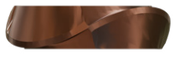
YE-EI24 EUROPE

i-Xmill

COATED EXCHANGEABLE CARBIDE INSERTS
WITH CARBIDE & STEEL HOLDERS
FOR VARIOUS MATERIALS

- NEW **Modular Type Head & Holder**
- **For General Purpose, Pre-Hardened Steels, High-Hardened Steels, Stainless Steels and Graphite**
- **High Precision Cutting and Wear Resistance**

i-Xmill INSERT FEATURES

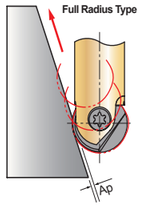


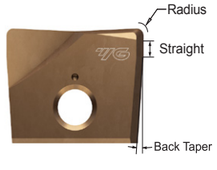
Helical Gash Geometries

- Provides softer cutting to minimize milling torque while maximizing tool life
- Ball radius tolerance of ±10µm

Full Radius Type Geometries

- Allows for machining undercuts
- 220° Enables pulling cut with higher ap



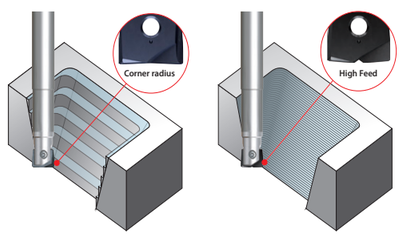


Corner Radius Geometries

- Back taper avoids surface irritations using z-constant machining
- Straight cutting edge section after radius enables for higher surface quality and/or higher ap step-overs (with reduced ae values)
- Corner radius tolerance ±15µm

High Feed Insert Geometry

- Highest metal removal rates for roughing through usage of the chip thinning effect
- Forces directed towards spindle allowing for longer stick-out lengths
- Ideal for 3 axis machining of inclined wall cavities, cutting closer to net workpiece shape holders



Highest Insert Thickness

- Stability against cracks and bending moment
- Allows for more freedom in design and higher helix angles

Additional Oversize Insert Diameters

- Reduces risk of collision using the same shank but with slightly increased cutting diameter (e.g. 13mm instead of regular 12mm)
- Great solution for 3 axis machining of straight walls

Wide Variety of Coatings

- Covering general purpose to high hardened steel applications
- Diamond coating for graphite and aluminum machining

AVAILABLE FOR GENERAL PURPOSE STEELS, PRE-HARDENED STEELS, HIGH HARDENED STEELS, STAINLESS STEEL AND GRAPHITE

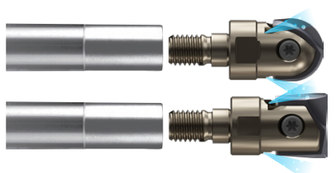
i-Xmill HOLDER FEATURES

Carbide Holders

- Repairable in case of collision due to blunt brazing
- Lower deflection than steel holder
- Preferred shank for use with shrink fit holders
- Ball nose shanks also accept both corner radius and high feed inserts

Steel Holders

- Economic solution for short reach applications
- Taper neck shape for less deflection on 5 axis machines
- Ball nose shanks also accept both corner radius and high feed inserts



Modular Type of i-Xmill Tooling

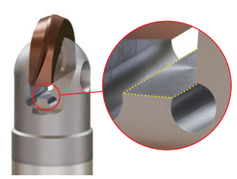
- Highest flexibility using market common coupling
- Internal coolant or air blow supply

Accuracy by Clamping Screw

- Restores run-out accuracy by exchanging worn out screw with a new clamping screw
- Allows for average changeover accuracy of ±20µm

Precise Contact of all Relevant Surfaces

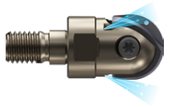
- Increased precision from insert to insert
- Accuracy and less vibrations during machining



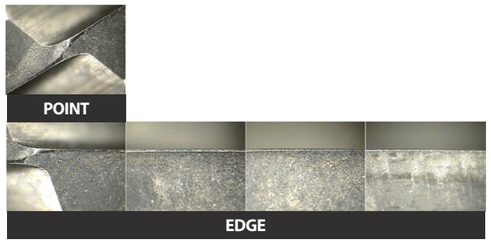
CASE STUDY

TEST I i-Xmill Modular Type

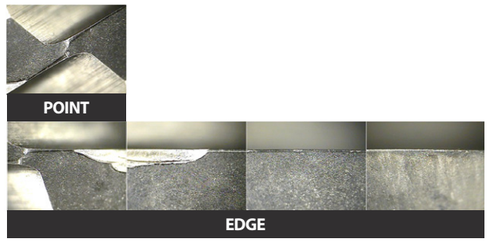
Tools	i-Xmill Moudular with Internal Coolant	Conventional Type
Milling Length	43.4 m	
Size (mm)	Ø21 x R10.0	
Work Material	- DIN : 42CrMo4 - AISI : 4140 - JIS : SCM440 (HRc30)	
Cutting Speed	283.36 m/min.	
RPM	4,295 rev./min.	
Feed	3,150 mm/min.	
Feed per tooth	0.37 mm/tooth	
Milling Depth	Axial : 1.0 mm Radial : 2.0 mm	
Coolant	Internal Coolant Hole	External Coolant
Milling Method	Profile Cutting	
Machine	Machining Center	
Wear	29.407 µm	Chipping



***i*-Xmill Modular with Internal Coolant**

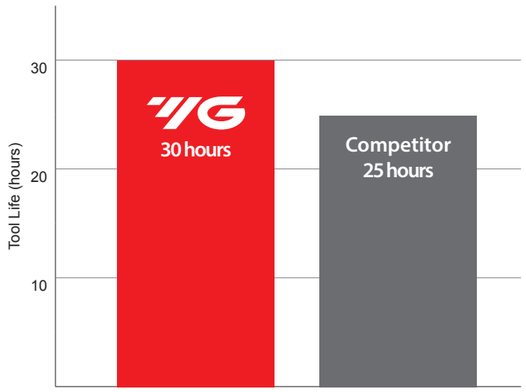


Conventional Type



TEST II i-Xmill Modular Type

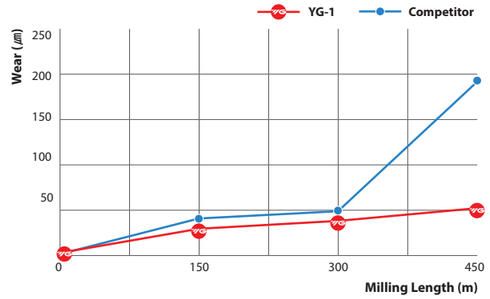
Tools	i-Xmill Modular	Competitor
Size (mm)	Ø20 x R10.0	
Work Material	Plastic Tool Steel 1.2311 (HRc30)	
Cutting Speed	376m/min.	
RPM	5,987 rev./min.	
Feed	5,987 mm/min.	
Feed per tooth	0.5 mm/tooth	
Milling Depth	Axial : 0.3 mm Radial : 0.3 mm	
Coolant	Dry	
Milling Method	Copy Milling	
Machine	Machining Center	



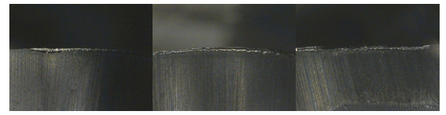
CASE STUDY

TEST III for Mold Steel (Corner Radius)

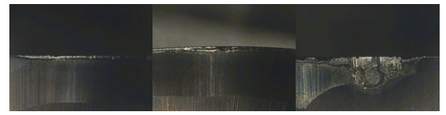
Tools	i-Xmill Corner Radius (XMR110A16020)
Size (mm)	Ø16 x R2.0
Work Material	- DIN: 40CrMnNiMo8-6-4 (1.2738) - AISI: P20+Ni - KS: KP4M (Mold steels HRc35)
Cutting Speed	280 m/min.
RPM	5,570 rev./min.
Feed	2,230 mm/min.
Feed per tooth	0.2 mm/tooth
Milling Method	Side Cutting
Milling Depth	Axial: 3.0 mm Radial: 0.2 mm
Coolant	Oil Mist
Overhang	70 mm
Machine	Machining Center



***i*-Xmill** (Total milling length 450m)

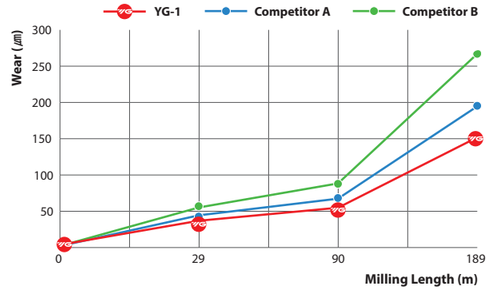


Competitor (Total milling length 450m)



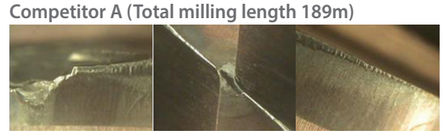
TEST IV for Pre-Hardened Steels (Ball)

Tools	i-Xmill Ball (XMB120C160)
Size (mm)	Ø16 x R8.0
Work Material	- DIN : X40GrMoV51 (1.2344) - AISI : H13 - JIS: SKD61 (HRc50)
Cutting Speed	80.42 m/min.
RPM	1,600 rev./min.
Feed	390 mm/min.
Feed per tooth	0.12 mm/tooth
Milling Method	Profile Cutting
Milling Depth	Axial: 0.8 mm Radial: 1.6 mm
Coolant	Oil Mist
Overhang	YG-1, Competitor B: 48 mm Competitor A: 56 mm
Machine	Machining Center

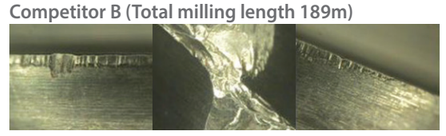


***i*-Xmill** (Total milling length 189m)

Competitor A (Total milling length 189m)



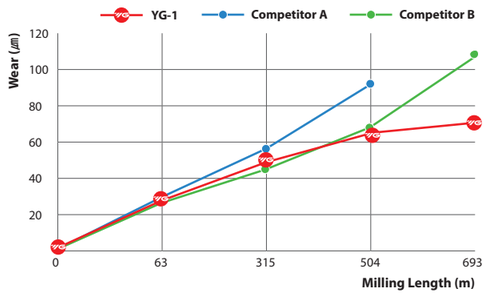
Competitor B (Total milling length 189m)



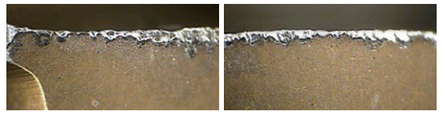
CASE STUDY

TEST V for High Hardened Steels (Ball)

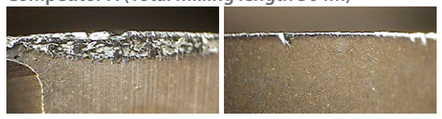
Tools	i -Xmill Ball (XMB260T160)
Size(mm)	Ø16 x R8.0
Work Material	- DIN: X155CrVMo12-1 (1.2379) - AISI: D2 - JIS: SKD11 (HRc60)
Cutting Speed	70.02 m/min.
RPM	1,393 rev./min.
Feed	613 mm/min.
Feed per tooth	0.22 mm/tooth
Milling Method	Profile Cutting
Milling Depth	Axial: 0.1 mm Radial: 0.3 mm
Coolant	Oil Mist
Machine	Machining Center



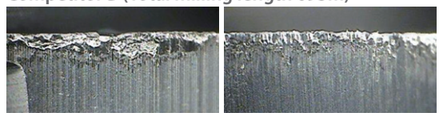
i-Xmill (Total milling length 693m)



Competitor A (Total milling length 504m)

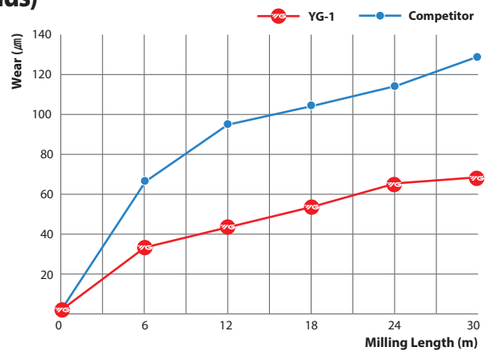


Competitor B (Total milling length 693m)

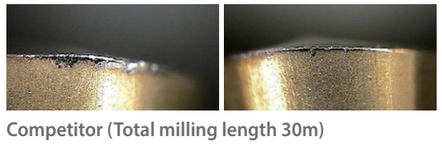


TEST VI for High Hardened Steels (Corner Radius)

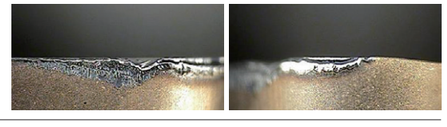
Tools	i-Xmill Corner Radius (XMR260T25010)
Size(mm)	Ø25 x R1.0
Work Material	- DIN: X155CrVMo12-1 (1.2379) - AISI: D2 - JIS: SKD11 (HRc60)
Cutting Speed	80.11 m/min.
RPM	1,020 rev./min.
Feed	310 mm/min.
Feed per tooth	0.15 mm/tooth
Milling Depth	Axial: 0.4 mm Radial: 0.2 mm
Milling Length	30 m
Milling Method	Down & Side Cutting
Coolant	Oil Mist



i-Xmill (Total milling length 30m)



