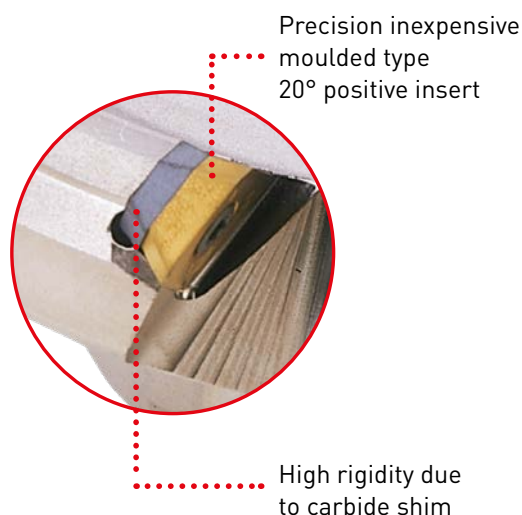


ASX SERIES

FOR STABLE FACE AND SHOULDER MILLING
EVEN UNDER HEAVY CUTTING CONDITIONS



STABLE FACE MILLING UNDER HIGH-LOAD CONDITIONS



A wide range of chipbreakers



JL BREAKER



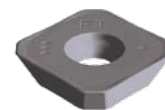
JM BREAKER



JH BREAKER



JP BREAKER



FT BREAKER

ASX445

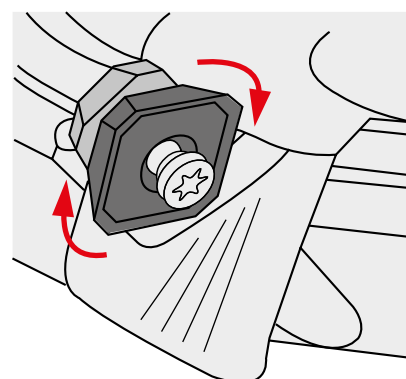
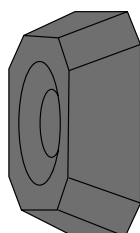
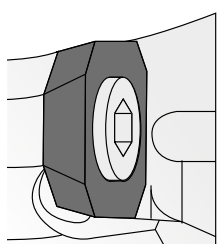
FEATURES

STABLE, LONG TOOL LIFE, HIGH ACCURACY BODY

A carbide shim with Mitsubishi's proprietary Anti-Fly Insert (AFI) mechanism provides excellent insert location characteristics, permitting stable cutting even under high load conditions.

The cutter body is made from a special alloy that provides high strength at high temperature. A special surface treatment improves the corrosion resistance.

The ASX cutter uses screw-on type inserts that allow easy clamping of the inserts with high location precision. Indexing of the inserts can be performed without completely removing the screw.



EFFECTIVE FOR VARIOUS MACHINING APPLICATIONS

Coarse pitch type

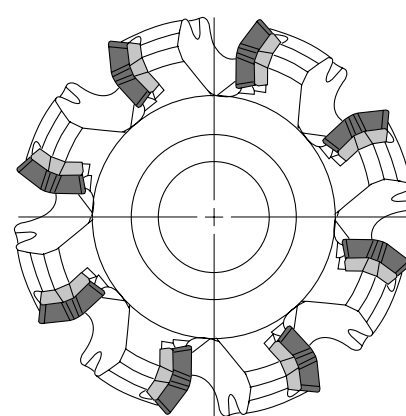
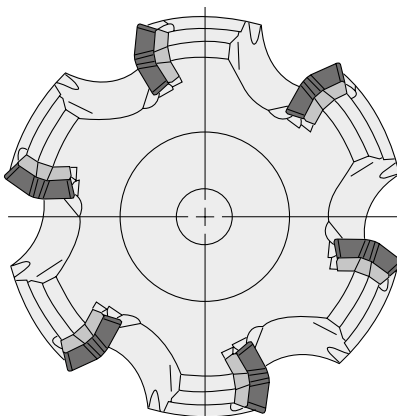
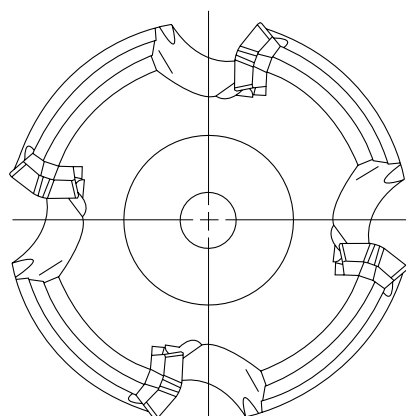
1. 1st recommendation for cutting steels and stainless steels.
2. For deep cutting and high feed rates with large-volume chip discharge.
3. Smooth cutting allows longer overhang applications.

Fine pitch type

1. 1st recommendation for cast iron, hardened steel and heat-resistant alloys.
2. For shallow cutting with low feed rates and low-volume chip discharge.

Extra fine pitch type

1. 1st recommendation for cast iron.
2. For cutting operations where chip discharge volume is small and high table feed is desired.



ASX300

SCREW-ON INSERT TYPE MILLING CUTTER

ECO-FRIENDLY DOWNSIZED MODEL

The downsized model features a multi-tooth design that increases table feed, resulting in shorter machining time and reduced power consumption - ultimately helping to lower CO₂ emissions. In addition, by keeping the cutting load per tooth at an optimal level, tool life can be extended thereby reducing the overall number of inserts required.

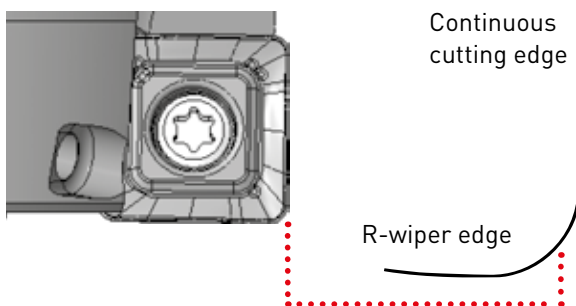
IMPROVED CUTTING EDGE RIDGE

ASX300 inserts have a smooth continuous cutting edge that improves the surface finish and dimensional accuracy of the component.

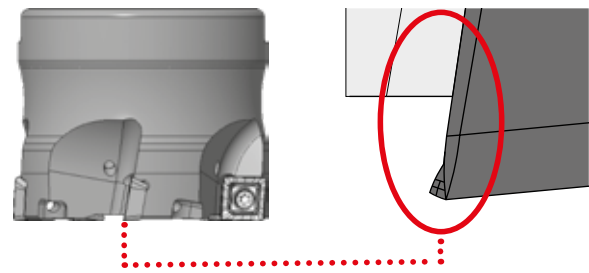
OPTIMISED CUTTING EDGE GEOMETRY

The geometry of the ASX300 optimises the contact with the workpiece. This provides edge strength and improves chip evacuation. The extra edge strength resists damage even under high cutting loads.

Improved cutting edge profile



Cutting edge optimisation



SURFACE FINISH COMPARISON WHEN MACHINING 1.7225

Achieves a glossy finish without machining marks.



ASX300



Conventional

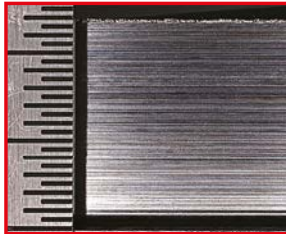
Material	1.7225
Tool	MV1030 M
DC (mm)	25
Vc (m/min)	300
fz (mm/t)	0.15
ap (mm)	0.5
ae (mm)	25
Cutting mode	Dry cutting Single Insert

ASX300

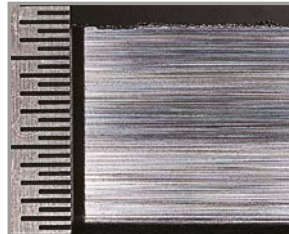
SCREW-IN INSERT TYPE MILLING CUTTER

COMPARISON OF WALL SURFACE ACCURACY AFTER SHOULDER MILLING 1.7225

The improved cutting edge geometry reduces the machining step marks.



