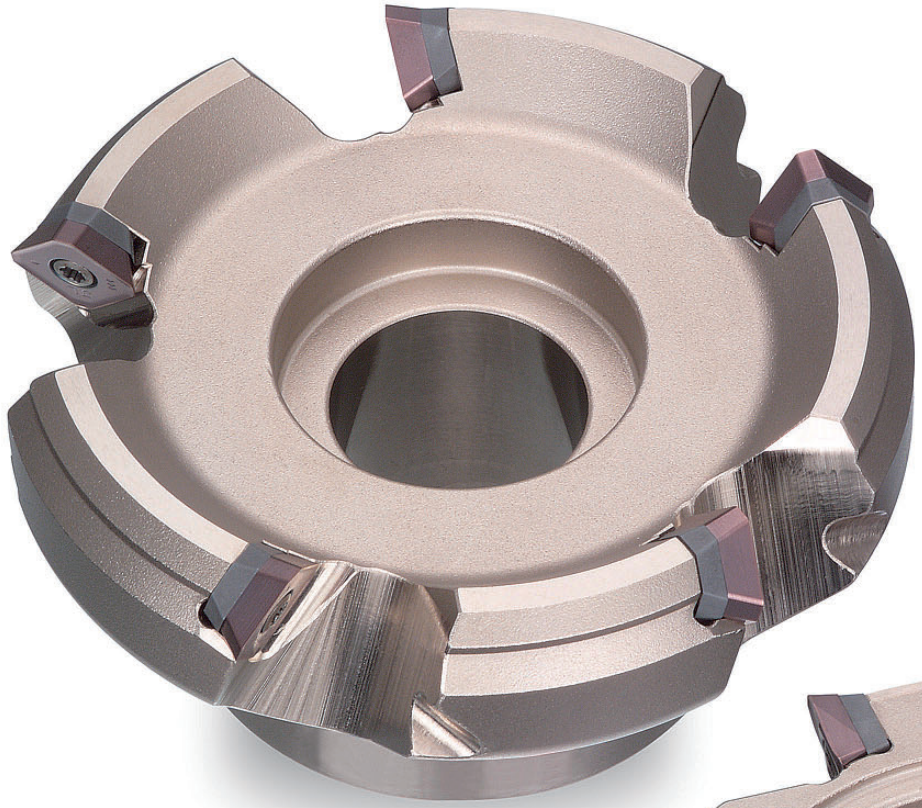
MITSUBISHI MITSUBISHI MATERIALS TOOL NEWS
2013.10 Update B188A

Screw-on Insert Type Milling Cutter

ASX Series

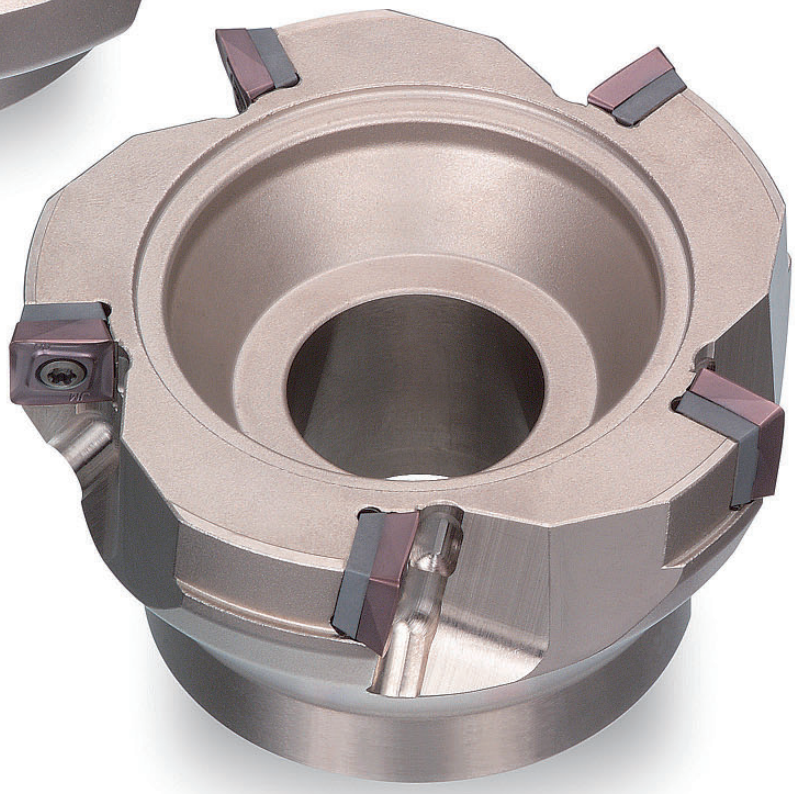
New coated grades now included



General use Screw-on Insert Type
Face Milling Cutter

ASX445

For stable milling even under heavy cutting conditions.



General use Screw-on Insert Type
Shoulder Milling Cutter

ASX400

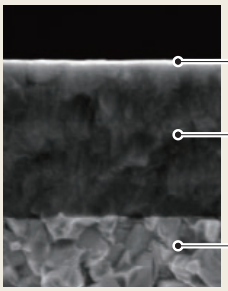
For stable shoulder milling even under heavy cutting conditions.

ASX445

INSERT GRADES FOR A WIDE RANGE OF MATERIALS

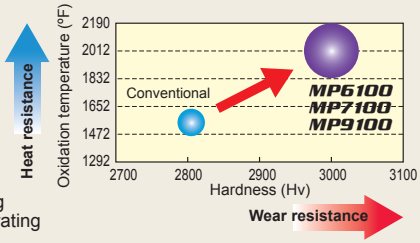
NEW **MP6100,MP7100,MP9100** - With accumulated Al-Ti-Cr-N based PVD coating

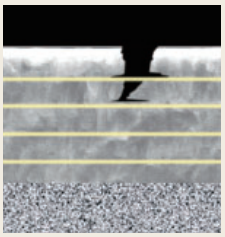
PVD coatings have properties such as toughness, low coefficient of friction and excellent welding, wear and heat resistance. This results in tough, precision grades such as MP6100, MP7100 and MP9100.



TOUGH-Σ Technology

A fusion of the separate coating technologies; PVD and multi-layering, realises extra toughness.

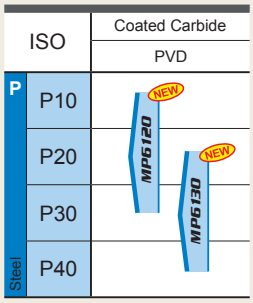


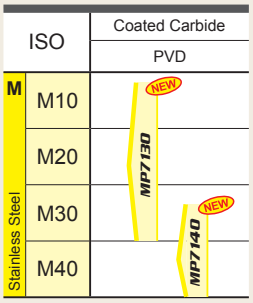


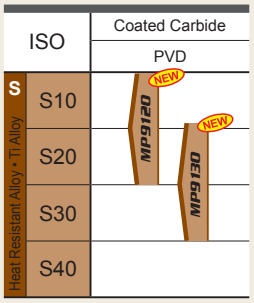
Multi-layering of the coating prevents any cracks penetrating through to the substrate.

*Graphical representation.

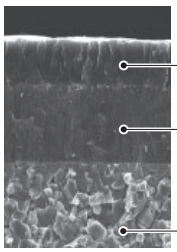
	Work Material	Grade	Coefficient of friction Measured at 1112°F S55C	SUS304	Ti-6Al-4V
P	Carbon Steel, Alloy Steel	MP6100	0.4		
M	Stainless Steel	MP7100		0.5	
S	Titanium Alloy, Heat Resistant Alloy	MP9100			0.3
	Conventional		0.7	0.7	0.7







Super diamond coated MC5020



With high wear resistance and outstanding fracture resistance, MC5020 is ideal for milling for cast iron

MIRACLE® coated VP15TF

Stable machining properties are enabled when the coating is combined with a high wear and fracture resistant carbide substrate.

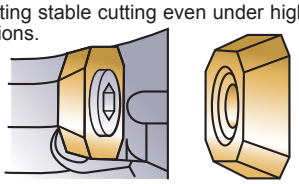
MIRACLE® coated VP30RT

Ideal for heavy interrupted cutting of stainless and general steels because of the excellent fracture resistance properties.

Features

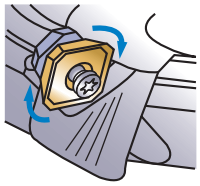
STABLE, LONG TOOL LIFE, HIGH ACCURACY BODY

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.

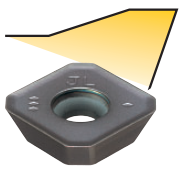
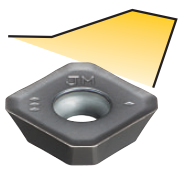
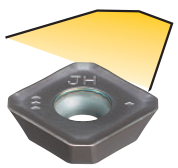
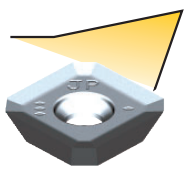
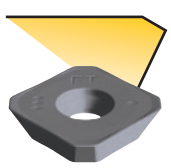


The cutter body is made from a special alloy that provides high strength at high temperatures. A special surface treatment improves the corrosion resistance.

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.



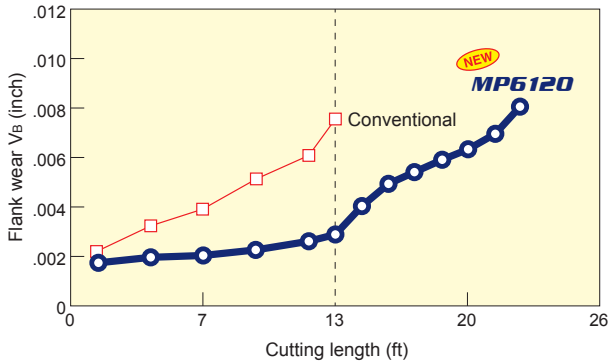
CHIPBREAKERS FOR A WIDE RANGE OF APPLICATIONS

JL Finish to Light cutting Breaker	JM Light to Semi-Heavy cutting Breaker	JH Medium to Heavy cutting Breaker	JP Aluminum alloy cutting Breaker	FT Rough cutting for cast iron Breaker
				
High accuracy insert with ground-finished periphery. Large rake angle leading to low cutting resistance. **①Workpiece rigidity is low.**	High accuracy M class insert. For a wide range of workpiece materials and cutting conditions. **①General cutting.**	High accuracy M class insert. Strong cutting edge for high fracture resistance. **①Interrupted cutting. ②Scaling.**	High accuracy insert with ground-finished periphery.Large rake angle and mirror-finished rake face for sharp cutting performance and high welding resistance. **①General cutting of aluminum alloy.**	High M class inserts. Higher fracture-resistant flat-top inserts. **①For rough accuracy machining of scaled cast iron.**

