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MACHINING

ISCAR MULTI-MASTER LINES

SOLID CARBIDE & INDEXABLE HEADS

Metric Catalog



MILLING

HOLE
MAKING

GROOVING

THREAD
MILLING

BLANKS

SHANKS



Quality Standards

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

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MW

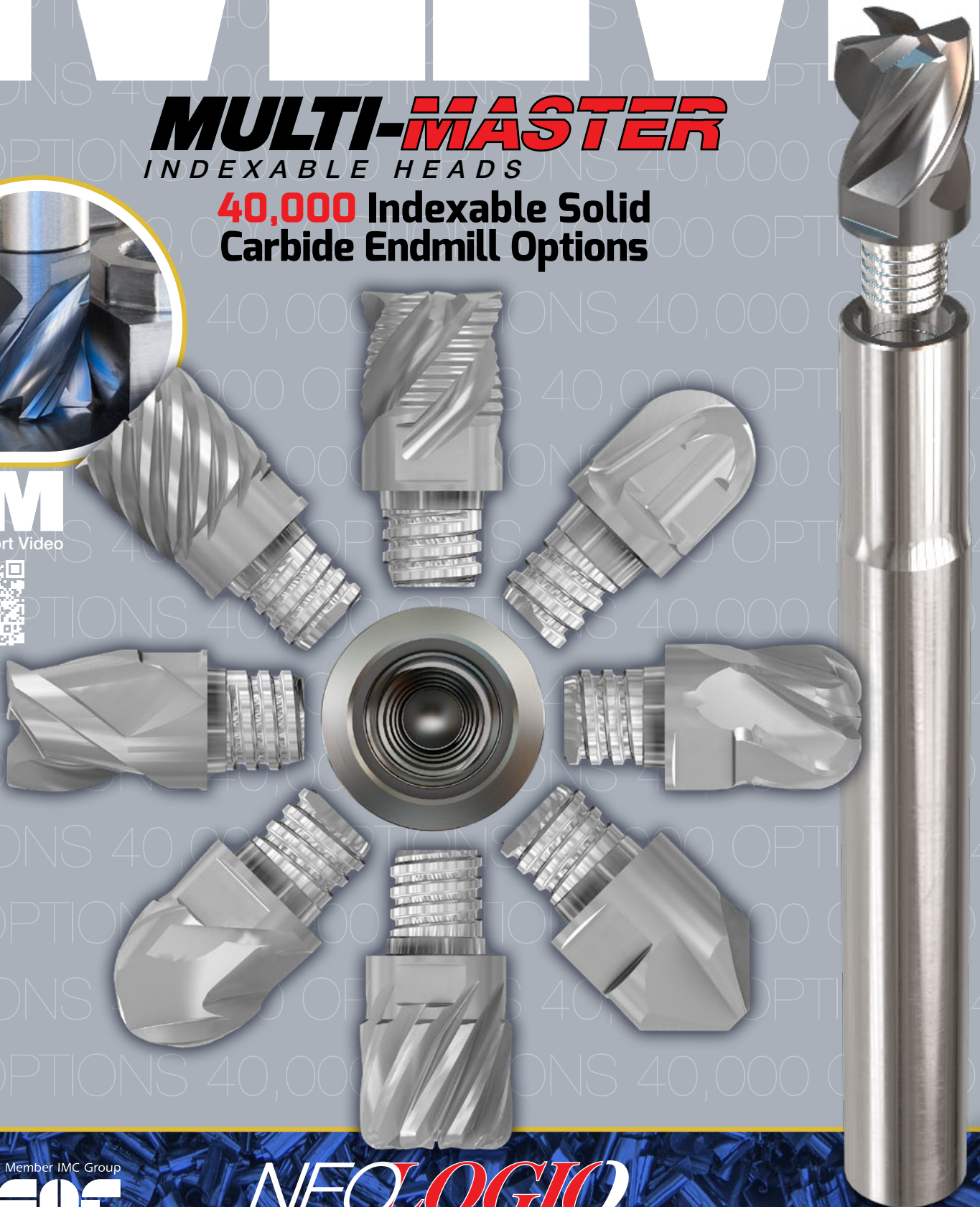
MULTI-MASTER INDEXABLE HEADS

40,000 Indexable Solid Carbide Endmill Options

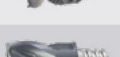
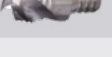


MIM

Scan for Short Video



Indexable Solid Carbide Milling Heads

Type	Helix Angle	No. of Flutes	Diameter Range	Remarks	Page	
MM FM	—	6	12-25	Face Mill	16	
SD FM	—	10,12	31.25-49.25	Face Mill	16	
MM ECU	38°	3	7.7-19.7	For Keyways (DIN 6885)	16	
MM EC-3	45°	3	8-12		17	
MM EC-4	30°, 45°	4	5-20		17	
MM EC-6 MM EC-D	30°, 45° 50°	6 6, 8, 10	8-12 8-20	For Machining Hardened Steel (up to 65 HRC).	18	
MM EC-8/10	30°, 45°	8,10	16-25		19	
MM EC-CF MM EC-CF-Z7/9-1.5xD	38° 36°, 46.5°	4, 12 4, 7, 9	8-25	CHATTER-FREE	19 25	
MM EC-H-4-CF MM EC-H-5-CF	45°	4 5	7.7-18.45 7.7-23.9	CHATTER-FREE Endmill	20 20	
MM EFS	45°	4	8-25	Finishred	21	
MM EFS-CF	38°	4	6-25	Finishred CHATTER-FREE	21	
MM ERS MM ERS-1.5xD	45° 40°-47°	4, 5, 6	8-25	Rough Milling	22	
MM ERA	45°	3	8-25	Rough Machining on Aluminum	22	
MM EA	45°	2, 3	8-20	High Speed Machining on Aluminum	23	
MM EA-CF	40°	3, 4	8-25	High Speed Machining on Aluminum-CHATTER-FREE	24	
MM EC-Z4-1.5xD	46.5°	4	8-25	1.5xD Flute Lengths	25	
MM ECK-CF	35°, 38°	5,6	8-32	For Machining Titanium Alloys	26	
MM HC	10°	2	7.8-16	Slot Drill Milling Heads	26	
MM FF	—	2	10-20	FEED-MILL	39	
MM EFF	—	4,6	8-25.4	FEED-MILL	40	
MM EBA-3	45°	3	8-25	Ball Nose for Machining Aluminum	43	
MM HCR MM HRF	—	2	8-16	Ball Nose for General Finishing	43	

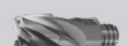
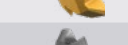
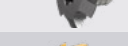
E = Economical

Indexable Solid Carbide Milling Heads

Type	Helix Angle	No. of Flutes	Diameter Range	Remarks	Page
MM HBR	—	2	10-25.4	Center Cutting, 240° Spherical Cutting Profile	44  
MM HT	—	2	10-20	Torodial	44  
MM ETR	30°	6	8-16	Torodial	45 
MM EB MM EBC	30° 45°	2, 4 4	5-25 8-20	Ball Nose Milling	45 46 
MM EBA-2	45°	2	8-25	Ball Nose for Machining Aluminum	46 
MM ELB	—	4	8,10,12,16	Lens-Shaped (Barrel)	46 
MM ELBA	—	4	8,10,12,16	Lens-Shaped (Barrel)	47 
MM EOB	—	4	8,10,12,16	Oval-Shaped (Barrel)	47 
MM EOBA	—	4	8,10,12,16	Oval-Shaped (Barrel)	48 
MM ET	20°,30°	8,12	12,16	Tapered Heads for Finishing Operations	48 
MM HCD	—	2	8-20	Chamfering, Countersinking and Spot Drilling for DIN 74 Screw	55  
MM ECF	—	4, 6	8-25 10-25	Chamfering and Countersinking	56 
MM HDF	—	2	9.8-15.7	Double Chamfering	56 
MM EDF	—	3	7.4-11.6	Double Chamfering	57 
MM TS-45	—	4	7.7	45° Chamfering	57 
MM GRIT-45A	—	3,4	17.7,21.7	45° Chamfering	57 
MM ER	—	4	8-12.7	Corner Rounding	58 
MM Dovetail	—	6	10.5-27.7	Dovetail groove milling	58 
MM HR	—	2	8-20	Corner Rounding	59  
MM GRIT 28P-DR	—	6	27.7	Double-Sided Corner Rounding Milling	59 
MM EPG	—	1	8	Engraving	60 
MM SPD-3T	—	3	8-16	Exchangeable Drilling Heads	62 

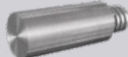
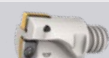
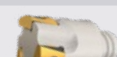
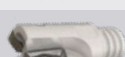
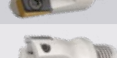
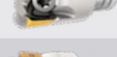
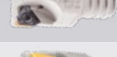
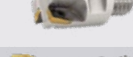
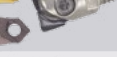
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Indexable Solid Carbide Milling Heads

Type	Helix Angle	No. of Flutes	Diameter Range	Remarks	Page
MM ECS	—	2	1.07-6.41	Centering Drills (DIN 332)	63 
MM ECD	—	2	6-16	Spot Drill	64 
MM EFCB	—	4	11-14	Flat Counter Boring Heads	64 
MM ECDF	—	2	8-20	Flat Bottom Drill Heads	65 
MM GRIT-3T6	—	3	15.7,17.7	Groove Milling	68 
MM GRIT-4T8 /6T10	—	4	21.7	Groove Milling	69 
MM TS-N	—	4,6	7.7,10.5, 12.7,13.5	Groove Milling	70 
MM TS-H	—	6	13.5,16,16.5, 19.5,22.5,25	Groove Milling	70 
MM TS-C	—	6	12.7,22.5	Groove milling standard circlips conform to DIN 471/472	71 
MM TS-DG	—	4	15.88, 19.05, 25.4	Internal Grooving for Heat Exchanger Tube Sheets	71 
MM SS	—	4	21.7	Involute Spline	72 
SD-SP	—	6,8,10,12	24.7,31.25, 31.7,39.7,49.7	Groove Milling	73 
SD-R-SP	—	8	31.7	Groove Milling	74 
SD-M-N-SP	—	8	32	Gear Profile Milling According to DIN 3972 Basic Profile II	74 
MM TRD-M	—	3,4	15.7, 21.7	55°-DIN ISO 228, B.S 84	80 
MT-ISO-MM	—	3-6	10-20	60°-ISO 68, DIN13	78 
MT-UN-MM	—	3,4,5,6	10,12,15.3, 16,20	Mill thread for Internal UN Thread Profile	79 
MT-W-MM	—	4,6	10,16,20	Mill thread for Internal and External 55° BSW Thread Profile	79 
MM TRD-W	—	4	21.7	milling heads for 55° partial profile thread milling	80 
MM TRF 55°	—	5,6	11.94,15.94, 19.94	Milling heads For 55° partial profile thread milling	81 
MM TRF 60°	—	5,6	11.94,15.94, 19.94,27.7	Milling heads For 60° partial profile thread milling	82 
SD TRD-M-SP	—	8,10	31.7,39.7	Milling heads For 60° partial profile thread milling	83 
SD TRD-W-SP	—	8,10	31.7,39.7	Milling heads For 55° partial profile thread milling	83 

E = Economical

Indexable Solid Carbide Milling Heads

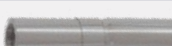
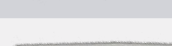
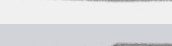
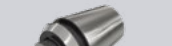
Type	Helix Angle	No. of Flutes	Diameter Range	Remarks	Page
MM TC-G	—		13.8,17.1,23.4, 28.6,35.6	Blank Heads	86 
MM ESR BLANKS	—		8-32	Blank Heads	87 
MM ESR-1.5D BLANKS			8-25.4	Blank Heads	88 
DCN-MM		2	4-10.49	Modular SUMO-CHAM drills	66 
HM90 EAL-MM-15-JHP		2,3	25.4,31.75	Endmills carrying HM90 AXCR 1505	27 
HM90 EAL-MM-16-JHP		2	31.75,38.1	Endmills carrying HM90 AXCR 1605 Inserts	27 
S890 ESZ-MMT15-R08		3,4	25,32	Endmills carrying double-sided square inserts with 8 cutting edges	28 
HM390 ETP/C/D-MM-JHP		3	32	Endmills carrying HM390 TPKT 1003 Inserts	28 
T490 ELN-MM-05		2,3,4,5	10,12,16,20	Endmills carrying tangentially Inserts	29 
HM90 E90AD-MM-15-JHP		2,3	25,32	Endmills carrying HELI-2000 and HELI-MILL Inserts	30 
MDR MMT-JHP		2	16,20,25	Multi-Function modular head for endmill	30 
T290 ELN-MM-05		2,3,4	10,12,14,16	Endmills carrying tangentially Inserts	31 
HP E90AN-MM-07		2,3,4,5	12,16,20	Endmills carrying HELI-PLUS HP ANKT 0702 Inserts	31 
T490 ELN-MM-08		2,3	16,20	Endmills carrying tangentially Inserts	32 
H490 E90AX-MM		3	20	Endmills carrying H490 ANKX/ ANCX 090 Inserts	32 
HM90 E90A-MM-10		2,3	16,20	Endmills carrying HM90 AP.. 1003 Inserts	33 
E90SO-MM-04		2,3,4,5,6	10,12,14,16,20	Endmills carrying Inserts for shouldering and fast Feed	34 
HM390 ETP-MM-04		2,3	8,10	Endmills carrying HM390 TPKR 0401... triangular Inserts	34 
HM390 ETC-MM		2,3,4	16,20,25	Endmills carrying HM390 TCKT 0703 triangular Inserts	35 
HM90 E90A-MM-10-JHP		2,3,4,5	16,20,25,32	Endmills carrying HELI-2000 and HELI-MILL Inserts	36 
HCE-MM		2	12,16,20	Endmills mounts several Insert geometries	36 
FF EWX-MM		2,3,4	16,20,25	Endmills for fast feed, that mount double-sided Inserts	37 

E = Economical

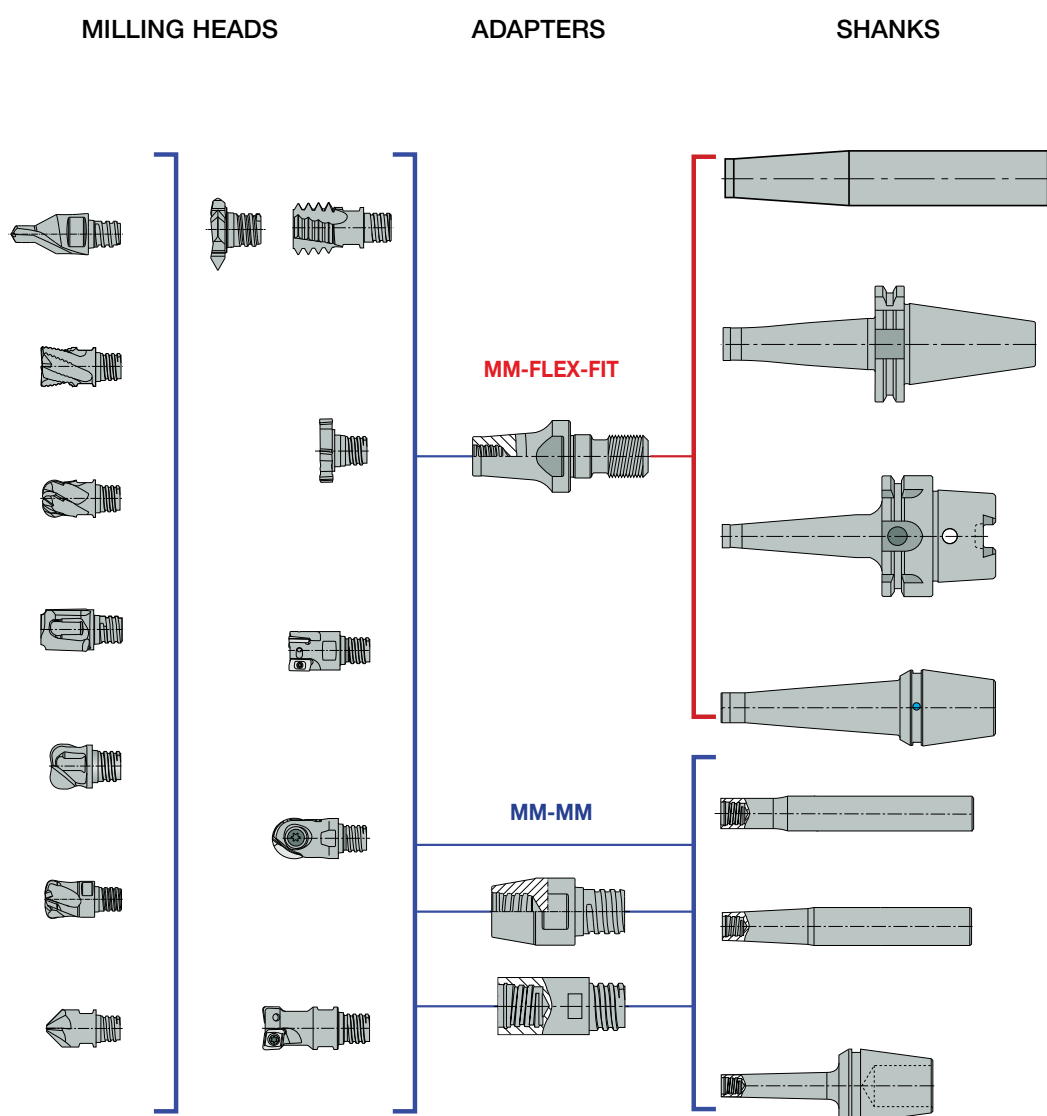
Indexable Solid Carbide Milling Heads

Type	Helix Angle	No. of Flutes	Diameter Range	Remarks	Page
FFX4 ED-MM		2,3,4	16,20,25	Endmills for fast feed, that mount double-sided Inserts	37
H690 EWN-MM-04		2,3,4,5,6	16,20,25,32,40	Endmills mount small Inserts for fast feed milling	38
E93CN-MM-07		2,3	16,20	Endmills carrying Toroidal Inserts	38
FFQ4 D-MM-06		3,4,5,7	16,20,25,32	Fast feed endmills	41
FFT3 EFM-MM 02		2,3	8,10	Endmills carrying triangular Inserts for fast feed	41
FFT3 EFM-MM 03		2,3,4,5,6	10,12,16,20,25	Endmills carrying small trigon inserts for fast feed	42
HCM-MM		2	12,16,20,25	Endmills mounts several Insert geometries	54
BCM-MM		2	12,16,20,25	Ball nose endmills	54
CH45-MM-PN06		1,2,3	11.7,16.7,18.7	Upper and bottom chamfering endmills	59
SGSF/A-MM-JHP		4,6	32,40	Grooving and Slitting Small Diameter	75
TGSF-MM-JHP		5	50	Grooving and Slitting Small Diameter	75
ETS-LN08-MM		4,6	32,40	Grooving and slitting cutters	75
ETS-XN06-MM		4,6	31.7,49.8	Grooving and slitting cutters	76
MTE-MM		1,2,3	13.7,15.8,20,21,27,30.4	Indexable threading endmills	84

Shanks for MULTI-MASTER Adaptation

Type	Connection Thread Size (THSZMS)	Connection Diameter Machine Side (DCONMS)	Shank Size (SS)	Connection Thread Nominal Size Workpiece (THSZWS)	Page
MM S-A-AV		20,25		T12,T15	90 
MM TS2-A		6-20		T04-T12	90 
MM S-A (stepped shanks)		8-32		T04-T21	90-91 
MM S-A-N		10-16		T06-T10	92 
MM TS-A		8-25		T04-T15	92 
MM GRT (shanks)		9.52-12.7		T06-T08	92 
MM S-A (straight shanks)		12-40		T05-T21	93 
MM S-B (85° conical shanks)		8-40		T04-T21	93 
MM S-D (89° conical shanks)		12-32		T05-T15	94 
MM S-ER			ER11-ER32	T04-T12	95 
MM S-ER-H			ER16-ER32	T05-T15	95 
MM S-A-HSK		40,63		T05-T21	96 
MM S-A-SK		40		T06-T15	96 
MM S-A-C#		32-80		T05-T15	96 
MM S-A-BT		30		T06-T15	97 
MM CAB-T-T	T04-T15			T04-T15	97 
MM CAB-T-T-W	T05-T15			T04-T12	97 
MM CAB	M6-M12			T06-T08	98 
SD S-A-C-H-SP		16,20,25		M4x0.5, M5x0.5, M6x0.5	98 
SD S-A-SP		12-25		M4x0.5, M5x0.5, M6x0.5	99 
SD-S-A-ER-SP			ER16-ER40	M4x0.5, M5x0.5, M6x0.5	100 
SD CAB	T10-T15			M4x0.5, M5x0.5, M6x0.5	101 

MULTI-MASTER and FLEX-FIT Connection Options



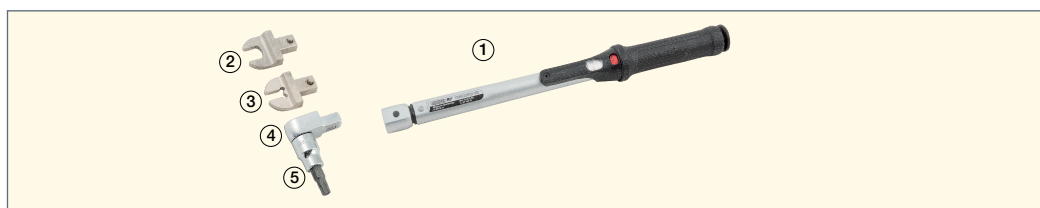
Features

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

Accessories

MM Adjustable Torque Keys

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



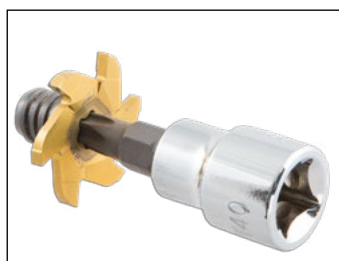
Designation	Fig.	Ts ⁽¹⁾	Key	TQ ⁽²⁾
TORQUE WRENCH 3-25NM 9X12	1	-	-	-
TORQUE WRENCH 5-50NM 9X12	1	-	-	-
MM WRENCH 6-05	2	T05	-	7.0
MM WRENCH 8-06	2	T06	-	10.0
MM WRENCH 10-08	2	T08	-	15.0
MM WRENCH 13-10	2	T10	-	28.0
MM WRENCH 16-12	2	T12	-	28.0
MM WRENCH 20-15	2	T15	-	40.0
MM WRENCH 24-21	2	T21	-	110.0
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: Recommended clamping torque for each MULTI-MASTER connection size, see next page

⁽¹⁾ MULTI-MASTER connection size

⁽²⁾ Clamping torque Nxm

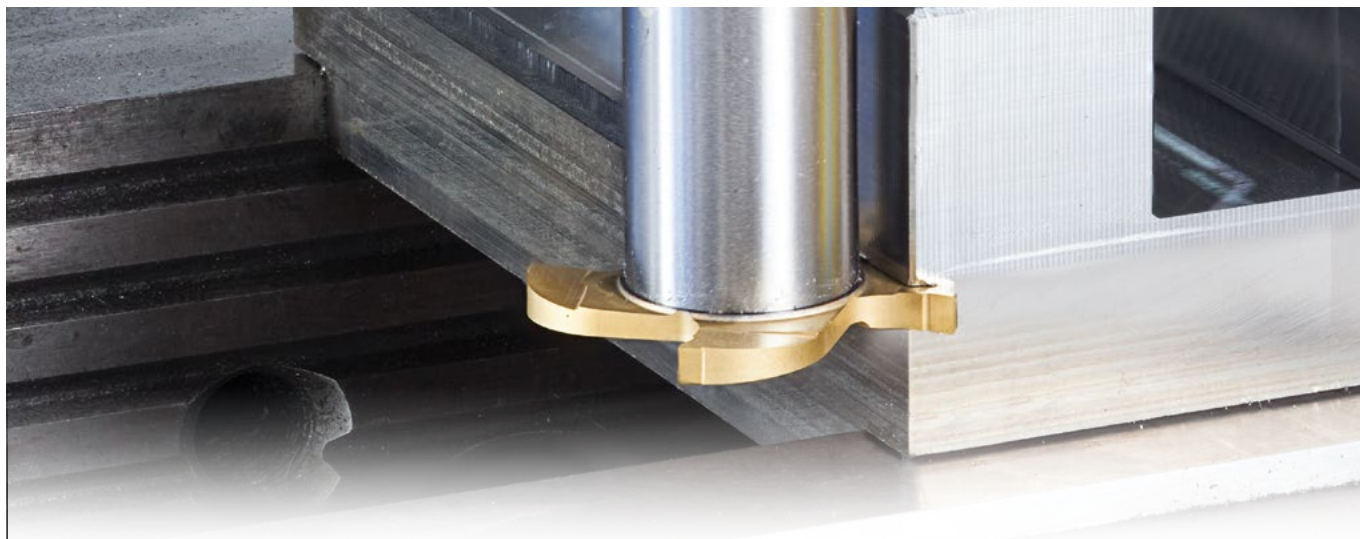
Adjustable Torque Handle with Interchangeable Wrenches for Clamping MULTI-MASTER Milling Heads



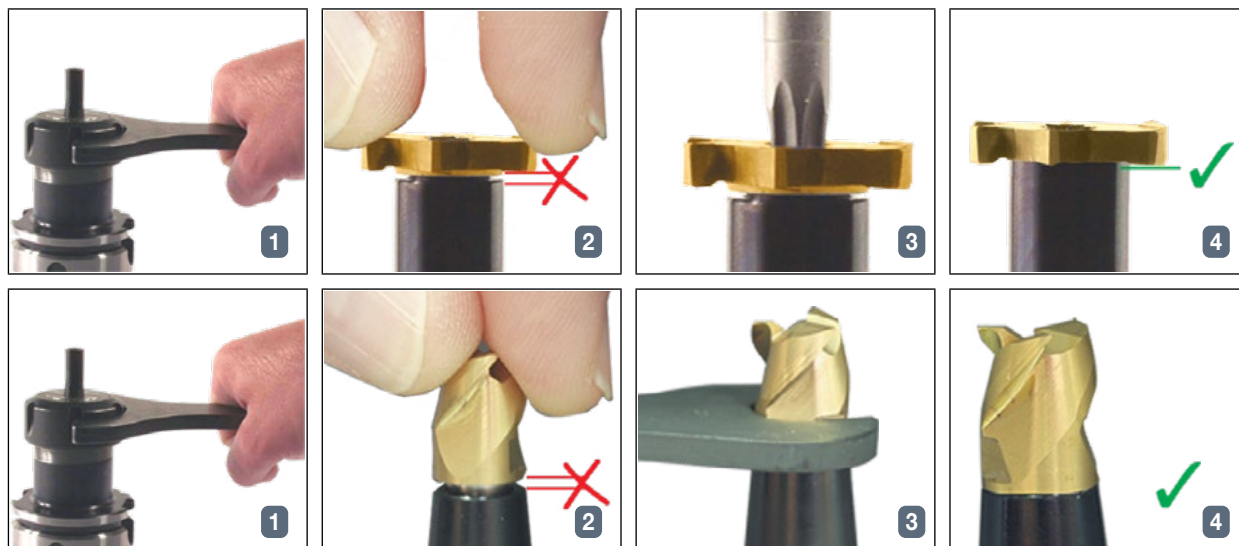
The adjustable torque handle, interchangeable wrenches and Torx bits are optional and should be ordered separately.

Table - Keys and Wrenches for Clamping Interchangeable MULTI-MASTER Heads

Applied Key / Wrench (Spare Parts)	Tool	Adjustable Torque Wrench Assembly							
L-shaped Torx-T Key	Torx Recess (For Face and Slot Milling Heads)	90° Adaptor for Torx Bits (Fig. 4)	Torx Bit (Fig. 5)	Adjustable Torque Handle - Torque Wrench (Fig. 1)					
				3-25Nm 9x12		5-50Nm 9x12			
T-20/3	T20	INSERT TOOL 3/8" 9X12mm	BIT SOCKET T20 3/8" DRIVE		V		V		
T-25/3	T25		BIT SOCKET T25 3/8" DRIVE					V	V
T-30/3 L	T30		BIT SOCKET T30 3/8" DRIVE					V	V
T-40/3 L	T40		BIT SOCKET T40 3/8" DRIVE					V	V
T-50/3 L	T50		BIT SOCKET T50 3/8" DRIVE					V	V
double open-end wrench	MULTI-MASTER connection thread size (for all other heads)	open-end wrench for MM E...- type heads (Fig. 2)	open-end wrench for MM H...- and MM FF...- type heads (Fig. 3)						
									
MM KEY 4X3	T04	-	-	-			-		
MM KEY 6X4	T05	MM WRENCH 6-05	MM WRENCH 4E-05	V			V		
MM KEY 8X5	T06	MM WRENCH 8-06	MM WRENCH 5E-06	V			V		
MM KEY 10X7	T08	MM WRENCH 10-08	MM WRENCH 7E-08	V			V		
MM KEY 13X8	T10	MM WRENCH 13-10	MM WRENCH 8E-10	-			V		
MM KEY 16X9	T12	MM WRENCH 16-12	MM WRENCH 9E-12	-			V		
MM KEY 20	T15	MM WRENCH 20-15	-	-			V		
~	T21	MM WRENCH 24-21	-	-			-		

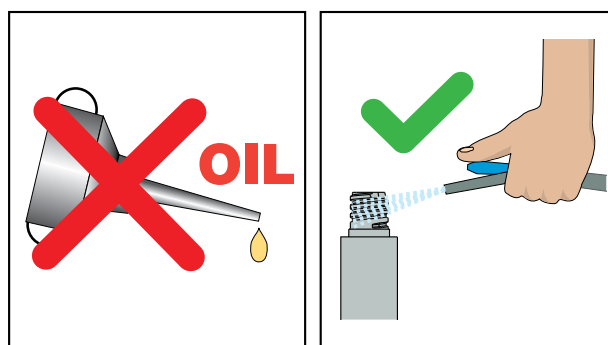
MULTI-MASTER

Clamping and Indexing Instructions



Do not apply lubricant to the threaded connection.

Thread Size	Key ⁽¹⁾	Tightening Torque (Nxcmm)
T04	MM KEY 4x3	400
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

Do not apply lubricant to the threaded connection.

Table of Contents

Grade Priorities for **MULTI-MASTER Solid Carbide Heads**

Material Groups		ISO P		ISO M	ISO K	ISO N	ISO S	ISO H
		1 - 11	12 - 13	14	15 - 20	21 - 28	31 - 37	38 - 41
		Steel	Stainless Steel Ferritic & Martensitic	Stainless Steel Austenitic & Duplex (Ferritic- Austenitic)	Cast Iron	Nonferrous	High Temp Alloys	Hard Steel & Hardened Cast Iron
MULTI-MASTER Endmills	Harder ↑ ↓			IC903				IC903
		IC903	IC903		IC903		IC903	
		IC608	IC608	IC608	IC608		IC908	IC608
		IC908	IC908	IC908	IC908			IC908
	Tougher					IC08	IC08	
Coolant		N	Y	Y	N	Y	Y	N
MULTI-MASTER Endmills	Harder ↑ ↓			IC608			IC903	
		IC903	IC903		IC903		IC908	IC903
		IC608	IC608		IC608			IC608
		IC908	IC908	IC908	IC908			IC908
	Tougher					IC08	IC08	
Coolant		N	Y	Y	N	Y	Y	N

■ First choice

Machining Data for MULTI-MASTER Exchangeable Solid Carbide Heads

ISO			Material	Condition	Tensile Strength [N/mm²]	Hardness HB	Material Group No.	Cutting Speed (m/min)			
								IC900/IC608	IC903	IC300	IC08
P	non-alloy steel and cast steel, free cutting steel	<0.25% C	annealed	420	125	1	260-280	260-280	210-220	180-200	
		≥0.25% C	annealed	650	190	2	200-230	200-230	160-180	140-160	
		<0.55% C	quenched and tempered	850	250	3	160-220	160-220	130-180	110-150	
		≥0.55% C	annealed	750	220	4	160-220	160-220	130-180	110-150	
			quenched and tempered	1000	300	5	140-180	140-180	110-140	100-130	
	low alloy and cast steel (less than 5% of alloying elements)		annealed	600	200	6	160-220	160-220	130-180	110-150	
		quenched and tempered		930	275	7	120-180	120-180	100-140	80-130	
				1000	300	8	130-180	130-180	100-140	90-130	
				1200	350	9	140-180	140-180	110-140	100-130	
	high alloyed steel, cast steel and tool steel		annealed	680	200	10	130-180	130-180	100-140	90-130	
			quenched and tempered	1100	325	11	70-120	70-120	60-100	50-80	
	stainless steel and cast steel		ferritic / martensitic	680	200	12	80-160	80-160	60-130	60-110	
			martensitic	820	240	13	60-150	60-150	50-120	40-100	
M	stainless steel and cast steel		austenitic, duplex	600	180	14	60-120	60-120	50-100	40-80	
K	gray cast iron (GG)		ferritic / pearlitic		180	15	80-260	80-250	60-210	60-180	
			pearlitic / martensitic		260	16	130-240	130-240	100-190	90-170	
	nodular cast iron (GGG)		ferritic		160	17	150-280	150-270	120-220	100-200	
			pearlitic		250	18	90-280	90-270	70-220	60-200	
	malleable cast iron		ferritic		130	19	150-280	150-270	120-220	100-200	
			pearlitic		230	20	140-240	140-240	110-190	100-170	
N	aluminum-wrought alloys		not hardenable		60	21				800-900	
			hardenable		100	22				700-800	
	aluminum-cast alloys	≤12% Si	not hardenable		75	23				800-900	
			hardenable		90	24				750-850	
		>12% Si	high temperature		130	25				400-450	
	copper alloys	>1% Pb	free cutting		110	26				500-550	
			brass		90	27				500-550	
		electrolytic copper		100	28				350-380		
	non metallic		duroplastics, fiber plastics		70 Shore D	29					
		hard rubber		55 Shore D	30						
S	high temperature alloys	Fe based	annealed		200	31	20-40	20-40	20-30	10-20	
			hardened		280	32	20-40	20-30	20-20	10-20	
		Ni or Co based	annealed		250	33	20-50	20-30	20-20	20-50	
			hardened		350	34	20-70	20-30	20-20	20-50	
			cast		320	35	30-70	30-80	20-60	20-50	
	titanium alloys		pure	400	190	36	30-70	30-80	20-60	20-30	
			alpha+beta alloys, hardened	1050	310	37	30-70	30-80	20-60	20-30	
H	hardened steel		hardened		55 HRC	38	30-50	30-60	20-40	40-60	
			hardened		60 HRC	39	30-40	30-40	20-30	20-30	
	chilled cast iron		cast		400	40	60-80	70-90	50-60	65-75	
	cast iron		hardened		55 HRC	41	30-50	30-60	20-40	40-45	

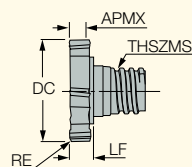
MULTI-MASTER



MULTI-MASTER

MM FM

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



Designation	Dimensions								IC908	Recommended Machining Data f_z (mm/t)
	DC	APMX	RE	NOF ⁽¹⁾	THSZMS	LF	CSP ⁽²⁾			
MM FM100-36R0.2-06T05	10.00	3.60	0.20	6	T05	4.40	0	T-20/3*	●	0.04-0.10
MM FM120-36R0.2-06T05	12.00	3.60	0.20	6	T05	4.40	0	T-20/3*	●	0.04-0.10
MM FM160-48R0.4-06T06	16.00	4.80	0.40	6	T06	5.60	0	T-25/3*	●	0.05-0.10
MM FM200-60R0.4-06T08	20.00	6.00	0.40	6	T08	6.80	0	T-40/3 L*	●	0.05-0.10
MM FM250-75R0.4-06T10	25.00	7.50	0.40	6	T10	8.40	0	T-50/3 L*	●	0.05-0.10

⁽¹⁾ Number of flutes

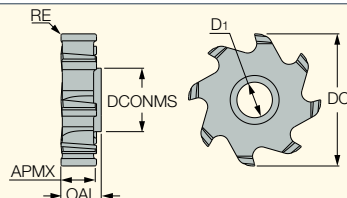
⁽²⁾ 0 - Without coolant supply, 1 - With coolant supply

* Optional, to be ordered separately

T-FACE

SD FM

Interchangeable Solid Carbide
Face Milling Heads



Designation	Dimensions								IC908	Recommended Machining Data f_z (mm/t)
	DC	APMX	NOF ⁽¹⁾	RE	D1	DCONMS	OAL	CSP ⁽²⁾		
SD FM D32-8-R0.4-SP15	31.25	8.00	8	0.40	8.40	15.00	8.00	0	●	0.04-0.15
SD FM D40-10-R0.4SP17	39.25	10.00	10	0.40	9.80	17.00	10.00	0	●	0.04-0.15
SD FM D50-12-R0.4SP19	49.25	12.00	12	0.40	9.80	19.00	14.00	0	●	0.04-0.15

• For shanks, see pages 98-101

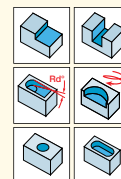
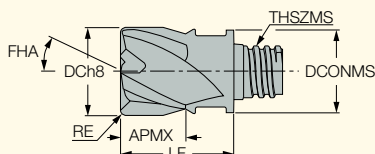
⁽¹⁾ Number of flutes

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

MULTI-MASTER

MM ECU

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



Designation	Dimensions										IC908	Recommended Machining Data f_z (mm/t)
	DC	NOF ⁽¹⁾	APMX	RE	THSZMS	DCONMS	LF	CSP ⁽²⁾	FHA	RMPX ⁽³⁾		
MM ECU077E04R020-3T05	7.70	3	4.00	0.20	T05	7.70	10.00	0	38.0	5.0	●	0.03-0.08
MM ECU097E05R030-3T06	9.70	3	5.00	0.30	T06	9.60	13.00	0	38.0	5.0	●	0.03-0.09
MM ECU117E07R030-3T08	11.70	3	7.00	0.30	T08	11.50	16.50	0	38.0	5.0	●	0.03-0.10
MM ECU157E08R030-3T10	15.70	3	8.00	0.30	T10	15.30	20.50	0	38.0	5.0	●	0.04-0.12
MM ECU197E12R040-3T12	19.70	3	12.00	0.40	T12	18.45	25.50	0	38.0	5.0	●	0.05-0.13

• For shanks, see pages 90-98

• For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 11-12

• Do not apply lubricant to the threaded connection

• For user guide, see pages 13-14

⁽¹⁾ Number of flutes

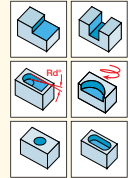
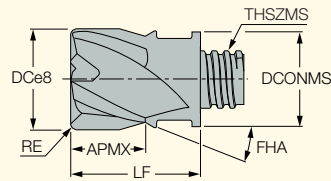
⁽²⁾ 0 - Without coolant supply, 1 - With coolant supply

⁽³⁾ Maximum ramping angle

MULTI-MASTER

MM EC-3

Interchangeable 3 Flute
Solid Carbide Endmill
Heads with 45° Helix



Designation	Dimensions										IC908	Recommended Machining Data f _z (mm/t)
	DC	NOF ⁽²⁾	APMX	RE	THSZMS	LF	FHA	CSP ⁽³⁾	RMPX ⁽⁴⁾	DCONMS		
MM EC080B05R0.4-3T05	8.00	3	5.00	0.40	T05	10.00	45.0	0	5.0	7.70	●	0.03-0.09
MM EC080B05R000-3T05	8.00	3	5.00	0.00	T05	10.00	45.0	0	5.0	7.70	●	0.03-0.09
MM EC100B07R000-3T06	10.00	3	7.00	0.00	T06	13.00	45.0	0	5.0	9.60	●	0.03-0.10
MM EC100B12R000-3T06	10.00	3	12.00	0.00	T06	19.00	45.0	0	5.0	9.60	●	0.03-0.10
MM EC120B09R000-3T08 ⁽¹⁾	12.00	3	9.00	0.00	T08	16.50	45.0	1	5.0	11.70	●	0.04-0.11
MM EC120B09R000-3T08	12.00	3	9.00	0.00	T08	16.50	45.0	0	5.0	11.70	●	0.04-0.11

• For shanks, see pages 90-98 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 11-12

• Do not apply lubricant to the threaded connection • For user guide, see pages 13-14

⁽¹⁾ With coolant holes directed to each flute

⁽²⁾ Number of flutes

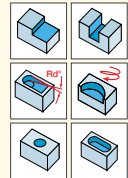
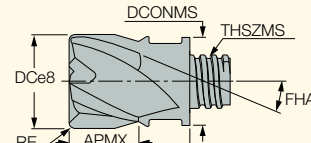
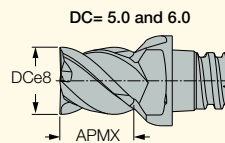
⁽³⁾ 0 - Without coolant supply, 1 - With coolant supply

⁽⁴⁾ Maximum ramping angle

MULTI-MASTER

MM EC-4

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



Designation	Dimensions										IC908	Recommended Machining Data f _z (mm/t)
	DC	RE	FHA	NOF ⁽¹⁾	APMX	CSP ⁽²⁾	THSZMS	DCONMS	LF	RMPX ⁽³⁾		
MM EC050B07R000-4T05	5.00	0.00	45.0	4	7.00	0	T05	8.00	15.00	5.0	●	0.02-0.06
MM EC060B05R000-4T05	6.00	0.00	45.0	4	5.00	0	T05	8.00	10.00	5.0	●	0.03-0.07
MM EC060B04R0.5-4T04	6.00	0.50	45.0	4	4.00	0	T04	5.80	8.50	5.0	●	0.02-0.04
MM EC080B05R000-4T05	8.00	0.00	45.0	4	5.00	0	T05	7.70	10.00	5.0	●	0.03-0.09
MM EC080B09R000-4T05	8.00	0.00	45.0	4	9.00	0	T05	7.70	15.00	5.0	●	0.03-0.09
MM EC080A05R0.5-4T05	8.00	0.50	30.0	4	5.00	0	T05	7.70	10.00	5.0	●	0.03-0.09
MM EC080A09R0.5-4T05	8.00	0.50	30.0	4	9.00	0	T05	7.70	15.00	5.0	●	0.03-0.09
MM EC080B05R0.5-4T05	8.00	0.50	45.0	4	5.00	0	T05	7.70	10.00	5.0	●	0.03-0.09
MM EC080A05R1.0-4T05	8.00	1.00	30.0	4	5.00	0	T05	7.70	10.00	5.0	●	0.03-0.09
MM EC080B05R1.0-4T05	8.00	1.00	45.0	4	5.00	0	T05	7.70	10.00	5.0	●	0.03-0.09
MM EC080A05R1.5-4T05	8.00	1.50	30.0	4	5.00	0	T05	7.70	10.00	5.0	●	0.03-0.09
MM EC080B05R1.5-4T05	8.00	1.50	45.0	4	5.00	0	T05	7.70	10.00	5.0	●	0.03-0.09
MM EC100B07R000-4T06	10.00	0.00	45.0	4	7.00	0	T06	9.60	13.00	5.0	●	0.03-0.10
MM EC100B12R000-4T06	10.00	0.00	45.0	4	12.00	0	T06	9.60	19.00	5.0	●	0.03-0.10
MM EC100A07R0.5-4T06	10.00	0.50	30.0	4	7.00	0	T06	9.60	13.00	5.0	●	0.03-0.10
MM EC100B07R0.5-4T06	10.00	0.50	45.0	4	7.00	0	T06	9.60	13.00	5.0	●	0.03-0.10
MM EC100A07R1.0-4T06	10.00	1.00	30.0	4	7.00	0	T06	9.60	13.00	5.0	●	0.03-0.10
MM EC100B07R1.0-4T06	10.00	1.00	45.0	4	7.00	0	T06	9.60	13.00	5.0	●	0.03-0.10
MM EC120B09R000-4T08	12.00	0.00	45.0	4	9.00	0	T08	11.70	16.50	5.0	●	0.04-0.11
MM EC120B14R000-4T08	12.00	0.00	45.0	4	14.00	0	T08	11.70	23.00	5.0	●	0.04-0.11
MM EC120A09R0.5-4T08	12.00	0.50	30.0	4	9.00	0	T08	11.70	16.50	5.0	●	0.04-0.11
MM EC120B09R0.5-4T08	12.00	0.50	45.0	4	9.00	0	T08	11.70	16.50	5.0	●	0.04-0.11
MM EC120A09R1.0-4T08	12.00	1.00	30.0	4	9.00	0	T08	11.70	16.50	5.0	●	0.04-0.11
MM EC120B09R1.0-4T08	12.00	1.00	45.0	4	9.00	0	T08	11.70	16.50	5.0	●	0.04-0.11
MM EC160B12R000-4T10	16.00	0.00	45.0	4	12.00	0	T10	15.30	20.50	5.0	●	0.05-0.13
MM EC160A12R0.5-4T10	16.00	0.50	30.0	4	12.00	0	T10	15.30	20.50	5.0	●	0.05-0.13
MM EC160B12R0.5-4T10	16.00	0.50	45.0	4	12.00	0	T10	15.30	20.50	5.0	●	0.05-0.13
MM EC160A12R1.0-4T10	16.00	1.00	30.0	4	12.00	0	T10	15.30	20.50	5.0	●	0.05-0.13
MM EC160B12R1.0-4T10	16.00	1.00	45.0	4	12.00	0	T10	15.30	20.50	5.0	●	0.05-0.13
MM EC160A12R1.5-4T10	16.00	1.50	30.0	4	12.00	0	T10	15.30	20.50	5.0	●	0.05-0.13
MM EC160B12R1.5-4T10	16.00	1.50	45.0	4	12.00	0	T10	15.30	20.50	5.0	●	0.05-0.13
MM EC160A12R2.0-4T10	16.00	2.00	30.0	4	12.00	0	T10	15.30	20.50	5.0	●	0.05-0.13
MM EC160B12R2.0-4T10	16.00	2.00	45.0	4	12.00	0	T10	15.30	20.50	5.0	●	0.05-0.13
MM EC160A12R3.0-4T10	16.00	3.00	30.0	4	12.00	0	T10	15.30	20.50	5.0	●	0.05-0.13
MM EC160B12R3.0-4T10	16.00	3.00	45.0	4	12.00	0	T10	15.30	20.50	5.0	●	0.05-0.13
MM EC160A12R4.0-4T10	16.00	4.00	30.0	4	12.00	0	T10	15.30	20.50	5.0	●	0.05-0.13
MM EC160B12R4.0-4T10	16.00	4.00	45.0	4	12.00	0	T10	15.30	20.50	5.0	●	0.05-0.13
MM EC200B15R000-4T12	20.00	0.00	45.0	4	15.00	0	T12	18.45	25.50	5.0	●	0.05-0.13
MM EC200A15R0.5-4T12	20.00	0.50	30.0	4	15.00	0	T12	18.45	25.50	5.0	●	0.05-0.13
MM EC200A15R1.0-4T12	20.00	1.00	30.0	4	15.00	0	T12	18.45	25.50	5.0	●	0.05-0.13
MM EC200A15R2.0-4T12	20.00	2.00	30.0	4	15.00	0	T12	18.45	25.50	5.0	●	0.05-0.13
MM EC200A15R3.0-4T12	20.00	3.00	30.0	4	15.00	0	T12	18.45	25.50	5.0	●	0.05-0.13

• For shanks, see pages 90-98 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 11-12

• Do not apply lubricant to the threaded connection • For user guide, see pages 13-14

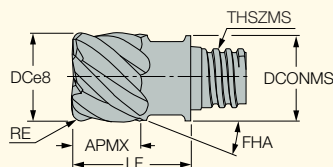
⁽¹⁾ Number of flutes

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

⁽³⁾ Maximum ramping angle

MULTI-MASTER**MM EC-6**

Interchangeable 6 Flute Solid Carbide Endmill Heads with 30°, 45° Helix and Corners with Different Radius



Designation	Dimensions										IC908	Recommended Machining Data f_z (mm/t)
	DC	NOF ⁽¹⁾	APMX	RE	THSZMS	DCONMS	LF	CSP ⁽²⁾	FHA	RMPX ⁽³⁾		
MM EC080A05R0.5-6T05	8.00	6	5.00	0.50	T05	7.70	10.00	0	30.0	6.0	●	0.03-0.09
MM EC080A05R1.0-6T05	8.00	6	5.00	1.00	T05	7.70	10.00	0	30.0	6.0	●	0.03-0.09
MM EC080A05R1.5-6T05	8.00	6	5.00	1.50	T05	7.70	10.00	0	30.0	6.0	●	0.03-0.09
MM EC080B05R0.5-6T05	8.00	6	5.00	0.50	T05	7.70	10.00	0	45.0	3.0	●	0.03-0.10
MM EC080B05R1.0-6T05	8.00	6	5.00	1.00	T05	7.70	10.00	0	45.0	3.0	●	0.03-0.09
MM EC080B05R1.5-6T05	8.00	6	5.00	1.50	T05	7.70	10.00	0	45.0	3.0	●	0.03-0.09
MM EC100A07R0.5-6T06	10.00	6	7.00	0.50	T06	9.60	13.00	0	30.0	6.0	●	0.03-0.10
MM EC100A07R1.0-6T06	10.00	6	7.00	1.00	T06	9.60	13.00	0	30.0	6.0	●	0.03-0.10
MM EC100A07R1.5-6T06	10.00	6	7.00	1.50	T06	9.60	13.00	0	30.0	6.0	●	0.03-0.10
MM EC100B07R0.5-6T06	10.00	6	7.00	0.50	T06	9.60	13.00	0	45.0	3.0	●	0.04-0.10
MM EC100B07R000-6T06	10.00	6	7.00	0.00	T06	9.60	13.00	0	45.0	3.0	●	0.03-0.10
MM EC100B07R1.0-6T06	10.00	6	7.00	1.00	T06	9.60	13.00	0	45.0	3.0	●	0.04-0.10
MM EC100B07R1.5-6T06	10.00	6	7.00	1.50	T06	9.60	13.00	0	45.0	3.0	●	0.03-0.10
MM EC100B12R1.5-6T06	10.00	6	12.00	1.50	T06	9.60	19.00	0	45.0	3.0	●	0.04-0.10
MM EC120A09R0.5-6T08	12.00	6	9.00	0.50	T08	11.70	16.50	0	30.0	6.0	●	0.04-0.11
MM EC120A09R1.0-6T08	12.00	6	9.00	1.00	T08	11.70	16.50	0	30.0	6.0	●	0.04-0.11
MM EC120B09R0.5-6T08	12.00	6	9.00	0.50	T08	11.70	16.50	0	45.0	3.0	●	0.04-0.10
MM EC120B09R000-6T08	12.00	6	9.00	0.00	T08	11.70	16.50	0	45.0	3.0	●	0.04-0.11
MM EC120B09R1.0-6T08	12.00	6	9.00	1.00	T08	11.70	16.50	0	45.0	3.0	●	0.04-0.10
MM EC120B09R1.5-6T08	12.00	6	9.00	1.50	T08	11.70	16.50	0	45.0	3.0	●	0.04-0.11

- For shanks, see pages 90-98
- For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 11-12
- Do not apply lubricant to the threaded connection
- For user guide, see pages 13-14

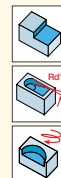
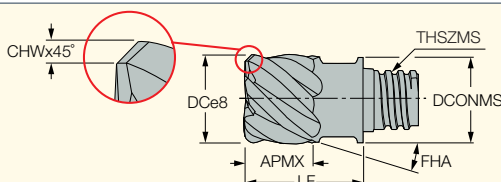
⁽¹⁾ Number of flutes

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

⁽³⁾ Maximum ramping angle

MULTI-MASTER**MM EC-D**

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



Designation	Dimensions											IC903	Recommended Machining Data
	DC	NOF ⁽¹⁾	APMX	CHW	KCH	THSZMS	DCONMS	LF	FHA	RMPX ^{o(2)}	CSP ⁽³⁾		f _z (mm/t)
MM EC080D05C01-6T05	8.00	6	5.00	0.10	45.0	T05	7.70	10.00	50.0	2.0	0	●	0.03-0.10
MM EC100D07C01-6T06	10.00	6	7.00	0.10	45.0	T06	9.60	13.00	50.0	2.0	0	●	0.03-0.10
MM EC120D09C01-6T08	12.00	6	9.00	0.10	45.0	T08	11.70	16.50	50.0	3.0	0	●	0.04-0.11
MM EC160D12C02-8T10	16.00	8	12.00	0.20	45.0	T10	15.30	20.50	50.0	3.0	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	●	0.05-0.13

- For shanks, see pages 90-98
- For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 11-12
- Do not apply lubricant to the threaded connection
- For user guide, see pages 13-14

⁽¹⁾ Number of flutes

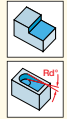
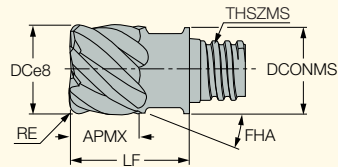
⁽²⁾ Maximum ramping angle

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

MULTI-MASTER

MM EC-8/10

Interchangeable 8, 10 Flute Solid Carbide Endmill Heads with 30°, 45° Helix and Corners with Different Radius



Designation	Dimensions										IC908	Recommended Machining Data f _z (mm/t)
	DC	NOF ⁽²⁾	APMX	RE	THSZMS	DCONMS	LF	FHA	RMPX ⁽³⁾	CSP ⁽⁴⁾		
MM EC160A12R0.5-8T10	16.00	8	12.00	0.50	T10	15.30	20.50	30.0	5.0	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	1	●	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	●	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	●	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	●	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	●	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	●	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	●	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	●	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	●	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	●	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	●	0.05-0.13

- For shanks, see pages 90-98 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 11-12
- Do not apply lubricant to the threaded connection • For user guide, see pages 13-14

