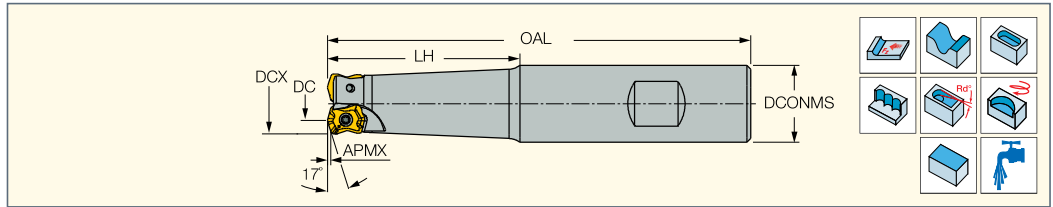




**FFX4 ED**

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	KAPR <sup>(4)</sup>	OAL	DCONMS	RMPX <sup>(5)</sup>	MDN <sup>(6)</sup>	MDX <sup>(7)</sup>	Shank <sup>(8)</sup>	Rg <sup>(9)</sup>	MIID <sup>(10)</sup>	TQ <sup>(11)</sup>	
FFX4 ED12-1-030-C12-04	12.00	4.60	0.80	3.7	1	30.0	17.0	90.00	12.00	3.6	16.60	23.00	C	1.80	FFX4 XNMU 040310T	0.9	0.07
FFX4 ED16-2-030-C16-04	16.00	8.60	0.80	3.7	2	30.0	17.0	120.00	16.00	4.3	24.60	31.00	C	1.80	FFX4 XNMU 040310T	0.9	0.16
FFX4 ED16-2-050-W20-04	16.00	8.60	0.80	3.7	2	50.0	17.0	110.00	20.00	4.3	24.60	31.00	W	1.80	FFX4 XNMU 040310T	0.9	0.20
FFX4 ED20-3-050-C20-04	20.00	12.60	0.80	3.7	3	50.0	17.0	140.00	20.00	2.7	32.60	39.00	C	1.80	FFX4 XNMU 040310T	0.9	0.29
FFX4 ED20-3-060-W20-04	20.00	12.60	0.80	3.7	3	60.0	17.0	120.00	20.00	2.7	32.60	39.00	W	1.80	FFX4 XNMU 040310T	0.9	0.24
FFX4 ED25-4-060-C25-04	25.00	17.60	0.80	3.7	4	60.0	17.0	150.00	25.00	1.8	42.60	49.00	C	1.80	FFX4 XNMU 040310T	0.9	0.50
FFX4 ED25-4-080-W25-04	25.00	17.60	0.80	3.7	4	80.0	17.0	140.00	25.00	1.8	42.60	49.00	W	1.80	FFX4 XNMU 040310T	0.9	0.45
FFX4 ED32-5-080-W32-04	32.00	24.60	0.80	3.7	5	80.0	17.0	150.00	32.00	1.2	56.60	63.00	W	1.80	FFX4 XNMU 040310T	0.9	0.80
FFX4 ED32-5-120-C32-04	32.00	24.60	0.80	3.7	5	120.0	17.0	205.00	32.00	1.2	56.60	63.00	C	1.80	FFX4 XNMU 040310T	0.9	1.02

• 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) Tool cutting edge angle
- (5) Maximum ramping angle
- (6) Machinable diameter minimum for interpolation
- (7) Machinable diameter maximum for interpolation
- (8) C-Cylindrical, W-Weldon
- (9) Radius for programming
- (10) Master insert identification
- (11) Recommended tightening torque (N\*m) for insert screw