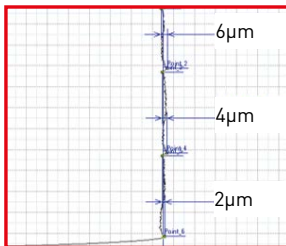
ASX300



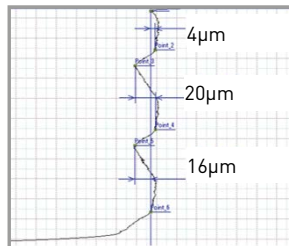
Conventional

Material	1.7225
Tool	MV1030 M
DC (mm)	25
Vc (m/min)	250
fz (mm/t)	0.1
ap (mm)	3 ^{x3}
ae (mm)	3
Cutting mode	Dry cutting Single Insert

MAXIMUM STEP HEIGHT: 6 μm



MAXIMUM STEP HEIGHT: 20 μm



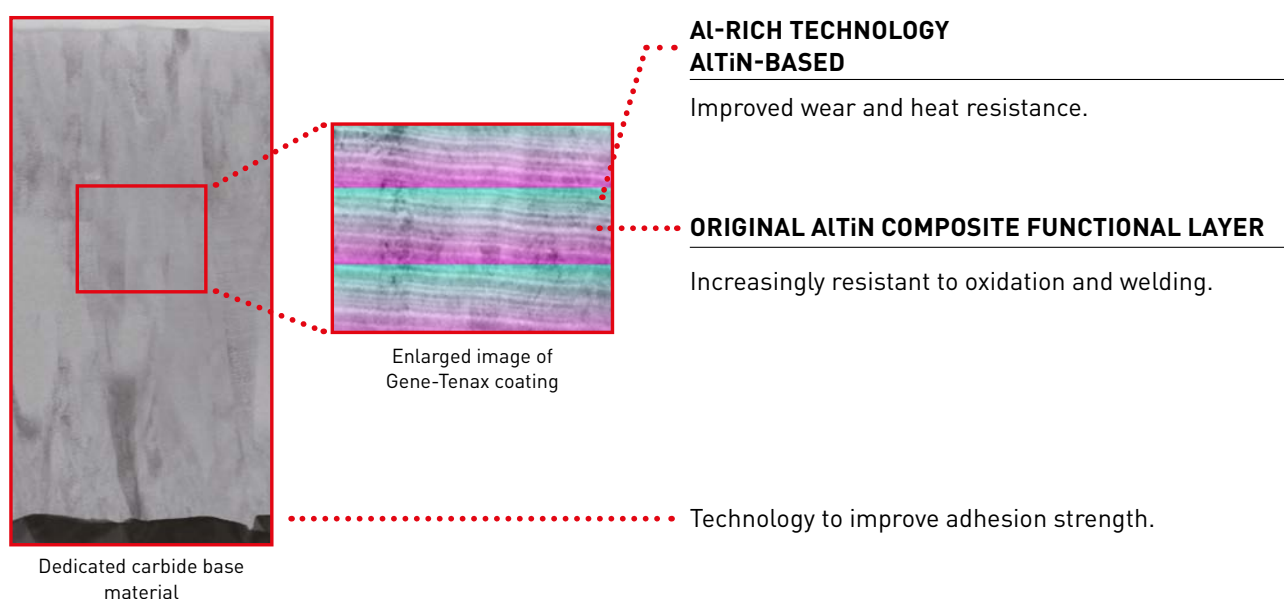
MP1220 / MP1230 / MP1240

MULTI-LAYER PVD COATING FOR MILLING

ONE INSERT SERIES TO SOLVE ALL PROBLEMS WHEN MACHINING STEELS, STAINLESS STEELS, HEAT RESISTANT AND TITANIUM ALLOYS.

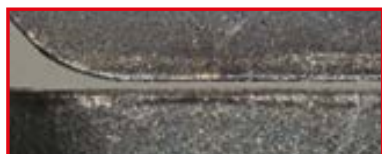
GENE-TENAX COATING

By controlling the coating structure at the nano level, damage to the coating has been vastly reduced compared to conventional lamination. By successfully laminating multiple films, simultaneous strengthening of heat, wear and welding resistance is achieved. Additionally the coating is now much less prone to cracking and with the increased adhesive strength, the most stable grade for milling has been created.



ACHIEVES TOUGHNESS FOR A WIDE RANGE OF WORK MATERIALS

STEEL MACHINING DAMAGE



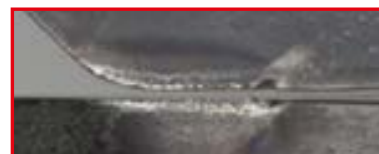
Cutting edge that is resistant to wear when machining steel

STAINLESS STEEL MACHINING DAMAGE



Cutting edge that is less susceptible to notching when machining stainless steel

HEAT RESISTANT AND TITANIUM ALLOYS MACHINING DAMAGE



Cutting edge that is resistant to chipping when machining heat resistant and titanium alloys



Thermal cracking



Notching

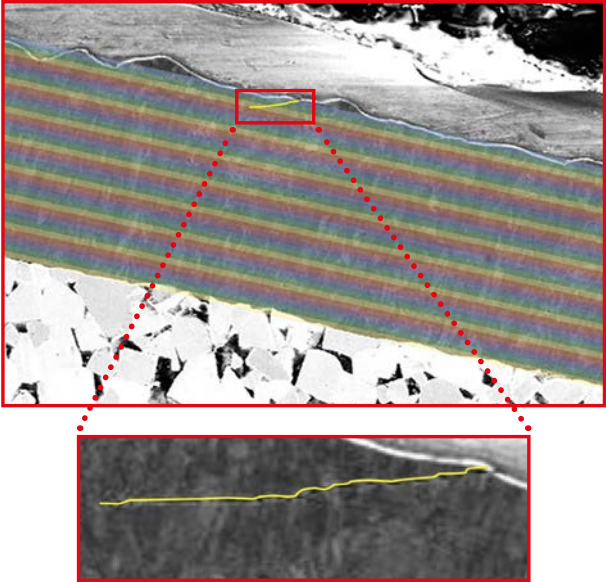


Chipped cutting edge

NEW MULTILAYER TECHNOLOGY

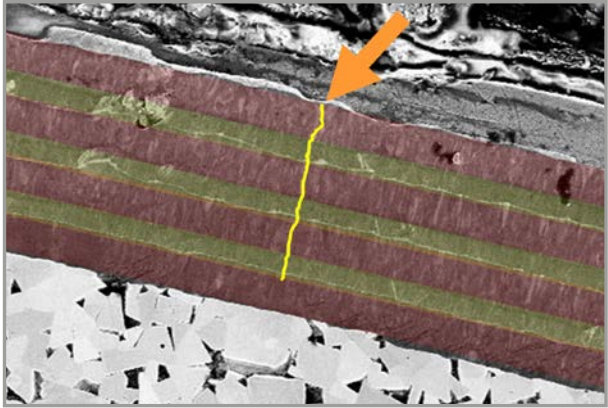
The adoption of a new multi-layer technology has succeeded in suppressing crack propagation and dramatically improved fracture resistance when compared to conventional technology.

MP1200 SERIES MULTI-LAYER TECHNOLOGY



Prevents cracks

CONVENTIONAL LAYER TECHNOLOGY



MULTI-GRADE SYSTEM

Using simulation technology, precise analysis of the cutting edge load and temperature when machining different workpiece materials was carried out. This led to the creation of different substrates for three different grades and ensures optimal performance for each type of workpiece material. Ensuring the best performance over a wide range of applications.

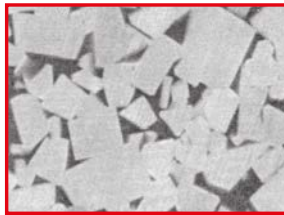
MP1220



MP1230



MP1240



2µm

SELECTION GUIDELINES

Steel, Carbon steel

Stainless steel

Titanium alloys,
Heat resistant alloys



- Hard grade
- Stable cutting
- Emphasis on wear resistance and mechanical properties

- Tough grade
- Unstable cutting
- Emphasis on fracture resistance and thermal properties

ASX SERIES

INSERT GRADES FOR A WIDE RANGE OF MATERIALS

P	CVD	PVD	M	CVD	PVD	K	CVD	N	S	PVD	H	PVD
P10	MV1020	MP6120	M10			K10	MC5020	N10	S10	MP9120	H10	
P20	MV1030	MP1220	M20	MV1030	MP7130	K20	MV1020	N20	S20	MP9130	H20	
P30	NEW	MP1230	M30	F7030	MP7140	K30	NEW	N30	S30	MP1240	H30	VP15TF
P40	NEW	MP1240	M40	NEW	NEW	K40		N40	S40	NEW	H40	

* When machining steel or stainless steel where the emphasis is on surface finish, use cermet grade MX3030.
 Stable Cutting: Continuous cutting, constant depth of cut, pre-machined securely clamped component cutting.
 Unstable Cutting: Heavy interrupted, irregular depth of cut, low clamping rigidity cutting.

