

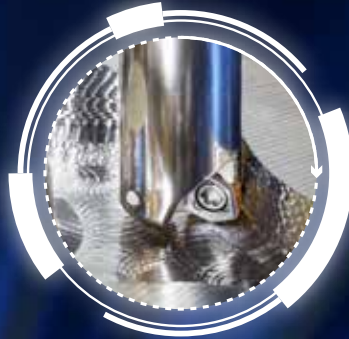
# FAST FEED MILLING

## Quick Tool Selector Guide

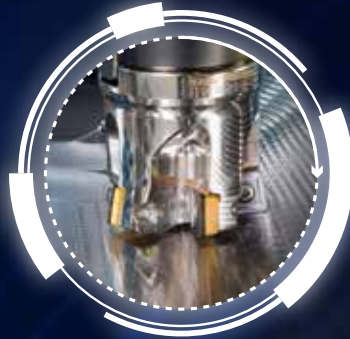
Inch Version



**NEOFEED**  
HIGH FEED LINE



**MICRO<sup>3</sup>FEED**  
MF 300 ENDMILL



**MILL<sup>4</sup>FEED**  
HIGH FEED



**LOGIQ<sup>4</sup>FEED**  
HIGH FEED MILLING



Member IMC Group

**ISCAR**  
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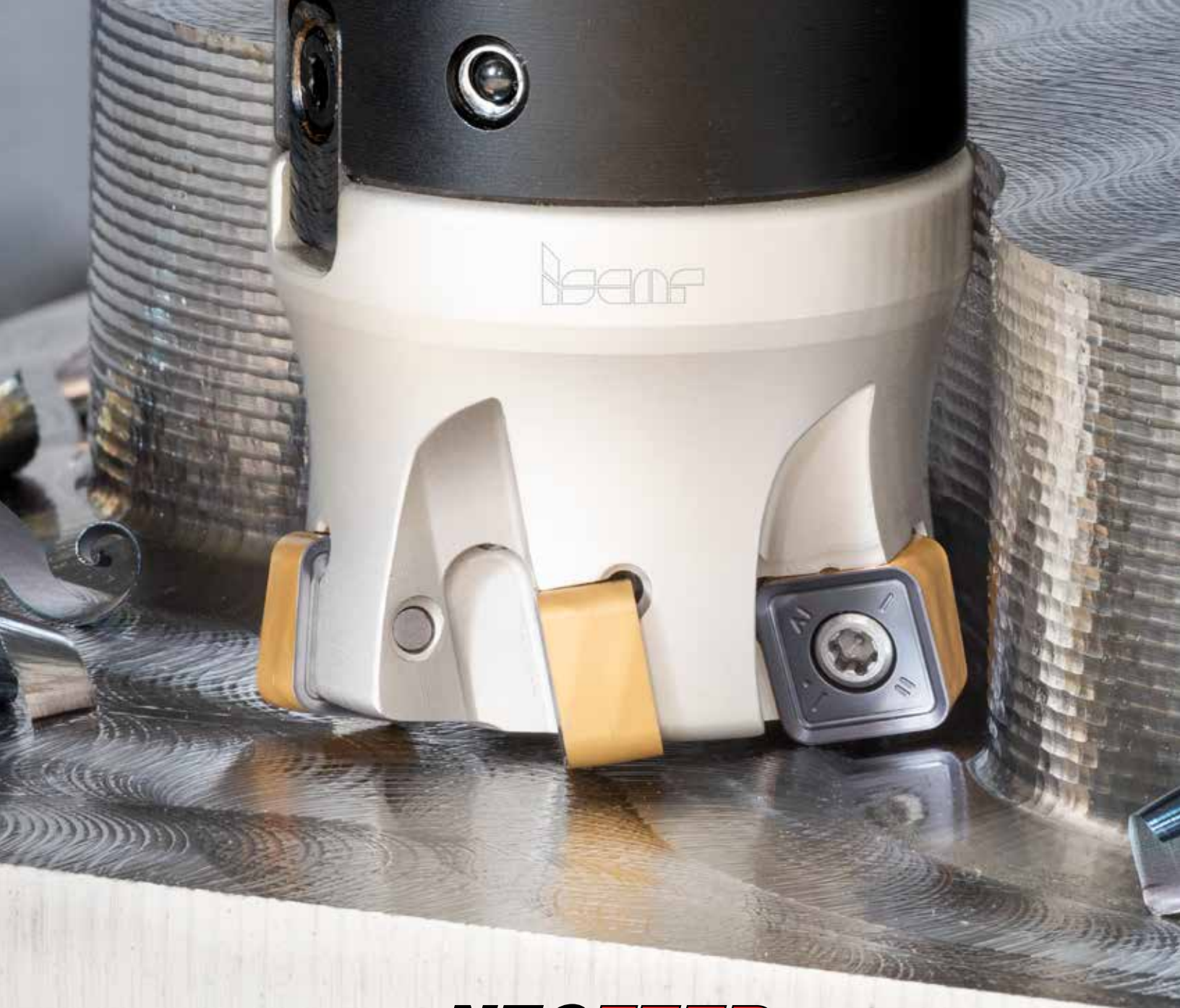
**SCAN ME**





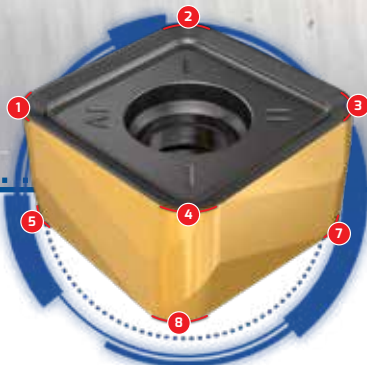
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# **NEOFEED**

HIGH FEED LINE



8 Cutting Edges Perform  
at Fast Feed and Moderate Rates



Highly Durable  
Straight Cutting Edge



## Fast Feed Milling Cutters

Fast feed (FF) milling cutters are a key factor in fast feed milling techniques. The cutter geometry, designed for efficient chip thinning, needs to ensure correct distribution of the cutting force components. There are two principal geometrical approaches. The first design requires the cutting edge of an FF milling cutter to be an arc of a great circle.

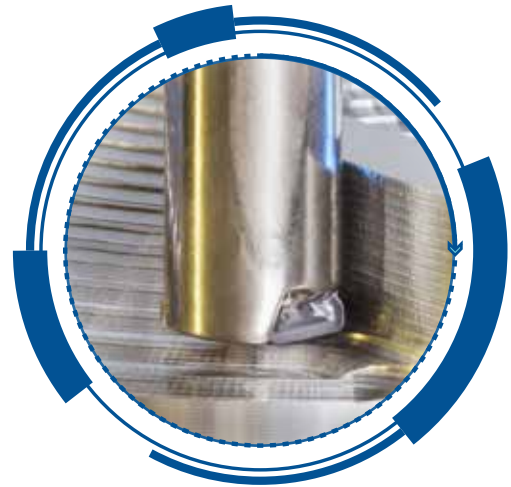
Another concept is based on using one or two straight edges that are chords of the arc. In both cases, the small cutting edge angle (usually 9-17°) meets the requirements of chip thinning and total cutting force. Ensuring the geometry of solid carbide fast feed endmills and replaceable milling heads demands the specific shape of a cutting edge, while in indexable milling it may be provided by the appropriate location of an insert of even a simple profile. FF milling is also referred as high feed milling (HFM)



Although the introduction of innovative carbide grades and advances in the form of rake faces has further improved progress in FF milling cutters, the essential element of fast feed milling – geometry – remains constant.

The cutting edge of a FF milling cutter is the arc of a great circle (or the chords that approximate the arc), and therefore the cutting edge angle of the cutter is not a constant value but varies depending on the axial depth of cut from 0 to 90°. Decreasing depth reduces the cutting edge angle resulting in thinner chips. The programmed feed per tooth for a cutter with round inserts relates to the maximal diameter of the cutter, i.e. to the maximal depth of cut (it is equal to the insert radius) and the maximal cutting edge angle.

Id the cutter mills under the maximal depth, the chip is thinner; and therefore the programmed feed should be increased correspondingly in order to produce the chips of the required thickness. The same situation is observed in ball-nose milling tools, which explains why FF cutters run so fast.



**NAN<sup>3</sup>FEED**  
NANO FEED MILL



**LOGIQ<sup>4</sup>FEED**  
HIGH FEED MILLING

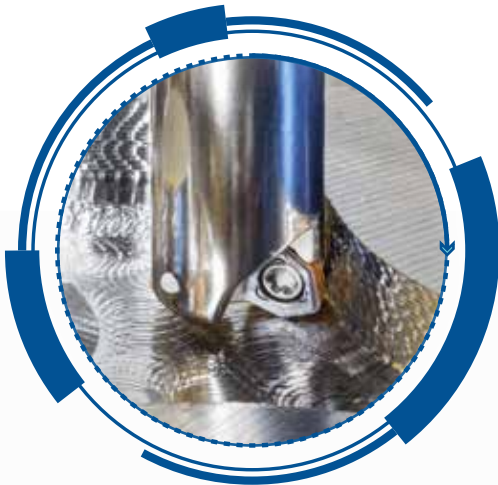






**NEOFEED**  
HIGH FEED LINE

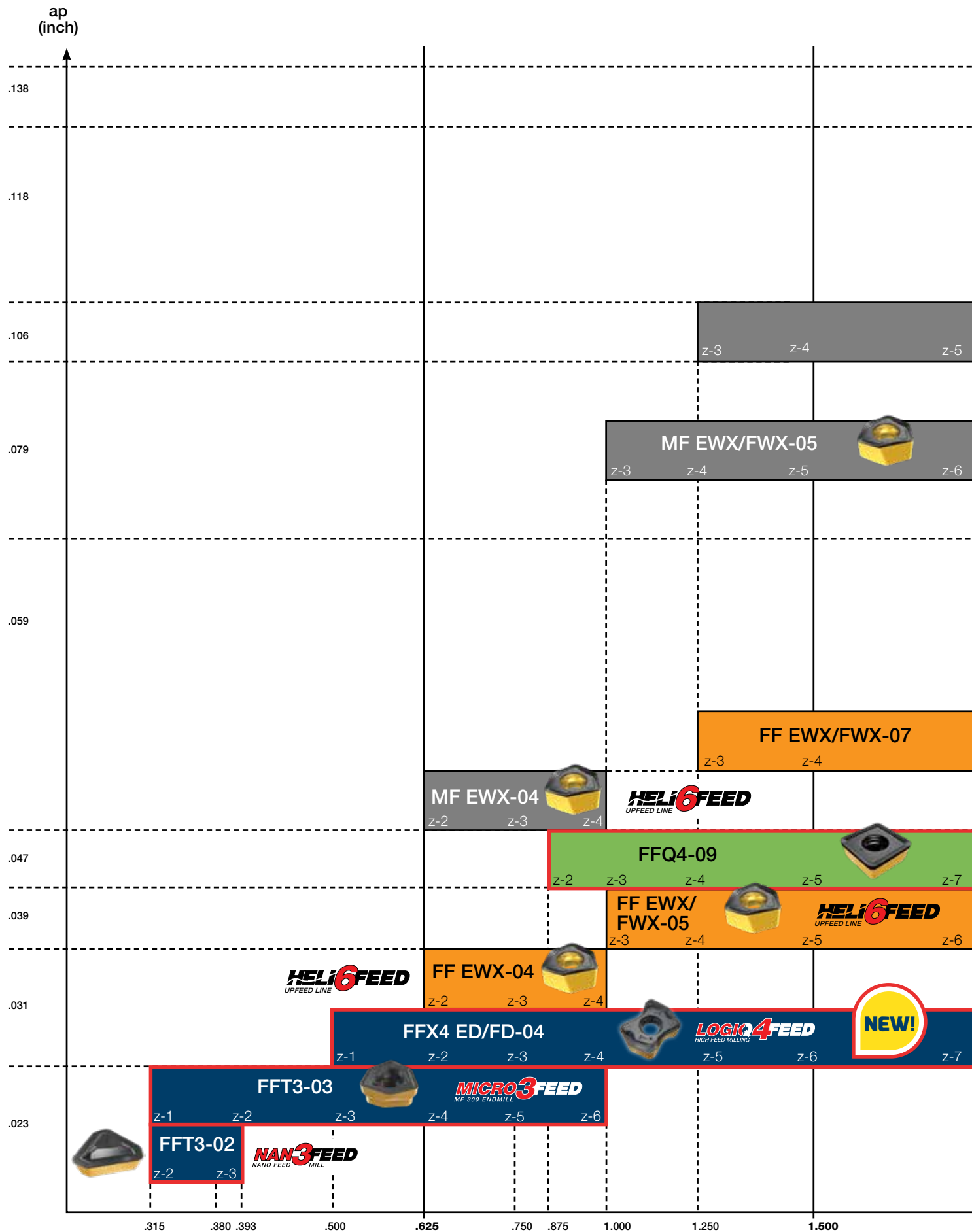
FF milling requires machine tools with high-speed feed drive. Various powerful yet slow machines which are common in metalworking, are not suitable for fast feed milling. However, **ISCAR**'s moderate feed (MF) cutters facilitate productive roughing at these machines. Compared with fast feed mills, MF cutters feature a higher cutting edge angle (typically 30°) as they move slower but machine at higher depths and need more power. In MF milling, the feed per tooth is moderate compared to FF milling yet faster than standard traditional milling. MF cutters may be considered as a kind of FF mills.



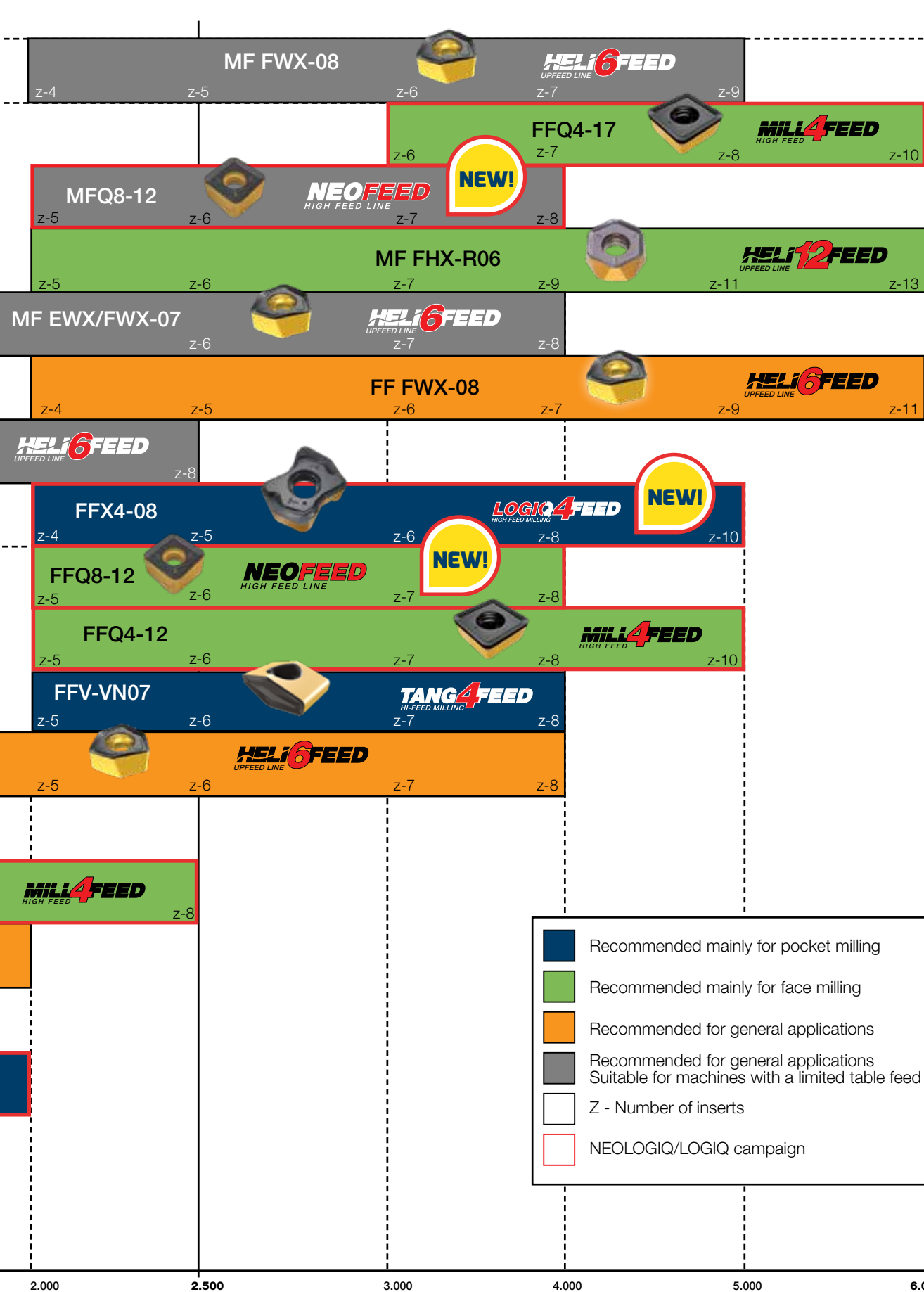
**MICRO<sup>3</sup>FEED**  
MF 300 ENDMILL

**ISCAR** offers a wide variety of fast feed milling families that represent different classes of indexable tools, solid carbide endmills and solid carbide interchangeable heads with Multi-Master threaded connections. This guide is intended as a quick selection for the right tool suitable for the type of material and type of application.

# ISCAR Fast Feed (High Feed) Indexable Milling Chart







Tool Diameter (inch)

# Indexable Fast Feed Family Selector

Diameter range (inch)	Family	Description	APMX (inch)	Available diameters (inch) for configuration		Insert			
				Endmill	MM <sup>(1)</sup>	Description	Chip former	No. of sides	No. of edges
Ø.315-.625	NANFEED	FFT3 EFM-02	.023	.315-.393	.315-.393	FFT3 TXMT 020105	T	1	3
	MICRO3FEED	FFT3 EFM-03	.023	.375-.625	.394-.630	FFT3 WXMT 030206	T	1	3
	LOGIQ4FEED	FFX4 ED-04	.031	.050-.625	.630	FFX4 XNMU 040310	T, RM-T, HP, RM-HP	2	4
	HELI6FEED	FF EWX-04	.039	.625	.630	H600 WXCUC 040310	T, HP	2	6
	HELI6FEED	MF EWX-04	.047	.625	.630	H600 WXCUC 040310	T, HP	2	6

Diameter range (inch)	Family	Description	APMX (inch)	Available diameters (inch) for configuration				Insert			
				Endmill	MM <sup>(1)</sup>	FLEXFIT	Facemill	Description	Chip former	No. of sides	No. of edges
Ø.630-1.50	MICRO3FEED	FFT3 EFM-03	.023		.787-1.00			FFT3 WXMT 030206	T	1	3
	LOGIQ4FEED	FFX4 ED/FD-04	.031	.750-1.25	.787-.984	.787-1.38	1.5	FFX4 XNMU 040310	T, RM-T, HP, RM-HP	2	4
	HELI6FEED	FF EWX-04	.031	0.75	.630-.984	.787-.984		H600 WXCUC 040310	T, HP	2	6
	HELI6FEED	FF EWX/FWX-05	.039	1.00-1.50	.984	.787-1.375	1.50	H600 WXCUC 05T312	T, HP	2	6
	MILL4FEED	FFQ4-09	.047	.875-1.50		1.50	1.50	FFQ4 SOMT 0904	T, RM-T, HP, RM-HP	1	4
	MILL4FEED	FFQ4-09	.039	.875-1.50		1.50	1.50	FFQ4 SOMW 0904	SOMW	1	4
	HELI6FEED	MF EWX-04	.059	.750		.787-1.26		H600 WXCUC 040310	T, HP	2	6
	HELI6FEED	FF EWX/FWX-07	.059	1.25-1.50		1.26	1.50	H600 WXCUC 070515	T, HP	2	6
	HELI6FEED	MF EWX/FWX-05	.079	1.00-1.50		.984-1.26	1.50	H600 WXCUC 05T312	T, HP	2	6
	HELI6FEED	MF EWX/FWX-07	.106	1.25-1.50		1.26	1.50	H600 WXCUC 070515	T, HP	2	6

Diameter range (inch)	Family	Description	APMX (inch)	Available diameters (inch) for configuration		Insert			
				MM <sup>(1)</sup>	Facemill	Description	Chip former	No. of sides	No. of edges
Ø1.57-2.50	LOGIQ4FEED	FFX4 ED/FD-04	.031	1.654	2.00	FFX4 XNMU 040310	T, RM-T, HP, RM-HP	2	4
	HELI6FEED	FF EWX/FWX-05	.039		2.00	H600 WXCUC 05T312	T, HP	2	6
	MILL4FEED	FFQ4-09	.047		2.00-2.50	FFQ4 SOMT 0904	T, RM-T, HP, RM-HP	1	4
	MILL4FEED	FFQ4-09	.039		2.00-2.50	FFQ4 SOMW 0904	SOMW	1	4
	NEOFEED	FFQ8 FD	.059		2.00-2.50	FFQ8 SZMU 120520	T, HP	2	8
	HELI6FEED	FF FWX-07	.059		2.00-2.50	H600 WXCUC 070515	T, HP	2	6
	TANG4FEED	FFV-D-R-VN07	.059		2.00-2.50	FF VNMT 0706ZN	ER, ETR	2	4
	MILL4FEED	FFQ4-12	.059		2.00-2.50	FFQ4 SOMW 1205	SOMW	1	4
	MILL4FEED	FFQ4-12	.047		2.00-2.50	FFQ4 SOMT 1205	T, T20, RM-T, HP, RM-HP, HP-P	1	4
	LOGIQ4FEED	FFX4 FD-08	.079		2.00-2.50	FFX4 XNMU 080620	T, HP	2	4
	HELI6FEED	MF FWX-05	.079		2.00-2.50	H600 WXCUC 05T312	T, HP	2	6
	HELI6FEED	FF FWX-08	.079		2.00-2.50	H600 WXCUC 0806	T, HP, RM	2	6
	HELI6FEED	MF FWX-07	.106		2.00-2.50	H600 WXCUC 070515	T, HP	2	6
	NEOFEED	MFQ8 FD	.118		2.00-2.50	FFQ8 SZMU 120520	T, HP	2	8
	HELI12FEED	MF FHX-R06	.118		2.00-2.50	H1200 HXCUC 0606	TR, HPR	2	12
HELI6FEED	MF FWX-08	.138		2.00-2.50	H600 WXCUC 0806	T, HP, RM	2	6	

<sup>(1)</sup> MM - Multi-Master Heads



Range of f <sub>z</sub> (ipt)	Radius for Programming	Applications							Material Groups				
									P	M	K	S	H
.008-.027	.043	○	○	●	●	○	●	●	●				
.011-.031	.043	○	●	●	●	○	●	●	●		○	●	○
.008-.047	.071	○	●	●	●	○	●	●	●	●	●	●	○
.008-.027	.075	○	○	○	○	○	○	○	●	●	○	●	○
.008-.020	.102	○	○	○	○	○	○	○	●	●	○	●	○

Range of f <sub>z</sub> (ipt)	Radius for Programming	Applications							Material				
									P	M	K	S	H
.011-.031	.043	○	●	●	●	○	●	●	●		○	●	○
.011-.031	.043	○	●	●	●	○	●	●	●	●	●	●	○
.008-.027	.075	○	○	○	○	○	○	○	●	●	●	●	
.012-.039	.090	○	○	○	○	○	○	○	●	●	●	●	●
.015-.059	.098	●	○	○	○	○	●	○	●	●	●	●	
.015-.059	.118	●	○	○	○	○	●	○	●		●		●
.008-.020	.102	○	○	○	○	○	○	○	●	●	●	●	○
.015-.055	.122	○	○	○	○	○	○	○	●	●	●	●	○
.008-.023	.130	●	●	○	○	○	○	○	●	●	●	●	○
.008-.031	.161	●	●	○	○	○	○	○	●	●	●	●	○

Range of f <sub>z</sub> (ipt)	Radius for Programming	Applications							Material				
									P	M	K	S	H
.008-.047	.070	●	●	●	●	○	●	●	●	●	●	●	○
.011-.039	.090	●	●	●	●	○	○	○	●	●	●	●	●
.015-.059	.098	●	○	○	○	○	○	○	●	●	●	●	○
.015-.059	.118	●	○	○	○	○	○	○	●		●		●
.015-.059	.142	●	●	●	●	○	○	○	●	●	●	●	○
.015-.055	.122	○	○	○	○	○	○	○	●	●	●	●	○
.015-.070	.110	○	●	●	●	○	○	○	●		●	●	○
.015-.078	.122	●	○	○	○	○	○	○	●		●		●
.015-.078	.157	●	○	○	○	○	○	○	●	●	●	●	○
.015-.047	.157	●	●	●	●	○	○	○	●	●	●	●	○
.008-.023	.130	○	○	○	○	○	○	○	●	●	●	●	○
.015-.059	.130 & .145 for RM	○	○	○	○	○	○	○	●	●	●	●	○
.008-.031	.161	○	○	○	○	○	○	○	●	●	●	●	○
.015-.031	.197	●	○						●	●	●	●	○
.004-.025	.212	●							●		●	●	○
.008-.031	.189 & .204 for RM	●	●	○	○	○	○	○	●	●	●	●	○

