CARBIDE INSERT & HOLDER

Being the best through innovation

i-Xmill

i-Xmill

- **Available for General Steels and for Hardened Steels up to HRc70**
- **Lieferbar für normale und gehärtete Stähle bis HRc70**

SELECTION GUIDE

◎ : Excellent, ○ : Good

Carbon Steels		Alloy Steels		Tool Steels		Cast Iron	Hardened Steels	Stainless Steels	Aluminum
~HRc35	HRc35~	~HRc35	HRc35~	~HRc35	HRc35~	~HRc35	HRc50~	~HRc28	~HRc8
◎	○	◎	○	◎	○	○		○	○
○	◎	○	◎	○	◎	◎	◎		
◎	○	◎	○	◎	○	○		○	○
○	◎	○	◎	○	◎	◎	◎		

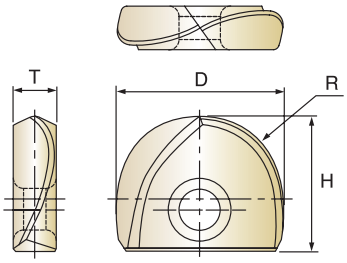
i-Xmill END MILLS

XMB110A
XMB120C

i-Xmill BALL INSERTS
i-Xmill WECHSELPLATTE mit RUNDER STIRN

- Indexable Ball End Mill for economic use
- Two Types of Inserts are available - For General Purpose (~HRc50) & For Hardened Material (HRc40~HRc65)
- Special Geometry and Coating for Excellent Performance

- Kopierfräser mit Wechselplatte für wirtschaftlichen Einsatz.
- Zwei Typen Wechselplatten verfügbar - Für allgemeinen Einsatz (HRc50) & Für gehärtete Materialien (HRc40~HRc65).
- Spezielle Geometrie und Beschichtung für höchste Leistu



Unit : mm

EDP No. For General Material	EDP No. For Hardened Material	Radius of Ball Nose R	Mill Diameter D	Height H	Thickness T
XMB110A080	XMB120C080	R4.0	8.0	8	2.4
XMB110A100	XMB120C100	R5.0	10.0	9.5	2.7
XMB110A120	XMB120C120	R6.0	12.0	11	3.2
XMB110A160	XMB120C160	R8.0	16.0	13	4.2
XMB110A200	XMB120C200	R10.0	20.0	16	5.2
XMB110A250	XMB120C250	R12.5	25.0	19.5	6.2
XMB110A300	XMB120C300	R15.0	30.0	23.5	7.2
XMB110A320	XMB120C320	R16.0	32.0	24.5	7.2

• The ball radius tolerance is ±0.01mm and the set-up accuracy is ±0.02mm

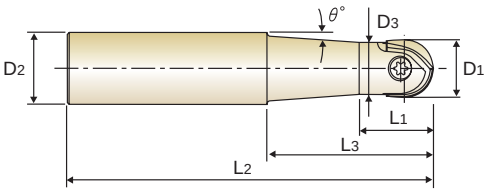
◎ : Excellent ○ : Good

	Carbon Steels		Alloy Steels		Tool Steels		Cast Iron	Hardened Steels	Stainless Steels	Aluminum
	~HRc35	HRc35~	~HRc35	HRc35~	~HRc35	HRc35~	~HRc35	HRc50~	~HRc28	~HRc8
XMB110A	◎	○	◎	○	◎	○	○		○	○
XMB120C	○	◎	○	◎	○	◎	◎	◎		

i-Xmill BALL HOLDERS - STEEL
i-Xmill HALTER für WECHSELPLATTE mit RUNDER STIRN - STÄHLE

- Premium alloy steel with excellent strength.
- Precise shank, Tolerance (h6).
- Black oxide treated, to prevent corrosion and improve lubricity.

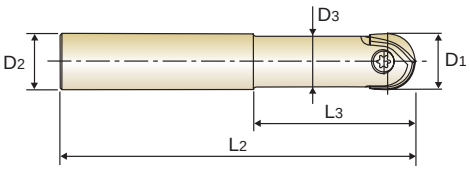
- Premium legierter Stähle mit großer Festigkeit.
- Hochgenauer Schaft, Tol h6.
- Schwarze Oxidschicht verhindert Korrosion und verbessert die Schmierfähigkeit.