MP1220

For stable machining operations with an emphasis on wear resistance.

MP1230

Ideal for medium machining applications and for light interrupted cutting.

MP1240

The toughest grade for heavy machining and rough interrupted applications.

MV1020

This grade has advanced wear and thermal shock resistance and also achieves stable cutting at unprecedented cutting speeds, especially when machining steel and ductile cast iron, thus greatly reducing work time.

MV1030

The new Al-Rich coating also provides excellent wear resistance. An unprecedented performance against sudden breakage was also realised especially during problematic wet cutting and when machining stainless steels.

MP6120

For general milling of steel.

MP6130

For interrupted milling of steel.

MP7130

For general milling of stainless steel.

MP7140

For unstable milling of stainless steel.

MC5020

For general milling of cast iron.

MP9120

For general milling of HRSA and titanium alloy.

MP9130

For interrupted and general milling of HRSA and Titanium alloy.

MX3030

For finishing.

HTi10

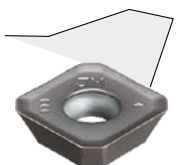
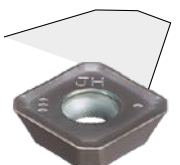
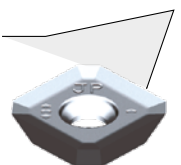
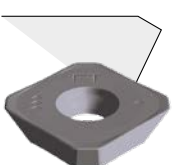
For general milling of aluminium.

VP15TF

For stable machining when the coating is combined with a high wear and fracture resistant carbide substrate.

ASX400 / 445

CHIPBREAKERS FOR A WIDE RANGE OF APPLICATIONS

JL BREAKER	JM BREAKER	JH BREAKER	JP BREAKER	FT BREAKER
Finish to light cutting breaker	Light to semi-heavy cutting breaker	Medium to heavy cutting breaker	Aluminium alloy cutting breaker	Rough cutting for cast iron breaker
				
High accuracy insert with ground-finished periphery. Large rake angle leading to low cutting resistance.	High accuracy M class insert. For a wide range of workpiece materials and cutting conditions.	High accuracy M class insert. Strong cutting edge for high fracture resistance.	High accuracy insert with ground-finished periphery. Large rake angle and mirror-finished rake face for sharp cutting performance and high welding resistance.	High M class inserts. Higher fracture-resistant flat-top inserts.
Workpiece rigidity is low	General cutting	Interrupted cutting scaling	General cutting of aluminium alloy	For rough accuracy machining of scaled cast iron

MV1000 SERIES

COATED CARBIDE GRADE FOR MILLING

ADVANCED WEAR RESISTANCE

By adopting the newly developed Al-Rich coating technology, the (Al,Ti)N with a high Al content ratio displays very high hardness. This greatly improves oxidation and wear resistance.

ADVANCED THERMAL SHOCK RESISTANCE

The extreme heat resistance of this new series achieves amazing stability, not only during dry cutting, but also when wet cutting where inserts are usually prone to thermal cracking.



Graphical representation

EXCELLENT WELDING RESISTANCE

Smooth surface.

OUTSTANDING WEAR RESISTANCE

Newly developed Al-Rich coating.

EXCELLENT CHIPPING RESISTANCE FOR STABLE MACHINING

Newly developed bonding layer.

FRACTURE RESISTANCE FOR THE ULTIMATE STABILITY

Exclusive cemented carbide substrate.



MX3030

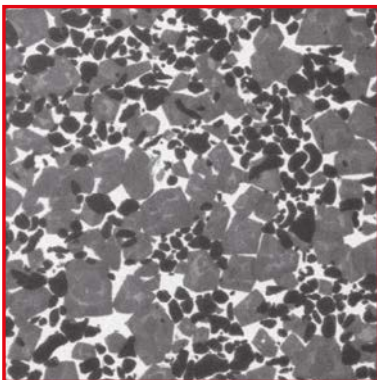
NEW CERMET GRADE FOR A WIDER RANGE OF APPLICATIONS

Enables excellent surface finishes even at high efficiency machining conditions.

IMPROVED MACHINING EFFICIENCY BY MAINTAINING EXCELLENT SURFACE FINISHES EVEN AT LARGE DEPTHS OF CUT

Cermet has a low affinity with iron, excellent thermal stability and oxidation resistance, and is therefore a suitable grade for finishing. However, it does not have the same bonding strength as cemented carbide thereby creating the challenge to compensate for fracture resistance.

MX3030 solves the challenge with higher thermal conductivity than conventional products and has excellent thermal cracking resistance. Therefore, it is possible to suppress wear and maintain high quality surface finishes. Also, since MX3030 has excellent toughness, improved machining efficiency even at large depths of cut can be realised.



MX3030

A special alloy is used for the binder material



Fracture resistance properties increased

High hardness Ti compound particles are used in the substrate



High wear resistance properties

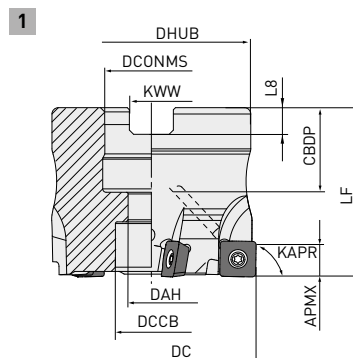


ASX300



ARBOR TYPE

P M K N S H



Order number	Stock													Type
	R	CICT	APMX	DC	DCONMS	LF	CBDP	DAH	DCCB	DHUB	KWW	L8	WT	
ASX300-040A04R	●	4	5.5	40	16	40	18	9	14	37	8.4	6.3	0.22	1
ASX300-040A06R	●	6	5.5	40	16	40	18	9	14	37	8.4	6.3	0.21	1
ASX300-050A05R	●	5	5.5	50	22	40	20	11	17	47	10.4	6.3	0.36	1
ASX300-050A07R	●	7	5.5	50	22	40	20	11	17	47	10.4	6.3	0.36	1
ASX300-063A06R	●	6	5.5	63	22	40	20	11	17	50	10.4	6.3	0.54	1
ASX300-063A08R	●	8	5.5	63	22	40	20	11	17	50	10.4	6.3	0.54	1
ASX300-080A08R	●	8	5.5	80	27	50	23	13	20	56	12.4	7	0.98	1
ASX300-080A10R	●	10	5.5	80	27	50	23	13	20	56	12.4	7	0.99	1

1/1

1. The rotational speed maximum (RPMX) are set to ensure tool and insert stability.
2. When using the tool at high spindle speeds, ensure that the tool and chuck are correctly balanced.
3. A set bolt for the arbor is not included with the body.



ASX300

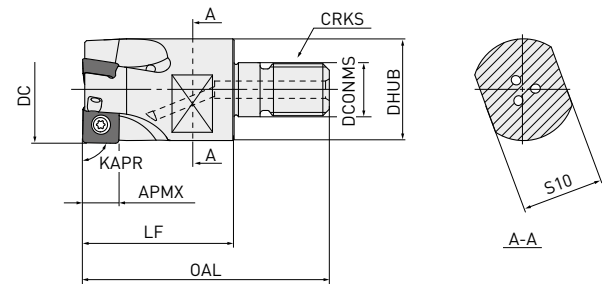


SCREW-IN TYPE

P M K N S H



1



Order number	Stock	CICT	APMX	DC	DCONMS	LF	DHUB	OAL	CRKS	WT	S10	Type
	R											
ASX300R2002AM1030	●	2	5.5	20	10.5	30	18.5	49	M10	0.05	14	1
ASX300R2503AM1235	●	3	5.5	25	12.5	35	23.5	57	M12	0.1	19	1
ASX300R3204AM1640	●	4	5.5	32	17	40	28.5	63	M16	0.2	24	1
1/1												

