QM MAX

Quick & Mini

New generation high feed mill "QM MAX"

Modular Type φ16～φ42

Bore Type φ40～φ66

G - Body

Shank Type φ16～φ25

Low cutting force geometry

Unique 3D geometry insert provides stable cutting and less power consumption.

Multi - flutes specification

High speed and high efficient machining.

Vibration free

Control vibration with combination of MSN carbide shank holder

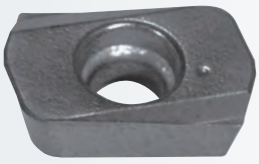
QM MAX — MQX/QXP Type

Insert Line-Up

High feed insert


EPMT100312ZER EPMT100312ZER

High feed insert for unfavorable conditions


EPMW100312ZER EPMW100312ZTR EPMW100312ZTR

For high hardened steel

EPHW100316ZTR

Shoulder insert for aluminum

ZPMT1003...ZER-NL (R0.4, 0.8, 2.0)

Shoulder insert for general steel

ZPMT1003...ZER-PL (R0.4, 0.8, 2.0)

Shoulder insert for Ti alloy

ZPMT1003...ZER-SL (R0.4, 0.8, 2.0)

"Mirror Insert" for finishing side & bottom face

YPHW1003...ZER-...

CBN insert

YPHW100308ZTR-F1

A variety of inserts all fit into the same body.

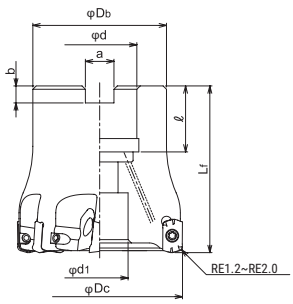
Multi-purpose cutter that can high feed, square up and finish.

QM MAX — MQX/QXP Type

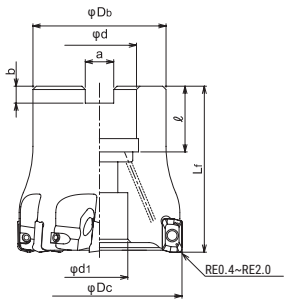
QXP TYPE — **Bore Type**

Through coolant hole | G - Body | Face Milling | Shoulder Milling | Slotting | Copy Milling | Pocket Milling | Helical Interpolation

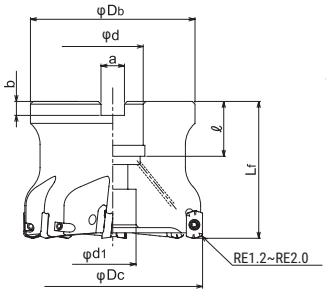
● Highfeed



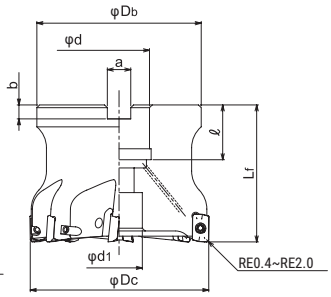
● Shoulder milling



● High feed (QXP-8066R)



● Shoulder milling (QXP-8066R)

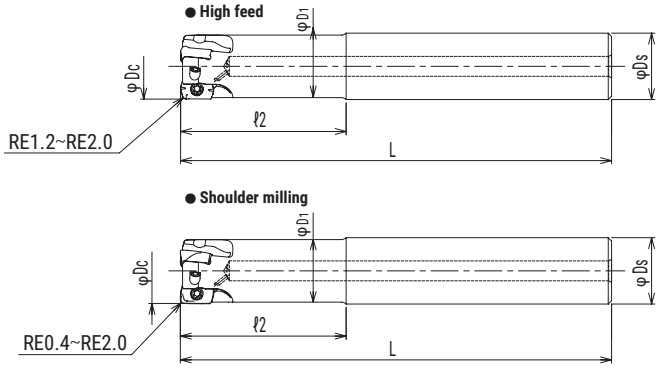


Cat.No.	Stock	No. of inserts	Dimensions (mm)							Insert
			φDc	Lf	φDb	φd	φd1	a	b	ℓ	
QXP-6040R-16	●	6	40	45	35	16	14	8.4	5.6	18	EP**1003**Z*R ZPMT1003**ZER-** YPHW1003**Z*R-**
QXP-7040R-16	●	7									
QXP-7050R-22	●		50	50	40	22	17	10.4	6.3	20	
QXP-8050R-22	●	8									
QXP-8052R-22	●		52								
QXP-8063R-22	●		63		48						
QXP-8066R-27	●		66			27	20	12.4	7	22	

Screw	Torque(N.m)	Wrench
DSW-2563H	1.1	A-08

QM MAX MQX/QXP Type

QXPS TYPE Shank Type



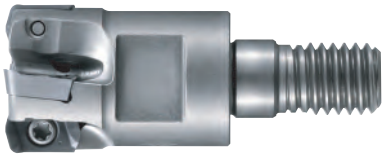
Cat.No	Stock	No. of inserts	Dimensions (mm)					Parts		Insert
			φDc	ℓ2	L	φD1	φDs	Screw	Wrench	
QXPS2016S16+A	●	2	16	30	100	15	16	TSW-2556H	A-08	EP**1003**Z*R ZPMT1003**ZER-** YPHW1003**Z*R-**
QXPS3020S20+A	●	3	20	50	130	18.85	20			
QXPS4025S25+A	●	4	25	60	140	23.6	25	DSW-2563H		

Screw	Torque(N.m)
TSW-2556H	1.1
DSW-2563H	

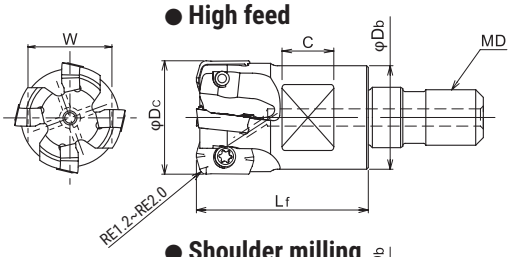
QM MAX — MQX/QXP Type

MQX TYPE Modular Type

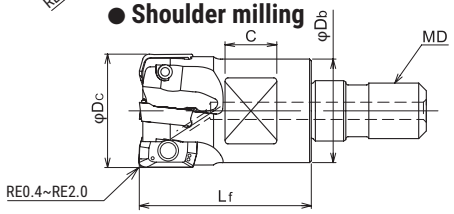
Through coolant hole | G - Body | Face Milling | Shoulder Milling | Slotting | Copy Milling | Pocket Milling | Helical Interpolation



● High feed



● Shoulder milling

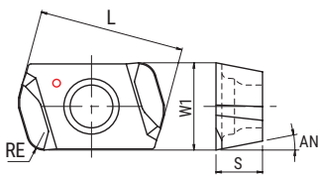


Cat.No.	Stock	No. of inserts	Dimensions (mm)						Parts		Insert
			φDc	Lf	φDb	MD	C	W	Screw	Wrench	
MQX-2016-M8	●	2	16	23	14	M8	8	12	TSW-2556H	A-08	EP**1003**Z*R ZPMT1003**ZER-** YPHW1003**Z*R-**
MQX-2017-M8	●		17			M8					
MQX-3020-M10	●	3	20	30	18	M10	9	14			
MQX-4020-M10	●	4				M10					
MQX-4021-M10	●		21			M10					
MQX-4025-M12	●		25	35	22.5	M12	10	17	DSW-2563H		
MQX-5025-M12	●	5				M12					
MQX-4026-M12	○	4	26			M12					
MQX-5026-M12	●	5				M12					
MQX-5028-M12	○		28		23.6	M12					
MQX-5030-M16	○		30	43	27	M16	12	22			
MQX-5032-M16	●		32		29	M16					
MQX-6032-M16	●	6				M16					
MQX-5035-M16	●	5	35			M16					
MQX-6035-M16	●	6				M16					
MQX-6040-M16	●		40		32	M16	14	26			
MQX-7040-M16	●	7				M16					
MQX-6042-M16	●	6	42			M16					