Cutting Performance

General Steel

Wear Resistance

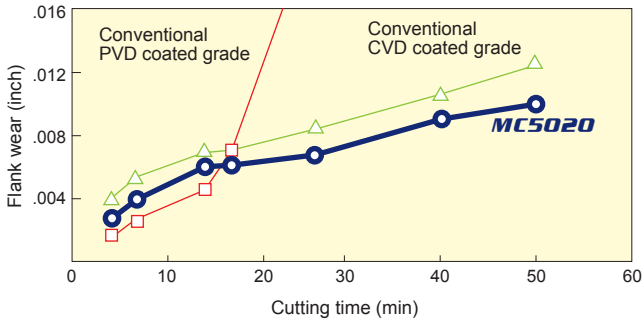


<Cutting conditions>

Workpiece	: Alloy steel	Cutting speed	: 985 SFM
Tool	: ASX445R12508E	Feed	: .008 IPT
Insert	: SEMT13T3AGSN-JM	Depth of cut	: .079 inch
Grade	: MP6120	Dry cutting	

Cast iron

Wear Resistance

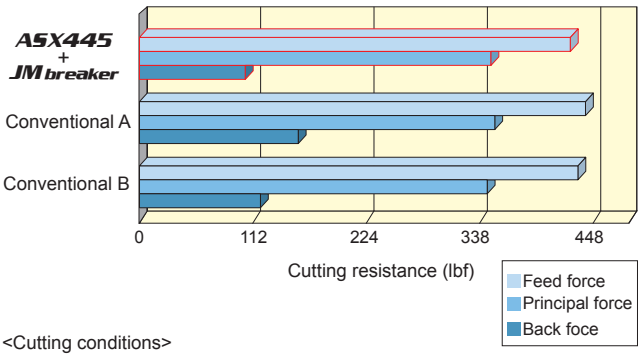


<Cutting conditions>

Workpiece	: AISI No 45B	Cutting speed	: 985 SFM
Tool	: ASX445R0508E	Feed per tooth	: .008 IPT
Insert	: SEMT13T3AGSN-JM	Depth of cut	: .079 inch
Grade	: MC5020	Wet cutting	

Stainless Steel

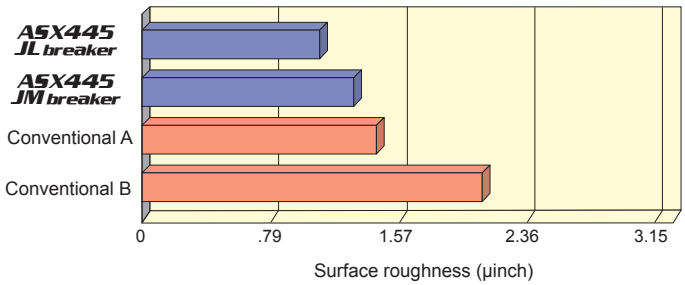
Cutting Resistance



<Cutting conditions>

Workpiece	: AISI 304	Cutting speed	: 720 SFM
Tool	: ASX445R0506E	Feed per tooth	: .008 IPT
Insert	: SEMT13T3AGSN-JM	Depth of cut	: .118 inch
Grade	: VP30RT	Dry cutting	

Surface Roughness

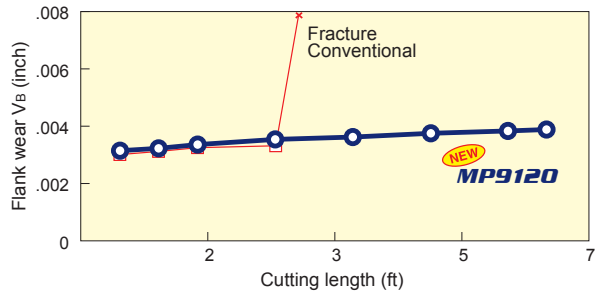


<Cutting conditions>

Workpiece	: AISI 4140	Cutting speed	: 720 SFM
Tool	: ASX445R0405E	Feed per tooth	: .008 IPT
Insert	: SEMT13T3AGEN-JL	Depth of cut	: .020 inch
Grade	: F7030	Dry cutting	

Titanium alloy

Wear Resistance

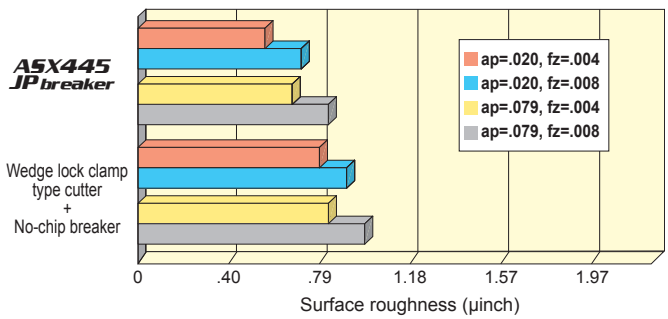


<Cutting conditions>

Workpiece	: Titanium alloy	Cutting speed	: 165 SFM
Tool	: ASX445R804S32	Feed	: .006 IPT
Insert	: SEMT13T3AGSN-JM	Depth of cut	: .059 inch
Grade	: MP9120		

Aluminum alloy

Surface Roughness



<Cutting conditions>

Workpiece	: Aluminum alloy	Cutting speed	: 2295 SFM
Tool	: ASX445R0405E	Feed per tooth (fz)	: .004 IPT, .008 IPT
Insert	: SEGT13T3AGFN-JP	Depth of cut (ap)	: .020 inch, .079 inch
Grade	: HTi10	Dry cutting	

General Use Screw-on Insert Type Milling Cutter

FACE MILLING 45°

<GENERAL CUTTING>

Finishing Roughing

ASX445

Light Alloy	Cast Iron	General Steel	Stainless Steel	Hardened Steel

- Precision molded 20° positive insert.
- A wide range of chip breakers.
- Screw-on type.
- High rigidity due to employment of a carbide shim.

Fig.1
ø2"
ø2.5"

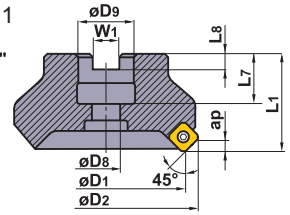


Fig.2
ø3"
ø4"
ø5"
ø6"

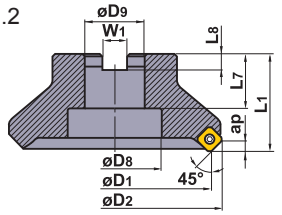
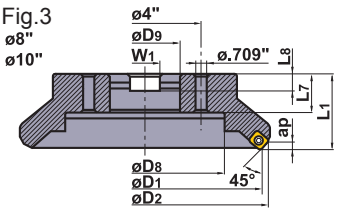


Fig.3
ø8"
ø10"

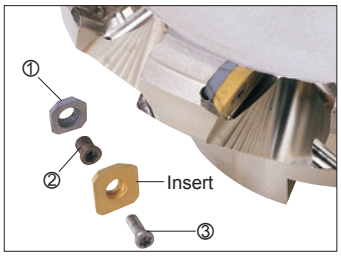


C H :45°
A.R :+20°—+23° T :+4°49′—+9°53′
R.R :-13°—-10° I :+22°55′—+23°02′

Right hand tool holder only.

ARBOR TYPE

Type	Order Number	Stock R	Number of Teeth	Dimensions (inch) D1	D2	L1	D9	L7	D8	W1	L8	Max. Depth of Cut ap	Mass (lbs)	Type (Fig.)
Coarse Pitch	**ASX445R2504**	●	4	2.500	3.009	1.575	.750	.748	.415	.313	.187	.236	1.5	1
	0304C	●	4	3.000	3.520	1.969	1.000	1.024	1.496	.375	.219	.236	2.4	2
	0405E	●	5	4.000	4.518	1.969	1.500	1.378	2.362	.625	.375	.236	4.0	2
	0506E	●	6	5.000	5.513	2.480	1.500	1.378	2.362	.625	.375	.236	6.6	2
	0607E	●	7	6.000	6.511	2.480	1.500	1.378	2.362	.625	.375	.236	10.4	2
	0808M	●	8	8.000	8.509	2.480	2.500	1.378	5.512	1.000	.560	.236	14.6	3
	1010M	●	10	10.000	10.508	2.480	2.500	1.378	7.087	1.000	.560	.236	23.7	3
Fine Pitch	**ASX445R0204**	●	4	2.000	2.513	1.575	.750	.748	.415	.313	.187	.236	.9	1
	2505	●	5	2.500	3.009	1.575	.750	.748	.415	.313	.187	.236	1.5	1
	0306C	●	6	3.000	3.520	1.969	1.000	1.024	1.496	.375	.219	.236	2.2	2
	0407E	●	7	4.000	4.518	1.969	1.500	1.378	2.362	.625	.375	.236	3.7	2
	0508E	●	8	5.000	5.513	2.480	1.500	1.378	2.362	.625	.375	.236	6.2	2
	0610E	●	10	6.000	6.511	2.480	1.500	1.378	2.362	.625	.375	.236	10.1	2
	0812M	●	12	8.000	8.509	2.480	2.500	1.378	5.512	1.000	.560	.236	14.6	3
	1014M	●	14	10.000	10.508	2.480	2.500	1.378	7.087	1.000	.560	.236	23.7	3
Extra Fine Pitch	**ASX445R0205**	●	5	2.000	2.513	1.575	.750	.748	.415	.313	.187	.236	.9	1
	0308C	●	8	3.000	3.520	1.969	1.000	1.024	1.496	.375	.219	.236	2.2	2
	0410E	●	10	4.000	4.518	1.969	1.500	1.378	2.362	.625	.375	.236	3.8	2
	0512E	●	12	5.000	5.513	2.480	1.500	1.378	2.362	.625	.375	.236	6.4	2
	0616E	●	16	6.000	6.511	2.480	1.500	1.378	2.362	.625	.375	.236	10.3	2
	0820M	●	20	8.000	8.509	2.480	2.500	1.378	5.512	1.000	.560	.236	14.6	3
	1024M	●	24	10.000	10.508	2.480	2.500	1.378	7.087	1.000	.560	.236	23.7	3



SPARE PARTS

Tool Holder Number	① Shim	② Shim Screw *	③ Insert Screw *	Wrench (Insert)	Wrench (Shim)
ASX445 Type	STASX445N	WCS503507H	TPS35	TIP15T	HKY35R

* Clamp Torque (lbf-in) : WCS503507H=44, TPS35=31

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

Fig.1
ø80
ø100
ø125
ø160

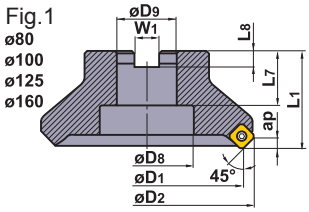


Fig.2
ø200
ø250

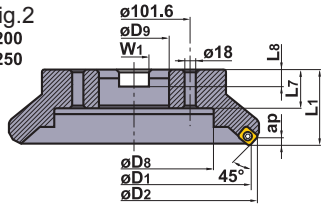
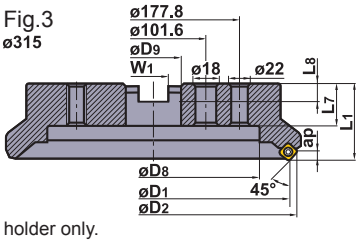


Fig.3
ø315



METRIC Standard

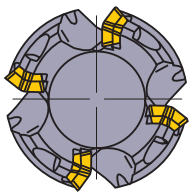
For inch arbors

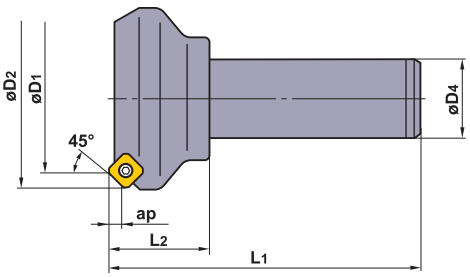
C H :45°
A.R :+20°—+23° T :+4°49′—+9°53′
R.R :-13°—-10° I :+22°55′—+23°02′

Right hand tool holder only.