TAPER NECK TYPE

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3	Taper Angle θ°	Length Type	Wrench No.	Screw No.
ZBT0801120	8.0	12	12	35	90	7.2	4°43′	Short	TWFT07	TX2508T07
ZBT0802120			25	55	110		3°37′	Regular		
ZBT1001120	10.0	12	15	35	90	9	2°51′	Short	TWFT08	TX3010T08
ZBT1002120			30	55	110		2°17′	Regular		
ZBT1201160	12.0	16	17	55	110	10.5	3°23′	Short	TWFT10	TX3512T10
ZBT1601200	16.0	20	20	65	125	14.5	2°51′	Short	TWFT15	TX4016T15
ZBT2001250	20.0	25	25	75	145	18	3°26′	Short	TWBT20	TX5020T20
ZBT2501320	25.0	32	30	90	170	22.5	4°03′	Short	TWBT25	TX6025T25
ZBT3001320	30.0 32.0	32	40	110	195	27	1°38′	Short	TWBT30	TX8030T30



STRAIGHT NECK TYPE

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length Below Shank L3	Overall Length L2	Neck Diameter D3	Length Type	Wrench No.	Screw No.
ZBS1201120	12.0	12	35	90	10.5	Short	TWFT10	TX3512T10
ZBS1202120			55	110		Regular		
ZBS1601160	16.0	16	35	95	14.5	Short	TWFT15	TX4016T15
ZBS1602160			65	125		Regular		
ZBS2001200	20.0	20	40	110	18	Short	TWBT20	TX5020T20
ZBS2002200			75	145		Regular		
ZBS2501250	25.0	25	45	125	22.5	Short	TWBT25	TX6025T25
ZBS2502250			90	170		Regular		
ZBS3001320	30.0, 32.0	32	55	140	27	Short	TWBT30	TX8030T30
ZBS3002320			110	195		Regular		

i-Xmill END MILLS

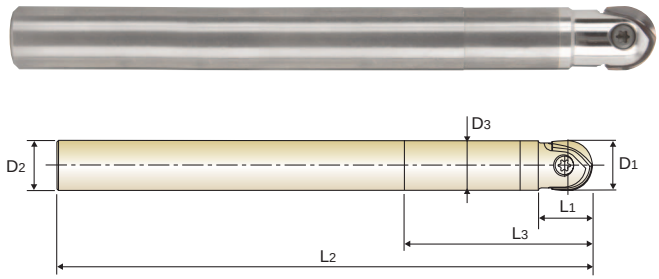
ZBC

i-Xmill BALL HOLDERS - CARBIDE

I-Xmill HALTER für WECHSELPLATTE mit RUNDER STIRN - VOLLHARTMETAL

- Equal tool rigidity with solid carbide end mill makes the stable and high finishing machining with the less vibration.
- The high finishing machining for the deeper part of mold.
- The tool's life of carbide ball holders is longer than steel holder.
- Shrink Fit Holding system can be applied.
- Upon request, the worn holder is able to be fixed.

- Die Festigkeit des Halters ermöglicht zusammen mit der VHM-Wechselplatte eine stabile Hochgenauigkeitsbearbeitung mit geringster Vibration.
- Feinbearbeitung auch in tieferen Teilen der Form.
- Die Lebensdauer von VHM-Haltern für runde Wechselplatten ist länger als die von Stahlhaltern.
- Schrumpffutter können verwendet werden.
- Auf Anfrage kann ein gebrochener Halter repariert werden.



