z 3 CDT 18-02; Z 3 CDT 18-2	Z 40 C 14 Cl; Z 40 C 14		Z 20 CDNbV 11	Z 20 C 13 Cl; Z 20 C 13	Z 44 C 14 Cl; Z 44 C 14; Z 38 C 13 M
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)	420; S42000	K91560; K90901; P91; F91; T91	443; 444; S44300; S44400	420; S42000; S42080			420; S42000	420; S42000
	BS (UK)	420 S 37; 420 S 29; En 56 C				BS 762		420 S 37; 420 S 29; En 56 C	
	DIN (GERMANY)	X20Cr13; X 20 Cr 13	X10CrMoVNb9-1; X 10 CrMoVNb 9 1	X2CrMoTi18-2; X 2 CrMoTi 18 2	X39Cr13; X 38 Cr 13	X20CrMoV11-1; X20CrMoV12-1; X 20 CrMoV 12 1	X22CrMoV12-1; X21CrMoNiV12-1; X 22 CrMoV 12 1	X20Cr13; X 20 Cr 13	X46Cr13; X 46 Cr 13
	Werkstoff (GERMANY)	1.4021	1.4903	1.4521	1.4031	1.4922	1.4923; 1.4934	1.4021	1.4034
	EN (EUROPE)	X20Cr13	X10CrMoVNb9-1	X2CrMoTi18-2	X39Cr13	X20CrMoV11-1; X20CrMoV12-1	X22CrMoV12-1; X21CrMoNiV12-1	X20Cr13	X46Cr13
	GOST (RUSSIA)	20Ch13			40Ch13		18Ch11MNFB; EP 291; 2Ch11MFBN	20Ch13	40Ch13
	JIS (JAPAN)	SUS 420 J 1; SUS 420 J 1 FB; SUS 420 J 1 TKA		SUS 444; SUS 444 TB; SUS 444 TP	SUS 420 J 2			SUS 420 J 1; SUS 420 J 1 FB; SUS 420 J 1 TKA	
	SS (SWEDEN)	2303		2326	2304	2317		2303	
	UNE (SPAIN)	F.310.J; F.3402		F.3123; X 2 CrMoTiNb 18 2	F.3404; X40 Cr 13			F.310.J; F.3402; X 20 Cr 13	F.3405; X 40 Cr 13
	UNI (ITALY)	X 20 Cr 13			X 40 Cr 14	X 20 CrMoNi 12 01		X 20 Cr 13	X 40 Cr 14
	IS (INDIA)	X20Cr13						X20Cr13	
	KS (REP. of KOREA)			STS 444					
	GB/YB/JB/ SY/NB (PRC)	2Cr13		1Cr15	3Cr13			2Cr13	4Cr13

Material Designation in Accordance with Selected Standards

Standards		Material Group No. 13	13	13	13	13	13	13	13
	NF/AFNOR (FRANCE)	Z 15 CN 16.02 Cl; Z 15 CN 16-02	Z 6 CN 13-04; Z 6 CN 13-4; Z 4 CND 13.4 M			Z 45 CS 9	X40Cr14; Z 40 C 14	Z 4 CND 13 4 M	MARVAL X12H
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)	431; S43100	415; CA 6-NM; S41500; J91540; ASTM A182 F6NM		422; HNV 8; S42200	HNV 3; S65007		CA 6-NM; J91540	S10120; AMS 5935
	BS (UK)	431 S 29; En 57				401 S 45; En 52		425 C 11; 425 C 12	
	DIN (GERMANY)	X17CrNi16-2; X 20 CrNi 17 2; X 22 CrNi 17	X3CrNiMo13-4; X 4 CrNi 13 4	X39CrMo17-1; X 35 CrMo 17	X20CrMoWV12-1; X 20 CrMoWV 12 1	X45CrSi9-3; X 45 CrS 9 3; G-X 45 CrNi 9 3	X40Cr14; X 42 Cr 13	GX4CrNi13-4; G-X 5 CrNi 13 4	X1CrNiMoAlTi 12-10-2; X 1 CrNiMoAlTi 12 10 2
	Werkstoff (GERMANY)	1.4057	1.4313	1.4122	1.4935	1.4718	1.2083; 1.2083 ESR	1.4317	1.4596
	EN (EUROPE)	X17CrNi16-2	X3CrNiMo13-4	X39CrMo17-1	X20CrMoWV12-1	X45CrSi9-3	X40Cr14	GX4CrNi13-4	X1CrNiMoAlTi 12-10-2
	GOST (RUSSIA)	14Ch17N2; 20Ch17N2				40Ch9S2; 4Ch9S2			
	JIS (JAPAN)	SUS 431; SUS 431 FB				SUH 1	SUS 420 J 2	SCS 6; SCS 6X	
	SS (SWEDEN)	2321	2384				2314		
	UNE (SPAIN)	F.313; F.3427; X 19 CrNi 17 2				F.322; F.3220	F.5263; X 40 Cr 13		
	UNI (ITALY)	X16 CrNi 16		X 39 CrMo 17-1		X 45 CrSi 8	X 41 Cr 13 KU	GX 6 CrNi 13 04	
	IS (INDIA)					X45Cr9Si3			
	KS (REP. of KOREA)	STS 431				STR 1			
	GB/YB/JB/ SY/NB (PRC)	1Cr17Ni2				4Cr9Si2	3Cr13		

Material Designation in Accordance with Selected Standards

Standards		Material Group No. 13	13	Material Group No. 14	14	14	14	14	14
	NF/AFNOR (FRANCE)	Z 100 CD 17 Cl; Z 100 CD 17		Z 6 CNT 18-10		Z 6 CND 17-11; Z 6 CND 17-11-02-FF; Z 7 CND 17-11-02; Z 7 CND 17-12-02	Z20CNS25.04	Z 10 CN 18.9 M	
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)	440C; S44004; S44025		321; S32100		316; 316H; 316 H; S31600; S31609		J92701	
	BS (UK)			321 S 31; LW 18; LW 24; LWCF 18; LWCF 24; 321 S 12; 321 S 50; 321 S 51; 321 S 50-490; 1010; 1115		316 S 31; 316 S 33; 316 S 17; 316 S 19; 316 S 40; 316 S 41; 845		ANC 3 grade A; ANC 3 A; 302 C 25	
	DIN (GERMANY)	X105CrMo17; X105 CrMo 17	GX4CrNiMo16-5-1; G-X 5 CrNiMo 15 5	X6CrNiTi18-10	X2CrNiMo18-13-3	X5CrNiMo17-12-2; X 5 CrNiMo 18 10	X20CrNiSi25-4	GX10CrNi18-8	GX7CrNiMoCuNb18-18; G-X 7 CrNiMoCuNb 18 18
	Werkstoff (GERMANY)	1.4125	1.441	1.4541	1.4425	1.4401	1.4821	1.4312	1.4585
	EN (EUROPE)	X105CrMo17		X6CrNiTi18-10		X5CrNiMo17-12-2	X20CrNiSi25-4		
	GOST (RUSSIA)	95Ch18; 110Ch18M-SchD		06Ch18N10T; 08Ch18N10T; 09Ch18N10T; 12Ch18N10T		08Ch16N11M3		10Ch18N9L	
	JIS (JAPAN)	SUS 440 C		SUS 321		SUS 316; SUS 316 A; SUS 316 FB; SUS 316 HFB; SUS 316 HTB; SUS 316 HTP; SUS 316 TB; SUS 316 TBS		SCS 12; SCS 13A	
	SS (SWEDEN)			2337		2347			
	UNE (SPAIN)			F.332; F.3523; X 6 CrNiTi 18 10		F.310.A; F.3534; X 5 CrNiMo 17 12 2			
	UNI (ITALY)			X 6 CrNiTi 18 11; X 6 CrNiTi 18 11 KG; X 6 CrNiTi 18 11 KW; X 6 CrNiTi 18 11 KT		X 5 CrNiMo 17 12; X 5 CrNiMo 17 12 KG; X 5 CrNiMo 17 12 KW			X 6 CrNiMoTi 17 12
	IS (INDIA)								
	KS (REP. of KOREA)			STS 321		STS 316		SSC 13A	
	GB/YB/JB/ SY/NB (PRC)	9Cr18		1Cr18Ni9Ti		0Cr17Ni12Mo2		ZG0Cr18Ni9Ti	

Material Designation in Accordance with Selected Standards

Standards		Material Group No. 14	14	14	14	14	14	14
	NF/AFNOR (FRANCE)	Z 4 CNNb 19.10 M; Z 6 CNNb 18.10 M	23 NCDU 25.20 M	Z 4 CN 19-10 FF; Z 5 CN 17-08; Z 6 CN 18-09; Z 7 CN 18-09	Z 1 CN 18-12; Z 2 CN 18-10; Z 3 CN 19.10 M; Z 3 CN 18-10; Z 3 CN 19-11; Z 3 CN 19-11 FF	Z 6 CN 18.10 M; Z 6 CN 19.9 M	Z 10 CND 18.9 M	Z 12 CMN 17-07 Az
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)	347; J92640; J82710		304; S30400	304L; 304 L; S30403; J92500; J92600	304H; 304 H; CF-8; J92590; J92600; J92650; J92710	J92701	201; S20100
	BS (UK)	347 C 17; 821 grade Nb		304 S 15; 304 S 31; LW 13; LW 15; LW 21; LWCF 13; LWCF 15; 302 S 17; 304 S 16; 304 S 17; 304 S 40	304 S 11; LW 20; LWCF 20; S.536; T.74; 304 C 12; 305 S 11	304 C 15	ANC 3 grade A; ANC 3 A; 3025 S 25	
	DIN (GERMANY)	GX5CrNiNb19-11; G-X 5 CrNiNb 18 9	GX7NiCrMoCuNb25-20; G-X 7 NiCrMoCuNb 25-20	X5CrNi18-10; X 5 CrNi 18 9	X2CrNi19-11; GXCrNi19-11	GX5CrNi19-10; G-X 6 CrNi 18 9	GX10CrNi18-8; G-X 10 CrNi 18 8	X12CrMnNiN17-7-5
	Werkstoff (GERMANY)	1.4552	1.4500	1.430	1.4306; 1.4309	1.4308	1.4312	1.4372
	EN (EUROPE)	GX5CrNiNb19-11		X5CrNi18-10	X2CrNi19-11; GXCrNi19-11	GX5CrNi19-10; 58E	GX10CrNi18-8	X12CrMnNiN17-7-5
	GOST (RUSSIA)			08Ch18N10	03Ch18N11	07Ch18N9L	10Ch18N9L	
	JIS (JAPAN)	SCS 21; SCS 21 X		SUS 304; SUS 304 A; SUS 304-CSP; SUS 304 FB; SUS 304 TB; SUS 304 TBS; SUS 304 TKA; SUS 304 TKC	SCS19	SCS 13; SCS 13 A; SCS 13 X	SCS 12	SUS 201
	SS (SWEDEN)			2333; 2332	2352			
	UNE (SPAIN)	AM-X 7 CrNiNb 20 10; F.8413		F.3504; X 5 CrNi 18 10	F.310.G; F.3503; X 2 CrNi 19 10; AM-X 2 CrNi 19 10; F.8412	AM-X 7 CrNi 20 10; F.8411		
	UNI (ITALY)			X 5 CrNi 18 10; X 5 CrNi 18 10 KG; X 5 CrNi 18 10 KW; X 5 CrNi 18 10 KT	X 3 CrNi 18 11; X 2 CrNi 18 11; GX 2 CrNi 19 10			
	IS (INDIA)							
	KS (REP. of KOREA)			STS 304				
	GB/YB/JB/ SY/NB (PRC)	ZG1Cr18Ni9Ti		0Cr19Ni9	ZG0Cr18Ni9	ZG1Cr18Ni9	ZG0Cr18Ni9Ti	1Cr17Mn6Ni5N

Material Designation in Accordance with Selected Standards

Standards		Material Group No. 14	14	14	14	14	14	14
	NF/AFNOR (FRANCE)	Z 6 CND 18-12-03; Z6 CND 18-13; Z 7 CND 18-12-03	Z 2 CND 17-12; Z 3 CND 17-11-02; Z 3 CND 17-12-02; Z 3 CND 17-12-02 FF; Z 3 CND 18-12-03	Z 2 CND 17-11 Az		Z 3 CND 17-12 Az	Z 3 CND 17-12-03; Z 3 CND 18-14-03	Z 3 CND 18-14-05 Az
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)	316; S31600	316L; 316 L; S31603; J92700; J92800	316LN; 316 LN; S31653	CF-8M; J92900	316LN; 316 LN; S31563	316L; 316 L; S31603; J92800	S31726
	BS (UK)	316 S 31; 316 S 33; LW 23; LWCF 23; 316 S 19; 316 S 40; 316 S 41; 1.4436	316 S 11; 316 S 13; 316 S 14; 316 S 30; S.161; S.537; T.75	316 S 61; 316 S 63	ANC 4 grade B; ANC 4 B; 316 C 16; 845 grade B	316 S 63	316 S 13; 316 S 11; 316 S 14; 316 S 31; LW 22; LWCF 22; 845 B	
	DIN (GERMANY)	X3CrNiMo17-13-3; X 5 CrNiMo 17 13 3	X2CrNiMo17-12-2; X2CrNiMo17-13-2; X 2 CrNiMo 17 12 2; X 2 CrNiMo 17 13 2	X2CrNiMoN17-11-2; X2CrNiMoN17-12-2; X 2 CrNiMoN 17 12 2	GX5CrNiMo 19-11-2; G-X 6 CrNiMo 18 10	X2CrNiMoN17-13-3; X 2 CrNiMoN 17 13 3	X2CrNiMo18-4-3; X 2 CrNiMo18 14 3	X2CrNiMoN17-13-5; X 2 CrNiMoN 17 13 5
	Werkstoff (GERMANY)	1.444	1.4404	1.4406	1.4408	1.4429	1.4435	1.4439
	EN (EUROPE)	X3CrNiMo17-13-3	X2CrNiMo17-13-2	X2CrNiMoN17-11-2	GX5CrNiMo 19-11-2	X2CrNiMoN17-13-3	X2CrNiMo18-4-3	X2CrNiMoN17-13-5
	GOST (RUSSIA)				07Ch18N10G2S2M2L		O3Ch17N14M3	
	JIS (JAPAN)	SUS 316; SUS 316 A; SUS 316 FB; SUS 316 TB; SUS 316 TBS; SUS 316 TKA; SUS 316 TKC; SUS 316 TP	SUS 316 L; SUS 316 LFB; SUS 316 LTBS; SUS 316 LTP; SUS 316 F 316 L	SUS 316 LN; SUS F 316 LN	SCS 14; SCS 14 A; SCS 14 X	SUS 316 LN; SUS F 316 LN	SUS 316 L; SUS 316 LFB; SUS 316 LTBS; SUS 316 LTP; SUS F 316 L	
	SS (SWEDEN)	2343	2348			2375	2353	
	UNE (SPAIN)	F.3538; X 5 CrNiMo 17 13 3	F.310.K; F.3533; F.3537	F.3542; X 2 CrNiMoN 17 12 2	AM-X 7 CrNiMo 20 10; F.8414	F.3543; X 2 CrNiMoN 17 13 3	F.3533-X2 CrNiMo 17 13 2	F.3544; X 2 CrNiMoN 17 13 5
	UNI (ITALY)	X 5 CrNiMo 17 13; X 8 CrNiMo 17 13	X 2 CrNiMo 17 12	X 2 CrNiMoN 17 12		X 2 CrNiMoN 17 13	X 2 CrNiMoN 17 13; X 2 CrNiMoN 17 13 KG; X 2 CrNiMoN 17 13 KW	
	IS (INDIA)							
	KS (REP. of KOREA)	STS 316	STS 316L	STS 316LN	SSC 14	STS 316LN	STS 316L	
	GB/YB/JB/ SY/NB (PRC)	0Cr17Ni12Mo2	00Cr17Ni14Mo2	00Cr18Ni14Mo2Cu2	ZG1Cr24Ni20Mo2Cu3	0Cr17Ni13Mo	00Cr17Ni14Mo2	