ARBOR TYPE

Type	Order Number	Stock R	Number of Teeth	Dimensions (mm) [inch] D1	D2	L1	D9	L7	D8	W1	L8	Max. Depth of Cut ap	Mass (kg)	Type (Fig.)
Coarse Pitch	**ASX445R08004C**	★	4	80	93.2	50	25.4 [1.0"]	26	38	9.5	6	6	1.1	1
	R10005D	★	5	100	113.2	50	31.75 [1.25"]	32	45	12.7	8	6	1.8	1
	R12506E	★	6	125	138.0	63	38.1 [1.5"]	35	60	15.9	10	6	2.9	1
	R16007F	★	7	160	173.0	63	50.8 [2.0"]	38	80	19.1	11	6	4.7	1
	R20008K	★	8	200	212.9	63	47.625 [1.875"]	35	140	25.4	14.22	6	7.9	2
	R25010K	★	10	250	262.9	63	47.625 [1.875"]	35	180	25.4	14.22	6	12.9	2
	R31514P	★	14	315	327.9	63	47.625 [1.875"]	40	245	25.4	14.22	6	22.4	3
Fine Pitch	**ASX445R08006C**	★	6	80	93.2	50	25.4 [1.0"]	26	38	9.5	6	6	1.0	1
	R10007D	★	7	100	113.2	50	31.75 [1.25"]	32	45	12.7	8	6	1.7	1
	R12508E	★	8	125	138.0	63	38.1 [1.5"]	35	60	15.9	10	6	2.8	1
	R16010F	★	10	160	173.0	63	50.8 [2.0"]	38	80	19.1	11	6	4.6	1
	R20012K	★	12	200	212.9	63	47.625 [1.875"]	35	140	25.4	14.22	6	7.8	2
	R25014K	★	14	250	262.9	63	47.625 [1.875"]	35	180	25.4	14.22	6	12.8	2
	R31518P	★	18	315	327.9	63	47.625 [1.875"]	40	245	25.4	14.22	6	22.2	3
Extra Fine Pitch	**ASX445R08008C**	★	8	80	93.2	50	25.4 [1.0"]	26	38	9.5	6	6	1.1	1
	R10010D	★	10	100	113.2	50	31.75 [1.25"]	32	45	12.7	8	6	1.8	1
	R12512E	★	12	125	138.0	63	38.1 [1.5"]	35	60	15.9	10	6	2.9	1
	R16016F	★	16	160	173.0	63	50.8 [2.0"]	38	80	19.1	11	6	4.7	1
	R20020K	★	20	200	212.9	63	47.625 [1.875"]	35	140	25.4	14.22	6	7.8	2
	R25024K	★	24	250	262.9	63	47.625 [1.875"]	35	180	25.4	14.22	6	12.8	2
	R31528P	★	28	315	327.9	63	47.625 [1.875"]	40	245	25.4	14.22	6	21.8	3





METRIC Standard

Right hand tool holder only.

SHANK TYPE

Order Number	Stock R	Number of Teeth	Dimensions (mm) D1	D2	L1	D4	L2	Max. Depth of Cut ap (mm)
ASX445R503S32	★	3	50	63.0	125	32	40	6
634S32	★	4	63	75.9	125	32	40	6
804S32	★	4	80	93.2	125	32	40	6

General Use Screw-on Insert Type Milling Cutter

METRIC Standard

For metric arbors

ø50, ø63

Over ø80

Fig.1 ø50 ø63

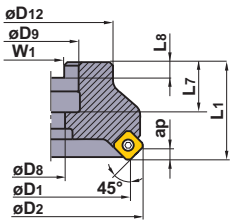


Fig.2 ø80 ø100

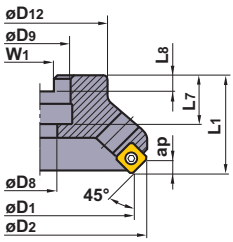


Fig.3 ø125

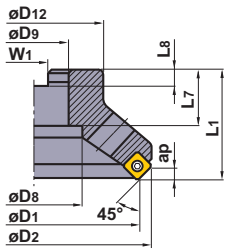


Fig.4 ø160

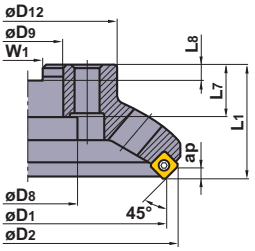
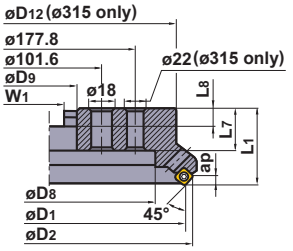


Fig.5 ø200 ø250 ø315



C H :45°
A.R :+20° — +23° T :+4°49′ — +9°53′
R.R :-13° — -10° I :+22°55′ — +23°02′

Right hand tool holder only.

ARBOR TYPE

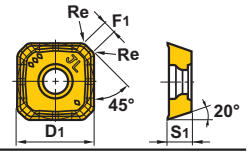
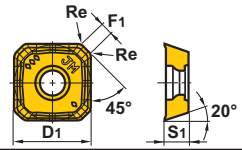
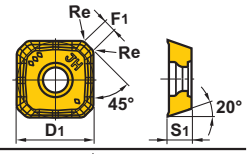
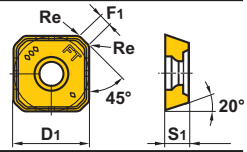
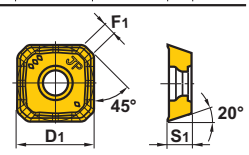
Type	Order Number	Stock R	Number of Teeth	Dimensions (mm) D1	D2	L1	D9	L7	D8	D12	W1	L8	Max. Depth of Cut ap	Mass (kg)	Type (Fig.)
Coarse Pitch	ASX445-050A03R	★	3	50	63.0	40	22	20	11	45	10.4	6.3	6	0.5	1
	-063A04R	★	4	63	75.9	40	22	20	11	50	10.4	6.3	6	0.7	1
	-080A04R	★	4	80	93.2	50	27	23	13	56	12.4	7	6	1.0	2
	-100A05R	★	5	100	113.2	50	32	26	17	70	14.4	8	6	1.6	2
	-125B06R	★	6	125	138.0	63	40	32	56	80	16.4	9	6	2.4	3
	-160C07R	★	7	160	173.0	63	40	29	56	100	16.4	9	6	3.9	4
	-200C08R	★	8	200	212.9	63	60	32	135	155	25.7	14.22	6	6.7	5
	-250C10R	★	10	250	262.9	63	60	32	174	200	25.7	14.22	6	10.5	5
	-315C14R	★	14	315	327.9	80	60	57	256.8	285	25.7	14.22	6	22.4	5
Fine Pitch	ASX445-050A04R	★	4	50	63.0	40	22	20	11	45	10.4	6.3	6	0.4	1
	-063A05R	★	5	63	75.9	40	22	20	11	50	10.4	6.3	6	0.6	1
	-080A06R	★	6	80	93.2	50	27	23	13	56	12.4	7	6	0.9	2
	-100A07R	★	7	100	113.2	50	32	26	17	70	14.4	8	6	1.5	2
	-125B08R	★	8	125	138.0	63	40	32	56	80	16.4	9	6	2.3	3
	-160C10R	★	10	160	173.0	63	40	29	56	100	16.4	9	6	3.6	4
	-200C12R	★	12	200	212.9	63	60	32	135	155	25.7	14.22	6	5.8	5
	-250C14R	★	14	250	262.9	63	60	32	174	200	25.7	14.22	6	10.6	5
	-315C18R	★	18	315	327.9	80	60	57	256.8	285	25.7	14.22	6	22.2	5
Extra Fine Pitch	ASX445-050A05R	★	5	50	63.0	40	22	20	11	45	10.4	6.3	6	0.4	1
	-063A06R	★	6	63	75.9	40	22	20	11	50	10.4	6.3	6	0.6	1
	-080A08R	★	8	80	93.2	50	27	23	13	56	12.4	7	6	0.9	2
	-100A10R	★	10	100	113.2	50	32	26	17	70	14.4	8	6	1.5	2
	-125B12R	★	12	125	138.0	63	40	32	56	80	16.4	9	6	2.3	3
	-160C16R	★	16	160	173.0	63	40	29	56	100	16.4	9	6	3.6	4
	-200C20R	★	20	200	212.9	63	60	32	135	155	25.7	14.22	6	6.5	5
	-250C24R	★	24	250	262.9	63	60	32	174	200	25.7	14.22	6	10.3	5
	-315C28R	★	28	315	327.9	80	60	57	256.8	285	25.7	14.22	6	21.8	5

● : Inventory maintained. ★ : Inventory maintained in Japan.
<10 inserts in one case> <1 insert in one case for CBN/PCD>

INSERTS WITH BREAKER

Work Material		
P	Steel	
M	Stainless Steel	
K	Cast Iron	
N	Non-ferrous Metal	
S	Heat-resistant Alloy, Titanium Alloy	
H	Hardened Steel	

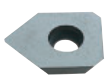
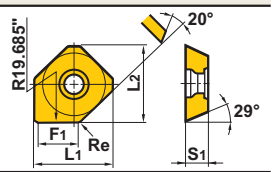
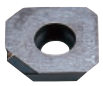
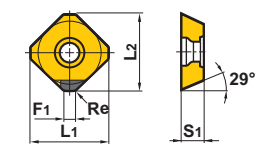
Cutting Conditions :
● : Stable Cutting ◐ : General Cutting
✠ : Unstable Cutting
Honing :
E : Round **F** : Sharp
S : Chamfer + Hone **T** : Chamfer

Application	Shape	Order Number	Class	Honing	Coated F7010	F7030	MC5020	MP6120 (NEW)	MP6130 (NEW)	MP7130 (NEW)	MP7140 (NEW)	MP9120 (NEW)	MP9130 (NEW)	VP15TF	VP30RT	Cermet NX4545	Carbide HTi10	D1	S1	F1	Re	Geometry
Finish–Light Cutting	**JL** Breaker 	**SEET13T3AGEN-JL**	E	E		●		●	●	●	●	●	●	●	●	●		.528	.156	.075	.059	
Light–Semi-Heavy Cutting	**JM** Breaker 	**SEMT13T3AGSN-JM**	M	S	●	●	●	●	●	●	●	●	●	●	●	●		.528	.156	.075	.059	
Medium–Heavy Cutting	**JH** Breaker 	**SEMT13T3AGSN-JH**	M	S		●	●	●	●	●	●	●	●	●	●			.528	.156	.075	.059	
Roughing For Cast Iron	**FT** Breaker 	**SEMT13T3AGSN-FT**	M	S			●											.528	.156	.075	.059	
For Aluminium Alloy	**JP** Breaker 	**SEGT13T3AGFN-JP**	G	F													●	.528	.156	.087	—	

Instructions for using JP breaker handling

*The JP breaker has sharp cutting edge. Please wear gloves when installing to prevent.
*During machining of aluminum alloy, chip welding can occur that can cause fracturing of the insert.
*Wet cutting is recommended.

