YOU

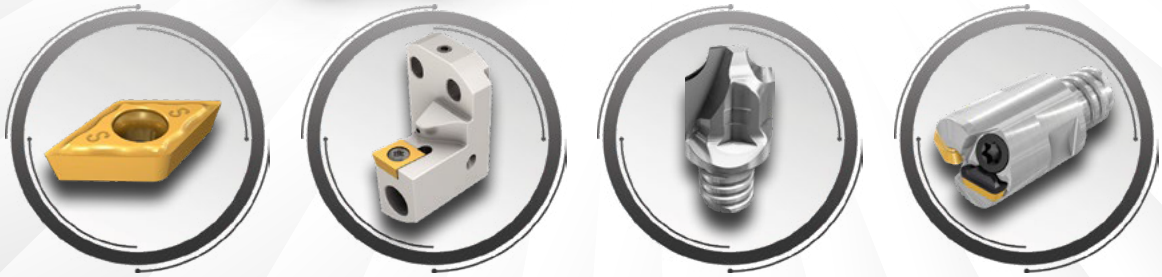
Metric · Imperial

INTELLIGENTLY?

MACHINING

ISCAR TOOLS FOR MINIATURE PARTS





TURNING | HOLEMAKING | MILLING | TOOL-HOLDERS

Member IMC Group

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PART 2



CERTIFIED QMS AS 9100 THE STANDARDS INSTITUTION OF ISRAEL

CERTIFIED QMS SI ISO 9001: 2015 THE STANDARDS INSTITUTION OF ISRAEL

CERTIFIED EMS SI ISO 14001: 2015 THE STANDARDS INSTITUTION OF ISRAEL

CERTIFIED OHS SYSTEM SI ISO 45001:2018 THE STANDARDS INSTITUTION OF ISRAEL

CERTIFIED ENERGY MANAGEMENT SYSTEM SI ISO 50001 THE STANDARDS INSTITUTION OF ISRAEL

CERTIFIED ISMS SI ISO 27001 2022 THE STANDARDS INSTITUTION OF ISRAEL

Quality Standard

ISCAR has been certified by the prestigious Standards Institution, as being in full compliance to ensure delivery of the finest quality goods. Quality control facilities include the metallurgical laboratory, raw metal testing, an online testing procedure and a machining center for tool performance testing and final product inspection. Only the finest products are packaged for entry into ISCAR's inventory.

HOLEMAKING TOOLS AND INSERTS

Miniature

YOU DRILLING INTELLIGENTLY?









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MULTI-FUNCTION TOOLS	906
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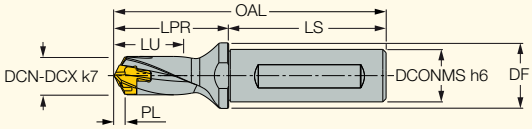
EXCHANGEABLE HEAD DRILLS



SUMOCHAM

DCN A-1.5D

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



M E T R I C

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

• Do not mount smaller drilling heads other than the specified range of the drill body • For user guide and cutting conditions, see pages 897-905

(1) Cutting diameter minimum

(2) Cutting diameter maximum

(3) Seat size code

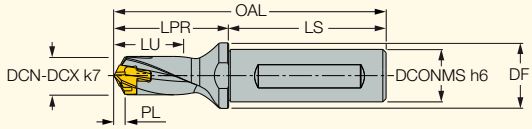
(4) Master insert identification

For inserts, see pages: ICP (870) • ICP-2M (879) • ICM (874) • ICN (878) • QCP-2M (893) • HCP-IQ (889) • FCP (885) • IHP (883)

SUMOCHAM

DCN A-1.5D

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



I N C H

Designation	DCN(1)	DCX(2)	DCONMS	DF	LU	LPR	PL	LS	OAL	SSC(3)	MIID(4)	
DCN 0236-035-050A-1.5D	.236	.255	.500	.630	.3920	.91	.03800	1.77	2.760	6.0	ICP 060	K DCN 6-9.99-Y
DCN 0256-038-050A-1.5D	.256	.274	.500	.630	.4300	.95	.04600	1.77	2.760	6.5	ICP 065	K DCN 6-9.99-Y
DCN 0275-043-050A-1.5D	.275	.294	.500	.630	.4530	.99	.04000	1.77	2.760	7.0	ICP 070	K DCN 6-9.99
DCN 0295-044-050A-1.5D	.295	.314	.500	.630	.4860	1.02	.04300	1.77	2.760	7.0	ICP 075	K DCN 6-9.99
DCN 0315-047-050A-1.5D	.315	.334	.500	.630	.5200	1.08	.04700	1.77	2.790	8.0	ICP 080	K DCN 6-9.99
DCN 0335-050-050A-1.5D	.335	.353	.500	.630	.5530	1.11	.05100	1.77	2.870	8.0	ICP 085	K DCN 6-9.99
DCN 0354-053-050A-1.5D	.354	.373	.500	.630	.5850	1.15	.05300	1.77	2.920	9.0	ICP 090	K DCN 6-9.99
DCN 0374-056-050A-1.5D	.374	.393	.500	.630	.6180	1.19	.05700	1.77	2.920	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 897-905

(1) Cutting diameter minimum

(2) Cutting diameter maximum

(3) Seat size code

(4) Master insert identification

For inserts, see pages: IHP (883) • ICP (870) • ICP-2M (879) • ICM (874) • ICN (878) • QCP-2M (893) • HCP-IQ (889) • FCP (885)

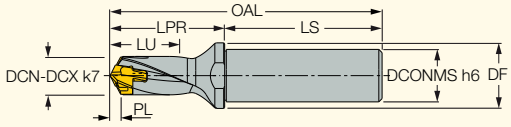


Standard Tools

SUMOCHAM

DCN R-1.5D

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



M E T R I C

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

• Do not mount smaller drilling heads other than the specified range of the drill body • For user guide and cutting conditions, see pages 897-905

(1) Cutting diameter minimum

(2) Cutting diameter maximum

(3) Seat size code

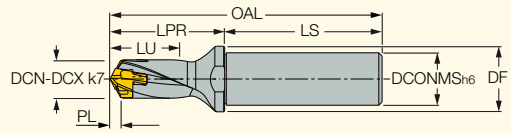
(4) Master insert identification

For inserts, see pages: ICP (870) • ICP-2M (879) • ICM (874) • ICN (878) • QCP-2M (893) • HCP-IQ (889) • FCP (885) • IHP (883)

SUMOCHAM

DCN R-1.5D

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



I N C H

Designation	DCN[1]	DCX[2]	DCONMS	DF	LU	LPR	PL	LS	OAL	SSC[3]	MIID[4]	
DCN 0236-035-050R-1.5D	.236	.255	.500	.630	.3920	.91	.03800	1.77	2.870	6.0	ICP 060	K DCN 6-9.99-Y
DCN 0256-038-050R-1.5D	.256	.274	.500	.630	.4300	.95	.04600	1.77	2.870	6.5	ICP 065	K DCN 6-9.99-Y
DCN 0275-043-050R-1.5D	.275	.294	.500	.630	.4530	.99	.04000	1.77	2.870	7.0	ICP 070	K DCN 6-9.99
DCN 0295-044-050R-1.5D	.295	.314	.500	.630	.4860	1.02	.04300	1.77	2.790	7.0	ICP 075	K DCN 6-9.99
DCN 0315-047-050R-1.5D	.315	.334	.500	.630	.5200	1.08	.04700	1.77	2.870	8.0	ICP 080	K DCN 6-9.99
DCN 0335-050-050R-1.5D	.335	.353	.500	.630	.5530	1.11	.05100	1.77	2.870	8.0	ICP 085	K DCN 6-9.99
DCN 0354-053-050R-1.5D	.354	.373	.500	.630	.5850	1.15	.05300	1.77	2.920	9.0	ICP 090	K DCN 6-9.99
DCN 0374-056-050R-1.5D	.374	.393	.500	.630	.6180	1.19	.05700	1.77	2.920	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 897-905

(1) Cutting diameter minimum

(2) Cutting diameter maximum

(3) Seat size code

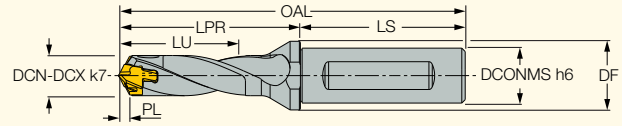
(4) Master insert identification

For inserts, see pages: IHP (883) • ICP (870) • ICP-2M (879) • ICM (874) • ICN (878) • QCP-2M (893) • HCP-IQ (889) • FCP (885)

SUMOCHAM

DCN A-3D

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



M E T R I C

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	32.00	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	33.80	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	35.60	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	37.10	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	39.40	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	40.90	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	42.80	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	44.30	1.440	45.0	89.30	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 897-905

(1) Cutting diameter minimum

(2) Cutting diameter maximum

(3) Seat size code

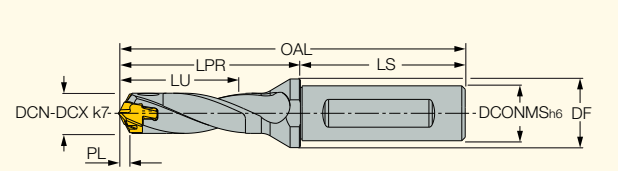
(4) Master insert identification

For inserts, see pages: ICP (870) • ICP-2M (879) • ICM (874) • ICN (878) • QCP-2M (893) • HCP-IQ (889) • FCP (885) • IHP (883)

SUMOCHAM

DCN A-3D

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



I N C H

Designation	DCN[1]	DCX[2]	DCONMS	DF	LU	LPR	PL	LS	OAL	SSC[3]	MIID[4]	
DCN 0236-071-050A-3D	.236	.255	.500	.630	.7460	1.26	.03800	1.77	3.030	6.0	ICP 060	K DCN 6-9.99-Y
DCN 0256-079-050A-3D	.256	.274	.500	.630	.8140	1.33	.04600	1.77	3.100	6.5	ICP 065	K DCN 6-9.99-Y
DCN 0275-082-050A-3D	.275	.294	.500	.630	.8670	1.40	.04000	1.77	3.170	7.0	ICP 070	K DCN 6-9.99
DCN 0295-089-050A-3D	.295	.314	.500	.630	.9290	1.46	.04300	1.77	3.230	7.0	ICP 075	K DCN 6-9.99
DCN 0315-094-050A-3D	.315	.334	.500	.630	.9920	1.55	.04700	1.77	3.320	8.0	ICP 080	K DCN 6-9.99
DCN 0335-100-050A-3D	.335	.353	.500	.630	1.0550	1.61	.05100	1.77	3.380	8.0	ICP 085	K DCN 6-9.99
DCN 0354-106-050A-3D	.354	.373	.500	.630	1.1160	1.69	.05300	1.77	3.460	9.0	ICP 090	K DCN 6-9.99
DCN 0374-112-050A-3D	.374	.393	.500	.630	1.1790	1.74	.05700	1.77	3.510	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 897-905

(1) Cutting diameter minimum

(2) Cutting diameter maximum

(3) Seat size code

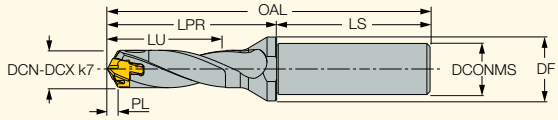
(4) Master insert identification

For inserts, see pages: IHP (883) • ICP (870) • ICP-2M (879) • ICM (874) • ICN (878) • QCP-2M (893) • HCP-IQ (889) • FCP (885)

SUMOCHAM

DCN R-3D

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



M E T R I C

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

• Do not mount smaller drilling heads other than the specified range of the drill body • For user guide and cutting conditions, see pages 897-905

(1) Cutting diameter minimum

(2) Cutting diameter maximum

(3) Seat size code

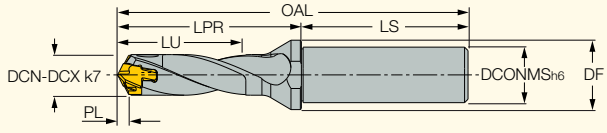
(4) Master insert identification

For inserts, see pages: ICP (870) • ICP-2M (879) • ICM (874) • ICN (878) • QCP-2M (893) • HCP-IQ (889) • FCP (885) • IHP (883)

SUMOCHAM

DCN R-3D

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



I N C H

Designation	DCN(1)	DCX(2)	DCONMS	DF	LU	LPR	PL	LS	OAL	SSC(3)	MIID(4)	
DCN 0236-071-050R-3D	.236	.255	.500	.630	.7460	1.26	.03800	1.77	3.030	6.0	ICP 060	K DCN 6-9.99-Y
DCN 0256-079-050R-3D	.256	.274	.500	.630	.8140	1.33	.04600	1.77	3.100	6.5	ICP 065	K DCN 6-9.99-Y
DCN 0275-082-050R-3D	.275	.294	.500	.630	.8670	1.40	.04000	1.77	3.170	7.0	ICP 070	K DCN 6-9.99
DCN 0295-089-050R-3D	.295	.314	.500	.630	.9290	1.46	.04300	1.77	3.170	7.0	ICP 075	K DCN 6-9.99
DCN 0315-094-050R-3D	.315	.334	.500	.630	.9920	1.55	.04700	1.77	3.320	8.0	ICP 080	K DCN 6-9.99
DCN 0335-100-050R-3D	.335	.353	.500	.630	1.0550	1.61	.05100	1.77	3.380	8.0	ICP 085	K DCN 6-9.99
DCN 0354-106-050R-3D	.354	.373	.500	.630	1.1160	1.69	.05300	1.77	3.460	9.0	ICP 090	K DCN 6-9.99
DCN 0374-112-050R-3D	.374	.393	.500	.630	1.1790	1.74	.05700	1.77	3.510	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 897-905

(1) Cutting diameter minimum

(2) Cutting diameter maximum

(3) Seat size code

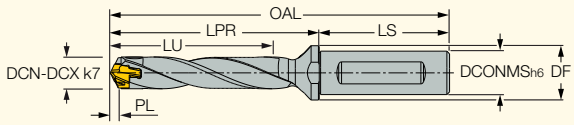
(4) Master insert identification

For inserts, see pages: IHP (883) • ICP (870) • ICP-2M (879) • ICM (874) • ICN (878) • QCP-2M (893) • HCP-IQ (889) • FCP (885)

SUMOCHAM

DCN A-5D

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



M E T R I C

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

• Do not mount smaller drilling heads other than the specified range of the drill body • For user guide and cutting conditions, see pages 897-905

(1) Cutting diameter minimum

(2) Cutting diameter maximum

(3) Seat size code

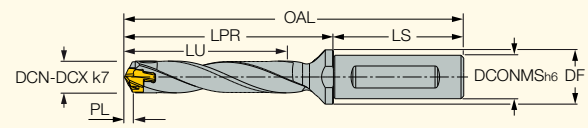
(4) Master insert identification

For inserts, see pages: ICP (870) • ICP-2M (879) • ICM (874) • ICN (878) • QCP-2M (893) • HCP-IQ (889) • FCP (885) • IHP (883)

SUMOCHAM

DCN A-5D

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



I N C H

Designation	DCN(1)	DCX(2)	DCONMS	DF	LU	LPR	PL	LS	OAL	SSC(3)	MIID(4)	
DCN 0236-118-050A-5D	.236	.255	.500	.630	1.2190	1.73	.03800	1.77	3.500	6.0	ICP 060	K DCN 6-9.99-Y
DCN 0256-130-050A-5D	.256	.274	.500	.630	1.3260	1.84	.04600	1.77	3.610	6.5	ICP 065	K DCN 6-9.99-Y
DCN 0275-138-050A-5D	.275	.294	.500	.630	1.4180	1.95	.04000	1.77	3.720	7.0	ICP 070	K DCN 6-9.99
DCN 0295-148-050A-5D	.295	.314	.500	.630	1.5200	2.05	.04300	1.77	3.820	7.0	ICP 075	K DCN 6-9.99
DCN 0315-157-050A-5D	.315	.334	.500	.630	1.6220	2.18	.04700	1.77	3.950	8.0	ICP 080	K DCN 6-9.99
DCN 0335-167-050A-5D	.335	.353	.500	.630	1.7240	2.28	.05100	1.77	4.050	8.0	ICP 085	K DCN 6-9.99
DCN 0354-177-050A-5D	.354	.373	.500	.630	1.8250	2.39	.05300	1.77	4.160	9.0	ICP 090	K DCN 6-9.99
DCN 0374-187-050A-5D	.374	.393	.500	.630	1.9270	2.49	.05700	1.77	4.260	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 897-905

(1) Cutting diameter minimum

(2) Cutting diameter maximum

(3) Seat size code

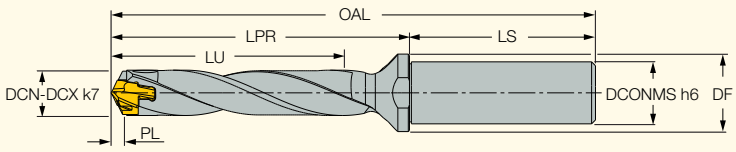
(4) Master insert identification

For inserts, see pages: IHP (883) • ICP (870) • ICP-2M (879) • ICM (874) • ICN (878) • QCP-2M (893) • HCP-IQ (889) • FCP (885)

SUMOCHAM

DCN R-5D

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



M E T R I C

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

• Do not mount smaller drilling heads other than the specified range of the drill body • For user guide and cutting conditions, see pages 897-905

[1] Cutting diameter minimum

[2] Cutting diameter maximum

[3] Seat size code

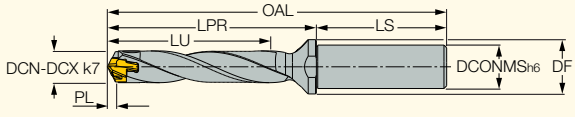
[4] Master insert identification

For inserts, see pages: ICP (870) • ICP-2M (879) • ICM (874) • ICN (878) • QCP-2M (893) • HCP-IQ (889) • FCP (885) • IHP (883)

SUMOCHAM

DCN R-5D

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



I N C H

Designation	DCN[1]	DCX[2]	DCONMS	DF	LU	LPR	PL	LS	OAL	SSC[3]	MIID[4]	
DCN 0236-118-050R-5D	.236	.255	.500	.630	1.2190	1.73	.03800	1.77	3.500	6.0	ICP 060	K DCN 6-9.99-Y
DCN 0256-130-050R-5D	.256	.274	.500	.630	1.3260	1.84	.04600	1.77	3.610	6.5	ICP 065	K DCN 6-9.99-Y
DCN 0275-138-050R-5D	.275	.294	.500	.630	1.4180	1.95	.04000	1.77	3.730	7.0	ICP 070	K DCN 6-9.99
DCN 0295-148-050R-5D	.295	.314	.500	.630	1.5200	2.05	.04300	1.77	3.820	7.0	ICP 075	K DCN 6-9.99
DCN 0315-157-050R-5D	.315	.334	.500	.630	1.6220	2.18	.04700	1.77	3.950	8.0	ICP 080	K DCN 6-9.99
DCN 0335-167-050R-5D	.335	.353	.500	.630	1.7240	2.28	.05100	1.77	4.050	8.0	ICP 085	K DCN 6-9.99
DCN 0354-177-050R-5D	.354	.373	.500	.630	1.8250	2.39	.05300	1.77	4.160	9.0	ICP 090	K DCN 6-9.99
DCN 0374-187-050R-5D	.374	.393	.500	.630	1.9270	2.49	.05700	1.77	4.260	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 897-905

[1] Cutting diameter minimum

[2] Cutting diameter maximum

[3] Seat size code

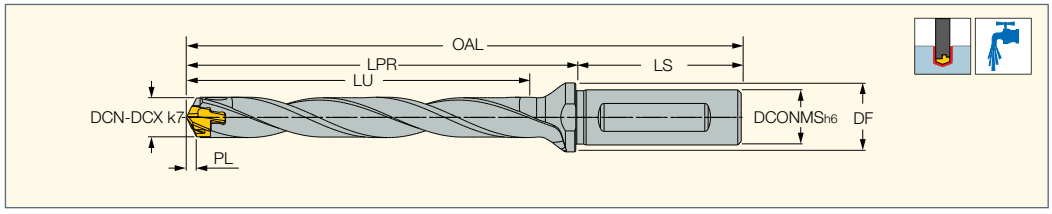
[4] Master insert identification

For inserts, see pages: IHP (883) • ICP (870) • ICP-2M (879) • ICM (874) • ICN (878) • QCP-2M (893) • HCP-IQ (889) • FCP (885)

SUMOCHAM

DCN A-8D

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



M E T R I C

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

- 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 897-905

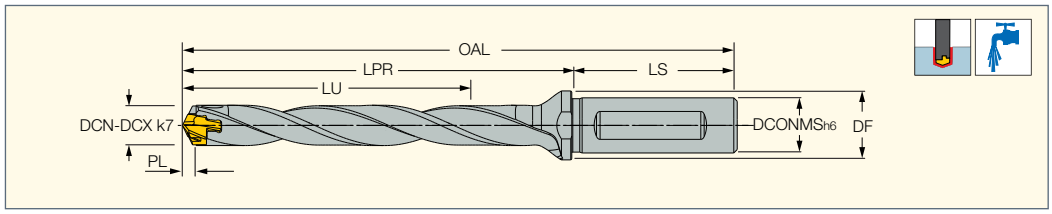
[1] Cutting diameter minimum
[2] Cutting diameter maximum
[3] Seat size code
[4] Master insert identification

For inserts, see pages: ICP (870) • ICP-2M (879) • ICM (874) • ICN (878) • QCP-2M (893) • HCP-IQ (889) • FCP (885) • IHP (883)

SUMOCHAM

DCN A-8D

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



I N C H

Designation	DCN[1]	DCX[2]	DCONMS	DF	LU	LPR	PL	LS	OAL	SSC[3]	MIID[4]	
DCN 0236-188-050A-8D	.236	.255	.500	.630	1.9280	2.44	.03800	1.77	4.210	6.0	ICP 060	K DCN 6-9.99-Y
DCN 0256-205-050A-8D	.256	.274	.500	.630	2.0940	2.61	.04600	1.77	4.380	6.5	ICP 065	K DCN 6-9.99-Y
DCN 0275-220-050A-8D	.275	.294	.500	.630	2.2440	2.78	.04000	1.77	4.550	7.0	ICP 070	K DCN 6-9.99
DCN 0295-236-050A-8D	.295	.314	.500	.630	2.4060	2.94	.04300	1.77	4.700	7.0	ICP 075	K DCN 6-9.99
DCN 0315-252-050A-8D	.315	.334	.500	.630	2.5670	3.13	.04700	1.77	4.900	8.0	ICP 080	K DCN 6-9.99
DCN 0335-268-050A-8D	.335	.353	.500	.630	2.7280	3.28	.05100	1.77	5.050	8.0	ICP 085	K DCN 6-9.99
DCN 0354-283-050A-8D	.354	.373	.500	.630	2.8880	3.46	.05300	1.77	5.230	9.0	ICP 090	K DCN 6-9.99
DCN 0374-299-050A-8D	.374	.393	.500	.630	3.0490	3.61	.05700	1.77	5.380	9.0	ICP 095	K DCN 6-9.99

- 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 897-905

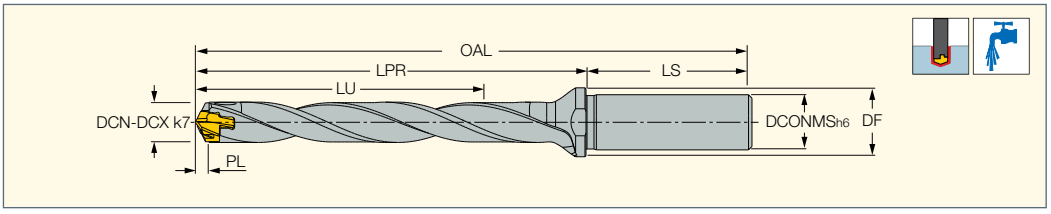
[1] Cutting diameter minimum
[2] Cutting diameter maximum
[3] Seat size code
[4] Master insert identification

For inserts, see pages: IHP (883) • ICP (870) • ICP-2M (879) • ICM (874) • ICN (878) • QCP-2M (893) • HCP-IQ (889) • FCP (885)

SUMOCHAM

DCN R-8D

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



M E T R I C

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	62.00	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	66.30	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	70.60	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	74.60	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	79.40	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	83.40	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	87.80	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	91.80	1.440	45.0	136.80	9.0	ICP 095	K DCN 6-9.99

- 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 897-905

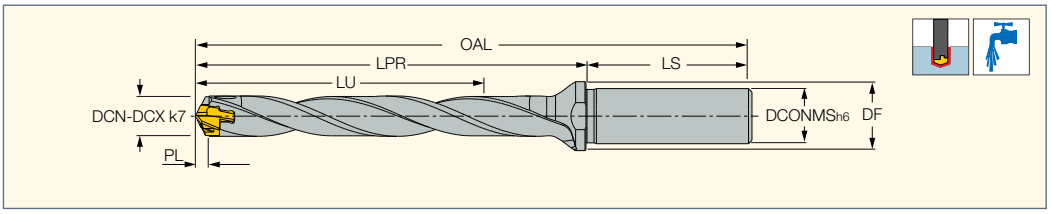
[1] Cutting diameter minimum
[2] Cutting diameter maximum
[3] Seat size code
[4] Master insert identification

For inserts, see pages: ICP (870) • ICP-2M (879) • ICM (874) • ICN (878) • QCP-2M (893) • HCP-IQ (889) • FCP (885) • IHP (883)

SUMOCHAM

DCN R-8D

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



I N C H

Designation	DCN[1]	DCX[2]	DCONMS	DF	LU	LPR	PL	LS	OAL	SSC[3]	MIID[4]	
DCN 0236-188-050R-8D	.236	.255	.500	.630	1.9280	2.44	.03800	1.77	4.210	6.0	ICP 060	K DCN 6-9.99-Y
DCN 0256-205-050R-8D	.256	.274	.500	.630	2.0940	2.61	.04600	1.77	4.380	6.5	ICP 065	K DCN 6-9.99-Y
DCN 0275-220-050R-8D	.275	.294	.500	.630	2.2440	2.78	.04000	1.77	4.550	7.0	ICP 070	K DCN 6-9.99
DCN 0295-236-050R-8D	.295	.314	.500	.630	2.4060	2.94	.04300	1.77	4.700	7.0	ICP 075	K DCN 6-9.99
DCN 0315-252-050R-8D	.315	.334	.500	.630	2.5670	3.13	.04700	1.77	4.900	8.0	ICP 080	K DCN 6-9.99
DCN 0335-268-050R-8D	.335	.353	.500	.630	2.7280	3.28	.05100	1.77	5.050	8.0	ICP 085	K DCN 6-9.99
DCN 0354-283-050R-8D	.354	.373	.500	.630	2.8880	3.46	.05300	1.77	5.230	9.0	ICP 090	K DCN 6-9.99
DCN 0374-299-050R-8D	.374	.393	.500	.630	3.0490	3.61	.05700	1.77	5.380	9.0	ICP 095	K DCN 6-9.99

- 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 897-905

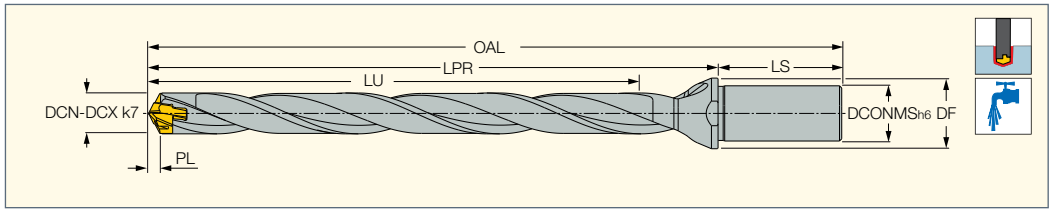
[1] Cutting diameter minimum
[2] Cutting diameter maximum
[3] Seat size code
[4] Master insert identification

For inserts, see pages: IHP (883) • ICP (870) • ICP-2M (879) • ICM (874) • ICN (878) • QCP-2M (893) • HCP-IQ (889) • FCP (885)

SUMOCHAM

DCN R-12D

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



M E T R I C

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

- 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 897-905

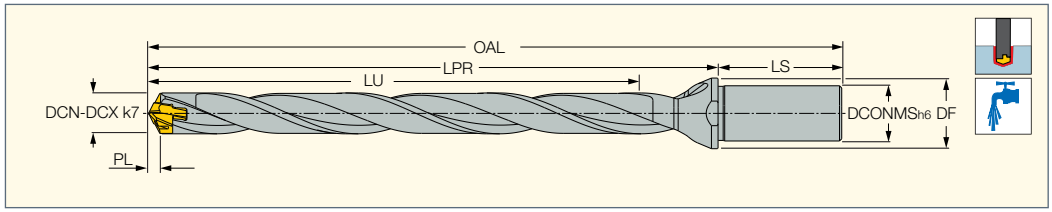
(1) Cutting diameter minimum
(2) Cutting diameter maximum
(3) Seat size code
(4) Master insert identification

For inserts, see pages: ICP (870) • ICP-2M (879) • ICM (874) • ICN (878) • QCP-2M (893) • HCP-IQ (889) • FCP (885) • IHP (883)

SUMOCHAM

DCN R-12D

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



I N C H

Designation	DCN(1)	DCX(2)	DCONMS	DF	LU	LPR	PL	LS	OAL	SSC(3)	MIID(4)	
DCN 0315-378-050R-12D	.315	.354	.500	.625	3.8270	4.39	.04700	1.77	6.160	8.0	ICP 080	K DCN 6-9.99
DCN 0335-402-050R-12D	.335	.353	.500	.625	4.0670	4.62	.05100	1.77	6.390	8.0	ICP 085	K DCN 6-9.99
DCN 0354-425-050R-12D	.354	.373	.500	.625	4.3050	4.87	.05300	1.77	6.640	9.0	ICP 090	K DCN 6-9.99
DCN 0374-449-050R-12D	.374	.393	.500	.625	4.5450	5.11	.05700	1.77	6.880	9.0	ICP 095	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 897-905

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

For inserts, see pages: IHP (883) • ICP (870) • ICP-2M (879) • ICM (874) • ICN (878) • QCP-2M (893) • HCP-IQ (889) • FCP (885)

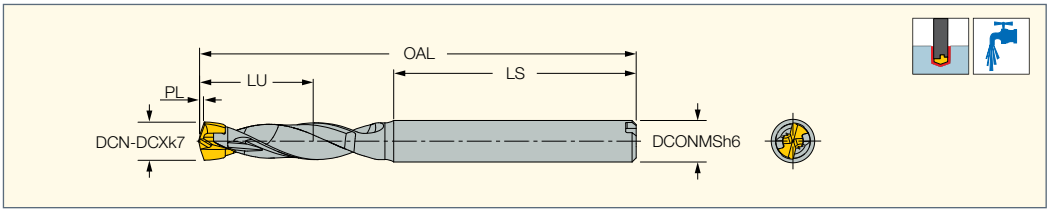


Standard Tools

SUMOCHAM

DCN C-3D

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



M E T R I C

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 897-905

(1) The SK DCN key is supplied with the insert

(2) Cutting diameter minimum

(3) Cutting diameter maximum

(4) Seat size code

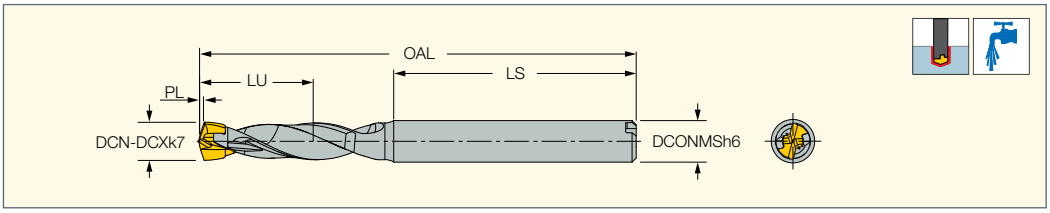
(5) Master insert identification

For inserts, see pages: ICP (870) • ICP-2M (879) • ICM (874) • ICN (878) • QCP-2M (893) • HCP-IQ (889) • FCP (885)

SUMOCHAM

DCN C-3D

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



I N C H

Designation	DCN(2)	DCX(3)	DCONMS	LU	PL	LS	OAL	SSC(4)	MIID(5)	
DCN 0157-047-0236C-3D (1)	.157	.177	.236	.4969	.02440	1.38	2.272	4.0	ICP 040	
DCN 0177-055-0236C-3D (1)	.177	.196	.236	.5575	.02598	1.38	2.348	4.5	ICP 045	
DCN 0197-059-0236C-3D (1)	.197	.216	.236	.6193	.02874	1.38	2.413	5.0	ICP 050	
DCN 0216-067-0236C-3D (1)	.217	.236	.236	.6815	.03188	1.38	2.486	5.5	ICP 055	
DCN 0236-071-0315C-3D	.236	.256	.315	.7464	.03779	1.42	2.520	6.0	ICP 060	K DCN 6-9.99-Y
DCN 0256-079-0315C-3D	.256	.275	.315	.8142	.04645	1.42	2.591	6.5	ICP 065	K DCN 6-9.99-Y
DCN 0275-082-0315C-3D	.276	.295	.315	.8665	.03976	1.42	2.661	7.0	ICP 070	K DCN 6-9.99
DCN 0295-089-0315C-3D	.295	.315	.315	.9291	.04330	1.42	2.720	7.0	ICP 075	K DCN 6-9.99
DCN 0315-094-0394C-3D	.315	.334	.394	.9921	.04724	1.57	2.969	8.0	ICP 080	K DCN 6-9.99
DCN 0335-102-0394C-3D	.335	.354	.394	1.0547	.05078	1.57	3.028	8.0	ICP 085	K DCN 6-9.99
DCN 0354-106-0394C-3D	.354	.374	.394	1.1161	.05314	1.57	3.102	9.0	ICP 090	K DCN 6-9.99
DCN 0374-112-0394C-3D	.374	.393	.394	1.1787	.05669	1.57	3.161	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 897-905

(1) The SK DCN key is supplied with the insert

(2) Cutting diameter minimum

(3) Cutting diameter maximum

(4) Seat size code

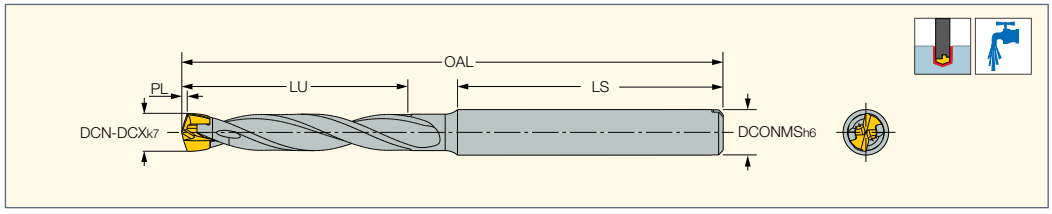
(5) Master insert identification

For inserts, see pages: ICP (870) • ICP-2M (879) • ICM (874) • ICN (878) • QCP-2M (893) • HCP-IQ (889) • FCP (885)

SUMOCHAM

DCN C-5D

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



M E T R I C

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 897-905

(1) The SK DCN key is supplied with the insert

(2) Cutting diameter minimum

(3) Cutting diameter maximum

(4) Seat size code

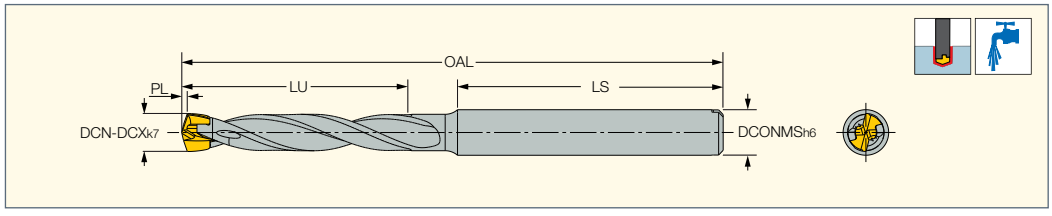
(5) Master insert identification

For inserts, see pages: ICP (870) • ICP-2M (879) • ICM (874) • ICN (878) • QCP-2M (893) • HCP-IQ (889) • FCP (885)

SUMOCHAM

DCN C-5D

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



I N C H

Designation	DCN(2)	DCX(3)	DCONMS	LU	PL	LS	OAL	SSC(4)	MIID(5)	
DCN 0157-079-0236C-5D (1)	.157	.177	.236	.8118	.02440	1.38	2.587	4.0	ICP 040	
DCN 0177-090-0236C-5D (1)	.177	.196	.236	.9118	.02598	1.38	2.703	4.5	ICP 045	
DCN 0197-098-0236C-5D (1)	.197	.216	.236	1.0130	.02874	1.38	2.807	5.0	ICP 050	
DCN 0216-110-0236C-5D (1)	.217	.236	.236	1.1146	.03188	1.38	2.919	5.5	ICP 055	
DCN 0236-118-0315C-5D	.236	.256	.315	1.2189	.03779	1.42	2.992	6.0	ICP 060	K DCN 6-9.99-Y
DCN 0256-130-0315C-5D	.256	.275	.315	1.3260	.04645	1.42	3.102	6.5	ICP 065	K DCN 6-9.99-Y
DCN 0275-138-0315C-5D	.276	.295	.315	1.4177	.03976	1.42	3.213	7.0	ICP 070	K DCN 6-9.99
DCN 0295-148-0315C-5D	.295	.315	.315	1.5197	.04330	1.42	3.311	7.0	ICP 075	K DCN 6-9.99
DCN 0315-157-0394C-5D	.315	.334	.394	1.6220	.04724	1.57	3.598	8.0	ICP 080	K DCN 6-9.99
DCN 0335-169-0394C-5D	.335	.354	.394	1.7240	.05078	1.57	3.697	8.0	ICP 085	K DCN 6-9.99
DCN 0354-177-0394C-5D	.354	.374	.394	1.8248	.05314	1.57	3.811	9.0	ICP 090	K DCN 6-9.99
DCN 0374-187-0394C-5D	.374	.393	.394	1.9268	.05669	1.57	3.909	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 897-905

(1) The SK DCN key is supplied with the insert

(2) Cutting diameter minimum

(3) Cutting diameter maximum

(4) Seat size code

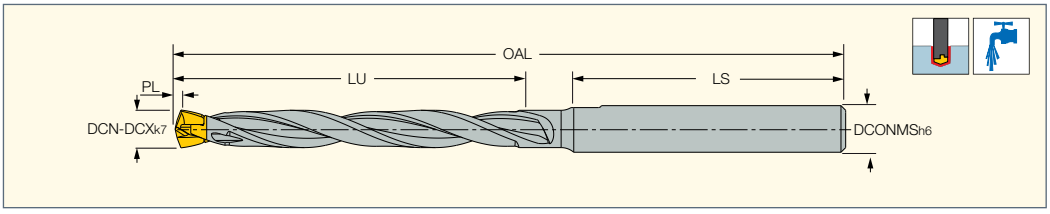
(5) Master insert identification

For inserts, see pages: ICP (870) • ICP-2M (879) • ICM (874) • ICN (878) • QCP-2M (893) • HCP-IQ (889) • FCP (885)

SUMOCHAM

DCN C-8D

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



M E T R I C

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 897-905

[1] Cutting diameter minimum

[2] Cutting diameter maximum

[3] Seat size code

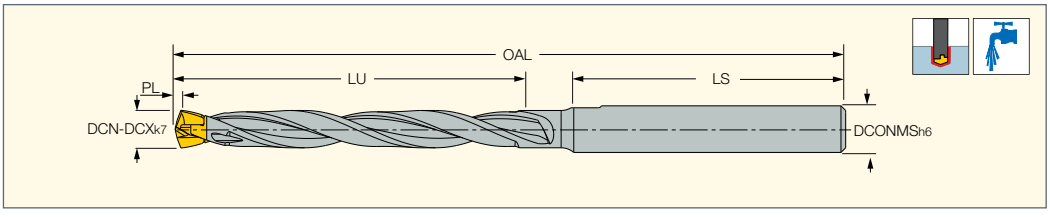
[4] Master insert identification

For inserts, see pages: ICP (870) • ICM (874) • ICN (878) • HCP-IQ (889) • FCP (885)

SUMOCHAM

DCN C-8D

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



I N C H

Designation	DCN[1]	DCX[2]	DCONMS	LU	PL	LS	OAL	SSC[3]	MIID[4]
DCN 0157-125-0236C-8D	.157	.177	.236	1.2842	.02440	1.378	3.059	4.0	ICP 040
DCN 0177-141-0236C-8D	.177	.196	.236	1.4433	.02598	1.378	3.234	4.5	ICP 045
DCN 0197-157-0236C-8D	.197	.216	.236	1.6035	.02874	1.378	3.398	5.0	ICP 050
DCN 0216-172-0236C-8D	.217	.236	.236	1.7642	.03188	1.378	3.569	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 897-905

[1] Cutting diameter minimum

[2] Cutting diameter maximum

[3] Seat size code

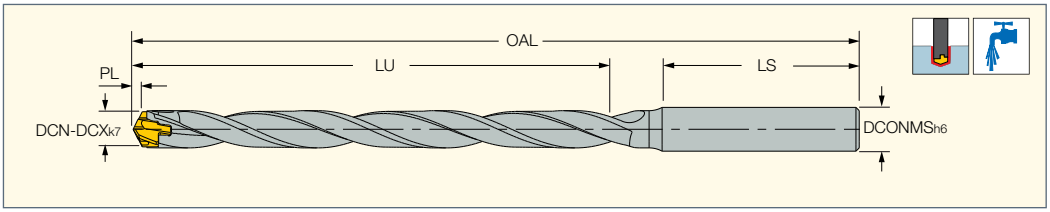
[4] Master insert identification

For inserts, see pages: ICP (870) • ICM (874) • ICN (878) • HCP-IQ (889) • FCP (885)

SUMOCHAM

DCN C-12D

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



M E T R I C

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 897-905

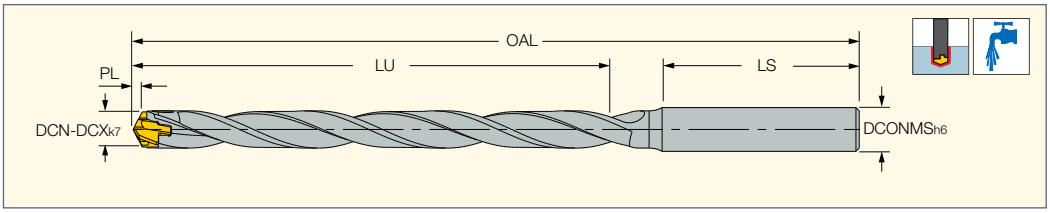
(1) Cutting diameter minimum
(2) Cutting diameter maximum
(3) Seat size code
(4) Master insert identification

For inserts, see pages: ICP (870) • ICP-2M (879) • ICM (874) • ICN (878) • QCP-2M (893) • HCP-IQ (889) • FCP (885)

SUMOCHAM

DCN C-12D

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



I N C H

Designation	DCN(1)	DCX(2)	DCONMS	LU	PL	LS	OAL	SSC(3)	MIID(4)	
DCN 0236-283-0314C-12D	.236	.256	.315	2.8724	.03779	1.417	4.724	6.0	ICP 060	K DCN 6-9.99-Y
DCN 0256-307-0314C-12D	.256	.275	.315	3.1173	.04645	1.417	4.972	6.5	ICP 065	K DCN 6-9.99-Y
DCN 0275-331-0314C-12D	.276	.295	.315	3.3468	.03976	1.417	5.220	7.0	ICP 070	K DCN 6-9.99
DCN 0295-354-0314C-12D	.295	.315	.315	3.5866	.04330	1.417	5.378	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 897-905

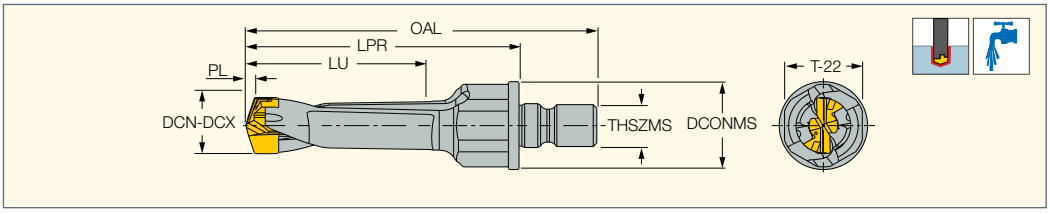
(1) Cutting diameter minimum
(2) Cutting diameter maximum
(3) Seat size code
(4) Master insert identification

For inserts, see pages: ICP (870) • ICP-2M (879) • ICM (874) • ICN (878) • QCP-2M (893) • HCP-IQ (889) • FCP (885)

SUMOCHAM

DCNM

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



M E T R I C

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

- Before mounting the FLEX-FIT adaptation, clean the mating surfaces and threads. Tighten to eliminate gaps, using the torque value from TQ_3.
- Do not mount smaller drilling heads other than the specified range of the drill body • For user guide and cutting conditions, see pages 897-905

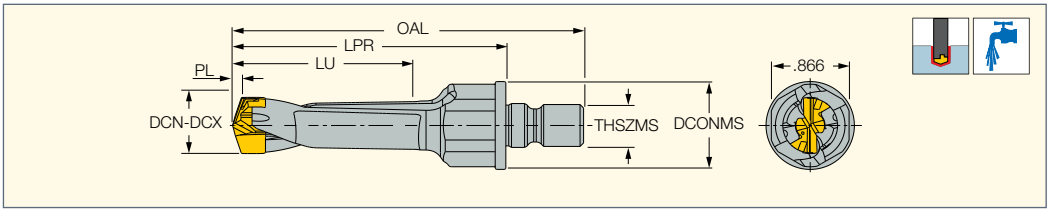
(1) Cutting diameter minimum
(2) Cutting diameter maximum
(3) Seat size code
(4) Master insert identification
(5) Tool tightening torque Nxm (lbfxin)

For inserts, see pages: • ICP (870) • ICP-2M (879) • ICM (874) • ICN (878) • QCP-2M (893) • HCP-IQ (889) • FCP (885) • IHP (883)

SUMOCHAM

DCNM

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



I N C H

Designation	DCN(1)	DCX(2)	DCONMS	LU	LPR	PL	OAL	THSZMS	SSC(3)	MIID(4)	TQ_3(5)	
DCNM 060-018-M12-3D	.236	.256	.984	.8661	1.65	.03779	2.520	M12	6.0	ICP 060	295	K DCN 6-9.99-Y
DCNM 065-020-M12-3D	.256	.275	.984	.9567	1.74	.04645	2.610	M12	6.5	ICP 065	295	K DCN 6-9.99-Y
DCNM 070-021-M12-3D	.276	.295	.984	1.0079	1.80	.03976	2.661	M12	7.0	ICP 070	295	K DCN 6-9.99
DCNM 075-023-M12-3D	.295	.315	.984	1.0866	1.87	.04330	2.740	M12	7.0	ICP 075	295	K DCN 6-9.99
DCNM 080-024-M12-3D	.315	.334	.984	1.1575	1.94	.04724	2.811	M12	8.0	ICP 080	295	K DCN 6-9.99
DCNM 085-025-M12-3D	.335	.354	.984	1.1969	1.98	.05078	2.850	M12	8.0	ICP 085	295	K DCN 6-9.99
DCNM 090-027-M12-3D	.354	.374	.984	1.2913	2.08	.05314	2.945	M12	9.0	ICP 090	295	K DCN 6-9.99
DCNM 095-029-M12-3D	.374	.393	.984	1.3701	2.16	.05669	3.024	M12	9.0	ICP 095	295	K DCN 6-9.99
DCNM 100-030-M12-3D	.394	.413	.984	1.4252	2.21	.05905	3.079	M12	10.0	ICP 100	295	K DCN 10-13.99
DCNM 105-032-M12-3D	.413	.433	.984	1.5039	2.29	.06259	3.157	M12	10.0	ICP 105	295	K DCN 10-13.99
DCNM 110-033-M12-3D	.433	.452	.984	1.5591	2.35	.06574	3.213	M12	11.0	ICP 110	295	K DCN 10-13.99
DCNM 115-035-M12-3D	.453	.472	.984	1.6378	2.43	.06929	3.291	M12	11.0	ICP 115	295	K DCN 10-13.99
DCNM 120-036-M12-3D	.472	.492	.984	1.6929	2.48	.07165	3.346	M12	12.0	ICP 120	295	K DCN 10-13.99

- Before mounting the FLEX-FIT adaptation, clean the mating surfaces and threads. Tighten to eliminate gaps, using the torque value from TQ_3.
- Do not mount smaller drilling heads other than the specified range of the drill body • For user guide and cutting conditions, see pages 897-905

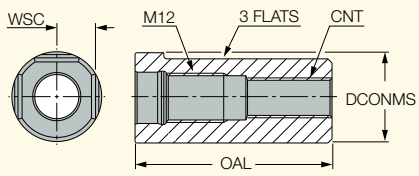
(1) Cutting diameter minimum
(2) Cutting diameter maximum
(3) Seat size code
(4) Master insert identification
(5) Tool tightening torque Nxm (lbfxin)

For inserts, see pages: ICP (870) • ICP-2M (879) • ICM (874) • ICN (878) • QCP-2M (893) • HCP-IQ (889) • FCP (885) • IHP (883)

FLEXFIT

FLEX-FIT HOLDER

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



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

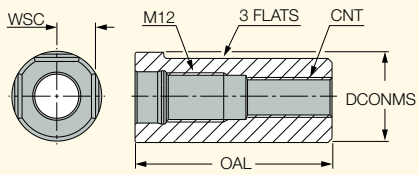
(1) For all 3 flats

For tools, see pages: DCNM (865)

FLEXFIT

FLEX-FIT HOLDER

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



I N C H				
Designation	**DCONMS**	**OAL**	**WSC(1)**	**CNT**
FLEX-FIT 160-HOLDER-DCN-MS	.630	1.417	.30	5/16"-24
FLEX-FIT 1905-HOLDER-DCNMS	.750	1.417	.33	5/16"-24
FLEX-FIT 200-HOLDER-DCN-MS	.787	1.417	.33	G1/8" BSP
FLEX-FIT 220-HOLDER-DCN-MS	.866	1.890	.37	G1/8" BSP
FLEX-FIT 250-HOLDER-DCN-MS	.984	2.126	.43	G1/8" BSP
FLEX-FIT 254-HOLDER-DCN-MS	1.000	2.126	.43	G1/8" BSP

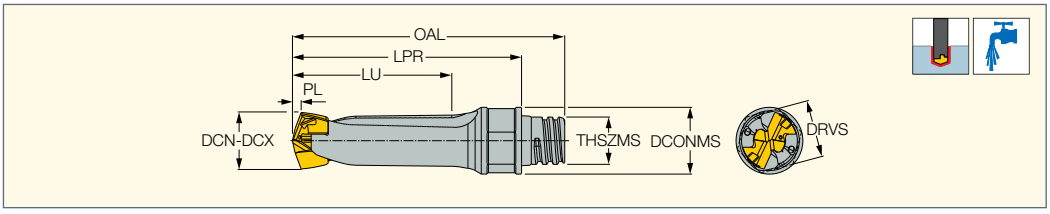
(1) For all 3 flats

For tools, see pages: DCNM (865)

SUMOCHAM

DCN-MM

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



M E T R I C

Designation	DCN[2]	DCX[3]	DCONMS	LU	LPR	PL	OAL	THSZMS	SSC[4]	MIID[5]	DRVS[6]	CSP[7]	
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	1	
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	1	
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	1	
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	1	
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	1	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	1	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	1	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	1	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	1	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	1	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	1	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	1	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	1	K DCN 10-13.99

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

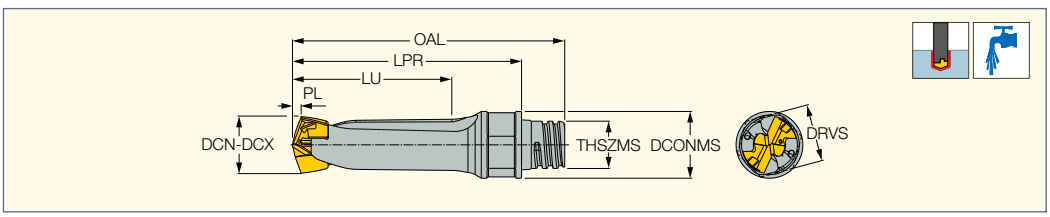
[1] The SK DCN key is supplied with the insert
[2] Cutting diameter minimum
[3] Cutting diameter maximum
[4] Seat size code
[5] Master insert identification
[6] Torque key size
[7] 0 - Without coolant supply, 1 - With coolant supply

For inserts, see pages: FCP (885) • HCP-IQ (889) • ICM (874) • ICN (878) • ICP (870) • ICP-2M (879) • IHP (883) • QCP-2M (893)

SUMOCHAM

DCN-MM

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



I N C H

Designation	DCN[2]	DCX[3]	DCONMS	LU	LPR	PL	OAL	THSZMS	SSC[4]	MIID[5]	DRVS[6]	CSP[7]	
DCN 0157-031-MMT05-2D [1]	.157	.177	.299	.3394	.866	.02440	1.132	T05	4.0	ICP 0157	.217	1	
DCN 0177-035-MMT05-2D [1]	.177	.196	.299	.3803	.917	.02598	1.183	T05	4.5	ICP 0177	.217	1	
DCN 0197-039-MMT06-2D [1]	.197	.216	.378	.4224	1.073	.02874	1.321	T06	5.0	ICP 0197	.315	1	
DCN 0216-043-MMT06-2D [1]	.217	.236	.378	.4650	1.083	.03188	1.331	T06	5.5	ICP 0216	.315	1	
DCN 0236-047-MMT06-2D	.236	.256	.378	.5102	1.098	.03779	1.346	T06	6.0	ICP 0236	.315	1	K DCN 6-9.99-Y
DCN 0256-051-MMT06-2D	.256	.275	.378	.5583	1.161	.04645	1.409	T06	6.5	ICP 0256	.315	1	K DCN 6-9.99-Y
DCN 0275-055-MMT06-2D	.276	.295	.378	.5909	1.185	.03976	1.433	T06	7.0	ICP 0275	.315	1	K DCN 6-9.99
DCN 0295-059-MMT06-2D	.295	.315	.378	.6303	1.224	.04330	1.472	T06	7.0	ICP 0295	.315	1	K DCN 6-9.99
DCN 0315-063-MMT06-2D	.315	.334	.378	.6764	1.295	.04724	1.543	T06	8.0	ICP 0315	.315	1	K DCN 6-9.99
DCN 0335-067-MMT06-2D	.335	.354	.378	.7201	1.335	.05078	1.582	T06	8.0	ICP 0335	.315	1	K DCN 6-9.99
DCN 0354-071-MMT08-2D	.354	.374	.457	.7618	1.472	.05314	1.768	T08	9.0	ICP 0354	.394	1	K DCN 6-9.99
DCN 0374-075-MMT08-2D	.374	.393	.457	.8047	1.512	.05669	1.807	T08	9.0	ICP 0374	.394	1	K DCN 6-9.99
DCN 0394-079-MMT08-2D	.394	.413	.457	.8465	1.567	.05905	1.862	T08	10.0	ICP 0394	.394	1	K DCN 10-13.99

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

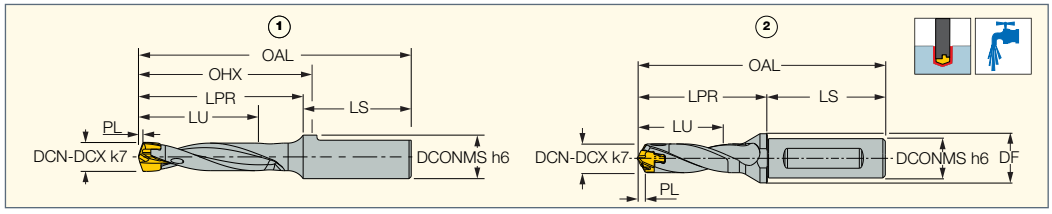
[1] The SK DCN key is supplied with the insert
[2] Cutting diameter minimum
[3] Cutting diameter maximum
[4] Seat size code
[5] Master insert identification
[6] Torque key size
[7] 0 - Without coolant supply, 1 - With coolant supply

For inserts, see pages: FCP (885) • HCP-IQ (889) • ICM (874) • ICN (878) • ICP (870) • ICP-2M (879) • IHP (883) • QCP-2M (893)

PICCOSUMOCHAM

DCN-PICCO

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



M E T R I C

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

• Do not mount smaller drilling heads other than the specified range of the drill body • For user guide and cutting conditions, see pages 897-905

(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

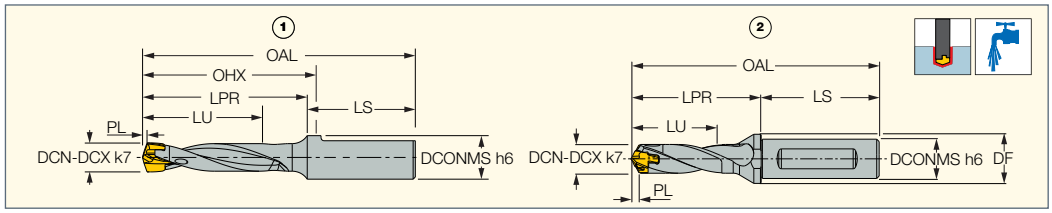
(6) Master insert identification

For inserts, see pages: ICP (870) • ICM (874) • ICN (878) • ICP-2M (879) • FCP (885) • HCP-IQ (889) • QCP-2M (893) • IHP (883)

PICCOSUMOCHAM

DCN-PICCO

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



I N C H

Designation	DCN(2)	DCX(3)	DCONMS	DF	LU	LPR	OHX(4)	PL	LS	OAL	SSC(5)	Fig.	MIID(6)	
DCN0157-047-0236-3D-PICCO (1)	.157	.177	.236	-	.4969	.894	.913	.02440	.587	1.480	4.0	1	ICP 040	
DCN0177-055-0236-3D-PICCO (1)	.177	.196	.236	-	.5772	.970	.988	.02598	.587	1.557	4.5	1	ICP 045	
DCN0197-059-0236-3D-PICCO (1)	.197	.216	.236	-	.6193	1.035	1.055	.02874	.587	1.622	5.0	1	ICP 050	
DCN0216-067-0236-3D-PICCO (1)	.217	.236	.236	-	.7012	1.100	1.126	.03188	.587	1.687	5.5	1	ICP 055	
DCN0236-071-0236-3D-PICCO	.236	.256	.236	-	.7464	1.165	1.185	.03779	.587	1.752	6.0	1	ICP 060	K DCN 6-9.99-Y
DCN0256-079-0236-3D-PICCO	.256	.275	.236	-	.8338	1.207	1.252	.04645	.614	1.823	6.5	1	ICP 065	K DCN 6-9.99-Y
DCN0275-082-0315-3D-PICCO	.276	.295	.315	.394	.8665	1.402	-	.03976	.787	2.189	7.0	2	ICP 070	K DCN 6-9.99
DCN0295-089-0315-3D-PICCO	.295	.315	.315	.394	.9488	1.461	-	.04330	.787	2.248	7.0	2	ICP 075	K DCN 6-9.99
DCN0315-094-0315-3D-PICCO	.315	.334	.315	.394	.9921	1.551	-	.04724	.787	2.339	8.0	2	ICP 080	K DCN 6-9.99
DCN0335-102-0315-3D-PICCO	.335	.354	.315	.394	1.0374	1.610	-	.05314	.787	2.398	8.0	2	ICP 085	K DCN 6-9.99
DCN0354-106-0315-3D-PICCO	.354	.374	.315	.394	1.1161	1.705	-	.05314	.787	2.492	9.0	2	ICP 090	K DCN 6-9.99
DCN0374-112-0315-3D-PICCO	.374	.393	.315	.433	1.1984	1.744	-	.05669	.787	2.531	9.0	2	ICP 095	K DCN 6-9.99
DCN0394-118-0315-3D-PICCO	.394	.413	.315	.433	1.2402	1.819	-	.05905	.787	2.606	10.0	2	ICP 100	K DCN 10-13.99
DCN0413-124-0315-3D-PICCO	.413	.433	.315	.433	1.2992	1.878	-	.06259	.787	2.665	10.5	2	ICP 105	K DCN 10-13.99

• Do not mount smaller drilling heads other than the specified range of the drill body • For user guide and cutting conditions, see pages 897-905

(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 (870) • ICM (874) • ICN (878) • ICP-2M (879) • FCP (885) • HCP-IQ (889) • QCP-2M (893) • IHP (883)

DRILLING HEADS

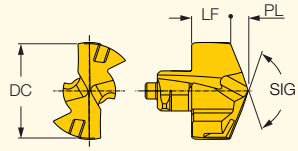


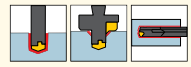
SUMOCHAM

ICP

Exchangeable SUMO-CHAM Drilling Heads for Machining ISO P Materials







M E T R I C

Designation	Dimensions DC	PL	LF	SIG	SSC(1)		IC608
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		•

• The drill head has a honed cutting edge • For cutting conditions see pages 897-905

(1) Seat size code

For tools, see pages: DCN A-1.5D (852) • DCN R-1.5D (853) • DCN A-3D (854) • DCN R-3D (855) • DCN A-5D (856) • DCN R-5D (857) • DCN A-8D (858) • DCN R-8D (859) • DCN R-12D (860) • DCN C-3D (861) • DCN C-5D (862) • DCN C-8D (863) • DCN C-12D (864) • DCNM (865) • DCN-PICCO (868) • DCN-MM (867)

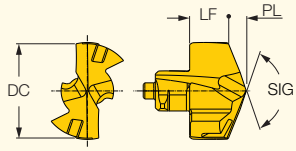
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SUMOCHAM

ICP

Exchangeable SUMO-CHAM Drilling Heads for Machining ISO P Materials







M E T R I C

Designation	Dimensions DC	PL	LF	SIG	SSC(1)	IC908
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	•
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	•

• The drill head has a honed cutting edge • For cutting conditions see pages 897-905

(1) Seat size code

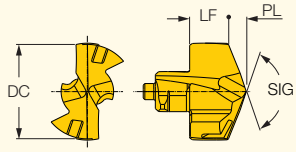
For tools, see pages: DCN A-1.5D (852) • DCN R-1.5D (853) • DCN A-3D (854) • DCN R-3D (855) • DCN A-5D (856) • DCN R-5D (857) • DCN A-8D (858) • DCN R-8D (859) • DCN R-12D (860) • DCN C-3D (861) • DCN C-5D (862) • DCN C-8D (863) • DCN C-12D (864) • DCNM (865) • DCN-PICCO (868) • DCN-MM (867)

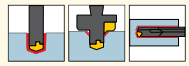
SUMOCHAM

ICP

Exchangeable SUMO-CHAM Drilling Heads for Machining ISO P Materials







I N C H

Designation	Dimensions DC	PL	LF	SIG	SSC(1)		IC608
ICP 0157	.157	.02440	.098	140	4.0	SK DCN 4-4.99	•
ICP 0161	.161	.02520	.097	140	4.0	SK DCN 4-4.99	•
ICP 0165	.165	.02598	.096	140	4.0	SK DCN 4-4.99	•
ICP 0169	.169	.02638	.096	140	4.0	SK DCN 4-4.99	•
ICP 0173	.173	.02717	.095	140	4.0	SK DCN 4-4.99	•
ICP 0177	.177	.02598	.114	140	4.5	SK DCN 4-4.99	•
ICP 0181	.181	.02677	.113	140	4.5	SK DCN 4-4.99	•
ICP 0185	.185	.02755	.112	140	4.5	SK DCN 4-4.99	•
ICP 0189	.189	.02795	.112	140	4.5	SK DCN 4-4.99	•
ICP 0193	.193	.02874	.111	140	4.5	SK DCN 4-4.99	•
ICP 0197	.197	.02874	.117	140	5.0	SK DCN 5-5.99	•
ICP 0201	.201	.02952	.116	140	5.0	SK DCN 5-5.99	•
ICP 0205	.205	.03031	.115	140	5.0	SK DCN 5-5.99	•
ICP 0209	.209	.03070	.115	140	5.0	SK DCN 5-5.99	•
ICP 0213	.213	.03149	.114	140	5.0	SK DCN 5-5.99	•
ICP 0217	.217	.03188	.120	140	5.5	SK DCN 5-5.99	•
ICP 0220	.220	.03267	.119	140	5.5	SK DCN 5-5.99	•
ICP 0224	.224	.03346	.118	140	5.5	SK DCN 5-5.99	•
ICP 0228	.228	.03385	.118	140	5.5	SK DCN 5-5.99	•
ICP 0232	.232	.03464	.117	140	5.5	SK DCN 5-5.99	•
ICP 0236	.236	.03779	.120	140	6.0		•
ICP 0240	.240	.03858	.119	140	6.0		•
ICP 0244	.244	.03937	.118	140	6.0		•
ICP 0248	.248	.03976	.118	140	6.0		•
ICP 0250	.250	.04015	.117	140	6.0		•
ICP 0252	.252	.04055	.117	140	6.0		•
ICP 0256	.256	.04645	.123	140	6.5		•
ICP 0260	.260	.04724	.122	140	6.5		•
ICP 0264	.264	.04803	.121	140	6.5		•
ICP 0268	.268	.04842	.121	140	6.5		•
ICP 0272	.272	.04921	.120	140	6.5		•
ICP 0276	.276	.03976	.141	140	7.0		•
ICP 0280	.280	.04055	.141	140	7.0		•
ICP 0283	.283	.04133	.140	140	7.0		•
ICP 0287	.287	.04173	.139	140	7.0		•
ICP 0291	.291	.04251	.139	140	7.0		•
ICP 0295	.295	.04330	.138	140	7.0		•
ICP 0299	.299	.04409	.137	140	7.0		•
ICP 0303	.303	.04488	.136	140	7.0		•
ICP 0307	.307	.04566	.135	140	7.0		•
ICP 0311	.311	.04606	.135	140	7.0		•
ICP 0315	.315	.04724	.165	140	8.0		•
ICP 0319	.319	.04803	.165	140	8.0		•
ICP 0323	.323	.04881	.164	140	8.0		•
ICP 0327	.327	.04921	.163	140	8.0		•
ICP 0331	.331	.05000	.163	140	8.0		•
ICP 0335	.335	.05078	.162	140	8.0		•
ICP 0339	.339	.05157	.161	140	8.0		•
ICP 0343	.343	.05236	.160	140	8.0		•
ICP 0346	.346	.05314	.159	140	8.0		•
ICP 0350	.350	.05354	.159	140	8.0		•
ICP 0354	.354	.05314	.175	140	9.0		•

• The drill head has a honed cutting edge • For cutting conditions see pages 897-905

(1) Seat size code

For tools, see pages: DCN A-1.5D (852) • DCN R-1.5D (853) • DCN A-3D (854) • DCN R-3D (855) • DCN A-5D (856) • DCN R-5D (857) • DCN A-8D (858) • DCN R-8D (859) • DCN R-12D (860) • DCN C-3D (861) • DCN C-5D (862) • DCN C-8D (863) • DCN C-12D (864) • DCNM (865) • DCN-PICCO (868) • DCN-MM (867)

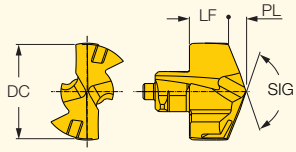
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SUMOCHAM

ICP

Exchangeable SUMO-CHAM Drilling Heads for Machining ISO P Materials







I N C H						
	Dimensions					
Designation	DC	PL	LF	SIG	SSC(1)	IC908
ICP 0358	.358	.05393	.174	140	9.0	●
ICP 0362	.362	.05472	.174	140	9.0	●
ICP 0366	.366	.05511	.173	140	9.0	●
ICP 0370	.370	.05590	.172	140	9.0	●
ICP 0374	.374	.05669	.172	140	9.0	●
ICP 0378	.378	.05748	.171	140	9.0	●
ICP 0382	.382	.05826	.170	140	9.0	●
ICP 0386	.386	.05905	.169	140	9.0	●
ICP 0390	.390	.05944	.169	140	9.0	●
ICP 0394	.394	.05905	.185	140	10.0	●
ICP 0398	.398	.05984	.184	140	10.0	●
ICP 0402	.402	.06062	.183	140	10.0	●
ICP 0406	.406	.06102	.183	140	10.0	●
ICP 0409	.409	.06181	.182	140	10.0	●
ICP 0413	.413	.06259	.181	140	10.0	●
ICP 0417	.417	.06338	.181	140	10.0	●
ICP 0421	.421	.06417	.180	140	10.0	●
ICP 0425	.425	.06496	.179	140	10.0	●
ICP 0429	.429	.06535	.179	140	10.0	●
ICP 0433	.433	.06574	.194	140	11.0	●
ICP 0437	.437	.06653	.193	140	11.0	●
ICP 0441	.441	.06732	.193	140	11.0	●
ICP 0445	.445	.06771	.192	140	11.0	●
ICP 0449	.449	.06850	.191	140	11.0	●
ICP 0453	.453	.06929	.191	140	11.0	●
ICP 0457	.457	.07007	.190	140	11.0	●
ICP 0461	.461	.07086	.189	140	11.0	●
ICP 0465	.465	.07165	.188	140	11.0	●
ICP 0469	.469	.07204	.188	140	11.0	●
ICP 0472	.472	.07165	.204	140	12.0	●
ICP 0476	.476	.07244	.203	140	12.0	●
ICP 0480	.480	.07322	.202	140	12.0	●
ICP 0484	.484	.07362	.202	140	12.0	●
ICP 0488	.488	.07440	.201	140	12.0	●
ICP 0492	.492	.07519	.200	140	12.0	●
ICP 0496	.496	.07598	.200	140	12.0	●
ICP 0500	.500	.07677	.199	140	12.0	●
ICP 0504	.504	.07755	.198	140	12.0	●
ICP 0508	.508	.07795	.198	140	12.0	●

• The drill head has a honed cutting edge • For cutting conditions see pages 897-905

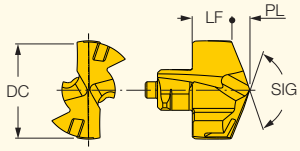
(1) Seat size code

For tools, see pages: DCN A-1.5D (852) • DCN R-1.5D (853) • DCN A-3D (854) • DCN R-3D (855) • DCN A-5D (856) • DCN R-5D (857) • DCN A-8D (858) • DCN R-8D (859) • DCN R-12D (860) • DCN C-3D (861) • DCN C-5D (862) • DCN C-8D (863) • DCN C-12D (864) • DCNM (865) • DCN-PICCO (868) • DCN-MM (867)

SUMOCHAM

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







M E T R I C

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		●	

• The drill head features a T-land on the cutting edge • For cutting conditions see pages 897-905

(1) Seat size code

For tools, see pages: DCN-MM (867) • DCN-PICCO (868) • DCN A-1.5D (852) • DCN R-1.5D (853) • DCN A-3D (854) • DCN R-3D (855) • DCN A-5D (856) • DCN R-5D (857) • DCN A-8D (858) • DCN R-8D (859) • DCN R-12D (860) • DCN C-3D (861) • DCN C-5D (862) • DCN C-8D (863) • DCN C-12D (864) • DCNM (865)

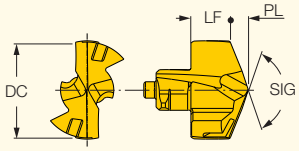
Continued

SUMOCHAM

ICM

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







M E T R I C

Designation	Dimensions DC	PL	LF	SIG	SSC(1)	Tough ↔ Hard IC908	IC907
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	•	•
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	•	•

• The drill head features a T-land on the cutting edge • For cutting conditions see pages 897-905

(1) Seat size code

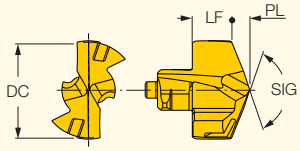
For tools, see pages: DCN-MM (867) • DCN-PICCO (868) • DCN A-1.5D (852) • DCN R-1.5D (853) • DCN A-3D (854) • DCN R-3D (855) • DCN A-5D (856) • DCN R-5D (857) • DCN A-8D (858) • DCN R-8D (859) • DCN R-12D (860) • DCN C-3D (861) • DCN C-5D (862) • DCN C-8D (863) • DCN C-12D (864) • DCNM (865)

SUMOCHAM

ICM

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







I N C H

Designation	Dimensions DC	PL	LF	SIG	SSC(1)		Tough ↔ Hard IC908	IC907
ICM 0197	.197	.02755	.118	140	5.0	SK DCN 5-5.99	•	
ICM 0201	.201	.02834	.117	140	5.0	SK DCN 5-5.99	•	
ICM 0205	.205	.02913	.117	140	5.0	SK DCN 5-5.99	•	
ICM 0209	.209	.02952	.116	140	5.0	SK DCN 5-5.99	•	
ICM 0213	.213	.03031	.115	140	5.0	SK DCN 5-5.99	•	
ICM 0217	.217	.03543	.116	140	5.5	SK DCN 5-5.99	•	
ICM 0220	.220	.03622	.115	140	5.5	SK DCN 5-5.99	•	
ICM 0224	.224	.03700	.115	140	5.5	SK DCN 5-5.99	•	
ICM 0228	.228	.03779	.114	140	5.5	SK DCN 5-5.99	•	
ICM 0232	.232	.03818	.113	140	5.5	SK DCN 5-5.99	•	
ICM 0236	.236	.03779	.120	140	6.0		•	
ICM 0240	.240	.03858	.119	140	6.0		•	
ICM 0244	.244	.03937	.118	140	6.0		•	
ICM 0248	.248	.03976	.118	140	6.0		•	
ICM 0250	.250	.04015	.117	140	6.0		•	
ICM 0252	.252	.04055	.117	140	6.0		•	
ICM 0256	.256	.05000	.119	140	6.5		•	
ICM 0260	.260	.05078	.118	140	6.5		•	
ICM 0264	.264	.05157	.118	140	6.5		•	
ICM 0268	.268	.05236	.117	140	6.5		•	
ICM 0272	.272	.05275	.117	140	6.5		•	
ICM 0276	.276	.03976	.141	140	7.0		•	
ICM 0280	.280	.04055	.141	140	7.0		•	
ICM 0283	.283	.04133	.140	140	7.0		•	
ICM 0287	.287	.04173	.139	140	7.0		•	
ICM 0291	.291	.04251	.139	140	7.0		•	
ICM 0295	.295	.04330	.138	140	7.0		•	•
ICM 0299	.299	.04409	.137	140	7.0		•	
ICM 0303	.303	.04488	.136	140	7.0		•	
ICM 0307	.307	.04566	.135	140	7.0		•	
ICM 0311	.311	.04606	.135	140	7.0		•	
ICM 0315	.315	.04724	.165	140	8.0		•	•
ICM 0319	.319	.04803	.165	140	8.0		•	
ICM 0323	.323	.04881	.164	140	8.0		•	
ICM 0327	.327	.04921	.163	140	8.0		•	
ICM 0331	.331	.05000	.163	140	8.0		•	
ICM 0335	.335	.05078	.162	140	8.0		•	•
ICM 0339	.339	.05157	.161	140	8.0		•	
ICM 0343	.343	.05236	.160	140	8.0		•	•
ICM 0346	.346	.05314	.159	140	8.0		•	
ICM 0350	.350	.05354	.159	140	8.0		•	
ICM 0354	.354	.05354	.175	140	9.0		•	•
ICM 0358	.358	.05433	.174	140	9.0		•	•
ICM 0362	.362	.05511	.173	140	9.0		•	
ICM 0366	.366	.05551	.173	140	9.0		•	
ICM 0370	.370	.05629	.172	140	9.0		•	•
ICM 0374	.374	.05708	.171	140	9.0		•	•
ICM 0378	.378	.05787	.170	140	9.0		•	
ICM 0382	.382	.05866	.170	140	9.0		•	•
ICM 0386	.386	.05944	.169	140	9.0		•	
ICM 0390	.390	.05984	.169	140	9.0		•	•
ICM 0394	.394	.05905	.185	140	10.0		•	•
ICM 0398	.398	.05984	.184	140	10.0		•	

• The drill head features a T-land on the cutting edge • For cutting conditions see pages 897-905

(1) Seat size code

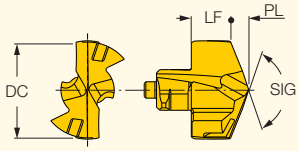
For tools, see pages: DCN-MM (867) • DCN-PICCO (868) • DCN A-1.5D (852) • DCN R-1.5D (853) • DCN A-3D (854) • DCN R-3D (855) • DCN A-5D (856) • DCN R-5D (857) • DCN A-8D (858) • DCN R-8D (859) • DCN R-12D (860) • DCN C-3D (861) • DCN C-5D (862) • DCN C-8D (863) • DCN C-12D (864) • DCNM (865)

SUMOCHAM

ICM

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







I N C H							
	Dimensions					Tough ↔ Hard	
Designation	DC	PL	LF	SIG	SSC(1)	IC908	IC907
ICM 0402	.402	.06062	.183	140	10.0	●	●
ICM 0406	.406	.06102	.183	140	10.0	●	●
ICM 0409	.409	.06181	.182	140	10.0	●	●
ICM 0413	.413	.06259	.181	140	10.0	●	●
ICM 0417	.417	.06338	.181	140	10.0	●	●
ICM 0421	.421	.06417	.180	140	10.0	●	●
ICM 0425	.425	.06496	.179	140	10.0	●	
ICM 0429	.429	.06535	.179	140	10.0	●	
ICM 0433	.433	.06535	.194	140	11.0	●	●
ICM 0437	.437	.06614	.194	140	11.0	●	●
ICM 0441	.441	.06692	.193	140	11.0	●	●
ICM 0445	.445	.06732	.193	140	11.0	●	
ICM 0449	.449	.06811	.192	140	11.0	●	
ICM 0453	.453	.06889	.191	140	11.0	●	●
ICM 0457	.457	.06968	.190	140	11.0	●	
ICM 0461	.461	.07047	.189	140	11.0	●	
ICM 0465	.465	.07125	.189	140	11.0	●	●
ICM 0469	.469	.07165	.188	140	11.0	●	●
ICM 0472	.472	.07125	.204	140	12.0	●	●
ICM 0476	.476	.07204	.204	140	12.0	●	
ICM 0480	.480	.07283	.203	140	12.0	●	
ICM 0484	.484	.07322	.202	140	12.0	●	●
ICM 0488	.488	.07401	.202	140	12.0	●	●
ICM 0492	.492	.07480	.201	140	12.0	●	●
ICM 0496	.496	.07559	.200	140	12.0	●	
ICM 0500	.500	.07637	.199	140	12.0	●	●
ICM 0504	.504	.07716	.198	140	12.0	●	
ICM 0508	.508	.07755	.198	140	12.0	●	●

• The drill head features a T-land on the cutting edge • For cutting conditions see pages 897-905

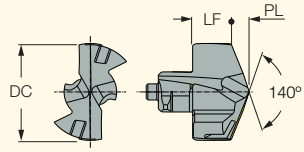
(1) Seat size code

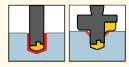
For tools, see pages: DCN-MM (867) • DCN-PICCO (868) • DCN A-1.5D (852) • DCN R-1.5D (853) • DCN A-3D (854) • DCN R-3D (855) • DCN A-5D (856) • DCN R-5D (857) • DCN A-8D (858) • DCN R-8D (859) • DCN R-12D (860) • DCN C-3D (861) • DCN C-5D (862) • DCN C-8D (863) • DCN C-12D (864) • DCNM (865)

SUMOCHAM

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







M E T R I C

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		•

• The drill is manufactured with a sharp cutting edge and polished flutes • For cutting conditions see pages 897-905

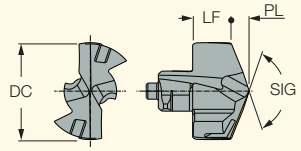
(1) Seat size code

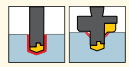
For tools, see pages: DCN-MM (867) • DCN-PICCO (868) • DCN A-1.5D (852) • DCN R-1.5D (853) • DCN A-3D (854) • DCN R-3D (855) • DCN A-5D (856) • DCN R-5D (857) • DCN A-8D (858) • DCN R-8D (859) • DCN R-12D (860) • DCN C-3D (861) • DCN C-5D (862) • DCN C-8D (863) • DCN C-12D (864) • DCNM (865)

SUMOCHAM

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







I N C H

Designation	Dimensions DC	PL	LF	SIG	SSC(1)		IC08
ICN 0187	.187	.02795	.112	140	4.0	SK DCN 4-4.99	•
ICN 0201	.201	.02953	.116	140	5.0	SK DCN 5-5.99	•
ICN 0213	.213	.02874	.117	140	5.0	SK DCN 5-5.99	•
ICN 0250	.250	.04015	.117	140	6.0		•
ICN 0313	.313	.04645	.135	140	7.0		•
ICN 0375	.375	.05669	.172	140	9.0		•
ICN 0394	.394	.05905	.185	140	10.0		•
ICN 0402	.402	.06062	.183	140	10.0		•
ICN 0406	.406	.06102	.183	140	10.0		•
ICN 0413	.413	.06259	.181	140	10.0		•
ICN 0421	.421	.06417	.180	140	10.0		•
ICN 0425	.425	.06496	.179	140	10.0		•
ICN 0433	.433	.06574	.194	140	11.0		•
ICN 0437	.437	.06653	.193	140	11.0		•
ICN 0453	.453	.06929	.191	140	11.0		•
ICN 0469	.469	.07204	.188	140	11.0		•
ICN 0472	.472	.07165	.204	140	12.0		•
ICN 0484	.484	.07362	.202	140	12.0		•
ICN 0492	.492	.07519	.200	140	12.0		•
ICN 0500	.500	.07677	.199	140	12.0		•

• The drill is manufactured with a sharp cutting edge and polished flutes • For cutting conditions see pages 897-905

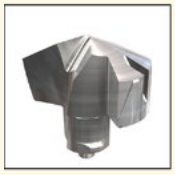
(1) Seat size code

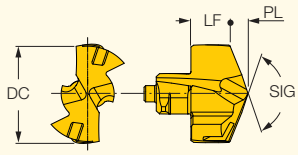
For tools, see pages: DCN-MM (867) • DCN-PICCO (868) • DCN A-1.5D (852) • DCN R-1.5D (853) • DCN A-3D (854) • DCN R-3D (855) • DCN A-5D (856) • DCN R-5D (857) • DCN A-8D (858) • DCN R-8D (859) • DCN R-12D (860) • DCN C-3D (861) • DCN C-5D (862) • DCN C-8D (863) • DCN C-12D (864) • DCNM (865)

SUMOCHAM

ICP-2M

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







M E T R I C

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	•

• 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 897-905

(1) Seat size code

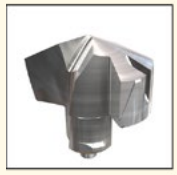
For tools, see pages: DCN-MM (867) • DCN-PICCO (868) • DCN A-1.5D (852) • DCN R-1.5D (853) • DCN A-3D (854) • DCN R-3D (855) • DCN A-5D (856) • DCN R-5D (857) • DCN A-8D (858) • DCN R-8D (859) • DCN R-12D (860) • DCN C-3D (861) • DCN C-5D (862) • DCN C-12D (864) • DCNM (865)

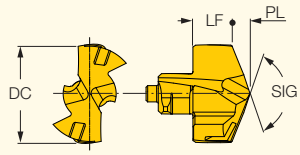
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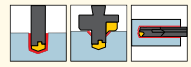
SUMOCHAM

ICP-2M

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







M E T R I C

Designation	Dimensions DC	LF	PL	SIG	SSC(1)	IC608
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	●
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	●

• 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 897-905

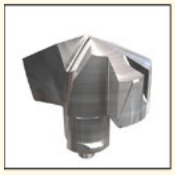
(1) Seat size code

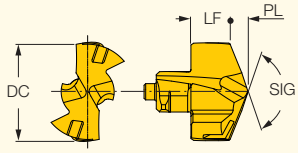
For tools, see pages: DCN-MM (867) • DCN-PICCO (868) • DCN A-1.5D (852) • DCN R-1.5D (853) • DCN A-3D (854) • DCN R-3D (855) • DCN A-5D (856) • DCN R-5D (857) • DCN A-8D (858) • DCN R-8D (859) • DCN R-12D (860) • DCN C-3D (861) • DCN C-5D (862) • DCN C-12D (864) • DCNM (865)

SUMOCHAM

ICP-2M

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







I N C H						
	Dimensions					
Designation	DC	LF	PL	SIG	SSC(1)	IC908
ICP 0236-2M	.236	.120	.03779	140	6.0	•
ICP 0240-2M	.240	.119	.03858	140	6.0	•
ICP 0244-2M	.244	.118	.03937	140	6.0	•
ICP 0252-2M	.252	.117	.04055	140	6.0	•
ICP 0256-2M	.256	.123	.04645	140	6.5	•
ICP 0260-2M	.260	.122	.04724	140	6.5	•
ICP 0264-2M	.264	.121	.04803	140	6.5	•
ICP 0268-2M	.268	.121	.04842	140	6.5	•
ICP 0272-2M	.272	.120	.04921	140	6.5	•
ICP 0276-2M	.276	.141	.03976	140	7.0	•
ICP 0280-2M	.280	.141	.04055	140	7.0	•
ICP 0287-2M	.287	.139	.04173	140	7.0	•
ICP 0291-2M	.291	.139	.04251	140	7.0	•
ICP 0295-2M	.295	.138	.04330	140	7.0	•
ICP 0303-2M	.303	.136	.04488	140	7.0	•
ICP 0307-2M	.307	.135	.04566	140	7.0	•
ICP 0311-2M	.311	.135	.04606	140	7.0	•
ICP 0315-2M	.315	.165	.04724	140	8.0	•
ICP 0319-2M	.319	.165	.04803	140	8.0	•
ICP 0323-2M	.323	.164	.04881	140	8.0	•
ICP 0327-2M	.327	.163	.04921	140	8.0	•
ICP 0331-2M	.331	.163	.05000	140	8.0	•
ICP 0335-2M	.335	.162	.05078	140	8.0	•
ICP 0339-2M	.339	.161	.05157	140	8.0	•
ICP 0343-2M	.343	.160	.05236	140	8.0	•
ICP 0346-2M	.346	.159	.05314	140	8.0	•
ICP 0350-2M	.350	.159	.05354	140	8.0	•
ICP 0354-2M	.354	.175	.05314	140	9.0	•
ICP 0358-2M	.358	.174	.05393	140	9.0	•
ICP 0362-2M	.362	.174	.05472	140	9.0	•
ICP 0366-2M	.366	.173	.05511	140	9.0	•
ICP 0370-2M	.370	.172	.05590	140	9.0	•
ICP 0374-2M	.374	.172	.05669	140	9.0	•
ICP 0378-2M	.378	.171	.05748	140	9.0	•
ICP 0382-2M	.382	.170	.05826	140	9.0	•
ICP 0386-2M	.386	.169	.05905	140	9.0	•
ICP 0390-2M	.390	.169	.05944	140	9.0	•
ICP 0394-2M	.394	.185	.05905	140	10.0	•
ICP 0398-2M	.398	.184	.05984	140	10.0	•
ICP 0402-2M	.402	.183	.06062	140	10.0	•
ICP 0406-2M	.406	.183	.06102	140	10.0	•
ICP 0409-2M	.409	.182	.06181	140	10.0	•
ICP 0413-2M	.413	.181	.06259	140	10.0	•
ICP 0417-2M	.417	.181	.06338	140	10.0	•
ICP 0421-2M	.421	.180	.06417	140	10.0	•
ICP 0425-2M	.425	.179	.06496	140	10.0	•
ICP 0429-2M	.429	.179	.06535	140	10.0	•
ICP 0433-2M	.433	.194	.06574	140	11.0	•
ICP 0437-2M	.437	.193	.06653	140	11.0	•
ICP 0441-2M	.441	.193	.06732	140	11.0	•
ICP 0445-2M	.445	.192	.06771	140	11.0	•
ICP 0449-2M	.449	.191	.06850	140	11.0	•
ICP 0453-2M	.453	.191	.06929	140	11.0	•

• Provides high surface finish of up to 64 microinches Ra hole cylindricity and straightness of up to.002" • For cutting conditions see pages 897-905

(1) Seat size code

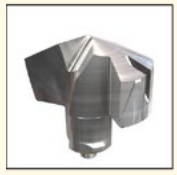
For tools, see pages: DCN-MM (867) • DCN-PICCO (868) • DCN A-1.5D (852) • DCN R-1.5D (853) • DCN A-3D (854) • DCN R-3D (855) • DCN A-5D (856) • DCN R-5D (857) • DCN A-8D (858) • DCN R-8D (859) • DCN R-12D (860) • DCN C-3D (861) • DCN C-5D (862) • DCN C-12D (864) • DCNM (865)

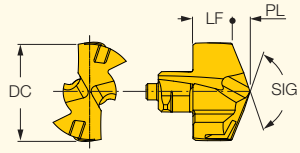
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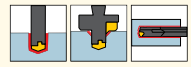
SUMOCHAM

ICP-2M

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







I N C H						
	Dimensions					
Designation	DC	LF	PL	SIG	SSC(1)	IC608
ICP 0457-2M	.457	.190	.07007	140	11.0	●
ICP 0461-2M	.461	.189	.07086	140	11.0	●
ICP 0465-2M	.465	.188	.07165	140	11.0	●
ICP 0469-2M	.469	.188	.07204	140	11.0	●
ICP 0472-2M	.472	.204	.07165	140	12.0	●
ICP 0476-2M	.476	.203	.07244	140	12.0	●
ICP 0480-2M	.480	.202	.07322	140	12.0	●
ICP 0484-2M	.484	.202	.07362	140	12.0	●
ICP 0488-2M	.488	.201	.07440	140	12.0	●
ICP 0492-2M	.492	.200	.07519	140	12.0	●
ICP 0496-2M	.496	.200	.07598	140	12.0	●
ICP 0500-2M	.500	.199	.07677	140	12.0	●
ICP 0504-2M	.504	.198	.07755	140	12.0	●
ICP 0508-2M	.508	.198	.07795	140	12.0	●

• Provides high surface finish of up to 64 microinches Ra hole cylindricity and straightness of up to.002" • For cutting conditions see pages 897-905

(1) Seat size code

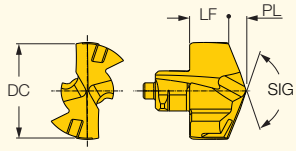
For tools, see pages: DCN-MM (867) • DCN-PICCO (868) • DCN A-1.5D (852) • DCN R-1.5D (853) • DCN A-3D (854) • DCN R-3D (855) • DCN A-5D (856) • DCN R-5D (857) • DCN A-8D (858) • DCN R-8D (859) • DCN R-12D (860) • DCN C-3D (861) • DCN C-5D (862) • DCN C-12D (864) • DCNM (865)

SUMOCHAM

IHP

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







M E T R I C

Designation	Dimensions DC	PL	LF	SIG	SSC(1)	IC948
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	●

• Intermediate sizes can be supplied on request • For cutting conditions see pages 897-905

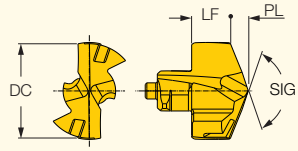
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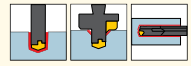
For tools, see pages: DCN A-1.5D (852) • DCN A-3D (854) • DCN A-5D (856) • DCN A-8D (858) • DCN R-1.5D (853) • DCN R-12D (860) • DCN R-3D (855) • DCN R-5D (857) • DCN R-8D (859) • DCN-MM (867) • DCN-PICCO (868) • DCNM (865)

SUMOCHAM

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







I N C H						
	Dimensions					
Designation	DC	PL	LF	SIG	SSC(1)	IC948
IHP 0394	.394	.05905	.185	140	10.0	●
IHP 0398	.398	.05984	.184	140	10.0	●
IHP 0402	.402	.06062	.183	140	10.0	●
IHP 0406	.406	.06102	.183	140	10.0	●
IHP 0409	.409	.06181	.182	140	10.0	●
IHP 0413	.413	.06259	.181	140	10.0	●
IHP 0417	.417	.06338	.181	140	10.0	●
IHP 0421	.421	.06417	.180	140	10.0	●
IHP 0425	.425	.06496	.179	140	10.0	●
IHP 0429	.429	.06535	.179	140	10.0	●
IHP 0433	.433	.06574	.194	140	11.0	●
IHP 0437	.437	.06653	.193	140	11.0	●
IHP 0441	.441	.06732	.193	140	11.0	●
IHP 0445	.445	.06771	.192	140	11.0	●
IHP 0449	.449	.06850	.191	140	11.0	●
IHP 0453	.453	.06929	.191	140	11.0	●
IHP 0457	.457	.07007	.190	140	11.0	●
IHP 0461	.461	.07086	.189	140	11.0	●
IHP 0465	.465	.07165	.188	140	11.0	●
IHP 0469	.469	.07204	.188	140	11.0	●
IHP 0472	.472	.07165	.204	140	12.0	●
IHP 0476	.476	.07244	.203	140	12.0	●
IHP 0480	.480	.07322	.202	140	12.0	●
IHP 0484	.484	.07362	.202	140	12.0	●
IHP 0488	.488	.07440	.201	140	12.0	●
IHP 0492	.492	.07519	.200	140	12.0	●
IHP 0496	.496	.07598	.200	140	12.0	●
IHP 0500	.500	.07677	.199	140	12.0	●
IHP 0504	.504	.07755	.198	140	12.0	●
IHP 0508	.508	.07795	.198	140	12.0	●

• Intermediate sizes can be supplied on request • For cutting conditions see pages 897-905

(1) Seat size code

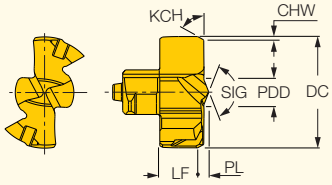
For tools, see pages: DCN A-1.5D (852) • DCN A-3D (854) • DCN A-5D (856) • DCN A-8D (858) • DCN R-1.5D (853) • DCN R-12D (860) • DCN R-3D (855) • DCN R-5D (857) • DCN R-8D (859) • DCN-MM (867) • DCN-PICCO (868) • DCNM (865)

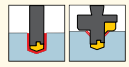
SUMOCHAM FLAT HEAD

FCP

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







M E T R I C

Designation	Dimensions DC	PDD	LF	PL	CHW	KCH	SIG	SSC(1)		IC908
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		•

• For nearly flat bottom hole applications • For cutting conditions see pages 897-905

(1) Seat size code

For tools, see pages: DCN-MM (867) • DCN-PICCO (868) • DCN A-1.5D (852) • DCN R-1.5D (853) • DCN A-3D (854) • DCN R-3D (855) • DCN A-5D (856) • DCN R-5D (857) • DCN A-8D (858) • DCN R-8D (859) • DCN R-12D (860) • DCN C-3D (861) • DCN C-5D (862) • DCN C-8D (863) • DCN C-12D (864) • DCNM (865)

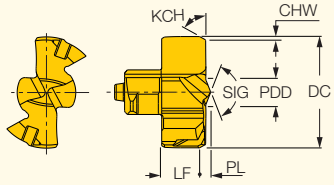
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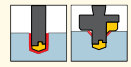
SUMOCHAM FLAT HEAD

FCP

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







M E T R I C

Designation	Dimensions DC	PDD	LF	PL	CHW	KCH	SIG	SSC(1)	IC908
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	•
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	•

• For nearly flat bottom hole applications • For cutting conditions see pages 897-905

(1) Seat size code

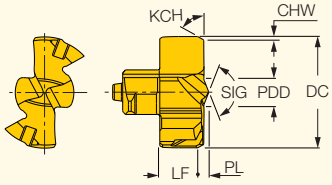
For tools, see pages: DCN-MM (867) • DCN-PICCO (868) • DCN A-1.5D (852) • DCN R-1.5D (853) • DCN A-3D (854) • DCN R-3D (855) • DCN A-5D (856) • DCN R-5D (857) • DCN A-8D (858) • DCN R-8D (859) • DCN R-12D (860) • DCN C-3D (861) • DCN C-5D (862) • DCN C-8D (863) • DCN C-12D (864) • DCNM (865)

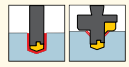
SUMOCHAM FLAT HEAD

FCP

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







I N C H

Designation	Dimensions DC	PDD	LF	PL	CHW	KCH	SIG	SSC(1)		IC908
FCP 0157-IQ	.157	.057	.098	.01771	.007	60.00	140	4.0	SK DCN 4-4.99	•
FCP 0161-IQ	.161	.057	.098	.01771	.007	60.00	140	4.0	SK DCN 4-4.99	•
FCP 0165-IQ	.165	.057	.098	.01771	.007	60.00	140	4.0	SK DCN 4-4.99	•
FCP 0169-IQ	.169	.057	.098	.01771	.007	60.00	140	4.0	SK DCN 4-4.99	•
FCP 0173-IQ	.173	.057	.098	.01771	.007	60.00	140	4.0	SK DCN 4-4.99	•
FCP 0177-IQ	.177	.061	.110	.01889	.007	60.00	140	4.5	SK DCN 4-4.99	•
FCP 0181-IQ	.181	.061	.110	.01889	.007	60.00	140	4.5	SK DCN 4-4.99	•
FCP 0185-IQ	.185	.061	.110	.01889	.007	60.00	140	4.5	SK DCN 4-4.99	•
FCP 0189-IQ	.189	.061	.110	.01889	.007	60.00	140	4.5	SK DCN 4-4.99	•
FCP 0193-IQ	.193	.061	.110	.01889	.007	60.00	140	4.5	SK DCN 4-4.99	•
FCP 0197-IQ	.197	.078	.114	.02401	.009	60.00	140	5.0	SK DCN 5-5.99	•
FCP 0201-IQ	.201	.078	.114	.02401	.009	60.00	140	5.0	SK DCN 5-5.99	•
FCP 0205-IQ	.205	.078	.114	.02401	.009	60.00	140	5.0	SK DCN 5-5.99	•
FCP 0209-IQ	.209	.078	.114	.02401	.009	60.00	140	5.0	SK DCN 5-5.99	•
FCP 0213-IQ	.213	.078	.114	.02401	.009	60.00	140	5.0	SK DCN 5-5.99	•
FCP 0217-IQ	.217	.080	.114	.02401	.009	60.00	140	5.5	SK DCN 5-5.99	•
FCP 0220-IQ	.220	.080	.114	.02401	.009	60.00	140	5.5	SK DCN 5-5.99	•
FCP 0224-IQ	.224	.080	.114	.02401	.009	60.00	140	5.5	SK DCN 5-5.99	•
FCP 0228-IQ	.228	.080	.114	.02401	.009	60.00	140	5.5	SK DCN 5-5.99	•
FCP 0232-IQ	.232	.080	.114	.02401	.009	60.00	140	5.5	SK DCN 5-5.99	•
FCP 0236	.236	.080	.094	.02401	.009	60.00	140	6.0		•
FCP 0240	.240	.080	.094	.02401	.009	60.00	140	6.0		•
FCP 0244	.244	.080	.094	.02401	.009	60.00	140	6.0		•
FCP 0248	.248	.080	.094	.02401	.009	60.00	140	6.0		•
FCP 0252	.252	.080	.094	.02401	.009	60.00	140	6.0		•
FCP 0256	.256	.104	.102	.02677	.009	60.00	140	6.5		•
FCP 0260	.260	.104	.102	.02677	.009	60.00	140	6.5		•
FCP 0264	.264	.104	.102	.02677	.009	60.00	140	6.5		•
FCP 0268	.268	.104	.102	.02677	.009	60.00	140	6.5		•
FCP 0272	.272	.104	.102	.02677	.009	60.00	140	6.5		•
FCP 0276	.276	.089	.114	.02677	.009	60.00	140	7.0		•
FCP 0280	.280	.089	.114	.02677	.009	60.00	140	7.0		•
FCP 0283	.283	.089	.114	.02677	.009	60.00	140	7.0		•
FCP 0287	.287	.089	.114	.02677	.009	60.00	140	7.0		•
FCP 0291	.291	.089	.114	.02677	.009	60.00	140	7.0		•
FCP 0295	.295	.089	.114	.02677	.009	60.00	140	7.0		•
FCP 0299	.299	.089	.114	.02677	.009	60.00	140	7.0		•
FCP 0303	.303	.089	.114	.02677	.009	60.00	140	7.0		•
FCP 0307	.307	.089	.114	.02677	.009	60.00	140	7.0		•
FCP 0311	.311	.089	.114	.02677	.009	60.00	140	7.0		•
FCP 0315	.315	.096	.130	.04291	.016	60.00	140	8.0		•
FCP 0319	.319	.096	.130	.04291	.016	60.00	140	8.0		•
FCP 0323	.323	.096	.130	.04291	.016	60.00	140	8.0		•
FCP 0327	.327	.096	.130	.04291	.016	60.00	140	8.0		•
FCP 0331	.331	.096	.130	.04291	.016	60.00	140	8.0		•
FCP 0335	.335	.096	.130	.04291	.016	60.00	140	8.0		•
FCP 0339	.339	.096	.130	.04291	.016	60.00	140	8.0		•
FCP 0343	.343	.096	.130	.04291	.016	60.00	140	8.0		•
FCP 0346	.346	.096	.130	.04291	.016	60.00	140	8.0		•
FCP 0350	.350	.096	.130	.04291	.016	60.00	140	8.0		•
FCP 0354	.354	.111	.138	.04370	.016	60.00	140	9.0		•
FCP 0358	.358	.111	.138	.04370	.016	60.00	140	9.0		•
FCP 0362	.362	.111	.138	.04370	.016	60.00	140	9.0		•

• For nearly flat bottom hole applications • For cutting conditions see pages 897-905

(1) Seat size code

For tools, see pages: DCN-MM (867) • DCN-PICCO (868) • DCN A-1.5D (852) • DCN R-1.5D (853) • DCN A-3D (854) • DCN R-3D (855) • DCN A-5D (856) • DCN R-5D (857) • DCN A-8D (858) • DCN R-8D (859) • DCN R-12D (860) • DCN C-3D (861) • DCN C-5D (862) • DCN C-8D (863) • DCN C-12D (864) • DCNM (865)

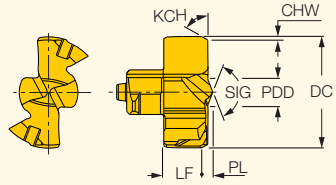
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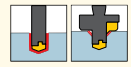
SUMOCHAM FLAT HEAD

FCP

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







I N C H

Designation	Dimensions								IC908
	DC	PDD	LF	PL	CHW	KCH	SIG	SSC(1)	
FCP 0366	.366	.111	.138	.04370	.016	60.00	140	9.0	•
FCP 0370	.370	.111	.138	.04370	.016	60.00	140	9.0	•
FCP 0374	.374	.111	.138	.04370	.016	60.00	140	9.0	•
FCP 0378	.378	.111	.138	.04370	.016	60.00	140	9.0	•
FCP 0382	.382	.111	.138	.04370	.016	60.00	140	9.0	•
FCP 0386	.386	.111	.138	.04370	.016	60.00	140	9.0	•
FCP 0390	.390	.111	.138	.04370	.016	60.00	140	9.0	•
FCP 0394	.394	.109	.146	.04606	.016	60.00	140	10.0	•
FCP 0398	.398	.109	.146	.04606	.016	60.00	140	10.0	•
FCP 0402	.402	.109	.146	.04606	.016	60.00	140	10.0	•
FCP 0406	.406	.109	.146	.04606	.016	60.00	140	10.0	•
FCP 0409	.409	.109	.146	.04606	.016	60.00	140	10.0	•
FCP 0413	.413	.109	.146	.04606	.016	60.00	140	10.0	•
FCP 0417	.417	.109	.146	.04606	.016	60.00	140	10.0	•
FCP 0421	.421	.109	.146	.04606	.016	60.00	140	10.0	•
FCP 0425	.425	.109	.146	.04606	.016	60.00	140	10.0	•
FCP 0429	.429	.109	.146	.04606	.016	60.00	140	10.0	•
FCP 0433	.433	.113	.150	.04921	.016	60.00	140	11.0	•
FCP 0437	.437	.113	.150	.04921	.016	60.00	140	11.0	•
FCP 0441	.441	.113	.150	.04921	.016	60.00	140	11.0	•
FCP 0445	.445	.113	.150	.04921	.016	60.00	140	11.0	•
FCP 0449	.449	.113	.150	.04921	.016	60.00	140	11.0	•
FCP 0453	.453	.113	.150	.04921	.016	60.00	140	11.0	•
FCP 0457	.457	.113	.150	.04921	.016	60.00	140	11.0	•
FCP 0461	.461	.113	.150	.04921	.016	60.00	140	11.0	•
FCP 0465	.465	.113	.150	.04921	.016	60.00	140	11.0	•
FCP 0469	.469	.113	.150	.04921	.016	60.00	140	11.0	•
FCP 0472	.472	.122	.161	.04960	.016	60.00	140	12.0	•
FCP 0476	.476	.122	.161	.04960	.016	60.00	140	12.0	•
FCP 0480	.480	.122	.161	.04960	.016	60.00	140	12.0	•
FCP 0484	.484	.122	.161	.04960	.016	60.00	140	12.0	•
FCP 0488	.488	.122	.161	.04960	.016	60.00	140	12.0	•
FCP 0492	.492	.122	.161	.04960	.016	60.00	140	12.0	•
FCP 0496	.496	.122	.161	.04960	.016	60.00	140	12.0	•
FCP 0500	.500	.122	.161	.04960	.016	60.00	140	12.0	•
FCP 0504	.504	.122	.161	.04960	.016	60.00	140	12.0	•
FCP 0508	.508	.122	.161	.04960	.016	60.00	140	12.0	•

• For nearly flat bottom hole applications • For cutting conditions see pages 897-905

(1) Seat size code

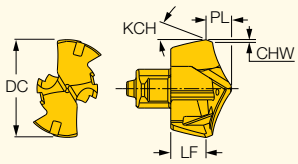
For tools, see pages: DCN-MM (867) • DCN-PICCO (868) • DCN A-1.5D (852) • DCN R-1.5D (853) • DCN A-3D (854) • DCN R-3D (855) • DCN A-5D (856) • DCN R-5D (857) • DCN A-8D (858) • DCN R-8D (859) • DCN R-12D (860) • DCN C-3D (861) • DCN C-5D (862) • DCN C-8D (863) • DCN C-12D (864) • DCNM (865)

SUMOCHAMIQ
CHAMDRILL LINE

HCP-IQ

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







M E T R I C

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		•

• Advance Self-Centering and high surface finish • For cutting conditions see page 897-905

(1) Seat size code

For tools, see pages: DCN-MM (867) • DCN-PICCO (868) • DCN A-1.5D (852) • DCN R-1.5D (853) • DCN A-3D (854) • DCN R-3D (855) • DCN A-5D (856) • DCN R-5D (857) • DCN A-8D (858) • DCN R-8D (859) • DCN R-12D (860) • DCN C-3D (861) • DCN C-5D (862) • DCN C-8D (863) • DCN C-12D (864) • DCNM (865)

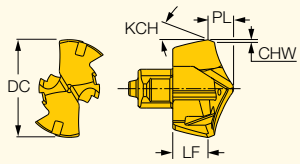
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SUMOCHAMIQ CHAMDRILL LINE

HCP-IQ

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







M E T R I C

Designation	Dimensions DC	LF	PL	CHW	KCH	SSC(1)	IC908
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	•
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	•

• Advance Self-Centering and high surface finish • For cutting conditions see page 897-905

(1) Seat size code

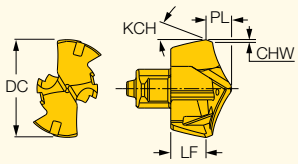
For tools, see pages: DCN-MM (867) • DCN-PICCO (868) • DCN A-1.5D (852) • DCN R-1.5D (853) • DCN A-3D (854) • DCN R-3D (855) • DCN A-5D (856) • DCN R-5D (857) • DCN A-8D (858) • DCN R-8D (859) • DCN R-12D (860) • DCN C-3D (861) • DCN C-5D (862) • DCN C-8D (863) • DCN C-12D (864) • DCNM (865)

SUMOCHAMIQ
CHAMDRILL LINE

HCP-IQ

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







I N C H

Designation	Dimensions DC	LF	PL	CHW	KCH	SSC(1)		IC908
HCP 0157-IQ	.157	.094	.04566	.008	30.00	4.0	SK DCN 4-4.99	●
HCP 0161-IQ	.161	.094	.04566	.008	30.00	4.0	SK DCN 4-4.99	●
HCP 0165-IQ	.165	.094	.04566	.008	30.00	4.0	SK DCN 4-4.99	●
HCP 0169-IQ	.169	.094	.04566	.008	30.00	4.0	SK DCN 4-4.99	●
HCP 0173-IQ	.173	.094	.04566	.008	30.00	4.0	SK DCN 4-4.99	●
HCP 0177-IQ	.177	.104	.04685	.008	30.00	4.5	SK DCN 4-4.99	●
HCP 0181-IQ	.181	.104	.04685	.008	30.00	4.5	SK DCN 4-4.99	●
HCP 0185-IQ	.185	.104	.04685	.008	30.00	4.5	SK DCN 4-4.99	●
HCP 0189-IQ	.189	.104	.04685	.008	30.00	4.5	SK DCN 4-4.99	●
HCP 0193-IQ	.193	.104	.04685	.008	30.00	4.5	SK DCN 4-4.99	●
HCP 0197-IQ	.197	.110	.05669	.010	30.00	5.0	SK DCN 5-5.99	●
HCP 0201-IQ	.201	.110	.05669	.010	30.00	5.0	SK DCN 5-5.99	●
HCP 0205-IQ	.205	.110	.05669	.010	30.00	5.0	SK DCN 5-5.99	●
HCP 0209-IQ	.209	.110	.05669	.010	30.00	5.0	SK DCN 5-5.99	●
HCP 0213-IQ	.213	.110	.05669	.010	30.00	5.0	SK DCN 5-5.99	●
HCP 0217-IQ	.217	.108	.06417	.010	30.00	5.5	SK DCN 5-5.99	●
HCP 0220-IQ	.220	.108	.06417	.010	30.00	5.5	SK DCN 5-5.99	●
HCP 0224-IQ	.224	.108	.06417	.010	30.00	5.5	SK DCN 5-5.99	●
HCP 0228-IQ	.228	.108	.06417	.010	30.00	5.5	SK DCN 5-5.99	●
HCP 0232-IQ	.232	.108	.06417	.010	30.00	5.5	SK DCN 5-5.99	●
HCP 0236-IQ	.236	.093	.06496	.012	30.00	6.0		●
HCP 0240-IQ	.240	.093	.06496	.012	30.00	6.0		●
HCP 0244-IQ	.244	.093	.06496	.012	30.00	6.0		●
HCP 0248-IQ	.248	.093	.06496	.012	30.00	6.0		●
HCP 0252-IQ	.252	.093	.06496	.012	30.00	6.0		●
HCP 0256-IQ	.256	.104	.06574	.012	30.00	6.5		●
HCP 0260-IQ	.260	.104	.06574	.012	30.00	6.5		●
HCP 0264-IQ	.264	.104	.06574	.012	30.00	6.5		●
HCP 0268-IQ	.268	.104	.06574	.012	30.00	6.5		●
HCP 0272-IQ	.272	.104	.06574	.012	30.00	6.5		●
HCP 0276-IQ	.276	.111	.06968	.014	30.00	7.0		●
HCP 0280-IQ	.280	.111	.06968	.014	30.00	7.0		●
HCP 0283-IQ	.283	.111	.06968	.014	30.00	7.0		●
HCP 0287-IQ	.287	.111	.06968	.014	30.00	7.0		●
HCP 0291-IQ	.291	.111	.06968	.014	30.00	7.0		●
HCP 0295-IQ	.295	.111	.06968	.014	30.00	7.0		●
HCP 0299-IQ	.299	.111	.06968	.014	30.00	7.0		●
HCP 0303-IQ	.303	.111	.06968	.014	30.00	7.0		●
HCP 0307-IQ	.307	.111	.06968	.014	30.00	7.0		●
HCP 0311-IQ	.311	.111	.06968	.014	30.00	7.0		●
HCP 0315-IQ	.315	.128	.08503	.016	30.00	8.0		●
HCP 0319-IQ	.319	.128	.08503	.016	30.00	8.0		●
HCP 0323-IQ	.323	.128	.08503	.016	30.00	8.0		●
HCP 0327-IQ	.327	.128	.08503	.016	30.00	8.0		●
HCP 0331-IQ	.331	.128	.08503	.016	30.00	8.0		●
HCP 0335-IQ	.335	.128	.08503	.016	30.00	8.0		●
HCP 0339-IQ	.339	.128	.08503	.016	30.00	8.0		●
HCP 0343-IQ	.343	.128	.08503	.016	30.00	8.0		●
HCP 0346-IQ	.346	.128	.08503	.016	30.00	8.0		●
HCP 0350-IQ	.350	.128	.08503	.016	30.00	8.0		●
HCP 0354-IQ	.354	.140	.08858	.018	30.00	9.0		●
HCP 0358-IQ	.358	.140	.08858	.018	30.00	9.0		●
HCP 0362-IQ	.362	.140	.08858	.018	30.00	9.0		●

• Advance Self-Centering and high surface finish • For cutting conditions see page 897-905

(1) Seat size code

For tools, see pages: DCN-MM (867) • DCN-PICCO (868) • DCN A-1.5D (852) • DCN R-1.5D (853) • DCN A-3D (854) • DCN R-3D (855) • DCN A-5D (856) • DCN R-5D (857) • DCN A-8D (858) • DCN R-8D (859) • DCN R-12D (860) • DCN C-3D (861) • DCN C-5D (862) • DCN C-8D (863) • DCN C-12D (864) • DCNM (865)

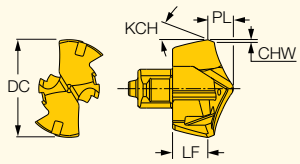
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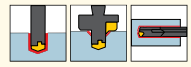
SUMOCHAMIQ CHAMDRILL LINE

HCP-IQ

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







I N C H

Designation	Dimensions DC	LF	PL	CHW	KCH	SSC(1)	IC908
HCP 0366-IQ	.366	.140	.08858	.018	30.00	9.0	●
HCP 0370-IQ	.370	.140	.08858	.018	30.00	9.0	●
HCP 0374-IQ	.374	.140	.08858	.018	30.00	9.0	●
HCP 0378-IQ	.378	.140	.08858	.018	30.00	9.0	●
HCP 0382-IQ	.382	.140	.08858	.018	30.00	9.0	●
HCP 0386-IQ	.386	.140	.08858	.018	30.00	9.0	●
HCP 0390-IQ	.390	.140	.08858	.018	30.00	9.0	●
HCP 0394-IQ	.394	.137	.10708	.019	30.00	10.0	●
HCP 0398-IQ	.398	.137	.10708	.019	30.00	10.0	●
HCP 0402-IQ	.402	.137	.10708	.019	30.00	10.0	●
HCP 0406-IQ	.406	.137	.10708	.019	30.00	10.0	●
HCP 0409-IQ	.409	.137	.10708	.019	30.00	10.0	●
HCP 0413-IQ	.413	.137	.10708	.019	30.00	10.0	●
HCP 0417-IQ	.417	.137	.10708	.019	30.00	10.0	●
HCP 0421-IQ	.421	.137	.10708	.019	30.00	10.0	●
HCP 0425-IQ	.425	.137	.10708	.019	30.00	10.0	●
HCP 0429-IQ	.429	.137	.10708	.019	30.00	10.0	●
HCP 0433-IQ	.433	.152	.10826	.019	30.00	11.0	●
HCP 0437-IQ	.437	.152	.10826	.019	30.00	11.0	●
HCP 0441-IQ	.441	.152	.10826	.019	30.00	11.0	●
HCP 0445-IQ	.445	.152	.10826	.019	30.00	11.0	●
HCP 0449-IQ	.449	.152	.10826	.019	30.00	11.0	●
HCP 0453-IQ	.453	.152	.10826	.019	30.00	11.0	●
HCP 0457-IQ	.457	.152	.10826	.019	30.00	11.0	●
HCP 0461-IQ	.461	.152	.10826	.019	30.00	11.0	●
HCP 0465-IQ	.465	.152	.10826	.019	30.00	11.0	●
HCP 0469-IQ	.469	.152	.10826	.019	30.00	11.0	●
HCP 0472-IQ	.472	.151	.12440	.020	30.00	12.0	●
HCP 0476-IQ	.476	.151	.12440	.020	30.00	12.0	●
HCP 0480-IQ	.480	.151	.12440	.020	30.00	12.0	●
HCP 0484-IQ	.484	.151	.12440	.020	30.00	12.0	●
HCP 0488-IQ	.488	.151	.12440	.020	30.00	12.0	●
HCP 0492-IQ	.492	.151	.12440	.020	30.00	12.0	●
HCP 0496-IQ	.496	.151	.12440	.020	30.00	12.0	●
HCP 0500-IQ	.500	.151	.12440	.020	30.00	12.0	●
HCP 0504-IQ	.504	.151	.12440	.020	30.00	12.0	●
HCP 0508-IQ	.508	.151	.12440	.020	30.00	12.0	●

• Advance Self-Centering and high surface finish • For cutting conditions see page 897-905

(1) Seat size code

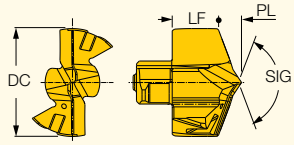
For tools, see pages: DCN-MM (867) • DCN-PICCO (868) • DCN A-1.5D (852) • DCN R-1.5D (853) • DCN A-3D (854) • DCN R-3D (855) • DCN A-5D (856) • DCN R-5D (857) • DCN A-8D (858) • DCN R-8D (859) • DCN R-12D (860) • DCN C-3D (861) • DCN C-5D (862) • DCN C-8D (863) • DCN C-12D (864) • DCNM (865)

SUMOCHAM

QCP-2M

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







M E T R I C

Designation	Dimensions DC	LF	PL	SIG	SSC(2)		IC608
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		•

• 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 897-905

(1) Single margin

(2) Seat size code

For tools, see pages: DCN-MM (867) • DCN-PICCO (868) • DCN A-1.5D (852) • DCN R-1.5D (853) • DCN A-3D (854) • DCN R-3D (855) • DCN A-5D (856) • DCN R-5D (857) • DCN A-8D (858) • DCN R-8D (859) • DCN R-12D (860) • DCN C-3D (861) • DCN C-5D (862) • DCN C-12D (864) • DCNM (865)

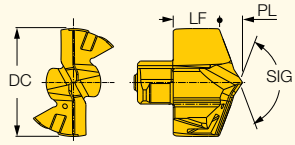
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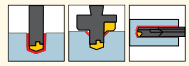
SUMOCHAM

QCP-2M

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







M E T R I C

Designation	Dimensions DC	LF	PL	SIG	SSC(2)	IC908
QCP 107-2M	10.70	4.56	2.230	136	10.0	●
QCP 108-2M	10.80	4.54	2.250	136	10.0	●
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	●

• 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 897-905

(1) Single margin

(2) Seat size code

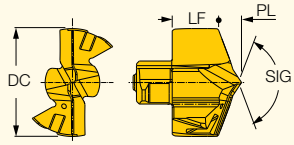
For tools, see pages: DCN-MM (867) • DCN-PICCO (868) • DCN A-1.5D (852) • DCN R-1.5D (853) • DCN A-3D (854) • DCN R-3D (855) • DCN A-5D (856) • DCN R-5D (857) • DCN A-8D (858) • DCN R-8D (859) • DCN R-12D (860) • DCN C-3D (861) • DCN C-5D (862) • DCN C-12D (864) • DCNM (865)

SUMOCHAM

QCP-2M

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







I N C H

Designation	Dimensions DC	LF	PL	SIG	SSC(2)		IC608
QCP 0177 (1)	.177	.112	.03582	136	4.5	SK DCN 4-4.99	●
QCP 0181 (1)	.181	.111	.03661	136	4.5	SK DCN 4-4.99	●
QCP 0189 (1)	.189	.109	.03818	136	4.5	SK DCN 4-4.99	●
QCP 0197 (1)	.197	.120	.04055	136	5.0	SK DCN 5-5.99	●
QCP 0201 (1)	.201	.119	.04133	136	5.0	SK DCN 5-5.99	●
QCP 0217 (1)	.217	.116	.04685	136	5.5	SK DCN 5-5.99	●
QCP 0236-2M	.236	.110	.04763	136	6.0		●
QCP 0240-2M	.240	.109	.04842	136	6.0		●
QCP 0244-2M	.244	.108	.04921	136	6.0		●
QCP 0248-2M	.248	.107	.05000	136	6.0		●
QCP 0250-2M	.250	.107	.05039	136	6.0		●
QCP 0252-2M	.252	.107	.05078	136	6.0		●
QCP 0256-2M	.256	.118	.05157	136	6.5		●
QCP 0260-2M	.260	.117	.05236	136	6.5		●
QCP 0264-2M	.264	.116	.05315	136	6.5		●
QCP 0268-2M	.268	.115	.05394	136	6.5		●
QCP 0272-2M	.272	.115	.05472	136	6.5		●
QCP 0276-2M	.276	.128	.05314	136	7.0		●
QCP 0280-2M	.280	.127	.05393	136	7.0		●
QCP 0283-2M	.283	.126	.05472	136	7.0		●
QCP 0287-2M	.287	.126	.05551	136	7.0		●
QCP 0291-2M	.291	.125	.05629	136	7.0		●
QCP 0295-2M	.295	.124	.05708	136	7.0		●
QCP 0299-2M	.299	.123	.05787	136	7.0		●
QCP 0303-2M	.303	.122	.05866	136	7.0		●
QCP 0307-2M	.307	.122	.05944	136	7.0		●
QCP 0311-2M	.311	.121	.06023	136	7.0		●
QCP 0315-2M	.315	.149	.06377	136	8.0		●
QCP 0319-2M	.319	.148	.06456	136	8.0		●
QCP 0323-2M	.323	.147	.06535	136	8.0		●
QCP 0327-2M	.327	.146	.06614	136	8.0		●
QCP 0331-2M	.331	.146	.06692	136	8.0		●
QCP 0335-2M	.335	.145	.06771	136	8.0		●
QCP 0339-2M	.339	.144	.06850	136	8.0		●
QCP 0343-2M	.343	.143	.06929	136	8.0		●
QCP 0346-2M	.346	.143	.07007	136	8.0		●
QCP 0354-2M	.354	.153	.07519	136	9.0		●
QCP 0358-2M	.358	.152	.07598	136	9.0		●
QCP 0362-2M	.362	.152	.07677	136	9.0		●
QCP 0366-2M	.366	.151	.07755	136	9.0		●
QCP 0370-2M	.370	.150	.07834	136	9.0		●
QCP 0374-2M	.374	.149	.07913	136	9.0		●
QCP 0378-2M	.378	.148	.07992	136	9.0		●
QCP 0382-2M	.382	.148	.08070	136	9.0		●
QCP 0386-2M	.386	.147	.08149	136	9.0		●
QCP 0390-2M	.390	.146	.08228	136	9.0		●
QCP 0394-2M	.394	.185	.08228	136	10.0		●
QCP 0398-2M	.398	.184	.08307	136	10.0		●
QCP 0402-2M	.402	.183	.08385	136	10.0		●
QCP 0406-2M	.406	.183	.08464	136	10.0		●
QCP 0409-2M	.409	.182	.08543	136	10.0		●
QCP 0413-2M	.413	.181	.08622	136	10.0		●
QCP 0417-2M	.417	.180	.08700	136	10.0		●

• Provides high surface finish of up to 64 microinches Ra hole cylindricity and straightness of up to.002" • For cutting conditions see pages 897-905

(1) Single margin

(2) Seat size code

For tools, see pages: DCN-MM (867) • DCN-PICCO (868) • DCN A-1.5D (852) • DCN R-1.5D (853) • DCN A-3D (854) • DCN R-3D (855) • DCN A-5D (856) • DCN R-5D (857) • DCN A-8D (858) • DCN R-8D (859) • DCN R-12D (860) • DCN C-3D (861) • DCN C-5D (862) • DCN C-12D (864) • DCNM (865)

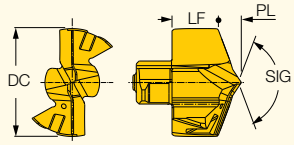
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SUMOCHAM

QCP-2M

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







I N C H						
	Dimensions					
Designation	DC	LF	PL	SIG	SSC(2)	IC608
QCP 0421-2M	.421	.180	.08779	136	10.0	●
QCP 0425-2M	.425	.179	.08858	136	10.0	●
QCP 0429-2M	.429	.178	.08937	136	10.0	●
QCP 0433-2M	.433	.194	.09133	136	11.0	●
QCP 0437-2M	.437	.193	.09212	136	11.0	●
QCP 0441-2M	.441	.193	.09291	136	11.0	●
QCP 0445-2M	.445	.192	.09370	136	11.0	●
QCP 0449-2M	.449	.191	.09448	136	11.0	●
QCP 0453-2M	.453	.190	.09527	136	11.0	●
QCP 0457-2M	.457	.189	.09606	136	11.0	●
QCP 0461-2M	.461	.189	.09685	136	11.0	●
QCP 0465-2M	.465	.188	.09763	136	11.0	●
QCP 0469-2M	.469	.187	.09842	136	11.0	●
QCP 0472-2M	.472	.204	.09645	136	12.0	●
QCP 0476-2M	.476	.203	.09724	136	12.0	●
QCP 0480-2M	.480	.202	.09803	136	12.0	●
QCP 0484-2M	.484	.202	.09881	136	12.0	●
QCP 0488-2M	.488	.201	.09960	136	12.0	●
QCP 0492-2M	.492	.200	.10039	136	12.0	●
QCP 0496-2M	.496	.199	.10118	136	12.0	●
QCP 0500-2M	.500	.198	.10196	136	12.0	●
QCP 0504-2M	.504	.198	.10275	136	12.0	●
QCP 0508-2M	.508	.197	.10354	136	12.0	●

• Provides high surface finish of up to 64 microinches Ra hole cylindricity and straightness of up to.002" • For cutting conditions see pages 897-905

(1) Single margin

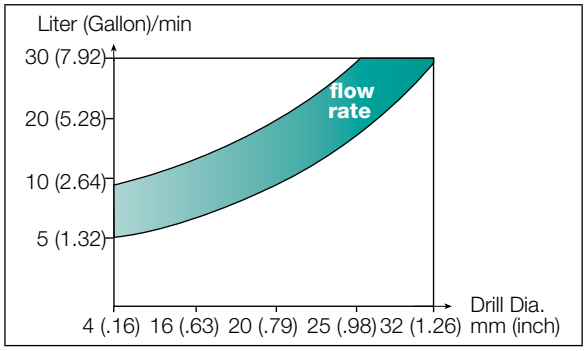
(2) Seat size code

For tools, see pages: DCN-MM (867) • DCN-PICCO (868) • DCN A-1.5D (852) • DCN R-1.5D (853) • DCN A-3D (854) • DCN R-3D (855) • DCN A-5D (856) • DCN R-5D (857) • DCN A-8D (858) • DCN R-8D (859) • DCN R-12D (860) • DCN C-3D (861) • DCN C-5D (862) • DCN C-12D (864) • DCNM (865)

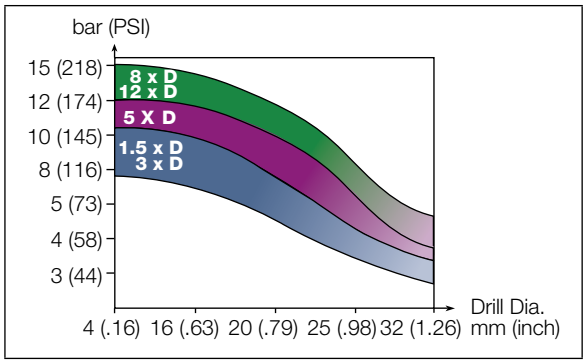
SUMO-CHAM General Information

- 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



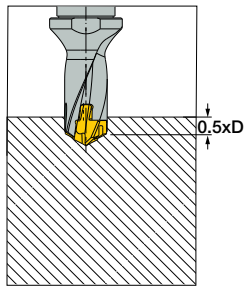
Minimum Coolant Pressure



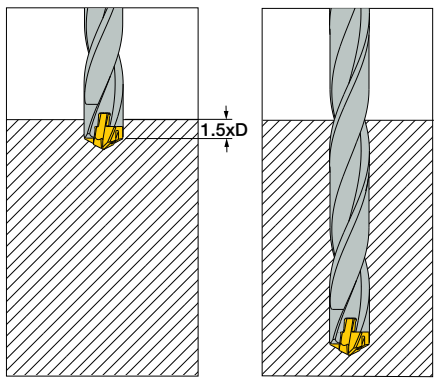
- For optimal performance, it is recommended to adjust runout of outer points or chisel with a maximum of 0.02 mm (.001″) Large runout will influence drill performance tool life and hole quality.
- No setup time is needed after indexing the **SUMO-CHAM** drill head.
- **SUMO-CHAM** drills can be used 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 2-5 mm (.08-.2″) 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.

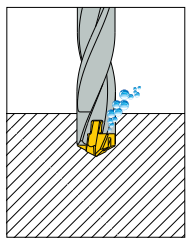
1 Pre-Hole 0.5xD Deep for Centering



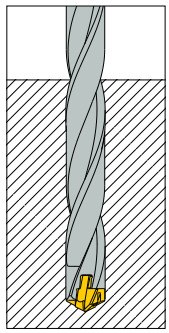
2 Slow Rotation and Feed While Entering the Pre-Hole



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



4 Continue Drilling at Recommended Cutting Conditions

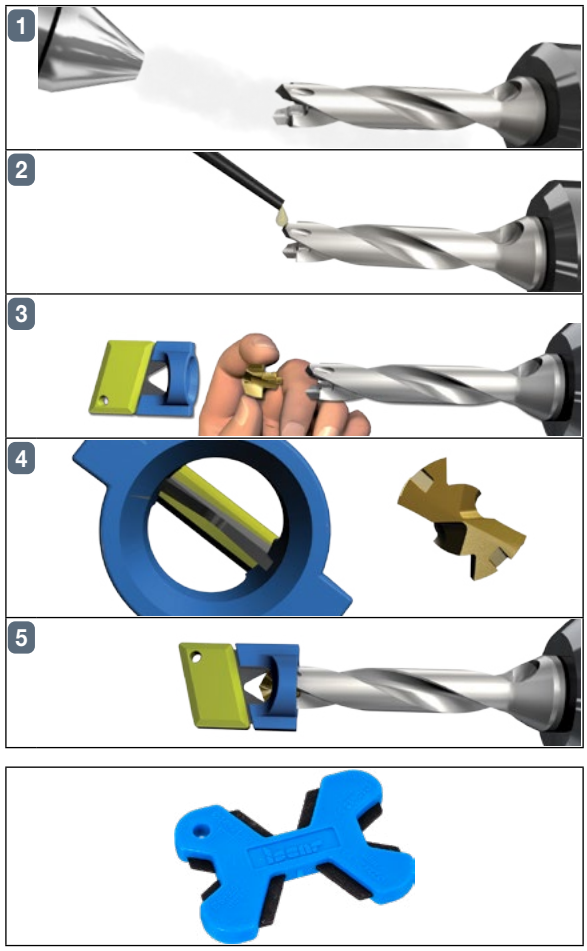


Prehole Adjustment

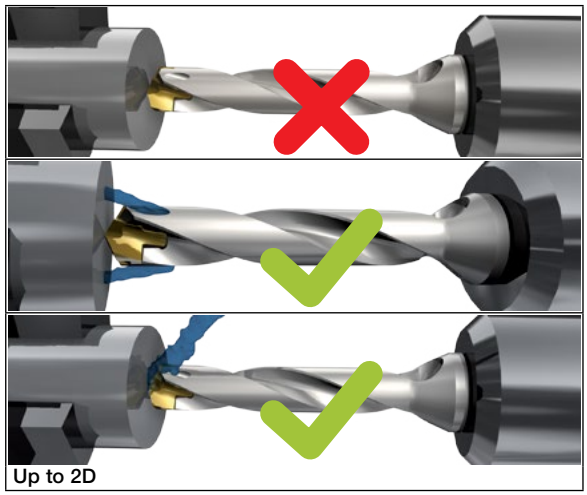
PreHole / Hole	ICP/ ICM/ ICN/ IHP	ICK	HCP/H3P	FCP/F3P	QCP	ICG
ICP/ ICM/ ICN/ IHP	IHP/ ICP/M/N PreHole ✓	ICK PreHole ✗	H#P PreHole ✗	FCP PreHole ✗	QCP PreHole ✗	ICG PreHole ✗
ICK	IHP/ ICP/M/N PreHole ✓	ICK PreHole ✓	H#P PreHole ✗	FCP PreHole ✗	QCP PreHole ✗	ICG PreHole ✗
HCP/ H3P	IHP/ ICP/M/N PreHole ✓	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 (.004") range of the same diameter may be used

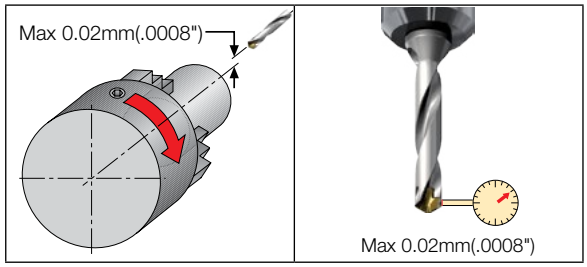
Drilling Head Mounting Procedure



Coolant Recommendations



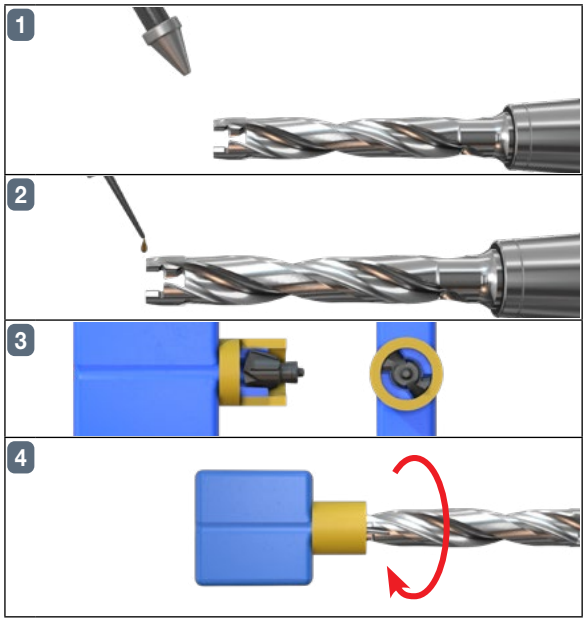
Maximum Runout, Misalignment



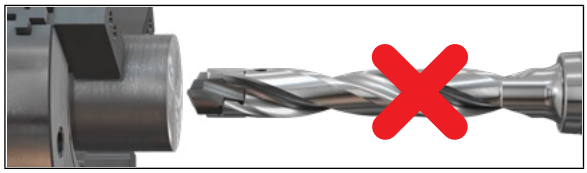
K DCN MULTI

The optional K DCN MULTI key enables clamping all **SUMO-CHAM** drilling heads geometry variety in 6-26.99 mm (.236-1.062") diameter range.

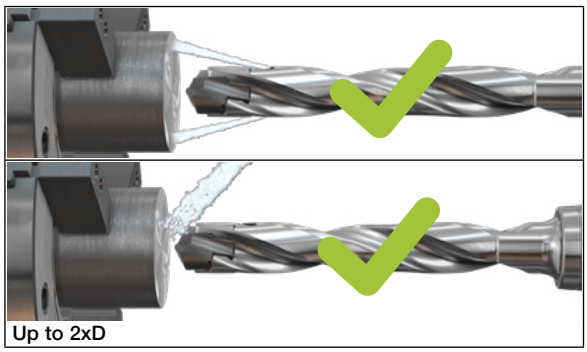
Drilling Head Dia. 4.0-5.99 Mm (.157-.232″) Mounting Procedure



Coolant Recommendations

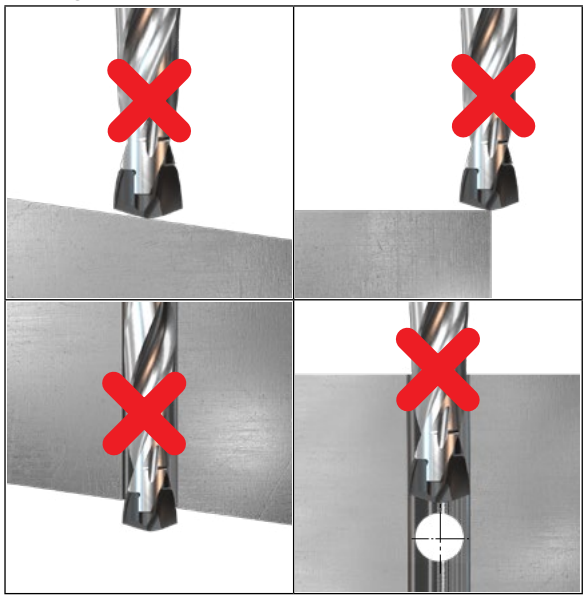


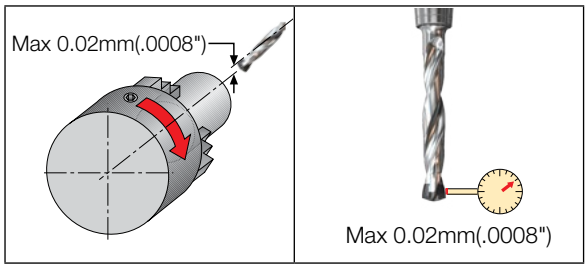
Dry machining



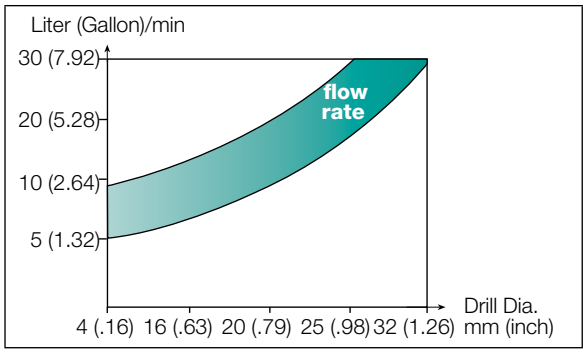
Up to 2xD

Drilling Limitations

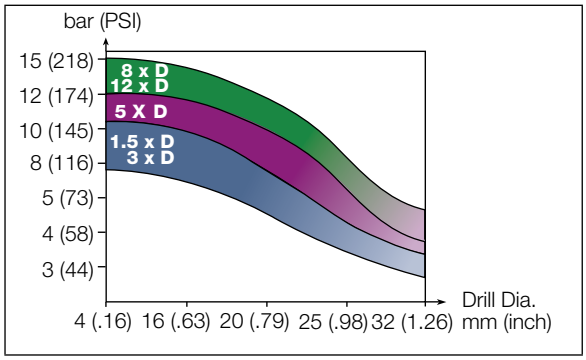




Coolant Flow Rate

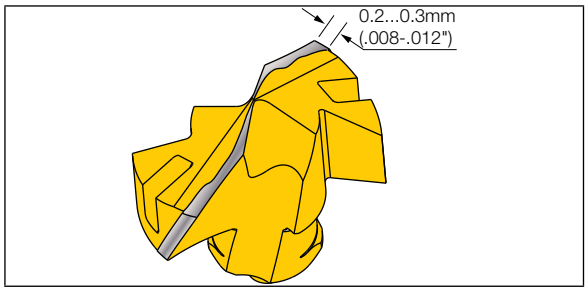


Minimum Coolant Pressure

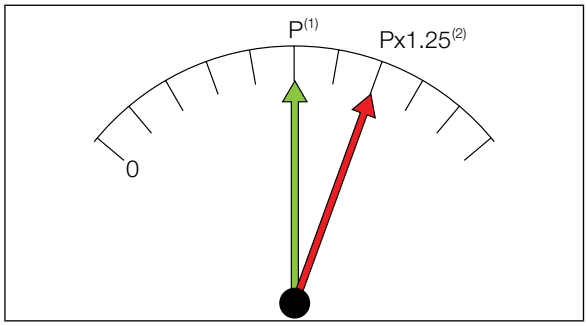


Indication of Drill Head Wear

Wear Limit



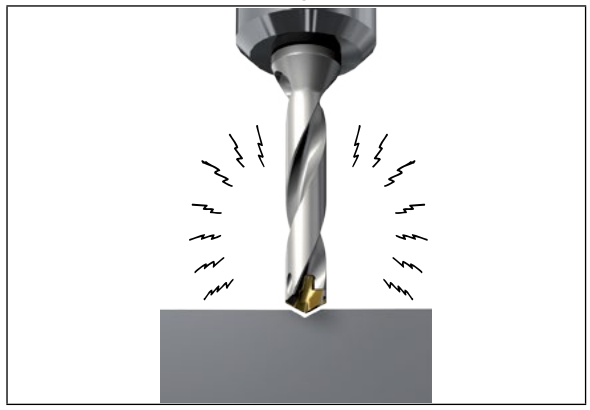
Power Restriction



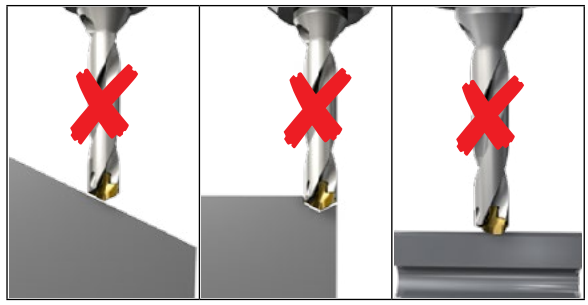
(1) New drilling head
(2) Worn-out drilling head

Diameter Change	Surface Finish Declines
Ø > D nominal + 0.15mm(.006") D nominal Ø < D nominal - 0.03mm(.0012")	Ra

Vibration Noise Drastically Increases



Drilling Limitations



SUMO-CHAM Cutting Parameters (Metric)

Material Groups							Recommended Machining Conditions						
								Feed Vs. Drill Diameter					
ISO	Material		Condition	Tensile Strength [N/mm²]	Hardness HB	Material No.	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
								mm/rev					
P	non-alloy steel and cast steel, free cutting steel	<0.25% C	annealed	420	125	1	80-**110**-140	0.04 **0.06** 0.08	0.07 **0.09** 0.11	0.09 **0.11** 0.13	0.12 **0.17** 0.22	0.15 **0.21** 0.28	0.18 **0.24** 0.30
		≥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	0.04 **0.06** 0.08	0.07 **0.10** 0.13	0.09 **0.12** 0.15	0.12 **0.18** 0.25	0.14 **0.21** 0.28	0.16 **0.24** 0.32
			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	0.06 **0.07** 0.08	0.07 **0.09** 0.10	0.09 **0.11** 0.12	0.12 **0.16** 0.20	0.12 **0.17** 0.22	0.15 **0.20** 0.25
			quenched and tempered	1100	325	11	40-**60**-80						
	stainless steel and cast steel		ferritic/martensitic	680	200	12	40-**55**-70	0.05 **0.06** 0.07	0.06 **0.07** 0.08	0.08 **0.09** 0.10	0.10 **0.12** 0.15	0.12 **0.15** 0.18	0.14 **0.17** 0.20
			martensitic	820	240	13	40-**55**-70						
M	stainless steel and cast steel		austenitic, duplex	600	180	14	30-**50**-70	0.05 **0.06** 0.07	0.06 **0.07** 0.08	0.08 **0.09** 0.10	0.10 **0.12** 0.15	0.12 **0.15** 0.18	0.14 **0.17** 0.20
N	aluminum-wrought alloys		not hardenable		60	21	90-**155**-220				0.20 **0.27** 0.35	0.25 **0.32** 0.40	0.30 **0.37** 0.45
			hardenable		100	22							
	aluminum-cast alloys	≤12% Si	not hardenable		75	23							
			hardenable		90	24							
		>12% Si	high temperature		130	25	80-**120**-160						
	copper alloys	>1% Pb	free cutting		110	26	90-**155**-220						
			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-**45**-60			0.05 **0.06** 0.07	0.06 **0.08** 0.11	0.08 **0.10** 0.13	0.10 **0.12** 0.15
			hardened		280	32	20-**35**-50						
		Ni or Co based	annealed		250	33							
			hardened		350	34							
			cast		320	35							
	titanium alloys		pure	400		36	20-**35**-50			0.05 **0.06** 0.07	0.06 **0.09** 0.12	0.08 **0.11** 0.15	0.10 **0.14** 0.18
			alpha+beta alloys, hardened	1050		37							
H	hardened steel		hardened		55 HRC	38	20-**35**-50			0.05 **0.06** 0.07	0.06 **0.09** 0.12	0.08 **0.11** 0.15	0.10 **0.14** 0.18
			hardened		60 HRC	39							

Recommended cutting data

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 (Metric)

Material Groups							Recommended Machining Conditions					
							Feed Vs. Drill Diameter					
ISO	Material	Condition	Tensile Strength [N/mm²]	Hardness HB	Material No.	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
							mm/rev					
P	non-alloy steel and cast steel, free cutting steel <0.25% C	annealed	420	125	1	80-**110**-140	0.04 **0.06** 0.08	0.07 **0.09** 0.11	0.09 **0.11** 0.13	0.12 **0.17** 0.22	0.15 **0.21** 0.28	0.18 **0.24** 0.30
	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	0.04 **0.06** 0.08	0.07 **0.09** 0.11	0.09 **0.12** 0.15	0.12 **0.18** 0.25	0.14 **0.21** 0.28	0.16 **0.24** 0.32
	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	0.06 **0.07** 0.08	0.07 **0.09** 0.10	0.09 **0.11** 0.12	0.12 **0.16** 0.20	0.12 **0.17** 0.22	0.15 **0.20** 0.25
	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	0.05 **0.06** 0.07	0.06 **0.07** 0.08	0.08 **0.10** 0.11	0.11 **0.15** 0.19	0.11 **0.16** 0.21	0.14 **0.19** 0.24
	stainless steel and cast steel	martensitic	820	240	13							

Recommended cutting data

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

SUMO-CHAM Cutting Parameters (Imperial)

ISO	Material		Condition	Tensile Strength [ksi]	Hardness HB	Material Group No.	V_c SFM	SUMO-CHAM Feed Vs. Drill Diameter D= .157-.193	D= .197-.232	D= .236-.311	D= .315-.390	D= .394-.469	D= .472-.547
								IPR					
P	non-alloy steel and cast steel, free cutting steel	<0.25% C	annealed	61	125	1	260-360-460	.0015 .0023 .0031	.0027 .0035 .0043	.0035 .0043 .0051	.0047 .0066 .0086	.0059 .0082 .0106	.0070 .0094 .0118
		≥0.25% C	annealed	94	190	2	260-340-430						
		<0.55% C	quenched and tempered	123	250	3	260-330-390						
		≥0.55% C	annealed	109	220	4	230-300-360						
			quenched and tempered	145	300	5	160-230-300						
	low alloy and cast steel (less than 5% of alloying elements)		annealed	87	200	6	230-310-390	.0015 .0023 .0031	.0027 .0039 .0051	.0035 .0047 .0059	.0055 .0082 .0110	.0062 .0094 .0125	.0062 .0094 .0125
			quenched and tempered	135	275	7	230-300-360						
				145	300	8	160-230-300						
				174	350	9	130-180-230						
	high alloyed steel, cast steel and tool steel		annealed	99	200	10	160-230-300	.0023 .0027 .0031	.0027 .0035 .0039	.0035 .0043 .0047	.0043 .0055 .0070	.0051 .0066 .0086	.0059 .0078 .0098
			quenched and tempered	160	325	11	130-200-260						
	stainless steel and cast steel		ferritic/martensitic	99	200	12	130-180-230	.0019 .0023 .0027	.0023 .0027 .0031	.0031 .0035 .0039	.0039 .0047 .0059	.0047 .0059 .0070	.0055 .0066 .0078
			martensitic	119	240	13							
M	stainless steel and cast steel		austenitic, duplex	87	180	14	100-160-230	.0019 .0023 .0027	.0023 .0027 .0031	.0031 .0035 .0039	.0039 .0047 .0059	.0047 .0059 .0070	.0055 .0066 .0078
N	aluminum-wrought alloys		not hardenable		60	21	300-510-720	.0019 .0047 .0078	.0039 .0066 .0098	.0059 .0086 .0118	.0078 .0106 .0137	.0098 .0125 .0157	.0118 .0145 .0177
			hardenable		100	22							
	aluminum-cast alloys	≤12% Si	not hardenable		75	23							
			hardenable		90	24							
		>12% Si	high temperature		130	25	260-390-520						
	copper alloys	>1% Pb	free cutting		110	26	300-510-720						
			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	100-150-200	.0011 .0015 .0019	.0015 .0019 .0023	.0019 .0023 .0027	.0023 .0031 .0043	.0031 .0039 .0051	.0039 .0047 .0059
			hardened		280	32	70-110-160						
		Ni or Co based	annealed		250	33							
			hardened		350	34							
			cast		320	35							
	titanium alloys		pure	58	190	36	70-110-160	.0011 .0015 .0019	.0015 .0019 .0023	.0019 .0023 .0027	.0023 .0035 .0047	.0031 .0043 .0059	.0039 .0055 .0070
			alpha+beta alloys, hardened	152	310	37							
H	hardened steel		hardened		55 HRC	38	70-110-160			.0019 .0023 .0027	.0023 .0035 .0047	.0031 .0043 .0059	.0039 .0055 .0070
			hardened		60 HRC	39							

Recommended cutting data

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%

SUMO-CHAM-IQ Cutting Parameters (Imperial)

ISO	Material		Condition	Tensile Strength [ksi]	Hardness HB	Material Group No.	V_c SFM	SUMO-CHAM Feed Vs. Drill Diameter D= .157-.193	D= .197-.232	D=.236-.311	D=.315-.390	D=.394-.469	D=.472-.547
								IPR					
P	non-alloy steel and cast steel, free cutting steel	<0.25% C	annealed	61	125	1	260-360-460	.0015 .0023 .0031	.0027 .0035 .0042	0035 .0043 .0051	.005 .007 .009	.006 .008 .011	.007 .009 .012
		≥0.25% C	annealed	94	190	2	260-340-430						
		<0.55% C	quenched and tempered	123	250	3	260-330-390						
		≥0.55% C	annealed	109	220	4	230-300-360						
			quenched and tempered	145	300	5	160-230-300						
	low alloy and cast steel (less than 5% of alloying elements)		annealed	87	200	6	230-310-390	.0015 .0023 .0031	.0027 .0039 .0050	.0035 .0047 .0059	.005 .007 .010	.006 .008 .011	.006 .009 .013
			quenched and tempered	135	275	7	230-300-360						
				145	300	8	160-230-300						
				174	350	9	130-180-230						
	high alloyed steel, cast steel and tool steel		annealed	99	200	10	160-230-300	.0023 .0027 .0031	.0027 .0035 .0039	.0035 .0041 .0047	.005 .006 .008	.005 .007 .009	.006 .008 .010
			quenched and tempered	160	325	11	130-200-260						
	stainless steel and cast steel		ferritic/ martensitic	99	200	12	130-180-230	.0019 .0023 .0027	.0023 .0027 .0031	.0031 .0040 .0042	.0042 .0060 .0075	.0042 .0063 .0082	.0055 .0075 .0094
			martensitic	119	240	13							

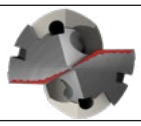
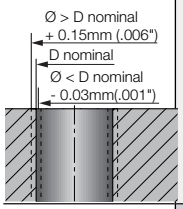
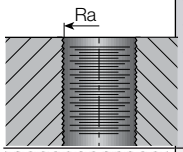
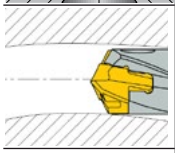
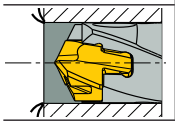
Recommended cutting data

Then, according to the wear results, conditions can be changed to optimize performance.
The data refers to IC908

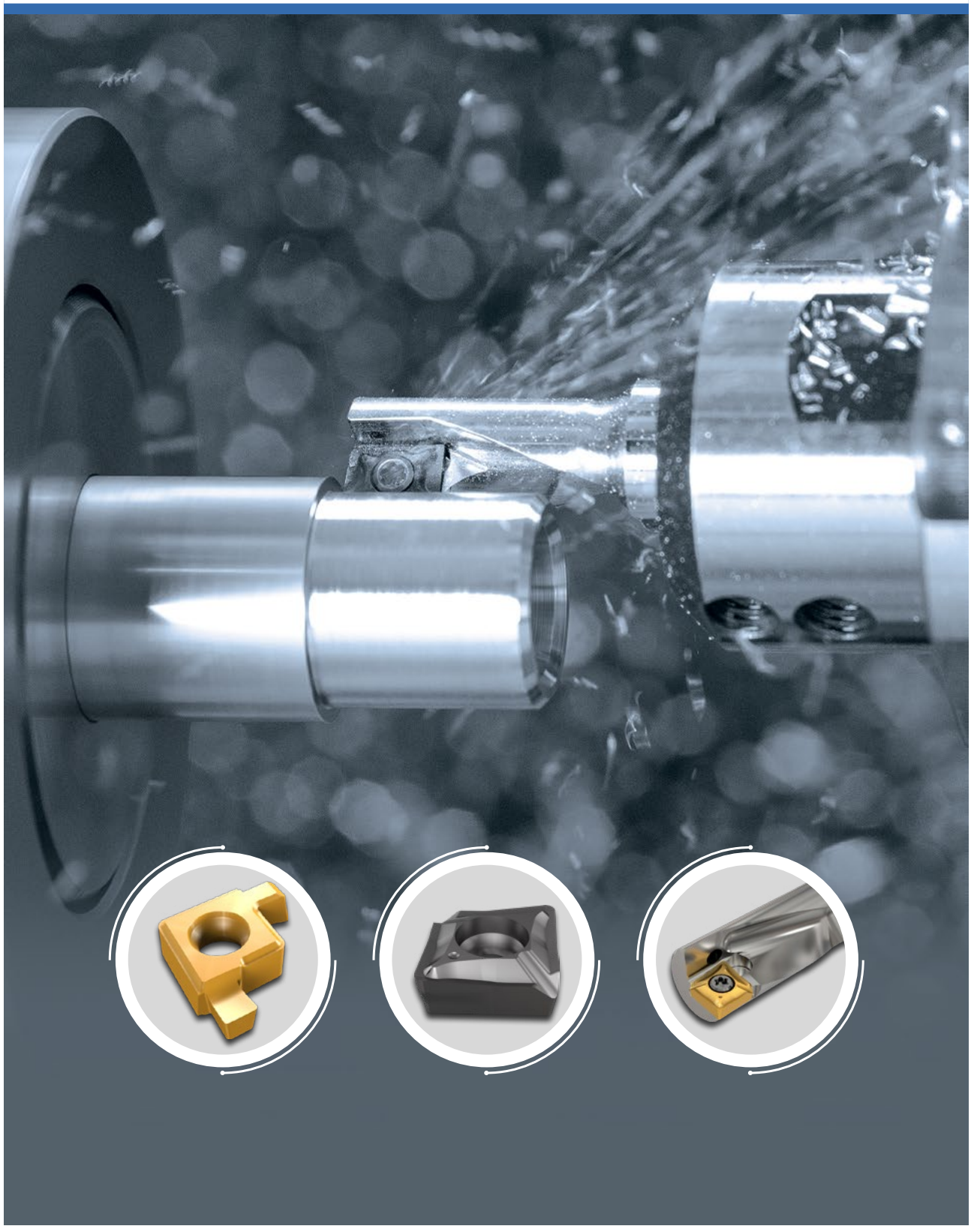
- When using external coolant supply only, reduce cutting speed by 10%
- When using more than 5XD drill ratio, reduce cutting parameters by 10%

No need to reduce the cutting parameters while using 8XD and up holders

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 0.02 mm (.0008″) 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 0.02 mm (.0008″) 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 0.02 mm (.0008″) 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 0.02 mm (.0008″) 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 0.02 mm (.0008″) 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 0.02 mm (.0008″) 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 within0.02 mm (.0008″) 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 0.02 mm (.0008″) 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.

MULTI-FUNCTION TOOLS



Multifunction Tools

DRG-MF

MULTI-FUNCTION Drilling, Boring, Facing, External Turning and Internal Grooving Tools

Fig. 1

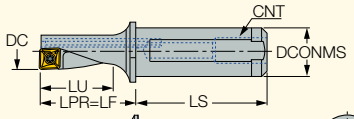
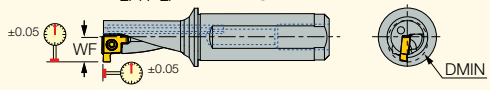
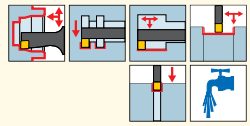


Fig. 2





Right-hand shown

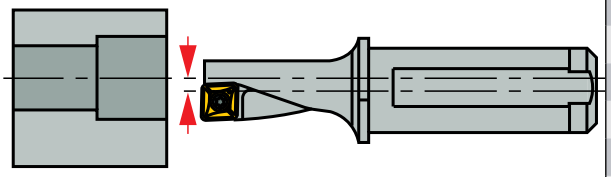
M E T R I C

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

- 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 (908) • XCMT-MG (909)

Radial Adjustment (off-center drilling)

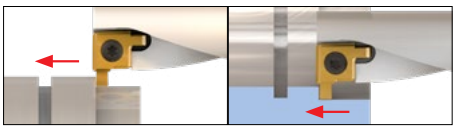


Radial Adjustment is Dependent on Drill Diameter

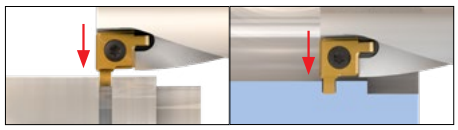
Holder	Drill dia.	Dmin	Dmax
DRG-MF 8	8	7.86	8.35
DRG-MF 10	10	9.82	10.60
DRG-MF 12	12	11.82	12.60
DRG-MF 14	14	13.80	14.60
DRG-MF16	16	15.76	16.50
DRG-MF 20	20	19.80	20.60
DRG-MF 25	25	24.80	25.80
DRG-MF 32	32	31.80	33.00

Typical Applications

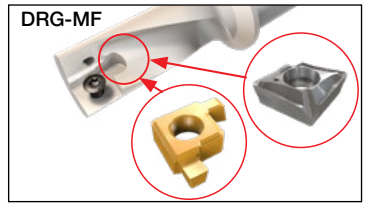
External Internal



External Internal



DRG-MF



Multifunction Tools

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



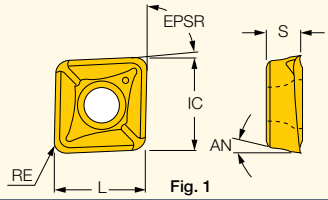


Fig. 1

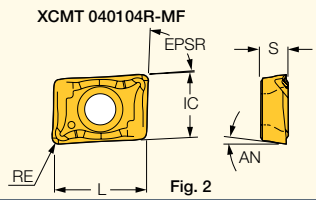


Fig. 2

M E T R I C

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 (907)

Multifunction Tools

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



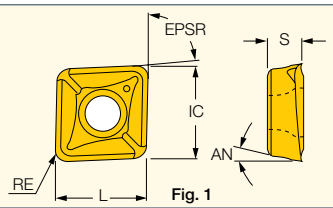


Fig. 1

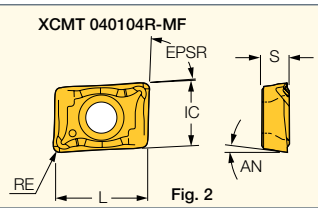


Fig. 2

I N C H

Designation	Dimensions IC	L	S	RE	AN	EPSR	Fig.	IC908
XCMT 040104R/L-MF	.173	.251	.067	.0157	7.0	83.5	2	●
XCMT 050204-MF	.220	.220	.083	.0157	7.0	83.5	1	●
XCMT 060204-MF	.252	.252	.094	.0157	7.0	83.5	1	●
XCMT 070304-MF	.295	.295	.125	.0157	7.0	83.5	1	●
XCMT 080304-MF	.332	.332	.125	.0157	7.0	83.5	1	●
XCMT 10T304-MF	.413	.413	.156	.0157	7.0	83.5	1	●
XCMT 10T308-MF	.413	.413	.156	.0315	7.0	83.5	1	●
XCMT 130404-MF	.528	.528	.187	.0157	7.0	83.5	1	●
XCMT 130408-MF	.528	.528	.187	.0315	7.0	83.5	1	●
XCMT 170508-MF	.685	.685	.219	.0315	7.0	83.5	1	●

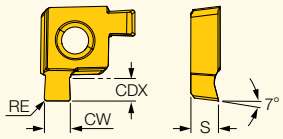
For tools, see pages: DRG-MF (907)

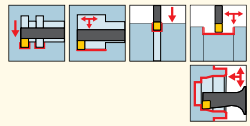
Multifunction Tools

XCMT-MG

Two Cutting Edged Internal Grooving Inserts for DR-MF MULTI-FUNCTION Tools







M E T R I C

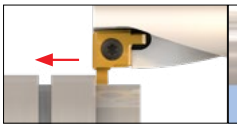
Designation	Dimensions CW	CDX	CWTOL[1]	RE	S	IC808G	Recommended Machining Data f turn (mm/rev)	f groove (mm/rev)
XCMT 05R-201802-MG	2.00	1.80	0.020	0.20	2.28	●	0.05-0.10	0.04-0.07
XCMT 06R-202002-MG	2.00	2.00	0.020	0.20	2.65	●	0.05-0.10	0.04-0.07
XCMT 07R-252002-MG	2.50	2.00	0.020	0.20	3.41	●	0.07-0.12	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 width tolerance (+/-)

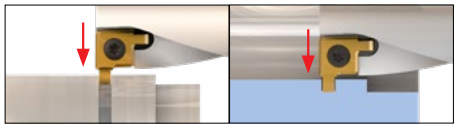
For tools, see pages: DRG-MF (907)

Typical Applications

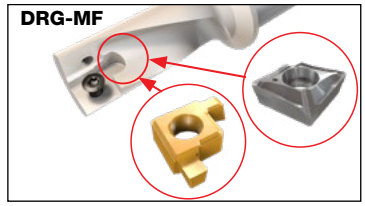
External Internal



External Internal



DRG-MF

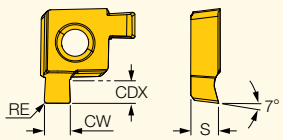


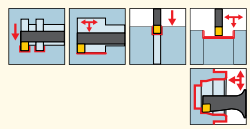
Multifunction Tools

XCMT-MG

Two Cutting Edged Internal Grooving Inserts for DR-MF MULTI-FUNCTION Tools







I N C H

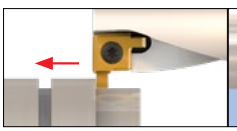
Designation	Dimensions CW	CDX	CWTOL[1]	RE	S	IC808G	Recommended Machining Data f turn (IPR)	f groove (IPR)
XCMT 05R-201802-MG	.079	.071	.00078	.0079	.090	●	.0020-.0039	.0016-.0027
XCMT 06R-202002-MG	.079	.079	.00078	.0079	.104	●	.0020-.0039	.0016-.0027
XCMT 07R-252002-MG	.098	.079	.00078	.0079	.134	●	.0027-.0047	.0020-.0039
XCMT 08R-252502-MG	.098	.098	.00078	.0079	.138	●	.0027-.0047	.0020-.0039
XCMT 10R-303003-MG	.118	.118	.00078	.0118	.171	●	.0055-.0071	.0024-.0047
XCMT 13R-353503-MG	.138	.138	.00078	.0118	.207	●	.0055-.0079	.0027-.0055
XCMT 17R-404004-MG	.157	.157	.00078	.0157	.236	●	.0059-.0083	.0031-.0059

(1) Cutting width tolerance (+/-)

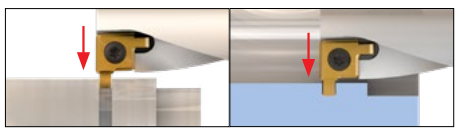
For tools, see pages: DRG-MF (907)

Typical Applications

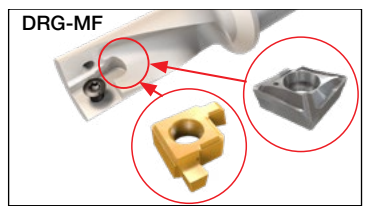
External Internal



External Internal



DRG-MF



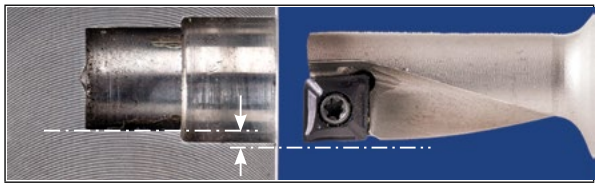
User Guide for DRG-MF

Coolant Pressure

- Apply above 6 Bar (85 PSI) in 2.25xD tools (optimal pressure is above 10 Bar (145 PSI)).