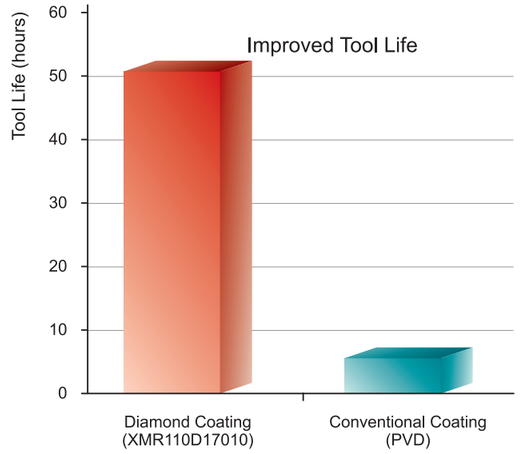
Competitor (Total milling length 30m)



CASE STUDY

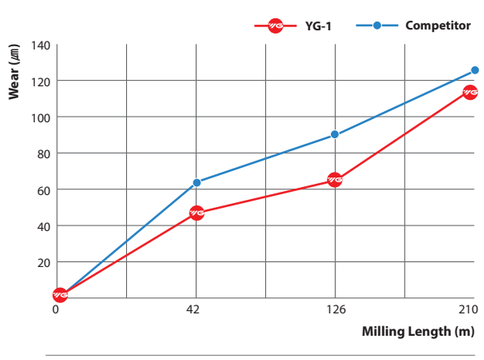
TEST VII for Graphite (Corner Radius)

Tools	i-Xmill Corner Radius (XMR110D17010)
Size(mm)	Ø17 x R1.0
Work Material	Graphite
Cutting Speed	320 m/min.
RPM	6,000 rev./min.
Feed	2,800 mm/min.
Feed per tooth	0.23 mm/tooth
Milling Depth	Axial : 0.2 mm
Coolant	Air

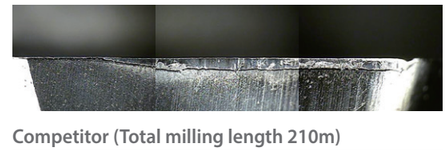


TEST VIII for High Feed (Corner Radius)

Tools	i -Xmill Corner Radius (XMF110V16015)
Size(mm)	Ø16 x R1.5
Work Material	- DIN: X40GrMoV51 (1.2344) - AISI: H13 - JIS: SKD61
Cutting Speed	174.97 m/min.
RPM	3,481 rev./min.
Feed	6,962 mm/min.
Feed per tooth	1.0 mm/tooth
Milling Depth	Axial: 0.6 mm Radial: 7.0 mm
Milling Length	210 m
Milling Method	Down & Side Cutting
Coolant	Oil Mist



i-Xmill (Total milling length 210m)



Competitor (Total milling length 210m)

SELECTION GUIDE

CARBIDE INSERT & HOLDER i-Xmill END MILLS

Available for General Purpose Steels, Pre-Hardened Steels, High Hardened Steels, Stainless Steel and Graphite

Please visit globalyg1.com/mat for material search

◎ : Excellent ○ : Good

Recommended cutting conditions : p.34-37

						SERIES	XMB110A	XMB120C	XMB260T	XMB130A	XMM110V	XMB110D	XMR110A	XMR120C	XMR260T	XMF110V	XMR110D		
						FLUTE	2	2	2	2	2	2	2	2	2	2	2		
						CUTTING EDGE SHAPE	BALL NOSE	BALL NOSE	BALL NOSE	BALL NOSE	BALL NOSE	BALL NOSE	CORNER RADIUS	CORNER RADIUS	CORNER RADIUS	CORNER RADIUS	CORNER RADIUS		
						SIZE MIN	R4.0	R4.0	R4.0	R4.0	R4.0	R4.0	D8.0	D8.0	D8.0	D8.0	D8.0		
						SIZE MAX	R16.5	R16.5	R16.5	R16.5	R16.5	R16.5	D33.0	D33.0	D33.0	D33.0	D33.0		
						PAGE	11	11	11	12	12	12	13	13	13	18	18		
							-	-	-	-	FULL RADIUS	-	-	-	-	HIGH FEED	-		
							AlTiN	XC-Coating	Z-Coating	AlTiN	Y-Coating	Diamond	AlTiN	XC-Coating	Z-Coating	Y-Coating	Diamond		
							GENERAL PURPOSE	PRE-HARDENED STEELS	HIGH HARDENED STEELS	STAINLESS STEELS	GENERAL PURPOSE	GRAPHITE	GENERAL PURPOSE STAINLESS STEELS	PRE-HARDENED STEELS	HIGH HARDENED STEELS	GENERAL PURPOSE	GRAPHITE		
ISO	VDI 3323	Material Description	Composition / Structure / Heat Treatment		HB	HRc													
P	1	Non-alloy steel	About 0.15% C	Annealed	125		◎				◎		◎			◎		1	P
	2		About 0.45% C	Annealed	190	13	◎				◎		◎			◎		2	
	3		About 0.45% C	Quenched & Tempered	250	25	◎				◎		◎			◎		3	
	4		About 0.75% C	Annealed	270	28	◎				◎		◎			◎		4	
	5		About 0.75% C	Quenched & Tempered	300	32	◎						◎			◎		5	
	6	Low alloy steel		Annealed	180	10	◎				◎		◎			◎		6	
	7			Quenched & Tempered	275	29	◎				◎		◎			◎		7	
	8			Quenched & Tempered	300	32	◎						◎					8	
	9			Quenched & Tempered	350	38		◎						◎				9	
	10	High alloyed steel, and tool steel		Annealed	200	15		○			◎			○		◎		10	
	11			Quenched & Tempered	325	35		◎						◎				11	
M	12	Stainless steel	Ferritic / Martensitic	Annealed	200	15				◎			◎					12	
	13		Martensitic	Quenched & Tempered	240	23				◎			◎					13	M
	14		Austenitic		180	10				◎			◎					14	
K	15	Grey cast iron	Pearlitic / ferritic		180	10		◎						◎				15	
	16		Pearlitic (Martensitic)		260	26		◎						◎				16	
	17	Nodular cast iron	Ferritic		160	3		◎						◎				17	K
	18		Pearlitic		250	25		◎						◎				18	
	19	Malleable cast iron	Ferritic		130			◎						◎				19	
	20		Pearlitic		230	21		◎						◎				20	
N	21	Aluminum-wrought alloy	Not Curable		60							○					○	21	
	22		Curable	Hardened	100							○					○	22	
	23	Aluminum-cast, alloyed	≤ 12% Si, Not Curable		75							○					○	23	
	24		≤ 12% Si, Curable	Hardened	90							○					○	24	
	25		> 12% Si, Not Curable		130													25	
	26	Copper and Copper Alloys (Bronze / Brass)	Cutting Alloys, PB>1%		110													26	N
	27		CuZn, CuSnZn (Brass)		90													27	
	28		CuSn, lead-free copper and electrolytic copper		100													28	
	29	Non Metallic Materials	Duroplastic, Fiber Reinforced Plastic									◎					◎	29	
	30		Rubber, Wood, etc.															30	
S	31	Heat Resistant Super Alloys	Fe Based	Annealed	200	15												31	
	32			Cured	280	30												32	
	33		Ni or Co Based	Annealed	250	25												33	
	34			Cured	350	38												34	S
	35			Cast	320	34												35	
	36	Titanium Alloys	Pure Titanium		400 Rm													36	
	37		Alpha + Beta Alloys	Hardened	1050 Rm													37	
H	38	Hardened steel		Hardened	550	55		○	◎					○	◎			38	
	39			Hardened	630	60			◎						◎			39	H
	40	Chilled Cast Iron		Cast	400	42			○						○			40	
	41	Hardened Cast Iron		Hardened	550	55			◎						◎			41	

Phone: +82-32-526-0909, www.yg1.kr, E-mail: yg1@yg1.kr

SELECTION GUIDE

	HOLDER					
SERIES	ZBC	ZBS	ZBT	ZRC	ZRS	ZRT
CUTTING EDGE SHAPE	BALL NOSE	BALL NOSE	BALL NOSE	CORNER RADIUS	CORNER RADIUS	CORNER RADIUS
PAGE	23	24	25	26	27	27
LENGTH	STRAIGHT NECK	STRAIGHT NECK	TAPER NECK	STRAIGHT NECK	STRAIGHT NECK	TAPER NECK
TOOL MATERIAL	Carbide	Steel	Steel	Carbide	Steel	Steel

i-Xmill END MILLS HOLDERS

Available for General Purpose Steels, Pre-Hardened Steels, High Hardened Steels, Stainless Steel and Graphite

Instruction manual : p.32

	MODULAR TYPE		MODULAR HOLDER		
SERIES	MIXB	MIXR	ZMC	ZMS	ZMT
CUTTING EDGE SHAPE	BALL NOSE	CORNER RADIUS	-	-	-
PAGE	28	28	29	30	31
LENGTH	-	-	STRAIGHT NECK	STRAIGHT NECK	TAPER NECK
TOOL MATERIAL	Steel	Steel	Carbide	Steel	Steel

i-Xmill END MILLS MODULAR TYPE

Available for General Purpose Steels, Pre-Hardened Steels, High Hardened Steels, Stainless Steel and Graphite

Instruction manual : p.33

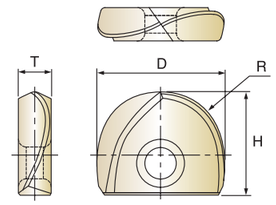
XMB110A SERIES
XMB120C SERIES
XMB260T SERIES

COATED EXCHANGEABLE CARBIDE END MILLS

i-Xmill BALL INSERTS

▶Exchangeable Ball End Mill for economic use
▶Three Types of Inserts are available
- For General Purpose (~HRc50)
- For Hardened Material (HRc40~HRc65)
- For Graphite

▶Special Geometry and Coating for Excellent Performance



Cutting conditions : p.34

Unit : mm

EDP No.			Radius of Ball Nose	Mill Diameter	Height	Thickness
AlTiN	XC-Coating	Z-Coating				
For General Purpose	For Pre-Hardened Steels	For High Hardened Steels	R	D	H	T
XMB110A080	XMB120C080	XMB260T080	R4.0	8.0	8.0	2.4
XMB110A100	XMB120C100	XMB260T100	R5.0	10.0	9.5	2.7
XMB110A110	XMB120C110	XMB260T110	R5.5	11.0	10.0	2.7
XMB110A120	XMB120C120	XMB260T120	R6.0	12.0	11.0	3.2
XMB110A130	XMB120C130	XMB260T130	R6.5	13.0	11.5	3.2
XMB110A160	XMB120C160	XMB260T160	R8.0	16.0	13.0	4.2
XMB110A170	XMB120C170	XMB260T170	R8.5	17.0	13.5	4.2
XMB110A200	XMB120C200	XMB260T200	R10.0	20.0	16.0	5.2
XMB110A210	XMB120C210	XMB260T210	R10.5	21.0	16.5	5.2
XMB110A250	XMB120C250	XMB260T250	R12.5	25.0	19.5	6.2
XMB110A260	XMB120C260	XMB260T260	R13.0	26.0	20.0	6.2
XMB110A300	XMB120C300	XMB260T300	R15.0	30.0	23.5	7.2
XMB110A320	XMB120C320	XMB260T320	R16.0	32.0	24.5	7.2
XMB110A330	XMB120C330	XMB260T330	R16.5	33.0	25.0	7.2

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

◎ : Excellent ○ : Good

ISO	P											M			K					
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
XMB110A	◎	◎	◎	◎	◎	◎	◎	◎												
XMB120C									◎	○	◎				◎	◎	◎	◎	◎	◎
XMB260T																				

ISO	N										S							H			
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
XMB110A																					
XMB120C																		○			
XMB260T																		◎	◎	○	◎

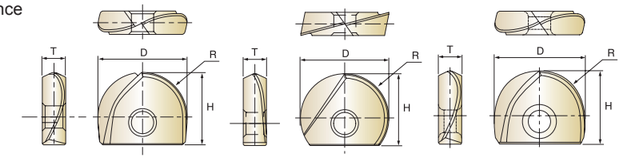
COATED EXCHANGEABLE CARBIDE END MILLS

i-Xmill BALL INSERTS

XMB130A SERIES
XMM110V SERIES
XMB110D SERIES

▶Exchangeable Ball End Mill for economic use
▶Three Types of Inserts are available
- For General Purpose (~HRc50)
- For Hardened Material (HRc40~HRc65)
- For Graphite

▶Special Geometry and Coating for Excellent Performance



for Stainless Steels | **Full Radius Type** (Cutting Angle : 220˚) | **for Graphite**

Cutting conditions : p.35

Unit : mm

EDP No.			Radius of Ball Nose	Mill Diameter	Height	Thickness
AlTiN	Y-Coating	Diamond				
For Stainless Steels	For General Purpose Full Radius Type	For Graphite	R	D	H	T
XMB130A080	XMM110V080	XMB110D080	R4.0	**8.0**	8.0	2.4
XMB130A100	XMM110V100	XMB110D100	R5.0	**10.0**	9.5	2.7
XMB130A110	XMM110V110	XMB110D110	R5.5	**11.0**	10.0	2.7
XMB130A120	XMM110V120	XMB110D120	R6.0	**12.0**	11.0	3.2
XMB130A130	XMM110V130	XMB110D130	R6.5	**13.0**	11.5	3.2
XMB130A160	XMM110V160	XMB110D160	R8.0	**16.0**	13.0	4.2
XMB130A170	XMM110V170	XMB110D170	R8.5	**17.0**	13.5	4.2
XMB130A200	XMM110V200	XMB110D200	R10.0	**20.0**	16.0	5.2
XMB130A210	XMM110V210	XMB110D210	R10.5	**21.0**	16.5	5.2
XMB130A250	XMM110V250	XMB110D250	R12.5	**25.0**	19.5	6.2
XMB130A260	XMM110V260	XMB110D260	R13.0	**26.0**	20.0	6.2
XMB130A300	XMM110V300	XMB110D300	R15.0	**30.0**	23.5	7.2
XMB130A320	XMM110V320	XMB110D320	R16.0	**32.0**	24.5	7.2
XMB130A330	XMM110V330	XMB110D330	R16.5	**33.0**	25.0	7.2

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

◎ : Excellent ○ : Good

ISO	P											M			K					
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
XMB130A												◎	◎	◎						
XMM110V	◎	◎	◎	◎		◎	◎			◎										
XMB110D																				

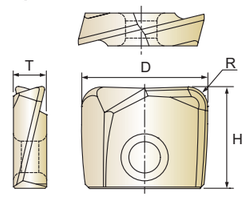
ISO	N										S							H		
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
XMB130A																					
XMM110V																					
XMB110D	○	○	○	○					◎												

COATED EXCHANGEABLE CARBIDE END MILLS

i-Xmill CORNER RADIUS INSERT

XMR110A SERIES
XMR120C SERIES
XMR260T SERIES

▶The optimized geometry of the tool achieves better reliability and less vibration and cutting load.
▶Interchangeable with i-Xmill ball holder, but precise cutting is possible with i-Xmill corner radius holder due to higher stability and strength of tool.
▶The varied and wide cutting range makes it possible to machine from roughing through to finishing.
▶Special coating makes high hardness with high thermal stability against oxidation.



