DIA EDGE
MITSUBISHI MATERIALS U.S.A.

ARP SERIES

ROUND INSERT CUTTER FOR
DIFFICULT-TO-CUT MATERIALS

ABOUT OUR BRAND

Your manufacturing success is our success.

It's simple. We want to provide high-quality cutting tool products that help deliver unparalleled performance and control for you to manufacture precisely perfect products every day.

Our long heritage of building partnerships through cutting tool solutions to metal working manufacturers, like yours, has given Mitsubishi Materials USA a solid reputation as an industry leader. We understand the importance of getting it right the first time by delivering high-quality cutting tool product brands to help overcome machining challenges to improve machining processes.

Your success is our success and is the driving force behind our innovative products. Our product brands, DIAEDGE and MOLDINO, are trusted globally in the metal manufacturing and die & mold industries for delivering expertly-designed manufactured tools of the trade for highly specialized industries like yours.

With the acquisition of MOLDINO Tool Engineering, Ltd, our traditional Mitsubishi Materials USA cutting tool product line is now sold under the DIAEDGE product brand name.

Brands you can trust:

MITSUBISHI MATERIALS U.S.A.

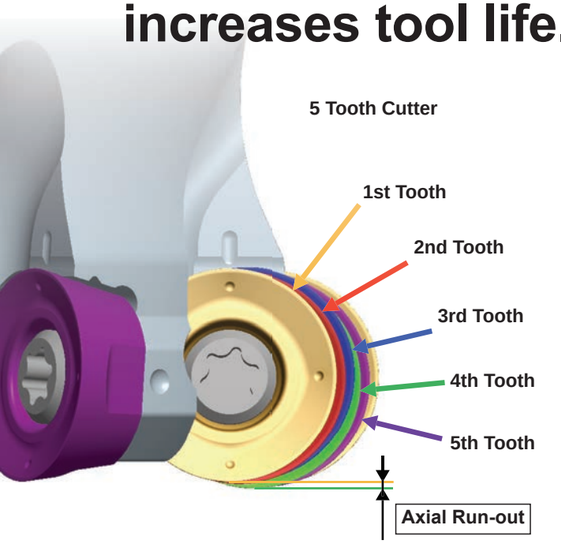
TRUSTED PRODUCT BRANDS

DIAEDGE MOLDINO

Round Insert Cutter for Difficult-to-Cut Materials

DIAEDGE ARP SERIES

Highest level of run-out accuracy increases tool life.



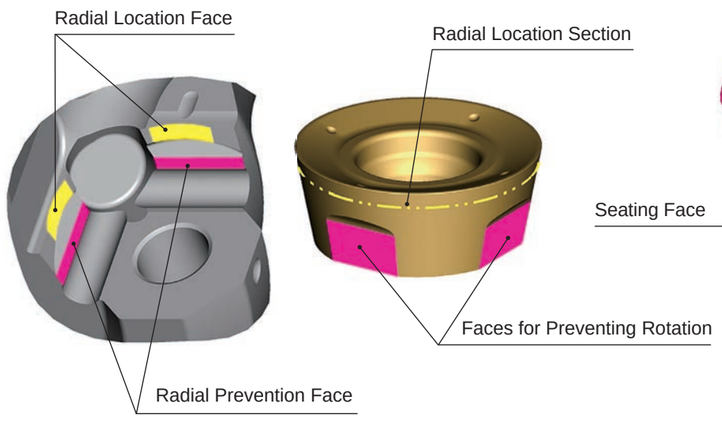
Highly accurate seating provides minimal change of run-out accuracy when indexing the inserts.

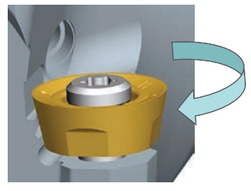
Compared to Conventional Tools

Axial Run-out 25% Improvement

Strong Clamping System

A wide seating face and 2 side location faces prevent inserts from moving during cutting.

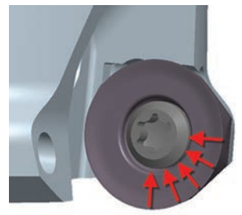




Easy indexing - No need to completely remove the clamping screw.

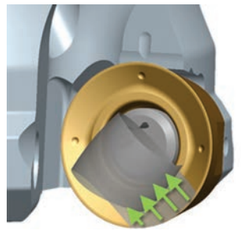
NEW Choose 4 or 8 Indexing Faces According to the Depth of Cut

8 seating face inserts are economical for small depth of cut machining.

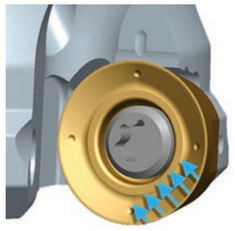


Rake design of 8 indexing face insert

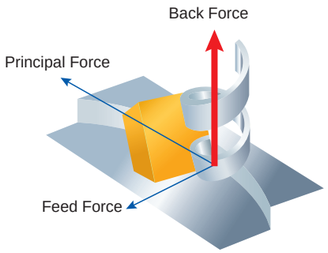
When the cutting depth is medium or higher, the rake face is in the same direction as the chip flow, achieving low cutting resistance. (4 indexing face insert)



Even chip flow

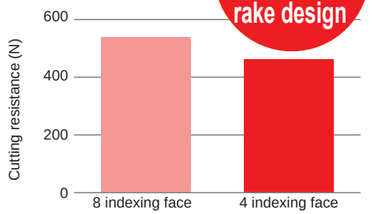


Rake design of 4 indexing face insert



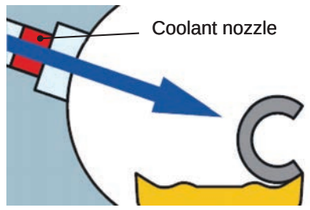
[Comparison of the back force]

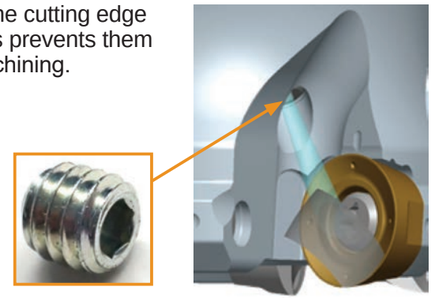
16% less than conventional rake design



Improved Chip Removal with Coolant

The internal coolant is directed slightly above the rake face of the cutting edge so that it is aimed directly at the chip. Forcibly ejecting the chips prevents them from welding to the cutting edge, enabling higher efficiency machining.