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. mm (inch)	Dmin mm (inch)	Dmax mm (inch)
DRG-MF-10	10.0 (.394)	9.82 (.387)	10.60 (.457)
DRG-MF-12	12.0 (.472)	11.82 (.456)	12.60 (.496)
DRG-MF-14	14.0 (.551)	13.8 (.543)	14.60 (.575)
DRG-MF-16	16.0 (.630)	15.76 (.620)	16.50 (.650)
DRG-MF-20	20.0 (.787)	19.80 (.780)	20.60 (.811)
DRG-MF-25	25.0 (.984)	24.80 (.976)	25.80 (1.016)
DRG-MF-32	32.0 (1.260)	31.80 (1.250)	33.00 (1.300)

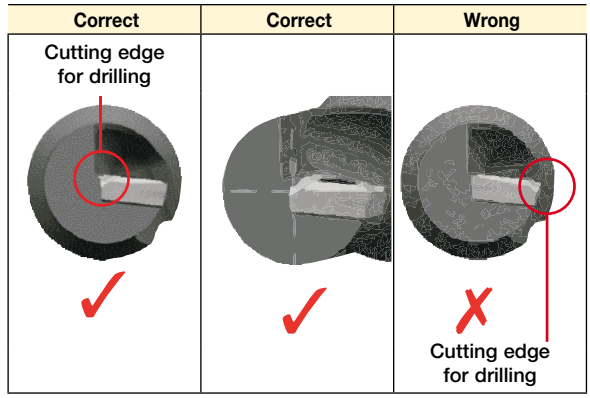
Troubleshooting

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

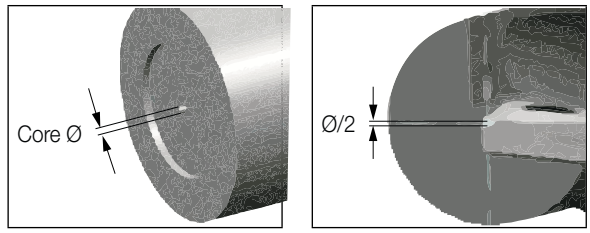
User Guide for Turn-Mill Machines

Insert Positioning

For drilling, cutting edge should be positioned in the center of tool body.

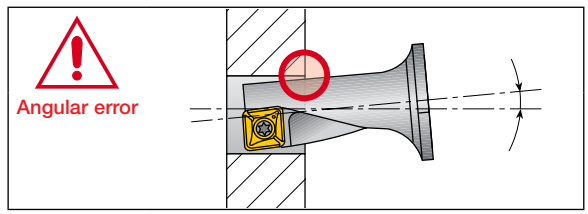


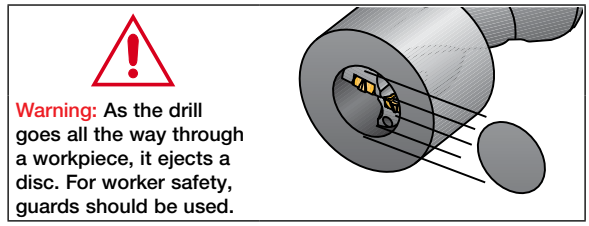
Setup



Check formation of core and its size after drilling 3 to 6 mm (.118 to .236") depth. The diameter of the core should be within 0.15-0.45 mm (.006-.018").
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 (Metric) - Based on ISO 513 and VDI 3323 Standards

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
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

Recommended Cutting Conditions for XCMT-MF Inserts (Imperial) - Based on ISO 513 and VDI 3323 Standards

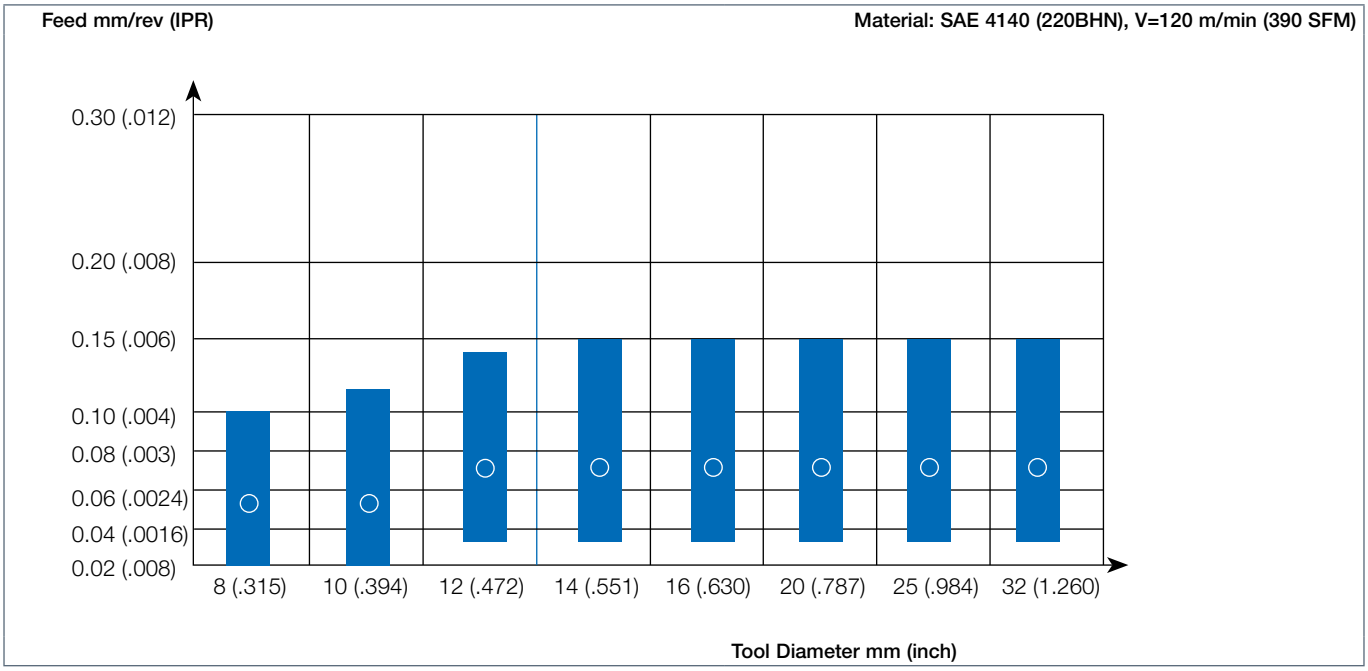
ISO	Material		Condition	Tensile Strength (ksi)	Hardness HB	Material Group No.	Drilling		Turning & Boring		Grooving	
							v_c SFM	Feed IPR	v_c SFM	Feed IPR	v_c SFM	Feed IPR
P	non-alloy steel, cast steel, free cutting steel	<0.25%C	annealed	61	125	1	395-855	.0020-.0024	460-920	.0016-.0055	395-820	.0016-.0098
			annealed	94	190	2	260-625	.0020-.0059	295-655	.0016-.0047	260-590	
		≥0.25%C	quenched and tempered	123	250	3	330-920	.0024-.0071	330-655	.0016-.0059		
		>0.25%C	annealed	109	220	4						
		≥0.55%C	quenched and tempered	145	300	5						
	low alloy steel and cast steel (less than 5% of alloying elements)		annealed	87	200	6	330-920	.0024-.0071	330-655	.0016-.0059	260-590	
			quenched and tempered	135	275	7	195-590	.0016-.0059	260-590	.0028-.0047	195-525	
				145	300	8						
				174	200	9						
	high alloy steel, cast steel and tool steel		annealed	99	200	10	260-625	.0016-.0059	260-655	.0016-.0047	260-525	
			quenched and tempered	160	325	11	165-490	.0016-.0055	195-490		165-395	
	stainless steel and cast steel		ferritic / martensitic	99	200	12	165-690	.0016-.0059	195-755	.0028-.0047	165-655	
			martensitic	119	240	13						
M	stainless steel and cast steel		austenitic, duplex	87	180	14	165-690	.0016-.0059	195-755	.0028-.0047	165-655	
N	aluminum-wrought alloys		not hardenable		60	21	395-1640	.0020-.0118	395-2300	.0016-.0098	330-2300	.0016-.0098
			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	260-1245	.0020-.0091	260-1640	.0016-.0079	260-1150	
			brass		90	27						
			electrolitic copper		100	28						
	non metallic		duroplastics, fiber plastics		70 Shore D	29	165-460	.0016-.005	165-525	.0016-.0047	165-460	
			hard rubber		55 Shore D	30						
S	high temperature alloys	Fe based	annealed		200	31	65-165	.0016-.0020	65-260	.0016-.0020	65-165	.0016-.0098
			hardened		280	32						
		Ni or Co based	annealed		250	33						
			hardened		350	34						
			cast		320	35						
	titanium alloys		pure	58	190	36	100-195		100-330		100-260	
			alpha+beta alloys, hardened	152	310	37						
H	hardened steel		hardened		55 HRC	38	65-130	.0016-.0020	65-230	.0016-.0020	65-165	.0016-.0020
			hardened		60 HRC	39						
	chilled cast iron		cast		400	40						
	cast iron		hardened		55 HRC	41						

steel
stainless steel
non-ferrous metals
superalloys and titanium
hard materials

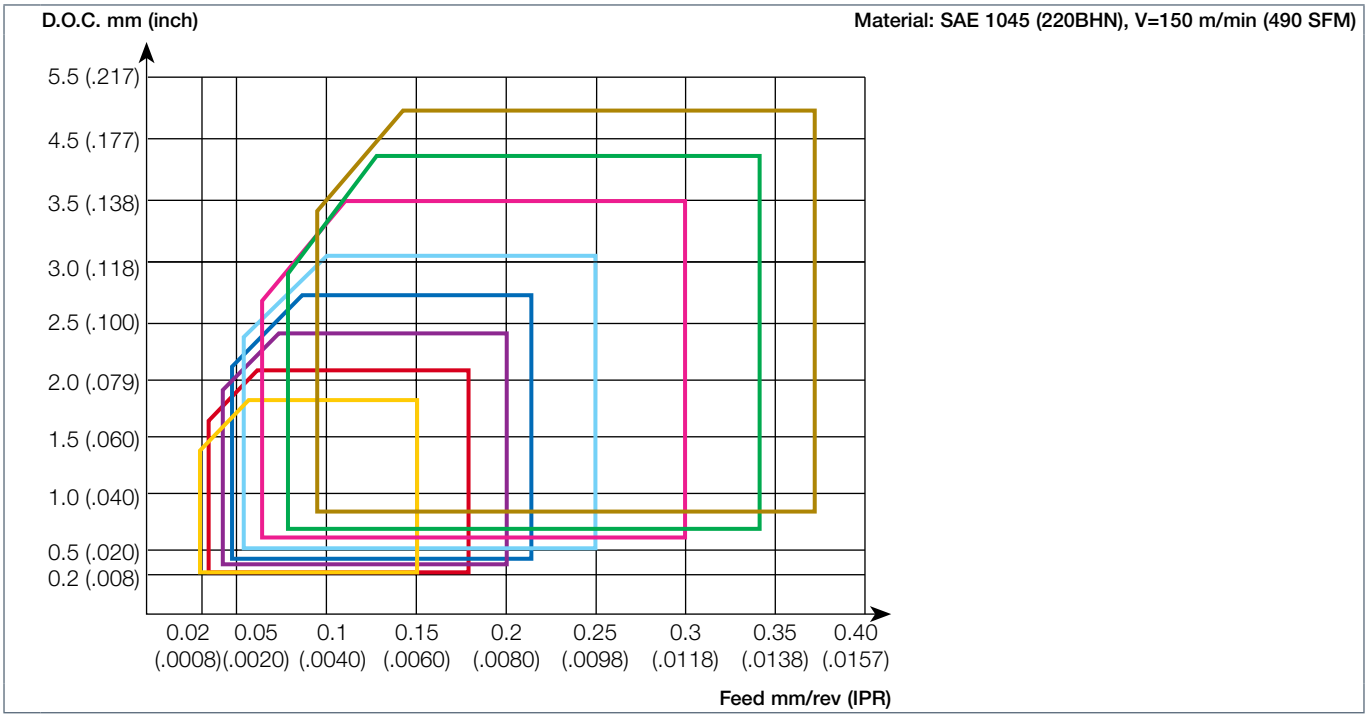
(1) Specific cutting force for .0016inch² chip section
(2) Chip thickness factor

Chip Control Range for DRG-MF

Drilling

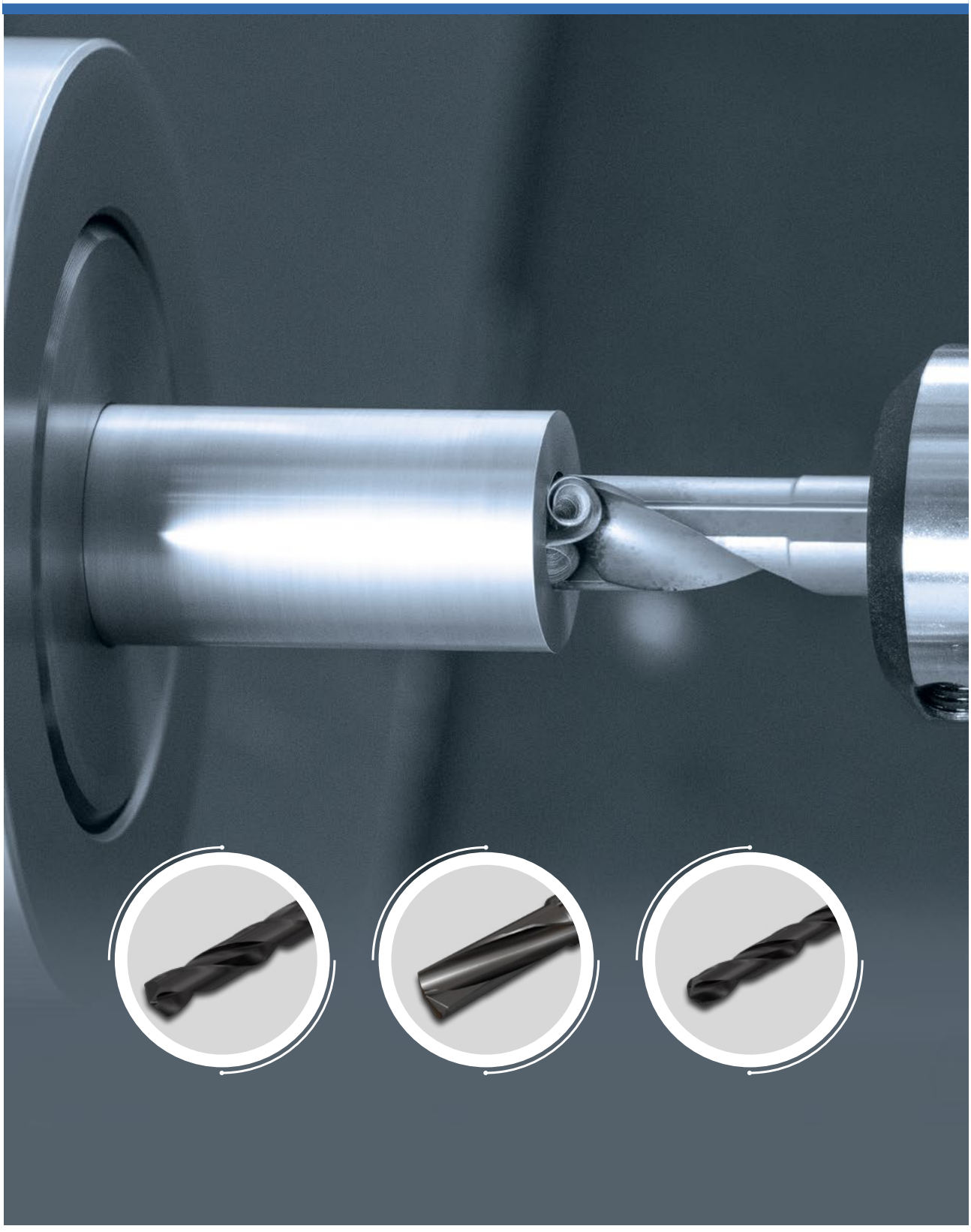


Turning



- XCMT 040104
- XCMT 050204
- XCMT 060204
- XCMT 070304
- XCMT 080304
- XCMT 100304
- XCMT 130304
- XCMT 170304

SOLID CARBIDE DRILLS

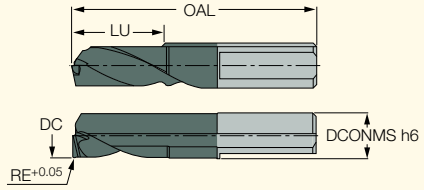


PICCOMF

PICCO-MF

MULTI-FUNCTION Solid Carbide Tools for Drilling, Facing, Internal and External Turning on Swiss and Small CNC Machines





Right-hand shown

M E T R I C

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 0.1 mm smaller by shifting tool center • Applications: drilling; face turning; internal chamfering; internal turning/ boring; internal profiling; external chamfering; external turning

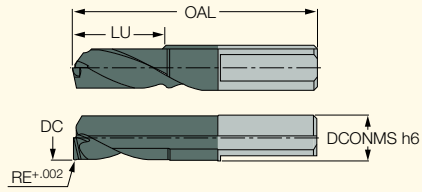
For holders, see pages: PICCO/MG PCO (Holder) (439) • SC-PICCO (836)

PICCOMF

PICCO-MF

MULTI-FUNCTION Solid Carbide Tools for Drilling, Facing, Internal and External Turning on Swiss and Small CNC Machines





Right-hand shown

I N C H

Designation	Dimensions DCONMS	DC	LU	OAL	RE	IC908
PICCO R-MF 6-3 L06	.236	.118	.2362	1.102	.0039	●
PICCO R/L-MF 6-4 L08	.236	.157	.3150	1.181	.0039	●
PICCO R/L-MF 6-4 L12	.236	.157	.4724	1.339	.0079	●
PICCO R/L-MF 6-5 L10	.236	.197	.3937	1.260	.0039	●
PICCO R/L-MF 6-5 L15	.236	.197	.5906	1.614	.0118	●
PICCO R/L-MF 6-6 L12	.236	.236	.4724	1.339	.0039	●
PICCO R/L-MF 6-6 L18	.236	.236	.7087	1.693	.0118	●
PICCO R/L-MF 8-7 L14	.315	.276	.5512	1.614	.0039	●
PICCO R/L-MF 8-7 L21	.315	.276	.8268	2.165	.0118	●
PICCO R/L-MF 8-8 L16	.315	.315	.6299	1.693	.0039	●
PICCO R/L-MF 8-8 L24	.315	.315	.9449	2.303	.0118	●

• Dmin can be .004" smaller by shifting tool center • Applications: drilling; face turning; internal chamfering; internal turning/ boring; internal profiling; external chamfering; external turning

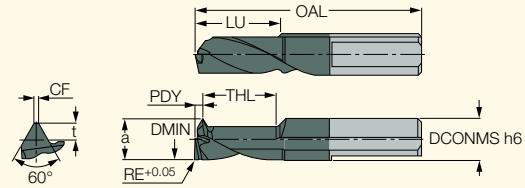
For holders, see pages: PICCO/MG PCO (Holder) (439) • SC-PICCO (836)

PICCOMFT

PICCO-MFT

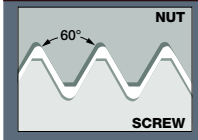
Solid Carbide Tools for Drilling, Facing, Internal / External Turning and Threading on Swiss and Small CNC Machines





Right-hand shown

M E T R I C



Designation	Dimensions														IC908
	DCONMS	DMIN	LU	TPN[2]	TPX[3]	TPIN[4]	TPIX[5]	t	a	CF	THL	OAL	PDY	RE	
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

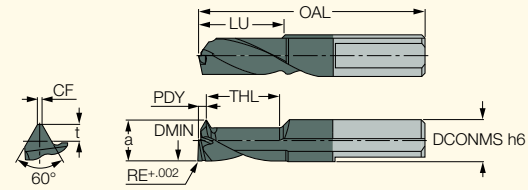
For holders, see pages: PICCO/MG PCO (Holder) (439)

PICCOMFT

PICCO-MFT

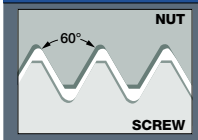
Solid Carbide Tools for Drilling, Facing, Internal / External Turning and Threading on Swiss and Small CNC Machines





Right-hand shown

I N C H



Designation	Dimensions														IC908
	DCONMS	DMIN	LU	TPN (mm)[2]	TPX (mm)[3]	TPIN[4]	TPIX[5]	t	a	CF	THL	OAL	PDY	RE	
PICCO R-MFT60 6-4 L08	.236	.157	.3150	.500	.750	32.00	48.00	.018	.154	.002	.287	1.181	.0512	.0039	●
PICCO R-MFT60 6-4 L12	.236	.157	.4724	.500	.750	32.00	48.00	.018	.154	.002	.457	1.339	.0472	.0079	●
PICCO R/L-MFT60 6-5 L10	.236	.197	.3937	.500	1.000	24.00	48.00	.024	.193	.002	.354	1.260	.0551	.0039	●
PICCO R/L-MFT60 6-5 L15 [1]	.236	.197	.5906	.500	1.000	24.00	48.00	.024	.193	.002	.567	1.457	.0551	.0118	●
PICCO R/L-MFT60 6-6 L18 [1]	.236	.236	.7087	.500	1.000	24.00	48.00	.024	.232	.002	.681	1.693	.0551	.0118	●
PICCO R-MFT60 6-6 L12	.236	.236	.4724	.500	1.000	24.00	48.00	.024	.232	.002	.433	1.339	.0551	.0039	●
PICCO R/L-MFT60 8-7 L14	.315	.276	.5512	.750	1.250	20.00	32.00	.030	.272	.004	.512	1.614	.0590	.0039	●
PICCO R-MFT60 8-7 L21	.315	.276	.8268	.750	1.250	20.00	32.00	.030	.272	.004	.787	2.165	.0590	.0118	●
PICCO R/L-MFT60 8-8 L16	.315	.315	.6299	.900	1.500	16.00	28.00	.036	.311	.004	.591	1.693	.0590	.0039	●
PICCO L-MFT60 8-8 L24 [1]	.315	.315	.9449	.900	1.500	16.00	28.00	.036	.311	.004	.906	2.244	.0590	.0118	●
PICCO R-MFT60 8-8 L24	.315	.315	.9449	.900	1.500	16.00	28.00	.036	.311	.004	.906	2.008	.0590	.0118	●

• 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

For holders, see pages: PICCO/MG PCO (Holder) (439)

PICCO-MF Recommended Cutting Conditions (Metric)

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	40-100	40-180
Carbon steel (≥0.25% C)	2	150-250	40-100	40-180
Low alloy steel	6	~180	40-80	40-140
Medium alloy steel	7	200-250	40-80	40-140
High alloy steel	8, 9	250-350	40-60	40-120
Martensitic stainless steel	12	200	20-60	40-140
Austenitic Stainless Steel	14	200	20-60	40-140
Aluminum alloy	21-24	60-130	50-200	150-320
Copper alloy	26-28	90-100	50-200	150-320

Feed (F) and Depth of Cut (Ap) 2xD

Tool Diameter (mm)	Machining Type	Cutting Conditions	
		A_p (mm)	F (mm/rev)
3-4	External Turning	0.8 (0.2-2.5)	0.04 (0.01-0.08)
	Face Turning	0.6 (0.02-1.7)	0.03 (0.01-0.06)
	Drilling	-	0.02 (0.01-0.06)
5-6	External Turning	-	0.04 (0.01-0.08)
	Face Turning	1.0 (0.2-3.0)	0.03 (0.01-0.06)
	Drilling	0.8 (0.2-2.5)	0.03 (0.01-0.08)
7-8	External Turning	1.3 (0.3-3.5)	0.04 (0.01-0.08)
	Face Turning	1.0 (0.25-0.3)	0.04 (0.01-0.07)
	Drilling	-	0.04 (0.01-0.10)

Feed (F) and Depth of Cut (Ap) 2xD

Tool Diameter (mm)	Machining Type	Cutting Conditions	
		A_p (mm)	F (mm/rev)
3-4	External Turning	0.8 (0.2-2.5)	0.03 (0.01-0.07)
	Face Turning	0.6 (0.02-1.7)	0.02 (0.01-0.04)
	Drilling	-	0.02 (0.01-0.05)
5-6	External Turning	-	0.03 (0.01-0.07)
	Face Turning	1.0 (0.2-3.0)	0.02 (0.01-0.04)
	Drilling	0.8 (0.2-2.5)	0.02 (0.01-0.06)
7-8	External Turning	1.3 (0.3-3.5)	0.03 (0.01-0.07)
	Face Turning	1.0 (0.25-0.3)	0.02 (0.01-0.04)
	Drilling	-	0.03 (0.01-0.08)

PICCO-MF Recommended Cutting Conditions (Imperial)

Cutting Speed (V_c)

Workpiece Materials	Material No. VDI 3323	Hardness (BHN)	Cutting Speed: V_c (SFM) for IC908	
			Drilling	Turning & Boring
Low carbon steel (<0.25% C)	1	150	430 - 790	490 - 890
Carbon steel (≥0.25% C)	2	150-250	300 - 520	330 - 590
Low alloy steel	6	180	390 - 690	460 - 750
Medium alloy steel	7	200-250	230 - 460	260 - 520
High alloy steel	8, 9	250-350	160 - 330	200 - 390
Martensitic stainless steel	12	200	360 - 590	430 - 660
Austenitic Stainless Steel	14	200	300 - 520	330 - 590
Aluminum alloy	21-24	60-130	330 - 1640	490 - 1970
Copper alloy	26-28	90-100	330 - 1310	330 - 1640

Feed (F) and Depth of Cut (A_p) 2xD

Tool Diameter (inch)	Machining Type	Cutting Conditions	
		A_p (inch)	F (IPR)
.118-.157	External Turning	.031 (.008-.098)	.0016 (.0004-.0031)
	Face Turning	.024 (.001-.067)	.0012 (.0004-.0024)
	Drilling	-	.0008 (.0004-.0024)
.197-.236	External Turning	.039 (.008-.118)	.0016 (.0004-.0031)
	Face Turning	.031 (.008-.098)	.0012 (.0004-.0024)
	Drilling	-	.0012 (.0004-.0031)
.276-.315	External Turning	.051 (.012-.138)	.0016 (.0004-.0031)
	Face Turning	.039 (.010-.012)	.0016 (.0004-.0028)
	Drilling	-	.0016 (.0004-.0039)

Feed (F) and Depth of Cut (A_p) 4xD

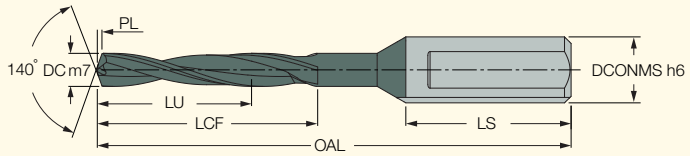
Tool Diameter (inch)	Machining Type	Cutting Conditions	
		A_p (inch)	F (IPR)
.118-.157	External Turning	.031 (.008-.098)	.0012 (.0004-.0028)
	Face Turning	.024 (.001-.067)	.0008 (.0004-.0016)
	Drilling	-	.0008 (.0004-.0020)
.197-.236	External Turning	.039 (.008-.118)	.0012 (.0004-.0028)
	Face Turning	.031 (.008-.098)	.0008 (.0004-.0016)
	Drilling	-	.0008 (.0004-.0024)
.276-.315	External Turning	.051 (.012-.138)	.0012 (.0004-.0028)
	Face Turning	.039 (.010-.012)	.0008 (.0004-.0016)
	Drilling	-	.0012 (.0004-.0031)

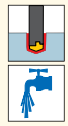
PICCODRILL

SCD-PICCO 3D

Solid Carbide Drills for Swiss and Small CNC Machines







M E T R I C

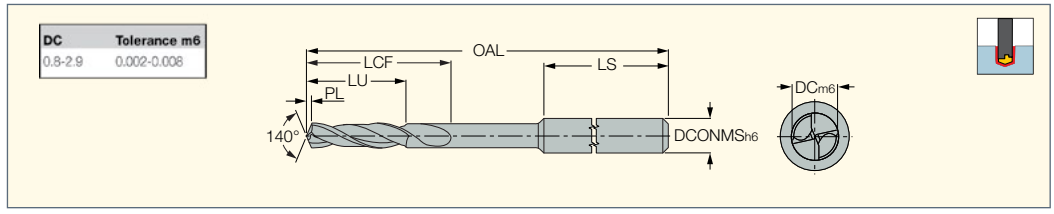
Designation	Dimensions DC	LU	LCF	LS	OAL	PL	DCONMS	IC908
SCD 030-014-060 PICCO 3D	3.00	14.00	21.0	15.0	43.00	0.500	6.00	•
SCD 032-014-060 PICCO 3D	3.20	14.00	21.0	15.0	43.00	0.500	6.00	•
SCD 033-014-060 PICCO 3D	3.30	14.00	21.0	15.0	43.00	0.500	6.00	•
SCD 035-014-060 PICCO 3D	3.50	14.00	21.0	15.0	43.00	0.600	6.00	•
SCD 038-017-060 PICCO 3D	3.80	17.00	25.0	15.0	46.00	0.600	6.00	•
SCD 039-017-060 PICCO 3D	3.90	17.00	25.0	15.0	46.00	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 041-017-060 PICCO 3D	4.10	17.00	25.0	15.0	46.00	0.700	6.00	•
SCD 042-017-060 PICCO 3D	4.20	17.00	25.0	15.0	46.00	0.700	6.00	•
SCD 045-017-060 PICCO 3D	4.50	17.00	25.0	15.0	46.00	0.700	6.00	•
SCD 046-017-060 PICCO 3D	4.60	17.00	25.0	15.0	46.00	0.700	6.00	•
SCD 048-020-060 PICCO 3D	4.80	20.00	29.0	15.0	46.00	0.800	6.00	•
SCD 050-020-060 PICCO 3D	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	•
SCD 062-024-080 PICCO 3D	6.20	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 066-024-080 PICCO 3D	6.60	24.00	35.0	19.0	62.00	1.000	8.00	•
SCD 068-024-080 PICCO 3D	6.80	24.00	35.0	19.0	62.00	1.100	8.00	•
SCD 070-024-080 PICCO 3D	7.00	24.00	35.0	19.0	62.00	1.100	8.00	•
SCD 071-029-080 PICCO 3D	7.10	29.00	42.0	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 078-029-080 PICCO 3D	7.80	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	•

• For user guide and cutting conditions, see pages 949, 950, 955-956, 952

SOLIDDRILL

SCD-AP4 (4xD)

DIN 6537 Solid Carbide Drills without Coolant Holes, Drilling Depth 4xD



Designation	Dimensions DC	LU	LCF	LS	OAL	PL	FTDZ(1)	DCONMS	IC908
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	●

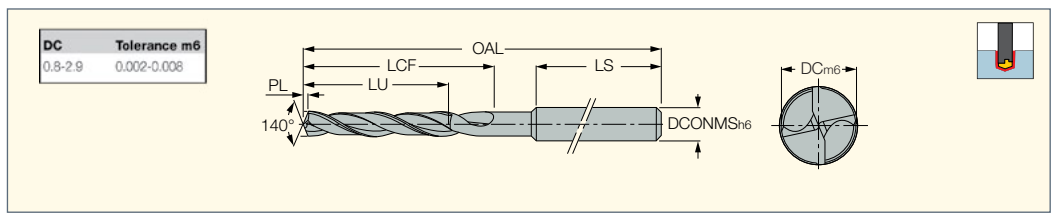
• For user guide and cutting conditions, see pages 949, 950, 955-956, 952

(1) Used for standard thread size

SOLIDDRILL

SCD-AP6 (6xD)

DIN 6537 Solid Carbide Drills without Coolant Holes, Drilling Depth 6xD



Designation	Dimensions DC	LU	LCF	LS	OAL	PL	FTDZ(1)	DCONMS	IC908
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	●

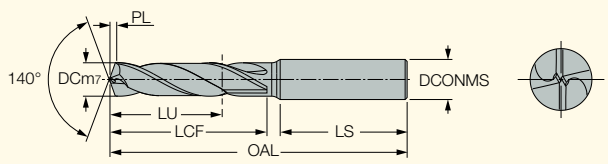
• For user guide and cutting conditions, see pages 949, 950, 955-956, 952 (1) Used for standard thread size

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



M E T R I C

Designation	Dimensions DC	LU	LCF	LS	OAL	PL	FTDZ(1)	DCONMS	IC908
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	•

• For user guide and cutting conditions, see pages 949, 950, 955-956, 952

(1) Used for standard thread size

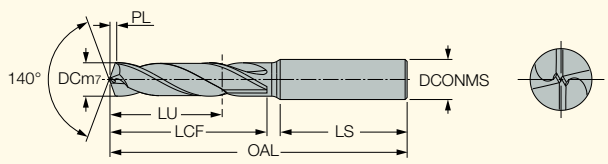
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SOLIDDRILL

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



M E T R I C

Designation	Dimensions DC	LU	LCF	LS	OAL	PL	FTDZ[1]	DCONMS	IC908
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	•
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 949, 950, 955-956, 952

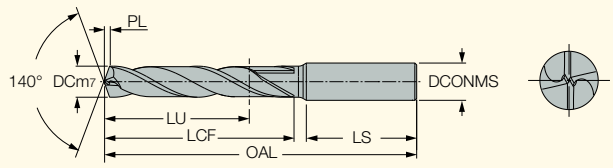
[1] Used for standard thread size

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



M E T R I C

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	•

• For user guide and cutting conditions, see pages 949, 950, 955-956, 952

(1) Used for standard thread size

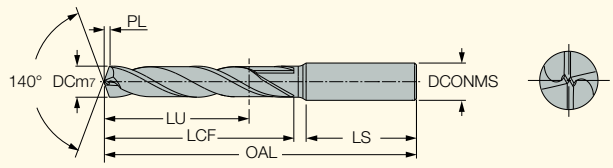
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SOLIDDRILL

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



M E T R I C

Designation	Dimensions								IC908
	DC	LU	LCF	LS	OAL	PL	FTDZ[1]	DCONMS	
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	•
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 949, 950, 955-956, 952

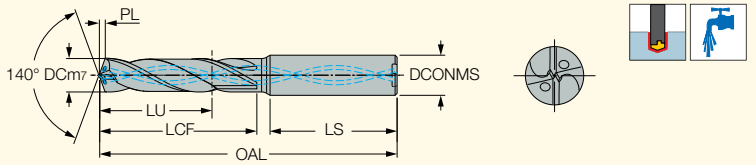
[1] Used for standard thread size

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



M E T R I C

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	•

• For user guide and cutting conditions, see pages 949, 950, 955-956, 952

[1] Used for standard thread size

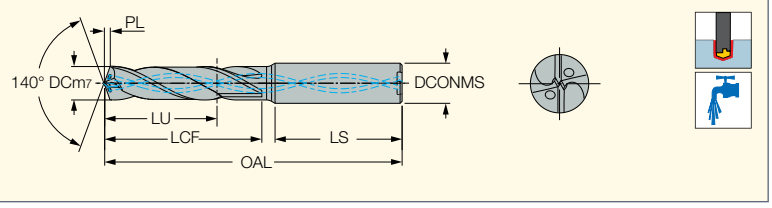
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SOLIDDRILL

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



M E T R I C

Designation	Dimensions DC	LU	LCF	LS	OAL	PL	FTDZ(1)	DCONMS	IC908
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	●
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 949, 950, 955-956, 952

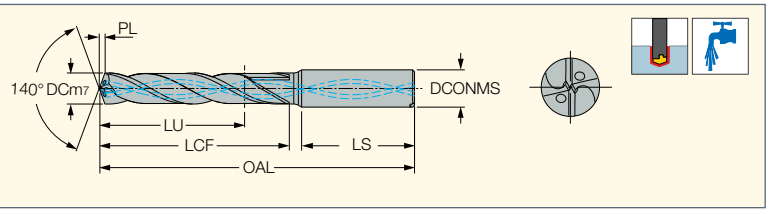
(1) Used for standard thread size

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



M E T R I C

Designation	Dimensions								IC908
	DC	LU	LCF	LS	OAL	PL	FTDZ(1)	DCONMS	
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	•

• For user guide and cutting conditions, see pages 949, 950, 955-956, 952

(1) Used for standard thread size

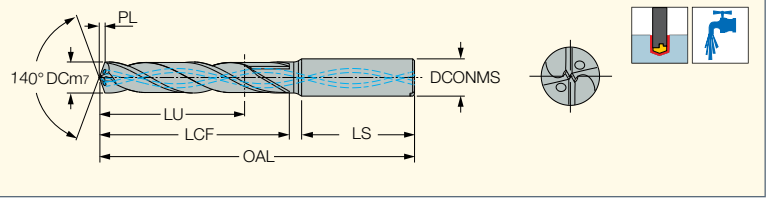
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SOLIDDRILL

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



M E T R I C

Designation	Dimensions DC	LU	LCF	LS	OAL	PL	FTDZ(1)	DCONMS	IC908
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	•
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 949, 950, 955-956, 952

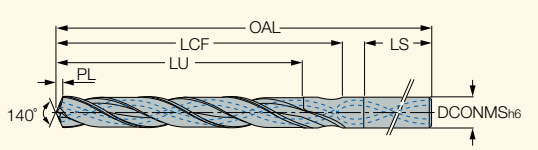
(1) Used for standard thread size

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



M E T R I C

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	●

• For user guide and cutting conditions, see pages 949, 950, 955-956, 952

(1) Used for standard thread size

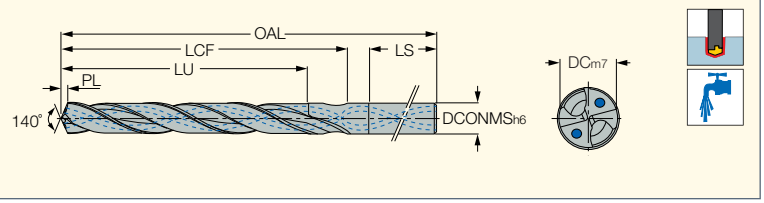
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SOLIDDRILL

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



M E T R I C

Designation	Dimensions DC	LU	LCF	LS	OAL	PL	FTDZ(1)	DCONMS	IC908
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	●
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	●

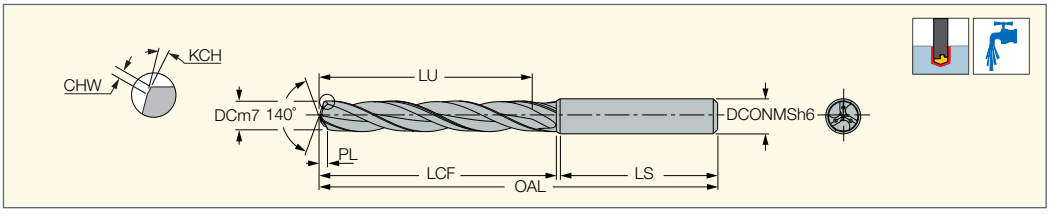
• For user guide and cutting conditions, see pages 949, 950, 955-956, 952

(1) Used for standard thread size

SOLIDDRILL

SCCD-ACP3

Three Flute Solid Carbide Drills with Coolant Holes, Drilling Depth 3xD



M E T R I C

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	-	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	M7	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 949, 950, 955-956, 952

(1) Used for standard thread size

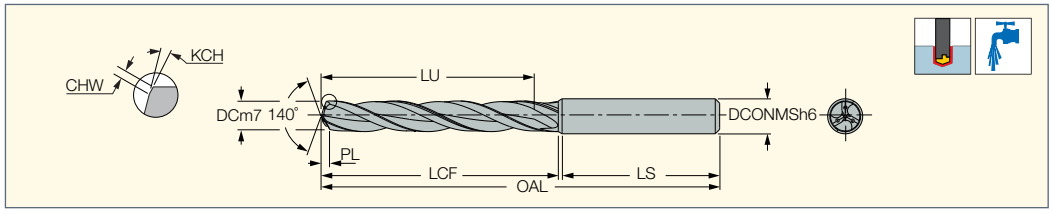
Recommended Machining Conditions for SCCD-ACP Solid Carbide Drills

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
	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					

SOLIDDRILL

SCCD-ACP3

Three Flute Solid Carbide Drills with Coolant Holes, Drilling Depth 3xD



I N C H

Designation	Dimensions										IC608
	DC	LU	LCF	LS	OAL	PL	KCH	CHW	FTDZ[1]	DCONMS	
SCCD 040-017-060 ACP3	.157	.6693	.98	1.378	2.598	.03228	30.00	.012	-	.236	●
SCCD 045-017-060 ACP3	.177	.6693	.98	1.378	2.598	.03464	30.00	.012	-	.236	●
SCCD 050-020-060 ACP3	.197	.7874	1.14	1.417	2.598	.03779	30.00	.012	M6	.236	●
SCCD 051-020-060 ACP3	.201	.7874	1.14	1.417	2.598	.03858	30.00	.012	-	.236	●
SCCD 055-020-060 ACP3	.217	.7874	1.14	1.417	2.598	.04251	30.00	.016	-	.236	●
SCCD 060-020-060 ACP3	.236	.7874	1.14	1.417	2.598	.04606	30.00	.016	M7	.236	●
SCCD 065-024-080 ACP3	.256	.9449	1.38	1.417	3.110	.04960	30.00	.016	-	.315	●
SCCD 068-024-080 ACP3	.268	.9449	1.38	1.417	3.110	.05157	30.00	.016	M8	.315	●
SCCD 070-024-080 ACP3	.276	.9449	1.38	1.417	3.110	.05314	30.00	.016	-	.315	●
SCCD 075-029-080 ACP3	.295	1.1417	1.65	1.417	3.110	.05511	30.00	.016	-	.315	●
SCCD 080-029-080 ACP3	.315	1.1417	1.65	1.417	3.110	.05866	30.00	.016	-	.315	●
SCCD 085-035-100 ACP3	.335	1.3780	1.89	1.575	3.504	.06417	30.00	.020	M10	.394	●
SCCD 086-035-100 ACP3	.339	1.3780	1.89	1.575	3.504	.06496	30.00	.020	-	.394	●
SCCD 090-035-100 ACP3	.354	1.3780	1.89	1.575	3.504	.06771	30.00	.020	-	.394	●
SCCD 095-035-100 ACP3	.374	1.3780	1.89	1.575	3.504	.06889	30.00	.020	M11	.394	●
SCCD 100-035-100 ACP3	.394	1.3780	1.89	1.575	3.504	.07283	30.00	.020	-	.394	●
SCCD 103-040-120 ACP3	.406	1.5748	2.17	1.772	4.016	.07637	30.00	.024	-	.472	●
SCCD 105-040-120 ACP3	.413	1.5748	2.17	1.772	4.016	.07795	30.00	.024	-	.472	●
SCCD 110-040-120 ACP3	.433	1.5748	2.17	1.772	4.016	.08149	30.00	.024	-	.472	●
SCCD 115-040-120 ACP3	.453	1.5748	2.20	1.772	4.016	.08346	30.00	.024	-	.472	●
SCCD 120-040-120 ACP3	.472	1.5748	2.20	1.772	4.016	.08700	30.00	.024	M14	.472	●

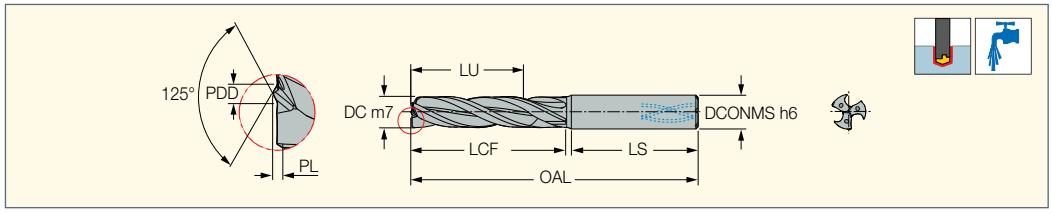
• For user guide and cutting conditions, see pages 949, 950, 955-956, 954

(1) Used for standard thread size

SOLIDDRILL

SCCD-ACF3

Three Flute Solid Carbide
Flat Head Drills with Coolant
Holes, Drilling Depth 3xD



M E T R I C

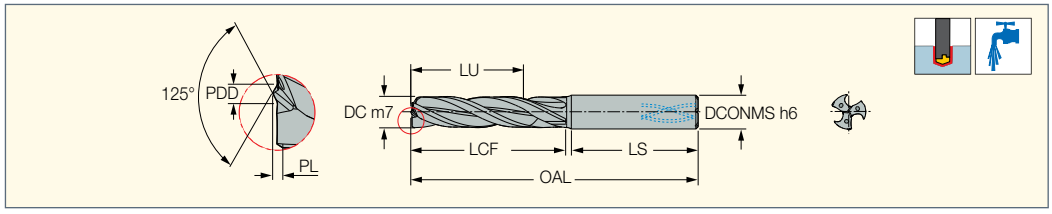
Designation	Dimensions								IC608
	DC	LU	LCF	LS	OAL	PDD	PL	DCONMS	
SCCD 040-017-060 ACF3	4.00	17.00	25.0	35.0	66.00	0.77	0.430	6.00	•
SCCD 041-017-060 ACF3	4.10	17.00	25.0	35.0	66.00	0.77	0.430	6.00	•
SCCD 042-017-060 ACF3	4.20	17.00	25.0	35.0	66.00	0.77	0.430	6.00	•
SCCD 043-017-060 ACF3	4.30	17.00	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	•

• For user guide and cutting conditions, see pages 949, 950, 955-956, 952

Continued

SOLIDDRILL

SCCD-ACF3
Three Flute Solid Carbide
Flat Head Drills with Coolant
Holes, Drilling Depth 3xD



M E T R I C

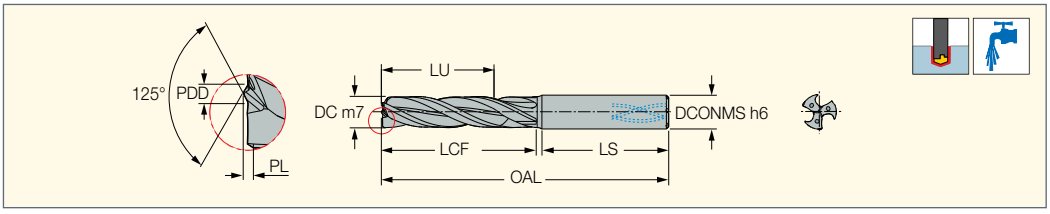
Designation	Dimensions								IC608
	DC	LU	LCF	LS	OAL	PDD	PL	DCONMS	
SCCD 096-035-100 ACF3	9.60	35.00	48.0	40.0	89.00	1.80	0.820	10.00	•
SCCD 097-035-100 ACF3	9.70	35.00	48.0	40.0	89.00	1.80	0.820	10.00	•
SCCD 098-035-100 ACF3	9.80	35.00	48.0	40.0	89.00	1.80	0.820	10.00	•
SCCD 099-035-100 ACF3	9.90	35.00	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	•

• For user guide and cutting conditions, see pages 949, 950, 955-956, 952

SOLIDDRILL

SCCD-ACF3

Three Flute Solid Carbide
Flat Head Drills with Coolant
Holes, Drilling Depth 3xD



I N C H

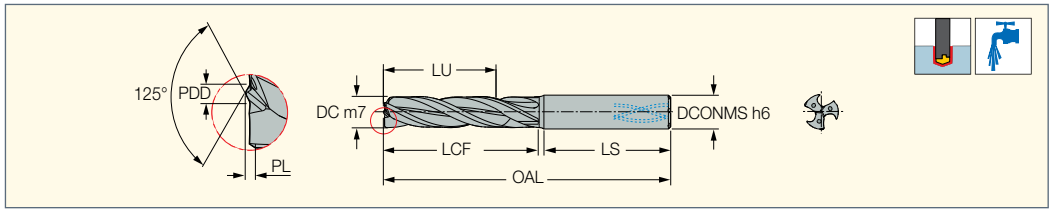
Designation	Dimensions								IC608
	DC	LU	LCF	LS	OAL	PDD	PL	DCONMS	
SCCD 040-017-060 ACF3	.157	.6693	.98	1.378	2.598	.030	.01692	.236	•
SCCD 041-017-060 ACF3	.161	.6693	.98	1.378	2.598	.030	.01692	.236	•
SCCD 042-017-060 ACF3	.165	.6693	.98	1.378	2.598	.030	.01692	.236	•
SCCD 043-017-060 ACF3	.169	.6693	.98	1.378	2.598	.034	.01771	.236	•
SCCD 044-017-060 ACF3	.173	.6693	.98	1.378	2.598	.034	.01771	.236	•
SCCD 045-017-060 ACF3	.177	.6693	.98	1.378	2.598	.034	.01771	.236	•
SCCD 046-017-060 ACF3	.181	.6693	.98	1.378	2.598	.034	.01771	.236	•
SCCD 047-017-060 ACF3	.185	.6693	.98	1.378	2.598	.034	.01771	.236	•
SCCD 048-020-060 ACF3	.189	.7874	1.14	1.417	2.598	.038	.01850	.236	•
SCCD 049-020-060 ACF3	.193	.7874	1.14	1.417	2.598	.038	.01850	.236	•
SCCD 050-020-060 ACF3	.197	.7874	1.14	1.417	2.598	.038	.01850	.236	•
SCCD 051-020-060 ACF3	.201	.7874	1.14	1.417	2.598	.038	.01850	.236	•
SCCD 052-020-060 ACF3	.205	.7874	1.14	1.417	2.598	.038	.01850	.236	•
SCCD 053-020-060 ACF3	.209	.7874	1.14	1.417	2.598	.038	.01850	.236	•
SCCD 054-020-060 ACF3	.213	.7874	1.14	1.417	2.598	.043	.02283	.236	•
SCCD 055-020-060 ACF3	.217	.7874	1.14	1.417	2.598	.043	.02283	.236	•
SCCD 056-020-060 ACF3	.220	.7874	1.14	1.417	2.598	.043	.02283	.236	•
SCCD 057-020-060 ACF3	.224	.7874	1.14	1.417	2.598	.043	.02283	.236	•
SCCD 058-020-060 ACF3	.228	.7874	1.14	1.417	2.598	.043	.02283	.236	•
SCCD 059-020-060 ACF3	.232	.7874	1.14	1.417	2.598	.043	.02283	.236	•
SCCD 060-020-060 ACF3	.236	.7874	1.14	1.417	2.598	.043	.02283	.236	•
SCCD 061-024-080 ACF3	.240	.9449	1.38	1.417	3.110	.050	.02440	.315	•
SCCD 062-024-080 ACF3	.244	.9449	1.38	1.417	3.110	.050	.02440	.315	•
SCCD 063-024-080 ACF3	.248	.9449	1.38	1.417	3.110	.050	.02440	.315	•
SCCD 064-024-080 ACF3	.252	.9449	1.38	1.417	3.110	.050	.02440	.315	•
SCCD 065-024-080 ACF3	.256	.9449	1.38	1.417	3.110	.050	.02440	.315	•
SCCD 066-024-080 ACF3	.260	.9449	1.38	1.417	3.110	.050	.02440	.315	•
SCCD 067-024-080 ACF3	.264	.9449	1.38	1.417	3.110	.050	.02440	.315	•
SCCD 068-024-080 ACF3	.268	.9449	1.38	1.417	3.110	.050	.02440	.315	•
SCCD 069-024-080 ACF3	.272	.9449	1.38	1.417	3.110	.050	.02440	.315	•
SCCD 070-024-080 ACF3	.276	.9449	1.38	1.417	3.110	.050	.02440	.315	•
SCCD 071-029-080 ACF3	.280	1.1417	1.65	1.417	3.110	.057	.02598	.315	•
SCCD 072-029-080 ACF3	.283	1.1417	1.65	1.417	3.110	.057	.02598	.315	•
SCCD 073-029-080 ACF3	.287	1.1417	1.65	1.417	3.110	.057	.02598	.315	•
SCCD 074-029-080 ACF3	.291	1.1417	1.65	1.417	3.110	.057	.02598	.315	•
SCCD 075-029-080 ACF3	.295	1.1417	1.65	1.417	3.110	.057	.02598	.315	•
SCCD 076-029-080 ACF3	.299	1.1417	1.65	1.417	3.110	.057	.02598	.315	•
SCCD 077-029-080 ACF3	.303	1.1417	1.65	1.417	3.110	.057	.02598	.315	•
SCCD 078-029-080 ACF3	.307	1.1417	1.65	1.417	3.110	.057	.02598	.315	•
SCCD 079-029-080 ACF3	.311	1.1417	1.65	1.417	3.110	.057	.02598	.315	•
SCCD 080-029-080 ACF3	.315	1.1417	1.65	1.417	3.110	.057	.02598	.315	•
SCCD 081-035-100 ACF3	.319	1.3780	1.89	1.575	3.504	.064	.03110	.394	•
SCCD 082-035-100 ACF3	.323	1.3780	1.89	1.575	3.504	.064	.03110	.394	•
SCCD 083-035-100 ACF3	.327	1.3780	1.89	1.575	3.504	.064	.03110	.394	•
SCCD 084-035-100 ACF3	.331	1.3780	1.89	1.575	3.504	.064	.03110	.394	•
SCCD 085-035-100 ACF3	.335	1.3780	1.89	1.575	3.504	.064	.03110	.394	•
SCCD 086-035-100 ACF3	.339	1.3780	1.89	1.575	3.504	.064	.03110	.394	•
SCCD 087-035-100 ACF3	.343	1.3780	1.89	1.575	3.504	.064	.03110	.394	•
SCCD 088-035-100 ACF3	.346	1.3780	1.89	1.575	3.504	.064	.03110	.394	•
SCCD 089-035-100 ACF3	.350	1.3780	1.89	1.575	3.504	.064	.03110	.394	•
SCCD 090-035-100 ACF3	.354	1.3780	1.89	1.575	3.504	.064	.03110	.394	•
SCCD 091-035-100 ACF3	.358	1.3780	1.89	1.575	3.504	.071	.03228	.394	•
SCCD 092-035-100 ACF3	.362	1.3780	1.89	1.575	3.504	.071	.03228	.394	•
SCCD 093-035-100 ACF3	.366	1.3780	1.89	1.575	3.504	.071	.03228	.394	•
SCCD 094-035-100 ACF3	.370	1.3780	1.89	1.575	3.504	.071	.03228	.394	•
SCCD 095-035-100 ACF3	.374	1.3780	1.89	1.575	3.504	.071	.03228	.394	•

• For user guide and cutting conditions, see pages 949, 950, 955-956, 954

Continued

SOLIDDRILL

SCCD-ACF3
Three Flute Solid Carbide
Flat Head Drills with Coolant
Holes, Drilling Depth 3xD



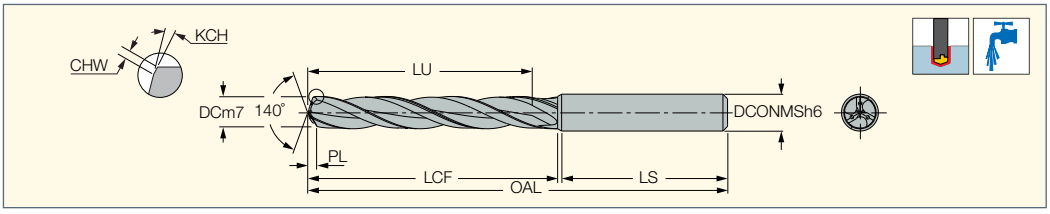
I N C H									
	Dimensions								
Designation	DC	LU	LCF	LS	OAL	PDD	PL	DCONMS	IC608
SCCD 096-035-100 ACF3	.378	1.3780	1.89	1.575	3.504	.071	.03228	.394	●
SCCD 097-035-100 ACF3	.382	1.3780	1.89	1.575	3.504	.071	.03228	.394	●
SCCD 098-035-100 ACF3	.386	1.3780	1.89	1.575	3.504	.071	.03228	.394	●
SCCD 099-035-100 ACF3	.390	1.3780	1.89	1.575	3.504	.071	.03228	.394	●
SCCD 100-035-100 ACF3	.394	1.3780	1.89	1.575	3.504	.071	.03228	.394	●
SCCD 101-040-120 ACF3	.398	1.5748	2.17	1.772	4.016	.078	.03740	.472	●
SCCD 102-040-120 ACF3	.402	1.5748	2.17	1.772	4.016	.078	.03740	.472	●
SCCD 103-040-120 ACF3	.406	1.5748	2.17	1.772	4.016	.078	.03740	.472	●
SCCD 104-040-120 ACF3	.409	1.5748	2.17	1.772	4.016	.078	.03740	.472	●
SCCD 105-040-120 ACF3	.413	1.5748	2.17	1.772	4.016	.078	.03740	.472	●
SCCD 106-040-120 ACF3	.417	1.5748	2.17	1.772	4.016	.078	.03740	.472	●
SCCD 107-040-120 ACF3	.421	1.5748	2.17	1.772	4.016	.078	.03740	.472	●
SCCD 108-040-120 ACF3	.425	1.5748	2.17	1.772	4.016	.078	.03740	.472	●
SCCD 109-040-120 ACF3	.429	1.5748	2.17	1.772	4.016	.078	.03740	.472	●
SCCD 110-040-120 ACF3	.433	1.5748	2.17	1.772	4.016	.078	.03740	.472	●
SCCD 111-040-120 ACF3	.437	1.5748	2.20	1.772	4.016	.085	.03858	.472	●
SCCD 112-040-120 ACF3	.441	1.5748	2.20	1.772	4.016	.085	.03858	.472	●
SCCD 113-040-120 ACF3	.445	1.5748	2.20	1.772	4.016	.085	.03858	.472	●
SCCD 114-040-120 ACF3	.449	1.5748	2.20	1.772	4.016	.085	.03858	.472	●
SCCD 115-040-120 ACF3	.453	1.5748	2.20	1.772	4.016	.085	.03858	.472	●
SCCD 116-040-120 ACF3	.457	1.5748	2.20	1.772	4.016	.085	.03858	.472	●
SCCD 117-040-120 ACF3	.461	1.5748	2.20	1.772	4.016	.085	.03858	.472	●
SCCD 118-040-120 ACF3	.465	1.5748	2.20	1.772	4.016	.085	.03858	.472	●
SCCD 119-040-120 ACF3	.469	1.5748	2.20	1.772	4.016	.085	.03858	.472	●
SCCD 120-040-120 ACF3	.472	1.5748	2.20	1.772	4.016	.085	.03858	.472	●

• For user guide and cutting conditions, see pages 949, 950, 955-956, 954

SOLIDDRILL

SCCD-ACP5

Three Flute Solid Carbide Drills with Coolant Holes, Drilling Depth 5xD



M E T R I C

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	•

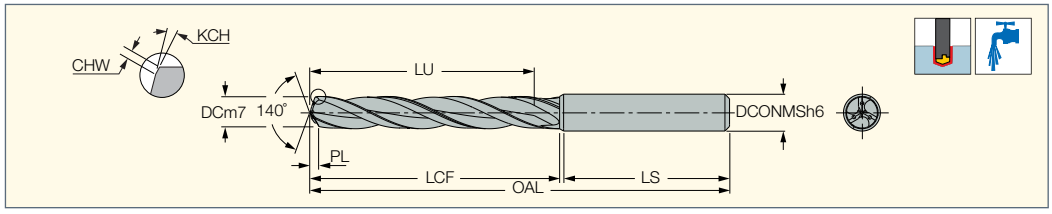
• For user guide and cutting conditions, see pages 949, 950, 955-956, 952

(1) Used for standard thread size

SOLIDDRILL

SCCD-ACP5

Three Flute Solid Carbide Drills with Coolant Holes, Drilling Depth 5xD



I N C H

Designation	Dimensions										IC608
	DC	LU	LCF	LS	OAL	PL	KCH	CHW	FTDZ[1]	DCONMS	
SCCD 040-029-060 ACP5	.157	1.1417	1.46	1.378	2.913	.03228	30.00	.012	-	.236	●
SCCD 045-029-060 ACP5	.177	1.1417	1.46	1.378	2.913	.03464	30.00	.012	-	.236	●
SCCD 050-035-060 ACP5	.197	1.3780	1.77	1.417	3.228	.03779	30.00	.012	M6	.236	●
SCCD 051-035-060 ACP5	.201	1.3780	1.77	1.417	3.228	.03858	30.00	.012	-	.236	●
SCCD 055-035-060 ACP5	.217	1.3780	1.77	1.417	3.228	.04251	30.00	.016	-	.236	●
SCCD 060-035-060 ACP5	.236	1.3780	1.77	1.417	3.228	.04606	30.00	.016	M7	.236	●
SCCD 065-043-080 ACP5	.256	1.6929	2.13	1.417	3.583	.04960	30.00	.016	-	.315	●
SCCD 068-043-080 ACP5	.268	1.6929	2.13	1.417	3.583	.05157	30.00	.016	M8	.315	●
SCCD 070-043-080 ACP5	.276	1.6929	2.13	1.417	3.583	.05314	30.00	.016	-	.315	●
SCCD 075-043-080 ACP5	.295	1.6929	2.13	1.417	3.583	.05511	30.00	.016	-	.315	●
SCCD 080-043-080 ACP5	.315	1.6929	2.13	1.417	3.583	.05866	30.00	.016	-	.315	●
SCCD 085-049-100 ACP5	.335	1.9291	2.44	1.575	4.055	.06417	30.00	.020	M10	.394	●
SCCD 086-049-100 ACP5	.339	1.9291	2.44	1.575	4.055	.06496	30.00	.020	-	.394	●
SCCD 090-049-100 ACP5	.354	1.9291	2.44	1.575	4.055	.06771	30.00	.020	-	.394	●
SCCD 095-049-100 ACP5	.374	1.9291	2.44	1.575	4.055	.06889	30.00	.020	M11	.394	●
SCCD 100-049-100 ACP5	.394	1.9291	2.44	1.575	4.055	.07283	30.00	.020	-	.394	●
SCCD 103-056-120 ACP5	.406	2.2047	2.80	1.772	4.646	.07637	30.00	.024	-	.472	●
SCCD 105-056-120 ACP5	.413	2.2047	2.80	1.772	4.646	.07795	30.00	.024	-	.472	●
SCCD 110-056-120 ACP5	.433	2.2047	2.80	1.772	4.646	.08149	30.00	.024	-	.472	●
SCCD 115-056-120 ACP5	.453	2.2047	2.83	1.772	4.646	.08346	30.00	.024	-	.472	●
SCCD 120-056-120 ACP5	.472	2.2047	2.83	1.772	4.646	.08700	30.00	.024	M14	.472	●

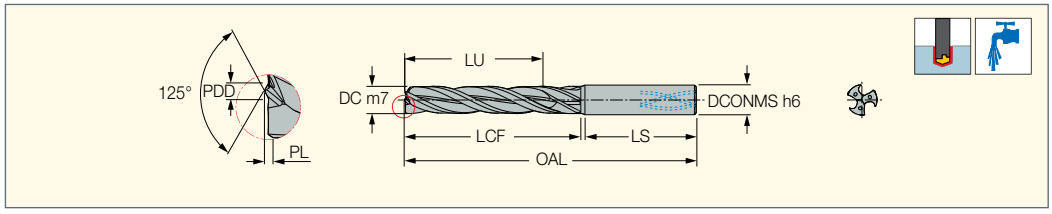
• For user guide and cutting conditions, see pages 949, 950, 955-956, 954

(1) Used for standard thread size

SOLIDDRILL

SCCD-ACF5

Three Flute Solid Carbide
Flat Head Drills with Coolant
Holes, Drilling Depth 5xD



M E T R I C

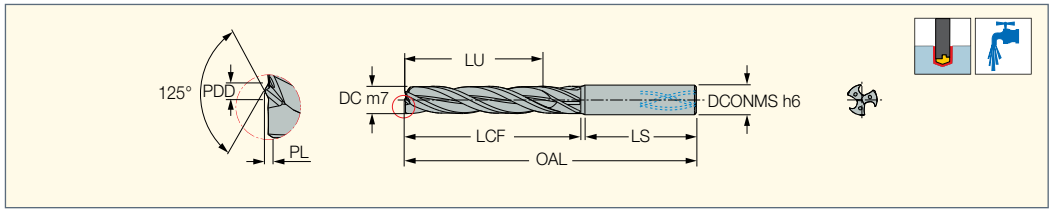
Designation	Dimensions								IC608
	DC	LU	LCF	LS	OAL	PL	PDD	DCONMS	
SCCD 040-029-060 ACF5	4.00	29.00	37.0	35.0	74.00	0.430	0.77	6.00	•
SCCD 041-029-060 ACF5	4.10	29.00	37.0	35.0	74.00	0.430	0.77	6.00	•
SCCD 042-029-060 ACF5	4.20	29.00	37.0	35.0	74.00	0.430	0.77	6.00	•
SCCD 043-029-060 ACF5	4.30	29.00	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	•

• For user guide and cutting conditions, see pages 949, 950, 955-956, 952

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M E T R I C

Designation	Dimensions DC	LU	LCF	LS	OAL	PL	PDD	DCONMS	IC608
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	•
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	•

• For user guide and cutting conditions, see pages 949, 950, 955-956, 952

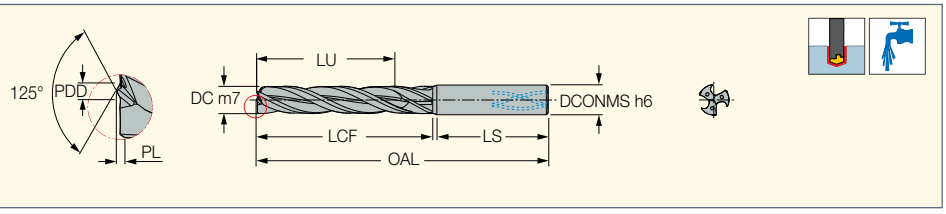
Recommended Cutting Data for SCCD-ACF

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					

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I N C H

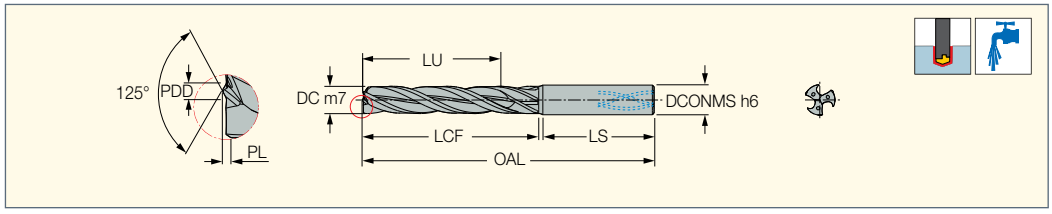
Designation	Dimensions								IC608
	DC	LU	LCF	LS	OAL	PL	PDD	DCONMS	
SCCD 040-029-060 ACF5	.157	1.1417	1.46	1.378	2.913	.01692	.030	.236	•
SCCD 041-029-060 ACF5	.161	1.1417	1.46	1.378	2.913	.01692	.030	.236	•
SCCD 042-029-060 ACF5	.165	1.1417	1.46	1.378	2.913	.01692	.030	.236	•
SCCD 043-029-060 ACF5	.169	1.1417	1.46	1.378	2.913	.01771	.034	.236	•
SCCD 044-029-060 ACF5	.173	1.1417	1.46	1.378	2.913	.01771	.034	.236	•
SCCD 045-029-060 ACF5	.177	1.1417	1.46	1.378	2.913	.01771	.034	.236	•
SCCD 046-029-060 ACF5	.181	1.1417	1.46	1.378	2.913	.01771	.034	.236	•
SCCD 047-029-060 ACF5	.185	1.1417	1.46	1.378	2.913	.01771	.034	.236	•
SCCD 048-035-060 ACF5	.189	1.3780	1.77	1.417	3.228	.01850	.038	.236	•
SCCD 049-035-060 ACF5	.193	1.3780	1.77	1.417	3.228	.01850	.038	.236	•
SCCD 050-035-060 ACF5	.197	1.3780	1.77	1.417	3.228	.01850	.038	.236	•
SCCD 051-035-060 ACF5	.201	1.3780	1.77	1.417	3.228	.01850	.038	.236	•
SCCD 052-035-060 ACF5	.205	1.3780	1.77	1.417	3.228	.01850	.038	.236	•
SCCD 053-035-060 ACF5	.209	1.3780	1.77	1.417	3.228	.01850	.038	.236	•
SCCD 054-035-060 ACF5	.213	1.3780	1.77	1.417	3.228	.02283	.043	.236	•
SCCD 055-035-060 ACF5	.217	1.3780	1.77	1.417	3.228	.02283	.043	.236	•
SCCD 056-035-060 ACF5	.220	1.3780	1.77	1.417	3.228	.02283	.043	.236	•
SCCD 057-035-060 ACF5	.224	1.3780	1.77	1.417	3.228	.02283	.043	.236	•
SCCD 058-035-060 ACF5	.228	1.3780	1.77	1.417	3.228	.02283	.043	.236	•
SCCD 059-035-060 ACF5	.232	1.3780	1.77	1.417	3.228	.02283	.043	.236	•
SCCD 060-035-060 ACF5	.236	1.3780	1.77	1.417	3.228	.02283	.043	.236	•
SCCD 061-043-080 ACF5	.240	1.6929	2.13	1.417	3.583	.02440	.050	.315	•
SCCD 062-043-080 ACF5	.244	1.6929	2.13	1.417	3.583	.02440	.050	.315	•
SCCD 063-043-080 ACF5	.248	1.6929	2.13	1.417	3.583	.02440	.050	.315	•
SCCD 064-043-080 ACF5	.252	1.6929	2.13	1.417	3.583	.02440	.050	.315	•
SCCD 065-043-080 ACF5	.256	1.6929	2.13	1.417	3.583	.02440	.050	.315	•
SCCD 066-043-080 ACF5	.260	1.6929	2.13	1.417	3.583	.02440	.050	.315	•
SCCD 067-043-080 ACF5	.264	1.6929	2.13	1.417	3.583	.02440	.050	.315	•
SCCD 068-043-080 ACF5	.268	1.6929	2.13	1.417	3.583	.02440	.050	.315	•
SCCD 069-043-080 ACF5	.272	1.6929	2.13	1.417	3.583	.02440	.050	.315	•
SCCD 070-043-080 ACF5	.276	1.6929	2.13	1.417	3.583	.02440	.050	.315	•
SCCD 071-043-080 ACF5	.280	1.6929	2.13	1.417	3.583	.02598	.057	.315	•
SCCD 072-043-080 ACF5	.283	1.6929	2.13	1.417	3.583	.02598	.057	.315	•
SCCD 073-043-080 ACF5	.287	1.6929	2.13	1.417	3.583	.02598	.057	.315	•
SCCD 074-043-080 ACF5	.291	1.6929	2.13	1.417	3.583	.02598	.057	.315	•
SCCD 075-043-080 ACF5	.295	1.6929	2.13	1.417	3.583	.02598	.057	.315	•
SCCD 076-043-080 ACF5	.299	1.6929	2.13	1.417	3.583	.02598	.057	.315	•
SCCD 077-043-080 ACF5	.303	1.6929	2.13	1.417	3.583	.02598	.057	.315	•
SCCD 078-043-080 ACF5	.307	1.6929	2.13	1.417	3.583	.02598	.057	.315	•
SCCD 079-043-080 ACF5	.311	1.6929	2.13	1.417	3.583	.02598	.057	.315	•
SCCD 080-043-080 ACF5	.315	1.6929	2.13	1.417	3.583	.02598	.057	.315	•
SCCD 081-049-100 ACF5	.319	1.9291	2.44	1.575	4.055	.03110	.064	.394	•
SCCD 082-049-100 ACF5	.323	1.9291	2.44	1.575	4.055	.03110	.064	.394	•
SCCD 083-049-100 ACF5	.327	1.9291	2.44	1.575	4.055	.03110	.064	.394	•
SCCD 084-049-100 ACF5	.331	1.9291	2.44	1.575	4.055	.03110	.064	.394	•
SCCD 085-049-100 ACF5	.335	1.9291	2.44	1.575	4.055	.03110	.064	.394	•
SCCD 086-049-100 ACF5	.339	1.9291	2.44	1.575	4.055	.03110	.064	.394	•
SCCD 087-049-100 ACF5	.343	1.9291	2.44	1.575	4.055	.03110	.064	.394	•
SCCD 088-049-100 ACF5	.346	1.9291	2.44	1.575	4.055	.03110	.064	.394	•
SCCD 089-049-100 ACF5	.350	1.9291	2.44	1.575	4.055	.03110	.064	.394	•
SCCD 090-049-100 ACF5	.354	1.9291	2.44	1.575	4.055	.03110	.064	.394	•
SCCD 091-049-100 ACF5	.358	1.9291	2.44	1.575	4.055	.03228	.071	.394	•
SCCD 092-049-100 ACF5	.362	1.9291	2.44	1.575	4.055	.03228	.071	.394	•
SCCD 093-049-100 ACF5	.366	1.9291	2.44	1.575	4.055	.03228	.071	.394	•
SCCD 094-049-100 ACF5	.370	1.9291	2.44	1.575	4.055	.03228	.071	.394	•
SCCD 095-049-100 ACF5	.374	1.9291	2.44	1.575	4.055	.03228	.071	.394	•

• For user guide and cutting conditions, see pages 949, 950, 955-956, 954

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SOLIDDRILL

SCCD-ACF5
Three Flute Solid Carbide
Flat Head Drills with Coolant
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I N C H									
	Dimensions								
Designation	DC	LU	LCF	LS	OAL	PL	PDD	DCONMS	IC608
SCCD 096-049-100 ACF5	.378	1.9291	2.44	1.575	4.055	.03228	.071	.394	•
SCCD 097-049-100 ACF5	.382	1.9291	2.44	1.575	4.055	.03228	.071	.394	•
SCCD 098-049-100 ACF5	.386	1.9291	2.44	1.575	4.055	.03228	.071	.394	•
SCCD 099-049-100 ACF5	.390	1.9291	2.44	1.575	4.055	.03228	.071	.394	•
SCCD 100-049-100 ACF5	.394	1.9291	2.44	1.575	4.055	.03228	.071	.394	•
SCCD 101-056-120 ACF5	.398	2.2047	2.80	1.772	4.646	.03740	.078	.472	•
SCCD 102-056-120 ACF5	.402	2.2047	2.80	1.772	4.646	.03740	.078	.472	•
SCCD 103-056-120 ACF5	.406	2.2047	2.80	1.772	4.646	.03740	.078	.472	•
SCCD 104-056-120 ACF5	.409	2.2047	2.80	1.772	4.646	.03740	.078	.472	•
SCCD 105-056-120 ACF5	.413	2.2047	2.80	1.772	4.646	.03740	.078	.472	•
SCCD 106-056-120 ACF5	.417	2.2047	2.80	1.772	4.646	.03740	.078	.472	•
SCCD 107-056-120 ACF5	.421	2.2047	2.80	1.772	4.646	.03740	.078	.472	•
SCCD 108-056-120 ACF5	.425	2.2047	2.80	1.772	4.646	.03740	.078	.472	•
SCCD 109-056-120 ACF5	.429	2.2047	2.80	1.772	4.646	.03740	.078	.472	•
SCCD 110-056-120 ACF5	.433	2.2047	2.80	1.772	4.646	.03740	.078	.472	•
SCCD 111-056-120 ACF5	.437	2.2047	2.83	1.772	4.646	.03858	.085	.472	•
SCCD 112-056-120 ACF5	.441	2.2047	2.83	1.772	4.646	.03858	.085	.472	•
SCCD 113-056-120 ACF5	.445	2.2047	2.83	1.772	4.646	.03858	.085	.472	•
SCCD 114-056-120 ACF5	.449	2.2047	2.83	1.772	4.646	.03858	.085	.472	•
SCCD 115-056-120 ACF5	.453	2.2047	2.83	1.772	4.646	.03858	.085	.472	•
SCCD 116-056-120 ACF5	.457	2.2047	2.83	1.772	4.646	.03858	.085	.472	•
SCCD 117-056-120 ACF5	.461	2.2047	2.83	1.772	4.646	.03858	.085	.472	•
SCCD 118-056-120 ACF5	.465	2.2047	2.83	1.772	4.646	.03858	.085	.472	•
SCCD 119-056-120 ACF5	.469	2.2047	2.83	1.772	4.646	.03858	.085	.472	•
SCCD 120-056-120 ACF5	.472	2.2047	2.83	1.772	4.646	.03858	.085	.472	•

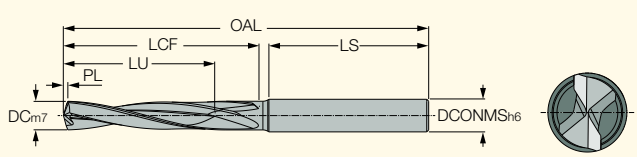
• For user guide and cutting conditions, see pages 949, 950, 955-956, 954

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



M E T R I C

Designation	Dimensions DC	LU	LCF	LS	OAL	PL	FTDZ(1)	DCONMS	IC903
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 949, 950, 955-956

(1) Used for standard thread size

Recommended Machining Conditions for SCD-AH5 Solid Carbide Drills

ISO	Material	Hardness	Material No.	Cutting Speed Vc (m/min)	Feed vs. Drill Diameter (mm/rev) 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

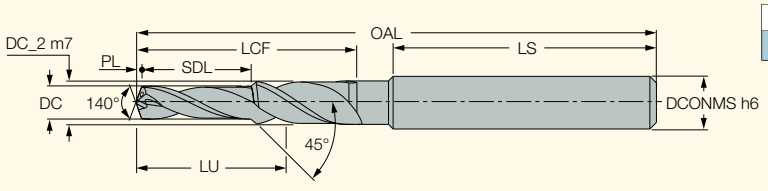
Materials over 50 HRC must be used with external coolant while machining.

Use of semi-synthetic or emulsion with more than 6% oil concentration is highly recommended to extend tool life and hole quality.

SOLIDDRILL

SCDT

PRE-THREAD Solid Carbide Drills with Coolant Holes



M E T R I C

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	●

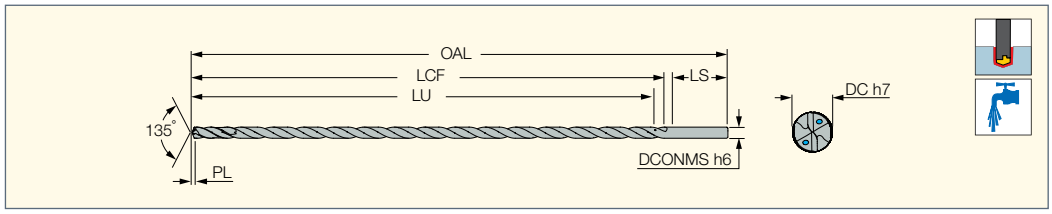
- For user guide and cutting conditions, see pages 949, 950, 955-956, 951-952

(1) Used for standard thread size

SOLIDDRILL

SCD-SXC16

Solid Carbide Drills with Internal Coolant Channels, Drilling Depth 16xD



M E T R I C

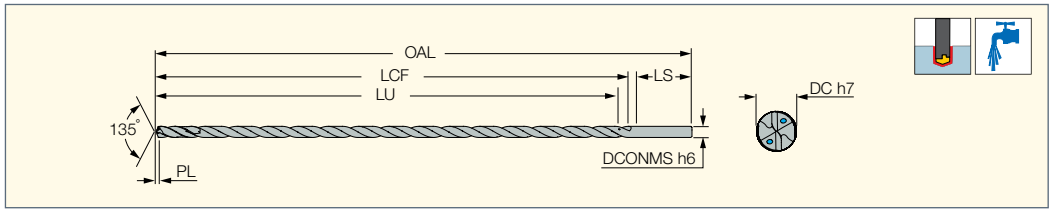
Designation	Dimensions DC	LU	LCF	LS	OAL	PL	DCONMS	IC908
SCD 030-055-060 SXC16	3.00	55.00	60.0	36.0	100.00	0.495	6.00	•
SCD 032-055-060 SXC16	3.20	55.00	60.0	36.0	100.00	0.528	6.00	•
SCD 033-055-060 SXC16	3.30	55.00	60.0	36.0	100.00	0.545	6.00	•
SCD 035-054-060 SXC16	3.50	54.00	60.0	36.0	100.00	0.578	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	•

• For user guide and cutting conditions, see pages 949, 950, 955-956, 945

SOLIDDRILL

SCD-SXC20

Solid Carbide Drills with Internal Coolant Channels, Drilling Depth 20xD



M E T R I C

Designation	Dimensions DC	LU	LCF	LS	OAL	PL	DCONMS	IC908
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	•

• For user guide and cutting conditions, see pages 949, 950, 955-956, 945

Recommended Machining Conditions for SCD-SXC16 & SCD-SXC20 Solid Carbide Drills (Metric)

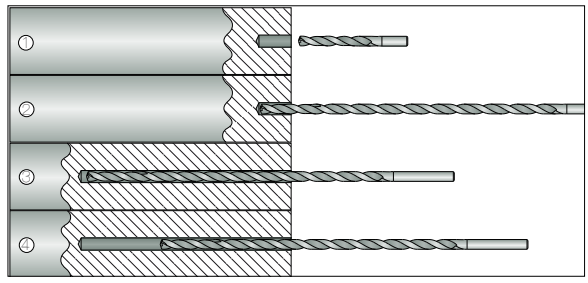
ISO	Material		Condition	Material Group No.	Tensile Strength [N/mm²]	Hardness HB	Cutting Speed V_c (m/min)	Cutting Diameter / Feed (mm/rev) 3.0-5.0	5.1-8.0	8.1-10.0	10.1-16	16.1-20
P	non-alloy steel and cast steel, free cutting steel	<0.25% C	annealed	1	420	125	70-90	0.1-0.18	0.14-0.24	0.16-0.26	0.18-0.3	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
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.

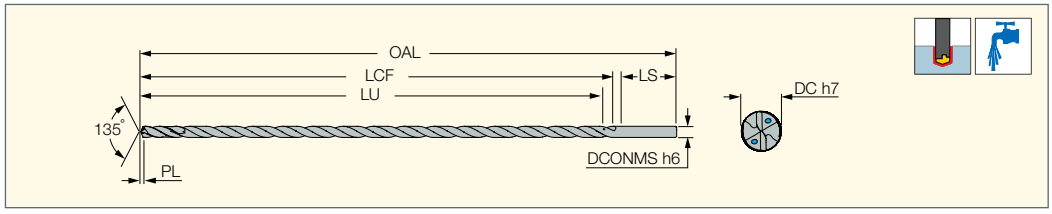


- 40xD & 50xD Must Utilize a 20xD Intermediary Drill Along with Pilot Drill.
- In through holes, the tool exit should not exceed 2-3 mm.

SOLIDDRILL

SCD-SXC30

Solid Carbide Drills with Internal Coolant Channels, Drilling Depth 30xD



M E T R I C

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	●

• **For user guide and cutting conditions, see pages:** 949, 950, 955-956

(1) On request

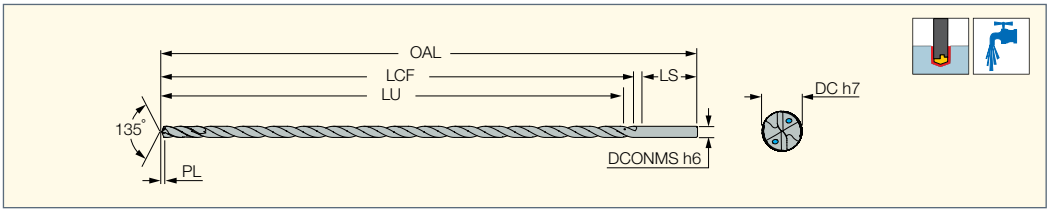
Recommended Machining Conditions for SCD-SXC30 Solid Carbide Drills (Metric)

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
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-IXC16

Solid Carbide Drills with Internal Coolant Channels, Drilling Depth 16xD, for Machining ISO K Materials



M E T R I C

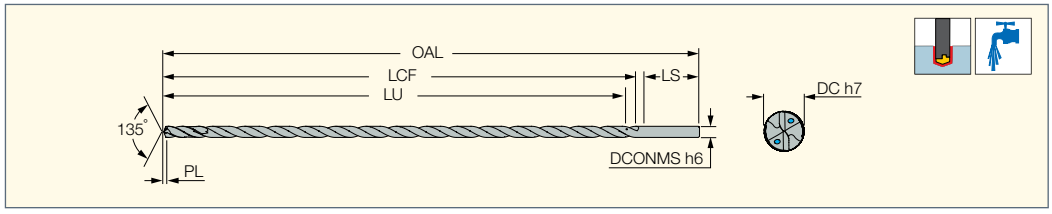
Designation	Dimensions							IC908
	DC	LU	LCF	LS	OAL	PL	DCONMS	
SCD 030-056-060 IXC16	3.00	56.00	60.0	36.0	100.00	0.620	6.00	•
SCD 032-055-060 IXC16	3.20	55.00	60.0	36.0	100.00	0.660	6.00	•
SCD 033-055-060 IXC16	3.30	55.00	60.0	36.0	100.00	0.680	6.00	•
SCD 035-055-060 IXC16	3.50	55.00	60.0	36.0	100.00	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	•

• Based on DIN 6537 standard • For user guide and cutting conditions, see pages 949, 950, 955-956, 952

SOLIDDRILL

SCD-IXC20

Solid Carbide Drills with Internal Coolant Channels, Drilling Depth 20xD, for Machining ISO K Materials



M E T R I C

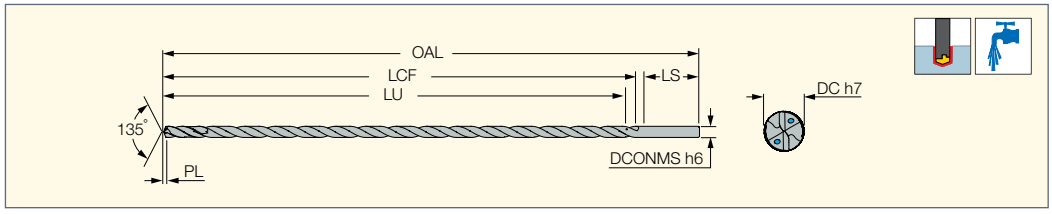
Designation	Dimensions DC	LU	LCF	LS	OAL	PL	DCONMS	IC908
SCD 030-076-060 IXC20	3.00	76.00	80.0	36.0	120.00	0.620	6.00	•
SCD 032-075-060 IXC20	3.20	75.00	80.0	36.0	120.00	0.660	6.00	•
SCD 033-075-060 IXC20	3.30	75.00	80.0	36.0	120.00	0.680	6.00	•
SCD 035-075-060 IXC20	3.50	75.00	80.0	36.0	120.00	0.730	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	•

• Based on DIN 6537 standard • For user guide and cutting conditions, see pages 949, 950, 955-956, 952

SOLIDDRILL

SCD-IXC30

Solid Carbide Drills with Internal Coolant Channels, Drilling Depth 30xD, for Machining ISO K Materials



M E T R I C

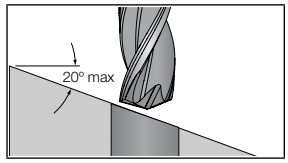
Designation	Dimensions DC	LU	LCF	LS	OAL	PL	DCONMS	IC908
SCD 030-101-060 IXC30	3.00	101.00	105.0	36.0	150.00	0.620	6.00	•
SCD 032-100-060 IXC30	3.20	100.00	105.0	36.0	150.00	0.660	6.00	•
SCD 033-130-060 IXC30	3.30	130.00	135.0	36.0	185.00	0.680	6.00	•
SCD 035-130-060 IXC30	3.50	130.00	135.0	36.0	185.00	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	•

• Based on DIN 6537 standard • For user guide and cutting conditions, see pages 949, 950, 955-956, 952

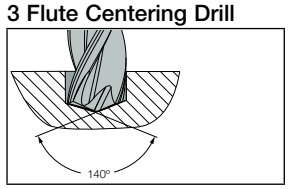
General Recommendations

- It is mostly recommended to use an external coolant jet at a minimum pressure of 10 to15 bar (145 to 218 PSI) 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 0.02 mm (.0008") 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:
  Collet chucks thermal shrink chucks
  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 955-956 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.

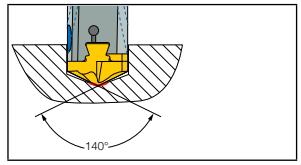
3 Flute Solid Carbide Drills
Three flute drills are used extensively on nonferrous metals because of their excellent performance on these materials. These solid carbide drills were designed with a special cutting edge geometry that can be used on a broad spectrum of materials including steel, stainless 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

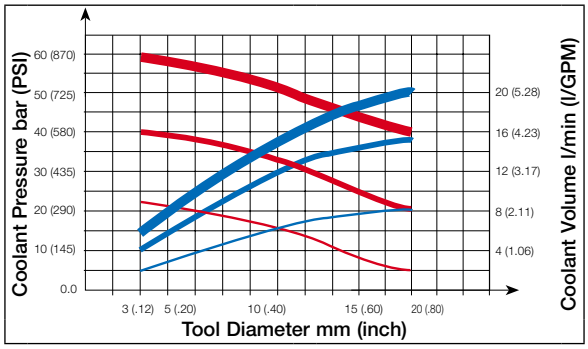


Followed by a CHAM-DRILL SUMO-CHAM/CHAM-GUN



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.

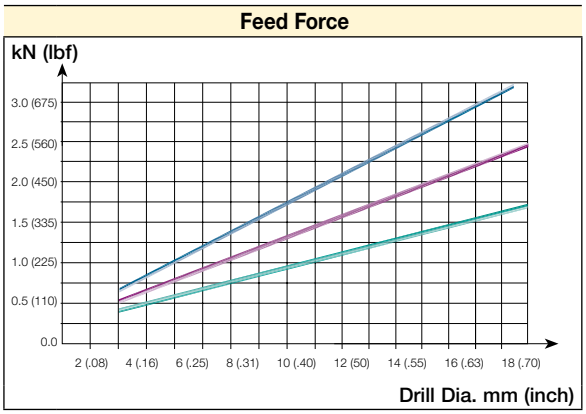
Coolant Pressure and Volume Recommendations



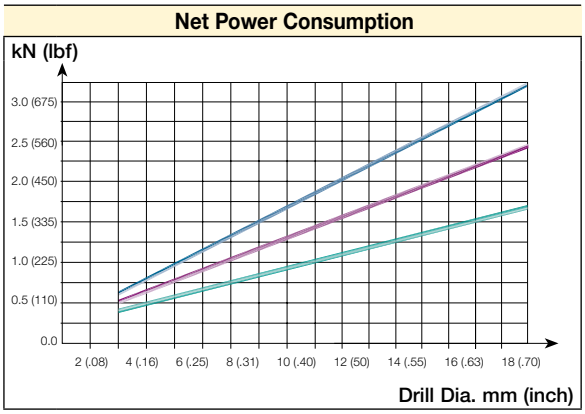
Required Coolant Pressure	Required Coolant Volume
Optimum pressure	Optimum volume
Good pressure	Good volume
Minimum pressure	Minimum pressure

Required coolant pressure and volume for SCD drills with internal coolant spiral nozzles.

Force and Power Characteristics



- f=0.30 mm/rev (.012 ipr)
- f=0.25 mm/rev (.010 ipr)
- f=0.20 mm/rev (.008 ipr)

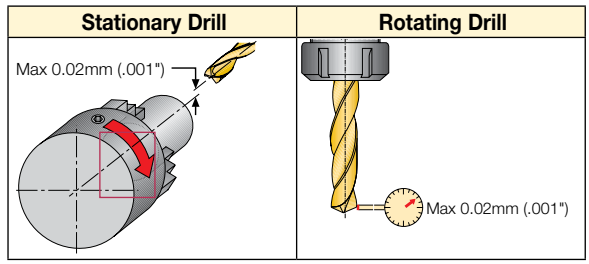


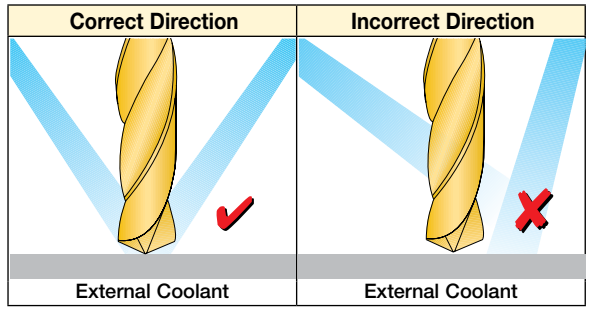
- f=0.30 mm/rev (.012 ipr)
- f=0.25 mm/rev (.010 ipr)
- f=0.20 mm/rev (.008 ipr)

Material: SAE 4340 (AISI 4340 / (UNS G43400)
Speed: 100 m/min (300sfm)
Values may change for different materials and drilling conditions.

Stability

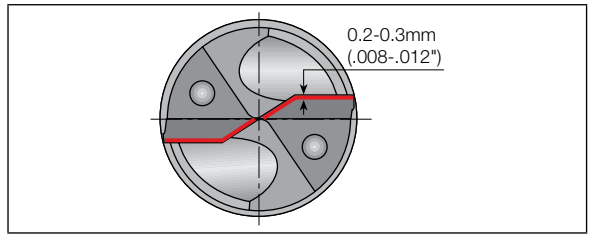
The stability of the application volume is important in order to obtain the very best tool life and hole accuracy. Check the condition of the machine spindle, fixture and fixturing of the component to secure maximum stability and rigidity. Unstable conditions can cause tool breakage.





Tool Life

Drills should not be used with flank wear exceeding 0.2-0.3 mm. (.008-.012")



Recommended Machining Conditions for Solid Carbide Drills D=0.8-2.9 mm (Metric)

ISO	Material		Condition	Tensile Strength [N/mm²]	Hardness HB	Material No.	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
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 0.01 mm
- 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.

Recommended Machining Conditions for Solid Carbide Drills D=3.0-20.0 mm (Metric)

ISO	Material		Condition	Tensile Strength [N/mm²]	Hardness HB	Material No.	Cutting Speed V_c m/min	Feed (mm/rev) Vs. Drill Diameter		
								Ø3-5	Ø5.1-8	Ø8.1-12
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
		≥0.25% C	annealed	650	190	2	80-110	0.10-0.18	0.15-0.25	0.2-0.30
		<0.55% C	quenched and tempered	850	250	3	70-100	0.10-0.20	0.15-0.28	0.2-0.35
		≥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
			quenched and tempered	930	275	7				
				1000	300	8	60-80	0.10-0.18	0.15-0.25	0.2-0.30
				1200	350	9	50-70	0.10-0.20	0.15-0.28	0.2-0.35
	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
			quenched and tempered	1100	325	11	50-70	0.10-0.15	0.12-0.20	0.14-0.25
	stainless steel and cast steel		ferritic / martensitic	680	200	12	25-75	0.04-0.10	0.05-0.15	0.05-0.18
			martensitic	820	240	13	25-75	0.04-0.10	0.05-0.15	0.05-0.18
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
N	aluminum-wrought alloys		not hardenable		60	21	70-300	0.10-0.25	0.15-0.35	0.25-0.45
			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
			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
H	hardened steel		hardened		55 HRC	38	40-70	0.06-0.10	0.08-0.12	0.10-0.14
			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

Recommended Machining Conditions for Solid Carbide Drills D=.031-.114" (Imperial)

ISO	Material		Condition	Tensile Strength [ksi]	Hardness HB	Material Group No.	Cutting Speed V_c (SFM)	Feed (IPR) Vs. Drill Diameter			
								Ø.031-.055	Ø.059-.075	Ø.079-.094	Ø.098-.114
P	non-alloy steel and cast steel, free cutting steel	<0.25% C	annealed	61	125	1	160-330	.0012-.0039	.0020-.0059	.0028-.0067	.0031-.0079
		≥0.25% C	annealed	94	190	2	130-330	.0012-.0039	.0020-.0059	.0028-.0067	.0031-.0079
		<0.55% C	quenched and tempered	123	250	3	130-280	.0012-.0039	.0020-.0059	.0028-.0067	.0031-.0079
		≥0.55% C	annealed	109	220	4	130-280	.0012-.0039	.0020-.0059	.0028-.0067	.0031-.0079
			quenched and tempered	145	300	5	130-280	.0012-.0039	.0020-.0059	.0028-.0067	.0031-.0079
	low alloy and cast steel (less than 5% of alloying elements)		annealed	87	200	6	130-250	.0012-.0039	.0020-.0059	.0028-.0067	.0031-.0079
			quenched and tempered	135	275	7	130-200	.0012-.0039	.0020-.0059	.0028-.0067	.0031-.0079
				145	300	8	130-200	.0012-.0039	.0020-.0059	.0028-.0067	.0031-.0079
				174	350	9	130-200	.0012-.0039	.0020-.0059	.0028-.0067	.0031-.0079
	high alloyed steel, cast steel and tool steel		annealed	99	200	10	100-160	.0012-.0039	.0020-.0059	.0028-.0067	.0031-.0079
			quenched and tempered	160	325	11	100-160	.0012-.0039	.0020-.0059	.0028-.0067	.0031-.0079
	stainless steel and cast steel		ferritic/ martensitic	99	200	12	70-110	.0012-.0024	.0016-.0031	.0020-.0039	.0024-.0039
			martensitic	119	240	13	70-110	.0012-.0024	.0016-.0031	.0020-.0039	.0024-.0039
M	stainless steel and cast steel		austenitic, duplex	87	180	14	70-110	.0012-.0024	.0016-.0031	.0020-.0039	.0024-.0039
N	aluminum-wrought alloys		not hardenable		60	21	260-490	.0012-.0039	.0020-.0059	.0028-.0067	.0031-.0079
			hardenable		100	22	260-490	.0012-.0039	.0020-.0059	.0028-.0067	.0031-.0079
	aluminum-cast alloys	≤12% Si	not hardenable		75	23	260-490	.0012-.0039	.0020-.0059	.0028-.0067	.0031-.0079
			hardenable		90	24	260-490	.0012-.0039	.0020-.0059	.0028-.0067	.0031-.0079
		>12% Si	high temperature		130	25	260-490	.0012-.0039	.0020-.0059	.0028-.0067	.0031-.0079
	copper alloys	>1% Pb	free cutting		110	26	260-490	.0012-.0039	.0020-.0059	.0028-.0067	.0031-.0079
			brass		90	27	160-490	.0020-.0047	.0028-.0059	.0031-.0071	.0035-.0071
			electrolytic copper		100	28	200-520	.0020-.0059	.0028-.0071	.0031-.0079	.0035-.0087
	non metallic		duroplastics, fiber plastics			29					
			hard rubber			30					
S	high temperature alloys	Fe based	annealed		200	31	30-70	.0008-.0016	.0012-.0024	.0016-.0028	.0016-.0031
			hardened		280	32	30-70	.0008-.0016	.0012-.0024	.0016-.0028	.0016-.0031
		Ni or Co based	annealed		250	33	30-70	.0008-.0016	.0012-.0024	.0016-.0028	.0016-.0031
			hardened		350	34	30-70	.0008-.0016	.0012-.0024	.0016-.0028	.0016-.0031
			cast		320	35	30-70	.0008-.0016	.0012-.0024	.0016-.0028	.0016-.0031
	titanium alloys		pure	58	190	36	30-70	.0008-.0012	.0008-.0012	.0012-.0016	.0012-.0016
			alpha+beta alloys, hardened	152	310	37	30-70	.0008-.0012	.0008-.0012	.0012-.0016	.0012-.0016
H	hardened steel		hardened		55 HRC	38	30-70	.0004-.0008	.0004-.0008	.0008-.0012	.0008-.0012
			hardened		60 HRC	39	30-70	.0004-.0008	.0004-.0008	.0008-.0012	.0008-.0012
	chilled cast iron		cast		400	40	30-70	.0004-.0008	.0004-.0008	.0008-.0012	.0008-.0012
	cast iron		hardened		55 HRC	41	30-70	.0004-.0008	.0004-.0008	.0008-.0012	.0008-.0012

- 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 .0004"

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

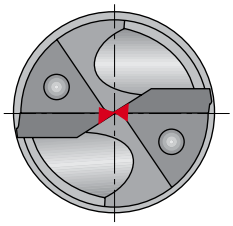
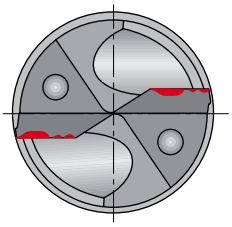
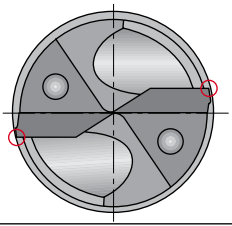
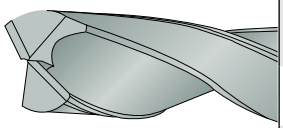
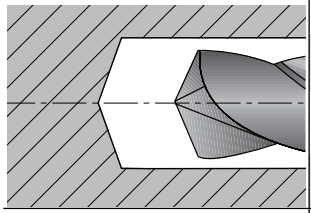
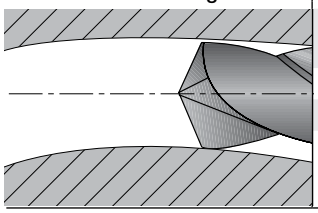
Recommended Machining Conditions for Solid Carbide Drills D=.118-.787" (Imperial)

ISO	Material		Condition	Tensile Strength [ksi]	Hardness HB	Material Group No.	Cutting Speed V_c (SFM)	Feed (IPR) Vs. Drill Diameter		
								Ø.118-.197	Ø.201-.315	Ø.319-.472
P	non-alloy steel and cast steel, free cutting steel	<0.25% C	annealed	61	125	1	260-390	.004-.007	.006-.010	.008-.012
		≥0.25% C	annealed	94	190	2	260-360	.004-.007	.006-.010	.008-.012
		<0.55% C	quenched and tempered	123	250	3	230-330	.004-.008	.006-.011	.008-.014
		≥0.55% C	annealed	109	220	4				
			quenched and tempered	145	300	5				
	low alloy and cast steel (less than 5% of alloying elements)		annealed	87	200	6	160-300	.004-.007	.006-.010	.008-.012
			quenched and tempered	135	275	7				
				145	300	8	200-260	.004-.007	.006-.010	.008-.012
				174	350	9	160-230	.004-.008	.006-.011	.008-.014
	high alloyed steel, cast steel and tool steel		annealed	99	200	10	200-260	.004-.008	.006-.011	.007-.014
			quenched and tempered	160	325	11	160-230	.004-.006	.005-.008	.006-.010
	stainless steel and cast steel		ferritic/ martensitic	99	200	12	160-260	.002-.004	.002-.006	.002-.007
			martensitic	119	240	13	80-220	.002-.004	.002-.006	.002-.007
M	stainless steel and cast steel		austenitic, duplex	87	180	14	80-220	.002-.004	.002-.006	.002-.007
N	aluminum-wrought alloys		not hardenable		60	21	230-980	.004-.010	.006-.014	.010-.018
			hardenable		100	22				
	aluminum-cast alloys	≤12% Si	not hardenable		75	23				
			hardenable		90	24	230-660			
		>12% Si	high temperature		130	25	230-980	.003-.007	.005-.010	.008-.014
	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	50-110	.001-.003	.002-.004	.002-.005
			hardened		280	32				
		Ni or Co based	annealed		250	33				
			hardened		350	34				
			cast		320	35				
	titanium alloys		pure	58	190	36				
			alpha+beta alloys, hardened	152	310	37				
H	hardened steel		hardened		55 HRC	38	130-230	.002-.004	.003-.005	.004-.006
			hardened		60 HRC	39				
	chilled cast iron		cast		400	40				
	cast iron		hardened		55 HRC	41				

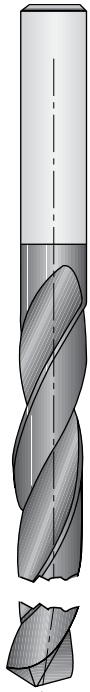
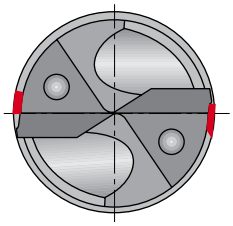
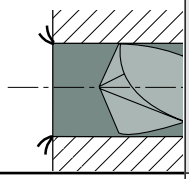
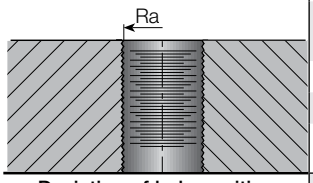
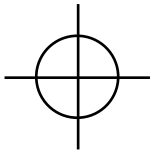
- When using external coolant supply only, reduce cutting speed by 10%
- Use internal coolant supply when machining austenitic stainless steel

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.

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 0.02 mm (.0008″) 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 0.02 mm (.0008″) (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 (Continued)

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 0.02 mm (.0008″) (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 0.02 mm (.0008″) (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.

Drilling Calculations (Metric)

Machining Parameters	Formula	Units	Example [1]
Spindle Speed	$n = \frac{v_c \cdot 1000}{\pi \cdot D}$	min^{-1}	$\frac{85 \cdot 1000}{\pi \cdot 6.0} = 4510$
Table Feed	$v_f = f \cdot n$	mm/min	$0.15 \cdot 4510 = 677$
Material Removal Rate	$Q = \frac{v_f \cdot \pi \cdot D^2}{4000}$	cm^3/min	$\frac{677 \cdot \pi \cdot (6.0)^2}{4000} = 19.1$
Material Specific Cutting Force	$k_c = k_{c1} \cdot f^{(-m)}$	N/mm^2	$1700 \cdot 0.15^{(-0.24)} = 2680$
Power Requirement	$P_c = \frac{Q}{60000} \cdot k_{c1}$	kW	$\left(\frac{19.1}{60000}\right) \cdot 2680 = 0.85$
Torque	$M_c = \frac{P_c \cdot 30 \cdot 1000}{\pi \cdot n}$	N/m	$\frac{0.85 \cdot 30 \cdot 1000}{\pi \cdot 4510} = 1.8$
Feed Force	$F_f = 0.7 \cdot \frac{D}{2} \cdot f \cdot k_c \cdot 1000 \cdot \sin(k)$ [2]	N	$0.7 \cdot \frac{6.0}{2} \cdot 0.15 \cdot 2680 \cdot 1000 \cdot 0.94 = 794$
Machining Time	$T_c = \frac{L+h}{v_f}$	min/ piece	$\frac{25+10}{677} = 0.05$
Machining Cost	$C_c = \frac{C_{Mh}}{60} \cdot T_c$	$/piece	$\frac{50}{60} \cdot 0.05 = 0.042$
v_c [3]	Cutting speed	m/min	85
f	Feed [4]	mm/rev	0.15
k_{c1}	Specific cutting force for 1 mm^2 chip section [5]	N/mm^2	2680
mc	Chip thickness factor [5]	-	0.24
k	Half drill point angle k=90° and sin(k)=1 for flat bottom drills (like DR-drills, for example), k=70° and sin(k)=0.94 for 140° - point angle drills etc.	-	k=70°, sin(k)=0.94
L	Depth of hole	mm	25.0
h	Distance from drill point to workpiece before feeding	mm	10
C_{Mh}	Cost/machine hour	$/h	50

[1] Solid drill **D = 6.0 mm, SCD 060-035-060**, workpiece material No. 4
[2] 0.7 - empirical coefficient, depending on the type of processing and cutting conditions - takes into account the characteristics of load distribution
[3] Recommended - see pages 951-954
[4] According to drill diameter see page 952
[5] See the table below on this page

Material Specific Cutting Force for Drilling

Material Group	1	2	3	4	5	6	7	8	9	10	11	12	13	14
K_{c1}, N/mm^2	1350	1500	1675	1700	1900	1775	1675	1725	1800	2450	2500	1875	1875	2150
mc	0.21	0.22	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.23	0.23	0.21	0.21	0.20

Material Group	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
K_{c1}, N/mm^2	700	800	700	700	750	700	700	700			2600	3100	3300	3300	3300	1700	2110	4600	4700	4600	4500
mc	0.25	0.25	0.25	0.25	0.25	0.27	0.27	0.27			0.24	0.24	0.24	0.24	0.24	0.23	0.22	0.25	0.25	0.25	0.25

steel
stainless steel
non-ferrous metals
superalloys and titanium
hard materials

Drilling Calculations (Imperial)

Machining Parameters	Formula	Units	Example (1)
Spindle Speed	$n = \frac{v_c \cdot 12}{\pi \cdot D}$	min^{-1}	$\frac{280 \cdot 12}{\pi \cdot (.25)} = 4278$
Table Feed	$v_f = f \cdot n$	ipm	$(.006) \cdot 4278 = 25.7$
Material Removal Rate	$Q = \frac{v_f \cdot \pi \cdot D^2}{4}$	in^3/min	$\frac{25.7 \cdot \pi \cdot (.25)^2}{4} = 1.26$
Material Specific Cutting Force	$k_c = \frac{k_{c1} \cdot f^{-m}}{6.895}$	KSI	$\frac{247 \cdot (.006)^{(-0.24)}}{6.895} = 389$
Power Requirement	$P_c = \frac{Q}{396} \cdot k_c$	HP	$\frac{1.26}{396} \cdot 389 = 1.24$
Torque	$M_c = \frac{P_c \cdot 63025}{n}$	lbf·in	$\frac{1.24 \cdot 63025}{4278} = 18.6$
Feed Force	$F_f = 0.7 \cdot \frac{D}{2} \cdot f \cdot k_c \cdot 1000 \cdot \sin(k)$ (2)	lbf	$0.7 \cdot \left(\frac{0.25}{2}\right) \cdot 0.006 \cdot 389 \cdot 1000 \cdot 0.94 = 192$
Machining Time	$T_c = \frac{L+h}{v_f}$	min/ piece	$\frac{1.0+(0.04)}{25.7} = 0.055$
Machining Cost	$C_c = \frac{C_{Mh}}{60} \cdot T_c$	$/piece	$\left(\frac{50}{60}\right) \cdot 0.055 = 0.045$
v_c (3)	Cutting speed	SFM	280
f	Feed (4)	IPR	.006
k_c	Specific cutting force for 1 mm^2 chip section (5)	KSI	247
mc	Chip thickness factor (5)	-	0.24
k	Half drill point angle k=90° and sin(k)=1 for flat bottom drills (like DR-drills, for example), k=70° and sin(k)=0.94 for 140° - point angle drills etc.	-	k=70°, sin(k)=0.94
L	Depth of hole	inch	1.0
h	Distance from drill point to workpiece before feeding	inch	.04
C_{Mh}	Cost/machine hour	$/h	50

(1) Solid drill D = .25", SCD0250-1712-0315, workpiece material No. 4
(2) 0.7 - empirical coefficient, depending on the type of processing and cutting conditions - takes into account the characteristics of load distribution
(3) Recommended - see page 954
(4) According to drill diameter see page 954
(5) See the table below on this page

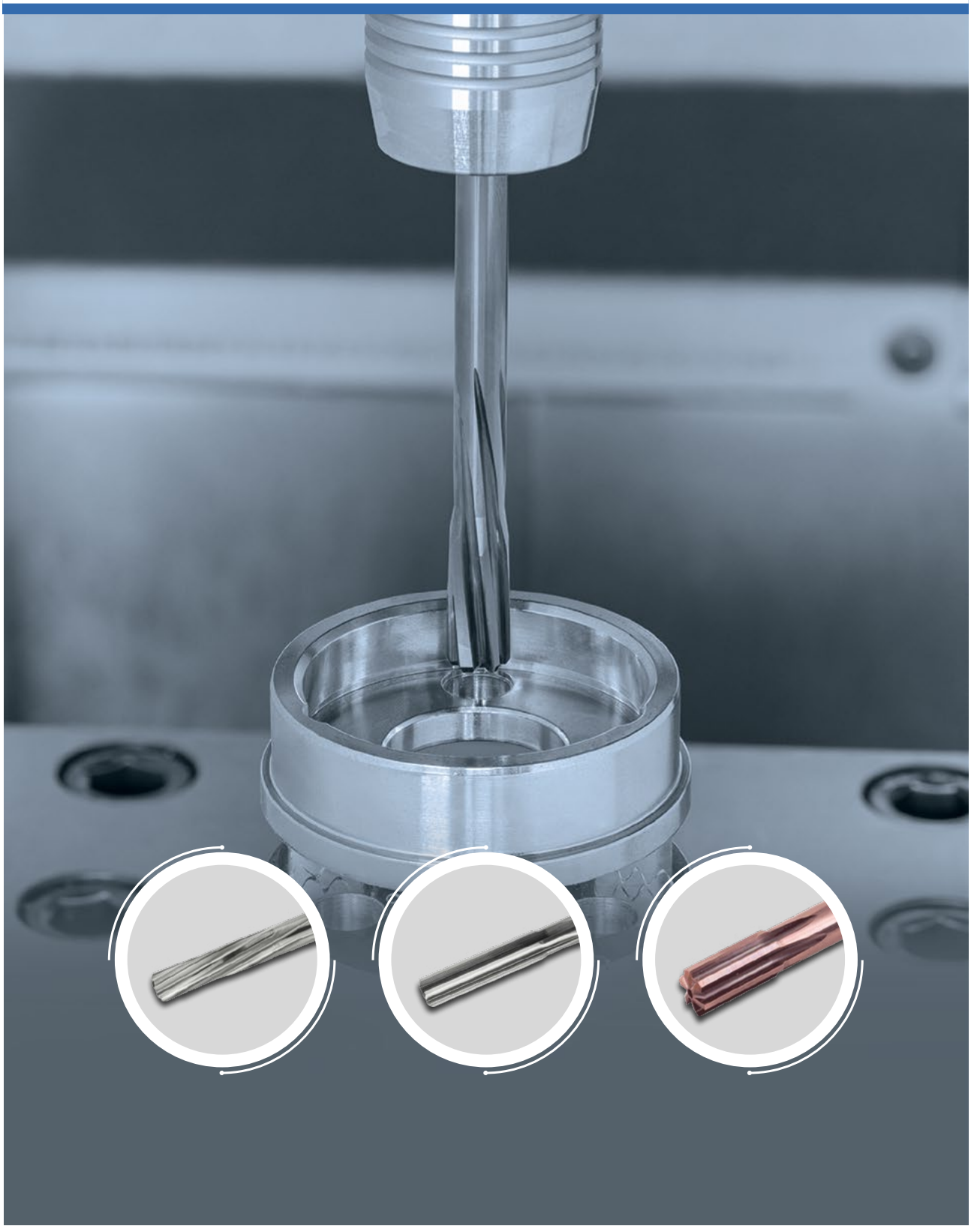
Material Specific Cutting Force for Drilling

Material Group	1	2	3	4	5	6	7	8	9	10	11	12	13	14
K_{c1}, KSI	196	218	243	247	276	257	243	250	261	355	363	272	272	312
mc	0.21	0.22	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.23	0.23	0.21	0.21	0.2

Material Group	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
K_{c1}, KSI	102	116	102	102	190	102	102	102			377	450	479	479	479	247	306	667	682	667	653
mc	0.25	0.25	0.25	0.25	0.25	0.27	0.27	0.27			0.24	0.24	0.24	0.24	0.24	0.23	0.22	0.25	0.25	0.25	0.25

steel
stainless steel
non-ferrous metals
superalloys and titanium
hard materials

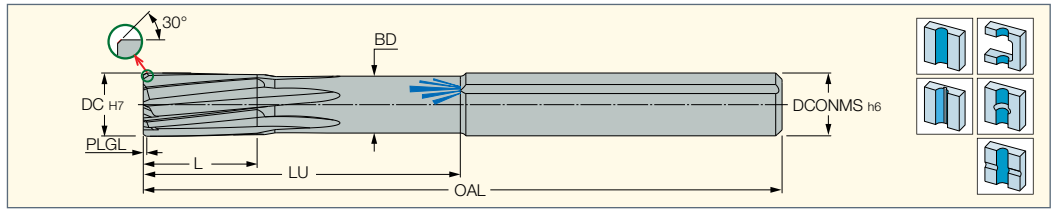
REAMING



SOLIDH-REAM

RM-MTR-H7N-CS-C

Solid Carbide Reamers with Helical Flutes, Unequal Pitch and Coolant Grooves for High Speed Reaming of Through Holes



M E T R I C

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 (Metric)

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
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

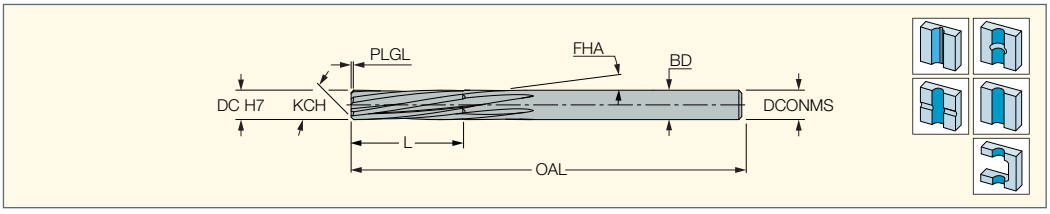
Reamer Diameter mm	Feed mm/rev
1.00-1.50	0.05-0.10
2.00-3.50	0.10-0.20
4.00-5.00	0.10-0.40
5.50-7.50	0.15-0.70
8.00-10.0	0.50-1.40
10.5-12.0	0.80-1.60

Runout max 0.005 mm

SOLIDH-REAM

RM-FCR-H7N-CS-C

DIN 212B Solid Carbide Reamers with Helical Flutes and a Cylindrical Shank for Through Holes



M E T R I C

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	●

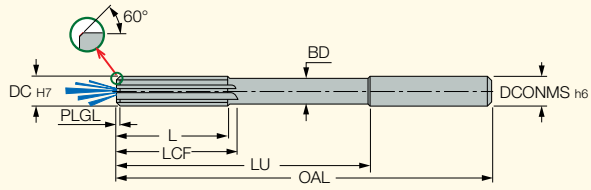
- Hole tolerance: H7 manufacturing tolerance according to DIN1420 • Available grades: IC07 - uncoated, optional: IC907 - TiAlN PVD coated
- Special diameters are available on request • For user guide and cutting conditions, see pages 964-965

(1) PLGL lower tolerance
(2) PLGL upper tolerance
(3) Number of flutes

SOLIDH-REAM

RM-MTR-H7S-CS-C

UOP Solid Carbide Reamers with Straight Flutes, Unequal Pitch and Coolant Holes for High Speed Reaming Blind Holes



DC 1 mm - 3 mm: Without internal coolant hole

M E T R I C

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

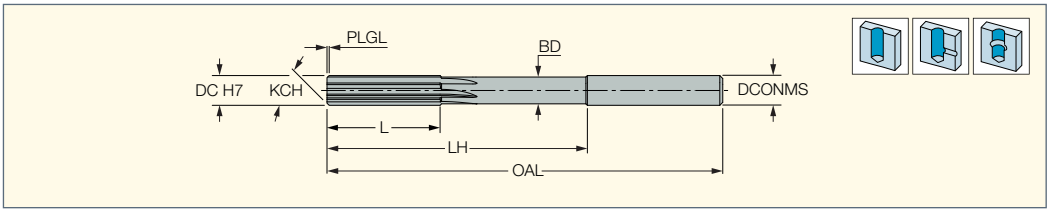
(1) Number of flutes

(2) 0 - Without coolant supply, 1 - With coolant supply

SOLIDH-REAM

RM-FCR-H7S-CS-C

DIN 212C Solid Carbide Reamers with Straight Flutes and a Cylindrical Shank for Blind Holes



M E T R I C

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	●

- 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 964-965

(1) PLGL lower tolerance
(2) PLGL upper tolerance
(3) Number of flutes

Machining Conditions for Solid Carbide Reamers (Metric)

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 10-12	0.04-0.10 0.10-0.12	0.15-0.25 0.20-0.25	6-10
	1000-1400	up to 10 10-12	0.04-0.10 0.10-0.12	0.12-0.20 0.15-0.19	6-8
Cast steel	400-500	up to 10 10-12	0.05-0.10 0.10-0.12	0.15-0.25 0.20-0.25	10-13
	500-700	up to 10 10-12	0.04-0.10 0.10-0.12	0.12-0.20 0.15-0.19	6-8
Titanium Titanium alloy	500-1300	up to 10 10-12	0.06-0.12 0.10-0.12	0.12-0.20 0.15-0.19	6-8
Aluminum alloy	over 80 HB	up to 10 10-12	0.06-0.12 0.10-0.14	0.20-0.30 0.30-0.35	Si<7% 10-15
Copper		up to 10 10-12	0.10-0.20 0.20-0.16	0.30-0.60 0.40-0.50	20-30
Brass Red bronze Cast bronze		up to 10 10-12	0.06-0.12 0.10-0.14	0.20-0.30 0.30-0.35	15-24
Thermoset polymers		up to 10 10-12	0.10-0.25 0.20-0.16	0.30-0.60 0.40-0.50	15-19



Cutting Speed
The cutting speed has the highest influence on the surface quality of the reamed hole and on the life of the tool. Increasing the cutting speed beyond the optimum speed will cause increased tool wear due to the increased cutting temperature. The increased speed also causes an increase in the built-up edge (material that is welded to the cutting edge). The built-up edge damages the surface finish and shortens the life of the tool. In order to achieve high surface quality and longer tool life, the cutting speed for reaming should be kept relatively low.

Feed Rate
The feed rate directly influences the wear on the cutting edge. As the feed rate is increased, the cutting forces increase almost proportionally. The feed, however, has less influence on the machined surface quality and tool wear than the cutting speed (i.e. the feed can be varied in a relatively wide range without having material influence the quality of the machined hole and the respective tool life). It is therefore recommended to select the highest possible feed in order to shorten reaming times without significantly reducing the tool life.

Reaming Allowance
The reaming allowance (the amount of material to be reamed) also influences the tool life. In order to achieve high tool life, the reaming allowance should be kept at a reasonable minimum considering the process to be performed. If the reaming allowance is too small, it may result in a high dimensional variation (inability to maintain the required tolerances) and a decrease in the machined surface quality. When reaming materials that have surface defects or have been welded or flame cut, the reaming allowance should be increased so these factors do not appear on the reamed surface.

Coolant/Lubrication
The high degree of friction between the tool and the wall being reamed demands the use of a fluid for lubrication and cooling. Using lubrication is more critical for maintaining tolerances than using a coolant. General cutting oils and emulsions may be used. It should be noted that in some cases emulsions will yield a better surface finish than cutting oils. Emulsions are thinner fluids that are able to reach and more uniformly lubricate the cutting edges better than viscous cutting oils (especially when performing deep applications). In order to determine the most suitable lubricant for a particular application, tests should be run on the material to be cut, on a case-to-case basis.

Reaming Prerequisites
In order to achieve high tolerances for reaming applications, there are certain requirements that must be considered.

1 Condition of the tool - If the tool is reground, both an exact concentricity and high quality grinding are indispensable.
2 Workpiece material - Axis shifting and warping (i.e. incorrect hole positioning) can only be corrected to a certain degree when reaming. A critical factor is the initial opening in the workpiece. This opening must be even, or if the prepared hole is countersunk, a cone countersink must be used. Failure to properly prepare the initial opening can result in irregular countersinking that leads to the reamer being pushed out of its proper alignment. Ideally, pre-machining should be performed in a chuck to avoid alignment defects.
3 Through holes - For best results, the holes to be reamed should extend completely through the workpiece material. This allows for easy exit of both the cutting fluid and the reamed material. Negative flute reamers are advantageous in through hole reaming.
4 Blind holes - Use straight flute reamers for blind holes.



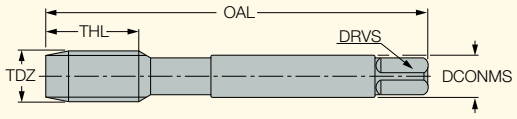
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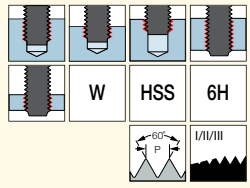


ISCARTAPS

TPHN M-W

DIN 13 HSS Hand Tap Set for
ISO Metric Coarse Threads





M E T R I C

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	●

• NOTE: Each set contains 2 or 3 taps • For user guide and cutting conditions, see pages 991-1002

[1] Thread pitch

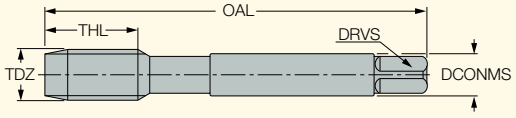
[2] Number of flutes

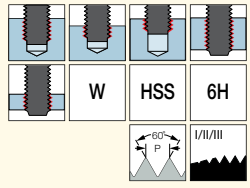
[3] Torque key size

ISCARTAPS

TPHN M-W

DIN 13 HSS Hand Tap Set for
ISO Metric Coarse Threads





I N C H

Designation	Dimensions									HS
	TDZ	TP mm[1]	OAL	THL	DCONMS	NOF[2]	DRVS[3]	Pre-hole	Standard	
TPHN M-2X0.4-W	M2	.400	1.417	.315	.110	3	.083	.06	DIN 352	●
TPHN M-2.2X0.45-W	M2.2	.450	1.417	.354	.110	3	.083	.07	DIN 352	●
TPHN M-2.5X0.45-W	M2.5	.450	1.575	.354	.110	3	.083	.08	DIN 352	●
TPHN M-3X0.5-W	M3	.500	1.654	.472	.138	3	.106	.10	DIN 352	●
TPHN M-3.5X0.6-W	M3.5	.600	1.772	.551	.157	3	.118	.11	DIN 352	●
TPHN M-4X0.7-W	M4	.700	1.811	.551	.177	3	.134	.13	DIN 352	●
TPHN M-5X0.8-W	M5	.800	1.968	.630	.236	3	.193	.17	DIN 352	●
TPHN M-6X1.0-W	M6	1.000	2.047	.709	.236	3	.193	.20	DIN 352	●
TPHN M-8X1.25-W	M8	1.250	2.480	.709	.236	3	.193	.27	DIN 352	●
TPHN M-10X1.5-W	M10	1.500	2.756	.906	.276	3	.217	.33	DIN 352	●

• NOTE: Each set contains 2 or 3 taps • For user guide and cutting conditions, see pages 991-1002

[1] Thread pitch

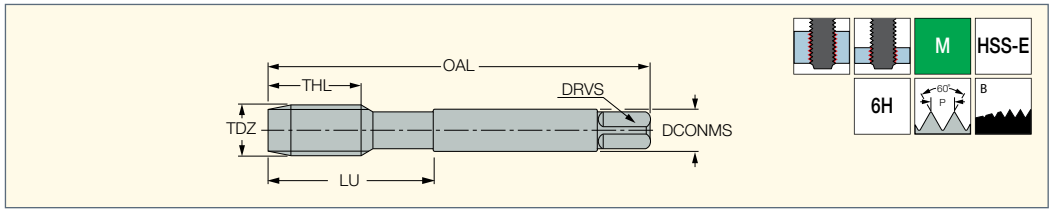
[2] Number of flutes

[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



M E T R I C

Designation	TDZ	TP[1]	OAL	THL	LU[2]	DCONMS	NOF[3]	DRVS[4]	Pre-hole	Standard	Tough ↔ Hard 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	•	•

• For user guide and cutting conditions, see pages 991-1002

(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.

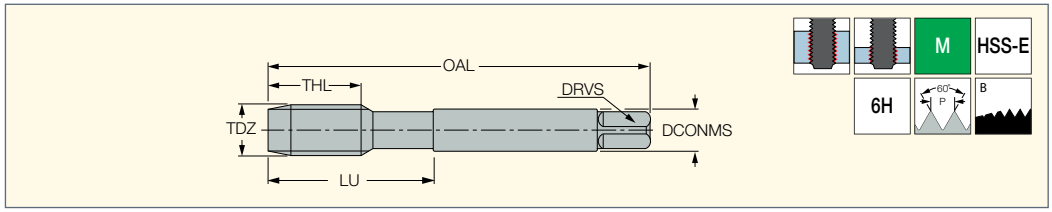
(3) Number of flutes

(4) Torque key size

ONETAP

TPGN M-M

DIN 13 HSSE 5% Co Gun Point Machine Taps - ISO Metric Coarse Threads for a Wide Range of Materials



I N C H

Designation	TDZ	TP mm[1]	OAL	THL	LU[2]	DCONMS	NOF[3]	DRVS[4]	Pre-hole	Standard	Tough ↔ Hard HE	HETI
TPGN M-2X0.4-M	M2	.400	1.772	.315	-	.110	2	.083	.06	DIN 371	•	•
TPGN M-2.2X0.45-M	M2.2	.450	1.772	.354	-	.110	2	.083	.07	DIN 371	•	•
TPGN M-2.5X0.45-M	M2.5	.450	1.968	.354	-	.110	2	.083	.08	DIN 371	•	•
TPGN M-3X0.5-M	M3	.500	2.205	.394	.71	.138	3	.106	.10	DIN 371	•	•
TPGN M-3.5X0.6-M	M3.5	.600	2.205	.394	.79	.157	3	.118	.11	DIN 371	•	•
TPGN M-4X0.7-M	M4	.700	2.480	.472	.83	.177	3	.134	.13	DIN 371	•	•
TPGN M-5X0.8-M	M5	.800	2.756	.551	.98	.236	3	.193	.17	DIN 371	•	•
TPGN M-6X1.0-M	M6	1.000	3.150	.630	1.18	.236	3	.193	.20	DIN 371	•	•
TPGN M-8X1.25-M	M8	1.250	3.543	.709	1.38	.315	3	.244	.27	DIN 371	•	•
TPGN M-10X1.5-M	M10	1.500	3.937	.787	1.54	.394	3	.315	.33	DIN 371	•	•

• For user guide and cutting conditions, see pages 991-1002

(1) Thread pitch

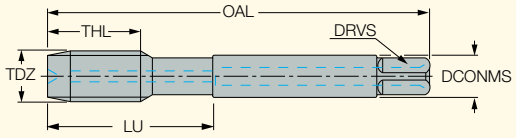
(2) DIN376 (M12+) and DIN374 (all MF) taps do not have a neck, meaning the shank diameter is smaller than the core hole. Therefore, the usable length isn't restricted by a neck.

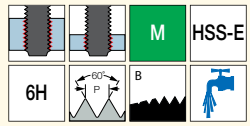
(3) Number of flutes

(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





M E T R I C

Designation	TDZ	TP[1]	OAL	THL	LU[2]	DCONMS	NOF[3]	DRVS[4]	Pre-hole	CSP[5]	Standard	HETI
	Dimensions											
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	●

- For user guide and cutting conditions, see pages 991-1002

(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.

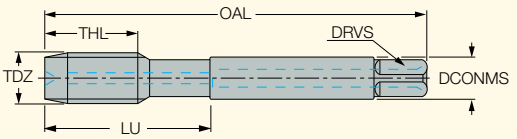
(3) Number of flutes

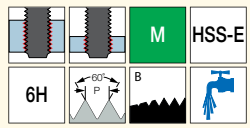
(4) Torque key size

(5) 0 - Without coolant supply, 1 - With coolant supply

ONETAP

TPGN M-M-B
DIN 13 HSS Gun Point Machine Taps - ISO Metric Coarse Threads for a Wide Range of Materials





I N C H

Designation	TDZ	TP mm[1]	OAL	THL	LU[2]	DCONMS	NOF[3]	DRVS[4]	Pre-hole	CSP[5]	Standard	HETI
	Dimensions											
TPGN M-8X1.25-M-B	M8	1.250	3.543	.709	1.38	.315	3	.244	.27	1	DIN 371	●
TPGN M-10X1.5-M-B	M10	1.500	3.937	.787	1.54	.394	3	.315	.33	1	DIN 371	●

- For user guide and cutting conditions, see pages 991-1002

(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

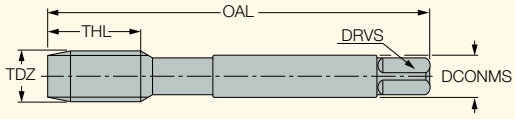
(4) Torque key size

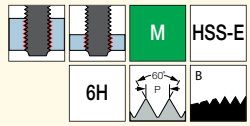
(5) 0 - Without coolant supply, 1 - With coolant supply

ONETAP

TPGN MF-M

DIN 13 HSSE 5% Co Gun Point Machine Taps - ISO Metric Fine Threads for a Wide Range of Materials





M E T R I C

Designation	TDZ	TP[1]	OAL	THL	DCONMS	NOF[2]	DRVS[3]	Pre-hole	Standard	Tough ↔ Hard: HE	Tough ↔ Hard: HETI
	Dimensions										
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	●	●

• For user guide and cutting conditions, see pages 991-1002

(1) Thread pitch

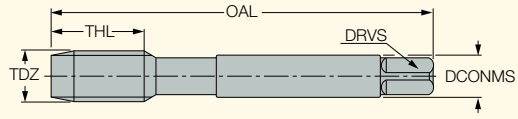
(2) Number of flutes

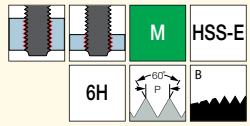
(3) Torque key size

ONETAP

TPGN MF-M

DIN 13 HSSE 5% Co Gun Point Machine Taps - ISO Metric Fine Threads for a Wide Range of Materials





I N C H

Designation	TDZ	TP mm[1]	OAL	THL	DCONMS	NOF[2]	DRVS[3]	Pre-hole	Standard	Tough ↔ Hard: HE	Tough ↔ Hard: HETI
	Dimensions										
TPGN MF-4X0.5-M	MF4	.500	2.480	.394	.110	3	.083	.14	DIN 374	●	●
TPGN MF-5X0.5-M	MF5	.500	2.756	.472	.138	3	.106	.18	DIN 374	●	●
TPGN MF-6X0.75-M	MF6	.750	3.150	.472	.177	3	.134	.20	DIN 374	●	●
TPGN MF-8X1.0-M	MF8	1.000	3.543	.591	.236	3	.193	.28	DIN 374	●	●
TPGN MF-10X1.0-M	MF10	1.000	3.543	.709	.276	3	.217	.35	DIN 374	●	●
TPGN MF-10X1.25-M	MF10	1.250	3.937	.709	.276	3	.217	.35	DIN 374	●	●

• For user guide and cutting conditions, see pages 991-1002

(1) Thread pitch

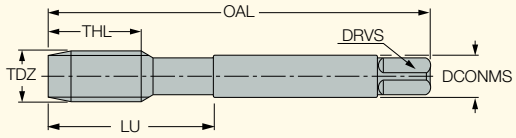
(2) Number of flutes

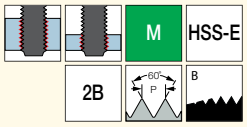
(3) Torque key size

ONETAP

TPGN UNC-M

HSSE 5% Co Gun Point Machine Taps - Unified Coarse Threads for a Wide Range of Materials





M E T R I C

Designation	TDZ	TPI[1]	OAL	THL	LU[2]	DCONMS	NOF[3]	DRVS[4]	Pre-hole	Standard	Tough ↔ Hard 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	●	●

• For user guide and cutting conditions, see pages 991-1002

(1) Threads per inch

(2) DIN376 (UNC 7/16+) 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.

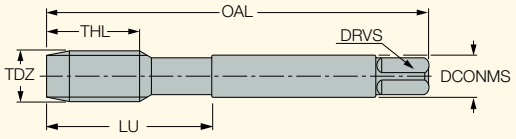
(3) Number of flutes

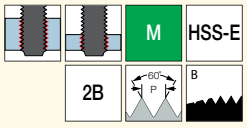
(4) Torque key size

ONETAP

TPGN UNC-M

HSSE 5% Co Gun Point Machine Taps - Unified Coarse Threads for a Wide Range of Materials





I N C H

Designation	TDZ	TPI[1]	OAL	THL	LU[2]	DCONMS	NOF[3]	DRVS[4]	Pre-hole	Standard	Tough ↔ Hard HE	HETI
TPGN UNC #4 40-M	UNC No.4	40.0	2.205	.394	.71	.138	2	.106	.09	DIN 371	●	●
TPGN UNC #5-40-M	UNC No.5	40.0	2.205	.394	.71	.138	3	.106	.10	DIN 371	●	●
TPGN UNC #6-32-M	UNC No.6	32.0	2.205	.394	.79	.157	3	.118	.11	DIN 371	●	●
TPGN UNC #8-32-M	UNC No.8	32.0	2.480	.472	.83	.177	3	.134	.14	DIN 371	●	●
TPGN UNC #10-24-M	UNC No.10	24.0	2.756	.551	.98	.236	3	.193	.15	DIN 371	●	●
TPGN UNC #12-24-M	UNC No.12	24.0	3.150	.630	1.18	.236	3	.193	.18	DIN 371	●	●
TPGN UNC 1/4-20-M	UNC 1/4	20.0	3.150	.630	1.18	.276	3	.217	.20	DIN 371	●	●
TPGN UNC 5/16-18-M	UNC 5/16	18.0	3.543	.709	1.38	.315	3	.244	.26	DIN 371	●	●
TPGN UNC 3/8-16-M	UNC 3/8	16.0	3.937	.787	1.54	.394	3	.315	.31	DIN 371	●	●

• For user guide and cutting conditions, see pages 991-1002

(1) Threads per inch

(2) DIN376 (UNC 7/16+) 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.

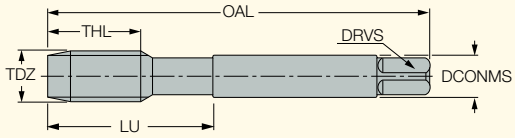
(3) Number of flutes

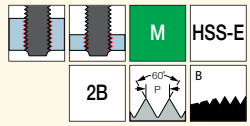
(4) Torque key size

ONETAP

TPGN UNF-M

HSSE 5% Co Spiral Flute Machine Taps - Unified Fine Threads, for a Wide Range of Materials





M E T R I C

Designation	TDZ	TPI[1]	OAL	THL	LU[2]	DCONMS	NOF[3]	DRVS[4]	Pre-hole	Standard	Tough ↔ Hard HE	HETI
	Dimensions											
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	●	●

- For user guide and cutting conditions, see pages 991-1002

(1) Threads per inch

(2) DIN376 (UNF 7/16+) 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.

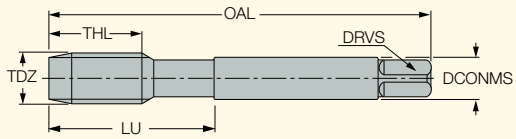
(3) Number of flutes

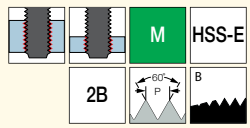
(4) Torque key size

ONETAP

TPGN UNF-M

HSSE 5% Co Spiral Flute Machine Taps - Unified Fine Threads, for a Wide Range of Materials





I N C H

Designation	TDZ	TPI[1]	OAL	THL	LU[2]	DCONMS	NOF[3]	DRVS[4]	Pre-hole	Standard	Tough ↔ Hard HE	HETI
	Dimensions											
TPGN UNF #4-48-M	UNF No.4	48.0	2.205	.315	.71	.138	2	.106	.09	DIN 371	●	●
TPGN UNF #5-44-M	UNF No.5	44.0	2.205	.354	.71	.138	3	.106	.11	DIN 371	●	●
TPGN UNF #6-40-M	UNF No.6	40.0	2.205	.394	.79	.157	3	.118	.12	DIN 371	●	●
TPGN UNF #8-36-M	UNF No.8	36.0	2.480	.472	.83	.177	3	.134	.14	DIN 371	●	●
TPGN UNF #10-32-M	UNF No.10	32.0	2.756	.472	.98	.236	3	.193	.16	DIN 371	●	●
TPGN UNF #12-28-M	UNF No.12	28.0	3.150	.472	1.18	.236	3	.193	.18	DIN 371	●	●
TPGN UNF 1/4-28-M	UNF 1/4	28.0	3.150	.472	1.18	.276	3	.217	.22	DIN 371	●	●
TPGN UNF 5/16-24-M	UNF 5/16	24.0	3.543	.591	1.38	.315	3	.244	.27	DIN 371	●	●
TPGN UNF 3/8-24-M	UNF 3/8	24.0	3.543	.709	1.54	.394	3	.315	.33	DIN 371	●	●

- For user guide and cutting conditions, see pages 991-1002

(1) Threads per inch

(2) DIN376 (UNF 7/16+) 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.

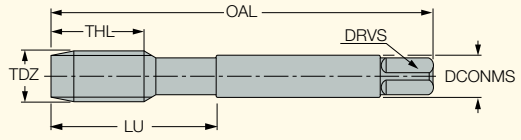
(3) Number of flutes

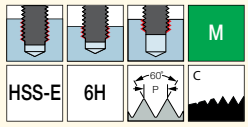
(4) Torque key size

ONETAP

TPSN M-M

DIN 13 HSSE 5% Co Spiral Flute Machine Taps ISO Metric Coarse Threads for a Wide Range of Materials





M E T R I C

Designation	TDZ	TP[1]	OAL	THL	LU[2]	DCONMS	NOF[3]	DRVS[4]	Pre-hole	Standard	Tough ↔ Hard 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	●	●

- For user guide and cutting conditions, see pages 991-1002

(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.

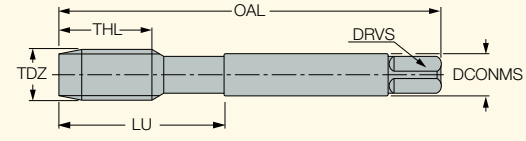
(3) Number of flutes

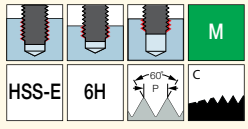
(4) Torque key size

ONETAP

TPSN M-M

DIN 13 HSSE 5% Co Spiral Flute Machine Taps ISO Metric Coarse Threads for a Wide Range of Materials





I N C H

Designation	TDZ	TP mm[1]	OAL	THL	LU[2]	DCONMS	NOF[3]	DRVS[4]	Pre-hole	Standard	Tough ↔ Hard HE	HETI
TPSN M-2X0.4-M	M2	.400	1.772	.236	.39	.110	3	.083	.06	DIN 371	●	●
TPSN M-2.2X0.45-M	M2.2	.450	1.772	.236	.39	.110	3	.083	.07	DIN 371	●	●
TPSN M-2.5X0.45-M	M2.5	.450	1.968	.236	.47	.110	3	.083	.08	DIN 371	●	●
TPSN M-3X0.5-M	M3	.500	2.205	.276	.71	.138	3	.106	.10	DIN 371	●	●
TPSN M-3.5X0.6-M	M3.5	.600	2.205	.276	.79	.157	3	.118	.11	DIN 371	●	●
TPSN M-4X0.7-M	M4	.700	2.480	.315	.83	.177	3	.134	.13	DIN 371	●	●
TPSN M-5X0.8-M	M5	.800	2.756	.394	.98	.236	3	.193	.17	DIN 371	●	●
TPSN M-6X1.0-M	M6	1.000	3.150	.472	1.18	.236	3	.193	.20	DIN 371	●	●
TPSN M-8X1.25-M	M8	1.250	3.543	.591	1.38	.315	3	.244	.27	DIN 371	●	●
TPSN M-10X1.5-M	M10	1.500	3.937	.709	1.54	.394	3	.315	.33	DIN 371	●	●

- For user guide and cutting conditions, see pages 991-1002

(1) Thread pitch

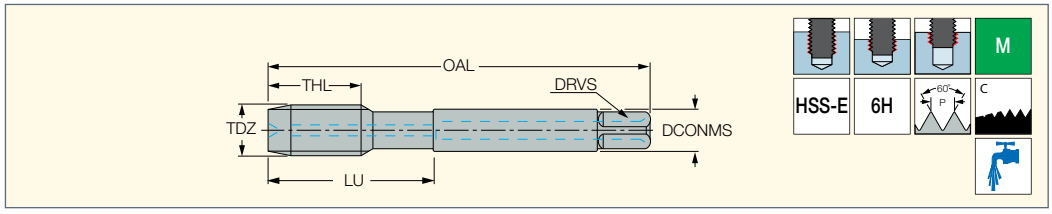
(2) DIN376 (M12+) and DIN374 (all MF) taps do not have a neck, meaning the shank diameter is smaller than the core hole. Therefore, the usable length isn't restricted by a neck.

(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



M E T R I C

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	●

- For user guide and cutting conditions, see pages 991-1002

[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.

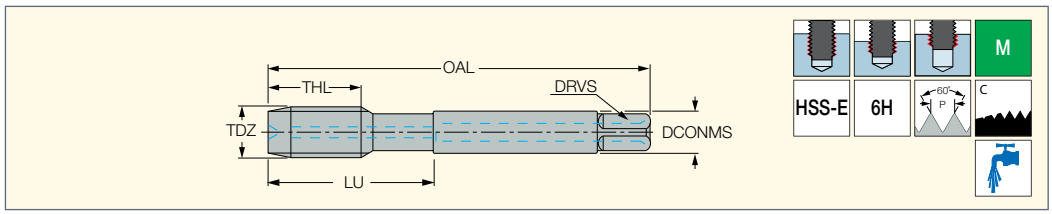
[3] Number of flutes

[4] Torque key size

[5] 0 - Without coolant supply, 1 - With coolant supply

ONETAP

TPSN M-M-B
DIN 13 HSS Spiral Flute Machine Taps - Metric Coarse Threads for a Wide Range of Materials



I N C H

Designation	Dimensions											HETI
	TDZ	TP mm[1]	OAL	THL	LU[2]	DCONMS	NOF[3]	DRVS[4]	Pre-hole	Standard	CSP[5]	
TPSN M-6X1.0-M-B	M6	1.000	3.150	.472	1.18	.236	3	.193	.20	DIN 371	1	●
TPSN M-8X1.25-M-B	M8	1.250	3.543	.591	1.38	.315	3	.244	.27	DIN 371	1	●
TPSN M-10X1.5-M-B	M10	1.500	3.937	.709	1.54	.394	3	.315	.33	DIN 371	1	●

- For user guide and cutting conditions, see pages 991-1002

[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

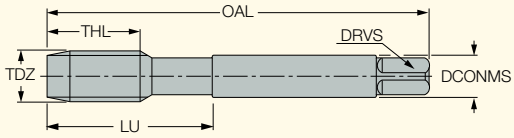
[4] Torque key size

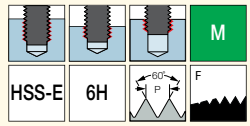
[5] 0 - Without coolant supply, 1 - With coolant supply

ONETAP

TPSN M-M-F

DIN 13 HSSE. 5% Co Spiral Flute Machine Taps ISO Metric Coarse Threads for a Wide Range of Materials





M E T R I C

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	●

- For user guide and cutting conditions, see pages 991-1002

(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.

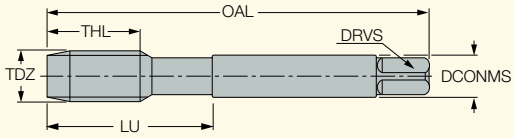
(3) Number of flutes

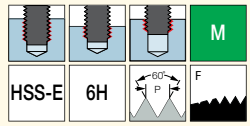
(4) Torque key size

ONETAP

TPSN M-M-F

DIN 13 HSSE. 5% Co Spiral Flute Machine Taps ISO Metric Coarse Threads for a Wide Range of Materials





I N C H

Designation	Dimensions										HE
	TDZ	TP mm[1]	OAL	THL	LU[2]	DCONMS	NOF[3]	DRVS[4]	Pre-hole	Standard	
TPSN M-4X0.7-M-F	M4	.700	2.480	.315	.83	.177	3	.134	.13	DIN 371	●
TPSN M-5X0.8-M-F	M5	.800	2.756	.394	.98	.236	3	.193	.17	DIN 371	●
TPSN M-6X1.0-M-F	M6	1.000	3.150	.472	1.18	.236	3	.193	.20	DIN 371	●
TPSN M-8X1.25-M-F	M8	1.250	3.543	.591	1.38	.315	3	.244	.27	DIN 371	●
TPSN M-10X1.5-M-F	M10	1.500	3.937	.709	1.54	.394	3	.315	.33	DIN 371	●

- For user guide and cutting conditions, see pages 991-1002

(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.

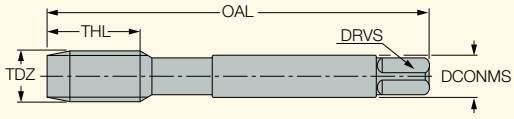
(3) Number of flutes

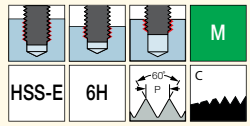
(4) Torque key size

ONETAP

TPSN MF-M

DIN 13 HSSE 5% Co Spiral Flute Machine Taps. ISO Metric Fine Threads for a Wide Range of Materials





M E T R I C

Designation	TDZ	TP[1]	OAL	THL	DCONMS	NOF[2]	DRVS[3]	Pre-hole	Standard	Tough ↔ Hard HE	HETI
		Dimensions									
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	●	●

• For user guide and cutting conditions, see pages 991-1002

(1) Thread pitch

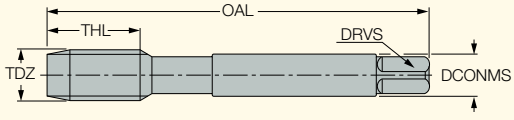
(2) Number of flutes

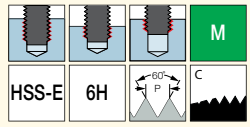
(3) Torque key size

ONETAP

TPSN MF-M

DIN 13 HSSE 5% Co Spiral Flute Machine Taps. ISO Metric Fine Threads for a Wide Range of Materials





I N C H

Designation	TDZ	TP mm[1]	OAL	THL	DCONMS	NOF[2]	DRVS[3]	Pre-hole	Standard	Tough ↔ Hard HE	HETI
		Dimensions									
TPSN MF-4X0.5-M	MF4	.500	2.480	.394	.110	3	.083	.14	DIN 374	●	●
TPSN MF-5X0.5-M	MF5	.500	2.756	.472	.138	3	.106	.18	DIN 374	●	●
TPSN MF-6X0.75-M	MF6	.750	3.150	.472	.177	3	.134	.20	DIN 374	●	●
TPSN MF-8X1.0-M	MF8	1.000	3.543	.591	.236	3	.193	.28	DIN 374	●	●
TPSN MF-10X1.25-M	MF10	1.250	3.937	.709	.276	3	.217	.35	DIN 374	●	●
TPSN MF-10X1.0-M	MF10	1.000	3.543	.709	.276	3	.217	.35	DIN 374	●	●

• For user guide and cutting conditions, see pages 991-1002

(1) Thread pitch

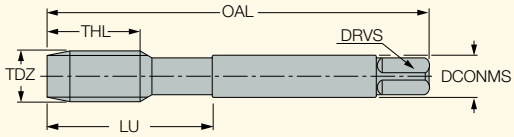
(2) Number of flutes

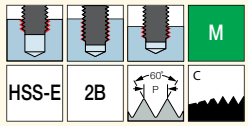
(3) Torque key size

ONETAP

TPSN UNC-M

HSSE 5% Co Spiral Flute Machine Taps Unified Coarse Threads, for a Wide Range of Materials





M E T R I C

Designation	TDZ	TPI[1]	OAL	THL	LU[2]	DCONMS	NOF[3]	DRVS[4]	Pre-hole	Standard	Tough ↔ Hard 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	●	●

• For user guide and cutting conditions, see pages 991-1002

(1) Threads per inch

(2) DIN376 (UNC 7/16+) 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.

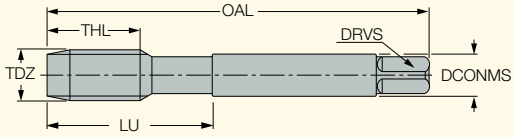
(3) Number of flutes

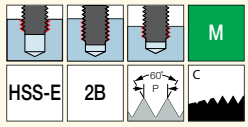
(4) Torque key size

ONETAP

TPSN UNC-M

HSSE 5% Co Spiral Flute Machine Taps Unified Coarse Threads, for a Wide Range of Materials





I N C H

Designation	TDZ	TPI[1]	OAL	THL	LU[2]	DCONMS	NOF[3]	DRVS[4]	Pre-hole	Standard	Tough ↔ Hard HE	HETI
TPSN UNC #4-40-M	UNC No.4	40.0	2.205	.394	.71	.138	3	.106	.09	DIN 371	●	●
TPSN UNC #5-40-M	UNC No.5	40.0	2.205	.394	.71	.138	3	.106	.10	DIN 371	●	●
TPSN UNC #6-32-M	UNC No.6	32.0	2.205	.394	.79	.157	3	.118	.11	DIN 371	●	●
TPSN UNC #8-32-M	UNC No.8	32.0	2.480	.472	.83	.177	3	.134	.14	DIN 371	●	●
TPSN UNC #10-24-M	UNC No.10	24.0	2.756	.551	.98	.236	3	.193	.15	DIN 371	●	●
TPSN UNC #12-24-M	UNC No.12	24.0	3.150	.630	1.18	.236	3	.193	.18	DIN 371	●	●
TPSN UNC 1/4-20-M	UNC 1/4	20.0	3.150	.630	1.18	.276	3	.217	.20	DIN 371	●	●
TPSN UNC 5/16-18-M	UNC 5/16	18.0	3.543	.709	1.38	.315	3	.244	.26	DIN 371	●	●
TPSN UNC 3/8-16-M	UNC 3/8	16.0	3.937	.787	1.54	.394	3	.315	.31	DIN 371	●	●

• For user guide and cutting conditions, see pages 991-1002

(1) Threads per inch

(2) DIN376 (UNC 7/16+) 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.

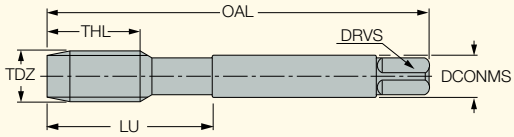
(3) Number of flutes

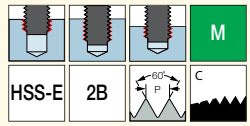
(4) Torque key size

ONETAP

TPSN UNF-M

HSSE 5% Co Spiral Flute Machine Taps Unified Fine Threads, for a Wide Range of Materials





M E T R I C

Designation	TDZ	TPI[1]	OAL	THL	LU[2]	DCONMS	NOF[3]	DRVS[4]	Pre-hole	Standard	Tough ↔ Hard 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	•	•

• For user guide and cutting conditions, see pages 991-1002

(1) Threads per inch

(2) DIN376 (UNF 7/16+) 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.

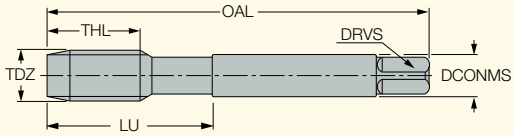
(3) Number of flutes

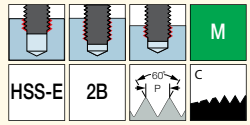
(4) Torque key size

ONETAP

TPSN UNF-M

HSSE 5% Co Spiral Flute Machine Taps Unified Fine Threads, for a Wide Range of Materials





I N C H

Designation	TDZ	TPI[1]	OAL	THL	LU[2]	DCONMS	NOF[3]	DRVS[4]	Pre-hole	Standard	Tough ↔ Hard HE	HETI
TPSN UNF #4-48-M	UNF No.4	48.0	2.205	.315	.71	.138	3	.106	.09	DIN 371	•	•
TPSN UNF #5-44-M	UNF No.5	44.0	2.205	.354	.71	.138	3	.106	.11	DIN 371	•	•
TPSN UNF #6-40-M	UNF No.6	40.0	2.205	.394	.79	.157	3	.118	.12	DIN 371	•	•
TPSN UNF #8-36-M	UNF No.8	36.0	2.480	.472	.83	.177	3	.134	.14	DIN 371	•	•
TPSN UNF #10-32-M	UNF No.10	32.0	2.756	.472	.98	.236	3	.193	.16	DIN 371	•	•
TPSN UNF #12-28-M	UNF No.12	28.0	3.150	.472	1.18	.236	3	.193	.18	DIN 371	•	•
TPSN UNF 1/4-28-M	UNF 1/4	28.0	3.150	.472	1.18	.276	3	.217	.22	DIN 371	•	•
TPSN UNF 5/16-24-M	UNF 5/16	24.0	3.543	.591	1.38	.315	3	.244	.27	DIN 371	•	•
TPSN UNF 3/8-24-M	UNF 3/8	24.0	3.543	.709	1.54	.394	3	.315	.33	DIN 371	•	•

• For user guide and cutting conditions, see pages 991-1002

(1) Threads per inch

(2) DIN376 (UNF 7/16+) 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.