Material Designation in Accordance with Selected Standards

Standards		Material Group No. 14	14	14	14	14	14	14
	NF/AFNOR (FRANCE)		Z 6 CNDT 17-12	Z 15 CN 23-13; Z 15 CN 24-13			Z 5 CN 18-09	Z 4 CNDNb 18.12 M
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)	317; S31700	316 Ti; S31635	309S; 309 S; 309; S30908; S30900	S30415	S30815	304H; 304 H; S30409; S30480	
	BS (UK)	317 S 16	320 S 31; 320 S 18	309 S 24			304 S 50; 304 S 51; 801 grade A	ANC 4 grade C; ANC 4 C; 318 C 17; 845 grade Nb
	DIN (GERMANY)	X3CrNiMo18-12-3	X6CrNiMoTi17-12-2; X 6 CrNiMoTi 17 12 2	X12CrNi23-13; X 7 CrNi 23 14	X4CrNiSiN18-10; X 4 CrNiSiN 18 10	X9CrNiSiNCe21-11-2; X 8 CrNiSiN 21 11	X6CrNi18-10; X6CrNi18-11; X 6 CrNi 18 11;	GX5CrNiMoNb19-11-2; G X 5 CrNiMoNb 18 10
	Werkstoff (GERMANY)	1.4449	1.4571	1.4833	1.4891	1.4893	1.4948	1.4581
	EN (EUROPE)	X3CrNiMo18-12-3	X6CrNiMoTi17-12-2	X12CrNi23-13	X4CrNiSiN18-10	X9CrNiSiNCe21-11-2	X6CrNi18-10	GX5CrNiMoNb19-11-2
	GOST (RUSSIA)		08Ch16N11M3T; 08Ch17N13M2T; 10Ch17N13M2T					
	JIS (JAPAN)	SUS 317; SUS 317 TB; SUS 317 TP; SUS F 317	SUS 316 Ti; SUS 316 TiTB; SUS 316 TiTP	SUS 309 S; SUS 309 S TB; SUS 309 S TP			SUS 302	SCS 22
	SS (SWEDEN)		2350		2372	2368		
	UNE (SPAIN)		F.310.B; F.3535; X 6 CrNiMoTi 17 12 2					
	UNI (ITALY)	X 5 CrNiMo 18 15	X 6 CrNiMoTi 17 12; X 6 CrNiMoTi 17 12 KG; X 6 CrNiMoTi 17 12 KW	X 6 CrNi 23 14				GX 6 CrNiMoNb 20 11
	IS (INDIA)							
	KS (REP. of KOREA)	STS 317		SSC17			STS 302	SSC 22
	GB/YB/JB/ SY/NB (PRC)	1Cr18Ni12Mo3Ti	1Cr18Ni12Mo2Ti	1Cr23Ni13			1Cr18Ni9	ZG1Cr18Mn8Ni4N

Material Designation in Accordance with Selected Standards

Standards		Material Group No. 14	14	14	14	14	14	14
	NF/AFNOR (FRANCE)	Z 8 CNF 18-09	Z 1 CN 18-12; Z 3 CN 18-10; Z 3 CN 19-11; Z 3 CN 19-11 FF	Z 11 CN 17-08; Z 11 CN 18-08; Z 12 18-09	Z 3 CN 18-10 Az; Z 3 CN 18-07 Az	Z 6 CN 18.09	Z 2 CND 19-15-04; Z 3 CND 19-15-04	Z 6 CNT 18-10
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)	303; S30300	304L; 304 L; S30403	301; J 230; S30100; S30200	304LN; 304 LN; S30453	304B1; 304B2; 304B3; 304 B1; 304 B2; 304 B3; S30461; S30462; S30463	317L; 317 L; S31703	321H; 321 H; S32109
	BS (UK)	303 S 31	304 S 11; LW14; LW 20; LWCF 14; LWCF 20; S.536; T.74; 304 C 12; 304 S 11	301 S 21; 301 S 22	304 S 61	304 S 31	317 S 12	321 S 31
	DIN (GERMANY)	X8CrNiS18-9; X 10 CrNiS 18 9	X2CrNi19-11; X 2 CrNi 19 11	X10CrNi18-8; X 12 CrNi 17 7	X2CrNiN18-10; X 2 CrNiN 18 10	X5CrNi18-9	X2CrNiMo18-15-4; X2 CrNiMo 18 16 4	X12CrNiTi18-10; X 12 CrNiTi 18-9
	Werkstoff (GERMANY)	1.4305	1.4306	1.4310	1.4311	1.4350	1.4438	1.4878
	EN (EUROPE)	X8CrNiS18-9; 58M	X2CrNi19-11	X10CrNi18-8	X2CrNiN18-10	58E	X2CrNiMo18-15-4	X12CrNiTi18-10; 58B
	GOST (RUSSIA)	30Ch18N11	03Ch18N11	12Ch18N9				
	JIS (JAPAN)	SUS 303	SUS 304 L; SUS 304 LFP; SUS 304 LTB; SUS 304 LTBS; SUS 304 LTP; SUS F 304 L	SUS 301; SUS 301-CSP; SUS 302; SUS 302 FB	SUS 304 LN; SUS F 304 LN		SUS 317 L; SUS 317 LFB; SUS 317 LTB; SUS 317 LTP; SUS F 317 L; SUS Y 317 L	SUS 321; SUS 321 HFB; SUS 321 HTB; SUS 321 HTP; SUS 321 TKA; SUS 321 TP; SUS F 321; SUS Y 321
	SS (SWEDEN)	2346	2352	2331	2371	2332; 2333	2367	2337
	UNE (SPAIN)	F.310.C; F.3508; X 10 CrNiS 18-09	F.310.G; F.3503; X 2 CrNi 18 10	F.3517; X 2 CrNiN 18 10	F.3541; X 2 CrNiN 18 10	F.3551	F.3539; X2 CrNiMo 18 16 4	F.3553
	UNI (ITALY)	X 10 CrNiS 18 09	X 2 CrNi 18 11; X 3 CrNi 18 11	X 12 CrNi 17 07	X 2 CrNiN 18 11	X 5 CrNi 18 10	X 2 CrNiMo 18 16	X 6 CrNiTi 18.11
	IS (INDIA)							
	KS (REP. of KOREA)	STS 303	STS 304L	STS 302	STS 304LN	STS 304L	STS 317L	STS 321
	GB/YB/JB/ SY/NB (PRC)	1Cr18Ni9MoZr	00Cr19Ni10	Cr17Ni7	00Cr18Ni10N	0Cr18Ni9	00Cr19Ni13Mo	0Cr18Ni9Ti

Material Designation in Accordance with Selected Standards

Standards		Material Group No. 14	14	14	14	14	14	14
	NF/AFNOR (FRANCE)	Z 6 CNNb 18-10	Z 6 CNDNb 18-12		Z 9 CN 24-13; Z 17 CNS 20-12	Z 15 CNS 25-20		Z 10 CNT 18-11; 9160/C 63; 9160C201
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)	347; 348; S34700; S34800	318; S31803		309; S30900	310; 314; S3100; S31400; S31500	348; S34800	
	BS (UK)	347 S 31; ANC 3 grade B; ANC 3 B; 347 S 20; 347 S 40; 347 S 50; 347 S 51			309 S 24	314 S 25	2 S.130; 2 S.143; 3 S.144; 3 S.145; S.525; S.527	S.524; S.526; 2 S 129
	DIN (GERMANY)	X6CrNiNb18-10; X 6 CrNiNb 18 10	X10CrNiMoNb18-12; X 10CrNiMoNb 18 12	X1CrNiMoN25-22-2; X 2 CrNiMoN 25 22 7	X15CrNiSi20-12; X 15 CrNiSi 20 12	X15CrNiSi25-21; X 15 CrNiSi 25 20	X5CrNiNb18-10	
	Werkstoff (GERMANY)	1.4550	1.4583	1.4465; 1.4466	1.4828	1.4841	1.4546	1.4544; 1.4544.9
	EN (EUROPE)	X6CrNiNb18-10; 58F;		X1CrNiMoN25-22-2	58C; X15CrNiSi20-12	X15CrNiSi25-21		FE-PA 13
	GOST (RUSSIA)	08Ch18N12B			20Ch20N14S2	20Ch25N20S2		08Ch18N12T
	JIS (JAPAN)	SUS 347; SUS 347 FB; SUS 347 HTB; SUS 347 TB; SUS 347 TKA; SUS 347 TP; SUS F 347			SUH 309; SUS 309 TB; SUS 309 TP	SUH 310; SUS 310 TB; SUS Y 310		
	SS (SWEDEN)	2338						
	UNE (SPAIN)	F.3524; X 6 CrNiNb 18 10			F.3312; X 15 CrNiSi 20-12	F.3310; X 15 CrNiSi 25-20		
	UNI (ITALY)	X 6 CrNiNb 18 11; X 6 CrNiNb 18 11 KG; X 6 CrNiNb 18 11 KW; X 6 CrNiNb 18 11 KT	X 6 CrNiMoNb 20 11		X 16 CrNi 23 14	X 16 CrNiSi 25 20		X 6 CrNiTi 18 11
	IS (INDIA)							
	KS (REP. of KOREA)	STS 347				STR 310		
	GB/YB/JB/ SY/NB (PRC)	1Cr18Ni11Nb	Cr17Ni12Mo3Mb		1Cr20Ni14Si2	1Cr25Ni20Si2		

Material Designation in Accordance with Selected Standards

Standards		Material Group No. 14	14	14	14	14	14	14
	NF/AFNOR (FRANCE)			Z 3 CND 19.10 M	Z 3 CN 19.10 M		Z 2 CN 18 10	Z 6 CNU 18 10
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)			316N; 316 N; J92804	304L; 304 L J92500; J92620			302 HQ; 304 Cu; 304 HQ; XM-7; EV-17; S30430
	BS (UK)				304 C 12		304 S 12	394 S 17
	DIN (GERMANY)	X12CrNi18-9; X 12 CrNi 18 9	X12CrNi22-12; X 12 CrNi 22 12	GX2CrNiMo19-11-2; G-X 2 CrNiMo 19 11 2	GX2CrNi19-11	GX2CrNiMnMoNNb21-15-4-3; G-X 2 CrNiMnMoNNb 21 15 43	X2CrNi18-9; X 2 CrNi 18 9	X3CrNiCu18-9-4; X 3 CrNiCu 18 9
	Werkstoff (GERMANY)	1.6900	1.4829	1.4409	1.4309	1.4569	1.431	1.457
	EN (EUROPE)			GX2CrNiMo19-11-2	GX2CrNi19-11		X2CrNi18-9	X3CrNiCu18-9-4
	GOST (RUSSIA)							
	JIS (JAPAN)			SCS 16 A; SCS 16 AX SCS 16 AXN	SCS 19; SCS 19 A			SUS XM 7
	SS (SWEDEN)							
	UNE (SPAIN)			AM-X 2 CrNiMo 19 11; F.8415	AM-X 2 CrNi 19 10; F.8412			
	UNI (ITALY)			GX2 CrNiMo 19 11	GX 2 CrNi 19 10			
	IS (INDIA)							
	KS (REP. of KOREA)				SSC 19			
	GB/YB/JB/ SY/NB (PRC)				ZG00Cr18Nice0			

Material Designation in Accordance with Selected Standards

Standards		Material Group No. 14	14	14	14	14	14	14	14
	NF/AFNOR (FRANCE)				Z 5 CN 18-11 FF				
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)	S21800; AMS 5848	S20910; XM-19	S24100; XM-28	305; 308; S30500; S30800	S31630			
	BS (UK)				305 S 17; 305 S 19				
	DIN (GERMANY)		X2CrNiMnMoNNb21-16-5-3		X4CrNi18-12; X 5 CrNi 18 12		GX6CrNiMo18-12; G-X 6 CrNiMo 18 12	GX2CrNiMoM17-13-4	GX6CrNiMo17-13; G-X 6 CrNiMo 17 13
	Werkstoff (GERMANY)		1.396		1.430		1.444	1.445	1.445
	EN (EUROPE)				X4CrNi18-12			GX2CrNiMoM17-13-4	
	GOST (RUSSIA)				06Ch18N11				
	JIS (JAPAN)				SUS 305 J 1; SUS 305				
	SS (SWEDEN)								
	UNE (SPAIN)				F.3513; X 8 CrNi 18 12				
	UNI (ITALY)				X 7 CrNi 18 10; X 8 CrNi 19 10				
	IS (INDIA)								
	KS (REP. of KOREA)								
	GB/YB/JB/ SY/NB (PRC)								

Material Designation in Accordance with Selected Standards

Standards		Material Group No. 14	14	14	14	14	14
	NF/AFNOR (FRANCE)		Z 2 NCDU 25-20		Z 8 CN 25-20; Z 12 CN 25-20; Z 12 CN 26-21		Z 52 CMN 21-09 Az; Z 53 CMN 21-09 Az
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)	J93254; CK3MCuN	904L; 904 L; N08904		310H; 310 H; 310S; 310 S; S31008; S31009	254 SMo; S31254; F44	EV 8; S63008
	BS (UK)		904 S 13		310 S 16; 310 S 24; 310 S 25; 310 S 31		349 S 52
	DIN (GERMANY)	GX2CrNiMoCuN20-18-6	X1NiCrMoCu25-20-5; X 1 NiCrMoCuN 25 20 5	GX1NiCrMoCuN25-20-5; G-X 1 NiCrMoCuN 25 20 5	X8CrNi25-21; X 12 CrNi 25 21	X1CrNiMoN20-18-7	X53CrMnNiN21-9; X 53 CrMnNiN 21 9
	Werkstoff (GERMANY)	1.456	1.4539	1.454	1.4845	1.4547	1.4871
	EN (EUROPE)	GX2CrNiMoCuN20-18-6	X1NiCrMoCu25-20-5		X12CrNi25-21	X1CrNiMoN20-18-7	X53CrMnNiN21-9
	GOST (RUSSIA)				10Ch23N18; 20Ch23N18		55Ch20G9AN4
	JIS (JAPAN)				SUS 310 S; SUS 310 FB; SUS 310 STG; SUS 310 STP; SUS310 TB; SYS Y 310 S		SUH 35; SUH 36
	SS (SWEDEN)		2562		2361	2378	
	UNE (SPAIN)				F.331		F.3217; X 53 CrMnNiN 21-09
	UNI (ITALY)				X 6 CrNi 25 20 (X 6 CrNi 25 20)		X 53 CrMnNiN 21 9
	IS (INDIA)						X53Cr22Mn9Ni4N
	KS (REP. of KOREA)						STR 35; STR 36
	GB/YB/JB/ SY/NB (PRC)				0Cr25Ni20		5Cr2Mn9Ni4N

Material Designation in Accordance with Selected Standards

Standards		Material Group No. 14	14	14	14	14	14
	NF/AFNOR (FRANCE)	Z 6 CND 15-07; 9160/C 65; 9160C 211	Z 55 CMN 20-08 Az	Z 50 CMNNb 21.09; Z 50 CMNNb 21-09	Z 53 CMNB 21-09-02 Az		Z 9 CNA 17-07; Z 8 CNA 17-07
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)	632; S15700; 15-7 PH; 15-7PH; AMS 5520; AMS 5657	EV 12; S63012	XEV-F; S63019		EV 16; S63018	631; 17-7PH; 17-7 PH; S17700
	BS (UK)				352 S 52		301 S 81
	DIN (GERMANY)	X8CrNiMoAl15-7-2; X 7 CrNiMoAl 15-7	X55CrMoNiN20-8; X 55 CrMoNiN 20 8	X50CrMnNiNbN21-9	X53CrMnNiNbN21-9; X 53 CrMnNiNbN 21 9	X33CrNiMnN23-8; X 33 CrNiMnN 23 8	X7CrNiAl17-7; X 7 CrNiAl 17 7
	Werkstoff (GERMANY)	1.4532; 1.4574	1.488	1.4882	1.487	1.487	1.4568; 1.4564; 1.4504
	EN (EUROPE)	X8CrNiMoAl15-7-2	X55CrMoNiN20-8	X50CrMnNiNbN21-9	X53CrMnNiNbN21-9	X33CrNiMnN23-8	X7CrNiAl17-7
	GOST (RUSSIA)						09Ch17N7Ju1
	JIS (JAPAN)						SUS 631; SUS 631 J 1; SUS 631-CSP
	SS (SWEDEN)						2388
	UNE (SPAIN)						X 2 CrNiMo 17 12
	UNI (ITALY)		X 55 CrMnNiN 20.8		X 53 CrMnNiNbN 21.9		
	IS (INDIA)						
	KS (REP. of KOREA)						
	GB/YB/JB/ SY/NB (PRC)						0Cr17Ni7Al