1. Please check the web catalogue for screw-in type mounting arbors.

17

ASX300

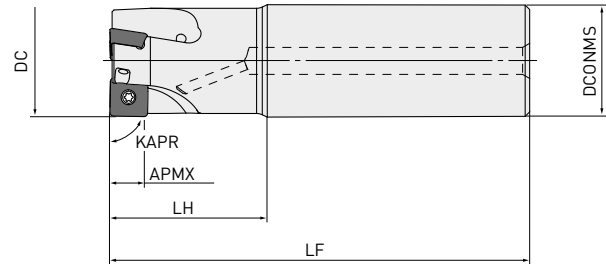


SHANK TYPE

P M K N S H



1



Order number	Stock	CICT	APMX	DC	DCONMS	LF	LH	WT	Type
	R								
ASX300R2002SA16S	●	2	5.5	20	16	100	27	0.14	1
ASX300R2002SA16L	●	2	5.5	20	16	150	27	0.21	1
ASX300R2002SA20S	●	2	5.5	20	20	100	27	0.21	1
ASX300R2002SA20L	●	2	5.5	20	20	150	62	0.31	1
ASX300R2503SA20S	●	3	5.5	25	20	115	35	0.26	1
ASX300R2503SA20L	●	3	5.5	25	20	170	35	0.39	1
ASX300R2503SA25S	●	3	5.5	25	25	115	35	0.38	1
ASX300R2503SA25L	●	3	5.5	25	25	170	73	0.56	1
ASX300R3204SA25S	●	4	5.5	32	25	125	43	0.48	1
ASX300R3204SA25L	●	4	5.5	32	25	190	43	0.71	1
ASX300R3204SA32S	●	4	5.5	32	32	125	43	0.69	1
ASX300R3204SA32L	●	4	5.5	32	32	190	93	1.04	1

1/1

ASX300

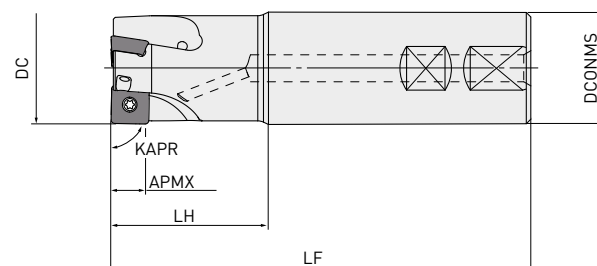


WELDON SHANK TYPE

P M K N S H



2



Order number	Stock	CIC	APMX	DC	DCONMS	LF	LH	WT	Type
	R								
ASX300R2002WA16S	●	2	5.5	20	16	100	27	0.14	2
ASX300R2002WA20S	●	2	5.5	20	20	100	27	0.21	2
ASX300R2503WA20S	●	3	5.5	25	20	115	35	0.26	2
ASX300R2503WA25S	●	3	5.5	25	25	115	35	0.37	2
ASX300R3204WA25S	●	4	5.5	32	25	125	43	0.47	2
ASX300R3204WA32S	●	4	5.5	32	32	125	43	0.68	2

1/1

ASX300

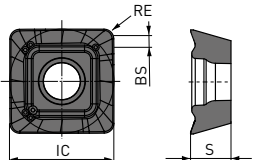
SPARE PARTS

Tool holder type	 *		
	Clamp screw	Wrench	Anti-seize Lubricant
ASX300	TPS25-1	TIP07F	MK1KS

* Clamp torque (N • m): TPS25-1 = 1.0

INSERTS

P	Steel	●	●	●	●	●	●			Cutting conditions : ●: Stable cutting ●: General cutting ✱: Unstable cutting
M	Stainless steel	●	●	●	●	✱	●			
K	Cast iron	●	●					✱		
N	Non-ferrous material								●	
S	Heat resistant alloy, Titanium			●	●	●	●			
H	Hardened steel							●		Honing: E: Round F: Sharp edge S: Chamfer + round T: Chamfer Z: Stable

Order number	Class	Honing	MV1020	MV1030	MP1220	MP1230	MP1240	VP15TF	HTi10	IC	S	BS	RE	Geometry
SOGT083308PEFR-L	G	F							●	8.5	3.3	1.2	0.8	 
SOMT083304PEER-L	M	E	●	●	●	●	●	●		8.5	3.3	1.6	0.4	
SOMT083308PEER-L	M	E	●	●	●	●	●	●		8.5	3.3	1.2	0.8	
SOMT083308PEER-M	M	E	●	●	●	●	●	●		8.5	3.3	1.2	0.8	
SOMT083312PEER-M	M	E	●	●	●	●	●	●		8.5	3.3	0.8	1.2	
SOMT083316PEER-M	M	E	●	●	●	●	●	●		8.5	3.3	0.4	1.6	
SOMT083308PEER-R	M	E	●	●	●	●	●	●		8.5	3.3	1.2	0.8	
SOMT083312PEER-R	M	E	●	●	●	●	●	●		8.5	3.3	0.8	1.2	
SOMT083316PEER-R	M	E	●	●	●	●	●	●		8.5	3.3	0.4	1.6	

1/1

ASX300

RECOMMENDED CUTTING CONDITIONS

Material	Properties	Grade	Vc						
				ft		ft		ft	
P	Mild steel	MV1020	300 [200 – 400]	0.14 [0.08 – 0.20]	L	0.16 [0.10 – 0.21]	M	0.18 [0.10 – 0.25]	R
		MV1030	275 [200 – 350]						
		MP1220	250 [200 – 300]						
		MP1230	240 [190 – 290]						
		VP15TF	250 [200 – 300]						
	Carbon steel, Alloy steel	MV1020	260 [170 – 350]	0.12 [0.07 – 0.16]	L	0.15 [0.10 – 0.20]	M	0.16 [0.10 – 0.21]	R
		MV1030	260 [170 – 350]						
		MP1220	220 [170 – 270]						
		MP1230	180 [150 – 230]						
		VP15TF	220 [170 – 270]						
		MV1020	180 [100 – 250]	0.10 [0.06 – 0.14]	L	0.14 [0.10 – 0.18]	M	0.15 [0.10 – 0.20]	R
		MV1030	165 [100 – 230]						
		MP1220	140 [100 – 180]						
		MP1230	120 [90 – 150]						
		VP15TF	140 [100 – 180]						
K	Stainless steel	MV1030	220 [170 – 270]	0.12 [0.07 – 0.16]	L	0.15 [0.10 – 0.20]	M	0.16 [0.10 – 0.21]	R
		MP1230	220 [170 – 270]						
		MP1240	200 [150 – 250]						
		VP15TF	220 [170 – 270]						
K	Cast iron, Ductile cast iron	MV1020	240 [130 – 350]	0.15 [0.10 – 0.20]	L	0.16 [0.10 – 0.21]	M	0.18 [0.10 – 0.25]	R
		MV1030	190 [130 – 250]						
		VP15TF	180 [130 – 230]						
		MV1020	220 [80 – 350]						
		MV1030	110 [80 – 150]						
N	Aluminium alloy	HTi10	650 [300–1000]	0.15 [0.10 – 0.20]	L	0.20 [0.10 – 0.30]	M	0.30 [0.20 – 0.40]	R
S	Titanium alloy	MP1220	50 [40 – 60]	0.10 [0.05 – 0.14]	L	0.10 [0.05 – 0.14]	M	0.15 [0.10 – 0.20]	R
		MP1230	45 [30 – 55]						
		MP1240	45 [30 – 55]						
		VP15TF	50 [40 – 60]						
	Heat resistant alloy	MP1220	40 [20 – 50]	0.10 [0.05 – 0.14]	L	0.10 [0.05 – 0.14]	M	0.15 [0.10 – 0.20]	R
		MP1230	30 [15 – 45]						
		MP1240	30 [15 – 45]						
H	Hardened steel	VP15TF	80 [60 – 100]	0.07 [0.04 – 0.09]	L	0.08 [0.05 – 0.11]	M	0.10 [0.07 – 0.12]	R

1/1

1. Revolution (min⁻¹) = (1000 x Cutting Speed) u (3.14 x DC)
2. Table Feed (mm/min) = Feed per Tooth x Number of Teeth x Cutter Revolution

