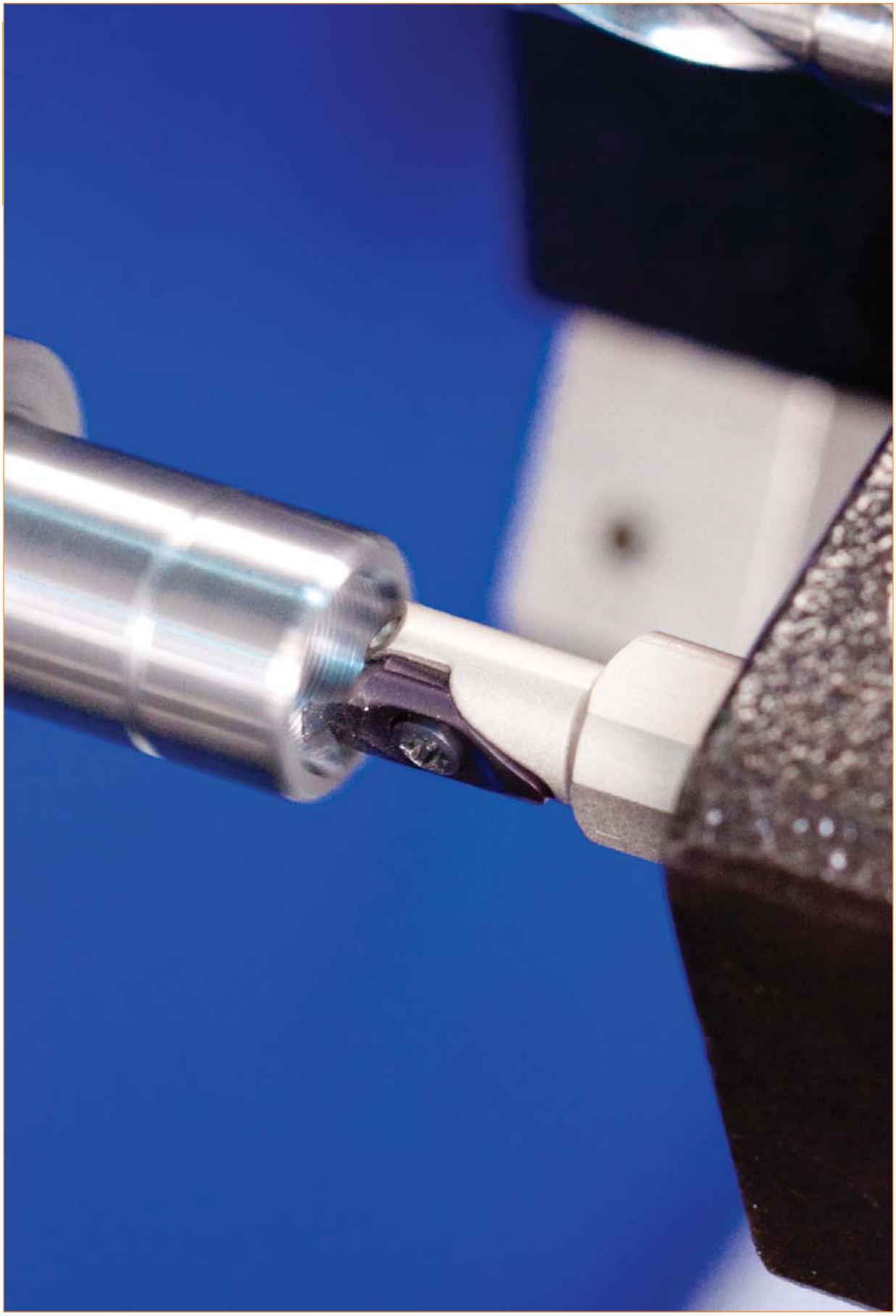
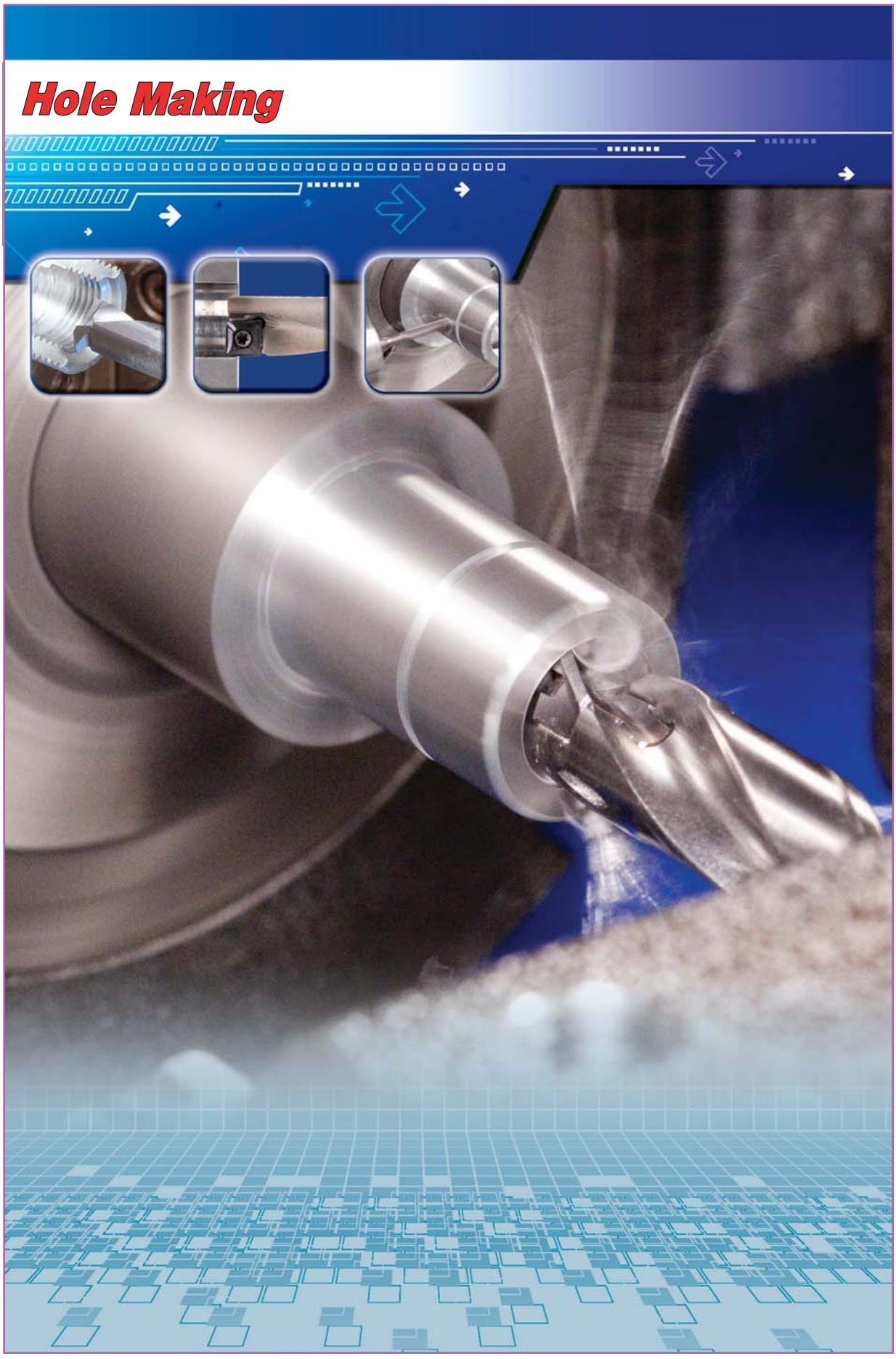


Hole Making

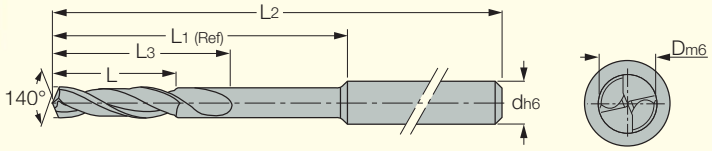


SOLIDDRILL

SCD-AP4 (4xD)

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

D	Tolerance m6
0.8-2.9	0.002-0.008



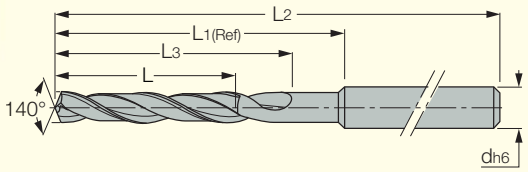
Designation	Dimensions D	d	L	L_3	L_1	L_2	T_h(1)	IC908
SCD 008-003-030 AP4	0.80	3.00	3.2	4.8	8.8	46.0	-	●
SCD 009-003-030 AP4	0.90	3.00	3.6	5.4	9.4	46.0	-	●
SCD 010-004-030 AP4	1.00	3.00	4.0	6.0	10.0	46.0	-	●
SCD 011-004-030 AP4	1.10	3.00	4.4	6.6	10.6	46.0	M1.4	●
SCD 012-004-030 AP4	1.20	3.00	4.8	7.2	11.2	46.0	-	●
SCD 013-005-030 AP4	1.30	3.00	5.2	7.8	11.8	46.0	-	●
SCD 014-005-030 AP4	1.40	3.00	5.6	8.4	12.4	46.0	-	●
SCD 015-006-030 AP4	1.50	3.00	6.0	9.0	13.0	46.0	-	●
SCD 016-006-030 AP4	1.60	3.00	6.4	9.6	13.6	46.0	M2	●
SCD 017-006-030 AP4	1.70	3.00	6.8	10.2	14.2	46.0	-	●
SCD 018-007-030 AP4	1.80	3.00	7.2	10.8	14.8	46.0	-	●
SCD 019-007-030 AP4	1.90	3.00	7.6	11.4	15.4	46.0	-	●
SCD 020-008-030 AP4	2.00	3.00	8.0	12.0	16.0	60.0	-	●
SCD 021-008-030 AP4	2.10	3.00	8.4	12.6	16.6	60.0	-	●
SCD 022-008-030 AP4	2.20	3.00	8.8	13.2	17.2	60.0	-	●
SCD 023-009-030 AP4	2.30	3.00	9.2	13.8	17.8	60.0	-	●
SCD 024-009-030 AP4	2.40	3.00	9.6	14.4	18.4	60.0	-	●
SCD 025-010-030 AP4	2.50	3.00	10.0	15.0	19.0	60.0	M3	●
SCD 026-010-030 AP4	2.60	3.00	10.4	15.6	19.6	60.0	-	●
SCD 027-010-030 AP4	2.70	3.00	10.8	16.2	20.2	60.0	-	●
SCD 028-011-030 AP4	2.80	3.00	11.2	16.8	20.8	60.0	-	●
SCD 029-011-030 AP4	2.90	3.00	11.6	17.4	21.4	60.0	M3.5	●

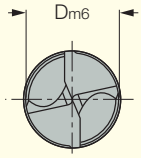
(1) Used for standard thread size

SCD-AP6 (6xD)

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

D	Tolerance m6
0.8-2.9	0.002-0.008





Designation	Dimensions D	d	L	L_3	L_1	L_2	T_h[1]	IC908
SCD 008-004-030 AP6	0.80	3.00	4.8	6.4	10.7	46.0	-	●
SCD 009-005-030 AP6	0.90	3.00	5.4	7.2	11.5	46.0	-	●
SCD 010-006-030 AP6	1.00	3.00	6.0	8.0	12.2	46.0	-	●
SCD 011-006-030 AP6	1.10	3.00	6.6	8.8	13.0	46.0	M1.4	●
SCD 012-007-030 AP6	1.20	3.00	7.2	9.6	13.7	46.0	-	●
SCD 013-007-030 AP6	1.30	3.00	7.8	10.4	14.5	46.0	-	●
SCD 014-008-030 AP6	1.40	3.00	8.4	11.2	15.2	46.0	-	●
SCD 015-009-030 AP6	1.50	3.00	9.0	12.0	16.0	46.0	-	●
SCD 016-009-030 AP6	1.60	3.00	9.6	12.8	16.7	46.0	M2	●
SCD 017-010-030 AP6	1.70	3.00	10.2	13.6	17.5	60.0	-	●
SCD 018-010-030 AP6	1.80	3.00	10.8	14.4	18.2	60.0	-	●
SCD 019-011-030 AP6	1.90	3.00	11.4	15.2	18.9	60.0	-	●
SCD 020-012-030 AP6	2.00	3.00	12.0	16.0	19.7	60.0	-	●
SCD 021-012-030 AP6	2.10	3.00	12.6	16.8	20.4	60.0	-	●
SCD 022-013-030 AP6	2.20	3.00	13.2	17.6	21.1	60.0	-	●
SCD 023-013-030 AP6	2.30	3.00	13.8	18.4	21.8	60.0	-	●
SCD 024-014-030 AP6	2.40	3.00	14.4	19.2	22.5	60.0	-	●
SCD 025-015-030 AP6	2.50	3.00	15.0	20.0	23.2	60.0	M3	●
SCD 026-015-030 AP6	2.60	3.00	15.6	20.8	23.9	60.0	-	●
SCD 027-016-030 AP6	2.70	3.00	16.2	21.6	24.5	60.0	-	●
SCD 028-016-030 AP6	2.80	3.00	16.8	22.4	25.2	60.0	-	●
SCD 029-017-030 AP6	2.90	3.00	17.4	23.2	25.7	60.0	M3.5	●

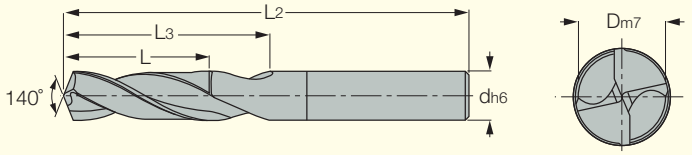
[1] Used for standard thread size

SOLIDDRILL

SCD-AP3 (3xD)

Solid Carbide Drills without Coolant Holes, Drilling Depth 3xD, DIN 6537

D	Tolerance m7
3.00- 6	0.004-0.016
6.01-10	0.006-0.021
10.01-18	0.007-0.025
18.01-21	0.008-0.029

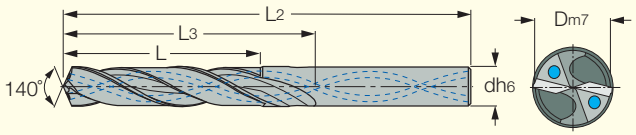


Designation	Dimensions D	d	L	L3	L2	Th(1)	IC908
SCD 030-014-060 AP3	3.00	6.00	14.0	20.0	62.0	-	●
SCD 031-014-060 AP3	3.10	6.00	14.0	20.0	62.0	-	●
SCD 032-014-060 AP3	3.20	6.00	14.0	20.0	62.0	-	●
SCD 033-014-060 AP3	3.30	6.00	14.0	20.0	62.0	M4	●
SCD 034-014-060 AP3	3.40	6.00	14.0	20.0	62.0	-	●
SCD 035-014-060 AP3	3.50	6.00	14.0	20.0	62.0	-	●
SCD 036-014-060 AP3	3.60	6.00	14.0	20.0	62.0	-	●
SCD 037-014-060 AP3	3.70	6.00	14.0	20.0	62.0	-	●
SCD 038-017-060 AP3	3.80	6.00	17.0	24.0	66.0	-	●
SCD 039-017-060 AP3	3.90	6.00	17.0	24.0	66.0	-	●
SCD 040-017-060 AP3	4.00	6.00	17.0	24.0	66.0	-	●
SCD 041-017-060 AP3	4.10	6.00	17.0	24.0	66.0	-	●
SCD 042-017-060 AP3	4.20	6.00	17.0	24.0	66.0	M5	●
SCD 043-017-060 AP3	4.30	6.00	17.0	24.0	66.0	-	●
SCD 044-017-060 AP3	4.40	6.00	17.0	24.0	66.0	-	●
SCD 045-017-060 AP3	4.50	6.00	17.0	24.0	66.0	-	●
SCD 046-017-060 AP3	4.60	6.00	17.0	24.0	66.0	-	●
SCD 047-017-060 AP3	4.70	6.00	17.0	24.0	66.0	-	●
SCD 048-020-060 AP3	4.80	6.00	20.0	28.0	66.0	-	●
SCD 049-020-060 AP3	4.90	6.00	20.0	28.0	66.0	-	●
SCD 050-020-060 AP3	5.00	6.00	20.0	28.0	66.0	M6	●
SCD 051-020-060 AP3	5.10	6.00	20.0	28.0	66.0	-	●
SCD 052-020-060 AP3	5.20	6.00	20.0	28.0	66.0	-	●
SCD 053-020-060 AP3	5.30	6.00	20.0	28.0	66.0	-	●
SCD 054-020-060 AP3	5.40	6.00	20.0	28.0	66.0	-	●
SCD 055-020-060 AP3	5.50	6.00	20.0	28.0	66.0	-	●
SCD 056-020-060 AP3	5.60	6.00	20.0	28.0	66.0	-	●
SCD 057-020-060 AP3	5.70	6.00	20.0	28.0	66.0	-	●
SCD 058-020-060 AP3	5.80	6.00	20.0	28.0	66.0	-	●
SCD 059-020-060 AP3	5.90	6.00	20.0	28.0	66.0	-	●
SCD 060-020-060 AP3	6.00	6.00	20.0	28.0	66.0	M7	●

(1) Used for standard thread size.

SCD-ACP5 (5xD)

Solid Carbide Drills with Coolant Holes, Drilling Depth 5xD



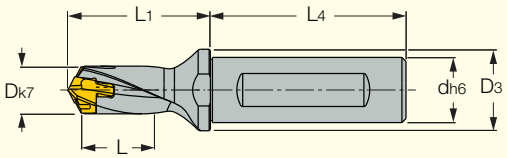
Designation	Dimensions						IC908
	D	d	L	L_3	L_2	$Th^{(1)}$	
SCD 030-023-060 ACP5	3.00	6.00	23.0	28.0	66.0	-	●
SCD 031-023-060 ACP5	3.10	6.00	23.0	28.0	66.0	-	●
SCD 032-023-060 ACP5	3.20	6.00	23.0	28.0	66.0	-	●
SCD 033-023-060 ACP5	3.30	6.00	23.0	28.0	66.0	M4	●
SCD 034-023-060 ACP5	3.40	6.00	23.0	28.0	66.0	-	●
SCD 035-023-060 ACP5	3.50	6.00	23.0	28.0	66.0	-	●
SCD 036-023-060 ACP5	3.60	6.00	23.0	28.0	66.0	-	●
SCD 037-023-060 ACP5	3.70	6.00	23.0	28.0	66.0	-	●
SCD 038-029-060 ACP5	3.80	6.00	29.0	36.0	74.0	-	●
SCD 039-029-060 ACP5	3.90	6.00	29.0	36.0	74.0	-	●
SCD 040-029-060 ACP5	4.00	6.00	29.0	36.0	74.0	-	●
SCD 041-029-060 ACP5	4.10	6.00	29.0	36.0	74.0	-	●
SCD 042-029-060 ACP5	4.20	6.00	29.0	36.0	74.0	M5	●
SCD 043-029-060 ACP5	4.30	6.00	29.0	36.0	74.0	-	●
SCD 044-029-060 ACP5	4.40	6.00	29.0	36.0	74.0	-	●
SCD 045-029-060 ACP5	4.50	6.00	29.0	36.0	74.0	-	●
SCD 046-029-060 ACP5	4.60	6.00	29.0	36.0	74.0	-	●
SCD 047-029-060 ACP5	4.70	6.00	29.0	36.0	74.0	-	●
SCD 048-035-060 ACP5	4.80	6.00	35.0	44.0	82.0	-	●
SCD 049-035-060 ACP5	4.90	6.00	35.0	44.0	82.0	-	●
SCD 050-035-060 ACP5	5.00	6.00	35.0	44.0	82.0	M6	●
SCD 051-035-060 ACP5	5.10	6.00	35.0	44.0	82.0	-	●
SCD 052-035-060 ACP5	5.20	6.00	35.0	44.0	82.0	-	●
SCD 053-035-060 ACP5	5.30	6.00	35.0	44.0	82.0	-	●
SCD 054-035-060 ACP5	5.40	6.00	35.0	44.0	82.0	-	●
SCD 055-035-060 ACP5	5.50	6.00	35.0	44.0	82.0	-	●
SCD 056-035-060 ACP5	5.60	6.00	35.0	44.0	82.0	-	●
SCD 057-035-060 ACP5	5.70	6.00	35.0	44.0	82.0	-	●
SCD 058-035-060 ACP5	5.80	6.00	35.0	44.0	82.0	-	●
SCD 059-035-060 ACP5	5.90	6.00	35.0	44.0	82.0	-	●
SCD 060-035-060 ACP5	6.00	6.00	35.0	44.0	82.0	-	●

(1) Used for standard thread size.

SUMOCHAM
CHAMDRILL LINE

DCN A-1.5D

Indexable Head Drills with Coolant Holes and One Flat Shanks, Drilling Depth 1.5xD



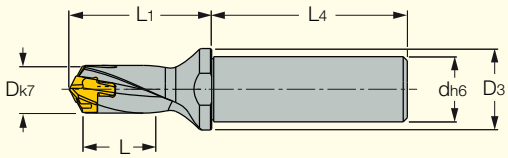
Designation	D min(1)	D max	L	d	D3	L1	L4	Po. Size	Clamping Key
DCN 060-009-12A-1.5D	6.00	6.40	9.0	12.00	16.00	23.0	45.0	6.0	K DCN 6-9.99-Y
DCN 065-010-12A-1.5D	6.50	6.90	10.0	12.00	16.00	24.1	45.0	6.5	K DCN 6-9.99-Y
DCN 070-011-12A-1.5D	7.00	7.40	11.0	12.00	16.00	25.1	45.0	7.0	K DCN 6-9.99
DCN 075-011-12A-1.5D	7.50	7.90	11.0	12.00	16.00	25.9	45.0	7.0	K DCN 6-9.99
DCN 080-012-12A-1.5D	8.00	8.40	12.0	12.00	16.00	27.9	45.0	8.0	K DCN 6-9.99

(1) Do not mount smaller drilling heads than specified range for drill body.

For inserts, see pages: FCP (C13) • ICM (C11) • ICP (C10) • ICP-2M (C12).

DCN R-1.5D

Indexable Head Drills with Coolant Holes and Cylindrical Shanks, Drilling Depth 1.5xD



Designation	D min(1)	D max	L	d	D3	L1	L4	Po. Size	Clamping Key
DCN 060-009-12R-1.5D	6.00	6.40	9.0	12.00	16.00	23.0	45.0	6.0	K DCN 6-9.99-Y
DCN 065-010-12R-1.5D	6.50	6.90	10.0	12.00	16.00	24.1	45.0	6.5	K DCN 6-9.99-Y
DCN 070-011-12R-1.5D	7.00	7.40	11.0	12.00	16.00	25.1	45.0	7.0	K DCN 6-9.99
DCN 075-011-12R-1.5D	7.50	7.90	11.0	12.00	16.00	25.9	45.0	7.0	K DCN 6-9.99
DCN 080-012-12R-1.5D	8.00	8.40	12.0	12.00	16.00	27.9	45.0	8.0	K DCN 6-9.99

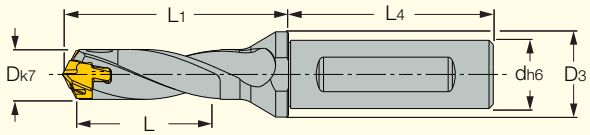
(1) Do not mount smaller drilling heads than specified range for drill body.

For inserts, see pages: FCP (C13) • ICM (C11) • ICP (C10) • ICP-2M (C12).

SUMOCHAM
CHAMDRILL LINE

DCN A-3D

Indexable Head Drills with Coolant Holes and One Flat Shanks, Drilling Depth 3xD



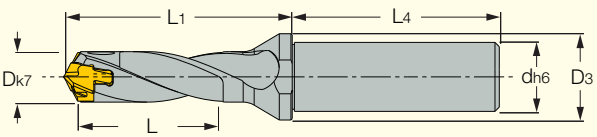
Designation	D min(1)	D max	L	d	D3	L1	L4	Po. Size	Clamping Key
DCN 060-018-12A-3D	6.00	6.40	18.0	12.00	16.00	32.0	45.0	6.0	K DCN 6-9.99-Y
DCN 065-020-12A-3D	6.50	6.90	20.0	12.00	16.00	33.8	45.0	6.5	K DCN 6-9.99-Y
DCN 070-021-12A-3D	7.00	7.40	21.0	12.00	16.00	35.6	45.0	7.0	K DCN 6-9.99
DCN 075-023-12A-3D	7.50	7.90	23.0	12.00	16.00	37.1	45.0	7.0	K DCN 6-9.99
DCN 080-024-12A-3D	8.00	8.40	24.0	12.00	16.00	39.4	45.0	8.0	K DCN 6-9.99

(1) Do not mount smaller drilling heads than specified range for drill body.

For inserts, see pages: ICP (C10) • ICM (C11) • ICP-2M (C12) • FCP (C13).

DCN R-3D

Indexable Head Drills with Coolant Holes and Cylindrical Shanks, Drilling Depth 3xD



Designation	D min(1)	D max	L	d	D3	L1	L4	Po. Size	Clamping Key
DCN 060-018-12R-3D	6.00	6.40	18.0	12.00	16.00	32.0	45.0	6.0	K DCN 6-9.99-Y
DCN 065-020-12R-3D	6.50	6.90	20.0	12.00	16.00	33.8	45.0	6.5	K DCN 6-9.99-Y
DCN 070-021-12R-3D	7.00	7.40	21.0	12.00	16.00	35.6	45.0	7.0	K DCN 6-9.99
DCN 075-023-12R-3D	7.50	7.90	23.0	12.00	16.00	37.1	45.0	7.0	K DCN 6-9.99
DCN 080-024-12R-3D	8.00	8.40	24.0	12.00	16.00	39.4	45.0	8.0	K DCN 6-9.99

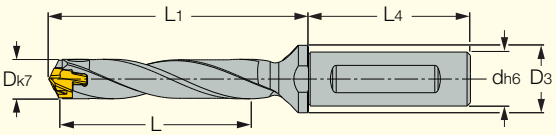
(1) Do not mount smaller drilling heads than specified range for drill body.

For inserts, see pages: FCP (C13) • ICM (C11) • ICP (C10) • ICP-2M (C12).

SUMOCHAM
CHAMDRILL LINE

DCN A-5D

Indexable Head Drills with Coolant Holes and One Flat Shanks, Drilling Depth 5xD



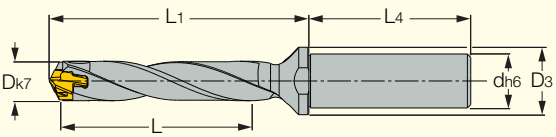
Designation	D min(1)	D max	L	d	D3	L1	L4	Po. Size	Clamping Key
DCN 060-030-12A-5D	6.00	6.40	30.0	12.00	16.00	44.0	45.0	6.0	K DCN 6-9.99-Y
DCN 065-033-12A-5D	6.50	6.90	33.0	12.00	16.00	46.8	45.0	6.5	K DCN 6-9.99-Y
DCN 070-035-12A-5D	7.00	7.40	35.0	12.00	16.00	49.6	45.0	7.0	K DCN 6-9.99
DCN 075-038-12A-5D	7.50	7.90	38.0	12.00	16.00	49.6	45.0	7.0	K DCN 6-9.99
DCN 080-040-12A-5D	8.00	8.40	40.0	12.00	16.00	55.4	45.0	8.0	K DCN 6-9.99

(1) Do not mount smaller drilling heads than specified range for drill body.

For inserts, see pages: FCP (C13) • ICM (C11) • ICP (C10) • ICP-2M (C12).

DCN R-5D

Indexable Head Drills with Coolant Holes and Cylindrical Shanks, Drilling Depth 5xD



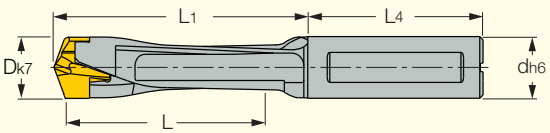
Designation	D min(1)	D max	L	d	D3	L1	L4	Po. Size	Clamping Key
DCN 060-030-12R-5D	6.00	6.40	30.0	12.00	16.00	44.0	45.0	6.0	K DCN 6-9.99-Y
DCN 065-033-12R-5D	6.50	6.90	33.0	12.00	16.00	46.8	45.0	6.5	K DCN 6-9.99-Y
DCN 070-035-12R-5D	7.00	7.40	35.0	12.00	16.00	49.6	45.0	7.0	K DCN 6-9.99
DCN 075-038-12R-5D	7.50	7.90	38.0	12.00	16.00	52.1	45.0	7.0	K DCN 6-9.99
DCN 080-040-12R-5D	8.00	8.40	40.0	12.00	16.00	55.4	45.0	8.0	K DCN 6-9.99

(1) Do not mount smaller drilling heads than specified range for drill body.

For inserts, see pages: FCP (C13) • ICM (C11) • ICP (C10) • ICP-2M (C12).

DCNS-3D

Indexable Head Drills without a Flange and One Flat Shank, Drilling Depth 3xD, Suitable for Chamfering Holders



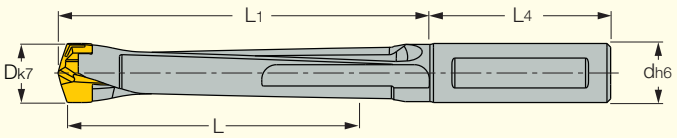
Designation	D min(1)	D max	L	d	L1	L4	Po. Size	Clamping Key
DCNS 075-022-080B-3D	7.50	7.90	22.5	8.00	34.2	36.0	7.0	K DCN 6-9.99
DCNS 080-024-080B-3D	8.00	8.40	24.0	8.00	34.7	36.0	8.0	K DCN 6-9.99

(1) Do not mount smaller drilling heads than specified range for drill body.

For inserts, see pages: FCP (C13) • ICM (C11) • ICP (C10) • ICP-2M (C12).

DCNS-5D

Indexable Head Drills without a Flange and One Flat Shank, Drilling Depth 5xD, Suitable for Chamfering Holders



Designation	D min(1)	D max	L	d	L1	L4	Po. Size	Clamping Key
DCNS 075-037-080B-5D	7.50	7.90	37.5	8.00	49.2	36.0	7.0	K DCN 6-9.99
DCNS 080-040-080B-5D	8.00	8.40	40.0	8.00	56.4	36.0	8.0	K DCN 6-9.99

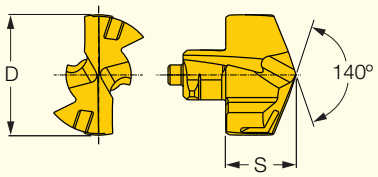
(1) Do not mount smaller drilling heads than specified range for drill body.

For inserts, see pages: FCP (C13) • ICM (C11) • ICP (C10) • ICP-2M (C12).

SUMOCHAM
CHAMDRILL LINE

ICP

Exchangeable DCN Drill Heads, for Carbon and Alloy Steel (ISO P Materials)

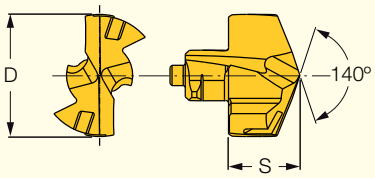


Designation	Dimensions D	S	Po. Size	IC908
ICP 060	6.00	4.00	6.0	●
ICP 061	6.10	4.00	6.0	●
ICP 062	6.20	4.00	6.0	●
ICP 063	6.30	4.00	6.0	●
ICP 0635	6.35	4.00	6.0	●
ICP 064	6.40	4.00	6.0	●
ICP 065	6.50	4.30	6.5	●
ICP 066	6.60	4.30	6.5	●
ICP 067	6.70	4.30	6.5	●
ICP 068	6.80	4.30	6.5	●
ICP 069	6.90	4.30	6.5	●
ICP 070	7.00	4.60	7.0	●
ICP 071	7.10	4.60	7.0	●
ICP 072	7.20	4.60	7.0	●
ICP 073	7.30	4.60	7.0	●
ICP 074	7.40	4.60	7.0	●
ICP 075	7.50	4.60	7.0	●
ICP 076	7.60	4.60	7.0	●
ICP 077	7.70	4.60	7.0	●
ICP 078	7.80	4.60	7.0	●
ICP 079	7.90	4.60	7.0	●
ICP 080	8.00	5.40	8.0	●
ICP 081	8.10	5.40	8.0	●
ICP 082	8.20	5.40	8.0	●
ICP 083	8.30	5.40	8.0	●
ICP 084	8.40	5.40	8.0	●

SUMOCHAM
CHAMDRILL LINE

ICM

Exchangeable DCN Drill Heads, for Stainless Steel and High Temperature Alloys
(ISO M Materials)

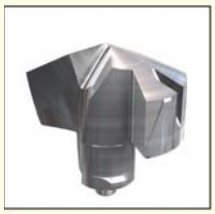


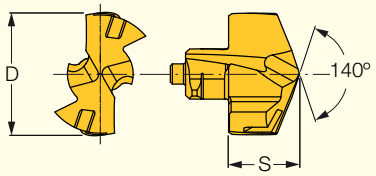
Designation	Dimensions D	S	Po. Size	Tough ↔ Hard IC908	IC907
ICM 060	6.00	4.00	6.0	●	
ICM 061	6.10	4.00	6.0	●	
ICM 062	6.20	4.00	6.0	●	
ICM 063	6.30	4.00	6.0	●	
ICM 0635	6.35	4.00	6.0	●	
ICM 064	6.40	4.00	6.0	●	
ICM 065	6.50	4.30	6.5	●	
ICM 066	6.60	4.30	6.5	●	
ICM 067	6.70	4.30	6.5	●	
ICM 068	6.80	4.30	6.5	●	
ICM 069	6.90	4.30	6.5	●	
ICM 070	7.00	4.60	7.0	●	
ICM 071	7.10	4.60	7.0	●	
ICM 072	7.20	4.60	7.0	●	
ICM 073	7.30	4.60	7.0	●	
ICM 074	7.40	4.60	7.0	●	
ICM 075	7.50	4.60	7.0	●	●
ICM 076	7.60	4.60	7.0	●	
ICM 077	7.70	4.60	7.0	●	
ICM 078	7.80	4.60	7.0	●	
ICM 079	7.90	4.60	7.0	●	
ICM 080	8.00	5.40	8.0	●	●
ICM 081	8.10	5.40	8.0	●	
ICM 082	8.20	5.40	8.0	●	
ICM 083	8.30	5.40	8.0	●	
ICM 084	8.40	5.40	8.0	●	

SUMOCHAM
CHAMDRILL LINE

ICP-2M

Double Margin Drilling Heads for DCN Drills for Machining Steel with High Surface Finish Results



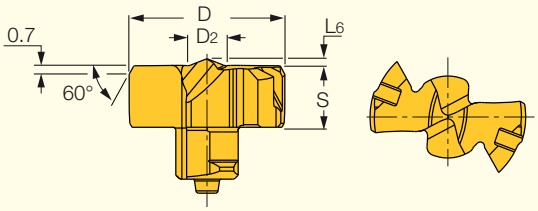


Designation	Dimensions D	S	Po. Size	IC908
ICP 060-2M	6.00	4.00	6.0	●
ICP 061-2M	6.10	4.00	6.0	●
ICP 062-2M	6.20	4.00	6.0	●
ICP 063-2M	6.30	4.00	6.0	●
ICP 0635-2M	6.35	4.00	6.0	●
ICP 064-2M	6.40	4.00	6.0	●
ICP 065-2M	6.50	4.30	6.5	●
ICP 066-2M	6.60	4.30	6.5	●
ICP 067-2M	6.70	4.30	6.5	●
ICP 068-2M	6.80	4.30	6.5	●
ICP 069-2M	6.90	4.30	6.5	●
ICP 070-2M	7.00	4.60	7.0	●
ICP 071-2M	7.10	4.60	7.0	●
ICP 072-2M	7.20	4.60	7.0	●
ICP 073-2M	7.30	4.60	7.0	●
ICP 074-2M	7.40	4.60	7.0	●
ICP 075-2M	7.50	4.60	7.0	●
ICP 076-2M	7.60	4.60	7.0	●
ICP 077-2M	7.70	4.60	7.0	●
ICP 078-2M	7.80	4.60	7.0	●
ICP 079-2M	7.90	4.60	7.0	●
ICP 080-2M	8.00	5.40	8.0	●
ICP 081-2M	8.10	5.40	8.0	●
ICP 082-2M	8.20	5.40	8.0	●
ICP 083-2M	8.30	5.40	8.0	●
ICP 084-2M	8.40	5.40	8.0	●

SUMOCHAM
CHAMDRILL LINE

FCP

Exchangeable Flat Bottom DCN Drill Heads, for Steel and Cast Iron (ISO P and ISO K Materials)



Designation	Dimensions					IC908
	D	D_2	S	L_6	Po. Size	
FCP 080	8.00	2.44	4.00	0.39	8.0	●
FCP 081	8.10	2.44	4.00	0.39	8.0	●
FCP 082	8.20	2.44	4.00	0.39	8.0	●
FCP 083	8.30	2.44	4.00	0.39	8.0	●
FCP 084	8.40	2.44	4.00	0.39	8.0	●

Single Flute Gundrill

ISCAR's gundrill consists of a single piece carbide head, a streamlined shank and a driver through which coolant flows to the working end where it is most needed.
Chips are evacuated along the V-shaped external flute.