Unit : mm

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter	Length Type	Wrench No.	Screw No.
	D1	D2	L1	L3	L2	D3			
ZBC0801080	8.0	8	12	25	130	7.7	Long	TWFT07	TX2508T07
ZBC1001100	10.0	10	15	30	140	9.7	Long	TWFT08	TX3010T08
ZBC1201120	12.0	12	17	35	150	11.7	Long	TWFT10	TX3512T10
ZBC1601160	16.0	16	20	50	200	15.7	Long	TWFT15	TX4016T15
ZBC2001200	20.0	20	25	60	200	19.7	Long	TWBT20	TX5020T20
ZBC2501250	25.0	25	30	75	200	24.7	Long	TWBT25	TX6025T25
ZBC3001320	30.0 32.0	32	40	90	250	29.7	Long	TWBT30	TX8030T30

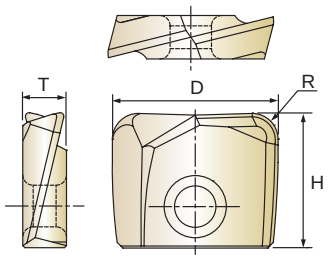
i-Xmill END MILLS

XMR110A
XMR120C

i-Xmill CORNER RADIUS INSERTS
i-Xmill WECHSELPLATTE mit GERADER STIRN UND ECKRADIUS

- ▶ The optimum geometry of the tool to achieve the better reliability and less vibration and cutting load.
- ▶ Interchangeability with i-Xmill ball holder, but the precise cutting is possible with i-Xmill corner radius holder due to higher stability and strength of tool.
- ▶ The various and wide cutting range makes it possible to machine over the roughing and finishing.
- ▶ Special coating makes high hardness with high thermal stability against oxidation.
- ▶ Two Types of Inserts are available - For General Purpose (~HRc50) & For Hardened Material (HRc40~HRc65)

- ▶ Die optimale Werkzeuggeometrie für große Betriebssicherheit und geringe Vibration und Schneidendruck.
- ▶ Einsetzbar wie i-Xmill Rundplattenhalter, aber eine größere Schnittgenauigkeit ist mit dem Vierkantplattenhalter möglich, wegen der größeren Steifigkeit und Stärke des Werkzeugs.
- ▶ Die große Einsatzbreite des Werkzeugs macht den Einsatz sowohl zum Schruppen als auch zum Schlichten möglich.
- ▶ Eine spezielle Beschichtung verleiht der Schneide große Härte und Hitzebeständigkeit.
- ▶ Zwei Typen Wechselplatten verfügbar - Für allgemeinen Einsatz (HRc50) & Für gehärtete Materialien (HRc40~HRc65).



Unit : mm

EDP No. For General Material	EDP No. For Hardened Material	Radius of Ball Nose R	Mill Diameter D	Height H	Thickness T
XMR110A080 03	XMR120C080 03	R0.3	8.0	8	2.4
XMR110A080 05	XMR120C080 05	R0.5			
XMR110A080 10	XMR120C080 10	R1.0			
XMR110A100 05	XMR120C100 05	R0.5	10.0	9.5	2.7
XMR110A100 10	XMR120C100 10	R1.0			
XMR110A100 20	XMR120C100 20	R2.0			
XMR110A120 05	XMR120C120 05	R0.5	12.0	11	3.2
XMR110A120 10	XMR120C120 10	R1.0			
XMR110A120 20	XMR120C120 20	R2.0			
XMR110A130 05	XMR120C130 05	R0.5	13.0	11.2	3.2
XMR110A130 10	XMR120C130 10	R1.0			
XMR110A130 20	XMR120C130 20	R2.0			
XMR110A160 05	XMR120C160 05	R0.5	16.0	13	4.2
XMR110A160 10	XMR120C160 10	R1.0			
XMR110A160 20	XMR120C160 20	R2.0			
XMR110A170 05	XMR120C170 05	R0.5	17.0	13	4.2
XMR110A170 10	XMR120C170 10	R1.0			
XMR110A170 20	XMR120C170 20	R2.0			

- The other corner radius values are available on request.
- The corner radius tolerance is ±0.015mm and the set-up accuracy is ±0.02mm