Cutting conditions : p.36

Unit : mm

EDP No.			Corner Radius	Mill Diameter	Height	Thickness
AlTiN	XC-Coating	Z-Coating				
For General Purpose & Stainless Steels	For Pre-Hardened Steels	For High Hardened Steels	R	D	H	T
XMR110A080 03	XMR120C080 03	XMR260T080 03	R0.3	**8.0**	8.0	2.4
XMR110A080 05	XMR120C080 05	XMR260T080 05	R0.5	**8.0**	8.0	2.4
XMR110A080 10	XMR120C080 10	XMR260T080 10	R1.0	**8.0**	8.0	2.4
XMR110A080 20	XMR120C080 20	XMR260T080 20	R2.0	**8.0**	8.0	2.4
XMR110A100 03	XMR120C100 03	XMR260T100 03	R0.3	**10.0**	9.5	2.7
XMR110A100 05	XMR120C100 05	XMR260T100 05	R0.5	**10.0**	9.5	2.7
XMR110A100 10	XMR120C100 10	XMR260T100 10	R1.0	**10.0**	9.5	2.7
XMR110A100 15	XMR120C100 15	XMR260T100 15	R1.5	**10.0**	9.5	2.7
XMR110A100 20	XMR120C100 20	XMR260T100 20	R2.0	**10.0**	9.5	2.7
XMR110A100 30	XMR120C100 30	XMR260T100 30	R3.0	**10.0**	9.5	2.7
XMR110A110 03	XMR120C110 03	XMR260T110 03	R0.3	**11.0**	9.5	2.7
XMR110A110 05	XMR120C110 05	XMR260T110 05	R0.5	**11.0**	9.5	2.7
XMR110A110 10	XMR120C110 10	XMR260T110 10	R1.0	**11.0**	9.5	2.7
XMR110A110 15	XMR120C110 15	XMR260T110 15	R1.5	**11.0**	9.5	2.7
XMR110A110 20	XMR120C110 20	XMR260T110 20	R2.0	**11.0**	9.5	2.7
XMR110A110 30	XMR120C110 30	XMR260T110 30	R3.0	**11.0**	9.5	2.7

▶ The corner radius tolerance is ±0.015mm and the set-up accuracy is ±0.02mm.

NEXT PAGE ▶

◎ : Excellent ○ : Good

ISO	P											M			K					
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
XMR110A	◎	◎	◎	◎	◎	◎	◎	◎				◎	◎	◎						
XMR120C									◎	○	◎				◎	◎	◎	◎	◎	◎
XMR260T																				

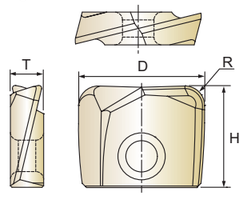
ISO	N										S							H		
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
XMR110A																					
XMR120C																		○			
XMR260T																		◎	◎	○	◎

COATED EXCHANGEABLE CARBIDE END MILLS

i-Xmill CORNER RADIUS INSERT

XMR110A SERIES
XMR120C SERIES
XMR260T SERIES

▶ The optimized geometry of the tool achieves better reliability and less vibration and cutting load.
▶ Interchangeable with i-Xmill ball holder, but precise cutting is possible with i-Xmill corner radius holder due to higher stability and strength of tool.
▶ The varied and wide cutting range makes it possible to machine from roughing through to finishing.
▶ Special coating makes high hardness with high thermal stability against oxidation.



Cutting conditions : p.36

Unit : mm

EDP No.			Corner Radius	Mill Diameter	Height	Thickness
AlTiN	XC-Coating	Z-Coating				
For General Purpose & Stainless Steels	For Pre-Hardened Steels	For High Hardened Steels	R	D	H	T
XMR110A120 03	XMR120C120 03	XMR260T120 03	R0.3	12.0	11.0	3.2
XMR110A120 05	XMR120C120 05	XMR260T120 05	R0.5	12.0	11.0	3.2
XMR110A120 10	XMR120C120 10	XMR260T120 10	R1.0	12.0	11.0	3.2
XMR110A120 15	XMR120C120 15	XMR260T120 15	R1.5	12.0	11.0	3.2
XMR110A120 20	XMR120C120 20	XMR260T120 20	R2.0	12.0	11.0	3.2
XMR110A120 30	XMR120C120 30	XMR260T120 30	R3.0	12.0	11.0	3.2
XMR110A130 03	XMR120C130 03	XMR260T130 03	R0.3	13.0	11.2	3.2
XMR110A130 05	XMR120C130 05	XMR260T130 05	R0.5	13.0	11.2	3.2
XMR110A130 10	XMR120C130 10	XMR260T130 10	R1.0	13.0	11.2	3.2
XMR110A130 15	XMR120C130 15	XMR260T130 15	R1.5	13.0	11.2	3.2
XMR110A130 20	XMR120C130 20	XMR260T130 20	R2.0	13.0	11.2	3.2
XMR110A130 30	XMR120C130 30	XMR260T130 30	R3.0	13.0	11.2	3.2
XMR110A160 03	XMR120C160 03	XMR260T160 03	R0.3	16.0	13.0	4.2
XMR110A160 05	XMR120C160 05	XMR260T160 05	R0.5	16.0	13.0	4.2
XMR110A160 10	XMR120C160 10	XMR260T160 10	R1.0	16.0	13.0	4.2
XMR110A160 15	XMR120C160 15	XMR260T160 15	R1.5	16.0	13.0	4.2
XMR110A160 20	XMR120C160 20	XMR260T160 20	R2.0	16.0	13.0	4.2
XMR110A160 30	XMR120C160 30	XMR260T160 30	R3.0	16.0	13.0	4.2

▶ The corner radius tolerance is ±0.015mm and the set-up accuracy is ±0.02mm.

NEXT PAGE ▶

◎ : Excellent ○ : Good

ISO	P											M			K					
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
XMR110A	◎	◎	◎	◎	◎	◎	◎	◎				◎	◎	◎						
XMR120C									◎	○	◎				◎	◎	◎	◎	◎	◎
XMR260T																				

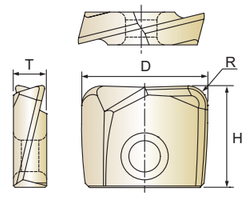
ISO	N										S							H			
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
XMR110A																					
XMR120C																		○			
XMR260T																		◎	◎	○	◎

COATED EXCHANGEABLE CARBIDE END MILLS

i-Xmill CORNER RADIUS INSERT

XMR110A SERIES
XMR120C SERIES
XMR260T SERIES

▶ The optimized geometry of the tool achieves better reliability and less vibration and cutting load.
▶ Interchangeable with i-Xmill ball holder, but precise cutting is possible with i-Xmill corner radius holder due to higher stability and strength of tool.
▶ The varied and wide cutting range makes it possible to machine from roughing through to finishing.
▶ Special coating makes high hardness with high thermal stability against oxidation.



Cutting conditions : p.36

Unit : mm

EDP No.			Corner Radius	Mill Diameter	Height	Thickness
AlTiN	XC-Coating	Z-Coating				
For General Purpose & Stainless Steels	For Pre-Hardened Steels	For High Hardened Steels	R	D	H	T
XMR110A170 03	XMR120C170 03	XMR260T170 03	R0.3	17.0	13.0	4.2
XMR110A170 05	XMR120C170 05	XMR260T170 05	R0.5	17.0	13.0	4.2
XMR110A170 10	XMR120C170 10	XMR260T170 10	R1.0	17.0	13.0	4.2
XMR110A170 15	XMR120C170 15	XMR260T170 15	R1.5	17.0	13.0	4.2
XMR110A170 20	XMR120C170 20	XMR260T170 20	R2.0	17.0	13.0	4.2
XMR110A170 30	XMR120C170 30	XMR260T170 30	R3.0	17.0	13.0	4.2
XMR110A200 03	XMR120C200 03	XMR260T200 03	R0.3	20.0	16.0	5.2
XMR110A200 05	XMR120C200 05	XMR260T200 05	R0.5	20.0	16.0	5.2
XMR110A200 10	XMR120C200 10	XMR260T200 10	R1.0	20.0	16.0	5.2
XMR110A200 15	XMR120C200 15	XMR260T200 15	R1.5	20.0	16.0	5.2
XMR110A200 20	XMR120C200 20	XMR260T200 20	R2.0	20.0	16.0	5.2
XMR110A200 30	XMR120C200 30	XMR260T200 30	R3.0	20.0	16.0	5.2
XMR110A210 03	XMR120C210 03	XMR260T210 03	R0.3	21.0	16.0	5.2
XMR110A210 05	XMR120C210 05	XMR260T210 05	R0.5	21.0	16.0	5.2
XMR110A210 10	XMR120C210 10	XMR260T210 10	R1.0	21.0	16.0	5.2
XMR110A210 15	XMR120C210 15	XMR260T210 15	R1.5	21.0	16.0	5.2
XMR110A210 20	XMR120C210 20	XMR260T210 20	R2.0	21.0	16.0	5.2
XMR110A210 30	XMR120C210 30	XMR260T210 30	R3.0	21.0	16.0	5.2

▶ The corner radius tolerance is ±0.015mm and the set-up accuracy is ±0.02mm.

NEXT PAGE ▶

◎ : Excellent ○ : Good

ISO	P											M			K					
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
XMR110A	◎	◎	◎	◎	◎	◎	◎	◎				◎	◎	◎						
XMR120C									◎	○	◎				◎	◎	◎	◎	◎	◎
XMR260T																				

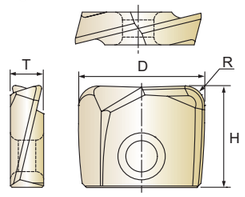
ISO	N										S							H			
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
XMR110A																					
XMR120C																		○			
XMR260T																		◎	◎	○	◎

COATED EXCHANGEABLE CARBIDE END MILLS

i-Xmill CORNER RADIUS INSERT

XMR110A SERIES
XMR120C SERIES
XMR260T SERIES

▶ The optimized geometry of the tool achieves better reliability and less vibration and cutting load.
▶ Interchangeable with i-Xmill ball holder, but precise cutting is possible with i-Xmill corner radius holder due to higher stability and strength of tool.
▶ The varied and wide cutting range makes it possible to machine from roughing through to finishing.
▶ Special coating makes high hardness with high thermal stability against oxidation.



Cutting conditions : p.36

Unit : mm

EDP No.			Corner Radius	Mill Diameter	Height	Thickness
AlTiN	XC-Coating	Z-Coating				
For General Purpose & Stainless Steels	For Pre-Hardened Steels	For High Hardened Steels	R	D	H	T
XMR110A250 03	XMR120C250 03	XMR260T250 03	R0.3	25.0	19.5	6.2
XMR110A250 05	XMR120C250 05	XMR260T250 05	R0.5	25.0	19.5	6.2
XMR110A250 10	XMR120C250 10	XMR260T250 10	R1.0	25.0	19.5	6.2
XMR110A250 15	XMR120C250 15	XMR260T250 15	R1.5	25.0	19.5	6.2
XMR110A250 20	XMR120C250 20	XMR260T250 20	R2.0	25.0	19.5	6.2
XMR110A250 30	XMR120C250 30	XMR260T250 30	R3.0	25.0	19.5	6.2
XMR110A260 03	XMR120C260 03	XMR260T260 03	R0.3	26.0	19.5	6.2
XMR110A260 05	XMR120C260 05	XMR260T260 05	R0.5	26.0	19.5	6.2
XMR110A260 10	XMR120C260 10	XMR260T260 10	R1.0	26.0	19.5	6.2
XMR110A260 15	XMR120C260 15	XMR260T260 15	R1.5	26.0	19.5	6.2
XMR110A260 20	XMR120C260 20	XMR260T260 20	R2.0	26.0	19.5	6.2
XMR110A260 30	XMR120C260 30	XMR260T260 30	R3.0	26.0	19.5	6.2
XMR110A300 03	XMR120C300 03	XMR260T300 03	R0.3	30.0	23.5	7.2
XMR110A300 05	XMR120C300 05	XMR260T300 05	R0.5	30.0	23.5	7.2
XMR110A300 10	XMR120C300 10	XMR260T300 10	R1.0	30.0	23.5	7.2
XMR110A300 15	XMR120C300 15	XMR260T300 15	R1.5	30.0	23.5	7.2
XMR110A300 20	XMR120C300 20	XMR260T300 20	R2.0	30.0	23.5	7.2
XMR110A300 30	XMR120C300 30	XMR260T300 30	R3.0	30.0	23.5	7.2

▶ The corner radius tolerance is ±0.015mm and the set-up accuracy is ±0.02mm.