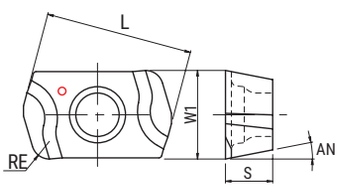
Screw	Torque(N.m)
TSW-2556H	1.1
DSW-2563H	

MQX/QXP TYPE Insert

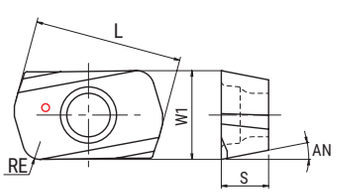
High feed insert
(EPMT1003＊＊ZER)



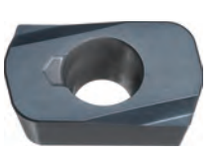
High feed insert for unfavorable conditions
(EPMW100312ZER)

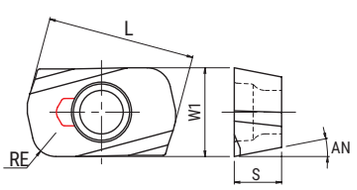


High feed insert for unfavorable conditions
(EPMW100312ZTR)

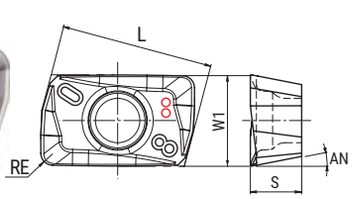


For high hardened steel
(EPHW1003＊＊ZTR)

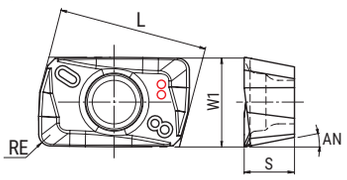




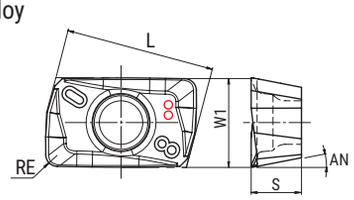
Shoulder insert for aluminum
(ZPMT1003＊＊ZER-NL)



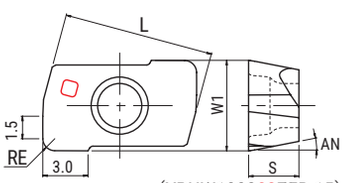
Shoulder insert for general steel
(ZPMT1003＊＊ZER-PL)



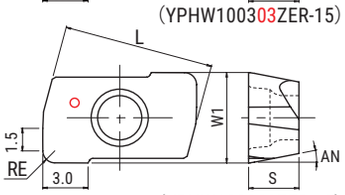
Shoulder insert for Ti alloy
(ZPMT1003＊＊ZER-SL)



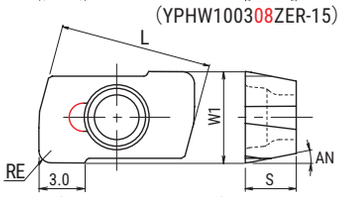
"Mirror Insert" for finishing side & bottom face
(YPHW1003＊＊ZER-15) (YPHW100308ZTR-F1) (YPHW100308ZER-F)



(YPHW100303ZER-15)

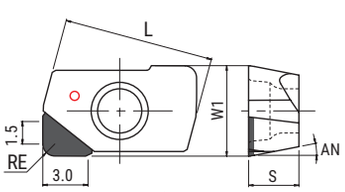


(YPHW100308ZER-15)



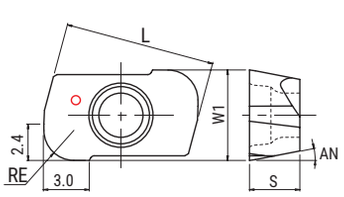
(YPHW100308ZER-F) (for low feed)

CBN insert



(YPHW100308ZTR-F1)

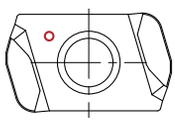
"Mirror Insert" for finishing side & bottom face
(YPHW100320ZER-24)



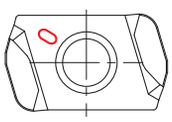
Type	Cat. No.	Tolerance	PVD coating									Uncoated	Cermet	CBN	Dimensions (mm)				
			JC8118	DH102	JC7518	JC7550	JC7560	JC8015	JC8050	DS118	DS150	FC18	CX75	JBN795	RE	L	W1	S	AN
High feed insert	EPMT100312ZER	M	●			●	●		●	●	●				10	3.2	6	1.2	11°
	EPMT100320ZER	M	●												10	3.2	6	2.0	11°
High feed insert for unfavorable conditions	EPMW100312ZER	M	●						●						10	3.2	6	1.2	11°
	EPMW100312ZTR	M	●				●		●						10	3.2	6	1.2	11°
For high hardened steel	EPHW100316ZTR	H	●	●											10	3.2	6	1.6	11°
	EPHW100320ZTR	H	●	●											10	3.2	6	2.0	11°
Shoulder insert for aluminum	ZPMT100304ZER-NL	M										●			10.08	3.4	6	0.4	11°
	ZPMT100308ZER-NL	M										●			10.08	3.4	6	0.8	11°
	ZPMT100320ZER-NL	M										●			10.08	3.4	6	2.0	11°
Shoulder insert for general steel	ZPMT100304ZER-PL	M	●	●					●				●		10.08	3.4	6	0.4	11°
	ZPMT100308ZER-PL	M	●	●					●				●		10.08	3.4	6	0.8	11°
	ZPMT100316ZER-PL	M	●						●						10.08	3.4	6	1.6	11°
	ZPMT100320ZER-PL	M	●	●					●				●		10.08	3.4	6	2.0	11°
Shoulder insert for Ti alloy	ZPMT100304ZER-SL	M			●					●					10.08	3.4	6	0.4	11°
	ZPMT100308ZER-SL	M			●					●					10.08	3.4	6	0.8	11°
	ZPMT100320ZER-SL	M			●					●					10.08	3.4	6	2.0	11°
"Mirror Insert" for finishing side & bottom face	YPHW100303ZER-15	H		●				●					●		10.06	3.35	6	0.3	11°
	YPHW100308ZER-15	H		●									●		10.06	3.35	6	0.8	11°
	YPHW100308ZER-F	H						●							10.06	3.35	6	0.8	11°
	YPHW100308ZTR-F1	H												○	10.06	3.35	6	0.8	11°
	YPHW100320ZER-24	H		●				●							10.06	3.35	6	2.0	11°

GRADE MARKING

●EPMT1003... / EPMW1003...

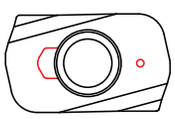


JC8118/DS118

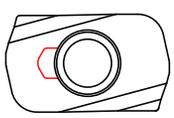


JC8050/JC7560/DS150

●EPHW1003...

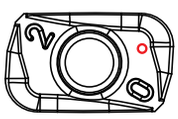


JC8118

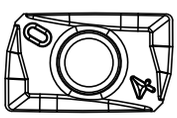


DH102

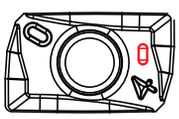
●ZPMT1003...