WIPER INSERTS

Shape	Order Number	Honing	Coated MC5020	Coated VP15TF	Cermet NX2525	Cermet	Coated Cermet VP25N	Coated Cermet	Carbide HTi05T	Carbide	CBN MB710	CBN	PCD MD220	PCD	L1	L2	S1	F1	Re	Geometry
	**WEEW13T3AGER8C**	E	●	●					●						.649	.654	.156	.295	.059	
	13T3AGTR8C	T			●		●								.649	.654	.156	.295	.059	
	**NP-WEEW13T3AGFR3C**	F											●		.649	.654	.156	.118	.059	
	13T3AGTR3C	T									●				.649	.654	.156	.118	.059	

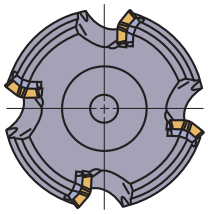
*Wiper inserts are single-cornered.
*CBN grade MB710 is for cast iron.
*PCD grade MD220 is for aluminum alloy.
*Please refer to page 8 for notes when using wiper insert.

RECOMMENDED CUTTING CONDITIONS

	Work Material	Hardness	Grade	Cutting Speed (SFM)	Finish—Light Cutting		Light—Semi-Heavy Cutting		Medium—Heavy Cutting	
					Feed per Tooth (mm/tooth)	Breaker	Feed per Tooth (mm/tooth)	Breaker	Feed per Tooth (mm/tooth)	Breaker
P	Mild Steel	≤180HB	F7030	920 (690—1150)	.006 (.004—.008)	JL	.008 (.004—.012)	JM	.012 (.008—.016)	JH
			MP6120 VP15TF	820 (655—985)	.006 (.004—.008)	JL	.008 (.004—.012)	JM	.012 (.008—.016)	JH
			MP6130	800 (620—950)	.006 (.004—.008)	JL	.008 (.004—.012)	JM	.012 (.008—.016)	JH
			VP30RT	755 (590—920)	.006 (.004—.008)	JL	.008 (.004—.012)	JM	.012 (.008—.016)	JH
			NX4545	590 (425—755)	.006 (.004—.008)	JL	.008 (.004—.012)	JM	—	—
	Carbon Steel Alloy Steel	180—280HB	F7030	820 (655—985)	.006 (.004—.008)	JL	.008 (.004—.012)	JM	.012 (.008—.016)	JH
			MP6120 VP15TF	720 (560—885)	.006 (.004—.008)	JL	.008 (.004—.012)	JM	.012 (.008—.016)	JH
			MP6130	600 (480—740)	.006 (.004—.008)	JL	.008 (.004—.012)	JM	.012 (.008—.016)	JH
			VP30RT	490 (395—590)	.006 (.004—.008)	JL	.008 (.004—.012)	JM	—	—
			NX4545	490 (390—590)	.006 (.004—.008)	JL	.008 (.004—.012)	JM	—	—
		280—350HB	F7030	590 (425—755)	.006 (.004—.008)	JL	.008 (.004—.012)	JM	.012 (.008—.016)	JH
			MP6120 VP15TF	460 (330—590)	.006 (.004—.008)	JL	.008 (.004—.012)	JM	.012 (.008—.016)	JH
			MP6130	400 (300—490)	.006 (.004—.008)	JL	.008 (.004—.012)	JM	.012 (.008—.016)	JH
			VP30RT	330 (260—395)	.006 (.004—.008)	JL	.008 (.004—.012)	JM	—	—
			NX4545	330 (260—390)	.006 (.004—.008)	JL	.008 (.004—.012)	JM	—	—
M	Stainless Steel	≤270HB	MP7130 VP15TF	720 (560—885)	.006 (.004—.008)	JL	.008 (.004—.012)	JM	.012 (.008—.016)	JH
			MP7140 VP30RT	655 (490—820)	.006 (.004—.008)	JL	.008 (.004—.012)	JM	.012 (.008—.016)	JH
			NX4545	490 (395—590)	.006 (.004—.008)	JL	.008 (.004—.012)	JM	—	—
K	Cast Iron Ductile Cast Iron	Tensile Strength ≤450MPa	MC5020	655 (400—820)	.006 (.004—.008)	JL	.008 (.004—.012)	JM	.012 (.008—.016)	JH FT
			VP15TF	590 (425—826)	.006 (.004—.008)	JL	.008 (.004—.012)	JM	.012 (.008—.016)	JH
		Tensile Strength ≥450MPa	MC5020	360 (260—490)	.006 (.004—.008)	JL	.008 (.004—.012)	JM	.012 (.008—.016)	JH FT
N	Aluminum Alloy	—	HTi10	2130 (1000—3300)	.006 (.004—.008)	JP	.008 (.004—.012)	JP	.012 (.008—.016)	JP
S	Titanium Alloy	—	MP9120 VP15TF	165 (130—195)	.006 (.004—.008)	JL	.008 (.004—.012)	JM	—	—
			MP9130	140 (100—180)	.006 (.004—.008)	JL	.008 (.004—.012)	JM	—	—
	Heat Resistant Alloy	—	MP9120 VP15TF	130 (65—165)	.006 (.004—.008)	JL	.008 (.004—.012)	JM	—	—
			MP9130	110 (55—140)	.006 (.004—.008)	JL	.008 (.004—.012)	JM	—	—
H	Hardened Steel	40—55HRC	VP15TF	260 (195—330)	.004 (.002—.006)	JL	.006 (.004—.008)	JM	.008 (.004—.012)	JH

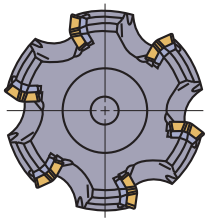
●Revolution (min^{-1})=(1000 x Cutting Speed)÷(3.14 x ϕD_1) ●Table Feed (mm/min)=Feed per Tooth x Number of Teeth x Cutter Revolution

Effective for various machining applications



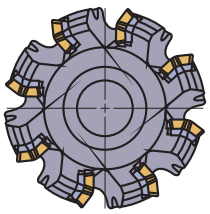
Coarse Pitch Type

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 dischange volume is small and high table feed is desired.

Instructions for use of wiper inserts

Fig.1

Fig.2

- Wiper inserts for ASX445 are single-cornered.
- When installing the wiper insert, place the insert so that the cutting edge is located as shown Fig.1.
  Do not install the wiper insert as Fig.2
- Recommended depth of cut is ap = .008-.020(inch).
  (Be aware of cutting load if the depth of cut is over the recommendation.)
- The major cutting edge of a wiper insert should be set inside as shown. This is to prevent heavy loads on the wiper and ensure the regular insert after the wiper takes the cutting load. To prevent fracture, set the feed under .008 inch/tooth.
- Excellent finished surfaces achieved with one wiper.
- Set more than 2 wiper inserts, equally spaced, when the feed per revolution is larger than the width of the wiper edge.

RECOMMENDED CUTTING CONDITIONS WHEN USING A WIPER INSERT

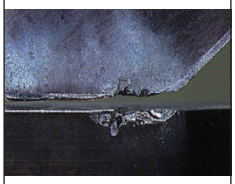
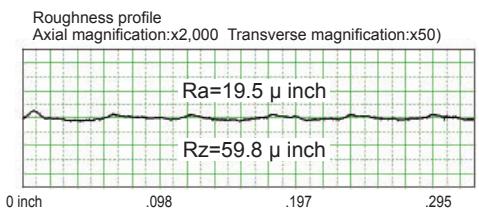
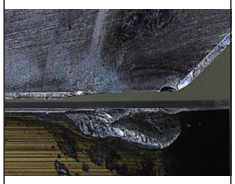
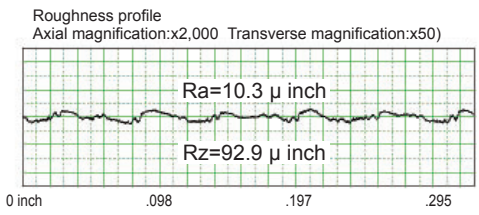
Work Material	Grade	Recommended Cutting Speed (SFM)
P	**VP25N**	655 (260—820)
	VP15TF	590 (260—820)
M	**VP15TF**	390—885
K	**MC5020**	425—820
	VP15TF	
S	**VP15TF**	65—165
H	**VP15TF**	130—260

●Recommended depth of cut (ap) is .008 inch- .020 inch, and feed per tooth (fz) is up to .008 inch/tooth.

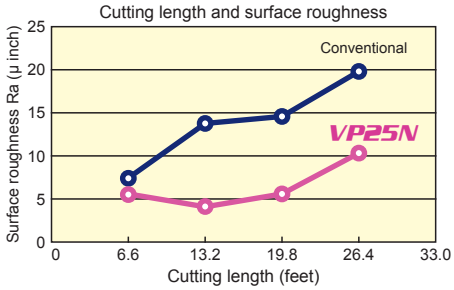
Machining using a wiper insert

Addition of coated grades (MC5020, VP15TF, VP25N) enables extended tool life.
Offset of the major cutting edge decreases the load of the wiper insert.