NEXT PAGE ▶

◎ : Excellent ○ : Good

ISO	P											M			K					
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
XMR110A	◎	◎	◎	◎	◎	◎	◎	◎				◎	◎	◎						
XMR120C									◎	○	◎				◎	◎	◎	◎	◎	◎
XMR260T																				

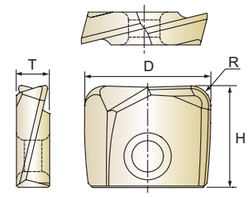
ISO	N										S							H		
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
XMR110A																					
XMR120C																		○			
XMR260T																		◎	◎	○	◎

COATED EXCHANGEABLE CARBIDE END MILLS

i-Xmill CORNER RADIUS INSERT

XMR110A SERIES
XMR120C SERIES
XMR260T SERIES

▶ The optimized geometry of the tool achieves better reliability and less vibration and cutting load.
▶ Interchangeable with i-Xmill ball holder, but precise cutting is possible with i-Xmill corner radius holder due to higher stability and strength of tool.
▶ The varied and wide cutting range makes it possible to machine from roughing through to finishing.
▶ Special coating makes high hardness with high thermal stability against oxidation.



Cutting conditions : p.36

Unit : mm

EDP No.			Corner Radius	Mill Diameter	Height	Thickness
AlTiN	XC-Coating	Z-Coating				
For General Purpose & Stainless Steels	For Pre-Hardened Steels	For High Hardened Steels	R	D	H	T
XMR110A320 03	XMR120C320 03	XMR260T320 03	R0.3	32.0	23.5	7.2
XMR110A320 05	XMR120C320 05	XMR260T320 05	R0.5	32.0	23.5	7.2
XMR110A320 10	XMR120C320 10	XMR260T320 10	R1.0	32.0	23.5	7.2
XMR110A320 15	XMR120C320 15	XMR260T320 15	R1.5	32.0	23.5	7.2
XMR110A320 20	XMR120C320 20	XMR260T320 20	R2.0	32.0	23.5	7.2
XMR110A320 30	XMR120C320 30	XMR260T320 30	R3.0	32.0	23.5	7.2
XMR110A330 03	XMR120C330 03	XMR260T330 03	R0.3	33.0	23.5	7.2
XMR110A330 05	XMR120C330 05	XMR260T330 05	R0.5	33.0	23.5	7.2
XMR110A330 10	XMR120C330 10	XMR260T330 10	R1.0	33.0	23.5	7.2
XMR110A330 15	XMR120C330 15	XMR260T330 15	R1.5	33.0	23.5	7.2
XMR110A330 20	XMR120C330 20	XMR260T330 20	R2.0	33.0	23.5	7.2
XMR110A330 30	XMR120C330 30	XMR260T330 30	R3.0	33.0	23.5	7.2

▶ The corner radius tolerance is ±0.015mm and the set-up accuracy is ±0.02mm.

◎ : Excellent ○ : Good

ISO	P											M			K					
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
XMR110A	◎	◎	◎	◎	◎	◎	◎	◎				◎	◎	◎						
XMR120C									◎	○	◎				◎	◎	◎	◎	◎	◎
XMR260T																				

ISO	N										S							H		
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
XMR110A																					
XMR120C																		○			
XMR260T																		◎	◎	○	◎

COATED EXCHANGEABLE CARBIDE END MILLS

i-Xmill CORNER RADIUS INSERT

XMF110V SERIES
XMR110D SERIES

▶ The optimized geometry of the tool achieves better reliability and less vibration and cutting load.
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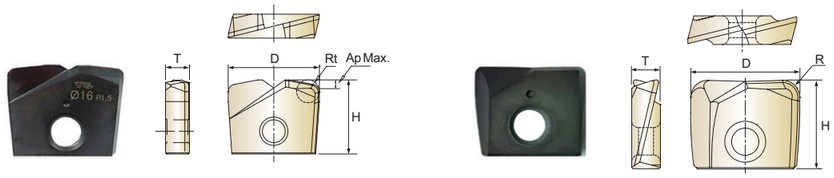
▶ Special coating makes high hardness with high thermal stability against oxidation.



High Feed

Cutting conditions : p.37

Unit : mm

EDP No.		Corner Radius	Mill Diameter	Height	Thickness	for High Feed
Y-Coating	Diamond					
For General Purpose High Feed	For Graphite	R (Rt)	D	H	T	Ap Max.
-	XMR110D080 03	R0.3	8.0	8.0	2.4	-
-	XMR110D080 05	R0.5	8.0	8.0	2.4	-
XMF110V080 08	-	R0.8	8.0	8.0	2.4	0.4
-	XMR110D080 10	R1.0	8.0	8.0	2.4	-
-	XMR110D080 20	R2.0	8.0	8.0	2.4	-
-	XMR110D100 03	R0.3	10.0	9.5	2.7	-
-	XMR110D100 05	R0.5	10.0	9.5	2.7	-
XMF110V100 10	XMR110D100 10	R1.0	10.0	9.5	2.7	0.5
-	XMR110D100 15	R1.5	10.0	9.5	2.7	-
-	XMR110D100 20	R2.0	10.0	9.5	2.7	-
-	XMR110D100 30	R3.0	10.0	9.5	2.7	-
-	XMR110D110 03	R0.3	11.0	9.5	2.7	-
-	XMR110D110 05	R0.5	11.0	9.5	2.7	-
XMF110V110 10	XMR110D110 10	R1.0	11.0	9.5	2.7	0.5
-	XMR110D110 15	R1.5	11.0	9.5	2.7	-
-	XMR110D110 20	R2.0	11.0	9.5	2.7	-
-	XMR110D110 30	R3.0	11.0	9.5	2.7	-

▶ The corner radius tolerance is ±0.015mm(Rt tolerance is ±0.05mm) and the set-up accuracy is ±0.02mm.

NEXT PAGE ▶

◎ : Excellent ○ : Good

ISO	P											M			K					
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
XMF110V	◎	◎	◎	◎	◎	◎	◎			◎										
XMR110D																				

ISO	N										S							H		
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
XMF110V																					
XMR110D	○	○	○	○					◎												

COATED EXCHANGEABLE CARBIDE END MILLS

i-Xmill CORNER RADIUS INSERT

XMF110V SERIES
XMR110D SERIES

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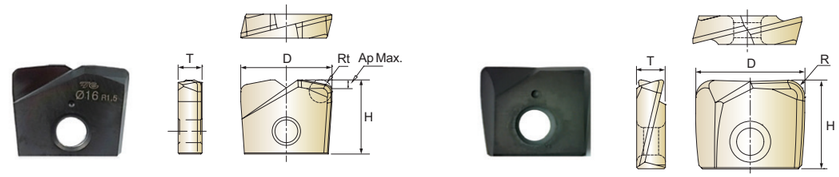

High Feed

Cutting conditions : p.37

Unit : mm

EDP No.		Corner Radius	Mill Diameter	Height	Thickness	for High Feed
Y-Coating	Diamond					
For General Purpose High Feed	For Graphite	R (Rt)	D	H	T	Ap Max.
-	XMR110D120 03	R0.3	12.0	11.0	3.2	-
-	XMR110D120 05	R0.5	12.0	11.0	3.2	-
XMF110V120 10	XMR110D120 10	R1.0	12.0	11.0	3.2	0.6
-	XMR110D120 15	R1.5	12.0	11.0	3.2	-
-	XMR110D120 20	R2.0	12.0	11.0	3.2	-
-	XMR110D120 30	R3.0	12.0	11.0	3.2	-
-	XMR110D130 03	R0.3	13.0	11.2	3.2	-
-	XMR110D130 05	R0.5	13.0	11.2	3.2	-
XMF110V130 10	XMR110D130 10	R1.0	13.0	11.2	3.2	0.6
-	XMR110D130 15	R1.5	13.0	11.2	3.2	-
-	XMR110D130 20	R2.0	13.0	11.2	3.2	-
-	XMR110D130 30	R3.0	13.0	11.2	3.2	-
-	XMR110D160 03	R0.3	16.0	13.0	4.2	-
-	XMR110D160 05	R0.5	16.0	13.0	4.2	-
-	XMR110D160 10	R1.0	16.0	13.0	4.2	-
XMF110V160 15	XMR110D160 15	R1.5	16.0	13.0	4.2	0.8
-	XMR110D160 20	R2.0	16.0	13.0	4.2	-
-	XMR110D160 30	R3.0	16.0	13.0	4.2	-

▶ The corner radius tolerance is ±0.015mm(Rt tolerance is ±0.05mm) and the set-up accuracy is ±0.02mm.

NEXT PAGE ▶

◎ : Excellent ○ : Good

ISO	P											M			K					
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
XMF110V	◎	◎	◎	◎	◎	◎	◎			◎										
XMR110D																				

ISO	N										S							H		
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
XMF110V																					
XMR110D	○	○	○	○					◎												

COATED EXCHANGEABLE CARBIDE END MILLS

i-Xmill CORNER RADIUS INSERT

XMF110V SERIES
XMR110D SERIES

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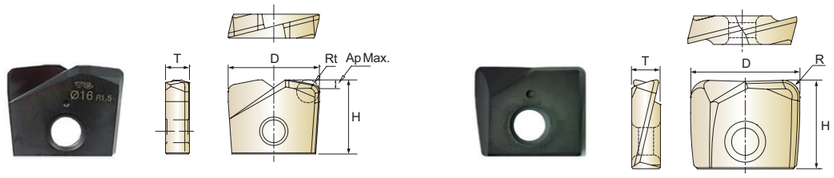

High Feed

Cutting conditions : p.37

Unit : mm

EDP No.		Corner Radius	Mill Diameter	Height	Thickness	for High Feed
Y-Coating	Diamond					
For General Purpose High Feed	For Graphite	R (Rt)	D	H	T	Ap Max.
-	XMR110D170 03	R0.3	17.0	13.0	4.2	-
-	XMR110D170 05	R0.5	17.0	13.0	4.2	-
-	XMR110D170 10	R1.0	17.0	13.0	4.2	-
XMF110V170 15	XMR110D170 15	R1.5	17.0	13.0	4.2	0.8
-	XMR110D170 20	R2.0	17.0	13.0	4.2	-
-	XMR110D170 30	R3.0	17.0	13.0	4.2	-
-	XMR110D200 03	R0.3	20.0	16.0	5.2	-
-	XMR110D200 05	R0.5	20.0	16.0	5.2	-
-	XMR110D200 10	R1.0	20.0	16.0	5.2	-
-	XMR110D200 15	R1.5	20.0	16.0	5.2	-
XMF110V200 20	XMR110D200 20	R2.0	20.0	16.0	5.2	1.0
-	XMR110D200 30	R3.0	20.0	16.0	5.2	-
-	XMR110D210 03	R0.3	21.0	16.0	5.2	-
-	XMR110D210 05	R0.5	21.0	16.0	5.2	-
-	XMR110D210 10	R1.0	21.0	16.0	5.2	-
-	XMR110D210 15	R1.5	21.0	16.0	5.2	-
XMF110V210 20	XMR110D210 20	R2.0	21.0	16.0	5.2	1.0
-	XMR110D210 30	R3.0	21.0	16.0	5.2	-

▶ The corner radius tolerance is ±0.015mm(Rt tolerance is ±0.05mm) and the set-up accuracy is ±0.02mm.

NEXT PAGE ▶

◎ : Excellent ○ : Good

ISO	P											M			K					
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
XMF110V	◎	◎	◎	◎	◎	◎	◎			◎										
XMR110D																				

ISO	N										S							H		
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
XMF110V																					
XMR110D	○	○	○	○					◎												

COATED EXCHANGEABLE CARBIDE END MILLS

i-Xmill CORNER RADIUS INSERT

XMF110V SERIES
XMR110D SERIES

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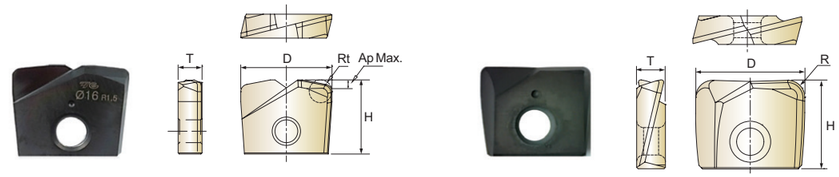


High Feed

Cutting conditions : p.37

Unit : mm

EDP No.		Corner Radius	Mill Diameter	Height	Thickness	for High Feed
Y-Coating	Diamond					
For General Purpose High Feed	For Graphite	R (Rt)	D	H	T	Ap Max.
-	XMR110D250 03	R0.3	25.0	19.5	6.2	-
-	XMR110D250 05	R0.5	25.0	19.5	6.2	-
-	XMR110D250 10	R1.0	25.0	19.5	6.2	-
-	XMR110D250 15	R1.5	25.0	19.5	6.2	-
-	XMR110D250 20	R2.0	25.0	19.5	6.2	-
XMF110V250 25	-	R2.5	25.0	19.5	6.2	1.25
-	XMR110D250 30	R3.0	25.0	19.5	6.2	-
-	XMR110D260 03	R0.3	26.0	19.5	6.2	-
-	XMR110D260 05	R0.5	26.0	19.5	6.2	-
-	XMR110D260 10	R1.0	26.0	19.5	6.2	-
-	XMR110D260 15	R1.5	26.0	19.5	6.2	-
-	XMR110D260 20	R2.0	26.0	19.5	6.2	-
XMF110V260 25	-	R2.5	26.0	19.5	6.2	1.25
-	XMR110D260 30	R3.0	26.0	19.5	6.2	-
-	XMR110D300 03	R0.3	30.0	23.5	7.2	-
-	XMR110D300 05	R0.5	30.0	23.5	7.2	-
-	XMR110D300 10	R1.0	30.0	23.5	7.2	-
-	XMR110D300 15	R1.5	30.0	23.5	7.2	-
-	XMR110D300 20	R2.0	30.0	23.5	7.2	-
XMF110V300 30	XMR110D300 30	R3.0	30.0	23.5	7.2	1.6

▶ The corner radius tolerance is ±0.015mm(Rt tolerance is ±0.05mm) and the set-up accuracy is ±0.02mm.