ASX400

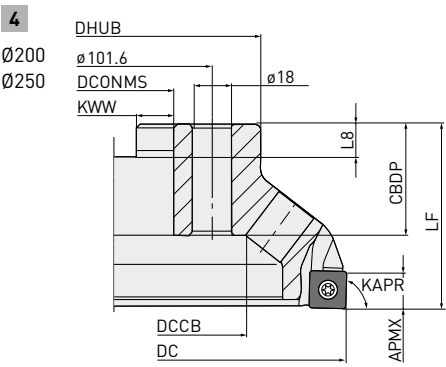
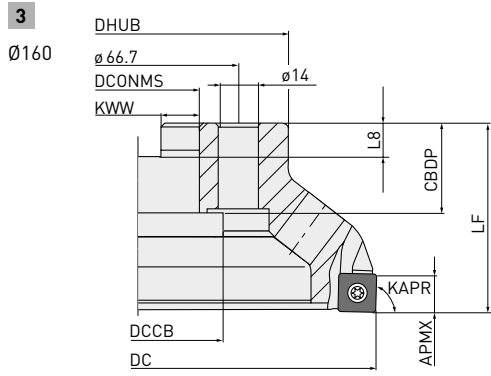
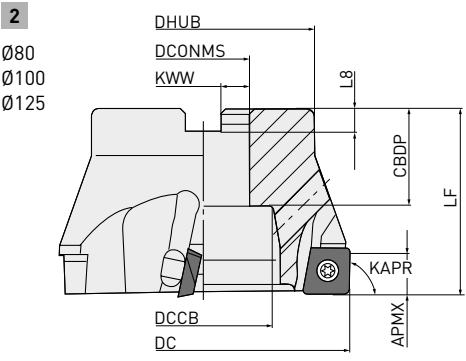
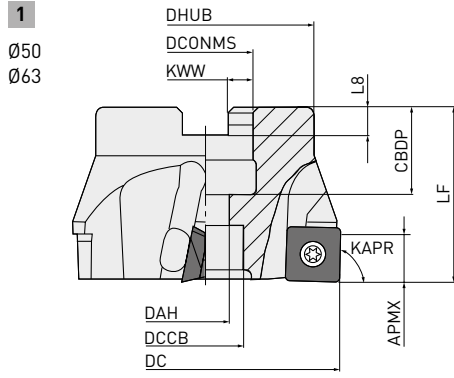


ARBOR TYPE

P M K N S H



KAPR : 90°
GAMP : +11°
GAMF : -9° - -11°



Right hand tool holder only.

ASX 400 – ARBOR TYPE

Order number	Stock	CICT	APMX	DC	DCONMS	LF	CBDP	DAH	DCCB	DHUB	KWW	L8	WT	Type
	R													
COARSE PITCH														
ASX400-050A03R	●	3	10	50	22	40	20	11	17	41	10.4	6.3	0.3	1
ASX400-063A04R	●	4	10	63	22	40	20	11	17	50	10.4	6.3	0.5	1
ASX400-080B04R	●	4	10	80	27	50	29	—	38	60	12.4	7	0.9	2
ASX400-100B05R	●	5	10	100	32	50	32	—	45	70	14.4	8	1.4	2
ASX400-125B06R	●	6	10	125	40	63	32	—	60	80	16.4	9	2.3	2
ASX400-160C08R	●	8	10	160	40	63	29	—	56	100	16.4	9	3.6	3
ASX400-200C10R	●	10	10	200	60	63	32	—	135	160	25.7	14.22	6.3	4
ASX400-250C12R	●	12	10	250	60	63	32	—	180	210	25.7	14.22	10.8	4
FINE PITCH														
ASX400-050A04R	●	4	10	50	22	40	20	11	17	41	10.4	6.3	0.3	1
ASX400-063A05R	●	5	10	63	22	40	20	11	17	50	10.4	6.3	0.5	1
ASX400-080B06R	●	6	10	80	27	50	29	—	38	60	12.4	7	0.9	2
ASX400-100B07R	●	7	10	100	32	50	32	—	45	70	14.4	8	1.4	2
ASX400-125B08R	●	8	10	125	40	63	32	—	60	80	16.4	9	2.2	2
ASX400-160C12R	●	12	10	160	40	63	29	—	56	100	16.4	9	3.5	3
ASX400-200C16R	●	16	10	200	60	63	32	—	135	160	25.7	14.22	6.2	4
ASX400-250C18R	●	18	10	250	60	63	32	—	180	210	25.7	14.22	10.7	4
EXTRA FINE PITCH														
ASX400-050A05R	●	5	10	50	22	40	20	11	17	41	10.4	6.3	0.3	1
ASX400-063A06R	●	6	10	63	22	40	20	11	17	50	10.4	6.3	0.5	1
ASX400-080B08R	●	8	10	80	27	50	29	—	38	60	12.4	7	0.9	2
ASX400-100B10R	●	10	10	100	32	50	32	—	45	70	14.4	8	1.4	2
ASX400-125B12R	●	12	10	125	40	63	32	—	60	80	16.4	9	2.1	2
ASX400-160C15R	●	15	10	160	40	63	29	—	56	100	16.4	9	3.4	3
ASX400-200C19R	★	19	10	200	60	63	32	—	135	160	25.7	14.22	6.2	4
ASX400-250C22R	★	22	10	250	60	63	32	—	180	210	25.7	14.22	10.5	4
														1/1

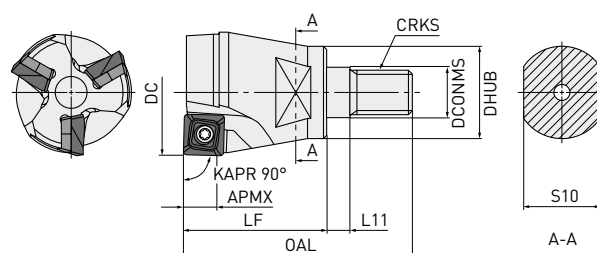
ASX400



SCREW-IN TYPE



1



Right hand tool holder only.

Order number	Stock	CICT	APMX	DC	DCONMS	LF	DHUB	OAL	CRKS	L11	WT	S10	Type
	R												
ASX400R322M16	●	3	10	32	17	42	29	65	M16	6	0.3	22	1

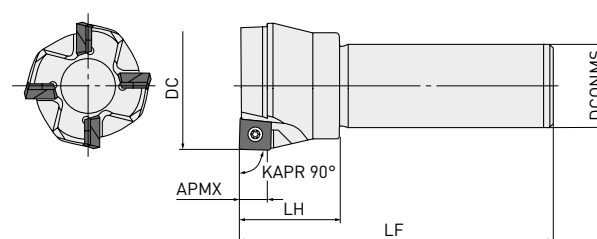
1/1



SHANK TYPE



1



Right hand tool holder only.

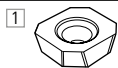
Order number	Stock	CICT	APMX	DC	DCONMS	LF	LH	Type
	R							
COARSE PITCH								
ASX400R403S32	★	3	10	40	32	125	40	1
FINE PITCH								
ASX400R504S32	★	4	10	50	32	125	40	1
ASX400R635S32	★	5	10	63	32	125	40	1
1/1								

1/1



ASX400

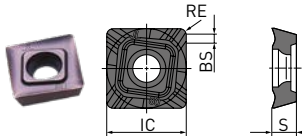
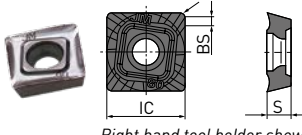
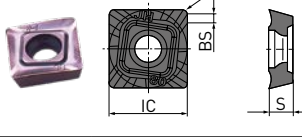
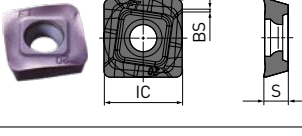
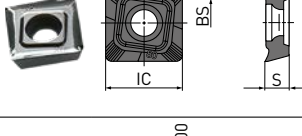
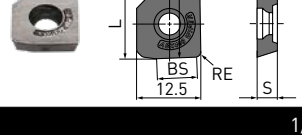
SPARE PARTS

Tool holder type					
	Shim	Shim screw	Clamp screw	Wrench (Insert)	Wrench (Shim)
ASX400	STASX400N	WCS503507H	TPS35	TIP15T	HKY35R

* Clamp torque (N • m): WCS503507H = 5.0, TPS35 = 3.5

INSERTS

	P	M	K	N	S	H
Steel	●	●	●	●	●	●
Stainless steel	●	●	●	●	●	●
Cast iron	●	●	●	●	●	●
Non-ferrous material	●	●	●	●	●	●
Heat resistant alloy, Titanium	●	●	●	●	●	●
Hardened steel	●	●	●	●	●	●

Order number	Class	Honing	F7030	MC5020	MP6120	MP6130	MP7130	MP7140	MP9130	MP9120	MV1020	MV1030	MP1220	MP1230	MP1240	MX3030	VP15TF	VP30RT	NX4545	NX2525	HT110	HT105T	L	IC	S	BS	RE	Geometry
SOET12T308PEER-JL	E	E	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	—	12.7	3.97	1.4	0.8	
SOMT12T308PEER-JM	M	E	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	—	12.7	3.97	1.4	0.8	
SOMT12T308PEEL-JM	M	E															●						—	12.7	3.97	1.4	0.8	
SOMT12T308PEER-JH	M	E	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	—	12.7	3.97	1.4	0.8	
SOMT12T320PEER-FT	M	E	●	●			★	★	●	●	●	●	●	●	●	●	●						—	12.7	3.97	0.5	2.0	
SOGT12T308PEFR-JP	G	F																		●			—	12.7	3.97	1.4	0.8	
WOEW12T308PEER8C	E	E																		●			13.2	—	3.97	8	0.8	
WOEW12T308PETR8C	E	T																		●			13.2	—	3.97	8	0.8	

● / ★ = Expansion

● : Inventory maintained. ★ : Inventory maintained in Japan.