JC8118/JC7518
DS118/FC18

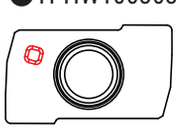


DH102

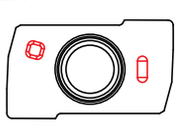


JC8050/CX75

●YPHW100303ZER-15

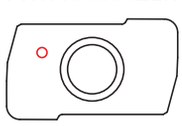


DH102/CX75



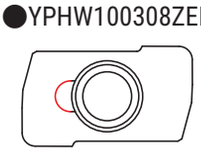
JC8015

●YPHW100308ZER-15



DH102/CX75

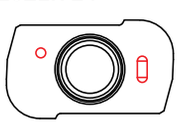
●YPHW100308ZER-F



JC8015

●YPHW100320ZER-24

DH102



JC8015

QM MAX — MQX/QXP Type

■ Insert selection guide

Material	Carbon steel (S50C, S55C) below 250HB						Tool & die steel (SKD61, SKD11) below 255HB						Mold steel (HPM7, PX5, P20) 30-36HRC						Mold steel (NAK80, HPM1, P21) 38-43HRC					
Grade / Cat.No.	JC8118	JC8050	JC7560	DH102	DS118	DS150	JC8118	JC8050	JC7560	DH102	DS118	DS150	JC8118	JC8050	JC7560	DH102	DS118	DS150	JC8118	JC8050	JC7560	DH102	DS118	DS150
EPMT1003＊＊ZER	☆	☆	☆				☆	☆	☆				☆	☆	☆				☆	☆				
EPMW100312ZER																				○				
EPMW100312ZTR	○	○	◎				○	○	◎				○	○	◎				◎	○				
EPHW100316ZTR																								

Material	Hardened die steel (SKD61, DAC, DHA) 42-52 HRC						Hardened die steel (SKD11, SLD, DC11) 55-62HRC						Grey cast iron (FC, FCD) below 300HB						Stainless steel (SUS304) below 250HB					
Grade / Cat.No.	JC8118	JC8050	JC7560	DH102	DS118	DS150	JC8118	JC8050	JC7560	DH102	DS118	DS150	JC8118	JC8050	JC7560	DH102	DS118	DS150	JC8118	JC8050	JC7560	DH102	DS118	DS150
EPMT1003＊＊ZER	☆						×	×					○							◎	○			
EPMW100312ZER	○						○						◎							●				
EPMW100312ZTR	●						●						●		○									
EPHW100316ZTR	◎									◎														

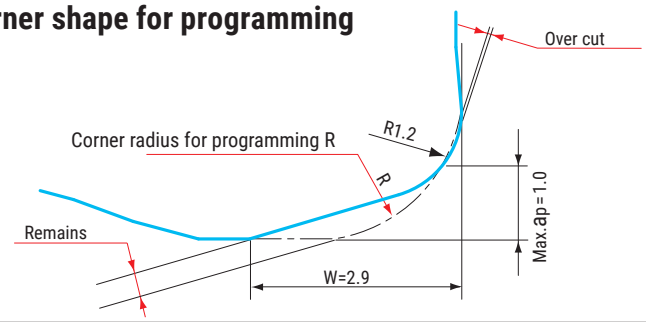
Material	Titanium alloy (Ti-6Al-4V)						Heat resistant alloy (INCO718)					
Grade / Cat.No.	JC8118	JC8050	JC7560	DH102	DS118	DS150	JC8118	JC8050	JC7560	DH102	DS118	DS150
EPMT1003＊＊ZER	○	○	●		○	◎	◎	○	○		○	○
EPMW100312ZER		●						●				
EPMW100312ZTR												
EPHW100316ZTR												

- EPMT Type : with chip breaker
- EPMW Type : without chip breaker
- EPMW Type : without chip breaker

◎: First choice
○: For general milling
●: For unstable milling
☆: For light cutting force
×: Not recommended

■ Definition of corner shape for programming

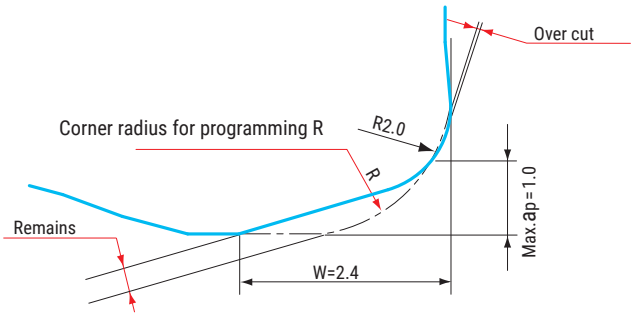
• EPMT/W Type (RE＝R1.2)



(mm)

Corner radius for programming R	Over cut	Remains
R1.0	0	0.57
R1.5 (Std.)	0	0.45
R2.0	0.04	0.33
R2.5	0.21	0.21
R3.0	0.40	0.09

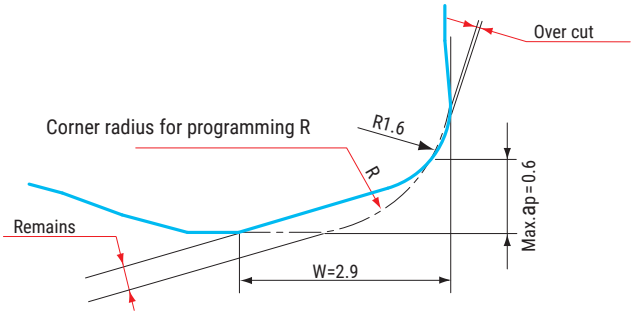
• EPMT Type (RE＝R2.0)



(mm)

Corner radius for programming R	Over cut	Remains
R1.0	0	0.51
R1.5	0	0.31
R2.0 (Std.)	0	0.13
R2.5	0.12	0.04
R3.0	0.32	0

• EPHW Type



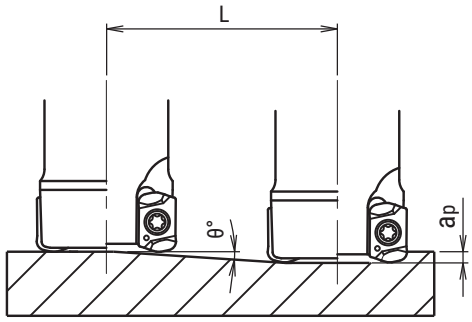
(mm)

Corner radius for programming R	Over cut	Remains
R1.0	0	0.42
R1.5 (Std.)	0	0.33
R2.0	0.01	0.23
R2.5	0.17	0.14
R3.0	0.37	0.05

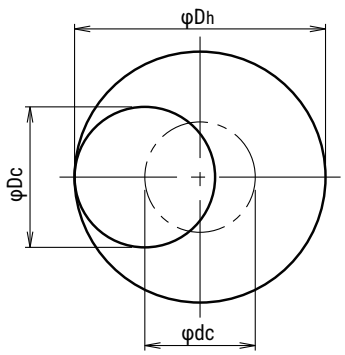
QM MAX MQX/QXP Type

■ Recommended Data for Profile Milling

Ramping



Helical interpolation



- Calculation of tool pass dia.

$$\varphi dc = \varphi Dh - \varphi Dc$$

Tool pass dia. Bore dia. Tool Dia.