⁽¹⁾ With a central coolant hole

⁽²⁾ Number of flutes

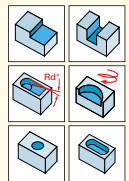
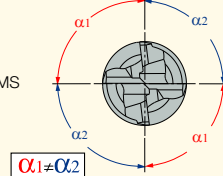
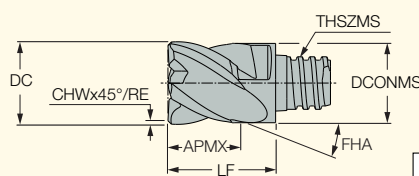
⁽³⁾ Maximum ramping angle

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

MULTI-MASTER

MM EC-CF

Interchangeable Solid Carbide Endmill Heads for CHATTER-FREE Roughing and Finishing Operations



Designation	Dimensions												IC908	Recommended Machining Data f _z (mm/t)
	DC	RE	NOF ⁽²⁾	APMX	THSZMS	DCONMS	LF	FHA	CSP ⁽³⁾	RMPX ⁽⁴⁾	CHW	KCH		
MM EC080E05C3CF-4T05	8.00	-	4	5.00	T05	7.70	10.00	38.0	0	5.0	0.30	45.0	●	0.03-0.09
MM EC080E05R0CF-4T05	8.00	0.00	4	5.00	T05	7.70	10.00	38.0	0	5.0	-	-	●	0.03-0.09
MM EC080E05R05CF-4T05	8.00	0.50	4	5.00	T05	7.70	10.00	38.0	0	5.0	-	-	●	0.03-0.09
MM EC100E07C4CF-4T06	10.00	-	4	7.00	T06	9.60	13.00	38.0	0	5.0	0.40	45.0	●	0.03-0.10
MM EC100E07R00CF-4T06	10.00	0.00	4	7.00	T06	9.60	13.00	38.0	0	5.0	-	-	●	0.03-0.10
MM EC100E07R02CF-4T06	10.00	0.20	4	7.00	T06	9.60	13.00	38.0	0	5.0	-	-	●	0.03-0.10
MM EC100E07R04CF-4T06	10.00	0.40	4	7.00	T06	9.60	13.00	38.0	0	5.0	-	-	●	0.03-0.10
MM EC100E07R05CF-4T06	10.00	0.50	4	7.00	T06	9.60	13.00	38.0	0	5.0	-	-	●	0.03-0.10
MM EC100E07R25CF-4T06	10.00	2.50	4	7.00	T06	9.60	13.00	38.0	0	5.0	-	-	●	0.03-0.10
MM EC120E09C5CF-4T08	12.00	-	4	9.00	T08	11.70	16.50	38.0	0	5.0	0.50	45.0	●	0.04-0.11
MM EC120E09C5CF-4T08I ⁽¹⁾	12.00	-	4	9.00	T08	11.70	16.50	38.0	1	5.0	0.50	45.0	●	0.04-0.11
MM EC120E09R00CF-4T08	12.00	0.00	4	9.00	T08	11.70	16.50	38.0	0	5.0	-	-	●	0.04-0.11
MM EC120E09R02CF-4T08	12.00	0.20	4	9.00	T08	11.70	16.50	38.0	0	5.0	-	-	●	0.04-0.11
MM EC120E09R04CF-4T08	12.00	0.40	4	9.00	T08	11.70	16.50	38.0	0	5.0	-	-	●	0.04-0.11
MM EC120E09R05CF-4T08	12.00	0.50	4	9.00	T08	11.70	16.50	38.0	0	5.0	-	-	●	0.04-0.11
MM EC120E09R15CF-4T08	12.00	1.50	4	9.00	T08	11.70	16.50	38.0	0	5.0	-	-	●	0.04-0.11
MM EC160E12C6CF-4T10	16.00	-	4	12.00	T10	15.30	20.50	38.0	0	5.0	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	5.0	-	-	●	0.05-0.13
MM EC200E15C6CF-4T12	20.00	-	4	15.00	T12	18.45	25.50	38.0	0	5.0	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	5.0	-	-	●	0.05-0.17
MM EC250E28C6CF-12T15	25.00	-	12	28.00	T15	23.90	43.00	38.0	0	5.0	0.60	45.0	●	0.06-0.13
MM EC250E28C6CF-4T15	25.00	-	4	28.00	T15	23.90	43.00	38.0	0	5.0	0.60	45.0	●	0.06-0.17
MM EC250E22C6CF-4T15	25.00	-	4	22.00	T15	23.90	37.00	38.0	0	5.0	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	5.0	-	-	●	0.06-0.17
MM EC250E22R10CF-4T15	25.00	1.00	4	22.00	T15	23.90	37.00	38.0	0	5.0	-	-	●	0.06-0.17
MM EC250E22R20CF-4T15	25.00	2.00	4	22.00	T15	23.90	37.00	38.0	0	5.0	-	-	●	0.06-0.17
MM EC250E22R30CF-4T15	25.00	3.00	4	22.00	T15	23.90	37.00	38.0	0	5.0	-	-	●	0.06-0.17
MM EC320H38C06-4T21	32.00	-	4	38.00	T21	30.00	55.00	38.0	0	5.0	0.60	45.0	●	0.06-0.18

- For shanks, see pages 90-98 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 11-12
- Do not apply lubricant to the threaded connection • For user guide, see pages 13-14

⁽¹⁾ With coolant holes directed to each flute

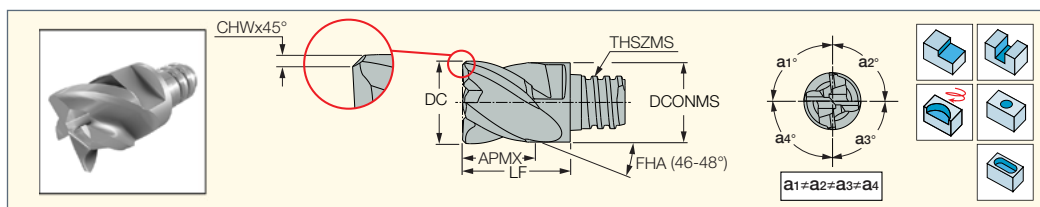
⁽²⁾ Number of flutes

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

⁽⁴⁾ Maximum ramping angle

MULTI-MASTER**MM EC-H-4-CF**

Interchangeable Carbide Endmill
Heads for CHATTER-FREE
Milling Alloyed Steel



Designation	Dimensions									IC908	Recommended Machining Data
	DC	NOF ⁽¹⁾	APMX	THSZMS	DCONMS	LF	CSP ⁽²⁾	CHW	KCH		f _z (mm/t)
MM EC080H05C3-4T05CF	8.00	4	5.00	T05	7.70	10.00	0	0.30	45.0	●	0.03-0.09
MM EC100H07C4-4T06CF	10.00	4	7.00	T06	9.60	13.00	0	0.40	45.0	●	0.03-0.10
MM EC120H09C5-4T08CF	12.00	4	9.00	T08	11.70	16.50	0	0.50	45.0	●	0.04-0.11
MM EC160H12C6-4T10CF	16.00	4	12.00	T10	15.30	20.50	0	0.60	45.0	●	0.05-0.13
MM EC200H15C6-4T12CF	20.00	4	15.00	T12	18.45	25.50	0	0.60	45.0	●	0.05-0.17

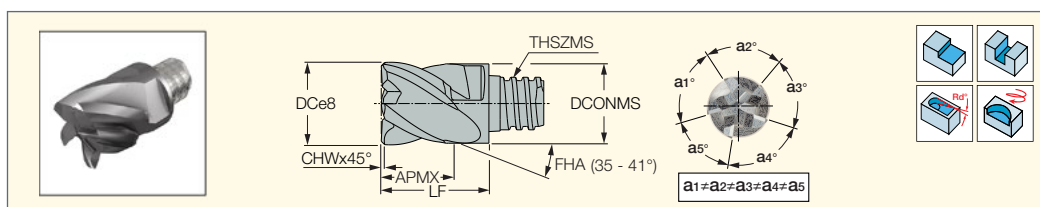
- For shanks, see pages 90-98
- For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 11-12
- Do not apply lubricant to the threaded connection
- For user guide, see pages 13-14

⁽¹⁾ Number of flutes

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

MULTI-MASTER**MM EC-H-5-CF**

Interchangeable Carbide Endmill
Heads for CHATTER-FREE
Milling of High Temperature Alloys
such as Titanium and Inconel



Designation	Dimensions										IC908	Recommended Machining Data f_z (mm/t)
	DC	NOF ⁽¹⁾	APMX	THSZMS	DCONMS	LF	RMPX ⁽²⁾	CSP ⁽³⁾	CHW	KCH		
MM EC080H05C3-5T05CF	8.00	5	5.00	T05	7.70	10.00	5.0	0	0.30	45.0	●	0.03-0.09
MM EC100H07C4-5T06CF	10.00	5	7.00	T06	9.60	13.00	5.0	0	0.40	45.0	●	0.03-0.10
MM EC120H09C5-5T08CF	12.00	5	9.00	T08	11.70	16.50	4.0	0	0.50	45.0	●	0.04-0.11
MM EC160H12C6-5T10CF	16.00	5	12.00	T10	15.30	20.50	4.0	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	0.60	45.0	●	0.05-0.17
MM EC250H22C6-5T15CF	25.00	5	22.00	T15	23.90	37.00	3.0	0	0.60	45.0	●	0.06-0.17

- For shanks, see pages 90-98
- For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 11-12
- Do not apply lubricant to the threaded connection
- For user guide, see pages 13-14

⁽¹⁾ Number of flutes

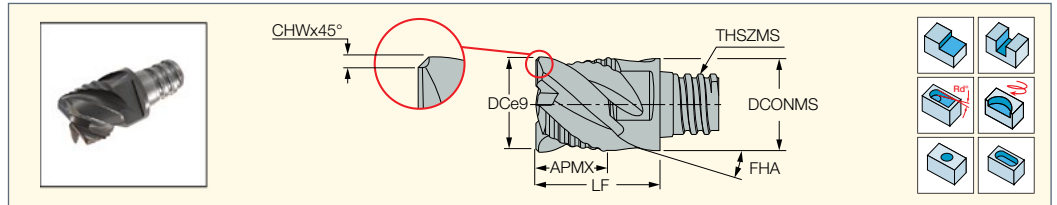
⁽²⁾ Maximum ramping angle

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

MULTI-MASTER

MM EFS

Combination of Interchangeable Solid Carbide Endmill Heads for Roughing and Finishing



Designation	Dimensions											IC908	Recommended Machining Data f_z (mm/t)
	DC	NOF ⁽¹⁾	APMX	THSZMS	DCONMS	LF	CSP ⁽²⁾	FHA	RMPX ^{°(3)}	CHW	KCH		
MM EFS080B05-4T05	8.00	4	5.00	T05	7.70	10.00	0	45.0	5.0	0.30	45.0	●	0.03-0.08
MM EFS100B07-4T06	10.00	4	7.00	T06	9.60	13.00	0	45.0	5.0	0.30	45.0	●	0.03-0.09
MM EFS120B09-4T08	12.00	4	9.00	T08	11.70	16.50	0	45.0	5.0	0.40	45.0	●	0.04-0.10
MM EFS160B12-4T10	16.00	4	12.00	T10	15.30	20.50	0	45.0	5.0	0.60	45.0	●	0.05-0.11
MM EFS200B15-4T12	20.00	4	15.00	T12	18.45	25.50	0	45.0	5.0	0.60	45.0	●	0.05-0.11
MM EFS250B22-4T15	25.00	4	22.00	T15	23.90	37.00	0	45.0	5.0	0.60	45.0	●	0.06-0.11

- For shanks, see pages 90-98
- For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 11-12
- Do not apply lubricant to the threaded connection
- For user guide, see pages 13-14

⁽¹⁾ Number of flutes

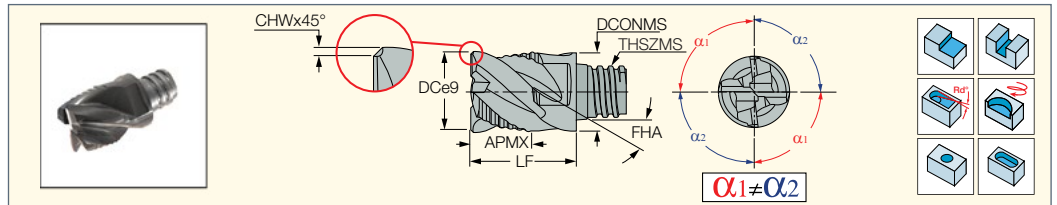
⁽²⁾ 0 - Without coolant supply, 1 - With coolant supply

⁽³⁾ Maximum ramping angle

MULTI-MASTER

MM EFS-CF

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



Designation	Dimensions											IC908	Recommended Machining Data f_z (mm/t)
	DC	NOF ⁽¹⁾	APMX	CHW	KCH	THSZMS	DCONMS	LF	FHA	CSP ⁽²⁾	RMPX ^{°(3)}		
MM EFS060E05-4T05 CF	6.00	4	5.00	0.25	45.0	T05	7.70	10.00	38.0	0	5.0	●	0.03-0.08
MM EFS080E05-4T05 CF	8.00	4	5.00	0.30	45.0	T05	7.70	10.00	38.0	0	5.0	●	0.03-0.08
MM EFS100E07-4T06 CF	10.00	4	7.00	0.40	45.0	T06	9.60	13.00	38.0	0	5.0	●	0.03-0.09
MM EFS120E09-4T08 CF	12.00	4	9.00	0.50	45.0	T08	11.70	16.50	38.0	0	5.0	●	0.04-0.10
MM EFS160E12-4T10 CF	16.00	4	12.00	0.60	45.0	T10	15.30	20.50	38.0	0	5.0	●	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	5.0	●	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	5.0	●	0.06-0.11

- For shanks, see pages 90-98
- For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 11-12
- Do not apply lubricant to the threaded connection
- For user guide, see pages 13-14

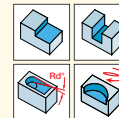
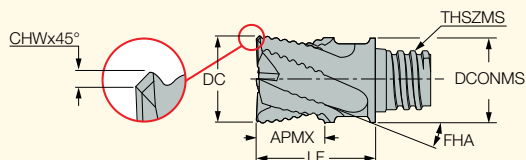
⁽¹⁾ Number of flutes

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

⁽³⁾ Maximum ramping angle

MULTI-MASTER**MM ERS**

Interchangeable Solid Carbide
Rough Milling Heads for
High Metal Removal Rates



Designation	Dimensions											IC908	Recommended Machining Data f _z (mm/t)
	DC	NOF ⁽³⁾	APMX	THSZMS	DCONMS	LF	FHA	RMPX ⁽⁴⁾	CSP ⁽⁵⁾	CHW	KCH		
MM ERS080B05-4T05	8.00	4	5.00	T05	7.70	10.00	45.0	5.0	0	0.25	45.0	●	0.03-0.08
MM ERS080B09-4T05	8.00	4	9.00	T05	7.70	15.00	45.0	5.0	0	0.25	45.0	●	0.03-0.08
MM ERS100B07-4T06	10.00	4	7.00	T06	9.60	13.00	45.0	5.0	0	0.30	45.0	●	0.03-0.09
MM ERS120B09-4T08	12.00	4	9.00	T08	11.70	16.50	45.0	5.0	0	0.35	45.0	●	0.04-0.10
MM ERS120B09-4T08H ⁽¹⁾	12.00	4	9.00	T08	11.70	16.50	45.0	5.0	1	0.35	45.0	●	0.04-0.10
MM ERS120B09-4T08J ⁽²⁾	12.00	4	9.00	T08	11.70	16.50	45.0	5.0	1	0.35	45.0	●	0.04-0.11
MM ERS120B14-4T08	12.00	4	14.00	T08	11.70	23.00	45.0	5.0	0	0.35	45.0	●	0.04-0.10
MM ERS160B12-5T10	16.00	5	12.00	T10	15.30	20.50	45.0	5.0	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	1	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	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	0.50	45.0	●	0.05-0.11

- For shanks, see pages 90-98
- For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 11-12
- Do not apply lubricant to the threaded connection
- For user guide, see pages 13-14

⁽¹⁾ With a central coolant hole

⁽²⁾ With coolant holes directed to each flute

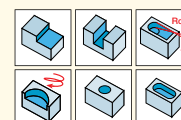
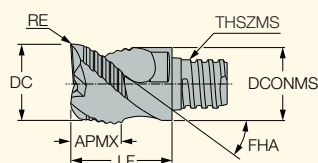
⁽³⁾ Number of flutes

⁽⁴⁾ Maximum ramping angle

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

MULTI-MASTER**MM ERA**

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

**ALUMINUM**

Designation	Dimensions										IC08	Recommended Machining Data f _z (mm/t)
	DC	NOF ⁽¹⁾	APMX	RE	THSZMS	DCONMS	LF	FHA	RMPX ⁽²⁾	CSP ⁽³⁾		
MM ERA080B05R0.2-3T05	8.00	3	5.00	0.20	T05	7.70	10.00	45.0	5.0	0	●	0.03-0.15
MM ERA100B06R0.2-3T06	10.00	3	6.00	0.20	T06	9.60	13.00	45.0	5.0	0	●	0.05-0.20
MM ERA120B08R0.2-3T08	12.00	3	8.00	0.20	T08	11.70	16.50	45.0	5.0	0	●	0.07-0.22
MM ERA160B10R0.2-3T10	16.00	3	10.00	0.20	T10	15.30	20.50	45.0	5.0	0	●	0.07-0.25
MM ERA200B12R0.2-3T12	20.00	3	12.00	0.20	T12	18.45	25.50	45.0	5.0	0	●	0.07-0.25
MM ERA250B19R0.2-3T15	25.00	3	19.00	0.20	T15	23.90	37.00	45.0	5.0	0	●	0.07-0.25

- For shanks, see pages 90-98
- For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 11-12
- Do not apply lubricant to the threaded connection
- For user guide, see pages 13-14

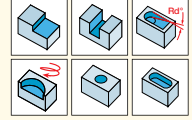
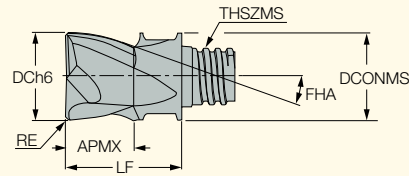
⁽¹⁾ Number of flutes

⁽²⁾ Maximum ramping angle

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

MM EA

Interchangeable Solid Carbide
Slot Drill Milling Heads for
Machining Aluminum


ALUMINUM

Designation	Dimensions										IC08	Recommended Machining Data f _z (mm/t)
	DC	NOF ⁽¹⁾	APMX	RE	THSZMS	DCONMS	LF	CSP ⁽²⁾	FHA	RMPX ⁽³⁾		
MM EA060B03R0.0-3T04	6.00	3	3.20	0.00	T04	5.80	8.50	0	45.0	5.0	●	0.02-0.05
MM EA080B05R0.5-2T05	8.00	2	5.00	0.50	T05	7.70	10.00	0	45.0	5.0	●	0.03-0.09
MM EA080B05R0.5-3T05	8.00	3	5.00	0.50	T05	7.70	10.00	0	45.0	5.0	●	0.03-0.09
MM EA100B07R0.5-2T06	10.00	2	7.00	0.50	T06	9.60	13.00	0	45.0	5.0	●	0.03-0.10
MM EA100B07R1.0-2T06	10.00	2	7.00	1.00	T06	9.60	13.00	0	45.0	5.0	●	0.03-0.10
MM EA100B06R0.5-3T06	10.00	3	6.00	0.50	T06	9.60	13.00	0	45.0	5.0	●	0.03-0.10
MM EA100B06R1.0-3T06	10.00	3	6.00	1.00	T06	9.60	13.00	0	45.0	5.0	●	0.03-0.10
MM EA120B09R0.5-2T08	12.00	2	9.00	0.50	T08	11.70	16.50	0	45.0	5.0	●	0.04-0.11
MM EA120B09R1.0-2T08	12.00	2	9.00	1.00	T08	11.70	16.50	0	45.0	5.0	●	0.04-0.11
MM EA120B08R0.5-3T08	12.00	3	8.00	0.50	T08	11.70	16.50	0	45.0	5.0	●	0.04-0.11
MM EA120B08R1.0-3T08	12.00	3	8.00	1.00	T08	11.70	16.50	0	45.0	5.0	●	0.04-0.11
MM EA120B08R3.0-3T08	12.00	3	8.00	3.00	T08	11.70	16.50	0	45.0	5.0	●	0.04-0.11
MM EA160B10R000-3T10	16.00	3	10.00	0.00	T10	15.30	20.50	0	45.0	5.0	●	0.05-0.13
MM EA160B10R1.0-3T10	16.00	3	10.00	1.00	T10	15.30	20.50	0	45.0	5.0	●	0.05-0.13
MM EA160B10R2.0-3T10	16.00	3	10.00	2.00	T10	15.30	20.50	0	45.0	5.0	●	0.05-0.13
MM EA160B10R3.0-3T10	16.00	3	10.00	3.00	T10	15.30	20.50	0	45.0	5.0	●	0.05-0.13
MM EA160B10R4.0-3T10	16.00	3	10.00	4.00	T10	15.30	20.50	0	45.0	5.0	●	0.05-0.13
MM EA200B12R0.5-3T12	20.00	3	12.00	0.50	T12	18.45	25.50	0	45.0	5.0	●	0.05-0.13
MM EA200B12R1.0-3T12	20.00	3	12.00	1.00	T12	18.45	25.50	0	45.0	5.0	●	0.05-0.13
MM EA200B12R2.0-3T12	20.00	3	12.00	2.00	T12	18.45	25.50	0	45.0	5.0	●	0.05-0.13
MM EA200B12R3.0-3T12	20.00	3	12.00	3.00	T12	18.45	25.50	0	45.0	5.0	●	0.05-0.13
MM EA200B12R4.0-3T12	20.00	3	12.00	4.00	T12	18.45	25.50	0	45.0	5.0	●	0.05-0.13

• For shanks, see pages 90-98

• For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 11-12

• Do not apply lubricant to the threaded connection

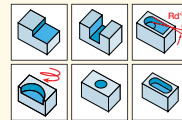
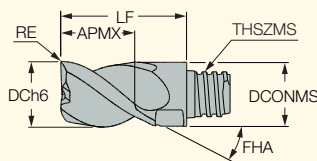
⁽¹⁾ Number of flutes

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

⁽³⁾ Maximum ramping angle

MULTI-MASTER**MM EA-CF**

Interchangeable Solid Carbide
Endmill Heads with Different
Helix for Machining Aluminum

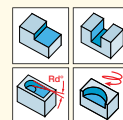
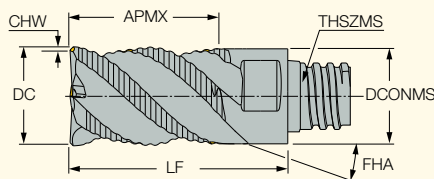
**ALUMINUM**

Designation	Dimensions										IC808	Recommended Machining Data f _z (mm/t)
	DC	NOF ⁽¹⁾	APMX	RE	THSZMS	DCONMS	LF	FHA	CSP ⁽²⁾	RMPX ⁽³⁾		
MM EA080H08R0CF-4T05	8.00	4	8.00	0.00	T05	7.70	15.00	40.0	0	5.0	●	0.03-0.09
MM EA100H10R0CF-4T06	10.00	4	10.00	0.00	T06	9.60	19.00	40.0	0	5.0	●	0.03-0.10
MM EA120H12R0.2CF-3T08	12.00	3	12.00	0.20	T08	11.70	23.00	40.0	0	5.0	●	0.04-0.11
MM EA120H12R0CF-4T08	12.00	4	12.00	0.00	T08	11.70	23.00	40.0	0	5.0	●	0.04-0.11
MM EA160H16R0.0CF-3T10	16.00	3	16.00	0.00	T10	15.30	28.00	40.0	0	5.0	●	0.05-0.13
MM EA160H16R0.2CF-3T10	16.00	3	16.00	0.20	T10	15.30	28.00	40.0	0	5.0	●	0.05-0.13
MM EA160H16R0.5CF-3T10	16.00	3	16.00	0.50	T10	15.30	28.00	40.0	0	5.0	●	0.05-0.13
MM EA160H16R2.5CF-3T10	16.00	3	16.00	2.50	T10	15.30	28.00	40.0	0	5.0	●	0.05-0.13
MM EA160H16R3CF-3T10	16.00	3	16.00	3.00	T10	15.30	28.00	40.0	0	5.0	●	0.05-0.13
MM EA160H16R4CF-3T10	16.00	3	16.00	4.00	T10	15.30	26.00	40.0	0	5.0	●	0.05-0.13
MM EA160H16R0CF-4T10	16.00	4	16.00	0.00	T10	15.30	26.00	40.0	0	5.0	●	0.05-0.13
MM EA200H20R0.0CF-3T12	20.00	3	20.00	0.00	T12	18.45	34.00	40.0	0	5.0	●	0.05-0.13
MM EA200H20R0.2CF-3T12	20.00	3	20.00	0.20	T12	18.45	34.00	40.0	0	5.0	●	0.05-0.13
MM EA200H20R0.5CF-3T12	20.00	3	20.00	0.50	T12	18.45	34.00	40.0	0	5.0	●	0.05-0.13
MM EA200H20R2.5CF-3T12	20.00	3	20.00	2.50	T12	18.45	34.00	40.0	0	5.0	●	0.05-0.13
MM EA200H20R3CF-3T12	20.00	3	20.00	3.00	T12	18.30	34.00	40.0	0	5.0	●	0.05-0.13
MM EA200H20R4CF-3T12	20.00	3	20.00	4.00	T12	18.45	34.00	40.0	0	5.0	●	0.05-0.13
MM EA250H19R0.5-3T15	25.00	3	19.00	0.50	T15	23.90	37.00	40.0	0	5.0	●	0.06-0.16
MM EA250H19R1.0-3T15	25.00	3	19.00	1.00	T15	23.90	37.00	40.0	0	5.0	●	0.06-0.16
MM EA250H19R3.0-3T15	25.00	3	19.00	3.00	T15	23.90	37.00	40.0	0	5.0	●	0.06-0.16
MM EA250H19R4.0-3T15	25.00	3	25.00	4.00	T15	23.90	37.00	40.0	0	5.0	●	0.06-0.16
MM EA320H32R0.2-4T21	32.00	4	32.00	0.20	T21	29.90	55.00	38.0	0	5.0	●	0.06-0.16
MM EA320H32R0.4-4T21	32.00	4	32.00	0.40	T21	29.90	55.00	38.0	0	5.0	●	0.06-0.16
MM EA320H32R0.8-4T21	32.00	4	32.00	0.80	T21	29.90	55.00	38.0	0	5.0	●	0.06-0.16

- For shanks, see pages 90-98
- For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 11-12
- Do not apply lubricant to the threaded connection
- For user guide, see pages 13-14

⁽¹⁾ Number of flutes⁽²⁾ 0 - Without coolant supply, 1 - With coolant supply⁽³⁾ Maximum ramping angle**MULTI-MASTER****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
	DC	NOF ⁽¹⁾	APMX	CHW	KCH	THSZMS	CSP ⁽²⁾	DCONMS	LF	FHA	RMPX ⁽³⁾		f _z (mm/t)
MM ERS080B12-4T05	8.00	4	12.00	0.25	45.0	T05	0	7.70	18.00	46.0	5.0	●	0.03-0.08
MM ERS100B15-4T06	10.00	4	15.00	0.30	45.0	T06	0	9.60	22.00	46.0	5.0	●	0.03-0.09
MM ERS120B18-4T08	12.00	4	18.00	0.35	45.0	T08	0	11.70	27.00	46.0	5.0	●	0.04-0.10
MM ERS160B24-5T10	16.00	5	24.00	0.40	45.0	T10	0	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	0	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	0	23.90	52.50	47.0	3.0	●	0.05-0.11

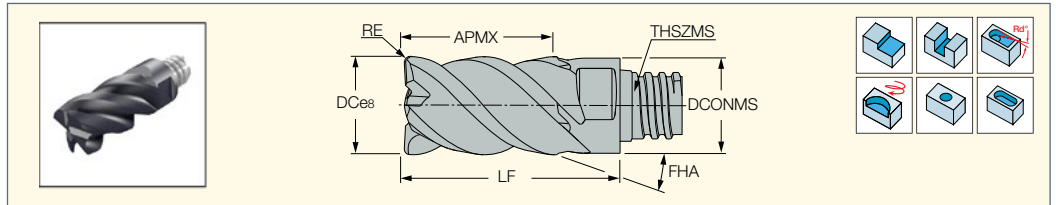
- For shanks, see pages 90-98
- For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 11-12
- Do not apply lubricant to the threaded connection
- For user guide, see pages 13-14

⁽¹⁾ Number of flutes⁽²⁾ 0 - Without coolant supply, 1 - With coolant supply⁽³⁾ Maximum ramping angle

MULTI-MASTER

MM EC-Z4-1.5xD

Interchangeable Solid Carbide
Endmill Heads with 1.5xD Flute
Lengths for CHATTER-FREE
Roughing and Finishing



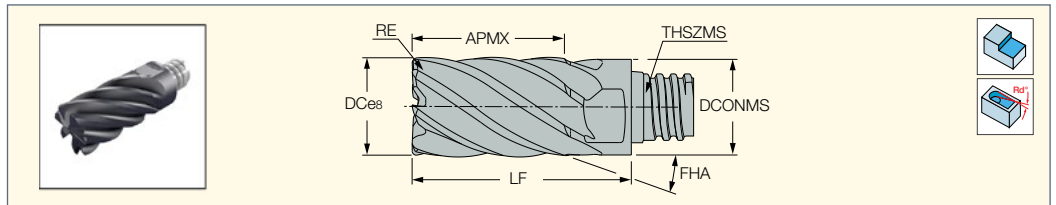
Designation	Dimensions										Tough ↔ Hard		Recommended Machining Data f _z (mm/t)
	DC	NOF ⁽¹⁾	APMX	RE	THSZMS	DCONMS	LF	FHA	CSP ⁽²⁾	RMPX ⁽³⁾	IC908	IC608	
MM EC080B12R000-4T05	8.00	4	12.00	0.00	T05	7.70	18.00	46.5	0	5.0		●	0.03-0.09
MM EC080H12R05CF-4T05	8.00	4	12.00	0.50	T05	7.70	18.00	46.5	0	5.0	●		0.03-0.09
MM EC100B15R000-4T06	10.00	4	15.00	0.00	T06	9.60	22.00	46.5	0	5.0		●	0.03-0.10
MM EC100H15R05CF-4T06	10.00	4	15.00	0.50	T06	9.60	22.00	46.5	0	5.0	●		0.03-0.10
MM EC120B18R000-4T08	12.00	4	18.00	0.00	T08	11.70	27.00	46.5	0	5.0		●	0.04-0.11
MM EC120H18R05CF-4T08	12.00	4	18.00	0.50	T08	11.70	27.00	46.5	0	5.0	●		0.04-0.11
MM EC160B24R000-4T10	16.00	4	24.00	0.00	T10	15.30	33.50	46.5	0	5.0		●	0.05-0.13
MM EC160H24R05CF-4T10	16.00	4	24.00	0.50	T10	15.30	33.50	46.5	0	5.0	●		0.05-0.13
MM EC200B30R000-4T12	20.00	4	30.00	0.00	T12	18.45	41.00	46.5	0	5.0		●	0.05-0.17
MM EC200H30R05CF-4T12	20.00	4	30.00	0.50	T12	18.45	41.00	46.5	0	5.0	●		0.05-0.17
MM EC250B37R000-4T15	25.00	4	37.00	0.00	T15	23.90	52.50	46.5	0	5.0		●	0.06-0.17
MM EC250H37R05CF-4T15	25.00	4	37.00	0.50	T15	23.90	52.50	46.5	0	5.0	●		0.06-0.17

- For shanks, see pages 90-98
- Do not apply lubricant to the threaded connection
- For user guide, see pages 13-14
- ⁽¹⁾ Number of flutes
- ⁽²⁾ 0 - Without coolant supply, 1 - With coolant supply
- ⁽³⁾ Maximum ramping angle

MULTI-MASTER

MM EC-CF-Z7/9-1.5xD

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

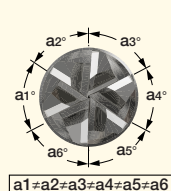
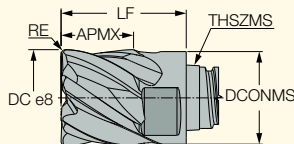


Designation	Dimensions										IC908	Recommended Machining Data f _z (mm/t)
	DC	APMX	RE	NOF ⁽¹⁾	THSZMS	DCONMS	LF	FHA	CSP ⁽²⁾	RMPX ⁽³⁾		
MM EC080H12R05CF-7T05	8.00	12.00	0.50	7	T05	7.70	18.00	36.0	0	3.0	●	0.03-0.10
MM EC100H15R05CF-7T06	10.00	15.00	0.50	7	T06	9.60	22.00	36.0	0	3.0	●	0.04-0.10
MM EC120H18R05CF-7T08	12.00	18.00	0.50	7	T08	11.70	27.00	36.0	0	3.0	●	0.04-0.10
MM EC160H24R08CF-9T10	16.00	24.00	0.80	9	T10	15.30	33.50	36.0	0	1.0	●	0.05-0.10
MM EC200H30R10CF-9T12	20.00	30.00	1.00	9	T12	18.45	41.00	36.0	0	1.0	●	0.05-0.10
MM EC250H37R10CF-9T15	25.00	37.00	1.00	9	T15	23.90	52.50	36.0	0	1.0	●	0.05-0.10

- For shanks, see pages 90-98
- For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 11-12
- Do not apply lubricant to the threaded connection
- For user guide, see pages 13-14
- ⁽¹⁾ Number of flutes
- ⁽²⁾ 0 - Without coolant supply, 1 - With coolant supply
- ⁽³⁾ Maximum ramping angle

MULTI-MASTER**MM ECK-CF**

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



Designation	Dimensions									IC908	Recommended Machining Data
	DC	RE	NOF ⁽¹⁾	APMX	THSZMS	DCONMS	LF	CSP ⁽²⁾	RMPX ^{c(3)}		f _z (mm/t)
MM ECK080H05R04-6T05CF	8.00	0.40	6	5.00	T05	7.70	10.00	0	5.0	●	0.04-0.08
MM ECK100H07R05-6T06CF	10.00	0.50	6	7.00	T06	9.60	13.00	0	5.0	●	0.04-0.08
MM ECK120H09R05-6T08CF	12.00	0.50	6	9.00	T08	11.70	16.50	0	5.0	●	0.04-0.08
MM ECK160H12R08-6T10CF	16.00	0.80	6	12.00	T10	15.30	20.50	0	5.0	●	0.07-0.12
MM ECK160H12R30-6T10CF	16.00	3.00	6	12.00	T10	15.30	20.50	0	5.0	●	0.07-0.12
MM ECK160H12R40-6T10CF	16.00	4.00	6	12.00	T10	15.30	20.50	0	5.0	●	0.07-0.12
MM ECK200H15R10-6T12CF	20.00	1.00	6	15.00	T12	18.45	25.50	0	5.0	●	0.07-0.12
MM ECK200H15R30-6T12CF	20.00	3.00	6	15.00	T12	18.45	25.50	0	5.0	●	0.07-0.12
MM ECK200H15R40-6T12CF	20.00	4.00	6	15.00	T12	18.45	25.50	0	5.0	●	0.07-0.12
MM ECK250H22R10-6T15CF	25.00	1.00	6	22.00	T15	23.90	37.00	0	5.0	●	0.07-0.12
MM ECK250H22R30-6T15CF	25.00	3.00	6	22.00	T15	23.90	37.00	0	5.0	●	0.07-0.12
MM ECK250H22R40-6T15CF	25.00	4.00	6	22.00	T15	23.90	37.00	0	5.0	●	0.07-0.12
MM ECK320H38R4-5T21	32.00	4.00	5	38.00	T21	30.00	55.00	0	5.0	●	0.06-0.18
MM ECK320H38R5-5T21	32.00	5.00	5	38.00	T21	30.00	55.00	0	5.0	●	0.06-0.18

- For shanks, see pages 90-98
- For clamping keys (should be ordered separately), tightening torques and clamping instructions, see pages 11-12
- Do not apply lubricant to the threaded connection
- For user guide, see pages 13-14

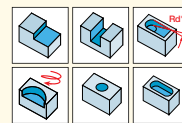
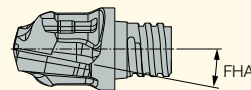
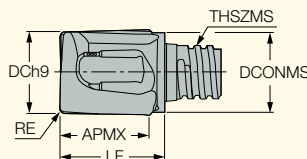
⁽¹⁾ Number of flutes

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

⁽³⁾ Maximum ramping angle

MULTI-MASTER**MM HC**

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

**ECONOMICAL SOLUTION**

Designation	Dimensions											Tough ↔ Hard		Recommended Machining Data f _z (mm/t)
	DC	NOF ⁽¹⁾	APMX	RE	Tm ⁽²⁾	THSZMS	DCONMS	LF	FHA	CSP ⁽³⁾	RMPX ⁽⁴⁾	IC908	IC903	
MM HC078C08R0.2-2T05	7.80	2	7.70	0.20	r0-2.0	T05	7.60	10.00	10.0	0	5.0	●	●	0.03-0.09
MM HC080C08R0.4-2T05	8.00	2	7.70	0.40	r0-2.0	T05	7.60	10.00	10.0	0	5.0	●	●	0.03-0.09
MM HC080C08R1.0-2T05	8.00	2	7.70	1.00	r0-2.0	T05	7.60	10.00	10.0	0	5.0	●	●	0.03-0.09
MM HC080C08R2.0-2T05	8.00	2	7.70	2.00	r0-2.0	T05	7.60	10.00	10.0	0	5.0	●	●	0.03-0.09
MM HC098C10R0.3-2T06	9.80	2	9.00	0.30	r0-3.0	T06	9.50	12.35	10.0	0	5.0	●	●	0.03-0.10
MM HC100C10R0.4-2T06	10.00	2	9.00	0.40	r0-3.0	T06	9.50	12.35	10.0	0	5.0	●	●	0.03-0.10
MM HC100C10R1.0-2T06	10.00	2	9.00	1.00	r0-3.0	T06	9.50	12.35	10.0	0	5.0	●	●	0.03-0.10
MM HC100C10R2.0-2T06	10.00	2	9.00	2.00	r0-3.0	T06	9.50	12.35	10.0	0	5.0	●	●	0.03-0.10
MM HC117C13R0.3-2T08	11.70	2	10.00	0.30	r0-3.0	T08	11.50	14.20	10.0	0	5.0	●	●	0.04-0.11
MM HC120C13R0.4-2T08	12.00	2	10.00	0.40	r0-3.0	T08	11.50	14.20	10.0	0	5.0	●	●	0.04-0.11
MM HC120C13R1.0-2T08	12.00	2	10.00	1.00	r0-3.0	T08	11.50	14.20	10.0	0	5.0	●	●	0.04-0.11
MM HC120C13R2.0-2T08	12.00	2	10.00	2.00	r0-3.0	T08	11.50	14.20	10.0	0	5.0	●	●	0.04-0.11
MM HC140C11R0.4-2T08	14.00	2	11.60	0.40	r0-4.0	T08	11.50	15.05	10.0	0	5.0	●	●	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	5.0	●	●	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	5.0	●	●	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	5.0	●	●	0.05-0.13

- For shanks, see pages 90-98
- For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 11-12
- Do not apply lubricant to the threaded connection
- For user guide, see pages 13-14

⁽¹⁾ Number of flutes

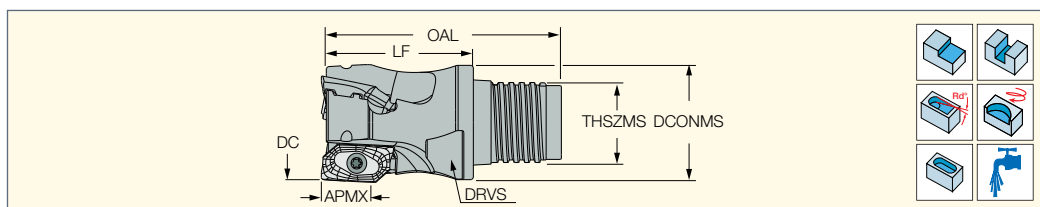
⁽²⁾ Specially tailored radius range, available upon request

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

⁽⁴⁾ Maximum ramping angle

HM90 EAL-MM-15-JHP

90° Endmills with a
MULTI-MASTER Threaded
Adaptation Carrying HM90
AXCR 1505... Inserts for
Machining Aluminum



Designation	DC	APMX	CICT ⁽¹⁾	LF	OAL	DCONMS	RPMX ⁽²⁾	RMPX ⁽³⁾	THSZMS	DRVS ⁽⁴⁾	TQ_3 ⁽⁵⁾	CSP ⁽⁶⁾	kg	MIID ⁽⁷⁾
HM90 EALD100-2MMT15-15JHP	25.40	14.00	2	39.50	56.50	24.00	37500	25.0	T15	20.0	43	1	0.10	HM90 AXCR 150504R-P
HM90 EALD125-3MMT21-15JHP	31.75	14.00	3	39.90	63.00	30.00	31250	13.0	T21	24.0	43	1	0.17	HM90 AXCR 150504R-P

• For adaptation, see page 9

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

⁽²⁾ Maximum RPM

⁽³⁾ Maximum ramping angle

⁽⁴⁾ Torque key size

⁽⁵⁾ Tool tightening torque (Nxm)

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

⁽⁷⁾ Master insert identification

For inserts: HM90 AXCR 1505

For holders, see pages: MM S-A (stepped shanks) (90) • MM S-A (straight shanks) (93) • MM S-A-AV (90) • MM S-A-C# (96) • MM S-A-HSK (96)

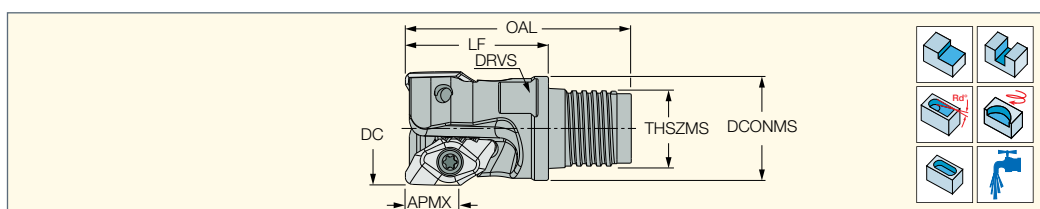
• MM S-B (85° conical shanks) (93) • MM S-D (89° conical shanks) (94) • MM S-ER-H (95) • MM TS-A (92)

Spare Parts

Designation			
HM90 EAL-MM-15-JHP	SR 14-562	BLD T10/S7	SW6-SD

HM90 EAL-MM-16-JHP

90° Endmills with a
MULTI-MASTER Threaded
Adaptation Carrying HM90
APCR 1605... Inserts for
Machining Aluminum



Designation	DC	APMX	LF	OAL	CICT ⁽¹⁾	DCONMS	RPMX ⁽²⁾	RMPX ⁽³⁾	THSZMS	DRVS ⁽⁴⁾	TQ_3 ⁽⁵⁾	CSP ⁽⁶⁾	kg	MIID ⁽⁷⁾
HM90 EALD125-2MMT21-16JHP	31.75	15.50	39.90	63.00	2	29.00	45643	22.4	T21	24.0	43	1	0.16	HM90 APCR 160502R-P
HM90 EALD150-2MMT21-16JHP	38.10	15.50	39.90	63.00	2	30.00	36809	16.9	T21	24.0	43	1	0.20	HM90 APCR 160502R-P

• For adaptation, see page 9

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

⁽²⁾ Maximum RPM

⁽³⁾ Maximum ramping angle

⁽⁴⁾ Torque key size

⁽⁵⁾ Tool tightening torque Nxm (lbfxin)

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

⁽⁷⁾ Master insert identification

For inserts: HM90 APCR 1605..R-P

For holders, see pages: MM S-A (stepped shanks) (90) • MM S-A (straight shanks) (93) • MM S-A-HSK (96) • MM S-B (85° conical shanks) (93)

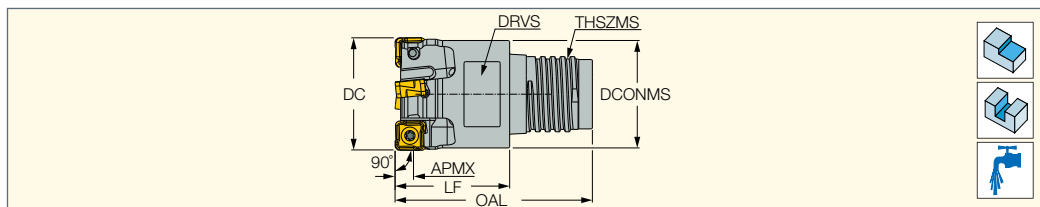
Spare Parts

Designation			
HM90 EAL-MM-16-JHP	SR 14-0180	BLD T20/M7	SW6-T

NEODO
S90° LINE

S890 ESZ-MMT15-R08

Endmills Carrying Double-Sided Square Inserts with 8 Cutting Edges with a MULTI-MASTER threaded adaptation



Designation	DC	APMX	CICT ⁽¹⁾	LF	THSZMS	DCONMS	OAL	CSP ⁽²⁾	DRVS ⁽³⁾	MIID ⁽⁴⁾	
S890 ESZ D25-3-MMT15-R08	25.00	5.00	3	25.00	T15	23.90	42.00	1	20.0	S890 SZMU 0804...	0.10
S890 ESZ D32-4-MMT21-R08	32.00	5.00	4	32.00	T21	30.00	55.10	1	24.0	S890 SZMU 0804...	0.20

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

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

(3) Torque key size

(4) Master insert identification

For inserts: S890 SZMU-0804PN

For holders, see pages: MM S-A (stepped shanks) (90) • MM S-A (straight shanks) (93) • MM S-A-AV (90) • MM S-A-BT (97) • MM S-A-C# (96) • MM S-A-HSK (96)

• MM S-A-SK (96) • MM S-B (85° conical shanks) (93) • MM S-D (89° conical shanks) (94) • MM S-ER-H (95) • MM TS-A (92)

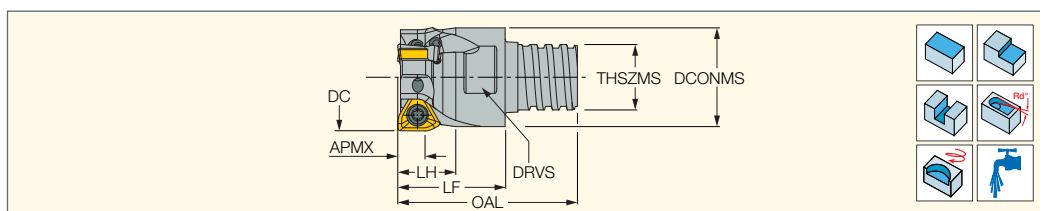
Spare Parts

Designation		
S890 ESZ-MMT15-R08	SR M3X0.5-L7.4 IP9	IP-9/151

HELI3MILL
HM390 LINE

HM390 ETP/C/D-MM-JHP

90° JHP endmill with a MULTI-MASTER threaded adaptation



Designation	DC	APMX	CICT ⁽¹⁾	LF	LH	DCONMS	THSZMS	OAL	DRVS ⁽²⁾	RMPX ⁽³⁾	CSP ⁽⁴⁾	MIID ⁽⁵⁾
HM390 ETPD16-4MMT10-05JHP	16.00	3.50	4	18.00	-	15.50	T10	29.30	13.0	1.5	1	HM390 TPKT 0502
HM390 ETPD20-5MMT12-05JHP	20.00	3.50	5	20.00	-	19.40	T12	33.27	16.0	1.3	1	HM390 TPKT 0502
HM390 ETPD16-2MMT10-07JHP	16.00	5.00	2	16.00	9.7	15.30	T10	27.30	13.0	1.9	1	HM390 TCKT 0703
HM390 ETPD20-3MMT12-07JHP	20.00	5.00	3	20.00	10.8	18.30	T12	33.30	16.0	1.4	1	HM390 TCKT 0703
HM390 ETPD25-4MMT15-07JHP	25.00	5.00	4	25.00	11.5	23.90	T15	42.00	20.0	1.0	1	HM390 TCKT 0703
HM390 ETPD25-3MMT15-10JHP	25.00	8.00	3	30.00	-	24.00	T15	47.00	20.0	2.9	1	HM390 TPKT 1003
HM390 ETPD32-4MMT21-10JHP	32.00	8.00	4	30.00	-	29.00	T21	53.10	24.0	2.1	1	HM390 TPKT 1003
HM390 ETDD40-4MMT21-15JHP	40.00	13.00	4	35.00	24.0	29.00	T21	58.10	24.0	2.1	1	HM390 TDKT 1505

• Insert tightening torque 0.5 N*m

• For adaptation, see page 9

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

(2) Torque key size

(3) Maximum ramping angle

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

(5) Master insert identification

For inserts: HM390 TCKT/CT 0703 • HM390 TDCR 1505 • HM390 TDKT/CT 1505 • HM390 TPCR 1003 • HM390 TPKT/CT 0502 • HM390 TPKT/CT 1003

For holders, see pages: MM S-A (stepped shanks) (90) • MM S-A (straight shanks) (93) • MM S-A-AV (90) • MM S-A-BT (97) • MM S-A-C# (96) • MM S-A-HSK (96)

• MM S-A-N (92) • MM S-A-SK (96) • MM S-B (85° conical shanks) (93) • MM S-D (89° conical shanks) (94) • MM S-ER (95) • MM S-ER-H (95) • MM TS-A (92)

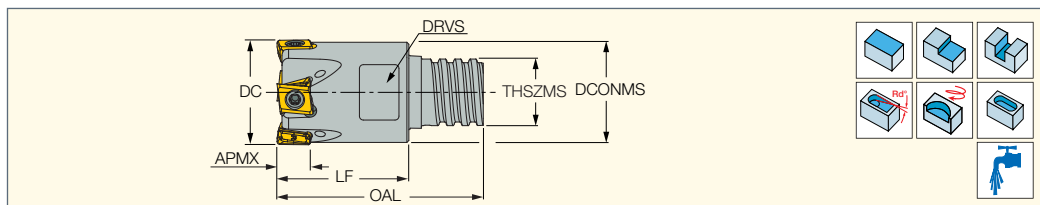
• MM TS2-A (90)

Spare Parts

Designation				
HM390 ETPD16-4MMT10-05JHP	TS 18041/HG	T-6IP/51		
HM390 ETPD20-5MMT12-05JHP	TS 18041/HG	T-6IP/51		
HM390 ETPD16-2MMT10-07JHP	SR M2.5X5-T7-60	T-7/51		
HM390 ETPD20-3MMT12-07JHP	SR M2.5X5-T7-60	T-7/51		
HM390 ETPD25-4MMT15-07JHP	SR M2.5X6-T7-60	T-7/51		
HM390 ETPD25-3MMT15-10JHP	SR 14-562/S		BLD T10/S7	SW6-SD
HM390 ETPD32-4MMT21-10JHP	SR 14-562/S		BLD T10/S7	SW6-SD
HM390 ETDD40-4MMT21-15JHP	SR 10511869		BLD IP20/S7	SW6-T

T490 ELN-MM-05

90° Endmills with
a MULTI-MASTER Threaded
Adaptation Carrying
Tangentially Clamped Inserts



M E T R I C														
Designation	DC	CICT ⁽¹⁾	APMX	DCONMS	LF	OAL	THSZMS	DRVS ⁽²⁾	RMPX ^{o(3)}	CSP ⁽⁴⁾		MIID ⁽⁵⁾		
T490 ELN D10-2-MMT06-05	10.00	2	4.60	9.20	13.00	19.30	T06	8.0	1.3	1	0.01	T490 LNMT 0502PNR-RD	SR M2X0.4-3.8 IP6	T-6IP/51
T490 ELN D12-3-MMT08-05	12.00	3	4.60	11.00	14.50	22.00	T08	10.0	0.9	1	0.01	T490 LNMT 0502PNR-RD	SR M2X0.4-4.8 IP6	T-6IP/51
T490 ELN D16-4-MMT10-05	16.00	4	4.60	15.20	20.00	31.30	T10	13.0	0.6	1	0.03	T490 LNMT 0502PNR-RD	SR M2X0.4-4.8 IP6	T-6IP/51
T490 ELN D20-5-MMT12-05	20.00	5	4.60	19.20	22.00	35.30	T12	16.0	0.5	1	0.05	T490 LNMT 0502PNR-RD	SR M2X0.4-4.8 IP6	T-6IP/51

• Do not apply lubricant to the MULTI-MASTER threaded connection

• For adaptation see page 9

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

⁽²⁾ Torque key size

⁽³⁾ Maximum ramping angle

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

⁽⁵⁾ Master insert identification

For inserts: T490 LNMT 0502

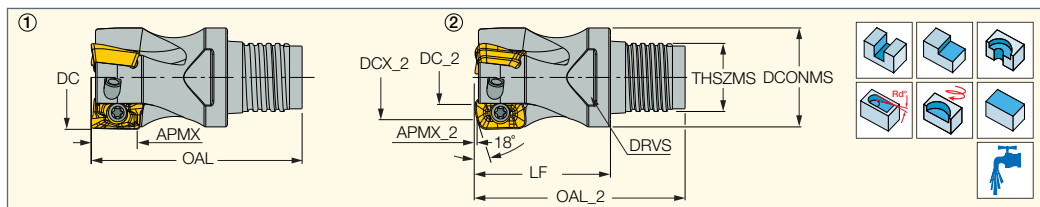
For holders, see pages: MM CAB (98) • MM S-A (stepped shanks) (90) • MM S-A (straight shanks) (93) • MM S-A-AV (90) • MM S-A-BT (97) • MM S-A-C# (96)