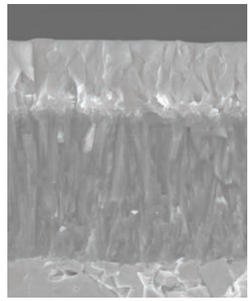


Use of the coolant nozzle discharges chips under high pressure and prevents welding of chips to the cutting edge.

CVD Coated Grade for Machining of Stainless Steels

MC7020

Excellent Wear, Chipping and Thermal Crack Resistance
These features prevent the problems usually associated with machining stainless steel over prolonged periods.



Improved Wear Resistance

The micro-grain wear resistant Al_2O_3 and fibrous TiCN layers deliver excellent wear resistance when milling a wide range of cast irons.

Improved Fracture Resistance

Use of a specially developed cemented carbide that provides superior resistance to fracture and thermal cracking prevents the cutting edge from sudden fracturing.

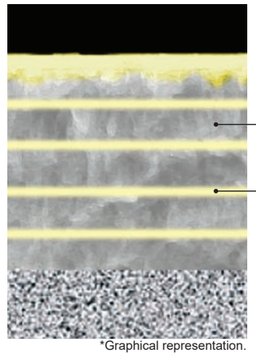
Reduced Abnormal Damage

An extremely smooth black super-smooth coating prevents abnormal damage such as weld chipping.

With Accumulated Al-Ti-Cr-N Based PVD Coating

MP7100, MP9100

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

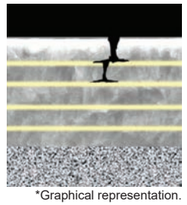


Base Layer
High Al-(Al, Ti)N

The new technology Al-(Al, Ti)N coating provides stabilisation of the high hardness phase and succeeds in dramatically improving wear, crater and welding resistance.

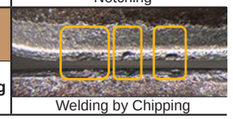
Each Grade Has a Layer Suitable for Each Application Area

*Graphical representation.



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

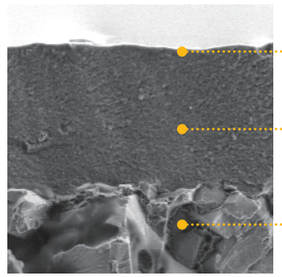
*Graphical representation.

M 	TiN Tough Against Notching	 Notching
S 	CrN Tough Against Chipping	 Welding by Chipping

PVD Coated Grade for Difficult-to-cut Materials

NEW MP9140

Excellent Welding Resistance Due to the Smoothened Surface



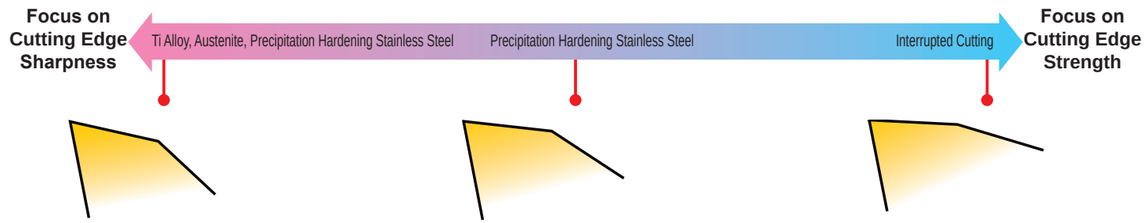
Smooth surfaces provide excellent welding resistance.

The high Al-rich AlTiN coating succeeds in dramatically improving wear and heat resistance.

Special cemented carbide substrate with improved fracture resistance.

Chip Breaker System

Chip breaker Series for Various Applications



L Breaker

Focus on Cutting Edge Sharpness
Low Resistance Type
- Accurate Molded Type
- Precision Ground Type

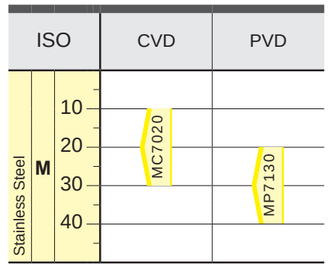
M Breaker

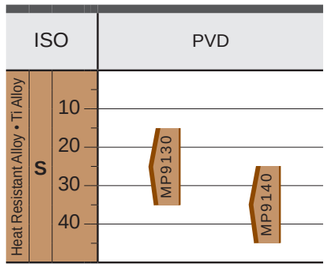
- Accurate Molded Type
- Precision Ground Type

R Breaker

Reinforced Edge Type
- Accurate Molded Type
- Precision Ground Type

Workpiece Material	Cutting Condition		
	Light	General	Interrupted
M	L	M	R
S	L	M	R





Round Insert Cutter for Difficult-to-Cut Materials

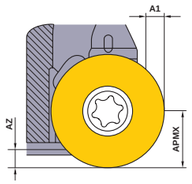
MULTI FUNCTIONAL MILLING

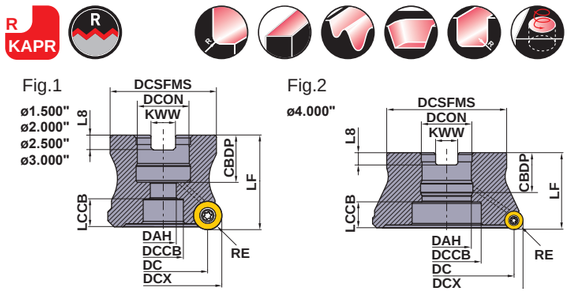
ARP

P M K N S H

■ Arbor Type

KAPR: R
GAMP: +4° GAMF : -6°
DCON = inch size





Right hand tool holder only.