- Depth of cut per one circuit should not exceed max. depth of cut Ap
- Down cutting is recommended, tool pass rotation should be counterclockwise

- In case of ramping and helical interpolation, apply 70% or less feed (Vf) from standard cutting condition table
- In case of drilling, apply 50% or less Z axis feed (F) from standard cutting condition table
- Long consecutive chips may result in case of drilling, confirm safe operating conditions

■ EPM*100312ZER

Cat.No.	Tool dia.	Effective Cutting dia.	Max.depth of cut : ap	Ramping		Helical interpolation		Max.drilling depth Z(mm)
				Max.ramping angle θ	Max.depth of cut (ap) Total cutting length L (mm)	Min.Bore dia.	Max.Bore dia.	
QXP-＊040R-16	40	34.1	1	0.5	114.6	70	78	0.6
QXP-＊050R-＊＊	50	44.1	1	0.4	143.2	90	98	0.6
QXP-8052R-22	52	46.1	1	0.35	163.7	94	102	0.6
QXP-8063R-＊＊	63	57.1	1	0.3	191	116	124	0.6
QXP-8066R-＊＊	66	60.1	1	0.3	191	122	130	0.6
QXPS2016S16+A	16	10.2	0.8	1.8	25.5	22	30	0.6
QXPS3020S20+A	20	14.1	0.8	1.4	32.7	30	38	0.6
QXPS4025S25+A	25	19.1	0.8	1	45.8	40	48	0.6
MQX-＊016-M8	16	10.2	0.8	1.8	25.5	22	30	0.6
MQX-＊017-M8	17	11.2	0.8	1.6	28.6	24	32	0.6
MQX-＊020-M10	20	14.1	0.8	1.4	32.7	30	38	0.6
MQX-＊021-M10	21	15.1	0.8	1.3	35.3	32	40	0.6
MQX-＊025-M12	25	19.1	0.8	1	45.8	40	48	0.6
MQX-＊026-M12	26	20.1	0.8	0.95	48.2	42	50	0.6
MQX-＊028-M12	28	22.1	0.8	0.85	53.9	46	54	0.6
MQX-＊030-M16	30	24.1	0.8	0.8	57.3	50	58	0.5
MQX-＊032-M16	32	26.1	0.8	0.7	65.5	54	62	0.5
MQX-＊035-M16	35	29.1	0.8	0.6	76.4	60	68	0.5
MQX-＊040-M16	40	34.1	0.8	0.5	91.7	70	78	0.6
MQX-＊042-M16	42	36.2	0.8	0.45	101.9	74	82	0.6

QM MAX MQX/QXP Type

■ Recommended Data for Profile Milling

■ EPMT100320ZER

Cat.No.	Tool dia.	Effective Cutting dia.	Max.depth of cut : ap	Ramping		Helical interpolation		Max.drilling depth Z(mm)
				Max.ramping angle θ	Max.depth of cut (ap) Total cutting length L (mm)	Min.Bore dia.	Max.Bore dia.	
QXP-＊040R-16	40	35.1	1	0.55	104.2	72	78	0.7
QXP-＊050R-＊＊	50	45.1	1	0.4	143.2	92	98	0.7
QXP-8052R-22	52	47.2	1	0.4	143.2	96	102	0.7
QXP-8063R-＊＊	63	58.2	1	0.3	191	118	124	0.7
QXP-8066R-＊＊	66	61.2	1	0.3	191	124	130	0.7
QXPS2016S16+A	16	11.2	0.8	2.3	19.9	24	30	0.7
QXPS3020S20+A	20	15.1	0.8	1.5	30.6	32	38	0.7
QXPS4025S25+A	25	20.1	0.8	1.1	41.7	42	48	0.6
MQX-＊016-M8	16	11.2	0.8	2.3	19.9	24	30	0.7
MQX-＊017-M8	17	12.2	0.8	2	22.9	26	32	0.7
MQX-＊020-M10	20	15.1	0.8	1.5	30.6	32	38	0.7
MQX-＊021-M10	21	16.1	0.8	1.4	32.7	34	40	0.7
MQX-＊025-M12	25	20.1	0.8	1.1	41.7	42	48	0.6
MQX-＊026-M12	26	21.1	0.8	1	45.8	44	50	0.6
MQX-＊028-M12	28	23.1	0.8	0.9	50.9	48	54	0.6
MQX-＊030-M16	30	25.1	0.8	0.85	53.9	52	58	0.6
MQX-＊032-M16	32	27.1	0.8	0.75	61.1	56	62	0.6
MQX-＊035-M16	35	30.1	0.8	0.65	70.5	62	68	0.6
MQX-＊040-M16	40	35.1	0.8	0.55	83.3	72	78	0.7
MQX-＊042-M16	42	37.1	0.8	0.55	83.3	76	82	0.7

■ EPMW100312ZTR

Cat.No.	Tool dia.	Effective Cutting dia.	Max.depth of cut : ap	Ramping		Helical interpolation		Max.drilling depth Z(mm)
				Max.ramping angle θ	Max.depth of cut (ap) Total cutting length L (mm)	Min.Bore dia.	Max.Bore dia.	
QXP-＊040R-16	40	34.1	1	0.4	143.2	70	78	0.6
QXP-＊050R-＊＊	50	44.1	1	0.3	191	90	98	0.6
QXP-8052R-22	52	46.1	1	0.25	229.2	94	102	0.6
QXP-8063R-＊＊	63	57.1	1	0.2	286.5	116	124	0.6
QXP-8066R-＊＊	66	60.1	1	0.2	286.5	122	130	0.6
QXPS2016S16+A	16	10.2	0.8	1.7	27	22	30	0.6
QXPS3020S20+A	20	14.1	0.8	1.3	35.3	30	38	0.6
QXPS4025S25+A	25	19.1	0.8	0.9	50.9	40	48	0.6
MQX-＊016-M8	16	10.2	0.8	1.7	27	22	30	0.6
MQX-＊017-M8	17	11.2	0.8	1.5	30.6	24	32	0.6
MQX-＊020-M10	20	14.1	0.8	1.3	35.3	30	38	0.6
MQX-＊021-M10	21	15.1	0.8	1.2	38.2	32	40	0.6
MQX-＊025-M12	25	19.1	0.8	0.9	50.9	40	48	0.6
MQX-＊026-M12	26	20.1	0.8	0.85	53.9	42	50	0.6
MQX-＊028-M12	28	22.1	0.8	0.75	61.1	46	54	0.6
MQX-＊030-M16	30	24.1	0.8	0.7	65.5	50	58	0.5
MQX-＊032-M16	32	26.1	0.8	0.6	76.4	54	62	0.5
MQX-＊035-M16	35	29.1	0.8	0.5	91.7	60	68	0.5
MQX-＊040-M16	40	34.1	0.8	0.4	114.6	70	78	0.6
MQX-＊042-M16	42	36.2	0.8	0.35	131	74	82	0.6

QM MAX MQX/QXP Type

EPHW100316ZTR

Cat.No.	Tool dia.	Effective Cutting dia.	Max.depth of cut : ap	Ramping		Helical interpolation		Max.drilling depth Z(mm)
				Max.ramping angle θ	Max.depth of cut (ap) Total cutting length L (mm)	Min.Bore dia.	Max.Bore dia.	
QXP-＊040R-16	40	34.1	0.6	0.3	114.6	70	78	0.6
QXP-＊050R-＊＊	50	44.1	0.6	0.2	171.9	90	98	0.6
QXP-8052R-22	52	46.1	0.6	0.2	171.9	94	102	0.6
QXP-8063R-＊＊	63	57.1	0.6	0.15	229.2	116	124	0.6
QXP-8066R-＊＊	66	60.1	0.6	0.15	229.2	122	130	0.6
QXPS2016S16+A	16	10.2	0.6	1.1	31.2	22	30	0.6
QXPS3020S20+A	20	14.1	0.6	0.8	43	30	38	0.6
QXPS4025S25+A	25	19.1	0.6	0.55	62.5	40	48	0.6
MQX-＊016-M8	16	10.2	0.6	1.1	31.2	22	30	0.6
MQX-＊017-M8	17	11.2	0.6	1	34.4	24	32	0.6
MQX-＊020-M10	20	14.1	0.6	0.8	43	30	38	0.6
MQX-＊021-M10	21	15.1	0.6	0.7	49.1	32	40	0.6
MQX-＊025-M12	25	19.1	0.6	0.55	62.5	40	48	0.6
MQX-＊026-M12	26	20.1	0.6	0.5	68.8	42	50	0.6
MQX-＊028-M12	28	22.1	0.6	0.45	76.4	46	54	0.6
MQX-＊030-M16	30	24.1	0.6	0.4	85.9	50	58	0.5
MQX-＊032-M16	32	26.1	0.6	0.4	85.9	54	62	0.5
MQX-＊035-M16	35	29.1	0.6	0.35	98.2	60	68	0.5
MQX-＊040-M16	40	34.1	0.6	0.3	114.6	70	78	0.6
MQX-＊042-M16	42	36.2	0.6	0.25	137.5	74	82	0.6