• MM S-A-HSK (96) • MM S-A-N (92) • MM S-A-SK (96) • MM S-B (85° conical shanks) (93) • MM S-D (89° conical shanks) (94) • MM S-ER (95) • MM S-ER-H (95)

• MM TS-A (92) • MM TS2-A (90)

HELI2000
JET LINE

HM90 E90AD-MM-15-JHP
90° JHP Endmills with
a MULTI-MASTER Threaded
Adaptation Carrying HELI-2000
and HELI-MILL Inserts



Designation	DC	DC_2	DCX_2	CICT ⁽¹⁾	APMX	APMX_2	OAL	OAL_2	DCONMS	RMPX ^{°(2)}	RMPX ^{°_2}
HM90 E90AD D25-2-MMT15JHP	25.00	12.26	25.00	2	14.30	1.50	56.30	56.04	24.00	11.5	11.5
HM90 E90AD D32-3-MMT21JHP	32.00	19.26	32.50	3	14.30	1.50	63.00	62.74	30.50	5.3	5.3

Designation	LF	RPMX ⁽³⁾	THSZMS	MDN	MDX	TQ_3 ⁽⁴⁾	DRVS ⁽⁵⁾	MIID ⁽⁶⁾	MIID_2 ⁽⁷⁾	CSP ⁽⁸⁾	kg
HM90 E90AD D25-2-MMT15JHP	39.30	41967	T15	37.76	50.00	40	20.0	ADKT 1505PDTR	ADKT 1505R8T-FF	1	0.10
HM90 E90AD D32-3-MMT21JHP	39.90	28924	T21	51.76	64.00	40	24.0	ADKT 1505PDTR	ADKT 1505R8T-FF	1	0.26

• 1- with standard square insert

• 2- with FF (fast feed) insert

• Do not apply lubricant to the MULTI-MASTER threaded connection

• For adaptation see page 9

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

⁽²⁾ Maximum ramping angle

⁽³⁾ The maximum cutting speed (RPM) for the cutting head assembled on the shank should be the lower parameter (RPMX) of either the cutting head or the shank

⁽⁴⁾ Tool tightening torque NxM (lbf·in)

⁽⁵⁾ Torque key size

⁽⁶⁾ Master insert identification

⁽⁷⁾ Master insert identification 2

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

For inserts: ADCR 1505PDR • ADCT 1505PDR-HM • ADKR 1505PDR/L • ADKT 1505-FF • ADKT 1505..R/L-HM • ADKT 1505PD-W • ADKT 1505PDR/L-HM

• ADKT 1505PDTR-76 • ADKT 1505PDTR/L-RM • ADKW (CBN) • ADKW (PCD) • ADMT 1505PDR-HS • HM90 ADCR 1505PDR-P • HM90 ADCT 1505

• HM90 ADCT 1505PDR-CF • HM90 ADKT 1505 • HM90 ADKT 1505PD-W • HM90 ADKW 1505PDR

For holders, see pages: MM S-A (stepped shanks) (90) • MM S-A (straight shanks) (93) • MM S-A-AV (90) • MM S-A-BT (97) • MM S-A-C# (96) • MM S-A-HSK (96)

• MM S-A-SK (96) • MM S-B (85° conical shanks) (93) • MM S-D (89° conical shanks) (94) • MM S-ER-H (95) • MM TS-A (92)

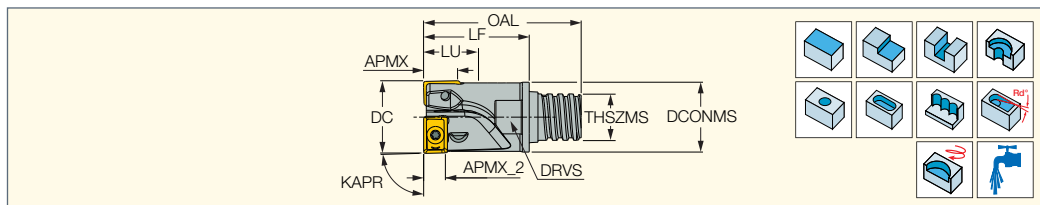
Spare Parts

Designation			
HM90 E90AD-MM-15-JHP	SR 14-544/S	BLD T15/M7	SW6-T-SH

QUICKDMILL

MDR MMT-JHP

Multi-Function Modular Head
for Endmill Cutters with
a MULTI-MASTER
Threaded Adaptation



Designation	DC	APMX	APMX_2	KAPR ⁽¹⁾	CICT ⁽²⁾	LU ⁽³⁾	LF	OAL	THSZMS	DCONMS	DRVS ⁽⁴⁾	RMPX ^{°(5)}	MDN ⁽⁶⁾	MDX ⁽⁷⁾	MIID ⁽⁸⁾	CSP ⁽⁹⁾	kg
MDR D16/.63-2-MMT10-07JHP	16.00	7.30	4.70	90.0	2	12.00	23.00	34.30	T10	15.20	13.0	90.0	16.80	30.80	MDR ANMU 07	1	0.07
MDR D20/.79-2-MMT12-09JHP	20.00	8.90	5.70	90.0	2	15.00	24.70	38.00	T12	18.30	16.0	90.0	21.80	38.20	MDR ANMU 09	1	0.08
MDR D25/.98-2-MMT15-12JHP	25.00	11.50	6.50	90.0	2	18.50	33.00	50.00	T15	23.90	20.0	90.0	26.30	47.60	MDR ANMU 12	1	0.08

• Do not apply lubricant to the MULTI-MASTER threaded connection

• When drilling holes deeper than 5 mm, it is recommended to use the pecking method (G83)

• For adaptation, see page 9

⁽¹⁾ Tool cutting edge angle

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

⁽³⁾ Max.drilling depth

⁽⁴⁾ Torque key size

⁽⁵⁾ Maximum ramping angle

⁽⁶⁾ Minimum diameter to obtain a flat-bottom pocket having no protrusions by use of helical or circular interpolation

⁽⁷⁾ Maximum diameter to obtain a flat-bottom pocket having no protrusions by use of helical or circular interpolation

⁽⁸⁾ Master insert identification

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

For inserts: MDR ANMU PNTR

For holders, see pages: MM CAB-T-T (97) • MM CAB-T-T-W (97) • MM S-A (stepped shanks) (90) • MM S-A (straight shanks) (93) • MM S-A-AV (90) • MM S-A-BT (97)

• MM S-A-C# (96) • MM S-A-HSK (96) • MM S-A-N (92) • MM S-A-SK (96) • MM S-B (85° conical shanks) (93) • MM S-D (89° conical shanks) (94) • MM S-ER (95)

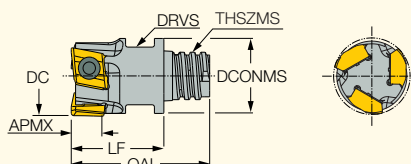
• MM S-ER-H (95) • MM TS-A (92) • MM TS2-A (90)

Spare Parts

Designation		
MDR D16/.63-2-MMT10-07JHP	SR M2.5-L6-D3.25-T7	T-7/51
MDR D20/.79-2-MMT12-09JHP	SR 10508082-HG	T-8/53
MDR D25/.98-2-MMT15-12JHP	SR 14-571	T-10/51

T290 ELN-MM-05

Endmills with a MULTI-MASTER
Adaptation Carrying
Tangentially Clamped Inserts



Designation	DC	CICT ⁽¹⁾	APMX	DCONMS	THSZMS	LF	OAL	DRVS ⁽²⁾	CSP ⁽³⁾	kg		
T290 ELN D10-02-MMT06-05	10.00	2	5.00	9.20	T06	13.40	20.00	8.0	0	0.01	SR 10503833-S	T-7/51
T290 ELN D12-03-MMT08-05	12.00	3	5.00	11.00	T08	16.00	24.00	10.0	0	0.01	SR 10503833	T-7/51
T290 ELN D14-03-MMT08-05	14.00	3	5.00	13.00	T08	16.06	24.00	10.0	0	0.01	SR 10503833	T-7/51
T290 ELN D16-04-MMT10-05	16.00	4	5.00	14.95	T10	19.25	30.55	13.0	0	0.03	SR 10503833	T-7/51

- Do not apply lubricant to the MULTI-MASTER threaded connection
- For adaptation see page 9

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

⁽²⁾ Torque key size

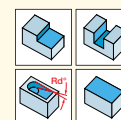
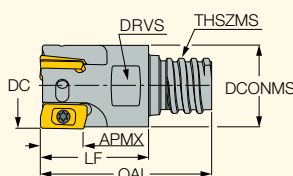
⁽³⁾ 0 - Without coolant supply, 1 - With coolant supply

For inserts: T290 LNMT/LNHT 0502

For holders, see pages: MM CAB (98) • MM CAB-T-T (97) • MM CAB-T-T-W (97) • MM GRT (shanks) (92) • MM S-A (stepped shanks) (90) • MM S-A (straight shanks) (93) • MM S-A-BT (97) • MM S-A-C# (96) • MM S-A-HSK (96) • MM S-A-N (92) • MM S-A-SK (96) • MM S-B (85° conical shanks) (93) • MM S-D (89° conical shanks) (94) • MM S-ER (95) • MM S-ER-H (95) • MM TS-A (92) • MM TS2-A (90)

HELIPLUS
HP E90AN-MM-07

90° Endmills with
a MULTI-MASTER Threaded
Adaptation Carrying HELI-PLUS
HP ANKT 0702.. Inserts



Designation	DC	CICT ⁽¹⁾	OAL	LF	APMX	THSZMS	DCONMS	DRVS ⁽²⁾	RMPX ⁽³⁾	RMPX [°] ₂ ⁽⁴⁾	RMPX ⁽⁵⁾	CSP ⁽⁶⁾	kg		
HP E90AN-D12-2-MMT08	12.00	2	24.45	16.50	7.70	T08	10.60	10.0	2.7	3.5	56970	0	0.01	SR 34-533/L/HG	T-6/51
HP E90AN-D16-3-MMT10	16.00	3	31.75	20.00	7.70	T10	14.95	13.0	3.2	6.0	44860	0	0.03	SR 34-533/L/HG	T-6/51
HP E90AN-D16-4-MMT10	16.00	4	31.75	20.00	7.70	T10	14.95	13.0	3.2	6.0	37630	0	0.03	SR 34-533/L/HG	T-6/51
HP E90AN-D20-5-MMT12	20.00	5	35.30	21.50	7.70	T12	18.40	16.0	2.4	4.5	38890	0	0.05	SR 34-533/L/HG	T-6/51

- Do not apply lubricant to the MULTI-MASTER threaded connection
- For adaptation see page 9

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

⁽²⁾ Torque key size

⁽³⁾ Maximum ramping angle

⁽⁴⁾ Values only for HP ANKT 0702R12T-FF insert

⁽⁵⁾ The maximum cutting speed (RPM) for the cutting head assembled on the shank should be the lower parameter (RMPX) of either the cutting head or the shank

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

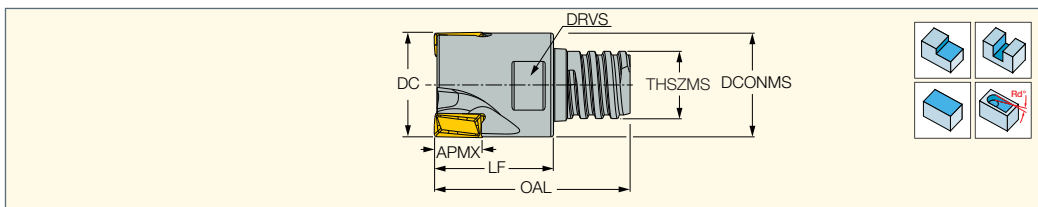
For inserts: HP ANCR 0702PNFR • HP ANKT 0702-FF • HP ANKT/ANCT 0702 PN-R/PNTR • HP ANKW 070204PNTR

For holders, see pages: MM CAB (98) • MM GRT (shanks) (92) • MM S-A (stepped shanks) (90) • MM S-A (straight shanks) (93) • MM S-A-AV (90) • MM S-A-BT (97) • MM S-A-C# (96) • MM S-A-HSK (96) • MM S-A-N (92) • MM S-A-SK (96) • MM S-B (85° conical shanks) (93) • MM S-D (89° conical shanks) (94) • MM S-ER (95) • MM S-ER-H (95) • MM TS-A (92) • MM TS2-A (90)



T490 ELN-MM-08

90° Endmills with
a MULTI-MASTER Threaded
Adaptation Carrying
Tangentially Clamped Inserts



Designation	DC	CICT ⁽¹⁾	APMX	DCONMS	LF	OAL	THSZMS	DRVS ⁽²⁾	RMPX ⁽³⁾	RMPX_2 ⁽⁴⁾	CSP ⁽⁵⁾	kg		
T490 ELN D16-2-MMT10	16.00	2	8.00	14.70	20.00	32.00	T10	13.0	2.0	1.1	1	0.03	SR 10502813-HGSM	IP-7/51
T490 ELN D20-3-MMT12	20.00	3	8.00	18.70	22.00	35.00	T12	16.0	1.7	0.8	1	0.05	SR 10502813-HG-M	IP-7/51

• Do not apply lubricant to the MULTI-MASTER threaded connection

• For adaptation see page 9

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

⁽²⁾ Clamping wrench size

⁽³⁾ Maximum ramping angle - valid only with T490 LNHT 080404PNR-RD inserts

⁽⁴⁾ Maximum ramping angle - valid only with T490 LNMT 080404PNR-RD inserts

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

For inserts: T490 LNAR-P • T490 LNMT/LNHT 0804

For holders, see pages: MM S-A (stepped shanks) (90) • MM S-A (straight shanks) (93) • MM S-A-AV (90) • MM S-A-BT (97) • MM S-A-C# (96) • MM S-A-HSK (96)

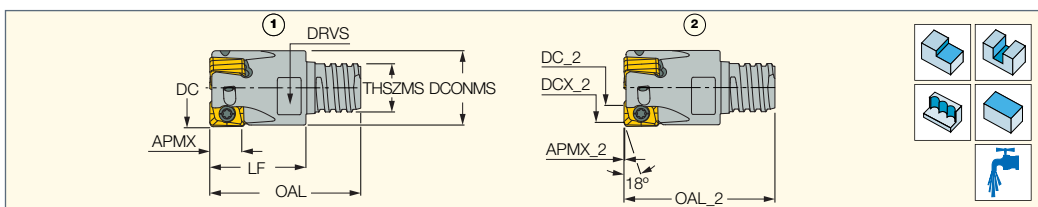
• MM S-A-N (92) • MM S-A-SK (96) • MM S-B (85° conical shanks) (93) • MM S-D (89° conical shanks) (94) • MM S-ER (95) • MM S-ER-H (95) • MM TS-A (92)

• MM TS2-A (90)



H490 E90AX-MM

90° Endmills with
a MULTI-MASTER Threaded
Connection Carrying H490
ANKX/ANCX 090...
Double-Sided Rectangular Inserts



Designation	DC	DCX_2	DC_2	CICT ⁽¹⁾	APMX	APMX_2	AE	LF	RMPX_2	OAL	OAL_2
H490 E90AX D20-3-MMT12-09	20.00	20.10	20.00	3	8.00	0.70	5.5	24.70	2.5	37.30	37.30

Designation	DCONMS	THSZMS	MDN	MDX	MIID ⁽²⁾	MIID_2 ⁽³⁾	DRVS ⁽⁴⁾	CSP ⁽⁵⁾	kg
H490 E90AX D20-3-MMT12-09	18.70	T12	34.70	39.20	H490 ANCX 090404PDR	H490 ANCX 0904...FF	16.0	1	0.05

• Do not apply lubricant to the MULTI-MASTER threaded connection

• For adaptation, see page 9

• 1 - with standard square insert

• 2 - with FF (fast feed) insert

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

⁽²⁾ Master insert identification

⁽³⁾ Master insert identification 2

⁽⁴⁾ Clamping wrench size

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

For inserts: H490 ANCX 0904-FF • H490 ANCX/ANCX-09

For holders, see pages: MM S-A (stepped shanks) (90) • MM S-A (straight shanks) (93) • MM S-A-AV (90) • MM S-A-BT (97) • MM S-A-C# (96) • MM S-A-HSK (96)

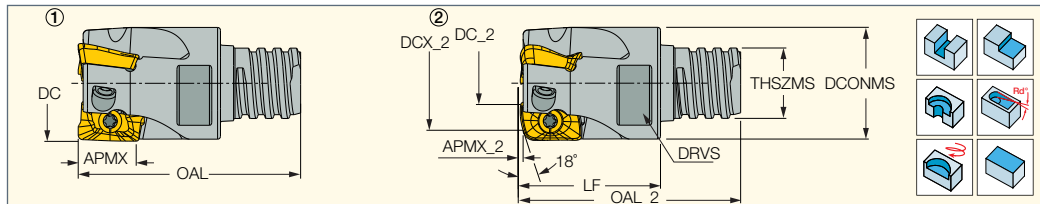
• MM S-A-SK (96) • MM S-B (85° conical shanks) (93) • MM S-D (89° conical shanks) (94) • MM S-ER (95) • MM S-ER-H (95) • MM TS-A (92) • MM TS2-A (90)

Spare Parts

Designation			
H490 E90AX-MM	SR 10508082-HG	BLD T08/M7	SW4-SD

HM90 E90A-MM-10

90° Endmills with
a MULTI-MASTER Threaded
Adaptation Carrying HM90
AP.. 1003... Inserts



Designation	DC	DC_2	DCX_2	CICT ⁽¹⁾	APMX	APMX_2	OAL	OAL_2	RMPX ^{o(2)}	RMPX_2	LF	THSZMS	DRVS ⁽³⁾	MDN	MDX
HM90 E90A-D16-2-MMT10	16.00	7.00	16.10	2	9.80	1.00	34.75	34.38	15.0	15.0	23.00	T10	13.0	23.10	31.20
HM90 E90A-D20-2-MMT12	20.00	11.00	20.10	2	9.80	1.00	38.30	37.93	7.5	7.5	24.60	T12	16.0	31.10	39.20
HM90 E90A-D20-3-MMT12	20.00	11.00	20.10	3	9.80	1.00	38.30	37.93	7.5	7.5	24.60	T12	16.0	31.10	39.20

Designation	MDX	RPMX ⁽⁴⁾	DCONMS	CSP ⁽⁵⁾	kg	MIID ⁽⁶⁾	MIID_2 ⁽⁷⁾		
HM90 E90A-D16-2-MMT10	31.20	66712	15.30	0	0.03	APKT 1003PDR-HM	APKT 1003R8T-FF	SR 34-505/HG	
HM90 E90A-D20-2-MMT12	39.20	55578	19.20	0	0.05	APKT 1003PDR-HM	APKT 1003R8T-FF	SR 34-505/HG	T-8/53
HM90 E90A-D20-3-MMT12	39.20	55578	19.20	0	0.05	APKT 1003PDR-HM	APKT 1003R8T-FF	SR 34-505/HG	

- 1- with standard square insert

- 2- with FF (fast feed) insert

- Do not apply lubricant to the MULTI-MASTER threaded connection

- For adaptation see page 9

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

⁽²⁾ Maximum ramping angle

⁽³⁾ Torque key size

⁽⁴⁾ The maximum cutting speed (RPM) for the cutting head assembled on the shank should be the lower parameter (RPMX) of either the cutting head or the shank

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

⁽⁶⁾ Master insert identification

⁽⁷⁾ Master insert identification 2

For inserts: APCR 1003PDR-P • APCT 1003PDR-HM • APKR 1003PDR • APKT 1003-FF • APKT 1003..R • APKT 1003..TR-RM • APKT 1003PDR-HM

• APKT 1003PDR-HM-CS • APKT 1003PDTR-76 • APKT 1003PDTR/L-RM • HM90 APCR 100304PDR-P/DP • HM90 APCT 1003 • HM90 APKT 1003

• HM90 APKT 1003PD-W • HM90 APKW 1003PDR

For holders, see pages: MM S-A (stepped shanks) (90) • MM S-A (straight shanks) (93) • MM S-A-AV (90) • MM S-A-BT (97) • MM S-A-C# (96) • MM S-A-HSK (96)

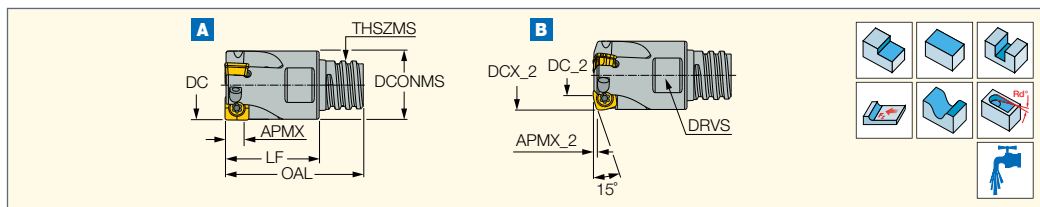
• MM S-A-N (92) • MM S-A-SK (96) • MM S-B (85° conical shanks) (93) • MM S-D (89° conical shanks) (94) • MM S-ER (95) • MM S-ER-H (95) • MM TS-A (92)

• MM TS2-A (90)



E90SO-MM-04

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



Designation	DC	APMX	DC_2	DCX_2	APMX_2	LF	OAL	CICT ⁽¹⁾	DCONMS	THSZMS	DRVS ⁽²⁾	RMPX ^{°(3)}	CSP ⁽⁴⁾	MIID ⁽⁵⁾	MIID_2 ⁽⁶⁾	kg
E90SO D10-2-MMT06-04	10.00	3.50	3.90	10.17	0.50	15.00	21.30	2	9.70	T06	8.0	6.0	1	SOMT 040204 PNTR	SOMT 040208 PNR-FF	0.05
E90SO D12-3-MMT08-04	12.00	3.50	5.90	12.17	0.50	16.00	23.50	3	11.60	T08	10.0	3.0	1	SOMT 040204 PNTR	SOMT 040208 PNR-FF	0.15
E90SO D14-4-MMT08-04	14.00	3.50	7.90	14.17	0.50	16.00	23.50	4	13.60	T08	10.0	2.0	1	SOMT 040204 PNTR	SOMT 040208 PNR-FF	0.01
E90SO D16-5-MMT10-04	16.00	3.50	9.90	16.17	0.50	18.00	29.30	5	15.60	T10	13.0	2.0	1	SOMT 040204 PNTR	SOMT 040208 PNR-FF	0.03
E90SO D20-6-MMT12-04	20.00	3.50	13.90	20.17	0.50	25.00	38.80	6	19.60	T12	16.0	1.0	1	SOMT 040204 PNTR	SOMT 040208 PNR-FF	0.08

• A - with SOMT/CT 0402 insert

• B - with SOMT 0402-FF insert

• Tightening torque 0.5 Nxm

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

⁽²⁾ Torque key size

⁽³⁾ Maximum ramping angle - valid only with SOMT 040208 PNR-FF insert

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

⁽⁵⁾ Master insert identification

⁽⁶⁾ Master insert identification 2

For inserts: SOMT 0402-FF • SOMT/CT 0402

For holders, see pages: MM CAB (98) • MM CAB-T-T (97) • MM CAB-T-T-W (97) • MM GRT (shanks) (92) • MM S-A (stepped shanks) (90) • MM S-A (straight shanks) (93)

• MM S-A-AV (90) • MM S-A-BT (97) • MM S-A-C# (96) • MM S-A-HSK (96) • MM S-A-N (92) • MM S-A-SK (96) • MM S-B (85° conical shanks) (93)

• MM S-D (89° conical shanks) (94) • MM S-ER (95) • MM S-ER-H (95) • MM TS-A (92) • MM TS2-A (90)

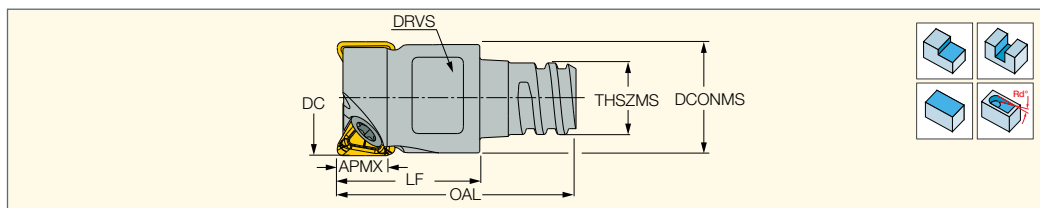
Spare Parts

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



HM390 ETP-MM-04

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



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

• Insert tightening torque 0.5 N*m

• For adaptation, see page 9

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

⁽²⁾ Torque key size

⁽³⁾ Maximum ramping angle

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

For inserts: HM390 TPKR 0401

For holders, see pages: MM CAB (98) • MM CAB-T-T (97) • MM CAB-T-T-W (97) • MM GRT (shanks) (92) • MM S-A (stepped shanks) (90) • MM S-A (straight shanks) (93)

• MM S-A-BT (97) • MM S-A-C# (96) • MM S-A-HSK (96) • MM S-A-N (92) • MM S-A-SK (96) • MM S-B (85° conical shanks) (93) • MM S-D (89° conical shanks) (94)

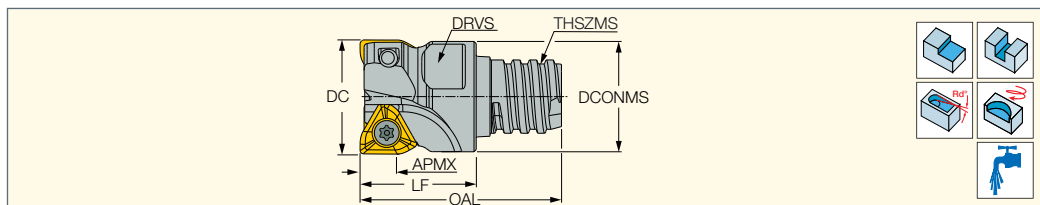
• MM S-ER (95) • MM S-ER-H (95) • MM TS-A (92) • MM TS2-A (90)

Spare Parts

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

HM390 ETC-MM

90° Endmills with
a MULTI-MASTER Threaded
Adaptation Carrying HM390
TCKT 0703 Triangular Inserts



Designation	DC	APMX	CICT ⁽¹⁾	LF	DCONMS	THSZMS	OAL	DRVS ⁽²⁾	RMPX ⁽³⁾	CSP ⁽⁴⁾	kg		
HM390 ETC D16-2-MMT10-07	16.00	5.00	2	16.00	15.20	T10	27.30	13.0	1.9	1	0.02	SR M2.5X5-T7-60	T-7/51
HM390 ETC D20-3-MMT12-07	20.00	5.00	3	20.00	18.30	T12	33.30	16.0	1.4	1	0.04	SR M2.5X5-T7-60	T-7/51
HM390 ETC D25-4-MMT15-07	25.00	5.00	4	25.00	23.90	T15	42.00	20.0	1.0	1	0.08	SR M2.5X6-T7-60	T-7/51

• Insert clamping screw must be lubricated every indexing

• Tightening torque 0.9 Nxm

• For adaptation see page 9

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

⁽²⁾ Torque key size

⁽³⁾ Maximum ramping angle

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

For inserts: HM390 TCKT/CT 0703

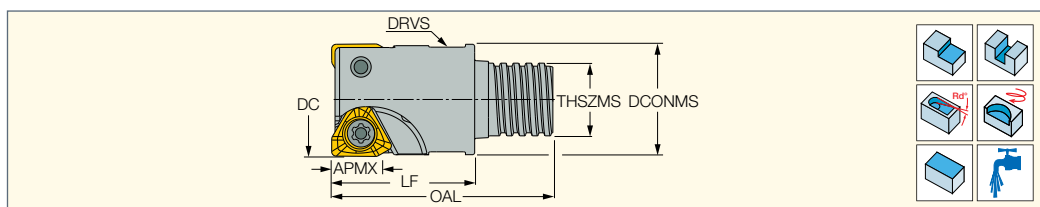
For holders, see pages: MM S-A (stepped shanks) (90) • MM S-A (straight shanks) (93) • MM S-A-AV (90) • MM S-A-BT (97) • MM S-A-C# (96) • MM S-A-HSK (96)

• MM S-A-N (92) • MM S-A-SK (96) • MM S-B (85° conical shanks) (93) • MM S-D (89° conical shanks) (94) • MM S-ER (95) • MM S-ER-H (95) • MM TS-A (92)

• MM TS2-A (90)

HM390 ETP-MM-05

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



Designation	DC	APMX	CICT ⁽¹⁾	LF	DCONMS	THSZMS	OAL	DRVS ⁽²⁾	RMPX ⁽³⁾	CSP ⁽⁴⁾	MIID ⁽⁵⁾	kg
HM390 ETP D10-2-MMT06-05	10.00	3.50	2	15.00	9.60	T06	21.60	8.0	2.0	1	HM390 TPKT 0502PDR	0.01
HM390 ETP D12-3-MMT08-05	12.00	3.50	3	16.00	11.60	T08	24.20	10.0	1.5	1	HM390 TPKT 0502PDR	0.00
HM390 ETP D14-3-MMT08-05	14.00	3.50	3	16.00	13.60	T08	22.90	10.0	1.5	1	HM390 TPKT 0502PDR	0.01
HM390 ETP D16-4-MMT10-05	16.00	3.50	4	18.00	15.60	T10	29.80	13.0	1.5	1	HM390 TPKT 0502PDR	0.03

• Insert tightening torque 0.5 N*m

• For adaptation, see page 9

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

⁽²⁾ Torque key size

⁽³⁾ Maximum ramping angle

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

⁽⁵⁾ Master insert identification

For inserts: HM390 TPKT/CT 0502

For holders, see pages: MM CAB (98) • MM CAB-T-T (97) • MM CAB-T-T-W (97) • MM GRT (shanks) (92) • MM S-A (stepped shanks) (90) • MM S-A (straight shanks) (93)

• MM S-A-BT (97) • MM S-A-C# (96) • MM S-A-HSK (96) • MM S-A-N (92) • MM S-A-SK (96) • MM S-B (85° conical shanks) (93) • MM S-D (89° conical shanks) (94)

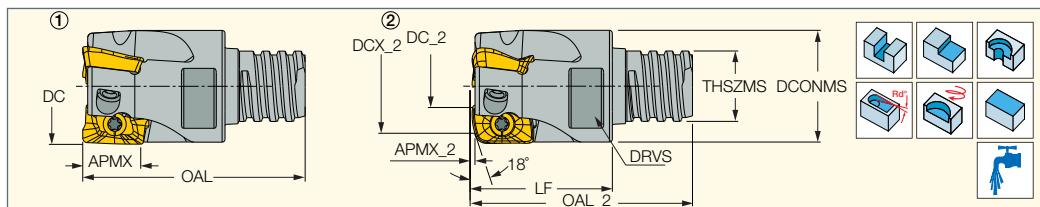
• MM S-ER (95) • MM S-ER-H (95) • MM TS-A (92) • MM TS2-A (90)

Spare Parts

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

HELI2000
JET LINE

HM90 E90A-MM-10-JHP
90° JHP Endmills with
a MULTI-MASTER Threaded
Adaptation Carrying HELI-2000
and HELI-MILL Inserts



Designation	DC	DC_2	DCX_2	CICT ⁽¹⁾	APMX	APMX_2	OAL	OAL_2	RMPX ^{o(2)}	RMPX ^o _2	MDN
HM90 E90A D16-2-MMT10-JHP	16.00	7.00	16.10	2	9.80	1.00	34.80	35.17	15.0	15.0	23.10
HM90 E90A D20-3-MMT12-JHP	20.00	11.00	20.10	3	9.80	1.00	38.50	38.87	7.5	7.5	31.10
HM90 E90A D25-4-MMT15-JHP	25.00	16.00	25.10	4	9.80	1.00	47.00	47.37	7.5	7.5	41.10
HM90 E90A D32-5-MMT21-JHP	32.00	23.00	32.10	5	9.80	1.00	57.95	58.32	3.0	3.0	55.10

Designation	MDX	LF	DCONMS	THSZMS	RPMX ⁽³⁾	DRVS ⁽⁴⁾	TQ_3 ⁽⁵⁾	CSP ⁽⁶⁾		MIID ⁽⁷⁾	MIID_2 ⁽⁸⁾
HM90 E90A D16-2-MMT10-JHP	31.20	23.40	15.60	T10	66710	13.0	28	1	0.10	APKT 1003PDR-HM	APKT 1003R8T-FF
HM90 E90A D20-3-MMT12-JHP	39.20	25.50	19.70	T12	55575	16.0	28	1	0.15	APKT 1003PDR-HM	APKT 1003R8T-FF
HM90 E90A D25-4-MMT15-JHP	49.20	30.00	24.70	T15	47510	20.0	40	1	0.05	APKT 1003PDR-HM	APKT 1003R8T-FF
HM90 E90A D32-5-MMT21-JHP	63.20	34.85	30.10	T21	35610	24.0	110	1	0.20	APKT 1003PDR-HM	APKT 1003R8T-FF

- 1- with standard square insert
- 2- with FF (fast feed) insert

• Do not apply lubricant to the MULTI-MASTER threaded connection

• For adaptation see page 9

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

⁽²⁾ Maximum ramping angle

⁽³⁾ The maximum cutting speed (RPM) for the cutting head assembled on the shank should be the lower parameter (RPMX) of either the cutting head or the shank

⁽⁴⁾ Torque key size

⁽⁵⁾ Tool tightening torque Nxm (lbfxin)

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

⁽⁷⁾ Master insert identification

⁽⁸⁾ Master insert identification 2

For inserts: APCR 1003PDR-P • APCT 1003PDR-HM • APKR 1003PDR • APKT 1003-FF • APKT 1003..R • APKT 1003..TR-RM • APKT 1003PDR-HM

• APKT 1003PDR-HM-CS • APKT 1003PDTR-76 • APKT 1003PDTR/L-RM • APKW 100304 PDR (PCD) • HM90 APCR 100304PDR-P/DP • HM90 APCT 1003

• HM90 APKT 1003 • HM90 APKT 1003PD-W • HM90 APKW 1003PDR

For holders, see pages: MM S-A (stepped shanks) (90) • MM S-A-AV (90) • MM S-A-BT (97) • MM S-B (85° conical shanks) (93) • MM S-A (straight shanks) (93)

• MM S-D (89° conical shanks) (94) • MM S-ER (95) • MM S-ER-H (95) • MM TS-A (92) • MM TS2-A (90) • MM S-A-N (92) • MM S-A-HSK (96) • MM S-A-SK (96)

• MM S-A-C# (96)

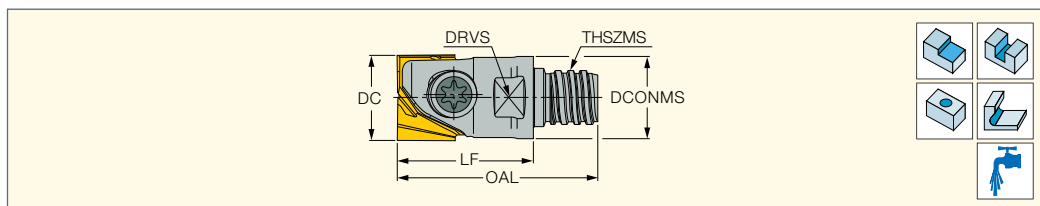
Spare Parts

Designation			
HM90 E90A-MM-10-JHP	SR 34-505/HG	BLD T08/M7	SW4-SD

BALLPLUS

HCE-MM

Multifunction Endmills with
a MULTI-MASTER Threaded
Adaptation that Mounts
Several Insert Geometries



Designation	DC	OAL	LF	APMX	THSZMS	DCONMS	DRVS ⁽¹⁾	TQ ⁽²⁾	CSP ⁽³⁾				
HCE D12/.50-MMT08	12.00	28.00	20.00	8.10	T08	11.50	10.0	6.0	1	0.01	SR 34-540	BLD T15/S7	SW6-T
HCE D16/.62-MMT10	16.00	36.75	25.00	10.30	T10	15.20	13.0	7.8	1	0.03	SR 10503579	BLD T20/S7	SW6-T
HCE D20/.75-MMT12	20.00	48.80	35.40	12.80	T12	18.50	15.0	12.0	1	0.06	SR 1052964	BLD T25/S7	SW6-T

• For undercutting, use HTR inserts only

• The dimensions are for HCC inserts with RE=0.5 mm

• Do not apply lubricant to the MULTI-MASTER threaded connection

• For adaptation options, see page 9

⁽¹⁾ Torque key size

⁽²⁾ Screw Tightening Torque

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

For inserts: HCC-QF • HLB-QF

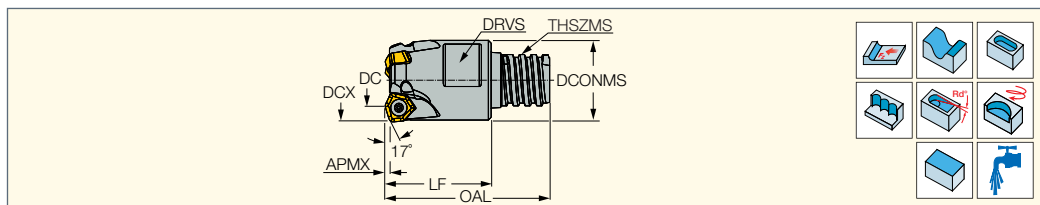
For holders, see pages: MM CAB (98) • MM GRT (shanks) (92) • MM S-A (stepped shanks) (90) • MM S-A (straight shanks) (93) • MM S-A-AV (90) • MM S-A-BT (97)

• MM S-A-C# (96) • MM S-A-HSK (96) • MM S-A-N (92) • MM S-A-SK (96) • MM S-B (85° conical shanks) (93) • MM S-D (89° conical shanks) (94) • MM S-ER (95)

• MM S-ER-H (95) • MM TS-A (92) • MM TS2-A (90)

FF EWX-MM

Fast Feed Endmills with
MULTI-MASTER Threaded
Connection That Mount
Double-Sided Inserts
with 6 Cutting Edges



Designation	DCX ⁽¹⁾	DC	APMX	CICT ⁽²⁾	THSZMS	LF	OAL	DCONMS	DRVS ⁽³⁾	RMPX ⁽⁴⁾	MDN ⁽⁵⁾	MDX ⁽⁶⁾	CSP ⁽⁷⁾	MIID ⁽⁸⁾	kg
FF EWX D16-2-MMT10-04	16.00	8.60	0.80	2	T10	19.50	30.81	15.20	12.0	5.0	24.60	31.00	1	H600 WXCUC 040310HP	0.02
FF EWX D20-3-MMT12-04	20.00	12.60	0.80	3	T12	25.00	38.80	18.80	15.0	4.8	32.60	39.00	1	H600 WXCUC 040310HP	0.05
FF EWX D25-4-MMT15-04	25.00	17.60	0.80	4	T15	30.00	47.00	23.90	19.0	3.3	42.60	49.00	1	H600 WXCUC 040310HP	0.10
FF EWX D25-3-MMT15-05	25.00	15.00	1.00	3	T15	30.00	47.00	23.90	19.0	5.0	40.00	49.00	1	H600 WXCUC 05T312T	0.09

- Do not apply lubricant to the MULTI-MASTER threaded connection
- To generate a straight surface without cusps, the width of cut must not exceed DC
- For adaptation options, see page 9

⁽¹⁾ Cutting diameter maximum

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

⁽³⁾ Width across flats (wrench should be ordered separately)

⁽⁴⁾ Maximum ramping angle

⁽⁵⁾ Machinable diameter minimum for interpolation

⁽⁶⁾ Machinable diameter maximum for interpolation

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

⁽⁸⁾ Master insert identification

For inserts: H600 WXCUC

For holders, see pages: MM CAB-T-T (97) • MM CAB-T-T-W (97) • MM S-A (stepped shanks) (90) • MM S-A (straight shanks) (93) • MM S-A-AV (90) • MM S-A-BT (97)

• MM S-A-C# (96) • MM S-A-HSK (96) • MM S-A-N (92) • MM S-A-SK (96) • MM S-B (85° conical shanks) (93) • MM S-D (89° conical shanks) (94) • MM S-ER (95)

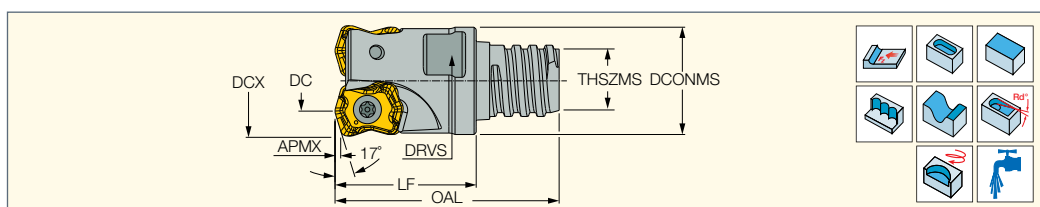
• MM S-ER-H (95) • MM TS-A (92) • MM TS2-A (90)

Spare Parts

Designation		
FF EWX D16-2-MMT10-04	SR M2.5X6-T7-60	T-7/51
FF EWX D20-3-MMT12-04	SR M2.5X6-T7-60	T-7/51
FF EWX D25-4-MMT15-04	SR M2.5X6-T7-60	T-7/51
FF EWX D25-3-MMT15-05	SR 10508600	T-9/51

FFX4 ED-MM

Endmills with MULTI-MASTER
Adaptation that Mount
Small "Bone Shaped"
Inserts with 4 Cutting Edges
for Fast Feed Milling



Designation	DCX ⁽¹⁾	DC	CICT ⁽²⁾	APMXAE ⁽³⁾	THSZMS	LF	OAL	DCONMS	RMPX ⁽⁴⁾	MDN ⁽⁵⁾	MDX ⁽⁶⁾	DRVS ⁽⁷⁾	MIID ⁽⁸⁾	TQ ⁽⁹⁾	CSP ⁽¹⁰⁾		
FFX4 ED16/.63-2-MMT10-04	16.00	8.60	2	0.80	3.7	T10	20.00	31.30	15.20	4.3	24.60	31.00	13.0	FFX4 XNMU 040310T	0.9	1	0.02
FFX4 ED20/.78-3-MMT12-04	20.00	12.60	3	0.80	3.7	T12	25.00	38.30	18.80	2.7	32.60	39.00	15.0	FFX4 XNMU 040310T	0.9	1	0.04
FFX4 ED25/.98-4-MMT15-04	25.00	17.60	4	0.80	3.7	T15	30.00	47.00	24.00	1.8	42.60	49.00	19.0	FFX4 XNMU 040310T	0.9	1	0.14
FFX4 ED32/1.26-5-MMT21-04	32.00	24.60	5	0.80	3.7	T21	35.00	58.10	29.00	1.2	56.60	63.00	24.0	FFX4 XNMU 040310T	0.9	1	0.19
FFX4 ED040-6-MMT21-04	40.00	32.60	6	0.80	3.7	T21	40.00	63.10	30.00	0.9	72.60	79.00	24.0	FFX4 XNMU 040310T	0.9	1	0.27

- To generate a straight surface without cusps, the width of cut must not exceed DC

- Radius for programming: for insert XNMU 1.8 mm, for insert XNMW 1.72 mm

⁽¹⁾ Cutting diameter maximum

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

⁽³⁾ Maximum plunging width

⁽⁴⁾ Maximum ramping angle

⁽⁵⁾ Machinable diameter minimum for interpolation

⁽⁶⁾ Machinable diameter maximum for interpolation

⁽⁷⁾ Torque key size

⁽⁸⁾ Master insert identification

⁽⁹⁾ Recommended tightening torque (N*m) for insert screw

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

For inserts: FFX4 XNMU/W-04

For holders, see pages: MM CAB-T-T (97) • MM CAB-T-T-W (97) • MM S-A (stepped shanks) (90) • MM S-A (straight shanks) (93) • MM S-A-AV (90) • MM S-A-BT (97)

• MM S-A-C# (96) • MM S-A-HSK (96) • MM S-A-N (92) • MM S-A-SK (96) • MM S-B (85° conical shanks) (93) • MM S-D (89° conical shanks) (94) • MM S-ER (95)

• MM S-ER-H (95) • MM TS-A (92) • MM TS2-A (90)

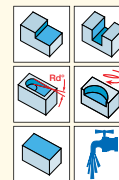
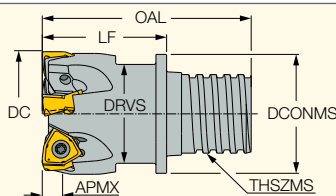
Spare Parts

Designation		
FFX4 ED-MM	SR M2.5X6-T7-60	T-7/51



H690 EWN-MM-04

90° Endmills with
a MULTI-MASTER Threaded
Connection Carrying H690
WNMU 0403 Double-
Sided Trigonal Inserts



Designation	DC	APMX	CICT ⁽¹⁾	LF	DCONMS	THSZMS	OAL	DRVS ⁽²⁾	RMPX ⁽³⁾	TQ_3 ⁽⁴⁾	CSP ⁽⁵⁾	
H690 EWN D20-3-MMT12-R04	20.00	4.00	3	20.00	18.30	T12	33.00	16.0	1.5	28	1	0.07
H690 EWN D25-5-MMT15-R04	25.00	4.00	5	25.00	23.90	T15	42.00	20.0	1.1	40	1	0.12

- Insert clamping screw must be lubricated every indexing
- For adaptation see page 9
- (1) Number of inserts (or edges for solid tool)
- (2) Clamping wrench size
- (3) Maximum ramping angle
- (4) Tool tightening torque (Nxm)
- (5) 0 - Without coolant supply, 1 - With coolant supply

For inserts: H690 WNMU 0403

For holders, see pages: MM S-A (stepped shanks) (90) • MM S-A (straight shanks) (93) • MM S-A-AV (90) • MM S-A-BT (97) • MM S-A-C# (96) • MM S-A-HSK (96)
• MM S-A-SK (96) • MM S-B (85° conical shanks) (93) • MM S-D (89° conical shanks) (94) • MM S-ER (95) • MM S-ER-H (95) • MM TS-A (92) • MM TS2-A (90)

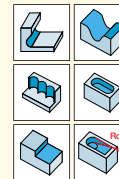
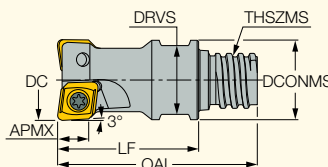
Spare Parts

Designation		
H690 EWN-MM-04	SR M2.5X6-T7-60	T-7/51

TORMILL

E93CN-MM-07

Bull Nose Endmills with
MULTI-MASTER Threaded
Adaptation Carrying
Toroidal Inserts



Designation	DC ⁽¹⁾	APMX	CICT ⁽²⁾	LF	OAL	RMPX ⁽³⁾	THSZMS	DCONMS	DRVS ⁽⁴⁾	MIID ⁽⁵⁾	CSP ⁽⁶⁾			
E93CN D16-2-MMT10-07	16.00	5.00	2	27.00	38.64	4.0	T10	15.00	13.0	CNHT 070315	0	0.03	SR 34-505/LHG	T-8/53
E93CN D20-3-MMT12-07	20.00	5.00	3	27.00	40.36	3.0	T12	19.00	16.0	CNHT 070315	0	0.05	SR 34-505/LHG	T-8/53

- Do not apply lubricant to the MULTI-MASTER threaded connection
- For adaptation options, see page 9
- (1) The specified diameter is for inserts with a 1.0 mm radius. For other radii options, see diameter change in the table below
- (2) Number of inserts (or edges for solid tool)
- (3) Maximum ramping angle
- (4) Clamping wrench size
- (5) Master insert identification
- (6) 0 - Without coolant supply, 1 - With coolant supply

For inserts: CNHT/MT 07

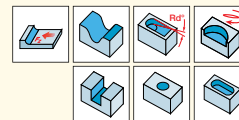
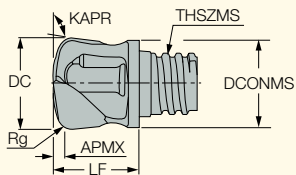
For holders, see pages: MM S-A (stepped shanks) (90) • MM S-A (straight shanks) (93) • MM S-A-AV (90) • MM S-A-BT (97) • MM S-A-C# (96) • MM S-A-HSK (96)
• MM S-A-N (92) • MM S-A-SK (96) • MM S-B (85° conical shanks) (93) • MM S-D (89° conical shanks) (94) • MM S-ER (95) • MM S-ER-H (95) • MM TS-A (92)
• MM TS2-A (90)

Diameter Change According to Insert Radius

R	0.5	1.0	1.5
ΔD	+0.07	0.0	-0.07

MM FF

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


ECONOMICAL SOLUTION

Designation	Dimensions										Tough ↔ Hard		Recommended Machining Data f _z (mm/t)
	DC	NOF ⁽¹⁾	APMX	Rg ⁽²⁾	THSZMS	DCONMS	LF	CSP ⁽³⁾	KAPR ⁽⁴⁾	RMPX ⁽⁵⁾	IC908	IC903	
MM FF100R1.5-L12-2T06	10.00	2	0.60	2.00	T06	9.60	12.50	0	97.0	7.0	●		0.30-0.60
MM FF120R2.0-2T08	12.00	2	0.68	2.50	T08	11.50	11.10	0	97.0	7.0	●	●	0.50-1.00
MM FF500R08-L59-2T08	12.70	2	0.68	2.50	T08	12.20	15.00	0	95.0	7.0	●		0.50-1.00
MM FF160R2.0-2T10	16.00	2	1.10	3.00	T10	15.20	13.50	0	97.0	7.0	●		0.55-1.10
MM FF200R2.0-2T12	20.00	2	1.50	3.40	T12	18.45	17.40	0	95.0	7.0	●		0.75-1.50

- For shanks, see pages 90-98
- For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 11-12
- Do not apply lubricant to the threaded connection
- For user guide, see pages 13-14

⁽¹⁾ Number of flutes

⁽²⁾ Radius for programming

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

⁽⁴⁾ Tool cutting edge angle

⁽⁵⁾ Maximum ramping angle

Machining Example:

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

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

Workpiece material: SAE 4340 HRc 28

Plunging

a_p = 2 mm

V_c = 80 m/min

F = 0.24 m/min

Milling

a_p = 0.7 mm

a_e = 8 mm

V_c = 150 m/min

F_z = 1 mm/tooth

V_f = 7960 mm/min

Machining Example:

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

Milling head: MM FF160R2.0-2T10 908

Workpiece material: P20 HRc 52

Milling

a_p = 0.2 mm

a_e = 6 mm

V_c = 150 m/min

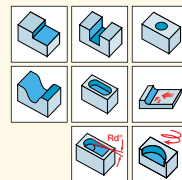
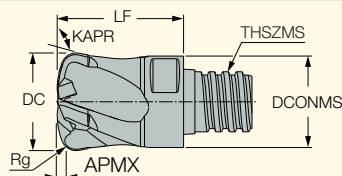
F_z = 1.4 mm/tooth

V_f = 8355

T = 60 min

MULTI^{FEED} MASTER**MM 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 ⁽¹⁾	APMX	THSZMS	DCONMS	LF	RMPX ⁽²⁾	KAPR ⁽³⁾	FHA	Rg ⁽⁴⁾	CSP ⁽⁵⁾	IC908	IC903	
MM EFF080T3R1.62-4T05	8.00	4	0.40	T05	7.50	10.00	5.0	97.0	20.0	1.62	0		●	0.12-0.48
MM EFF080S2R0.86-6T05	8.00	6	0.40	T05	7.50	10.00	5.0	97.0	0.0	0.86	0		●	0.12-0.48
MM EFF100T4R2.01-4T06	10.00	4	0.50	T06	9.50	13.00	5.0	97.0	20.0	2.01	0		●	0.16-0.57
MM EFF100S2R1.0-6T06	10.00	6	0.45	T06	9.50	13.00	5.0	97.0	0.0	1.00	0		●	0.16-0.57
MM EFF100T2R1.0-6T06H	10.00	6	0.45	T06	9.50	10.00	3.0	97.0	20.0	1.00	1		●	0.16-0.47
MM EFF120T4R1.8-4T08H	12.00	4	0.60	T08	11.50	16.50	5.0	97.0	20.0	1.80	1	●	●	0.16-0.67
MM EFF120T4R2.47-4T08	12.00	4	0.60	T08	11.50	16.50	5.0	97.0	20.0	2.47	0		●	0.16-0.67
MM EFF120S3R1.2-6T08	12.00	6	0.65	T08	11.50	16.50	5.0	97.0	0.0	1.20	0		●	0.16-0.67
MM EFF120T2R1.2-6T08H	12.00	6	0.65	T08	11.50	12.00	3.0	97.0	20.0	1.20	1		●	0.16-0.54
MM EFF127T4R2.59-4T08	12.70	4	0.60	T08	12.20	16.50	5.0	97.0	20.0	2.59	0		●	0.16-0.67
MM EFF127S3R1.3-6T08	12.70	6	0.70	T08	12.70	16.50	5.0	97.0	0.0	1.30	0		●	0.16-0.67
MM EFF127T4R1.3-6T08H	12.70	6	0.70	T08	12.20	12.70	3.0	97.0	20.0	1.30	1		●	0.16-0.67
MM EFF160T5R2.2-4T10H	16.00	4	0.80	T10	15.40	20.50	5.0	97.0	20.0	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	20.0	3.25	0		●	0.20-0.75
MM EFF160S4R2.0-6T10	16.00	6	1.05	T10	15.40	20.50	5.0	97.0	0.0	2.00	0		●	0.20-0.75
MM EFF160T4R2.0-6T10H	16.00	6	1.05	T10	15.40	16.00	3.0	97.0	20.0	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	20.0	4.02	0		●	0.20-0.90
MM EFF200S5R2.2-6T12	20.00	6	1.25	T12	18.45	25.50	5.0	97.0	0.0	2.20	0		●	0.20-0.90
MM EFF200T5R2.2-6T12H	20.00	6	1.25	T12	18.45	20.00	3.0	97.0	20.0	2.20	1		●	0.20-0.80
MM EFF250A7R3.1-6T15	25.00	6	1.20	T15	23.90	25.00	5.0	97.0	30.0	3.10	0		●	0.25-1.00
MM EFF250S6R2.5-6T15	25.00	6	1.55	T15	23.90	25.00	5.0	97.0	0.0	2.50	0		●	0.25-1.00
MM EFF254A7R3.1-6T15	25.40	6	1.20	T15	23.90	25.00	5.0	97.0	30.0	3.10	0		●	0.25-1.00

