

MULTI-MASTER



Indexable Solid Carbide Milling Heads

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E = Economical

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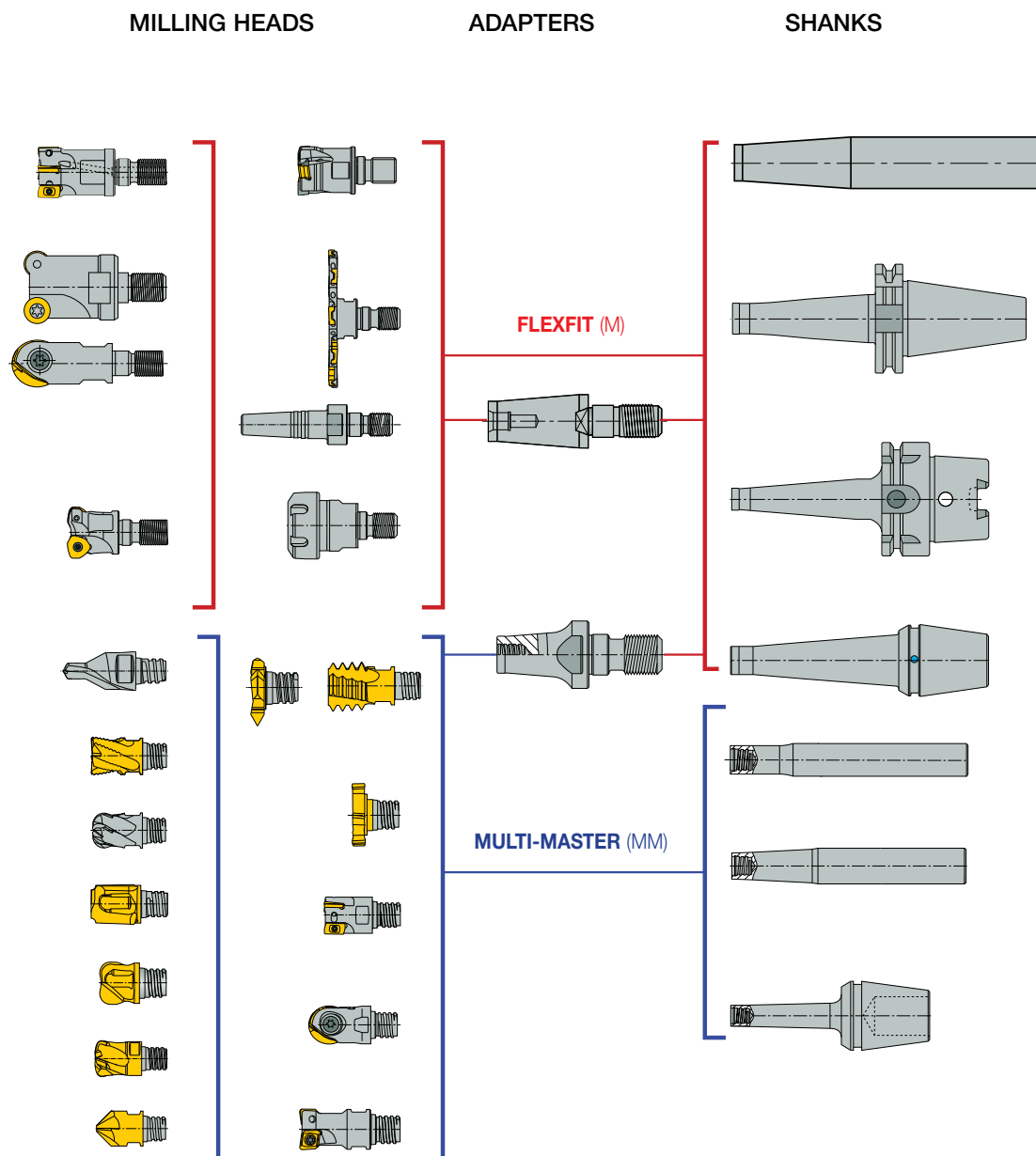
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E = Economical

MULTI-MASTER and FLEXFIT Connection Options

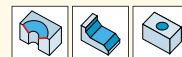
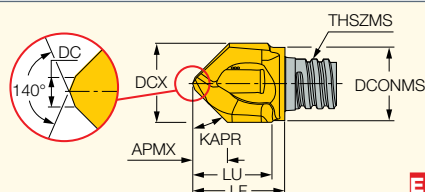


Features

Modular system reduces stock cost by using the same head with different shank options. Enables machining with larger overhang. Same head can be mounted on metric and inch combinations.

MM HCD

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


ECONOMICAL SOLUTION

Designation	Dimensions										IC908
	DCX ⁽⁴⁾	DCXTOL	NOF ⁽⁵⁾	LU	THSZMS	DCONMS	LF	APMX	DC	KAPR ⁽⁶⁾	
MM HCD080-090-2T05 ⁽¹⁾	8.00	z9	2	7.00	T05	7.60	9.75	3.15	1.00	45.0	●
MM HCD083-090-2T05 ⁽¹⁾	8.30	z9	2	7.50	T05	7.60	10.00	3.56	1.00	45.0	●
MM HCD.375-080-2T06	9.50	z9	2	9.00	T06	9.20	11.80	5.00	2.00	50.0	●
MM HCD.375-100-2T06 ⁽²⁾	9.50	z9	2	9.70	T06	9.50	13.40	3.60	2.00	40.0	●
MM HCD100-060-2T06	10.00	h10	2	9.30	T06	9.50	11.75	7.60	1.50	60.0	●
MM HCD100-120-2T06	10.00	h10	2	9.50	T06	9.50	12.70	2.70	1.50	30.0	●
MM HCD100-090-2T06-N ⁽¹⁾	10.00	z9	2	10.10	T06	9.50	14.00	4.50	1.50	45.0	●
MM HCD104-090-2T06 ⁽¹⁾	10.40	z9	2	9.00	T06	9.50	11.75	4.60	1.50	45.0	●
MM HCD120-060-2T08	12.00	h10	2	11.00	T08	11.50	15.40	9.24	1.50	60.0	●
MM HCD120-120-2T08	12.00	h10	2	11.65	T08	11.50	15.20	3.50	1.50	30.0	●
MM HCD120-090-2T08 ⁽¹⁾	12.00	z9	2	12.00	T08	11.50	15.50	5.30	1.50	45.0	●
MM HCD124-090-2T08 ⁽¹⁾	12.40	z9	2	11.80	T08	11.50	15.50	5.50	1.50	45.0	●
MM HCD.500-080-2T08 ⁽³⁾	12.70	z9	2	11.10	T08	12.20	15.50	6.80	1.50	50.0	●
MM HCD.500-100-2T08 ⁽²⁾	12.70	z9	2	10.90	T08	11.50	14.70	4.90	1.50	40.0	●
MM HCD.625-080-2T10	15.90	z9	2	15.20	T10	15.00	18.80	8.80	2.00	50.0	●
MM HCD.625-100-2T10 ⁽²⁾	15.90	z9	2	14.90	T10	15.10	19.00	6.20	2.00	40.0	●
MM HCD160-060-2T10	16.00	h10	2	16.20	T10	15.20	20.20	12.00	2.50	60.0	●
MM HCD160-120-2T10	16.00	h10	2	15.50	T10	15.20	19.90	4.40	1.50	30.0	●
MM HCD160-090-2T10-N	16.00	z9	2	15.70	T10	15.20	20.00	7.40	1.50	45.0	●
MM HCD165-090-2T10 ⁽¹⁾	16.50	z9	2	14.90	T10	15.20	18.80	7.10	1.50	45.0	●
MM HCD.750-080-2T12	19.05	z9	2	19.60	T12	18.45	24.70	11.00	2.00	50.0	●
MM HCD.750-100-2T12 ⁽²⁾	19.05	z9	2	18.50	T12	18.30	23.60	7.50	1.50	40.0	●
MM HCD200-060-2T12	20.00	h10	2	18.20	T12	18.45	24.70	15.50	2.50	60.0	●
MM HCD200-120-2T12	20.00	h10	2	14.65	T12	18.45	21.15	5.50	1.50	30.0	●
MM HCD200-090-2T12 ⁽¹⁾	20.00	z9	2	18.20	T12	18.45	24.70	9.40	1.50	45.0	●

• For shanks, see pages 84-91 • Clamping keys (should be ordered separately), tightening torques and clamping instructions, see pages 91-92

• Do not apply lubricant to the threaded connection. • For user guide see pages 44, 177-184

⁽¹⁾ May be used for F-type (fine) countersink according to DIN 74.

⁽²⁾ May be used for 100° countersink according to ISO 5856, DIN EN 4072, ANSI B18.6.3-1972

⁽³⁾ Countersink according to American National and British standard flat screws.

⁽⁴⁾ Cutting diameter maximum

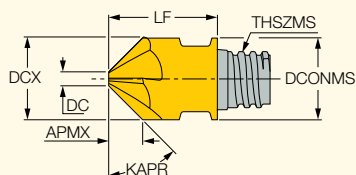
⁽⁵⁾ Number of flutes

⁽⁶⁾ Tool cutting edge angle


MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

MM ECF

Interchangeable Solid Carbide Heads for Chamfering and Countersinking



Designation	Dimensions								IC908
	KAPR ⁽¹⁾	DCX ⁽²⁾	NOF ⁽³⁾	DC	APMX	THSZMS	DCONMS	LF	
MM ECF120-02/100-4T06	30.0	10.00	4	2.00	2.30	T06	10.00	13.00	●
MM ECF120-02/120-4T08	30.0	12.00	4	2.00	2.90	T08	12.00	16.50	●
MM ECF120-03/160-6T10	30.0	16.00	6	3.00	3.70	T10	16.00	20.50	●
MM ECF120-05/200-6T12	30.0	20.00	6	5.00	4.30	T12	18.45	25.50	●
MM ECF120-06/250-6T15	30.0	25.00	6	6.00	5.40	T15	25.00	25.00	●
MM ECF45-080-4T05	45.0	8.00	4	1.95	3.00	T05	8.00	10.00	●
MM ECF45-100-4T06	45.0	10.00	4	1.95	4.00	T06	10.00	13.00	●
MM ECF45-120-4T08	45.0	12.00	4	1.95	5.00	T08	12.00	16.50	●
MM ECF45-150-4T08	45.0	12.70	4	1.95	5.00	T08	12.70	16.50	●
MM ECF45-160-6T10	45.0	16.00	6	3.00	6.50	T10	16.00	20.50	●
MM ECF45-200-6T12	45.0	20.00	6	5.00	7.50	T12	18.45	25.50	●
MM ECF45-250-6T15-M	45.0	25.00	6	5.00	10.00	T15	25.00	25.00	●
MM ECF60-100-4T06	60.0	10.00	4	1.60	7.30	T06	10.00	13.00	●
MM ECF60-02/100-4T06	60.0	10.00	4	2.00	6.90	T06	10.00	13.00	●
MM ECF60-03/120-4T08	60.0	12.00	4	3.00	7.80	T08	12.00	16.50	●
MM ECF60-04/160-6T10	60.0	16.00	6	4.00	10.00	T10	16.00	20.50	●
MM ECF60-05/200-6T12	60.0	20.00	6	5.00	13.00	T12	18.45	25.50	●
MM ECF60-08/250-6T15	60.0	25.00	6	8.00	14.00	T15	25.00	25.00	●

- For shanks, see pages 84-91
- For clamping keys (should be ordered separately), tightening torques and clamping instructions, see pages 91-92
- Do not apply lubricant to the threaded connection.
- For user guide see pages 44, 177-184

⁽¹⁾ Tool cutting edge angle

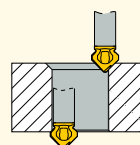
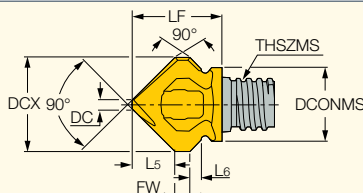
⁽²⁾ Cutting diameter maximum

⁽³⁾ Number of flutes

MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

MM HDF

Interchangeable 2 Flute Solid Carbide Heads for Upper and Bottom Chamfering


ECONOMICAL SOLUTION

Designation	Dimensions										IC908
	DCX ⁽¹⁾	NOF ⁽²⁾	L5	L6	FW	DC	THSZMS	DCONMS	LF		
MM HDF100-090-2T05	9.80	2	4.30	0.90	2.50	1.20	T05	7.60	10.80	MM KEY 8X5*	●
MM HDF120-090-2T06	11.80	2	5.30	1.20	2.00	1.20	T06	9.30	11.20	MM KEY 10X7*	●
MM HDF160-090-2T08	15.70	2	7.10	2.20	2.00	1.50	T08	11.50	14.00	MM KEY 13X8*	●

- For shanks, see pages 84-91
- Clamping keys should be ordered separately
- For tightening torques and clamping instructions, see pages 91-92
- Do not apply lubricant to the threaded connection
- For user guide see pages 44, 177-184

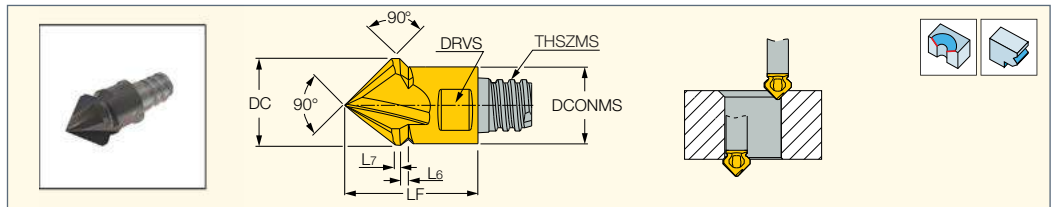
⁽¹⁾ Cutting diameter maximum

⁽²⁾ Number of flutes

* Optional, should be ordered separately

MM EDF

Interchangeable 3 Flute Solid Carbide Heads for Upper and Bottom Chamfering



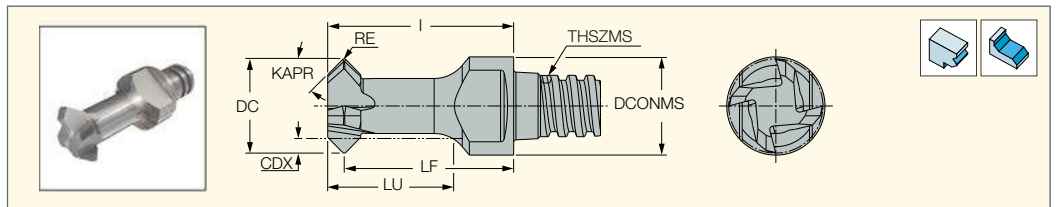
Designation	Dimensions							IC908
	DC	DCONMS	NOF ⁽¹⁾	L6	L7	LF	THSZMS	
MM EDF074-090-58-3T04	7.40	5.80	3	0.90	1.00	10.00	T04	•
MM EDF094-090-76-3T05	9.40	7.60	3	0.90	1.00	12.50	T05	•
MM EDF116-090-95-3T06	11.60	9.60	3	1.00	1.00	16.50	T06	•

- For shanks, see pages 84-91 • For clamping keys (should be ordered separately), tightening torques and clamping instructions, see pages 91-92
- Do not apply lubricant to the threaded connection. • For user guide see pages 44, 177-184

⁽¹⁾ Number of flutes

MM TS-45

Interchangeable Solid Carbide Small Diameter 45° Chamfering Heads



Designation	Dimensions										IC908
	DC	KAPR ⁽¹⁾	CDX ⁽²⁾	RE	NOF ⁽³⁾	I	THSZMS	DCONMS	LU	LF	
MM TS077-45-20A-4T05	7.70	45.0	1.20	0.20	4	15.20	T05	8.00	10.3	13.85	•

- For clamping keys (should be ordered separately), tightening torques and clamping instructions, see pages 91-92 • Do not apply lubricant to the threaded connection

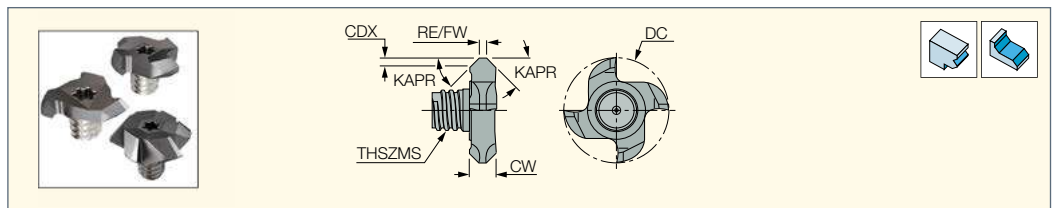
⁽¹⁾ Tool cutting edge angle

⁽²⁾ Cutting depth maximum

⁽³⁾ Number of flutes

MM GRIT-45A

Interchangeable Solid Carbide Small Diameter 45° Chamfering Heads



Designation	Dimensions									IC908
	DC	KAPR ⁽¹⁾	CDX ⁽²⁾	RE	FW	CW	THSZMS	NOF ⁽³⁾		
MM GRIT18K-45A-3T6	17.70	45.0	1.40	0.10	-	3.47	T06	3	T-25/3*	•
MM GRIT18P-45A-3T6	17.70	45.0	1.40	0.10	-	3.47	T06	3	T-25/3*	•
MM GRIT22K-45A-4T8	21.70	45.0	1.70	-	1.50	5.55	T08	4	T-30/3 L*	•
MM GRIT28K-45A-6T10	27.70	45.0	4.00	-	0.50	9.80	T10	6	T-40/3 L*	•

- P-TYPE - Positive geometry for soft and gummy materials. • K-Type - For general steel machining. • Modification options on request.

- Do not apply lubricant to the threaded connection. • For clamping instructions, see pages 91-92 • For shanks, see pages 84-91

⁽¹⁾ Tool cutting edge angle

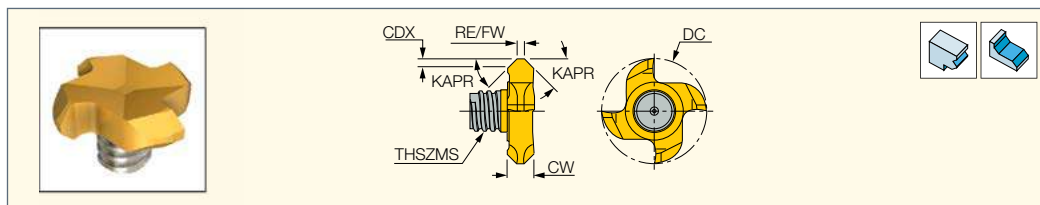
⁽²⁾ Cutting depth maximum

⁽³⁾ Number of flutes

* Optional, should be ordered separately

MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

MM GRIT-K/P-45A

Interchangeable Solid
Carbide Small Diameter
45° Chamfering Heads


Designation	Dimensions									IC528
	DC	KAPR ⁽¹⁾	CDX ⁽²⁾	RE	FW	CW	THSZMS	NOF ⁽³⁾	✓	
MM GRIT 18K-45A	17.70	45.0	1.40	0.10	-	3.40	T06	3	MM EGR 16-18°	•
MM GRIT 18P-45A	17.70	45.0	1.40	0.10	-	3.40	T06	3	MM EGR 16-18°	•
MM GRIT 22K-45A	21.70	45.0	1.70	-	1.50	5.50	T08	4	MM EGR 20-22°	•
MM GRIT 22P-45A	21.70	45.0	1.70	-	1.50	5.50	T08	4	MM EGR 20-22°	•
MM GRIT 28K-45A	27.70	45.0	4.00	-	0.50	9.80	T10	6	T-40/3 L°	•

• Use carbide shanks for groove milling heads. • 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. • For user guide see pages 44, 177-184

⁽¹⁾ Tool cutting edge angle

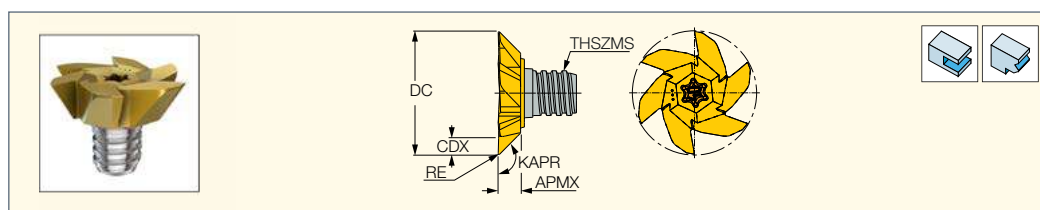
⁽²⁾ Cutting depth maximum

⁽³⁾ Number of flutes

* Optional, should be ordered separately

MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

MM GRIT Dovetail

Interchangeable Solid
Carbide Heads


Designation	Dimensions								Tough ↔ Hard	
	DC	KAPR ⁽¹⁾	CDX ⁽²⁾	APMX	RE	THSZMS	NOF ⁽³⁾	✓	IC528	IC908
MM GRIT 28K-45D-6T10	27.70	135.0	4.00	5.00	0.20	T10	6	T-40/3 L°	•	•
MM GRIT 28K-60D-6T10	27.70	120.0	4.00	7.80	0.20	T10	6	T-40/3 L°	•	•
MM GRIT 28K-75D-6T10	27.70	105.0	2.20	10.10	0.20	T10	6	T-40/3 L°	•	•

• Use carbide shanks for groove milling heads • For user guide see pages 44, 177-184

⁽¹⁾ Tool cutting edge angle

⁽²⁾ Cutting depth maximum

⁽³⁾ Number of flutes

* Optional, should be ordered separately



MM GRIT 28K-45D-6T10



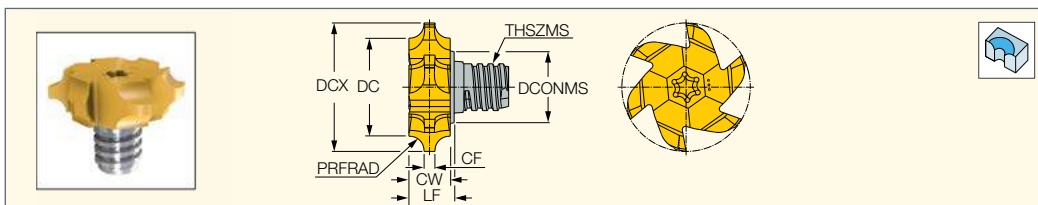
MM GRIT 28K-60D-6T10



MM GRIT 28K-75D-6T10

MM GRIT 28P-DR

Interchangeable 6 Flute Solid Carbide Double-Sided Corner Rounding Milling Heads



Designation	Dimensions										Tough ↔ Hard	
	PRFRAD	CF	DCX ⁽¹⁾	DC	LF	CW	NOF ⁽²⁾	THSZMS	DCONMS	✓	IC528	IC908
MM GRIT 28P-2.7-DR1.0	1.00	2.70	27.70	24.80	6.00	5.60	6	T10	15.30	T-40/3 L*	●	●
MM GRIT 28P-2.6-DR2.0	2.00	2.60	27.70	22.90	7.70	7.30	6	T10	15.30	T-40/3 L*	●	●
MM GRIT 28P-2.3-DR3.0	3.00	2.30	27.70	21.10	9.70	8.90	6	T10	15.30	T-40/3 L*	●	●
MM GRIT 28P-2.6-DR4.0	4.00	2.60	27.70	19.70	11.70	10.90	6	T10	15.30	T-40/3 L*	●	●

- For shanks, see pages 84-91
- For clamping keys (should be ordered separately), tightening torques and clamping instructions, see pages 91-92
- Do not apply lubricant to the threaded connection.
- For user guide see pages 44, 177-184

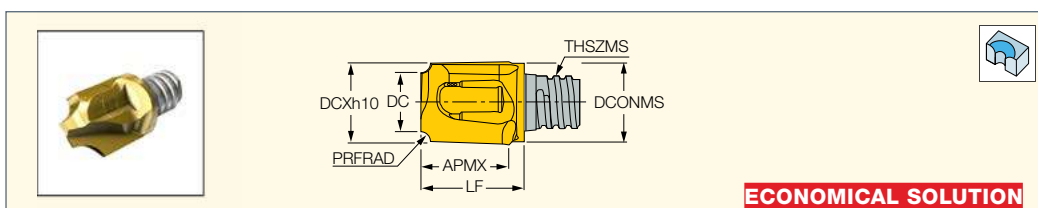
⁽¹⁾ Cutting diameter maximum

⁽²⁾ Number of flutes

* Optional, should be ordered separately

MM HR

Interchangeable 2 Flute Solid Carbide Corner Rounding Milling Heads


ECONOMICAL SOLUTION

Designation	Dimensions									IC908		
	DCX ⁽¹⁾	PRFRAD	Tm ⁽²⁾	NOF ⁽³⁾	DC	APMX	THSZMS	DCONMS	LF			
	MM HR1.0/047-5.8-2T05	8.00	1.00	r0.5-3.0	2	5.80	7.50	T05	7.60		10.60	●
	MM HR1.6/063-6.8-2T06	10.00	1.60	r0.5-3.0	2	6.80	9.50	T06	9.50		12.50	●
	MM HR2.0/078-6.0-2T06	10.00	2.00	r0.5-3.0	2	6.00	9.50	T06	9.50		12.50	●
	MM HR2.5/094-5.1-2T06	10.00	2.50	r0.5-3.0	2	5.10	9.50	T06	9.50		12.50	●
	MM HR3.0/125-6.5-2T08	12.70	3.00	r0.5-4.0	2	6.50	12.00	T08	11.50		15.60	●
	MM HR4.0/156-4.7-2T08	12.70	4.00	r0.5-4.0	2	4.70	12.00	T08	11.50		15.60	●
	MM HR5.0/188-6.2-2T10	16.00	5.00	r0.5-5.0	2	6.20	15.00	T10	15.20		19.10	●
	MM HR6.0/236-8.0-2T12	20.00	6.00	r0.5-6.0	2	8.00	7.00	T12	18.45		17.40	●

- For shanks, see pages 84-91
- For clamping keys (should be ordered separately), tightening torques and clamping instructions, see pages 91-92
- Do not apply lubricant to the threaded connection.
- For user guide see pages 44, 177-184

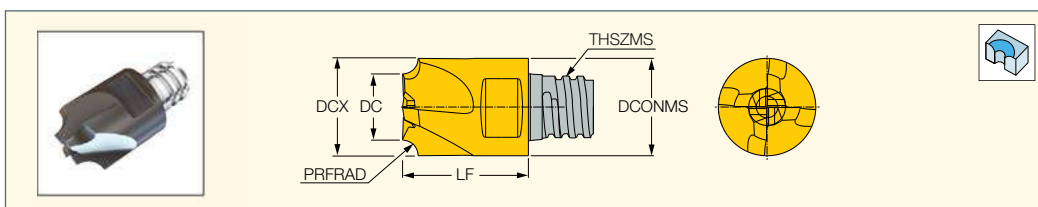
⁽¹⁾ Cutting diameter maximum

⁽²⁾ Specially tailored radius range upon request.

⁽³⁾ Number of flutes

MM ER

Interchangeable 4 Flute Solid Carbide Corner Rounding Milling Heads



Designation	Dimensions								IC908
	PRFRAD	Tm ⁽¹⁾	DC	DCX ⁽²⁾	DCONMS	NOF ⁽³⁾	LF	THSZMS	
MM ER1.0/047-5.8-4T05	1.00	0.5-1.4	5.80	8.00	8.00	4	10.00	T05	●
MM ER1.6/063-6.8-4T06	1.60	0.5-2.5	6.80	10.00	10.00	4	13.00	T06	●
MM ER2.0/078-6.0-4T06	2.00	0.5-2.5	6.00	10.00	10.00	4	13.00	T06	●
MM ER2.5/094-5.1-4T06	2.50	0.5-2.5	5.10	10.00	10.00	4	13.00	T06	●
MM ER3.0/125-6.5-4T08	3.00	0.5-3.1	6.50	12.70	12.70	4	16.50	T08	●

- For shanks, see pages 84-91
- For clamping keys (should be ordered separately), tightening torques and clamping instructions, see pages 91-92
- Do not apply lubricant to the threaded connection.
- For user guide see pages 44, 177-184

⁽¹⁾ Specially tailored radius range upon request.