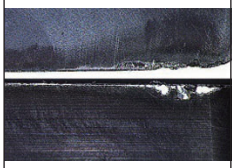
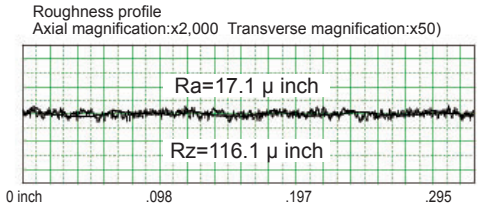
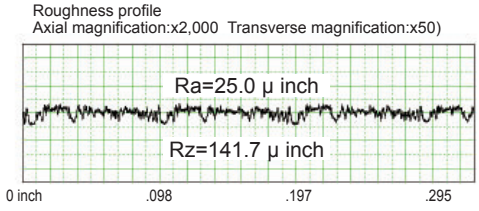
General steel

		Insert wear	Surface roughness profile
Cutting length 26.2 feet	VP25N		
	Conventional		

<Cutting conditions>
Workpiece : AISI 4140
Tool : ASX445R0407E
Insert : WEEW13T3AGTR8C
Cutting speed : 820 SFM
Feed : .055 inch/rev
Depth of cut : .008 inch
Width of cut : 3.07 inch
Dry cutting

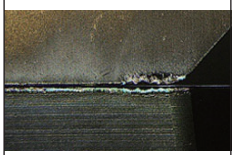
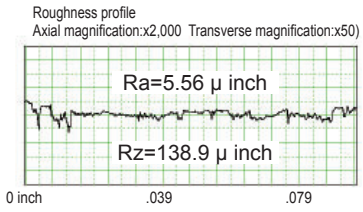
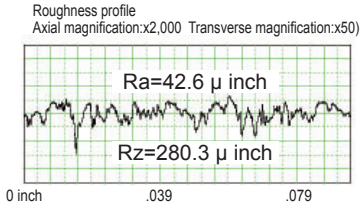


Stainless steel

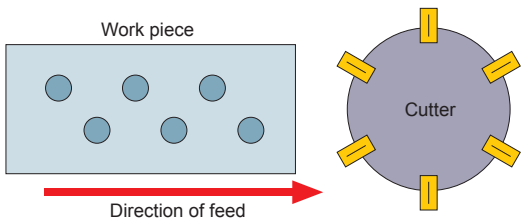
		Insert wear	Surface roughness profile
Cutting length 20.3 feet	VP15TF		
Cutting length 33.4 feet	Competitor		

<Cutting conditions>
Workpiece : AISI 304
Tool : ASX445R0512E
Insert : WEEW13T3AGER8C
Cutting speed : 885 SFM
Feed : .094 inch/rev
Depth of cut : .008 inch
Width of cut : 3.94 inch
Dry cutting

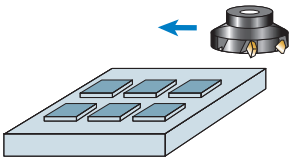
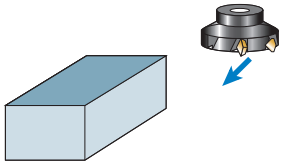
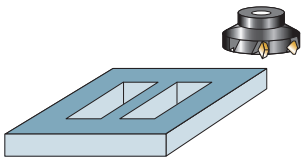
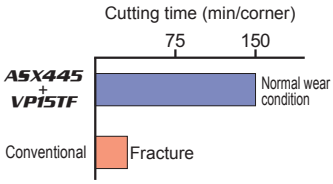
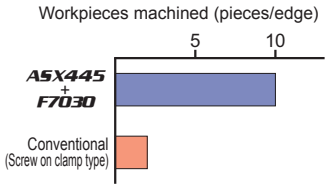
Cast iron

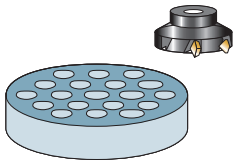
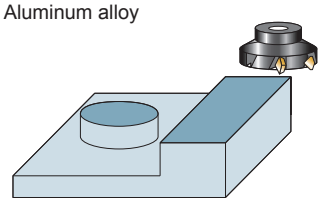
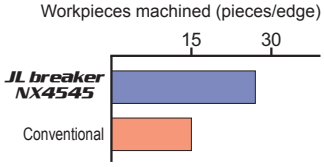
		Insert wear	Surface roughness profile
Cutting length 131.2 feet	MC5020 (Major cutting edge offset)		
	Conventional (No offset)		

<Cutting conditions>
Workpiece : AISI No45B (Perforated)
Tool : ASX445R0506E
Insert : WEEW13T3AGER8C
Cutting speed : 655 SFM
Per tooth : .008 IPT
Depth of cut : .008 inch
Width of cut : 3.94 inch
Dry cutting



APPLICATION EXAMPLE

Tool		ASX445R0607E	ASX445R0610E	ASX445R1010M
Insert (Grade)		SEMT13T3AGSN-JM (VP15TF)	SEMT13T3AGSN-JM (F7030)	SEMT13T3AGSN-JM (VP30RT)
Work piece		Welding parts 	Carbon steel 	Stainless steel 
Component		Machine parts	Machine parts	Ship parts
Cutting Conditions	Cutting Speed (SFM)	655	655	515
	Feed per Tooth (IPT)	.011	.008	.006
	Depth of Cut (inch)	.118	.039	.138
	Coolant	Dry cutting	Wet cutting	Dry cutting
Results				VP30RT lengthens the life of inserts foufold without fracturing

Tool		ASX445R0607E	ASX445R0506E
Insert (Grade)		SEET13T3AGEN-JL (NX4545)	SEGT13T3AGFN-JP (HTi10)
Work piece		Stainless steel 	Aluminum alloy 
Component		Machine parts	Machine parts
Cutting Conditions	Cutting Speed (SFM)	490	2560
	Feed per Tooth (IPT)	.002	.007
	Depth of Cut (inch)	.059	(Rough cutting) .079 (Finishing) .010
	Coolant	Dry cutting	Wet cutting
Results			Good surface finish without vibration. Vibration occurred when using conventional cutters on low rigidity work pieces.

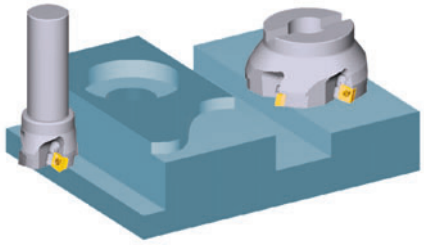
General use Screw-on Insert Type Shoulder Milling Cutter

ASX400

Features

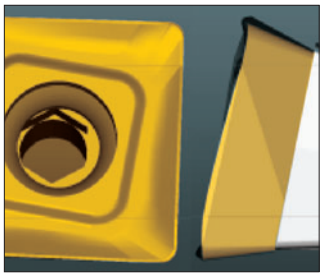
ECONOMICAL

ASX400 is economical as it employs inserts that have 4 cutting edges. Additionally with one tool, it is possible to carry out face milling, shoulder milling, and slotting operations.



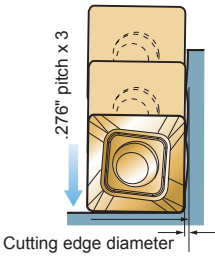
LOW RESISTANCE

Due to the 3D design of the cutting edge and a large rake angle, high cutting edge sharpness has been achieved with reduced cutting resistance.



HIGH ACCURACY

Due to the curved edge and high accuracy body and insert, high accuracy surface finish on walls and high quality surface finish on faces can be achieved.



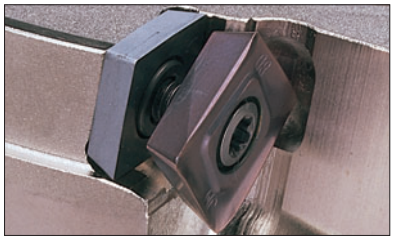
*JM breaker data

Tool	δ
ASX400	.0012
Competitor A	.0040
Competitor B	.0048

Values obtained under recommended cutting conditions.

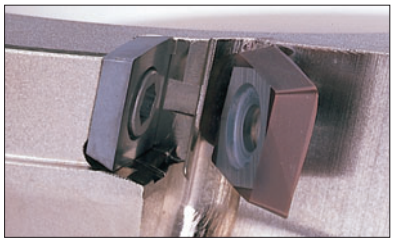
EASY TO USE

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.



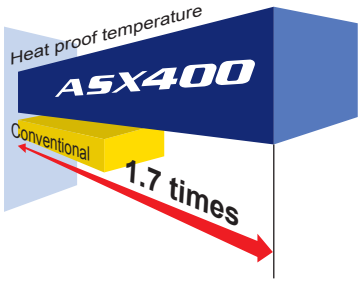
HIGH RELIABILITY

Uses a carbide shim and Mitsubishi's proprietary Anti-Fly-Insert (A.F.I) to prevent the inserts from moving when machining. Additionally the insert screw uses TORXPLUS®, for high clamping force ensuring high reliability.

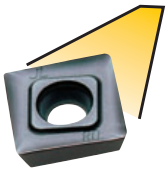
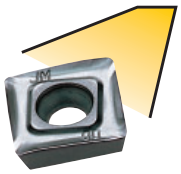
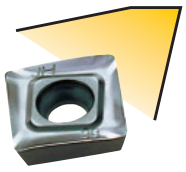
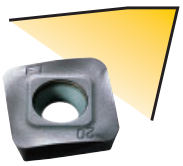
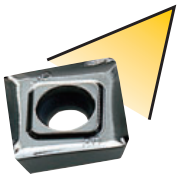


HIGH HEAT-RESISTANT BODY

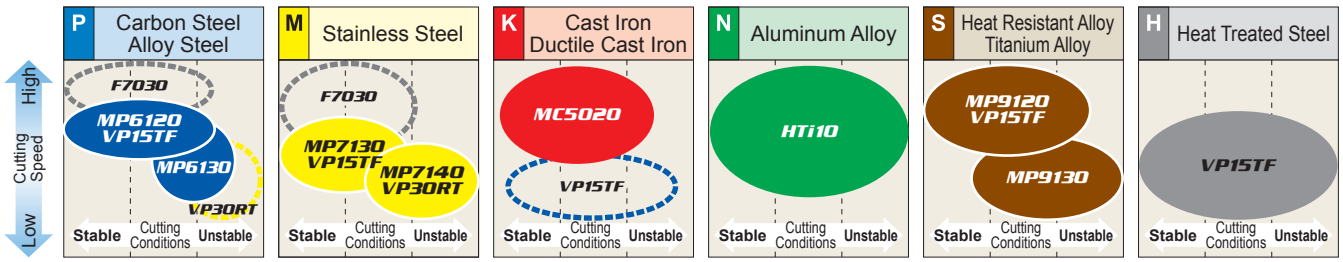
The cutter body is made from a special alloy that provides high strength at high temperatures. A special surface treatment improves the corrosion and friction resistance. The **ASX400** can be used for long hours even under harsh conditions.