- For shanks, see pages 90-98
- For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 11-12
- Do not apply lubricant to the threaded connection
- Heads with coolant supply are recommended for shouldering operations
- For user guide, see pages 13-14,40

⁽¹⁾ Number of flutes

⁽²⁾ Maximum ramping angle

⁽³⁾ Tool cutting edge angle

⁽⁴⁾ Radius for programming

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

MULTI-MASTER Machining Recommendations for MM EFF Heads

VDI 3323	Material Group ⁽¹⁾	v _c (m/min)	f _z (mm/t) vs. Tool Diameter (mm) ^(5,6)							
			a _p	a _e	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
	12, 13	120	0.04xD	0.6xD	0.30	0.35	0.43	0.52	0.60	0.70
K	15-16	180	APMX	0.7xD	0.45	0.52	0.60	0.70	0.80	0.90
	17-18	160	APMX	0.7xD	0.38	0.45	0.52	0.60	0.70	0.80
H	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⁾ HRC 45-49

⁽³⁾ HRC 50-55

⁽⁴⁾ HRC 56-63

⁽⁵⁾ For Full Slot: f_z slot=0.6 x f_z

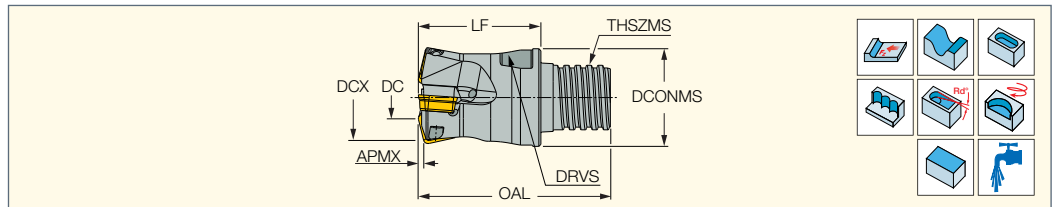
⁽⁶⁾ For Ramp Down: f_z ramp=0.1 x f_z

a_p - Depth of cut

a_e - Width of cut

FFQ4 D-MM-06

Fast Feed Endmills with
MULTI-MASTER Threaded
Adaptation Carrying
Single-Sided Square Inserts
with 4 Cutting Edges



Designation	DCX ⁽¹⁾	DC	APMX	AE ⁽²⁾	CICT ⁽³⁾	THSZMS	LF	OAL	DCONMS	DRVS ⁽⁴⁾	RMPX ⁽⁵⁾	CSP ⁽⁶⁾	MDN	MDX	TQ ₃ ⁽⁷⁾	MIID ⁽⁸⁾	TQ
FFQ4 D16/.63-03-MMT10-06	16.00	7.20	0.70	4.4	3	T10	16.00	27.30	15.20	13.0	6.0	1	23.20	31.00	28	FFQ4 SOMT 060210T	0.9 0.02
FFQ4 D20-04-MMT12-06	20.00	11.20	0.70	4.4	4	T12	25.00	38.30	18.80	16.0	3.5	1	31.20	39.00	28	FFQ4 SOMT 060210T	0.9 0.05
FFQ4 D25/.98-05-MMT15-06	25.00	16.20	0.70	4.4	5	T15	30.00	47.00	24.00	20.0	2.2	1	41.20	49.00	40	FFQ4 SOMT 060210T	0.9 0.09
FFQ4 D32/1.26-07-MMT21-06	32.00	23.20	0.70	4.4	7	T21	30.00	53.10	29.40	24.0	1.4	1	55.20	63.00	110	FFQ4 SOMT 060210T	0.9 0.17

- Do not apply lubricant to the MULTI-MASTER threaded connection
- To generate a straight surface without cusps, the width of cut must not exceed DC
- Radius for programming: for insert SOMT 1.7 mm, for insert SOMW 1.9 mm
- When mounting insert SOMW, APMX=0.6 mm
- For slot milling or machining with high tool overhang, the maximum depth of cut should be reduced by 50%

⁽¹⁾ Cutting diameter maximum

⁽²⁾ Maximum plunging width

⁽³⁾ Number of inserts (or edges for solid tool)

⁽⁴⁾ Torque key size

⁽⁵⁾ Maximum ramping angle

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

⁽⁷⁾ Tool tightening torque Nxmm (lbf·in)

⁽⁸⁾ Master insert identification

For inserts: FFQ4 SOMT/W 0602

For holders, see pages: MM S-A-AV (90) • MM S-A-BT (97) • MM TS2-A (90) • MM S-A (stepped shanks) (90) • MM S-B (85° conical shanks) (93)

• MM S-A (straight shanks) (93) • MM S-D (89° conical shanks) (94) • MM S-ER (95) • MM S-ER-H (95) • MM TS-A (92) • MM S-A-N (92) • MM S-A-HSK (96)

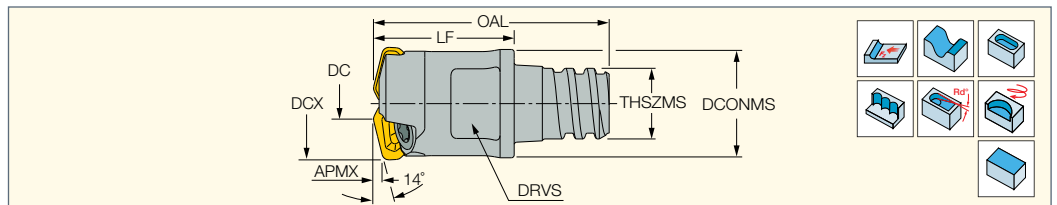
• MM S-A-SK (96) • MM S-A-C# (96) • MM CAB-T-T (97) • MM CAB-T-T-W (97)

Spare Parts

Designation		
FFQ4 D-MM-06	SR 10516050-L4.6	IP-7/51

FFT3 EFM-MM 02

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



Designation	DCX ⁽¹⁾	DC	APMX	AE ⁽²⁾	CICT ⁽³⁾	LF	DCONMS	THSZMS	OAL	DRVS ⁽⁴⁾	RMPX ⁽⁵⁾	MDN ⁽⁶⁾	MDX ⁽⁷⁾	MIID ⁽⁸⁾	TQ ⁽⁹⁾	CSP ⁽¹⁰⁾	
FFT3 EFM08/.31-2MMT05-02	8.00	2.20	0.60	2.9	2	10.00	7.60	T05	16.75	5.5	10.8	10.20	15.00	FFT3 TXMT 0201205T	0.5	1	0.01
FFT3 EFM10/.39-3MMT06-02	10.00	4.20	0.60	2.9	3	10.00	9.70	T06	16.30	8.0	4.7	14.20	19.00	FFT3 TXMT 0201205T	0.5	1	0.01

- For adaptation, see page 9
- Radius for programming 1.0 mm
- To generate a straight surface without cusps, the width of cut must not exceed DC

⁽¹⁾ Cutting diameter maximum

⁽²⁾ Maximum plunging width

⁽³⁾ Number of inserts (or edges for solid tool)

⁽⁴⁾ Torque key size

⁽⁵⁾ Maximum ramping angle

⁽⁶⁾ Machinable diameter minimum for interpolation

⁽⁷⁾ Machinable diameter maximum for interpolation

⁽⁸⁾ Master insert identification

⁽⁹⁾ Recommended tightening torque (N·m) for insert screw

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

For inserts: FFT3 TXMT 02

For holders, see pages: MM CAB (98) • MM CAB-T-T (97) • MM CAB-T-T-W (97) • MM GRT (shanks) (92) • MM S-A (stepped shanks) (90) • MM S-A (straight shanks) (93)

• MM S-A-BT (97) • MM S-A-C# (96) • MM S-A-HSK (96) • MM S-A-N (92) • MM S-A-SK (96) • MM S-B (85° conical shanks) (93) • MM S-D (89° conical shanks) (94)

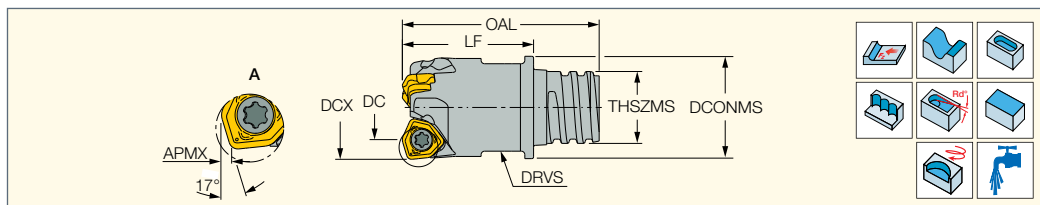
• MM S-ER (95) • MM S-ER-H (95) • MM TS-A (92) • MM TS2-A (90)

Spare Parts

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


FFT3 EFM-MM 03

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



Designation	DCX ⁽¹⁾	DC	APMX	AE ⁽²⁾	CICT ⁽³⁾	LF	DCONMS	THSZMS	OAL	DRVS ⁽⁴⁾	RMPX ⁽⁵⁾	MDN ⁽⁶⁾	MDX ⁽⁷⁾	MIID ⁽⁸⁾	CSP ⁽⁹⁾	
FFT3 EFMD10/.39-2MMT06-03	10.00	5.60	0.60	2.2	2	10.00	9.70	T06	16.30	8.0	6.9	15.60	19.00	FFT3 WXMT 030206T	1	0.02
FFT3 EFMD12/.47-3MMT08-03	12.00	7.60	0.60	2.2	3	15.00	11.70	T08	22.50	10.0	4.7	19.60	23.00	FFT3 WXMT 030206T	1	0.03
FFT3 EFMD16/.63-4MMT10-03	16.00	11.60	0.60	2.2	4	20.00	15.30	T10	31.30	13.0	2.9	27.60	31.00	FFT3 WXMT 030206T	1	0.05
FFT3 EFMD20/.78-5MMT12-03	20.00	15.60	0.60	2.2	5	25.00	19.00	T12	38.30	16.0	2.0	35.60	39.00	FFT3 WXMT 030206T	1	0.07
FFT3 EFMD25/.98-6MMT15-03	25.00	20.60	0.60	2.2	6	30.00	24.00	T15	47.00	20.0	1.5	45.60	49.00	FFT3 WXMT 030206T	1	0.16

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

(1) Cutting diameter maximum

(2) Maximum plunging width

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

(4) Torque key size

(5) Maximum ramping angle

(6) Machinable diameter minimum for interpolation

(7) Machinable diameter maximum for interpolation

(8) Master insert identification

(9) 0 - Without coolant supply, 1 - With coolant supply

For inserts: FFT3 WXMT 03

For holders, see pages: MM CAB (98) • MM CAB-T-T (97) • MM CAB-T-T-W (97) • MM GRT (shanks) (92) • MM S-A (stepped shanks) (90) • MM S-A (straight shanks) (93) • MM S-A-AV (90) • MM S-A-BT (97) • MM S-A-C# (96) • MM S-A-HSK (96) • MM S-A-N (92) • MM S-A-SK (96) • MM S-B (85° conical shanks) (93) • MM S-D (89° conical shanks) (94) • MM S-ER (95) • MM S-ER-H (95) • MM TS-A (92) • MM TS2-A (90)

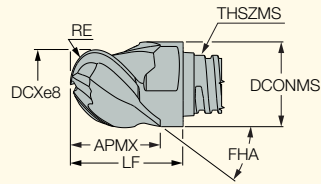
Spare Parts

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

MULTI-MASTER

MM EBA-3

Interchangeable 3 Flute High Precision Solid Carbide Ball Nose Heads for Machining Aluminum



Designation	Dimensions										IC08
	DCX ⁽¹⁾	NOF ⁽²⁾	APMX	RE	RETOL ⁽³⁾	THSZMS	DCONMS	LF	FHA	CSP ⁽⁴⁾	
MM EBA080H05-3T05	8.00	3	5.50	3.98	0.010	T05	7.70	10.00	45.0	0	•
MM EBA100H07-3T06	10.00	3	7.50	4.98	0.010	T06	9.60	13.00	45.0	0	•
MM EBA120H09-3T08	12.00	3	9.50	5.98	0.012	T08	11.70	16.50	45.0	0	•
MM EBA160H12-3T10	16.00	3	12.70	7.98	0.012	T10	15.30	20.50	45.0	0	•
MM EBA200H15-3T12	20.00	3	15.60	9.97	0.012	T12	18.25	25.50	45.0	0	•
MM EBA250H22-3T15	25.00	3	22.60	12.47	0.015	T15	23.80	37.00	45.0	0	•

- For shanks, see pages 90-98
- For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 11-12
- Do not apply lubricant to the threaded connection
- For user guide, see pages 13-14

⁽¹⁾ Cutting diameter maximum

⁽²⁾ Number of flutes

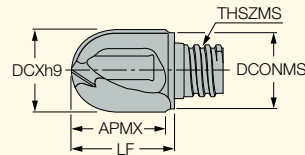
⁽³⁾ Corner radius tolerance (+/-)

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

MULTI-MASTER

MM HCR

Interchangeable 2 Flute Solid Carbide Ball Nose Milling Heads



ECONOMICAL SOLUTION

Designation	Dimensions							IC908
	DCX ⁽¹⁾	NOF ⁽²⁾	APMX	THSZMS	DCONMS	LF	CSP ⁽³⁾	
MM HCR080-2T05	8.00	2	7.80	T05	7.60	9.95	0	●
MM HCR100-2T06	10.00	2	10.00	T06	9.50	12.35	0	●
MM HCR120-2T08	12.00	2	11.45	T08	11.50	15.30	0	●
MM HCR160-2T10	16.00	2	15.80	T10	15.20	19.10	0	●

- For shanks, see pages 90-98
- For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 11-12
- Do not apply lubricant to the threaded connection
- For user guide, see pages 13-14

⁽¹⁾ Cutting diameter maximum

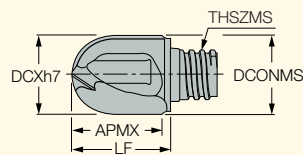
⁽²⁾ Number of flutes

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

MULTI-MASTER

MM HRF

Interchangeable 2 Flute Solid Carbide Ball Nose Finishing Milling Heads



Designation	Dimensions							Tough ↔ Hard	
	DCX ⁽¹⁾	NOF ⁽²⁾	APMX	THSZMS	DCONMS	LF	CSP ⁽³⁾	IC908	IC903
MM HRF080-2T05	8.00	2	7.60	T05	7.60	9.95	0		●
MM HRF100-2T06	10.00	2	10.20	T06	9.50	12.35	0	●	●
MM HRF120-2T08	12.00	2	11.50	T08	11.50	15.30	0		●
MM HRF160-2T10	16.00	2	15.80	T10	15.20	19.10	0		●

- For shanks, see pages 90-98
- For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 11-12
- Do not apply lubricant to the threaded connection
- For user guide, see pages 13-14

⁽¹⁾ Cutting diameter maximum

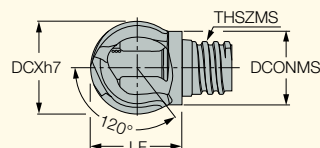
⁽²⁾ Number of flutes

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

MULTI-MASTER

MM HBR

Interchangeable 2 Flute High Precision Ball Nose Solid Carbide Milling Heads



ECONOMICAL SOLUTION

Designation	Dimensions							IC908
	DCX ⁽¹⁾	NOF ⁽²⁾	THSZMS	DCONMS	LF	CSP ⁽³⁾		
MM HBR080-2T04	8.00	2	T04	5.80	8.22	0	MM KEY 6X4*	●
MM HBR100-2T05	10.00	2	T05	7.60	10.00	0	MM KEY 6X4*	●
MM HBR120-2T06	12.00	2	T06	9.50	11.60	0	MM KEY 10X7*	●
MM HBR160-2T08	16.00	2	T08	12.20	15.40	0	MM KEY 13X8*	●
MM HBR200-2T10	20.00	2	T10	15.20	18.40	0	MM KEY 13X8*	●
MM HBR250-2T12	25.00	2	T12	18.30	23.20	0	MM KEY 16X9*	●

- For shanks, see pages 90-98
- For tightening torques and clamping instructions, see pages 11-12
- Do not apply lubricant to the threaded connection
- For user guide, see pages 13-14

⁽¹⁾ Cutting diameter maximum

⁽²⁾ Number of flutes

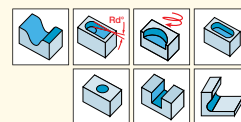
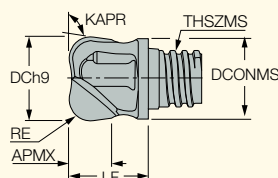
⁽³⁾ 0 - Without coolant supply, 1 - With coolant supply

* Optional, to be ordered separately

MULTI-MASTER

MM HT

Torodial 2 Flute Interchangeable Solid Carbide Milling Heads



ECONOMICAL SOLUTION

Designation	Dimensions										Tough ↔ Hard	
	DC	NOF ⁽¹⁾	APMX	RE	Tm ⁽²⁾	THSZMS	CSP ⁽³⁾	DCONMS	LF	KAPR ⁽⁴⁾	IC908	IC903
MM HT100C08R0.5-2T06	10.00	2	7.00	0.50	r0-1.0	T06	0	9.50	12.45	95.0	●	
MM HT100C08R1.0-2T06	10.00	2	7.00	1.00	r0-1.0	T06	0	9.50	12.45	95.0	●	
MM HT100N06R2.0-2T06	10.00	2	6.00	2.00	r0-3.0	T06	0	9.50	12.40	97.0	●	
MM HT100N07R0.5-2T06	10.00	2	6.90	0.50	r0-1.0	T06	0	9.50	11.20	95.0		●
MM HT100N07R1.0-2T06	10.00	2	6.90	1.00	r0-1.0	T06	0	9.50	11.20	95.0		●
MM HT100N07R2.0-2T06	10.00	2	6.90	2.00	r0-3.0	T06	0	9.50	11.20	95.0		●
MM HT100N07R3.0-2T06	10.00	2	6.90	3.00	r2.7-4.0	T06	0	9.50	11.20	95.0		●
MM HT120N06R3.0-2T06	12.00	2	5.40	3.00	r2.7-4.0	T06	0	9.10	9.10	97.0	●	
MM HT120N06R4.0-2T06	12.00	2	5.10	4.00	r2.7-4.0	T06	0	11.50	9.10	97.0	●	
MM HT120N06R1.6-2T08	12.00	2	5.70	1.60	r1.3-r2.7	T08	0	11.50	11.10	97.0	●	●
MM HT120N06R2.0-2T08	12.00	2	5.90	2.00	r1.3-2.7	T08	0	11.50	11.10	97.0	●	●
MM HT120N06R2.5-2T08	12.00	2	5.50	2.50	r1.3-4.0	T08	0	11.50	11.10	97.0	●	
MM HT120N06R3.0-2T08	12.00	2	5.50	3.00	r2.7-4.4	T08	0	11.50	11.10	97.0	●	●
MM HT120N06R4.0-2T08	12.00	2	5.60	4.00	r2.7-4.4	T08	0	11.50	11.10	97.0	●	
MM HT160N07R2.0-2T10	16.00	2	6.90	2.00	r1.5-4.0	T10	0	15.20	13.10	97.0	●	
MM HT160N07R3.0-2T10	16.00	2	7.20	3.00	r1.5-4.0	T10	0	15.20	13.40	97.0	●	
MM HT160N07R4.0-2T10	16.00	2	7.10	4.00	r1.5-4.0	T10	0	15.20	13.40	97.0	●	
MM HT160N08R5.0-2T10	16.00	2	8.00	5.00	r2.7-4.4	T10	0	15.20	20.20	97.0	●	●
MM HT200N11R3.0-2T12	20.00	2	10.80	3.00	r3.0-8.0	T12	0	18.45	17.00	97.0	●	
MM HT200N11R4.0-2T12	20.00	2	11.10	4.00	r3.0-8.0	T12	0	18.45	17.30	97.0	●	
MM HT200N11R5.0-2T12	20.00	2	11.10	5.00	r3.0-8.0	T12	0	18.45	17.30	97.0	●	
MM HT200N11R6.0-2T12	20.00	2	11.00	6.00	r3.0-8.0	T12	0	18.45	17.30	97.0	●	
MM HT200N11R8.0-2T12	20.00	2	10.90	8.00	r3.0-8.0	T12	0	18.45	17.30	97.0	●	

- For shanks, see pages 90-98
- For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 11-12
- Do not apply lubricant to the threaded connection
- For user guide, see pages 13-14

⁽¹⁾ Number of flutes

⁽²⁾ Specially tailored radius range upon request

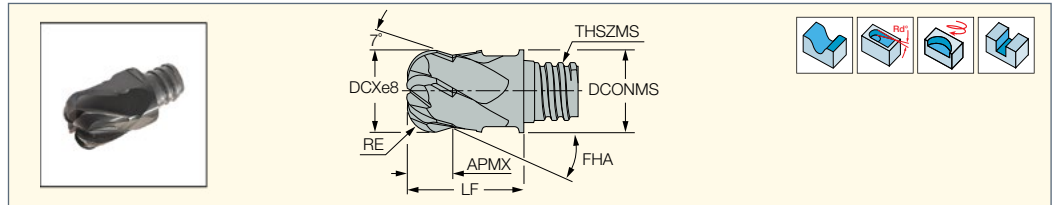
⁽³⁾ 0 - Without coolant supply, 1 - With coolant supply

⁽⁴⁾ Tool cutting edge angle

MULTI-MASTER

MM ETR

Torodial 6 Flute Interchangeable
Solid Carbide Milling Heads



Designation	Dimensions										Tough ↔ Hard	
	DCX ⁽¹⁾	RE	NOF ⁽²⁾	APMX	THSZMS	DCONMS	LF	CSP ⁽³⁾	FHA	RMPX ⁽⁴⁾	IC908	IC903
MM ETR080A4R05CF-6T05	8.00	0.50	6	4.00	T05	7.70	10.00	0	30.0	9.0		●
MM ETR080A4R10CF-6T05	8.00	1.00	6	4.00	T05	7.70	10.00	0	30.0	9.0		●
MM ETR080A04R2.0-6T05	8.00	2.00	6	5.00	T05	7.70	10.00	0	30.0	9.0	●	
MM ETR100A5R05CF-6T06	10.00	0.50	6	5.00	T06	9.60	13.00	0	30.0	9.0		●
MM ETR100A5R10CF-6T06	10.00	1.00	6	5.00	T06	9.60	13.00	0	30.0	9.0		●
MM ETR100A05R3.0-6T06	10.00	3.00	6	7.00	T06	9.60	13.00	0	30.0	9.0	●	
MM ETR120A7R05CF-6T08	12.00	0.50	6	7.00	T08	12.00	17.00	0	30.0	9.0		●
MM ETR120A7R10CF-6T08	12.00	1.00	6	7.00	T08	11.70	16.50	0	30.0	9.0		●
MM ETR120A07R4.0-6T08	12.00	4.00	6	9.00	T08	11.70	16.50	0	30.0	9.0	●	
MM ETR160A09R5.0-6T10	16.00	5.00	6	12.00	T10	15.30	20.50	0	30.0	9.0	●	

- For shanks, see pages 90-98
- For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 11-12
- Do not apply lubricant to the threaded connection
- For user guide, see pages 13-14

⁽¹⁾ Cutting diameter maximum

⁽²⁾ Number of flutes

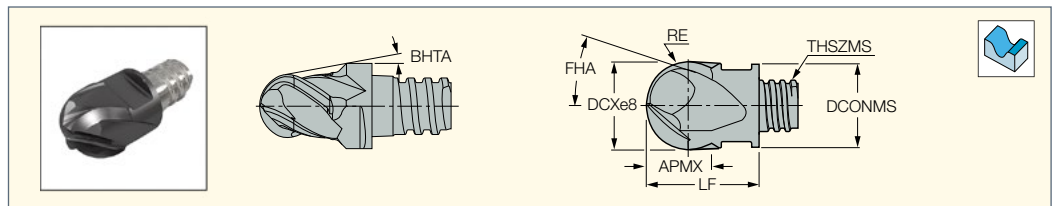
⁽³⁾ 0 - Without coolant supply, 1 - With coolant supply

⁽⁴⁾ Maximum ramping angle

MULTI-MASTER

MM EB

Interchangeable Solid Carbide
Ball Nose Milling Heads



Designation	Dimensions										IC908
	DCX ⁽²⁾	NOF ⁽³⁾	APMX	RE	THSZMS	DCONMS	LF	FHA	CSP ⁽⁴⁾	BHTA	
MM EB050E07-4T05	5.00	4	7.00	2.49	T05	8.00	15.00	38.0	0	7.4	●
MM EB060E04-4T04	6.00	4	4.00	2.99	T04	5.80	8.50	37.0	0	-	●
MM EB060E05-4T05	6.00	4	5.00	2.99	T05	8.00	10.00	38.0	0	11.7	●
MM EB080A05-2T05	8.00	2	5.00	3.98	T05	7.70	10.00	30.0	0	-	●
MM EB080A05-4T05	8.00	4	5.00	3.98	T05	7.70	10.00	30.0	0	-	●
MM EB100A07-2T06	10.00	2	7.00	4.98	T06	9.60	13.00	30.0	0	-	●
MM EB100A07-4T06	10.00	4	7.00	4.98	T06	9.60	13.00	30.0	0	-	●
MM EB120A09-2T08	12.00	2	9.00	5.98	T08	11.70	16.50	30.0	0	-	●
MM EB120H09CF-3T08I ⁽¹⁾	12.00	3	9.00	5.98	T08	11.70	16.50	38.0	1	-	●
MM EB120A09-4T08	12.00	4	9.00	5.98	T08	11.70	16.50	30.0	0	-	●
MM EB160A09-2T10	16.00	2	9.00	7.98	T10	15.30	20.50	30.0	0	-	●
MM EB160A12-4T10	16.00	4	12.00	7.98	T10	15.30	20.50	30.0	0	-	●
MM EB200A15-4T12	20.00	4	15.00	9.97	T12	18.45	25.50	30.0	0	-	●
MM EB250A22-4T15	25.00	4	22.00	12.47	T15	23.90	37.00	30.0	0	-	●

- For shanks, see pages 90-98
- For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 11-12
- Do not apply lubricant to the threaded connection
- For user guide, see pages 13-14

⁽¹⁾ With coolant holes directed to each flute

⁽²⁾ Cutting diameter maximum

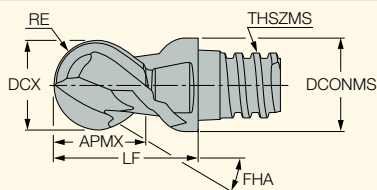
⁽³⁾ Number of flutes

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

MULTI-MASTER

MM EBA-2

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



ALUMINUM

Designation	Dimensions										IC08
	DCX ⁽¹⁾	NOF ⁽²⁾	APMX	RE	RETOL ⁽³⁾	THSZMS	DCONMS	LF	CSP ⁽⁴⁾	FHA	
MM EBA080B05-2T05	8.00	2	5.00	3.98	0.010	T05	7.70	10.00	0	45.0	●
MM EBA100B07-2T06	10.00	2	7.00	4.98	0.010	T06	9.60	13.00	0	45.0	●
MM EBA120B09-2T08	12.00	2	9.00	5.98	0.012	T08	11.50	16.50	0	45.0	●
MM EBA160B12-2T10	16.00	2	12.00	7.98	0.012	T10	15.30	20.50	0	45.0	●
MM EBA200B15-2T12	20.00	2	15.00	9.97	0.012	T12	18.45	25.50	0	45.0	●
MM EBA250B22-2T15	25.00	2	22.00	12.50	0.012	T15	23.90	37.00	0	45.0	●

- For shanks, see pages 90-98
- For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 11-12
- Do not apply lubricant to the threaded connection
- For user guide, see pages 13-14

⁽¹⁾ Cutting diameter maximum

⁽²⁾ Number of flutes

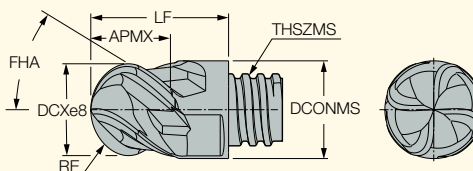
⁽³⁾ Corner radius tolerance (+/-)

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

MULTI-MASTER

MM EBC

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



Designation	Dimensions										IC903
	DCX ⁽¹⁾	NOF ⁽²⁾	APMX	RE	THSZMS	DCONMS	LF	FHA	CSP ⁽³⁾		
MM EBC080B05-4T05CF	8.00	4	5.40	3.98	T05	7.70	10.00	45.0	0	MM KEY 6X4*	●
MM EBC100B07-4T06CF	10.00	4	7.40	4.98	T06	9.60	13.00	45.0	0	MM KEY 8X5*	●
MM EBC120B09-4T08CF	12.00	4	9.30	5.98	T08	11.70	16.50	45.0	0	MM KEY 10X7*	●
MM EBC160B12-4T10CF	16.00	4	12.40	7.98	T10	15.30	20.50	45.0	0	MM KEY 13X8*	●
MM EBC200B15-4T12CF	20.00	4	16.00	9.97	T12	18.45	25.50	45.0	0	MM KEY 16X9*	●

- For shanks, see pages 90-98
- For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 11-12
- Do not apply lubricant to the threaded connection
- For user guide, see pages 13-14

⁽¹⁾ Cutting diameter maximum

⁽²⁾ Number of flutes

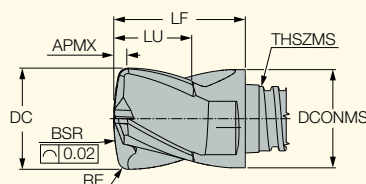
⁽³⁾ 0 - Without coolant supply, 1 - With coolant supply

* Optional, to be ordered separately

MULTI-MASTER

MM ELB

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



Designation	Dimensions										IC908
	DC	BSR	RE	LU	APMX	THSZMS	DCONMS	NOF ⁽¹⁾	LF	CSP ⁽²⁾	
MM ELB08R16A05-4T05	8.00	16.00	0.50	5.50	0.90	T05	7.70	4	10.00	0	●
MM ELB10R20A07-4T06	10.00	20.00	1.00	7.50	1.42	T06	9.70	4	13.00	0	●
MM ELB12R24A09-4T08	12.00	24.00	1.00	9.00	1.55	T08	11.70	4	16.50	0	●
MM ELB16R32A12-4T10	16.00	32.00	1.00	12.00	1.80	T10	15.30	4	20.50	0	●

- For user guide, see pages 49-53

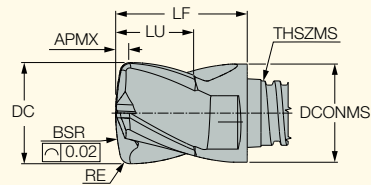
⁽¹⁾ Number of flutes

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

MULTI-MASTER

MM ELBA

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



Designation	Dimensions										IC08
	DC	BSR	RE	LU	APMX	THSZMS	DCONMS	NOF ⁽¹⁾	LF	CSP ⁽²⁾	
MM ELBA08R16A05-4T05	8.00	16.00	0.50	5.00	0.90	T05	8.00	4	10.00	0	●
MM ELBA10R20A07-4T06	10.00	20.00	1.00	7.00	1.42	T06	10.00	4	13.00	0	●
MM ELBA12R24A09-4T08	12.00	24.00	1.00	9.00	1.55	T08	12.00	4	16.50	0	●
MM ELBA16R32A12-4T10	16.00	32.00	1.00	12.00	1.80	T10	16.00	4	20.50	0	●

• For user guide, see pages 49-53

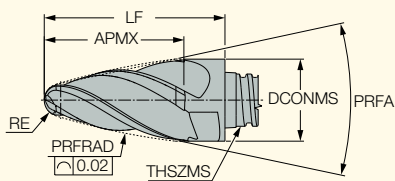
⁽¹⁾ Number of flutes

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

MULTI-MASTER

MM EOB

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



Designation	Dimensions									IC908
	PRFRAD	RE	APMX	PRFA	THSZMS	CSP ⁽¹⁾	NOF ⁽²⁾	DCONMS	LF	
MM EOB08R1.5R80A13-4T05	80.00	1.50	14.20	24.00	T05	0	4	8.00	18.00	●
MM EOB08R1.5R80A13-6T05	80.00	1.50	14.10	24.00	T05	0	6	8.00	18.00	●
MM EOB10R2.0R85A16-4T06	85.00	2.00	16.50	24.00	T06	0	4	10.00	22.00	●
MM EOB10R2.0R85A16-6T06	85.00	2.00	16.50	24.00	T06	0	6	10.00	22.00	●
MM EOB12R2.0R75A21-4T08	75.00	2.00	21.30	24.00	T08	0	4	12.00	27.00	●
MM EOB12R2.0R75A21-6T08	75.00	2.00	21.30	24.00	T08	0	6	12.00	27.00	●
MM EOB16R3.0R75A26-4T10	75.00	3.00	27.00	24.00	T10	0	4	16.00	33.50	●
MM EOB16R3.0R75A26-6T10	75.00	3.00	27.00	24.00	T10	0	6	16.00	33.50	●

• For user guide, see pages 49-53

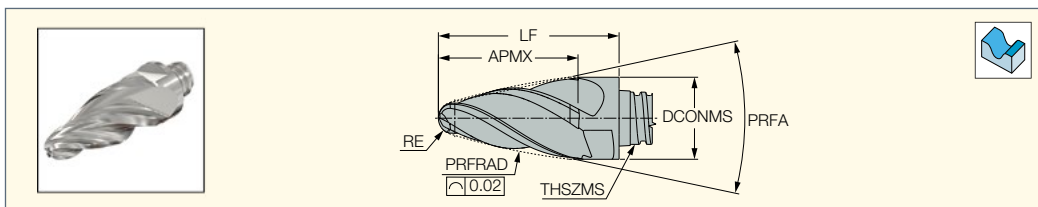
⁽¹⁾ 0 - Without coolant supply, 1 - With coolant supply

⁽²⁾ Number of flutes

MULTI-MASTER

MM EOBA

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



Designation	Dimensions									IC8
	PRFRAD	RE	APMX	PRFA	THSZMS	NOF ⁽¹⁾	DCONMS	LF	CSP ⁽²⁾	
MM EOBA08R1.5R80A13-4T05	80.00	1.50	14.20	24.00	T05	4	8.00	18.00	0	●
MM EOBA10R2.0R85A16-4T06	85.00	2.00	16.50	24.00	T06	4	10.00	22.00	0	●
MM EOBA12R2.0R75A21-4T08	75.00	2.00	21.30	24.00	T08	4	12.00	27.00	0	●
MM EOBA16R3.0R75A26-4T10	75.00	3.00	27.00	24.00	T10	4	16.00	33.50	0	●

• For user guide, see pages 49-53

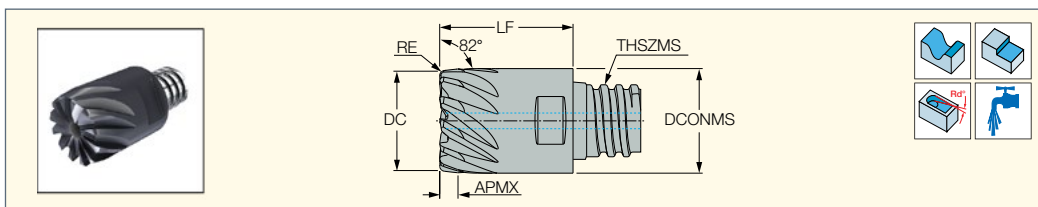
⁽¹⁾ Number of flutes

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

MULTI-MASTER

MM ET

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



Designation	Dimensions									IC908	Recommended Machining Data f_z (mm/t)
	DC	RE	NOF ⁽¹⁾	APMX	THSZMS	DCONMS	LF	CSP ⁽²⁾	RMPX ⁽³⁾		
MM ET11/8H4R10CF-8T08H	11.00	1.00	8	3.50	T08	12.00	16.50	1	3.0	●	0.04-0.10
MM ET15/8H4R10CF-12T10H	15.00	1.00	12	3.50	T10	16.00	20.50	1	3.0	●	0.05-0.11

• For shanks, see pages 90-98

• For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 11-12

• Do not apply lubricant to the threaded connection

• For user guide, see pages 13-14

⁽¹⁾ Number of flutes

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

⁽³⁾ Maximum ramping angle

Circle Segment Lines for Advanced Finish Milling Operations

Barrel Endmill

ISCAR's Barrel line comprises a variety of solid carbide endmills and **MULTI-MASTER** heads in different shapes: Oval, Taper & Lens.

For more information, refer to NPA 22-2020

Solid Carbide Endmills

Oval Barrel – EOB

Taper Barrel – ETB

Lens Barrel – ELB

MULTI-MASTER Heads

Oval Barrel – MM EOB

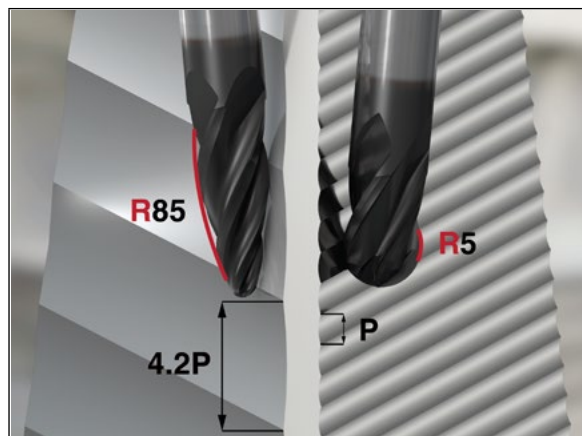
Lens Barrel – MM ELB

Barrel Endmills Are Intended for Finish and Semi-Finish Machining of 3D Surfaces

Blade Rough	Blade Finish
	

A prominent advantage of a Barrel endmill over a Ball-Nose is the number of stepovers and, subsequent, machining time can be significantly reduced without degradation of the surface finish parameters.

The large-diameter arc of the endmill cutting edge results in a substantial reduction of the cusp height.



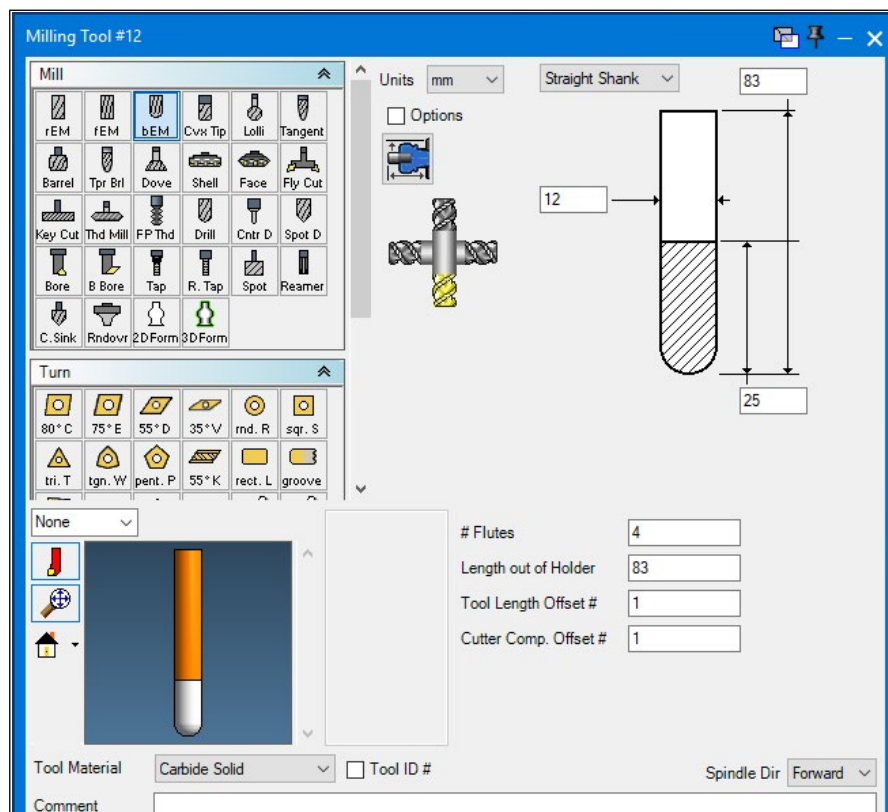
Machining Guidelines

The Most Important Thing to Remember

Programming circle segment tooling requires a supporting CAM system

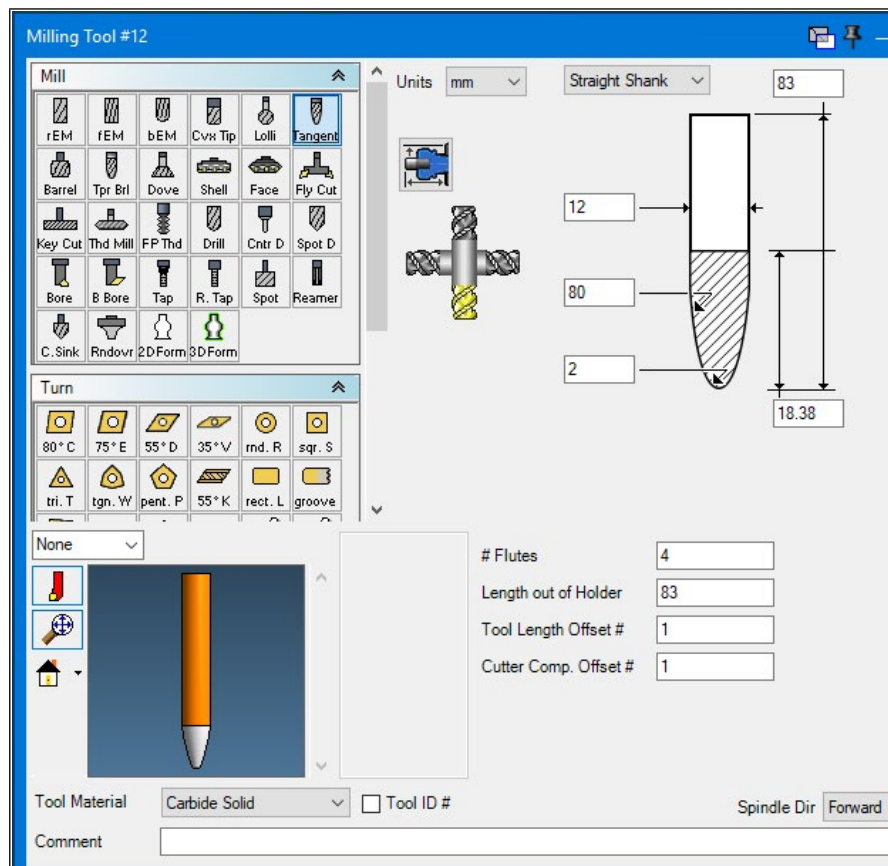
- **Step #1 – for Ball-Nose**

Select a Ball-Nose tool configuration and define its parameters.



- **Step #1 – for Oval Shape**

Select a Barrel tool configuration and define its parameters.



• **Step #1 – for Taper Shape**

Select a Taper tool configuration and set its parameters.

Milling Tool #12

Units: mm Straight Shank 83

Mill

rEM	fEM	bEM	Cvx Tip	Lolli	Tangent
Barrel	Tpr Brl	Dove	Shell	Face	Fly Cut
Key Cut	Thd Mill	FP Thd	Drill	Cntr D	Spot D
Bore	B Bore	Tap	R. Tap	Spot	Reamer
C. Sink	Rndovr	2D Form	3D Form		

Turn

80° C	75° E	55° D	35° V	rnd. R	sqr. S
tri. T	ign. W	pent. P	55° K	rect. L	groove

None

Tool Material: Carbide Solid ☐ Tool ID #

Spindle Dir: Forward

Comment:

Flutes: 4
Length out of Holder: 83
Tool Length Offset #: 1
Cutter Comp. Offset #: 1

• **Step #1 – for Lens Shape**

Select a Lens tool configuration and set its parameters.

Milling Tool #12

Units: mm Straight Shank 83

Options

Mill

rEM	fEM	bEM	Cvx Tip	Lolli	Tangent
Barrel	Tpr Brl	Dove	Shell	Face	Fly Cut
Key Cut	Thd Mill	FP Thd	Drill	Cntr D	Spot D
Bore	B Bore	Tap	R. Tap	Spot	Reamer
C. Sink	Rndovr	2D Form	3D Form		

Turn

80° C	75° E	55° D	35° V	rnd. R	sqr. S
tri. T	ign. W	pent. P	55° K	rect. L	groove

None

Tool Material: Carbide Solid ☐ Tool ID #

Spindle Dir: Forward

Comment:

Flutes: 4
Length out of Holder: 83
Tool Length Offset #: 1
Cutter Comp. Offset #: 1

- Step #2**
 Select the process. Each CAM defines different relevant processes, for example:
 Surface, 5-Axis, Adv3D, etc.

Remember:
 The advantage of barrel endmills is realized when used for 5 axis, finish milling operations.

Important
 Each CAM software has its own features to configure the tools and their machining processes, but the definitions are similar.
 The following example demonstrates only one way to define a Surface Finish (Ra) and is process dependent. In this example you will notice how many stepovers are required in order to obtain the same Ra with different tools.

Example
 Same Ra – Different stepovers.

Select Process Type

Search

Mill

Holes

Contour

Roughing

Thread

Surface

Adv3D

Rad Con

Rad Pocket

Rot. Rough

5-Axis

Plunge Rgh

VoluMill

Process #1 5-Axis Parameters

Options

Surface paths

Tool axis control

Gouge check

Link

Roughing

Utility

Calculation based on

Surfaces

Pattern

Parallel to curve(s)

Edit curves

Edge curve(s)...

Drive surface

Drive surfaces clearance

0

Area

Type

Full, start and end at exact surface edges

Margins

Corner Cleanup

Extend / trim

Angle range

2d Containment

Sorting

Flip stepover

Cutting method

One way

Out order

From center away

Direction for one way machining

Direction one

Enforce cutting direction (assume closed contours)

Start point

Machine by

Lanes

Surface quality

Out tolerance

0.01

Surface edge handling

Advanced

Stepover

Maximum stepover

0

Ridge height

0

Ball Nose Ø12 R6 [Ø.472" R.236"]	Stepover	Maximum stepover	2
Oval Ø12 R80 [Ø.472" R3.15"]	Stepover	Maximum stepover	7.4
Taper Ø12 R250 [Ø.472" R9.84"]	Stepover	Maximum stepover	13.5
Lens Ø12 R25 [Ø.472" R.98"]	Stepover	Maximum stepover	4.09

Take Into Consideration
 Barrel milling should not always be considered the answer to finishing all 3D machined surfaces. Some part shapes are not conducive to Barrel milling operations. Sometimes, the blend radii of the machined part or the kinetics of the machine result in a complicated CAM tool path which may increase the cycle time compared to using a conventional Ball-Nose milling approach. This is where the need for a highly skilled programmer to make good and effective decisions comes into play.