NEXT PAGE ▶

◎ : Excellent ○ : Good

ISO	P											M			K					
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
XMF110V	◎	◎	◎	◎	◎	◎	◎			◎										
XMR110D																				

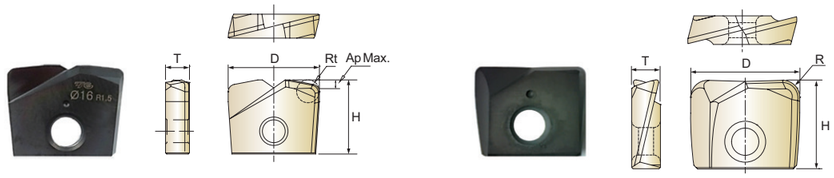
ISO	N										S							H		
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
XMF110V																					
XMR110D	○	○	○	○						◎											

COATED EXCHANGEABLE CARBIDE END MILLS

i-Xmill CORNER RADIUS INSERT

XMF110V SERIES
XMR110D SERIES

▶ The optimized geometry of the tool achieves better reliability and less vibration and cutting load.
▶ Interchangeable with i-Xmill ball holder, but precise cutting is possible with i-Xmill corner radius holder due to higher stability and strength of tool.
▶ The varied and wide cutting range makes it possible to machine from roughing through to finishing.
▶ Special coating makes high hardness with high thermal stability against oxidation.



High Feed

Cutting conditions : p.37

Unit : mm

EDP No.		Corner Radius	Mill Diameter	Height	Thickness	for High Feed
Y-Coating	Diamond					
For General Purpose High Feed	For Graphite	R (Rt)	D	H	T	Ap Max.
-	XMR110D320 03	R0.3	32.0	23.5	7.2	-
-	XMR110D320 05	R0.5	32.0	23.5	7.2	-
-	XMR110D320 10	R1.0	32.0	23.5	7.2	-
-	XMR110D320 15	R1.5	32.0	23.5	7.2	-
-	XMR110D320 20	R2.0	32.0	23.5	7.2	-
-	XMR110D320 30	R3.0	32.0	23.5	7.2	-
XMF110V320 32	XMR110D320 32	R3.2	32.0	23.5	7.2	1.6
-	XMR110D330 03	R0.3	33.0	23.5	7.2	-
-	XMR110D330 05	R0.5	33.0	23.5	7.2	-
-	XMR110D330 10	R1.0	33.0	23.5	7.2	-
-	XMR110D330 15	R1.5	33.0	23.5	7.2	-
-	XMR110D330 20	R2.0	33.0	23.5	7.2	-
-	XMR110D330 30	R3.0	33.0	23.5	7.2	-
XMF110V330 32	XMR110D330 32	R3.2	33.0	23.5	7.2	1.6

▶ The corner radius tolerance is ±0.015mm(Rt tolerance is ±0.05mm) and the set-up accuracy is ±0.02mm.

◎ : Excellent ○ : Good

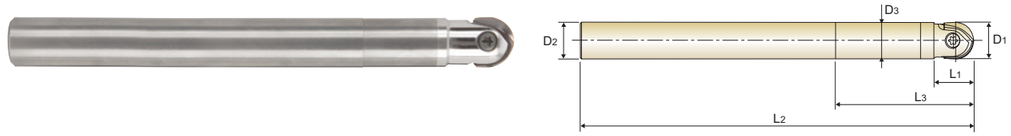
ISO	P											M			K					
Material Description	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
XMF110V	◎	◎	◎	◎	◎	◎	◎			◎										
XMR110D																				

ISO	N										S							H			
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
XMF110V																					
XMR110D	○	○	○	○					◎												

CARBIDE HOLDER

i-Xmill BALL NOSE - STRAIGHT NECK

ZBC SERIES



Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Neck Diameter D3	Length of Cut L1	Length Below Shank L3	Overall Length L2	Length Type	Wrench No.	Screw No.
★ ZBC0801080	8.0	8.0	7.6	12.0	25.0	130.0	Regular	TWFT07	TX2508T07
★ ZBC0802080	8.0	8.0	7.6	12.0	40.0	130.0	Regular		
★ ZBC0803080	8.0	8.0	7.6	12.0	65.0	130.0	Regular		
ZBC0804080	8.0	8.0	7.6	12.0	60.0	150.0	Regular		
ZBC0805080	8.0	8.0	7.6	12.0	60.0	200.0	Long		
ZBC0806080	8.0	8.0	7.6	12.0	25.0	80.0	Short		
★ ZBC1001100	10.0/11.0	10.0	9.5	15.0	30.0	140.0	Regular	TWFT08	TX3010T08
★ ZBC1002100	10.0/11.0	10.0	9.5	15.0	50.0	140.0	Regular		
★ ZBC1003100	10.0/11.0	10.0	9.5	15.0	75.0	140.0	Regular		
ZBC1004100	10.0/11.0	10.0	9.5	15.0	60.0	180.0	Regular		
ZBC1005100	10.0/11.0	10.0	9.5	15.0	60.0	200.0	Long		
ZBC1006100	10.0/11.0	10.0	9.5	15.0	30.0	80.0	Short		
ZBC120001P	12.0/13.0	12.0	11.4	17.0	40.0	200.0	Long	TWFT10	TX3512T10
★ ZBC1201120	12.0/13.0	12.0	11.4	17.0	35.0	150.0	Regular		
★ ZBC1202120	12.0/13.0	12.0	11.4	17.0	60.0	150.0	Regular		
★ ZBC1203120	12.0/13.0	12.0	11.4	17.0	85.0	150.0	Regular		
ZBC1204120	12.0/13.0	12.0	11.4	17.0	60.0	250.0	Long		
ZBC1205120	12.0/13.0	12.0	11.4	17.0	35.0	100.0	Short		
ZBC160001P	16.0/17.0	16.0	15.0	20.0	50.0	150.0	Regular	TWFT15	TX4016T15
★ ZBC1601160	16.0/17.0	16.0	15.0	20.0	50.0	200.0	Long		
★ ZBC1602160	16.0/17.0	16.0	15.0	20.0	80.0	200.0	Long		
★ ZBC1603160	16.0/17.0	16.0	15.0	20.0	120.0	200.0	Long		
★ ZBC1604160	16.0/17.0	16.0	15.0	20.0	80.0	250.0	Long		
ZBC1605160	16.0/17.0	16.0	15.0	20.0	50.0	120.0	Short		
ZBC200002P	20.0/21.0	20.0	19.0	25.0	60.0	150.0	Regular	● TWBT20	TX5020T20
★ ZBC2001200	20.0/21.0	20.0	19.0	25.0	60.0	200.0	Regular		
★ ZBC2002200	20.0/21.0	20.0	19.0	25.0	80.0	200.0	Regular		
★ ZBC2003200	20.0/21.0	20.0	19.0	25.0	100.0	250.0	Long		
★ ZBC2004200	20.0/21.0	20.0	19.0	25.0	150.0	250.0	Long		
ZBC2005200	20.0/21.0	20.0	19.0	25.0	100.0	300.0	Long		
ZBC250001P	25.0/26.0	25.0	24.0	30.0	75.0	150.0	Regular	● TWBT25	TX6025T25
★ ZBC2501250	25.0/26.0	25.0	24.0	30.0	75.0	200.0	Regular		
★ ZBC2502250	25.0/26.0	25.0	24.0	30.0	120.0	250.0	Regular		
★ ZBC2503250	25.0/26.0	25.0	24.0	30.0	190.0	300.0	Long		
ZBC2504250	25.0/26.0	25.0	24.0	30.0	120.0	350.0	Long		
ZBC2505250	25.0/26.0	25.0	24.0	30.0	60.0	300.0	Long		
★ ZBC3001320	30.0/32.0/33.0	32.0	29.0	40.0	90.0	250.0	Regular	● TWBT30	TX8030T30
★ ZBC3002320	30.0/32.0/33.0	32.0	29.0	40.0	150.0	300.0	Long		
★ ZBC3003320	30.0/32.0/33.0	32.0	29.0	40.0	190.0	300.0	Long		
ZBC3004320	30.0/32.0/33.0	32.0	29.0	40.0	120.0	350.0	Long		
ZBC3005320	30.0/32.0/33.0	32.0	29.0	40.0	150.0	400.0	Long		

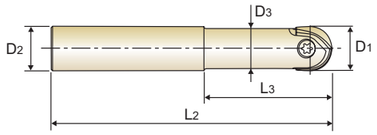
* Upon request, the broken holder is able to be regenerated
* Your carbide holder can be regenerated as YG-1 type upon request
* ● Required to use T-HANDLE (TWH600)
* ★Stock Item

▶ Please refer to the wrench table on the 32 page.

STEEL HOLDER

i-Xmill BALL NOSE - STRAIGHT NECK

ZBS SERIES



Unit : mm

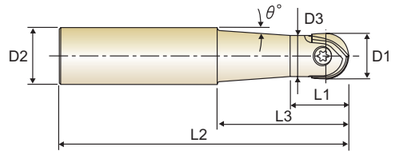
EDP No.	Mill Diameter D1	Shank Diameter D2	Neck Diameter D3	Length Below Shank L3	Overall Length L2	Length Type	Wrench No.	Screw No.
★ ZBS1201120	12.0/13.0	12.0	10.5	35.0	90.0	Short	TWFT10	TX3512T10
★ ZBS1202120	12.0/13.0	12.0	10.5	55.0	110.0	Regular		
ZBS120001P	12.0/13.0	12.0	10.5	40.0	150.0	Long		
★ ZBS1601160	16.0/17.0	16.0	14.5	35.0	95.0	Short	TWFT15	TX4016T15
★ ZBS1602160	16.0/17.0	16.0	14.5	65.0	125.0	Regular		
ZBS160001P	16.0/17.0	16.0	14.5	60.0	200.0	Long		
★ ZBS2001200	20.0/21.0	20.0	18.0	40.0	110.0	Short	● TWBT20	TX5020T20
★ ZBS2002200	20.0/21.0	20.0	18.0	75.0	145.0	Regular		
ZBS200001P	20.0/21.0	20.0	18.0	80.0	200.0	Long		
ZBS200002P	20.0/21.0	20.0	18.0	60.0	200.0	Long		
★ ZBS2501250	25.0/26.0	25.0	22.5	45.0	125.0	Short	● TWBT25	TX6025T25
★ ZBS2502250	25.0/26.0	25.0	22.5	90.0	170.0	Regular		
ZBS2503250	25.0/26.0	25.0	22.5	100.0	250.0	Long		
ZBS250001P	25.0/26.0	25.0	22.5	90.0	200.0	Long		
ZBS250002P	25.0/26.0	25.0	22.5	60.0	200.0	Long		
★ ZBS3001320	30.0/32.0/33.0	32.0	27.0	55.0	140.0	Short	● TWBT30	TX8030T30
★ ZBS3002320	30.0/32.0/33.0	32.0	27.0	110.0	195.0	Regular		
ZBS3004320	30.0/32.0/33.0	32.0	27.0	150.0	350.0	Long		
ZBS300001P	30.0/32.0/33.0	32.0	27.0	100.0	250.0	Long		

* ● Required to use T-HANDLE (TWH600)
* ★ Stock Item
▶ Please refer to the wrench table on the 32 page.

STEEL HOLDER

i-Xmill BALL NOSE - TAPER NECK

ZBT SERIES



Unit : mm

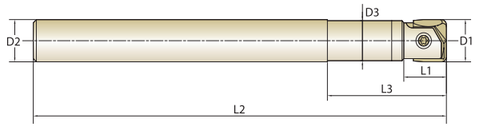
EDP No.	Mill Diameter D1	Shank Diameter D2	Neck Diameter D3	Length of Cut L1	Length Below Shank L3	Overall Length L2	Interference Angle θ°	Length Type	Wrench No.	Screw No.
★ ZBT0801120	8.0	12.0	7.2	12.0	35.0	90.0	4° 43′	Short	TWFT07	TX2508T07
★ ZBT0802120	8.0	12.0	7.2	25.0	55.0	110.0	3° 37′	Regular		
★ ZBT1001120	10.0/11.0	12.0	9.0	15.0	35.0	90.0	2° 51′	Short	TWFT08	TX3010T08
★ ZBT1002120	10.0/11.0	12.0	9.0	30.0	55.0	110.0	2° 17′	Regular		
★ ZBT1201160	12.0/13.0	16.0	10.5	17.0	55.0	110.0	3° 23′	Short	TWFT10	TX3512T10
★ ZBT1601200	16.0/17.0	20.0	14.5	20.0	65.0	125.0	2° 51′	Short	TWFT15	TX4016T15
ZBT1604200	16.0/17.0	20.0	14.5	20.0	115.0	200.0	1° 22′	Regular		
★ ZBT2001250	20.0/21.0	25.0	18.0	25.0	75.0	145.0	3° 26′	Short	● TWBT20	TX5020T20
ZBT2004250	20.0/21.0	25.0	18.0	25.0	115.0	200.0	1° 55′	Regular		
ZBT2005250	20.0/21.0	25.0	18.0	25.0	160.0	250.0	1° 17′	Long		
★ ZBT2501320	25.0/26.0	32.0	22.5	30.0	90.0	170.0	4° 03′	Short	● TWBT25	TX6025T25
ZBT2504320	25.0/26.0	32.0	22.5	30.0	160.0	250.0	1° 53′	Regular		
ZBT2505320	25.0/26.0	32.0	22.5	30.0	190.0	300.0	1° 32′	Long		
★ ZBT3001320	30.0/32.0/33.0	32.0	27.0	40.0	110.0	195.0	1° 38′	Short	● TWBT30	TX8030T30
ZBT3004320	30.0/32.0/33.0	32.0	27.0	40.0	160.0	250.0	0° 58′	Regular		
ZBT3005320	30.0/32.0/33.0	32.0	27.0	40.0	190.0	300.0	0° 46′	Long		

* ● Required to use T-HANDLE (TWH600)
* ★ Stock Item
▶ Please refer to the wrench table on the 32 page.