DCX	Set Bolt	Geometry
ϕ1.500"	HSC08025H	①
ϕ2.000"	HSC10030H	①
ϕ2.500", ϕ3.000"	HSC12035H	①
ϕ4.000"	MBA16033H	②

(inch)

DCX	Order Number	Stock R	∗1 Coolant Hole	RE	∗2 No.T	Pitch	DC	LF	DCON	WT (lbs)	Max. Depth of Cut A1	Max. Depth of Cut AZ	RMPX	Fig.	Insert Type
1.500	**ARP5UPR1504SA**	●	Y	.197	4	Fine	1.104	1.500	.500	.3	.079	.047	2.8°	1	RP○T1040
1.500	**ARP5UPR1505SA**	●	Y	.197	5	Extra Fine	1.104	1.500	.500	.3	.079	.047	2.8°	1	RP○T1040
1.500	**ARP6UPR1504SA**	●	Y	.236	4	Fine	1.026	1.500	.500	.3	.079	.041	2.7°	1	RP○T1248
2.000	**ARP5UPR0206AA**	●	Y	.197	6	Fine	1.604	1.750	.750	.8	.079	.073	2.9°	1	RP○T1040
2.000	**ARP5UPR0207AA**	●	Y	.197	7	Extra Fine	1.604	1.750	.750	.8	.079	.073	2.9°	1	RP○T1040
2.000	**ARP6UPR0205AA**	●	Y	.236	5	Fine	1.526	1.750	.750	.7	.079	.067	2.8°	1	RP○T1248
2.000	**ARP6UPR0206AA**	●	Y	.236	6	Extra Fine	1.526	1.750	.750	.7	.079	.067	2.8°	1	RP○T1248
2.500	**ARP5UPR2507CA**	●	Y	.197	7	Fine	2.104	2.000	1.000	1.4	.098	.098	2.9°	1	RP○T1040
2.500	**ARP5UPR2508CA**	●	Y	.197	8	Extra Fine	2.104	2.000	1.000	1.4	.098	.098	2.9°	1	RP○T1040
2.500	**ARP6UPR2506CA**	●	Y	.236	6	Fine	2.026	2.000	1.000	1.4	.098	.098	3.1°	1	RP○T1248
2.500	**ARP6UPR2507CA**	●	Y	.236	7	Extra Fine	2.026	2.000	1.000	1.4	.098	.098	3.1°	1	RP○T1248
3.000	**ARP6UPR0308CA**	●	Y	.236	8	Fine	2.526	2.000	1.000	1.8	.098	.098	2.4°	1	RP○T1248
3.000	**ARP6UPR0309CA**	●	Y	.236	9	Extra Fine	2.526	2.000	1.000	1.8	.098	.098	2.4°	1	RP○T1248
4.000	**ARP6UPR0409EA**	●	Y	.236	9	Fine	3.526	2.500	1.500	4.5	.098	.098	1.7°	2	RP○T1248
4.000	**ARP6UPR0411EA**	●	Y	.236	11	Extra Fine	3.526	2.500	1.500	4.5	.098	.098	1.7°	2	RP○T1248

∗1 Y=Yes, N=No
∗2 Number of Teeth
Note 1) For the maximum width of cut (APMX), Please refer to page 12.

Mounting Dimensions

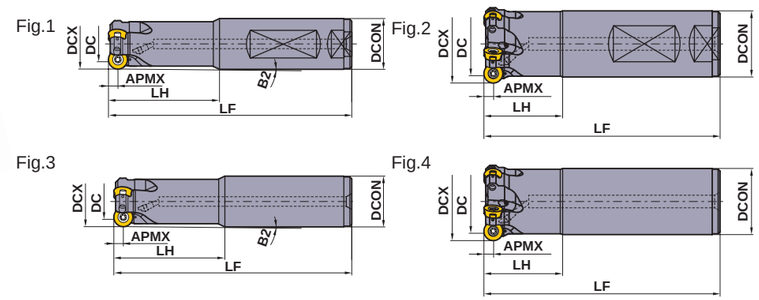
(inch)

DCX	Order Number	DCON	CBDP	DAH	DCCB	LCCB	DCSFMS	KWW	L8	Fig.
1.500	**ARP5UPR15**	.500	.630	.433	.276	.359	1.250	.250	.156	1
1.500	**ARP6UPR15**	.500	.630	.433	.276	.354	1.250	.250	.156	1
2.000	**ARP5UPR02**	.750	.748	.630	.413	.649	1.750	.313	.187	1
2.000	**ARP6UPR02**	.750	.748	.630	.413	.643	1.750	.313	.187	1
2.500	**ARP5UPR25**	1.000	.945	.787	.539	.702	2.190	.375	.219	1
2.500	**ARP6UPR25**	1.000	.945	.787	.539	.696	2.190	.375	.219	1
3.000	**ARP6UPR03**	1.000	.945	.787	.539	.696	2.190	.375	.219	1
4.000	**ARP6UPR04**	1.500	1.417	1.500	2.205	.802	3.500	.625	.375	2

Dimensions and Symbols (ISO 13399 Compliance)