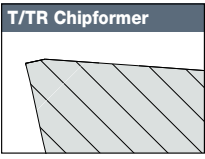
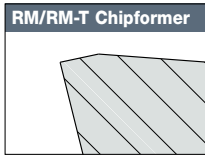
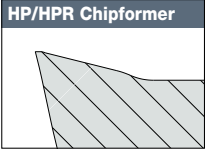
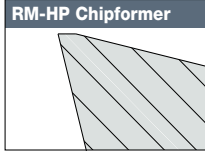
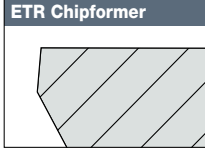
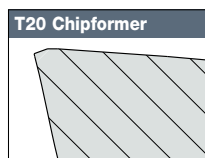
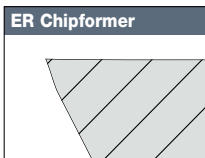
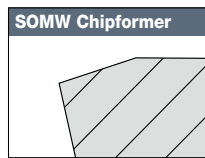
● - Most suitable   ○ - Suitable   ○ - May be used








# Indexable Fast Feed Family Selector

Diameter range (inch)	Family	Description	APMX (inch)	Available diameters (inch) for configuration	Insert			
				Facemill	Description	Chip former	No. of sides	No. edges
Ø3.00-6.00	HELI6FEED	FF FWX-07	.059	3.00-4.00	H600 WXCUC 070515	T, HP	2	6
	TANG4FEED	FFV-D-R-VN07	.059	3.00-4.00	FF VNMT 0706ZN	ER, ETR	2	4
	MILL4FEED	FFQ4-12	.059	3.00-5.00	FFQ4 SOMT 1205	T, T20, RM-T, HP, RM-HP, HP-P	1	4
	MILL4FEED	FFQ4-12	.047	3.00-5.00	FFQ4 SOMW 1205	SOMW	1	4
	NEOFEED	FFQ8 FD	.059	3.00-4.00	FFQ8 SZMU 120520	T, HP	2	8
	LOGIQ4FEED	FFX4 FD-08	.079	3.00-5.00	FFX4 XNMU 080620	T, HP	2	4
	HELI6FEED	FF FWX-08	.079	3.00-6.00	H600 WXCUC 0806	T, HP, RM	2	6
	HELI6FEED	MF FWX-07	.106	3.00-4.00	H600 WXCUC 070515	T, HP	2	6
	NEOFEED	MFQ8 FD	.118	3.00-4.00	FFQ8 SZMU 120520	T, HP	2	8
	MILL4FEED	FFQ4-17	.118	3.00-6.00	FFQ4 SOMT 1706	T, RM-T, HP, RM-HP	1	4
	MILL4FEED	FFQ4-17	.098	3.00-6.00	FFQ4 SOMW 1706	SOMW	1	4
	HELI12FEED	MF FHX-R06	.118	3.00-6.00	H1200 HXCUC 0606	TR, HPR	2	12
HELI6FEED	MF FWX-08	.138	3.00-5.00	H600 WXCUC 0806	T, HP, RM	2	6	

<sup>(1)</sup> MM - Multi-Master Heads

## Insert Chipformer Types

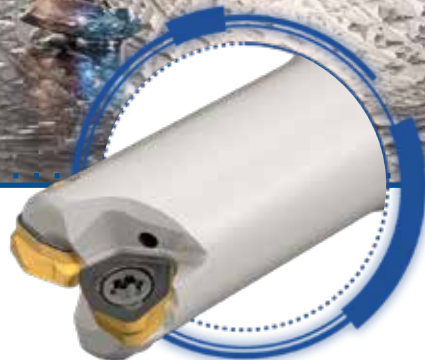
 <p><b>T/TR Chipformer</b></p>	<p><b>T / TR</b> - For steel, ferritic and martensitic stainless steel, cast iron and hardened steel</p>	 <p><b>RM/RM-T Chipformer</b></p>	<p><b>RM / RM-T</b> - For interrupted cut and for machining near straight wall shoulders of steel, ferritic and martensitic stainless steel, cast iron and hardened steel</p>
 <p><b>HP/HPR Chipformer</b></p>	<p><b>HP / HPR</b> - For austenitic stainless steel and high temperature alloys</p>	 <p><b>RM-HP Chipformer</b></p>	<p><b>RM-HP</b> - For interrupted cut and for machining near straight wall shoulders of austenitic stainless steel and high temperature alloys</p>
 <p><b>ETR Chipformer</b></p>	<p><b>ETR</b> - Tangential insert with reinforced cutting edges for interrupted cut and unfavorable conditions</p>	 <p><b>T20 Chipformer</b></p>	<p><b>T20</b> - For gray and nodular cast iron</p>
 <p><b>ER Chipformer</b></p>	<p><b>ER</b> - Tangential insert for general applications</p>	 <p><b>SOMW Chipformer</b></p>	<p><b>SOMW</b> - T flat insert for interrupted and hard material up to 60 HRC</p>

Range of $f_z$ (ipt)	Radius for Programming	Applications							Material				
									P	M	K	S	H
.015-.055	.122	●	○	○	○	○	●	○	●	●	●	●	○
.015-.070	.110	●	●	●	●	○	●	●	○	○	○	●	○
.015-.078	.122	●	○	○	○	○	●	○	○	○	○	●	○
.015-.078	.157	●	○	○	○	○	●	○	○	○	○	●	●
.015-.059	.142	●	●	●	○	●	○	○	●	●	●	●	○
.015-.047	.157	●	●	●	●	○	●	●	●	●	●	●	○
.015-.059	.130 & .145 for RM	○	○	○	○	○	○	○	●	●	●	●	○
.008-.031	.161	●	○	●	○	○	●	●	●	●	●	●	○
.015-.031	.197	●	○						●	●	●	●	○
.015-.078	.216	●	○	○	○	○	●	○	●	●	●	●	○
.015-.078	.252	●	○	○	○	○	○	○	●		●		●
.004-.025	.212	●		○					●				○
.008-.031	.189 & .204 for RM	○	○	○	○	○	○	○	●	●	●	●	○

● - Most suitable   ○ - Suitable   ○ - May be used



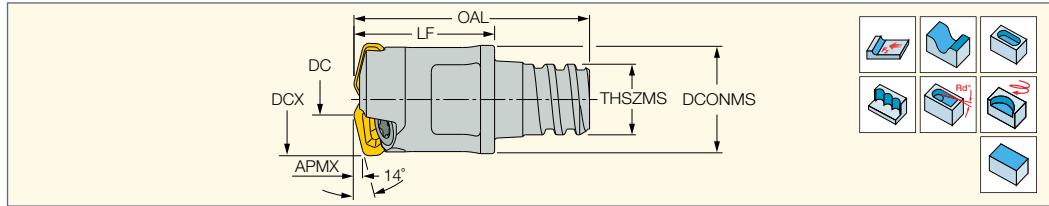
**MICRO<sup>3</sup>FEED**  
MF 300 ENDMILL



Single-Sided Small Trigon Inserts  
for Fast Feed Milling



**FFT3 EFM-MM 02**  
Small Diameter Endmills with a MULTI-MASTER Threaded Adaptation Carrying Triangular Inserts for Fast Feed Milling



Designation	DCX <sup>(1)</sup>	DC	APMX	AE <sup>(2)</sup>	CICT <sup>(3)</sup>	LF	DCONMS	THSZMS	OAL	DRVS <sup>(4)</sup>	RMPX <sup>(5)</sup>	MDN <sup>(6)</sup>	MDX <sup>(7)</sup>	MIID <sup>(8)</sup>	TQ <sup>(9)</sup>
<b>FFT3 EFM D08/.31-2MMT05-02</b>	.315	.087	.0236	.114	2	.394	.299	T05	.659	.217	10.8	.402	.591	FFT3 TXMT 0201205T	4.50 .02
<b>FFT3 EFM D10/.39-3MMT06-02</b>	.394	.165	.0236	.114	3	.394	.382	T06	.642	.315	4.7	.559	.748	FFT3 TXMT 0201205T	4.50 .02

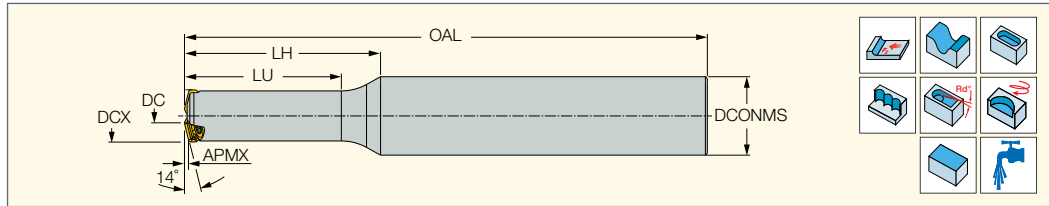
• Radius for programming .043" • To generate a straight surface without cusps, the width of cut must not exceed DC

- (1) Cutting diameter maximum
- (2) Maximum plunging width
- (3) Number of inserts
- (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 (lb\*in) for insert screw

**Spare Parts**

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

**FFT3 EFM-02**  
Small Diameter Endmills  
Carrying Single-Sided Triangular Inserts for Fast Feed Milling



Designation	DCX <sup>(1)</sup>	DC	APMX	AE <sup>(2)</sup>	CICT <sup>(3)</sup>	LU	LH	OAL	DCONMS	Shank <sup>(4)</sup>	RMPX <sup>(5)</sup>	MDN <sup>(6)</sup>	MDX <sup>(7)</sup>	MIID <sup>(8)</sup>	TQ <sup>(9)</sup>
<b>FFT3 EFM D08-2-060-C10-02</b>	.315	.087	.0236	.114	2	.6693	.787	2.362	.394	C	10.8	.402	.591	FFT3 TXMT 0201205T	4.50 .07
<b>FFT3 EFM D08-2-080-C12-02</b>	.315	.087	.0236	.114	2	1.0236	1.181	3.150	.472	C	10.8	.402	.591	FFT3 TXMT 0201205T	4.50 .11
<b>FFT3 EFM D10-3-070-C10-02</b>	.394	.165	.0236	.114	3	.7677	.787	2.756	.394	C	4.7	.559	.748	FFT3 TXMT 0201205T	4.50 .09
<b>FFT3 EFM D10-3-090-C12-02</b>	.394	.165	.0236	.114	3	1.1811	1.299	3.543	.472	C	4.7	.559	.748	FFT3 TXMT 0201205T	4.50 .13

• Radius for programming .043 inch • To generate a straight surface without cusps, the width of cut must not exceed DC

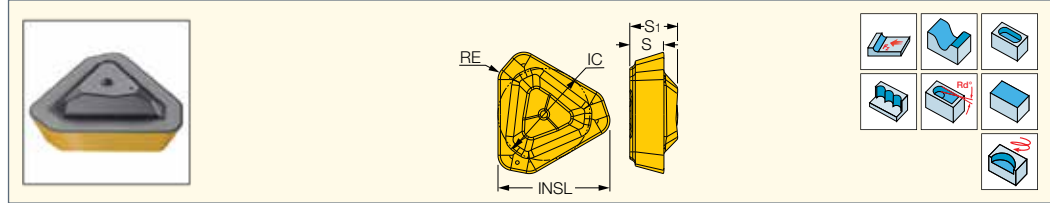
- (1) Cutting diameter maximum
- (2) Maximum plunging width
- (3) Number of inserts
- (4) C-Cylindrical
- (5) Maximum ramping angle
- (6) Machinable diameter minimum for interpolation
- (7) Machinable diameter maximum for interpolation
- (8) Master insert identification
- (9) Recommended tightening torque (lb\*in) for insert screw

**Spare Parts**

Designation		
<b>FFT3 EFM-02</b>	SR M2X0.4-2.9 T6-HG <sup>(a)</sup>	T-6/5 MAGNET 3X3

(a)

**FFT3 TXMT 02**  
Triangular Miniature Inserts  
for Fast Feed Milling at  
Small Depths of Cut



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

- For side plunging, the initial cutting feed is .002 inch/t

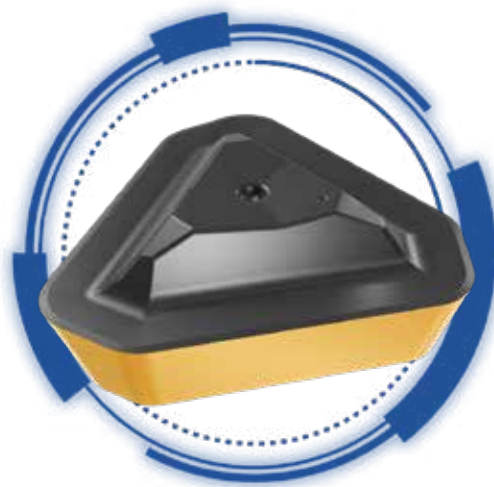
### Average Cutting Data for FFT3-02 Fast Feed Cutters

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

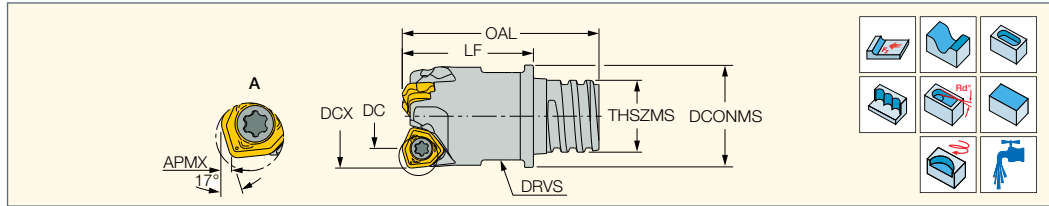
\* ISCAR material group in accordance with VDI 3323 standard

\*\* Quenched and tempered

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



**FFT3 EFM-MM 03**  
Endmills with a MULTI-MASTER  
Threaded Adaptation Carrying  
Single-Sided Small Trigon  
Inserts for Fast Feed Milling



Designation	DCX <sup>(1)</sup>	DC	APMX	AE <sup>(2)</sup>	CICT <sup>(3)</sup>	LF	DCONMS	THSZMS	OAL	DRVS <sup>(4)</sup>	RMPX <sup>(5)</sup>	MDN <sup>(6)</sup>	MDX <sup>(7)</sup>	MIID <sup>(8)</sup>	Lbs
<b>FFT3 EFMD10/.39-2MMT06-03</b>	.394	.220	.0236	.087	2	.394	.382	T06	.642	.315	6.9	.614	.748	FFT3 WXMT 030206T	.04
<b>FFT3 EFMD12/.47-3MMT08-03</b>	.472	.299	.0236	.087	3	.591	.461	T08	.886	.394	4.7	.772	.906	FFT3 WXMT 030206T	.07
<b>FFT3 EFMD16/.63-4MMT10-03</b>	.630	.457	.0236	.087	4	.787	.602	T10	1.232	.512	2.9	1.087	1.220	FFT3 WXMT 030206T	.11
<b>FFT3 EFMD.75-5-MMT12-03</b>	.750	.580	.0236	.087	5	.984	.710	T12	1.508	.630	2.0	1.330	1.460	FFT3 WXMT 030206T	.00
<b>FFT3 EFMD20/.78-5MMT12-03</b>	.787	.614	.0236	.087	5	.984	.748	T12	1.508	.630	2.0	1.402	1.535	FFT3 WXMT 030206T	.15
<b>FFT3 EFMD25/.98-6MMT15-03</b>	.984	.811	.0236	.087	6	1.181	.945	T15	1.850	.787	1.5	1.795	1.929	FFT3 WXMT 030206T	.00
<b>FFT3 EFMD1.00-6-MMT15-03</b>	1.000	.830	.0236	.087	6	1.181	.960	T15	1.850	.787	1.5	1.830	1.960	FFT3 WXMT 030206T	.25

• Radius for programming .043" • To generate a straight surface without cusps, the width of cut must not exceed DC

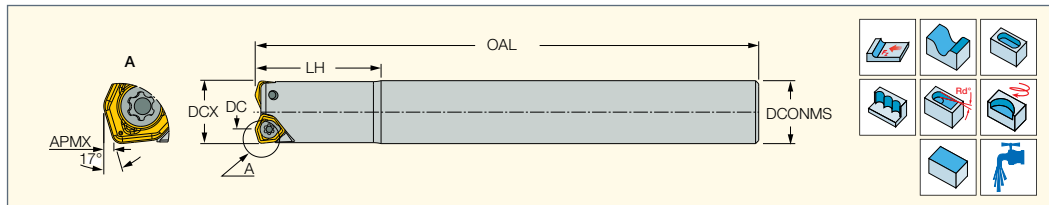
- (1) Cutting diameter maximum
- (2) Maximum plunging width
- (3) Number of inserts
- (4) Torque key size
- (5) Maximum ramping angle
- (6) Machinable diameter minimum for interpolation
- (7) Machinable diameter maximum for interpolation
- (8) Master insert identification

**Spare Parts**

Designation			
<b>FFT3 EFM-MM 03</b>	TS 180411/HG	TS 180411/HG <sup>(a)</sup>	T-6IP/51

(a) Recommended tightening torque: 4.5 lbfxin

**FFT3 EFM-03**  
Endmills Carrying Single-Sided Small Trigon  
Inserts for Fast Feed Milling



Designation	DCX <sup>(1)</sup>	DC	APMX	AE <sup>(2)</sup>	CICT <sup>(3)</sup>	LH	OAL	DCONMS	Shank <sup>(4)</sup>	RMPX <sup>(5)</sup>	MDN <sup>(6)</sup>	MDX <sup>(7)</sup>	MIID <sup>(8)</sup>	Lbs
<b>FFT3 EFMD.38-2-3.0C.38-03</b>	.375	.200	.0236	.086	2	.750	3.000	.375	C	7.5	.575	.711	FFT3 WXMT 030206T	.08
<b>FFT3 EFMD.50-3-5.0C.50-03</b>	.500	.325	.0236	.086	3	1.000	5.000	.500	C	4.0	.823	.961	FFT3 WXMT 030206T	.24
<b>FFT3 EFMD.62-4-5.5C.62-03</b>	.625	.450	.0236	.086	4	1.250	5.500	.625	C	2.5	1.075	1.211	FFT3 WXMT 030206T	.40

• Radius for programming .043" • To generate a straight surface without cusps, the width of cut must not exceed DC

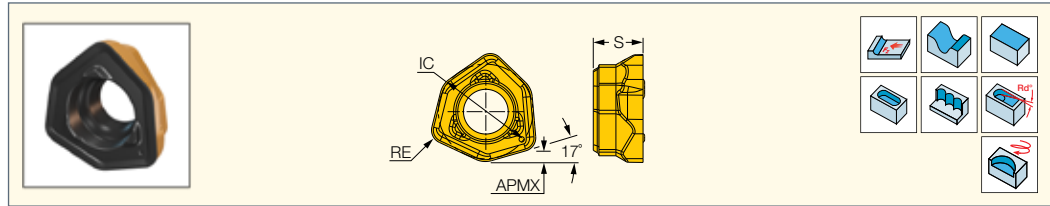
- (1) Cutting diameter maximum
- (2) Maximum plunging width
- (3) Number of inserts
- (4) C-Cylindrical
- (5) Maximum ramping angle
- (6) Machinable diameter minimum for interpolation
- (7) Machinable diameter maximum for interpolation
- (8) Master insert identification

**Spare Parts**

Designation		
<b>FFT3 EFM-03</b>	TS 180411/HG <sup>(a)</sup>	T-6IP/51

(a) Recommended tightening torque: 4.5 lbfxin





Designation	Dimensions				Tough ↔ Hard				Recommended Machining Data	
	IC	S	RE	APMX	IC882	IC830	IC5820	IC808	ap (inch)	fz (inch/t)
<b>FFT3 WXMT 030206T</b>	.165	.087	.0236	.0236	●	●	●	●	.008-.024	.0079-.0315

• For side plunging, the initial cutting feed is .003 inch/t

### Recommended Machining Conditions for FFT3-03 Fast Feed Endmills

ISO class DIN/ ISO 513	Workpiece material					Carbide grade	D.O.C. ap (inch)	Cutting speed vc (sfm)	Feed fz (ipt)	Coolant					
	Description	ISCAR mat. group*	Hardness, HB	Typical materials											
				AISI/SAE/ASTM	DIN W.-Nr.										
<b>P</b>	Non-alloy steel	1-5	130-180	1020	1.0402	IC808	.008-.023	400-660	.011-.031	Dry/Wet					
	Low alloy steel	6-8	260-300	4340	1.6582	IC830		360-590	.011-.031						
						IC808		330-590	.11-.027						
		9	"HRC 35-42***"	3135	1.5710	IC830		300-520	.11-.027						
						IC808		330-520	.11-.023						
	High alloy steel	10-11	200-220	H13	1.2344	IC830		300-490	.11-.023						
	"Ferritic/martensitic stainless steel"	12-13	200	420	1.4021	IC808		260-490	.11-.023						
						IC830		230-490	.11-.023						
<b>M</b>	Austenitic stainless steel	14	200	304L	1.4306	IC808	.008-.023	330-520	.11-.023	Dry					
						IC830		260-390	.11-.023						
						IC5820		330-520	.11-.023						
						IC882		260-420	.11-.023						
<b>K</b>	Gray cast iron	15-16	250	Class 40	0.6025 (GG25)	IC808	.008-.023	490-650	.11-.023	Dry					
	Nodular cast iron	17-18	200	Class 65-45-12	0.7050 (GGG50)	IC808		460-490	.11-.023						
<b>S</b>	High temperature alloys and Titanium	33-35	340	Inconel 718	2.4668	IC882	.008-.020	60-100	.008-.015	Wet					
						IC5820		80-115	.008-.015						
						IC808		80-115	.008-.015						
		36-37	HRC 30-32	AMS R56400	3.7165 (Ti6Al4V ELI)	IC830		80-100	.008-.015						
						IC882		80-115	.008-.020						
						IC5820		80-130	.008-.020						
<b>H</b>	Hardened steel	38	HRC 45-49	HARDOX 450 plate		IC808	.008-.020	160-250	.008-.015	Dry/Wet					
								Chilled cast iron	40		400	Ni-Hard 1	0.9625	260-330	.008-.020
														Hard cast iron	41

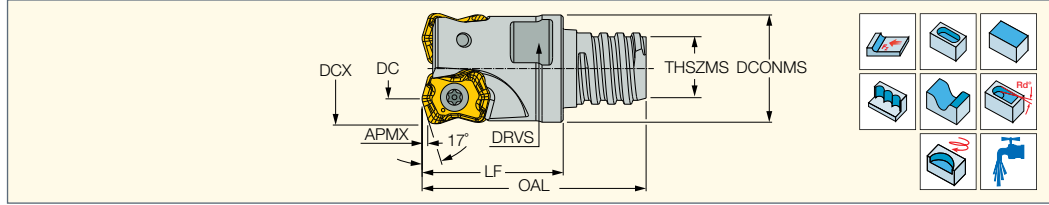
\* ISCAR material group in accordance with VDI 3323 standard

\*\* Quenched and tempered

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

**FFX4 ED-MM**

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





Designation	DCX <sup>(1)</sup>	DC	CICT <sup>(2)</sup>	APMX	AE <sup>(3)</sup>	THSZMS	LF	OAL	DCONMS	RMPX <sup>(4)</sup>	MDN <sup>(5)</sup>	MDX <sup>(6)</sup>	DRVS <sup>(7)</sup>	MIID <sup>(8)</sup>	TQ <sup>(9)</sup>	Rg <sup>(10)</sup>	Lbs
<b>FFX4 ED16/.63-2-MMT10-04</b>	.630	.339	2	.0315	.146	T10	.787	1.250	.598	4.3	.969	1.220	.512	FFX4 XNMU 040310T	.04	.071	.05
<b>FFX4 ED20/.78-3-MMT12-04</b>	.787	.496	3	.0315	.146	T12	.984	1.508	.740	2.7	1.283	1.535	.591	FFX4 XNMU 040310T	.04	.071	.10
<b>FFX4 ED25/.98-4-MMT15-04</b>	.984	.693	4	.0315	.146	T15	1.181	1.850	.945	1.8	1.677	1.929	.748	FFX4 XNMU 040310T	.04	.071	.32