◎ : Excellent ○ : Good

	Carbon Steels		Alloy Steels		Tool Steels		Cast Iron	Hardened Steels	Stainless Steels	Aluminum
	~HRc35	HRc35~	~HRc35	HRc35~	~HRc35	HRc35~	~HRc35	HRc50~	~HRc28	~HRc8
XMB110A	◎	○	◎	○	◎	○	○		○	○
XMB120C	○	◎	○	◎	○	◎	◎	◎		

i-Xmill END MILLS

XMR110A
XMR120C

i-Xmill CORNER RADIUS INSERTS
i-Xmill WECHSELPLATTE mit GERADER STIRN UND ECKRADIUS

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- Die große Einsatzbreite des Werkzeugs macht den Einsatz sowohl zum Schruppen als auch zum Schlichten möglich.
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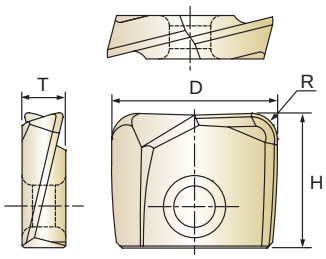

Unit : mm

EDP No. For General Material	EDP No. For Hardened Material	Radius of Ball Nose R	Mill Diameter D	Height H	Thickness T
XMR110A200 05	XMR120C200 05	R0.5	20.0	16	5.2
XMR110A200 10	XMR120C200 10	R1.0			
XMR110A200 20	XMR120C200 20	R2.0			
XMR110A210 05	XMR120C210 05	R0.5	21.0	16	5.2
XMR110A210 10	XMR120C210 10	R1.0			
XMR110A210 20	XMR120C210 20	R2.0			
XMR110A250 05	XMR120C250 05	R0.5	25.0	19.5	6.2
XMR110A250 10	XMR120C250 10	R1.0			
XMR110A250 20	XMR120C250 20	R2.0			
XMR110A260 05	XMR120C260 05	R0.5	26.0	19.5	6.2
XMR110A260 10	XMR120C260 10	R1.0			
XMR110A260 20	XMR120C260 20	R2.0			
XMR110A300 05	XMR120C300 05	R0.5	30.0	23.5	7.2
XMR110A300 10	XMR120C300 10	R1.0			
XMR110A300 20	XMR120C300 20	R2.0			
XMR110A320 05	XMR120C320 05	R0.5	32.0	23.5	7.2
XMR110A320 10	XMR120C320 10	R1.0			
XMR110A320 20	XMR120C320 20	R2.0			

- The other corner radius valuess are available on request.
- The corner radius tolerance is ±0.015mm and the set-up accuracy is ±0.02mm

◎ : Excellent ○ : Good

	Carbon Steels		Alloy Steels		Tool Steels		Cast Iron	Hardened Steels	Stainless Steels	Aluminum
	~HRc35	HRc35~	~HRc35	HRc35~	~HRc35	HRc35~	~HRc35	HRc50~	~HRc28	~HRc8
XMB110A	◎	○	◎	○	◎	○	○		○	○
XMB120C	○	◎	○	◎	○	◎	◎	◎		

i-Xmill CORNER RADIUS HOLDERS - STEEL

i-Xmill HALTER für WECHSELPLATTE mit GERADER STIRN UND ECKRADIU

- Premium alloy steel with excellent strength.
- Precise shank, Tolerance (h6).
- Black oxide treated, to prevent corrosion and improve lubricity.

- Premium legierter Stähle mit großer Festigkeit.
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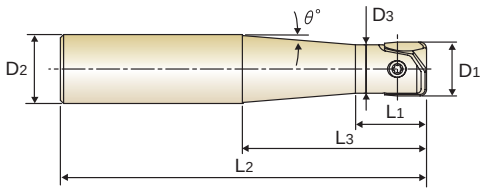
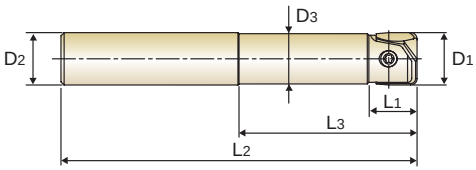


TAPER NECK TYPE

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3	Taper Angle θ°	Length Type	Wrench No.	Screw No.
ZRT0801120	8.0	12	10	22	100	6.7	9°	Regular	TWFT07	TX2508T07
ZRT0802120				50	130		2° 43'	Long		
ZRT1001120	10.0	12	13	25	100	8.6	4° 45'	Regular	TWFT08	TX3010T08
ZRT1002120				50	150		1° 32'	Long		
ZRT1202160	12.0 13.0	16	15	60	160	10.2	2° 32'	Long	TWFT10	TX3512T10