Material Designation in Accordance with Selected Standards

Standards		Material Group No. 14	14	14	14	14	14
	NF/AFNOR (FRANCE)				Z 3 CN 23-04 Az	Z 5 CND 27-05 Az; Z 3 CND 25-07 Az	Z 2 CND 24-08 Az; Z 3 CND 25-06-03 Az; Z 3 CND 25 -05 Az
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)	S31266	654 SMo; S32654	J94650; CN7MS	S32304	329; S31260; S32900	S31803; S31260; S32900; A182 F51; A182 Gr. F51; A182 Grade F51
	BS (UK)						318 S 13; 1.4462
	DIN (GERMANY)	X1CrNiMoCuNW24-22-6	X1CrNiMoCuN24-22-8	GX2NiCrMoCuN25-20	X2CrNiN23-4; X 2 CrNiN 23 4	X3CrNiMoN27-5-2; X 4 CrNiMoN 27 5 2	X2CrNiMoN22-5-3; X 2 CrNiMoN 22 5 3
	Werkstoff (GERMANY)	1.466	1.465	1.454	1.4362	1.4460	1.4462
	EN (EUROPE)	X1CrNiMoCuNW24-22-6	X1CrNiMoCuN24-22-8		X2CrNiN23-4	X3CrNiMoN27-5-2	X2CrNiMoN22-5-3
	GOST (RUSSIA)				03Ch3N6	10Ch26N5M; 08Ch21N6M2T	
	JIS (JAPAN)					SUS 329 J 1; SUS 329 J 1 FB; SUS 329 J 1 TB; SUS 329 J 1 TP	SUS 329 J 3 L; SUS 329 J 3 LTB; SUS 329 J 3 LTP
	SS (SWEDEN)				2327	2324	2377
	UNE (SPAIN)					F.3552; F.3309; X 8 CrNiMo 27-05; X 8 CrNiMo 26 6	
	UNI (ITALY)						
	IS (INDIA)						
	KS (REP. of KOREA)					STS 329J1	STS 329J3L
	GB/YB/JB/ SY/NB (PRC)				0Cr26Ni5Mo2	0Cr26Ni5Mo2	

Material Designation in Accordance with Selected Standards

Standards		Material Group No.							
		14	14	14	14	14	14	14	14
	NF/AFNOR (FRANCE)						Z 2 CND 18.05.03		
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)	J92605; J93005	329; S32900	S33100; A182 F10; A182 Gr. F10; A182 Grade F10			S31500		
	BS (UK)								
	DIN (GERMANY)	GX40CrNiSi27-4; G-X 40 CrNiSi 27 4	X6CrNiMo26-4-2; X 6 CrNiMo 26 4 2			GX2CrNiMoN25-6-3; G-X 3 CrNiMoN 26 6 3	GX2CrNiMoN25-7-3; G-X 2 CrNiMoN 25 7 3; X2CrNiMoSi18-5-3; X 2 CrNiMoSi 18 5 3	GX4CrNiN26-7; G-X 8 CrNiN 26-7; G-X 6 CrNiN 26-7	GX6CrNiMo24-8-2; G-X 6 CrNiMo 24 8 2
	Werkstoff (GERMANY)	1.4823	1.448			1.447	1.4417; 1.4424	1.435	1.446
	EN (EUROPE)	GX40CrNiSi27-4				GX2CrNiMoN25-6-3	GX2CrNiMoN25-7-3; X2CrNiMoSi18-5-3	GX4CrNiN26-7	
	GOST (RUSSIA)				03Ch22N6M2	03Ch24N6AM3			
	JIS (JAPAN)	SCH 11 X							
	SS (SWEDEN)						2376		
	UNE (SPAIN)								
	UNI (ITALY)								
	IS (INDIA)								
	KS (REP. of KOREA)								
	GB/YB/JB/ SY/NB (PRC)								

Material Designation in Accordance with Selected Standards

Standards		Material Group No. 14	14	14	14	14	14
	NF/AFNOR (FRANCE)						Z 3 CNDU 25-06 Az
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)	J92205; CD3MN 4A; A 995 Grade 4A		J93372; CD4MCuN; A890 Grade 1B; A 995 Grade 1B		J92615; CC 50; CC-50	S32760; SA351/995; 25Cr-7Ni-Mo-N
	BS (UK)						
	DIN (GERMANY)	GX2CrNiMoN22-5-3	GX3CrNiMoCuN26-6-3-3; G-X 2 CrNiMoCuN 26 6 3 3	GX2CrNiMoCuN25-6-3-3; G-X 3 CrNiMoCuN 26 6 3 3	GX32CrNi28-10	GX40CrNi27-4; G-X 40 CrNi 27 4	X2CrNiMoCuWN25-7-4
	Werkstoff (GERMANY)	1.447	1.452	1.452	1.434	1.4340	1.4501
	EN (EUROPE)	GX2CrNiMoN22-5-3		GX2CrNiMoCuN25-6-3-3			X2CrNiMoCuWN25-7-4
	GOST (RUSSIA)						
	JIS (JAPAN)			SCS 32			
	SS (SWEDEN)						
	UNE (SPAIN)						
	UNI (ITALY)						
	IS (INDIA)						
	KS (REP. of KOREA)						
	GB/YB/JB/ SY/NB (PRC)						0Cr26Ni5Mo2

Material Designation in Accordance with Selected Standards

Standards		Material Group No. 14	14	14	14	14	14	14
	NF/AFNOR (FRANCE)	Z 5 CND 25-06 Az		Z 3 CNDU 25-06 Az; Z 3 CNDU 25-07 Az				
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)	S32750		S32520; S32550; F61	S32950; SA276; SA479	J93380; CD3MNWCuN; A890 Grade 6A	J93503; J94003; J94013; HK 30; HH; A297-HH	J94203; J94204; J94224; HK
	BS (UK)						309 C 30	310 C 40; 310 C 45
	DIN (GERMANY)	X2CrNiMoN25-7-4; X 10 CrNiMo 18 9	GX2CrNiMoN26-7-4; G-X 2 CrNiMoN 25-7-4	X2CrNiMoCuN25-6-3		GX3CrNiMoWCuN27-6-3-1; G-X 3 CrNiMoWCuN 27 6 3 1	GX40CrNiSi25-12; G-X 40 CrNiSi 25 12	GX40CrNiSi25-20; G-X 40 CrNiSi 25 20
	Werkstoff (GERMANY)	1.4410	1.447	1.451		1.447	1.4837; 1.4848+Nb	1.4848
	EN (EUROPE)	X2CrNiMoN25-7-4	GX2CrNiMoN26-7-4	X2CrNiMoCuN25-6-3			GX40CrNiSi25-12	GX40CrNiSi25-20
	GOST (RUSSIA)						40Ch24N12SL	
	JIS (JAPAN)						SCH 13; SCH 13 A; SCH 13 X; SCH 17; SCS 17	SCH 21; SCH 22; SCH 22 X
	SS (SWEDEN)	2328						
	UNE (SPAIN)							AM-X 40 CrNi 25 20; F.8452
	UNI (ITALY)						G X 35 CrNi 25 12	G X 40 CrNi 26 20
	IS (INDIA)							
	KS (REP. of KOREA)						SSC 17	HRSC 21; HRSC 22
	GB/YB/JB/ SY/NB (PRC)							ZG4Cr25Ni20Si2

Material Designation in Accordance with Selected Standards

Standards		Material Group No. 14	14	14	14	14	14	14
	NF/AFNOR (FRANCE)							
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)				J94202; CK 20; AMS 5365; A351; A743			
	BS (UK)							
	DIN (GERMANY)	GX40NiCrSiNb38-19; G-X 40 NiCrSi 38 18	GX40NiCrSiNb35-26; G-X 40 NiCrSiNb 35 25	GX25CrNiSi20-14	GX15CrNi25-20	GX40CrNiSiNb24-24; G-X 30 CrNiSiNb 24 24	GX40NiCrSi35-26; G-X 40 NiCrSi 35 25	GX25CrNiSi18-9; G-X 25 CrNiSi 18 9
	Werkstoff (GERMANY)	1.4849	1.485	1.483	1.484	1.486	1.486	1.483
	EN (EUROPE)	GX40NiCrSiNb38-19	GX40NiCrSiNb35-26	GX25CrNiSi20-14		GX40CrNiSiNb24-24	GX40NiCrSi35-26	GX25CrNiSi18-9
	GOST (RUSSIA)							
	JIS (JAPAN)				SCS 18	SCH 33	SCH 24 X	
	SS (SWEDEN)							
	UNE (SPAIN)							
	UNI (ITALY)							
	IS (INDIA)							
	KS (REP. of KOREA)							
	GB/YB/JB/ SY/NB (PRC)							

Material Designation in Accordance with Selected Standards

Standards		Material Group No.			Material Group No.				
		14	14	14	15	15	15	15	15
	NF/AFNOR (FRANCE)				Ft 10 D		Ft 15 D; R 15 D; FGL 150		Ft 20 D; FGL 200
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)		N08151; CT15C		F11401; A48-20; A48-20 B; Class 20; No 20 B	H10 J431	F11701; A48-25; A48 25 B; Class 25; No 25 B; G9H12 J431	H11 J431	F12101; A48-30; A48-30 B; Class 30, No.30 B; G110H18 J431
	BS (UK)				Grade 100		Grade 150		Grade 220
	DIN (GERMANY)	GX40CrNiSi22-10; G-X 40 CrNiSi 22 9	GX10NiCrSiNb32-20; G-X 10NiCrNb 32 20	GX50NiCrCoW35-25-15-5; G-X 50 NiCrCoWSi 35 25 15 5	EN-GJL-100; EN-JL 1010; GG-10	EN-GJL-HB155; EN-JL 2010; GG-150 HB	EN-GJL-150; EN-GJL-150C; EN-JL 1020; GG-15	EN-GJL-HB175; EN-JL 2020; GG-170 HB	EN-GJL-200; EN-GJL-200C; EN-JL 1030; GG-20
	Werkstoff (GERMANY)	1.483	1.486	1.487	0.6010; 5.1100	0.6012; 5.1101	0.6015; 5.1200	0.6017; 5.1201	0.6020; 5.1300
	EN (EUROPE)	GX40CrNiSi22-10	GX10NiCrSiNb32-20	GX50NiCrCoW35-25-15-5	EN-GJL-100; EN-JL 1010	EN-GJL-HB155; EN-JL 2010	EN-GJL-150; EN-GJL-150C; EN-JL 1020	EN-GJL-HB175; EN-JL 2020	EN-GJL-200; EN-GJL-200C; EN-JL 1030
	GOST (RUSSIA)				SCh10		SCh 15		SCh 20
	JIS (JAPAN)	SCH12	SCH 34	SCH 46	FC 10; FC 100		FC 15; FC 150		FC 20; FC 200
	SS (SWEDEN)				0110-00		0115-00		0120-00
	UNE (SPAIN)				FG 10		FG 15		FG 20
	UNI (ITALY)				G 10		G 14; G 15		G 20; Gh 190
	IS (INDIA)								
	KS (REP. of KOREA)				GC 10		GC 15		GC 20
	GB/YB/JB/ SY/NB (PRC)				HT100		HT150		HT200

Material Designation in Accordance with Selected Standards

Standards		Material Group No. 15	15	15	16	16	16	16	16
	NF/AFNOR (FRANCE)				Ft 25 D; FGL 250	Ft 30 D; FGL 300	Ft 35 D; FGL 350		
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)	F10004; G1800; A159 Grade G1800	F10005; G2500; A159 Grade G2500	F10009; G2500a; A159 Grade G2500a	F12401; A48-40; A48-40 B; Class 40; No 40 B; A278-35; G11H20	F13101; A48-45; A48-45 B; Class 45; No 45 B; A278-45	F13501; A48-50; A48-50 B; Class 50; No 50 B; A278-50	H13 J431; H14 J431	H16 J431
	BS (UK)				Grade 260; Grade 250	Grade 300	Grade 350		
	DIN (GERMANY)				EN-GJL-250; EN-GJL-250C; EN-JL1040; GG-25	EN-GJL-300; EN-GJL-300C; EN-JL 1050; GG-30	EN-GJL-350; EN-GJL-350C; EN-JL 1060; GG-35	EN-GJL-HB195; EN-JL2030; GG-190 HB	EN-GJL-HB215; EN-JL2040; GG-220 HB
	Werkstoff (GERMANY)				0.6025; 5.1301	0.6030; 5.1302	0.6035; 5.1303	0.6022; 5.1304	0.6027; 5.1305
	EN (EUROPE)				EN-GJL-250; EN-GJL-250C; EN-JL1040	EN-GJL-300; EN-GJL-300C; EN-JL 1050	EN-GJL-350; EN-GJL-350C; EN-JL 1060	EN-GJL-HB195; EN-JL2030	EN-GJL-HB215; EN-JL2040
	GOST (RUSSIA)				SCh 25	SCh 30	SCh 35		
	JIS (JAPAN)				FC 25; FC250	FC 30; FC 300	FC 35; FC350		
	SS (SWEDEN)				0125-00	0130-00	0135-00		
	UNE (SPAIN)				FG 25	FG 30	FG 35		
	UNI (ITALY)				G 25	G 30	G 35		
	IS (INDIA)								
	KS (REP. of KOREA)				GC 25; GC 250	GC 30	GC 350		
	GB/YB/JB/ SY/NB (PRC)				HT250	HT300	HT350		

Material Designation in Accordance with Selected Standards

Standards		Material Group No. 16	16	16	16	16	16	16	16
	NF/AFNOR (FRANCE)				Ft 40 D				
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)	H18 J431	H20 J431	F13801; A48-55; A48-55 B; Class 55; No 60 B	F14101; A48-60 B; Class 60; No 60 B	F10006; G3000; A159 Grade G3000	F10007; G3500; A159 Grade G3500	F10010; G3500b; A159 Grade G3500b	F10011; G3500c; A159 Grade G3500c
	BS (UK)				Grade 400				
	DIN (GERMANY)	EN-GJL-HB235; EN-JL2050; GG-240 HB	EN-GJL-HB255; EN-JL2060; GG-260 HB		EN-JLZ; GG-40				
	Werkstoff (GERMANY)	0.6032; 5.1306	0.6037; 5.1307		0.6040				
	EN (EUROPE)	EN-GJL-HB235; EN-JL2050	EN-GJL-HB255; EN-JL2060		EN-JLZ				
	GOST (RUSSIA)				SCh 40				
	JIS (JAPAN)								
	SS (SWEDEN)				0140-00				
	UNE (SPAIN)								
	UNI (ITALY)								
	IS (INDIA)								
	KS (REP. of KOREA)								
	GB/YB/JB/ SY/NB (PRC)				HT400				

Material Designation in Accordance with Selected Standards

Standards		Material Group No. 16	16	17	17	17	17	17
	NF/AFNOR (FRANCE)			FGS 370-/17			FGS 370-17	
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)	F10008; G4000; A159 Grade G4000	F10012; G4000d; A159 Grade G4000d				F32800; 60-40-18; A395 60-40-18; A536 60-40-18	
	BS (UK)			350/22 L 40			370/17; Grade 370/17; 400/18; Grade 400/18; SG 24/17	
	DIN (GERMANY)			EN-GJS-350-22-LT; GGG-35.3			EN-GJS-400-18-LT; EN-GJS-400-18C-LT; EN-GJS-400-18U-LT; EN-JS1025; EN-JS1049; GGG-40.3	
	Werkstoff (GERMANY)			0.7033; 5.3100	5.310	5.310	0.7043; 5.3103	5.310
	EN (EUROPE)			EN-GJS-350-22-LT; EN-GJS-350-22C-LT; EN-GJS-350-22U-LT; EN-JS1015; EN-JS1019	EN-GJS-350-22-RT; EN-GJS-350-22C-RT; EN-GJS-350-22U-RT; EN-JS1014; EN-JS1029	EN-GJS-350-22; EN-GJS-350-22C; EN-GJS-350-22U; EN-JS1010; EN-JS1032; EN-JS2010	EN-GJS-400-18-LT; EN-GJS-400-18C-LT; EN-GJS-400-18U-LT; EN-JS1025; EN-JS1049	EN-GJS-400-18-RT; EN-GJS-400-18C-RT; EN-GJS-400-18U-RT; EN-JS1024; EN-JS1059
	GOST (RUSSIA)			VCh 42-12	VCh 35	VCh 35	VCh 42-2	
	JIS (JAPAN)			FCD 350-22L	FCD 350-22	FCD 350-22	FCD 400-18L; FCD 400-18AL; FCD 370	FCD 400-18; FCD 400-18A
	SS (SWEDEN)						0717-15	
	UNE (SPAIN)			FNG 38-17				
	UNI (ITALY)			GS 370/17			GSO 42/15	
	IS (INDIA)							
	KS (REP. of KOREA)							
	GB/YB/JB/ SY/NB (PRC)			QT350-22L				