Inserts: FFX4 XNMU-04

**Spare Parts**

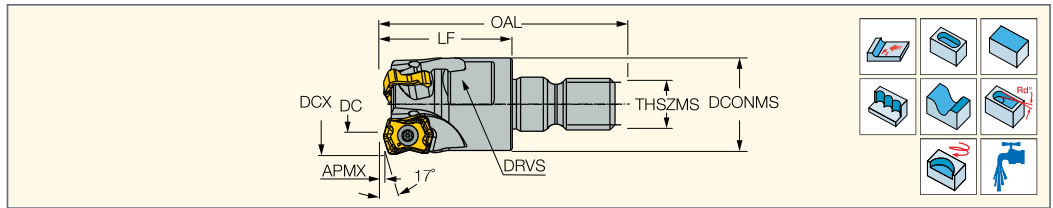
Designation		
FFX4 ED	SR M2.5X6-T7-60	T-7/51



**FLEXFIT**

**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>	
FFX4 ED20/78-3-M10-04	20.00	12.60	3	0.80	3.7	M10	25.00	45.00	18.00	2.7	32.60	39.00	15.0	1.80	FFX4 XNMU 040310T	0.9	29	0.04
FFX4 ED25/98-4-M12-04	25.00	17.60	4	0.80	3.7	M12	30.00	52.00	21.00	1.8	42.60	49.00	19.0	1.80	FFX4 XNMU 040310T	0.9	33	0.08
FFX4 ED32/1.26-5-M16-04	32.00	24.60	5	0.80	3.7	M16	35.00	60.00	29.00	1.2	56.60	63.00	27.0	1.80	FFX4 XNMU 040310T	0.9	40	0.18
FFX4 ED35/1.38-5-M16-04	35.00	27.60	5	0.80	3.7	M16	35.00	60.00	29.00	1.1	62.60	69.00	25.0	1.80	FFX4 XNMU 040310T	0.9	40	0.20
FFX4 ED42/1.65-6-M16-04	42.00	34.60	6	0.80	3.7	M16	40.00	65.00	29.00	0.8	76.60	83.00	25.0	1.80	FFX4 XNMU 040310T	0.9	40	0.30

• 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 (N\*m) for insert screw
- (11) Tool tightening torque Nxm (lbfxin)

Inserts: FFX4 XNMU-04

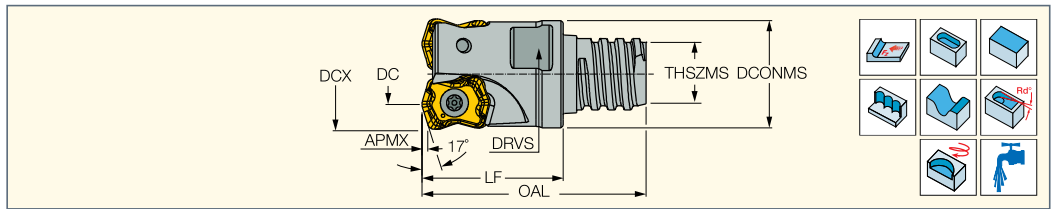
Holders: BT-ODP (FLEXFIT) • C#-ODP (FLEXFIT) • CAB M-M (FLEXFIT) • DIN69871-ODP • ER-ODP • HSK A-ODP (FLEXFIT) • S M • S M-C-H • S M-CF

**Spare Parts**

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

**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>	kg
<b>FFX4 ED16/.63-2-MMT10-04</b>	16.00	8.60	2	0.80	3.7	T10	20.00	31.75	15.20	4.3	24.60	31.00	13.0	FFX4 XNMU 040310T	0.9	1.80	0.02
<b>FFX4 ED20/.78-3-MMT12-04</b>	20.00	12.60	3	0.80	3.7	T12	25.00	38.30	18.80	2.7	32.60	39.00	15.0	FFX4 XNMU 040310T	0.9	1.80	0.04
<b>FFX4 ED25/.98-4-MMT15-04</b>	25.00	17.60	4	0.80	3.7	T15	30.00	47.00	24.00	1.8	42.60	49.00	19.0	FFX4 XNMU 040310T	0.9	1.80	0.14



• 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 (N\*m) for insert screw
- (10) Radius for programming