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

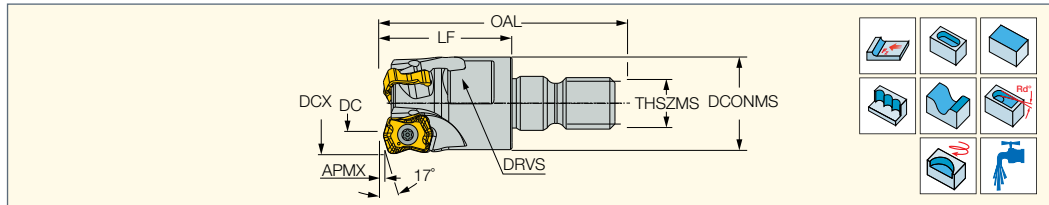
- (1) Cutting diameter maximum
- (2) Number of inserts
- (3) Maximum plunging width
- (4) Maximum ramping angle
- (5) Machinable diameter minimum for interpolation
- (6) Machinable diameter maximum for interpolation
- (7) Torque key size
- (8) Master insert identification
- (9) Recommended tightening torque (lb\*in) for insert screw
- (10) Radius for programming

**Spare Parts**

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

**FFX4 ED-M**

Endmills with FLEXFIT Adaptation Carrying Small "Bone Shaped" Inserts with 4 Cutting Edges for Fast Feed Milling





Designation	DCX <sup>(1)</sup>	DC	CICT <sup>(2)</sup>	APMX	AE <sup>(3)</sup>	THSZMS	LF	OAL	DCONMS	RMPX <sup>(4)</sup>	MDN <sup>(5)</sup>	MDX <sup>(6)</sup>	DRVS <sup>(7)</sup>	Rg <sup>(8)</sup>	MIID <sup>(9)</sup>	TQ <sup>(10)</sup>	TQ_3 <sup>(11)</sup>	Lbs
<b>FFX4 ED20/.78-3-M10-04</b>	.787	.496	3	.0315	.146	M10	.984	1.772	.709	2.7	1.283	1.535	.591	.071	FFX4 XNMU 040310T	.04	260	.09
<b>FFX4 ED25/.98-4-M12-04</b>	.984	.693	4	.0315	.146	M12	1.181	2.047	.827	1.8	1.677	1.929	.748	.071	FFX4 XNMU 040310T	.04	295	.18
<b>FFX4 ED32/1.26-5-M16-04</b>	1.260	.969	5	.0315	.146	M16	1.378	2.362	1.142	1.2	2.228	2.480	1.063	.071	FFX4 XNMU 040310T	.04	355	.40
<b>FFX4 ED35/1.38-5-M16-04</b>	1.378	1.087	5	.0315	.146	M16	1.378	2.362	1.142	1.1	2.465	2.717	.984	.071	FFX4 XNMU 040310T	.04	355	.44
<b>FFX4 ED42/1.65-6-M16-04</b>	1.654	1.362	6	.0315	.146	M16	1.575	2.559	1.142	.8	3.016	3.268	.984	.071	FFX4 XNMU 040310T	.04	355	.66

• To generate a straight surface without cusps, the width of cut must not exceed DC • When mounting items with FLEXFIT threaded adaptation to their holders, the mating surfaces and threaded areas must be thoroughly cleaned. Apply appropriate tightening torque to eliminate a gap between the mating faces. Estimated torque values are specified in the TQ\_3 parameter

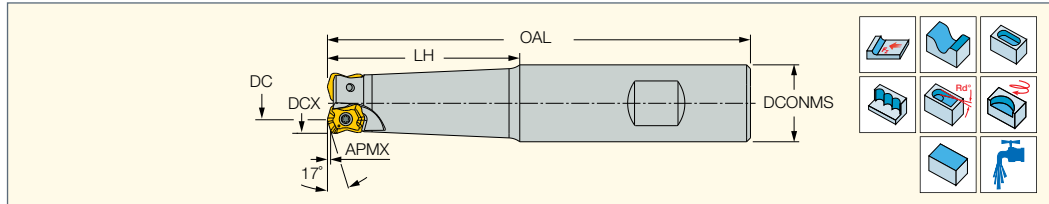
- (1) Cutting diameter maximum
- (2) Number of inserts
- (3) Maximum plunging width
- (4) Maximum ramping angle
- (5) Machinable diameter minimum for interpolation
- (6) Machinable diameter maximum for interpolation
- (7) Torque key size
- (8) Radius for programming
- (9) Master insert identification
- (10) Recommended tightening torque (lb\*in) for insert screw
- (11) Tool tightening torque (lb\*in)

**Spare Parts**

Designation		
<b>FFX4 ED-M</b>	SR M2.5X6-T7-60	T-7/51

**FFX4 ED**

Endmills Carrying Small Double-Sided "Bone Shaped" Inserts with 4 Cutting Edges for Fast Feed Milling





Designation	DCX <sup>(1)</sup>	DC	APMX	AE <sup>(2)</sup>	CICT <sup>(3)</sup>	LH	OAL	DCONMS	Shank <sup>(4)</sup>	RMPX <sup>(5)</sup>	MDN <sup>(6)</sup>	MDX <sup>(7)</sup>	Rg <sup>(8)</sup>	MIID <sup>(9)</sup>	Lbs
FFX4 ED0.50-1-1.2W0.50-04	.500	.209	.0310	.145	1	1.200	3.250	.500	W	3.4	.709	.961	.071	FFX4 XNMMU 040310T	.15
FFX4 ED0.62-2-1.5W0.62-04	.625	.334	.0310	.145	2	1.500	3.500	.625	W	4.3	.959	1.211	.071	FFX4 XNMMU 040310T	.25
FFX4 ED0.62-2-2.0W0.75-04	.625	.334	.0310	.145	2	2.000	4.250	.750	W	4.3	.959	1.211	.071	FFX4 XNMMU 040310T	.39
FFX4 ED0.75-3-2.0W0.75-04	.750	.459	.0310	.145	3	2.000	4.250	.750	W	2.9	1.209	1.461	.071	FFX4 XNMMU 040310T	.44
FFX4 ED0.75-3-2.5W0.75-04	.750	.459	.0310	.145	3	2.500	5.000	.750	W	2.9	1.209	1.461	.071	FFX4 XNMMU 040310T	.50
FFX4 ED1.00-4-2.0W1.00-04	1.000	.709	.0310	.145	4	2.000	4.500	1.000	W	1.8	1.709	1.961	.071	FFX4 XNMMU 040310T	.02
FFX4 ED1.00-4-3.0W1.00-04	1.000	.709	.0310	.145	4	3.000	5.000	1.000	W	1.8	1.709	1.961	.071	FFX4 XNMMU 040310T	1.03
FFX4 ED1.25-5-2.5W1.00-04	1.250	.959	.0310	.145	5	2.500	5.000	1.000	W	1.2	2.209	2.461	.071	FFX4 XNMMU 040310T	1.21
FFX4 ED1.25-5-3.0W1.25-04	1.250	.959	.0310	.145	5	3.000	5.500	1.250	W	1.2	2.209	2.461	.071	FFX4 XNMMU 040310T	1.50

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

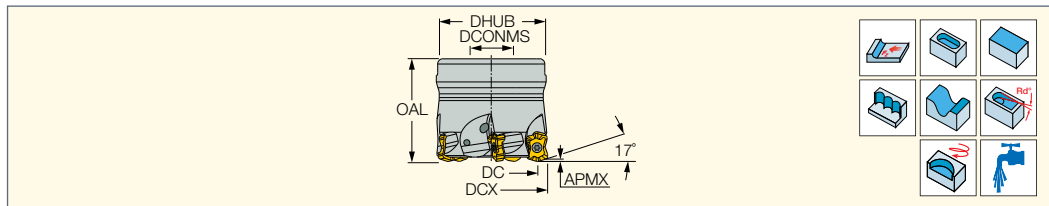
- <sup>(1)</sup> Cutting diameter maximum
- <sup>(2)</sup> Maximum plunging width
- <sup>(3)</sup> Number of inserts
- <sup>(4)</sup> W - Weldon
- <sup>(5)</sup> Maximum ramping angle
- <sup>(6)</sup> Machinable diameter minimum for interpolation
- <sup>(7)</sup> Machinable diameter maximum for interpolation
- <sup>(8)</sup> Radius for programming
- <sup>(9)</sup> Master insert identification

**Spare Parts**

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

**FFX4 FD-04**

Face Mills Carrying "Bone Shaped" Inserts with 4 Cutting Edges for Fast Feed Milling






Designation	DCX <sup>(1)</sup>	DC	CICT <sup>(2)</sup>	APMX	AE <sup>(3)</sup>	OAL	DHUB	DCONMS	Arbor	RMPX <sup>(4)</sup>	MDN <sup>(5)</sup>	MDX <sup>(6)</sup>	Rg <sup>(7)</sup>	MIID <sup>(8)</sup>	Lbs
FFX4 FD1.50-6-.50-04	1.500	1.209	6	.0310	.145	1.500	1.417	.500	A	1.0	2.709	2.961	.071	FFX4 XNMMU 040310T	.51
FFX4 FD2.00-7-.75-04	2.000	1.709	7	.0310	.145	1.500	1.850	.750	A	.6	3.709	3.961	.071	FFX4 XNMMU 040310T	.86

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

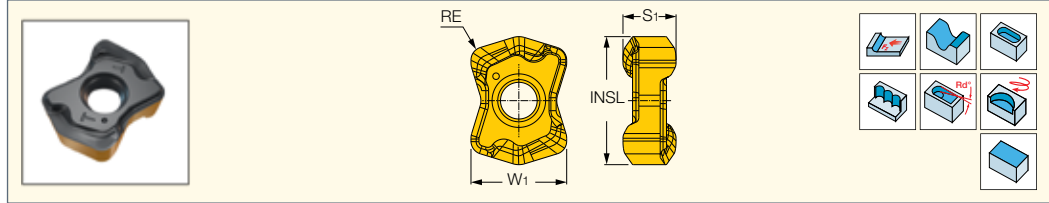
- <sup>(1)</sup> Cutting diameter maximum
- <sup>(2)</sup> Number of inserts
- <sup>(3)</sup> Maximum plunging width
- <sup>(4)</sup> Ramping angle maximum
- <sup>(5)</sup> Machinable diameter minimum for interpolation
- <sup>(6)</sup> Machinable diameter maximum for interpolation
- <sup>(7)</sup> Radius for programming
- <sup>(8)</sup> Master insert identification

**Spare Parts**

Designation			
FFX4 FD1.50-6-.50-04	SR M2.5X6-T7-60	SR UNF 1/4X1 B18.3	T-7/51
FFX4 FD2.00-7-.75-04	SR M2.5X6-T7-60	SR UNF 3/8X1 B18.3	T-7/51

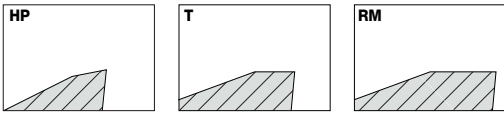


**FFX4 XNMU-04**  
"Bone Shaped" Inserts  
with 4 Cutting Edges for  
Fast Feed Milling



Designation	Dimensions				Tough ↔ Hard						Recommended Machining Data	
	INSL	S1	RE	W1	IC882	IC840	IC830	IC5820	IC808	IC810	a <sub>p</sub> (inch)	f <sub>z</sub> (inch/t)
<b>FFX4 XNMU 040310HP</b>	.377	.156	.0394	.282	●	●	●	●			.008-.031	.0079-.0315
<b>FFX4 XNMU 040310RM-HP</b>	.377	.156	.0394	.282	●				●		.008-.031	.0079-.0315
<b>FFX4 XNMU 040310T</b>	.377	.156	.0394	.282			●			●	.008-.031	.0157-.0472
<b>FFX4 XNMU 040310RM-T</b>	.377	.156	.0394	.282					●	●	.008-.031	.0157-.0472

• For side plunging, the initial cutting feed is .004 inch/t • HP- for austenitic stainless steel, titanium and high temperature alloys • T- for steel, ferritic and martensitic stainless steel, cast iron and hardened steel • RM-reinforced type insert



**Average Cutting Data for FFX4 Fast Feed Cutters**

ISO class DIN/ ISO 513	Workpiece material					Insert type	Carbide grade	D.O.C. a <sub>p</sub> (inch)	Cutting speed v <sub>c</sub> [sfm]	Feed f <sub>z</sub> (ipt)	Coolant
	Description	ISCAR mat. group*	Hardness, HB	AISI/SAE/ASTM	DIN W.-Nr.						
<b>P</b>	Non-alloy steel	1-5	130-180	1020	1.0402	T/RM-T	IC808	.008-.031	500-720	.0157-.039	Dry
	Low alloy steel	6-8	260-300	4340	1.6582		IC830		460-660	.0157-.035	Dry/Wet
		9	HRC	3135	1.5710		IC830		400-600	.0157-.043	Dry/Wet
	High alloy steel	10-11	200-220	H13	1.2344		IC808		430-600	.0157-.031	Dry
							IC830		400-530	.0157-.039	Dry/Wet
	"Ferritic/ martensitic stainless steel"	12-13	200	420	1.4021		IC808		400-560	.0157-.031	Dry
							IC830		330-500	.0157-.035	Dry/Wet
	<b>M</b>	Austenitic stainless steel	14	200	304L		1.4306		HP/ RM-HP	IC830	.008-.031
IC840						260-460		.008-.031			
IC5820						330-530		.008-.027			
IC882						260-430		.008-.031			
<b>K</b>	Gray cast iron	15-16	250	Class 40	0.6025 (GG25)	T/RM-T	IC810	.008-.031	500-720	.0157-.047	Dry
	Nodular cast iron	17-18	200	Class 65-45-12	0.7050 (GGG50)		IC810		400-660	.0157-.047	
<b>S</b>	High temperature alloys and Titanium	33-35	340	Inconel 718	2.4668	HP/ RM-HP	IC882	.008-.031	65-100	.008-.027	Wet
							IC5820		80-115	.008-.023	
							IC840		80-115	.008-.023	
							IC830		80-100	.008-.027	
		36-37	HRC 30-32	AMS R56400	3.7165 (Ti6Al4V ELI)		IC882		80-115	.008-.027	
							IC5820		80-130	.008-.023	
							IC840		80-115	.008-.023	
							IC830		65-100	.008-.027	
<b>H</b>	Hardened steel	38	HRC 45-49	HARDFOX 450 plate		T/RM-T	IC808	.008-.031	160-250	.008-.019	Dry

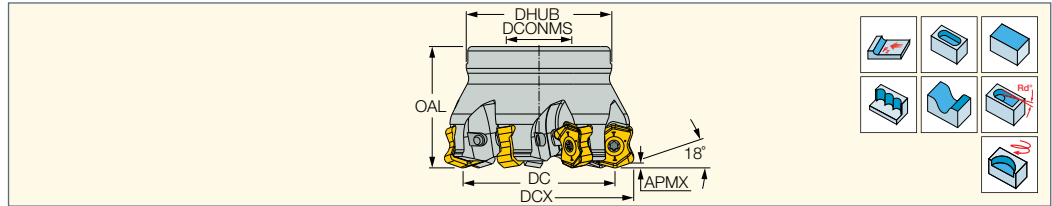
\* ISCAR material group in accordance with VDI 3323 standard

\*\* Quenched and tempered

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

**FFX4 FD-08**

Face Mills Carrying "Bone Shaped" Inserts with 4 Cutting Edges for Fast Feed Milling



Designation	DCX <sup>(1)</sup>	DC	CICT <sup>(2)</sup>	APMX	AE	OAL	DHUB	DCONMS	Arbor	Rd°	MDN <sup>(3)</sup>	MDX <sup>(4)</sup>	Rg <sup>(5)</sup>	MIID <sup>(6)</sup>	Lbs
<b>FFX4 FD2.00-4-0.75-08</b>	2.000	1.386	4	.0780	.307	1.750	1.850	.750	A	3.2	3.386	3.961	.157	FFX4 XNMU 080620T	1.32
<b>FFX4 FD2.50-5-1.00-08</b>	2.500	1.886	5	.0780	.307	1.750	2.252	1.000	A	2.2	4.386	4.961	.157	FFX4 XNMU 080620T	1.19
<b>FFX4 FD3.00-6-1.00-08</b>	3.000	2.386	6	.0780	.307	2.000	2.252	1.000	A	1.7	5.386	5.961	.157	FFX4 XNMU 080620T	1.98
<b>FFX4 FD4.00-8-1.50-08</b>	4.000	3.386	8	.0780	.307	2.000	3.228	1.500	B	1.0	7.386	7.961	.157	FFX4 XNMU 080620T	2.87
<b>FFX4 FD5.00-10-1.50-08</b>	5.000	4.386	10	.0780	.307	2.000	3.800	1.500	B	.9	9.386	9.961	.157	FFX4 XNMU 080620T	5.51

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

<sup>(1)</sup> Cutting diameter maximum

<sup>(2)</sup> Number of inserts





<sup>(3)</sup> Machinable diameter minimum for interpolation

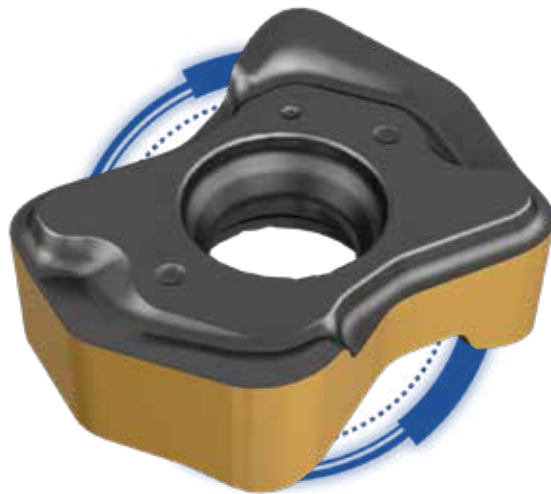
<sup>(4)</sup> Machinable diameter maximum for interpolation

<sup>(5)</sup> Radius for programming

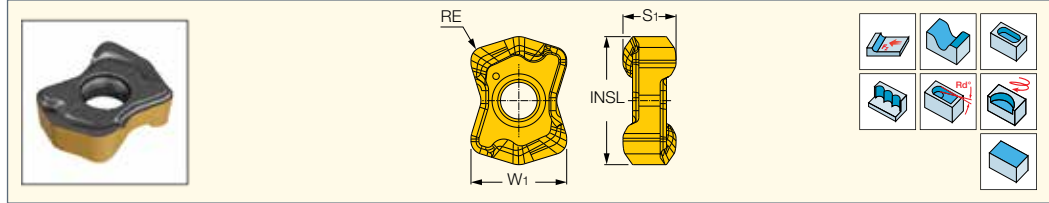
<sup>(6)</sup> Master insert identification

**Spare Parts**

Designation				
<b>FFX4 FD2.00-4-0.75-08</b>	SR M5-14 IP20	SR UNF 3/8X1 B18.3	SW6-T	BLD IP20/S7
<b>FFX4 FD2.50-5-1.00-08</b>	SR M5-14 IP20	SR UNF 1/2X20X1 B18.3	SW6-T	BLD IP20/S7
<b>FFX4 FD3.00-6-1.00-08</b>	SR M5-14 IP20	SR UNF 1/2X1 1/4 B18.3	SW6-T	BLD IP20/S7
<b>FFX4 FD4.00-8-1.50-08</b>	SR M5-14 IP20		SW6-T	BLD IP20/S7
<b>FFX4 FD5.00-10-1.50-08</b>	SR M5-14 IP20		SW6-T	BLD IP20/S7

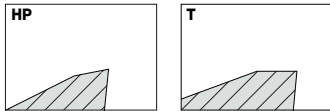


**FFX4 XNMU-08**  
"Bone Shaped" Inserts  
with 4 Cutting Edges for  
Fast Feed Milling



Designation	Dimensions				Tough ↔ Hard				Recommended Machining Data	
	INSL	S1	RE	W1	IC882	IC830	IC808	IC810	$a_p$ (inch)	$f_z$ (inch/t)
<b>FFX4 XNMU 080620HP</b>	.705	.307	.0787	.614	●	●	●	●	.008-.079	.0079-.0315
<b>FFX4 XNMU 080620T</b>	.705	.307	.0787	.614		●	●	●	.008-.079	.0157-.0472

• For side plunging, the initial cutting feed is .004 inch/t • T-for steel, ferritic and martensitic stainless steel, cast iron and hardened steel • HP-for austenitic stainless steel and high temperature alloys



**Average Cutting Data for FFX4-08 Fast Feed Cutters**

ISO class DIN/ ISO 513	Description	Workpiece material				Insert type	Carbide grade	D.O.C. $a_p$ (inch)	Cutting speed $v_c$ (sfm)	Feed $f_z$ (ipt)	Coolant
		ISCAR mat. group*	Hardness, HB	Typical representative							
				AISI/SAE/ ASTM	DIN W.-Nr.						
<b>P</b>	Non-alloy steel	1-5	130-180	1020	1.0402	T	.019 - .078	IC808	490-590	.0157-.0472	Dry
	Low alloy steel	6-8	260-300	4340	1.6582			IC830	490-590	.0157-.0472	Dry/Wet
								IC808	490-590	.0157-.0472	Dry/Wet
		9	HRC 35-42**	3135	1.5710			IC830	390-590	.0157-.0472	Dry/Wet
	High alloy steel	10-11	200-220	H13	1.2344			IC808	430-580	.0157-.0472	Dry
								IC830	390-520	.0157-.0472	Dry/Wet
								IC808	390-560	.0157-.0472	Dry
	Ferritic/martensitic stainless steel	12-13	200	420	1.4021			IC830	330-490	.0157-.0472	Dry/Wet
IC808						360-520	.0157-.0472	Dry			
<b>M</b>	Austenitic stainless steel	14	200	304L	1.4306	HP	.019- .078	IC882	230-420	.0078-.0314	Wet
								IC808	330-520	.0078-.0314	
								IC830	260-450	.0078-.0314	
<b>K</b>	Gray cast iron	15-16	250	Class 40	0.6025 (GG25)	T	.019 - .078	IC810	490-720	.0157-.0472	Dry
	Nodular cast iron	17-18	200	Class 65-45-12	0.7050 (GGG50)			IC810	390-650	.0157-.0472	
<b>S</b>	High temperature alloys and titanium	31-32	220	330	1.4864	HP	.019 - .078	IC882	130-200	.0078-.0275	Wet
								IC808	130-210	.0078-.0275	
								IC830	130-230	.0078-.0275	
		33-35	340	Inconel 718	1.4668			IC882	65-100	.0078-.0275	
								IC808	80-130	.0078-.0275	
								IC830	75-110	.0078-.0275	
		36-37	HRC 30-32	AMS R56400	3.7165 (Ti6Al4V ELI)			IC882	100-160	.0078-.0275	
								IC808	130-190	.0078-.0275	
IC830	110-180	.0078-.0275									
<b>H</b>	Hardened steel	38	HRC 45-49	HARDOX 450 plate		T	IC808	.019 - .078	160-245	.0078-.0196	Dry

\* ISCAR material group in accordance with VDI 3323 standard

\*\* Quenched and tempered

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

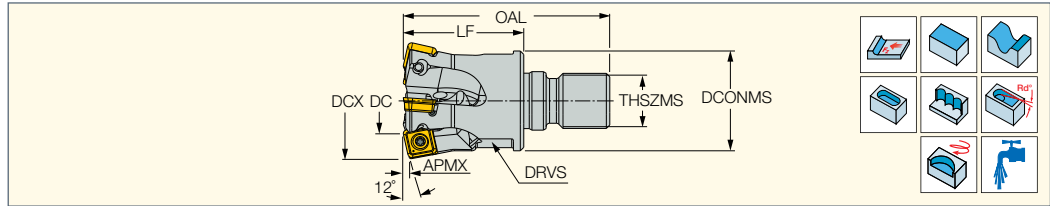


**MILL4FEED**

**FLEXFIT**

**FFQ4 D-M-09**

Fast Feed Endmills with FLEXFIT Threaded Adaptation Carrying Single-Sided Inserts with 4 Cutting Edges



Designation	DCX <sup>(1)</sup>	DC	APMX	AE <sup>(2)</sup>	CICT <sup>(3)</sup>	THSZMS	LF	OAL	DCONMS	RMPX <sup>(4)</sup>	MDN <sup>(5)</sup>	MDX <sup>(6)</sup>	DRVS <sup>(7)</sup>	MIID <sup>(8)</sup>	TQ <sup>(9)</sup>	TQ_3 <sup>(10)</sup>	
<b>FFQ4 D1.50-05-M16-09</b>	1.500	.933	.0470	.280	5	M16	1.400	2.400	1.142	2.3	2.433	2.961	.984	FFQ4 SOMT 090412T	17.70	355	.39

- To generate a straight surface without cusps, the width of cut must not exceed DC
- Radius for programming: for insert SOMT .098", for insert SOMW .118"
- When mounting insert SOMW, APMX=.039"
- 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
- (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 (lb\*in) for insert screw
- (10) Tool tightening torque (lb\*in)