ZPMT100304ZER-**

Cat.No.	Tool dia.	Effective Cutting dia.	Max.depth of cut : ap	Ramping		Helical interpolation		Max.drilling depth Z(mm)
				Max.ramping angle θ	Max.depth of cut (ap) Total cutting length L (mm)	Min.Bore dia.	Max.Bore dia.	
QXP-＊040R-16	40	39	1	0.95	60.3	75.6	78.4	0.6
QXP-＊050R-＊＊	50	49	1	0.7	81.8	95.6	98.4	0.6
QXP-8052R-22	52	51	1	0.65	88.1	99.6	102.4	0.6
QXP-8063R-＊＊	63	62	1	0.55	104.2	121.6	124.4	0.6
QXP-8066R-＊＊	66	65	1	0.5	114.6	127.6	130.4	0.6
QXPS2016S16+A	16	15	0.8	3	15.3	27.6	30.4	0.6
QXPS3020S20+A	20	19	0.8	2.4	19.1	35.6	38.4	0.6
QXPS4025S25+A	25	24	0.8	1.7	27	45.6	48.4	0.6
MQX-＊016-M8	16	15	0.8	3	15.3	27.6	30.4	0.6
MQX-＊017-M8	17	16	0.8	3.2	14.3	29.6	32.4	0.6
MQX-＊020-M10	20	19	0.8	2.4	19.1	35.6	38.4	0.6
MQX-＊021-M10	21	20	0.8	2.2	20.8	37.6	40.4	0.6
MQX-＊025-M12	25	24	0.8	1.7	27	45.6	48.4	0.6
MQX-＊026-M12	26	25	0.8	1.6	28.6	47.6	50.4	0.6
MQX-＊028-M12	28	27	0.8	1.5	30.6	51.6	54.4	0.6
MQX-＊030-M16	30	29	0.8	1.3	35.3	55.6	58.4	0.5
MQX-＊032-M16	32	31	0.8	1.2	38.2	59.6	62.4	0.5
MQX-＊035-M16	35	34	0.8	1.1	41.7	65.6	68.4	0.5
MQX-＊040-M16	40	39	0.8	0.95	48.2	75.6	78.4	0.6
MQX-＊042-M16	42	41	0.8	0.85	53.9	79.6	82.4	0.6

■ Recommended Data for Profile Milling

■ ZPMT100308ZER-**

Cat.No.	Tool dia.	Effective Cutting dia.	Max.depth of cut : ap	Ramping		Helical interpolation		Max.drilling depth Z(mm)
				Max.ramping angle θ	Max.depth of cut (ap) Total cutting length L (mm)	Min.Bore dia.	Max.Bore dia.	
QXP-＊040R-16	40	38.2	1	0.95	60.3	74.8	77.6	0.6
QXP-＊050R-＊＊	50	48.2	1	0.7	81.8	94.8	97.6	0.6
QXP-8052R-22	52	50.2	1	0.65	88.1	98.8	101.6	0.6
QXP-8063R-＊＊	63	61.2	1	0.55	104.2	120.8	123.6	0.6
QXP-8066R-＊＊	66	64.2	1	0.5	114.6	126.8	129.6	0.6
QXPS2016S16+A	16	14.2	0.8	3	15.3	26.8	29.6	0.6
QXPS3020S20+A	20	18.2	0.8	2.4	19.1	34.8	37.6	0.6
QXPS4025S25+A	25	23.2	0.8	1.7	27	44.8	47.6	0.6
MQX-＊016-M8	16	14.2	0.8	3	15.3	26.8	29.6	0.6
MQX-＊017-M8	17	15.2	0.8	3.2	14.3	28.8	31.6	0.6
MQX-＊020-M10	20	18.2	0.8	2.4	19.1	34.8	37.6	0.6
MQX-＊021-M10	21	19.2	0.8	2.2	20.8	36.8	39.6	0.6
MQX-＊025-M12	25	23.2	0.8	1.7	27	44.8	47.6	0.6
MQX-＊026-M12	26	24.2	0.8	1.6	28.6	46.8	49.6	0.6
MQX-＊028-M12	28	26.2	0.8	1.5	30.6	50.8	53.6	0.6
MQX-＊030-M16	30	28.2	0.8	1.3	35.3	54.8	57.6	0.5
MQX-＊032-M16	32	30.2	0.8	1.2	38.2	58.8	61.6	0.5
MQX-＊035-M16	35	33.2	0.8	1.1	41.7	64.8	67.6	0.5
MQX-＊040-M16	40	38.2	0.8	0.95	48.2	74.8	77.6	0.6
MQX-＊042-M16	42	40.2	0.8	0.85	53.9	78.8	81.6	0.6

■ ZPMT100320ZER-**

Cat.No.	Tool dia.	Effective Cutting dia.	Max.depth of cut : ap	Ramping		Helical interpolation		Max.drilling depth Z(mm)
				Max.ramping angle θ	Max.depth of cut (ap) Total cutting length L (mm)	Min.Bore dia.	Max.Bore dia.	
QXP-＊040R-16	40	35.8	1	0.95	60.3	70	75.2	0.6
QXP-＊050R-＊＊	50	45.8	1	0.7	81.8	90	95.2	0.6
QXP-8052R-22	52	47.8	1	0.65	88.1	94	99.2	0.6
QXP-8063R-＊＊	63	58.8	1	0.55	104.2	116	121.2	0.6
QXP-8066R-＊＊	66	61.8	1	0.5	114.6	122	127.2	0.6
QXPS2016S16+A	16	11.8	0.8	3	15.3	22	27.2	0.6
QXPS3020S20+A	20	15.8	0.8	2.4	19.1	30	35.2	0.6
QXPS4025S25+A	25	20.8	0.8	1.7	27	40	45.2	0.6
MQX-＊016-M8	16	11.8	0.8	3	15.3	22	27.2	0.6
MQX-＊017-M8	17	12.8	0.8	3.2	14.3	24	29.2	0.6
MQX-＊020-M10	20	15.8	0.8	2.4	19.1	30	35.2	0.6
MQX-＊021-M10	21	16.8	0.8	2.2	20.8	32	37.2	0.6
MQX-＊025-M12	25	20.8	0.8	1.7	27	40	45.2	0.6
MQX-＊026-M12	26	21.8	0.8	1.6	28.6	42	47.2	0.6
MQX-＊028-M12	28	23.8	0.8	1.5	30.6	46	51.2	0.6
MQX-＊030-M16	30	25.8	0.8	1.3	35.3	50	55.2	0.5
MQX-＊032-M16	32	27.8	0.8	1.2	38.2	54	59.2	0.5
MQX-＊035-M16	35	30.8	0.8	1.1	41.7	60	65.2	0.5
MQX-＊040-M16	40	35.8	0.8	0.95	48.2	70	75.2	0.6
MQX-＊042-M16	42	37.8	0.8	0.85	53.9	74	79.2	0.6