STRAIGHT NECK TYPE

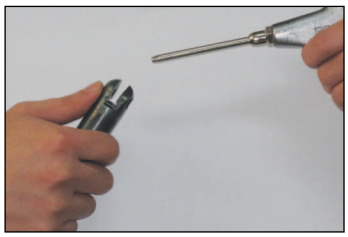
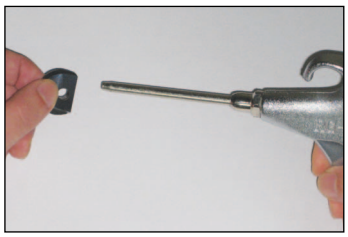
Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3	Length Type	Wrench No.	Screw No.
ZRS1201120	12.0, 13.0	12	13	30	110	11	Regular	TWFT10	TX3512T10
ZRS1601160	16.0, 17.0	16	15	50	130	15	Regular	TWFT15	TX4016T15
ZRS1602160				65	165		Intermediate		
ZRS2001200	20.0, 21.0	20	18	60	140	19	Regular	TWBT20	TX5020T20
ZRS2002200				80	180		Intermediate		
ZRS2501250	25.0, 26.0	25	23	70	150	24	Regular	TWBT25	TX6025T25
ZRS2502250				90	200		Intermediate		
ZRS3001320	30.0	32	27	80	160	29	Regular	TWBT30	TX8030T30
ZRS3002320				100	220		Intermediate		
ZRS3201320	32.0	32	28	80	160	31	Regular	TWBT30	TX8030T30
ZRS3202320				100	220		Intermediate		

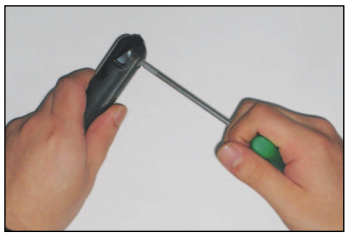
i-Xmill END MILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

ASSEMBLY OF *i*-Xmill
MONTAGE DES i-Xmill

◀ Make sure to clean the insert and insert seat.
Wechselplatte und Plattensitz sorgfältig reinigen.

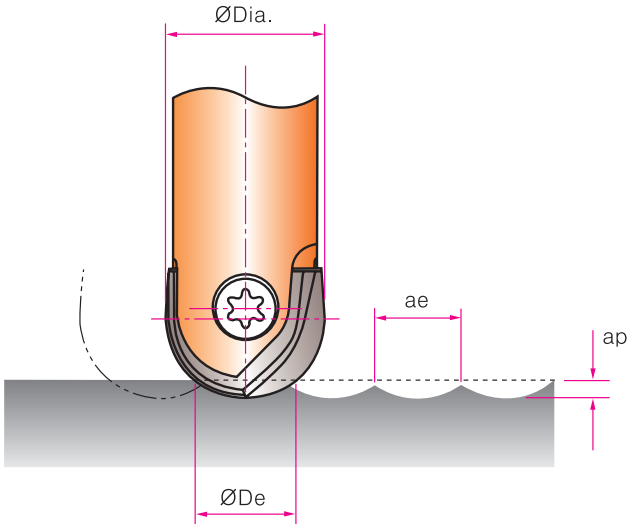



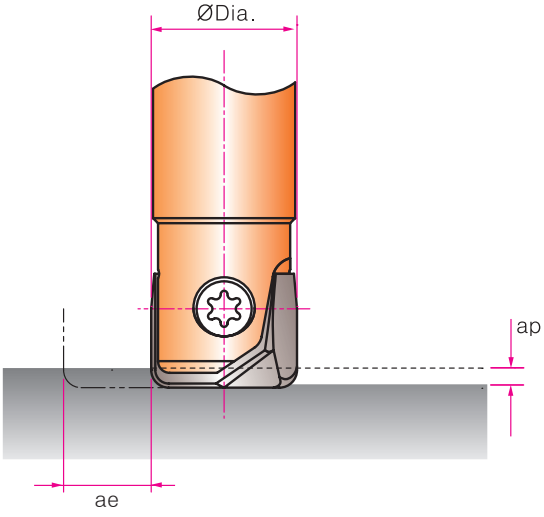
◀ Slide the insert into the slot of the holder.
Tighten the screw using anti-seize compound.
Wechselplatte in den Sitz des Halters einf¸hren.
Die Schraube fest anziehen und dabei Spezialfett verwenden