CHIPBREAKERS FOR A WIDE RANGE OF APPLICATIONS

JL Finish to Light cutting Breaker	JM Light to Semi-Heavy cutting Breaker	JH Medium to Heavy cutting Breaker	FT Heavy cutting/ Heavy interrupted cutting Breaker	JP Aluminum alloy cutting 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 M class insert. Corner radius of .079" has improved fracture resistance. Strong main cutting edge allows heavy cutting and heavy interrupted cutting. Stable cutting performance.	High accuracy insert with ground-finished periphery. Large rake angle and mirror-finished rake face lead to sharp cutting performance and high welding resistance.

INSERT GRADES FOR A WIDE RANGE OF MATERIALS

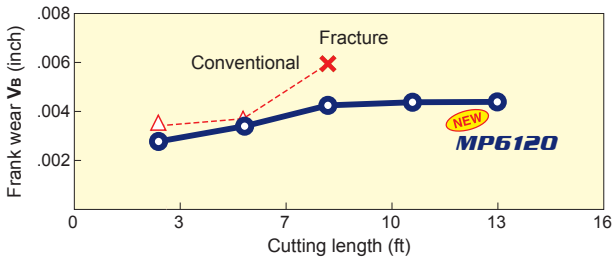


(Note) When machining steel or stainless steel where the emphasis is on surface finish, use cermet grade NX4545.
Stable Cutting : Continuous cutting, Constant depth of cut, Pre-machined securely clamped component cutting
Unstable Cutting : Heavy interrupted, Irregular depth of cut, Low clamping rigidity cutting

Cutting Performance

Alloy Steel

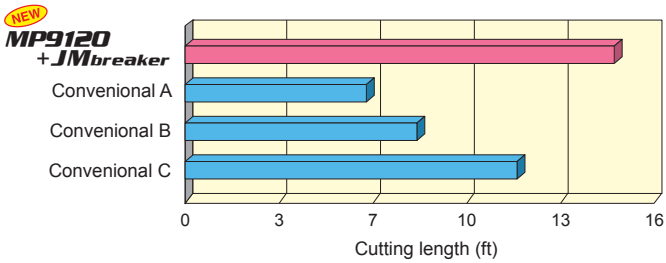
Cutting Resistance



<Cutting conditions>

Workpiece	: Alloy steel	Cutting speed	: 655 SFM
Tool	: ASX400-063A05R	Feed per tooth	: .006 IPT
Insert	: SOMT12T308PEER-JM	Axial depth of cut	: .118 inch
Grade	: MP6120	Radial depth of cut	: 1.969 inch
		Dry cutting	

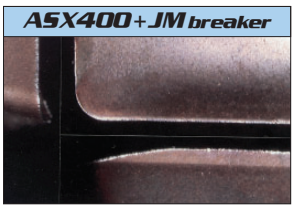
Heat Resistant Alloy



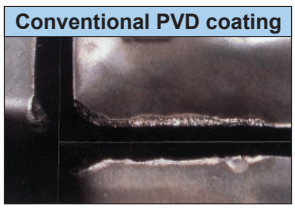
<Cutting conditions>

Workpiece	: Titanium alloy	Cutting speed	: 195 SFM
Tool	: ASX400-063A04R	Feed per tooth	: .004 IPT
Insert	: SOMT12T308PEER-JM	Axial depth of cut	: .315 inch
Grade	: MP9120	Radial depth of cut	: .236 inch
		Wet cutting	

Hardened Steel



Cutting length 5.6ft

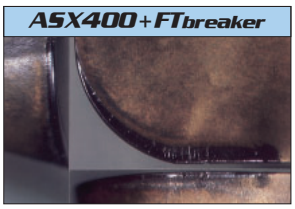


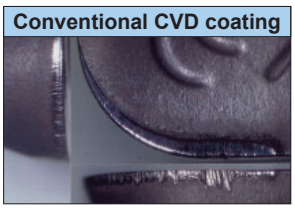
Cutting length .49ft

<Cutting conditions>

Workpiece	: AISI H13 (53HRC)	Cutting speed	: 245 SFM
Tool	: ASX400R503S32	Feed per tooth	: .006 IPT
Insert	: SOMT12T308PEER-JM	Depth of cut	: .197 inch
	SOET12T308PEER-JM	Width of cut	: .394 inch
Grade	: VP15TF	Dry cutting	

Cast Iron

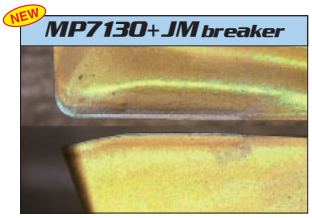


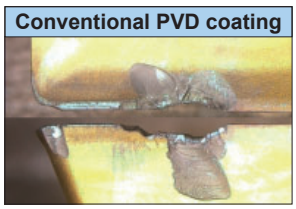


<Cutting conditions>

Workpiece	: AISI No 45B	Cutting speed	: 820 SFM
Tool	: ASX400R0407E	Feed per tooth	: .006 IPT
Insert	: SOMT12T320PEER-FT	Depth of cut	: .118 inch
Grade	: MC5020	Width of cut	: 1.378 inch
		Semi-wet cutting	
		Cutting length	: 26ft (Cutting time 67min.)

Stainless Steel





<Cutting conditions>

Workpiece	: AISI 304	Cutting speed	: 395 SFM
Tool	: ASX400R0508E	Feed per tooth	: .006 IPT
Insert	: SOMT12T308PEER-JM	Depth of cut	: .236 inch
Grade	: MP7130	Width of cut	: .630 inch
Number of teeth	: Single insert	Wet cutting	
		Cutting length	: 1.64 feet

Aluminum Alloy

Tool	Wall accuracy (µinch)	Base surface finish (µinch)	Results
ASX400	.591	.118	Stable machining. Small cutting power.
Conventional A	1.575	.472	Large welding and unstable machining.
Conventional B	2.008	.354	Big cutting power and vibrator.

<Cutting conditions>

Workpiece	: Aluminum alloy	Cutting speed	: 2460 SFM
Tool	: ASX400R404S32	Feed per tooth	: .004 IPT
Insert	: SOGT12T308PEER-JP	Depth of cut	: .276 inch x 3 times
Grade	: HTi10	Width of cut	: .118 inch
		Wet cutting	

General use Screw-on Insert Type Shoulder Milling Cutter

SHOULDER MILLING <GENERAL CUTTING>

0° Finishing Roughing

ASX400

Light Alloy	Cast Iron	General Steel	Stainless Steel	Hardened Steel

- Economical due to the use of 4 cutting edges.
- Low resistance due to the 3D design of the curved cutting edge.
- Curved cutting edge and high rigidity holder.

C H :0°
A.R :+11° T :-9°—-11°
R.R :-9°—-11° I :+11°

Fig.1
ø2"
ø2-1/2"

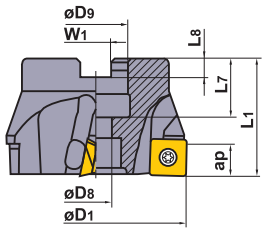


Fig.2
ø3"
ø4"
ø5"
ø6"

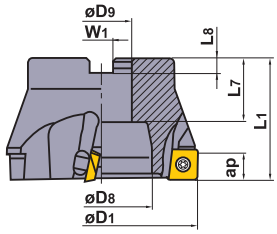
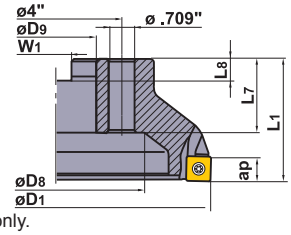


Fig.3
ø8"
ø10"



Right hand tool holder only.

ARBOR TYPE

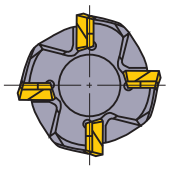
Type	Order Number	Stock R	Number of Teeth	Dimensions (inch) D1	L1	D9	L7	D8	W1	L8	Max. Depth of Cut ap	Mass (lbs)	Type (Fig.)
Coarse Pitch	**ASX400R0203**	●	3	2.000	1.575	.750	.748	.415	.313	.187	.394	.8	1
	2504	●	4	2.500	1.575	.750	.748	.415	.313	.187	.394	1.1	1
	0304C	●	4	3.000	1.969	1.000	1.024	1.496	.375	.219	.394	2.2	2
	0405E	●	5	4.000	1.969	1.500	1.378	2.362	.625	.375	.394	3.3	2
	0506E	●	6	5.000	2.480	1.500	1.378	2.362	.625	.375	.394	5.5	2
	0608E	●	8	6.000	2.480	1.500	1.378	2.362	.625	.375	.394	8.8	2
	0810M	●	10	8.000	2.480	2.500	1.378	5.315	1.000	.560	.394	15.0	3
	1012M	●	12	10.000	2.480	2.500	1.378	7.087	1.000	.560	.394	26.0	3
Fine Pitch	**ASX400R0204**	●	4	2.000	1.575	.750	.748	.415	.313	.187	.394	.8	1
	2505	●	5	2.500	1.575	.750	.748	.415	.313	.187	.394	1.1	1
	0306C	●	6	3.000	1.969	1.000	1.024	1.496	.375	.219	.394	2.2	2
	0407E	●	7	4.000	1.969	1.500	1.378	2.362	.625	.375	.394	3.3	2
	0508E	●	8	5.000	2.480	1.500	1.378	2.362	.625	.375	.394	5.5	2
	0612E	●	12	6.000	2.480	1.500	1.378	2.362	.625	.375	.394	8.8	2
	0816M	●	16	8.000	2.480	2.500	1.378	5.315	1.000	.560	.394	15.0	3
	1018M	●	18	10.000	2.480	2.500	1.378	7.087	1.000	.560	.394	26.0	3
Extra Fine Pitch	**ASX400R0205**	●	5	2.000	1.575	.750	.748	.415	.313	.187	.394	.8	1
	2506	●	6	2.500	1.575	.750	.748	.415	.313	.187	.394	1.1	1
	0308C	●	8	3.000	1.969	1.000	1.024	1.496	.375	.219	.394	2.2	2
	0410E	●	10	4.000	1.969	1.500	1.378	2.362	.625	.375	.394	3.3	2
	0512E	●	12	5.000	2.480	1.500	1.378	2.362	.625	.375	.394	5.5	2
	0615E	●	15	6.000	2.480	1.500	1.378	2.362	.625	.375	.394	8.8	2
	0819M	●	19	8.000	2.480	2.500	1.378	5.315	1.000	.560	.394	15.0	3
	1022M	●	22	10.000	2.480	2.500	1.378	7.087	1.000	.560	.394	26.0	3

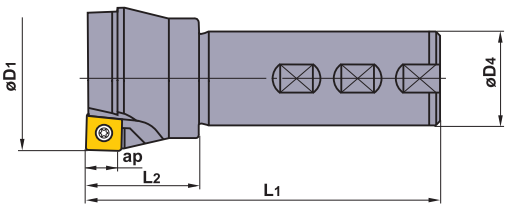
SPARE PARTS

Tool Holder Number	 Shim	 * Shim Screw	 * Insert Screw	 Wrench (Insert)	 Wrench (Shim)	 Insert
ASX400R Type	STASX400N	WCS503507H	TPS35	TIP15T	HKY35R	SO○T12T3○○ PE○R-○○

* Clamp Torque (lbf-in) : WCS503507H=44, TPS35=31

● : **Inventory maintained.**
<10 inserts in one case>





WELDON SHANK TYPE

Right hand tool holder only.