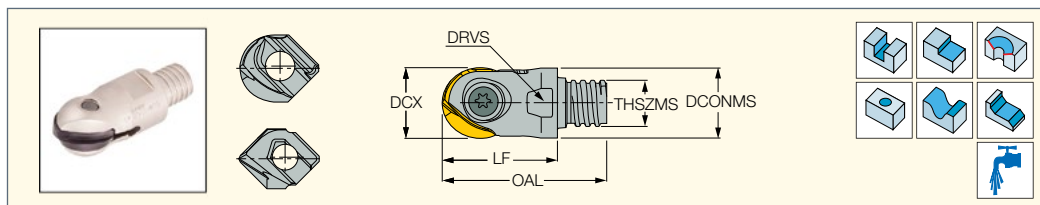
Recommended Cutting Parameters to Start

ISO			Material	Condition	Tensile Strength [N/mm ²]	Hardness HB	Material No. ⁽¹⁾	Cutting Parameters		
								V _c m/min	F _z mm/t	F _z Start
P	non-alloy steel and cast steel, free cutting steel	< 0.25 %C	annealed	420	125	1	210-300	0.005-0.01xD	0.006xD	
		>= 0.25 %C	annealed	650	190	2	200-250	0.005-0.01xD	0.006xD	
		< 0.55 %C	quenched and tempered							
			850	250	3	160-240	0.004-0.009xD	0.005xD		
		annealed	750	220	4	160-240	0.003-0.008xD	0.004xD		
	>= 0.55 %C	quenched and tempered	1000	300	5	140-200	0.004-0.009xD	0.005xD		
		annealed	600	200	6	160-240	0.003-0.008xD	0.004xD		
		quenched and tempered	930	275	7	120-200	0.003-0.008xD	0.004xD		
			1000	300	8	130-200	0.003-0.008xD	0.004xD		
	low alloy and cast steel (less than 5% of alloying elements)	1200	350	9	140-200	0.003-0.008xD	0.004xD			
		annealed	680	200	10	130-200	0.003-0.008xD	0.004xD		
		quenched and tempered	1100	325	11	70-130	0.002-0.007xD	0.003xD		
	ferritic/martensitic	680							200	12
	high alloyed steel, cast steel and tool steel	martensitic	820	240	13	60-165	0.002-0.007xD	0.003xD		
stainless steel and cast steel	martensitic	820	240	13	60-165	0.002-0.007xD	0.003xD			
M	stainless steel and cast steel	austenitic	600	180	14	60-110	0.002-0.007xD	0.003xD		
K	grey cast iron (GG)	ferritic/pearlitic		180	15	150-275	0.005-0.01xD	0.006xD		
		pearlitic		260	16	150-265	0.005-0.01xD	0.006xD		
	cast iron nodular (GGG)	ferritic		160	17	150-200	0.005-0.01xD	0.006xD		
		pearlitic		250	18	90-150	0.004-0.009xD	0.005xD		
	malleable cast iron	ferritic		130	19	150-200	0.005-0.01xD	0.006xD		
		pearlitic		230	20	90-150	0.004-0.009xD	0.005xD		
S	high temp. alloys	Fe based	annealed		200	31	20-45	0.002-0.004xD	0.003xD	
			cured		280	32	20-35	0.002-0.004xD	0.003xD	
		Ni or Co based	annealed		250	33	20-35	0.002-0.004xD	0.003xD	
			cured		350	34	20-35	0.002-0.004xD	0.003xD	
			cast		320	35	60-90	0.002-0.004xD	0.003xD	
	titanium alloys	pure	Rm = 400		36	60-90	0.002-0.004xD	0.003xD		
		alpha+beta alloys cured	Rm = 1050		37	60-90	0.002-0.004xD	0.003xD		
H	hardened steel	hardened		55 HRC	38	40-80	0.001-0.003xD	0.002xD		
		hardened		60 HRC	39					
	chilled cast iron	cast		400	40	40-80	0.001-0.003xD	0.002xD		
	cast iron	hardened		55 HRC	41	40-80	0.001-0.003xD	0.002xD		

BALLPLUS

HCM-MM

Ball Nose Multifunction
Endmills with a MULTI-MASTER
Threaded Adaptation



Designation	DCX ⁽¹⁾	OAL ⁽²⁾	LF ⁽³⁾	DCONMS	THSZMS	DRVS ⁽⁴⁾	TQ ⁽⁵⁾	TQ_3 ⁽⁶⁾	CSP ⁽⁷⁾	MIID ⁽⁸⁾				
HCM D12/.50-MMT08	12.00	28.00	20.00	11.50	T08	10.0	6.0	20	1	HBR D120-QF	0.01	SR 34-540	BLD T15/S7	SW6-T
HCM D16/.62-MMT10	16.00	36.30	25.00	15.20	T10	13.0	7.8	40	1	HBR D160-QF	0.03	SR 10503579	BLD T20/S7	SW6-T
HCM D20/.75-MMT12	20.00	48.30	35.00	18.50	T12	15.0	12.0	20	1	HBR D200-QF	0.06	SR 1052964	BLD T25/S7	SW6-T
HCM D25/1.0-MMT15	25.00	63.00	46.00	24.00	T15	20.0	12.0	33	1	HBR D250-QF	0.13	SR 1051666	BLD T25/S7	SW6-T

- The dimensions are for HBR inserts
- Do not apply lubricant to the MULTI-MASTER threaded connection
- For adaptation options, see page 9

⁽¹⁾ Cutting diameter maximum

⁽²⁾ Refers to HBR inserts

⁽³⁾ Refers to HBR inserts

⁽⁴⁾ Width across flats (wrench should be ordered separately)

⁽⁵⁾ Screw tightening torque

⁽⁶⁾ Tool tightening torque Nxmm

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

⁽⁸⁾ Master insert identification

For inserts: HBF-QF • HBR-QF • HCC-QF • HCD-QF • HCR • HCT-QF • HLB-QF

For holders, see pages: MM CAB (98) • MM GRT (shanks) (92) • MM S-A (stepped shanks) (90) • MM S-A (straight shanks) (93) • MM S-A-AV (90) • MM S-A-BT (97)

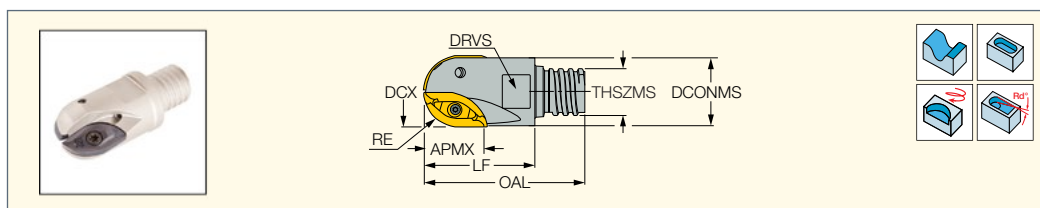
• MM S-A-C# (96) • MM S-A-HSK (96) • MM S-A-N (92) • MM S-A-SK (96) • MM S-B (85° conical shanks) (93) • MM S-D (89° conical shanks) (94) • MM S-ER (95)

• MM S-ER-H (95) • MM TS-A (92) • MM TS2-A (90)

DROPMILL

BCM-MM

Ball Nose Endmills with
MULTI-MASTER Threaded
Adaptation with Tangentially
Mounted Straight Edge Inserts



Designation	DCX ⁽²⁾	RE	APMX	CICT ⁽³⁾	LF	OAL	DRVS ⁽⁴⁾	DCONMS	THSZMS	CSP ⁽⁵⁾	MIID ⁽⁶⁾	
BCM D12-MMT08	12.00	6.00	9.60	2	20.00	28.00	10.0	11.50	T08	0	BCR D120-QT	0.01
BCM D16-MMT10	16.00	8.00	12.70	2	25.00	36.80	13.0	15.20	T10	0	BCR D160-QT	0.03
BCM D20-MMT12-CC ⁽¹⁾	20.00	10.00	17.00	2	35.00	48.80	15.0	18.50	T12	0	BCR D200..	0.10
BCM D25-MMT15-C	25.00	12.50	20.00	2	40.00	57.00	19.0	24.00	T15	1	BCR D250-QT	0.11

- Do not apply lubricant to the MULTI-MASTER threaded connection
- For adaptation options, see page 9

⁽¹⁾ Center Cutting

⁽²⁾ Cutting diameter maximum

⁽³⁾ Number of inserts (or edges for solid tool)

⁽⁴⁾ Clamping wrench size

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

⁽⁶⁾ Master insert identification

For inserts: BCR

For holders, see pages: MM CAB (98) • MM S-A (stepped shanks) (90) • MM S-A (straight shanks) (93) • MM S-A-AV (90) • MM S-A-BT (97) • MM S-A-C# (96)

• MM S-A-HSK (96) • MM S-A-N (92) • MM S-A-SK (96) • MM S-B (85° conical shanks) (93) • MM S-D (89° conical shanks) (94) • MM S-ER (95) • MM S-ER-H (95)

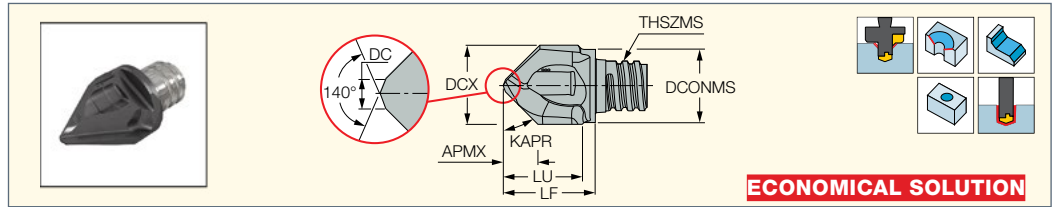
• MM TS-A (92) • MM TS2-A (90)

Spare Parts

Designation				
BCM D12-MMT08	SR 10503457	T-6/51		
BCM D16-MMT10	SR 34-505/1 MHG 2.5X7.2	T-8/53		
BCM D20-MMT12-CC	SR 34-506/L	T-9/51		
BCM D25-MMT15-C	SR 14-601		BLD T15/S7	SW6-T-SH

MM HCD

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



Designation	Dimensions											IC908
	DCX ⁽⁴⁾	DCXTOL	NOF ⁽⁵⁾	LU	THSZMS	DCONMS	LF	APMX	DC	KAPR ⁽⁶⁾	CSP ⁽⁷⁾	
MM HCD060-090-2T04	6.00	z9	2	6.86	T04	5.80	8.50	2.66	1.00	45.0	0	●
MM HCD080-060-2T05	8.00	h10	2	8.00	T05	7.60	10.50	6.08	1.20	60.0	0	●
MM HCD080-120-2T05	8.00	h10	2	7.80	T05	7.60	10.30	2.15	1.00	30.0	0	●
MM HCD080-090-2T05 ⁽¹⁾	8.00	z9	2	7.00	T05	7.60	9.75	3.15	1.00	45.0	0	●
MM HCD083-090-2T05 ⁽¹⁾	8.30	z9	2	7.50	T05	7.60	10.00	3.56	1.00	45.0	0	●
MM HCD.375-100-2T06 ⁽²⁾	9.50	h10	2	9.70	T06	9.50	13.40	3.60	2.00	40.0	0	●
MM HCD.375-080-2T06	9.50	z9	2	9.00	T06	9.20	11.80	5.00	2.00	50.0	0	●
MM HCD100-060-2T06	10.00	h10	2	9.30	T06	9.50	11.75	7.60	1.50	60.0	0	●
MM HCD100-120-2T06	10.00	h10	2	9.50	T06	9.50	12.70	2.70	1.50	30.0	0	●
MM HCD100-090-2T06-N ⁽¹⁾	10.00	z9	2	10.10	T06	9.50	14.00	4.50	1.50	45.0	0	●
MM HCD104-090-2T06 ⁽¹⁾	10.40	z9	2	9.00	T06	9.50	11.75	4.60	1.50	45.0	0	●
MM HCD120-060-2T08	12.00	h10	2	11.00	T08	11.50	15.40	9.24	1.50	60.0	0	●
MM HCD120-120-2T08	12.00	h10	2	11.65	T08	11.50	15.20	3.50	1.50	30.0	0	●
MM HCD120-090-2T08 ⁽¹⁾	12.00	z9	2	12.00	T08	11.50	15.50	5.30	1.50	45.0	0	●
MM HCD124-090-2T08 ⁽¹⁾	12.40	z9	2	11.80	T08	11.50	15.50	5.50	1.50	45.0	0	●
MM HCD.500-080-2T08 ⁽³⁾	12.70	z9	2	11.10	T08	12.20	15.50	6.80	1.50	50.0	0	●
MM HCD.500-100-2T08 ⁽²⁾	12.70	z9	2	10.90	T08	11.50	14.70	4.90	1.50	40.0	0	●
MM HCD.625-080-2T10	15.90	z9	2	15.20	T10	15.00	18.80	8.80	1.50	50.0	0	●
MM HCD.625-100-2T10 ⁽²⁾	15.90	z9	2	14.90	T10	15.10	19.00	6.20	2.00	40.0	0	●
MM HCD160-060-2T10	16.00	h10	2	16.20	T10	15.20	20.20	12.00	2.50	60.0	0	●
MM HCD160-120-2T10	16.00	h10	2	15.50	T10	15.20	19.90	4.40	1.50	30.0	0	●
MM HCD160-090-2T10-N	16.00	z9	2	15.70	T10	15.20	20.00	7.40	1.50	45.0	0	●
MM HCD165-090-2T10 ⁽¹⁾	16.50	z9	2	14.90	T10	15.20	18.80	7.10	1.50	45.0	0	●
MM HCD.750-080-2T12	19.05	z9	2	19.60	T12	18.45	24.70	11.00	2.00	50.0	0	●
MM HCD.750-100-2T12 ⁽²⁾	19.05	z9	2	18.50	T12	18.30	23.60	7.50	1.50	40.0	0	●
MM HCD200-060-2T12	20.00	h10	2	18.20	T12	18.30	24.70	15.50	2.60	60.0	0	●
MM HCD200-120-2T12	20.00	h10	2	14.65	T12	18.30	21.15	5.50	1.50	30.0	0	●
MM HCD200-090-2T12 ⁽¹⁾	20.00	z9	2	18.20	T12	18.30	24.70	9.40	1.50	45.0	0	●

- For shanks, see pages 90-98
- Clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 11-12
- Do not apply lubricant to the threaded connection
- For user guide, see pages 13-14

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

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

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

⁽⁴⁾ Cutting diameter maximum

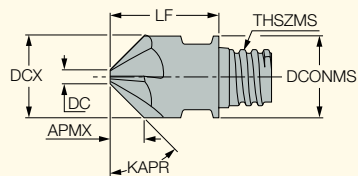
⁽⁵⁾ Number of flutes

⁽⁶⁾ Tool cutting edge angle

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

MULTI-MASTER**MM ECF**

Interchangeable Solid Carbide Heads for Chamfering and Countersinking



Designation	Dimensions									IC908
	KAPR ⁽¹⁾	DCX ⁽²⁾	NOF ⁽³⁾	DC	APMX	THSZMS	CSP ⁽⁴⁾	DCONMS	LF	
MM ECF120-02/100-4T06	30.0	10.00	4	2.00	2.30	T06	0	10.00	13.00	●
MM ECF120-02/120-4T08	30.0	12.00	4	2.00	2.90	T08	0	12.00	16.50	●
MM ECF120-03/160-6T10	30.0	16.00	6	3.00	3.70	T10	0	16.00	20.50	●
MM ECF120-05/200-6T12	30.0	20.00	6	5.00	4.30	T12	0	18.45	25.50	●
MM ECF120-06/250-6T15	30.0	25.00	6	6.00	5.40	T15	0	25.00	25.00	●
MM ECF45-080-4T05	45.0	8.00	4	1.95	3.00	T05	0	8.00	10.00	●
MM ECF45-100-4T06	45.0	10.00	4	1.95	4.00	T06	0	10.00	13.00	●
MM ECF45-120-4T08	45.0	12.00	4	1.95	5.00	T08	0	12.00	16.50	●
MM ECF45-150-4T08	45.0	12.70	4	1.95	5.00	T08	0	12.70	16.50	●
MM ECF45-160-6T10	45.0	16.00	6	3.00	6.50	T10	0	16.00	20.50	●
MM ECF45-200-6T12	45.0	20.00	6	5.00	7.50	T12	0	18.45	25.50	●
MM ECF45-250-6T15-M	45.0	25.00	6	5.00	10.00	T15	0	25.00	25.00	●
MM ECF60-100-4T06	60.0	10.00	4	1.60	7.30	T06	0	10.00	13.00	●
MM ECF60-02/100-4T06	60.0	10.00	4	2.00	6.90	T06	0	10.00	13.00	●
MM ECF60-03/120-4T08	60.0	12.00	4	3.00	7.80	T08	0	12.00	16.50	●
MM ECF60-04/160-6T10	60.0	16.00	6	4.00	10.00	T10	0	16.00	20.50	●
MM ECF60-05/200-6T12	60.0	20.00	6	5.00	13.00	T12	0	18.45	25.50	●
MM ECF60-08/250-6T15	60.0	25.00	6	8.00	14.00	T15	0	25.00	25.00	●

- For shanks, see pages 90-98
- For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 11-12
- Do not apply lubricant to the threaded connection
- For user guide, see pages 13-14

⁽¹⁾ Tool cutting edge angle

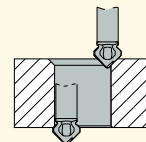
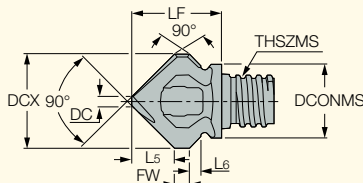
⁽²⁾ Cutting diameter maximum

⁽³⁾ Number of flutes

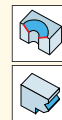
⁽⁴⁾ 0 - Without coolant supply, 1 - With coolant supply

MULTI-MASTER**MM HDF**

Interchangeable 2 Flute Solid Carbide Heads for Upper and Bottom Chamfering



ECONOMICAL SOLUTION



Designation	Dimensions										IC908
	DCX ⁽¹⁾	NOF ⁽²⁾	L5	L6	FW	DC	THSZMS	CSP ⁽³⁾	DCONMS	LF	
MM HDF100-090-2T05	9.80	2	4.30	0.90	2.50	1.20	T05	0	7.60	10.80	MM KEY 8X5*
MM HDF120-090-2T06	11.80	2	5.30	1.20	2.00	1.20	T06	0	9.30	11.20	MM KEY 10X7*
MM HDF160-090-2T08	15.70	2	7.10	2.20	2.00	1.50	T08	0	11.50	14.00	MM KEY 13X8*

- For shanks, see pages 90-98
- Clamping keys to be ordered separately
- For tightening torques and clamping instructions, see pages 11-12
- Do not apply lubricant to the threaded connection
- For user guide, see pages 13-14

⁽¹⁾ Cutting diameter maximum

⁽²⁾ Number of flutes

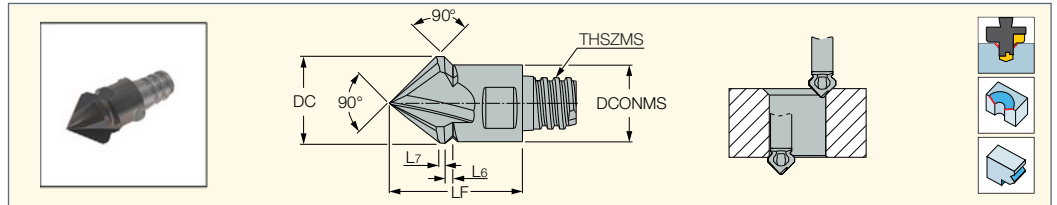
⁽³⁾ 0 - Without coolant supply, 1 - With coolant supply

* Optional, to be ordered separately

MULTI-MASTER

MM EDF

Interchangeable 3 Flute Solid Carbide Heads for Upper and Bottom Chamfering



Designation	Dimensions								IC908
	DC	DCONMS	NOF ⁽¹⁾	L6	L7	LF	THSZMS	CSP ⁽²⁾	
MM EDF074-090-58-3T04	7.40	5.80	3	0.90	1.00	10.00	T04	0	●
MM EDF094-090-76-3T05	9.40	7.60	3	0.90	1.00	12.50	T05	0	●
MM EDF116-090-95-3T06	11.60	9.60	3	1.00	1.00	16.50	T06	0	●

- For shanks, see pages 90-98
- For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 11-12
- Do not apply lubricant to the threaded connection
- For user guide, see pages 13-14

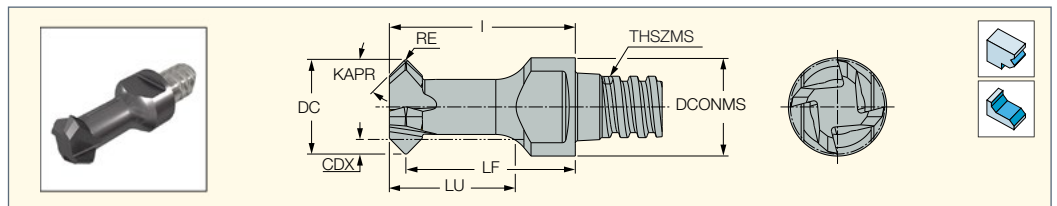
⁽¹⁾ Number of flutes

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

MULTI-MASTER

MM TS-45

Interchangeable Solid Carbide Small Diameter 45° Chamfering Heads



Designation	Dimensions											IC908
	DC	KAPR ⁽¹⁾	CDX ⁽²⁾	RE	NOF ⁽³⁾	I	THSZMS	DCONMS	LU	LF	CSP ⁽⁴⁾	
MM TS077-45-20A-4T05	7.70	45.0	1.20	0.20	4	15.20	T05	8.00	10.3	13.85	0	●

- For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 11-12
- Do not apply lubricant to the threaded connection

⁽¹⁾ Tool cutting edge angle

⁽²⁾ Cutting depth maximum

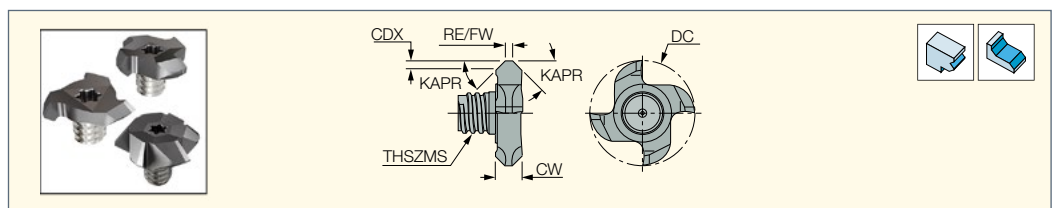
⁽³⁾ Number of flutes

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

MULTI-MASTER

MM GRIT-45A

Interchangeable Solid Carbide Small Diameter 45° Chamfering Heads



Designation	Dimensions										IC908
	DC	KAPR ⁽¹⁾	CDX ⁽²⁾	RE	FW	CW	THSZMS	CSP ⁽³⁾	NOF ⁽⁴⁾		
MM GRIT18K-45A-3T6	17.70	45.0	1.40	0.10	-	3.47	T06	0	3	T-25/3*	●
MM GRIT18P-45A-3T6	17.70	45.0	1.40	0.10	-	3.47	T06	0	3	T-25/3*	●
MM GRIT22K-45A-4T8	21.70	45.0	1.70	-	1.50	5.55	T08	0	4	T-30/3 L*	●
MM GRIT22P-45A-4T8	21.70	45.0	1.70	-	1.50	5.55	T08	0	4	T-30/3 L*	●
MM GRIT28K-45A-6T10	27.70	45.0	4.00	-	0.50	9.80	T10	0	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 11-12
- For shanks, see pages 90-98

⁽¹⁾ Tool cutting edge angle

⁽²⁾ Cutting depth maximum

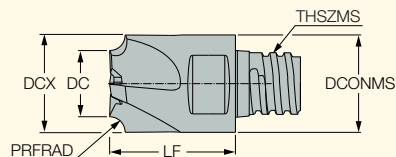
⁽³⁾ 0 - Without coolant supply, 1 - With coolant supply

⁽⁴⁾ Number of flutes

* Optional, to be ordered separately

MULTI-MASTER**MM ER**

Interchangeable 4 Flute
Solid Carbide Corner
Round Milling Heads



Designation	Dimensions									IC908
	PRFRAD	Tm ⁽¹⁾	DC	DCX ⁽²⁾	DCONMS	NOF ⁽³⁾	LF	THSZMS	CSP ⁽⁴⁾	
MM ER0.5/020-5.0-4T04	0.50	0.5-1.0	5.00	6.00	6.00	4	8.50	T04	0	●
MM ER1.0/040-5.8-4T05	1.00	0.5-1.4	5.80	8.00	8.00	4	10.00	T05	0	●
MM ER1.6/063-6.8-4T06	1.60	0.5-2.5	6.80	10.00	10.00	4	13.00	T06	0	●
MM ER2.0/078-6.0-4T06	2.00	0.5-2.5	6.00	10.00	10.00	4	13.00	T06	0	●
MM ER2.5/094-5.1-4T06	2.50	0.5-2.5	5.10	10.00	10.00	4	13.00	T06	0	●
MM ER3.0/125-6.5-4T08	3.00	0.5-3.1	6.50	12.70	12.70	4	16.50	T08	0	●

- For shanks, see pages 90-98
- For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 11-12
- Do not apply lubricant to the threaded connection
- For user guide, see pages 13-14

⁽¹⁾ Specially tailored radius range upon request

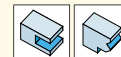
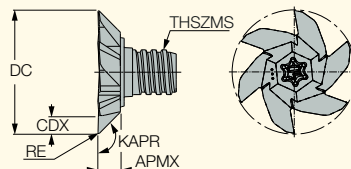
⁽²⁾ Cutting diameter maximum

⁽³⁾ Number of flutes

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

MULTI-MASTER**MM Dovetail**

Interchangeable Solid
Carbide Heads



Designation	Dimensions									IC908
	DC	KAPR ⁽¹⁾	CDX ⁽²⁾	APMX	RE	THSZMS	CSP ⁽³⁾	NOF ⁽⁴⁾	∠	
MM TS105-45D-06T04	10.50	135.0	1.33	1.60	0.20	T04	0	6	T-15/3°	●
MM TS135-45D-06T05	13.50	135.0	1.75	2.00	0.20	T05	0	6	T-20/3°	●
MM TS165-45D-06T06	16.50	135.0	1.75	2.00	0.20	T06	0	6	T-25/3°	●
MM TS195-45D-06T08	19.50	135.0	2.55	2.80	0.20	T08	0	6	T-30/3 L°	●
MM TS225-45D-06T08	22.50	135.0	3.48	3.70	0.20	T08	0	6	T-40/3 L°	●
MM TS250-45D-06T10	25.00	135.0	3.68	3.90	0.20	T10	0	6	T-50/3 L°	●
MM GRIT 28K-45D-6T10	27.70	135.0	4.00	4.20	0.20	T10	0	6	T-40/3 L°	●
MM TS105-60D-06T04	10.50	120.0	0.84	1.70	0.20	T04	0	6	T-15/3°	●
MM TS135-60D-06T05	13.50	120.0	1.67	3.10	0.20	T05	0	6	T-20/3°	●
MM TS165-60D-06T06	16.50	120.0	2.02	3.70	0.20	T06	0	6	T-25/3°	●
MM TS195-60D-06T08	19.50	120.0	2.70	4.80	0.20	T08	0	6	T-30/3 L°	●
MM TS225-60D-06T08	22.50	120.0	3.79	6.70	0.20	T08	0	6	T-40/3 L°	●
MM TS250-60D-06T10	25.00	120.0	3.85	6.80	0.20	T10	0	6	T-50/3 L°	●
MM GRIT 28K-60D-6T10	27.70	120.0	4.00	7.08	0.20	T10	0	6	T-40/3 L°	●
MM GRIT 28K-75D-6T10	27.70	105.0	2.20	8.39	0.20	T10	0	6	T-40/3 L°	●

- Use carbide shanks for groove milling heads

- For user guide, see pages 13-14

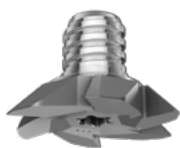
⁽¹⁾ Tool cutting edge angle

⁽²⁾ Cutting depth maximum

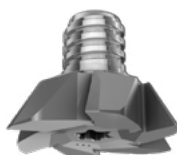
⁽³⁾ 0 - Without coolant supply, 1 - With coolant supply

⁽⁴⁾ Number of flutes

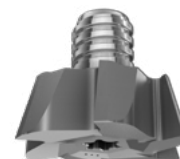
* Optional, to be ordered separately



MM GRIT 28K-45D-6T10



MM GRIT 28K-60D-6T10

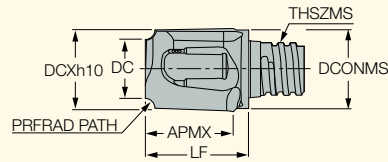


MM GRIT 28K-75D-6T10

MULTI-MASTER

MM HR

Interchangeable 2 Flute
Solid Carbide Corner
Round Milling Heads



ECONOMICAL SOLUTION

Designation	Dimensions										IC908
	DCX ⁽¹⁾	PRFRAD	Tm ⁽²⁾	NOF ⁽³⁾	DC	APMX	THSZMS	CSP ⁽⁴⁾	DCONMS	LF	
MM HR1.0/047-5.8-2T05	8.00	1.00	r0.5-3.0	2	5.80	7.50	T05	0	7.60	10.60	●
MM HR1.6/063-6.8-2T06	10.00	1.60	r0.5-3.0	2	6.80	9.50	T06	0	9.50	12.50	●
MM HR2.0/078-6.0-2T06	10.00	2.00	r0.5-3.0	2	6.00	9.50	T06	0	9.50	12.50	●
MM HR2.5/094-5.1-2T06	10.00	2.50	r0.5-3.0	2	5.10	9.50	T06	0	9.50	12.50	●
MM HR3.0/125-6.5-2T08	12.70	3.00	r0.5-4.0	2	6.50	12.00	T08	0	11.50	15.60	●
MM HR4.0/156-4.7-2T08	12.70	4.00	r0.5-4.0	2	4.70	12.00	T08	0	11.50	15.60	●
MM HR5.0/188-6.2-2T10	16.00	4.88	r0.5-5.0	2	6.20	15.00	T10	0	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	0	18.45	17.40	●

- For shanks, see pages 90-98
- For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 11-12
- Do not apply lubricant to the threaded connection
- For user guide, see pages 13-14

⁽¹⁾ Cutting diameter maximum

⁽²⁾ Specially tailored radius range upon request.

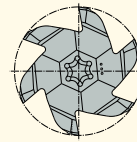
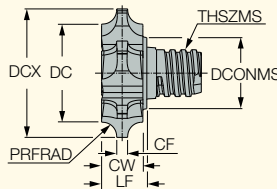
⁽³⁾ Number of flutes

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

MULTI-MASTER

MM GRIT 28P-DR

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



Designation	Dimensions										IC908
	PRFRAD	CF	DCX ⁽¹⁾	DC	LF	CW	NOF ⁽²⁾	THSZMS	CSP ⁽³⁾	DCONMS	
MM GRIT 28P-2.7-DR1.0	1.00	2.70	27.70	24.80	6.00	5.60	6	T10	0	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	0	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	0	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	0	15.30	T-40/3 L*

- For shanks, see pages 90-98
- For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 11-12
- Do not apply lubricant to the threaded connection
- For user guide, see pages 13-14

⁽¹⁾ Cutting diameter maximum

⁽²⁾ Number of flutes

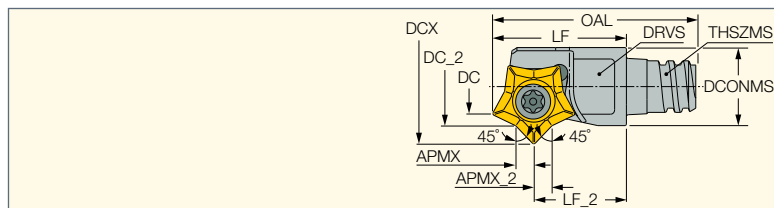
⁽³⁾ 0 - Without coolant supply, 1 - With coolant supply

* Optional, to be ordered separately

CHAMFMILL

CH45-MM-PN06

Upper and Bottom Chamfering
Endmills with a MULTI-MASTER
Threaded Adaptation



Designation	DCX ⁽¹⁾	DC_2	DC	APMX	APMX_2	LF	LF_2	OAL	DCONMS	THSZMS	CICT ⁽²⁾	DRVS ⁽³⁾	DMIN ⁽⁴⁾	CSP ⁽⁵⁾	kg
CH45-10/.39-1-MMT05-PN06	11.70	8.45	6.60	1.50	1.50	13.00	9.00	19.75	7.60	T05	1	5.5	10.00	0	0.00
CH45-17/.67-2-MMT08-PN06	16.70	13.45	11.40	1.50	1.50	18.00	14.00	25.50	12.20	T08	2	10.0	17.00	1	0.02
CH45-19/.75-3-MMT10-PN06	18.70	15.45	13.40	1.50	1.50	20.00	16.00	31.30	15.30	T10	3	13.0	19.00	1	0.02

- Do not apply lubricant to the MULTI-MASTER threaded connection
- For adaptation options, see pages 11-12

⁽¹⁾ Cutting diameter maximum

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

⁽³⁾ Torque key size

⁽⁴⁾ Minimum penetration diameter for back chamfering

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

For inserts: PNMT 0602-TN

For holders, see pages: MM CAB (98) • MM CAB-T-T (97) • MM CAB-T-T-W (97) • MM GRT (shanks) (92) • MM S-A (stepped shanks) (90) • MM S-A (straight shanks) (93)

• MM S-A-BT (97) • MM S-A-C# (96) • MM S-A-HSK (96) • MM S-A-N (92) • MM S-A-SK (96) • MM S-B (85° conical shanks) (93) • MM S-D (89° conical shanks) (94)

• MM S-ER (95) • MM S-ER-H (95) • MM TS-A (92) • MM TS2-A (90)

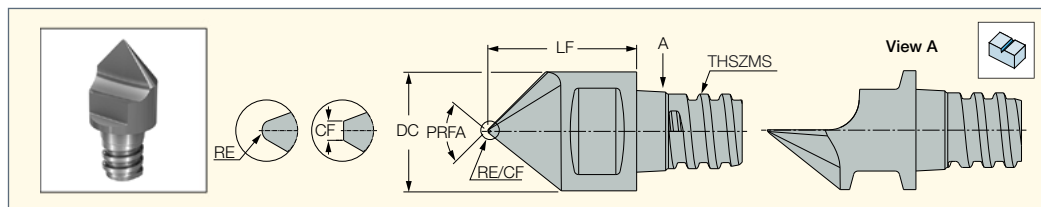
Spare Parts

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

MULTI-MASTER

MM EPG

Single Flute MULTI-MASTER
Engraving Tool Head

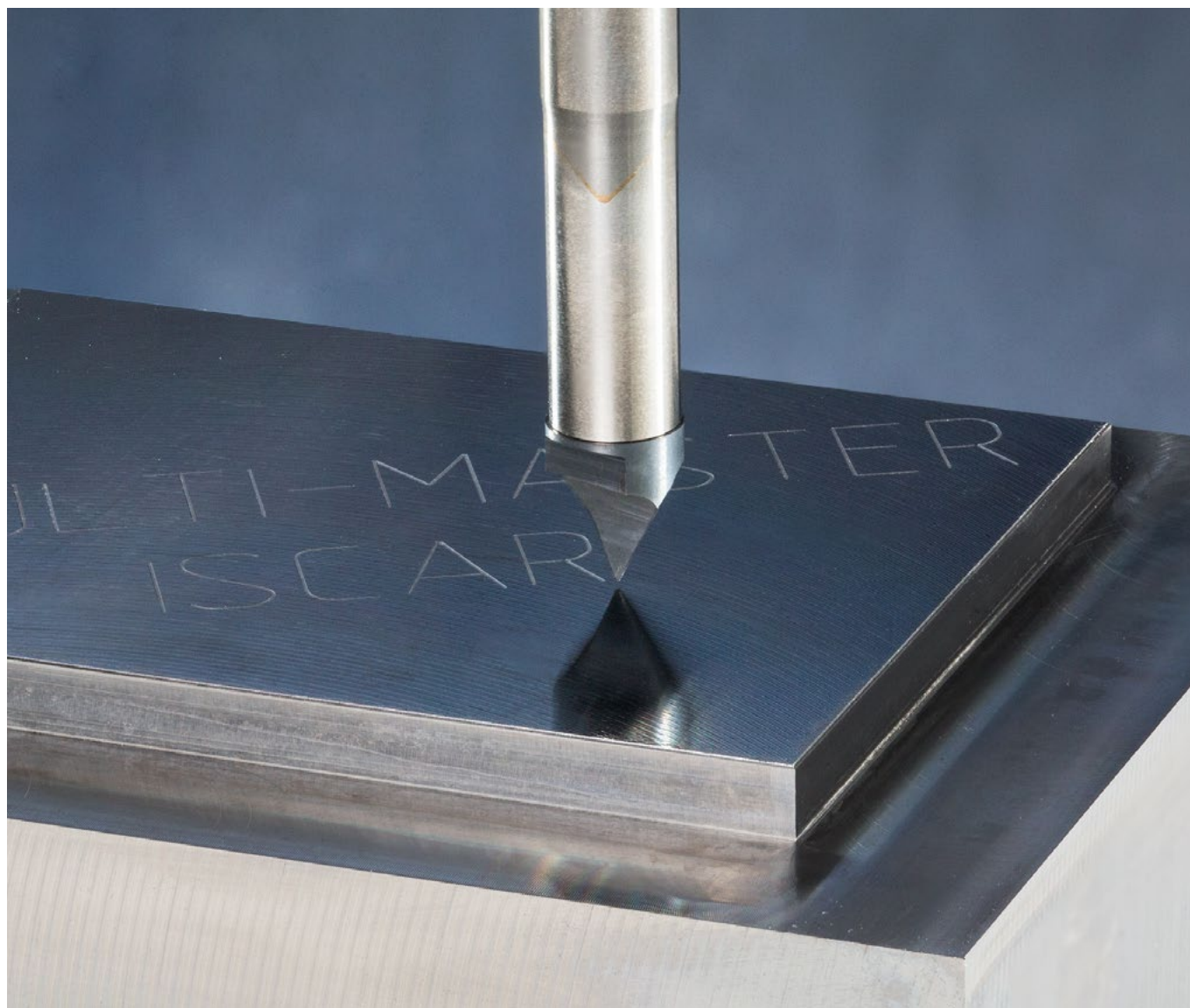


Designation	Dimensions							IC908
	DC	RE	CF ⁽¹⁾	PRFA	LF	THSZMS	CSP ⁽²⁾	
MM EPG060/60-1T04	6.00	0.20	-	60.00	8.50	T04	0	●
MM EPG080/30-1T05	8.00	0.20	-	30.00	10.00	T05	0	●
MM EPG080/45-1T05	8.00	0.20	-	45.00	10.00	T05	0	●
MM EPG080/60-1T05	8.00	0.20	-	60.00	10.00	T05	0	●
MM EPG080/90-1T05	8.00	0.20	-	90.00	10.00	T05	0	●
MM EPG080/60-F50-1T05	8.00	-	0.50	60.00	10.00	T05	0	●
MM EPG080/60-F75-1T05	8.00	-	0.75	60.00	10.00	T05	0	●
MM EPG080/90-F32-1T05	8.00	-	0.32	90.00	10.00	T05	0	●
MM EPG080/90-F50-1T05	8.00	-	0.50	90.00	10.00	T05	0	●

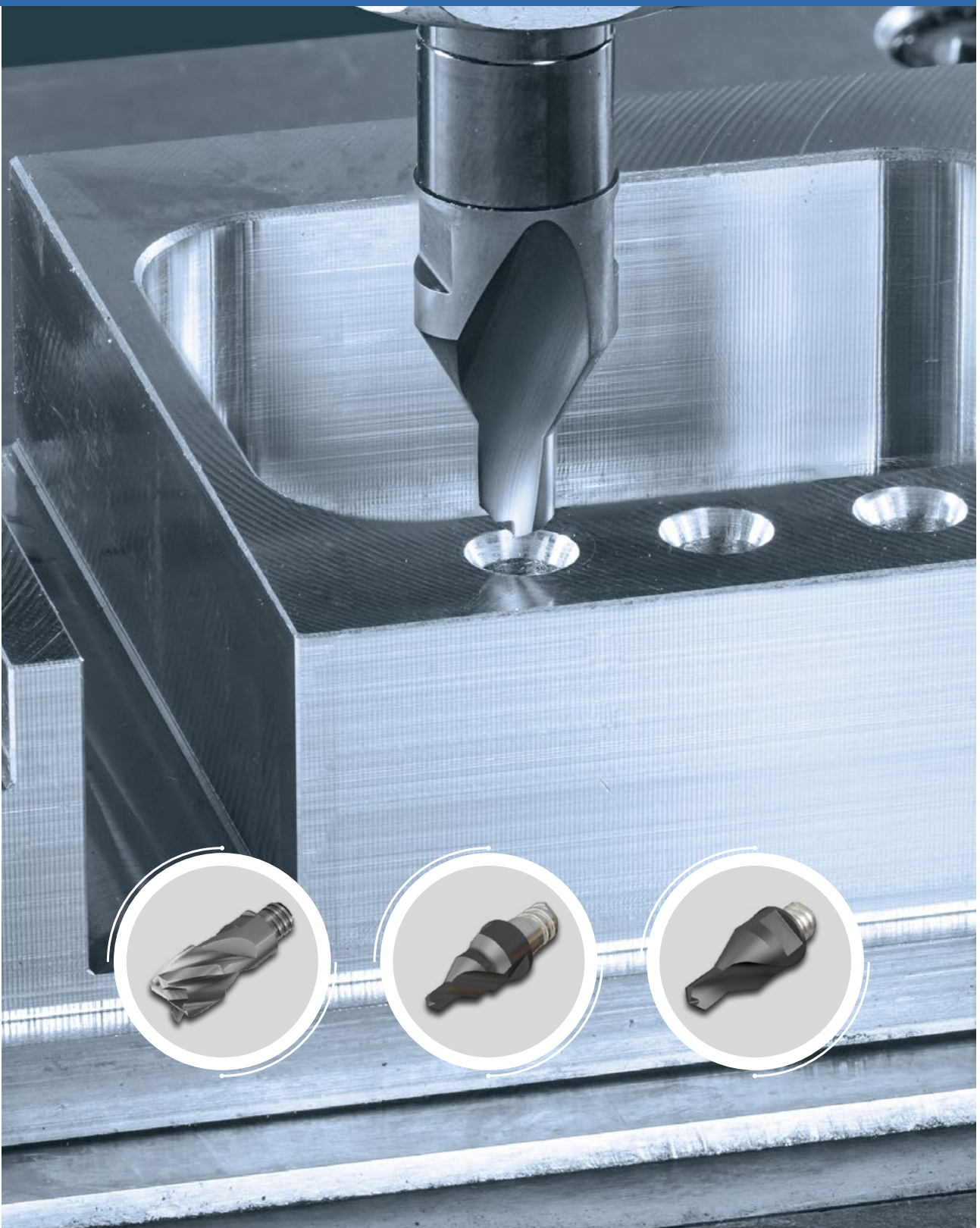
- For shanks, see pages 90-98
- For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 11-12
- Do not apply lubricant to the threaded connection

⁽¹⁾ Front flat

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

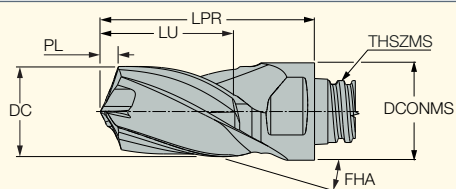


HOLEMAKING



MULTI-MASTER**MM SPD-3T**

Three-Flute Exchangeable
Solid Carbide Drilling Heads



Designation	Dimensions								IC908
	DC	LU	LPR	PL	FHA	THSZMS	DCONMS	CSP ⁽¹⁾	
MM SPD080-08-3T06	8.00	12.10	22.00	1.590	15.0	T06	10.00	0	●
MM SPD085-09-3T06	8.50	12.20	22.00	1.680	15.0	T06	10.00	0	●
MM SPD090-09-3T06	9.00	12.30	22.00	1.780	15.0	T06	10.00	0	●
MM SPD0925-10-3T06	9.25	13.80	22.00	1.830	15.0	T06	10.00	0	●
MM SPD095-10-3T06	9.50	13.90	22.00	1.870	15.0	T06	10.00	0	●
MM SPD100-10-3T08	10.00	15.00	27.00	1.970	15.0	T08	12.00	0	●
MM SPD105-11-3T08	10.50	15.00	27.00	2.050	15.0	T08	12.00	0	●
MM SPD1075-11-3T08	10.75	15.10	27.00	2.120	15.0	T08	12.00	0	●
MM SPD110-11-3T08	11.00	15.10	27.00	2.160	15.0	T08	12.00	0	●
MM SPD1125-12-3T08	11.25	16.20	27.00	2.200	15.0	T08	12.00	0	●
MM SPD115-12-3T08	11.50	16.20	27.00	2.260	15.0	T08	12.00	0	●
MM SPD120-12-3T08	12.00	16.60	27.00	2.350	15.0	T08	12.70	0	●
MM SPD125-13-3T08	12.50	16.60	27.00	2.430	15.0	T08	12.70	0	●
MM SPD1275-13-3T10	12.75	20.00	33.50	2.500	15.0	T10	16.00	0	●
MM SPD130-13-3T10	13.00	20.00	33.50	2.540	15.0	T10	16.00	0	●
MM SPD140-14-3T10	14.00	19.70	33.50	2.730	15.0	T10	16.00	0	●
MM SPD145-15-3T10	14.50	20.80	33.50	2.810	15.0	T10	16.00	0	●
MM SPD150-15-3T10	15.00	20.40	33.50	2.930	15.0	T10	16.00	0	●
MM SPD1525-16-3T10	15.25	20.50	33.50	2.970	15.0	T10	16.00	0	●
MM SPD155-16-3T10	15.50	20.50	33.50	3.020	15.0	T10	16.00	0	●
MM SPD160-16-3T12	16.00	25.10	41.00	3.100	15.0	T12	18.43	0	●

• For shanks, see pages 90-98

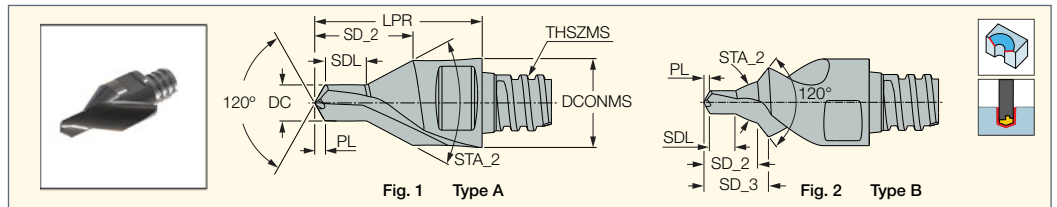
• For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 11-12

• Do not apply lubricant to the threaded connection

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

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.	CSP ⁽¹⁾	
MM ECS-A1.00X06-2T04	1.07	6.00	T04	10.00	1.32	4.14	-	60.0	0.280	1	0	●
MM ECS-A1.60X06-2T04	1.65	6.00	T04	10.00	1.97	4.45	-	60.0	0.430	1	0	●
MM ECS-A2.00X06-2T04	2.07	6.00	T04	10.00	2.36	6.37	-	60.0	0.540	1	0	●
MM ECS-A3.15X08-2T05	3.28	8.00	T05	15.00	3.75	8.76	-	60.0	0.850	1	0	●
MM ECS-A4.00X10-2T06	4.12	10.00	T06	19.00	4.83	11.05	-	60.0	1.070	1	0	●
MM ECS-A5.00X12-2T08	5.13	12.00	T08	23.00	5.88	13.23	-	60.0	1.320	1	0	●
MM ECS-A6.30X16-2T10	6.46	16.00	T10	28.00	7.25	17.18	-	60.0	1.650	1	0	●
MM ECS-B3.15X12-2T08	3.24	12.00	T08	23.00	3.55	7.40	8.94	60.0	0.830	2	0	●
MM ECS-B4.00X127-2T08	4.09	12.70	T08	23.00	4.53	9.50	10.71	60.0	1.070	2	0	●
MM ECS-B5.00X19-2T12	5.09	18.45	T12	25.50	5.56	11.70	14.17	60.0	1.330	2	0	●
MM ECS-B6.30X20-2T12	6.41	18.45	T12	25.50	6.95	14.50	16.58	60.0	1.680	2	0	●

- For shanks, see pages 90-98
 - For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 11-12
 - Do not apply lubricant to the threaded connection
 - For user guide, see below
- ⁽¹⁾ 0 - Without coolant supply, 1 - With coolant supply

		IC908						
		*V _c x f _z [m/min x mm/tooth]						
	ISO	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

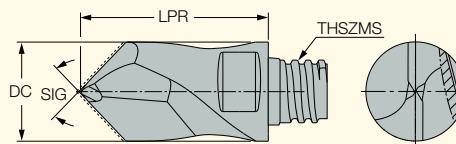
* V_c Calculated for ØDC

		IC908			
		*V _c x f _z [m/min x mm/tooth]			
	ISO	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

MULTI-MASTER**MM ECD**

NC Spot Drills for Accurate Hole Location without the need for a Bushing Guide



Designation	Dimensions						IC908
	DC	LPR	THSZMS	SIG	CSP ⁽¹⁾		
MM ECD-06X145-2T04	6.00	8.50	T04	145	0		●
MM ECD-06X90-2T04	6.00	11.00	T04	90	0		●
MM ECD-08X145-2T05	8.00	10.00	T05	145	0		●
MM ECD-08X90-2T05	8.00	15.00	T05	90	0		●
MM ECD-10X145-2T06	10.00	13.00	T06	145	0		●
MM ECD-10X90-2T06	10.00	19.00	T06	90	0		●
MM ECD-12X145-2T08	12.00	16.50	T08	145	0		●
MM ECD-12X90-2T08	12.00	23.00	T08	90	0		●
MM ECD-16X145-2T10	16.00	20.50	T10	145	0		●
MM ECD-16X90-2T10	16.00	28.00	T10	90	0		●

• For shanks, see pages 90-98

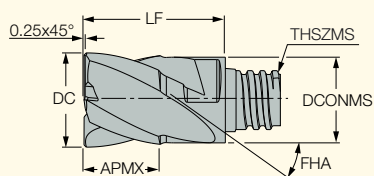
• For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 11-12

• Do not apply lubricant to the threaded connection

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

MULTI-MASTER**MM EFCB**

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



Designation	Dimensions										IC908	Recommended Machining Data f_z (mm/t)
	DC ⁽¹⁾	APMX	LF	DCONMS	THSZMS	NOF ⁽²⁾	FHA	CSP ⁽³⁾	KCH	CHW		
MM EFCB110A08-4T06	11.00	8.40	16.50	10.00	T06	4	30.0	0	45.0	0.25	●	0.03-0.04
MM EFCB140A11-4T08	14.00	11.50	28.00	12.00	T08	4	30.0	0	45.0	0.25	●	0.04-0.05

• 0.06 mm maximum concavity on the tool's bottom

• For shanks, see pages 90-98

• For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 11-12

• Do not apply lubricant to the threaded connection

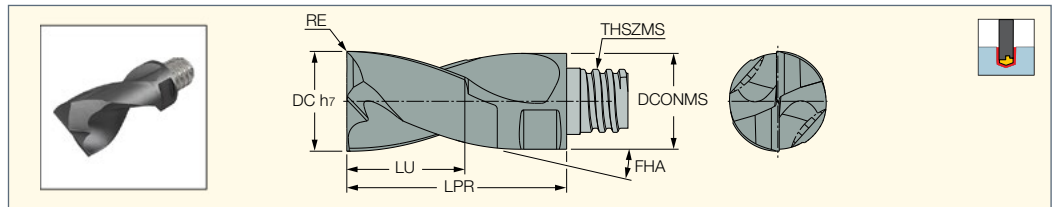
• For user guide, see pages 13-14

⁽¹⁾ e8 tolerance

⁽²⁾ Number of flutes

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

MULTI-MASTER
Exchangeable Solid Carbide
Flat Bottom Drill Heads



Designation	Dimensions									IC908
	DC	DCONMS	NOF ⁽¹⁾	LU	LPR	RE	FHA	THSZMS	CSP ⁽²⁾	
MM ECDF080A100-2T05	8.00	7.70	2	10.00	18.00	0.00	30.0	T05	0	●
MM ECDF085A120-2T05	8.50	7.70	2	12.00	22.00	0.00	30.0	T05	0	●
MM ECDF090A120-2T05	9.00	7.70	2	12.00	22.00	0.00	30.0	T05	0	●
MM ECDF095A120-2T06	9.50	9.20	2	12.00	22.00	0.00	30.0	T06	0	●
MM ECDF100A120-2T06	10.00	9.60	2	12.00	22.00	0.00	30.0	T06	0	●
MM ECDF105A120-2T06	10.50	9.60	2	12.00	23.00	0.00	30.0	T06	0	●
MM ECDF110A120-2T06	11.00	9.60	2	12.00	23.00	0.00	30.0	T06	0	●
MM ECDF115A120-2T06	11.50	9.60	2	12.00	23.00	0.00	30.0	T06	0	●
MM ECDF125A150-2T08	12.00	11.70	2	15.00	27.00	0.00	30.0	T08	0	●
MM ECDF125A150-2T08	12.50	12.10	2	15.00	27.00	0.00	30.0	T08	0	●
MM ECDF130A150-2T08	13.00	12.20	2	15.00	27.00	0.00	30.0	T08	0	●
MM ECDF135A150-2T08	13.50	12.20	2	15.00	27.00	0.00	30.0	T08	0	●
MM ECDF140A150-2T08	14.00	12.20	2	15.00	27.00	0.00	30.0	T08	0	●
MM ECDF145A150-2T08	14.50	12.20	2	15.00	27.00	0.00	30.0	T08	0	●
MM ECDF150A150-2T08	15.00	12.20	2	15.00	27.00	0.00	30.0	T08	0	●
MM ECDF155A150-2T08	15.50	12.20	2	15.00	27.00	0.00	30.0	T08	0	●
MM ECDF160A200-2T10	16.00	15.30	2	20.00	33.50	0.00	30.0	T10	0	●
MM ECDF165A200-2T10	16.50	15.30	2	20.00	33.50	0.00	30.0	T10	0	●
MM ECDF170A200-2T10	17.00	15.30	2	20.00	33.50	0.00	30.0	T10	0	●
MM ECDF175A200-2T10	17.50	15.30	2	20.00	33.50	0.00	30.0	T10	0	●
MM ECDF180A200-2T10	18.00	15.30	2	20.00	33.50	0.00	30.0	T10	0	●
MM ECDF185A200-2T12	18.50	18.20	2	25.00	41.00	0.00	30.0	T12	0	●
MM ECDF190A250-2T12	19.00	18.30	2	25.00	41.00	0.00	30.0	T12	0	●
MM ECDF195A250-2T12	19.50	18.30	2	25.00	41.00	0.00	30.0	T12	0	●
MM ECDF200A250-2T12	20.00	18.45	2	25.00	41.00	0.00	30.0	T12	0	●

• For shanks, see pages 90-98 • For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 11-12

• Do not apply lubricant to the threaded connection • For user guide, see below

⁽¹⁾ Number of flutes

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

Recommended Machining Conditions for Solid Carbide Endmill Heads DC=8.0-25.4mm

ISO	Material	Condition	Tensile Strength [N/mm ²]	Hardness HB	Material Group No.	V m/min	Feed vs. Flat-Drill Diameter				
							DC=8.0-9.9	DC=10.0-12.9	DC=13.0-15.9	DC=16.0-17.9	DC=18.0-25.4
							frev mm/rev				
P	non-alloy steel and cast steel, free cutting steel	< 0.25 %C annealed	420	125	1	80-110-140	0.08	0.10	0.12	0.14	0.18
		≥ 0.25 %C annealed	650	190	2		0.10	0.12	0.15	0.17	0.21
		< 0.55 %C quenched and tempered	850	250	3		0.12	0.14	0.18	0.20	0.24
		≥ 0.55 %C annealed	750	220	4						
	low alloy and cast steel (less than 5% of alloying elements)	quenched and tempered	1000	300	5	80-105-130					
		annealed	600	200	6						
		quenched and tempered	930	275	7		0.06	0.06	0.08	0.10	0.12
		annealed	1000	300	8		0.08	0.08	0.10	0.12	0.14
	high alloyed steel, cast steel and tool steel	annealed	1200	350	9	60-80-100	0.10	0.10	0.12	0.14	0.16
		quenched and tempered	680	200	10						
		ferritic/martensitic	1100	325	11		0.01	0.02	0.03	0.04	0.06
		martensitic	680	200	12		0.02	0.03	0.04	0.05	0.07
M	stainless steel and cast steel	austenitic, duplex	600	180	14	60-80-100	0.03	0.04	0.05	0.06	0.08
							0.01	0.02	0.03	0.04	0.06
							0.02	0.03	0.04	0.05	0.07
K	gray cast iron (GG)	ferritic / pearlitic		180	17	80-120-160					
		pearlitic / martensitic		260	18		0.08	0.10	0.14	0.16	0.18
	nodular cast iron (GGG)	ferritic		160	15		0.10	0.12	0.16	0.18	0.20
		pearlitic		250	16		0.12	0.14	0.18	0.20	0.22
	malleable cast iron	ferritic		130	19						
		pearlitic		230	20						

■ recommended cutting data

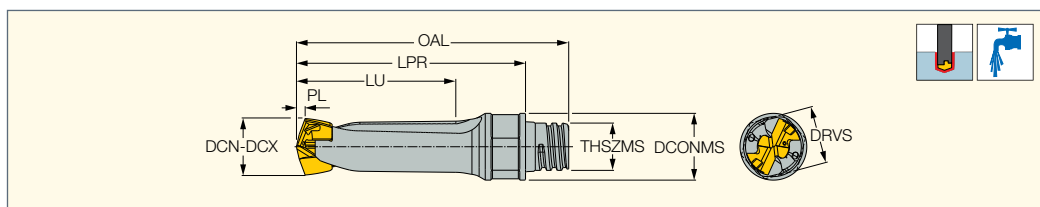
Spare Parts

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, to be ordered separately

SUMOCHAM**DCN-MM**

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



Designation	DCN ⁽²⁾	DCX ⁽³⁾	DCONMS	LU	LPR	PL	OAL	THSZMS	SSC ⁽⁴⁾	MIID ⁽⁵⁾	DRVS ⁽⁶⁾	CSP ⁽⁷⁾	
DCN 040-008-MMT05-2D ⁽¹⁾	4.00	4.49	7.60	8.62	22.00	0.620	28.75	T05	4.0	ICP 040	5.5	1	
DCN 045-009-MMT05-2D ⁽¹⁾	4.50	4.99	7.60	9.66	23.30	0.660	30.05	T05	4.5	ICP 045	5.5	1	
DCN 050-010-MMT06-2D ⁽¹⁾	5.00	5.49	9.60	10.73	27.25	0.730	33.55	T06	5.0	ICP 050	8.0	1	
DCN 055-011-MMT06-2D ⁽¹⁾	5.50	5.99	9.60	11.81	27.50	0.810	33.80	T06	5.5	ICP 055	8.0	1	
DCN 060-012-MMT06-2D	6.00	6.49	9.60	12.96	27.90	0.960	34.20	T06	6.0	ICP 060	8.0	1	K DCN 6-9.99-Y
DCN 065-013-MMT06-2D	6.50	6.99	9.60	14.18	29.50	1.180	35.80	T06	6.5	ICP 065	8.0	1	K DCN 6-9.99-Y
DCN 070-014-MMT06-2D	7.00	7.49	9.60	15.01	30.10	1.010	36.39	T06	7.0	ICP 070	8.0	1	K DCN 6-9.99
DCN 075-015-MMT06-2D	7.50	7.99	9.60	16.01	31.10	1.100	37.40	T06	7.0	ICP 075	8.0	1	K DCN 6-9.99
DCN 080-016-MMT06-2D	8.00	8.49	9.60	17.18	32.90	1.200	39.19	T06	8.0	ICP 080	8.0	1	K DCN 6-9.99
DCN 085-017-MMT06-2D	8.50	8.99	9.60	18.29	33.90	1.290	40.19	T06	8.0	ICP 085	8.0	1	K DCN 6-9.99
DCN 090-018-MMT08-2D	9.00	9.49	11.60	19.35	37.40	1.350	44.90	T08	9.0	ICP 090	10.0	1	K DCN 6-9.99
DCN 095-019-MMT08-2D	9.50	9.99	11.60	20.44	38.40	1.440	45.90	T08	9.0	ICP 095	10.0	1	K DCN 6-9.99
DCN 100-020-MMT08-2D	10.00	10.49	11.60	21.50	39.80	1.500	47.30	T08	10.0	ICP 100	10.0	1	K DCN 10-13.99