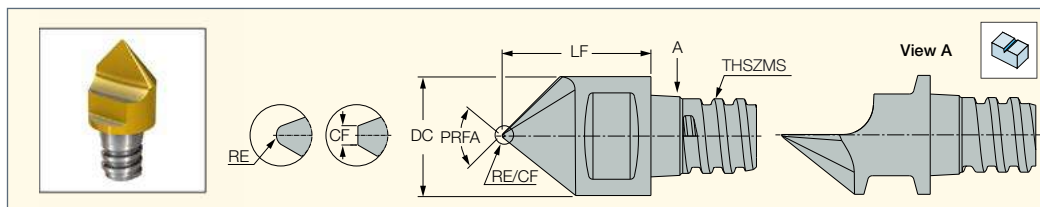
⁽²⁾ Cutting diameter maximum

⁽³⁾ Number of flutes

MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

MM EPG

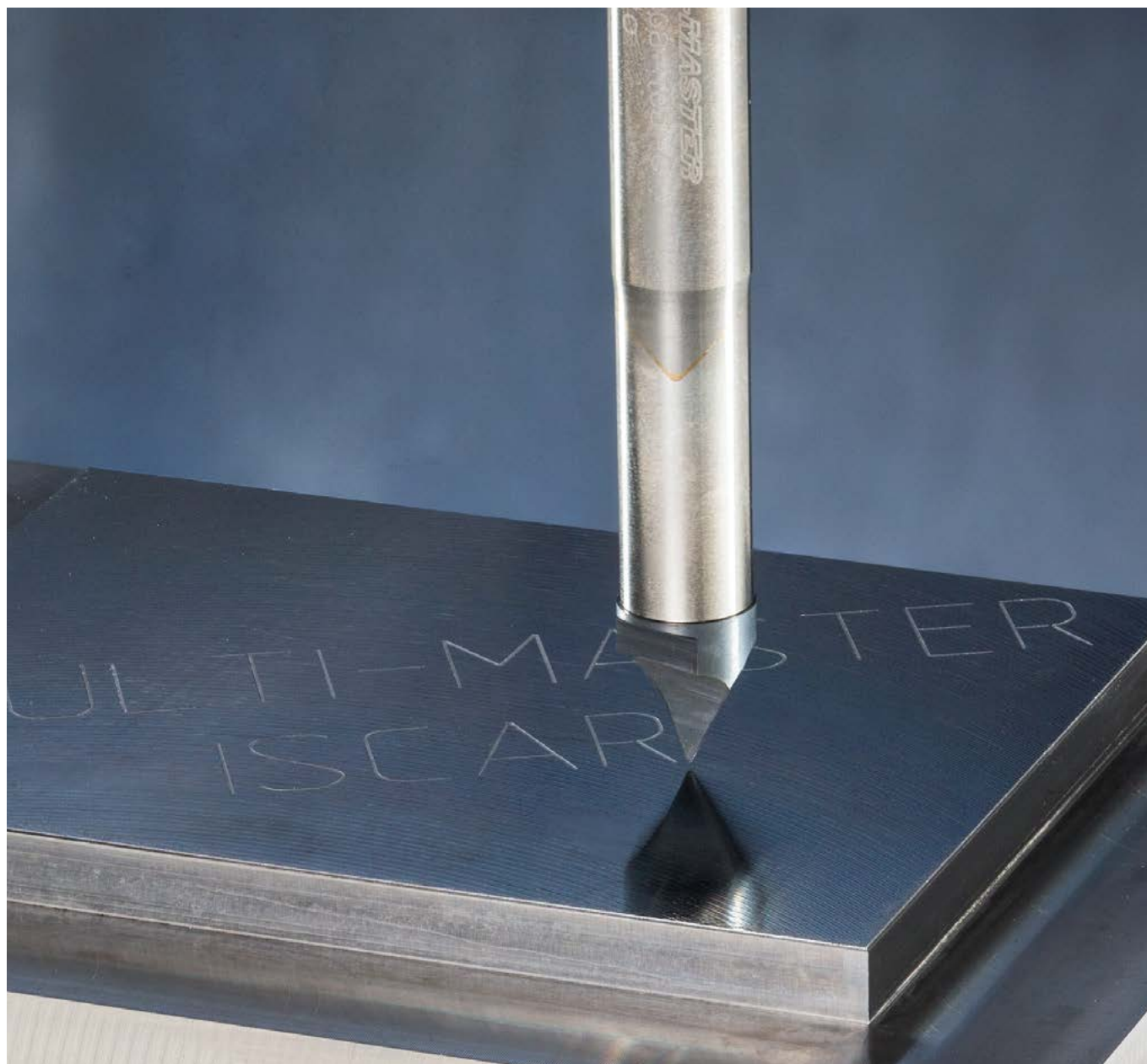
Single Flute MULTI-MASTER
Engraving Tool Head



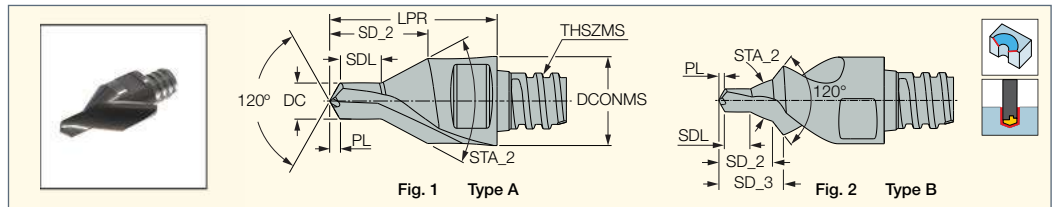
Designation	Dimensions						IC908
	DC	RE	CF ⁽¹⁾	PRFA	LF	THSZMS	
MM EPG080/30-1T05	8.00	0.20	-	30.00	10.00	T05	•
MM EPG080/45-1T05	8.00	0.20	-	45.00	10.00	T05	•
MM EPG080/60-1T05	8.00	0.20	-	60.00	10.00	T05	•
MM EPG080/90-1T05	8.00	0.20	-	90.00	10.00	T05	•
MM EPG080/60-F50-1T05	8.00	-	0.50	60.00	10.00	T05	•
MM EPG080/60-F75-1T05	8.00	-	0.75	60.00	10.00	T05	•
MM EPG080/90-F32-1T05	8.00	-	0.32	90.00	10.00	T05	•
MM EPG080/90-F50-1T05	8.00	-	0.50	90.00	10.00	T05	•

- For shanks, see pages 84-91
- For clamping keys (should be ordered separately), tightening torques and clamping instructions, see pages 91-92
- Do not apply lubricant to the threaded connection

⁽¹⁾ Frontal corner flat

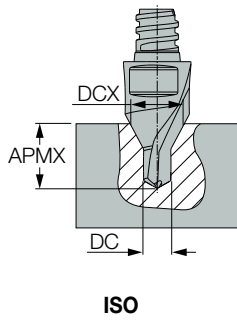


MM ECS
Interchangeable Solid Carbide
Centering Drills (DIN 332)



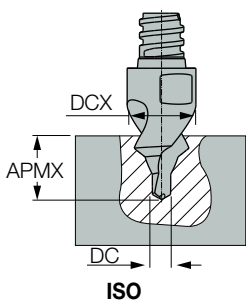
Designation	Dimensions										IC908
	DC	DCONMS	THSZMS	LPR	SDL	SD_2	SD_3	STA_2	PL	Fig.	
MM ECS-A1.00X06-2T04	1.07	6.00	T04	10.00	1.32	4.14	-	60.0	0.280	1	•
MM ECS-A1.60X06-2T04	1.65	6.00	T04	10.00	1.97	4.45	-	60.0	0.430	1	•
MM ECS-A2.00X06-2T04	2.07	6.00	T04	10.00	2.36	6.37	-	60.0	0.540	1	•
MM ECS-A3.15X08-2T05	3.28	8.00	T05	15.00	3.75	8.76	-	60.0	0.850	1	•
MM ECS-A4.00X10-2T06	4.12	10.00	T06	19.00	4.83	11.05	-	60.0	1.070	1	•
MM ECS-A5.00X12-2T08	5.13	12.00	T08	23.00	5.88	13.23	-	60.0	1.320	1	•
MM ECS-A6.30X16-2T10	6.46	16.00	T10	28.00	7.25	17.18	-	60.0	1.650	1	•
MM ECS-B3.15X12-2T08	3.24	12.00	T08	23.00	3.55	7.40	8.94	60.0	0.830	2	•
MM ECS-B4.00X127-2T08	4.09	12.70	T08	23.00	4.53	9.50	10.71	60.0	1.070	2	•
MM ECS-B5.00X19-2T12	5.09	18.45	T12	25.50	5.56	11.70	14.17	60.0	1.330	2	•
MM ECS-B6.30X20-2T12	6.41	18.45	T12	25.50	6.95	14.50	16.58	60.0	1.680	2	•

- For shanks, see pages 84-91
- For clamping keys (should be ordered separately), tightening torques and clamping instructions, see pages 91-92
- Do not apply lubricant to the threaded connection.
- For user guide see pages 44, 177-184



		IC908						
		*V _{cx} f _z [m/minxmm/tooth]						
		MM ECS-A1.00X06-2T04	MM ECS-A1.60X06-2T04	MM ECS-A2.00X06-2T04	MM ECS-A3.15X08-2T05	MM ECS-A4.00X10-2T06	MM ECS-A5.00X12-2T08	MM ECS-A6.30X16-2T10
		DCX=2.12, APMX=2.5	DCX=3.35, APMX=3.9	DCX=4.25, APMX=4.8	DCX=6.70, APMX=7.60	DCX=8.50, APMX=9.80	DCX=10.60, APMX=12.00	DCX=13.20, APMX=14.80
P	4340 24-29HRC	80x0.020	80x0.025	80x0.025	80x0.030	80x0.040	80x0.050	80x0.060
	4340 38-42HRC	65x0.020	65x0.025	65x0.025	65x0.030	65x0.040	65x0.050	65x0.060
M	316L MAX-215 HB	50x0.015	50x0.020	50x0.020	50x0.025	50x0.030	50x0.040	50x0.040
S	Inconel 718	15x0.010	15x0.010	15x0.015	15x0.015	15x0.020	15x0.020	15x0.025

* V_c Calculated for ØDC

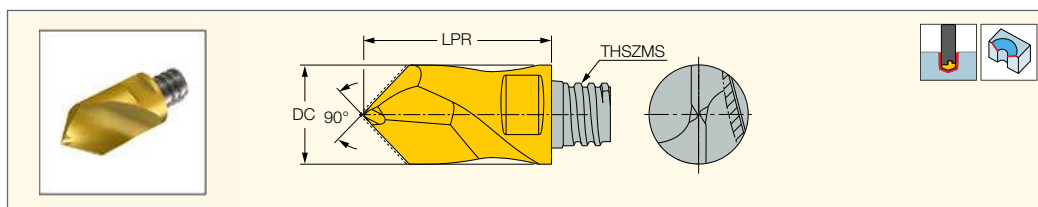


		IC908			
		*V _{cx} f _z [m/minxmm/tooth]			
		MM ECS-A3.15X12-2T08	MM ECS-A4.00X127-2T08	MM ECS-A5.00X19-2T12	MM ECS-A6.30X20-2T12
		DCX=10.00, APMX=8.80	DCX=12.50, APMX=11.00	DCX=16.00, APMX=13.900	DCX=18.00, APMX=16.80
P	4340 24-29HRC	75x0.030	75x0.040	75x0.050	75x0.060
	4340 38-42HRC	60x0.030	60x0.040	60x0.050	60x0.060
M	316L MAX-215 HB	45x0.025	45x0.030	45x0.040	45x0.040
S	Inconel 718	12x0.015	12x0.020	12x0.020	12x0.025

* V_c Calculated for ØDC

SOLIDDRILL
MULTI-MASTER
MM ECD

NC Spotting Drills for Accurately
Locating a Hole without
Using a Guide Bushing

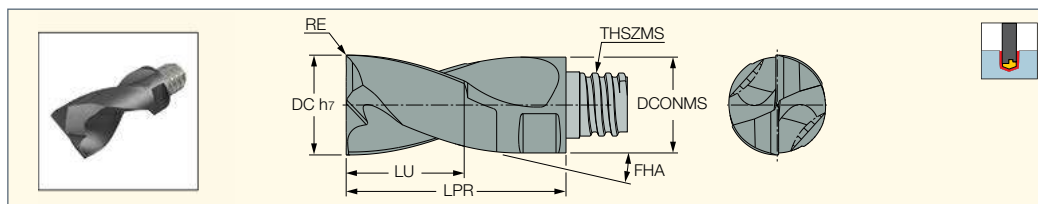


Dimensions				IC908
Designation	DC	LPR	THSZMS	
MM ECD-06X90-2T04	6.00	11.00	T04	●
MM ECD-08X90-2T05	8.00	15.00	T05	●
MM ECD-10X90-2T06	10.00	19.00	T06	●
MM ECD-12X90-2T08	12.00	23.00	T08	●
MM ECD-16X90-2T10	16.00	28.00	T10	●

- For shanks, see pages 84-91
- For clamping keys (should be ordered separately), tightening torques and clamping instructions, see pages 91-92
- Do not apply lubricant to the threaded connection

SOLIDDRILL
MULTI-MASTER
MM ECDF

MULTI-MASTER
Exchangeable Solid Carbide
Flat Bottom Drill Heads



Dimensions									IC908
Designation	DC	DCONMS	NOF ⁽¹⁾	LU	LPR	RE	FHA	THSZMS	
MM ECDF080A100-2T05	8.00	7.70	2	12.00	22.00	0.00	30.0	T05	●
MM ECDF085A120-2T05	8.50	7.70	2	12.00	22.00	0.00	30.0	T05	●
MM ECDF090A120-2T05	9.00	7.70	2	12.00	22.00	0.00	30.0	T05	●
MM ECDF095A120-2T06	9.50	9.20	2	12.00	22.00	0.00	30.0	T06	●
MM ECDF100A120-2T06	10.00	9.60	2	12.00	22.00	0.00	30.0	T06	●
MM ECDF105A120-2T06	10.50	9.60	2	12.00	23.00	0.00	30.0	T06	●
MM ECDF110A120-2T06	11.00	9.60	2	12.00	23.00	0.00	30.0	T06	●
MM ECDF115A120-2T06	11.50	9.60	2	12.00	23.00	0.00	30.0	T06	●
MM ECDF120A150-2T08	12.00	11.70	2	15.00	27.00	0.00	30.0	T08	●
MM ECDF125A150-2T08	12.50	12.10	2	15.00	27.00	0.00	30.0	T08	●
MM ECDF130A150-2T08	13.00	12.20	2	15.00	27.00	0.00	30.0	T08	●
MM ECDF135A150-2T08	13.50	12.20	2	15.00	27.00	0.00	30.0	T08	●
MM ECDF140A150-2T08	14.00	12.20	2	15.00	27.00	0.00	30.0	T08	●
MM ECDF145A150-2T08	14.50	12.20	2	15.00	27.00	0.00	30.0	T08	●
MM ECDF150A150-2T08	15.00	12.20	2	15.00	27.00	0.00	30.0	T08	●
MM ECDF155A150-2T08	15.50	12.20	2	15.00	27.00	0.00	30.0	T08	●
MM ECDF160A200-2T10	16.00	15.30	2	20.00	33.50	0.00	30.0	T10	●
MM ECDF165A200-2T10	16.50	15.30	2	20.00	33.50	0.00	30.0	T10	●
MM ECDF170A200-2T10	17.00	15.30	2	20.00	33.50	0.00	30.0	T10	●
MM ECDF175A200-2T10	17.50	15.30	2	20.00	33.50	0.00	30.0	T10	●
MM ECDF180A200-2T10	18.00	15.30	2	20.00	33.50	0.00	30.0	T10	●
MM ECDF185A200-2T12	18.50	18.20	2	25.00	41.00	0.00	30.0	T12	●
MM ECDF190A250-2T12	19.00	18.30	2	25.00	41.00	0.00	30.0	T12	●
MM ECDF195A250-2T12	19.50	18.30	2	25.00	41.00	0.00	30.0	T12	●
MM ECDF200A250-2T12	20.00	18.45	2	25.00	41.00	0.00	30.0	T12	●

- For shanks, see pages 84-91
- For clamping keys (should be ordered separately), tightening torques and clamping instructions, see pages 91-92
- Do not apply lubricant to the threaded connection.
- For user guide see pages 44, 177-184

⁽¹⁾ Number of flutes

ISO	Material	Condition	Tensile Strength [N/mm ²]	Kc1 ⁽¹⁾ [N/mm ²]	mc ⁽²⁾	Hardness HB	Material Group No.	V m/min	Feed vs. Flat-Drill Diameter				
									DC=18.0-25.4	DC=16.0-17.9	DC=13.0-15.9	DC=10.0-12.9	DC=8.0-9.9
									frev mm/rev				
P	Non-alloy steel and cast steel, free cutting steel	< 0.25 %C Annealed	420	1350	0.21	125	1	80-110-140	0.08 0.10 0.12	0.10 0.12 0.14	0.12 0.15 0.18	0.14 0.17 0.20	0.18 0.21 0.24
		>= 0.25 %C Annealed	650	1500	0.22	190	2						
		< 0.55 %C Quenched and tempered	850	1675	0.24	250	3						
		>= 0.55 %C Annealed	750	1700	0.24	220	4						
		>= 0.55 %C Quenched and tempered	1000	1900	0.24	300	5						
	Low alloy and cast steel (less than 5% of alloying elements)	Annealed	600	1775	0.24	200	6	60-80-100	0.06 0.08 0.10	0.06 0.08 0.10	0.08 0.10 0.12	0.10 0.12 0.14	0.12 0.14 0.16
		Quenched and tempered	930	1675	0.24	275	7						
			1000	1725	0.24	300	8						
			1200	1800	0.24	350	9						
	High alloyed steel, cast steel and tool steel	Annealed	680	2450	0.23	200	10	60-80-100	0.01 0.02 0.03	0.02 0.03 0.04	0.03 0.04 0.05	0.04 0.05 0.06	0.06 0.07 0.08
		Quenched and tempered	1100	2500	0.23	325	11						
	Stainless steel and cast steel	Ferritic/martensitic	680	1875	0.21	200	12	60-80-100	0.01 0.02 0.03	0.02 0.03 0.04	0.03 0.04 0.05	0.04 0.05 0.06	0.06 0.07 0.08
		Martensitic	820	1875	0.21	240	13						
M	Stainless steel and cast steel	Austenitic, duplex	600	2150	0.20	180	14	60-80-100	0.01 0.02 0.03	0.02 0.03 0.04	0.03 0.04 0.05	0.04 0.05 0.06	0.06 0.07 0.08
K	Grey cast iron (GG)	Ferritic/pearlitic		1150	0.20	180	17	80-120-160	0.08 0.10 0.12	0.10 0.12 0.14	0.14 0.16 0.18	0.16 0.18 0.20	0.18 0.20 0.22
		Pearlitic / martensitic		1350	0.28	260	18						
	Cast iron nodular (GGG)	Ferritic		1225	0.25	160	15						
		Pearlitic		1350	0.28	250	16						
	Malleable cast iron	Ferritic		1225	0.25	130	19						
		Pearlitic		1420	0.30	230	20						

■ recommended cutting data

Spare Parts

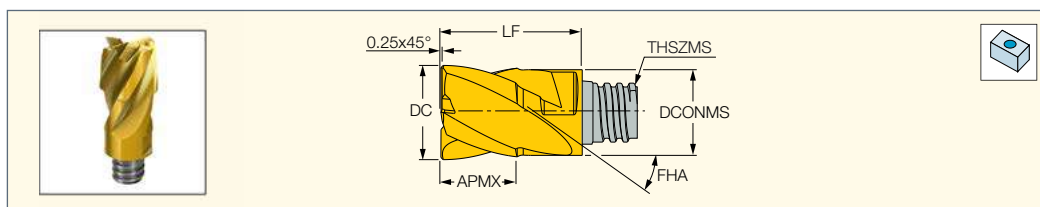
Designation	
MM ECDF080A100-2T05	MM KEY 6X4*
MM ECDF100A120-2T06	MM KEY 8X5*
MM ECDF120A150-2T08	MM KEY 10X7*
MM ECDF160A200-2T10	MM KEY 13X8*
MM ECDF200A250-2T12	MM KEY 16X9*

* Optional, should be ordered separately

MULTI-MASTER INDEXABLE SOLID CARBIDE LINE

MM EFCB

Interchangeable 4 Flute 30°
Helix Solid Carbide Heads
for Flat Counter Boring



Designation	Dimensions									IC908	Recommended Machining Data
	DC ⁽¹⁾	APMX	LF	DCONMS	THSZMS	NOF ⁽²⁾	FHA	CHW	KCH		f _z (mm/t)
MM EFCB110A08-4T06	11.00	8.40	16.50	10.00	T06	4	30.0	45.0	0.25	●	0.03-0.04
MM EFCB140A11-4T08	14.00	11.50	28.00	12.00	T08	4	30.0	45.0	0.25	●	0.04-0.05

• 0.06 mm maximum concavity on the tool's bottom • For shanks, see pages 84-91

• For clamping keys (should be ordered separately), tightening torques and clamping instructions, see pages 91-92

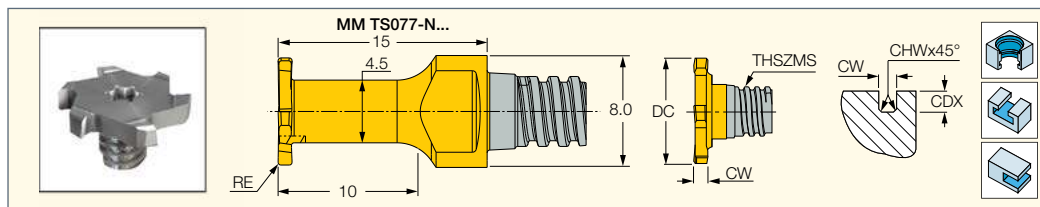
• Do not apply lubricant to the threaded connection. • For user guide see pages 44, 177-184

⁽¹⁾ e8 tolerance

⁽²⁾ Number of flutes

MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

MM TS-N

Interchangeable Solid Carbide
T-Slot Milling Heads


Designation	Dimensions									Tough ↔ Hard		
	DC	DCTOLL	CW	NOF ⁽¹⁾	THSZMS	CDX ⁽²⁾	RE	CHW		IC328	IC928	IC908
MM TS077-N07A-4T05	7.70	-0.05	0.70	4	T05	1.20	0.20	-	MM KEY 6X4*			●
MM TS077-N08A-4T05	7.70	-0.05	0.80	4	T05	1.20	0.20	-	MM KEY 6X4*			●
MM TS077-N09A-4T05	7.70	-0.05	0.90	4	T05	1.20	0.20	-	MM KEY 6X4*			●
MM TS077-N10A-4T05	7.70	-0.05	1.00	4	T05	1.20	0.20	-	MM KEY 6X4*			●
MM TS077-N15A-4T05	7.70	-0.05	1.50	4	T05	1.20	0.20	-	MM KEY 6X4*			●
MM TS077-N20A-4T05	7.70	-0.05	2.00	4	T05	1.20	0.20	-	MM KEY 6X4*			●
MM TS105-N20D-06T04	10.50	-0.05	2.00	6	T04	2.00	0.40	-	T-15/3*		●	
MM TS.500-N062P-06T05	12.70	-0.05	1.58	6	T05	2.25	-	0.15	T-20/3*	●		●
MM TS.500-N078P-06T05	12.70	-0.05	1.98	6	T05	2.25	-	0.15	T-20/3*	●		●
MM TS135-N20P-06T05	13.50	-0.05	2.00	6	T05	2.65	-	0.20	T-20/3*	●		●
MM TS135-N25P-06T05	13.50	-0.05	2.50	6	T05	2.65	-	0.20	T-20/3*	●		●

• For shanks, see pages 84-91 • For tightening torques and clamping instructions, see pages 91-92 • Do not apply lubricant to the threaded connection

• For user guide see pages 44, 177-184

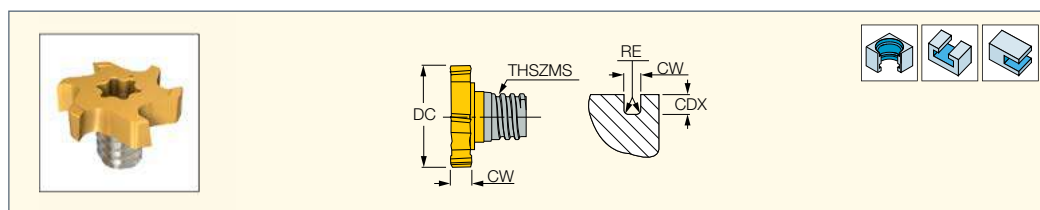
⁽¹⁾ Number of flutes

⁽²⁾ Cutting depth maximum

* Optional, should be ordered separately

MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

MM TS-H

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


Designation	Dimensions									Tough ↔ Hard	
	DC	DCTOLL	CW	CDX ⁽¹⁾	NOF ⁽²⁾	RE	THSZMS			IC328	IC908
MM TS135-H30D-06T05	13.50	-0.05	3.00	2.65	6	0.40	T05	T-20/3*		●	●
MM TS135-H40D-06T05	13.50	-0.05	4.00	2.65	6	0.40	T05	T-20/3*		●	●
MM TS165-H40A-06T05	16.50	-0.05	4.00	4.25	6	0.20	T05	T-20/3*		●	●
MM TS160-H20D-06T06	16.00	-0.05	2.00	3.00	6	0.40	T06	T-20/3*		●	●
MM TS160-H30D-06T06	16.00	-0.05	3.00	3.00	6	0.40	T06	T-25/3*		●	●
MM TS160-H40D-06T06	16.00	-0.05	4.00	3.00	6	0.40	T06	T-25/3*		●	●
MM TS165-H20D-06T06	16.50	-0.05	2.00	3.25	6	0.40	T06	T-20/3*		●	●
MM TS165-H30D-06T06	16.50	-0.05	3.00	3.25	6	0.40	T06	T-25/3*		●	●
MM TS165-H40D-06T06	16.50	-0.05	4.00	3.25	6	0.40	T06	T-25/3*		●	●
MM TS195-H60A-06T06	19.50	-0.05	6.00	4.45	6	0.20	T06	T-25/3*		●	●
MM TS225-H60A-06T06	22.50	-0.05	6.00	5.95	6	0.20	T06	T-25/3*		●	●
MM TS195-H40D-06T08	19.50	-0.05	4.00	3.45	6	0.40	T08	T-30/3 L*		●	●
MM TS195-H50D-06T08	19.50	-0.05	5.00	3.45	6	0.40	T08	T-30/3 L*		●	●
MM TS195-H60D-06T08	19.50	-0.05	6.00	3.45	6	0.40	T08	T-30/3 L*		●	●
MM TS225-H40D-06T08	22.50	-0.05	4.00	4.90	6	0.40	T08	T-40/3 L*		●	●
MM TS225-H50D-06T08	22.50	-0.05	5.00	4.95	6	0.40	T08	T-40/3 L*		●	●
MM TS225-H60D-06T08	22.50	-0.05	6.00	4.95	6	0.40	T08	T-40/3 L*		●	●
MM TS250-H50D-06T08	25.00	-0.05	5.00	5.90	6	0.40	T08	T-50/3 L*		●	●
MM TS250-H60D-06T08	25.00	-0.05	6.00	5.90	6	0.40	T08	T-50/3 L*		●	●
MM TS250-H80D-06T08	25.00	-0.05	8.00	5.90	6	0.40	T08	T-50/3 L*		●	●
MM TS250-H50D-06T10	25.00	-0.05	5.00	4.30	6	0.40	T10	T-50/3 L*		●	●
MM TS250-H60D-06T10	25.00	-0.05	6.00	4.30	6	0.40	T10	T-50/3 L*		●	●
MM TS250-H80D-06T10	25.00	-0.05	8.00	4.30	6	0.40	T10	T-50/3 L*		●	●

• Inserts in 5 mm and wider feature chip splitting edges • For tightening torques and clamping instructions, see pages 91-92

• Do not apply lubricant to the threaded connection • For shanks, see pages 84-91 • For user guide see pages 44, 177-184

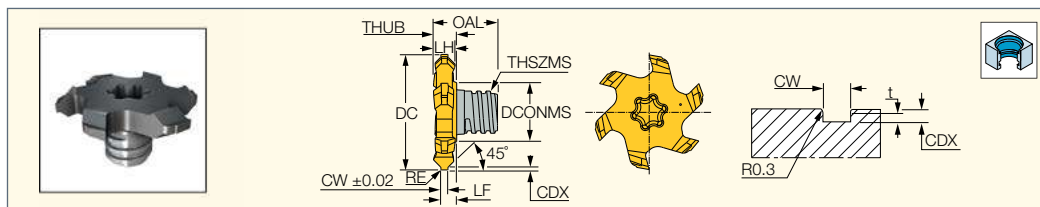
⁽¹⁾ Cutting depth maximum

⁽²⁾ Number of flutes

* Optional, should be ordered separately

MM TS-C

Interchangeable Solid Carbide
 Circlip Groove Milling Heads
 According to DIN 471/472



Designation	Dimensions													IC928
	DC	CW	CDX	LF	t	RE	THUB	LH	OAL	DCONMS	NOF ⁽¹⁾	THSZMS	✓	
MM TS127C118T035-6T05	12.70	1.18	0.35	2.23	0.27	0.05	3.00	2.7	8.43	7.70	6	T05	T-20/3*	•
MM TS127C118T040-6T05	12.70	1.18	0.40	2.23	0.32	0.05	3.00	2.7	8.43	7.70	6	T05	T-20/3*	•
MM TS127C118T050-6T05	12.70	1.18	0.50	2.23	0.42	0.05	3.00	2.7	8.43	7.70	6	T05	T-20/3*	•
MM TS127C138T050-6T05	12.70	1.38	0.50	2.23	0.42	0.05	3.00	2.7	8.63	7.70	6	T05	T-20/3*	•
MM TS225C138T060-6T08	22.50	1.38	0.60	3.08	0.50	0.05	4.50	4.2	9.48	11.70	6	T08	T-40/3 L*	•
MM TS225C138T070-6T08	22.50	1.38	0.70	3.08	0.60	0.05	4.50	4.2	9.48	11.70	6	T08	T-40/3 L*	•
MM TS225C138T085-6T08	22.50	1.38	0.85	3.08	0.74	0.05	4.50	4.2	9.48	11.70	6	T08	T-40/3 L*	•
MM TS225C168T070-6T08	22.50	1.68	0.70	3.23	0.60	0.10	4.50	4.2	9.78	11.70	6	T08	T-40/3 L*	•
MM TS225C168T085-6T08	22.50	1.68	0.85	3.23	0.74	0.10	4.50	4.2	9.78	11.70	6	T08	T-40/3 L*	•
MM TS225C168T100-6T08	22.50	1.68	1.00	3.23	0.89	0.10	4.50	4.2	9.78	11.70	6	T08	T-40/3 L*	•
MM TS225C193T100-6T08	22.50	1.93	1.00	3.35	0.89	0.10	4.50	4.2	10.03	11.70	6	T08	T-40/3 L*	•
MM TS225C193T125-6T08	22.50	1.93	1.25	3.35	1.13	0.10	4.50	4.2	10.03	11.70	6	T08	T-40/3 L*	•
MM TS225C223T150-6T08	22.50	2.23	1.50	3.50	1.38	0.10	4.50	4.2	10.33	11.70	6	T08	T-40/3 L*	•
MM TS225C273T150-6T08	22.50	2.73	1.50	3.77	1.39	0.20	4.50	4.1	10.83	11.70	6	T08	T-40/3 L*	•
MM TS225C273T175-6T08	22.50	2.73	1.75	3.77	1.64	0.20	4.40	3.9	10.83	11.70	6	T08	T-40/3 L*	•
MM TS225C325T175-6T08	22.50	3.25	1.75	4.40	1.64	0.20	5.10	4.6	11.35	11.70	6	T08	T-40/3 L*	•

• For shanks, see pages 84-91 • For tightening torques and clamping instructions, see pages 91-92 • Do not apply lubricant to the threaded connection

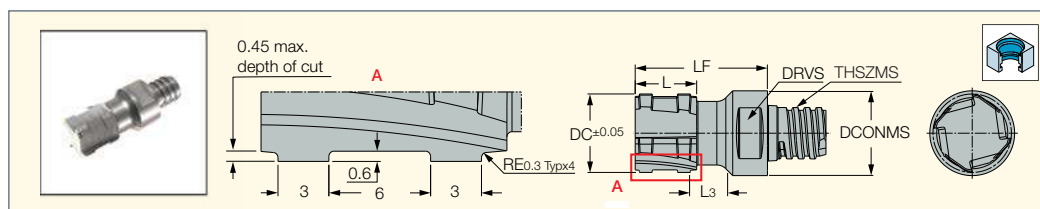
• For user guide see pages 44, 177-184

⁽¹⁾ Number of flutes

* Optional, should be ordered separately

MM TS-DG

Double Groove Internal
 Grooving Heads with a
 Threaded Connection for Tube
 Sheets of Heat Exchangers



Designation	Dimensions										IC908
	DC	DCONMS	PHD ⁽¹⁾	THSZMS	NOF ⁽²⁾	LF	L3	L	DRVS ⁽³⁾	✓	
MM TS155-04T10-8238	15.50	16.00	15.88	T10	4	34.00	18.10	14.10	10.0	MM KEY 10x7*	•
MM TS185-04T12-8239	18.50	18.45	19.05	T12	4	34.50	18.30	14.50	13.0	MM KEY 13x8*	•
MM TS245-04T15-8240	24.50	23.90	25.40	T15	4	37.40	11.00	14.40	20.0	MM KEY 20*	•

• For shanks, see pages 84-91 • For clamping keys (should be ordered separately), tightening torques and clamping instructions, see pages 91-92

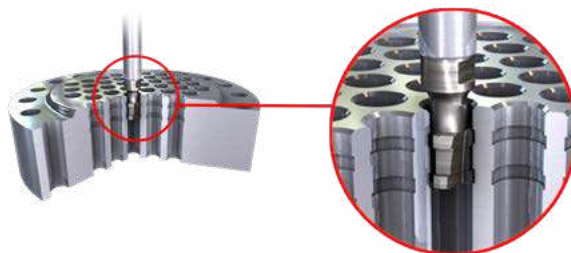
• Do not apply lubricant to the threaded connection • For user guide see pages 44, 177-184

⁽¹⁾ For minimum tube outer diameter

⁽²⁾ Number of flutes

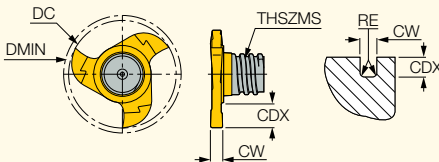
⁽³⁾ Clamping wrench size

* 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
	DC	CW	CDX ⁽²⁾	NOF ⁽³⁾	RE	DMIN ⁽⁴⁾	THSZMS		
MM GRIT 16K-1.50-0.10	15.70	1.50	2.80	3	0.10	16.00	T06	MM EGR 16-18*	●
MM GRIT 16P-1.50-0.10	15.70	1.50	2.80	3	0.10	16.00	T06	MM EGR 16-18*	●
MM GRIT 16K-1.57-0.20	15.70	1.57	2.80	3	0.20	16.00	T06	MM EGR 16-18*	●
MM GRIT 16K-2.00-0.20	15.70	2.00	2.80	3	0.20	16.00	T06	MM EGR 16-18*	●
MM GRIT 16P-2.20-1.10	15.70	2.20	2.80	3	1.10	16.00	T06	MM EGR 16-18*	●
MM GRIT 16K-2.39-0.20	15.70	2.39	2.80	3	0.20	16.00	T06	MM EGR 16-18*	●
MM GRIT 16K-2.50-0.20	15.70	2.50	2.80	3	0.20	16.00	T06	MM EGR 16-18*	●
MM GRIT 16K-3.00-0.20	15.70	3.00	2.80	3	0.20	16.00	T06	MM EGR 16-18*	●
MM GRIT 16P-3.00-0.20	15.70	3.00	2.80	3	0.20	16.00	T06	MM EGR 16-18*	●
MM GRIT 16K-3.17-0.20	15.70	3.17	2.80	3	0.20	16.00	T06	MM EGR 16-18*	●
MM GRIT 18K-1.20-0.05 ⁽¹⁾	17.70	1.20	3.80	3	0.05	18.00	T06	MM EGR 16-18*	●
MM GRIT 18P-1.20-0.60	17.70	1.20	3.80	3	0.60	18.00	T06	MM EGR 16-18*	●
MM GRIT 18K-1.40-0.05 ⁽¹⁾	17.70	1.40	3.80	3	0.05	18.00	T06	MM EGR 16-18*	●
MM GRIT 18K-1.50-0.10	17.70	1.50	3.80	3	0.10	18.00	T06	MM EGR 16-18*	●
MM GRIT 18K-1.57-0.20	17.70	1.57	3.80	3	0.20	18.00	T06	MM EGR 16-18*	●
MM GRIT 18K-1.70-0.05 ⁽¹⁾	17.70	1.70	3.80	3	0.05	18.00	T06	MM EGR 16-18*	●
MM GRIT 18K-2.00-0.20	17.70	2.00	3.80	3	0.20	18.00	T06	MM EGR 16-18*	●
MM GRIT 18P-2.00-1.00	17.70	2.00	3.80	3	1.00	18.00	T06	MM EGR 16-18*	●
MM GRIT 18P-2.20-1.10	17.70	2.20	3.80	3	1.10	18.00	T06	MM EGR 16-18*	●
MM GRIT 18K-2.39-0.20	17.70	2.39	3.80	3	0.20	18.00	T06	MM EGR 16-18*	●
MM GRIT 18K-2.50-0.20	17.70	2.50	3.80	3	0.20	18.00	T06	MM EGR 16-18*	●
MM GRIT 18K-3.00-0.20	17.70	3.00	3.80	3	0.20	18.00	T06	MM EGR 16-18*	●
MM GRIT 18P-3.00-1.50	17.70	3.00	3.80	3	1.50	18.00	T06	MM EGR 16-18*	●
MM GRIT 18K-3.17-0.20	17.70	3.17	3.80	3	0.20	18.00	T06	MM EGR 16-18*	●