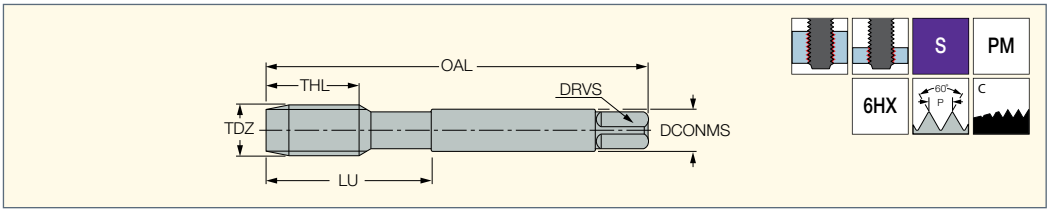
(3) Number of flutes

(4) Torque key size

ISCARTAPS

TPGN M-S

PM Gun Point Machine Taps
According to DIN 13 - ISO
Metric Coarse Threads for
Machining Stainless Steel



M E T R I C

Designation	TDZ	TP[1]	OAL	THL	LU[2]	DCONMS	NOF[3]	DRVS[4]	Pre-hole	Standard	Tough ↔ Hard PMST	Tough ↔ Hard PMTC
TPGN M-2X0.4-S	M2	0.400	45.00	8.0	39.0	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	●	●

• For user guide and cutting conditions, see pages 991-1002

(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.

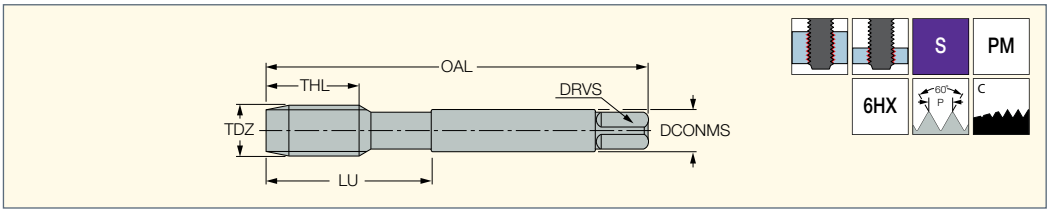
(3) Number of flutes

(4) Torque key size

ISCARTAPS

TPGN M-S

PM Gun Point Machine Taps
According to DIN 13 - ISO
Metric Coarse Threads for
Machining Stainless Steel



I N C H

Designation	TDZ	TP mm[1]	OAL	THL	LU[2]	DCONMS	NOF[3]	DRVS[4]	Pre-hole	Standard	Tough ↔ Hard PMST	Tough ↔ Hard PMTC
TPGN M-2X0.4-S	M2	.400	1.772	.315	1.54	.110	2	.083	.06	DIN 371	●	●
TPGN M-2.5X0.45-S	M2.5	.450	1.968	.354	1.18	.110	2	.083	.08	DIN 371	●	●
TPGN M-3X0.5-S	M3	.500	2.205	.394	.71	.138	3	.106	.10	DIN 371	●	●
TPGN M-4X0.7-S	M4	.700	2.480	.472	.83	.177	3	.134	.13	DIN 371	●	●
TPGN M-5X0.8-S	M5	.800	2.756	.551	.98	.236	3	.193	.17	DIN 371	●	●
TPGN M-6X1.0-S	M6	1.000	3.150	.630	1.18	.236	3	.193	.20	DIN 371	●	●
TPGN M-8X1.25-S	M8	1.250	3.543	.709	1.38	.315	3	.244	.27	DIN 371	●	●
TPGN M-10X1.5-S	M10	1.500	3.937	.787	1.54	.394	3	.315	.33	DIN 371	●	●

• For user guide and cutting conditions, see pages 991-1002

(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.

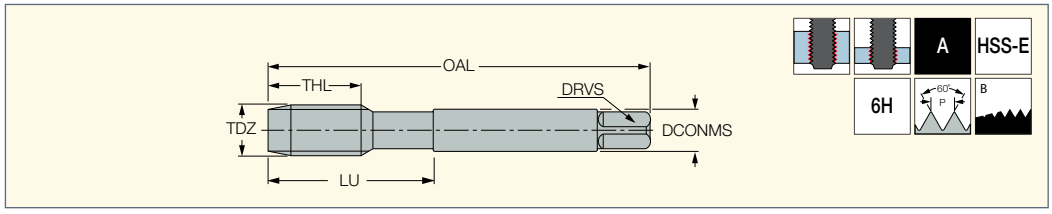
(3) Number of flutes

(4) Torque key size

ISCARTAPS

TPGN M-A

DIN 13 HSSE 5% Co Gun Point Machine Taps - ISO Metric Coarse Threads for Machining Aluminum



M E T R I C

Designation	Dimensions TDZ	TP[1]	OAL	THL	LU[2]	DCONMS	NOF[3]	DRVS[4]	Pre-hole	Standard	HEDLC
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	●

- For user guide and cutting conditions, see pages 991-1002

(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.

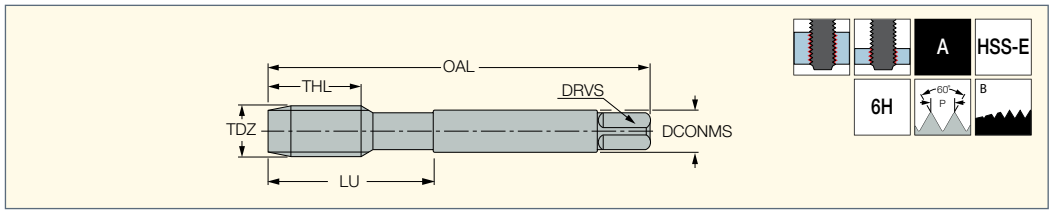
(3) Number of flutes

(4) Torque key size

ISCARTAPS

TPGN M-A

DIN 13 HSSE 5% Co Gun Point Machine Taps - ISO Metric Coarse Threads for Machining Aluminum



I N C H

Designation	Dimensions TDZ	TP mm[1]	OAL	THL	LU[2]	DCONMS	NOF[3]	DRVS[4]	Pre-hole	Standard	HEDLC
TPGN M-2X0.4-A	M2	.400	1.772	.315	-	.110	2	.083	.06	DIN 371	●
TPGN M-3X0.5-A	M3	.500	2.205	.394	.71	.138	3	.106	.10	DIN 371	●
TPGN M-4X0.7-A	M4	.700	2.480	.472	.83	.177	3	.134	.13	DIN 371	●
TPGN M-5X0.8-A	M5	.800	2.756	.551	.98	.236	3	.193	.17	DIN 371	●
TPGN M-6X1.0-A	M6	1.000	3.150	.630	1.18	.236	3	.193	.20	DIN 371	●
TPGN M-8X1.25-A	M8	1.250	3.543	.709	1.38	.315	3	.244	.27	DIN 371	●
TPGN M-10X1.5-A	M10	1.500	3.937	.787	1.54	.394	3	.315	.33	DIN 371	●

- For user guide and cutting conditions, see pages 991-1002

(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.

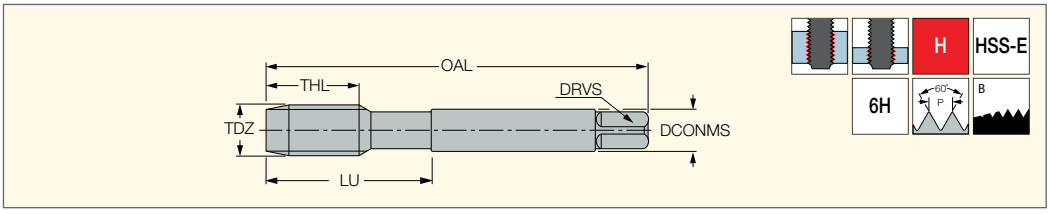
(3) Number of flutes

(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



M E T R I C

Designation	Dimensions TDZ	TP[1]	OAL	THL	LU[2]	DCONMS	NOF[3]	DRVS[4]	Pre-hole	Standard	Tough ↔ Hard 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	●	●

- For user guide and cutting conditions, see pages 991-1002

(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.

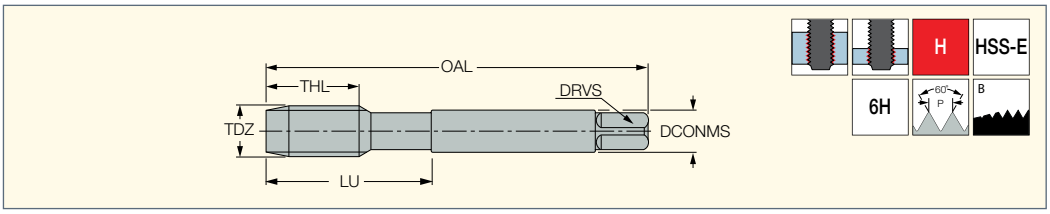
(3) Number of flutes

(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



I N C H

Designation	Dimensions TDZ	TP mm[1]	OAL	THL	LU[2]	DCONMS	NOF[3]	DRVS[4]	Pre-hole	Standard	Tough ↔ Hard HENI	HETC
TPGN M-2X0.4-H	M2	.400	1.772	.315	-	.110	2	.083	.06	DIN 371	●	●
TPGN M-2.2X0.45-H	M2.2	.450	1.772	.354	-	.110	2	.083	.07	DIN 371	●	●
TPGN M-2.5X0.45-H	M2.5	.450	1.968	.354	-	.110	2	.083	.08	DIN 371	●	●
TPGN M-3X0.5-H	M3	.500	2.205	.394	.71	.138	3	.106	.10	DIN 371	●	●
TPGN M-3.5X0.6-H	M3.5	.600	2.205	.394	.79	.157	3	.118	.11	DIN 371	●	●
TPGN M-4X0.7-H	M4	.700	2.480	.472	.83	.177	3	.134	.13	DIN 371	●	●
TPGN M-5X0.8-H	M5	.800	2.756	.551	.98	.236	3	.193	.17	DIN 371	●	●
TPGN M-6X1.0-H	M6	1.000	3.150	.630	1.18	.236	3	.193	.20	DIN 371	●	●
TPGN M-8X1.25-H	M8	1.250	3.543	.709	1.38	.315	3	.244	.27	DIN 371	●	●
TPGN M-10X1.5-H	M10	1.500	3.937	.787	1.54	.394	3	.315	.33	DIN 371	●	●

- For user guide and cutting conditions, see pages 991-1002

(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.

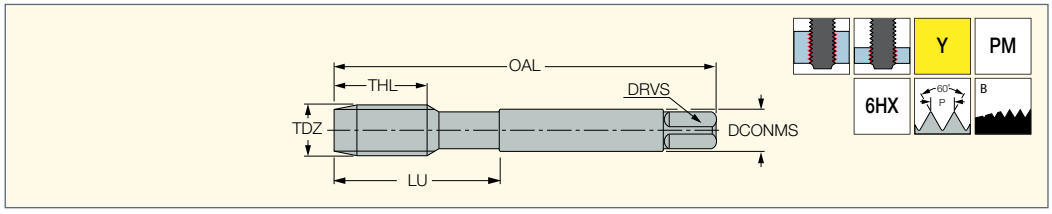
(3) Number of flutes

(4) Torque key size

ISCARTAPS

TPGN M-Y

DIN 13 HSS Gun Point Machine Taps - ISO Metric Coarse Threads for Machining Nickel Alloys



M E T R I C

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	●

• For user guide and cutting conditions, see pages 991-1002

(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.

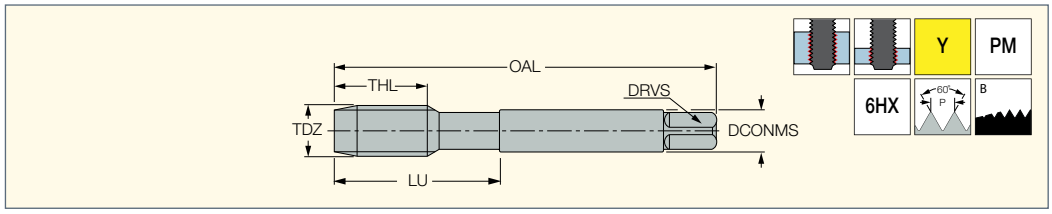
(3) Number of flutes

(4) Torque key size

ISCARTAPS

TPGN M-Y

DIN 13 HSS Gun Point Machine Taps - ISO Metric Coarse Threads for Machining Nickel Alloys



I N C H

Designation	Dimensions										PMTC
	TDZ	TP mm[1]	OAL	THL	LU[2]	DCONMS	NOF[3]	DRVS[4]	Pre-hole	Standard	
TPGN M-2X0.4-Y	M2	.400	1.772	.315	-	.110	2	.083	.06	DIN 371	●
TPGN M-2.2X0.45-Y	M2.2	.450	1.772	.354	-	.110	2	.083	.07	DIN 371	●
TPGN M-2.5X0.45-Y	M2.5	.450	1.968	.354	-	.110	2	.083	.08	DIN 371	●
TPGN M-3X0.5-Y	M3	.500	2.205	.394	.71	.138	3	.106	.10	DIN 371	●
TPGN M-3.5X0.6-Y	M3.5	.600	2.205	.394	.79	.157	3	.118	.11	DIN 371	●
TPGN M-4X0.7-Y	M4	.700	2.480	.472	.83	.177	3	.134	.13	DIN 371	●
TPGN M-5X0.8-Y	M5	.800	2.756	.551	.98	.236	3	.193	.17	DIN 371	●
TPGN M-6X1.0-Y	M6	1.000	3.150	.630	1.18	.236	3	.193	.20	DIN 371	●
TPGN M-8X1.25-Y	M8	1.250	3.543	.709	1.38	.315	3	.244	.27	DIN 371	●
TPGN M-10X1.5-Y	M10	1.500	3.937	.787	1.54	.394	3	.315	.33	DIN 371	●

• For user guide and cutting conditions, see pages 991-1002

(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.

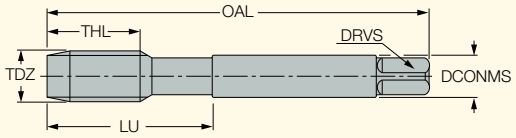
(3) Number of flutes

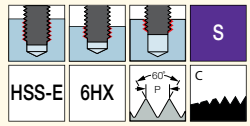
(4) Torque key size

ISCARTAPS

TPSN M-S

PM Right-Hand 40° Spiral Flute Machine Taps - ISO Metric Coarse Threads, According to DIN 13, for Stainless Steel





M E T R I C

Designation	Dimensions TDZ	TP[1]	OAL	THL	LU[2]	DCONMS	NOF[3]	DRVS[4]	Pre-hole	Standard	Tough ↔ Hard 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	●	●

• For user guide and cutting conditions, see pages 991-1002

(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.

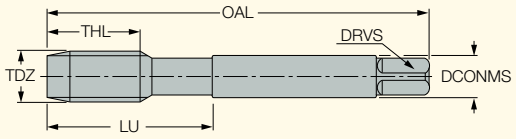
(3) Number of flutes

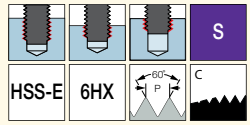
(4) Torque key size

ISCARTAPS

TPSN M-S

PM Right-Hand 40° Spiral Flute Machine Taps - ISO Metric Coarse Threads, According to DIN 13, for Stainless Steel





I N C H

Designation	Dimensions TDZ	TP mm[1]	OAL	THL	LU[2]	DCONMS	NOF[3]	DRVS[4]	Pre-hole	Standard	Tough ↔ Hard PMST	PMTC
TPSN M-2X0.4-S	M2	.400	1.772	.236	.39	.110	3	.083	.06	DIN 371	●	●
TPSN M-2.5X0.45-S	M2.5	.450	1.968	.236	.47	.110	3	.083	.08	DIN 371	●	●
TPSN M-3X0.5-S	M3	.500	2.205	.276	.71	.138	3	.106	.10	DIN 371	●	●
TPSN M-4X0.7-S	M4	.700	2.480	.315	.83	.177	3	.134	.13	DIN 371	●	●
TPSN M-5X0.8-S	M5	.800	2.756	.394	.98	.236	3	.193	.17	DIN 371	●	●
TPSN M-6X1.0-S	M6	1.000	3.150	.472	1.18	.236	3	.193	.20	DIN 371	●	●
TPSN M-8X1.25-S	M8	1.250	3.543	.591	1.38	.315	3	.244	.27	DIN 371	●	●
TPSN M-10X1.5-S	M10	1.500	3.937	.709	1.54	.394	3	.315	.33	DIN 371	●	●

• For user guide and cutting conditions, see pages 991-1002

(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.

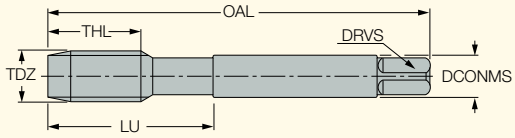
(3) Number of flutes

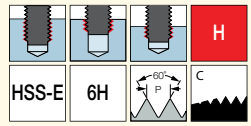
(4) Torque key size

ISCARTAPS

TPSN M-H

DIN 13 HSS Right-Hand 40° Spiral Flute Machine Taps - ISO Metric Coarse Threads for H.T.A.





M E T R I C

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	●	●

- For user guide and cutting conditions, see pages 991-1002

(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.

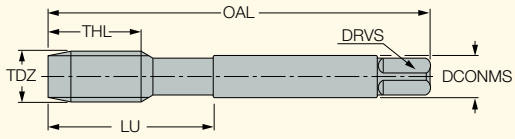
(3) Number of flutes

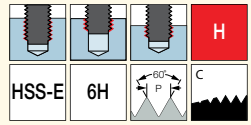
(4) Torque key size

ISCARTAPS

TPSN M-H

DIN 13 HSS Right-Hand 40° Spiral Flute Machine Taps - ISO Metric Coarse Threads for H.T.A.





I N C H

Designation	Dimensions										Tough ↔ Hard	
	TDZ	TP mm[1]	OAL	THL	LU[2]	DCONMS	NOF[3]	DRVS[4]	Pre-hole	Standard	HE	HETC
TPSN M-2X0.4-H	M2	.400	1.772	.236	.39	.110	3	.083	.06	DIN 371	●	●
TPSN M-2.2X0.45-H	M2.2	.450	1.772	.236	.39	.110	3	.083	.07	DIN 371	●	●
TPSN M-2.5X0.45-H	M2.5	.450	1.968	.236	.47	.110	3	.083	.08	DIN 371	●	●
TPSN M-3X0.5-H	M3	.500	2.205	.276	.71	.138	3	.106	.10	DIN 371	●	●
TPSN M-3.5X0.6-H	M3.5	.600	2.205	.276	.79	.157	3	.118	.11	DIN 371	●	●
TPSN M-4X0.7-H	M4	.700	2.480	.315	.83	.177	3	.134	.13	DIN 371	●	●
TPSN M-5X0.8-H	M5	.800	2.756	.394	.98	.236	3	.193	.17	DIN 371	●	●
TPSN M-6X1.0-H	M6	1.000	3.150	.472	1.18	.236	3	.193	.20	DIN 371	●	●
TPSN M-8X1.25-H	M8	1.250	3.543	.591	1.38	.315	3	.244	.27	DIN 371	●	●
TPSN M-10X1.5-H	M10	1.500	3.937	.709	1.54	.394	3	.315	.33	DIN 371	●	●

- For user guide and cutting conditions, see pages 991-1002

(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.

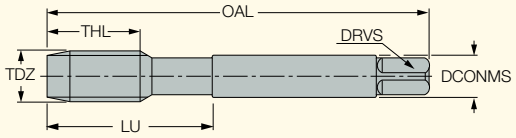
(3) Number of flutes

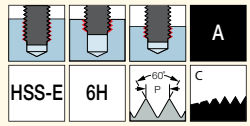
(4) Torque key size

ISCARTAPS

TPSN M-A

DIN 13 HSS Right-Hand 40° Spiral Flute Machine Taps for ISO Metric Coarse Threads on Aluminum and Aluminum Alloys





M E T R I C

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	•

• For user guide and cutting conditions, see pages 991-1002

(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.

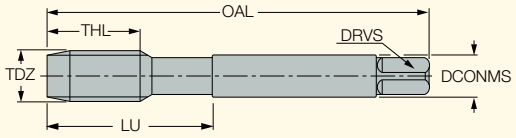
(3) Number of flutes

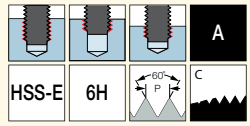
(4) Torque key size

ISCARTAPS

TPSN M-A

DIN 13 HSS Right-Hand 40° Spiral Flute Machine Taps for ISO Metric Coarse Threads on Aluminum and Aluminum Alloys





I N C H

Designation	Dimensions										HEDLC
	TDZ	TP mm[1]	OAL	THL	LU[2]	DCONMS	NOF[3]	DRVS[4]	Pre-hole	Standard	
TPSN M-2X0.4-A	M2	.400	1.772	.236	.39	.110	3	.083	.06	DIN 371	•
TPSN M-3X0.5-A	M3	.500	2.205	.276	.71	.138	3	.106	.10	DIN 371	•
TPSN M-4X0.7-A	M4	.700	2.480	.315	.83	.177	3	.134	.13	DIN 371	•
TPSN M-5X0.8-A	M5	.800	2.756	.394	.98	.236	3	.193	.17	DIN 371	•
TPSN M-6X1.0-A	M6	1.000	3.150	.472	1.18	.236	3	.193	.20	DIN 371	•
TPSN M-8X1.25-A	M8	1.250	3.543	.591	1.38	.315	3	.244	.27	DIN 371	•
TPSN M-10X1.5-A	M10	1.500	3.937	.709	1.54	.394	3	.315	.33	DIN 371	•

• For user guide and cutting conditions, see pages 991-1002

(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.

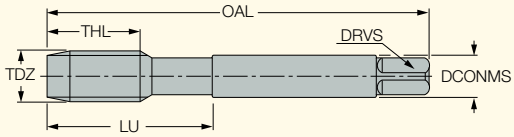
(3) Number of flutes

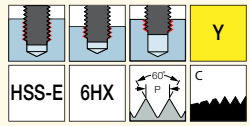
(4) Torque key size

ISCARTAPS

TPSN M-Y

DIN 13 HSS Spiral Flute Machine Taps - Metric Coarse Threads for Machining Nickel Alloys





M E T R I C

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	●

- For user guide and cutting conditions, see pages 991-1002

(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.

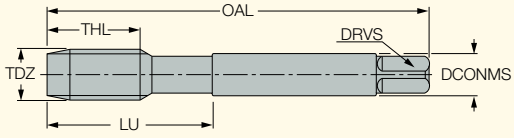
(3) Number of flutes

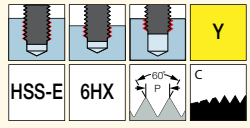
(4) Torque key size

ISCARTAPS

TPSN M-Y

DIN 13 HSS Spiral Flute Machine Taps - Metric Coarse Threads for Machining Nickel Alloys





I N C H

Designation	Dimensions										PMTI
	TDZ	TP mm[1]	OAL	THL	LU[2]	DCONMS	NOF[3]	DRVS[4]	Pre-hole	Standard	
TPSN M-2X0.4-Y	M2	.400	1.772	.315	-	.110	3	.083	.06	DIN 371	●
TPSN M-2.2X0.45-Y	M2.2	.450	1.772	.354	-	.110	3	.083	.07	DIN 376	●
TPSN M-2.5X0.45-Y	M2.5	.450	1.968	.354	-	.110	3	.083	.08	DIN 371	●
TPSN M-3 0.5-Y	M3	.500	2.205	.394	.71	.138	3	.106	.10	DIN 371	●
TPSN M-3.5X0.6-Y	M3.5	.600	2.205	.394	.79	.157	3	.118	.11	DIN 371	●
TPSN M-4X0.7-Y	M4	.700	2.480	.472	.83	.177	3	.134	.13	DIN 371	●
TPSN M-5X0.8-Y	M5	.800	2.756	.551	.98	.236	3	.193	.17	DIN 371	●
TPSN M-6X1.0-Y	M6	1.000	3.150	.630	1.18	.236	3	.193	.20	DIN 371	●
TPSN M-8X1.25-Y	M8	1.250	3.543	.709	1.38	.315	3	.244	.27	DIN 371	●
TPSN M-10X1.5-Y	M10	1.500	3.937	.787	1.54	.394	3	.315	.33	DIN 371	●

- For user guide and cutting conditions, see pages 991-1002

(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.

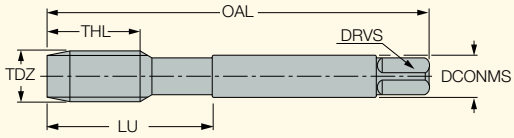
(3) Number of flutes

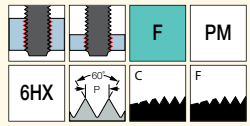
(4) Torque key size

ONETAP

TPFN M-F (PM)

PM Cold Forming Machine
Taps - ISO Metric Coarse
Threads, According to DIN 13





M E T R I C

Designation	TDZ	TP[2]	OAL	THL	LU[3]	DCONMS	NOF[4]	DRVS[5]	Pre-hole	Standard	Tough ↔ Hard 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	●	●

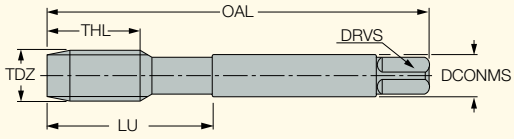
- For user guide and cutting conditions, see pages 991-1002

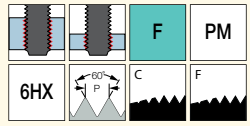
[1] Form C champfer lead
[2] Thread pitch
[3] DIN376 (M12+) and DIN374 (all MF) taps do not have a neck, meaning the shank diameter is smaller than the core hole. Therefore, the usable length isn't restricted by a neck.
[4] Number of flutes
[5] Torque key size

ONETAP

TPFN M-F (PM)

PM Cold Forming Machine
Taps - ISO Metric Coarse
Threads, According to DIN 13





I N C H

Designation	TDZ	TP mm[2]	OAL	THL	LU[3]	DCONMS	NOF[4]	DRVS[5]	Pre-hole	Standard	Tough ↔ Hard PMTI	PMTC
TPFN M-3X0.5-F	M3	.500	2.205	.394	.71	.138	3	.106	.11	DIN 371	●	●
TPFN M-4X0.7-F	M4	.700	2.480	.472	.83	.177	3	.134	.15	DIN 371	●	●
TPFN M-5X0.8 F	M5	.800	2.756	.551	.98	.236	5	.193	.18	DIN 371	●	
TPFN M-5X0.8-F [1]	M5	.800	2.756	.551	.98	.236	5	.193	.18	DIN 371		●
TPFN M-6X1.0-F	M6	1.000	3.150	.630	1.18	.236	5	.193	.22	DIN 371	●	●
TPFN M-8X1.25-F	M8	1.250	3.543	.709	1.38	.315	5	.244	.29	DIN 371	●	●
TPFN M-10X1.5-F	M10	1.500	3.937	.787	1.54	.394	5	.315	.37	DIN 371	●	●

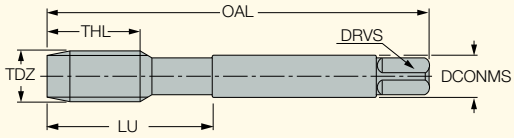
- For user guide and cutting conditions, see pages 991-1002

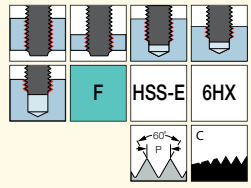
[1] Form C champfer lead
[2] Thread pitch
[3] DIN376 (M12+) and DIN374 (all MF) taps do not have a neck, meaning the shank diameter is smaller than the core hole. Therefore, the usable length isn't restricted by a neck.
[4] Number of flutes
[5] Torque key size

ISCARTAPS

TPFN M-F

HSSE 5% Co Cold Forming Machine Taps - ISO Metric Coarse Threads, According to DIN 13





M E T R I C

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	●

• For user guide and cutting conditions, see pages 991-1002

(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.

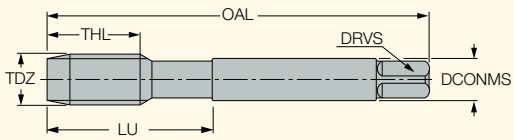
(3) Number of flutes

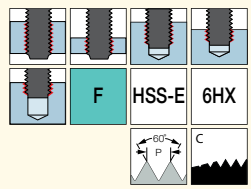
(4) Torque key size

ISCARTAPS

TPFN M-F

HSSE 5% Co Cold Forming Machine Taps - ISO Metric Coarse Threads, According to DIN 13





I N C H

Designation	Dimensions										HETI
	TDZ	TP mm[1]	OAL	THL	LU[2]	DCONMS	NOF[3]	DRVS[4]	Pre-hole	Standard	
TPFN M-3X0.5-F	M3	.500	2.205	.394	.71	.138	3	.106	.11	DIN 371	●
TPFN M-4X0.7-F	M4	.700	2.480	.472	.83	.177	3	.134	.15	DIN 371	●
TPFN M-5X0.8-F	M5	.800	2.756	.551	.98	.236	5	.193	.18	DIN 371	●
TPFN M-6X1.0-F	M6	1.000	3.150	.630	1.18	.236	5	.193	.22	DIN 371	●
TPFN M-8X1.25-F	M8	1.250	3.543	.709	1.38	.315	5	.244	.29	DIN 371	●
TPFN M-10X1.5-F	M10	1.500	3.937	.787	1.54	.394	5	.315	.37	DIN 371	●

• For user guide and cutting conditions, see pages 991-1002

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(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.

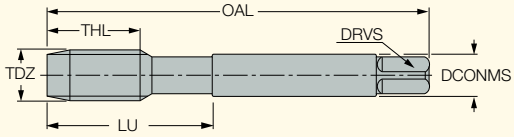
(3) Number of flutes

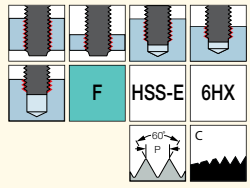
(4) Torque key size

ISCARTAPS

TPFN MF-F

HSSE 5% Co Cold Forming Machine Taps - ISO Metric Fine Threads, According to DIN 13





M E T R I C

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	●

- For user guide and cutting conditions, see pages 991-1002

(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.

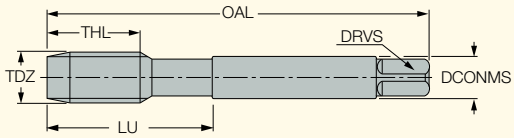
(3) Number of flutes

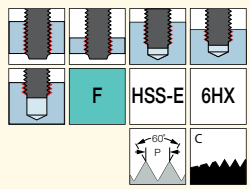
(4) Torque key size

ISCARTAPS

TPFN MF-F

HSSE 5% Co Cold Forming Machine Taps - ISO Metric Fine Threads, According to DIN 13





I N C H

Designation	Dimensions										HETI
	TDZ	TP mm[1]	OAL	THL	LU[2]	DCONMS	NOF[3]	DRVS[4]	Pre-hole	Standard	
TPFN MF-8X1.0-F	MF8	1.000	3.543	.591	-	.236	5	.193	.30	DIN 374	●
TPFN MF-10X1.0-F	MF10	1.000	3.543	.709	-	.276	5	.217	.38	DIN 374	●
TPFN MF-10X1.25-F	MF10	1.250	3.937	.709	-	.276	5	.217	.37	DIN 374	●

- For user guide and cutting conditions, see pages 991-1002

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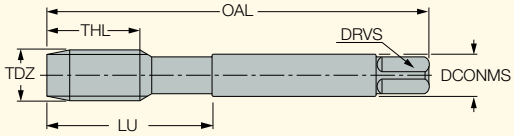
(3) Number of flutes

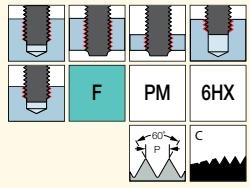
(4) Torque key size

ONETAP

TPFN MF-F (PM)

PM Cold Forming Machine
Taps - ISO Metric Fine Threads,
According to DIN 13





M E T R I C

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	●

- For user guide and cutting conditions, see pages 991-1002

[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.

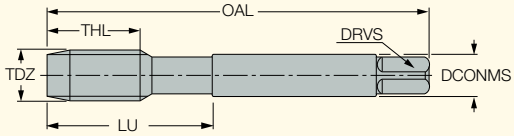
[3] Number of flutes

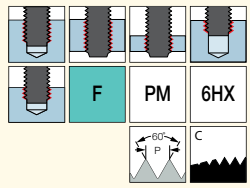
[4] Torque key size

ONETAP

TPFN MF-F (PM)

PM Cold Forming Machine
Taps - ISO Metric Fine Threads,
According to DIN 13





I N C H

Designation	Dimensions										PMTC
	TDZ	TP mm[1]	OAL	THL	LU[2]	DCONMS	NOF[3]	DRVS[4]	Pre-hole	Standard	
TPFN MF-8X1.0-F	MF8	1.000	3.543	.591	-	.236	5	.193	.30	DIN 374	●
TPFN MF-10X1.25-F	MF10	1.250	3.937	.709	-	.276	5	.217	.37	DIN 374	●
TPFN MF-10X1.0-F	MF10	1.000	3.543	.709	-	.276	5	.217	.38	DIN 374	●

- For user guide and cutting conditions, see pages 991-1002

[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

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

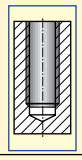
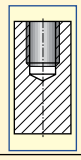
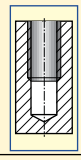
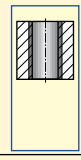
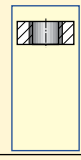
HS	-	H.S.S. (M2)
HE	-	H.S.S- E 5% Co. HSS (M35)
PM	-	compacted powder
HM	-	solid carbide

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 (Metric)

Material 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 [N/mm²]	Hardness HB	Chip	Coolant
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
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

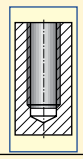
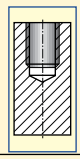
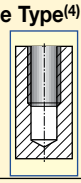
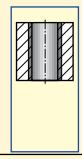
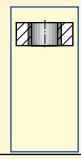
[1] See page 991
[2] See page 996
[3] See page 997
[4] See page 998

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		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	••			
	•	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

Tap Selection Guide and Cutting Speed Recommendations (Imperial)

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
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 991
(2) See page 996
(3) See page 997
(4) See page 998

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		
•	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.

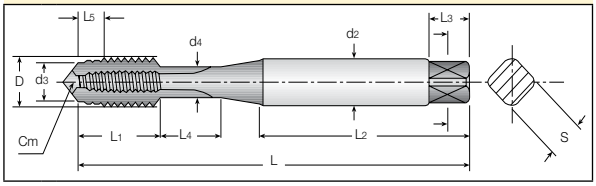
Application Class for Taps to DIN EN 22857		Tolerance Class to Withdrawn Standard DIN 802 Part 1	Allotment of the Tolerance Zones of the Nut Thread to Be Cut				
class 1	ISO 1	4H	4H	5H	-	-	-
class 2	ISO 2	6H	5G	5G	6H	-	-
class 3	ISO 3	6G	-	-	6G	7H	8H
-	-	7G	-	-	-	7G	8G

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.

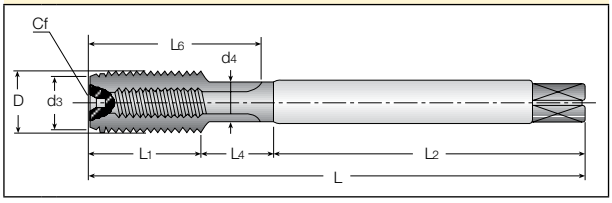
Tap Nomenclature and Standards

DIN 371



D - major diameter
d_2 - shank diameter
d_3 - chamfer diameter
d_4 - neck diameter

DIN 376

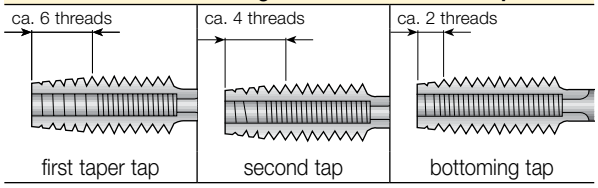


L - total length
L_1 - thread length
L_2 - shank length
L_3 - square length
L_4 - neck length
L_5 - chamfer length
L_6 - flute length
S - square size
Cm - center male
Cf - center female

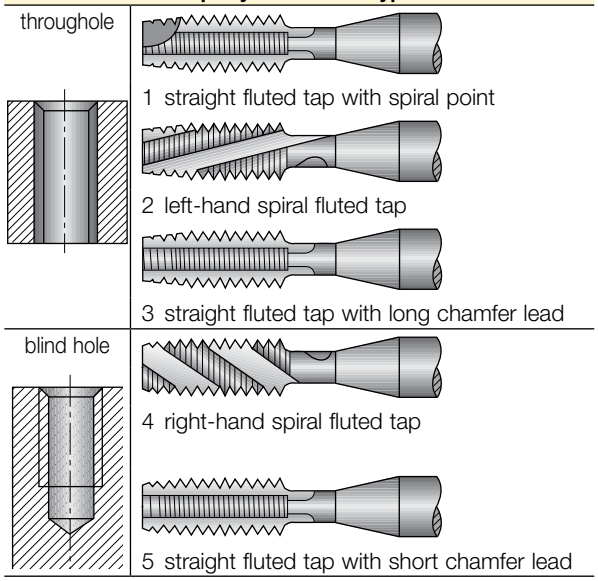
Chamfer Lead Forms According to DIN 2197

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

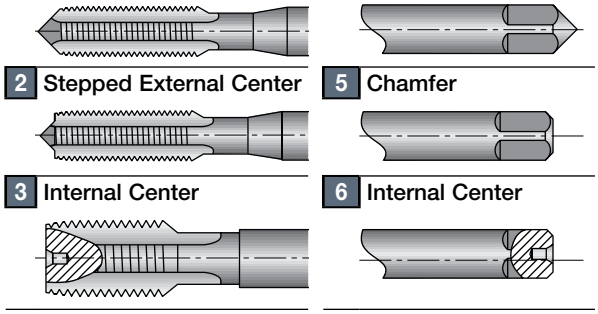


Tap Styles for Hole Types



Front and end configurations according to DIN2197

Front End	Shank End
1 External Center	4 External Center
2 Stepped External Center	5 Chamfer
3 Internal Center	6 Internal Center



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
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

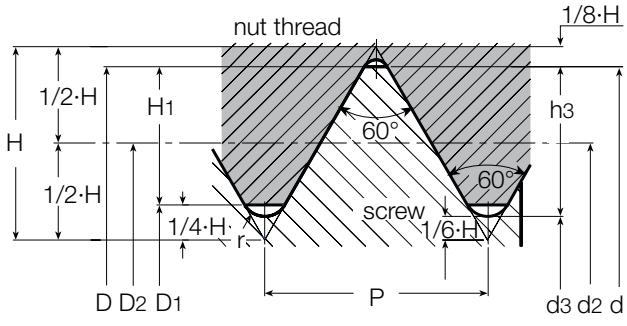
Recommended Tap Drill Size		
M	Pitch mm	Drill Size mm
1	0.25	0.9
1.1	0.25	1
1.2	0.25	1.1
1.4	0.3	1.28
1.6	0.35	1.47
1.7	0.35	1.57
1.8	0.35	1.67
2	0.4	1.85
2.2	0.45	2.03
2.3	0.4	2.15
2.5	0.45	2.33
2.6	0.45	2.43
3	0.5	2.8
3.5	0.6	3.25
4	0.7	3.7
4.5	0.75	4.2
5	0.8	4.65
6	1	5.55
7	1	6.55
8	1.25	6.6
9	1.25	7.45
10	1.5	8.45
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

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

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

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

$H_1 = \frac{5}{8}H = 0.54127P$

$h_3 = \frac{17}{24}H = 0.61343P$

$d_2 = D_2 = d - \frac{3}{4}H = d - 0.64952P$

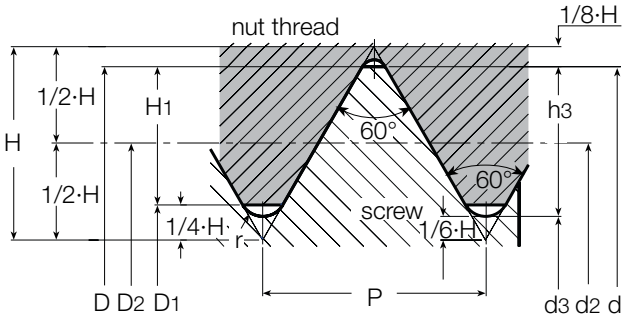
d_3 = d-2h_3 = d-1.22687P

$r = \frac{H}{6} = 0.14434P$

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
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

$H_1 = \frac{5}{8}H = 0.54127P$

$h_3 = \frac{17}{24}H = 0.61343P$

$d_2 = D_2 = d - \frac{3}{4}H = d - 0.64952P$

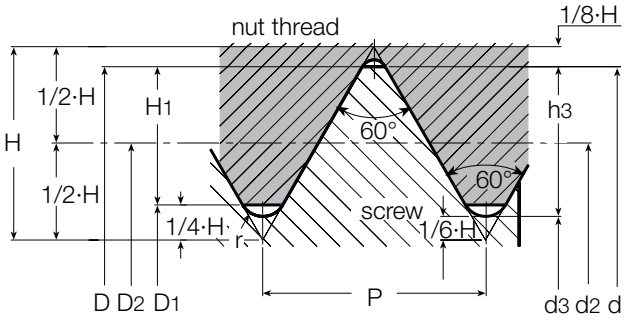
d_3 = d-2h_3 = d-1.22687P

$r = \frac{H}{6} = 0.14434P$

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
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

$H_1 = \frac{5}{8}H = 0.54127P$

$h_3 = \frac{17}{24}H = 0.61343P$

$d_2 = D_2 = d - \frac{3}{4}H = d - 0.64952P$

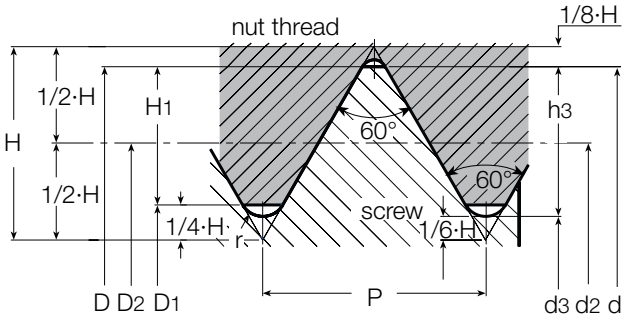
d_3 = d-2h_3 = d-1.22687P

$r = \frac{H}{6} = 0.14434P$

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

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 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
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

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INDEXABLE ENDMILLS



Fast Feed



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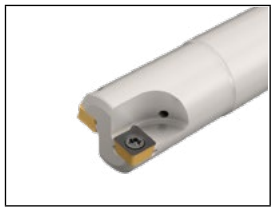


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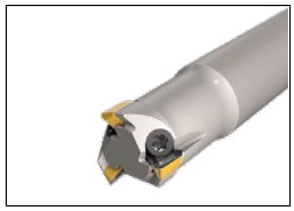


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Endmills 90°



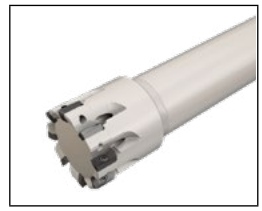
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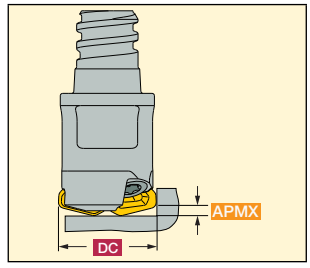
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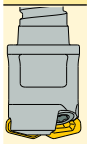
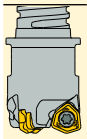
Endmills 45°



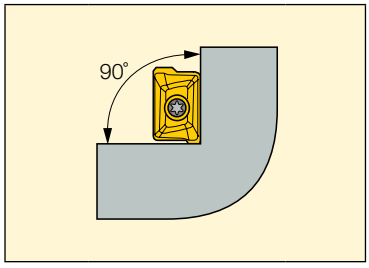
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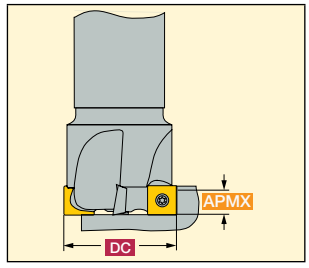
Fast Feed Selection Guide

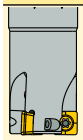
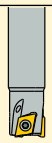
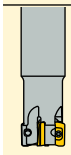
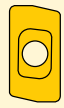
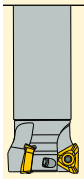


Tools	Pages	DC / APMX	METRIC 8	METRIC 10	METRIC 12	INCH .315″	INCH .375″	INCH .394″	INCH . 472″	INCH .500″	Inserts
 FFT3 EFM-02 FFT3 EFM-MM 02	1009, 1010	0.6 mm .0236″	•	•	•	•	•	•		•	 FFT3 TXMT 02
 FFT3 EFM-MM 03 FFT3 EFM-03	1012, 1013	0.6 mm .0236″		•	•		•	•		•	 FFT3 WXMT 03

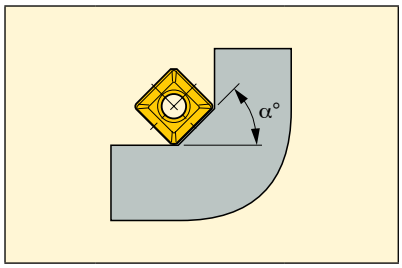
90° Endmills Selection Guide

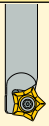




Tools	Pages	DC / APMX	METRIC 6	METRIC 8	METRIC 10	METRIC 12	INCH .313″	INCH .375″	INCH .500″	Inserts
 E90SO-04 E90SO-MM-04	1016, 1017	3.5 mm .1380″	•	•	•	•	•	•	•	 SOMT/CT 0402
 T290 ELN-05 T290 ELN-MM-05	1025, 1026	5 mm .197″		•	•	•		•	•	 T290 LNMT 05
 HP E90AN-07	1028	7.7 mm .303″			•	•		•	•	 HP ANKT 0702 HP ANCR 0702 HP ANKW 0702
 HM390 ETP-04 HM390 ETP-MM-04 HM390 ETP-05 HM390 ETP-MM-05	1019, 1020, 1022, 1023	3 mm 3.5 mm .1200″ .1380″	•	•	•	•	•	•	•	 HM390 TPKR 0401 HM390 TPKT/CT 0502

Endmills 45° Selection Guide

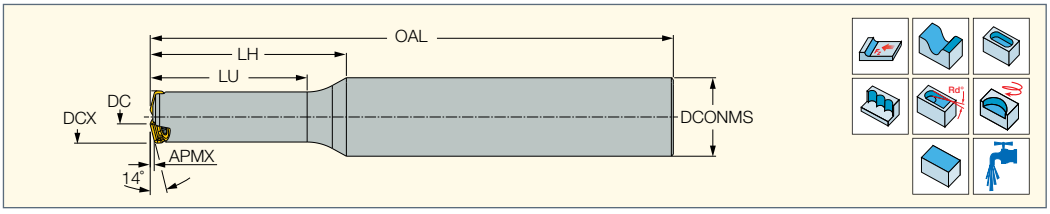


Tools	Pages	DC / APMX	METRIC 12	INCH .460″	Inserts
 CH45-PN06 CH45-MM-PN06	1033, 1034	1.5 mm .0590″ α°=45°	1	1	 PNMT 0602-TN

NANO FEED MILL

FFT3 EFM-02

Small Diameter Endmills
Carrying Single-Sided Triangular
Inserts for Fast Feed Milling



M E T R I C

Designation	DCX(1)	DC	APMX	AE(2)	CICT(3)	LU	LH	OAL	DCONMS	Shank(4)	RMPX°(5)	MDN(6)	MDX(7)	CSP(8)	MIID(9)	TQ(10)	kg
FFT3 EFM D08-2-060-C10-02	8.00	2.20	0.60	2.9	2	17.00	20.0	60.00	10.00	C	10.8	10.20	15.00	1	FFT3 TXMT 0201205T	0.5	0.03
FFT3 EFM D08-2-080-C12-02	8.00	2.20	0.60	2.9	2	26.00	30.0	80.00	12.00	C	10.8	10.20	15.00	1	FFT3 TXMT 0201205T	0.5	0.05
FFT3 EFM D10-3-070-C10-02	10.00	4.20	0.60	2.9	3	19.50	20.0	70.00	10.00	C	4.7	14.20	19.00	1	FFT3 TXMT 0201205T	0.5	0.04
FFT3 EFM D10-3-090-C12-02	10.00	4.20	0.60	2.9	3	30.00	33.0	90.00	12.00	C	4.7	14.20	19.00	1	FFT3 TXMT 0201205T	0.5	0.06

• Radius for programming 1.0 mm • To generate a straight surface without cusps, the width of cut must not exceed DC

(1) Cutting diameter maximum
(2) Maximum plunging width
(3) Number of inserts (or edges for solid tool)
(4) C-Cylindrical
(5) Maximum ramping angle
(6) Machinable diameter minimum for interpolation
(7) Machinable diameter maximum for interpolation
(8) 0 - Without coolant supply, 1 - With coolant supply
(9) Master insert identification
(10) Recommended tightening torque (N*m) for insert screw

For inserts, see pages: FFT3 TXMT 02 (1011)

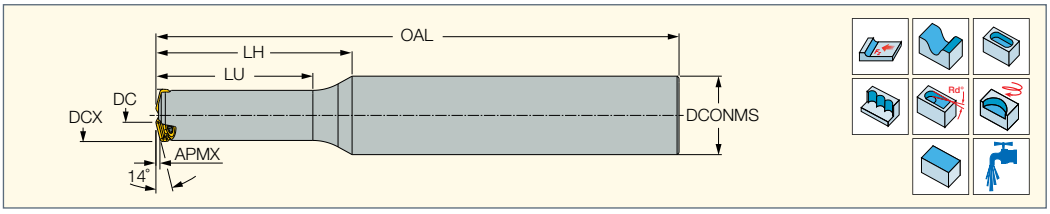
Spare Parts

Designation		
FFT3 EFM-02	SR M2X0.4-2.9 T6-HG	T-6/5 MAGNET 3X3

NANO FEED MILL

FFT3 EFM-02

Small Diameter Endmills
Carrying Single-Sided Triangular
Inserts for Fast Feed Milling



I N C H

Designation	DCX(1)	DC	APMX	AE(2)	CICT(3)	LU	LH	OAL	DCONMS	Shank(4)	RMPX°(5)	MDN(6)	MDX(7)	CSP(8)	MIID(9)	TQ(10)	lbs
FFT3 EFM D08-2-060-C10-02	.315	.087	.0236	.114	2	.6693	.787	2.362	.394	C	10.8	.402	.591	1	FFT3 TXMT 0201205T	4.43	.07
FFT3 EFM D08-2-080-C12-02	.315	.087	.0236	.114	2	1.0236	1.181	3.150	.472	C	10.8	.402	.591	1	FFT3 TXMT 0201205T	4.43	.11
FFT3 EFM D10-3-070-C10-02	.394	.165	.0236	.114	3	.7677	.787	2.756	.394	C	4.7	.559	.748	1	FFT3 TXMT 0201205T	4.43	.09
FFT3 EFM D10-3-090-C12-02	.394	.165	.0236	.114	3	1.1811	1.299	3.543	.472	C	4.7	.559	.748	1	FFT3 TXMT 0201205T	4.43	.13

• Radius for programming .04 inch • To generate a straight surface without cusps, the width of cut must not exceed DC

(1) Cutting diameter maximum
(2) Maximum plunging width
(3) Number of inserts (or edges for solid tool)
(4) C-Cylindrical
(5) Maximum ramping angle
(6) Machinable diameter minimum for interpolation
(7) Machinable diameter maximum for interpolation
(8) 0 - Without coolant supply, 1 - With coolant supply
(9) Master insert identification
(10) Recommended tightening torque (lbf*in) for insert screw

For inserts, see pages: FFT3 TXMT 02 (1011)

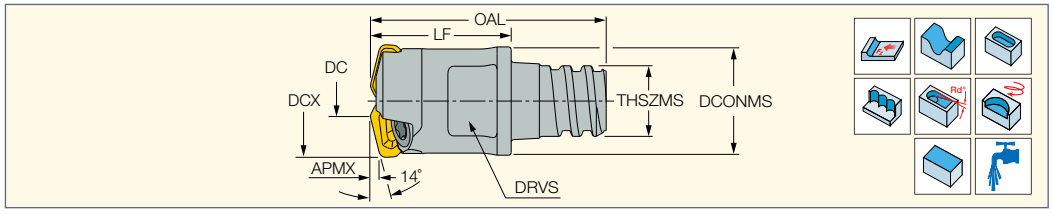
Spare Parts

Designation		
FFT3 EFM-02	SR M2X0.4-2.9 T6-HG	T-6/5 MAGNET 3X3

NANO FEED MILL

FFT3 EFM-MM 02

Small Diameter Endmills with a MULTI-MASTER Threaded Adaptation that Mount Triangular Inserts for Fast Feed Milling



M E T R I C

Designation	DCX[1]	DC	APMX	AE[2]	CICT[3]	LF	DCONMS	THSZMS	OAL	DRVS[4]	RMPX°[5]	MDN[6]	MDX[7]	MIID[8]	TQ[9]	CSP[10]	kg
FFT3 EFMD08/.31-2MMT05-02	8.00	2.20	0.60	2.9	2	10.00	7.60	T05	16.75	5.5	10.8	10.20	15.00	FFT3 TXMT 0201205T	0.5	1	0.01
FFT3 EFMD10/.39-3MMT06-02	10.00	4.20	0.60	2.9	3	10.00	9.70	T06	16.30	8.0	4.7	14.20	19.00	FFT3 TXMT 0201205T	0.5	1	0.01

- For adaptation, see pages 1047-1048 • For user guide, see pages 1040-1042 • Radius for programing 1.0 mm
- To generate a straight surface without cusps, the width of cut must not exceed DC

(1) Cutting diameter maximum
(2) Maximum plunging width
(3) Number of inserts (or edges for solid tool)
(4) Torque key size
(5) Maximum ramping angle
(6) Machinable diameter minimum for interpolation
(7) Machinable diameter maximum for interpolation
(8) Master insert identification
(9) Recommended tightening torque (N*m) for insert screw
(10) 0 - Without coolant supply, 1 - With coolant supply

For inserts, see pages: FFT3 TXMT 02 (1011)
For holders, see pages: MM CAB-T-T (1123) • MM CAB-T-T-W (1124) • MM GRT (shanks) (1117) • MM S-A (stepped shanks) (1112)
• MM S-A (straight shanks) (1118) • MM S-A-C# (1114) • MM S-A-N (1114) • MM S-B (85° conical shanks) (1119) • MM S-D (89° conical shanks) (1120)
• MM S-ER (1121) • MM S-ER-H (1122) • MM TS-A (1115) • MM TS2-A (1116)

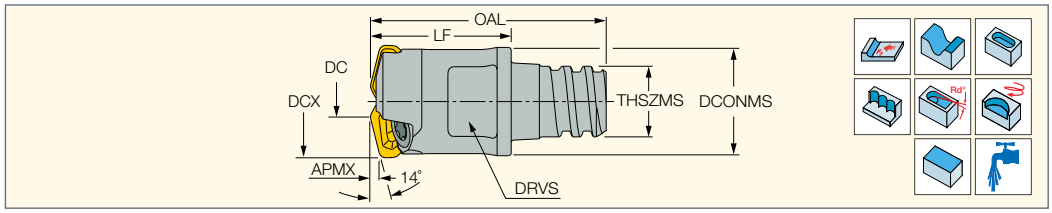
Spare Parts

Designation		
FFT3 EFM-MM 02	SR M2X0.4-2.9 T6-HG	T-6/5 MAGNET 3X3

NANO FEED MILL

FFT3 EFM-MM 02

Small Diameter Endmills with a MULTI-MASTER Threaded Adaptation that Mount Triangular Inserts for Fast Feed Milling



I N C H

Designation	DCX[1]	DC	APMX	AE[2]	CICT[3]	LF	DCONMS	THSZMS	OAL	DRVS[4]	RMPX°[5]	MDN[6]	MDX[7]	MIID[8]	TQ[9]	CSP[10]	Lbs
FFT3 EFMD08/.31-2MMT05-02	.315	.087	.0236	.114	2	.394	.299	T05	.659	.217	10.8	.402	.591	FFT3 TXMT 0201205T	4.43	1	.02
FFT3 EFMD10/.39-3MMT06-02	.394	.165	.0236	.114	3	.394	.382	T06	.642	.315	4.7	.559	.748	FFT3 TXMT 0201205T	4.43	1	.02

- For adaptation, see page 1048 • For user guide, see pages 1040-1042 Radius for programing .04"
- To generate a straight surface without cusps, the width of cut must not exceed DC

(1) Cutting diameter maximum
(2) Maximum plunging width
(3) Number of inserts (or edges for solid tool)
(4) Torque key size
(5) Maximum ramping angle
(6) Machinable diameter minimum for interpolation
(7) Machinable diameter maximum for interpolation
(8) Master insert identification
(9) Recommended tightening torque (lbf*in) for insert screw
(10) 0 - Without coolant supply, 1 - With coolant supply

For inserts, see pages: FFT3 TXMT 02 (1011)
For holders, see pages: MM CAB-T-T (1123) • MM CAB-T-T-W (1124) • MM GRT (shanks) (1117) • MM S-A (stepped shanks) (1112)
• MM S-A (straight shanks) (1118) • MM S-A-C# (1114) • MM S-A-N (1114) • MM S-B (85° conical shanks) (1119) • MM S-D (89° conical shanks) (1120)
• MM S-ER (1121) • MM S-ER-H (1122) • MM TS-A (1115) • MM TS2-A (1116)

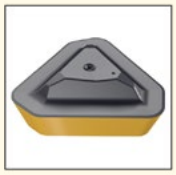
Spare Parts

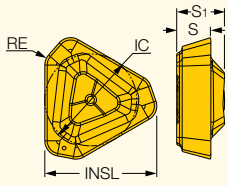
Designation		
FFT3 EFM-MM 02	SR M2X0.4-2.9 T6-HG	T-6/5 MAGNET 3X3

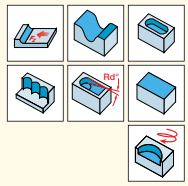
NANO FEED MILL

FFT3 TXMT 02

Triangular Miniature Inserts
for Fast Feed Milling at
Small Depths of Cut







M E T R I C

Designation	Dimensions INSL	IC	RE	S	S1	Tough ↔ Hard IC830	IC808	Recommended Machining Data a_p (mm)	f_z (mm/t)
FFT3 TXMT 020105T	3.66	2.00	0.50	1.10	1.56	•	•	0.20-0.60	0.20-0.45

• For side plunging, the initial cutting feed is 0.06 mm/t • For cutting speed recommendations, see page 1011

For tools, see pages: FFT3 EFM-02 (1009) • FFT3 EFM-MM 02 (1010)

Recommended Machining Conditions for FFT3-02 Fast Feed Endmills

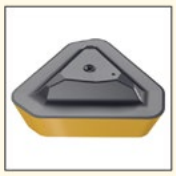
ISO class DIN/ISO	Description	Workpiece material: ISCAR mat. group*	Hardness, HB	Typical representative: AISI/SAE/ASTM	DIN W.-Nr.	D.O.C. a_p (mm)	Cutting speed v_c, (m/min)	Feed f_z (mm/tooth)	Coolant
P	non-alloy steel	1-5	130-180	1020	1.0402	0.20-0.60	120-200	0.20-0.70	dry/wet
	low alloy steel	6-8	260-300	4340	1.6582		100-180	0.20-0.70	dry/wet
		9	HRC 35-42**	3135	1.5710		100-130	0.20-0.60	dry/wet
	high alloy steel	10-11	200-220	H13	1.2344		80-150	0.20-0.60	dry/wet
	ferritic/martensitic stainless steel	12-13	200	420	1.4021		80-150	0.20-0.60	dry/wet

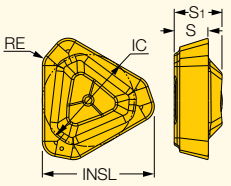
* ISCAR material group in accordance with VDI 3323 standard ** Quenched and tempered
For machining under unstable conditions, the recommended cutting data should be reduced by 20-30%

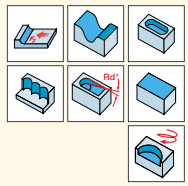
NANO FEED MILL

FFT3 TXMT 02

Triangular Miniature Inserts
for Fast Feed Milling at
Small Depths of Cut







I N C H

Designation	Dimensions INSL	IC	RE	S	S1	Tough ↔ Hard IC830	IC808	Recommended Machining Data a_p (inch)	f_z (inch/t)
FFT3 TXMT 020105T	.144	.079	.0197	.043	.061	•	•	.008-.024	.0079-.0177

• For side plunging, the initial cutting feed is .002 inch/t • For cutting speed recommendations, see page 1011

For tools, see pages: FFT3 EFM-02 (1009) • FFT3 EFM-MM 02 (1010)

Average Cutting Data for FFT3-02 Fast Feed Cutters

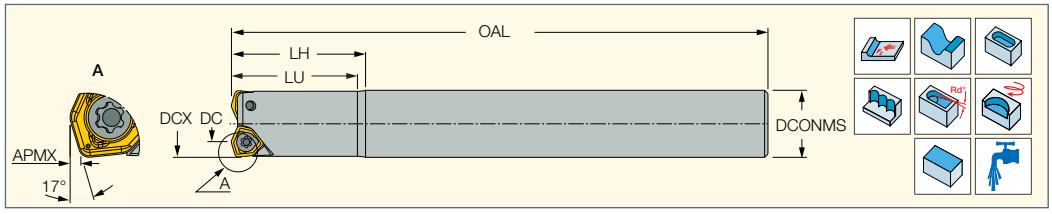
ISO class DIN/ ISO 513	Description	Workpiece material: ISCAR mat. group*	Hardness, HB	Typical representative: AISI/SAE/ASTM	DIN W.-Nr.	D.O.C. a_p [inch]	Cutting speed v_c [sfm]	Feed f_z [ipt]	Coolant
P	non-alloy steel	1-5	130-180	1020	1.0402	.008-.024	400-660	.008-.027	dry/wet
	low alloy steel	6-8	260-300	4340	1.6582		330-590		dry/wet
		9	HRC 35-42**	3135	1.5710		330-430		dry/wet
	high alloy steel	10-11	200-220	H13	1.2344		260-490		dry/wet
	ferritic/martensitic stainless steel	12-13	200	420	1.4021		260-490		dry/wet

* ISCAR material group in accordance with VDI 3323 standard
** Quenched and tempered
For machining under unstable conditions, the recommended cutting data should be reduced by 20-30%

MICRO3FEED MF 300 ENDMILL

FFT3 EFM-03

Endmills Carrying Single-Sided Small Trigon Inserts for Fast Feed Milling



M E T R I C

Designation	DCX(1)	DC	APMX	AE(2)	CICT(3)	LU	LH	DCONMS	OAL	Shank(4)	RMPX°(5)	MDN(6)	MDX(7)	MIID(8)	CSP(9)	kg
FFT3 EFM D08-1-080-C12-03	8.00	3.60	0.60	2.2	1	15.70	20.0	12.00	80.00	C	1.1	11.60	15.00	FFT3 WXMT 030206T	1	0.00
FFT3 EFM D10-2-080-C10-03	10.00	5.60	0.60	2.2	2	18.00	20.0	10.00	80.00	C	6.9	15.60	19.00	FFT3 WXMT 030206T	1	0.11
FFT3 EFM D12-3-120-C12-03	12.00	7.60	0.60	2.2	3	23.00	25.0	12.00	120.00	C	4.7	19.60	23.00	FFT3 WXMT 030206T	1	0.10

• Radius for programming 1.0 mm • To generate a straight surface without cusps, the width of cut must not exceed DC

(1) Cutting diameter maximum
(2) Maximum plunging width
(3) Number of inserts (or edges for solid tool)
(4) C-Cylindrical
(5) Maximum ramping angle
(6) Machinable diameter minimum for interpolation
(7) Machinable diameter maximum for interpolation
(8) Master insert identification
(9) 0 - Without coolant supply, 1 - With coolant supply

For inserts, see pages: FFT3 WXMT 03 (1014)

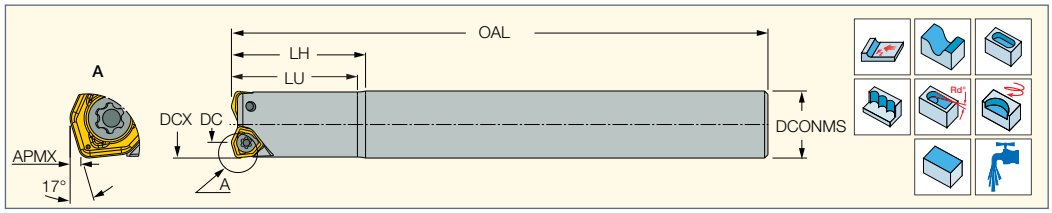
Spare Parts

Designation		
FFT3 EFM-03	TS 18041I/HG	T-6IP/51

MICRO3FEED MF 300 ENDMILL

FFT3 EFM-03

Endmills Carrying Single-Sided Small Trigon Inserts for Fast Feed Milling



I N C H

Designation	DCX(1)	DC	APMX	AE(2)	CICT(3)	LU	LH	DCONMS	OAL	Shank(4)	RMPX°(5)	MDN(6)	MDX(7)	MIID(8)	CSP(9)	Lbs
FFT3 EFMD.38-2-3.0C.38-03	.375	.200	.0236	.086	2	.6720	.750	.375	3.000	C	7.5	.575	.711	FFT3 WXMT 030206T	1	.08
FFT3 EFMD.50-3-5.0C.50-03	.500	.325	.0236	.086	3	.9220	1.000	.500	5.000	C	4.0	.823	.961	FFT3 WXMT 030206T	1	.24

• Radius for programming .04" • To generate a straight surface without cusps, the width of cut must not exceed DC

(1) Cutting diameter maximum
(2) Maximum plunging width
(3) Number of inserts (or edges for solid tool)
(4) C-Cylindrical
(5) Maximum ramping angle
(6) Machinable diameter minimum for interpolation
(7) Machinable diameter maximum for interpolation
(8) Master insert identification
(9) 0 - Without coolant supply, 1 - With coolant supply

For inserts, see pages: FFT3 WXMT 03 (1014)

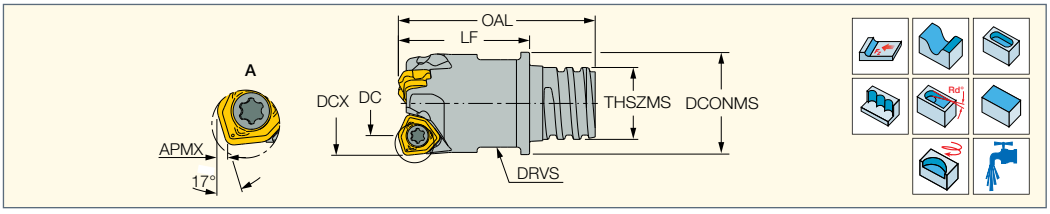
Spare Parts

Designation		
FFT3 EFM-03	TS 18041I/HG	T-6IP/51

MICRO 3 FEED
MF 300 ENDMILL

FFT3 EFM-MM 03

Endmills with a MULTI-MASTER Threaded Adaptation Carrying Single-Sided Small Trigon Inserts for Fast Feed Milling



M E T R I C

Designation	DCX[1]	DC	APMX	AE[2]	CICT[3]	LF	DCONMS	THSZMS	OAL	DRVS[4]	RMPX°[5]	MDN[6]	MDX[7]	MIID[8]	CSP[9]	kg
FFT3 EFMD10/.39-2MMT06-03	10.00	5.60	0.60	2.2	2	10.00	9.70	T06	16.30	8.0	6.9	15.60	19.00	FFT3 WXMT 030206T	1	0.02
FFT3 EFMD12/.47-3MMT08-03	12.00	7.60	0.60	2.2	3	15.00	11.70	T08	22.50	10.0	4.7	19.60	23.00	FFT3 WXMT 030206T	1	0.03

• Radius for programming 1.0 mm • To generate a straight surface without cusps, the width of cut must not exceed DC

(1) Cutting diameter maximum
(2) Maximum plunging width
(3) Number of inserts (or edges for solid tool)
(4) Torque key size
(5) Maximum ramping angle
(6) Machinable diameter minimum for interpolation
(7) Machinable diameter maximum for interpolation
(8) Master insert identification
(9) 0 - Without coolant supply, 1 - With coolant supply

For inserts, see pages: FFT3 WXMT 03 (1014)
For holders, see pages: MM CAB-T-T (1123) • MM CAB-T-T-W (1124) • MM GRT (shanks) (1117) • MM S-A (stepped shanks) (1112) • MM S-A (straight shanks) (1118) • MM S-A-C# (1114) • MM S-A-N (1114) • MM S-B (85° conical shanks) (1119) • MM S-D (89° conical shanks) (1120) • MM S-ER (1121) • MM S-ER-H (1122) • MM TS-A (1115) • MM TS2-A (1116)

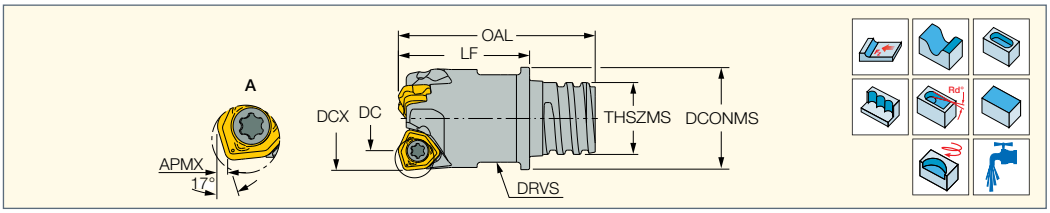
Spare Parts

Designation		
FFT3 EFM-MM 03	TS 18041I/HG	T-6IP/51

MICRO 3 FEED
MF 300 ENDMILL

FFT3 EFM-MM 03

Endmills with a MULTI-MASTER Threaded Adaptation Carrying Single-Sided Small Trigon Inserts for Fast Feed Milling



I N C H

Designation	DCX[1]	DC	APMX	AE[2]	CICT[3]	LF	DCONMS	THSZMS	OAL	DRVS[4]	RMPX°[5]	MDN[6]	MDX[7]	MIID[8]	CSP[9]	Lbs
FFT3 EFMD10/.39-2MMT06-03	.394	.220	.0236	.087	2	.394	.382	T06	.642	.315	6.9	.614	.748	FFT3 WXMT 030206T	1	.04
FFT3 EFMD12/.47-3MMT08-03	.472	.299	.0236	.087	3	.591	.461	T08	.886	.394	4.7	.772	.906	FFT3 WXMT 030206T	1	.07

• Radius for programming .04" • To generate a straight surface without cusps, the width of cut must not exceed DC

(1) Cutting diameter maximum
(2) Maximum plunging width
(3) Number of inserts (or edges for solid tool)
(4) Torque key size
(5) Maximum ramping angle
(6) Machinable diameter minimum for interpolation
(7) Machinable diameter maximum for interpolation
(8) Master insert identification
(9) 0 - Without coolant supply, 1 - With coolant supply

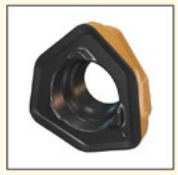
For inserts, see pages: FFT3 WXMT 03 (1014)
For holders, see pages: MM CAB-T-T (1123) • MM CAB-T-T-W (1124) • MM GRT (shanks) (1117) • MM S-A (stepped shanks) (1112) • MM S-A (straight shanks) (1118) • MM S-A-C# (1114) • MM S-A-N (1114) • MM S-B (85° conical shanks) (1119) • MM S-D (89° conical shanks) (1120) • MM S-ER (1121) • MM S-ER-H (1122) • MM TS-A (1115) • MM TS2-A (1116)

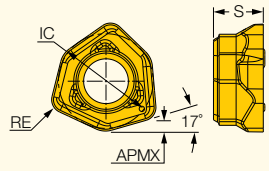
Spare Parts

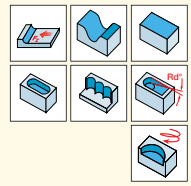
Designation		
FFT3 EFM-MM 03	TS 18041I/HG	T-6IP/51

MICRO3FEED
MF 300 ENDMILL

FFT3 WXMT 03
Single-Sided Small Trigon
Inserts for Fast Feed Milling







M E T R I C

Designation	Dimensions IC	S	RE	APMX	Tough ↔ Hard IC882	IC830	IC5820	IC808	Recommended Machining Data a_p (mm)	f_z (mm/t)
FFT3 WXMT 030206T	4.20	2.20	0.60	0.60	•	•	•	•	0.20-0.60	0.20-0.80

• For side plunging, the initial cutting feed is 0.08 mm/t • For cutting speed recommendations, see page 1014

For tools, see pages: FFT3 EFM-03 (1012) • FFT3 EFM-MM 03 (1013)

Recommended Machining Conditions for FFT3-03 Fast Feed Endmills

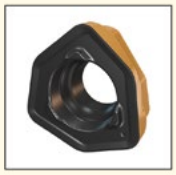
Workpiece Material						Carbide Grade	D.O.C. ap (mm)	Cutting Speed V_c (m/min)	Feed F_z (mm/tooth)	Coolant
ISO Class DIN/ ISO 513	Description	ISCAR Mat. Group*	Hardness, HB	Typical Materials AISI/SAE/ ASTM	Typical Materials DIN W.-Nr.					
P	non-alloy steel and cast steel, free cutting steel	1-5	130-180	1020	1.0402	IC808	0.20-0.60	120-200	0.30-0.80	dry/wet
						IC830		110-180	0.30-0.80	
	low alloy and cast steel (less than 5% of alloying elements)	6-8	260-300	4340	1.6582	IC808		100-180	0.30-0.70	
						IC830		90-160	0.30-0.70	
		9	HRC 35-42**	3135	1.5710	IC808		100-160	0.30-0.60	
						IC830		90-150	0.30-0.60	
	high alloyed steel, cast steel and tool steel	10-11	200-220	H13	1.2344	IC808		80-150	0.30-0.60	
						IC830		70-140	0.30-0.60	
	stainless steel and cast steel	12-13	200	420	1.4021	IC808		80-150	0.30-0.60	
						IC830		70-140	0.30-0.60	
M	stainless steel and cast steel	14	200	304L	1.4306	IC830	0.20-0.60	80-120	0.20-0.60	dry
						IC5820		100-160	0.20-0.50	
						IC882		80-130	0.20-0.50	
S	high temperature alloys and titanium	33-35	340	inconel 718	2.4668	IC882	0.2-0.50	20-30	0.20-0.40	wet
						IC5820		25-35	0.20-0.40	
						IC808		25-35	0.20-0.40	
						IC830		25-30	0.20-0.40	
		36-37	HRC 30-32	AMS R56400	3.7165 (Ti6Al4V ELI)	IC882		25-35	0.20-0.50	
						IC5820		25-40	0.20-0.50	
						IC808		25-35	0.20-0.50	
						IC830		20-30	0.20-0.50	

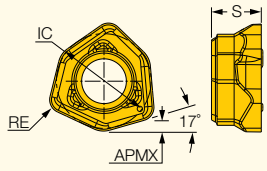
* ISCAR material group in accordance with VDI 3323 standard
** Quenched and tempered
For machining under unstable conditions, the recommended cutting data should be reduced by 20-30%

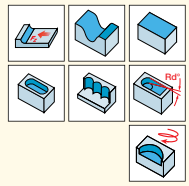
MICRO 3 FEED
MF 300 ENDMILL

FFT3 WXMT 03

Single-Sided Small Trigon
Inserts for Fast Feed Milling







I N C H

Designation	Dimensions IC	S	RE	APMX	Tough ↔ Hard IC882	IC830	IC5820	IC808	Recommended Machining Data a_p (inch)	f_z (inch/t)
FFT3 WXMT 030206T	.165	.087	.0236	.0236	•	•	•	•	.008-.024	.0079-.0315

• For side plunging, the initial cutting feed is .003 inch/t • For cutting speed recommendations, see page 1015

For tools, see pages: FFT3 EFM-03 (1012) • FFT3 EFM-MM 03 (1013)

Recommended Machining Conditions for FFT3-03 Fast Feed Endmills

Workpiece Material										
ISO Class DIN/ ISO 513	Description	ISCAR Mat. Group*	Hardness, HB	Typical Materials AISI/SAE/ ASTM	Typical Materials DIN W.-Nr.	Carbide Grade	D.O.C. A_p (inch)	Cutting Speed V_c (sfm)	Feed F_z (ipt)	Coolant
P	non-alloy steel and cast steel, free cutting steel	1-5	130-180	1020	1.0402	IC808	.008-.023	400-660	.011-.031	dry/wet
						IC830		360-590	.011-.031	
	low alloy and cast steel (less than 5% of alloying elements)	6-8	260-300	4340	1.6582	IC808		330-590	.011-.027	
						IC830		300-520	.011-.027	
		9	HRC 35-42**	3135	1.5710	IC808		330-520	.011-.023	
						IC830		300-490	.011-.023	
	high alloyed steel, cast steel and tool steel	10-11	200-220	H13	1.2344	IC808		260-490	.011-.023	
						IC830		230-460	.011-.023	
	stainless steel and cast steel	12-13	200	420	1.4021	IC808		260-490	.011-.023	
						IC830		230-490	.011-.023	
M	stainless steel and cast steel	14	200	304L	1.4306	IC808	.008-.023	330-520	.011-.023	dry
						IC830		260-390	.011-.023	
						IC5820		330-520	.011-.023	
						IC882		260-420	.011-.023	
S	high temperature alloys and titanium	33-35	340	inconel 718	2.4668	IC882	.008-.020	60-100	.008-.015	wet
						IC5820		80-115	.008-.015	
						IC808		80-115	.008-.015	
						IC830		80-100	.008-.015	
		36-37	HRC 30-32	AMS R56400	3.7165 (Ti6Al4V ELI)	IC882		80-115	.008-.020	
						IC5820		80-130	.008-.020	
						IC808		80-115	.008-.020	
						IC830		60-100	.008-.020	

* ISCAR material group in accordance with VDI 3323 standard

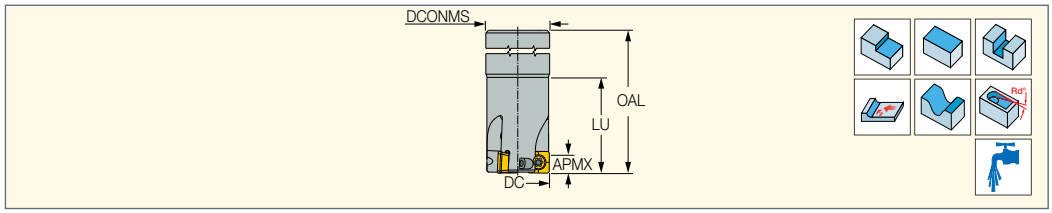
** Quenched and tempered

For machining under unstable conditions, the recommended cutting data should be reduced by 20-30%

HELI4MILL

E90SO-04

Endmills Carrying Square Inserts for Shouldering and Fast Feed Milling Applications



M E T R I C

Designation	DC	APMX	LU	OAL	DCONMS	Shank(1)	CICT(2)	RMPX°	CSP(3)	MIID(4)	kg
E90SO D06-1-C06-04-C	6.00	3.50	15.00	57.00	6.00	C	1	-	1	SOMT 040204 PNTR	0.06
E90SO D08-1-C08-04-C	8.00	3.50	15.30	60.00	8.00	C	1	8.0	1	SOMT 040204 PNTR	0.01
E90SO D10-2-C10-04-C	10.00	3.50	18.00	70.00	10.00	C	2	6.0	1	SOMT 040204 PNTR	0.04
E90SO D12-2-C12-04-C	12.00	3.50	18.00	70.00	12.00	C	2	3.0	1	SOMT 040204 PNTR	0.05
E90SO D12-3-C12-04-C	12.00	3.50	18.00	70.00	12.00	C	3	3.0	1	SOMT 040204 PNTR	0.05

- Tightening torque 0.5 Nxm

(1) C-Cylindrical

(2) Number of inserts (or edges for solid tool)

(3) 0 - Without coolant supply, 1 - With coolant supply

(4) Master insert identification

For inserts, see pages: SOMT/CT 0402 (1018)

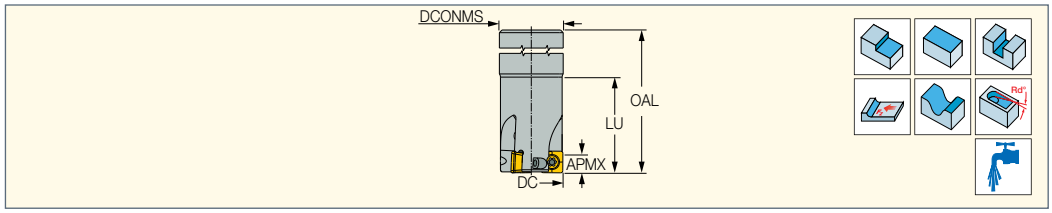
Spare Parts

Designation		
E90SO D06-1-C06-04-C	TS 18041I/HG/S	T-6IP/51
E90SO D08-1-C08-04-C	TS 18041I/HG/S	T-6IP/51
E90SO D10-2-C10-04-C	TS 18041I/HG	T-6IP/51
E90SO D12-2-C12-04-C	TS 18041I/HG	T-6IP/51
E90SO D12-3-C12-04-C	TS 18041I/HG	T-6IP/51

HELI4MILL

E90SO-04

Endmills Carrying Square Inserts for Shouldering and Fast Feed Milling Applications



I N C H

Designation	DC	APMX	LU	OAL	DCONMS	Shank(1)	CICT(2)	RMPX°	CSP(3)	MIID(4)	Lbs
E90SO D.38-02-C.38-04-C	.375	.1380	.7500	3.000	.375	C	2	6.0	1	SOMT 040204 PNTR	.07
E90SO D.50-03-C.50-04-C	.500	.1380	.7500	3.500	.500	C	3	3.0	1	SOMT 040204 PNTR	.17

- Tightening torque 4.4 lbf*in

(1) C-Cylindrical

(2) Number of inserts (or edges for solid tool)

(3) 0 - Without coolant supply, 1 - With coolant supply

(4) Master insert identification

For inserts, see pages: SOMT/CT 0402 (1018)

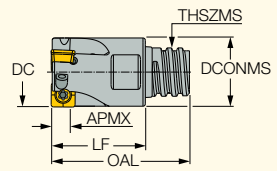
Spare Parts

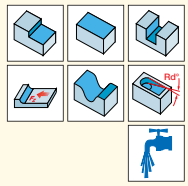
Designation		
E90SO-04	TS 18041I/HG	T-6IP/51

HELI4MILL

E90SO-MM-04

Endmills with a MULTI-MASTER Connection Carrying Inserts for Shouldering and Fast Feed Applications





M E T R I C

Designation	DC	APMX	LF	OAL	CICT(1)	DCONMS	THSZMS	DRVS(2)	RMPX°	CSP(3)	MIID(4)	kg
E90SO D10-2-MMT06-04	10.00	3.50	15.00	21.30	2	9.70	T06	8.0	6.0	1	SOMT 040204 PNTR	0.05
E90SO D12-3-MMT08-04	12.00	3.50	16.00	23.50	3	11.60	T08	10.0	3.0	1	SOMT 040204 PNTR	0.15

- Tightening torque 0.5 Nxm

(1) Number of inserts (or edges for solid tool)
(2) Torque key size
(3) 0 - Without coolant supply, 1 - With coolant supply
(4) Master insert identification

For inserts, see pages: SOMT/CT 0402 (1018)
For holders, see pages: MM CAB-T-T (1123) • MM CAB-T-T-W (1124) • MM GRT (shanks) (1117) • MM S-A (stepped shanks) (1112) • MM S-A (straight shanks) (1118) • MM S-A-C# (1114) • MM S-A-N (1114) • MM S-B (85° conical shanks) (1119) • MM S-D (89° conical shanks) (1120) • MM S-ER (1121) • MM S-ER-H (1122) • MM TS-A (1115) • MM TS2-A (1116)

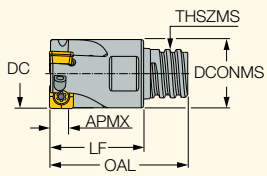
Spare Parts

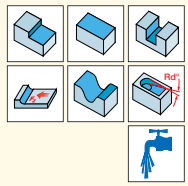
Designation		
E90SO-MM-04	TS 18041I/HG	T-6IP/51

HELI4MILL

E90SO-MM-04

Endmills with a MULTI-MASTER Connection Carrying Inserts for Shouldering and Fast Feed Applications





I N C H

Designation	DC	APMX	LF	OAL	CICT(1)	DCONMS	THSZMS	DRVS(2)	RMPX°	MIID(3)	CSP(4)	Lbs
E90SO D.38-02-MMT06-04-C	.375	.1380	.526	.770	2	.361	T06	.315	6.0	SOMT 040204 PNTR	1	.01
E90SO D.50-03-MMT08-04-C	.500	.1380	.630	.940	3	.450	T08	.394	3.0	SOMT 040204 PNTR	1	.03

- Tightening torque 4.4 lbf*in

(1) Number of inserts (or edges for solid tool)
(2) Torque key size
(3) Master insert identification
(4) 0 - Without coolant supply, 1 - With coolant supply

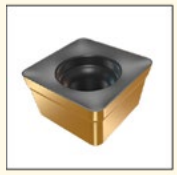
For inserts, see pages: SOMT/CT 0402 (1018)
For holders, see pages: MM CAB-T-T (1123) • MM CAB-T-T-W (1124) • MM GRT (shanks) (1117) • MM S-A (stepped shanks) (1112) • MM S-A (straight shanks) (1118) • MM S-A-C# (1114) • MM S-B (85° conical shanks) (1119) • MM S-D (89° conical shanks) (1120) • MM S-ER (1121) • MM S-ER-H (1122) • MM TS-A (1115) • MM TS2-A (1116)

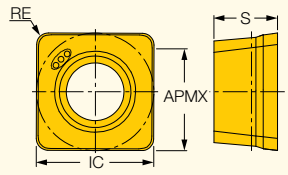
Spare Parts

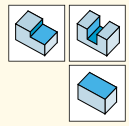
Designation		
E90SO-MM-04	TS 18041I/HG	T-6IP/51

HELI4MILL

SOMT/CT 0402
Square Milling Inserts
for General Use





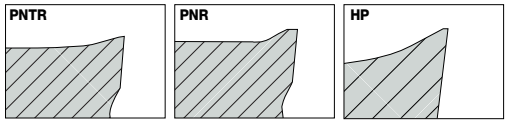


M E T R I C

Designation	Dimensions APMX	RE	IC	S	Tough ↔ Hard IC716	IC830	IC808	IC810	Recommended Machining Data a_p (mm)	f_z (mm/t)
SOCT 040204 PNR	3.50	0.40	4.07	2.20		•	•		0.50-3.50	0.04-0.10
SOMT 040204 PN-HP	3.50	0.40	4.07	2.24	•				0.50-3.50	0.04-0.10
SOMT 040204 PNTR	3.50	0.40	4.07	2.20		•	•	•	0.50-3.50	0.04-0.10
SOMT 040208 PNTR	3.50	0.80	4.07	2.20			•		1.10-3.50	0.04-0.10
SOMT 040212 PNTR	3.50	1.20	4.07	2.20			•		1.50-3.50	0.04-0.10

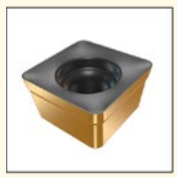
• For cutting speed recommendations, see pages 1036-1039 • For left or right hand machining

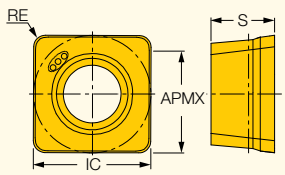
For tools, see pages: E90SO-04 (1016) • E90SO-MM-04 (1017)

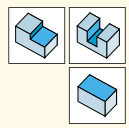


HELI4MILL

SOMT/CT 0402
Square Milling Inserts
for General Use







I N C H

Designation	Dimensions APMX	RE	IC	S	Tough ↔ Hard IC716	IC830	IC808	IC810	Recommended Machining Data a_p (inch)	f_z (inch/t)
SOCT 040204 PNR	.1378	.0157	.160	.087		•	•		.020-.138	.0016-.0039
SOMT 040204 PN-HP	.1378	.0157	.160	.088	•				.020-.138	.0016-.0039
SOMT 040204 PNTR	.1378	.0157	.160	.087		•	•	•	.020-.138	.0016-.0039
SOMT 040208 PNTR	.1378	.0315	.160	.087			•		.043-.138	.0016-.0039
SOMT 040212 PNTR	.1378	.0472	.160	.087			•		.059-.138	.0016-.0039

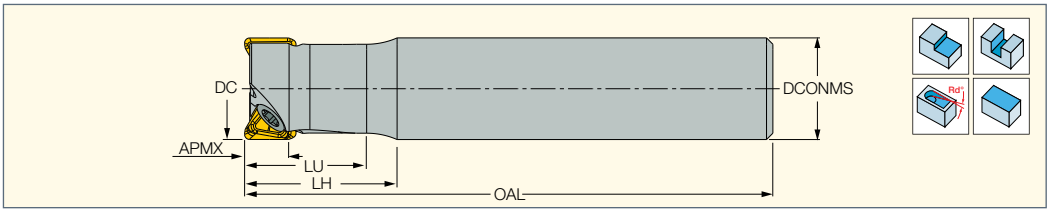
• For cutting speed recommendations, see pages 1036-1039 • For left or right hand machining

For tools, see pages: E90SO-04 (1016) • E90SO-MM-04 (1017)

NANMILL
NANO ENDMILL

HM390 ETP-04

90° Small Diameter Endmills
Carrying HM390 TPKR
0401 Triangular Inserts with
3 Helical Cutting Edges



M E T R I C

Designation	DC	APMX	CICT(1)	OAL	LU	LH	DCONMS	Shank(2)	RMPX°(3)	CSP(4)	kg
HM390 ETP D08-2-C08-04	8.00	3.00	2	60.00	9.60	12.0	8.00	C	3.0	0	0.02
HM390 ETP D10-3-C10-04	10.00	3.00	3	80.00	12.60	15.0	10.00	C	2.5	0	0.05

- Tightening torque 0.5 Nxm

(1) Number of inserts (or edges for solid tool)
(2) C-Cylindrical
(3) Maximum ramping angle
(4) 0 - Without coolant supply, 1 - With coolant supply

For inserts, see pages: HM390 TPKR 0401 (1021)

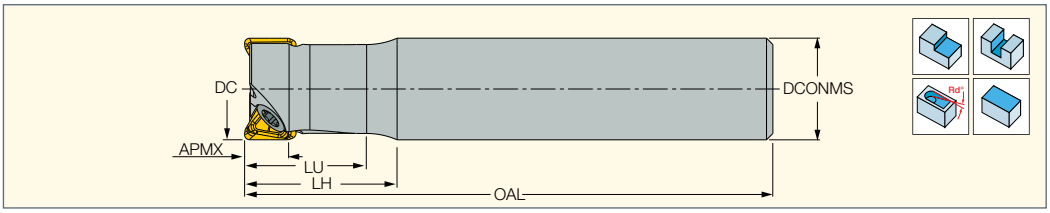
Spare Parts

Designation		
HM390 ETP D08-2-C08-04	SR M2X0.4-3 T6	T-6/5 MAGNET 3X3
HM390 ETP D10-3-C10-04	SR M2X0.4-3.5 T6	T-6/5 MAGNET 3X3

NANMILL
NANO ENDMILL

HM390 ETP-04

90° Small Diameter Endmills
Carrying HM390 TPKR
0401 Triangular Inserts with
3 Helical Cutting Edges



I N C H

Designation	DC	APMX	CICT(1)	OAL	LU	LH	DCONMS	Shank(2)	RMPX°(3)	CSP(4)	Lbs
HM390 ETP D.31-2-C.31-04	.313	.1200	2	2.500	.3740	.470	.313	C	3.0	0	.05
HM390 ETP D.38-3-C.38-04	.375	.1200	3	3.000	.4685	.560	.375	C	2.6	0	.09

- Tightening torque 4.4 Lbf x in

(1) Number of inserts (or edges for solid tool)
(2) C-Cylindrical
(3) Maximum ramping angle
(4) 0 - Without coolant supply, 1 - With coolant supply

For inserts, see pages: HM390 TPKR 0401 (1021)

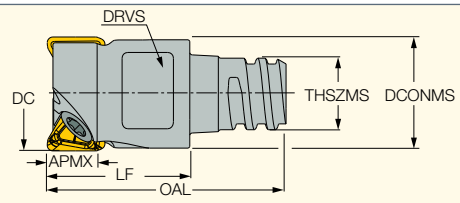
Spare Parts

Designation		
HM390 ETP-04	SR M2X0.4-3 T6	T-6/5 MAGNET 3X3

NANMILL
NANO ENDMILL

HM390 ETP-MM-04

90° Endmills with a MULTI-MASTER Threaded Adaptation Carrying HM390 TPKR 0401... Triangular Inserts



M E T R I C

Designation	DC	APMX	CICT(1)	LF	DCONMS	THSZMS	OAL	DRVS(2)	RMPX°(3)	CSP(4)	kg
HM390 ETP D08-2-MMT05-04	8.00	3.00	2	10.00	7.60	T05	16.75	5.5	3.0	0	0.04
HM390 ETP D10-3-MMT06-04	10.00	3.00	3	12.00	9.60	T06	18.30	8.0	2.5	0	0.04

• Insert tightening torque 0.5 N*m • For adaptation, see pages 1047-1048 • For user guide, see pages 1040-1042

(1) Number of inserts (or edges for solid tool)

(2) Torque key size

(3) Maximum ramping angle

(4) 0 - Without coolant supply, 1 - With coolant supply

For inserts, see pages: HM390 TPKR 0401 (1021)

For holders, see pages: MM CAB-T-T (1123) • MM CAB-T-T-W (1124) • MM GRT (shanks) (1117) • MM S-A (stepped shanks) (1112) • MM S-A (straight shanks) (1118) • MM S-A-C# (1114) • MM S-A-N (1114) • MM S-B (85° conical shanks) (1119) • MM S-D (89° conical shanks) (1120) • MM S-ER (1121) • MM S-ER-H (1122) • MM TS-A (1115) • MM TS2-A (1116)

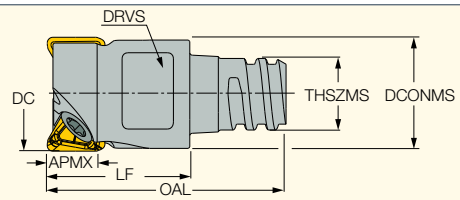
Spare Parts

Designation		
HM390 ETP D08-2-MMT05-04	SR M2X0.4-3 T6	T-6/5 MAGNET 3X3
HM390 ETP D10-3-MMT06-04	SR M2X0.4-3.5 T6	T-6/5 MAGNET 3X3

NANMILL
NANO ENDMILL

HM390 ETP-MM-04

90° Endmills with a MULTI-MASTER Threaded Adaptation Carrying HM390 TPKR 0401... Triangular Inserts



I N C H

Designation	DC	APMX	CICT(1)	LF	DCONMS	THSZMS	OAL	DRVS(2)	RMPX°(3)	CSP(4)	Lbs
HM390 ETP D.31-2-MMT05-04	.313	.1200	2	.380	.300	T05	.850	.217	3.0	0	.01
HM390 ETP D.38-3-MMT06-04	.375	.1200	3	.500	.360	T06	.740	.315	2.5	0	.02

• Tightening torque 4.4 Lbf x in • For adaptation, see pages 1047-1048 • For user guide, see pages 1040-1042

(1) Number of inserts (or edges for solid tool)

(2) Torque key size

(3) Maximum ramping angle

(4) 0 - Without coolant supply, 1 - With coolant supply

For inserts, see pages: HM390 TPKR 0401 (1021)

For holders, see pages: MM CAB-T-T (1123) • MM CAB-T-T-W (1124) • MM GRT (shanks) (1117) • MM S-A (stepped shanks) (1112) • MM S-A (straight shanks) (1118) • MM S-A-C# (1114) • MM S-B (85° conical shanks) (1119) • MM S-D (89° conical shanks) (1120) • MM S-ER (1121) • MM S-ER-H (1122) • MM TS-A (1115) • MM TS2-A (1116)

Spare Parts

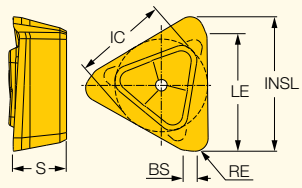
Designation		
HM390 ETP-MM-04	SR M2X0.4-3 T6	T-6/5 MAGNET 3X3

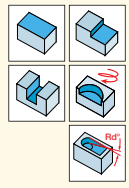
NANMILL
NANO ENDMILL

HM390 TPKR 0401

Triangular Miniature Inserts with 3 Helical Cutting Edges for 90° Shoulders







M E T R I C

Designation	Dimensions INSL	IC	S	LE	RE	BS	Tough ↔ Hard IC830	IC808	Recommended Machining Data a_p (mm)	f_z (mm/t)
HM390 TPKR 0401-PCTR	4.00	2.80	1.60	3.00	0.40	0.40	●	●	0.80-3.00	0.04-0.10

- For cutting speed recommendations, see pages 1036-1039

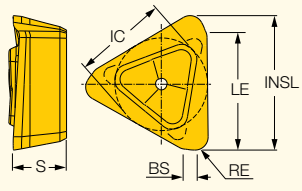
For tools, see pages: HM390 ETP-04 (1019) • HM390 ETP-MM-04 (1020)

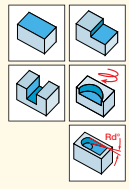
NANMILL
NANO ENDMILL

HM390 TPKR 0401

Triangular Miniature Inserts with 3 Helical Cutting Edges for 90° Shoulders







I N C H

Designation	Dimensions INSL	IC	S	LE	RE	BS	Tough ↔ Hard IC830	IC808	Recommended Machining Data a_p (inch)	f_z (inch/t)
HM390 TPKR 0401-PCTR	.157	.110	.063	.118	.0157	.016	●	●	.031-.118	.0016-.0039

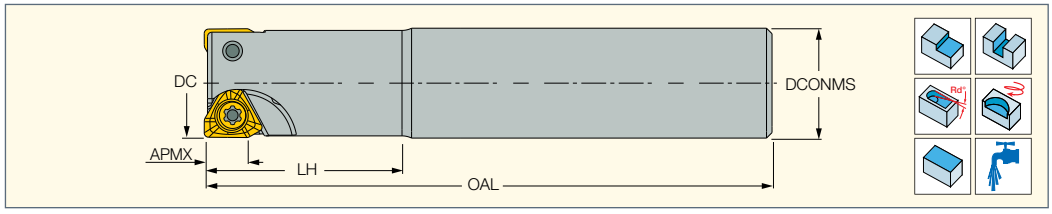
- For cutting speed recommendations, see pages 1036-1039

For tools, see pages: HM390 ETP-04 (1019) • HM390 ETP-MM-04 (1020)

HELI3MILL HM390 LINE

HM390 ETP-05

90° Endmills Carrying HM390 TPKT 0502 Triangular Inserts with 3 Helical Cutting Edges



M E T R I C

Designation	DC	APMX	CICT(1)	OAL	LH	DCONMS	Shank(2)	RMPX°(3)	CSP(4)	kg
HM390 ETP D06-1-C06-05-C	6.00	3.50	1	57.00	15.0	6.00	C	1.0	1	0.06
HM390 ETP D08-1-C08-05-C	8.00	3.50	1	60.00	14.9	8.00	C	1.0	1	0.03
HM390 ETP D10-2-C10-05-C	10.00	3.50	2	70.00	18.0	10.00	C	2.0	1	0.03
HM390 ETP D12-3-C12-05-C	12.00	3.50	3	70.00	18.0	12.00	C	1.5	1	0.06

• Tightening torque 0.5 N*m • For user guide see pages 1040-1042

(1) Number of inserts (or edges for solid tool)

(2) C-Cylindrical

(3) Maximum ramping angle

(4) 0 - Without coolant supply, 1 - With coolant supply

For inserts, see pages: HM390 TPKT/CT 0502 (1024)

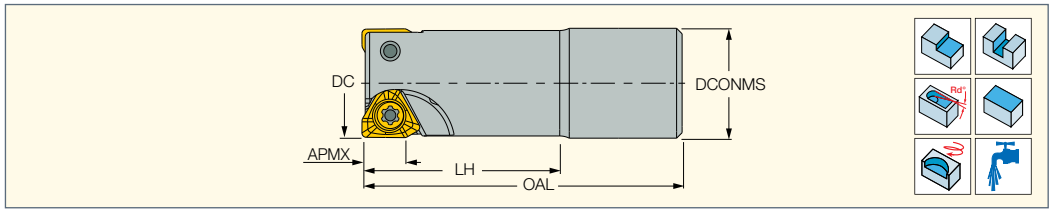
Spare Parts

Designation		
HM390 ETP D06-1-C06-05-C	TS 18041I/HG/S	T-6IP/51
HM390 ETP D08-1-C08-05-C	TS 18041I/HG/S	T-6IP/51
HM390 ETP D10-2-C10-05-C	TS 18041I/HG	T-6IP/51
HM390 ETP D12-3-C12-05-C	TS 18041I/HG	T-6IP/51

HELI3MILL HM390 LINE

HM390 ETP-05

90° Endmills Carrying HM390 TPKT 0502 Triangular Inserts with 3 Helical Cutting Edges



I N C H

Designation	DC	APMX	CICT(1)	OAL	LH	DCONMS	Shank(2)	RMPX°(3)	CSP(4)	Lbs
HM390 ETPD.50-3-C.50-05C	.500	.1380	3	3.500	.750	.500	C	1.5	1	.17

• Tightening torque 4.42 lbf*in • For user guide, see pages 1040-1042

(1) Number of inserts (or edges for solid tool)

(2) C-Cylindrical

(3) Maximum ramping angle

(4) 0 - Without coolant supply, 1 - With coolant supply

For inserts, see pages: HM390 TPKT/CT 0502 (1024)

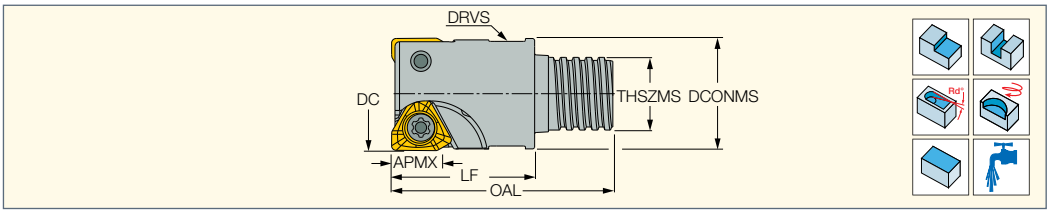
Spare Parts

Designation		
HM390 ETP-05	TS 18041I/HG	T-6IP/51

HELI3MILL HM390 LINE

HM390 ETP-MM-05

90° Endmills with a MULTI-MASTER Threaded Adaptation Carrying HM390 TPKT 0502... Triangular Inserts



M E T R I C

Designation	DC	APMX	CICT(1)	LF	DCONMS	THSZMS	OAL	DRVS(2)	RMPX°(3)	CSP(4)	MIID(5)	kg
HM390 ETP D10-2-MMT06-05	10.00	3.50	2	15.00	9.60	T06	21.60	8.0	2.0	1	HM390 TPKT 0502PDR	0.01
HM390 ETP D12-3-MMT08-05	12.00	3.50	3	16.00	11.60	T08	24.20	10.0	1.5	1	HM390 TPKT 0502PDR	0.00

• Insert tightening torque 0.5 N*m • For adaptation, see pages 1047-1048 • For user guide, see pages 1040-1042

(1) Number of inserts (or edges for solid tool)

(2) Torque key size

(3) Maximum ramping angle

(4) 0 - Without coolant supply, 1 - With coolant supply

(5) Master insert identification

For inserts, see pages: HM390 TPKT/CT 0502 (1024)

For holders, see pages: MM CAB-T-T (1123) • MM CAB-T-T-W (1124) • MM GRT (shanks) (1117) • MM S-A (stepped shanks) (1112) • MM S-A (straight shanks) (1118) • MM S-A-C# (1114) • MM S-A-N (1114) • MM S-B (85° conical shanks) (1119) • MM S-D (89° conical shanks) (1120) • MM S-ER (1121) • MM S-ER-H (1122) • MM TS-A (1115) • MM TS2-A (1116)

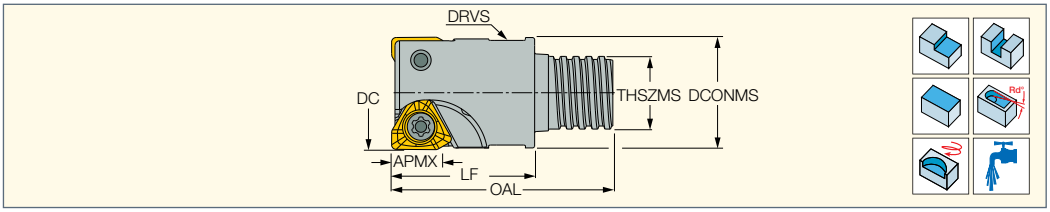
Spare Parts

Designation		
HM390 ETP-MM-05	TS 18041I/HG	T-6IP/51

HELI3MILL HM390 LINE

HM390 ETP-MM-05

90° Endmills with a MULTI-MASTER Threaded Adaptation Carrying HM390 TPKT 0502... Triangular Inserts



I N C H

Designation	DC	APMX	CICT(1)	LF	DCONMS	THSZMS	OAL	DRVS(2)	RMPX°(3)	CSP(4)	Lbs
HM390 ETPD.50-3-MMT08-05	.500	.1380	3	.650	.480	T08	.950	.394	1.5	1	.20

• Insert tightening torque 4.42 lbf*in • For adaptation, see pages 1047-1048 • For user guide, see pages 1040-1042

(1) Number of inserts (or edges for solid tool)

(2) Torque key size

(3) Maximum ramping angle

(4) 0 - Without coolant supply, 1 - With coolant supply

For inserts, see pages: HM390 TPKT/CT 0502 (1024)

For holders, see pages: MM CAB-T-T (1123) • MM CAB-T-T-W (1124) • MM GRT (shanks) (1117) • MM S-A (stepped shanks) (1112) • MM S-A (straight shanks) (1118) • MM S-A-C# (1114) • MM S-B (85° conical shanks) (1119) • MM S-D (89° conical shanks) (1120) • MM S-ER (1121) • MM S-ER-H (1122) • MM TS-A (1115) • MM TS2-A (1116)

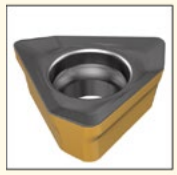
Spare Parts

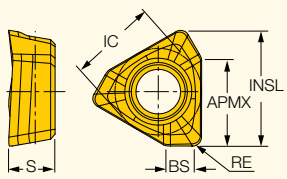
Designation		
HM390 ETP-MM-05	TS 18041I/HG	T-6IP/51

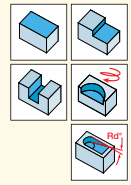
HELI3MILL HM390 LINE

HM390 TPKT/CT 0502

Triangular Inserts with 3 Helical Cutting Edges for 90° Shoulder Accuracy





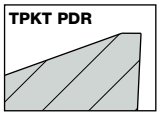


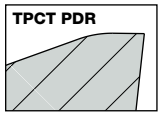
M E T R I C

Designation	Dimensions INSL	IC	S	APMX	RE	BS	Tough ↔ Hard IC830	IC808	IC810	Recommended Machining Data a_p (mm)	f_z (mm/t)
HM390 TPCT 0502PDR	5.26	3.94	2.10	3.50	0.40	1.00	●			0.80-3.50	0.05-0.10
HM390 TPKT 0502PDR	5.26	3.94	2.10	3.50	0.40	1.00	●	●	●	0.80-3.50	0.05-0.15
HM390 TPKT 050202PDR	5.26	3.94	2.10	3.50	0.20	1.20		●		0.60-3.50	0.05-0.15
HM390 TPKT 050208PDR	5.26	3.94	2.10	3.50	0.80	0.60		●		1.20-3.50	0.05-0.15

• For cutting speed recommendations, see pages 1036-1039

For tools, see pages: HM390 ETP-05 (1022) • HM390 ETP-MM-05 (1023)

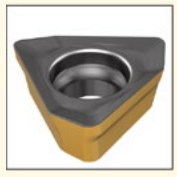


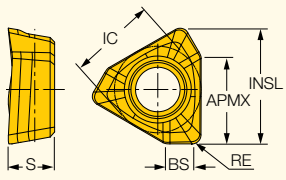


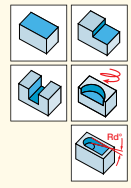
HELI3MILL HM390 LINE

HM390 TPKT/CT 0502

Triangular Inserts with 3 Helical Cutting Edges for 90° Shoulder Accuracy







I N C H

Designation	Dimensions INSL	IC	S	APMX	RE	BS	Tough ↔ Hard IC830	IC808	IC810	Recommended Machining Data a_p (inch)	f_z (inch/t)
HM390 TPCT 0502PDR	.207	.155	.083	.1378	.0157	.039	●			.031-.138	.0020-.0039
HM390 TPKT 0502PDR	.207	.155	.083	.1378	.0157	.039	●	●	●	.031-.138	.0020-.0059
HM390 TPKT 050202PDR	.207	.155	.083	.1378	.0079	.047		●		.024-.138	.0020-.0059
HM390 TPKT 050208PDR	.207	.155	.083	.1378	.0315	.024		●		.047-.138	.0020-.0059

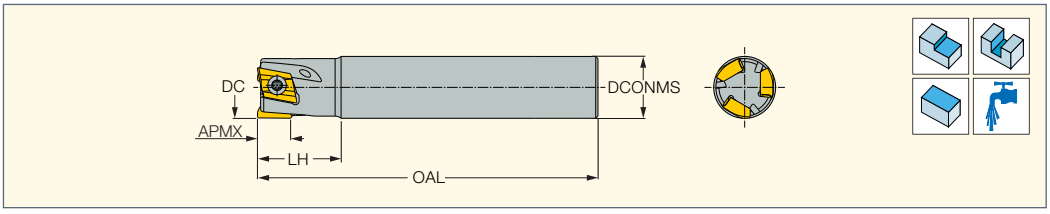
• For cutting speed recommendations, see pages 1036-1039

For tools, see pages: HM390 ETP-05 (1022) • HM390 ETP-MM-05 (1023)

SUMOMILL 290 LINE

T290 ELN-05

Endmills Carrying Tangentially Clamped Inserts



M E T R I C

Designation	DC	CICT(1)	OAL	LH	APMX	DCONMS	Shank(2)	CSP(3)	kg		
T290 ELN D08-01-C08-05	8.00	1	60.00	20.0	5.00	8.00	C	1	0.02	SR 10503833	T-7/51
T290 ELN D10-02-C10-05	10.00	2	80.00	20.0	5.00	10.00	C	1	0.04	SR 10503833-S	T-7/51
T290 ELN D12-02-C12-05	12.00	2	80.00	20.0	5.00	12.00	C	1	0.06	SR 10503833	T-7/51
T290 ELN D12-03-C12-05	12.00	3	80.00	20.0	5.00	12.00	C	1	0.05	SR 10503833	T-7/51

- For user guide, see pages 1040-1042

(1) Number of inserts (or edges for solid tool)

(2) C-Cylindrical

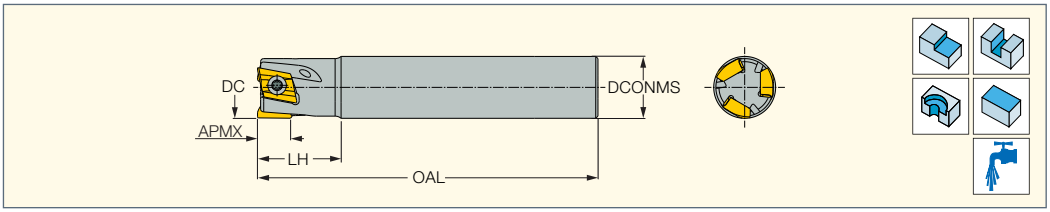
(3) 0 - Without coolant supply, 1 - With coolant supply

For inserts, see pages: T290 LNMT/LNHT 0502 (1027)

SUMOMILL 290 LINE

T290 ELN-05

Endmills Carrying Tangentially Clamped Inserts



I N C H

Designation	DC	CICT(1)	OAL	LH	APMX	DCONMS	Shank(2)	CSP(3)	Lbs		
T290 ELN D.38-02-C.38-05	.375	2	3.000	.790	.197	.375	C	1	.07	SR 10503833-S	T-7/51
T290 ELN D.50-03-C.50-05	.500	3	3.250	.790	.197	.500	C	1	.15	SR 10503833	T-7/51

- For user guide, see pages 1040-1042

(1) Number of inserts (or edges for solid tool)

(2) C-Cylindrical

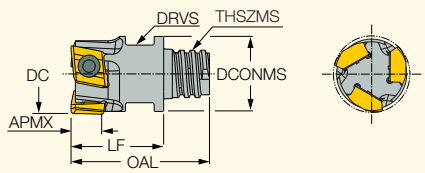
(3) 0 - Without coolant supply, 1 - With coolant supply

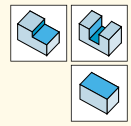
For inserts, see pages: T290 LNMT/LNHT 0502 (1027)

SUMOMILL 290 LINE

T290 ELN-MM-05

Endmills with a MULTI-MASTER Adaptation Carrying Tangentially Clamped Inserts





M E T R I C

Designation	DC	CICT(1)	APMX	DCONMS	THSZMS	LF	OAL	DRVS(2)	CSP(3)	kg		
T290 ELN D10-02-MMT06-05	10.00	2	5.00	9.20	T06	13.40	20.00	8.0	0	0.01	SR 10503833-S	T-7/51
T290 ELN D12-03-MMT08-05	12.00	3	5.00	11.00	T08	16.00	24.00	10.0	0	0.01	SR 10503833	T-7/51

• Do not apply lubricant to the MULTI-MASTER threaded connection • For adaptation see pages 1047-1048 • For user guide see pages 1040-1042

(1) Number of inserts (or edges for solid tool)

(2) Torque key size

(3) 0 - Without coolant supply, 1 - With coolant supply

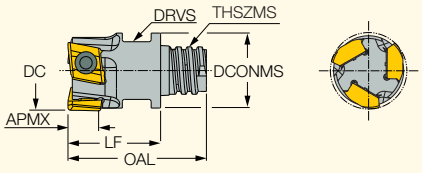
For inserts, see pages: T290 LNMT/LNHT 0502 (1027)

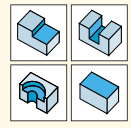
For holders, see pages: MM CAB-T-T (1123) • MM CAB-T-T-W (1124) • MM GRT (shanks) (1117) • MM S-A (stepped shanks) (1112) • MM S-A (straight shanks) (1118) • MM S-A-C# (1114) • MM S-A-N (1114) • MM S-B (85° conical shanks) (1119) • MM S-D (89° conical shanks) (1120) • MM S-ER (1121) • MM S-ER-H (1122) • MM TS-A (1115) • MM TS2-A (1116)

SUMOMILL 290 LINE

T290 ELN-MM-05

Endmills with a MULTI-MASTER Adaptation Carrying Tangentially Clamped Inserts





I N C H

Designation	DC	CICT(1)	APMX	DCONMS	THSZMS	LF	OAL	DRVS(2)	CSP(3)	Lbs		
T290 ELN D.50-03-MMT08-05	.500	3	.197	.450	T08	.630	.940	.394	0	.03	SR 10503833	T-7/51

• Do not apply lubricant to the MULTI-MASTER threaded connection • For adaptation options, see pages 1047-1048 • For user guide, see pages 1040-1042

(1) Number of inserts (or edges for solid tool)

(2) Torque key size

(3) 0 - Without coolant supply, 1 - With coolant supply

For inserts, see pages: T290 LNMT/LNHT 0502 (1027)

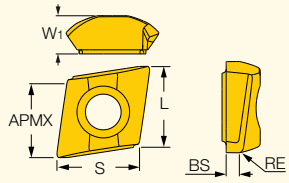
For holders, see pages: MM S-A (stepped shanks) (1112) • MM S-A (straight shanks) (1118) • MM S-A-C# (1114) • MM S-B (85° conical shanks) (1119) • MM S-D (89° conical shanks) (1120) • MM S-ER (1121) • MM S-ER-H (1122) • MM TS-A (1115) • MM TS2-A (1116)

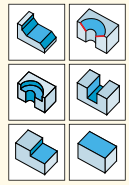
SUMOMILL 290 LINE

T290 LNMT/LNHT 0502

Tangential Inserts with
2 Cutting Edges







M E T R I C

Designation	Dimensions W1	L	APMX	S	BS	RE	Tough ↔ Hard IC330	IC830	IC808	IC810	IC5400	Recommended Machining Data a_p (mm)	f_z (mm/t)
T290 LNHT 050202TR	2.70	5.75	5.00	5.85	1.20	0.20		●	●			2.00-5.00	0.03-0.07
T290 LNHT 050204TR	2.70	5.75	5.00	5.85	1.00	0.40		●				2.00-5.00	0.03-0.07
T290 LNHT 050208TR	2.70	5.75	5.00	5.85	1.00	0.80		●				2.00-5.00	0.03-0.07
T290 LNHT 050210TR	2.70	5.75	5.00	5.85	1.00	1.00		●				2.00-5.00	0.03-0.07
T290 LNMT 050204TR	2.70	5.75	5.00	5.85	1.00	0.40	●	●	●	●	●	2.00-5.00	0.04-0.08

• LNMT-utility inserts. LNHT-precision inserts • For cutting speed recommendations, see pages 1036-1039

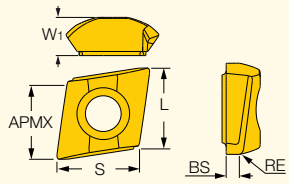
For tools, see pages: T290 ELN-05 (1025) • T290 ELN-MM-05 (1022)

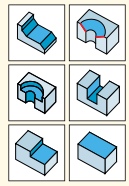
SUMOMILL 290 LINE

T290 LNMT/LNHT 0502

Tangential Inserts with
2 Cutting Edges







I N C H

Designation	Dimensions W1	L	APMX	S	BS	RE	Tough ↔ Hard IC330	IC830	IC808	IC810	IC5400	Recommended Machining Data a_p (inch)	f_z (inch/t)
T290 LNHT 050202TR	.106	.226	.197	.230	.047	.0079		●	●			.079-.197	.0012-.0027
T290 LNHT 050204TR	.106	.226	.197	.230	.039	.0157		●				.079-.197	.0012-.0027
T290 LNHT 050208TR	.106	.226	.197	.230	.039	.0315		●				.079-.197	.0012-.0027
T290 LNHT 050210TR	.106	.226	.197	.230	.039	.0394		●				.079-.197	.0012-.0027
T290 LNMT 050204TR	.106	.226	.197	.230	.039	.0157	●	●	●	●	●	.079-.197	.0016-.0031

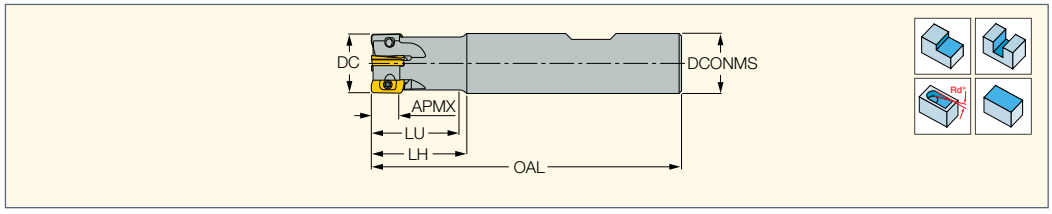
• LNMT-utility inserts. LNHT-precision inserts • For cutting speed recommendations, see pages 1036-1039

For tools, see pages: T290 ELN-05 (1025) • T290 ELN-MM-05 (1026)

HELIPLUS

HP E90AN-07

Endmills with HELI-PLUS
HP ANKT 0702.. Inserts



M E T R I C

Designation	DC	CICT(2)	LH	LU	OAL	APMX	DCONMS	Shank(3)	RMPX°(4)	RMPX°_2(5)	RPMX(6)	CSP(7)	kg		
HP E90AN-D10-1-C10-07-C	10.00	1	20.0	18.0	80.00	7.70	10.00	C	2.5	-	66390	1	0.04	SR 34-533	T-6/51
HP E90AN-D12-2-C12-07-C	12.00	2	18.0	16.2	80.00	7.70	12.00	C	2.7	3.5	56970	1	0.06	SR 34-533/L/HG	T-6/51

• Insert tightening torque: 0.6 Nxm. • For user guide see pages 1040-1042

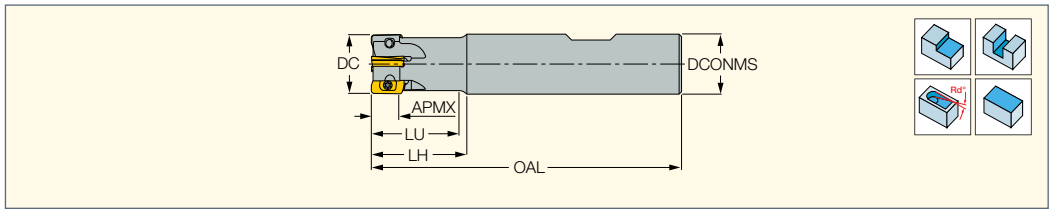
(1) "B" suffix - cylindrical shank which may be shortened.
(2) Number of inserts (or edges for solid tool)
(3) C-Cylindrical
(4) Maximum ramping angle
(5) Values only for HP ANKT 0702R12T-FF insert
(6) Maximum RPM
(7) 0 - Without coolant supply, 1 - With coolant supply

For inserts, see pages: HP ANCR 0702PNFR (1029) • HP ANKT 0702-FF (1030) • HP ANKT/ANCT 0702 PN-R/PNTR (1031) • HP ANKW 070204PNTR (1032)

HELIPLUS

HP E90AN-07

Endmills with HELI-PLUS
HP ANKT 0702.. Inserts



I N C H

Designation	DC	CICT(1)	APMX	LH	LDRED	OAL	RMPX°(2)	RMPX°_2(3)	RPMX(4)	DCONMS	CSP(5)	Shank(6)	Lbs		
HP E90AN-D.38-1-C.38-7C	.375	1	.303	.640	.57	3.000	2.5	-	69730	.375	1	C	.07	SR 34-533/L/HG	T-6/51
HP E90AN-D.38-1-W.38-7	.375	1	.303	.640	.57	3.000	2.5	-	69730	.375	0	W	.08	SR 34-533/L/HG	T-6/51
HP E90AN-D.50-2-C.50-7C	.500	2	.303	.750	.67	3.270	2.7	3.5	54310	.500	1	C	.15	SR 34-533/L/HG	T-6/51
HP E90AN-D.50-2-W.50-7	.500	2	.303	.750	.67	3.250	2.7	3.5	54310	.500	0	W	.16	SR 34-533/L/HG	T-6/51

• Insert tightening torque: 5.5 lbfxin. • For user guide see pages 1040-1042

(1) Number of inserts (or edges for solid tool)
(2) Maximum ramping angle
(3) Values only for HP ANKT 0702R12T-FF insert
(4) Maximum RPM
(5) 0 - Without coolant supply, 1 - With coolant supply
(6) C-Cylindrical

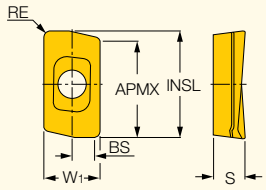
For inserts, see pages: HP ANCR 0702PNFR (1029) • HP ANKT 0702-FF (1030) • HP ANKT/ANCT 0702 PN-R/PNTR (1031) • HP ANKW 070204PNTR (1032)

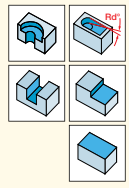
HELIPLUS

HP ANCR 0702PNFR

Peripherally Ground Inserts with a Super Positive Chipformer for Machining Aluminum, Titanium and Magnesium







M E T R I C

Designation	Dimensions INSL	APMX	S	RE	BS	W1	Tough ↔ Hard IC28	IC328	IC928	IC908	Recommended Machining Data a_p (mm)	f_z (mm/t)
HP ANCR 070204PNFR	8.70	7.70	2.60	0.40	1.20	4.50		●	●	●	0.80-7.70	0.07-0.20
HP ANCR 070204PNFR-P (1)	8.70	7.70	2.60	0.40	1.20	4.50	●				0.80-7.70	0.07-0.20

• For cutting speed recommendations, see pages 1036-1039

(1) Polished rake

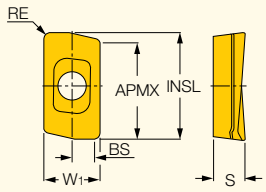
For tools, see pages: HP E90AN-07 (1028)

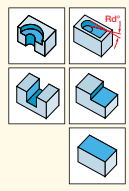
HELIPLUS

HP ANCR 0702PNFR

Peripherally Ground Inserts with a Super Positive Chipformer for Machining Aluminum, Titanium and Magnesium







I N C H

Designation	Dimensions INSL	APMX	S	RE	BS	W1	Tough ↔ Hard IC28	IC328	IC928	IC908	Recommended Machining Data a_p (inch)	f_z (inch/t)
HP ANCR 070204PNFR	.343	.303	.102	.0157	.047	.177		●	●	●	.031-.303	.0027-.0079
HP ANCR 070204PNFR-P (1)	.343	.303	.102	.0157	.047	.177	●				.031-.303	.0027-.0079

• For cutting speed recommendations, see pages 1036-1039

(1) Polished rake

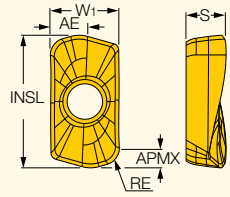
For tools, see pages: HP E90AN-07 (1028)

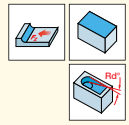
HELIPLUS

HP ANKT 0702-FF

Inserts for Fast Feed Milling







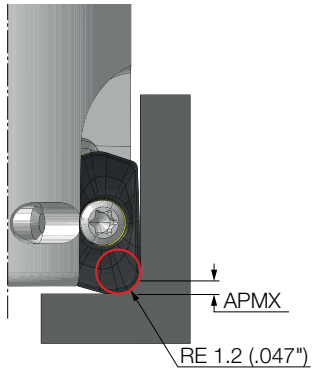
M E T R I C

Designation	Dimensions W1	RE	S	INSL	APMX	AE	Tough ↔ Hard IC830	IC808	IC5600	Recommended Machining Data f_z (mm/t)
HP ANKT 0702R12T-FF	4.40	1.20	2.60	8.55	0.70	1.9	●	●		0.30-1.00
HP ANKT 0702R12GT-FF (1)	4.40	1.20	2.60	8.55	0.70	1.9		●	●	0.30-1.00

• Can be used on 12 mm and larger tools • For cutting speed recommendations, see pages 1036-1039

(1) Reinforced cutting-edge geometry for Fast Feed (FF) hardened materials up to 60 HRC

For tools, see pages: HP E90AN-07 (1028)

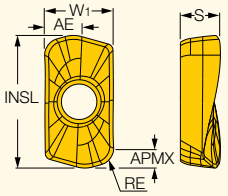


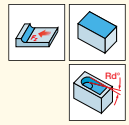
HELIPLUS

HP ANKT 0702-FF

Inserts for Fast Feed Milling







I N C H

Designation	Dimensions W1	RE	S	INSL	APMX	AE	Tough ↔ Hard IC830	IC808	IC5600	Recommended Machining Data f_z (inch/t)
HP ANKT 0702R12T-FF	.173	.0472	.102	.337	.028	.075	●	●		.0118-.0394
HP ANKT 0702R12GT-FF (1)	.173	.0472	.102	.337	.028	.075		●	●	.0118-.0394

• Can be used on .500" and larger tools • For cutting speed recommendations,see pages 1036-1039

(1) Reinforced cutting-edge geometry for Fast Feed (FF) hardened materials up to 60 HRC

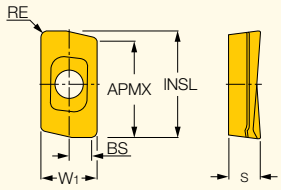
For tools, see pages: HP E90AN-07 (1028)

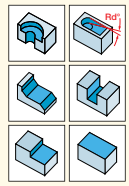
HELIPLUS

HP ANKT/ANCT 0702 PN-R/PNTR

Inserts with a 7 mm Helical Edge and Various Corner Radii for General Use





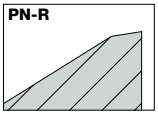


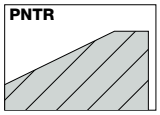
M E T R I C

Designation	Dimensions W1	APMX	BS	RE	INSL	S	Tough ↔ Hard IC328	IC830	IC928	IC950	IC808	IC908	IC30N	IC810	IC910	IC5400	DT7150	IC5100	Recommended Machining Data a_p (mm)	f_z (mm/t)
HP ANCT 070202 PN-R	4.50	7.70	1.50	0.20	8.70	2.60									●				0.60-7.70	0.05-0.10
HP ANCT 070204PN-R	4.50	7.70	1.40	0.40	8.70	2.60	●		●		●				●				0.80-7.70	0.05-0.10
HP ANKT 0702 PN-R	4.50	7.70	1.30	0.50	8.70	2.60	●	●	●		●	●		●	●	●			0.90-7.70	0.06-0.10
HP ANKT 070202PNTR	4.50	7.70	1.60	0.20	8.70	2.60	●		●										0.70-7.70	0.08-0.15
HP ANKT 0702PNTR	4.50	7.70	1.30	0.50	8.70	2.60	●	●	●	●		●	●		●		●	●	0.90-7.70	0.08-0.12
HP ANKT 070208PNTR	4.50	7.70	1.00	0.80	8.70	2.60		●	●		●	●							1.20-7.70	0.08-0.15
HP ANKT 070212PNTR	4.50	7.70	0.70	1.20	8.70	2.60			●			●							1.60-7.70	0.08-0.15
HP ANKT 070216PNTR	4.50	7.70	0.20	1.60	8.70	2.60			●			●							2.00-7.70	0.08-0.15

• For cutting speed recommendations, see pages 1036-1039

For tools, see pages: HP E90AN-07 (1028)



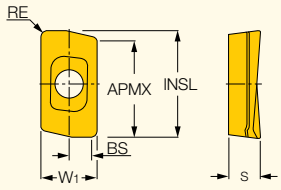


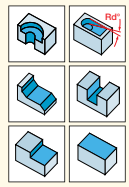
HELIPLUS

HP ANKT/ANCT 0702 PN-R/PNTR

Inserts with a .276" Helical Edge and Various Corner Radii for General Use







I N C H

Designation	Dimensions W1	APMX	BS	RE	INSL	S	Tough ↔ Hard IC328	IC830	IC928	IC950	IC808	IC908	IC30N	IC810	IC910	IC5400	DT7150	IC5100	Recommended Machining Data a_p (inch)	f_z (inch/t)
HP ANCT 070202 PN-R	.177	.303	.059	.0079	.343	.102									●				.024-.303	.0020-.0039
HP ANCT 070204PN-R	.177	.303	.055	.0157	.343	.102	●		●		●				●				.031-.303	.0020-.0039
HP ANKT 0702 PN-R	.177	.303	.051	.0197	.343	.102	●	●	●		●	●		●	●	●			.035-.303	.0024-.0039
HP ANKT 070202PNTR	.177	.303	.063	.0079	.343	.102	●		●										.028-.303	.0031-.0059
HP ANKT 0702PNTR	.177	.303	.051	.0197	.343	.102	●	●	●	●		●	●		●		●	●	.035-.303	.0031-.0047
HP ANKT 070208PNTR	.177	.303	.039	.0315	.343	.102		●	●		●	●							.047-.303	.0031-.0059
HP ANKT 070212PNTR	.177	.303	.028	.0472	.343	.102			●			●							.063-.303	.0031-.0059
HP ANKT 070216PNTR	.177	.303	.008	.0630	.343	.102			●			●							.079-.303	.0031-.0059

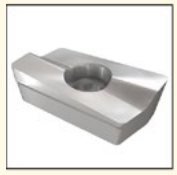
• For cutting speed recommendations, see pages 1036-1039

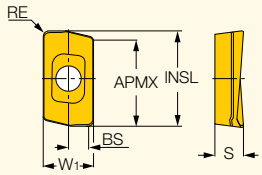
For tools, see pages: HP E90AN-07 (1028)

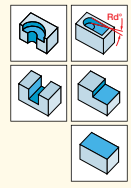
HELIPLUS

HP ANKW 070204PNTR

Insert with a 7 mm Helical Edge and Flat Rake for Rough Machining and Hardened Steel







M E T R I C

Designation	Dimensions INSL	APMX	S	RE	BS	W1	Tough ↔ Hard IC928	IC910	Recommended Machining Data a_p (mm)	f_z (mm/t)
HP ANKW 070204PNTR	8.70	7.70	2.60	0.40	1.20	4.50	●	●	0.80-7.70	0.08-0.15

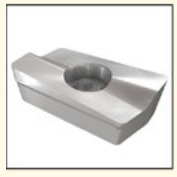
- Reinforced flat rake for machining cast iron. For cutting speed recommendations, see pages 1036-1039

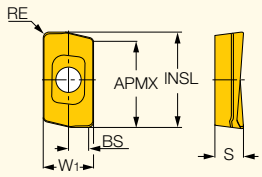
For tools, see pages: HP E90AN-07 (1028)

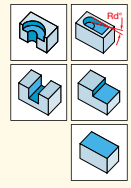
HELIPLUS

HP ANKW 070204PNTR

Insert with a .276" Helical Edge and Flat Rake for Rough Machining and Hardened Steel







I N C H

Designation	Dimensions INSL	APMX	S	RE	BS	W1	Tough ↔ Hard IC928	IC910	Recommended Machining Data a_p (inch)	f_z (inch/t)
HP ANKW 070204PNTR	.343	.303	.102	.0157	.047	.177	●	●	.031-.303	.0031-.0059

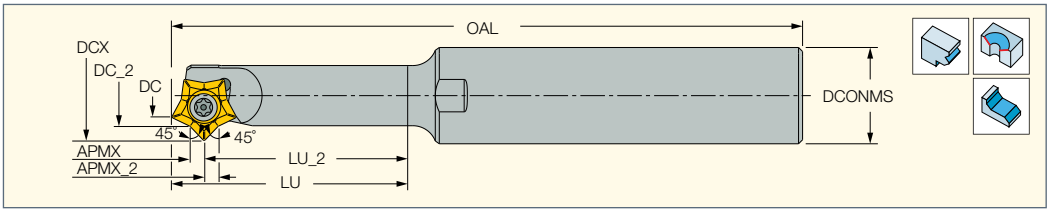
- Reinforced flat rake for machining cast iron. For cutting speed recommendations, see pages 1036-1039

For tools, see pages: HP E90AN-07 (1028)

CHAMFMILL
CHAMFERING LINE

CH45-PN06

Upper and Bottom
Chamfering Endmills Carrying
Pentagonal Inserts



M E T R I C

Designation	DCX(1)	DC_2	DC	APMX	APMX_2	DCONMS	CICT(2)	LU	LU_2	OAL	DMIN(3)	CSP(4)	kg
CH45-10-30-1-C12-PN06	11.70	8.45	6.60	1.50	1.50	12.00	1	29.40	25.40	100.00	10.00	0	0.00

(1) Cutting diameter maximum
(2) Number of inserts (or edges for solid tool)
(3) Minimum penetration diameter for back chamfering
(4) 0 - Without coolant supply, 1 - With coolant supply

For inserts, see pages: PNMT 0602-TN (1035)

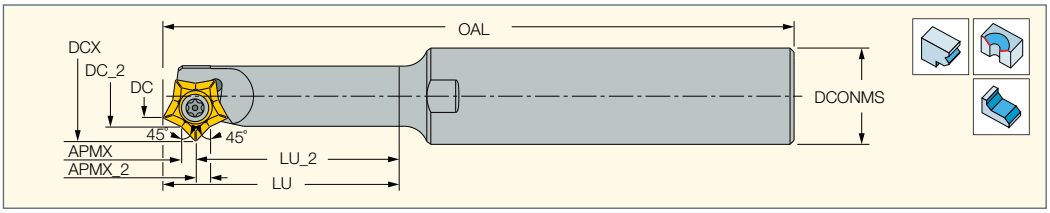
Spare Parts

Designation		
CH45-PN06	SR M2.5X5-T7-60	T-7/51

CHAMFMILL
CHAMFERING LINE

CH45-PN06

Upper and Bottom
Chamfering Endmills Carrying
Pentagonal Inserts



I N C H

Designation	DCX(1)	DC_2	DC	APMX	APMX_2	DCONMS	CICT(2)	LU	LU_2	OAL	DMIN(3)	CSP(4)	Lbs
CH45-.39-1.2-1-C.50-PN06	.458	.330	.260	.0590	.0590	.500	1	1.1570	1.0000	4.000	.390	0	.17

(1) Cutting diameter maximum
(2) Number of inserts (or edges for solid tool)
(3) Minimum penetration diameter for back chamfering
(4) 0 - Without coolant supply, 1 - With coolant supply

For inserts, see pages: PNMT 0602-TN (1035)

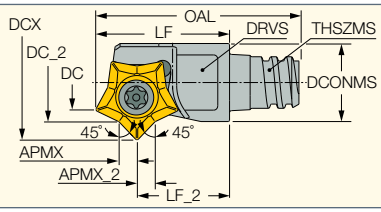
Spare Parts

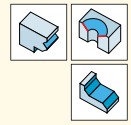
Designation		
CH45-PN06	SR M2.5X5-T7-60	T-7/51

CHAMFMILL
CHAMFERING LINE

CH45-MM-PN06

Upper and Bottom Chamfering Endmills with a MULTI-MASTER Threaded Adaptation





M E T R I C

Designation	DCX[1]	DC_2	DC	APMX	APMX_2	LF	LF_2	OAL	DCONMS	THSZMS	CICT[2]	DRVS[3]	DMIN[4]	CSP[5]	kg
CH45-10/.39-1-MMT05-PN06	11.70	8.45	6.60	1.50	1.50	13.00	9.00	19.75	7.60	T05	1	5.5	10.00	0	0.00

• Do not apply lubricant to the MULTI-MASTER threaded connection • For adaptation options, see pages 1047-1048 • For user guide, see pages 1040-1042

(1) Cutting diameter maximum
(2) Number of inserts (or edges for solid tool)
(3) Torque key size
(4) Minimum penetration diameter for back chamfering
(5) 0 - Without coolant supply, 1 - With coolant supply

For inserts, see pages: PNMT 0602-TN (1035)
For holders, see pages: MM CAB-T-T (1123) • MM CAB-T-T-W (1124) • MM GRT (shanks) (1117) • MM S-A (stepped shanks) (1112) • MM S-A (straight shanks) (1118) • MM S-A-C# (1114) • MM S-A-N (1114) • MM S-B (85° conical shanks) (1119) • MM S-D (89° conical shanks) (1120) • MM S-ER (1121) • MM S-ER-H (1122) • MM TS-A (1115) • MM TS2-A (1116)

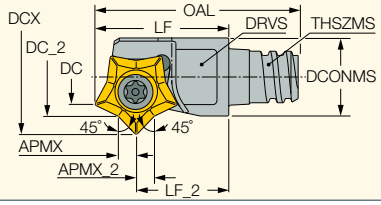
Spare Parts

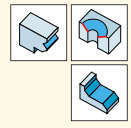
Designation		
CH45-MM-PN06	SR M2.5X5-T7-60	T-7/51

CHAMFMILL
CHAMFERING LINE

CH45-MM-PN06

Upper and Bottom Chamfering Endmills with a MULTI-MASTER Threaded Adaptation





I N C H

Designation	DCX[1]	DC_2	DC	APMX	APMX_2	LF	LF_2	OAL	DCONMS	THSZMS	CICT[2]	DRVS[3]	DMIN[4]	CSP[5]	lbs
CH45-10/.39-1-MMT05-PN06	.461	.333	.260	.0590	.0590	.512	.354	.778	.299	T05	1	.217	.394	0	.01

• Do not apply lubricant to the MULTI-MASTER threaded connection • For adaptation options, see pages 1047-1048 • For user guide, see pages 1040-1042

(1) Cutting diameter maximum
(2) Number of inserts (or edges for solid tool)
(3) Torque key size
(4) Minimum penetration diameter for back chamfering
(5) 0 - Without coolant supply, 1 - With coolant supply

For inserts, see pages: PNMT 0602-TN (1035)
For holders, see pages: MM CAB-T-T (1123) • MM CAB-T-T-W (1124) • MM GRT (shanks) (1117) • MM S-A (stepped shanks) (1112) • MM S-A (straight shanks) (1118) • MM S-A-C# (1114) • MM S-A-N (1114) • MM S-B (85° conical shanks) (1119) • MM S-D (89° conical shanks) (1120) • MM S-ER (1121) • MM S-ER-H (1122) • MM TS-A (1115) • MM TS2-A (1116)

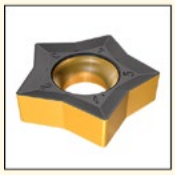
Spare Parts

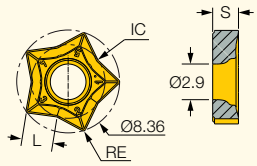
Designation		
CH45-MM-PN06	SR M2.5X5-T7-60	T-7/51

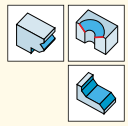
CHAMFMILL
CHAMFERING LINE

PNMT 0602-TN

Pentagonal Inserts for Upper and Bottom Chamfering







M E T R I C

Designation	Dimensions L	RE	IC	S	IC830	Recommended Machining Data f_z (mm/t)
PNMT 0602-TN	2.30	0.20	6.00	2.10	●	0.07-0.12

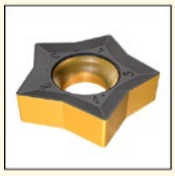
- For cutting speed recommendations, see pages 1036-1039

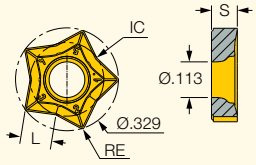
For tools, see pages: CH45-MM-PN06 (1034) • CH45-PN06 (1033)

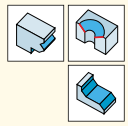
CHAMFMILL
CHAMFERING LINE

PNMT 0602-TN

Pentagonal Inserts for Upper and Bottom Chamfering







I N C H

Designation	Dimensions L	RE	IC	S	IC830	Recommended Machining Data f_z (inch/t)
PNMT 0602-TN	.091	.0079	.236	.083	●	.0027-.0047

- For cutting speed recommendations, see pages 1036-1039

For tools, see pages: CH45-MM-PN06 (1034) • CH45-PN06 (1033)

Cutting Speed Recommendations for Indexable Milling Cutters (Metric)

ISO	Material		Condition	Tensile Strength [N/mm²]	Hardness HB	Material Group No. (1)	CUTTING SPEED V_c (m/min) COATED							
							IC330/ 328	IC380	IC808/ 908	IC810/ 910	IC830/ 928	IC840	IC845	IC882
P	non-alloy steel and cast steel, free cutting steel	< 0.25 %C	annealed	420	125	1	140-200		210-300	190-260	150-240		130-220	
		>= 0.25 %C	annealed	650	190	2	130-190		200-280	170-240	140-230		120-200	
		< 0.55 %C	quenched and tempered	850	250	3	130-190		200-260	160-230	140-230		120-190	
		>= 0.55 %C	annealed	750	220	4	120-180		180-250	140-220	130-220		120-180	
			quenched and tempered	1000	300	5	120-170		180-240	140-210	130-200		110-180	
	low alloy and cast steel (less than 5% of alloying elements)		annealed	600	200	6	120-160		170-240	130-210	120-190		100-170	
			quenched and tempered	930	275	7	110-150		160-230	120-200	120-170		100-160	
				1000	300	8	100-140		150-230	110-200	110-170		100-150	
				1200	350	9	90-150		140-220	100-190	100-160		90-150	
	high alloyed steel, cast steel and tool steel		annealed	680	200	10	80-130		120-210	90-180	90-150		80-140	
			quenched and tempered	1100	325	11	80-120		110-170	80-160	90-140		80-130	
	stainless steel and cast steel		ferritic/ martensitic	680	200	12	100-140		150-230		110-160		110-160	
			martensitic	820	240	13	90-130		140-220		100-150		100-150	
M	stainless steel and cast steel		austenitic, duplex	600	180	14	80-120		100-160		100-150	90-160		70-140
N	aluminum wrought alloys		not cureable		60	21								
			cured		100	22								
	aluminum cast alloys	<=12% Si	not cureable		75	23								
			cured		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 temp. alloys	Fe based	annealed		200	31	35-50	45-55	50-60		35-55	40-55		35-50
			cured		280	32	30-40	35-45	40-50		30-45	30-45		30-40
		Ni or Co based	annealed		250	33	25-35	30-45	35-50		30-45	30-40		25-35
			cured		350	34	20-25	25-35	25-35		25-35	25-30		20-25
			cast		320	35	25-30	30-35	30-40		30-35	30-35		25-30
	titanium alloys		pure	Rm = 400		36	45-80	55-100	65-110		50-90	50-90		45-80
			alpha+beta alloys cured	Rm = 1050		37	30-65	35-65	35-70		30-65	30-60		30-65

Rm - ultimate tensile strength, MPa

(1) For ISCAR material group numbers and workpiece material list, see pages 820-910

CUTTING SPEED V_c (m/min)								
COATED						CERMET	UNCOATED	
IC950	IC5100 a-TEC	IC5400	IC5500	IC5820	DT7150 DO-TEC	IC30N	IC08	IC28
180-230		230-320	180-280			250-350		
160-190		210-300	160-260			200-300		
130-160		200-280	150-240			150-250		
120-140		200-260	130-240			135-200		
100-130		180-260	130-220			120-180		
160-210		170-250	130-210			180-240		
120-180		160-240	110-210			135-210		
100-160		150-240	110-200			120-200		
90-140		150-230	100-200			110-220		
80-100		120-220	100-190			110-160		
70-160		110-180	90-160			80-100		
		150-240	150-280			120-200		
		140-230	140-270			100-160		
				100-160				
							800-900	480-640
							700-800	400-560
							800-900	480-640
							750-850	400-560
							400-450	240-320
							500-550	240-320
							500-550	240-320
							350-380	160-240
				45-55				
				35-45				
				35-45				
				25-35				
				30-35				
				55-95				
				30-65				

Cutting Speed Recommendations for Indexable Milling Cutters (Imperial)

ISO	Material		Condition	Tensile Strength [ksi]	Hardness HB	Material Group No. (1)	Cutting Speed (SFM) COATED GRADES IC330 / 328	IC380	IC808 / 908	IC810 / 910	IC830 / 928	IC840
P	non-alloy steel and cast steel, free cutting steel	<0.25% C	annealed	61	125	1	460 - 590	590 - 785	690 - 885	590 - 755	590 - 755	
		≥0.25% C	annealed	94	190	2	410 - 490	490 - 655	605 - 740	525 - 625	525 - 625	
		<0.55% C	quenched and tempered	123	250	3	330 - 395	395 - 525	490 - 590	425 - 525	425 - 525	
		≥0.55% C	annealed	109	220	4	295 - 360	360 - 490	445 - 540	395 - 460	425 - 525	
			quenched and tempered	145	300	5	260 - 330	330 - 445	395 - 490	330 - 820	330 - 425	
	low alloy and cast steel (less than 5% of alloying elements)		annealed	87	200	6	395 - 525	525 - 720	590 - 785	525 - 720	525 - 690	
			quenched and tempered	135	275	7	295 - 460	460 - 625	445 - 690	395 - 590	395 - 590	
				145	300	8	260 - 395	395 - 525	395 - 590	330 - 525	330 - 525	
				174	350	9	230 - 360	360 - 490	345 - 540	295 - 460	295 - 460	
	high alloyed steel, cast steel and tool steel		annealed	99	200	10	195 - 260	260 - 360	295 - 395	260 - 330	260 - 330	
			quenched and tempered	160	325	11	180 - 395	395 - 525	260 - 590	230 - 525	230 - 525	
	stainless steel and cast steel		ferritic/ martensitic	99	200	12	330 - 590	395 - 655	395 - 655		395 - 720	
			martensitic	119	240	13	330 - 460	360 - 625	360 - 625		395 - 560	
M	stainless steel and cast steel		austenitic, duplex	87	180	14	260 - 395	345 - 510	330 - 525		330 - 490	295-525
N	aluminum-wrought alloys		not hardenable		60	21			3870 - 4005			
			hardenable		100	22			3510 - 3970			
	aluminum-cast alloys	≤12% Si	not hardenable		75	23			3870 - 4005			
			hardenable		90	24			3510 - 3970			
		>12% Si	high temperature		130	25			1540 - 1610			
	copper alloys	>1% Pb	free cutting		110	26			1905 - 2035			
			brass		90	27			1905 - 2035			
			electrolytic copper		100	28			1310 - 1445			
	non metallic		duroplastics, fiber plastics			29						
			hard rubber			30						
S	high temperature alloys	Fe based	annealed		200	31	100 - 130	150-180	115 - 165		100 - 165	130-180
			hardened		280	32	80 - 115	115-150	100 - 150		100 - 130	100-150
		Ni or Co based	annealed		250	33	65 - 100	100-150	80 - 115		65 - 100	100-130
			hardened		350	34	65 - 80	80-115	80 - 100		65 - 100	80-100
			cast		320	35	130 - 195	100-115	165 - 245		165 - 230	100-115
	titanium alloys		pure	58	190	36	100 - 195	180-330	115 - 245		100 - 230	165-295
			alpha+beta alloys, hardened	152	310	37	100 - 195	115-215	115 - 245		100 - 230	100-195

(1) For ISCAR material group numbers and workpiece material list, see pages 806-837

Material No.	Cutting Speed (SFM)									
	COATED GRADES								UNCOATED GRADES	
	IC845	IC882	IC950	IC5100 a-TEC	IC5400	IC5500	IC5820	DT7150 DO-TEC	IC08	IC28
1	425-720		590 - 755		560 - 920	590-920			590-655	260 - 360
2	395-655		525 - 625		395 - 655	525-855			460-525	230 - 295
3	395-625		425 - 525		330 - 525	490-785			360-490	195 - 230
4	395-590		395 - 460		260 - 395	425-785			360-490	165 - 230
5	360-590		330 - 425		460 - 1050	425-720			330-425	165 - 195
6	330-560		525 - 690		395 - 785	425-690			360-490	230 - 330
7	330-525		395 - 590		330 - 655	360-690			260-425	165 - 260
8	330-490		330 - 525		260 - 525	360-655			295-425	165 - 230
9	295-490		295 - 460		230 - 460	330-655			330-425	130 - 230
10	260-460		260 - 330		195 - 395	330-625			295-425	130 - 165
11	260-425		230 - 525		195 - 330	295-525			165-260	100 - 230
12	360-525					490-920			195 - 360	195 - 360
13	330-490					460-885			130 - 330	195 - 260
14		230-460					330-525		130 - 260	165 - 230
21									2625 - 2955	1575 - 2100
22									2295 - 2625	1310 - 1835
23									2625 - 2955	165 - 2100
24									2460 - 2790	1310 - 1835
25									1310 - 1475	785 - 1050
26									1640 - 1805	785 - 1050
27									1640 - 1805	785 - 1050
28									1150 - 1245	525 - 785
29										
30										
31		115-165					150-180		35 - 65	65 - 100
32		100-130					115-150		35 - 65	65 - 65
33		80-115					115-150		65 - 165	35 - 65
34		65-80					80-115		65 - 165	35 - 65
35		80-100					100-115		65 - 165	100 - 130
36		150-260					180-310		65 - 100	65 - 130
37		100-215					100-215		65 - 100	65 - 130

Grades for Applications and Materials

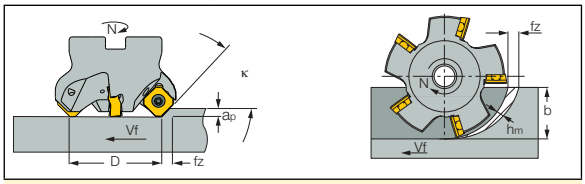
Material Groups		ISO P		ISO M	ISO N	ISO S
		1 - 11	12 - 13	14	21 - 28	31 - 37
		Steel	Stainless Steel Ferritic & Martensitic	Stainless Steel Austenitic & Duplex (Ferritic-Austenitic)	Nonferrous	High Temp. Alloys
MILLING Indexable	Harder	IC5400	IC808 (908)	IC808 (908)	ID5	IC808 (908)
		IC30N				**IC840**
		IC808 (908)	IC5500	**IC840**		IC380
		IC810 (910)*		IC830 (928)	IC04	IC5820**
		IC830 (928)	**IC830 (928)**	**IC330 (328)**	IC08	**IC882**
		IC845	IC330 (328)	IC882	**IC28**	IC330 (328)
Coolant	Tougher	N	N	Y	Y	Y

First choice

* for steel castings

** for milling with high pressure coolant (HPC) supply

Milling Calculations (Metric)



Calculations	
Cutting 4	$Vc = \frac{\pi \cdot D \cdot N}{1000\ min}\left[m/min\right]$
Spindle speed	$N = \frac{Vc \cdot 1000}{\pi \cdot D}\left[rev/min\right]$
Feed speed	$Vf = fz \cdot Z \cdot N[mm/min]$
Feed per tooth	$f_z = \frac{V_n}{N \cdot Z}\left[mm/tooth\right]$
Feed per revolution	$f_N = f_z \cdot Z[mm/rev]$
Metal removal rate	$Q = \frac{a_p \cdot b \cdot V_f}{1000}\left[cm^3/min\right]$
Machining time	$T_h = \frac{L^w}{V^f}\left[min\right]$
Specific cutting force	$K_c = K_{c1} \cdot h_m - m_c[N/mm^2]$
Average chip thickness in shoulder milling for b/D≤0.1	$h_m \approx f_z \cdot \sqrt{\frac{b}{D}}\left[mm\right]$
Average chip thickness in shoulder milling for b/D>0.1	$h_m = \frac{\sin k \cdot 180 \cdot b \cdot f_z}{\pi \cdot D \cdot \arcsin\left(\frac{b}{D}\right)}\left[mm\right]$
Machining power	$P = \frac{a_p \cdot b \cdot V_f \cdot k_c}{6 \cdot 107 \cdot h}\left[kW\right]$

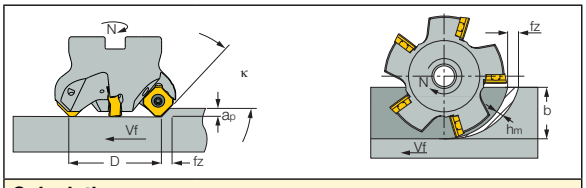
V_c	[m/min]	Cutting speed
D	[mm]	Tool diameter
N	[rev/min]	Spindle speed
V_f	[mm/min]	Feed speed
f_z	[mm/tooth]	Feed per tooth
Z		Number of teeth
fN	[mm/rev]	Feed per revolution
Q	[cm^3/ min]	Metal removal rate
a_p	[mm]	Depth of cut
b	[mm]	Width of cut
Th	[min]	Machining time
Lw	[mm]	Machining length
K_c	[N/mm^2]	Specific cutting force
Kc1	[N/mm^2]	Specific cutting force for 1 mm^2 chip section
hm	[mm]	Average chip thickness
mc		Chip thickness factor
k	[degrees]	Cutting edge angle
P	[kW]	Machining power
h		Machine efficiency
P	=	Pc + Pm
P	-	Total Machining Power
Pc	-	Net Power=Cutting Power
Pm	-	Motor Power (while not cutting)

Values for Motor Power Pm

Max. Machine Power [kW]	Motor Power Pm [kW]
5.5	0.4
7.5	0.4-0.6
11.0	1.0
15.0	1.5
18.0	2.2
22.0	2.5

Motor Power Pm has a value of approximately 7 to 12% of Maximum Machine Power

Milling Calculations (Imperial)



Calculations	
Cutting speed	$Vc = \frac{\pi \cdot D \cdot N}{12} \left[SFM\right]$
Spindle speed	$N = \frac{Vc \cdot 12}{\pi \cdot D} \left[RPM\right]$
Table speed	$Vf = fz \cdot Z \cdot N \left[IPM\right]$
Feed per tooth	$f_z = \frac{V_f}{N \cdot Zeff} \left[IPT\right]$
Feed per revolution	$f_N = f_z \cdot Z \left[IPR\right]$
Metal removal rate	$Q = a_p \cdot b \cdot V_f \left[in^3/min\right]$
Machining time	$T_h = \frac{L^w}{V^f} \left[min\right]$
Specific cutting force	$K_c = K_{c1} \cdot hm^{-m_c}$
Average chip thickness in shoulder milling for b/D≤0.1	$h_m \approx f_z \cdot \sqrt{\frac{b}{D}} \left[in\right]$
Average chip thickness in shoulder milling for b/D>0.1	$h_m = \frac{\sin k \cdot 180 \cdot b \cdot f_z}{\pi \cdot D \cdot \arcsin\left(\frac{b}{D}\right)} \left[in\right]$
Machining power	$P = \frac{558 \cdot a_p \cdot b \cdot V_f \cdot k_c}{45 \cdot 107 \cdot \eta} \left[HP\right]$

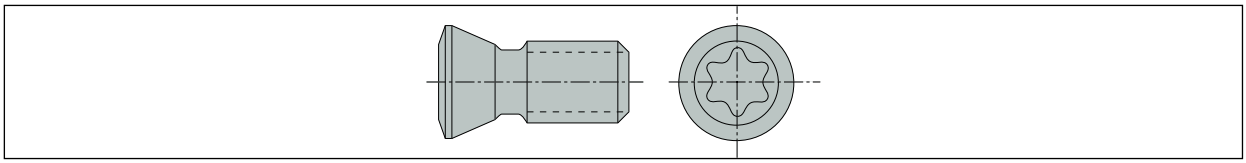
V_c	[SFM]	Cutting speed
D	[in]	Tool diameter
N	[RPM]	Spindle speed
V_f	[IPM]	Feed speed
f_z	[IPT]	Feed per tooth
Z		Number of teeth
fN	[IPR]	Feed per revolution
Q	[in^3/min]	Metal removal rate
a_p	[inch]	Depth of cut
b	[inch]	Width of cut
Th	[min]	Machining time
Lw	[inch]	Machining length
K_c	[PSI]	Specific cutting force
Kc1	[PSI]	Specific cutting force for 1 mm^2 chip section
hm	[inch]	Average chip thickness
mc		Chip thickness factor
k	[degrees]	Cutting edge angle
P	[HP]	Machining power
η		Machine efficiency
P=	Pc + Pm	
P	-	Total Machining Power
Pc	-	Net Power=Cutting Power
Pm	-	Motor Power (while not cutting)

Values for Motor Power Pm

Max. Machine Power (HP)	Motor Power Pm (HP)
7.5	0.5
10.0	0.5-1.0
15.0	1.5
20.0	2.0
24.0	3.0
29.5	3.4

Motor Power Pm has a value of approximately 7 to 12% of Maximum Machine Power

Tightening Torque by Screw

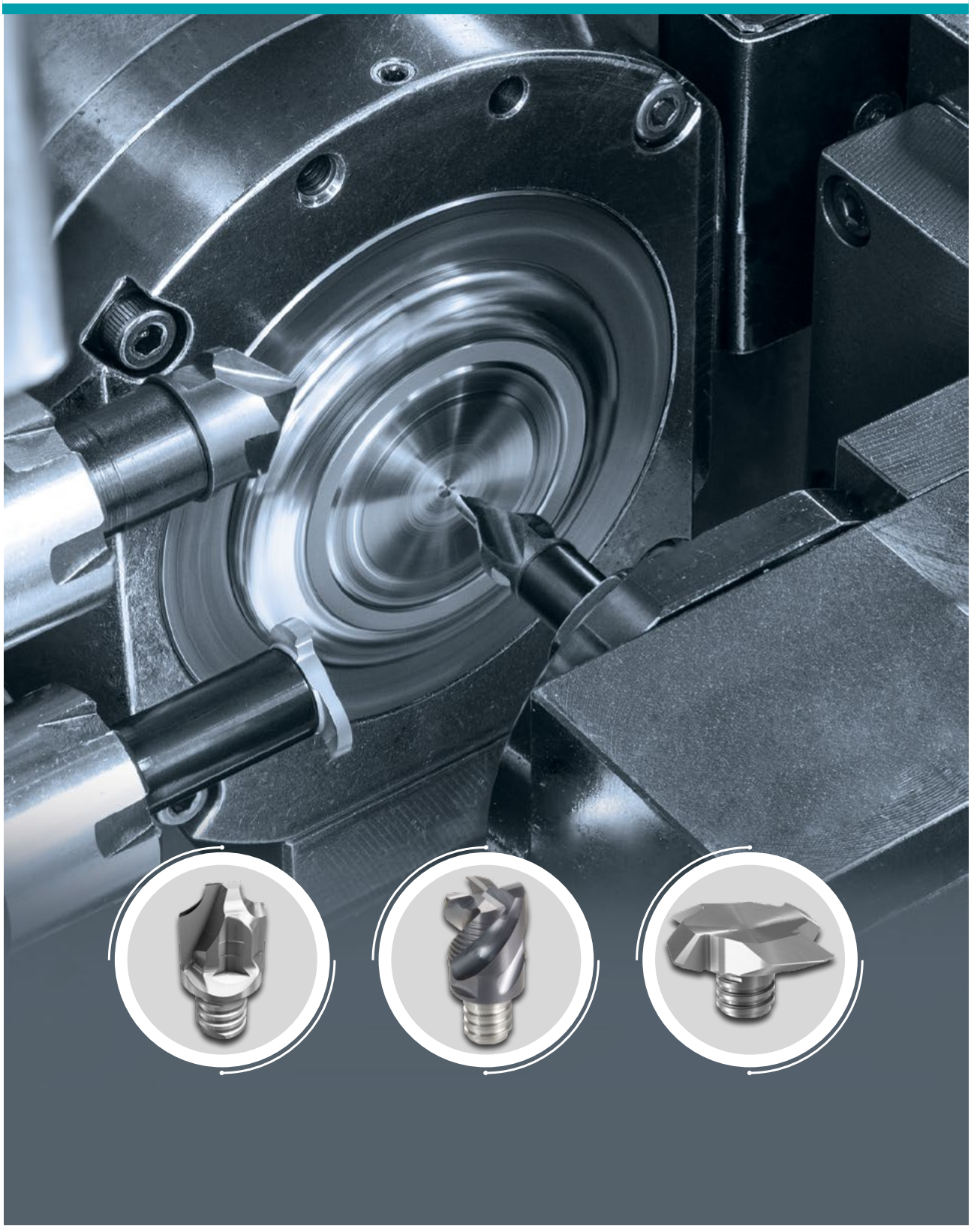


Screw	Thread	Overall Length [mm]	TORX Recess	Tightening Torque [Nxm]	Tightening Torque [lbfxin]
TS 18041I/HG	M1.8	4.1	IP 6	0.5	4.4
SR M2X0.4-2.9 T6-HG	M2	2.9	T 6	0.5	4.4
SR M2X0.4-3 T6	M2	2.9	T 6	0.5	4.4
SR M2X0.4-3.5 T6	M2	3.55	T 6	0.5	4.4
SR 34-533/L	M2	4.8	T 6	0.6	5.3
SR 34-533/L/HG	M2	4.8	T 6	0.6	5.3
SR 34-508	M2.2	4.6	T 7	0.9	8
SR 34-508/S-HG	M2.2	3.8	T 7	0.9	8
SR 34-508/L	M2.2	5.2	T 7	0.9	8
SR 14-548	M2.2	5.3	T 7	0.9	8
SR 14-505	M2.2	6.5	T 7	0.9	8
SR 114-018-L2.50	M2.5	2.5	T 6	0.6	5.3
SR 114-018-L3.40	M2.5	3.4	T 6	0.6	5.3
SR 114-018-L4.40	M2.5	4.4	T 6	0.6	5.3
SR 114-018-L5.30	M2.5	5.3	T 6	0.6	5.3
SR 10503833	M2.5	4.6	T 7	0.9	8
SR M2.5X5-T7-60	M2.5	5	T 7	0.9	8
SR 10503457	M2.5	5.2	T 6	0.9	8
SR 34-514	M2.5	5.2	T 7	0.9	8
SR 34-513	M2.5	5.5	T 8	1.2	10.6
SR M2.5-T8-MT	M2.5	5.5	T 8	1.2	10.6
SR 34-505	M2.5	5.5	T 8	1.2	10.6
SR 34-505/HG	M2.5	5.5	T 8	1.2	10.6
SR 34-505/L	M2.5	7.5	T 8	1.2	10.6
SR 34-505/LHG	M2.5	7.5	T 8	1.2	10.6
SR M2.5x6-T7-60	M2.5	6	T 7	0.9	8
SR M2.5X0.45-L6 IP7	M2.5	6	IP 7	0.9	8
SR 14-560	M2.5	6.4	T 8	1.2	10.6
SR 14-560-HG	M2.5	6.4	T 8	1.2	10.6
SR 14-560/S	M2.5	5.3	T 8	1.2	10.6
SR M2.6-L6.7-S11	M2.6x0.45	6.7	T 8	1.2	10.6
SR 10508082-HG	M3	6.8	T 8	1.2	10.6
SR 34-506	M3	6.5	T 9	2	17.7
SR 34-506/M	M3	7.4	T 9	2	17.7
SR 34-506/L	M3	8	T 9	2	17.7
SR M3×0.5-L7.4 IP9	M3	7.4	IP 9	2	17.7
SR 14-513	M3	8	T 9	2	17.7
SR 10508600	M3	8.1	T 9	2	17.7
SR 14-551	M3	8.2	T 9	2	17.7
SR 10504970	M3.5	8.1	IP15	3.2	28.3
SR 14-562	M3.5	8.7	T10	3.2	28.3
SR M3.5X0.6-L8.5 IP10	M3.5	8.5	IP15	3.2	28.36
SR 14-562/S	M3.5	6.5	T10	3.2	28.3
SR 14-562XL	M3.5	10.7	T10	3.2	28.3
SR 14-571	M3.5	8.7	T10	3.2	28.3
SR 14-571/L	M3.5	10	T10	3.2	28.3
SR 14-601	M3.5	11	T15	3.2	28.3
SR 34-550	M3.5	11.5	T10	3.2	28.3
SR 14-541	M4	7.9	T15	4.8	42.5
SR 14-506	M4	8.2	T15	4.8	42.5
SR M4X0.7-L9.5 IP15	M4	9.5	IP15	4.8	42.5
SR M4X0.7-L9.6 IP15	M4	9.65	IP15	4.8	42.5
SR M4X0.7-L11.5 IP15	M4	11.5	IP15	4.8	42.5

* For T490...-11 cutters only

Screw	Thread	Overall Length [mm]	TORX Recess	Tightening Torque [Nxm]	Tightening Torque [lbfxin]
SR 16-236	M4	9.7	T15	5.3	47
SR 16-236/P	M4	11.3	T15	5.3	47
SR M4x0.7IP15	M4	10.5	IP15	4.8	42.5
SR 34-535	M4	11.5	T15	4.8	42,5
SR 34-535-SN	M4	11.5	T15	4.8 (3.2*)	42.5 (28.3*)
SR 34-535/L9.5-SN	M4	9.5	T15	4.8 (3.2*)	42.5 (28.3*)
SR 14-500 -L	M4x0.5	-	T15	4.8	42.5
SR 14-536	M4	12	T20	6	53
SR 14-536/S	M4	10.5	T20	6	53
SR M4-IP15-MT	M4	10.5	IP15	4.8	42.5
SR 14-536/M	M4	14.1	T20	6	53
SR 14-544	M4	12	T15	4.8	42.5
SR 14-544/S	M4	9.3	T15	4.8	42.5
SR 34-501	M4	7.4	T15	4.8	42.5
SR 11800745	M4	12.5	IP15	4.8	42.5
SR 34-510	M4	14.4	T15	4.8	42.5
SR 34-510/L...	M4	10... 11.7	T15	4.8	42.5
SR M4-L15-D4.5	M4	15	IP15	4.8	42.5
SR 14-592M	M5	8.7	T20	9	80
SR 14-592SM	M5	9	T20	9	80
SR 14-592XLM	M5	10.4	T20	9	80
SR 34-523	M5	9.5	T20	9	80
SR 14-0180	M5	10.4	T20	6	53
SR M5x0.8IP20-1	M5	10.8	IP20	6	53
SR 14-590	M5	11.2	T20	9	80
SR 10505427	M5	12	IP20	9	80
SR 10513105	M5	13	IP20	8	70.8
SR 10513105-L10.5	M5	10.5	IP20	8	70.8
SR 14-591	M5	13.5	T20	9	80
SR 14-591/H	M5	13.5	T20	9	80
SR 14-591/L	M5	16.2	T20	9	80
SR 34-511	M5	14	T20	9	80
SR M5X0.8 16 IP20	M5	16	IP20	9	80
SR M5-IP25-MT	M5	16.5	IP25	9	80
SR 14-519	M5	17	T20	9	80
SR 14-542	M5	18.3	T20	9	80
SR 16-212	M5	12.5	T20	9	80
SR 10503750	M6	18	T25	12	106
SR 10507547	M6	22.5	IP25	9	80
SR 34-516	M7x1	15.5	T25	12	106
SR 34-515	M8x1	17.2	T25	12	106
SR 10502813-HG-M	4-48 UNF	8.2	IP7	1.2	10.6
SR 10502813-HGSM	4-48 UNF	7	IP7	1.2	10.6
SR 11800866	12-28 UNF-RH/ LH	18	IP15	6	53
SR 118-069	NF 1/4-28 NF	13.3	IP20	9	80
SR 1/4-28xIP25	1/4-48 UNF	18.7	IP25	9	80

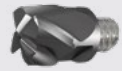
MULTI-MASTER



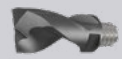
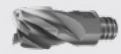
Indexable Solid Carbide Milling Heads
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Type	Helix Angle	No .of Flutes	Diameter Range	Remarks	Page	
MM HC	10º	2	7.8-12 .312-.500	Slot Drill Milling Heads	1051	
MM EA	45º	2, 3	6-12 .312-.500	High Speed Machining on Aluminum	1049	
MM EA-CF	40º	3, 4	8-12 .375-.500	High Speed Machining on Aluminum- **CHATTER-FREE**	1050	
MM EC-3	45º	3	8-12 .312-.500		1052	
MM EC-4	30º, 45º	4	5-12 .187-.500		1053-1054	
MM EC-6 **MM EC-D**	30º, 45º 50°	6 6	8-12 .312-.500	For Machining Hardened Steel (up to 65 HRC).	1055-1057	
MM ECK-CF	35º, 38º	6	8-12 .312-.500	For Machining Titanium Alloys	1065	
MM EC-H-4-CF **MM EC-H-5-CF**	45º	4 5	8-12 .312-.500	**CHATTER-FREE** endmill	1066 1068	
MM EFS	45º	4	8-12 .312-.500	**FINISHRED**	1058	
MM EFS-CF	38°	4	6-12 .250-.500	**FINISHRED CHATTER-FREE**	1059	
MM EC-CF **MM EC-CF-Z7/9-1.5xD**	38º 36º	4 7, 9	8-12 .312-.500	**CHATTER-FREE**	1064 1063	
MM ERA	45°	3	8-12 .312-.500	Rough Machining on Aluminum	1062	
MM ERS **MM ERS-1.5xD**	45º 46º-47º	4	8-12 .312-.500	Rough Milling	1060-1061	
MM EBA-2 **MM EBA-3**	45º	2,3	8-12 .312-.500	Ball Nose for Machining Aluminum	1071-1072	
MM EPG	—	1	6-8 .236-.315	Engraving	1075	
MM FM	—	6	10-20 .394-.787	Face Mill	1110	
MM EB **MM EBC**	30º 45º	2, 4 4	5-12 .312-.500	Ball Nose Milling	1069 1070	

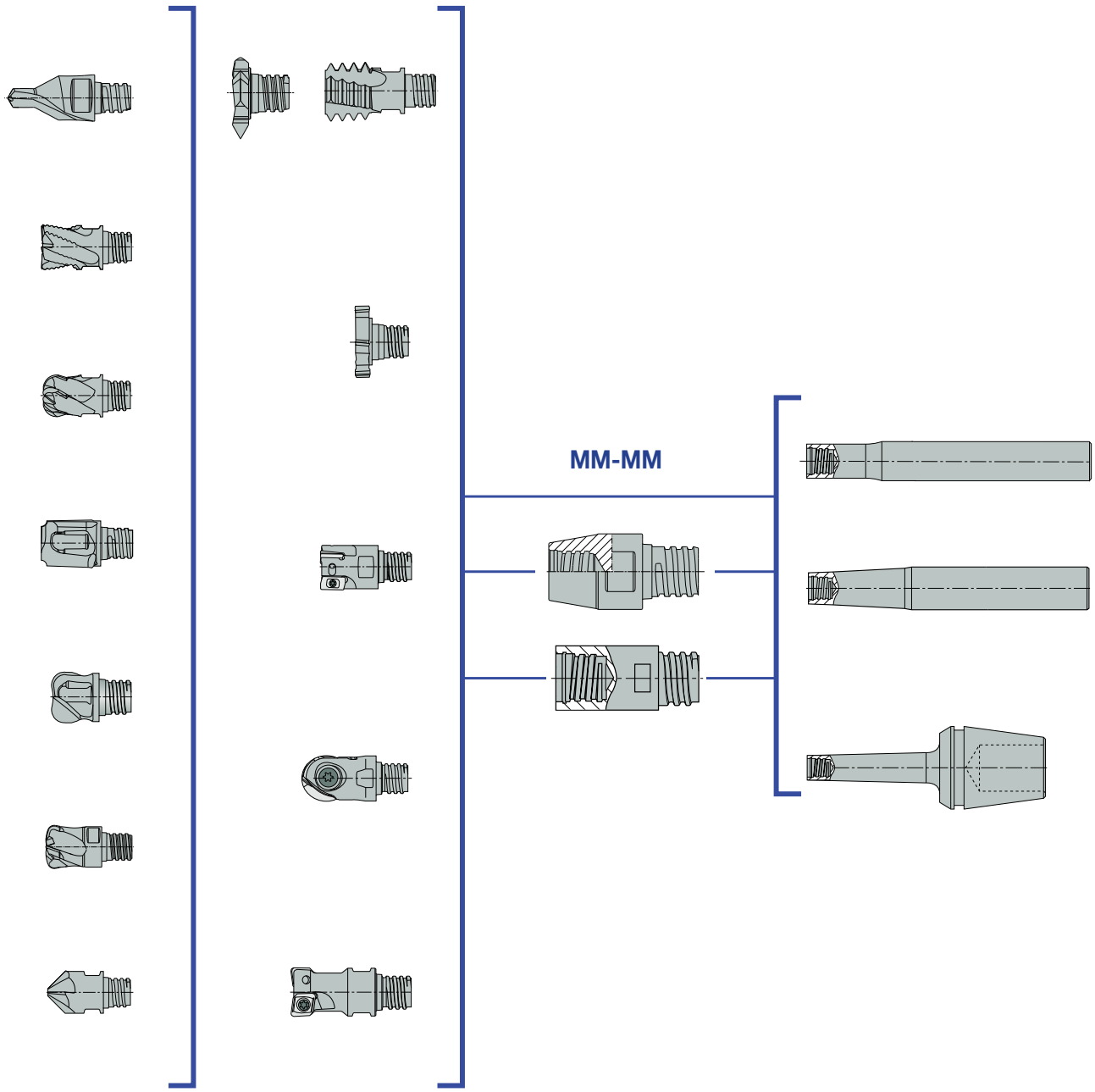
Indexable Solid Carbide Milling Heads
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Type	Helix Angle	No .of Flutes	Diameter Range	Remarks	Page	
MM EOB	—	4	8-12 .312-.500	Oval-Shaped (Barrel)	1108	
MM EOBA	—	4	8-12 .312-.500	Oval-Shaped (Barrel)	1109	
MM ELB	—	4	8-12 .312-.500	Lens-Shaped (Barrel)	1106	
MM ELBA	—	4	8-12 .312-.500	Lens-Shaped (Barrel)	1107	
MM HCR MM HRF	—	2	8-12 .312-.500	Ball Nose for General Finishing	1082-1083	
MM HBR	—	2	8-12 .315-.500	Center Cutting, 240° Spherical Cutting Profile	1084	
MM HT	—	2	10-12 .394-.472	Torodial	1079	
MM FF	—	2	10-12 .375-.500	**FEED-MILL**	1076	
MM EFF	—	4,6	8-12.7 .315-.500	**FEED-MILL**	1077-1078	
MM ET	20º,30º	8	11 .433	Tapered Heads for Finishing Operations	1081	
MM ETR	30˚	6	8-12 .315-.500	Torodial	1080	
MM HR	—	2	8-12.7 .315-.500	Corner Rounding	1073	
MM ER	—	4	6-12.7 .236-.500	Corner Rounding	1074	
MM HCD	—	2	6-12.7 .236-.500	Chamfering, Countersinking and Spot Drilling for DIN 74 Screw	1085-1086	
MM ECF	—	4, 6	10-12 .375-.500	Chamfering and Countersinking	1087	
MM ECS	—	2	1.07-4.09 .042-.161	Centering Drills (DIN 332)	1093-1094	
MM ECD	—	2	6-12 .250-.500	Spot Drill	1095	

Indexable Solid Carbide Milling Heads
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Type	Helix Angle	No .of Flutes	Diameter Range	Remarks	Page	
MM ECDF	—	2	8-12 .315-.492	Flat Bottom Drill Heads	1096-1097	
MM EFCB	—	4	11	Flat Counter Boring Heads	1098	
MM SPD-3T	—	3	8-12 .315-.492	Exchangeable Drilling Heads	1098	
MM HDF	—	2	9.8-11.8 .386-.465	Double Chamfering	1088	
MM EDF	—	3	7.4-11.6 .291-.457	Double Chamfering	1089	
MM TS-N	—	4,6	7.7-13.5 .303-.531	Groove Milling	1099	
MM GRIT-3T6	—	3	15.7-17.7 .618-.697	Groove Milling	1100-1101	
MM GRIT-4T8	—	4	21.7 .854	Groove Milling	1102-1103	
MM GRIT-45A	—	3,4	17.7-21.7 .697-.854	45° Chamfering	1091	
MM Dovetail	—	6	10.5-22.5 .413-.886		1092	
MM TRF 55	—	5,6	11.94-19.94 .470-.785		1174	
MM TRF 60	—	5,6	11.94-19.94 .470-.785		1175-1176	
MM TRD MT-..-MM	—	3,4 3-6	10-21.7 .394-.854	55°-DIN ISO 228, B.S 84 60°-ISO 68, DIN13	1167-1169 1170-1173	

MULTI-MASTER and FLEX-FIT Connection Options



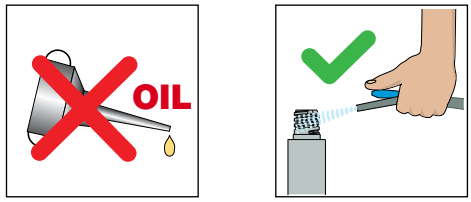
Features
Modular system reduces stock cost by using the same head with different shank options. Enables machining with larger overhang. Same head can be mounted on metric and inch combinations.