**Inserts:** FFX4 XNMU-04

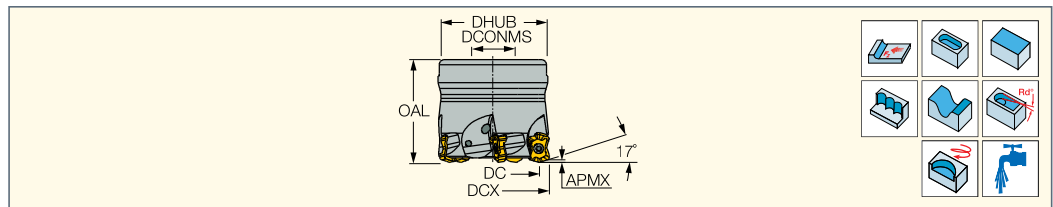
**Holders:** MM CAB-T-T • MM S-A (stepped shanks) • MM S-A (straight shanks) • MM S-A-C# • MM S-A-HSK • MM S-A-N • MM S-A-SK • MM S-B (85° conical shanks) • MM S-D (89° conical shanks) • MM S-ER • MM S-ER-H • MM TS-A

**Spare Parts**

Designation		
<b>FFX4 ED-MM</b>	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	DCONMS	DHUB	RMPX <sup>(4)</sup>	MDN <sup>(5)</sup>	MDX <sup>(6)</sup>	Arbor	Rg <sup>(7)</sup>	MIID <sup>(8)</sup>	kg
<b>FFX4 FD032-5-16-04</b>	32.00	24.60	5	0.80	3.7	40.00	16.00	38.00	1.2	56.60	63.00	A	1.80	FFX4 XNMU 040310T	0.12
<b>FFX4 FD040-6-16-04</b>	40.00	32.60	6	0.80	3.7	40.00	16.00	38.00	0.9	72.60	79.00	A	1.80	FFX4 XNMU 040310T	0.23
<b>FFX4 FD042-6-16-04</b>	42.00	34.60	6	0.80	3.7	40.00	16.00	38.00	0.8	76.60	83.00	A	1.80	FFX4 XNMU 040310T	0.50
<b>FFX4 FD050-7-22-04</b>	50.00	42.60	7	0.80	3.7	40.00	22.00	48.00	0.7	92.60	99.00	A	1.80	FFX4 XNMU 040310T	0.39
<b>FFX4 FD052-7-22-04</b>	52.00	44.60	7	0.80	3.7	40.00	22.00	48.00	0.7	96.60	103.00	A	1.80	FFX4 XNMU 040310T	0.44

• 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) Radius for programming
- (8) Master insert identification

**Inserts:** FFX4 XNMU-04

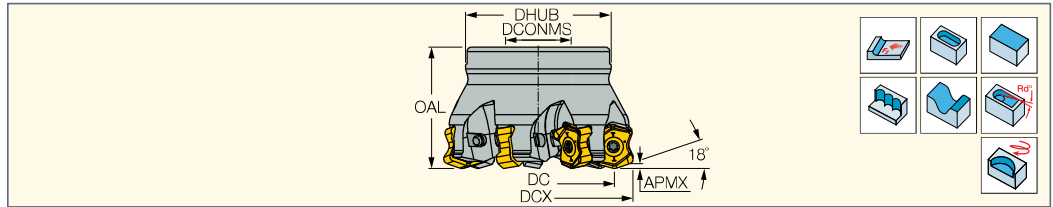
**Spare Parts**

Designation			
<b>FFX4 FD032-5-16-04</b>	SR M2.5X6-T7-60	T-7/51	SR M8X25-D11.5
<b>FFX4 FD040-6-16-04</b>	SR M2.5X6-T7-60	T-7/51	SR M8X25DIN912
<b>FFX4 FD042-6-16-04</b>	SR M2.5X6-T7-60	T-7/51	SR M8X25DIN912
<b>FFX4 FD050-7-22-04</b>	SR M2.5X6-T7-60	T-7/51	SR M10X25 DIN912
<b>FFX4 FD052-7-22-04</b>	SR M2.5X6-T7-60	T-7/51	SR M10X25 DIN912