QM MAX MQX/QXP Type

YPHW100303ZER-15

Cat.No.	Tool dia.	Effective Cutting dia.	Max.depth of cut : ap	Ramping		Helical interpolation		Max.drilling depth Z(mm)
				Max.ramping angle θ	Max.depth of cut (ap) Total cutting length L (mm)	Min.Bore dia.	Max.Bore dia.	
QXP-＊040R-16	40	39.3	0.3	1	17.2	77	78.7	0.3
QXP-＊050R-＊＊	50	49.3	0.3	0.75	22.9	97	98.7	0.3
QXP-8052R-22	52	51.3	0.3	0.7	24.6	101	102.7	0.3
QXP-8063R-＊＊	63	62.3	0.3	0.6	28.6	123	124.7	0.3
QXP-8066R-＊＊	66	65.3	0.3	0.55	31.3	129	130.7	0.3
QXPS2016S16+A	16	15.3	0.3	1.3	13.2	29	30.7	0.2
QXPS3020S20+A	20	19.3	0.3	2.1	8.2	37	38.7	0.3
QXPS4025S25+A	25	24.3	0.3	1.8	9.5	47	48.7	0.3
MQX-＊016-M8	16	15.3	0.3	1.3	13.2	29	30.7	0.2
MQX-＊017-M8	17	16.3	0.3	1.7	10.1	31	32.7	0.3
MQX-＊020-M10	20	19.3	0.3	2.1	8.2	37	38.7	0.3
MQX-＊021-M10	21	20.3	0.3	2.4	7.2	39	40.7	0.3
MQX-＊025-M12	25	24.3	0.3	1.8	9.5	47	48.7	0.3
MQX-＊026-M12	26	25.3	0.3	1.7	10.1	49	50.7	0.3
MQX-＊028-M12	28	27.3	0.3	1.6	10.7	53	54.7	0.3
MQX-＊030-M16	30	29.3	0.3	1.4	12.3	57	58.7	0.3
MQX-＊032-M16	32	31.3	0.3	1.3	13.2	61	62.7	0.3
MQX-＊035-M16	35	34.3	0.3	1.2	14.3	67	68.7	0.3
MQX-＊040-M16	40	39.3	0.3	1	17.2	77	78.7	0.3
MQX-＊042-M16	42	41.3	0.3	0.9	19.1	81	82.7	0.3

YPHW100308ZER-15

Cat.No.	Tool dia.	Effective Cutting dia.	Max.depth of cut : ap	Ramping		Helical interpolation		Max.drilling depth Z(mm)
				Max.ramping angle θ	Max.depth of cut (ap) Total cutting length L (mm)	Min.Bore dia.	Max.Bore dia.	
QXP-＊040R-16	40	38.3	0.3	1	17.2	75	77.7	0.3
QXP-＊050R-＊＊	50	48.3	0.3	0.75	22.9	95	97.7	0.3
QXP-8052R-22	52	50.3	0.3	0.7	24.6	99	101.7	0.3
QXP-8063R-＊＊	63	61.3	0.3	0.6	28.6	121	123.7	0.3
QXP-8066R-＊＊	66	64.3	0.3	0.55	31.3	127	129.7	0.3
QXPS2016S16+A	16	14.3	0.3	1.4	12.3	27	29.7	0.2
QXPS3020S20+A	20	18.3	0.3	2.2	7.8	35	37.7	0.3
QXPS4025S25+A	25	23.3	0.3	1.9	9	45	47.7	0.3
MQX-＊016-M8	16	14.3	0.3	1.4	12.3	27	29.7	0.2
MQX-＊017-M8	17	15.3	0.3	1.8	9.5	29	31.7	0.3
MQX-＊020-M10	20	18.3	0.3	2.2	7.8	35	37.7	0.3
MQX-＊021-M10	21	19.3	0.3	2.5	6.9	37	39.7	0.3
MQX-＊025-M12	25	23.3	0.3	1.9	9	45	47.7	0.3
MQX-＊026-M12	26	24.3	0.3	1.8	9.5	47	49.7	0.3
MQX-＊028-M12	28	26.3	0.3	1.7	10.1	51	53.7	0.3
MQX-＊030-M16	30	28.3	0.3	1.5	11.5	55	57.7	0.3
MQX-＊032-M16	32	30.3	0.3	1.4	12.3	59	61.7	0.3
MQX-＊035-M16	35	33.3	0.3	1.2	14.3	65	67.7	0.3
MQX-＊040-M16	40	38.3	0.3	1	17.2	75	77.7	0.3
MQX-＊042-M16	42	40.3	0.3	0.9	19.1	79	81.7	0.3

QM MAX MQX/QXP Type

■ Recommended Data for Profile Milling

■ YPHW100320ZER-24

Cat.No.	Tool dia.	Effective Cutting dia.	Max.depth of cut : ap	Ramping		Helical interpolation		Max.drilling depth Z(mm)
				Max.ramping angle θ	Max.depth of cut (ap) Total cutting length L (mm)	Min.Bore dia.	Max.Bore dia.	
QXP-＊040R-16	40	35.9	0.3	1.1	15.6	70.2	75.3	0.3
QXP-＊050R-＊＊	50	45.9	0.3	0.9	19.1	90.2	95.3	0.3
QXP-8052R-22	52	47.9	0.3	0.85	20.2	94.2	99.3	0.3
QXP-8063R-＊＊	63	58.9	0.3	0.65	26.4	116.2	121.3	0.3
QXP-8066R-＊＊	66	61.9	0.3	0.65	26.4	122.2	127.3	0.3
QXPS2016S16+A	16	11.9	0.3	1.9	9	22.2	27.3	0.3
QXPS3020S20+A	20	15.9	0.3	2.5	6.9	30.2	35.3	0.3
QXPS4025S25+A	25	20.9	0.3	2.2	7.8	40.2	45.3	0.3
MQX-＊016-M8	16	11.9	0.3	1.9	9	22.2	27.3	0.3
MQX-＊017-M8	17	12.9	0.3	2.2	7.8	24.2	29.3	0.3
MQX-＊020-M10	20	15.9	0.3	2.5	6.9	30.2	35.3	0.3
MQX-＊021-M10	21	16.9	0.3	2.8	6.1	32.2	37.3	0.3
MQX-＊025-M12	25	20.9	0.3	2.2	7.8	40.2	45.3	0.3
MQX-＊026-M12	26	21.9	0.3	2	8.6	42.2	47.3	0.3
MQX-＊028-M12	28	23.9	0.3	1.8	9.5	46.2	51.3	0.3
MQX-＊030-M16	30	25.9	0.3	1.6	10.7	50.2	55.3	0.3
MQX-＊032-M16	32	27.9	0.3	1.5	11.5	54.2	59.3	0.3
MQX-＊035-M16	35	30.9	0.3	1.4	12.3	60.2	65.3	0.3
MQX-＊040-M16	40	35.9	0.3	1.1	15.6	70.2	75.3	0.3
MQX-＊042-M16	42	37.9	0.3	1.1	15.6	74.2	79.3	0.3