Material Designation in Accordance with Selected Standards

Standards		Material Group No. 17	17	17	17	18	18	18	18
	NF/AFNOR (FRANCE)		FCS 400-12; FCS 400-12	FGS 450-10		FGS 500-7	FGS 600-3	FGS 700-2	
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)	F32800; 60-40-18; A395 60-40-18; A536 60- 40-18; D400 J434; D4018 J434	F32800; 60-40-18; A395 60-40-18; A536 60-40-18	F33100; A395 65-45-15; 65-45-15; A536 65-45-12; 65-45-12		F33500; D5006 J 434; D5006	F33800; A536 80-55-06; 80-55-06; F34100; A538 80-60-03; 80-60-03	F34800; A536 100-70-03; 100-70-03; A536 100-70-03; D700 J434; D7003 J434	
	BS (UK)	400/18; Grade 400/18; SG 24/17	420/12; Grade 420/12	420/12; Grade 420/12; SG 27/12		500/7; Grade 500/7; SG 32/7	600/3; Grade 600/3	700/2; Grade 700/2; SG42/2; SNG700/2	
	DIN (GERMANY)		EN-GJS-400-15; EN-GJS-400-15C; EN-GJS-400-15U; EN-GJS-HB155; EN-JS 1030; EN-JS1072; EN-JS2030; GGG-40			EN-GJS-500-7; EN-GJS-500-7C; EN-GJS-500-7U; EN-GJS-HB200; EN-JS-1050; EN-JS-1082; EN-JS-2050; GGG-50	EN-GJS-600-3; EN-GJS-600-3C; EN-GJS-600-3U; EN-GJS-HB230; EN-JS1060; EN-JS1092; EN-JS2060; GGG-60	EN-GJS-700-2; EN-JS 1070; GGG-70	
	Werkstoff (GERMANY)	0.7043; 5.3105	0.7040; 5.3106	5.311	5.311	0.7050; 5.3200	0.7060; 5.3201	0.7070; 5.3300	5.311
	EN (EUROPE)	EN-GJS-400-18; EN-GJS-400-18-C; EN-GJS-400-18U; EN-GJS-HB-150; EN-JS1020; EN_JS1062; EN-JS-2020	EN-GJS-400-15; EN-GJS-400-15C; EN-GJS-400-15U; EN-GJS-HB155; EN-JS 1030; EN-JS1072; EN-JS2030	EN-GJS-450-10; EN-GJS-450-10C; EN-GJS-450-10U; EN-GJS-HB185; EN-JS1040; EN-JS1132; EN-JS-HB185	EN-GJS-450-18; EN-GJS-450-18C	EN-GJS-500-7; EN-GJS-500-7C; EN-GJS-500-7U; EN-GJS-HB200; EN-JS-1050; EN-JS-1082; EN-JS-2050	EN-GJS-600-3; EN-GJS-600-3C; EN-GJS-600-3U; EN-GJS-HB230; EN-JS1060; EN-JS1092; EN-JS2060	EN-GJS-700-2; EN-GJS-700-2C; EN-GJS-700-2U; EN GJS-HB265; EN-JS1070; EN-JS1102; EN-JS2070	EN-GJS-500-14; EN-GJS-500-14C
	GOST (RUSSIA)	VCh 40	VCh 40; VCh 42-12	VCh 45		VCh 50; VCh 50-2; VCh 50-2-2	VCh 60; VCh 60-2	VCh 70; VCh 70-2; VCh 70-3	
	JIS (JAPAN)	FCD 400-18; FCD 400-18A	FCD 400-15; FCD 400-15A; FCD 400; FCD 40	FCD 450-10		FCD 500-7; FCD 500-7A; FCD 500; FCD 50	FCD 600-3; FCD 600-3A; FCD 600; FCD 60; FCD 550-7; FCD 550	FCD 700-2; FCD 700; FCD 70	
	SS (SWEDEN)		0717-02			0727-02	0732-03	0737-01	
	UNE (SPAIN)		FGE 38-17			FGE 50-7	FGE 60-2	FGE 70-2	
	UNI (ITALY)		GS 400/12			GS 500/7	GS 600/3	GS 700-2	
	IS (INDIA)		SG370/17	SG400/12		SG500/7	SG600/3	SG700/2	
	KS (REP. of KOREA)		DC 40; GCD 42			GCD 50; GCD 500-7	GCD 600-3	GCD 700-2	
	GB/YB/JB/ SY/NB (PRC)	QT400-18	QT400-15	QT400-18L		QT500-7	QT600-3	QT700-2	

Material Designation in Accordance with Selected Standards

Standards		Material Group No. 18	18	18	19	19	19	20
	NF/AFNOR (FRANCE)			FGS 900-2	MN 35-10; A32-702 MN 350-10	MN 380-18; A32-702 MN 380-18		MP 60-3; A32-703 MP 60-3; Mn 550-4
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)		F36200; A536 120-90-02; 120-90-02		A47-32510; A47 Class 32510; A47 Grade 32510; 32510; F22200	A47-35018, A47 Class 35018; A47 Grade 35018	A47-22010; A47 Class 22010; A47 Grade 22010; F22200	A220-50005; A220 Class 50005; A220 Grade 50005; A220-60004; A220 Class 60004; F24130
	BS (UK)		800/2; Grade 800/2	900/2; Grade 900/2	B 340/12; 310 B340/12		B 32-10; 6681 B 32-10	P 55-04; P 510/4
	DIN (GERMANY)		EN-GJS-800-2; EN-GJS-800-2C; EN-GJS-800-2U; EN-GJS-HB300; EN-JS1080; EN-JS1112; EN-JS2080; GGG-80		EN-GJMB-350-10; EN-JM 1130; GTS-35-10; GTS-35			EN-GJMB-550-4; EN-JM1160; GTS-55-04
	Werkstoff (GERMANY)	5.3110	0.7080; 5.3301	5.330	0.8135; 5.4101			0.8155; 5.4207
	EN (EUROPE)	EN-GJS-600-10; EN-GJS-600-10C	EN-GJS-800-2; EN-GJS-800-2C; EN-GJS-800-2U; EN-GJS-HB300; EN-JS1080; EN-JS1112; EN-JS2080	EN-GJS-900-2; EN-GJS-900-2U; EN-GJS-HB330; EN-JS1090; EN-JS1122; EN-JS2090	EN-GJMB-350-10; EN-JM 1130			EN-GJMB-550-4; EN-JM1160
	GOST (RUSSIA)		VCh 80; VCh 80-2; VCh 80-3	VCh 100; VCh 100-4	KCh 35-10	KCh 37-12	KCh 33-8	KCh 55-4
	JIS (JAPAN)		FCD 800-2; FCD 800		FCMB 35-10; FCMB 340		FCMB 310	FCMP 55-04; FCMP 540
	SS (SWEDEN)				0810; 0815-00			0856-00
	UNE (SPAIN)				GTS 35; 36114 Type A			Type C; 36116 Type C
	UNI (ITALY)		GS 800/2		B 35-10			P 55-04
	IS (INDIA)							
	KS (REP. of KOREA)							
	GB/YB/JB/ SY/NB (PRC)				KTH350-10	KTH370-12	KTH330-08	KTZ550-04

Material Designation in Accordance with Selected Standards

Standards		Material Group No. 20	20	20	20	20	20	20	20
	NF/AFNOR (FRANCE)		Mn 650-3	MP 70-2; A 32-703 MP 70-2; Mn 700-2	MP 50-5; A32-703 MP 50-5	MN 700-2			
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)	A220-70003; A220 Class 70003; A220 Grade 70003; A220-480M3; A220 Class 480M3; A602-M5503; F24830	A220-70003; A220 Class 70003; A220 Grade 70003; A220-80002; A220 Class 80002; F25530	A220-70003; A220 Class 70003; A220 Grade 70003; F26230; F20004; F24830; A220-90001; A220-620M1	A220-45006; A220 Class 45006; A220 Grade 45006 A220-45008; A220-310M6; A220-310M8; F23130; F23131	A220-80002; A220 Class 80002; A220 Grade 80002; A602-M8501; F20005	A220-90001; A220 Class 90001; A220 Grade 90001	A220-60004; A220 Class 60004; A220 Grade 60004	A220-40010; A220 Class 40010; A220 Grade 40010
	BS (UK)		P 65-02; 6681 P 65-02; P 570/3	P 70-2; 6681 P 70-2; P 690/2	P 45-06; 6681 P 45-06				
	DIN (GERMANY)	EN-GJMB-600-3; EN-JM1170	EN-GJMB-650-2; EN-JM1180; GTS-65-02	EN-GJMB-700-2; EN-JM1190; GTS-70-02	EN-GJMD-450-6; EN-JM1140; GTS-45-06; GTS-45	EN-GJMB-800-1; EN-JM1200			
	Werkstoff (GERMANY)	5.421	0.8165; 5.4300	0.8170; 5.4301	0.8145; 5.4205	5.4302			
	EN (EUROPE)	EN-GJMB-600-3; EN-JM1170	EN-GJMB-650-2; EN-JM1180	EN-GJMB-700-2; EN-JM1190	EN-GJMD-450-6; EN-JM1140	EN-GJMB-800-1; EN-JM1200			
	GOST (RUSSIA)	KCh60-3	KCh 63-3; KCh 65-3	KCh 70-2	KCh 45-7	KCh 80-1.5			
	JIS (JAPAN)	FCMP 60-03	FCMP 65-02; FCMP 590	FCMP 70-02; FCMP 690	FCMP 45-06	FCMP 80-01; FCMP 70; FCMP 700			
	SS (SWEDEN)		0862-030	0862-03	0854-00				0852-00
	UNE (SPAIN)		Type B; 36116 Type B	36116 Type A	Type E; 36116 Type E				
	UNI (ITALY)		GMN 65; P 65-02	P 70-2; GMN 70	P 45-06				
	IS (INDIA)								
	KS (REP. of KOREA)					PMC 490	PMC 590		
	GB/YB/JB/ SY/NB (PRC)		KTZ650-02	KTZ700-02	KTZ450-06	KTZ650-02	KTZ700-02	KTZ550-04	

Material Designation in Accordance with Selected Standards

Standards		Material Group No. 20	20	20	Material Group No. 21	21	21	21	22
	NF/AFNOR (FRANCE)	MB 400-5	MB 35-7	MB 380-12	A G0-6	A5	A4	A-G4.5MC	A-U4G
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)				AA5005; AA5006; A95005; A95006; 5005; 5005A; 5006	AA1050; A91050; 1050; 1050A	AA1200; A91200; 1200; 1200A	AA5083; A95083; 5083	AA2017; A92017; 2017; 2017A
	BS (UK)	W 40-05	W 35-04		N41	1B	1C	N8	
	DIN (GERMANY)	EN-GJMW-400-5; GTW-40-05	EN-GJMW-350-4; GTW-35-04	GTW-S-38-12; EN-GJMW-360-12; EN-JM1020	AlMg1; AlMg1C	Al99,5; Al99.5	Al99,0; Al99.0; Al99	AlMg4,5Mn; AlMg4.5Mn	AlCu2,5Si(A); AlCu2.5Si(A); AlCuMg1
	Werkstoff (GERMANY)	0.8040; 5.4202	0.8035; 5.4200	0.8038; 5.4201	3.3315	3.0255	3.0205	3.355	3.1325; 3.1124
	EN (EUROPE)	EN-GJMW-400-5; EN-JM1030	EN-GJMW-350-4; EN-JM1010	EN-GJMW-360-12; EN-JM1020	AlMg1C; 5005A	Al99.5; Al99,5; 1050A	Al99.0; AL99,0; 1200	EN AW-5083; AlMg4,5Mn; AlMg4.5Mn	AlCu2,5Si(A); AlCu2.5Si(A); 2017A
	GOST (RUSSIA)				1510; AMg1	AD0	A0		V65
	JIS (JAPAN)	FCMW 40-05; FCMW 370	FCMW 35-04; FCMW 330	FCMW 38-12; FCMW 370	A5005		A1200	A5083	
	SS (SWEDEN)				144106	14407	144010	144140	
	UNE (SPAIN)	36113 Type A	36113 Type B		L-3350	L-3051	L-3001	L-3321	L-3120
	UNI (ITALY)	W 40-05	W 35-04		9005/1	9001/2	Al99.0	9005/5	
	IS (INDIA)				51000	19500	19000		24534
	KS (REP. of KOREA)								
	GB/YB/JB/ SY/NB (PRC)	KTB380-12	KTB350-04	KTB380-12	5005	1A50	1200; L50		2A11; LY11

Material Designation in Accordance with Selected Standards

Standards		Material Group No. 22	22	22	22	22	22	22	22
	NF/AFNOR (FRANCE)	A-SGM0.7		A-U5PbBi	A-Z5GU	A-U4G1	A-Z5G	A-GSUC	
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)				AA7075; A97075; 7075	AA2024; A92024; 2024		AA6061; A96061; 6061	AA7010; A97010; 7010
	BS (UK)	H30		FC1	7075; L95; L96	2024; 2L97	H17	H20	5120 B; 5130 A
	DIN (GERMANY)	AlMgSi1	AlZnMgCuO,5; AlZnMgCuO.5	AlCu6BiPb; AlCuBiPb	AlZn5,5MgCu; AlZn5.5MgCu; AlZnMgCu1,5; AlZnMgCu1.5	AlCuMg2	AlZn4,5Mg1; AlZn4.5Mg1	AlMg1SiCu	AlZn6MgCu
	Werkstoff (GERMANY)	3.2315	3.4345	3.1655	3.4365; 3.4364	3.1355; 3.1354	3.4335	3.3211; 3.3214	3.4394
	EN (EUROPE)	AlSiMgMn; 6082; EN AW-6082	AlZnMgCu0.5; AlZnMgCu0,5; 7022	AlCu6BiPb; 2011	AlZn5.5MgCu; AlZn5,.5MgCu; AW-7075; 7075	AlCu4Mg1; 2024	AlZn4.5Mg1; AlZn4,5Mg1; 7020	EN AW-6061; EN AW-AlMg1SiCu; AlMg1SiCu	EN AW-7010; AlZn6MgCu
	GOST (RUSSIA)	AD35			B95	D16		AD33	
	JIS (JAPAN)			A2011	A7075	A2024		A6061	
	SS (SWEDEN)	144312		144355			144425		
	UNE (SPAIN)	L-3453		L-3192	L-3710	L-3140	L-3741	L-3420	
	UNI (ITALY)	9006/4		9002/5	9007/2	9002/4; 3583	9007/1	9006/2	9007/4; P-AlZn6 2Mg2 3Cu 1.8Zr
	IS (INDIA)	64430			76528	24530	74530	65032	
	KS (REP. of KOREA)				A7075P			A6061P	
	GB/YB/JB/ SY/NB (PRC)		7022		7075	2A12	7020	6061	

Material Designation in Accordance with Selected Standards

Standards		Material Group No.								
		22	22	22	22	23	23	23	23	23
	NF/AFNOR (FRANCE)			A-U2GN; 2618A			A-S12U	A-G10S		
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)	AA7050; A97050; 7050	AA6063; A96063; 6063	AA2618; A92618; A2618; 2618	AA7050; A97050; 7050			520.0; AA 520.0; A05200	222.0; AA 222.0; A02220	518.0; AA 518.0; A05180
	BS (UK)		H9	2618A; H16		LM5			LM12	
	DIN (GERMANY)	AlZn6CuMgZr	AlMg0.7Si	AlCu2Mg1.5Ni	AlZn6CuMgZr	G-AlMg5Si; GK-AlMg5Si; AlMg5Si; VDS 245	GD-AlSi12(Cu); G-AlSi12(Cu); AlSi12(Cu); VDS 231 D			G-AlMg9; GD-AlMg9; AlMg9; VDS 349
	Werkstoff (GERMANY)			3.192	3.4144	3.3261	3.2982			3.3292
	EN (EUROPE)	EN AW-7050; EN AW-AlZn6CuMgZr; AlZn6CuMgZr	EN AW-6063; AlMg0.7Si	EN AW-2618A; AlCu2Mg1.5Ni; 2618A	EN AW-7050; EN AW-AlZn6CuMgZr; AlZn6CuMgZr	EN AC-51400; EN AC-AlMg5Si; G-AlMg5Si; AlMg5Si	EN AC-47100; EN AC-AlSi12C; G-AlSi12Cu; AlSi12Cu; AlSi12Cu1(Fe)			EN AC-51200; EN AC-AlMg9; G-AlMg9; AlMg9
	GOST (RUSSIA)					AL13		A18		
	JIS (JAPAN)	A7050	A6063	A2618	A7050			AC7B		
	SS (SWEDEN)		144104			144163				
	UNE (SPAIN)		L-3441	L-3171; 2618A; Al-2CuMgNi				L-2310	L-2110	
	UNI (ITALY)			9002/6; 3578; P-AlCu2.3Mg1.5FeNi; 2618A			3048	3056	3041	
	IS (INDIA)						4685			
	KS (REP. of KOREA)									
	GB/YB/JB/ SY/NB (PRC)			LD7	7050	ZL303		ZL301		