DCX = Cutting Diameter Maximum
RE = Corner Radius
DC = Cutting Diameter
LF = Functional Length
DCON = Connection Diameter
WT = Weight of Item
A1 = Max. Width of Cut in the Radius Direction
AZ = Plunge Depth Maximum
RMPX = Max.Ramping Angle

● : USA Stock



■ Shank Type

KAPR: R
GAMP: +4° GAMF : -6°
DCON = inch size

(inch)

DCX	Order Number	Stock R	∗1 Coolant Hole	RE	∗2 No.T	DC	LF	LF	DCON	B2	WT (lbs)	Max. Depth of Cut A1	Max. Depth of Cut AZ	RMPX	Fig.	Insert Type
1.000	**ARP5UPR1603FA16M**	●	Y	.197	3	.608	5.500	2.250	1.000	1.170°	.9	.039	.018	1.9°	1	RP○T1040
1.000	**ARP5UPR1602SA16L**	●	Y	.197	2	.608	7.000	3.000	1.000	.570°	1.3	.039	.018	1.9°	3	RP○T1040
1.250	**ARP5UPR2004FA20M**	●	Y	.197	4	.858	6.000	2.750	1.250	.760°	1.7	.039	.026	1.9°	1	RP○T1040
1.250	**ARP5UPR2003SA20L**	●	Y	.197	3	.858	8.000	4.750	1.250	1.010°	2.2	.039	.026	1.9°	3	RP○T1040
1.250	**ARP6UPR2003FA20M**	●	Y	.236	3	.781	6.000	2.750	1.250	.950°	1.7	.039	.024	2.0°	1	RP○T1248
1.250	**ARP6UPR2002SA20L**	●	Y	.236	2	.781	8.000	4.750	1.250	.510°	2.2	.039	.024	2.0°	3	RP○T1248
1.500	**ARP6UPR2404FA20M**	●	Y	.236	4	1.028	6.000	2.000	1.250	-	1.8	.098	.041	2.7°	2	RP○T1248
1.500	**ARP6UPR2403SA20L**	●	Y	.236	3	1.028	10.000	2.000	1.250	-	3.2	.098	.041	2.7°	4	RP○T1248
2.000	**ARP6UPR3205FA24M**	●	Y	.236	5	1.528	6.000	2.000	1.500	-	2.7	.098	.067	2.8°	2	RP○T1248
2.000	**ARP6UPR3204SA24L**	●	Y	.236	4	1.528	10.000	2.000	1.500	-	4.7	.098	.067	2.8°	4	RP○T1248

∗1 Y=Yes, N=No
∗2 Number of Teeth
Note 1) For the maximum width of cut (APMX), Please refer to page 12.

Spare Parts

(inch)

Tool Holder Type	Clamp Screw ∗	Wrench (Insert)	Anti-seize Lubricant
ARP5	TPS351B	TIP10D	MK1KS
ARP6	TPS4	TIP15D	MK1KS

∗ Clamp Torque (lbf-in) : TPS351B=22,TPS4=31

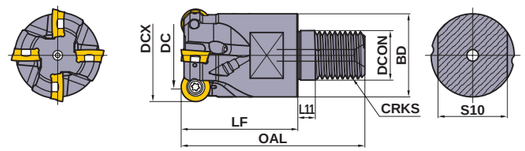
	≤1Mpa (≤20 l/min.)	←Standard→	≥5Mpa (≥30 l/min.)	≥7Mpa (≥50 l/min.)	To Plug a Coolant Hole
Nozzle Dia.	ø.024"	ø.031"	ø.047"	ø.063"	–
Order Number	**HSD04004H06**	**HSD04004H08**	**HSD04004H12**	**HSD04004H16**	**HSS04004**

Note 1) Coolant nozzles are available with varying diameters for adjusting coolant pressure. Select nozzles as required by the specification.
Clamp Torque (lbf-in) : HSS04004H○○= 13, HSS04004○○= 13

Dimensions and Symbols (ISO 13399 Compliance)

DCX = Cutting Diameter Maximum
DCON = Connection Diameter
CBDP = Connection Bore Depth
DAH = Diameter Access Hole
DCCB = Fixing Bolt Seat Diameter
LCCB = Counterbore Depth Connection Bore
DCSFMS = Contact Surface Diameter Machine Side
KWW = Keyway Width
L8 = Depth of Keyway

Round Insert Cutter for Difficult-to-Cut Materials



Right hand tool holder only.

■Screw-in Type

KAPR: R
GAMP: +4° GAMF : -6°—-7°
With Coolant Hole

(inch)

DCX	Order Number	Stock	★1 Coolant Hole	RE	★2 No.T	DC	DCON	DCSFMS	OAL	LF	S10	CRKS	WT (lbs)	Max. Depth of Cut A1	Max. Depth of Cut AZ	RMPX	Insert Type
		R															
1.000	**ARP5UPR1603AM1235**	●	Y	.197	3	.606	.492	.925	2.244	1.378	.748	M12	.2	–	.016	1.9°	RP○T1040
1.250	**ARP5UPR2004AM1640**	●	Y	.197	4	.856	.669	1.122	2.480	1.575	.945	M16	.4	.039	.026	1.9°	RP○T1040
1.250	**ARP6UPR2003AM1640**	●	Y	.236	3	.778	.669	1.122	2.480	1.575	.945	M16	.4	.039	.024	2.0°	RP○T1248
1.500	**ARP6UPR2404AM1640**	●	Y	.236	4	1.028	.669	1.122	2.480	1.575	.945	M16	.4	.098	.045	2.7°	RP○T1248

★1 Y=Yes, N=No
★2 Number of Teeth
Note 1) For the maximum width of cut (APMX), Please refer to page 12.