- 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 • For clamping instructions, see pages 91-92
- For shanks, see pages 84-91 • K - For general steel machining • P - Positive geometry for soft and gummy materials • Use carbide shanks for groove milling heads.
- 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. • For user guide see pages 44, 177-184

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

⁽²⁾ Cutting depth maximum

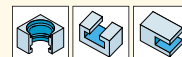
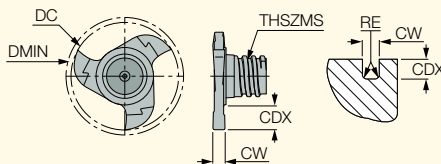
⁽³⁾ Number of flutes

⁽⁴⁾ Minimum bore diameter

* Optional, should be ordered separately



MM GRIT-16K/P,18K/P 3T6

 Interchangeable Solid
 Carbide Small Diameter
 Groove Milling Heads


Designation	Dimensions								IC908
	DC	CW	CDX ⁽¹⁾	NOF ⁽²⁾	RE	DMIN ⁽³⁾	THSZMS	✓	
MM GRIT16K150-010-3T6	15.70	1.50	2.80	3	0.10	16.00	T06	T-20/3*	•
MM GRIT16P150-010-3T6	15.70	1.50	2.80	3	0.10	16.00	T06	T-20/3*	•
MM GRIT16K157-020-3T6	15.70	1.57	2.80	3	0.20	16.00	T06	T-25/3*	•
MM GRIT16K200-020-3T6	15.70	2.00	2.80	3	0.20	16.00	T06	T-20/3*	•
MM GRIT16P220-110-3T6	15.70	2.20	2.80	3	1.10	16.00	T06	T-20/3*	•
MM GRIT16K239-020-3T6	15.70	2.39	2.80	3	0.20	16.00	T06	T-25/3*	•
MM GRIT16K250-020-3T6	15.70	2.50	2.80	3	0.20	16.00	T06	T-25/3*	•
MM GRIT16K300-020-3T6	15.70	3.00	2.80	3	0.20	16.00	T06	T-25/3*	•
MM GRIT16P300-020-3T6	15.70	3.00	2.80	3	0.20	16.00	T06	T-25/3*	•
MM GRIT16K317-020-3T6	15.70	3.17	2.80	3	0.20	16.00	T06	T-25/3*	•
MM GRIT18K120-005-3T6	17.70	1.20	3.80	3	0.05	18.00	T06	T-20/3*	•
MM GRIT18P120-060-3T6	17.70	1.20	3.80	3	0.60	18.00	T06	T-20/3*	•
MM GRIT18K140-005-3T6	17.70	1.40	3.80	3	0.05	18.00	T06	T-20/3*	•
MM GRIT18K150-010-3T6	17.70	1.50	3.80	3	0.10	18.00	T06	T-20/3*	•
MM GRIT18K157-020-3T6	17.70	1.57	3.80	3	0.20	18.00	T06	T-20/3*	•
MM GRIT18K170-005-3T6	17.70	1.70	3.80	3	0.05	18.00	T06	T-20/3*	•
MM GRIT18K200-020-3T6	17.70	2.00	3.80	3	0.20	18.00	T06	T-20/3*	•
MM GRIT18P200-100-3T6	17.70	2.00	3.80	3	1.00	18.00	T06	T-20/3*	•
MM GRIT18P220-110-3T6	17.70	2.20	3.80	3	1.10	18.00	T06	T-20/3*	•
MM GRIT18K239-020-3T6	17.70	2.39	3.80	3	0.20	18.00	T06	T-20/3*	•
MM GRIT18K250-020-3T6	17.70	2.50	3.80	3	0.20	18.00	T06	T-20/3*	•
MM GRIT18K300-020-3T6	17.70	3.00	3.80	3	0.20	18.00	T06	T-25/3*	•
MM GRIT18P300-150-3T6	17.70	3.00	3.80	3	1.50	18.00	T06	T-25/3*	•
MM GRIT18K317-020-3T6	17.70	3.17	3.80	3	0.20	18.00	T06	T-25/3*	•

- Recommended for O-rings and retaining rings
- Modification options on request
- Do not apply lubricant to the threaded connection
- For clamping instructions, see pages 91-92
- For shanks, see pages 84-91
- K-Type - For general steel machining
- P-Type - Positive geometry for soft and gummy materials
- Use carbide shanks for groove milling heads.
- Keys for other milling heads must be ordered separately.
- MM GRIT.. shanks serve mainly for MM GRIT.. slotting heads.
- K-Type - For general steel machining.
- P-Type - Positive geometry for soft and gummy materials.
- For user guide see pages 44, 177-184

⁽¹⁾ Cutting depth maximum

⁽²⁾ Number of flutes

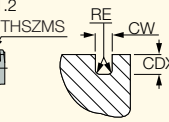
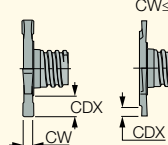
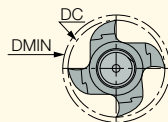
⁽³⁾ Minimum bore diameter

* Optional, should be ordered separately



MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

MM GRIT-22K/P,28K/P
4T8/6T10

Interchangeable Solid
Carbide Small Diameter
Groove Milling Heads


Designation	Dimensions									IC908
	DC	CW	CDX ⁽¹⁾	NOF ⁽²⁾	RE	DMIN ⁽³⁾	THSZMS	↙	↘	
MM GRIT22K076-000-4T8	21.70	0.76	1.50	4	0.00	22.00	T08		T-25/3*	●
MM GRIT22K086-000-4T8	21.70	0.86	1.70	4	0.00	22.00	T08		T-25/3*	●
MM GRIT22K096-000-4T8	21.70	0.96	1.90	4	0.00	22.00	T08		T-25/3*	●
MM GRIT22K100-005-4T8	21.70	1.00	2.00	4	0.05	22.00	T08		T-25/3*	●
MM GRIT22P100-005-4T8	21.70	1.00	2.00	4	0.05	22.00	T08		T-25/3*	●
MM GRIT22K120-005-4T8	21.70	1.20	4.50	4	0.05	22.00	T08		T-25/3*	●
MM GRIT22K140-005-4T8	21.70	1.40	4.50	4	0.05	22.00	T08		T-25/3*	●
MM GRIT22K157-000-4T8	21.70	1.57	4.50	4	0.00	22.00	T08		T-25/3*	●
MM GRIT22K170-010-4T8	21.70	1.70	4.50	4	0.10	22.00	T08		T-25/3*	●
MM GRIT22P170-010-4T8	21.70	1.70	4.50	4	0.10	22.00	T08		T-25/3*	●
MM GRIT22K195-020-4T8	21.70	1.95	4.50	4	0.20	22.00	T08		T-25/3*	●
MM GRIT22K200-020-4T8	21.70	2.00	4.50	4	0.20	22.00	T08		T-25/3*	●
MM GRIT22P200-020-4T8	21.70	2.00	4.50	4	0.20	22.00	T08		T-25/3*	●
MM GRIT22K225-020-4T8	21.70	2.25	4.50	4	0.20	22.00	T08		T-25/3*	●
MM GRIT22K239-020-4T8	21.70	2.39	4.50	4	0.20	22.00	T08		T-25/3*	●
MM GRIT22K250-020-4T8	21.70	2.50	4.50	4	0.20	22.00	T08		T-25/3*	●
MM GRIT22P250-020-4T8	21.70	2.50	4.50	4	0.20	22.00	T08		T-25/3*	●
MM GRIT22K275-020-4T8	21.70	2.75	4.50	4	0.20	22.00	T08		T-25/3*	●
MM GRIT22K300-020-4T8	21.70	3.00	4.50	4	0.20	22.00	T08		T-30/3 L*	●
MM GRIT22P300-020-4T8	21.70	3.00	4.50	4	0.20	22.00	T08		T-30/3 L*	●
MM GRIT22K317-020-4T8	21.70	3.17	4.50	4	0.20	22.00	T08		T-30/3 L*	●
MM GRIT22K325-020-4T8	21.70	3.25	4.50	4	0.20	22.00	T08		T-30/3 L*	●
MM GRIT22P381-020-4T8	21.70	3.81	4.50	4	0.20	22.00	T08		T-30/3 L*	●
MM GRIT22K400-020-4T8	21.70	4.00	4.50	4	0.20	22.00	T08		T-30/3 L*	●
MM GRIT22P400-020-4T8	21.70	4.00	4.50	4	0.20	22.00	T08		T-30/3 L*	●
MM GRIT22P400-200-4T8	21.70	4.00	4.50	4	2.00	22.00	T08		T-30/3 L*	●
MM GRIT22K425-020-4T8	21.70	4.25	4.50	4	0.20	22.00	T08		T-30/3 L*	●
MM GRIT22K425-120-4T8	21.70	4.25	4.50	4	1.20	22.00	T08		T-30/3 L*	●
MM GRIT22K475-020-4T8	21.70	4.75	4.50	4	0.20	22.00	T08		T-30/3 L*	●
MM GRIT22K525-020-4T8	21.70	5.25	4.50	4	0.20	22.00	T08		T-30/3 L*	●
MM GRIT22K600-300-4T8	21.70	6.00	4.50	4	3.00	22.00	T08		T-30/3 L*	●
MM GRIT28K250-020-6T10	27.70	2.50	6.00	6	0.20	28.00	T10	T-40/3 L*		●
MM GRIT28K525-020-6T10	27.70	5.25	6.00	6	0.20	28.00	T10	T-40/3 L*		●
MM GRIT28P700-350-6T10	27.70	7.00	6.00	6	0.20	28.00	T10	T-40/3 L*		●
MM GRIT28K1000-020-6T10	27.70	10.00	6.00	6	0.20	28.00	T10	T-40/3 L*		●
MM GRIT28K1100-020-6T10	27.70	11.00	6.00	6	0.20	28.00	T10	T-40/3 L*		●
MM GRIT28K1200-020-6T10	27.70	12.00	6.00	6	0.20	28.00	T10	T-40/3 L*		●
MM GRIT28K1300-020-6T10	27.70	13.00	6.00	6	0.20	28.00	T10	T-40/3 L*		●

- Recommended for Orings and retaining rings • K - for general steel & cast iron machining P - for soft and gummy materials
- Modification options on request • Do not apply lubricant to the threaded connection • For clamping instructions, see pages 91-92
- For shanks, see pages 84-91 • Use carbide shanks for groove milling heads.
- 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.
- For user guide see pages 44, 177-184

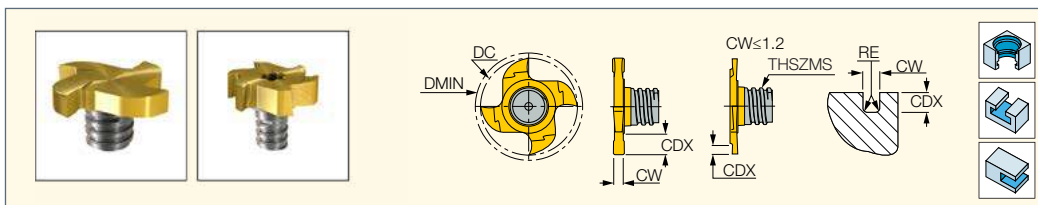
⁽¹⁾ Cutting depth maximum

⁽²⁾ Number of flutes

⁽³⁾ Minimum bore diameter

* Optional, should be ordered separately

MM GRIT-22K/P,28K/P

Interchangeable Solid
Carbide Small Diameter
Groove Milling Heads


Designation	Dimensions								IC528
	DC	CW	CDX ⁽²⁾	NOF ⁽³⁾	RE	DMIN ⁽⁴⁾	THSZMS	✓	
MM GRIT 22K-0.76-0.00 ⁽¹⁾	21.70	0.76	1.50	4	0.00	22.00	T08	MM EGR 20-22*	●
MM GRIT 22K-0.86-0.00 ⁽¹⁾	21.70	0.86	1.70	4	0.00	22.00	T08	MM EGR 20-22*	●
MM GRIT 22K-0.96-0.00 ⁽¹⁾	21.70	0.96	1.90	4	0.00	22.00	T08	MM EGR 20-22*	●
MM GRIT 22K-1.00-0.05	21.70	1.00	2.00	4	0.05	22.00	T08	MM EGR 20-22*	●
MM GRIT 22P-1.00-0.05	21.70	1.00	2.00	4	0.05	22.00	T08	MM EGR 20-22*	●
MM GRIT 22K-1.20-0.05 ⁽¹⁾	21.70	1.20	4.50	4	0.05	22.00	T08	MM EGR 20-22*	●
MM GRIT 22K-1.40-0.05 ⁽¹⁾	21.70	1.40	4.50	4	0.05	22.00	T08	MM EGR 20-22*	●
MM GRIT 22K-1.57-0.00	21.70	1.57	4.50	4	0.00	22.00	T08	MM EGR 20-22*	●
MM GRIT 22K-1.70-0.10 ⁽¹⁾	21.70	1.70	4.50	4	0.10	22.00	T08	MM EGR 20-22*	●
MM GRIT 22P-1.70-0.10 ⁽¹⁾	21.70	1.70	4.50	4	0.10	22.00	T08	MM EGR 20-22*	●
MM GRIT 22K-1.95-0.20 ⁽¹⁾	21.70	1.95	4.50	4	0.20	22.00	T08	MM EGR 20-22*	●
MM GRIT 22K-2.00-0.20	21.70	2.00	4.50	4	0.20	22.00	T08	MM EGR 20-22*	●
MM GRIT 22P-2.00-0.20	21.70	2.00	4.50	4	0.20	22.00	T08	MM EGR 20-22*	●
MM GRIT 22K-2.25-0.20 ⁽¹⁾	21.70	2.25	4.50	4	0.20	22.00	T08	MM EGR 20-22*	●
MM GRIT 22K-2.39-0.20	21.70	2.39	4.50	4	0.20	22.00	T08	MM EGR 20-22*	●
MM GRIT 22K-2.50-0.20	21.70	2.50	4.50	4	0.20	22.00	T08	MM EGR 20-22*	●
MM GRIT 22P-2.50-0.20	21.70	2.50	4.50	4	0.20	22.00	T08	MM EGR 20-22*	●
MM GRIT 22K-2.75-0.20 ⁽¹⁾	21.70	2.75	4.50	4	0.20	22.00	T08	MM EGR 20-22*	●
MM GRIT 22K-3.00-0.20	21.70	3.00	4.50	4	0.20	22.00	T08	MM EGR 20-22*	●
MM GRIT 22P-3.00-0.20	21.70	3.00	4.50	4	0.20	22.00	T08	MM EGR 20-22*	●
MM GRIT 22K-3.17-0.20	21.70	3.17	4.50	4	0.20	22.00	T08	MM EGR 20-22*	●
MM GRIT 22K-3.25-0.20 ⁽¹⁾	21.70	3.25	4.50	4	0.20	22.00	T08	MM EGR 20-22*	●
MM GRIT 22P-3.81-0.20	21.70	3.81	4.50	4	0.20	22.00	T08	MM EGR 20-22*	●
MM GRIT 22K-4.00-0.20	21.70	4.00	4.50	4	0.20	22.00	T08	MM EGR 20-22*	●
MM GRIT 22P-4.00-0.20	21.70	4.00	4.50	4	0.20	22.00	T08	MM EGR 20-22*	●
MM GRIT 22K-4.00-2.00	21.70	4.00	4.50	4	2.00	22.00	T08	MM EGR 20-22*	●
MM GRIT 22K-4.25-0.20 ⁽¹⁾	21.70	4.25	4.50	4	0.20	22.00	T08	MM EGR 20-22*	●
MM GRIT 22K-4.25-1.20 ⁽¹⁾	21.70	4.25	4.50	4	1.20	22.00	T08	MM EGR 20-22*	●
MM GRIT 22K-4.75-0.20	21.70	4.75	4.50	4	0.20	22.00	T08	MM EGR 20-22*	●
MM GRIT 22K-5.25-0.20 ⁽¹⁾	21.70	5.25	4.50	4	0.20	22.00	T08	MM EGR 20-22*	●
MM GRIT 22K-6.00-3.00	21.70	6.00	4.50	4	3.00	22.00	T08	MM EGR 20-22*	●
MM GRIT 28K-2.50-0.2	27.70	2.50	6.00	6	0.20	28.00	T10	T-40/3 L*	●
MM GRIT 28K-5.25-0.2	27.70	5.25	6.00	6	0.20	28.00	T10	T-40/3 L*	●
MM GRIT 28P-7.0-3.5	27.70	7.00	5.70	6	3.50	28.00	T10	T-40/3 L*	●
MM GRIT 28K-10.0-0.2	27.70	10.00	6.00	6	0.20	28.00	T10	T-40/3 L*	●

- Recommended for Orings and retaining rings • K - for general steel & cast iron machining P for soft and gummy materials
- Modification options on request • Do not apply lubricant to the threaded connection • For clamping instructions, see pages 91-92
- For user guide see pages 542-548 • For shanks, see pages 84-91 • Use carbide shanks for groove milling heads.
- 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.
- For user guide see pages 44, 177-184

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

⁽²⁾ Cutting depth maximum

⁽³⁾ Number of flutes

⁽⁴⁾ Minimum bore diameter

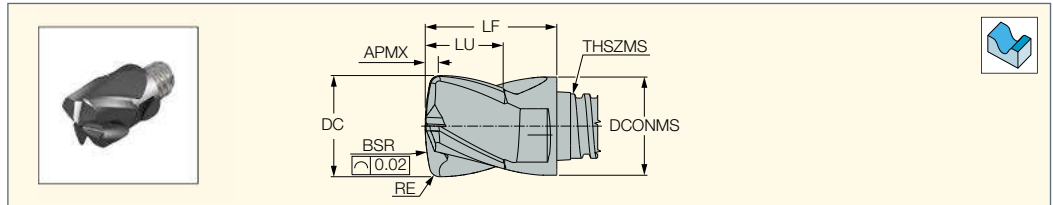
* Optional, should be ordered separately

Machining Data for MULTI-MASTER Groove Milling Heads

ISO	Material	Condition	Tensile Strength [N/mm²]	Hardness HB	Material No.	MM-TS			MM-GRIT K-TYPE			MM-GRIT P-TYPE				
						Speed		Feed mm/t	Speed		Feed mm/t		Speed		Feed mm/t	
						V m/min	F _z (min)	F _z (max)	V m/min	F _z (min)	F _z (max)	V m/min	F _z (min)	F _z (max)		
P	Non-alloy steel and cast steel, free cutting steel	< 0.25 %C Annealed	420	125	1	110-140	0.08	0.20	110-160	0.05	0.15	-	-	-		
		>= 0.25 %C Annealed	650	190	2	100-120	0.08	0.18	100-150	0.05	0.15	-	-	-		
		< 0.55 %C Quenched and tempered	850	250	3	70-100	0.08	0.15	80-100	0.05	0.15	-	-	-		
		>= 0.55 %C Annealed	750	220	4	70-100	0.08	0.15	80-100	0.05	0.15	-	-	-		
		Quenched and tempered	1000	300	5	60-80	0.08	0.15	60-80	0.05	0.15	-	-	-		
	Low alloy and cast steel (less than 5% of alloying elements)	Annealed	600	200	6	100-120	0.08	0.15	110-150	0.05	0.15	-	-	-		
		Quenched and tempered	930	275	7	90-120	0.08	0.15	100-120	0.05	0.15	-	-	-		
			1000	300	8	80-110	0.08	0.15	70-110	0.05	0.15	-	-	-		
			1200	350	9	70-100	0.05	0.12	70-100	0.05	0.15	-	-	-		
	High alloyed steel, cast steel and tool steel	Annealed	680	200	10	60-80	0.05	0.18	60-80	0.05	0.15	-	-	-		
		Quenched and tempered	1100	325	11	55-70	0.08	0.15	55-70	0.05	0.15	-	-	-		
	Stainless steel and cast steel	Ferritic/martensitic.	680	200	12	100-130	0.06	0.12	100-130	0.03	0.15	100-130	0.03	0.10		
		Martensitic	820	240	13	100-120	0.08	0.15	100-130	0.03	0.15	100-130	0.03	0.10		
M	Stainless steel and cast steel	Austenitic	600	180	14	80-120	0.05	0.10	90-120	0.03	0.12	90-120	0.03	0.10		
K	Grey cast iron (GG)	Ferritic/pearlitic		180	15	160-220	0.10	0.20	160-220	0.03	0.12	-	-	-		
		Pearlitic / martensitic		260	16	120-200	0.10	0.15	120-200	0.03	0.12	-	-	-		
	Cast iron nodular (GGG)	Ferritic		160	17	100-140	0.10	0.20	-	-	-	-	-	-		
		Pearlitic		250	18	80-100	0.10	0.15	-	-	-	-	-	-		
	Malleable cast iron	Ferritic		130	19	180-250	0.10	0.20	180-250	0.03	0.15	-	-	-		
		Pearlitic		230	20	160-220	0.10	0.15	160-220	0.03	0.15	-	-	-		
N	Aluminum-wrought alloys	Not cureable		60	21	800-1200	0.10	0.20	-	-	-	800-1200	0.05	0.15		
		Cured		100	22	800-1200	0.10	0.20	-	-	-	800-1200	0.05	0.15		
	Aluminum-cast-alloys	<=12% Si Not cureable		75	23	-	-	-	-	-	-	600-1000	0.05	0.15		
		Cured		90	24	-	-	-	-	-	-	500-1000	0.05	0.15		
	>12% Si	High temperature		130	25	-	-	-	-	-	-	200-400	0.05	0.15		
		Copper alloys	>1% Pb Free cutting		110	26	-	-	-	-	-	-	-	-	-	
			Brass		90	27	-	-	-	-	-	-	-	-	-	
	Electrolitic copper			100	28	-	-	-	-	-	-	-	-	-		
	Non-metallic	Duroplastics, fiber plastics			29	-	-	-	-	-	-	-	-	-		
		Hard rubber			30	-	-	-	-	-	-	-	-	-		
S	High temp. alloys	Fe based	Annealed		200	31	-	-	-	30-40	0.02	0.12	-	-	-	
			Cured		280	32	25-35	0.05	0.12	25-40	0.02	0.12	-	-	-	
		Ni or Co based	Annealed		250	33	25-35	0.05	0.12	25-40	-	-	-	0.01	0.12	
			Cured		350	34	25-35	0.05	0.12	25-40	-	-	-	0.01	0.12	
			Cast		320	35	40-60	0.05	0.12	25-40	-	-	-	0.01	0.12	
	Titanium Ti alloys		RM 400		36	40-60	0.05	0.12	40-60	-	-	-	0.05	0.12		
		Alpha+beta alloys cured	RM 1050		37	40-60	0.05	0.10	40-60	-	-	-	0.05	0.10		
		H	Hardened steel	Hardened		55 HRC	38									
Hardened				60 HRC	39											
Chilled cast iron	Cast			400	40											
Cast iron	Hardened			55 HRC	41											

MM ELB

Interchangeable Lens-Shaped
(Barrel) Solid Carbide
Heads for 3D Profiling



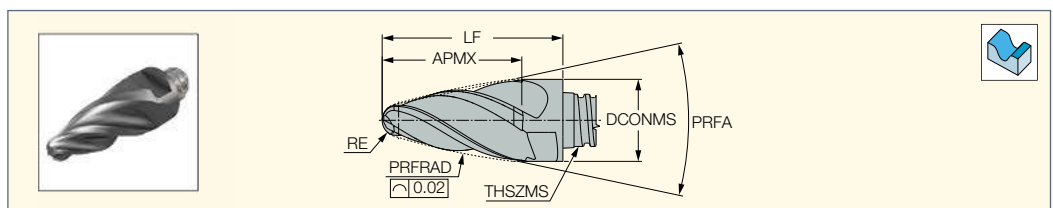
Designation	Dimensions									IC908
	DC	BSR	RE	LU	APMX	THSZMS	DCONMS	NOF ⁽¹⁾	LF	
MM ELB08R16A05-4T05	8.00	16.00	0.50	5.50	0.90	T05	8.00	4	10.00	●
MM ELB10R20A07-4T06	10.00	20.00	1.00	7.50	1.42	T06	10.00	4	13.00	●
MM ELB12R24A09-4T08	12.00	24.00	1.00	9.00	1.55	T08	12.00	4	16.50	●
MM ELB16R32A12-4T10	16.00	32.00	1.00	12.00	1.80	T10	16.00	4	20.50	●

• For user guide see pages 44, 177-184

⁽¹⁾ Number of flutes

MM EOB

Interchangeable Oval-Shaped
(Barrel) Solid Carbide
Heads for 3D Profiling



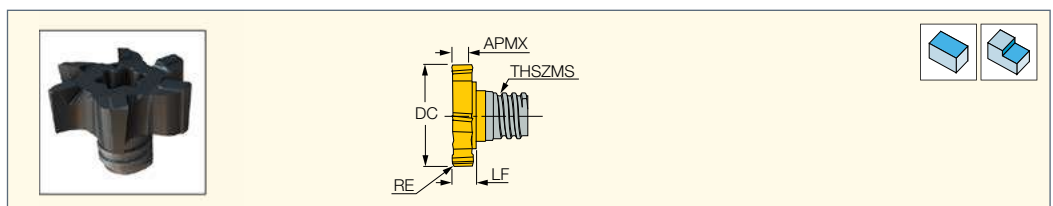
Designation	Dimensions								IC908
	PRFRAD	RE	APMX	PRFA	THSZMS	NOF ⁽¹⁾	DCONMS	LF	
MM EOB08R1.5R80A13-4T05	80.00	1.50	14.20	24.00	T05	4	8.00	18.00	●
MM EOB12R2.0R75A21-4T08	75.00	2.00	21.30	24.00	T08	4	12.00	27.00	●
MM EOB10R2.0R85A16-4T06	85.00	2.00	16.50	24.00	T06	4	10.00	22.00	●
MM EOB16R3.0R75A26-4T10	75.00	3.00	27.00	24.00	T10	4	16.00	33.40	●

• For user guide see pages 44, 177-184

⁽¹⁾ Number of flutes

MM FM

Interchangeable Solid Carbide
Face Milling Heads with
MULTI-MASTER Threaded
Connections



Designation	Dimensions							IC908	Recommended Machining Data
	DC	APMX	RE	NOF ⁽¹⁾	THSZMS	LF	∠		
MM FM120-36R0.2-06T05	12.00	3.60	0.20	6	T05	4.40	T-20/3*	●	f _z (mm/t) 0.04-0.10
MM FM160-48R0.4-06T06	16.00	4.80	0.40	6	T06	5.60	T-25/3*	●	0.05-0.10
MM FM200-60R0.4-06T08	20.00	6.00	0.40	6	T08	6.80	T-40/3 L*	●	0.05-0.10
MM FM250-75R0.4-06T10	25.00	7.50	0.40	6	T10	8.40	T-50/3 L*	●	0.05-0.10

⁽¹⁾ Number of flutes

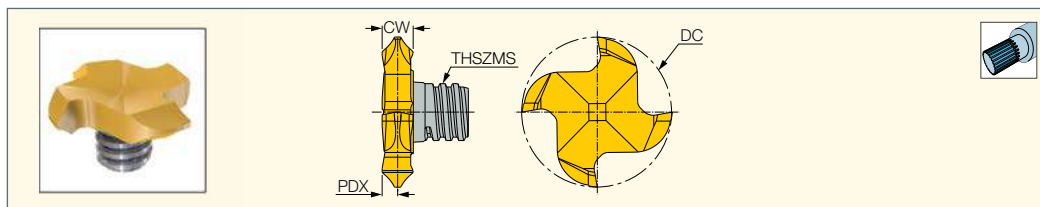
* Optional, should be ordered separately

MULTI-MASTER

INDEXABLE SOLID CARBIDE LINE

MM SS

Interchangeable Solid Carbide Heads for Milling Involute Spline Shafts According to DIN 5480



Designation	Dimensions								IC528
	Module	T range ⁽¹⁾	DC	PDX	CW	NOF ⁽²⁾	THSZMS		
MM SS22M100Z1720-4T08	1.00	17-20	21.70	2.8	5.50	4	T08	MM EGR 20-22*	●
MM SS22M100Z2125-4T08	1.00	21-25	21.70	2.3	4.50	4	T08	MM EGR 20-22*	●
MM SS22M150Z1720-4T08	1.50	17-20	21.70	2.7	5.40	4	T08	MM EGR 20-22*	●

- MM EGR 20-22 clamping keys are supplied with each MM GRT... shanks • Tightening torque 1500 Nxcm • Do not apply lubricant to the threaded connection.
- For clamping instructions, see pages 91-92 • For user guide see pages 44, 177-184 • For shanks, see pages 84-91

⁽¹⁾ Teeth range

⁽²⁾ Number of flutes

* Optional, should be ordered separately

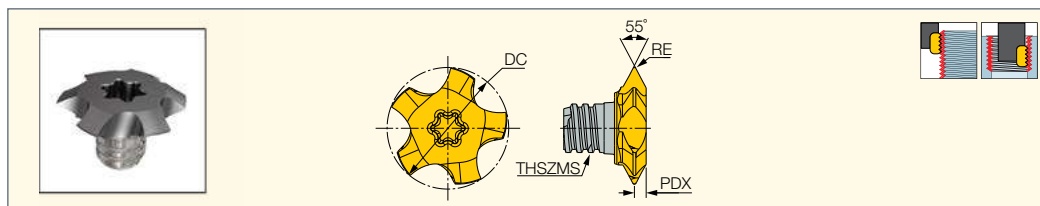
SOLIDTHREAD

MULTI-MASTER

INDEXABLE SOLID CARBIDE LINE

MM TRF 55°

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



Designation	Dimensions											IC908
	DC	NOF ⁽¹⁾	TPIN ⁽²⁾	TPIX ⁽³⁾	RE	PDX	THSZMS	TDZ ⁽⁴⁾	DMIN	TQ ⁽⁵⁾	Standard	
MM TRF12-W55-P11-5T05	11.94	5	11.00	14.00	0.23	1.15	T05	15.875	13.60	7.0	DIN/ISO 228, B.S. 84	●
MM TRF12-W55-P19-5T05	11.94	5	19.00	28.00	0.11	0.75	T05	14.287	13.10	10.0	DIN/ISO 228, B.S. 84	●
MM TRF16-W55-P8-5T06	15.94	5	8.00	14.00	0.23	1.55	T06	20.637	18.30	15.0	DIN/ISO 228, B.S. 84	●
MM TRF20-W55-P6-6T08	19.94	6	6.00	8.00	0.40	1.95	T08	25.4	21.30	28.0	DIN/ISO 228, B.S. 84	●

- For ISO metric thread (ISO 68, DIN13, ANSI B 1.13M-1983) • For shanks, see pages 84-91 • For clamping instructions, see pages 91-92
- Do not apply lubricant to the threaded connection.