Order Number	Stock	Number of Teeth	Dimensions (inch)					Shim	Shim Screw *	Insert Screw *	Wrench (Insert)	Wrench (Shim)	Insert
	R		D1	L1	D4	L2	ap						
ASX400R202W20	●	2	1.250	4.750	1.250	1.500	.394	STASX400N	WCS503507H	TPS35	TIP15T	HKY35R	SO○T12T3○○ PE○R-○○
243W20	●	3	1.500	4.750	1.250	1.500	.394	STASX400N	WCS503507H	TPS35	TIP15T	HKY35R	
324W20	●	4	2.000	4.750	1.250	1.575	.394	STASX400N	WCS503507H	TPS35	TIP15T	HKY35R	

* Clamp Torque (lbf-in) : WCS503507H=44, TPS35=31

INSERTS WITH BREAKER

Work Material		
P	Steel	
M	Stainless Steel	
K	Cast Iron	
N	Non-ferrous Metal	
S	Heat-resistant Alloy, Titanium Alloy	
H	Hardened Steel	

Cutting Conditions :
● : Stable Cutting ◐ : General Cutting
✱ : Unstable Cutting

Honing :
E : Round **F** : Sharp **T** : Chamfer

Application	Shape	Order Number	Class	Honing	Coated F7010	F7030	MC5020	MP6120 (NEW)	MP6130 (NEW)	MP7130 (NEW)	MP7140 (NEW)	MP9120 (NEW)	MP9130 (NEW)	VP15TF	VP30RT	Cermet NX4545	Carbide HTi10	Dimensions (inch) D1	S1	F1	Re	Geometry
Finish–Light Cutting	JL Breaker	SOET12T308PEER-JL	E	E		●		●	●	●	●	●	●	●	●	●		.500	.156	.055	.031	
Light–Semi-Heavy Cutting	JM Breaker	SOMT12T308PEER-JM	M	E	●	●	●	●	●	●	●	●	●	●	●	●		.500	.156	.055	.031	
Medium–Heavy Cutting	JH Breaker	SOMT12T308PEER-JH	M	E		●	●	●	●	●	●	●	●	●	●			.500	.156	.055	.031	
Heavy Interrupted Cutting	FT Breaker	SOMT12T320PEER-FT	M	E			●	●				●	●	●				.500	.156	.055	.031	
For Aluminium Alloy	JP Breaker	SOGT12T308PEFR-JP	G	F													●	.500	.156	.055	.031	

WIPER INSERTS

Shape	Order Number	Class	Honing	Carbide HTi05T	Cermet NX2525	Dimensions (inch) L1	L2	S1	F1	Re	Geometry
	WOEW12T308PEER8C	E	E	●		.492	.520	.156	.315	.031	
	12T308PETR8C	E	T		●	.492	.520	.156	.315	.031	

General use Screw-on Insert Type Shoulder Milling Cutter

Fig.1
ø80
ø100
ø125
ø160

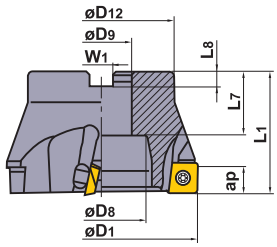
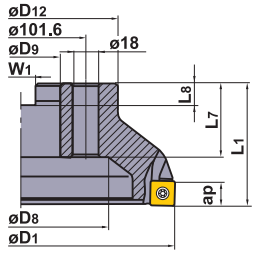


Fig.2
ø200
ø250



Right hand tool holder only.

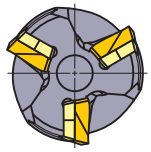
METRIC Standard

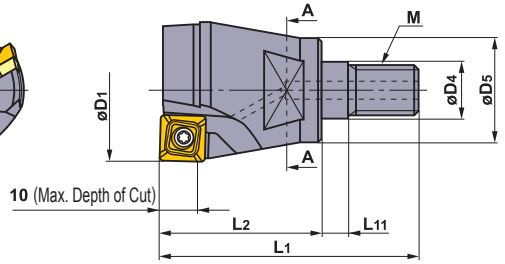
For inch arbors

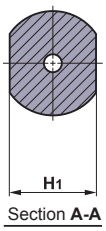
ARBOR TYPE

C H :0°
A.R :+11° T :-9°—-11°
R.R :-9°—-11° I :+11°

Type	Order Number	Stock R	Number of Teeth	Dimensions (mm) [inch] D1	L1	D9	L7	D8	D12	W1	L8	Max. Depth of Cut ap	Mass (kg)	Type (Fig.)
Coarse Pitch	**ASX400R08004C**	★	4	80	50	25.4 [1.0"]	26	38	60	9.5	6	10	1.0	1
	R10005D	★	5	100	50	31.75 [1.25"]	32	45	70	12.7	8	10	1.5	1
	R12506E	★	6	125	63	38.1 [1.5"]	35	60	80	15.9	10	10	2.5	1
	R16008F	★	8	160	63	50.8 [2.0"]	38	90	100	19.1	11	10	4.0	1
	R20010K	★	10	200	63	47.625 [1.875"]	35	135	160	25.4	14.22	10	7.0	2
	R25012K	★	12	250	63	47.625 [1.875"]	35	180	210	25.4	14.22	10	12.0	2
Fine Pitch	**ASX400R08006C**	★	6	80	50	25.4 [1.0"]	26	38	60	9.5	6	10	1.0	1
	R10007D	★	7	100	50	31.75 [1.25"]	32	45	70	12.7	8	10	1.5	1
	R12508E	★	8	125	63	38.1 [1.5"]	35	60	80	15.9	10	10	2.5	1
	R16012F	★	12	160	63	50.8 [2.0"]	38	90	100	19.1	11	10	4.0	1
	R20016K	★	16	200	63	47.625 [1.875"]	35	135	160	25.4	14.22	10	7.0	2
	R25018K	★	18	250	63	47.625 [1.875"]	35	180	210	25.4	14.22	10	12.0	2







METRIC Standard

SCREW-IN TYPE

Right hand tool holder only.

Order Number	Stock R	*3 Coolant Thru	Number of Teeth	Dimensions (mm) D1	D4	D5	L1	L2	L11	H1	M *2	Mass (kg)	Shim	*1 Shim Screw	*1 Insert Screw	Wrench (Insert)	Wrench (Shim)
ASX400R322AM1640	★	Y	2	32	17	29	63	40	6	24	M16	0.3	—	WCS503507H	TPS35	TIP15T	HKY35R
403AM1645	★	Y	3	40	17	29	68	45	6	24	M16	0.3	STASX400N	WCS503507H	TPS35	TIP15T	HKY35R

*1 Clamp Torque (lbf-in) : WCS503507H=44, TPS35=31
*2 Clamp Torque of the Head (lbf-ft) : M16=66.7
*3 Y=Yes

★ : **Inventory maintained in Japan.**

METRIC Standard

For metric arbors

Fig.1 ø50 ø63

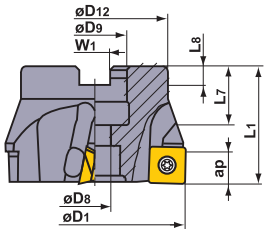


Fig.2 ø80 ø100 ø125

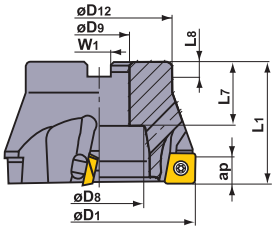


Fig.3 ø160

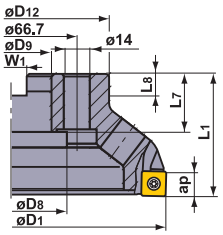
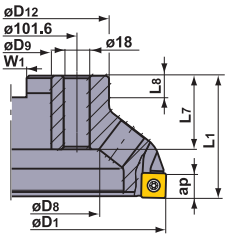


Fig.4 ø200 ø250



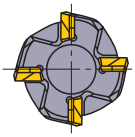
ARBOR TYPE

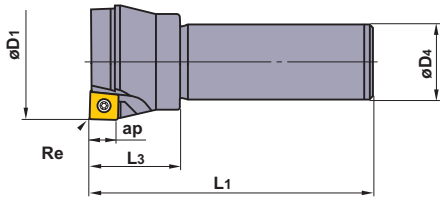
C H :0°
A.R :+11° T:-9°–-11°
R.R :-9°–-11° I :+11°

Right hand tool holder only.

Type	Order Number	Stock R	Number of Teeth	Dimensions (mm) D1	L1	D9	L7	D8	D12	W1	L8	Max. Depth of Cut ap	Mass (kg)	Type (Fig.)
Coarse Pitch	**ASX400-050A03R**	★	3	50	40	22	20	11	41	10.4	6.3	10	0.3	1
	-063A04R	★	4	63	40	22	20	11	50	10.4	6.3	10	0.5	1
	-080B04R	★	4	80	50	27	29	38	60	12.4	7	10	0.9	2
	-100B05R	★	5	100	50	32	32	45	70	14.4	8	10	1.4	2
	-125B06R	★	6	125	63	40	32	60	80	16.4	9	10	2.3	2
	-160C08R	★	8	160	63	40	29	56	100	16.4	9	10	3.6	3
	-200C10R	★	10	200	63	60	32	135	160	25.7	14.22	10	6.3	4
	-250C12R	★	12	250	63	60	32	180	210	25.7	14.22	10	10.8	4
Fine Pitch	**ASX400-050A04R**	★	4	50	40	22	20	11	41	10.4	6.3	10	0.3	1
	-063A05R	★	5	63	40	22	20	11	50	10.4	6.3	10	0.5	1
	-080B06R	★	6	80	50	27	29	38	60	12.4	7	10	0.9	2
	-100B07R	★	7	100	50	32	32	45	70	14.4	8	10	1.4	2
	-125B08R	★	8	125	63	40	32	60	80	16.4	9	10	2.2	2
	-160C12R	★	12	160	63	40	29	56	100	16.4	9	10	3.5	3
	-200C16R	★	16	200	63	60	32	135	160	25.7	14.22	10	6.2	4
	-250C18R	★	18	250	63	60	32	180	210	25.7	14.22	10	10.7	4
Extra Fine Pitch	**ASX400-050A05R**	★	5	50	40	22	20	11	41	10.4	6.3	10	0.3	1
	-063A06R	★	6	63	40	22	20	11	50	10.4	6.3	10	0.5	1
	-080B08R	★	8	80	50	27	29	38	60	12.4	7	10	0.9	2
	-100B10R	★	10	100	50	32	32	45	70	14.4	8	10	1.4	2
	-125B12R	★	12	125	63	40	32	60	80	16.4	9	10	2.1	2
	-160C15R	★	15	160	63	40	29	56	100	16.4	9	10	3.4	3
	-200C19R	★	19	200	63	60	32	135	160	25.7	14.22	10	6.2	4
	-250C22R	★	22	250	63	60	32	180	210	25.7	14.22	10	10.5	4

METRIC Standard





SHANK TYPE

Right hand tool holder only.