Drilling Head

The carbide head is tapered on its length to reduce friction. The taper angle depends on the type of material to be drilled. For high precision drilling, the taper should be reduced to a minimum Note that when the head is resharpened, the diameter of the drill changes, affecting the hole tolerance.

Shank

The cross-section of the shank is V-shaped with coolant holes. It is made of hardened steel that is highly resistant to twisting (for information on carbide shanks, see next page). This cross-section provides the optimal conditions for twist resistance, coolant flow and chip evacuation.

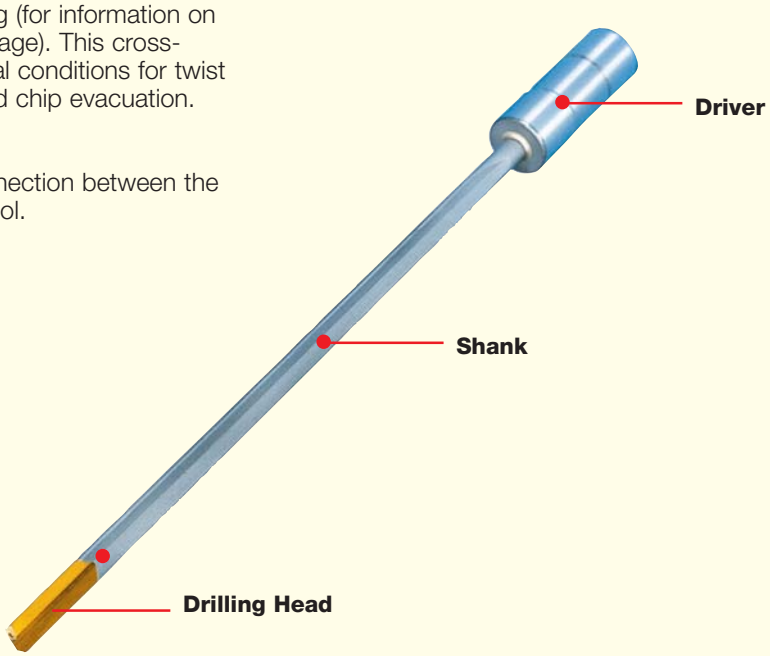
Driver

The driver ensures the connection between the gundrill and the machine tool.

Carbide Tipped Gundrill Range

Drill Diameter	Max. Flute Length
2.50 to 3.09	1100
3.10 to 5.99	2500
6.00 to 11.39	3000
11.40 to 40.00	3500

Overall length=flute length+driver length



Advantages

- Drilling precision of IT7 to IT9 tolerances can be reached.
- Excellent straightness and concentricity.
- Maintains high precision hole center alignment.
- Surface roughness of R 0.4-1.6mm is easily obtained.
- Reboring operations are often unnecessary.

ISCAR's advanced gundrill technology provides superior geometric and dimensional quality for both deep and shallow drilling.
The drills are available in the range of 2.5 to 40mm.

ISCAR Single Flute Solid Carbide Gundrills

Another type of gundrill is made with integral tip and shank, made of solid carbide with either a steel or a carbide driver.
These drills are designed for conventional machines, machining centers and lathes. This style of gundrill is available from 0.9-16.00mm and can be used on various types of materials. It provides superior rigidity and optimal coolant flow rates. As a result of its rigidity, up to 100% higher feed rate can be reached.
When using the small diameter drills, it is crucial to adhere closely to recommended drilling parameters.

Solid Carbide Gundrill Range

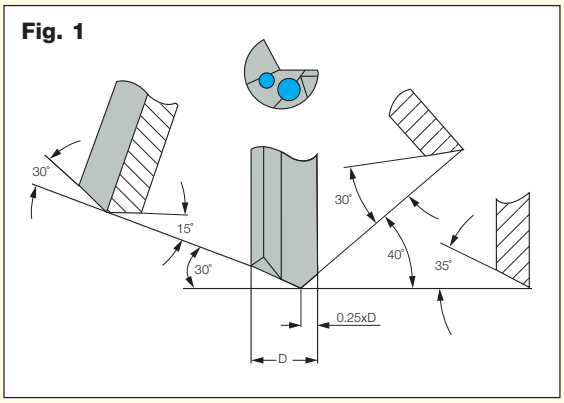
(with or without brazed steel driver)

Drill Diameter	Max. Flute Length
0.9 to 16.00	300

Standard Gundrill Head Sharpening Angles

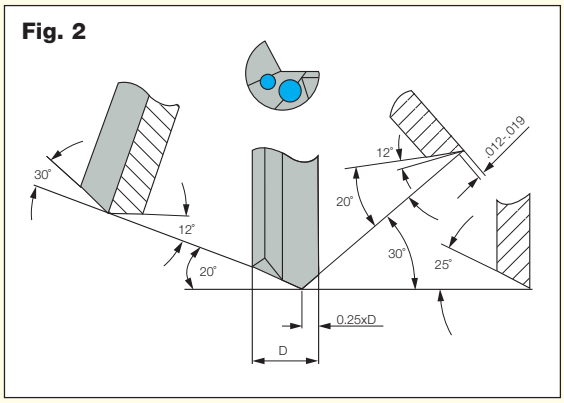
Subject to the required tolerance, cutting performance and desired chip shape, the following standard sharpening angles are recommended (shown in figures 1-3).

Fig. 1



Standard sharpening for 0.9 to 4mm drill diameters

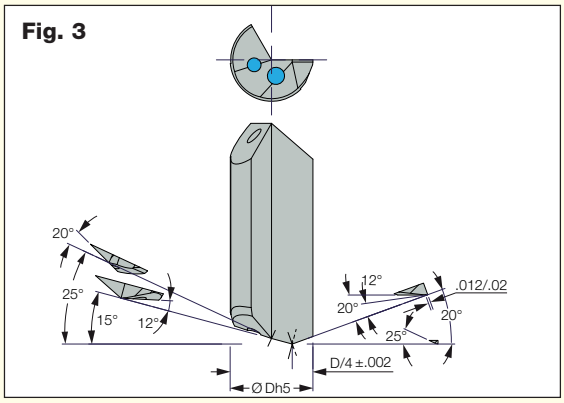
Fig. 2



Standard sharpening for 4 to 32mm drill diameters

Note: For special or semi-standard gundrills, special geometries will be offered to match the application.

Fig. 3

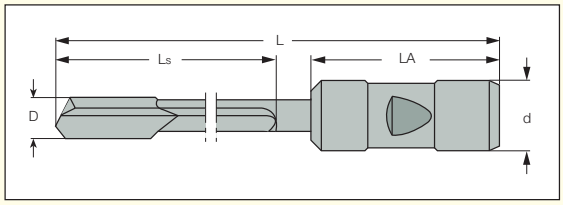


Standard sharpening for 32 to 40mm drill diameters

Gundrill Inquiry Form

1. Tool

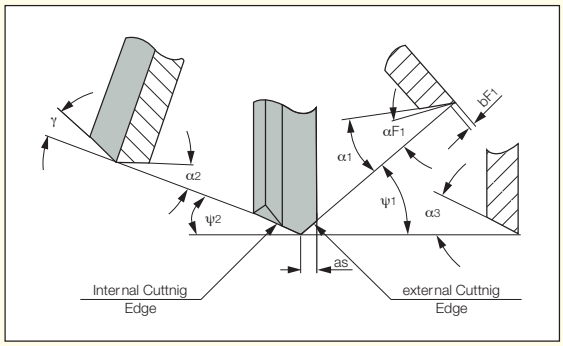
Quantity.....
Nominal diameter and tolerance .....
Please fill in dimensions on the sketch below.



Driver

Driver: for standard drivers please use codes from HOLE MAKING TOOLS Metric Catalog.
□ Code No.
□ Special, please attach sketch and specifications.

Grind:: Special (fill in the dimensions and angles below).



$\alpha_{1=}$ ..... $\alpha F_{1=}$ ..... $\psi_{1=}$ .....

$\alpha_{2=}$ ..... $bF_{1=}$ ..... $\psi_{2=}$ .....

$\alpha_{3=}$ ..... $as_{=}$ ..... $\gamma_{=}$ .....

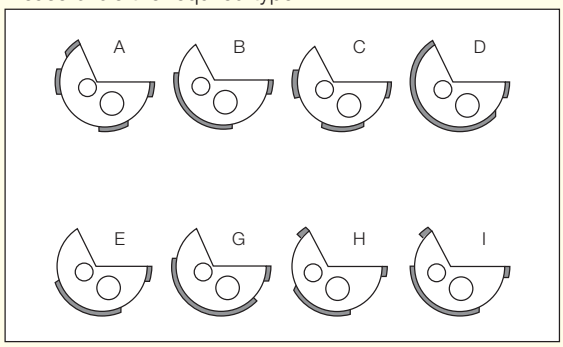
□ Standard

Coating:

□ TiN : TiCN : TiN+TiCN : TiAlN : Other
□ IC208 (TiN) : IC308 (TiCN) : IC508 (TiCN+TiN)
□ IC908 (TiAlN)

Type:

Please circle the required type.



2. Workpiece

(If possible, please attach a drawing)

2.1 Material

Material description (DIN material number or any other standard):

.....

Hardness and Properties:

.....

□ Short Chips □ Long Chips

2.2 Hole Type

□ Blind Hole □ Drilling into Pre-hole □ Angled Entry
□ Drilling into Solid □ Boring □ Angled Exit

Drilling Depth mm Hole Tolerance

2.3 Application:

Workpiece:: Stationary : Rotating
Tool : Stationary : Rotating

3. Machine

3.1 Technical Data

Machine Type.....
Power: ..... kW .....

3.2 Cutting Data:

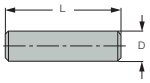
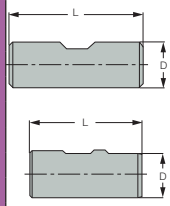
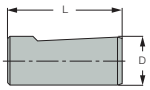
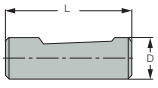
Cutting Speed V_c ..... m/min .....
Revolutions **N**min ..... RPM, **N**max ..... RPM
Feed **F**min..... mm/rev
Fmax..... mm/rev .....
Feed Rate **VF** ..... mm/min .....

Coolant:
□ Oil □ Soluble Oil : Other
Coolant Pressure: ..... Bar .....

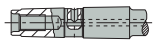
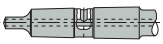
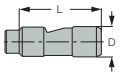
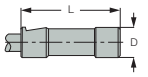
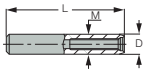
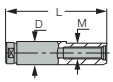
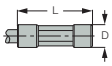
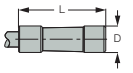
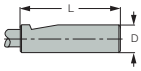
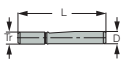
Sketch of drilling application

Note: It may be necessary to change several of the parameters that you indicated, based on our experience with your application.

Standard Gundrill Drivers for Machining Centers, Lathes, etc.

Driver Type	Drawing	DxL	Driver code	BRAZED GUNDRILL F = CYLINDRICAL TUBE: Max. cutting diameter	BRAZED GUNDRILL F = CYLINDRICAL TUBE: Equal or less than max. cutting diameter	BRAZED GUNDRILL F = CYLINDRICAL TUBE: More than maximum diameter	SOLID CARBIDE GUNDRILL: F = Straightening extension
Cylindrical DIN1835A DIN6535HA		4x28	N°1	2.749	10	20	18
		5x28	N°2	3.249	10	20	15
		6x36	N°3	4.249	10	20	14
		8x36	N°4	5.749	10	20	14
		10x40	N°5	7.299	10	20	15
		12x45	N°6	8.999	10	20	15
		.50x1.78”	N°94	9.699	10	20	15
		14x45	N°7	10.999	10	20	15
		16x48	N°8	12.399	10	20	15
		18x48	N°9	14.399	10	20	15
		.75x2.03”	N°95	14.899	10	20	15
		20x50	N°10	15.899	10	20	
		25x56	N°11	19.509	10	25	
		1.00x2.28”	N°96	19.509	10	25	
		1.25x2.28”	N°97	25.609	10	25	
		32x60	N°12	25.609	10	25	
		40x70	N°13	32.609	10	25	
		50x80	N°14	40	10	25	
		63x90	N°15	40	10	25	
Weldon DIN1835B DIN6535HB		6x36	N°16	2.749	10	20	15
		8x36	N°17	3.249	10	20	15
		10x40	N°18	7.299	10	20	15
		12x45	N°19	8.999	10	20	15
		.50x1.78”	N°98	9.699	10	20	15
		16x48	N°20	12.399	10	20	15
		18x48	N°21	14.399	10	20	15
		.75x2.03”	N°99	14.899	10	20	15
		20x50	N°22	15.899	10	20	15
		25x56	N°23	19.509	10	25	
		1.00x2.28”	N°100	19.509	10	25	
		1.25x2.28”	N°101	25.609	10	25	
		32x60	N°24	25.609	10	25	
		40x70	N°25	32.609	10	25	
		50x80	N°26	40	10	25	
		63x90	N°27	40	10	25	
Whistle Notch DIN1835E		6x36	N°28	2.749	10	20	
		8x36	N°29	3.249	10	20	
		10x40	N°30	7.299	10	20	15
		12x45	N°31	8.999	10	20	15
		16x48	N°32	12.399	10	20	15
		18x48	N°33	14.399	10	20	15
		20x50	N°34	15.899	10	20	15
		25x56	N°35	19.509	10	25	
		32x60	N°36	25.609	10	25	
		40x70	N°37	32.609	10	25	
Whistle Notch DIN6535HE		6x36	N°38	2.749	10	20	15
		8x36	N°39	3.249	10	20	15
		10x40	N°40	7.299	10	20	15
		12x45	N°41	8.999	10	20	15
		16x48	N°42	12.399	10	20	15
		18x48	N°43	14.399	10	20	15
		20x50	N°44	15.899	10	20	15

Standard Drivers for Gundrill Machines

Driver Type	Drawing	DxL	Driver code	BRAZED GUNDRILL F = CYLINDRICAL TUBE: Max. cutting diameter	BRAZED GUNDRILL F = CYLINDRICAL TUBE: Equal or less than max. cutting diameter	BRAZED GUNDRILL F = CYLINDRICAL TUBE: More than maximum diameter	SOLID CARBIDE GUNDRILL: F = Straightening extension
DIN228AK		CM1	N°45	9.599	10	20	
		CM2	N°46	14.599	10	20	
		CM3	N°47	21.499	10	25	
		CM4	N°48	29.499	10	25	
DIN228BK		CM1	N°49	9.599	10	20	
		CM2	N°50	14.599	10	20	
		CM3	N°51	21.499	10	25	
		CM4	N°52	29.499	10	25	
Central Clamping Surface 15°		6x30	N°53	2.749	10	20	20
		10x40	N°54	7.299	10	20	15
		16x45	N°55	12.399	10	20	
		.750x2.75”	N°56	14.899	10	20	
		25x70	N°57	19.509	10	25	
		1.00x2.75”	N°58	19.509	10	25	
		1.25x2.75”	N°59	25.609	10	25	
		1.50x2.75”	N°60	32.609	10	25	
Frontal Clamping Surface 15°		16x50	N°61	12.399	10	20	
Cylindrical with Thread		10x50 M6X0.5	N°62	7.299	10	20	15
		10x60 M6X0.5	N°63	7.299	10	20	
		.50x1.97” M6x0.5	N°64	8.999	10	20	15
		16x80 M10X1	N°65	12.399	10	20	15
		25x100 M16x1.5	N°66	19.509	10	25	
		36x120 M24x1.5	N°67	30.609	10	25	
VDI Design		10x68 M6x0.5	N°68	6.749	10	20	
		16x90 M10x1	N°69	10.799	10	20	15
		25x112 M16x1.5	N°70	19.509	10	25	
		36x135 M24x1.5	N°71	30.609	10	25	
Central Clamping Hexagonal		25x70	N°72	19.509	10	25	
		32x70	N°73	25.609	10	25	
Central Clamping Tapered		.50x1.50”	N°74	8.599	10	20	15
		16x70	N°75	12.099	10	20	15
		.75x2.75”	N°76	14.099	10	20	
		20x70	N°77	16.099	10	20	15
Frontal Clamping Surface 2°		.50x1.50”	N°78	9.699	10	20	
		.75x2.75”	N°79	14.899	10	20	
		1.00x2.75”	N°80	19.509	10	25	
		1.00x3.94”	N°81	19.509	10	25	
		1.25x2.75”	N°82	25.609	10	25	
		1.25x3.94”	N°83	25.609	10	25	
		1.50x2.75”	N°84	32.609	10	25	
		1.50x3.94”	N°85	32.609	10	25	
Trapezoidal Thread		16x112 Tr 16x1.5	N°86	13.599	10	20	
		20x126 Tr 20x2	N°87	17.099	10	20	
		28x126 Tr 28x2	N°88	25.599	10	25	
		36x162 Tr 36x2	N°89	32.599	10	25	
Spraymist Driver		16x40	N°90	12.399	10	20	
		25x50	N°91	19.509	10	25	
		35x60	N°92	26.599	10	25	

Drivers are available for dedicated and CNC machines, for any specified diameter and length.

Holder Designation Code Key

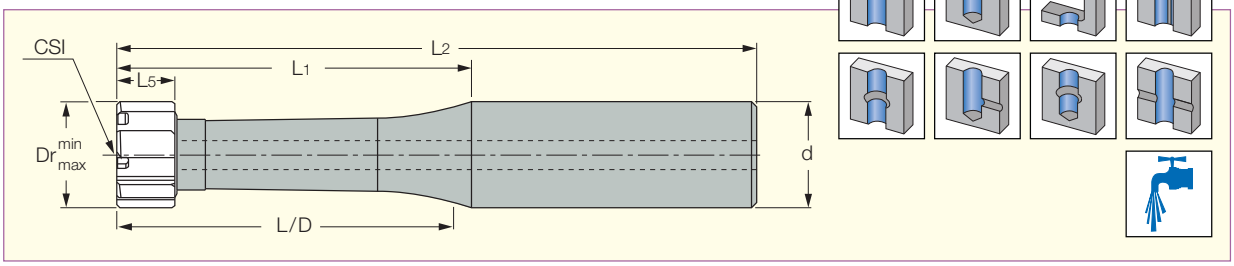
RM	-	BNT6	-	3D	-	16	-	C [1]	-	□ [2]
Reamer		Bayonet tool size		Functional length		Shank diameter		Shank type		Shank material

[1] C-cylindrical (default), W-Weldon (by request), M-Morse (by request)

[2] No letter-Steel (default), C-Carbide (by request), W-Heavy metal (by request)

RM-BNT-3D/5D/8D (Shanks)

Shanks for BAYO T-REAM Interchangeable Head Reamers



Designation	L/D	Dr(min)	Dr(max)	L5	L2	L1	d	CSI[1]
RM-BNT5-3D-16C	3.00	11.501	13.500	9.20	97.8	49.8	16.00	BN5
RM-BNT6-3D-16C	3.00	13.501	16.000	9.20	105.4	57.4	16.00	BN6
RM-BNT5-5D-16C	5.00	11.501	13.500	9.20	125.0	77.0	16.00	BN5
RM-BNT6-5D-16C	5.00	13.501	16.000	9.20	137.4	89.4	16.00	BN6
RM-BNT5-8D-16C	8.00	11.501	13.500	9.20	165.5	117.5	16.00	BN5
RM-BNT6-8D-16C	8.00	13.501	16.000	9.20	185.4	137.4	16.00	BN6

[1] Connection size

For inserts, see pages: RM-BN-H7LB (C20) • RM-BN-H7SA (C21).

Spare Parts

Designation	Bayonet Screw	Clamping Key
RM-BNT5-3D-16C	RM-BN5-SR	RM-BN5-K
RM-BNT6-3D-16C	RM-BN6-SR	RM-BN6-K
RM-BNT5-5D-16C	RM-BN5-SR	RM-BN5-K
RM-BNT6-5D-16C	RM-BN6-SR	RM-BN6-K
RM-BNT5-8D-16C	RM-BN5-SR	RM-BN5-K
RM-BNT6-8D-16C	RM-BN6-SR	RM-BN6-K

BAYO T-REAM

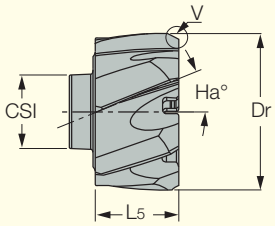
Designation Code Key

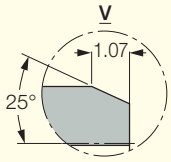
RM - BN6 - 16.000 - H7LB

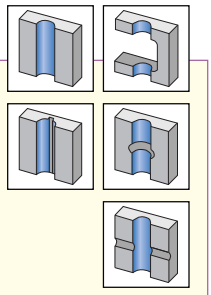
- RM — Reamer
- BN6 — Bayonet Size
- 16.000 — Hole diameter
- H7LB — IT Hole Tolerance; Flute Type (**S**traight, **L**eft); Front End Configuration Code

RM-BN-H7LB

Interchangeable Left-Hand Flute Solid Carbide Reaming Heads with a Quick Change for High Speed Reaming of Through Holes





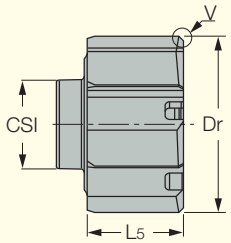


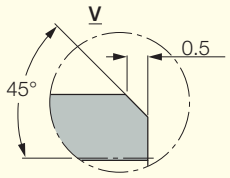
Designation	Dimensions					Tough ↔ Hard	
	CSI	D_r	L_5	Flute	H_a°	IC08	IC908
RM-BN5-11.501-H7LB	BN5	11.501	9.20	6	20.0	●	●
RM-BN5-12.000-H7LB	BN5	12.000	9.20	6	20.0	●	●
RM-BN5-13.000-H7LB	BN5	13.000	9.20	6	20.0	●	●
RM-BN5-13.500-H7LB	BN5	13.500	9.20	6	20.0	●	●
RM-BN6-13.501-H7LB	BN6	13.501	9.20	6	20.0	●	●
RM-BN6-14.000-H7LB	BN6	14.000	9.20	6	20.0	●	●
RM-BN6-15.000-H7LB	BN6	15.000	9.20	6	20.0	●	●
RM-BN6-16.000-H7LB	BN6	16.000	9.20	6	20.0	●	●

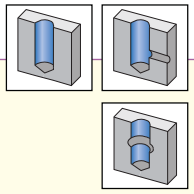
For tools, see page: RM-BNT-3D/5D/8D (Shanks) (C19).

RM-BN-H7SA

Interchangeable Straight Flute Solid Carbide Reaming Heads with Quick Change Bayonet Mechanism for High Speed Reaming



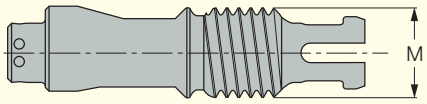




Designation	Dimensions CSI	Dr	L5	Flute	Tough ↔ Hard IC08	IC908
RM-BN5-11.501-H7SA	BN5	11.501	9.20	6	●	●
RM-BN5-12.000-H7SA	BN5	12.000	9.20	6	●	●
RM-BN5-13.000-H7SA	BN5	13.000	9.20	6	●	●
RM-BN5-13.500-H7SA	BN5	13.500	9.20	6	●	●
RM-BN6-13.501-H7SA	BN6	13.501	9.20	6	●	●
RM-BN6-14.000-H7SA	BN6	14.000	9.20	6	●	●
RM-BN6-15.000-H7SA	BN6	15.000	9.20	6	●	●
RM-BN6-16.000-H7SA	BN6	16.000	9.20	6	●	●

For tools, see page: RM-BNT-3D/5D/8D (Shanks) (C19).

Bayonet Screw



Designation	Head Diameter	Bayonet Size	M
RM-BN5-SR	11.501-13.500	BN5	M5
RM-BN6-SR	13.501-16.000	BN6	M6

Clamping Key

Designation	Head Diameter	Bayonet Size
RM-BN5-K	11.501-13.500	BN5
RM-BN6-K	13.501-16.000	BN6

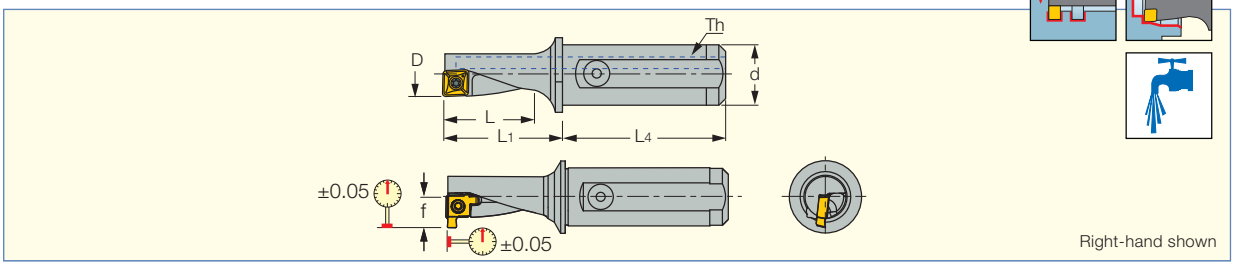
MULTIFUNCTION TOOLS

Member IMC Group

MULTIFUNCTION TOOLS

DRG-MF

Multifunction Drilling, Boring, Facing, External Turning and Internal Grooving Tools



Designation	D	D min	f	L	L1	L4	d	Th	Insert
DRG-MF-10R/L-2.25D-12A-05	10.00	12.00	7.1	22.5	27.5	42.0	12.00	G 1/16	XCMT 05...
DRG-MF-12R/L-2.25D-16A-06	12.00	14.50	8.5	27.0	33.0	45.0	16.00	G 1/8	XCMT 06...
DRG-MF-14R/L-2.25D-16A-07	14.00	16.50	9.5	31.5	38.5	45.0	16.00	G 1/8	XCMT 07...
DRG-MF-16R/L-2.25D-20A-08	16.00	19.00	11.1	36.0	44.0	50.0	20.00	G 1/8	XCMT 08...

• 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 page: XCMT-MF (D3) • XCMT-MG (D3).

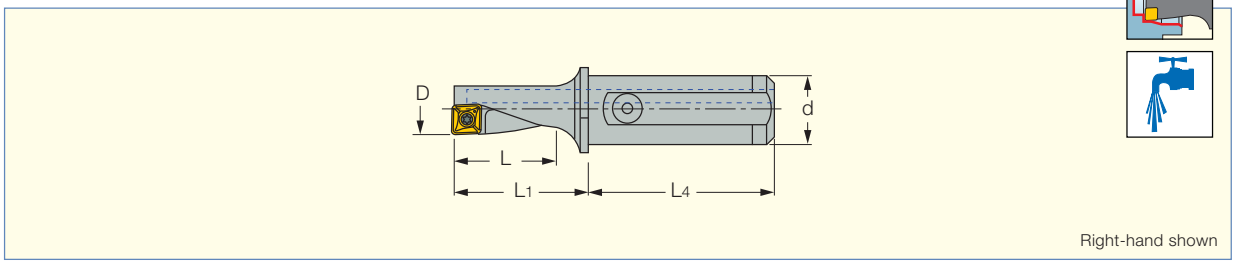
Spare Parts

Designation	Screw	Key
DRG-MF-10R/L-2.25D-12A-05	SR 20038/HG-P*	IP-6/5*
DRG-MF-12R/L-2.25D-16A-06	SR 22052/HG-P*	IP-7/5*
DRG-MF-14R/L-2.25D-16A-07	SR 25064/HG-P*	IP-8/5*
DRG-MF-16R/L-2.25D-20A-08	SR 30070/HG-P*	IP-9/151*

* Optional, should be ordered separately

DR-MF-2.25D

Multifunction Drilling, Boring, Facing and External Turning Tool



Designation	D	d	L	L1	L4
DR-MF-08R/L-2.25D-12A-04	8.00	12.00	18.0	22.5	42.0
DR-MF-10R/L-2.25D-12A-05	10.00	12.00	22.5	27.5	42.0
DR-MF-12R/L-2.25D-16A-06	12.00	16.00	27.0	33.0	45.0
DR-MF-14R/L-2.25D-16A-07	14.00	16.00	31.5	38.5	45.0
DR-MF-16R/L-2.25D-20A-08	16.00	20.00	36.0	44.0	50.0

• 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 have an internal coolant hole.

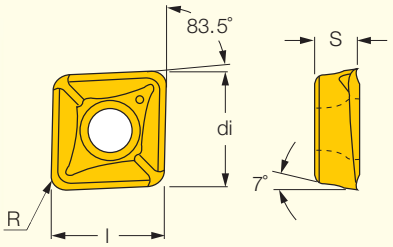
For inserts, see page: XCMT-MF (D3).

Spare Parts

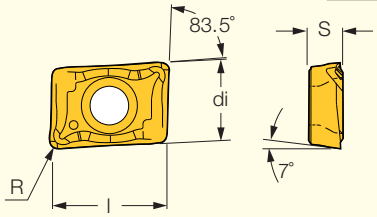
Designation	Screw	Key
DR-MF-08R/L-2.25D-12A-04	SR 18034/HG-P	IP-6/5
DR-MF-10R/L-2.25D-12A-05	SR 20038/HG-P	IP-6/5
DR-MF-12R/L-2.25D-16A-06	SR 22052/HG-P	IP-7/5
DR-MF-14R/L-2.25D-16A-07	SR 25064/HG-P	IP-8/5
DR-MF-16R/L-2.25D-20A-08	SR 30070/HG-P	IP-9/151

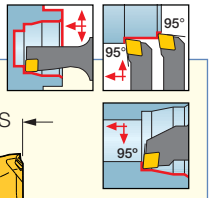
XCMT-MF

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



XCMT 040104R-MF



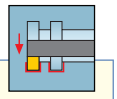


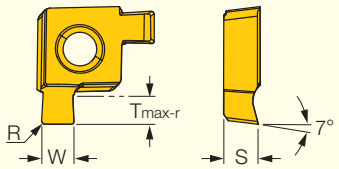
Designation	Dimensions di	l	S	R	IC908
XCMT 040104L-MF	4.40	6.40	1.70	0.40	●
XCMT 040104R-MF	4.40	6.40	1.70	0.40	●
XCMT 050204-MF	5.60	5.60	2.10	0.40	●
XCMT 060204-MF	6.38	6.38	2.38	0.40	●
XCMT 070304-MF	7.48	7.48	3.18	0.40	●
XCMT 080304-MF	8.44	8.44	3.18	0.40	●

For tools, see page: DRG-MF (D2) • DR-MF-2.25D(D2)

XCMT-MG

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





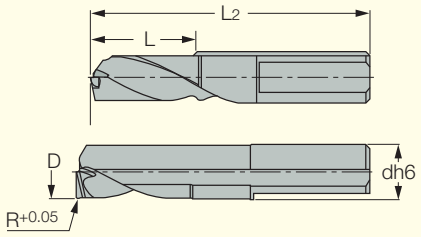
Designation	Dimensions W±0.02	Tmax-r	R	S	IC808G	Recommended Machining Data f groove (mm/rev)
XCMT 05R-201802-MG	2.00	1.80	0.20	2.28	●	0.02-0.10
XCMT 06R-202002-MG	2.00	2.00	0.20	2.65	●	0.02-0.12
XCMT 07R-252002-MG	2.50	2.00	0.20	3.41	●	0.03-0.14
XCMT 08R-252502-MG	2.50	2.50	0.20	3.50	●	0.03-0.17

For tools, see page: DRG-MF (D2).

MULTIFUNCTION TOOLS

PICCO-MF

Multifunction, Solid Carbide Tools for Drilling, Facing, Int. and Ext. Turning on Swiss and Small CNC Machines



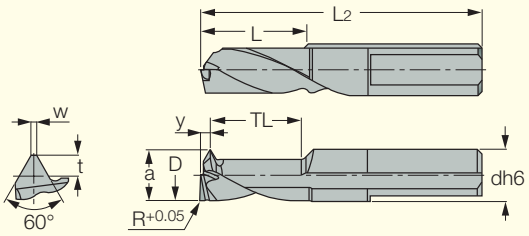
Right-hand shown

Designation	Dimensions D	L	L2	d	R	IC908
PICCO R-MF 6-3 L06	3.00	6.0	28.0	6.00	0.10	●
PICCO R/L-MF 6-4 L08	4.00	8.0	30.0	6.00	0.10	●
PICCO R/L-MF 6-4 L12	4.00	12.0	34.0	6.00	0.20	●
PICCO R/L-MF 6-5 L10	5.00	10.0	32.0	6.00	0.10	●
PICCO R/L-MF 6-5 L15	5.00	15.0	41.0	6.00	0.30	●
PICCO R/L-MF 6-6 L12	6.00	12.0	34.0	6.00	0.10	●
PICCO R/L-MF 6-6 L18	6.00	18.0	43.0	6.00	0.30	●
PICCO R/L-MF 8-7 L14	7.00	14.0	41.0	8.00	0.10	●
PICCO R/L-MF 8-7 L21	7.00	21.0	55.0	8.00	0.30	●
PICCO R/L-MF 8-8 L16	8.00	16.0	43.0	8.00	0.10	●
PICCO R/L-MF 8-8 L24	8.00	24.0	58.5	8.00	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.