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

• For shanks, see pages 90-98

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

⁽²⁾ Cutting diameter minimum

⁽³⁾ Cutting diameter maximum

⁽⁴⁾ Seat size code

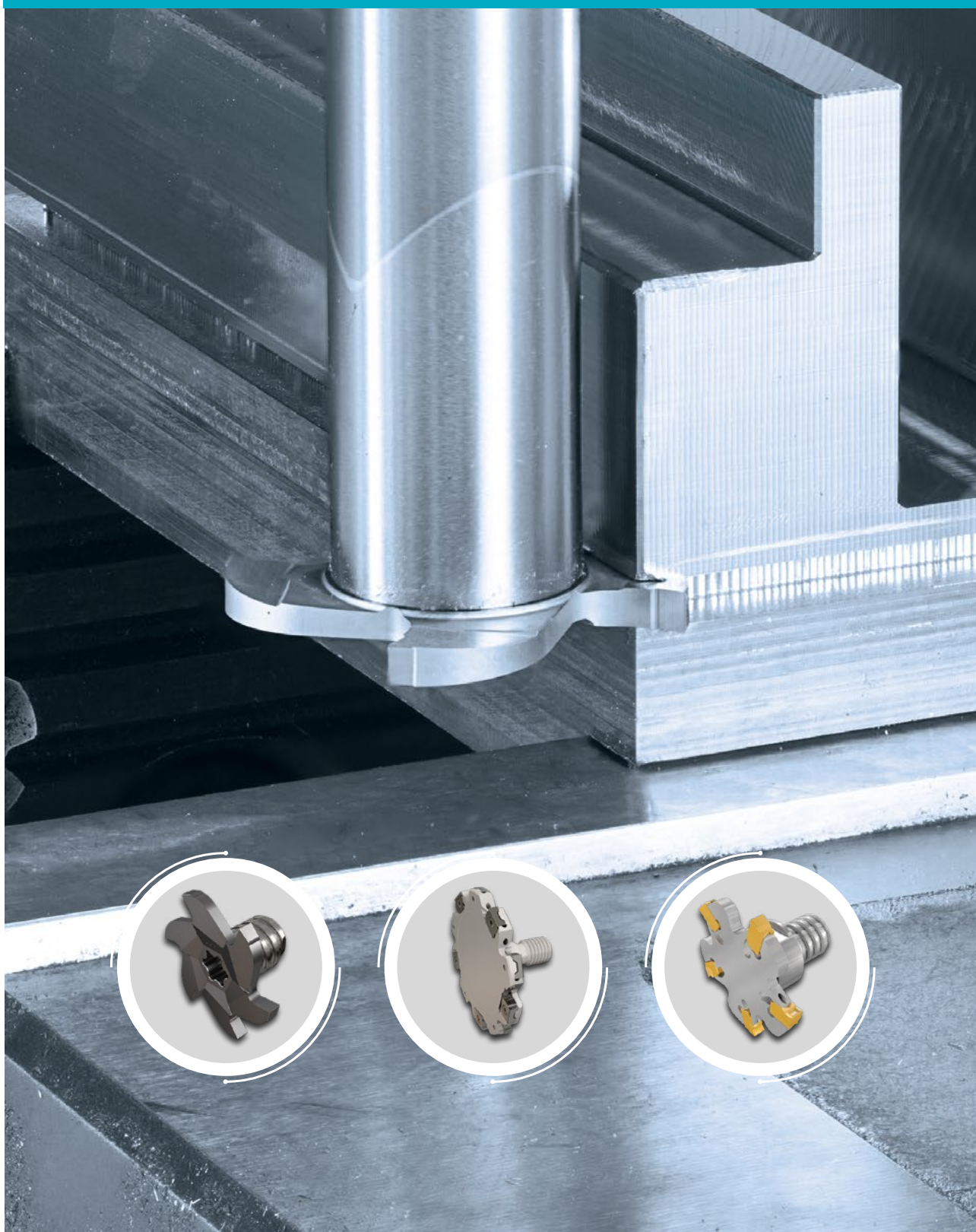
⁽⁵⁾ Master insert identification

⁽⁶⁾ Torque key size

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

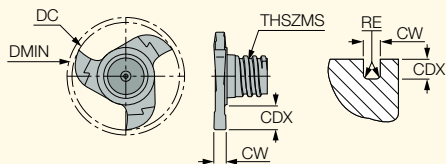
For inserts: FCP • HCP-IQ • ICK • ICK-2M • ICM • ICN • ICP • ICP-2M • IHP • QCP-2M

GROOVING



MULTI-MASTER**MM GRIT-3T6**

Interchangeable Solid
Carbide Small Diameter
Groove Milling Heads



Designation	Dimensions									IC908
	DC	CW	CDX ⁽¹⁾	NOF ⁽²⁾	RE	DMIN ⁽³⁾	THSZMS	CSP ⁽⁴⁾	∠	
MM GRIT16K150-010-3T6	15.70	1.50	2.80	3	0.10	16.00	T06	0	T-20/3°	●
MM GRIT16P150-010-3T6	15.70	1.50	2.80	3	0.10	16.00	T06	0	T-20/3°	●
MM GRIT16K157-020-3T6	15.70	1.57	2.80	3	0.20	16.00	T06	0	T-20/3°	●
MM GRIT16K200-020-3T6	15.70	2.00	2.80	3	0.20	16.00	T06	0	T-20/3°	●
MM GRIT16P220-110-3T6	15.70	2.20	2.80	3	1.10	16.00	T06	0	T-20/3°	●
MM GRIT16K239-020-3T6	15.70	2.39	2.80	3	0.20	16.00	T06	0	T-20/3°	●
MM GRIT16K250-020-3T6	15.70	2.50	2.80	3	0.20	16.00	T06	0	T-20/3°	●
MM GRIT16K300-020-3T6	15.70	3.00	2.80	3	0.20	16.00	T06	0	T-25/3°	●
MM GRIT16P300-020-3T6	15.70	3.00	2.80	3	0.20	16.00	T06	0	T-25/3°	●
MM GRIT16K317-020-3T6	15.70	3.17	2.80	3	0.20	16.00	T06	0	T-25/3°	●
MM GRIT18K120-005-3T6	17.70	1.20	3.80	3	0.05	18.00	T06	0	T-20/3°	●
MM GRIT18P120-060-3T6	17.70	1.20	3.80	3	0.60	18.00	T06	0	T-20/3°	●
MM GRIT18K140-005-3T6	17.70	1.40	3.80	3	0.05	18.00	T06	0	T-20/3°	●
MM GRIT18K150-010-3T6	17.70	1.50	3.80	3	0.10	18.00	T06	0	T-20/3°	●
MM GRIT18K157-020-3T6	17.70	1.57	3.80	3	0.20	18.00	T06	0	T-20/3°	●
MM GRIT18K170-005-3T6	17.70	1.70	3.80	3	0.05	18.00	T06	0	T-20/3°	●
MM GRIT18K200-020-3T6	17.70	2.00	3.80	3	0.20	18.00	T06	0	T-20/3°	●
MM GRIT18P200-100-3T6	17.70	2.00	3.80	3	1.00	18.00	T06	0	T-20/3°	●
MM GRIT18P220-110-3T6	17.70	2.20	3.80	3	1.10	18.00	T06	0	T-20/3°	●
MM GRIT18K239-020-3T6	17.70	2.39	3.80	3	0.20	18.00	T06	0	T-20/3°	●
MM GRIT18K250-020-3T6	17.70	2.50	3.80	3	0.20	18.00	T06	0	T-20/3°	●
MM GRIT18K300-020-3T6	17.70	3.00	3.80	3	0.20	18.00	T06	0	T-25/3°	●
MM GRIT18P300-150-3T6	17.70	3.00	3.80	3	1.50	18.00	T06	0	T-25/3°	●
MM GRIT18K317-020-3T6	17.70	3.17	3.80	3	0.20	18.00	T06	0	T-25/3°	●

- Recommended for O-rings and retaining rings
- Modification options on request
- Do not apply lubricant to the threaded connection
- For clamping instructions, see pages 11-12
- For user guide, see pages 13-14
- For shanks, see pages 90-98
- K-Type - For general steel machining
- P-Type - Positive geometry for soft and gummy materials

⁽¹⁾ Cutting depth maximum

⁽²⁾ Number of flutes

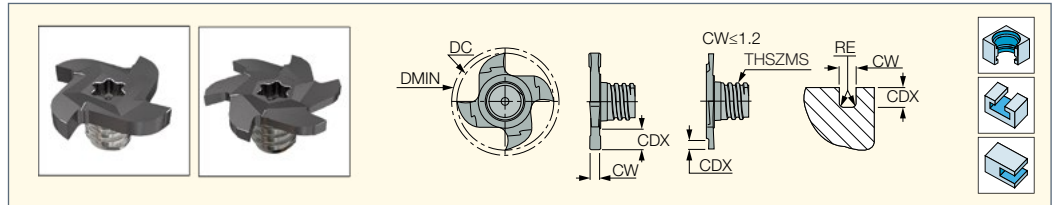
⁽³⁾ Minimum bore diameter

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

* Optional, to be ordered separately

MM GRIT-4T8/6T10

Interchangeable Solid
Carbide Small Diameter
Groove Milling Heads



Designation	Dimensions									IC908
	DC	CW	CDX ⁽¹⁾	NOF ⁽²⁾	RE	DMIN ⁽³⁾	THSZMS	CSP ⁽⁴⁾	∠	
MM GRIT22K076-000-4T8	21.70	0.76	1.50	4	0.00	22.00	T08	0	T-25/3*	●
MM GRIT22K086-000-4T8	21.70	0.86	1.70	4	0.00	22.00	T08	0	T-25/3*	●
MM GRIT22K096-000-4T8	21.70	0.96	1.90	4	0.00	22.00	T08	0	T-25/3*	●
MM GRIT22K100-005-4T8	21.70	1.00	2.00	4	0.05	22.00	T08	0	T-25/3*	●
MM GRIT22P100-005-4T8	21.70	1.00	2.00	4	0.05	22.00	T08	0	T-25/3*	●
MM GRIT22K120-005-4T8	21.70	1.20	4.50	4	0.05	22.00	T08	0	T-25/3*	●
MM GRIT22K140-005-4T8	21.70	1.40	4.50	4	0.05	22.00	T08	0	T-25/3*	●
MM GRIT22K157-000-4T8	21.70	1.57	4.50	4	0.00	22.00	T08	0	T-25/3*	●
MM GRIT22K170-010-4T8	21.70	1.70	4.50	4	0.10	22.00	T08	0	T-25/3*	●
MM GRIT22P170-010-4T8	21.70	1.70	4.50	4	0.10	22.00	T08	0	T-25/3*	●
MM GRIT22K195-020-4T8	21.70	1.95	4.50	4	0.20	22.00	T08	0	T-25/3*	●
MM GRIT22K200-020-4T8	21.70	2.00	4.50	4	0.20	22.00	T08	0	T-25/3*	●
MM GRIT22P200-020-4T8	21.70	2.00	4.50	4	0.20	22.00	T08	0	T-25/3*	●
MM GRIT22K225-020-4T8	21.70	2.25	4.50	4	0.20	22.00	T08	0	T-25/3*	●
MM GRIT22K239-020-4T8	21.70	2.39	4.50	4	0.20	22.00	T08	0	T-25/3*	●
MM GRIT22K250-020-4T8	21.70	2.50	4.50	4	0.20	22.00	T08	0	T-25/3*	●
MM GRIT22P250-020-4T8	21.70	2.50	4.50	4	0.20	22.00	T08	0	T-25/3*	●
MM GRIT22K275-020-4T8	21.70	2.75	4.50	4	0.20	22.00	T08	0	T-25/3*	●
MM GRIT22K300-020-4T8	21.70	3.00	4.50	4	0.20	22.00	T08	0	T-30/3 L*	●
MM GRIT22P300-020-4T8	21.70	3.00	4.50	4	0.20	22.00	T08	0	T-30/3 L*	●
MM GRIT22K317-020-4T8	21.70	3.17	4.50	4	0.20	22.00	T08	0	T-30/3 L*	●
MM GRIT22K325-020-4T8	21.70	3.25	4.50	4	0.20	22.00	T08	0	T-30/3 L*	●
MM GRIT22P381-020-4T8	21.70	3.81	4.50	4	0.20	22.00	T08	0	T-30/3 L*	●
MM GRIT22K400-020-4T8	21.70	4.00	4.50	4	0.20	22.00	T08	0	T-30/3 L*	●
MM GRIT22P400-020-4T8	21.70	4.00	4.50	4	0.20	22.00	T08	0	T-30/3 L*	●
MM GRIT22P400-200-4T8	21.70	4.00	4.50	4	2.00	22.00	T08	0	T-30/3 L*	●
MM GRIT22K425-020-4T8	21.70	4.25	4.50	4	0.20	22.00	T08	0	T-30/3 L*	●
MM GRIT22K425-120-4T8	21.70	4.25	4.50	4	1.20	22.00	T08	0	T-30/3 L*	●
MM GRIT22K475-020-4T8	21.70	4.75	4.50	4	0.20	22.00	T08	0	T-30/3 L*	●
MM GRIT22K525-020-4T8	21.70	5.25	4.50	4	0.20	22.00	T08	0	T-30/3 L*	●
MM GRIT22K600-300-4T8	21.70	6.00	4.50	4	3.00	22.00	T08	0	T-30/3 L*	●
MM GRIT28K250-020-6T10	27.70	2.50	6.00	6	0.20	28.00	T10	0	T-40/3 L*	●
MM GRIT28K525-020-6T10	27.70	5.25	6.00	6	0.20	28.00	T10	0	T-40/3 L*	●
MM GRIT28P700-350-6T10	27.70	7.00	6.00	6	3.50	28.00	T10	0	T-40/3 L*	●
MM GRIT28K1000-020-6T10	27.70	10.00	6.00	6	0.20	28.00	T10	0	T-40/3 L*	●
MM GRIT28K1100-020-6T10	27.70	11.00	6.00	6	0.20	28.00	T10	0	T-40/3 L*	●
MM GRIT28K1200-020-6T10	27.70	12.00	6.00	6	0.20	28.00	T10	0	T-40/3 L*	●
MM GRIT28K1300-020-6T10	27.70	13.00	6.00	6	0.20	28.00	T10	0	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 11-12
- For user guide, see pages 13-14
- For shanks, see pages 90-98

⁽¹⁾ Cutting depth maximum

⁽²⁾ Number of flutes

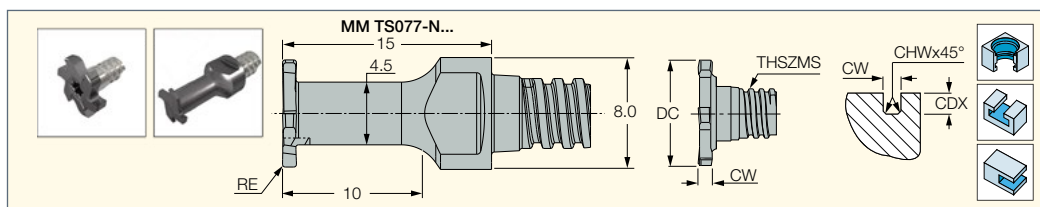
⁽³⁾ Minimum bore diameter

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

* Optional, to be ordered separately

MULTI-MASTER**MM TS-N**

Interchangeable Solid Carbide
T-SLOT Milling Heads



Designation	Dimensions										Tough ↔ Hard		
	DC	DCTOLL	CW	NOF ⁽¹⁾	THSZMS	CSP ⁽²⁾	CDX ⁽³⁾	RE	CHW			IC928	IC908
MM TS077-N07A-4T05	7.70	-0.0500	0.70	4	T05	0	1.20	0.20	-	MM KEY 6X4*			●
MM TS077-N08A-4T05	7.70	-0.0500	0.80	4	T05	0	1.20	0.20	-	MM KEY 6X4*			●
MM TS077-N09A-4T05	7.70	-0.0500	0.90	4	T05	0	1.20	0.20	-	MM KEY 6X4*			●
MM TS077-N10A-4T05	7.70	-0.0500	1.00	4	T05	0	1.20	0.20	-	MM KEY 6X4*			●
MM TS077-N15A-4T05	7.70	-0.0500	1.50	4	T05	0	1.20	0.20	-	MM KEY 6X4*			●
MM TS077-N20A-4T05	7.70	-0.0500	2.00	4	T05	0	1.20	0.20	-	MM KEY 6X4*			●
MM TS105-N20D-06T04	10.50	-0.0500	2.00	6	T04	0	2.00	0.40	-		T-15/3*	●	
MM TS.500-N062P-06T05	12.70	-0.0500	1.58	6	T05	0	2.25	-	0.15		T-20/3*		●
MM TS.500-N078P-06T05	12.70	-0.0500	1.98	6	T05	0	2.25	-	0.15		T-20/3*		●
MM TS135-N20P-06T05	13.50	-0.0500	2.00	6	T05	0	2.65	-	0.20		T-20/3*		●
MM TS135-N25P-06T05	13.50	-0.0500	2.50	6	T05	0	2.65	-	0.20		T-20/3*		●

• For shanks, see pages 90-98

• For tightening torques and clamping instructions, see pages 11-12

• Do not apply lubricant to the threaded connection

• For user guide, see pages 13-14

⁽¹⁾ Number of flutes

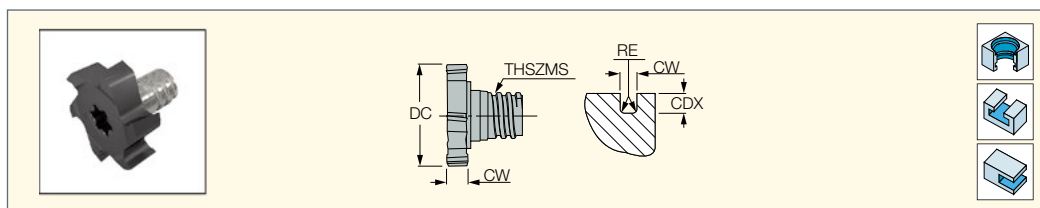
⁽²⁾ 0 - Without coolant supply, 1 - With coolant supply

⁽³⁾ Cutting depth maximum

* Optional, to be ordered separately

MULTI-MASTER**MM TS-H**

Interchangeable Solid Carbide
T-SLOT Milling Heads with
Diverse Corner Radii



	Dimensions									IC908
Designation	DC	DCTOLL	CW	CDX ⁽¹⁾	NOF ⁽²⁾	RE	CSP ⁽³⁾	THSZMS		
MM TS135-H30D-06T05	13.50	-0.0500	3.00	2.65	6	0.40	0	T05	T-20/3*	●
MM TS135-H40D-06T05	13.50	-0.0500	4.00	2.65	6	0.40	0	T05	T-20/3*	●
MM TS165-H40A-06T05	16.50	-0.0500	4.00	4.25	6	0.20	0	T05	T-20/3*	●
MM TS160-H20D-06T06	16.00	-0.0500	2.00	3.00	6	0.40	0	T06	T-20/3*	●
MM TS160-H30D-06T06	16.00	-0.0500	3.00	3.00	6	0.40	0	T06	T-25/3*	●
MM TS160-H40D-06T06	16.00	-0.0500	4.00	3.00	6	0.40	0	T06	T-25/3*	●
MM TS165-H20D-06T06	16.50	-0.0500	2.00	3.25	6	0.40	0	T06	T-20/3*	●
MM TS165-H30D-06T06	16.50	-0.0500	3.00	3.25	6	0.40	0	T06	T-25/3*	●
MM TS165-H40D-06T06	16.50	-0.0500	4.00	3.25	6	0.40	0	T06	T-25/3*	●
MM TS195-H60A-06T06	19.50	-0.0500	6.00	4.45	6	0.20	0	T06	T-25/3*	●
MM TS225-H60A-06T06	22.50	-0.0500	6.00	5.95	6	0.20	0	T06	T-25/3*	●
MM TS195-H40D-06T08	19.50	-0.0500	4.00	3.45	6	0.40	0	T08	T-30/3 L*	●
MM TS195-H50D-06T08	19.50	-0.0500	5.00	3.45	6	0.40	0	T08	T-30/3 L*	●
MM TS195-H60D-06T08	19.50	-0.0500	6.00	3.45	6	0.40	0	T08	T-30/3 L*	●
MM TS225-H40D-06T08	22.50	-0.0500	4.00	4.90	6	0.40	0	T08	T-40/3 L*	●
MM TS225-H50D-06T08	22.50	-0.0500	5.00	4.95	6	0.40	0	T08	T-40/3 L*	●
MM TS225-H60D-06T08	22.50	-0.0500	6.00	4.95	6	0.40	0	T08	T-40/3 L*	●
MM TS225-H80D-06T08	22.50	-0.0500	8.00	4.95	6	0.40	0	T08	T-40/3 L*	●
MM TS250-H50D-06T08	25.00	-0.0500	5.00	5.90	6	0.40	0	T08	T-50/3 L*	●
MM TS250-H60D-06T08	25.00	-0.0500	6.00	5.90	6	0.40	0	T08	T-50/3 L*	●
MM TS250-H80D-06T08	25.00	-0.0500	8.00	5.90	6	0.40	0	T08	T-50/3 L*	●
MM TS250-H50D-06T10	25.00	-0.0500	5.00	4.30	6	0.40	0	T10	T-50/3 L*	●
MM TS250-H60D-06T10	25.00	-0.0500	6.00	4.30	6	0.40	0	T10	T-50/3 L*	●
MM TS250-H80D-06T10	25.00	-0.0500	8.00	4.30	6	0.40	0	T10	T-50/3 L*	●

• Inserts in 5 mm and wider feature chip splitting edges

• For tightening torques and clamping instructions, see pages 11-12

• Do not apply lubricant to the threaded connection

• For shanks, see pages 90-98

• For user guide, see pages 13-14

⁽¹⁾ Cutting depth maximum

⁽²⁾ Number of flutes

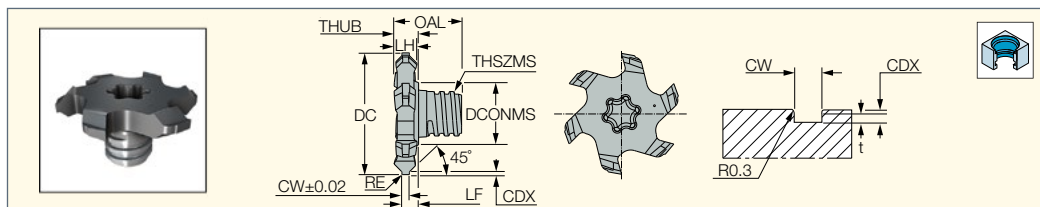
⁽³⁾ 0 - Without coolant supply, 1 - With coolant supply

* Optional, to be ordered separately

MULTI-MASTER

MM TS-C

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



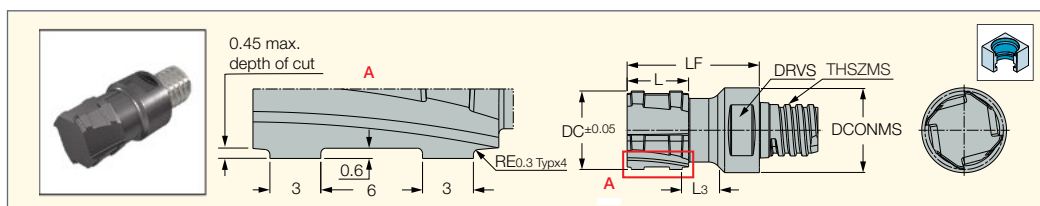
Designation	Dimensions														IC928
	DC	CW	CDX	LF	t	RE	THUB	LH	OAL	DCONMS	NOF ⁽¹⁾	CSP ⁽²⁾	THSZMS	⌄	
MM TS127C118T035-6T05	12.70	1.18	0.35	2.23	0.27	0.05	3.00	2.7	8.43	7.70	6	0	T05	T-20/3*	●
MM TS127C118T040-6T05	12.70	1.18	0.40	2.23	0.32	0.05	3.00	2.7	8.43	7.70	6	0	T05	T-20/3*	●
MM TS127C118T050-6T05	12.70	1.18	0.50	2.23	0.42	0.05	3.00	2.7	8.43	7.70	6	0	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	0	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	0	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	0	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	0	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	0	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	0	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	0	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	0	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	0	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	0	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	0	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	0	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	0	T08	T-40/3 L*	●

- For shanks, see pages 90-98
 - For tightening torques and clamping instructions, see pages 11-12
 - Do not apply lubricant to the threaded connection
 - For user guide, see pages 13-14
- (1) Number of flutes
(2) 0 - Without coolant supply, 1 - With coolant supply
* Optional, to be ordered separately

MULTI-MASTER

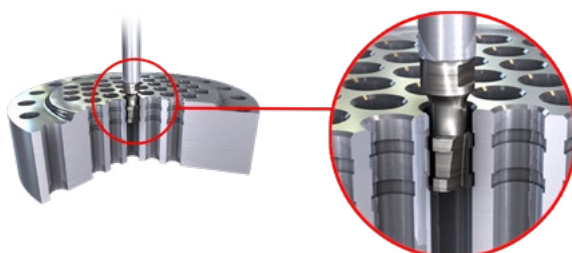
MM TS-DG

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



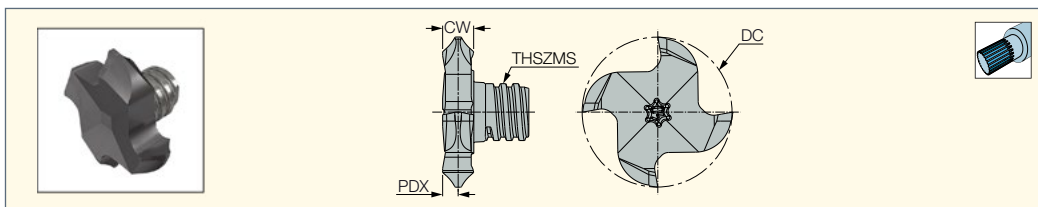
Designation	Dimensions											IC908
	DC	DCONMS	PHD ⁽¹⁾	THSZMS	NOF ⁽²⁾	LF	L3	L	CSP ⁽³⁾	DRVS ⁽⁴⁾	⌄	
MM TS155-04T10-8238	15.50	16.00	15.88	T10	4	33.70	17.80	14.20	0	10.0	MM KEY 10X7*	●
MM TS185-04T12-8239	18.50	18.45	19.05	T12	4	34.50	18.30	14.50	0	13.0	MM KEY 13X8*	●
MM TS245-04T15-8240	24.50	23.80	25.40	T15	4	37.20	11.00	14.40	0	20.0	MM KEY 20*	●

- For shanks, see pages 90-98
 - For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 11-12
 - Do not apply lubricant to the threaded connection
 - For user guide, see pages 13-14
- (1) For minimum tube outer diameter
(2) Number of flutes
(3) 0 - Without coolant supply, 1 - With coolant supply
(4) Clamping wrench size
* Optional, to be ordered separately



MULTI-MASTER**MM SS**

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



Designation	Dimensions								IC908
	Module	T range ⁽¹⁾	DC	PDX	CW	NOF ⁽²⁾	THSZMS	CSP ⁽³⁾	
MM SS22M100Z1720-4T08	1.00	17-20	21.70	2.8	5.50	4	T08	0	●
MM SS22M100Z2125-4T08	1.00	21-25	21.70	2.3	4.50	4	T08	0	●
MM SS22M150Z1720-4T08	1.50	17-20	21.70	2.7	5.40	4	T08	0	●

- Tightening torque 1500 Nxcn
- Do not apply lubricant to the threaded connection
- For clamping instructions, see pages 11-12
- For user guide, see pages 13-14
- For shanks see pages 90-98

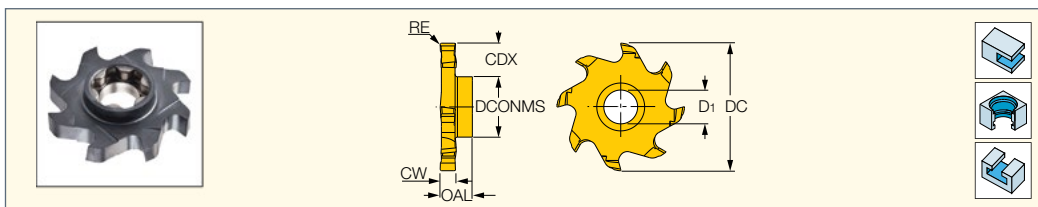
⁽¹⁾ Teeth range

⁽²⁾ Number of flutes

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

T-SLOT**SD-SP**

Interchangeable Solid Carbide T-SLOT Milling Heads



Designation	Dimensions									Tough ↔ Hard
	DC	CW	CDX ⁽³⁾	NOF ⁽⁴⁾	RE	D1	DCONMS	OAL	CSP ⁽⁵⁾	IC908
SD D25-1.5-R0.2-SP11	24.70	1.50	6.50	6	0.20	7.50	11.00	6.60	0	●
SD D25-2.0-R0.2-SP11	24.70	2.00	6.50	6	0.20	7.50	11.00	6.75	0	●
SD D25-2.5-R0.4-SP11	24.70	2.50	6.50	6	0.40	7.50	11.00	6.60	0	●
SD D25-3.0-R0.4-SP11	24.70	3.00	6.50	6	0.40	7.50	11.00	6.60	0	●
SD D25-3.5-R0.4-SP11	24.70	3.50	6.50	6	0.40	7.50	11.00	6.60	0	●
SD D25-4.0-R0.4-SP11	24.70	4.00	6.50	6	0.40	7.50	11.00	6.75	0	●
SD D25-1.0-R0.2-SP13	24.70	1.00	5.50	6	0.20	7.50	13.00	7.15	0	●
SD D25-2.0-R0.2-SP13	24.70	2.00	5.50	6	0.20	7.50	13.00	7.30	0	●
SD D25-3.0-R0.4-SP13	24.70	3.00	5.50	6	0.40	7.50	13.00	7.30	0	●
SD D25-3.5-R0.4-SP13	24.70	3.50	5.50	6	0.40	7.50	13.00	7.30	0	●
SD D25-4.0-R0.4-SP13	24.70	4.00	5.50	6	0.40	7.50	13.00	8.30	0	●
SD D25-4.5-R0.4-SP13	24.70	4.50	5.50	6	0.40	7.50	13.00	8.30	0	●
SD D25-5.0-R0.4-SP13	24.70	5.00	5.50	6	0.40	7.50	13.00	8.30	0	●
SD D25-5.5-R0.4-SP13	24.70	5.50	5.50	6	0.40	7.50	13.00	8.30	0	●
SD D25-6.0-R0.4-SP13	24.70	6.00	5.50	6	0.40	7.50	13.00	8.30	0	●
SD D25-6.5-R0.4-SP13	24.70	6.50	5.50	6	0.40	7.50	13.00	8.30	0	●
SD D25-7.0-R0.4-SP13	24.70	7.00	5.50	6	0.40	7.50	13.00	8.30	0	●
SD D25-7.5-R0.4-SP13	24.70	7.50	5.50	6	0.40	7.50	13.00	8.30	0	●
SD D25-8.0-R0.4-SP13	24.70	8.00	5.50	6	0.40	7.50	13.00	8.30	0	●
SD D32-1.0-R0.2-SP15	31.70	1.00	8.00	8	0.20	8.40	15.00	8.00	0	●
SD D32-1.5-R0.2-SP15	31.70	1.50	8.00	8	0.20	8.40	15.00	8.00	0	●
SD D32-2.0-R0.2-SP11	31.70	2.00	10.00	8	0.20	7.20	11.00	6.75	0	●
SD D32-2.0-R0.2-SP15	31.70	2.00	8.00	8	0.20	8.40	15.00	8.00	0	●
SD D32-2.5-R0.4-SP15	31.70	2.50	8.00	8	0.40	8.40	15.00	8.00	0	●
SD D32-3.0-R0.4-SP11	31.70	3.00	10.00	8	0.40	7.20	11.00	6.75	0	●
SD D32-3.0-R0.4-SP15	31.70	3.00	8.00	8	0.40	8.40	15.00	8.00	0	●
SD D32-3.5-R0.4-SP15	31.70	3.50	8.00	8	0.40	8.40	15.00	8.00	0	●
SD D32-4.0-R0.4-SP15	31.70	4.00	8.00	8	0.40	8.40	15.00	8.00	0	●
SD D32-4.0-R1.6-SP15	31.70	4.00	8.00	8	1.60	8.40	15.00	8.00	0	●
SD D32-4.5-R0.4-SP15	31.70	4.50	8.00	8	0.40	8.40	15.00	8.00	0	●
SD D32-5.0-R0.4-SP15	31.70	5.00	8.00	8	0.40	8.40	15.00	8.00	0	●
SD D32-5.0-R1.6-SP15	31.70	5.00	8.00	8	1.60	8.40	15.00	8.00	0	●
SD D32-5.5-R0.4-SP15	31.70	5.50	8.00	8	0.40	8.40	15.00	8.00	0	●
SD D32-6.0-R0.4-SP15	31.70	6.00	8.00	8	0.40	8.40	15.00	8.00	0	●
SD D32-6.0-R1.6-SP15	31.70	6.00	8.00	8	1.60	8.40	15.00	8.00	0	●
SD D32-6.5-R0.4-SP15	31.70	6.50	8.00	8	0.40	8.40	15.00	8.00	0	●
SD D32-7.0-R0.4-SP15	31.25	7.00	7.75	8	0.40	8.40	15.00	8.00	0	●
SD D32-7.0-R1.6-SP15	31.70	7.00	7.75	8	1.60	8.40	15.00	8.00	0	●
SD D32-7.5-R0.4-SP15	31.25	7.50	7.75	8	0.40	8.40	15.00	8.00	0	●

- For shanks, see pages 98-101
- For user guide, see page 73

⁽¹⁾ Maximum feed: 0.04 mm/tooth

⁽²⁾ Maximum feed: 0.1 mm/tooth

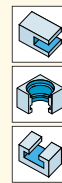
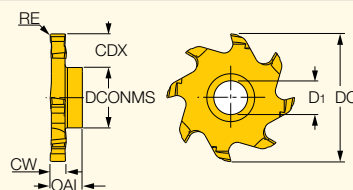
⁽³⁾ Cutting depth maximum

⁽⁴⁾ Number of flutes

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

SD-SP

Interchangeable Solid Carbide
T-SLOT Milling Heads



Designation	Dimensions									Tough ↔ Hard IC908
	DC	CW	CDX ⁽³⁾	NOF ⁽⁴⁾	RE	D1	DCONMS	OAL	CSP ⁽⁵⁾	
SD D32-8.0-R0.4-SP15	31.25	8.00	7.75	8	0.40	8.40	15.00	8.00	0	●
SD D32-8.0-R1.6-SP15	31.70	8.00	7.75	8	1.60	8.40	15.00	8.00	0	●
SD D32-8.5-R0.4-SP15	31.25	8.50	7.75	8	0.40	8.40	15.00	8.00	0	●
SD D40-1.0-R0.2SP11 ⁽¹⁾	39.70	1.00	14.00	10	0.20	7.20	11.00	6.70	0	●
SD D40-1.0-R0.2SP13	39.70	1.00	13.00	10	0.20	7.50	13.00	7.30	0	●
SD D40-1.5-R0.2SP13	39.70	1.50	13.00	10	0.20	7.50	13.00	7.30	0	●
SD D40-2.0-R0.2SP11	39.70	2.00	14.00	10	0.20	7.20	11.00	6.80	0	●
SD D40-2.0-R0.2SP13	39.70	2.00	13.00	10	0.20	7.50	13.00	7.30	0	●
SD D40-2.5-R0.4SP13	39.70	2.50	13.00	10	0.40	7.50	13.00	7.30	0	●
SD D40-3.0-R0.4SP11	39.70	3.00	14.00	10	0.40	7.20	11.00	6.80	0	●
SD D40-3.0-R0.4SP13	39.70	3.00	13.00	10	0.40	7.50	13.00	7.30	0	●
SD D40-3.5-R0.4SP13	39.70	3.50	13.00	10	0.40	7.50	13.00	7.30	0	●
SD D40-4.0-R0.4SP13 ⁽²⁾	39.70	4.00	13.00	10	0.40	7.50	13.00	7.30	0	●
SD D40-4.0-R0.4SP17	39.70	4.00	11.00	10	0.40	7.50	17.00	10.00	0	●
SD D40-5.0-R0.4SP13	39.70	5.00	13.00	10	0.40	7.50	13.00	7.30	0	●
SD D40-5.0-R0.4SP17	39.70	5.00	11.00	10	0.40	9.80	17.00	10.00	0	●
SD D40-6.0-R0.4SP17	39.70	6.00	11.00	10	0.40	9.80	17.00	10.00	0	●
SD D40-7.0-R0.4SP17	39.70	7.00	11.00	10	0.40	9.80	17.00	10.00	0	●
SD D40-8.0-R0.4SP17	39.70	8.00	11.00	10	0.40	9.80	17.00	10.00	0	●
SD D40-9.0-R0.4SP17	39.70	9.00	11.00	10	0.40	9.80	17.00	10.00	0	●
SD D40-10-R0.4SP17	39.70	10.00	11.00	10	0.40	9.80	17.00	10.00	0	●
SD D50-2.0-R0.4-SP19	49.70	2.00	15.00	12	0.40	9.80	19.00	14.00	0	●
SD D50-3.0-R0.4-SP19	49.70	3.00	15.00	12	0.40	9.80	19.00	14.00	0	●
SD D50-4.0-R0.4-SP19	49.70	4.00	15.00	12	0.40	9.80	19.00	14.00	0	●
SD D50-5.0-R0.4-SP19	49.70	5.00	15.00	12	0.40	9.80	19.00	14.00	0	●
SD D50-6.0-R0.4-SP19	49.70	6.00	15.00	12	0.40	9.80	19.00	14.00	0	●
SD D50-7.0-R0.4-SP19	49.70	7.00	15.00	12	0.40	9.80	19.00	14.00	0	●
SD D50-8.0-R0.4-SP19	49.70	8.00	15.00	12	0.40	9.80	19.00	14.00	0	●
SD D50-9.0-R0.4-SP19	49.70	9.00	15.00	12	0.40	9.80	19.00	14.00	0	●
SD D50-10-R0.4-SP19	49.70	10.00	15.00	12	0.40	9.80	19.00	14.00	0	●
SD D50-12-R0.4-SP19	49.70	12.00	15.00	12	0.40	9.80	19.00	14.00	0	●

• For shanks, see pages 98-101

• For user guide, see below

⁽¹⁾ Maximum feed: 0.04 mm/tooth

⁽²⁾ Maximum feed: 0.1 mm/tooth

⁽³⁾ Cutting depth maximum

⁽⁴⁾ Number of flutes

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

Cutting Data for SD-SP Milling Heads

ISO class DIN/ ISO 513	Description	ISCAR mat. group*	Workpiece Material			Cutting Speed V _c m/min	Feed for SP11	Feed for SP13	Feed for SP15	Feed for SP17	Feed for SP19
			Typical Representative		Hardness HB		f _z mm/tooth	f _z mm/tooth	f _z mm/tooth	f _z mm/tooth	f _z mm/tooth
			AISI/SAE/ ASTM	DIN W.-Nr.							
P	non-alloy steel	1	1020	1.0402	130-180	130-200	0.06-0.12	0.06-0.12	0.07-0.15	0.07-0.15	0.07-0.15
	low alloy steel	8	4340	1.6511	260-300	120-170	0.06-0.12	0.06-0.12	0.07-0.15	0.07-0.15	0.07-0.15
	low alloy steel	9	3135	1.5710	HRC 35-40*	80-120	0.02-0.06	0.02-0.06	0.03-0.12	0.04-0.12	0.04-0.13
	high alloy steel	10	H13	1.2344	200-220	100-140	0.04-0.07	0.04-0.07	0.04-0.12	0.04-0.12	0.05-0.13
	martensitic S.S.	12	420	1.4021	200	100-140	0.03-0.06	0.03-0.06	0.04-0.12	0.04-0.12	0.04-0.13
M	austenitic S.S.	14	304L	1.4306	200	80-120	0.02-0.06	0.02-0.06	0.03-0.10	0.03-0.12	0.03-0.12
K	grey cast iron	16	class 40	0.6025 (GG25)	250	160-200	0.05-0.12	0.05-0.12	0.05-0.20	0.06-0.20	0.06-0.20
	nodular cast iron	17	class 65-45-12	0.7050 (GGG50)	200	140-180	0.05-0.11	0.05-0.11	0.05-0.18	0.06-0.18	0.06-0.20
S	high temperature alloys	34	inconel 718	2.4668	HRC 36-40	20-30	0.02-0.12	0.02-0.12	0.02-0.12	0.02-0.12	0.02-0.13
		37	AMS R56400	3.7165 (Ti6Al4V)	HRC 40-45	35-45	0.02-0.06	0.02-0.06	0.02-0.12	0.02-0.12	0.02-0.13

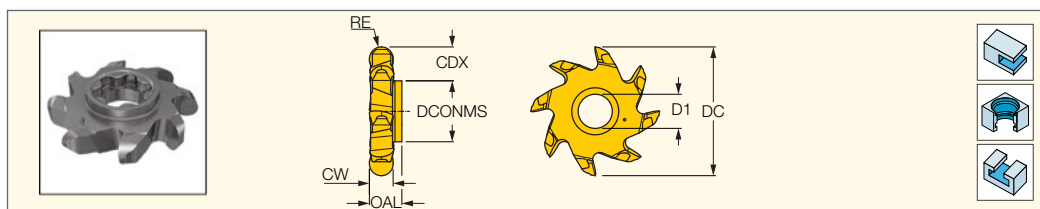
* ISCAR material group in accordance with VDI 3323 standard

** Quenched and tempered

When machining in unstable conditions, the table values should be reduced by 20-30%.

T-SLOT**SD-R-SP**

Interchangeable Solid Carbide T-Slot Milling Heads with Full Radius



Designation	Dimensions									IC908
	DC	CW	CDX	CICT ⁽¹⁾	RE	D1	DCONMS	OAL	CSP ⁽²⁾	
SD D32-03-R1.5-SP15	31.70	3.00	8.00	8	1.50	8.40	15.00	8.00	0	●
SD D32-04-R2.0-SP15	31.70	4.00	8.00	8	2.00	8.40	15.00	8.00	0	●
SD D32-05-R2.5-SP15	31.70	5.00	8.00	8	2.50	8.40	15.00	8.00	0	●
SD D32-06-R3.0-SP15	31.70	6.00	8.00	8	3.00	8.40	15.00	8.00	0	●

• For shanks, see pages 98-101

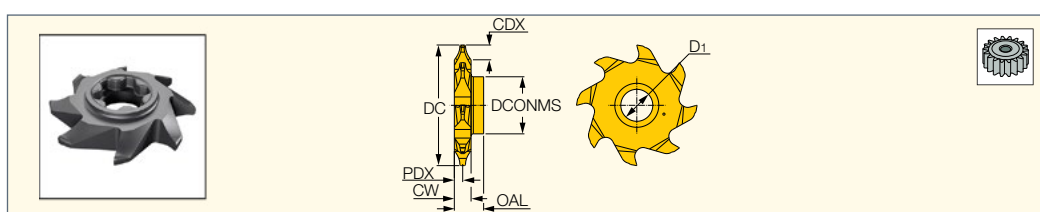
• For user guide, see page 73

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

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

T-GEAR
GEAR MILLING**SD-M-N-SP**

Interchangeable Solid Carbide Heads for Involute Gear Profile Milling According to DIN 3972 Basic Profile II



Designation	Dimensions											IC908
	Module	T range ⁽¹⁾	DC	PDX	CW	CDX	CEDC ⁽²⁾	DCONMS	D1	OAL	CSP ⁽³⁾	
SD D32-M0.50-NO3-SP15	0.50	17-20	32.00	1.30	2.60	1.50	8	15.00	8.40	7.80	0	●
SD D32-M0.50-NO8-SP15	0.50	>134	32.00	1.20	2.40	2.00	8	15.00	8.40	7.70	0	●
SD D32-M1.00-NO1-SP15	1.00	12-13	32.00	2.20	4.40	2.50	8	15.00	8.40	7.70	0	●
SD D32-M1.00-NO2-SP15	1.00	14-16	32.00	2.20	4.40	2.50	8	15.00	8.40	7.70	0	●
SD D32-M1.25-NO3-SP15	1.25	17-20	32.00	2.20	4.40	3.00	8	15.00	8.40	7.70	0	●
SD D32-M1.25-NO4-SP15	1.25	21-25	32.00	2.20	4.40	3.00	8	15.00	8.40	7.70	0	●
SD D32-M1.50-NO5-SP15	1.50	26-34	32.00	2.20	4.40	3.50	8	15.00	8.40	7.70	0	●
SD D32-M1.50-NO6-SP15	1.50	35-54	32.00	2.20	4.40	3.50	8	15.00	8.40	7.70	0	●
SD D32-M1.75-NO6-SP15	1.75	35-54	32.00	2.70	5.40	4.25	8	15.00	8.40	7.70	0	●
SD D32-M1.75-NO7-SP15	1.75	55-134	32.00	2.70	5.40	4.25	8	15.00	8.40	7.70	0	●
SD D32-M1.75-NO8-SP15	1.75	>134	32.00	2.70	5.40	4.25	8	15.00	8.40	7.70	0	●
SD D32-M2.00-NO4-SP15	2.00	21-25	32.00	3.20	6.40	4.50	8	15.00	8.40	7.70	0	●
SD D32-M2.00-NO5-SP15	2.00	26-34	32.00	3.20	6.40	4.50	8	15.00	8.40	7.70	0	●
SD D32-M2.00-NO6-SP15	2.00	35-54	32.00	3.20	6.40	4.50	8	15.00	8.40	7.70	0	●
SD D32-M2.25-NO6-SP15	2.25	35-54	32.00	3.20	6.40	5.00	8	15.00	8.40	7.70	0	●
SD D32-M2.25-NO7-SP15	2.25	55-134	32.00	3.20	6.40	5.00	8	15.00	8.40	7.70	0	●
SD D32-M2.50-NO6-SP15	2.50	35-54	32.00	3.70	7.40	5.50	8	15.00	8.40	7.70	0	●

• Tightening torque 4 Nxm

• For user guide, see page 73

• For shanks, see pages 98-101

⁽¹⁾ Gear teeth range

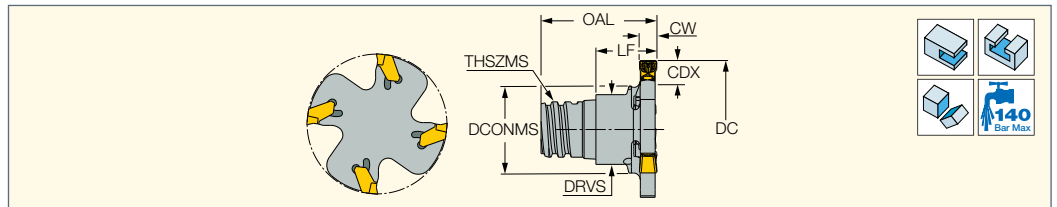
⁽²⁾ Number of cutting edges

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

SELF-GRIP

SGSF/A-MM-JHP

Grooving and Slitting Small Diameter Cutters with the MULTI-MASTER Threaded Adaptor



Designation	DC	CW	CDX	CICT ⁽¹⁾	DCONMS	THSZMS	LF	OAL	DRVS ⁽²⁾	CSP ⁽³⁾	Insert	
SGSF 32-2-MMT08-3Z-JHP	32.00	2.00	9.00	3	11.70	T08	10.60	18.10	10.0	1	GSFN 2...	ESG 1.4-2*
SGSA 32-3-MMT08-4Z-JHP	32.00	3.00	9.00	4	11.70	T08	11.60	19.20	10.0	1	GSAN 3...	ESG 1.4-2*
SGSF 40-2-MMT10-4Z-JHP	40.00	2.00	11.30	4	15.30	T10	10.60	21.90	13.0	1	GSFN 2...	ESG 1.4-2*
SGSA 40-3-MMT10-6Z-JHP	40.00	3.00	11.30	6	15.30	T10	11.40	22.70	13.0	1	GSAN 3...	ESG 1.4-2*

• For best performance use internal coolant with "CH" type shanks

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

⁽²⁾ Torque key size

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

* Optional, to be ordered separately

For inserts: GSAN • GSFN • GSFU

For holders, see pages: MM CAB (98) • MM CAB-T-T (97) • MM CAB-T-T-W (97) • MM GRT (shanks) (92) • MM S-A (stepped shanks) (90) • MM S-A (straight shanks) (93)

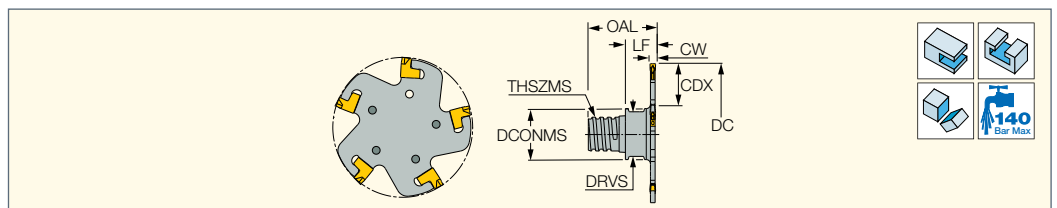
• MM S-A-BT (97) • MM S-A-C# (96) • MM S-A-HSK (96) • MM S-A-N (92) • MM S-A-SK (96) • MM S-B (85° conical shanks) (93) • MM S-D (89° conical shanks) (94)

• MM S-ER (95) • MM S-ER-H (95) • MM TS-A (92) • MM TS2-A (90)

TANGSLIT

TGSF-MM-JHP

Grooving and Slitting Small Diameter Cutters with MULTI-MASTER Threaded Adaptor



Designation	DC	CW	CDX	CICT ⁽¹⁾	DCONMS	THSZMS	LF	OAL	DRVS ⁽²⁾	RPMX ⁽³⁾	CSP ⁽⁴⁾	Insert	
TGSF 50-2-MMT12-5Z-JHP	50.00	2.00	14.00	5	19.00	T12	10.70	24.00	16.0	1600	1	TAG 2	ETG 2*
TGSF 50-3-MMT12-5Z-JHP	50.00	3.00	14.00	5	19.00	T12	11.50	24.70	16.0	6300	1	TAG 3	ETG 3-4-SH*

• For best performance use internal coolant with "CH" type shanks

• DC varies slightly due to different chip formers having different lengths

• For precision operations it is recommended to verify diameter offset before machining

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

⁽²⁾ Torque key size

⁽³⁾ Maximum RPM

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

* Optional, to be ordered separately

For inserts: TAG N-A • TAG N-C/W/M • TAG N-J/JS/JT • TAG N-MF

For holders, see pages: MM CAB-T-T (97) • MM CAB-T-T-W (97) • MM S-A (stepped shanks) (90) • MM S-A (straight shanks) (93) • MM S-A-AV (90) • MM S-A-BT (97)

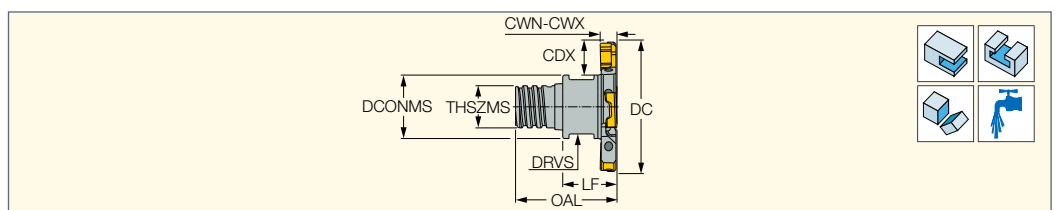
• MM S-A-C# (96) • MM S-A-HSK (96) • MM S-A-SK (96) • MM S-B (85° conical shanks) (93) • MM S-D (89° conical shanks) (94) • MM S-ER (95) • MM S-ER-H (95)

• MM TS-A (92) • MM TS2-A (90)

MINI-TANGSLOT

ETS-LN08-MM

Grooving and Slitting Cutters with MULTI-MASTER Threaded Adaptor



Designation	DC	CWN ⁽¹⁾	CWX ⁽²⁾	CDX ⁽³⁾	NOF ⁽⁴⁾	ZEFP	DCONMS	THSZMS	LF	OAL	DRVS ⁽⁵⁾	CSP ⁽⁶⁾
ETS D32/1.26-4-LN08-MMT10	32.00	4.00 ⁽⁷⁾	4.50 ⁽⁸⁾	8.20	4	2	15.20	T10	13.00	24.30	13.0	1
ETS D40/1.57-4-LN08-MMT12	40.00	4.00 ⁽⁷⁾	4.50 ⁽⁸⁾	10.40	6	3	18.20	T12	13.00	26.30	16.0	1

⁽¹⁾ Minimum cutting width

⁽²⁾ Maximum cutting width

⁽³⁾ Cutting depth maximum

⁽⁴⁾ Number of flutes

⁽⁵⁾ Torque key size

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

⁽⁷⁾ Use LNET 0826.. insert with SR 114-018-L3.40 screw

⁽⁸⁾ Use LNET 0828.. insert with SR 114-018-L3.40 screw

For inserts: LNET 08

For holders, see pages: MM S-A (stepped shanks) (90) • MM S-A (straight shanks) (93) • MM S-A-AV (90) • MM S-A-BT (97) • MM S-A-C# (96) • MM S-A-HSK (96)

• MM S-A-N (92) • MM S-A-SK (96) • MM S-B (85° conical shanks) (93) • MM S-D (89° conical shanks) (94) • MM S-ER (95) • MM S-ER-H (95) • MM TS-A (92)

• MM TS2-A (90)

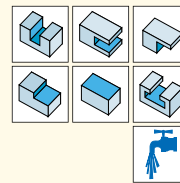
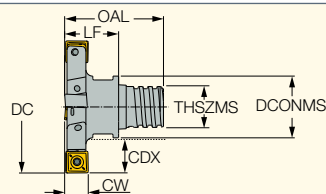
Spare Parts

Designation			
ETS-LN08-MM	SR 114-018-L3.40	T-6/5	T-6/3-L



HELISLOT**ETS-XN06-MM**

T-SLOT Endmills with a
MULTI-MASTER Threaded
Connection, Mount XNMU
0603 Square Inserts



Designation	DC	CICT ⁽¹⁾	ZEFP	CW	CDX	DCONMS	THSZMS	LF	OAL	DRVS ⁽²⁾	CSP ⁽³⁾
ETS D032-07-XN06-MMT10	31.70	4	4	7.00	7.70	15.30	T10	16.00	27.30	13.0	1
ETS D040-07-XN06-MMT12	39.80	4	4	7.00	10.00	18.30	T12	16.00	29.30	16.0	1
ETS D050-07-XN06-MMT15	49.80	6	6	7.00	12.50	23.90	T15	19.00	36.00	20.0	1

• For user guide, see below

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

⁽²⁾ Torque key size

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

For inserts: XNMU 06

For holders, see pages: MM S-A (stepped shanks) (90) • MM S-A (straight shanks) (93) • MM S-A-AV (90) • MM S-A-BT (97) • MM S-A-C# (96) • MM S-A-HSK (96)

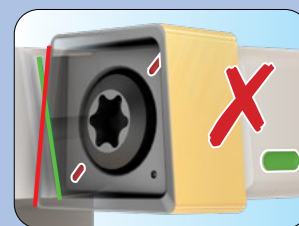
• MM S-A-N (92) • MM S-A-SK (96) • MM S-B (85° conical shanks) (93) • MM S-D (89° conical shanks) (94) • MM S-ER (95) • MM S-ER-H (95) • MM TS-A (92)

• MM TS2-A (90)

Mounting an XNMU 0603... Insert on Slot Milling Cutters

Top Pocket

Bottom Pocket



The Symbol on the Insert and Tool Body Must Align



Starting Feed Per Tooth f_z for HeliSlot 06 Slotting Mills with Inserts XNMU 06...