**Spare Parts**

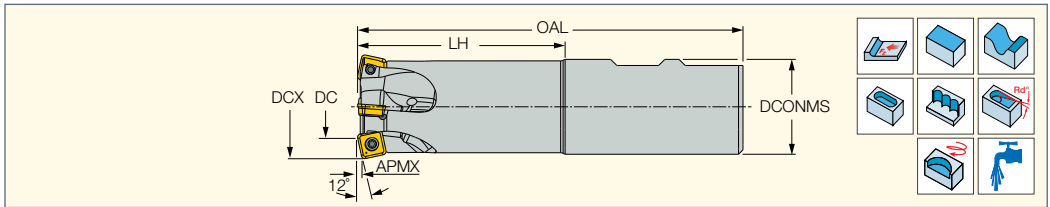
Designation		
<b>FFQ4 D-M-09</b>	SR M3X0.5-L7.4 IP9 <sup>(a)</sup>	IP-9/151

(a) Recommended tightening torque: 17.7 lb\*in

**MILL4FEED**

**FFQ4 D-W-09**

Fast Feed Endmills Carrying Single-Sided Inserts with 4 Cutting Edges



Designation	DCX <sup>(1)</sup>	DC	APMX	AE <sup>(2)</sup>	CICT <sup>(3)</sup>	LH	DCONMS	OAL	RMPX <sup>(4)</sup>	MDN <sup>(5)</sup>	MDX <sup>(6)</sup>	MIID <sup>(7)</sup>	TQ <sup>(8)</sup>	
<b>FFQ4 D0.87-2-1.7-W0.75-09</b>	.875	.311	.0470	.280	2	1.750	.750	3.800	8.0	1.186	1.711	FFQ4 SOMT 090412T	17.70	.39
<b>FFQ4 D1.00-3-2.0-W1.00-09</b>	1.000	.437	.0470	.280	3	2.000	1.000	4.300	5.4	1.437	1.961	FFQ4 SOMT 090412T	17.70	.74
<b>FFQ4 D1.25-4-2.5-W1.00-09</b>	1.250	.689	.0470	.280	4	2.500	1.000	4.800	3.3	1.939	2.461	FFQ4 SOMT 090412T	17.70	.91
<b>FFQ4 D1.50-5-3.0-W1.25-09</b>	1.500	.938	.0470	.280	5	3.000	1.250	5.300	2.2	2.438	2.961	FFQ4 SOMT 090412T	17.70	1.55

- To generate a straight surface without cusps, the width of cut must not exceed DC
- Radius for programming: for insert SOMT .098", for insert SOMW .118"
- When mounting insert SOMW, APMX=.039"
- 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
- (4) Maximum ramping angle
- (5) Machinable diameter minimum for interpolation
- (6) Machinable diameter maximum for interpolation
- (7) Master insert identification
- (8) Recommended tightening torque (lb\*in) for insert screw

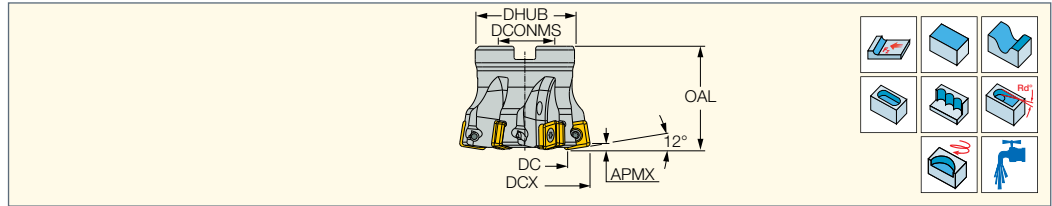
**Spare Parts**

Designation		
<b>FFQ4 D-W-09</b>	SR M3X0.5-L7.4 IP9 <sup>(a)</sup>	IP-9/151

(a) Recommended tightening torque: 17.7 lb\*in

**FFQ4 D-09**

Fast Feed Face Mills  
Carrying Single-Sided Inserts  
with 4 Cutting Edges



Designation	DCX <sup>(1)</sup>	DC	APMX	AE <sup>(2)</sup>	CICT <sup>(3)</sup>	OAL	DCONMS	DHUB	Arbor	RMPX <sup>(4)</sup>	MDN <sup>(5)</sup>	MDX <sup>(6)</sup>	MIID <sup>(7)</sup>	TQ <sup>(8)</sup>	
<b>FFQ4 D1.50-05-0.50-09</b>	1.500	.933	.0470	.280	5	1.400	.500	1.417	A	2.2	2.433	2.961	FFQ4 SOMT 090412T	17.70	.38
<b>FFQ4 D2.00-07-0.75-09</b>	2.000	1.439	.0470	.280	7	1.600	.750	1.850	A	1.5	3.439	3.961	FFQ4 SOMT 090412T	17.70	.77
<b>FFQ4 D2.50-08-1.00-09</b>	2.500	1.937	.0470	.280	8	1.850	1.000	2.252	A	1.1	4.437	4.961	FFQ4 SOMT 090412T	17.70	1.38

- To generate a straight surface without cusps, the width of cut must not exceed DC
- Radius for programming: for insert SOMT .098", for insert SOMW .118"
- When mounting insert SOMW, APMX=.039"
- 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

(4) Maximum ramping angle

(5) Machinable diameter minimum for interpolation

(6) Machinable diameter maximum for interpolation

(7) Master insert identification

(8) Recommended tightening torque (lbf\*in) for insert screw

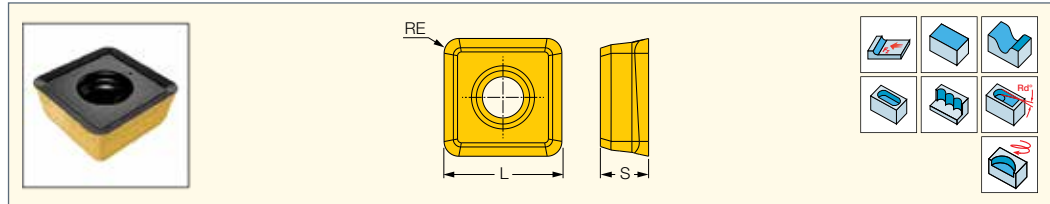
**Spare Parts**

Designation			
<b>FFQ4 D1.50-05-0.50-09</b>	SR M3X0.5-L7.4 IP9 <sup>(a)</sup>	IP-9/151	
<b>FFQ4 D2.00-07-0.75-09</b>	SR M3X0.5-L7.4 IP9 <sup>(a)</sup>	IP-9/151	SR UNF 3/8X1 B18.3
<b>FFQ4 D2.50-08-1.00-09</b>	SR M3X0.5-L7.4 IP9 <sup>(a)</sup>	IP-9/151	SR UNF 1/2X1¼ B18.3

(a) Recommended tightening torque: 17.7 lbf\*in



**FFQ4 SOMT/W 0904**  
Single-Sided Square Inserts  
with 4 Cutting Edges for  
Fast Feed Milling



Designation	Dimensions			Tough ↔ Hard					Recommended Machining Data	
	L	S	RE	IC882	IC830	IC5820	IC808	IC810	$a_p$ (inch)	$f_z$ (inch/t)
FFQ4 SOMT 090412T	.335	.154	.0472		•		•	•	.020-.047	.0157-.0590
FFQ4 SOMT 0904RM-T	.339	.150	.0472				•		.020-.047	.0157-.0590
FFQ4 SOMT 0904RM-HP	.339	.150	.0472	•					.020-.047	.0157-.0590
FFQ4 SOMT 090412HP	.335	.150	.0472	•	•	•	•		.020-.047	.0157-.0551
FFQ4 SOMW 090420T	.346	.154	.0787				•		.012-.039	.0079-.0394

• For side plunging, the initial cutting feed is .004 inch/t • T type for steel, ferritic and martensitic stainless steel and cast iron • RM-... reinforced radius type for machining near straight shoulder wall • HP type for austenitic stainless steel and high temperature alloys • SOMW-T flat insert for interrupted and hard material up to 60 HRC



### Average Cutting Data for FFQ4-09 Fast Feed Cutters

ISO class DIN/ ISO 513	Description	Workpiece Material				Insert type	Carbide grade	D.O.C. $a_p$ (inch)		Cutting speed $v_c$ (sfm)	Feed $f_z$ (ipt)		Coolant
		ISCAR mat. group*	Hardness, HB	Typical representative AISI/SAE/ ASTM	DIN W.-Nr.			Recom- mended	Range		Recom- mended	Range	
P	Non-alloy steel	1-5	130-180	1020	1.0402	T / RM-T	IC808	.040	.016-.047	490-720	.047	.020-.060	Dry
		6-8	260-300	4340	1.6582		IC830			460-660	.050	.020-.060	Dry/Wet
	Low alloy steel	9	HRC 35-42**	3135	1.5710		IC808			460-660	.047	.020-.060	Dry
							IC830			400-600	.050	.020-.060	Dry/Wet
	High alloy steel	10-11	200-220	H13	1.2344		IC808			430-590	.047	.020-.055	Dry
							IC830			400-525	.047	.020-.055	Dry/Wet
	Ferritic/martensitic stainless steel	12-13	200	420	1.4021		IC808			400-580	.047	.020-.055	Dry
							IC830			330-500	.050	.020-.055	Dry/Wet
M	Austenitic stainless steel	14	200	304L	1.4306	HP / RM-HP	IC830	.040	.016-.047	260-460	.040	.020-.050	Wet
							IC808			330-520	.040	.020-.050	
							IC5820			330-520	.040	.020-.055	
							IC882			260-460	.040	.020-.055	
K	Gray cast iron	15-16	250	Class 40	0.6025 (GG25)	T / RM-T	IC810	.040	.020-.047	490-720	.047	.020-.060	Dry
	Nodular cast iron	17-18	200	Class 65-45-12	0.7050 (GGG50)					390-660	.047	.020-.060	
S	High temperature alloys and Titanium	33-35	340	Inconel 718	2.4668	HP / RM-HP	IC882	.040	.016-.047	65-100	.023	.015-.040	Wet
							IC5820			75-115	.023	.020-.040	
							IC830			75-115	.023	.020-.040	
		IC808	80-130	.023	.015-.040								
		IC882	65-100	.023	.020-.040								
		IC5820	65-100	.023	.015-.040								
36-37	HRC 35-40	AMS R56400	3.7165 (Ti6Al4V ELI)	IC830	65-150	.023	.020-.040						
				IC808	65-100	.023	.020-.040						
				IC808	65-100	.023	.020-.040						
H	Hard materials	39-41	HRC 45-49	HARDOX 450 plate	1.2379	SOMW	IC808	.031	.016-.039	165-262	.020	.008-.039	Dry
			HRC 58-62							D2	.012	.012-.020	

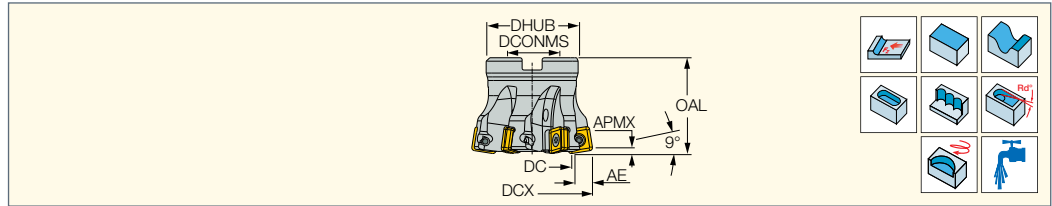
\* ISCAR material group in accordance with VDI 3323 standard

\*\* Quenched and tempered

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

## FFQ4 D-12

Fast Feed Face Mills  
Carrying Single-Sided Inserts  
with 4 Cutting Edges



Designation	DCX <sup>(1)</sup>	DC	APMX	AE <sup>(2)</sup>	CICT <sup>(3)</sup>	OAL	DHUB	DCONMS	Arbor <sup>(4)</sup>	RMPX <sup>(5)</sup>	MDN <sup>(6)</sup>	MDX <sup>(7)</sup>	MIID <sup>(8)</sup>	TQ <sup>(9)</sup>	
<b>FFQ4 D2.0-5-0.75-12</b>	2.000	1.136	.059	.394	5	2.000	1.850	.750	A	2.6	3.136	3.961	FFQ4 SOMT 120516HP	42.50	.88
<b>FFQ4 D2.5-6-1.00-12</b>	2.500	1.636	.059	.394	6	2.000	2.252	1.000	A	1.7	4.136	4.961	FFQ4 SOMT 120516HP	42.50	1.30
<b>FFQ4 D3.0-7-1.00-12</b>	3.000	2.136	.059	.394	7	2.000	2.252	1.000	A	1.3	5.136	5.961	FFQ4 SOMT 120516HP	42.50	1.72
<b>FFQ4 D4.0-8-1.50-12</b>	4.000	3.136	.059	.394	8	2.000	3.228	1.500	B	.9	7.136	7.961	FFQ4 SOMT 120516HP	42.50	2.92
<b>FFQ4 D5.0-10-1.50-12</b>	5.000	4.110	.059	.394	10	2.000	3.799	1.500	B	.7	9.110	9.961	FFQ4 SOMT 120516HP	42.50	5.51

• To generate a straight surface without cusps, the width of cut must not exceed DC • Radius for programming: for insert SOMT .118" for insert SOMW .157" • When mounting insert SOMW, APMX=.047" • For slot milling or machining with high tool overhang, the maximum depth of cut should be reduced by 50%

<sup>(1)</sup> Cutting diameter maximum

<sup>(2)</sup> Maximum plunging width

<sup>(3)</sup> Number of inserts

<sup>(4)</sup> For adaptation options, see page

<sup>(5)</sup> Maximum ramping angle

<sup>(6)</sup> Machinable diameter minimum for interpolation

<sup>(7)</sup> Machinable diameter maximum for interpolation

<sup>(8)</sup> Master insert identification

<sup>(9)</sup> Recommended tightening torque (lbf\*in) for insert screw

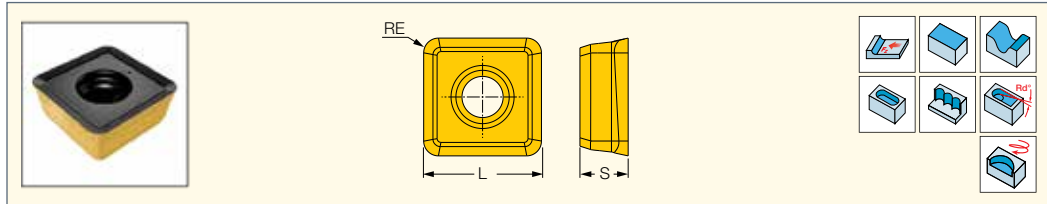
### Spare Parts

Designation				
<b>FFQ4 D2.0-5-0.75-12</b>	SR M4X0.7-L9.6 IP15	SW6-T	BLD IP15/S7	SR UNF 3/8X1.5 B18.3
<b>FFQ4 D2.5-6-1.00-12</b>	SR M4X0.7-L9.6 IP15	SW6-T	BLD IP15/S7	SR UNF 1/2X1¼ B18.3
<b>FFQ4 D3.0-7-1.00-12</b>	SR M4X0.7-L9.6 IP15	SW6-T	BLD IP15/S7	SR UNF 1/2X1¼ B18.3
<b>FFQ4 D4.0-8-1.50-12</b>	SR M4X0.7-L9.6 IP15	SW6-T	BLD IP15/S7	
<b>FFQ4 D5.0-10-1.50-12</b>	SR M4X0.7-L9.6 IP15	SW6-T	BLD IP15/S7	



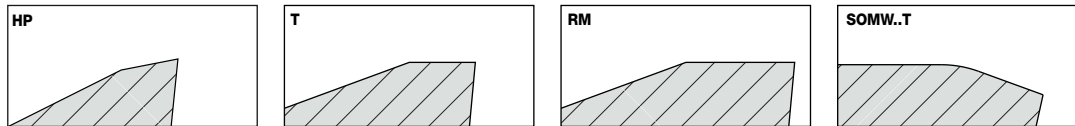


**FFQ4 SOMT/W 1205**  
Single-Sided Square Inserts with 4 Cutting Edges for Fast Feed Milling



Designation	Dimensions			Tough ← Hard						Recommended Machining Data	
	L	S	RE	IC882	IC28	IC830	IC5820	IC808	IC810	ap (inch)	fz (inch/t)
FFQ4 SOMT 1205RM-HP	.500	.205	.0630	●		●				.020-.059	.0157-.0709
FFQ4 SOMT 1205RM-T	.500	.205	.0630	●		●		●		.020-.059	.0157-.0787
FFQ4 SOMT 120516HP	.500	.205	.0630	●		●	●	●		.020-.059	.0157-.0709
FFQ4 SOMT 120516HP-P	.500	.205	.0630		●	●		●		.020-.059	.0157-.0709
FFQ4 SOMT 120516T	.500	.205	.0630			●		●		.020-.059	.0157-.0787
FFQ4 SOMT 120516T20	.500	.205	.0630			●			●	.020-.059	.0157-.0787
FFQ4 SOMW 120530T	.512	.209	.1181					●		.020-.059	.0157-.0590

• For side plunging, the initial cutting feed is .004 inch/t • T- for steel, ferritic and martensitic stainless steel and cast iron • RM-.. type for interrupted cut and machining near straight shoulders wall • HP-for austenitic stainless steel and high temperature alloys • HP-P - Positive rake face, used for aluminum • T20- for grey and nodular cast iron • SOMW-T flat insert for interrupted and hard material up to 60 HRC



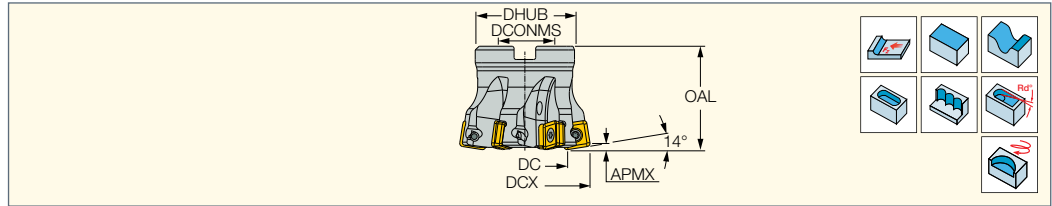
**Average Cutting Data for FFQ4-12 Fast Feed Cutters**

ISO class DIN/ ISO 513	Workpiece Material					Insert type	Carbide grade	D.O.C. ap [inch]		Cutting speed vc [sfm]	Feed fz [ipt]		Coolant
	Description	ISCAR mat. group*	Hardness, HB	Typical representative AISI/ SAE/ ASTM	DIN W.-Nr.			Recommended	Range		Recommended	Range	
P	Non-alloy steel	1-5	130-180	1020	1.0402	T / RM-T	IC808	.047	.016-.059	492-722	.059	.02-.08	Dry
							IC830			459-656			
							IC808			459-656			
	Low alloy steel	6-8	260-300	4340	1.6582		IC830			394-590			
							IC808			426-590			
							IC830			394-525			
	High alloy steel	10-11	200-220	H13	1.2344		IC808			394-578			
							IC830			328-492			
							IC808			361-525			
Ferritic/martensitic stainless steel	12-13	200	420	1.4021	IC830	328-459	.055	.02-.071	Dry/Wet				
M	Austenitic stainless steel	14	200	304L	1.4306	HP/ RM-HP	IC830	.039	.016-.059	260-394	.039	.02-.059	Wet
							IC808			330-524			
							IC5820			320-524			
							IC882			262-426			
K	Grey cast iron	15-16	250	Class 40	0.6025 (GG25)	T20 / T	IC810	.059	.016-.059	490-720	.059	.02-.08	Dry
	Nodular cast iron	17-18	200	Class 65-45-12	0.7050 (GGG50)								
S	High temperature alloys and titanium	33-35	340	Inconel 718	2.4668	HP/ RM-HP	IC830	.039	.016-.059	82-98	.020	.02-.04	Wet
							IC808			82-115			
							IC5820			82-115			
		36-37	HRC 35-40	AMS R56400	3.7165 (Ti6Al4V ELI)		IC882			65-98			
							IC830			65-98			
							IC808			115-196			
							IC5820			82-131			
IC882	82-115												
H	Hardened steel	38	HRC 45-49	HARDOX 450 plate D2	1.2379	SOMW	IC808	.039	.016-.047	148-214	.020	.016-.04	Dry
			HRC 58-62							131-196			

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

**FFQ4 D-17**

Fast Feed Face Mills  
Carrying Single-Sided Inserts  
with 4 Cutting Edges



Designation	DCX <sup>(2)</sup>	DC	APMX	AE <sup>(3)</sup>	CICT <sup>(4)</sup>	OAL	DCONMS	DHUB	RMPX <sup>(5)</sup>	MDN <sup>(6)</sup>	MDX <sup>(7)</sup>	CSP <sup>(8)</sup>	Arbor	MIID <sup>(9)</sup>	TQ <sup>(10)</sup>	
<b>FFQ4 D3.00-06-1.25-17</b>	3.000	1.850	.1180	.574	6	2.000	1.250	2.874	1.2	4.850	5.961	1	A	FFQ4 SOMT 170625T	80.00	1.79
<b>FFQ4 D4.00-07-1.50-17</b>	4.000	2.850	.1180	.574	7	2.000	1.500	3.228	.8	6.850	7.961	1	A	FFQ4 SOMT 170625T	80.00	2.91
<b>FFQ4 D5.00-08-1.50-17</b>	5.000	3.850	.1180	.574	8	2.250	1.500	3.228	.6	8.850	9.961	1	B	FFQ4 SOMT 170625T	80.00	4.44
<b>FFQ4 D6.00-10-2.00-17</b> <sup>(1)</sup>	6.000	4.850	.1180	.574	10	2.500	2.000	5.000	.4	10.850	11.961	0	B	FFQ4 SOMT 170625T	80.00	9.81

• To generate a straight surface without cusps, the width of cut must not exceed DC • Radius for programming: for insert SOMT .217" for insert SOMW .252" • When mounting insert SOMW, APMX=.098" • For slot milling or machining with high tool overhang, the maximum depth of cut should be reduced by 50%

<sup>(1)</sup> For internal coolant, use a matching coolant set (should be ordered separately)

<sup>(2)</sup> Cutting diameter maximum

<sup>(3)</sup> Maximum plunging width

<sup>(4)</sup> Number of inserts

<sup>(5)</sup> Maximum ramping angle

<sup>(6)</sup> Machinable diameter minimum for interpolation

<sup>(7)</sup> Machinable diameter maximum for interpolation

<sup>(8)</sup> 0 - Without coolant supply, 1 - With coolant supply

<sup>(9)</sup> Master insert identification

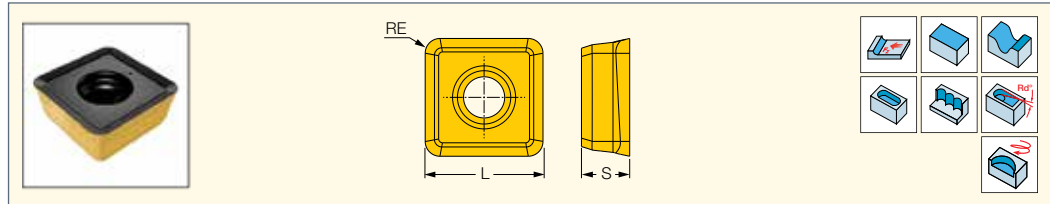
<sup>(10)</sup> Recommended tightening torque (lb\*in) for insert screw

**Spare Parts**

Designation			
<b>FFQ4 D3.00-06-1.25-17</b>	SR M5-14 IP20	BLD IP20/S7	SW6-T
<b>FFQ4 D4.00-07-1.50-17</b>	SR M5-14 IP20	BLD IP20/S7	SW6-T-SH
<b>FFQ4 D5.00-08-1.50-17</b>	SR M5-14 IP20	BLD IP20/S7	SW6-T
<b>FFQ4 D6.00-10-2.00-17</b>	SR M5-14 IP20	BLD IP20/S7	SW6-T

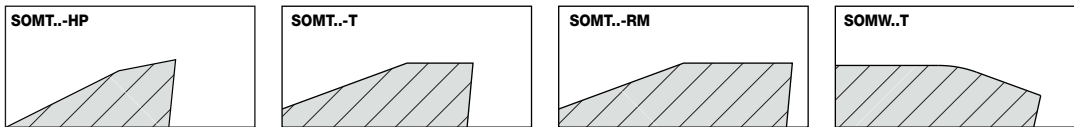


**FFQ4 SOMT/W 1706**  
Single-Sided Square Inserts  
with 4 Cutting Edges for  
Fast Feed Milling



Designation	Dimensions			Tough ← Hard				Recommended Machining Data	
	L	S	RE	IC882	IC830	IC808	IC810	ap (inch)	fz (inch/t)
FFQ4 SOMT 1706RM-HP	.689	.236	.0984		•			.047-.098	.0157-.0472
FFQ4 SOMT 1706RM-T	.689	.236	.0984		•	•		.047-.118	.0157-.0787
FFQ4 SOMT 170625HP	.689	.236	.0984	•	•	•		.047-.118	.0157-.0590
FFQ4 SOMT 170625T	.689	.236	.0984		•	•	•	.047-.118	.0157-.0787
FFQ4 SOMW 170640T	.709	.240	.1575			•		.047-.118	.0157-.0590