QM MAX — MQX/QXP Type

■Recommended Cutting Conditions

Material		High Feed		Shoulder Milling	Side Finishing	Bottom Finishing
		EPMT / EPMW	EPHW	ZPMT		
Carbon Steel below 250HB	Grade	JC7560 (JC8050 JC8118)	-	JC8050 (JC8118)	JC8050 (JC8118)	JC8050 (JC8118)
	Vc	130 - 180	-	130 - 160	190 - 320	90 - 180
	fz	0.7 - 0.9	-	0.12 - 0.15	0.18 - 0.30	0.1 - 0.15
	ap	0.4 - 1.0	-	~5.0	~5.0	~0.2
	ae	0.7 Dc	-	~0.16 Dc	~0.2	0.4 - 1.0 Dc
Tool & Die Steel below 255HB	Grade	JC7560 (JC8050 JC8118)	-	JC8050 (JC8118)	JC8050 (JC8118)	JC8050 (JC8118)
	Vc	130 - 180	-	120 - 150	180 - 300	80 - 160
	fz	0.7 - 0.9	-	0.12 - 0.15	0.15 - 0.25	0.1 - 0.15
	ap	0.4 - 1.0	-	~5.0	~5.0	~0.2
	ae	0.7 Dc	-	~0.16 Dc	~0.2	0.4 - 1.0 Dc
Mold Steel 30-36HRC	Grade	JC8118 (JC7560 JC8050)	-	JC8118 (JC8050)	JC8118 (JC8050)	JC8118 (JC8050)
	Vc	130 - 180	-	120 - 150	180 - 300	80 - 160
	fz	0.7 - 1.0	-	0.12 - 0.15	0.15 - 0.25	0.1 - 0.15
	ap	0.4 - 1.0	-	~5.0	~5.0	~0.2
	ae	0.7 Dc	-	~0.16 Dc	~0.2	0.4 - 1.0 Dc
Mold Steel 38-43HRC	Grade	JC8118 (JC8050)	-	JC8118 (JC8050)	JC8118 (JC8050)	JC8118 (JC8050)
	Vc	70 - 100	-	100 - 120	150 - 250	70 - 140
	fz	0.6 - 0.7	-	0.1 - 0.12	0.15 - 0.25	0.1 - 0.15
	ap	0.3 - 0.8	-	~4.0	~4.0	~0.2
	ae	0.6 Dc	-	~0.15 Dc	~0.2	0.4 - 1.0 Dc
Hardened Die Steel 42-52HRC	Grade	JC8118	JC8118	JC8118 (DH102)	JC8118 (DH102)	JC8118 (DH102)
	Vc	60 - 70	70 - 90	80 - 100	120 - 210	75 - 100
	fz	0.5	0.5 - 0.8	0.09 - 0.12	0.12 - 0.20	0.1 - 0.12
	ap	0.2 - 0.6	0.1 - 0.3	~3.5	~3.5	~0.2
	ae	0.6 Dc	0.6 Dc	~0.14 Dc	~0.2	0.4 -1.0 Dc
Hardened Die Steel 55-62HRC	Grade	-	DH102	DH102	DH102	DH102
	Vc	-	60 - 80	50 - 70	100 - 180	50 - 70
	fz	-	0.2 - 0.3	0.1	0.09 - 0.15	0.08 - 0.1
	ap	-	0.1 - 0.2	~2.5	~2.5	~0.15
	ae	-	0.4 Dc	~0.14 Dc	~0.15	0.4 - 1.0 Dc
Grey & Nodular Cast Iron below 300HB	Grade	JC8118	-	JC8118 (DH102)	JC8118 (DH102)	JC8118 (DH102)
	Vc	110 - 150	-	120 - 150	160 - 280	90 - 180
	fz	0.8 - 1.2	-	0.16 - 0.2	0.18 - 0.30	0.12 - 0.18
	ap	0.4 - 1.0	-	~5.0	~5.0	~0.2
	ae	0.7 Dc	-	~0.2 Dc	~0.2	0.4 -1.0 Dc
Stainless Steel	Grade	JC8050 (JC7560)	-	JC8050 (JC8118 JC7518)	JC8050 (JC8118 JC7518)	JC8050 (JC8118 JC7518)
	Vc	130 - 150	-	120 - 150	180 - 300	80 - 160
	fz	0.6 - 0.8	-	0.12 - 0.15	0.15 - 0.25	0.1 - 0.15
	ap	0.3 - 0.8	-	~5.0	~5.0	~0.2
	ae	0.6 Dc	-	~0.16 Dc	~0.2	0.4 - 1.0 Dc
Titanium Alloy	Grade	DS150 (JC8050 DS118)	-	DS118 (JC7518)	DS118 (JC7518)	DS118 (JC7518)
	Vc	50 - 60	-	50 - 60	60 - 100	25 - 50
	fz	0.4	-	0.12 - 0.15	0.15 - 0.25	0.1 - 0.12
	ap	0.2 - 0.8	-	~5.0	~5.0	~0.2
	ae	0.6 Dc	-	~0.15 Dc	~0.2	0.4 - 1.0 Dc
Heat Resistant Alloy	Grade	JC8118 (JC8050)	-	JC7518	JC7518	JC7518
	Vc	20 - 30	-	25 - 30	30 - 50	15 - 30
	fz	0.3	-	0.11 - 0.15	0.15 - 0.25	0.1 - 0.12
	ap	0.2 - 0.8	-	~5.0	~5.0	~0.2
	ae	0.6 Dc	-	~0.15 Dc	~0.20	0.4 - 1.0 Dc
Aluminium	Grade	-	-	FC18	FC18	FC18
	Vc	-	-	300 - 600	420 - 700	300 - 600
	fz	-	-	0.16 - 0.2	0.18 - 0.30	0.1 - 0.15
	ap	-	-	~5.0	~5.0	~0.3
	ae	-	-	~0.4 Dc	~0.3	0.4 - 1.0 Dc

QM MAX MQX/QXP Type

■Recommended Cutting Conditions

Material		Contouring	Side Finishing	Bottom Finishing	Vertical Side Finishing	Side Finishing	Bottom Finishing	Vertical Side Finishing
		YPHW-24	YPHW-15			YPHW-F (CBN)		
Carbon Steel below 250HB	Grade	-	JC8015 (DH102)	DH102	JC8015 (DH102)	-	-	-
	Vc	-	450 - 650	170 - 260	350 - 450	-	-	-
	fz	-	0.1 - 0.15	0.18 - 0.25	0.08 - 0.18	-	-	-
	ap	-	0.7 - 2.0	~0.2	Pf 0.5 - 1.12	-	-	-
	ae	-	~0.2	~0.6 Dc	~0.2	-	-	-
Tool & Die Steel below 255HB	Grade	-	JC8015 (DH102)	DH102	JC8015 (DH102)	-	-	-
	Vc	-	350 - 450	150 - 240	300 - 400	-	-	-
	fz	-	0.1 - 0.15	0.18 - 0.25	0.08 - 0.18	-	-	-
	ap	-	0.7 - 2.0	~0.2	Pf 0.5 - 1.12	-	-	-
	ae	-	~0.2	~0.6 Dc	~0.2	-	-	-
Mold Steel 30-36HRC	Grade	-	JC8015 (DH102)	DH102	JC8015 (DH102)	-	-	-
	Vc	-	350 - 450	140 - 220	250 - 350	-	-	-
	fz	-	0.1 - 0.15	0.17 - 0.2	0.07 - 0.15	-	-	-
	ap	-	0.7 - 2.0	~0.2	Pf 0.5 - 1.12	-	-	-
	ae	-	~0.2	~0.6 Dc	~0.2	-	-	-
Mold Steel 38-43HRC	Grade	JC8015 (DH102)	JC8015 (DH102)	DH102	JC8015 (DH102)	-	-	-
	Vc	220	350 - 400	150 - 200	180 - 250	-	-	-
	fz	0.25	0.08 - 0.12	0.1 - 0.12	0.07 - 0.12	-	-	-
	ap	0.15 - 0.4	0.7 - 2.0	~0.2	Pf 0.5 - 1.12	-	-	-
	ae	~0.4 Dc	~0.2	~0.6 Dc	~0.2	-	-	-
Hardened Die Steel 42-52HRC	Grade	JC8015 (DH102)	JC8015 (DH102)	DH102	DH102 (JC8015)	JBN795	JBN795	JBN795
	Vc	160	170 - 200	60 - 100	120 - 170	400 - 450	300 - 350	400 - 450
	fz	0.25	0.08 - 0.1	0.1	0.06 - 0.1	0.07 - 0.08	0.06 - 0.08	0.07 - 0.08
	ap	0.1 - 0.25	~1.5	~0.2	Pf 0.5 - 1.12	~1.2	~0.08	Pf 0.5 - 1.12
	ae	~0.4 Dc	~0.2	~0.6 Dc	~0.15	~0.1	~0.6 Dc	~0.1
Hardened Die Steel 55-62HRC	Grade	DH102	DH102	DH102	-	JBN795	JBN795	-
	Vc	100	150 - 180	50 - 70	-	300 - 400	200	-
	fz	0.2	0.08 - 0.1	0.05 - 0.07	-	0.06 - 0.08	0.05 - 0.06	-
	ap	0.1 - 0.2	~1.0	~0.2	-	~1.2	~0.06	-
	ae	~0.3 Dc	~0.2	~0.4 Dc	-	~0.1	~0.6 Dc	-
Grey Cast Iron	Grade	-	JC8015 (DH102)	DH102	JC8015 (DH102)	JBN795	JBN795	JBN795
	Vc	-	450 - 550	130 - 200	450 - 550	750	700	750
	fz	-	0.1 - 0.15	0.1 - 0.2	0.1 - 0.15	0.1 - 0.135	0.1 - 0.12	0.1 - 0.135
	ap	-	0.7 - 2.0	~0.2	Pf 0.5 - 1.12	~1.5	~0.1	Pf 0.5 - 1.12
	ae	-	~0.2	~0.6 Dc	~0.2	~0.1	~0.6 Dc	~0.1
Nodular Cast Iron	Grade	-	JC8015 (DH102)	DH102	JC8015 (DH102)	JBN795	-	JBN795
	Vc	-	450 - 550	130 - 200	450 - 550	700	-	700
	fz	-	0.1 - 0.15	0.1 - 0.2	0.1 - 0.15	0.1 - 0.135	-	0.1 - 0.135
	ap	-	0.7 - 2.0	~0.2	Pf 0.5 - 1.12	~1.5	-	Pf 0.5
	ae	-	~0.2	~0.6 Dc	~0.2	~0.1	-	~0.1
Stainless Steel	Grade	-	JC8015 (DH102)	JC8015 (DH102)	-	-	-	-
	Vc	-	350 - 450	130 - 180	-	-	-	-
	fz	-	0.1 - 0.15	0.1 - 0.15	-	-	-	-
	ap	-	0.7 - 2.0	~0.2	-	-	-	-
	ae	-	~0.2	~0.6 Dc	-	-	-	-
Titanium Alloy	Grade	-	JC8015 (DH102)	DH102	-	-	-	-
	Vc	-	70 - 90	30 - 50	-	-	-	-
	fz	-	0.08 - 0.12	0.1 - 0.15	-	-	-	-
	ap	-	0.7 - 2.0	~0.2	-	-	-	-
	ae	-	~0.2	~0.6 Dc	-	-	-	-