ASX400

RECOMMENDED CUTTING CONDITIONS

Material	Properties	Grade	Vc						
				ft		ft		ft	
P	Mild steel	MV1020	300 [200 – 400]	0.18 [0.08 – 0.28]	JL	0.20 [0.10 – 0.30]	JM	0.25 [0.10 – 0.35]	JH
		F7030	280 [210 – 350]						
		MV1030	275 [200 – 350]						
		MP1220							
		MP6120	250 [200 – 300]						JH/FT
		VP15FT							
		MP1230							
		MP6130	240 [190 – 290]						JH
		VP30RT	230 [180 – 280]						
		MX3030	180 [130 – 250]						—
		NX4545	180 [130 – 230]						—
P	Carbon steel Alloy steel	MV1020	260 [170 – 350]	0.15 [0.07 – 0.23]	JL	0.18 [0.10 – 0.28]	JM	0.20 [0.10 – 0.30]	JH
		F7030	250 [200 – 300]						
		MV1030	235 [170 – 300]						
		MP1220							
		MP6120	220 [170 – 270]						JH/FT
		VP15FT							
		MP1230							
		MP6130	180 [150 – 230]						JH
		VP30RT	150 [120 – 180]						
		MX3030	150 [120 – 180]						—
		NX4545	150 [120 – 180]						—
M	Stainless steel	MV1020	180 [100 – 250]	0.13 [0.06 – 0.20]	JL	0.15 [0.10 – 0.25]	JM	0.18 [0.10 – 0.28]	JH
		F7030	180 [130 – 230]						
		MV1030	165 [100 – 230]						
		MP1220							
		MP6120	140 [100 – 180]						JH/FT
		VP15FT							
		MP1230							
		MP6130	120 [90 – 150]						JH
		VP30RT	100 [80 – 160]						
		MX3030	100 [80 – 160]						—
		NX4545	100 [80 – 160]						—
M	Stainless steel	MV1030		0.15 [0.07 – 0.23]	JL	0.18 [0.10 – 0.28]	JM	0.20 [0.10 – 0.30]	JH
		MP1230	220 [170 – 270]						JH/FT
		MP7130							
		VP15TF							
		MP1240							
		MP7140	200 [150 – 250]						JH
		VP30RT							
		MX3030	150 [120 – 180]						—
		NX4545	150 [120 – 180]						—

1/2

1. Revolution (min⁻¹) = (1000 x Cutting Speed) u (3.14 x DC)
2. Table Feed (mm/min) = Feed per Tooth x Number of Teeth x Cutter Revolution

ASX400

RECOMMENDED CUTTING CONDITIONS

Material	Properties	Grade	Vc	L		R		H	
				ft		ft		ft	
K	Cast iron	MV1020	240 (130 – 350)	0.18 (0.10 – 0.28)	JL				
		MC5020	200 (150 – 250)	—	—				
		MV1030	190 (130 – 250)	0.18 (0.10 – 0.28)		0.20 (0.10 – 0.30)	JM	0.25 (0.10 – 0.35)	JH/FT
	Ductile cast iron	VP15TF	180 (130 – 230)		JL				
		MX3030	150 (120 – 180)	0.15 (0.10 – 0.20)				—	—
		MV1020	220 (80 – 350)	0.18 (0.10 – 0.28)	JL	0.20 (0.10 – 0.30)	JM	0.25 (0.10 – 0.35)	JH/FT
N	Aluminium alloy	HTi10	650 (300–1000)	0.15 (0.10 – 0.20)	JP	0.20 (0.10 – 0.30)	JP	0.30 (0.20 – 0.40)	JP
		MP1220							
S	Titanium alloy	MP9120	50 (40 – 60)	0.12 (0.05 – 0.20)					
		VP15TF			JL	0.15 (0.05 – 0.20)	JM	0.18 (0.10 – 0.28)	JH/FT
		MP1230	45 (30 – 55)	0.10 (0.05 – 0.20)					
		MP9130							
	Heat resistant alloy	MP1220							
		MP9120	40 (20 – 50)	0.12 (0.05 – 0.20)					
		VP15TF			JL	0.15 (0.05 – 0.20)	JM	0.18 (0.10 – 0.28)	JH/FT
		MP1230							
		MP1240	35 (15 – 45)	0.10 (0.05 – 0.20)					
		MP9130							
H	Hardened steel	40 – 55HRC	VP15TF	80 (60 – 100)	0.08 (0.04 – 0.13)	JL	0.10 (0.05 – 0.15)	JM	0.12 (0.07 – 0.17)

2/2

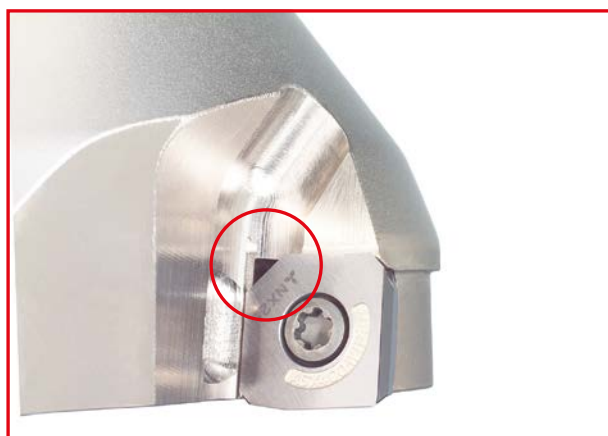
1. Revolution $[\text{min}^{-1}] = (1000 \times \text{Cutting Speed}) \div (3.14 \times \text{DC})$
2. Table Feed $(\text{mm}/\text{min}) = \text{Feed per Tooth} \times \text{Number of Teeth} \times \text{Cutter Revolution}$

INSTRUCTIONS FOR USING INSERTS

INSTRUCTIONS FORH THE JP BREAKER

- The JP breaker has sharp cutting edges. Wear gloves when handling.
- When machining aluminium alloy, welding to the cutting edge tends to occur, often leading to insert failure. To prevent this, wet cutting is recommended.

INSTRUCTIONS FOR USE OF WIPER INSERTS

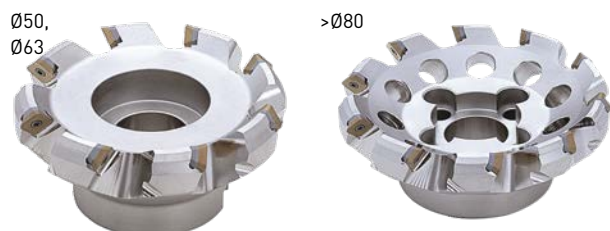


- Wiper inserts for the ASX400 are single-cornered.
- When installing the wiper insert, place the insert so that the small chamfer is located as shown.
- The peripheral cutting edge of the wiper insert is located further back than general inserts. Beware of wear of the insert just behind the wiper insert.
- When using the wiper, set the following standard conditions.
Depth of cut (ap) < 0.5 mm,
Feed per tooth (fz) < 0.2 mm/t.

ASX445



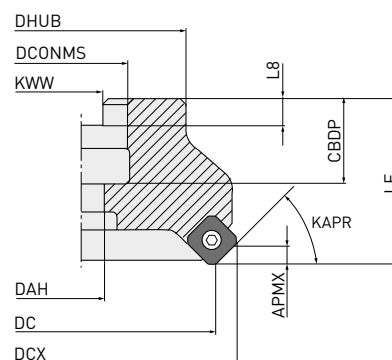
ARBOR TYPE



KAPR : 45°
GAMP : +20° - +23°
GAMF : -13° - -10°

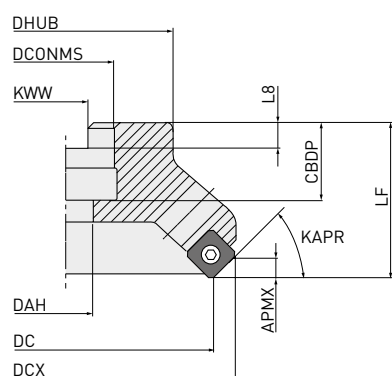
1

Ø50
Ø63



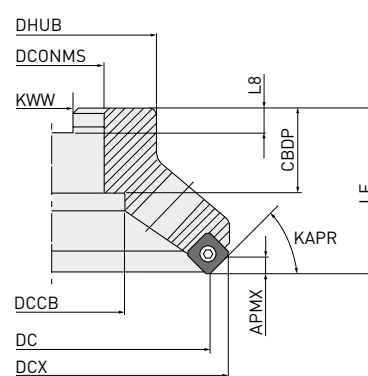
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Ø80
Ø100