• For side plunging, the initial cutting feed is .004 inch/t • T type for steel, ferritic and martensitic stainless steel and cast iron • RM-.. type for interrupted cut and machining near straight shoulders wall • HP type for austenitic stainless steel and high temperature alloys • SOMW-T flat insert for interrupted and hard material up to 60 HRC



**Average Cutting Data for FFQ4-17 Fast Feed Cutters**

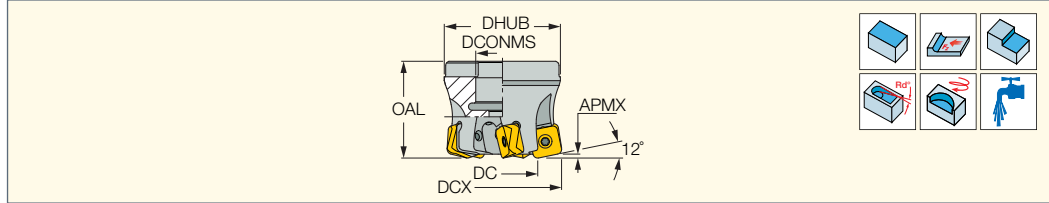
ISO class DN/ISO 513	Workpiece Material					Insert type	Carbide grade	D.O.C. ap (inch)		Cutting speed vc (sfm)	Feed fz (ipt)		Coolant
	Description	ISCAR mat. group*	Hardness, HB	Typical representative				Recommended	Range		Recommended	Range	
				AISI/SAE /ASTM	DIN W.-Nr.								
P	Non-alloy steel	1-5	130-180	1020	1.0402	T / RM-T	IC808	.098	.016-.118	492-722	.060	.02-.08	Dry
	Low alloy steel	6-8	260-300	4340	1.6582		IC830			459-656	.063	.02-.08	Dry/Wet
		9	HRC 35-42**	3135	1.5710		IC808			459-656	.060	.02-.08	Dry
	High alloy steel	10-11	200-220	H13	1.2344		IC830			394-590	.063	.02-.08	Dry/Wet
							IC808			426-590	.060	.02-.071	Dry
							IC830			394-525	.060	.02-.071	Dry/Wet
	Ferritic/martensitic stainless steel	12-13	200	420	1.4021		IC808			394-578	.051	.02-.071	Dry
M	Austenitic stainless steel	14	200	304L	1.4306	HP/ RM-HP	IC830	.080	.016-.118	260-394	.020	.02-.059	Wet
							IC808			330-524	.020	.02-.059	
							IC5820			320-524	.020	.02-.063	
							IC882			262-426	.020	.02-.071	
K	Gray cast iron	15-16	250	Class 40	0.6025 (GG25)	T / RM-T	IC810	.118	.016-.118	490-720	.059	.02-.08	Dry
	Nodular cast iron	17-18	200	Class 65-45-12	0.7050 (GGG50)		IC810			390-650	.02-.08		
S	High temperature alloys and Titanium	33-35	340	Inconel 718	2.4668	HP/ RM-HP	IC830	.060	.016-.118	82-98	.020	.02-.04	Wet
							IC808			82-115		.02-.04	
							IC5820			82-115		.02-.04	
		36-37	HRC 35-40	AMS R56400	3.7165 (Ti6Al4V ELI)		IC882			65-98	.024	.02-.04	
							IC830			65-98		.02-.04	
							IC808			115-196		.02-.04	
							IC5820			82-131		.02-.04	
H	Hardened steel	38	HRC 45-49	HARDOX 450 plate	SOMW	IC808	.040	.016-.098	148-214	.020	.016-.04	Dry	
			HRC 58-62	D2			1.2379	.020	.016-.098	131-196	.016		.016-.02

\* ISCAR material group in accordance with VDI 3323 standard \*\* Quenched and tempered

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

**FFQ8-12**

Fast Feed Face Mills Carrying Double-Sided Inserts with 8 Cutting Edges







Designation	DC	DCX <sup>(1)</sup>	APMX	CICT <sup>(2)</sup>	OAL	DHUB	DCONMS	Arbor	RMPX <sup>(3)</sup>	MDN <sup>(4)</sup>	MDX <sup>(5)</sup>	TQ <sup>(6)</sup>	MID <sup>(7)</sup>	Lbs
FFQ8 D2.00-05-0.75-12	1.236	2.000	.0600	5	1.625	1.850	.750	A	.3	3.236	3.960	42.50	FFQ8 SZMU 120520	1.61
FFQ8 D2.50-06-1.00-12	1.736	2.500	.0600	6	1.750	2.250	1.000	A	.2	4.236	4.960	42.50	FFQ8 SZMU 120520	1.94
FFQ8 D3.00-07-1.00-12	2.236	3.000	.0600	7	1.750	2.250	1.000	A	.2	5.236	5.960	42.50	FFQ8 SZMU 120520	3.64
FFQ8 D4.00-08-1.50-12	3.236	4.000	.0600	8	2.000	3.230	1.500	B	.1	7.236	7.960	42.50	FFQ8 SZMU 120520	6.17

- Radius for programming .142" • To generate a straight surface without cusps, the width of cut most not exceed DC • For slot milling or machining with high tool overhang, the maximum depth of cut should be reduced by 30%

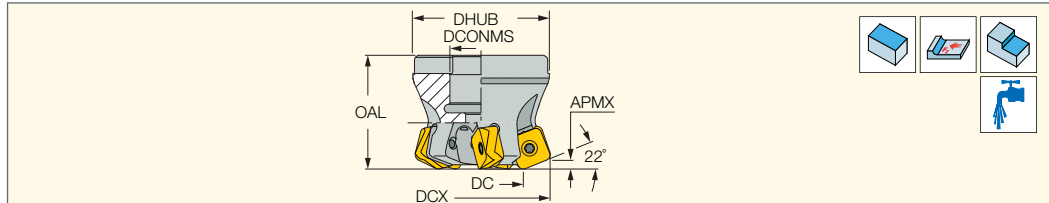
- (1) Cutting diameter maximum
- (2) Number of inserts
- (3) Maximum ramping angle
- (4) Machinable diameter minimum for interpolation
- (5) Machinable diameter maximum for interpolation
- (6) Recommended tightening torque (lbfin) for insert screw
- (7) Master insert identification

**Spare Parts**

Designation				
FFQ8 D2.00-05-0.75-12	SR M4X0.7-L11.5 IP15	BLD IP15/S7	SW6-T-SH	SR UNF 3/8X1 B18.3
FFQ8 D2.50-06-1.00-12	SR M4X0.7-L11.5 IP15	BLD IP15/S7	SW6-T-SH	SR UNF 1/2X20X1 B18.3
FFQ8 D3.00-07-1.00-12	SR M4X0.7-L11.5 IP15	BLD IP15/S7	SW6-T-SH	SR UNF 1/2X20X1 B18.3
FFQ8 D4.00-08-1.50-12	SR M4X0.7-L11.5 IP15	BLD IP15/M7	SW6-T-SH	

**MFQ8-12**

Moderate Feed Face Mills Carrying Double-Sided Inserts with 8 Cutting Edges







Designation	DC	DCX <sup>(1)</sup>	APMX	CICT <sup>(2)</sup>	OAL	DHUB	DCONMS	Arbor	TQ <sup>(3)</sup>	MID <sup>(4)</sup>	Lbs
MFQ8 D2.00-05-0.75-12	1.276	2.000	.1180	5	1.625	1.850	.750	A	42.50	FFQ8 SZMU 120520	1.48
MFQ8 D2.50-06-1.00-12	1.776	2.500	.1180	6	1.750	2.250	1.000	A	42.50	FFQ8 SZMU 120520	2.43
MFQ8 D3.00-07-1.00-12	2.276	3.000	.1180	7	1.750	2.250	1.000	A	42.50	FFQ8 SZMU 120520	3.38
MFQ8 D4.00-08-1.50-12	3.276	4.000	.1180	8	2.000	3.230	1.500	B	42.50	FFQ8 SZMU 120520	4.41

- Radius for programming .197" • To generate a straight surface without cusps, the width of cut most not exceed DC • For slot milling or machining with high tool overhang, the maximum depth of cut should be reduced by 30%

- (1) Cutting diameter maximum
- (2) Number of inserts
- (3) Recommended tightening torque (lbfin) for insert screw
- (4) Master insert identification

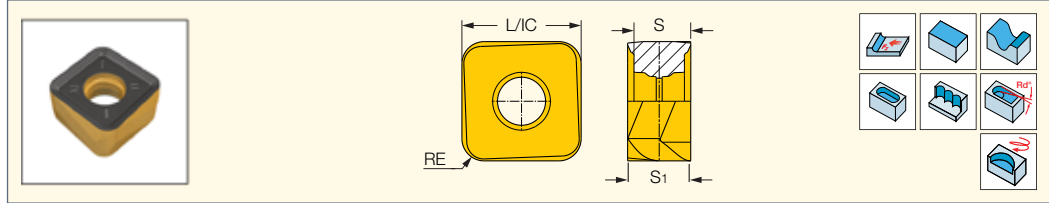
**Spare Parts**

Designation				
MFQ8 D2.00-05-0.75-12	SR M4X0.7-L11.5 IP15	BLD IP15/S7	SW6-T-SH	SR UNF 3/8X1 B18.3
MFQ8 D2.50-06-1.00-12	SR M4X0.7-L11.5 IP15	BLD IP15/S7	SW6-T-SH	SR UNF 1/2X20X1 B18.3
MFQ8 D3.00-07-1.00-12	SR M4X0.7-L11.5 IP15	BLD IP15/S7	SW6-T-SH	SR UNF 1/2X20X1 B18.3
MFQ8 D4.00-08-1.50-12	SR M4X0.7-L11.5 IP15	BLD IP15/M7	SW6-T-SH	



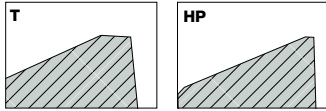
**FFQ8 SZMU**

Double-Sided Square  
Inserts with 8 Cutting Edges  
for High Feed Milling



Designation	Dimensions				Tough ← Hard				Recommended Machining Data  f <sub>z</sub> (inch/t)
	L	S	S1	RE	IC882	IC830	IC808	IC810	
<b>FFQ8 SZMU 120520HP</b>	.472	.230	.256	.0787	•	•	•	•	.0079-.0590
<b>FFQ8 SZMU 120520T</b>	.472	.230	.256	.0787		•	•	•	.0157-.0590

• For side plunging, the initial cutting feed is .004 inch/t • T- for steel, ferritic and martensitic stainless steel, cast iron and hardened steel • HP - for austenitic stainless steel and high temperature alloys



**Average Cutting Data for FFQ8 Fast Feed Cutters**

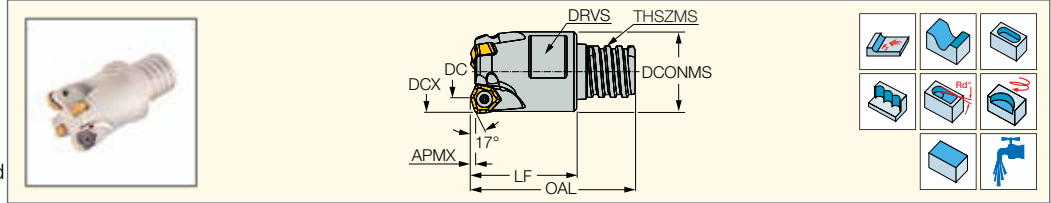
Workpiece material						Insert type	Carbide grade	Cutting speed v <sub>c</sub> [sfm]	Fast feed cutters (FF)		Moderate feed (MF)		Coolant
ISO class DIN/ ISO 513	Description	ISCAR mat. group*	Hardness, HB	AISI/SAE/ ASTM	DIN W.-Nr.				D.O.C a <sub>p</sub> [inch]	Feed f <sub>z</sub> [Inch/tooth]	D.O.C a <sub>p</sub> [inch]	Feed f <sub>z</sub> [Inch/tooth]	
<b>P</b>	Non-alloy steel	1-5	130-180	1020	1.0402	T	IC808	490-720	.0196-.059	.0157-.059	.0196-.118	.0078-.0393	Dry
		6-8	260-300	4340	1.6582		IC830	460-660		.0157-.059		.0078-.0393	Dry/Wet
	Low alloy steel	9	35-42** HRC	3135	1.5710		IC808	460-660		.0157-.059		.0078-.0393	Dry/Wet
							IC830	390-590		.0157-.059		.0078-.0393	Dry
	High alloy steel	10-11	200-220	H13	1.2344		IC808	430-590		.0157-.059		.0078-.0393	Dry/Wet
							IC830	390-520		.0157-.059		.0078-.0393	Dry/Wet
							IC808	390-560		.0157-.059		.0078-.0393	Dry
							IC830	330-490		.0157-.059		.0078-.0393	Dry/Wet
Ferritic/ martensitic stainless steel	12-13	200	420	1.4021	IC808	360-520	.0157-.059	.0078-.0393	Dry				
<b>M</b>	Austenitic	14	200	304L	1.4306	HP	IC882	230-420	.0196-.059	.0078-.0314	.0196-.118	.0078-.0196	Wet
						IC808	330-520	.0078-.0314		.0078-.0196			
						IC830	260-450	.0078-.0314		.0078-.0196			
<b>K</b>	Grey cast iron	15-16	250	Class 40	0.6025 (GG25)	T	IC810	490-720	.0196-.059	.0157-.059	.0196-.118	.0157-.0314	Dry
	Nodular cast iron	17-18	200	Class 65-45-12	0.7050 (GGG50)		IC810	390-650		.0157-.059		.0157-.0314	
<b>S</b>	High temperature alloys and titanium alloys	31-32	220	330	1.4864	HP	IC882	130-200	.0196-.059	.0078-.0314	.0196-.118	.0078-.0196	Wet
		33-35	340	Inconel 718	2.4668		IC808	130-250		.0078-.0314		.0078-.0196	
							IC830	130-240		.0078-.0314		.0078-.0196	
							IC882	65-100		.0078-.0314		.0078-.0196	
		36-37	30-32 HRC	AMS R56400	3.7165		IC808	80-130		.0078-.0314		.0078-.0196	
							IC830	75-110		.0078-.0314		.0078-.0196	
							IC882	100-160		.0078-.0314		.0078-.0196	
IC808	130-190	.0078-.0314	.0078-.0196										
IC830	110-180	.0078-.0314	.0078-.0196										
<b>H</b>	Hardened steel	38	45-49 HRC	HARDOX 450 plate	T	IC808	160-245	.0196-.059	.0078-.0196	.0196-.118	.0078-.0196	Dry	

\* ISCAR material group in accordance with VDI 3323 standard \*\* Quenched and tempered

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

**FF EWX-MM**

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



Designation	DCX <sup>(1)</sup>	DC	APMX	CICT <sup>(2)</sup>	THSZMS	LF	OAL	DCONMS	DRVS <sup>(3)</sup>	TQ <sup>(4)</sup>	RMPX <sup>(5)</sup>	MDN <sup>(6)</sup>	MDX <sup>(7)</sup>	MIID <sup>(8)</sup>	Lbs
<b>FF EWX D0.62-2-MMT10-04</b>	.625	.330	.031	2	T10	.750	1.210	.600	.500	8.00	5.0	.960	1.221	H600 WXCUC 040310HP	.05
<b>FF EWX D16-2-MMT10-04</b>	.630	.339	.031	2	T10	.768	1.230	.598	.472	7.97	5.0	.969	1.220	H600 WXCUC 040310HP	.05
<b>FF EWX D0.75-3-MMT12-04</b>	.750	.460	.031	3	T12	1.000	1.540	.720	.562	8.00	5.0	1.210	1.461	H600 WXCUC 040310HP	.10
<b>FF EWX D20-3-MMT12-04</b>	.787	.496	.031	3	T12	.984	1.528	.740	.591	7.97	4.8	1.283	1.535	H600 WXCUC 040310HP	.11
<b>FF EWX D25-4-MMT15-04</b>	.984	.693	.031	4	T15	1.181	1.850	.941	.748	7.97	3.3	1.677	1.929	H600 WXCUC 040310HP	.21
<b>FF EWX D25-3-MMT15-05</b>	.984	.591	.039	3	T15	1.181	1.850	.941	.748	17.70	5.0	1.575	1.929	H600 WXCUC 05T312T	.20

- 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

<sup>(1)</sup> Cutting diameter maximum

<sup>(2)</sup> Number of inserts

<sup>(3)</sup> Width across flats (wrench should be ordered separately)

<sup>(4)</sup> Recommended tightening torque (lb\*in) for insert screw



<sup>(5)</sup> Maximum ramping angle

<sup>(6)</sup> Machinable diameter minimum for interpolation

<sup>(7)</sup> Machinable diameter maximum for interpolation

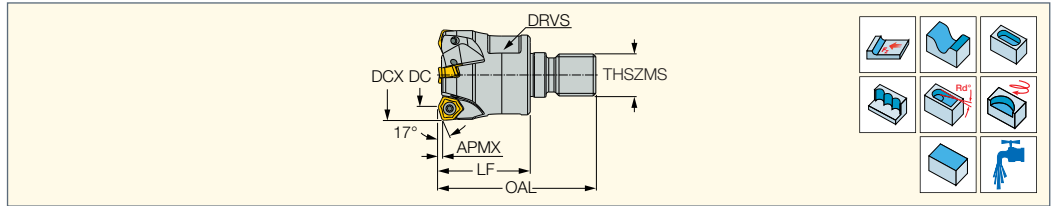
<sup>(8)</sup> Master insert identification

**Spare Parts**

Designation		
<b>FF EWX D0.62-2-MMT10-04</b>	SR M2.5X6-T7-60	T-7/51
<b>FF EWX D16-2-MMT10-04</b>	SR M2.5X6-T7-60	T-7/51
<b>FF EWX D0.75-3-MMT12-04</b>	SR M2.5X6-T7-60	T-7/51
<b>FF EWX D20-3-MMT12-04</b>	SR M2.5X6-T7-60	T-7/51
<b>FF EWX D25-4-MMT15-04</b>	SR M2.5X6-T7-60	T-7/51
<b>FF EWX D25-3-MMT15-05</b>	SR 10508600	T-9/51

**FF EWX-M**

Fast Feed Endmills with  
FLEXFIT Threaded Connection  
Carrying Double-Sided Inserts  
with 6 Cutting Edges



Designation	DCX <sup>(1)</sup>	DC	APMX	CICT <sup>(2)</sup>	LF	OAL	THSZMS	RMPX <sup>o(3)</sup>	MDN <sup>(4)</sup>	MDX <sup>(5)</sup>	DRVS <sup>(6)</sup>	MIID <sup>(7)</sup>	TQ <sup>(8)</sup>	TQ_3 <sup>(9)</sup>	Lbs
<b>FF EWX D20-3-M10-04</b>	.787	.496	.031	3	.984	1.772	M10	4.8	1.283	1.535	.591	H600 WXCU 040310HP	8.00	260	.10
<b>FF EWX D25-4-M12-04</b>	.984	.693	.031	4	1.181	2.047	M12	3.3	1.677	1.929	.748	H600 WXCU 040310HP	8.00	295	.20
<b>FF EWX D25-3-M12-05</b>	.984	.591	.039	3	1.181	2.047	M12	5.0	1.575	1.929	.748	H600 WXCU 05T312T	17.70	295	.19
<b>FF EWX D32-4-M16-05</b>	1.260	.866	.039	4	1.378	2.362	M16	4.0	2.126	2.480	.984	H600 WXCU 05T312T	17.70	355	.38
<b>FF EWX D35-4-M16-05</b>	1.378	.984	.039	4	1.378	2.362	M16	3.5	2.362	2.717	.984	H600 WXCU 05T312T	17.70	355	.42
<b>FF EWX D40-5-M16-05</b>	1.575	1.181	.039	5	1.575	2.559	M16	2.8	2.756	3.110	.984	H600 WXCU 05T312T	17.70	355	.57
<b>FF EWX D32-3-M16-07</b>	1.260	.748	.059	3	1.378	2.362	M16	6.3	2.008	2.480	.984	H600 WXCU 070515HP	42.50	355	.35
<b>FF EWX D40-4-M16-07</b>	1.575	1.063	.059	4	1.575	2.559	M16	4.2	2.638	3.110	.984	H600 WXCU 070515HP	42.50	355	.52

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

<sup>(1)</sup> Cutting diameter maximum

<sup>(2)</sup> Number of inserts

<sup>(3)</sup> Maximum ramping angle

<sup>(4)</sup> Machinable diameter minimum for interpolation

<sup>(5)</sup> Machinable diameter maximum for interpolation





<sup>(6)</sup> Clamping wrench size

<sup>(7)</sup> Master insert identification

<sup>(8)</sup> Recommended tightening torque (lb\*in) for insert screw

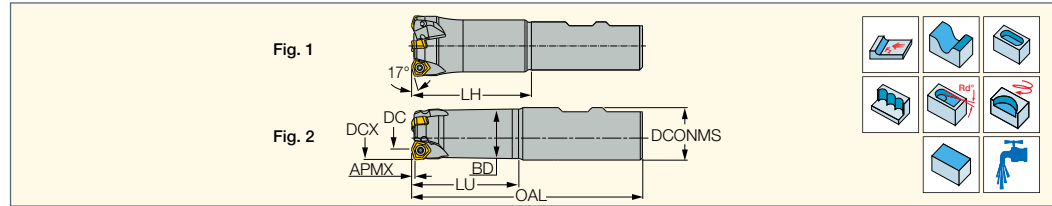
<sup>(9)</sup> Tool tightening torque (lbfxin)

**Spare Parts**

Designation				
<b>FF EWX D20-3-M10-04</b>	SR M2.5X6-T7-60	T-7/51		
<b>FF EWX D25-4-M12-04</b>	SR M2.5X6-T7-60	T-7/51		
<b>FF EWX D25-3-M12-05</b>	SR 10508600	T-9/51		
<b>FF EWX D32-4-M16-05</b>	SR 10508600	T-9/51		
<b>FF EWX D35-4-M16-05</b>	SR 10508600	T-9/51		
<b>FF EWX D40-5-M16-05</b>	SR 10508600	T-9/51		
<b>FF EWX D32-3-M16-07</b>	SR 34-535-SN		BLD T15/S7	SW6-T-SH
<b>FF EWX D40-4-M16-07</b>	SR 34-535-SN		BLD T15/S7	SW6-T-SH