Type	Order Number	Stock R	Number of Teeth	Dimensions (mm) D1	L1	D4	L3	ap	Shim	Shim Screw *	Insert Screw *	Wrench (Insert)	Wrench (Shim)	Insert
Coarse Pitch	**ASX400R403S32**	★	3	40	125	32	40	10	STASX400N	WCS503507H	TPS35	TIP15T	HKY35R	SO□T12T3□□ PE□R-□□
	503S32	★	3	50	125	32	40	10	STASX400N	WCS503507H	TPS35	TIP15T	HKY35R	
	634S32	★	4	63	125	32	40	10	STASX400N	WCS503507H	TPS35	TIP15T	HKY35R	
	804S32	★	4	80	125	32	40	10	STASX400N	WCS503507H	TPS35	TIP15T	HKY35R	
Fine Pitch	**ASX400R504S32**	★	4	50	125	32	40	10	STASX400N	WCS503507H	TPS35	TIP15T	HKY35R	SO□T12T3□□ PE□R-□□
	635S32	★	5	63	125	32	40	10	STASX400N	WCS503507H	TPS35	TIP15T	HKY35R	
	806S32	★	6	80	125	32	40	10	STASX400N	WCS503507H	TPS35	TIP15T	HKY35R	

* Clamp Torque (lbf-in) : WCS503507H=44, TPS35=31

RECOMMENDED CUTTING CONDITIONS

	Work Material	Hardness	Grade	Cutting Speed (SFM)	Finish—Light Cutting		Light—Semi-Heavy Cutting		Medium—Heavy Cutting	
					Feed per Tooth (mm/tooth)	Breaker	Feed per Tooth (mm/tooth)	Breaker	Feed per Tooth (mm/tooth)	Breaker
P	Mild Steel	≤180HB	F7030	920 (690—1150)	.007 (.003—.011)	JL	.008 (.004—.012)	JM	.010 (.008—.014)	JH
			MP6120 VP15TF	820 (655—985)	.007 (.003—.011)	JL	.008 (.004—.012)	JM	.010 (.004—.014)	JH
			MP6130	780 (652—950)	.007 (.003—.011)	JL	.008 (.004—.012)	JM	.010 (.004—.014)	JH
			VP30RT	755 (590—920)	.007 (.003—.011)	JL	.008 (.004—.012)	JM	.010 (.004—.014)	JH
			NX4545	590 (425—755)	.006 (.003—.009)	JL	.007 (.004—.011)	JM	—	—
	Carbon Steel Alloy Steel	180—280HB	F7030	820 (655—985)	.006 (.003—.009)	JL	.007 (.004—.011)	JM	.008 (.004—.012)	JH
			MP6120 VP15TF	720 (560—885)	.006 (.003—.009)	JL	.007 (.004—.011)	JM	.008 (.004—.012)	JH
			MP6130	600 (480—740)	.006 (.003—.009)	JL	.007 (.004—.011)	JM	.008 (.004—.012)	JH
			VP30RT	490 (395—590)	.005 (.002—.008)	JL	.006 (.004—.010)	JM	—	—
			NX4545	490 (390—590)	.005 (.002—.008)	JL	.006 (.004—.010)	JM	—	—
		280—350HB	F7030	590 (425—755)	.005 (.002—.008)	JL	.006 (.004—.010)	JM	.007 (.004—.011)	JH
			MP6120 VP15TF	460 (330—590)	.005 (.002—.008)	JL	.006 (.004—.010)	JM	.007 (.004—.011)	JH
			MP6130	510 (290—560)	.005 (.002—.008)	JL	.006 (.004—.010)	JM	.007 (.004—.011)	JH
			VP30RT	390 (260—525)	.005 (.002—.008)	JL	.006 (.004—.010)	JM	.007 (.004—.011)	JH
			NX4545	330 (260—395)	.004 (.002—.006)	JL	.005 (.004—.008)	JM	—	—
M	Stainless Steel	≤270HB	MP7130 VP15TF	720 (560—885)	.006 (.003—.009)	JL	.007 (.004—.011)	JM	.008 (.004—.012)	JH
			MP7140 VP30RT	490 (395—590)	.006 (.003—.009)	JL	.007 (.004—.011)	JM	—	—
			NX4545	490 (390—590)	.006 (.003—.009)	JL	.007 (.004—.011)	JM	—	—
K	Cast Iron Ductile Cast Iron	Tensile Strength ≤450MPa	MC5020	655 (490—820)	—	—	.008 (.004—.012)	JM	.010 (.004—.014)	JH FT
			VP15TF	590 (425—820)	.007 (.004—.011)	JL	.008 (.004—.012)	JM	.010 (.004—.014)	JH
N	Aluminum Alloy	—	HTi10	2130 (1000—3300)	.006 (.004—.008)	JP	.008 (.004—.012)	JP	.012 (.008—.016)	JP
S	Titanium Alloy	—	MP9120 VP15TF	165 (130—195)	.005 (.002—.008)	JL	.006 (.003—.009)	JM	—	—
			MP9130	140 (100—180)	.005 (.002—.008)	JL	.006 (.003—.009)	JM	—	—
	Heat Resistant Alloy	—	MP9120 VP15TF	130 (65—165)	.004 (.002—.006)	JL	.005 (.003—.008)	JM	—	—
			MP9130	110 (55—140)	.004 (.002—.006)	JL	.005 (.003—.008)	JM	—	—
H	Hardened Steel	40—55HRC	VP15TF	200 (120—280)	.003 (.002—.005)	JL	.004 (.002—.006)	JM	.005 (.003—.007)	JH

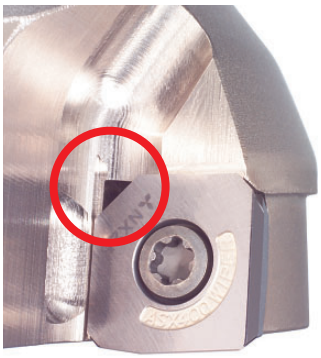
●Revolution (min^{-1})=(1000 x Cutting Speed)÷(3.14 x ϕD_1) ●Table Feed (mm/min)=Feed per Tooth x Number of Teeth x Cutter Revolution

INSTRUCTIONS FOR USING INSERTS

Instructions for use of the JP breaker

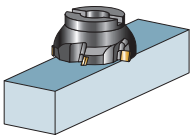
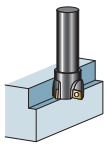
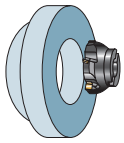
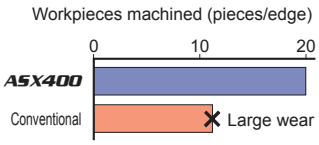
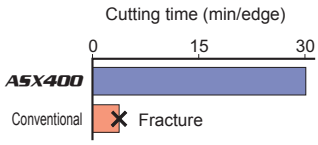
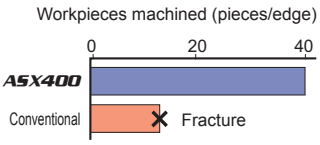
- The JP breaker has sharp cutting edges. Wear gloves when handling.
- When machining aluminum alloy, welding to the cutting edge tends to occur, often leading to insert failure. To prevent this, wet cutting is recommended.

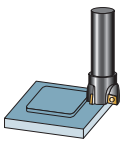
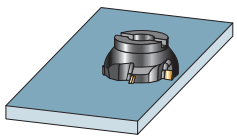
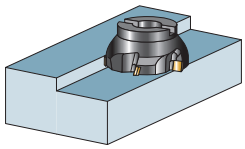
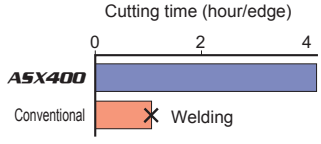
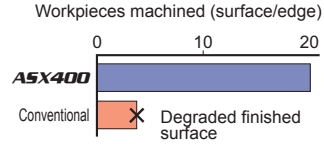
Instructions for use of wiper inserts



- 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 back than general inserts. Beware of wear of the insert just behind the wiper insert.

APPLICATION EXAMPLE

Tool		ASX400R0612E	ASX400R324W20	ASX400R0405E
Insert (Grade)		SOMT12T308PEER-JM (F7030)	SOMT12T308PEER-JM (VP15TF)	SOMT12T308PEER-JM (VP30RT)
Work piece		Alloy steel 	Die steel (52HRC) 	Stainless steel 
Component		Machine parts	Mold parts	Valve parts
Cutting Conditions	Cutting Speed (SFM)	820	330	490
	Feed per Tooth (IPT)	.006	.004	.006
	Depth of Cut (inch)	.118	.157 x 4 pass	.157
	Width of Cut (inch)	4.724	.787	1.574-3.937
	Coolant	Dry cutting	Dry cutting	Dry cutting
Results				

Tool		ASX400R324W20	ASX400R0506E	ASX400-050A04R
Insert (Grade)		SOGT12T308PEFR-JP (HTi10)	SOET12T308PEER-JL (NX4545)	SOMT12T308PEER-JM (MP6120)
Work piece		Aluminum alloy 	Mild steel 	S45C NEW 
Component		Airplane parts	Machine parts	Machine parts
Cutting Conditions	Cutting Speed (SFM)	3280	260	500
	Feed per Tooth (IPT)	.006	.005	.006
	Depth of Cut (inch)	.157 x 5 pass	.059	.15
	Width of Cut (inch)	.197-1.575	3.937	.244
	Coolant	Wet cutting	Wet cutting	Dry cutting
Results				Compared with conventional products, it became life of about three times.

ASX400

ASX445

Screw-on Insert Type Milling Cutter

ASX Series

For your safety
●Don't touch breakers and chips without gloves. ●Please machine within recommended application range, and exchange expired tools with new parts in advance. ●Please use safety cover and wear safety glasses. ●When using compounded cutting oils, please take fire prevention. ●When attaching chips or spare parts, please use the attached wrench or spanner. ●When using tools in revolution machining, please make a trial run to check run-out, vibration, abnormal sounds etc.

MITSUBISHI MATERIALS CORPORATION

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(Tools specifications subject to change without notice.)

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