⁽¹⁾ Number of flutes

⁽²⁾ Threads per inch minimum

⁽³⁾ Threads per inch maximum

⁽⁴⁾ Smallest possible thread

⁽⁵⁾ Tightening torque

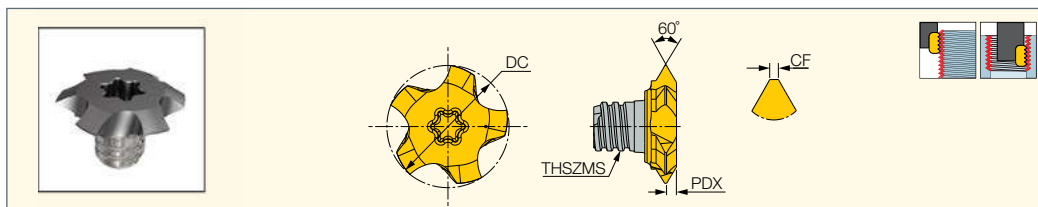
Spare Parts

Designation	
MM TRF12-W55-P11-5T05	BIT SOCKET T20 3/8" DRIVE*
MM TRF12-W55-P19-5T05	BIT SOCKET T20 3/8" DRIVE*
MM TRF16-W55-P8-5T06	BIT SOCKET T25 3/8" DRIVE*
MM TRF20-W55-P6-6T08	BIT SOCKET T40 3/8" DRIVE*

* Optional, should be ordered separately

MM TRF 60°

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



Designation	Dimensions											
	DC	NOF ⁽¹⁾	TTP	TTP_DF2	TPN ⁽²⁾	TPX ⁽³⁾	TPN_DF2	TPX_DF2	TPIN ⁽⁴⁾	TPIX ⁽⁵⁾	TPIN_DF2	TPIX_DF2
MM TRF12A60-P080-5T05	11.94	5	INT	EXT	0.500	0.800	0.400	0.800	28.00	56.00	32.00	64.00
MM TRF12A60-P175-5T05	11.94	5	INT	EXT	1.000	1.750	0.800	1.500	14.00	28.00	16.00	32.00
MM TRF12A60-P250-5T05	11.94	5	INT	EXT	2.000	2.500	1.750	2.000	10.00	13.00	11.00	15.00
MM TRF16A60-P080-5T06	15.94	5	INT	EXT	0.500	0.800	0.400	0.800	28.00	56.00	32.00	64.00
MM TRF16A60-P175-5T06	15.94	5	INT	EXT	1.000	1.750	0.800	1.500	14.00	28.00	16.00	32.00
MM TRF16A60-P300-5T06	15.94	5	INT	EXT	2.000	3.000	1.750	2.500	8.00	13.00	10.00	15.00
MM TRF20A60-P200-6T08	19.94	6	INT	EXT	1.000	2.000	0.800	1.750	13.00	28.00	15.00	32.00
MM TRF20A60-P300-6T08	19.94	6	INT	EXT	2.000	3.000	1.750	2.500	8.00	13.00	10.00	15.00
MM TRF20A60-P400-6T08	19.94	6	INT	EXT	3.000	4.000	2.500	3.500	6.00	9.00	7.00	10.00
MM TRF28A60-P600-5T10	27.70	5	INT	EXT	5.000	6.000	4.500	5.000	4.00	5.00	5.00	6.00
MM TRF28A60-P500-6T10	27.70	6	INT	EXT	3.000	5.000	2.500	4.500	6.00	8.00	6.00	10.00

Designation	CF	PDX	THSZMS	TDZ ⁽⁶⁾	TQ	DMIN	Standard	IC908
MM TRF12A60-P080-5T05	0.05	0.55	T05	M14	7.0	13.50	ISO 68, DIN 13	●
MM TRF12A60-P175-5T05	0.11	0.96	T05	M14	7.0	13.00	ISO 68, DIN 13	●
MM TRF12A60-P250-5T05	0.22	1.21	T05	M16	7.0	14.00	ISO 68, DIN 13	●
MM TRF16A60-P080-5T06	0.05	0.55	T06	M18	10.0	17.50	ISO 68, DIN 13	●
MM TRF16A60-P175-5T06	0.10	1.00	T06	M18	10.0	17.00	ISO 68, DIN 13	●
MM TRF16A60-P300-5T06	0.22	1.41	T06	M20	10.0	18.00	ISO 68, DIN 13	●
MM TRF20A60-P200-6T08	0.11	0.95	T08	M24	10.0	23.00	ISO 68, DIN 13	●
MM TRF20A60-P300-6T08	0.22	1.41	T08	M24	15.0	22.00	ISO 68, DIN 13	●
MM TRF20A60-P400-6T08	0.31	1.86	T08	M25	15.0	22.00	ISO 68, DIN 13	●
MM TRF28A60-P600-5T10	0.57	2.49	T10	M38	28.0	33.00	ISO 68, DIN 13	●
MM TRF28A60-P500-6T10	0.34	2.17	T10	M33	28.0	30.00	ISO 68, DIN 13	●

• For ISO metric thread (ISO 68, DIN13, ANSI B 1.13M-1983) • For shanks, see pages 84-91 • For clamping instructions, see pages 91-92

• Do not apply lubricant to the threaded connection.

⁽¹⁾ Number of flutes

⁽²⁾ Thread pitch minimum (mm)-internal

⁽³⁾ Thread pitch maximum (mm)-internal

⁽⁴⁾ Thread pitch minimum (mm)-external

⁽⁵⁾ Thread pitch maximum (mm)-external

⁽⁶⁾ Threads per inch minimum-internal

Spare Parts

Designation	
MM TRF12A60-P080-5T05	BIT SOCKET T20 3/8" DRIVE*
MM TRF12A60-P175-5T05	BIT SOCKET T20 3/8" DRIVE*
MM TRF12A60-P250-5T05	BIT SOCKET T20 3/8" DRIVE*
MM TRF16A60-P080-5T06	BIT SOCKET T20 3/8" DRIVE*
MM TRF16A60-P175-5T06	BIT SOCKET T25 3/8" DRIVE*
MM TRF16A60-P300-5T06	BIT SOCKET T25 3/8" DRIVE*
MM TRF20A60-P200-6T08	BIT SOCKET T25 3/8" DRIVE*
MM TRF20A60-P300-6T08	BIT SOCKET T40 3/8" DRIVE*
MM TRF20A60-P400-6T08	BIT SOCKET T25 3/8" DRIVE*
MM TRF28A60-P600-5T10	BIT SOCKET T40 3/8" DRIVE*
MM TRF28A60-P500-6T10	BIT SOCKET T40 3/8" DRIVE*

* Optional, should be ordered separately

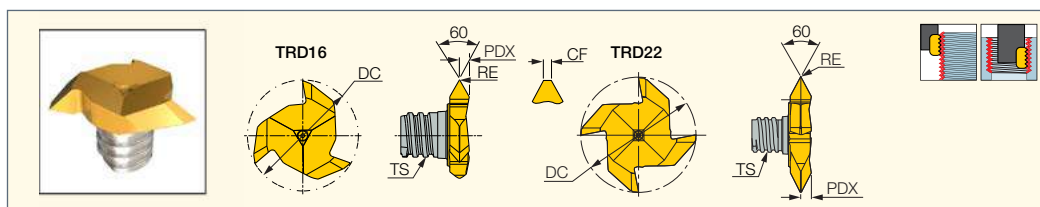
SOLIDTHREAD

MULTI-MASTER

INDEXABLE SOLID CARBIDE LINE

MM TRD-M

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



Dimensions													IC528
Designation	DC	NOF ⁽¹⁾	TPN ⁽²⁾	TPX ⁽³⁾	RE	CF	PDX	THSZMS	TDZ ⁽⁴⁾	DMIN	Standard		
MM TRD16-M60-05P-3T06	15.70	3	0.500	2.000	- ⁽⁵⁾	0.05	1.4	T06	M20	19.05	ISO 68, DIN 13	MM EGR 16-18*	
MM TRD16-M60-15P-3T06	15.70	3	1.500	2.000	0.05	-	1.4	T06	M22	19.05	ISO 68, DIN 13	MM EGR 16-18*	
MM TRD22-M60-30P-4T08	21.70	4	3.000	4.500	0.20	-	2.4	T08	M36	31.00	ISO 68, DIN 13	MM EGR 20-22*	

• For ISO metric thread (ISO 68, DIN13, ANSI B 1.13M-1983) • For shanks, see pages 84-91 • For clamping instructions, see pages 91-92

• Do not apply lubricant to the threaded connection.

⁽¹⁾ Number of flutes

⁽²⁾ Thread pitch minimum (mm)-internal

⁽³⁾ Thread pitch maximum (mm)-internal

⁽⁴⁾ Thread pitch minimum (mm)-external

* Optional, should be ordered separately

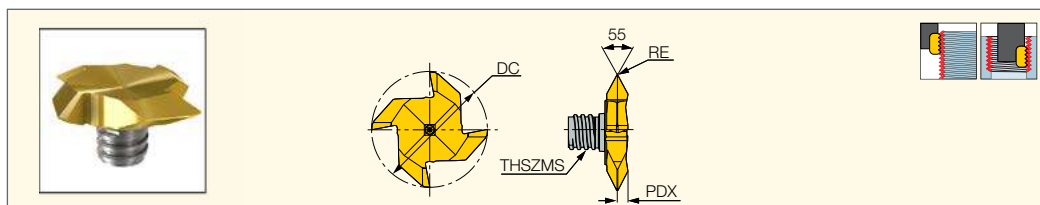
SOLIDTHREAD

MULTI-MASTER

INDEXABLE SOLID CARBIDE LINE

MM TRD-W

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



Dimensions												IC528
Designation	DC	NOF ⁽¹⁾	RE	PDX	TPIN ⁽²⁾	TPIX ⁽³⁾	THSZMS	TDZ ⁽⁴⁾	DMIN	Standard		
MM TRD22-W55-14P-4T08	21.70	4	0.20	2.0	11.00	14.00	T08	G3/4	24.20	DIN ISO 228, B.S. 84	MM EGR 20-22*	

• For shanks, see pages 84-91 • For clamping instructions, see pages 91-92 • Do not apply lubricant to the threaded connection.

⁽¹⁾ Number of flutes

⁽²⁾ Threads per inch minimum-internal

⁽³⁾ Threads per inch maximum-internal

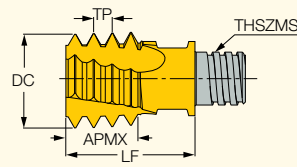
⁽⁴⁾ Threads per inch minimum-external

* Optional, should be ordered separately

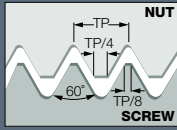


MT-ISO-MM

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



Application: General engineering



Designation	Dimensions										IC908
	TP ⁽¹⁾	M Coarse	M Fine	DC	NOF ⁽²⁾	APMX	LF	THSZMS			
MT10D7.5 0.5ISO-MMT05	0.500	-	=>14	10.00	4	7.50	12.75	T05	MM KEY 6X4*		•
MT 10D6 0.75ISO-MMT05	0.750	-	=>12	10.00	4	6.00	12.75	T05	MM KEY 6X4*		•
MT 10D6 1.0ISO-MMT05	1.000	-	=>12	10.00	4	6.00	12.75	T05	MM KEY 6X4*		•
MT 10D5 1.25ISO-MMT05	1.250	-	=>14	10.00	4	5.00	12.75	T05	MM KEY 6X4*		•
MT 10D6 1.5ISO-MMT05	1.500	-	=>14	10.00	4	6.00	12.75	T05	MM KEY 6X4*		•
MT 12D8 0.5ISO-MMT06	0.500	-	=>16	12.00	4	8.00	14.30	T06	MM KEY 8X5*		•
MT 12E8 0.75ISO-MMT06	0.750	-	=>16	12.00	5	8.30	14.30	T06	MM KEY 8X5*		•
MT 12E8 1.0ISO-MMT06	1.000	-	=>16	12.00	5	8.00	14.30	T06	MM KEY 8X5*		•
MT 12D8 1.25ISO-MMT06	1.250	-	=>16	12.00	4	7.50	14.30	T06	MM KEY 8X5*		•
MT 12D7 1.5ISO-MMT06	1.500	-	=>16	12.00	4	7.60	14.30	T06	MM KEY 8X5*		•
MT 12D7 1.75ISO-MMT06	1.750	-	=>16	12.00	4	7.10	14.30	T06	MM KEY 8X5*		•
MT12D8 2.0ISO-MMT06	2.000	M16	=>17	12.00	4	8.00	14.30	T06	MM KEY 8X5*		•
MT 16F12 1.0ISO-MMT08	1.000	-	=>22	16.00	6	12.00	20.00	T08	MM KEY 10X7*		•
MT 16F12 1.5ISO-MMT08	1.500	-	=>20	16.00	6	12.00	20.00	T08	MM KEY 10X7*		•
MT 16E12 2.0ISO-MMT08	2.000	-	=>19	16.00	5	12.00	20.00	T08	MM KEY 10X7*		•
MT15.4E13 2.5ISO-MMT08 98	2.500	M20	=>22	15.40	5	12.70	20.00	T08	MM KEY 10X7*		•
MT 16C12 3.0ISO-MMT08	3.000	M24	=>25	16.00	3	12.10	20.00	T08	MM KEY 10X7*		•
MT20F14 2.0ISO-MMTT10	2.000	-	=>27	20.00	6	12.00	21.00	T10	BIT SOCKET T30 3/8" DRIVE*	T-40/3 L*	•
MT20D12 3.0ISO-MMTT10	3.000	-	=>27	20.00	4	12.20	21.00	T10	BIT SOCKET T40 3/8" DRIVE*	T-40/3 L*	•
MT20D14 3.5ISO-MMTT10	3.500	-	=>30	20.00	4	10.60	21.00	T10	BIT SOCKET T40 3/8" DRIVE*	T-40/3 L*	•

• Note: Description and dimensions relate to the new products with clamping flats.

There is a possibility that the customer will receive the old item (with TORX) until the stock is depleted.

• For shanks, see pages 84-91 • For clamping keys (should be ordered separately), tightening torques and clamping instructions, see pages 91-92

• Do not apply lubricant to the threaded connection

⁽¹⁾ Thread pitch

⁽²⁾ Number of flutes

* Optional, should be ordered separately

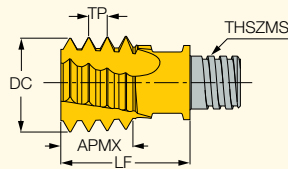
Identification Code

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

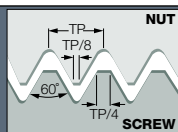
SOLIDTHREAD
MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

MT-UN-MM

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



Application: General engineering



Designation	Dimensions										IC908
	TPI ⁽¹⁾	UNC	UNF	UNEF	DC	NOF ⁽²⁾	APMX	LF	THSZMS	TP ⁽³⁾	
MT 10D7 32UN-MMT05	32.0	-	-	-	10.00	4	6.40	12.75	T05	0.794	●
MT 10D6 28UN-MMT05	28.0	-	1/2	-	10.00	4	5.50	12.75	T05	0.907	●
MT 10D6 24UN-MMT05	24.0	-	-	9/16-5/8	10.00	4	5.30	12.75	T05	1.058	●
MT 10D6 20UN-MMT05	20.0	-	1/2	-	10.00	4	5.10	12.75	T05	1.270	●
MT 10D5 18UN-MMT05	18.0	-	9/16-5/8	1 1/8-1 5/8	10.00	4	5.60	12.75	T05	1.411	●
MT 10D7 16UN-MMT05	16.0	-	3/4	-	10.00	4	6.40	12.75	T05	1.588	●
MT 12D8 24UN-MMT06	24.0	-	-	5/8- 11/16	12.00	4	7.40	14.30	T06	1.058	●
MT 12D8 20UN-MMT06	20.0	-	-	3/4 - 1	12.00	4	7.70	14.30	T06	1.270	●
MT 12D8 18UN-MMT06	18.0	-	5/8	=>1 11/16	12.00	4	7.10	14.30	T06	1.411	●
MT 12D8 16UN-MMT06	16.0	-	3/4	-	12.00	4	8.00	14.30	T06	1.588	●
MT 12D8 14UN-MMT06	14.0	-	7/8	-	12.00	4	7.30	14.30	T06	1.814	●
MT 16E11 18UN-MMT08	18.0	-	5/8	=>1 11/16	16.00	5	11.30	20.00	T08	1.411	●
MT 16E13 14UN-MMT08	14.0	-	7/8	-	16.00	5	12.70	20.00	T08	1.814	●
MT 16E13 12UN-MMT08	12.0	-	1-1 1/2	-	16.00	5	12.70	20.00	T08	2.117	●
MT 15.3D13 10UN-MMT08	10.0	3/4	-	-	15.30	4	12.70	20.00	T08	2.540	●
MT 16C11 9UN-MMT08	9.0	7/8	-	-	16.00	3	11.30	20.00	T08	2.822	●
MT 16C13 8UN-MMT08	8.0	1.0	-	-	16.00	3	12.70	20.00	T08	3.175	●
MT20F13 12UN-MMTT10	12.0	-	=>1	-	20.00	6	12.70	21.00	T10	2.117	●
MT20D13 8UN-MMTT10	8.0	1	-	-	20.00	4	12.70	21.00	T10	3.175	●
MT20D15 7UN-MMTT10	7.0	-	1 1/8 - 1 1/4	-	20.00	4	10.90	21.00	T10	3.629	●

• Note: Description and dimensions relate to the new products with clamping flats.

There is a possibility that the customer will receive the old item (with TORX) until the stock is depleted.

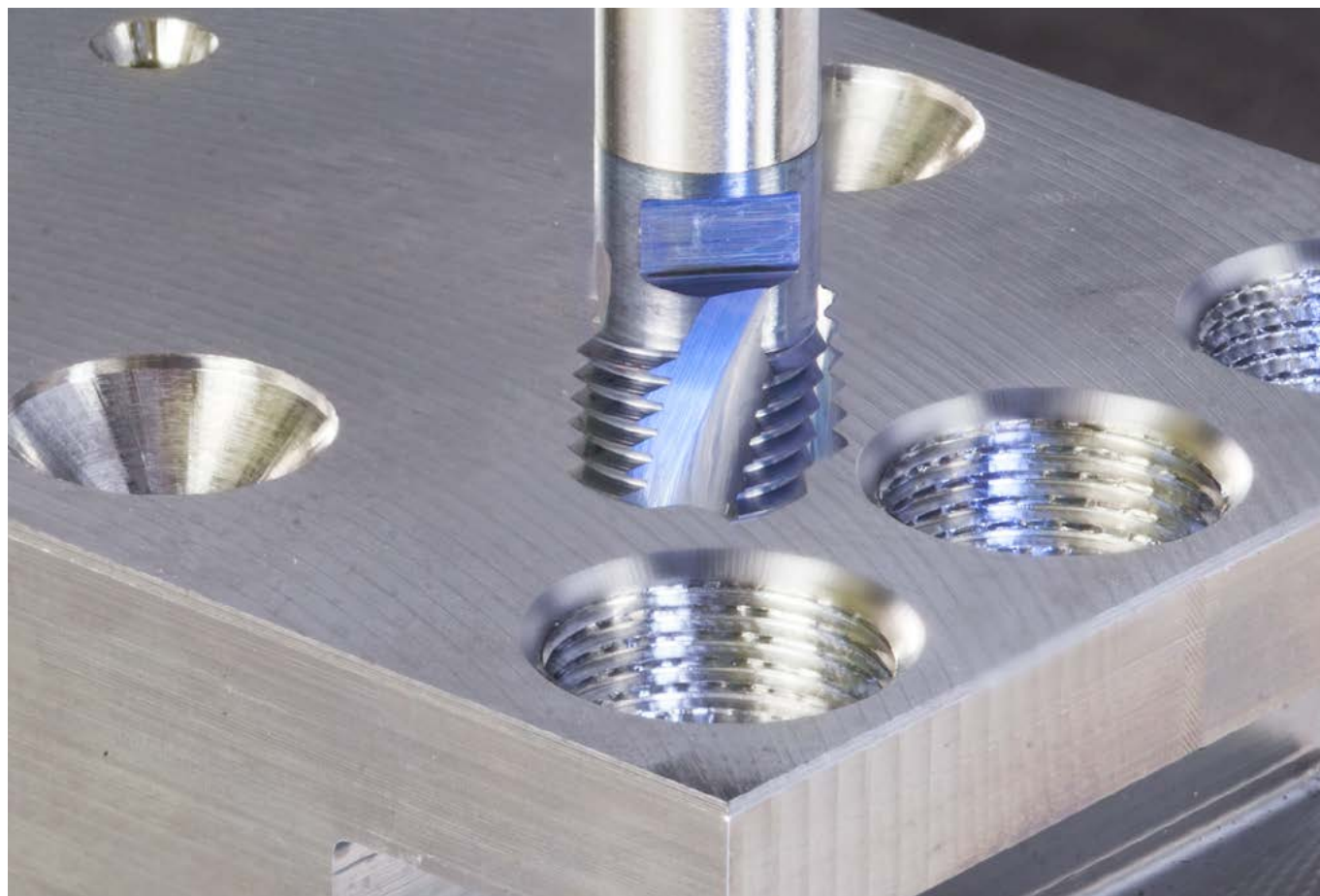
• For shanks, see pages 84-91 • For clamping keys (should be ordered separately), tightening torques and clamping instructions, see pages 91-92

• Do not apply lubricant to the threaded connection

⁽¹⁾ Threads per inch

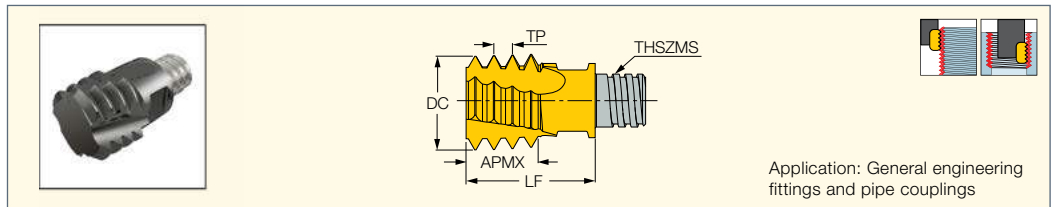
⁽²⁾ Number of flutes

⁽³⁾ Thread pitch



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								IC908
	TPI ⁽¹⁾	TDZ	DC	NOF ⁽²⁾	APMX	LF	THSZMS	TP ⁽³⁾	
MT 10D6 19W-MMT05	19.0	G1/4-3/8	10.00	4	5.30	12.75	T05	1.337	•
MT 16D13 14W-MMT08	14.0	G1/2-7/8	16.00	4	12.70	20.00	T08	1.814	•
MT 16D11 11W-MMT08	11.0	G<1	16.00	4	11.50	20.00	T08	2.309	•
MT20F15 14W-MMTT10	14.0	G3/4-7/8	20.00	6	12.70	21.00	T10	1.814	•
MT20F14 11W-MMTT10	11.0	G<1	20.00	6	11.50	21.00	T10	2.309	•

• Note: Description and dimensions relate to the new products with clamping flats.

There is a possibility that the customer will receive the old item (with TORX) until the stock is depleted.

• For shanks, see pages 84-91 • For clamping keys (should be ordered separately), tightening torques and clamping instructions, see pages 91-92

• Do not apply lubricant to the threaded connection

⁽¹⁾ Threads per inch

⁽²⁾ Number of flutes

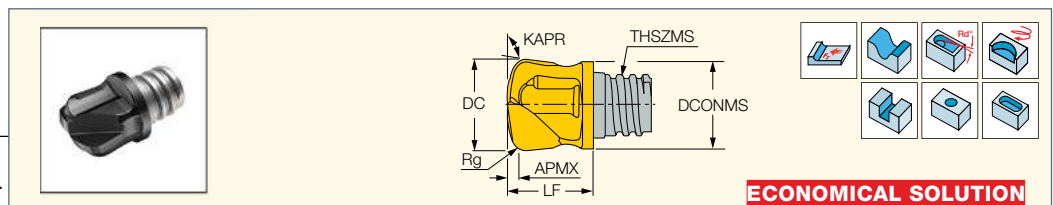
⁽³⁾ Thread pitch

Thread Size	Key ⁽¹⁾	Torque Wrench ⁽¹⁾	Wrench ⁽¹⁾	Tightening Torque (NxcM)
T05	MM KEY 6x4	TORQUE WRENCH 5-50Nm 9X12	MM WRENCH 6-05	700
T06	MM KEY 8x5	TORQUE WRENCH 5-50Nm 9X12	MM WRENCH 8-06	1000
T08	MM KEY 10x7	TORQUE WRENCH 5-50Nm 9X12	MM WRENCH 10-08	1500
T10	MM KEY 13x8	TORQUE WRENCH 5-50Nm 9X12	MM WRENCH 13-10	2800

⁽¹⁾ Order separately

MM FF

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



ECONOMICAL SOLUTION

Designation	Dimensions										Tough ↔ Hard	Recommended Machining Data
	DC	NOF ⁽¹⁾	APMX	Rg ⁽²⁾	THSZMS	DCONMS	LF	KAPR ⁽³⁾	RMPX ⁽⁴⁾	IC908	IC903	
MM FF100R1.5-L12-2T06	10.00	2	0.60	2.00	T06	9.60	12.50	97.0	7.0	•		0.30-0.60
MM FF120R2.0-2T08	12.00	2	0.68	2.50	T08	11.50	11.10	97.0	7.0	•	•	0.50-1.00
MM FF500R08-L59-2T08	12.70	2	0.68	2.50	T08	11.50	15.00	95.0	7.0	•		0.50-1.00
MM FF160R2.0-2T10	16.00	2	1.10	3.00	T10	15.20	13.50	97.0	7.0	•		0.55-1.10
MM FF200R2.0-2T12	20.00	2	1.50	3.40	T12	18.45	17.40	95.0	7.0	•		0.75-1.50

• For shanks, see pages 84-91 • For clamping keys (should be ordered separately), tightening torques and clamping instructions, see pages 91-92

• Do not apply lubricant to the threaded connection. • For user guide see pages 44, 177-184

⁽¹⁾ Number of flutes

⁽²⁾ Radius for programming

⁽³⁾ Tool cutting edge angle

⁽⁴⁾ Maximum ramping angle

Machining Example:

Shank: MM S-B-L140-C16-T08

Milling head: MM FF 120R2.0-2T08

Workpiece material: SAE 4340 HRc 28

Plunging

$a_p = 2 \text{ mm}$

$V_c = 80 \text{ m/min}$

$F = 0.24 \text{ mm/min}$

Milling

$a_p = 0.7 \text{ mm}$

$a_e = 8 \text{ mm}$

$V_c = 150 \text{ m/min}$

$F_z = 1 \text{ mm/tooth}$

$V_f = 7960 \text{ mm/min}$

Machining Example:

Shank: MM S-A-L070-W20-T10

Milling head: MM FF160R2.0-2T10 908

Workpiece material: P20 HRc 52

Milling

$a_p = 0.2 \text{ mm}$

$a_e = 6 \text{ mm}$

$V_c = 150 \text{ m/min}$

$F_z = 1.4 \text{ mm/tooth}$

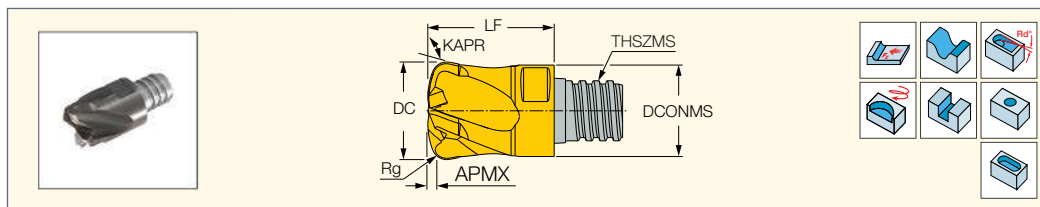
$V_f = 8355 \text{ mm/min}$

$T = 60 \text{ min}$

MULTI^{FEED} MASTER SOLID^{FEED} MILL

MM EFF

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



Designation	Dimensions										Tough ↔ Hard		Recommended Machining Data f _z (mm/t)
	DC	NOF ⁽³⁾	APMX	THSZMS	DCONMS	LF	RMPX ⁽⁴⁾	KAPR ⁽⁵⁾	Rg ⁽⁶⁾	CSP ⁽⁷⁾	IC908	IC903	
MM EFF080T3R1.62-4T05	8.00	4	0.40	T05	7.50	10.00	5.0	97.0	1.62	0		●	0.12-0.48
MM EFF100T4R2.01-4T06	10.00	4	0.50	T06	9.50	13.00	5.0	97.0	2.01	0		●	0.16-0.57
MM EFF100T2R1.0-6T06H ⁽¹⁾	10.00	6	0.45	T06	9.50	10.00	3.0	97.0	1.00	1		●	0.16-0.47
MM EFF120T4R1.8-4T08H ⁽¹⁾	12.00	4	0.60	T08	11.50	16.50	5.0	97.0	1.80	1	●		0.16-0.67
MM EFF120T4R2.47-4T08	12.00	4	0.60	T08	11.50	16.50	5.0	97.0	2.47	0		●	0.16-0.67
MM EFF120T2R1.2-6T08H ⁽¹⁾	12.00	6	0.65	T08	11.50	12.50	3.0	97.0	1.20	1		●	0.16-0.54
MM EFF127T4R2.59-4T08	12.70	4	0.60	T08	12.20	16.50	5.0	97.0	2.59	0		●	0.16-0.67
MM EFF127T4R1.3-6T08H	12.70	6	0.70	T08	12.20	12.70	3.0	97.0	1.30	1		●	0.16-0.67
MM EFF160T5R2.2-4T10H ⁽¹⁾	16.00	4	0.80	T10	15.40	20.50	5.0	97.0	2.20	1	●		0.20-0.75
MM EFF160T5R3.25-4T10	16.00	4	0.80	T10	15.40	20.50	5.0	97.0	3.25	0		●	0.20-0.75
MM EFF160T4R2.0-6T10H ⁽¹⁾	16.00	6	1.05	T10	15.40	16.00	3.0	97.0	2.00	1		●	0.20-0.65
MM EFF200T6R4.02-4T12	20.00	4	1.00	T12	18.45	25.50	5.0	97.0	4.02	0		●	0.20-0.90
MM EFF200T5R2.2-6T12H ⁽¹⁾	20.00	6	1.25	T12	18.45	20.00	3.0	97.0	2.20	1		●	0.20-0.80
MM EFF250A7R3.1-6T15 ⁽²⁾	25.00	6	1.20	T15	23.90	25.00	5.0	97.0	3.10	0		●	0.25-1.00
MM EFF254A7R3.1-6T15 ⁽²⁾	25.40	6	1.20	T15	23.90	25.00	5.0	97.0	3.10	0		●	0.25-1.00

• For shanks, see pages 84-91 • For clamping keys (should be ordered separately), tightening torques and clamping instructions, see pages 91-92

• Do not apply lubricant to the threaded connection. • For user guide see pages 44, 177-184

⁽¹⁾ With a central coolant hole

⁽²⁾ Cannot be used for plunging application

⁽³⁾ Number of flutes

⁽⁴⁾ Maximum ramping angle

⁽⁵⁾ Tool cutting edge angle

⁽⁶⁾ Radius for programming

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

Machining Recommendations

VDI 3323	Material Group ⁽¹⁾	V _c (m/min)	F _z (mm/t) vs. Tool Diameter (mm)							
			a _p	AE	8	10	12	16	20	25
P	1	180	0.045xD	0.7xD	0.48	0.57	0.67	0.75	0.90	1.00
	2	160	0.045xD	0.7xD	0.48	0.57	0.67	0.75	0.90	1.00
	3	160	0.045xD	0.7xD	0.48	0.57	0.67	0.75	0.90	1.00
	4	160	0.045xD	0.7xD	0.48	0.57	0.67	0.75	0.90	1.00
	5	150	0.045xD	0.7xD	0.43	0.50	0.57	0.65	0.75	0.87
	6	150	0.045xD	0.7xD	0.33	0.40	0.48	0.57	0.67	0.78
	7	140	0.045xD	0.7xD	0.33	0.40	0.48	0.57	0.67	0.78
	8	140	0.045xD	0.7xD	0.30	0.35	0.43	0.52	0.60	0.70
	9	140	0.045xD	0.7xD	0.30	0.35	0.43	0.52	0.60	0.70
	10	130	0.04xD	0.6xD	0.28	0.33	0.38	0.48	0.57	0.67
	11	120	0.04xD	0.6xD	0.25	0.30	0.35	0.43	0.52	0.62
K	12, 13	120	0.04xD	0.6xD	0.30	0.35	0.43	0.52	0.60	0.70
	15-16	180	A _{pmax}	0.7xD	0.45	0.52	0.60	0.70	0.80	0.90
H	17-18	160	A _{pmax}	0.7xD	0.38	0.45	0.52	0.60	0.70	0.80
	38.1 ⁽²⁾	100	0.035xD	0.45xD	0.20	0.25	0.33	0.40	0.48	0.55
	38.2 ⁽³⁾	80	0.03xD	0.3xD	0.16	0.22	0.30	0.38	0.45	0.52
	39 ⁽⁴⁾	60	0.02xD	0.25xD	0.12	0.16	0.16	0.20	0.20	0.25

⁽¹⁾ ISCAR material group in accordance with VDI 3323 standard

⁽²⁾ 45-49 HRc

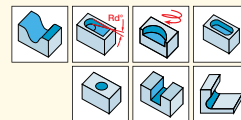
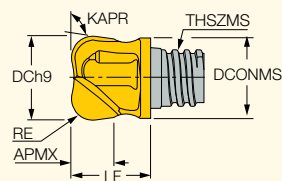
⁽³⁾ 50-55 HRc