**FF EWX**

Fast Feed Endmills Carrying  
Double-Sided Inserts  
with 6 Cutting Edges



Designation	DCX <sup>(1)</sup>	DC	APMX	CICT <sup>(2)</sup>	LU	LH	OAL	BD	DCONMS	Shank <sup>(3)</sup>	RMPX <sup>(4)</sup>	MDN <sup>(5)</sup>	MDX <sup>(6)</sup>	TQ <sup>(7)</sup>	MIID <sup>(8)</sup>	Fig.	
FF EWXD0.62-2-1.5W0.62-04	.625	.333	.030	2	1.50	1.600	3.550	.580	.625	W	5.0	.958	1.211	8.00	H600 WXCU 040310T	2	.25
FF EWXD0.62-2-2.0W0.75-04	.625	.333	.030	2	2.00	2.250	4.350	.580	.750	W	5.0	.958	1.211	8.00	H600 WXCU 040310T	2	.38
FF EWXD0.62-2-3.0W0.75-04	.625	.333	.030	2	3.00	3.250	5.350	.580	.750	W	5.0	.958	1.211	8.00	H600 WXCU 040310T	2	.00
FF EWXD0.75-3-1.5W0.75-04	.750	.458	.030	3	1.50	1.600	3.650	.700	.750	W	5.0	1.208	1.461	8.00	H600 WXCU 040310T	2	.37
FF EWXD0.75-3-2.5W0.75-04	.750	.458	.030	3	2.50	2.600	4.650	.700	.750	W	5.0	1.208	1.461	8.00	H600 WXCU 040310T	2	.47
FF EWXD0.75-3-3.5W0.75-04	.750	.458	.030	3	3.50	3.600	5.650	.700	.750	W	5.0	1.208	1.461	8.00	H600 WXCU 040310T	2	.57
FF EWXD1.00-3-2.0W1.00-05	1.000	.610	.039	3	2.00	2.120	4.450	.950	1.000	W	5.0	1.610	1.961	17.70	H600 WXCU 05T312T	2	.82
FF EWXD1.00-3-3.0W1.00-05	1.000	.610	.039	3	3.00	3.120	5.450	.950	1.000	W	5.0	1.610	1.961	17.70	H600 WXCU 05T312T	2	.99
FF EWXD1.00-3-5.0W1.00-05	1.000	.610	.039	3	5.00	5.120	7.450	.950	1.000	W	5.0	1.610	1.961	17.70	H600 WXCU 05T312T	2	1.35
FF EWXD1.25-4-2.5W1.00-05	1.250	.860	.039	4	2.50	2.620	4.950	1.078	1.000	W	4.0	2.110	2.461	17.70	H600 WXCU 05T312T	1	1.04
FF EWXD1.25-4-2.5W1.25-05	1.250	.860	.039	4	2.50	2.620	4.950	1.200	1.250	W	4.0	2.110	2.461	17.70	H600 WXCU 05T312T	2	1.39
FF EWXD1.25-4-4.0W1.00-05	1.250	.860	.039	4	4.00	4.120	6.450	1.078	1.000	W	4.0	2.110	2.461	17.70	H600 WXCU 05T312T	1	1.39
FF EWXD1.25-4-4.0W1.25-05	1.250	.860	.039	4	4.00	4.120	6.450	1.200	1.250	W	4.0	2.110	2.461	17.70	H600 WXCU 05T312T	2	1.80
FF EWXD1.25-4-6.0W1.25-05	1.250	.860	.039	4	6.00	6.120	8.450	1.200	1.250	W	4.0	2.110	2.461	17.70	H600 WXCU 05T312T	2	2.33
FF EWXD1.50-5-2.5W1.25-05	1.500	1.110	.039	5	2.50	2.620	4.950	1.328	1.250	W	3.0	2.610	2.961	17.70	H600 WXCU 05T312T	1	1.54
FF EWXD1.50-5-4.0W1.25-05	1.500	1.110	.039	5	4.00	4.120	6.450	1.328	1.250	W	3.0	2.610	2.961	17.70	H600 WXCU 05T312T	1	2.06
FF EWXD1.50-5-6.0W1.25-05	1.500	1.110	.039	5	6.00	6.120	8.450	1.328	1.250	W	3.0	2.610	2.961	17.70	H600 WXCU 05T312T	1	2.78
FF EWXD1.50-5-7.5W1.50-05	1.500	1.110	.039	5	7.50	7.620	10.350	1.450	1.500	W	3.0	2.610	2.961	17.70	H600 WXCU 05T312T	2	4.06
FF EWXD1.25-3-2.5W1.25-07	1.250	.740	.059	3	2.50	2.620	4.950	1.200	1.250	W	6.3	1.990	2.461	42.50	H600 WXCU 070515T	2	1.28
FF EWXD1.25-3-4.0W1.25-07	1.250	.740	.059	3	4.00	4.120	6.450	1.200	1.250	W	6.3	1.990	2.461	42.50	H600 WXCU 070515T	2	1.66
FF EWXD1.25-3-6.0W1.25-07	1.250	.740	.059	3	6.00	6.120	8.450	1.200	1.250	W	6.3	1.990	2.461	42.50	H600 WXCU 070515T	2	2.16
FF EWXD1.50-4-2.5W1.25-07	1.500	.990	.059	4	2.50	2.590	4.950	1.330	1.250	W	4.6	2.490	2.961	42.50	H600 WXCU 070515T	1	1.30
FF EWXD1.50-4-4.0W1.25-07	1.500	.990	.059	4	4.00	4.090	6.450	1.330	1.250	W	4.6	2.490	2.961	42.50	H600 WXCU 070515T	1	2.04

• For machining recommendations and radius for programming, refer to information of related insert • To generate a straight surface without cusps, the width of cut must not exceed DC

(1) Cutting diameter maximum

(2) Number of inserts

(3) W-Weldon

(4) Maximum ramping angle

(5) Machinable diameter minimum for interpolation

(6) Machinable diameter maximum for interpolation

(7) Recommended tightening torque (lbf\*in) for insert screw

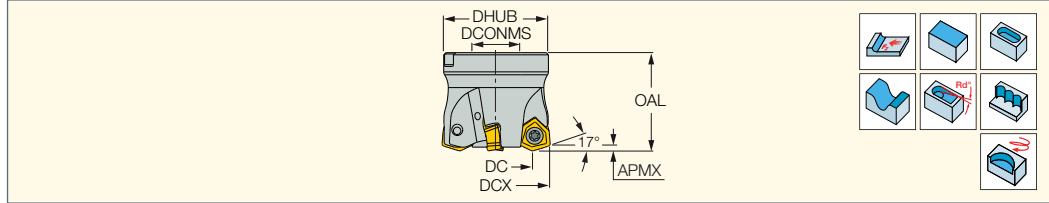
(8) Master insert identification

**Spare Parts**

Designation				
FF EWX D...-04	SR M2.5X6-T7-60	T-7/51		
FF EWX D...-05	SR 10508600	T-9/51		
FF EWX D...-07	SR 34-535-SN		BLD T15/S7	SW6-T-SH



**FF FWX**  
Fast Feed Face Mills Carrying  
Double-Sided Inserts  
with 6 Cutting Edges



Designation	DC	DCX <sup>(2)</sup>	APMX	CICT <sup>(3)</sup>	OAL	DHUB	DCONMS	Arbor <sup>(4)</sup>	RMPX <sup>(5)</sup>	MDN <sup>(6)</sup>	MDX <sup>(7)</sup>	CSP <sup>(8)</sup>	MIID <sup>(9)</sup>	TQ <sup>(10)</sup>	
FF FWX D1.50-05-0.50-05	1.110	1.500	.039	5	1.250	1.378	.500	A	3.0	2.610	2.961	1	H600 WXCUC 05T312T	17.70	.36
FF FWX D2.00-06-0.75-05	1.610	2.000	.039	6	1.500	1.772	.750	A	2.0	3.610	3.961	1	H600 WXCUC 05T312T	17.70	.76
FF FWX D1.50-04-0.50-07	.990	1.500	.059	4	1.250	1.378	.500	A	4.6	2.490	2.961	1	H600 WXCUC 070515HP	42.50	.32
FF FWX D2.00-05-0.75-07	1.490	2.000	.059	5	1.500	1.772	.750	A	2.5	3.490	3.961	1	H600 WXCUC 070515HP	42.50	.70
FF FWX D2.50-06-1.00-07	1.990	2.500	.059	6	1.750	2.402	1.000	A	2.1	4.490	4.961	1	H600 WXCUC 070515HP	42.50	1.42
FF FWX D3.00-07-1.25-07	2.528	3.000	.059	7	2.000	2.850	1.250	A	1.7	5.528	5.961	1	H600 WXCUC 070515HP	42.50	2.46
FF FWX D4.00-08-1.50-07	3.488	4.000	.059	8	2.000	3.110	1.500	B	1.2	7.488	7.961	1	H600 WXCUC 070515HP	42.50	3.20
FF FWX D2.00-04-0.75-08	1.370	2.000	.079	4	1.750	1.772	.750	A	4.7	3.370	3.961	1	H600 WXCUC 080612T	80.00	.77
FF FWX D2.50-05-1.00-08	1.870	2.500	.079	5	1.750	2.402	1.000	A	3.3	4.370	4.961	1	H600 WXCUC 080612T	80.00	1.30
FF FWX D3.00-06-1.25-08	2.370	3.000	.079	6	2.000	2.850	1.250	A	2.5	5.370	5.961	1	H600 WXCUC 080612T	80.00	2.26
FF FWX D4.00-07-1.50-08	3.370	4.000	.079	7	2.000	3.110	1.500	B	1.7	7.370	7.961	1	H600 WXCUC 080612T	80.00	2.98
FF FWX D5.00-09-1.50-08	4.370	5.000	.079	9	2.000	3.500	1.500	B	1.3	9.370	9.961	1	H600 WXCUC 080612T	80.00	4.88
FF FWX D6.00-10-2.00-08 <sup>(1)</sup>	5.370	6.000	.079	10	2.250	3.858	2.000	B	1.0	11.370	11.961	0	H600 WXCUC 080612T	80.00	7.04

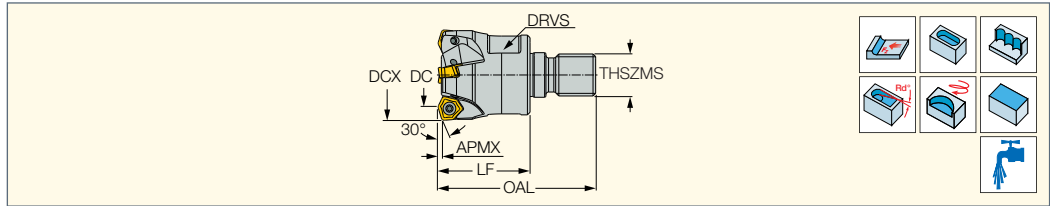
- To generate a straight surface without cusps, the width of cut must not exceed DC
- <sup>(1)</sup> For internal coolant, use a matching coolant set (should be ordered separately)
- <sup>(2)</sup> Cutting diameter maximum
- <sup>(3)</sup> Number of inserts
- <sup>(4)</sup> For adaptation see page ..
- <sup>(5)</sup> Maximum ramping angle
- <sup>(6)</sup> Machinable diameter minimum for interpolation
- <sup>(7)</sup> Machinable diameter maximum for interpolation
- <sup>(8)</sup> 0 - Without coolant supply, 1 - With coolant supply
- <sup>(9)</sup> Master insert identification
- <sup>(10)</sup> Recommended tightening torque (lbf\*in) for insert screw

**Spare Parts**

Designation					
FF FWX D1.50-05-0.50-05	SR 10508600	T-9/51			SR UNF 1/4X3/4 B18.3
FF FWX D2.00-06-0.75-05	SR 10508600	T-9/51			SR UNF 3/8X1 B18.3
FF FWX D1.50-04-0.50-07	SR 34-535-SN		BLD T15/S7	SW6-T-SH	SR UNF 1/4X3/4 B18.3
FF FWX D2.00-05-0.75-07	SR 34-535-SN		BLD T15/S7	SW6-T-SH	SR UNF 3/8X1 B18.3
FF FWX D2.50-06-1.00-07	SR 34-535-SN		BLD T15/S7	SW6-T-SH	SR UNF 1/2X20X1 B18.3
FF FWX D3.00-07-1.25-07	SR 34-535-SN		BLD T15/S7	SW6-T-SH	SR UNF 5/8X1 B18.3
FF FWX D4.00-08-1.50-07	SR 34-535-SN		BLD T15/M7	SW6-T-SH	
FF FWX D2.00-04-0.75-08	SR 14-591/H		BLD T20/S7	SW6-T	SR UNF 3/8X1 B18.3
FF FWX D2.50-05-1.00-08	SR 14-591/H		BLD T20/S7	SW6-T	SR UNF 1/2X20X1 B18.3
FF FWX D3.00-06-1.25-08	SR 14-591/H		BLD T20/S7	SW6-T	SR UNF 5/8X1 B18.3
FF FWX D4.00-07-1.50-08	SR 14-591/H		BLD T20/M7	SW6-T	
FF FWX D5.00-09-1.50-08	SR 14-591/H		BLD T20/L7	SW6-T	
FF FWX D6.00-10-2.00-08	SR 14-591/H		BLD T20/L7	SW6-T	

**MF EWX-M**

Moderate Feed Endmills with FLEXFIT Threaded Connection Carrying Double-Sided Inserts with 6 Cutting Edges



Designation	DCX <sup>(1)</sup>	DC	APMX	CICT <sup>(2)</sup>	LF	OAL	THSZMS	DRVS <sup>(3)</sup>	RMPX <sup>(4)</sup>	MDN <sup>(5)</sup>	MDX <sup>(6)</sup>	MIID <sup>(7)</sup>	TQ <sup>(8)</sup>	TQ_3 <sup>(9)</sup>	
<b>MF EWX D20-3-M10-04</b>	.787	.512	.059	3	1.102	1.890	M10	.551	2.4	1.299	1.535	H600 WXCUC 040310T	8.00	260	.11
<b>MF EWX D25-4-M12-04</b>	.984	.709	.059	4	1.260	2.126	M12	.669	1.7	1.693	1.929	H600 WXCUC 040310T	8.00	295	.20
<b>MF EWX D25-3-M12-05</b>	.984	.610	.079	3	1.181	2.047	M12	.669	3.0	1.594	1.929	H600 WXCUC 05T312T	17.70	295	.16
<b>MF EWX D32-4-M16-05</b>	1.260	.886	.079	4	1.378	2.362	M16	.945	1.9	2.146	2.480	H600 WXCUC 05T312T	17.70	355	.36
<b>MF EWX D32-3-M16-07</b>	1.260	.776	.106	3	1.378	2.362	M16	.945	3.0	2.035	2.480	H600 WXCUC 070515HP	42.50	355	.32

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

<sup>(1)</sup> Cutting diameter maximum

<sup>(2)</sup> Number of inserts

<sup>(3)</sup> Clamping wrench size

<sup>(4)</sup> Maximum ramping angle

<sup>(5)</sup> Machinable diameter minimum for interpolation

<sup>(6)</sup> Machinable diameter maximum for interpolation

<sup>(7)</sup> Master insert identification

<sup>(8)</sup> Recommended tightening torque (lbf\*in) for insert screw

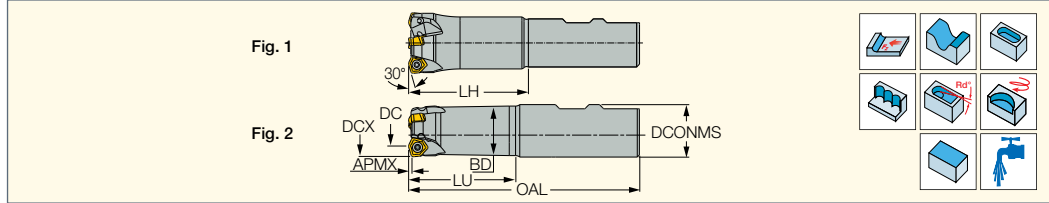
<sup>(9)</sup> Tool tightening torque (lbf\*in)

**Spare Parts**

Designation				
<b>MF EWX D20-3-M10-04</b>	SR M2.5X6-T7-60	T-7/51		
<b>MF EWX D25-4-M12-04</b>	SR M2.5X6-T7-60	T-7/51		
<b>MF EWX D25-3-M12-05</b>	SR 10508600	T-9/51		
<b>MF EWX D32-4-M16-05</b>	SR 10508600	T-9/51		
<b>MF EWX D32-3-M16-07</b>	SR 34-535-SN		BLD T15/S7	SW6-T-SH

**MF EWX**

Moderate Feed Endmills  
Carrying Double-Sided Inserts  
with 6 Cutting Edges



Designation	DCX <sup>(1)</sup>	DC	CICT <sup>(2)</sup>	LU	LH	OAL	APMX	DCONMS	BD	Shank <sup>(3)</sup>	RMPX <sup>(4)</sup>	MDN <sup>(5)</sup>	MDX <sup>(6)</sup>	MIID <sup>(7)</sup>	TQ <sup>(8)</sup>	Fig.	Lbs
<b>MF EWXD0.62-2-1.5W0.75-04</b>	.625	.350	2	1.50	1.750	3.850	.059	.750	.580	W	3.8	.975	1.211	H600 WXCUC 040310T	8.00	2	.33
<b>MF EWXD0.75-3-2.0W0.75-04</b>	.750	.470	3	2.00	2.100	4.200	.059	.750	.710	W	2.6	1.220	1.461	H600 WXCUC 040310T	8.00	2	.37
<b>MF EWXD1.00-3-2.5W1.00-05</b>	1.000	.630	3	2.50	2.650	5.000	.079	1.000	.940	W	2.9	1.630	1.961	H600 WXCUC 05T312T	17.70	2	.80
<b>MF EWXD1.25-4-3.0W1.25-05</b>	1.250	.880	4	3.00	3.150	5.500	.079	1.250	1.200	W	1.9	2.130	2.461	H600 WXCUC 05T312T	17.70	2	1.46
<b>MF EWXD1.25-3-3.0W1.25-07</b>	1.250	.770	3	3.00	3.150	5.500	.106	1.250	1.200	W	3.0	2.020	2.461	H600 WXCUC 070515T	42.50	2	1.39
<b>MF EWXD1.50-4-3.5W1.25-07</b>	1.500	1.020	4	3.50	6.000	6.000	.106	1.250	1.375	W	2.2	2.520	2.961	H600 WXCUC 070515T	42.50	1	1.93

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

<sup>(1)</sup> Cutting diameter maximum

<sup>(2)</sup> Number of inserts

<sup>(3)</sup> W-Weldon

<sup>(4)</sup> Maximum ramping angle





<sup>(5)</sup> Machinable diameter minimum for interpolation

<sup>(6)</sup> Machinable diameter maximum for interpolation

<sup>(7)</sup> Master insert identification

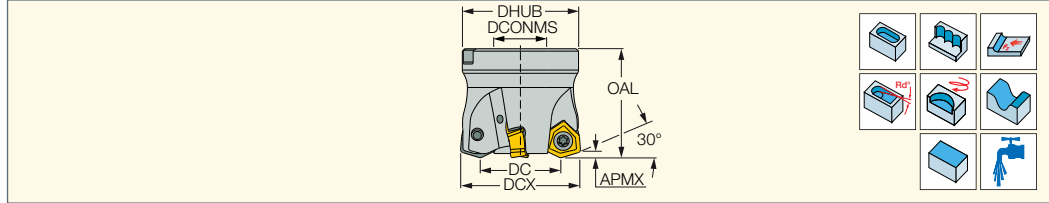
<sup>(8)</sup> Recommended tightening torque (lbf\*in) for insert screw

**Spare Parts**

Designation				
<b>MF EWXD0.62-2-1.5W0.75-04</b>	SR M2.5X6-T7-60	T-7/51		
<b>MF EWXD0.75-3-2.0W0.75-04</b>	SR M2.5X6-T7-60	T-7/51		
<b>MF EWXD1.00-3-2.5W1.00-05</b>	SR 10508600	T-9/51		
<b>MF EWXD1.25-4-3.0W1.25-05</b>	SR 10508600	T-9/51		
<b>MF EWXD1.25-3-3.0W1.25-07</b>	SR 34-535-SN		BLD T15/S7	SW6-T-SH
<b>MF EWXD1.50-4-3.5W1.25-07</b>	SR 34-535-SN		BLD T15/S7	SW6-T-SH

**MF FWX**

Moderate Feed Face Mills  
Carrying Double-Sided Inserts  
with 6 Cutting Edges



Designation	DC	DCX <sup>(1)</sup>	APMX	CICT <sup>(2)</sup>	OAL	DHUB	DCONMS	Arbor <sup>(3)</sup>	RMPX <sup>o(4)</sup>	MDN <sup>(5)</sup>	MDX <sup>(6)</sup>	Lbs	MIID <sup>(7)</sup>	TQ <sup>(8)</sup>
MF FWX D1.50-05-0.50-05	1.128	1.500	.079	5	1.250	1.378	.500	A	1.5	2.628	2.961	.31	H600 WXCUC 05T312T	17.70
MF FWX D2.00-06-0.75-05	1.628	2.000	.079	6	1.500	1.772	.750	A	1.0	3.628	3.961	.63	H600 WXCUC 05T312T	17.70
MF FWX D2.50-08-1.00-05	2.127	2.500	.079	8	1.625	2.250	1.000	A	.8	4.627	4.961	1.14	H600 WXCUC 05T312T	17.70
MF FWX D1.50-04-0.50-07	1.020	1.500	.106	4	1.250	1.378	.500	A	2.2	2.520	2.961	.31	H600 WXCUC 070515HP	42.50
MF FWX D2.00-05-0.75-07	1.520	2.000	.106	5	1.500	1.772	.750	A	1.4	3.520	3.961	.64	H600 WXCUC 070515HP	42.50
MF FWX D3.00-07-1.25-07	2.520	3.000	.106	7	2.000	2.850	1.250	A	.8	5.520	5.961	.00	H600 WXCUC 070515HP	42.50
MF FWX D4.00-08-1.50-07	3.520	4.000	.106	8	2.000	3.110	1.500	B	.6	7.520	7.961	2.99	H600 WXCUC 070515HP	42.50
MF FWX D2.00-04-0.75-08	1.398	2.000	.138	4	1.750	1.772	.750	A	2.5	3.398	3.961	.71	H600 WXCUC 080612T	80.00
MF FWX D2.50-05-1.00-08	1.898	2.500	.138	5	1.750	2.402	1.000	A	1.7	4.398	4.961	1.25	H600 WXCUC 080612T	80.00
MF FWX D3.00-06-1.25-08	2.398	3.000	.138	6	2.000	2.850	1.250	A	1.3	5.398	5.961	2.09	H600 WXCUC 080612T	80.00
MF FWX D4.00-07-1.50-08	3.398	4.000	.138	7	2.000	3.110	1.500	B	.9	7.398	7.961	2.80	H600 WXCUC 080612T	80.00
MF FWX D5.00-09-1.50-08	4.398	5.000	.138	9	2.000	3.500	1.500	B	.7	9.398	9.961	4.82	H600 WXCUC 080612T	80.00

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

<sup>(1)</sup> Cutting diameter maximum

<sup>(2)</sup> Number of inserts

<sup>(3)</sup> For adaptation options, see page

<sup>(4)</sup> Maximum ramping angle

<sup>(5)</sup> Machinable diameter minimum for interpolation

<sup>(6)</sup> Machinable diameter maximum for interpolation

<sup>(7)</sup> Master insert identification

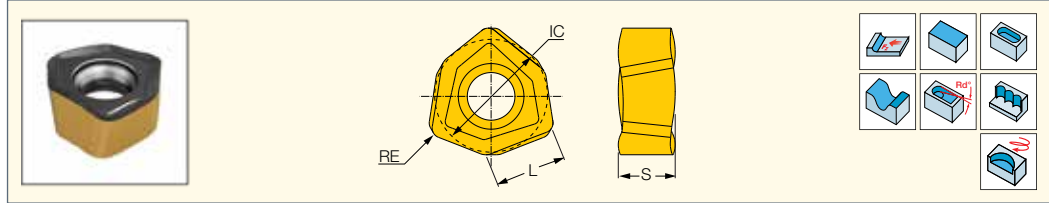
<sup>(8)</sup> Recommended tightening torque (lb\*in) for insert screw

**Spare Parts**

Designation					
MF FWX D1.50-05-0.50-05	SR 10508600	T-9/51			SR UNF 1/4X3/4 B18.3
MF FWX D2.00-06-0.75-05	SR 10508600	T-9/51			SR UNF 3/8X1 B18.3
MF FWX D2.50-08-1.00-05	SR 10508600	T-9/51			SR UNF 1/2X20X1 B18.3
MF FWX D1.50-04-0.50-07	SR 34-535-SN		BLD T15/S7	SW6-T-SH	SR UNF 1/4X3/4 B18.3
MF FWX D2.00-05-0.75-07	SR 34-535-SN		BLD T15/S7	SW6-T-SH	SR UNF 3/8X1 B18.3
MF FWX D3.00-07-1.25-07	SR 34-535-SN		BLD T15/S7	SW6-T-SH	SR UNF 5/8X1 B18.3
MF FWX D4.00-08-1.50-07	SR 34-535-SN		BLD T15/M7	SW6-T-SH	
MF FWX D2.00-04-0.75-08	SR 14-591/H		BLD T20/S7	SW6-T	SR UNF 3/8X1 B18.3
MF FWX D2.50-05-1.00-08	SR 14-591/H		BLD T20/S7	SW6-T	SR UNF 1/2X20X1 B18.3
MF FWX D3.00-06-1.25-08	SR 14-591/H		BLD T20/S7	SW6-T	SR UNF 5/8X1 B18.3
MF FWX D4.00-07-1.50-08	SR 14-591/H		BLD T20/M7	SW6-T	
MF FWX D5.00-09-1.50-08	SR 14-591/H		BLD T20/L7	SW6-T	



**H600 WXCU**  
Double-Sided Inserts  
with 6 Cutting Edges for  
Fast Feed Machining

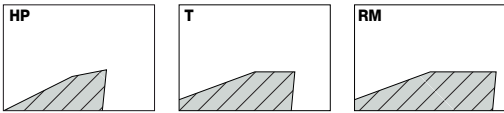


Designation	Dimensions				Tough ↔ Hard						
	IC	L	S	RE <sup>(1)</sup>	IC882	IC330	IC830	IC5820	IC380	IC808	IC810
H600 WXCU 040310HP	.246	.163	.122	.0378	•	•	•				
H600 WXCU 040310T	.246	.163	.122	.0378			•			•	
H600 WXCU 05T312HP	.328	.217	.165	.0472	•	•	•	•			
H600 WXCU 05T312T	.328	.217	.165	.0472			•			•	•
H600 WXCU 070515HP	.439	.282	.232	.0590	•	•	•	•	•		
H600 WXCU 070515T	.439	.282	.232	.0590			•			•	•
H600 WXCU 080612HP	.537	.346	.268	.0472	•	•	•		•	•	
H600 WXCU 080612T	.537	.346	.268	.0472			•			•	•
H600 WXCU 080616RM	.537	.346	.268	.0630			•			•	•