Workpiece Material						Feed f_z mm/tooth	
ISO Class DIN/ISO 513	Description	ISCAR Material Group**	Typical Representative		Hardness, HB	Grades	
			AISI/SAE/ASTM	DIN W.-Nr.		IC808	IC830
P	non-alloy steel	1	1020	1.0044	130-180	0.10-0.20	0.10-0.20
	alloy steel	8	4340	1.6582	260-300	0.08-0.12	0.08-0.12
	alloy steel	9	4340	1.6582	HRC 35-42*	0.08-0.12	0.08-0.12
	high alloy steel	10	H13	1.2344	200-220	0.08-0.12	0.08-0.12
	martensitic s.s.	12	420	1.4021	200	0.08-0.12	0.08-0.12
M	austenitic s.s.	14	304L	1.4306	200	0.08-0.12	0.08-0.12
	austenitic s.s.	14	316L	1.4404	140	0.08-0.12	0.08-0.12
K	grey cast iron	16	class 40	0.6025 (GG25)	250	0.10-0.20	
	nodular cast iron	17	class 65-45-12	0.7050 (GGG50)	200	0.08-0.15	
H	hard steel and cast iron	38.1	H11	1.2343	HRC 45-49	0.06-0.12	
		38.2	P20	1.2330	HRC 50-55	0.05-0.10	

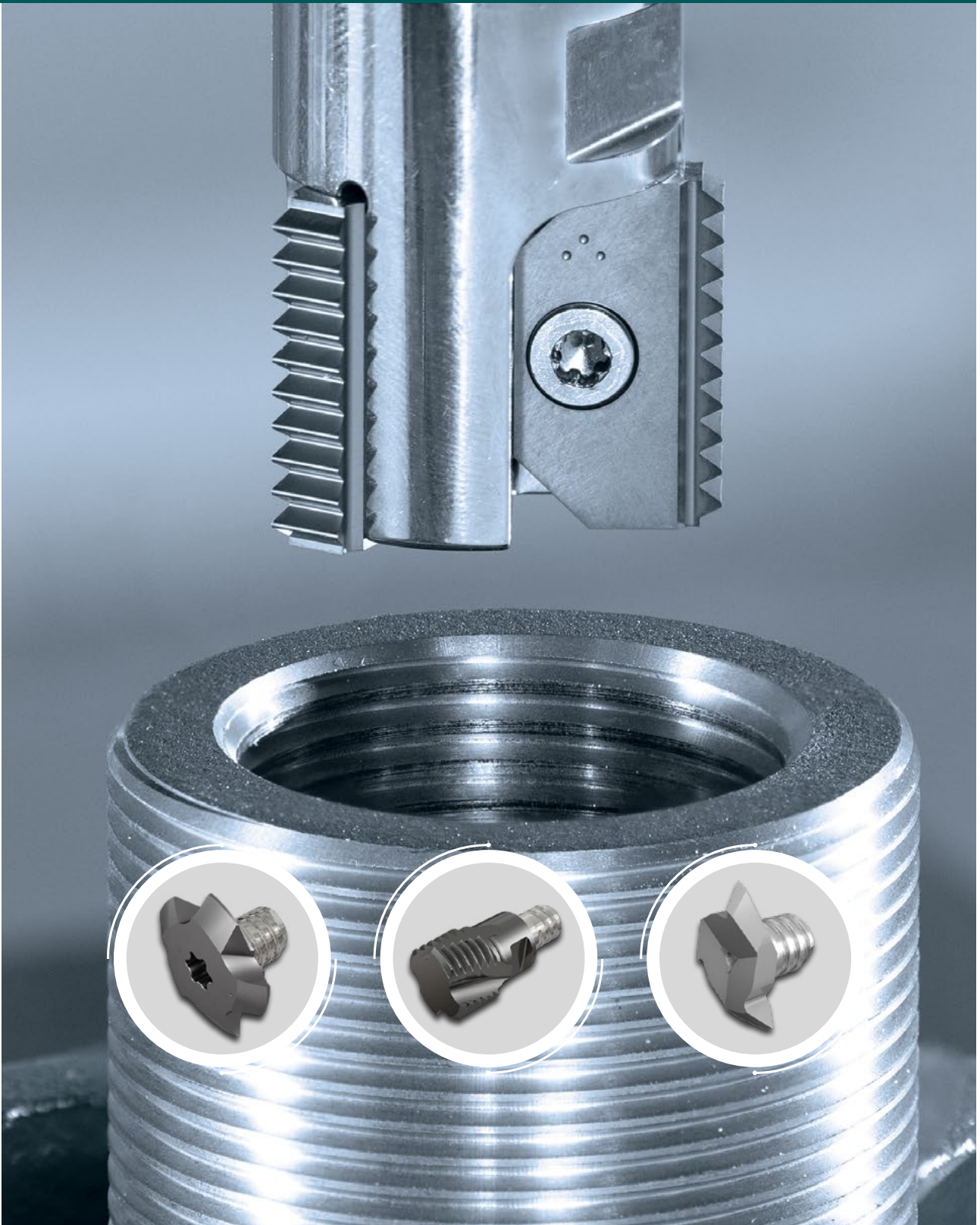
* Quenched and tempered

** ISCAR material group in accordance with VDI 3323 standard

Spare Parts

Designation		
ETS-XN06-MM	SR M2.5X6-T7-60	T-7/51

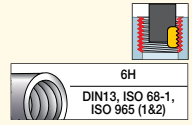
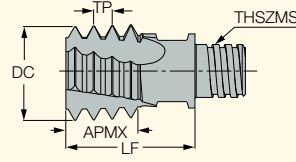
THREAD MILLING



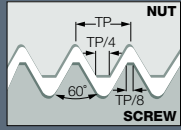
MULTI-MASTER

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	CSP ⁽³⁾		
MT10D7.5 0.5ISO-MMT05	0.500	-	=>14	10.00	4	7.50	12.75	T05	0	MM KEY 6X4*	●
MT 10D6 0.75ISO-MMT05	0.750	-	=>12	10.00	4	6.00	12.75	T05	0	MM KEY 6X4*	●
MT 10D6 1.0ISO-MMT05	1.000	-	=>12	10.00	4	6.00	12.75	T05	0	MM KEY 6X4*	●
MT 10D5 1.25ISO-MMT05	1.250	-	=>14	10.00	4	5.00	12.75	T05	0	MM KEY 6X4*	●
MT 10D6 1.5ISO-MMT05	1.500	-	=>14	10.00	4	6.00	12.75	T05	0	MM KEY 6X4*	●
MT 12D8 0.5ISO-MMT06	0.500	-	=>16	12.00	4	8.00	14.30	T06	0	MM KEY 8X5*	●
MT 12E8 0.75ISO-MMT06	0.750	-	=>16	12.00	5	8.30	14.30	T06	0	MM KEY 8X5*	●
MT 12E8 1.0ISO-MMT06	1.000	-	=>16	12.00	5	8.00	14.30	T06	0	MM KEY 8X5*	●
MT 12D8 1.25ISO-MMT06	1.250	-	=>16	12.00	4	7.50	14.30	T06	0	MM KEY 8X5*	●
MT 12D7 1.5ISO-MMT06	1.500	-	=>16	12.00	4	7.60	14.30	T06	0	MM KEY 8X5*	●
MT 12D7 1.75ISO-MMT06	1.750	-	=>16	12.00	4	7.10	14.30	T06	0	MM KEY 8X5*	●
MT12D8 2.0ISO-MMT06	2.000	M16	=>17	12.00	4	8.00	14.30	T06	0	MM KEY 8X5*	●
MT 16F12 1.0ISO-MMT08	1.000	-	=>22	16.00	6	12.00	20.00	T08	0	MM KEY 10X7*	●
MT 16F12 1.5ISO-MMT08	1.500	-	=>20	16.00	6	12.00	20.00	T08	0	MM KEY 10X7*	●
MT 16E12 2.0ISO-MMT08	2.000	-	=>19	16.00	5	12.00	20.00	T08	0	MM KEY 10X7*	●
MT15.4E13 2.5ISO-MMT08	2.500	M20	=>22	15.40	5	12.70	20.00	T08	0	MM KEY 10X7*	●
MT 16C12 3.0ISO-MMT08	3.000	M24	=>25	16.00	3	12.10	20.00	T08	0	MM KEY 10X7*	●
MT20F14 2.0ISO-MMTT10	2.000	-	=>27	20.00	6	12.00	21.00	T10	0	MM KEY 13X8*	●
MT20D12 3.0ISO-MMTT10	3.000	-	=>27	20.00	4	12.20	21.00	T10	0	MM KEY 13X8*	●
MT20D11 3.5ISO-MMTT10	3.500	-	=>30	20.00	4	10.60	21.00	T10	0	MM KEY 13X8*	●

- Note: Description and dimensions relate to the new products with clamping flats
- For shanks, see pages 90-98
- For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 11-12
- Do not apply lubricant to the threaded connection

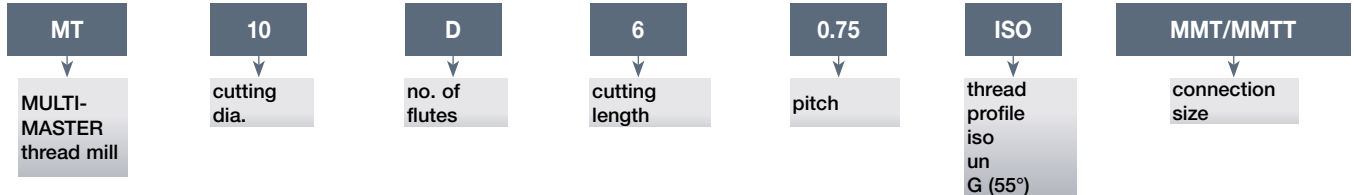
⁽¹⁾ Thread pitch

⁽²⁾ Number of flutes

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

* Optional, to be ordered separately

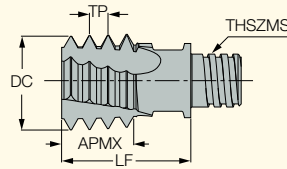
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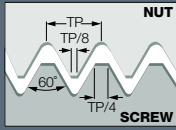
MULTI-MASTER

MT-UN-MM

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



Application: General engineering



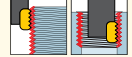
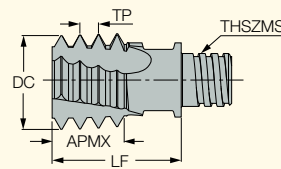
Designation	Dimensions											IC908
	TP ⁽¹⁾	UNC	UNF	UNEF	DC	NOF ⁽²⁾	APMX	LF	THSZMS	TP ⁽³⁾	CSP ⁽⁴⁾	
MT 10D7 32UN-MMT05	32.0	-	-	-	10.00	4	6.40	12.75	T05	0.794	0	●
MT 10D6 28UN-MMT05	28.0	-	-	1/2	10.00	4	5.50	12.75	T05	0.907	0	●
MT 10D6 24UN-MMT05	24.0	-	-	9/16-5/8	10.00	4	5.30	12.75	T05	1.058	0	●
MT 10D6 20UN-MMT05	20.0	-	1/2	-	10.00	4	5.10	12.75	T05	1.270	0	●
MT 10D5 18UN-MMT05	18.0	-	9/16-5/8	1 1/8-1 5/8	10.00	4	5.60	12.75	T05	1.411	0	●
MT 10D7 16UN-MMT05	16.0	-	3/4	-	10.00	4	6.40	12.75	T05	1.588	0	●
MT 12D8 24UN-MMT06	24.0	-	-	5/8- 11/16	12.00	4	7.40	14.30	T06	1.058	0	●
MT 12D8 20UN-MMT06	20.0	-	-	3/4 - 1	12.00	4	7.70	14.30	T06	1.270	0	●
MT 12D8 18UN-MMT06	18.0	-	5/8	=>1 11/16	12.00	4	7.10	14.30	T06	1.411	0	●
MT 12D8 16UN-MMT06	16.0	-	3/4	-	12.00	4	8.00	14.30	T06	1.588	0	●
MT 12D8 14UN-MMT06	14.0	-	7/8	-	12.00	4	7.30	14.30	T06	1.814	0	●
MT 16E11 18UN-MMT08	18.0	-	5/8	=>1 11/16	16.00	5	11.30	20.00	T08	1.411	0	●
MT 16E13 14UN-MMT08	14.0	-	7/8	-	16.00	5	12.70	20.00	T08	1.814	0	●
MT 16E13 12UN-MMT08	12.0	-	1-1 1/2	-	16.00	5	12.70	20.00	T08	2.117	0	●
MT 15.3D13 10UN-MMT08	10.0	3/4	-	-	15.30	4	12.70	20.00	T08	2.540	0	●
MT 16C11 9UN-MMT08	9.0	7/8	-	-	16.00	3	11.30	20.00	T08	2.822	0	●
MT 16C13 8UN-MMT08	8.0	1.0	-	-	16.00	3	12.70	20.00	T08	3.175	0	●
MT20F13 12UN-MMTT10	12.0	-	=>1	-	20.00	6	12.70	21.00	T10	2.117	0	●
MT20D13 8UN-MMTT10	8.0	1	-	-	20.00	4	12.70	21.00	T10	3.175	0	●
MT20D15 7UN-MMTT10	7.0	-	1 1/8 - 1 1/4	-	20.00	4	10.90	21.00	T10	3.629	0	●

- Note: Description and dimensions relate to the new products with clamping flats • For shanks, see pages 90-98
- For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 11-12 • Do not apply lubricant to the threaded connection
- ⁽¹⁾ Threads per inch
- ⁽²⁾ Number of flutes
- ⁽³⁾ Thread pitch
- ⁽⁴⁾ 0 - Without coolant supply, 1 - With coolant supply

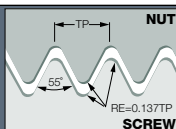
MULTI-MASTER

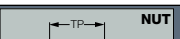
MT-W-MM

Carbide Milling Heads with a Threaded Connection for Internal and External 55° BSW Thread Profile



Application: General engineering fittings and pipe couplings



	Dimensions									IC908
Designation	TP ⁽¹⁾	TDZ	DC	NOF ⁽²⁾	APMX	LF	THSZMS	TP ⁽³⁾	CSP ⁽⁴⁾	
MT 10D6 19W-MMT05	19.0	G1/4-3/8	10.00	4	5.30	12.75	T05	1.337	0	
MT 16D13 14W-MMT08	14.0	G1/2-7/8	16.00	4	12.70	20.00	T08	1.814	0	
MT 16D11 11W-MMT08	11.0	G=>1	16.00	4	11.50	20.00	T08	2.309	0	
MT20F15 14W-MMTT10	14.0	G3/4-7/8	20.00	6	12.70	21.00	T10	1.814	0	
MT20F12 11W-MMTT10	11.0	G=>1	20.00	6	11.50	21.00	T10	2.309	0	

- Note: Description and dimensions relate to the new products with clamping flats • For shanks, see pages 90-98
- For clamping keys (to be ordered separately), tightening torques and clamping instructions, see pages 11-12
- Do not apply lubricant to the threaded connection • B.S.84 Internal & External tolerance: Medium class
- ⁽¹⁾ Threads per inch
- ⁽²⁾ Number of flutes
- ⁽³⁾ Thread pitch
- ⁽⁴⁾ 0 - Without coolant supply, 1 - With coolant supply



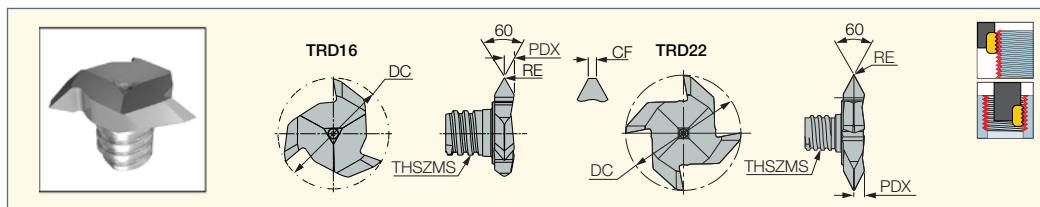
Thread Size	Key ⁽¹⁾	Torque Wrench ⁽¹⁾	Wrench ⁽¹⁾	Tightening Torque (N×cm)
T05	MM KEY 6x4	TORQUE WRENCH 5-50Nm 9X12	MM WRENCH 6-05	700
T06	MM KEY 8x5	TORQUE WRENCH 5-50Nm 9X12	MM WRENCH 8-06	1000
T08	MM KEY 10x7	TORQUE WRENCH 5-50Nm 9X12	MM WRENCH 10-08	1500
T10	MM KEY 13x8	TORQUE WRENCH 5-50Nm 9X12	MM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

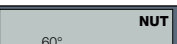
⁽¹⁾ Order separately

MULTI-MASTER

MM TRD-M

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



	Dimensions																Tough ↔ Hard		
	Designation	DC	NOF ⁽¹⁾	TPN ⁽²⁾	TPX ⁽³⁾	TPN _{DF2} ⁽⁴⁾	TPX _{DF2} ⁽⁵⁾	TPIN ⁽⁶⁾	TPIX ⁽⁷⁾	TPN _{DF2} ⁽⁸⁾	TPIX _{DF2} ⁽⁹⁾	RE	CF	PDX	THSZMS	TDZ ⁽¹⁰⁾	CSP ⁽¹¹⁾	IC528	IC908
MM TRD16-M60-05P-3T06	15.70	3	0.500	2.000	0.400	2.000	13.00	48.00	16.00	56.00	- ⁽¹²⁾	0.05	1.40	T06	M20	0		●	●
MM TRD16-M60-15P-3T06	15.70	3	1.500	2.000	1.000	1.500	13.00	16.00	16.00	28.00	0.05	-	1.40	T06	M22	0		●	●
MM TRD22-M60-30P-4T08	21.70	4	3.000	4.500	2.500	4.000	6.00	9.00	7.00	10.00	0.20	-	2.40	T08	M36	0		●	●

- For ISO metric thread (ISO 68, DIN13, ANSI B 1.13M-1983)
- For shanks, see pages 90-98
- For clamping instructions, see pages 11-12
- Do not apply lubricant to the threaded connection
- DIN13, ISO 68-1, ISO 965 (1&2) - Internal tolerance: 6H, External tolerance: 6g
- ANSI/ASME B1.1 - Internal tolerance: 2B, External tolerance: 2A

⁽¹⁾ Number of flutes

⁽²⁾ Thread pitch minimum (mm)-internal

⁽³⁾ Thread pitch maximum (mm)-internal

⁽⁴⁾ Thread pitch minimum (mm)-external

⁽⁵⁾ Thread pitch maximum (mm)-external

⁽⁶⁾ Threads per inch minimum-internal

⁽⁷⁾ Threads per inch maximum-internal

⁽⁸⁾ Threads per inch minimum-external

⁽⁹⁾ Threads per inch maximum-external

⁽¹⁰⁾ Smallest possible thread

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

⁽¹²⁾ Flat

Spare Parts

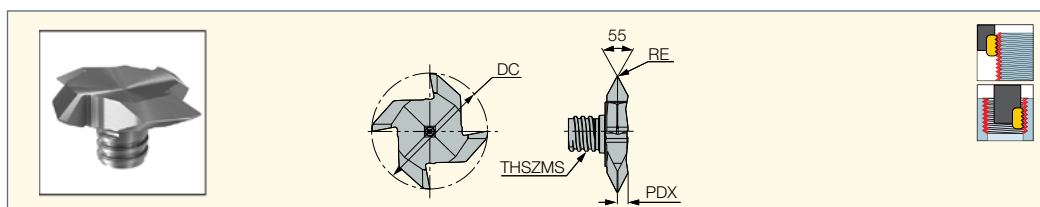
Designation		
MM TRD16-M60-05P-3T06	MM EGR 16-18*	T-25/3*
MM TRD16-M60-15P-3T06	MM EGR 16-18*	T-25/3*
MM TRD22-M60-30P-4T08	MM EGR 20-22*	T-30/3 L*

* Optional, to be ordered separately

MULTI-MASTER

MM TRD-W

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



Designation	Dimensions												Tough ↔ Hard	
	DC	NOF ⁽¹⁾	RE	PDX	TPIN ⁽²⁾	TPIX ⁽³⁾	TPN _{DF2} ⁽⁴⁾	TPIX _{DF2} ⁽⁵⁾	THSZMS	TDZ ⁽⁶⁾	Standard	CSP ⁽⁷⁾	IC528	IC908
MM TRD22-W55-14P-4T08	21.70	4	0.20	2.0	11.00	14.00	11.50	16.00	T08	G3/4	DIN ISO 228, B.S. 84	0	●	●

- For shanks, see pages 90-98
- For clamping instructions, see pages 11-12
- Do not apply lubricant to the threaded connection
- B.S.84 Internal & External tolerance: Medium class

⁽¹⁾ Number of flutes

⁽²⁾ Threads per inch minimum-internal

⁽³⁾ Threads per inch maximum-internal

⁽⁴⁾ Threads per inch minimum-external

⁽⁵⁾ Threads per inch maximum-external

⁽⁶⁾ Thread diameter size

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

Spare Parts

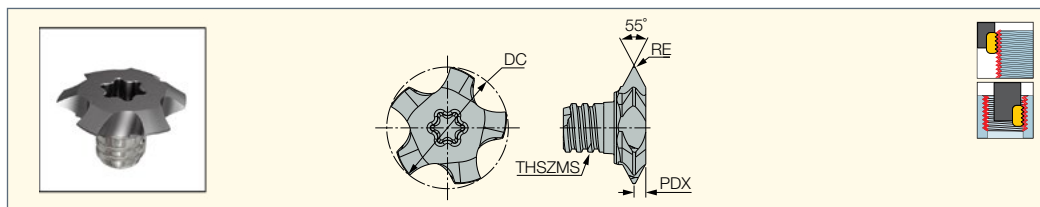
Designation		
MM TRD-W	T-30/3 L*	MM EGR 20-22*

* Optional, to be ordered separately

MULTI-MASTER

MM 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⁾	TQ ⁽⁵⁾	CSP ⁽⁶⁾	
MM TRF12-W55-P11-5T05	11.94	5	11.00	14.00	0.23	1.15	T05	15.875	7.0	0	●
MM TRF12-W55-P19-5T05	11.94	5	19.00	28.00	0.11	0.75	T05	14.287	10.0	0	●
MM TRF16-W55-P8-5T06	15.94	5	8.00	14.00	0.23	1.55	T06	20.637	15.0	0	●
MM TRF20-W55-P6-6T08	19.94	6	6.00	8.00	0.40	1.95	T08	25.4	28.0	0	●

• For ISO metric thread (ISO 68, DIN13, ANSI B 1.13M-1983)

• For shanks, see pages 90-98

• For clamping instructions, see pages 11-12

• Do not apply lubricant to the threaded connection

⁽¹⁾ Number of flutes

⁽²⁾ Threads per inch minimum

⁽³⁾ Threads per inch maximum

⁽⁴⁾ Smallest possible thread

⁽⁵⁾ Tightening torque

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

Thread Size	Tightening Torque (NxcM)
T05	700
T06	1000
T08	1500
T10	2800

⁽¹⁾ Order separately

Spare Parts

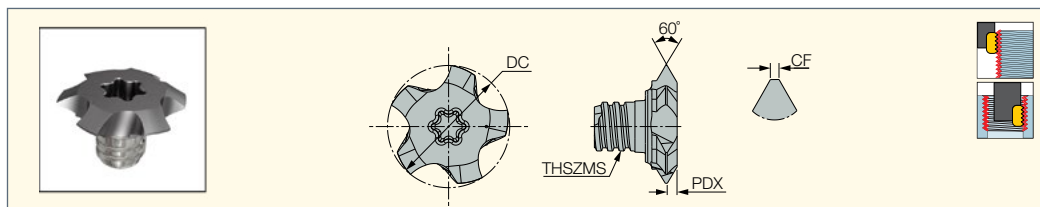
Designation	
MM TRF12-W55-P11-5T05	BIT SOCKET T20 3/8" DRIVE*
MM TRF12-W55-P19-5T05	BIT SOCKET T20 3/8" DRIVE*
MM TRF16-W55-P8-5T06	BIT SOCKET T25 3/8" DRIVE*
MM TRF20-W55-P6-6T08	BIT SOCKET T40 3/8" DRIVE*

* Optional, to be ordered separately

MULTI-MASTER

MM TRF 60°

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



Designation	Dimensions																IC908
	DC	NOF ⁽¹⁾	TPN ⁽²⁾	TPX ⁽³⁾	TPN_DF2 ⁽⁴⁾	TPX_DF2 ⁽⁵⁾	TPIN ⁽⁶⁾	TPIX ⁽⁷⁾	TPIN_DF2 ⁽⁸⁾	TPIX_DF2 ⁽⁹⁾	CF	PDX	THSZMS	TDZ ⁽¹⁰⁾	TQ	CSP ⁽¹¹⁾	
MM TRF12A60-P080-5T05	11.94	5	0.500	0.800	0.400	0.800	28.00	56.00	32.00	64.00	0.05	0.55	T05	M14	7.0	0	●
MM TRF12A60-P175-5T05	11.94	5	1.000	1.750	0.800	1.500	14.00	28.00	16.00	32.00	0.11	0.96	T05	M14	7.0	0	●
MM TRF12A60-P250-5T05	11.94	5	2.000	2.500	1.750	2.000	10.00	13.00	11.00	15.00	0.22	1.21	T05	M16	7.0	0	●
MM TRF16A60-P080-5T06	15.94	5	0.500	0.800	0.400	0.800	28.00	56.00	32.00	64.00	0.05	0.55	T06	M18	10.0	0	●
MM TRF16A60-P175-5T06	15.94	5	1.000	1.750	0.800	1.500	14.00	28.00	16.00	32.00	0.10	1.00	T06	M18	10.0	0	●
MM TRF16A60-P300-5T06	15.94	5	2.000	3.000	1.750	2.500	8.00	13.00	10.00	15.00	0.22	1.41	T06	M20	10.0	0	●
MM TRF20A60-P200-6T08	19.94	6	1.000	2.000	0.800	1.750	13.00	28.00	15.00	32.00	0.11	0.95	T08	M24	10.0	0	●
MM TRF20A60-P300-6T08	19.94	6	2.000	3.000	1.750	2.500	8.00	13.00	10.00	15.00	0.22	1.41	T08	M24	15.0	0	●
MM TRF20A60-P400-6T08	19.94	6	3.000	4.000	2.500	3.500	6.00	9.00	7.00	10.00	0.31	1.86	T08	M25	15.0	0	●
MM TRF28A60-P600-5T10	27.70	5	5.000	6.000	4.500	5.000	4.00	5.00	5.00	6.00	0.57	2.49	T10	M38	28.0	0	●
MM TRF28A60-P500-6T10	27.70	6	3.000	5.000	2.500	4.500	6.00	8.00	6.00	10.00	0.34	2.17	T10	M33	28.0	0	●

- For ISO metric thread (ISO 68, DIN13, ANSI B 1.13M-1983)
- For shanks, see pages 90-98
- For clamping instructions, see pages 11-12
- Do not apply lubricant to the threaded connection

⁽¹⁾ Number of flutes

⁽²⁾ Thread pitch minimum (mm)-internal

⁽³⁾ Thread pitch maximum (mm)-internal

⁽⁴⁾ Thread pitch minimum (mm)-external

⁽⁵⁾ Thread pitch maximum (mm)-external

⁽⁶⁾ Threads per inch minimum-internal

⁽⁷⁾ Threads per inch maximum-internal

⁽⁸⁾ Threads per inch minimum-external

⁽⁹⁾ Threads per inch maximum-external

⁽¹⁰⁾ Smallest possible thread

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

Spare Parts

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

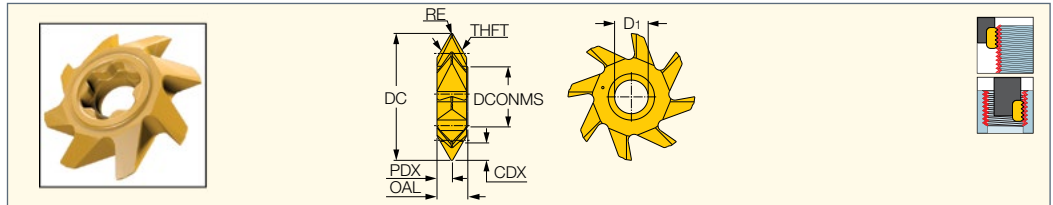
* Optional, to be ordered separately



SOLIDTHREAD

SD TRD-M-SP

Interchangeable Solid Carbide Heads for 60° Partial Profile Thread Milling



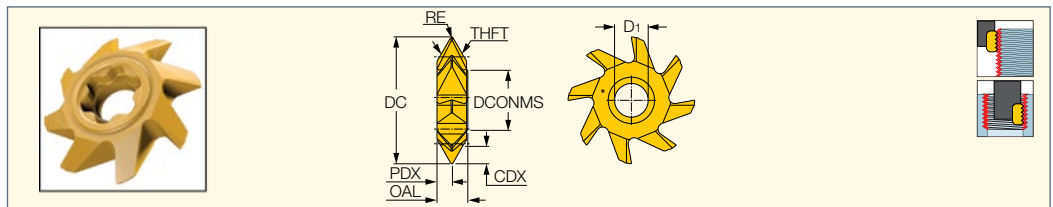
Designation	Dimensions															IC908
	DC	DIOUT ⁽¹⁾	THFT ⁽²⁾	TPN ⁽³⁾	TPX ⁽⁴⁾	TPIN ⁽⁵⁾	TPIX ⁽⁶⁾	PDX	RE	D1	CDX	OAL	ZEFP ⁽⁷⁾	DCONMS	CSP ⁽⁸⁾	
SD TRD32-M60-6P-SP15	31.70	36.00	VP60	4.000	6.000	4.00	6.00	3.70	0.30	8.40	4.70	7.70	8	15.00	0	•
SD TRD40-M60-8P-SP17	39.70	64.00	VP60	6.000	8.000	3.00	4.00	4.50	0.40	9.80	6.20	9.50	10	17.00	0	•

- For shanks, see pages 98-101
- DIN13 , ISO 68-1, ISO 965 (1&2) - Internal tolerance: 6H, External tolerance: 6g
- ANSI/ASME B1.1 - Internal tolerance: 2B, External tolerance: 2A
- ⁽¹⁾ Minimum diameter for external threading
- ⁽²⁾ VP60=60° partial thread form
- ⁽³⁾ Thread pitch minimum (mm)
- ⁽⁴⁾ Thread pitch maximum (mm)
- ⁽⁵⁾ Threads per inch minimum
- ⁽⁶⁾ Threads per inch maximum
- ⁽⁷⁾ Num. of cutting edges
- ⁽⁸⁾ 0 - Without coolant supply, 1 - With coolant supply

SOLIDTHREAD

SD TRD-W-SP

Interchangeable Solid Carbide Heads for 55° Partial Profile Thread Milling



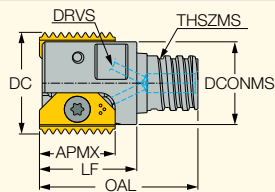
	Dimensions														IC908
	Designation	DC	DIOUT ⁽¹⁾	THFT ⁽²⁾	THFT_2	TPIN ⁽³⁾	TPIX ⁽⁴⁾	PDX	D1	CDX	OAL	ZEFP ⁽⁵⁾	RE	DCONMS	
SD TRD32-W55-4T-SP15	31.70	35.00	VP55	WH55	4.00	6.00	3.70	8.40	4.70	7.70	8	0.50	15.00	0	●
SD TRD40-W55-3T-SP17	39.70	57.00	VP55	WH55	3.00	4.00	4.50	9.80	6.20	9.50	10	0.80	17.00	0	●

- For shanks, see pages 98-101
- B.S.84 Internal & External tolerance: Medium class
- ⁽¹⁾ Minimum diameter for external threading
- ⁽²⁾ VP55=55° partial thread forms
- ⁽³⁾ Threads per inch minimum
- ⁽⁴⁾ Threads per inch maximum
- ⁽⁵⁾ Num. of cutting edges
- ⁽⁶⁾ 0 - Without coolant supply, 1 - With coolant supply

MILLTHREAD

MTE-MM

Indexable Threading Endmills
with a MULTI-MASTER
Shank Connection



Designation	DC	APMX	CICT ⁽¹⁾	LF	THSZMS	DCONMS	OAL	DRVS ⁽²⁾	TQ ⁽³⁾	CSP ⁽⁴⁾	
MTE D9.9-1-MMT05-12	9.90	12.00	1	16.20	T05	7.70	32.30	5.5	1.2	0	0.01
MTE D13.7-1-MMT06-14	13.70	14.00	1	17.00	T06	9.60	23.30	8.0	1.2	1	0.03
MTE D15.8-1-MMT08-14	15.80	14.00	1	17.00	T08	11.70	24.50	10.0	1.2	1	0.02
MTE D20/D0.79-2-MMT10-14	20.00	14.00	2	18.00	T10	15.30	29.30	13.0	1.2	1	0.03
MTE D20/D0.79-3-MMT10-14	20.00	14.00	3	24.00	T10	15.30	35.30	13.0	1.2	1	0.02
MTE D21/D0.82-1-MMT10-21	21.00	21.00	1	25.00	T10	15.30	36.30	13.0	4.8	1	0.12
MTE D30.4/D1.2-2-MMT15-21	30.40	21.00	2	25.00	T15	23.90	42.00	20.0	4.8	1	0.13
MTE D30.4/D1.2-3-MMT15-21	30.40	21.00	3	34.00	T15	23.90	51.00	20.0	4.8	1	0.10
MTE D27-1-MMT12-30	27.00	30.00	1	38.20	T12	18.30	52.00	16.0	9.0	1	0.06

• Tool cutting diameter should not exceed 2/3 of thread bore diameter

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

⁽²⁾ Torque key size

⁽³⁾ Recommended clamping torque

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

For inserts: MT LNH#-ACME (Internal) • MT LNH#-ISO (Internal) • MT LNH#-NPS • MT LNH#-NPSF • MT LNH#-UN (Internal) • MT LNH#-W • MT LNHT-ABUT

• MT LNHT-BSPT • MT LNHT-NPT • MT LNHT-NPTF • MT LNHT-ISO (External) • MT LNHT-NPSM (Int.&Ext.) • MT LNHT-PG • MT LNHT-UN (External)

• MT LNHT-UNJ (External) • MT LNHT-UNJ (Internal)

For holders, see pages: MM CAB (98) • MM GRT (shanks) (92) • MM S-A (stepped shanks) (90) • MM S-A (straight shanks) (93) • MM S-A-AV (90) • MM S-A-BT (97)

• MM S-A-C# (96) • MM S-A-HSK (96) • MM S-A-N (92) • MM S-A-SK (96) • MM S-B (85° conical shanks) (93) • MM S-D (89° conical shanks) (94) • MM S-ER (95)

• MM S-ER-H (95) • MM TS-A (92) • MM TS2-A (90)

Spare Parts

Designation				
MTE D9.9-1-MMT05-12	SR M2.5-T8-MT	BLD T08/M7	SW4-SD	MM KEY 6X4*
MTE D13.7-1-MMT06-14	SR M2.6-L6.7-S11	BLD T08/M7	SW4-SD	MM KEY 8X5*
MTE D15.8-1-MMT08-14	SR M2.6-L6.7-S11	BLD T08/M7	SW4-SD	MM KEY 10X7*
MTE D20/D0.79-2-MMT10-14	SR M2.6-L6.7-S11	BLD T08/M7	SW4-SD	MM KEY 13X8*
MTE D20/D0.79-3-MMT10-14	SR M2.6-L6.7-S11	BLD T08/M7	SW4-SD	MM KEY 13X8*
MTE D21/D0.82-1-MMT10-21	SR M4-IP15-MT	BLD IP15/S7	SW6-SD	MM KEY 13X8*
MTE D30.4/D1.2-2-MMT15-21	SR M4-IP15-MT	BLD IP15/S7	SW6-SD	MM KEY 20*
MTE D30.4/D1.2-3-MMT15-21	SR M4-IP15-MT	BLD IP15/S7	SW6-SD	MM KEY 20*
MTE D27-1-MMT12-30	SR M5-IP25-MT-S	BLD IP25/S7	SW6-T	MM KEY 16X9*

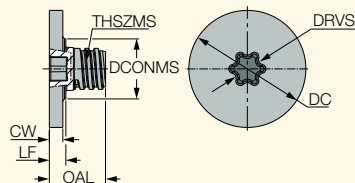
* Optional, to be ordered separately

MULTI-MASTER BLANKS



MULTI-MASTER**MM TC-G**

Interchangeable Cemented Carbide Blank Heads



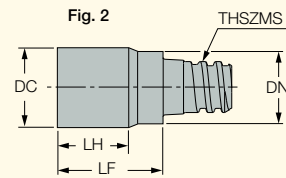
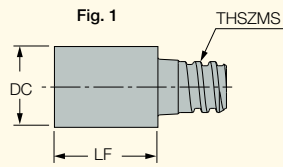
Designation	Dimensions							IC28
	DC	CW	LF	OAL	DCONMS	DRVS ⁽¹⁾	THSZMS	
MM TC138N-19-G-T05	13.80	1.90	2.50	9.60	7.60	20.0	T05	●
MM TC138N-23-G-T05	13.80	2.30	2.90	10.00	7.60	20.0	T05	●
MM TC138N-28-G-T05	13.80	2.80	3.40	10.50	7.60	20.0	T05	●
MM TC138N-35-G-T05	13.80	3.50	4.10	11.20	7.60	20.0	T05	●
MM 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	18.45	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 90-98

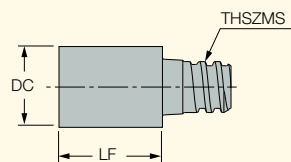
• For tightening torques and clamping instructions, see pages 11-12

• Do not apply lubricant to the threaded connection

⁽¹⁾ Torque key size

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.375-.56T06	9.53	13.35	T06	-	-	1	●	
MM ESR-G.375-.75T06	9.53	19.40	T06	-	-	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.500-.67T06	12.70	17.09	T06	-	-	1	●	
MM ESR-G.500-.67T08	12.70	17.09	T08	-	-	1	●	●
MM ESR-G.500-.91T08	12.70	23.45	T08	-	-	1	●	
MM ESR-G.625-.83 T10	15.88	20.90	T10	-	-	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.750-1.02T12	19.05	26.05	T12	17.0	18.45	2	●	
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 222-295 T12	22.00	29.50	T12	17.9	18.45	2	●	
MM ESR-G 222-295 T10	22.22	29.50	T10	17.9	18.45	2	●	
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	●	

MULTI-MASTER**MM ESR-1.5D BLANKS**Interchangeable Solid
Carbide Blank Heads

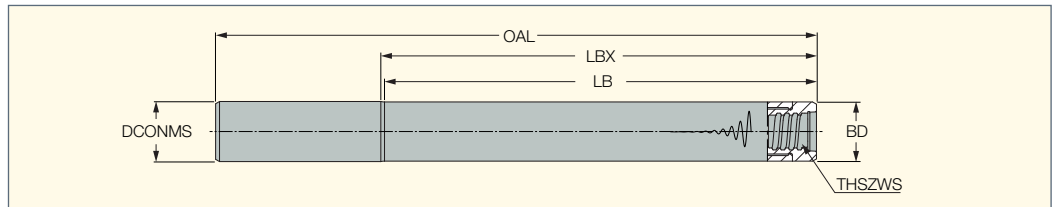
Designation	Dimensions			IC08
	DC	LF	THSZMS	
MM ESR-G 080-18.0 T05 08	8.00	18.40	T05	•
MM ESR-G.375-.87T06	9.53	22.40	T06	•
MM ESR-G 100-22.0 T06	10.00	22.40	T06	•
MM ESR-G 120-27.0 T08 08	12.00	27.45	T08	•
MM ESR-G.500-1.06T08	12.70	27.45	T08	•
MM ESR-G 160-33.5 T10	16.00	34.00	T10	•
MM ESR-G.750-1.61T12	19.05	41.50	T12	•
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 ESR-G1.00-2.07T15	25.40	53.00	T15	•

MULTI-MASTER SHANKS



MULTI-MASTER**MM S-A-AV**

Anti-Vibration Cylindrical
Shanks Mount Interchangeable
Milling Heads

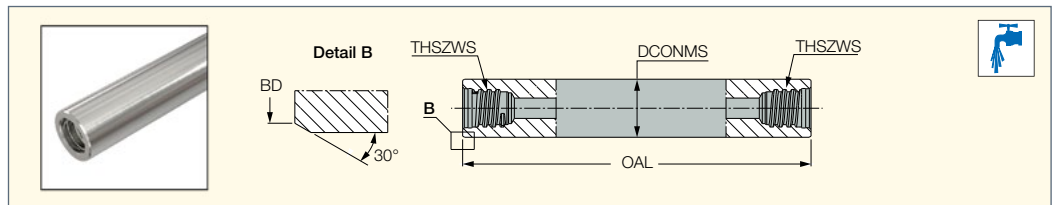


Designation	THSZWS	OAL	LBX	LB	DCONMS	BD	CSP ⁽¹⁾
MM S-A-L175/120-C20-T12AV	T12	175.00	120.00	118.80	20.00	19.70	0
MM S-A-L200/145-C20-T12AV	T12	200.00	145.00	143.80	20.00	19.70	0
MM S-A-L210/150-C25-T15AV	T15	210.00	150.00	148.60	25.00	24.60	0
MM S-A-L250/190-C25-T15AV	T15	250.00	190.00	188.60	25.00	24.60	0

- Do not apply lubricant to the threaded connection
- (1) 0 - Without coolant supply, 1 - With coolant supply

MULTI-MASTER**MM TS2-A**

Double-Sided Cylindrical Shanks
for Interchangeable Heads

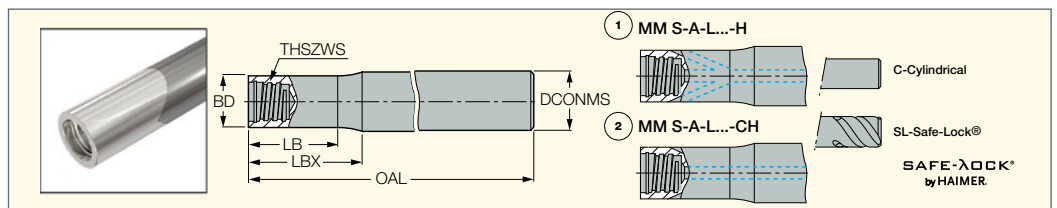


Designation	THSZWS	DCONMS	BD	OAL	Shank m.	CSP ⁽¹⁾	kg
MM TS2-A-L050-C06-T04-CH	T04	6.00	5.80	50.00	S	1	0.03
MM TS2-A-L050-C08-T05-CH	T05	8.00	7.60	50.00	S	1	0.02
MM TS2-A-L060-C10-T06-CH	T06	10.00	9.60	60.00	S	1	0.04
MM TS2-A-L070-C12-T08-CH	T08	12.00	11.60	70.00	S	1	0.06
MM TS2-A-L080-C16-T10-CH	T10	16.00	15.30	80.00	S	1	0.00
MM TS2-A-L090-C20-T12-CH	T12	20.00	18.30	90.00	S	1	0.18

- Do not apply lubricant to the threaded connection
- (1) 0 - Without coolant supply, 1 - With coolant supply

MULTI-MASTER**MM S-A (stepped shanks)**

Stepped Cylindrical Shanks
Mount Interchangeable
Milling Heads



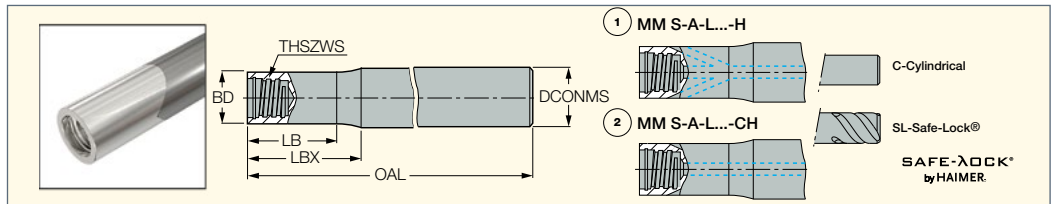
Designation	THSZWS	DCONMS	BD	LB	LBX	OAL	Shank ⁽²⁾	Shankm. ⁽³⁾	CSP ⁽⁴⁾	Fig.	RPMX ⁽⁵⁾	kg
MM S-A-L050-C08-T04	T04	8.00	5.80	9.90	14.0	50.00	C	S	0	-	60000	0.03
MM S-A-L060/20-C08-T04-C	T04	8.00	5.80	16.90	20.0	60.00	C	C	0	-	60000	0.03
MM S-A-L060-C08-T05	T05	8.00	7.60	12.50	15.0	60.00	C	S	0	-	60000	0.05
MM S-A-L065/24-SL08T05C	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	1	60000	0.08
MM S-A-L075-C10-T06	T06	10.00	9.60	17.70	20.0	75.00	C	S	0	-	60000	0.05
MM S-A-L075-C10-T06-H	T06	10.00	9.60	19.40	20.0	75.00	C	S	1	1	53940	0.04
MM S-A-L075/12-C10-T06-CH	T06	10.00	9.60	10.60	12.0	75.00	C	S	1	2	53940	0.04
MM S-A-L075/30-SL10T06C	T06	10.00	9.60	30.00	31.7	75.00	SL	C	0	-	53940	0.00
MM S-A-L090-C10-T06-C	T06	10.00	9.60	38.60	40.0	90.00	C	C	0	-	55170	0.06
MM S-A-L090/040C10T06C-H	T06	10.00	9.60	38.60	40.0	90.00	C	C	1	1	60000	0.08
MM S-A-L090-C10-T06-W	T06	10.00	9.60	17.20	20.0	90.00	C	W	0	-	41670	0.12
MM S-A-L090-C10-T06-W-H	T06	10.00	9.60	39.00	40.0	90.00	C	W	1	1	40860	0.10
MM S-A-L110-C10-T06-C	T06	10.00	9.60	57.90	60.0	110.00	C	C	0	-	34530	0.11
MM S-A-L110-C10-T06-W-H	T06	10.00	9.60	59.00	60.0	110.00	C	W	1	1	24840	0.12
MM S-A-L150-C10-T06-C	T06	10.00	9.60	98.50	100.0	150.00	C	C	0	-	16620	0.16
MM S-A-L070-C12-T08-C	T08	12.00	11.60	17.90	20.0	70.00	C	C	0	-	60000	0.10
MM S-A-L070-C12-T08-W-H	T08	12.00	11.60	18.70	20.0	70.00	C	W	1	1	60000	0.11
MM S-A-L085/36-C12T08C	T08	12.00	11.60	36.00	37.7	85.00	C	C	0	-	60000	0.13
MM S-A-L090/14-C12-T08-CH	T08	12.00	11.60	13.00	14.0	90.00	C	S	1	2	43000	0.08
MM S-A-L090-C12-T08	T08	12.00	11.60	13.30	16.0	90.00	C	S	0	-	43000	0.10

- Do not apply lubricant to the threaded connection
- (1) With Safe-Lock® (by Haimer) pull-out prevention helical grooves
- (2) C-Cylindrical, W-Weldon, SL-Safe-Lock® by Haimer, helical grooves that prevent pull-out (available upon request)
- (3) S-steel, C-carbide, W-tungsten
- (4) 0 - Without coolant supply, 1 - With coolant supply
- (5) The maximum RPM must be calculated. Divide the listed max. RPM by the number of flutes (on the milling head) being used

Continued

MULTI-MASTER**MM S-A (stepped shanks)**

Stepped Cylindrical Shanks
Mount Interchangeable
Milling Heads



Designation	THSZWS	DCONMS	BD	LB	LBX	OAL	Shank ⁽²⁾	Shankm. ⁽³⁾	CSP ⁽⁴⁾	Fig.	RPMX ⁽⁵⁾	
MM S-A-L070/020C12T08C-CH	T08	12.00	11.60	18.00	20.0	70.00	C	C	1	2	43050	0.08
MM S-A-L090-C12-T08-C	T08	12.00	11.60	39.00	40.0	90.00	C	C	0	-	43050	0.12
MM S-A-L090-C12-T08-H	T08	12.00	11.60	38.70	40.0	90.00	C	S	1	1	41040	0.08
MM S-A-L090-C12-T08-W-H	T08	12.00	11.60	38.70	40.0	90.00	C	W	1	1	49800	0.15
MM S-A-L090/040C12T08C-CH	T08	12.00	11.60	38.00	40.0	90.00	C	C	1	2	49800	0.11
MM S-A-L090/42-C12-T08-CH	T08	12.00	11.60	41.00	42.0	90.00	C	S	1	2	41010	0.07
MM S-A-L110-C12-T08-W	T08	12.00	11.60	17.00	20.0	110.00	C	W	0	-	31350	0.20
MM S-A-L110-C12-T08-C	T08	12.00	11.60	57.00	60.0	110.00	C	C	0	-	41040	0.16
MM S-A-L110-C12-T08-W-H	T08	12.00	11.60	58.70	60.0	110.00	C	W	1	1	30210	0.18
MM S-A-L110/060C12T08C-CH	T08	12.00	11.60	58.00	60.0	110.00	C	C	1	2	30210	0.12
MM S-A-L130-C12-T08-C	T08	12.00	11.60	78.60	80.0	130.00	C	C	0	-	27960	0.19
MM S-A-L130-C12-T08-W-H	T08	12.00	11.60	78.70	80.0	130.00	C	W	1	1	20100	0.21
MM S-A-L130/080C12T08C-CH	T08	12.00	11.60	78.00	80.0	130.00	C	C	1	2	20100	0.17
MM S-A-L070-C16-T10-W-H	T10	16.00	15.30	18.20	20.0	70.00	C	W	1	1	60000	0.00
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	1	57510	0.27
MM S-A-L090/040C16T10C-CH	T10	16.00	15.30	38.00	40.0	90.00	C	C	1	2	57510	0.17
MM S-A-L100-C16-T10	T10	16.00	15.30	17.10	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	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	2	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	2	38040	0.14
MM S-A-L100/48-C16T10C ⁽¹⁾	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	58.20	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	1	36030	0.33
MM S-A-L110/060C16T10C-H	T10	16.00	15.30	58.10	60.0	110.00	C	C	1	1	60000	0.24
MM S-A-L110/060C16T10C-CH	T10	16.00	15.30	58.00	60.0	110.00	C	C	1	2	36030	0.28
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	1	24450	0.41
MM S-A-L130/080C16T10C-CH	T10	16.00	15.30	78.00	80.0	130.00	C	C	1	2	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
MM S-A-L150-C16-T10-W-H	T10	16.00	15.30	98.20	100.0	150.00	C	W	1	1	17610	0.45
MM S-A-L090-C20-T12-C	T12	20.00	18.30	37.20	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	1	60000	0.41
MM S-A-L090/040C20T12C-CH	T12	20.00	18.30	37.20	40.0	90.00	C	C	1	2	60000	0.30
MM S-A-L110/50-SL20T12C	T12	20.00	18.30	50.00	53.3	110.00	SL	C	0	-	60000	0.41
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	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	2	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	2	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	1	31650	0.59
MM S-A-L130/080C20T12C-CH	T12	20.00	18.30	77.20	80.0	130.00	C	C	1	2	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	1	12540	0.92
MM S-A-L200/120C20T12C-CH	T12	20.00	18.30	117.20	120.0	200.00	C	C	1	2	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	1	41700	0.89
MM S-A-L125/63-C25T15C ⁽¹⁾	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	2	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	2	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-W32-T21-CH	T21	32.00	30.00	-	-	100.00	W	S	1	2	12690	0.51
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-L150/50-C32-T21-CH	T21	32.00	30.00	50.00	53.3	150.00	C	S	1	2	12690	0.80
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-L170/100C32T21C-CH	T21	32.00	30.00	100.00	103.5	170.00	C	C	1	2	12690	0.00
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⁾ With Safe-Lock® (by Haimer) pull-out prevention helical grooves