Clamping and indexing instructions

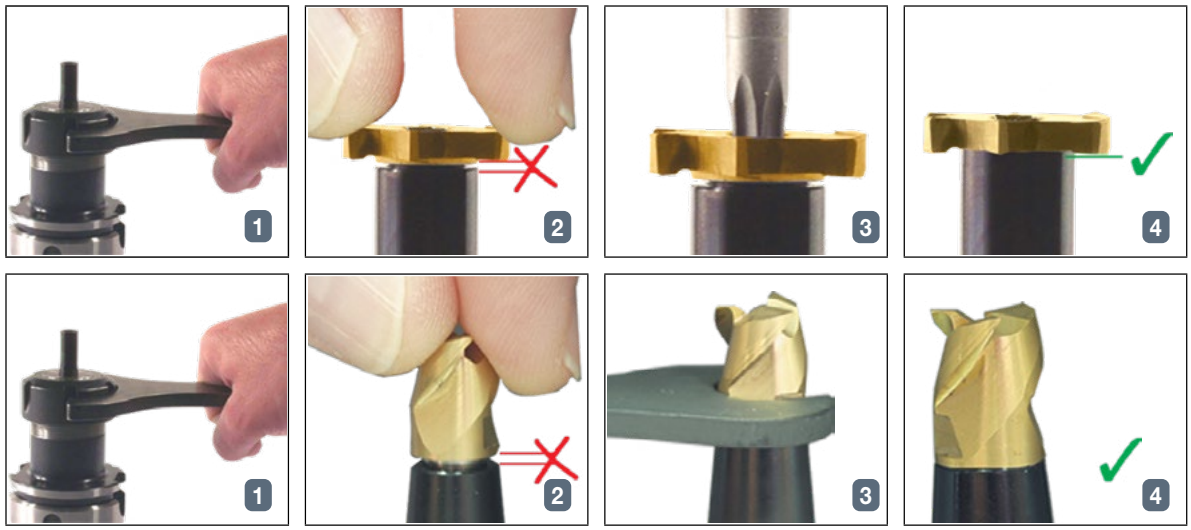
Table - Application range of the adjustable torque handles

Adjustable Torque Handle Designation	Adjustable Torque Range		MULTI-MASTER T-Thread Connection Size and Its Tightening Torque							
			T04		T05		T06		T08	
	N×m	Lbf×in	N×m	Lbf×in	N×m	Lbf×in	N×m	Lbf×in	N×m	Lbf×in
			4	35	7	60	10	90	15	130
Torque Wrench 3-25Nm 9x12 - NEW	3...25	27...220								
Torque Wrench 5-50Nm 9x12	5...50	44...440	~	~						





Do not apply lubricant to the threaded connection

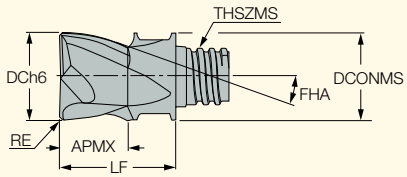


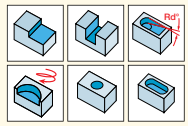
MULTI-MASTER

MM EA

Interchangeable Solid Carbide Slot Drill Milling Heads for Machining Aluminum







ALUMINUM

M E T R I C

Designation	Dimensions DC	NOF(1)	APMX	RE	THSZMS	DCONMS	LF	CSP(2)	FHA	RMPX°(3)	IC08	Recommended Machining Data f_z (mm/t)
MM EA060B03R0.0-3T04	6.00	3	3.20	0.00	T04	5.80	8.50	0	45.0	5.0	•	0.02-0.05
MM EA080B05R0.5-2T05	8.00	2	5.00	0.50	T05	7.70	10.00	0	45.0	5.0	•	0.03-0.09
MM EA080B05R0.5-3T05	8.00	3	5.00	0.50	T05	7.70	10.00	0	45.0	5.0	•	0.03-0.09
MM EA100B07R0.5-2T06	10.00	2	7.00	0.50	T06	9.60	13.00	0	45.0	5.0	•	0.03-0.10
MM EA100B07R1.0-2T06	10.00	2	7.00	1.00	T06	9.60	13.00	0	45.0	5.0	•	0.03-0.10
MM EA100B06R0.5-3T06	10.00	3	6.00	0.50	T06	9.60	13.00	0	45.0	5.0	•	0.03-0.10
MM EA100B06R1.0-3T06	10.00	3	6.00	1.00	T06	9.60	13.00	0	45.0	5.0	•	0.03-0.10
MM EA120B09R0.5-2T08	12.00	2	9.00	0.50	T08	11.70	16.50	0	45.0	5.0	•	0.04-0.11
MM EA120B09R1.0-2T08	12.00	2	9.00	1.00	T08	11.70	16.50	0	45.0	5.0	•	0.04-0.11
MM EA120B08R0.5-3T08	12.00	3	8.00	0.50	T08	11.70	16.50	0	45.0	5.0	•	0.04-0.11
MM EA120B08R1.0-3T08	12.00	3	8.00	1.00	T08	11.70	16.50	0	45.0	5.0	•	0.04-0.11
MM EA120B08R3.0-3T08	12.00	3	8.00	3.00	T08	11.70	16.50	0	45.0	5.0	•	0.04-0.11

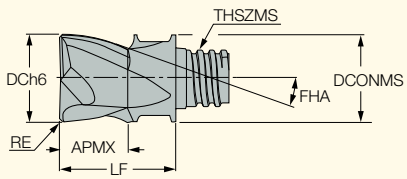
• For shanks, see pages 1112-1124 • For tightening torques and clamping instructions, see pages 1047-1048 • Do not apply lubricant to the threaded connection
• For user guide, see pages 1157-1158
(1) Number of flutes
(2) 0 - Without coolant supply, 1 - With coolant supply
(3) Maximum ramping angle

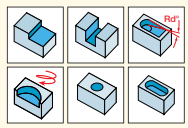
MULTI-MASTER

MM EA

Interchangeable Solid Carbide Slot Drill Milling Heads for Machining Aluminum







ALUMINUM

I N C H

Designation	Dimensions DC	NOF(1)	APMX	RE	THSZMS	DCONMS	LF	CSP(2)	FHA	RMPX°(3)	IC08	Recommended Machining Data f_z (inch/t)
MM EA.312B20R020-3T05	.312	3	.200	.0200	T05	.300	.390	0	45.0	5.0	•	.0010-.0040
MM EA080B05R0.5-2T05	.315	2	.197	.0197	T05	.303	.394	0	45.0	5.0	•	.0012-.0035
MM EA.375B27R000-2T06	.375	2	.270	.0000	T06	.360	.510	0	45.0	5.0	•	.0010-.0040
MM EA.375B27R020-2T06	.375	2	.270	.0200	T06	.360	.512	0	45.0	5.0	•	.0010-.0040
MM EA.375B23R031-3T06	.375	3	.230	.0310	T06	.360	.510	0	45.0	5.0	•	.0010-.0040
MM EA.375B23R062-3T06	.375	3	.230	.0620	T06	.360	.510	0	45.0	5.0	•	.0010-.0040
MM EA120B09R1.0-2T08	.472	2	.354	.0394	T08	.461	.650	0	45.0	5.0	•	.0016-.0043
MM EA120B08R3.0-3T08	.472	3	.315	.1181	T08	.461	.650	0	45.0	5.0	•	.0016-.0043
MM EA.500B37R000-2T08	.500	2	.374	.0000	T08	.488	.650	0	45.0	5.0	•	.0016-.0043
MM EA.500B37R020-2T08	.500	2	.374	.0200	T08	.488	.650	0	45.0	5.0	•	.0016-.0043
MM EA.500B31R031-3T08	.500	3	.315	.0310	T08	.488	.650	0	45.0	5.0	•	.0016-.0043
MM EA.500B31R062-3T08	.500	3	.315	.0630	T08	.488	.650	0	45.0	5.0	•	.0016-.0043
MM EA.500B31R094-3T08	.500	3	.315	.0940	T08	.488	.650	0	45.0	5.0	•	.0016-.0043
MM EA.500B31R125-3T08	.500	3	.315	.1260	T08	.488	.650	0	45.0	5.0	•	.0016-.0043

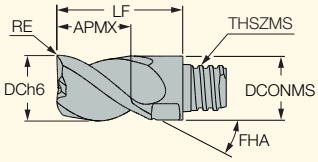
• For shanks, see pages 1112-1124 • For tightening torques and clamping instructions, see pages 1047-1048 • Do not apply lubricant to the threaded connection
• For user guide, see pages 1157-1158
(1) Number of flutes
(2) 0 - Without coolant supply, 1 - With coolant supply
(3) Maximum ramping angle

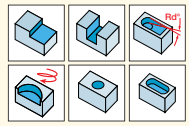
MULTI-MASTER

MM EA-CF

Interchangeable Solid Carbide Endmill Heads with Different Helix for Machining Aluminum







ALUMINUM

M E T R I C

Designation	Dimensions DC	NOF(1)	APMX	RE	THSZMS	DCONMS	LF	FHA	CSP(2)	RMPX°(3)	IC08	Recommended Machining Data f_z (mm/t)
MM EA080H08R0CF-4T05	8.00	4	8.00	0.00	T05	7.70	15.00	40.0	0	5.0	●	0.03-0.09
MM EA100H10R0CF-4T06	10.00	4	10.00	0.00	T06	9.60	19.00	40.0	0	5.0	●	0.03-0.10
MM EA120H12R0.2CF-3T08	12.00	3	12.00	0.20	T08	11.70	23.00	40.0	0	5.0	●	0.04-0.11
MM EA120H12R0CF-4T08	12.00	4	12.00	0.00	T08	11.70	23.00	40.0	0	5.0	●	0.04-0.11

- For shanks, see pages 1112-1124 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 1047-1048
- Do not apply lubricant to the threaded connection • For user guide, see pages 1157-1158

(1) Number of flutes

(2) 0 - Without coolant supply, 1 - With coolant supply

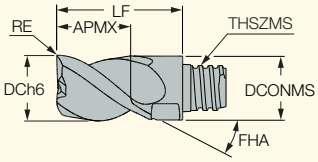
(3) Maximum ramping angle

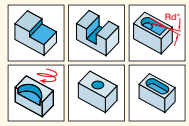
MULTI-MASTER

MM EA-CF

Interchangeable Solid Carbide Endmill Heads with Different Helix for Machining Aluminum







ALUMINUM

I N C H

Designation	Dimensions DC	NOF(1)	APMX	RE	THSZMS	DCONMS	LF	FHA	CSP(2)	RMPX°(3)	IC08	Recommended Machining Data f_z (inch/t)
MM EA.375H375R000-3T06	.375	3	.3750	.0000	T06	.366	.748	45.0	0	5.0	●	.0011-.0039
MM EA.375H375R030-3T06	.375	3	.3750	.0300	T06	.366	.748	45.0	0	5.0	●	.0011-.0039
MM EA.375H375R060-3T06	.375	3	.3750	.0600	T06	.366	.748	45.0	0	5.0	●	.0011-.0039
MM EA.500H500R000-3T08	.500	3	.5000	.0000	T08	.488	.906	45.0	0	5.0	●	.0015-.0043
MM EA.500H500R030-3T08	.500	3	.5000	.0300	T08	.488	.906	45.0	0	5.0	●	.0015-.0043
MM EA.500H500R060-3T08	.500	3	.5000	.0600	T08	.488	.906	45.0	0	5.0	●	.0015-.0043
MM EA.500H500R090-3T08	.500	3	.5000	.0900	T08	.488	.906	45.0	0	5.0	●	.0015-.0043
MM EA.500H500R123-3T08	.500	3	.5000	.1230	T08	.488	.906	45.0	0	5.0	●	.0015-.0043

- For shanks, see pages 1112-1124 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 1047-1048
- Do not apply lubricant to the threaded connection • For user guide, see pages 1157-1158

(1) Number of flutes

(2) 0 - Without coolant supply, 1 - With coolant supply

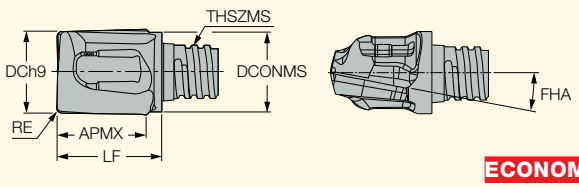
(3) Maximum ramping angle

MULTI-MASTER

MM HC

Interchangeable Solid Carbide Slot Drill Milling Heads with Two 10° Helix Flutes





ECONOMICAL SOLUTION

M E T R I C

Designation	Dimensions DC	NOF(1)	APMX	RE	Tm(2)	THSZMS	DCONMS	LF	FHA	CSP(3)	RMPX°(4)	Tough ↔ Hard IC908	IC903	Recommended Machining Data f_z (mm/t)
MM HC078C08R0.2-2T05	7.80	2	7.70	0.20	r0-2.0	T05	7.60	10.00	10.0	0	5.0	●		0.03-0.09
MM HC080C08R0.4-2T05	8.00	2	7.70	0.40	r0-2.0	T05	7.60	10.00	10.0	0	5.0	●	●	0.03-0.09
MM HC080C08R1.0-2T05	8.00	2	7.70	1.00	r0-2.0	T05	7.60	10.00	10.0	0	5.0	●	●	0.03-0.09
MM HC080C08R2.0-2T05	8.00	2	7.70	2.00	r0-2.0	T05	7.60	10.00	10.0	0	5.0	●	●	0.03-0.09
MM HC098C10R0.3-2T06	9.80	2	9.00	0.30	r0-3.0	T06	9.50	12.35	10.0	0	5.0	●		0.03-0.10
MM HC100C10R0.4-2T06	10.00	2	9.00	0.40	r0-3.0	T06	9.50	12.35	10.0	0	5.0	●	●	0.03-0.10
MM HC100C10R1.0-2T06	10.00	2	9.00	1.00	r0-3.0	T06	9.50	12.35	10.0	0	5.0	●	●	0.03-0.10
MM HC100C10R2.0-2T06	10.00	2	9.00	2.00	r0-3.0	T06	9.50	12.35	10.0	0	5.0	●	●	0.03-0.10
MM HC117C13R0.3-2T08	11.70	2	10.00	0.30	r0-3.0	T08	11.50	14.20	10.0	0	5.0	●		0.04-0.11
MM HC120C13R0.4-2T08	12.00	2	10.00	0.40	r0-3.0	T08	11.50	14.20	10.0	0	5.0	●	●	0.04-0.11
MM HC120C13R1.0-2T08	12.00	2	10.00	1.00	r0-3.0	T08	11.50	14.20	10.0	0	5.0	●	●	0.04-0.11
MM HC120C13R2.0-2T08	12.00	2	10.00	2.00	r0-3.0	T08	11.50	14.20	10.0	0	5.0	●	●	0.04-0.11

- For shanks, see pages 1112-1124 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 1047-1048
- Do not apply lubricant to the threaded connection • For user guide, see pages 1157-1158

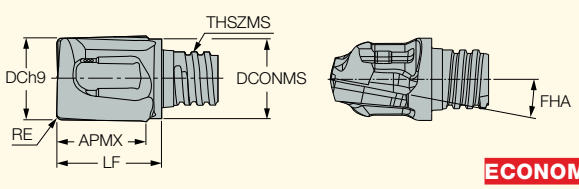
(1) Number of flutes
(2) Specially tailored radius range, available upon request
(3) 0 - Without coolant supply, 1 - With coolant supply
(4) Maximum ramping angle

MULTI-MASTER

MM HC

Interchangeable Solid Carbide Slot Drill Milling Heads with Two 10° Helix Flutes





ECONOMICAL SOLUTION

I N C H

Designation	Dimensions DC	NOF(1)	APMX	RE	Tm(2)	THSZMS	DCONMS	LF	FHA	CSP(3)	RMPX°(4)	Tough ↔ Hard IC908	IC903	Recommended Machining Data f_z (inch/t)
MM HC.312C31R016-2T05	.312	2	.310	.0160	r0-r.064	T05	.297	.390	10.0	0	5.0	●		.0010-.0040
MM HC.375C38R016-2T06	.375	2	.380	.0160	r0-r.078	T06	.360	.485	10.0	0	5.0	●		.0010-.0040
MM HC100C10R0.4-2T06	.394	2	.354	.0157	r0-3.0	T06	.374	.486	10.0	0	5.0	●	●	.0012-.0039
MM HC100C10R1.0-2T06	.394	2	.354	.0394	r0-3.0	T06	.374	.486	10.0	0	5.0	●	●	.0012-.0039
MM HC100C10R2.0-2T06	.394	2	.354	.0787	r0-3.0	T06	.374	.486	10.0	0	5.0	●	●	.0012-.0039
MM HC117C13R0.3-2T08	.461	2	.394	.0118	r0-3.0	T08	.453	.559	10.0	0	5.0	●		.0016-.0043
MM HC120C13R0.4-2T08	.472	2	.394	.0157	r0-3.0	T08	.453	.559	10.0	0	5.0	●	●	.0016-.0043
MM HC120C13R1.0-2T08	.472	2	.394	.0394	r0-3.0	T08	.453	.559	10.0	0	5.0	●	●	.0016-.0043
MM HC120C13R2.0-2T08	.472	2	.394	.0787	r0-3.0	T08	.453	.559	10.0	0	5.0	●	●	.0016-.0043
MM HC.500C55R016-2T08	.500	2	.433	.0160	r0-r.126	T08	.453	.600	10.0	0	5.0	●		.0016-.0043

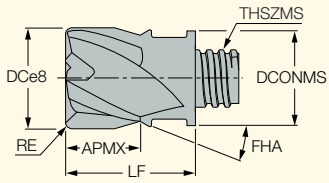
- For shanks, see pages 1112-1124 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 1047-1048
- Do not apply lubricant to the threaded connection • For user guide, see pages 1157-1158

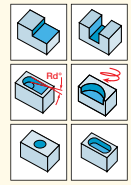
(1) Number of flutes
(2) Specially tailored radius range, available upon request
(3) 0 - Without coolant supply, 1 - With coolant supply
(4) Maximum ramping angle

MULTI-MASTER

MM EC-3
Interchangeable 3 Flute
Solid Carbide Endmill
Heads with 45° Helix







M E T R I C

Designation	Dimensions DC	NOF(2)	APMX	RE	THSZMS	LF	FHA	CSP(3)	RMPX°(4)	DCONMS	IC908	Recommended Machining Data f_z (mm/t)
MM EC080B05R0.4-3T05	8.00	3	5.00	0.40	T05	10.00	45.0	0	5.0	7.70	●	0.03-0.09
MM EC080B05R000-3T05	8.00	3	5.00	0.00	T05	10.00	45.0	0	5.0	7.70	●	0.03-0.09
MM EC100B07R000-3T06	10.00	3	7.00	0.00	T06	13.00	45.0	0	5.0	9.60	●	0.03-0.10
MM EC100B12R000-3T06	10.00	3	12.00	0.00	T06	19.00	45.0	0	5.0	9.60	●	0.03-0.10
MM EC120B09R000-3T08I (1)	12.00	3	9.00	0.00	T08	16.50	45.0	1	5.0	11.70	●	0.04-0.11
MM EC120B09R000-3T08	12.00	3	9.00	0.00	T08	16.50	45.0	0	5.0	11.70	●	0.04-0.11

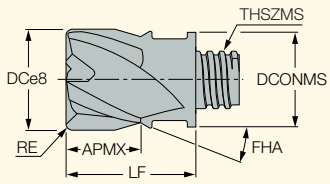
- For shanks, see pages 1112-1124 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 1047-1048
- Do not apply lubricant to the threaded connection. • For user guide, see pages 1157-1158

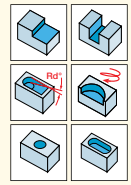
(1) With coolant holes directed to each flute
(2) Number of flutes
(3) 0 - Without coolant supply, 1 - With coolant supply
(4) Maximum ramping angle

MULTI-MASTER

MM EC-3
Interchangeable 3 Flute
Solid Carbide Endmill
Heads with 45° Helix







I N C H

Designation	Dimensions DC	NOF(1)	APMX	RE	THSZMS	LF	FHA	CSP(2)	RMPX°(3)	DCONMS	IC908	Recommended Machining Data f_z (inch/t)
MM EC.312B20R000-3T05	.312	3	.200	.0000	T05	.390	45.0	0	5.0	.300	●	.0010-.0040
MM EC.312B20R030-3T05	.312	3	.200	.0300	T05	.390	45.0	0	5.0	.300	●	.0010-.0040
MM EC.375B27R000-3T06	.375	3	.275	.0000	T06	.512	45.0	0	5.0	.370	●	.0010-.0040
MM EC.375B27R015-3T06	.375	3	.275	.0150	T06	.512	45.0	0	5.0	.370	●	.0010-.0040
MM EC.375B27R031-3T06	.375	3	.275	.0310	T06	.512	45.0	0	5.0	.370	●	.0010-.0040
MM EC.375B27R062-3T06	.375	3	.275	.0620	T06	.512	45.0	0	5.0	.370	●	.0010-.0040
MM EC.500B37R000-3T08	.500	3	.374	.0000	T08	.650	45.0	0	5.0	.488	●	.0020-.0039
MM EC.500B37R015-3T08	.500	3	.374	.0160	T08	.650	45.0	0	5.0	.488	●	.0020-.0039
MM EC.500B37R031-3T08	.500	3	.374	.0310	T08	.650	45.0	0	5.0	.488	●	.0020-.0039
MM EC.500B37R062-3T08	.500	3	.374	.0630	T08	.650	45.0	0	5.0	.488	●	.0020-.0039

- For shanks, see pages 1112-1124 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 1047-1048
- Do not apply lubricant to the threaded connection. • For user guide, see pages 1157-1158

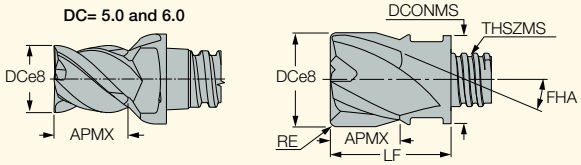
(1) Number of flutes
(2) 0 - Without coolant supply, 1 - With coolant supply
(3) Maximum ramping angle

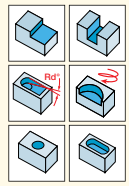
MULTI-MASTER

MM EC-4

Interchangeable 4 Flute Solid Carbide Endmill Heads with 30°, 45° Helix and Various Corner Radii







M E T R I C

Designation	Dimensions DC	RE	FHA	NOF(1)	APMX	CSP(2)	THSZMS	DCONMS	LF	RMPX°(3)	IC908	Recommended Machining Data f_z (mm/t)
MM EC050B07R000-4T05	5.00	0.00	45.0	4	7.00	0	T05	8.00	15.00	5.0	●	0.02-0.06
MM EC060B05R000-4T05	6.00	0.00	45.0	4	5.00	0	T05	8.00	10.00	5.0	●	0.03-0.07
MM EC060B04R0.5-4T04	6.00	0.50	45.0	4	4.00	0	T04	5.80	8.50	5.0	●	0.02-0.04
MM EC080B05R000-4T05	8.00	0.00	45.0	4	5.00	0	T05	7.70	10.00	5.0	●	0.03-0.09
MM EC080B09R000-4T05	8.00	0.00	45.0	4	9.00	0	T05	7.70	15.00	5.0	●	0.03-0.09
MM EC080A05R0.5-4T05	8.00	0.50	30.0	4	5.00	0	T05	7.70	10.00	5.0	●	0.03-0.09
MM EC080A09R0.5-4T05	8.00	0.50	30.0	4	9.00	0	T05	7.70	15.00	5.0	●	0.03-0.09
MM EC080B05R0.5-4T05	8.00	0.50	45.0	4	5.00	0	T05	7.70	10.00	5.0	●	0.03-0.09
MM EC080A05R1.0-4T05	8.00	1.00	30.0	4	5.00	0	T05	7.70	10.00	5.0	●	0.03-0.09
MM EC080B05R1.0-4T05	8.00	1.00	45.0	4	5.00	0	T05	7.70	10.00	5.0	●	0.03-0.09
MM EC080A05R1.5-4T05	8.00	1.50	30.0	4	5.00	0	T05	7.70	10.00	5.0	●	0.03-0.09
MM EC080B05R1.5-4T05	8.00	1.50	45.0	4	5.00	0	T05	7.70	10.00	5.0	●	0.03-0.09
MM EC100B07R000-4T06	10.00	0.00	45.0	4	7.00	0	T06	9.60	13.00	5.0	●	0.03-0.10
MM EC100B12R000-4T06	10.00	0.00	45.0	4	12.00	0	T06	9.60	19.00	5.0	●	0.03-0.10
MM EC100A07R0.5-4T06	10.00	0.50	30.0	4	7.00	0	T06	9.60	13.00	5.0	●	0.03-0.10
MM EC100B07R0.5-4T06	10.00	0.50	45.0	4	7.00	0	T06	9.60	13.00	5.0	●	0.03-0.10
MM EC100A07R1.0-4T06	10.00	1.00	30.0	4	7.00	0	T06	9.60	13.00	5.0	●	0.03-0.10
MM EC100B07R1.0-4T06	10.00	1.00	45.0	4	7.00	0	T06	9.60	13.00	5.0	●	0.03-0.10
MM EC120B09R000-4T08	12.00	0.00	45.0	4	9.00	0	T08	11.70	16.50	5.0	●	0.04-0.11
MM EC120B14R000-4T08	12.00	0.00	45.0	4	14.00	0	T08	11.70	23.00	5.0	●	0.04-0.11
MM EC120A09R0.5-4T08	12.00	0.50	30.0	4	9.00	0	T08	11.70	16.50	5.0	●	0.04-0.11
MM EC120B09R0.5-4T08	12.00	0.50	45.0	4	9.00	0	T08	11.70	16.50	5.0	●	0.04-0.11
MM EC120A09R1.0-4T08	12.00	1.00	30.0	4	9.00	0	T08	11.70	16.50	5.0	●	0.04-0.11
MM EC120B09R1.0-4T08	12.00	1.00	45.0	4	9.00	0	T08	11.70	16.50	5.0	●	0.04-0.11

• For shanks, see pages 1112-1124 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 1047-1048
• Do not apply lubricant to the threaded connection • For user guide, see pages 1157-1158

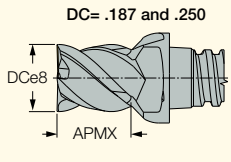
(1) Number of flutes
(2) 0 - Without coolant supply, 1 - With coolant supply
(3) Maximum ramping angle

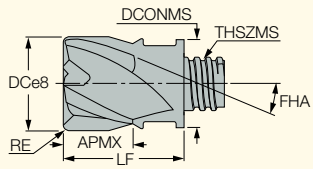
MULTI-MASTER

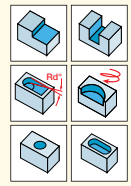
MM EC-4

Interchangeable 4 Flute Solid Carbide Endmill Heads with 30°, 45° Helix and Various Corner Radii









I N C H

Designation	Dimensions DC	RE	FHA	NOF(1)	APMX	CSP(2)	THSZMS	DCONMS	LF	RMPX°(3)	IC908	Recommended Machining Data f_z (inch/t)
MM EC.187B27R000-4T05	.187	.0000	45.0	4	.270	0	T05	.315	.591	5.0	●	.0008-.0024
MM EC.250B20R000-4T05	.250	.0000	45.0	4	.200	0	T05	.300	.390	5.0	●	.0010-.0030
MM EC.312B20R000-4T05	.312	.0000	45.0	4	.200	0	T05	.300	.390	5.0	●	.0010-.0030
MM EC.312A20R015-4T05	.312	.0150	30.0	4	.200	0	T05	.300	.390	5.0	●	.0010-.0040
MM EC.312B20R015-4T05	.312	.0150	45.0	4	.200	0	T05	.300	.390	5.0	●	.0010-.0030
MM EC.312B20R030-4T05	.312	.0300	45.0	4	.200	0	T05	.300	.390	5.0	●	.0010-.0030
MM EC.312A20R060-4T05	.312	.0600	30.0	4	.200	0	T05	.300	.390	5.0	●	.0010-.0040
MM EC.312B20R060-4T05	.312	.0600	45.0	4	.200	0	T05	.300	.390	5.0	●	.0010-.0030
MM EC.375B27R000-4T06	.375	.0000	45.0	4	.275	0	T06	.370	.512	5.0	●	.0010-.0040
MM EC.375B47R000-4T06	.375	.0000	45.0	4	.475	0	T06	.370	.512	5.0	●	.0010-.0040
MM EC.375A27R015-4T06	.375	.0150	30.0	4	.275	0	T06	.370	.512	5.0	●	.0010-.0040
MM EC.375B27R015-4T06	.375	.0150	45.0	4	.275	0	T06	.370	.512	5.0	●	.0010-.0040
MM EC.375A27R030-4T06	.375	.0300	30.0	4	.275	0	T06	.370	.512	5.0	●	.0010-.0040
MM EC.375B27R031-4T06	.375	.0310	45.0	4	.275	0	T06	.370	.512	5.0	●	.0010-.0040
MM EC.375B27R062-4T06	.375	.0620	45.0	4	.275	0	T06	.370	.512	5.0	●	.0010-.0040
MM EC.500B37R000-4T08	.500	.0000	45.0	4	.374	0	T08	.488	.650	5.0	●	.0020-.0040
MM EC.500A37R015-4T08	.500	.0150	30.0	4	.374	0	T08	.488	.650	5.0	●	.0020-.0040
MM EC.500B37R015-4T08	.500	.0150	45.0	4	.374	0	T08	.488	.650	5.0	●	.0020-.0040
MM EC.500A37R030-4T08	.500	.0300	30.0	4	.374	0	T08	.488	.650	5.0	●	.0020-.0040
MM EC.500B37R031-4T08	.500	.0310	45.0	4	.374	0	T08	.488	.650	5.0	●	.0020-.0040
MM EC.500B37R062-4T08	.500	.0620	45.0	4	.374	0	T08	.488	.650	5.0	●	.0020-.0040

• For shanks, see pages 1112-1124 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 1047-1048
• Do not apply lubricant to the threaded connection • For user guide, see pages 1157-1158

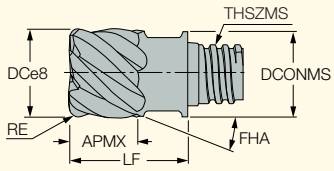
(1) Number of flutes
(2) 0 - Without coolant supply, 1 - With coolant supply
(3) Maximum ramping angle

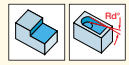
MULTI-MASTER

MM EC-6

Interchangeable 6 Flute Solid Carbide Endmill Heads with 30°, 45° Helix and Corners with Different Radius







M E T R I C

Designation	Dimensions DC	NOF(1)	APMX	RE	THSZMS	DCONMS	LF	CSP(2)	FHA	RMPX°(3)	IC908	Recommended Machining Data f_z (mm/t)
MM EC080A05R0.5-6T05	8.00	6	5.00	0.50	T05	7.70	10.00	0	30.0	6.0	●	0.03-0.09
MM EC080A05R1.0-6T05	8.00	6	5.00	1.00	T05	7.70	10.00	0	30.0	6.0	●	0.03-0.09
MM EC080A05R1.5-6T05	8.00	6	5.00	1.50	T05	7.70	10.00	0	30.0	6.0	●	0.03-0.09
MM EC080B05R0.5-6T05	8.00	6	5.00	0.50	T05	7.70	10.00	0	45.0	3.0	●	0.03-0.10
MM EC080B05R1.0-6T05	8.00	6	5.00	1.00	T05	7.70	10.00	0	45.0	3.0	●	0.03-0.09
MM EC080B05R1.5-6T05	8.00	6	5.00	1.50	T05	7.70	10.00	0	45.0	3.0	●	0.03-0.09
MM EC100A07R0.5-6T06	10.00	6	7.00	0.50	T06	9.60	13.00	0	30.0	6.0	●	0.03-0.10
MM EC100A07R1.0-6T06	10.00	6	7.00	1.00	T06	9.60	13.00	0	30.0	6.0	●	0.03-0.10
MM EC100A07R1.5-6T06	10.00	6	7.00	1.50	T06	9.60	13.00	0	30.0	6.0	●	0.03-0.10
MM EC100B07R0.5-6T06	10.00	6	7.00	0.50	T06	9.60	13.00	0	45.0	3.0	●	0.04-0.10
MM EC100B07R000-6T06	10.00	6	7.00	0.00	T06	9.60	13.00	0	45.0	3.0	●	0.03-0.10
MM EC100B07R1.0-6T06	10.00	6	7.00	1.00	T06	9.60	13.00	0	45.0	3.0	●	0.04-0.10
MM EC100B07R1.5-6T06	10.00	6	7.00	1.50	T06	9.60	13.00	0	45.0	3.0	●	0.03-0.10
MM EC100B12R1.5-6T06	10.00	6	12.00	1.50	T06	9.60	19.00	0	45.0	3.0	●	0.04-0.10
MM EC120A09R0.5-6T08	12.00	6	9.00	0.50	T08	11.70	16.50	0	30.0	6.0	●	0.04-0.11
MM EC120A09R1.0-6T08	12.00	6	9.00	1.00	T08	11.70	16.50	0	30.0	6.0	●	0.04-0.11
MM EC120B09R0.5-6T08	12.00	6	9.00	0.50	T08	11.70	16.50	0	45.0	3.0	●	0.04-0.10
MM EC120B09R000-6T08	12.00	6	9.00	0.00	T08	11.70	16.50	0	45.0	3.0	●	0.04-0.11
MM EC120B09R1.0-6T08	12.00	6	9.00	1.00	T08	11.70	16.50	0	45.0	3.0	●	0.04-0.10
MM EC120B09R1.5-6T08	12.00	6	9.00	1.50	T08	11.70	16.50	0	45.0	3.0	●	0.04-0.11

• For shanks, see pages 1112-1124 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 1047-1048
• Do not apply lubricant to the threaded connection • For user guide, see pages 1157-1158

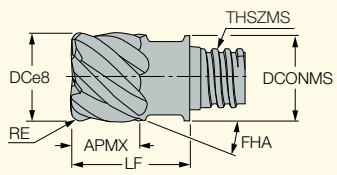
(1) Number of flutes
(2) 0 - Without coolant supply, 1 - With coolant supply
(3) Maximum ramping angle

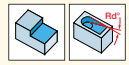
MULTI-MASTER

MM EC-6

Interchangeable 6 Flute Solid Carbide Endmill Heads with 30°, 45° Helix and Corners with Different Radius







I N C H

Designation	Dimensions DC	NOF(1)	APMX	RE	THSZMS	DCONMS	LF	CSP(2)	FHA	RMPX°(3)	IC908	Recommended Machining Data f_z (inch/t)
MM EC.312A20R015-6T05	.312	6	.200	.0150	T05	.300	.394	0	30.0	3.0	●	.0010-.0040
MM EC.312B20R000-6T05	.312	6	.200	.0000	T05	.300	.394	0	45.0	3.0	●	.0010-.0040
MM EC.312B20R030-6T05	.312	6	.200	.0300	T05	.300	.394	0	30.0	3.0	●	.0010-.0040
MM EC.375A27R015-6T06	.375	6	.275	.0150	T06	.370	.512	0	30.0	5.0	●	.0010-.0040
MM EC.375A27R030-6T06	.375	6	.275	.0300	T06	.370	.512	0	30.0	5.0	●	.0010-.0040
MM EC.375B27R000-6T06	.375	6	.275	.0000	T06	.370	.512	0	45.0	5.0	●	.0010-.0040
MM EC.375B27R015-6T06	.375	6	.275	.0150	T06	.370	.512	0	45.0	5.0	●	.0010-.0040
MM EC.375B27R031-6T06	.375	6	.275	.0310	T06	.370	.512	0	45.0	5.0	●	.0010-.0040
MM EC.375B27R060-6T06	.375	6	.275	.0600	T06	.370	.512	0	45.0	5.0	●	.0010-.0040
MM EC.500A37R015-6T08	.500	6	.374	.0160	T08	.488	.650	0	30.0	6.0	●	.0016-.0043
MM EC.500A37R030-6T08	.500	6	.374	.0300	T08	.488	.650	0	30.0	6.0	●	.0016-.0043
MM EC.500B37R000-6T08	.500	6	.374	.0000	T08	.488	.650	0	45.0	5.0	●	.0016-.0043
MM EC.500B37R015-6T08	.500	6	.374	.0160	T08	.488	.650	0	45.0	5.0	●	.0016-.0043
MM EC.500B37R031-6T08	.500	6	.374	.0310	T08	.488	.650	0	45.0	5.0	●	.0016-.0043
MM EC.500B37R060-6T08	.500	6	.374	.0590	T08	.488	.650	0	45.0	5.0	●	.0016-.0043

- For shanks, see pages 1112-1124 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 1047-1048
- Do not apply lubricant to the threaded connection • For user guide, see pages 1157-1158

(1) Number of flutes

(2) 0 - Without coolant supply, 1 - With coolant supply

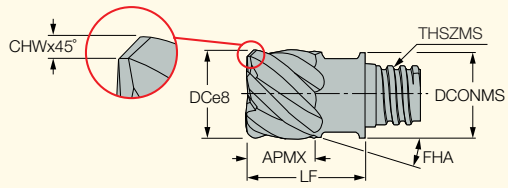
(3) Maximum ramping angle

MULTI-MASTER

MM EC-D

Interchangeable 6, 8, 10 Flute Solid Carbide Endmill Heads with 50° Helix for Machining Hardened Steel





M E T R I C

Designation	Dimensions DC	NOF(1)	APMX	CHW	KCH	THSZMS	DCONMS	LF	FHA	RMPX°(2)	CSP(3)	IC903	Recommended Machining Data f_z (mm/t)
MM EC080D05C01-6T05	8.00	6	5.00	0.10	45.0	T05	7.70	10.00	50.0	2.0	0	●	0.03-0.10
MM EC100D07C01-6T06	10.00	6	7.00	0.10	45.0	T06	9.60	13.00	50.0	2.0	0	●	0.03-0.10
MM EC120D09C01-6T08	12.00	6	9.00	0.10	45.0	T08	11.70	16.50	50.0	3.0	0	●	0.04-0.11

• For shanks, see pages 1112-1124 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 1047-1048
• Do not apply lubricant to the threaded connection • For user guide, see pages 1157-1158

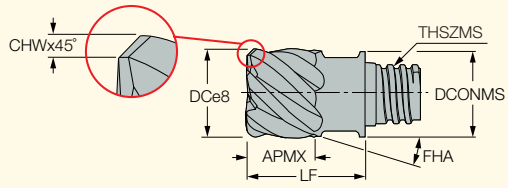
(1) Number of flutes
(2) Maximum ramping angle
(3) 0 - Without coolant supply, 1 - With coolant supply

MULTI-MASTER

MM EC-D

Interchangeable 6, 8, 10 Flute Solid Carbide Endmill Heads with 50° Helix for Machining Hardened Steel





I N C H

Designation	Dimensions DC	NOF(1)	APMX	CHW	KCH	THSZMS	DCONMS	LF	FHA	RMPX°(2)	CSP(3)	IC903	Recommended Machining Data f_z (inch/t)
MM EC.312D20C004-6T05	.312	6	.200	.004	45.00	T05	.300	.390	50.0	2.0	0	●	.0010-.0040
MM EC.375D27C004-6T06	.375	6	.270	.004	45.00	T06	.370	.510	50.0	2.0	0	●	.0010-.0040
MM EC.500D37C004-6T08	.500	6	.370	.004	45.00	T08	.480	.650	50.0	3.0	0	●	.0020-.0040

• For shanks, see pages 1112-1124 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 1047-1048
• Do not apply lubricant to the threaded connection • For user guide, see pages 1157-1158

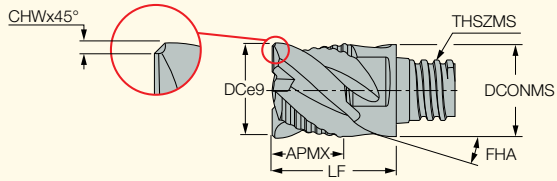
(1) Number of flutes
(2) Maximum ramping angle
(3) 0 - Without coolant supply, 1 - With coolant supply

MULTI-MASTER

MM EFS

Combination of Interchangeable Solid Carbide Endmill Heads for Roughing and Finishing





M E T R I C

Designation	Dimensions DC	NOF(1)	APMX	THSZMS	DCONMS	LF	CSP(2)	FHA	RMPX°(3)	CHW	KCH	IC908	Recommended Machining Data f_z (mm/t)
MM EFS080B05-4T05	8.00	4	5.00	T05	7.70	10.00	0	45.0	5.0	0.30	45.0	●	0.03-0.08
MM EFS100B07-4T06	10.00	4	7.00	T06	9.60	13.00	0	45.0	5.0	0.30	45.0	●	0.03-0.09
MM EFS120B09-4T08	12.00	4	9.00	T08	11.70	16.50	0	45.0	5.0	0.40	45.0	●	0.04-0.10

- For shanks, see pages 1112-1124 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 1047-1048
- Do not apply lubricant to the threaded connection • For user guide, see pages 1157-1158

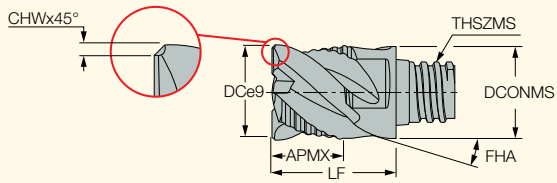
(1) Number of flutes
(2) 0 - Without coolant supply, 1 - With coolant supply
(3) Maximum ramping angle

MULTI-MASTER

MM EFS

Combination of Interchangeable Solid Carbide Endmill Heads for Roughing and Finishing





I N C H

Designation	Dimensions DC	NOF(1)	APMX	THSZMS	DCONMS	LF	CSP(2)	FHA	RMPX°(3)	CHW	KCH	IC908	Recommended Machining Data f_z (inch/t)
MM EFS.312B20-4T05	.312	4	.200	T05	.300	.393	0	45.0	5.0	.012	45.00	●	.0010-.0030
MM EFS.375B27-4T06	.375	4	.275	T06	.360	.512	0	45.0	5.0	.012	45.00	●	.0010-.0040
MM EFS.500B37-4T08	.500	4	.370	T08	.488	.650	0	45.0	5.0	.015	45.00	●	.0016-.0000

- For shanks, see pages 1112-1124 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 1047-1048
- Do not apply lubricant to the threaded connection • For user guide, see pages 1157-1158

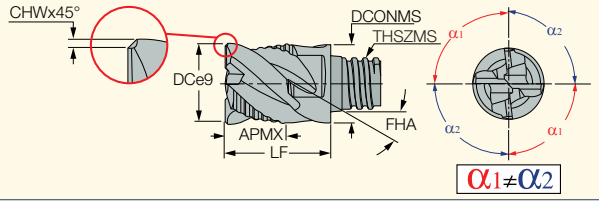
(1) Number of flutes
(2) 0 - Without coolant supply, 1 - With coolant supply
(3) Maximum ramping angle

MULTI-MASTER

MM EFS-CF

4 Flute Solid Carbide Heads with 38° Helix and Variable Pitch for CHATTER-FREE Roughing and Finishing Applications





M E T R I C

Designation	Dimensions DC	NOF(1)	APMX	CHW	KCH	THSZMS	DCONMS	LF	FHA	CSP(2)	RMPX°(3)	IC908	Recommended Machining Data f_z (mm/t)
MM EFS060E05-4T05 CF	6.00	4	5.00	0.25	45.0	T05	7.70	10.00	38.0	0	5.0	●	0.03-0.08
MM EFS080E05-4T05 CF	8.00	4	5.00	0.30	45.0	T05	7.70	10.00	38.0	0	5.0	●	0.03-0.08
MM EFS100E07-4T06 CF	10.00	4	7.00	0.40	45.0	T06	9.60	13.00	38.0	0	5.0	●	0.03-0.09
MM EFS120E09-4T08 CF	12.00	4	9.00	0.50	45.0	T08	11.70	16.50	38.0	0	5.0	●	0.04-0.10

- For shanks, see pages 1112-1124 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 1047-1048
- Do not apply lubricant to the threaded connection • For user guide, see pages 1157-1158

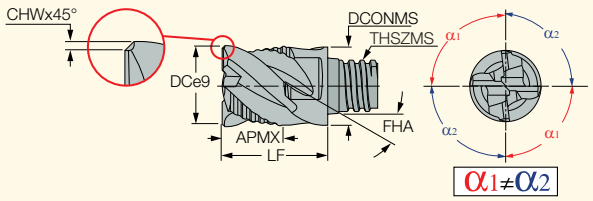
(1) Number of flutes
(2) 0 - Without coolant supply, 1 - With coolant supply
(3) Maximum ramping angle

MULTI-MASTER

MM EFS-CF

4 Flute Solid Carbide Heads with 38° Helix and Variable Pitch for CHATTER-FREE Roughing and Finishing Applications





I N C H

Designation	Dimensions DC	NOF(1)	APMX	CHW	KCH	THSZMS	DCONMS	LF	FHA	CSP(2)	RMPX°(3)	IC908	Recommended Machining Data f_z (inch/t)
MM EFS.250E20-4T05 CF	.250	4	.210	.010	45.00	T05	.312	.393	38.0	0	5.0	●	.0010-.0030
MM EFS.312E20-4T05 CF	.312	4	.210	.012	45.00	T05	.312	.393	38.0	0	5.0	●	.0010-.0030
MM EFS.375E27-4T06 CF	.375	4	.287	.016	45.00	T06	.364	.510	38.0	0	5.0	●	.0010-.0040
MM EFS.500E37-4T08 CF	.500	4	.374	.020	45.00	T08	.488	.650	38.0	0	5.0	●	.0016-.0039

- For shanks, see pages 1112-1124 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 1047-1048
- Do not apply lubricant to the threaded connection • For user guide, see pages 1157-1158

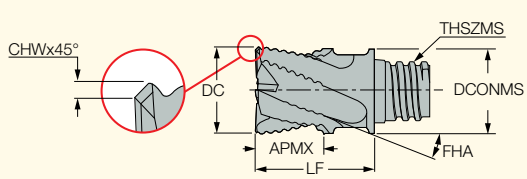
(1) Number of flutes
(2) 0 - Without coolant supply, 1 - With coolant supply
(3) Maximum ramping angle

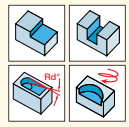
MULTI-MASTER

MM ERS

Interchangeable Solid Carbide Rough Milling Heads for High Metal Removal Rates







M E T R I C

Designation	Dimensions DC	NOF[3]	APMX	THSZMS	DCONMS	LF	FHA	RMPX°[4]	CSP[5]	CHW	KCH	IC908	Recommended Machining Data f_z (mm/t)
MM ERS080B05-4T05	8.00	4	5.00	T05	7.70	10.00	45.0	5.0	0	0.25	45.0	•	0.03-0.08
MM ERS080B09-4T05	8.00	4	9.00	T05	7.70	15.00	45.0	5.0	0	0.25	45.0	•	0.03-0.08
MM ERS100B07-4T06	10.00	4	7.00	T06	9.60	13.00	45.0	5.0	0	0.30	45.0	•	0.03-0.09
MM ERS120B09-4T08	12.00	4	9.00	T08	11.70	16.50	45.0	5.0	0	0.35	45.0	•	0.04-0.10
MM ERS120B09-4T08H [1]	12.00	4	9.00	T08	11.70	16.50	45.0	5.0	1	0.35	45.0	•	0.04-0.10
MM ERS120B09-4T08I [2]	12.00	4	9.00	T08	11.70	16.50	45.0	5.0	1	0.35	45.0	•	0.04-0.11
MM ERS120B14-4T08	12.00	4	14.00	T08	11.70	23.00	45.0	5.0	0	0.35	45.0	•	0.04-0.10

• For shanks, see pages 1112-1124 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 1047-1048
• Do not apply lubricant to the threaded connection • For user guide, see pages 1157-1158

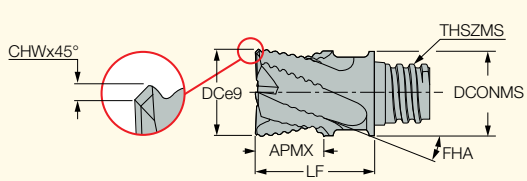
[1] With a central coolant hole
[2] With coolant holes directed to each flute
[3] Number of flutes
[4] Maximum ramping angle
[5] 0 - Without coolant supply, 1 - With coolant supply

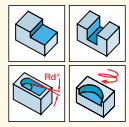
MULTI-MASTER

MM ERS

Interchangeable Solid Carbide Rough Milling Heads for High Metal Removal Rates







I N C H

Designation	Dimensions DC	NOF[2]	APMX	THSZMS	DCONMS	LF	FHA	RMPX°[3]	CSP[4]	CHW	KCH	IC908	Recommended Machining Data f_z (inch/t)
MM ERS.312B20-4T05	.312	4	.200	T05	.300	.390	45.0	5.0	0	.010	45.00	•	.0012-.0032
MM ERS.375B27-4T06	.375	4	.270	T06	.360	.512	45.0	5.0	0	.012	45.00	•	.0013-.0036
MM ERS.500B37-4T08	.500	4	.374	T08	.488	.650	45.0	5.0	0	.014	45.00	•	.0016-.0040

• For shanks, see pages 1112-1124 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 1047-1048
• Do not apply lubricant to the threaded connection • For user guide, see pages 1157-1158

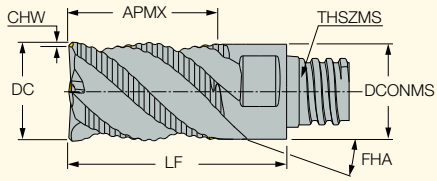
[1] With a central coolant hole
[2] Number of flutes
[3] Maximum ramping angle
[4] 0 - Without coolant supply, 1 - With coolant supply

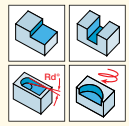
MULTI-MASTER

MM ERS-1.5xD

Interchangeable Solid Carbide Rough Milling Heads with 1.5xD Flute Lengths for High Metal Removal Rates







M E T R I C

Designation	Dimensions DC	NOF(1)	APMX	CHW	KCH	THSZMS	CSP(2)	DCONMS	LF	FHA	RMPX°(3)	IC908	Recommended Machining Data f_z (mm/t)
MM ERS080B12-4T05	8.00	4	12.00	0.25	45.0	T05	0	7.70	18.00	46.0	5.0	●	0.03-0.08
MM ERS100B15-4T06	10.00	4	15.00	0.30	45.0	T06	0	9.60	22.00	46.0	5.0	●	0.03-0.09
MM ERS120B18-4T08	12.00	4	18.00	0.35	45.0	T08	0	11.70	27.00	46.0	5.0	●	0.04-0.10

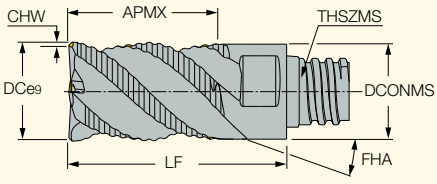
- For shanks, see pages 1112-1124 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 1047-1048
- Do not apply lubricant to the threaded connection • For user guide, see pages 1157-1158

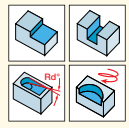
(1) Number of flutes
(2) 0 - Without coolant supply, 1 - With coolant supply
(3) Maximum ramping angle

MM ERS-1.5xD

Interchangeable Solid Carbide Rough Milling Heads with 1.5xD Flute Lengths for High Metal Removal Rates







I N C H

Designation	Dimensions DC	NOF(1)	APMX	CHW	KCH	THSZMS	CSP(2)	DCONMS	LF	FHA	RMPX°(3)	IC908	Recommended Machining Data f_z (inch/t)
MM ERS312B47-4T05	.312	4	.4690	.010	45.00	T05	0	.303	.709	46.0	5.0	●	.0011-.0031
MM ERS375B56-4T06	.375	4	.5630	.012	45.00	T06	0	.366	.866	46.0	5.0	●	.0011-.0035
MM ERS500B75-4T08	.500	4	.7500	.014	45.00	T08	0	.488	1.063	46.0	5.0	●	.0015-.0039

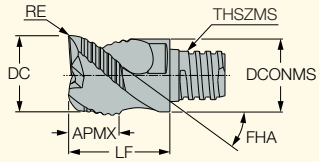
- For shanks, see pages 1112-1124 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 1047-1048
- Do not apply lubricant to the threaded connection • For user guide, see pages 1157-1158

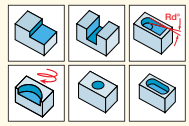
(1) Number of flutes
(2) 0 - Without coolant supply, 1 - With coolant supply
(3) Maximum ramping angle

MULTI-MASTER

MM ERA
Interchangeable Solid Carbide Rough Milling Heads for Machining Aluminum at High Metal Removal Rates







ALUMINUM

M E T R I C

Designation	Dimensions DC	NOF(1)	APMX	RE	THSZMS	DCONMS	LF	FHA	RMPX°(2)	CSP(3)	IC08	Recommended Machining Data f_z (mm/t)
MM ERA080B05R0.2-3T05	8.00	3	5.00	0.20	T05	7.70	10.00	45.0	5.0	0	●	0.03-0.15
MM ERA100B06R0.2-3T06	10.00	3	6.00	0.20	T06	9.60	13.00	45.0	5.0	0	●	0.05-0.20
MM ERA120B08R0.2-3T08	12.00	3	8.00	0.20	T08	11.70	16.50	45.0	5.0	0	●	0.07-0.22

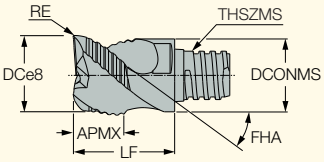
- For shanks, see pages 1112-1124 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 1047-1048
- Do not apply lubricant to the threaded connection • For user guide, see pages 1157-1158

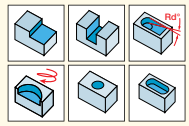
(1) Number of flutes
(2) Maximum ramping angle
(3) 0 - Without coolant supply, 1 - With coolant supply

MULTI-MASTER

MM ERA
Interchangeable Solid Carbide Rough Milling Heads for Machining Aluminum at High Metal Removal Rates







ALUMINUM

I N C H

Designation	Dimensions DC	NOF(1)	APMX	RE	THSZMS	DCONMS	LF	FHA	RMPX°(2)	CSP(3)	IC08	Recommended Machining Data f_z (inch/t)
MM ERA.312B20R008-3T05 08	.312	3	.210	.0080	T05	.300	.390	45.0	5.0	0	●	.0010-.0060
MM ERA.375B23R008-3T06 08	.375	3	.250	.0080	T06	.360	.510	45.0	5.0	0	●	.0020-.0080
MM ERA.500B31R008-3T08 08	.500	3	.330	.0080	T08	.480	.650	45.0	5.0	0	●	.0030-.0090

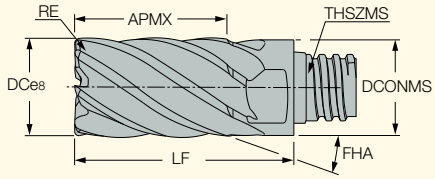
- For shanks, see pages 1112-1124 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 1047-1048
- Do not apply lubricant to the threaded connection • For user guide, see pages 1157-1158

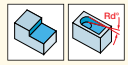
(1) Number of flutes
(2) Maximum ramping angle
(3) 0 - Without coolant supply, 1 - With coolant supply

MULTI-MASTER

MM EC-CF-Z7/9-1.5xD
Interchangeable 7, 9 Flute Solid Carbide Endmill Heads with 36° Helix and 1.5xD Flute Lengths







M E T R I C

Designation	Dimensions DC	APMX	RE	NOF(1)	THSZMS	DCONMS	LF	FHA	CSP(2)	RMPX°(3)	IC908	Recommended Machining Data f_z (mm/t)
MM EC080H12R05CF-7T05	8.00	12.00	0.50	7	T05	7.70	18.00	36.0	0	3.0	●	0.03-0.10
MM EC100H15R05CF-7T06	10.00	15.00	0.50	7	T06	9.60	22.00	36.0	0	3.0	●	0.04-0.10
MM EC120H18R05CF-7T08	12.00	18.00	0.50	7	T08	11.70	27.00	36.0	0	3.0	●	0.04-0.10

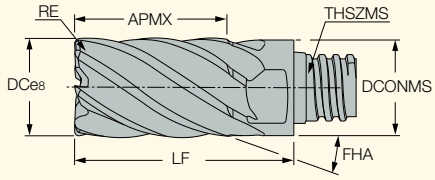
- For shanks, see pages 1112-1124 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 1047-1048
- Do not apply lubricant to the threaded connection • For user guide, see pages 1157-1158

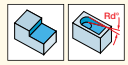
(1) Number of flutes
(2) 0 - Without coolant supply, 1 - With coolant supply
(3) Maximum ramping angle

MULTI-MASTER

MM EC-CF-Z7/9-1.5xD
Interchangeable 7, 9 Flute Solid Carbide Endmill Heads with 36° Helix and 1.5xD Flute Lengths







I N C H

Designation	Dimensions DC	APMX	RE	NOF(1)	THSZMS	DCONMS	LF	FHA	CSP(2)	RMPX°(3)	IC908	Recommended Machining Data f_z (inch/t)
MM EC312H47R015-7T05	.312	.4690	.0150	7	T05	.303	.709	36.0	0	3.0	●	.0011-.0039
MM EC375H56R015-7T06	.375	.5630	.0150	7	T06	.366	.866	36.0	0	3.0	●	.0015-.0039
MM EC500H75R015-7T08	.500	.7500	.0150	7	T08	.488	1.063	36.0	0	3.0	●	.0015-.0039

- For shanks, see pages 1112-1124 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 1047-1048
- Do not apply lubricant to the threaded connection • For user guide, see pages 1157-1158

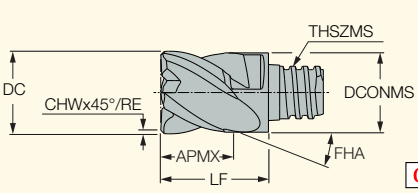
(1) Number of flutes
(2) 0 - Without coolant supply, 1 - With coolant supply
(3) Maximum ramping angle

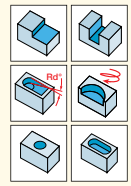
MULTI-MASTER

MM EC-CF

Interchangeable Solid Carbide Endmill Heads for CHATTER-FREE Roughing and Finishing Operations







M E T R I C

Designation	Dimensions DC	RE	NOF(2)	APMX	THSZMS	DCONMS	LF	FHA	CSP(3)	RMPX°(4)	CHW	KCH	IC908	Recommended Machining Data f_z (mm/t)
MM EC080E05C3CF-4T05	8.00	-	4	5.00	T05	7.70	10.00	38.0	0	5.0	0.30	45.0	●	0.03-0.09
MM EC080E05R0CF-4T05	8.00	0.00	4	5.00	T05	7.70	10.00	38.0	0	5.0	-	-	●	0.03-0.09
MM EC080E05R05CF-4T05	8.00	0.50	4	5.00	T05	7.70	10.00	38.0	0	5.0	-	-	●	0.03-0.09
MM EC100E07C4CF-4T06	10.00	-	4	7.00	T06	9.60	13.00	38.0	0	5.0	0.40	45.0	●	0.03-0.10
MM EC100E07R00CF-4T06	10.00	0.00	4	7.00	T06	9.60	13.00	38.0	0	5.0	-	-	●	0.03-0.10
MM EC100E07R02CF-4T06	10.00	0.20	4	7.00	T06	9.60	13.00	38.0	0	5.0	-	-	●	0.03-0.10
MM EC100E07R04CF-4T06	10.00	0.40	4	7.00	T06	9.60	13.00	38.0	0	5.0	-	-	●	0.03-0.10
MM EC100E07R05CF-4T06	10.00	0.50	4	7.00	T06	9.60	13.00	38.0	0	5.0	-	-	●	0.03-0.10
MM EC100E07R25CF-4T06	10.00	2.50	4	7.00	T06	9.60	13.00	38.0	0	5.0	-	-	●	0.03-0.10
MM EC120E09C5CF-4T08	12.00	-	4	9.00	T08	11.70	16.50	38.0	0	5.0	0.50	45.0	●	0.04-0.11
MM EC120E09C5CF-4T08I (1)	12.00	-	4	9.00	T08	11.70	16.50	38.0	1	5.0	0.50	45.0	●	0.04-0.11
MM EC120E09R00CF-4T08	12.00	0.00	4	9.00	T08	11.70	16.50	38.0	0	5.0	-	-	●	0.04-0.11
MM EC120E09R02CF-4T08	12.00	0.20	4	9.00	T08	11.70	16.50	38.0	0	5.0	-	-	●	0.04-0.11
MM EC120E09R04CF-4T08	12.00	0.40	4	9.00	T08	11.70	16.50	38.0	0	5.0	-	-	●	0.04-0.11
MM EC120E09R05CF-4T08	12.00	0.50	4	9.00	T08	11.70	16.50	38.0	0	5.0	-	-	●	0.04-0.11
MM EC120E09R15CF-4T08	12.00	1.50	4	9.00	T08	11.70	16.50	38.0	0	5.0	-	-	●	0.04-0.11

- For shanks, see pages 1112-1124 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 1047-1048
- Do not apply lubricant to the threaded connection • For user guide, see pages 1157-1158

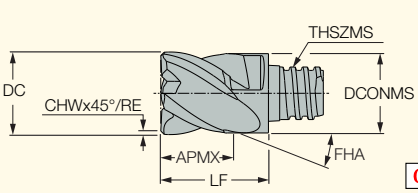
(1) With coolant holes directed to each flute
(2) Number of flutes
(3) 0 - Without coolant supply, 1 - With coolant supply
(4) Maximum ramping angle

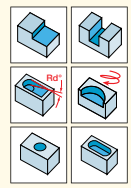
MULTI-MASTER

MM EC-CF

Interchangeable Solid Carbide Endmill Heads for CHATTER-FREE Roughing and Finishing Operations







I N C H

Designation	Dimensions DC	RE	NOF(1)	APMX	THSZMS	DCONMS	LF	FHA	CSP(2)	RMPX°(3)	CHW	KCH	IC908	Recommended Machining Data f_z (inch/t)
MM EC312E20C12CF-4T05	.312	-	4	.220	T05	.303	.393	38.0	0	5.0	.012	45.00	●	.0010-.0040
MM EC312E20R0-CF-4T05	.312	.0000	4	.220	T05	.303	.393	38.0	0	5.0	-	-	●	.0010-.0040
MM EC312E20R15CF-4T05	.312	.0150	4	.220	T05	.303	.393	38.0	0	5.0	-	-	●	.0010-.0040
MM EC080E05R0CF-4T05	.315	.0000	4	.197	T05	.303	.394	38.0	0	5.0	-	-	●	.0012-.0035
MM EC375E27C16CF-4T06	.375	-	4	.299	T06	.370	.512	38.0	0	5.0	.016	45.00	●	.0010-.0040
MM EC375E27R0-CF-4T06	.375	.0000	4	.299	T06	.370	.512	38.0	0	5.0	-	-	●	.0010-.0040
MM EC375E27R15CF-4T06	.375	.0150	4	.299	T06	.370	.512	38.0	0	5.0	-	-	●	.0010-.0040
MM EC120E09R00CF-4T08	.472	.0000	4	.354	T08	.461	.650	38.0	0	5.0	-	-	●	.0016-.0043
MM EC120E09R02CF-4T08	.472	.0079	4	.354	T08	.461	.650	38.0	0	5.0	-	-	●	.0016-.0043
MM EC120E09R04CF-4T08	.472	.0157	4	.354	T08	.461	.650	38.0	0	5.0	-	-	●	.0016-.0043
MM EC120E09R15CF-4T08	.472	.0590	4	.354	T08	.461	.650	38.0	0	5.0	-	-	●	.0016-.0043
MM EC500E37C20CF-4T08	.500	-	4	.374	T08	.488	.650	38.0	0	5.0	.020	45.00	●	.0015-.0043
MM EC500E37R0-CF-4T08	.500	.0000	4	.374	T08	.488	.650	38.0	0	5.0	-	-	●	.0015-.0043
MM EC500E37R15CF-4T08	.500	.0150	4	.374	T08	.488	.650	38.0	0	5.0	-	-	●	.0015-.0043
MM EC500E37R31CF-4T08	.500	.0310	4	.374	T08	.488	.650	38.0	0	5.0	-	-	●	.0015-.0043
MM EC500E37R62CF-4T08	.500	.0610	4	.374	T08	.488	.650	38.0	0	5.0	-	-	●	.0015-.0043

- For shanks, see pages 1112-1124 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 1047-1048
- Do not apply lubricant to the threaded connection • For user guide, see pages 1157-1158

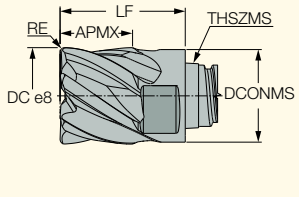
(1) Number of flutes
(2) 0 - Without coolant supply, 1 - With coolant supply
(3) Maximum ramping angle

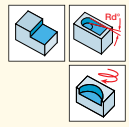
MULTI-MASTER

MM ECK-CF

5,6 Flute Solid Carbide Heads with 35°/38° Helix Featuring Different Corner Radii For Machining Titanium Alloys







M E T R I C

Designation	Dimensions DC	RE	NOF(1)	APMX	THSZMS	DCONMS	LF	CSP(2)	RMPX°(3)	IC908	Recommended Machining Data f_z (mm/t)
MM ECK080H05R04-6T05CF	8.00	0.40	6	5.00	T05	7.70	10.00	0	5.0	●	0.04-0.08
MM ECK100H07R05-6T06CF	10.00	0.50	6	7.00	T06	9.60	13.00	0	5.0	●	0.04-0.08
MM ECK120H09R05-6T08CF	12.00	0.50	6	9.00	T08	11.70	16.50	0	5.0	●	0.04-0.08

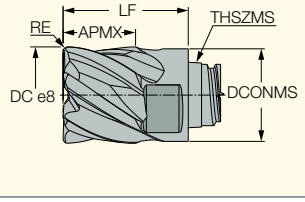
- For shanks, see pages 1112-1124 • For clamping keys (should be ordered separately), tightening torques and clamping instructions, see pages 1047-1048
- Do not apply lubricant to the threaded connection • For user guide, see pages 1157-1158

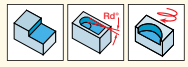
(1) Number of flutes
(2) 0 - Without coolant supply, 1 - With coolant supply
(3) Maximum ramping angle

MM ECK-CF

Five and Six-Flute Heads with 35°/38° Helix Featuring Different Corner Radii For Machining Titanium Alloys







I N C H

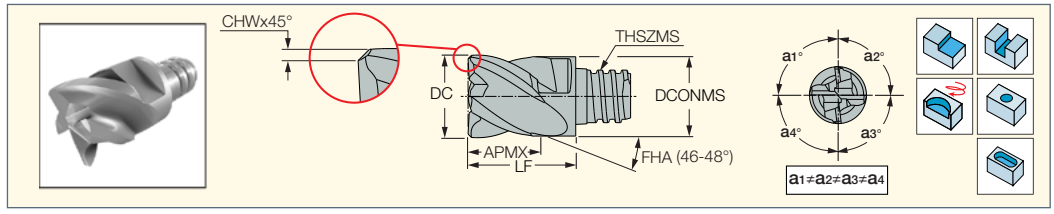
Designation	Dimensions DC	RE	NOF(1)	APMX	THSZMS	DCONMS	LF	CSP(2)	RMPX°(3)	IC908	Recommended Machining Data f_z (inch/t)
MM ECK.312H20R015-6T05CF	.312	.0150	6	.2000	T05	.303	.394	0	5.0	●	.0016-.0031
MM ECK.375H27R020-6T06CF	.375	.0200	6	.2700	T06	.366	.512	0	5.0	●	.0016-.0031
MM ECK.500H37R020-6T08CF	.500	.0200	6	.3700	T08	.488	.650	0	5.0	●	.0016-.0031

- For shanks, see pages 1112-1124 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 1047-1048
- Do not apply lubricant to the threaded connection • For user guide, see pages 1157-1158

(1) Number of flutes
(2) 0 - Without coolant supply, 1 - With coolant supply
(3) Maximum ramping angle

MULTI-MASTER

MM EC-H-4-CF
Interchangeable Carbide Endmill Heads for CHATTER-FREE Milling Alloyed Steel



M E T R I C

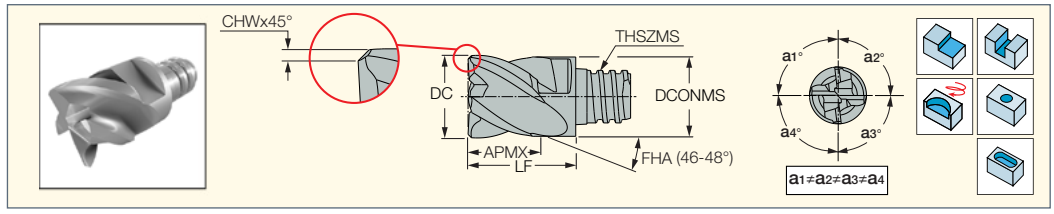
Designation	Dimensions DC	NOF(1)	APMX	THSZMS	DCONMS	LF	CSP(2)	CHW	KCH	IC908	Recommended Machining Data f_z (mm/t)
MM EC080H05C3-4T05CF	8.00	4	5.00	T05	7.70	10.00	0	0.30	45.0	●	0.03-0.09
MM EC100H07C4-4T06CF	10.00	4	7.00	T06	9.60	13.00	0	0.40	45.0	●	0.03-0.10
MM EC120H09C5-4T08CF	12.00	4	9.00	T08	11.70	16.50	0	0.50	45.0	●	0.04-0.11

- For shanks, see pages 1112-1124 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 1047-1048
- Do not apply lubricant to the threaded connection • For user guide, see pages 1157-1158

(1) Number of flutes
(2) 0 - Without coolant supply, 1 - With coolant supply

MULTI-MASTER

MM EC-H-4-CF
Interchangeable Carbide Endmill Heads for CHATTER-FREE Milling Alloyed Steel



I N C H

Designation	Dimensions DC	NOF(1)	APMX	THSZMS	DCONMS	LF	CSP(2)	CHW	KCH	IC908	Recommended Machining Data f_z (inch/t)
MM EC.312H20C12-4T05CF	.312	4	.210	T05	.303	.393	0	.012	45.00	●	.0010-.0030
MM EC.375H27C16-4T06CF	.375	4	.291	T06	.364	.510	0	.016	45.00	●	.0010-.0040
MM EC.500H37C20-4T08CF	.500	4	.366	T08	.488	.650	0	.020	45.00	●	.0016-.0040

- For shanks, see pages 1112-1124 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 1047-1048
- Do not apply lubricant to the threaded connection • For user guide, see pages 1157-1158

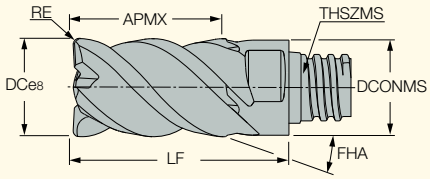
(1) Number of flutes
(2) 0 - Without coolant supply, 1 - With coolant supply

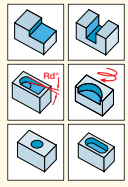
MULTI-MASTER

MM EC-Z4-1.5xD

Interchangeable Solid Carbide Endmill Heads with 1.5xD Flute Lengths for CHATTER-FREE Roughing and Finishing







M E T R I C

Designation	Dimensions DC	NOF(1)	APMX	RE	THSZMS	DCONMS	LF	FHA	CSP(2)	RMPX°(3)	Tough ↔ Hard IC908	IC608	Recommended Machining Data f_z (mm/t)
MM EC080B12R000-4T05	8.00	4	12.00	0.00	T05	7.70	18.00	46.5	0	5.0		●	0.03-0.09
MM EC080H12R05CF-4T05	8.00	4	12.00	0.50	T05	7.70	18.00	46.5	0	5.0	●		0.03-0.09
MM EC100B15R000-4T06	10.00	4	15.00	0.00	T06	9.60	22.00	46.5	0	5.0		●	0.03-0.10
MM EC100H15R05CF-4T06	10.00	4	15.00	0.50	T06	9.60	22.00	46.5	0	5.0	●		0.03-0.10
MM EC120B18R000-4T08	12.00	4	18.00	0.00	T08	11.70	27.00	46.5	0	5.0		●	0.04-0.11
MM EC120H18R05CF-4T08	12.00	4	18.00	0.50	T08	11.70	27.00	46.5	0	5.0	●		0.04-0.11

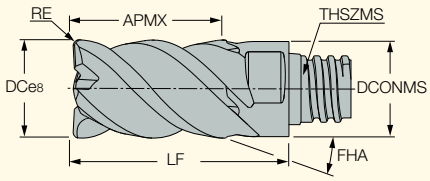
• For shanks, see pages 1112-1124 • For tightening torques and clamping instructions, see pages 1047-1048 • Do not apply lubricant to the threaded connection
• For user guide, see pages 1157-1158
(1) Number of flutes
(2) 0 - Without coolant supply, 1 - With coolant supply
(3) Maximum ramping angle

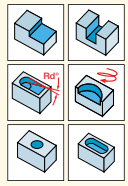
MULTI-MASTER

MM EC-Z4-1.5xD

Interchangeable Solid Carbide Endmill Heads with 1.5xD Flute Lengths for CHATTER-FREE Roughing and Finishing







I N C H

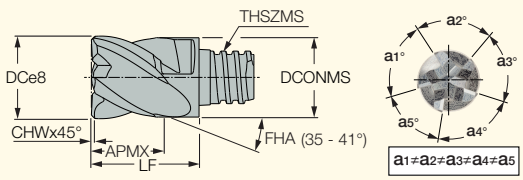
Designation	Dimensions DC	NOF(1)	APMX	RE	THSZMS	DCONMS	LF	FHA	CSP(2)	RMPX°(3)	Tough ↔ Hard IC908	IC608	Recommended Machining Data f_z (inch/t)
MM EC312H47R015CF-4T05	.312	4	.4700	.0150	T05	.303	.709	46.5	0	5.0	●		.0011-.0035
MM EC312B47R000-4T05	.312	4	.4700	.0000	T05	.303	.709	46.5	0	5.0		●	.0011-.0035
MM EC375H56R015CF-4T06	.375	4	.5600	.0150	T06	.366	.866	46.5	0	5.0	●		.0012-.0039
MM EC375B56R000-4T06	.375	4	.5600	.0000	T06	.366	.866	46.5	0	5.0		●	.0012-.0039
MM EC500H75R015CF-4T08	.500	4	.7500	.0150	T08	.488	1.063	46.5	0	5.0	●		.0015-.0043
MM EC500B75R000-4T08	.500	4	.7500	.0000	T08	.488	1.063	46.5	0	5.0		●	.0015-.0043

• For shanks, see pages 1112-1124 • For tightening torques and clamping instructions, see pages 1047-1048 • Do not apply lubricant to the threaded connection
• For user guide, see pages 1157-1158
(1) Number of flutes
(2) 0 - Without coolant supply, 1 - With coolant supply
(3) Maximum ramping angle

MULTI-MASTER

MM EC-H-5-CF
Interchangeable Carbide Endmill Heads for CHATTER-FREE Milling of High Temperature Alloys such as Titanium and Inconel





M E T R I C

Designation	Dimensions DC	NOF(1)	APMX	THSZMS	DCONMS	LF	RMPX°(2)	CSP(3)	CHW	KCH	IC908	Recommended Machining Data f_z (mm/t)
MM EC080H05C3-5T05CF	8.00	5	5.00	T05	7.70	10.00	5.0	0	0.30	45.0	●	0.03-0.09
MM EC100H07C4-5T06CF	10.00	5	7.00	T06	9.60	13.00	5.0	0	0.40	45.0	●	0.03-0.10
MM EC120H09C5-5T08CF	12.00	5	9.00	T08	11.70	16.50	4.0	0	0.50	45.0	●	0.04-0.11

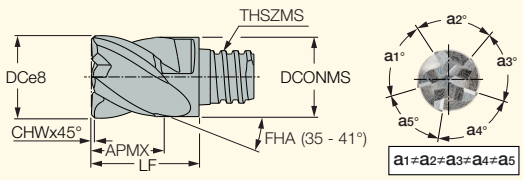
- For shanks, see pages 1112-1124 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 1047-1048
- Do not apply lubricant to the threaded connection • For user guide, see pages 1157-1158

(1) Number of flutes
(2) Maximum ramping angle
(3) 0 - Without coolant supply, 1 - With coolant supply

MULTI-MASTER

MM EC-H-5-CF
Interchangeable Carbide Endmill Heads for CHATTER-FREE Milling of High Temperature Alloys such as Titanium and Inconel





I N C H

Designation	Dimensions DC	NOF(1)	APMX	THSZMS	DCONMS	LF	RMPX°(2)	CSP(3)	CHW	KCH	IC908	Recommended Machining Data f_z (inch/t)
MM EC.312H20C12-5T05CF	.312	5	.197	T05	.303	.394	5.0	0	.012	45.00	●	.0012-.0035
MM EC080H05C3-5T05CF	.315	5	.197	T05	.303	.394	5.0	0	.012	45.00	●	.0012-.0035
MM EC.375H27C16-5T06CF	.375	5	.276	T06	.366	.512	5.0	0	.016	45.00	●	.0012-.0039
MM EC100H07C4-5T06CF	.394	5	.276	T06	.378	.512	5.0	0	.016	45.00	●	.0012-.0039
MM EC120H09C5-5T08CF	.472	5	.354	T08	.461	.650	4.0	0	.020	45.00	●	.0016-.0043
MM EC.500H37C20-5T08CF	.500	5	.354	T08	.488	.650	4.0	0	.020	45.00	●	.0016-.0043

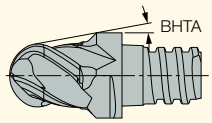
- For shanks, see pages 1112-1124 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 1047-1048
- Do not apply lubricant to the threaded connection • For user guide, see pages 1157-1158

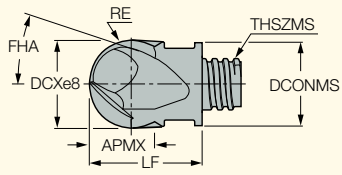
(1) Number of flutes
(2) Maximum ramping angle
(3) 0 - Without coolant supply, 1 - With coolant supply

MULTI-MASTER

MM EB
Interchangeable Solid Carbide
Ball Nose Milling Heads







M E T R I C

Designation	Dimensions										IC908
	DCX[2]	NOF[3]	APMX	RE	THSZMS	DCONMS	LF	FHA	CSP[4]	BHTA	
MM EB050E07-4T05	5.00	4	7.00	2.49	T05	8.00	15.00	38.0	0	7.4	●
MM EB060E04-4T04	6.00	4	4.00	2.99	T04	5.80	8.50	37.0	0	-	●
MM EB060E05-4T05	6.00	4	5.00	2.99	T05	8.00	10.00	38.0	0	11.7	●
MM EB080A05-2T05	8.00	2	5.00	3.98	T05	7.70	10.00	30.0	0	-	●
MM EB080A05-4T05	8.00	4	5.00	3.98	T05	7.70	10.00	30.0	0	-	●
MM EB100A07-2T06	10.00	2	7.00	4.98	T06	9.60	13.00	30.0	0	-	●
MM EB100A07-4T06	10.00	4	7.00	4.98	T06	9.60	13.00	30.0	0	-	●
MM EB120A09-2T08	12.00	2	9.00	5.98	T08	11.70	16.50	30.0	0	-	●
MM EB120H09CF-3T08I [1]	12.00	3	9.00	5.98	T08	11.70	16.50	38.0	1	-	●
MM EB120A09-4T08	12.00	4	9.00	5.98	T08	11.70	16.50	30.0	0	-	●

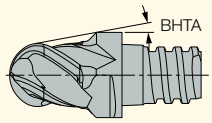
- For shanks, see pages 1112-1124 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 1047-1048
- Do not apply lubricant to the threaded connection • For user guide, see pages 1157-1158

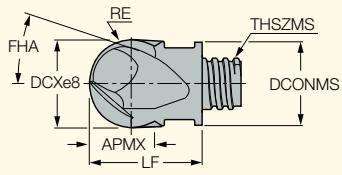
[1] With coolant holes directed to each flute
[2] Cutting diameter maximum
[3] Number of flutes
[4] 0 - Without coolant supply, 1 - With coolant supply

MULTI-MASTER

MM EB
Interchangeable Solid Carbide
Ball Nose Milling Heads







I N C H

Designation	Dimensions										IC908
	DCX[1]	NOF[2]	APMX	RE	THSZMS	DCONMS	LF	FHA	CSP[3]	BHTA	
MM EB.187E27-4T05	.187	4	.280	.0900	T05	.320	.590	38.0	0	7.90	●
MM EB.250E15-4T04	.250	4	.165	.1240	T04	.228	.335	38.0	0	-	●
MM EB.250E20-4T05	.250	4	.200	.1300	T05	.300	.390	38.0	0	9.80	●
MM EB.312A20-2T05	.312	2	.200	.1600	T05	.300	.350	30.0	0	-	●
MM EB.312A20-4T05	.312	4	.200	.1600	T05	.300	.350	30.0	0	-	●
MM EB.375A27-2T06	.375	2	.280	.1900	T06	.360	.510	30.0	0	-	●
MM EB.375A27-4T06	.375	4	.280	.1900	T06	.360	.510	30.0	0	-	●
MM EB.500A37-2T08	.500	2	.374	.2490	T08	.488	.650	30.0	0	-	●
MM EB.500A37-4T08	.500	4	.374	.2490	T08	.488	.650	30.0	0	-	●

- For shanks, see pages 1112-1124 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 1047-1048
- Do not apply lubricant to the threaded connection • For user guide, see pages 1157-1158

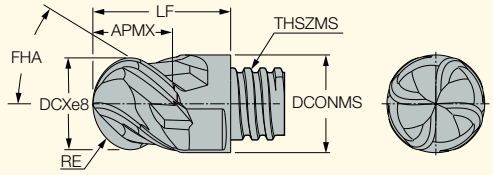
[1] Cutting diameter maximum
[2] Number of flutes
[3] 0 - Without coolant supply, 1 - With coolant supply

MULTI-MASTER

MM EBC

Interchangeable Solid Carbide Ball Nose Milling Heads for High Productivity on Hard Materials





M E T R I C

Designation	Dimensions DCX(1)	NOF(2)	APMX	RE	THSZMS	DCONMS	LF	FHA	CSP(3)		IC903
MM EBC080B05-4T05CF	8.00	4	5.40	3.98	T05	7.70	10.00	45.0	0	MM KEY 6X4*	●
MM EBC100B07-4T06CF	10.00	4	7.40	4.98	T06	9.60	13.00	45.0	0	MM KEY 8X5*	●
MM EBC120B09-4T08CF	12.00	4	9.30	5.98	T08	11.70	16.50	45.0	0	MM KEY 10X7*	●

- For shanks, see pages 1112-1124 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 1047-1048
- Do not apply lubricant to the threaded connection • For user guide, see pages 1157-1158

(1) Cutting diameter maximum

(2) Number of flutes

(3) 0 - Without coolant supply, 1 - With coolant supply

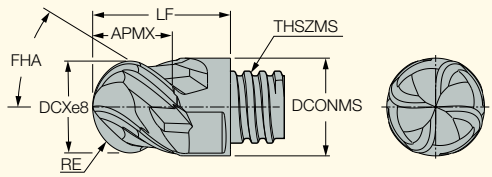
* Optional, to be ordered separately

MULTI-MASTER

MM EBC

Interchangeable Solid Carbide Ball Nose Milling Heads





I N C H

Designation	Dimensions DCX(1)	NOF(2)	APMX	RE	THSZMS	DCONMS	LF	FHA	CSP(3)		IC903
MM EBC.312B20-4T05CF	.312	4	.200	.1560	T05	.300	.390	45.0	0	MM KEY 6X4*	●
MM EBC080B05-4T05CF	.315	4	.213	.1567	T05	.303	.394	45.0	0	MM KEY 6X4*	●
MM EBC.375B27-4T06CF	.375	4	.290	.1870	T06	.360	.510	45.0	0	MM KEY 8X5*	●
MM EBC100B07-4T06CF	.394	4	.291	.1961	T06	.378	.512	45.0	0	MM KEY 8X5*	●
MM EBC120B09-4T08CF	.472	4	.366	.2354	T08	.461	.650	45.0	0	MM KEY 10X7*	●
MM EBC.500B37-4T08CF	.500	4	.370	.2500	T08	.490	.650	45.0	0	MM KEY 10X7*	●

- For shanks, see pages 1112-1124 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 1047-1048
- Do not apply lubricant to the threaded connection • For user guide, see pages 1157-1158

(1) Cutting diameter maximum

(2) Number of flutes

(3) 0 - Without coolant supply, 1 - With coolant supply

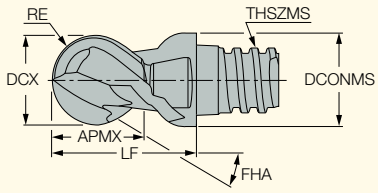
* Optional, to be ordered separately

MULTI-MASTER

MM EBA-2

Interchangeable 2 Flute High Precision Solid Carbide Ball Nose Heads for Machining Aluminum





ALUMINUM

M E T R I C

Designation	Dimensions										IC08
	DCX[1]	NOF[2]	APMX	RE	RETOL[3]	THSZMS	DCONMS	LF	CSP[4]	FHA	
MM EBA080B05-2T05	8.00	2	5.00	3.98	0.010	T05	7.70	10.00	0	45.0	●
MM EBA100B07-2T06	10.00	2	7.00	4.98	0.010	T06	9.60	13.00	0	45.0	●
MM EBA120B09-2T08	12.00	2	9.00	5.98	0.012	T08	11.50	16.50	0	45.0	●

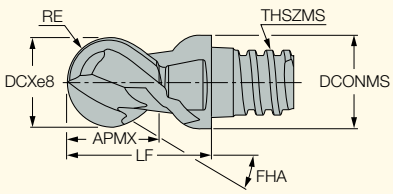
• For shanks, see pages 1112-1124 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 1047-1048
• Do not apply lubricant to the threaded connection • For user guide, see pages 1157-1158

(1) Cutting diameter maximum
(2) Number of flutes
(3) Corner radius tolerance (+/-)
(4) 0 - Without coolant supply, 1 - With coolant supply

MM EBA-2

Interchangeable 2 Flute High Precision Solid Carbide Ball Nose Heads for Machining Aluminum





ALUMINUM

I N C H

Designation	Dimensions										IC08
	DCX[1]	NOF[2]	APMX	RE	RETOL[3]	THSZMS	DCONMS	LF	CSP[4]	FHA	
MM EBA.312B20-2T05	.312	2	.200	.1560	.0004	T05	.300	.390	0	45.0	●
MM EBA.375B27-2T06	.375	2	.270	.1870	.0004	T06	.360	.510	0	45.0	●
MM EBA.500B37-2T08	.500	2	.374	.2500	.0005	T08	.488	.650	0	45.0	●

• For shanks, see pages 1112-1124 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 1047-1048
• Do not apply lubricant to the threaded connection • For user guide, see pages 1157-1158

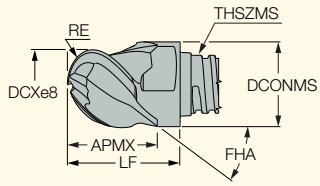
(1) Cutting diameter maximum
(2) Number of flutes
(3) Corner radius tolerance (+/-)
(4) 0 - Without coolant supply, 1 - With coolant supply

MULTI-MASTER

MM EBA-3

Interchangeable 3 Flute High Precision Solid Carbide Ball Nose Heads for Machining Aluminum





ALUMINUM

M E T R I C

Designation	Dimensions										IC08
	DCX[1]	NOF[2]	APMX	RE	RETOL[3]	THSZMS	DCONMS	LF	FHA	CSP[4]	
MM EBA080H05-3T05	8.00	3	5.50	3.98	0.010	T05	7.70	10.00	45.0	0	•
MM EBA100H07-3T06	10.00	3	7.50	4.98	0.010	T06	9.60	13.00	45.0	0	•
MM EBA120H09-3T08	12.00	3	9.50	5.98	0.012	T08	11.70	16.50	45.0	0	•

• For shanks, see pages 1112-1124 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 1047-1048
• Do not apply lubricant to the threaded connection • For user guide, see pages 1157-1158

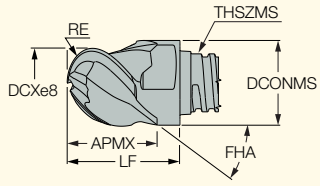
(1) Cutting diameter maximum
(2) Number of flutes
(3) Corner radius tolerance (+/-)
(4) 0 - Without coolant supply, 1 - With coolant supply

MULTI-MASTER

MM EBA-3

Interchangeable 3 Flute High Precision Solid Carbide Ball Nose Heads for Machining Aluminum





ALUMINUM

I N C H

Designation	Dimensions										IC08
	DCX[1]	NOF[2]	APMX	RE	RETOL[3]	THSZMS	DCONMS	LF	FHA	CSP[4]	
MM EBA.312H20-3T05	.312	3	.2200	.1560	.0003	T05	.303	.394	45.0	0	•
MM EBA.375H27-3T06	.375	3	.2900	.1875	.0003	T06	.378	.512	45.0	0	•
MM EBA.500H37-3T08	.500	3	.3800	.2500	.0004	T08	.461	.650	45.0	0	•

• For shanks, see pages 1112-1124 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 1047-1048
• Do not apply lubricant to the threaded connection • For user guide, see pages 1157-1158

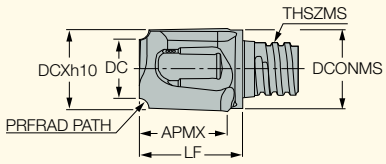
(1) Cutting diameter maximum
(2) Number of flutes
(3) Corner radius tolerance (+/-)
(4) 0 - Without coolant supply, 1 - With coolant supply

MULTI-MASTER

MM HR

Interchangeable 2 Flute
Solid Carbide Corner
Round Milling Heads





ECONOMICAL SOLUTION

M E T R I C

Designation	Dimensions										IC908
	DCX[1]	PRFRAD	Tm[2]	NOF[3]	DC	APMX	THSZMS	CSP[4]	DCONMS	LF	
MM HR1.0/047-5.8-2T05	8.00	1.00	r0.5-3.0	2	5.80	7.50	T05	0	7.60	10.60	●
MM HR1.6/063-6.8-2T06	10.00	1.60	r0.5-3.0	2	6.80	9.50	T06	0	9.50	12.50	●
MM HR2.0/078-6.0-2T06	10.00	2.00	r0.5-3.0	2	6.00	9.50	T06	0	9.50	12.50	●
MM HR2.5/094-5.1-2T06	10.00	2.50	r0.5-3.0	2	5.10	9.50	T06	0	9.50	12.50	●
MM HR3.0/122-6.5-2T08	12.70	3.00	r0.5-4.0	2	6.50	12.00	T08	0	11.50	15.60	●
MM HR4.0/156-4.7-2T08	12.70	4.00	r0.5-4.0	2	4.70	12.00	T08	0	11.50	15.60	●

- For shanks, see pages 1112-1124
- For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 1047-1048
- Do not apply lubricant to the threaded connection
- For user guide, see pages 1157-1158

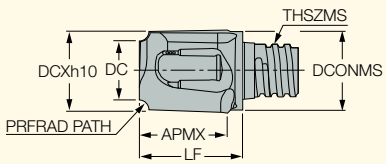
[1] Cutting diameter maximum
[2] Specially tailored radius range upon request.
[3] Number of flutes
[4] 0 - Without coolant supply, 1 - With coolant supply

MULTI-MASTER

MM HR

Interchangeable 2 Flute
Solid Carbide Corner
Round Milling Heads





ECONOMICAL SOLUTION

I N C H

Designation	Dimensions										IC908
	DCX[1]	PRFRAD	Tm[2]	NOF[3]	DC	APMX	THSZMS	CSP[4]	DCONMS	LF	
MM HR1.0/047-5.8-2T05	.315	.0394	r.02-.118	2	.228	.295	T05	0	.299	.417	●
MM HR1.6/063-6.8-2T06	.394	.0630	r.02-.118	2	.268	.374	T06	0	.374	.492	●
MM HR2.0/078-6.0-2T06	.394	.0787	r.02-.118	2	.236	.374	T06	0	.374	.492	●
MM HR2.5/094-5.1-2T06	.394	.0984	r.02-.118	2	.201	.374	T06	0	.374	.492	●
MM HR3.0/122-6.5-2T08	.500	.1181	r.02-.157	2	.256	.472	T08	0	.453	.614	●
MM HR4.0/156-4.7-2T08	.500	.1575	r.02-.157	2	.185	.472	T08	0	.453	.614	●

- For shanks, see pages 1112-1124
- For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 1047-1048
- Do not apply lubricant to the threaded connection
- For user guide, see pages 1157-1158

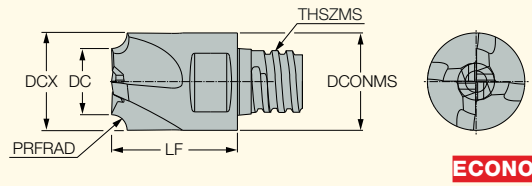
[1] Cutting diameter maximum
[2] Specially tailored radius range upon request
[3] Number of flutes
[4] 0 - Without coolant supply, 1 - With coolant supply

MULTI-MASTER

MM ER

Interchangeable 4 Flute
Solid Carbide Corner
Round Milling Heads





ECONOMICAL SOLUTION

M E T R I C

Designation	Dimensions									IC908
	PRFRAD	Tm(1)	DC	DCX(2)	DCONMS	NOF(3)	LF	THSZMS	CSP(4)	
MM ER0.5/020-5.0-4T04	0.50	0.5-1.0	5.00	6.00	6.00	4	8.50	T04	0	●
MM ER1.0/040-5.8-4T05	1.00	0.5-1.4	5.80	8.00	8.00	4	10.00	T05	0	●
MM ER1.6/063-6.8-4T06	1.60	0.5-2.5	6.80	10.00	10.00	4	13.00	T06	0	●
MM ER2.0/078-6.0-4T06	2.00	0.5-2.5	6.00	10.00	10.00	4	13.00	T06	0	●
MM ER2.5/094-5.1-4T06	2.50	0.5-2.5	5.10	10.00	10.00	4	13.00	T06	0	●
MM ER3.0/125-6.5-4T08	3.00	0.5-3.1	6.50	12.70	12.70	4	16.50	T08	0	●

- For shanks, see pages 1112-1124 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 1047-1048
- Do not apply lubricant to the threaded connection • For user guide, see pages 1157-1158

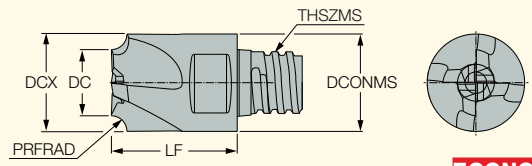
(1) Specially tailored radius range upon request.
(2) Cutting diameter maximum
(3) Number of flutes
(4) 0 - Without coolant supply, 1 - With coolant supply

MULTI-MASTER

MM ER

Interchangeable 4 Flute
Solid Carbide Corner
Round Milling Heads





ECONOMICAL SOLUTION

I N C H

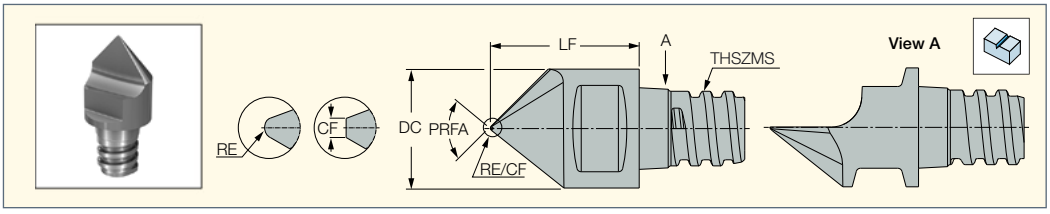
Designation	Dimensions									IC908
	PRFRAD	Tm(1)	DC	DCX(2)	DCONMS	NOF(3)	LF	THSZMS	CSP(4)	
MM ER0.5/020-5.0-4T04	.0196	0.02-.039	.197	.236	.236	4	.335	T04	0	●
MM ER1.0/040-5.8-4T05	.0393	0.02-.055	.228	.315	.315	4	.394	T05	0	●
MM ER1.6/063-6.8-4T06	.0629	0.02-.098	.268	.394	.394	4	.512	T06	0	●
MM ER2.0/078-6.0-4T06	.0787	0.02-.098	.236	.394	.394	4	.512	T06	0	●
MM ER2.5/094-5.1-4T06	.0984	0.02-.098	.201	.394	.394	4	.512	T06	0	●
MM ER3.0/125-6.5-4T08	.1181	0.02-.122	.256	.500	.500	4	.650	T08	0	●

- For shanks, see pages 1112-1124 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 1047-1048
- Do not apply lubricant to the threaded connection • For user guide, see pages 1157-1158

(1) Specially tailored radius range upon request
(2) Cutting diameter maximum
(3) Number of flutes
(4) 0 - Without coolant supply, 1 - With coolant supply

MULTI-MASTER

MM EPG
Single Flute MULTI-MASTER
Engraving Tool Head



M E T R I C

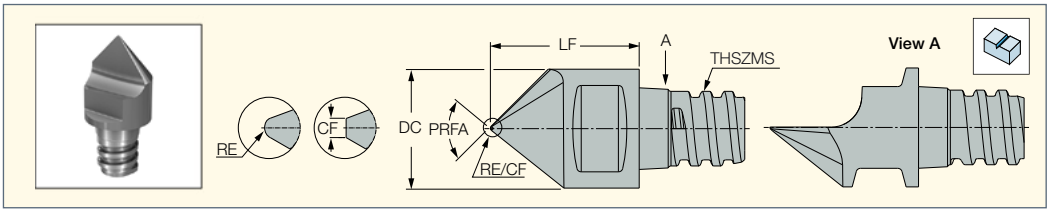
Designation	Dimensions							IC908
	DC	RE	CF[1]	PRFA	LF	THSZMS	CSP[2]	
MM EPG060/60-1T04	6.00	0.20	-	60.00	8.50	T04	0	●
MM EPG080/30-1T05	8.00	0.20	-	30.00	10.00	T05	0	●
MM EPG080/45-1T05	8.00	0.20	-	45.00	10.00	T05	0	●
MM EPG080/60-1T05	8.00	0.20	-	60.00	10.00	T05	0	●
MM EPG080/90-1T05	8.00	0.20	-	90.00	10.00	T05	0	●
MM EPG080/60-F50-1T05	8.00	-	0.50	60.00	10.00	T05	0	●
MM EPG080/60-F75-1T05	8.00	-	0.75	60.00	10.00	T05	0	●
MM EPG080/90-F32-1T05	8.00	-	0.32	90.00	10.00	T05	0	●
MM EPG080/90-F50-1T05	8.00	-	0.50	90.00	10.00	T05	0	●

- For shanks, see pages 1112-1124 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 1047-1048
- Do not apply lubricant to the threaded connection

(1) Front flat

(2) 0 - Without coolant supply, 1 - With coolant supply

MM EPG
Single Flute MULTI-MASTER
Engraving Tool Head



I N C H

Designation	Dimensions							IC908
	DC	RE	CF[1]	PRFA	LF	THSZMS	CSP[2]	
MM EPG060/60-1T04	.236	.0079	-	60.00	.335	T04	0	●
MM EPG080/30-1T05	.315	.0079	-	30.00	.394	T05	0	●
MM EPG080/45-1T05	.315	.0079	-	45.00	.394	T05	0	●
MM EPG080/60-1T05	.315	.0079	-	60.00	.394	T05	0	●
MM EPG080/90-1T05	.315	.0079	-	90.00	.394	T05	0	●
MM EPG080/60-F50-1T05	.315	-	.020	60.00	.394	T05	0	●
MM EPG080/60-F75-1T05	.315	-	.030	60.00	.394	T05	0	●
MM EPG080/90-F32-1T05	.315	-	.013	90.00	.394	T05	0	●
MM EPG080/90-F50-1T05	.315	-	.020	90.00	.394	T05	0	●

- For shanks, see pages 1112-1124 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 1047-1048
- Do not apply lubricant to the threaded connection

(1) Front flat

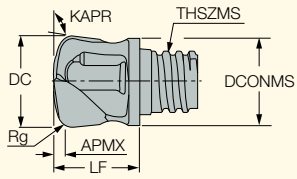
(2) 0 - Without coolant supply, 1 - With coolant supply

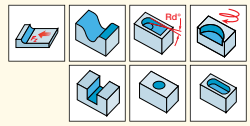
MULTI FEED MASTER

MM FF

Interchangeable 2 Flute FEED-MILL Solid Carbide Heads for Milling at Very Fast Feeds and Small D.O.C.







ECONOMICAL SOLUTION

M E T R I C

Designation	Dimensions DC	NOF(1)	APMX	Rg(2)	THSZMS	DCONMS	LF	CSP(3)	KAPR(4)	RMPX°(5)	Tough ↔ Hard IC908	IC903	Recommended Machining Data f_z (mm/t)
MM FF100R1.5-L12-2T06	10.00	2	0.60	2.00	T06	9.60	12.50	0	97.0	7.0	●		0.30-0.60
MM FF120R2.0-2T08	12.00	2	0.68	2.50	T08	11.50	11.10	0	97.0	7.0	●	●	0.50-1.00

- For shanks, see pages 1112-1124 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 1047-1048
- Do not apply lubricant to the threaded connection • For user guide, see pages 1157-1158

(1) Number of flutes
(2) Radius for programming
(3) 0 - Without coolant supply, 1 - With coolant supply
(4) Tool cutting edge angle
(5) Maximum ramping angle

Machining Example:

Shank: MM S-B-L140-C16-T08
Milling head: MM FF 120R2.0-2T08
Workpiece material: SAE 4340 HRc 28

Plunging
a_p = 2 mm
V_c = 80 mm
F = 0.24 m/min

Milling
a_p = 0.7 mm
a_e = 8 mm
V_c = 150 m/min
F_z = 1 mm/tooth
V_f = 7960 mm/min

Machining Example:

Shank: MM S-A-L070-W20-T10
Milling head: MM FF160R2.0-2T10 908
Workpiece material: P20 HRc 52

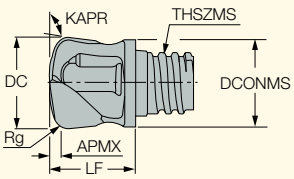
Milling
a_p = 0.2 mm
a_e = 6 mm
V_c = 150 m/min
F_z = 1.4 mm/tooth
V_f = 8355
T = 60 min

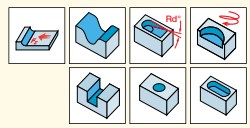
MULTI FEED MASTER

MM FF

Interchangeable 2 Flute FEED-MILL Solid Carbide Heads for Milling at Very Fast Feeds and Small D.O.C.







ECONOMICAL SOLUTION

I N C H

Designation	Dimensions DC	NOF(1)	APMX	Rg(2)	THSZMS	DCONMS	LF	CSP(3)	KAPR(4)	RMPX°(5)	Tough ↔ Hard IC908	IC903	Recommended Machining Data f_z (inch/t)
MM FF375R06-L49-2T06	.375	2	.020	.059	T06	.360	.490	0	100.0	7.0	●		.0118-.0236
MM FF100R1.5-L12-2T06	.394	2	.024	.079	T06	.378	.492	0	97.0	7.0	●		.0118-.0236
MM FF120R2.0-2T08	.472	2	.027	.098	T08	.453	.437	0	97.0	7.0	●	●	.0197-.0394
MM FF500R08-L59-2T08	.500	2	.027	.098	T08	.480	.591	0	95.0	7.0	●		.0197-.0394

- For shanks, see pages 1112-1124 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 1047-1048
- Do not apply lubricant to the threaded connection • For user guide, see pages 1157-1158

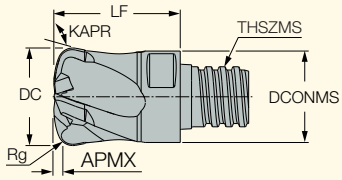
(1) Number of flutes
(2) Radius for programming
(3) 0 - Without coolant supply, 1 - With coolant supply
(4) Tool cutting edge angle
(5) Maximum ramping angle

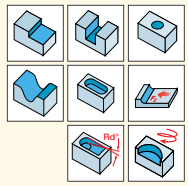
MULTI FEED MASTER

MM EFF

4, 6 Flute Solid Carbide Heads for Milling at Very Fast Feeds and Small D.O.C.







M E T R I C

Designation	Dimensions											Tough ↔ Hard		Recommended Machining Data
	DC	NOF[1]	APMX	THSZMS	DCONMS	LF	RMPX°[2]	KAPR[3]	FHA	Rg[4]	CSP[5]	IC908	IC903	f_z (mm/t)
MM EFF080T3R1.62-4T05	8.00	4	0.40	T05	7.50	10.00	5.0	97.0	20.0	1.62	0		●	0.12-0.48
MM EFF080S2R0.86-6T05	8.00	6	0.40	T05	7.50	10.00	5.0	97.0	0.0	0.86	0		●	0.12-0.48
MM EFF100T4R2.01-4T06	10.00	4	0.50	T06	9.50	13.00	5.0	97.0	20.0	2.01	0		●	0.16-0.57
MM EFF100S2R1.0-6T06	10.00	6	0.45	T06	9.50	13.00	5.0	97.0	0.0	1.00	0		●	0.16-0.57
MM EFF100T2R1.0-6T06H	10.00	6	0.45	T06	9.50	10.00	3.0	97.0	20.0	1.00	1		●	0.16-0.47
MM EFF120T4R1.8-4T08H	12.00	4	0.60	T08	11.50	16.50	5.0	97.0	20.0	1.80	1	●	●	0.16-0.67
MM EFF120T4R2.47-4T08	12.00	4	0.60	T08	11.50	16.50	5.0	97.0	20.0	2.47	0		●	0.16-0.67
MM EFF120S3R1.2-6T08	12.00	6	0.65	T08	11.50	16.50	5.0	97.0	0.0	1.20	0		●	0.16-0.67
MM EFF120T2R1.2-6T08H	12.00	6	0.65	T08	11.50	12.00	3.0	97.0	20.0	1.20	1		●	0.16-0.54
MM EFF127T4R2.59-4T08	12.70	4	0.60	T08	12.20	16.50	5.0	97.0	20.0	2.59	0		●	0.16-0.67
MM EFF127S3R1.3-6T08	12.70	6	0.70	T08	12.70	16.50	5.0	97.0	0.0	1.30	0		●	0.16-0.67
MM EFF127T4R1.3-6T08H	12.70	6	0.70	T08	12.20	12.70	3.0	97.0	20.0	1.30	1		●	0.16-0.67

- For shanks, see pages 1112-1124 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 1047-1048
- Do not apply lubricant to the threaded connection • Heads with coolant supply are recommended for shouldering operations
- For user guide, see page 1077

(1) Number of flutes
(2) Maximum ramping angle
(3) Tool cutting edge angle
(4) Radius for programming
(5) 0 - Without coolant supply, 1 - With coolant supply

MULTI-MASTER Machining Recommendations for MM EFF Heads (Metric)

VDI 3323	Material Group[1]	V_c (m/min)	A_p	A_e	F_z (mm/t) Vs. Tool Diameter (mm) [2,3] 8	10	12
P	1	180	0.045xD	0.7xD	0.48	0.57	0.67
	2	160	0.045xD	0.7xD	0.48	0.57	0.67
	3	160	0.045xD	0.7xD	0.48	0.57	0.67
	4	160	0.045xD	0.7xD	0.48	0.57	0.67
	5	150	0.045xD	0.7xD	0.43	0.50	0.57
	6	150	0.045xD	0.7xD	0.33	0.40	0.48
	7	140	0.045xD	0.7xD	0.33	0.40	0.48
	8	140	0.045xD	0.7xD	0.30	0.35	0.43
	9	140	0.045xD	0.7xD	0.30	0.35	0.43
	10	130	0.04xD	0.6xD	0.28	0.33	0.38
	11	120	0.04xD	0.6xD	0.25	0.30	0.35
	12, 13	120	0.04xD	0.6xD	0.30	0.35	0.43

(1) ISCAR material group in accordance with VDI 3323 standard
(2) For Full Slot: f_z slot=0.6 x f_z
(3) For Ramp Down: f_z ramp=0.1 x f_z

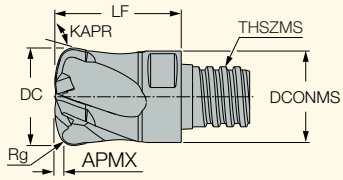
a_p - Depth of cut
a_e - Width of cut

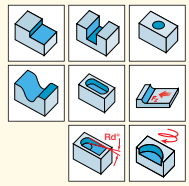
MULTI FEED MASTER

MM EFF

4, 6 Flute Solid Carbide Heads for Milling at Very Fast Feeds and Small D.O.C.







I N C H

Designation	Dimensions DC	NOF(1)	APMX	THSZMS	DCONMS	LF	RMPX°(2)	KAPR(3)	FHA	Rg(4)	CSP(5)	Tough ↔ Hard IC908	IC903	Recommended Machining Data f_z (inch/t)
MM EFF080T3R1.62-4T05	.315	4	.016	T05	.295	.394	5.0	97.0	20.0	.064	0		●	.0047-.0189
MM EFF080S2R0.86-6T05	.315	6	.016	T05	.295	.394	5.0	97.0	0	.034	0		●	.0047-.0189
MM EFF100T4R2.01-4T06	.394	4	.020	T06	.374	.512	5.0	97.0	20.0	.079	0		●	.0063-.0224
MM EFF100S2R1.0-6T06	.394	6	.018	T06	.374	.512	5.0	97.0	0	.039	0		●	.0063-.0224
MM EFF100T2R1.0-6T06H	.394	6	.018	T06	.374	.394	3.0	97.0	20.0	.039	1		●	.0063-.0185
MM EFF120T4R1.8-4T08H	.472	4	.024	T08	.453	.650	5.0	97.0	20.0	.071	1	●	●	.0063-.0264
MM EFF120T4R2.47-4T08	.472	4	.024	T08	.453	.650	5.0	97.0	20.0	.097	0		●	.0063-.0264
MM EFF120S3R1.2-6T08	.472	6	.026	T08	.453	.650	5.0	97.0	0	.047	0		●	.0063-.0264
MM EFF120T2R1.2-6T08H	.472	6	.026	T08	.453	.472	3.0	97.0	20.0	.047	1		●	.0063-.0213
MM EFF127T4R2.59-4T08	.500	4	.024	T08	.480	.650	5.0	97.0	20.0	.102	0		●	.0063-.0264
MM EFF127S3R1.3-6T08	.500	6	.028	T08	.500	.650	5.0	97.0	0	.051	0		●	.0063-.0264
MM EFF127T4R1.3-6T08H	.500	6	.028	T08	.480	.500	3.0	97.0	20.0	.051	1		●	.0063-.0264

- For shanks, see pages 1112-1124 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 1047-1048
- Do not apply lubricant to the threaded connection • Heads with coolant supply are recommended for shouldering operations
- For user guide, see page 1078

(1) Number of flutes
(2) Maximum ramping angle
(3) Tool cutting edge angle
(4) Radius for programming
(5) 0 - Without coolant supply, 1 - With coolant supply

MULTI MASTER Machining Recommendations for MM EFF Heads (Imperial)

VDI 3323	Material Group(1)	V_c (sfm)	A_p	A_e	F_z (ipt) Vs. Tool Diameter (inch) (2,3) .315	.394	.472
P	1	590	.045xD	.7xD	.019	.022	.026
	2	520	.045xD	.7xD	.019	.022	.026
	3	520	.045xD	.7xD	.019	.022	.026
	4	520	.045xD	.7xD	.019	.022	.026
	5	490	.045xD	.7xD	.017	.020	.022
	6	490	.045xD	.7xD	.013	.016	.019
	7	460	.045xD	.7xD	.013	.016	.019
	8	460	.045xD	.7xD	.012	.014	.017
	9	460	.045xD	.7xD	.012	.014	.017
	10	430	.04xD	.6xD	.011	.013	.015
	11	390	.04xD	.6xD	.010	.012	.014
	12, 13	390	.04xD	.6xD	.012	.014	.017

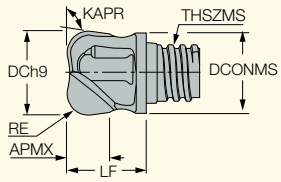
(1) ISCAR material group in accordance with VDI 3323 standard
(2) For Full Slot: f_z slot=0.6 x f_z
(3) For Ramp Down: f_z ramp=0.1 x f_z

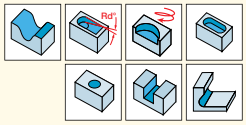
a_p - Depth of cut
a_e - Width of cut

MULTI-MASTER

MM HT
Torodial 2 Flute Interchangeable
Solid Carbide Milling Heads







ECONOMICAL SOLUTION

M E T R I C

Designation	Dimensions DC	NOF(1)	APMX	RE	Tm(2)	THSZMS	CSP(3)	DCONMS	LF	KAPR(4)	RMPX°(5)	Tough ↔ Hard IC908	IC903
MM HT100C08R0.5-2T06	10.00	2	7.00	0.50	r0-1.0	T06	0	9.50	12.45	95.0	5.0	●	
MM HT100C08R1.0-2T06	10.00	2	7.00	1.00	r0-1.0	T06	0	9.50	12.45	95.0	5.0	●	
MM HT100N06R2.0-2T06	10.00	2	6.00	2.00	r0-3.0	T06	0	9.50	12.40	97.0	5.0	●	
MM HT100N07R0.5-2T06	10.00	2	6.90	0.50	r0-1.0	T06	0	9.50	11.20	95.0	5.0		●
MM HT100N07R1.0-2T06	10.00	2	6.90	1.00	r0-1.0	T06	0	9.50	11.20	95.0	5.0		●
MM HT100N07R2.0-2T06	10.00	2	6.90	2.00	r0-3.0	T06	0	9.50	11.20	95.0	5.0		●
MM HT100N07R3.0-2T06	10.00	2	6.90	3.00	r2.7-4.0	T06	0	9.50	11.20	95.0	5.0		●
MM HT120N06R3.0-2T06	12.00	2	5.40	3.00	r2.7-4.0	T06	0	9.10	9.10	97.0	5.0	●	
MM HT120N06R4.0-2T06	12.00	2	5.10	4.00	r2.7-4.0	T06	0	11.50	9.10	97.0	5.0	●	
MM HT120N06R1.6-2T08	12.00	2	5.70	1.60	r1.3-r2.7	T08	0	11.50	11.10	97.0	5.0	●	●
MM HT120N06R2.0-2T08	12.00	2	5.90	2.00	r1.3-2.7	T08	0	11.50	11.10	97.0	5.0	●	●
MM HT120N06R2.5-2T08	12.00	2	5.50	2.50	r1.3-4.0	T08	0	11.50	11.10	97.0	5.0	●	
MM HT120N06R3.0-2T08	12.00	2	5.50	3.00	r2.7-4.4	T08	0	11.50	11.10	97.0	5.0	●	●
MM HT120N06R4.0-2T08	12.00	2	5.60	4.00	r2.7-4.4	T08	0	11.50	11.10	97.0	5.0	●	

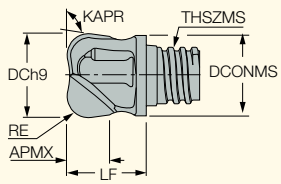
- For shanks, see pages 1112-1124 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 1047-1048
- Do not apply lubricant to the threaded connection • For user guide, see pages 1157-1158

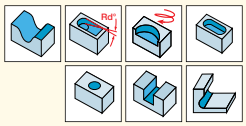
(1) Number of flutes
(2) Specially tailored radius range upon request
(3) 0 - Without coolant supply, 1 - With coolant supply
(4) Tool cutting edge angle
(5) Maximum ramping angle

MULTI-MASTER

MM HT
Torodial 2 Flute Interchangeable
Solid Carbide Milling Heads







ECONOMICAL SOLUTION

I N C H

Designation	Dimensions DC	NOF(1)	APMX	RE	Tm(2)	THSZMS	CSP(3)	DCONMS	LF	KAPR(4)	RMPX°(5)	Tough ↔ Hard IC908	IC903
MM HT100C08R0.5-2T06	.394	2	.276	.0196	r0-.040	T06	0	.374	.490	95.0	5.0	●	
MM HT100C08R1.0-2T06	.394	2	.276	.0393	r0-.040	T06	0	.374	.490	95.0	5.0	●	
MM HT100N06R2.0-2T06	.394	2	.236	.0787	r0-.118	T06	0	.374	.488	97.0	5.0	●	
MM HT100N07R0.5-2T06	.394	2	.272	.0196	r0-.040	T06	0	.374	.441	95.0	5.0		●
MM HT100N07R1.0-2T06	.394	2	.272	.0393	r0-.040	T06	0	.374	.441	95.0	5.0		●
MM HT100N07R2.0-2T06	.394	2	.272	.0787	r0-.118	T06	0	.374	.441	95.0	5.0		●
MM HT100N07R3.0-2T06	.394	2	.272	.1181	r.106-.157	T06	0	.374	.441	95.0	5.0		●
MM HT120N06R3.0-2T06	.472	2	.213	.1181	r.106-.157	T06	0	.358	.358	97.0	5.0	●	
MM HT120N06R4.0-2T06	.472	2	.201	.1574	r.106-.157	T06	0	.453	.358	97.0	5.0	●	
MM HT120N06R1.6-2T08	.472	2	.224	.0629	r.051-.106	T08	0	.453	.437	97.0	5.0	●	●
MM HT120N06R2.0-2T08	.472	2	.232	.0787	r.051-.106	T08	0	.453	.437	97.0	5.0	●	●
MM HT120N06R2.5-2T08	.472	2	.217	.0984	r.051-.157	T08	0	.453	.437	97.0	5.0	●	
MM HT120N06R3.0-2T08	.472	2	.217	.1181	r.106-.173	T08	0	.453	.437	97.0	5.0	●	●
MM HT120N06R4.0-2T08	.472	2	.220	.1574	r.106-.173	T08	0	.453	.437	97.0	5.0	●	

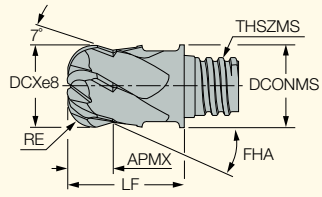
- For shanks, see pages 1112-1124 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 1047-1048
- Do not apply lubricant to the threaded connection • For user guide, see pages 1157-1158

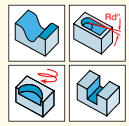
(1) Number of flutes
(2) Specially tailored radius range upon request
(3) 0 - Without coolant supply, 1 - With coolant supply
(4) Tool cutting edge angle
(5) Maximum ramping angle

MULTI-MASTER

MM ETR
Torodial 6 Flute Interchangeable Solid Carbide Milling Heads







M E T R I C

Designation	Dimensions										Tough ↔ Hard	
	DCX[1]	RE	NOF[2]	APMX	THSZMS	DCONMS	LF	CSP[3]	FHA	RMPX°[4]	IC908	IC903
MM ETR080A4R05CF-6T05	8.00	0.50	6	4.00	T05	7.70	10.00	0	30.0	9.0		●
MM ETR080A4R10CF-6T05	8.00	1.00	6	4.00	T05	7.70	10.00	0	30.0	9.0		●
MM ETR080A04R2.0-6T05	8.00	2.00	6	5.00	T05	7.70	10.00	0	30.0	9.0	●	
MM ETR100A5R05CF-6T06	10.00	0.50	6	5.00	T06	9.60	13.00	0	30.0	9.0		●
MM ETR100A5R10CF-6T06	10.00	1.00	6	5.00	T06	9.60	13.00	0	30.0	9.0		●
MM ETR100A05R3.0-6T06	10.00	3.00	6	7.00	T06	9.60	13.00	0	30.0	9.0	●	
MM ETR120A7R05CF-6T08	12.00	0.50	6	7.00	T08	12.00	17.00	0	30.0	9.0		●
MM ETR120A7R10CF-6T08	12.00	1.00	6	7.00	T08	11.70	16.50	0	30.0	9.0		●
MM ETR120A07R4.0-6T08	12.00	4.00	6	9.00	T08	11.70	16.50	0	30.0	9.0	●	

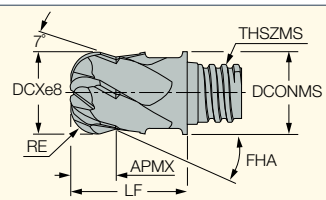
- For shanks, see pages 1112-1124 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 1047-1048
- Do not apply lubricant to the threaded connection • For user guide, see pages 1157-1158

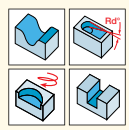
(1) Cutting diameter maximum
(2) Number of flutes
(3) 0 - Without coolant supply, 1 - With coolant supply
(4) Maximum ramping angle

MULTI-MASTER

MM ETR
Torodial 6 Flute Interchangeable Solid Carbide Milling Heads







I N C H

Designation	Dimensions										Tough ↔ Hard	
	DCX[1]	RE	NOF[2]	APMX	THSZMS	DCONMS	LF	CSP[3]	FHA	RMPX°[4]	IC908	IC903
MM ETR080A4R05CF-6T05	.315	.0197	6	.157	T05	.303	.394	0	30.0	9.0		●
MM ETR080A4R10CF-6T05	.315	.0394	6	.157	T05	.303	.394	0	30.0	9.0		●
MM ETR100A5R05CF-6T06	.394	.0197	6	.197	T06	.378	.512	0	30.0	9.0		●
MM ETR100A5R10CF-6T06	.394	.0394	6	.197	T06	.378	.512	0	30.0	9.0		●
MM ETR120A7R05CF-6T08	.472	.0197	6	.276	T08	.472	.669	0	30.0	9.0		●
MM ETR120A7R10CF-6T08	.472	.0394	6	.276	T08	.461	.650	0	30.0	9.0		●
MM ETR.312A16R078-6T05 90	.312	.0780	6	.160	T05	.300	.390	0	30.0	9.0	●	
MM ETR.375A19R031-6T06 90	.375	.0310	6	.190	T06	.360	.510	0	30.0	9.0	●	
MM ETR.375A19R125-6T06 90	.375	.1250	6	.190	T06	.360	.510	0	30.0	9.0	●	
MM ETR.500A27R062-6T08 90	.500	.0620	6	.270	T08	.480	.650	0	30.0	9.0	●	
MM ETR.500A27R125-6T08 90	.500	.1250	6	.270	T08	.480	.650	0	30.0	9.0	●	
MM ETR.500A27R156-6T08 90	.500	.1560	6	.270	T08	.480	.650	0	30.0	9.0	●	

- For shanks, see pages 1112-1124 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 1047-1048
- Do not apply lubricant to the threaded connection • For user guide, see pages 1157-1158

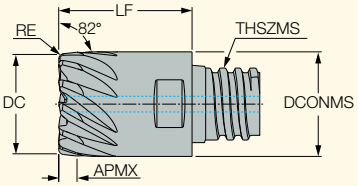
(1) Cutting diameter maximum
(2) Number of flutes
(3) 0 - Without coolant supply, 1 - With coolant supply
(4) Maximum ramping angle

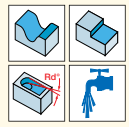
MULTI-MASTER

MM ET

Solid Carbide Tapered Heads with 20/30° Helix, Variable Pitch and Coolant Holes for CHATTER-FREE Finishing Operations







M E T R I C

Designation	Dimensions									IC908	Recommended Machining Data
	DC	RE	NOF(1)	APMX	THSZMS	DCONMS	LF	CSP(2)	RMPX°(3)		f_z (mm/t)
MM ET11/8H4R10CF-8T08H	11.00	1.00	8	3.50	T08	12.00	16.50	1	3.0	●	0.04-0.10

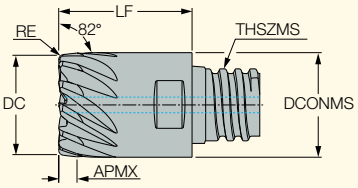
- For shanks, see pages 1112-1124
- For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 1047-1048
- Do not apply lubricant to the threaded connection
- For user guide, see pages 1157-1158

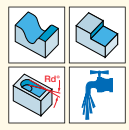
(1) Number of flutes
(2) 0 - Without coolant supply, 1 - With coolant supply
(3) Maximum ramping angle

MM ET

Solid Carbide Tapered Heads with 20/30° Helix, Variable Pitch and Coolant Holes for CHATTER-FREE Finishing Operations







I N C H

Designation	Dimensions									IC908	Recommended Machining Data
	DC	RE	NOF(1)	APMX	THSZMS	DCONMS	LF	CSP(2)	RMPX°(3)		f_z (inch/t)
MM ET11/8H4R10CF-8T08H	.433	.0394	8	.138	T08	.472	.650	1	3.0	●	.0016-.0039

- For shanks, see pages 1112-1124
- For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 1047-1048
- Do not apply lubricant to the threaded connection
- For user guide, see pages 1157-1158

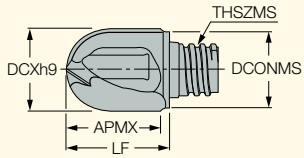
(1) Number of flutes
(2) 0 - Without coolant supply, 1 - With coolant supply
(3) Maximum ramping angle

MULTI-MASTER

MM HCR

Interchangeable 2 Flute Solid Carbide Ball Nose Milling Heads





ECONOMICAL SOLUTION

M E T R I C

Designation	Dimensions DCX(1)	NOF(2)	APMX	THSZMS	DCONMS	LF	CSP(3)	IC908
MM HCR080-2T05	8.00	2	7.80	T05	7.60	9.95	0	●
MM HCR100-2T06	10.00	2	10.00	T06	9.50	12.35	0	●
MM HCR120-2T08	12.00	2	11.45	T08	11.50	15.30	0	●

- For shanks, see pages 1112-1124 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 1047-1048
- Do not apply lubricant to the threaded connection • For user guide, see pages 1157-1158

(1) Cutting diameter maximum

(2) Number of flutes

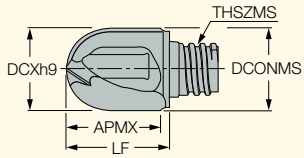
(3) 0 - Without coolant supply, 1 - With coolant supply

MULTI-MASTER

MM HCR

Interchangeable 2 Flute Solid Carbide Ball Nose Milling Heads





ECONOMICAL SOLUTION

I N C H

Designation	Dimensions DCX(1)	NOF(2)	APMX	THSZMS	DCONMS	LF	CSP(3)	IC908
MM HCR.312-2T05	.312	2	.310	T05	.300	.390	0	●
MM HCR.375-2T06	.375	2	.380	T06	.360	.478	0	●
MM HCR.500-2T08	.500	2	.508	T08	.480	.646	0	●

- For shanks, see pages 1112-1124 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 1047-1048
- Do not apply lubricant to the threaded connection • For user guide, see pages 1157-1158

(1) Cutting diameter maximum

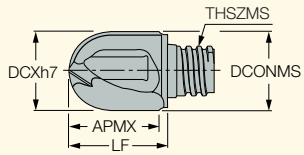
(2) Number of flutes

(3) 0 - Without coolant supply, 1 - With coolant supply

MULTI-MASTER

MM HRF
Interchangeable 2 Flute
Solid Carbide Ball Nose
Finishing Milling Heads





M E T R I C

Designation	Dimensions							Tough ↔ Hard	
	DCX(1)	NOF(2)	APMX	THSZMS	DCONMS	LF	CSP(3)	IC908	IC903
MM HRF080-2T05	8.00	2	7.60	T05	7.60	9.95	0		●
MM HRF100-2T06	10.00	2	10.20	T06	9.50	12.35	0	●	●
MM HRF120-2T08	12.00	2	11.50	T08	11.50	15.30	0		●

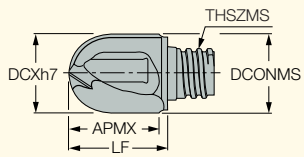
- For shanks, see pages 1112-1124 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 1047-1048
- Do not apply lubricant to the threaded connection • For user guide, see pages 1157-1158

(1) Cutting diameter maximum
(2) Number of flutes
(3) 0 - Without coolant supply, 1 - With coolant supply

MULTI-MASTER

MM HRF
Interchangeable 2 Flute
Solid Carbide Ball Nose
Finishing Milling Heads





I N C H

Designation	Dimensions							Tough ↔ Hard	
	DCX(1)	NOF(2)	APMX	THSZMS	DCONMS	LF	CSP(3)	IC908	IC903
MM HRF.312-2T05	.312	2	.312	T05	.300	.390	0		●
MM HRF.375-2T06	.375	2	.380	T06	.360	.480	0		●
MM HRF.500-2T08	.500	2	.500	T08	.480	.640	0		●

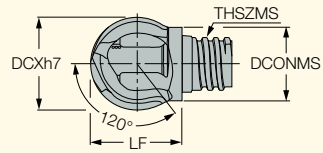
- For shanks, see pages 1112-1124 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 1047-1048
- Do not apply lubricant to the threaded connection • For user guide, see pages 1157-1158

(1) Cutting diameter maximum
(2) Number of flutes
(3) 0 - Without coolant supply, 1 - With coolant supply

MULTI-MASTER

MM HBR
Interchangeable 2 Flute High Precision Ball Nose Solid Carbide Milling Heads





ECONOMICAL SOLUTION

M E T R I C

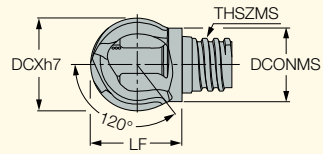
Designation	Dimensions DCX(1)	NOF(2)	THSZMS	DCONMS	LF	CSP(3)		IC908
MM HBR080-2T04	8.00	2	T04	5.80	8.22	0	MM KEY 6X4*	●
MM HBR100-2T05	10.00	2	T05	7.60	10.00	0	MM KEY 6X4*	●
MM HBR120-2T06	12.00	2	T06	9.50	11.60	0	MM KEY 10X7*	●

• For shanks, see pages 1112-1124 • For tightening torques and clamping instructions, see pages 1047-1048 • Do not apply lubricant to the threaded connection
• For user guide, see pages 1157-1158
(1) Cutting diameter maximum
(2) Number of flutes
(3) 0 - Without coolant supply, 1 - With coolant supply
* Optional, to be ordered separately

MULTI-MASTER

MM HBR
Interchangeable 2 Flute High Precision Ball Nose Solid Carbide Milling Heads





ECONOMICAL SOLUTION

I N C H

Designation	Dimensions DCX(1)	NOF(2)	THSZMS	DCONMS	LF	CSP(3)		IC908
MM HBR080-2T04	.315	2	T04	.228	.324	0	MM KEY 6X4*	●
MM HBR.375-2T05	.375	2	T05	.300	.389	0	MM KEY 6X4*	●
MM HBR100-2T05	.394	2	T05	.299	.394	0	MM KEY 6X4*	●
MM HBR.500-2T06	.500	2	T06	.362	.482	0	MM KEY 10X7*	●

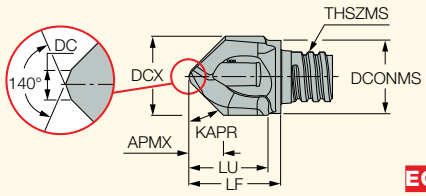
• For shanks, see pages 1112-1124 • For tightening torques and clamping instructions, see pages 1047-1048 • Do not apply lubricant to the threaded connection
• For user guide, see pages 1157-1158
(1) Cutting diameter maximum
(2) Number of flutes
(3) 0 - Without coolant supply, 1 - With coolant supply
* Optional, to be ordered separately

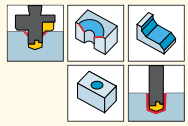
MULTI-MASTER

MM HCD

Interchangeable 2 Flute Solid Carbide Heads for Chamfering, Countersinking and Spot Drilling







ECONOMICAL SOLUTION

M E T R I C

Designation	Dimensions											IC908
	DCX[4]	DCXTOL	NOF[5]	LU	THSZMS	DCONMS	LF	APMX	DC	KAPR[6]	CSP[7]	
MM HCD060-090-2T04	6.00	z9	2	6.86	T04	5.80	8.50	2.66	1.00	45.0	0	●
MM HCD080-060-2T05	8.00	h10	2	8.00	T05	7.60	10.50	6.08	1.20	60.0	0	●
MM HCD080-120-2T05	8.00	h10	2	7.80	T05	7.60	10.30	2.15	1.00	30.0	0	●
MM HCD080-090-2T05 [1]	8.00	z9	2	7.00	T05	7.60	9.75	3.15	1.00	45.0	0	●
MM HCD083-090-2T05 [1]	8.30	z9	2	7.50	T05	7.60	10.00	3.56	1.00	45.0	0	●
MM HCD.375-100-2T06 [2]	9.50	h10	2	9.70	T06	9.50	13.40	3.60	2.00	40.0	0	●
MM HCD.375-080-2T06	9.50	z9	2	9.00	T06	9.20	11.80	5.00	2.00	50.0	0	●
MM HCD100-060-2T06	10.00	h10	2	9.30	T06	9.50	11.75	7.60	1.50	60.0	0	●
MM HCD100-120-2T06	10.00	h10	2	9.50	T06	9.50	12.70	2.70	1.50	30.0	0	●
MM HCD100-090-2T06-N [1]	10.00	z9	2	10.10	T06	9.50	14.00	4.50	1.50	45.0	0	●
MM HCD104-090-2T06 [1]	10.40	z9	2	9.00	T06	9.50	11.75	4.60	1.50	45.0	0	●
MM HCD120-060-2T08	12.00	h10	2	11.00	T08	11.50	15.40	9.24	1.50	60.0	0	●
MM HCD120-120-2T08	12.00	h10	2	11.65	T08	11.50	15.20	3.50	1.50	30.0	0	●
MM HCD120-090-2T08 [1]	12.00	z9	2	12.00	T08	11.50	15.50	5.30	1.50	45.0	0	●
MM HCD124-090-2T08 [1]	12.40	z9	2	11.80	T08	11.50	15.50	5.50	1.50	45.0	0	●
MM HCD.500-080-2T08 [3]	12.70	z9	2	11.10	T08	12.20	15.50	6.80	1.50	50.0	0	●
MM HCD.500-100-2T08 [2]	12.70	z9	2	10.90	T08	11.50	14.70	4.90	1.50	40.0	0	●

- For shanks, see pages 1112-1124
- Clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 1047-1048
- Do not apply lubricant to the threaded connection
- For user guide, see pages 1157-1158

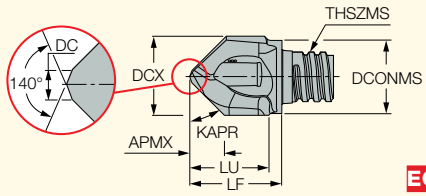
[1] May be used for F-type (fine) countersink according to DIN 74.
[2] May be used for 100° countersink according to ISO 5856, DIN EN 4072, ANSI B18.6.3-1972
[3] Countersink according to American National and British standard flat screws.
[4] Cutting diameter maximum
[5] Number of flutes
[6] Tool cutting edge angle
[7] 0 - Without coolant supply, 1 - With coolant supply

MULTI-MASTER

MM HCD

Interchangeable 2 Flute Solid Carbide Heads for Chamfering, Countersinking and Spot Drilling





ECONOMICAL SOLUTION

I N C H

Designation	Dimensions											IC908
	DCX[4]	DCXTOL	NOF[5]	LU	THSZMS	DCONMS	LF	APMX	DC	KAPR[6]	CSP[7]	
MM HCD060-090-2T04	.236	z9	2	.270	T04	.228	.335	.1047	.039	45.0	0	●
MM HCD080-060-2T05	.315	h10	2	.315	T05	.299	.413	.2394	.047	60.0	0	●
MM HCD080-120-2T05	.315	h10	2	.307	T05	.299	.406	.0846	.039	30.0	0	●
MM HCD080-090-2T05 [1]	.315	z9	2	.276	T05	.299	.384	.1240	.039	45.0	0	●
MM HCD083-090-2T05 [1]	.327	z9	2	.295	T05	.299	.394	.1402	.039	45.0	0	●
MM HCD.375-100-2T06 [2]	.374	h10	2	.382	T06	.374	.528	.1417	.079	40.0	0	●
MM HCD.375-080-2T06	.374	z9	2	.354	T06	.362	.465	.1969	.079	50.0	0	●
MM HCD100-060-2T06	.394	h10	2	.366	T06	.374	.463	.2992	.059	60.0	0	●
MM HCD100-120-2T06	.394	h10	2	.374	T06	.374	.500	.1063	.059	30.0	0	●
MM HCD100-090-2T06-N [1]	.394	z9	2	.398	T06	.374	.551	.1772	.059	45.0	0	●
MM HCD104-090-2T06 [1]	.409	z9	2	.354	T06	.374	.463	.1811	.059	45.0	0	●
MM HCD120-060-2T08	.472	h10	2	.433	T08	.453	.606	.3638	.059	60.0	0	●
MM HCD120-120-2T08	.472	h10	2	.459	T08	.453	.598	.1378	.059	30.0	0	●
MM HCD120-090-2T08 [1]	.472	z9	2	.472	T08	.453	.610	.2087	.059	45.0	0	●
MM HCD124-090-2T08 [1]	.488	z9	2	.465	T08	.453	.610	.2165	.059	45.0	0	●
MM HCD.500-080-2T08 [3]	.500	z9	2	.437	T08	.480	.610	.2677	.059	50.0	0	●
MM HCD.500-100-2T08 [2]	.500	z9	2	.429	T08	.453	.579	.1929	.059	40.0	0	●

- For shanks, see pages 1112-1124
- Clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 1047-1048
- Do not apply lubricant to the threaded connection
- For user guide, see pages 1157-1158

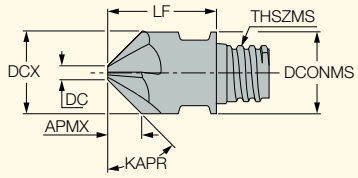
[1] May be used for F-type (fine) countersink according to DIN 74.
[2] May be used for 100° countersink according to ISO 5856, DIN EN 4072, ANSI B18.6.3-1972
[3] Countersink according to American National and British standard flat screws.
[4] Cutting diameter maximum
[5] Number of flutes
[6] Tool cutting edge angle
[7] 0 - Without coolant supply, 1 - With coolant supply

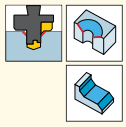
MULTI-MASTER

MM ECF

Interchangeable Solid Carbide Heads for Chamfering and Countersinking







M E T R I C

Designation	Dimensions									IC908
	KAPR[1]	DCX[2]	NOF[3]	DC	APMX	THSZMS	CSP[4]	DCONMS	LF	
MM ECF120-02/100-4T06	30.0	10.00	4	2.00	2.30	T06	0	10.00	13.00	●
MM ECF120-02/120-4T08	30.0	12.00	4	2.00	2.90	T08	0	12.00	16.50	●
MM ECF45-080-4T05	45.0	8.00	4	1.95	3.00	T05	0	8.00	10.00	●
MM ECF45-100-4T06	45.0	10.00	4	1.95	4.00	T06	0	10.00	13.00	●
MM ECF45-120-4T08	45.0	12.00	4	1.95	5.00	T08	0	12.00	16.50	●
MM ECF60-100-4T06	60.0	10.00	4	1.60	7.30	T06	0	10.00	13.00	●
MM ECF60-02/100-4T06	60.0	10.00	4	2.00	6.90	T06	0	10.00	13.00	●
MM ECF60-03/120-4T08	60.0	12.00	4	3.00	7.80	T08	0	12.00	16.50	●

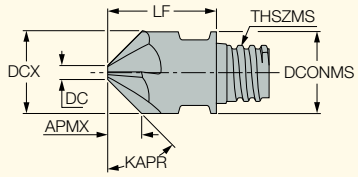
- For shanks, see pages 1112-1124
- For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 1047-1048
- Do not apply lubricant to the threaded connection
- For user guide, see pages 1157-1158

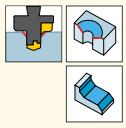
(1) Tool cutting edge angle
(2) Cutting diameter maximum
(3) Number of flutes
(4) 0 - Without coolant supply, 1 - With coolant supply

MM ECF

Interchangeable Solid Carbide Heads for Chamfering and Countersinking







I N C H

Designation	Dimensions									IC908
	KAPR[1]	DCX[2]	NOF[3]	DC	APMX	THSZMS	CSP[4]	DCONMS	LF	
MM ECF120-08/375-4T06	30.0	.375	4	.079	.083	T06	0	.375	.512	●
MM ECF120-02/100-4T06	30.0	.394	4	.079	.091	T06	0	.394	.512	●
MM ECF120-02/120-4T08	30.0	.472	4	.079	.114	T08	0	.472	.650	●
MM ECF120-08/500-4T08	30.0	.500	4	.079	.122	T08	0	.500	.650	●
MM ECF45-.375-4T06	45.0	.375	4	.073	.150	T06	0	.375	.512	●
MM ECF45-.500-4T08	45.0	.500	4	.077	.197	T08	0	.500	.650	●
MM ECF60-08/375-4T06	60.0	.375	4	.079	.258	T06	0	.375	.512	●
MM ECF60-02/100-4T06	60.0	.394	4	.079	.272	T06	0	.394	.512	●
MM ECF60-03/120-4T08	60.0	.472	4	.118	.307	T08	0	.472	.650	●
MM ECF60-12/500-4T08	60.0	.500	4	.118	.256	T08	0	.500	.650	●

- For shanks, see pages 1112-1124
- For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 1047-1048
- Do not apply lubricant to the threaded connection
- For user guide, see pages 1157-1158

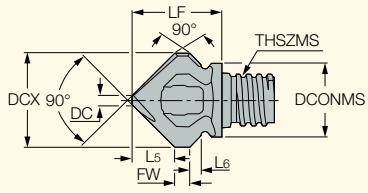
(1) Tool cutting edge angle
(2) Cutting diameter maximum
(3) Number of flutes
(4) 0 - Without coolant supply, 1 - With coolant supply

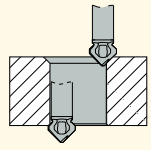
MULTI-MASTER

MM HDF

Interchangeable 2 Flute Solid Carbide Heads for Upper and Bottom Chamfering







ECONOMICAL SOLUTION

M E T R I C

Designation	Dimensions											IC908
	DCX[1]	NOF[2]	L5	L6	FW	DC	THSZMS	CSP[3]	DCONMS	LF		
MM HDF100-090-2T05	9.80	2	4.30	0.90	2.50	1.20	T05	0	7.60	10.80	MM KEY 8X5*	●
MM HDF120-090-2T06	11.80	2	5.30	1.20	2.00	1.20	T06	0	9.30	11.20	MM KEY 10X7*	●

- For shanks, see pages 1112-1124 • Clamping keys to be ordered separately • For tightening torques and clamping instructions, see pages 1047-1048
- Do not apply lubricant to the threaded connection • For user guide, see pages 1157-1158

(1) Cutting diameter maximum

(2) Number of flutes

(3) 0 - Without coolant supply, 1 - With coolant supply

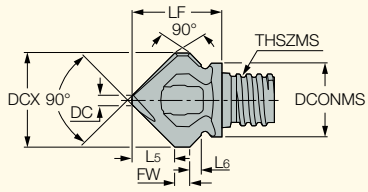
* Optional, to be ordered separately

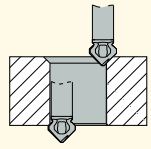
MULTI-MASTER

MM HDF

Interchangeable 2 Flute Solid Carbide Heads for Upper and Bottom Chamfering







ECONOMICAL SOLUTION

I N C H

Designation	Dimensions											IC908
	DCX[1]	NOF[2]	L5	L6	FW	DC	THSZMS	CSP[3]	DCONMS	LF		
MM HDF100-090-2T05	.386	2	.169	.035	.098	.047	T05	0	.299	.425	MM KEY 8X5*	●
MM HDF120-090-2T06	.465	2	.209	.047	.079	.047	T06	0	.366	.441	MM KEY 10X7*	●

- For shanks, see pages 1112-1124 • Clamping keys to be ordered separately • For tightening torques and clamping instructions, see pages 1047-1048
- Do not apply lubricant to the threaded connection • For user guide, see pages 1157-1158

(1) Cutting diameter maximum

(2) Number of flutes

(3) 0 - Without coolant supply, 1 - With coolant supply

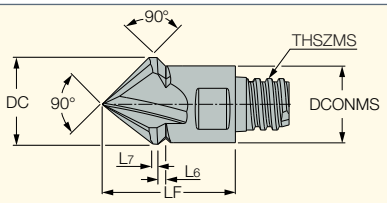
* Optional, to be ordered separately

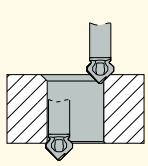
MULTI-MASTER

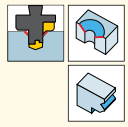
MM EDF

Interchangeable 3 Flute Solid Carbide Heads for Upper and Bottom Chamfering









M E T R I C

Designation	Dimensions								IC908
	DC	DCONMS	NOF(1)	L6	L7	LF	THSZMS	CSP(2)	
MM EDF074-090-58-3T04	7.40	5.80	3	0.90	1.00	10.00	T04	0	●
MM EDF094-090-76-3T05	9.40	7.60	3	0.90	1.00	12.50	T05	0	●
MM EDF116-090-95-3T06	11.60	9.60	3	1.00	1.00	16.50	T06	0	●

- For shanks, see pages 1112-1124
- For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 1047-1048
- Do not apply lubricant to the threaded connection
- For user guide, see pages 1157-1158

(1) Number of flutes

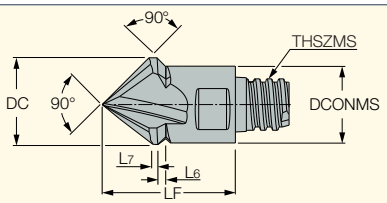
(2) 0 - Without coolant supply, 1 - With coolant supply

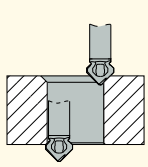
MULTI-MASTER

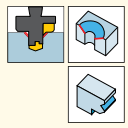
MM EDF

Interchangeable 3 Flute Solid Carbide Heads for Upper and Bottom Chamfering









I N C H

Designation	Dimensions								IC908
	DC	DCONMS	NOF(1)	L6	L7	LF	THSZMS	CSP(2)	
MM EDF074-090-58-3T04	.291	.228	3	.035	.039	.394	T04	0	●
MM EDF094-090-76-3T05	.370	.299	3	.035	.039	.492	T05	0	●
MM EDF116-090-95-3T06	.457	.378	3	.039	.039	.650	T06	0	●

- For shanks, see pages 1112-1124
- For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 1047-1048
- Do not apply lubricant to the threaded connection
- For user guide, see pages 1157-1158

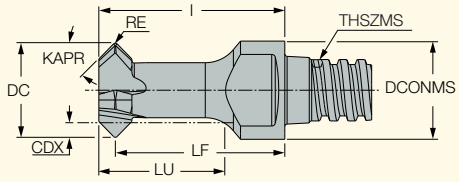
(1) Number of flutes

(2) 0 - Without coolant supply, 1 - With coolant supply

MULTI-MASTER

MM TS-45
Interchangeable Solid
Carbide Small Diameter
45° Chamfering Heads





M E T R I C

Designation	Dimensions											IC908
	DC	KAPR(1)	CDX(2)	RE	NOF(3)	I	THSZMS	DCONMS	LU	LF	CSP(4)	
MM TS077-45-20A-4T05	7.70	45.0	1.20	0.20	4	15.20	T05	8.00	10.3	13.85	0	•

• For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 1047-1048 • Do not apply lubricant to the threaded connection

(1) Tool cutting edge angle

(2) Alpha numeric parameter

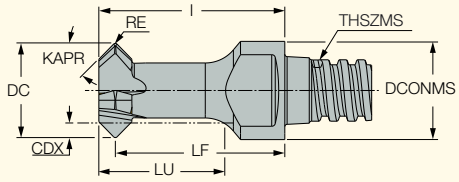
(3) Number of flutes

(4) 0 - Without coolant supply, 1 - With coolant supply

MULTI-MASTER

MM TS-45
Interchangeable Solid
Carbide Small Diameter
45° Chamfering Heads





I N C H

Designation	Dimensions											IC908
	DC	KAPR(1)	CDX(2)	RE	NOF(3)	I	THSZMS	DCONMS	LU	LF	CSP(4)	
MM TS077-45-20A-4T05	.303	45.0	.047	.0079	4	.598	T05	.315	.406	.545	0	•

• For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 1047-1048 • Do not apply lubricant to the threaded connection

(1) Tool cutting edge angle

(2) Alpha numeric parameter

(3) Number of flutes

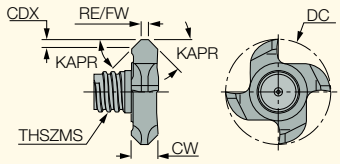
(4) 0 - Without coolant supply, 1 - With coolant supply

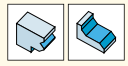
MULTI-MASTER

MM GRIT-45A

Interchangeable Solid Carbide Small Diameter 45° Chamfering Heads







M E T R I C

Designation	Dimensions										IC908
	DC	KAPR(1)	CDX(2)	RE	FW	CW	THSZMS	CSP(3)	NOF(4)		
MM GRIT18K-45A-3T6	17.70	45.0	1.40	0.10	-	3.47	T06	0	3	T-25/3*	●
MM GRIT18P-45A-3T6	17.70	45.0	1.40	0.10	-	3.47	T06	0	3	T-25/3*	●
MM GRIT22K-45A-4T8	21.70	45.0	1.70	-	1.50	5.55	T08	0	4	T-30/3 L*	●
MM GRIT22P-45A-4T8	21.70	45.0	1.70	-	1.50	5.55	T08	0	4	T-30/3 L	●

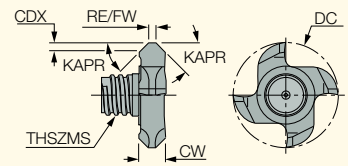
- P-TYPE - Positive geometry for soft and gummy materials. • K-Type - For general steel machining. • Modification options on request
- Do not apply lubricant to the threaded connection • For clamping instructions, see pages 1047-1048 • For shanks, see pages 1112-1124

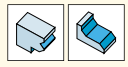
(1) Tool cutting edge angle
(2) Alpha numeric parameter
(3) 0 - Without coolant supply, 1 - With coolant supply
(4) Number of flutes
* Optional, to be ordered separately

MM GRIT-45A

Interchangeable Solid Carbide Small Diameter 45° Chamfering Heads







I N C H

Designation	Dimensions										IC908
	DC	KAPR(1)	CDX(2)	RE	FW	CW	THSZMS	CSP(3)	NOF(4)		
MM GRIT18K-45A-3T6	.697	45.0	.055	.0039	-	.137	T06	0	3	T-25/3*	●
MM GRIT18P-45A-3T6	.697	45.0	.055	.0039	-	.137	T06	0	3	T-25/3*	●
MM GRIT22K-45A-4T8	.854	45.0	.067	-	.059	.219	T08	0	4	T-30/3 L*	●
MM GRIT22P-45A-4T8	.854	45.0	.067	-	.059	.219	T08	0	4	T-30/3 L	●

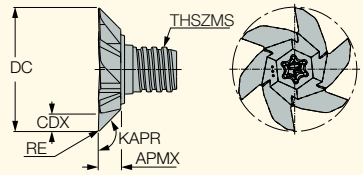
- P-TYPE - Positive geometry for soft and gummy materials. • K-Type - For general steel machining. • Modification options on request
- Do not apply lubricant to the threaded connection • For clamping instructions, see pages 1047-1048 • For shanks, see pages 1112-1124

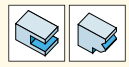
(1) Tool cutting edge angle
(2) Alpha numeric parameter
(3) 0 - Without coolant supply, 1 - With coolant supply
(4) Number of flutes
* Optional, to be ordered separately

MULTI-MASTER

MM Dovetail
Interchangeable Solid Carbide Heads







M E T R I C

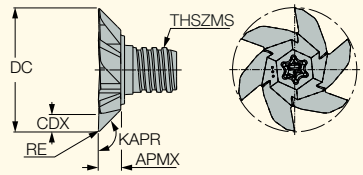
Designation	Dimensions DC	KAPR(1)	CDX(2)	APMX	RE	THSZMS	CSP(3)	NOF(4)		IC908
MM TS105-45D-06T04	10.50	135.0	1.33	1.60	0.20	T04	0	6	T-15/3*	●
MM TS135-45D-06T05	13.50	135.0	1.75	2.00	0.20	T05	0	6	T-20/3*	●
MM TS165-45D-06T06	16.50	135.0	1.75	2.00	0.20	T06	0	6	T-25/3*	●
MM TS195-45D-06T08	19.50	135.0	2.55	2.80	0.20	T08	0	6	T-30/3 L*	●
MM TS225-45D-06T08	22.50	135.0	3.48	3.70	0.20	T08	0	6	T-40/3 L*	●
MM TS105-60D-06T04	10.50	120.0	0.84	1.70	0.20	T04	0	6	T-15/3*	●
MM TS135-60D-06T05	13.50	120.0	1.67	3.10	0.20	T05	0	6	T-20/3*	●
MM TS165-60D-06T06	16.50	120.0	2.02	3.70	0.20	T06	0	6	T-25/3*	●
MM TS195-60D-06T08	19.50	120.0	2.70	4.80	0.20	T08	0	6	T-30/3 L*	●
MM TS225-60D-06T08	22.50	120.0	3.79	6.70	0.20	T08	0	6	T-40/3 L*	●

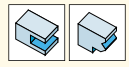
• Use carbide shanks for groove milling heads • For user guide, see pages 1157-1158
(1) Tool cutting edge angle
(2) Alpha numeric parameter
(3) 0 - Without coolant supply, 1 - With coolant supply
(4) Number of flutes
* Optional, to be ordered separately

MULTI-MASTER

MM Dovetail
Interchangeable Solid Carbide Heads







I N C H

Designation	Dimensions DC	KAPR(1)	CDX(2)	APMX	RE	THSZMS	CSP(3)	NOF(4)		IC908
MM TS105-45D-06T04	.413	135.0	.052	.063	.0079	T04	0	6	T-15/3*	●
MM TS135-45D-06T05	.531	135.0	.069	.079	.0079	T05	0	6	T-20/3*	●
MM TS165-45D-06T06	.650	135.0	.069	.079	.0079	T06	0	6	T-25/3*	●
MM TS195-45D-06T08	.768	135.0	.100	.110	.0079	T08	0	6	T-30/3 L*	●
MM TS225-45D-06T08	.886	135.0	.137	.146	.0079	T08	0	6	T-40/3 L*	●
MM TS105-60D-06T04	.413	120.0	.033	.067	.0079	T04	0	6	T-15/3*	●
MM TS135-60D-06T05	.531	120.0	.066	.122	.0079	T05	0	6	T-20/3*	●
MM TS165-60D-06T06	.650	120.0	.080	.146	.0079	T06	0	6	T-25/3*	●
MM TS195-60D-06T08	.768	120.0	.106	.189	.0079	T08	0	6	T-30/3 L*	●
MM TS225-60D-06T08	.886	120.0	.149	.264	.0079	T08	0	6	T-40/3 L*	●

• Use carbide shanks for groove milling heads • For user guide, see pages 1157-1158
(1) Tool cutting edge angle
(2) Alpha numeric parameter
(3) 0 - Without coolant supply, 1 - With coolant supply
(4) Number of flutes
* Optional, to be ordered separately

MULTI-MASTER

MM ECS

Interchangeable Solid Carbide Centering Drills (DIN 332)



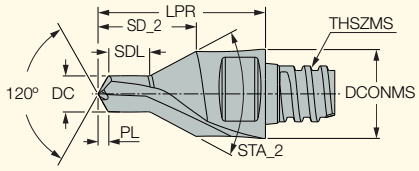


Fig. 1 Type A

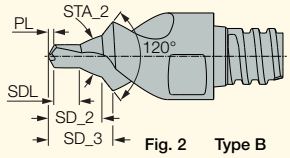
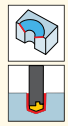


Fig. 2 Type B

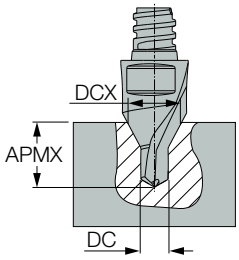


M E T R I C

Designation	Dimensions											IC908
	DC	DCONMS	THSZMS	LPR	SDL	SD_2	SD_3	STA_2	PL	Fig.	CSP(1)	
MM ECS-A1.00X06-2T04	1.07	6.00	T04	10.00	1.32	4.14	-	60.0	0.280	1	0	●
MM ECS-A1.60X06-2T04	1.65	6.00	T04	10.00	1.97	4.45	-	60.0	0.430	1	0	●
MM ECS-A2.00X06-2T04	2.07	6.00	T04	10.00	2.36	6.37	-	60.0	0.540	1	0	●
MM ECS-A3.15X08-2T05	3.28	8.00	T05	15.00	3.75	8.76	-	60.0	0.850	1	0	●
MM ECS-A4.00X10-2T06	4.12	10.00	T06	19.00	4.83	11.05	-	60.0	1.070	1	0	●
MM ECS-A5.00X12-2T08	5.13	12.00	T08	23.00	5.88	13.23	-	60.0	1.320	1	0	●
MM ECS-B3.15X12-2T08	3.24	12.00	T08	23.00	3.55	7.40	8.94	60.0	0.830	2	0	●
MM ECS-B4.00X127-2T08	4.09	12.70	T08	23.00	4.53	9.50	10.71	60.0	1.070	2	0	●

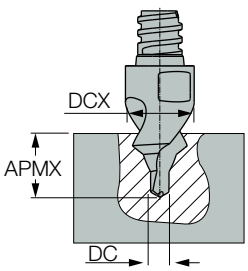
- For shanks, see pages 1112-1124
- For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 1047-1048
- Do not apply lubricant to the threaded connection
- For user guide, see page 1093

(1) 0 - Without coolant supply, 1 - With coolant supply



ISO		IC908 *V_c x F_z [m/min x mm/tooth]					
		MM ECS-A1.00X06-2T04	MM ECS-A1.60X06-2T04	MM ECS-A2.00X06-2T04	MM ECS-A3.15X08-2T05	MM ECS-A4.00X10-2T06	MM ECS-A5.00X12-2T08
		DCX=2.12, APMX=2.5	DCX=3.35, APMX=3.9	DCX=4.25, APMX=4.8	DCX=6.70, APMX=7.60	DCX=8.50, APMX=9.80	DCX=10.60, APMX=12.00
P	4340 24-29HRC	80x0.020	80x0.025	80x0.025	80x0.030	80x0.040	80x0.050
P	4340 38-42HRC	65x0.020	65x0.025	65x0.025	65x0.030	65x0.040	65x0.050
M	316L MAX-215 HB	50x0.015	50x0.020	50x0.020	50x0.025	50x0.030	50x0.040
S	Inconel 718	15x0.010	15x0.010	15x0.015	15x0.015	15x0.020	15x0.020

* V_c Calculated for ØDC



ISO		IC908 *V_c x F_z [m/min x mm/tooth]	
		MM ECS-A3.15X12-2T08	MM ECS-A4.00X127-2T08
		DCX=10.00, APMX=8.80	DCX=12.50, APMX=11.00
P	4340 24-29HRC	75x0.030	75x0.040
P	4340 38-42HRC	60x0.030	60x0.040
M	316L MAX-215 HB	45x0.025	45x0.030
S	Inconel 718	12x0.015	12x0.020

* V_c Calculated for ØDC

MULTI-MASTER

MM ECS

Interchangeable Solid Carbide Centering Drills (ANSI B94.11M / DIN 332)



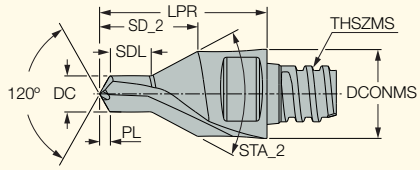


Fig. 1 Type A

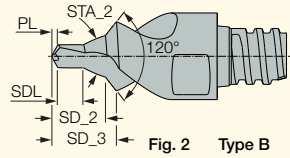
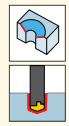


Fig. 2 Type B

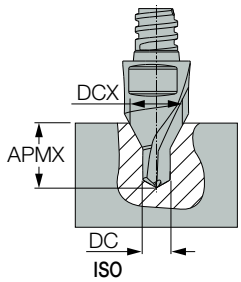


I N C H

Designation	Dimensions DC	DCONMS	THSZMS	LPR	SDL	SD_2	SD_3	STA_2	PL	Fig.	CSP(1)	IC908
MM ECS-A1.00X06-2T04	.042	.236	T04	.394	.0520	.1630	-	60.0	.01102	1	0	●
MM ECS-A1.60X06-2T04	.065	.236	T04	.394	.0775	.1752	-	60.0	.01692	1	0	●
MM ECS-A2.00X06-2T04	.081	.236	T04	.394	.0929	.2508	-	60.0	.02125	1	0	●
MM ECS-A3.15X08-2T05	.129	.315	T05	.591	.1476	.3449	-	60.0	.03346	1	0	●
MM ECS-A125X312-2T05	.126	.310	T05	.590	.1323	.3280	-	60.0	.03270	1	0	●
MM ECS-A4.00X10-2T06	.162	.394	T06	.748	.1902	.4350	-	60.0	.04212	1	0	●
MM ECS-A188X500-2T08	.193	.500	T08	.906	.2189	.5346	-	60.0	.04960	1	0	●
MM ECS-A5.00X12-2T08	.202	.472	T08	.906	.2315	.5209	-	60.0	.05196	1	0	●
MM ECS-A219X500-2T08	.220	.500	T08	.906	.2488	.5496	-	60.0	.05750	1	0	●
MM ECS-B3.15X12-2T08	.128	.472	T08	.906	.1398	.2913	.352	60.0	.03267	2	0	●
MM ECS-B4.00X127-2T08	.161	.500	T08	.906	.1783	.3740	.422	60.0	.04212	2	0	●

- For shanks, see pages 1112-1124
- For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 1047-1048
- Do not apply lubricant to the threaded connection
- For user guide, see page 1094

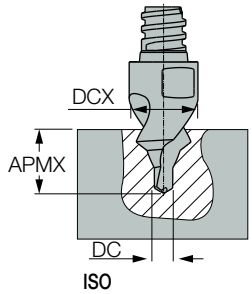
(1) 0 - Without coolant supply, 1 - With coolant supply



ISO

		IC908 *Vcxf$_z$ [SFM x Inch/Tooth]			
		MM ECS-A1.00X06-2T04	MM ECS-A1.60X06-2T04	MM ECS-A2.00X06-2T04	MM ECS-A3.15X08-2T05
		DCX=.083, APMX=.098	DCX=.131, APMX=.153	DCX=.167, APMX=.189	DCX=.263, APMX=.299
P	4340 24-29HRC	262x.0008	262x.0010	262x.0010	262x.0012
P	4340 38-42HRC	213x.0008	213x.0010	213x.0010	213x.0012
M	316L MAX-215 HB	164x.0006	164x.0008	164x.0008	164x.0010
S	Inconel 718	49x.0004	49x.0004	49x.0006	49x.0006

* Vc Calculated for ØDC



ISO

		IC908 *Vcxf$_z$ [SFM x Inch/Tooth]			
		MM ECS-A4.00X10-2T06	MM ECS-A5.00X12-2T08	MM ECS-A3.15X12-2T08	MM ECS-A4.00X127-2T08
		DCX=.334, APMX=.385	DCX=.417, APMX=.472	DCX=.393, APMX=.346	DCX=.492, APMX=.433
P	4340 24-29HRC	262x.0016	262x.0020	230x.0012	246x.0016
P	4340 38-42HRC	213x.0016	213x.0020	196x.0012	196x.0016
M	316L MAX-215 HB	164.0012	164x.0016	147x.0010	147x.0012
S	Inconel 718	49x.0008	49x.0008	39x.0006	39x.0008

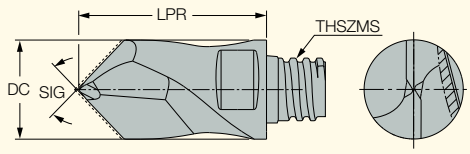
* Vc Calculated for ØDC

MULTI-MASTER

MM ECD

NC Spot Drills for Accurate Hole Location without the need for a Bushing Guide.