Spare Parts

(inch)

Tool Holder Type	★ Clamp Screw	Wrench (Insert)	Anti-seize Lubricant
ARP5	TPS351B	TIP10D	MK1KS
ARP6	TPS4	TIP15D	MK1KS

★ Clamp Torque (lbf-in) : TPS351B=22,TPS4=31

	≤1Mpa (≤20 l/min.)	←Standard→	≥5Mpa (≥30 l/min.)	≥7Mpa (≥50 l/min.)	To Plug a Coolant Hole
Nozzle Dia.	ø.024"	ø.031"	ø.047"	ø.063"	–
Order Number	**HSD04004H06**	**HSD04004H08**	**HSD04004H12**	**HSD04004H16**	**HSS04004**

Note 1) Coolant nozzles are available with varying diameters for adjusting coolant pressure. Select nozzles as required by the specification.
Clamp Torque (lbf-in) : HSS04004H○○= 13, HSS04004○○= 13

Dimensions and Symbols (ISO 13399 Compliance)

DCX = Cutting Diameter Maximum
RE = Corner Radius
DC = Cutting Diameter
DCON = Functional Length
DCSFMS = Contact Surface Diameter Machine Side
OAL = Overall Length
LF = Functional Length
CRKS = Connection Retention Knob Thread Size
WT = Weight of Item
A1 = Max. Width of Cut in the Radius Direction
AZ = Plunge Depth Maximum
RMPX = Max.Ramping Angle

● : USA Stock ★ : Stocked in Japan

MULTI FUNCTIONAL MILLING

KAPR R

ARP

P M K N S H

Metric Standard

■Arbor Type

KAPR: R
GAMP: +4° GAMF : -6°
DCON = inch size, With Coolant Hole

(mm)

DCX	Order Number	Stock	RE	★1 No.T	DC	LF	DCON	WT (kg)	Max. Depth of Cut A1	Max. Depth of Cut AZ	RMPX	Fig.	Insert Type
		R											
80	**ARP6PR08008CA**	★	6	8	68	50	25.4	0.9	2.5	2.5	2.3°	1	RP○T1248
80	**ARP6PR08009CA**	★	6	9	68	50	25.4	0.9	2.5	2.5	2.3°	1	RP○T1248
100	**ARP6PR10009DA**	★	6	9	88	50	31.75	1.4	2.5	2.5	1.7°	2	RP○T1248
100	**ARP6PR10011DA**	★	6	11	88	50	31.75	1.4	2.5	2.5	1.7°	2	RP○T1248

DCON = mm size, With Coolant Hole

(mm)

DCX	Order Number	Stock	RE	★1 No.T	DC	LF	DCON	WT (kg)	Max. Depth of Cut A1	Max. Depth of Cut AZ	RMPX	Fig.	Insert Type
		R											
40	**ARP5P-040A05AR**	★	5	5	29.9	40	16	0.2	2.0	1.3	2.8°	1	RP○T1040
40	**ARP6P-040A04AR**	★	6	4	28	40	16	0.2	2.0	1.1	2.7°	1	RP○T1248
50	**ARP5P-050A06AR**	★	5	6	39.9	40	22	0.3	2.0	1.8	2.9°	1	RP○T1040
50	**ARP5P-050A07AR**	★	5	7	39.9	40	22	0.3	2.0	1.8	2.9°	1	RP○T1040
50	**ARP6P-050A05AR**	★	6	5	38	40	22	0.3	2.0	1.7	2.9°	1	RP○T1248
50	**ARP6P-050A06AR**	★	6	6	38	40	22	0.3	2.0	1.7	2.9°	1	RP○T1248
63	**ARP5P-063A07AR**	★	5	7	52.9	40	22	0.5	2.5	2.5	3.0°	1	RP○T1040
63	**ARP5P-063A08AR**	★	5	8	52.9	40	22	0.5	2.5	2.5	3.0°	1	RP○T1040
63	**ARP6P-063A06AR**	★	6	6	51	40	22	0.4	2.5	2.5	3.1°	1	RP○T1248
63	**ARR6P-063A07AR**	★	6	7	51	40	22	0.4	2.5	2.5	3.1°	1	RP○T1248
80	**ARP6P-080A08AR**	★	6	8	68	50	27	0.9	2.5	2.5	2.3°	1	RP○T1248
80	**ARP6P-080A09AR**	★	6	9	68	50	27	0.9	2.5	2.5	2.3°	1	RP○T1248
100	**ARP6P-100B09AR**	★	6	9	88	50	32	1.5	2.5	2.5	1.7°	2	RP○T1248
100	**ARP6P-100B11AR**	★	6	11	88	50	32	1.5	2.5	2.5	1.7°	2	RP○T1248

★1 Number of Teeth
Note 1) For the maximum width of cut (APMX), Please refer to page 12.

Fig.1
ø40
ø50
ø63
ø80

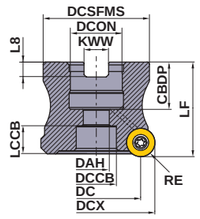
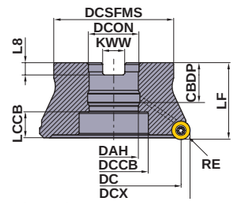


Fig.2
ø100

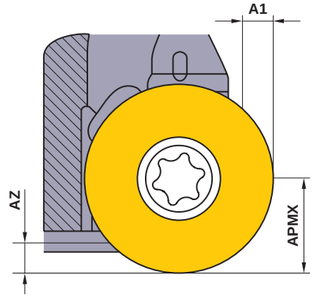


Right hand tool holder only.