PICCO-MFT

Solid Carbide Tools for Drilling, Facing, Int. and Ext. Turning and Threading on Swiss and Small CNC Machines



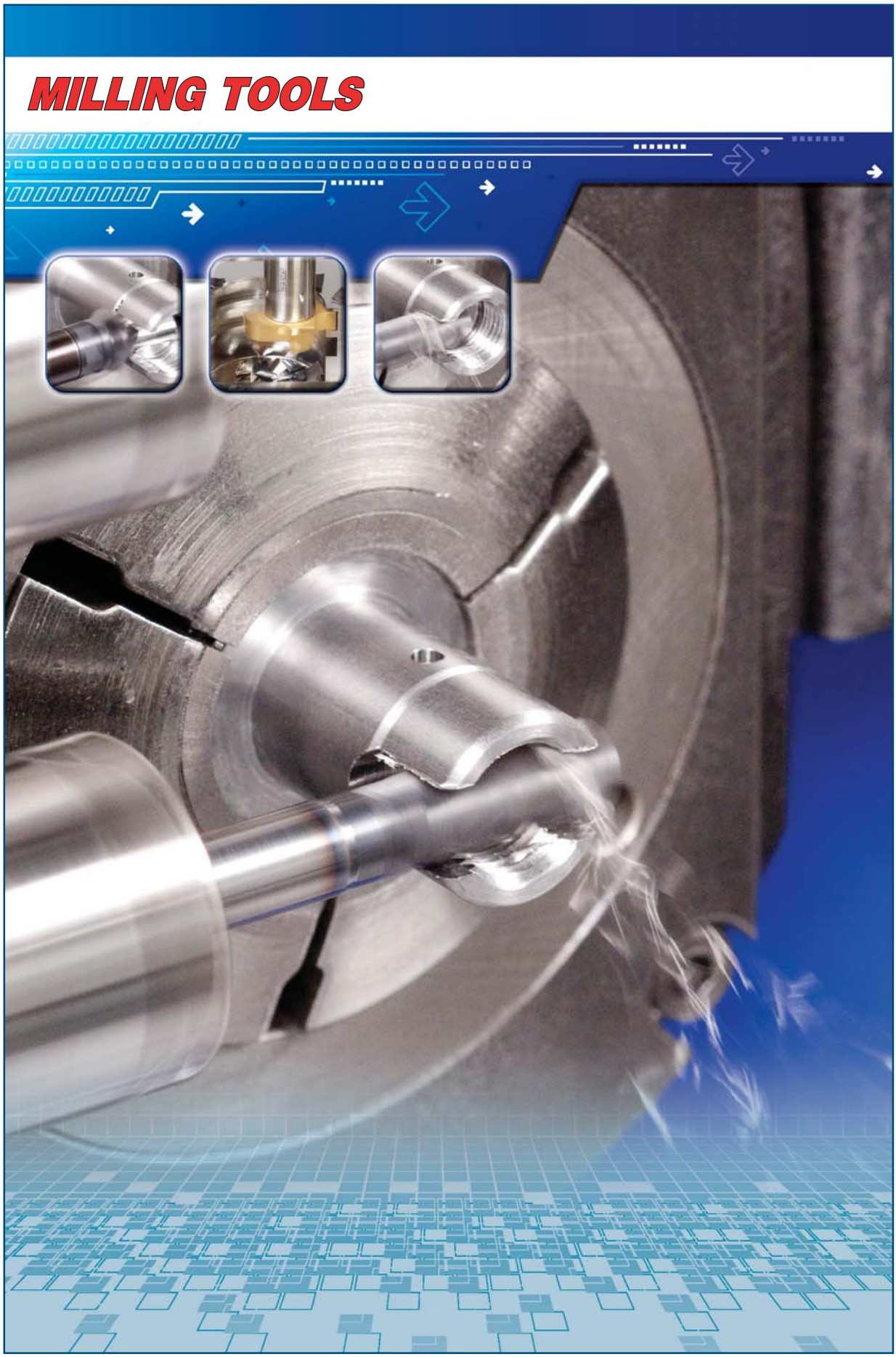
Right-hand shown

Designation	Dimensions D min	Pmin	Pmax	t	a	w	L	TL	L2	Y	d	R	IC908
PICCO R/L-MFT60 6-4 L08	4.00	0.50	0.75	0.46	3.90	0.06	8.0	7.3	30.0	1.3	6.00	0.10	●
PICCO R-MFT60 6-4 L12	4.00	0.50	0.75	0.46	3.90	0.06	12.0	11.6	34.0	1.2	6.00	0.20	●
PICCO R/L-MFT60 6-5 L10	5.00	0.50	1.00	0.61	4.90	0.06	10.0	9.0	32.0	1.4	6.00	0.10	●
PICCO R/L-MFT60 6-5 L15 (1)	5.00	0.50	1.00	0.61	4.90	0.06	15.0	14.4	37.0	1.4	6.00	0.30	●
PICCO R/L-MFT60 6-6 L18 (1)	6.00	0.50	1.00	0.61	5.90	0.06	18.0	17.3	43.0	1.4	6.00	0.30	●
PICCO R-MFT60 6-6 L12	6.00	0.50	1.00	0.61	5.90	0.06	12.0	11.0	34.0	1.4	6.00	0.10	●
PICCO R/L-MFT60 8-7 L14	7.00	0.75	1.25	0.76	6.90	0.09	14.0	13.0	41.0	1.5	8.00	0.10	●
PICCO R-MFT60 8-7 L21	7.00	0.75	1.25	0.76	6.90	0.09	21.0	20.0	55.0	1.5	8.00	0.30	●
PICCO R/L-MFT60 8-8 L16	8.00	0.90	1.50	0.92	7.90	0.11	16.0	15.0	43.0	1.5	8.00	0.10	●
PICCO R/L-MFT60 8-8 L24 (1)	8.00	0.90	1.50	0.92	7.90	0.11	24.0	23.0	57.0	1.5	8.00	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).

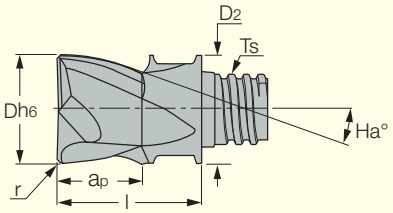
(1) Available on request.

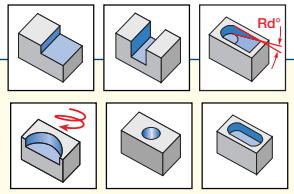
MILLING TOOLS



MM EA

Interchangeable Solid Carbide Slot Drill Milling Heads for Machining Aluminum





ALUMINUM

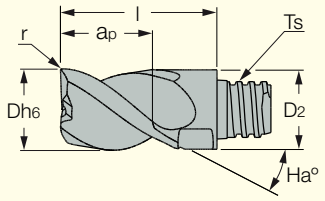
Designation	Dimensions D	Flute	a_p	r	T_s	D_2	l	H_a°	IC08	Recommended Machining Data f_z (mm/t)
MM EA080B05R0.5-2T05	8.00	2	5.00	0.50	T05	7.70	10.00	45.0	●	0.03-0.09
MM EA080B05R0.5-3T05	8.00	3	5.00	0.50	T05	7.70	10.00	45.0	●	0.03-0.09
MM EA100B07R0.5-2T06	10.00	2	7.00	0.50	T06	9.60	13.00	45.0	●	0.03-0.10
MM EA100B07R1.0-2T06	10.00	2	7.00	1.00	T06	9.60	13.00	45.0	●	0.03-0.10
MM EA100B06R0.5-3T06	10.00	3	6.00	0.50	T06	9.60	13.00	45.0	●	0.03-0.10
MM EA100B06R1.0-3T06	10.00	3	6.00	1.00	T06	9.60	13.00	45.0	●	0.03-0.10
MM EA120B09R0.5-2T08	12.00	2	9.00	0.50	T08	11.70	16.50	45.0	●	0.04-0.11
MM EA120B09R1.0-2T08	12.00	2	9.00	1.00	T08	11.70	16.50	45.0	●	0.04-0.11
MM EA120B08R0.5-3T08	12.00	3	8.00	0.50	T08	11.70	16.50	45.0	●	0.04-0.11
MM EA120B08R1.0-3T08	12.00	3	8.00	1.00	T08	11.70	16.50	45.0	●	0.04-0.11
MM EA120B08R3.0-3T08	12.00	3	8.00	3.00	T08	11.70	16.50	45.0	●	0.04-0.11
MM EA.500B37R000-2T08	12.70	2	9.50	0.00	T08	12.40	16.50	45.0	●	0.04-0.11
MM EA.500B37R020-2T08	12.70	2	9.50	0.50	T08	12.40	16.50	45.0	●	0.04-0.11
MM EA.500B31R031-3T08	12.70	3	8.00	0.80	T08	12.40	16.50	45.0	●	0.04-0.11
MM EA.500B31R062-3T08	12.70	3	8.00	1.60	T08	12.40	16.50	45.0	●	0.04-0.11
MM EA.500B31R094-3T08	12.70	3	8.00	2.40	T08	12.40	16.50	45.0	●	0.04-0.11
MM EA.500B31R125-3T08	12.70	3	8.00	3.20	T08	12.40	16.50	45.0	●	0.04-0.11

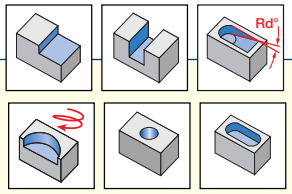
• For shanks, see pages E20-23 • For Clamping keys (should be ordered separately), tightening torques and clamping instructions, see page E20 • Do not apply lubricant to the threaded connection.

CHATTERFREE
MULTI-MASTER LINE

MM EA-CF

Interchangeable Solid Carbide Endmill Heads with Different Helix for Machining Aluminum





ALUMINUM

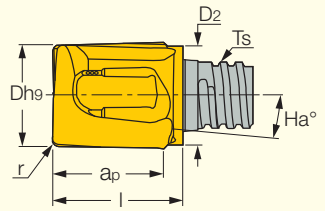
Designation	Dimensions D	Flute	a_p	r	T_s	D_2	l	H_a°	IC08	Recommended Machining Data f_z (mm/t)
MM EA080H08R0CF-4T05	8.00	4	8.00	0.00	T05	7.70	15.00	40.0	●	0.03-0.09
MM EA100H10R0CF-4T06	10.00	4	10.00	0.00	T06	9.60	19.00	40.0	●	0.03-0.10
MM EA120H12R0.2CF-3T08	12.00	3	12.00	0.20	T08	11.70	23.00	40.0	●	0.04-0.11
MM EA120H12R0CF-4T08	12.00	4	12.00	0.00	T08	11.70	23.00	40.0	●	0.04-0.11

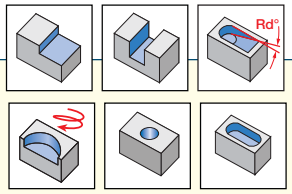
• For shanks, see pages E20-23 • For clamping keys (should be ordered separately), tightening torques and clamping instructions, see page E20
• Do not apply lubricant to the threaded connection.

MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

MM HC

Interchangeable Solid Carbide Slot Drill Milling Heads with Two 10° Helix Flutes





ECONOMICAL SOLUTION

Designation	Dimensions D	Flute	a_p	r	T_s	D_2	l	H_a°	T_m(1)	Tough ↔ Hard IC908	IC903	Recommended Machining Data f_z (mm/t)
MM HC078C08R0.2-2T05	7.80	2	7.70	0.20	T05	7.60	10.00	10.0	r0-2.0	●		0.03-0.09
MM HC080C08R0.4-2T05	8.00	2	7.70	0.40	T05	7.60	10.00	10.0	r0-2.0	●	●	0.03-0.09
MM HC080C08R1.0-2T05	8.00	2	7.70	1.00	T05	7.60	10.00	10.0	r0-2.0	●	●	0.03-0.09
MM HC080C08R2.0-2T05	8.00	2	7.70	2.00	T05	7.60	10.00	10.0	r0-2.0	●	●	0.03-0.09
MM HC098C10R0.3-2T06	9.80	2	9.00	0.30	T06	9.60	12.35	10.0	r0-3.0	●		0.03-0.10
MM HC100C10R0.4-2T06	10.00	2	9.00	0.40	T06	9.60	12.35	10.0	r0-3.0	●	●	0.03-0.10
MM HC100C10R1.0-2T06	10.00	2	9.00	1.00	T06	9.60	12.35	10.0	r0-3.0	●	●	0.03-0.10
MM HC100C10R2.0-2T06	10.00	2	9.00	2.00	T06	9.60	12.35	10.0	r0-3.0	●	●	0.03-0.10
MM HC117C13R0.3-2T08	11.70	2	10.00	0.30	T08	11.50	14.20	10.0	r0-3.0	●		0.04-0.11
MM HC120C13R0.4-2T08	12.00	2	10.00	0.40	T08	11.50	14.20	10.0	r0-3.0	●	●	0.04-0.11
MM HC120C13R1.0-2T08	12.00	2	10.00	1.00	T08	11.50	14.20	10.0	r0-3.0	●	●	0.04-0.11
MM HC120C13R2.0-2T08	12.00	2	10.00	2.00	T08	11.50	14.20	10.0	r0-3.0	●	●	0.04-0.11
MM HC.500C55R016-2T08	12.70	2	11.00	0.40	T08	11.50	15.25	10.0	r0-3.2	●		0.04-0.11
MM HC140C11R0.4-2T08	14.00	2	11.60	0.40	T08	11.50	15.05	10.0	r0-4.0	●		0.04-0.12

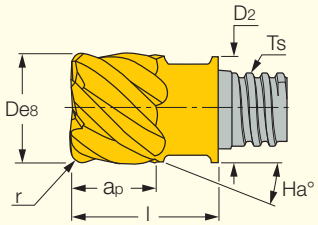
• For shanks, see pages E20-23 • For clamping keys (should be ordered separately), tightening torques and clamping instructions, see page E20
• Do not apply lubricant to the threaded connection.

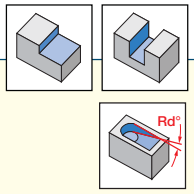
(1) Specially tailored radius range, available upon request.

MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

MM EC-6

6 Flute Interchangeable Solid Carbide Endmill Heads, 30° and 45° Helix, Various Corner Radii



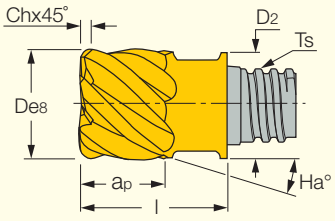


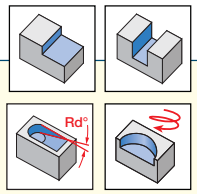
Designation	Dimensions D	Flute	ap	r	Ts	D2	l	Ha°	Rd°	IC908	Recommended Machining Data fz (mm/t)
MM EC080A05R0.5-6T05	8.00	6	5.00	0.50	T05	7.70	10.00	30.0	6.0	●	0.03-0.09
MM EC080A05R1.0-6T05	8.00	6	5.00	1.00	T05	7.70	10.00	30.0	6.0	●	0.03-0.09
MM EC080A05R1.5-6T05	8.00	6	5.00	1.50	T05	7.70	10.00	30.0	6.0	●	0.03-0.09
MM EC080B05R0.5-6T05	8.00	6	5.00	0.50	T05	7.70	10.00	45.0	3.0	●	0.03-0.10
MM EC080B05R1.0-6T05	8.00	6	5.00	1.00	T05	7.70	10.00	45.0	3.0	●	0.03-0.09
MM EC080B05R1.5-6T05	8.00	6	5.00	1.50	T05	7.70	10.00	45.0	3.0	●	0.03-0.09
MM EC100A07R0.5-6T06	10.00	6	7.00	0.50	T06	9.60	13.00	30.0	6.0	●	0.03-0.10
MM EC100A07R1.0-6T06	10.00	6	7.00	1.00	T06	9.60	13.00	30.0	6.0	●	0.03-0.10
MM EC100A07R1.5-6T06	10.00	6	7.00	1.50	T06	9.60	13.00	30.0	6.0	●	0.03-0.10
MM EC100B07R0.5-6T06	10.00	6	7.00	0.50	T06	9.60	13.00	45.0	3.0	●	0.04-0.10
MM EC100B07R000-6T06	10.00	6	7.00	0.00	T06	9.60	13.00	45.0	3.0	●	0.03-0.10
MM EC100B07R1.0-6T06	10.00	6	7.00	1.00	T06	9.60	13.00	45.0	3.0	●	0.04-0.10
MM EC100B07R1.5-6T06	10.00	6	7.00	1.50	T06	9.60	13.00	45.0	3.0	●	0.03-0.10
MM EC100B12R1.5-6T06	10.00	6	12.00	1.50	T06	9.60	19.00	45.0	3.0	●	0.04-0.10
MM EC120A09R0.5-6T08	12.00	6	9.00	0.50	T08	11.70	16.50	30.0	6.0	●	0.04-0.11
MM EC120A09R1.0-6T08	12.00	6	9.00	1.00	T08	11.70	16.50	30.0	6.0	●	0.04-0.11
MM EC120B09R0.5-6T08	12.00	6	9.00	0.50	T08	11.70	16.50	45.0	3.0	●	0.04-0.10
MM EC120B09R000-6T08	12.00	6	9.00	0.00	T08	11.70	16.50	45.0	3.0	●	0.04-0.11
MM EC120B09R1.0-6T08	12.00	6	9.00	1.00	T08	11.70	16.50	45.0	3.0	●	0.04-0.10
MM EC120B09R1.5-6T08	12.00	6	9.00	1.50	T08	11.70	16.50	45.0	3.0	●	0.04-0.11
MM EC.500A37R015-6T08	12.70	6	9.50	0.40	T08	12.40	16.50	30.0	6.0	●	0.04-0.11
MM EC.500A37R030-6T08	12.70	6	9.50	0.76	T08	12.40	16.50	30.0	6.0	●	0.04-0.11
MM EC.500B37R000-6T08	12.70	6	9.50	0.00	T08	12.40	16.50	45.0	5.0	●	0.04-0.11
MM EC.500B37R015-6T08	12.70	6	9.50	0.40	T08	12.40	16.50	45.0	5.0	●	0.04-0.11
MM EC.500B37R031-6T08	12.70	6	9.50	0.80	T08	12.40	16.50	45.0	5.0	●	0.04-0.11
MM EC.500B37R060-6T08	12.70	6	9.50	1.50	T08	12.40	16.50	45.0	5.0	●	0.04-0.11

• For shanks, see pages E20-23 • For clamping keys (should be ordered separately), tightening torques and clamping instructions, see page E20
• Do not apply lubricant to the threaded connection.

MM EC-D

6, 8, 10 Flute Interchangeable Solid Carbide Endmill Heads with 50° Helix, for Machining Hardened Steel





Designation	Dimensions D	Flute	ap	Ch	Ts	D2	l	Ha°	Rd°	IC903	Recommended Machining Data fz (mm/t)
MM EC080D05C01-6T05	8.00	6	5.00	0.10	T05	7.70	10.00	50.0	2.0	●	0.03-0.10
MM EC100D07C01-6T06	10.00	6	7.00	0.10	T06	9.60	13.00	50.0	2.0	●	0.03-0.10
MM EC120D09C01-6T08	12.00	6	9.00	0.10	T08	11.70	16.50	50.0	3.0	●	0.04-0.11

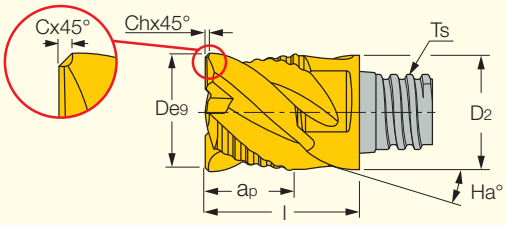
• For shanks, see pages E20-23 • For clamping keys (should be ordered separately), tightening torques and clamping instructions, see page E20
• Do not apply lubricant to the threaded connection.

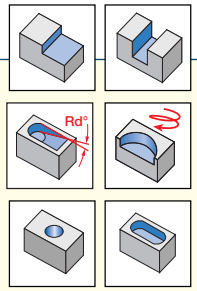
MULTI-MASTER • FINISHRED

INDEXABLE SOLID CARBIDE LINE — MULTI-MASTER LINE

MM EFS

Combination of Roughing and Finishing Interchangeable Solid Carbide Endmill Heads





Designation	Dimensions D	Flute	ap	Ch	Ts	D2	l	Ha°	IC908	Recommended Machining Data fz (mm/t)
MM EFS080B05-4T05	8.00	4	5.00	0.30	T05	7.70	10.00	45.0	●	0.03-0.08
MM EFS100B07-4T06	10.00	4	7.00	0.30	T06	9.60	13.00	45.0	●	0.03-0.09
MM EFS120B09-4T08	12.00	4	9.00	0.40	T08	11.70	16.50	45.0	●	0.04-0.10

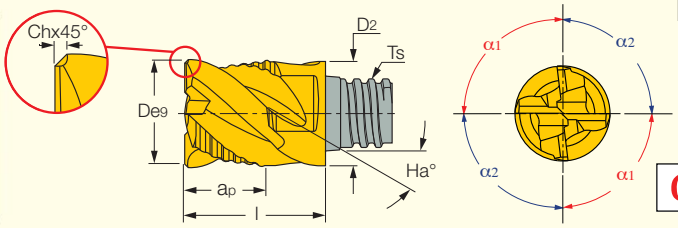
• For shanks, see pages E20-23 • For clamping keys (should be ordered separately), tightening torques and clamping instructions, see page E20
• Do not apply lubricant to the threaded connection.

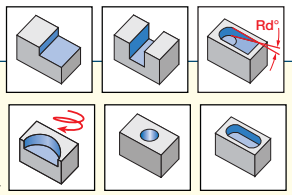
FINISHRED • CHATTERFREE

MULTI-MASTER LINE — MULTI-MASTER LINE

MM EFS-CF

4 Flute 38° Helix with Variable Pitch, Solid Carbide Heads
for Chatter Free Roughing and Finishing Applications





Designation	Dimensions D	Flute	ap	Ch	Ts	D2	l	Ha°	IC908	Recommended Machining Data fz (mm/t)
MM EFS060E05-4T05 CF	6.00	4	5.00	0.25	T05	7.70	10.00	38.0	●	0.03-0.08
MM EFS080E05-4T05 CF	8.00	4	5.00	0.3	T05	7.70	10.00	38.0	●	0.03-0.08
MM EFS100E07-4T06 CF	10.00	4	7.00	0.4	T06	9.60	13.00	38.0	●	0.03-0.09
MM EFS120E09-4T08 CF	12.00	4	9.00	0.5	T08	11.70	16.50	38.0	●	0.04-0.10
MM EFS.500E37-4T08 CF	12.70	4	9.50	0.5	T08	12.40	16.50	38.0	●	0.04-0.10

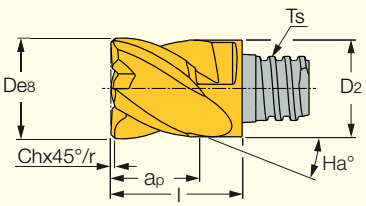
• For shanks, see pages E20-23 • For clamping keys (should be ordered separately), tightening torques and clamping instructions, see page E20
• Do not apply lubricant to the threaded connection.

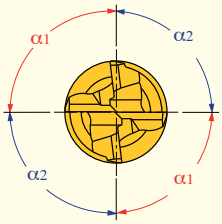
MULTI-MASTER • CHATTERFREE

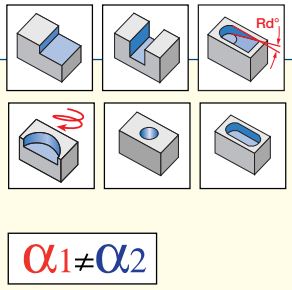
INDEXABLE SOLID CARBIDE LINE — MULTI-MASTER LINE

MM EC-CF

Interchangeable Solid Carbide Endmill Heads for Chatter Free Roughing and Finishing Operations







Designation	Dimensions D	Ch	r	Flute	a_p	T_s	D_2	l	H_a°	IC908	Recommended Machining Data f_z (mm/t)
MM EC080E05C3CF-4T05	8.00	0.3	-	4	5.00	T05	7.70	10.00	38.0	●	0.03-0.09
MM EC080E05R0CF-4T05	8.00	-	0.00	4	5.00	T05	7.70	10.00	38.0	●	0.03-0.09
MM EC080E05R05CF-4T05	8.00	-	0.50	4	5.00	T05	7.70	10.00	38.0	●	0.03-0.09
MM EC100E07C4CF-4T06	10.00	0.4	-	4	7.00	T06	9.60	13.00	38.0	●	0.03-0.10
MM EC100E07R05CF-4T06	10.00	-	0.50	4	7.00	T06	9.60	13.00	38.0	●	0.03-0.10
MM EC120E09C5CF-4T08	12.00	0.5	-	4	9.00	T08	11.70	16.50	38.0	●	0.04-0.11
MM EC120E09R05CF-4T08	12.00	-	0.50	4	9.00	T08	11.70	16.50	38.0	●	0.04-0.11
MM EC500E37C20CF-4T08	12.70	0.5	-	4	9.50	T08	12.40	16.50	38.0	●	0.04-0.11
MM EC500E37R0-CF-4T08	12.70	-	-	4	9.50	T08	12.40	16.50	38.0	●	0.04-0.11
MM EC500E37R15CF-4T08	12.70	-	0.39	4	9.50	T08	12.40	16.50	38.0	●	0.04-0.11
MM EC500E37R31CF-4T08	12.70	-	0.78	4	9.50	T08	12.40	16.50	38.0	●	0.04-0.11
MM EC500E37R62CF-4T08	12.70	-	1.56	4	9.50	T08	12.40	16.50	38.0	●	0.04-0.11

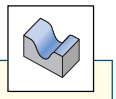
• For shanks, see pages E20-23 • For clamping keys (should be ordered separately), tightening torques and clamping instructions, see page E20
• Do not apply lubricant to the threaded connection.

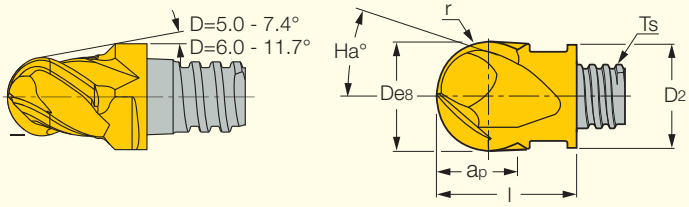
MULTI-MASTER

INDEXABLE SOLID CARBIDE LINE

MM EB

Interchangeable Solid Carbide Ball Nose Milling Heads





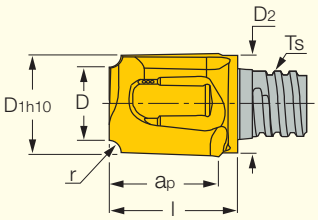
Designation	Dimensions D	Flute	a_p	r	T_s	D_2	l	H_a°	IC908
MM EB050E07-4T05	5.00	4	7.00	2.49	T05	8.00	15.00	38.0	●
MM EB060E05-4T05	6.00	4	5.00	2.99	T05	8.00	10.00	38.0	●
MM EB080A05-2T05	8.00	2	5.00	3.98	T05	7.70	10.00	30.0	●
MM EB080A05-4T05	8.00	4	5.00	3.98	T05	7.70	10.00	30.0	●
MM EB100A07-2T06	10.00	2	7.00	4.98	T06	9.60	13.00	30.0	●
MM EB100A07-4T06	10.00	4	7.00	4.98	T06	9.60	13.00	30.0	●
MM EB120A09-2T08	12.00	2	9.00	5.98	T08	11.70	16.50	30.0	●
MM EB120A09-4T08	12.00	4	9.00	5.98	T08	11.70	16.50	30.0	●
MM EB.500A37-2T08	12.70	2	9.50	6.33	T08	12.40	16.50	30.0	●
MM EB.500A37-4T08	12.70	4	9.50	6.33	T08	12.40	16.50	30.0	●

• For shanks, see pages E20-23 • For clamping keys (should be ordered separately), tightening torques and clamping instructions, see page E20
• Do not apply lubricant to the threaded connection.

MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

MM HR

Interchangeable 2 Flute Solid Carbide, Corner Rounding Milling Heads



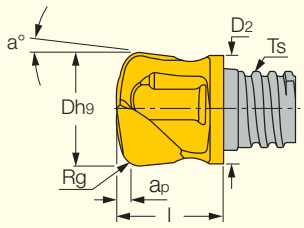
ECONOMICAL SOLUTION

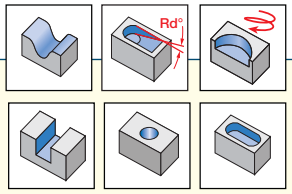
Designation	Dimensions									IC908
	D_1	r	Z	D	a_p	T_s	D_2	l	T_m[1]	
MM HR1.0/047-5.8-2T05	8.0	1.00	2	5.80	7.50	T05	7.60	10.60	r0.5-3.0	●
MM HR1.6/063-6.8-2T06	10.0	1.60	2	6.80	9.50	T06	9.60	12.50	r0.5-3.0	●
MM HR2.0/078-6.0-2T06	10.0	2.00	2	6.00	9.50	T06	9.60	12.50	r0.5-3.0	●
MM HR2.5/094-5.1-2T06	10.0	2.50	2	5.10	9.50	T06	9.60	12.50	r0.5-3.0	●
MM HR3.0/125-6.5-2T08	12.7	3.00	2	6.50	12.00	T08	11.50	15.60	r0.5-4.0	●
MM HR4.0/156-4.7-2T08	12.7	4.00	2	4.70	12.00	T08	11.50	15.60	r0.5-4.0	●

• For shanks, see pages E20-23 • For clamping keys (should be ordered separately), tightening torques and clamping instructions, see page E20
• Do not apply lubricant to the threaded connection.
[1] Specially tailored radius range upon request.

MM FF

2 Flute FEEDMILL Interchangeable Solid Carbide Heads,
for Milling at Very Fast Feed and Small D.O.C.





ECONOMICAL SOLUTION

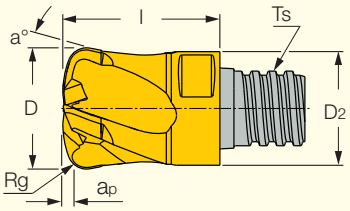
Designation	Dimensions D	Z	a_p	R_g(1)	T_s	D_2	l	a°	R_d°	Tough ↔ Hard IC908	IC903	Recommended Machining Data f_z (mm/t)
MM FF100R1.5-L12-2T06	10.00	2	0.60	2.00	T06	9.60	12.50	7	90.0	●		0.30-0.60
MM FF120R2.0-2T08	12.00	2	0.68	2.50	T08	11.50	11.10	7	90.0	●	●	0.50-1.00
MM FF500R08-L59-2T08	12.70	2	0.68	2.50	T08	11.50	15.00	5	90.0	●		0.50-1.00

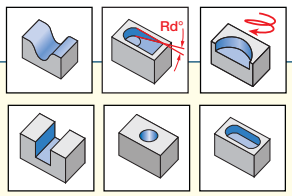
• For shanks, see pages E20-23 • For clamping keys (should be ordered separately), tightening torques and clamping instructions, see page E20
• Do not apply lubricant to the threaded connection.

(1) Radius for programming

MM EFF

4, 6 Flute Solid Carbide Heads for Milling at Very Fast Feed and Small D.O.C.





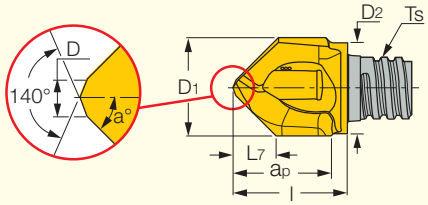
Designation	Dimensions D	Z	a_p	T_s	D_2	l	a°	R_g(2)	Tough ↔ Hard IC908	IC903	Recommended Machining Data f_z (mm/t)
MM EFF080T3R1.62-4T05	8.00	4	0.40	T05	7.50	10.00	7	1.62		●	0.12-0.48
MM EFF100T4R2.01-4T06	10.00	4	0.50	T06	9.50	13.00	7	2.01		●	0.16-0.57
MM EFF120T4R1.8-4T08H (1)	12.00	4	0.60	T08	11.50	16.50	7	1.80	●		0.16-0.67
MM EFF120T4R2.47-4T08	12.00	4	0.60	T08	11.50	16.50	7	2.47		●	0.16-0.67
MM EFF127T4R2.59-4T08	12.70	4	0.60	T08	12.20	16.50	7	2.59		●	0.16-0.67

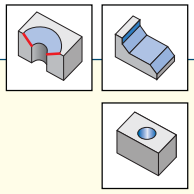
• For shanks, see pages E20-23 • For clamping keys (should be ordered separately), tightening torques and clamping instructions, see page E20
• Do not apply lubricant to the threaded connection.

(1) With a central coolant hole (2) Radius for programming

MM HCD

2 Flute Interchangeable Solid Carbide Heads, for Chamfering, Countersinking and Spot Drilling





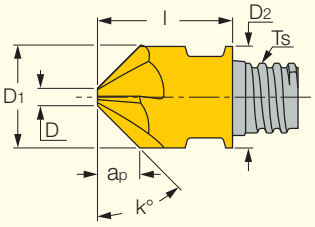
ECONOMICAL SOLUTION

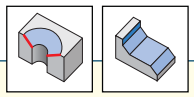
Designation	Dimensions D1	Dtol(3)	Z	ap	Ts	D2	l	a°	L7	D	IC908
MM HCD080-090-2T05 (1)	8.0	z9	2	7.00	T05	7.60	9.75	45	3.15	1.00	●
MM HCD083-090-2T05 (1)	8.3	z9	2	7.50	T05	7.60	10.00	45	3.56	1.00	●
MM HCD100-090-2T06 (1)	10.0	z9	2	9.00	T06	9.60	11.75	45	4.40	1.50	●
MM HCD100-060-2T06	10.0	h10	2	9.30	T06	9.60	11.75	30	7.60	1.50	●
MM HCD100-120-2T06	10.0	h10	2	9.50	T06	9.60	12.70	60	2.70	1.50	●
MM HCD104-090-2T06 (1)	10.4	z9	2	9.00	T06	9.60	11.75	45	4.60	1.50	●
MM HCD120-090-2T08 (1)	12.0	z9	2	12.00	T08	11.50	15.50	45	5.30	1.50	●
MM HCD120-060-2T08	12.0	h10	2	11.00	T08	11.50	15.40	30	9.24	1.50	●
MM HCD120-120-2T08	12.0	h10	2	11.65	T08	11.50	15.20	60	3.50	1.50	●
MM HCD124-090-2T08 (1)	12.4	z9	2	11.80	T08	11.50	15.50	45	5.50	1.50	●
MM HCD.500-080-2T08 (2)	12.7	z9	2	11.10	T08	12.20	15.50	40	6.80	1.50	●

• For shanks, see pages E20-23 • Clamping keys (should be ordered separately), tightening torques and clamping instructions, see page E20
• Do not apply lubricant to the threaded connection.
(1) May be used for F-type (fine) countersink according to DIN 74. (2) Countersink according to American National and British standard flat screws.
(3) D diameter tolerance

MM ECF

Interchangeable Solid Carbide Heads, for Chamfering and Countersinking



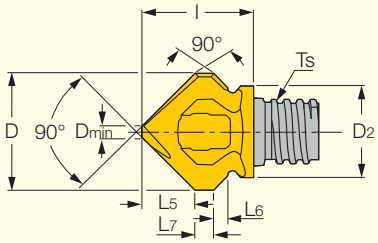


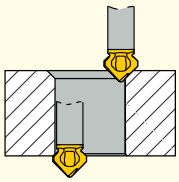
Designation	Dimensions D1	Z	D	ap	Ts	D2	l	K°	IC908
MM ECF45-100-4T06	10.0	4	1.95	4.00	T06	10.00	13.00	45.0	●
MM ECF60-100-4T06	10.0	4	1.60	7.30	T06	10.00	13.00	60.0	●
MM ECF45-120-4T08	12.0	4	1.95	5.00	T08	12.00	16.50	45.0	●
MM ECF45-.500-4T08	12.7	4	1.95	5.00	T08	12.70	16.50	45.0	●

• For shanks, see pages E20-23 • For clamping keys (should be ordered separately), tightening torques and clamping instructions, see page E20
• Do not apply lubricant to the threaded connection.