**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	DCONMS	DHUB	Rd°	MDN <sup>(3)</sup>	MDX <sup>(4)</sup>	Arbor	Rg <sup>(5)</sup>	MIID <sup>(6)</sup>	
<b>FFX4 FD050-4-22-08</b>	50.00	34.40	4	2.00	7.8	50.00	22.00	48.00	3.3	84.40	99.00	A	4.00	FFX4 XNMU 080620	0.58
<b>FFX4 FD063-5-22-08</b>	63.00	47.40	5	2.00	7.8	45.00	22.00	48.00	2.3	110.40	125.00	A	4.00	FFX4 XNMU 080620T	0.48
<b>FFX4 FD080-7-27-08</b>	80.00	64.40	7	2.00	7.8	50.00	27.00	60.00	1.6	144.40	159.00	B	4.00	FFX4 XNMU 080620T	0.95
<b>FFX4 FD100-8-32-08</b>	100.00	84.40	8	2.00	7.8	50.00	32.00	78.00	1.2	184.40	199.00	B	4.00	FFX4 XNMU 080620T	1.24
<b>FFX4 FD125-10-40-08</b>	125.00	109.40	10	2.00	7.8	63.00	40.00	92.00	0.9	234.40	249.00	B	4.00	FFX4 XNMU 080620T	2.40

• 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 interpolation
- (4) For interpolation
- (5) Radius for programming
- (6) Master insert identification

**Inserts:** FFX4 XNMU-08

**Spare Parts**

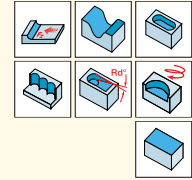
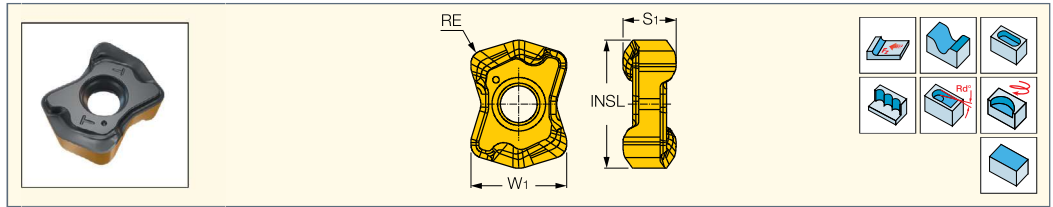
Designation				
<b>FFX4 FD050-4-22-08</b>	SR M5-14 IP20	SW6-T	BLD IP20/S7	SR PS 118-0273
<b>FFX4 FD063-5-22-08</b>	SR M5-14 IP20	SW6-T	BLD IP20/S7	SR M10X25 DIN912
<b>FFX4 FD080-7-27-08</b>	SR M5-14 IP20	SW6-T	BLD IP20/S7	SR M12X30DIN912
<b>FFX4 FD100-8-32-08</b>	SR M5-14 IP20	SW6-T	BLD IP20/S7	
<b>FFX4 FD125-10-40-08</b>	SR M5-14 IP20	SW6-T	BLD IP20/S7	





**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	ap (mm)	fz (mm/t)
FFX4 XNMU 040310HP	9.58	3.97	1.00	7.16	●	●	●	●			0.20-0.80	0.20-0.90
FFX4 XNMU 040310RM-HP	9.58	3.97	1.00	7.16	●				●		0.20-0.80	0.20-0.90
FFX4 XNMU 040310T	9.58	3.95	1.00	7.16			●		●	●	0.20-0.80	0.40-1.20
FFX4 XNMU 040310RM-T	9.58	3.95	1.00	7.16					●		0.20-0.80	0.40-1.20

- For side plunging, the initial cutting feed is 0.1 mm/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