CARBIDE HOLDER

i-Xmill CORNER RADIUS - STRAIGHT NECK

ZRC SERIES



Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Neck Diameter D3	Length of Cut L1	Length Below Shank L3	Overall Length L2	Length Type	Wrench No.	Screw No.
★ ZRC0801080	8.0	8.0	7.6	12.0	25.0	130.0	Regular	TWFT07	TX2508T07
★ ZRC0802080	8.0	8.0	7.6	12.0	40.0	130.0	Regular		
★ ZRC0803080	8.0	8.0	7.6	12.0	65.0	130.0	Regular		
★ ZRC1001100	10.0	10.0	9.5	15.0	30.0	140.0	Regular	TWFT08	TX3010T08
★ ZRC1002100	10.0	10.0	9.5	15.0	50.0	140.0	Regular		
★ ZRC1003100	10.0	10.0	9.5	15.0	75.0	140.0	Regular		
★ ZRC1201120	12.0/13.0	12.0	11.4	17.0	35.0	150.0	Regular	TWFT10	TX3512T10
★ ZRC1202120	12.0/13.0	12.0	11.4	17.0	60.0	150.0	Regular		
★ ZRC1203120	12.0/13.0	12.0	11.4	17.0	85.0	150.0	Regular		
★ ZRC1601160	16.0/17.0	16.0	15.0	20.0	50.0	200.0	Long	TWFT15	TX4016T15
★ ZRC1602160	16.0/17.0	16.0	15.0	20.0	80.0	200.0	Long		
★ ZRC1603160	16.0/17.0	16.0	15.0	20.0	120.0	200.0	Long		
★ ZRC1604160	16.0/17.0	16.0	15.0	20.0	80.0	250.0	Long		
★ ZRC2001200	20.0/21.0	20.0	19.0	25.0	60.0	200.0	Regular	●TWBT20	TX5020T20
★ ZRC2002200	20.0/21.0	20.0	19.0	25.0	80.0	200.0	Regular		
★ ZRC2003200	20.0/21.0	20.0	19.0	25.0	100.0	250.0	Long		
★ ZRC2004200	20.0/21.0	20.0	19.0	25.0	150.0	250.0	Long		
★ ZRC2501250	25.0/26.0	25.0	24.0	30.0	75.0	200.0	Regular	●TWBT25	TX6025T25
★ ZRC2502250	25.0/26.0	25.0	24.0	30.0	120.0	250.0	Regular		
★ ZRC2503250	25.0/26.0	25.0	24.0	30.0	190.0	300.0	Long		
★ ZRC3001320	30.0/32.0/33.0	32.0	29.0	40.0	90.0	250.0	Regular	●TWBT30	TX8030T30
★ ZRC3002320	30.0/32.0/33.0	32.0	29.0	40.0	150.0	300.0	Long		
★ ZRC3003320	30.0/32.0/33.0	32.0	29.0	40.0	190.0	300.0	Long		

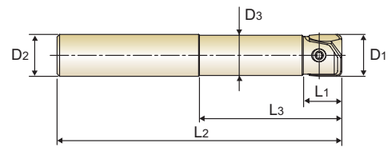
* ● Required to use T-HANDLE (TWH600)
* ★ Stock Item

▶ Please refer to the wrench table on the 32 page.

STEEL HOLDER

i-Xmill CORNER RADIUS - STRAIGHT NECK

ZRS SERIES



Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Neck Diameter D3	Length of Cut L1	Length Below Shank L3	Overall Length L2	Length Type	Wrench No.	Screw No.
★ ZRS1201120	12.0/13.0	12.0	11.0	13.0	30.0	110.0	Regular	TWFT10	TX3512T10
★ ZRS1601160	16.0/17.0	16.0	15.0	15.0	50.0	130.0	Regular	TWFT15	TX4016T15
★ ZRS1602160	16.0/17.0	16.0	15.0	15.0	65.0	165.0	Intermediate		
ZRS1603160	16.0/17.0	16.0	15.0	15.0	65.0	200.0	Long		
★ ZRS2001200	20.0/21.0	20.0	19.0	18.0	60.0	140.0	Regular	●TWBT20	TX5020T20
★ ZRS2002200	20.0/21.0	20.0	19.0	18.0	80.0	180.0	Intermediate		
ZRS2003200	20.0/21.0	20.0	19.0	18.0	80.0	250.0	Long		
★ ZRS2501250	25.0/26.0	25.0	24.0	23.0	70.0	150.0	Regular	●TWBT25	TX6025T25
★ ZRS2502250	25.0/26.0	25.0	24.0	23.0	90.0	200.0	Intermediate		
ZRS2503250	25.0/26.0	25.0	24.0	23.0	90.0	300.0	Long		
★ ZRS3001320	30.0/32.0/33.0	32.0	29.0	27.0	80.0	160.0	Regular	●TWBT30	TX8030T30
★ ZRS3002320	30.0/32.0/33.0	32.0	29.0	27.0	100.0	220.0	Intermediate		
ZRS3003320	30.0/32.0/33.0	32.0	29.0	27.0	100.0	350.0	Long		

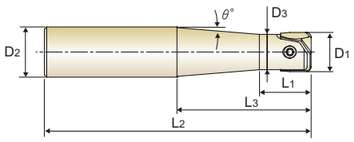
* ● Required to use T-HANDLE (TWH600)
* ★ Stock Item

▶ Please refer to the wrench table on the 32 page.

STEEL HOLDER

i-Xmill CORNER RADIUS - TAPER NECK

ZRT SERIES



Unit : mm

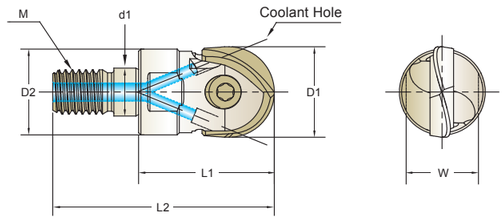
EDP No.	Mill Diameter D1	Shank Diameter D2	Neck Diameter D3	Length of Cut L1	Length Below Shank L3	Overall Length L2	Interference Angle θ°	Length Type	Wrench No.	Screw No.
★ ZRT0801120	8.0	12.0	6.7	10.0	22.0	100.0	9°	Regular	TWFT07	TX2508T07
★ ZRT0802120	8.0	12.0	6.7	10.0	50.0	130.0	2° 43′	Long		
★ ZRT1001120	10.0/11.0	12.0	8.6	13.0	25.0	100.0	4° 45′	Regular	TWFT08	TX3010T08
★ ZRT1002120	10.0/11.0	12.0	8.6	13.0	50.0	150.0	1° 32′	Long		
★ ZRT1202160	12.0/13.0	16.0	10.2	15.0	60.0	160.0	2° 32′	Long	TWFT10	TX3512T10

* ★ Stock Item

▶ Please refer to the wrench table on the 32 page.

MODULAR TYPE STEEL HEAD
BALL NOSE TYPE NEW

MIXB SERIES



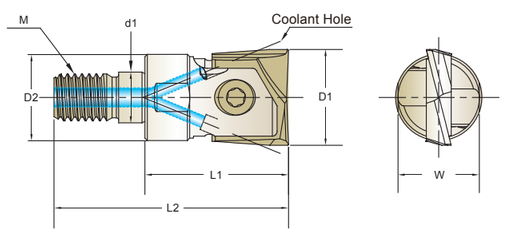
Unit : mm

EDP No.	Mill Diameter	Neck Diameter	Length Below Shank	Overall Length	Therad	Coupling Diameter
	D_1	D_2	L_1	L_2	M	d_1
MIXB100M06 - H	**10.0/11.0**	9.5	18.5	33.0	M6	6.5
MIXB120M06 - H	**12.0/13.0**	11.4	21.5	36.0	M6	6.5
MIXB160M08 - H	**16.0/17.0**	15.0	25.5	42.5	M8	8.5
MIXB200M10 - H	**20.0/21.0**	19.0	30.0	49.0	M10	10.5
MIXB250M12 - H	**25.0/26.0**	24.0	37.0	59.0	M12	12.5
MIXB300M16 - H	**30.0/32.0/33.0**	29.0	43.0	66.0	M16	17.0

▶ Please refer to the wrench table on the 33 page.

MODULAR TYPE STEEL HEAD
CORNER RADIUS TYPE NEW

MIXR SERIES



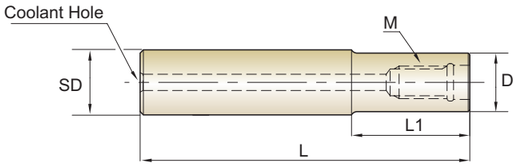
Unit : mm

EDP No.	Mill Diameter	Neck Diameter	Length Below Shank	Overall Length	Therad	Coupling Diameter
	D_1	D_2	L_1	L_2	M	d_1
MIXR100M06 - H	**10.0/11.0**	9.5	18.5	33.0	M6	6.5
MIXR120M06 - H	**12.0/13.0**	11.4	21.5	36.0	M6	6.5
MIXR160M08 - H	**16.0/17.0**	15.0	25.5	42.5	M8	8.5
MIXR200M10 - H	**20.0/21.0**	19.0	30.0	49.0	M10	10.5
MIXR250M12 - H	**25.0/26.0**	24.0	37.0	59.0	M12	12.5
MIXR300M16 - H	**30.0/32.0/33.0**	29.0	43.0	66.0	M16	17.0

▶ Please refer to the wrench table on the 33 page.

MODULAR CARBIDE HOLDER
STRAIGHT NECK TYPE

ZMC SERIES



Unit : mm

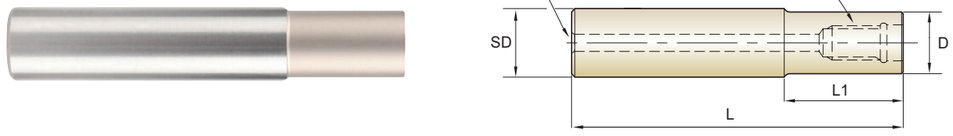
EDP No.	Mill Diameter	Shank Diameter	Overall Length	Neck Length	Neck Diameter	Thread	Wrench No.	Coolant Hole
		SD	L	L_1	D	M		
ZMC1001100	**10.0**	10.0	70.0	20.0	9.5	M6	SPIS0810	2
ZMC1002100	**10.0**	10.0	100.0	40.0	9.5	M6	SPIS0810	2
ZMC1003100	**10.0**	10.0	130.0	70.0	9.5	M6	SPIS0810	2
ZMC1201120	**12.0**	12.0	80.0	20.0	11.5	M6	SPIS0810	2
ZMC1202120	**12.0**	12.0	100.0	40.0	11.5	M6	SPIS0810	2
ZMC1203120	**12.0**	12.0	130.0	70.0	11.5	M6	SPIS0810	2
ZMC1601160	**16.0**	16.0	100.0	40.0	15.5	M8	SPIS1300	3
ZMC1602160	**16.0**	16.0	150.0	80.0	15.5	M8	SPIS1300	3
ZMC1603160	**16.0**	16.0	200.0	120.0	15.5	M8	SPIS1300	3
ZMC2001200	**20.0**	20.0	100.0	40.0	19.5	M10	SPIS1700	4
ZMC2002200	**20.0**	20.0	150.0	80.0	19.5	M10	SPIS1700	4
ZMC2003200	**20.0**	20.0	200.0	120.0	19.5	M10	SPIS1700	4
ZMC2004200	**20.0**	20.0	250.0	160.0	19.5	M10	SPIS1700	4
ZMC2501250	**25.0**	25.0	150.0	70.0	24.3	M12	SPIS2200	5
ZMC2502250	**25.0**	25.0	200.0	100.0	24.3	M12	SPIS2200	5
ZMC2503250	**25.0**	25.0	250.0	150.0	24.3	M12	SPIS2200	5
ZMC2504250	**25.0**	25.0	300.0	200.0	24.3	M12	SPIS2200	5
ZMC3001320	**30.0/32.0**	32.0	150.0	70.0	29.0	M16	SPIS2700	6
ZMC3002320	**30.0/32.0**	32.0	200.0	120.0	29.0	M16	SPIS2700	6
ZMC3003320	**30.0/32.0**	32.0	250.0	150.0	29.0	M16	SPIS2700	6
ZMC3004320	**30.0/32.0**	32.0	300.0	200.0	29.0	M16	SPIS2700	6
ZMC3005320	**30.0/32.0**	32.0	350.0	250.0	29.0	M16	SPIS2700	6

▶ The wrench (1pc) for the relevant item is included. More items are available for sale upon request.
▶ Please refer to the wrench table on the 33 page.