MM HDF

2 Flute Interchangeable Solid Carbide Heads, for Upper and Bottom Chamfering





ECONOMICAL SOLUTION

Designation	Dimensions D	Z	L5	L6	L7	D min	Ts	D2	l	IC908
MM HDF100-090-2T05	9.80	2	4.30	0.90	2.50	1.20	T05	7.60	10.80	●
MM HDF120-090-2T06	11.80	2	5.30	1.20	2.00	1.20	T06	9.30	11.20	●
MM HDF160-090-2T08	15.70	2	7.10	2.20	2.00	1.50	T08	11.50	14.00	●

• For shanks, see pages E20-23 • Clamping keys should be ordered separately • For tightening torques and clamping instructions, see page E20
• Do not apply lubricant to the threaded connection

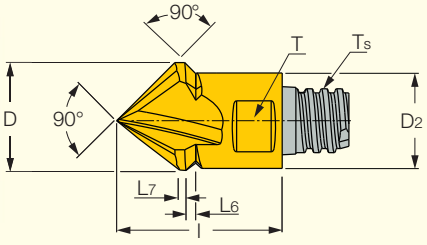
Spare Parts

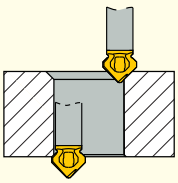
Designation	Wrench
MM HDF100-090-2T05	MM KEY 8X5*
MM HDF120-090-2T06	MM KEY 10X7*
MM HDF160-090-2T08	MM KEY 13X8*

* Optional, should be ordered separately

MM EDF

3 Flute Interchangeable Solid Carbide Heads, for Upper and Bottom Chamfering





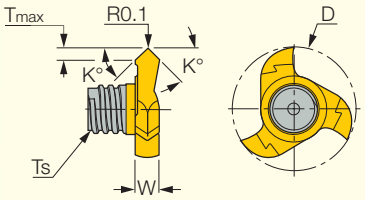
Designation	Dimensions D	D2	Z	L6	L7	l	Ts	IC908
MM EDF094-090-76-3T05	9.40	7.60	3	0.90	1.00	12.50	T05	●
MM EDF116-090-95-3T06	11.60	9.60	3	1.00	1.00	16.50	T06	●

• Suitable for pecking applications. • For shanks, see pages E20-23 • For clamping keys (should be ordered separately), tightening torques and clamping instructions, see page E20 • Do not apply lubricant to the threaded connection.

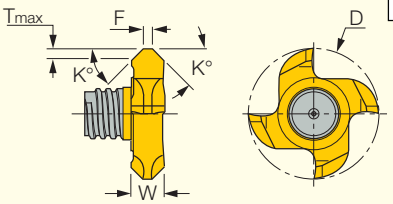
MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

MM GRIT-K/P-45A

Interchangeable Solid Carbide Small Diameter 45° Chamfering Heads



MM GRIT 18



MM GRIT 22

Designation	Dimensions D	K°	Tmax	F	W	Ts	Z	IC528
MM GRIT 18K-45A	17.70	45.0	1.40	-	3.40	T06	3	●
MM GRIT 18P-45A	17.70	45.0	1.40	-	3.40	T06	3	●
MM GRIT 22K-45A	21.70	45.0	1.70	1.50	5.50	T08	4	●
MM GRIT 22P-45A	21.70	45.0	1.70	1.50	5.50	T08	4	●

• Use carbide shanks for groove milling heads. • Each MM GRT shank is supplied with MM EGR clamping key. • Keys for other milling heads must be ordered separately. • MM GRT.. shanks serve mainly for MM GRIT.. slitting heads. • K-Type - For general steel machining. • P-Type - Positive geometry for soft and gummy materials.

Spare Parts

Designation	Clamping Key
MM GRIT 18K-45A	MM EGR 16-18*
MM GRIT 18P-45A	MM EGR 16-18*
MM GRIT 22K-45A	MM EGR 20-22*
MM GRIT 22P-45A	MM EGR 20-22*

* Optional, should be ordered separately

SOLIDDRILL • MULTI-MASTER

MM ECS

Centering Drill (DIN 332), Interchangeable Solid Carbide Heads

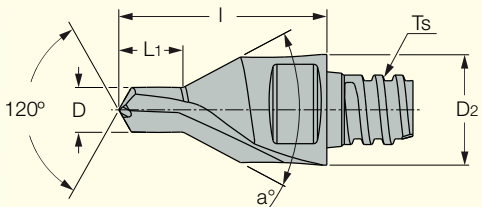


Fig. 1 Type A

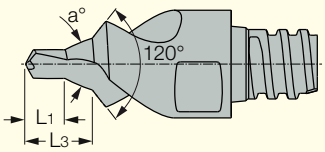


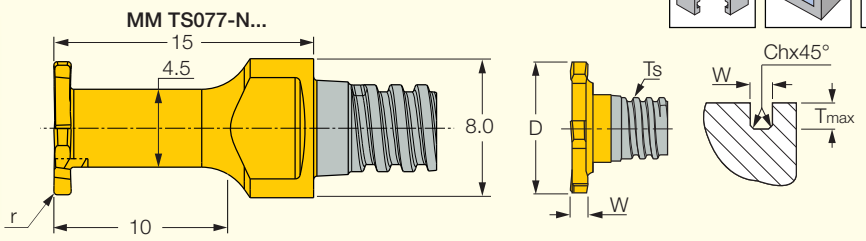
Fig. 2 Type B

Designation	Dimensions D	D2	l	L1	L2	Ts	a°	Fig.	IC908
MM ECS-A3.15X08-2T05	3.28	8.00	15.00	4.6	-	T05	60	1	●
MM ECS-A4.00X10-2T06	4.12	10.00	19.00	5.9	-	T06	60	1	●
MM ECS-A5.00X12-2T08	5.13	12.00	23.00	7.2	-	T08	60	1	●
MM ECS-B3.15X12-2T08	3.24	12.00	23.00	4.4	7.40	T08	60	2	●
MM ECS-B4.00X127-2T08	4.09	12.70	23.00	5.6	9.50	T08	60	2	●

• For shanks, see pages E20-23 • For clamping keys (should be ordered separately), tightening torques and clamping instructions, see page E20
• Do not apply lubricant to the threaded connection.

MM TS-N

Interchangeable Solid Carbide T-Slot Milling Heads



Designation	Dimensions D-0.05	W±0.02	Tmax	Z	r	Ch	Ts	Tough ↔ Hard IC328	IC928	IC908
MM TS077-N07A-4T05	7.70	0.70	1.20	4	0.20	-	T05			●
MM TS077-N08A-4T05	7.70	0.80	1.20	4	0.20	-	T05			●
MM TS077-N09A-4T05	7.70	0.90	1.20	4	0.20	-	T05			●
MM TS077-N10A-4T05	7.70	1.00	1.20	4	0.20	-	T05			●
MM TS077-N15A-4T05	7.70	1.50	1.20	4	0.20	-	T05			●
MM TS077-N20A-4T05	7.70	2.00	1.20	4	0.20	-	T05			●
MM TS105-N20D-06T04	10.50	2.00	2.00	6	0.40	-	T04		●	
MM TS.500-N062P-06T05	12.70	1.58	2.25	6	-	0.15	T05	●		
MM TS.500-N078P-06T05	12.70	1.98	2.25	6	-	0.15	T05	●		
MM TS135-N20P-06T05	13.50	2.00	2.65	6	-	0.20	T05	●		
MM TS135-N25P-06T05	13.50	2.50	2.65	6	-	0.20	T05	●		

• For tightening torques and clamping instructions, see page E20 • Do not apply lubricant to the threaded connection • For shanks, see pages E20-23

MM TS077-N...

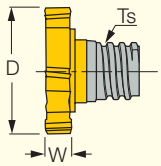
Spare Parts

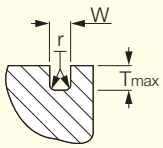
Designation	Key	Wrench
MM TS077-N07A-4T05		MM KEY 6X4*
MM TS077-N08A-4T05		MM KEY 6X4*
MM TS077-N09A-4T05		MM KEY 6X4*
MM TS077-N10A-4T05		MM KEY 6X4*
MM TS077-N15A-4T05		MM KEY 6X4*
MM TS077-N20A-4T05		MM KEY 6X4*
MM TS105-N20D-06T04	T-15/3*	
MM TS.500-N062P-06T05	T-20/3*	
MM TS.500-N078P-06T05	T-20/3*	
MM TS135-N20P-06T05	T-20/3*	
MM TS135-N25P-06T05	T-20/3*	

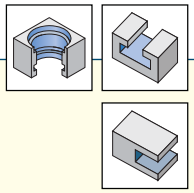
* Optional, should be ordered separately

MM TS-H

Interchangeable Solid Carbide T-Slot Milling Heads with Various Corner Radius







Designation	Dimensions						IC328
	$D_{-0.05}$	$W^{\pm 0.02}$	T_{max}	Z	r	T_s	
MM TS135-H30D-06T05	13.50	3.00	2.65	6	0.40	T05	●
MM TS135-H40D-06T05	13.50	4.00	2.65	6	0.40	T05	●
MM TS165-H40A-06T05	16.50	4.00	4.25	6	0.20	T05	●
MM TS160-H20D-06T06	16.00	2.00	3.00	6	0.40	T06	●
MM TS160-H30D-06T06	16.00	3.00	3.00	6	0.40	T06	●
MM TS160-H40D-06T06	16.00	4.00	3.00	6	0.40	T06	●
MM TS165-H20D-06T06	16.50	2.00	3.25	6	0.40	T06	●
MM TS165-H30D-06T06	16.50	3.00	3.25	6	0.40	T06	●
MM TS165-H40D-06T06	16.50	4.00	3.25	6	0.40	T06	●
MM TS195-H60A-06T06	19.50	6.00	4.45	6	0.20	T06	●
MM TS225-H60A-06T06	22.50	6.00	5.95	6	0.20	T06	●
MM TS195-H40D-06T08	19.50	4.00	3.45	6	0.40	T08	●
MM TS195-H50D-06T08	19.50	5.00	3.45	6	0.40	T08	●
MM TS195-H60D-06T08	19.50	6.00	3.45	6	0.40	T08	●
MM TS225-H40D-06T08	22.50	4.00	4.90	6	0.40	T08	●
MM TS225-H50D-06T08	22.50	5.00	4.95	6	0.40	T08	●
MM TS225-H60D-06T08	22.50	6.00	4.95	6	0.40	T08	●
MM TS225-H80D-06T08	22.50	8.00	4.95	6	0.40	T08	●
MM TS250-H50D-06T08	25.00	5.00	5.90	6	0.40	T08	●
MM TS250-H60D-06T08	25.00	6.00	5.90	6	0.40	T08	●
MM TS250-H80D-06T08	25.00	8.00	5.90	6	0.40	T08	●

• For tightening torques and clamping instructions, see page E20 • Do not apply lubricant to the threaded connection • For shanks, see pages E20-23

Spare Parts

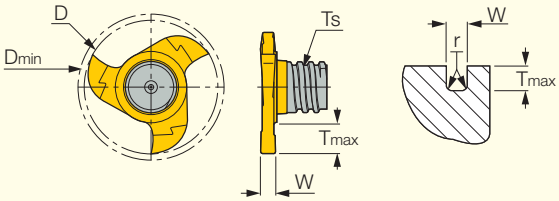
Designation	Key
MM TS135-H30D-06T05	T-20/3*
MM TS135-H40D-06T05	T-20/3*
MM TS165-H40A-06T05	T-20/3*
MM TS160-H20D-06T06	T-20/3*
MM TS160-H30D-06T06	T-25/3*
MM TS160-H40D-06T06	T-25/3*
MM TS165-H20D-06T06	T-20/3*
MM TS165-H30D-06T06	T-25/3*
MM TS165-H40D-06T06	T-25/3*
MM TS195-H60A-06T06	T-25/3*
MM TS225-H60A-06T06	T-25/3*
MM TS195-H40D-06T08	T-30/3 L*
MM TS195-H50D-06T08	T-30/3 L*
MM TS195-H60D-06T08	T-30/3 L*
MM TS225-H40D-06T08	T-40/3 L*
MM TS225-H50D-06T08	T-40/3 L*
MM TS225-H60D-06T08	T-40/3 L*
MM TS225-H80D-06T08	T-40/3 L*
MM TS250-H50D-06T08	T-50/3 L*
MM TS250-H60D-06T08	T-50/3 L*
MM TS250-H80D-06T08	T-50/3 L*

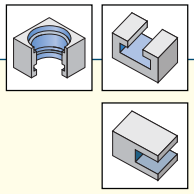
* Optional, should be ordered separately

MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

MM GRIT-16K/P,18K/P

Interchangeable Solid Carbide Small Diameter Groove Milling Heads





Designation	Dimensions							IC528
	D	W±0.02	Tmax	Z	r	D min(2)	Ts	
MM GRIT 16K-1.50-0.10	15.70	1.50	2.80	3	0.10	16.00	T06	●
MM GRIT 16P-1.50-0.10	15.70	1.50	2.80	3	0.10	16.00	T06	●
MM GRIT 16K-1.57-0.20	15.70	1.57	2.80	3	0.20	16.00	T06	●
MM GRIT 16K-2.00-0.20	15.70	2.00	2.80	3	0.20	16.00	T06	●
MM GRIT 16P-2.20-1.10	15.70	2.20	2.80	3	1.10	16.00	T06	●
MM GRIT 16K-2.39-0.20	15.70	2.39	2.80	3	0.20	16.00	T06	●
MM GRIT 16K-2.50-0.20	15.70	2.50	2.80	3	0.20	16.00	T06	●
MM GRIT 16K-3.00-0.20	15.70	3.00	2.80	3	0.20	16.00	T06	●
MM GRIT 16P-3.00-0.20	15.70	3.00	2.80	3	0.20	16.00	T06	●
MM GRIT 16K-3.17-0.20	15.70	3.17	2.80	3	0.20	16.00	T06	●
MM GRIT 18K-1.20-0.05 (1)	17.70	1.20	3.80	3	0.05	18.00	T06	●
MM GRIT 18P-1.20-0.60	17.70	1.20	3.80	3	0.60	18.00	T06	●
MM GRIT 18K-1.40-0.05 (1)	17.70	1.40	3.80	3	0.05	18.00	T06	●
MM GRIT 18K-1.50-0.10	17.70	1.50	3.80	3	0.10	18.00	T06	●
MM GRIT 18K-1.57-0.20	17.70	1.57	3.80	3	0.20	18.00	T06	●
MM GRIT 18K-1.70-0.05 (1)	17.70	1.70	3.80	3	0.05	18.00	T06	●
MM GRIT 18K-2.00-0.20	17.70	2.00	3.80	3	0.20	18.00	T06	●
MM GRIT 18P-2.00-1.00	17.70	2.00	3.80	3	1.00	18.00	T06	●
MM GRIT 18P-2.20-1.10	17.70	2.20	3.80	3	1.10	18.00	T06	●
MM GRIT 18K-2.39-0.20	17.70	2.39	3.80	3	0.20	18.00	T06	●
MM GRIT 18K-2.50-0.20	17.70	2.50	3.80	3	0.20	18.00	T06	●
MM GRIT 18K-3.00-0.20	17.70	3.00	3.80	3	0.20	18.00	T06	●
MM GRIT 18P-3.00-1.50	17.70	3.00	3.80	3	1.50	18.00	T06	●
MM GRIT 18K-3.17-0.20	17.70	3.17	3.80	3	0.20	18.00	T06	●

• Recommended for O-rings and retaining rings. • MM EGR clamping key is supplied with each MM GRT... shank. • Modification options on request. • Do not apply lubricant to the threaded connection. • Tightening torque: 1000 N x cm • For clamping instructions, see page E20 • For shanks, see pages E20-23
• K-For general steel machining. • P-Positive geometry for soft and gummy materials.

(1) For circle clips according to DIN 471/472 and ANSI B27.7M (2) Minimum bore diameter

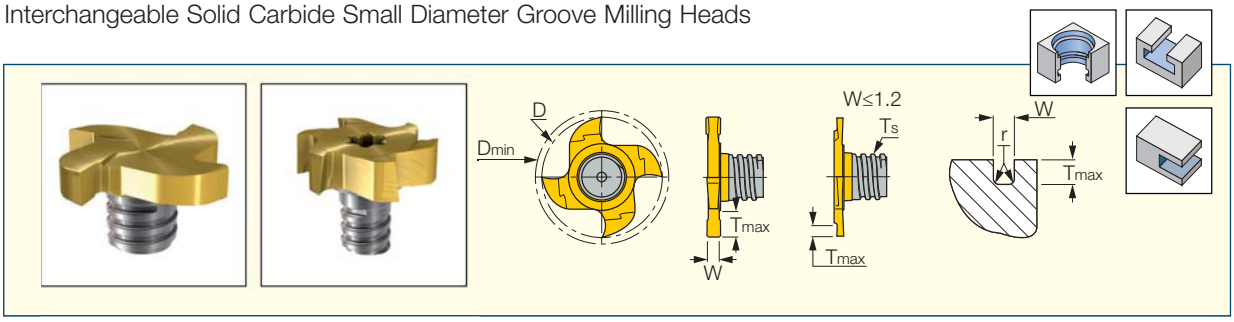
Spare Parts

Designation	Clamping Key
MM GRIT-16K/P,18K/P	MM EGR 16-18*

* Optional, should be ordered separately

MM GRIT-22K/P

Interchangeable Solid Carbide Small Diameter Groove Milling Heads



Designation	Dimensions D	W±0.02	Tmax	Z	r	D min(2)	Ts	IC528
MM GRIT 22K-0.76-0.00 (1)	21.70	0.76	1.50	4	0.00	22.00	T08	●
MM GRIT 22K-0.86-0.00 (1)	21.70	0.86	1.70	4	0.00	22.00	T08	●
MM GRIT 22K-0.96-0.00 (1)	21.70	0.96	1.90	4	0.00	22.00	T08	●
MM GRIT 22K-1.00-0.05	21.70	1.00	2.00	4	0.05	22.00	T08	●
MM GRIT 22P-1.00-0.05	21.70	1.00	2.00	4	0.05	22.00	T08	●
MM GRIT 22K-1.20-0.05 (1)	21.70	1.20	4.50	4	0.05	22.00	T08	●
MM GRIT 22K-1.40-0.05 (1)	21.70	1.40	4.50	4	0.05	22.00	T08	●
MM GRIT 22K-1.57-0.00	21.70	1.57	4.50	4	0.00	22.00	T08	●
MM GRIT 22K-1.70-0.10 (1)	21.70	1.70	4.50	4	0.10	22.00	T08	●
MM GRIT 22P-1.70-0.10 (1)	21.70	1.70	4.50	4	0.10	22.00	T08	●
MM GRIT 22K-1.95-0.20 (1)	21.70	1.95	4.50	4	0.20	22.00	T08	●
MM GRIT 22K-2.00-0.20	21.70	2.00	4.50	4	0.20	22.00	T08	●
MM GRIT 22P-2.00-0.20	21.70	2.00	4.50	4	0.20	22.00	T08	●
MM GRIT 22K-2.25-0.20 (1)	21.70	2.25	4.50	4	0.20	22.00	T08	●
MM GRIT 22K-2.39-0.20	21.70	2.39	4.50	4	0.20	22.00	T08	●
MM GRIT 22K-2.50-0.20	21.70	2.50	4.50	4	0.20	22.00	T08	●
MM GRIT 22P-2.50-0.20	21.70	2.50	4.50	4	0.20	22.00	T08	●
MM GRIT 22K-2.75-0.20 (1)	21.70	2.75	4.50	4	0.20	22.00	T08	●
MM GRIT 22K-3.00-0.20	21.70	3.00	4.50	4	0.20	22.00	T08	●
MM GRIT 22P-3.00-0.20	21.70	3.00	4.50	4	0.20	22.00	T08	●
MM GRIT 22K-3.17-0.20	21.70	3.17	4.50	4	0.20	22.00	T08	●
MM GRIT 22K-3.25-0.20 (1)	21.70	3.25	4.50	4	0.20	22.00	T08	●
MM GRIT 22P-3.81-0.20	21.70	3.81	4.50	4	0.20	22.00	T08	●
MM GRIT 22K-4.00-0.20	21.70	4.00	4.50	4	0.20	22.00	T08	●
MM GRIT 22P-3.98-0.20	21.70	3.98	4.50	4	0.20	22.00	T08	●
MM GRIT 22P-4.00-0.20	21.70	4.00	4.50	4	0.20	22.00	T08	●
MM GRIT 22P-4.00-2.00	21.70	4.00	4.50	4	2.00	22.00	T08	●
MM GRIT 22K-4.25-0.20 (1)	21.70	4.25	4.50	4	0.20	22.00	T08	●
MM GRIT 22K-4.25-1.20 (1)	21.70	4.25	4.50	4	1.20	22.00	T08	●
MM GRIT 22K-4.75-0.20	21.70	4.75	4.50	4	0.20	22.00	T08	●
MM GRIT 22K-5.25-0.20 (1)	21.70	5.25	4.50	4	0.20	22.00	T08	●
MM GRIT 22K-6.00-3.00	21.70	6.00	4.50	4	3.00	22.00	T08	●

• Recommended for O-rings and retaining rings • MM EGR 20-22 clamping keys are supplied with each MM GRT... shank • Tightening torque for MM GRIT 22: 1500 Nxcm, for MM GRIT 28: 2800 Nxcm • 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 page E20 • For shanks, see pages E20-23

(1) For circle clips according to DIN471/472 and ANSI B27.7M (2) Minimum bore diameter.

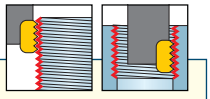
Spare Parts

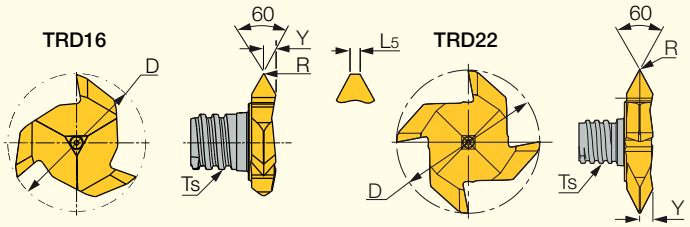
Designation	Clamping Key
MM GRIT 22K/P	MM EGR 20-22*

• Optional, should be ordered separately

MM TRD-M

Interchangeable Solid Carbide Milling Heads, for 60° Partial Profile Thread Milling





Designation	Dimensions											IC528
	D	Z	Pmin	Pmax	R	L5	Y	Ts	Th(1)	D min	Standard	
MM TRD16-M60-05P-3T06	15.70	3	0.50	2.00	- (2)	0.05	1.2	T06	M20	19.05	ISO 68, DIN 13	●
MM TRD16-M60-15P-3T06	15.70	3	1.50	2.00	0.05	-	1.2	T06	M22	19.05	ISO 68, DIN 13	●
MM TRD22-M60-30P-4T08	21.70	4	3.00	4.50	0.20	-	2.8	T08	M36	31.00	ISO 68, DIN 13	●

• For shanks, see pages E20-23 • For clamping instructions, see page E20 • Do not apply lubricant to the threaded connection.

(1) Smallest possible thread (2) Flat

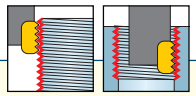
Spare Parts

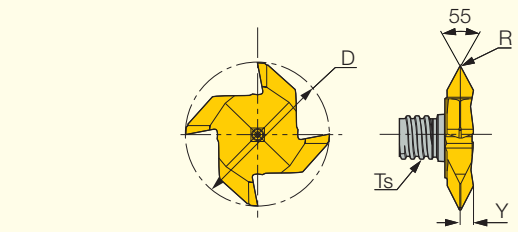
Designation	Clamping Key
MM TRD16-M60-05P-3T06	MM EGR 16-18*
MM TRD16-M60-15P-3T06	MM EGR 16-18*
MM TRD22-M60-30P-4T08	MM EGR 20-22*

* Optional, should be ordered separately

MM TRD-W

Interchangeable Solid Carbide Milling Heads, for 55° Partial Profile Thread Milling





Designation	Dimensions										IC528
	D	Z	R	Y	TPI max	TPI min	Ts	Th	D min	Standard	
MM TRD22-W55-14P-4T08	21.70	4	0.20	2.4	14	11	T08	G3/4	24.20	DIN ISO 228, B.S. 84	●

• For shanks, see pages E20-23 • For clamping instructions, see page E20 • Do not apply lubricant to the threaded connection.

Spare Parts

Designation	Clamping Key
MM TRD-W	MM EGR 20-22*

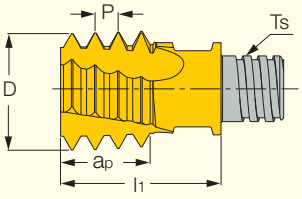
* Optional, should be ordered separately

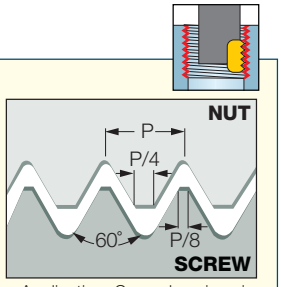
Identification Code

MT	10	D	6	0.75	ISO	MMT05
MULTI-MASTER Thread Mill	Cutting Dia.	No. of Flutes	Cutting Length	Pitch	Thread Profile ISO UN G (55°)	Connection Size

MT-ISO-MM

Carbide Milling Heads with a Threaded Connection for Internal ISO Metric Thread





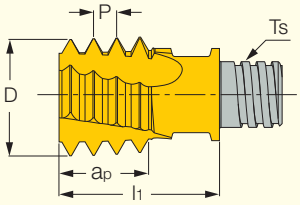
Application: General engineering

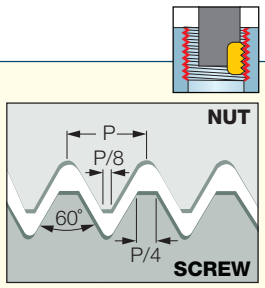
Designation	Dimensions								IC908
	Pitch	M Coarse	M Fine	D	Flute	a_p	l_1	T_s	
MT 10D6 0.75ISO-MMT05	0.75	-	≥12	10.00	4	6.00	12.75	T05	●
MT 10D6 1.0ISO-MMT05	1.00	-	≥12	10.00	4	6.00	12.75	T05	●
MT 10D6 1.5ISO-MMT05	1.50	-	≥14	10.00	4	6.00	12.75	T05	●
MT 12D7 1.5ISO-MMT06	1.50	-	≥16	12.00	4	7.50	17.05	T06	●
MT 12D8 2.0ISO-MMT06	2.00	M16	≥17	12.00	4	8.00	17.05	T06	●
MT 16F12 1.5ISO-MMT08	1.50	-	≥20	16.00	6	12.00	20.85	T08	●
MT 16E12 2.0ISO-MMT08	2.00	-	≥19	16.00	5	12.00	20.85	T08	●
MT 15E12 2.5ISO-MMT08	2.50	M20	≥22	15.40	5	12.50	20.85	T08	●
MT 16C12 3.0ISO-MMT08	3.00	M24	≥25	16.00	3	12.00	20.85	T08	●

• For shanks, see pages E20-23 • For clamping keys (should be ordered separately), tightening torques and clamping instructions, see page E20
• Do not apply lubricant to the threaded connection

MT-UN-MM

Carbide Milling Heads with a Threaded Connection, for Internal UN Thread Profile





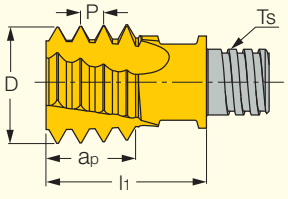
Application: General engineering

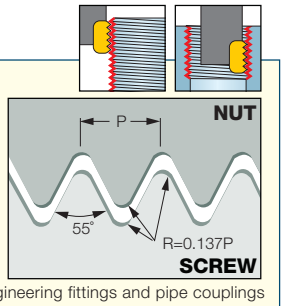
Designation	Dimensions TPI	UNC	UNF	UNEF	D	Flute	a_p	l_1	T_s	IC908
MT 10D6 24UN-MMT05	24.0	-	-	9/16-5/8	10.00	4	5.30	12.75	T05	●
MT 10D6 20UN-MMT05	20.0	-	1/2	-	10.00	4	5.10	12.75	T05	●
MT 10D5 18UN-MMT05	18.0	-	9/16-5/8	1 1/8-1 5/8	10.00	4	5.60	12.75	T05	●
MT 12D8 16UN-MMT06	16.0	-	3/4	-	12.00	4	8.00	17.05	T06	●
MT 16E12 14UN-MMT08	14.0	-	7/8	-	16.00	5	12.70	20.85	T08	●
MT 16E12 12UN-MMT08	12.0	-	1-1 1/2	-	16.00	5	12.70	20.85	T08	●
MT 15D12 10UN-MMT08	10.0	3/4	-	-	15.30	4	12.70	20.85	T08	●
MT 16C11 9UN-MMT08	9.0	7/8	-	-	16.00	3	11.30	20.85	T08	●
MT 16C12 8UN-MMT08	8.0	1.0	-	-	16.00	3	12.70	20.85	T08	●

• For shanks, see pages E20-23 • For clamping keys (should be ordered separately), tightening torques and clamping instructions, see page E20
• Do not apply lubricant to the threaded connection

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

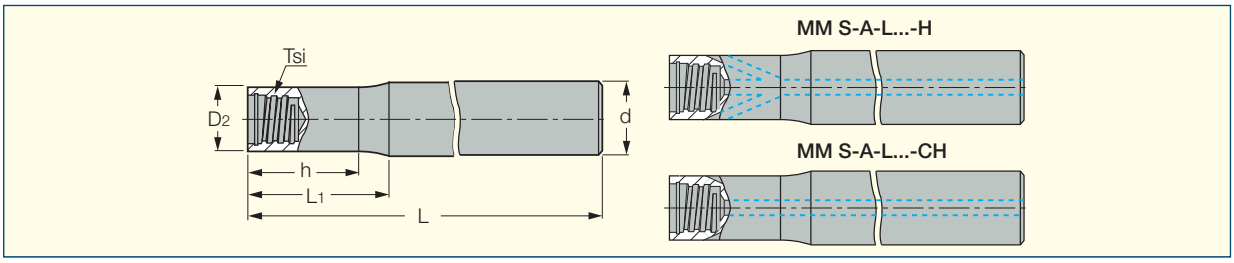
Designation	Dimensions TPI	BSP	D	Flute	a_p	l_1	T_s	IC908
MT 10D6 19W-MMT05	19.0	G1/4-3/8	10.00	4	5.30	12.75	T05	●
MT 16D12 14W-MMT08	14.0	G1/2-7/8	16.00	4	12.70	20.85	T08	●
MT 16D11 11W-MMT08	11.0	G≥1	16.00	4	11.60	20.85	T08	●

• For shanks, see pages E20-23 • For clamping keys (should be ordered separately), tightening torques and clamping instructions, see page E20
• Do not apply lubricant to the threaded connection

MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

MM S-A (stepped shanks)

Stepped Cylindrical Shanks for Interchangeable Milling Heads



Designation	Tsi	d	D_2	h	L_1	L	Shank m.(1)	Coolant	RPM max(2)	Kg
MM S-A-L050-C08-T04	T04	8.00	5.80	9.90	14.0	50.00	S	N	60000	0.02
MM S-A-L060-C08-T05	T05	8.00	7.60	12.50	15.0	60.00	S	N	60000	0.02
MM S-A-L070-C08-T05-C	T05	8.00	7.60	18.60	20.0	70.00	C	N	60000	0.04
MM S-A-L070-C08-T05-W	T05	8.00	7.60	18.90	20.0	70.00	W	N	60000	0.06
MM S-A-L090-C08-T05-C	T05	8.00	7.60	38.60	40.0	90.00	C	N	50160	0.06
MM S-A-L090-C08-T05-W	T05	8.00	7.60	38.90	40.0	90.00	W	N	36090	0.07
MM S-A-L110-C08-T05-C	T05	8.00	7.60	57.90	60.0	110.00	C	N	30600	0.07
MM S-A-L110-C08-T05-W	T05	8.00	7.60	58.90	60.0	110.00	W	N	21060	0.09
MM S-A-L070-C10-T06-C	T06	10.00	9.60	18.50	20.0	70.00	C	N	54900	0.01
MM S-A-L070-C10-T06-W-H	T06	10.00	9.60	18.90	20.0	70.00	W	Y	60000	0.08
MM S-A-L075-C10-T06	T06	10.00	9.55	17.40	20.0	75.00	S	N	60000	0.05
MM S-A-L075-C10-T06-H	T06	10.00	9.55	18.80	20.0	75.00	S	Y	53940	0.04
MM S-A-L090-C10-T06-C	T06	10.00	9.60	38.50	40.0	90.00	C	N	55170	0.06
MM S-A-L090-C10-T06-W	T06	10.00	9.55	17.20	20.0	90.00	W	N	41670	0.12
MM S-A-L090-C10-T06-W-H	T06	10.00	9.60	39.00	40.0	90.00	W	Y	40860	0.10
MM S-A-L110-C10-T06-C	T06	10.00	9.60	57.90	60.0	110.00	C	N	34530	0.11
MM S-A-L110-C10-T06-W-H	T06	10.00	9.60	59.00	60.0	110.00	W	Y	24840	0.12
MM S-A-L150-C10-T06-C	T06	10.00	9.60	98.50	100.0	150.00	C	N	16620	0.15
MM S-A-L070-C12-T08-C	T08	12.00	11.50	17.90	20.0	70.00	C	N	60000	0.10
MM S-A-L070-C12-T08-W-H	T08	12.00	11.50	18.70	20.0	70.00	W	Y	60000	0.11
MM S-A-L090-C12-T08	T08	12.00	11.50	13.30	16.0	90.00	S	N	43000	0.10
MM S-A-L090-C12-T08-C	T08	12.00	11.50	39.00	40.0	90.00	C	N	43050	0.12
MM S-A-L090-C12-T08-H	T08	12.00	11.50	38.70	40.0	90.00	S	Y	41040	0.08
MM S-A-L090-C12-T08-W-H	T08	12.00	11.50	38.70	40.0	90.00	W	Y	49800	0.15
MM S-A-L090/42-C12-T08-CH	T08	12.00	11.50	41.00	42.0	90.00	S	Y	41010	0.07
MM S-A-L110-C12-T08-C	T08	12.00	11.50	57.00	60.0	110.00	C	N	41040	0.16
MM S-A-L110-C12-T08-W	T08	12.00	11.50	17.00	20.0	110.00	W	N	31350	0.09
MM S-A-L110-C12-T08-W-H	T08	12.00	11.50	58.70	60.0	110.00	W	Y	30210	0.18
MM S-A-L130-C12-T08-C	T08	12.00	11.50	77.80	80.0	130.00	C	N	27960	0.19
MM S-A-L130-C12-T08-W-H	T08	12.00	11.50	78.70	80.0	130.00	W	Y	20100	0.21

• Do not apply lubricant to the threaded connection.

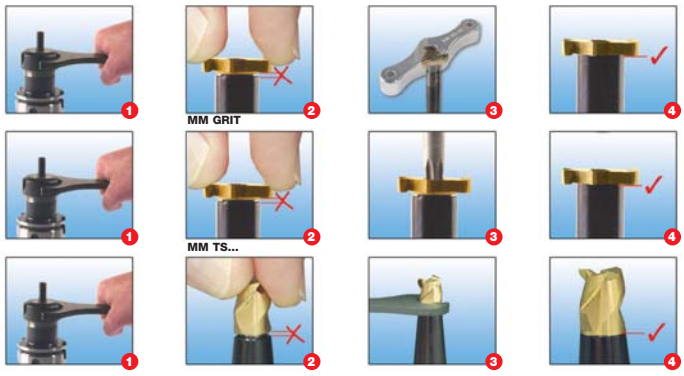
(1) S-steel, C-carbide, W-tungsten (2) The actual maximum RPM should be calculated by dividing the listed RPM max by the number of the heads flutes being used.

Clamping and Indexing Instructions

Do not apply lubricant to the threaded connection.