Note
1. Please adjust cutting conditions according to machine rigidity or work rigidity.
2. In case of chatter ocurring, recommended to reduce ap or rpm and keep feed per tooth.
3. ap should be reduced when using on low rigidity machine.
4. Use air blow.
5. When using Endmill type, reduce cutting conditions by 10-20%.

5-AXIS Series

Through coolant hole | Face Milling | Shoulder Milling

MQT TYPE — High precision "QM MAX"

- 3 different angled bodies (0°, 3°, and 5°) that cover a range of tapered walls from 0° ~ 8°
- Possible to use even on 3 axis machine with 3°or 5°angled body ; A03 type or A05 type
- High tolerance insert-pocket for the ground inserts
- High efficiency with multi flutes

Fig 1

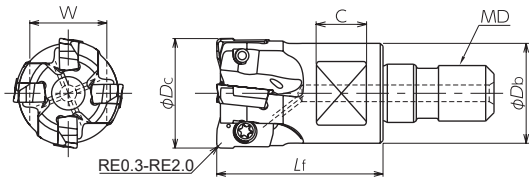
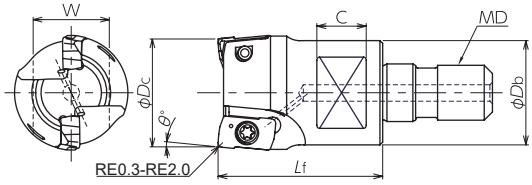


Fig 2



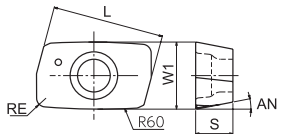
Inclination angle θ°	Cat.No.	Stock	No. of inserts	Dimensions (mm)						Parts		Insert	Fig.
				φDc	Lf	φDb	MD	C	W	Screws	Wrench		
0°	MQT-2016A00-M8	●	2	16	23	14	M8	8	12	TSW-2556H	A-08	XP**100308ZER-R YPHW1003**Z*R-** ZPMT1003**ZER-PL	1
	MQT-4020A00-M10	●	4	20	30	18	M10	9	14				
	MQT-5025A00-M12	●	5	25	35	22.5	M12	10	17	DSW-2563H			
	MQT-6032A00-M16	●	6	32	43	29	M16	12	22				
	MQT-6035A00-M16	●		35			M16						
3°	MQT-2016A03-M8	●	2	16	23	14	M8	8	12	TSW-2556H			2
	MQT-2020A03-M10	●		20	30	18	M10	9	14				
5°	MQT-2016A05-M8	●		16	23	14	M8	8	12				
	MQT-2020A05-M10	●		20	30	18	M10	9	14				

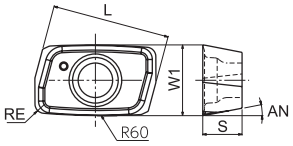
Clamp screw	Torque(N.m)
TSW-2556H	1.1
DSW-2563H	

5-AXIS Series

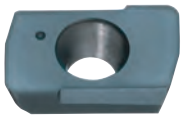
Insert

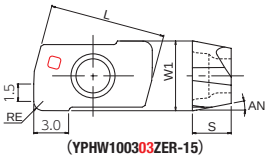
For tapered wall finishing
(XPHW100308ZER-R)
(XPHT100308RZER-R)



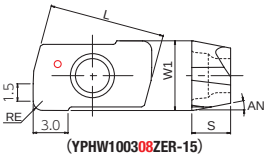


For finishing side face
(YPHW1003ZER-15)**
(YPHW100308ZER-F)
(YPHW100308ZTR-F1)

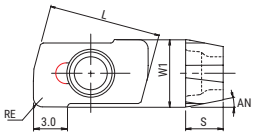




(YPHW100303ZER-15)

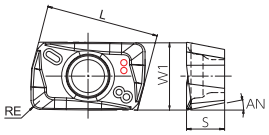


(YPHW100308ZER-15)

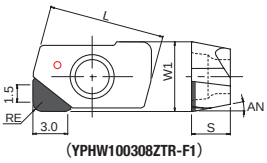


(YPHW100308ZER-F) (for low feed)

Shoulder milling insert
(for semi-finishing to finishing)
ZPMT1003ZER-PL***



CBN Insert



(YPHW100308ZTR-F1)

Type	Cat.No.	Tolerance	PVD Coating				Cermet	CBN	Dimensions (mm)				
			DH102	JC8015	JC8050	JC8118	CX75	JBN795	RE	L	W1	S	AN
For Tapered wall finishing	XPHW100308ZER-R	H	●	●					0.8	10.06	6	3.35	11°
							●						
	XPHT100308ZER-R			●									
							●						
For Finishing side face	YPHW100303ZER-15			●					0.3				
			●										
							●						
	YPHW100308ZER-15		●						0.8				
							●						
	YPHW100308ZER-F			●									
	YPHW100308ZTR-F1							●					
Shoulder milling insert (for semi-finishing to finishing)	ZPMT100304ZER-PL	M	●		●	●			0.4	10.08		3.4	
							●						
	ZPMT100308ZER-PL		●		●	●			0.8				
							●						
	ZPMT100320ZER-PL		●		●	●			2				
							●						