Material Designation in Accordance with Selected Standards

Standards		Material Group No.									
		23	23	23	23	23	23	23	23	24	24
	NF/AFNOR (FRANCE)	AU5NKZr		A-Z5GF	A-G6	A-S13			A-G3T		A-S9G
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)	203.0; AA 203.0; A02030	ER4047; A94047	712.0; AA 712.0; A07120	514.0; 514.1; AA 514.0; AA 514.1; A05140; A05141	B413.0; AA B413.0; A24130; B213.0; AA 213.0; A22130		A444.0; AA A444.0; A14440		515.0; AA 515.0; A05150	
	BS (UK)		4047A; NG2			LM6			H20		
	DIN (GERMANY)	G-AlCu5Ni1,5; G-AlCu5Ni1.5	SG-AlSi12	G-AlZn10Si8Mg; GK-AlZn10Si8Mg; AlZn10Si8Mg; VDS 108	G-AlMg5; GK-AlMg5; AlMg5; EN AC-51300; VDS 244	G-AlSi12; GK-AlSi12; GD-AlSi12; AlSi12	G-AlSi11; GK-AlSi11; AlSi11		G-AlMg3; GK-AlMg3; GF-AlMg3; AlMg3; VDC 244	G-AlMg3Si; GK-AlMg3Si; GF-AlMg3Si; AlMg3Si; AlMg3Si1	G-AlSi9Mg; GK-AlSi9Mg; AlSi9Mg
	Werkstoff (GERMANY)	3.1754	3.2585		3.3561	3.2581; 3,2582	3.2211		3.3541	3.3241	3.2373
	EN (EUROPE)		SG-AlSi12; EL-AlSi12	EN AC-71100; EN AC-AlZn10Si8Mg; G-AlZn10Si8Mg; AlZn10Si8Mg	EN AC-51300; EN AC-AlMg5; G-AlMg5; AlMg5	EN AC-44200; EN AC-AlSi12; G-AlSi12; GD-AlSi12; AlSi12	EN AC-44000; EN AC-AlSi11; G-AlSi11		EN AC-51100; EN AC-AlMg3; G-AlMg3; AlMg3	G-AlMg3Si1; AlMg3Si	G-AlSi9Mg; AlSi9Mg
	GOST (RUSSIA)				AL28; AMg5Mz;			AK7			AK9
	JIS (JAPAN)					AC3			ADC6		AC4A
	SS (SWEDEN)		144262			144261			144224		
	UNE (SPAIN)				L-2331	L-2520			L-2341		
	UNI (ITALY)			3602	3058	4514			3059		3051
	IS (INDIA)								53000		
	KS (REP. of KOREA)										AC4A
	GB/YB/JB/ SY/NB (PRC)		4047	ZL402	YI302	YL102			5754		ZL102

Material Designation in Accordance with Selected Standards

Standards		Material Group No. 24	24	24	24	24	24	24	24	24
	NF/AFNOR (FRANCE)	A-S7G03	AU5GT		A-S9U3		A-S5UZ	A-S10UG	A-S10G	
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)	A356.0; AA A356.0; A13560; A356.2; AA A356.2; A13562	204.0; AA 204.0; A02040	A333.0; AA A333.0; A13330	380.0; AA 380.0; A03800	365.0; AA 365.0; A03650	319.0; AA 319.0; A03190			
	BS (UK)	2L99			LM24		LM21			
	DIN (GERMANY)	G-AlSi7Mg; GK-AlSi7Mg; GF-AlSi7Mg; AlSi7Mg	G-AlCu4TiMg; GK-AlCu4TiMg; GF-AlCu4TiMg; AlCu4TiMg	G-AlSi8Cu3; GK-AlSi8Cu3	G-AlSi9Cu3; GD-AlSi9Cu3; AlSi9Cu3; VDS 226	G-AlSi10MnMg	G-AlSi6Cu4; GK-AlSi6Cu4; AlSi6Cu4; VDS 225	G-AlSi10MgCu; GK-AlSi10MgCu; G-AlSi10Mg(Cu); GK-AlSi10Mg(Cu); AlSi10MgCu; AlSi10Mg(Cu)	G-AlSi10Mg; GK-AlSi10Mg; GD-AlSi10Mg; AlSi10Mg; VDS 239	G-AlCu4Ti; AlCu4Ti
	Werkstoff (GERMANY)	3.2371	3.1371	3.2161	3.2163		3.2151	3.2383	3.2381; 3.2385	3.1841
	EN (EUROPE)	G-AlSi7Mg; AlSi7Mg	EN AC-21000; EN AC-AlCu4TiMg; G-AlCu4TiMg	EN AC-AlSi8Cu3; EN AC-AlSi8Cu3; G-AlSi8Cu3	EN AC-46200; EN AC-AlSi8Cu3; G-AlSi9Cu3; AlSi8Cu3	EN AC-43500; EN AC-AlSi10MnMg; G-AlSi10MnMg	EN AC-45000; EN AC-AlSi6Cu4; G-AlSi6Cu4; AlSi6Cu4		EN AC-43000; EN AC-AlSi10Mg; G-AlSi10Mg; AlSi10Mg	EN AC-21100; EN AC-AlCu4Ti; G-AlCu4Ti; AlCu4Ti
	GOST (RUSSIA)	AL9		AL13	AK8M3; AK8		AK5M			AL19
	JIS (JAPAN)	AC4CH	AC1B		AC4B		AC2B			
	SS (SWEDEN)			144163	144252		144230		144253	
	UNE (SPAIN)	L-2651	L-2140		L-2630		L-2620			
	UNI (ITALY)				3610		7369/4			
	IS (INDIA)									2280
	KS (REP. of KOREA)									
	GB/YB/JB/ SY/NB (PRC)	ZL101	ZL201		ZL105A		ZL107		YL104	ZL203

Material Designation in Accordance with Selected Standards

Standards		Material Group No.									
		24	25	25	25	26	26	26	26	26	26
	NF/AFNOR (FRANCE)						CuPb5Sn5Zn5; UE5; U-E 5 Pb 5 Z 5	CuSn7Pb6Zn4; UE7; U-E 7 Z 5 Pb 4	U-Pb15E8; U-Pb 15 E8	U-Pb10	CuZn36Pb3
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)	A304	390.0; AA 390.0; A03900	393.0; AA 393.0; A03930		C83810	C83600	C93200	C93800	C93700	C36000
	BS (UK)		LM30	LM29	LM28	LG1	LG2	GC 493K	LB1	LB2	CZ124
	DIN (GERMANY)		G-AlSi17Cu4Mg	G-AlSi20CuMgNi; AlSi20CuMgNi	G-AlSi18Cu1MgNi; AlSi18Cu1MgNi	CuSn3Zn8Pb5-C; G-CuSn2ZnPb	CuSn5Zn5Pb5-C; G-CuSn5ZnPb; Rg 5	CuSn7Zn4Pb7-C; G-CuSn7ZnPb; GC-CuSn7ZnPb; GZ-CuSn7ZnPb; Rg 7	CuSn7Pb15-C; G-CuPb15Sn; GC-CuPb15Sn; GZ-CuPb15Sn	CuSn10Pb10-C; G-CuPb10Sn; GC-CuPb10Sn; GZ-CuPb10Sn	CuZn36Pb3
	Werkstoff (GERMANY)					2.1098	2.1096; 2.1096.01	2.1090	2.1182	2.1176	2.0375
	EN (EUROPE)		EN AB-48100; EN AC-48100; G-AlSi17Cu4Mg; AlSi17Cu4Mg			CuSn3Zn8Pb5-C	CuSn5Zn5Pb5-C	CuSn7Zn4Pb7-C	CuSn7Pb15-C; CC496K	CuSn10Pb10-C	CuZn36Pb3; CW603N
	GOST (RUSSIA)			AK21M2N2			BrO5Ts5S5				
	JIS (JAPAN)		ADC14				H5111; H2203				C3600; C3601; C3602
	SS (SWEDEN)		4282				5204-15				
	UNE (SPAIN)								C-3300		
	UNI (ITALY)										12167
	IS (INDIA)										
	KS (REP. of KOREA)										
	GB/YB/JB/ SY/NB (PRC)						QSn4-0.3			ZCuPb10Sn10	HPb63-3

Material Designation in Accordance with Selected Standards

Standards		Material Group No. 26	26	27	27	27	27	27	27	27
	NF/AFNOR (FRANCE)	CuZn38Pb2		U-Z10; CuZn10	U-Z36N3; CuZn19Al6Y20	U-Z36; CuZn 36				U-Z15; CuZn15
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)	C37000	C67300; J461; J463	C22000	C86200; SAE 430A	C27200	C27400	C86400	C46400	C23000; 85Cu-15Zn
	BS (UK)	CZ129		CZ101	HTB 1	CZ108	CZ108	HTB 1	CZ112	CZ102
	DIN (GERMANY)	CuZn38Pb2; CuZn38Pb1.5		CuZn10; Ms90	CuZn34Mn3Al2Fe1-C; G-CuZn34Al2; GK-CuZn34Al2; GZ-CuZn34Al2	CuZn36; Ms64	CuZn37; Ms63	CuZn35Mn2Al1Fe1-C; G-CuZn35Al1; GK-CuZn35Al1; GZ-CuZn35Al1; G-Ms60	CuZn38Sn1As; CuZn38Sn1	CuZn15 ; CuZn 15
	Werkstoff (GERMANY)	2.037		2.0230	2.0596	2.0335	2.0321	2.0592	2.0530	2.0240
	EN (EUROPE)	CuZn38Pb2; CW608N	CuZn35Mn3Pb2Si1	CuZn10; CW501L	CuZn34Mn3Al2Fe1-C; CC764S	CuZn36; CW507L	CuZn37; CW508L	CuZn35Mn2Al1Fe1-C; CC765S	CuZn38Sn1As; CW717R	CuZn15; CW502L
	GOST (RUSSIA)	LS59-1		L90	LTs23A; LTs23A6Zh3MTs2	L63	L63		LO60-1	
	JIS (JAPAN)	C3710		C2200	HBSC4; H5102/class 3; H5102/class 4		C2720	HBSC1; CAC301	C4640	C2300
	SS (SWEDEN)									5112-02; 5112-04; 5112-05
	UNE (SPAIN)									
	UNI (ITALY)			P-CuZn10; P-OT90		C 2700	P-CuZn37; P-OT63		P-CuZn39Sn1	
	IS (INDIA)									
	KS (REP. of KOREA)									
	GB/YB/JB/ SY/NB (PRC)			H90	ZCuZn25Al6Fe3Mn3	H65	H63	ZCuZn35Al2Mn2Fe1	HSn60-1	H85

Material Designation in Accordance with Selected Standards

Standards		Material Group No. 27	27	27	27	27	27	28	28	28	28
	NF/AFNOR (FRANCE)	CuZn20	CuZn30				CuZn40	U-A10N; CuAl9Ni5Fe3	CuSn8	UE12P	CuAl10Fe5Ni5 Y70
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)	C24000; 80Cu-20Zn	C26000; CA260	C27453		C85566	C28000	C63000	C90700	C90800; C91700	C95800; C95810
	BS (UK)	CZ103	CZ106				CZ109	CA 104	CT1	PB2	
	DIN (GERMANY)	CuZn20; CuZn 20; Ms80	CuZn30; CuZn 30				CuZn40	CuAl10Ni5Fe4; CuAl 10 Ni 5 Fe 4	CuSn10-C; G-CuSn 10; SnBz10	CuSn12-C; G-CuSn12; GZ-CuSn12; SnBz12, Gbz12	G-CuAl10Fe5Ni5-C; G-CuAl 10 Ni; NiAlBz-F60
	Werkstoff (GERMANY)	2.0250	2.0265				2.036	2.0966	2.1050	2.1052; 2.1052.01; 2.1052.04; 2.1052.03; 2.1056	2.0975
	EN (EUROPE)	CuZn20; CW503L	CuZn30; CW505L	CuZn38As; CW511L	CuZn36AlAsSb-B; CB771S	CuZn38AsSb-C; CC771S	CuZn40; CW509L	CuAl10Ni5Fe4; CW307G	CuSn10-C; CC480K	CuSn12-C; CC483K	CC333G
	GOST (RUSSIA)						L60	BrAD; BrAZhN10-4-4; N10-4-4			
	JIS (JAPAN)	C2400	C2600				C2801	C6301		CAC502C; PBC2C	CAC703C
	SS (SWEDEN)	5114-02; 5114-04; 5114-05									
	UNE (SPAIN)										
	UNI (ITALY)							P-CuAl10Ni5Fe5			
	IS (INDIA)										
	KS (REP. of KOREA)										
	GB/YB/JB/ SY/NB (PRC)	H80	H70					QAl10-4-4			

Material Designation in Accordance with Selected Standards

Standards		Material Group No. 28	28	28	28	28	28	28	28	28	28	28
	NF/AFNOR (FRANCE)	Cu-B	U-Cr0.8Zr		Ci-c1; Cu-c2		U-C1Z; U-Cr0.8Zr	Cu-B	UA9	CuAl8	CuNi10Fe1Mn	CuZn16Si4-C
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)	C11000	C81500	C10300	C10100; C10200	C86550	C18100; C18150	C11000; C12200	C95500	C61000	C70600; 90Cu-10Ni	C87500; C87400; C87800
	BS (UK)	C101	CC1-FF		C103; C110		CC102	C106			CN 102; CN102	ZCuZn16Si4
	DIN (GERMANY)	Cu-ETP; E-Cu57; E Cu 57	G-CuCrF 35	Cu-HCP; Cu-PHC; SE-Cu	Cu-OF; OF-Cu	G-CuZn40Fe; G-SoMsF30	CuCr1Zr; CuCrZr	Cu-DHP; E-Cu58; E Cu 58 SF-Cu	CuAl9Ni3Fe2	CuAl8; Cu Al 8	CuNi10Fe1Mn	G-CuZn15Si4; GD-CuZn15Si4; GK-CuZn15Si4
	Werkstoff (GERMANY)	2.0060	2.1292	2.0070	2.0040	2.0590	2.1293	2.0090	2.0971	2.0920	2.0872	2.0492; 2.0492-01; 2.0492-02; 2.0492-05
	EN (EUROPE)	Cu-ETP; E-Cu57; CW004A		Cu-HCP; CW020A; Cu-PHC; CW021A	Cu-OF; CW008A	G-CuZn40Fe	CuCr1Zr; CW106C	Cu-DHP; E-Cu58; CW024A		CuAl8	CW 352H; CuNi10Fe1Mn	CuZn16Si4-B; CuZn16Si4-C; CB761S; CC761S
	GOST (RUSSIA)	M1		LS60-2	M0b			M1f	BrA10Zh4N4L	BrA7	MNZhMtz10-1-1	LTs16K4
	JIS (JAPAN)	C1100		C103	C1011; C1020			C1100; C1220			C7060; YCuNi-1	SzBC2; H5112/class 2; H5112/class 3
	SS (SWEDEN)										5667	
	UNE (SPAIN)	C11020			C-1120						CW 352H	
	UNI (ITALY)	Cu-DHP										
	IS (INDIA)											
	KS (REP. of KOREA)											
	GB/YB/JB/ SY/NB (PRC)	T2			TU2		QCr0.6-0.4-0.05	TP2		QAl7	BFe10-1-1	