M E T R I C

Designation	Dimensions DC	LPR	THSZMS	SIG	CSP(1)	IC908
MM ECD-06X145-2T04	6.00	8.50	T04	145	0	●
MM ECD-06X90-2T04	6.00	11.00	T04	90	0	●
MM ECD-08X145-2T05	8.00	10.00	T05	145	0	●
MM ECD-08X90-2T05	8.00	15.00	T05	90	0	●
MM ECD-10X145-2T06	10.00	13.00	T06	145	0	●
MM ECD-10X90-2T06	10.00	19.00	T06	90	0	●
MM ECD-12X145-2T08	12.00	16.50	T08	145	0	●
MM ECD-12X90-2T08	12.00	23.00	T08	90	0	●

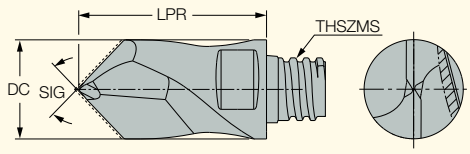
- For shanks, see pages 1112-1124 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 1047-1048
- Do not apply lubricant to the threaded connection

(1) 0 - Without coolant supply, 1 - With coolant supply

MM ECD

NC Spot Drills for Accurate Hole Location without the need for a Bushing Guide.





I N C H

Designation	Dimensions DC	LPR	THSZMS	SIG	CSP(1)	IC908
MM ECD-250X145-2T04	.250	.334	T04	145	0	●
MM ECD-312X145-2T05	.312	.393	T05	145	0	●
MM ECD-375X145-2T06	.375	.511	T06	145	0	●
MM ECD-500X145-2T08	.500	.650	T08	145	0	●

- For shanks, see pages 1112-1124 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 1047-1048
- Do not apply lubricant to the threaded connection

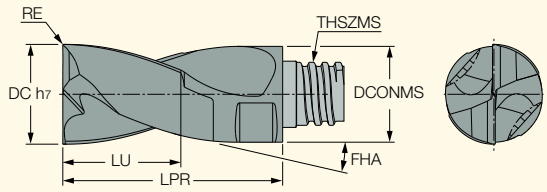
(1) 0 - Without coolant supply, 1 - With coolant supply

MULTI-MASTER

MM ECDF

MULTI-MASTER
Exchangeable Solid Carbide
Flat Bottom Drill Heads





M E T R I C

Designation	Dimensions DC	DCONMS	NOF[1]	LU	LPR	RE	FHA	THSZMS	CSP[2]	IC908
MM ECDF080A100-2T05	8.00	7.70	2	10.00	18.00	0.00	30.0	T05	0	●
MM ECDF085A120-2T05	8.50	7.70	2	12.00	22.00	0.00	30.0	T05	0	●
MM ECDF090A120-2T05	9.00	7.70	2	12.00	22.00	0.00	30.0	T05	0	●
MM ECDF095A120-2T06	9.50	9.20	2	12.00	22.00	0.00	30.0	T06	0	●
MM ECDF100A120-2T06	10.00	9.60	2	12.00	22.00	0.00	30.0	T06	0	●
MM ECDF105A120-2T06	10.50	9.60	2	12.00	23.00	0.00	30.0	T06	0	●
MM ECDF110A120-2T06	11.00	9.60	2	12.00	23.00	0.00	30.0	T06	0	●
MM ECDF115A120-2T06	11.50	9.60	2	12.00	23.00	0.00	30.0	T06	0	●
MM ECDF120A150-2T08	12.00	11.70	2	15.00	27.00	0.00	30.0	T08	0	●

- For shanks, see pages 1112-1124
- For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 1047-1048
- Do not apply lubricant to the threaded connection
- For user guide, see page 1096

(1) Number of flutes
(2) 0 - Without coolant supply, 1 - With coolant supply

Recommended Machining Conditions for Solid Carbide Endmill Heads DC= 8.0-12.9 mm

ISO	Material		Condition	Tensile Strength [N/mm²]	Hardness HB	Material Group No.	V m/min	Feed vs. Flat-Drill Diameter DC=8.0-9.9 frev mm/rev	DC=10.0-12.9 frev mm/rev
P	non-alloy steel and cast steel, free cutting steel	< 0.25 %C	annealed	420	125	1	80-110-140	0.08 0.10 0.12	0.10 0.12 0.14
		≥ 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	80-105-130		
	low alloy and cast steel (less than 5% of alloying elements)		annealed	600	200	6			
			quenched and tempered	930	275	7	60-80-100	0.06 0.08 0.10	0.06 0.08 0.10
				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	60-80-100	0.01 0.02 0.03	0.02 0.03 0.04
			martensitic	820	240	13			
M	stainless steel and cast steel		austenitic, duplex	600	180	14	60-80-100	0.01 0.02 0.03	0.02 0.03 0.04

■ recommended cutting data

Spare Parts

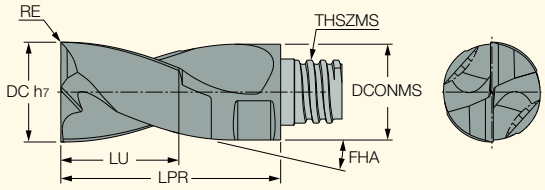
Designation	
MM ECDF080A100-2T05	MM KEY 6X4*
MM ECDF100A120-2T06	MM KEY 8X5*
MM ECDF120A150-2T08	MM KEY 10X7*

* Optional, to be ordered separately

MULTI-MASTER

MM ECDF
MULTI-MASTER
Exchangeable Solid Carbide
Flat Bottom Drill Heads





INCH										
	Dimensions									
Designation	DC	DCONMS	NOF[1]	LU	LPR	RE	FHA	THSZMS	CSP[2]	IC908
MM ECDF315A394-2T05	.315	.303	2	.3937	.709	.0000	30.0	T05	0	●
MM ECDF335A472-2T05	.335	.303	2	.4724	.866	.0000	30.0	T05	0	●
MM ECDF354A472-2T05	.354	.303	2	.4724	.866	.0000	30.0	T05	0	●
MM ECDF374A472-2T06	.374	.362	2	.4724	.866	.0000	30.0	T06	0	●
MM ECDF394A472-2T06	.394	.378	2	.4724	.866	.0000	30.0	T06	0	●
MM ECDF413A472-2T06	.413	.378	2	.4724	.906	.0000	30.0	T06	0	●
MM ECDF433A472-2T06	.433	.378	2	.4724	.906	.0000	30.0	T06	0	●
MM ECDF453A472-2T06	.453	.378	2	.4724	.906	.0000	30.0	T06	0	●
MM ECDF472A590-2T08	.472	.461	2	.5906	1.063	.0000	30.0	T08	0	●
MM ECDF492A590-2T08	.492	.476	2	.5906	1.063	.0000	30.0	T08	0	●

- For shanks, see pages 1112-1124
- For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 1047-1048
- Do not apply lubricant to the threaded connection
- For user guide, see page 1097

(1) Number of flutes
(2) 0 - Without coolant supply, 1 - With coolant supply

Recommended Machining Conditions for MM ECDF Heads DC=.314"-.507"

ISO	Material		Condition	Tensile Strength [ksi]	Hardness HB	Material Group No.	V_c SFM	Feed Vs. Flat-Drill Diameter .314-.389 F (IPR)	Feed Vs. Flat-Drill Diameter .393-.507 F (IPR)
P	non-alloy steel and cast steel, free cutting steel	<0.25% C	annealed	61	125	1	262-360-459	.0031 .0039 .0047	.0039 .0047 .0055
		≥0.25% C	annealed	94	190	2			
		<0.55% C	quenched and tempered	123	250	3			
		≥0.55% C	annealed	109	220	4			
			quenched and tempered	145	300	5	262-344-426		
	low alloy and cast steel (less than 5% of alloying elements)		annealed	87	200	6			
			quenched and tempered	135	275	7	196-262-328	.0023 .0031 .0039	.0023 .0031 .0039
				145	300	8			
				174	350	9			
	high alloyed steel, cast steel and tool steel		annealed	99	200	10			
			quenched and tempered	160	325	11			
	stainless steel and cast steel		ferritic/martensitic	99	200	12	196-262-328	.0004 .0008 .0011	.0004 .0008 .0011
			martensitic	119	240	13			
M	stainless steel and cast steel		austenitic, duplex	87	180	14	196-262-328	.0004 .0008 .0011	.0004 .0008 .0011

■ recommended cutting data

Spare Parts

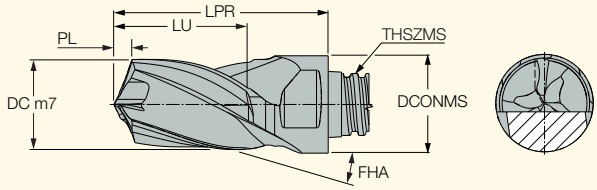
Designation	
MM ECDF315A394-2T05	MM KEY 6X4*
MM ECDF394A472-2T06	MM KEY 8X5*
MM ECDF472A590-2T08	MM KEY 10X7*

* Optional, to be ordered separately

MULTI-MASTER

MM SPD-3T
Three-Flute Exchangeable
Solid Carbide Drilling Heads





M E T R I C

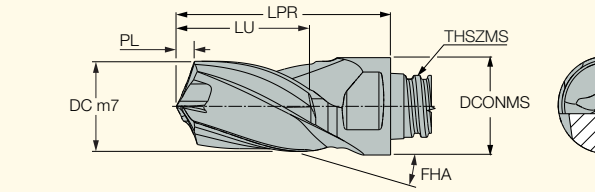
Designation	Dimensions DC	LU	LPR	PL	FHA	THSZMS	DCONMS	CSP(1)	IC908
MM SPD080-08-3T06	8.00	12.10	22.00	1.590	15.0	T06	10.00	0	●
MM SPD085-09-3T06	8.50	12.20	22.00	1.680	15.0	T06	10.00	0	●
MM SPD090-09-3T06	9.00	12.30	22.00	1.780	15.0	T06	10.00	0	●
MM SPD0925-10-3T06	9.25	13.80	22.00	1.830	15.0	T06	10.00	0	●
MM SPD095-10-3T06	9.50	13.90	22.00	1.870	15.0	T06	10.00	0	●
MM SPD100-10-3T08	10.00	15.00	27.00	1.970	15.0	T08	12.00	0	●
MM SPD105-11-3T08	10.50	15.00	27.00	2.050	15.0	T08	12.00	0	●
MM SPD1075-11-3T08	10.75	15.10	27.00	2.120	15.0	T08	12.00	0	●
MM SPD110-11-3T08	11.00	15.10	27.00	2.160	15.0	T08	12.00	0	●
MM SPD1125-12-3T08	11.25	16.20	27.00	2.200	15.0	T08	12.00	0	●
MM SPD115-12-3T08	11.50	16.20	27.00	2.260	15.0	T08	12.00	0	●
MM SPD120-12-3T08	12.00	16.60	27.00	2.350	15.0	T08	12.70	0	●

- For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 1157-1158
- For shanks, clamping keys (to be ordered separately), tightening torques and clamping instructions, see ISCAR MILLING LINES catalog
- Do not apply lubricant to the threaded connection • For user guide, see pages 1157-1158

(1) 0 - Without coolant supply, 1 - With coolant supply

MM SPD-3T
Three-Flute Exchangeable
Solid Carbide Drilling Heads





I N C H

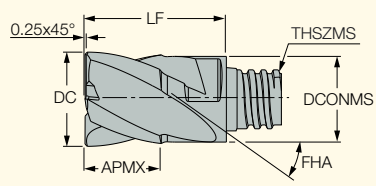
Designation	Dimensions DC	LU	LPR	PL	FHA	THSZMS	DCONMS	CSP(1)	IC908
MM SPD315-31-3T06	.315	.4764	.866	.06259	15.0	T06	.394	0	●
MM SPD335-35-3T06	.335	.4803	.866	.06614	15.0	T06	.394	0	●
MM SPD354-35-3T06	.354	.4843	.866	.07007	15.0	T06	.394	0	●
MM SPD364-39-3T06	.364	.5433	.866	.07204	15.0	T06	.394	0	●
MM SPD374-39-3T06	.374	.5472	.866	.07362	15.0	T06	.394	0	●
MM SPD394-39-3T08	.394	.5906	1.063	.07755	15.0	T08	.472	0	●
MM SPD413-43-3T08	.413	.5906	1.063	.08070	15.0	T08	.472	0	●
MM SPD423-43-3T08	.423	.5945	1.063	.08346	15.0	T08	.472	0	●
MM SPD432-43-3T08	.433	.5945	1.063	.08503	15.0	T08	.472	0	●
MM SPD443-47-3T08	.443	.6378	1.063	.08661	15.0	T08	.472	0	●
MM SPD453-47-3T08	.453	.6378	1.063	.08897	15.0	T08	.472	0	●
MM SPD470-47-3T08	.472	.6535	1.063	.09251	15.0	T08	.500	0	●
MM SPD492-51-3T08	.492	.6535	1.063	.09566	15.0	T08	.500	0	●

- For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 1157-1158
- For shanks, clamping keys (to be ordered separately), tightening torques and clamping instructions, see ISCAR MILLING LINES catalog
- Do not apply lubricant to the threaded connection • For user guide, see pages 1157-1158

(1) 0 - Without coolant supply, 1 - With coolant supply

MM EFCB
Interchangeable 4 Flute 30°
Helix Solid Carbide Heads
for Flat Counter Boring





M E T R I C

Designation	Dimensions DC(1)	APMX	LF	DCONMS	THSZMS	NOF(2)	FHA	CSP(3)	KCH	CHW	IC908	Recommended Machining Data f_z (mm/t)
MM EFCB110A08-4T06	11.00	8.40	16.50	10.00	T06	4	30.0	0	0.25	45.0	●	0.03-0.04

- 0.06 mm maximum concavity on the tool's bottom • For shanks, see pages 1112-1124
- For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 1157-1158 • Do not apply lubricant to the threaded connection
- For user guide, see pages 1047-1048

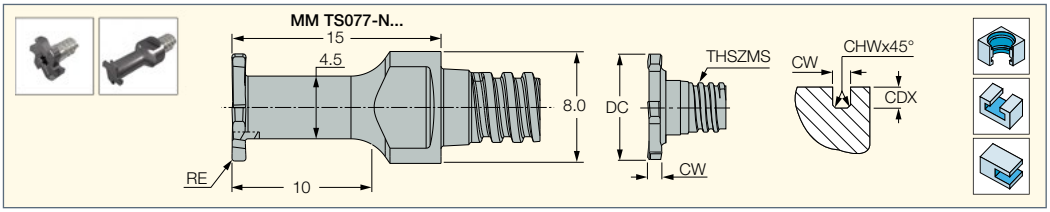
(1) e8 tolerance

(2) Number of flutes

(3) 0 - Without coolant supply, 1 - With coolant supply

MULTI-MASTER

MM TS-N
Interchangeable Solid Carbide
T-SLOT Milling Heads



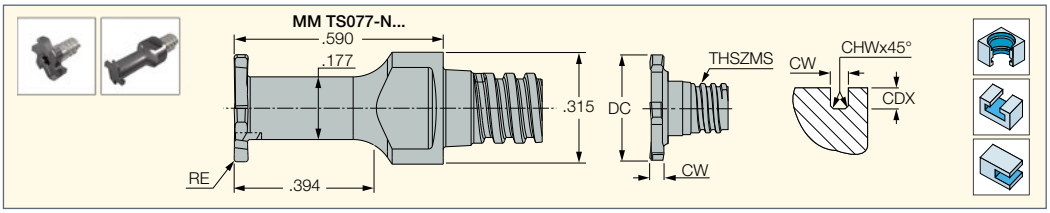
M E T R I C

Designation	Dimensions DC	DCTOLL	CW	NOF(1)	THSZMS	CSP(2)	CDX	RE	CHW			Tough ↔ Hard IC928	IC908
MM TS077-N07A-4T05	7.70	-0.0500	0.70	4	T05	0	1.20	0.20	-	MM KEY 6X4*			●
MM TS077-N08A-4T05	7.70	-0.0500	0.80	4	T05	0	1.20	0.20	-	MM KEY 6X4*			●
MM TS077-N09A-4T05	7.70	-0.0500	0.90	4	T05	0	1.20	0.20	-	MM KEY 6X4*			●
MM TS077-N10A-4T05	7.70	-0.0500	1.00	4	T05	0	1.20	0.20	-	MM KEY 6X4*			●
MM TS077-N15A-4T05	7.70	-0.0500	1.50	4	T05	0	1.20	0.20	-	MM KEY 6X4*			●
MM TS077-N20A-4T05	7.70	-0.0500	2.00	4	T05	0	1.20	0.20	-	MM KEY 6X4*			●
MM TS105-N20D-06T04	10.50	-0.0500	2.00	6	T04	0	2.00	0.40	-		T-15/3*	●	
MM TS.500-N062P-06T05	12.70	-0.0500	1.58	6	T05	0	2.25	-	0.15		T-20/3*		●
MM TS.500-N078P-06T05	12.70	-0.0500	1.98	6	T05	0	2.25	-	0.15		T-20/3*		●
MM TS135-N20P-06T05	13.50	-0.0500	2.00	6	T05	0	2.65	-	0.20		T-20/3*		●
MM TS135-N25P-06T05	13.50	-0.0500	2.50	6	T05	0	2.65	-	0.20		T-20/3*		●

• For shanks, see pages 1112-1124 • For tightening torques and clamping instructions, see pages 1047-1048 • Do not apply lubricant to the threaded connection
• For user guide, see pages 1104-1105
(1) Number of flutes
(2) 0 - Without coolant supply, 1 - With coolant supply
* Optional, to be ordered separately

MULTI-MASTER

MM TS-N
Interchangeable Solid Carbide
T-SLOT Milling Heads



I N C H

Designation	Dimensions DC	DCTOLL	CW	NOF(1)	THSZMS	CSP(2)	CDX	RE	CHW			Tough ↔ Hard IC928	IC908
MM TS077-N07A-4T05	.303	-0.0020	.028	4	T05	0	.047	.0079	-	MM KEY 6X4*			●
MM TS077-N08A-4T05	.303	-0.0020	.031	4	T05	0	.047	.0079	-	MM KEY 6X4*			●
MM TS077-N09A-4T05	.303	-0.0020	.035	4	T05	0	.047	.0079	-	MM KEY 6X4*			●
MM TS077-N10A-4T05	.303	-0.0020	.039	4	T05	0	.047	.0079	-	MM KEY 6X4*			●
MM TS077-N15A-4T05	.303	-0.0020	.059	4	T05	0	.047	.0079	-	MM KEY 6X4*			●
MM TS077-N20A-4T05	.303	-0.0020	.079	4	T05	0	.047	.0079	-	MM KEY 6X4*			●
MM TS105-N20D-06T04	.413	-0.0020	.079	6	T04	0	.079	.0157	-		T-15/3*	●	
MM TS.500-N062P-06T05	.500	-0.0020	.062	6	T05	0	.089	-	.006		T-20/3*		●
MM TS.500-N078P-06T05	.500	-0.0020	.078	6	T05	0	.089	-	.006		T-20/3*		●
MM TS135-N20P-06T05	.531	-0.0020	.079	6	T05	0	.104	-	.008		T-20/3*		●
MM TS135-N25P-06T05	.531	-0.0020	.098	6	T05	0	.104	-	.008		T-20/3*		●

• For shanks, see pages 1112-1124 • For tightening torques and clamping instructions, see pages 1047-1048 • Do not apply lubricant to the threaded connection
• For user guide, see pages 1104-1105
(1) Number of flutes
(2) 0 - Without coolant supply, 1 - With coolant supply
* Optional, to be ordered separately

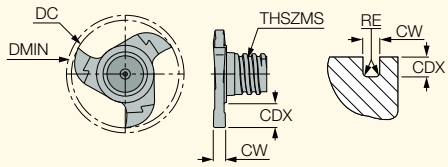
MM TS077-N...



MULTI-MASTER

MM GRIT-3T6
Interchangeable Solid
Carbide Small Diameter
Groove Milling Heads





M E T R I C

Designation	Dimensions DC	CW	CDX(1)	NOF(2)	RE	DMIN(3)	THSZMS	CSP(4)		IC908
MM GRIT16K150-010-3T6	15.70	1.50	2.80	3	0.10	16.00	T06	0	T-20/3*	●
MM GRIT16P150-010-3T6	15.70	1.50	2.80	3	0.10	16.00	T06	0	T-20/3*	●
MM GRIT16K157-020-3T6	15.70	1.57	2.80	3	0.20	16.00	T06	0	T-20/3*	●
MM GRIT16K200-020-3T6	15.70	2.00	2.80	3	0.20	16.00	T06	0	T-20/3*	●
MM GRIT16P220-110-3T6	15.70	2.20	2.80	3	1.10	16.00	T06	0	T-20/3*	●
MM GRIT16K239-020-3T6	15.70	2.39	2.80	3	0.20	16.00	T06	0	T-20/3*	●
MM GRIT16K250-020-3T6	15.70	2.50	2.80	3	0.20	16.00	T06	0	T-20/3*	●
MM GRIT16K300-020-3T6	15.70	3.00	2.80	3	0.20	16.00	T06	0	T-25/3*	●
MM GRIT16P300-020-3T6	15.70	3.00	2.80	3	0.20	16.00	T06	0	T-25/3*	●
MM GRIT16K317-020-3T6	15.70	3.17	2.80	3	0.20	16.00	T06	0	T-25/3*	●
MM GRIT18K120-005-3T6	17.70	1.20	3.80	3	0.05	18.00	T06	0	T-20/3*	●
MM GRIT18P120-060-3T6	17.70	1.20	3.80	3	0.60	18.00	T06	0	T-20/3*	●
MM GRIT18K140-005-3T6	17.70	1.40	3.80	3	0.05	18.00	T06	0	T-20/3*	●
MM GRIT18K150-010-3T6	17.70	1.50	3.80	3	0.10	18.00	T06	0	T-20/3*	●
MM GRIT18K157-020-3T6	17.70	1.57	3.80	3	0.20	18.00	T06	0	T-20/3*	●
MM GRIT18K170-005-3T6	17.70	1.70	3.80	3	0.05	18.00	T06	0	T-20/3*	●
MM GRIT18K200-020-3T6	17.70	2.00	3.80	3	0.20	18.00	T06	0	T-20/3*	●
MM GRIT18P200-100-3T6	17.70	2.00	3.80	3	1.00	18.00	T06	0	T-20/3*	●
MM GRIT18P220-110-3T6	17.70	2.20	3.80	3	1.10	18.00	T06	0	T-20/3*	●
MM GRIT18K239-020-3T6	17.70	2.39	3.80	3	0.20	18.00	T06	0	T-20/3*	●
MM GRIT18K250-020-3T6	17.70	2.50	3.80	3	0.20	18.00	T06	0	T-20/3*	●
MM GRIT18K300-020-3T6	17.70	3.00	3.80	3	0.20	18.00	T06	0	T-25/3*	●
MM GRIT18P300-150-3T6	17.70	3.00	3.80	3	1.50	18.00	T06	0	T-25/3*	●
MM GRIT18K317-020-3T6	17.70	3.17	3.80	3	0.20	18.00	T06	0	T-25/3*	●

- Recommended for O-rings and retaining rings • Modification options on request • Do not apply lubricant to the threaded connection
- For clamping instructions, see pages 1047-1048 • For user guide, see pages 1104-1105 • For shanks, see pages 1112-1124
- K-Type - For general steel machining
- P-Type - Positive geometry for soft and gummy materials

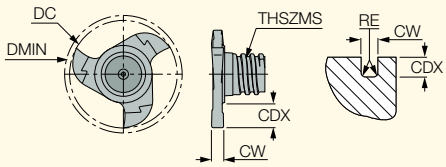
(1) Alpha numeric parameter
(2) Number of flutes
(3) Minimum bore diameter
(4) 0 - Without coolant supply, 1 - With coolant supply
* Optional, to be ordered separately

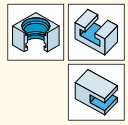
MULTI-MASTER

MM GRIT-3T6

Interchangeable Solid Carbide Small Diameter Groove Milling Heads







I N C H

Designation	Dimensions									IC908
	DC	CW	CDX[1]	NOF[2]	RE	DMIN[3]	THSZMS	CSP[4]		
MM GRIT16K150-010-3T6	.618	.059	.110	3	.0039	.630	T06	0	T-20/3*	●
MM GRIT16P150-010-3T6	.618	.059	.110	3	.0039	.630	T06	0	T-20/3*	●
MM GRIT16K157-020-3T6	.618	.062	.110	3	.0079	.630	T06	0	T-20/3*	●
MM GRIT16K200-020-3T6	.618	.079	.110	3	.0079	.630	T06	0	T-20/3*	●
MM GRIT16P220-110-3T6	.618	.087	.110	3	.0433	.630	T06	0	T-20/3*	●
MM GRIT16K239-020-3T6	.618	.094	.110	3	.0079	.630	T06	0	T-20/3*	●
MM GRIT16K250-020-3T6	.618	.098	.110	3	.0079	.630	T06	0	T-20/3*	●
MM GRIT16K300-020-3T6	.618	.118	.110	3	.0079	.630	T06	0	T-25/3*	●
MM GRIT16P300-020-3T6	.618	.118	.110	3	.0079	.630	T06	0	T-25/3*	●
MM GRIT16K317-020-3T6	.618	.125	.110	3	.0079	.630	T06	0	T-25/3*	●
MM GRIT18K120-005-3T6	.697	.047	.150	3	.0020	.709	T06	0	T-20/3*	●
MM GRIT18P120-060-3T6	.697	.047	.150	3	.0236	.709	T06	0	T-20/3*	●
MM GRIT18K140-005-3T6	.697	.055	.150	3	.0020	.709	T06	0	T-20/3*	●
MM GRIT18K150-010-3T6	.697	.059	.150	3	.0039	.709	T06	0	T-20/3*	●
MM GRIT18K157-020-3T6	.697	.062	.150	3	.0079	.709	T06	0	T-20/3*	●
MM GRIT18K170-005-3T6	.697	.067	.150	3	.0020	.709	T06	0	T-20/3*	●
MM GRIT18K200-020-3T6	.697	.079	.150	3	.0079	.709	T06	0	T-20/3*	●
MM GRIT18P200-100-3T6	.697	.079	.150	3	.0394	.709	T06	0	T-20/3*	●
MM GRIT18P220-110-3T6	.697	.087	.150	3	.0433	.709	T06	0	T-20/3*	●
MM GRIT18K239-020-3T6	.697	.094	.150	3	.0079	.709	T06	0	T-20/3*	●
MM GRIT18K250-020-3T6	.697	.098	.150	3	.0079	.709	T06	0	T-20/3*	●
MM GRIT18K300-020-3T6	.697	.118	.150	3	.0079	.709	T06	0	T-25/3*	●
MM GRIT18P300-150-3T6	.697	.118	.150	3	.0591	.709	T06	0	T-25/3*	●
MM GRIT18K317-020-3T6	.697	.125	.150	3	.0079	.709	T06	0	T-25/3*	●

- Recommended for O-rings and retaining rings • Modification options on request • Do not apply lubricant to the threaded connection
- For clamping instructions, see pages 1047-1048 • For user guide, see pages 1104-1105 • For shanks, see pages 1112-1124
- K-Type - For general steel machining
- P-Type - Positive geometry for soft and gummy materials

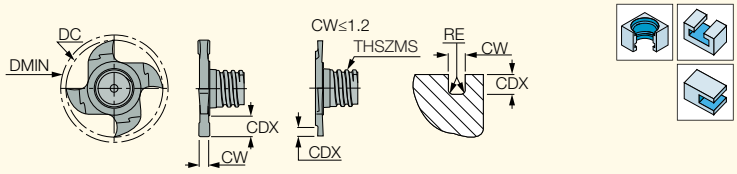
(1) Alpha numeric parameter
(2) Number of flutes
(3) Minimum bore diameter
(4) 0 - Without coolant supply, 1 - With coolant supply
* Optional, to be ordered separately

MULTI-MASTER

MM GRIT-4T8

Interchangeable Solid Carbide Small Diameter Groove Milling Heads





M E T R I C

Designation	Dimensions DC	CW	CDX(1)	NOF(2)	RE	DMIN(3)	THSZMS	CSP(4)		IC908
MM GRIT22K076-000-4T8	21.70	0.76	1.50	4	0.00	22.00	T08	0	T-25/3*	●
MM GRIT22K086-000-4T8	21.70	0.86	1.70	4	0.00	22.00	T08	0	T-25/3*	●
MM GRIT22K096-000-4T8	21.70	0.96	1.90	4	0.00	22.00	T08	0	T-25/3*	●
MM GRIT22K100-005-4T8	21.70	1.00	2.00	4	0.05	22.00	T08	0	T-25/3*	●
MM GRIT22P100-005-4T8	21.70	1.00	2.00	4	0.05	22.00	T08	0	T-25/3*	●
MM GRIT22K120-005-4T8	21.70	1.20	4.50	4	0.05	22.00	T08	0	T-25/3*	●
MM GRIT22K140-005-4T8	21.70	1.40	4.50	4	0.05	22.00	T08	0	T-25/3*	●
MM GRIT22K157-000-4T8	21.70	1.57	4.50	4	0.00	22.00	T08	0	T-25/3*	●
MM GRIT22K170-010-4T8	21.70	1.70	4.50	4	0.10	22.00	T08	0	T-25/3*	●
MM GRIT22P170-010-4T8	21.70	1.70	4.50	4	0.10	22.00	T08	0	T-25/3*	●
MM GRIT22K195-020-4T8	21.70	1.95	4.50	4	0.20	22.00	T08	0	T-25/3*	●
MM GRIT22K200-020-4T8	21.70	2.00	4.50	4	0.20	22.00	T08	0	T-25/3*	●
MM GRIT22P200-020-4T8	21.70	2.00	4.50	4	0.20	22.00	T08	0	T-25/3*	●
MM GRIT22K225-020-4T8	21.70	2.25	4.50	4	0.20	22.00	T08	0	T-25/3*	●
MM GRIT22K239-020-4T8	21.70	2.39	4.50	4	0.20	22.00	T08	0	T-25/3*	●
MM GRIT22K250-020-4T8	21.70	2.50	4.50	4	0.20	22.00	T08	0	T-25/3*	●
MM GRIT22P250-020-4T8	21.70	2.50	4.50	4	0.20	22.00	T08	0	T-25/3*	●
MM GRIT22K275-020-4T8	21.70	2.75	4.50	4	0.20	22.00	T08	0	T-25/3*	●
MM GRIT22K300-020-4T8	21.70	3.00	4.50	4	0.20	22.00	T08	0	T-30/3 L*	●
MM GRIT22P300-020-4T8	21.70	3.00	4.50	4	0.20	22.00	T08	0	T-30/3 L*	●
MM GRIT22K317-020-4T8	21.70	3.17	4.50	4	0.20	22.00	T08	0	T-30/3 L*	●
MM GRIT22K325-020-4T8	21.70	3.25	4.50	4	0.20	22.00	T08	0	T-30/3 L*	●
MM GRIT22P381-020-4T8	21.70	3.81	4.50	4	0.20	22.00	T08	0	T-30/3 L*	●
MM GRIT22K400-020-4T8	21.70	4.00	4.50	4	0.20	22.00	T08	0	T-30/3 L*	●
MM GRIT22P400-020-4T8	21.70	4.00	4.50	4	0.20	22.00	T08	0	T-30/3 L*	●
MM GRIT22P400-200-4T8	21.70	4.00	4.50	4	2.00	22.00	T08	0	T-30/3 L*	●
MM GRIT22K425-020-4T8	21.70	4.25	4.50	4	0.20	22.00	T08	0	T-30/3 L*	●
MM GRIT22K425-120-4T8	21.70	4.25	4.50	4	1.20	22.00	T08	0	T-30/3 L*	●
MM GRIT22K475-020-4T8	21.70	4.75	4.50	4	0.20	22.00	T08	0	T-30/3 L*	●
MM GRIT22K525-020-4T8	21.70	5.25	4.50	4	0.20	22.00	T08	0	T-30/3 L*	●
MM GRIT22K600-300-4T8	21.70	6.00	4.50	4	3.00	22.00	T08	0	T-30/3 L*	●

- Recommended for Orings and retaining rings • K - for general steel & cast iron machining P - for soft and gummy materials
- Modification options on request
- Do not apply lubricant to the threaded connection • For clamping instructions, see pages 1047-1048 • For user guide, see pages 1104-1105
- For shanks, see pages 1112-1124

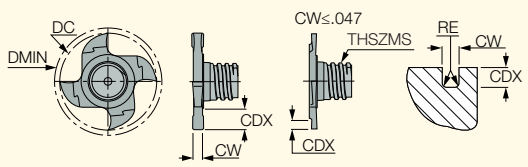
(1) Alpha numeric parameter
(2) Number of flutes
(3) Minimum bore diameter
(4) 0 - Without coolant supply, 1 - With coolant supply
* Optional, to be ordered separately

MULTI-MASTER

MM GRIT-4T8

Interchangeable Solid Carbide Small Diameter Groove Milling Heads





I N C H

Designation	Dimensions									IC908
	DC	CW	CDX(1)	NOF(2)	RE	DMIN(3)	THSZMS	CSP(4)		
MM GRIT22K076-000-4T8	.854	.030	.059	4	.0000	.866	T08	0	T-25/3*	●
MM GRIT22K086-000-4T8	.854	.034	.067	4	.0000	.866	T08	0	T-25/3*	●
MM GRIT22K096-000-4T8	.854	.038	.075	4	.0000	.866	T08	0	T-25/3*	●
MM GRIT22K100-005-4T8	.854	.039	.079	4	.0020	.866	T08	0	T-25/3*	●
MM GRIT22P100-005-4T8	.854	.039	.079	4	.0020	.866	T08	0	T-25/3*	●
MM GRIT22K120-005-4T8	.854	.047	.177	4	.0020	.866	T08	0	T-25/3*	●
MM GRIT22K140-005-4T8	.854	.055	.177	4	.0020	.866	T08	0	T-25/3*	●
MM GRIT22K157-000-4T8	.854	.062	.177	4	.0000	.866	T08	0	T-25/3*	●
MM GRIT22K170-010-4T8	.854	.067	.177	4	.0039	.866	T08	0	T-25/3*	●
MM GRIT22P170-010-4T8	.854	.067	.177	4	.0039	.866	T08	0	T-25/3*	●
MM GRIT22K195-020-4T8	.854	.077	.177	4	.0079	.866	T08	0	T-25/3*	●
MM GRIT22K200-020-4T8	.854	.079	.177	4	.0079	.866	T08	0	T-25/3*	●
MM GRIT22P200-020-4T8	.854	.079	.177	4	.0079	.866	T08	0	T-25/3*	●
MM GRIT22K225-020-4T8	.854	.089	.177	4	.0079	.866	T08	0	T-25/3*	●
MM GRIT22K239-020-4T8	.854	.094	.177	4	.0079	.866	T08	0	T-25/3*	●
MM GRIT22K250-020-4T8	.854	.098	.177	4	.0079	.866	T08	0	T-25/3*	●
MM GRIT22P250-020-4T8	.854	.098	.177	4	.0079	.866	T08	0	T-25/3*	●
MM GRIT22K275-020-4T8	.854	.108	.177	4	.0079	.866	T08	0	T-25/3*	●
MM GRIT22K300-020-4T8	.854	.118	.177	4	.0079	.866	T08	0	T-30/3 L*	●
MM GRIT22P300-020-4T8	.854	.118	.177	4	.0079	.866	T08	0	T-30/3 L*	●
MM GRIT22K317-020-4T8	.854	.125	.177	4	.0079	.866	T08	0	T-30/3 L*	●
MM GRIT22K325-020-4T8	.854	.128	.177	4	.0079	.866	T08	0	T-30/3 L*	●
MM GRIT22P381-020-4T8	.854	.150	.177	4	.0079	.866	T08	0	T-30/3 L*	●
MM GRIT22K400-020-4T8	.854	.157	.177	4	.0079	.866	T08	0	T-30/3 L*	●
MM GRIT22P400-020-4T8	.854	.157	.177	4	.0079	.866	T08	0	T-30/3 L*	●
MM GRIT22P400-200-4T8	.854	.157	.177	4	.0787	.866	T08	0	T-30/3 L*	●
MM GRIT22K425-020-4T8	.854	.167	.177	4	.0079	.866	T08	0	T-30/3 L*	●
MM GRIT22K425-120-4T8	.854	.167	.177	4	.0472	.866	T08	0	T-30/3 L*	●
MM GRIT22K475-020-4T8	.854	.187	.177	4	.0079	.866	T08	0	T-30/3 L*	●
MM GRIT22K525-020-4T8	.854	.207	.177	4	.0079	.866	T08	0	T-30/3 L*	●
MM GRIT22K600-300-4T8	.854	.236	.177	4	.1181	.866	T08	0	T-30/3 L*	●

- Recommended for O-rings and retaining rings • K - for general steel & cast iron machining P - for soft and gummy materials
- Modification options on request
- Do not apply lubricant to the threaded connection • For clamping instructions, see pages 1047-1048 • For user guide, see pages 1104-1105
- For shanks, see pages 1112-1124

(1) Alpha numeric parameter
(2) Number of flutes
(3) Minimum bore diameter
(4) 0 - Without coolant supply, 1 - With coolant supply
* Optional, to be ordered separately

Machining Data for MULTI-MASTER Groove Milling Heads (Metric)

ISO	Material		Condition	Tensile Strength [N/mm²]	Hardness HB	Material No.	MM-TS			MM-GRIT K-TYPE			MM-GRIT P-TYPE		
							Speed	Feed mm/t		Speed	Feed mm/t		Speed	Feed mm/t	
							V m/min	$F_{z\ (min)}$	$F_{z\ (max)}$	V m/min	$F_{z\ (min)}$	$F_{z\ (max)}$	V m/min	$F_{z\ (min)}$	$F_{z\ (max)}$
P	non-alloy steel and cast steel, free cutting steel	<0.25% C	annealed	420	125	1	110-140	0.08	0.20	110-160	0.05	0.15	-	-	-
		≥0.25% C	annealed	650	190	2	100-120	0.08	0.18	100-150	0.05	0.15	-	-	-
		<0.55% C	quenched and tempered	850	250	3	70-100	0.08	0.15	80-100	0.05	0.15	-	-	-
		≥0.55% C	annealed	750	220	4	70-100	0.08	0.15	80-100	0.05	0.15	-	-	-
			quenched and tempered	1000	300	5	60-80	0.08	0.15	60-80	0.05	0.15	-	-	-
	low alloy and cast steel (less than 5% of alloying elements)		annealed	600	200	6	100-120	0.08	0.15	110-150	0.05	0.15	-	-	-
			quenched and tempered	930	275	7	90-120	0.08	0.15	100-120	0.05	0.15	-	-	-
				1000	300	8	80-110	0.08	0.15	70-110	0.05	0.15	-	-	-
				1200	350	9	70-100	0.05	0.12	70-100	0.05	0.15	-	-	-
	high alloyed steel, cast steel and tool steel		annealed	680	200	10	60-80	0.05	0.18	60-80	0.05	0.15	-	-	-
			quenched and tempered	1100	325	11	55-70	0.08	0.15	55-70	0.05	0.15	-	-	-
	stainless steel and cast steel		ferritic / martensitic	680	200	12	100-130	0.06	0.12	100-130	0.03	0.15	100-130	0.03	0.10
			martensitic	820	240	13	100-120	0.08	0.15	100-130	0.03	0.15	100-130	0.03	0.10
M	stainless steel and cast steel		austenitic, duplex	600	180	14	80-120	0.05	0.10	90-120	0.03	0.12	90-120	0.03	0.10
N	aluminum-wrought alloys		not hardenable		60	21	800-1200	0.10	0.20	-	-	-	800-1200	0.05	0.15
			hardenable		100	22	800-1200	0.10	0.20	-	-	-	800-1200	0.05	0.15
	aluminum-cast alloys	≤12% Si	not hardenable		75	23	-	-	-	-	-	-	600-1000	0.05	0.15
			hardenable		90	24	-	-	-	-	-	-	500-1000	0.05	0.15
		>12% Si	high temperature		130	25	-	-	-	-	-	-	200-400	0.05	0.15
	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	-	-	-	30-40	0.02	0.12	-	-	-
			hardened		280	32	25-35	0.05	0.12	25-40	0.02	0.12	-	-	-
		Ni or Co based	annealed		250	33	25-35	0.05	0.12	25-40	-	-	-	0.01	0.12
			hardened		350	34	25-35	0.05	0.12	25-40	-	-	-	0.01	0.12
			cast		320	35	40-60	0.05	0.12	25-40	-	-	-	0.01	0.12
	titanium alloys		pure	400	190	36	40-60	0.05	0.12	40-60	-	-	-	0.05	0.12
			alpha+beta alloys, hardened	1050	310	37	40-60	0.05	0.10	40-60	-	-	-	0.05	0.10

Machining Data for MULTI-MASTER Groove Milling Heads (Imperial)

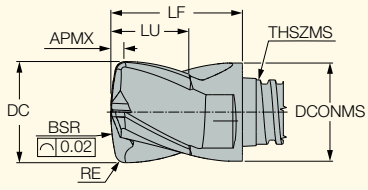
ISO	Material		Condition	Tensile Strength [ksi]	Hardness HB	Material Group No.	MM-TS			MM-GRIT K-TYPE			MM-GRIT P-TYPE		
							Speed	Feed [Inch/Tooth]		Speed	Feed [Inch/Tooth]		Speed	Feed [Inch/Tooth]	
							V (SFM)	F_z (min)	F_z (max)	V (SFM)	F_z (min)	F_z (max)	V (SFM)	F_z (min)	F_z (max)
P	non-alloy steel and cast steel, free cutting steel	<0.25% C	annealed	61	125	1	360-460	.0031	.0079	360-520	.0020	.0059	-	-	-
		≥0.25% C	annealed	94	190	2	330-390	.0031	.0071	330-490	.0020	.0059	-	-	-
		<0.55% C	quenched and tempered	123	250	3	230-330	.0031	.0059	260-330	.0020	.0059	-	-	-
		≥0.55% C	annealed	109	220	4	230-330	.0031	.0059	260-330	.0020	.0059	-	-	-
			quenched and tempered	145	300	5	200-260	.0031	.0059	200-260	.0020	.0059	-	-	-
	low alloy and cast steel (less than 5% of alloying elements)		annealed	87	200	6	330-390	.0031	.0059	360-490	.0020	.0059	-	-	-
			quenched and tempered	135	275	7	300-390	.0031	.0059	330-390	.0020	.0059	-	-	-
				145	300	8	260-360	.0031	.0059	230-360	.0020	.0059	-	-	-
				174	350	9	230-330	.0020	.0047	230-330	.0020	.0059	-	-	-
	high alloyed steel, cast steel and tool steel		annealed	99	200	10	200-260	.0020	.0071	200-260	.0020	.0059	-	-	-
			quenched and tempered	160	325	11	180-230	.0031	.0059	180-230	.0020	.0059	-	-	-
	stainless steel and cast steel		ferritic/ martensitic	99	200	12	330-430	.0024	.0047	330-430	.0012	.0059	330-430	.0012	.0039
			martensitic	119	240	13	330-390	.0031	.0059	330-430	.0012	.0059	330-430	.0012	.0039
M	stainless steel and cast steel		austenitic, duplex	87	180	14	260-390	.0020	.0039	300-390	.0012	.0047	300-390	.0012	.0039
N	aluminum-wrought alloys		not hardenable		60	21	2620-3940	.0039	.0079	-	-	-	2620-3940	.0020	.0059
			hardenable		100	22	2620-3940	.0039	.0079	-	-	-	2620-3940	.0020	.0059
	aluminum-cast alloys	≤12% Si	not hardenable		75	23	-	-	-	-	-	-	1970-3280	.0020	.0059
			hardenable		90	24	-	-	-	-	-	-	1640-3280	.0020	.0059
		>12% Si	high temperature		130	25	-	-	-	-	-	-	660-1310	.0020	.0059
	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	-	-	-	100-130	.0008	.0047	-	-	-
			hardened		280	32	80-110	.0020	.0047	80-130	.0008	.0047	-	-	-
		Ni or Co based	annealed		250	33	80-110	.0020	.0047	80-130	-	-	-	.0004	.0047
			hardened		350	34	80-110	.0020	.0047	80-130	-	-	-	.0004	.0047
			cast		320	35	130-200	.0020	.0047	80-130	-	-	-	.0004	.0047
	titanium alloys		pure	58	190	36	130-200	.0020	.0047	130-200	-	-	-	.0020	.0047
			alpha+beta alloys, hardened	152	310	37	130-200	.0020	.0039	130-200	-	-	-	.0020	.0039

MULTI-MASTER

MM ELB

Interchangeable Lens-Shaped (Barrel) Solid Carbide Heads for 3D Profiling





M E T R I C

Designation	Dimensions										IC908
	DC	BSR	RE	LU	APMX	THSZMS	DCONMS	NOF(1)	LF	CSP(2)	
MM ELB08R16A05-4T05	8.00	16.00	0.50	5.50	0.90	T05	7.70	4	10.00	0	●
MM ELB10R20A07-4T06	10.00	20.00	1.00	7.50	1.42	T06	9.70	4	13.00	0	●
MM ELB12R24A09-4T08	12.00	24.00	1.00	9.00	1.55	T08	11.70	4	16.50	0	●

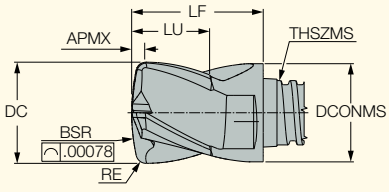
• For shanks, see pages 1112-1124 • For tightening torques and clamping instructions, see pages 1047-1048 • Do not apply lubricant to the threaded connection
• For user guide, see pages 1160-1164
(1) Number of flutes
(2) 0 - Without coolant supply, 1 - With coolant supply

MULTI-MASTER

MM ELB

Interchangeable Lens-Shaped (Barrel) Solid Carbide Heads for 3D Profiling





I N C H

Designation	Dimensions										IC908
	DC	BSR	RE	LU	APMX	THSZMS	DCONMS	NOF(1)	LF	CSP(2)	
MM ELB312R625A19-4T05	.312	.6250	.0200	.1900	.0351	T05	.312	4	.394	0	●
MM ELB375R750A27-4T06	.375	.7500	.0390	.2700	.0548	T06	.375	4	.512	0	●
MM ELB500R1.0A35-4T08	.500	1.0000	.0390	.3500	.0626	T08	.500	4	.650	0	●

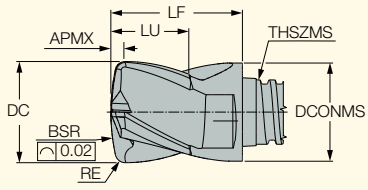
• For shanks, see pages 1112-1124 • For tightening torques and clamping instructions, see pages 1047-1048 • Do not apply lubricant to the threaded connection
• For user guide, see pages 1160-1164
(1) Number of flutes
(2) 0 - Without coolant supply, 1 - With coolant supply

MULTI-MASTER

MM ELBA

Interchangeable Lens-Shaped (Barrel) Solid Carbide Heads for 3D Aluminum Profiling





ALUMINUM

M E T R I C

Designation	Dimensions										IC08
	DC	BSR	RE	LU	APMX	THSZMS	DCONMS	NOF(1)	LF	CSP(2)	
MM ELBA08R16A05-4T05	8.00	16.00	0.50	5.00	0.90	T05	8.00	4	10.00	0	●
MM ELBA10R20A07-4T06	10.00	20.00	1.00	7.00	1.42	T06	10.00	4	13.00	0	●
MM ELBA12R24A09-4T08	12.00	24.00	1.00	9.00	1.55	T08	12.00	4	16.50	0	●

• For shanks, see pages 1112-1124 • For tightening torques and clamping instructions, see pages 1047-1048 • Do not apply lubricant to the threaded connection
• For user guide, see pages 1160-1164

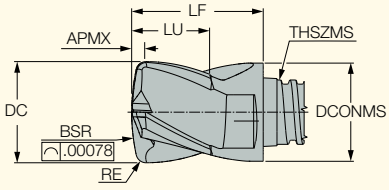
(1) Number of flutes

(2) 0 - Without coolant supply, 1 - With coolant supply

MM ELBA

Interchangeable Lens-Shaped (Barrel) Solid Carbide Heads for 3D Aluminum Profiling





ALUMINUM

I N C H

Designation	Dimensions										IC08
	DC	BSR	RE	LU	APMX	THSZMS	DCONMS	NOF(1)	LF	CSP(2)	
MM ELBA312R625A19-4T05	.312	.6250	.0200	.1900	.0351	T05	.312	4	.394	0	●
MM ELBA375R750A27-4T06	.375	.7500	.0390	.2700	.0548	T06	.375	4	.512	0	●
MM ELBA500R1.0A35-4T08	.500	1.0000	.0390	.3500	.0626	T08	.500	4	.650	0	●

• For shanks, see pages 1112-1124 • For tightening torques and clamping instructions, see pages 1047-1048 • Do not apply lubricant to the threaded connection
• For user guide, see pages 1160-1164

(1) Number of flutes

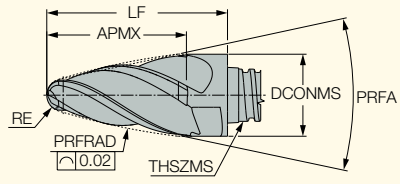
(2) 0 - Without coolant supply, 1 - With coolant supply

MULTI-MASTER

MM EOB

Interchangeable Oval-Shaped (Barrel) Solid Carbide Heads for 3D Profiling





M E T R I C

Designation	Dimensions									IC908
	PRFRAD	RE	APMX	PRFA	THSZMS	CSP(1)	NOF(2)	DCONMS	LF	
MM EOB08R1.5R80A13-4T05	80.00	1.50	14.20	24.00	T05	0	4	8.00	18.00	●
MM EOB08R1.5R80A13-6T05	80.00	1.50	14.10	24.00	T05	0	6	8.00	18.00	●
MM EOB10R2.0R85A16-4T06	85.00	2.00	16.50	24.00	T06	0	4	10.00	22.00	●
MM EOB10R2.0R85A16-6T06	85.00	2.00	16.50	24.00	T06	0	6	10.00	22.00	●
MM EOB12R2.0R75A21-4T08	75.00	2.00	21.30	24.00	T08	0	4	12.00	27.00	●
MM EOB12R2.0R75A21-6T08	75.00	2.00	21.30	24.00	T08	0	6	12.00	27.00	●

• For user guide, see pages 1160-1164

(1) 0 - Without coolant supply, 1 - With coolant supply

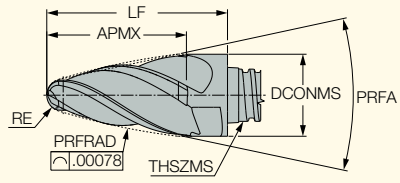
(2) Number of flutes

MULTI-MASTER

MM EOB

Interchangeable Oval-Shaped (Barrel) Solid Carbide Heads for 3D Profiling





I N C H

Designation	Dimensions									IC908
	PRFRAD	RE	APMX	PRFA	THSZMS	NOF(1)	DCONMS	LF	CSP(2)	
MM EOB312R06R3.15A50-6T05	3.1500	.0600	.5300	24.00	T05	6	.312	.709	0	●
MM EOB312R060R315A53-4T05	3.1500	.0600	.5300	24.00	T05	4	.312	.709	0	●
MM EOB375R123R295A62-4T06	2.9500	.1230	.6000	16.00	T06	4	.375	.866	0	●
MM EOB375R123R295A62-6T06	2.9500	.1230	.6000	16.00	T06	6	.375	.866	0	●
MM EOB500R157R75A82-6T08	7.5000	.1570	.8200	16.00	T08	6	.500	1.063	0	●
MM EOB500R157R750A82-4T08	7.5000	.1570	.8200	16.00	T08	4	.500	1.063	0	●

• For user guide, see pages 1160-1164

(1) Number of flutes

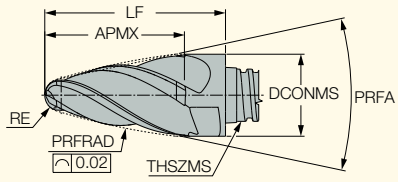
(2) 0 - Without coolant supply, 1 - With coolant supply

MULTI-MASTER

MM EOBA

Interchangeable Oval-Shaped (Barrel) Solid Carbide Heads for 3D Aluminum Profiling





ALUMINUM

M E T R I C

Designation	Dimensions									IC08
	PRFRAD	RE	APMX	PRFA	THSZMS	NOF(1)	DCONMS	LF	CSP(2)	
MM EOBA08R1.5R80A13-4T05	80.00	1.50	14.20	24.00	T05	4	8.00	18.00	0	●
MM EOBA10R2.0R85A16-4T06	85.00	2.00	16.50	24.00	T06	4	10.00	22.00	0	●
MM EOBA12R2.0R75A21-4T08	75.00	2.00	21.30	24.00	T08	4	12.00	27.00	0	●

• For user guide, see pages 1160-1164

(1) Number of flutes

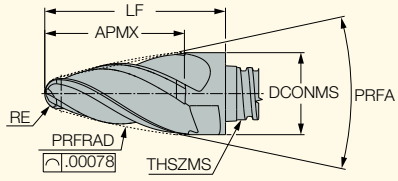
(2) 0 - Without coolant supply, 1 - With coolant supply

MULTI-MASTER

MM EOBA

Interchangeable Oval-Shaped (Barrel) Solid Carbide Heads for 3D Aluminum Profiling





ALUMINUM

I N C H

Designation	Dimensions									IC08
	PRFRAD	RE	APMX	PRFA	THSZMS	NOF(1)	DCONMS	LF	CSP(2)	
MM EOBA312R06R315A50-4T05	3.1500	.0600	.5310	24.00	T05	4	.312	.709	0	●
MM EOBA375R31R295A62-4T06	2.9500	.1230	.6000	16.00	T06	4	.375	.866	0	●
MM EOBA500R157R75A82-4T08	7.5000	.1570	.8270	16.00	T08	4	.500	1.063	0	●

• For user guide, see pages 1160-1164

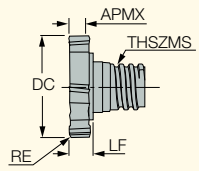
(1) Number of flutes

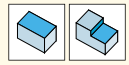
(2) 0 - Without coolant supply, 1 - With coolant supply

MULTI-MASTER

MM FM
Interchangeable Solid Carbide
Face Milling Heads
with MULTI-MASTER
Threaded Connections







M E T R I C

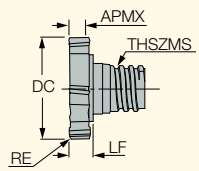
Designation	Dimensions DC	APMX	RE	NOF(1)	THSZMS	LF	CSP(2)		IC908	Recommended Machining Data f_z (mm/t)
MM FM100-36R0.2-06T05	10.00	3.60	0.20	6	T05	4.40	0	T-20/3*	●	0.04-0.10
MM FM120-36R0.2-06T05	12.00	3.60	0.20	6	T05	4.40	0	T-20/3*	●	0.04-0.10
MM FM500-14R008-06T05	12.70	3.60	0.20	6	T05	4.40	0	T-20/3*	●	0.04-0.10
MM FM625-19R016-06T06	15.88	4.80	0.40	6	T06	5.60	0	T-25/3*	●	0.05-0.10
MM FM160-48R0.4-06T06	16.00	4.80	0.40	6	T06	5.60	0	T-25/3*	●	0.05-0.10
MM FM200-60R0.4-06T08	20.00	6.00	0.40	6	T08	6.80	0	T-40/3 L*	●	0.05-0.10

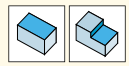
(1) Number of flutes
(2) 0 - Without coolant supply, 1 - With coolant supply
* Optional, to be ordered separately

MULTI-MASTER

MM FM
Interchangeable Solid Carbide
Face Milling Heads
with MULTI-MASTER
Threaded Connections







I N C H

Designation	Dimensions DC	APMX	RE	NOF(1)	THSZMS	LF	CSP(2)		IC908	Recommended Machining Data f_z (inch/t)
MM FM100-36R0.2-06T05	.394	.1417	.0079	6	T05	.173	0	T-20/3*	●	.0016-.0039
MM FM120-36R0.2-06T05	.472	.1417	.0079	6	T05	.173	0	T-20/3*	●	.0016-.0039
MM FM500-14R008-06T05	.500	.1417	.0079	6	T05	.173	0	T-20/3*	●	.0016-.0039
MM FM625-19R016-06T06	.625	.1890	.0158	6	T06	.220	0	T-25/3*	●	.0020-.0039
MM FM160-48R0.4-06T06	.630	.1890	.0157	6	T06	.220	0	T-25/3*	●	.0020-.0039
MM FM200-60R0.4-06T08	.787	.2362	.0157	6	T08	.268	0	T-40/3 L*	●	.0020-.0039

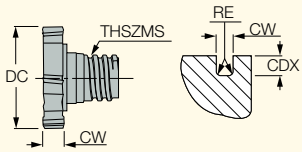
(1) Number of flutes
(2) 0 - Without coolant supply, 1 - With coolant supply
* Optional, to be ordered separately

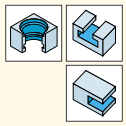
MULTI-MASTER

MM TS-H

Interchangeable Solid Carbide T-SLOT Milling Heads with Diverse Corner Radii







M E T R I C

Designation	Dimensions DC	DCTOLL	CW	CDX	NOF(1)	RE	CSP(2)	THSZMS		IC908
MM TS135-H30D-06T05	13.50	-0.0500	3.00	2.65	6	0.40	0	T05	T-20/3*	●
MM TS135-H40D-06T05	13.50	-0.0500	4.00	2.65	6	0.40	0	T05	T-20/3*	●
MM TS165-H40A-06T05	16.50	-0.0500	4.00	4.25	6	0.20	0	T05	T-20/3*	●
MM TS160-H20D-06T06	16.00	-0.0500	2.00	3.00	6	0.40	0	T06	T-20/3*	●
MM TS160-H30D-06T06	16.00	-0.0500	3.00	3.00	6	0.40	0	T06	T-25/3*	●
MM TS160-H40D-06T06	16.00	-0.0500	4.00	3.00	6	0.40	0	T06	T-25/3*	●
MM TS165-H20D-06T06	16.50	-0.0500	2.00	3.25	6	0.40	0	T06	T-20/3*	●
MM TS165-H30D-06T06	16.50	-0.0500	3.00	3.25	6	0.40	0	T06	T-25/3*	●
MM TS165-H40D-06T06	16.50	-0.0500	4.00	3.25	6	0.40	0	T06	T-25/3*	●
MM TS195-H60A-06T06	19.50	-0.0500	6.00	4.45	6	0.20	0	T06	T-25/3*	●
MM TS225-H60A-06T06	22.50	-0.0500	6.00	5.95	6	0.20	0	T06	T-25/3*	●
MM TS195-H40D-06T08	19.50	-0.0500	4.00	3.45	6	0.40	0	T08	T-30/3 L*	●
MM TS195-H50D-06T08	19.50	-0.0500	5.00	3.45	6	0.40	0	T08	T-30/3 L*	●
MM TS195-H60D-06T08	19.50	-0.0500	6.00	3.45	6	0.40	0	T08	T-30/3 L*	●
MM TS225-H40D-06T08	22.50	-0.0500	4.00	4.90	6	0.40	0	T08	T-40/3 L*	●
MM TS225-H50D-06T08	22.50	-0.0500	5.00	4.95	6	0.40	0	T08	T-40/3 L*	●
MM TS225-H60D-06T08	22.50	-0.0500	6.00	4.95	6	0.40	0	T08	T-40/3L*	●
MM TS225-H80D-06T08	22.50	-0.0500	8.00	4.95	6	0.40	0	T08	T-40/3 L*	●
MM TS250-H50D-06T08	25.00	-0.0500	5.00	5.90	6	0.40	0	T08	T-50/3 L*	●
MM TS250-H60D-06T08	25.00	-0.0500	6.00	5.90	6	0.40	0	T08	T-50/3 L*	●
MM TS250-H80D-06T08	25.00	-0.0500	8.00	5.90	6	0.40	0	T08	T-50/3 L*	●

- Inserts in 5 mm and wider feature chip splitting edges
- For tightening torques and clamping instructions, see pages 1047-1048
- Do not apply lubricant to the threaded connection
- For shanks, see pages 1112-1124
- For user guide, see pages 1104-1105

(1) Number of flutes

(2) 0 - Without coolant supply, 1 - With coolant supply

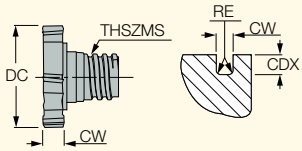
* Optional, to be ordered separately

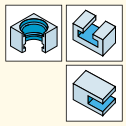
MULTI-MASTER

MM TS-H

Interchangeable Solid Carbide T-SLOT Milling Heads with Diverse Corner Radii







I N C H

Designation	Dimensions DC	DCTOLL	CW	CDX	NOF(1)	RE	CSP(2)	THSZMS		IC908
MM TS.500-H125D-06T05	.500	-0.0020	.125	.088	6	.0150	0	T05	T-20/3*	●
MM TS.625-H056D-06T06	.625	-0.0020	.056	.125	6	.0160	0	T06	T-20/3*	●
MM TS.625-H063D-06T06	.625	-0.0020	.063	.125	6	.0160	0	T06	T-20/3*	●
MM TS.625-H068D-06T06	.625	-0.0020	.068	.125	6	.0160	0	T06	T-20/3*	●
MM TS.625-H078D-06T06	.625	-0.0020	.078	.125	6	.0160	0	T06	T-20/3*	●
MM TS.625-H086D-06T06	.625	-0.0020	.086	.125	6	.0160	0	T06	T-20/3*	●
MM TS.625-H105D-06T06	.625	-0.0020	.105	.125	6	.0160	0	T06	T-25/3*	●
MM TS.625-H125D-06T06	.625	-0.0020	.125	.125	6	.0160	0	T06	T-25/3*	●
MM TS.625-H156D-06T06	.625	-0.0020	.156	.125	6	.0160	0	T06	T-25/3*	●
MM TS.750-H156D-06T08	.750	-0.0020	.156	.120	6	.0160	0	T08	T-30/3 L*	●
MM TS.750-H187D-06T08	.750	-0.0020	.187	.120	6	.0160	0	T08	T-30/3 L*	●
MM TS.750-H250D-06T08	.750	-0.0020	.250	.120	6	.0160	0	T08	T-30/3 L*	●
MM TS.875-H187D-06T08	.875	-0.0020	.187	.190	6	.0150	0	T08	T-40/3 L*	●
MM TS.875-H250D-06T08	.875	-0.0020	.250	.190	6	.0150	0	T08	T-40/3 L*	●
MM TS.875-H312D-06T08	.875	-0.0020	.312	.190	6	.0150	0	T08	T-40/3 L*	●

- Inserts in .197" and wider feature chip splitting edges
- For tightening torques and clamping instructions, see pages 1047-1048
- Do not apply lubricant to the threaded connection
- For shanks, see pages 1112-1124
- For user guide, see pages 1104-1105

(1) Number of flutes

(2) 0 - Without coolant supply, 1 - With coolant supply

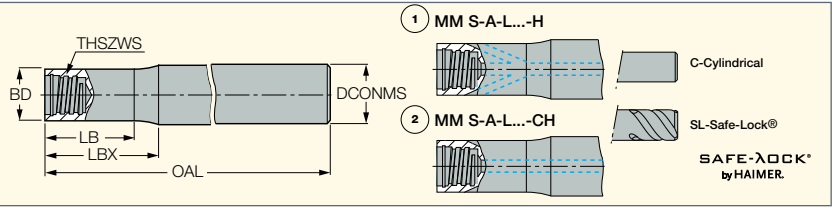
* Optional, to be ordered separately

MULTI-MASTER

MM S-A (stepped shanks)

Stepped Cylindrical Shanks
Mount Interchangeable
Milling Heads





M E T R I C

Designation	THSZWS	DCONMS	BD	LB	LBX	OAL	Shank[2]	Shank m.[3]	CSP[4]	Fig.	RPMX[5]	kg
MM S-A-L050-C08-T04	T04	8.00	5.80	9.90	14.0	50.00	C	S	0	-	60000	0.03
MM S-A-L060/20-C08-T04-C	T04	8.00	5.80	16.90	20.0	60.00	C	C	0	-	60000	0.03
MM S-A-L060-C08-T05	T05	8.00	7.60	12.50	15.0	60.00	C	S	0	-	60000	0.05
MM S-A-L070-C08-T05-C	T05	8.00	7.60	18.60	20.0	70.00	C	C	0	-	60000	0.04
MM S-A-L070-C08-T05-W	T05	8.00	7.60	18.90	20.0	70.00	C	W	0	-	60000	0.06
MM S-A-L090-C08-T05-C	T05	8.00	7.60	38.60	40.0	90.00	C	C	0	-	50160	0.06
MM S-A-L090-C08-T05-W	T05	8.00	7.60	38.60	40.0	90.00	C	W	0	-	36090	0.07
MM S-A-L110-C08-T05-C	T05	8.00	7.60	57.90	60.0	110.00	C	C	0	-	30600	0.07
MM S-A-L110-C08-T05-W	T05	8.00	7.60	58.90	60.0	110.00	C	W	0	-	21060	0.09
MM S-A-L070-C10-T06-C	T06	10.00	9.60	18.50	20.0	70.00	C	C	0	-	54900	0.08
MM S-A-L070-C10-T06-W-H	T06	10.00	9.60	18.90	20.0	70.00	C	W	1	1	60000	0.08
MM S-A-L075-C10-T06	T06	10.00	9.60	17.70	20.0	75.00	C	S	0	-	60000	0.05
MM S-A-L075-C10-T06-H	T06	10.00	9.60	19.40	20.0	75.00	C	S	1	1	53940	0.04
MM S-A-L075/12-C10-T06-CH	T06	10.00	9.60	10.60	12.0	75.00	C	S	1	2	53940	0.04
MM S-A-L090-C10-T06-C	T06	10.00	9.60	38.60	40.0	90.00	C	C	0	-	55170	0.06
MM S-A-L090/040C10T06C-H	T06	10.00	9.60	38.60	40.0	90.00	C	C	1	1	60000	0.08
MM S-A-L090-C10-T06-W	T06	10.00	9.60	17.20	20.0	90.00	C	W	0	-	41670	0.12
MM S-A-L090-C10-T06-W-H	T06	10.00	9.60	39.00	40.0	90.00	C	W	1	1	40860	0.10
MM S-A-L110-C10-T06-C	T06	10.00	9.60	57.90	60.0	110.00	C	C	0	-	34530	0.11
MM S-A-L110-C10-T06-W-H	T06	10.00	9.60	59.00	60.0	110.00	C	W	1	1	24840	0.12
MM S-A-L150-C10-T06-C	T06	10.00	9.60	98.50	100.0	150.00	C	C	0	-	16620	0.16
MM S-A-L070-C12-T08-C	T08	12.00	11.60	17.90	20.0	70.00	C	C	0	-	60000	0.10
MM S-A-L070-C12-T08-W-H	T08	12.00	11.60	18.70	20.0	70.00	C	W	1	1	60000	0.11
MM S-A-L085/36-C12T08C	T08	12.00	11.60	36.00	37.7	85.00	C	C	0	-	60000	0.13
MM S-A-L090/14-C12-T08-CH	T08	12.00	11.60	13.00	14.0	90.00	C	S	1	2	43000	0.08
MM S-A-L090-C12-T08	T08	12.00	11.60	13.30	16.0	90.00	C	S	0	-	43000	0.10
MM S-A-L070/020C12T08C-CH	T08	12.00	11.60	18.00	20.0	70.00	C	C	1	2	43050	0.08
MM S-A-L090-C12-T08-C	T08	12.00	11.60	39.00	40.0	90.00	C	C	0	-	43050	0.12
MM S-A-L090-C12-T08-H	T08	12.00	11.60	38.70	40.0	90.00	C	S	1	1	41040	0.08
MM S-A-L090-C12-T08-W-H	T08	12.00	11.60	38.70	40.0	90.00	C	W	1	1	49800	0.15
MM S-A-L090/040C12T08C-CH	T08	12.00	11.60	38.00	40.0	90.00	C	C	1	2	49800	0.11
MM S-A-L090/42-C12-T08-CH	T08	12.00	11.60	41.00	42.0	90.00	C	S	1	2	41010	0.07
MM S-A-L110-C12-T08-W	T08	12.00	11.60	17.00	20.0	110.00	C	W	0	-	31350	0.20
MM S-A-L110-C12-T08-C	T08	12.00	11.60	57.00	60.0	110.00	C	C	0	-	41040	0.16
MM S-A-L110-C12-T08-W-H	T08	12.00	11.60	58.70	60.0	110.00	C	W	1	1	30210	0.18
MM S-A-L110/060C12T08C-CH	T08	12.00	11.60	58.00	60.0	110.00	C	C	1	2	30210	0.12
MM S-A-L130-C12-T08-C	T08	12.00	11.60	78.60	80.0	130.00	C	C	0	-	27960	0.19
MM S-A-L130-C12-T08-W-H	T08	12.00	11.60	78.70	80.0	130.00	C	W	1	1	20100	0.21
MM S-A-L130/080C12T08C-CH	T08	12.00	11.60	78.00	80.0	130.00	C	C	1	2	20100	0.17

- Do not apply lubricant to the threaded connection

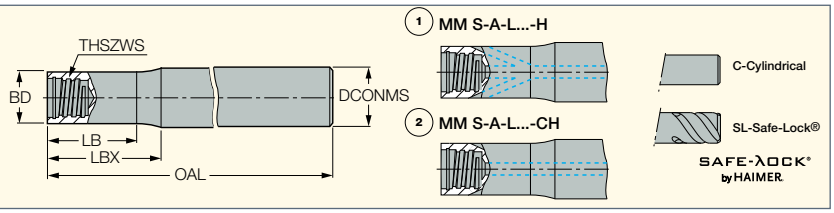
(1) With Safe-Lock® (by Haimer) pull-out prevention helical grooves
(2) C-Cylindrical, W-Weldon
(3) S-steel, C-carbide, W-tungsten
(4) 0 - Without coolant supply, 1 - With coolant supply
(5) The maximum RPM must be calculated. Divide the listed max. RPM by the number of flutes (on the milling head) being used.

MULTI-MASTER

MM S-A (stepped shanks)

Stepped Cylindrical Shanks
Mount Interchangeable
Milling Heads





INCH

Designation	THSZWS	DCONMS	BD	LB	LBX	OAL	Shank[1]	Shank m.[2]	CSP[3]	Fig.	RPMX[4]	Lbs
MM S-A-L2.5/09-C312T05C	T05	.312	.299	-	-	2.500	C	C	0	-	22650	.08
MM S-A-L2.50-C.312-T05	T05	.312	.299	.510	.60	2.500	C	S	0	-	60000	.05
MM S-A-L3.00-C.312-T05-C	T05	.312	.299	.950	1.00	3.000	C	C	0	-	60000	.12
MM S-A-L3.0-C.312-T05-W	T05	.312	.299	.980	1.00	3.000	C	W	0	-	60000	.13
MM S-A-L3.50-C.312-T05-C	T05	.312	.299	1.450	1.50	3.500	C	C	0	-	50160	.13
MM S-A-L40/20-C312-T05-W	T05	.312	.299	1.949	2.00	4.000	C	W	0	-	22650	.20
MM S-A-L4.00-C.312-T05-C	T05	.312	.299	1.950	2.00	4.000	C	C	0	-	40000	.15
MM S-A-L3.00-C.375-T06	T06	.375	.364	.510	.60	3.000	C	S	0	-	60000	.09
MM S-A-L30/06-C375T06-CH	T06	.375	.364	.600	.67	3.000	C	S	1	2	47670	.08
MM S-A-L3.55-C.375-T06-W	T06	.375	.364	.680	.80	3.550	C	W	0	-	41670	.23
MM S-A-L30/10-C375-T06-WH	T06	.375	.364	.980	1.00	3.000	C	W	1	1	47670	.22
MM S-A-L4.00-C.375-T06-C	T06	.375	.364	1.200	1.30	4.000	C	C	0	-	50000	.22
MM S-A-L40/12-C375T06C-CH	T06	.375	.364	1.200	1.27	4.000	C	C	1	2	47670	0
MM S-A-L4.75-C.375-T06-C	T06	.375	.364	1.950	2.00	4.750	C	C	0	-	34530	0
MM S-A-L40/20-C375-T06-WH	T06	.375	.364	1.980	2.00	4.000	C	W	1	1	24420	.24
MM S-A-L3.5/14-C500T08C	T08	.500	.480	-	-	3.500	C	C	0	-	60000	.35
MM S-A-L3.50-C.500-T08	T08	.500	.480	.530	.60	3.540	C	S	0	-	42000	.19
MM S-A-L4.25-C.500-T08-W	T08	.500	.480	.530	.60	4.250	C	W	0	-	31350	.50
MM S-A-L3.5/.63C50T08- CH	T08	.500	.480	.590	.60	3.500	C	S	1	2	42000	.22
MM S-A-L30/10-C500-T08-WH	T08	.500	.480	.966	1.00	3.000	C	W	1	1	60000	.33
MM S-A-L4.00-C.50-T08-M-C	T08	.500	.460	1.400	1.50	4.000	C	C	0	-	42000	.35
MM S-A-L4.00-C.500-T08-C	T08	.500	.480	1.400	1.50	4.000	C	C	0	-	42000	0
MM S-A-L4.0/1.5C50T08C-CH	T08	.500	.480	1.430	1.50	4.000	C	C	1	2	42000	0
MM S-A-L5.5/2.5C50T08C-CH	T08	.500	.480	2.430	2.50	5.500	C	C	1	2	27960	.47
MM S-A-L5.50-C.50-T08-M-C	T08	.500	.460	2.450	2.50	5.500	C	C	0	-	27960	.48
MM S-A-L5.50-C.500-T08-C	T08	.500	.480	2.450	2.50	5.500	C	C	0	-	27960	.50
MM S-A-L50/30-C500-T08-WH	T08	.500	.480	2.966	3.00	5.000	C	W	1	1	20610	.57

- Do not apply lubricant to the threaded connection

[1] C-Cylindrical, SL-Safe-Lock® by Haimer, helical grooves that prevent pull-out (available upon request).

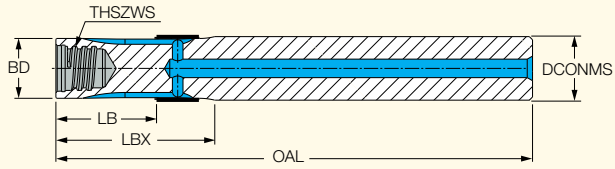
[2] S-steel, C-carbide, W-tungsten

[3] 0 - Without coolant supply, 1 - With coolant supply

[4] The maximum RPM must be calculated. Divide the listed max. RPM by the number of flutes (on the milling head) being used.

MULTI-MASTER

MM S-A-N
Stepped Cylindrical Shanks with Parallel Directed Coolant Mount Interchangeable Milling Heads



M E T R I C

Designation	THSZWS	DCONMS	BD	LB	LBX	OAL	Shank m.(1)	CSP(2)	kg
MM S-A-L075-C10-T06-N	T06	10.00	9.60	18.00	28.0	75.00	S	1	0.04
MM S-A-L090-C12-T08-N	T08	12.00	11.60	18.00	30.0	90.00	S	1	0.07

- Do not apply lubricant to the threaded connection

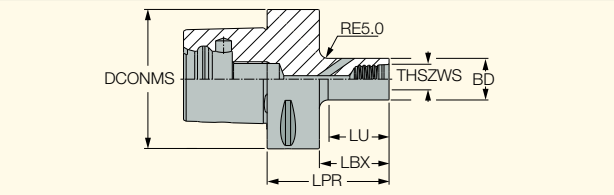
(1) S-steel

(2) 0 - Without coolant supply, 1 - With coolant supply

CAMFIX

MULTI-MASTER

MM S-A-C#
MULTI-MASTER Threaded Connection Shanks with a CAMFIX (ISO 26623-1) Exchangeable Adaptation



M E T R I C

Designation	DCONMS	THSZWS	BD	LPR	LBX	LU	DCP(1)	CSP(2)	kg
MM S-A-H035-C3-T05	32.00	T05	7.60	35.00	20.0	15.00	0	0	0.12
MM S-A-H035-C3-T06	32.00	T06	9.25	35.00	20.0	15.00	1	0	0.12
MM S-A-H040-C3-T08	32.00	T08	11.60	40.00	25.0	20.00	1	0	0.13
MM S-A-H045-C4-T06	40.00	T06	9.25	45.00	25.0	20.00	1	0	0.25
MM S-A-H045-C4-T08	40.00	T08	11.60	45.00	25.0	20.00	1	0	0.25

- Do not apply lubricant to the threaded connection
- For adaptation options, see page 1047

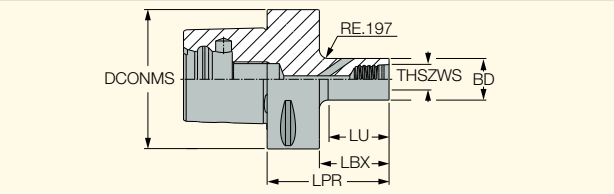
(1) 1 - Slot for data chip, 0 - Without slot for data chip

(2) 0 - Without coolant supply, 1 - With coolant supply

CAMFIX

MULTI-MASTER

MM S-A-C#
MULTI-MASTER Threaded Connection Shanks with a CAMFIX (ISO 26623-1) Exchangeable Adaptation



I N C H

Designation	DCONMS	THSZWS	BD	LPR	LBX	LU	DCP(1)	CSP(2)	Lbs
MM S-A-H035-C3-T05	1.260	T05	.299	1.378	.79	.591	0	0	.26
MM S-A-H035-C3-T06	1.260	T06	.364	1.378	.79	.591	1	0	.27
MM S-A-H040-C3-T08	1.260	T08	.457	1.575	.98	.787	1	0	.28
MM S-A-H045-C4-T06	1.575	T06	.364	1.772	.98	.787	1	0	.55
MM S-A-H045-C4-T08	1.575	T08	.457	1.772	.98	.787	1	0	.55

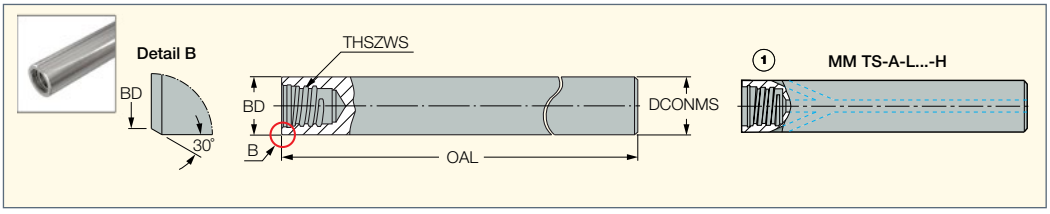
- Do not apply lubricant to the threaded connection
- For adaptation options, see page 1047

(1) 1 - Slot for data chip, 0 - Without slot for data chip

(2) 0 - Without coolant supply, 1 - With coolant supply

MULTI-MASTER

MM TS-A
Cylindrical Shanks Mount
Interchangeable Milling Heads



M E T R I C

Designation	THSZWS	DCONMS	BD	OAL	Shank m.(1)	RPMX(2)	CSP(3)	Fig.	kg
MM TS-A-L070-C08-T04	T04	8.00	5.80	70.00	S	-	0	-	0.03
MM TS-A-L070-C08-T05	T05	8.00	7.60	70.00	S	60000	0	-	0.03
MM TS-A-L080-C10-T06	T06	10.00	9.60	80.00	S	47400	0	-	0.05
MM TS-A-L080-C10-T06-H	T06	10.00	9.60	80.00	S	46920	1	1	0.04
MM TS-A-L090-C12-T08	T08	12.00	11.60	90.00	S	43110	0	-	0.07
MM TS-A-L090-C12-T08-H	T08	12.00	11.60	90.00	S	42780	1	1	0.12

- Do not apply lubricant to the threaded connection

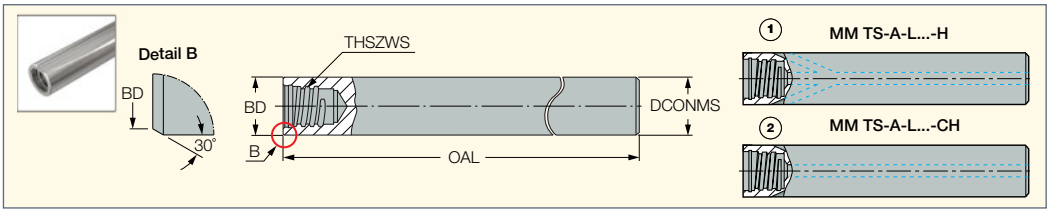
(1) S-steel

(2) The actual maximum RPM to be calculated by dividing the listed RPM max by the number of the head's flutes being used.

(3) 0 - Without coolant supply, 1 - With coolant supply

MULTI-MASTER

MM TS-A
Cylindrical Shanks Mount
Interchangeable Milling Heads



I N C H

Designation	THSZWS	DCONMS	BD	OAL	Shank m.(1)	RPMX(2)	CSP(3)	Fig.	Lbs
MM TS-A-L070-C08-T04	T04	.315	.228	2.756	S	-	0	-	.06
MM TS-A-L2.75-C.312-T05	T05	.312	.312	2.750	S	60000	0	-	.06
MM TS-A-L4.00-C.312-T05-C	T05	.312	.312	4.000	C	-	0	-	.15
MM TS-A-L6.50-C.312-T05-C	T05	.312	.312	6.500	C	-	0	-	.25
MM TS-A-L3.25-C.375-T06	T06	.375	.375	3.250	S	47400	0	-	.15
MM TS-A-L4.00-C.375-T06-C	T06	.375	.375	4.000	C	-	0	-	.21
MM TS-A-L4.5-C375T06W-CH	T06	.375	.364	4.500	W	-	1	2	.25
MM TS-A-L7.00-C.375-T06-C	T06	.375	.375	7.000	C	-	0	-	.38
MM TS-A-L080-C10-T06-H	T06	.394	.378	3.150	S	46920	1	1	.08
MM TS-A-L090-C12-T08-H	T08	.472	.457	3.543	S	42780	1	1	.26
MM TS-A-L3.75-C.500-T08	T08	.500	.500	3.750	S	43110	0	-	.26
MM TS-A-L4.00-C.500-T08-C	T08	.500	.500	4.000	C	-	0	-	.37
MM TS-A-L5.5-C500T08W-CH	T08	.500	.480	5.500	W	-	1	2	.65
MM TS-A-L7.50-C.500-T08-C	T08	.500	.500	7.500	C	-	0	-	.73

- Do not apply lubricant to the threaded connection

(1) S-steel, C-carbide, W-tungsten

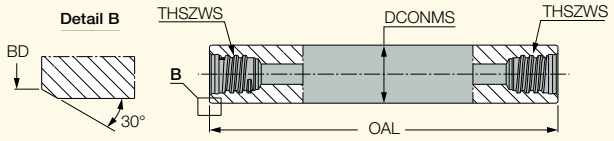
(2) The actual maximum RPM to be calculated by dividing the listed RPM max by the number of the head's flutes being used.

(3) 0 - Without coolant supply, 1 - With coolant supply

MULTI-MASTER

MM TS2-A
Double-Sided Cylindrical Shanks
for Interchangeable Heads





M E T R I C

Designation	THSZWS	DCONMS	BD	OAL	Shank m.	CSP(1)	kg
MM TS2-A-L050-C06-T04-CH	T04	6.00	5.80	50.00	S	1	0.03
MM TS2-A-L050-C08-T05-CH	T05	8.00	7.60	50.00	S	1	0.02
MM TS2-A-L060-C10-T06-CH	T06	10.00	9.60	60.00	S	1	0.04
MM TS2-A-L070-C12-T08-CH	T08	12.00	11.60	70.00	S	1	0.06

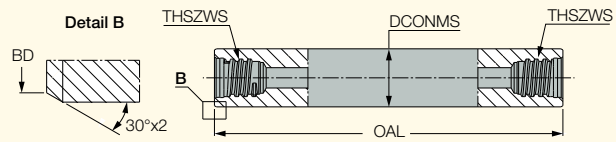
- Do not apply lubricant to the threaded connection

(1) 0 - Without coolant supply, 1 - With coolant supply

MULTI-MASTER

MM TS2-A
Double-Sided Cylindrical Shanks
for Interchangeable Heads





I N C H

Designation	THSZWS	DCONMS	BD	OAL	Shank m.	CSP(1)	Lbs
MM TS2-A-L050-C06-T04-CH	T04	.236	.228	1.968	S	1	.07
MM TS2-A-L050-C08-T05-CH	T05	.315	.299	1.968	S	1	.04
MM TS2-A-L060-C10-T06-CH	T06	.394	.378	2.362	S	1	.09
MM TS2-A-L070-C12-T08-CH	T08	.472	.457	2.756	S	1	.13

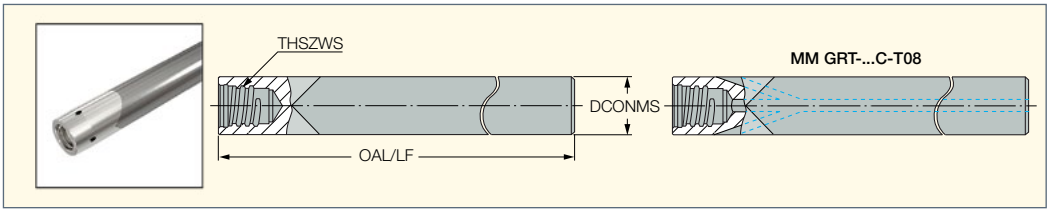
- Do not apply lubricant to the threaded connection

(1) 0 - Without coolant supply, 1 - With coolant supply

MULTI-MASTER

MM GRT (shanks)

Mount Slitting and Grooving
Interchangeable Milling Heads



M E T R I C

Designation	THSZWS	DCONMS	OAL	Shank m.(1)	CSP(2)	kg
MM GRT-095-T06	T06	9.52	80.00	C	0	0.07
MM GRT-100-T06	T06	10.00	100.00	C	0	0.10
MM GRT-120C-T08	T08	12.00	100.00	C	1	0.12

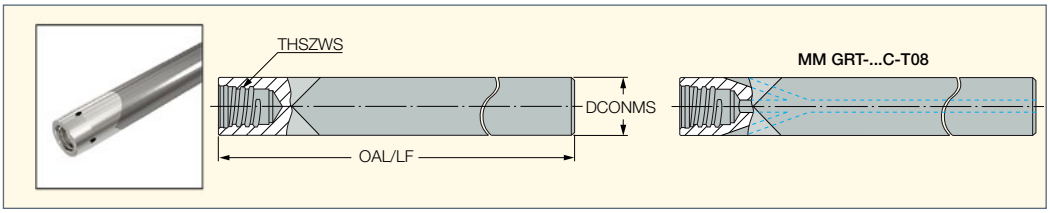
- MM GRT... shanks serve mainly for MM GRIT... slitting heads. When mounting other types of milling heads, do not exceed maximum specified depth of cut for the particular milling head. Since the shank diameter is not relieved, it may touch a wall on the workpiece being machined.
- Use carbide shanks for groove milling heads and for applications requiring high rigidity and processes.

(1) C - Solid carbide
(2) 0 - Without coolant supply, 1 - With coolant supply

MULTI-MASTER

MM GRT (shanks)

Mount Slitting and Grooving
Interchangeable Milling Heads



I N C H

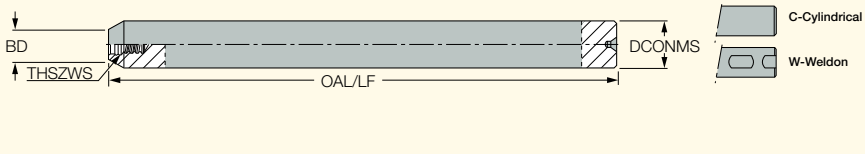
Designation	THSZWS	DCONMS	OAL	Shank m.(1)	CSP(2)	Lbs
MM GRT-095-T06	T06	.375	3.150	C	0	.16
MM GRT-100-T06	T06	.394	3.937	C	0	.23
MM GRT-120C-T08	T08	.472	3.937	C	1	.27
MM GRT-127C-T08	T08	.500	4.724	C	1	.37

- MM GRT... shanks serve mainly for MM GRIT... slitting heads. When mounting other types of milling heads, do not exceed maximum specified depth of cut for the particular milling head. Since the shank diameter is not relieved, it may touch a wall on the workpiece being machined.
- Use carbide shanks for groove milling heads and for applications requiring high rigidity and processes.

(1) C - Solid carbide
(2) 0 - Without coolant supply, 1 - With coolant supply

MULTI-MASTER

MM S-A (straight shanks)
Shanks Mount Interchangeable Milling Heads



M E T R I C

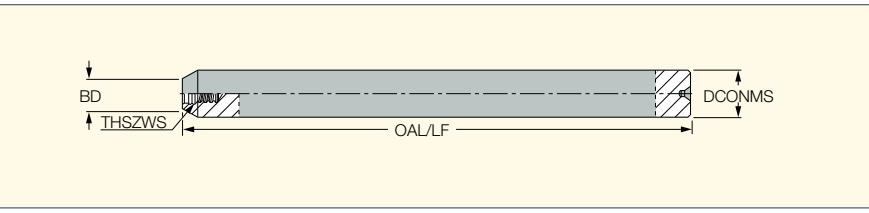
Designation	THSZWS	DCONMS	BD	OAL	Shank[2]	Shank m.[3]	RPMX[4]	CSP[5]	kg
MM S-A-L055-W12-T05	T05	12.00	7.60	55.00	W	S	60000	0	0.05
MM S-A-L150-C12-T05-B [1]	T05	12.00	7.60	150.00	C	S	18270	0	0.13

- Do not apply lubricant to the threaded connection

[1] "B" suffix - cylindrical shank which may be shortened.
[2] C-Cylindrical, W-Weldon
[3] S-steel
[4] The maximum RPM must be calculated. Divide the listed max. RPM by the number of flutes (on the milling head) being used.
[5] 0 - Without coolant supply, 1 - With coolant supply

MULTI-MASTER

MM S-A (straight shanks)
Shanks Mount Interchangeable Milling Heads



I N C H

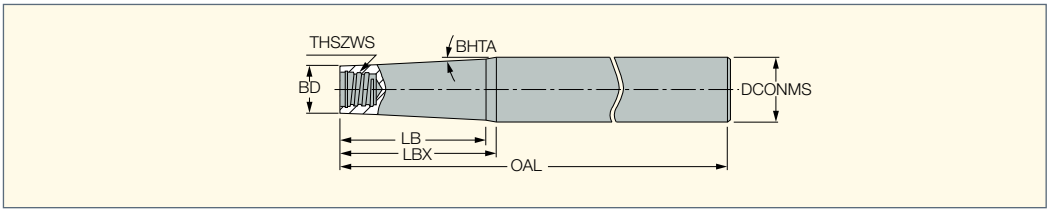
Designation	THSZWS	DCONMS	BD	OAL	Shank[3]	Shank m.[4]	RPMX[5]	CSP[6]	lbs
MM S-A-L2.18-W.500-T05 [1]	T05	.500	.299	2.190	W	S	60000	0	.04

- Do not apply lubricant to the threaded connection

[1] Short design for keyholes.
[2] Carbide shank
[3] C-Cylindrical, W-Weldon
[4] S-steel, C-carbide
[5] The maximum RPM must be calculated. Divide the listed max. RPM by the number of flutes (on the milling head) being used.
[6] 0 - Without coolant supply, 1 - With coolant supply

MULTI-MASTER

MM S-B
(85° conical shanks)
Shanks Interchangeable
Milling Heads



M E T R I C

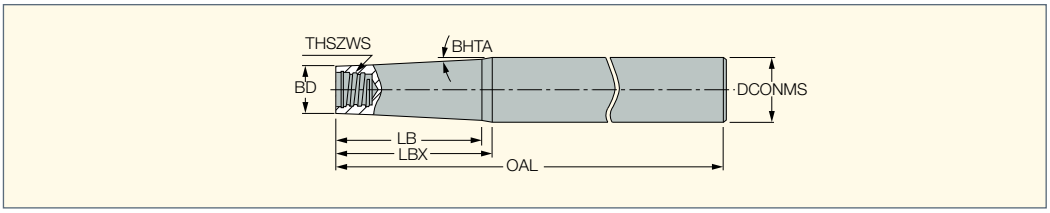
Designation	THSZWS	DCONMS	BD	BHTA	Shank[1]	LB	LBX	OAL	Shank m.[2]	RPMX[3]	CSP[4]	kg
MM S-B-L080/24-C08-T04	T04	8.00	5.80	2.6	C	-	24.0	80.00	S	60000	0	0.04
MM S-B-L080-C12-T05	T05	12.00	7.60	5.0	C	-	25.0	80.00	S	60000	0	0.06

- Do not apply lubricant to the threaded connection

[1] C-Cylindrical
[2] S-steel, W-tungsten
[3] The maximum RPM must be calculated. Divide the listed max. RPM by the number of flutes (on the milling head) being used.
[4] 0 - Without coolant supply, 1 - With coolant supply

MULTI-MASTER

MM S-B
(85° conical shanks)
Shanks Interchangeable
Milling Heads



I N C H

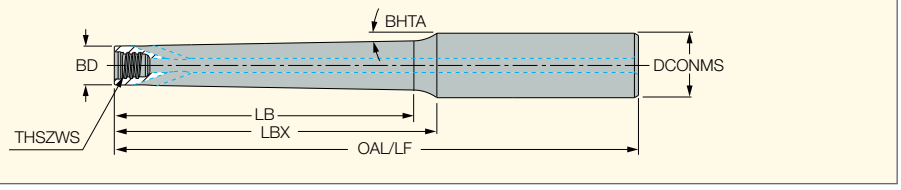
Designation	THSZWS	DCONMS	BD	BHTA	Shank[1]	LB	LBX	OAL	Shank m.[2]	RPMX[3]	CSP[4]	lbs
MM S-B-L3.00-C.500-T05	T05	.500	.299	5.00	C	.930	1.00	3.000	S	60000	0	.12

- Do not apply lubricant to the threaded connection

[1] C-Cylindrical
[2] S-steel, W-tungsten
[3] The maximum RPM must be calculated. Divide the listed max. RPM by the number of flutes (on the milling head) being used.
[4] 0 - Without coolant supply, 1 - With coolant supply

MULTI-MASTER

MM S-D
(89° conical shanks)
Shanks Mount Interchangeable Milling Heads



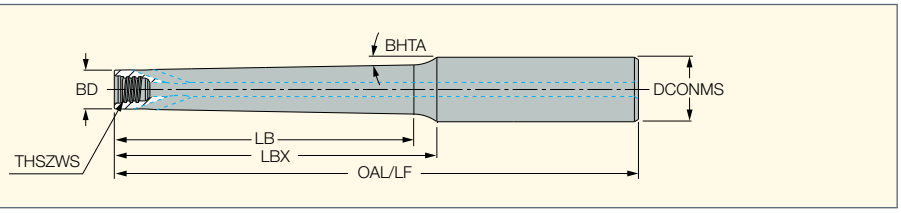
M E T R I C

Designation	THSZWS	DCONMS	BD	LB	Shank	LBX	OAL	BHTA	Shank m.	CSP(1)	RPMX(2)	kg
MM S-D-L100-C12-T05	T05	12.00	7.60	29.60	C	35.0	100.00	1.0	S	0	52000	0.08
MM S-D-L110-C12-T05-C	T05	12.00	7.60	55.90	C	60.0	110.00	1.0	C	0	53430	0.13
MM S-D-L110-C12-T05-W-H	T05	12.00	7.60	55.70	C	60.0	110.00	1.0	W	1	38460	0.14
MM S-D-L130-C12-T05-C	T05	12.00	7.60	77.30	C	80.0	130.00	1.0	C	0	36420	0.15
MM S-D-L130-C12-T05-W-H	T05	12.00	7.60	76.40	C	80.0	130.00	1.0	W	1	26160	0.16
MM S-D-L110-C12-T06-W-H	T06	12.00	9.60	58.80	C	60.0	110.00	1.0	W	1	36990	0.17

• Shank material (Shank m.): S-steel, C-carbide, W-tungsten. • Do not apply lubricant to the threaded connection
(1) 0 - Without coolant supply, 1 - With coolant supply
(2) The maximum RPM must be calculated. Divide the listed max. RPM by the number of flutes (on the milling head) being used.

MULTI-MASTER

MM S-D
(89° conical shanks)
Shanks Mount Interchangeable Milling Heads



I N C H

Designation	THSZWS	DCONMS	BD	LB	Shank(1)	LBX	OAL	BHTA	Shank m.	CSP(2)	RPMX(3)	lbs
MM S-D-L3.50-C.375-T05-C	T05	.375	.299	-	C	1.50	3.500	1.00	C	0	55000	.19
MM S-D-L110-C12-T05-W-H	T05	.472	.299	2.193	C	2.36	4.331	1.00	W	1	38460	.31
MM S-D-L130-C12-T05-W-H	T05	.472	.299	3.008	C	3.15	5.118	1.00	W	1	26160	.36
MM S-D-L4.00-C.500-T05	T05	.500	.299	1.300	C	1.50	4.000	1.00	S	0	53000	.20
MM S-D-L4.50-C.500-T05-C	T05	.500	.299	2.354	C	2.50	4.500	1.00	C	0	53430	.19
MM S-D-L110-C12-T06-W-H	T06	.472	.378	2.315	C	2.36	4.331	1.00	W	1	36990	.37

• Shank material (Shank m.): S-steel, C-carbide, W-tungsten. • Do not apply lubricant to the threaded connection
(1) C-Cylindrical
(2) 0 - Without coolant supply, 1 - With coolant supply
(3) The maximum RPM must be calculated. Divide the listed max. RPM by the number of flutes (on the milling head) being used.

MULTI-MASTER

MM S-ER
Shanks that Mount MULTI-MASTER Solid Carbide Heads with an ER Collet Adaptation

Fig 1

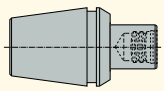
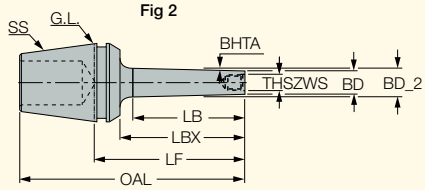


Fig 2



M E T R I C

Designation	SS	THSZWS	BHTA	BD	BD_2	LB	LBX	LF	OAL	Fig.	CSP(1)	kg
MM S-A-H004-ER11-T04	ER11	T04	-	5.80	-	-	4.0	9.60	22.00	1	1	0.01
MM S-A-H004-ER11-T05	ER11	T05	-	7.60	-	-	4.0	9.60	22.00	1	0	0.01
MM S-A-H10.5-ER11-T05	ER11	T05	-	7.60	-	-	10.5	16.10	28.50	1	0	0.01
MM S-A-H10.5-ER16-T05	ER16	T05	-	7.60	-	-	10.5	18.10	38.00	1	0	0.03
MM S-A-H10.5-ER16-T06	ER16	T06	-	9.25	-	-	10.5	18.10	38.00	1	0	0.04
MM S-A-H004-ER16-T08	ER16	T08	-	11.60	-	-	4.0	11.60	31.50	1	1	0.03
MM S-A-H013-ER16-T08	ER16	T08	-	11.60	-	-	14.0	20.60	40.50	1	1	0.02
MM S-A-H10.5-ER20-T06	ER20	T06	-	9.25	-	-	10.5	19.10	42.00	1	0	0.05

- Do not apply lubricant to the threaded connection • For adaptation see page 1047
- When a rigid ER collet is assembled in an ER holder, the actual protruding length of the holder becomes shorter by 2.0 mm for ER20 and by 3.0 mm for ER25/ER32

(1) 0 - Without coolant supply, 1 - With coolant supply

MULTI-MASTER

MM S-ER
Shanks that Mount MULTI-MASTER Solid Carbide Heads with an ER Collet Adaptation

Fig 1

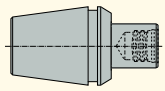
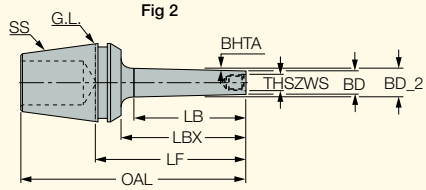


Fig 2



I N C H

Designation	SS	THSZWS	BHTA	BD	BD_2	LB	LBX	LF	OAL	Fig.	CSP(1)	lbs
MM S-A-H004-ER11-T04	ER11	T04	-	.228	-	-	.16	.378	.866	1	0	.02
MM S-A-H004-ER11-T05	ER11	T05	-	.299	-	-	.16	.378	.866	1	0	.03
MM S-A-H10.5-ER11-T05	ER11	T05	-	.299	-	-	.41	.634	1.122	1	0	.02
MM S-A-H10.5-ER16-T05	ER16	T05	-	.299	-	-	.41	.713	1.496	1	0	.06
MM S-A-H10.5-ER16-T06	ER16	T06	-	.364	-	-	.41	.713	1.496	1	0	.08
MM S-A-H004-ER16-T08	ER16	T08	-	.457	-	-	.16	.457	1.240	1	0	.06
MM S-A-H013-ER16-T08	ER16	T08	-	.457	-	-	.55	.811	1.594	1	0	.04
MM S-A-H10.5-ER20-T06	ER20	T06	-	.364	-	-	.41	.752	1.654	1	0	.11

- Do not apply lubricant to the threaded connection • For adaptation see page 1047
- When a rigid ER collet is assembled in an ER holder, the actual protruding length of the holder becomes shorter by .0787" for ER20 and by .118" for ER25/ER32

(1) 0 - Without coolant supply, 1 - With coolant supply

MULTI-MASTER

MM S-ER-H

Shanks that Mount MULTI-MASTER Solid Carbide Heads with an ER Collet Adaptation and Coolant Holes

Fig. 1

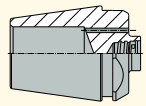
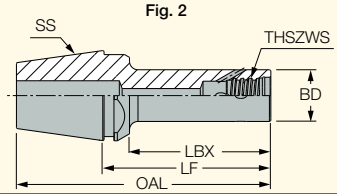


Fig. 2



M E T R I C

Designation	SS	THSZWS	BD	LBX	LF	OAL	Fig.	CSP(1)	kg
MM S-A-H004-ER16-T05-H	ER16	T05	7.60	4.0	11.60	31.50	1	1	0.03
MM S-A-H004-ER16-T06-H	ER16	T06	9.25	4.0	11.60	31.50	1	1	0.03
MM S-A-H004-ER20-T05-H	ER20	T05	7.60	4.0	12.60	35.50	1	1	0.06
MM S-A-H10.5-ER20-T05-H	ER20	T05	7.60	10.5	19.10	42.00	1	1	0.04
MM S-A-H004-ER20-T06-H	ER20	T06	9.25	4.0	12.60	35.50	1	1	0.06
MM S-A-H004-ER20-T08-H	ER20	T08	11.60	4.0	12.60	35.50	1	1	0.04
MM S-A-H013-ER20-T08-H	ER20	T08	11.60	13.0	21.60	44.50	1	1	0.07

• Do not apply lubricant to the threaded connection • For adaptation see page 1047

(1) 0 - Without coolant supply, 1 - With coolant supply

MULTI-MASTER

MM S-ER-H

Shanks that Mount MULTI-MASTER Solid Carbide Heads with an ER Collet Adaptation and Coolant Holes

Fig. 1

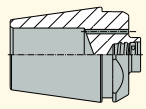
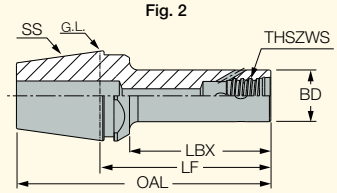


Fig. 2



I N C H

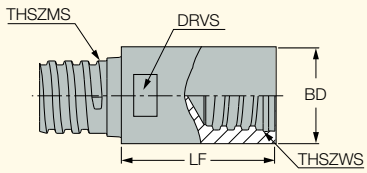
Designation	SS	THSZWS	BD	LBX	LF	OAL	Fig.	CSP(1)	lbs
MM S-A-H004-ER16-T05-H	ER16	T05	.299	.16	.457	1.240	1	1	.07
MM S-A-H004-ER16-T06-H	ER16	T06	.364	.16	.457	1.240	1	1	.06
MM S-A-H004-ER20-T05-H	ER20	T05	.299	.16	.496	1.398	1	1	.13
MM S-A-H10.5-ER20-T05-H	ER20	T05	.299	.41	.752	1.654	1	0	.08
MM S-A-H004-ER20-T06-H	ER20	T06	.364	.16	.496	1.398	1	1	.13
MM S-A-H004-ER20-T08-H	ER20	T08	.457	.16	.496	1.398	1	1	.10
MM S-A-H013-ER20-T08-H	ER20	T08	.457	.51	.850	1.752	1	1	.15

• Do not apply lubricant to the threaded connection • For adaptation see page 1047

(1) 0 - Without coolant supply, 1 - With coolant supply

MULTI-MASTER

MM CAB-T-T
MULTI-MASTER
Shank Extensions



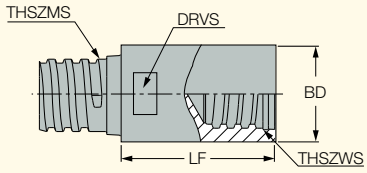
M E T R I C

Designation	BD	THSZWS	THSZMS	LF	DRVS(1)	CSP(2)	kg
MM CAB T04T04-20/.78-C	5.80	T04	T04	20.00	4.0	0	0.01
MM CAB T05T05-25/1.0-C	7.60	T05	T05	25.40	6.0	0	0.02
MM CAB T06T06-25/1.0-C	9.30	T06	T06	25.40	8.0	0	0.02
MM CAB T08T08-25/1.0-C	11.50	T08	T08	25.40	10.0	0	0.02

• Clamping key to be ordered separately • For adaptation, see page 1047
(1) Clamping wrench size
(2) 0 - Without coolant supply, 1 - With coolant supply

MULTI-MASTER

MM CAB-T-T
MULTI-MASTER
Shank Extensions



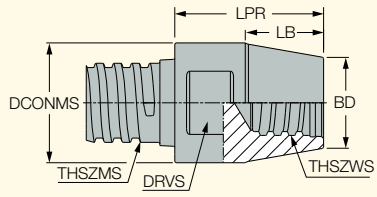
I N C H

Designation	BD	THSZWS	THSZMS	LF	DRVS(1)	CSP(2)	Lbs
MM CAB T04T04-20/.78-C	.228	T04	T04	.787	.157	0	.03
MM CAB T05T05-25/1.0-C	.299	T05	T05	1.000	.236	0	.05
MM CAB T06T06-25/1.0-C	.366	T06	T06	1.000	.315	0	.04
MM CAB T08T08-25/1.0-C	.453	T08	T08	1.000	.394	0	.04

• Clamping key to be ordered separately • For adaptation, see page 1047
(1) Clamping wrench size
(2) 0 - Without coolant supply, 1 - With coolant supply

MULTI-MASTER

MM CAB-T-T-W
MULTI-MASTER Shank Reducers



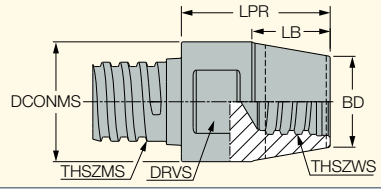
M E T R I C

Designation	DCONMS	THSZMS	THSZWS	BD	LB	LPR	DRVS(1)	CSP(2)	kg
MM CAB T05T04-14.0/.55-W	7.60	T05	T04	5.80	8.20	14.00	5.5	0	0.00
MM CAB T06T05-15.0/.59-W	9.60	T06	T05	7.60	9.00	15.00	8.0	0	0.03
MM CAB T08T06-16.0/.63-W	11.60	T08	T06	9.60	9.00	16.00	10.0	0	0.04

• Clamping key to be ordered separately • For adaptation, see page 1047
(1) Torque key size
(2) 0 - Without coolant supply, 1 - With coolant supply

MULTI-MASTER

MM CAB-T-T-W
MULTI-MASTER Shank Reducers

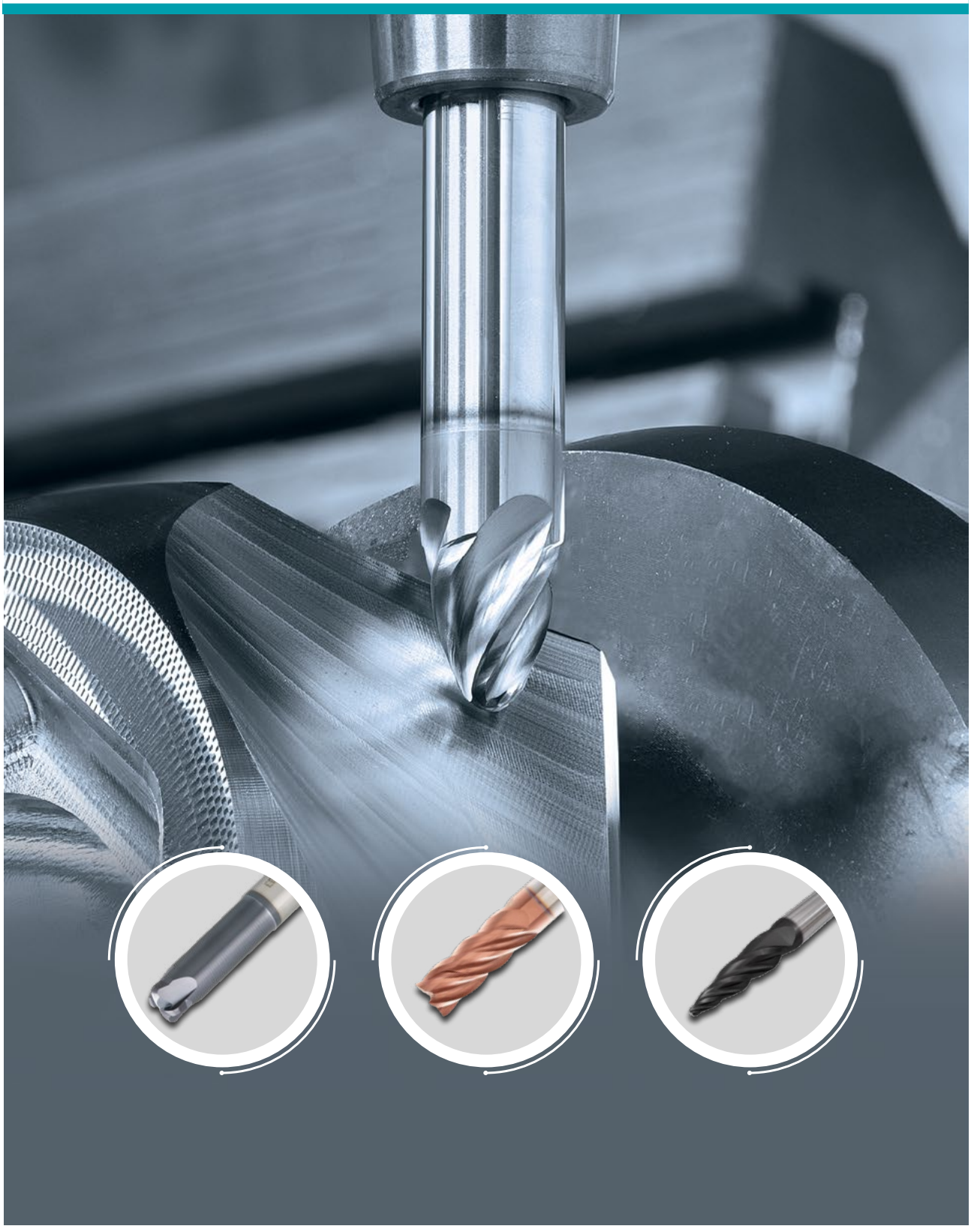


I N C H

Designation	DCONMS	THSZMS	THSZWS	BD	LB	LPR	DRVS(1)	CSP(2)	lbs
MM CAB T05T04-14.0/.55-W	.299	T05	T04	.2283	.323	.551	.217	0	0
MM CAB T06T05-15.0/.59-W	.378	T06	T05	.2992	.354	.591	.315	0	.06
MM CAB T08T06-16.0/.63-W	.457	T08	T06	.3780	.354	.630	.394	0	.10

• Clamping key to be ordered separately • For adaptation, see page 1047
(1) Torque key size
(2) 0 - Without coolant supply, 1 - With coolant supply

SOLID CARBIDE ENDMILLS



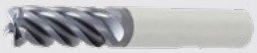
Workpiece Material	ISO	Page
Steel	P	1126-1128
Stainless Steel	M	1129-1130
Superalloys / Titanium	S	1131-1132

P (Steel Materials)

Tools - Choosing Priorities

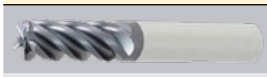
Tool	Rough	Semi-Finish	Finish/H.S.M
EFSI-B44 EFS-B44	5	6	-
EFSI-E44 EFS-E44-CF	4	5	-
ECI-E5-CF EC-E5L-CF	7	1	4
ECI-E4-CF EC-E4L-CF	3	3	5

ROUGHING

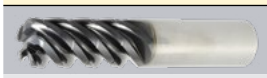
	Designation	Ø	LU (Neck)	A_p	ZEFF	Corner Type	Coolant	Page
	EFSI-B44 EFS-B44	.250 - .500″ 4-12 mm	-	2xDC	4	CHWx45	NO	1135
	ECI-E5-CF EC-E5L-CF	.250 -.500″ 6-12 mm	-	2xDC	5	CHWx45	NO	1141 1140

P (Steel Materials)

Finishing

	Designation	Ø	LU (Neck)	A_p	ZEFF	Corner Type	Coolant	Page
	ECI-E5-CF EC-E5L-CF	.250 -.500″ 6-12 mm	-	2xDC	5	CHWx45	NO	1141 1140
	ECXI-B-6 ECXL-B-4/6	.250-.500″ 10-12 mm	-	6xDC	6 4/6	-	NO	1150
	ECHI-B6 ECH-B-6	.250-.500″ 6-12 mm	-	2xDC	6	-	NO	1148

High Feed Milling

	Designation	Ø	LU (Neck)	A_p	ZEFF	Corner Type	Coolant	Page
	EFPI-E4,5CF EFP-E4,5CF	.250-.500″ 6-12 mm	-	2.5xDC	4-5	RE	NO	1143
	EFFI-S4/S6 EFF-S2/S4/S6	.250-.500″ 1-12 mm	-	0.05xDC	4, 6	RE	NO	1142

P (Steel Materials)	
Tool Type	**Features**
ECI-E4-CF EC-E4L-CF	• Rough and finish operations • Used for machining alloyed steel and general use • Low power machines **CHATTER-FREE**
ECI-E5-CF EC-E5L-CF	• Rough and finish operations • Used for machining alloyed steel and general use • High material removal rates
EFSI-E44 EFS-E44	• Used for machining alloyed steel • Combination of Vibrafree and Finishrough
EFSI-B44 EFS-B44	• Unique design • Used for machining titanium, stainless and alloyed steel • Fully effective • Semi-finish surface quality

P (Steel Materials)

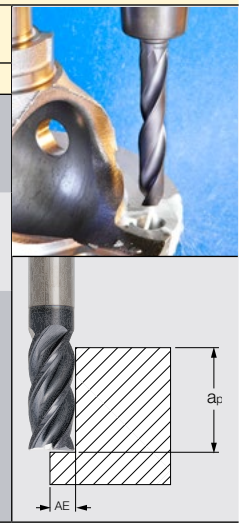
Rough: AE = 40%-Full Cut , A_p = 2 XDC

Material Group Parameters	Unalloyed Steel		Low Alloyed Steel		High Alloyed Steel		Martensitic Steels	Ferritic Steels
	1-4	5	6-7	8-9	10	11	12	13
V_c (IC900/608) (SFM)	520-590	460-490	390-520	430-490	430-490	230-300	260-330	200-300
F_z (Ø.250-.313) (IPT)	.0010-.0014	.0010-.0014	.0008-.0012	.0008-.0012	.0008-.0012	.0008-.0012	.0008-.0014	.0008-.0014
F_z (Ø.375-.500) (IPT)	.0012-.0018	.0012-.0018	.0012-.0018	.0012-.0018	.0012-.0018	.0012-.0018	.0012-.0016	.0012-.0016



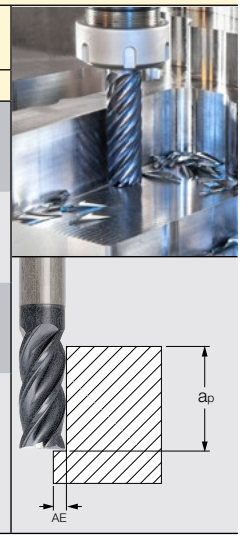
Semi-Finish: AE = 10%-40%, A_p = 2 XDC

Material Group Parameters	Unalloyed Steel		Low Alloyed Steel		High Alloyed Steel		Martensitic Steels	Ferritic Steels
	1-4	5	6-7	8-9	10	11	12	13
V_c (IC900/608) (SFM)	660-720	490-560	520-590	490-560	490-520	300-360	330-430	300-390
F_z (Ø.250-.313) (IPT)	.0012-.0024	.0012-.0024	.0008-.0020	.0008-.0020	.0008-.0020	.0008-.0020	.0010-.0016	.0010-.0016
F_z (Ø.375-.500) (IPT)	.0024-.0028	.0024-.0028	.0016-.0026	.0016-.0026	.0016-.0026	.0016-.0026	.0014-.0018	.0014-.0018



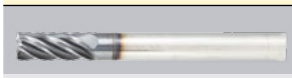
Finish: AE = 5%-10%, A_p = Max. Cutting Length

Material Group Parameters	Unalloyed Steel		Low Alloyed Steel		High Alloyed Steel		Martensitic Steels	Ferritic Steels
	1-4	5	6-7	8-9	10	11	12	13
V_c (IC900/608) (SFM)	720-920	560-590	590-720	560-590	520-590	360-390	430-520	390-490
V_c (IC902/903/702) (SFM)	750-950	590-660	620-750	590-750	560-620	390-430	460-560	430-520
F_z (Ø.250-.313) (IPT)	.0020-.0028	.0020-.0028	.0020-.0028	.0020-.0028	.0020-.0028	.0020-.0028	.0012-.0018	.0012-.0018
F_z (Ø.375-.500) (IPT)	.0028-.0031	.0028-.0031	.0028-.0031	.0028-.0031	.0028-.0031	.0028-.0031	.0016-.0020	.0016-.0020

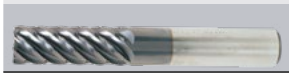


M (Stainless Steel)			
Tools - Choosing Priorities			
Tool	**Rough**	**Semi-Finish**	**Finish/H.S.M**
EFSI-B44 EFS-B44	6	7	-
ECI-E5-CF EC-H5M-CFR	-	4	3

ROUGHING

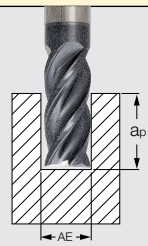
	Designation	Ø	LU (Neck)	A_p	ZEFF	Corner Type	Coolant	Page
	ECI-H5R-CF EC-H5M-CF/NE	.250-.500″ 4-12 mm	-	2xDC	5	RE	NO	1137
	EFSI-B44 EFS-B44	.250-.500″ 6-12 mm	3xDC	2xDC	4	CHWx45	NO	1135

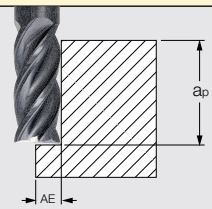
FINISHING

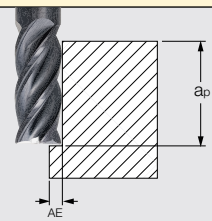
	Designation	Ø	LU (Neck)	A_p	ZEFF	Corner Type	Coolant	Page
	ECI-H5R-CF EC-H5M-CF/NE	.250-.500″ 4-12 mm	-	2xDC	5	RE	NO	1137
	ECXI-B-6 ECXL-B-4/6	.250-.500″ 10-12 mm	-	6xDC	6	-	NO	1150
	ECHI-B6 ECH-B-6	.250-.500″ 6-12 mm	-	2xDC	6	-	NO	1148

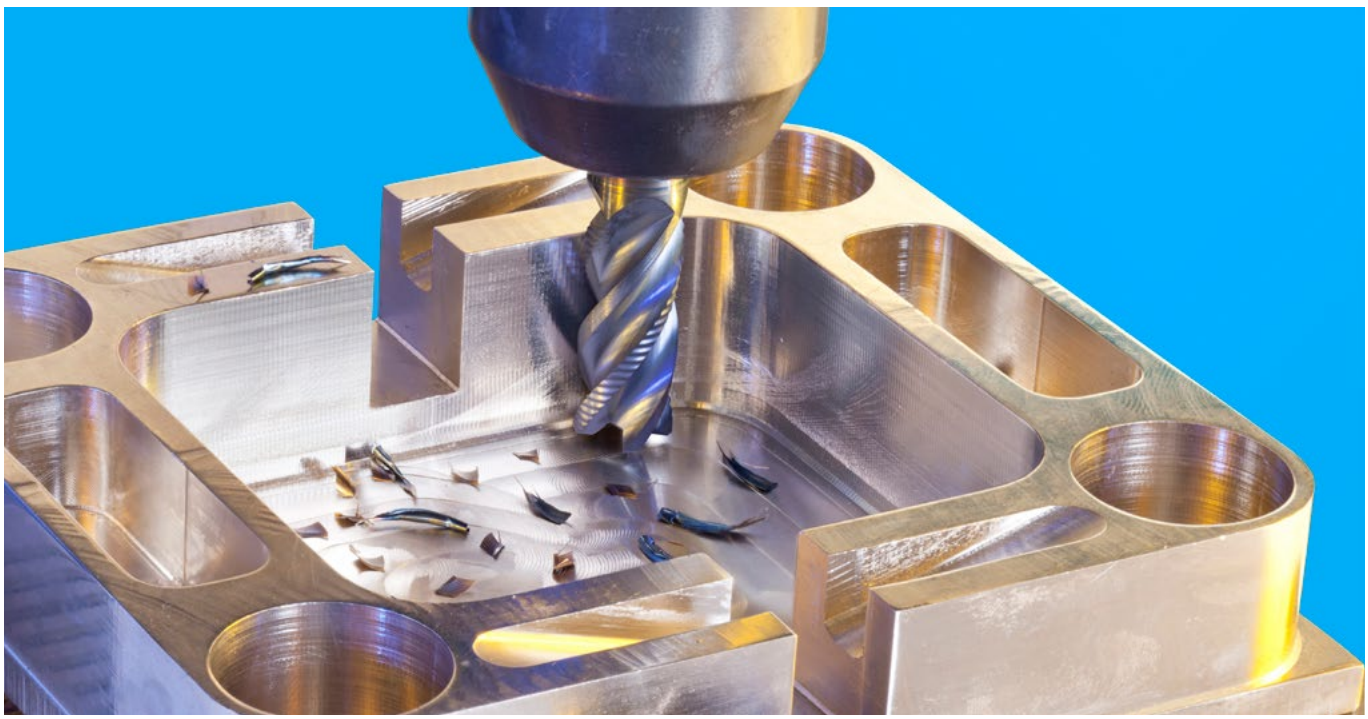
M (Stainless Steel)								
High Feed Milling								
	Designation	**Ø**	**LU (Neck)**	**A_p**	**ZEFF**	**Corner Type**	**Coolant**	**Page**
	EFPI-E4,5CF EFP-E4,5CF	.250-.500″ 6-12 mm	-	2.5xDC	4/5	RE	NO	1143
	EFFI-S4/S6 EFF-S2/S4/S6	.250-.500″ 1-12 mm	-	MIN.	4 2/4	RE	NO	1142

Tool Type	Features
ECI-H5R-CF EC-H5M-CFR	• Rough and finish operations • Used for machining stainless steel • High material removal rates
EFSI-B44 EFS-B44	• Unique design • Used for machining titanium, stainless and alloyed steel • Fully effective • Semi-finish surface quality

M (Stainless Steel)		
Rough: AE = 40% - Full Cut , A_p = 2 XDC		
Material Group Parameters	**Austenitic Steel**	
	14	
V_c (IC900/608) (SFM)	200 - 260	
F_z (Ø.250-.313) (IPT)	.0008 - .0014	
F_z (Ø.375-.500) (IPT)	.0012 - .0016	

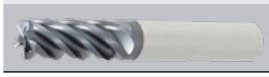
Semi-Finish: AE = 10% - 40%, A_p = 2 XDC		
Material Group Parameters	**Austenitic Steel**	
	14	
V_c (IC900/608) (SFM)	260 - 330	
F_z (Ø.250-.313) (IPT)	.0010 - .0016	

Finish / H.S.M: AE = 5% - 10%, A_p = Max. Cutting Length		
Material Group Parameters	**Austenitic Steel**	
	14	
V_c (IC900/608) (SFM)	330 - 390	
V_c (IC902/903/702) (SFM)	360 - 430	
F_z (Ø.250-.313) (IPT)	.0012 - .0018	
F_z (Ø.375-.500) (IPT)	.0016 - .0020	

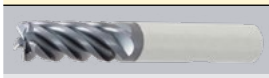


S (High Heat Resistant Alloys)			
Tools - Choosing Priorities			
Tool	**Rough**	**Semi-Finish**	**Finish/H.S.M**
EFSI-B44	2	1	-
ECI-H5R EC-H5M-CFR	-	4	3
ECI-E4 (CER) ECI-E6 (CER)	1	-	-

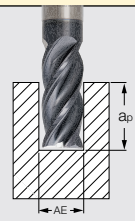
Roughing

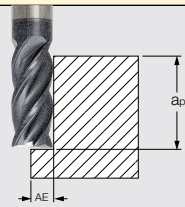
	Designation	Ø	LU (Neck)	A_p	ZEFF	Corner Type	Coolant	Page
	ECI-E4-CF EC-E4L-CF	.125-.500″ 1-12 mm	3xDC	2xDC	4	CHWx45	NO	1139 1138
	EFSI-B44 EFS-B44	.250-.500″ 4-12 mm	3xDC	2xDC	4	CHWx45	NO	1135
	ECI-E5-CF EC-E5L-CF	.250-.500″ 6-12 mm	-	2xDC	5	CHWx45	NO	1141 1140

Finishing

	Designation	Ø	LU (Neck)	A_p	ZEFF	Corner Type	Coolant	Page
	ECI-E5-CF EC-E5L-CF	.250-.500″ 6-12 mm	-	2xDC	5	CHWx45	NO	1141 1140
	ECXL-B-4/6	10-12 mm	-	6xDC	4/6	-	NO	1150
	ECHI-B6 ECH-B-6	.250-.500″ 6-12 mm	-	2xDC	6	-	NO	1148

S (High Heat Resistant Alloys)								
High Feed Milling								
	Designation	Ø	LU (Neck)	A_p	ZEFF	Corner Type	Coolant	Page
	EFPI-E4,5CF EFP-E4,5CF	.250-.500″ 6-12 mm	-	2.5xDC	4/5	RE	NO	1143
	EFFI-S4/S6 EFF-S2/S4/S6	.250-.500″ 1-12 mm	-	MIN.	2/4	RE	NO	1142

Rough: AE = 40%-Full Cut , A_p = 1.5 XDC			
Material Group Parameters	Nickel Based Alloys	Titanium and Ti Alloys	
	31-35	36-37	
V_c (IC900/608) (SFM)	70-130	100-160	
F_z (Ø.250-.313) (IPT)	.0008-.0012	.0008-.0012	
F_z (Ø.375-.500) (IPT)	.0012-.0016	.0012-.0016	

Semi-Finish: AE = 10%-40%, A_p = 2 XDC			
Material Group Parameters	Nickel Based Alloys	Titanium and Ti Alloys	
	31-35	36-37	
V_c (IC900/608) (SFM)	130-160	160-200	
F_z (Ø.250-.313) (IPT)	.0012-.0016	.0012-.0016	
F_z (Ø.375-.500) (IPT)	.0014-.0020	.0014-.0020	

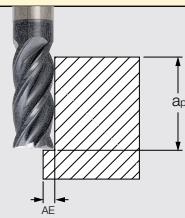
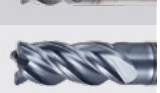
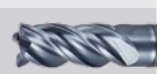
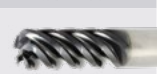
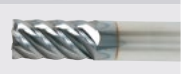
Finish / H.S.M: AE = 5%-10%, A_p = Max. Cutting Length			
Material Group Parameters	Nickel Based Alloys	Titanium and Ti Alloys	
	31-35	36-37	
V_c (IC900/608) (SFM)	160-230	200-230	
V_c (IC902/903/702) (SFM)	180-260	210-260	
F_z (Ø.250-.313) (IPT)	.0014-.0020	.0014-.0020	
F_z (Ø.375-.500) (IPT)	.0016-.0024	.0016-.0024	

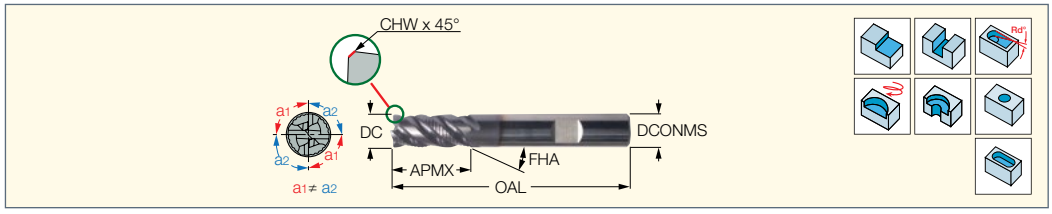
Table of Contents

Type	Helix Angle	Cutting Length	Workpiece Hardness HRC	No. of Flutes	Diameter Range	Remarks	Page	
EFSI-E44 EFS-E44	38°	2DC	<45	4	.250-.500″ 6-12 mm		1134	
EFSI-B44 EFS-B44	45°	2DC	<55	4	.250-.500″ 4-12 mm		1135	
EC-H5M-CF/NE	Different helix with variable pitch	2DC	<55	4,5	4-12 mm		1137	
ECI-E4-CF EC-E4L-CF	38° helix with variable pitch	2DC	<45	4	.125-.500″ 1-12 mm		1139 1138	
ECI-E5-CF EC-E5L-CF	38° helix with variable pitch	2.5DC	<45	5	.250-.500″ 6-12 mm		1141 1140	
EFPI-E4,5CF EFP-E4,5CF	38° helix with variable pitch	2DC	<55	4-5	.250-.500″ 6-12 mm	High feed at small D.O.C.	1143	
EFFI-S4/S6 EFF-S2/S4/S6	0°	0.05DC	<65	4, 6	.250-.500″ 1-12 mm		1142	
ECHI-B6 ECH-B-6	45°	2DC	<65	6	.250-.500″ 6-12 mm	High temp. alloys	1148	
ECLI-B-6 ECL-B-4/6	45°	3-5DC	<45	6 4,6	.250-.500″ 6-12 mm		1149	
ECXI-B-6 ECXL-B-4/6	45°	4-6DC	<45	6 4,6	.250-.500″ 10-12 mm		1150	

FINISHRED

EFS-E44

Combination of Roughing and Finishing Solid Carbide Endmills with Variable Pitch for CHATTER-FREE Milling



M E T R I C

Designation	Dimensions DC	DCONMS	APMX	OAL	NOF(1)	FHA	RMPX°(2)	Shank(3)	CSP(4)	CHW	KCH	IC900	Recommended Machining Data f_z (mm/t)
EFS-E44 06-14C06CF57	6.00	6.00	14.00	57.00	4	38.0	5.0	C	0	0.25	45.0	●	0.03-0.06
EFS-E44 08-18C08CF63	8.00	8.00	18.00	63.00	4	38.0	5.0	C	0	0.30	45.0	●	0.03-0.08
EFS-E44 10-22C10CF72	10.00	10.00	22.00	72.00	4	38.0	5.0	C	0	0.40	45.0	●	0.03-0.09
EFS-E44 12-26C12CF83	12.00	12.00	26.00	83.00	4	38.0	5.0	C	0	0.50	45.0	●	0.04-0.10

• Minimum width of cut for semi-finishing operation >= 0.05 x DC • For user guide, see pages 1156-1159

(1) Number of flutes

(2) Maximum ramping angle

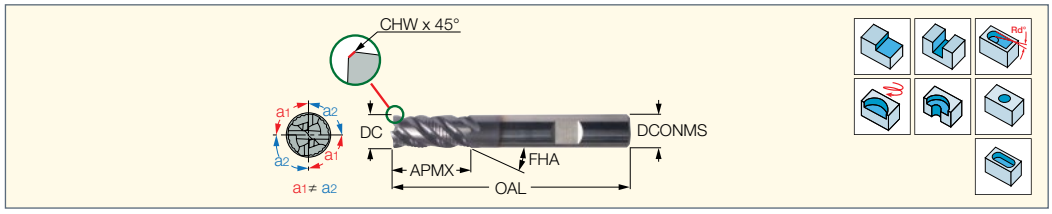
(3) C-Cylindrical

(4) 0 - Without coolant supply, 1 - With coolant supply

FINISHRED

EFSI-E44

A Combination of Roughing and Finishing Solid Carbide Endmill with Variable Pitch for Chatter Free Milling



I N C H

Designation	Dimensions DC	DCONMS	APMX	OAL	CHW	KCH	NOF(1)	FHA	RMPX°(2)	Shank(3)	CSP(4)	IC900	Recommended Machining Data f_z (inch/t)
EFSI-E44 250-500C250CF2.5	.250	.250	.500	2.500	.010	45.00	4	38.0	5.0	C	0	●	.0010-.0020
EFSI-E44 312-625C312CF2.5	.312	.312	.625	2.500	.012	45.00	4	38.0	5.0	C	0	●	.0010-.0030
EFSI-E44 375-750C375CF3.0	.375	.375	.750	3.000	.016	45.00	4	38.0	5.0	C	0	●	.0010-.0040
EFSI-E44 500-1.0C500CF3.0	.500	.500	1.000	3.000	.020	45.00	4	38.0	5.0	C	0	●	.0020-.0040

• Minimum width of cut for semi-finishing operation >= 0.05 x DC • For user guide, see pages 1156-1159

(1) Number of flutes

(2) Maximum ramping angle

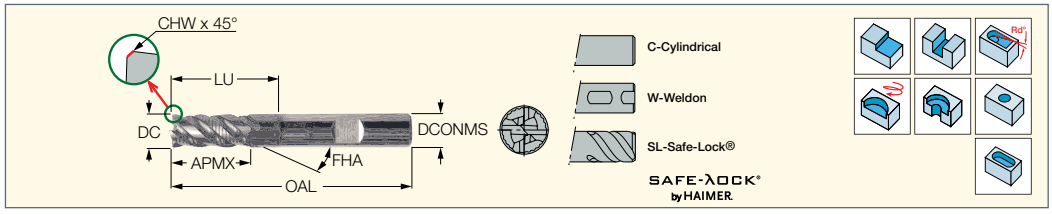
(3) C-Cylindrical

(4) 0 - Without coolant supply, 1 - With coolant supply

FINISHRED

EFS-B44

Combination of Roughing and Finishing Solid Carbide Endmills with a Single Tool



M E T R I C

Designation	Dimensions DC	DCONMS	APMX	LU	OAL	NOF(2)	FHA	RMPX°(3)	Shank(4)	CSP(5)	CHW	KCH	Tough ↔ Hard IC900	IC608	Recommended Machining Data f_z (mm/t)
EFS-B44 04-10C06-57	4.00	6.00	10.00	-	57.00	4	45.0	5.0	C	0	0.12	45.0	●		0.03-0.05
EFS-B44 05-12C06-57	5.00	6.00	12.00	-	57.00	4	45.0	5.0	C	0	0.18	45.0	●		0.03-0.06
EFS-B44 06-14/20C06-57	6.00	6.00	14.00	20.0	57.00	4	45.0	5.0	C	0	0.25	45.0	●		0.03-0.06
EFS-B44 06-14C06-57	6.00	6.00	14.00	-	57.00	4	45.0	5.0	C	0	0.25	45.0	●	●	0.03-0.06
EFS-B44 08-18/26C08-63	8.00	8.00	18.00	26.0	63.00	4	45.0	5.0	C	0	0.30	45.0	●		0.03-0.08
EFS-B44 08-18C08-63	8.00	8.00	18.00	-	63.00	4	45.0	5.0	C	0	0.30	45.0	●	●	0.03-0.08
EFS-B44 10-22/32C10-72	10.00	10.00	22.00	32.0	72.00	4	45.0	5.0	C	0	0.30	45.0	●		0.03-0.09
EFS-B44 10-22C10-72	10.00	10.00	22.00	-	72.00	4	45.0	5.0	C	0	0.30	45.0	●	●	0.03-0.09
EFS-B44 12-26/38C12-83	12.00	12.00	26.00	38.0	83.00	4	45.0	5.0	C	0	0.40	45.0	●		0.04-0.10
EFS-B44 12-26C12-83	12.00	12.00	26.00	-	83.00	4	45.0	5.0	C	0	0.40	45.0	●	●	0.04-0.10

• Minimum width of cut for semi-finishing operations>= 0.05 x DC • For user guide, see pages 1156-1159

(1) With Safe-Lock® (by Haimer) pull-out prevention helical grooves

(2) Number of flutes

(3) Maximum ramping angle

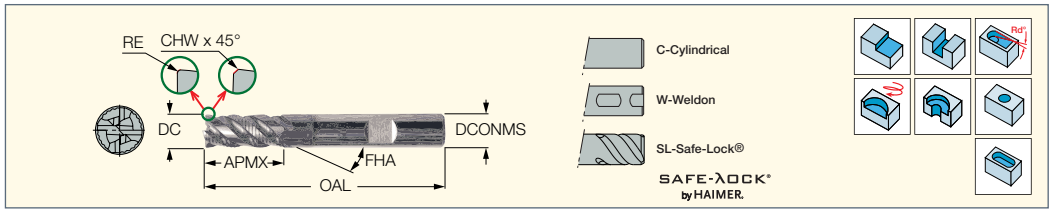
(4) C-Cylindrical

(5) 0 - Without coolant supply, 1 - With coolant supply

FINISHRED

EFSI-B44

A Combination of Roughing and Finishing Solid Carbide Endmills in a Single Tool



I N C H

Designation	Dimensions DC	DCONMS	APMX	NOF(2)	OAL	FHA	Shank(3)	CHW	KCH	RE	CSP(4)	RMPX°(5)	IC900	Recommended Machining Data f_z (inch/t)
EFSI-B44 250-500C250	.250	.250	.500	4	2.500	45.0	C	.010	45.00	-	0	5.0	●	.0010-.0020
EFSI-B44 312-625C312	.312	.312	.625	4	2.500	45.0	C	.012	45.00	-	0	5.0	●	.0010-.0030
EFSI-B44 375-750C375	.375	.375	.750	4	3.000	45.0	C	.012	45.00	-	0	5.0	●	.0010-.0040
EFSI-B44 500-1.0C500	.500	.500	1.000	4	3.000	45.0	C	.016	45.00	-	0	5.0	●	.0020-.0040