• HP - for stainless steel and high temperature alloys • T - for alloy steel and cast iron ("I" mark on top rake face for identification)

• RM - for interrupted cut and hard materials

<sup>(1)</sup> Radius for programming



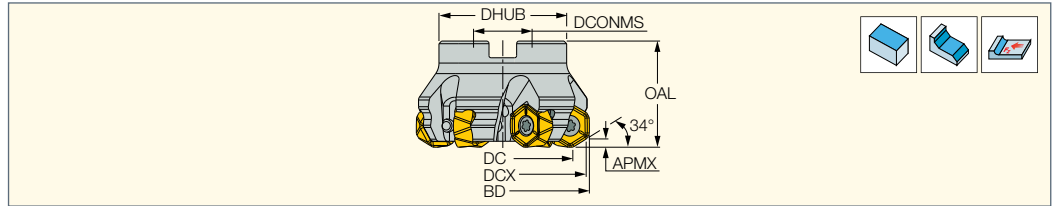
Inserts	Cutting Recommendations for FF Tools		Radius for Programming on FF Tools (inch)	Cutting Recommendations for MF Tools		Radius for Programming on MF Tools (inch)
	a <sub>e</sub> (inch)	f <sub>z</sub> (ipt)		a <sub>e</sub> (inch)	f <sub>z</sub> (ipt)	
H600 WXCU 040310HP	.020 - .031	.013-.027	.075	.020-.060	.008-.016	.102
H600 WXCU 040310T	.020 - .031	.027-.040	.075	.020-.060	.016-.024	.102
H600 WXCU 05T312HP	.028 - .039	.013-.027	.091	.031-.079	.008-.016	.130
H600 WXCU 05T312T	.028 - .039	.027-.040	.091	.031-.079	.016-.024	.130
H600 WXCU 070515HP	.039 - .059	.013-.034	.122	.040-.100	.008-.020	.161
H600 WXCU 070515T	.039 - .059	.027-.054	.122	.040-.100	.016-.031	.161
H600 WXCU 080612HP	.059 - .079	.013-.034	.130	.071-.138	.008-.020	.189
H600 WXCU 080612T	.059 - .079	.027-.054	.130	.071-.138	.016-.031	.189
H600 WXCU 080616RM	.059 - .079	.027-.054	.146	.071-.138	.016-.031	.205



Inserts	Cutting Recommendations for FF Tools in plunging		Radius for Programming on FF Tools (inch)	Cutting Recommendations for MF Tools in plunging		Radius for Programming on MF Tools (inch)
	a <sub>e</sub> (inch)	f <sub>z</sub> (ipt)		a <sub>e</sub> (inch)	f <sub>z</sub> (ipt)	
H600 WXCU 040310HP	.146	.002-.003	.075	.138	.002-.003	.102
H600 WXCU 040310T	.146	.002-.004	.075	.138	.002-.004	.102
H600 WXCU 05T312HP	.197	.002-.003	.091	.187	.002-.003	.130
H600 WXCU 05T312T	.197	.002-.004	.091	.187	.002-.004	.130
H600 WXCU 070515HP	.256	.002-.004	.122	.242	.002-.004	.161
H600 WXCU 070515T	.256	.002-.005	.122	.242	.002-.005	.161
H600 WXCU 080612HP	.315	.002-.004	.130	.301	.002-.004	.189
H600 WXCU 080612T	.315	.002-.005	.130	.301	.002-.005	.189
H600 WXCU 080616RM	.315	.002-.005	.146	.301	.002-.005	.205

**MF FHX-R06**

34° Face Mills Carrying Hexagonal Inserts with 12 Cutting Edges



Designation	DCX <sup>(1)</sup>	BD	DC	CICT <sup>(2)</sup>	APMX	OAL	DHUB	DCONMS	Arbor <sup>(3)</sup>	CSP <sup>(4)</sup>	MIID <sup>(5)</sup>	TQ <sup>(6)</sup>	
MF FHX D2.00-05-0.75-R06	2.000	2.091	1.625	5	.118	1.500	1.770	.750	A	1	H1200 HXCU 0606-HPR	80.00	1.32
MF FHX D2.50-06-1.00-R06	2.500	2.590	2.120	6	.118	1.750	2.250	1.000	A	1	H1200 HXCU 0606-HPR	80.00	1.31
MF FHX D3.00-07-1.25-R06	3.000	3.090	2.620	7	.118	1.750	2.750	1.250	A	1	H1200 HXCU 0606-HPR	80.00	1.94
MF FHX D4.00-09-1.50-R06	4.000	4.090	3.620	9	.118	2.000	3.250	1.500	B	1	H1200 HXCU 0606-HPR	80.00	3.37
MF FHX D5.00-11-1.50-R06	5.000	5.090	4.620	11	.118	2.000	3.500	1.500	B	1	H1200 HXCU 0606-HPR	80.00	5.36
MF FHX D6.00-13-2.00-R06	6.000	6.090	5.620	13	.118	2.250	4.000	2.000	B	0	H1200 HXCU 0606-HPR	80.00	7.67

• Radius for programming according to D1 diameter is .213" • When machining next to shoulders, maximum width of cut should be 0.3xD • To generate a straight surface without cusps, the width of cut must not exceed DC

(1) Cutting diameter maximum

(2) Number of inserts

(3) For adaptation options, see page

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

(5) Master insert identification

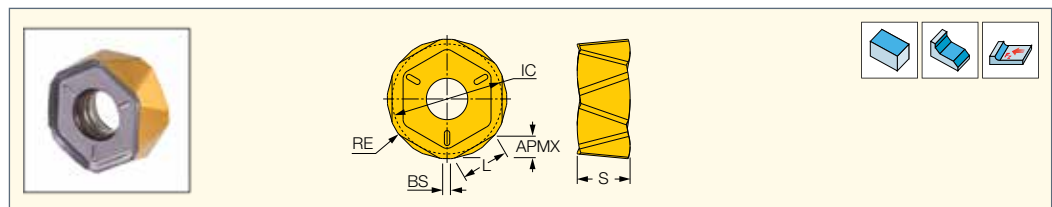
(6) Recommended tightening torque (lbf\*in) for insert screw

**Spare Parts**

Designation				
MF FHX D2.00-05-0.75-R06	SR 14-591/H	BLD T20/S7	SW6-T	SR UNF 3/8X1-1421
MF FHX D2.50-06-1.00-R06	SR 14-591/H	BLD T20/S7	SW6-T	SR UNF 1/2X20X1 B18.3
MF FHX D3.00-07-1.25-R06	SR 14-591/H	BLD T20/S7	SW6-T	SR UNF 5/8X1 B18.3
MF FHX D4.00-09-1.50-R06	SR 14-591/H	BLD T20/M7	SW6-T	
MF FHX D5.00-11-1.50-R06	SR 14-591/H	BLD T20/M7	SW6-T	
MF FHX D6.00-13-2.00-R06	SR 14-591/H	BLD T20/M7	SW6-T	

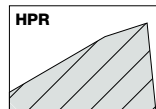
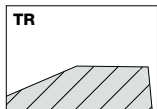
**H1200 HXCU 0606**

Double-Sided Hexagonal Inserts with 12 Cutting Edges

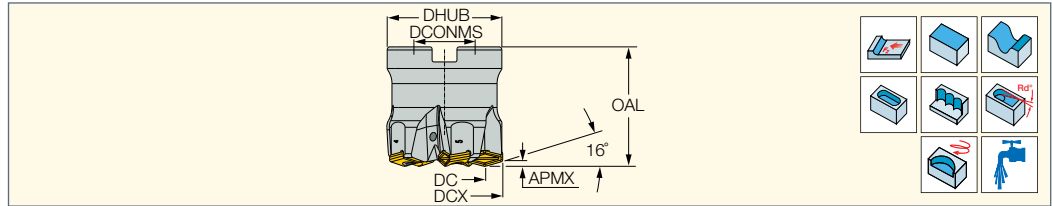


Designation	Dimensions						Tough ← Hard						Recommended Machining Data	
	APMX	L	BS	RE	IC	S	IC845	IC840	IC830	IC5500	IC808	IC810	a <sub>p</sub> (inch)	f <sub>z</sub> (inch/t)
H1200 HXCU 0606-HPR	.118	.253	.042	.0630	.586	.281		•	•				.008-.118	.0031-.0157
H1200 HXCU 0606-TR	.118	.253	.042	.0630	.586	.281	•		•	•	•	•	.008-.118	.0098-.0256

• TR-for steel and cast iron, HPR-for stainless steel and high temperature alloys



**FFV-D-R-VN07**  
Fast Feed Shell Mill Carrying  
Tangentially Clamped Inserts  
with 4 Cutting Edges



Designation	DCX <sup>(1)</sup>	DC	AE <sup>(2)</sup>	APMX	CICT <sup>(3)</sup>	OAL	DCONMS	DHUB	RMPX <sup>(4)</sup>	MDN <sup>(5)</sup>	MDX <sup>(6)</sup>	Arbor	MIID <sup>(7)</sup>	TQ <sup>(8)</sup>	
<b>FFV D2.0-05-.75-R-VN07</b>	2.000	1.417	.295	.0590	5	2.000	.750	1.850	3.1	3.417	3.961	A	FF VNMT 0706ZN-ER	46.00	1.01
<b>FFV D2.5-06-1.0-R-VN07</b>	2.500	1.890	.295	.0590	6	1.750	1.000	2.252	2.2	4.390	4.961	A	FF VNMT 0706ZN-ER	46.00	1.35
<b>FFV D3.0-07-1.0-R-VN07</b>	3.000	2.402	.295	.0590	7	2.000	1.000	2.252	1.5	5.402	5.961	B	FF VNMT 0706ZN-ER	46.00	1.63
<b>FFV D4.0-08-1.5-R-VN07</b>	4.000	3.386	.295	.0590	8	2.000	1.500	3.228	1.2	7.386	7.961	B	FF VNMT 0706ZN-ER	46.00	3.43

• Radius for programming .110" • 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

(4) Maximum ramping angle

(5) Machinable diameter minimum for interpolation

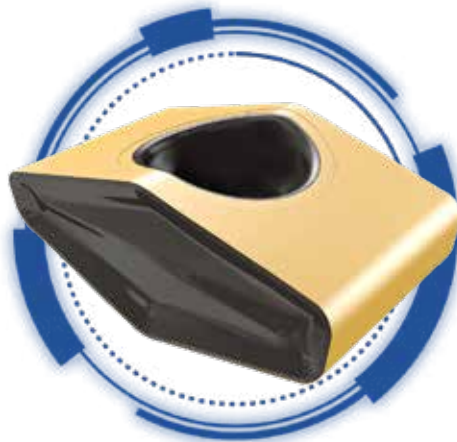
(6) Machinable diameter maximum for interpolation

(7) Master insert identification

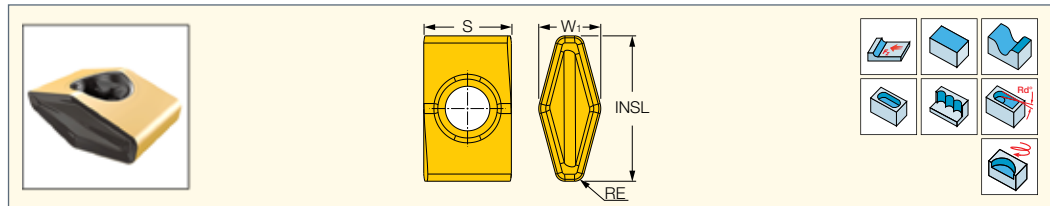
(8) Recommended tightening torque (lb\*in) for insert screw

**Spare Parts**

Designation				
<b>FFV D2.0-05-.75-R-VN07</b>	SR M4X0.7-L11.5 IP15	BLD IP15/S7	SW6-T-SH	SR UNF 3/8X1 B18.3
<b>FFV D2.5-06-1.0-R-VN07</b>	SR M4X0.7-L11.5 IP15	BLD IP15/S7	SW6-T-SH	SR UNF 1/2X20X1 B18.3
<b>FFV D3.0-07-1.0-R-VN07</b>	SR M4X0.7-L11.5 IP15	BLD IP15/S7	SW6-T-SH	
<b>FFV D4.0-08-1.5-R-VN07</b>	SR M4X0.7-L11.5 IP15	BLD IP15/S7	SW6-T-SH	



**FF VNMT 0706**  
Tangentially Clamped  
Inserts with 4 Cutting Edges  
for Fast Feed Milling



Designation	Dimensions				Tough ← Hard							Recommended Machining Data			
	W1	INSL	RE	S	IC882	IC845	IC840	IC830	IC5820	IC5400	IC5500	IC808	IC810	ap (inch)	fz (inch/t)
FF VNMT 0706ZN-ER <sup>(1)</sup>	.252	.591	.0394	.356	●	●	●	●	●	●	●	●	●	.020-.059	.0157-.0709
FF VNMT 0706ZN-ETR <sup>(2)</sup>	.252	.591	.0394	.356				●			●	●	●	.020-.059	.0157-.0709

- For side plunging, the initial cutting feed is .004 inch/t
- <sup>(1)</sup> For general applications
- <sup>(2)</sup> Reinforced cutting edges for interrupted cuts and unfavorable conditions

**Average Cutting Data for FFV-07 Fast Feed Cutters**

ISO class DIN/ISO 513	Workpiece material					Insert type	Carbide grade	D.O.C. ap (inch)	Cutting speed vc (sfm)	Feed fz (ipt)	Coolant
	Description	ISCAR mat. group*	Hardness, HB	Typical representative							
				AISI/SAE/ ASTM	DIN W.-Nr.						
<b>P</b>	Non-alloy steel	1-5	130-180	1020	1.0402	ER / ETR	IC808	.020-.059	490-720	.020-.051	Dry
							IC830		460-660	.023-.063	Dry/Wet
							IC845		430-590	.027-.070	Dry/Wet
							IC5400		490-820	.020-.043	Dry
	Low alloy steel	6-8	260-300	4340	1.6582		IC808		460-660	.020-.047	Dry
							IC830		400-590	.020-.059	Dry/Wet
							IC845		330-520	.023-.063	Dry/Wet
							IC5400		460-720	.020-.051	Dry
							IC808		430-590	.020-.047	Dry
							IC830		400-520	.020-.055	Dry/Wet
							IC845		330-490	.020-.059	Dry/Wet
							IC5400		430-620	.020-.043	Dry
	High alloy steel	10-11	200-220	H13	1.2344		IC808		400-560	.020-.047	Dry
							IC830		330-490	.020-.051	Dry/Wet
							IC845		290-460	.020-.055	Dry/Wet
							IC5400		400-590	.020-.043	Dry
Ferritic/martensitic stainless steel	12-13	200	420	1.4021	IC808	360-520	.020-.047	Dry			
					IC830	330-490	.020-.051	Dry/Wet			
					IC845	330-460	.020-.055	Dry/Wet			
					IC5400	360-520	.020-.043	Dry			
<b>M</b>	Austenitic stainless steel	14	200	304L	1.4306	ER	IC840	.020-.059	260-460	.015-.023	Wet
						IC830	260-400		.015-.027		
						IC882	260-430		.015-.035		
						IC5820	330-520		.015-.031		
						IC808	330-520		.015-.027		
<b>K</b>	Gray cast iron	15-16	250	Class 40	0.6025 (GG25)	ER / ETR	IC810	.020-.059	490-720	.020-.070	Dry
									Nodular cast iron	17-18	
<b>S</b>	High temperature alloys and Titanium	33-35	340	Inconel 718	2.4668	ER	IC808	.020-.059	80-130	.015-.023	Wet
							IC840		80-115	.015-.020	
							IC882		65-100	.015-.031	
							IC5820		80-115	.015-.027	
							IC830		65-100	.015-.023	
		36-37	HRC 30-32	AMS R56400	3.7165 (Ti6Al4V ELI)		IC808		100-200	.015-.027	
							IC840		80-115	.015-.023	
							IC882		80-115	.015-.035	
							IC5820		65-100	.015-.031	
							IC830		65-100	.015-.027	
<b>H</b>	Hardened steel	38.1	HRC 45-49	HARDOX 450 plate		ETR	IC808	.020-.059	245-290	.015-.031	Dry

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





# **LOGIQ4FEED**

**HIGH FEED MILLING**



**"Bone Shaped" Inserts  
with 4 Cutting Edges for  
Fast Feed Milling**



### Application Range of Carbide Grades for Indexable Lines

P	P05	P10	P15	P20	P25	P30	P35	P40	P45	P50		
					IC830							
				IC808								
					IC5500							
				IC845								
				IC810								
			IC5400									
						IC330						

M	M05	M10	M15	M20	M25	M30	M35	M40			
					IC840						
						IC330					
					IC830						
					IC882						
					IC5820						
					IC808						

K	K05	K10	K15	K20	K25	K30	K35	K40		
				IC810						
					IC808					

S	S05	S10	S15	S20	S25	S30				
				IC840						
			IC808							
				IC882						
				IC380						
					IC330					
					IC5820					
				IC830						

H	H05	H10	H15	H20	H25	H30				
					IC808					
				IC380						

Hardness ←————→ Toughness

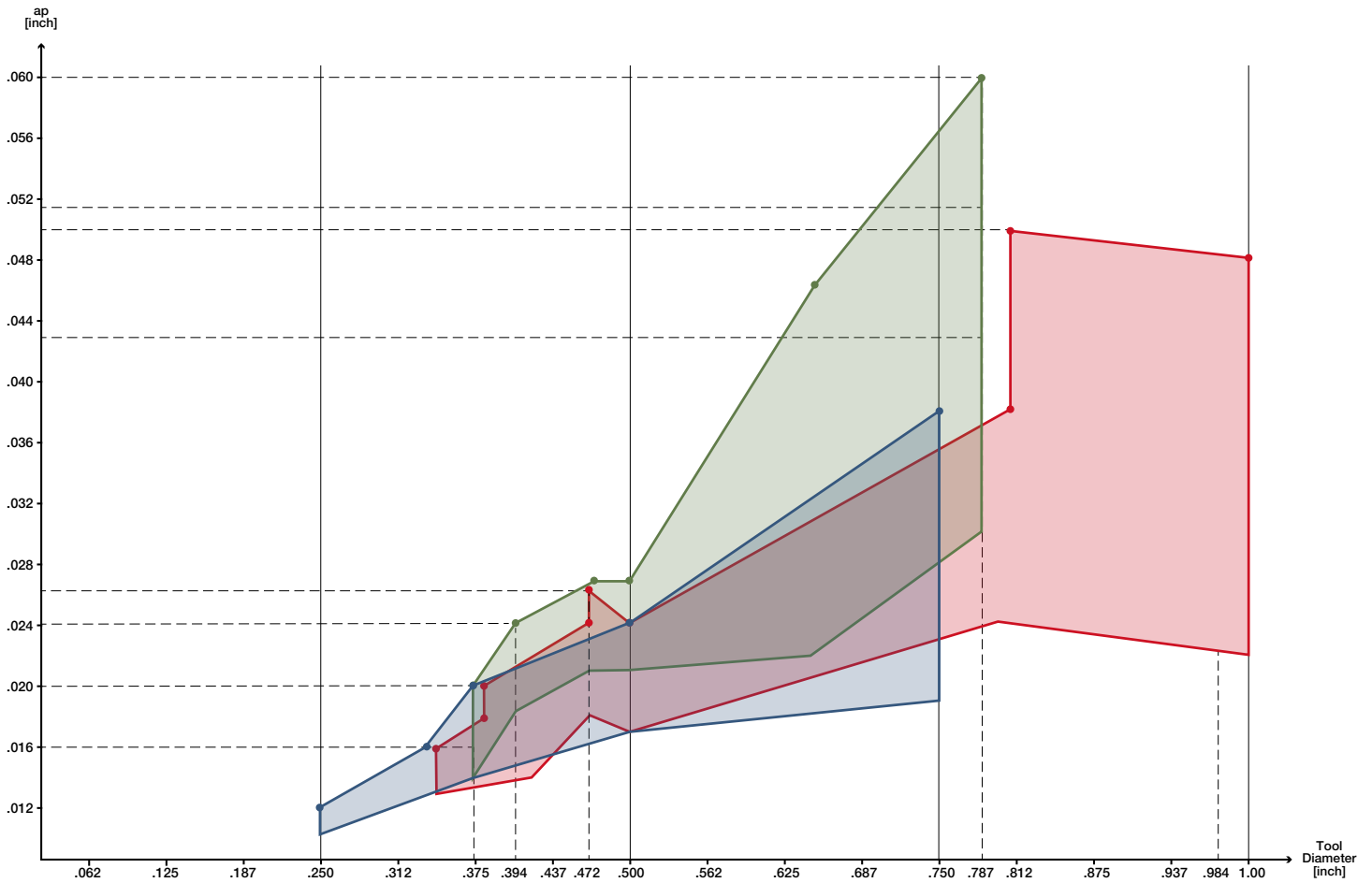
**ICXX** The marked area features the most suitable grade  
**ICXX** The white area relates to a complementary grade

## Recommended Cutting Speed Range for Indexable Fast Feed Milling Cutters

ISO	Material		Condition	Material No.	Cutting Speed, SFM for Grade											
					IC330	IC380	IC882	IC845	IC840	IC830	IC5820	IC5400	IC5500	IC808	IC810	
<b>P</b>	Non alloy steel and cast steel (less than 5% all elements)	< 0.25 %C	Annealed	1	460-660			<b>430-720</b>		490-660		590-820	<b>490-590</b>	<b>490-720</b>	490-720	
		>= 0.25 %C	Annealed	2	430-620			<b>390-660</b>		460-620		460-790	<b>460-560</b>	<b>490-721</b>	460-720	
		< 0.55 %C	Quenched and tempered	3	430-620			<b>390-620</b>		460-620		460-750	<b>460-660</b>	<b>490-690</b>	460-690	
		>= 0.55 %C	Annealed	4	390-590			<b>390-590</b>		430-590		460-720	<b>430-660</b>	<b>460-690</b>	430-690	
		>= 0.55%C	Quenched and tempered	5	390-560			<b>360-590</b>		430-560		460-720	<b>430-620</b>	<b>460-690</b>	430-690	
	Low alloy steel and cast steel (less than 5% all elements)	Annealed		6	390-520			<b>360-560</b>		390-520		460-690	<b>430-590</b>	<b>460-660</b>	430-660	
		Quenched and tempered		7	360-490			<b>330-520</b>		390-460		430-660	<b>400-560</b>	<b>430-620</b>	400-620	
				8	330-460			<b>330-490</b>		360-460		430-620	<b>360-520</b>	<b>430-590</b>	400-590	
			9	290-490			<b>290-490</b>		330-420		430-590	<b>360-520</b>	<b>430-590</b>	400-590		
	High alloy steel, cast steel and tool steel	Annealed		10	260-420			<b>260-460</b>		290-390		400-590	<b>360-490</b>	<b>400-560</b>	400-560	
		Quenched and tempered		11	260-390			<b>260-420</b>		290-360		400-560	<b>330-460</b>	<b>400-520</b>	360-520	
	Stainless steel and cast steel	Ferritic/martensitic		12	330-460			<b>360-520</b>		290-520		400-560	<b>300-520</b>	<b>360-560</b>	360-560	
		Martensitic		13	290-420			<b>330-490</b>		260-490		360-520	<b>260-490</b>	<b>330-520</b>	330-490	
<b>M</b>	Stainless steel and cast steel		Austenitic	14	<b>260-390</b>		230-460		<b>260-490</b>	<b>260-460</b>	330-520			330-520		
<b>K</b>	Gray cast iron	Ferritic/pearlitic		15										460-660	<b>490-720</b>	
		Pearlitic/martensitic		16											430-620	<b>460-590</b>
	Ductile cast iron (nodular)	Ferritic		17											360-590	<b>400-660</b>
		Pearlitic		18											330-560	<b>330-590</b>
	Malleable cast iron	Ferritic		19											460-620	<b>460-690</b>
		Pearlitic		20											360-560	<b>360-660</b>
<b>S</b>	High temp. alloys	Fe based	Annealed	31	115-165	130-165	<b>115-165</b>		<b>100-150</b>	80-165	130-165			<b>130-165</b>		
			Hardened	32	100-130	115-150	<b>100-130</b>		<b>65-115</b>	65-130	100-130			<b>100-130</b>		
		Ni or Co bases	Annealed	33	80-115	100-150	<b>80-115</b>		<b>65-100</b>	65-130	100-130				<b>80-130</b>	
			Hardened	34	65-115	80-115	<b>65-80</b>		<b>65-80</b>	65-115	80-115				<b>80-115</b>	
			Cast	35	80-100	100-115	<b>80-100</b>		<b>80-100</b>	65-130	100-115				<b>100-130</b>	
	Titanium and Ti alloys	Pure Titanium		36	130-230	165-260	<b>150-230</b>		<b>130-200</b>	80-165	130-260				<b>150-300</b>	
		Alpha+beta alloys cured		37	100-200	100-200	<b>100-180</b>		<b>65-165</b>	100-150	80-200				<b>80-200</b>	
<b>H</b>	Hardened steel	Hardened		38		150-180								<b>150-210</b>		
		Hardened		39		130-165									<b>130-200</b>	
	Chilled cast iron	Cast		40		230-300								<b>230-280</b>		
	Cast iron	Hardened		41		150-180									<b>150-210</b>	