DCX		Set Bolt	Geometry
DCON inch size	DCON mm size		
ϕ80	ϕ40	HSC08025H	① ②
–	ϕ50, ϕ63	HSC10030H	①
–	ϕ80	HSC12035H	
ϕ100	ϕ100	MBA16033H	②

Dimensions and Symbols (ISO 13399 Compliance)

DCX = Cutting Diameter Maximum
RE = Corner Radius
DC = Cutting Diameter
LF = Functional Length
DCON = Connection Diameter
WT = Weight of Item
A1 = Max. Width of Cut in the Radius Direction
AZ = Plunge Depth Maximum
RMPX = Max.Ramping Angle



Round Insert Cutter for Difficult-to-Cut Materials

Mounting Dimensions

(mm)

DCX	Order Number	DCON	CBDP	DAH	DCCB	LCCB	DCSFMS	KWW	L8	Fig.
40	**ARP5P-040A05AR**	16	18	9	14	14.0	34	8.4	5.6	1
40	**ARP6P-040A04AR**	16	18	9	13.4	13.9	34	8.4	5.6	1
50	**ARP5P-050A06AR**	22	20	11	17	12.0	45	10.4	6.3	1
50	**ARP5P-050A07AR**	22	20	11	17	12.0	45	10.4	6.3	1
50	**ARP6P-050A05AR**	22	20	11	17	11.9	45	10.4	6.3	1
50	**ARP6P-050A06AR**	22	20	11	17	11.9	45	10.4	6.3	1
63	**ARP5P-063A07AR**	22	20	11	17	12.0	50	10.4	6.3	1
63	**ARP5P-063A08AR**	22	20	11	17	12.0	50	10.4	6.3	1
63	**ARP6P-063A06AR**	22	20	11	17	11.9	50	10.4	6.3	1
63	**ARR6P-063A07AR**	22	20	11	17	11.9	50	10.4	6.3	1
80	**ARP6PR08008CA**	25.4	26	20	13	14.9	56	9.5	6.0	1
80	**ARP6PR08009CA**	25.4	26	20	13	14.9	56	9.5	6.0	1
80	**ARP6P-080A08AR**	27	23	13	20	14.9	56	12.4	7.0	1
80	**ARP6P-080A09AR**	27	23	13	20	14.9	56	12.4	7.0	1
100	**ARP6PR10009DA**	31.75	32	31.75	45	11.9	70	12.7	8.0	2
100	**ARP6PR10011DA**	31.75	32	31.75	45	11.9	70	12.7	8.0	2
100	**ARP6P-100B09AR**	32	26	45	32	16.9	78	14.4	8.0	2
100	**ARP6P-100B11AR**	32	26	45	32	16.9	78	14.4	8.0	2

Spare Parts

(mm)

Tool Holder Type	Clamp Screw *	Wrench (Insert)	Anti-seize Lubricant
ARP5	TPS351B	TIP10D	MK1KS
ARP6	TPS4	TIP15D	MK1KS

★ Clamp Torque (N • m) : TPS351B=2.5,TPS4=3.5

	≤1Mpa (≤20 l/min.)	←Standard→	≥5Mpa (≥30 l/min.)	≥7Mpa (≥50 l/min.)	To Plug a Coolant Hole
Nozzle Dia.	ø0.6mm	ø0.8mm	ø1.2mm	ø1.6mm	–
Order Number	**HSD04004H06**	**HSD04004H08**	**HSD04004H12**	**HSD04004H16**	**HSS04004**

Note 1) Coolant nozzles are available with varying diameters for adjusting coolant pressure. Select nozzles as required by the specification.
Note 2) Use HSS04004 (JIS B 1177 flat point M4x4, clamp torque 1.5 Nm) to plug the coolant hole.

Dimensions and Symbols (ISO 13399 Compliance)

DCX = Cutting Diameter Maximum
DCON = Connection Diameter
CBDP = Connection Bore Depth
DAH = Diameter Access Hole
DCCB = Fixing Bolt Seat Diameter
LCCB = Counterbore Depth Connection Bore
DCSFMS = Contact Surface Diameter Machine Side
KWW = Keyway Width
L8 = Depth of Keyway

★ : **Stocked in Japan**

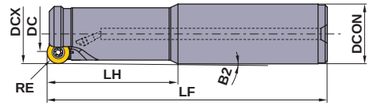


Fig.1

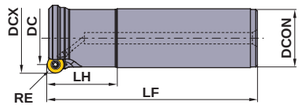


Fig.2

■Arbor Type

KAPR: R
GAMP: +4° GAMF : -6°—-7°
With Coolant Hole

(mm)

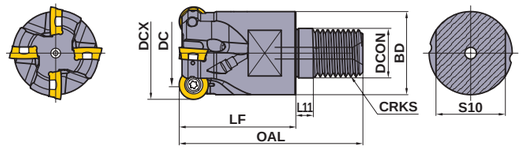
DCX	Order Number	Stock R	RE	*1 No.T	DC	LF	LH	DCON	B2	WT (kg)	Max. Depth of Cut A1	Max. Depth of Cut AZ	RMPX	Fig.	Insert Type
25	**ARP5PR2503SA25M**	★	5	3	15	140	60	25	1.10°	0.4	1.0	0.40	1.8°	1	RP○T1040
25	**ARP5PR2502SA25L**	★	5	2	15	180	80	25	0.80°	0.6	1.0	0.40	1.8°	1	RP○T1040
32	**ARP5PR3204SA32M**	★	5	4	22	150	70	32	0.92°	0.8	1.0	0.65	1.9°	1	RP○T1040
32	**ARP6PR3203SA32M**	★	6	3	20	150	70	32	0.51°	0.8	1.0	0.60	2.0°	1	RP○T1248
32	**ARP5PR3203SA32L**	★	5	3	22	200	120	32	0.94°	1.0	1.0	0.65	1.9°	1	RP○T1040
32	**ARP6PR3202SA32L**	★	6	2	20	200	120	32	0.52°	1.0	1.0	0.60	2.0°	1	RP○T1248
40	**ARP6PR4004SA32M**	★	6	4	28	150	50	32	–	0.9	2.5	1.15	2.7°	2	RP○T1248
40	**ARP6PR4003SA32L**	★	6	3	28	250	50	32	–	1.5	2.5	1.15	2.7°	2	RP○T1248
50	**ARP6PR5005SA42M**	★	6	5	38	150	50	42	–	1.5	2.5	1.70	2.9°	2	RP○T1248
50	**ARP6PR5004SA42L**	★	6	4	38	250	50	42	–	2.5	2.5	1.70	2.9°	2	RP○T1248