⁽⁴⁾ 56-63 HRc

a_p - Depth of cut

AE - Width of cut

MM HT

Torodial 2 Flute Interchangeable
Solid Carbide Milling Heads

ECONOMICAL SOLUTION

Designation	Dimensions									Tough ↔ Hard	
	DC	NOF ⁽¹⁾	APMX	RE	Tm ⁽²⁾	THSZMS	DCONMS	LF	KAPR ⁽³⁾	IC908	IC903
MM HT100C08R0.5-2T06	10.00	2	7.00	0.50	r0-1.0	T06	9.50	12.45	95.0	●	
MM HT100C08R1.0-2T06	10.00	2	7.00	1.00	r0-1.0	T06	9.50	12.45	95.0	●	
MM HT100N06R2.0-2T06	10.00	2	6.00	2.00	r0-3.0	T06	9.50	12.40	97.0	●	
MM HT100N07R0.5-2T06	10.00	2	6.90	0.50	r0-1.0	T06	9.50	11.20	95.0		●
MM HT100N07R1.0-2T06	10.00	2	6.90	1.00	r0-1.0	T06	9.50	11.20	95.0		●
MM HT100N07R2.0-2T06	10.00	2	6.90	2.00	r0-3.0	T06	9.50	11.20	95.0		●
MM HT100N07R3.0-2T06	10.00	2	6.90	3.00	r2.7-4.0	T06	9.50	11.20	95.0		●
MM HT120N06R3.0-2T06	12.00	2	5.40	3.00	r2.7-4.0	T06	9.10	9.10	97.0	●	
MM HT120N06R2.0-2T06	12.00	2	5.10	4.00	r2.7-4.0	T06	11.50	9.10	97.0	●	
MM HT120N06R1.6-2T08	12.00	2	5.70	1.60	r1.3-2.7	T08	11.50	11.10	97.0	●	●
MM HT120N06R2.0-2T08	12.00	2	5.90	2.00	r1.3-2.7	T08	11.50	11.10	97.0	●	●
MM HT120N06R2.5-2T08	12.00	2	5.50	2.50	r1.3-4.0	T08	11.50	11.10	97.0	●	
MM HT120N06R3.0-2T08	12.00	2	5.50	3.00	r2.7-4.4	T08	11.50	11.10	97.0	●	●
MM HT120N06R4.0-2T08	12.00	2	5.60	4.00	r2.7-4.4	T08	11.50	11.10	97.0	●	
MM HT160N07R2.0-2T10	16.00	2	6.90	2.00	r1.5-4.0	T10	15.20	13.10	97.0	●	
MM HT160N07R3.0-2T10	16.00	2	7.20	3.00	r1.5-4.0	T10	15.20	13.40	97.0	●	
MM HT160N07R4.0-2T10	16.00	2	7.10	4.00	r1.5-4.0	T10	15.20	13.40	97.0	●	
MM HT160N08R5.0-2T10	16.00	2	8.00	5.00	r2.7-4.4	T10	15.20	20.20	97.0	●	●
MM HT200N11R3.0-2T12	20.00	2	10.80	3.00	r3.0-8.0	T12	18.45	17.00	97.0	●	
MM HT200N11R4.0-2T12	20.00	2	11.10	4.00	r3.0-8.0	T12	18.45	17.30	97.0	●	
MM HT200N11R5.0-2T12	20.00	2	11.10	5.00	r3.0-8.0	T12	18.45	17.30	97.0	●	
MM HT200N11R6.0-2T12	20.00	2	11.00	6.00	r3.0-8.0	T12	18.45	17.30	97.0	●	
MM HT200N11R8.0-2T12	20.00	2	10.90	8.00	r3.0-8.0	T12	18.45	17.30	97.0	●	

• For shanks, see pages 84-91 • For clamping keys (should be ordered separately), tightening torques and clamping instructions, see pages 91-92

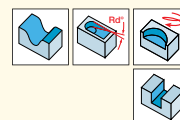
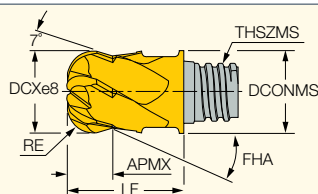
• Do not apply lubricant to the threaded connection. • For user guide see pages 44, 177-184

⁽¹⁾ Number of flutes

⁽²⁾ Specially tailored radius range upon request

⁽³⁾ Tool cutting edge angle

MM ETR

Torodial 2 Flute Interchangeable
Solid Carbide Milling Heads


Designation	Dimensions									Tough ↔ Hard	
	DCX ⁽¹⁾	NOF ⁽²⁾	APMX	RE	THSZMS	DCONMS	LF	FHA	RMPX ⁽³⁾	IC908	IC903
MM ETR080A04R2.0-6T05	8.00	6	5.00	2.00	T05	7.70	10.00	30.0	9.0	●	
MM ETR080A4R05CF-6T05	8.00	6	4.00	0.50	T05	7.70	10.00	30.0	9.0		●
MM ETR080A4R10CF-6T05	8.00	6	4.00	1.00	T05	7.70	10.00	30.0	9.0		●
MM ETR100A05R3.0-6T06	10.00	6	7.00	3.00	T06	9.60	13.00	30.0	9.0	●	
MM ETR100A5R05CF-6T06	10.00	6	5.00	0.50	T06	9.60	13.00	30.0	9.0		●
MM ETR100A5R10CF-6T06	10.00	6	5.00	1.00	T06	9.60	13.00	30.0	9.0		●
MM ETR120A07R4.0-6T08	12.00	6	9.00	4.00	T08	11.70	16.50	30.0	9.0	●	
MM ETR120A7R05CF-6T08	12.00	6	7.00	0.50	T08	12.00	17.00	30.0	9.0		●
MM ETR120A7R10CF-6T08	12.00	6	7.00	1.00	T08	12.00	17.00	30.0	9.0		●
MM ETR160A09R5.0-6T10	16.00	6	12.00	5.00	T10	15.30	20.50	30.0	9.0	●	

• For shanks, see pages 84-91 • For clamping keys (should be ordered separately), tightening torques and clamping instructions, see pages 91-92

• Do not apply lubricant to the threaded connection. • For user guide see pages 44, 177-184

⁽¹⁾ Cutting diameter maximum

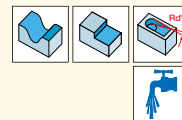
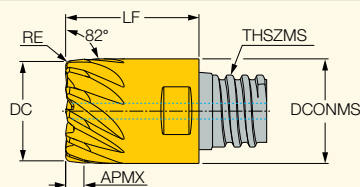
⁽²⁾ Number of flutes

⁽³⁾ Maximum ramping angle

MULTI-MASTER INDEXABLE SOLID CARBIDE LINE

MM ET

Solid Carbide Tapered Heads with 20/30° Helix, Variable Pitch and Coolant Holes for CHATTERFREE Finishing Operations



Designation	Dimensions								IC908	Recommended Machining Data f _z (mm/t)
	DC	RE	NOF ⁽¹⁾	APMX	THSZMS	DCONMS	LF	RMPX ⁽²⁾		
MM ET11/8H4R10CF-8T08H	11.00	1.00	8	3.50	T08	12.00	16.50	3.0	●	0.04-0.10
MM ET15/8H4R10CF-12T10H	15.00	1.00	12	3.50	T10	16.00	20.50	3.0	●	0.05-0.11

- For shanks, see pages 84-91
- For clamping keys (should be ordered separately), tightening torques and clamping instructions, see pages 91-92
- Do not apply lubricant to the threaded connection.
- For user guide see pages 44, 177-184

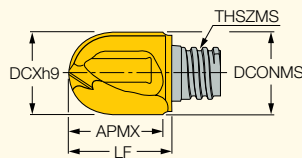
⁽¹⁾ Number of flutes

⁽²⁾ Maximum ramping angle

MULTI-MASTER INDEXABLE SOLID CARBIDE LINE

MM HCR

Interchangeable 2 Flute Solid Carbide Ball Nose Milling Heads



ECONOMICAL SOLUTION

Designation	Dimensions						IC908
	DCX ⁽¹⁾	NOF ⁽²⁾	APMX	THSZMS	DCONMS	LF	
MM HCR080-2T05	8.00	2	7.80	T05	7.60	9.95	●
MM HCR100-2T06	10.00	2	10.00	T06	9.50	12.35	●
MM HCR120-2T08	12.00	2	11.45	T08	11.50	15.30	●
MM HCR160-2T10	16.00	2	15.80	T10	15.20	19.10	●

- For shanks, see pages 84-91
- For clamping keys (should be ordered separately), tightening torques and clamping instructions, see pages 91-92
- Do not apply lubricant to the threaded connection.
- For user guide see pages 44, 177-184

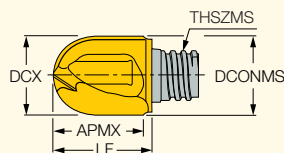
⁽¹⁾ Cutting diameter maximum

⁽²⁾ Number of flutes

MULTI-MASTER INDEXABLE SOLID CARBIDE LINE

MM HRF

Interchangeable 2 Flute Solid Carbide Ball Nose Finish Milling Heads



Designation	Dimensions						Tough ↔ Hard	
	DCX ⁽¹⁾	NOF ⁽²⁾	APMX	THSZMS	DCONMS	LF	IC908	IC903
MM HRF080-2T05	8.00	2	7.60	T05	7.60	9.95		●
MM HRF100-2T06	10.00	2	10.20	T06	9.50	12.35	●	●
MM HRF120-2T08	12.00	2	11.50	T08	11.50	15.30		●
MM HRF160-2T10	16.00	2	15.80	T10	15.20	19.10		●

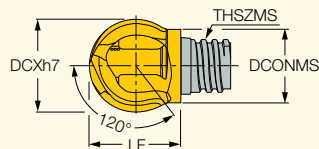
- For shanks, see pages 84-91
- For clamping keys (should be ordered separately), tightening torques and clamping instructions, see pages 91-92
- Do not apply lubricant to the threaded connection.
- For user guide see pages 44, 177-184

⁽¹⁾ Cutting diameter maximum

⁽²⁾ Number of flutes

MM HBR

Interchangeable 2 Flute High Precision Ball Nose Solid Carbide Milling Heads


ECONOMICAL SOLUTION

Designation	Dimensions						IC908
	DCX ⁽¹⁾	NOF ⁽²⁾	THSZMS	DCONMS	LF		
MM HBR080-2T04	8.00	2	T04	5.80	8.22	MM KEY 6X4*	•
MM HBR100-2T05	10.00	2	T05	7.60	10.00	MM KEY 6X4*	•
MM HBR120-2T06	12.00	2	T06	9.50	11.60	MM KEY 10X7*	•
MM HBR160-2T08	16.00	2	T08	12.20	15.40	MM KEY 13X8*	•
MM HBR200-2T10	20.00	2	T10	15.20	18.40	MM KEY 13X8*	•
MM HBR250-2T12	25.00	2	T12	18.30	23.20	MM KEY 16X9*	•

• For shanks, see pages 84-91 • For tightening torques and clamping instructions, see pages 91-92 • Do not apply lubricant to the threaded connection.

• For user guide see pages 44, 177-184

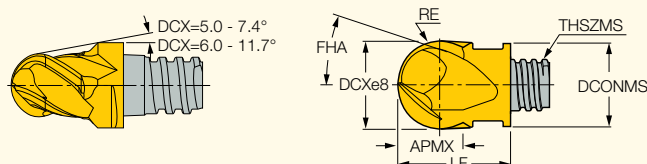
⁽¹⁾ Cutting diameter maximum

⁽²⁾ Number of flutes

* Optional, should be ordered separately

MM EB

Interchangeable Solid Carbide Ball Nose Milling Heads



Designation	Dimensions								IC908
	DCX ⁽²⁾	NOF ⁽³⁾	APMX	RE	THSZMS	DCONMS	LF	FHA	
MM EB050E07-4T05	5.00	4	7.00	2.49	T05	8.00	15.00	38.0	•
MM EB060E04-4T04	6.00	4	4.00	2.99	T04	5.80	7.60	37.0	•
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 EB120H09CF-3T08I ⁽¹⁾	12.00	3	9.00	5.98	T08	11.70	16.50	38.0	•
MM EB120A09-4T08	12.00	4	9.00	5.98	T08	11.70	16.50	30.0	•
MM EB160A09-2T10	16.00	2	9.00	7.98	T10	15.30	20.50	30.0	•
MM EB160A12-4T10	16.00	4	12.00	7.98	T10	15.30	20.50	30.0	•
MM EB200A15-4T12	20.00	4	15.00	9.97	T12	18.45	25.50	30.0	•
MM EB250A22-4T15	25.00	4	22.00	12.47	T15	23.90	37.00	30.0	•

• For shanks, see pages 84-91 • For clamping keys (should be ordered separately), tightening torques and clamping instructions, see pages 91-92

• Do not apply lubricant to the threaded connection. • For user guide see pages 44, 177-184

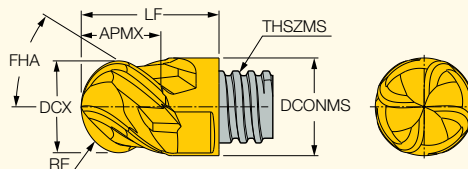
⁽¹⁾ With coolant holes directed to each flute

⁽²⁾ Cutting diameter maximum

⁽³⁾ Number of flutes

MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

MM EBC

Interchangeable Solid Carbide
Ball Nose Milling Heads for High
Productivity on Hard Materials


Dimensions									IC903
Designation	DCX ⁽¹⁾	NOF ⁽²⁾	APMX	RE	THSZMS	DCONMS	LF	FHA	
MM EBC080B05-4T05CF	8.00	4	5.40	3.98	T05	7.70	10.00	45.0	●
MM EBC100B07-4T06CF	10.00	4	7.40	4.98	T06	9.60	13.00	45.0	●
MM EBC120B09-4T08CF	12.00	4	9.30	5.98	T08	11.70	16.50	45.0	●
MM EBC160B12-4T10CF	16.00	4	12.40	7.98	T10	15.30	20.50	45.0	●
MM EBC200B15-4T12CF	20.00	4	16.00	9.97	T12	18.45	25.50	45.0	●

- For shanks, see pages 84-91
- For clamping keys (should be ordered separately), tightening torques and clamping instructions, see pages 91-92
- Do not apply lubricant to the threaded connection.
- For user guide see pages 44, 177-184

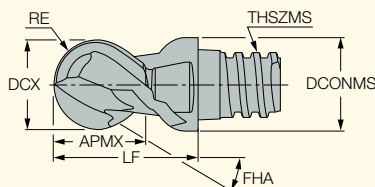
⁽¹⁾ Cutting diameter maximum

⁽²⁾ Number of flutes

* Optional, should be ordered separately

MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

MM EBA

Interchangeable 2 Flute High
Precision Solid Carbide Ball Nose
Heads for Machining Aluminum

ALUMINUM

Dimensions									IC08
Designation	DCX ⁽¹⁾	NOF ⁽²⁾	APMX	RE	RETOL ⁽³⁾	THSZMS	DCONMS	LF	FHA
MM EBA080B05-2T05	8.00	2	5.00	3.98	0.010	T05	7.70	10.00	45.0
MM EBA100B07-2T06	10.00	2	7.00	4.98	0.010	T06	9.60	13.00	45.0
MM EBA120B09-2T08	12.00	2	9.00	5.98	0.012	T08	11.50	16.50	45.0
MM EBA160B12-2T10	16.00	2	12.00	7.98	0.012	T10	15.30	20.50	45.0
MM EBA200B15-2T12	20.00	2	15.00	9.97	0.012	T12	18.45	25.50	45.0
MM EBA250B22-2T15	25.00	2	22.00	12.50	0.012	T15	23.90	37.00	45.0

- For shanks, see pages 84-91
- For clamping keys (should be ordered separately), tightening torques and clamping instructions, see pages 91-92
- Do not apply lubricant to the threaded connection.
- For user guide see pages 44, 177-184

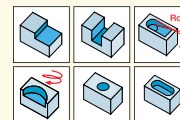
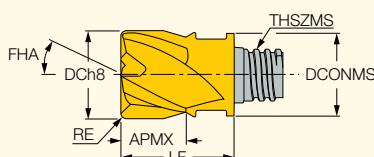
⁽¹⁾ Cutting diameter maximum

⁽²⁾ Number of flutes

⁽³⁾ Corner radius tolerance (+/-)

MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

MM ECU

Interchangeable 3 Flute
Undersized Solid Carbide Heads
for Keyways (DIN 6885)


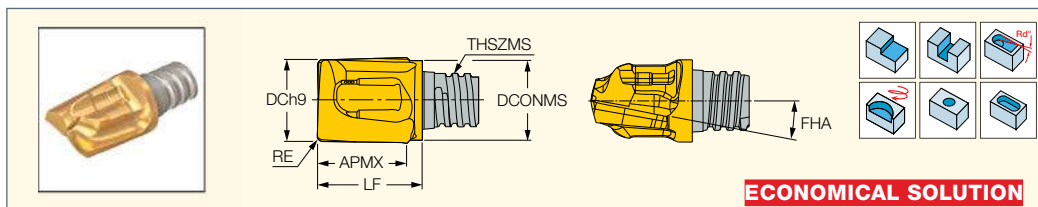
Dimensions									Recommended Machining Data	
Designation	DC	NOF ⁽¹⁾	APMX	RE	THSZMS	DCONMS	LF	FHA	IC908	f _z (mm/t)
MM ECU077E04R020-3T05	7.70	3	4.00	0.20	T05	7.70	10.00	38.0	●	0.03-0.08
MM ECU097E05R030-3T06	9.70	3	5.00	0.30	T06	9.60	13.00	38.0	●	0.03-0.09
MM ECU117E07R030-3T08	11.70	3	7.00	0.30	T08	11.50	16.50	38.0	●	0.03-0.10
MM ECU157E08R030-3T10	15.70	3	8.00	0.30	T10	15.30	20.50	38.0	●	0.04-0.12
MM ECU197E12R040-3T12	19.70	3	12.00	0.40	T12	18.45	25.50	38.0	●	0.05-0.13

- For shanks, see pages 84-91
- For clamping keys (should be ordered separately), tightening torques and clamping instructions, see pages 91-92
- Do not apply lubricant to the threaded connection.
- For user guide see pages 44, 177-184

⁽¹⁾ Number of flutes

MM HC

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


ECONOMICAL SOLUTION

Designation	Dimensions									Tough ↔ Hard		Recommended Machining Data
	DC	NOF ⁽¹⁾	APMX	RE	Tm ⁽²⁾	THSZMS	DCONMS	LF	FHA	IC908	IC903	
MM HC078C08R0.2-2T05	7.80	2	7.70	0.20	r0-2.0	T05	7.60	10.00	10.0	●		0.03-0.09
MM HC080C08R0.4-2T05	8.00	2	7.70	0.40	r0-2.0	T05	7.60	10.00	10.0	●	●	0.03-0.09
MM HC080C08R1.0-2T05	8.00	2	7.70	1.00	r0-2.0	T05	7.60	10.00	10.0	●	●	0.03-0.09
MM HC080C08R2.0-2T05	8.00	2	7.70	2.00	r0-2.0	T05	7.60	10.00	10.0	●	●	0.03-0.09
MM HC098C10R0.3-2T06	9.80	2	9.00	0.30	r0-3.0	T06	9.50	12.35	10.0	●		0.03-0.10
MM HC100C10R0.4-2T06	10.00	2	9.00	0.40	r0-3.0	T06	9.50	12.35	10.0	●	●	0.03-0.10
MM HC100C10R1.0-2T06	10.00	2	9.00	1.00	r0-3.0	T06	9.50	12.35	10.0	●	●	0.03-0.10
MM HC100C10R2.0-2T06	10.00	2	9.00	2.00	r0-3.0	T06	9.50	12.35	10.0	●	●	0.03-0.10
MM HC117C13R0.3-2T08	11.70	2	10.00	0.30	r0-3.0	T08	11.50	14.20	10.0	●		0.04-0.11
MM HC120C13R0.4-2T08	12.00	2	10.00	0.40	r0-3.0	T08	11.50	14.20	10.0	●	●	0.04-0.11
MM HC120C13R1.0-2T08	12.00	2	10.00	1.00	r0-3.0	T08	11.50	14.20	10.0	●	●	0.04-0.11
MM HC120C13R2.0-2T08	12.00	2	10.00	2.00	r0-3.0	T08	11.50	14.20	10.0	●	●	0.04-0.11
MM HC140C11R0.4-2T08	14.00	2	11.60	0.40	r0-4.0	T08	11.50	15.05	10.0	●		0.04-0.12
MM HC157C16R0.3-2T10	15.70	2	15.00	0.30	r0-4.0	T10	15.20	19.05	10.0	●		0.05-0.13
MM HC160C16R0.4-2T10	16.00	2	14.90	0.40	r0-4.0	T10	15.20	19.05	10.0	●	●	0.05-0.13
MM HC160C16R0.8-2T10	16.00	2	14.90	0.80	r0-4.0	T10	15.15	19.05	10.0	●	●	0.05-0.13

• For shanks, see pages 84-91 • For clamping keys (should be ordered separately), tightening torques and clamping instructions, see pages 91-92

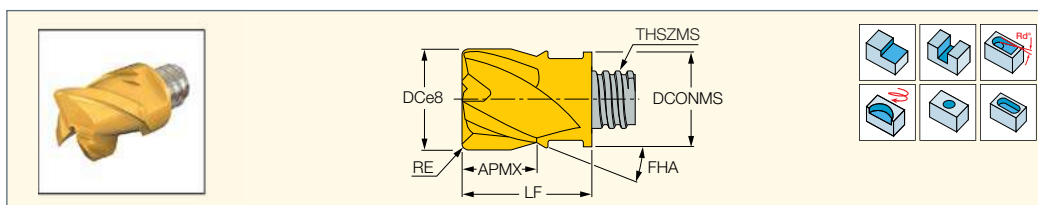
• Do not apply lubricant to the threaded connection. • For user guide see pages 44, 177-184

⁽¹⁾ Number of flutes

⁽²⁾ Specially tailored radius range, available upon request.

MM EC-3

Interchangeable 3 Flute
Solid Carbide Endmill
Heads with 45° Helix



Designation	Dimensions								IC908	Recommended Machining Data
	DC	NOF ⁽²⁾	APMX	RE	THSZMS	LF	FHA	DCONMS		
MM EC080B05R000-3T05	8.00	3	5.00	0.00	T05	10.00	45.0	7.70	●	0.03-0.09
MM EC100B07R000-3T06	10.00	3	7.00	0.00	T06	13.00	45.0	9.60	●	0.03-0.10
MM EC100B12R000-3T06	10.00	3	12.00	0.00	T06	19.00	45.0	9.60	●	0.03-0.10
MM EC120B09R000-3T08 ⁽¹⁾	12.00	3	9.00	0.00	T08	16.50	45.0	11.70	●	0.04-0.11
MM EC120B09R000-3T08	12.00	3	9.00	0.00	T08	16.50	45.0	11.70	●	0.04-0.11

• For shanks, see pages 84-91 • For clamping keys (should be ordered separately), tightening torques and clamping instructions, see pages 91-92

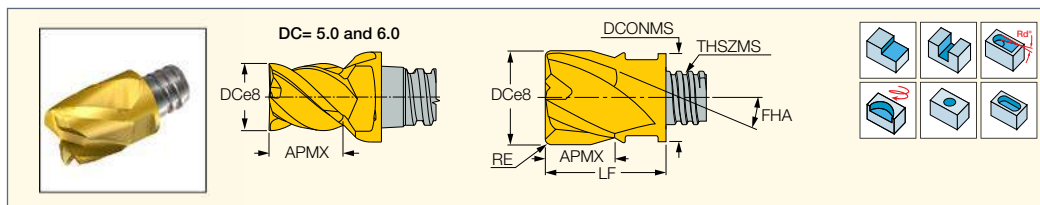
• Do not apply lubricant to the threaded connection. • For user guide see pages 44, 177-184

⁽¹⁾ With coolant holes directed to each flute

⁽²⁾ Number of flutes

MULTI-MASTER
INDEXABLE SOLID CARBIDE LINE

MM EC-4

Interchangeable 4 Flute
Solid Carbide Endmill Heads
with 30° and 45° Helix and
Various Corner Radii


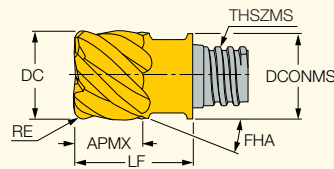
Designation	Dimensions									Recommended Machining Data
	DC	RE	FHA	NOF ⁽¹⁾	APMX	THSZMS	DCONMS	LF	IC908	f _z (mm/t)
MM EC050B07R000-4T05	5.00	0.00	45.0	4	7.00	T05	8.00	15.00	●	0.02-0.06
MM EC060B05R000-4T05	6.00	0.00	45.0	4	5.00	T05	8.00	10.00	●	0.03-0.07
MM EC060B04R0.5-4T04	6.00	0.50	45.0	4	4.00	T04	5.80	8.50	●	0.02-0.04
MM EC080B05R000-4T05	8.00	0.00	45.0	4	5.00	T05	7.70	10.00	●	0.03-0.09
MM EC080B09R000-4T05	8.00	0.00	45.0	4	9.00	T05	7.70	15.00	●	0.03-0.09
MM EC080A05R0.5-4T05	8.00	0.50	30.0	4	5.00	T05	7.70	10.00	●	0.03-0.09
MM EC080A09R0.5-4T05	8.00	0.50	30.0	4	9.00	T05	7.70	15.00	●	0.03-0.09
MM EC080B05R0.5-4T05	8.00	0.50	45.0	4	5.00	T05	7.70	10.00	●	0.03-0.09
MM EC080A05R1.0-4T05	8.00	1.00	30.0	4	5.00	T05	7.70	10.00	●	0.03-0.09
MM EC080B05R1.0-4T05	8.00	1.00	45.0	4	5.00	T05	7.70	10.00	●	0.03-0.09
MM EC080A05R1.5-4T05	8.00	1.50	30.0	4	5.00	T05	7.70	10.00	●	0.03-0.09
MM EC080B05R1.5-4T05	8.00	1.50	45.0	4	5.00	T05	7.70	10.00	●	0.03-0.09
MM EC100B07R000-4T06	10.00	0.00	45.0	4	7.00	T06	9.60	13.00	●	0.03-0.10
MM EC100B12R000-4T06	10.00	0.00	45.0	4	12.00	T06	9.60	19.00	●	0.03-0.10
MM EC100A07R0.5-4T06	10.00	0.50	30.0	4	7.00	T06	9.60	13.00	●	0.03-0.10
MM EC100B07R0.5-4T06	10.00	0.50	45.0	4	7.00	T06	9.60	13.00	●	0.03-0.10
MM EC100A07R1.0-4T06	10.00	1.00	30.0	4	7.00	T06	9.60	13.00	●	0.03-0.10
MM EC100B07R1.0-4T06	10.00	1.00	45.0	4	7.00	T06	9.60	13.00	●	0.03-0.10
MM EC120B09R000-4T08	12.00	0.00	45.0	4	9.00	T08	11.70	16.50	●	0.04-0.11
MM EC120B14R000-4T08	12.00	0.00	45.0	4	14.00	T08	11.70	23.00	●	0.04-0.11
MM EC120A09R0.5-4T08	12.00	0.50	30.0	4	9.00	T08	11.70	16.50	●	0.04-0.11
MM EC120B09R0.5-4T08	12.00	0.50	45.0	4	9.00	T08	11.70	16.50	●	0.04-0.11
MM EC120A09R1.0-4T08	12.00	1.00	30.0	4	9.00	T08	11.70	16.50	●	0.04-0.11
MM EC120B09R1.0-4T08	12.00	1.00	45.0	4	9.00	T08	11.70	16.50	●	0.04-0.11
MM EC160B12R000-4T10	16.00	0.00	45.0	4	12.00	T10	15.30	20.50	●	0.05-0.13
MM EC160A12R0.5-4T10	16.00	0.50	30.0	4	12.00	T10	15.30	20.50	●	0.05-0.13
MM EC160B12R0.5-4T10	16.00	0.50	45.0	4	12.00	T10	15.30	20.50	●	0.05-0.13
MM EC160A12R1.0-4T10	16.00	1.00	30.0	4	12.00	T10	15.30	20.50	●	0.05-0.13
MM EC160B12R1.0-4T10	16.00	1.00	45.0	4	12.00	T10	15.30	20.50	●	0.05-0.13
MM EC160A12R1.5-4T10	16.00	1.50	30.0	4	12.00	T10	15.30	20.50	●	0.05-0.13
MM EC160B12R1.5-4T10	16.00	1.50	45.0	4	12.00	T10	15.30	20.50	●	0.05-0.13
MM EC160A12R2.0-4T10	16.00	2.00	30.0	4	12.00	T10	15.30	20.50	●	0.05-0.13
MM EC160B12R2.0-4T10	16.00	2.00	45.0	4	12.00	T10	15.30	20.50	●	0.05-0.13
MM EC160A12R3.0-4T10	16.00	3.00	30.0	4	12.00	T10	15.30	20.50	●	0.05-0.13
MM EC160B12R3.0-4T10	16.00	3.00	45.0	4	12.00	T10	15.30	20.50	●	0.05-0.13
MM EC160A12R4.0-4T10	16.00	4.00	30.0	4	12.00	T10	15.30	20.50	●	0.05-0.13
MM EC160B12R4.0-4T10	16.00	4.00	45.0	4	12.00	T10	15.30	20.50	●	0.05-0.13
MM EC200B15R000-4T12	20.00	0.00	45.0	4	15.00	T12	18.45	25.50	●	0.05-0.13
MM EC200A15R0.5-4T12	20.00	0.50	30.0	4	15.00	T12	18.45	25.50	●	0.05-0.13
MM EC200A15R1.0-4T12	20.00	1.00	30.0	4	15.00	T12	18.45	25.50	●	0.05-0.13
MM EC200A15R2.0-4T12	20.00	2.00	30.0	4	15.00	T12	18.45	25.50	●	0.05-0.13
MM EC200A15R3.0-4T12	20.00	3.00	30.0	4	15.00	T12	18.45	25.50	●	0.05-0.13

- For shanks, see pages 84-91
- For clamping keys (should be ordered separately), tightening torques and clamping instructions, see pages 91-92
- Do not apply lubricant to the threaded connection.
- For user guide see pages 44, 177-184

⁽¹⁾ Number of flutes

MM EC-6

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



Designation	Dimensions									IC908	Recommended Machining Data
	DC	NOF ⁽¹⁾	APMX	RE	THSZMS	DCONMS	LF	FHA	RMPX ⁽²⁾		f _z (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

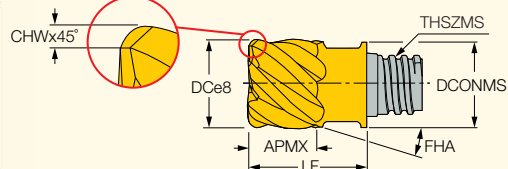
- For shanks, see pages 84-91
- For clamping keys (should be ordered separately), tightening torques and clamping instructions, see pages 91-92
- Do not apply lubricant to the threaded connection.
- For user guide see pages 44, 177-184

⁽¹⁾ Number of flutes

⁽²⁾ Maximum ramping angle

MM EC-D

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



Designation	Dimensions										IC903	Recommended Machining Data f _z (mm/t)
	DC	NOF ⁽¹⁾	APMX	CHW	KCH	THSZMS	DCONMS	LF	FHA	RMPX ⁽²⁾		
MM EC080D05C01-6T05	8.00	6	5.00	0.10	45.0	T05	7.70	10.00	50.0	2.0	●	0.03-0.10
MM EC100D07C01-6T06	10.00	6	7.00	0.10	45.0	T06	9.60	13.00	50.0	2.0	●	0.03-0.10
MM EC120D09C01-6T08	12.00	6	9.00	0.10	45.0	T08	11.70	16.50	50.0	3.0	●	0.04-0.11
MM EC160D12C02-8T10	16.00	8	12.00	0.20	45.0	T10	15.30	20.50	50.0	3.0	●	0.05-0.13
MM EC200D15C02-10T12	20.00	10	15.00	0.20	45.0	T12	18.45	25.50	50.0	3.0	●	0.05-0.13

- For shanks, see pages 84-91
- For clamping keys (should be ordered separately), tightening torques and clamping instructions, see pages 91-92
- Do not apply lubricant to the threaded connection.
- For user guide see pages 44, 177-184

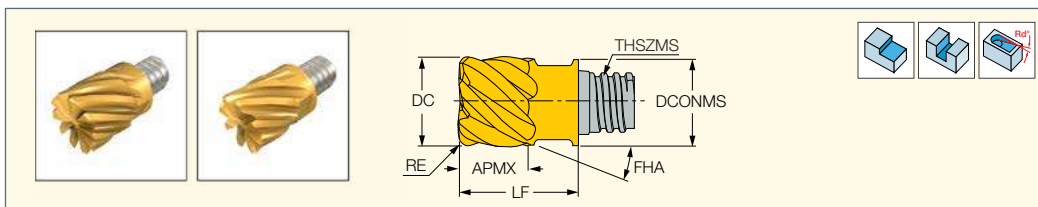
⁽¹⁾ Number of flutes

⁽²⁾ Maximum ramping angle

MULTI-MASTER INDEXABLE SOLID CARBIDE LINE

MM EC-8/10

Interchangeable 8, 10 Flute Solid Carbide Endmill Heads with 30° and 45° Helix and Various Corner Radii