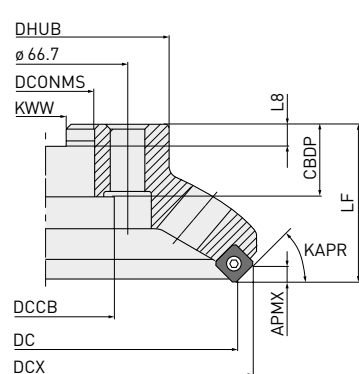
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Ø125



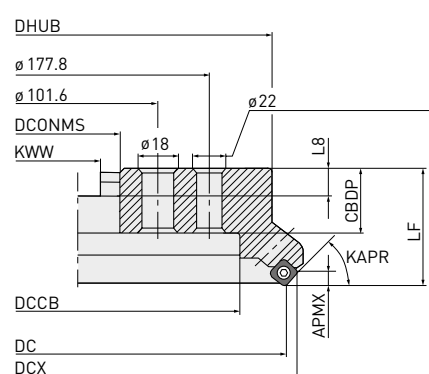
4

Ø160



5

Ø200
Ø250
Ø315



Right hand tool holder only.

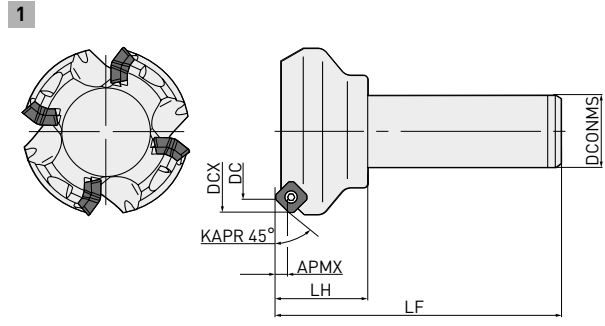
ASX 445 – ARBOR TYPE

Order number	Stock		CICT	APMX	DC	DCONMS	DCX	LF	CBDP	DAH	DCCB	DHUB	KWW	L8	WT	Type
	R	L														
COARSE PITCH																
ASX445-050A03R	●		3	6	50	22	63.0	40	20	11	—	45	10.4	6.3	0.5	1
ASX445-063A04R	●		4	6	63	22	75.9	40	20	11	—	50	10.4	6.3	0.7	1
ASX445-080A04R	●		4	6	80	27	93.2	50	23	13	—	56	12.4	7	1.0	2
ASX445-100A05R	●		5	6	100	32	113.2	50	26	17	—	70	14.4	8	1.6	2
ASX445-125B06R	●		6	6	125	40	138.0	63	32	—	56	80	16.4	9	2.4	3
ASX445-160C07R	●		7	6	160	40	173.0	63	29	—	56	100	16.4	9	3.9	4
ASX445-200C08R	★		8	6	200	60	212.9	63	32	—	135	155	25.7	14.22	6.7	5
ASX445-250C10R	★		10	6	250	60	262.9	63	32	—	174	200	25.7	14.22	10.5	5
ASX445-315C14R	★		14	6	315	60	327.9	80	57	—	256.8	285	25.7	14.22	22.4	5
FINE PITCH																
ASX445-050A04R	●		4	6	50	22	63.0	40	20	11	—	45	10.4	6.3	0.4	1
ASX445-063A05R	●		5	6	63	22	75.9	40	20	11	—	50	10.4	6.3	0.6	1
ASX445-080A06R/L	●	□	6	6	80	27	93.2	50	23	13	—	56	12.4	7	0.9	2
ASX445-100A07R/L	●	□	7	6	100	32	113.2	50	26	17	—	70	14.4	8	1.5	2
ASX445-125B08R/L	●	□	8	6	125	40	138.0	63	32	—	56	80	16.4	9	2.3	3
ASX445-160C10R	●		10	6	160	40	173.0	63	29	—	56	100	16.4	9	3.6	4
ASX445-200C12R/L	●	□	12	6	200	60	212.9	63	32	—	135	155	25.7	14.22	5.8	5
ASX445-250C14R/L	★	□	14	6	250	60	262.9	63	32	—	174	200	25.7	14.22	10.6	5
ASX445-315C18R/L	★	□	18	6	315	60	327.9	80	57	—	256.8	285	25.7	14.22	22.2	5
EXTRA FINE PITCH																
ASX445-050A05R	●		5	6	50	22	63.0	40	20	11	—	45	10.4	6.3	0.4	1
ASX445-063A06R	●		6	6	63	22	75.9	40	20	11	—	50	10.4	6.3	0.6	1
ASX445-080A08R	●		8	6	80	27	93.2	50	23	13	—	56	12.4	7	0.9	2
ASX445-100A10R/L	●	□	10	6	100	32	113.2	50	26	17	—	70	14.4	8	1.5	2
ASX445-125B12R	●		12	6	125	40	138.0	63	32	—	56	80	16.4	9	2.3	3
ASX445-160C16R	●		16	6	160	40	173.0	63	29	—	56	100	16.4	9	3.6	4
ASX445-200C20R	★		20	6	200	60	212.9	63	32	—	135	155	25.7	14.22	6.5	5
ASX445-250C24R	★		24	6	250	60	262.9	63	32	—	174	200	25.7	14.22	10.3	5
ASX445-315C28R	★		28	6	315	60	327.9	80	57	—	256.8	285	25.7	14.22	21.8	5
																1/1

ASX445



SHANK TYPE



Right hand tool holder only.

Order number	Stock	CICT	APMX	DC	DCONMS	DCX	LF	LH
	R							
ASX445R503S32	★	3	6	50	32	63.0	125	40
ASX445R634S32	★	4	6	63	32	75.9	125	40

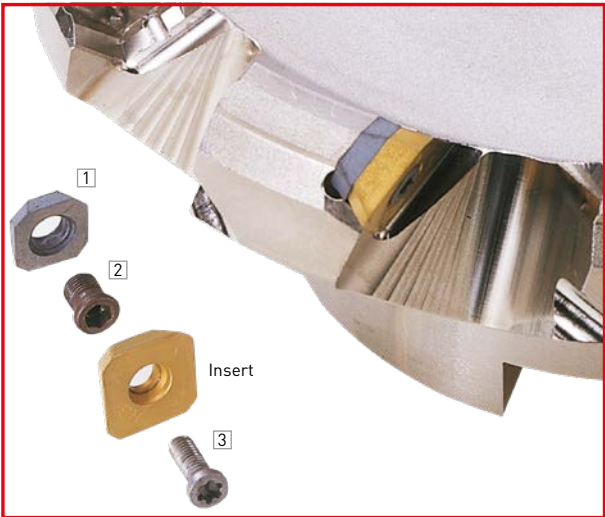
1/1



SPARE PARTS

Tool holder type			*		*		
	Shim	Shim screw		Clamp screw		Wrench (Insert)	Wrench (Shim)
ASX445	STASX445N	WCS503507H		TPS35		TIP15T	HKY35R

* Clamp torque (N • m): WCS503507H = 5.0, TPS35 = 3.5



- 1. WRENCH**
The ASX445 uses a TORXPLUS clamp screw. The attached wrench is for the exclusive use of this screw.
To ensure the effectiveness of TORXPLUS only use the attached wrench.
- 2. HEXAGONAL WRENCH**
The attached hexagonal wrench is for use with the seat and the shim. The wrench size is 3.5 mm.
- 3. SPARE PARTS**
Only use the original parts that were supplied when purchased. If other parts are used the performance and safety can not be assured.