SIZE (ØD)	CLAMPING TORQUE [N · m]
Ø8	1.0
Ø10	1.5
Ø12, Ø13	2.5
Ø16, Ø17	3.5
Ø20, Ø21	5.0
Ø25, Ø26	6.0
Ø30, Ø32	6.5

∗ When the screw is worn out, please change the new screw.
∗ Wenn das Schraubengewinde verschlissen ist, bitte neue Schraube verwenden.
∗ Please tighten up the screw with recommended torque.
(Please refer to the table)
∗ Die Feststellschraube mit dem empfohlenen Anzugsmoment anziehen (siehe Tabelle).
∗ Don't press down the insert, when the screw is tightened.
∗ Die Wechselplatte nicht nach unten dr¸cken, wenn die Schraube angezogen ist.

CUTTING CONDITION





RPM = revolution per minute (rev/min)
Vc = surface meter per minute (M/min)
Dia. = diameter of insert (mm)
Vf = feed rate (mm/rev)
De = effective tool diameter (mm)
ap = axial depth of cut (mm)
ae = radial depth of cut (mm)

$$Vc\ [M/min] = \frac{(RPM) \cdot (\pi) \cdot (Dia.)}{1000}$$

$$Vf\ [mm/min] = (RPM) \cdot (Feed)$$

$$RPM\ [rev/min] = \frac{(Vc) \cdot (1000)}{(\pi) \cdot (Dia.)}$$

$$De\ [mm] = 2\sqrt{(ap) \cdot (Dia. - ap)}$$

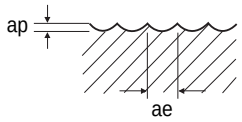
i-Xmill END MILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

i-Xmill BALL INSERTS
i-Xmill WECHSELPLATTE MIT RUNDER STIRN

XMB110A, XMB120C SERIES

WORK MATERIAL		CARBON & ALLOY STEELS			CARBON & ALLOY STEELS			DIE TOOL STEELS PRE-HARDENED			HARDENED STEELS		
HARDNESS	HB	~280			280~380			380~480			480~740		
	HRc	~30			30~40			40~50			50~65		
i-Xmill TYPE		XMB110A			XMB110A			XMB110A, XMB120C			XMB120C		
CUTTING SPEED Vc [M/min]	ROUGHING	160~260			120~200			100~200			180~230		
	FINISHING	215~400			150~380			150~320			200~250		
CUTTING CONDITION		Feed (Vf) [mm/rev]	ae [mm]	ap [mm]	Feed (Vf) [mm/rev]	ae [mm]	ap [mm]	Feed (Vf) [mm/rev]	ae [mm]	ap [mm]	Feed (Vf) [mm/rev]	ae [mm]	ap [mm]
8.0		0.30~0.50	0.80~0.25	0.20~0.10	0.30~0.50	0.80~0.25	0.20~0.10	0.20~0.30	0.80~0.25	0.20~0.10	0.20~0.30	0.80~0.20	0.20~0.10
10.0		0.30~0.50	1.00~0.25	0.25~0.10	0.30~0.50	1.00~0.25	0.25~0.10	0.25~0.35	1.00~0.25	0.25~0.10	0.25~0.35	1.00~0.20	0.25~0.10
12.0		0.40~0.60	1.20~0.30	0.30~0.10	0.40~0.60	1.20~0.30	0.30~0.10	0.25~0.40	1.20~0.30	0.30~0.10	0.25~0.40	1.20~0.25	0.30~0.10
16.0		0.50~0.70	1.60~0.30	0.80~0.10	0.50~0.70	1.60~0.30	0.80~0.10	0.30~0.50	1.60~0.30	0.80~0.10	0.30~0.50	1.60~0.25	0.80~0.10
20.0		0.50~0.80	2.00~0.40	1.00~0.10	0.50~0.80	2.00~0.40	1.00~0.10	0.35~0.55	2.00~0.40	1.00~0.10	0.35~0.55	2.00~0.35	1.00~0.10
25.0		0.50~1.00	2.50~0.40	1.25~0.10	0.50~1.00	2.50~0.40	1.25~0.10	0.40~0.60	2.50~0.40	1.25~0.10	0.40~0.60	2.50~0.40	1.25~0.10
30.0, 32.0		0.80~1.00	3.00~0.40	1.50~0.10	0.80~1.00	3.00~0.40	1.50~0.10	0.40~0.80	3.00~0.40	1.50~0.10	0.40~0.80	3.00~0.40	1.50~0.10