Designation	Dimensions										Recommended Machining Data
	DC	NOF ⁽²⁾	APMX	RE	THSZMS	DCONMS	LF	FHA	RMPX ⁽³⁾	IC908	f _z (mm/t)
MM EC160A12R0.5-8T10	16.00	8	12.00	0.50	T10	15.30	20.50	30.0	5.0	●	0.05-0.13
MM EC160A12R0.5-8T10H ⁽¹⁾	16.00	8	12.00	0.50	T10	15.30	20.50	30.0	5.0	●	0.05-0.13
MM EC160A12R1.0-8T10	16.00	8	12.00	1.00	T10	15.30	20.50	30.0	5.0	●	0.05-0.13
MM EC160A12R1.6-8T10	16.00	8	12.00	1.60	T10	15.30	20.50	30.0	5.0	●	0.05-0.13
MM EC160A12R2.0-8T10	16.00	8	12.00	2.00	T10	15.30	20.50	30.0	5.0	●	0.05-0.13
MM EC160B12R0.5-8T10	16.00	8	12.00	0.50	T10	15.30	20.50	45.0	5.0	●	0.05-0.13
MM EC160B12R1.0-8T10	16.00	8	12.00	1.00	T10	15.30	20.50	45.0	5.0	●	0.05-0.13
MM EC160B12R1.6-8T10	16.00	8	12.00	1.60	T10	15.30	20.50	45.0	5.0	●	0.05-0.13
MM EC160B12R2.0-8T10	16.00	8	12.00	2.00	T10	15.30	20.50	45.0	5.0	●	0.05-0.13
MM EC200A15R1.0-10T12	20.00	10	15.00	1.00	T12	18.45	25.50	30.0	3.0	●	0.05-0.13
MM EC200A15R2.0-10T12	20.00	10	15.00	2.00	T12	18.45	25.50	30.0	3.0	●	0.05-0.13
MM EC250A22R0.8-10T15	25.00	10	22.00	0.80	T15	23.90	37.00	30.0	3.0	●	0.05-0.13

- For shanks, see pages 84-91
- For clamping keys (should be ordered separately), tightening torques and clamping instructions, see pages 91-92
- Do not apply lubricant to the threaded connection.
- For user guide see pages 44, 177-184

⁽¹⁾ With a central coolant hole

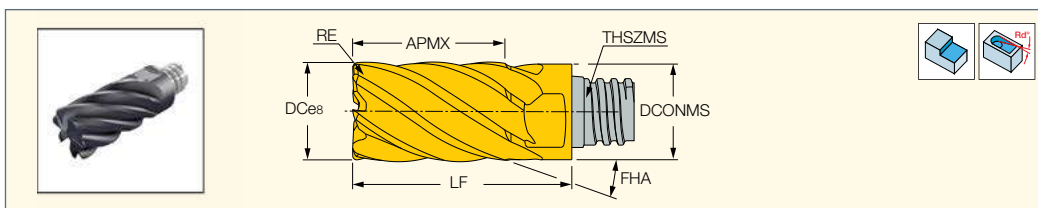
⁽²⁾ Number of flutes

⁽³⁾ Maximum ramping angle

MULTI-MASTER INDEXABLE SOLID CARBIDE LINE

MM EC-CF-Z7/9-1.5xD

Interchangeable 7, 9 Flute Solid Carbide Endmill Heads with 36° Helix and 1.5xD Flute Lengths



Designation	Dimensions										Recommended Machining Data
	DC	APMX	RE	NOF ⁽¹⁾	THSZMS	DCONMS	LF	FHA	RMPX ⁽²⁾	IC908	f _z (mm/t)
MM EC080H12R05CF-7T05	8.00	12.00	0.50	7	T05	7.70	18.00	36.0	3.0	●	0.03-0.10
MM EC100H15R05CF-7T06	10.00	15.00	0.50	7	T06	9.60	22.00	36.0	3.0	●	0.04-0.10
MM EC120H18R05CF-7T08	12.00	18.00	0.50	7	T08	11.70	27.00	36.0	3.0	●	0.04-0.10
MM EC160H24R08CF-9T10	16.00	24.00	0.80	9	T10	15.30	33.50	36.0	1.0	●	0.05-0.10
MM EC200H30R10CF-9T12	20.00	30.00	1.00	9	T12	18.45	41.00	36.0	1.0	●	0.05-0.10
MM EC250H37R10CF-9T15	25.00	37.00	1.00	9	T15	23.90	52.50	36.0	1.0	●	0.05-0.10

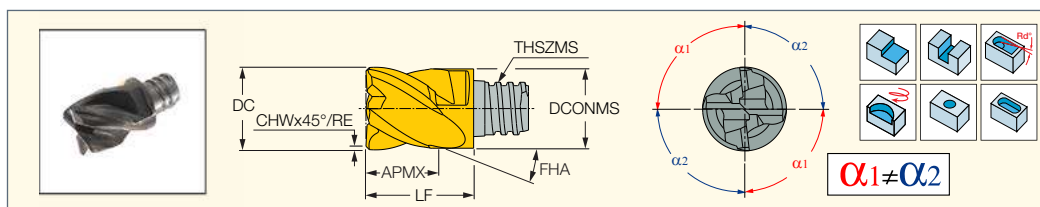
- For shanks, see pages 84-91
- For clamping keys (should be ordered separately), tightening torques and clamping instructions, see pages 91-92
- Do not apply lubricant to the threaded connection.
- For user guide see pages 44, 177-184

⁽¹⁾ Number of flutes

⁽²⁾ Maximum ramping angle

MM EC-CF

Interchangeable Solid Carbide Endmill Heads for CHATTERFREE Roughing and Finishing Operations



Designation	Dimensions										IC908	Recommended Machining Data f_z (mm/t)
	DC	RE	NOF ⁽²⁾	APMX	THSZMS	DCONMS	LF	FHA	CHW	KCH		
MM EC080E05C3CF-4T05	8.00	-	4	5.00	T05	7.70	10.00	38.0	0.30	45.0	●	0.03-0.09
MM EC080E05R0CF-4T05	8.00	-	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	-	4	7.00	T06	9.60	13.00	38.0	0.40	45.0	●	0.03-0.10
MM EC100E07R00CF-4T06	10.00	-	4	7.00	T06	9.60	13.00	38.0	-	-	●	0.03-0.10
MM EC100E07R02CF-4T06	10.00	0.20	4	7.00	T06	9.60	13.00	38.0	-	-	●	0.03-0.10
MM EC100E07R04CF-4T06	10.00	0.40	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 EC100E07R25CF-4T06	10.00	2.50	4	7.00	T06	9.60	13.00	38.0	-	-	●	0.03-0.10
MM EC120E09C5CF-4T08	12.00	-	4	9.00	T08	11.70	16.50	38.0	0.50	45.0	●	0.04-0.11
MM EC120E09C5CF-4T08I ⁽¹⁾	12.00	-	4	9.00	T08	11.70	16.50	38.0	0.50	45.0	●	0.04-0.11
MM EC120E09R00CF-4T08	12.00	-	4	9.00	T08	11.70	16.50	38.0	-	-	●	0.04-0.11
MM EC120E09R02CF-4T08	12.00	0.20	4	9.00	T08	11.70	16.50	38.0	-	-	●	0.04-0.11
MM EC120E09R04CF-4T08	12.00	0.40	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 EC120E09R15CF-4T08	12.00	1.50	4	9.00	T08	11.70	16.50	38.0	-	-	●	0.04-0.11
MM EC160E12C6CF-4T10	16.00	-	4	12.00	T10	15.30	20.50	38.0	0.60	45.0	●	0.05-0.13
MM EC160E12R05CF-4T10	16.00	0.50	4	12.00	T10	15.30	20.50	38.0	-	-	●	0.05-0.13
MM EC200E15C6CF-4T12	20.00	-	4	15.00	T12	18.45	25.50	38.0	0.60	45.0	●	0.05-0.17
MM EC200E15R05CF-4T12	20.00	0.50	4	15.00	T12	18.45	25.50	38.0	-	-	●	0.05-0.17
MM EC250E28C6CF-12T15	25.00	-	12	28.00	T15	23.90	43.00	38.0	0.60	45.0	●	0.06-0.13
MM EC250E28C6CF-4T15	25.00	-	4	28.00	T15	23.90	43.00	38.0	0.60	45.0	●	0.06-0.17
MM EC250E22C6CF-4T15	25.00	-	4	22.00	T15	23.90	37.00	38.0	0.60	45.0	●	0.06-0.17
MM EC250E22R05CF-4T15	25.00	0.50	4	22.00	T15	23.90	37.00	38.0	-	-	●	0.06-0.17
MM EC250E22R10CF-4T15	25.00	1.00	4	22.00	T15	23.90	37.00	38.0	-	-	●	0.06-0.17
MM EC250E22R20CF-4T15	25.00	2.00	4	22.00	T15	23.90	37.00	38.0	-	-	●	0.06-0.17
MM EC250E22R30CF-4T15	25.00	3.00	4	22.00	T15	23.90	37.00	38.0	-	-	●	0.06-0.17
MM EC320H38C06-4T21	32.00	-	4	38.00	T21	30.00	55.00	38.0	0.60	45.0	●	0.06-0.18

• For shanks, see pages 84-91 • For clamping keys (should be ordered separately), tightening torques and clamping instructions, see pages 91-92

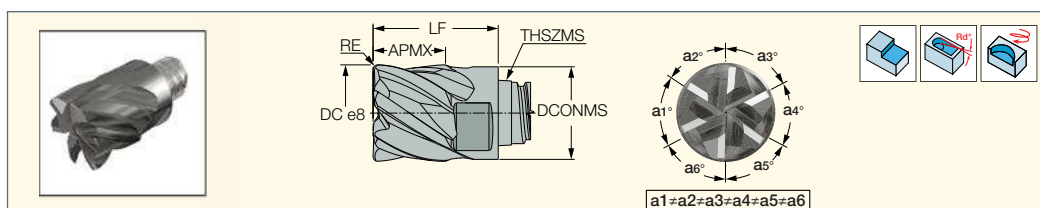
• Do not apply lubricant to the threaded connection. • For user guide see pages 44, 177-184

⁽¹⁾ With coolant holes directed to each flute

⁽²⁾ Number of flutes

MM ECK-CF

5, 6 Flute Solid Carbide Heads with 35°/38° Helix Featuring Different Corner Radii For Machining Titanium Alloys



Designation	Dimensions								IC908	Recommended Machining Data
	DC	RE	NOF ⁽¹⁾	APMX	THSZMS	DCONMS	LF	RMPX ^{o(2)}		f _z (mm/t)
MM ECK080H05R04-6T05CF	8.00	0.40	6	5.00	T05	7.70	10.00	5.0	●	0.04-0.08
MM ECK100H07R05-6T06CF	10.00	0.50	6	7.00	T06	9.60	13.00	5.0	●	0.04-0.08
MM ECK120H09R05-6T08CF	12.00	0.50	6	9.00	T08	11.70	16.50	5.0	●	0.04-0.08
MM ECK160H12R08-6T10CF	16.00	0.80	6	12.00	T10	15.30	20.50	5.0	●	0.07-0.12
MM ECK200H15R10-6T12CF	20.00	1.00	6	15.00	T12	18.45	25.50	5.0	●	0.07-0.12
MM ECK250H22R10-6T15CF	25.00	1.00	6	22.00	T15	23.90	37.00	5.0	●	0.07-0.12
MM ECK320H38R4-5T21	32.00	4.00	5	38.00	T21	30.00	55.00	1.0	●	0.06-0.18
MM ECK320H38R5-5T21	32.00	5.00	5	38.00	T21	30.00	55.00	1.0	●	0.06-0.18

• For shanks, see pages 84-91 • For clamping keys (should be ordered separately), tightening torques and clamping instructions, see pages 91-92

• Do not apply lubricant to the threaded connection. • For user guide see pages 44, 177-184

⁽¹⁾ Number of flutes

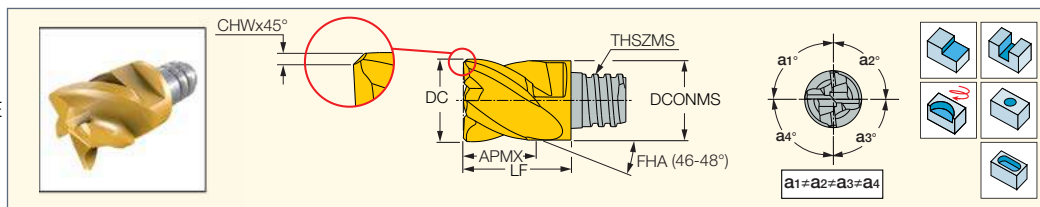
⁽²⁾ Maximum ramping angle

MULTI-MASTER

INDEXABLE SOLID CARBIDE LINE

MM EC-H-4-CF

Interchangeable Solid Carbide
Endmill Heads for CHATTERFREE
Milling of Alloyed Steel



Designation	Dimensions									IC908	Recommended Machining Data f _z (mm/t)
	DC	NOF ⁽¹⁾	APMX	THSZMS	DCONMS	LF	CHW	KCH			
MM EC080H05C3-4T05CF	8.00	4	5.00	T05	7.70	10.00	0.30	45.0		●	0.03-0.09
MM EC100H07C4-4T06CF	10.00	4	7.00	T06	9.60	13.00	0.40	45.0		●	0.03-0.10
MM EC120H09C5-4T08CF	12.00	4	9.00	T08	11.70	16.50	0.50	45.0		●	0.04-0.11
MM EC160H12C6-4T10CF	16.00	4	12.00	T10	15.30	20.50	0.60	45.0		●	0.05-0.13
MM EC200H15C6-4T12CF	20.00	4	15.00	T12	18.45	25.50	0.60	45.0		●	0.05-0.17

- For shanks, see pages 84-91
- For clamping keys (should be ordered separately), tightening torques and clamping instructions, see pages 91-92
- Do not apply lubricant to the threaded connection.
- For user guide see pages 44, 177-184

⁽¹⁾ Number of flutes

MULTI-MASTER

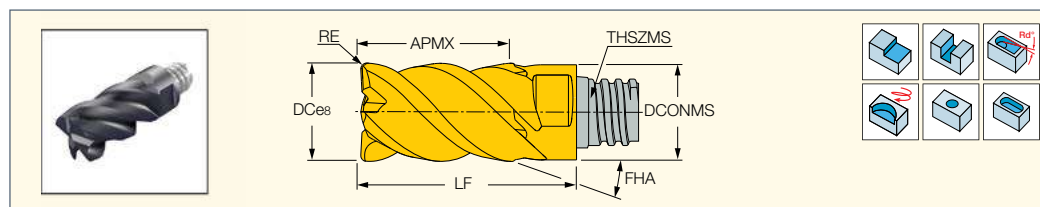
INDEXABLE SOLID CARBIDE LINE

CHATTERFREE

MULTI-MASTER LINE

MM EC-CF-Z4-1.5xD

Interchangeable Solid Carbide
Endmill Heads with 1.5xD Flute
Lengths for CHATTERFREE
Roughing and Finishing



Designation	Dimensions									IC908	Recommended Machining Data f _z (mm/t)
	DC	NOF ⁽¹⁾	APMX	RE	THSZMS	DCONMS	LF	FHA			
MM EC080H12R05CF-4T05	8.00	4	12.00	0.50	T05	7.70	18.00	46.5		●	0.03-0.09
MM EC100H15R05CF-4T06	10.00	4	15.00	0.50	T06	9.60	22.00	46.5		●	0.03-0.10
MM EC120H18R05CF-4T08	12.00	4	18.00	0.50	T08	11.70	27.00	46.5		●	0.04-0.11
MM EC160H24R05CF-4T10	16.00	4	24.00	0.50	T10	15.30	33.50	46.5		●	0.05-0.13
MM EC200H30R05CF-4T12	20.00	4	30.00	0.50	T12	18.45	41.00	46.5		●	0.05-0.17
MM EC250H37R05CF-4T15	25.00	4	37.00	0.50	T15	23.90	52.50	46.5		●	0.06-0.17

- For shanks, see pages 84-91
- For clamping keys (should be ordered separately), tightening torques and clamping instructions, see pages 91-92
- Do not apply lubricant to the threaded connection
- For user guide see pages 44, 177-184

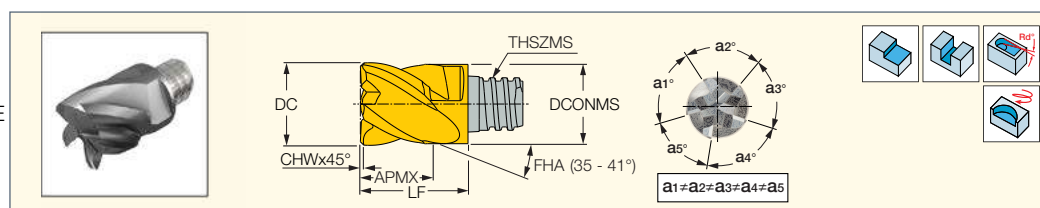
⁽¹⁾ Number of flutes

MULTI-MASTER

INDEXABLE SOLID CARBIDE LINE

MM EC-H-5-CF

Interchangeable Solid Carbide
Endmill Heads for CHATTERFREE
Milling of High Temperature
Alloys like Titanium and Inconel



Designation	Dimensions									IC308	Recommended Machining Data f _z (mm/t)
	DC	NOF ⁽¹⁾	APMX	THSZMS	DCONMS	LF	RMPX ⁽²⁾	CHW	KCH		
MM EC080H05C3-5T05CF	8.00	5	5.00	T05	7.70	10.00	5.0	0.30	45.0	●	0.03-0.09
MM EC100H07C4-5T06CF	10.00	5	7.00	T06	9.60	13.00	5.0	0.40	45.0	●	0.03-0.10
MM EC120H09C5-5T08CF	12.00	5	9.00	T08	11.70	16.50	4.0	0.50	45.0	●	0.04-0.11
MM EC160H12C6-5T10CF	16.00	5	12.00	T10	15.30	20.50	4.0	0.60	45.0	●	0.05-0.13
MM EC200H15C6-5T12CF	20.00	5	15.00	T12	18.45	25.50	3.0	0.60	45.0	●	0.05-0.17
MM EC250H22C6-5T15CF	25.00	5	22.00	T15	23.90	37.00	3.0	0.60	45.0	●	0.06-0.17

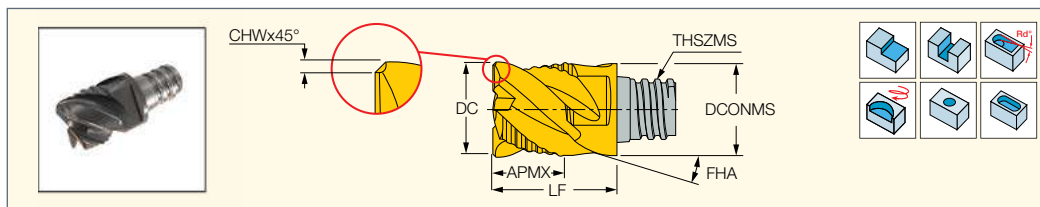
- For shanks, see pages 84-91
- For clamping keys (should be ordered separately), tightening torques and clamping instructions, see pages 91-92
- Do not apply lubricant to the threaded connection.
- For user guide see pages 44, 177-184

⁽¹⁾ Number of flutes

⁽²⁾ Maximum ramping angle

MM EFS

Combination of Interchangeable
Solid Carbide Endmill Heads
for Roughing and Finishing



Designation	Dimensions									IC908	Recommended Machining Data
	DC	NOF ⁽¹⁾	APMX	THSZMS	DCONMS	LF	FHA	CHW	KCH		f _z (mm/t)
MM EFS080B05-4T05	8.00	4	5.00	T05	7.70	10.00	45.0	0.30	45.0	●	0.03-0.08
MM EFS100B07-4T06	10.00	4	7.00	T06	9.60	13.00	45.0	0.30	45.0	●	0.03-0.09
MM EFS120B09-4T08	12.00	4	9.00	T08	11.70	16.50	45.0	0.40	45.0	●	0.04-0.10
MM EFS160B12-4T10	16.00	4	12.00	T10	15.30	20.50	45.0	0.60	45.0	●	0.05-0.11
MM EFS200B15-4T12	20.00	4	15.00	T12	18.45	25.50	45.0	0.60	45.0	●	0.05-0.11
MM EFS250B22-4T15	25.00	4	22.00	T15	23.90	37.00	45.0	0.60	45.0	●	0.06-0.11

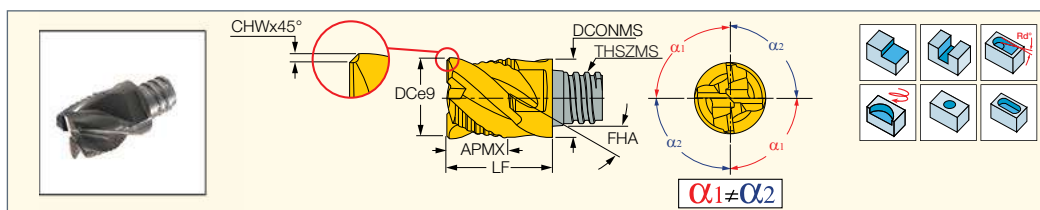
• For shanks, see pages 84-91 • For clamping keys (should be ordered separately), tightening torques and clamping instructions, see pages 91-92

• Do not apply lubricant to the threaded connection. • For user guide see pages 44, 177-184

⁽¹⁾ Number of flutes

MM EFS-CF

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



Designation	Dimensions									IC908	Recommended Machining Data
	DC	NOF ⁽¹⁾	APMX	CHW	KCH	THSZMS	DCONMS	LF	FHA		f _z (mm/t)
MM EFS060E05-4T05 CF	6.00	4	5.00	0.25	45.0	T05	7.70	10.00	38.0	●	0.03-0.08
MM EFS080E05-4T05 CF	8.00	4	5.00	0.30	45.0	T05	7.70	10.00	38.0	●	0.03-0.08
MM EFS100E07-4T06 CF	10.00	4	7.00	0.40	45.0	T06	9.60	13.00	38.0	●	0.03-0.09
MM EFS120E09-4T08 CF	12.00	4	9.00	0.50	45.0	T08	11.70	16.50	38.0	●	0.04-0.10
MM EFS160E12-4T10 CF	16.00	4	12.00	0.60	45.0	T10	15.30	20.50	38.0	●	0.05-0.11
MM EFS200E15-4T12 CF	20.00	4	16.00	0.60	45.0	T12	18.45	25.50	38.0	●	0.05-0.11
MM EFS250E22-4T15 CF	25.00	4	22.00	0.60	45.0	T15	23.90	37.00	38.0	●	0.06-0.11

• For shanks, see pages 84-91 • For clamping keys (should be ordered separately), tightening torques and clamping instructions, see pages 91-92

• Do not apply lubricant to the threaded connection. • For user guide see pages 44, 177-184

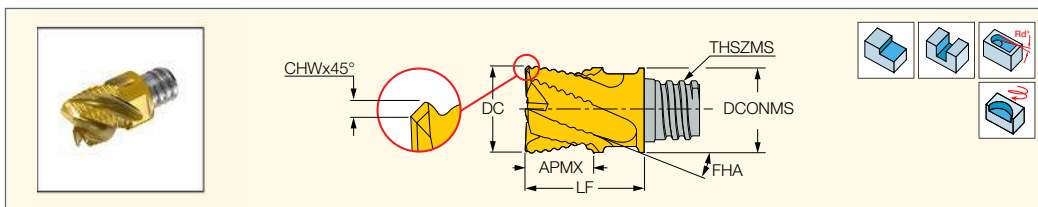
⁽¹⁾ Number of flutes



MULTI-MASTER INDEXABLE SOLID CARBIDE LINE

MM ERS

Interchangeable Solid Carbide
Rough Milling Heads for High
Metal Removal Rates



Designation	Dimensions										IC908	Recommended Machining Data f _z (mm/t)
	DC	NOF ⁽³⁾	APMX	THSZMS	DCONMS	LF	FHA	RMPX ⁽⁴⁾	CHW	KCH		
MM ERS080B05-4T05	8.00	4	5.00	T05	7.70	10.00	45.0	5.0	0.25	45.0	●	0.03-0.08
MM ERS080B09-4T05	8.00	4	9.00	T05	7.70	15.00	45.0	5.0	0.25	45.0	●	0.03-0.08
MM ERS100B07-4T06	10.00	4	7.00	T06	9.60	13.00	45.0	5.0	0.30	45.0	●	0.03-0.09
MM ERS120B09-4T08	12.00	4	9.00	T08	11.70	16.50	45.0	5.0	0.35	45.0	●	0.04-0.10
MM ERS120B09-4T08H ⁽¹⁾	12.00	4	9.00	T08	11.70	16.50	45.0	5.0	0.35	45.0	●	0.04-0.10
MM ERS120B09-4T08I ⁽²⁾	12.00	4	9.00	T08	11.70	16.50	45.0	5.0	0.35	45.0	●	0.04-0.11
MM ERS120B14-4T08	12.00	4	14.00	T08	11.70	23.00	45.0	5.0	0.35	45.0	●	0.04-0.10
MM ERS160B12-5T10	16.00	5	12.00	T10	15.30	20.50	45.0	5.0	0.40	45.0	●	0.04-0.10
MM ERS160B12-5T10H ⁽¹⁾	16.00	5	12.00	T10	15.30	20.50	45.0	5.0	0.40	45.0	●	0.04-0.10
MM ERS200B15-6T12	20.00	6	15.00	T12	18.45	25.50	45.0	3.0	0.40	45.0	●	0.05-0.11
MM ERS250B22-6T15	25.00	6	22.00	T15	23.90	37.00	45.0	3.0	0.50	45.0	●	0.05-0.11

- For shanks, see pages 84-91
- For clamping keys (should be ordered separately), tightening torques and clamping instructions, see pages 91-92
- Do not apply lubricant to the threaded connection.
- For user guide see pages 44, 177-184

⁽¹⁾ With a central coolant hole

⁽²⁾ With coolant holes directed to each flute

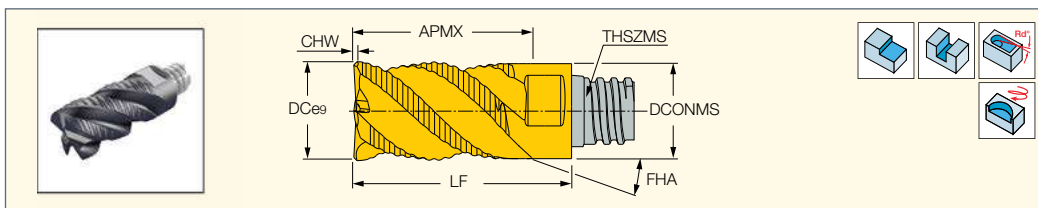
⁽³⁾ Number of flutes

⁽⁴⁾ Maximum ramping angle

MULTI-MASTER INDEXABLE SOLID CARBIDE LINE

MM ERS-1.5xD

Interchangeable Solid Carbide
Rough Milling Heads with
1.5xD Flute Lengths for High
Metal Removal Rates



Designation	Dimensions										IC908	Recommended Machining Data f _z (mm/t)
	DC	NOF ⁽¹⁾	APMX	CHW	KCH	THSZMS	DCONMS	LF	FHA	RMPX ⁽²⁾		
MM ERS080B12-4T05	8.00	4	12.00	0.25	45.0	T05	7.70	18.00	46.0	5.0	●	0.03-0.08
MM ERS100B15-4T06	10.00	4	15.00	0.30	45.0	T06	9.60	22.00	46.0	5.0	●	0.03-0.09
MM ERS120B18-4T08	12.00	4	18.00	0.35	45.0	T08	11.70	27.00	46.0	5.0	●	0.04-0.10
MM ERS160B24-5T10	16.00	5	24.00	0.40	45.0	T10	15.30	33.50	40.0	5.0	●	0.04-0.10
MM ERS200B30-6T12	20.00	6	30.00	0.40	45.0	T12	18.45	41.00	47.0	3.0	●	0.05-0.11
MM ERS250B37-6T15	25.00	6	37.00	0.50	45.0	T15	23.90	52.50	47.0	3.0	●	0.05-0.11

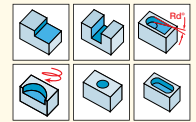
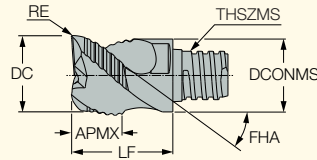
- For shanks, see pages 84-91
- For clamping keys (should be ordered separately), tightening torques and clamping instructions, see pages 91-92
- Do not apply lubricant to the threaded connection
- For user guide see pages 44, 177-184

⁽¹⁾ Number of flutes

⁽²⁾ Maximum ramping angle

MM ERA

Interchangeable Solid Carbide
Rough Milling Heads for
Machining Aluminum at High
Metal Removal Rates


ALUMINUM

Designation	Dimensions								IC08	Recommended Machining Data	
	DC	NOF ⁽¹⁾	APMX	RE	THSZMS	DCONMS	LF	FHA		f _z	(mm/t)
MM ERA080B05R0.2-3T05	8.00	3	5.00	0.20	T05	7.70	10.00	45.0	●	0.03-0.15	
MM ERA100B06R0.2-3T06	10.00	3	6.00	0.20	T06	9.60	13.00	45.0	●	0.05-0.20	
MM ERA120B08R0.2-3T08	12.00	3	8.00	0.20	T08	11.70	16.50	45.0	●	0.07-0.22	
MM ERA160B10R0.2-3T10	16.00	3	10.00	0.20	T10	15.30	20.50	45.0	●	0.07-0.25	
MM ERA200B12R0.2-3T12	20.00	3	12.00	0.20	T12	18.45	25.50	45.0	●	0.07-0.25	
MM ERA250B19R0.2-3T15	25.00	3	19.00	0.20	T15	23.90	37.00	45.0	●	0.07-0.25	

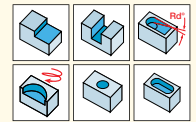
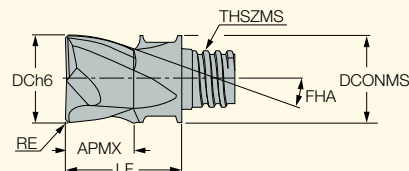
• For shanks, see pages 84-91 • For clamping keys (should be ordered separately), tightening torques and clamping instructions, see pages 91-92

• Do not apply lubricant to the threaded connection. • For user guide see pages 44, 177-184

⁽¹⁾ Number of flutes

MM EA

Interchangeable Solid Carbide
Slot Drill Milling Heads for
Machining Aluminum


ALUMINUM

Designation	Dimensions								IC08	Recommended Machining Data	
	DC	NOF ⁽¹⁾	APMX	RE	THSZMS	DCONMS	LF	FHA		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 EA160B10R000-3T10	16.00	3	10.00	0.00	T10	15.30	20.50	45.0	●	0.05-0.13	
MM EA160B10R1.0-3T10	16.00	3	10.00	1.00	T10	15.30	20.50	45.0	●	0.05-0.13	
MM EA160B10R2.0-3T10	16.00	3	10.00	2.00	T10	15.30	20.50	45.0	●	0.05-0.13	
MM EA160B10R3.0-3T10	16.00	3	10.00	3.00	T10	15.30	20.50	45.0	●	0.05-0.13	
MM EA160B10R4.0-3T10	16.00	3	10.00	4.00	T10	15.30	20.50	45.0	●	0.05-0.13	
MM EA200B12R0.5-3T12	20.00	3	12.00	0.50	T12	18.45	25.50	45.0	●	0.05-0.13	
MM EA200B12R1.0-3T12	20.00	3	12.00	1.00	T12	18.45	25.50	45.0	●	0.05-0.13	
MM EA200B12R2.0-3T12	20.00	3	12.00	2.00	T12	18.45	25.50	45.0	●	0.05-0.13	
MM EA200B12R3.0-3T12	20.00	3	12.00	3.00	T12	18.45	25.50	45.0	●	0.05-0.13	
MM EA200B12R4.0-3T12	20.00	3	12.00	4.00	T12	18.45	25.50	45.0	●	0.05-0.13	

• For shanks, see pages 84-91 • For clamping keys (should be ordered separately), tightening torques and clamping instructions, see pages 91-92

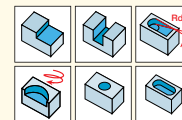
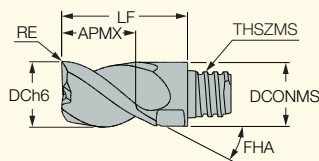
• Do not apply lubricant to the threaded connection.