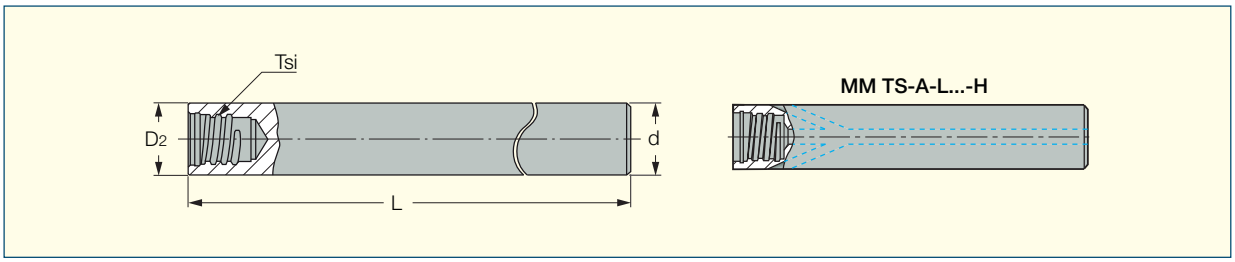
Thread Size	Key (1)	Tightening Torque (Nxcm)
T05	MM KEY 6x4	700
T06	MM KEY 8x5	1000
T08	MM KEY 10x7	1500
T10	MM KEY 13x8	2800
T12	MM KEY 16x9	2800
T15	MM KEY 20	4000

(1) Order separately



MM TS-A

Cylindrical Shanks for Interchangeable Milling Heads



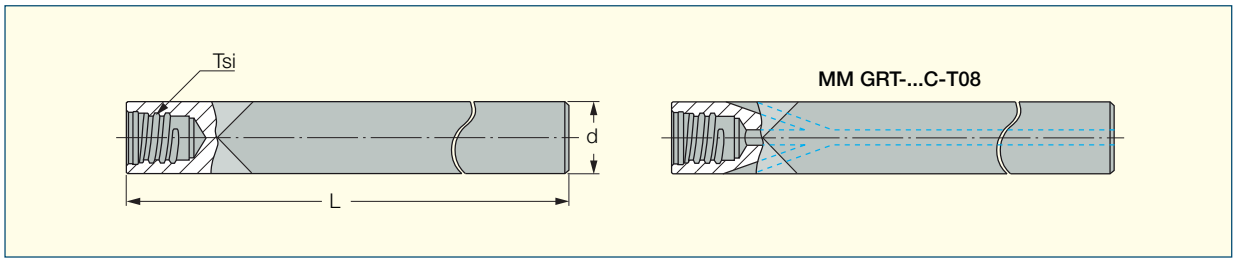
Designation	Tsi	d	D_2	L	Coolant	RPM max(1)	Kg
MM TS-A-L070-C08-T05	T05	8.00	8.00	70.00	N	60000	0.03
MM TS-A-L080-C10-T06	T06	10.00	10.00	80.00	N	47400	0.07
MM TS-A-L080-C10-T06-H	T06	10.00	10.00	80.00	Y	46920	0.04
MM TS-A-L090-C12-T08	T08	12.00	12.00	90.00	N	43110	0.12
MM TS-A-L090-C12-T08-H	T08	12.00	12.00	90.00	Y	42780	0.08

• Do not apply lubricant to the threaded connection

(1) The actual maximum RPM should be calculated by dividing the listed RPM max by the number of the heads flutes being used.

MM GRT (shanks)

Solid Carbide Cylindrical Shanks for Slitting and Grooving Interchangeable Milling Heads



Designation	Tsi	d	L	Shank(1)	Coolant	Kg
MM GRT-095-T06	T06	9.52	80.00	C	N	0.07
MM GRT-100-T06	T06	10.00	100.00	C	N	0.10
MM GRT-120C-T08	T08	12.00	100.00	C	Y	0.12
MM GRT-127C-T08	T08	12.70	120.00	C	Y	0.17

(1) C-Cylindrical

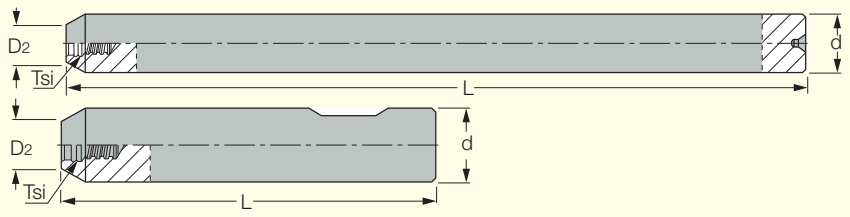
Spare Parts

Designation	Clamping Key
MM GRT-095-T06	MM EGR 16-18
MM GRT-100-T06	MM EGR 16-18
MM GRT-120C-T08	MM EGR 20-22
MM GRT-127C-T08	MM EGR 20-22

MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

MM S-A (straight shanks)

Shanks for Interchangeable Milling Heads



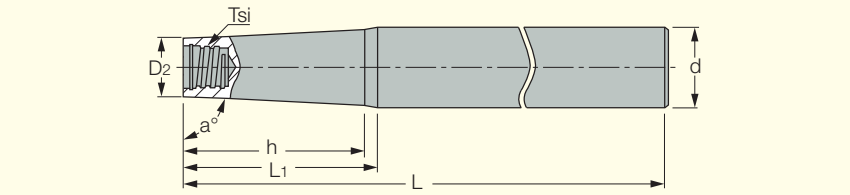
Designation	Tsi	d	D_2	Shank(1)	L	RPM max(2)	Kg
MM S-A-L055-W12-T05	T05	12.00	7.60	W	55.00	60000	0.05

• Do not apply lubricant to the threaded connection.

(1) W-Weldon (2) The actual maximum RPM should be calculated by dividing the listed RPM max by the number of the heads flutes being used.

MM S-B (85° conical shanks)

85° Conical Shanks for Interchangeable Milling Heads



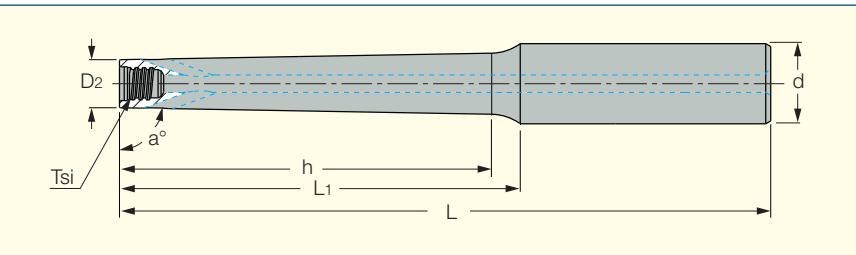
Designation	Tsi	a°	d	D_2	Shank(1)	L_1	L	Shank m.	h	RPM max(2)	Kg
MM S-B-L080-C12-T05	T05	85	12.00	7.60	C	25.0	80.00	S	-	60000	0.06

• Shank material (Shank m.): S-steel • Do not apply lubricant to the threaded connection.

(1) C-Cylindrical (2) The actual maximum RPM should be calculated by dividing the listed RPM max by the number of the heads flutes being used.

MM S-D (89° conical shanks)

89° Conical Shanks for Interchangeable Milling Heads



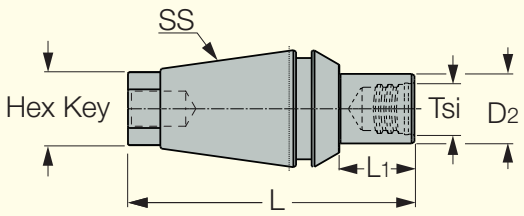
Designation	Tsi	a°	d	D_2	L_1	L	Shank m.	h	Coolant	RPM max(1)	Kg
MM S-D-L100-C12-T05	T05	89	12.00	7.60	35.0	100.00	S	29.60	N	52000	0.15
MM S-D-L110-C12-T05-C	T05	89	12.00	7.60	60.0	110.00	C	55.90	N	53430	0.13
MM S-D-L110-C12-T05-W-H	T05	89	12.00	7.60	60.0	110.00	W	55.70	Y	38460	0.14
MM S-D-L130-C12-T05-C	T05	89	12.00	7.60	80.0	130.00	C	77.30	N	36420	0.15
MM S-D-L130-C12-T05-W-H	T05	89	12.00	7.60	80.0	130.00	W	76.40	Y	26160	0.16
MM S-D-L150-C16-T05-C	T05	89	16.00	7.60	100.0	150.00	C	91.50	N	29700	0.02
MM S-D-L110-C12-T06-W-H	T06	89	12.00	9.60	60.0	110.00	W	58.80	Y	36990	0.17

• Shank material (Shank m.): S-steel, C-carbide, W-tungsten. • Do not apply lubricant to the threaded connection.

(1) The actual maximum RPM should be calculated by dividing the listed RPM max by the number of the heads flutes being used.

MM S-ER

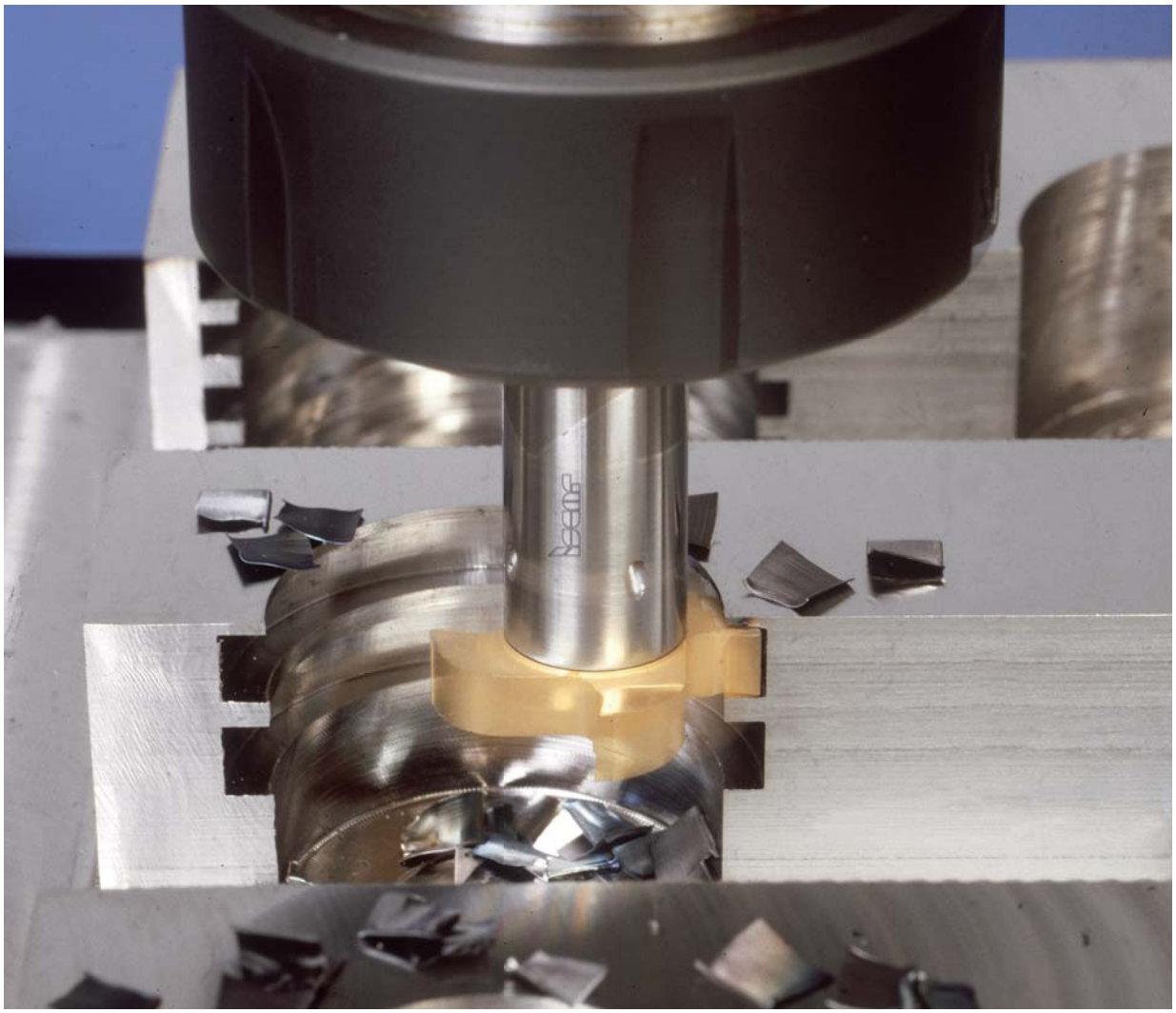
Shanks for MULTI-MASTER Solid Carbide Heads with ER Collet Adaptation

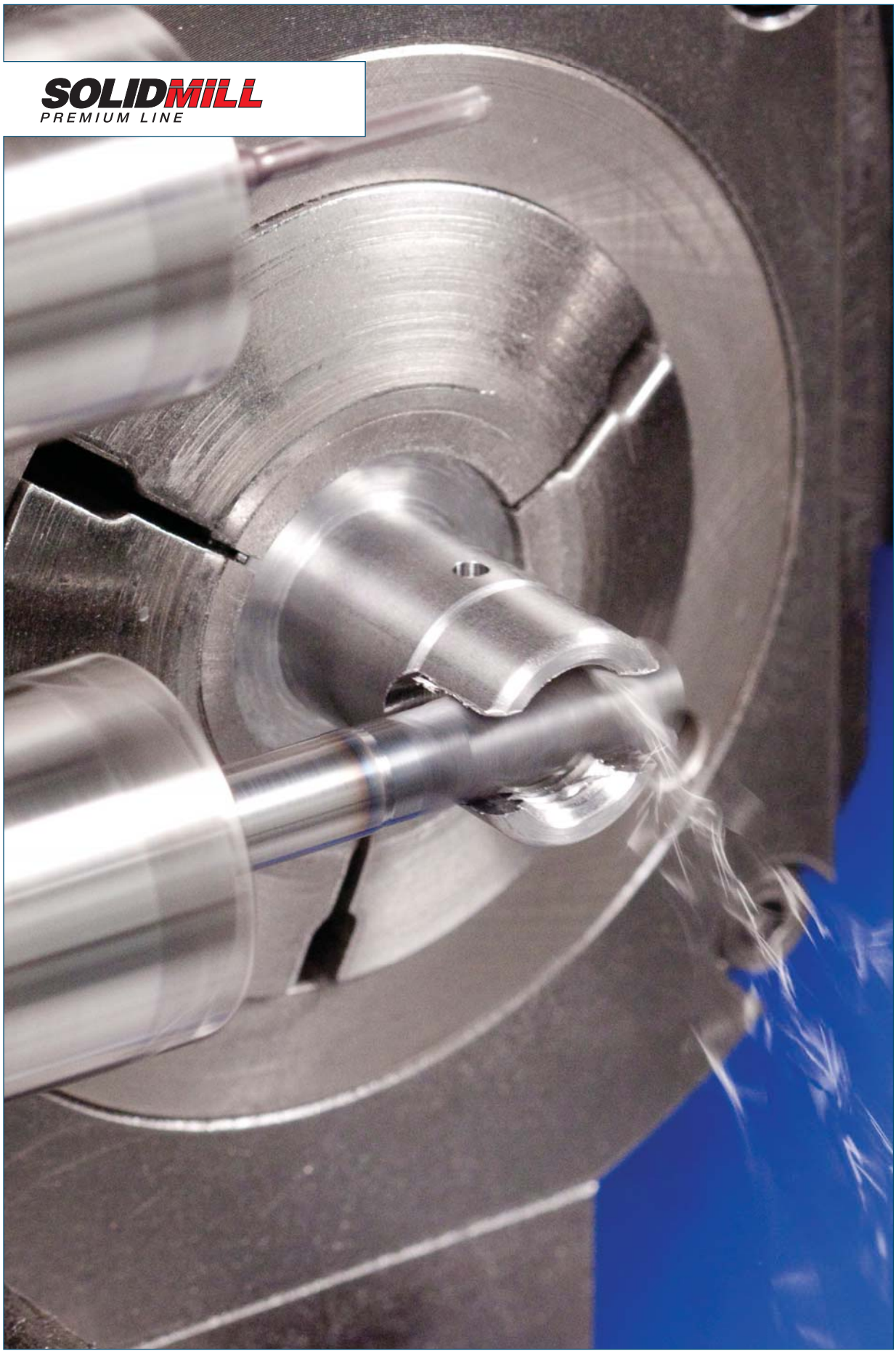


Designation	SS	Tsi	D_2	L_1	L	Key(1)
MM S-A-H004-ER11-T05	ER11	T05	7.60	4.0	26.50	6.35
MM S-A-H10.5-ER11-T05	ER11	T05	7.60	10.5	33.00	6.35
MM S-A-H004-ER16-T05	ER16	T05	7.60	4.0	33.50	7.94
MM S-A-H004-ER16-T06	ER16	T06	9.00	4.0	33.50	7.94
MM S-A-H004-ER16-T08	ER16	T08	11.50	4.0	33.50	7.94
MM S-A-H10.5-ER16-T05	ER16	T05	7.60	10.5	43.10	7.94
MM S-A-H10.5-ER16-T06	ER16	T06	9.00	10.5	43.10	7.94
MM S-A-H013-ER16-T08	ER16	T08	11.50	13.0	45.60	7.94
MM S-A-H004-ER20-T05	ER20	T05	7.60	4.0	40.60	11.11
MM S-A-H004-ER20-T06	ER20	T06	9.00	4.0	40.60	11.11
MM S-A-H004-ER20-T08	ER20	T08	11.50	4.0	40.60	11.11
MM S-A-H10.5-ER20-T05	ER20	T05	7.60	10.5	47.10	11.11
MM S-A-H10.5-ER20-T06	ER20	T06	9.00	10.5	47.10	11.11
MM S-A-H013-ER20-T08	ER20	T08	11.50	13.0	49.60	11.11

• Do not apply lubricant to the threaded connection.

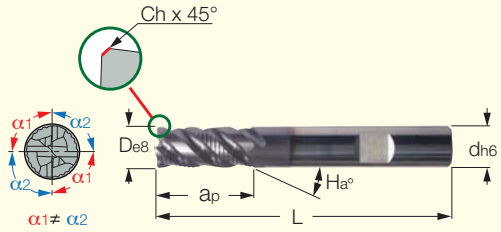
(1) Inch size spanners (displayed in mm)

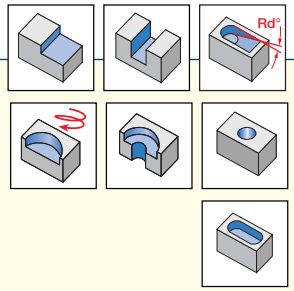




EFS-E44

Combination of Roughing and Finishing Solid Carbide Endmill with Variable Pitch for Chatter Free Milling



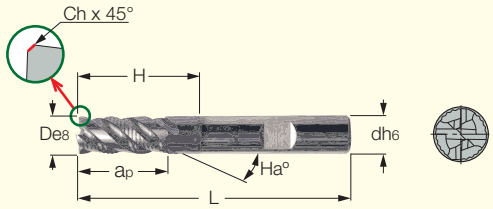


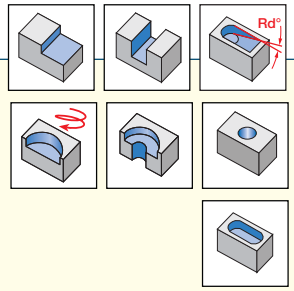
Designation	Dimensions D	d	a_p	L	Flute	H_a°	R_d°	Shank(1)	Ch	IC900	Recommended Machining Data f_z (mm/t)
EFS-E44 06-14C06CF57	6.00	6.00	14.00	57.00	4	38.0	5.0	C	0.25	●	0.03-0.06
EFS-E44 06-14W06CF57	6.00	6.00	14.00	57.00	4	38.0	5.0	W	0.25	●	0.03-0.06
EFS-E44 08-18C08CF63	8.00	8.00	18.00	63.00	4	38.0	5.0	C	0.30	●	0.03-0.08
EFS-E44 08-18W08CF63	8.00	8.00	18.00	63.00	4	38.0	5.0	W	0.30	●	0.03-0.08
EFS-E44 10-22C10CF72	10.00	10.00	22.00	72.00	4	38.0	5.0	C	0.40	●	0.03-0.09
EFS-E44 10-22W10CF72	10.00	10.00	22.00	72.00	4	38.0	5.0	W	0.40	●	0.03-0.09
EFS-E44 12-26C12CF83	12.00	12.00	26.00	83.00	4	38.0	5.0	C	0.50	●	0.04-0.10
EFS-E44 12-26W12CF83	12.00	12.00	26.00	83.00	4	38.0	5.0	W	0.50	●	0.04-0.10

(1) C-Cylindrical, W-Weldon

EFS-B44

Combination of Roughing and Finishing Solid Carbide Endmill in a Single Tool





Designation	Dimensions D	d	a_p	H	L	Flute	H_a°	R_d°	Shank(1)	Ch	Tough ↔ Hard IC300	IC900	Recommended Machining Data f_z (mm/t)
EFS-B44 06-14/20C06-57	6.00	6.00	14.00	20.00	57.00	4	45.0	5.0	C	0.25		●	0.03-0.06
EFS-B44 06-14/20W06-57	6.00	6.00	14.00	20.00	57.00	4	45.0	5.0	W	0.25		●	0.03-0.06
EFS-B44 06-14C06-57	6.00	6.00	14.00	-	57.00	4	45.0	5.0	C	0.25	●	●	0.03-0.06
EFS-B44 06-14W06-57	6.00	6.00	14.00	-	57.00	4	45.0	5.0	W	0.25		●	0.03-0.06
EFS-B44 08-18/26C08-63	8.00	8.00	18.00	26.00	63.00	4	45.0	5.0	C	0.30		●	0.03-0.08
EFS-B44 08-18/26W08-63	8.00	8.00	18.00	26.00	63.00	4	45.0	5.0	W	0.30		●	0.03-0.08
EFS-B44 08-18C08-63	8.00	8.00	18.00	-	63.00	4	45.0	5.0	C	0.30	●	●	0.03-0.08
EFS-B44 08-18W08-63	8.00	8.00	18.00	-	63.00	4	45.0	5.0	W	0.30	●	●	0.03-0.08
EFS-B44 10-22/32C10-72	10.00	10.00	22.00	32.00	72.00	4	45.0	5.0	C	0.30		●	0.03-0.09
EFS-B44 10-22/32W10-72	10.00	10.00	22.00	32.00	72.00	4	45.0	5.0	W	0.30		●	0.03-0.09
EFS-B44 10-22C10-72	10.00	10.00	22.00	-	72.00	4	45.0	5.0	C	0.30	●	●	0.03-0.09
EFS-B44 10-22W10-72	10.00	10.00	22.00	-	72.00	4	45.0	5.0	W	0.30		●	0.03-0.09
EFS-B44 12-26/38C12-83	12.00	12.00	26.00	38.00	83.00	4	45.0	5.0	C	0.40		●	0.04-0.10
EFS-B44 12-26/38W12-83	12.00	12.00	26.00	38.00	83.00	4	45.0	5.0	W	0.40		●	0.04-0.10
EFS-B44 12-26C12-83	12.00	12.00	26.00	-	83.00	4	45.0	5.0	C	0.40		●	0.04-0.10
EFS-B44 12-26W12-83	12.00	12.00	26.00	-	83.00	4	45.0	5.0	W	0.40	●	●	0.04-0.10

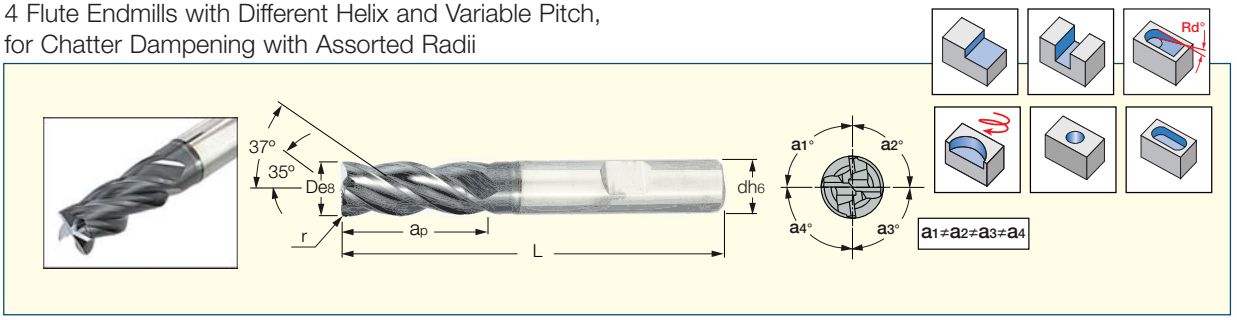
• IC300 should be mainly used for machining exotic materials

(1) C-Cylindrical, W-Weldon

CHATTERFREE
SOLID MILL LINE

EC-H4M-CFR

4 Flute Endmills with Different Helix and Variable Pitch,
for Chatter Dampening with Assorted Radii



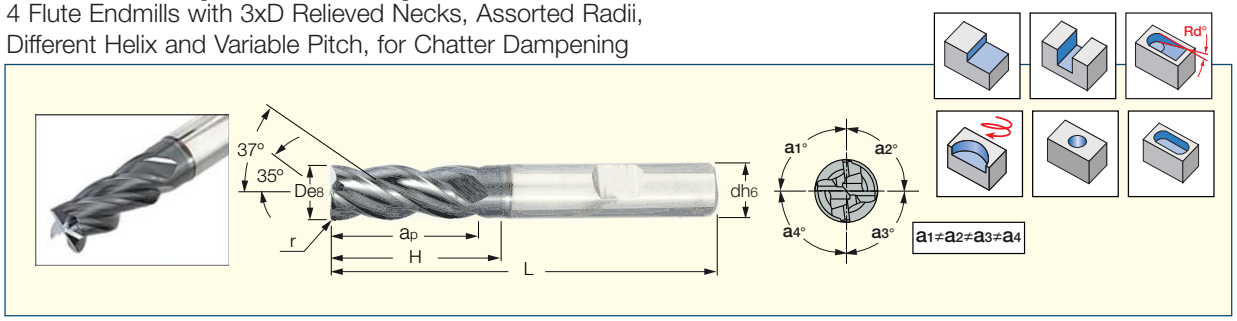
Designation	Dimensions D	d	ap	L	Flute	r	Rd°	Shank(1)	IC900	Recommended Machining Data fz (mm/t)
EC-H4M 06-12C06CFR0.2-57	6.00	6.00	12.00	57.00	4	0.20	5.0	C	●	0.03-0.06
EC-H4M 06-12W06CFR0.2-57	6.00	6.00	12.00	57.00	4	0.20	5.0	W	●	0.03-0.06
EC-H4M 08-16C08CFR0.4-63	8.00	8.00	16.00	63.00	4	0.40	5.0	C	●	0.03-0.08
EC-H4M 08-16W08CFR0.4-63	8.00	8.00	16.00	63.00	4	0.40	5.0	W	●	0.03-0.08
EC-H4M 10-20C10CFR0.5-72	10.00	10.00	20.00	72.00	4	0.50	5.0	C	●	0.03-0.09
EC-H4M 10-20W10CFR0.5-72	10.00	10.00	20.00	72.00	4	0.50	5.0	W	●	0.03-0.09
EC-H4M 12-24C12CFR0.6-83	12.00	12.00	24.00	83.00	4	0.60	5.0	C	●	0.04-0.10
EC-H4M 12-24W12CFR0.6-83	12.00	12.00	24.00	83.00	4	0.60	5.0	W	●	0.04-0.10

(1) C-Cylindrical, W-Weldon

SOLIDMILL • CHATTERFREE
PREMIUM LINE — SOLID MILL LINE

EC-H4L-CFR (relieved neck)

4 Flute Endmills with 3xD Relieved Necks, Assorted Radii,
Different Helix and Variable Pitch, for Chatter Dampening



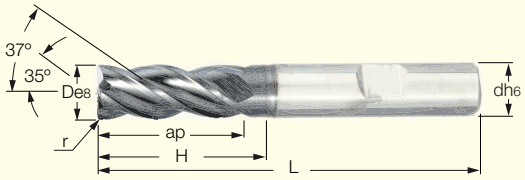
Designation	Dimensions D	d	ap	H	L	Flute	r	Rd°	Shank(1)	IC900	Recommended Machining Data fz (mm/t)
EC-H4L 06-12/20C6CFR.2-57	6.00	6.00	12.00	20.00	57.00	4	0.20	5.0	C	●	0.03-0.06
EC-H4L 06-12/20W6CFR.2-57	6.00	6.00	12.00	20.00	57.00	4	0.20	5.0	W	●	0.03-0.06
EC-H4L 08-16/26C8CFR.4-63	8.00	8.00	16.00	26.00	63.00	4	0.40	5.0	C	●	0.03-0.08
EC-H4L 08-16/26W8CFR.4-63	8.00	8.00	16.00	26.00	63.00	4	0.40	5.0	W	●	0.03-0.08
EC-H4L 10-20/32C10CFR.5	10.00	10.00	20.00	32.00	72.00	4	0.50	5.0	C	●	0.03-0.09
EC-H4L 10-20/32W10CFR.5	10.00	10.00	20.00	32.00	72.00	4	0.50	5.0	W	●	0.03-0.09
EC-H4L 12-24/38C12CFR.6	12.00	12.00	24.00	38.00	83.00	4	0.60	5.0	C	●	0.04-0.10
EC-H4L 12-24/38W12CFR.6	12.00	12.00	24.00	38.00	83.00	4	0.60	5.0	W	●	0.04-0.10

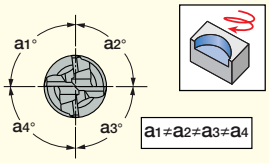
(1) C-Cylindrical, W-Weldon

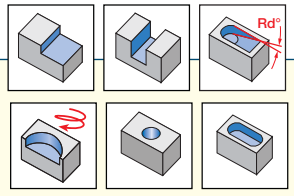
SOLIDMILL • CHATTERFREE
PREMIUM LINE — SOLID MILL LINE

EC-H4XL-CFR (relieved neck)

4 Flute Endmills with 4xD Relieved Necks, Assorted Radii
Different Helix and Variable Pitch, for Chatter Dampening







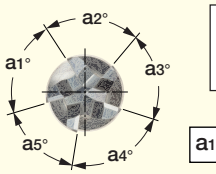
Designation	Dimensions D	d	a_p	H	L	Flute	r	R_d°	Shank(1)	IC900	Recommended Machining Data f_z (mm/t)
EC-H4XL 06-12/25C06CFR.2	6.00	6.00	12.00	25.00	61.00	4	0.20	5.0	C	●	0.03-0.06
EC-H4XL 06-12/25W06CFR.2	6.00	6.00	12.00	25.00	61.00	4	0.20	5.0	W	●	0.03-0.06
EC-H4XL 08-16/32C08CFR.4	8.00	8.00	16.00	32.00	68.00	4	0.40	5.0	C	●	0.03-0.08
EC-H4XL 08-16/32W08CFR.4	8.00	8.00	16.00	32.00	68.00	4	0.40	5.0	W	●	0.03-0.08
EC-H4XL 10-20/40C10CFR.5	10.00	10.00	20.00	40.00	80.00	4	0.50	5.0	C	●	0.03-0.09
EC-H4XL 10-20/40W10CFR.5	10.00	10.00	20.00	40.00	80.00	4	0.50	5.0	W	●	0.03-0.09
EC-H4XL 12-24/50C12CFR.6	12.00	12.00	24.00	50.00	95.00	4	0.60	5.0	C	●	0.04-0.10
EC-H4XL 12-24/50W12CFR.6	12.00	12.00	24.00	50.00	95.00	4	0.60	5.0	W	●	0.04-0.10

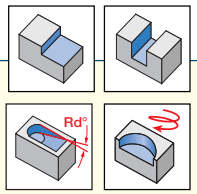
(1) C-Cylindrical, W-Weldon

CHATTERFREE
SOLID MILL LINE

EC-H5M-CFR

5 Flute Endmills with Different Helix (36 - 38°) and Variable Pitch for
Chatter Dampening with Assorted Radii





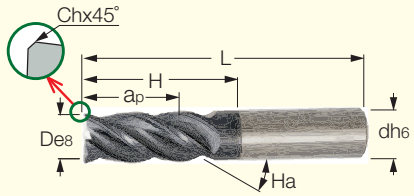
Designation	Dimensions D	d	a_p	L	Flute	r	R_d°	Shank(1)	IC900	Recommended Machining Data f_z (mm/t)
EC-H5M 04-09C06CFR0.2-57	4.00	6.00	9.00	57.00	5	0.20	5.0	C	●	0.02-0.04
EC-H5M 05-11C06CFR0.2-57	5.00	6.00	11.00	57.00	5	0.20	5.0	C	●	0.02-0.04
EC-H5M 06-13C06CFR0.2-57	6.00	6.00	13.00	57.00	5	0.20	5.0	C	●	0.03-0.07
EC-H5M 06-13W06CFR0.2-57	6.00	6.00	13.00	57.00	5	0.20	5.0	W	●	0.03-0.07
EC-H5M 08-19C08CFR0.4-63	8.00	8.00	19.00	63.00	5	0.40	5.0	C	●	0.03-0.09
EC-H5M 08-19W08CFR0.4-63	8.00	8.00	19.00	63.00	5	0.40	5.0	W	●	0.03-0.09
EC-H5M 10-22C10CFR0.5-72	10.00	10.00	22.00	72.00	5	0.50	5.0	C	●	0.03-0.10
EC-H5M 10-22W10CFR0.5-72	10.00	10.00	22.00	72.00	5	0.50	5.0	W	●	0.03-0.10
EC-H5M 12-26C12CFR0.6-83	12.00	12.00	26.00	83.00	5	0.60	5.0	C	●	0.04-0.11
EC-H5M 12-26W12CFR0.6-83	12.00	12.00	26.00	83.00	5	0.60	5.0	W	●	0.04-0.11

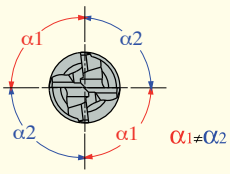
(1) C-Cylindrical, W-Weldon

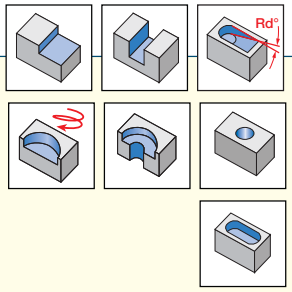
CHATTERFREE
SOLID MILL LINE

EC-E4L-CF

4 Flute 38° Helix Endmills with 3xD Relieved Necks and Variable Pitch, for Chatter Dampening







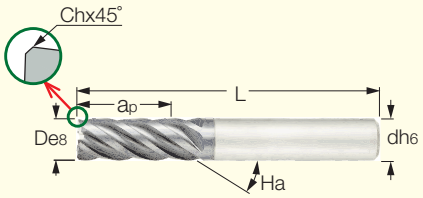
Designation	Dimensions D	d	a_p	H	L	Flute	H_a°	R_d°	Shank(1)	Ch	Tough ↔ Hard IC300	IC900	Recommended Machining Data f_z (mm/t)
EC-E4L 03-8/11C06CF57	3.00	6.00	8.00	11.00	57.00	4	38.0	5.0	C	0.10	●	●	0.02-0.05
EC-E4L 04-10/14C06CF57	4.00	6.00	10.00	14.00	57.00	4	38.0	5.0	C	0.15	●	●	0.02-0.05
EC-E4L 05-12/17C06CF57	5.00	6.00	12.00	17.00	57.00	4	38.0	5.0	C	0.18	●	●	0.02-0.06
EC-E4L 06-14/20C06CF57	6.00	6.00	14.00	20.00	57.00	4	38.0	5.0	C	0.25	●	●	0.03-0.07
EC-E4L 06-14/20W06CF57	6.00	6.00	14.00	20.00	57.00	4	38.0	5.0	W	0.25	●	●	0.03-0.07
EC-E4L 08-18/26C08CFS63	8.00	8.00	18.00	26.00	63.00	4	38.0	5.0	C	0		●	0.03-0.08
EC-E4L 08-18/26C08CF63	8.00	8.00	18.00	26.00	63.00	4	38.0	5.0	C	0.30	●	●	0.03-0.09
EC-E4L 08-18/26W08CF63	8.00	8.00	18.00	26.00	63.00	4	38.0	5.0	W	0.30	●	●	0.03-0.09
EC-E4L 10-22/32C10CFS72	10.00	10.00	22.00	32.00	72.00	4	38.0	5.0	C	0		●	0.03-0.09
EC-E4L 10-22/32C10CF72	10.00	10.00	22.00	32.00	72.00	4	38.0	5.0	C	0.40	●	●	0.03-0.10
EC-E4L 10-22/32W10CF72	10.00	10.00	22.00	32.00	72.00	4	38.0	5.0	W	0.40		●	0.03-0.10
EC-E4L 10-22/32W10CF72 30	10.00	10.00	22.00	32.00	72.00	4	38.0	5.0	W	0.40	●		0.03-0.10
EC-E4L 12-26/38C12CFS83	12.00	12.00	26.00	38.00	83.00	4	38.0	5.0	C	0		●	0.04-0.10
EC-E4L 12-26/38C12CF83	12.00	12.00	26.00	38.00	83.00	4	38.0	5.0	C	0.50	●	●	0.04-0.11
EC-E4L 12-26/38W12CF83	12.00	12.00	26.00	38.00	83.00	4	38.0	5.0	W	0.50	●	●	0.04-0.11