- For machining under unstable conditions (long overhang, poor toolholing etc.) the recommended cutting data should be reduced by 20-30%
- Recommended cutting speeds, which relate to the most suitable grades, are emphasized in **bold**

# Solid Carbide Endmills and Multi-Master Heads Chart



**EFF-S**  **SOLID FEED MILL**

Z-4    Z-4,6    Z-4,6    Z-4,6    Z-4








**MM EFF**  **MULTI FEED MASTER**

Z-4    Z-4,6    Z-4,6    Z-4,6    Z-4,6    Z-4,6    Z-6    Z-6

**MM FF**  **MULTI FEED MASTER**

Z-2    Z-2    Z-2    Z-2    Z-2    Z-2

## Fast Feed Family Selector for Solid Carbide Endmills (SCEM) and Multi-Master Heads (MM)

Diameter range (inch)	Family	Description	ap (inch)	Range of fz (ipt)	Applications							Material Groups				
												P	M	K	S	H
Ø.250-.750	EFF	EFF-S	.012-.039	.0040-.0276	●	○	●	●	●	●	●	●	○	●	●	●
Ø.315-1.00	MM-EFF	MM-EFF	.016-.049	.0047-.0394	●	●	●	●		●	●	●	●	●	●	○
Ø.375-.787	MM-FF	MM FF	.020-.059	.0118-.0591	●	●	●	●		●	●	●	○	●	○	○

- - Most suitable
- - Suitable
- - May be used



**MULTI<sup>FEED</sup>MASTER**

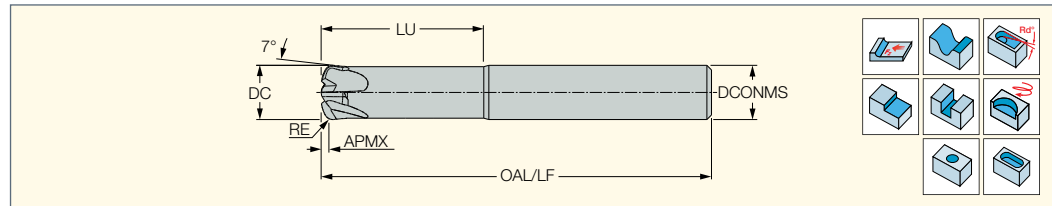


Interchangeable 2 flute  
FEEDMILL solid carbide heads

# SOLID FEED MILL

## EFFI-S4/S6

4/6 Flute with Relieved Necks,  
Fast Feed High Productivity  
Solid Carbide Endmills



Designation	Dimensions								Tough ↔ Hard		Recommended Machining Data  f <sub>z</sub> (inch/t)
	DC	DCONMS	OAL	NOF <sup>(1)</sup>	LU	RE <sup>(2)</sup>	PRFRAD	APMX	IC903	IC902	
EFFI-S4-250 125/750C250M	.250	.250	2.500	4	.750	.0390	.220	.012	●		.0040-.0120
EFFI-S4-312 137/1.00C312M	.312	.312	2.500	4	1.000	.0510	.276	.016	●		.0040-.0160
EFFI-S6-312 118/1.00C312M	.312	.312	2.500	6	1.000	.0390	.236	.114		●	.0040-.0140
EFFI-S4-375 157/1.20C375M	.375	.375	3.000	4	1.200	.0590	.331	.020	●		.0060-.0200
EFFI-S6-375 118/1.20C375M	.375	.375	3.000	6	1.200	.0370	.224	.110		●	.0060-.0180
EFFI-S4-500 180/1.30C500M	.500	.500	3.000	4	1.300	.0830	.441	.024	●		.0060-.0200
EFFI-S6-500 137/1.30C500M	.500	.500	3.000	6	1.300	.0510	.413	.133		●	.0060-.0180

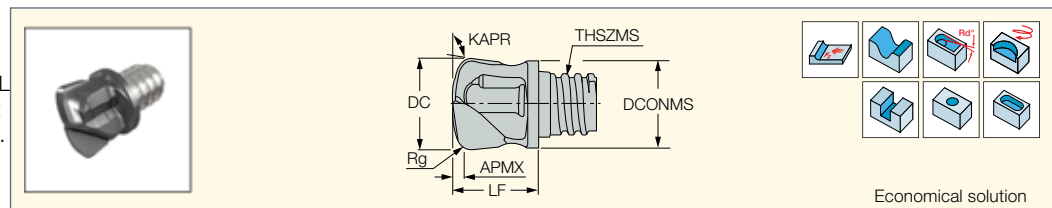
<sup>(1)</sup> Number of flutes

<sup>(2)</sup> To be used for programming

# MULTI FEED MASTER

## MM FF

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



Designation	Dimensions									Tough ↔ Hard		Recommended Machining Data  f <sub>z</sub> (inch/t)
	DC	NOF <sup>(1)</sup>	APMX	Rg <sup>(2)</sup>	THSZMS	DCONMS	LF	KAPR <sup>(3)</sup>	RMPX <sup>(4)</sup>	IC908	IC903	
MM FF375R06-L49-2T06	.375	2	.020	.059	T06	.360	.490	100.0	7.0	●		.0118-.0236
MM FF100R1.5-L12-2T06	.394	2	.024	.079	T06	.378	.492	97.0	7.0	●		.0118-.0236
MM FF120R2.0-2T08	.472	2	.027	.098	T08	.453	.437	97.0	7.0	●	●	.0197-.0394
MM FF500R08-L59-2T08	.500	2	.027	.098	T08	.453	.591	95.0	7.0	●		.0197-.0394
MM FF160R2.0-2T10	.630	2	.043	.118	T10	.598	.531	97.0	7.0	●		.0216-.0433
MM FF750R.08-2T12	.750	2	.056	.079	T12	.726	.685	100.0	7.0	●		.0295-.0591
MM FF200R2.0-2T12	.787	2	.059	.134	T12	.726	.685	95.0	7.0	●		.0295-.0590

• Do not apply lubricant to the threaded connection.

<sup>(1)</sup> Number of flutes

<sup>(2)</sup> Radius for programming

<sup>(3)</sup> Tool cutting edge angle

<sup>(4)</sup> Maximum ramping angle

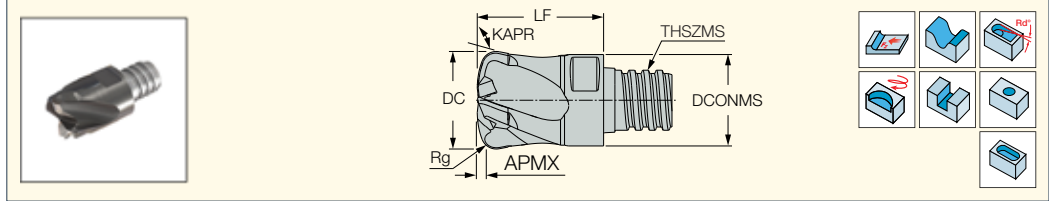


**MULTI<sup>FEED</sup> MASTER**

**SOLID<sup>FEED</sup> MILL**

**MM EFF**

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



Designation	Dimensions										Tough ↔ Hard		Recommended Machining Data  f <sub>z</sub> (inch/t)
	DC	NOF <sup>(3)</sup>	APMX	THSZMS	DCONMS	LF	RMPX <sup>(4)</sup>	KAPR <sup>(5)</sup>	Rg <sup>(6)</sup>	CSP <sup>(7)</sup>	IC908	IC903	
MM EFF080T3R1.62-4T05	.315	4	.016	T05	.295	.394	5.0	97.0	.064	0		●	.0047-.0189
MM EFF100T4R2.01-4T06	.394	4	.020	T06	.374	.512	5.0	97.0	.079	0		●	.0063-.0224
MM EFF100T2R1.0-6T06H <sup>(1)</sup>	.394	6	.018	T06	.374	.394	3.0	97.0	.039	1		●	.0063-.0185
MM EFF120T4R1.8-4T08H <sup>(1)</sup>	.472	4	.024	T08	.453	.650	5.0	97.0	.071	1	●		.0063-.0264
MM EFF120T4R2.47-4T08	.472	4	.024	T08	.453	.650	5.0	97.0	.097	0		●	.0063-.0264
MM EFF120T2R1.2-6T08H <sup>(1)</sup>	.472	6	.026	T08	.453	.492	3.0	97.0	.047	1		●	.0063-.0213
MM EFF127T4R2.59-4T08	.500	4	.024	T08	.480	.650	5.0	97.0	.102	0		●	.0063-.0264
MM EFF127T4R1.3-6T08H	.500	6	.028	T08	.480	.500	3.0	97.0	.051	1		●	.0063-.0264
MM EFF160T5R2.2-4T10H <sup>(1)</sup>	.630	4	.031	T10	.606	.807	5.0	97.0	.087	1	●		.0079-.0295
MM EFF160T5R3.25-4T10	.630	4	.031	T10	.606	.807	5.0	97.0	.128	0		●	.0079-.0295
MM EFF160T4R2.0-6T10H <sup>(1)</sup>	.630	6	.041	T10	.606	.630	3.0	97.0	.079	1		●	.0079-.0256
MM EFF200T6R4.02-4T12	.787	4	.039	T12	.726	1.004	5.0	97.0	.158	0		●	.0079-.0354
MM EFF200T5R2.2-6T12H <sup>(1)</sup>	.787	6	.049	T12	.726	.787	3.0	97.0	.087	1		●	.0079-.0315
MM EFF250A7R3.1-6T15 <sup>(2)</sup>	.984	6	.047	T15	.941	.984	5.0	97.0	.122	0		●	.0098-.0394
MM EFF254A7R3.1-6T15 <sup>(2)</sup>	1.000	6	.047	T15	.941	.984	5.0	97.0	.122	0		●	.0098-.0394

• Do not apply lubricant to the threaded connection.

<sup>(1)</sup> With a central coolant hole

<sup>(2)</sup> Cannot be used for plunging applications

<sup>(3)</sup> Number of flutes

<sup>(4)</sup> Maximum ramping angle

<sup>(5)</sup> Tool cutting edge angle

<sup>(6)</sup> Radius for programming

<sup>(7)</sup> 0 - Without coolant supply, 1 - With coolant supply

**Multi Master Machining Recommendations**

VDI 3323	Material Group <sup>(1)</sup>	v <sub>c</sub> (sfm)	f <sub>z</sub> (ipt) vs. Tool Diameter (inch)							
			a <sub>p</sub>	a <sub>e</sub>	.315	.394	.472	.630	.787	.984
P	1	590	.045xD	.7xD	.019	.022	.026	.030	.035	.039
	2	520	.045xD	.7xD	.019	.022	.026	.030	.035	.039
	3	520	.045xD	.7xD	.019	.022	.026	.030	.035	.039
	4	520	.045xD	.7xD	.019	.022	.026	.030	.035	.039
	5	490	.045xD	.7xD	.017	.020	.022	.026	.030	.034
	6	490	.045xD	.7xD	.013	.016	.019	.022	.026	.031
	7	460	.045xD	.7xD	.013	.016	.019	.022	.026	.031
	8	460	.045xD	.7xD	.012	.014	.017	.020	.024	.028
	9	460	.045xD	.7xD	.012	.014	.017	.020	.024	.028
	10	430	.04xD	.6xD	.011	.013	.015	.019	.022	.026
	11	390	.04xD	.6xD	.010	.012	.014	.017	.020	.024
K	15-16	590	apmax	.7xD	.018	.020	.024	.028	.031	.035
	17-18	520	apmax	.7xD	.015	.018	.020	.024	.028	.031
H	38.1 <sup>(2)</sup>	330	.035xD	.45xD	.008	.010	.013	.016	.019	.022
	38.2 <sup>(3)</sup>	260	.03xD	.3xD	.006	.009	.012	.015	.018	.020
	39 <sup>(4)</sup>	200	.02xD	.25xD	.005	.006	.006	.008	.008	.010

<sup>(1)</sup> ISCAR material group in accordance with VDI 3323 standard

<sup>(2)</sup> HRC 45-49

<sup>(3)</sup> HRC 50-55

<sup>(4)</sup> HRC 56-63

a<sub>p</sub> - Depth of cut  
a<sub>e</sub> - Width of cut

### Application Range of Carbide Grades for Solid Carbide Endmills and Multi-Master Heads

<b>P</b>	P05	P10	P15	P20	P25	P30	P35	P40	P45	P50
	IC903									
	IC902									
<b>M</b>	M05	M10	M15	M20	M25	M30	M35	M40		
	IC902									
	IC903									
<b>K</b>	K05	K10	K15	K20	K25	K30	K35	K40		
	IC903									
	IC902									
<b>S</b>	S05	S10	S15	S20	S25	S30				
	IC902									
	IC903									
<b>H</b>	H05	H10	H15	H20	H25	H30				
	IC902									
	IC903									

Hardness ←————→ Toughness

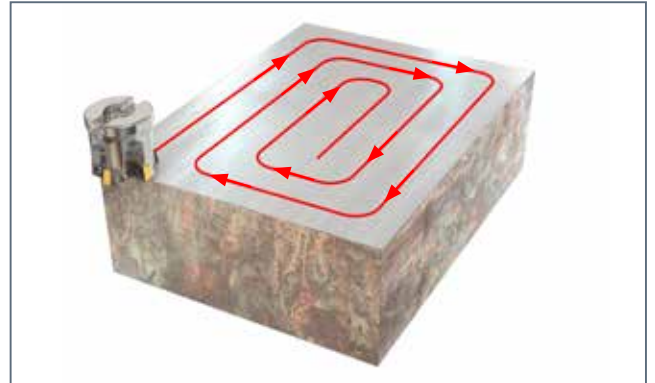
## Recommended Cutting Speed Range for Fast Feed Solid Carbide Endmills and Multi-Master Heads

ISO	Material		Condition	Material No.	Cutting Speed, SFM for Grade			
					IC902	IC903	IC908	
<b>P</b>	Non alloy steel and cast steel (less than 5% all elements)	< 0.25 %C	Annealed	1	820-980	820-990	850-920	
		>= 0.25 %C	Annealed	2	660-820	660-750	660-750	
		< 0.55 %C	Quenched and tempered	3	520-790	520-720	520-720	
		>= 0.55 %C	Annealed	4	520-790	520-720	520-720	
		>= 0.55%C	Quenched and tempered	5	460-660	460-180	460-590	
	Low alloy steel and cast steel (less than 5% all elements)			Annealed	6	520-790	520-720	520-720
				Quenched and tempered	7	400-660	400-590	400-590
					8	430-660	430-660	430-590
					9	460-660	430-590	460-430
	High alloy steel, cast steel and tool steel			Annealed	10	430-660	430-180	430-590
				Quenched and tempered	11	230-430	230-400	230-400
	Stainless steel and cast steel			Ferritic/martensitic	12	260-570	260-520	260-520
				Martensitic	13	200-540	200-490	200-490
<b>M</b>	Stainless steel and cast steel		Austenitic	14	200-430	200-400	200-400	
<b>K</b>	Gray cast iron			Ferritic/pearlitic	15	260-900	260-820	260-850
				Pearlitic/martensitic	16	430-870	430-790	430-790
	Ductile cast iron (nodular)			Ferritic	17	490-980	490-890	490-920
				Pearlitic	18	300-980	300-890	300-920
	Malleable cast iron			Ferritic	19	490-980	490-890	490-920
				Pearlitic	20	460-870	460-790	460-790
<b>S</b>	High temp. alloys	Fe based	Annealed	31	65-150	65-130	65-130	
			Hardened	32	65-115	65-100	65-130	
		Ni or Co bases	Annealed	33	65-115	65-100	65-100	
			Hardened	34	65-115	65-100	65-100	
			Cast	35	100-300	100-260	100-245	
	Titanium and Ti alloys			Pure Titanium	36	100-300	100-260	100-245
				Alpha+beta alloys cured	37	100-300	100-260	100-245
<b>H</b>	Hardened steel			Hardened	38	100-210	100-200	100-165
				Hardened	39	100-150	100-130	100-130
	Chilled cast iron			Cast	40	230-330	230-300	200-260
	Cast iron			Hardened	41	100-210	330-690	100-165

# Recommendations for Machining Methods

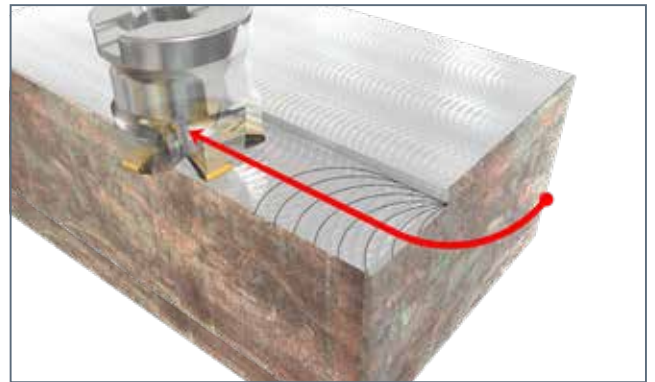
## Face Milling Including Milling Next to Square Shoulder

- It is recommended that a width of cut be no more than diameter DC in order to prevent tooth overloading, because of excess machining allowance in cusps produced on the additional passes after stepdown
- Down (climb) milling is preferable



## Cutting into material

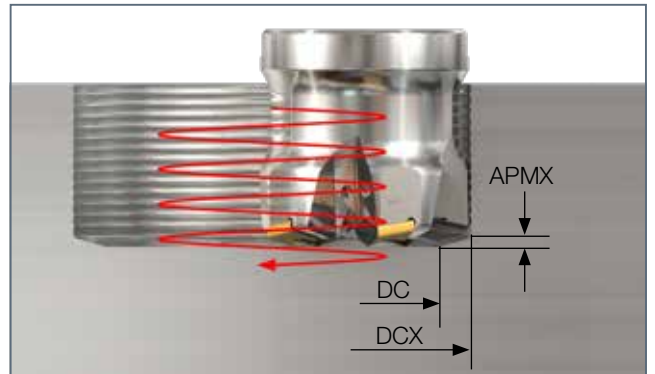
In milling, an approach cut by arc (“rolling in”) is preferable. When a milling cutter enters a machined material by arc, the chip thickness (and therefore, loading the cutting edge) grows to a maximum value progressively and then gradually diminishes to zero. It significantly contributes to machining stability, improves tool life, and reduces vibrations.



## Milling Hole of Diameter D by Helical Interpolation

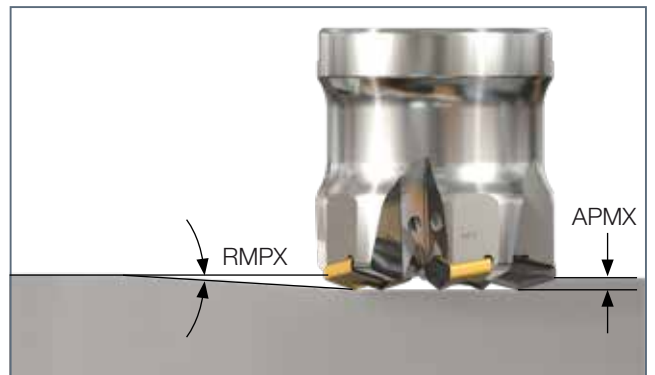
Maximum and minimum hole diameters  
Dmax and Dmin correspondingly:  
 $D_{max} = 2 \times DCX - 1$ ,  $D_{min} = DCX + DC$

- Down (climb) milling is recommended, however if chip evacuation is problematic, up (conventional) milling may provide better results
- Helical pitch should not exceed the maximum depth of cut APMX
- Helix angle should not exceed the maximum ramping angle RMPX
- It is recommended to reduce feed per tooth fz by 30-40%



## Milling by Ramping Down

- Depth of ramping per pass should not exceed maximum depth of cut APMX
- Ramping angle should not exceed maximum ramping angle RMPX
- Down (climb) milling is preferable
- It is recommended to reduce feed per tooth fz by 30-40%



## Pocket Milling

- In pocket milling, machining from the center to outside contour is preferable
- In ramping down by line or helix, depth of ramping per pass should not exceed the maximum depth of cut APMX and the ramping angle should not exceed the maximum ramping angle RMPX
- In ramping down passes, it is recommended to reduce feed per tooth fz by 30-40%

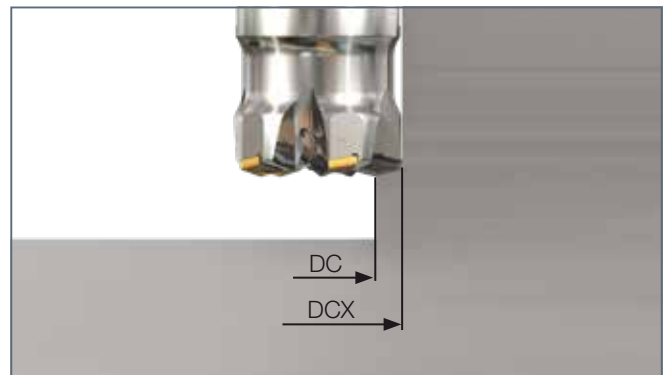
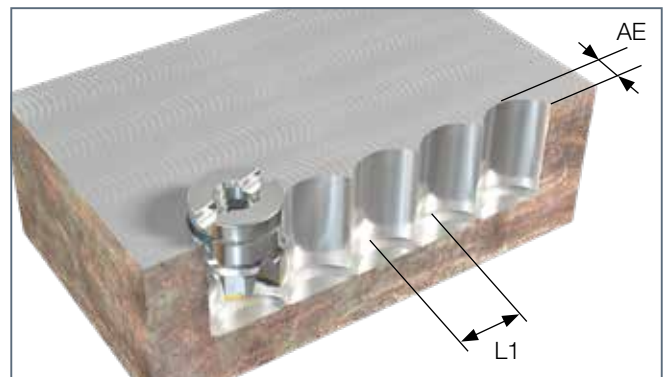


## Side Plunge Milling

- The relationship between L1 max and ae is given by the following formulas:  

$$ae_{max} = (DCX - DC)/2$$

$$L1_{max} = 2 \times \sqrt{(DCX \times ae - ae^2)}$$
- Plunge milling is an effective and economical method for machining deep cavities, walls, slots and shapes
- Plunge milling can provide a good solution for unstable and low-power milling machine tools





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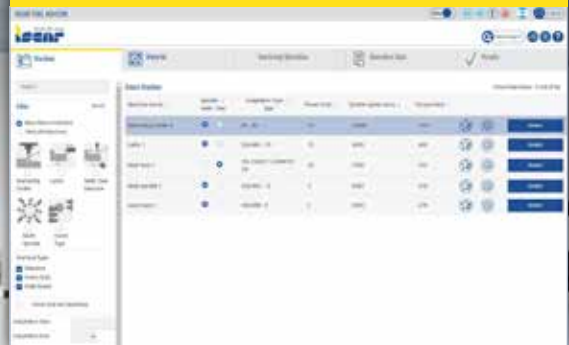


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# NEO ITA System Workflow

## Select a Machine



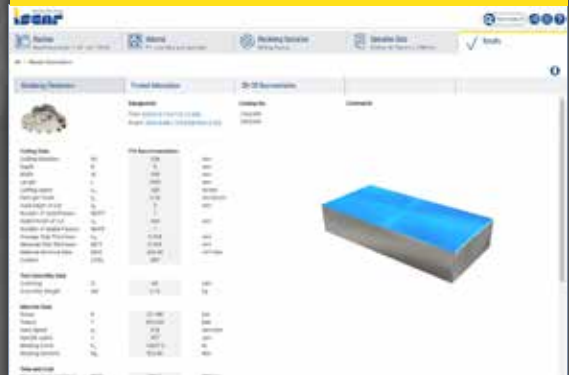
## Define and customize machine specifications



## Search material by groups or by random choice



## Choose a Tool Recommendation



# FAST FEED MILLING

## Quick Tool Selector Guide

Inch Version



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