⁽¹⁾ Number of flutes

CHATTERFREE

MM EA-CF

Interchangeable Solid Carbide
Endmill Heads with Different
Helix for Machining Aluminum



ALUMINUM

Designation	Dimensions								IC08	Recommended Machining Data	
	DC	NOF ⁽¹⁾	APMX	RE	THSZMS	DCONMS	LF	FHA		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	
MM EA160H16R0.0CF-3T10	16.00	3	16.00	0.00	T10	15.30	28.00	40.0	●	0.05-0.13	
MM EA160H16R0.2CF-3T10	16.00	3	16.00	0.20	T10	15.30	28.00	40.0	●	0.05-0.13	
MM EA160H16R0.5CF-3T10	16.00	3	16.00	0.50	T10	15.30	28.00	40.0	●	0.05-0.13	
MM EA160H16R2.5CF-3T10	16.00	3	16.00	2.50	T10	15.30	28.00	40.0	●	0.05-0.13	
MM EA160H16R0CF-4T10	16.00	4	16.00	0.00	T10	15.30	26.00	40.0	●	0.05-0.12	
MM EA200H20R0.0CF-3T12	20.00	3	20.00	0.00	T12	18.45	34.00	40.0	●	0.05-0.13	
MM EA200H20R0.2CF-3T12	20.00	3	20.00	0.20	T12	18.45	34.00	40.0	●	0.05-0.13	
MM EA200H20R0.5CF-3T12	20.00	3	20.00	0.50	T12	18.45	34.00	40.0	●	0.05-0.13	
MM EA200H20R2.5CF-3T12	20.00	3	20.00	2.50	T12	18.45	34.00	40.0	●	0.05-0.13	
MM EA250H19R0.5-3T15	25.00	3	19.00	0.50	T15	23.90	37.00	40.0	●	0.06-0.16	
MM EA250H19R1.0-3T15	25.00	3	19.00	1.00	T15	23.90	37.00	40.0	●	0.06-0.16	
MM EA250H19R3.0-3T15	25.00	3	19.00	3.00	T15	23.90	37.00	40.0	●	0.06-0.16	

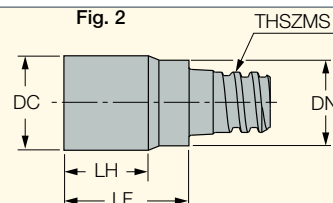
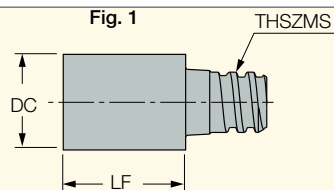
• For shanks, see pages 84-91 • For clamping keys (should be ordered separately), tightening torques and clamping instructions, see pages 91-92

• Do not apply lubricant to the threaded connection. • For user guide see pages 44, 177-184

⁽¹⁾ Number of flutes

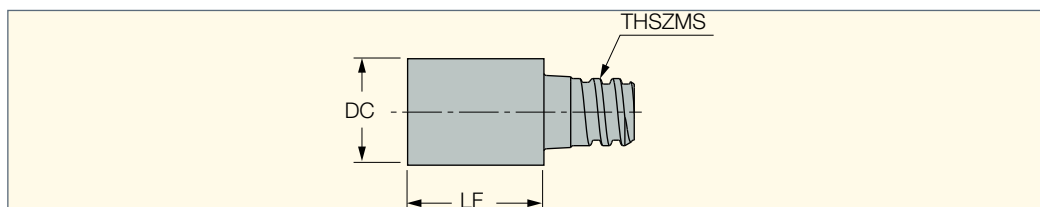
MULTI-MASTER

INDEXABLE SOLID CARBIDE LINE
MM ESR BLANKS
Interchangeable Solid
Carbide Blank Heads



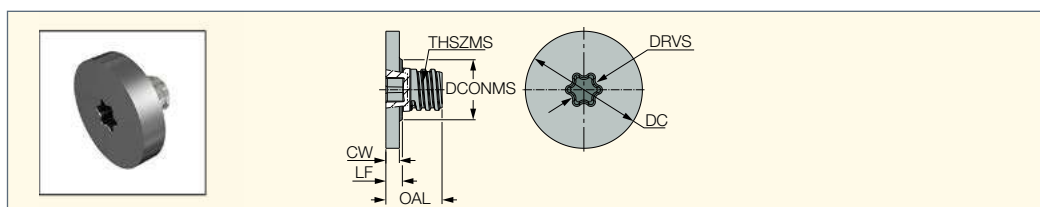
Designation	Dimensions						Tough ↔ Hard	
	DC	LF	THSZMS	LH	DN	Fig.	IC08	IC03
MM ESR-G 080-10 T05	8.00	10.35	T05	-	-	1	●	●
MM ESR-G 080-15 T05	8.00	15.40	T05	-	-	1	●	
MM ESR-G 100-13 T05	10.00	13.35	T05	-	-	1	●	
MM ESR-G 100-13 T06	10.00	13.35	T06	-	-	1	●	●
MM ESR-G 100-19 T06	10.00	19.45	T06	-	-	1	●	
MM ESR-G 120-17 T06	12.00	17.05	T06	-	-	1	●	
MM ESR-G 120-17 T08	12.00	17.05	T08	-	-	1	●	
MM ESR-G 120-23 T08	12.00	23.40	T08	-	-	1	●	
MM ESR-G 160-21 T08	16.00	20.90	T08	-	-	1	●	
MM ESR-G 160-21 T10	16.00	20.90	T10	-	-	1	●	●
MM ESR-G 160-28 T08	16.00	28.45	T08	-	-	1	●	
MM ESR-G 160-28 T10	16.00	28.45	T10	-	-	1	●	
MM ESR-G 200-26 T12	20.00	28.10	T12	16.6	18.45	2	●	●
MM ESR-G 200-34 T12	20.00	34.50	T12	-	-	1	●	
MM ESR-G 250-25 T15	25.00	25.60	T15	-	-	1	●	●
MM ESR-G 250-37 T12	25.00	37.60	T12	-	-	1	●	
MM ESR-G 250-37 T15	25.00	37.60	T15	-	-	1	●	
MM ESR-G 320-55-T21 NECK	32.00	55.80	T21	39.5	30.00	2	●	

MM ESR-1.5D BLANKS

Interchangeable Solid
Carbide Blank Heads


Designation	Dimensions			IC08
	DC	LF	THSZMS	
MM ESR-G 080-18.0 T05 08	8.00	18.40	T05	•
MM ESR-G 100-22.0 T06	10.00	22.40	T06	•
MM ESR-G 120-27.0 T08 08	12.00	27.45	T08	•
MM ESR-G 160-33.5 T10	16.00	34.00	T10	•
MM ESR-G 200-41.0 T12	20.00	41.50	T12	•
MM ESR-G 250-52.5 T15	25.00	53.00	T15	•

MM TC-G

Interchangeable Cemented
Carbide Blank Heads


Designation	Dimensions							Tough ↔ Hard	
	DC	CW	LF	OAL	DCONMS	DRVS ⁽¹⁾	THSZMS	IC28	IC08
MM TC138N-19-G-T05	13.80	1.90	2.50	9.60	7.60	20.0	T05	•	
MM TC138N-23-G-T05	13.80	2.30	2.90	10.00	7.60	20.0	T05	•	
MM TC138N-28-G-T05	13.80	2.80	3.40	10.50	7.60	20.0	T05	•	
MM TC138N-35-G-T05	13.80	3.50	4.10	11.20	7.60	20.0	T05	•	
MM TC138N-43-G-T05	13.80	4.30	4.90	12.00	7.60	20.0	T05	•	
MM TC171N-19-G-T06	17.10	1.90	2.75	9.40	9.25	25.0	T06	•	
MM TC171N-23-G-T06	17.10	2.30	3.15	9.80	9.25	25.0	T06	•	
MM TC171N-33-G-T06	17.10	3.30	4.15	10.80	9.25	25.0	T06	•	
MM TC171N-43-G-T06	17.10	4.30	5.15	11.80	9.25	25.0	T06	•	
MM TC171N-50-G-T06	17.10	5.00	5.85	12.50	9.25	25.0	T06	•	
MM TC234N-27-G-T08	23.40	2.70	3.30	11.25	12.00	40.0	T08	•	
MM TC234N-42-G-T08	23.40	4.20	4.80	12.75	12.00	40.0	T08	•	
MM TC234N-53-G-T08	23.40	5.30	5.90	13.85	12.00	40.0	T08	•	
MM TC234N-66-G-T08	23.40	6.60	7.20	15.75	12.00	40.0	T08	•	
MM TC234N-82-G-T08	23.40	8.20	8.80	17.35	12.00	40.0	T08	•	
MM TC234N-99-G-T08	23.40	9.90	10.50	19.05	12.00	40.0	T08	•	
MM TC286N-28-G-T10	28.60	2.80	3.65	15.40	15.30	40.0	T10	•	
MM TC286N-36-G-T10	28.60	3.60	4.45	16.20	15.30	40.0	T10	•	
MM TC286N-46-G-T10	28.60	4.60	5.45	17.20	15.30	40.0	T10	•	
MM TC286N-56-G-T10	28.60	5.60	6.45	18.20	15.30	40.0	T10	•	•
MM TC286N-66-G-T10	28.60	6.60	7.45	19.20	15.30	40.0	T10	•	
MM TC286N-83-G-T10	28.60	8.30	9.15	20.90	15.30	40.0	T10	•	
MM TC286N-93-G-T10	28.60	9.30	10.15	21.90	15.30	40.0	T10	•	
MM TC286N-103-G-T10	28.60	10.30	11.15	22.90	15.30	40.0	T10	•	
MM TC356N-60-G-T12	35.60	6.00	6.55	20.35	18.30	50.0	T12	•	
MM TC356N-100-G-T12	35.60	10.00	10.55	24.35	18.30	50.0	T12	•	•
MM TC356N-120-G-T12	35.60	12.00	12.55	26.35	18.30	50.0	T12	•	
MM TC356N-160-G-T12	35.60	16.00	16.55	30.35	18.30	50.0	T12	•	

• For shanks, see pages 84-91 • For tightening torques and clamping instructions, see pages 91-92 • Do not apply lubricant to the threaded connection

• For user guide see pages 44, 177-184

⁽¹⁾ Torque key size

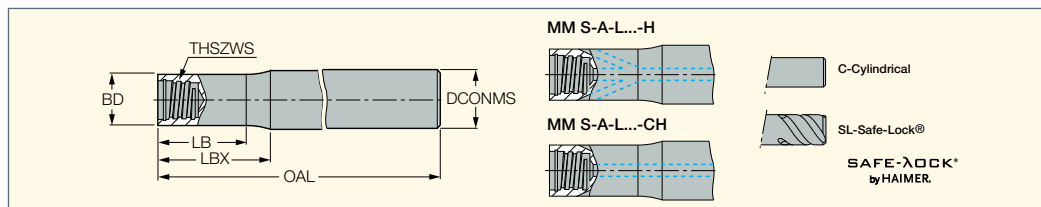
MULTI-MASTER

MM S-A (stepped shanks)

Stepped Cylindrical Shanks

Carrying Interchangeable

Milling Heads



Designation	THSZWS	DCONMS	BD	LB	LBX	OAL	Shank ⁽³⁾	Shank m. ⁽⁴⁾	CSP ⁽⁵⁾	RPMX ⁽⁶⁾	Kg
MM S-A-L050-C08-T04	T04	8.00	5.80	9.90	14.0	50.00	C	S	0	60000	0.02
MM S-A-L060/20-C08-T04-C	T04	8.00	5.80	16.90	20.0	60.00	C	C	0	60000	0.00
MM S-A-L060-C08-T05	T05	8.00	7.60	12.50	15.0	60.00	C	S	0	60000	0.02
MM S-A-L065/24-SL08T05C ⁽¹⁾	T05	8.00	7.60	24.00	25.6	65.00	SL	C	0	60000	0.04
MM S-A-L070-C08-T05-C	T05	8.00	7.60	18.60	20.0	70.00	C	C	0	60000	0.04
MM S-A-L070-C08-T05-W	T05	8.00	7.60	18.90	20.0	70.00	C	W	0	60000	0.06
MM S-A-L090-C08-T05-C	T05	8.00	7.60	38.60	40.0	90.00	C	C	0	50160	0.06
MM S-A-L090-C08-T05-W	T05	8.00	7.60	38.60	40.0	90.00	C	W	0	36090	0.07
MM S-A-L110-C08-T05-C	T05	8.00	7.60	57.90	60.0	110.00	C	C	0	30600	0.07
MM S-A-L110-C08-T05-W	T05	8.00	7.60	58.90	60.0	110.00	C	W	0	21060	0.09
MM S-A-L070-C10-T06-C	T06	10.00	9.60	18.50	20.0	70.00	C	C	0	54900	0.08
MM S-A-L070-C10-T06-W-H	T06	10.00	9.60	18.90	20.0	70.00	C	W	1	60000	0.08
MM S-A-L075-C10-T06	T06	10.00	9.60	17.40	20.0	75.00	C	S	0	60000	0.05
MM S-A-L075-C10-T06-H	T06	10.00	9.60	19.40	20.0	75.00	C	S	1	53940	0.04
MM S-A-L075/12-C10-T06-CH	T06	10.00	9.60	10.60	12.0	75.00	C	S	1	53940	0.04
MM S-A-L075/30-SL10T06C ⁽¹⁾	T06	10.00	9.60	30.00	31.7	75.00	SL	C	0	53940	0.08
MM S-A-L090-C10-T06-C	T06	10.00	9.60	38.50	40.0	90.00	C	C	0	55170	0.06
MM S-A-L090/040C10T06C-H	T06	10.00	9.60	38.60	40.0	90.00	C	C	1	60000	0.08
MM S-A-L090-C10-T06-W	T06	10.00	9.60	17.20	20.0	90.00	C	W	0	41670	0.12
MM S-A-L090-C10-T06-W-H	T06	10.00	9.60	39.00	40.0	90.00	C	W	1	40860	0.10
MM S-A-L110-C10-T06-C	T06	10.00	9.60	57.90	60.0	110.00	C	C	0	34530	0.11
MM S-A-L110-C10-T06-W-H	T06	10.00	9.60	59.00	60.0	110.00	C	W	1	24840	0.12
MM S-A-L150-C10-T06-C	T06	10.00	9.60	98.50	100.0	150.00	C	C	0	16620	0.00
MM S-A-L070-C12-T08-C	T08	12.00	11.60	17.90	20.0	70.00	C	C	0	60000	0.10
MM S-A-L070-C12-T08-W-H	T08	12.00	11.60	18.70	20.0	70.00	C	W	1	60000	0.11
MM S-A-L085/36-C12T08C ⁽²⁾	T08	12.00	11.60	36.00	37.7	85.00	C	C	0	60000	0.13
MM S-A-L090/14-C12-T08-CH	T08	12.00	11.60	13.00	14.0	90.00	C	S	1	43000	0.08
MM S-A-L090-C12-T08	T08	12.00	11.60	13.30	16.0	90.00	C	S	0	43000	0.08
MM S-A-L070/020C12T08C-CH	T08	12.00	11.60	18.00	20.0	70.00	C	C	1	43050	0.08
MM S-A-L090-C12-T08-C	T08	12.00	11.60	39.00	40.0	90.00	C	C	0	43050	0.12
MM S-A-L090-C12-T08-H	T08	12.00	11.60	38.70	40.0	90.00	C	S	1	41040	0.08
MM S-A-L090-C12-T08-W-H	T08	12.00	11.60	38.70	40.0	90.00	C	W	1	49800	0.15
MM S-A-L090/040C12T08C-CH	T08	12.00	11.50	38.00	40.0	90.00	C	C	1	49800	0.11
MM S-A-L090/42-C12-T08-CH	T08	12.00	11.60	41.00	42.0	90.00	C	S	1	41010	0.08
MM S-A-L110-C12-T08-W	T08	12.00	11.60	17.00	20.0	110.00	C	W	0	31350	0.20
MM S-A-L110-C12-T08-C	T08	12.00	11.60	57.00	60.0	110.00	C	C	0	41040	0.16
MM S-A-L110-C12-T08-W-H	T08	12.00	11.60	58.70	60.0	110.00	C	W	1	30210	0.18
MM S-A-L110/060C12T08C-CH	T08	12.00	11.50	58.00	60.0	110.00	C	C	1	30210	0.12
MM S-A-L130-C12-T08-C	T08	12.00	11.60	78.60	80.0	130.00	C	C	0	27960	0.19
MM S-A-L130-C12-T08-W-H	T08	12.00	11.60	78.70	80.0	130.00	C	W	1	20100	0.21
MM S-A-L130/080C12T08C-CH	T08	12.00	11.50	78.00	80.0	130.00	C	C	1	20100	0.17
MM S-A-L070-C16-T10-W-H	T10	16.00	15.30	18.20	20.0	70.00	C	W	1	60000	0.21
MM S-A-L090-C16-T10-C	T10	16.00	15.30	38.00	40.0	90.00	C	C	0	60000	0.21
MM S-A-L090-C16-T10-W-H	T10	16.00	15.30	38.20	40.0	90.00	C	W	1	57510	0.27
MM S-A-L090/040C16T10C-CH	T10	16.00	15.30	38.00	40.0	90.00	C	C	1	57510	0.17
MM S-A-L100-C16-T10	T10	16.00	15.30	16.30	20.0	100.00	C	S	0	39000	0.15
MM S-A-L100-C16-T10-H	T10	16.00	15.30	48.00	50.0	100.00	C	S	1	37140	0.13
MM S-A-L100/20-C16-T10-CH	T10	16.00	15.30	18.00	20.0	100.00	C	S	1	37140	0.12
MM S-A-L100/42-C16-T10-CH	T10	16.00	15.30	40.20	42.0	100.00	C	S	1	38040	0.14
MM S-A-L100/48-C16T10C ⁽²⁾	T10	16.00	15.30	48.00	50.3	100.00	C	C	0	38040	0.06
MM S-A-L110-C16-T10-C	T10	16.00	15.30	58.00	60.0	110.00	C	C	0	47010	0.27
MM S-A-L110-C16-T10-W-H	T10	16.00	15.30	58.20	60.0	110.00	C	W	1	36030	0.33
MM S-A-L110/060C16T10C-H	T10	16.00	15.00	58.10	60.0	110.00	C	C	1	60000	0.00
MM S-A-L110/060C16T10C-CH	T10	16.00	15.30	58.00	60.0	110.00	C	C	1	36030	0.17
MM S-A-L130-C16-T10-C	T10	16.00	15.30	77.40	80.0	130.00	C	C	0	33510	0.32
MM S-A-L130-C16-T10-W-H	T10	16.00	15.30	78.20	80.0	130.00	C	W	1	24450	0.41
MM S-A-L130/080C16T10C-CH	T10	16.00	15.30	78.00	80.0	130.00	C	C	1	24450	0.32
MM S-A-L150-C16-T10-C	T10	16.00	15.30	97.40	100.0	150.00	C	C	0	24660	0.37

• Do not apply lubricant to the threaded connection.

⁽¹⁾ SL-Safe-Lock® (by Haimer) helical grooves that prevent pull-out(available upon request).

⁽²⁾ With Safe-Lock® (by Haimer) pull-out prevention helical grooves

⁽³⁾ C-Cylindrical, SL-Safe-Lock® (by Haimer)

⁽⁴⁾ S-steel, C-carbide, W-tungsten

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

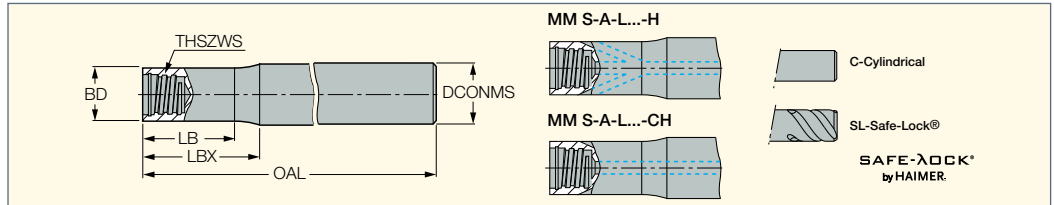
⁽⁶⁾ The maximum RPM must be calculated. Divide the listed max. RPM by the number of flutes (on the milling head) being used.

MULTI-MASTER

MM S-A (stepped shanks)

(Continue)

Stepped Cylindrical Shanks
Carrying Interchangeable
Milling Heads



Designation	THSZWS	DCONMS	BD	LB	LBX	OAL	Shank ⁽³⁾	Shank m. ⁽⁴⁾	CSP ⁽⁵⁾	RPMX ⁽⁶⁾	Kg
MM S-A-L150-C16-T10-W-H	T10	16.00	15.30	98.20	100.0	150.00	C	W	1	17610	0.45
MM S-A-L090-C20-T12-C	T12	20.00	18.30	37.00	40.0	90.00	C	C	0	60000	0.27
MM S-A-L090-C20-T12-W-H	T12	20.00	18.30	36.90	40.0	90.00	C	W	1	60000	0.41
MM S-A-L090/040C20T12C-CH	T12	20.00	18.30	37.20	40.0	90.00	C	C	1	60000	0.30
MM S-A-L110/50-SL20T12C ⁽¹⁾	T12	20.00	18.30	50.00	53.3	110.00	SL	C	0	60000	0.08
MM S-A-L120-C20-T12	T12	20.00	18.30	20.30	25.0	120.00	C	S	0	36000	0.27
MM S-A-L120-C20-T12-H	T12	20.00	18.30	66.70	70.0	120.00	C	S	1	32160	0.25
MM S-A-L120/25-C20-T12-CH	T12	20.00	18.30	22.20	25.0	120.00	C	S	1	32160	0.12
MM S-A-L120/48-C20-T12-CH	T12	20.00	18.30	45.20	48.0	120.00	C	S	1	32160	0.20
MM S-A-L130-C20-T12-C	T12	20.00	18.30	77.20	80.0	130.00	C	C	0	42360	0.47
MM S-A-L130-C20-T12-W-H	T12	20.00	18.30	76.90	80.0	130.00	C	W	1	31650	0.59
MM S-A-L130/080C20T12C-CH	T12	20.00	18.30	77.20	80.0	130.00	C	C	1	42360	0.44
MM S-A-L170-C20-T12-C	T12	20.00	18.30	97.20	100.0	170.00	C	C	0	25170	0.63
MM S-A-L200-C20-T12-C	T12	20.00	18.30	116.50	120.0	200.00	C	C	0	17790	0.76
MM S-A-L200-C20-T12-W-H	T12	20.00	18.30	116.90	120.0	200.00	C	W	1	12540	0.92
MM S-A-L200/120C20T12C-CH	T12	20.00	18.30	117.20	120.0	200.00	C	C	1	17790	0.74
MM S-A-L120-C25-T15-C	T15	25.00	23.90	57.50	60.0	120.00	C	C	0	49400	0.64
MM S-A-L120-C25-T15-W-H	T15	25.00	23.90	58.00	60.0	120.00	C	W	1	41700	0.89
MM S-A-L125/63-C25T15C ⁽²⁾	T15	25.00	24.00	63.00	65.8	125.00	C	C	0	41700	0.75
MM S-A-L135-C25-T15	T15	25.00	23.90	33.00	35.0	135.00	C	S	0	28290	0.47
MM S-A-L135/35-C25-T15-CH	T15	25.00	23.90	33.00	35.0	135.00	C	S	1	28230	0.42
MM S-A-L135/50-C25-T15-CH	T15	25.00	23.90	47.70	50.0	135.00	C	S	1	28230	0.40
MM S-A-L170-C25-T15-C	T15	25.00	23.90	98.00	100.0	170.00	C	C	0	27360	0.96
MM S-A-L175-C25-T15	T15	25.00	23.90	62.70	65.0	175.00	C	S	0	16890	0.10
MM S-A-L250-C25-T15-C	T15	25.00	23.90	148.00	150.0	250.00	C	C	0	12690	1.45
MM S-A-L100/32-C32-T21	T21	32.00	30.00	32.00	35.3	100.00	C	S	0	12690	0.56
MM S-A-L130/60-C32-T21-C	T21	32.00	30.00	60.00	63.3	130.00	C	C	0	12690	1.22
MM S-A-L135/64-C32T21C	T21	32.00	30.00	64.00	67.5	135.00	C	C	0	12690	1.02
MM S-A-L150/50-C32-T21	T21	32.00	30.00	50.00	53.5	150.00	C	S	0	12690	0.86
MM S-A-L170/100-C32-T21-C	T21	32.00	30.00	100.00	103.5	170.00	C	C	0	12690	1.22
MM S-A-L250/150-C32-T21-C	T21	32.00	30.00	150.00	153.5	250.00	C	C	0	12690	2.50
MM S-A-L300/200-C32-T21-C	T21	32.00	30.00	200.00	203.5	300.00	C	C	0	12690	3.00

• Do not apply lubricant to the threaded connection.

⁽¹⁾ SL-Safe-Lock® (by Haimer) helical grooves that prevent pull-out (available upon request).

⁽²⁾ With Safe-Lock® (by Haimer) pull-out prevention helical grooves

⁽³⁾ C-Cylindrical, SL-Safe-Lock® (by Haimer)

⁽⁴⁾ S-steel, C-carbide, W-tungsten

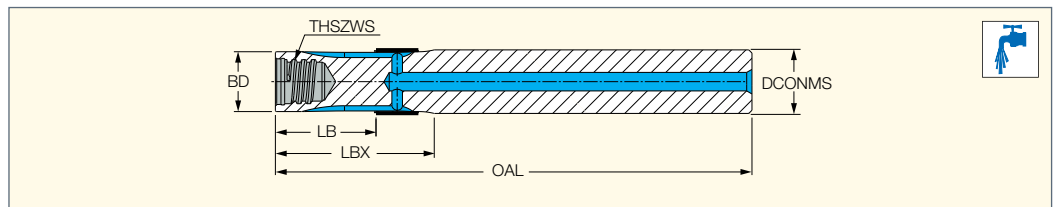
⁽⁵⁾ 0 - Without coolant supply, 1 - With coolant supply

⁽⁶⁾ The maximum RPM must be calculated. Divide the listed max. RPM by the number of flutes (on the milling head) being used.

MULTI-MASTER

MM S-A-N

Stepped Cylindrical Shanks with
Parallel Directed Coolant Carrying
Interchangeable Milling Heads



Designation	THSZWS	DCONMS	BD	LB	LBX	OAL	Shank m. ⁽¹⁾	kg
MM S-A-L075-C10-T06-N	T06	10.00	9.60	18.00	28.0	75.00	S	0.04
MM S-A-L090-C12-T08-N	T08	12.00	11.60	18.00	30.0	90.00	S	0.07
MM S-A-L100-C16-T10-N	T10	16.00	15.30	23.00	35.0	100.00	S	0.04

• Do not apply lubricant to the threaded connection

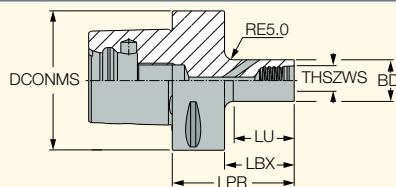
⁽¹⁾ S-steel

MULTI-MASTER

CAMFIX

MM S-A-C#

MULTI-MASTER Threaded Connection Shanks with a CAMFIX (ISO 26623-1) Exchangeable Adaptation



Designation	DCONMS	THSZWS	BD	LPR	LBX	LU	CDI ⁽¹⁾	kg
MM S-A-H035-C3-T05	32.00	T05	7.60	35.00	20.0	15.00	0	0.00
MM S-A-H035-C3-T06	32.00	T06	9.25	35.00	20.0	15.00	0	0.12
MM S-A-H040-C3-T08	32.00	T08	11.60	40.00	25.0	20.00	0	0.13
MM S-A-H040-C3-T10	32.00	T10	15.30	40.00	25.0	20.00	0	0.15
MM S-A-H045-C3-T12	32.00	T12	18.30	45.00	30.0	25.00	0	0.16
MM S-A-H045-C4-T06	40.00	T06	9.25	45.00	25.0	20.00	0	0.00
MM S-A-H045-C4-T08	40.00	T08	11.60	45.00	25.0	20.00	0	0.00
MM S-A-H050-C4-T10	40.00	T10	15.30	50.00	30.0	25.00	0	0.00
MM S-A-H055-C4-T12	40.00	T12	18.30	55.00	35.0	30.00	0	0.00
MM S-A-H055-C4-T15	40.00	T15	23.90	55.00	35.0	30.00	0	0.35
MM S-A-H060-C5-T10	50.00	T10	15.30	60.00	40.0	35.00	0	0.00
MM S-A-H060-C5-T12	50.00	T12	18.30	60.00	40.0	35.00	0	0.48
MM S-A-H060-C5-T15	50.00	T15	23.90	60.00	40.0	35.00	0	0.58
MM S-A-H065-C6-T12	63.00	T12	18.30	65.00	43.0	38.00	0	0.00
MM S-A-H065-C6-T15	63.00	T15	23.90	65.00	43.0	38.00	0	0.00
MM S-A-H070-C8-T15	80.00	T15	23.90	70.00	40.0	35.00	0	0.00

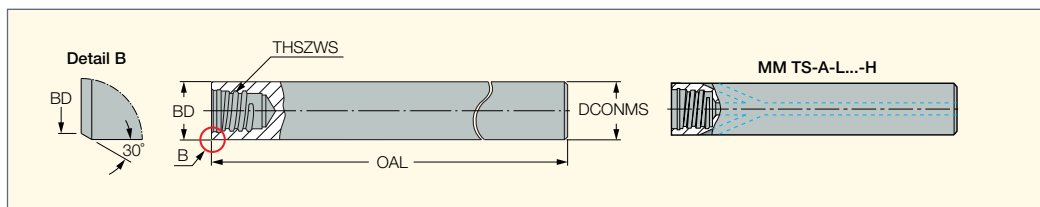
• Do not apply lubricant to the threaded connection • For adaptation options, see page 44

⁽¹⁾ 1 - Hole for data chip, 0 - Without hole for data chip

MULTI-MASTER

MM TS-A

Cylindrical Shanks Carrying Interchangeable Milling Heads



Designation	THSZWS	DCONMS	BD	OAL	Shank m. ⁽¹⁾	RPMX ⁽²⁾	CSP ⁽³⁾	kg
MM TS-A-L070-C08-T04	T04	8.00	5.80	70.00	S	-	0	0.00
MM TS-A-L070-C08-T05	T05	8.00	7.60	70.00	S	60000	0	0.03
MM TS-A-L080-C10-T06	T06	10.00	9.60	80.00	S	47400	0	0.05
MM TS-A-L080-C10-T06-H	T06	10.00	9.60	80.00	S	46920	1	0.04
MM TS-A-L090-C12-T08	T08	12.00	11.60	90.00	S	43110	0	0.08
MM TS-A-L090-C12-T08-H	T08	12.00	11.60	90.00	S	42780	1	0.08
MM TS-A-L100-C16-T10	T10	16.00	15.30	100.00	S	39420	0	0.16
MM TS-A-L100-C16-T10-H	T10	16.00	15.30	100.00	S	39210	1	0.14

• Do not apply lubricant to the threaded connection

⁽¹⁾ S-steel, C-carbide

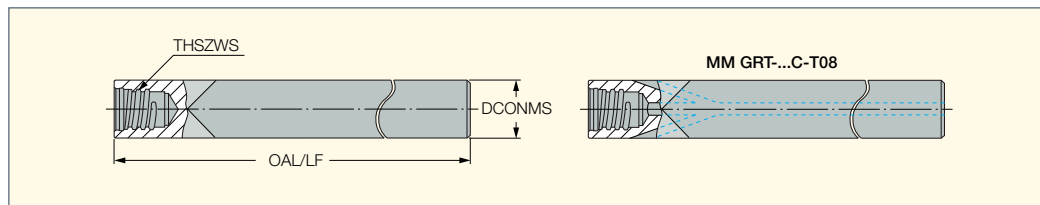
⁽²⁾ The actual maximum RPM should be calculated by dividing the listed RPM max by the number of the head's flutes being used.

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

MULTI-MASTER

MM GRT (shanks)

Solid Carbide Cylindrical Shanks Carrying Slitting and Grooving Interchangeable Milling Heads



Designation	THSZWS	DCONMS	OAL	Shank m. ⁽¹⁾	CSP ⁽²⁾	kg
MM GRT-095-T06	T06	9.52	80.00	C	0	0.07
MM GRT-100-T06	T06	10.00	100.00	C	0	0.10
MM GRT-120C-T08	T08	12.00	100.00	C	1	0.12
MM GRT-127C-T08	T08	12.70	120.00	C	1	0.17

• MM GRT... shanks serve mainly for MM GRIT... slitting heads. When mounting other types of milling heads, do not exceed maximum specified depth of cut for the particular milling head. Since the shank diameter is not relieved, it may touch a wall on the workpiece being machined.

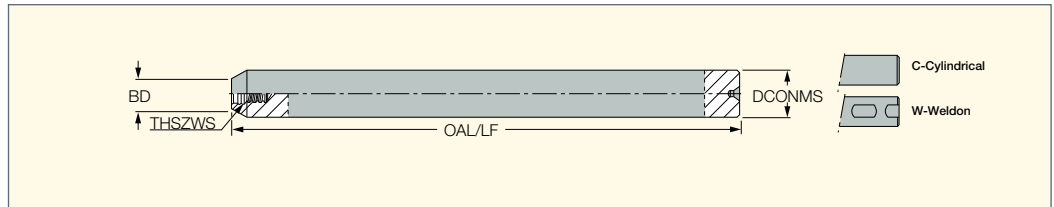
• Use carbide shanks for groove milling heads and for applications requiring high rigidity and precision.