Material Designation in Accordance with Selected Standards

Standards		Material Group No.						Material Group No.			
		29	29	29	29	29	29	31	31	31	31
	NF/AFNOR (FRANCE)							Z 20 NCS 33-16; Z 12 NCS 37-18; Z 12 NCS 35-16			
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)							330; N08330	N08002; N08004; N08005; N08030		N08031
	BS (UK)							NA 17; INCOLOY alloy DS	330 C 11; 330 C 40; 331 C 40	NA 15	
	DIN (GERMANY)							X12NiCrSi35-16; X12NiCrSi36-16; X12 NiCrSi 36 16	GX40NiCrSi38-19 GX40NiCrSi38-18; G-X40 NiCrSi38 18	X2NiCrAlTi32-20; X2 NiCrAlTi 32 20	X1NiCrMoCu32-28-7; X1 NiCrMoCu 32 28 7
	Werkstoff (GERMANY)							1.486	1.487	1.456	1.456
	EN (EUROPE)							X12NiCrSi35-16	GX40NiCrSi38-18	X2NiCrAlTi32-20	X1NiCrMoCu32-28-7
	GOST (RUSSIA)	Capron; Nylon	Polymetylmetakrylat; orgsteklo; SOL; ST-1; 2-55	PVCh	Polystyrol	Teflon; PTFE; Ftoroplast-4	RST; RST-250; RST-275; RST-320; RST-410				
	JIS (JAPAN)							SUH 330	SCH 15; SCH 16	NCF 800	
	SS (SWEDEN)										
	UNE (SPAIN)							F.3313; X 12 CrNiSi 36-16			
	UNI (ITALY)								GX 50 NiCr 39 19		
	IS (INDIA)										
	KS (REP. of KOREA)							STR 330	HRSC 15		
	GB/YB/JB/ SY/NB (PRC)							1Cr16Ni35		NS111	NS1404

Material Designation in Accordance with Selected Standards

Standards		Material Group No. 31	31	31	31	31	31	31	31
	NF/AFNOR (FRANCE)		Z 8 NC 33-21; Z 10 NC 32-21	Z 2 NCDU 31-27; Z 1 NCDU 31-27-03	Z 10 NC 32-21; Z 8 NC 33-21				
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)		N08811	N08028	B 163; N08800; N08810; N08332; N08811				
	BS (UK)	NA 15	NA 15; NA 15 H		NA 15; NA 15 H				
	DIN (GERMANY)	X5NiCrAlTi31-20; X5 NiCrAlTi 31 20	X8NiCrAlTi32-21; X8 NiCrAlTi 32 21	X1NiCrMoCu31-27-4; X1 NiCrMoCu 31 27 4	X10NiCrAlTi32-21; X10NiCrAlTi32-20; X10 NiCrAlTi 32 20				
	Werkstoff (GERMANY)	1.496	1.496	1.456	1.488				
	EN (EUROPE)	X5NiCrAlTi31-20	X8NiCrAlTi32-21	X1NiCrMoCu31-27-4	X10NiCrAlTi32-21				
	GOST (RUSSIA)			EK77; ChN30MDB		08Ch15N25M3TYuB	06Ch16N15M3B; EI 847	08Ch15N24VTR; Ch15N24VT; EP 164	08Ch16N9M2
	JIS (JAPAN)	NCF 800 H; NCF 718			NCF 800; NCF 800 TB; NCF 800 TP				
	SS (SWEDEN)			2584					
	UNE (SPAIN)				F.3314; F.3545				
	UNI (ITALY)								
	IS (INDIA)								
	KS (REP. of KOREA)								
	GB/YB/JB/ SY/NB (PRC)				NS112				

Material Designation in Accordance with Selected Standards

Standards		Material Group No.									
		31	31	31	31	32	32	32	32	32	32
	NF/AFNOR (FRANCE)		A54-301			Z 42 CNKDWNb	Z 3 NCT 25; Z 6 NCTDV 25.15 B	Z 6 NCTDV 25-15 B			
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)		K94610; AMS 7726; F15	K93600; K93601; B388; F1684	K93500; AMS 1-23011	S590; J 467	660; S66286; AMS 5731; AMS 5732; AMS 5737; AMS 5525		661; R30155	R30556	S41880; AMS 5508; AMS 5616; A565 Grade 615; J467
	BS (UK)			4J36			HR 51; HR 52; 286 S 31	HR 51			
	DIN (GERMANY)		NiCo 29 18; X3NiCo29-18	Ni36; Ni 36		X40CoCrNi20-20; X40 CoCrNi 20 20	X6NiCrTiMoVB25-15-2; X5NiCrTi26-15 X6 NiCrTiMoVB 25 15 2; X5 NiCrTi 26 15	X4NiCrTi25-15; X5NiCrTi26-15	X12CrCoNi21-20; X12 CrCoNi 21 20		
	Werkstoff (GERMANY)		1.398	1.391		1.4977	1.4980	1.4943; 1.4944	1.4971		
	EN (EUROPE)						X6NiCrTiMoVB25-15-2; X5NiCrTi26-15	X4NiCrTi25-15; X5NiCrTi26-15	X12CrCoNi21-20		
	GOST (RUSSIA)	20Ch12N2V2MF		36N; 36N-VI				36NChTYu			
	JIS (JAPAN)										
	SS (SWEDEN)							2570			
	UNE (SPAIN)										
	UNI (ITALY)										
	IS (INDIA)										
	KS (REP. of KOREA)										
	GB/YB/JB/ SY/NB (PRC)						0Cr15Ni25Ti2MoA	GH2132	GH19		

Material Designation in Accordance with Selected Standards

Standards		Material Group No.								
		32	32	32	32	32	32	32	32	32
	NF/AFNOR (FRANCE)									
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)	651; S63198; AMS 5579; AMS 5526	AMS 5725	662; S66220; AMS 5733	R30590; S-590			S38100; XM-15; A249 Grade TPXM-15		S66009
	BS (UK)									
	DIN (GERMANY)			X4NiCrMoTiMnSiB26-14-3-2			X5NiCrTiMoV26-15			
	Werkstoff (GERMANY)			1.464			1.3980			
	EN (EUROPE)									
	GOST (RUSSIA)					36NChTYu	08Ch15N25T2MFR	08Ch20N14S2; 08Ch20N14S2; EI 732	37Ch12N8G8MFB	45Ch14N14B2M
	JIS (JAPAN)									
	SS (SWEDEN)									
	UNE (SPAIN)									
	UNI (ITALY)									
	IS (INDIA)									
	KS (REP. of KOREA)									
	GB/YB/JB/ SY/NB (PRC)									

Material Designation in Accordance with Selected Standards

Standards		Material Group No.									
		32	32	32	33	33	33	33	33	33	33
	NF/AFNOR (FRANCE)				KC 20 WN	K 13 C 20 N16 Fe 15 D 7		NC 21 Fe DU		NC 20 T	NC 22 FeDNb
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)			S66315	R30605; 670; 5537C; AMS 5759	R30003; R30008; F1058; F1058 Grade 1; F1058 Grade 2	R31233; B815; B818	Incoloy 825; N08825;	Hastelloy C-4; N06455	Nimonic 75; N06075; AMS 5715	Inconel 625; N06625; AMS 5666
	BS (UK)							NA 16		HR 5; HR 203-4	NA 21
	DIN (GERMANY)				CoCr20W15Ni	CoCr20Ni15Mo7; CoCr 20 Ni 15 Mo	CoCr26Ni9Mo5W; CoCr 26 Ni 9 Mo 5 W	NiCr21Mo	NiMo16Cr16Ti	NiCr20Ti	NiCr22Mo9Nb
	Werkstoff (GERMANY)				2.4964	2.471	2.468	2.4858	2.4610	2.4630; 2.4951	2.4856
	EN (EUROPE)				CoCr20W15Ni						
	GOST (RUSSIA)	40Ch15N7GF2MS; EI 388	ChN35VTYu; EI 787					ChN38VT			
	JIS (JAPAN)										
	SS (SWEDEN)										
	UNE (SPAIN)										
	UNI (ITALY)										
	IS (INDIA)										
	KS (REP. of KOREA)										
	GB/YB/JB/ SY/NB (PRC)				GH25			NS142	GH182		GH984

Material Designation in Accordance with Selected Standards

Standards		Material Group No. 33	33	33	33	33	33	33	33	33	33
	NF/AFNOR (FRANCE)	NC 30 Fe	NU 30	NC 22 FeD	NC 14 K 9 T 5 DWA	Z 8 NCDT 42		NC 19 KDT		NU 30	NC 16 FeT
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)	Inconel 690; N06690	Monel 400; N04400	Hastelloy X; Inconel HX; N06002; 5390A; AMS 5754; AMS 5536	Inconel 617; N06617; AMS 5887	Nimonic 90; N07090; AMS 5829	Haynes 214; NO7214	Rene 41; N07041; AMS 5712; AMS 5713; AMS 5800	Hastelloy B2; N10665	Monel R-405; N04405	Inconel 600; N06600; AMS 5665
	BS (UK)		NA 13; ANC 18	HR 6; HR 204		HR 2; HR202; HR 402; HR 501; HR 502; HR 503				NA 13	NA 14
	DIN (GERMANY)	NiC29Fe	NiCu30Fe	NiCr30FeMo; NiCr22Fe18Mo; NiCr21Fe18Mo9	NiCr23Co12Mo	NiCr20Co18Ti; NiCr 20 Co 18 Ti	NiCr16Al	NiCr19Co11MoTi; NiCr 19 CoMo	NiMo28; EL-NiM29; SG(UP)-NiMo27	NiCu30Fe	NiCr15Fe8; NiCr 15 Fe
	Werkstoff (GERMANY)	2.464	2.4360; 2.4361	2.4603; 2.4665	2.4663a	2.4632; 2.4969	2.4646	2.4973	2.4617; 2.4616; 2.4615	2.4360; 2.4361	2.4816
	EN (EUROPE)					NiCr20Co18Ti			NiMo28		NiCr15Fe8
	GOST (RUSSIA)										ChN78T
	JIS (JAPAN)								YNiMo-7		
	SS (SWEDEN)										
	UNE (SPAIN)										
	UNI (ITALY)										
	IS (INDIA)										
	KS (REP. of KOREA)										
	GB/YB/JB/ SY/NB (PRC)	NS315		GH22; GH334; GH536GH739; SG-5		GH4037		GH141	NS322		NS312

Material Designation in Accordance with Selected Standards

Standards		Material Group No. 33	33	33	33	33	33	33	33	33	33
	NF/AFNOR (FRANCE)	N C 23 FeA	NCK 20 D		NC 17 D		A54-301; Fe-Ni48	NW 11 AC			
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)	Inconel 601; N06601	Nimonic 263; N07263; AMS 5872; AMS 5886	Hastelloy C-22; N06022	Hastelloy C-276; N10276	N06025	K94800; F 30	Nimonic PE 16	Haynes HR-120; N08120; B408; B409	Haynes HR-160; N12160	Udimet 520
	BS (UK)		HR 10; HR 206; HR 404					HR 55; HR 207			
	DIN (GERMANY)	NiCr23Fe15A; NiCr 23 Fe	NiCo20Cr20MoTi; NiCo 20 Cr 20 MoTi MoTi	NiCr21Mo14W	NiMo16Cr15W; NiMo 16 Cr 15 W	NiCr25FeAlY	Ni 48; RNi 12; RNi 8			NiCo29Cr28Si	
	Werkstoff (GERMANY)	2.4851	2.4650	2.4602	2.482	2.463	1.3922; 1.3926; 1.3927			2.488	
	EN (EUROPE)	NiCr23Fe15A	NiCo20Cr20MoTi			NiCr25FeAlY					
	GOST (RUSSIA)	ChN60Yu									
	JIS (JAPAN)			NW 6022		NCF 625					
	SS (SWEDEN)										
	UNE (SPAIN)										
	UNI (ITALY)										
	IS (INDIA)										
	KS (REP. of KOREA)										
	GB/YB/JB/ SY/NB (PRC)	NS313	GH163		NS334						

Material Designation in Accordance with Selected Standards

Standards		Material Group No. 33	33	34	34	34	34	34	34	34	34
	NF/AFNOR (FRANCE)			KC 22 WN					NU 30 AT	NC 19 Fe Nb	NiFe25Cr20NbTi
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)	Incoloy 840	N08020	R30188; AMS 5608; AMS 5772	R30816; S-816; B639; Grade 671 Cobalt			R30600	Monel K-500; N05500	Inconel 718; N07718; AMS 5596; AMS 5589	
	BS (UK)		GH 1015; NS 1403; NS 143						NA 18	HR 8	
	DIN (GERMANY)	X8CrNiAlTi20-20	NiCr20CuMo	CoCr22W14Ni	CoCr20Ni20W				NiCu30Al3Ti; NiCu 30 Al	NiCr19Nb5Mo3; NiCr 19 NbMo; NiCr19Fe19Nb5Mo3	NiFe25Cr20NbTi; NiFe 25 Cr 20 NbTi
	Werkstoff (GERMANY)	1.485	2.466	2.4964	2.4989			2.478	2.438	2.467	2.496
	EN (EUROPE)		NiCr20CuMo	CoCr22W14Ni	CoCr20Ni20W				NiCu30Al3Ti	NiCr19Nb5Mo3	NiFe25Cr20NbTi
	GOST (RUSSIA)		ChN28VMAB		Altemp S-816						
	JIS (JAPAN)										
	SS (SWEDEN)										
	UNE (SPAIN)										
	UNI (ITALY)										
	IS (INDIA)										
	KS (REP. of KOREA)										
	GB/YB/JB/ SY/NB (PRC)			GH25		GH4169	GH901; GH109	GH146			

Material Designation in Accordance with Selected Standards

Standards		Material Group No. 34	34	34	34	34	34	34	34	34	34
	NF/AFNOR (FRANCE)		Z 8 NCDT 42	NCK 19 DAT	NC 20 TA			NC 20 K 14		NC 19 KDT	NC 14 K8
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)	Incoloy 925; N09925	Nimonic 901; N09901; AMS 5660; AMS 5661	Udimet 500; N07500; AISI 684	Nimonic 80A; N07080	MAR-M 246	Inconel 722; N07722; AMS 5411	Waspaloy; N07001; AISI 685; AMS 5704; AMS 5706; AMS 5708; AMS 5544		Rene 41; N07041; AMS 5712; AMS 5713; AMS 5800	Rene 95
	BS (UK)				HR 401; HR 601						
	DIN (GERMANY)		NiFe35Cr14MoTi; NiCr13Mo6Ti3; NiCr 13 Mo 6 Ti 3	NiCr18Co18MoAlTi	NiCr20TiAl; NiCr 20 TiAl	NiCr23Mo16Cu; NiCr 23 Mo 16 Cu		NiCr20Co13Mo4Ti3AL; NiCr 19 Co 14 Mo 4 Ti		NiCr19Co11MoTi; NiCr 19 CoMo	
	Werkstoff (GERMANY)		2.4662	2.4983	2.4631; 2.4952	2.4675		2.4654		2.4973	
	EN (EUROPE)			NiCr18Co18MoAlTi	NiCr20TiAl	NiCr23Mo16Cu		NiCr20Co13Mo4Ti3AL			
	GOST (RUSSIA)				ChN77TYuR; ChN56VMTYu				ChN75VMYu; EI 827		
	JIS (JAPAN)				NCF 80 A						
	SS (SWEDEN)										
	UNE (SPAIN)										
	UNI (ITALY)										
	IS (INDIA)										
	KS (REP. of KOREA)										
	GB/YB/JB/ SY/NB (PRC)				GH80A		GH141	GH738			

Material Designation in Accordance with Selected Standards

Standards		Material Group No. 34	34	34	34	34	34	34	34	34	34
	NF/AFNOR (FRANCE)					NK 20 CDA; NCK 20 Atv	NCK 15 ATD	NC 19 KDu/v	NC 16 FeTNb		Z 3 NK 28; Z 3 NK 38
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)	N06230; AMS 5891; AMS 5878			Udimet 700; 687; AMS 5846; J467; GE C50T67	Nimonic 105; N13021; C565	Nimonic 115; N06115; AMS 5666	Nimonic PK 33	Inconel X-750; N07750; AMS 5542; AMS 5582; AMS 5670; AMS 5667	Astroloy; N13017; AMS 5851; AMS 5852; AMS 5882	Incoloy 903; N19903; AMS 5803; ANS 5884; AMS 5892; AMS 5893
	BS (UK)					HR 3	HR 4				
	DIN (GERMANY)	NiCr22W14Mo				NiCo20Cr15MoAlTi; NiCo 20 Cr 5 MoAlTi	NiCo15Cr15MoAlTi; NiCo 15 Cr 5 MoAlTi		NiCr15Fe7TiAl; NiCr15Fe7Ti2Al		
	Werkstoff (GERMANY)	2.473				2.463	2.464		2.467		
	EN (EUROPE)								NiCr15Fe7TiAl; NiCr15Fe7Ti2Al		
	GOST (RUSSIA)		ChN72MVKYu	ChN60MVTYu							
	JIS (JAPAN)										
	SS (SWEDEN)										
	UNE (SPAIN)										
	UNI (ITALY)										
	IS (INDIA)										
	KS (REP. of KOREA)										
	GB/YB/JB/ SY/NB (PRC)										