• Minimum width of cut for semi-finishing operation >= 0.05 x DC • For user guide, see pages 1156-1159

(1) With Safe-Lock® (by Haimer) pull-out prevention helical grooves

(2) Number of flutes

(3) C-Cylindrical

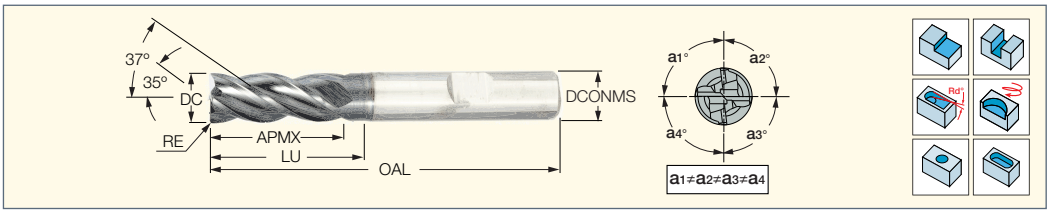
(4) 0 - Without coolant supply, 1 - With coolant supply

(5) Maximum ramping angle

CHATTERFREE
SOLID MILL LINE

EC-H4-L/M/XL-CFR

4 Flute Endmills with Different Helix and Variable Pitch for Chatter Damping with Assorted Radii



M E T R I C

Designation	Dimensions										IC900	Recommended Machining Data
	DC	DCONMS	APMX	LU	OAL	NOF(1)	RE	CSP(2)	RMPX°(3)	Shank(4)		f_z (mm/t)
EC-H4L 03-08/10C6CFR.2	3.00	6.00	8.00	10.00	52.00	4	0.20	0	5.0	C	●	0.03-0.06
EC-H4L 04-11/13C6CFR.2	4.00	6.00	11.00	13.00	52.00	4	0.20	0	5.0	C	●	0.03-0.06
EC-H4L 05-13/20C6CFR.2	5.00	6.00	13.00	20.00	57.00	4	0.20	0	5.0	C	●	0.03-0.06
EC-H4L 06-14/20C6CFR.2	6.00	6.00	14.00	20.00	52.00	4	0.20	0	5.0	C	●	0.03-0.06
EC-H4L 06-14/20C6CFR.2C	6.00	6.00	14.00	20.00	52.00	4	0.20	1	5.0	C	●	0.03-0.06
EC-H4L 06-14/25C6CFR.2	6.00	6.00	14.00	25.00	57.00	4	0.20	0	5.0	C	●	0.03-0.06
EC-H4L 06-14/25C6CFR.2C	6.00	6.00	14.00	25.00	57.00	4	0.20	1	5.0	C	●	0.03-0.06
EC-H4M 06-12C06CFR0.2-57	6.00	6.00	12.00	12.00	57.00	4	0.20	0	5.0	C	●	0.03-0.06
EC-H4M 06-12C06CFR0.5-57	6.00	6.00	12.00	12.00	57.00	4	0.50	0	5.0	C	●	0.03-0.06
EC-H4XL 06-12/25C06CFR.2	6.00	6.00	12.00	25.00	61.00	4	0.20	0	5.0	C	●	0.03-0.06
EC-H4M 08-16C08CFR0.4-63	8.00	8.00	16.00	16.00	63.00	4	0.40	0	5.0	C	●	0.03-0.08
EC-H4M 08-16C08CFR0.5-63	8.00	8.00	16.00	16.00	63.00	4	0.50	0	5.0	C	●	0.03-0.08
EC-H4M 08-16C08CFR1-63	8.00	8.00	16.00	16.00	63.00	4	1.00	0	5.0	C	●	0.03-0.08
EC-H4XL 08-16/32C08CFR.4	8.00	8.00	16.00	32.00	68.00	4	0.40	0	5.0	C	●	0.03-0.08
EC-H4M 10-20C10CFR0.5-72	10.00	10.00	20.00	20.00	72.00	4	0.50	0	5.0	C	●	0.03-0.09
EC-H4XL 10-20/40C10CFR.5	10.00	10.00	20.00	40.00	80.00	4	0.50	0	5.0	C	●	0.03-0.09
EC-H4M 12-24C12CFR0.6-83	12.00	12.00	24.00	24.00	83.00	4	0.60	0	5.0	C	●	0.04-0.10
EC-H4XL 12-24/50C12CFR.6	12.00	12.00	24.00	50.00	95.00	4	0.60	0	5.0	C	●	0.04-0.10

• For user guide, see pages 1156-1159

(1) Number of flutes

(2) 0 - Without coolant supply, 1 - With coolant supply

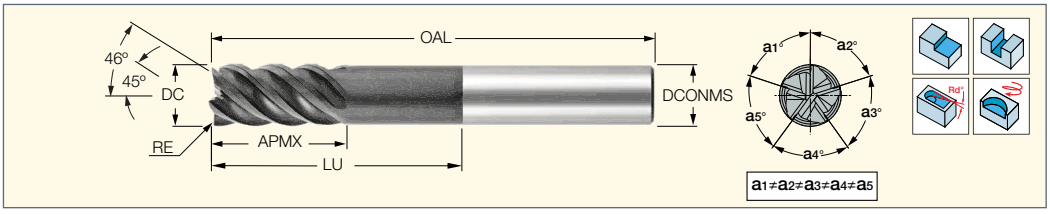
(3) Maximum ramping angle

(4) C-Cylindrical

CHATTERFREE SOLID MILL LINE

EC-H5M-CF/NE

5 Flute Endmills with Different Helix and Variable Pitch for Chatter Damping with Assorted Radius Dimensions



M E T R I C

Designation	Dimensions DC	DCONMS	APMX	LU	OAL	NOF(1)	RE	RMPX°(2)	Shank(3)	CSP(4)	IC900
EC-H5M 04-09C06CFR0.2-57	4.00	6.00	9.00	12.00	57.00	5	0.20	2.0	C	0	●
EC-H5M 05-11C06CFR0.2-57	5.00	6.00	11.00	14.50	57.00	5	0.20	2.0	C	0	●
EC-H5M 06-10/25C06CFR.1	6.00	6.00	10.00	25.00	61.00	5	0.10	2.0	C	0	●
EC-H5M 06-10/25C06CFR.1C	6.00	6.00	10.00	25.00	61.00	5	0.10	2.0	C	1	●
EC-H5M 06-13/19C06CFR.1	6.00	6.00	13.00	19.00	55.00	5	0.10	2.0	C	0	●
EC-H5M 06-13/19C06CFR.1C	6.00	6.00	13.00	19.00	55.00	5	0.10	2.0	C	1	●
EC-H5M 08-13/33C08CFR.1	8.00	8.00	13.00	33.00	69.00	5	0.10	2.0	C	0	●
EC-H5M 08-13/33C08CFR.1C	8.00	8.00	13.00	33.00	69.00	5	0.10	2.0	C	1	●
EC-H5M 08-17/25C08CFR.1	8.00	8.00	17.00	25.00	61.00	5	0.10	2.0	C	0	●
EC-H5M 08-17/25C08CFR.1C	8.00	8.00	17.00	25.00	61.00	5	0.10	2.0	C	1	●
EC-H5M 10-17/42C10CFR.1	10.00	10.00	17.00	42.00	82.00	5	0.10	2.0	C	0	●
EC-H5M 10-17/42C10CFR.1C	10.00	10.00	17.00	42.00	82.00	5	0.10	2.0	C	1	●
EC-H5M 10-22/32C10CFR.1	10.00	10.00	22.00	32.00	72.00	5	0.10	2.0	C	0	●
EC-H5M 10-22/32C10CFR.1C	10.00	10.00	22.00	32.00	72.00	5	0.10	2.0	C	1	●
EC-H5M 12-20/50C12CFR.2	12.00	12.00	20.00	50.00	95.00	5	0.20	2.0	C	0	●
EC-H5M 12-20/50C12CFR.2C	12.00	12.00	20.00	50.00	95.00	5	0.20	2.0	C	1	●
EC-H5M 12-26/38C12CFR.2	12.00	12.00	26.00	38.00	83.00	5	0.20	2.0	C	0	●
EC-H5M 12-26/38C12CFR.2C	12.00	12.00	26.00	38.00	83.00	5	0.20	2.0	C	1	●

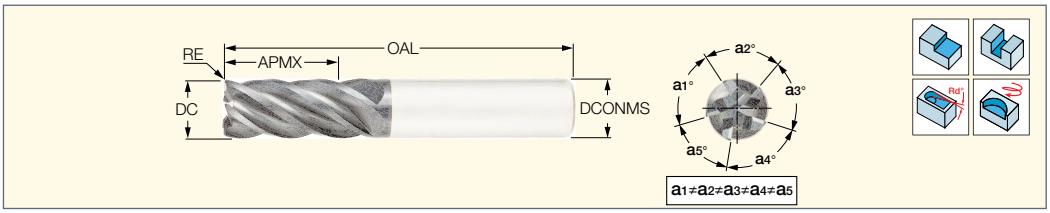
- For user guide, see pages 1156-1159

(1) Number of flutes
(2) Maximum ramping angle
(3) C-Cylindrical
(4) 0 - Without coolant supply, 1 - With coolant supply

CHATTERFREE SOLID MILL LINE

ECI-H5R-CF

5 Flute Endmills with Different Helix (36-38°) and Variable Pitch for Chatter Damping with Assorted Radii



I N C H

Designation	Dimensions DC	DCONMS	APMX	OAL	NOF(1)	RE	RMPX°(2)	Shank(3)	CSP(4)	IC900	Recommended Machining Data f_z (inch/t)
ECI-H5R 250-630C01CF	.250	.250	.6300	2.500	5	.0100	5.0	C	0	●	.0015-.0025
ECI-H5R 312-780C015CF	.312	.312	.7800	2.500	5	.0150	5.0	C	0	●	.0015-.0045
ECI-H5R 375-940C02CF	.375	.375	.9400	3.000	5	.0200	5.0	C	0	●	.0015-.0045
ECI-H5R 500-1.25C025CF	.500	.500	1.2500	3.500	5	.0250	5.0	C	0	●	.0025-.0055

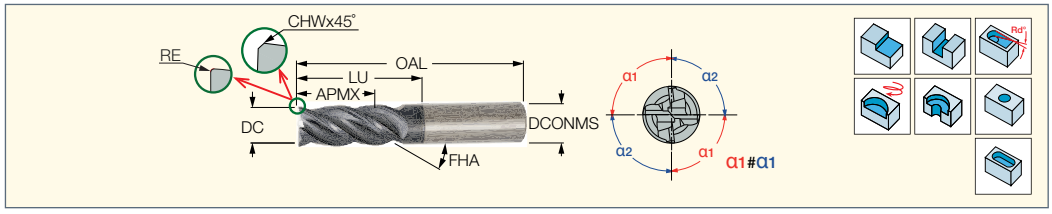
- For user guide, see pages 1156-1159

(1) Number of flutes
(2) Maximum ramping angle
(3) C-Cylindrical
(4) 0 - Without coolant supply, 1 - With coolant supply

CHATTERFREE SOLID MILL LINE

EC-E4L-CF

4 Flute, 38° Helix Endmills with 3xD Relieved Neck and Variable Pitch for Chatter Damping



M E T R I C

Designation	Dimensions DC	DCONMS	APMX	LU	OAL	NOF(1)	FHA	RMPX°(2)	RE	CSP(3)	Shank(4)	CHW	KCH	Tough ↔ Hard IC900	IC608	Recommended Machining Data f_z (mm/t)
EC-E4L 01-2/04C04CF50	1.00	4.00	2.00	4.00	50.00	4	38.0	5.0	-	0	C	0.04	45.0	●		0.02-0.05
EC-E4L 02-4/06C04CF50	2.00	4.00	4.00	6.00	50.00	4	38.0	5.0	-	0	C	0.08	45.0	●		0.02-0.05
EC-E4L 03-8/11C06CF57	3.00	6.00	8.00	11.00	57.00	4	38.0	5.0	-	0	C	0.10	45.0	●	●	0.02-0.05
EC-E4L 04-10/14C06CF57	4.00	6.00	10.00	14.00	57.00	4	38.0	5.0	-	0	C	0.15	45.0	●	●	0.02-0.05
EC-E4L 05-12/17C06CF57	5.00	6.00	12.00	17.00	57.00	4	38.0	5.0	-	0	C	0.18	45.0	●	●	0.02-0.06
EC-E4L 06-14/20C06CFR0.2	6.00	6.00	14.00	20.00	57.00	4	38.0	5.0	0.20		C	-	-	●		0.03-0.07
EC-E4L 06-14/20C06CFR0.5	6.00	6.00	14.00	20.00	57.00	4	38.0	5.0	0.50	0	C	-	-	●		0.03-0.07
EC-E4L 06-14/20C06CFR1	6.00	6.00	14.00	20.00	57.00	4	38.0	5.0	1.00	0	C	-	-	●		0.03-0.07
EC-E4L 06-14/20C06CF57	6.00	6.00	14.00	20.00	57.00	4	38.0	5.0	-	0	C	0.25	45.0	●	●	0.03-0.07
EC-E4L 08-18/26C08CFR0.3	8.00	8.00	18.00	26.00	63.00	4	38.0	5.0	0.30	0	C	-	-	●		0.03-0.08
EC-E4L 08-18/26C08CFR0.5	8.00	8.00	18.00	26.00	63.00	4	38.0	5.0	0.50	0	C	-	-	●		0.03-0.08
EC-E4L 08-18/26C08CFR1	8.00	8.00	18.00	26.00	63.00	4	38.0	5.0	1.00	0	C	-	-	●		0.03-0.08
EC-E4L 08-18/26C08CFR1.5	8.00	8.00	18.00	26.00	63.00	4	38.0	5.0	1.50	0	C	-	-	●		0.03-0.08
EC-E4L 08-18/26C08CFS63	8.00	8.00	18.00	26.00	63.00	4	38.0	5.0	-	0	C	-	-	●		0.03-0.08
EC-E4L 08-18/26C08CF63	8.00	8.00	18.00	26.00	63.00	4	38.0	5.0	-	0	C	0.30	45.0	●	●	0.03-0.09
EC-E4L 10-22/32C10CFR0.5	10.00	10.00	22.00	32.00	72.00	4	38.0	5.0	0.50	0	C	-	-	●		0.03-0.10
EC-E4L 10-22/32C10CFR1	10.00	10.00	22.00	33.30	72.00	4	38.0	5.0	1.00	0	C	-	-	●		0.03-0.10
EC-E4L 10-22/32C10CFR1.5	10.00	10.00	22.00	32.00	72.00	4	38.0	5.0	1.50	0	C	-	-	●		0.03-0.10
EC-E4L 10-22/32C10CFR2	10.00	10.00	22.00	32.00	72.00	4	38.0	5.0	2.00	0	C	-	-	●		0.03-0.10
EC-E4L 10-22/32C10CFR3	10.00	10.00	22.00	32.00	72.00	4	38.0	5.0	3.00	0	C	-	-	●		0.03-0.10
EC-E4L 10-22/32C10CFS72	10.00	10.00	22.00	32.00	72.00	4	38.0	5.0	-	0	C	-	-	●		0.03-0.09
EC-E4L 10-22/32C10CF72	10.00	10.00	22.00	32.00	72.00	4	38.0	5.0	-	0	C	0.40	45.0	●	●	0.03-0.10
EC-E4L 12-26/38C12CFR0.5	12.00	12.00	26.00	38.00	83.00	4	38.0	5.0	0.50	0	C	-	-	●		0.04-0.11
EC-E4L 12-26/38C12CFR1	12.00	12.00	26.00	38.00	83.00	4	38.0	5.0	1.00	0	C	-	-	●		0.04-0.11
EC-E4L 12-26/38C12CFR1.5	12.00	12.00	26.00	38.00	83.00	4	38.0	5.0	1.50	0	C	-	-	●		0.04-0.11
EC-E4L 12-26/38C12CFR2	12.00	12.00	26.00	38.00	83.00	4	38.0	5.0	2.00	0	C	-	-	●		0.04-0.11
EC-E4L 12-26/38C12CFR3	12.00	12.00	26.00	38.00	83.00	4	38.0	5.0	3.00	0	C	-	-	●		0.04-0.11
EC-E4L 12-26/38C12CFR4	12.00	12.00	26.00	38.00	83.00	4	38.0	5.0	4.00	0	C	-	-	●		0.04-0.11
EC-E4L 12-26/38C12CFS83	12.00	12.00	26.00	38.00	83.00	4	38.0	5.0	-	0	C	-	-	●		0.04-0.10
EC-E4L 12-26/38C12CF83	12.00	12.00	26.00	38.00	83.00	4	38.0	5.0	-	0	C	0.50	45.0	●	●	0.04-0.11

• For user guide, see pages 1156-1159

(1) Number of flutes

(2) Maximum ramping angle

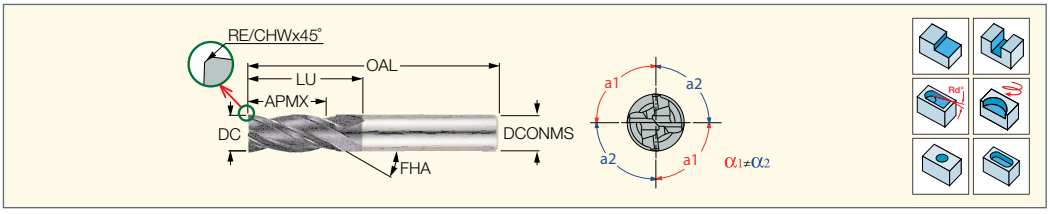
(3) 0 - Without coolant supply, 1 - With coolant supply

(4) C-Cylindrical

CHATTERFREE
SOLID MILL LINE

ECI-E4-CF

4 Flute Chatter Damping Endmills with 3xD Relieved Necks, 38° Helix, Variable Pitch and Chamfered or Radius Corners



I N C H

Designation	Dimensions													IC900	Recommended Machining Data
	DC	NOF(1)	DCONMS	APMX	LU	OAL	FHA	Shank(2)	CHW	KCH	RE	RMPX°(3)	CSP(4)		f_z (inch/t)
ECI-E4L125-250/375C125CF	.125	4	.125	.250	.375	1.500	38.0	C	.004	45.00	-	5.0	0	●	.0010-.0020
ECI-E4L188-375/565C188CF	.188	4	.188	.375	.565	2.000	38.0	C	.006	45.00	-	5.0	0	●	.0010-.0020
ECI-E4L250-500/750C250CF	.250	4	.250	.500	.750	2.500	38.0	C	.010	45.00	-	5.0	0	●	.0010-.0020
ECI-E4L312-625/1.0C312CF	.312	4	.312	.625	1.000	2.500	38.0	C	.012	45.00	-	5.0	0	●	.0010-.0040
ECI-E4 375-75/1.25C37CFS	.375	4	.375	.750	1.250	3.000	38.0	C	-	-	.0000	5.0	0	●	.0010-.0040
ECI-E4L375-750/1.25C37CF	.375	4	.375	.750	1.250	3.000	38.0	C	.015	45.00	-	5.0	0	●	.0010-.0040
ECI-E4R375-75/1.25C37CF03	.375	4	.375	.750	1.250	3.000	38.0	C	-	-	.0300	5.0	0	●	.0010-.0040
ECI-E4R375-75/1.25C37CF06	.375	4	.375	.750	1.250	3.000	38.0	C	-	-	.0600	5.0	0	●	.0010-.0040
ECI-E4 500-1.0/1.5C50CFS	.500	4	.500	1.000	1.500	3.500	38.0	C	-	-	.0000	5.0	0	●	.0020-.0040
ECI-E4L500-1.0/1.5C500CF	.500	4	.500	1.000	1.500	3.500	38.0	C	.020	45.00	-	5.0	0	●	.0020-.0040
ECI-E4R500-1.0/1.5C50CF06	.500	4	.500	1.000	1.500	3.500	38.0	C	-	-	.0600	5.0	0	●	.0020-.0040
ECI-E4R500-1.0/1.5C50CF09	.500	4	.500	1.000	1.500	3.500	38.0	C	-	-	.0900	5.0	0	●	.0020-.0040
ECI-E4R500-1.0/1.5C50CF12	.500	4	.500	1.000	1.500	3.500	38.0	C	-	-	.1200	5.0	0	●	.0020-.0040

• For user guide, see pages 1156-1159

(1) Number of flutes

(2) C-Cylindrical

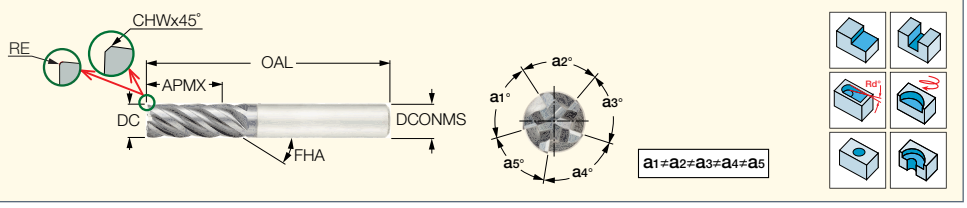
(3) Maximum ramping angle

(4) 0 - Without coolant supply, 1 - With coolant supply

CHATTERFREE
SOLID MILL LINE

EC-E5L-CF

5 Flute, 38° Helix Medium Length (3xD) Variable Pitch Endmills



M E T R I C

Designation	Dimensions												IC900	Recommended Machining Data
	DC	DCONMS	APMX	OAL	NOF(1)	FHA	RMPX°(2)	Shank(3)	CSP(4)	CHW	KCH	RE		f_z (mm/t)
EC-E5L 06-15C06CF57	6.00	6.00	15.00	57.00	5	38.0	5.0	C	0	0.20	45.0	-	●	0.03-0.07
EC-E5L 06-18C06CFR0.2-66	6.00	6.00	18.00	66.00	5	38.0	5.0	C	0	-	-	0.20	●	0.03-0.07
EC-E5L 06-18C06CFR0.5-66	6.00	6.00	18.00	66.00	5	38.0	5.0	C	0	-	-	0.50	●	0.03-0.07
EC-E5L 06-18C06CFR1.0-66	6.00	6.00	18.00	66.00	5	38.0	5.0	C	0	-	-	1.00	●	0.03-0.07
EC-E5L 06-18C06CF66	6.00	6.00	18.00	66.00	5	38.0	5.0	C	0	0.15	45.0	-	●	0.03-0.07
EC-E5L 08-20C08CF63	8.00	8.00	20.00	63.00	5	38.0	5.0	C	0	0.25	45.0	-	●	0.03-0.09
EC-E5L 08-24C08CFR0.3-69	8.00	8.00	24.00	69.00	5	38.0	5.0	C	0	-	-	0.30	●	0.03-0.09
EC-E5L 08-24C08CFR0.5-69	8.00	8.00	24.00	69.00	5	38.0	5.0	C	0	-	-	0.50	●	0.03-0.09
EC-E5L 08-24C08CFR1.5-69	8.00	8.00	24.00	69.00	5	38.0	5.0	C	0	-	-	1.50	●	0.03-0.09
EC-E5L 08-24C08CF69	8.00	8.00	24.00	69.00	5	38.0	5.0	C	0	0.20	45.0	-	●	0.03-0.09
EC-E5L 10-25C10CF72	10.00	10.00	25.00	72.00	5	38.0	5.0	C	0	0.30	45.0	-	●	0.03-0.10
EC-E5L 10-30C10CFR0.5-81	10.00	10.00	30.00	81.00	5	38.0	5.0	C	0	-	-	0.50	●	0.03-0.10
EC-E5L 10-30C10CFR1.5-81	10.00	10.00	30.00	81.00	5	38.0	5.0	C	0	-	-	1.50	●	0.03-0.10
EC-E5L 10-30C10CFR2.5-81	10.00	10.00	30.00	81.00	5	38.0	5.0	C	0	-	-	2.50	●	0.03-0.10
EC-E5L 10-30C10CFR3.0-81	10.00	10.00	30.00	81.00	5	38.0	5.0	C	0	-	-	3.00	●	0.03-0.10
EC-E5L 12-30C12CF83	12.00	12.00	30.00	83.00	5	38.0	5.0	C	0	0.40	45.0	-	●	0.04-0.11
EC-E5L 12-36C12CFR0.5-94	12.00	12.00	36.00	94.00	5	38.0	5.0	C	0	-	-	0.50	●	0.04-0.11
EC-E5L 12-36C12CFR1.5-94	12.00	12.00	36.00	94.00	5	38.0	5.0	C	0	-	-	1.50	●	0.04-0.11
EC-E5L 12-36C12CFR2.0-94	12.00	12.00	36.00	94.00	5	38.0	5.0	C	0	-	-	2.00	●	0.04-0.11
EC-E5L 12-36C12CFR3.0-94	12.00	12.00	36.00	94.00	5	38.0	5.0	C	0	-	-	3.00	●	0.04-0.11
EC-E5L 12-36C12CF94	12.00	12.00	36.00	94.00	5	38.0	5.0	C	0	0.30	45.0	-	●	0.04-0.11

• For user guide, see pages 1156-1159

(1) Number of flutes

(2) Maximum ramping angle

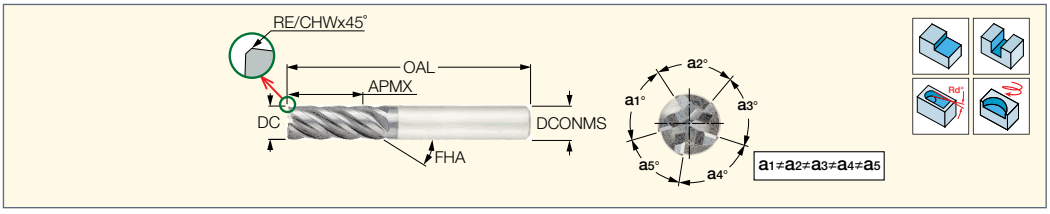
(3) C-Cylindrical

(4) 0 - Without coolant supply, 1 - With coolant supply

CHATTERFREE
SOLID MILL LINE

ECI-E5-CF

5 Flute Medium Length Endmills, 38° Helix and Variable Pitch for Chatter Damping, Includes Tools with Corner Radius



I N C H

Designation	Dimensions DC	NOF(1)	DCONMS	APMX	OAL	FHA	CHW	KCH	RE	Shank(2)	RMPX°(3)	CSP(4)	IC900	Recommended Machining Data f_z (inch/t)
ECI-E5L250-625C250CF	.250	5	.250	.6300	2.500	38.0	.008	45.00	-	C	5.0	0	●	.0010-.0020
ECI-E5L312-780C312CF	.312	5	.312	.7800	2.500	38.0	.010	45.00	-	C	5.0	0	●	.0010-.0040
ECI-E5 375-937C37CFS	.375	5	.375	.9370	3.000	38.0	-	-	.0000	C	5.0	0	●	.0010-.0040
ECI-E5L375-937C37CF	.375	5	.375	.9370	3.000	38.0	.012	45.00	-	C	5.0	0	●	.0010-.0040
ECI-E5R375-937C37CF03	.375	5	.375	.9370	3.000	38.0	-	-	.0300	C	5.0	0	●	.0010-.0040
ECI-E5R375-937C37CF06	.375	5	.375	.9370	3.000	38.0	-	-	.0600	C	5.0	0	●	.0010-.0040
ECI-E5 500-1.25C500CFS	.500	5	.500	1.2500	3.500	38.0	-	-	.0000	C	5.0	0	●	.0020-.0040
ECI-E5L500-1.25C500CF	.500	5	.500	1.2500	3.500	38.0	.016	45.00	-	C	5.0	0	●	.0020-.0040
ECI-E5R500-1.25C500CF06	.500	5	.500	1.2500	3.500	38.0	-	-	.0600	C	5.0	0	●	.0020-.0040
ECI-E5R500-1.25C500CF09	.500	5	.500	1.2500	3.500	38.0	-	-	.0900	C	5.0	0	●	.0020-.0040
ECI-E5R500-1.25C500CF12	.500	5	.500	1.2500	3.500	38.0	-	-	.1200	C	5.0	0	●	.0020-.0040

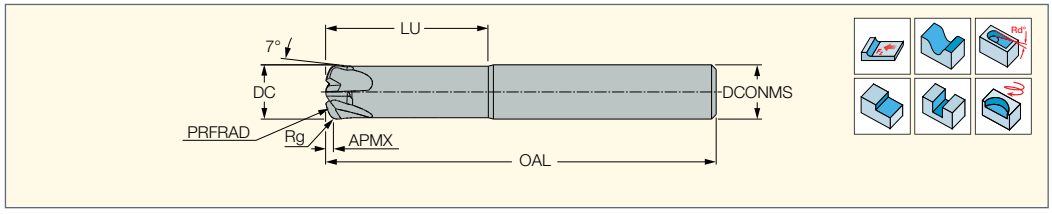
• For user guide, see pages 1156-1159

(1) Number of flutes
(2) C-Cylindrical
(3) Maximum ramping angle
(4) 0 - Without coolant supply, 1 - With coolant supply

SOLIDFEEDMILL

EFF-S2/S4/S6

Solid Carbide Endmills with Relieved Necks for Fast Feed High Productivity



M E T R I C

Designation	Dimensions DC	DCONMS	OAL	NOF(1)	LU	Rg(2)	PRFRAD	APMX	Shank(3)	RMPX°(4)	CSP(5)	Tough ↔ Hard IC903	IC902	Recommended Machining Data f_z (mm/t)
EFF-S2 01-04/03C6RP.15M50	1.00	6.00	50.00	2	3.0	0.15	0.8	0.06	C	5.0	0		•	0.02-0.05
EFF-S2 02-07/06C6RP0.3M50	2.00	6.00	50.00	2	6.0	0.30	1.6	0.11	C	5.0	0		•	0.10-0.14
EFF-S2 03-1/09C06RP0.5M50	3.00	6.00	50.00	2	9.0	0.50	2.4	0.18	C	5.0	0		•	0.10-0.20
EFF-S4-04 020/14C06M57	4.00	6.00	57.00	4	14.0	0.70	3.8	0.20	C	5.0	0		•	0.10-0.25
EFF-S4-05 022/17C06M57	5.00	6.00	57.00	4	17.0	0.90	4.0	0.31	C	5.0	0		•	0.10-0.30
EFF-S4-06 030/20C06R1.0M	6.00	6.00	57.00	4	20.0	1.23	5.3	0.29	C	5.0	0	•		0.10-0.30
EFF-S6-06 025/20C06R0.7M	6.00	6.00	57.00	6	20.0	0.70	5.0	0.33	C	3.0	0		•	0.10-0.25
EFF-S4-08 035/26C08R1.3M	8.00	8.00	63.00	4	26.0	1.62	7.0	0.40	C	5.0	0	•		0.10-0.40
EFF-S6-08 025/26C08R0.86M	8.00	8.00	63.00	6	26.0	0.86	6.0	0.40	C	3.0	0		•	0.10-0.35
EFF-S4-10 040/30C10R1.6M	10.00	10.00	72.00	4	30.0	2.01	8.8	0.50	C	5.0	0	•		0.15-0.50
EFF-S6-10 025/30C10R1.0M	10.00	10.00	72.00	6	30.0	1.00	6.0	0.50	C	3.0	0		•	0.15-0.45
EFF-S4-12 045/34C12R2.0M	12.00	12.00	83.00	4	34.0	2.46	10.6	0.57	C	5.0	0	•		0.15-0.50
EFF-S6-12 030/34C12R1.2M	12.00	12.00	83.00	6	34.0	1.20	10.0	0.65	C	3.0	0		•	0.15-0.45

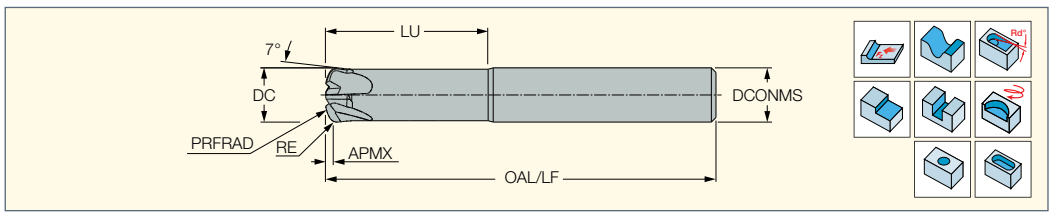
- For user guide, see pages 1156-1159

(1) Number of flutes
(2) Radius for programming
(3) C-Cylindrical
(4) Maximum ramping angle
(5) 0 - Without coolant supply, 1 - With coolant supply

SOLIDFEEDMILL

EFFI-S4/S6

4/6 Flute with Relieved Necks, Fast Feed High Productivity Solid Carbide Endmills



I N C H

Designation	Dimensions DC	DCONMS	OAL	NOF(1)	LU	RE(2)	PRFRAD	APMX	RMPX°(3)	CSP(4)	Tough ↔ Hard IC903	IC902	Recommended Machining Data f_z (inch/t)
EFFI-S4-250 125/750C250M	.250	.250	2.500	4	.750	.0500	.220	.012	5.0	0	•		.0040-.0120
EFFI-S4-312 137/1.00C312M	.312	.312	2.500	4	1.000	.0630	.276	.015	5.0	0	•		.0040-.0160
EFFI-S6-312 118/1.00C312M	.312	.312	2.500	6	1.000	.0390	.236	.016	5.0	0		•	.0040-.0140
EFFI-S4-375 157/1.20C375M	.375	.375	3.000	4	1.200	.0740	.331	.018	5.0	0	•		.0060-.0200
EFFI-S6-375 118/1.20C375M	.375	.375	3.000	6	1.200	.0370	.224	.018	5.0	0		•	.0060-.0180
EFFI-S4-500 180/1.30C500M	.500	.500	3.000	4	1.300	.1200	.441	.024	5.0	0	•		.0060-.0200
EFFI-S6-500 137/1.30C500M	.500	.500	3.000	6	1.300	.0510	.413	.028	5.0	0		•	.0060-.0180

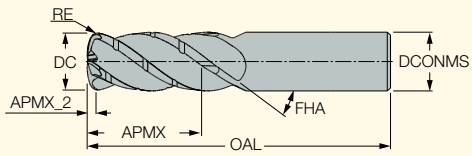
- For user guide, see pages 1156-1159

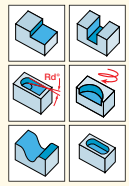
(1) Number of flutes
(2) To be used for programming
(3) Maximum ramping angle
(4) 0 - Without coolant supply, 1 - With coolant supply

SOLID FEED MILL

EFP-E4,5CF

Solid Carbide Roughing Endmills with Chip Splitting Cutting Edges, Variable Pitch and Large Radius Front Edge





M E T R I C

Designation	Dimensions DC	DCONMS	OAL	RE(2)	NOF(3)	FHA	APMX_2(4)	APMX	CSP(5)	RMPX°(6)	Shank(7)	IC903	Recommended Machining Data f_z (mm/t)
EFP-E4CF 06-12C06R1.0M57	6.00	6.00	57.00	1.00	4	38.0	0.30	12.00	0	5.0	C	●	0.02-0.30
EFP-E4CF 08-16C08R1.4M63	8.00	8.00	63.00	1.40	4	38.0	0.40	16.00	0	5.0	C	●	0.03-0.40
EFP-E4CF 10-20C10R1.7M72	10.00	10.00	72.00	1.70	4	38.0	0.50	20.00	0	5.0	C	●	0.03-0.50
EFP-E4CF 12-25C12R2.0M83	12.00	12.00	83.00	2.00	4	38.0	0.60	24.00	0	5.0	C	●	0.04-0.50

• For user guide, see pages 1156-1159

(1) Cannot be used for plunging application

(2) Used for programming

(3) Number of flutes

(4) Maximum D.O.C. for high feed milling (FEED-MILL)

(5) 0 - Without coolant supply, 1 - With coolant supply

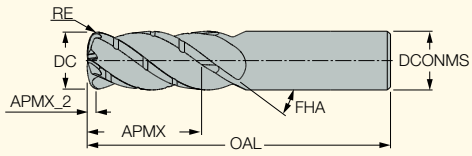
(6) Maximum ramping angle

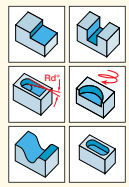
(7) C-Cylindrical

SOLID FEED MILL

EFPI-E4,5CF

Solid Carbide Roughing Endmills with Chip Splitting Cutting Edges, Variable Pitch and Large Radius Front Edge





I N C H

Designation	Dimensions DC	DCONMS	OAL	RE(2)	NOF(3)	FHA	APMX_2(4)	CSP(5)	APMX	RMPX°(6)	Shank(7)	IC903	Recommended Machining Data f_z (inch/t)
EFPI-E4CF 250-50C250R05	.250	.250	2.500	.0500	4	38.0	.011	0	.500	5.0	C	●	.0010-.0110
EFPI-E4CF 312-62C312R06	.312	.312	2.500	.0600	4	38.0	.015	0	.625	5.0	C	●	.0010-.0150
EFPI-E4CF 375-75C375R07	.375	.375	3.000	.0700	4	38.0	.020	0	.750	5.0	C	●	.0010-.0200
EFPI-E5CF 375-938C375R07 (1)	.375	.375	3.000	.0700	5	38.0	.020	0	.938	5.0	C	●	.0010-.0200
EFPI-E4CF 500-1.0C500R10	.500	.500	3.000	.1000	4	38.0	.023	0	1.000	5.0	C	●	.0020-.0200
EFPI-E5CF 500-1.25C500R10 (1)	.500	.500	3.000	.1000	5	38.0	.023	0	1.250	5.0	C	●	.0020-.0200

• For user guide, see pages 1156-1159

(1) Cannot be used for plunging application

(2) Used for programming

(3) Number of flutes

(4) Maximum D.O.C. for high feed milling (FEED-MILL)

(5) 0 - Without coolant supply, 1 - With coolant supply

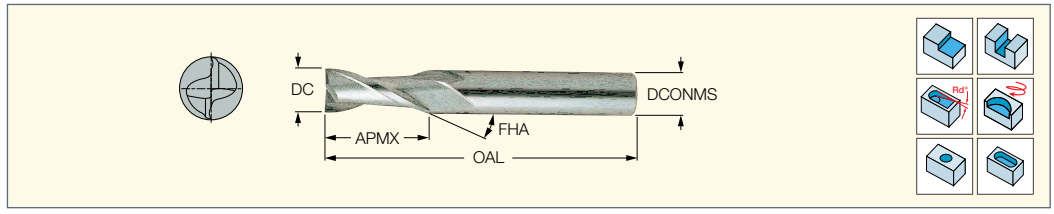
(6) Maximum ramping angle

(7) C-Cylindrical

SOLIDMILL TEC LINE

EC-A2 (economical-short/ medium/extra long)

Economical Type 2 Flute, 30° Helix Center Cutting, Short, Medium, and Extra Long Length Solid Carbide Endmills



M E T R I C

Designation	Dimensions DC	DCONMS	APMX	OAL	NOF(1)	FHA	RMPX°(2)	Shank(3)	CSP(4)	Tough ↔ Hard IC08	IC900	Recommended Machining Data f_z (mm/t)
EC-A2 01-03C04E50	1.00	4.00	3.00	50.00	2	30.0	5.0	C	0	•	•	0.0050-0.0100
EC-A2 015-045C04E50	1.50	4.00	4.50	50.00	2	30.0	5.0	C	0	•	•	0.0050-0.0200
EC-A2 02-08C02E32	2.00	2.00	8.00	32.00	2	30.0	5.0	C	0	•	•	0.0100-0.0300
EC-A2 025-08C025E32	2.50	2.50	8.00	32.00	2	30.0	5.0	C	0	•	•	0.0100-0.0300
EC-A2 03-12C03E38	3.00	3.00	12.00	38.00	2	30.0	5.0	C	0	•	•	0.0100-0.0400
EC-A2 03-30C03E75	3.00	3.00	30.00	75.00	2	30.0	5.0	C	0	•	•	0.0100-0.0400
EC-A2 035-12C035E32	3.50	3.50	12.00	32.00	2	30.0	5.0	C	0	•	•	0.0100-0.0400
EC-A2 04-12C04E50	4.00	4.00	12.00	50.00	2	30.0	5.0	C	0	•	•	0.0200-0.0500
EC-A2 04-30C04E75	4.00	4.00	30.00	75.00	2	30.0	5.0	C	0	•	•	0.0200-0.0500
EC-A2 05-14C05E50	5.00	5.00	14.00	50.00	2	30.0	5.0	C	0	•	•	0.0200-0.0600
EC-A2 05-40C05E100	5.00	5.00	40.00	100.00	2	30.0	5.0	C	0	•	•	0.0200-0.0600
EC-A2 055-16C055E50	5.50	5.50	16.00	50.00	2	30.0	5.0	C	0	•	•	0.0200-0.0600
EC-A2 06-16C06E50	6.00	6.00	16.00	50.00	2	30.0	5.0	C	0	•	•	0.0300-0.0700
EC-A2 06-50C06E150	6.00	6.00	50.00	150.00	2	30.0	5.0	C	0	•	•	0.0300-0.0700
EC-A2 07-20C07E60	7.00	7.00	20.00	60.00	2	30.0	5.0	C	0	•	•	0.0300-0.0800
EC-A2 08-20C08E63	8.00	8.00	20.00	63.00	2	30.0	5.0	C	0	•	•	0.0300-0.0900
EC-A2 08-50C08E150	8.00	8.00	50.00	150.00	2	30.0	5.0	C	0	•	•	0.0300-0.0900
EC-A2 09-20C09E60	9.00	9.00	20.00	60.00	2	30.0	5.0	C	0	•	•	0.0300-0.0900
EC-A2 10-22C10E72	10.00	10.00	22.00	72.00	2	30.0	5.0	C	0	•	•	0.0300-0.1000
EC-A2 10-60C10E150	10.00	10.00	60.00	150.00	2	30.0	5.0	C	0	•	•	0.0300-0.1000
EC-A2 12-22C12E73	12.00	12.00	22.00	73.00	2	30.0	5.0	C	0	•	•	0.0400-0.1100
EC-A2 12-75C12E150	12.00	12.00	75.00	150.00	2	30.0	5.0	C	0	•	•	0.0400-0.1100

• For user guide, see pages 1156-1159

(1) Number of flutes

(2) Maximum ramping angle

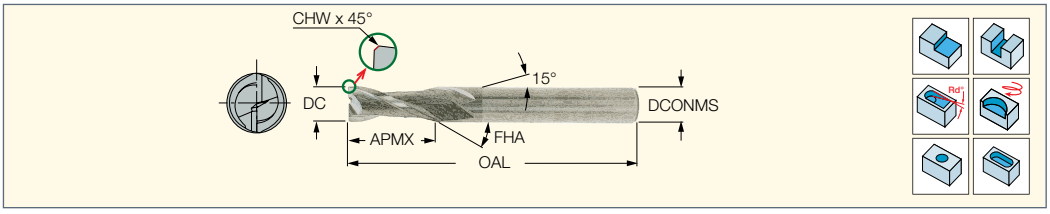
(3) C-Cylindrical

(4) 0 - Without coolant supply, 1 - With coolant supply

SOLIDMILL PREMIUM LINE

EC/ECC-A-2

2 Flute, 30 and 45° Helix
Medium Length Solid Carbide
Slot / Drill Endmills



M E T R I C

Designation	Dimensions											Tough ↔ Hard		Recommended Machining Data
	DC	DCONMS	APMX	OAL	NOF[1]	FHA	RMPX°[2]	Shank	CHW	KCH	CSP[4]	IC08	IC900	f_z (mm/t)
ECC020B07-2C03	2.00	3.00	7.00	38.00	2	45.0	5.0	C	0.10	45.0	0		●	0.01-0.03
EC020B07-2C03	2.00	3.00	7.00	38.00	2	45.0	5.0	C	-	-	0	●		0.01-0.03
EC020B07-2C06	2.00	6.00	7.00	57.00	2	45.0	5.0	C	-	-	0		●	0.01-0.03
ECC025A07-2C03	2.50	3.00	7.00	38.00	2	30.0	5.0	C	0.10	45.0	0		●	0.01-0.03
EC025A07-2C03	2.50	3.00	7.00	38.00	2	30.0	5.0	C	-	-	0	●		0.01-0.03
ECC030A10-2C03	3.00	3.00	10.00	38.00	2	30.0	5.0	C	0.10	45.0	0		●	0.01-0.04
EC030A10-2C03	3.00	3.00	10.00	38.00	2	30.0	5.0	C	-	-	0	●		0.01-0.04
EC030A10-2C06	3.00	6.00	10.00	57.00	2	30.0	5.0	C	-	-	0		●	0.01-0.04
EC035A12-2C04	3.50	4.00	12.00	50.00	2	30.0	5.0	C	-	-	0	●		0.01-0.04
ECC040A12-2C04	4.00	4.00	12.00	50.00	2	30.0	5.0	C	0.15	45.0	0		●	0.02-0.05
EC040A12-2C04	4.00	4.00	12.00	50.00	2	30.0	5.0	C	-	-	0	●	●	0.02-0.05
EC040A12-2C06	4.00	6.00	12.00	57.00	2	30.0	5.0	C	-	-	0	●	●	0.02-0.05
ECC050A14-2C05	5.00	5.00	14.00	50.00	2	30.0	5.0	C	0.15	45.0	0		●	0.02-0.06
EC050A14-2C05	5.00	5.00	14.00	50.00	2	30.0	5.0	C	-	-	0	●		0.02-0.06
EC050A14-2C06	5.00	6.00	14.00	57.00	2	30.0	5.0	C	-	-	0		●	0.02-0.06
ECC060A16-2C06	6.00	6.00	16.00	57.00	2	30.0	5.0	C	0.15	45.0	0		●	0.03-0.07
EC060A16-2C06	6.00	6.00	16.00	57.00	2	30.0	5.0	C	-	-	0	●	●	0.03-0.07
EC070A20-2C07	7.00	7.00	20.00	60.00	2	30.0	5.0	C	-	-	0	●		0.03-0.08
ECC080A20-2C08	8.00	8.00	20.00	63.00	2	30.0	5.0	C	0.15	45.0	0		●	0.03-0.09
EC080A20-2C08	8.00	8.00	20.00	63.00	2	30.0	5.0	C	-	-	0	●	●	0.03-0.09
ECC100A22-2C10	10.00	10.00	22.00	72.00	2	30.0	5.0	C	0.25	45.0	0		●	0.03-0.10
EC100A22-2C10	10.00	10.00	22.00	72.00	2	30.0	5.0	C	-	-	0	●	●	0.03-0.10
ECC120A25-2C12	12.00	12.00	25.00	83.00	2	30.0	5.0	C	0.25	45.0	0		●	0.04-0.11
EC120A25-2C12	12.00	12.00	25.00	83.00	2	30.0	5.0	C	-	-	0	●	●	0.04-0.11

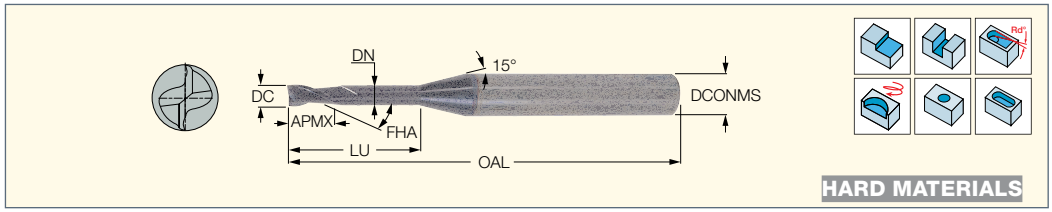
• For user guide, see pages 1156-1159

[1] Number of flutes
[2] Maximum ramping angle
[3] C-Cylindrical
[4] 0 - Without coolant supply, 1 - With coolant supply

SOLIDMILL PREMIUM LINE

EC-A2-M (rib processing)

2 Flute, 30° Helix Solid Carbide Endmills for Rib Processing on Hard Materials up to 55 HRC



M E T R I C

Designation	Dimensions DC	DCONMS	APMX	LU	OAL	DN	NOF(1)	FHA	RMPX°(2)	Shank(3)	CSP(4)	IC903	Recommended Machining Data f_z (mm/t)
EC-A2 004-006/02C4M45	0.40	4.00	0.60	2.0	45.00	0.37	2	30.0	3.0	C	0	•	0.0010-0.0030
EC-A2 004-006/05C4M45	0.40	4.00	0.60	5.0	45.00	0.37	2	30.0	3.0	C	0	•	0.0010-0.0030
EC-A2 005-007/02C4M45	0.50	4.00	0.70	2.0	45.00	0.45	2	30.0	3.0	C	0	•	0.0010-0.0030
EC-A2 005-007/04C4M45	0.50	4.00	0.70	4.0	45.00	0.45	2	30.0	3.0	C	0	•	0.0010-0.0030
EC-A2 005-007/06C4M45	0.50	4.00	0.70	6.0	45.00	0.45	2	30.0	3.0	C	0	•	0.0010-0.0030
EC-A2 005-007/08C4M45	0.50	4.00	0.70	8.0	45.00	0.45	2	30.0	3.0	C	0	•	0.0010-0.0030
EC-A2 006-009/02C4M45	0.60	4.00	0.90	2.0	45.00	0.55	2	30.0	3.0	C	0	•	0.0010-0.0030
EC-A2 006-009/04C4M45	0.60	4.00	0.90	4.0	45.00	0.55	2	30.0	3.0	C	0	•	0.0010-0.0030
EC-A2 006-009/06C4M45	0.60	4.00	0.90	6.0	45.00	0.55	2	30.0	3.0	C	0	•	0.0010-0.0030
EC-A2 006-009/08C4M45	0.60	4.00	0.90	8.0	45.00	0.55	2	30.0	3.0	C	0	•	0.0010-0.0030
EC-A2 006-009/10C4M45	0.60	4.00	0.90	10.0	45.00	0.55	2	30.0	3.0	C	0	•	0.0010-0.0030
EC-A2 007-010/02C4M45	0.70	4.00	1.00	2.0	45.00	0.65	2	30.0	3.0	C	0	•	0.0010-0.0030
EC-A2 007-010/08C4M45	0.70	4.00	1.00	8.0	45.00	0.65	2	30.0	3.0	C	0	•	0.0010-0.0030
EC-A2 008-012/04C4M45	0.80	4.00	1.20	4.0	45.00	0.75	2	30.0	3.0	C	0	•	0.0020-0.0040
EC-A2 008-012/06C4M45	0.80	4.00	1.20	6.0	45.00	0.75	2	30.0	3.0	C	0	•	0.0020-0.0040
EC-A2 008-012/08C4M45	0.80	4.00	1.20	8.0	45.00	0.75	2	30.0	3.0	C	0	•	0.0020-0.0040
EC-A2 008-012/10C4M45	0.80	4.00	1.20	10.0	45.00	0.75	2	30.0	3.0	C	0	•	0.0020-0.0040
EC-A2 009-0135/06C4M45	0.90	4.00	1.35	6.0	45.00	0.85	2	30.0	3.0	C	0	•	0.0030-0.0050
EC-A2 009-0135/10C4M45	0.90	4.00	1.35	10.0	45.00	0.85	2	30.0	3.0	C	0	•	0.0030-0.0050
EC-A2 009-0135/15C4M50	0.90	4.00	1.35	15.0	50.00	0.85	2	30.0	3.0	C	0	•	0.0030-0.0050
EC-A2 010-015/04C4M45	1.00	4.00	1.50	4.0	45.00	0.97	2	30.0	3.0	C	0	•	0.0040-0.0060
EC-A2 010-015/06C4M45	1.00	4.00	1.50	6.0	45.00	0.97	2	30.0	3.0	C	0	•	0.0040-0.0060
EC-A2 010-015/08C4M45	1.00	4.00	1.50	8.0	45.00	0.95	2	30.0	3.0	C	0	•	0.0040-0.0060
EC-A2 010-015/10C4M45	1.00	4.00	1.50	10.0	45.00	0.95	2	30.0	3.0	C	0	•	0.0040-0.0060
EC-A2 010-015/12C4M45	1.00	4.00	1.50	12.0	45.00	0.93	2	30.0	3.0	C	0	•	0.0040-0.0060
EC-A2 010-015/16C4M50	1.00	4.00	1.50	16.0	50.00	0.93	2	30.0	3.0	C	0	•	0.0040-0.0060
EC-A2 010-015/20C4M55	1.00	4.00	1.50	20.0	55.00	0.93	2	30.0	3.0	C	0	•	0.0040-0.0060
EC-A2 012-018/06C4M45	1.20	4.00	1.80	6.0	45.00	1.17	2	30.0	3.0	C	0	•	0.0040-0.0075
EC-A2 012-018/08C4M45	1.20	4.00	1.80	8.0	45.00	1.15	2	30.0	3.0	C	0	•	0.0040-0.0075
EC-A2 012-018/10C4M45	1.20	4.00	1.80	10.0	45.00	1.15	2	30.0	3.0	C	0	•	0.0040-0.0075
EC-A2 012-018/16C4M50	1.20	4.00	1.80	16.0	50.00	1.13	2	30.0	3.0	C	0	•	0.0040-0.0075
EC-A2 014-021/06C4M45	1.40	4.00	2.10	6.0	45.00	1.35	2	30.0	3.0	C	0	•	0.0040-0.0080
EC-A2 014-021/08C4M45	1.40	4.00	2.10	8.0	45.00	1.35	2	30.0	3.0	C	0	•	0.0040-0.0080
EC-A2 014-021/10C4M45	1.40	4.00	2.10	10.0	45.00	1.35	2	30.0	3.0	C	0	•	0.0040-0.0080
EC-A2 015-023/06C4M45	1.50	4.00	2.30	6.0	45.00	1.47	2	30.0	3.0	C	0	•	0.0050-0.0100
EC-A2 015-023/08C4M45	1.50	4.00	2.30	8.0	45.00	1.45	2	30.0	3.0	C	0	•	0.0050-0.0100
EC-A2 015-023/10C4M45	1.50	4.00	2.30	10.0	45.00	1.45	2	30.0	3.0	C	0	•	0.0050-0.0100
EC-A2 015-023/12C4M45	1.50	4.00	2.30	12.0	45.00	1.41	2	30.0	3.0	C	0	•	0.0050-0.0100
EC-A2 015-023/14C4M50	1.50	4.00	2.30	14.0	50.00	1.41	2	30.0	3.0	C	0	•	0.0050-0.0100
EC-A2 015-023/16C4M50	1.50	4.00	2.30	16.0	50.00	1.41	2	30.0	3.0	C	0	•	0.0050-0.0100
EC-A2 015-023/20C4M55	1.50	4.00	2.30	20.0	55.00	1.41	2	30.0	3.0	C	0	•	0.0050-0.0100
EC-A2 016-024/06C4M45	1.60	4.00	2.40	6.0	45.00	1.57	2	30.0	3.0	C	0	•	0.0050-0.0100
EC-A2 016-024/08C4M45	1.60	4.00	2.40	8.0	45.00	1.55	2	30.0	3.0	C	0	•	0.0050-0.0100
EC-A2 016-024/10C4M45	1.60	4.00	2.40	10.0	45.00	1.55	2	30.0	3.0	C	0	•	0.0050-0.0100
EC-A2 016-024/18C4M55	1.60	4.00	2.40	18.0	55.00	1.53	2	30.0	3.0	C	0	•	0.0050-0.0100
EC-A2 016-024/26C4M60	1.60	4.00	2.40	26.0	60.00	1.53	2	30.0	3.0	C	0	•	0.0050-0.0100
EC-A2 018-027/06C4M45	1.80	4.00	2.70	6.0	45.00	1.77	2	30.0	3.0	C	0	•	0.0060-0.0100
EC-A2 018-027/08C4M45	1.80	4.00	2.70	8.0	45.00	1.75	2	30.0	3.0	C	0	•	0.0060-0.0100
EC-A2 018-027/10C4M45	1.80	4.00	2.70	10.0	45.00	1.75	2	30.0	3.0	C	0	•	0.0060-0.0100
EC-A2 018-027/12C4M45	1.80	4.00	2.70	12.0	45.00	1.73	2	30.0	3.0	C	0	•	0.0060-0.0100
EC-A2 018-027/14C4M50	1.80	4.00	2.70	14.0	50.00	1.73	2	30.0	3.0	C	0	•	0.0060-0.0100
EC-A2 020-030/06C4M45	2.00	4.00	3.00	6.0	45.00	1.97	2	30.0	3.0	C	0	•	0.0080-0.0150

• The DC tolerance is: 0 - -0.015 mm • For user guide, see pages 1156-1159

(1) Number of flutes

(2) Maximum ramping angle

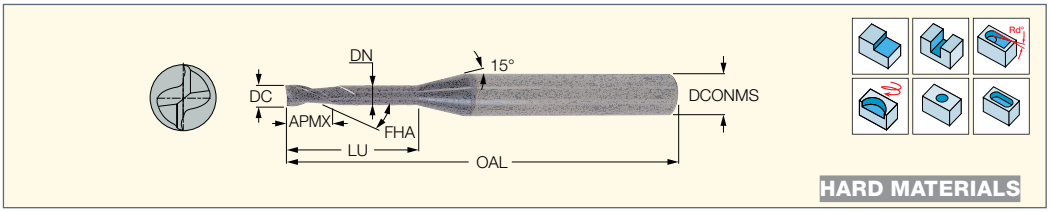
(3) C-Cylindrical

(4) 0 - Without coolant supply, 1 - With coolant supply

SOLIDMILL PREMIUM LINE

EC-A2-M (rib processing)

2 Flute, 30° Helix Solid Carbide Endmills for Rib Processing on Hard Materials up to 55 HRC



M E T R I C

Designation	Dimensions											IC903	Recommended Machining Data
	DC	DCONMS	APMX	LU	OAL	DN	NOF(1)	FHA	RMPX°(2)	Shank(3)	CSP(4)		f_z (mm/t)
EC-A2 020-030/08C4M45	2.00	4.00	3.00	8.0	45.00	1.95	2	30.0	3.0	C	0	•	0.0080-0.0150
EC-A2 020-030/10C4M45	2.00	4.00	3.00	10.0	45.00	1.95	2	30.0	3.0	C	0	•	0.0080-0.0150
EC-A2 020-030/12C4M45	2.00	4.00	3.00	12.0	45.00	1.93	2	30.0	3.0	C	0	•	0.0080-0.0150
EC-A2 020-030/14C4M50	2.00	4.00	3.00	14.0	50.00	1.93	2	30.0	3.0	C	0	•	0.0080-0.0150
EC-A2 020-030/16C4M50	2.00	4.00	3.00	16.0	50.00	1.91	2	30.0	3.0	C	0	•	0.0080-0.0150
EC-A2 020-030/18C4M55	2.00	4.00	3.00	18.0	55.00	1.91	2	30.0	3.0	C	0	•	0.0080-0.0150
EC-A2 020-030/20C4M55	2.00	4.00	3.00	20.0	55.00	1.89	2	30.0	3.0	C	0	•	0.0080-0.0150
EC-A2 020-030/25C4M56	2.00	4.00	3.00	25.0	56.00	1.89	2	30.0	3.0	C	0	•	0.0080-0.0150
EC-A2 020-030/30C4M70	2.00	4.00	3.00	30.0	70.00	1.89	2	30.0	3.0	C	0	•	0.0080-0.0150
EC-A2 025-037/08C4M45	2.50	4.00	3.70	8.0	45.00	2.40	2	30.0	3.0	C	0	•	0.0090-0.0180
EC-A2 025-037/10C4M45	2.50	4.00	3.70	10.0	45.00	2.40	2	30.0	3.0	C	0	•	0.0090-0.0180
EC-A2 025-037/12C4M45	2.50	4.00	3.70	12.0	45.00	2.40	2	30.0	3.0	C	0	•	0.0090-0.0180
EC-A2 025-037/14C4M50	2.50	4.00	3.70	14.0	50.00	2.40	2	30.0	3.0	C	0	•	0.0090-0.0180
EC-A2 025-037/16C4M55	2.50	4.00	3.70	16.0	55.00	2.40	2	30.0	3.0	C	0	•	0.0090-0.0180
EC-A2 025-037/18C4M55	2.50	4.00	3.70	18.0	55.00	2.40	2	30.0	3.0	C	0	•	0.0090-0.0180
EC-A2 025-037/20C4M60	2.50	4.00	3.70	20.0	60.00	2.40	2	30.0	3.0	C	0	•	0.0090-0.0180
EC-A2 025-037/25C4M70	2.50	4.00	3.70	25.0	70.00	2.40	2	30.0	3.0	C	0	•	0.0090-0.0180
EC-A2 025-037/30C4M80	2.50	4.00	3.70	30.0	80.00	2.40	2	30.0	3.0	C	0	•	0.0090-0.0180
EC-A2 030-045/08C6M45	3.00	6.00	4.50	8.0	45.00	2.85	2	30.0	3.0	C	0	•	0.0100-0.0180
EC-A2 030-045/10C6M45	3.00	6.00	4.50	10.0	45.00	2.85	2	30.0	3.0	C	0	•	0.0100-0.0180
EC-A2 030-045/12C6M45	3.00	6.00	4.50	12.0	45.00	2.85	2	30.0	3.0	C	0	•	0.0100-0.0180
EC-A2 030-045/14C6M50	3.00	6.00	4.50	14.0	50.00	2.85	2	30.0	3.0	C	0	•	0.0100-0.0180
EC-A2 030-045/16C6M55	3.00	6.00	4.50	16.0	55.00	2.85	2	30.0	3.0	C	0	•	0.0100-0.0180
EC-A2 030-045/18C6M55	3.00	6.00	4.50	18.0	55.00	2.85	2	30.0	3.0	C	0	•	0.0100-0.0180
EC-A2 030-045/20C6M60	3.00	6.00	4.50	20.0	60.00	2.85	2	30.0	3.0	C	0	•	0.0100-0.0180
EC-A2 030-045/25C6M65	3.00	6.00	4.50	25.0	65.00	2.85	2	30.0	3.0	C	0	•	0.0100-0.0180
EC-A2 030-045/30C6M70	3.00	6.00	4.50	30.0	70.00	2.85	2	30.0	3.0	C	0	•	0.0100-0.0180
EC-A2 030-045/35C6M80	3.00	6.00	4.50	35.0	80.00	2.85	2	30.0	3.0	C	0	•	0.0100-0.0180
EC-A2 030-045/40C6M90	3.00	6.00	4.50	40.0	90.00	2.85	2	30.0	3.0	C	0	•	0.0100-0.0180
EC-A2 040-060/12C6M50	4.00	6.00	6.00	12.0	50.00	3.80	2	30.0	3.0	C	0	•	0.0100-0.0200
EC-A2 040-060/16C6M60	4.00	6.00	6.00	16.0	60.00	3.80	2	30.0	3.0	C	0	•	0.0100-0.0200
EC-A2 040-060/20C6M60	4.00	6.00	6.00	20.0	60.00	3.80	2	30.0	3.0	C	0	•	0.0100-0.0200
EC-A2 040-060/25C6M70	4.00	6.00	6.00	25.0	70.00	3.80	2	30.0	3.0	C	0	•	0.0100-0.0200
EC-A2 040-060/30C6M70	4.00	6.00	6.00	30.0	70.00	3.80	2	30.0	3.0	C	0	•	0.0100-0.0200
EC-A2 040-060/35C6M80	4.00	6.00	6.00	35.0	80.00	3.80	2	30.0	3.0	C	0	•	0.0100-0.0200
EC-A2 040-060/40C6M90	4.00	6.00	6.00	40.0	90.00	3.80	2	30.0	3.0	C	0	•	0.0100-0.0200
EC-A2 040-060/45C6M90	4.00	6.00	6.00	45.0	90.00	3.80	2	30.0	3.0	C	0	•	0.0100-0.0200
EC-A2 040-060/50C6M100	4.00	6.00	6.00	50.0	100.00	3.80	2	30.0	3.0	C	0	•	0.0100-0.0200
EC-A2 050-075/16C6M60	5.00	6.00	7.50	16.0	60.00	4.80	2	30.0	3.0	C	0	•	0.0100-0.0250
EC-A2 050-075/20C6M60	5.00	6.00	7.50	20.0	60.00	4.80	2	30.0	3.0	C	0	•	0.0100-0.0250
EC-A2 050-075/25C6M70	5.00	6.00	7.50	25.0	70.00	4.80	2	30.0	3.0	C	0	•	0.0100-0.0250
EC-A2 050-075/30C6M80	5.00	6.00	7.50	30.0	80.00	4.80	2	30.0	3.0	C	0	•	0.0100-0.0250
EC-A2 050-075/35C6M80	5.00	6.00	7.50	35.0	80.00	4.80	2	30.0	3.0	C	0	•	0.0100-0.0250
EC-A2 050-075/40C6M80	5.00	6.00	7.50	40.0	80.00	4.80	2	30.0	3.0	C	0	•	0.0100-0.0250
EC-A2 050-075/50C6M110	5.00	6.00	7.50	50.0	110.00	4.80	2	30.0	3.0	C	0	•	0.0100-0.0250
EC-A2 060-090/20C6M80	6.00	6.00	9.00	20.0	80.00	5.70	2	30.0	3.0	C	0	•	0.0150-0.0300
EC-A2 060-090/30C6M90	6.00	6.00	9.00	30.0	90.00	5.70	2	30.0	3.0	C	0	•	0.0150-0.0300
EC-A2 060-090/40C6M100	6.00	6.00	9.00	40.0	100.00	5.60	2	30.0	3.0	C	0	•	0.0150-0.0300
EC-A2 060-090/50C6M110	6.00	6.00	9.00	50.0	110.00	5.60	2	30.0	3.0	C	0	•	0.0150-0.0300

• The DC tolerance is: 0 - -0.015 mm • For user guide, see pages 1156-1159

(1) Number of flutes

(2) Maximum ramping angle

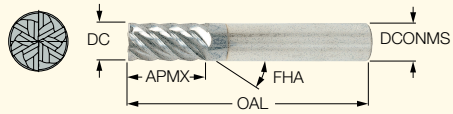
(3) C-Cylindrical

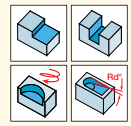
(4) 0 - Without coolant supply, 1 - With coolant supply

SOLIDMILL PREMIUM LINE

ECH-B-6

6 Flute, 45° Helix Medium Length Solid Carbide Endmills for Finishing Hard Materials up to 65 HRC





HARD MATERIALS

M E T R I C

Designation	Dimensions DC	DCONMS	APMX	OAL	NOF(1)	FHA	Shank(2)	CSP(3)	RMPX°(4)	Tough ↔ Hard IC900	IC903	Recommended Machining Data f_z (mm/t)
ECH060B16-6C06	6.00	6.00	16.00	57.00	6	45.0	C	0	5.0	●	●	0.03-0.07
ECH080B20-6C08	8.00	8.00	20.00	63.00	6	45.0	C	0	5.0	●	●	0.03-0.09
ECH100B22-6C10	10.00	10.00	22.00	72.00	6	45.0	C	0	5.0	●	●	0.03-0.10
ECH120B25-6C12	12.00	12.00	25.00	83.00	6	45.0	C	0	5.0	●	●	0.04-0.11

• Use IC903 for machining hardened steel up to 65 HRC • For user guide, see pages 1156-1159

(1) Number of flutes

(2) C-Cylindrical

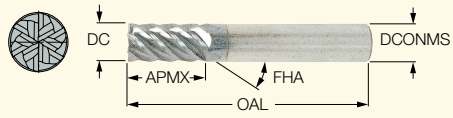
(3) 0 - Without coolant supply, 1 - With coolant supply

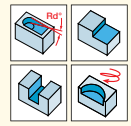
(4) Maximum ramping angle

SOLIDMILL PREMIUM LINE

ECHI-B6

6 Flute 45° Helix, Medium Length Solid Carbide Endmills for Finishing Hard Materials up to 65 HRC





HARD MATERIALS

I N C H

Designation	Dimensions DC	DCONMS	APMX	OAL	Shank(1)	NOF(2)	FHA	CSP(3)	RMPX°(4)	Tough ↔ Hard IC900	IC903	Recommended Machining Data f_z (inch/t)
ECHI-B6 250-625-C250	.250	.250	.625	2.500	C	6	45.0	0	5.0	●	●	.0010-.0030
ECHI-B6 313-750-C313	.313	.313	.750	2.500	C	6	45.0	0	5.0	●	●	.0010-.0040
ECHI-B6 375-875-C375	.375	.375	.875	3.000	C	6	45.0	0	5.0	●	●	.0010-.0040
ECHI-B6 437-1.0-C437	.437	.437	1.000	2.750	C	6	45.0	0	5.0	●		.0020-.0040
ECHI-B6 500-1.0-C500	.500	.500	1.000	3.000	C	6	45.0	0	5.0	●	●	.0020-.0040

• Use IC903 for machining hardened steel up to 65 HRC • For user guide, see pages 1156-1159

(1) C-Cylindrical

(2) Number of flutes

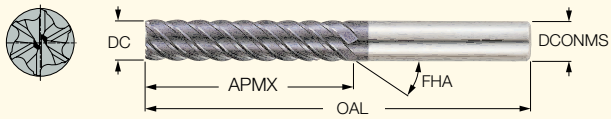
(3) 0 - Without coolant supply, 1 - With coolant supply

(4) Maximum ramping angle

SOLIDMILL PREMIUM LINE

EC-B6

6 Flute, 45° Helix Extra Long Solid Carbide Endmills for Finishing Hard Materials up to 65 HRC





HARD MATERIALS

M E T R I C

Designation	Dimensions DC	DCONMS	APMX	OAL	NOF(1)	FHA	Shank(2)	CSP(3)	IC903	Recommended Machining Data f_z (mm/t)
EC-B6 060-026C06-70	6.00	6.00	26.00	70.00	6	45.0	C	0	●	0.03-0.07
EC-B6 080-036C08-90	8.00	8.00	36.00	90.00	6	45.0	C	0	●	0.03-0.09
EC-B6 100-46C10-100	10.00	10.00	46.00	100.00	6	45.0	C	0	●	0.03-0.10
EC-B6 120-56C12-110	12.00	12.00	56.00	110.00	6	45.0	C	0	●	0.04-0.11

• For user guide, see pages 1156-1159

(1) Number of flutes

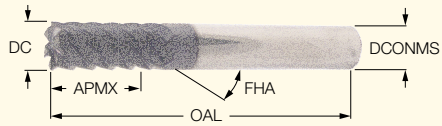
(2) C-Cylindrical

(3) 0 - Without coolant supply, 1 - With coolant supply

SOLIDMILL PREMIUM LINE

EC-D6

6 Flute, 50° Helix Medium Length Solid Carbide Endmills for Finishing of Hard Materials up to 65 HRC



HARD MATERIALS

M E T R I C

Designation	Dimensions DC	DCONMS	APMX	OAL	NOF(1)	FHA	Shank(2)	RMPX°(3)	CSP(4)	IC903	Recommended Machining Data f_z (mm/t)
EC-D6 06-13C06H57	6.00	6.00	13.00	57.00	6	50.0	C	5.0	0	●	0.03-0.07
EC-D6 08-20C08H63	8.00	8.00	20.00	63.00	6	50.0	C	5.0	0	●	0.03-0.09
EC-D6 10-22C10H72	10.00	10.00	22.00	72.00	6	50.0	C	5.0	0	●	0.03-0.10
EC-D6 12-25C12H83	12.00	12.00	25.00	83.00	6	50.0	C	5.0	0	●	0.04-0.11

• For user guide, see pages 1156-1159

(1) Number of flutes

(2) C-Cylindrical

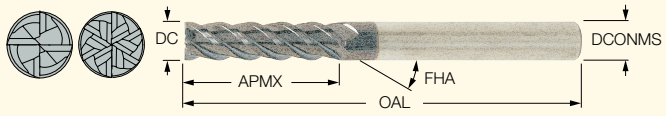
(3) Maximum ramping angle

(4) 0 - Without coolant supply, 1 - With coolant supply

SOLIDMILL PREMIUM LINE

ECL-B-4/6

4 & 6 Flute, 45° Helix Long Solid Carbide Endmills



M E T R I C

Designation	Dimensions DC	DCONMS	APMX	OAL	NOF(2)	CSP(3)	FHA	Shank(4)	IC900	Recommended Machining Data f_z (mm/t)
ECL060B24-4C06	6.00	6.00	24.00	65.00	4	0	45.0	C	●	0.03-0.07
ECL080B32-4C08	8.00	8.00	32.00	79.00	4	0	45.0	C	●	0.03-0.09
ECL100B40-4C10	10.00	10.00	40.00	100.00	4	0	45.0	C	●	0.03-0.10
ECL120B48-4C12	12.00	12.00	48.00	100.00	4	0	45.0	C	●	0.04-0.11

• Smooth cutting in extra long depth • For user guide, see pages 1156-1159

(1) Cannot be used for plunging application

(2) Number of flutes

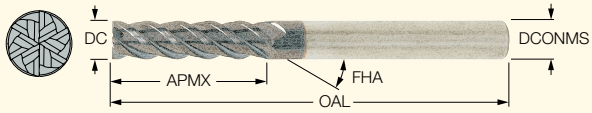
(3) 0 - Without coolant supply, 1 - With coolant supply

(4) C-Cylindrical

SOLIDMILL PREMIUM LINE

ECLI-B-6

6 Flute, 45° Helix, Long Solid Carbide Endmills



I N C H

Designation	Dimensions DC	DCONMS	APMX	OAL	Shank(1)	NOF(2)	FHA	CSP(3)	IC900	Recommended Machining Data f_z (inch/t)
ECLI-B-6 250-1.0-C250	.250	.250	1.0000	3.000	C	6	45.0	0	●	.0010-.0030
ECLI-B-6 313-1.25-C313	.313	.313	1.2500	3.000	C	6	45.0	0	●	.0010-.0040
ECLI-B-6 375-1.5-C375	.375	.375	1.5000	4.000	C	6	45.0	0	●	.0010-.0040
ECLI-B-6 500-2.0-C500	.500	.500	2.0000	4.500	C	6	45.0	0	●	.0020-.0040

• Smooth cutting in long depth of cut. • For user guide, see pages 1156-1159

(1) C-Cylindrical

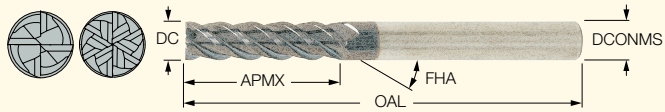
(2) Number of flutes

(3) 0 - Without coolant supply, 1 - With coolant supply

SOLIDMILL PREMIUM LINE

ECXL-B-4/6

4 & 6 Flute, 45° Helix Extra Long Solid Carbide Endmills



M E T R I C

Designation	Dimensions DC	DCONMS	APMX	OAL	NOF[2]	FHA	CSP[3]	Shank[4]	IC900	Recommended Machining Data f_z (mm/t)
ECXL100B60-4C10	10.00	10.00	60.00	112.00	4	45.0	0	C	●	0.03-0.10
ECXL120B72-4C12	12.00	12.00	72.00	150.00	4	45.0	0	C	●	0.04-0.11

• Smooth cutting in extra long depth. • For user guide, see pages 1156-1159

[1] Cannot be used for plunging application

[2] Number of flutes

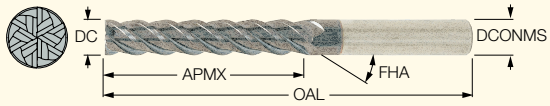
[3] 0 - Without coolant supply, 1 - With coolant supply

[4] C-Cylindrical

SOLIDMILL PREMIUM LINE

ECXI-B-6

6 Flute 45° Helix, Center Cutting Extra Long Solid Carbide Endmills



I N C H

Designation	Dimensions DC	DCONMS	APMX	OAL	Shank[1]	NOF[2]	FHA	CSP[3]	IC900	Recommended Machining Data f_z (inch/t)
ECXI-B-6 250-1.5-C250	.250	.250	1.5000	4.000	C	6	45.0	0	●	.0010-.0030
ECXI-B-6 313-1.88-C313	.313	.313	1.8800	4.000	C	6	45.0	0	●	.0010-.0040
ECXI-B-6 500-3.0-C500	.500	.500	3.0000	6.000	C	6	45.0	0	●	.0020-.0040

• Smooth cutting in extra long depth. • For user guide, see pages 1156-1159

[1] C-Cylindrical

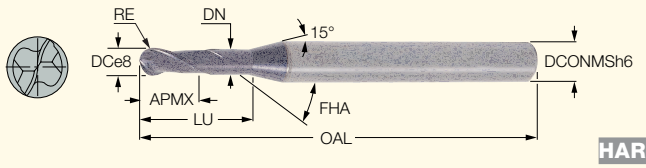
[2] Number of flutes

[3] 0 - Without coolant supply, 1 - With coolant supply

SOLIDMILL PREMIUM LINE

EB-A2 (rib processing)

2 Flute, 30° Helix Rib Processing Solid Carbide Ball Nose Endmills for Materials up to 55 HRC



HARD MATERIALS

M E T R I C

Designation	Dimensions												IC903	Recommended Machining Data
	DC	DCONMS	APMX	OAL	LU	DN	NOF(1)	CSP(2)	FHA	Shank(3)	RE	RETOL(4)		f_z (mm/t)
EB-A2 004-006/01C4M45	0.40	4.00	0.60	45.00	1.0	0.36	2	0	30.0	C	0.20	0.010	•	0.0030-0.0060
EB-A2 004-006/02C4M45	0.40	4.00	0.60	45.00	2.0	0.36	2	0	30.0	C	0.20	0.010	•	0.0030-0.0060
EB-A2 004-006/03C4M45	0.40	4.00	0.60	45.00	3.0	0.36	2	0	30.0	C	0.20	0.010	•	0.0030-0.0060
EB-A2 005-007/02C4M45	0.50	4.00	0.70	45.00	2.0	0.45	2	0	30.0	C	0.25	0.010	•	0.0030-0.0060
EB-A2 005-007/04C4M45	0.50	4.00	0.70	45.00	4.0	0.45	2	0	30.0	C	0.25	0.010	•	0.0030-0.0060
EB-A2 005-007/06C4M45	0.50	4.00	0.70	45.00	6.0	0.45	2	0	30.0	C	0.25	0.010	•	0.0030-0.0060
EB-A2 005-007/08C4M45	0.50	4.00	0.70	45.00	8.0	0.45	2	0	30.0	C	0.25	0.010	•	0.0030-0.0060
EB-A2 006-009/02C4M45	0.60	4.00	0.90	45.00	2.0	0.55	2	0	30.0	C	0.30	0.010	•	0.0040-0.0080
EB-A2 006-009/04C4M45	0.60	4.00	0.90	45.00	4.0	0.55	2	0	30.0	C	0.30	0.010	•	0.0040-0.0080
EB-A2 008-012/02C4M45	0.80	4.00	1.20	45.00	2.0	0.75	2	0	30.0	C	0.40	0.010	•	0.0040-0.0080
EB-A2 008-012/04C4M45	0.80	4.00	1.20	45.00	4.0	0.75	2	0	30.0	C	0.40	0.010	•	0.0040-0.0080
EB-A2 008-012/06C4M45	0.80	4.00	1.20	45.00	6.0	0.75	2	0	30.0	C	0.40	0.010	•	0.0040-0.0080
EB-A2 008-012/10C4M45	0.80	4.00	1.20	45.00	10.0	0.75	2	0	30.0	C	0.40	0.010	•	0.0040-0.0080
EB-A2 010-015/03C4M45	1.00	4.00	1.50	45.00	3.0	0.97	2	0	30.0	C	0.50	0.010	•	0.0050-0.0100
EB-A2 010-015/04C4M45	1.00	4.00	1.50	45.00	4.0	0.97	2	0	30.0	C	0.50	0.010	•	0.0050-0.0100
EB-A2 010-015/05C4M45	1.00	4.00	1.50	45.00	5.0	0.97	2	0	30.0	C	0.50	0.010	•	0.0050-0.0100
EB-A2 010-015/06C4M45	1.00	4.00	1.50	45.00	6.0	0.97	2	0	30.0	C	0.50	0.010	•	0.0050-0.0100
EB-A2 010-015/07C4M45	1.00	4.00	1.50	45.00	7.0	0.95	2	0	30.0	C	0.50	0.010	•	0.0050-0.0100
EB-A2 010-015/08C4M45	1.00	4.00	1.50	45.00	8.0	0.95	2	0	30.0	C	0.50	0.010	•	0.0050-0.0100
EB-A2 010-015/10C4M45	1.00	4.00	1.50	45.00	10.0	0.95	2	0	30.0	C	0.50	0.010	•	0.0050-0.0100
EB-A2 010-015/12C4M45	1.00	4.00	1.50	45.00	12.0	0.93	2	0	30.0	C	0.50	0.010	•	0.0050-0.0100
EB-A2 010-015/16C4M50	1.00	4.00	1.50	50.00	16.0	0.93	2	0	30.0	C	0.50	0.010	•	0.0050-0.0100
EB-A2 010-015/20C4M55	1.00	4.00	1.50	55.00	20.0	0.93	2	0	30.0	C	0.50	0.010	•	0.0050-0.0100
EB-A2 012-018/08C4M45	1.20	4.00	1.80	45.00	8.0	1.17	2	0	30.0	C	0.60	0.010	•	0.0060-0.0150
EB-A2 012-018/12C4M45	1.20	4.00	1.80	45.00	12.0	1.13	2	0	30.0	C	0.60	0.010	•	0.0060-0.0150
EB-A2 014-021/08C4M45	1.40	4.00	2.10	45.00	8.0	1.35	2	0	30.0	C	0.70	0.010	•	0.0060-0.0150
EB-A2 014-021/16C4M50	1.40	4.00	2.10	50.00	16.0	1.31	2	0	30.0	C	0.70	0.010	•	0.0060-0.0150
EB-A2 015-015/03C04M50	1.50	4.00	1.50	50.00	3.0	1.47	2	0	30.0	C	0.75	0.010	•	0.0070-0.0160
EB-A2 015-023/06C4M45	1.50	4.00	2.30	45.00	6.0	1.47	2	0	30.0	C	0.75	0.010	•	0.0070-0.0160
EB-A2 015-023/08C4M45	1.50	4.00	2.30	45.00	8.0	1.45	2	0	30.0	C	0.75	0.010	•	0.0070-0.0160
EB-A2 015-023/10C4M45	1.50	4.00	2.30	45.00	10.0	1.45	2	0	30.0	C	0.75	0.010	•	0.0070-0.0160
EB-A2 015-023/12C4M45	1.50	4.00	2.30	45.00	12.0	1.43	2	0	30.0	C	0.75	0.010	•	0.0070-0.0160
EB-A2 015-023/20C4M55	1.50	4.00	2.30	55.00	20.0	1.39	2	0	30.0	C	0.75	0.010	•	0.0070-0.0160
EB-A2 016-024/08C4M45	1.60	4.00	2.40	45.00	8.0	1.55	2	0	30.0	C	0.80	0.010	•	0.0080-0.0170
EB-A2 016-024/12C4M45	1.60	4.00	2.40	45.00	12.0	1.53	2	0	30.0	C	0.80	0.010	•	0.0080-0.0170
EB-A2 018-027/08C4M45	1.80	4.00	2.70	45.00	8.0	1.75	2	0	30.0	C	0.90	0.010	•	0.0080-0.0180
EB-A2 018-027/12C4M45	1.80	4.00	2.70	45.00	12.0	1.73	2	0	30.0	C	0.90	0.010	•	0.0080-0.0180
EB-A2 018-027/16C4M50	1.80	4.00	2.70	50.00	16.0	1.71	2	0	30.0	C	0.90	0.010	•	0.0080-0.0180
EB-A2 020-030/04C4M45	2.00	4.00	3.00	45.00	4.0	1.97	2	0	30.0	C	1.00	0.010	•	0.0100-0.0210
EB-A2 020-030/06C4M45	2.00	4.00	3.00	45.00	6.0	1.97	2	0	30.0	C	1.00	0.010	•	0.0100-0.0210
EB-A2 020-030/10C4M45	2.00	4.00	3.00	45.00	10.0	1.93	2	0	30.0	C	1.00	0.010	•	0.0100-0.0210
EB-A2 020-030/12C4M50	2.00	4.00	3.00	50.00	12.0	1.93	2	0	30.0	C	1.00	0.010	•	0.0100-0.0210
EB-A2 020-030/14C4M50	2.00	4.00	3.00	50.00	14.0	1.93	2	0	30.0	C	1.00	0.010	•	0.0100-0.0210
EB-A2 020-030/16C4M50	2.00	4.00	3.00	50.00	16.0	1.91	2	0	30.0	C	1.00	0.010	•	0.0100-0.0210
EB-A2 020-030/20C4M55	2.00	4.00	3.00	55.00	20.0	1.89	2	0	30.0	C	1.00	0.010	•	0.0100-0.0210
EB-A2 020-030/25C4M60	2.00	4.00	3.00	60.00	25.0	1.89	2	0	30.0	C	1.00	0.010	•	0.0100-0.0210
EB-A2 020-030/30C4M70	2.00	4.00	3.00	70.00	30.0	1.89	2	0	30.0	C	1.00	0.010	•	0.0100-0.0210
EB-A2 030-045/08C6M50	3.00	6.00	4.50	50.00	8.0	2.85	2	0	30.0	C	1.50	0.010	•	0.0120-0.0300
EB-A2 030-045/10C6M50	3.00	6.00	4.50	50.00	10.0	2.85	2	0	30.0	C	1.50	0.010	•	0.0120-0.0300
EB-A2 030-045/12C6M50	3.00	6.00	4.50	50.00	12.0	2.85	2	0	30.0	C	1.50	0.010	•	0.0120-0.0300
EB-A2 030-045/16C6M58	3.00	6.00	4.50	58.00	16.0	2.85	2	0	30.0	C	1.50	0.010	•	0.0120-0.0300
EB-A2 030-045/20C6M60	3.00	6.00	4.50	60.00	20.0	2.85	2	0	30.0	C	1.50	0.010	•	0.0120-0.0300
EB-A2 030-045/25C6M65	3.00	6.00	4.50	65.00	25.0	2.85	2	0	30.0	C	1.50	0.010	•	0.0120-0.0300

• For user guide, see pages 1156-1159

(1) Number of flutes

(2) 0 - Without coolant supply, 1 - With coolant supply

(3) C-Cylindrical

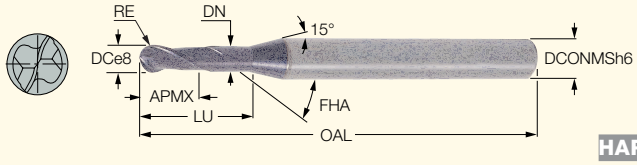
(4) Corner radius tolerance (+/-)

Continued

SOLIDMILL PREMIUM LINE

EB-A2 (rib processing)

2 Flute, 30° Helix Rib Processing Solid Carbide Ball Nose Endmills for Materials up to 55 HRC



HARD MATERIALS

M E T R I C

Designation	Dimensions DC	DCONMS	APMX	OAL	LU	DN	NOF(1)	CSP(2)	FHA	Shank(3)	RE	RETOL(4)	IC903	Recommended Machining Data f_z (mm/t)
EB-A2 030-045/30C6M70	3.00	6.00	4.50	70.00	30.0	2.85	2	0	30.0	C	1.50	0.010	•	0.0120-0.0300
EB-A2 030-045/35C6M80	3.00	6.00	4.50	80.00	35.0	2.85	2	0	30.0	C	1.50	0.010	•	0.0120-0.0300
EB-A2 040-060/10C6M60	4.00	6.00	6.00	60.00	10.0	3.80	2	0	30.0	C	2.00	0.010	•	0.0150-0.0350
EB-A2 040-060/12C6M60	4.00	6.00	6.00	60.00	12.0	3.80	2	0	30.0	C	2.00	0.010	•	0.0150-0.0350
EB-A2 040-060/16C6M60	4.00	6.00	6.00	60.00	16.0	3.80	2	0	30.0	C	2.00	0.010	•	0.0150-0.0350
EB-A2 040-060/20C6M65	4.00	6.00	6.00	65.00	20.0	3.80	2	0	30.0	C	2.00	0.010	•	0.0150-0.0350
EB-A2 040-060/25C6M70	4.00	6.00	6.00	70.00	25.0	3.80	2	0	30.0	C	2.00	0.010	•	0.0150-0.0350
EB-A2 040-060/30C6M70	4.00	6.00	6.00	70.00	30.0	3.80	2	0	30.0	C	2.00	0.010	•	0.0150-0.0350
EB-A2 040-060/35C6M80	4.00	6.00	6.00	80.00	35.0	3.80	2	0	30.0	C	2.00	0.010	•	0.0150-0.0350
EB-A2 040-060/45C6M90	4.00	6.00	6.00	90.00	45.0	3.80	2	0	30.0	C	2.00	0.010	•	0.0150-0.0350
EB-A2 050-075/20C6M60	5.00	6.00	7.50	60.00	20.0	4.80	2	0	30.0	C	2.50	0.010	•	0.0180-0.0440
EB-A2 050-075/25C6M70	5.00	6.00	7.50	70.00	25.0	4.80	2	0	30.0	C	2.50	0.010	•	0.0180-0.0440
EB-A2 050-075/35C6M80	5.00	6.00	7.50	80.00	35.0	4.80	2	0	30.0	C	2.50	0.010	•	0.0180-0.0440
EB-A2 060-090/20C6M80	6.00	6.00	9.00	80.00	20.0	5.80	2	0	30.0	C	3.00	0.010	•	0.0200-0.0500
EB-A2 060-090/30C6M90	6.00	6.00	9.00	90.00	30.0	5.80	2	0	30.0	C	3.00	0.010	•	0.0200-0.0500
EB-A2 060-090/40C6M100	6.00	6.00	9.00	100.00	40.0	5.80	2	0	30.0	C	3.00	0.010	•	0.0200-0.0500

• For user guide, see pages 1156-1159

(1) Number of flutes

(2) 0 - Without coolant supply, 1 - With coolant supply

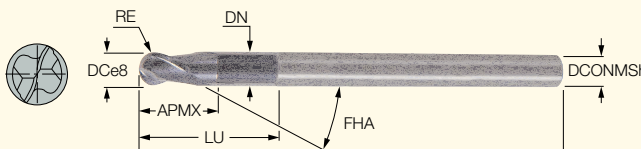
(3) C-Cylindrical

(4) Corner radius tolerance (+/-)

SOLIDMILL PREMIUM LINE

EB-A2 (precision stub cut)

2 Flute, 30° Helix Stub Cut Length High Precision Ball Nose Endmills with Relieved Necks for Materials up to 65 HRC



HARD MATERIALS

M E T R I C

Designation	Dimensions DC	DCONMS	APMX	LU	OAL	DN	NOF(1)	CSP(2)	FHA	Shank(3)	RE	RETOLL(4)	RETOLU(5)	IC903
EB-A2 01-01/02C04M50	1.00	4.00	1.00	2.20	50.00	0.95	2	0	30.0	C	0.50	0.000	0.004	•
EB-A2 01-01/02C06M50	1.00	6.00	1.00	2.20	50.00	0.95	2	0	30.0	C	0.50	-0.010	0.010	•
EB-A2 012-012/02C04M50	1.20	4.00	1.20	2.60	50.00	1.10	2	0	30.0	C	0.60	-0.010	0.010	•
EB-A2 02-02/04C06M50	2.00	6.00	2.00	4.00	50.00	1.90	2	0	30.0	C	1.00	-0.010	0.010	•
EB-A2 025-025/05C06M60	2.50	6.00	2.50	5.00	60.00	2.40	2	0	30.0	C	1.25	0.000	0.006	•
EB-A2 03-03/06C06M60	3.00	6.00	3.00	6.00	60.00	2.90	2	0	30.0	C	1.50	-0.010	0.010	•
EB-A2 04-04/08C06M70	4.00	6.00	4.00	8.00	70.00	3.90	2	0	30.0	C	2.00	-0.010	0.010	•
EB-A2 05-05/10C06M80	5.00	6.00	5.00	10.00	80.00	4.90	2	0	30.0	C	2.50	-0.010	0.010	•
EB-A2 06-06/12C06M90	6.00	6.00	6.00	12.00	90.00	5.90	2	0	30.0	C	3.00	-0.010	0.010	•
EB-A2 07-07/14C08M90	7.00	8.00	7.00	14.00	90.00	6.90	2	0	30.0	C	3.50	-0.010	0.010	•
EB-A2 08-08/16C08M100	8.00	8.00	8.00	16.00	100.00	7.90	2	0	30.0	C	4.00	-0.010	0.010	•
EB-A2 09-09/18C10M100	9.00	10.00	9.00	18.00	100.00	8.90	2	0	30.0	C	4.50	-0.010	0.010	•
EB-A2 10-10/20C10M100	10.00	10.00	10.00	20.00	100.00	9.90	2	0	30.0	C	5.00	-0.010	0.010	•
EB-A2 12-12/24C12M110	12.00	12.00	12.00	24.00	110.00	11.90	2	0	30.0	C	6.00	-0.012	0.012	•

• For user guide, see pages 1156-1159

(1) Number of flutes

(2) 0 - Without coolant supply, 1 - With coolant supply

(3) C-Cylindrical

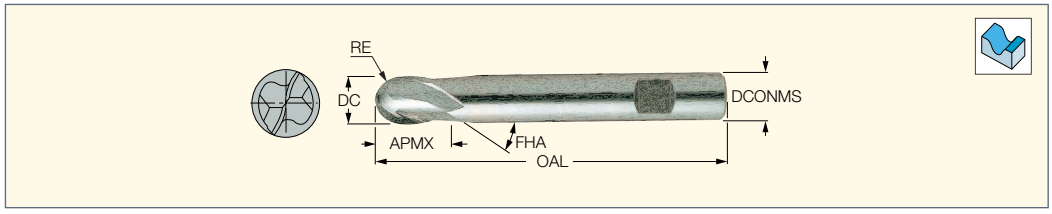
(4) Corner radius tolerance lower

(5) Corner radius tolerance upper

SOLIDMILL TEC LINE

EB-A2 (economical)

Economical Type 2 Flute, 30° Helix Ball Nose Solid Carbide Endmills



M E T R I C

Designation	Dimensions DC	DCONMS	APMX	OAL	NOF(1)	FHA	Shank(2)	CSP(3)	RE	Tough ↔ Hard IC08	IC900
EB-A2 02-06C03E38	2.00	3.00	6.00	38.00	2	30.0	C	0	1.00	•	•
EB-A2 02-04C06E48	2.00	6.00	4.00	48.00	2	30.0	C	0	1.00	•	•
EB-A2 025-04C06E48	2.50	6.00	4.00	48.00	2	30.0	C	0	1.25	•	•
EB-A2 03-04C06E48	3.00	6.00	4.00	48.00	2	30.0	C	0	1.50	•	•
EB-A2 04-06C06E50	4.00	6.00	6.00	50.00	2	30.0	C	0	2.00	•	•
EB-A2 05-07C06E51	5.00	6.00	7.00	51.00	2	30.0	C	0	2.50	•	
EB-A2 06-07C06E51	6.00	6.00	7.00	51.00	2	30.0	C	0	3.00	•	•
EB-A2 08-09C08E63	8.00	8.00	9.00	63.00	2	30.0	C	0	4.00	•	•
EB-A2 10-10C10E66	10.00	10.00	10.00	66.00	2	30.0	C	0	5.00	•	•
EB-A2 12-14C12E71	12.00	12.00	14.00	71.00	2	30.0	C	0	6.00	•	•

• For user guide, see pages 1156-1159

(1) Number of flutes

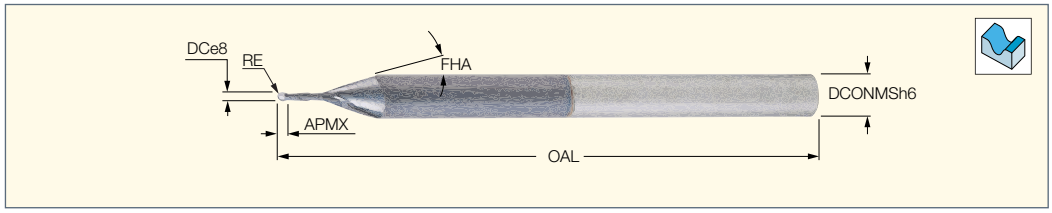
(2) C-Cylindrical

(3) 0 - Without coolant supply, 1 - With coolant supply

SOLIDMILL PREMIUM LINE

EBM-A-2

2 Flute, 30° Helix Medium Length Solid Carbide Miniature Ball Nose Endmills



M E T R I C

Designation	Dimensions DC	DCONMS	APMX	OAL	NOF(1)	FHA	Shank(2)	CSP(3)	RE	RETOLL(4)	RETOLU(5)	Tough ↔ Hard IC08	IC900
EBM004A008-2C03	0.40	3.00	0.80	38.00	2	30.0	C	0	0.20	0.000	0.004	•	•
EBM005A010-2C03	0.50	3.00	1.00	38.00	2	30.0	C	0	0.25	0.000	0.004	•	•
EBM006A012-2C03	0.60	3.00	1.20	38.00	2	30.0	C	0	0.30	0.000	0.004	•	•
EBM007A014-2C03	0.70	3.00	1.40	38.00	2	30.0	C	0	0.35	0.000	0.004	•	
EBM008A016-2C03	0.80	3.00	1.60	38.00	2	30.0	C	0	0.40	0.000	0.004	•	•
EBM010A025-2C04	1.00	4.00	2.50	50.00	2	30.0	C	0	0.50	0.000	0.004	•	•
EBM012A030-2C04	1.20	4.00	3.00	50.00	2	30.0	C	0	0.60	0.000	0.004	•	•
EBM016A040-2C04	1.60	4.00	4.00	50.00	2	30.0	C	0	0.80	0.000	0.004	•	•
EBM020A060-2C04	2.00	4.00	6.00	50.00	2	30.0	C	0	1.00	0.000	0.004	•	•

• Short and stable design for profiling (roughing). • For user guide, see pages 1156-1159

(1) Number of flutes

(2) C-Cylindrical

(3) 0 - Without coolant supply, 1 - With coolant supply

(4) Corner radius tolerance lower

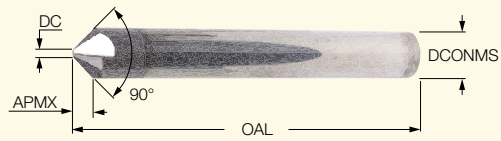
(5) Corner radius tolerance upper

DC	Tolerance	
DC≤0.6	DC	0.000 -0.010
0.6<DC≤2	DC	0.000 -0.012

SOLIDMILL PREMIUM LINE

ECF../45

45° Chamfering and Countersinking Solid Carbide Endmills



M E T R I C

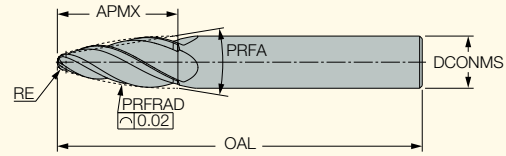
Designation	Dimensions DC	DCONMS	APMX	OAL	NOF(1)	Shank(2)	CSP(3)	IC900
ECF D-1.5/45-4C04	1.00	4.00	1.50	50.00	4	C	0	●
ECF D-2/45-4C06	2.00	6.00	2.00	57.00	4	C	0	●
ECF D-3/45-4C08	2.00	8.00	3.00	63.00	4	C	0	●
ECF D-4/45-4C10	2.00	10.00	4.00	72.00	4	C	0	●
ECF D-5/45-4C12	2.00	12.00	5.00	83.00	4	C	0	●

• For user guide, see pages 1156-1159
(1) Number of flutes
(2) C-Cylindrical
(3) 0 - Without coolant supply, 1 - With coolant supply

NEOBARREL PROFILE MILLING

EOB

Solid Carbide Oval-Shaped (Barrel) Endmills for 3D Profiling



M E T R I C

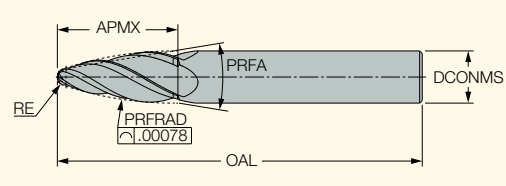
Designation	Dimensions DCONMS	RE	PRFRAD	APMX	PRFA	NOF(1)	OAL	CSP(2)	Shank(3)	Tough ↔ Hard IC08	IC902
EOB-R1.5R85A17/5-8C06-57	6.00	1.50	85.00	17.00	10.82	8	57.00	0	C		
EOB-R1R90A24/7-4C08-63	8.00	1.00	90.00	24.50	14.88	4	63.00	0	C		●
EOB-R2R90A20/7-4C08-63	8.00	2.00	90.00	21.50	12.18	4	63.00	0	C		●
EOB-AL-R2R85A20/9-4C10-72	10.00	2.00	85.00	21.00	18.68	4	72.00	0	C	●	
EOB-R2R85A24/8-4C10-72	10.00	2.00	85.00	24.50	15.46	4	72.00	0	C		●
EOB-R3R85A21/6-4C10-72	10.00	3.00	85.00	21.30	12.62	4	72.00	0	C		●
EOB-R2R80A27/9-4C12-83	12.00	2.00	80.00	27.10	18.38	4	83.00	0	C		●
EOB-AL-R3R85A24/8-4C12-83	12.00	3.00	85.00	25.00	16.12	4	83.00	0	C	●	
EOB-R3R80A24/8-4C12-83	12.00	3.00	80.00	24.50	15.98	4	83.00	0	C		●
EOB-R4R80A21/6-8C12-83	12.00	4.00	80.00	21.50	13.10	8	83.00	0	C		●
EOB-R4R80A21/7-4C12-83	12.00	4.00	80.00	21.50	13.10	4	83.00	0	C		●

• For user guide, see pages 1156, 1159-1164
(1) Number of flutes
(2) 0 - Without coolant supply, 1 - With coolant supply
(3) C-Cylindrical

NEOBARREL PROFILE MILLING

EOBI

Solid Carbide Oval-Shaped (Barrel) Endmills for 3D Profiling



I N C H

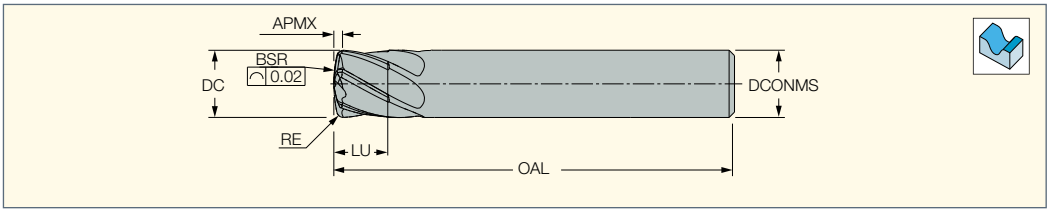
Designation	Dimensions PRFRAD	RE	APMX	PRFA	DCONMS	NOF(1)	OAL	Shank(2)	CSP(3)	IC902
EOBI-R.06R3.5A87/7-4C312	3.5000	.0600	.8700	13.60	.312	4	2.500	C	0	●
EOBI-R.08R3.38A92/7-4C375	3.3750	.0800	.9100	14.68	.375	4	3.000	C	0	●
EOBI-R.08R3.12A1.1/10-4C5	3.1250	.0800	1.1000	19.54	.500	4	3.000	C	0	●
EOBI-R.123R3.5A1./8-8C500	3.5000	.1230	1.0800	17.30	.500	8	3.500	C	0	●

• For user guide, see pages 1156, 1159-1164
(1) Number of flutes
(2) C-Cylindrical
(3) 0 - Without coolant supply, 1 - With coolant supply

NEOBARREL PROFILE MILLING

ELB

Solid Carbide Lens-Shaped (Barrel) Endmills for 3D Profiling



M E T R I C

Designation	Dimensions										IC902
	DC	BSR	RE	LU	APMX	DCONMS	NOF(1)	OAL	Shank(2)	CSP(3)	
ELB-R0.75R16A5-6C8-63	8.00	16.00	0.75	5.00	1.10	8.00	6	63.00	C	0	●
ELB-R1R20A7-6C10-72	10.00	20.00	1.00	7.00	1.43	10.00	6	72.00	C	0	●
ELB-R1R25A9-6C12-83	12.00	25.00	1.00	9.00	1.53	12.00	6	83.00	C	0	●

• For user guide, see pages 1156, 1159-1164

(1) Number of flutes

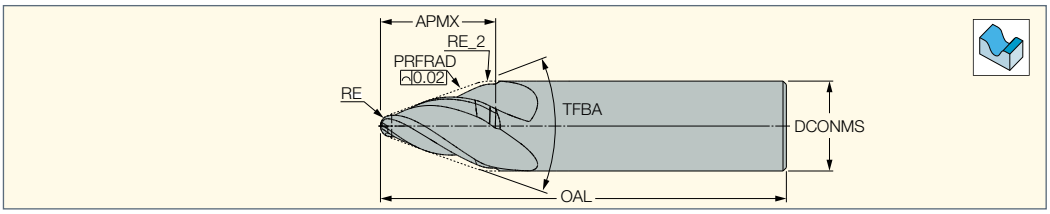
(2) C-Cylindrical

(3) 0 - Without coolant supply, 1 - With coolant supply

NEOBARREL PROFILE MILLING

ETB

Solid Carbide Taper-Shaped (Barrel) Endmills for 3D Profiling



M E T R I C

Designation	Dimensions										IC902
	PRFRAD	RE_2	RE	APMX	TFBA	DCONMS	NOF(1)	OAL	Shank(2)	CSP(3)	
ETB-R1R250A10/20-4C08-63	250.00	4.00	1.00	10.00	40.00	8.00	4	63.00	C	0	●
ETB-R2R250A11/20-4C10-72	250.00	5.00	2.00	11.00	40.00	10.00	4	72.00	C	0	●
ETB-R3R250A12/20-4C12-83	250.00	6.00	3.00	12.00	40.00	12.00	4	83.00	C	0	●

• For user guide, see pages 1156, 1159-1164

(1) Number of flutes

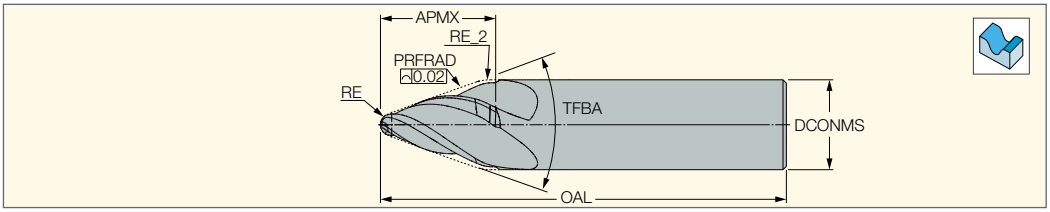
(2) C-Cylindrical

(3) 0 - Without coolant supply, 1 - With coolant supply

NEOBARREL PROFILE MILLING

ETBI

Solid Carbide Taper-Shaped (Barrel) Endmills for 3D Profiling



I N C H

Designation	Dimensions										IC902
	PRFRAD	RE_2	RE	APMX	TFBA	DCONMS	NOF(1)	OAL	Shank(2)	CSP(3)	
ETBI-R.06R10A35/20-4C312	10.0000	.1500	.0600	.3750	40.00	.312	4	2.500	C	0	●
ETBI-R.08R10A40/20-4C375	10.0000	.1900	.1200	.4300	40.00	.375	4	3.000	C	0	●
ETBI-R.123R10A50/20-4C500	10.0000	.2500	.1228	.5500	40.00	.500	4	3.000	C	0	●

• For user guide, see pages 1156, 1159-1164

(1) Number of flutes

(2) C-Cylindrical

(3) 0 - Without coolant supply, 1 - With coolant supply

Grade Priorities for Solid Carbide Endmills

Material Groups		ISO P		ISO M	ISO N	ISO S
		1 - 11	12 - 13	14	21 - 28	31 - 37
		Steel	Stainless Steel Ferritic & Martensitic	Stainless Steel Austenitic & Duplex (Ferritic-Austenitic)	Nonferrous	High Temp Alloys
Solid & MULTI-MASTER Endmills	Harder	IC702	IC702	IC902		IS6*
		IC902	IC902	IC903		IS902**
		IC903	IC903			IC903
		IC608	IC608	**IC608**		**IC900 (908)**
		**IC900 (908)**	**IC900 (908)**	IC900 (908)		
Roughing/ Semi-Finishing	Tougher				**IC08**	IC08
Coolant		N	Y	Y	Y	Y
Solid & MULTI-MASTER Endmills	Harder	**IC702** **IC902**	**IC702** **IC902**	IC902		**IC902** **IC903**
				IC608		
		IC903	IC903			IC900 (908)
		IC608	IC608			
		IC900 (908)	IC900 (908)	IC900 (908)		
						IC08
Finishing	Tougher				**IC08**	
Coolant		N	Y	Y	Y	Y

First choice
* SiAlON grade
** First choice for trochoidal milling



Machining Data for Solid Carbide and MULTI-MASTER Endmills (Metric)

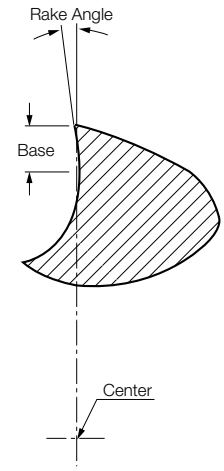
ISO	Material		Condition	Tensile Strength [N/mm²]	Hardness HB	Material No.	Cutting Speed (m/min)		
							IC900/ IC608	IC903	IC08
P	non-alloy steel and cast steel, free cutting steel	<0.25% C	annealed	420	125	1	260-280	260-280	180-200
		≥0.25% C	annealed	650	190	2	200-230	200-230	140-160
		<0.55% C	quenched and tempered	850	250	3	160-220	160-220	110-150
		≥0.55% C	annealed	750	220	4	160-220	160-220	110-150
			quenched and tempered	1000	300	5	140-180	140-180	100-130
	low alloy and cast steel (less than 5% of alloying elements)		annealed	600	200	6	160-220	160-220	110-150
			quenched and tempered	930	275	7	120-180	120-180	80-130
				1000	300	8	130-180	130-180	90-130
				1200	350	9	140-180	140-180	100-130
	high alloyed steel, cast steel and tool steel		annealed	680	200	10	130-180	130-180	90-130
			quenched and tempered	1100	325	11	70-120	70-120	50-80
	stainless steel and cast steel		ferritic/martensitic.	680	200	12	80-160	80-160	60-110
			martensitic	820	240	13	60-150	60-150	40-100
M	stainless steel and cast steel		austenitic	600	180	14	60-120	60-120	40-80
N	aluminum-wrought alloys		not cureable		60	21			800-900
			cured		100	22			700-800
	aluminum-cast-alloys	≤12% Si	not cureable		75	23			800-900
			cured		90	24			750-850
		>12% Si	high temperature		130	25			400-450
	copper alloys	>1% Pb	free cutting		110	26			500-550
			brass		90	27			500-550
			electrolitic copper		100	28			350-380
	non-metallic		duroplastics, fiber plastics			29			
			hard rubber			30			
S	high temp. alloys	Fe based	annealed		200	31	20-40	20-40	10-20
			cured		280	32	20-40	20-30	10-20
		Ni or Co based	annealed		250	33	20-50	20-30	20-50
			cured		350	34	20-70	20-30	20-50
			cast		320	35	30-70	30-80	20-50
	titanium ti alloys			RM 400		36	30-70	30-80	20-30
			alpha+beta alloys cured	RM 1050		37	30-70	30-80	20-30

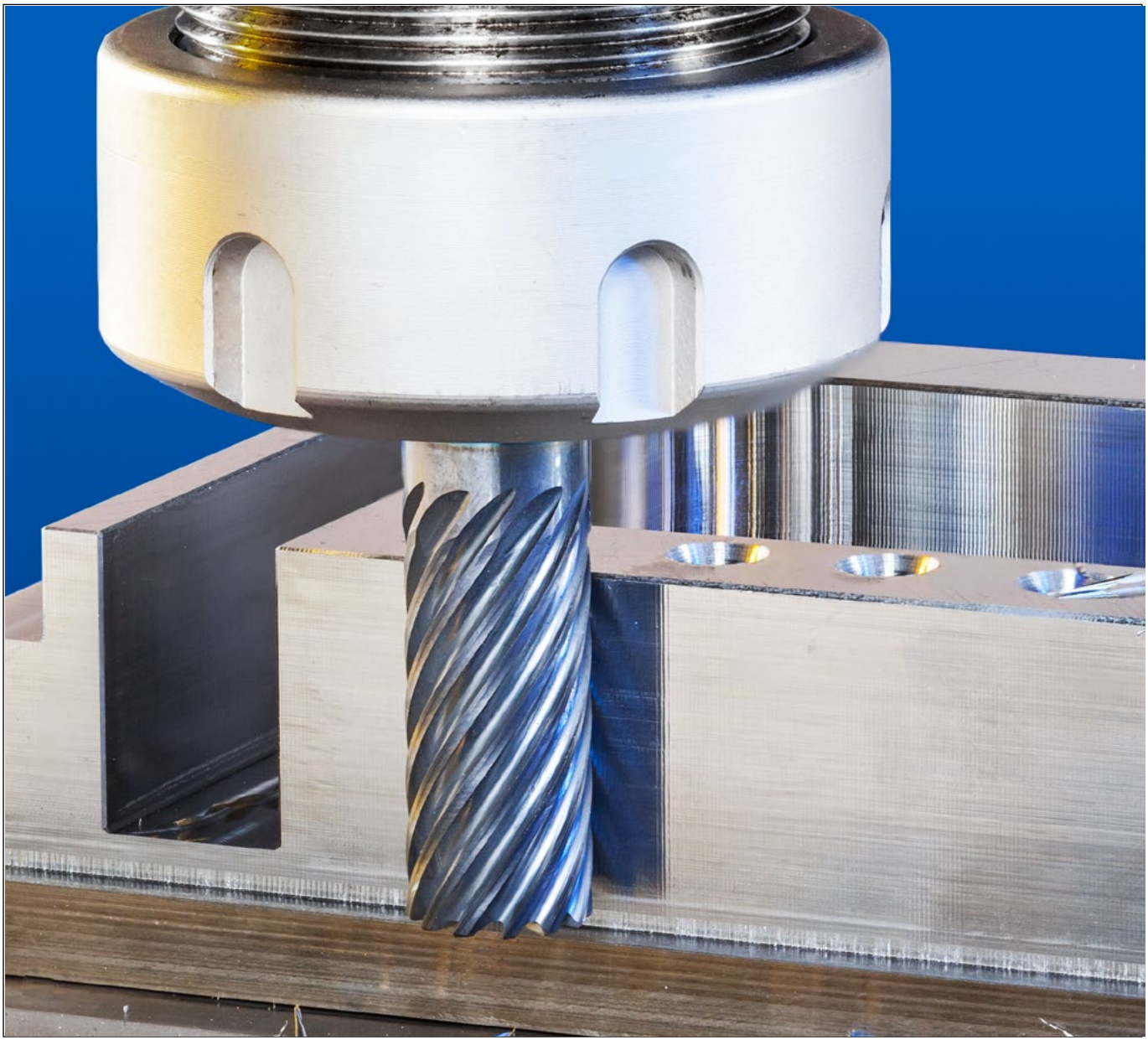
Machining Data for Solid Carbide and MULTI-MASTER Endmills (Imperial)

ISO	Material		Condition	Tensile Strength [ksi]	Hardness HB	Materia No.	Cutting Speed (SFM)		
							IC900 / IC908	IC903	IC08
P	non-alloy steel and cast steel, free cutting steel	<0.25% C	annealed	61	125	1	855 - 920	855 - 920	590 - 655
		≥0.25% C	annealed	94	190	2	655 - 755	655 - 755	460 - 525
		<0.55% C	quenched and tempered	123	250	3	525 - 720	525 - 720	360 - 490
		≥0.55% C	annealed	109	220	4	525 - 720	525 - 720	360 - 490
			quenched and tempered	145	300	5	460 - 590	460 - 590	330 - 425
	low alloy and cast steel (less than 5% of alloying elements)		annealed	87	200	6	525 - 720	525 - 720	360 - 490
			quenched and tempered	135	275	7	395 - 590	395 - 590	260 - 425
				145	300	8	425 - 590	425 - 590	295 - 425
				174	350	9	460 - 590	460 - 590	330 - 425
	high alloyed steel, cast steel and tool steel		annealed	99	200	10	425 - 590	425 - 590	295 - 425
			quenched and tempered	160	325	11	230 - 395	230 - 395	165 - 260
	stainless steel and cast steel		ferritic/martensitic	99	200	12	260 - 525	260 - 525	195 - 360
			martensitic	119	240	13	195 - 490	195 - 490	130 - 330
M	stainless steel and cast steel		austenitic, duplex	87	180	14	195 - 395	195 - 395	130 - 260
N	aluminum-wrought alloys		not hardenable		60	21			2625 - 2955
			hardenable		100	22			2295 - 2625
	aluminum-cast alloys	≤12% Si	not hardenable		75	23			2625 - 2955
			hardenable		90	24			2460 - 2790
		>12% Si	high temperature		130	25			1310 - 1475
	copper alloys	>1% Pb	free cutting		110	26			1640 - 1805
			brass		90	27			1640 - 1805
			electrolytic copper		100	28			1150 - 1245
	non metallic		duroplastics, fiber plastics			29			
			hard rubber			30			
S	high temperature alloys	Fe based	annealed		200	31	65 - 130	65 - 130	35 - 65
			hardened		280	32	65 - 130	65 - 100	35 - 65
		Ni or Co based	annealed		250	33	65 - 165	65 - 100	65 - 165
			hardened		350	34	65 - 230	65 - 100	65 - 165
			cast		320	35	100 - 230	100 - 260	65 - 165
	titanium alloys		pure	58		36	100 - 230	100 - 260	65 - 100
			alpha+beta alloys, hardened	152		37	100 - 230	100 - 260	65 - 100

Regrinding Instructions for Solid Carbide Endmills
Base Distance for Rake Angle Measurement

Tool Diameter Base Distance		Tool Diameter Base Distance	
mm	In	mm	In
0.5<d1≤0.7	.02<d1≤.03	0.03	.001181
0.7<d1≤0.8	.03<d1≤.032	0.04	.001574
0.8<d1≤1.0	.032<d1≤.04	0.05	.001968
1.0<d1≤1.2	.04<d1≤.05	0.065	.002559
1.2<d1≤1.4	.05<d1≤.055	0.075	.002952
1.4<d1≤1.6	.055<d1≤.063	0.085	.003346
1.6<d1≤2	.063<d1≤.08	0.1	.003937
2<d1≤4	.08<d1≤.158	0.2	.007874
4<d1≤6.35	.158<d1≤.25	0.3	.01181
6.35<d1≤8	.25<d1≤.315	0.4	.01574
8<d1≤13	.315<d1≤.512	0.5	.01968





Circle Segment Lines for Advanced Finish Milling Operations

Barrel Endmill

ISCAR's Barrel line comprises a variety of solid carbide endmills and **MULTI-MASTER** heads in different shapes: Oval, Taper & Lens.

Solid Carbide Endmills

Oval Barrel – EOB
Taper Barrel – ETB
Lens Barrel – ELB

MULTI-MASTER Heads

Oval Barrel – MM EOB
Lens Barrel – MM ELB

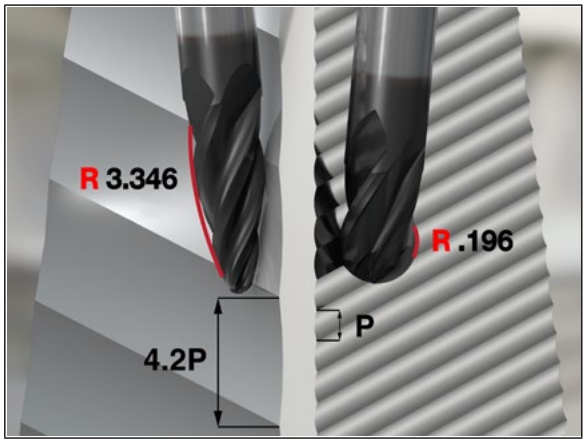


Barrel Endmills Are Intended for Finish and Semi-Finish Machining of 3D Surfaces

Blade Roughing	Blade Finishing
	

A prominent advantage of a Barrel endmill over a Ball-Nose is the number of stepovers and, subsequent, machining time can be significantly reduced without degradation of the surface finish parameters.

The large-diameter arc of the endmill cutting edge results in a substantial reduction of the cusp height.

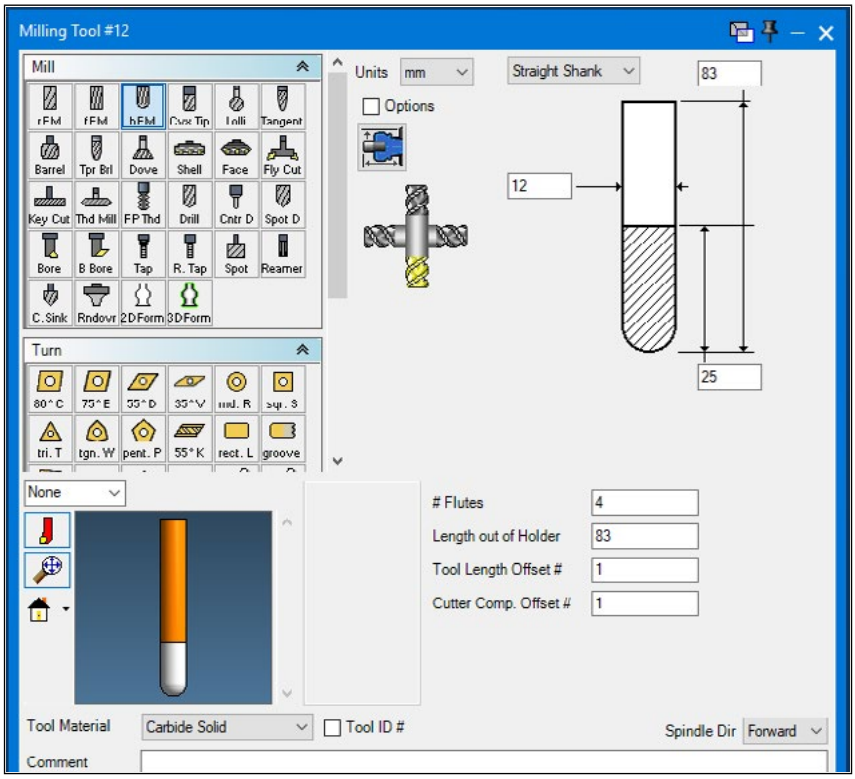


Machining Guidelines

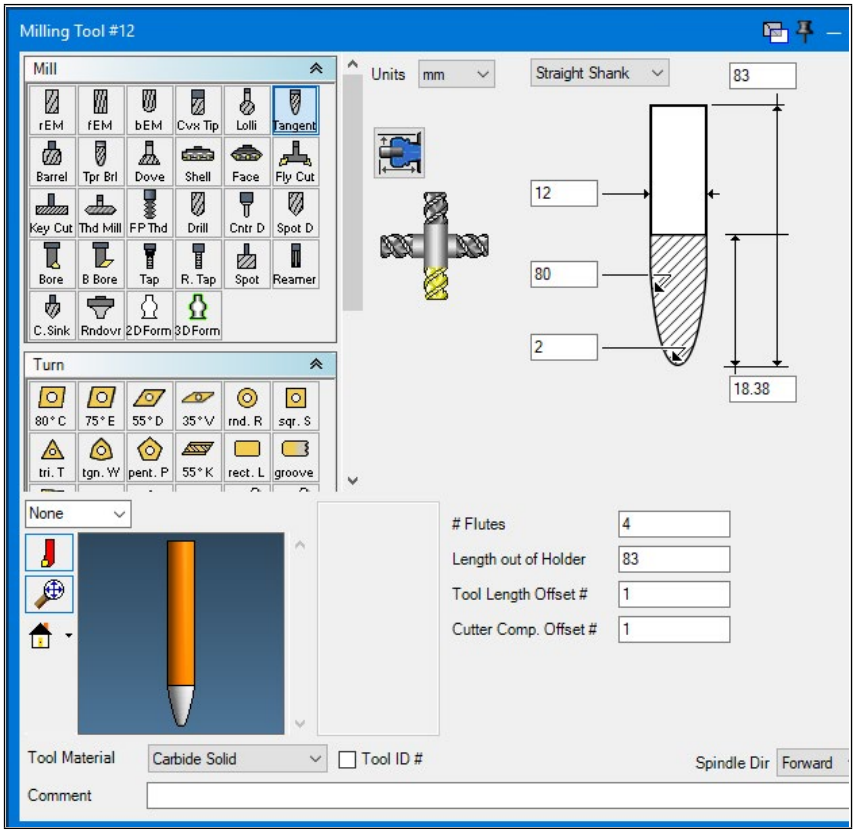
The Most Important Thing to Remember

Programming circle segment tooling requires a supporting CAM system

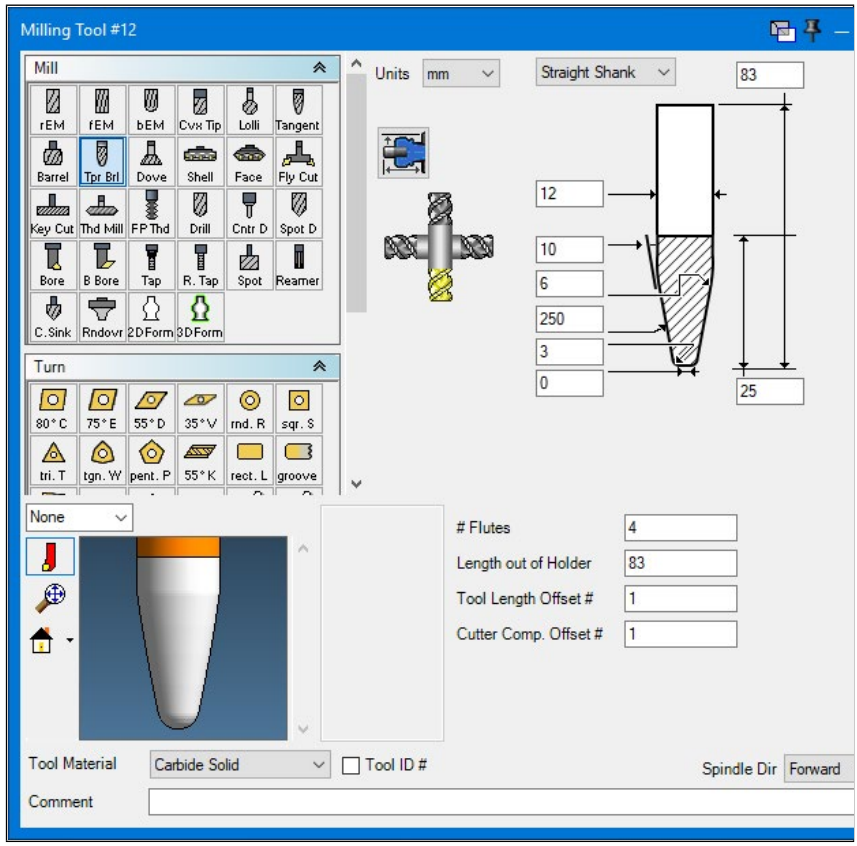
- **Step #1 – for Ball-Nose**
  Select a Ball-Nose tool configuration and define its parameters.



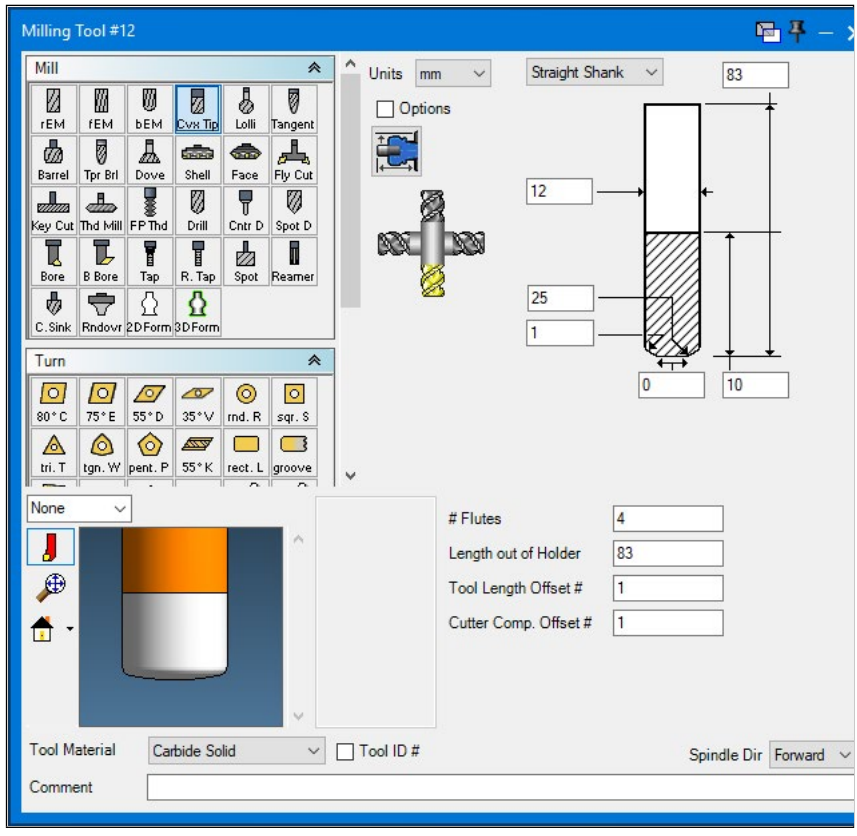
- **Step #1 – for Oval Shape**
  Select a Barrel tool configuration and define its parameters.



- **Step #1 – for Taper Shape**
  Select a taper tool configuration and set its parameters.

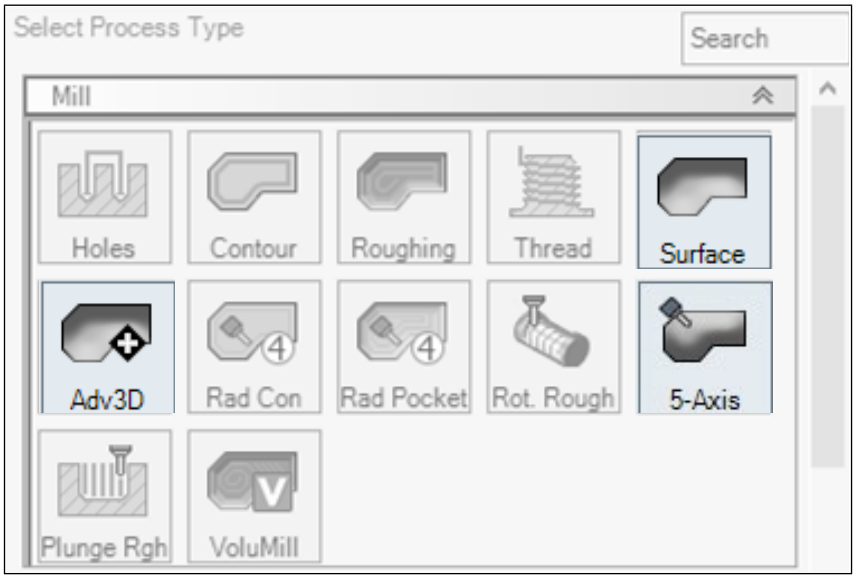


- **Step #1 – for Lens Shape**
  Select a lens tool configuration and set its parameters.



- **Step #2**
  Select the process. Each CAM defines different relevant processes, for example:
  Surface, 5-Axis, Adv3D, etc.

  The advantage of barrel endmills is realized when used for 5 axis, finish milling operations.



Important

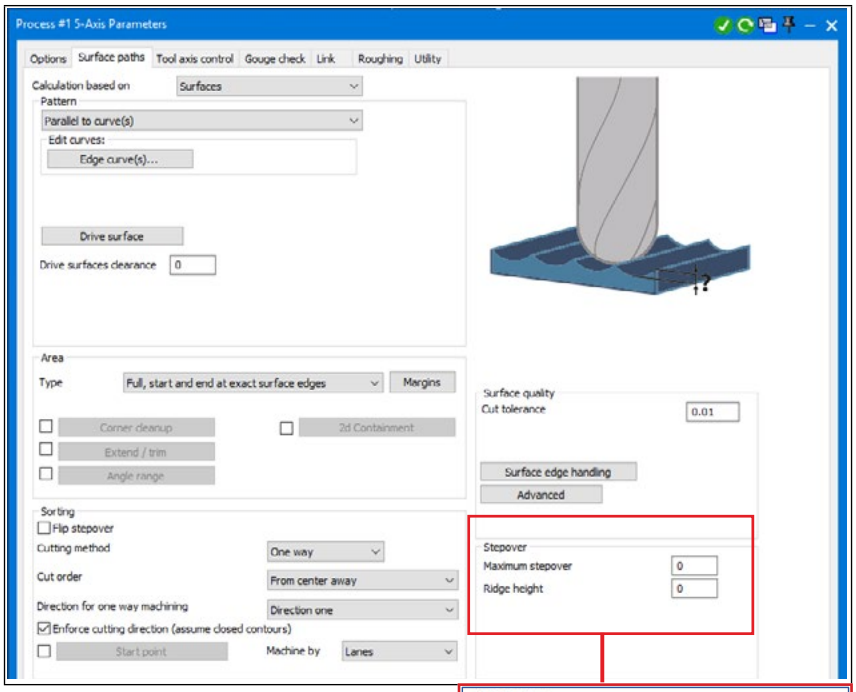
Each CAM software has its own features to configure the tools and their machining processes, but the definitions are similar.

The following example demonstrates only one way to define a surface finish (Ra) and is process dependent. Note that many stepovers are required in order to obtain the same Ra with different tools.

There are many different options to define the required results from a tool.

Example

Same Ra – different stepovers



Ball Nose Ø12 R6 [Ø.472″ R.236″]	Stepover Maximum stepover 2
Oval Ø12 R80 [Ø.472″ R3.15″]	Stepover Maximum stepover 7.4
Taper Ø12 R250 [Ø.472″ R9.84″]	Stepover Maximum stepover 13.5
Lens Ø12 R25 [Ø.472″ R.98″]	Stepover Maximum stepover 4.09

Take Into Consideration

Barrel milling should not always be considered the answer to finishing all 3D machined surfaces. Some part shapes are not conducive to Barrel milling operations. Sometimes, the blend radii of the machined part or the kinetics of the machine result in a complicated CAM tool path which may increase the cycle time compared to using a conventional Ball-Nose milling approach.

Recommended Cutting Parameters to Start - Barrel Endmills (Metric)

ISO	Material		Condition	Tensile Strength [N/mm²]	Hardness HB	Material No. (1)	Cutting Parameters		
							V_c m/min	F_z mm/t	F_z Start
P	non-alloy steel and cast steel, free cutting steel	<0.25% C	annealed	420	125	1	210-300	0.005-0.01xD	0.006xD
		≥0.25% C	annealed	650	190	2	200-250	0.005-0.01xD	0.006xD
		<0.55% C	quenched and tempered						
				850	250	3	160-240	0.004-0.009xD	0.005xD
		≥0.55% C	annealed	750	220	4	160-240	0.003-0.008xD	0.004xD
			quenched and tempered	1000	300	5	140-200	0.004-0.009xD	0.005xD
	low alloy and cast steel (less than 5% of alloying elements)		annealed	600	200	6	160-240	0.003-0.008xD	0.004xD
			quenched and tempered	930	275	7	120-200	0.003-0.008xD	0.004xD
				1000	300	8	130-200	0.003-0.008xD	0.004xD
				1200	350	9	140-200	0.003-0.008xD	0.004xD
	high alloyed steel, cast steel and tool steel		annealed	680	200	10	130-200	0.003-0.008xD	0.004xD
			quenched and tempered	1100	325	11	70-130	0.002-0.007xD	0.003xD
			ferritic/martensitic	680	200	12	80-175	0.002-0.007xD	0.003xD
	stainless steel and cast steel		martensitic	820	240	13	60-165	0.002-0.007xD	0.003xD
M	stainless steel and cast steel		austenitic	600	180	14	60-110	0.002-0.007xD	0.003xD
S	high temp. alloys	Fe based	annealed		200	31	20-45	0.002-0.004xD	0.003xD
			cured		280	32	20-35	0.002-0.004xD	0.003xD
		Ni or Co based	annealed		250	33	20-35	0.002-0.004xD	0.003xD
			cured		350	34	20-35	0.002-0.004xD	0.003xD
			cast		320	35	60-90	0.002-0.004xD	0.003xD
	titanium alloys		pure	Rm = 400		36	60-90	0.002-0.004xD	0.003xD
			alpha+beta alloys cured	Rm = 1050		37	60-90	0.002-0.004xD	0.003xD

Recommended Cutting Parameters to Start - Barrel Endmills (Imperial)

ISO	Material		Condition	Tensile Strength [ksi]	Hardness HB	Material No. (1)	Cutting Parameters		
							V_c SFM	F_z In/t	F_z Start
P	non-alloy steel and cast steel, free cutting steel	<0.25% C	annealed	61	125	1	690-980	.0002-.0004xD	.00023xD
		≥0.25% C	annealed	94	190	2	650-820	.0002-.0004xD	.00023xD
		<0.55% C	quenched and tempered	123	250	3	520-780	.00016-.00035xD	.0002xD
		≥0.55% C	annealed	109	220	4	520-780	.00012-.00031xD	.00016xD
			quenched and tempered	145	300	5	460-650	.00016-.00035xD	.0002xD
	low alloy and cast steel (less than 5% of alloying elements)		annealed	87	200	6	520-780	.00012-.00031xD	.00016xD
			quenched and tempered	135	275	7	390-650	.00012-.00031xD	.00016xD
				145	300	8	420-650	.00012-.00031xD	.00016xD
				174	350	9	460-650	.00012-.00031xD	.00016xD
	high alloyed steel, cast steel and tool steel		annealed	99	200	10	420-650	.00012-.00031xD	.00016xD
			quenched and tempered	160	325	11	230-420	.00008-.00027xD	.00012xD
	stainless steel and cast steel		ferritic/martensitic	99	200	12	260-570	.00008-.00027xD	.00012xD
			martensitic	119	240	13	190-540	.00008-.00027xD	.00012xD
M	stainless steel and cast steel		austenitic, duplex	87	180	14	190-360	.00008-.00027xD	.00012xD
S	high temperature alloys	Fe based	annealed		200	31	65-150	.00008-.00016xD	.00012xD
			hardened		280	32	65-110	.00008-.00016xD	.00012xD
		Ni or Co based	annealed		250	33	65-110	.00008-.00016xD	.00012xD
			hardened		350	34	65-110	.00008-.00016xD	.00012xD
			cast		320	35	190-290	.00008-.00016xD	.00012xD
	titanium alloys		pure	58	190	36	190-290	.00008-.00016xD	.00012xD
			alpha+beta alloys, hardened	152	310	37	190-290	.00008-.00016xD	.00012xD

THREAD MILLING



ISCAR Thread



SOLID-THREAD

MTEC, MTECB, MTECZ, MTECQ,MTECH
pages 1177-1183,1191-1196, 1209-1215



SOLID-THREAD

MTECS, MTECD, MTECSH
pages 1184-1188, 1197-1201, 1203, 1207-1208



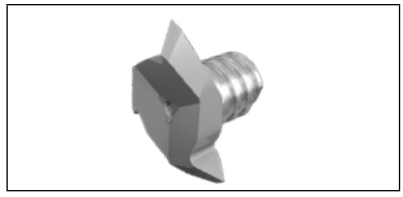
SOLID-M-THREAD

MTECK, MTECM
pages 1189-1190, 1202-1203, 1204-1206



SOLID-THREAD

MTECI
pages 1216-1218



MULTI-MASTER

MM TRD
pages 1167-1169



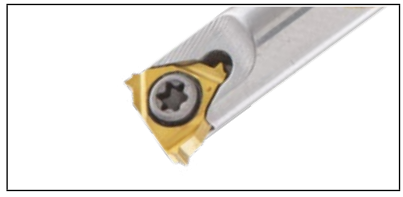
MULTI-MASTER

MM TRF
pages 1174-1176



MULTI-MASTER

MT-...-MM
pages 1170-1173



MILL-THREAD endmill

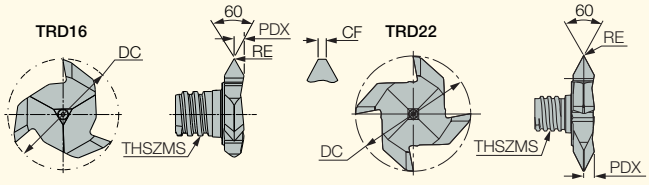
MTET
page 1219

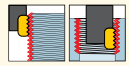
MULTI-MASTER

MM TRD-M

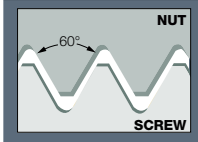
Interchangeable Solid Carbide Milling Heads for 60° Partial Profile Thread Milling







M E T R I C



Designation	Dimensions																Tough ↔ Hard	
	DC	NOF[1]	TPN[2]	TPX[3]	TPN_ DF2[4]	TPX_ DF2[5]	TPIN[6]	TPIX[7]	TPIN_ DF2[8]	TPIX_ DF2[9]	RE	CF	PDX	THSZMS	TDZ[10]	CSP[11]	IC528	IC908
MM TRD16-M60-05P-3T06	15.70	3	0.500	2.000	0.400	2.000	13.00	48.00	16.00	56.00	- [12]	0.05	1.40	T06	M20	0	●	●
MM TRD16-M60-15P-3T06	15.70	3	1.500	2.000	1.000	1.500	13.00	16.00	16.00	28.00	0.05	-	1.40	T06	M22	0	●	●
MM TRD22-M60-30P-4T08	21.70	4	3.000	4.500	2.500	4.000	6.00	9.00	7.00	10.00	0.20	-	2.40	T08	M36	0	●	●

- For ISO metric thread (ISO 68, DIN13, ANSI B 1.13M-1983) • For shanks, see pages 1112-1124 • For clamping instructions, see pages 1047-1048
- Do not apply lubricant to the threaded connection • 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] Number of flutes
[2] Thread pitch minimum (mm)-internal
[3] Thread pitch maximum (mm)-internal
[4] Thread pitch minimum (mm)-external
[5] Thread pitch maximum (mm)-external
[6] Threads per inch minimum-internal
[7] Threads per inch maximum-internal
[8] Threads per inch minimum-external
[9] Threads per inch maximum-external
[10] Smallest possible thread
[11] 0 - Without coolant supply, 1 - With coolant supply
[12] Flat

Spare Parts

Designation		
MM TRD16-M60-05P-3T06	MM EGR 16-18*	T-25/3*
MM TRD16-M60-15P-3T06	MM EGR 16-18*	T-25/3*
MM TRD22-M60-30P-4T08	MM EGR 20-22*	T-30/3 L*

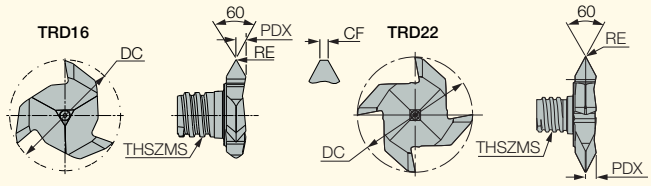
* Optional, to be ordered separately

MULTI-MASTER

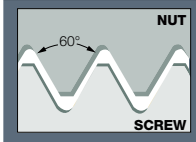
MM TRD-M

Interchangeable Solid Carbide Milling Heads for 60° Partial Profile Thread Milling





I N C H



Designation	Dimensions																Tough ↔ Hard	
	DC	NOF[1]	TPN (mm)[2]	TPX (mm)[3]	TPN_ DF2[4]	TPX_ DF2[5]	TPIN[6]	TPIX[7]	TPIN_ DF2[8]	TPIX_ DF2[9]	RE	CF	PDX	THSZMS	TDZ[10]	CSP[11]	IC528	IC908
MM TRD16-M60-05P-3T06	.618	3	.500	2.000	.400	2.000	13.00	48.00	16.00	56.00	- [12]	.002	.0551	T06	M20	0	●	●
MM TRD16-M60-15P-3T06	.618	3	1.500	2.000	1.000	1.500	13.00	16.00	16.00	28.00	.0020	-	.0551	T06	M22	0	●	●
MM TRD22-M60-30P-4T08	.854	4	3.000	4.500	2.500	4.000	6.00	9.00	7.00	10.00	.0079	-	.0945	T08	M36	0	●	●

- For ISO metric thread (ISO 68, DIN13, ANSI B 1.13M-1983) • For shanks, see pages 1112-1124 • For clamping instructions, see pages 1047-1048
- Do not apply lubricant to the threaded connection • 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] Number of flutes
[2] Thread pitch minimum (mm)-internal
[3] Thread pitch maximum (mm)-internal
[4] Thread pitch minimum (mm)-external
[5] Thread pitch maximum (mm)-external
[6] Threads per inch minimum-internal
[7] Threads per inch maximum-internal
[8] Threads per inch minimum-external
[9] Threads per inch maximum-external
[10] Smallest possible thread
[11] 0 - Without coolant supply, 1 - With coolant supply
[12] flat

Spare Parts

Designation		
MM TRD16-M60-05P-3T06	MM EGR 16-18*	T-25/3*
MM TRD16-M60-15P-3T06	MM EGR 16-18*	T-25/3*
MM TRD22-M60-30P-4T08	MM EGR 20-22*	T-30/3 L*

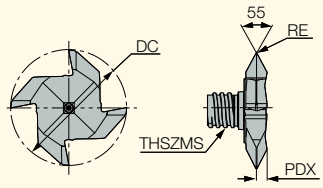
* Optional, to be ordered separately

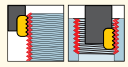
MULTI-MASTER

MM TRD-W

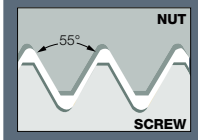
Interchangeable Solid Carbide Milling Heads for 55° Partial Profile Thread Milling







M E T R I C



Designation	Dimensions												Tough ↔ Hard	
	DC	NOF(1)	RE	PDX	TPIN(2)	TPIX(3)	TPIN_ DF2(4)	TPIX_ DF2(5)	THSZMS	TDZ(6)	Standard	CSP(7)	IC528	IC908
MM TRD22-W55-14P-4T08	21.70	4	0.20	2.0	11.00	14.00	11.50	16.00	T08	G3/4	DIN ISO 228, B.S. 84	0	•	•

- For shanks, see pages 1112-1124
- For clamping instructions, see pages 1047-1048
- Do not apply lubricant to the threaded connection
- B.S.84 Internal & External tolerance: Medium class

(1) Number of flutes
(2) Threads per inch minimum-internal
(3) Threads per inch maximum-internal
(4) Threads per inch minimum-external
(5) Threads per inch maximum-external
(6) Thread diameter size
(7) 0 - Without coolant supply, 1 - With coolant supply

Spare Parts

Designation		
MM TRD-W	T-30/3 L*	MM EGR 20-22*

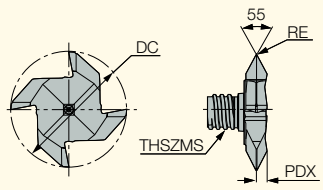
* Optional, to be ordered separately

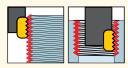
MULTI-MASTER

MM TRD-W

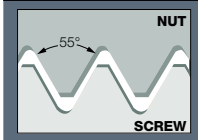
Interchangeable Solid Carbide Milling Heads for 55° Partial Profile Thread Milling







I N C H



Designation	Dimensions												Tough ↔ Hard	
	DC	NOF(1)	RE	PDX	TPIN(2)	TPIX(3)	TPIN_ DF2(4)	TPIX_ DF2(5)	THSZMS	TDZ	Standard	CSP(6)	IC528	IC908
MM TRD22-W55-14P-4T08	.854	4	.0079	.08	11.00	14.00	11.50	16.00	T08	G3/4	DIN ISO 228, B.S. 84	0	•	•

- For shanks, see pages 1112-1124
- For clamping instructions, see pages 1047-1048
- Do not apply lubricant to the threaded connection
- B.S.84 Internal & External tolerance: Medium class

(1) Number of flutes
(2) Threads per inch minimum-internal
(3) Threads per inch maximum-internal
(4) Threads per inch minimum-external
(5) Threads per inch maximum-external
(6) 0 - Without coolant supply, 1 - With coolant supply

Spare Parts

Designation		
MM TRD-W	T-30/3 L*	MM EGR 20-22*

* Optional, to be ordered separately

Identification Code

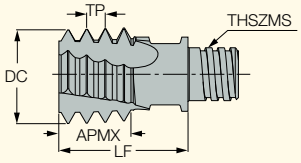
MT	10	D	6	0.75	ISO	MMT/MMTT
MULTI-MASTER thread mill	cutting dia.	no. of flutes	cutting length	pitch	thread profile iso un G (55°)	connection size

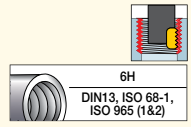
MULTI-MASTER

MT-ISO-MM

Carbide Milling Heads with a Threaded Connection for Internal ISO Metric Thread

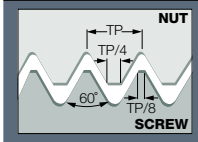






Application: General engineering

M E T R I C



Designation	Dimensions										IC908
	TP(1)	M Coarse	M Fine	DC	NOF(2)	APMX	LF	THSZMS	CSP(3)		
MT10D7.5 0.5ISO-MMT05	0.500		=>14	10.00	4	7.50	12.75	T05	0	MM KEY 6X4*	●
MT 10D6 0.75ISO-MMT05	0.750		=>12	10.00	4	6.00	12.75	T05	0	MM KEY 6X4*	●
MT 10D6 1.0ISO-MMT05	1.000		=>12	10.00	4	6.00	12.75	T05	0	MM KEY 6X4*	●
MT 10D5 1.25ISO-MMT05	1.250		=>14	10.00	4	5.00	12.75	T05	0	MM KEY 6X4*	●
MT 10D6 1.5ISO-MMT05	1.500		=>14	10.00	4	6.00	12.75	T05	0	MM KEY 6X4*	●
MT 12D8 0.5ISO-MMT06	0.500		=>16	12.00	4	8.00	14.30	T06	0	MM KEY 8X5*	●
MT 12E8 0.75ISO-MMT06	0.750		=>16	12.00	5	8.30	14.30	T06	0	MM KEY 8X5*	●
MT 12E8 1.0ISO-MMT06	1.000		=>16	12.00	5	8.00	14.30	T06	0	MM KEY 8X5*	●
MT 12D8 1.25ISO-MMT06	1.250		=>16	12.00	4	7.50	14.30	T06	0	MM KEY 8X5*	●
MT 12D7 1.5ISO-MMT06	1.500		=>16	12.00	4	7.60	14.30	T06	0	MM KEY 8X5*	●
MT 12D7 1.75ISO-MMT06	1.750		=>16	12.00	4	7.10	14.30	T06	0	MM KEY 8X5*	●
MT12D8 2.0ISO-MMT06	2.000	M16	=>17	12.00	4	8.00	14.30	T06	0	MM KEY 8X5*	●
MT 16F12 1.0ISO-MMT08	1.000		=>22	16.00	6	12.00	20.00	T08	0	MM KEY 10X7*	●
MT 16F12 1.5ISO-MMT08	1.500		=>20	16.00	6	12.00	20.00	T08	0	MM KEY 10X7*	●
MT 16E12 2.0ISO-MMT08	2.000		=>19	16.00	5	12.00	20.00	T08	0	MM KEY 10X7*	●
MT15.4E13 2.5ISO-MMT08	2.500	M20	=>22	15.40	5	12.70	20.00	T08	0	MM KEY 10X7*	●
MT 16C12 3.0ISO-MMT08	3.000	M24	=>25	16.00	3	12.10	20.00	T08	0	MM KEY 10X7*	●

- Note: Description and dimensions relate to the new products with clamping flats. • For shanks, see pages 1112-1124
- For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 1047-1048 • Do not apply lubricant to the threaded connection

(1) Thread pitch

(2) Number of flutes

(3) 0 - Without coolant supply, 1 - With coolant supply

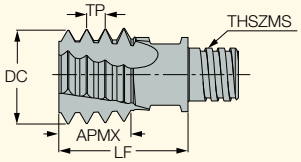
* Optional, to be ordered separately

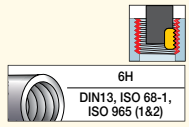
MULTI-MASTER

MT-ISO-MM

Carbide Milling Heads with a Threaded Connection for Internal ISO Metric Thread

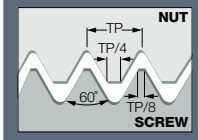






Application: General engineering

I N C H



Designation	Dimensions										IC908
	TP mm[1]	M Coarse	M Fine	DC	NOF[2]	APMX	LF	THSZMS	CSP[3]		
MT10D7.5 0.5ISO-MMT05	.500	-	=>14	.394	4	.295	.502	T05	0	MM KEY 6X4*	●
MT 10D6 0.75ISO-MMT05	.750	-	=>12	.394	4	.236	.502	T05	0	MM KEY 6X4*	●
MT 10D6 1.0ISO-MMT05	1.000	-	=>12	.394	4	.236	.502	T05	0	MM KEY 6X4*	●
MT 10D5 1.25ISO-MMT05	1.250	-	=>14	.394	4	.197	.502	T05	0	MM KEY 6X4*	●
MT 10D6 1.5ISO-MMT05	1.500	-	=>14	.394	4	.236	.502	T05	0	MM KEY 6X4*	●
MT 12D8 0.5ISO-MMT06	.500	-	=>16	.472	4	.315	.563	T06	0	MM KEY 8X5*	●
MT 12E8 0.75ISO-MMT06	.750	-	=>16	.472	5	.327	.563	T06	0	MM KEY 8X5*	●
MT 12E8 1.0ISO-MMT06	1.000	-	=>16	.472	5	.315	.563	T06	0	MM KEY 8X5*	●
MT 12D8 1.25ISO-MMT06	1.250	-	=>16	.472	4	.295	.563	T06	0	MM KEY 8X5*	●
MT 12D7 1.5ISO-MMT06	1.500	-	=>16	.472	4	.299	.563	T06	0	MM KEY 8X5*	●
MT 12D7 1.75ISO-MMT06	1.750	-	=>16	.472	4	.280	.563	T06	0	MM KEY 8X5*	●
MT12D8 2.0ISO-MMT06	2.000	M16	=>17	.472	4	.315	.563	T06	0	MM KEY 8X5*	●
MT 16F12 1.0ISO-MMT08	1.000	-	=>22	.630	6	.472	.787	T08	0	MM KEY 10X7*	●
MT 16F12 1.5ISO-MMT08	1.500	-	=>20	.630	6	.472	.787	T08	0	MM KEY 10X7*	●
MT 16E12 2.0ISO-MMT08	2.000	-	=>19	.630	5	.472	.787	T08	0	MM KEY 10X7*	●
MT15.4E13 2.5ISO-MMT08	2.500	M20	=>22	.606	5	.500	.787	T08	0	MM KEY 10X7*	●
MT 16C12 3.0ISO-MMT08	3.000	M24	=>25	.630	3	.476	.787	T08	0	MM KEY 10X7*	●

• Note: Description and dimensions relate to the new products with clamping flats. • For shanks, see pages 1112-1124

• For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 1047-1048 • Do not apply lubricant to the threaded connection

(1) Thread pitch

(2) Number of flutes

(3) 0 - Without coolant supply, 1 - With coolant supply

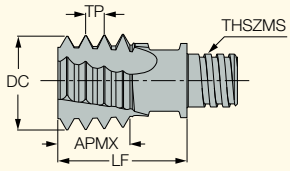
* Optional, to be ordered separately

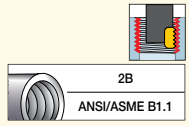
MULTI-MASTER

MT-UN-MM

Carbide Milling Heads with a Threaded Connection for Internal UN Thread Profile

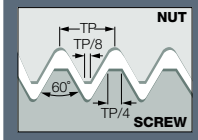






Application: General engineering

M E T R I C



Designation	Dimensions TPI[1]	UNC	UNF	UNEF	DC	NOF[2]	APMX	LF	THSZMS	TP[3]	CSP[4]	IC908
MT 10D7 32UN-MMT05	32.0	-	-	-	10.00	4	6.40	12.75	T05	0.794	0	●
MT 10D6 28UN-MMT05	28.0	-	-	1/2	10.00	4	5.50	12.75	T05	0.907	0	●
MT 10D6 24UN-MMT05	24.0	-	-	9/16-5/8	10.00	4	5.30	12.75	T05	1.058	0	●
MT 10D6 20UN-MMT05	20.0	-	1/2"	-	10.00	4	5.10	12.75	T05	1.270	0	●
MT 10D5 18UN-MMT05	18.0		9/16-5/8"	1 1/8-1 5/8	10.00	4	5.60	12.75	T05	1.411	0	●
MT 10D7 16UN-MMT05	16.0		3/4"		10.00	4	6.40	12.75	T05	1.588	0	●
MT 12D8 24UN-MMT06	24.0			5/8- 11/16	12.00	4	7.40	14.30	T06	1.058	0	●
MT 12D8 20UN-MMT06	20.0			3/4 - 1	12.00	4	7.70	14.30	T06	1.270	0	●
MT 12D8 18UN-MMT06	18.0		5/8"	=>1 11/16	12.00	4	7.10	14.30	T06	1.411	0	●
MT 12D8 16UN-MMT06	16.0		3/4"		12.00	4	8.00	14.30	T06	1.588	0	●
MT 12D8 14UN-MMT06	14.0		7/8"		12.00	4	7.30	14.30	T06	1.814	0	●
MT 16E11 18UN-MMT08	18.0		5/8"	=>1 11/16	16.00	5	11.30	20.00	T08	1.411	0	●
MT 16E13 14UN-MMT08	14.0		7/8"		16.00	5	12.70	20.00	T08	1.814	0	●
MT 16E13 12UN-MMT08	12.0		1-1 1/2"		16.00	5	12.70	20.00	T08	2.117	0	●
MT 15.3D13 10UN-MMT08	10.0	3/4"			15.30	4	12.70	20.00	T08	2.540	0	●
MT 16C11 9UN-MMT08	9.0	7/8"			16.00	3	11.30	20.00	T08	2.822	0	●
MT 16C13 8UN-MMT08	8.0	1.0"			16.00	3	12.70	20.00	T08	3.175	0	●

- Note: Description and dimensions relate to the new products with clamping flats • For shanks, see pages 1112-1124
- For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 1047-1048 • Do not apply lubricant to the threaded connection

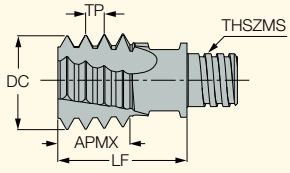
(1) Threads per inch
(2) Number of flutes
(3) Thread pitch
(4) 0 - Without coolant supply, 1 - With coolant supply

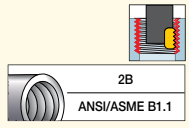
MULTI-MASTER

MT-UN-MM

Carbide Milling Heads with a Threaded Connection for Internal UN Thread Profile

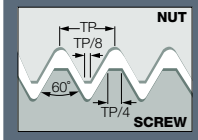






Application: General engineering

I N C H



Designation	Dimensions TPI[1]	UNC	UNF	UNEF	DC	NOF[2]	APMX	LF	THSZMS	TP mm[3]	CSP[4]	IC908
MT 10D7 32UN-MMT05	32.0	-	-	-	.394	4	.252	.502	T05	.794	0	●
MT 10D6 28UN-MMT05	28.0	-	-	1/2	.394	4	.217	.502	T05	.907	0	●
MT 10D6 24UN-MMT05	24.0	-	-	9/16-5/8	.394	4	.209	.502	T05	1.058	0	●
MT 10D6 20UN-MMT05	20.0	-	1/2"	-	.394	4	.201	.502	T05	1.270	0	●
MT 10D5 18UN-MMT05	18.0	-	9/16-5/8"	1 1/8-1 5/8	.394	4	.220	.502	T05	1.411	0	●
MT 10D7 16UN-MMT05	16.0	-	3/4"	-	.394	4	.252	.502	T05	1.588	0	●
MT 12D8 24UN-MMT06	24.0	-	-	5/8- 11/16	.472	4	.291	.563	T06	1.058	0	●
MT 12D8 20UN-MMT06	20.0	-	-	3/4 - 1	.472	4	.303	.563	T06	1.270	0	●
MT 12D8 18UN-MMT06	18.0	-	5/8"	=>1 11/16	.472	4	.280	.563	T06	1.411	0	●
MT 12D8 16UN-MMT06	16.0	-	3/4"	-	.472	4	.315	.563	T06	1.588	0	●
MT 12D8 14UN-MMT06	14.0	-	7/8"	-	.472	4	.287	.563	T06	1.814	0	●
MT 16E11 18UN-MMT08	18.0	-	5/8"	=>1 11/16	.630	5	.445	.787	T08	1.411	0	●
MT 16E13 14UN-MMT08	14.0	-	7/8"	-	.630	5	.500	.787	T08	1.814	0	●
MT 16E13 12UN-MMT08	12.0	-	1-1 1/2"	-	.630	5	.500	.787	T08	2.117	0	●
MT 15.3D13 10UN-MMT08	10.0	3/4"	-	-	.602	4	.500	.787	T08	2.540	0	●
MT 16C11 9UN-MMT08	9.0	7/8"	-	-	.630	3	.445	.787	T08	2.822	0	●
MT 16C13 8UN-MMT08	8.0	1.0"	-	-	.630	3	.500	.787	T08	3.175	0	●