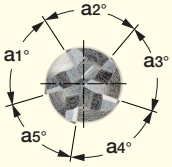
• IC300 should be mainly used for machining exotic materials

(1) C-Cylindrical, W-Weldon

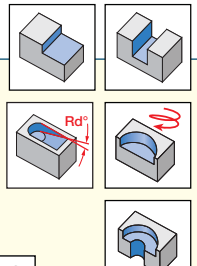
EC-E5L-CF

5 Flute 38° Helix Endmills, Variable Pitch Medium Length (1xD)





a1≠a2≠a3≠a4≠a5



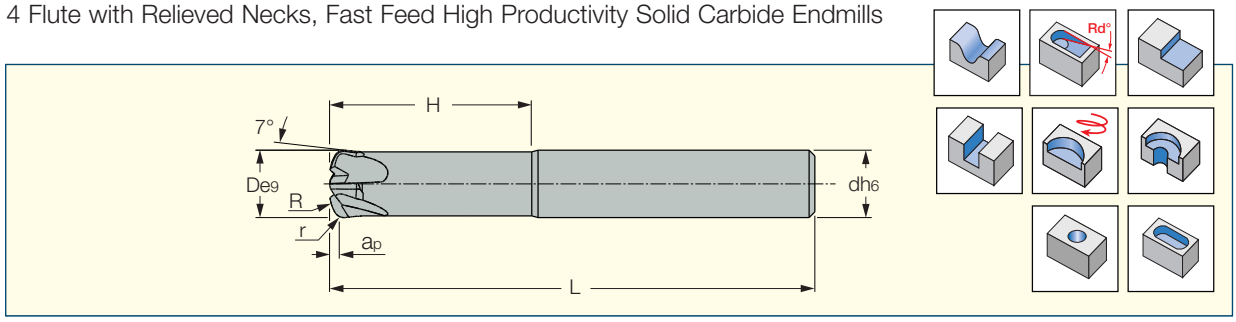
Designation	Dimensions D	d	a_p	L	Flute	H_a°	R_d°	Shank(1)	Ch	IC900	Recommended Machining Data f_z (mm/t)
EC-E5L 06-15C06CF57	6.00	6.00	15.00	57.00	5	38.0	5.0	C	0.20	●	0.03-0.07
EC-E5L 06-15W06CF57	6.00	6.00	15.00	57.00	5	38.0	5.0	W	0.20	●	0.03-0.07
EC-E5L 08-20C08CF63	8.00	8.00	20.00	63.00	5	38.0	5.0	C	0.25	●	0.03-0.09
EC-E5L 08-20W08CF63	8.00	8.00	20.00	63.00	5	38.0	5.0	W	0.25	●	0.03-0.09
EC-E5L 10-25C10CF72	10.00	10.00	25.00	72.00	5	38.0	5.0	C	0.30	●	0.03-0.10
EC-E5L 10-25W10CF72	10.00	10.00	25.00	72.00	5	38.0	5.0	W	0.30	●	0.03-0.10
EC-E5L 12-30C12CF83	12.00	12.00	30.00	83.00	5	38.0	5.0	C	0.40	●	0.04-0.11
EC-E5L 12-30W12CF83	12.00	12.00	30.00	83.00	5	38.0	5.0	W	0.40	●	0.04-0.11

(1) C-Cylindrical, W-Weldon

SOLID FEED MILL

EFF-S4

4 Flute with Relieved Necks, Fast Feed High Productivity Solid Carbide Endmills



Designation	Dimensions D	d	L	Flute	H	r(1)	R	ap	IC903	Recommended Machining Data fz (mm/t)
EFF-S4-06 030/20C06R1.0M	6.00	6.00	57.00	4	20.00	1.23	5.3	0.30	●	0.10-0.30
EFF-S4-08 035/26C08R1.3M	8.00	8.00	63.00	4	26.00	1.62	7.0	0.40	●	0.10-0.40
EFF-S4-10 040/30C10R1.6M	10.00	10.00	72.00	4	30.00	2.01	8.8	0.50	●	0.15-0.50
EFF-S4-12 045/34C12R2.0M	12.00	12.00	83.00	4	34.00	2.47	10.6	0.60	●	0.15-0.50

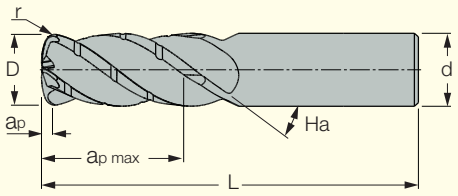
(1) Should be used for programming

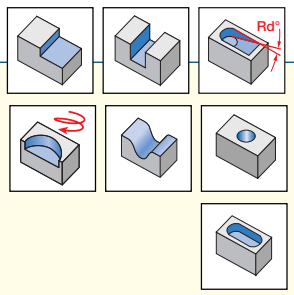
CHATTERFREE • SOLID FEED MILL

SOLID MILL LINE

EFP-E4,5CF

Solid Carbide Roughing Endmills with Chip Splitting Cutting Edges, Variable Pitch and Large Radius Frontal Edge





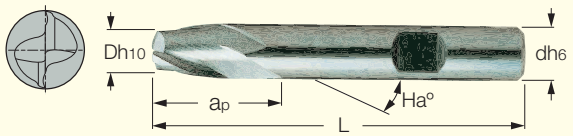
Designation	Dimensions D	d	L	r(2)	Flute	Ha°	ap(3)	ap max	Rd°	IC903	Recommended Machining Data fz (mm/t)
EFP-E4CF 06-12C06R1.0M57	6.00	6.00	57.00	1.00	4	38.0	0.30	12.00	5.0	●	0.02-0.30
EFP-E4CF 08-16C08R1.4M63	8.00	8.00	63.00	1.40	4	38.0	0.40	16.00	5.0	●	0.03-0.40
EFP-E4CF 10-20C10R1.7M72	10.00	10.00	72.00	1.70	4	38.0	0.50	20.00	5.0	●	0.03-0.50
EFP-E5CF 10-24C10R1.7M72 (1)	10.00	10.00	72.00	1.70	5	38.0	0.50	24.00	5.0	●	0.03-0.50
EFP-E4CF 12-25C12R2.0M83	12.00	12.00	83.00	2.00	4	38.0	0.60	24.00	5.0	●	0.04-0.50

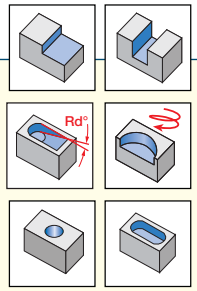
(1) Cannot be used for plunging application (2) Used for programming (3) Maximum D.O.C. for high feed milling (FEEDMILL)

SOLIDMILL
TEC LINE

EC-A2 (economical-short)

Economical Type 2 Flute, 30° Helix Center Cutting Short Solid Carbide Endmills





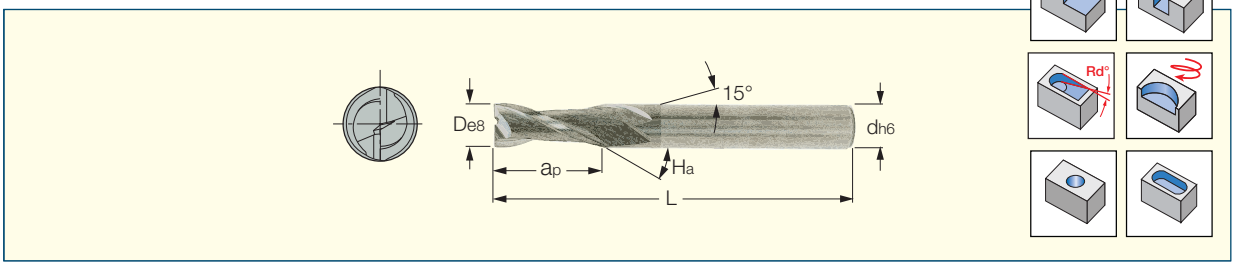
Designation	Dimensions D	d	a_p	L	Flute	H_a°	R_d°	Shank[1]	Tough ↔ Hard IC08	IC900	Recommended Machining Data f_z (mm/t)
EC-A2 02-03W06E50	2.00	6.00	3.00	50.00	2	30.0	5.0	W	●	●	0.01-0.03
EC-A2 03-04W06E50	3.00	6.00	4.00	50.00	2	30.0	5.0	W	●	●	0.01-0.04
EC-A2 04-05W06E54	4.00	6.00	5.00	54.00	2	30.0	5.0	W	●	●	0.02-0.05
EC-A2 045-05W06E54	4.50	6.00	5.00	54.00	2	30.0	5.0	W	●	●	0.02-0.05
EC-A2 05-06W06E54	5.00	6.00	6.00	54.00	2	30.0	5.0	W	●	●	0.02-0.06
EC-A2 06-07W06E54	6.00	6.00	7.00	54.00	2	30.0	5.0	W	●	●	0.03-0.07
EC-A2 07-08W08E58	7.00	8.00	8.00	58.00	2	30.0	5.0	W	●	●	0.03-0.08
EC-A2 08-09W08E58	8.00	8.00	9.00	58.00	2	30.0	5.0	W	●	●	0.03-0.09
EC-A2 09-10W10E66	9.00	10.00	10.00	66.00	2	30.0	5.0	W	●	●	0.03-0.09
EC-A2 10-11W10E66	10.00	10.00	11.00	66.00	2	30.0	5.0	W	●	●	0.03-0.10
EC-A2 12-12W12E73	12.00	12.00	12.00	73.00	2	30.0	5.0	W	●		0.04-0.11

[1] W-Weldon

SOLIDMILL
PREMIUM LINE

EC-A-2

2 Flute, 30 and 45° Helix Medium Length Solid Carbide Slot / Drill Endmills



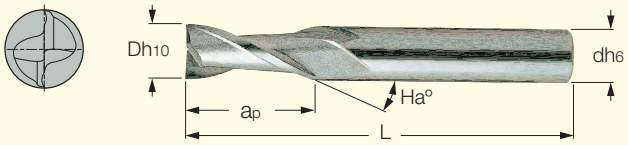
Designation	Dimensions D	d	a_p	L	Flute	H_a°	R_d°	Shank(1)	Tough ↔ Hard IC08	IC300	IC900	Recommended Machining Data f_z (mm/t)
EC020B07-2C03	2.00	3.00	7.00	38.00	2	45.0	5.0	C	●	●		0.01-0.03
EC020B07-2C06	2.00	6.00	7.00	57.00	2	45.0	5.0	C		●	●	0.01-0.03
EC025A07-2C03	2.50	3.00	7.00	38.00	2	30.0	5.0	C	●	●		0.01-0.03
EC030A10-2C03	3.00	3.00	10.00	38.00	2	30.0	5.0	C	●	●		0.01-0.04
EC030A10-2C06	3.00	6.00	10.00	57.00	2	30.0	5.0	C		●	●	0.01-0.04
EC035A12-2C04	3.50	4.00	12.00	50.00	2	30.0	5.0	C	●	●		0.01-0.04
EC040A12-2C04	4.00	4.00	12.00	50.00	2	30.0	5.0	C	●	●	●	0.02-0.05
EC040A12-2C06	4.00	6.00	12.00	57.00	2	30.0	5.0	C	●	●	●	0.02-0.05
EC045A14-2C06	4.50	6.00	14.00	57.00	2	30.0	5.0	C		●		0.02-0.05
EC050A14-2C05	5.00	5.00	14.00	50.00	2	30.0	5.0	C	●	●		0.02-0.06
EC050A14-2C06	5.00	6.00	14.00	57.00	2	30.0	5.0	C		●	●	0.02-0.06
EC055A16-2C06	5.50	6.00	16.00	57.00	2	30.0	5.0	C		●		0.02-0.06
EC060A16-2C06	6.00	6.00	16.00	57.00	2	30.0	5.0	C	●	●	●	0.03-0.07
EC060A16-2W06	6.00	6.00	16.00	57.00	2	30.0	5.0	W			●	0.03-0.07
EC065A20-2C07	6.50	7.00	20.00	60.00	2	30.0	5.0	C		●		0.03-0.07
EC070A20-2C07	7.00	7.00	20.00	60.00	2	30.0	5.0	C	●	●		0.03-0.08
EC080A20-2C08	8.00	8.00	20.00	63.00	2	30.0	5.0	C	●	●	●	0.03-0.09
EC080A20-2W08	8.00	8.00	20.00	63.00	2	30.0	5.0	W			●	0.03-0.09
EC085A22-2C10	8.50	10.00	22.00	72.00	2	30.0	5.0	C		●		0.03-0.09
EC100A22-2C10	10.00	10.00	22.00	72.00	2	30.0	5.0	C	●	●	●	0.03-0.10
EC120A25-2C12	12.00	12.00	25.00	83.00	2	30.0	5.0	C	●	●	●	0.04-0.11

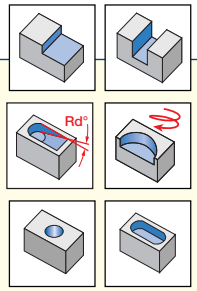
(1) C-Cylindrical, W-Weldon

SOLIDMILL
TEC LINE

EC-A2 (economical-medium)

Economical Type 2 Flute, 30° Helix Center Cutting Medium Length
Solid Carbide Endmills





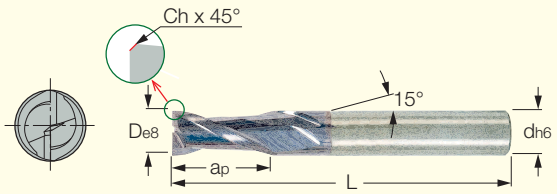
Designation	Dimensions D	d	a_p	L	Flute	H_a°	R_d°	Shank(1)	Tough ↔ Hard IC08	IC900	Recommended Machining Data f_z (mm/t)
EC-A2 01-03C04E50	1.00	4.00	3.00	50.00	2	30.0	5.0	C	●	●	0.00-0.01
EC-A2 015-045C04E50	1.50	4.00	4.50	50.00	2	30.0	5.0	C	●	●	0.00-0.02
EC-A2 02-08C02E32	2.00	2.00	8.00	32.00	2	30.0	5.0	C	●	●	0.01-0.03
EC-A2 025-08C025E32	2.50	2.50	8.00	32.00	2	30.0	5.0	C	●	●	0.01-0.03
EC-A2 03-12C03E38	3.00	3.00	12.00	38.00	2	30.0	5.0	C	●	●	0.01-0.04
EC-A2 035-12C035E32	3.50	3.50	12.00	32.00	2	30.0	5.0	C	●	●	0.01-0.04
EC-A2 04-12C04E50	4.00	4.00	12.00	50.00	2	30.0	5.0	C	●	●	0.02-0.05
EC-A2 045-14C045E50	4.50	4.50	14.00	50.00	2	30.0	5.0	C	●		0.02-0.05
EC-A2 05-14C05E50	5.00	5.00	14.00	50.00	2	30.0	5.0	C	●	●	0.02-0.06
EC-A2 055-16C055E50	5.50	5.50	16.00	50.00	2	30.0	5.0	C	●	●	0.02-0.06
EC-A2 06-16C06E50	6.00	6.00	16.00	50.00	2	30.0	5.0	C	●	●	0.03-0.07
EC-A2 07-20C07E60	7.00	7.00	20.00	60.00	2	30.0	5.0	C	●	●	0.03-0.08
EC-A2 08-20C08E63	8.00	8.00	20.00	63.00	2	30.0	5.0	C	●	●	0.03-0.09
EC-A2 09-20C09E60	9.00	9.00	20.00	60.00	2	30.0	5.0	C	●	●	0.03-0.09
EC-A2 10-22C10E72	10.00	10.00	22.00	72.00	2	30.0	5.0	C	●	●	0.03-0.10
EC-A2 12-22C12E70	12.00	12.00	22.00	70.00	2	30.0	5.0	C	●	●	0.04-0.11

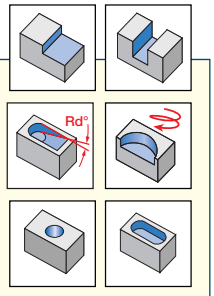
(1) C-Cylindrical

SOLIDMILL
PREMIUM LINE

ECC-A-2

2 Flute, 30° Helix Medium Length Solid Carbide Slot / Drill Endmills with Chamfered Corners



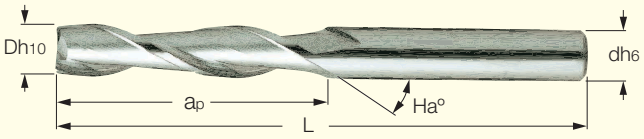


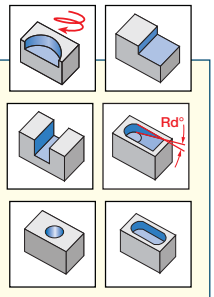
Designation	Dimensions D	d	Flute	a_p	L	R_d°	Shank(1)	Ch	Tough ↔ Hard IC300	IC900	Recommended Machining Data f_z (mm/t)
ECC020B07-2C03	2.00	3.00	2	7.00	38.00	5.0	C	0.10	●	●	0.01-0.03
ECC025A07-2C03	2.50	3.00	2	7.00	38.00	5.0	C	0.10		●	0.01-0.03
ECC030A10-2C03	3.00	3.00	2	10.00	38.00	5.0	C	0.10	●	●	0.01-0.04
ECC035A12-2C04	3.50	4.00	2	12.00	50.00	5.0	C	0.10	●		0.01-0.04
ECC040A12-2C04	4.00	4.00	2	12.00	50.00	5.0	C	0.15	●	●	0.02-0.05
ECC050A14-2C05	5.00	5.00	2	14.00	50.00	5.0	C	0.15	●	●	0.02-0.06
ECC060A16-2C06	6.00	6.00	2	16.00	57.00	5.0	C	0.15	●	●	0.03-0.07
ECC060A16-2W06	6.00	6.00	2	16.00	57.00	5.0	W	0.15		●	0.03-0.07
ECC080A20-2C08	8.00	8.00	2	20.00	63.00	5.0	C	0.15	●	●	0.03-0.09
ECC100A22-2C10	10.00	10.00	2	22.00	72.00	5.0	C	0.25		●	0.03-0.10
ECC120A25-2C12	12.00	12.00	2	25.00	83.00	5.0	C	0.25		●	0.04-0.11

(1) C-Cylindrical, W-Weldon

EC-A2(economical-extra long)

Economical Type 2 Flute, 30° Helix Center Cutting Extra Long Solid Carbide Endmills





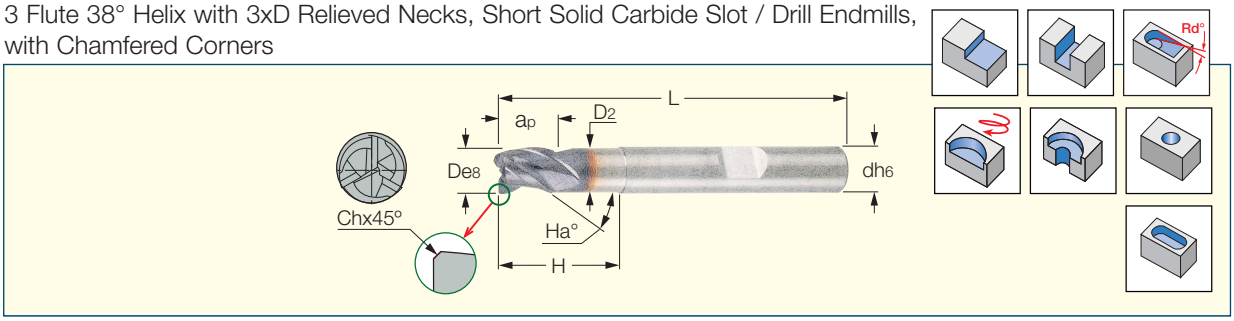
Designation	Dimensions D	d	a_p	L	Flute	H_a°	R_d°	Shank(1)	Tough ↔ Hard IC08	IC900	Recommended Machining Data f_z (mm/t)
EC-A2 03-30C03E75	3.00	3.00	30.00	75.00	2	30.0	5.0	C	●	●	0.01-0.04
EC-A2 04-30C04E75	4.00	4.00	30.00	75.00	2	30.0	5.0	C	●	●	0.02-0.05
EC-A2 05-40C05E100	5.00	5.00	40.00	100.00	2	30.0	5.0	C	●	●	0.02-0.06
EC-A2 06-50C06E150	6.00	6.00	50.00	150.00	2	30.0	5.0	C	●	●	0.03-0.07
EC-A2 08-50C08E150	8.00	8.00	50.00	150.00	2	30.0	5.0	C	●	●	0.03-0.09
EC-A2 10-60C10E150	10.00	10.00	60.00	150.00	2	30.0	5.0	C	●	●	0.03-0.10
EC-A2 12-75C12E150	12.00	12.00	75.00	150.00	2	30.0	5.0	C	●	●	0.04-0.11

(1) C-Cylindrical

SOLIDMILL
PREMIUM LINE

ECS/ECCS-E-3

3 Flute 38° Helix with 3xD Relieved Necks, Short Solid Carbide Slot / Drill Endmills, with Chamfered Corners



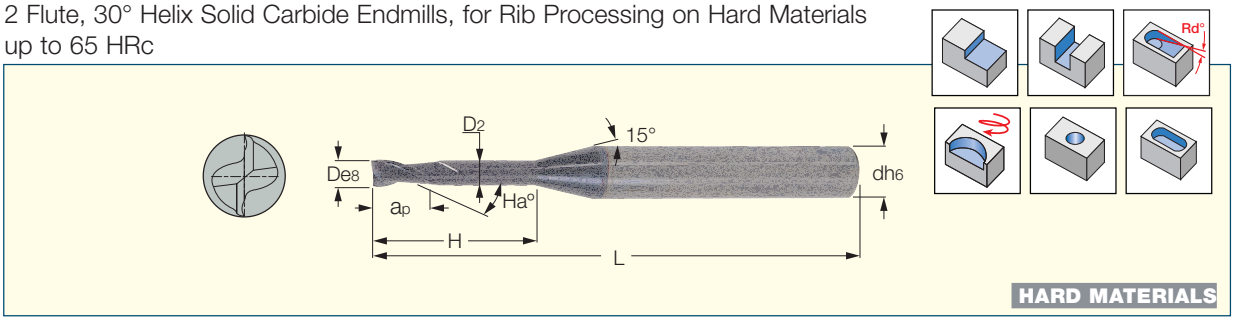
Designation	Dimensions											Tough ↔ Hard		Recommended Machining Data
	D	d	a_p	H	D_2	L	Flute	H_a°	R_d°	Shank(1)	Ch	IC300	IC900	f_z (mm/t)
ECS020E03-3W06-57	2.00	6.00	3.00	8.00	1.90	57.00	3	38.0	5.0	W	-		●	0.01-0.03
ECS025E03-3W06-57	2.50	6.00	3.00	8.00	2.40	57.00	3	38.0	5.0	W	-		●	0.01-0.03
ECS030E04-3W06-57	3.00	6.00	4.00	9.00	2.90	57.00	3	38.0	5.0	W	-		●	0.01-0.04
ECS035E04-3W06-57	3.50	6.00	4.00	12.00	3.40	57.00	3	38.0	5.0	W	-		●	0.01-0.04
ECS040E05-3W06-57	4.00	6.00	5.00	13.00	3.90	57.00	3	38.0	5.0	W	-	●	●	0.02-0.05
ECS050E06-3W06-57	5.00	6.00	6.00	14.00	4.90	57.00	3	38.0	5.0	W	-		●	0.02-0.06
ECCS060E07-3W06-57	6.00	6.00	7.00	15.00	5.90	57.00	3	38.0	5.0	W	0.15		●	0.03-0.07
ECCS070E08-3W08-63	7.00	8.00	8.00	20.00	6.70	63.00	3	38.0	5.0	W	0.15		●	0.03-0.08
ECCS080E09-3W08-63	8.00	8.00	9.00	21.00	7.60	63.00	3	38.0	5.0	W	0.15		●	0.03-0.09
ECCS090E10-3W10-72	9.00	10.00	10.00	22.00	8.60	72.00	3	38.0	5.0	W	0.15		●	0.03-0.09
ECCS100E11-3W10-72	10.00	10.00	11.00	23.00	9.50	72.00	3	38.0	5.0	W	0.25		●	0.03-0.10
ECCS120E12-3W12-83	12.00	12.00	12.00	24.00	11.30	83.00	3	38.0	5.0	W	0.25		●	0.04-0.11

(1) W-Weldon

SOLIDMILL
PREMIUM LINE

EC-A2 (rib processing)

2 Flute, 30° Helix Solid Carbide Endmills, for Rib Processing on Hard Materials up to 65 HRc



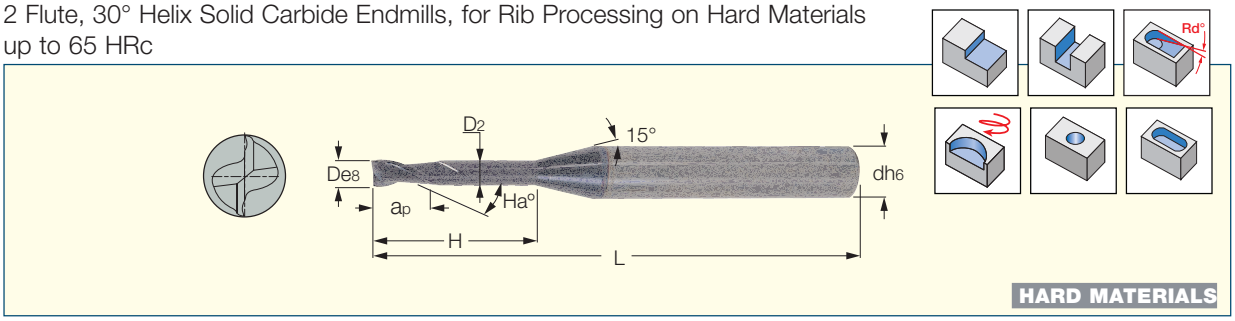
HARD MATERIALS

Designation	Dimensions										IC903	Recommended Machining Data
	D	d	a_p	H	L	D_2	Flute	H_a°	R_d°	Shank[1]		f_z (mm/t)
EC-A2 004-006/02C4M45	0.40	4.00	0.60	2.00	45.00	0.37	2	30.0	3.0	C	●	0.01-0.01
EC-A2 004-006/03C4M45	0.40	4.00	0.60	3.00	45.00	0.37	2	30.0	3.0	C	●	0.01-0.01
EC-A2 004-006/04C4M45	0.40	4.00	0.60	4.00	45.00	0.37	2	30.0	3.0	C	●	0.01-0.01
EC-A2 004-006/05C4M45	0.40	4.00	0.60	5.00	45.00	0.37	2	30.0	3.0	C	●	0.01-0.01
EC-A2 005-007/02C4M45	0.50	4.00	0.70	2.00	45.00	0.45	2	30.0	3.0	C	●	0.01-0.01
EC-A2 005-007/04C4M45	0.50	4.00	0.70	4.00	45.00	0.45	2	30.0	3.0	C	●	0.01-0.01
EC-A2 005-007/06C4M45	0.50	4.00	0.70	6.00	45.00	0.45	2	30.0	3.0	C	●	0.01-0.01
EC-A2 005-007/08C4M45	0.50	4.00	0.70	8.00	45.00	0.45	2	30.0	3.0	C	●	0.01-0.01
EC-A2 006-009/02C4M45	0.60	4.00	0.90	2.00	45.00	0.55	2	30.0	3.0	C	●	0.01-0.02
EC-A2 006-009/04C4M45	0.60	4.00	0.90	4.00	45.00	0.55	2	30.0	3.0	C	●	0.01-0.02
EC-A2 006-009/06C4M45	0.60	4.00	0.90	6.00	45.00	0.55	2	30.0	3.0	C	●	0.01-0.02
EC-A2 006-009/08C4M45	0.60	4.00	0.90	8.00	45.00	0.55	2	30.0	3.0	C	●	0.01-0.02
EC-A2 006-009/10C4M45	0.60	4.00	0.90	10.00	45.00	0.55	2	30.0	3.0	C	●	0.01-0.02
EC-A2 007-010/02C4M45	0.70	4.00	1.00	2.00	45.00	0.65	2	30.0	3.0	C	●	0.01-0.03
EC-A2 007-010/08C4M45	0.70	4.00	1.00	8.00	45.00	0.65	2	30.0	3.0	C	●	0.01-0.03
EC-A2 008-012/04C4M45	0.80	4.00	1.20	4.00	45.00	0.75	2	30.0	3.0	C	●	0.01-0.03
EC-A2 008-012/06C4M45	0.80	4.00	1.20	6.00	45.00	0.75	2	30.0	3.0	C	●	0.01-0.03
EC-A2 008-012/08C4M45	0.80	4.00	1.20	8.00	45.00	0.75	2	30.0	3.0	C	●	0.01-0.03
EC-A2 008-012/10C4M45	0.80	4.00	1.20	10.00	45.00	0.75	2	30.0	3.0	C	●	0.01-0.03
EC-A2 009-0135/06C4M45	0.90	4.00	1.35	6.00	45.00	0.85	2	30.0	3.0	C	●	0.01-0.03
EC-A2 009-0135/10C4M45	0.90	4.00	1.35	10.00	45.00	0.85	2	30.0	3.0	C	●	0.01-0.03
EC-A2 009-0135/15C4M50	0.90	4.00	1.35	15.00	50.00	0.85	2	30.0	3.0	C	●	0.01-0.03
EC-A2 010-015/04C4M45	1.00	4.00	1.50	4.00	45.00	0.97	2	30.0	3.0	C	●	0.01-0.01
EC-A2 010-015/06C4M45	1.00	4.00	1.50	6.00	45.00	0.97	2	30.0	3.0	C	●	0.01-0.01
EC-A2 010-015/08C4M45	1.00	4.00	1.50	8.00	45.00	0.95	2	30.0	3.0	C	●	0.01-0.01
EC-A2 010-015/10C4M45	1.00	4.00	1.50	10.00	45.00	0.95	2	30.0	3.0	C	●	0.01-0.01
EC-A2 010-015/12C4M45	1.00	4.00	1.50	12.00	45.00	0.93	2	30.0	3.0	C	●	0.01-0.01
EC-A2 010-015/16C4M50	1.00	4.00	1.50	16.00	50.00	0.93	2	30.0	3.0	C	●	0.01-0.01
EC-A2 010-015/20C4M55	1.00	4.00	1.50	20.00	55.00	0.93	2	30.0	3.0	C	●	0.01-0.01
EC-A2 012-018/06C4M45	1.20	4.00	1.80	6.00	45.00	1.17	2	30.0	3.0	C	●	0.01-0.01
EC-A2 012-018/08C4M45	1.20	4.00	1.80	8.00	45.00	1.15	2	30.0	3.0	C	●	0.01-0.01
EC-A2 012-018/10C4M45	1.20	4.00	1.80	10.00	45.00	1.15	2	30.0	3.0	C	●	0.01-0.01
EC-A2 012-018/16C4M50	1.20	4.00	1.80	16.00	50.00	1.13	2	30.0	3.0	C	●	0.01-0.01
EC-A2 014-021/06C4M45	1.40	4.00	2.10	6.00	45.00	1.35	2	30.0	3.0	C	●	0.01-0.01
EC-A2 014-021/08C4M45	1.40	4.00	2.10	8.00	45.00	1.35	2	30.0	3.0	C	●	0.01-0.01
EC-A2 014-021/10C4M45	1.40	4.00	2.10	10.00	45.00	1.35	2	30.0	3.0	C	●	0.01-0.01
EC-A2 015-023/06C4M45	1.50	4.00	2.30	6.00	45.00	1.47	2	30.0	3.0	C	●	0.01-0.02
EC-A2 015-023/08C4M45	1.50	4.00	2.30	8.00	45.00	1.45	2	30.0	3.0	C	●	0.01-0.02
EC-A2 015-023/10C4M45	1.50	4.00	2.30	10.00	45.00	1.45	2	30.0	3.0	C	●	0.01-0.02
EC-A2 015-023/12C4M45	1.50	4.00	2.30	12.00	45.00	1.41	2	30.0	3.0	C	●	0.01-0.02
EC-A2 015-023/14C4M50	1.50	4.00	2.30	14.00	50.00	1.41	2	30.0	3.0	C	●	0.01-0.02
EC-A2 015-023/16C4M50	1.50	4.00	2.30	16.00	50.00	1.41	2	30.0	3.0	C	●	0.01-0.02
EC-A2 015-023/20C4M55	1.50	4.00	2.30	20.00	55.00	1.41	2	30.0	3.0	C	●	0.01-0.02
EC-A2 016-024/06C4M45	1.60	4.00	2.40	6.00	45.00	1.57	2	30.0	3.0	C	●	0.01-0.02
EC-A2 016-024/08C4M45	1.60	4.00	2.40	8.00	45.00	1.55	2	30.0	3.0	C	●	0.01-0.02
EC-A2 016-024/10C4M45	1.60	4.00	2.40	10.00	45.00	1.55	2	30.0	3.0	C	●	0.01-0.02
EC-A2 016-024/18C4M55	1.60	4.00	2.40	18.00	55.00	1.53	2	30.0	3.0	C	●	0.01-0.02
EC-A2 016-024/26C4M60	1.60	4.00	2.40	26.00	60.00	1.53	2	30.0	3.0	C	●	0.01-0.02
EC-A2 018-027/06C4M45	1.80	4.00	2.70	6.00	45.00	1.77	2	30.0	3.0	C	●	0.01-0.03
EC-A2 018-027/08C4M45	1.80	4.00	2.70	8.00	45.00	1.75	2	30.0	3.0	C	●	0.01-0.03
EC-A2 018-027/10C4M45	1.80	4.00	2.70	10.00	45.00	1.75	2	30.0	3.0	C	●	0.01-0.03
EC-A2 018-027/12C4M45	1.80	4.00	2.70	12.00	45.00	1.73	2	30.0	3.0	C	●	0.01-0.03
EC-A2 018-027/14C4M50	1.80	4.00	2.70	14.00	50.00	1.73	2	30.0	3.0	C	●	0.01-0.03
EC-A2 020-030/06C4M45	2.00	4.00	3.00	6.00	45.00	1.97	2	30.0	3.0	C	●	0.01-0.03