*1 Number of Teeth
Note 1) For the maximum width of cut (APMX), Please refer to page 12.

Dimensions and Symbols (ISO 13399 Compliance)

DCX = Cutting Diameter Maximum
RE = Corner Radius
DC = Cutting Diameter
LF = Functional Length
LH = Neck Length
DCON = Connection Diameter
WT = Weight of Item
A1 = Max. Width of Cut in the Radius Direction
AZ = Plunge Depth Maximum
RMPX = Max.Ramping Angle

Round Insert Cutter for Difficult-to-Cut Materials



■Screw-in Type

KAPR: R
GAMP: +4° GAMF : -6°—-7°
With Coolant Hole

(mm)

DCX	Order Number	Stock R	RE	⁎1 No.T	DC	DCON	DCSFMS	OAL	LF	S10	CRKS	WT (kg)	Max. Depth of Cut A1	Max. Depth of Cut AZ	RMPX	Insert Type
25	**ARP5PR2502AM1235**	★	5	2	15	12.5	23.5	57	35	19	M12	0.1	–	0.40	1.8°	RP○T1040
25	**ARP5PR2503AM1235**	★	5	3	15	12.5	23.5	57	35	19	M12	0.1	–	0.40	1.8°	RP○T1040
32	**ARP5PR3203AM1640**	★	5	3	22	17.0	28.5	63	40	24	M16	0.2	1.0	0.65	1.9°	RP○T1040
32	**ARP5PR3204AM1640**	★	5	4	22	17.0	28.5	63	40	24	M16	0.2	1.0	0.65	1.9°	RP○T1040
32	**ARP6PR3202AM1640**	★	6	2	20	17.0	28.5	63	40	24	M16	0.2	1.0	0.60	2.0°	RP○T1248
32	**ARP6PR3203AM1640**	★	6	3	20	17.0	28.5	63	40	24	M16	0.2	1.0	0.60	2.0°	RP○T1248
40	**ARP6PR4003AM1640**	★	6	3	28	17.0	28.5	63	40	24	M16	0.2	2.5	1.15	2.7°	RP○T1248
40	**ARP6PR4004AM1640**	★	6	4	28	17.0	28.5	63	40	24	M16	0.2	2.5	1.15	2.7°	RP○T1248

⁎1 Number of Teeth
Note 1) For the maximum width of cut (APMX), Please refer to page 12.

Spare Parts

(mm)

Tool Holder Type	⁎ Clamp Screw	Wrench (Insert)	Anti-seize Lubricant
ARP5	TPS351B	TIP10D	MK1KS
ARP6	TPS4	TIP15D	MK1KS

⁎ Clamp Torque (N • m) : TPS351B=2.5,TPS4=3.5

	≤1Mpa (≤20 l/min.)	←Standard→	≥5Mpa (≥30 l/min.)	≥7Mpa (≥50 l/min.)	To Plug a Coolant Hole
Nozzle Dia.	ø0.6mm	ø0.8mm	ø1.2mm	ø1.6mm	–
Order Number	**HSD04004H06**	**HSD04004H08**	**HSD04004H12**	**HSD04004H16**	**HSS04004**

Note 1) Coolant nozzles are available with varying diameters for adjusting coolant pressure. Select nozzles as required by the specification.
Note 2) Use HSS04004 (JIS B 1177 flat point M4x4, clamp torque 1.5 Nm) to plug the coolant hole.

Dimensions and Symbols (ISO 13399 Compliance)

DCX = Cutting Diameter Maximum
RE = Corner Radius
DC = Cutting Diameter
DCON = Functional Length
DCSFMS = Contact Surface Diameter Machine Side
OAL = Overall Length
LF = Functional Length
CRKS = Connection Retention Knob Thread Size
WT = Weight of Item
A1 = Max. Width of Cut in the Radius Direction
AZ = Plunge Depth Maximum
RMPX = Max.Ramping Angle

● : USA Stock ★ : Stocked in Japan (10 inserts in one case)

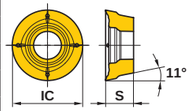
Inserts

(inch)

Workpiece Material
M Stainless Steels
S Heat-resistant Alloys, Titanium Alloys

Cutting Conditions (Guide) :
● : Stable Cutting ◐ : General Cutting
✤ : Unstable Cutting