**Tools:** FFX4 ED • FFX4 ED-M • FFX4 ED-MM • FFX4 FD-04

**Averaged Cutting Data for FFX4 Fast Feed Cutters Size 04**

ISO class DIN/ ISO 513	Description	Workpiece material				Insert type	Carbide grade	D.O.C. ap [mm]	Cutting Speed & Feed		Coolant
		ISCAR mat. group*	Hardness HB	AISI/SAE/ASTM	DIN W.-Nr.				Vc [m/min]	fz [mm/tooth]	
P	Non-alloy steel	1-5	130-180	1020	1.0402	T	IC808	0.2-0.8	150-220	0.2-1.0	Dry
	Low alloy steel	6-8	260-300	4340	1.6582		IC830		140-200	0.2-1.2	Dry/Wet
		9	HRC 35-42**	3135	1.5710		IC808		140-200	0.2-0.9	Dry/Wet
	High alloy steel	10-11	200-220	H13	1.2344		IC830		120-180	0.2-1.1	Dry/Wet
							IC808		130-180	0.2-0.8	Dry
							IC830		120-160	0.2-1.0	Dry/Wet
	Ferritic/martensitic stainless steel	12-13	200	420	1.4021		IC808		120-170	0.2-0.8	Dry
M	Austenitic stainless steel	14	200	304L	1.4306	IC830	0.2-0.8	80-120	0.2-0.9	Wet	
						IC840		80-140	0.2-0.8		
						IC5820		100-160	0.2-0.7		
						IC882		80-130	0.2-0.8		
K	Grey cast iron	15-16	250	Class 40	0.6025 (GG25)	T	0.2-0.8	150-220	0.4-1.2	Dry	
	Nodular cast iron	17-18	200	Class 65-45-12	0.7050 (GGG50)			IC810	120-200		0.4-1.2
S	High temperature alloys	33-35	340	Inconel 718	2.4668	HP	0.2-0.8	IC882	20-30	0.2-0.7	Wet
								IC5820	25-35	0.2-0.6	
								IC840	25-35	0.2-0.6	
		36-37	HRC 30-32	AMS R56400	3.7165 (Ti6Al4V ELI)			IC830	25-30	0.2-0.7	
								IC882	25-35	0.2-0.7	
								IC5820	25-40	0.2-0.6	
								IC840	25-35	0.2-0.6	
H	Hardened steel	38	HRC 45-49	HARDOX 450 plate		T	0.2-0.8	IC830	20-30	0.2-0.7	
								IC808	50-75	0.2-0.5	Dry

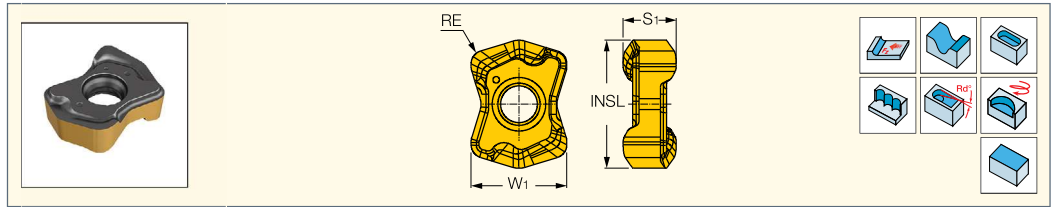
\* ISCAR material group in accordance with VDI 3323 standard

\*\* Quenched and tempered

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

**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	ap (mm)	fz (mm/t)
FFX4 XNMU 080620HP	17.90	7.80	2.00	15.60	•	•	•	•	0.20-2.00	0.20-0.60
FFX4 XNMU 080620T	17.90	7.80	2.00	15.60	•	•	•	•	0.20-2.00	0.40-1.20

- For side plunging, the initial cutting feed is 0.1 mm/t • T-for steel, ferritic and martensitic stainless steel, cast iron and hardened steel
- HP-for austenitic stainless steel and high temperature alloys