[1] C-Cylindrical

EC-A2 (rib processing) (continued)

2 Flute, 30° Helix Solid Carbide Endmills, for Rib Processing on Hard Materials up to 65 HRc



HARD MATERIALS

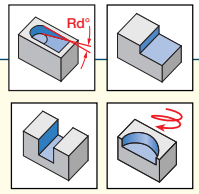
Designation	Dimensions										IC903	Recommended Machining Data
	D	d	a_p	H	L	D_2	Flute	H_a°	R_d°	Shank[1]		f_z (mm/t)
EC-A2 020-030/08C4M45	2.00	4.00	3.00	8.00	45.00	1.95	2	30.0	3.0	C	●	0.01-0.03
EC-A2 020-030/10C4M45	2.00	4.00	3.00	10.00	45.00	1.95	2	30.0	3.0	C	●	0.01-0.03
EC-A2 020-030/12C4M45	2.00	4.00	3.00	12.00	45.00	1.93	2	30.0	3.0	C	●	0.01-0.03
EC-A2 020-030/14C4M50	2.00	4.00	3.00	14.00	50.00	1.93	2	30.0	3.0	C	●	0.01-0.03
EC-A2 020-030/16C4M50	2.00	4.00	3.00	16.00	50.00	1.91	2	30.0	3.0	C	●	0.01-0.03
EC-A2 020-030/18C4M55	2.00	4.00	3.00	18.00	55.00	1.91	2	30.0	3.0	C	●	0.01-0.03
EC-A2 020-030/20C4M55	2.00	4.00	3.00	20.00	55.00	1.89	2	30.0	3.0	C	●	0.01-0.03
EC-A2 020-030/25C4M60	2.00	4.00	3.00	25.00	60.00	1.89	2	30.0	3.0	C	●	0.01-0.03
EC-A2 020-030/30C4M70	2.00	4.00	3.00	30.00	70.00	1.89	2	30.0	3.0	C	●	0.01-0.03
EC-A2 025-037/08C4M45	2.50	4.00	3.70	8.00	45.00	2.40	2	30.0	3.0	C	●	0.01-0.03
EC-A2 025-037/10C4M45	2.50	4.00	3.70	10.00	45.00	2.40	2	30.0	3.0	C	●	0.01-0.03
EC-A2 025-037/12C4M45	2.50	4.00	3.70	12.00	45.00	2.40	2	30.0	3.0	C	●	0.01-0.03
EC-A2 025-037/14C4M50	2.50	4.00	3.70	14.00	50.00	2.40	2	30.0	3.0	C	●	0.01-0.03
EC-A2 025-037/16C4M55	2.50	4.00	3.70	16.00	55.00	2.40	2	30.0	3.0	C	●	0.01-0.03
EC-A2 025-037/18C4M55	2.50	4.00	3.70	18.00	55.00	2.40	2	30.0	3.0	C	●	0.01-0.03
EC-A2 025-037/20C4M60	2.50	4.00	3.70	20.00	60.00	2.40	2	30.0	3.0	C	●	0.01-0.03
EC-A2 025-037/25C4M70	2.50	4.00	3.70	25.00	70.00	2.40	2	30.0	3.0	C	●	0.01-0.03
EC-A2 025-037/30C4M80	2.50	4.00	3.70	30.00	80.00	2.40	2	30.0	3.0	C	●	0.01-0.03
EC-A2 030-045/08C6M45	3.00	6.00	4.50	8.00	45.00	2.85	2	30.0	3.0	C	●	0.01-0.04
EC-A2 030-045/10C6M45	3.00	6.00	4.50	10.00	45.00	2.85	2	30.0	3.0	C	●	0.01-0.04
EC-A2 030-045/12C6M45	3.00	6.00	4.50	12.00	45.00	2.85	2	30.0	3.0	C	●	0.01-0.04
EC-A2 030-045/14C6M50	3.00	6.00	4.50	14.00	50.00	2.85	2	30.0	3.0	C	●	0.01-0.04
EC-A2 030-045/16C6M55	3.00	6.00	4.50	16.00	55.00	2.85	2	30.0	3.0	C	●	0.01-0.04
EC-A2 030-045/18C6M55	3.00	6.00	4.50	18.00	55.00	2.85	2	30.0	3.0	C	●	0.01-0.04
EC-A2 030-045/20C6M60	3.00	6.00	4.50	20.00	60.00	2.85	2	30.0	3.0	C	●	0.01-0.04
EC-A2 030-045/25C6M65	3.00	6.00	4.50	25.00	65.00	2.85	2	30.0	3.0	C	●	0.01-0.04
EC-A2 030-045/30C6M70	3.00	6.00	4.50	30.00	70.00	2.85	2	30.0	3.0	C	●	0.01-0.04
EC-A2 030-045/35C6M80	3.00	6.00	4.50	35.00	80.00	2.85	2	30.0	3.0	C	●	0.01-0.04
EC-A2 030-045/40C6M90	3.00	6.00	4.50	40.00	90.00	2.85	2	30.0	3.0	C	●	0.01-0.04
EC-A2 040-060/12C6M50	4.00	6.00	6.00	12.00	50.00	3.80	2	30.0	3.0	C	●	0.02-0.05
EC-A2 040-060/16C6M60	4.00	6.00	6.00	16.00	60.00	3.80	2	30.0	3.0	C	●	0.02-0.05
EC-A2 040-060/20C6M60	4.00	6.00	6.00	20.00	60.00	3.80	2	30.0	3.0	C	●	0.02-0.05
EC-A2 040-060/25C6M70	4.00	6.00	6.00	25.00	70.00	3.80	2	30.0	3.0	C	●	0.02-0.05
EC-A2 040-060/30C6M70	4.00	6.00	6.00	30.00	70.00	3.80	2	30.0	3.0	C	●	0.02-0.05
EC-A2 040-060/35C6M80	4.00	6.00	6.00	35.00	80.00	3.80	2	30.0	3.0	C	●	0.02-0.05
EC-A2 040-060/40C6M90	4.00	6.00	6.00	40.00	90.00	3.80	2	30.0	3.0	C	●	0.02-0.05
EC-A2 040-060/45C6M90	4.00	6.00	6.00	45.00	90.00	3.80	2	30.0	3.0	C	●	0.02-0.05
EC-A2 040-060/50C6M100	4.00	6.00	6.00	50.00	100.00	3.80	2	30.0	3.0	C	●	0.02-0.05
EC-A2 050-075/16C6M60	5.00	6.00	7.50	16.00	60.00	4.80	2	30.0	3.0	C	●	0.02-0.06
EC-A2 050-075/20C6M60	5.00	6.00	7.50	20.00	60.00	4.80	2	30.0	3.0	C	●	0.02-0.06
EC-A2 050-075/25C6M70	5.00	6.00	7.50	25.00	70.00	4.80	2	30.0	3.0	C	●	0.02-0.06
EC-A2 050-075/30C6M80	5.00	6.00	7.50	30.00	80.00	4.80	2	30.0	3.0	C	●	0.02-0.06
EC-A2 050-075/35C6M80	5.00	6.00	7.50	35.00	80.00	4.80	2	30.0	3.0	C	●	0.02-0.06
EC-A2 050-075/40C6M80	5.00	6.00	7.50	40.00	80.00	4.80	2	30.0	3.0	C	●	0.02-0.06
EC-A2 050-075/50C6M110	5.00	6.00	7.50	50.00	110.00	4.80	2	30.0	3.0	C	●	0.02-0.06
EC-A2 060-090/20C6M80	6.00	6.00	9.00	20.00	80.00	5.70	2	30.0	3.0	C	●	0.02-0.06
EC-A2 060-090/30C6M90	6.00	6.00	9.00	30.00	90.00	5.70	2	30.0	3.0	C	●	0.02-0.06
EC-A2 060-090/40C6M100	6.00	6.00	9.00	40.00	100.00	5.60	2	30.0	3.0	C	●	0.02-0.06
EC-A2 060-090/50C6M110	6.00	6.00	9.00	50.00	110.00	5.60	2	30.0	3.0	C	●	0.02-0.06

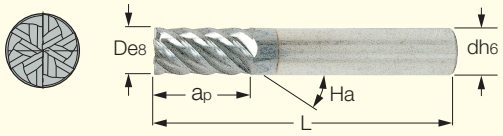
[1] C-Cylindrical

SOLIDMILL
PREMIUM LINE

ECH-B-6

6 Flute, 45° Helix Medium Length Solid Carbide Endmills, for Finishing of Hard Materials up to 65 HRc





HARD MATERIALS

Designation	Dimensions D	d	a_p	L	Flute	H_a°	Shank[1]	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	●	●	0.03-0.07
ECH060B16-6W06	6.00	6.00	16.00	57.00	6	45.0	W	●		0.03-0.07
ECH080B20-6C08	8.00	8.00	20.00	63.00	6	45.0	C	●	●	0.03-0.09
ECH080B20-6W08	8.00	8.00	20.00	63.00	6	45.0	W	●		0.03-0.09
ECH100B22-6C10	10.00	10.00	22.00	72.00	6	45.0	C	●	●	0.03-0.10
ECH100B22-6W10	10.00	10.00	22.00	72.00	6	45.0	W	●		0.03-0.10
ECH120B25-6C12	12.00	12.00	25.00	83.00	6	45.0	C	●	●	0.04-0.11
ECH120B25-6W12	12.00	12.00	25.00	83.00	6	45.0	W	●		0.04-0.11

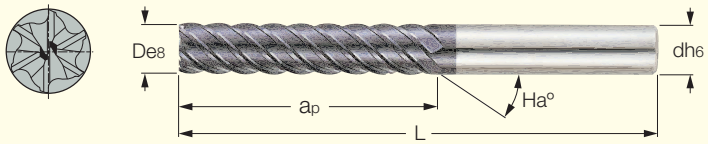
• Use IC903 for machining hardened steel up to 65 HRc

[1] C-Cylindrical, W-Weldon

SOLIDMILL
PREMIUM LINE

EC-B6

6 Flute, 45° Helix Extra Long Solid Carbide Endmills, for Finishing of Hard Materials up to 65 HRc



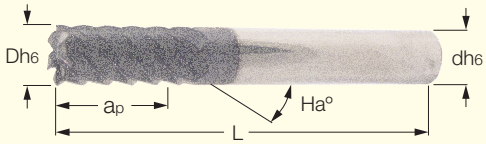
HARD MATERIALS

Designation	Dimensions D	d	a_p	L	Flute	H_a°	Shank(1)	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	●	0.03-0.07
EC-B6 080-036C08-90	8.00	8.00	36.00	90.00	6	45.0	C	●	0.03-0.09
EC-B6 100-46C10-100	10.00	10.00	46.00	100.00	6	45.0	C	●	0.03-0.10
EC-B6 120-56C12-110	12.00	12.00	56.00	110.00	6	45.0	C	●	0.04-0.11

(1) C-Cylindrical

EC-D6

6 Flute, 50° Helix Medium Length Solid Carbide Endmills, for Finishing of Hard Materials up to 65 HRc



HARD MATERIALS

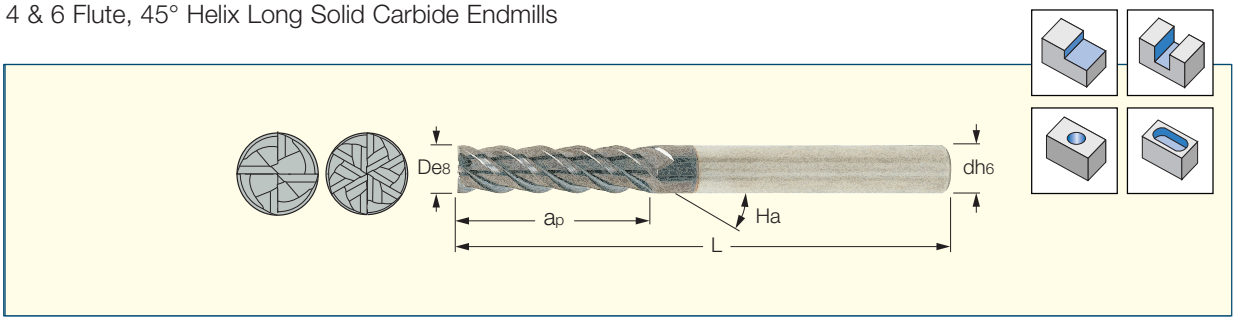
Designation	Dimensions D	d	a_p	L	Flute	H_a°	Shank(1)	R_d°	IC903	Recommended Machining Data f_z (mm/t)
EC-D6 06-13C06H57	6.00	6.00	13.00	57.00	6	50.0	C	5.0	●	0.03-0.07
EC-D6 08-20C08H63	8.00	8.00	20.00	63.00	6	50.0	C	5.0	●	0.03-0.09
EC-D6 10-22C10H72	10.00	10.00	22.00	72.00	6	50.0	C	5.0	●	0.03-0.10
EC-D6 12-25C12H83	12.00	12.00	25.00	83.00	6	50.0	C	5.0	●	0.04-0.11
EC-D6 12-25W12H83	12.00	12.00	25.00	83.00	6	50.0	W	5.0	●	0.04-0.11

(1) W-Weldon, C-Cylindrical

SOLIDMILL
PREMIUM LINE

ECL-B-4

4 & 6 Flute, 45° Helix Long Solid Carbide Endmills



Designation	Dimensions D	d	a_p	L	Flute	H_a°	Shank(1)	IC900	Recommended Machining Data f_z (mm/t)
ECL060B24-4C06	6.00	6.00	24.00	65.00	4	45.0	C	●	0.03-0.07
ECL060B24-4W06	6.00	6.00	24.00	65.00	4	45.0	W	●	0.03-0.07
ECL080B32-4C08	8.00	8.00	32.00	80.00	4	45.0	C	●	0.03-0.09
ECL080B32-4W08	8.00	8.00	32.00	80.00	4	45.0	W	●	0.03-0.09
ECL100B40-4C10	10.00	10.00	40.00	100.00	4	45.0	C	●	0.03-0.10
ECL100B40-4W10	10.00	10.00	40.00	100.00	4	45.0	W	●	0.03-0.10
ECL120B48-4C12	12.00	12.00	48.00	100.00	4	45.0	C	●	0.04-0.11
ECL120B48-4W12	12.00	12.00	48.00	100.00	4	45.0	W	●	0.04-0.11

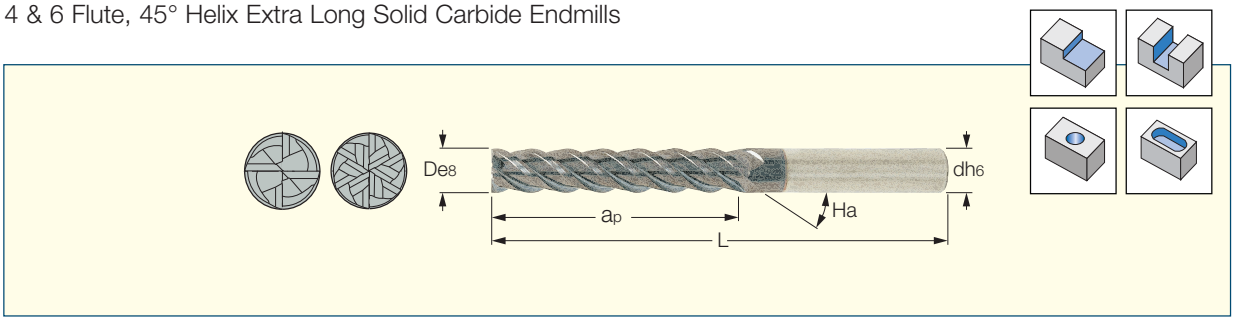
• Smooth cutting in extra long depth

(1) C-Cylindrical, W-Weldon

SOLIDMILL
PREMIUM LINE

ECXL-B-4

4 & 6 Flute, 45° Helix Extra Long Solid Carbide Endmills



Designation	Dimensions D	d	a_p	L	Flute	H_a°	Shank(1)	IC900	Recommended Machining Data f_z (mm/t)
ECXL100B60-4C10	10.00	10.00	60.00	112.00	4	45.0	C	●	0.03-0.10
ECXL100B60-4W10	10.00	10.00	60.00	112.00	4	45.0	W	●	0.03-0.10
ECXL120B72-4C12	12.00	12.00	72.00	150.00	4	45.0	C	●	0.04-0.11
ECXL120B72-4W12	12.00	12.00	72.00	150.00	4	45.0	W	●	0.04-0.11

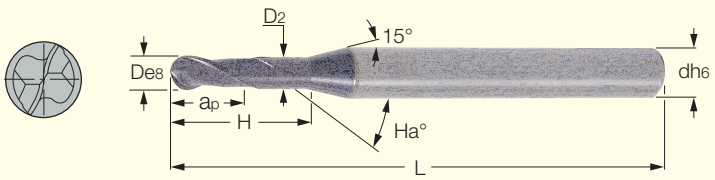
• Smooth cutting in extra long depth.

(1) C-Cylindrical, W-Weldon

SOLIDMILL
PREMIUM LINE

EB-A2 (rib processing)

2 Flute, 30° Helix Rib Processing Solid Carbide Ball Nose Endmills, for Materials up to 65 HRc



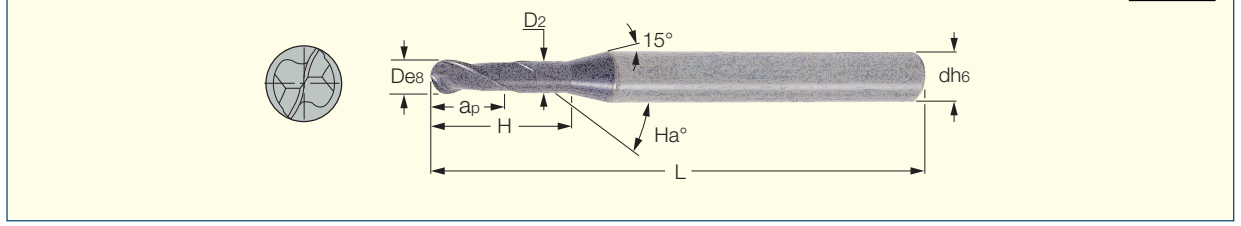
HARD MATERIALS

Designation	Dimensions									IC903
	D	d	a_p	L	H	D_2	Flute	H_a°	Shank(1)	
EB-A2 004-006/01C4M45	0.40	4.00	0.60	45.00	1.00	0.36	2	30.0	C	●
EB-A2 004-006/02C4M45	0.40	4.00	0.60	45.00	2.00	0.36	2	30.0	C	●
EB-A2 004-006/03C4M45	0.40	4.00	0.60	45.00	3.00	0.36	2	30.0	C	●
EB-A2 005-007/02C4M45	0.50	4.00	0.70	45.00	2.00	0.45	2	30.0	C	●
EB-A2 005-007/04C4M45	0.50	4.00	0.70	45.00	4.00	0.45	2	30.0	C	●
EB-A2 005-007/06C4M45	0.50	4.00	0.70	45.00	6.00	0.45	2	30.0	C	●
EB-A2 005-007/08C4M45	0.50	4.00	0.70	45.00	8.00	0.45	2	30.0	C	●
EB-A2 006-009/02C4M45	0.60	4.00	0.90	45.00	2.00	0.55	2	30.0	C	●
EB-A2 006-009/04C4M45	0.60	4.00	0.90	45.00	4.00	0.55	2	30.0	C	●
EB-A2 006-009/06C4M45	0.60	4.00	0.90	45.00	6.00	0.55	2	30.0	C	●
EB-A2 006-009/08C4M45	0.60	4.00	0.90	45.00	8.00	0.55	2	30.0	C	●
EB-A2 008-012/02C4M45	0.80	4.00	1.20	45.00	2.00	0.75	2	30.0	C	●
EB-A2 008-012/04C4M45	0.80	4.00	1.20	45.00	4.00	0.75	2	30.0	C	●
EB-A2 008-012/06C4M45	0.80	4.00	1.20	45.00	6.00	0.75	2	30.0	C	●
EB-A2 008-012/10C4M45	0.80	4.00	1.20	45.00	10.00	0.75	2	30.0	C	●
EB-A2 010-015/03C4M45	1.00	4.00	1.50	45.00	3.00	0.97	2	30.0	C	●
EB-A2 010-015/04C4M45	1.00	4.00	1.50	45.00	4.00	0.97	2	30.0	C	●
EB-A2 010-015/05C4M45	1.00	4.00	1.50	45.00	5.00	0.97	2	30.0	C	●
EB-A2 010-015/06C4M45	1.00	4.00	1.50	45.00	6.00	0.97	2	30.0	C	●
EB-A2 010-015/07C4M45	1.00	4.00	1.50	45.00	7.00	0.95	2	30.0	C	●
EB-A2 010-015/08C4M45	1.00	4.00	1.50	45.00	8.00	0.95	2	30.0	C	●
EB-A2 010-015/10C4M45	1.00	4.00	1.50	45.00	10.00	0.95	2	30.0	C	●
EB-A2 010-015/12C4M45	1.00	4.00	1.50	45.00	12.00	0.93	2	30.0	C	●
EB-A2 010-015/14C4M50	1.00	4.00	1.50	50.00	14.00	0.93	2	30.0	C	●
EB-A2 010-015/16C4M50	1.00	4.00	1.50	50.00	16.00	0.93	2	30.0	C	●
EB-A2 010-015/20C4M55	1.00	4.00	1.50	55.00	20.00	0.93	2	30.0	C	●
EB-A2 012-018/08C4M45	1.20	4.00	1.80	45.00	8.00	1.17	2	30.0	C	●
EB-A2 012-018/12C4M45	1.20	4.00	1.80	45.00	12.00	1.13	2	30.0	C	●
EB-A2 014-021/08C4M45	1.40	4.00	2.10	45.00	8.00	1.35	2	30.0	C	●
EB-A2 014-021/16C4M50	1.40	4.00	2.10	50.00	16.00	1.31	2	30.0	C	●
EB-A2 015-015/03C04M50	1.50	4.00	1.50	50.00	3.00	1.47	2	30.0	C	●
EB-A2 015-023/06C4M45	1.50	4.00	2.30	45.00	6.00	1.47	2	30.0	C	●
EB-A2 015-023/08C4M45	1.50	4.00	2.30	45.00	8.00	1.45	2	30.0	C	●
EB-A2 015-023/10C4M45	1.50	4.00	2.30	45.00	10.00	1.45	2	30.0	C	●
EB-A2 015-023/12C4M45	1.50	4.00	2.30	45.00	12.00	1.43	2	30.0	C	●
EB-A2 015-023/16C4M50	1.50	4.00	2.30	50.00	16.00	1.41	2	30.0	C	●
EB-A2 015-023/20C4M55	1.50	4.00	2.30	55.00	20.00	1.39	2	30.0	C	●
EB-A2 016-024/08C4M45	1.60	4.00	2.40	45.00	8.00	1.55	2	30.0	C	●
EB-A2 016-024/12C4M45	1.60	4.00	2.40	45.00	12.00	1.53	2	30.0	C	●
EB-A2 018-027/08C4M45	1.80	4.00	2.70	45.00	8.00	1.75	2	30.0	C	●
EB-A2 018-027/12C4M45	1.80	4.00	2.70	45.00	12.00	1.73	2	30.0	C	●
EB-A2 018-027/16C4M50	1.80	4.00	2.70	50.00	16.00	1.71	2	30.0	C	●
EB-A2 020-030/04C4M45	2.00	4.00	3.00	45.00	4.00	1.97	2	30.0	C	●
EB-A2 020-030/06C4M45	2.00	4.00	3.00	45.00	6.00	1.97	2	30.0	C	●
EB-A2 020-030/10C4M45	2.00	4.00	3.00	45.00	10.00	1.93	2	30.0	C	●
EB-A2 020-030/12C4M50	2.00	4.00	3.00	50.00	12.00	1.93	2	30.0	C	●
EB-A2 020-030/14C4M50	2.00	4.00	3.00	50.00	14.00	1.93	2	30.0	C	●
EB-A2 020-030/16C4M50	2.00	4.00	3.00	50.00	16.00	1.91	2	30.0	C	●
EB-A2 020-030/20C4M55	2.00	4.00	3.00	55.00	20.00	1.89	2	30.0	C	●
EB-A2 020-030/25C4M60	2.00	4.00	3.00	60.00	25.00	1.89	2	30.0	C	●
EB-A2 020-030/30C4M70	2.00	4.00	3.00	70.00	30.00	1.89	2	30.0	C	●
EB-A2 030-045/08C6M50	3.00	6.00	4.50	50.00	8.00	2.85	2	30.0	C	●
EB-A2 030-045/10C6M50	3.00	6.00	4.50	50.00	10.00	2.85	2	30.0	C	●

(1) C-Cylindrical

EB-A2 (rib processing) (continued)

2 Flute, 30° Helix Rib Processing Solid Carbide Ball Nose Endmills, for Materials up to 65 HRc



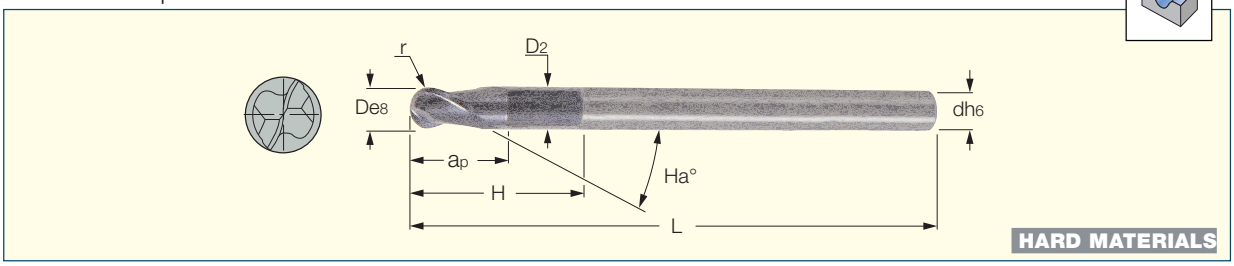
Designation	Dimensions									IC903
	D	d	a_p	L	H	D_2	Flute	H_a°	Shank(1)	
EB-A2 030-045/12C6M50	3.00	6.00	4.50	50.00	12.00	2.85	2	30.0	C	●
EB-A2 030-045/16C6M55	3.00	6.00	4.50	55.00	16.00	2.85	2	30.0	C	●
EB-A2 030-045/20C6M60	3.00	6.00	4.50	60.00	20.00	2.85	2	30.0	C	●
EB-A2 030-045/25C6M65	3.00	6.00	4.50	65.00	25.00	2.85	2	30.0	C	●
EB-A2 030-045/30C6M70	3.00	6.00	4.50	70.00	30.00	2.85	2	30.0	C	●
EB-A2 030-045/35C6M80	3.00	6.00	4.50	80.00	35.00	2.85	2	30.0	C	●
EB-A2 040-060/10C6M60	4.00	6.00	6.00	60.00	10.00	3.80	2	30.0	C	●
EB-A2 040-060/12C6M60	4.00	6.00	6.00	60.00	12.00	3.80	2	30.0	C	●
EB-A2 040-060/16C6M60	4.00	6.00	6.00	60.00	16.00	3.80	2	30.0	C	●
EB-A2 040-060/20C6M65	4.00	6.00	6.00	65.00	20.00	3.80	2	30.0	C	●
EB-A2 040-060/25C6M70	4.00	6.00	6.00	70.00	25.00	3.80	2	30.0	C	●
EB-A2 040-060/30C6M70	4.00	6.00	6.00	70.00	30.00	3.80	2	30.0	C	●
EB-A2 040-060/35C6M80	4.00	6.00	6.00	80.00	35.00	3.80	2	30.0	C	●
EB-A2 040-060/45C6M90	4.00	6.00	6.00	90.00	45.00	3.80	2	30.0	C	●
EB-A2 050-075/20C6M60	5.00	6.00	7.50	60.00	20.00	4.80	2	30.0	C	●
EB-A2 050-075/25C6M70	5.00	6.00	7.50	70.00	25.00	4.80	2	30.0	C	●
EB-A2 050-075/30C6M80	5.00	6.00	7.50	80.00	30.00	4.80	2	30.0	C	●
EB-A2 050-075/35C6M80	5.00	6.00	7.50	80.00	35.00	4.80	2	30.0	C	●
EB-A2 060-090/20C6M80	6.00	6.00	9.00	80.00	20.00	5.80	2	30.0	C	●
EB-A2 060-090/30C6M90	6.00	6.00	9.00	90.00	30.00	5.80	2	30.0	C	●
EB-A2 060-090/40C6M100	6.00	6.00	9.00	100.00	40.00	5.80	2	30.0	C	●
EB-A2 060-090/50C6M110	6.00	6.00	9.00	110.00	50.00	5.80	2	30.0	C	●

(1) C-Cylindrical

SOLIDMILL
PREMIUM LINE

EB-A2 (precision stub cut)

High Precision Ball Nose with 2 Flutes 30° Helix, Stub Cut Length and Relieved Necks, for Materials up to 65 HRc



HARD MATERIALS

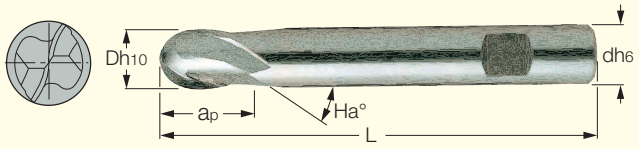
Designation	Dimensions										IC903
	D	r	d	a_p	H	L	D_2	Flute	H_a°	Shank(1)	
EB-A2 01-01/02C04M50	1.00	0.50	4.00	1.00	2.20	50.00	0.95	2	30.0	C	●
EB-A2 01-01/02C06M50	1.00	0.50	6.00	1.00	2.20	50.00	0.95	2	30.0	C	●
EB-A2 012-012/02C04M50	1.20	0.60	4.00	1.20	2.60	50.00	1.10	2	30.0	C	●
EB-A2 02-02/04C06M50	2.00	1.00	6.00	2.00	4.00	50.00	1.90	2	30.0	C	●
EB-A2 025-025/05C06M60	2.50	1.25	6.00	2.50	5.00	60.00	2.40	2	30.0	C	●
EB-A2 03-03/06C06M60	3.00	1.50	6.00	3.00	6.00	60.00	2.90	2	30.0	C	●
EB-A2 04-04/08C06M70	4.00	2.00	6.00	4.00	8.00	70.00	3.90	2	30.0	C	●
EB-A2 05-05/10C06M80	5.00	2.50	6.00	5.00	10.00	80.00	4.90	2	30.0	C	●
EB-A2 06-06/12C06M90	6.00	3.00	6.00	6.00	12.00	90.00	5.90	2	30.0	C	●
EB-A2 07-07/14C08M90	7.00	3.50	8.00	7.00	14.00	90.00	6.90	2	30.0	C	●
EB-A2 08-08/16C08M100	8.00	4.00	8.00	8.00	16.00	100.00	7.90	2	30.0	C	●
EB-A2 09-09/18C10M100	9.00	4.50	10.00	9.00	18.00	100.00	8.90	2	30.0	C	●
EB-A2 10-10/20C10M100	10.00	5.00	10.00	10.00	20.00	100.00	9.90	2	30.0	C	●
EB-A2 12-12/24C12M110	12.00	6.00	12.00	12.00	24.00	110.00	11.90	2	30.0	C	●

(1) C-Cylindrical

SOLIDMILL
TEC LINE

EB-A2 (economical)

Economical Type 2 Flute, 30° Helix Ball Nose Solid Carbide Endmills



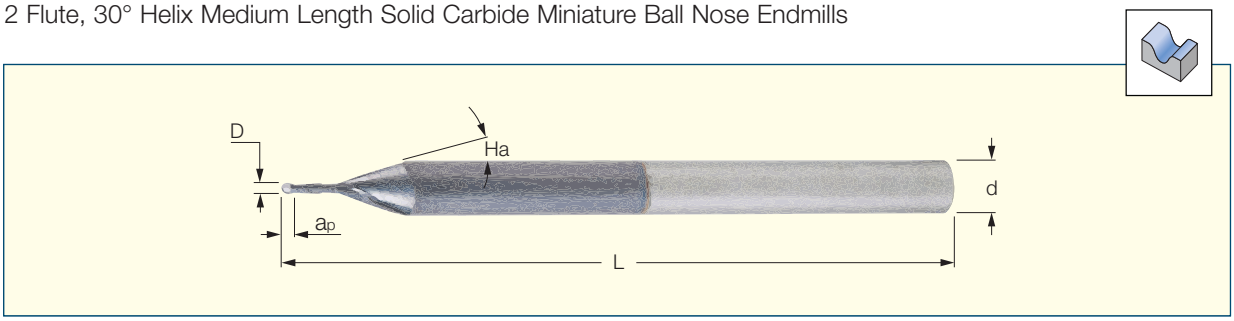
Designation	Dimensions							Tough ↔ Hard	
	D	d	a_p	L	Flute	H_a°	Shank[1]	IC08	IC900
EB-A2 02-06C03E38	2.00	3.00	6.00	38.00	2	30.0	C	●	●
EB-A2 02-04C06E48	2.00	6.00	4.00	48.00	2	30.0	C	●	●
EB-A2 025-04C06E48	2.50	6.00	4.00	48.00	2	30.0	C	●	●
EB-A2 03-04C06E48	3.00	6.00	4.00	48.00	2	30.0	C	●	●
EB-A2 03-07W06E57	3.00	6.00	7.00	57.00	2	30.0	W	●	●
EB-A2 04-06C06E50	4.00	6.00	6.00	50.00	2	30.0	C	●	●
EB-A2 04-08W06E57	4.00	6.00	8.00	57.00	2	30.0	W	●	●
EB-A2 05-07C06E51	5.00	6.00	7.00	51.00	2	30.0	C	●	
EB-A2 05-10W06E57	5.00	6.00	10.00	57.00	2	30.0	W	●	●
EB-A2 06-07C06E51	6.00	6.00	7.00	51.00	2	30.0	C	●	●
EB-A2 06-10W06E57	6.00	6.00	10.00	57.00	2	30.0	W	●	●
EB-A2 08-09C08E59	8.00	8.00	9.00	59.00	2	30.0	C	●	●
EB-A2 08-16W08E63	8.00	8.00	16.00	63.00	2	30.0	W	●	●
EB-A2 10-10C10E60	10.00	10.00	10.00	60.00	2	30.0	C	●	●
EB-A2 10-19W10E72	10.00	10.00	19.00	72.00	2	30.0	W	●	●
EB-A2 12-14C12E71	12.00	12.00	14.00	71.00	2	30.0	C	●	●
EB-A2 12-22W12E83	12.00	12.00	22.00	83.00	2	30.0	W	●	●
EB-A2 14-14C14E71	14.00	14.00	14.00	71.00	2	30.0	C	●	●

[1] C-Cylindrical, W-Weldon

SOLIDMILL
PREMIUM LINE

EBM-A-2

2 Flute, 30° Helix Medium Length Solid Carbide Miniature Ball Nose Endmills



Designation	Dimensions D	r	d	a_p	L	Flute	H_a°	Shank(1)	Tough ↔ Hard IC08	IC900
EBM004A008-2C03	0.40	0.20	3.00	0.80	38.00	2	30.0	C	●	●
EBM005A010-2C03	0.50	0.25	3.00	1.00	38.00	2	30.0	C	●	●
EBM006A012-2C03	0.60	0.30	3.00	1.20	38.00	2	30.0	C	●	●
EBM007A014-2C03	0.70	0.35	3.00	1.40	38.00	2	30.0	C	●	
EBM008A016-2C03	0.80	0.40	3.00	1.60	38.00	2	30.0	C	●	●
EBM010A025-2C04	1.00	0.50	4.00	2.50	50.00	2	30.0	C	●	●
EBM011A025-2C04	1.10	0.55	4.00	2.50	50.00	2	30.0	C	●	
EBM012A030-2C04	1.20	0.60	4.00	3.00	50.00	2	30.0	C	●	●
EBM016A040-2C04	1.60	0.80	4.00	4.00	50.00	2	30.0	C	●	●
EBM020A060-2C04	2.00	1.00	4.00	6.00	50.00	2	30.0	C	●	●

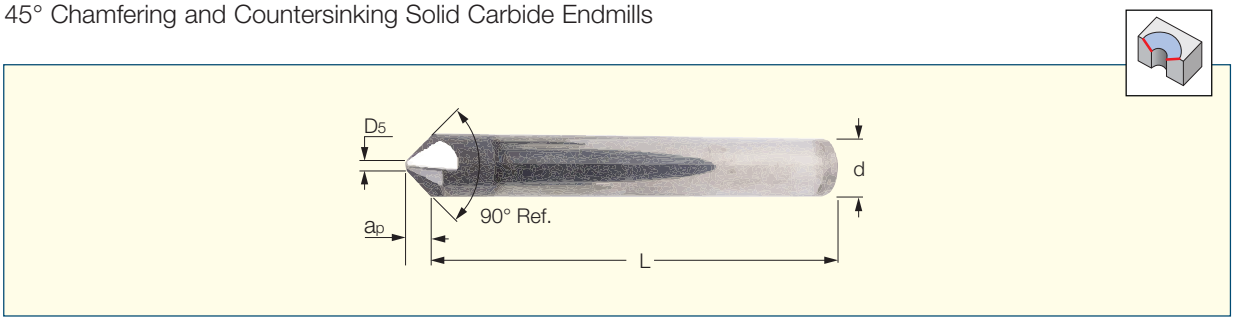
• Short and stable design for profiling (roughing).