⁽¹⁾ C - Solid carbide

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

MULTI-MASTER

MM S-A (straight shanks) Shanks Carrying Interchangeable Milling Heads



Designation	THSZWS	DCONMS	BD	OAL	Shank ⁽²⁾	Shank m. ⁽³⁾	RPMX ⁽⁴⁾	kg
MM S-A-L055-W12-T05	T05	12.00	7.60	55.00	W	S	60000	0.05
MM S-A-L070-C20T05	T05	20.00	7.60	70.00	C	S	60000	0.24
MM S-A-L150-C12-T05-B ⁽¹⁾	T05	12.00	7.60	150.00	C	S	18270	0.13
MM S-A-L065-W16-T06	T06	16.00	9.60	65.00	W	S	60000	0.09
MM S-A-L080-C25T06	T06	25.00	9.60	80.00	C	S	60000	0.29
MM S-A-L200-C16-T06-B ⁽¹⁾	T06	16.00	9.60	200.00	C	S	11970	0.33
MM S-A-L065-W16-T08	T08	16.00	11.60	65.00	W	S	60000	0.10
MM S-A-L080-C25T08	T08	25.00	11.60	80.00	C	S	60000	0.40
MM S-A-L250-C20-T08-B ⁽¹⁾	T08	20.00	11.60	250.00	C	S	9330	0.60
MM S-A-L070-W20-T10	T10	20.00	15.30	70.00	W	S	60000	0.17
MM S-A-L080-C32T10	T10	32.00	15.30	80.00	C	S	60000	0.65
MM S-A-L250-C25-T10-B ⁽¹⁾	T10	25.00	15.30	250.00	C	S	11130	0.94
MM S-A-L075-W25-T12	T12	25.00	18.30	75.00	W	S	60000	0.28
MM S-A-L080-C32T12	T12	32.00	18.30	80.00	C	S	60000	0.65
MM S-A-L100-W32-T15	T15	32.00	23.90	100.00	W	S	60000	0.30
MM S-A-L100-C40T15	T15	40.00	23.90	100.00	C	S	60000	0.94
MM S-A-L100-C40T21	T21	40.00	30.00	100.00	C	S	60000	1.56

• Do not apply lubricant to the threaded connection.

⁽¹⁾ "B" suffix - cylindrical shank which may be shortened.

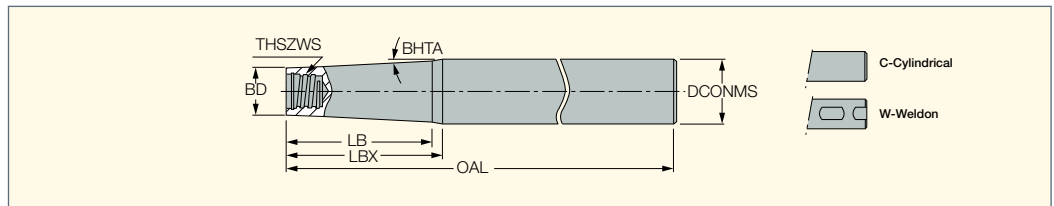
⁽²⁾ C-Cylindrical, W-Weldon

⁽³⁾ S-steel

⁽⁴⁾ The maximum RPM must be calculated. Divide the listed max. RPM by the number of flutes (on the milling head) being used.

MULTI-MASTER

MM S-B (85° conical shanks) Shanks Carrying Interchangeable Milling Heads



Designation	THSZWS	DCONMS	BD	BHTA	Shank ⁽¹⁾	LB	LBX	OAL	Shank m. ⁽²⁾	RPMX ⁽³⁾	kg
MM S-B-L080/24-C08-T04	T04	8.00	5.80	2.6	C	-	24.0	80.00	S	60000	0.00
MM S-B-L080-C12-T05	T05	12.00	7.60	5.0	C	-	25.0	80.00	S	60000	0.06
MM S-B-L085/32-C16T05	T05	16.00	7.60	5.0	C	27.00	32.0	85.00	S	41280	0.11
MM S-B-L125-C16-T06	T06	16.00	9.60	5.0	C	31.50	31.7	125.00	S	41280	0.19
MM S-B-L095/40-C20T06	T06	20.00	9.60	5.0	C	34.00	40.0	95.00	S	41280	0.19
MM S-B-L140-C20-T06-W	T06	20.00	9.65	5.0	C	-	60.3	140.50	W	51180	0.62
MM S-B-L140-C16-T08	T08	16.00	11.60	5.0	C	19.30	22.0	140.00	S	25590	0.22
MM S-B-L100/48-C20T08	T08	20.00	11.60	5.0	C	-	48.0	100.00	S	25590	0.32
MM S-B-L140-C20-T10	T10	20.00	15.30	5.0	C	-	27.0	140.00	S	31020	0.34
MM S-B-L170-C25-T10	T10	25.00	15.30	5.0	C	-	56.0	170.00	S	29490	0.16
MM S-B-L120/55-C25T10	T10	25.00	15.30	5.0	C	-	55.4	120.00	S	29490	0.40
MM S-B-L160-C25-T12	T12	25.00	18.30	5.0	C	-	40.0	160.00	S	28680	0.11
MM S-B-L190-C32-T12	T12	32.00	18.30	5.0	C	-	80.0	190.00	S	34890	0.56
MM S-B-L150/78-C32T12	T12	32.00	18.30	5.0	C	-	78.3	150.00	S	34890	0.78
MM S-B-L200-C32-T15	T15	32.00	23.90	5.0	C	-	50.0	200.00	S	14160	1.19
MM S-B-L180/92-C40T15	T15	40.00	23.90	5.0	C	-	92.0	180.00	S	14160	0.28
MM S-B-L250-W40-T15	T15	40.00	23.90	5.0	W	-	100.0	250.00	S	21840	2.12
MM S-B-L150/57-C40T21	T21	40.00	30.00	5.0	C	-	57.0	150.00	S	21840	0.62

• Do not apply lubricant to the threaded connection.

⁽¹⁾ C-Cylindrical, W-Weldon

⁽²⁾ S-steel, W-tungsten

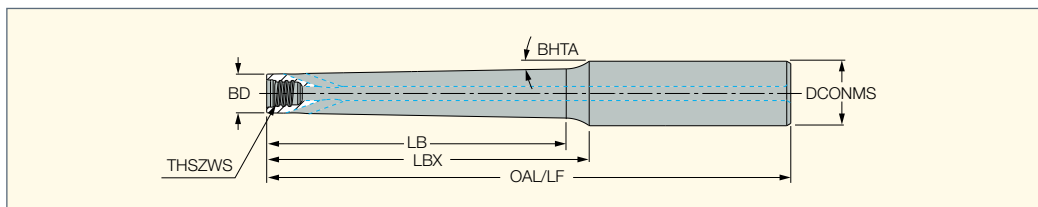
⁽³⁾ The maximum RPM must be calculated. Divide the listed max. RPM by the number of flutes (on the milling head) being used.

MULTI-MASTER

MM S-D

(89° conical shanks)

Shanks Carrying Interchangeable
Milling Heads



Designation	THSZWS	DCONMS	BD	LB	Shank	LBX	OAL	BHTA	Shank m.	CSP ⁽¹⁾	RPMX ⁽²⁾	kg
MM S-D-L100-C12-T05	T05	12.00	7.60	29.60	C	35.0	100.00	1.0	S	0	52000	0.08
MM S-D-L110-C12-T05-C	T05	12.00	7.60	55.90	C	60.0	110.00	1.0	C	0	53430	0.13
MM S-D-L110-C12-T05-W-H	T05	12.00	7.60	55.70	C	60.0	110.00	1.0	W	1	38460	0.14
MM S-D-L130-C12-T05-C	T05	12.00	7.60	77.30	C	80.0	130.00	1.0	C	0	36420	0.15
MM S-D-L130-C12-T05-W-H	T05	12.00	7.60	76.40	C	80.0	130.00	1.0	W	1	26160	0.16
MM S-D-L150-C16-T05-C	T05	16.00	7.60	91.50	C	100.0	150.00	1.0	C	0	29700	0.00
MM S-D-L110-C12-T06-W-H	T06	12.00	9.60	58.80	C	60.0	110.00	1.0	W	1	36990	0.17
MM S-D-L130-C16-T06-W-H	T06	16.00	9.60	73.40	C	80.0	130.00	1.0	W	1	29490	0.28
MM S-D-L150-C16-T06-C	T06	16.00	9.60	95.40	C	100.0	150.00	1.0	C	0	30150	0.27
MM S-D-L150-C16-T06-W-H	T06	16.00	9.60	93.80	C	100.0	150.00	1.0	W	1	21660	0.33
MM S-D-L160-C16-T06	T06	16.00	9.60	46.80	C	55.0	160.00	1.0	S	0	23370	0.12
MM S-D-L170-C16-T06-C	T06	16.00	9.60	116.90	C	120.0	170.00	1.0	C	0	23400	0.11
MM S-D-L170-C16-T06-W	T06	16.00	9.60	46.30	C	55.0	170.00	1.0	W	0	21210	0.48
MM S-D-L130-C16-T08-C	T08	16.00	11.60	77.20	C	80.0	130.00	1.0	C	0	39870	0.28
MM S-D-L130-C16-T08-W-H	T08	16.00	11.60	76.40	C	80.0	130.00	1.0	W	1	29040	0.32
MM S-D-L150-C16-T08-C	T08	16.00	11.60	97.80	C	100.0	150.00	1.0	C	0	29970	0.33
MM S-D-L150-C16-T08-W-H	T08	16.00	11.60	98.30	C	100.0	150.00	1.0	W	1	21540	0.38
MM S-D-L170-C20-T08	T08	20.00	11.60	69.70	C	80.0	170.00	1.0	S	0	22680	0.30
MM S-D-L170-C20-T08-C	T08	20.00	11.60	112.00	C	120.0	170.00	1.0	C	0	26250	0.47
MM S-D-L170-C20-T08-W	T08	20.00	11.60	69.70	C	80.0	170.00	1.0	W	0	24900	0.65
MM S-D-L170-C20-T08-W-H	T08	20.00	11.60	113.10	C	120.0	170.00	1.0	W	1	18750	0.53
MM S-D-L150-C20-T10-C	T10	20.00	15.30	97.50	C	120.0	150.00	1.0	C	0	35610	0.10
MM S-D-L150-C20-T10-W-H	T10	20.00	15.30	96.80	C	100.0	150.00	1.0	W	1	25800	0.60
MM S-D-L170-C20-T10-C	T10	20.00	15.30	118.30	C	120.0	170.00	1.0	C	0	28140	0.61
MM S-D-L170-C20-T10-W-H	T10	20.00	15.30	118.00	C	120.0	170.00	1.0	W	1	20100	0.73
MM S-D-L190-C20-T10	T10	20.00	15.30	73.70	C	80.0	190.00	1.0	S	0	15780	0.42
MM S-D-L190-C20-T10-C	T10	20.00	15.30	-	C	140.0	190.00	1.0	C	0	22830	0.68
MM S-D-L190-C20-T10-W-H	T10	20.00	15.30	-	C	140.0	190.00	1.0	W	1	16170	0.83
MM S-D-L210-C20-T10-C	T10	20.00	15.30	-	C	160.0	210.00	1.0	C	0	18270	0.75
MM S-D-L210-C20-T10-W-H	T10	20.00	15.30	-	C	160.0	210.00	1.0	W	1	12870	0.93
MM S-D-L180-C25-T12-C	T12	25.00	18.30	115.70	C	120.0	180.00	1.0	C	0	29460	0.91
MM S-D-L180-C25-T12-W-H	T12	25.00	18.30	114.60	C	120.0	180.00	1.0	W	1	20940	1.15
MM S-D-L200-C25-T12-W-H	T12	25.00	18.30	146.60	C	150.0	200.00	1.0	W	1	16560	1.21
MM S-D-L210-C25-T12	T12	25.00	18.30	94.60	C	100.0	210.00	1.0	S	0	15540	0.66
MM S-D-L250-C25-T12-C	T12	25.00	18.30	135.60	C	140.0	250.00	1.0	C	0	16170	1.40
MM S-D-L250-C25-160T12W-H	T12	25.00	18.30	157.20	C	160.0	250.00	1.0	W	1	11310	1.76
MM S-D-L250-C25-T12-W-H	T12	25.00	18.30	135.60	C	140.0	250.00	1.0	W	1	11300	1.80
MM S-D-L250-C32-T15	T15	32.00	23.90	90.10	C	100.0	250.00	1.0	S	0	14160	1.00
MM S-D-L250-C32-T15-C	T15	32.00	23.90	143.30	C	150.0	250.00	1.0	C	0	20370	1.88
MM S-D-L300-C32-T15-C	T15	32.00	23.90	195.70	C	200.0	300.00	1.0	C	0	16000	2.62

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

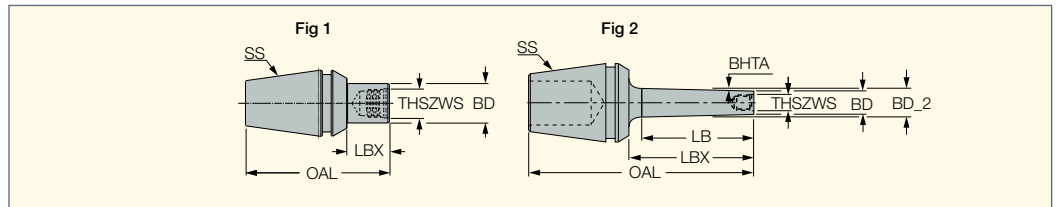
⁽¹⁾ 0 - Without coolant supply, 1 - With coolant supply

⁽²⁾ The maximum RPM must be calculated. Divide the listed max. RPM by the number of flutes (on the milling head) being used.



MM S-ER

Shanks Carrying MULTI-MASTER
Solid Carbide Heads with
an ER Collet Adaptation

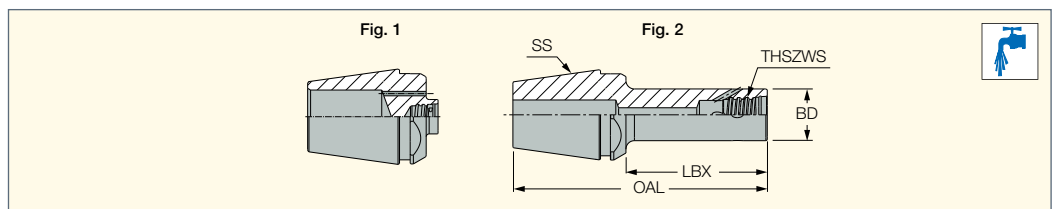


Designation	SS	THSZWS	BHTA	BD	BD_2	LB	LBX	OAL	Fig.	kg
MM S-A-H004-ER11-T04	ER11	T04	-	5.80	-	-	4.0	22.00	1.	0.00
MM S-A-H004-ER11-T05	ER11	T05	-	7.60	-	-	4.0	22.00	1.	0.01
MM S-A-H10.5-ER11-T05	ER11	T05	-	7.60	-	-	10.5	28.50	1.	0.01
MM S-A-H004-ER16-T05	ER16	T05	-	7.60	-	-	4.0	31.50	1.	0.03
MM S-A-H004-ER16-T06	ER16	T06	-	9.25	-	-	4.0	31.50	1.	0.03
MM S-A-H004-ER16-T08	ER16	T08	-	11.60	-	-	4.0	31.50	1.	0.04
MM S-A-H10.5-ER16-T05	ER16	T05	-	7.60	-	-	10.5	38.00	1.	0.04
MM S-A-H10.5-ER16-T06	ER16	T06	-	9.25	-	-	10.5	38.00	1.	0.04
MM S-A-H013-ER16-T08	ER16	T08	-	11.60	-	-	14.0	40.50	1.	0.02
MM S-A-H004-ER20-T05	ER20	T05	-	7.60	-	-	4.0	35.50	1.	0.06
MM S-A-H004-ER20-T06	ER20	T06	-	9.25	-	-	4.0	35.50	1.	0.06
MM S-A-H004-ER20-T08	ER20	T08	-	11.60	-	-	4.0	35.50	1.	0.07
MM S-A-H004-ER20-T10	ER20	T10	-	15.30	-	-	4.0	35.50	1.	0.06
MM S-A-H10.5-ER20-T05	ER20	T05	-	7.60	-	-	10.5	42.00	1.	0.06
MM S-A-H10.5-ER20-T06	ER20	T06	-	9.25	-	-	10.5	42.00	1.	0.06
MM S-A-H013-ER20-T08	ER20	T08	-	11.60	-	-	13.0	44.50	1.	0.07
MM S-A-H016-ER20-T10	ER20	T10	-	15.30	-	-	16.0	47.50	1.	0.07
MM S-A-H004-ER25-T05	ER25	T05	-	7.60	-	-	4.0	38.00	1.	0.10
MM S-A-H10.5-ER25-T05	ER25	T05	-	7.60	-	-	10.5	44.50	1	0.10
MM S-A-H004-ER25-T06	ER25	T06	-	9.25	-	-	4.0	38.00	1.	0.07
MM S-A-H10.5-ER25-T06	ER25	T06	-	9.25	-	-	10.5	44.50	1.	0.12
MM S-A-H004-ER25-T08	ER25	T08	-	11.60	-	-	4.0	38.00	1.	0.11
MM S-A-H10.5-ER25-T08	ER25	T08	-	11.60	-	-	10.5	44.50	1.	0.06
MM S-A-H004-ER25-T10	ER25	T10	-	15.30	-	-	4.0	38.00	1.	0.10
MM S-A-H10.5-ER25-T10	ER25	T10	-	15.30	-	-	10.5	44.50	1.	0.10
MM S-A-H004-ER25-T12	ER25	T12	-	18.30	-	-	4.0	38.00	1.	0.10
MM S-A-H10.5-ER25-T12	ER25	T12	-	18.30	-	-	10.5	44.50	1.	0.06
MM S-A-H025-ER32-T06	ER32	T06	-	9.25	10.00	18.00	25.0	65.00	2.	0.15
MM S-B-H025-ER32-T06	ER32	T06	5.0	9.60	13.50	22.30	25.0	65.00	2.	0.16
MM S-B-H050-ER32-T06	ER32	T06	5.0	9.60	17.90	47.30	50.0	90.00	2.	0.20
MM S-B-H075-ER32-T06	ER32	T06	5.0	9.60	22.60	74.10	75.0	115.00	2.	0.25
MM S-D-H050-ER32-T06	ER32	T06	1.0	9.60	11.20	45.00	50.0	90.00	2.	0.17

• Do not apply lubricant to the threaded connection. • For adaptation see page 44 • When a rigid ER collet is assembled in an ER holder, the actual protruding length of the holder becomes shorter by 2.0 mm for ER20 and by 3.0 mm for ER25/ER32

MM S-ER-H

Shanks Carrying MULTI-MASTER
Solid Carbide Heads with
an ER Collet Adaptation
and Coolant Holes



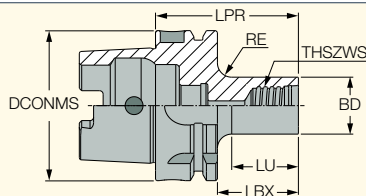
Designation	SS	THSZWS	BD	LBX	OAL	Fig.	kg
MM S-A-H004-ER32-T05-H	ER32	T05	7.60	4.0	44.00	1	0.14
MM S-A-H025-ER32-T05-H	ER32	T05	7.60	25.0	65.00	2	0.20
MM S-A-H040-ER32-T05-H	ER32	T05	7.60	40.0	80.00	2	0.23
MM S-A-H004-ER32-T06-H	ER32	T06	9.60	4.0	44.00	1	0.14
MM S-A-H025-ER32-T06-H	ER32	T06	9.25	25.0	65.00	2	0.20
MM S-A-H040-ER32-T06-H	ER32	T06	9.25	40.0	80.00	2	0.22
MM S-A-H004-ER32-T08-H	ER32	T08	11.60	4.0	44.00	1	0.14
MM S-A-H025-ER32-T08-H	ER32	T08	11.60	25.0	65.00	2	0.20
MM S-A-H050-ER32-T08-H	ER32	T08	11.60	50.0	90.00	2	0.23
MM S-A-H004-ER32-T10-H	ER32	T10	15.30	4.0	44.00	1	0.14
MM S-A-H025-ER32-T10-H	ER32	T10	15.30	25.0	65.00	2	0.20
MM S-A-H050-ER32-T10-H	ER32	T10	15.20	50.0	90.00	2	0.25
MM S-A-H004-ER32-T12-H	ER32	T12	18.30	4.0	44.00	1	0.14
MM S-A-H025-ER32-T12-H	ER32	T12	18.30	25.0	65.00	2	0.22
MM S-A-H050-ER32-T12-H	ER32	T12	18.30	50.0	90.00	2	0.22
MM S-A-H004-ER32-T15-H	ER32	T15	23.90	4.0	44.00	1	0.15
MM S-A-H025-ER32-T15-H	ER32	T15	23.90	25.0	65.00	2	0.21
MM S-A-H050-ER32-T15-H	ER32	T15	23.90	50.0	90.00	2	0.25

• Do not apply lubricant to the threaded connection. • For adaptation see page 44

MULTI-MASTER HSK

MM S-A-HSK

MULTI-MASTER Threaded Connection Shanks with an Integral HSK DIN 69893 Form A Tapered Adaptation



Designation	DCONMS	THSZWS	BD	LPR	LBX	LU	RE	CDI ⁽¹⁾	kg
MM S-A-H035-HSK A40-T05	40.00	T05	7.60	35.00	15.0	10.00	5.0	1	0.00
MM S-A-H040-HSK A40-T06	40.00	T06	9.25	40.00	20.0	15.00	5.0	1	0.28
MM S-A-H045-HSK A40-T08	40.00	T08	11.60	45.00	25.0	20.00	5.0	1	0.24
MM S-A-H050-HSK A40-T10	40.00	T10	15.30	50.00	30.0	25.00	5.0	1	0.23
MM S-A-H050-HSK A40-T12	40.00	T12	18.30	50.00	30.0	25.00	5.0	1	0.27
MM S-A-H050-HSK A63-T06	63.00	T06	9.25	50.00	24.0	18.00	6.0	1	0.70
MM S-A-H050-HSK A63-T08	63.00	T08	11.60	50.00	24.0	18.00	6.0	1	0.72
MM S-A-H055-HSK A63-T10	63.00	T10	15.30	55.00	29.0	23.00	6.0	1	0.73
MM S-A-H055-HSK A63-T12	63.00	T12	18.30	55.00	29.0	23.00	6.0	1	0.40
MM S-A-H060-HSK A63-T15	63.00	T15	23.90	60.00	34.0	28.00	6.0	1	0.76

• Do not apply lubricant to the threaded connection • For adaptation options, see page 44

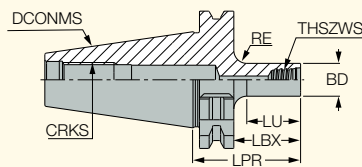
⁽¹⁾ 1 - Hole for data chip, 0 - Without hole for data chip

MULTI-MASTER

DIN69871

MM S-A-SK

DIN 69871 Integral Tapered Shanks Carrying MULTI-MASTER Milling Heads



Designation	DCONMS	CRKS	THSZWS	BD	LPR	LBX	LU	RE	kg
MM S-A-H040-SK 40-T06	40.00	M16	T06	9.25	40.00	21.0	15.00	6.0	0.86
MM S-A-H045-SK 40-T08	40.00	M16	T08	11.60	45.00	26.0	20.00	6.0	0.87
MM S-A-H050-SK 40-T10	40.00	M16	T10	15.30	50.00	31.0	25.00	6.0	0.88
MM S-A-H050-SK 40-T12	40.00	M16	T12	18.30	50.00	31.0	25.00	6.0	0.90
MM S-A-H050-SK 40-T15	40.00	M16	T15	23.90	50.00	31.0	25.00	6.0	0.93

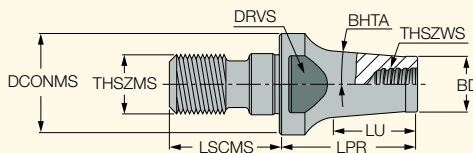
• Do not apply lubricant to the threaded connection • For adaptation, see page 44

FLEXFIT

MULTI-MASTER

MM CAB

Adapters for Connecting FLEXFIT Shanks and MULTI-MASTER Milling Heads



Designation	THSZWS	THSZMS	LPR	LU	BD	DCONMS	LSCMS	DRVS ⁽¹⁾	BHTA	TQ_3 ⁽²⁾	kg
MM CAB T06M06-16/.63	T06	M06	16.00	11.60	9.30	9.70	14.50	8.0	1.5	15	0.01
MM CAB T06M08-16/.63	T06	M08	16.00	13.70	9.60	13.00	17.50	11.0	6.0	20	0.02
MM CAB T06M08-25/1.0	T06	M08	25.00	11.30	9.30	13.00	17.50	11.0	1.5	20	0.02
MM CAB T06M10-25/1.0	T06	M10	25.00	16.60	9.60	18.00	20.00	11.0	5.0	29	0.04
MM CAB T08M08-16/.63	T08	M08	16.00	5.40	11.70	13.00	17.50	11.0	11.4	20	0.03
MM CAB T08M08-25/1.0	T08	M08	25.00	19.50	11.70	13.00	17.50	11.0	1.5	20	0.03
MM CAB T08M10-20/.75	T08	M10	20.00	11.30	11.70	18.00	20.00	13.0	7.0	29	0.04
MM CAB T08M10-25/1.0	T08	M10	25.00	14.20	11.70	18.00	20.00	11.0	1.5	29	0.03
MM CAB T08M12-20/.75	T08	M12	20.00	9.30	11.70	21.00	22.00	13.0	7.0	33	0.05
MM CAB T08M12-25/1.0	T08	M12	25.00	12.50	11.70	21.00	22.00	13.0	1.5	33	0.04

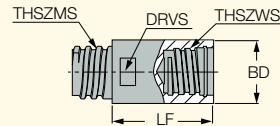
• Do not apply lubricant to the threaded connection • When mounting items with FLEXFIT threaded adaptation to their holders, the mating surfaces and threaded areas must be thoroughly cleaned. Apply appropriate tightening torque to eliminate a gap between the mating faces. Estimated torque values are specified in the TQ_3 parameter

⁽¹⁾ Clamping wrench size

⁽²⁾ Tool tightening torque Nxm (lbfxin)

MM CAB-T-T

MULTI-MASTER Shank Extensions



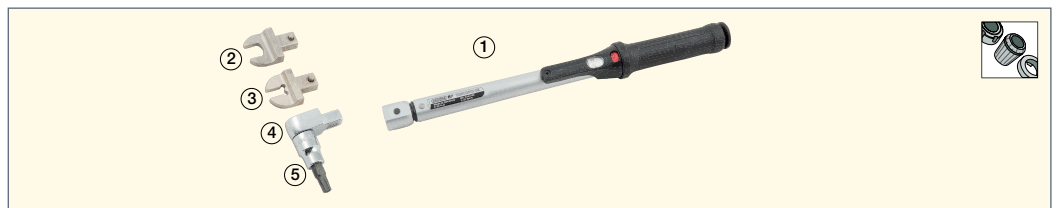
Designation	BD	THSZMS	THSZWS	LF	DRVS ⁽¹⁾	kg
MM CAB T05T05-25/1.0-C	7.60	T05	T05	25.40	6.0	0.02
MM CAB T06T06-25/1.0-C	9.30	T06	T06	25.40	8.0	0.02
MM CAB T08T08-25/1.0-C	11.50	T08	T08	25.40	10.0	0.02
MM CAB T10T10-38/1.5-C	15.20	T10	T10	38.10	13.0	0.08
MM CAB T12T12-38/1.5-C	18.45	T12	T12	38.10	16.0	0.11
MM CAB T15T15-45/1.77-C	23.90	T15	T15	45.00	20.0	0.21

• Clamping key should be ordered separately • For adaptation, see page 44

⁽¹⁾ Clamping wrench size

Accessories
MM Adjustable Torque Keys

Adjustable Torque Handle and Keys for Secure and Accurate Tightening of MULTI-MASTER Milling Heads



Designation	Fig.	Ts ⁽¹⁾	Key	TQ ⁽²⁾
TORQUE WRENCH 5-50Nm 9X12	1	-	-	-
MM WRENCH 6-05	2	T05	-	7.0
MM WRENCH 8-06	2	T06	-	10.0
MM WRENCH 10-08	2	T08	-	15.0
MM WRENCH 13-10	2	T10	-	28.0
MM WRENCH 16-12	2	T12	-	28.0
MM WRENCH 20-15	2	T15	-	40.0
MM WRENCH 4E-05	3	T05	-	7.0
MM WRENCH 5E-06	3	T06	-	10.0
MM WRENCH 7E-08	3	T08	-	15.0
MM WRENCH 8E-10	3	T10	-	28.0
MM WRENCH 9E-12	3	T12	-	28.0
INSERT TOOL 3/8" 9X12mm	4	-	-	-
BIT SOCKET T20 3/8" DRIVE	5	-	Torx T20	-
BIT SOCKET T25 3/8" DRIVE	5	-	Torx T25	-
BIT SOCKET T30 3/8" DRIVE	5	-	Torx T30	-
BIT SOCKET T40 3/8" DRIVE	5	-	Torx T40	-
BIT SOCKET T50 3/8" DRIVE	5	-	Torx T50	-

• NOTE: For recommended clamping torque for each MULTI-MASTER connection size, see page 92

⁽¹⁾ MULTI-MASTER connection size

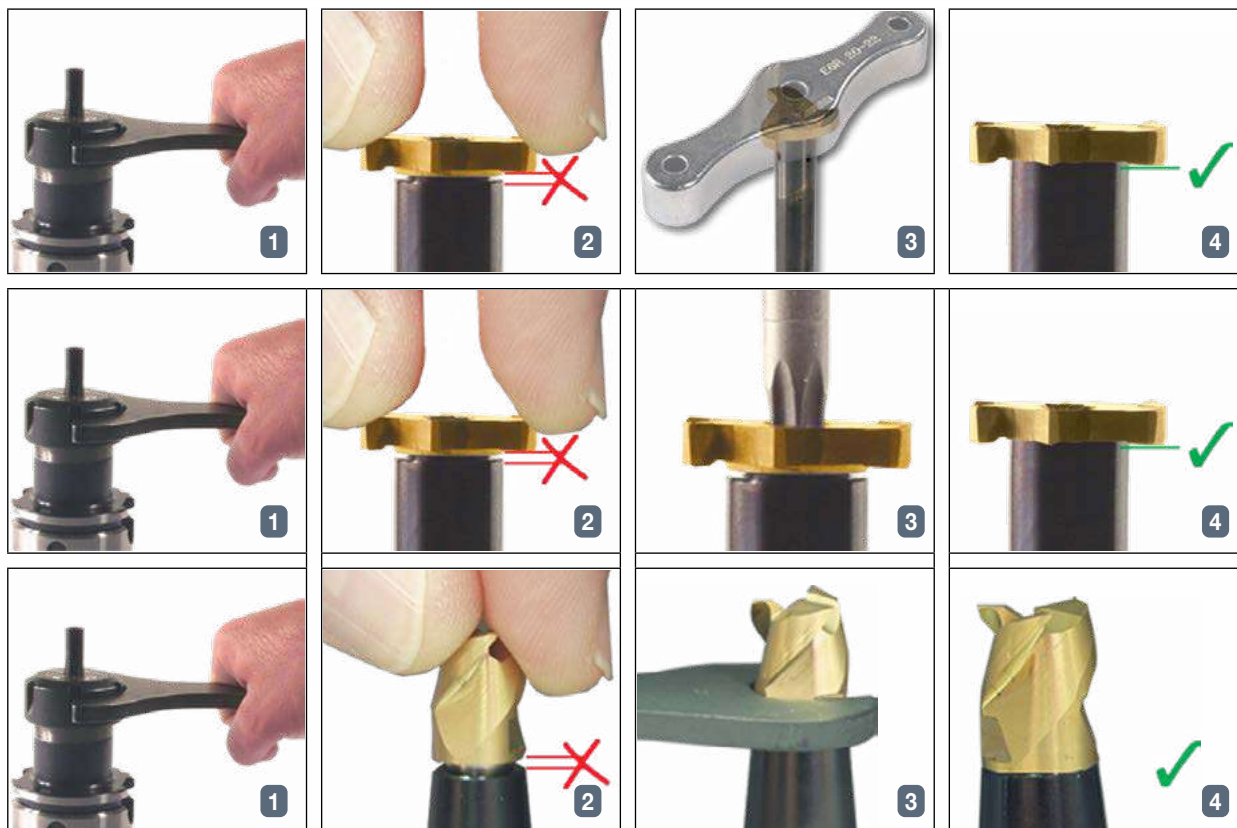
⁽²⁾ Clamping torque NxM

Adjustable Torque Handle with Interchangeable Wrenches for Clamping MULTI-MASTER Milling Heads


The adjustable torque handle, interchangeable wrenches and Torx bits are optional and should be ordered separately.



Clamping and Indexing Instructions



Do not apply lubricant to the threaded connection.

Thread Size	Key ⁽¹⁾	Tightening Torque (Nxcn)
T04	MM KEY 6x4	400
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
T21	MM WRENCH 24-21	11000

⁽¹⁾ Order separately