- Note: Description and dimensions relate to the new products with clamping flats • For shanks, see pages 1112-1124
- For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 1047-1048 • Do not apply lubricant to the threaded connection

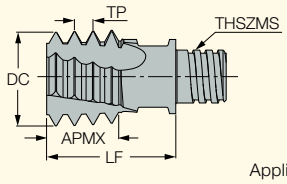
(1) Threads per inch
(2) Number of flutes
(3) Thread pitch
(4) 0 - Without coolant supply, 1 - With coolant supply

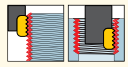
MULTI-MASTER

MT-W-MM

Carbide Milling Heads with a Threaded Connection for Internal and External 55° BSW Thread Profile

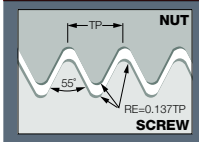






Application: General engineering fittings and pipe couplings

M E T R I C



Designation	Dimensions									IC908
	TPI[1]	TDZ	DC	NOF[2]	APMX	LF	THSZMS	TP[3]	CSP[4]	
MT 10D6 19W-MMT05	19.0	G1/4-3/8	10.00	4	5.30	12.75	T05	1.337	0	●
MT 16D13 14W-MMT08	14.0	G1/2-7/8	16.00	4	12.70	20.00	T08	1.814	0	●
MT 16D11 11W-MMT08	11.0	G=>1	16.00	4	11.50	20.00	T08	2.309	0	●

- Note: Description and dimensions relate to the new products with clamping flats • For shanks, see pages 1112-1124
- For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 1047-1048 • Do not apply lubricant to the threaded connection
- B.S.84 Internal & External tolerance: Medium class

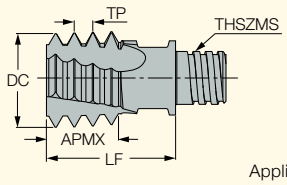
(1) Threads per inch
(2) Number of flutes
(3) Thread pitch
(4) 0 - Without coolant supply, 1 - With coolant supply

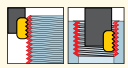
MULTI-MASTER

MT-W-MM

Carbide Milling Heads with a Threaded Connection for Internal and External 55° BSW Thread Profile

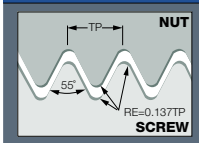






Application: General engineering fittings and pipe couplings

I N C H



Designation	Dimensions									IC908
	TPI[1]	TDZ	DC	NOF[2]	APMX	LF	THSZMS	TP mm[3]	CSP[4]	
MT 10D6 19W-MMT05	19.0	G1/4-3/8	.394	4	.209	.502	T05	1.337	0	●
MT 16D13 14W-MMT08	14.0	G1/2-7/8	.630	4	.500	.787	T08	1.814	0	●
MT 16D11 11W-MMT08	11.0	G=>1	.630	4	.453	.787	T08	2.309	0	●

- Note: Description and dimensions relate to the new products with clamping flats • For shanks, see pages 1112-1124
- For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 1047-1048 • Do not apply lubricant to the threaded connection
- B.S.84 Internal & External tolerance: Medium class

(1) Threads per inch
(2) Number of flutes
(3) Thread pitch
(4) 0 - Without coolant supply, 1 - With coolant supply







Thread Size	Key[1]	Torque Wrench[1]	Wrench[1]	Tightening Torque (N×cm)	Tightening Torque (Lbf×inch)
T05	MM KEY 6x4	TORQUE WRENCH 5-50Nm 9X12	MM WRENCH 6-05	700	60
T06	MM KEY 8x5	TORQUE WRENCH 5-50Nm 9X12	MM WRENCH 8-06	1000	90
T08	MM KEY 10x7	TORQUE WRENCH 5-50Nm 9X12	MM WRENCH 10-08	1500	130

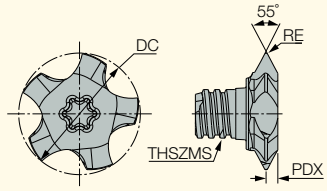
(1) To Be Ordered Separately

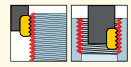
MULTI-MASTER

MM TRF 55°

Interchangeable Solid Carbide Milling Heads for 55° Partial Profile Thread Milling







M E T R I C

Designation	Dimensions										IC908
	DC	NOF(1)	TPIN(2)	TPIX(3)	RE	PDX	THSZMS	TDZ(4)	TQ(5)	CSP(6)	
MM TRF12-W55-P11-5T05	11.94	5	11.00	14.00	0.23	1.15	T05	15.875	7.0	0	●
MM TRF12-W55-P19-5T05	11.94	5	19.00	28.00	0.11	0.75	T05	14.287	10.0	0	●
MM TRF16-W55-P8-5T06	15.94	5	8.00	14.00	0.23	1.55	T06	20.637	15.0	0	●
MM TRF20-W55-P6-6T08	19.94	6	6.00	8.00	0.40	1.95	T08	25.4	28.0	0	●

• For ISO metric thread (ISO 68, DIN13, ANSI B 1.13M-1983) • For shanks, see pages 1112-1124 • For clamping instructions, see pages 1047-1048
• Do not apply lubricant to the threaded connection
(1) Number of flutes
(2) Threads per inch minimum
(3) Threads per inch maximum
(4) Smallest possible thread
(5) Tightening torque
(6) 0 - Without coolant supply, 1 - With coolant supply

Thread Size	Tightening Torque (Nxcm)
T05	700
T06	1000
T08	1500

(1) Order separately

Spare Parts

Designation	
MM TRF12-W55-P11-5T05	BIT SOCKET T20 3/8" DRIVE*
MM TRF12-W55-P19-5T05	BIT SOCKET T20 3/8" DRIVE*
MM TRF16-W55-P8-5T06	BIT SOCKET T25 3/8" DRIVE*
MM TRF20-W55-P6-6T08	BIT SOCKET T40 3/8" DRIVE*

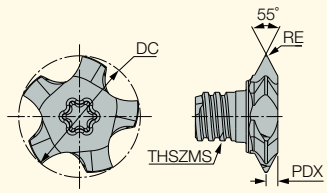
* Optional, to be ordered separately

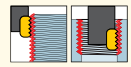
MULTI-MASTER

MM TRF 55°

Interchangeable Solid Carbide Milling Heads for 55° Partial Profile Thread Milling







I N C H

Designation	Dimensions										IC908
	DC	NOF(1)	TPIN(2)	TPIX(3)	RE	PDX	THSZMS	TDZ(4)	TQ(5)	CSP(6)	
MM TRF12-W55-P11-5T05	.470	5	11.00	14.00	.0091	.0453	T05	15.875	61.96	0	●
MM TRF12-W55-P19-5T05	.470	5	19.00	28.00	.0043	.0295	T05	14.287	88.51	0	●
MM TRF16-W55-P8-5T06	.628	5	8.00	14.00	.0091	.0610	T06	20.637	132.76	0	●
MM TRF20-W55-P6-6T08	.785	6	6.00	8.00	.0157	.0768	T08	25.4	247.82	0	●

• For ISO metric thread (ISO 68, DIN13, ANSI B 1.13M-1983) • For shanks, see pages 1112-1124 • For clamping instructions, see pages 1047-1048
• Do not apply lubricant to the threaded connection
(1) Number of flutes
(2) Threads per inch minimum
(3) Threads per inch maximum
(4) Smallest possible thread
(5) Tightening torque
(6) 0 - Without coolant supply, 1 - With coolant supply

Spare Parts

Designation	
MM TRF12-W55-P11-5T05	BIT SOCKET T20 3/8" DRIVE*
MM TRF12-W55-P19-5T05	BIT SOCKET T20 3/8" DRIVE*
MM TRF16-W55-P8-5T06	BIT SOCKET T25 3/8" DRIVE*
MM TRF20-W55-P6-6T08	BIT SOCKET T40 3/8" DRIVE*

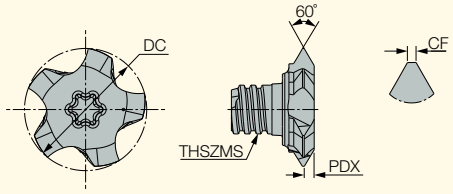
* Optional, to be ordered separately

MULTI-MASTER

MM TRF 60°

Interchangeable Solid Carbide Milling Heads for 60° Partial Profile Thread Milling





M E T R I C

Designation	Dimensions																IC908
	DC	NOF(1)	TPN(2)	TPX(3)	TPN_ DF2(4)	TPX_ DF2(5)	TPIN(6)	TPIX(7)	TPIN_ DF2(8)	TPIX_ DF2(9)	CF	PDX	THSZMS	TDZ(10)	TQ	CSP(11)	
MM TRF12A60-P080-5T05	11.94	5	0.500	0.800	0.400	0.800	28.00	56.00	32.00	64.00	0.05	0.55	T05	M14	7.0	0	●
MM TRF12A60-P175-5T05	11.94	5	1.000	1.750	0.800	1.500	14.00	28.00	16.00	32.00	0.11	0.96	T05	M14	7.0	0	●
MM TRF12A60-P250-5T05	11.94	5	2.000	2.500	1.750	2.000	10.00	13.00	11.00	15.00	0.22	1.21	T05	M16	7.0	0	●
MM TRF16A60-P080-5T06	15.94	5	0.500	0.800	0.400	0.800	28.00	56.00	32.00	64.00	0.05	0.55	T06	M18	10.0	0	●
MM TRF16A60-P175-5T06	15.94	5	1.000	1.750	0.800	1.500	14.00	28.00	16.00	32.00	0.10	1.00	T06	M18	10.0	0	●
MM TRF16A60-P300-5T06	15.94	5	2.000	3.000	1.750	2.500	8.00	13.00	10.00	15.00	0.22	1.41	T06	M20	10.0	0	●
MM TRF20A60-P200-6T08	19.94	6	1.000	2.000	0.800	1.750	13.00	28.00	15.00	32.00	0.11	0.95	T08	M24	10.0	0	●
MM TRF20A60-P300-6T08	19.94	6	2.000	3.000	1.750	2.500	8.00	13.00	10.00	15.00	0.22	1.41	T08	M24	15.0	0	●
MM TRF20A60-P400-6T08	19.94	6	3.000	4.000	2.500	3.500	6.00	9.00	7.00	10.00	0.31	1.86	T08	M25	15.0	0	●

• For ISO metric thread (ISO 68, DIN13, ANSI B 1.13M-1983) • For shanks, see pages 1112-1124 • For clamping instructions, see pages 1047-1048

• Do not apply lubricant to the threaded connection

(1) Number of flutes

(2) Thread pitch minimum (mm)-internal

(3) Thread pitch maximum (mm)-internal

(4) Thread pitch minimum (mm)-external

(5) Thread pitch maximum (mm)-external

(6) Threads per inch minimum-internal

(7) Threads per inch maximum-internal

(8) Threads per inch minimum-external

(9) Threads per inch maximum-external

(10) Smallest possible thread

(11) 0 - Without coolant supply, 1 - With coolant supply

Spare Parts

Designation	
MM TRF12A60-P080-5T05	BIT SOCKET T20 3/8" DRIVE*
MM TRF12A60-P175-5T05	BIT SOCKET T20 3/8" DRIVE*
MM TRF12A60-P250-5T05	BIT SOCKET T20 3/8" DRIVE*
MM TRF16A60-P080-5T06	BIT SOCKET T20 3/8" DRIVE*
MM TRF16A60-P175-5T06	BIT SOCKET T25 3/8" DRIVE*
MM TRF16A60-P300-5T06	BIT SOCKET T25 3/8" DRIVE*
MM TRF20A60-P200-6T08	BIT SOCKET T40 3/8" DRIVE*
MM TRF20A60-P300-6T08	BIT SOCKET T40 3/8" DRIVE*
MM TRF20A60-P400-6T08	BIT SOCKET T40 3/8" DRIVE*

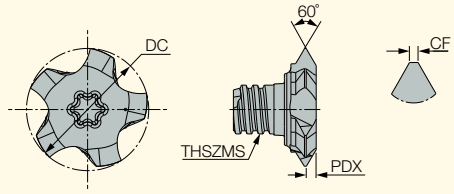
* Optional, to be ordered separately

MULTI-MASTER

MM TRF 60°

Interchangeable Solid Carbide Milling Heads for 60° Partial Profile Thread Milling





I N C H

Designation	Dimensions																IC908
	DC	NOF[1]	TPN (mm)[2]	TPX (mm)[3]	TPN_ DF2[4]	TPX_ DF2[5]	TPIN[6]	TPIX[7]	TPIN_ DF2[8]	TPIX_ DF2[9]	CF	PDX	THSZMS	TDZ[10]	TQ	CSP[11]	
MM TRF12A60-P080-5T05	.470	5	.500	.800	.400	.800	28.00	56.00	32.00	64.00	.002	.0216	T05	M14	61.96	0	●
MM TRF12A60-P175-5T05	.470	5	1.000	1.750	.800	1.500	14.00	28.00	16.00	32.00	.004	.0378	T05	M14	61.96	0	●
MM TRF12A60-P250-5T05	.470	5	2.000	2.500	1.750	2.000	10.00	13.00	11.00	15.00	.009	.0476	T05	M16	61.96	0	●
MM TRF16A60-P080-5T06	.628	5	.500	.800	.400	.800	28.00	56.00	32.00	64.00	.002	.0216	T06	M18	88.51	0	●
MM TRF16A60-P175-5T06	.628	5	1.000	1.750	.800	1.500	14.00	28.00	16.00	32.00	.004	.0394	T06	M18	88.51	0	●
MM TRF16A60-P300-5T06	.628	5	2.000	3.000	1.750	2.500	8.00	13.00	10.00	15.00	.009	.0555	T06	M20	88.51	0	●
MM TRF20A60-P200-6T08	.785	6	1.000	2.000	.800	1.750	13.00	28.00	15.00	32.00	.004	.0374	T08	M24	88.51	0	●
MM TRF20A60-P300-6T08	.785	6	2.000	3.000	1.750	2.500	8.00	13.00	10.00	15.00	.009	.0555	T08	M24	132.76	0	●
MM TRF20A60-P400-6T08	.785	6	3.000	4.000	2.500	3.500	6.00	9.00	7.00	10.00	.012	.0732	T08	M25	132.76	0	●

- For ISO metric thread (ISO 68, DIN13, ANSI B 1.13M-1983) • For shanks, see pages 1112-1124 • For clamping instructions, see pages 1047-1048
- Do not apply lubricant to the threaded connection

[1] Number of flutes
[2] Thread pitch minimum (mm)-internal
[3] Thread pitch maximum (mm)-internal
[4] Thread pitch minimum (mm)-external
[5] Thread pitch maximum (mm)-external
[6] Threads per inch minimum-internal
[7] Threads per inch maximum-internal
[8] Threads per inch minimum-external
[9] Threads per inch maximum-external
[10] Smallest possible thread
[11] 0 - Without coolant supply, 1 - With coolant supply

Thread Size	Tightening Torque (Nxcm)	Tightening Torque (Lbfxinch)
T05	700	60
T06	1000	90
T08	1500	130

[1] Order separately

Spare Parts

Designation	
MM TRF12A60-P080-5T05	BIT SOCKET T20 3/8" DRIVE*
MM TRF12A60-P175-5T05	BIT SOCKET T20 3/8" DRIVE*
MM TRF12A60-P250-5T05	BIT SOCKET T20 3/8" DRIVE*
MM TRF16A60-P080-5T06	BIT SOCKET T20 3/8" DRIVE*
MM TRF16A60-P175-5T06	BIT SOCKET T25 3/8" DRIVE*
MM TRF16A60-P300-5T06	BIT SOCKET T25 3/8" DRIVE*
MM TRF20A60-P200-6T08	BIT SOCKET T40 3/8" DRIVE*
MM TRF20A60-P300-6T08	BIT SOCKET T40 3/8" DRIVE*
MM TRF20A60-P400-6T08	BIT SOCKET T40 3/8" DRIVE*

* Optional, to be ordered separately

ISCAR THREAD - Solid Carbide Endmills Designation Code Key

MTEC□ — Mill Thread endmill carbide

- - without coolant hole
- B - central coolant hole
- Z - coolant holes in flutes
- Q - central coolant hole and reduced neck diameter
- S - for small internal threads for general use
- SH - for small internal threads in hard materials
- I - single point design of cutting head

06 — shank diameter

04 — cutting diameter

C — no. of flutes
- C = 3 flutes
- D = 4 flutes
- E = 5 flutes
- F = 6 flutes

14 — APMX

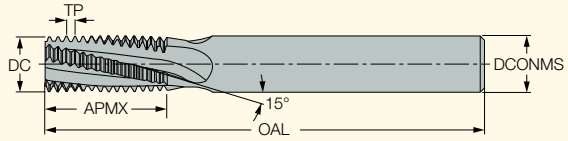
1.0 — thread pitch

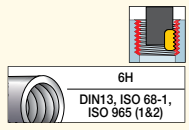
ISO — thread standard

IC908 — carbide grade

SOLIDTHREAD

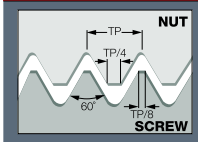
MTEC-ISO
Solid Carbide Internal Threading Endmills for ISO Thread Profile





Application: General engineering

M E T R I C



Designation	Dimensions TP[1]	M Coarse	M Fine	DCONMS	DC	NOF[2]	APMX	OAL	Shank[3]	IC908
MTEC 06022C5 0.5ISO	0.500	M3	=>4	6.00	2.20	3	5.30	58.00	C	●
MTEC 06038C10 0.5ISO	0.500	-	=>5	6.00	3.80	3	10.30	58.00	C	●
MTEC 06031C7 0.7ISO	0.700	M4	=>5	6.00	3.10	3	7.40	58.00	C	●
MTEC 06045C10 0.75ISO	0.750	-	=>6	6.00	4.50	3	10.00	58.00	C	●
MTEC 06036C9 0.8ISO	0.800	M5	=>6	6.00	3.60	3	9.20	58.00	C	●
MTEC 0604C10 1.0ISO	1.000	M6	=>7	6.00	4.00	3	10.50	58.00	C	●
MTEC 0604C14 1.0ISO	1.000	M6	=>7	6.00	4.00	3	14.50	58.00	C	●
MTEC 0606C12 1.0ISO	1.000	-	=>9	6.00	6.00	3	12.50	58.00	C	●
MTEC 0808D16 1.0ISO	1.000	-	=>10	8.00	8.00	4	16.50	64.00	C	●
MTEC 0605C14 1.25ISO	1.250	M8	=>10	6.00	5.00	3	14.40	58.00	C	●
MTEC 0605C19 1.25ISO	1.250	M8	=>10	6.00	5.00	3	19.40	58.00	C	●
MTEC 0807C17 1.5ISO	1.500	M10	=>12	8.00	7.00	3	17.30	64.00	C	●
MTEC 0807C24 1.5ISO	1.500	M10	=>12	8.00	7.00	3	24.80	76.00	C	●
MTEC 1010D21 1.5ISO	1.500	-	=>14	10.00	10.00	4	21.80	73.00	C	●
MTEC 0808C20 1.75ISO	1.750	M12	=>14	8.00	8.00	3	20.10	64.00	C	●
MTEC 0808C28 1.75ISO	1.750	M12	=>14	8.00	8.00	3	28.90	76.00	C	●
MTEC 1010C27 2.0ISO	2.000	M14	=>15	10.00	10.00	3	27.00	73.00	C	●
MTEC 1010C39 2.0ISO	2.000	M14	=>15	10.00	10.00	3	39.00	100.00	C	●
MTEC 1212D27 2.0ISO	2.000	-	=>18	12.00	12.00	4	27.00	84.00	C	●

• For user guide, see pages 1222-1223, 1227-1232

(1) Thread pitch

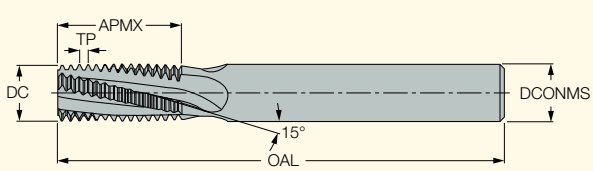
(2) Number of flutes

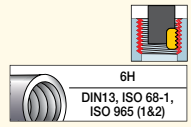
(3) C-Cylindrical

SOLIDTHREAD

MTEC-ISO

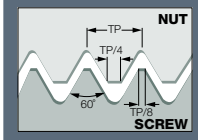
Solid Carbide Internal Threading Endmills for ISO Thread Profile





Application: General engineering

I N C H



Designation	Dimensions									IC908
	TP mm[1]	M Coarse	M Fine	DCONMS	Shank[2]	DC	NOF[3]	APMX	OAL	
MTEC 0250C02 0.5ISO	.500	M3	=>.16	.250	C	.087	3	.210	2.500	●
MTEC 0250C04 0.8ISO	.800	M5	=>.24	.250	C	.142	3	.360	2.500	●
MTEC 0250C04 1.0ISO	1.000	M6	=>.28	.250	C	.160	3	.400	2.500	●
MTEC 0312D07 1.0ISO	1.000	-	=>.39	.312	C	.310	4	.700	2.500	●
MTEC 0250C07 1.25ISO	1.250	M8	=>.39	.250	C	.197	3	.760	2.500	●
MTEC 0375D09 1.5ISO	1.500	MF14	=>.55	.375	C	.370	4	.900	3.000	●
MTEC 0312C07 1.5ISO	1.500	M10	=>.47	.312	C	.280	3	.700	2.500	●
MTEC 0312C09 1.5ISO	1.500	M10	=>.47	.312	C	.276	3	.980	2.500	●
MTEC 0375C11 2.0ISO	2.000	M16	=>.67	.375	C	.370	3	1.100	3.000	●
MTEC 0375C15 2.0ISO	2.000	M16	=>.67	.375	C	.375	3	1.540	4.000	●

• For user guide, see pages 1222-1223, 1227-1232

(1) Thread pitch

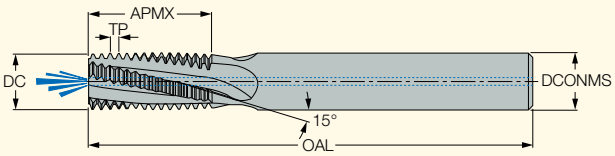
(2) C-Cylindrical

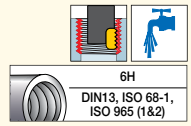
(3) Number of flutes

SOLIDTHREAD

MTECB-ISO

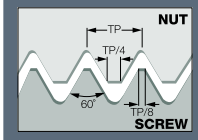
Solid Carbide Internal Threading Endmills with Coolant Hole for ISO Thread Profile





Application: General engineering

M E T R I C



Designation	TP[1]	M Coarse	M Fine	DCONMS	DC	NOF[2]	APMX	OAL	Shank[3]	IC908
	Dimensions									
MTECB 06038C10 0.5ISO	0.500	-	=>5	6.00	3.80	3	10.30	58.00	C	●
MTECB 06031C7 0.7ISO	0.700	M4	=>5	6.00	3.10	3	7.40	58.00	C	●
MTECB 06045C10 0.75ISO	0.750	-	=>6	6.00	4.50	3	10.10	58.00	C	●
MTECB 1010D24 0.75ISO	0.750	-	=>12	10.00	10.00	4	24.40	73.00	C	●
MTECB 06038C9 0.8ISO	0.800	M5	=>6	6.00	3.80	3	9.20	58.00	C	●
MTECB 06046C10 1.0ISO	1.000	M6	=>7	6.00	4.60	3	10.50	58.00	C	●
MTECB 06046C14 1.0ISO	1.000	M6	=>6	6.00	4.60	3	14.50	58.00	C	●
MTECB 0606C12 1.0ISO	1.000	-	=>9	6.00	6.00	3	12.50	58.00	C	●
MTECB 0808D16 1.0ISO	1.000	-	=>10	8.00	8.00	4	16.50	64.00	C	●
MTECB 1010D24 1.0ISO	1.000	-	=>12	10.00	10.00	4	24.50	73.00	C	●
MTECB 0606C14 1.25ISO	1.250	M8	=>10	6.00	6.00	3	14.40	58.00	C	●
MTECB 0606C19 1.25ISO	1.250	M8	=>10	6.00	6.00	3	19.40	58.00	C	●
MTECB 1212D26 1.5ISO	1.500		=>16	12.00	12.00	4	26.30	84.00	C	●
MTECB 08078C17 1.5ISO	1.500	M10	=>12	8.00	7.80	3	17.00	64.00	C	●
MTECB 08078C24 1.5ISO	1.500	M10	=>12	8.00	7.80	3	24.80	76.00	C	●
MTECB 1010D21 1.5ISO	1.500	-	=>14	10.00	10.00	4	21.80	73.00	C	●
MTECB 1009C20 1.75ISO	1.750	M12	=>12	10.00	9.00	3	20.10	73.00	C	●
MTECB 1009C28 1.75ISO	1.750	M12	=>12	10.00	9.00	3	28.90	73.00	C	●
MTECB 1010C27 2.0ISO	2.000	M14	=>15	10.00	10.00	3	27.00	73.00	C	●
MTECB 12118D27 2.0ISO	2.000	M16	=>17	12.00	11.80	4	27.00	84.00	C	●
MTECB 12118D39 2.0ISO	2.000	M16	=>17	12.00	11.80	4	39.00	105.00	C	●

• With internal coolant hole • For user guide, see pages 1222-1223, 1227-1232

(1) Thread pitch

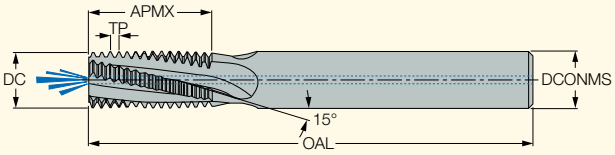
(2) Number of flutes

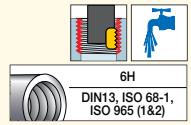
(3) C-Cylindrical

SOLIDTHREAD

MTECB-ISO

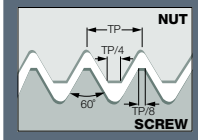
Solid Carbide Internal Threading Endmills with Coolant Holes for ISO Thread Profile





Application: General engineering

I N C H



Designation	TP mm[1]	M Coarse	M Fine	DCONMS	Shank[2]	DC	NOF[3]	APMX	OAL	IC908
	Dimensions									
MTECB 0250C06 1.0ISO	1.000	M6	=>.28	.250	C	.181	3	.600	2.500	●
MTECB 0312D06 1.0ISO	1.000	M10	=>.47	.313	C	.310	4	.650	2.500	●
MTECB 0250C07 1.25ISO	1.250	M8	=>.39	.250	C	.250	3	.760	2.500	●
MTECB 0312C09 1.5ISO	1.500	M10	=>.47	.313	C	.307	3	.980	2.500	●
MTECB 0375C11 1.75ISO	1.750	M12	=>.47	.375	C	.352	3	1.102	3.000	●
MTECB 0375C11 2.0ISO	2.000	M16	=>.47	.375	C	.370	3	1.023	3.000	●

• For user guide, see pages 1222-1223, 1227-1232

(1) Thread pitch

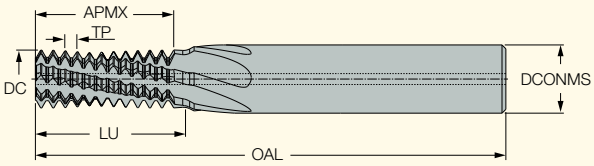
(2) C-Cylindrical

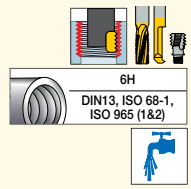
(3) Number of flutes

SOLIDMTHREAD

MTECBF-ISO

Solid Carbide Internal Threading Endmills with a Coolant Hole. Intended for ISO Thread Profiles





M E T R I C

Designation	Dimensions TP[1]	M Coarse	M Fine	DCONMS	DC	NOF[2]	APMX	OAL	Shank	IC908
MTECBF06048F10 1.0ISO	1.000	M6	=>7	6.00	4.80	6	10.20	57.00	C	●
MTECBF08064G14 1.25ISO	1.250	M8	=>10	8.00	6.40	7	14.00	63.00	C	●
MTECBF 1008G16 1.5ISO	1.500	M10	=>12	10.00	8.00	7	16.70	72.00	C	●
MTECBF12095G20 1.75ISO	1.750	M12	=>12	12.00	9.50	7	20.00	84.00	C	●

• For user guide, see pages 1222-1223, 1227-1232 • Internal & External tolerance: ISO 228-1 - Medium class

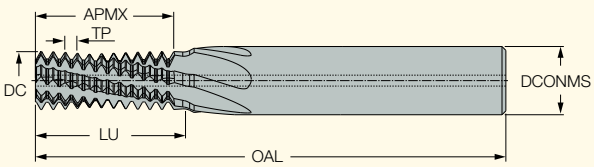
(1) Thread pitch

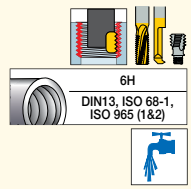
(2) Number of flutes

SOLIDMTHREAD

MTECBF-ISO

Solid Carbide Internal Threading Endmills with a Coolant Hole. Intended for ISO Thread Profiles





I N C H

Designation	Dimensions TP mm[1]	M Coarse	M Fine	DCONMS	DC	NOF[2]	APMX	OAL	Shank	IC908
MTECBF06048F10 1.0ISO	1.000	M6	=>7	.236	.189	6	.402	2.244	C	●
MTECBF08064G14 1.25ISO	1.250	M8	=>10	.315	.252	7	.551	2.480	C	●
MTECBF 1008G16 1.5ISO	1.500	M10	=>12	.394	.315	7	.657	2.835	C	●
MTECBF12095G20 1.75ISO	1.750	M12	=>12	.472	.374	7	.787	3.307	C	●

• For user guide, see pages 1222-1223, 1227-1232 • Internal & External tolerance: ISO 228-1 - Medium class

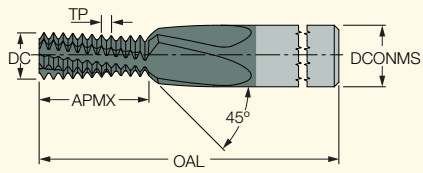
(1) Thread pitch

(2) Number of flutes

SOLIDTHREAD

MTECH-ISO

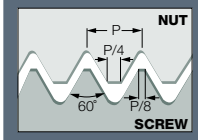
Small Diameter Solid Carbide Internal ISO Profile Threading and Chamfering Endmills, for Hard Materials





Application: General engineering

M E T R I C



Designation	Dimensions TP[1]	M Coarse	M Fine	DCONMS	DC	NOF[2]	APMX	OAL	Shank[3]	IC902
MTECH 0604C9 0.8ISO	0.800	M5	>5.9	6.00	4.00	3	9.20	58.00	C	●
MTECH 08048D10 1.0ISO	1.000	M6	>6.9	8.00	4.80	4	10.50	64.00	C	●
MTECH 0806D14 1.25ISO	1.250	M8	M10	8.00	6.00	4	13.70	64.00	C	●
MTECH 12095D20 1.75ISO 92	1.750	M12	-	12.00	9.50	4	20.10	84.00	C	●

• For user guide, see pages 1222-1223, 1227-1232

(1) Thread pitch

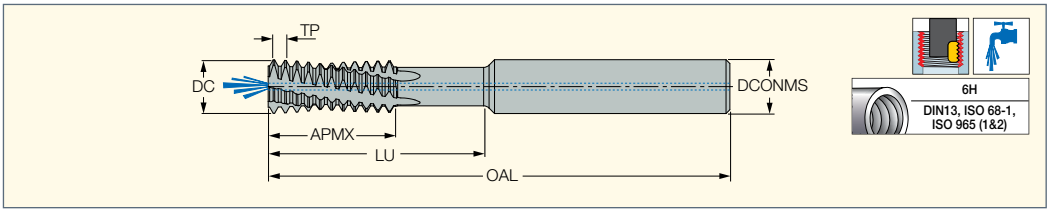
(2) Number of flutes

(3) C-Cylindrical

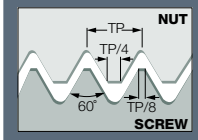
SOLIDTHREAD

MTECQ-ISO

Endmills with Through Tool Coolant and Reduced Neck Diameter for Deep Internal ISO Profile Threading



M E T R I C



Designation	Dimensions									IC908
	TP[1]	TDZ	DCONMS	DC	NOF[2]	APMX	LU	OAL	Shank[3]	
MTECQ 1010D32 1.0ISO	1.000	=>12	10.00	10.00	4	18.00	32.0	73.00	C	●
MTECQ 1212D38 1.0ISO	1.000	=>14	12.00	12.00	4	21.00	38.0	84.00	C	●
MTECQ 1010D30 1.5ISO	1.500	=>13	10.00	10.00	4	18.00	30.0	73.00	C	●
MTECQ 1212D42 2.0ISO	2.000	=>16	12.00	12.00	4	24.00	42.0	84.00	C	●

- For user guide, see pages 1222-1223, 1227-1232

[1] Thread pitch

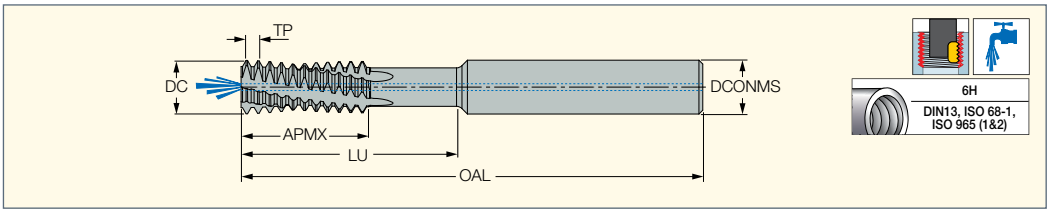
[2] Number of flutes

[3] C-Cylindrical

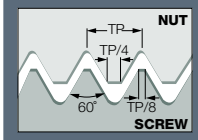
SOLIDTHREAD

MTECQ-ISO

Endmills with Through Tool Coolant and Reduced Neck Diameter for Deep Internal ISO Profile Threading



I N C H



Designation	Dimensions									IC908
	TP mm[1]	TDZ	DCONMS	DC	NOF[2]	APMX	LU	OAL	Shank[3]	
MTECQ 1010D32 1.0ISO	1.000	=>0.472	.394	.394	4	.709	1.260	2.874	C	●
MTECQ 1212D38 1.0ISO	1.000	=>0.551	.472	.472	4	.827	1.496	3.307	C	●
MTECQ 1010D30 1.5ISO	1.500	=>0.511	.394	.394	4	.709	1.181	2.874	C	●
MTECQ 1212D42 2.0ISO	2.000	=>0.629	.472	.472	4	.945	1.654	3.307	C	●

- For user guide, see pages 1222-1223, 1227-1232

[1] Thread pitch

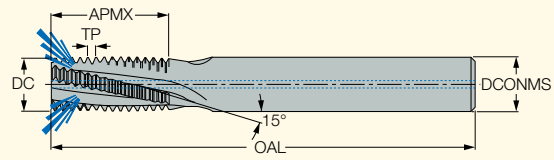
[2] Number of flutes

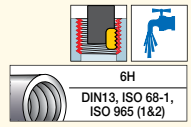
[3] C-Cylindrical

SOLIDTHREAD

MTECZ-ISO

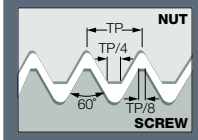
Solid Carbide Internal Threading Endmills with Coolant Holes





Application: General engineering

M E T R I C



Designation	TP[1]	M Coarse	M Fine	Dimensions DCONMS	DC	NOF[2]	APMX	OAL	Shank[3]	IC908
MTECZ 06048C10 1.0ISO	1.000	M6	=>7	6.00	4.80	3	10.50	58.00	C	•
MTECZ 0606C12 1.0ISO	1.000	-	=>9	6.00	6.00	3	12.50	58.00	C	•
MTECZ 0808D16 1.0ISO	1.000	-	=>10	8.00	8.00	4	16.50	64.00	C	•
MTECZ 0606C14 1.25ISO	1.250	M8	=>10	6.00	6.00	3	14.40	58.00	C	•
MTECZ 0606C19 1.25ISO	1.250	M8	=>10	6.00	6.00	3	19.40	58.00	C	•
MTECZ 08078C17 1.5ISO	1.500	M10	=>12	8.00	7.80	3	17.00	64.00	C	•
MTECZ 1010D21 1.5ISO	1.500	-	=>14	10.00	10.00	4	21.80	73.00	C	•
MTECZ 1212D26 1.5ISO	1.500	-	=>16	12.00	12.00	4	26.30	84.00	C	•
MTECZ 1009C20 1.75ISO	1.750	M12	=>12	10.00	9.00	3	20.10	73.00	C	•
MTECZ 1009C28 1.75ISO	1.750	M12	=>12	10.00	9.00	3	28.90	73.00	C	•
MTECZ 1010C27 2.0ISO	2.000	M14	=>15	10.00	10.00	3	27.00	73.00	C	•
MTECZ 12118D27 2.0ISO	2.000	M16	=>17	12.00	11.80	4	27.00	84.00	C	•

• With internal coolant hole • For user guide, see pages 1222-1223, 1227-1232

[1] Thread pitch

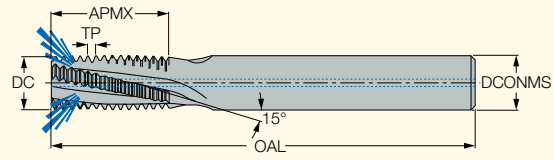
[2] Number of flutes

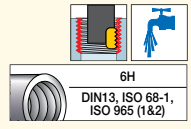
[3] C-Cylindrical

SOLIDTHREAD

MTECZ-ISO

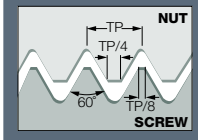
Solid Carbide Internal Threading Endmills with Coolant Holes





Application: General engineering

I N C H



Designation	TP mm[1]	M Coarse	M Fine	Dimensions DCONMS	DC	NOF[2]	APMX	OAL	Shank[3]	IC908
MTECZ 06048C10 1.0ISO	1.000	M6	=>7	.236	.189	3	.413	2.283	C	•
MTECZ 0606C12 1.0ISO	1.000	-	=>9	.236	.236	3	.492	2.283	C	•
MTECZ 0808D16 1.0ISO	1.000	-	=>10	.315	.315	4	.650	2.520	C	•
MTECZ 0606C14 1.25ISO	1.250	M8	=>10	.236	.236	3	.567	2.283	C	•
MTECZ 0606C19 1.25ISO	1.250	M8	=>10	.236	.236	3	.764	2.283	C	•
MTECZ 08078C17 1.5ISO	1.500	M10	=>12	.315	.307	3	.669	2.520	C	•
MTECZ 1010D21 1.5ISO	1.500	-	=>14	.394	.394	4	.858	2.874	C	•
MTECZ 1212D26 1.5ISO	1.500	-	=>16	.472	.472	4	1.035	3.307	C	•
MTECZ 1009C20 1.75ISO	1.750	M12	=>12	.394	.354	3	.791	2.874	C	•
MTECZ 1009C28 1.75ISO	1.750	M12	=>12	.394	.354	3	1.138	2.874	C	•
MTECZ 1010C27 2.0ISO	2.000	M14	=>15	.394	.394	3	1.063	2.874	C	•
MTECZ 12118D27 2.0ISO	2.000	M16	=>17	.472	.465	4	1.063	3.307	C	•

• With internal coolant hole • For user guide, see pages 1222-1223, 1227-1232

[1] Thread pitch

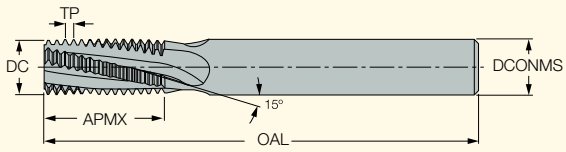
[2] Number of flutes

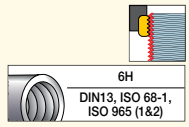
[3] C-Cylindrical

SOLIDTHREAD

MTEC E-ISO

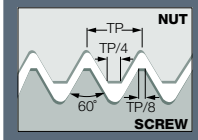
Solid Carbide External Threading Endmills for an ISO Thread Profile





Application: General engineering

M E T R I C



Designation	Dimensions TP[1]	DCONMS	DC	NOF[2]	APMX	OAL	Shank[3]	IC908
MTEC E 1010D16 1.0ISO	1.000	10.00	10.00	4	16.50	73.00	C	●
MTEC E 1212E20 1.0ISO	1.000	12.00	12.00	5	20.50	84.00	C	●
MTEC E 1010D16 1.25ISO	1.250	10.00	10.00	4	16.90	73.00	C	●
MTEC E 1010D15 1.5ISO	1.500	10.00	10.00	4	15.80	73.00	C	●
MTEC E 1212D20 1.5ISO	1.500	12.00	12.00	4	20.30	84.00	C	●
MTEC E 1212D20 1.75ISO	1.750	12.00	12.00	4	20.10	84.00	C	●
MTEC E 1010C17 2.0ISO	2.000	10.00	10.00	3	17.00	73.00	C	●
MTEC E 1212D21 2.0ISO	2.000	12.00	12.00	4	21.00	84.00	C	●

• For user guide, see pages 1222-1223, 1227-1232

(1) Thread pitch

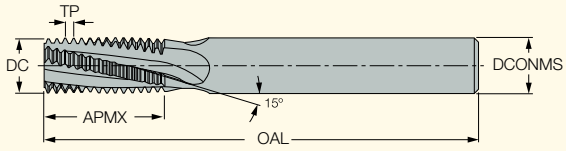
(2) Number of flutes

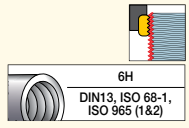
(3) C-Cylindrical

SOLIDTHREAD

MTEC E-ISO

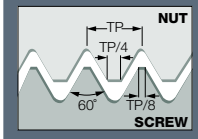
Solid Carbide External Threading Endmills for an ISO Thread Profile





Application: General engineering

I N C H



Designation	Dimensions TP mm[1]	DCONMS	DC	NOF[2]	APMX	OAL	Shank[3]	IC908
MTEC E 1010D16 1.0ISO	1.000	.394	.394	4	.650	2.874	C	●
MTEC E 1212E20 1.0ISO	1.000	.472	.472	5	.807	3.307	C	●
MTEC E 1010D16 1.25ISO	1.250	.394	.394	4	.665	2.874	C	●
MTEC E 1010D15 1.5ISO	1.500	.394	.394	4	.622	2.874	C	●
MTEC E 1212D20 1.5ISO	1.500	.472	.472	4	.799	3.307	C	●
MTEC E 1212D20 1.75ISO	1.750	.472	.472	4	.791	3.307	C	●
MTEC E 1010C17 2.0ISO	2.000	.394	.394	3	.669	2.874	C	●
MTEC E 1212D21 2.0ISO	2.000	.472	.472	4	.827	3.307	C	●

• For user guide, see pages 1222-1223, 1227-1232

(1) Thread pitch

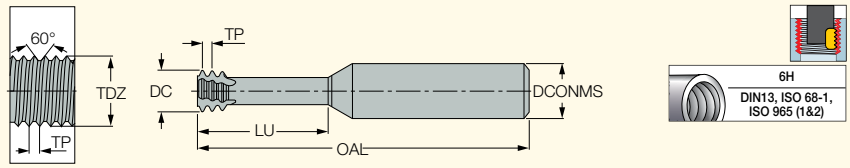
(2) Number of flutes

(3) C-Cylindrical

SOLIDTHREAD

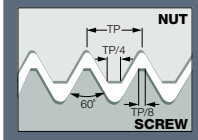
MTECS-ISO

Small Diameter Solid Carbide Threading Endmills for an Internal ISO Profile



Application: General engineering

M E T R I C



Designation	Dimensions								Tough ↔ Hard	
	DC	TP[2]	LU	OAL	DCONMS	TDZ	NOF[3]	Shank[4]	IC908	IC903
MTECS 03007C2 0.25ISO	0.72	0.250	2.5	39.00	3.00	M1	3	C	•	
MTECS 03009C3 0.25ISO	0.90	0.250	3.0	39.00	3.00	M1.2	3	C	•	
MTECS 03011C4 0.3ISO [1]	1.05	0.300	4.0	38.00	3.00	M1.4	3	C	•	
MTECS 03012C5 0.35ISO [1]	1.20	0.350	5.0	38.00	3.00	M1.6	3	C	•	•
MTECS 03016C6 0.4ISO [1]	1.53	0.400	6.0	39.00	3.00	M2	3	C	•	
MTECS 06016C4 0.4ISO	1.53	0.400	4.5	58.00	6.00	M2	3	C	•	
MTECS 03017C7 0.45ISO [1]	1.65	0.450	7.0	39.00	3.00	M2.2	3	C	•	
MTECS 06017C5 0.45ISO	1.65	0.450	5.0	58.00	6.00	M2.2	3	C	•	
MTECS 0602C5 0.45ISO	1.95	0.450	5.5	58.00	6.00	M2.5	3	C	•	
MTECS 0602C5 0.45ISO-L	1.95	0.450	5.5	100.00	6.00	M2.5	3	C	•	
MTECS 0602C7 0.45ISO	1.95	0.450	7.5	58.00	6.00	M2.5	3	C	•	
MTECS 06024C6 0.5ISO	2.37	0.500	6.5	58.00	6.00	M3	3	C	•	
MTECS 06024C9 0.5ISO	2.37	0.500	9.5	58.00	6.00	M3	3	C	•	
MTECS 06024C9 0.5ISO-L	2.37	0.500	9.5	100.00	6.00	M3	3	C	•	
MTECS 03024C12 0.5ISO	2.40	0.500	12.5	39.00	3.00	M3	3	C	•	
MTECS 03024C15 0.5ISO	2.40	0.500	15.5	39.00	3.00	M3	3	C	•	
MTECS 06028C10 0.6ISO	2.75	0.600	10.5	58.00	6.00	M3.5	3	C	•	
MTECS 06028C7 0.6ISO	2.75	0.600	7.5	58.00	6.00	M3.5	3	C	•	
MTECS 06031C12 0.7ISO	3.10	0.700	12.5	58.00	6.00	M4	3	C	•	
MTECS 06031C120.7ISO-L	3.10	0.700	12.5	100.00	6.00	M4	3	C	•	
MTECS 06031C16 0.7ISO	3.10	0.700	16.7	58.00	6.00	M4	3	C	•	
MTECS 06031C9 0.7ISO	3.10	0.700	9.0	58.00	6.00	M4	3	C	•	
MTECS 06038C12 0.8ISO	3.80	0.800	12.5	58.00	6.00	M5	3	C	•	
MTECS 06038C16 0.8ISO	3.80	0.800	16.0	58.00	6.00	M5	3	C	•	•
MTECS 06038C160.8ISO-L	3.80	0.800	16.0	100.00	6.00	M5	3	C	•	
MTECS 0604C20 0.8ISO	4.00	0.800	20.8	58.00	6.00	M5	3	C	•	
MTECS 06047C14 1.0ISO	4.65	1.000	14.0	58.00	6.00	M6	3	C	•	
MTECS 06047C20 1.0ISO	4.65	1.000	20.0	58.00	6.00	M6	3	C	•	
MTECS 06047C201.0ISO-L	4.65	1.000	20.0	100.00	6.00	M6	3	C	•	
MTECS 06048C25 1.0ISO	4.80	1.000	25.0	58.00	6.00	M6	3	C	•	
MTECS 06054D20 0.5ISO	5.35	0.500	20.0	58.00	6.00	M6	4	C	•	
MTECS 0606C18 1.25ISO	6.00	1.250	18.0	58.00	6.00	M8	3	C	•	
MTECS 0606C24 1.25ISO	6.00	1.250	24.0	58.00	6.00	M8	3	C	•	
MTECS0606C24 1.25ISO-L	6.00	1.250	24.6	100.00	6.00	M8	3	C	•	
MTECS 08078C23 1.5ISO	7.80	1.500	23.0	64.00	8.00	M10	3	C	•	
MTECS 08078C31 1.5ISO	7.80	1.500	31.5	64.00	8.00	M10	3	C	•	
MTECS 0808D25 0.75ISO	8.00	0.750	25.0	64.00	8.00	M10	4	C	•	
MTECS 1009C26 1.75ISO	9.00	1.750	26.0	73.00	10.00	M12	3	C	•	
MTECS 1009C37 1.75ISO	9.00	1.750	37.8	73.00	10.00	M12	3	C	•	
MTECS 12118D35 2.0ISO	11.80	2.000	35.0	84.00	12.00	M16	4	C	•	
MTECS 12118D50 2.0ISO	11.80	2.000	50.0	100.00	12.00	M16	4	C	•	

• For user guide, see pages 1222-1223, 1227-1232

(1) Specially designed for the production of dental implants

(2) Thread pitch

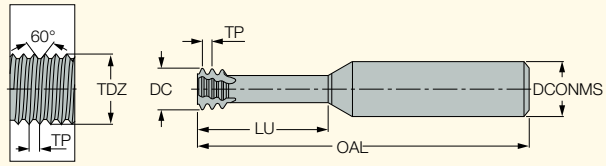
(3) Number of flutes

(4) C-Cylindrical

SOLIDTHREAD

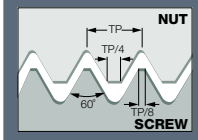
MTECS-ISO

Small Diameter Solid Carbide Threading Endmills for an Internal ISO Profile



Application: General engineering

I N C H



Designation	Dimensions DC	TP mm[1]	LU	OAL	DCONMS	TDZ	NOF[2]	Shank[3]	IC908
MTECS 0250C18 0.4ISO	.061	.400	.180	2.500	.250	M2	3	C	●
MTECS 0250C22 0.45ISO	.077	.450	.220	2.500	.250	M2.5	3	C	●
MTECS 0250C30 0.45ISO	.077	.450	.300	2.500	.250	M2.5	3	C	●
MTECS 0250C26 0.5ISO	.093	.500	.260	2.500	.250	M3	3	C	●
MTECS 0250C37 0.5ISO	.093	.500	.370	2.500	.250	M3	3	C	●
MTECS 0250C30 0.6ISO	.108	.600	.300	2.500	.250	M3.5	3	C	●
MTECS 0250C35 0.7ISO	.122	.700	.350	2.500	.250	M4	3	C	●
MTECS 0250C49 0.7ISO	.122	.700	.490	2.500	.250	M4	3	C	●
MTECS 0250C49 0.8ISO	.150	.800	.490	2.500	.250	M5	3	C	●
MTECS 0250C63 0.8ISO	.150	.800	.630	2.500	.250	M5	3	C	●
MTECS 0250C79 1.0ISO	.183	1.000	.790	2.500	.250	M6	3	C	●
MTECS 0250C71 1.25ISO	.234	1.250	.710	2.500	.250	M8	3	C	●
MTECS 0250C94 1.25ISO	.234	1.250	.940	2.500	.250	M8	3	C	●
MTECS 0312C91 1.5ISO	.307	1.500	.910	2.500	.312	M10	3	C	●
MTECS 0375C10 1.75ISO	.354	1.750	1.020	3.000	.375	M12	3	C	●
MTECS 0500D13 2.0ISO	.465	2.000	1.380	3.000	.500	M16	4	C	●

• For user guide, see pages 1222-1223, 1227-1232

(1) Thread pitch

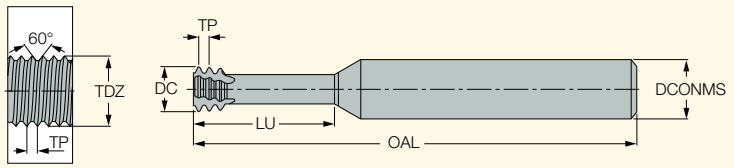
(2) Number of flutes

(3) C-Cylindrical

SOLIDTHREAD

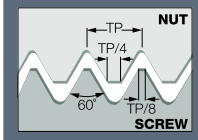
MTECSH-ISO

Small Diameter Short Left-Hand Cut. Internal ISO Profile Threading Endmills for Hardened Steel



Left-hand tools (CNC code M04) • Application: General engineering

M E T R I C



Designation	Dimensions DC	TP[1]	LU	OAL	DCONMS	TDZ	NOF[2]	Shank[3]	IC903
MTECSH 03011C4 0.3ISO	1.05	0.300	4.0	39.00	3.00	M1.4	3	C	•
MTECSH 03012C5 0.35ISO	1.20	0.350	4.8	39.00	3.00	M1.6, M1.8	3	C	•
MTECSH 03016C6 0.4ISO	1.55	0.400	6.0	38.00	3.00	M2	3	C	•
MTECSH 06016C4 0.4ISO	1.55	0.400	4.5	58.00	6.00	M2	3	C	•
MTECSH 06017C5 0.45ISO	1.65	0.450	5.0	58.00	6.00	M2.2	3	C	•
MTECSH 0602C5 0.45ISO	1.95	0.450	5.5	58.00	6.00	M2.5	3	C	•
MTECSH 0602C7 0.45ISO	1.95	0.450	7.5	58.00	6.00	M2.5	3	C	•
MTECSH 06024C6 0.5ISO	2.35	0.500	6.5	58.00	6.00	M3	3	C	•
MTECSH 06024C9 0.5ISO	2.35	0.500	9.5	58.00	6.00	M3	3	C	•
MTECSH 06028C7 0.6ISO	2.75	0.600	7.5	58.00	6.00	M3.5	3	C	•
MTECSH06028C10 0.6ISO	2.75	0.600	10.0	58.00	6.00	M3.5	3	C	•
MTECSH 06031C9 0.7ISO	3.10	0.700	9.0	58.00	6.00	M4	3	C	•
MTECSH 06031C12 0.7ISO	3.10	0.700	12.5	58.00	6.00	M4	3	C	•
MTECSH 06038C12 0.8ISO	3.80	0.800	12.5	58.00	6.00	M5	3	C	•
MTECSH 06038C16 0.8ISO	3.80	0.800	16.0	58.00	6.00	M5	3	C	•
MTECSH 06047C14 1.0ISO	4.65	1.000	14.0	58.00	6.00	M6	3	C	•
MTECSH 06047C20 1.0ISO	4.65	1.000	20.0	58.00	6.00	M6	3	C	•
MTECSH 0606C18 1.25ISO	5.95	1.250	18.0	58.00	6.00	M8	3	C	•
MTECSH 0606C24 1.25ISO	5.95	1.250	24.0	58.00	6.00	M8	3	C	•
MTECSH 08078C23 1.5ISO	7.80	1.500	23.0	64.00	8.00	M10	3	C	•
MTECSH 1009C26 1.75ISO	9.00	1.750	26.0	73.00	10.00	M12	3	C	•
MTECSH 12118D35 2.0ISO	11.80	2.000	35.0	84.00	12.00	M16	4	C	•

• For user guide, see pages 1186, 1227-1232

(1) Thread pitch

(2) Number of flutes

(3) C-Cylindrical

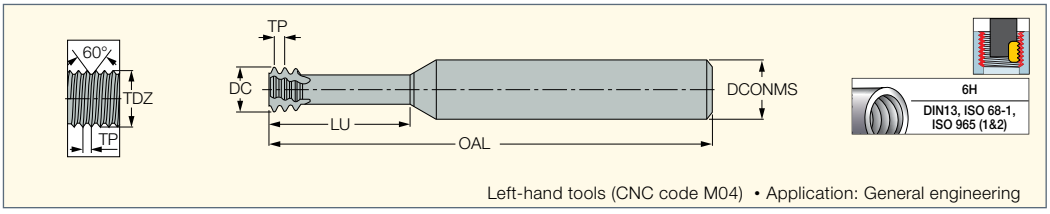
Machining Data for Solid Carbide Thread Mills for Small Internal Threads in Hard Materials

ISO	Material	Hardness HRC	Cutting Speed m/min	Feed mm/tooth for Cutting Diameter (mm) 1.5	2	3	4	5	6	7	8	9
H	hardened steels	45-50	60-70	0.04	0.04	0.05	0.05	0.06	0.06	0.07	0.07	0.08
		51-55	50-60	0.03	0.03	0.04	0.04	0.05	0.05	0.06	0.06	0.07
		56-62	40-50	0.02	0.02	0.03	0.03	0.04	0.04	0.05	0.05	0.06

SOLIDTHREAD

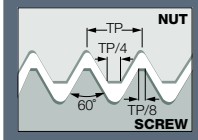
MTECSH-ISO

Small Diameter Short Left-Hand Cut. Internal ISO Profile Threading Endmills for Hardened Steel



Left-hand tools (CNC code M04) • Application: General engineering

I N C H



Designation	Dimensions DC	TP mm[1]	LU	OAL	DCONMS	TDZ	NOF[2]	Shank[3]	IC903
MTECSH 0250C26 0.5ISO	.093	.500	.260	2.500	.250	M3	3	C	●
MTECSH 0250C37 0.5ISO	.093	.500	.370	2.500	.250	M3	3	C	●
MTECSH 0250C35 0.7ISO	.122	.700	.350	2.500	.250	M4	3	C	●
MTECSH 0250C49 0.8ISO	.149	.800	.490	2.500	.250	M5	3	C	●
MTECSH 0250C55 1.0ISO	.183	1.000	.550	2.500	.250	M6	3	C	●
MTECSH 0250C79 1.0ISO	.183	1.000	.811	2.500	.250	M6	3	C	●
MTECSH 0250C71 1.25ISO	.234	1.250	.710	2.500	.250	M8	3	C	●
MTECSH 0250C94 1.25ISO	.234	1.250	.969	2.500	.250	M8	3	C	●
MTECSH 0312C91 1.5ISO	.305	1.500	.910	2.500	.312	M10	3	C	●
MTECSH 0375C10 1.75ISO	.354	1.750	1.020	3.000	.375	M12	3	C	●

• For user guide, see pages 1187, 1227-1232

(1) Thread pitch

(2) Number of flutes

(3) C-Cylindrical

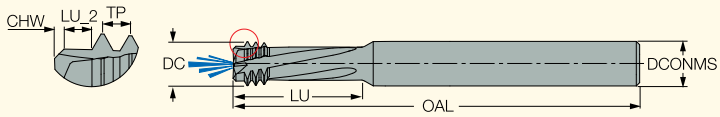
Machining Data for Solid Carbide Thread Mills for Small Internal Threads in Hard Materials

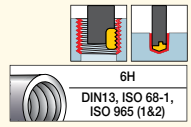
ISO	Material	Hardness HRc	Cutting Speed SFM	Feed (IPT) for Cutting Diameter (D) .06	.08	.12	.16	.2	.24	.28	.31	.35
H	hardened steels	45-50	200-230	.0016	.0016	.002	.002	.0024	.0024	.0028	.0028	.0031
		51-55	160-200	.0012	.0012	.0016	.0016	.002	.002	.0024	.0024	.0028
		56-62	130-160	.0008	.0008	.0012	.0012	.0016	.0016	.002	.002	.0024

SOLIDTHREAD

MTECD-ISO

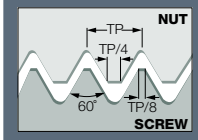
Small Diameter Short Left-Hand Cut. Solid Carbide Endmills for Internal ISO Profile Drilling, Threading and Chamfering





Left-hand tools (CNC code M04) • Application: General engineering • Coolant holes only in 1.0-2.0 pitch tools

M E T R I C



Designation	Dimensions											Tough ↔ Hard	
	TP[1]	TDZ	DCONMS	DC	NOF[2]	LU	OAL	CHW	LU_2	Shank[3]	CSP[4]	IC908	IC903
MTECD 06032C11 0.7ISO	0.700	M4	6.00	3.15	3	11.6	58.00	0.20	0.7	C	0	•	
MTECDH06032C11 0.7ISO	0.700	M4	6.00	3.15	3	11.6	58.00	0.20	0.7	C	0		•
MTECD 0604C14 0.8ISO	0.800	M5	6.00	4.00	3	14.4	58.00	0.30	0.8	C	0	•	
MTECD 08047C14 1.0ISO	1.000	M6-M9	8.00	4.70	3	14.0	64.00	0.40	1.0	C	1	•	
MTECD 08061D18 1.25ISO	1.250	M8-M12	8.00	6.10	4	18.0	64.00	0.50	1.3	C	1	•	
MTECD 08078D23 1.5ISO	1.500	M10-M15	8.00	7.80	4	23.0	64.00	0.60	1.5	C	1	•	
MTECD 1009D26 1.75ISO	1.750	M12	10.00	9.00	4	26.0	73.00	0.60	1.8	C	1	•	
MTECD 12118D35 2.0ISO	2.000	M16-M23	12.00	11.80	4	35.0	84.00	0.60	2.0	C	1	•	

• Thread hole, thread and chamfer by circular interpolation • For user guide, see pages 1222-1223, 1227-1232

(1) Thread pitch

(2) Number of flutes

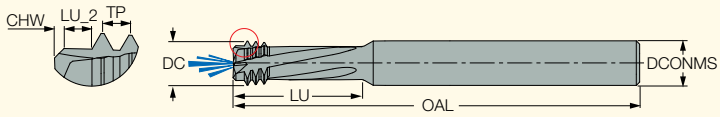
(3) C-Cylindrical

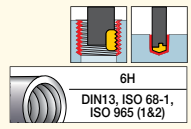
(4) 0 - Without coolant supply, 1 - With coolant supply

SOLIDTHREAD

MTECD-ISO

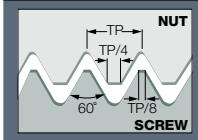
Small Diameter Short Left-Hand Cut. Solid Carbide Endmills for Internal ISO Profile Drilling, Threading and Chamfering





Left-hand tools (CNC code M04) • Application: General engineering • Coolant holes only in 1.0-2.0 pitch tools

I N C H



Designation	Dimensions											Tough ↔ Hard	
	TP mm[1]	TDZ	DCONMS	DC	NOF[2]	LU	OAL	CHW	LU_2	Shank[3]	CSP[4]	IC908	IC903
MTECD 06032C11 0.7ISO	.700	M4	.236	.124	3	.457	2.283	.008	.03	C	0	•	
MTECDH06032C11 0.7ISO	.700	M4	.236	.124	3	.457	2.283	.008	.03	C	0		•
MTECD 0604C14 0.8ISO	.800	M5	.236	.157	3	.567	2.283	.012	.03	C	0	•	
MTECD 08047C14 1.0ISO	1.000	M6-M9	.315	.185	3	.551	2.520	.016	.04	C	1	•	
MTECD 08061D18 1.25ISO	1.250	M8-M12	.315	.240	4	.709	2.520	.020	.05	C	1	•	
MTECD 08078D23 1.5ISO	1.500	M10-M15	.315	.307	4	.906	2.520	.024	.06	C	1	•	
MTECD 1009D26 1.75ISO	1.750	M12	.394	.354	4	1.024	2.874	.024	.07	C	1	•	
MTECD 12118D35 2.0ISO	2.000	M16-M23	.472	.465	4	1.378	3.307	.024	.08	C	1	•	

• Thread hole, thread and chamfer by circular interpolation • For user guide, see pages 1222-1223, 1227-1232

(1) Thread pitch

(2) Number of flutes

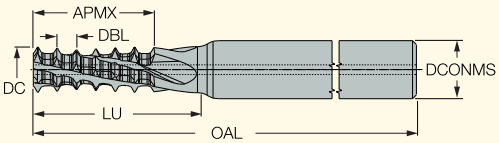
(3) C-Cylindrical

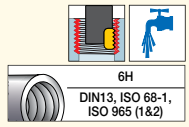
(4) 0 - Without coolant supply, 1 - With coolant supply

SOLIDMTHREAD

MTECK-ISO

Solid Carbide Internal Threading Endmill Step Release, Lead x2 With Coolant Hole, Used for ISO Thread Profile





M E T R I C

Designation	Dimensions										IC908
	TP[1]	M Coarse	M Fine	DBL	APMX	OAL	NOF[2]	DCONMS	DC	Shank	
MTECK 06032D$_8$ 0.5ISO	0.500	-	M4	1.00	8.20	58.00	4	6.00	3.20	C	•
MTECK 06031C9 0.7ISO	0.700	M4	-	1.40	8.70	58.00	3	6.00	3.10	C	•
MTECK 06039C10 0.8ISO	0.800	M5	-	1.60	10.80	58.00	3	6.00	3.90	C	•
MTECK 06047D12 1.0ISO	1.000	M6	-	2.00	12.50	58.00	4	6.00	4.70	C	•
MTECK 08063D16 1.25ISO	1.250	M8	-	2.50	16.90	64.00	4	8.00	6.30	C	•
MTECK 08079D21 1.5ISO	1.500	M10	-	3.00	21.70	64.00	4	8.00	7.90	C	•
MTECK 120117E28 1.5ISO	1.500	-	M16	3.00	29.30	94.00	5	12.00	11.70	C	•
MTECK10098E24 1.5ISO	1.500	-	M13	3.00	24.80	73.00	5	10.00	9.80	C	•
MTECK 10096D24 1.75ISO	1.750	M12	-	3.50	25.30	73.00	4	10.00	9.60	C	•
MTECK 12112D28 2.0ISO	2.000	M16	-	4.00	28.90	84.00	4	12.00	11.20	C	•

• For user guide, see pages 1224-1225, 1227-1232

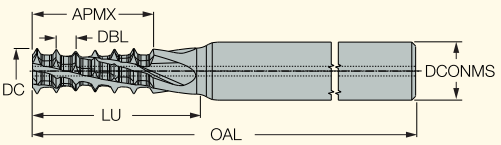
(1) Thread pitch

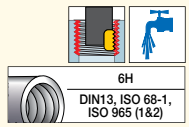
(2) Number of flutes

SOLIDMTHREAD

MTECK-ISO

Solid Carbide Internal Threading Endmill Step Release, Lead x2 With Coolant Hole, Used for ISO Thread Profile





I N C H

Designation	Dimensions										IC908
	TP mm[1]	M Coarse	M Fine	DBL	APMX	OAL	NOF[2]	DCONMS	DC	Shank	
MTECK 06032D$_8$ 0.5ISO	.500	-	M4	.0394	.3228	2.283	4	.236	.126	C	•
MTECK 06031C9 0.7ISO	.700	M4	-	.0551	.3425	2.283	3	.236	.122	C	•
MTECK 06039C10 0.8ISO	.800	M5	-	.0630	.4252	2.283	3	.236	.154	C	•
MTECK 06047D12 1.0ISO	1.000	M6	-	.0787	.4921	2.283	4	.236	.185	C	•
MTECK 08063D16 1.25ISO	1.250	M8	-	.0984	.6654	2.520	4	.315	.248	C	•
MTECK 08079D21 1.5ISO	1.500	M11	-	.1181	.8543	2.520	4	.315	.311	C	•
MTECK 120117E28 1.5ISO	1.500	-	M16	.1181	1.1535	3.701	5	.472	.461	C	•
MTECK10098E24 1.5ISO	1.500	-	M13	.1181	.9764	2.874	5	.394	.386	C	•
MTECK 10096D24 1.75ISO	1.750	M12	-	.1378	.9961	2.874	4	.394	.378	C	•
MTECK 12112D28 2.0ISO	2.000	M16	-	.1575	1.1378	3.307	4	.472	.441	C	•

• For user guide, see pages 1224-1225, 1227-1232

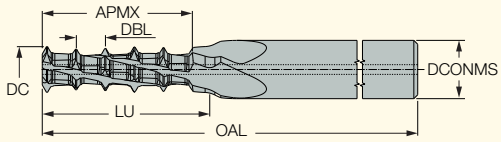
(1) Thread pitch

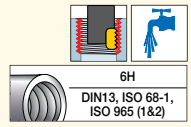
(2) Number of flutes

SOLIDMTHREAD

MTECM-ISO

Solid Carbide Internal Threading Endmill Step Release, Lead x3 With Coolant Holes, Used for ISO Thread Profile





M E T R I C

Designation	Dimensions										IC908
	TP[1]	M Coarse	M Fine	DBL	APMX	OAL	NOF[2]	DCONMS	DC	Shank	
MTECM 06031C11 0.7ISO	0.700	M4	-	2.10	10.80	58.00	3	6.00	3.10	C	●
MTECM 06039C12 0.8ISO	0.800	M5	-	2.40	13.20	58.00	3	6.00	3.90	C	●
MTECM 06047D14 1.0ISO	1.000	M6	-	3.00	15.40	58.00	4	6.00	4.70	C	●
MTECM 08079E21 1.0ISO	1.000	-	M10	3.00	21.40	64.00	5	8.00	7.90	C	●
MTECM 10096D32 1.75ISO	1.750	M12	-	5.25	32.30	81.00	4	10.00	9.60	C	●

• For user guide, see pages 1224-1225, 1227-1232

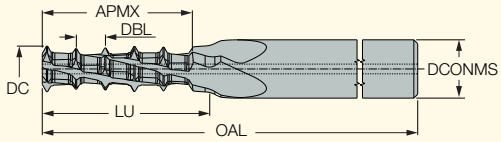
(1) Thread pitch

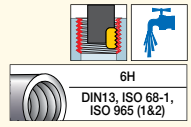
(2) Number of flutes

SOLIDMTHREAD

MTECM-ISO

Solid Carbide Internal Threading Endmill Step Release, Lead x3 With Coolant Holes, Used for ISO Thread Profile





I N C H

Designation	Dimensions										IC908
	TP mm[1]	M Coarse	M Fine	DBL	APMX	OAL	NOF[2]	DCONMS	DC	Shank	
MTECM 06031C11 0.7ISO	.700	M4	-	.0827	.4252	2.283	3	.236	.122	C	●
MTECM 06039C12 0.8ISO	.800	M5	-	.0945	.5197	2.283	3	.236	.154	C	●
MTECM 06047D14 1.0ISO	1.000	M6	-	.1181	.6063	2.283	4	.236	.185	C	●
MTECM 08079E21 1.0ISO	1.000	-	M10	.1181	.8425	2.520	5	.315	.311	C	●
MTECM 10096D32 1.75ISO	1.750	M12	-	.2067	1.2716	3.189	4	.394	.378	C	●

• For user guide, see pages 1224-1225, 1227-1232

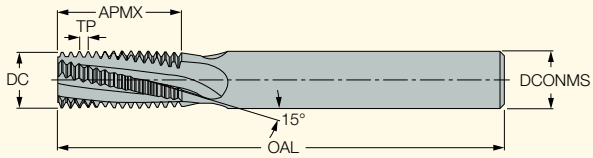
(1) Thread pitch

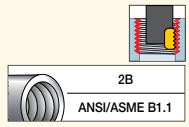
(2) Number of flutes

SOLIDTHREAD

MTEC-UN

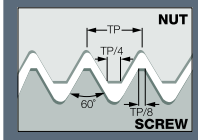
Solid Carbide Threading Endmills
for Internal UN Thread Profile





Application: General engineering

M E T R I C



Designation	TPI[1]	UNC	UNF	UNEF	Dimensions DCONMS	DC	NOF[2]	APMX	OAL	Shank[3]	TP[4]	IC908
MTEC 06025C6 40UN	40.0	5	-	-	6.00	2.50	3	6.00	58.00	C	0.635	●
MTEC 06032C6 32UN	32.0	8	10	12	6.00	3.20	3	6.80	58.00	C	0.794	●
MTEC 0604C11 28UN	28.0	-	1/4"	-	6.00	4.00	3	11.30	58.00	C	0.907	●
MTEC 0606C14 28UN	28.0	-	-	7/16,1/2	6.00	6.00	3	14.50	58.00	C	0.907	●
MTEC 0605C14 24UN	24.0	-	5/16"	-	6.00	5.00	3	14.30	58.00	C	1.058	●
MTEC 0807C21 24UN	24.0	-	3/8"	9/16,5/8	8.00	7.00	3	20.00	64.00	C	1.058	●
MTEC 06045C12 20UN	20.0	1/4"	-	-	6.00	4.50	3	12.10	58.00	C	1.270	●
MTEC 0807C21 20UN	20.0	-	7/16,1/2"	-	8.00	7.00	3	20.00	64.00	C	1.270	●
MTEC 1212E27 20UN	20.0	-	-	3/4,1	12.00	12.00	5	27.30	84.00	C	1.270	●
MTEC 0605C14 18UN	18.0	5/16"	-	-	6.00	5.00	3	14.80	58.00	C	1.411	●
MTEC 1010D26 18UN	18.0	-	9/16,5/8"	1-1/8,1-5/8	10.00	10.00	4	26.10	73.00	C	1.411	●
MTEC 0606C16 16UN	16.0	3/8"	-	-	6.00	6.00	3	16.70	57.00	C	1.588	●
MTEC 1212D31 16UN	16.0	-	3/4"	-	12.00	12.00	4	30.00	83.00	C	1.588	●
MTEC 0808C22 13UN	13.0	1/2"	-	-	8.00	8.00	3	22.50	63.00	C	1.954	●
MTEC 1010C26 12UN	12.0	9/16"	-	-	10.00	10.00	3	26.50	72.00	C	2.117	●
MTEC 1010C28 11UN	11.0	5/8"	-	-	10.00	10.00	3	28.90	72.00	C	2.309	●
MTEC 1212C34 10UN	10.0	3/4"	-	-	12.00	12.00	3	34.30	83.00	C	2.540	●

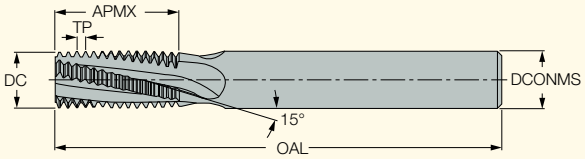
• For user guide, see pages 1222-1223, 1227-1232

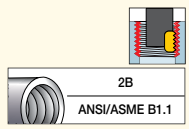
(1) Threads per inch
(2) Number of flutes
(3) C-Cylindrical
(4) Thread pitch

SOLIDTHREAD

MTEC-UN

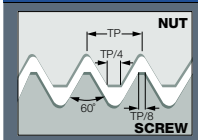
Solid Carbide Threading Endmills
for Internal UN Thread Profile





Application: General engineering

I N C H



Designation	TPI[1]	UNC	UNF	UNEF	Dimensions DCONMS	Shank[2]	DC	NOF[3]	APMX	OAL	IC908
MTEC 0250C02 40UN	40.0	5"			.250	C	.098	3	.240	2.500	●
MTEC 0250C02 32UN	32.0	8"	10"	12"	.250	C	.126	3	.270	2.500	●
MTEC 0250C04 28UN	28.0		1/4"	7/16-1/2"	.250	C	.160	3	.400	2.500	●
MTEC 0250C05 28UN	28.0			7/16-1/2"	.250	C	.236	3	.570	2.500	●
MTEC 0250C06 24UN	24.0		5/16-3/8"		.250	C	.200	3	.600	2.500	●
MTEC 0312C08 24UN	24.0			9/16-5/8"	.312	C	.280	3	.800	2.500	●
MTEC 0250C05 20UN	20.0	1/4"			.250	C	.180	3	.472	2.500	●
MTEC 0312C08 20UN	20.0		7/16-1/2"		.312	C	.280	3	.800	2.500	●
MTEC 0500E11 20UN	20.0			3/4-1"	.500	C	.470	5	1.100	3.000	●
MTEC 0250C06 18UN	18.0	5/16"			.250	C	.200	3	.600	2.500	●
MTEC 0375D10 18UN	18.0		9/16-5/8"	1 1/8-1 5/8"	.375	C	.375	4	1.000	3.000	●
MTEC 0250C07 16UN	16.0	3/8"			.250	C	.240	3	.700	2.500	●
MTEC 0500D12 16UN	16.0		3/4"		.500	C	.470	4	1.200	3.000	●
MTEC 0312C08 14UN	14.0	7/16"			.312	C	.280	3	.800	2.500	●
MTEC 0312C09 13UN	13.0	1/2"			.312	C	.310	3	.900	2.500	●
MTEC 0375C10 12UN	12.0	9/16"			.375	C	.375	3	1.000	3.000	●
MTEC 0375C11 11UN	11.0	5/8"			.375	C	.372	3	1.100	3.000	●
MTEC 0500C14 10UN	10.0	3/4"			.500	C	.470	3	1.400	3.000	●

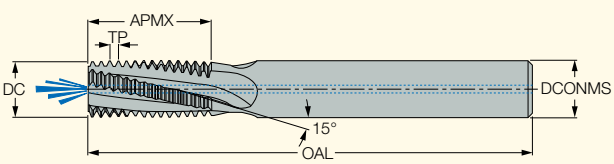
• For user guide, see pages 1222-1223, 1227-1232

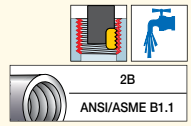
(1) Threads per inch
(2) C-Cylindrical
(3) Number of flutes

SOLIDTHREAD

MTECB-UN

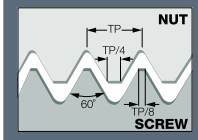
Solid Carbide Threading Endmills with Coolant Hole for Internal UN Thread Profile





Application: General engineering

M E T R I C



Designation	TPI[1]	UNC	UNF	UNEF	DCONMS	DC	NOF[2]	APMX	OAL	Shank[3]	TP[4]	IC908
	Dimensions											
MTECB 06032C6 32UN	32.0	8	10	12	6.00	3.20	3	6.80	58.00	C	0.794	●
MTECB 0606C14 32UN	32.0	-	-	7/16-1/2	6.00	6.00	3	16.00	58.00	C	0.794	●
MTECB 0808D18 32UN	32.0	-	-	3/8	8.00	8.00	4	18.70	64.00	C	0.794	●
MTECB 0605C11 28UN	28.0	-	1/4	-	6.00	5.00	3	11.30	58.00	C	0.907	●
MTECB 08066C14 24UN	24.0	-	5/16	-	8.00	6.60	3	14.30	64.00	C	1.058	●
MTECB 0808D21 24UN	24.0	-	-	9/16-5/8	8.00	8.00	4	20.60	64.00	C	1.058	●
MTECB 0808C21 20UN	20.0	-	7/16	-	8.00	8.00	3	21.00	64.00	C	1.270	●
MTECB 1010D22 20UN	20.0	-	1/2	-	10.00	10.00	4	22.30	73.00	C	1.270	●
MTECB 06056C14 18UN	18.0	5/16	-	-	6.00	5.60	3	14.80	58.00	C	1.411	●
MTECB 12113D26 18UN	18.0	-	9/16-5/8	1-1/8_1-5/8	12.00	11.30	4	26.10	84.00	C	1.411	●
MTECB 08067C16 16UN	16.0	3/8	-	-	8.00	6.70	3	16.70	64.00	C	1.588	●
MTECB 1212D31 16UN	16.0	-	3/4	-	12.00	12.00	4	31.00	84.00	C	1.588	●
MTECB 08077C20 14UN	14.0	7/16	-	-	8.00	7.70	3	20.90	64.00	C	1.814	●
MTECB 10092C22 13UN	13.0	1/2	-	-	10.00	9.20	3	22.50	73.00	C	1.954	●
MTECB 12114C28 11UN	11.0	5/8	-	-	12.00	11.40	3	28.90	84.00	C	2.309	●

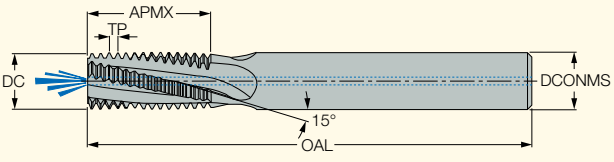
• For user guide, see pages 1222-1223, 1227-1232

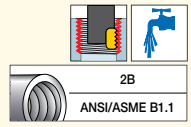
(1) Threads per inch
(2) Number of flutes
(3) C-Cylindrical
(4) Thread pitch

SOLIDTHREAD

MTECB-UN

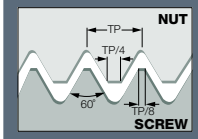
Solid Carbide Threading Endmills with Coolant Holes for Internal UN Thread Profile





Application: General engineering

I N C H



Designation	TPI[1]	UNC	UNF	UNEF	DCONMS	Shank[2]	DC	NOF[3]	APMX	OAL	IC908
	Dimensions										
MTECB 0250C05 32UN	32.0			5/16"	.250	C	.250	3	.580	2.500	●
MTECB 0312D07 32UN	32.0			3/8"	.313	C	.312	4	.740	2.500	●
MTECB 0250C04 28UN	28.0		1/4"		.250	C	.197	3	.440	2.500	●
MTECB 0250C05 28UN	28.0			7/16-1/2"	.250	C	.250	3	.560	2.500	●
MTECB 0312C05 24UN	24.0		5/16"		.313	C	.260	3	.560	2.500	●
MTECB 0312D08 24UN	24.0			3/8-5/8"	.313	C	.312	4	.810	2.500	●
MTECB 0250C04 20UN	20.0	1/4"			.250	C	.185	3	.480	2.500	●
MTECB 0312C08 20UN	20.0		7/16"		.313	C	.312	3	.830	2.500	●
MTECB 0375D08 20UN	20.0		1/2"		.375	C	.375	4	.880	3.000	●
MTECB 0500E11 20UN	20.0			3/4-1"	.500	C	.500	5	1.070	3.500	●
MTECB 0250C05 18UN	18.0	5/16"			.250	C	.220	3	.580	2.500	●
MTECB 0500D10 18UN	18.0		9/16-5/8"	1 1/8-1 5/8"	.500	C	.445	4	1.030	4.000	●
MTECB 0312C06 16UN	16.0	3/8"			.313	C	.264	3	.660	2.500	●
MTECB 0500D12 16UN	16.0		3/4"		.500	C	.500	4	1.220	3.500	●
MTECB 0312C08 14UN	14.0	7/16"			.313	C	.303	3	.820	2.500	●
MTECB 0375C08 13UN	13.0	1/2"			.375	C	.362	3	.890	3.000	●
MTECB 0500C10 12UN	12.0	9/16"			.500	C	.413	3	1.040	3.500	●
MTECB 0500C11 11UN	11.0	5/8"			.500	C	.449	3	1.140	4.000	●

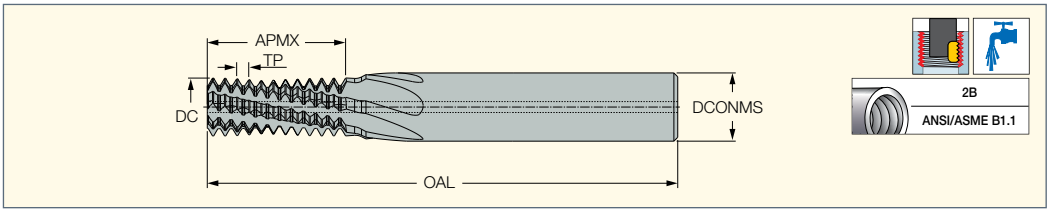
• For user guide, see pages 1222-1223, 1227-1232

(1) Threads per inch
(2) C-Cylindrical
(3) Number of flutes

SOLIDMTHREAD

MTECBF-UN

Solid Carbide Internal Threading Endmills with a Coolant Hole. Intended for UN Thread Profile



M E T R I C

Designation	Dimensions										IC908
	TPI[1]	UNC	UNF	UNEF	DCONMS	DC	NOF[2]	APMX	OAL	Shank	
MTECBF 08066G14 24UN	24.0		5/16"		8.00	6.60	7	14.20	64.00	C	●
MTECBF 10066G14 24UN	24.0		5/16"		10.00	6.60	7	14.20	73.00	C	●
MTECBF 06048E12 20UN	20.0	1/4"			6.00	4.80	5	12.00	58.00	C	●
MTECBF 10092H21 20UN	20.0		7/16"		10.00	9.20	8	20.90	73.00	C	●
MTECBF 12092H21 20UN	20.0		7/16"		12.00	9.20	8	20.90	84.00	C	●
MTECBF 0806F14 18UN	18.0	5/16"			8.00	6.00	6	14.70	64.00	C	●
MTECBF 10074F16 16UN	16.0	3/8"			10.00	7.40	6	16.60	73.00	C	●
MTECBF 10085F20 14UN	14.0	7/16"			10.00	8.50	6	20.80	73.00	C	●
MTECBF 12098F24 13UN	13.0	1/2"			12.00	9.80	6	24.30	84.00	C	●

• For user guide, see pages 1222-1223, 1227-1232 • Internal & External tolerance: ISO 228-1 - Medium class

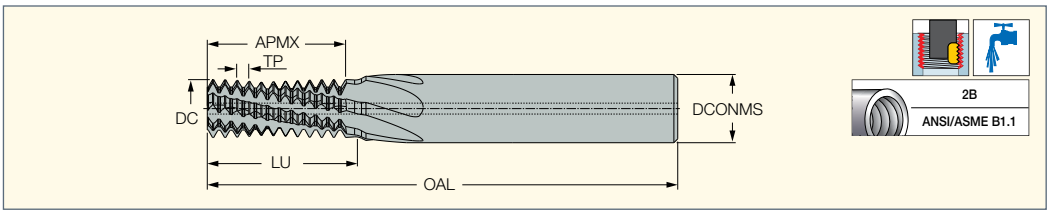
(1) Threads per inch

(2) Number of flutes

SOLIDMTHREAD

MTECBF-UN

Solid Carbide Internal Threading Endmills with a Coolant Hole. Intended for UN Thread Profile



I N C H

Designation	Dimensions										IC908
	TPI[1]	UNC	UNF	UNEF	DCONMS	DC	NOF[2]	APMX	OAL	Shank	
MTECBF 08066G14 24UN	24.0	-	5/16"	-	.315	.260	7	.559	2.520	C	●
MTECBF 10066G14 24UN	24.0	-	5/16"	-	.394	.260	7	.559	2.874	C	●
MTECBF 06048E12 20UN	20.0	1/4"	-	-	.236	.189	5	.472	2.283	C	●
MTECBF 10092H21 20UN	20.0	-	7/16"	-	.394	.362	8	.823	2.874	C	●
MTECBF 12092H21 20UN	20.0	-	7/16"	-	.472	.362	8	.823	3.307	C	●
MTECBF 0806F14 18UN	18.0	5/16"	-	-	.315	.236	6	.579	2.520	C	●
MTECBF 10074F16 16UN	16.0	3/8"	-	-	.394	.291	6	.654	2.874	C	●
MTECBF 10085F20 14UN	14.0	7/16"	-	-	.394	.335	6	.819	2.874	C	●
MTECBF 12098F24 13UN	13.0	1/2"	-	-	.472	.386	6	.957	3.307	C	●

• For user guide, see pages 1222-1223, 1227-1232 • Internal & External tolerance: ISO 228-1 - Medium class

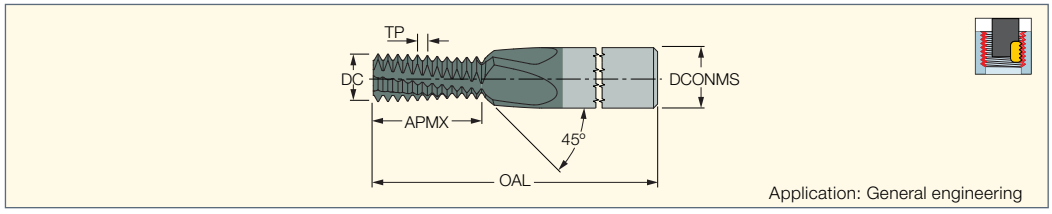
(1) Threads per inch

(2) Number of flutes

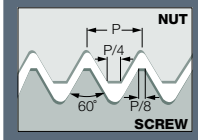
SOLIDTHREAD

MTECH-UN

Small Diameter Solid Carbide Internal UN Profile Threading and Chamfering Endmills, for Hard Materials



M E T R I C



Designation	Dimensions										IC902
	TPI[1]	UNC	UNF	UNEF	DCONMS	DC	NOF[2]	APMX	OAL	Shank[3]	
MTECH 06026C5 32UN	32.0	6			6.00	2.60	3	6.70	58.00	C	●
MTECH 06048C12 20UN	20.0	1/4"	-	-	6.00	4.80	3	12.10	58.00	C	●
MTECH 08057C14 18UN	18.0	5/16"	9/16, 5/8"	11/16"	8.00	5.70	3	14.80	64.00	C	●
MTECH 10074C16 16UN	16.0	3/8"	3/4"	-	10.00	7.40	3	16.70	73.00	C	●
MTECH 12094D22 13UN	13.0	1/2"	-	-	12.00	9.40	4	22.50	84.00	C	●

- For user guide, see pages 1222-1223, 1227-1232

(1) Threads per inch

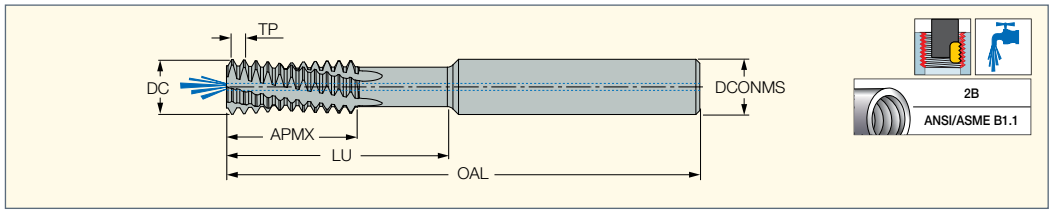
(2) Number of flutes

(3) C-Cylindrical

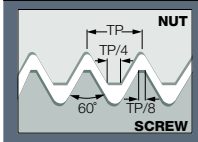
SOLIDTHREAD

MTECQ-UN

Solid Carbide Endmills with Internal Coolant Holes and a Reduced Diameter Neck, for Deep Internal UN Profile Threading



M E T R I C



Designation	Dimensions									IC908
	TPI[1]	TDZ	DCONMS	DC	NOF[2]	APMX	LU	OAL	Shank[3]	
MTECQ 1010D30 20UN	20.0	>=12	10.00	10.00	4	17.80	30.5	73.00	C	●
MTECQ 1212D42 12UN	12.0	>=16	12.00	12.00	4	25.40	42.3	84.00	C	●

- For user guide, see pages 1222-1223, 1227-1232

(1) Threads per inch

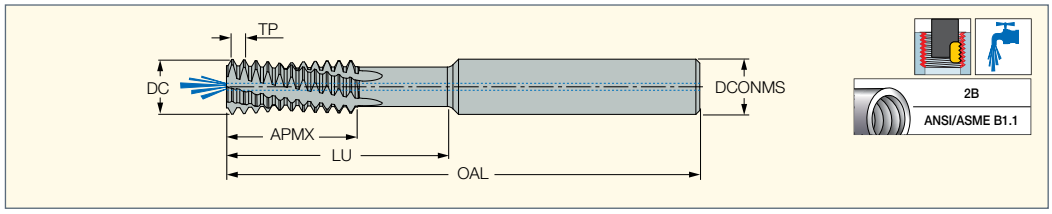
(2) Number of flutes

(3) C-Cylindrical

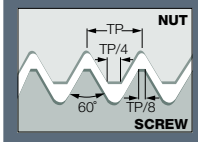
SOLIDTHREAD

MTECQ-UN

Solid Carbide Endmills with Internal Coolant Holes and a Reduced Diameter Neck, for Deep Internal UN Profile Threading



I N C H



Designation	Dimensions									IC908
	TPI[1]	TDZ	DCONMS	DC	NOF[2]	APMX	LU	OAL	Shank	
MTECQ 1010D30 20UN	20.0	>=0.472	.394	.394	4	.701	1.201	2.874	C	●
MTECQ 1212D42 12UN	12.0	>=0.629	.472	.472	4	1.000	1.665	3.307	C	●

- For user guide, see pages 1222-1223, 1227-1232

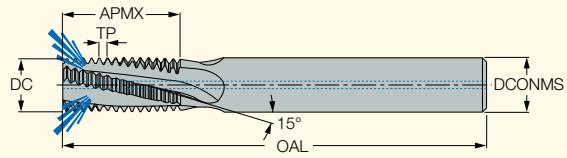
(1) Threads per inch

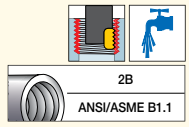
(2) Number of flutes

SOLIDTHREAD

MTECZ-UN

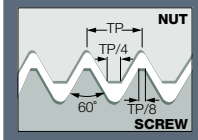
Solid Carbide Threading Endmills with Coolant Holes Located in the Flutes for Internal UN Thread Profiles





Application: General engineering

M E T R I C



Designation	TPI[1]	UNC	UNF	UNEF	DCONMS	DC	NOF[2]	APMX	OAL	Shank[3]	TP[4]	IC908
	Dimensions											
MTECZ 1010D22 20UN	20.0		1/2"		10.00	10.00	4	22.30	73.00	C	1.270	●
MTECZ 1212E27 20UN	20.0			3/4-1"	12.00	12.00	5	27.30	84.00	C	1.270	●
MTECZ 12113D26 18UN	18.0		9/16-5/8"	1 1/8-1 5/8"	12.00	11.30	4	26.10	84.00	C	1.411	●
MTECZ 08067C16 16UN	16.0	3/8"			8.00	6.70	3	16.70	64.00	C	1.588	●
MTECZ 1212D31 16UN	16.0		3/4"		12.00	12.00	4	31.00	84.00	C	1.588	●
MTECZ 12114C28 11UN	11.0	5/8"			12.00	11.40	3	28.90	84.00	C	2.309	●

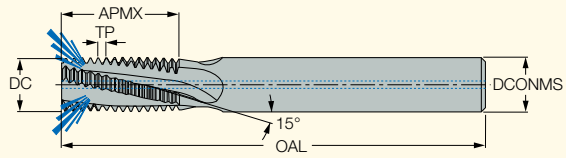
• With internal coolant hole • For user guide, see pages 1222-1223, 1227-1232

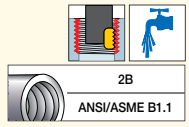
(1) Threads per inch
(2) Number of flutes
(3) C-Cylindrical
(4) Thread pitch

SOLIDTHREAD

MTECZ-UN

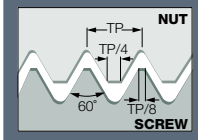
Solid Carbide Threading Endmills with Coolant Holes Located in the Flutes for Internal UN Thread Profiles





Application: General engineering

I N C H



Designation	TPI[1]	UNC	UNF	UNEF	DCONMS	DC	NOF[2]	APMX	OAL	Shank[3]	TP mm[4]	IC908
	Dimensions											
MTECZ 1010D22 20UN	20.0	-	1/2"	-	.394	.394	4	.878	2.874	C	1.270	●
MTECZ 1212E27 20UN	20.0	-	-	3/4 1"	.472	.472	5	1.075	3.307	C	1.270	●
MTECZ 12113D26 18UN	18.0	-	9/16-5/8"	1 1/8-1 5/8"	.472	.445	4	1.028	3.307	C	1.411	●
MTECZ 08067C16 16UN	16.0	3/8"	-	-	.315	.264	3	.657	2.520	C	1.588	●
MTECZ 1212D31 16UN	16.0	-	3/4"	-	.472	.472	4	1.220	3.307	C	1.588	●
MTECZ 12114C28 11UN	11.0	5/8"	-	-	.472	.449	3	1.138	3.307	C	2.309	●

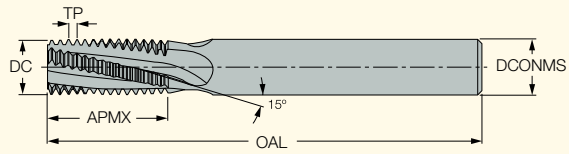
• With internal coolant hole • For user guide, see pages 1222-1223, 1227-1232

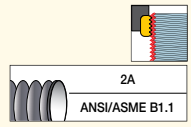
(1) Threads per inch
(2) Number of flutes
(3) C-Cylindrical
(4) Thread pitch

SOLIDTHREAD

MTEC E-UN

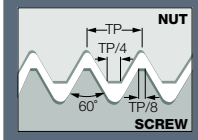
Solid Carbide Threading Endmills with UN Form for External Threading





Application: General engineering

M E T R I C



Designation	TPI[1]	DCONMS	DC	NOF[2]	APMX	OAL	Shank[3]	IC908
	Dimensions							
MTEC E 1010D16 24UN	24.0	10.00	10.00	4	16.40	73.00	C	●
MTEC E 1212E21 20UN	20.0	12.00	12.00	5	21.00	84.00	C	●
MTEC E 1212D20 12UN	12.0	12.00	12.00	4	20.10	84.00	C	●

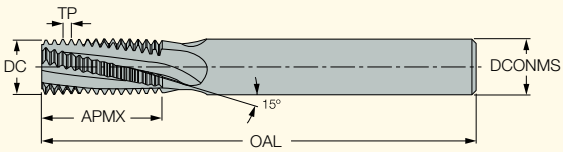
- For user guide, see pages 1222-1223, 1227-1232

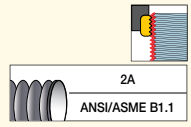
(1) Threads per inch
(2) Number of flutes
(3) C-Cylindrical

SOLIDTHREAD

MTEC E-UN

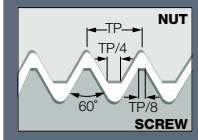
Solid Carbide Threading Endmills with UN Form for External Threading





Application: General engineering

I N C H



Designation	TPI[1]	DCONMS	DC	NOF[2]	APMX	OAL	Shank[3]	IC908
	Dimensions							
MTEC E 1010D16 24UN	24.0	.394	.394	4	.646	2.874	C	●
MTEC E 1212E21 20UN	20.0	.472	.472	5	.827	3.307	C	●
MTEC E 1212D20 12UN	12.0	.472	.472	4	.791	3.307	C	●

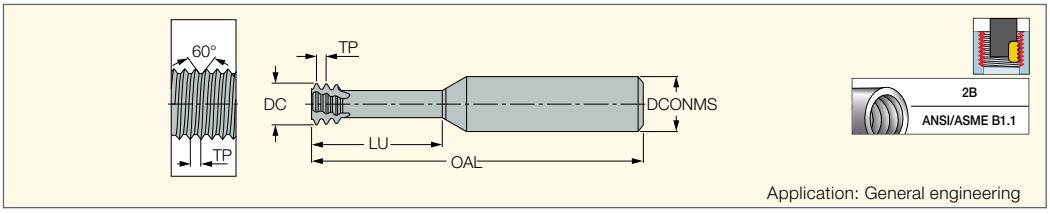
- For user guide, see pages 1222-1223, 1227-1232

(1) Threads per inch
(2) Number of flutes
(3) C-Cylindrical

SOLIDTHREAD

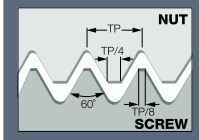
MTECS-UN

Small Diameter Solid
Carbide UN Profile Threading
Endmills for Steel



Application: General engineering

M E T R I C



Designation	Dimensions										IC908
	DC	TPI[2]	TP[3]	LU	OAL	DCONMS	UNC	UNF	NOF[4]	Shank[5]	
MTECS 03012C8 80UN	1.15	80.0	0.318	8.0	39.00	3.00	-	0	3	C	●
MTECS 03015C6 72UN [1]	1.45	72.0	0.353	6.0	39.00	3.00	-	1	3	C	●
MTECS 03016C6 56UN	1.65	56.0	0.454	6.6	39.00	3.00	2	3	3	C	●
MTECS 03016C9 56UN	1.65	56.0	0.454	9.2	39.00	3.00	2	3	3	C	●
MTECS 03016C11 56UN	1.65	56.0	0.454	11.4	39.00	3.00	2	3	3	C	●
MTECS 06016C4 56UN	1.65	56.0	0.454	4.4	58.00	6.00	2	3	3	C	●
MTECS 06016C6 56UN	1.65	56.0	0.454	6.6	58.00	6.00	2	3	3	C	●
MTECS 06016C6 56UN-L	1.65	56.0	0.454	6.6	100.00	6.00	2	3	3	C	●
MTECS 06019C5 48UN	1.90	48.0	0.529	5.2	58.00	6.00	3	4	3	C	●
MTECS 03021C8 40UN	2.10	40.0	0.635	8.0	39.00	3.00	4	-	3	C	●
MTECS 03021C12 40UN	2.10	40.0	0.635	12.0	39.00	3.00	4	-	3	C	●
MTECS 06021C8 40UN	2.10	40.0	0.635	8.0	58.00	6.00	4	-	3	C	●
MTECS 06021C8 40UN-L	2.10	40.0	0.635	8.0	100.00	6.00	4	-	3	C	●
MTECS 06024C9 40UN	2.45	40.0	0.635	9.6	58.00	6.00	5	6	3	C	●
MTECS 06021C6 40UN	2.10	40.0	0.635	6.3	58.00	6.00	4	-	3	C	●
MTECS 06021C6 40UN-L	2.10	40.0	0.635	6.3	100.00	6.00	4	-	3	C	●
MTECS 06033C9 36UN	3.30	36.0	0.706	9.0	58.00	6.00	-	8	3	C	●
MTECS 03025C14 32UN	2.55	32.0	0.794	14.8	39.00	3.00	6	-	3	C	●
MTECS 06025C7 32UN	2.55	32.0	0.794	7.1	58.00	6.00	6	-	3	C	●
MTECS 06025C10 32UN	2.55	32.0	0.794	10.5	58.00	6.00	6	-	3	C	●
MTECS 06025C10 32UN-L	2.55	32.0	0.794	10.5	100.00	6.00	6	-	3	C	●
MTECS 06032C9 32UN	3.20	32.0	0.794	9.5	58.00	6.00	8	10	3	C	●
MTECS 06032C12 32UN	3.20	32.0	0.794	12.5	58.00	6.00	8	10	3	C	●
MTECS 06037C10 32UN	3.70	32.0	0.794	10.5	58.00	6.00	-	10	3	C	●
MTECS 06037C15 32UN	3.70	32.0	0.794	15.0	58.00	6.00	-	10	3	C	●
MTECS 06037C15 32UN-L	3.70	32.0	0.794	15.0	101.00	6.00	-	10	3	C	●
MTECS 06042C11 28UN	4.20	28.0	0.907	11.0	58.00	6.00	-	12	3	C	●
MTECS 0605C14 28UN	5.00	28.0	0.907	14.5	58.00	6.00	-	1/4	3	C	●
MTECS 0605C19 28UN	5.00	28.0	0.907	19.0	58.00	6.00	-	1/4	3	C	●
MTECS 06035C10 24UN	3.50	24.0	1.058	10.6	58.00	6.00	10,12	-	3	C	●
MTECS 06035C15 24UN	3.50	24.0	1.058	15.5	58.00	6.00	10,12	-	3	C	●
MTECS 08066C17 24UN	6.60	24.0	1.058	17.0	64.00	8.00	-	5/16	3	C	●
MTECS 08066C24 24UN	6.60	24.0	1.058	24.0	64.00	8.00	-	5/16	3	C	●
MTECS 06047C14 20UN	4.75	20.0	1.270	14.0	58.00	6.00	1/4	-	3	C	●
MTECS 06047C19 20UN	4.75	20.0	1.270	19.0	58.00	6.00	1/4	-	3	C	●
MTECS 06047C19 20UN-L	4.75	20.0	1.270	19.0	100.00	6.00	1/4	-	3	C	●
MTECS 0808C25 20UN	8.00	20.0	1.270	25.0	64.00	8.00	-	7/16	3	C	●
MTECS 0808C34 20UN	8.00	20.0	1.270	34.6	64.00	8.00	-	7/16	3	C	●
MTECS 0606C17 18UN	6.00	18.0	1.411	17.0	58.00	6.00	5/16	-	3	C	●
MTECS 0606C23 18UN	6.00	18.0	1.411	23.0	58.00	6.00	5/16	-	3	C	●
MTECS 1212D35 18UN	12.00	18.0	1.411	35.0	84.00	12.00	-	5/8	4	C	●
MTECS 08067C22 16UN	6.70	16.0	1.588	22.0	64.00	8.00	3/8	-	3	C	●
MTECS 08067C30 16UN	6.70	16.0	1.588	30.2	64.00	8.00	3/8	-	3	C	●
MTECS 08077C25 14UN	7.70	14.0	1.814	25.0	64.00	8.00	7/16	-	3	C	●
MTECS 08077C35 14UN	7.70	14.0	1.814	35.2	64.00	8.00	7/16	-	3	C	●
MTECS 10092C27 13UN	9.20	13.0	1.954	27.5	73.00	10.00	1/2	-	3	C	●
MTECS 12114C34 11UN	11.40	11.0	2.309	34.5	84.00	12.00	5/8	-	3	C	●
MTECS 12114C50 11UN	11.40	11.0	2.309	50.0	101.00	12.00	5/8	-	3	C	●

● For user guide, see pages 1222-1223, 1227-1232

(1) Specially designed for the production of dental implants

(2) Threads per inch

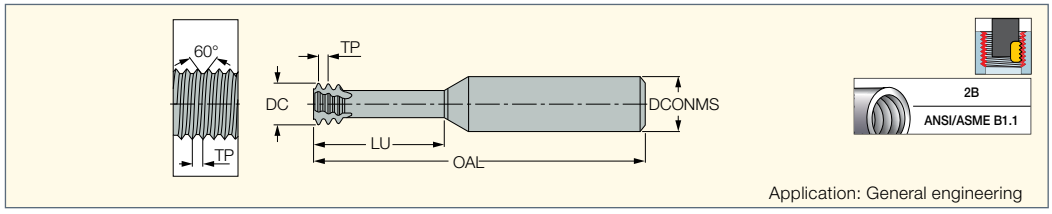
(3) Thread pitch

(4) Number of flutes

(5) C-Cylindrical

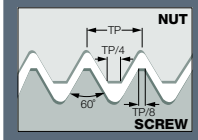
SOLIDTHREAD

MTECS-UN
Small Diameter Solid
Carbide UN Profile Threading
Endmills for Steel



Application: General engineering

I N C H



Designation	Dimensions DC	TPI[1]	UNC	UNF	LU	OAL	DCONMS	NOF[2]	Shank[3]	IC908
MTECS 0250C15 72UN	.057	72.0		1"	.150	2.500	.250	3	C	●
MTECS 0250C15 64UN	.055	64.0	1"	2"	.150	2.500	.250	3	C	●
MTECS 0250C17 56UN	.065	56.0	2"	3"	.170	2.500	.250	3	C	●
MTECS 0250C26 56UN	.065	56.0	2"	3"	.260	2.500	.250	3	C	●
MTECS 0250C20 48UN	.075	48.0	3"	4"	.200	2.500	.250	3	C	●
MTECS 0250C25 40UN	.083	40.0	4"		.250	2.500	.250	3	C	●
MTECS 0250C28 40UN	.096	40.0	5"	6"	.280	2.500	.250	3	C	●
MTECS 0250C31 40UN	.083	40.0	4"		.310	2.500	.250	3	C	●
MTECS 0250C38 40UN	.096	40.0	5"	6"	.380	2.500	.250	3	C	●
MTECS 0250C35 36UN	.130	36.0		8"	.350	2.500	.250	3	C	●
MTECS 0250C28 32UN	.100	32.0	6"		.280	2.500	.250	3	C	●
MTECS 0250C40 32UN	.100	32.0	6"		.410	2.500	.250	3	C	●
MTECS 0250C37 32UN	.126	32.0	8"	10"	.370	2.500	.250	3	C	●
MTECS 0250C41 32UN	.146	32.0		10"	.410	2.500	.250	3	C	●
MTECS 0250C49 32UN	.126	32.0	8"	10"	.490	2.500	.250	3	C	●
MTECS 0250C59 32UN	.146	32.0		10"	.590	2.500	.250	3	C	●
MTECS 0250C43 28UN	.165	28.0		12"	.430	2.500	.250	3	C	●
MTECS 0250C57 28UN	.197	28.0		1/4"	.570	2.500	.250	3	C	●
MTECS 0250C75 28UN	.197	28.0		1/4"	.750	2.500	.250	3	C	●
MTECS 0250C42 24UN	.138	24.0	10.12"		.420	2.500	.250	3	C	●
MTECS 0250C55 20UN	.187	20.0	1/4"		.550	2.500	.250	3	C	●
MTECS 0250C75 20UN	.187	20.0	1/4"		.750	2.500	.250	3	C	●
MTECS 0250C67 18UN	.236	18.0	5/16"		.670	2.500	.250	3	C	●
MTECS 0250C91 18UN	.236	18.0	5/16"		.910	2.500	.250	3	C	●
MTECS 0312C67 24UN	.260	24.0		5/16"	.670	2.500	.312	3	C	●
MTECS 0312C94 24UN	.260	24.0		5/16"	.940	2.500	.312	3	C	●
MTECS 0312C87 16UN	.264	16.0	3/8"		.870	2.500	.312	3	C	●
MTECS 0312C98 20UN	.312	20.0		7/16"	.980	2.500	.312	3	C	●
MTECS 0312C98 14UN	.303	14.0	7/16"		.980	2.500	.312	3	C	●
MTECS 0375C10 13UN	.362	13.0	1/2"		1.080	3.000	.375	3	C	●
MTECS 0500C12 12UN	.413	12.0	9/16"		1.240	3.000	.500	3	C	●
MTECS 0500C13 11UN	.449	11.0	5/8"		1.360	3.000	.500	3	C	●
MTECS 0500D14 18UN	.500	18.0	5/8"		1.380	2.500	.500	4	C	●

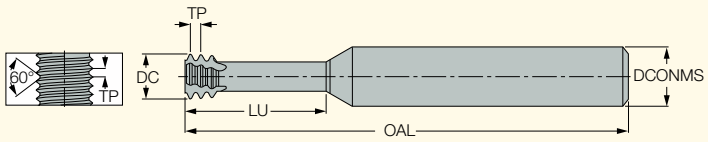
• For user guide, see pages 1222-1223, 1227-1232

(1) Threads per inch
(2) Number of flutes
(3) C-Cylindrical

SOLIDTHREAD

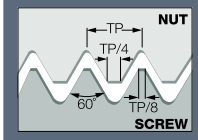
MTECSH-UN

Small Diameter Short Left-Hand Cut Solid Carbide UN Profile Threading Endmills for Hardened Steel



Left-hand tools (CNC code M04) • Application: General engineering

M E T R I C



Designation	Dimensions										IC903
	DC	TPI[1]	UNC	UNF	LU	OAL	DCONMS	NOF[2]	Shank[3]	TP[4]	
MTECSH 03015C6 72UN	1.45	72.0	-	1	6.0	39.00	3.00	3	C	0.353	●
MTECSH 06012C4 80UN	1.15	80.0	-	0	4.0	58.00	6.00	3	C	0.318	●
MTECSH 06016C6 56UN	1.65	56.0	2	3	6.6	58.00	6.00	3	C	0.454	●
MTECSH 06019C5 48UN	1.90	48.0	3	4	5.2	58.00	6.00	3	C	0.529	●
MTECSH 06021C6 40UN	2.10	40.0	4	-	6.3	58.00	6.00	3	C	0.635	●
MTECSH 06024C7 40UN	2.45	40.0	5	6	7.0	58.00	6.00	3	C	0.635	●
MTECSH 06021C8 40UN	2.10	40.0	4	-	8.0	58.00	6.00	3	C	0.635	●
MTECSH 06024C9 40UN	2.45	40.0	5	6	9.6	58.00	6.00	3	C	0.635	●
MTECSH 06025C7 32UN	2.55	32.0	6	-	7.1	58.00	6.00	3	C	0.794	●
MTECSH 06025C10 32UN	2.55	32.0	6	-	10.5	58.00	6.00	3	C	0.794	●
MTECSH 06032C9 32UN	3.20	32.0	8	-	9.5	58.00	6.00	3	C	0.794	●
MTECSH 06037C10 32UN	3.70	32.0	-	10	10.5	58.00	6.00	3	C	0.794	●
MTECSH 06032C12 32UN	3.20	32.0	8	-	12.5	58.00	6.00	3	C	0.794	●
MTECSH 06037C15 32UN	3.70	32.0	-	10	15.0	58.00	6.00	3	C	0.794	●
MTECSH 06042C11 28UN	4.20	28.0	-	12	11.0	58.00	6.00	3	C	0.907	●
MTECSH 0605C14 28UN	5.00	28.0	-	1/4	14.5	58.00	6.00	3	C	0.907	●
MTECSH 0605C19 28UN	5.00	28.0	-	1/4	19.0	58.00	6.00	3	C	0.907	●
MTECSH 06035C10 24UN	3.50	24.0	10,12	-	10.6	58.00	6.00	3	C	1.058	●
MTECSH 08066C17 24UN	6.60	24.0	-	5/16	17.0	64.00	8.00	3	C	1.058	●
MTECSH 08066C24 24UN	6.60	24.0	-	5/16	24.0	64.00	8.00	3	C	1.058	●
MTECSH 06047C14 20UN	4.75	20.0	1/4	-	14.0	58.00	6.00	3	C	1.270	●
MTECSH 06047C19 20UN	4.75	20.0	1/4	-	19.0	58.00	6.00	3	C	1.270	●
MTECSH 0808C25 20UN	8.00	20.0	-	7/16	25.0	64.00	8.00	3	C	1.270	●
MTECSH 0606C17 18UN	6.00	18.0	5/16	-	17.0	58.00	6.00	3	C	1.411	●
MTECSH 0606C23 18UN	6.00	18.0	5/16	-	23.0	58.00	6.00	3	C	1.411	●
MTECSH 08067C22 16UN	6.70	16.0	3/8	-	22.0	64.00	8.00	3	C	1.588	●
MTECSH 08077C25 14UN	7.70	14.0	7/16	-	25.0	64.00	8.00	3	C	1.814	●
MTECSH 10092C27 13UN	9.20	13.0	1/2	-	27.5	73.00	10.00	3	C	1.954	●
MTECSH 12114C34 11UN	11.40	11.0	5/8	-	34.5	84.00	12.00	3	C	2.309	●

• For user guide, see pages 1199, 1227-1232

(1) Threads per inch

(2) Number of flutes

(3) C-Cylindrical

(4) Thread pitch

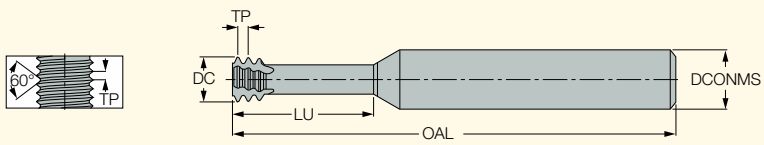
Machining Data for Solid Carbide Thread Mills for Small Internal Threads in Hard Materials

ISO	Material	Hardness HRC	Cutting Speed m/min	Feed mm/tooth for Cutting Diameter (mm)								
				1.5	2	3	4	5	6	7	8	9
H	hardened steels	45-50	60-70	0.04	0.04	0.05	0.05	0.06	0.06	0.07	0.07	0.08
		51-55	50-60	0.03	0.03	0.04	0.04	0.05	0.05	0.06	0.06	0.07
		56-62	40-50	0.02	0.02	0.03	0.03	0.04	0.04	0.05	0.05	0.06

SOLIDTHREAD

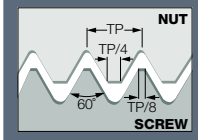
MTECSH-UN

Small Diameter Short Left-Hand Solid Carbide UN Profile Threading Endmills for Hardened Steel



Left-hand tools (CNC code M04) • Application: General engineering

I N C H



Designation	Dimensions DC	TPI[1]	UNC	UNF	LU	OAL	DCONMS	NOF[2]	Shank[3]	IC903
MTECSH 0250C16 80UN	.045	80.0		0	.157	2.500	.250	3	C	●
MTECSH 0250C15 72UN	.057	72.0		1"	.150	2.500	.250	3	C	●
MTECSH 0250C26 56UN	.065	56.0	2"	3"	.260	2.500	.250	3	C	●
MTECSH 0250C20 48UN	.075	48.0	3"	4"	.200	2.500	.250	3	C	●
MTECSH 0250C25 40UN	.083	40.0	4"		.250	2.500	.250	3	C	●
MTECSH 0250C31 40UN	.083	40.0			.310	2.500	.250	3	C	●
MTECSH 0250C35 36UN	.130	36.0		8"	.350	2.500	.250	3	C	●
MTECSH 0250C28 32UN	.100	32.0	6"		.280	2.500	.250	3	C	●
MTECSH 0250C40 32UN	.100	32.0			.400	2.500	.250	3	C	●
MTECSH 0250C37 32UN	.126	32.0	8"		.370	2.500	.250	3	C	●
MTECSH 0250C49 32UN	.126	32.0	8"		.490	2.500	.250	3	C	●
MTECSH 0250C59 32UN	.146	32.0		10"	.590	2.500	.250	3	C	●
MTECSH 0250C75 28UN	.197	28.0		1/4"	.750	2.500	.250	3	C	●
MTECSH 0250C57 28UN	.197	28.0		1/4"	.570	2.500	.250	3	C	●
MTECSH 0250C42 24UN	.138	24.0	10,12"		.420	2.500	.250	3	C	●
MTECSH 0312C67 24UN	.260	24.0		5/16"	.670	2.500	.312	3	C	●
MTECSH 0312C94 24UN	.260	24.0		5/16"	.940	2.500	.312	3	C	●
MTECSH 0250C55 20UN	.187	20.0	1/4"		.550	2.500	.250	3	C	●
MTECSH 0250C75 20UN	.187	20.0	1/4"		.750	2.500	.250	3	C	●
MTECSH 0250C67 18UN	.236	18.0	5/16"		.670	2.500	.250	3	C	●
MTECSH 0312C87 16UN	.264	16.0	3/8"		.870	2.500	.312	3	C	●
MTECSH 0312C98 14UN	.303	14.0	7/16"		.980	2.500	.312	3	C	●
MTECSH 0375C10 13UN	.362	13.0	1/2"		1.080	3.000	.375	3	C	●

• For user guide, see pages 1200, 1227-1232

(1) Threads per inch

(2) Number of flutes

(3) C-Cylindrical

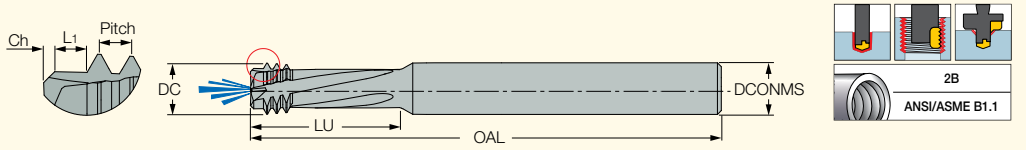
Machining Data for Solid Carbide Thread Mills for Small Internal Threads in Hard Materials

ISO	Material	Hardness HRc	Cutting Speed SFM	Feed (IPT) for Cutting Diameter (D) .06	.08	.12	.16	.2	.24	.28	.31	.35
H	hardened steels	45-50	200-230	.0016	.0016	.002	.002	.0024	.0024	.0028	.0028	.0031
		51-55	160-200	.0012	.0012	.0016	.0016	.002	.002	.0024	.0024	.0028
		56-62	130-160	.0008	.0008	.0012	.0012	.0016	.0016	.002	.002	.0024

SOLIDTHREAD

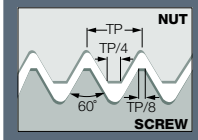
MTECD-UN

Small Diameter, Short, Left Hand, Internal UN Profile Endmills for Drilling, Threading and Chamfering



Left-hand tools (CNC code M04) • Application: General engineering • Coolant holes only in 28-16 TPI tools

M E T R I C



Designation	Dimensions												Tough ↔ Hard	
	TPI[1]	CNT	DCONMS	DC	NOF[2]	LU	OAL	CHW	L1	Shank[3]	CSP[4]	THFT	IC908	IC903
MTECD 06033C12 36UN	36.0	8	6.00	3.30	3	12.0	58.00	0.20	0.7	C	0	UN60	•	
MTECD 06032C12 32UN	32.0	8	6.00	3.20	3	12.3	58.00	0.30	0.8	C	0	UN60	•	
MTECD 06038C14 32UN	32.0	10	6.00	3.80	3	14.0	58.00	0.30	0.8	C	0	UN60	•	
MTECD 0805C14 28UN	28.0	1/4-3/8"	8.00	5.00	3	14.5	64.00	0.40	0.9	C	1	UN60	•	
MTECD 08065D17 24UN	24.0	5/16-1/2"	8.00	6.50	4	17.0	64.00	0.50	1.1	C	1	UN60	•	
MTECD 08048C14 20UN	20.0	1/4-3/8"	8.00	4.80	3	14.0	64.00	0.40	1.3	C	1	UN60	•	
MTECD 0806D17 18UN	18.0	5/16-7/16"	8.00	6.00	4	17.0	64.00	0.50	1.4	C	1	UN60	•	
MTECD 08067C22 16UN	16.0	3/8-1/2"	8.00	6.70	3	22.0	64.00	0.50	1.6	C	1	UN60	•	
MTECDH 08067C22 16UN	16.0	3/8-1/2"	8.00	6.70	3	22.0	64.00	0.50	1.6	C	1	UN60		•

• Thread hole, thread and chamfer are made by circular interpolation • For user guide, see pages 1222-1223, 1227-1232

[1] Threads per inch

[2] Number of flutes

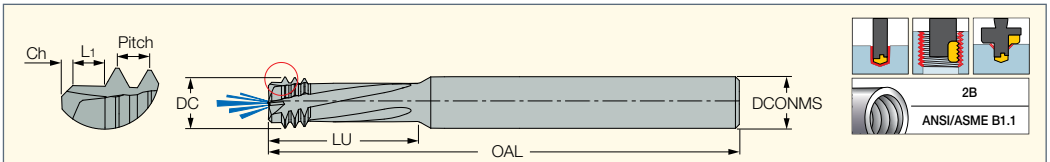
[3] C-Cylindrical

[4] 0 - Without coolant supply, 1 - With coolant supply

SOLIDTHREAD

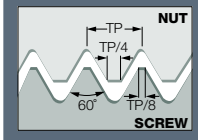
MTECD-UN

Small Diameter, Short, Left Hand, Internal UN Profile Endmills for Drilling, Threading and Chamfering



Left-hand tools (CNC code M04) • Application: General engineering • Coolant holes only in 28-16 TPI tools

I N C H



Designation	Dimensions												Tough ↔ Hard	
	TPI[1]	CNT	DCONMS	DC	NOF[2]	LU	OAL	CHW	L1	Shank	CSP[3]	THFT	IC908	IC903
MTECD 06033C12 36UN	36.0	8	.236	.130	3	.472	2.283	.008	.03	C	0	UN60	•	
MTECD 06032C12 32UN	32.0	8	.236	.126	3	.484	2.283	.012	.03	C	0	UN60	•	
MTECD 06038C14 32UN	32.0	10	.236	.150	3	.551	2.283	.012	.03	C	0	UN60	•	
MTECD 0805C14 28UN	28.0	1/4-3/8"	.315	.197	3	.571	2.520	.016	.04	C	1	UN60	•	
MTECD 08065D17 24UN	24.0	5/16-1/2"	.315	.256	4	.669	2.520	.020	.04	C	1	UN60	•	
MTECD 08048C14 20UN	20.0	1/4-3/8"	.315	.189	3	.551	2.520	.016	.05	C	1	UN60	•	
MTECD 0806D17 18UN	18.0	5/16-7/16"	.315	.236	4	.669	2.520	.020	.06	C	1	UN60	•	
MTECD 08067C22 16UN	16.0	3/8-1/2"	.315	.264	3	.866	2.520	.020	.06	C	1	UN60	•	
MTECDH 08067C22 16UN	16.0	3/8-1/2"	.315	.264	3	.866	2.520	.020	.06	C	1	UN60		•

[1] Threads per inch • For user guide, see pages 1222-1223, 1227-1232

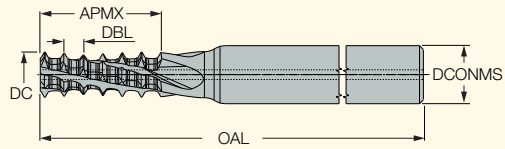
[2] Number of flutes

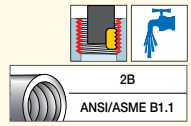
[3] 0 - Without coolant supply, 1 - With coolant supply

SOLIDMTHREAD

MTECK-UN

Solid Carbide Internal Threading Endmill Step Release, Lead x2 With Coolant Hole, Used for UN Thread Profiles





M E T R I C

Designation	TPI[1]	UNC	UNF	Dimensions DBL	APMX	OAL	DCONMS	DC	Shank	NOF[2]	IC908
MTECK 0250C34 32UN	32.0	8		1.59	9.10	63.50	6.35	3.10	C	3	•
MTECK 0250D50 28UN	28.0		1/4"	1.81	13.10	63.50	6.35	5.00	C	4	•
MTECK 06035C10 24UN	24.0	10		2.12	11.00	58.00	6.00	3.50	C	3	•
MTECK 0250C50 20UN	20.0	1/4"		2.54	13.30	63.50	6.35	4.70	C	3	•
MTECK 0250D67 18UN	18.0	5/16"		2.82	17.60	63.50	6.35	6.10	C	4	•
MTECK 08061D17 18UN	18.0	5/16"		2.82	17.60	64.00	8.00	6.10	C	4	•
MTECK 08061D22 18UN	18.0	5/16"		2.82	23.20	76.00	8.00	6.10	C	4	•
MTECK 12011E29 18UN	18.0		9/16"	2.82	30.40	84.00	12.00	11.00	C	5	•
MTECK 08074D19 16UN	16.0	3/8"		3.17	19.80	64.00	8.00	7.40	C	4	•
MTECK 1298D25 13UN	13.0	1/2"		3.91	26.30	84.00	12.00	9.80	C	4	•

• For user guide, see pages 1224-1225, 1227-1232

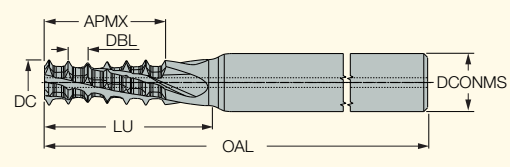
(1) Threads per inch

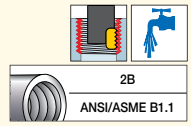
(2) Number of flutes

SOLIDMTHREAD

MTECK-UN

Solid Carbide Internal Threading Endmill Step Release, Lead x2 With Coolant Hole, Used for UN Thread Profiles





I N C H

Designation	TPI[1]	UNC	UNF	Dimensions DBL	APMX	OAL	DCONMS	DC	Shank	NOF[2]	IC908
MTECK 0250C34 32UN	32.0	8		.0626	.3583	2.500	.250	.122	C	3	•
MTECK 0250D50 28UN	28.0		1/4"	.0712	.5157	2.500	.250	.197	C	4	•
MTECK 06035C10 24UN	24.0	10		.0835	.4331	2.283	.236	.138	C	3	•
MTECK 0250C50 20UN	20.0	1/4"		.1000	.5236	2.500	.250	.185	C	3	•
MTECK 0250D67 18UN	18.0	5/16"		.1110	.6929	2.500	.250	.240	C	4	•
MTECK 08061D17 18UN	18.0	5/16"		.1110	.6929	2.520	.315	.240	C	4	•
MTECK 08061D22 18UN	18.0	5/16"		.1110	.9134	2.992	.315	.240	C	4	•
MTECK 12011E29 18UN	18.0		9/16"	.1110	1.1969	3.307	.472	.433	C	5	•
MTECK 08074D19 16UN	16.0	3/8"		.1248	.7795	2.520	.315	.291	C	4	•
MTECK 1298D25 13UN	13.0	1/2"		.1539	1.0354	3.307	.472	.386	C	4	•

• For user guide, see pages 1224-1225, 1227-1232

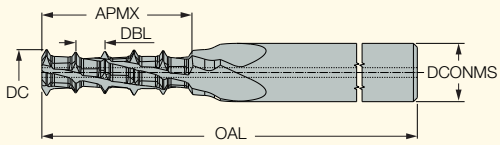
(1) Threads per inch

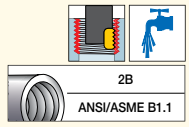
(2) Number of flutes

SOLIDMTHREAD

MTECM-UN

Solid Carbide Internal Threading Endmill Step Release, Lead x3 With Coolant Hole, Used for UN Thread Profiles





M E T R I C

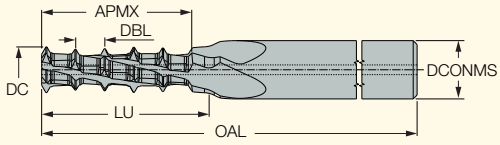
Designation	TPI[1]	UNC	UNF	UNEF	DBL	APMX	OAL	DCONMS	DC	Shank	NOF[2]	IC908
	Dimensions											
MTECM 0250C28 32UN	32.0	8	-	-	2.38	7.50	63.50	6.35	3.10	C	3	●
MTECM 0250C50 24UN	24.0	10	-	-	3.17	13.20	63.50	6.35	3.50	C	3	●
MTECM 06047C16 20UN	20.0	1/4"	-	-	3.81	17.10	58.00	6.00	4.70	C	3	●
MTECM 0250C65 20UN	20.0	1/4"	-	-	3.81	17.10	63.50	6.35	4.70	C	3	●
MTECM 0312D09 16UN	16.0	3/8"	-	-	4.76	24.50	63.50	7.94	7.40	C	4	●

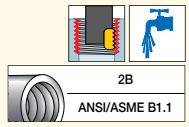
• For user guide, see pages 1224-1225, 1227-1232
(1) Threads per inch
(2) Number of flutes

SOLIDMTHREAD

MTECM-UN

Solid Carbide Internal Threading Endmill Step Release, Lead x3 With Coolant Hole, Used for UN Thread Profiles





I N C H

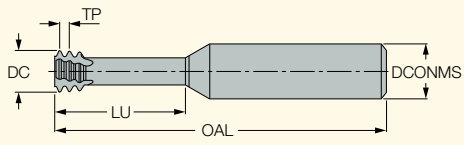
Designation	TPI[1]	UNC	UNF	UNEF	DBL	APMX	OAL	DCONMS	DC	Shank	NOF[2]	IC908
	Dimensions											
MTECM 0250C28 32UN	32.0	8	-	-	.0937	.2953	2.500	.250	.122	C	3	●
MTECM 0250C50 24UN	24.0	10	-	-	.1248	.5197	2.500	.250	.138	C	3	●
MTECM 06047C16 20UN	20.0	1/4"	-	-	.1500	.6732	2.283	.236	.185	C	3	●
MTECM 0250C65 20UN	20.0	1/4"	-	-	.1500	.6732	2.500	.250	.185	C	3	●
MTECM 0312D09 16UN	16.0	3/8"	-	-	.1874	.9646	2.500	.313	.291	C	4	●

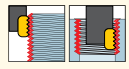
• For user guide, see pages 1224-1225, 1227-1232
(1) Threads per inch
(2) Number of flutes

SOLIDTHREAD

MTECS-W

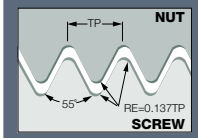
Short Solid Carbide Threading Endmills for Internal or External BSP and BSF Thread Profiles





Application: General engineering fittings and pipe couplings

M E T R I C



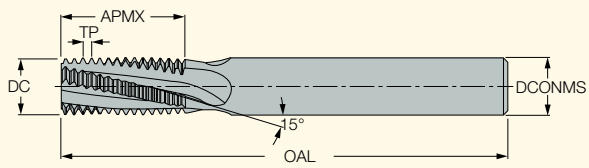
Designation	DC	TPI[1]	LU	OAL	DCONMS	TDZ	NOF[2]	Shank[3]	IC908
	Dimensions								
MTECS 08078C19 28W	7.80	28.0	19.5	64.00	8.00	G 1/8"	3	C	●
MTECS 1010D30 19W	10.00	19.0	30.0	73.00	10.00	G 1/4-3/8"	4	C	●
MTECS 1212D37 14W	12.00	14.0	37.0	84.00	12.00	G 1/2-7/8"	4	C	●

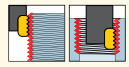
• For user guide, see pages 1222-1223, 1227-1232 • Internal & External tolerance: ISO 228-1 - Medium class
(1) Threads per inch
(2) Number of flutes
(3) C-Cylindrical

SOLIDTHREAD

MTEC-W

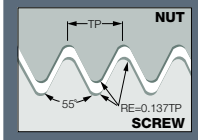
Solid Carbide Threading Endmills for Internal or External BSF/BSP Thread Profiles





Application: General engineering fittings and pipe couplings

M E T R I C



Designation	Dimensions TPI[1]	TDZ	DCONMS	DC	NOF[2]	APMX	OAL	Shank[3]	IC908
MTEC 0606C9 28W	28.0	G1/8"	6.00	6.00	3	9.50	58.00	C	●
MTEC 0808C14 19W	19.0	G1/4,G3/8"	8.00	8.00	3	14.00	64.00	C	●
MTEC 1212D19 14W	14.0	G1/2,G7/8"	12.00	12.00	4	19.30	84.00	C	●
MTEC 1212D26 14W	14.0	G1/2,G7/8"	12.00	12.00	4	26.30	84.00	C	●
MTEC 1212C24 11W	11.0	G1,-G1-1/2"	12.00	12.00	3	24.20	84.00	C	●

• For user guide, see pages 1222-1223, 1227-1232 • Internal & External tolerance: ISO 228-1 - Medium class

(1) Threads per inch

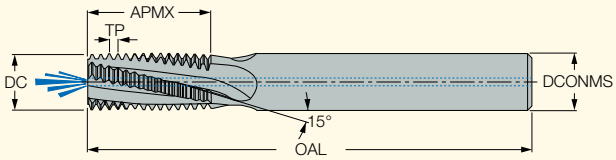
(2) Number of flutes

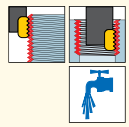
(3) C-Cylindrical

SOLIDTHREAD

MTECB-W

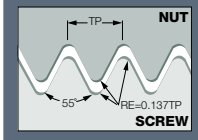
Solid Carbide Internal or External Threading Endmills with Coolant Hole for BSF/BSP Thread Profiles





Application: General engineering fittings and pipe couplings

M E T R I C



Designation	Dimensions TPI[1]	TDZ	DCONMS	DC	NOF[2]	APMX	OAL	Shank[3]	IC908
MTECB 08078C14 28W	28.0	G1/8"	8.00	7.80	3	14.10	64.00	C	●
MTECB 1010D16 19W	19.0	G1/4-3/8"	10.00	10.00	4	16.70	73.00	C	●

• For user guide, see pages 1222-1223, 1227-1232 • Internal & External tolerance: ISO 228-1 - Medium class

(1) Threads per inch

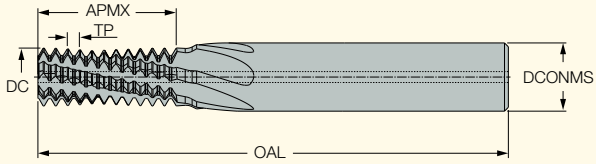
(2) Number of flutes

(3) C-Cylindrical

SOLIDMTHREAD

MTECBF-W

Solid Carbide Internal or External Threading Endmills with a Coolant Hole. Intended for BSF/BSP Thread Profiles



M E T R I C

Designation	Dimensions								IC908
	TPI(1)	TDZ	DCONMS	DC	NOF(2)	APMX	OAL	Shank	
MTECBF 08078H14 28W	28.0	1/8"	8.00	7.80	8	14.00	64.00	C	●
MTECBF 1010G16 19W	19.0	1/4-3/8"	10.00	10.00	7	16.00	73.00	C	●

• For user guide, see pages 1222-1223, 1227-1232 • Internal & External tolerance: B.S.84 - Medium class

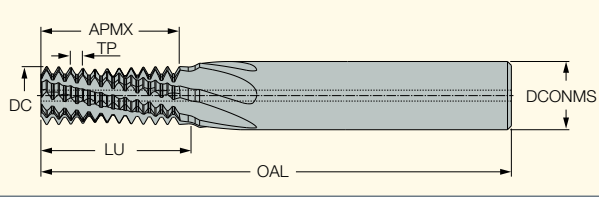
(1) Threads per inch

(2) Number of flutes

SOLIDMTHREAD

MTECBF-W

Solid Carbide Internal or External Threading Endmills with a Coolant Hole. Intended for BSF/BSP Thread Profiles



I N C H

Designation	Dimensions								IC908
	TPI(1)	TDZ	DCONMS	DC	NOF(2)	APMX	OAL	Shank	
MTECBF 08078H14 28W	28.0	1/8"	.315	.307	8	.551	2.520	C	●
MTECBF 1010G16 19W	19.0	1/4-3/8"	.394	.394	7	.630	2.874	C	●

• For user guide, see pages 1222-1223, 1227-1232 • Internal & External tolerance: B.S.84 - Medium class

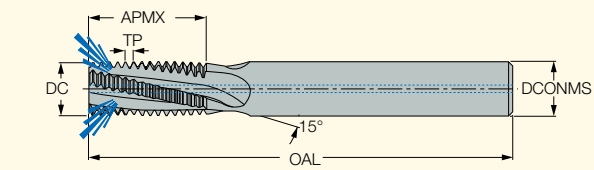
(1) Threads per inch

(2) Number of flutes

SOLIDTHREAD

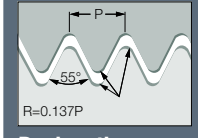
MTECZ-Whitworth

Solid Carbide Threading Endmills with Coolant Holes Located in the Flutes, for Internal or External Whitworth Thread



Application: General engineering fittings and pipe couplings

M E T R I C



Designation	Dimensions									IC908
	TPI(1)	BSW	DCONMS	DC	NOF(2)	APMX	OAL	Shank(3)	THFT	
MTECZ 10092D24 16W	16.0	1/2"	10.00	9.20	4	24.60	73.00	C	WH55	●
MTECZ 10086D24 12W	12.0	1/2"	10.00	8.60	4	24.40	73.00	C	WH55	●
MTECZ 12109D28 11W	11.0	5/8"	12.00	10.90	4	28.90	84.00	C	WH55	●

• With internal coolant hole • For user guide, see pages 1222-1223, 1227-1232 • Internal & External tolerance: B.S.84 - Medium class

(1) Threads per inch

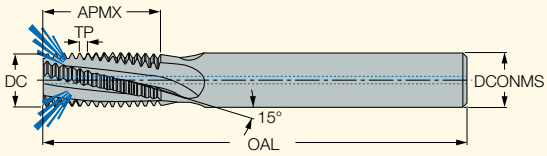
(2) Number of flutes

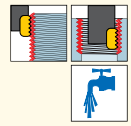
(3) C-Cylindrical

SOLIDTHREAD

MTECZ-BSF/BSP

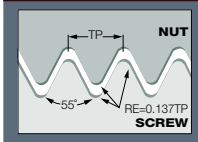
Solid Carbide Threading Endmills with Coolant Holes for Internal or External BSF/BSP Thread





Application: General engineering fittings and pipe couplings

M E T R I C



Designation	Dimensions								IC908
	TPI[1]	TDZ	DCONMS	DC	NOF[2]	APMX	OAL	Shank[3]	
MTECZ 08078C14 28W	28.0	G1/8"	8.00	7.80	3	14.10	64.00	C	●
MTECZ 1010D16 19W	19.0	G1/4-3/8"	10.00	10.00	4	16.70	73.00	C	●

• With internal coolant hole • For user guide, see pages 1222-1223, 1227-1232 • Internal & External tolerance: ISO 228-1 - Medium class

(1) Threads per inch

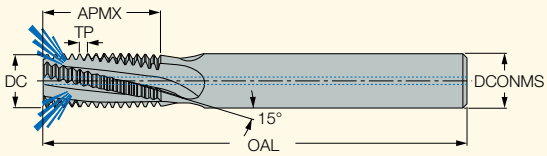
(2) Number of flutes

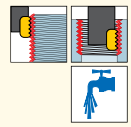
(3) C-Cylindrical

SOLIDTHREAD

MTECZ-BSF/BSP

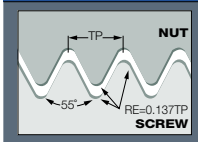
Solid Carbide Threading Endmills with Coolant Holes for Internal or External BSF/BSP Thread





Application: General engineering fittings and pipe couplings

I N C H



Designation	Dimensions								IC908
	TPI[1]	TDZ	DCONMS	DC	NOF[2]	APMX	OAL	Shank[3]	
MTECZ 08078C14 28W	28.0	G1/8"	.315	.307	3	.555	2.520	C	●
MTECZ 1010D16 19W	19.0	G1/4-3/8"	.394	.394	4	.657	2.874	C	●

• With internal coolant hole • For user guide, see pages 1222-1223, 1227-1232 • Internal & External tolerance: ISO 228-1 - Medium class

(1) Threads per inch

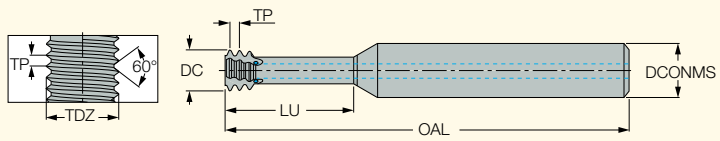
(2) Number of flutes

(3) C-Cylindrical

SOLIDTHREAD

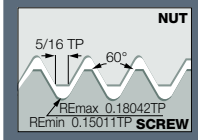
MTECS-MJ

Small Diameter Short Solid Carbide MJ-Type Profile Threading Endmills



Aerospace and automotive industries, for applications requiring high fatigue strength

M E T R I C



Designation	Dimensions									IC908
	DC	TP[2]	LU	OAL	DCONMS	TDZ	NOF[3]	Shank[4]	CSP[5]	
MTECS 06032C10 0.7MJ [1]	3.20	0.700	10.0	58.00	6.00	MJ4	3	C	0	●
MTECS 06039C12 0.8MJ [1]	3.90	0.800	12.5	58.00	6.00	MJ5	3	C	0	●
MTECS 06048C15 1.0MJ [1]	4.80	1.000	15.0	58.00	6.00	MJ6	3	C	0	●
MTECS 08061C20 1.25MJ	6.10	1.250	20.0	64.00	8.00	MJ8	3	C	1	●
MTECS 0808C25 1.5MJ	8.00	1.500	25.0	64.00	8.00	MJ10	3	C	1	●
MTECS 10092C30 1.75MJ	9.20	1.750	30.0	73.00	10.00	MJ12	3	C	1	●
MTECS 1010C35 2.0MJ	10.00	2.000	35.0	73.00	10.00	MJ14, MJ16	3	C	1	●

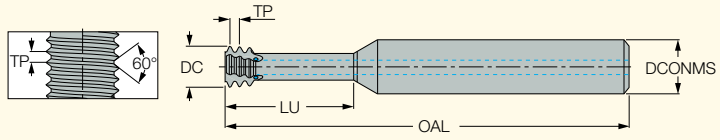
• For user guide, see pages 1222-1223, 1227-1232

[1] Without coolant holes
[2] Thread pitch
[3] Number of flutes
[4] C-Cylindrical
[5] 0 - Without coolant supply, 1 - With coolant supply

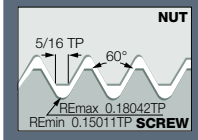
SOLIDTHREAD

MTECS-MJ

Small Diameter Short Solid Carbide MJ-Type Profile Threading Endmills



I N C H



Designation	Dimensions									IC908
	DC	TP mm[1]	LU	OAL	DCONMS	TDZ	NOF[2]	Shank[3]	CSP[4]	
MTECS 06032C10 0.7MJ	.126	.700	.394	2.283	.236	MJ4	3	C	0	●
MTECS 06039C12 0.8MJ	.154	.800	.492	2.283	.236	MJ5	3	C	0	●
MTECS 06048C15 1.0MJ	.189	1.000	.591	2.283	.236	MJ6	3	C	0	●
MTECS 08061C20 1.25MJ	.240	1.250	.787	2.520	.315	MJ8	3	C	1	●
MTECS 0808C25 1.5MJ	.315	1.500	.984	2.520	.315	MJ10	3	C	1	●
MTECS 10092C30 1.75MJ	.362	1.750	1.181	2.874	.394	MJ12	3	C	1	●
MTECS 1010C35 2.0MJ	.394	2.000	1.378	2.874	.394	MJ14, MJ16	3	C	1	●

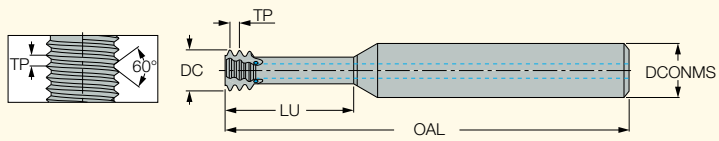
• For user guide, see pages 1222-1223, 1227-1232

[1] Thread pitch
[2] Number of flutes
[3] C-Cylindrical
[4] 0 - Without coolant supply, 1 - With coolant supply

SOLIDTHREAD

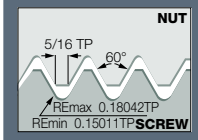
MTECS-UNJ

Small Diameter Short Solid Carbide UNJ-Type Profile Threading Endmills



Aerospace and automotive industries, for applications requiring high fatigue strength

M E T R I C



Designation	Dimensions DC	TPI[2]	UNJC	UNJF	LU	OAL	DCONMS	NOF[3]	Shank[4]	CSP[5]	IC908
MTECS 06033C10 32UNJ [1]	3.30	32.0	8"	10"	10.5	58.00	6.00	3	C	0	●
MTECS 08051C16 28UNJ	5.10	28.0		1/4"	16.0	64.00	8.00	3	C	1	●
MTECS 08067C20 24UNJ	6.70	24.0		5/16, 3/8"	20.0	64.00	8.00	3	C	1	●
MTECS 06049C16 20UNJ [1]	4.90	20.0	1/4"		16.0	58.00	6.00	3	C	0	●
MTECS 0808C28 20UNJ	8.00	20.0		7/16"	28.0	64.00	8.00	3	C	1	●
MTECS 08061C20 18UNJ	6.15	18.0	5/16"	9/16"	20.0	64.00	8.00	3	C	1	●
MTECS 08069C24 16UNJ	6.90	16.0	3/8"		24.0	64.00	8.00	3	C	1	●
MTECS 10094C27 13UNJ	9.40	13.0	1/2"		27.5	73.00	10.00	3	C	1	●

• For user guide, see pages 1222-1223, 1227-1232

[1] Without coolant holes

[2] Threads per inch

[3] Number of flutes

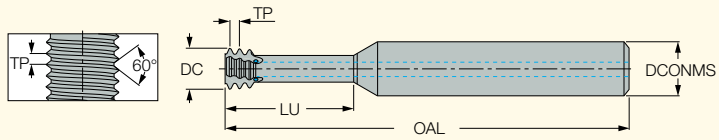
[4] C-Cylindrical

[5] 0 - Without coolant supply, 1 - With coolant supply

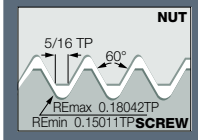
SOLIDTHREAD

MTECS-UNJ

Small Diameter Short Solid Carbide UNJ-Type Profile Threading Endmills



I N C H



Designation	Dimensions DC	TPI[1]	UNJC	UNJF	LU	OAL	DCONMS	NOF[2]	Shank[3]	CSP[4]	IC908
MTECS 06033C10 32UNJ	.130	32.0	8"	10"	.413	2.283	.236	3	C	0	●
MTECS 08051C16 28UNJ	.201	28.0	-	1/4"	.630	2.520	.315	3	C	1	●
MTECS 08067C20 24UNJ	.264	24.0	-	5/16, 3/8"	.787	2.520	.315	3	C	1	●
MTECS 06049C16 20UNJ	.193	20.0	1/4"	-	.630	2.283	.236	3	C	0	●
MTECS 0808C28 20UNJ	.315	20.0	-	7/16"	1.102	2.520	.315	3	C	1	●
MTECS 08061C20 18UNJ	.242	18.0	5/16"	9/16"	.787	2.520	.315	3	C	1	●
MTECS 08069C24 16UNJ	.272	16.0	3/8"	-	.945	2.520	.315	3	C	1	●
MTECS 10094C27 13UNJ	.370	13.0	1/2"	-	1.083	2.874	.394	3	C	1	●

• For user guide, see pages 1222-1223, 1227-1232

[1] Threads per inch

[2] Number of flutes

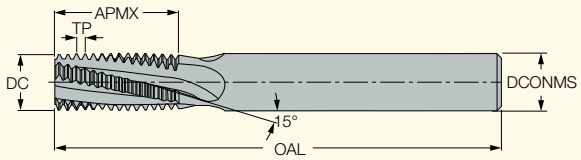
[3] C-Cylindrical

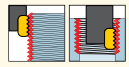
[4] 0 - Without coolant supply, 1 - With coolant supply

SOLIDTHREAD

MTEC-BSPT

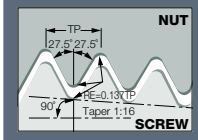
Solid Carbide Threading Endmills for an External or Internal BSPT Thread Profile





Application: General engineering fittings and pipe couplings

M E T R I C



Designation	Dimensions								IC908
	TPI[1]	TDZ	DCONMS	DC	NOF[2]	APMX	OAL	Shank[3]	
MTEC 0606C9 28BSPT	28.0	RC1/8	6.00	5.40	3	8.16	58.00	C	●
MTEC 0808C14 19BSPT	19.0	RC1/4,RC3/8	8.00	7.16	3	12.03	64.00	C	●
MTEC 1212D19 14BSPT	14.0	RC1/2,RC7/8	12.00	10.88	4	16.33	84.00	C	●

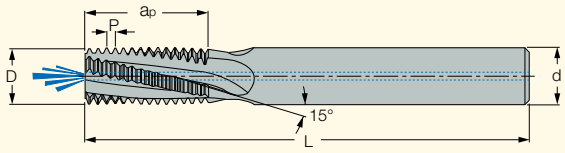
• For user guide, see pages 1222-1223, 1227-1232 • Internal & External tolerance: ISO 7-1, EN 10226 (1&2) - Standard BSPT

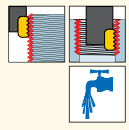
(1) Threads per inch
(2) Number of flutes
(3) C-Cylindrical

SOLIDTHREAD

MTECB-BSPT

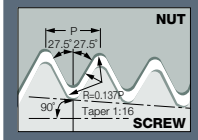
Solid Carbide External or Internal Threading Endmills with Coolant Holes, for BSPT Thread Profile





Application: General engineering fittings and pipe couplings

M E T R I C



Designation	Dimensions										IC908
	TPI[1]	BSPT	DCONMS	DC	NOF[2]	APMX	OAL	Shank[3]	THFT	TP[4]	
MTECB 08078C14 28BSPT	28.0	RC1/8	8.00	7.80	3	14.10	64.00	C	BSPT55	0.907	●
MTECB 1010D16 19BSPT	19.0	RC1/4-3/8	10.00	10.00	4	16.70	73.00	C	BSPT55	1.337	●

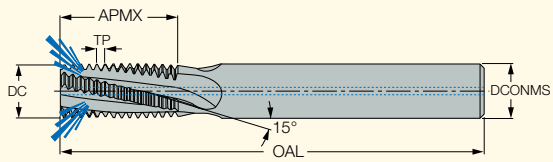
• With internal coolant hole • For user guide, see pages 1222-1223, 1227-1232

(1) Threads per inch
(2) Number of flutes
(3) C-Cylindrical
(4) Thread pitch

SOLIDTHREAD

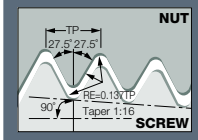
MTECZ-BSPT

Solid Carbide Threading Endmills with Coolant Holes for an Internal or External BSPT Thread Profile



Application: General engineering fittings and pipe couplings

M E T R I C



Designation	Dimensions									IC908
	TPI[1]	BSPT	DCONMS	DC	NOF[2]	APMX	OAL	Shank[3]	TP[4]	
MTECZ 08078C14 28BSPT	28.0	RC1/8	8.00	7.80	3	14.10	64.00	C	0.907	●
MTECZ 1010D16 19BSPT	19.0	RC1/4-3/8	10.00	10.00	4	16.70	73.00	C	1.337	●

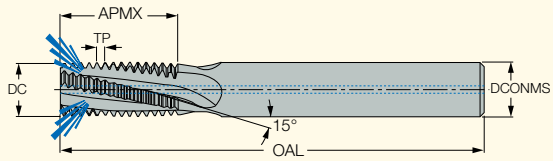
• With internal coolant hole • For user guide, see pages 1222-1223, 1227-1232 • Internal & External tolerance: ISO 7-1, EN 10226 (1&2) - Standard BSPT

(1) Threads per inch
(2) Number of flutes
(3) C-Cylindrical
(4) Thread pitch

SOLIDTHREAD

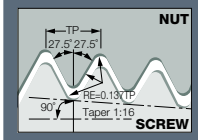
MTECZ-BSPT

Solid Carbide Threading Endmills with Coolant Holes for an Internal or External BSPT Thread Profile



Application: General engineering fittings and pipe couplings

I N C H



Designation	Dimensions									IC908
	TPI[1]	BSPT	DCONMS	DC	NOF[2]	APMX	OAL	Shank[3]	TP mm[4]	
MTECZ 08078C14 28BSPT	28.0	RC1/8	.315	.307	3	.555	2.520	C	.907	●
MTECZ 1010D16 19BSPT	19.0	RC1/4-3/8	.394	.394	4	.657	2.874	C	1.337	●

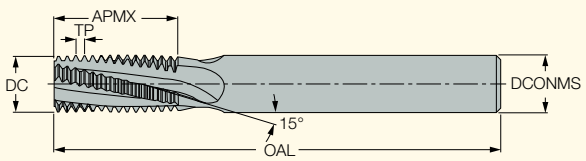
• With internal coolant hole • For user guide, see pages 1222-1223, 1227-1232 • Internal & External tolerance: ISO 7-1, EN 10226 (1&2) - Standard BSPT

(1) Threads per inch
(2) Number of flutes
(3) C-Cylindrical
(4) Thread pitch

SOLIDTHREAD

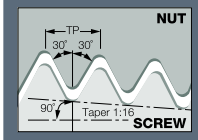
MTEC-NPT

Solid Carbide Threading Endmills for an External or Internal NPT Thread Profile



Application: Steam, gas and water pipes

M E T R I C



Designation	Dimensions								IC908
	TPI[1]	TDZ	DCONMS	DC	NOF[2]	APMX	OAL	Shank[3]	
MTEC 0606C9 27NPT	27.0	1/16,1/8"	6.00	5.36	3	9.90	58.00	C	●
MTEC 0808C14 18NPT	18.0	1/4,3/8"	8.00	7.12	3	14.80	64.00	C	●
MTEC 1212D20 14NPT	14.0	1/2,3/4"	12.00	10.77	4	20.90	84.00	C	●

• For user guide, see pages 1222-1223, 1227-1232 • Internal & External tolerance: ANSI/ASME B1.20.1 - Standard NPT

(1) Threads per inch

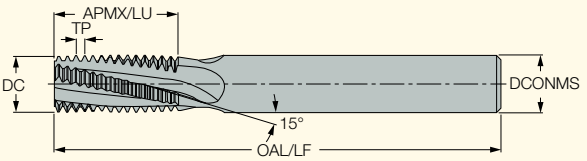
(2) Number of flutes

(3) C-Cylindrical

SOLIDTHREAD

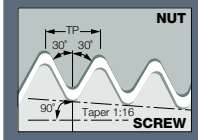
MTEC-NPT

Solid Carbide Threading Endmills for an External or Internal NPT Thread Profile



Application: Steam, gas and water pipes

I N C H



Designation	Dimensions								IC908
	TPI[1]	TDZ	DCONMS	Shank[2]	DC	NOF[3]	APMX	OAL	
MTEC 0250C03 27NPT	27.0	1/16"	.250	C	.230	3	.390	2.500	●
MTEC 0250C04 27NPT	27.0	1/8"	.250	C	.250	3	.400	2.500	●
MTEC 0312C06 18NPT	18.0	1/4,3/8"	.312	C	.312	3	.600	2.500	●
MTEC 0500D08 14NPT	14.0	1/2,3/4"	.500	C	.500	4	.800	3.500	●

• For user guide, see pages 1222-1223, 1227-1232 • Internal & External tolerance: ANSI/ASME B1.20.1 - Standard NPT

(1) Threads per inch

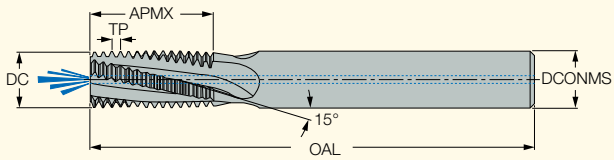
(2) C-Cylindrical

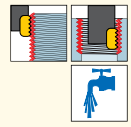
(3) Number of flutes

SOLIDTHREAD

MTECB-NPT

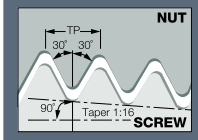
Solid Carbide Threading Endmills with Coolant Hole for an External or Internal NPT Thread Profile





Application: Steam, gas and water pipes

M E T R I C



Designation	Dimensions								IC908
	TPI[1]	TDZ	DCONMS	DC	NOF[2]	APMX	OAL	Shank[3]	
MTECB 08076C10 27NPT	27.0	1/8	8.00	7.60	3	10.80	64.00	C	●
MTECB 1010D16 18NPT	18.0	1/4,3/8	10.00	10.00	4	16.20	73.00	C	●

• For user guide, see pages 1222-1223, 1227-1232 • Internal & External tolerance: ANSI/ASME B1.20.1 - Standard NPT

[1] Threads per inch

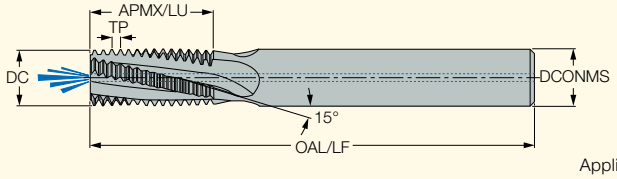
[2] Number of flutes

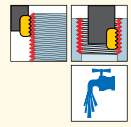
[3] C-Cylindrical

SOLIDTHREAD

MTECB-NPT

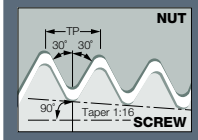
Solid Carbide Threading Endmills with Coolant Hole for an External or Internal NPT Thread Profile





Application: Steam, gas and water pipes

I N C H



Designation	Dimensions								IC908
	TPI[1]	TDZ	DCONMS	Shank[2]	DC	NOF[3]	APMX	OAL	
MTECB 0312C04 27NPT	27.0	1/8"	.313	C	.299	3	.430	2.500	●
MTECB 0375D06 18NPT	18.0	1/4,3/8"	.375	C	.375	4	.640	3.000	●

• For user guide, see pages 1222-1223, 1227-1232 • Internal & External tolerance: ANSI/ASME B1.20.1 - Standard NPT

[1] Threads per inch

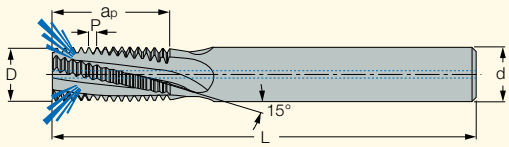
[2] C-Cylindrical

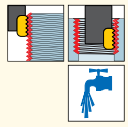
[3] Number of flutes

SOLIDTHREAD

MTECZ-NPT

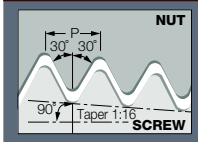
Solid Carbide Threading Endmills with Coolant Holes Located in the Flutes, for Internal or External NPT Thread Profile





Application: General engineering fittings and pipe couplings

M E T R I C



Designation	Dimensions TPI(1)	NPT	DCONMS	DC	NOF(2)	APMX	OAL	Shank(3)	THFT	IC908
MTECZ 08076C10 27NPT	27.0	1/8"	8.00	7.60	3	10.80	64.00	C	NPT60	●
MTECZ 1010D16 18NPT	18.0	1/4-3/8"	10.00	10.00	4	16.20	73.00	C	NPT60	●

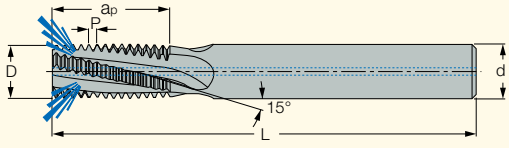
- For user guide, see pages 1222-1223, 1227-1232