Material Designation in Accordance with Selected Standards

Standards		Material Group No. 34	34	35	35	35	35	35	35	35
	NF/AFNOR (FRANCE)				ND 30 M		NK 15 CAT		NC 13 AD	
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)		Inconel 740H; N07740	5388C; N30002; CW-12MW;	N7M; N-7M; N30007	N12MV; N-12MV; N30012	Nimocast PK24; N13100; AMS 5397	Jethete M-252; N07252; AMS 5551	Nimocast 713; N07713; AMS 5391; Inconel 713LC	M-35-1; N214135
	BS (UK)						HC 204		HC 203	
	DIN (GERMANY)	NoCr25Co20TiMo		G-NiM16CrW	G-NiMo28	G-NiMo30	G-NiCo15Cr10AlTiMo	G-NiCr19Co; G-NiCr 19 Co	G-NiCr13Al6MoNb	G-NiCu40Nb
	Werkstoff (GERMANY)	2.488		2.4883	2.4685	2.4882; 9.4810; 2.4810/9.4810	2.4674	2.4916	2.467	2.4365; 2.4365/9.4365
	EN (EUROPE)	NoCr25Co20TiMo								
	GOST (RUSSIA)									
	JIS (JAPAN)									NiCuC
	SS (SWEDEN)									
	UNE (SPAIN)									
	UNI (ITALY)									
	IS (INDIA)									
	KS (REP. of KOREA)									
	GB/YB/JB/ SY/NB (PRC)									

Material Designation in Accordance with Selected Standards

Standards		Material Group No.										
		35	35	35	35	35	35	35	35	35	35	35
	NF/AFNOR (FRANCE)			NC14 K9 T5 DWA								
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)		Rene 77	Rene 80					MAR-M 247	MAR-M 421	MAR-M 432	Rene 125
	BS (UK)											
	DIN (GERMANY)	G-NiCr28W			G-NiCr15				G-NiCo10W10CrAlNb			
	Werkstoff (GERMANY)	2.488			2.482				2.468			
	EN (EUROPE)	G-NiCr28W			G-NiCr15							
	GOST (RUSSIA)					ChN62MVKYuL	ChN65VMTYuL	ChN67VMTYuL				
	JIS (JAPAN)											
	SS (SWEDEN)											
	UNE (SPAIN)											
	UNI (ITALY)											
	IS (INDIA)											
	KS (REP. of KOREA)											
	GB/YB/JB/ SY/NB (PRC)											

Material Designation in Accordance with Selected Standards

Standards		Material Group No. 35	35	35	35	35	35	36	36	36
	NF/AFNOR (FRANCE)			KD 27 DN	KC 25 NW; KC 25 N 10 W 7 Fe			T-35	T-40	T-50
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)	Rene 220C	Udimet 700B	F75; AMS 5385D	A567; AMS 5382E; Cobalt Alloy 31; Cobalt #31			R50250; Titanium Grade 1; ASTM GR. 1	R50400; Titanium Grade 2; AMS 4902; AMS 4941; ASTM Gr. 2	R50500; R50550; Titanium Grade 3; AMS 4900
	BS (UK)			ANC 14	ANC 13; 3146.2			TA1	TA2; TA3; TA4; TA5	DTD 5023, DTD 5273
	DIN (GERMANY)			CoCr28MoNi	CoCr25NiW	G-CoCr28	G-CoCr28Nb	Ti 1; Ti 99.8; Titan Grade 1	Ti 2; Ti 99.7	Ti 3; Ti 99.6; Titan Grade 3
	Werkstoff (GERMANY)			2.498	2.497	2.478	2.478	3.7024; 3.7025	3.7034; 3.7035; 3.7036	3.7055; 3.7056
	EN (EUROPE)					G-CoCr28		Ti 99.8	Ti 99.7	Ti 99.6
	GOST (RUSSIA)							VT1-00	VT1-0	
	JIS (JAPAN)							Class 2; Gr-1	Class 2; Gr-2	Class 3; Gr-3
	SS (SWEDEN)									
	UNE (SPAIN)							Ti-PO1	Ti-PO2; 38-711L-7001; 38-712L-7002	
	UNI (ITALY)							Ti1-Type 1	Ti1-Type 2	Ti1-Type 3
	IS (INDIA)									
	KS (REP. of KOREA)									
	GB/YB/JB/ SY/NB (PRC)							TA0	TA1	TA2

Material Designation in Accordance with Selected Standards

Standards		Material Group No. 36	36	36	36	36	36	36	36
	NF/AFNOR (FRANCE)	T-60							
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)	R50700; Titanium Grade 4; AMS 4901; AMS 4921	R52400; Titanium Grade 7; Ti-0.15Pd	R52250; Titanium Grade 11; Ti-0.15Pd	R52402; Titanium Grade 16; Ti-0.05Pd	R52252; Titanium Grade 17; Ti-0.05Pd	R52404; Titanium Grade 26; Ti-0.1Ru	R52254; Titanium Grade 27; Ti-0.1Ru	R53400; Titanium Grade 12; Ti-0.3Mo-0.8Ni; AMS 4902
	BS (UK)	TA7; TA8; TA9							
	DIN (GERMANY)	Ti 4; Ti 99.5; Titan Grade 4							TiNi0.8Mo0.3
	Werkstoff (GERMANY)	3.7064; 3.7065; 3.7066	3.724	3.723					3.711
	EN (EUROPE)	Ti 99.5							TiNi0.8Mo0.3
	GOST (RUSSIA)								
	JIS (JAPAN)	Class 4; Gr-4	Class 13; Gr-13	Class 13; Gr-13					
	SS (SWEDEN)								
	UNE (SPAIN)	38-714L-7004	38-715L-7021	38-715L-7021					
	UNI (ITALY)	Ti1-Type 4	Ti2Pd-Type 7	Ti2Pd-Type 7					
	IS (INDIA)								
	KS (REP. of KOREA)								
	GB/YB/JB/ SY/NB (PRC)	TA3	TA9						

Material Designation in Accordance with Selected Standards

Standards		Material Group No. 37	37	37	37	37	37	37
	NF/AFNOR (FRANCE)	TA6V; T-A6V; Ti-P.63	TA6ZR4DE; T-A6ZR4DE		TA6V6E2; T-A6V6E2		TU2; T-U2	TA4DE; T-A4DE
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)	R56400; Titanium Grade 5; Ti-6Al-4V; AMS 4911; AMS 4928	R54620; Titanium Grade 6Al-2Sn-4Zr-2Mo; 6Al-2Sn-4Zr-2Mo; AMS 4975; AMS 4976; AMS 4919	R54790; Ti-679; AMS 4974	R56620; Titanium Grade 6Al-6V-2Sn; Ti-6Al-6V-2Sn; AMS 4918; AMS 4936; AMS 4971; AMS 4978	R56320; Titanium Grade 9; Ti-3Al-2.5V; AMS 4943; AMS 4944		
	BS (UK)	TA10; TA11; TA12; TA13; TA 28; TA56; Ti-Al-V	TA18; TA19; TA20; TA25; TA26; TA27	TA18; TA19; TA20; TA25; TA26; TA27			TA21; TA22; TA23; TA24	TA45; TA46; TA47; TA48; TA49; TA50; TA51; TA57
	DIN (GERMANY)	Ti6Al4V; Titan Grade 5; Titan 6 Al 4V	TiAl6Sn2Zr4Mo2		Ti-6Al-2Sn-4Zr-6Mo	Ti6Al2.5V; Titan Grade 9; Titan 3Al 2,5V	TiCu2	Ti4Al4Mo2Sn; TiAl4Mo4Sn4Si0.5
	Werkstoff (GERMANY)	3.7165; 3.7164	3.7145; 3.7144		3.7175; 3.7174	3.7195; 3.7194	3.712	3.7185; 3.7184
	EN (EUROPE)	Ti6Al4V	TiAl6Sn2Zr4Mo2		Ti-6Al-6V-2Sn	Ti6Al2.5V		
	GOST (RUSSIA)	VT6; VT6L	VT25			PT-3V		
	JIS (JAPAN)	Class 6 0; Gr 6 0; SAT-64; TAB 6400E; TAF 6400				Class 6 1; Gr 6 1		
	SS (SWEDEN)							
	UNE (SPAIN)	Ti-P63; 38-723L-7301			38-725L-7303		Ti-P11	Ti-P68
	UNI (ITALY)	TiAl6V4-Type 5				TiAl3V2.5-Type 9		
	IS (INDIA)							
	KS (REP. of KOREA)							
	GB/YB/JB/ SY/NB (PRC)				TC4	TC2		

Material Designation in Accordance with Selected Standards

Standards		Material Group No. 37	37	37	37	37	37	37
	NF/AFNOR (FRANCE)	TA5E; T-A5E; Ti-P.65			TA6VE; T-A6VE	TA4D3V; T-A4D3V		TA8DV; T-A8DV
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)	R54520; Titanium Grade 6; Ti-5Al-2.5Sn; Gr6; AMS 4910; AMS 4926	R54521; Titanium Grade Ti-5Al-2.5Sn-ELI; Ti-5Al-2.5Sn-ELI; AMS 4909; AMS 4924	R56410; Titanium Grade Ti-10V-2Fe-3Al	R56401; R56407; Titanium Grade 23; Ti-6Al-4V-ELI; AMS 4907; AMS 4930; AMS 4956	Ti-4Al-3Mo-1V		R54810; Titanium Grade Ti-8Al-1Mo-1V; Ti-8Al-1Mo-1V; AMS 4915; AMS 4916; AMS 4972; AMS 4973
	BS (UK)	TA14; TA17	TA32		TA11			TA40
	DIN (GERMANY)	TiAl5Sn2.5; TiAl 5 Sn 22; Titan 5Al2.5Sn; Ti5Al2,5Sn	TiAl5Sn2.5 ELI		Ti6Al4V ELI			
	Werkstoff (GERMANY)	3.7115.1; 3.7115; 3.7114						
	EN (EUROPE)	TiAl5Sn2.5						
	GOST (RUSSIA)	VT5-1	VT5-1		VT6S	VT14	VT22	
	JIS (JAPAN)	SAT-525			Class 6 1; Gr 6 1			
	SS (SWEDEN)							
	UNE (SPAIN)	38-716L-7101						
	UNI (ITALY)				TiAl6V4ELI-Type 5.1			
	IS (INDIA)							
	KS (REP. of KOREA)							
	GB/YB/JB/ SY/NB (PRC)	TA7						

Material Designation in Accordance with Selected Standards

Standards		Material Group No. 37	37	37	37	37	37
	NF/AFNOR (FRANCE)						
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)	R56322; Titanium Grade 18; Ti-3Al-2.5V-0.05Pd; Ti-Pd18; F18	R56323; Titanium Grade 28; Ti-3Al-2.5V-0.1Ru	R54250; Titanium Grade 38; Ti-4Al-2.5V; AMS 6946B	R56260; Titanium Grade 6Al-2Sn-4Zr-6Mo; Ti-6Al-2Sn-4Zr-6Mo; AMS 4981B	R58650; Titanium Grade Ti-5Al-2Sn-2Zr-4Cr-4Mo; AMS 4995; AMS 4997	Ti-6Al-2Sn-2Zr-2Mo-2Cr-0.15Si; AMS 4898
	BS (UK)						
	DIN (GERMANY)				Ti6Al2Sn4Zr6Mo	Ti5Al2Sn2Zr4Mo4Cr	
	Werkstoff (GERMANY)						
	EN (EUROPE)				Ti6Al2Sn4Zr6Mo	Ti5Al2Sn2Zr4Mo4Cr	
	GOST (RUSSIA)						
	JIS (JAPAN)		TAT 3250 Class 61				
	SS (SWEDEN)						
	UNE (SPAIN)						
	UNI (ITALY)						
	IS (INDIA)						
	KS (REP. of KOREA)						
	GB/YB/JB/ SY/NB (PRC)						

Material Designation in Accordance with Selected Standards

Standards		Material Group No. 37	37	37	37	37	37	37	37
	NF/AFNOR (FRANCE)								
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)	Ti-4.5Al-3V-2Mo-2Fe; AMS 4899	R56700; Titanium Grade Ti-6Al-7Nb; F1295			R56410; Ti-10V-2Fe-3Al; AMS 4983; AMS 4984; AMS 4986; AMS 4987	R58010; Ti-13V-11Cr-3Al; AMS 4917; AMS 4959; B120VCA; B-1; 3Al-13V-11Cr	R58030; Titanium Grade 10; Ti-11.5Mo-6Zr-4.5Sn; AMS 4977; AMS 4980	R58153; Ti-15V-3Cr-3Al-3Sn; AMS 4914
	BS (UK)						TA3	TA5	
	DIN (GERMANY)								
	Werkstoff (GERMANY)								
	EN (EUROPE)				Ti5Al5V5Mo3Cr				
	GOST (RUSSIA)			OT4-1	VST 5553				
	JIS (JAPAN)			ST-A90					
	SS (SWEDEN)								
	UNE (SPAIN)						38-729L-7701		
	UNI (ITALY)								
	IS (INDIA)								
	KS (REP. of KOREA)								
	GB/YB/JB/ SY/NB (PRC)								

Material Designation in Accordance with Selected Standards

Standards		Material Group No. 37	37	37	37	37	37	37	Material Group No. 38
	NF/AFNOR (FRANCE)								C 105 E 2 U; Y1 105; C105E2U
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)	R58210; Titanium Grade 21; Ti-15Mo-2.7Nb-3Al-0.2Si; B265	R58640; Titanium Grade 19; Ti-3Al-8V-6Cr-4Mo-4Zr	R58645; Titanium Grade 20; Ti-3Al-8V-6Cr-4Mo-4Zr	R58820; Titanium Grade 8Mo-8V-2Fe-3Al; Ti-8Mo-8V-2Fe-3Al				W110; T72301
	BS (UK)		TA38						
	DIN (GERMANY)								C105U; C 105 W 1; C 105 U
	Werkstoff (GERMANY)								1.1545
	EN (EUROPE)								C105U
	GOST (RUSSIA)					VT15	VT15-1	VT19	U10A-1; U10A-2; U11-1
	JIS (JAPAN)								SK 105; SK 3; TC 105
	SS (SWEDEN)								1880
	UNE (SPAIN)								F.515; F.516
	UNI (ITALY)								C 100 KU
	IS (INDIA)								
	KS (REP. of KOREA)								STC 105; STC 3
	GB/YB/JB/ SY/NB (PRC)								T10

Material Designation in Accordance with Selected Standards

Standards		Material Group No. 38	38	38	38	38	38	38	38	38	38
	NF/AFNOR (FRANCE)	35 NCD 14	C 105 E 2 UV 1; Y1 105 V; 100 V 2	50CrV4RR; 50 CV 4; 51 CV 4	34 CD 4		X40Cr14; Z 40 C 14			Z 30 WCV 9	
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)		W210; T72302	6145; 6150; 6150 H; G61500; H61500	P20; T51620			300M; 4340M; K44220		H21; T20821	S7; T41907
	BS (UK)	832 M 31	BW 2	735 A 50; 735 A 51; 735 H 51; 735 M 50; En 47	708 A 37					BH 21	
	DIN (GERMANY)	32NiCrMo14-5; 32 NiCrMo 14-5	100V1; 100 V 1	51CrV4; 50CrV4; 50 CrV 4	35CrMo4; 35 CrMo 4	26MnCr6-3	X40Cr14; X 42 Cr 13	41SiNiCrMoV7-6		X30WCrV9-3; X30WCrV9 3	50CrMoV13-4; 50 CrMoV 13 4; 50CrMoV13-15
	Werkstoff (GERMANY)	1.6746	1.2833	1.8159	1.2330	1.8721	1.2083; 1.2083 ESR	1.6928		1.2581	
	EN (EUROPE)	32NiCrMo14-5	100V1	51CrV4	35CrMo4	26MnCr6-3	X40Cr14	S 155		X30WCrV9-3; X30WCrV9 3	50CrMoV13-15
	GOST (RUSSIA)			50ChFA; 50ChGFA					30ChGSA	3Ch2W8F	
	JIS (JAPAN)		SKS 43	SUP 10; SUP 10-CSP; SUP 10 M			SUS 420 J 2			SKD 5	
	SS (SWEDEN)			2230	2234		2314				
	UNE (SPAIN)	F.1262-32 NiCrMo 12		F.143; F.143.A; 51 CrV 4; F.1430			F.5263; X 40 Cr 13			F.5323; X 30 WCrV 9	1.2357; 1.2355
	UNI (ITALY)		102 V 2 KU	50 CrV 4	35 CrMo 4		X 41 Cr 13 KU			X 30 WCrV 9 3 KU	
	IS (INDIA)										
	KS (REP. of KOREA)		SPS 4	SPS 10	SCM 435TK		STS 420J2				
	GB/YB/JB/ SY/NB (PRC)		T9 ; V	50CrVA	3CrMo		3Cr13				