⁽²⁾ C-Cylindrical, W-Weldon, SL-Safe-Lock® by Haimer, helical grooves that prevent pull-out (available upon request)

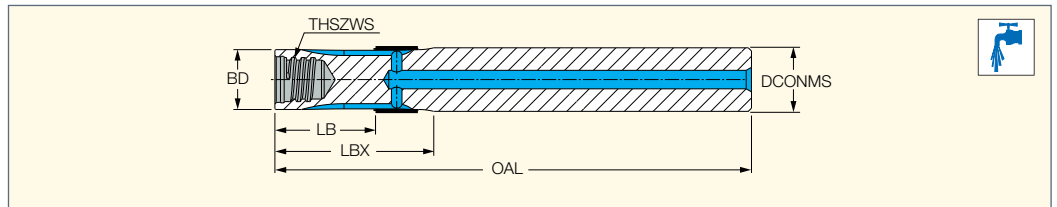
⁽³⁾ S-steel, C-carbide, W-tungsten

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

⁽⁵⁾ The maximum RPM must be calculated. Divide the listed max. RPM by the number of flutes (on the milling head) being used

MULTI-MASTER**MM S-A-N**

Stepped Cylindrical Shanks with
Parallel Directed Coolant Mount
Interchangeable Milling Heads



Designation	THSZWS	DCONMS	BD	LB	LBX	OAL	Shank m. ⁽¹⁾	CSP ⁽²⁾	kg
MM S-A-L075-C10-T06-N	T06	10.00	9.60	18.00	28.0	75.00	S	1	0.04
MM S-A-L090-C12-T08-N	T08	12.00	11.60	18.00	30.0	90.00	S	1	0.07
MM S-A-L100-C16-T10-N	T10	16.00	15.30	23.00	35.0	100.00	S	1	0.04

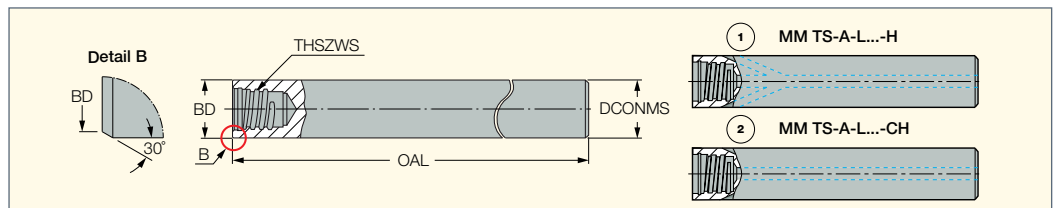
• Do not apply lubricant to the threaded connection

⁽¹⁾ S-steel

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

MULTI-MASTER**MM TS-A**

Cylindrical Shanks Mount
Interchangeable Milling Heads



Designation	THSZWS	DCONMS	BD	OAL	Shank m. ⁽¹⁾	RPMX ⁽²⁾	CSP ⁽³⁾	Fig.	kg
MM TS-A-L070-C08-T04	T04	8.00	5.80	70.00	S	-	0	-	0.03
MM TS-A-L070-C08-T05	T05	8.00	7.60	70.00	S	60000	0	-	0.03
MM TS-A-L080-C10-T06	T06	10.00	9.60	80.00	S	47400	0	-	0.05
MM TS-A-L080-C10-T06-H	T06	10.00	9.60	80.00	S	46920	1	1	0.04
MM TS-A-L090-C12-T08	T08	12.00	11.60	90.00	S	43110	0	-	0.07
MM TS-A-L090-C12-T08-H	T08	12.00	11.60	90.00	S	42780	1	1	0.12
MM TS-A-L070-C16-T10-CH	T10	16.00	15.30	70.00	S	39420	1	2	0.00
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	1	0.14
MM TS-A-L090-C20-T12-CH	T12	20.00	18.30	90.00	S	-	1	2	0.20
MM TS-A-L100-C25-T15-CH	T15	25.00	23.90	100.00	S	-	1	2	0.34

• Do not apply lubricant to the threaded connection

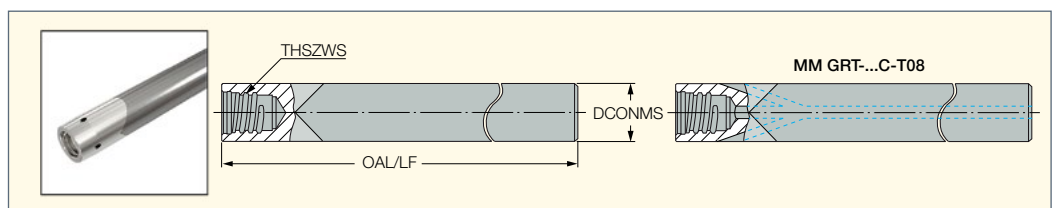
⁽¹⁾ S-steel

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

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

MULTI-MASTER**MM GRT (shanks)**

Mount 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 processes

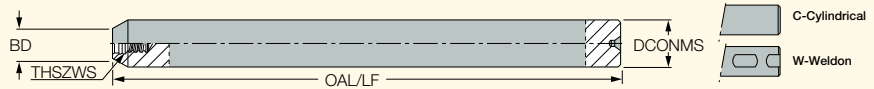
⁽¹⁾ C - Solid carbide

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

MULTI-MASTER

MM S-A (straight shanks)

Shanks Mount Interchangeable
Milling Heads



Designation	THSZWS	DCONMS	BD	OAL	Shank ⁽²⁾	Shank m. ⁽³⁾	RPMX ⁽⁴⁾	CSP ⁽⁵⁾	kg
MM S-A-L055-W12-T05	T05	12.00	7.60	55.00	W	S	60000	0	0.05
MM S-A-L070-C20T05	T05	20.00	7.60	70.00	C	S	60000	0	0.24
MM S-A-L150-C12-T05-B ⁽¹⁾	T05	12.00	7.60	150.00	C	S	18270	0	0.13
MM S-A-L065-W16-T06	T06	16.00	9.60	65.00	W	S	60000	0	0.09
MM S-A-L080-C25T06	T06	25.00	9.60	80.00	C	S	60000	0	0.29
MM S-A-L200-C16-T06-B ⁽¹⁾	T06	16.00	9.60	200.00	C	S	11970	0	0.33
MM S-A-L065-W16-T08	T08	16.00	11.60	65.00	W	S	60000	0	0.10
MM S-A-L080-C25T08	T08	25.00	11.60	80.00	C	S	60000	0	0.40
MM S-A-L250-C20-T08-B ⁽¹⁾	T08	20.00	11.60	250.00	C	S	9330	0	0.60
MM S-A-L070-W20-T10	T10	20.00	15.30	70.00	W	S	60000	0	0.17
MM S-A-L080-C32T10	T10	32.00	15.30	80.00	C	S	60000	0	0.65
MM S-A-L250-C25-T10-B ⁽¹⁾	T10	25.00	15.30	250.00	C	S	11130	0	0.94
MM S-A-L075-W25-T12	T12	25.00	18.30	75.00	W	S	60000	0	0.28
MM S-A-L080-C32T12	T12	32.00	18.30	80.00	C	S	60000	0	0.65
MM S-A-L100-W32-T15	T15	32.00	23.90	100.00	W	S	60000	0	0.30
MM S-A-L100-C40T15	T15	40.00	23.90	100.00	C	S	60000	0	0.94
MM S-A-L100-C40T21	T21	40.00	30.00	100.00	C	S	60000	0	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

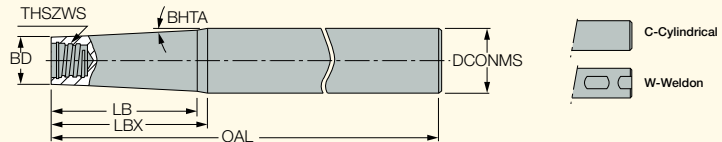
⁽⁴⁾ The maximum RPM must be calculated. Divide the listed max. RPM by the number of flutes (on the milling head) being used

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

MULTI-MASTER

MM S-B (85° conical shanks)

Shanks Mount Interchangeable
Milling Heads



Designation	THSZWS	DCONMS	BD	BHTA	Shank ⁽¹⁾	LB	LBX	OAL	Shank m. ⁽²⁾	RPMX ⁽³⁾	CSP ⁽⁴⁾	kg
MM S-B-L080/24-C08-T04	T04	8.00	5.80	2.6	C	-	24.0	80.00	S	60000	0	0.04
MM S-B-L080-C12-T05	T05	12.00	7.60	5.0	C	-	25.0	80.00	S	60000	0	0.06
MM S-B-L085/32-C16T05	T05	16.00	7.60	5.0	C	27.00	32.0	85.00	S	41280	0	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	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	0.19
MM S-B-L140-C20-T06-W	T06	20.00	9.65	5.0	C	-	60.3	140.50	W	51180	0	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	0.22
MM S-B-L100/48-C20T08	T08	20.00	11.60	5.0	C	-	48.0	100.00	S	25590	0	0.32
MM S-B-L140-C20-T10	T10	20.00	15.30	5.0	C	-	27.0	140.00	S	31020	0	0.34
MM S-B-L170-C25-T10	T10	25.00	15.30	5.0	C	-	56.0	170.00	S	29490	0	0.16
MM S-B-L120/55-C25T10	T10	25.00	15.30	5.0	C	-	55.4	120.00	S	29490	0	0.40
MM S-B-L160-C25-T12	T12	25.00	18.30	5.0	C	-	40.0	160.00	S	28680	0	0.08
MM S-B-L190-C32-T12	T12	32.00	18.30	5.0	C	-	80.0	190.00	S	34890	0	0.56
MM S-B-L150/78-C32T12	T12	32.00	18.30	5.0	C	-	78.3	150.00	S	34890	0	0.78
MM S-B-L200-C32-T15	T15	32.00	23.90	5.0	C	-	50.0	200.00	S	14160	0	1.19
MM S-B-L180/92-C40T15	T15	40.00	23.90	5.0	C	-	92.0	180.00	S	14160	0	0.28
MM S-B-L250-W40-T15	T15	40.00	23.90	5.0	W	-	100.0	250.00	S	21840	0	2.12
MM S-B-L150/57-C40T21	T21	40.00	30.00	5.0	C	-	57.0	150.00	S	21840	0	0.62

• Do not apply lubricant to the threaded connection

⁽¹⁾ C-Cylindrical, W-Weldon

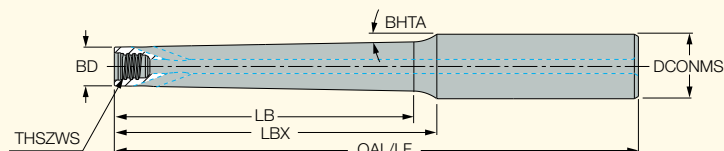
⁽²⁾ S-steel, W-tungsten

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

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

MULTI-MASTER**MM S-D (89° conical shanks)**

Shanks Mount Interchangeable
Milling Heads



Designation	THSZWS	DCONMS	BD	LB	Shank	LBX	OAL	BHTA	Shankm.	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	0.26
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	100.0	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

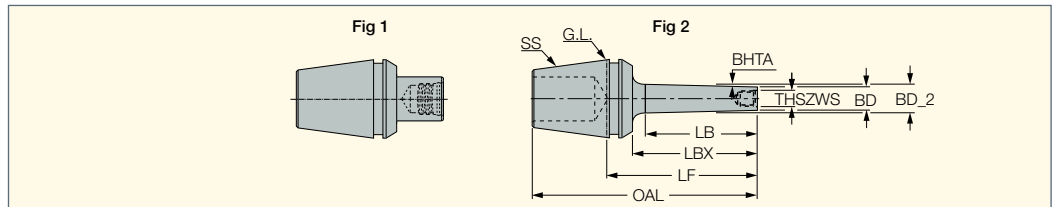
• Do not apply lubricant to the threaded connection

⁽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 that Mount
MULTI-MASTER Solid
Carbide Heads with an
ER Collet Adaptation

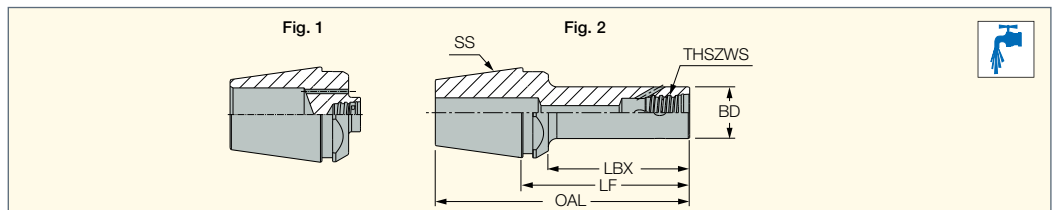


Designation	SS	THSZWS	BHTA	BD	BD_2	LB	LBX	LF	OAL	Fig.	CSP ⁽¹⁾	kg
MM S-A-H004-ER11-T04	ER11	T04	-	5.80	-	-	4.0	9.60	22.00	1	1	0.01
MM S-A-H004-ER11-T05	ER11	T05	-	7.60	-	-	4.0	9.60	22.00	1	0	0.01
MM S-A-H10.5-ER11-T05	ER11	T05	-	7.60	-	-	10.5	16.10	28.50	1	0	0.01
MM S-A-H10.5-ER16-T05	ER16	T05	-	7.60	-	-	10.5	18.10	38.00	1	0	0.03
MM S-A-H10.5-ER16-T06	ER16	T06	-	9.25	-	-	10.5	18.10	38.00	1	0	0.04
MM S-A-H004-ER16-T08	ER16	T08	-	11.60	-	-	4.0	11.60	31.50	1	1	0.03
MM S-A-H013-ER16-T08	ER16	T08	-	11.60	-	-	14.0	20.60	40.50	1	1	0.02
MM S-A-H10.5-ER20-T06	ER20	T06	-	9.25	-	-	10.5	19.10	42.00	1	0	0.05
MM S-A-H004-ER20-T10	ER20	T10	-	15.30	-	-	4.0	12.60	35.50	1	1	0.05
MM S-A-H016-ER20-T10	ER20	T10	-	15.30	-	-	16.0	24.60	47.50	1	1	0.06
MM S-A-H004-ER25-T12	ER25	T12	-	18.30	-	-	4.0	13.10	38.00	1	1	0.08
MM S-A-H10.5-ER25-T12	ER25	T12	-	18.30	-	-	10.5	19.60	44.50	1	1	0.06
MM S-A-H025-ER32-T06	ER32	T06	-	9.25	10.00	18.00	25.0	35.10	65.00	2	0	0.15
MM S-B-H025-ER32-T06	ER32	T06	5.0	9.60	13.50	22.30	25.0	35.10	65.00	2	0	0.16
MM S-B-H050-ER32-T06	ER32	T06	5.0	9.60	17.90	47.30	50.0	60.10	90.00	2	0	0.20
MM S-D-H050-ER32-T06	ER32	T06	1.0	9.60	11.20	45.00	50.0	60.10	90.00	2	0	0.17
MM S-B-H075-ER32-T06	ER32	T06	5.0	9.60	22.60	74.10	75.0	85.10	115.00	2	0	0.25

- Do not apply lubricant to the threaded connection
 - For adaptation see page 9
 - When a rigid ER collet is assembled in an ER holder, the actual protruding length of the holder becomes shorter by 2.0 mm for ER20 and by 3.0 mm for ER25/ER32
- (1) 0 - Without coolant supply, 1 - With coolant supply

MULTI-MASTER
MM S-ER-H

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

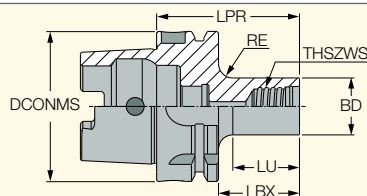


Designation	SS	THSZWS	BD	LBX	LF	OAL	Fig.	CSP ⁽¹⁾	kg
MM S-A-H004-ER16-T05-H	ER16	T05	7.60	4.0	11.60	31.50	1	1	0.03
MM S-A-H004-ER16-T06-H	ER16	T06	9.25	4.0	11.60	31.50	1	1	0.03
MM S-A-H004-ER20-T05-H	ER20	T05	7.60	4.0	12.60	35.50	1	1	0.06
MM S-A-H10.5-ER20-T05-H	ER20	T05	7.60	10.5	19.10	42.00	1	1	0.04
MM S-A-H004-ER20-T06-H	ER20	T06	9.25	4.0	12.60	35.50	1	1	0.06
MM S-A-H004-ER20-T08-H	ER20	T08	11.60	4.0	12.60	35.50	1	1	0.04
MM S-A-H013-ER20-T08-H	ER20	T08	11.60	13.0	21.60	44.50	1	1	0.07
MM S-A-H004-ER25-T05-H	ER25	T05	7.60	4.0	13.10	38.00	1	1	0.08
MM S-A-H10.5-ER25-T05-H	ER25	T05	7.60	10.5	19.60	44.50	1	1	0.08
MM S-A-H004-ER25-T06-H	ER25	T06	9.25	4.0	13.10	38.00	1	1	0.07
MM S-A-H10.5-ER25-T06-H	ER25	T06	9.25	10.5	19.60	44.50	1	1	0.12
MM S-A-H004-ER25-T08-H	ER25	T08	11.60	4.0	13.10	38.00	1	1	0.11
MM S-A-H10.5-ER25-T08-H	ER25	T08	11.60	10.5	19.60	44.50	1	1	0.06
MM S-A-H004-ER25-T10-H	ER25	T10	15.30	4.0	13.10	38.00	1	1	0.10
MM S-A-H10.5-ER25-T10-H	ER25	T10	15.30	10.5	19.60	44.50	1	1	0.10
MM S-A-H004-ER32-T05-H	ER32	T05	7.60	4.0	14.10	44.00	1	1	0.14
MM S-A-H025-ER32-T05-H	ER32	T05	7.60	25.0	35.10	65.00	1	1	0.14
MM S-A-H040-ER32-T05-H	ER32	T05	7.60	40.0	50.10	80.00	1	1	0.15
MM S-A-H004-ER32-T06-H	ER32	T06	9.60	4.0	14.10	44.00	1	1	0.14
MM S-A-H025-ER32-T06-H	ER32	T06	9.25	25.0	35.10	65.00	1	1	0.14
MM S-A-H040-ER32-T06-H	ER32	T06	9.25	40.0	50.10	80.00	1	1	0.22
MM S-A-H004-ER32-T08-H	ER32	T08	11.60	4.0	14.10	44.00	1	1	0.16
MM S-A-H025-ER32-T08-H	ER32	T08	11.60	25.0	35.10	65.00	1	1	0.16
MM S-A-H050-ER32-T08-H	ER32	T08	11.60	50.0	60.10	90.00	2	1	0.23
MM S-A-H004-ER32-T10-H	ER32	T10	15.30	4.0	14.10	44.00	1	1	0.14
MM S-A-H025-ER32-T10-H	ER32	T10	15.30	25.0	35.10	65.00	1	1	0.20
MM S-A-H050-ER32-T10-H	ER32	T10	15.20	50.0	60.10	90.00	2	1	0.25
MM S-A-H004-ER32-T12-H	ER32	T12	18.30	4.0	14.10	44.00	1	1	0.14
MM S-A-H025-ER32-T12-H	ER32	T12	18.30	25.0	35.10	65.00	1	1	0.17
MM S-A-H050-ER32-T12-H	ER32	T12	18.30	50.0	60.10	90.00	2	1	0.22
MM S-A-H004-ER32-T15-H	ER32	T15	23.90	4.0	14.10	44.00	1	1	0.16
MM S-A-H025-ER32-T15-H	ER32	T15	23.90	25.0	35.10	65.00	2	1	0.21
MM S-A-H050-ER32-T15-H	ER32	T15	23.90	50.0	60.10	90.00	2	1	0.25

- Do not apply lubricant to the threaded connection
 - For adaptation see page 9
- (1) 0 - Without coolant supply, 1 - With coolant supply

HSK MULTI-MASTER**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	DCP ⁽¹⁾	CSP ⁽²⁾	kg
MM S-A-H035-HSK A40-T05	40.00	T05	7.60	35.00	15.0	10.00	5.0	1	0	0.20
MM S-A-H040-HSK A40-T06	40.00	T06	9.25	40.00	20.0	15.00	5.0	1	0	0.28
MM S-A-H045-HSK A40-T08	40.00	T08	11.60	45.00	25.0	20.00	5.0	1	0	0.24
MM S-A-H050-HSK A40-T10	40.00	T10	15.30	50.00	30.0	25.00	5.0	1	0	0.23
MM S-A-H050-HSK A40-T12	40.00	T12	18.30	50.00	30.0	25.00	5.0	1	0	0.27
MM S-A-H050-HSK A63-T06	63.00	T06	9.25	50.00	24.0	18.00	6.0	1	0	0.70
MM S-A-H050-HSK A63-T08	63.00	T08	11.60	50.00	24.0	18.00	6.0	1	0	0.72
MM S-A-H055-HSK A63-T10	63.00	T10	15.30	55.00	29.0	23.00	6.0	1	0	0.73
MM S-A-H055-HSK A63-T12	63.00	T12	18.30	55.00	29.0	23.00	6.0	1	0	0.40
MM S-A-H055-HSK A63-T21	63.00	T21	30.00	55.00	29.0	19.00	10.0	1	0	0.83
MM S-A-H060-HSK A63-T15	63.00	T15	23.90	62.00	34.0	28.00	6.0	1	0	0.76
MM S-A-H080-HSK A63-T21	63.00	T21	30.00	80.00	54.0	44.00	10.0	1	0	0.94

• Do not apply lubricant to the threaded connection

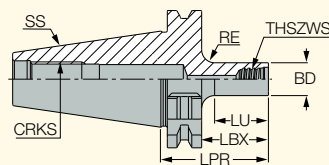
• For adaptation options, see page 9

⁽¹⁾ 1 - Slot for data chip, 0 - Without slot for data chip

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

DIN69871**MULTI-MASTER****MM S-A-SK**

DIN 69871 Integral Tapered Shanks Mount MULTI-MASTER Milling Heads

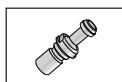


Designation	SS	CRKS	THSZWS	BD	LPR	LBX	LU	RE	CSP ⁽¹⁾	kg
MM S-A-H040-SK 40-T06	40	M16	T06	9.25	40.00	21.0	15.00	6.0	1	0.86
MM S-A-H045-SK 40-T08	40	M16	T08	11.60	45.00	26.0	20.00	6.0	1	0.87
MM S-A-H050-SK 40-T10	40	M16	T10	15.30	50.00	31.0	25.00	6.0	1	0.83
MM S-A-H050-SK 40-T12	40	M16	T12	18.30	50.00	31.0	25.00	6.0	1	0.90
MM S-A-H050-SK 40-T15	40	M16	T15	23.90	50.00	31.0	25.00	6.0	1	0.09

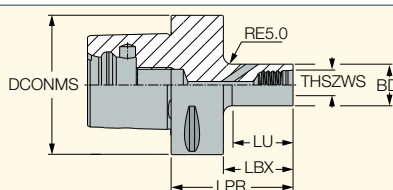
• Do not apply lubricant to the threaded connection

• For adaptation, see page 9

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

**CAMFIX****MULTI-MASTER****MM S-A-C#**

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



Designation	DCONMS	THSZWS	BD	LPR	LBX	LU	DCP ⁽¹⁾	kg	CSP ⁽²⁾
MM S-A-H035-C3-T05	32.00	T05	7.60	35.00	20.0	15.00	0	0.12	0
MM S-A-H035-C3-T06	32.00	T06	9.25	35.00	20.0	15.00	1	0.12	0
MM S-A-H040-C3-T08	32.00	T08	11.60	40.00	25.0	20.00	1	0.13	0
MM S-A-H040-C3-T10	32.00	T10	15.30	40.00	25.0	20.00	1	0.15	0
MM S-A-H045-C3-T12	32.00	T12	18.30	45.00	30.0	25.00	1	0.16	0
MM S-A-H045-C4-T06	40.00	T06	9.25	45.00	25.0	20.00	1	0.25	0
MM S-A-H045-C4-T08	40.00	T08	11.60	45.00	25.0	20.00	1	0.25	0
MM S-A-H050-C4-T10	40.00	T10	15.30	50.00	30.0	25.00	1	0.28	0
MM S-A-H055-C4-T12	40.00	T12	18.30	55.00	35.0	30.00	1	0.22	0
MM S-A-H055-C4-T15	40.00	T15	23.90	55.00	35.0	30.00	1	0.35	0
MM S-A-H060-C5-T10	50.00	T10	15.30	60.00	40.0	35.00	1	0.22	0
MM S-A-H060-C5-T12	50.00	T12	18.30	60.00	40.0	35.00	1	0.48	0
MM S-A-H060-C5-T15	50.00	T15	23.90	60.00	40.0	35.00	1	0.58	0
MM S-A-H065-C6-T12	63.00	T12	18.30	65.00	43.0	38.00	1	0.80	0
MM S-A-H065-C6-T15	63.00	T15	23.90	65.00	43.0	38.00	1	0.84	0
MM S-A-H070-C8-T15	80.00	T15	23.90	70.00	40.0	35.00	1	1.83	0

• Do not apply lubricant to the threaded connection

• For adaptation options, see page 9

⁽¹⁾ 1 - Slot for data chip, 0 - Without slot for data chip

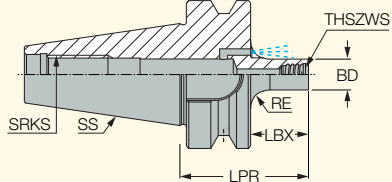
⁽²⁾ 0 - Without coolant supply, 1 - With coolant supply

BT MAS

MULTI-MASTER

MM S-A-BT

BT Integral Tapered Shanks
Mount MULTI-MASTER
Milling Heads



Designation	SS	CRKS	THSZWS	BD	LPR	LBX	RE	CSP ⁽¹⁾
MM S-A-H040-BT30-T06-H	30	M12	T06	9.60	40.00	18.0	6.0	1
MM S-A-H045-BT30-T08-H	30	M12	T08	11.60	45.00	23.0	6.0	1
MM S-A-H050-BT30-T10-H	30	M12	T10	15.30	50.00	28.0	6.0	1
MM S-A-H050-BT30-T12-H	30	M12	T12	18.30	50.00	28.0	6.0	1
MM S-A-H050-BT30-T15-H	30	M12	T15	23.90	50.00	28.0	3.0	1

• Do not apply lubricant to the threaded connection

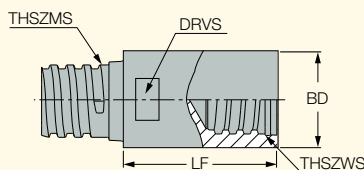
• For adaptation, see page 9

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

MULTI-MASTER

MM CAB-T-T

MULTI-MASTER
Shank Extensions



Designation	BD	THSZWS	THSZMS	LF	DRVS ⁽¹⁾	CSP ⁽²⁾	kg
MM CAB T04T04-20/.78-C	5.80	T04	T04	20.00	4.0	0	0.01
MM CAB T05T05-25/1.0-C	7.60	T05	T05	25.40	6.0	0	0.02
MM CAB T06T06-25/1.0-C	9.30	T06	T06	25.40	8.0	0	0.02
MM CAB T08T08-25/1.0-C	11.50	T08	T08	25.40	10.0	0	0.02
MM CAB T10T10-38/1.5-C	15.20	T10	T10	38.10	13.0	0	0.08
MM CAB T12T12-38/1.5-C	18.45	T12	T12	38.10	16.0	0	0.11
MM CAB T15T15-45/1.77-C	23.90	T15	T15	45.00	20.0	0	0.21

• Clamping key to be ordered separately

• For adaptation, see page 9

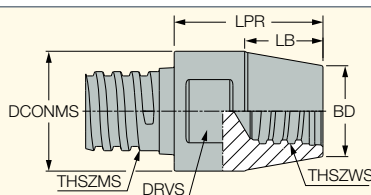
(1) Clamping wrench size

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

MULTI-MASTER

MM CAB-T-T-W

MULTI-MASTER Shank Reducers



Designation	DCONMS	THSZMS	THSZWS	BD	LB	LPR	DRVS ⁽¹⁾	CSP ⁽²⁾	kg
MM CAB T05T04-14.0/.55-W	7.60	T05	T04	5.80	8.20	14.00	5.5	0	0.00
MM CAB T06T05-15.0/.59-W	9.60	T06	T05	7.60	9.00	15.00	8.0	0	0.03
MM CAB T08T06-16.0/.63-W	11.60	T08	T06	9.60	9.00	16.00	10.0	0	0.04
MM CAB T10T08-19.0/.75-W	15.30	T10	T08	11.60	10.00	19.00	13.0	0	0.07
MM CAB T12T10-24.0/.94-W	18.30	T12	T10	15.30	15.00	24.00	16.0	0	0.12
MM CAB T15T12-30.0/1.18-W	23.90	T15	T12	18.30	17.50	30.00	20.0	0	0.24

• Clamping key to be ordered separately

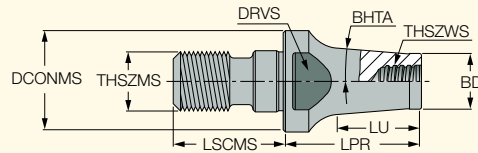
• For adaptation, see page 9

(1) Torque key size

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

MULTI-MASTER**MM CAB**

Adapters for Connecting
FLEX-FIT Shanks and
MULTI-MASTER Milling Heads



Designation	THSZWS	THSZMS	LPR	LU	BD	DCONMS	LSCMS	DRVS ⁽¹⁾	BHTA	TQ_3 ⁽²⁾	CSP ⁽³⁾	kg
MM CAB T06M06-16/.63	T06	M06	16.00	11.60	9.30	9.70	14.50	8.0	1.5	15	0	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	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	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	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	0.02
MM CAB T08M08-25/1.0	T08	M08	25.00	19.50	11.70	13.00	17.50	11.0	1.5	20	0	0.02
MM CAB T08M10-20/.75	T08	M10	20.00	11.30	11.70	18.00	20.00	13.0	7.0	29	0	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	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	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	0.04

- Do not apply lubricant to the threaded connection
- When mounting items with FLEX-FIT 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

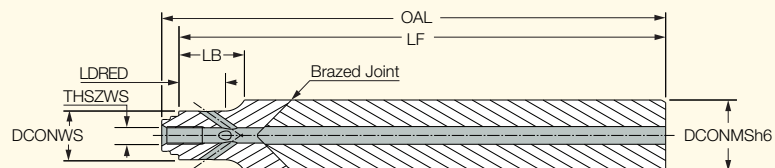
⁽¹⁾ Clamping wrench size

⁽²⁾ Tool tightening torque NxM (lbf·in)

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

**T-SLOT****SD S-A-C-H-SP**

Stepped Cylindrical Carbide
Shanks with Brazed Steel
Segment for Interchangeable
Solid Carbide Milling Heads



Designation	DCONMS	DCONWS	THSZWS	LDRED	LB	LF	OAL	Shank m.	CSP ⁽¹⁾	kg
SD S-A-L110-C16-C-H-SP11	16.00	11.00	M4x0.5	10.5	14.80	110.00	113.80	C	1	0.30
SD S-A-L130-C16-C-H-SP13	16.00	13.00	M4x0.5	13.0	16.60	130.00	134.30	C	1	0.35
SD S-A-L130-C16-C-H-SP15	16.00	15.00	M5x0.5	16.0	18.20	130.00	134.90	C	1	0.35
SD S-A-L140-C20-C-H-SP17	20.00	17.00	M6x0.5	20.2	23.80	140.00	146.00	C	1	0.60
SD S-A-L160-C25-C-H-SP19	25.00	19.00	M6x0.5	20.0	24.60	160.00	168.50	C	1	1.08

- Apply lubricant to the clamping screw

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

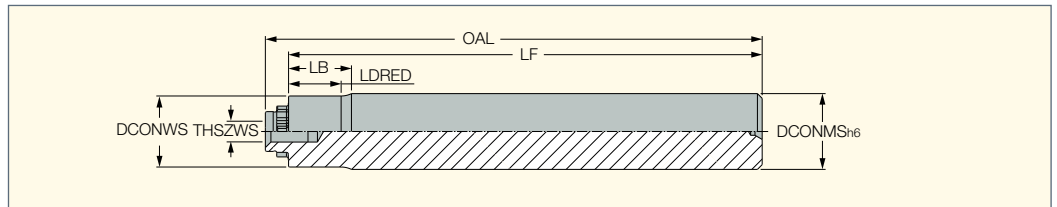
Spare Parts

Designation			
SD S-A-L110-C16-C-H-SP11	SR M4X0.5-SP11 HG	BLD T15/S7	SW6-T-SH
SD S-A-L130-C16-C-H-SP13	SR M4X0.5-SP13-IP15-HG	BLD IP15/S7	SW6-T-SH
SD S-A-L130-C16-C-H-SP15	SR M5X0.5-SP15-IP20-HG	BLD IP20/S7	SW6-T-SH
SD S-A-L140-C20-C-H-SP17	SR M6X0.5-SP1719-IP25-HG	BLD IP25/S7	SW6-T
SD S-A-L160-C25-C-H-SP19	SR M6X0.5-SP1719-IP25-HG	BLD IP25/S7	SW6-T

T-SLOT

SD S-A-SP

Stepped Cylindrical Shanks
for Interchangeable Solid
Carbide Milling Heads



Designation	DCONMS	DCONWS	THSZWS	LDRED	LB	LF	OAL	Shank m. ⁽¹⁾	CSP ⁽²⁾	kg
SD S-A-L90-C12-SP11	12.00	11.00	M4x0.5	10.50	12.7	90.00	94.00	S	0	0.08
SD S-A-L100-C16-SP13	16.00	13.00	M4x0.5	13.00	16.6	100.00	104.00	S	0	0.15
SD S-A-L100-C16-SP15	16.00	15.00	M5x0.5	16.00	18.2	100.00	105.00	S	0	0.16
SD S-A-L130-C16-SP15	16.00	15.00	M5x0.5	16.00	18.2	130.00	135.00	S	0	0.20
SD S-A-L130-C16-SP15-C	16.00	15.00	M5x0.5	16.00	18.2	130.00	135.00	C	0	0.36
SD S-A-L150-C16-SP15-C	16.00	15.00	M5x0.5	16.00	18.2	150.00	155.00	C	0	0.41
SD S-A-L140-C20-SP17	20.00	17.00	M6x0.5	20.20	23.8	140.00	146.00	S	0	0.33
SD S-A-L150-C25-SP19	25.00	19.00	M6x0.5	20.00	27.9	150.00	158.50	S	0	0.55

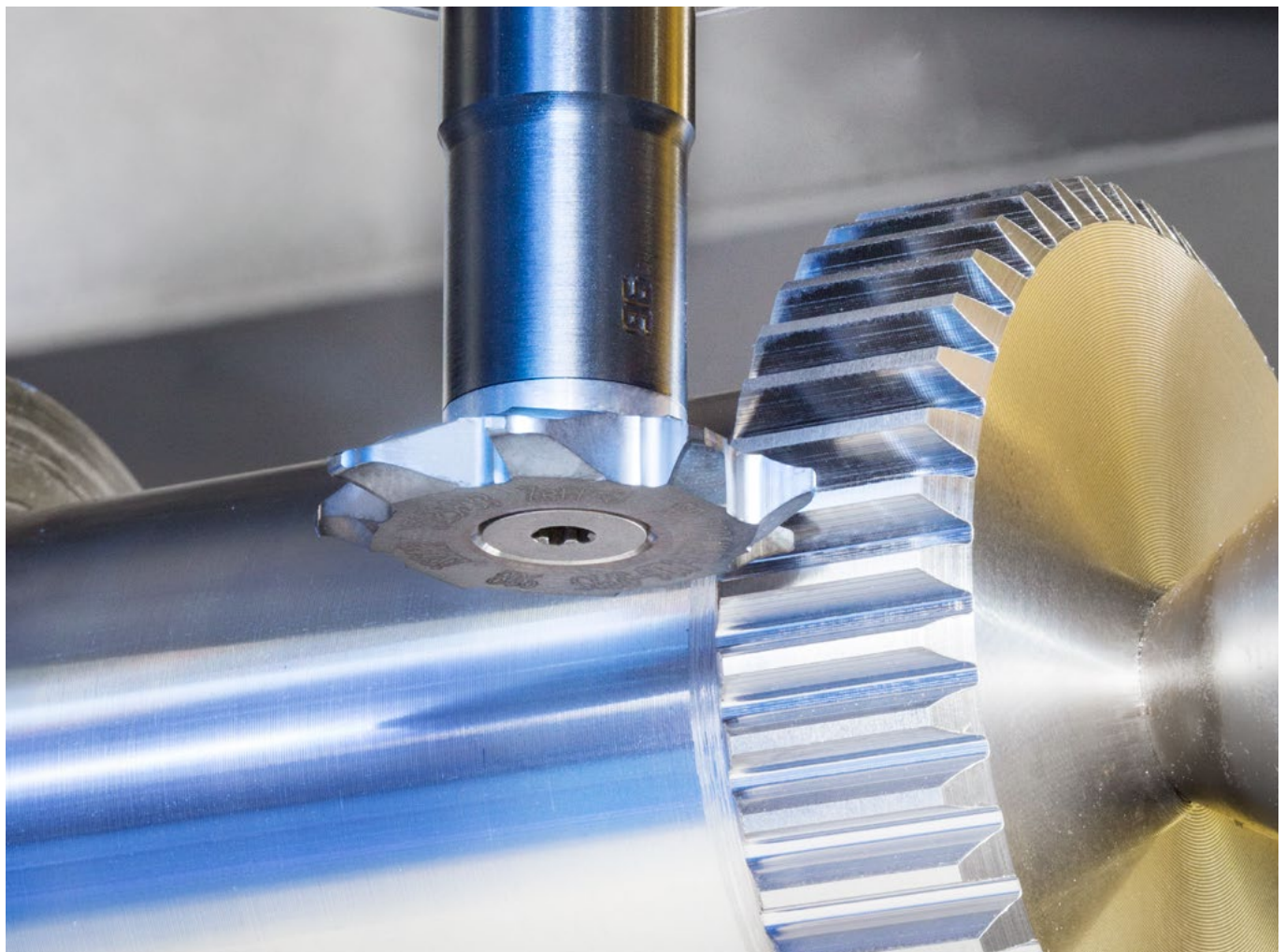
• Apply lubricant to the clamping screw

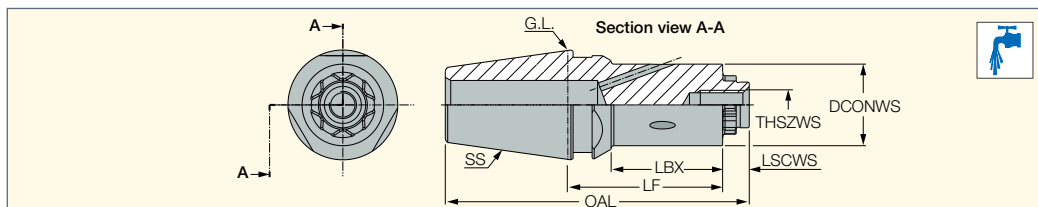
⁽¹⁾ S-steel C-solid carbide

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

Spare Parts

Designation			
SD S-A-L90-C12-SP11	SR M4X0.5-SP11 HG	BLD T15/S7	SW6-T-SH
SD S-A-L100-C16-SP13	SR M4X0.5-SP13-IP15-HG	BLD IP15/S7	SW6-T-SH
SD S-A-L100-C16-SP15	SR M5X0.5-SP15-IP20-HG	BLD IP20/S7	SW6-T-SH
SD S-A-L130-C16-SP15	SR M5X0.5-SP15-IP20-HG	BLD IP20/S7	SW6-T-SH
SD S-A-L130-C16-SP15-C	SR M5X0.5-SP15-IP20-HG	BLD IP20/S7	SW6-T-SH
SD S-A-L150-C16-SP15-C	SR M5X0.5-SP15-IP20-HG	BLD IP20/S7	SW6-T-SH
SD S-A-L140-C20-SP17	SR M6X0.5-SP1719-IP25-HG	BLD IP25/S7	SW6-T
SD S-A-L150-C25-SP19	SR M6X0.5-SP1719-IP25-HG	BLD IP25/S7	SW6-T



SD-S-A-ER-SPSolid ER Collets with SD
Spline Connection (SP)

Designation	SS	LBX ⁽¹⁾	LF	DCONWS	THSZWS	LSCWS	OAL	CSP ⁽²⁾	kg
SD-S-A-H05-ER16-SP11-C	ER16	5.00	12.60	11.00	M4X0.5	3.85	36.35	1	0.03
SD-S-A-H20-ER16-SP11-C	ER16	20.00	27.60	11.00	M4X0.5	3.85	51.35	1	0.04
SD-S-A-H05-ER20-SP11-C	ER20	5.00	13.60	11.00	M4X0.5	3.85	39.85	1	0.05
SD-S-A-H05-ER20-SP13-C	ER20	5.00	13.60	13.00	M4X0.5	4.35	40.35	1	0.05
SD-S-A-H05-ER20-SP15-C	ER20	5.00	13.60	15.00	M5X0.5	4.90	40.90	1	0.05
SD-S-A-H20-ER20-SP11-C	ER20	20.00	28.60	11.00	M4X0.5	3.85	54.85	1	0.06
SD-S-A-H20-ER20-SP13-C	ER20	20.00	28.60	13.00	M4X0.5	4.35	55.35	1	0.07
SD-S-A-H20-ER20-SP15-C	ER20	20.00	28.60	15.00	M5X0.5	4.90	55.90	1	0.08
SD-S-A-H05-ER25-SP11-C	ER25	5.00	14.10	11.00	M4X0.5	3.85	42.85	1	0.09
SD-S-A-H05-ER25-SP13-C	ER25	5.00	14.10	13.00	M4X0.5	4.35	43.35	1	0.09
SD-S-A-H05-ER25-SP15-C	ER25	5.00	14.10	15.00	M5X0.5	4.90	43.90	1	0.09
SD-S-A-H05-ER25-SP17-C	ER25	5.00	14.10	17.00	M6X0.5	6.00	45.00	1	0.09
SD-S-A-H05-ER25-SP19-C	ER25	5.00	14.10	19.00	M6X0.5	8.50	47.50	1	0.09
SD-S-A-H20-ER25-SP11-C	ER25	20.00	29.10	11.00	M4X0.5	3.85	57.85	1	0.10
SD-S-A-H20-ER25-SP13-C	ER25	20.00	29.10	13.00	M4X0.5	4.35	58.35	1	0.10
SD-S-A-H20-ER25-SP15-C	ER25	20.00	29.10	15.00	M5X0.5	4.90	58.90	1	0.11
SD-S-A-H20-ER25-SP17-C	ER25	20.00	29.10	17.00	M6X0.5	6.00	60.00	1	0.12
SD-S-A-H20-ER25-SP19-C	ER25	20.00	29.10	19.00	M6X0.5	8.50	62.50	1	0.13
SD-S-A-H05-ER32-SP13-C	ER32	5.00	15.10	13.00	M4X0.5	4.35	49.35	1	0.14
SD-S-A-H05-ER32-SP15-C	ER32	5.00	15.10	15.00	M5X0.5	4.90	49.90	1	0.15
SD-S-A-H05-ER32-SP17-C	ER32	5.00	15.10	17.00	M6X0.5	6.00	51.00	1	0.15
SD-S-A-H05-ER32-SP19-C	ER32	5.00	15.10	19.00	M6X0.5	8.50	53.50	1	0.10
SD-S-A-H20-ER32-SP13-C	ER32	20.00	30.10	13.00	M4X0.5	4.35	64.35	1	0.16
SD-S-A-H20-ER32-SP15-C	ER32	20.00	30.10	15.00	M5X0.5	4.90	64.90	1	0.16
SD-S-A-H20-ER32-SP17-C	ER32	20.00	30.10	17.00	M6X0.5	6.00	66.00	1	0.17
SD-S-A-H20-ER32-SP19-C	ER32	20.00	30.10	19.00	M6X0.5	8.50	68.50	1	0.18
SD-S-A-H05-ER40-SP17-C	ER40	5.00	17.20	17.00	M6X0.5	6.00	57.00	1	0.26
SD-S-A-H05-ER40-SP19-C	ER40	5.00	17.20	19.00	M6X0.5	8.50	59.20	1	0.27
SD-S-A-H20-ER40-SP17-C	ER40	20.00	32.20	17.00	M6X0.5	6.00	72.00	1	0.29
SD-S-A-H20-ER40-SP19-C	ER40	20.00	32.20	19.00	M6X0.5	8.50	74.50	1	0.30

• Apply lubricant to the slotting head and its clamping screw

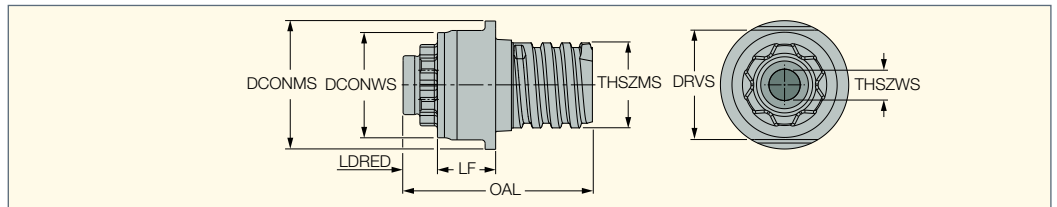
⁽¹⁾ After the nut is mounted⁽²⁾ 0 - Without coolant supply, 1 - With coolant supply**Spare Parts**

Designation			
SD-S-A-H05-ER16-SP11-C	SR M4X0.5-SP11 HG	SW6-T-SH	BLD T15/S7
SD-S-A-H20-ER16-SP11-C	SR M4X0.5-SP11 HG	SW6-T-SH	BLD T15/S7
SD-S-A-H05-ER20-SP11-C	SR M4X0.5-SP11 HG	SW6-T-SH	BLD T15/S7
SD-S-A-H05-ER20-SP13-C	SR M4X0.5-SP13-IP15-HG	SW6-T-SH	BLD IP15/S7
SD-S-A-H05-ER20-SP15-C	SR M5X0.5-SP15-IP20-HG	SW6-T-SH	BLD IP20/S7
SD-S-A-H20-ER20-SP11-C	SR M4X0.5-SP11 HG	SW6-T-SH	BLD T15/S7
SD-S-A-H20-ER20-SP13-C	SR M4X0.5-SP13-IP15-HG	SW6-T-SH	BLD IP15/S7
SD-S-A-H20-ER20-SP15-C	SR M5X0.5-SP15-IP20-HG	SW6-T-SH	BLD IP20/S7
SD-S-A-H05-ER25-SP11-C	SR M4X0.5-SP11 HG	SW6-T-SH	BLD T15/S7
SD-S-A-H05-ER25-SP13-C	SR M4X0.5-SP13-IP15-HG	SW6-T-SH	BLD IP15/S7
SD-S-A-H05-ER25-SP15-C	SR M5X0.5-SP15-IP20-HG	SW6-T-SH	BLD IP20/S7
SD-S-A-H05-ER25-SP17-C	SR M6X0.5-SP1719-IP25-HG	SW6-T	BLD IP25/S7
SD-S-A-H05-ER25-SP19-C	SR M6X0.5-SP1719-IP25-HG	SW6-T	BLD IP25/S7
SD-S-A-H20-ER25-SP11-C	SR M4X0.5-SP11 HG	SW6-T-SH	BLD T15/S7
SD-S-A-H20-ER25-SP13-C	SR M4X0.5-SP13-IP15-HG	SW6-T-SH	BLD IP15/S7
SD-S-A-H20-ER25-SP15-C	SR M5X0.5-SP15-IP20-HG	SW6-T-SH	BLD IP20/S7
SD-S-A-H20-ER25-SP17-C	SR M6X0.5-SP1719-IP25-HG	SW6-T	BLD IP25/S7
SD-S-A-H20-ER25-SP19-C	SR M6X0.5-SP1719-IP25-HG	SW6-T	BLD IP25/S7
SD-S-A-H05-ER32-SP13-C	SR M4X0.5-SP13-IP15-HG	SW6-T-SH	BLD IP15/S7
SD-S-A-H05-ER32-SP15-C	SR M5X0.5-SP15-IP20-HG	SW6-T-SH	BLD IP20/S7
SD-S-A-H05-ER32-SP17-C	SR M6X0.5-SP1719-IP25-HG	SW6-T	BLD IP25/S7
SD-S-A-H05-ER32-SP19-C	SR M6X0.5-SP1719-IP25-HG	SW6-T	BLD IP25/S7
SD-S-A-H20-ER32-SP13-C	SR M4X0.5-SP13-IP15-HG	SW6-T-SH	BLD IP15/S7
SD-S-A-H20-ER32-SP15-C	SR M5X0.5-SP15-IP20-HG	SW6-T-SH	BLD IP20/S7
SD-S-A-H20-ER32-SP17-C	SR M6X0.5-SP1719-IP25-HG	SW6-T	BLD IP25/S7
SD-S-A-H20-ER32-SP19-C	SR M6X0.5-SP1719-IP25-HG	SW6-T	BLD IP25/S7
SD-S-A-H05-ER40-SP17-C	SR M6X0.5-SP1719-IP25-HG	SW6-T	BLD IP25/S7
SD-S-A-H05-ER40-SP19-C	SR M6X0.5-SP1719-IP25-HG	SW6-T	BLD IP25/S7
SD-S-A-H20-ER40-SP17-C	SR M6X0.5-SP1719-IP25-HG	SW6-T	BLD IP25/S7
SD-S-A-H20-ER40-SP19-C	SR M6X0.5-SP1719-IP25-HG	SW6-T	BLD IP25/S7

MULTI-MASTER

SD CAB

Adapters for Connecting
SD Solid Carbide T-Slot
Milling Heads and
MULTI-MASTER Shanks



Designation	THSZWS	THSZMS	LF	LDRED	OAL	DCONWS	DCONMS	DRVS ⁽¹⁾	CSP ⁽²⁾	kg
SD CAB T10-14/0.55-SP11	M4x0.5	T10	14.00	3.9	29.15	11.00	15.20	13.0	0	0.02
SD CAB T12-14/0.55-SP13	M4x0.5	T12	14.00	4.3	31.65	13.00	18.30	16.0	0	0.04
SD CAB T12-14/0.55-SP15	M5x0.5	T12	14.00	4.9	32.70	15.00	18.30	16.0	0	0.04
SD CAB T15-14/0.55-SP17	M6x0.5	T15	14.00	6.0	37.00	17.00	23.90	20.0	0	0.11
SD CAB T15-14/0.55-SP19	M6x0.5	T15	14.00	8.5	39.50	19.00	23.90	20.0	0	0.07

• Apply Lubricant to the Screw Head and Threads

⁽¹⁾ Clamping wrench size

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

Spare Parts

Designation				
SD CAB T10-14/0.55-SP11	SR M4X0.5-SP11 HG	BLD T15/S7	SW6-T-SH	MM KEY 13X8*
SD CAB T12-14/0.55-SP13	SR M4X0.5-SP13-IP15-HG	BLD IP15/S7	SW6-T-SH	
SD CAB T12-14/0.55-SP15	SR M5X0.5-SP15-IP20-HG	BLD IP20/S7	SW6-T-SH	
SD CAB T15-14/0.55-SP17	SR M6X0.5-SP1719-IP25-HG	BLD IP25/S7	SW6-T	
SD CAB T15-14/0.55-SP19	SR M6X0.5-SP1719-IP25-HG	BLD IP25/S7	SW6-T	

* Optional, to be ordered separately



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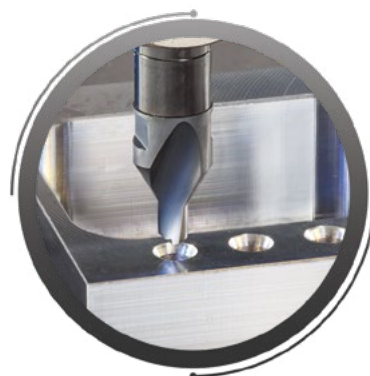
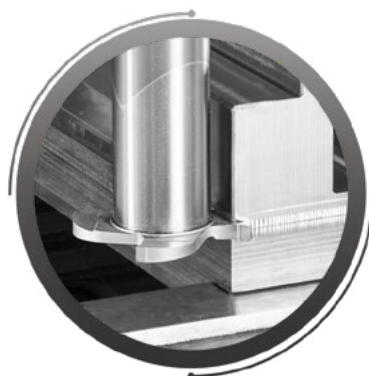
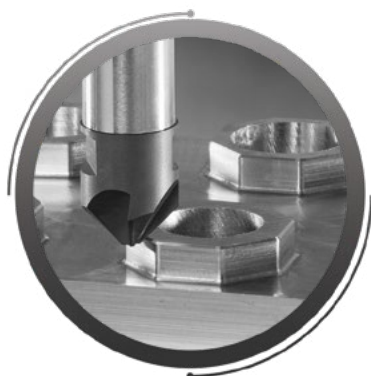
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