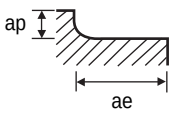


▶ Recommend to reduce the feed rate to 70 ~ 85% when you use long tools.

i-Xmill CORNER RADIUS INSERTS
i-Xmill WECHSELPLATTE MIT GERADER STIRN UND ECKRADIUS

XMR110A, XMR120C SERIES

WORK MATERIAL		CARBON & ALLOY STEELS			CARBON & ALLOY STEELS			DIE TOOL STEELS PRE-HARDENED			HARDENED STEELS		
HARDNESS	HB	~280			280~380			380~480			480~740		
	HRc	~30			30~40			40~50			50~65		
i-Xmill TYPE		XMR110A			XMR110A			XMR110A, XMR120C			XMR120C		
CUTTING SPEED Vc [M/min]	ROUGHING	160~250			120~240			100~240			80~180		
	FINISHING	200~300			200~280			200~280			150~220		
CUTTING CONDITION		Feed (Vf) [mm/rev]	ae [mm]	ap [mm]	Feed (Vf) [mm/rev]	ae [mm]	ap [mm]	Feed (Vf) [mm/rev]	ae [mm]	ap [mm]	Feed (Vf) [mm/rev]	ae [mm]	ap [mm]
8.0		0.40~0.30	0.80~0.20	0.20~0.10	0.40~0.30	0.80~0.20	0.20~0.10	0.20~0.10	0.80~0.20	0.20~0.10	0.20~0.10	0.80~0.20	0.20~0.10
10.0		0.40~0.30	1.00~0.20	0.20~0.10	0.40~0.30	1.00~0.20	0.20~0.10	0.20~0.10	1.00~0.20	0.20~0.10	0.20~0.10	1.00~0.20	0.20~0.10
12.0, 13.0		0.40~0.30	1.20~0.20	0.30~0.10	0.40~0.30	1.20~0.20	0.30~0.10	0.20~0.10	1.20~0.20	0.30~0.10	0.20~0.10	1.20~0.20	0.30~0.10
16.0, 17.0		0.50~0.40	1.60~0.20	0.80~0.20	0.50~0.40	1.60~0.20	0.80~0.20	0.24~0.12	1.60~0.20	0.80~0.20	0.24~0.12	1.60~0.20	0.80~0.20
20.0, 21.0		0.50~0.40	2.00~0.20	1.00~0.20	0.50~0.40	2.00~0.20	1.00~0.20	0.24~0.12	2.00~0.20	1.00~0.20	0.24~0.12	2.00~0.20	1.00~0.20
25.0, 26.0		0.50~0.40	2.05~0.20	1.30~0.20	0.50~0.40	2.50~0.20	1.30~0.20	0.24~0.12	2.50~0.20	1.30~0.20	0.24~0.12	2.50~0.20	1.30~0.20
30.0, 32.0		0.50~0.40	3.20~0.20	1.60~0.20	0.50~0.40	3.20~0.20	1.60~0.20	0.24~0.12	3.20~0.20	1.60~0.20	0.24~0.12	3.20~0.20	1.60~0.20



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