Material Designation in Accordance with Selected Standards

Standards		Material Group No.									
		38	38	38	38	38	38	38	38	38	39
	NF/AFNOR (FRANCE)			Z 40 C 13		55WC20; 55 WC 20	Z 2 CN 18-10 M				X 160 CrMoV 12; Z 160 CDV 12
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)	A9; T30109	S6; T41906	420 C	414; S41400; AMS 5615	S1; T41901	K92710	K92890; AMS 6512	K93120; AMS 6514	K93540; AMS 6515	D2; T30402
	BS (UK)			420 S 45		BS 1		BS S162			BD 2
	DIN (GERMANY)			X39Cr13; X 38 Cr 13		60WCrV8; 60 WCrV 7	X2NiCoMo18-8-5	X2NiCoMo18-9-5; X2NiCoMo18-8-5	X2NiCoMo18-8-5	X2NiCoMo18-12; X2NiCoMoTi18-12-4	X153CrMoV12; X155CrVMo12-1; X155 CrVMo 12 1
	Werkstoff (GERMANY)			1.4031		1.2550	1.6359	1.6358; 1.6359	1.6354; 1.6359	1.6355; 1.6356	1.238
	EN (EUROPE)			X39Cr13		60WCrV8	X2NiCoMo18-8-5	X2NiCoMo18-8-5	X2NiCoMo18-8-5		X153CrMoV12
	GOST (RUSSIA)			40Ch13		6ChV2S; 5ChV2S					
	JIS (JAPAN)										SKD 10; SKD 11
	SS (SWEDEN)										2310
	UNE (SPAIN)										F.520.A
	UNI (ITALY)			X 40 Cr 14		55 WCrV 8 KU					X 155 CrVMo 12 1 KU
	IS (INDIA)										
	KS (REP. of KOREA)										
	GB/YB/JB/ SY/NB (PRC)										Cr12MoV

Material Designation in Accordance with Selected Standards

Standards		Material Group No. 39	39	39	39	39	39	39	39	39	39
	NF/AFNOR (FRANCE)	X200Cr12; Z 200 C 12	100Cr6RR; 100 C 6; 100Cr6; Y 100 C 6	90 MnV 8; 90 MV 8	X 40 CrMoV 5; Z 40 CDV 5		Z 100 CD 17 Cl; Z 100 CD 17			100 C 3	55 NCDV 7; 55 NiCrMoV7
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)	D3; T30403	L3; T61203	O2; T31502	H13; T20813		440C; S44004; S44025	440A; S44002; J91606		L2; T61202	L6; T61206
	BS (UK)	BD 3	BL 3; BL3	BO 2; BO2	BH 13						
	DIN (GERMANY)	X210Cr12; X 210 Cr 12	102Cr6; 102 Cr 6; 100 Cr 6	90MnCrV8; 90 MnCrV 8	X40CrMoV5-1; X40 CrMoV 5 1		X105CrMo17; X105 CrMo 17	X70CrMo15; X 65 CrMo 14	62SiMnCr4; 62 SiMnCr 4	115CrV3; 115 CrV 3	55NiCrMoV7; 56 NiCrMoV 7
	Werkstoff (GERMANY)	1.2080	1.2067	1.284	1.2344		1.4125	1.411	1.2101	1.2210	1.2714
	EN (EUROPE)	X210Cr12	102Cr6	90MnCrV8	X40CrMoV5-1		X105CrMo17	X70CrMo15		115CrV3	55NiCrMoV7
	GOST (RUSSIA)	Ch12	Ch		4Ch5MF1S		95Ch18; 110Ch18M-SchD				5ChGNM
	JIS (JAPAN)	SKD 1	SUJ 2		SKD 61		SUS 440 C				SKT 4
	SS (SWEDEN)				2242						
	UNE (SPAIN)	F.521; F.5212; X 210 Cr 12	F.5230; 100 Cr 6	90 MnCrV 8; F.5229	F.5318; X 40 CrMoSiV 5					F.520.L; F.5125	F.520.B; 55 NiCrMoV 7; F.5307
	UNI (ITALY)	X 205 Cr 12 KU	102 Cr 6 KU	90 MoVCr 8 KU	X 40 CrMoV 5 1 1 KU					107 CrV 3 KU	55 NiCrMoV 7 KU; 56 NiCrMoV 7 KU
	IS (INDIA)	T215Cr12									
	KS (REP. of KOREA)	STR 3	STB 2		STD 61	STF 4					
	GB/YB/JB/ SY/NB (PRC)	Cr12	Cr2	9Mn2V	40CrMoV5	5CrNiMo	9Cr18				

Material Designation in Accordance with Selected Standards

Standards		Material Group No. 39	39	39	39	39	39	39	39	39	39	39	39
	NF/AFNOR (FRANCE)									C 105 E 2 U; Y1 105; C105E2U	X200Cr12; Z 200 C 12	HS 2-8-1; Z 85 DCWV 08-04-02-01	18-0-1; HS 18-0-1; Z 80 WCV 18-04-01
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)	S2; T41902	S5; T41905	D7; T30407	A6; T30106	A8; T30108	440F; S44020	K93540; AMS 6515	W1; T72301	W110; T72301	D3; T30403	M1; H41; T11301; T20841	T1; T12001
	BS (UK)								BW 18		BD 3	BM 1	BT 1
	DIN (GERMANY)							X2NiCoMo18-12; X2NiCoMoTi18-12-4	C80W2; C 80 W2	C105U; C 105 W 1; C 105 U	X210Cr12; X 210 Cr 12	HS2-9-1; S 2-9-1	HS18-0-1; S 18-0-1
	Werkstoff (GERMANY)							1.6355; 1.6356	1.1625	1.1545	1.2080	1.3346	1.336
	EN (EUROPE)								C80W2	C105U	X210Cr12	HS2-9-1	HS18-0-1
	GOST (RUSSIA)								U8-1	U10A-1; U10A-2; U11-1	Ch12		R18
	JIS (JAPAN)								SK 75; SK 85; SK 85 M; SK 5; SK 5 M; SK 6	SK 105; SK 3; TC 105	SKD 1		SKH 2
	SS (SWEDEN)									1880			2750
	UNE (SPAIN)								F.520.U; F.5107; C 80	F.515; F.516	F.521; F.5212; X 210 Cr 12		F.5520; HS 18-0-1
	UNI (ITALY)									C 100 KU	X 205 Cr 12 KU		HS 18-0-1
	IS (INDIA)												
	KS (REP. of KOREA)									STC 105; STC 3			
	GB/YB/JB/ SY/NB (PRC)								T7	T10			W18Cr4V

Material Designation in Accordance with Selected Standards

Standards		Material Group No.										
		39	39	39	39	39	39	39	39	39	39	40
	NF/AFNOR (FRANCE)	90 MnV 8; 90 MV 8	Z 85 WDCV 06-05-04-02; 6-5-2; HS6-5-2						Z 80 WKCV 19-05-04-01; HS 18-1-1-5	Z 120 WDCV 06-05-04-03; HS6-5-3; Z 120 WDCV 06-05-04-04; HS6-5-4		
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)	O2; T31502	M2; T11302	D7; T30407	A3; T30103	A7; T30107	W5; T72305	P4; T51604	T4; T12004	M3 Class 2; T11323		A532 IB; Ni-Hard 2; Ni-Cr-Lc; F45001
	BS (UK)	BO 2; BO2	BM 2; BM2						BT 4			Grade 2 A
	DIN (GERMANY)	90MnCrV8; 90 MnCrV 8	HS6-5-2; HS 6-5-2; S 6-5-2					6CrMo15-5; X 6 CrMo 4	HS18-1-2-5; S 18-1-2-5	HS6-5-3; HS 6-5-3; S 6-5-3	HS6-5-3C	G-X 260 NiCr 4 2; EN-GJN-HV520; EN-GJN-HB480; EN-JN2029
	Werkstoff (GERMANY)	1.284	1.3343					1.234	1.3255	1.334	1.335	0.9620; 5.5602
	EN (EUROPE)	90MnCrV8	HS6-5-2						HS18-1-2-5	HS6-5-3	HS6-5-3C	EN-GJN-HB480; EN-JN2029
	GOST (RUSSIA)		R6M5									
	JIS (JAPAN)		SKH 51						SKH 3	SKH 52; SKH 53		
	SS (SWEDEN)		2722							2725		0512-00
	UNE (SPAIN)	90 MnCrV 8; F.5229	F.550.A; F.5604						F.5530; HS 18-1-1-5	F.5605; 6-5-3		
	UNI (ITALY)	90 MoVCr 8 KU							HS 18-1-1-5			
	IS (INDIA)		T83MoW6Cr4V2									
	KS (REP. of KOREA)		SKH 51									
	GB/YB/JB/ SY/NB (PRC)	9Mn2V	W6Mo5Cr4V2									

Material Designation in Accordance with Selected Standards

Standards		Material Group No. 40	40	40	40	40	40	40	40	40	40	40
	NF/AFNOR (FRANCE)											
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)				SAE J2477 AD 1400	F37006; A897 230-185-01; A897 (230/185/01); A897M 1600-1300-01; A897M (1600/1300/01); A897 Grade 5; SAE J2477 AD 1600						
	BS (UK)	Grade 1 A; Grade 1 B; Grade 1 C										
	DIN (GERMANY)	EN-GJN-HV350; EN-GJN-HB340; EN-JN2019	EN-GJN-HB400; EN-JN2059	EN-GJN-HB500	EN-GJS-HB400	EN-GJS-HB450	G-X 250 CrMoV 25					
	Werkstoff (GERMANY)	0.9610; 5.5600	5.5601	5.560	5.3406	5.3407	1.4192					
	EN (EUROPE)	EN-GJN-HB340; EN-JN2019	EN-GJN-HB400; EN-JN2059	EN-GJN-HB500	EN-GJS-HB400	EN-GJS-HB450						
	GOST (RUSSIA)							ChS15M4	ChS17	ChS17M3	ChKh16	ChKh22
	JIS (JAPAN)											
	SS (SWEDEN)											
	UNE (SPAIN)											
	UNI (ITALY)											
	IS (INDIA)											
	KS (REP. of KOREA)											
	GB/YB/JB/ SY/NB (PRC)											

Material Designation in Accordance with Selected Standards

Standards		Material Group No.							
		40	40	40	40	41	41	41	41
	NF/AFNOR (FRANCE)								
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)					A532 IID 20% CrMo-LC; A532 Class II Type D; F45007	A532 IIC 15% CrMo-HC; A532 Class II Type C; 15% CrMo; F45005	A532 IIIA 25% Cr; A532 Class III Type A	A532 ID; Ni-Hard 4; Ni-HiCr; F45003
	BS (UK)					Grade 3 C	Grade 3 A; Grade 3 B	Grade 3 D	Grade 2 C; Grade 2 D; Grade 2 E
	DIN (GERMANY)					G-X 260 CrMoNi 20 2 1; EN-GJN-HV600(XCr23); EN-GJN-HB555(XCr18); EN-JN3039	G-X 300 CrMo 15 3; G-X 300 CrMoNi 15 2 1; EN-GJN-HV600(XCr14)	G-X 260 Cr 27; EN-GJN-HB555(XCr23); EN-JN3049	G-X 300 CrNiSi 9 5 2; EN-GJN-HV600;
	Werkstoff (GERMANY)					0.9645; 5.5609	0.9635; 0.9640; 5.5608	0.9650; 5.5610	0.9630; 5.5605
	EN (EUROPE)					EN-GJN-HB555(XCr18); EN-JN3039	EN-GJN-HB555(XCr14)	EN-GJN-HB555(XCr23); EN-JN3049	EN-GJN-HB555; EN-JN2049
	GOST (RUSSIA)	ChKh28D2	ChG7Kh4	ChYu30	ChN3KhMDSha			ChWG	
	JIS (JAPAN)								
	SS (SWEDEN)							0466-00	0457-00
	UNE (SPAIN)								
	UNI (ITALY)								
	IS (INDIA)								
	KS (REP. of KOREA)								
	GB/YB/JB/ SY/NB (PRC)								

Material Designation in Accordance with Selected Standards

Standards		Material Group No.								
		41	41	41	41	41	41	41	41	41
	NF/AFNOR (FRANCE)									
	AISI/ASM/ ASTM/SAE/ UNS/AA (US)	A532 IA; Ni-Hard; F45000; Ni-Cr-Hc	A532 IIIA 25% Cr							
	BS (UK)	Grade 2 B	Grade 3 E							
	DIN (GERMANY)	G-X 330 NiCr 4 2; EN-GJN-HV550; EN-GJN-HB510; EN-JN2039	G-X 300 CrMo 27 1; EN-GJN-HB555(XCr23)	G-X 250 CrMoV 25						
	Werkstoff (GERMANY)	0.9625; 5.5604	0.9655; 5.5610	1.419						
	EN (EUROPE)	EN-GJN-HB510; EN-JN2039	EN-GJN-HB555(XCr23)							
	GOST (RUSSIA)		20Ch25N20S2		ChKh9N5	ChKh16M2	ChKh22	ChKh28D2	ChYu30	ChN3KhMDSha
	JIS (JAPAN)									
	SS (SWEDEN)	0513-00								
	UNE (SPAIN)									
	UNI (ITALY)									
	IS (INDIA)									
	KS (REP. of KOREA)									
	GB/YB/JB/ SY/NB (PRC)									

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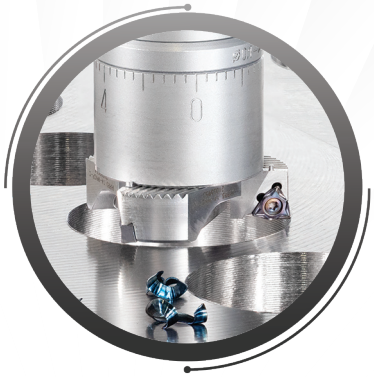
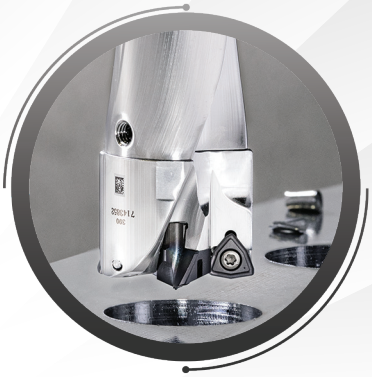
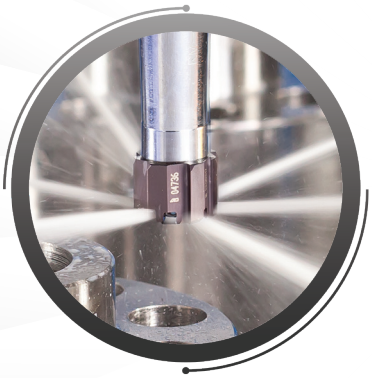
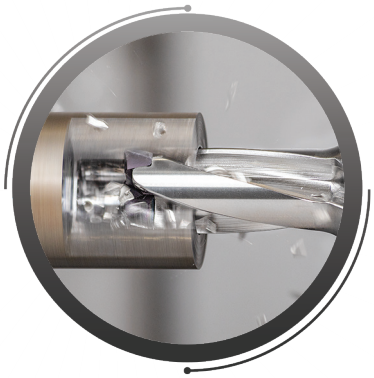

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