MODULAR STEEL HOLDER

STRAIGHT NECK TYPE

ZMS SERIES



Unit : mm

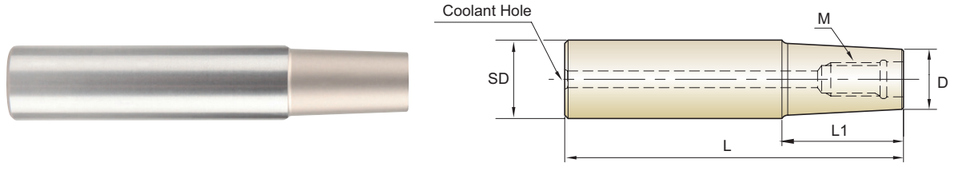
EDP No.	Mill Diameter	Shank Diameter	Overall Length	Neck Length	Neck Diameter	Thread	Wrench No.	Coolant Hole
		SD	L	L_1	D	M		
ZMS1001100	**10.0**	10.0	70.0	20.0	9.0	M6	SPIS0810	3
ZMS1201120	**12.0**	12.0	90.0	30.0	11.0	M6	SPIS0810	3
ZMS1601160	**16.0**	16.0	100.0	30.0	15.0	M8	SPIS1300	4
ZMS2001200	**20.0**	20.0	100.0	30.0	19.0	M10	SPIS1700	5
ZMS2501250	**25.0**	25.0	115.0	40.0	24.0	M12	SPIS2200	5
ZMS3001320	**30.0/32.0**	32.0	125.0	40.0	29.0	M16	SPIS2700	6

▶ The wrench (1pc) for the relevant item is included. More items are available for sale upon request.
▶ Please refer to the wrench table on the 33 page.

MODULAR STEEL HOLDER

TAPER NECK TYPE

ZMT SERIES



Unit : mm

EDP No.	Mill Diameter	Shank Diameter	Overall Length	Neck Length	Neck Diameter	Thread	Wrench No.	Coolant Hole
		SD	L	L_1	D	M		
ZMT1001120	**10.0**	12.0	100.0	50.0	9.0	M6	SPIS0810	3
ZMT1201160	**12.0**	16.0	130.0	70.0	11.0	M6	SPIS0810	3
ZMT1601200	**16.0**	20.0	150.0	90.0	15.0	M8	SPIS1300	4
ZMT2001250	**20.0**	25.0	170.0	100.0	19.0	M10	SPIS1700	5
ZMT2501320	**25.0**	32.0	200.0	110.0	24.0	M12	SPIS2200	5
ZMT3001320	**30.0/32.0**	32.0	200.0	110.0	29.0	M16	SPIS2700	6

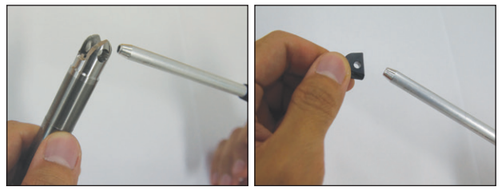
▶ The wrench (1pc) for the relevant item is included. More items are available for sale upon request.
▶ Please refer to the wrench table on the 33 page.

COPY MILL ARBOR

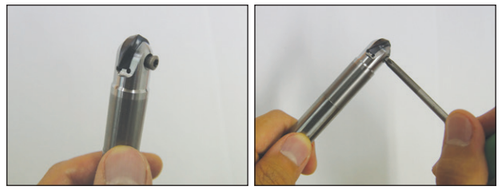
DIN 69871-SK	DIN 69893 / ISO 12164-HSK	JIS B6339/MAS 403-BT
		

▶ i-Xmill modular type can fit directly to copy mill arbors as above.
Please refer to the YG-1 Tooling System Catalog for copy mill arbors compatible with i-Xmill modular type.

ASSEMBLY of i-Xmill



▲ Make sure to clean the insert and insert seat.



▲ Slide the insert into the slot of the holder.
Tighten the screw using anti-seize compound.

SIZE (ØD)	CLAMPING TORQUE [N·m]
Ø8.0	1.0
Ø10.0	1.5
Ø12.0, Ø13.0	2.5
Ø16.0, Ø17.0	3.5
Ø20.0, Ø21.0	5.0
Ø25.0, Ø26.0	6.0
Ø30.0, Ø32.0	6.5

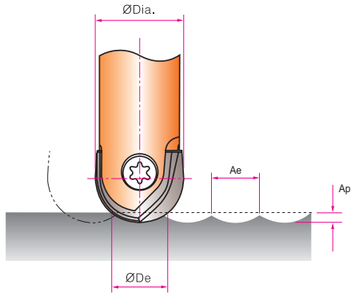
∗ When the screw is worn out, please change the a new screw.
∗ Please tighten up the screw with recommended torque.
(Please refer to the table)
∗ Don't press down the insert, when the screw is tightened.

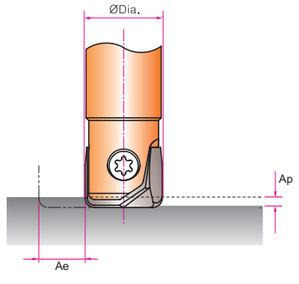
Wrench No.

WRENCH TYPE		PRODUCT NO.	T-HANDLE No.
FLAG TYPE		TWFT07	–
		TWFT08	–
		TWFT10	–
		TWFT15	–
TORX BIT TYPE		● TWBT20	TWH600 
		● TWBT25	
		● TWBT30	

∗ ● Required to use T-HANDLE (TWH600)

CUTTING CONDITION





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

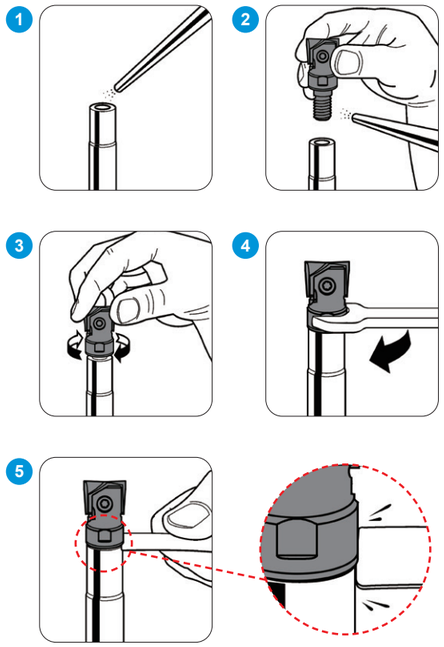
$$Vc\ [M/min] = \frac{(RPM) \cdot (\pi) \cdot (Dia.)}{1000}$$

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

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

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

ASSEMBLY of i-Xmill MODULAR TYPE



Step 1, 2 : Clean

Please be sure to remove dirt and debris on all adjoining surfaces before assembling. (air preferred)

Step 3, 4 : Assembly

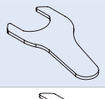
Mount the modular head onto the shank by hand until it fits then use the supplied wrench to tighten.

Step 5, 6 : Final Check

Re-check and make sure there is no gap.

Notice
Please tighten the screw with designated torque, too much torque will damage the screw.

WRENCH

Model	Wrench No.	Wrench Width	Mill Diameter	Clamping Torque [N·m]
	SPIS0810	8	10.0	6.5
		10	12.0	6.5
	SPIS1300	13	16.0	10
	SPIS1700	17	20.0	12
	SPIS2200	22	25.0	15
	SPIS2700	27	30.0 32.0	20

XMB110A SERIES

BALL INSERTS for GENERAL PURPOSE

Vc = m/min. RPM = rev./min. fz = mm/tooth FEED = mm/min.

ISO	VDI 3323	Material Description	Parameter	Diameter (Ø) 8	10, 11	12, 13	16, 17	20, 21	25, 26	30, 32, 33
P	1-4	Non-alloy steel	Vc	160~320	160~360	160~380	160~480	160~580	160~600	160~700
			fz	0.20~0.20	0.20~0.20	0.20~0.20	0.25~0.30	0.25~0.40	0.25~0.50	0.25~0.60
			RPM	6370~12730	5090~11460	4240~10080	3180~9550	2550~9230	2040~7640	1700~7430
			FEED	2550~5090	2040~4580	1700~4030	1590~5730	1270~7380	1020~7640	850~8910
	5		Vc	120~280	120~300	120~350	120~380	120~420	120~480	120~550
			fz	0.20~0.20	0.20~0.20	0.20~0.20	0.25~0.30	0.25~0.40	0.25~0.50	0.25~0.60
			RPM	4770~11140	3820~9550	3180~9280	2390~7560	1910~6680	1530~6110	1270~5840
			FEED	1910~4460	1530~3820	1270~3710	1190~4540	950~5350	760~6110	640~7000
	6-7	Low alloy steel	Vc	160~320	160~360	160~380	160~480	160~580	160~600	160~700
			fz	0.20~0.20	0.20~0.20	0.20~0.20	0.25~0.30	0.25~0.40	0.25~0.50	0.25~0.60
			RPM	6370~12730	5090~11460	4240~10080	3180~9550	2550~9230	2040~7640	1700~7430
			FEED	2550~5090	2040~4580	1700~4030	1590~5730	1270~7380	1020~7640	850~8910
	8		Vc	120~280	120~300	120~350	120~380	120~420	120~480	120~550
			fz	0.20~0.20	0.20~0.20	0.20~0.20	0.25~0.30	0.25~0.40	0.25~0.50	0.25~0.60
			RPM	4770~11140	3820~9550	3180~9280	2390~7560	1910~6680	1530~6110	1270~5840
			FEED	1910~4460	1530~3820	1270~3710	1190~4540	950~5350	760~6110	640~7000

XMB120C SERIES

BALL INSERTS for PRE-HARDENED STEELS

Vc = m/min. RPM = rev./min. fz = mm/tooth FEED = mm/min.

ISO	VDI 3323	Material Description	Parameter	Diameter (Ø) 8	10, 11	12, 13	16, 17	20, 21	25, 26	30, 32, 33
P	9-11	Low alloy steel High alloyed steel, and tool steel	Vc	100~220	100~260	100~280	100~350	100~400	100~450	100~500
			fz	0.15~0.20	0.15~0.20	0.15~0.20	0.20~0.30	0.20~0.40	0.20~0.50	0.20~0.60
			RPM	3980~8750	3180~8280	2650~7430	1990~6960	1590~6370	1270~5730	1060~5310
			FEED	1190~3500	950~3310	800~2970	800~4180	640~5090	510~5730	420~6370
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	Vc	160~320	160~360	160~400	160~500	160~550	160~620	160~720
			fz	0.30~0.30	0.30~0.30	0.30~0.30	0.35~0.40	0.35~0.40	0.35~0.50	0.35~0.60
			RPM	6370~12730	5090~11460	4240~10610	3180~9950	2550~8750	2040~7890	1700~7640
			FEED	3820~7640	3060~6880	2550~6370	2230~7960	1780~7000	1430~7890	1190~9170
H	38	Hardened steel	Vc	80~180	80~200	80~220	80~260	80~320	80~360	80~400
			fz	0.10~0.20	0.10~0.20	0.10~0.20	0.15~0.30	0.15~0.40	0.15~0.50	0.15~0.60
			RPM	3180~7160	2550~6370	2120~5840	1590~5170	1270~5090	1020~4580	850~4240
			FEED	640~2860	510~2550	420~2330	480~3100	380~4070	310~4580	250~5090

XMB260T SERIES

BALL INSERTS for HIGH HARDENED STEELS

Vc = m/min. RPM = rev./min. fz = mm/tooth FEED = mm/min.

ISO	VDI 3323	Material Description	Parameter	Diameter (Ø) 8	10, 11	12, 13	16, 17	20, 21	25, 26	30, 32, 33
H	38-41	Hardened steel	Vc	80~180	80~200	80~220	80~260	80~320	80~360	80~400
			fz	0.10~0.15	0.10~0.15	0.10~0.15	0.15~0.25	0.15~0.25	0.15~0.25	0.15~0.30
			RPM	3180~7160	2550~6370	2120~5840	1590~5170	1270~5090	1020~4580	850~4240
			FEED	640~2150	510~1910	420~1750	480~2590	380~2550	310~2290	250~2550

XMB130A SERIES

BALL INSERTS for STAINLESS STEELS

Vc = m/min. RPM = rev./min. fz = mm/tooth FEED = mm/min.

ISO	VDI 3323	Material Description	Parameter	Diameter (Ø) 8	10, 11	12, 13	16, 17	20, 21	25, 26	30, 32, 33
M	12-14	Stainless steel	Vc	90~130	90~130	90~130	90~130	90~130	90~130	90~130
			fz	0.10~0.12	0.13~0.15	0.15~0.20	0.15~0.20	0.15~0.20	0.20~0.25	0.20~0.25
			RPM	3580~5170	2860~4140	2390~3450	1790~2590	1430~2070	1150~1660	950~1380
			FEED	720~1290	720~1240	720~1380	540~1030	430~830	460~830	380~690

XMM110V SERIES

BALL INSERTS for GENERAL PURPOSE - FULL RADIUS

Vc = m/min. RPM = rev./min. fz = mm/tooth FEED = mm/min.