ASX445

RECOMMENDED CUTTING CONDITIONS

Material	Properties	Grade	Vc						
				ft		ft		ft	
P	Mild steel	MV1020	300 (200 – 400)						
		F7030	280 (210 – 350)						
		MV1030	275 (200 – 350)						
		MP1220							
		MP6120	250 (200 – 300)					0.3 (0.2 – 0.4)	JH
		VP15FT		0.15 (0.1 – 0.2)	JL	0.2 (0.1 – 0.3)	JM		
		MP1230	240 (190 – 290)						
		MP6130							
		VP30RT	230 (180 – 280)						
		MX3030	180 (130 – 250)					—	—
P	Carbon steel Alloy steel	NX4545	180 (130 – 230)					—	—
		MV1020	260 (170 – 350)						
		F7030	250 (200 – 300)						
		MV1030	235 (170 – 300)						
		MP1220							
		MP6120	220 (170 – 270)					0.3 (0.2 – 0.4)	JH
		VP15FT		0.15 (0.1 – 0.2)	JL	0.2 (0.1 – 0.3)	JM		
		MP1230	200 (150 – 230)						
		MP6130							
		VP30RT	150 (120 – 180)						
P	Carbon steel Alloy steel	MX3030	150 (120 – 180)					—	—
		NX4545	150 (120 – 180)					—	—
		MV1020	180 (100 – 250)						
		F7030	180 (130 – 230)						
		MV1030	165 (100 – 230)						
		MP1220							
		MP6120	140 (100 – 180)					0.3 (0.2 – 0.4)	JH
		VP15FT		0.15 (0.1 – 0.2)	JL	0.2 (0.1 – 0.3)	JM		
		MP1230	120 (90 – 150)						
		MP6130							
M	Stainless steel	VP30RT	100 (80 – 160)						
		MX3030	100 (80 – 160)					—	—
		NX4545	100 (80 – 160)					—	—
		MP7130							
		MP1230	220 (170 – 270)						
		MV1030							
		VP15TF						0.3 (0.2 – 0.4)	JH
		MP1240		0.15 (0.1 – 0.2)	JL	0.2 (0.1 – 0.3)	JM		
		MP7140	200 (150 – 250)						
		VP30RT							
M	Stainless steel	MX3030	150 (120 – 180)					—	—
		NX4545	150 (120 – 180)					—	—
		MP7130							
		MP1230	220 (170 – 270)						
		MV1030							
		VP15TF						0.3 (0.2 – 0.4)	JH
		MP1240		0.15 (0.1 – 0.2)	JL	0.2 (0.1 – 0.3)	JM		
		MP7140	200 (150 – 250)						
		VP30RT							
		MX3030	150 (120 – 180)					—	—

1/2

1. Revolution (min⁻¹) = (1000 x Cutting Speed) ÷ (3.14 x DC)
2. Table Feed (mm/min) = Feed per Tooth x Number of Teeth x Cutter Revolution

ASX445

RECOMMENDED CUTTING CONDITIONS

Material	Properties	Grade	Vc						
				ft		ft		ft	
K	Cast iron Ductile cast iron	MV1020	240 (130 – 350)	0.15 (0.1 – 0.2)	JL				
		MC5020	200 (150 – 250)	—	—				JH/FT
		MV1030	190 (130 – 250)	0.15 (0.1 – 0.2)	JL				
		VP15TF	180 (130 – 250)	0.15 (0.1 – 0.2)		0.2 (0.1 – 0.3)	JM	0.3 (0.2 – 0.4)	JH
	Tensile strength >450MPa	MX3030	130 (100 – 160)		JL				—
		MV1020	220 (80 – 350)	0.15 (0.1 – 0.2)					JH/FT
		MV1030	110 (80 – 150)						
		MC5020	110 (80 – 150)	—	—				
N	Aluminium alloy	—	HTi10	650 (300 – 1000)	0.15 (0.1 – 0.2)	JP	0.2 (0.1 – 0.3)	JP	0.3 (0.2 – 0.4)
S	Titanium alloy	—	MP9120						
		—	MP1220	50 (40 – 60)					
		—	VP15TF		0.15 (0.1 – 0.2)		0.2 (0.1 – 0.3)		0.3 (0.2 – 0.4)
		—	MP1230	45 (30 – 55)					
	Heat resistant alloy	—	MP9130						
		—	MP1220			JL		JM	JH
		—	MP9120	40 (20 – 50)					
		—	VP15TF						
H	Hardened Steel	40 – 55HRC	VP15TF	80 (60–100)	0.10 (0.05–0.15)		0.15 (0.1 – 0.2)		0.2 (0.1 – 0.3)

2/2

1. Revolution (min⁻¹) = (1000 x Cutting Speed) ÷ (3.14 x DC)
2. Table Feed (mm/min) = Feed per Tooth x Number of Teeth x Cutter Revolution

RECOMMENDED CUTTING CONDITIONS WHEN USING A WIPER INSERT

	Grade	Vc
P	VP25N	200 (80 – 250)
	VP15TF	180 (80 – 250)
M	VP15TF	145 (120 – 270)
	MC5020	
K	VP15TF	190 (130 – 250)
	MB710	
S	VP15TF	35 (20 – 50)
H	VP15TF	160 (40 – 80)
N	MD220	650 (300 – 1000)

1. Recommended depth of cut (ap) is 0.2 mm – 0.5 mm and feed per tooth (fz) is up to 0.2 mm/t.

SYMBOLS

 Recommended cutting conditions	MACHINING TYPE
NEW Completely new products or expansions released in the current Spring or Autumn product launch and are not included in the latest version of the General Catalogue.	 Roughing
NEW Products or expansions that have already been introduced in one of the previous Spring or Autumn product launches but are not included in the latest General Catalogue.	 Medium cutting
APPLICATION	 Light cutting
 Face milling	 Pre-finishing
 Chamfer milling	 Finishing
 Shoulder milling with R	 Fine-finishing
 Face milling close to a wall	TOOL MATERIAL
 Shoulder milling	 Ultra micro grain carbide Ultra micro grain carbide substrate material.
 Side milling	 Cubic boron nitride Mitsubishi Materials' original CBN material.
 Slot milling	 Ceramic For high speed efficient machining of super alloys due to the excellent high temperature strength property.
 Ramping	 High hardness powder metallurgy HSS High hardness powder metallurgy HSS substrate material.
 Pocket milling	 High grade high alloy HSS High grade high alloy HSS substrate material.
 Slot milling with R	 Cobalt high speed steel Cobalt high speed steel substrate material.
 Copy milling	 High speed steel High speed steel substrate material.
 T-Slot milling	

SYMBOLS

COATING



SMART MIRACLE coating

New smooth and dense coating technology for high efficiency milling of difficult to cut materials.



CRN coating

Newly developed CrN coating for Copper Electrodes machining.



Violet coating

Increased tool life of 2-3 times more than TiN coated products.



DP coating

New generation coating suitable for a wide range of materials.



MIRACLE coating

The original Miracle (Al,Ti)N coating. Also suitable for dry cutting.



[Al, Ti]N coating

[Al,Ti]N highly versatile application range.



[Al,Ti,Cr]N multi-layer coating

For carbon, alloy and hardened steels.



IMPACT MIRACLE coating

Single phase nano crystal coating technology has higher film hardness and heat resistance.



MIRACLE coating

The original MIRACLE (Al,Ti)N coating. Also suitable for dry cutting.



VFR coating

The [AlCrSi]N/[AlTiSi]N PVD multilayer coating is ideal for machining of extremely hard materials up to 70 HRC.



DLC coating

Hardness similar to CVD diamond coating achieved with high adhesion strength.



Diamond coating

Suitable for CFRP and CFRP-aluminium materials.



Diamond coating

Suitable for graphite machining.



Diamond coating

The original CVD diamond coating.



CVD Diamond coating

Unique multi-layer micro-grain diamond crystal control technology drastically improves wear resistance and smoothness.

CUTTING EDGE PROPERTIES



Sharp corner edge

Indicates the end mill has a sharp corner edge.



Gash land

Indicates the end mill cutting edge has a protective chamfer.



Rake angle



Helix angle

Indicates the helix angle of the end mill.



Point angle

Indicates the drill point angle.



Roughing flute geometry



Variable helix



Rounded gash



Corner angle

WEB THINNING



X type point geometry

X web thinning used at the drill point.



XR type point geometry

XR web thinning used at the drill point.



S type point geometry

Easy cutting geometry.



N type point geometry

Effective when the point web is thick.



Chipbreaker

SYMBOLS

TOLERANCES



Tolerance of taper angle
Indicates the tolerance of the taper angle.



R tolerance
Indicates the radial tolerance of a ball nose end mill.



R tolerance
Indicates the radial tolerance of the corner radius.



R tolerance
Indicates the radial tolerance of a cutter with a corner radius.



Outside diameter tolerance
Indicates the diameter tolerance of the end mill.



Peak tolerance
Indicates the tolerance for the end diameter.



Shank diameter tolerance



Shank diameter tolerance



Drill tolerance / diameter

COOLANT HOLES



External coolant



Internal coolant



Internal coolant



Centered, internal coolant hole



Radial, internal coolant holes



Internal coolant holes



Internal coolant holes

MEMO

MEMO

EUROPEAN SALES COMPANIES

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