Tools: FFX4 FD-08

**Averaged Cutting Data for FFX4 Fast Feed Cutters Size 08**

ISO class DIN/ISO 513	Workpiece material		Typical representative		Insert type	Carbide grade	D.O.C. ap [mm]	Cutting speed vc [m/min]	Feed fz [mm/tooth]	Coolant	
	Description	ISCAR mat. group*	Hardness HB	AISI/SAE/ASTM							DIN W.-Nr.
P	Non-alloy steel	1-5	130-180	1020	1.0402	T	0.50-2.0	150-180	0.40-1.20	Dry	
		6-8	260-300	4340	1.6582			150-180	0.40-1.20	Dry/Wet	
	Low alloy steel	9	HRC 35-42**	3135	1.5710			IC830	150-180	0.40-1.20	Dry/Wet
								IC830	120-180	0.40-1.10	Dry/Wet
	High alloy steel	10-11	200-220	H13	1.2344			IC808	130-180	0.40-1.10	Dry
								IC830	120-160	0.40-1.00	Dry/Wet
	Ferritic/martensitic stainless steel	12-13	200	420	1.4021			IC808	120-170	0.40-0.80	Dry
								IC830	100-150	0.40-0.90	Dry/Wet
M	Austenitic stainless steel	14	200	304L	1.4306	HP	0.50-2.0	IC808	110-160	0.40-0.80	Dry
								IC830	100-150	0.40-0.90	Dry/Wet
K	Grey cast iron	15-16	250	Class 40	0.6025 (GG25)	T	0.50-2.0	IC810	70-130	0.20-0.80	Wet
	Nodular cast iron	17-18	200	Class 65-45-12	0.7050 (GGG50)			IC810	100-160	0.20-0.80	
S	High temperature alloys	31-32	220	330	1.4864	HP	0.50-2.0	IC882	150-220	0.40-1.20	Wet
								IC808	120-200	0.40-1.20	
		33-35	340	Inconel 718	2.4668			IC830	40-60	0.20-0.70	
								IC882	40-80	0.20-0.70	
		36-37	30-32	AMS R56400	(Ti6Al4V ELI)			IC830	40-75	0.20-0.70	
								IC882	20-30	0.20-0.70	
IC808	25-40	0.20-0.70									
IC830	25-35	0.20-0.70									
H	Hardened steel	38	HRC 45-49	HARDOX 450 plate		T	0.50-2.0	IC882	30-50	0.20-0.70	Dry
								IC808	35-55	0.20-0.70	

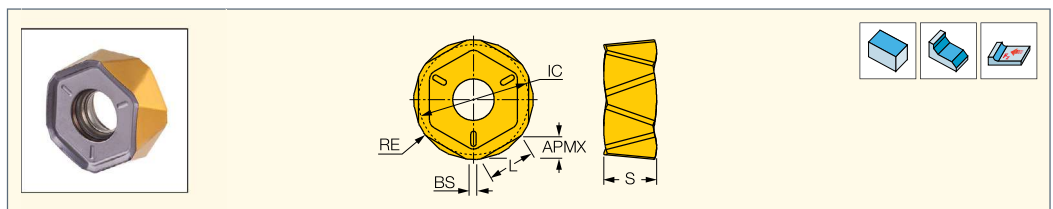
\* ISCAR material group in accordance with VDI 3323 standard

\*\* Quenched and tempered

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

**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	ap (mm)	fz (mm/t)
H1200 HXCU 0606-HPR (1)	3.00	6.43	1.06	1.60	14.88	7.15	•	•	•	•	•	•	0.20-3.00	0.08-0.40
H1200 HXCU 0606-TR (2)	3.00	6.43	1.06	1.60	14.88	7.15	•	•	•	•	•	•	0.20-3.00	0.25-0.65

• For cutting speed recommendations, see pages 542-547

(1) HPR - for stainless steel and high temperature alloys

(2) TR - for steel and cast iron

Tools: MF FHX-R06