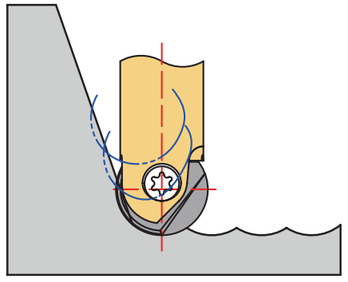
ISO	VDI 3323	Material Description	Parameter	Diameter (Ø) 8	10, 11	12, 13	16, 17	20, 21	25, 26	30, 32, 33
P	1-4	Non-alloy steel	Vc	160~320	160~360	160~380	160~480	160~580	160~600	160~700
			fz	0.20~0.20	0.20~0.20	0.20~0.20	0.25~0.30	0.25~0.40	0.25~0.50	0.25~0.60
			RPM	6370~12730	5090~11460	4240~10080	3180~9550	2550~9230	2040~7640	1700~7430
			FEED	2550~5090	2040~4580	1700~4030	1590~5730	1270~7380	1020~7640	850~8910
	6-7	Low alloy steel	Vc	160~320	160~360	160~380	160~480	160~580	160~600	160~700
			fz	0.20~0.20	0.20~0.20	0.20~0.20	0.25~0.30	0.25~0.40	0.25~0.50	0.25~0.60
			RPM	6370~12730	5090~11460	4240~10080	3180~9550	2550~9230	2040~7640	1700~7430
			FEED	2550~5090	2040~4580	1700~4030	1590~5730	1270~7380	1020~7640	850~8910
	10	High alloyed steel, and tool steel	Vc	160~320	160~360	160~380	160~480	160~580	160~600	160~700
			fz	0.20~0.20	0.20~0.20	0.20~0.20	0.25~0.30	0.25~0.40	0.25~0.50	0.25~0.60
			RPM	6370~12730	5090~11460	4240~10080	3180~9550	2550~9230	2040~7640	1700~7430
			FEED	2550~5090	2040~4580	1700~4030	1590~5730	1270~7380	1020~7640	850~8910

XMB110D SERIES

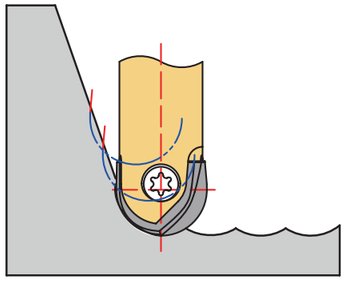
BALL INSERTS for GRAPHITE

Vc = m/min. RPM = rev./min. fz = mm/tooth FEED = mm/min.

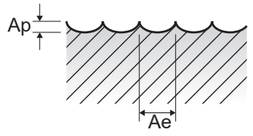
ISO	VDI 3323	Material Description	Parameter	Diameter (Ø) 8	10, 11	12, 13	16, 17	20, 21	25, 26	30, 32, 33
N	21~22	Aluminum-wrought alloy	Vc	300~400	300~400	300~400	300~400	300~480	300~560	300~650
			fz	0.20~0.20	0.20~0.20	0.20~0.20	0.25~0.30	0.30~0.35	0.35~0.40	0.40~0.50
			RPM	11940~15920	9550~12730	7960~10610	5970~7960	4770~7640	3820~7130	3180~6900
			FEED	4770~6370	3820~5090	3180~4240	2980~4770	2860~5350	2670~5700	2550~6900
	23~24	Aluminum-cast, alloyed	Vc	300~400	300~400	300~400	300~400	300~480	300~560	300~650
			fz	0.20~0.20	0.20~0.20	0.20~0.20	0.25~0.30	0.30~0.35	0.35~0.40	0.40~0.50
			RPM	11940~15920	9550~12730	7960~10610	5970~7960	4770~7640	3820~7130	3180~6900
			FEED	4770~6370	3820~5090	3180~4240	2980~4770	2860~5350	2670~5700	2550~6900
	29.2	Graphite	Vc	300~400	300~400	300~400	300~400	300~480	300~560	300~650
			fz	0.20~0.20	0.20~0.20	0.20~0.20	0.25~0.30	0.30~0.35	0.35~0.40	0.40~0.50
			RPM	11940~15920	9550~12730	7960~10610	5970~7960	4770~7640	3820~7130	3180~6900
			FEED	4770~6370	3820~5090	3180~4240	2980~4770	2860~5350	2670~5700	2550~6900



Full Radius Type



Ball Radius Type



Ae : Roughing - 0.1 x D
Finishing - Under Ø12 : 0.25mm
Under Ø20 : 0.30mm
From Ø20 : 0.40mm

Ap : Roughing - Under Ø16 : 0.025 x D
From Ø16 : 0.05 x D
Finishing - Under Ø16 : 0.1mm

▶ When the length of overhang exceeds 4xD, we recommend using the carbide shank holder with 20% lower feed
▶ When using long (long & intermediate type holder) tools, we recommend reducing the feed rate to 70 ~ 85%.

XMR110A SERIES

CORNER RADIUS INSERTS for GENERAL PURPOSE & STAINLESS STEELS

Vc = m/min. fz = mm/tooth
RPM = rev./min. FEED = mm/min.

ISO	VDI 3323	Material Description	Parameter	Diameter (Ø) 8	10, 11	12, 13	16, 17	20, 21	25, 26	30, 32, 33
P	1-4	Non-alloy steel	Vc	160~300	160~300	160~300	160~300	160~300	160~300	160~300
			fz	0.20~0.15	0.20~0.15	0.20~0.15	0.25~0.20	0.25~0.20	0.25~0.20	0.25~0.20
			RPM	6370~11940	5090~9550	4240~7960	3180~5970	2550~4770	2040~3820	1700~3180
			FEED	2550~3580	2040~2860	1700~2390	1590~2390	1270~1910	1020~1530	850~1270
	5		Vc	120~280	120~280	120~280	120~280	120~280	120~280	120~280
			fz	0.20~0.15	0.20~0.15	0.20~0.15	0.25~0.20	0.25~0.20	0.25~0.20	0.25~0.20
			RPM	4770~11140	3820~8910	3180~7430	2390~5570	1910~4460	1530~3570	1270~2970
			FEED	1910~3340	1530~2670	1270~2230	1190~2230	950~1780	760~1430	640~1190
	6-7	Low alloy steel	Vc	160~300	160~300	160~300	160~300	160~300	160~300	160~300
			fz	0.20~0.15	0.20~0.15	0.20~0.15	0.25~0.20	0.25~0.20	0.25~0.20	0.25~0.20
			RPM	6370~11940	5090~9550	4240~7960	3180~5970	2550~4770	2040~3820	1700~3180
			FEED	2550~3580	2040~2860	1700~2390	1590~2390	1270~1910	1020~1530	850~1270
	8		Vc	120~280	120~280	120~280	120~280	120~280	120~280	120~280
			fz	0.20~0.15	0.20~0.15	0.20~0.15	0.25~0.20	0.25~0.20	0.25~0.20	0.25~0.20
			RPM	4770~11140	3820~8910	3180~7430	2390~5570	1910~4460	1530~3570	1270~2970
			FEED	1910~3340	1530~2670	1270~2230	1190~2230	950~1780	760~1430	640~1190
M	12-14	Stainless steel	Vc	90~130	90~130	90~130	90~130	90~130	90~130	90~130
			fz	0.10~0.10	0.11~0.11	0.12~0.11	0.13~0.13	0.13~0.13	0.13~0.12	0.13~0.12
			RPM	3580~5170	2860~4140	2390~3450	1790~2590	1430~2070	1150~1660	950~1380
			FEED	720~1030	630~910	550~790	450~650	360~520	290~410	240~340

XMR120C SERIES

CORNER RADIUS INSERTS for PRE-HARDENED STEELS

Vc = m/min. fz = mm/tooth
RPM = rev./min. FEED = mm/min.

ISO	VDI 3323	Material Description	Parameter	Diameter (Ø) 8	10, 11	12, 13	16, 17	20, 21	25, 26	30, 32, 33
P	9-11	Low alloy steel High alloyed steel, and tool steel	Vc	100~280	100~280	100~280	100~280	100~280	100~280	100~280
			fz	0.12~0.06	0.13~0.06	0.13~0.06	0.15~0.08	0.15~0.08	0.15~0.08	0.15~0.08
			RPM	3980~11140	3180~8910	2650~7430	1990~5570	1590~4460	1270~3570	1060~2970
			FEED	990~1340	800~1070	690~890	600~840	480~670	380~570	320~450
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	Vc	160~380	160~380	160~380	160~380	160~380	160~380	160~380
			fz	0.30~0.20	0.30~0.20	0.30~0.20	0.35~0.30	0.35~0.30	0.35~0.30	0.35~0.30
			RPM	6370~15120	5090~12100	4240~10080	3180~7560	2550~6050	2040~4840	1700~4030
			FEED	3820~6050	3060~4840	2550~4030	2230~4540	1780~3630	1430~2900	1190~2420
H	38	Hardened steel	Vc	80~220	80~220	80~220	80~220	80~220	80~220	80~220
			fz	0.10~0.05	0.10~0.05	0.10~0.05	0.15~0.06	0.15~0.06	0.15~0.06	0.15~0.06
			RPM	3180~8750	2550~7000	2120~5840	1590~4380	1270~3500	1020~2800	850~2330
			FEED	640~880	510~700	420~580	420~530	380~420	310~340	250~280

XMR260T SERIES

CORNER RADIUS INSERTS for HIGH HARDENED STEELS

Vc = m/min. fz = mm/tooth
RPM = rev./min. FEED = mm/min.

ISO	VDI 3323	Material Description	Parameter	Diameter (Ø) 8	10, 11	12, 13	16, 17	20, 21	25, 26	30, 32, 33
H	38-41	Hardened steel	Vc	80~220	80~220	80~220	80~220	80~220	80~220	80~220
			fz	0.10~0.05	0.10~0.05	0.10~0.05	0.15~0.06	0.15~0.06	0.15~0.06	0.15~0.06
			RPM	3180~8750	2550~7000	2120~5840	1590~4380	1270~3500	1020~2800	850~2330
			FEED	640~880	510~700	420~580	480~530	380~420	310~340	250~280

XMF110V SERIES

CORNER RADIUS INSERTS for GENERAL PURPOSE - HIGH FEED

Vc = m/min. fz = mm/tooth
RPM = rev./min. FEED = mm/min.

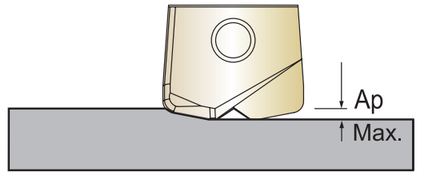
ISO	VDI 3323	Material Description	Parameter	Diameter (Ø) 8	10, 11	12, 13	16, 17	20, 21	25, 26	30, 32, 33
P	1-7	Non-alloy steel Low alloy steel	Vc	150~200	150~200	150~200	150~200	150~200	150~200	150~200
			fz	0.60~0.40	0.75~0.50	0.90~0.60	1.20~0.80	1.50~1.00	1.80~1.40	2.30~1.80
			RPM	5970~7960	4770~6370	3980~5310	2980~3980	2390~3180	1910~2550	1590~2120
			FEED	7160~6370	7160~6370	7160~6370	7160~6370	7160~6370	6880~7140	7320~7640
			Ap(Max)	0.4	0.5	0.6	0.8	1.0	1.3	1.6
	10	High alloyed steel, and tool steel	Vc	150~200	150~200	150~200	150~200	150~200	150~200	150~200
			fz	0.60~0.40	0.75~0.50	0.90~0.60	1.20~0.80	1.50~1.00	1.80~1.40	2.30~1.80
			RPM	5970~7960	4770~6370	3980~5310	2980~3980	2390~3180	1910~2550	1590~2120
			FEED	7160~6370	7160~6370	7160~6370	7160~6370	7160~6370	6880~7140	7320~7640
			Ap(Max)	0.4	0.5	0.6	0.8	1.0	1.3	1.6

XMR110D SERIES

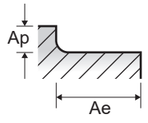
CORNER RADIUS INSERTS for GRAPHITE

Vc = m/min. fz = mm/tooth
RPM = rev./min. FEED = mm/min.

ISO	VDI 3323	Material Description	Parameter	Diameter (Ø) 8	10, 11	12, 13	16, 17	20, 21	25, 26	30, 32, 33
N	21~22	Aluminum-wrought alloy	Vc	300~400	300~400	300~400	300~400	300~400	300~400	300~400
			fz	0.20~0.20	0.20~0.20	0.20~0.20	0.20~0.20	0.25~0.25	0.25~0.25	0.25~0.25
			RPM	11940~15920	9550~12730	7960~10610	5970~7960	4770~6370	3820~5090	3180~4240
			FEED	4770~6370	3820~5090	3180~4240	2390~3180	2390~3180	1910~2550	1590~2120
	23~24	Aluminum-cast, alloyed	Vc	300~400	300~400	300~400	300~400	300~400	300~400	300~400
			fz	0.20~0.20	0.20~0.20	0.20~0.20	0.20~0.20	0.25~0.25	0.25~0.25	0.25~0.25
			RPM	11940~15920	9550~12730	7960~10610	5970~7960	4770~6370	3820~5090	3180~4240
			FEED	4770~6370	3820~5090	3180~4240	2390~3180	2390~3180	1910~2550	1590~2120
	29.2	Graphite	Vc	300~400	300~400	300~400	300~400	300~400	300~400	300~400
			fz	0.20~0.20	0.20~0.20	0.20~0.20	0.20~0.20	0.25~0.25	0.25~0.25	0.25~0.25
			RPM	11940~15920	9550~12730	7960~10610	5970~7960	4770~6370	3820~5090	3180~4240
			FEED	4770~6370	3820~5090	3180~4240	2390~3180	2390~3180	1910~2550	1590~2120



High Feed



Ae : Roughing - 0.1 x D
Finishing - 0.2mm

Ap : Roughing - Under Ø16 : 0.025 x D
From Ø16 : 0.05 x D
Finishing - Under Ø16 : 0.1mm
From Ø16 : 0.2mm

▶ When the length of overhang exceeds 4xD, we recommend using the carbide shank holder with 20% lower feed
▶ When using long (long & intermediate type holder) tools, we recommend reducing the feed rate to 70 ~ 85%.

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