(1) C-Cylindrical

SOLIDMILL
PREMIUM LINE

ECF../45

45° Chamfering and Countersinking Solid Carbide Endmills



Designation	Dimensions D_5	d	a_p	L	Flute	Shank(1)	IC900
ECF D-1.5/45-4C04	1.00	4.00	1.50	50.00	4	C	●
ECF D-2/45-4C06	2.00	6.00	2.00	57.00	4	C	●
ECF D-3/45-4C08	2.00	8.00	3.00	63.00	4	C	●
ECF D-4/45-4C10	2.00	10.00	4.00	72.00	4	C	●
ECF D-5/45-4C12	2.00	12.00	5.00	83.00	4	C	●

(1) C-Cylindrical

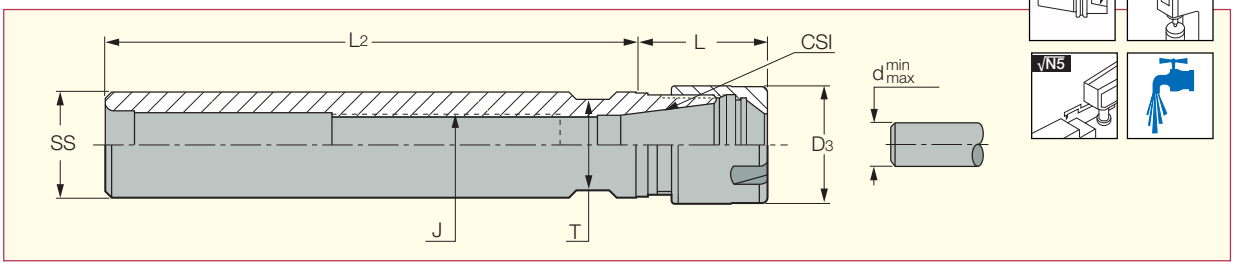
TOOLHOLDING SYSTEMS

Member IMC Group

Straight Shank

ST-ER-M (mini)

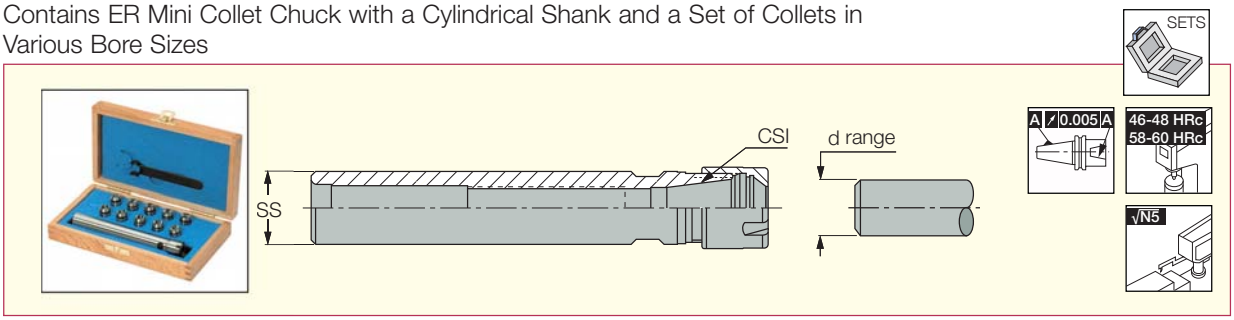
DIN 6499 ER Mini Collet Chucks with Cylindrical Shanks



Designation	SS	CSI	d min	d max	L_2	L	J	D_3	T	Kg
ST 12X 80 ER11 M	12	ER11	0.5	7.0	80.00	26.50	-	16.00	11.0	0.06
ST 16X100 ER11 M	16	ER11	0.5	7.0	100.00	18.50	M8	16.00	13.0	0.10
ST 16X150 ER11 M	16	ER11	0.5	7.0	150.00	18.50	M8	16.00	13.0	0.19
ST 22X150 ER11 M	22	ER11	0.5	7.0	150.00	18.50	M12	16.00	13.0	0.40
ST 12X 80 ER16 M	12	ER16	0.5	10.0	80.00	36.50	-	22.00	17.0	0.30
ST 20X100 ER16 M	20	ER16	0.5	10.0	100.00	25.00	M12	22.00	17.0	0.40
ST 20X150 ER16 M	20	ER16	0.5	10.0	150.00	25.00	M12	22.00	17.0	0.40
ST 20X100 ER20 M	20	ER20	1.0	13.0	100.00	40.00	M12	28.00	21.0	0.40
ST 20X150 ER20 M	20	ER20	1.0	13.0	150.00	40.00	M12	28.00	21.0	0.31

KIT ST-ER-M/MF

Contains ER Mini Collet Chuck with a Cylindrical Shank and a Set of Collets in Various Bore Sizes



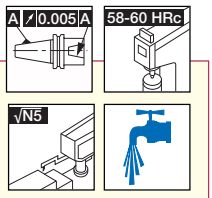
Designation	SS	CSI	d Range	Qty
KIT ST12X80 7 ER11 M	12	ER11	0.5-7	7
KIT ST12X80 10 ER16 M	12	ER16	0.5-10	10
KIT ST16X50 7 ER11MF	16	ER11	0.5-7	7
KIT ST16X100 7 ER11 M	16	ER11	0.5-7	7
KIT ST16X150 7 ER11 M	16	ER11	0.5-7	7
KIT ST20X100 10 ER16 M	20	ER16	0.5-10	10
KIT ST20X150 10 ER16 M	20	ER16	0.5-10	10
KIT ST20X100 12 ER20 M	20	ER20	1-12	12
KIT ST20X150 12 ER20 M	20	ER20	1-12	12

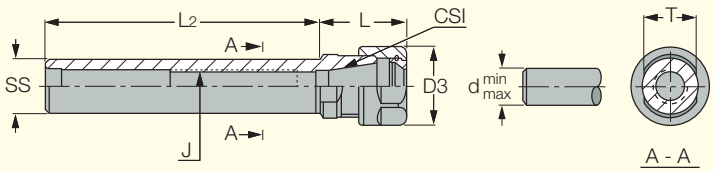
• F suffix indicates a flat on the shank.

Straight Shank

ST-ER

DIN 6499 ER Collet Chucks with Straight Shanks



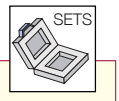


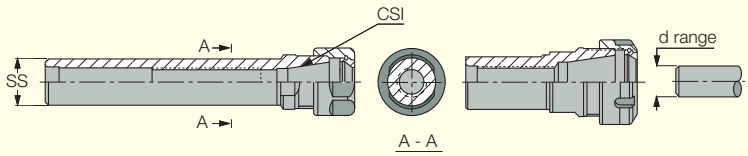
Designation	SS	CSI	d min	d max	L2	L	J	D3	T	Kg
ST 16X 50 ER11 F (1)	16	ER11	0.5	7.0	50.00	18.50	M8	19.00	13.0	0.06
ST 20X 50 ER11 F (1)	20	ER11	0.5	7.0	50.00	18.50	M10	19.00	17.0	0.08
ST 20X100 ER11	20	ER11	0.5	7.0	100.00	18.50	M10	19.00	17.0	0.20
ST 20X150 ER11	20	ER11	0.5	7.0	150.00	18.50	M10	19.00	17.0	0.25
ST 20X 50 ER16 F (1)	20	ER16	0.5	10.0	50.00	32.30	M12	28.00	19.0	0.07
ST 20X100 ER16	20	ER16	0.5	10.0	100.00	30.00	M12	28.00	19.0	0.20
ST 20X100 ER16 F (1)	20	ER16	0.5	10.0	100.00	30.00	M12	28.00	19.0	0.30
ST 20X150 ER16	20	ER16	0.5	10.0	150.00	30.00	M12	28.00	19.0	0.28
ST 20X 50 ER20 F (1)	20	ER20	1.0	13.0	50.00	42.50	M12	34.00	22.0	0.15

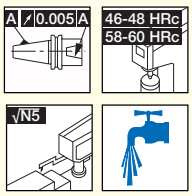
(1) With a clamping flat.

KIT ST-ER

Contains 1 ER Collet Chuck with a Cylindrical Shank and a Set of Collets in Various Bore Sizes







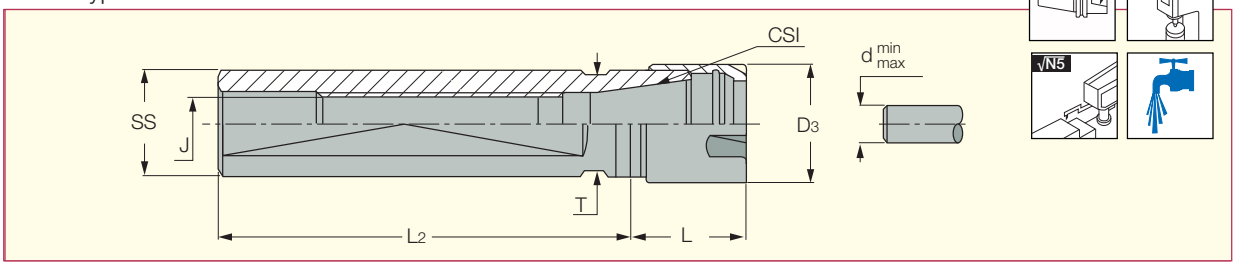
Designation		SS	CSI	d Range	Qty
KIT ST16X50	7 ER11 F	16	ER11	0.5-7	7
KIT ST20X100	7 ER11	20	ER11	0.5-7	7
KIT ST20X150	7 ER11	20	ER11	0.5-7	7
KIT ST20X50	10 ER16 F	20	ER16	0.5-10	10
KIT ST20X100	10 ER16	20	ER16	0.5-10	10
KIT ST20X150	10 ER16	20	ER16	0.5-10	10
KIT ST20X50	12 ER20 F	20	ER20	1.0-12	12

• F suffix indicates a flat on the shank. • For ER collets see pages: F8-11

Straight Shank

ST-ER-MF (mini flat)

DIN 6499 ER Mini Collet Chucks with Cylindrical Shanks and a Flat for Clamping on Swiss Type CNC Lathes



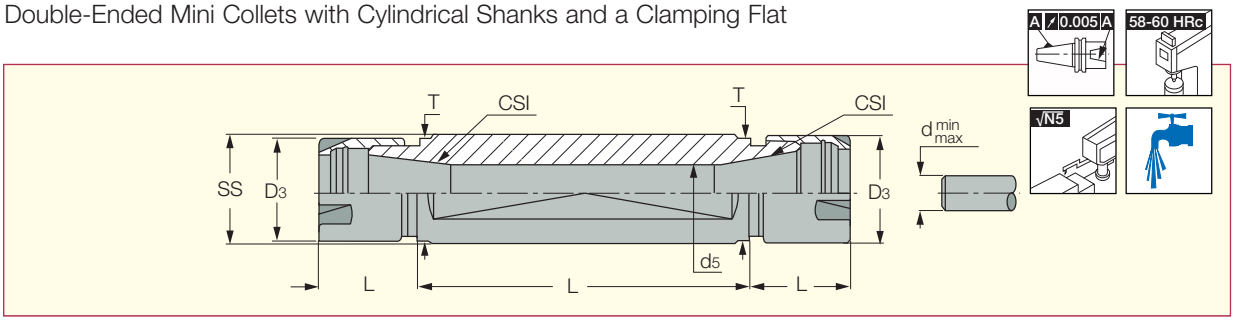
Designation	CSI	SS	d min	d max	L2	L	J	D3	T	Kg
ST 16X 38 ER11 MF (1)	ER11	16	0.5	7.0	38.00	18.50	M8X1	16.00	14.0	0.05
ST 16X 50 ER11 MF	ER11	16	0.5	7.0	50.00	18.50	M8X1	16.00	13.0	0.07
ST 16X140 ER11 MF	ER11	16	0.5	7.0	140.00	18.50	M8X1	16.00	14.0	0.18
ST 16X 35 ER16 MF (1)	ER16	16	0.5	10.0	35.00	36.00	M8X1	22.00	17.0	0.25
ST 20X 50 ER16 MF (2)	ER16	20	0.5	10.0	50.00	26.00	M12X1	22.00	17.0	0.10
ST 20X 70 ER16 MF (2)	ER16	20	0.5	10.0	70.00	26.00	M12X1	22.00	17.0	0.40
ST 20X120 ER16 MF (2)	ER16	20	0.5	10.0	120.00	26.00	M12X1	22.00	17.0	0.19
ST 20X140 ER16 MF (2)	ER16	20	0.5	10.0	140.00	26.00	M12X1	22.00	17.0	0.40
ST 22X 38 ER16 MF (1)	ER16	22	0.5	10.0	38.00	26.00	M12X1	22.00	19.0	0.10
ST 22X 70 ER16 MF (1)	ER16	22	0.5	10.0	70.00	26.00	M12X1	22.00	19.0	0.16
ST 22X100 ER16 MF (1)	ER16	22	0.5	10.0	100.00	28.00	M12X1	22.00	19.0	0.30
ST 22X 80 ER20 MF (1)	ER20	22	1.0	13.0	80.00	39.00	M12X1	28.00	21.0	0.21

(1) For Star machines. (2) For Citizen machines.

Straight Shank

ST-ER-MF-D (double-ended)

Double-Ended Mini Collets with Cylindrical Shanks and a Clamping Flat



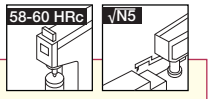
Designation	CSI	SS	d min	d max	D3	d5	L2	L	T	Kg
ST 16X 50 ER11 MF D	ER11	16	0.5	7.0	16.00	7.5	50.00	18.50	14.0	0.07
ST 20X 30 ER11 MF D (1)	ER11	20	0.5	7.0	16.00	7.5	30.00	18.50	17.0	0.09
ST 20X 50 ER11 MF D (1)	ER11	20	0.5	7.0	16.00	7.5	50.00	18.50	17.0	0.13
ST 20X 55 ER16 MF D (1)	ER16	20	0.5	10.0	22.00	10.5	55.00	25.00	17.0	0.12
ST 22X 55 ER16 MF D (2)	ER16	22	0.5	10.0	22.00	10.5	55.00	28.00	19.0	0.17
ST 22X 75 ER16 MF D (2)	ER16	22	0.5	10.0	22.00	10.5	75.00	28.00	19.0	0.21

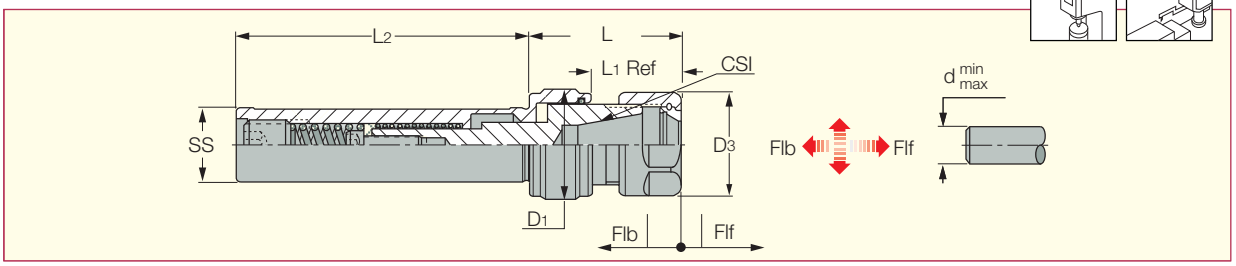
(1) For Citizen machines. (2) For Star machines.

Straight Shank • GTI

GTI ER-ST (tapping)

DIN 6499 ER Tapping Attachments with Straight Shanks



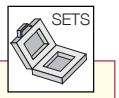


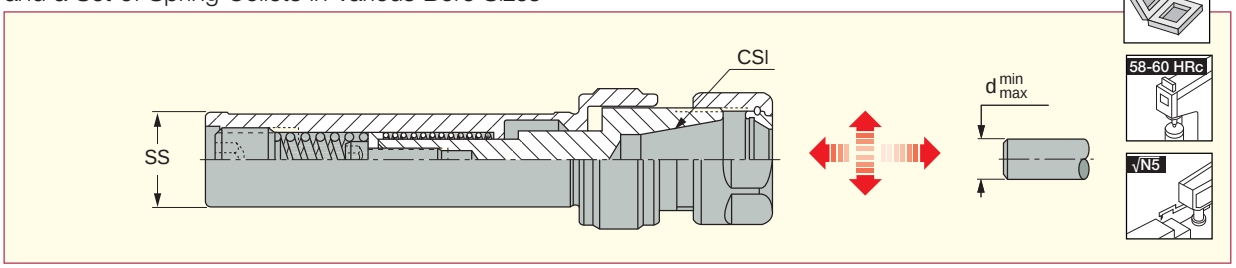
Designation	SS	CSI	Tap min	Tap max	d min	d max	D3	D1	L1	L	L2	Flf	Flb	Kg
GTI ER11 ST16X150 M (1)	ST16	ER11	M2	M7	0.5	7.0	16.00	-	19.0	-	150.00	6.0	3.0	0.18
GTI ER16 ST20X80	ST20	ER16	M3	M10	0.5	10.0	28.00	29.5	24.6	41.60	80.00	8.0	3.0	0.29
GTI ER20 ST20X80	ST20	ER20	M4	M14	1.0	13.0	34.00	33.5	28.0	49.00	80.00	8.0	3.0	0.35

(1) Without a clamping flat.

KIT GTI ER-ST

Contains a DIN 6499 ER Tapping Attachment with Straight Shank and a Set of Spring Collets in Various Bore Sizes





Designation	SS	CSI	d Range
KIT GTI ER11 ST16X150 4M	16	ER11	3,4,5,6
KIT GTI ER16 ST20X80 4	20	ER16	4,5,6,7
KIT GTI ER20 ST20X80 4	20	ER20	5,6,8,9

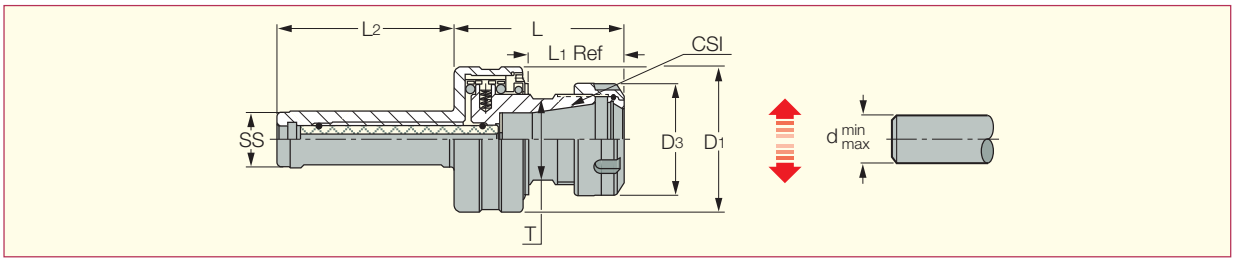
- Kit includes GTI,collets and wrench.
- For ER collets see pages: F8-11

Kit GTI ER11
Tapping Attachment Kit

Straight Shank • GFI

GFI ST-ER

Floating Reamer DIN 6499 Collet Chucks with Cylindrical Shanks



Designation	SS	CSI	d min	d max	L2	L	L1	D3	D1	RFI	T	Kg
GFI ST20 ER20 (1)	20	ER20	1.0	13.0	65.00	55.50	34.5	34.00	50.0	1.0	22.0	0.30

• ! Maximum RPM 2000.

(1) Radial float 1 mm.

GFI ER - Floating Reamer Collet Chuck

Floating chuck - adjusts the misalignment between reamer and workpiece hole to ensure the same accuracy as the reamer itself.

Application

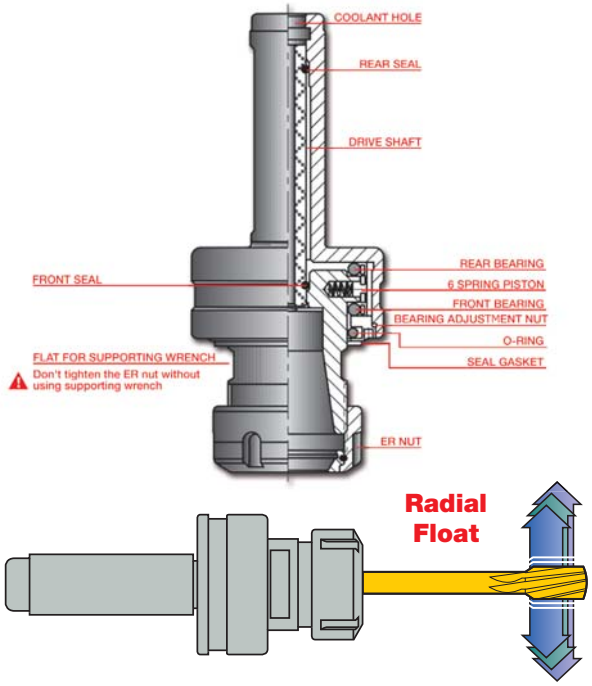
The GFI floating chuck is a unique holder that compensates for the radial misalignment existing in the reaming operations carried out on vertical and horizontal machine tools.

Features

Radial self-floating mechanism compensates for misalignment between reamer and workpiece to ensure the same tolerance as the reamer itself.
The special self-centering mechanism eliminates tapered and oversized bores.

Advantages

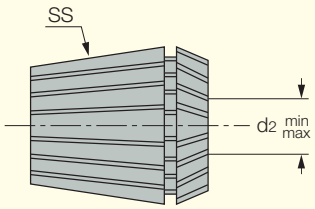
Unique ball bearing and axle drive shaft structure enables vertical and horizontal machining.
Precise and efficient clamping with ER spring collets or ER COOLIT collets.

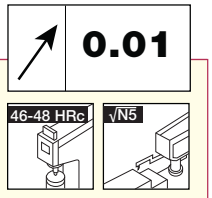


ER Collet

ER-SPR

DIN 6499 ER Spring Collets with HARD TOUCH Coating



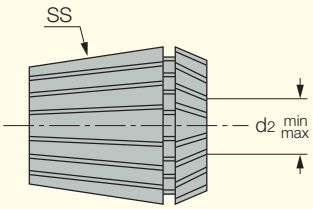


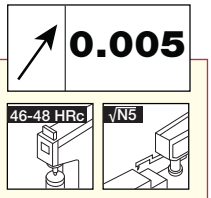
Designation	SS	$d_{2\ min}$	$d_{2\ max}$
ER11 SPR 0.5- 1	ER11	0.50	1.00
ER11 SPR 1-2	ER11	1.00	2.00
ER11 SPR 2-3	ER11	2.00	3.00
ER11 SPR 3-4	ER11	3.00	4.00
ER11 SPR 4-5	ER11	4.00	5.00
ER11 SPR 5-6	ER11	5.00	6.00
ER11 SPR 6-7	ER11	6.00	7.00
ER16 SPR 0.5-1	ER16	0.50	1.00
ER16 SPR 1-2	ER16	1.00	2.00
ER16 SPR 2-3	ER16	2.00	3.00
ER16 SPR 3-4	ER16	3.00	4.00
ER16 SPR 4-5	ER16	4.00	5.00
ER16 SPR 5-6	ER16	5.00	6.00
ER16 SPR 6-7	ER16	6.00	7.00
ER16 SPR 7-8	ER16	7.00	8.00
ER16 SPR 8-9	ER16	8.00	9.00
ER16 SPR 9-10	ER16	9.00	10.00
ER20 SPR 1-2	ER20	1.00	2.00
ER20 SPR 2-3	ER20	2.00	3.00
ER20 SPR 3-4	ER20	3.00	4.00
ER20 SPR 4-5	ER20	4.00	5.00
ER20 SPR 5-6	ER20	5.00	6.00
ER20 SPR 6-7	ER20	6.00	7.00
ER20 SPR 7-8	ER20	7.00	8.00
ER20 SPR 8-9	ER20	8.00	9.00
ER20 SPR 9-10	ER20	9.00	10.00
ER20 SPR 10-11	ER20	10.00	11.00
ER20 SPR 11-12	ER20	11.00	12.00
ER20 SPR 12-13	ER20	12.00	13.00

ER Collet

ER-SPR-AA

DIN 6499 'AA' Ultra Precise ER Spring Collets with HARD TOUCH Coating





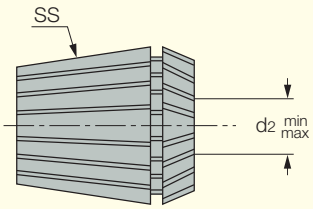
Designation	SS	$d_{2\ min}$	$d_{2\ max}$
ER11 SPR 0.5- 1 AA	ER11	0.50	1.00
ER11 SPR 1-2 AA	ER11	1.00	2.00
ER11 SPR 2-3 AA	ER11	2.00	3.00
ER11 SPR EX3.0AAA (1)	ER11	3.00	3.00
ER11 SPR 3-4 AA	ER11	3.00	4.00
ER11 SPR EX4.0AAA (1)	ER11	4.00	4.00
ER11 SPR 4-5 AA	ER11	4.00	5.00
ER11 SPR 5-6 AA	ER11	5.00	6.00
ER11 SPR EX6.0AAA (1)	ER11	6.00	6.00
ER11 SPR 6-7 AA	ER11	6.00	7.00
ER16 SPR 0.5-1 AA	ER16	0.50	1.00
ER16 SPR 1-2 AA	ER16	1.00	2.00
ER16 SPR 2-3 AA	ER16	2.00	3.00
ER16 SPR 3-4 AA	ER16	3.00	4.00
ER16 SPR 4-5 AA	ER16	4.00	5.00
ER16 SPR 5-6 AA	ER16	5.00	6.00
ER16 SPR 6-7 AA	ER16	6.00	7.00
ER16 SPR 7-8 AA	ER16	7.00	8.00
ER16 SPR 8-9 AA	ER16	8.00	9.00
ER16 SPR 9-10 AA	ER16	9.00	10.00
ER20 SPR 1-2 AA	ER20	1.00	2.00
ER20 SPR 2-3 AA	ER20	2.00	3.00
ER20 SPR 3-4 AA	ER20	3.00	4.00
ER20 SPR 4-5 AA	ER20	4.00	5.00
ER20 SPR 5-6 AA	ER20	5.00	6.00
ER20 SPR 6-7 AA	ER20	6.00	7.00
ER20 SPR 7-8 AA	ER20	7.00	8.00
ER20 SPR 8-9 AA	ER20	8.00	9.00
ER20 SPR 9-10 AA	ER20	9.00	10.00
ER20 SPR 10-11 AA	ER20	10.00	11.00
ER20 SPR 11-12 AA	ER20	11.00	12.00
ER20 SPR 12-13 AA	ER20	12.00	13.00

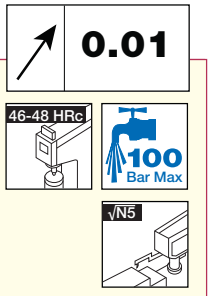
(1) 0.003 mm runout accuracy

ER Collet

ER-SEAL

DIN 6499 ER COOLIT, Sealed Spring Collets with HARD TOUCH Coating, for up to 100 Bar





Designation	SS	$d_{2\ min}$	$d_{2\ max}$
ER16 SEAL 3- 4	ER16	3.00	4.00
ER16 SEAL 4- 5	ER16	4.00	5.00
ER16 SEAL 5- 6	ER16	5.00	6.00
ER16 SEAL 6- 7	ER16	6.00	7.00
ER16 SEAL 7- 8	ER16	7.00	8.00
ER16 SEAL 8- 9	ER16	8.00	9.00
ER16 SEAL 9-10	ER16	9.00	10.00
ER20 SEAL 3-4	ER20	3.00	4.00
ER20 SEAL 4-5	ER20	4.00	5.00
ER20 SEAL 5-6	ER20	5.00	6.00
ER20 SEAL 6-7	ER20	6.00	7.00
ER20 SEAL 7-8	ER20	7.00	8.00
ER20 SEAL 8-9	ER20	8.00	9.00
ER20 SEAL 9-10	ER20	9.00	10.00
ER20 SEAL 10-11	ER20	10.00	11.00
ER20 SEAL 11-12	ER20	11.00	12.00
ER20 SEAL 12-13	ER20	12.00	13.00

- The HARD TOUCH coating increases wear resistance, improves corrosion protection, prolongs the surface finish quality and maintains longer runout accuracy.

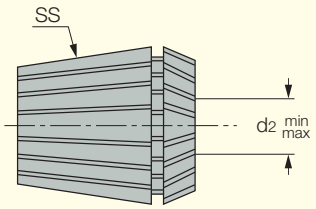
Sealed Collet JET

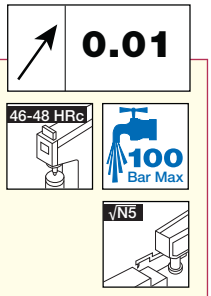
For straight shank cutting tools with internal coolant oil hole.

ER Collet

ER-SEAL-JET2

DIN 6499 ER COOLIT, Sealed Collets with Cooling Jets and HARD TOUCH Coating, for up to 100 Bars





Designation	SS	$d_{2\ min}$	$d_{2\ max}$
ER16 SEAL 3- 4 JET2	ER16	3.00	4.00
ER16 SEAL 4- 5 JET2	ER16	4.00	5.00
ER16 SEAL 5- 6 JET2	ER16	5.00	6.00
ER16 SEAL 6- 7 JET2	ER16	6.00	7.00
ER16 SEAL 7- 8 JET2	ER16	7.00	8.00
ER16 SEAL 8- 9 JET2	ER16	8.00	9.00
ER16 SEAL 9-10 JET2	ER16	9.00	10.00
ER20 SEAL 3-4 JET2	ER20	3.00	4.00
ER20 SEAL 4-5 JET2	ER20	4.00	5.00
ER20 SEAL 5-6 JET2	ER20	5.00	6.00
ER20 SEAL 6-7 JET2	ER20	6.00	7.00
ER20 SEAL 7-8 JET2	ER20	7.00	8.00
ER20 SEAL 8-9 JET2	ER20	8.00	9.00
ER20 SEAL 9-10 JET2	ER20	9.00	10.00
ER20 SEAL 10-11 JET2	ER20	10.00	11.00
ER20 SEAL 11-12 JET2	ER20	11.00	12.00
ER20 SEAL 12-13 JET2	ER20	12.00	13.00

- The HARD TOUCH coating increases wear resistance, improves corrosion protection, prolongs the surface finish quality and maintains longer runout accuracy.

Straight Shank • GTI

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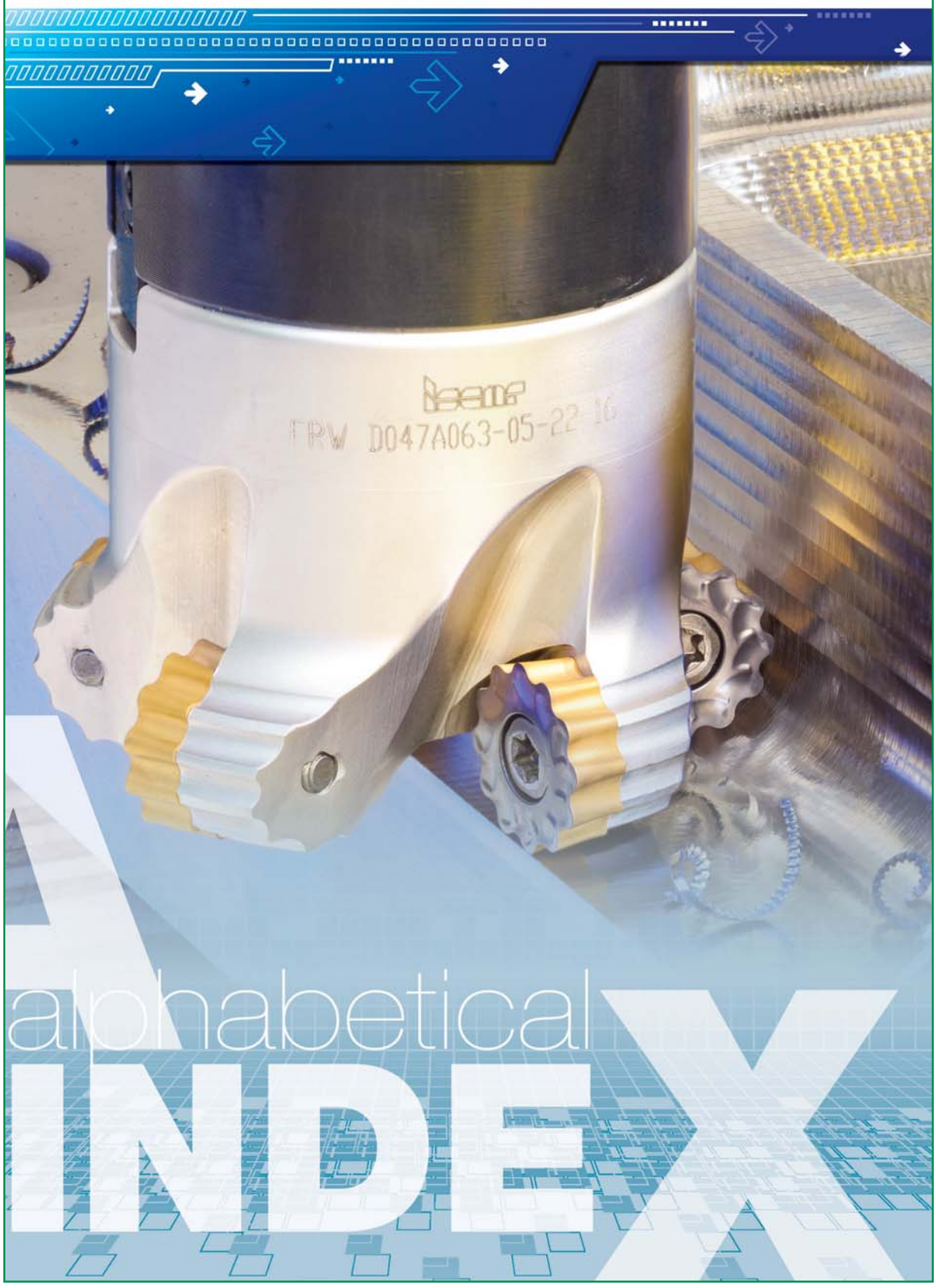

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