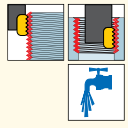
(1) Threads per inch
(2) Number of flutes
(3) C-Cylindrical

SOLIDTHREAD

MTECZ-NPT

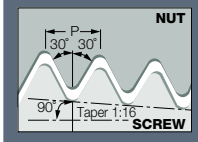
Solid Carbide Threading Endmills with Coolant Holes Located in the Flutes, for Internal or External NPT Thread Profile





Application: General engineering fittings and pipe couplings

I N C H



Designation	Dimensions TPI(1)	NPT	DCONMS	DC	NOF(2)	APMX	OAL	Shank	THFT	IC908
MTECZ 08076C10 27NPT	27.0	1/8"	.315	.299	3	.425	2.520	C	NPT60	●
MTECZ 1010D16 18NPT	18.0	1/4-3/8"	.394	.394	4	.638	2.874	C	NPT60	●

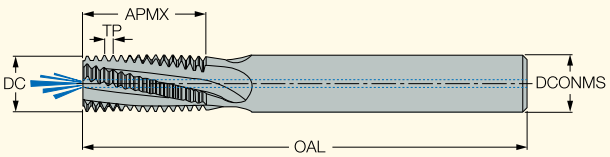
- For user guide, see pages 1222-1223, 1227-1232

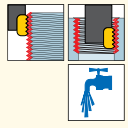
(1) Threads per inch
(2) Number of flutes

SOLIDTHREAD

MTECB-PG

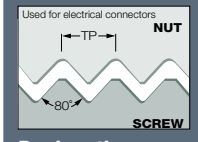
Solid Carbide Threading Endmills with a Coolant Hole for External and Internal PG Full Profile (DIN 40430)





Application: Electrical connectors

M E T R I C



Designation	Dimensions TPI(1)	THOD	DCONMS	DC	NOF(2)	APMX	OAL	Shank(3)	TP(4)	IC908
MTECB 1212D20 18PG	18.0	Pg 9, 11, 13.5, 16	12.00	12.00	4	20.50	84.00	C	1.411	●
MTECB 1212D23 16PG	16.0	Pg 21, 29,36, 42, 48	12.00	12.00	4	23.00	84.00	C	1.588	●

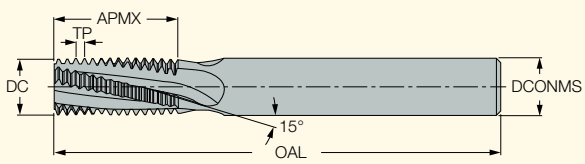
- With internal coolant hole • For user guide, see pages 1222-1223, 1227-1232 • Internal & External tolerance: DIN 40430 - Standard PG

(1) Threads per inch
(2) Number of flutes
(3) C-Cylindrical
(4) Thread pitch

SOLIDTHREAD

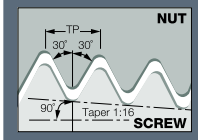
MTEC-NPTF

Solid Carbide Threading Endmills for an External or Internal NPTF Thread Profile



Application: Steam, gas and water pipes

M E T R I C



Designation	TPI[1]	TDZ	DCONMS	DC	NOF[2]	APMX	OAL	Shank[3]	IC908
	Dimensions								
MTEC 0606C9 27NPTF	27.0	1/16,1/8	6.00	6.00	3	9.90	58.00	C	●
MTEC 0808C14 18NPTF	18.0	1/4,3/8	8.00	8.00	3	14.80	64.00	C	●
MTEC 1212D20 14NPTF	14.0	1/2,3/4	12.00	12.00	4	20.90	84.00	C	●

• For user guide, see pages 1222-1223, 1227-1232 • Internal & External tolerance: ANSI/ASME B1.20.3 - Standard NPTF

(1) Threads per inch

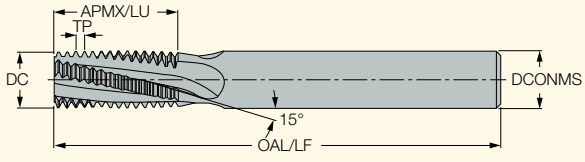
(2) Number of flutes

(3) C-Cylindrical

SOLIDTHREAD

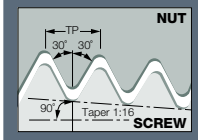
MTEC-NPTF

Solid Carbide Threading Endmills for an External or Internal NPTF Thread Profile



Application: Steam, gas and water pipes

I N C H



Designation	TPI[1]	DCONMS	Shank[2]	DC	NOF[3]	APMX	OAL	TDZ	IC908
	Dimensions								
MTEC 0250C03 27NPTF	27.0	.250	C	.230	3	.390	2.500	1/16"	●
MTEC 0250C04 27NPTF	27.0	.250	C	.250	3	.390	2.500	1/8"	●
MTEC 0312C06 18NPTF	18.0	.312	C	.312	3	.580	2.500	1/4,3/8"	●
MTEC 0500D08 14NPTF	14.0	.500	C	.500	4	.820	3.500	1/2,3/4"	●

• For user guide, see pages 1222-1223, 1227-1232 • Internal & External tolerance: ANSI/ASME B1.20.3 - Standard NPTF

(1) Threads per inch

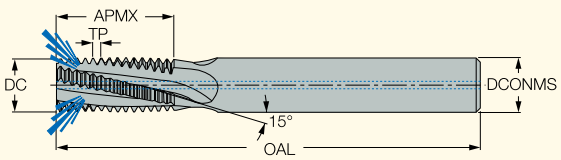
(2) C-Cylindrical

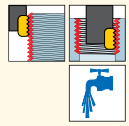
(3) Number of flutes

SOLIDTHREAD

MTECZ-NPTF

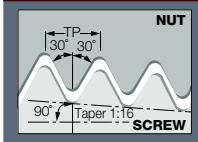
Solid Carbide Threading Endmills with Coolant Holes for Internal or External NPTF Thread Profile





Application: General engineering fittings and pipe couplings

M E T R I C



Designation	Dimensions								IC908
	TPI[1]	DCONMS	DC	NOF[2]	APMX	OAL	Shank[3]	TDZ	
MTECZ 08076C10 27NPTF	27.0	8.00	7.60	3	10.80	64.00	C	1/8"	●
MTECZ 1010D16 18NPTF	18.0	10.00	10.00	4	16.20	73.00	C	1/4-3/8"	●

• For user guide, see pages 1222-1223, 1227-1232 • Internal & External tolerance: ANSI/ASME B1.20.3 - Standard NPTF

(1) Threads per inch

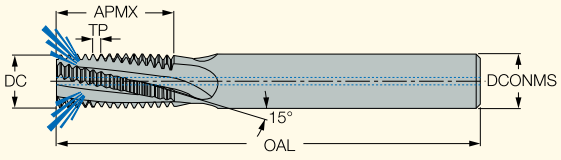
(2) Number of flutes

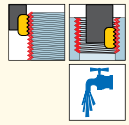
(3) C-Cylindrical

SOLIDTHREAD

MTECZ-NPTF

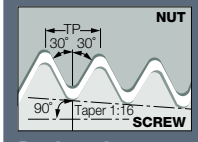
Solid Carbide Threading Endmills with Coolant Holes for Internal or External NPTF Thread Profile





Application: General engineering fittings and pipe couplings

I N C H



Designation	Dimensions								IC908
	TPI[1]	DCONMS	DC	NOF[2]	APMX	OAL	Shank[3]	TDZ	
MTECZ 08076C10 27NPTF	27.0	.315	.299	3	.425	2.520	C	1/8"	●
MTECZ 1010D16 18NPTF	18.0	.394	.394	4	.638	2.874	C	1/4-3/8"	●

• For user guide, see pages 1222-1223, 1227-1232 • Internal & External tolerance: ANSI/ASME B1.20.3 - Standard NPTF

(1) Threads per inch

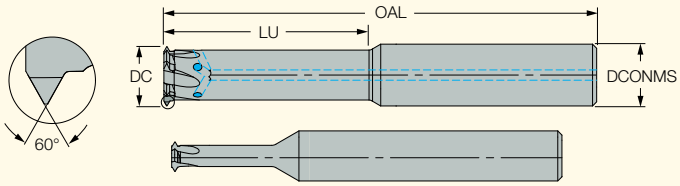
(2) Number of flutes

(3) C-Cylindrical

SOLIDTHREAD

MTECI-A60

60° Partial Profile Solid Carbide Thread Mills for Internal and External Threads



Application: General engineering

M E T R I C

Designation	TPN[1]	TPX[2]	TPN_ DF2[3]	TPX_ DF2[4]	TPIN[5]	TPIX[6]	TPIN_ DF2[7]	TPIX_ DF2[8]	Th	DCONMS	DC	NOF[9]	LU	OAL	Shank[10]	CSP[11]	Tough ↔ Hard IC908	IC902
MTECI 03019C5 A60	0.350	0.600	0.350	0.600	40.00	72.00	40.00	72.00	[a] Several Sizes	3.00	1.90	3	5.2	39.00	C	0		●
MTECI 03024C7 A60	0.500	0.800	0.500	0.800	32.00	48.00	32.00	48.00	[a] Several Sizes	3.00	2.40	3	7.1	38.00	C	0		●
MTECI 06032C9 A60	0.500	1.000	0.500	1.000	24.00	48.00	24.00	48.00	[a] Several Sizes	6.00	3.20	3	9.5	57.00	C	0		●
MTECI 0604C12 A60	0.500	1.000	0.500	1.000	24.00	48.00	24.00	48.00	[a] Several Sizes	6.00	4.00	3	12.5	58.00	C	0		●
MTECI 0605D20 A60	0.500	0.800	0.400	0.800	28.00	56.00	32.00	64.00	=>6	6.00	5.00	4	20.0	58.00	C	1	●	
MTECI 0808D28 A60	0.500	0.800	0.400	0.800	28.00	56.00	32.00	64.00	=>9	8.00	8.00	4	28.0	64.00	C	1	●	
MTECI 0808D30 A60	1.000	1.750	0.800	1.500	14.00	28.00	16.00	32.00	=>10	8.00	8.00	4	30.0	64.00	C	1	●	
MTECI 1010D35 A60	1.000	1.750	0.800	1.500	14.00	28.00	16.00	32.00	=>12	10.00	10.00	4	35.0	73.00	C	1	●	
MTECI 1212E39 A60	1.000	1.750	0.800	1.500	14.00	28.00	16.00	32.00	=>14	12.00	12.00	5	39.0	84.00	C	1	●	
MTECI 1212E40 A60	2.000	3.000	1.750	2.500	8.00	13.00	10.00	15.00	=>16	12.00	12.00	5	40.0	84.00	C	1	●	

- (a)See table below
- For user guide, see pages 1222-1223, 1227-1232
- DIN13 , ISO 68-1, ISO 965 (1&2) - Internal tolerance: 6H, External tolerance: 6g
- ANSI/ASME B1.1 - Internal tolerance: 2B, External tolerance: 2A

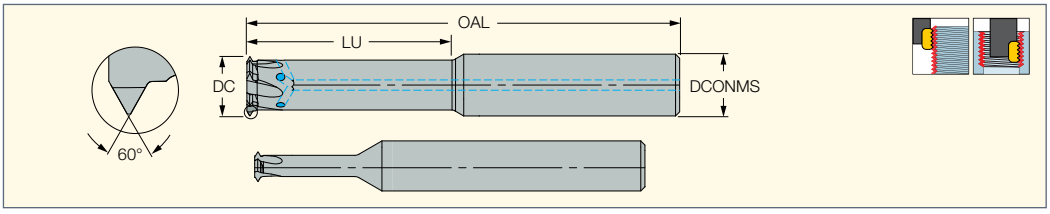
[1] Internal thread pitch minimum
[2] Internal thread pitch maximum
[3] External thread pitch minimum
[4] External thread pitch maximum
[5] Internal threads per inch minimum
[6] Internal threads per inch maximum
[7] External threads per inch minimum
[8] External threads per inch maximum
[9] Number of flutes
[10] C-Cylindrical
[11] 0 - Without coolant supply, 1 - With coolant supply

Designation	Possible Thread Sizes M Coarse	M Fine	UN, UNC, UNS,UNF, UNEF
MTECI 03019C5 A60	M2.5x0.45	M2.5x0.35, M3x0.35,	3-48UNC, 3-56UNF, 4-40UNC, 4-48UNF
MTECI 06032C9 A60	M4x0.7 M4.5x0.75	M4x0.5	8-32UNC, 8-36UNF, 10-24UNC, 10-28UNS, 10-32UNF
MTECI 0604C12 A60	M5x0.8 M6x1.0	M5x0.5, M5.5x0.5, M5x0.75	10-36UNS, 10-40UNS, 10-48UNS, 12-24UNC, 12-28UNF

SOLIDTHREAD

MTECI-A60

60° Partial Profile Solid Carbide Thread Mills for Internal and External Threads



I N C H

Designation	TPN (mm)[1]	TPX (mm)[2]	TPN_ DF2[3]	TPX_ DF2[4]	TPIN[5]	TPIX[6]	TPIN_ DF2[7]	TPIX_ DF2[8]	Th	DCONMS	DC	NOF[9]	LU	OAL	Shank[10]	CSP[11]	Tough ↔ Hard IC908	IC902
MTECI 03019C5 A60	.350	.600	.350	.600	40.00	72.00	40.00	72.00	[a] Several Sizes	.118	.075	3	.205	1.535	C	0		•
MTECI 03024C7 A60	.500	.800	.500	.800	32.00	48.00	32.00	48.00	[a] Several Sizes	.118	.094	3	.280	1.496	C	0		•
MTECI 06032C9 A60	.500	1.000	.500	1.000	24.00	48.00	24.00	48.00	[a] Several Sizes	.236	.126	3	.374	2.244	C	0		•
MTECI 0604C12 A60	.500	1.000	.500	1.000	24.00	48.00	24.00	48.00	[a] Several Sizes	.236	.157	3	.492	2.283	C	0		•
MTECI 0605D20 A60	.500	.800	.400	.800	28.00	56.00	32.00	64.00	=>6	.236	.197	4	.787	2.283	C	1	•	
MTECI 0808D28 A60	.500	.800	.400	.800	28.00	56.00	32.00	64.00	=>9	.315	.315	4	1.102	2.520	C	1	•	
MTECI 0808D30 A60	1.000	1.750	.800	1.500	14.00	28.00	16.00	32.00	=>10	.315	.315	4	1.181	2.520	C	1	•	
MTECI 1010D35 A60	1.000	1.750	.800	1.500	14.00	28.00	16.00	32.00	=>12	.394	.394	4	1.378	2.874	C	1	•	
MTECI 1212E39 A60	1.000	1.750	.800	1.500	14.00	28.00	16.00	32.00	=>14	.472	.472	5	1.535	3.307	C	1	•	
MTECI 1212E40 A60	2.000	3.000	1.750	2.500	8.00	13.00	10.00	15.00	=>16	.472	.472	5	1.575	3.307	C	1	•	

• DIN13 , ISO 68-1, ISO 965 (1&2) - Internal tolerance: 6H, External tolerance: 6g • ANSI/ASME B1.1 - Internal tolerance: 2B, External tolerance: 2A

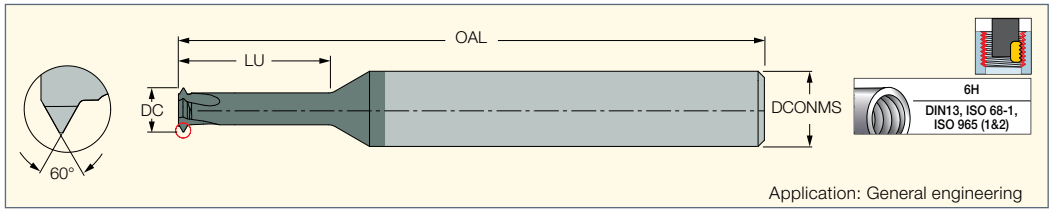
[1] Internal thread pitch minimum (mm)
[2] Internal thread pitch maximum (mm)
[3] External thread pitch minimum (mm)
[4] External thread pitch maximum (mm)
[5] Internal threads per inch minimum
[6] Internal threads per inch maximum
[7] External threads per inch minimum
[8] External threads per inch maximum
[9] Number of flutes
[10] C-Cylindrical
[11] 0 - Without coolant supply, 1 - With coolant supply

Designation	Possible Thread Sizes M Coarse	M Fine	UN, UNC, UNS,UNF, UNEF
MTECI 03019C5 A60	M2.5x0.45	M2.5x0.35, M3x0.35,	3-48UNC, 3-56UNF, 4-40UNC, 4-48UNF
MTECI 06032C9 A60	M4x0.7 M4.5x0.75	M4x0.5	8-32UNC, 8-36UNF, 10-24UNC, 10-28UNS, 10-32UNF
MTECI 0604C12 A60	M5x0.8 M6x1.0	M5x0.5, M5.5x0.5, M5x0.75	10-36UNS, 10-40UNS, 10-48UNS, 12-24UNC, 12-28UNF

SOLIDTHREAD

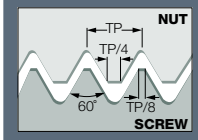
MTECI-ISO

Small Diameter Single Point
Internal ISO Profile Solid
Carbide Thread Mills



Application: General engineering

M E T R I C



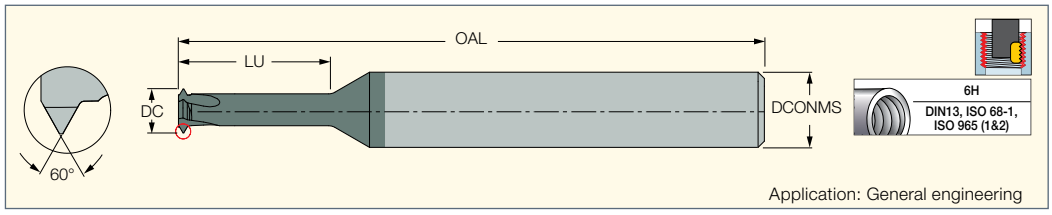
Designation	Dimensions TP[1]	M Coarse	M Fine	DCONMS	DC	NOF[2]	LU	OAL	Shank[3]	IC902
MTECI 03009C4 0.25ISO	0.250	M1.2X0.25	M1.4X0.25, M1.6X0.25	3.00	0.90	3	4.3	39.00	C	●
MTECI 03007C3 0.25ISO	0.250	M1X0.25	-	3.00	0.72	3	3.6	39.00	C	●
MTECI 03011C5 0.3ISO	0.300	M1.4X0.3	-	3.00	1.05	3	5.0	39.00	C	●
MTECI 03012C6 0.35ISO	0.350	M1.6X0.35	M2X0.35, M2.2X0.35	3.00	1.20	3	5.7	39.00	C	●
MTECI 03016C7 0.4ISO	0.400	M2X0.4	-	3.00	1.55	3	7.1	39.00	C	●
MTECI 03024C10 0.5ISO	0.500	M3X0.5	M3.5X0.5, M4X0.5	3.00	2.37	3	10.6	39.00	C	●

• For user guide, see pages 1222-1223, 1227-1232
(1) Thread pitch
(2) Number of flutes
(3) C-Cylindrical

SOLIDTHREAD

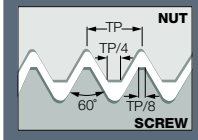
MTECI-ISO

Small Diameter Single Point
Internal ISO Profile Solid
Carbide Thread Mills



Application: General engineering

I N C H



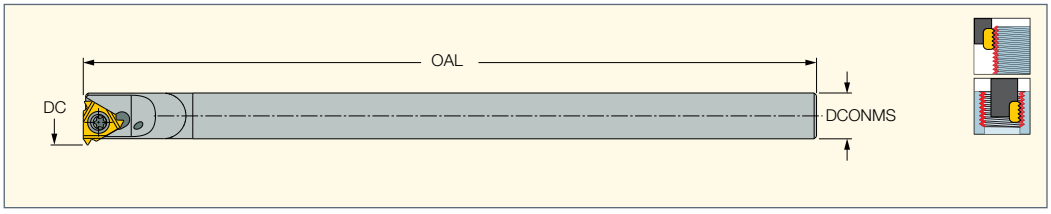
Designation	Dimensions TP mm[1]	M Coarse	M Fine	DCONMS	DC	NOF[2]	LU	OAL	Shank[3]	IC902
MTECI 03009C4 0.25ISO	.250	M1.2X0.25	M1.4X0.25, M1.6X0.25	.118	.035	3	.169	1.535	C	●
MTECI 03007C3 0.25ISO	.250	M1X0.25	-	.118	.028	3	.142	1.535	C	●
MTECI 03011C5 0.3ISO	.300	M1.4X0.3	-	.118	.041	3	.197	1.535	C	●
MTECI 03012C6 0.35ISO	.350	M1.6X0.35	M2X0.35, M2.2X0.35	.118	.047	3	.224	1.535	C	●
MTECI 03016C7 0.4ISO	.400	M2X0.4	-	.118	.061	3	.280	1.535	C	●
MTECI 03024C10 0.5ISO	.500	M3X0.5	M3.5X0.5, M4X0.5	.118	.093	3	.417	1.535	C	●

• For user guide, see pages 1222-1223, 1227-1232
(1) Thread pitch
(2) Number of flutes
(3) C-Cylindrical

MILLTHREAD

MTET Single Point

Indexable Threading Endmills
with Cylindrical Shanks
for Single Point Inserts



M E T R I C

Designation	Dimensions												Recommended Machining Data
	TPN[2]	TPX[3]	TPIX[4]	TPIN[5]	DC	DCONMS	OAL	Shank[6]	Shank m.[7]	Insert	CSP[8]	kg	f_z (mm/rev)
MTET D_7.0-1-C5C-06	0.500	1.250	48.00	20.00	7.00	5.00	63.00	C	C	06IR	0	0.06	0.05-0.15
MTET D_8.8-1-C6C-08	0.500	1.750	48.00	14.00	8.80	6.00	100.00	C	C	08IR	1	0.04	0.05-0.15
MTET D13.2-1-C10C-11 [1]	0.500	2.000	48.00	11.00	13.20	10.00	150.00	C	C	11IR/EL	1	0.13	0.05-0.15

- For user guide, see pages 1220-1221, 1226
- For inserts, refer to ISCAR Turning Lines catalog
- Tool cutting diameter should not exceed 2/3 of thread bore diameter

[1] For internal threading use internal R.H insert, for external threading use external L.H insert
[2] Thread pitch minimum (mm)
[3] Thread pitch maximum (mm)
[4] Threads per inch maximum
[5] Threads per inch minimum
[6] C-Cylindrical
[7] Shank material C-carbide
[8] 0 - Without coolant supply, 1 - With coolant supply

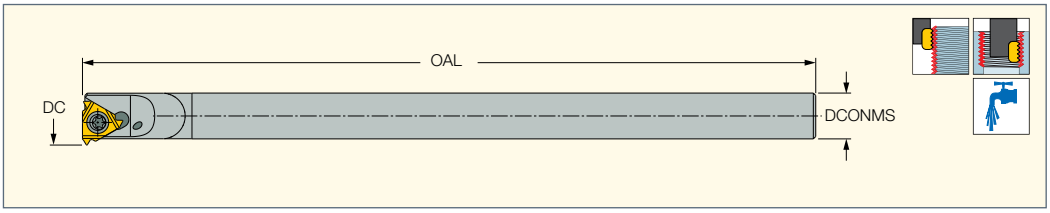
Spare Parts

Designation		
MTET D_7.0-1-C5C-06	SR 14-552	T-6/5
MTET D_8.8-1-C6C-08	SR 14-558-S	T-6/5
MTET D13.2-1-C10C-11	SR M2.6-L6.7-S11	T-8/5

MILLTHREAD

MTET Single Point

Indexable Threading Endmills
with Cylindrical Shanks
for Single Point Inserts



I N C H

Designation	Dimensions												Recommended Machining Data
	TPN (mm) (2)	TPX (mm) (3)	TPIX[4]	TPIN[5]	DC	DCONMS	OAL	Shank[6]	Shank m.(7)	Insert	CSP[8]	Lbs	f_z (IPR)
MTET D.35-1-C.25C-08	.500	1.750	48.00	14.00	.350	.250	4.130	C	C	08IR/EL	1	.13	.0020-.0060
MTET D.50-1-C.38C-11 [1]	.500	2.000	48.00	11.00	.500	.375	6.000	C	C	11IR/EL	1	.33	.0020-.0060

- For user guide, see pages 1220-1221, 1226
- For inserts, refer to ISCAR Turning Lines catalog
- Tool cutting diameter should not exceed 2/3 of thread bore diameter

[1] For internal threading use internal R.H insert, for external threading use external L.H insert
[2] Thread pitch minimum (mm)
[3] Thread pitch maximum (mm)
[4] Threads per inch maximum
[5] Threads per inch minimum
[6] C-Cylindrical
[7] Shank material C-carbide
[8] 0 - Without coolant supply, 1 - With coolant supply

Spare Parts

Designation		
MTET D.35-1-C.25C-08	SR 14-558-S	T-6/5
MTET D.50-1-C.38C-11	SR M2.6-L6.7-S11	T-8/5

Machining Data for Indexable Threading Tools (Metric)

ISO	Material		Condition	Tensile Strength [N/mm²]	Hardness HB	Material No.	Indexable Cutting Speed for IC908 M/min
P	non-alloy steel and cast steel, free cutting steel	<0.25% C	annealed	420	125	1	100-200
		≥0.25% C	annealed	650	190	2	95-190
		<0.55% C	quenched and tempered	850	250	3	90-180
		≥0.55% C	annealed	750	220	4	90-170
			quenched and tempered	1000	300	5	80-150
	low alloy and cast steel (less than 5% of alloying elements)		annealed	600	200	6	120-170
			quenched and tempered	930	275	7	115-160
				1000	300	8	105-150
				1200	350	9	90-140
	high alloyed steel, cast steel and tool steel		annealed	680	200	10	90-170
			quenched and tempered	1100	325	11	75-145
	stainless steel and cast steel		ferritic/martensitic	680	200	12	110-170
			martensitic	820	240	13	100-160
M	stainless steel		austenitic, duplex	600	180	14	90-145
N	aluminum- wrought alloy		not hardenable		60	21	110-260
			hardenable		100	22	110-200
	aluminum-cast, alloyed	≤12% Si	not hardenable		75	23	145-350
			hardenable		90	24	145-275
		>12% Si	high temperature		130	25	95-225
	copper alloys	>1% Pb	free cutting		110	26	145-350
			brass		90	27	145-350
			electrolytic copper		100	28	145-350
	non-metallic		duroplastics, fiber plastics			29	90-370
			hard rubber			30	80-330
S	high temperature alloys	Fe based	annealed		200	31	20-60
			hardened		280	32	20-50
		Ni or Co based	annealed		250	33	20-30
			hardened		350	34	10-20
			cast		320	35	15-25
	titanium alloys			400		36	30-90
			alpha+beta alloys, hardened	1050		37	20-70

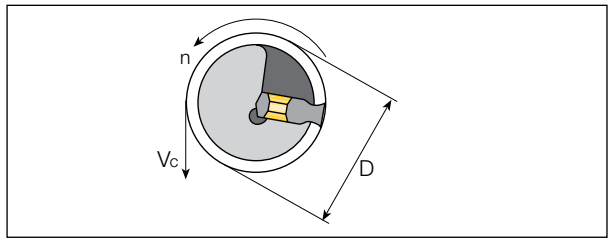
Calculating RPM:

Metric Example: V=120 m/min, D=30 mm

$$n = \frac{Vc \times 1000}{\pi \times D} = \frac{120 \times 1000}{3.14 \times 30} = 1274 \text{ RPM}$$

Inch Example: V= 410 SFM, D=1.5 inch

$$n = \frac{Vc \times 12}{\pi \times D} = \frac{410 \times 12}{3.14 \times 1.5} = 1045 \text{ RPM}$$



Feed:	0.05-0.15 mm/tooth

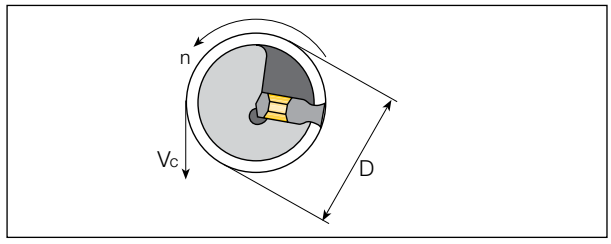
Machining Data for Indexable Insert Threading Tools (Imperial)

ISO	Material		Condition	Tensile Strength [ksi]	Hardness HB	Material Group No.	Indexable Cutting Speed (SFM) IC908
P	non-alloy steel and cast steel, free cutting steel	<0.25% c	annealed	61	125	1	330 - 655
		≥0.25% c	annealed	94	190	2	310 - 625
		<0.55% c	quenched and tempered	123	250	3	295 - 590
		≥0.55% c	annealed	109	220	4	295 - 560
			quenched and tempered	145	300	5	260 - 490
	low alloy and cast steel (less than 5% of alloying elements)		annealed	87	200	6	395 - 560
			quenched and tempered	135	275	7	375 - 525
				145	300	8	345 - 490
				174	350	9	295 - 460
	high alloyed steel, cast steel and tool steel		annealed	99	200	10	295 - 560
			quenched and tempered	160	325	11	245 - 475
	stainless steel and cast steel		ferritic/martensitic	99	200	12	360 - 560
			martensitic	119	240	13	330 - 525
M	stainless steel and cast steel		austenitic, duplex	87	180	14	295 - 475
N	aluminum-wrought alloys		not hardenable		60	21	360 - 855
			hardenable		100	22	360 - 655
	aluminum-cast alloys	≤12% si	not hardenable		75	23	475 - 1150
			hardenable		90	24	475 - 900
		>12% si	high temperature		130	25	310 - 740
	copper alloys	>1% pb	free cutting		110	26	475 - 1150
			brass		90	27	475 - 1150
			electrolytic copper		100	28	475 - 1150
	non metallic		duroplastics, fiber plastics			29	295 - 1215
			hard rubber			30	260 - 1085
S	high temperature alloys	Fe based	annealed		200	31	65 - 195
			hardened		280	32	65 - 165
		Ni or Co based	annealed		250	33	65 - 100
			hardened		350	34	35 - 65
			cast		320	35	50 - 80
	titanium alloys		pure	58	190	36	100 - 295
			alpha+beta alloys, hardened	152	310	37	65 - 230

Calculating RPM:

Inch Example: V= 410 SFM, D=1.5 inch

$$n = \frac{Vc \times 12}{\pi \times D} = \frac{410 \times 12}{3.14 \times 1.5} = 1045 \text{ RPM}$$



Feed:	0.002-0.006 Inch/tooth

Solid Carbide Threading Endmills Machining Data for General-Use (Metric)

ISO	Material		Condition	Tensile Strength [N/mm²]	Hardness HB	Material No.	Cutting Speed (m/min)	Cutting Diameter Feed mm/tooth						
							IC908	2	3	4	6	8	10	12
P	non-alloy steel and cast steel, free cutting steel	<0.25% C	annealed	420	125	1	100-250	0.03	0.04	0.04	0.06	0.07	0.08	0.09
		≥0.25% C	annealed	650	190	2	80-210	0.03	0.04	0.04	0.06	0.07	0.08	0.09
		<0.55% C	quenched and tempered	850	250	3	65-170							
		≥0.55% C	annealed	750	220	4	110-180	0.02	0.03	0.03	0.05	0.06	0.07	0.08
			quenched and tempered	1000	300	5	95-160	0.02	0.03	0.03	0.05	0.06	0.07	0.08
	low alloy and cast steel (less than 5% of alloying elements)		annealed	600	200	6	90-160	0.02	0.02	0.03	0.03	0.04	0.05	0.05
			quenched and tempered	930	275	7	65-200	0.02	0.02	0.03	0.03	0.04	0.05	0.05
				1000	300	8	70-210	0.02	0.02	0.03	0.03	0.04	0.05	0.05
				1200	350	9	95-160	0.02	0.02	0.03	0.03	0.04	0.05	0.05
	high alloyed steel, cast steel and tool steel		annealed	680	200	10	130-170	0.02	0.02	0.03	0.03	0.04	0.05	0.05
			quenched and tempered	1100	325	11	75-100	0.02	0.02	0.03	0.03	0.04	0.05	0.05
	stainless steel and cast steel		ferritic/martensitic	680	200	12	110-170	0.02	0.02	0.03	0.03	0.04	0.05	0.05
			martensitic	820	240	13	70-155	0.02	0.02	0.03	0.03	0.04	0.05	0.05
M	stainless steel		austenitic, duplex	600	180	14	85-100	0.02	0.02	0.03	0.03	0.04	0.05	0.05
N	aluminum- wrought alloy		not hardenable		60	21	160-300	0.03	0.04	0.04	0.06	0.07	0.08	0.09
			hardenable		100	22								
	aluminum-cast, alloyed	≤12% Si	not hardenable		75	23	150-350	0.03	0.04	0.04	0.06	0.07	0.08	0.09
			hardenable		90	24								
		>12% Si	high temperature		130	25	100-250	0.02	0.02	0.03	0.03	0.04	0.05	0.05
	copper alloys	>1% Pb	free cutting		110	26								
			brass		90	27								
			electrolytic copper		100	28								
	non-metallic		duroplastics, fiber plastics			29	100-400	0.05	0.06	0.07	0.09	0.1	0.11	0.12
			hard rubber			30								
S	high temperature alloys	Fe based	annealed		200	31								
			hardened		280	32								
		Ni or Co based	annealed		250	33	20-80	0.02	0.02	0.02	0.03	0.03	0.03	0.03
			hardened		350	34								
			cast		320	35								
	titanium ti alloys			400		36								
			alpha+beta alloys, hardened	1050		37	20-80	0.02	0.02	0.02	0.03	0.03	0.03	0.03

* For cutters with long cutting flute, reduce feed rate by 40%.

Solid Carbide Threading Endmills Machining Data for General-Use (Imperial)

ISO	Material		Condition	Tensile Strength [ksi]	Hardness HB	Material Group No.	Cutting Speed (SFM)	Cutting Diameter / Feed (in/tooth)						
							IC908	3/32	1/8	5/32	1/4	5/16	3/8	1/2
P	non-alloy steel and cast steel, free cutting steel	<0.25% C	annealed	61	125	1	330-820	.0012	.0016	.0016	.0024	.0028	.0031	.0035
		≥0.25% C	annealed	94	190	2	260-690	.0012	.0016	.0016	.0024	.0028	.0031	.0035
		<0.55% C	quenched and tempered	123	250	3	210-560							
		≥0.55% C	annealed	109	220	4	360-590	.0008	.0012	.0012	.0020	.0024	.0028	.0031
			quenched and tempered	145	300	5	310-520	.0008	.0012	.0012	.0020	.0025	.0028	.0031
	low alloy and cast steel (less than 5% of alloying elements)		annealed	87	200	6	300-520	.0008	.0008	.0012	.0012	.0016	.0020	.0020
			quenched and tempered	135	275	7	210-660	.0008	.0008	.0012	.0012	.0016	.0020	.0020
				145	300	8	230-690	.0008	.0008	.0012	.0012	.0016	.0020	.0020
				174	350	9	310-520	.0008	.0008	.0012	.0012	.0016	.0020	.0020
	high alloyed steel, cast steel and tool steel		annealed	99	200	10	430-560	.0008	.0008	.0012	.0012	.0016	.0020	.0020
			quenched and tempered	160	325	11	250-330	.0008	.0008	.0012	.0012	.0016	.0020	.0020
	stainless steel and cast steel		ferritic/martensitic	99	200	12	360-560	.0008	.0008	.0012	.0012	.0016	.0020	.0020
			martensitic	119	240	13	230-510	.0008	.0008	.0012	.0012	.0016	.0020	.0020
M	stainless steel and cast steel		austenitic, duplex	87	180	14	280-330	.0008	.0008	.0012	.0012	.0016	.0020	.0020
N	aluminum-wrought alloys		not hardenable		60	21	520-980	.0012	.0016	.0016	.0024	.0028	.0031	.0035
			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	330-460	.0020	.0024	0028	0035	.0039	.0043	.0047
			hard rubber			30								
S	high temperature alloys	fe based	annealed		200	31								
			hardened		280	32								
		ni or co based	annealed		250	33	70-260	.0008	.0008	.0008	.0012	.0012	.0012	.0012
			hardened		350	34								
			cast		320	35								
	titanium alloys		pure	58		36								
			alpha+beta alloys, hardened	152		37	70-260	.0008	.0008	.0008	.0012	.0012	.0012	.0012

* For cutters with long cutting flute, reduce feed rate by 40%.

Solid Carbide Threading Endmills Cutting Conditions for Fast Machining (MTECK,MTECM,MTECBF) (Metric)

Recommended initial cutting conditions are shown in the tables below.
Use the **ISCAR MILL-THREAD** Advisor, for correct process and cutting condition re-considerations (https://www.ISCAR.com/mts/).
See machining data for solid carbide threading endmills with small diameters and short solid carbide thread mills.

ISO	Material		Condition	Tensile Strength [N/mm²]	Hardness HB	Material Group No.	Cutting Speed [m/min]	Feed [mm/tooth] for Diameter [mm]									
								Ø1.5	Ø2	Ø3	Ø4	Ø5	Ø6	Ø7	Ø8	Ø9	Ø10	Ø12
P	non-alloy steel and cast steel, free cutting steel	<0.25% C	annealed	420	125	1	70-120	0.05	0.05	0.07	0.09	0.11	0.13	0.14	0.15	0.16	0.16	0.17
		≥0.25% C	annealed	650	190	2	65-115	0.05	0.05	0.07	0.09	0.11	0.13	0.14	0.15	0.16	0.16	0.17
		<0.55% C	quenched and tempered	850	250	3	60-110	0.05	0.05	0.07	0.09	0.11	0.13	0.14	0.15	0.16	0.16	0.17
		≥0.55% C	annealed	750	220	4	70-90	0.04	0.05	0.06	0.08	0.09	0.1	0.12	0.13	0.14	0.14	0.16
			quenched and tempered	1000	300	5	60-85	0.04	0.05	0.06	0.08	0.09	0.1	0.12	0.13	0.14	0.14	0.16
	low alloy and cast steel (less than 5% of alloying elements)		annealed	600	200	6	60-80	0.04	0.04	0.05	0.05	0.06	0.07	0.07	0.08	0.09	0.1	0.12
			quenched and tempered	930	275	7	60-75	0.04	0.04	0.05	0.05	0.06	0.07	0.07	0.08	0.09	0.1	0.12
				1000	300	8	55-75	0.04	0.04	0.05	0.05	0.06	0.07	0.07	0.08	0.09	0.1	0.12
				1200	350	9	55-70	0.04	0.04	0.05	0.05	0.06	0.07	0.07	0.08	0.09	0.1	0.12
	high alloyed steel, cast steel and tool steel		annealed	680	200	10	50-65	0.04	0.04	0.05	0.05	0.06	0.07	0.07	0.08	0.09	0.1	0.12
			quenched and tempered	1100	325	11	50-63	0.04	0.04	0.05	0.05	0.06	0.07	0.07	0.08	0.09	0.1	0.12
	stainless steel and cast steel		ferritic / martensitic	680	200	12	50-60	0.04	0.04	0.05	0.05	0.06	0.07	0.07	0.08	0.09	0.1	0.12
			martensitic	820	240	13	50-70	0.04	0.04	0.05	0.05	0.06	0.07	0.07	0.08	0.09	0.1	0.12
M	stainless steel and cast steel		austenitic, duplex	600	180	14	60-90	0.03	0.03	0.04	0.05	0.06	0.06	0.07	0.08	0.09	0.1	0.11
N	aluminum-wrought alloys		not hardenable		60	21	120-150	0.05	0.05	0.07	0.09	0.11	0.13	0.14	0.15	0.16	0.16	0.17
			hardenable		100	22	110-130	0.05	0.05	0.07	0.09	0.11	0.13	0.14	0.15	0.16	0.16	0.17
	aluminum-cast alloys	≤12% Si	not hardenable		75	23	120-150	0.05	0.05	0.07	0.09	0.11	0.13	0.14	0.15	0.16	0.16	0.17
			hardenable		90	24	120-160	0.05	0.05	0.07	0.09	0.11	0.13	0.14	0.15	0.16	0.16	0.17
		>12% Si	high temperature		130	25	80-110	0.05	0.05	0.07	0.09	0.11	0.13	0.14	0.15	0.16	0.16	0.17
	copper alloys	>1% Pb	free cutting		110	26	85-120	0.05	0.05	0.07	0.09	0.11	0.13	0.14	0.15	0.16	0.16	0.17
			brass		90	27	85-120	0.05	0.05	0.07	0.09	0.11	0.13	0.14	0.15	0.16	0.16	0.17
			electrolytic copper		100	28	70-100	0.05	0.05	0.07	0.09	0.11	0.13	0.14	0.15	0.16	0.16	0.17
	non metallic		duroplastics, fiber plastics		70 Shore D	29	120-200	0.1	0.11	0.12	0.14	0.16	0.18	0.19	0.19	0.19	0.19	0.19
			hard rubber		55 Shore D	30	120-200	0.1	0.11	0.12	0.14	0.16	0.18	0.19	0.19	0.19	0.19	0.19
S	high temperature alloys	Fe based	annealed		200	31	40-60	0.03	0.03	0.04	0.04	0.05	0.06	0.06	0.06	0.07	0.07	0.07
			hardened		280	32	30-50	0.03	0.03	0.04	0.04	0.05	0.06	0.06	0.06	0.07	0.07	0.07
		Ni or Co based	annealed		250	33	25-40	0.03	0.03	0.04	0.04	0.05	0.06	0.06	0.06	0.07	0.07	0.07
			hardened		350	34	20-35	0.03	0.03	0.04	0.04	0.05	0.06	0.06	0.06	0.07	0.07	0.07
			cast		320	35	20-40	0.03	0.03	0.04	0.04	0.05	0.06	0.06	0.06	0.07	0.07	0.07
	titanium alloys		pure	400	190	36	30-45	0.03	0.03	0.04	0.04	0.05	0.06	0.06	0.06	0.07	0.07	0.07
			alpha+beta alloys, hardened	1050	310	37	30-40	0.03	0.03	0.04	0.04	0.05	0.06	0.06	0.06	0.07	0.07	0.07

Solid Carbide Threading Endmills Cutting Conditions for Fast Machining (MTECK,MTECM,MTECBF) (Imperial)

Recommended initial cutting conditions are shown in the tables below.
Use the **ISCAR MILL-THREAD** Advisor, for correct process and cutting condition re-considerations (https://www.ISCAR.com/mts/).
See machining data for solid carbide threading endmills with small diameters and short solid carbide thread mills.

ISO	Material		Condition	Tensile Strength [ksi]	Hardness HB	Material Group No.	Cutting Speed [sfm]	Feed [inch/tooth] for Diameter [inch]										
								Ø0.0591	Ø0.0787	Ø0.1181	Ø0.1575	Ø0.1968	Ø0.2362	Ø0.2756	Ø0.3150	Ø0.3543	Ø0.3937	Ø0.4724
P	non-alloy steel and cast steel, free cutting steel	<.25% C	annealed	61	125	1	230-394	.0020	.0020	.0028	.0035	.0043	.0051	.0055	.0059	.0063	.0063	.0067
		≥.25% C	annealed	94	190	2	213-377	.0020	.0020	.0028	.0035	.0043	.0051	.0055	.0059	.0063	.0063	.0067
		<.55% C	quenched and tempered	123	250	3	197-361	.0020	.0020	.0028	.0035	.0043	.0051	.0055	.0059	.0063	.0063	.0067
		≥.55% C	annealed	109	220	4	230-295	.0016	.0020	.0024	.0031	.0035	.0039	.0047	.0051	.0055	.0055	.0063
			quenched and tempered	145	300	5	197-279	.0016	.0020	.0024	.0031	.0035	.0039	.0047	.0051	.0055	.0055	.0063
	low alloy and cast steel (less than 5% of alloying elements)		annealed	87	200	6	197-262	.0016	.0016	.0020	.0020	.0024	.0028	.0028	.0031	.0035	.0039	.0047
			quenched and tempered	135	275	7	197-246	.0016	.0016	.0020	.0020	.0024	.0028	.0028	.0031	.0035	.0039	.0047
				145	300	8	180-246	.0016	.0016	.0020	.0020	.0024	.0028	.0028	.0031	.0035	.0039	.0047
				174	350	9	180-230	.0016	.0016	.0020	.0020	.0024	.0028	.0028	.0031	.0035	.0039	.0047
	high alloyed steel, cast steel and tool steel		annealed	99	200	10	164-213	.0016	.0016	.0020	.0020	.0024	.0028	.0028	.0031	.0035	.0039	.0047
			quenched and tempered	160	325	11	164-207	.0016	.0016	.0020	.0020	.0024	.0028	.0028	.0031	.0035	.0039	.0047
	stainless steel and cast steel		ferritic / martensitic	99	200	12	164-197	.0016	.0016	.0020	.0020	.0024	.0028	.0028	.0031	.0035	.0039	.0047
			martensitic	119	240	13	164-230	.0016	.0016	.0020	.0020	.0024	.0028	.0028	.0031	.0035	.0039	.0047
M	stainless steel and cast steel		austenitic, duplex	87	180	14	197-295	.0012	.0012	.0016	.0020	.0024	.0024	.0028	.0031	.0035	.0039	.0043
N	aluminum-wrought alloys		not hardenable		60	21	394-492	.0020	.0020	.0028	.0035	.0043	.0051	.0055	.0059	.0063	.0063	.0067
			hardenable		100	22	361-427	.0020	.0020	.0028	.0035	.0043	.0051	.0055	.0059	.0063	.0063	.0067
	aluminum-cast alloys	≤12% Si	not hardenable		75	23	394-492	.0020	.0020	.0028	.0035	.0043	.0051	.0055	.0059	.0063	.0063	.0067
			hardenable		90	24	394-525	.0020	.0020	.0028	.0035	.0043	.0051	.0055	.0059	.0063	.0063	.0067
		>12% Si	high temperature		130	25	262-361	.0020	.0020	.0028	.0035	.0043	.0051	.0055	.0059	.0063	.0063	.0067
	copper alloys	>1% Pb	free cutting		110	26	279-394	.0020	.0020	.0028	.0035	.0043	.0051	.0055	.0059	.0063	.0063	.0067
			brass		90	27	279-394	.0020	.0020	.0028	.0035	.0043	.0051	.0055	.0059	.0063	.0063	.0067
			electrolytic copper		100	28	230-328	.0020	.0020	.0028	.0035	.0043	.0051	.0055	.0059	.0063	.0063	.0067
	non metallic		duroplastics, fiber plastics		70 Shore D	29	394-656	.0039	.0043	.0047	.0055	.0063	.0071	.0075	.0075	.0075	.0075	.0075
			hard rubber		55 Shore D	30	394-656	.0039	.0043	.0047	.0055	.0063	.0071	.0075	.0075	.0075	.0075	.0075
S	high temperature alloys	Fe based	annealed		200	31	131-197	.0012	.0012	.0016	.0016	.0020	.0024	.0024	.0024	.0028	.0028	.0028
			hardened		280	32	98-164	.0012	.0012	.0016	.0016	.0020	.0024	.0024	.0024	.0028	.0028	.0028
		Ni or Co based	annealed		250	33	82-131	.0012	.0012	.0016	.0016	.0020	.0024	.0024	.0024	.0028	.0028	.0028
			hardened		350	34	66-115	.0012	.0012	.0016	.0016	.0020	.0024	.0024	.0024	.0028	.0028	.0028
			cast		320	35	66-131	.0012	.0012	.0016	.0016	.0020	.0024	.0024	.0024	.0028	.0028	.0028
	titanium alloys		pure	58	190	36	98-148	.0012	.0012	.0016	.0016	.0020	.0024	.0024	.0024	.0028	.0028	.0028
			alpha+beta alloys, hardened	152	310	37	98-131	.0012	.0012	.0016	.0016	.0020	.0024	.0024	.0024	.0028	.0028	.0028

Thread Milling CNC Program for Internal Thread

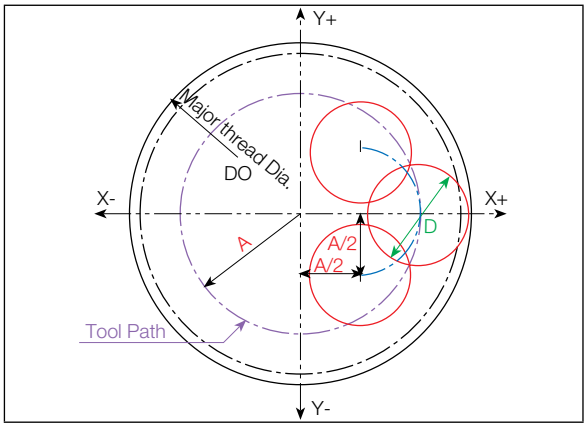
Right-hand thread (climb milling) from bottom up.
Program is based on tool center.
This method of programming needs no tool radius compensation value other than an offset for wear.

$$A = \frac{Do - D}{2}$$

A = Radius of tool path
Do = Major thread diameter
D = Cutting diameter

General Program

G90 G00 G54 G43 H1X0 Y0 Z10 S...
G00 Z-(to thread depth)
G01 G91 G41 D1 X(A/2) Y-(A/2) Z0 F...
G03 X(A/2) Y(A/2) R(A/2) Z(1/8 pitch)
G03 X0 Y0 I-(A) J0 Z(pitch)
G03 X-(A/2) Y(A/2) R(A/2) Z(1/8 pitch)
G01 G40 X-(A/2) Y-(A/2) Z0
G90 X0 Y0 Z0



Internal Thread

Example: M 48x2.0 IN-RH
(Thread depth 25 mm)
Toolholder: MTSR0029 J30
(Cutting dia. 29 mm)
Insert: MT30 I2.0ISO
A =(Do-D)/2=(48-29)/2=9.5
A/2 =4.75
(Tool compensation of radius=0)
G90 G0 G54 G43 G17 H1X0 Y0 Z10 S1320
G0 Z-25
G01 G91 G41 D1X 4.75 Y-4.75 Z0 F41
G03 X4.75 Y4.75 R4.75 Z0.25
G03 X0 Y0 I-9.5 J0 Z2.0
G03 X-4.75 Y4.75 R4.75 Z0.25
G01 G40 X-4.75 Y-4.75 Z0
G90 G0 X0 Y0 Z0
M30
%

Number of Radial Passes

In order to produce a thread, in some cases one radial pass is sufficient but other times a number of radial passes are required.

The table below presents **ISCAR**'s recommendations for the number of radial passes depending on the material and lead.

Number of Radial Passes (Metric)

ISO	Material		Condition	Tensile Strength [N/mm²]	Hardness HB	Material No.	Lead (mm)			
							0.25-1.00	1.25-1.50	1.75-2.00	2.50-6.00
							Number of Passes			
P	non-alloy steel and cast steel, free cutting steel	<0.25% C	annealed	420	125	1	1	1	2	3
		≥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		austenitic, duplex	600	180	14	1	1	2	3
N	aluminum- wrought alloy		not hardenable		60	21	1	1	1	1
			hardenable		100	22				
	aluminum-cast, alloyed	≤12% Si	not hardenable		75	23				
			hardenable		90	24				
		>12% Si	high temperature		130	25	1	1	2	3
	copper alloys	>1% Pb	free cutting		110	26	1	1	1	1
			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	2	2	2	3
			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				

Rm - ultimate tensile strength, MPa

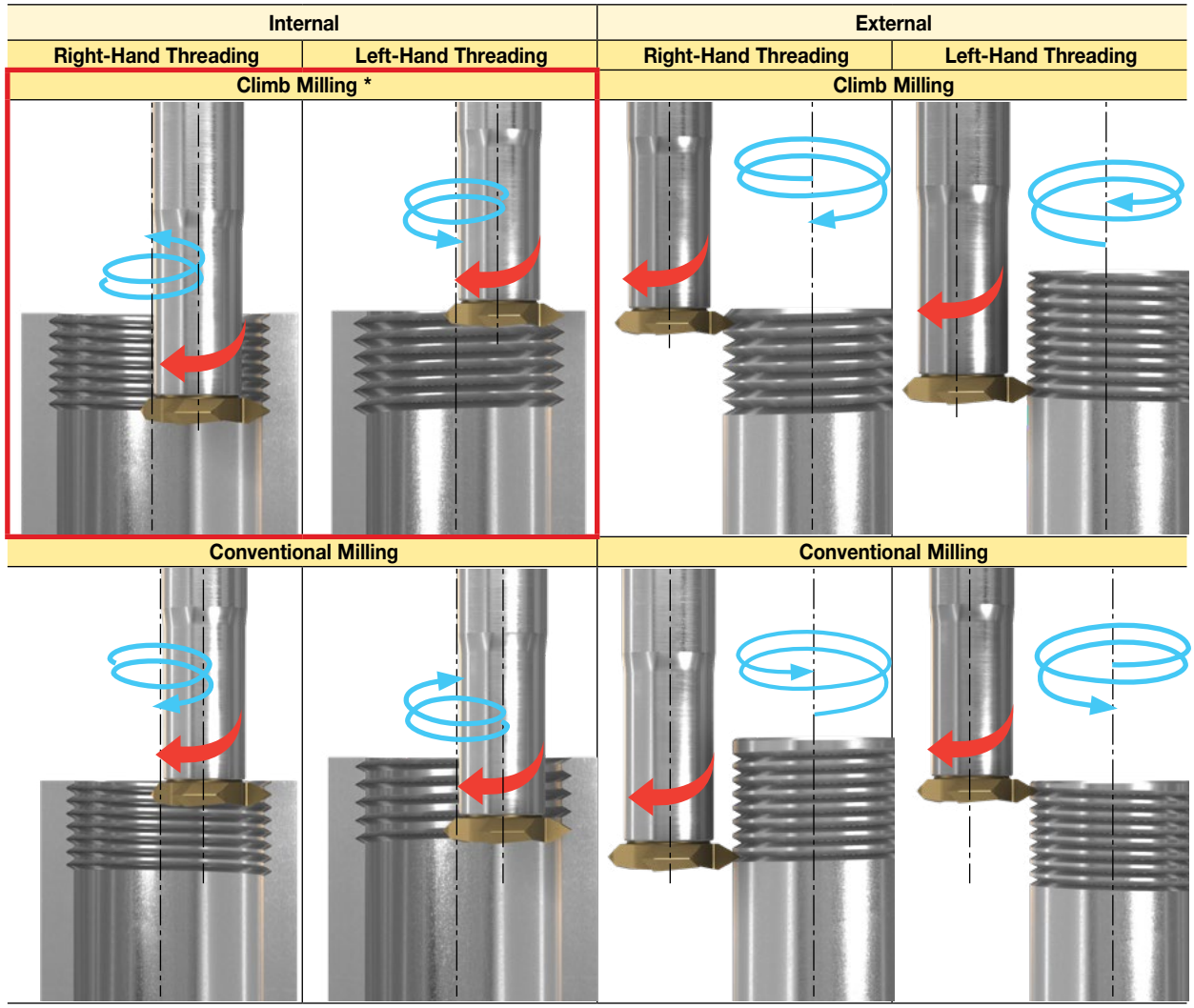
Number of Radial Passes (Imperial)

ISO	Material		Condition	Tensile Strength [ksi]	Hardness HB	Material Group No.	Lead (inch) .01-.04 Number of Passes	Lead (inch) .05-.06 Number of Passes	Lead (inch) .07-.08 Number of Passes	Lead (inch) .10-.24 Number of Passes
P	non-alloy steel and cast steel, free cutting steel	<0.25% c	annealed	61	125	1	1	1	2	3
		≥0.25% c	annealed	94	190	2				
		<0.55% c	quenched and tempered	123	250	3				
		≥0.55% c	annealed	109	220	4				
			quenched and tempered	145	300	5				
	low alloy and cast steel (less than 5% of alloying elements)		annealed	87	200	6				
			quenched and tempered	135	275	7				
				145	300	8				
				174	350	9				
	high alloyed steel, cast steel and tool steel		annealed	99	200	10				
			quenched and tempered	160	325	11				
	stainless steel and cast steel		ferritic/martensitic	99	200	12				
			martensitic	119	240	13				
M	stainless steel and cast steel		austenitic, duplex	87	180	14	1	1	2	3
N	aluminum-wrought alloys		not hardenable		60	21	1	1	1	1
			hardenable		100	22				
	aluminum-cast alloys	≤12% si	not hardenable		75	23				
			hardenable		90	24				
		>12% si	high temperature		130	25	1	1	2	3
	copper alloys	>1% pb	free cutting		110	26	1	1	1	1
			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	2	2	2	3
			hardened		280	32				
		Ni or Co based	annealed		250	33				
			hardened		350	34				
			cast		320	35				
	titanium alloys		pure	58	190	36				
			alpha+beta alloys, hardened	152	310	37				

Rm - ultimate tensile strength, MPa

Thread Milling Methods

There are several methods used for thread milling operations. The cutter usually rotates clockwise, except in special cases where the tool rotates counterclockwise. The spiral movement of the cutter can be clockwise or counterclockwise, and the tool can produce a thread by top-down or bottom-up. The combination of these movements depends on the type of thread required to produce, left-hand or right-hand threads.



* First choice

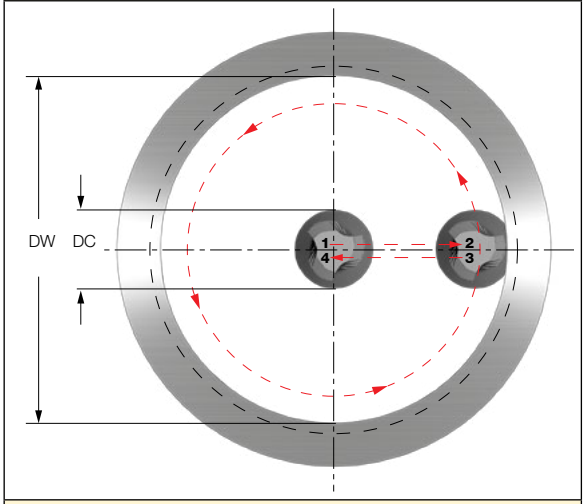
Entering the workpiece

A sudden load is applied to the cutter when it enters the workpiece and as a result the cutter may be broken, or a mark will remain. If entering is smooth, then the load on the tool will increase gradually and the surface will remain "clean".
There are three ways to initially enter the workpiece: radial entering, tangential entering by arc, tangential entering by line.

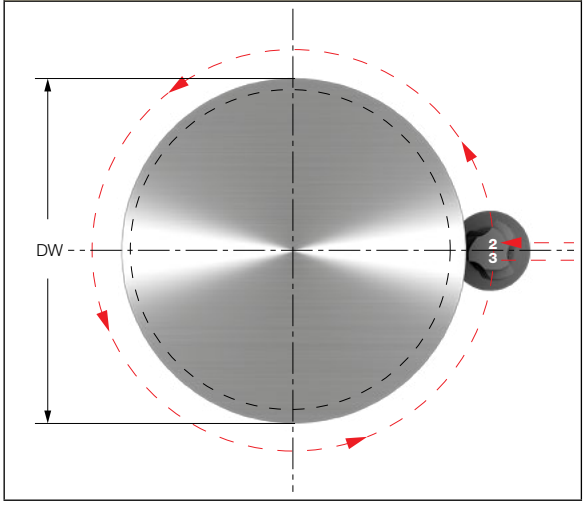
Radial Entering

The cutter enters the workpiece in a straight line to the center workpiece axis.
This is the simplest method, but also the least recommended because the angle of the hugging is too large.

Internal Threading



External Threading



DW - Workpiece diameter
DC - Cutter Diameter
1-2: Straight line entry
2-3: Helical movement during one full orbit (360°)
3-4: Straight line exit

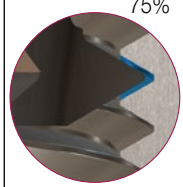
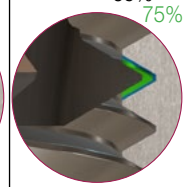
Depth Per Pass

Based on the number of passes, the table below presents **ISCAR**'s recommendations for depth per pass, which is expressed as a percentage according to the total depth that is required to be removed.

Number of Radial Passes



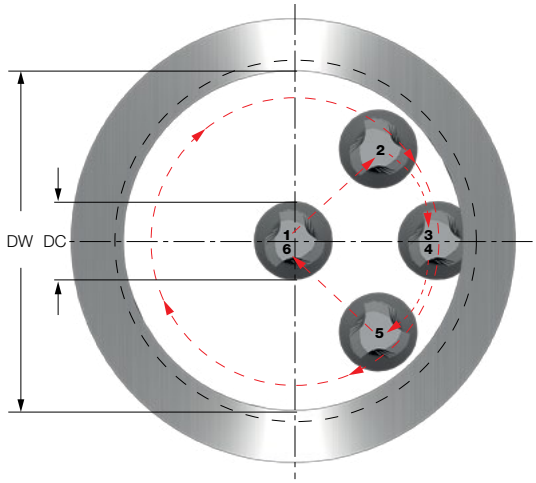
Depth Per Pass

1 pass	2 passes	3 passes
 100%	 75% 100%	 65% 75% 100%

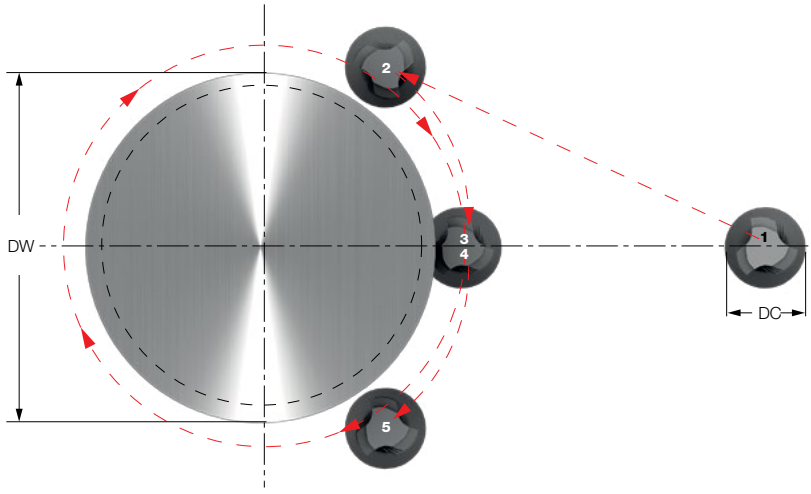
Tangential entering by arc (recommended)

The tool enters the material in an arc movement. At the end of the thread, the tool also extends in an arc movement from the material. This method is recommended because the cutter gradually enters the material and the load on the tool increases gradually.

Internal Threading



External Threading



DW - Workpiece diameter
DC - Cutter Diameter
1-2: Rapid approach
2-3: Tangential entry by arc
3-4: Helical movement during one full orbit (360°)
4-5: Tangential exit by arc
5-6: Rapid return

MTECS Small Diameter, Short Solid Carbide Thread Mills

The **MTECS** (Mill Thread Endmills Carbide Short) solid carbide thread mills are used for the production of small internal threads. These thread mills feature a short 3-tooth cutting zone with 3 flutes and a released neck between the cutting zone and the shank.

This unique tool design offers very precise profiles and a high performance **IC908** submicron carbide grade with **PVD** titanium aluminum nitride coating.

The very short profile exerts a low force which minimizes tool bending. This facilitates parallel and high thread precision for the entire length.



Compared to taps, the **SOLID-THREAD** is more accurate, thread machining is substantially faster and there is no danger of a broken tap being stuck in the hole.

Features

- Minimum thread size: M1.4x0.3 (1.1 mm bore diameter) up to M20x2.50
- 2xD and 3xD threading lengths
- High cutting speeds
- Short cycle time
- Low cutting forces due to the short contact profile resulting in accurate and parallel thread
- Prevents oval threads near thin walls
- No more dealing with broken taps
- Reliable threading in blind holes
- Excellent performance on hardened steel, high temperature alloys and titanium



Thread Mill Vs. Tap

Features	Solid Carbide Thread Mills	Taps
Thread surface quality	High	Medium
Thread geometry	Very accurate	Medium
Thread tolerance	4H, 5H, 6H with std. cutter	6H with standard tap, 4H with special tap
Machining time	Shorter or same as tap	Short
Machining load	Very low	High
Range of thread diameters	Wide range of diameters	Specific tap for each thread size
Right-/Left-hand threading	Same cutter	Specific tap for right- and left-hand
Geometric shape	Full profile	Partial profile

MILLING GRADES

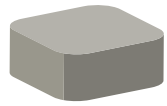
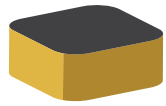
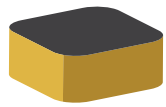
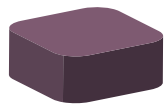
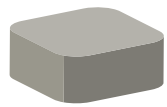
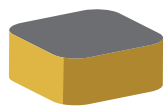
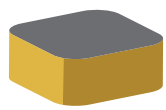
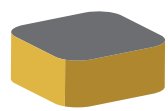
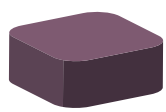






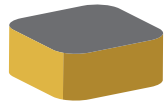
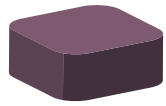
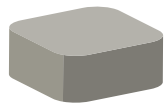
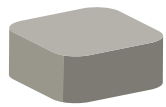
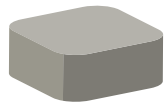
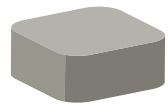
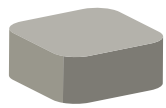


Milling Materials Grades Chart

	Grade	ISO	Grade Description	Coating Layers	Coating Color*
PVD COATED	IC328	P25-P40 M30-M40 S20-S30 	A tough substrate with PVD coating, suitable for a wide range of applications on steel and stainless steel at low to medium speeds and medium to high feeds. The grade is recommended for interrupted cuts and machining under unstable conditions.	TiCN Base	
	IC330	P25-P40 M30-M40 S20-S30 	A tough PVD coated grade with SUMOTEC surface treatment. Used for milling a wide range of workpiece materials, at low to medium cutting speeds and for unstable machining conditions.	TiCN Base	
	IC380	 S15-S20 H15-H25	A tough submicron grain size substrate with SUMOTEC PVD coated grade. Used for machining Titanium and heat resistant alloys at medium to high cutting speeds. Excellent resistance to built-up edge, mechanical and thermal shock resistance.	TiCN Base	
	IC608	 M10-M20 K10-K25 S10-S25 H15-H25	A hard submicron grain size substrate with PVD coated. Long tool life and high deformation, oxidation, chipping and wear resistance on a wide range of materials.	TiSiN TiAlSiN AlTiN Base	
	IC716	 S20-S25 	A tough PVD coated grade that provides high wear and chipping resistance. Recommended for Ti alloys machining in variable cutting condition.	TiB_2 Base	
	IC808	P15-P30 M20-M30 K20-K30 S10-S25 H20-H30	A tough hard, 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	
	IC810	P15-P30 K15-K35 	A SUMOTEC PVD coated grade. Optimal choice for milling nodular cast iron at medium to high cutting speeds.	TiN AlTiCrN 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	
	IC840	 M20-M35 S15-S25 	A PVD coated tough grade followed by a special surface treatment. Suitable for milling austenitic stainless steel and high temperature alloys. Recommended for interrupted cuts and heavy operations.	TiSiN TiAlSiN AlTiN Base	

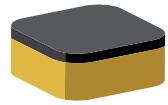
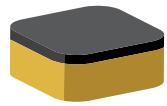
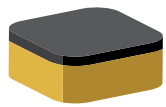
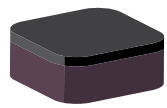
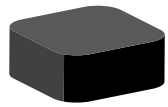
* For coated grades

Milling Materials Grades Chart

	Grade	ISO	Grade Description	Coating Layers	Coating Color*
PVD COATED	IC845	P25-P45	A PVD coated tough grade followed by a special SUMOTEC surface treatment. Designed for milling alloyed steel, especially when used for interrupted cuts and heavy operations.	TiN AlTiN Base	
	IC882	M25-M40 S20-S30	A grade with a tough substrate, a with PVD coating and a special surface treatment. Designed for machining austenitic stainless steel, Titanium and high temperature alloys, particularly under hard cutting conditions.	TiSiN TiAlSiN AlTiN Base	
	IC900	P15-P30 M20-M30 K20-K30 S10-S25 H20-H30	A tough submicron grain size with a PVD coating coated grade. Suitable for medium to high cutting speeds. Designed for machining various materials like steel, stainless steel, Titanium, and heat resistant alloys.	AlTiN Base	
	IC902	P05-P15 M10-M15 K05-K15 S05-S10 H05-H15	Ultra-fine carbide grain, PVD coated with high resistance to abrasive wear, suitable for machining various materials including hard steel and cast iron, at high cutting speeds.	AlTiN Base	
	IC903	P10-P20 M15-M25 K10-K20 S10-S20 H10-H20	Ultra-fine carbide grain, PVD coated with high wear resistance and toughness. High speed, medium feed. Used for up to 62 HRC hardened steel, Titanium, nickel-based alloys and stainless steel.	AlTiN Base	
	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.	AlTiN Base	

* For coated grades

Milling Materials Grades Chart

	Grade	ISO	Grade Description	Coating Layers	Coating Color*
CVD COATED	IC5400	P10-P20 M10-M25	A tough substrate with MTCVD coating. Recommended for milling steel at high cutting speed and for parting stainless steel.	TiN Al_2O_3 TiCN Base	
CVD COATED	IC5500	P20-P35	A tough substrate with CVD coating. Recommended for machining martensitic stainless steel at high cutting speed. Provides excellent tool life.	TiN Al_2O_3 TiCN Base	
CVD COATED	IC5600	P10-P15	A CVD coated carbide grade with a submicron substrate. Intended for machining steel at high cutting speeds.	TiN Al_2O_3 TiCN Base	
CVD COATED	IC5820	M20-M35 S15-S25	A tough substrate, with a MTCVD coating and special SUMOTEC post coating surface treatment. Designed for machining austenitic stainless steel, Titanium and high temperature alloys.	TiCN Al_2O_3 TiCN Base	
DLC	IC1508	N10-N20	A submicron DLC coated grade for machining mainly aluminum and non-ferrous materials.	DLC Base	

* For coated grades

	Grade	ISO	Grade Description	Uncoated Layers	Uncoated
UNCOATED	IC4	N05-N15 S05-S15	A very hard-uncoated carbide grade, suitable for machining aluminum alloys, aluminum alloys with high silicon content and other non-ferrous materials at high cutting speeds.	Base	
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	
UNCOATED	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	
CERMET	IC30N	P10-P30 M10-M20 H10-H25	A tough cermet grade, suitable for machining steels and stainless steel at medium to high cutting speeds and low feeds. Features excellent surface finish, very good wear resistance and prevents built-up edge.	Base	

For complete information regarding ISCAR's ceramic, CBN, and PCD grades, please refer to ISCAR's catalog on the subject.

Material Groups
Based on ISO 513 and VDI 3323 standards

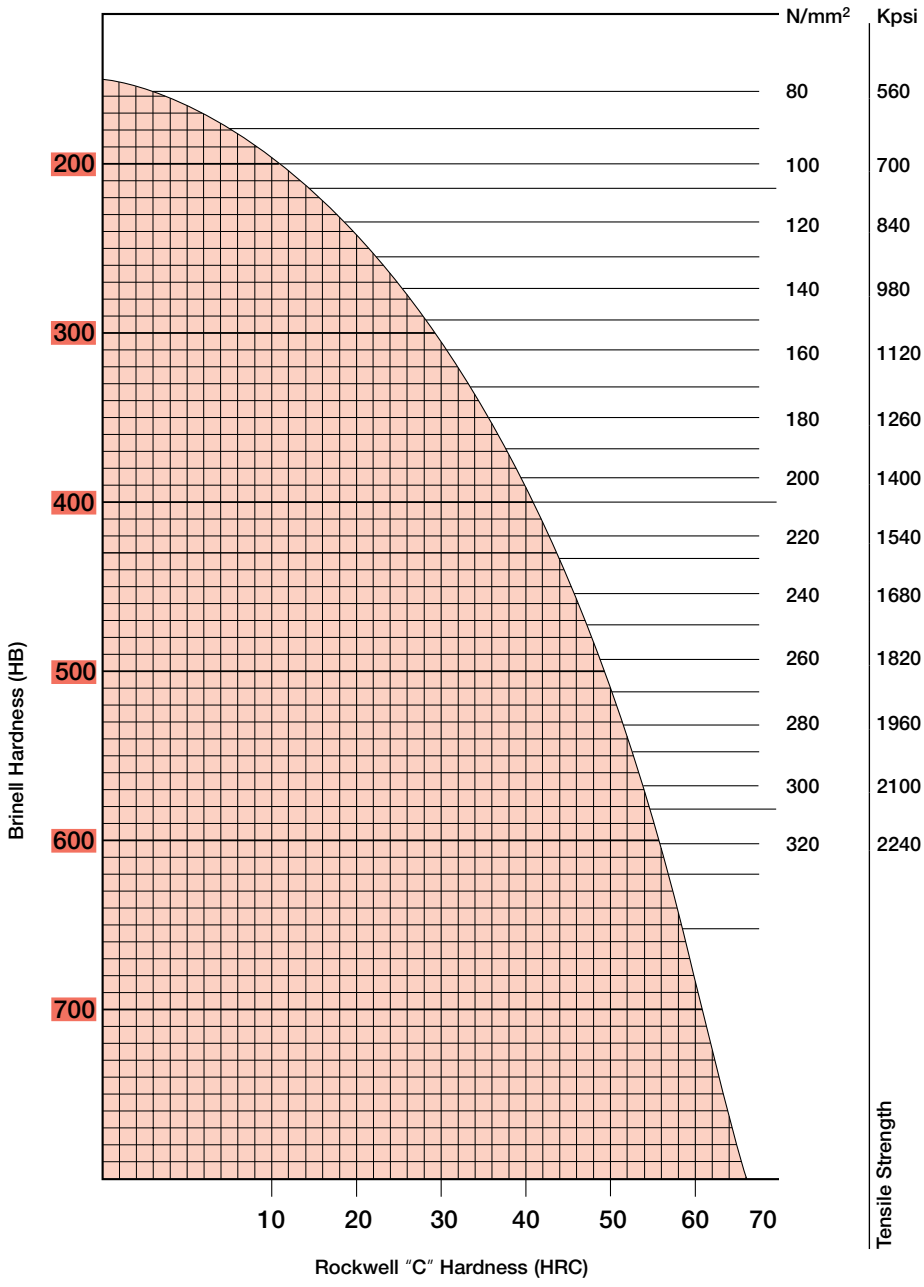
ISO	Material		Condition	Tensile Strength [N/mm²]	Kc1(1) [N/mm²]	mc(2)	Hardness HB	Material Group No.
P	non-alloy steel and cast steel, free cutting steel	<0.25% C	annealed	420	1350	0.21	125	1
		≥0.25% C	annealed	650	1500	0.22	190	2
		<0.55% C	quenched and tempered	850	1675	0.24	250	3
		≥0.55% C	annealed	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
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

Steel
Stainless Steel
Non-Ferrous Metals
Superalloys and Titaniu

(1) Specific cutting force for 1 mm² chip section.
(2) Chip thickness factor.

Material Groups

Hardness Conversion Table



TOOLHOLDERS

Miniature

YOU

INTELLIGENTLY?

MACHINING



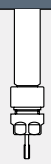
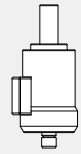






Member IMC Group

CONTENTS

GTI - Tapping Attachment	ER SC Collets	SPINJET
STRAIGHT  page 1242	SPR SPRING COLLET  page 1248	ST- SPIN-JET  pages 1256-1258
	SPR AA SPRING COLLET  page 1249	
	SPR SEAL SPRING COLLETS  pages 1251-1252	
	SPR SEAL JET SPRING COLLETS  pages 1253-1254	
	SHRINK-IN ER-SRK  pages 1254-1255	

ER - Top Clamping Nut for DIN 6499 Collets

Description

Friction bearing **ER** nut is a nut with a unique two-piece exclusive friction mechanism, combining radial and angular self-centering movements.

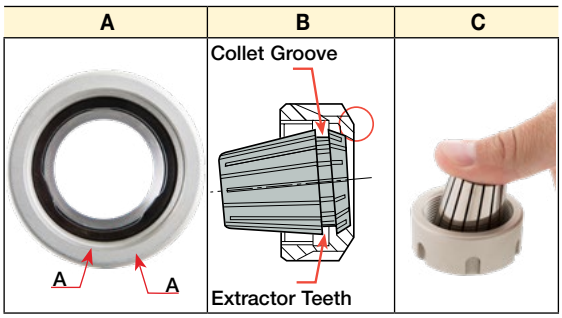
Features

- Unique two-piece friction bearing
- Radial and angular float for better concentricity
- Powerful gripping force, 50-100% higher than the standard **ER** nut due to the friction bearing mechanism
- Balanced for higher spindle spin due to unique extractor teeth design
- Compact design - general dimensions and size range are the same as the standard nut
- Designed for use with sealed collets

Always assemble the collet into the nut before mounting onto the collet chuck.

Insertion Procedure

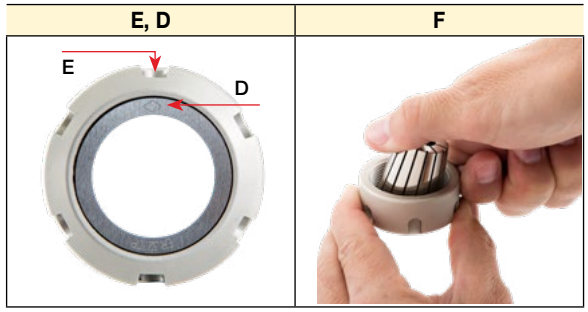
1 Insert the collet at an angle, fitting the two extractor teeth which protrude **(A)** into the collet's groove **(B)**.
2 Place the two parts on a clean and horizontal work surface.
3 Press down with your thumb on the back end of the collet until it clicks into place **(C)**.



Important: Never insert the collet parallel to the extractor ring. Doing this will chip or break the extractor's teeth. When unclamping the nut, the collet will self-release from the chuck by means of extractor teeth.

Extraction Procedure

1 Align the engraved diamond shape which is on the silver ring **(D)**, with any of the key slots **(E)** of the nut.
2 Place the nut with the collet facing down on a clean and horizontal work surface.
3 Insert a screwdriver vertically between the nut slots and the collet on the reverse side of the engraved diamond shape **(D)**.
4 Tilt the screwdriver outwards, while helping the extraction by pushing the collet's back end in the opposite direction **(F)**.



Nut Type	Kgxm
ER-11	5
ER-11M	3
ER-16	7
ER-16M	4
ER-20	12
ER-20M	8

Note: For maximum performance, the clamping nut thread and collet taper must be cleaned and oiled before use.

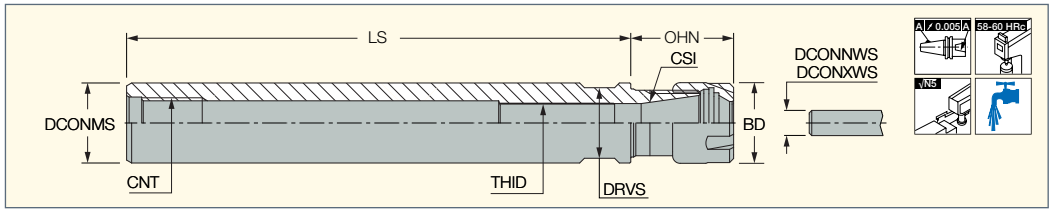
⚠ Recommended Clamping Torque for Standard ER & ER-Top Clamping Nut

Important: This torque is calculated with the maximum diameter capacity per collet which should be gradually reduced when used with a smaller shank size.

Straight Shank

ST-ER-M (mini)

DIN 6499 ER Mini Collet Chucks with Cylindrical Shanks



M E T R I C

Designation	DCONMS	CSI	DCONNWS(1)	DCONXWS(2)	LS	OHN(3)	CNT	THID	BD	DRVS(4)	kg
ST 12X 80 ER11 M	12.00	ER11	0.5	7.0	80.00	26.50	-	M7.5X0.5	16.00	11.0	0.06
ST 16X100 ER11 M	16.00	ER11	0.5	7.0	100.00	18.50	G1/8	M7.5X0.5	16.00	13.0	0.10
ST 16X150 ER11 M	16.00	ER11	0.5	7.0	150.00	18.50	G1/8	M7.5X0.5	16.00	13.0	0.19
ST 12X 80 ER16 M	12.00	ER16	0.5	10.0	80.00	36.50	-	M7.5X0.5	22.00	17.0	0.09
ST 20X100 ER16 M	20.00	ER16	0.5	10.0	100.00	25.00	G1/8	M11X1	22.00	17.0	0.21
ST 20X150 ER16 M	20.00	ER16	0.5	10.0	150.00	25.00	G1/8	M11X1	22.00	17.0	0.29
ST 20X100 ER20 M	20.00	ER20	1.0	13.0	100.00	40.00	G1/8	M14X1	28.00	22.0	0.27
ST 20X150 ER20 M	20.00	ER20	1.0	13.0	150.00	40.00	G1/8	M14X1	28.00	22.0	0.31

(1) Minimum diameter
(2) Maximum diameter
(3) Minimum overhang
(4) Torque key size

Spare Parts

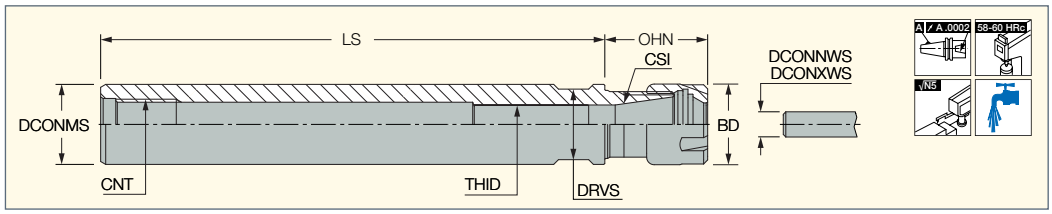
Designation		
ST 12X 80 ER11 M	NUT ER11 MINI	WRENCH ER11 MINI*
ST 16X100 ER11 M	NUT ER11 MINI	WRENCH ER11 MINI*
ST 16X150 ER11 M	NUT ER11 MINI	WRENCH ER11 MINI*
ST 12X 80 ER16 M	NUT ER16 MINI	WRENCH ER16 MINI*
ST 20X100 ER16 M	NUT ER16 MINI	WRENCH ER16 MINI*
ST 20X150 ER16 M	NUT ER16 MINI	WRENCH ER16 MINI*
ST 20X100 ER20 M	NUT ER20 MINI	WRENCH ER20 MINI*
ST 20X150 ER20 M	NUT ER20 MINI	WRENCH ER20 MINI*

* Optional, to be ordered separately

Straight Shank

ST-ER-M (mini)

DIN 6499 ER Mini Collet Chucks with Cylindrical Shanks



I N C H

Designation	DCONMS	LS	CSI	DCONNWS(1)	DCONXWS(2)	OHN(3)	CNT	THID	BD	DRVS(4)	lbs
ST1/2X4.000 ER11 M	.500	4.000	ER11	.022	.278	.734	-	M7.5X0.5	.630	.433	.18
ST1/2X4.000 ER16 M	.500	4.000	ER16	.022	.396	1.480	-	M7.5X0.5	.866	.669	.26
ST5/8X4.000 ER11 M	.625	4.000	ER11	.022	.278	.734	G1/8	M7.5X0.5	.630	.512	.28
ST5/8X6.000 ER11 M	.625	6.000	ER11	.022	.278	.734	G1/8	M7.5X0.5	.630	.512	.41
ST3/4X4.000 ER16 M	.750	4.000	ER16	.022	.396	1.000	G1/8	M11X1	.866	.630	.35
ST3/4X4.000 ER20 M	.750	4.000	ER20	.041	.514	1.650	G1/8	M14X1	1.102	.866	.46
ST3/4X6.000 ER16 M	.750	6.000	ER16	.022	.396	1.000	G1/8	M11X1	.866	.630	.51
ST3/4X6.000 ER20 M	.750	6.000	ER20	.041	.514	1.650	G1/8	M14X1	1.102	.866	.62

(1) Minimum diameter
(2) Maximum diameter
(3) Minimum overhang
(4) Torque key size

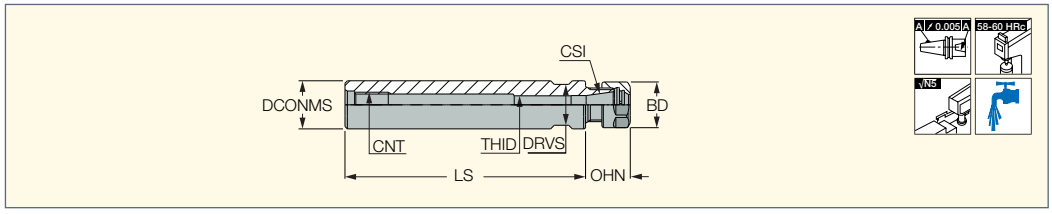
Spare Parts

Designation		
ST1/2X4.000 ER11 M	NUT ER11 MINI	WRENCH ER11 MINI*
ST1/2X4.000 ER16 M	NUT ER16 MINI	WRENCH ER16 MINI*
ST5/8X4.000 ER11 M	NUT ER11 MINI	WRENCH ER11 MINI*
ST5/8X6.000 ER11 M	NUT ER11 MINI	WRENCH ER11 MINI*
ST3/4X4.000 ER16 M	NUT ER16 MINI	WRENCH ER16 MINI*
ST3/4X4.000 ER20 M	NUT ER20 MINI	WRENCH ER20 MINI*
ST3/4X6.000 ER16 M	NUT ER16 MINI	WRENCH ER16 MINI*
ST3/4X6.000 ER20 M	NUT ER20 MINI	WRENCH ER20 MINI*

* Optional, to be ordered separately

Straight Shank

ST-ER
DIN 6499 ER Collet Chucks
with Straight Shanks



M E T R I C

Designation	DCONMS	CSI	DCONNWS(1)	DCONXWS(2)	LS	OHN(3)	CNT	THID	BD	DRVS(4)	kg
ST 16X 50 ER11 F	16.00	ER11	0.50	7.00	50.0	18.5	G1/8	M7.5X0.5	19.00	13.0	0.06
ST 20X 50 ER11 F	20.00	ER11	0.50	7.00	50.0	18.5	G1/8	M7.5X0.5	19.00	17.0	0.10
ST 20X100 ER11	20.00	ER11	0.50	7.00	100.0	18.5	G1/8	M7.5X0.5	19.00	17.0	0.20
ST 20X150 ER11	20.00	ER11	0.50	7.00	150.0	18.5	G1/8	M7.5X0.5	19.00	17.0	0.25
ST 20X 50 ER16 F	20.00	ER16	0.50	10.00	50.0	32.3	G1/8	M11X1	28.00	19.0	0.07
ST 20X100 ER16	20.00	ER16	0.50	10.00	100.0	30.0	G1/8	M11X1	28.00	19.0	0.20
ST 20X100 ER16 F	20.00	ER16	0.50	10.00	100.0	30.0	G1/8	M11X1	28.00	19.0	0.20
ST 20X150 ER16	20.00	ER16	0.50	10.00	150.0	30.0	G1/8	M11X1	28.00	19.0	0.28
ST 20X 50 ER20 F	20.00	ER20	1.00	13.00	50.0	42.5	G1/8	M14X1	34.00	22.0	0.15
ST 25X100 ER20	25.00	ER20	1.00	13.00	100.0	36.0	G1/4	M14X1	34.00	22.0	0.30
ST 25X150 ER20	25.00	ER20	1.00	13.00	150.0	36.0	-	M16	34.00	22.0	0.39

(1) Minimum diameter
(2) Maximum diameter
(3) Minimum overhang
(4) Torque key size

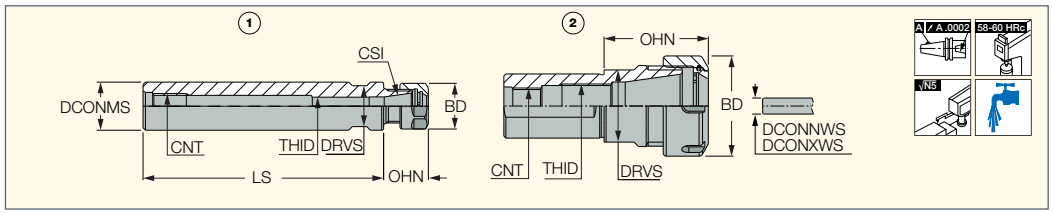
Spare Parts

Designation		
ST 16X 50 ER11 F	NUT ER11 UM	WRENCH ER11*
ST 20X 50 ER11 F	NUT ER11 UM	WRENCH ER11*
ST 20X100 ER11	NUT ER11 UM	WRENCH ER11*
ST 20X150 ER11	NUT ER11 UM	WRENCH ER11*
ST 20X 50 ER16 F	NUT ER16 TOP	WRENCH ER16*
ST 20X100 ER16	NUT ER16 TOP	WRENCH ER16*
ST 20X100 ER16 F	NUT ER16 TOP	WRENCH ER16*
ST 20X150 ER16	NUT ER16 TOP	WRENCH ER16*
ST 20X 50 ER20 F	NUT ER20 TOP	WRENCH ER20*
ST 25X100 ER20	NUT ER20 TOP	WRENCH ER20*
ST 25X150 ER20	NUT ER20 TOP	WRENCH ER20*

* Optional, to be ordered separately

Straight Shank

ST-ER
DIN 6499 ER Collet Chucks
with Straight Shanks



I N C H

Designation	DCONMS	LS	CSI	DCONNWS(1)	DCONXWS(2)	OHN(3)	CNT	THID	BD	DRVS(4)	Fig.	lbs
ST5/8X2.500 ER11 F	.625	2.500	ER11	.022	.278	.73	G1/8	M7.5X0.5	.7480	.512	1.	.22
ST3/4X2.500 ER11 F	.750	2.500	ER11	.022	.278	.73	G1/8	M7.5X0.5	.7480	.669	1.	.26
ST3/4X2.500 ER16 F	.750	2.500	ER16	.022	.278	1.19	G1/8	M11X1	1.1020	.748	1.	.27
ST3/4X2.500 ER20 F	.750	2.500	ER20	.041	.514	1.66	G1/8	M14X1	1.3390	.866	1.	.66
ST3/4X4.000 ER11	.750	4.000	ER11	.022	.278	.73	G1/8	M7.5X0.5	.7480	.669	1.	.37
ST3/4X4.000 ER20	.750	4.000	ER20	.041	.514	1.66	G1/8	M14X1	1.3390	.866	1.	.47
ST3/4X6.000 ER11	.750	6.000	ER11	.022	.278	.73	G1/8	M7.5X0.5	.7480	.669	1.	.55
ST3/4X6.000 ER20	.750	6.000	ER20	.041	.514	1.19	G1/8	M14X1	1.3390	.866	1.	.68
ST1X1.969 ER20 F	1.000	1.969	ER20	.041	.514	1.44	G1/8	M14X1	1.3390	.866	2.	.46

(1) Minimum diameter
(2) Maximum diameter
(3) Minimum overhang
(4) Torque key size

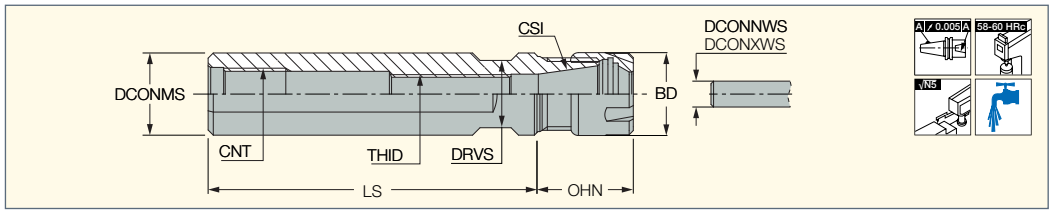
Spare Parts

Designation		
ST5/8X2.500 ER11 F	NUT ER11 UM	WRENCH ER11*
ST3/4X2.500 ER11 F	NUT ER11 UM	WRENCH ER11*
ST3/4X2.500 ER16 F	NUT ER16 TOP	WRENCH ER16*
ST3/4X2.500 ER20 F	NUT ER20 TOP	WRENCH ER20*
ST3/4X4.000 ER11	NUT ER11 UM	WRENCH ER11*
ST3/4X4.000 ER20	NUT ER20 TOP	WRENCH ER20*

* Optional, to be ordered separately

Straight Shank

ST-ER-MF (mini flat)
DIN 6499 ER Mini Collet Chucks with Cylindrical Shanks and a Clamping Flat for Swiss-Type CNC Lathes



M E T R I C											
Designation	DCONMS	CSI	LS	DCONNWS[4]	DCONXWS[5]	OHN[6]	CNT	THID	BD	DRVS[7]	kg
ST 16X 38 ER11 MF [1]	16.00	ER11	38.00	0.5	7.0	18.50	G1/8	M7.5X0.5	16.00	14.0	0.05
ST 16X 50 ER11 MF	16.00	ER11	50.00	0.5	7.0	18.50	G1/8	M7.5X0.5	16.00	13.0	0.07
ST 16X140 ER11 MF	16.00	ER11	140.00	0.5	7.0	18.50	G1/8	M7.5X0.5	16.00	14.0	0.18
ST 16X 35 ER16 MF [1]	16.00	ER16	35.00	0.5	10.0	36.00	G1/8	M11X1	22.00	17.0	0.08
ST 20X 50 ER16 MF [2]	20.00	ER16	50.00	0.5	10.0	26.00	G1/8	M11X1	22.00	17.0	0.10
ST 20X 70 ER16 MF [2]	20.00	ER16	70.00	0.5	10.0	26.00	G1/8	M11X1	22.00	17.0	0.17
ST 20X120 ER16 MF [2]	20.00	ER16	120.00	0.5	10.0	26.00	G1/8	M11X1	22.00	17.0	0.19
ST 20X140 ER16 MF [2]	20.00	ER16	140.00	0.5	10.0	26.00	G1/8	M11X1	22.00	17.0	0.40
ST 22X 38 ER16 MF [1]	22.00	ER16	38.00	0.5	10.0	26.00	G1/4	M11X1	22.00	19.0	0.10
ST 22X 70 ER16 MF [1]	22.00	ER16	70.00	0.5	10.0	26.00	G1/4	M11X1	22.00	19.0	0.16
ST 22X100 ER16 MF [1]	22.00	ER16	100.00	0.5	10.0	28.00	G1/8	M11X1	22.00	19.0	0.23
ST 22X 80 ER20 MF [1]	22.00	ER20	80.00	1.0	13.0	39.00	G1/4	M14X1	28.00	22.0	0.21
ST 25X 65 ER16 MF	25.00	ER16	65.00	0.5	10.0	28.00	G1/4	M11X1	22.00	22.0	0.22
ST 25X100 ER20 MF [3]	25.00	ER20	100.00	1.0	13.0	28.00	G1/4	M14X1	28.00	22.0	0.15
ST 25X154 ER20 MF [3]	25.00	ER20	154.00	1.0	13.0	28.00	G1/4	M14X1	28.00	22.0	0.40

[1] For Star machines
[2] For Citizen machines
[3] For Tornos-Bechler machines
[4] Minimum diameter
[5] Maximum diameter
[6] Minimum overhang
[7] Torque key size

Spare Parts

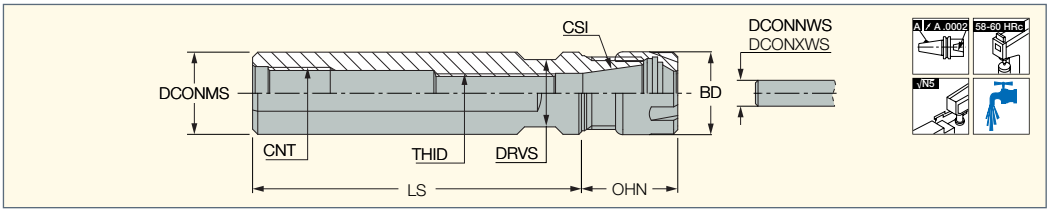
Designation		
ST 16X 38 ER11 MF	NUT ER11 MINI	WRENCH ER11 MINI*
ST 16X 50 ER11 MF	NUT ER11 MINI	WRENCH ER11 MINI*
ST 16X140 ER11 MF	NUT ER11 MINI	WRENCH ER11 MINI*
ST 16X 35 ER16 MF	NUT ER16 MINI	WRENCH ER16 MINI*
ST 20X 50 ER16 MF	NUT ER16 MINI	WRENCH ER16 MINI*
ST 20X 70 ER16 MF	NUT ER16 MINI	WRENCH ER16 MINI*
ST 20X120 ER16 MF	NUT ER16 MINI	WRENCH ER16 MINI*
ST 20X140 ER16 MF	NUT ER16 MINI	WRENCH ER16 MINI*
ST 22X 38 ER16 MF	NUT ER16 MINI	WRENCH ER16 MINI*
ST 22X 70 ER16 MF	NUT ER16 MINI	WRENCH ER16 MINI*
ST 22X100 ER16 MF	NUT ER16 MINI	WRENCH ER16 MINI*
ST 22X 80 ER20 MF	NUT ER20 MINI	WRENCH ER20 MINI*
ST 25X 65 ER16 MF	NUT ER16 MINI	WRENCH ER16 MINI*
ST 25X100 ER20 MF	NUT ER20 MINI	WRENCH ER20 MINI*
ST 25X154 ER20 MF	NUT ER20 MINI	WRENCH ER20 MINI*

* Optional, to be ordered separately

Straight Shank

ST-ER-MF (mini flat)

DIN 6499 ER Mini Collet Chucks with Cylindrical Shanks and a Clamping Flat for Swiss-Type CNC Lathes



I N C H											
Designation	DCONMS	CSI	LS	DCONNWS(3)	DCONXWS(4)	OHN(5)	CNT	THID	BD	DRVS(6)	Lbs
ST.6248X3.000 ER11 MF	.625	ER11	3.000	.022	.278	.734	G1/8	M7.5x0.5	.630	.551	.22
ST5/8X2.500 ER11 MF	.625	ER11	2.500	.022	.278	.734	G1/8	M7.5x0.5	.630	.551	.15
ST5/8X1.250 ER16 MF	.625	ER16	1.250	.022	.396	1.378	G1/8	M11X1	.866	.669	.14
ST3/4 X2.500 ER16 MF	.750	ER16	2.500	.022	.396	1.000	G1/8	M11X1	.866	.630	.22
ST3/4X1.496 ER16 MF (1)	.750	ER16	1.496	.022	.396	1.024	G1/8	M11X1	.866	.669	.15
ST3/4X1.969 ER16 MF (1)	.750	ER16	1.969	.022	.396	1.024	G1/8	M11X1	.866	.669	.20
ST3/4X2.756 ER16 MF (1)	.750	ER16	2.756	.022	.396	1.024	G1/8	M11X1	.866	.669	.25
ST3/4X4.724 ER16 MF (1)	.750	ER16	4.724	.022	.396	1.024	G1/8	M11X1	.866	.669	.37
ST3/4X5.512 ER16 MF (1)	.750	ER16	5.512	.022	.396	1.024	G1/8	M11X1	.866	.669	.46
ST3/4X2.500 ER20 MF	.750	ER20	2.500	.041	.514	1.562	G1/8	M14X1	1.102	.866	.35
ST1 X2.559 ER16 MF (2)	1.000	ER16	2.559	.022	.396	1.102	G1/4	M12X1	.866	.866	.49
ST1 X2.953 ER16 MF (1)	1.000	ER16	2.953	.022	.396	1.102	G1/4	M11X1	.866	.866	.56
ST1 X3.937 ER16 MF	1.000	ER16	3.937	.022	.396	1.102	G1/4	M12X1	.866	.866	.12
ST1 X3.937 ER20 MF	1.000	ER20	3.937	.041	.514	1.102	G1/4	M14X1	1.102	.866	.66
ST1 X5.512 ER20 MF (1)	1.000	ER20	5.512	.041	.514	1.102	G1/4	M14X1	1.102	.866	.86

(1) For Citizen machines
(2) For Manurhin machines
(3) Minimum diameter
(4) Maximum diameter
(5) Minimum overhang
(6) Torque key size

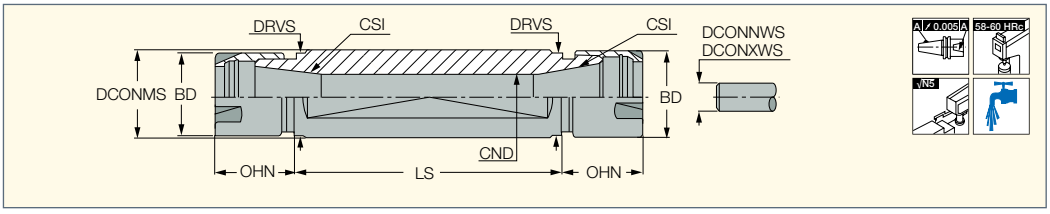
Spare Parts

Designation		
ST.6248X3.000 ER11 MF	NUT ER11 MINI	WRENCH ER11 MINI*
ST5/8X2.500 ER11 MF	NUT ER11 MINI	WRENCH ER11 MINI*
ST5/8X1.250 ER16 MF	NUT ER16 MINI	WRENCH ER16 MINI*
ST3/4 X2.500 ER16 MF	NUT ER16 MINI	WRENCH ER16 MINI*
ST3/4X1.496 ER16 MF	NUT ER16 MINI	WRENCH ER16 MINI*
ST3/4X1.969 ER16 MF	NUT ER16 MINI	WRENCH ER16 MINI*
ST3/4X2.756 ER16 MF	NUT ER16 MINI	WRENCH ER16 MINI*
ST3/4X4.724 ER16 MF	NUT ER16 MINI	WRENCH ER16 MINI*
ST3/4X5.512 ER16 MF	NUT ER16 MINI	WRENCH ER16 MINI*
ST3/4X2.500 ER20 MF	NUT ER20 MINI	WRENCH ER20 MINI*
ST1 X2.559 ER16 MF	NUT ER16 MINI	WRENCH ER16 MINI*
ST1 X2.953 ER16 MF	NUT ER16 MINI	WRENCH ER16 MINI*
ST1 X3.937 ER16 MF	NUT ER16 MINI	WRENCH ER16 MINI*
ST1 X3.937 ER20 MF	NUT ER20 MINI	WRENCH ER20 MINI*
ST1 X5.512 ER20 MF	NUT ER20 MINI	WRENCH ER20 MINI*

* Optional, to be ordered separately

Straight Shank

ST-ER-MF-D
(double-ended)
Double-Ended Mini Collets
with Cylindrical Shanks
and a Clamping Flat



M E T R I C

Designation	DCONMS	LS	CSI	DCONNWS(3)	DCONXWS(4)	BD	CND(5)	OHN(6)	DRVS(7)	kg
ST 16X 50 ER11 MF D	16.00	50.00	ER11	0.5	7.0	16.00	7.5	18.50	14.0	0.07
ST 20X 30 ER11 MF D (1)	20.00	30.00	ER11	0.5	7.0	16.00	7.5	18.50	17.0	0.09
ST 20X 50 ER11 MF D (1)	20.00	50.00	ER11	0.5	7.0	16.00	7.5	18.50	17.0	0.13
ST 20X 55 ER16 MF D (1)	20.00	55.00	ER16	0.5	10.0	22.00	10.5	25.00	17.0	0.12
ST 22X 55 ER16 MF D (2)	22.00	55.00	ER16	0.5	10.0	22.00	10.5	28.00	19.0	0.17
ST 22X 75 ER16 MF D (2)	22.00	75.00	ER16	0.5	10.0	22.00	10.5	28.00	19.0	0.21
ST 25X 62 ER16 MF D	25.00	62.00	ER16	0.5	10.0	22.00	10.5	28.00	22.0	0.23
ST 32X 55 ER20 MF D (2)	32.00	55.00	ER20	1.0	13.0	28.00	13.5	28.00	27.0	0.34
ST 32X 75 ER20 MF D (2)	32.00	75.00	ER20	1.0	13.0	28.00	13.5	28.00	27.0	0.44

(1) For Citizen machines
(2) For Star machines
(3) Minimum diameter
(4) Maximum diameter
(5) Coolant entry diameter
(6) Minimum overhang
(7) Torque key size

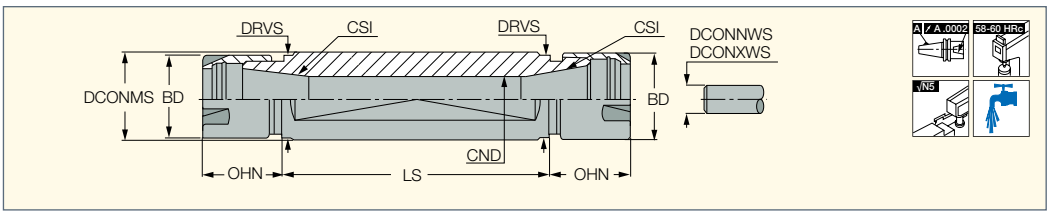
Spare Parts

Designation		
ST 16X 50 ER11 MF D	NUT ER11 MINI	WRENCH ER11 MINI*
ST 20X 30 ER11 MF D	NUT ER11 MINI	WRENCH ER11 MINI*
ST 20X 50 ER11 MF D	NUT ER11 MINI	WRENCH ER11 MINI*
ST 20X 55 ER16 MF D	NUT ER16 MINI	WRENCH ER16 MINI*
ST 22X 55 ER16 MF D	NUT ER16 MINI	WRENCH ER16 MINI*
ST 22X 75 ER16 MF D	NUT ER16 MINI	WRENCH ER16 MINI*
ST 25X 62 ER16 MF D	NUT ER16 MINI	WRENCH ER16 MINI*
ST 32X 55 ER20 MF D	NUT ER20 MINI	WRENCH ER20 MINI*
ST 32X 75 ER20 MF D	NUT ER20 MINI	WRENCH ER20 MINI*

* Optional, to be ordered separately

Straight Shank

ST-ER-MF-D
(double-ended)
Double-Ended Mini Collets
with Cylindrical Shanks
and a Clamping Flat



I N C H

Designation	CSI	DCONMS	DCONNWS(1)	DCONXWS(2)	LS	OHN(3)	BD	CND(4)	DRVS(5)	Lbs
ST3/4X2.756 ER11 MF D	ER11	.750	.022	.278	2.756	.787	.630	.295	.669	.33
ST3/4X2.165 ER16 MF D	ER16	.750	.022	.396	2.165	1.024	.866	.413	.669	.26
ST1 X2.441 ER16 MF D	ER16	1.000	.022	.396	2.441	1.102	.866	.413	.866	.55

(1) Minimum diameter
(2) Maximum diameter
(3) Minimum overhang
(4) Coolant entry diameter
(5) Torque key size

Spare Parts

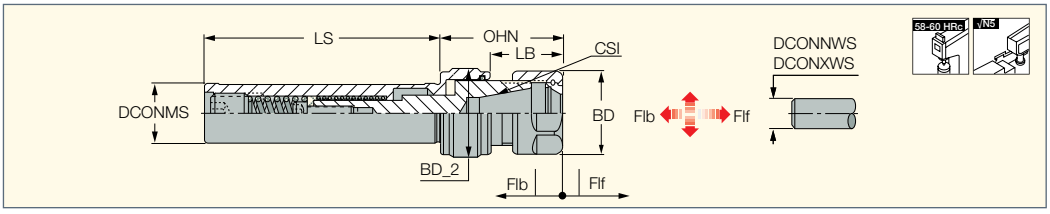
Designation		
ST3/4X2.756 ER11 MF D	NUT ER11 MINI	WRENCH ER11 MINI*
ST3/4X2.165 ER16 MF D	NUT ER16 MINI	WRENCH ER16 MINI*
ST1 X2.441 ER16 MF D	NUT ER16 MINI	WRENCH ER16 MINI*

* Optional, to be ordered separately

Straight Shank GTI

GTI ER-ST (tapping)

DIN 6499 ER Tapping
Attachments with
Straight Shanks



M E T R I C

Designation	DCONMS	CSI	Tap min	Tap max	DCONNWS(2)	DCONXWS(3)	BD	BD_2	LB	OHN(4)	LS	Flf	Flb	DCP(5)	kg
GTI ER11 ST16X150 M (1)	16.00	ER11	M2	M7	0.5	7.0	16.00	-	19.0	-	150.00	6.0	3.0	0	0.00
GTI ER16 ST20X80	20.00	ER16	M3	M10	0.5	10.0	28.00	29.50	24.6	41.60	80.00	8.0	3.0	0	0.00
GTI ER20 ST20X80	20.00	ER20	M4	M14	1.0	13.0	34.00	33.50	28.0	49.00	80.00	8.0	3.0	0	0.35

(1) Without a clamping flat
(2) Minimum diameter
(3) Maximum diameter
(4) Minimum overhang
(5) 1 - Slot for data chip, 0 - Without slot for data chip

Spare Parts

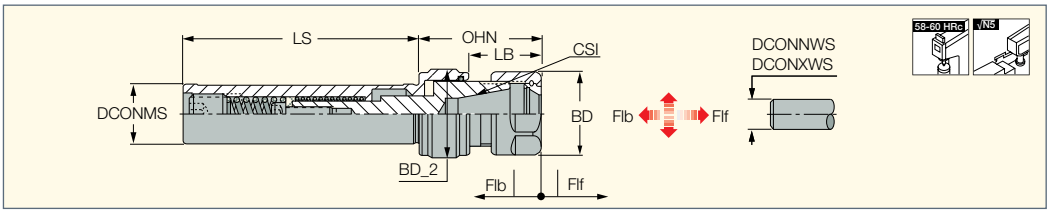
Designation		
GTI ER11 ST16X150 M	NUT ER11 MINI	
GTI ER16 ST20X80	NUT ER16 TOP	WRENCH ER16*
GTI ER20 ST20X80	NUT ER20 TOP	WRENCH ER20*

* Optional, to be ordered separately

Straight Shank GTI

GTI ER-ST (tapping)

DIN 6499 ER Tapping
Attachments with
Straight Shanks



I N C H

Designation	CSI	DCONMS	Tap min	Tap max	DCONNWS(2)	DCONXWS(3)	BD	BD_2	LS	OHN(4)	LB	Flf	Flb	DCP(5)	Lbs
GTI ER11 ST5/8 M (1)	ER11	.625	#3	1/4	.022	.278	.630	-	5.905	.768	-	.24	.12	0	.39
GTI ER16 ST3/4	ER16	.750	#6	3/8	.022	.396	1.102	1.161	3.154	1.638	.969	.32	.12	0	.66
GTI ER20 ST3/4	ER20	.750	#8	1/2	.041	.514	1.339	1.319	3.150	1.929	1.102	.32	.12	0	1.21

(1) Without a clamping flat
(2) Minimum diameter
(3) Maximum diameter
(4) Minimum overhang
(5) 1 - Slot for data chip, 0 - Without slot for data chip

Spare Parts

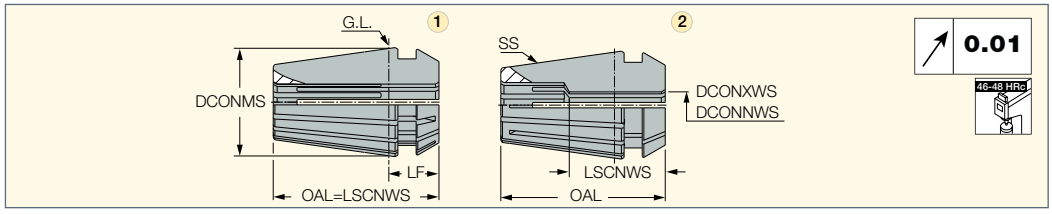
Designation		
GTI ER11 ST5/8 M	NUT ER11 MINI	
GTI ER16 ST3/4	NUT ER16 TOP	WRENCH ER16*
GTI ER20 ST3/4	NUT ER20 TOP	WRENCH ER20*

* Optional, to be ordered separately

ERCOLLET

ER-SPR

DIN 6499/ ISO 15488-B
ER Spring Collet with Super Finish Surface and Special Anti-Corrosion Protection



M E T R I C

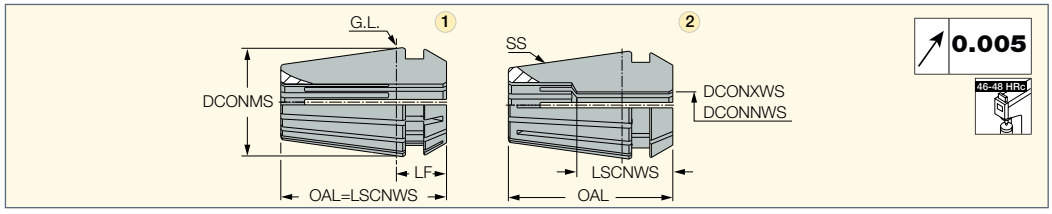
Designation	SS	DCONNWS(3)	DCONXWS(4)	DCONMS	LF	OAL	LSCNWS	Fig.	kg
ER11 SPR 0.5-1.0 (1)	ER11	0.50	1.00	11.00	6.30	18.00	8.50	2	0.01
ER11 SPR 1.0-1.5	ER11	1.00	1.50	11.00	6.30	18.00	8.50	2	0.01
ER11 SPR 1.5-2.0	ER11	1.50	2.00	11.00	6.30	18.00	9.50	2	0.01
ER11 SPR 2.0-2.5	ER11	2.00	2.50	11.00	6.30	18.00	9.50	2	0.01
ER11 SPR 2.5-3.0	ER11	2.50	3.00	11.00	6.30	18.00	18.00	1	0.01
ER11 SPR 3.0-3.5	ER11	3.00	3.50	11.00	6.30	18.00	18.00	1	0.01
ER11 SPR 3.5-4.0	ER11	3.50	4.00	11.00	6.30	18.00	18.00	1	0.01
ER11 SPR 4.0-4.5	ER11	4.00	4.50	11.00	6.30	18.00	18.00	1	0.01
ER11 SPR 4.5-5.0	ER11	4.50	5.00	11.00	6.30	18.00	18.00	1	0.01
ER11 SPR 5.0-5.5	ER11	5.00	5.50	11.00	6.30	18.00	18.00	1	0.01
ER11 SPR 5.5-6.0	ER11	5.50	6.00	11.00	6.30	18.00	18.00	1	0.01
ER11 SPR 6.0-6.5	ER11	6.00	6.50	11.00	6.30	18.00	18.00	1	0.01
ER11 SPR 6.5-7.0	ER11	6.50	7.00	11.00	6.30	18.00	18.00	1	0.01
ER16 SPR 0.5-1	ER16	0.50	1.00	16.00	10.26	27.50	10.50	2	0.02
ER16 SPR 1-1.5	ER16	1.00	1.50	16.00	10.26	27.50	10.50	2	0.02
ER16 SPR 1.5-2	ER16	1.50	2.00	16.00	10.26	27.50	14.20	2	0.02
ER16 SPR 2-3	ER16	2.00	3.00	16.00	10.26	27.50	15.50	2	0.02
ER16 SPR 3-3.5	ER16	3.00	3.50	16.00	10.26	27.50	18.50	2	0.02
ER16 SPR 3.2-4 (2)	ER16	3.20	4.00	16.00	10.26	27.50	18.50	2	0.02
ER16 SPR 4-5	ER16	4.00	5.00	16.00	10.26	27.50	27.50	1	0.02
ER16 SPR 5-6	ER16	5.00	6.00	16.00	10.26	27.50	27.50	1	0.02
ER16 SPR 6-7	ER16	6.00	7.00	16.00	10.26	27.50	27.50	1	0.02
ER16 SPR 7-8	ER16	7.00	8.00	16.00	10.26	27.50	27.50	1	0.02
ER16 SPR 8-9	ER16	8.00	9.00	16.00	10.26	27.50	27.50	1	0.02
ER16 SPR 9-10	ER16	9.00	10.00	16.00	10.26	27.50	27.50	1	0.02
ER20 SPR 1-1.5	ER20	1.00	1.50	20.00	11.16	31.50	11.70	2	0.04
ER20 SPR 1.5-2	ER20	1.50	2.00	20.00	11.16	31.50	11.70	2	0.04
ER20 SPR 2-3	ER20	2.00	3.00	20.00	11.16	31.50	17.70	2	0.04
ER20 SPR 3-4	ER20	3.00	4.00	20.00	11.16	31.50	19.30	2	0.04
ER20 SPR 4-5	ER20	4.00	5.00	20.00	11.16	31.50	19.30	2	0.04
ER20 SPR 5-6	ER20	5.00	6.00	20.00	11.16	31.50	31.50	1	0.04
ER20 SPR 6-7	ER20	6.00	7.00	20.00	11.16	31.50	31.50	1	0.04
ER20 SPR 7-8	ER20	7.00	8.00	20.00	11.16	31.50	31.50	1	0.04
ER20 SPR 8-9	ER20	8.00	9.00	20.00	11.16	31.50	31.50	1	0.04
ER20 SPR 9-10	ER20	9.00	10.00	20.00	11.16	31.50	31.50	1	0.03
ER20 SPR 10-11	ER20	10.00	11.00	20.00	11.16	31.50	31.50	1	0.03
ER20 SPR 11-12	ER20	11.00	12.00	20.00	11.16	31.50	31.50	1	0.03
ER20 SPR 12-13	ER20	12.00	13.00	20.00	11.16	31.50	31.50	1	0.02

(1) The existing ER11 Collets with 1 mm clamping range will be phased out.
(2) For shank diameter 3-3.5 it is recommended to use collet type ER SPR 3-3.5
(3) Minimum diameter
(4) Maximum diameter

ERCOLLET

ER-SPR-AA

DIN 6499 'AA' Ultra Precise ER Spring Collets with Super Finish Surface and Special Anti-Corrosion Protection



M E T R I C

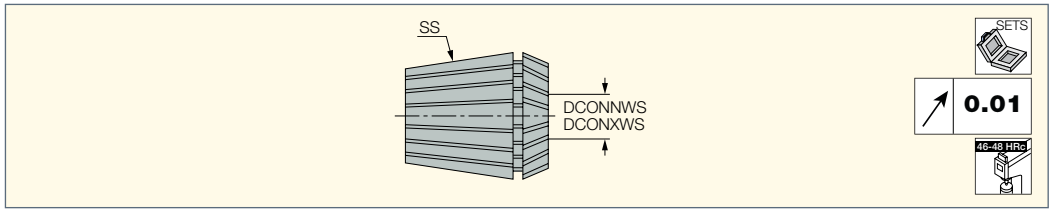
Designation	SS	DCONNWS(2)	DCONXWS(3)	DCONMS	LF	OAL	LSCNWS	Fig.	kg
ER11 SPR 0.5-1.0 AA	ER11	0.50	1.00	11.00	6.30	18.00	8.50	2	0.01
ER11 SPR 1.0-1.5 AA	ER11	1.00	1.50	11.00	6.30	18.00	8.50	2	0.01
ER11 SPR 1.5-2.0 AA	ER11	1.50	2.00	11.00	6.30	18.00	9.50	2	0.01
ER11 SPR 2.0-2.5 AA	ER11	2.00	2.50	11.00	6.30	18.00	9.50	2	0.01
ER11 SPR 2.5-3.0 AA	ER11	2.50	3.00	11.00	6.30	18.00	18.00	1	0.01
ER11 SPR 3.0-3.5 AA	ER11	3.00	3.50	11.00	6.30	18.00	18.00	1	0.01
ER11 SPR 3.5-4.0 AA	ER11	3.50	4.00	11.00	6.30	18.00	18.00	1	0.01
ER11 SPR 4.0-4.5 AA	ER11	4.00	4.50	11.00	6.30	18.00	18.00	1	0.01
ER11 SPR 4.5-5.0 AA	ER11	4.50	5.00	11.00	6.30	18.00	18.00	1	0.01
ER11 SPR 5.0-5.5 AA	ER11	5.00	5.50	11.00	6.30	18.00	18.00	1	0.01
ER11 SPR 5.5-6.0 AA	ER11	5.50	6.00	11.00	6.30	18.00	18.00	1	0.01
ER11 SPR 6.0-6.5 AA	ER11	6.00	6.50	11.00	6.30	18.00	18.00	1	0.01
ER11 SPR 6.5-7.0 AA	ER11	6.50	7.00	11.00	6.30	18.00	18.00	1	0.01
ER16 SPR 0.5-1 AA	ER16	0.50	1.00	16.00	10.26	27.50	10.50	2	0.02
ER16 SPR 1.5-2 AA	ER16	1.50	2.00	16.00	10.26	27.50	14.20	2	0.02
ER16 SPR 2-3 AA	ER16	2.00	3.00	16.00	10.26	27.50	15.50	2	0.02
ER16 SPR 3.2-4 AA (1)	ER16	3.20	4.00	16.00	10.26	27.50	18.50	2	0.03
ER16 SPR 4-5 AA	ER16	4.00	5.00	16.00	10.26	27.50	27.50	1	0.02
ER16 SPR 5-6 AA	ER16	5.00	6.00	16.00	10.26	27.50	27.50	1	0.02
ER16 SPR 6-7 AA	ER16	6.00	7.00	16.00	10.26	27.50	27.50	1	0.02
ER16 SPR 7-8 AA	ER16	7.00	8.00	16.00	10.26	27.50	27.50	1	0.02
ER16 SPR 8-9 AA	ER16	8.00	9.00	16.00	10.26	27.50	27.50	1	0.02
ER16 SPR 9-10 AA	ER16	9.00	10.00	16.00	10.26	27.50	27.50	1	0.01
ER20 SPR 1.5-2 AA	ER20	1.50	2.00	20.00	11.16	31.50	11.70	2	0.04
ER20 SPR 2-3 AA	ER20	2.00	3.00	20.00	11.16	31.50	17.70	2	0.04
ER20 SPR 3-4 AA	ER20	3.00	4.00	20.00	11.16	31.50	19.30	2	0.04
ER20 SPR 4-5 AA	ER20	4.00	5.00	20.00	11.16	31.50	19.30	2	0.04
ER20 SPR 5-6 AA	ER20	5.00	6.00	20.00	11.16	31.50	31.50	1	0.04
ER20 SPR 6-7 AA	ER20	6.00	7.00	20.00	11.16	31.50	31.50	1	0.04
ER20 SPR 7-8 AA	ER20	7.00	8.00	20.00	11.16	31.50	31.50	1	0.04
ER20 SPR 8-9 AA	ER20	8.00	9.00	20.00	11.16	31.50	31.50	1	0.04
ER20 SPR 9-10 AA	ER20	9.00	10.00	20.00	11.16	31.50	31.50	1	0.03
ER20 SPR 10-11 AA	ER20	10.00	11.00	20.00	11.16	31.50	31.50	1	0.03
ER20 SPR 11-12 AA	ER20	11.00	12.00	20.00	11.16	31.50	31.50	1	0.03
ER20 SPR 12-13 AA	ER20	12.00	13.00	20.00	11.16	31.50	31.50	1	0.02

(1) For shank diameter 3-3.1 use ER16 SPR 2-3
(2) Minimum diameter
(3) Maximum diameter

ERCOLLET

SET ER-SPR

DIN 6499 ER Spring Collet Set with Super Finish Surface and Special Anti-Corrosion Protection



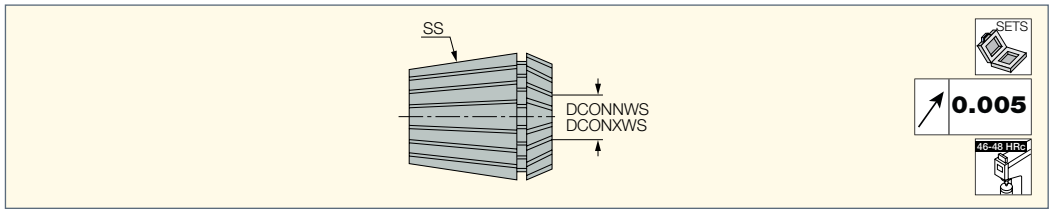
M E T R I C				
Designation	**SS**	**Qty**	**DCONNWS(2)**	**DCONXWS(3)**
SET ER11 SPR 13 (1)	ER11	13	0.5	7.0
SET ER16 SPR 10	ER16	10	0.5	10.0
SET ER20 SPR 12	ER20	12	1.0	13.0

(1) Clamping range 0.5 mm
(2) Minimum diameter
(3) Maximum diameter

ERCOLLET

SET ER-SPR-AA

Sets of DIN 6499 'AA' Ultra Precise ER Spring Collets with Super Finish Surface and Special Anti-Corrosion Protection



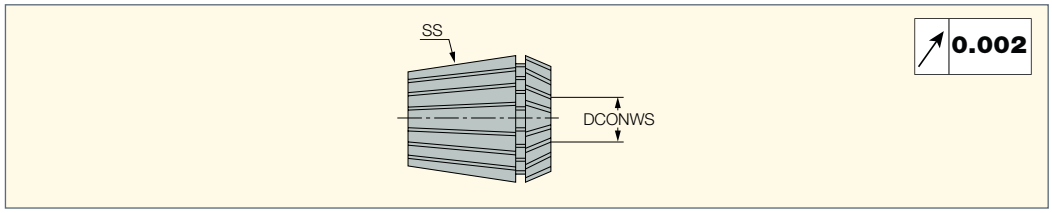
M E T R I C				
Designation	**SS**	**Qty**	**DCONNWS(2)**	**DCONXWS(3)**
SET ER11 SPR 13 AA (1)	ER11	13	0.5	7.0
SET ER16 SPR 10 AA	ER16	10	0.5	10.0
SET ER20 SPR 12 AA	ER20	12	1.0	13.0

(1) Clamping range 0.5 mm
(2) Minimum diameter
(3) Maximum diameter

ERCOLLET

ER-SPR-AAA

DIN 6499 'AAA' Ultra Precise ER Spring Collets with Super Finish Surface and Special Anti-Corrosion Protection

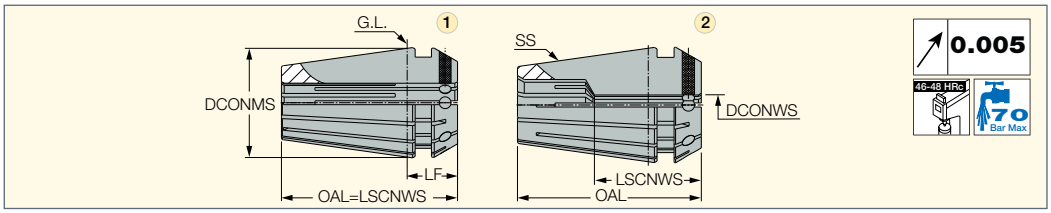


M E T R I C		
Designation	**SS**	**DCONWS**
ER11 SPR EX3.0AAA (1)	ER11	3.00
ER11 SPR EX4.0AAA (1)	ER11	4.00
ER11 SPR EX6.0AAA (1)	ER11	6.00

(1) 0.002 mm runout accuracy

ERCOLLET

ER-SEAL-AA
DIN 6499/ ISO 15488-B ER
Sealed Single Diameter Collet
with Super Finish Surface and
Special Anti-Corrosion Protection

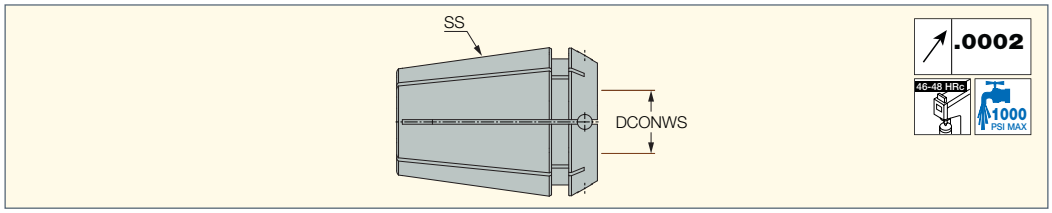


M E T R I C								
Designation	SS	DCONWS	DCONMS	LF	OAL	LSCNWS	Fig.	Kg
ER11 SEAL 3 AA	ER11	3.00	11.00	4.50	18.00	18.00	1	0.01
ER11 SEAL 4 AA	ER11	4.00	11.00	4.50	18.00	18.00	1	0.01
ER11 SEAL 5 AA	ER11	5.00	11.00	4.50	18.00	18.00	1	0.01
ER11 SEAL 6 AA	ER11	6.00	11.00	4.50	18.00	18.00	1	0.01
ER16 SEAL 3 AA	ER16	3.00	16.00	6.30	27.50	15.50	2	0.02
ER16 SEAL 4 AA	ER16	4.00	16.00	6.30	27.50	18.50	2	0.02
ER16 SEAL 5 AA	ER16	5.00	16.00	6.30	27.50	27.50	1	0.02
ER16 SEAL 6 AA	ER16	6.00	16.00	6.30	27.50	27.50	1	0.02
ER16 SEAL 7 AA	ER16	7.00	16.00	6.30	27.50	27.50	1	0.02
ER16 SEAL 8 AA	ER16	8.00	16.00	6.30	27.50	27.50	1	0.02
ER16 SEAL 9 AA	ER16	9.00	16.00	6.30	27.50	27.50	1	0.02
ER16 SEAL 10 AA	ER16	10.00	16.00	6.30	27.50	27.50	1	0.01
ER20 SEAL 3 AA	ER20	3.00	20.00	7.20	31.50	17.70	2	0.04
ER20 SEAL 4 AA	ER20	4.00	20.00	7.20	31.50	17.70	2	0.04
ER20 SEAL 5 AA	ER20	5.00	20.00	7.20	31.50	19.30	2	0.04
ER20 SEAL 6 AA	ER20	6.00	20.00	7.20	31.50	19.30	2	0.04
ER20 SEAL 7 AA	ER20	7.00	20.00	7.20	31.50	31.50	1	0.04
ER20 SEAL 8 AA	ER20	8.00	20.00	7.20	31.50	31.50	1	0.04
ER20 SEAL 9 AA	ER20	9.00	20.00	7.20	31.50	31.50	1	0.04
ER20 SEAL 10 AA	ER20	10.00	20.00	7.20	31.50	31.50	1	0.03
ER20 SEAL 11 AA	ER20	11.00	20.00	7.20	31.50	31.50	1	0.03
ER20 SEAL 12 AA	ER20	12.00	20.00	7.20	31.50	31.50	1	0.03

- Recommended for improved runout and clamping torque.

ERCOLLET

ER-SEAL-AA
DIN 6499/ ISO 15488-B ER
Sealed Single Diameter Collet
with Super Finish Surface and
Special Anti-Corrosion Protection



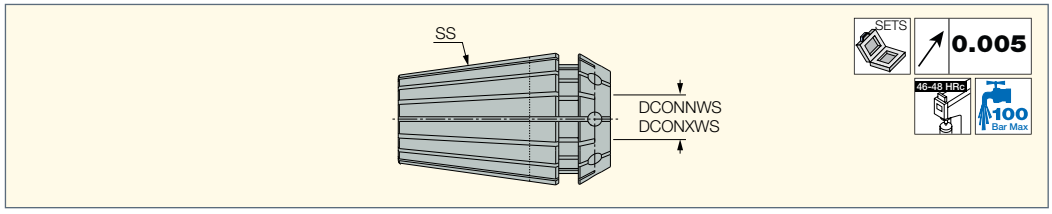
I N C H			
Designation	SS	DCONWS	Lbs
ER11 SEAL 1/8 AA	ER11	.1250	.02
ER11 SEAL 3/16 AA	ER11	.1880	.01
ER11 SEAL 1/4 AA	ER11	.2500	.01
ER16 SEAL 1/8 AA	ER16	.1250	.05
ER16 SEAL 3/16 AA	ER16	.1880	.05
ER16 SEAL 1/4 AA	ER16	.2500	.05
ER16 SEAL 5/16 AA	ER16	.3120	.04
ER16 SEAL 3/8 AA	ER16	.3750	.04
ER20 SEAL 1/8 AA	ER20	.1250	.09
ER20 SEAL 3/16 AA	ER20	.1880	.09
ER20 SEAL 1/4 AA	ER20	.2500	.09
ER20 SEAL 5/16 AA	ER20	.3120	.09
ER20 SEAL 3/8 AA	ER20	.3750	.08
ER20 SEAL 7/16 AA	ER20	.4370	.07
ER20 SEAL 1/2 AA	ER20	.5000	.05

- Recommended for improved runout and clamping torque.

ERCOLLET

SET ER-SEAL-AA

DIN 6499/ ISO 15488-B ER
Sealed Single Diameter Collet
with Super Finish Surface and
Special Anti-Corrosion Protection



M E T R I C

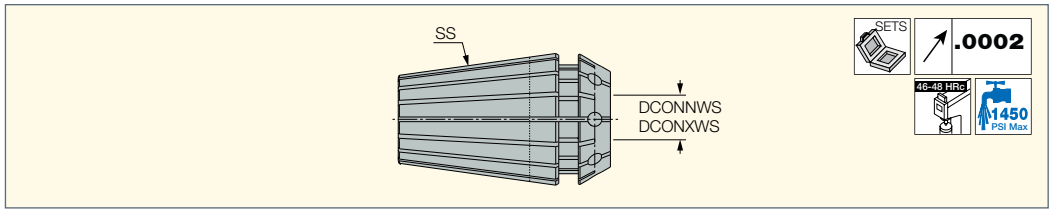
Designation	SS	Qty	DCONNWS(1)	DCONXWS(2)
SET ER16 SEAL 7 AA	ER16	7	4.00	10.00
SET ER20 SEAL 9 AA	ER20	9	4.00	12.00

(1) Minimum diameter
(2) Maximum diameter

ERCOLLET

SET ER-SEAL-AA

DIN 6499/ ISO 15488-B ER
Sealed Single Diameter Collet
with Super Finish Surface and
Special Anti-Corrosion Protection



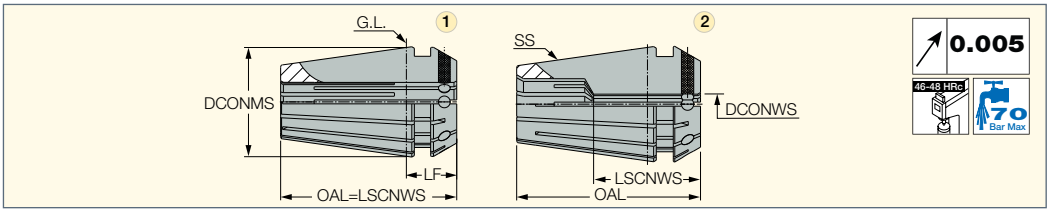
I N C H

Designation	SS	Qty	DCONNWS(1)	DCONXWS(2)
SET ER16 SEAL 5 AA INCH	ER16	5	.125	.375
SET ER20 SEAL 7 AA INCH	ER20	7	.125	.500

(1) Minimum diameter
(2) Maximum diameter

ERCOLLET

ER-SEAL-AA-JET
DIN 6499/ ISO 15488-B ER
Sealed Single Diameter Collet
with Special Anti-Corrosion
Protection Featuring
4 Coolant Jets



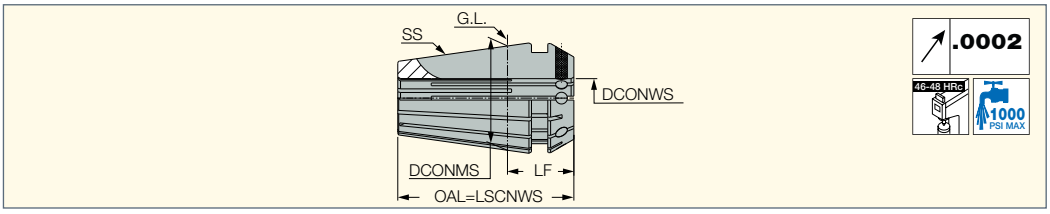
M E T R I C

Designation	SS	DCONWS	DCONMS	LF	OAL	LSCNWS	Fig.	kg
ER16 SEAL 3 AA JET	ER16	3.00	16.00	6.30	27.50	15.50	2	0.02
ER16 SEAL 4 AA JET	ER16	4.00	16.00	6.30	27.50	18.50	2	0.02
ER16 SEAL 5 AA JET	ER16	5.00	16.00	6.30	27.50	27.50	1	0.02
ER16 SEAL 6 AA JET	ER16	6.00	16.00	6.30	27.50	27.50	1	0.02
ER16 SEAL 7 AA JET	ER16	7.00	16.00	6.30	27.50	27.50	1	0.02
ER16 SEAL 8 AA JET	ER16	8.00	16.00	6.30	27.50	27.50	1	0.02
ER16 SEAL 9 AA JET	ER16	9.00	16.00	6.30	27.50	27.50	1	0.02
ER16 SEAL 10 AA JET	ER16	10.00	16.00	6.30	27.50	27.50	1	0.01
ER20 SEAL 3 AA JET	ER20	3.00	20.00	7.20	31.50	17.70	2	0.04
ER20 SEAL 4 AA JET	ER20	4.00	20.00	7.20	31.50	17.70	2	0.04
ER20 SEAL 5 AA JET	ER20	5.00	20.00	7.20	31.50	19.30	2	0.04
ER20 SEAL 6 AA JET	ER20	6.00	20.00	7.20	31.50	19.30	2	0.04
ER20 SEAL 7 AA JET	ER20	7.00	20.00	7.20	31.50	31.50	1	0.04
ER20 SEAL 8 AA JET	ER20	8.00	20.00	7.20	31.50	31.50	1	0.04
ER20 SEAL 9 AA JET	ER20	9.00	20.00	7.20	31.50	31.50	1	0.04
ER20 SEAL 10 AA JET	ER20	10.00	20.00	7.20	31.50	31.50	1	0.03
ER20 SEAL 11 AA JET	ER20	11.00	20.00	7.20	31.50	31.50	1	0.03
ER20 SEAL 12 AA JET	ER20	12.00	20.00	7.20	31.50	31.50	1	0.03

- Recommended for improved runout and clamping torque.

ERCOLLET

ER-SEAL-AA-JET
DIN 6499/ ISO 15488-B ER
Sealed Single Diameter Collet
with Special Anti-Corrosion
Protection Featuring
4 Coolant Jets



I N C H

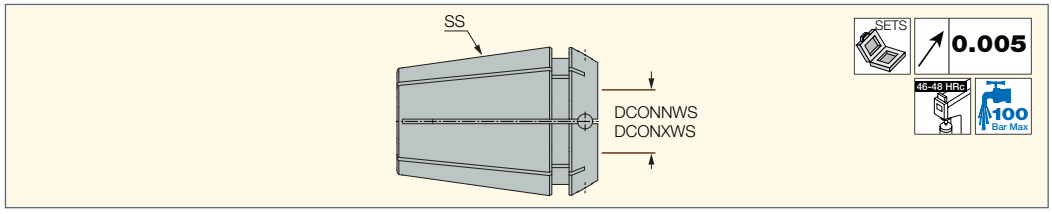
Designation	SS	DCONWS	Lbs
ER16 SEAL 1/8 AA JET	ER16	.1250	.05
ER16 SEAL 3/16 AA JET	ER16	.1880	.05
ER16 SEAL 1/4 AA JET	ER16	.2500	.05
ER16 SEAL 5/16 AA JET	ER16	.3130	.04
ER16 SEAL 3/8 AA JET	ER16	.3750	.04
ER20 SEAL 1/8 AA JET	ER20	.1250	.09
ER20 SEAL 3/16 AA JET	ER20	.1880	.09
ER20 SEAL 1/4 AA JET	ER20	.2500	.09
ER20 SEAL 5/16 AA JET	ER20	.3130	.09
ER20 SEAL 3/8 AA JET	ER20	.3750	.08
ER20 SEAL 7/16 AA JET	ER20	.4380	.07
ER20 SEAL 1/2 AA JET	ER20	.5000	.05

- Recommended for improved runout and clamping torque.

ERCOLLET

SET ER-SEAL-AA-JET

DIN 6499/ ISO 15488-B ER Sealed Single Diameter Collet with Special Anti-Corrosion Protection Featuring 4 Coolant Jets



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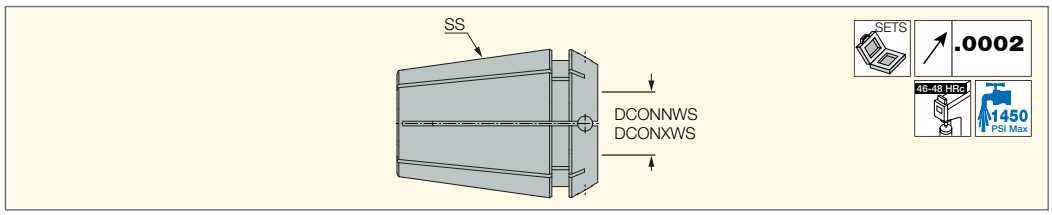
Designation	SS	Qty	DCONNWS(1)	DCONXWS(2)
SET ER16 SEAL 7 AA JET	ER16	7	4.00	10.00
SET ER20 SEAL 9 AA JET	ER20	9	4.00	12.00

(1) Minimum diameter
(2) Maximum diameter

ERCOLLET

SET ER-SEAL-AA-JET

DIN 6499/ ISO 15488-B ER Sealed Single Diameter Collet with Special Anti-Corrosion Protection Featuring 4 Coolant Jets



I N C H

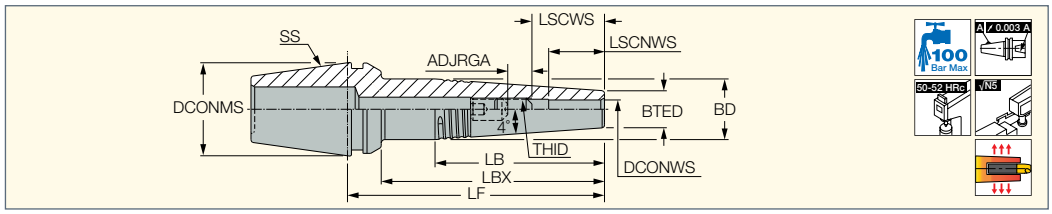
Designation	SS	Qty	DCONNWS(1)	DCONXWS(2)
SET ER16 S 5 AA JET INCH	ER16	5	.125	.375
SET ER20 S 7 AA JET INCH	ER20	7	.125	.500

(1) Minimum diameter
(2) Maximum diameter

SHRINKIN

ER-SRK

Thermal Shrink Chucks with an Integral ER Collet



M E T R I C

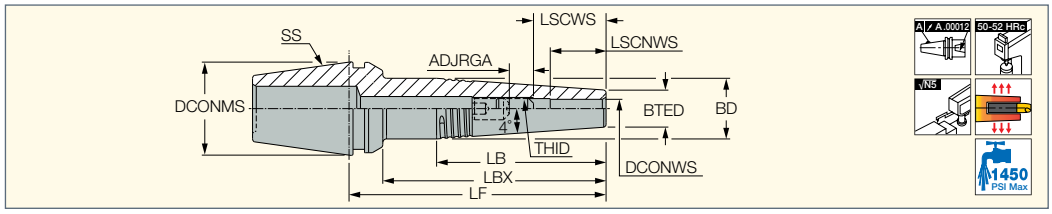
Designation	SS	DCONWS	DCONMS	LB	LBX	LF	LSCNWS	LSCWS	ADJRGA	BD	BTED	THID	Key(1)	kg	
ER16 SRK 3X35	ER16	3.00	16.00	14.30	36.00	43.10	10.00	16.00	6.00	12.00	10.00	M6	3.00	0.05	SR M6X10 DIN916
ER16 SRK 4X35	ER16	4.00	16.00	14.30	36.00	43.10	12.00	18.00	6.00	12.00	10.00	M6	3.00	0.05	SR M6X10 DIN916
ER16 SRK 5X35	ER16	5.00	16.00	14.30	36.00	43.10	15.00	21.00	6.00	12.00	10.00	M6	3.00	0.06	SR M6X10 DIN916
ER16 SRK 6X35	ER16	6.00	16.00	7.20	36.00	43.10	18.00	22.00	6.00	12.00	11.00	M6	3.00	0.06	SR M6X10 DIN916
ER20 SRK 3X35	ER20	3.00	20.00	24.50	35.00	43.50	10.00	16.00	6.00	13.50	10.00	M6	3.00	0.07	SR M6X10 DIN916
ER20 SRK 3X60	ER20	3.00	20.00	24.50	60.00	68.50	10.00	16.00	6.00	13.50	10.00	M6	3.00	0.09	SR M6X10 DIN916
ER20 SRK 4X35	ER20	4.00	20.00	24.50	35.00	43.50	12.00	18.00	6.00	13.50	10.00	M6	3.00	0.07	SR M6X10 DIN916
ER20 SRK 4X60	ER20	4.00	20.00	24.50	60.00	68.50	12.00	18.00	6.00	13.50	10.00	M6	3.00	0.10	SR M6X10 DIN916
ER20 SRK 5X35	ER20	5.00	20.00	24.50	35.00	43.50	15.00	21.00	6.00	13.50	10.00	M6	3.00	0.07	SR M6X10 DIN916
ER20 SRK 5X60	ER20	5.00	20.00	24.50	60.00	68.50	15.00	21.00	6.00	13.50	10.00	M6	3.00	0.10	SR M6X10 DIN916
ER20 SRK 6X35	ER20	6.00	20.00	25.50	35.00	43.50	18.00	24.00	6.00	13.50	11.00	M8	4.00	0.07	SR M8X12 DIN916
ER20 SRK 6X60	ER20	6.00	20.00	29.50	60.00	68.50	18.00	24.00	6.00	13.50	11.00	M8	4.00	0.09	SR M8X12 DIN916

• For carbide tools only • For through tool coolant, preset screw must be removed
(1) Hex key size for the rear stopper screw

SHRINKIN

ER-SRK

Thermal Shrink Chucks with Integral ER Collet



I N C H

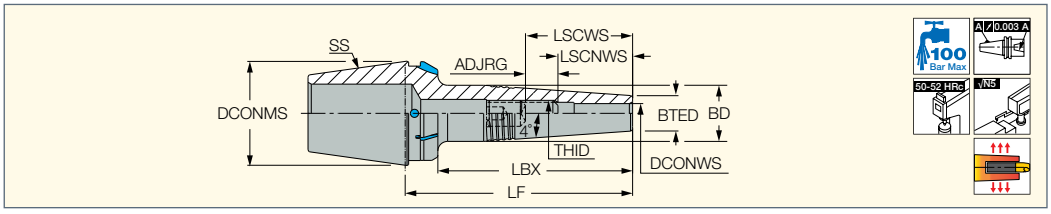
Designation	SS	DCONMS	DCONWS	LB	LBX	LF	LSCNWS	LSCWS	ADJRGA	BD	BTED	THID	Key(1)	Lbs	
ER20 SRK 1/4X1.500	ER20	20.000	.2500	1.140	1.500	1.835	.710	.9500	.240	.590	.433	M8	4.000	.15	SR M8X12 DIN916
ER20 SRK 1/4X2.500	ER20	20.000	.2500	1.310	2.500	2.835	.710	.9500	.240	.620	.433	M8	4.000	.22	SR M8X12 DIN916
ER20 SRK 1/8X1.500	ER20	20.000	.1250	.970	1.500	1.835	.390	.6300	.240	.530	.394	M6	3.000	.16	SR M6X10 DIN916
ER20 SRK 1/8X2.500	ER20	20.000	.1250	.970	2.500	2.835	.390	.6300	.240	.530	.394	M6	3.000	.20	SR M6X10 DIN916
ER20 SRK 3/16X1.500	ER20	20.000	.1870	.970	1.500	1.835	.590	.8300	.240	.530	.394	M6	3.000	.15	SR M6X10 DIN916
ER20 SRK 3/16X2.500	ER20	20.000	.1870	.970	2.500	2.835	.590	.8300	.240	.530	.394	M6	3.000	.26	SR M6X10 DIN916

• For carbide tools only • For through tool coolant, preset screw must be removed
(1) Hex key (metric size) for the rear stopper screw

SHRINKIN

ER-SRK-JET2

Thermal Shrink Chuck with Three Internal Cooling Jets and an Integral ER Collet



M E T R I C

Designation	SS	DCONWS	LB	LBX	LF	LSCNWS	LSCWS	ADJRGA	BD	BTED	THID	Key(1)	kg	
ER20 SRK 3X35 JET2	ER20	3.00	24.50	35.00	43.50	10.00	16.00	6.00	13.50	10.00	M6	3.00	0.07	SR M6X10 DIN916
ER20 SRK 4X35 JET2	ER20	4.00	24.50	35.00	43.50	12.00	18.00	6.00	13.50	10.00	M6	3.00	0.07	SR M6X10 DIN916
ER20 SRK 5X35 JET2	ER20	5.00	24.50	35.00	43.50	15.00	21.00	6.00	13.50	10.00	M6	3.00	0.09	SR M6X10 DIN916
ER20 SRK 6X35 JET2	ER20	6.00	25.50	35.00	43.50	18.00	24.00	6.00	13.50	11.00	M8	4.00	0.07	SR M8X12 DIN916

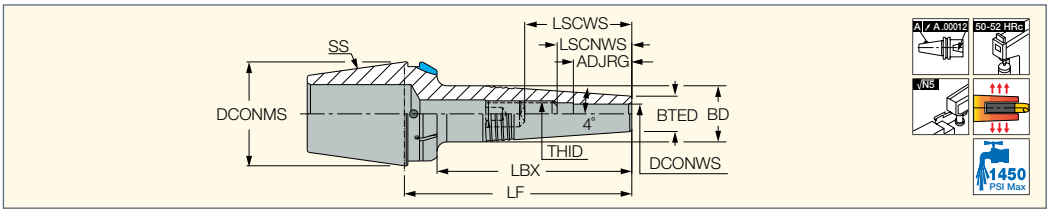
• For carbide tools only • For through tool coolant, preset screw must be removed

(1) Hex key size for the rear stopper screw

SHRINKIN

ER-SRK-JET2

Thermal Shrink Chuck with Three Internal Cooling Jets and an Integral ER Collet



I N C H

Designation	SS	DCONWS	LB	LBX	LF	LSCNWS	LSCWS	ADJRGA	BD	BTED	THID	Key(1)	lbs	
ER20 SRK 1/8X1.500 JET2	ER20	.1250	.970	1.500	1.835	.390	.6300	.240	.530	.394	M6	3.000	.15	SR M6X10 DIN916
ER20 SRK 1/8X2.500 JET2	ER20	.1250	.970	2.500	2.835	.390	.6300	.240	.530	.394	M6	3.000	.22	SR M6X10 DIN916
ER20 SRK 3/16X1.500 JET2	ER20	.1880	.970	1.500	1.835	.590	.8300	.240	.530	.394	M6	3.000	.19	SR M6X10 DIN916
ER20 SRK 3/16X2.500 JET2	ER20	.1880	.970	2.500	2.835	.590	.8300	.240	.530	.394	M6	3.000	.24	SR M6X10 DIN916
ER20 SRK 1/4X1.500 JET2	ER20	.2500	1.140	1.500	1.835	.710	.9500	.240	.590	.433	M8	4.000	.16	SR M8X12 DIN916
ER20 SRK 1/4X2.500 JET2	ER20	.2500	1.310	2.500	2.835	.710	.9500	.240	.620	.433	M8	4.000	.25	SR M8X12 DIN916

• For carbide tools only • For through tool coolant, preset screw must be removed

(1) Hex key (metric size) for the rear stopper screw

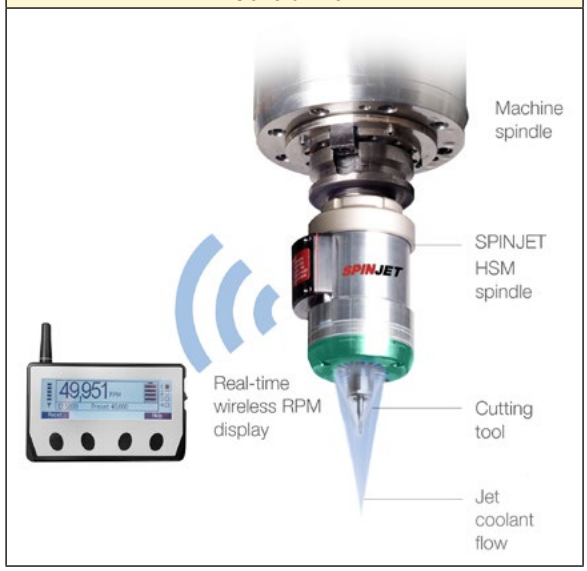
SPIN-JET COOLENT DRIVEN HSM SPINDLES



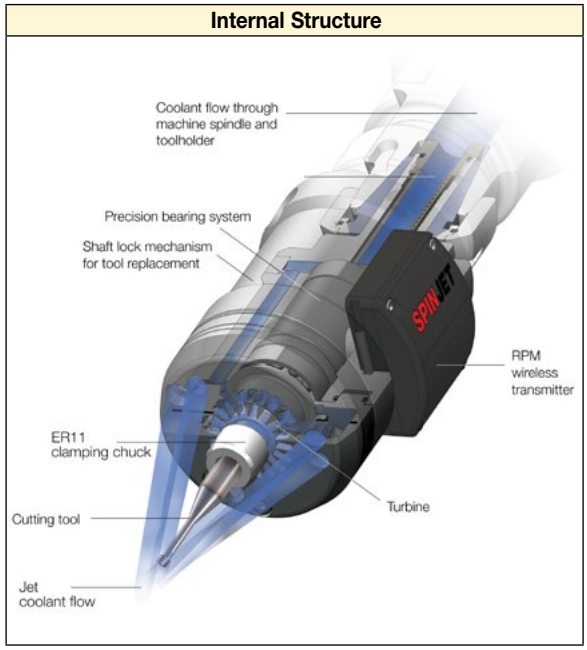
SPIN-JET – A unique, coolant-driven high speed compact spindle for small diameter tools.

The **SPIN-JET** spindles have been developed for use when high RPM is required for small diameter tools on limited RPM machines. The spindles are for semi-finish and finish machining applications such as milling, drilling, engraving, chamfering / deburring and fine radial grinding.

General View



Internal Structure



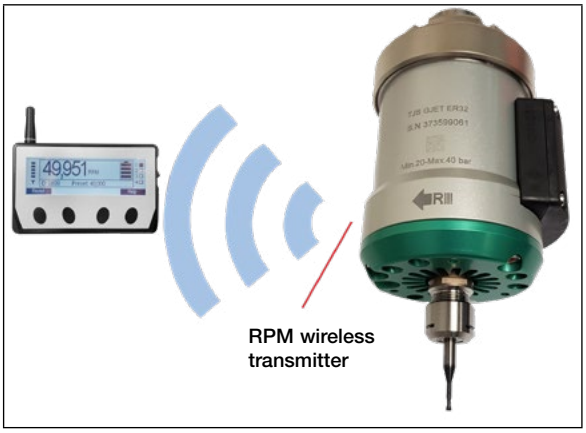
Advantages

- Reduced machining time - High table speed, thus faster machining due to high rotation speed
- High efficiency - Up to 65% increased productivity compared to machining with the original machine with low RPM spindle
- Energy saving - The machine spindle is idle while the **SPIN-JET** is in operation
- High precision - Excellent surface quality due to optimized machining conditions
- Plug & play – Easy installation on existing machines with no adaptation required
- Extended tool life – As a result of optimal cutting conditions and strong jet coolant flow

Features Direct Wireless Rotation Speed Display

SPIN-JET is equipped with an online speed display system, monitoring the actual cutting tool rotation speed during machining.

- 2.4 GHz radio frequency transmission
- Direct wireless rotational speed monitoring in a range of up to 10 meters
- Externally powered display enables reading all **SPIN-JET** systems being used on the machine

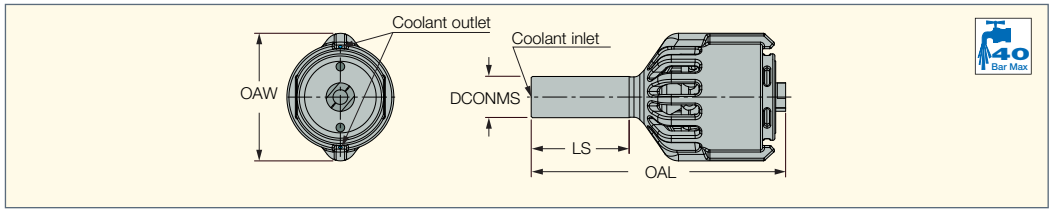




Straight Shank

SPINJET

TJS M00 ST
High-Pressure Coolant Driven HSM Spindle with a Straight Shank for Small Diameter Cutting Tools



M E T R I C				
Designation	**LS**	**OAL**	**OAW**	**DCONMS**
TJS M00-3.0	23.8	61.80	31.00	10.00

Spare Parts

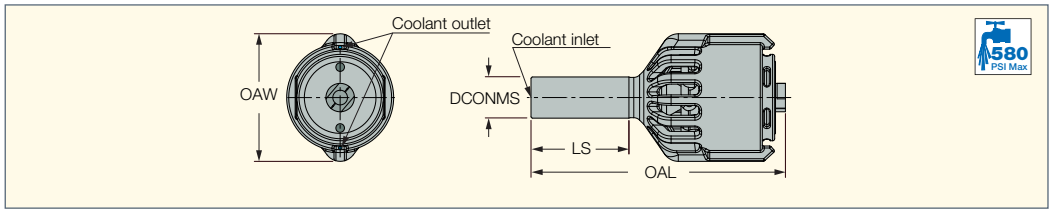
Designation							
TJS M00-3.0	TJS-COLLET 1.6*	TJS-COLLET 2.0*	TJS-COLLET 3.0	TJS-COLLET 1/8*	TJS MJ-WRENCH-COLLET	TJS MJ-SHAFT-LOCK	TJS MJ-PLUG COOLANT

* Optional, to be ordered separately

Straight Shank

SPINJET

TJS M00 ST
High-Pressure Coolant Driven HSM Spindle with a Straight Shank for Small Diameter Cutting Tools



I N C H				
Designation	**LS**	**OAL**	**OAW**	**DCONMS**
TJS M00-1/8	.937	2.433	1.220	.394

Spare Parts

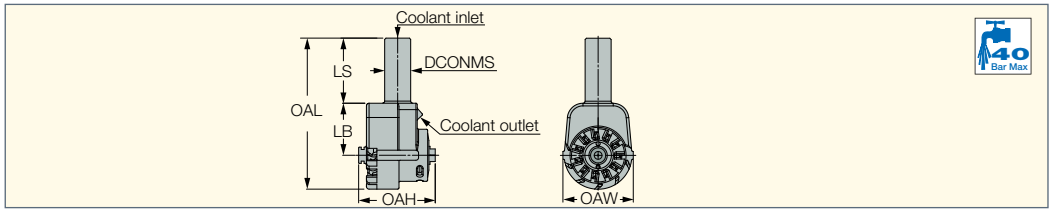
Designation							
TJS M00-1/8	TJS-COLLET 1.6*	TJS-COLLET 2.0*	TJS-COLLET 3.0*	TJS-COLLET 1/8	TJS MJ-WRENCH-COLLET	TJS MJ-SHAFT-LOCK	TJS MJ-PLUG COOLANT

* Optional, to be ordered separately

Straight Shank

SPINJET

TJS M90 ST
High-Pressure Coolant Driven HSM Spindle with a Straight Shank for Small Diameter Cutting Tools



M E T R I C						
Designation	**LS**	**LB**	**OAL**	**OAH**	**OAW**	**DCONMS**
TJS M90-3.0	25.0	20.00	58.00	29.00	27.00	10.00

Spare Parts

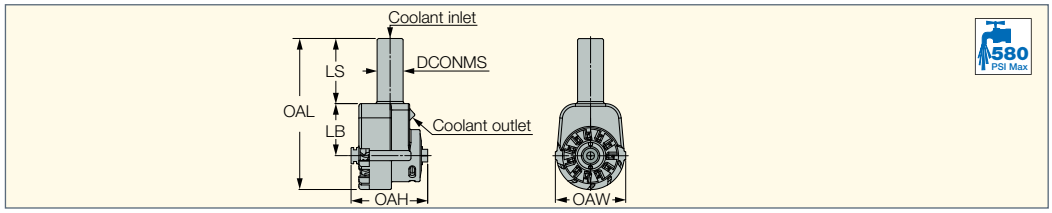
Designation					
TJS M90-3.0	TJS-COLLET 3.0	TJS-COLLET 1.6*	TJS-COLLET 2.0*	TJS-COLLET 1/8*	TJS MJ90 WRENCH-2430

* Optional, to be ordered separately

Straight Shank

SPINJET

TJS M90 ST
High-Pressure Coolant Driven HSM Spindle with a Straight Shank for Small Diameter Cutting Tools



I N C H						
Designation	**LS**	**LB**	**OAL**	**OAH**	**OAW**	**DCONMS**
TJS M90-1/8	.984	.787	2.283	1.142	1.063	.394

Spare Parts

Designation					
TJS M90-1/8	TJS-COLLET 3.0*	TJS-COLLET 1.6*	TJS-COLLET 2.0*	TJS-COLLET 1/8	TJS MJ90 WRENCH-2430

* Optional, to be ordered separately

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