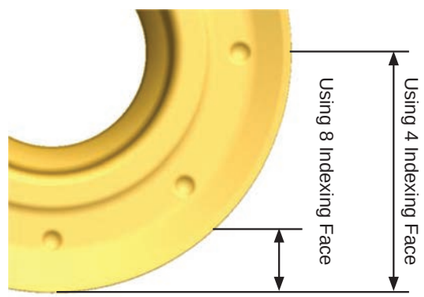
Edge Preparation (Honing) :
E : Round

Shape	Holder	Order Number	Type	Class	Edge Preparation	Coated MC7020	Coated MP7130	Coated MP9130	Coated MP9140	IC	S	APMX 4 Seats	APMX 8 Seats	Geometry
	ARP5	**RPHT1040M0E4-L**	Low Resistance, High Precision	H	E	●	●	●		.394	.156	.197	–	
		RPMT1040M0E4-L	Low Resistance	M	E	●	●	●		.394	.156	.197	–	
		NEW **RPMT1040M0E8-L1**	Low Resistance, 8 Seats	M	E	●	●	●	●	.394	.156	.197	.055	
		NEW **RPMT1040M0E4-L2**	Low Resistance, High Rigidity	M	E			●		.394	.156	.197	–	
		RPHT1040M0E4-M	General, High Precision	H	E	●	●	●		.394	.156	.197	–	
		RPMT1040M0E4-M	General Purpose	M	E	●	●	●		.394	.156	.197	–	
		NEW **RPMT1040M0E8-M1**	General, 8 Seats	M	E	●	●	●	●	.394	.156	.197	.055	
		NEW **RPMT1040M0E4-M2**	General, High Rigidity	M	E			●		.394	.156	.197	–	
		RPHT1040M0E4-R	Reinforced Edge, High Precision	H	E	●	●	●		.394	.156	.197	–	
		RPMT1040M0E4-R	Reinforced Edge	M	E	●	●	●		.394	.156	.197	–	
		NEW **RPMT1040M0E8-R1**	Reinforced Edge, 8 Seats	M	E	●	●	●		.394	.156	.197	.055	
	ARP6	**RPHT1248M0E4-L**	Low Resistance, High Precision	H	E	●	●	●		.472	.187	.236	–	
		RPMT1248M0E4-L	Low Resistance	M	E	●	●	●		.472	.187	.236	–	
		NEW **RPMT1248M0E8-L1**	Low Resistance, 8 Seats	M	E	●	●	●	●	.472	.187	.236	.067	
		NEW **RPMT1248M0E4-L2**	Low Resistance, High Rigidity	M	E			●		.472	.187	.236	–	
		RPHT1248M0E4-M	General, High Precision	H	E	●	●	●		.472	.187	.236	–	
		RPMT1248M0E4-M	General Purpose	M	E	●	●	●		.472	.187	.236	–	
		NEW **RPMT1248M0E8-M1**	General, 8 Seats	M	E	●	●	●	●	.472	.187	.236	.067	
		NEW **RPMT1248M0E4-M2**	General, High Rigidity	M	E			●		.472	.187	.236	–	
		RPHT1248M0E4-R	Reinforced Edge, High Precision	H	E	●	●	●		.472	.187	.236	–	
		RPMT1248M0E4-R	Reinforced Edge	M	E	●	●	●		.472	.187	.236	–	
		NEW **RPMT1248M0E8-R1**	Reinforced Edge, 8 Seats	M	E	●	●	●		.472	.187	.236	.067	

● = NEW

Depth of cut (ap) for 8 indexing face insert

8 indexing face type inserts can also be used at the same depth of cut as the 4 face type insert.



Round Insert Cutter for Difficult-to-Cut Materials

Recommended Cutting Conditions

■ Dry Cutting

(inch)

	Work Material	Hardness	Grade	vc (SFM)	fz (IPT)
M	Austenitic Stainless Steel	≤200HB	**MC7020**	720 (560—885)	.008 (.004—.014)
			MP7130	655 (490—820)	.008 (.004—.014)
	Austenitic Stainless Steel	>200HB	**MC7020**	620 (460—785)	.008 (.004—.014)
			MP7130	560 (395—720)	.008 (.004—.014)
	Duplex Stainless Steel	≤280HB	**MC7020**	590 (425—755)	.008 (.004—.014)
			MP7130	525 (360—690)	.008 (.004—.014)
	Ferritic and Martensitic Stainless Steel	≤200MPa	**MC7020**	785 (620—950)	.008 (.004—.014)
			MP7130	655 (490—820)	.008 (.004—.014)
	Ferritic and Martensitic Stainless Steel	>200HB	**MC7020**	785 (620—950)	.008 (.004—.014)
			MP7130	655 (490—820)	.008 (.004—.014)
	Precipitation Hardening Stainless Steel	<450HB	**MC7020**	560 (395—720)	.008 (.004—.014)
			MP7130	490 (330—655)	.008 (.004—.014)

■ Wet Cutting

(inch)

	Work Material	Hardness	Grade	vc (SFM)	fz (IPT)
M	Austenitic Stainless Steel	≤200HB	**MC7020**	490 (330—655)	.008 (.004—.014)
			MP7130	425 (260—590)	.008 (.004—.014)
	Austenitic Stainless Steel	>200HB	**MC7020**	395 (230—560)	.008 (.004—.014)
			MP7130	330 (260—490)	.008 (.004—.014)
	Duplex Stainless Steel	≤280HB	**MC7020**	395 (230—560)	.008 (.004—.014)
			MP7130	330 (260—490)	.008 (.004—.014)
	Ferritic and Martensitic Stainless Steel	≤200MPa	**MC7020**	560 (395—720)	.008 (.004—.014)
			MP7130	425 (260—590)	.008 (.004—.014)
	Ferritic and Martensitic Stainless Steel	>200HB	**MC7020**	560 (395—720)	.008 (.004—.014)
			MP7130	425 (260—590)	.008 (.004—.014)
	Precipitation Hardening Stainless Steel	<450HB	**MC7020**	360 (195—525)	.008 (.004—.014)
			MP7130	295 (165—460)	.008 (.004—.014)
S	Titanium Alloy	—	**MP9130**	150 (100—180)	.004 (.002—.006)
			MP9140	130 (100—165)	.004 (.002—.006)
	Heat Resistant Alloy	—	**MP9130**	115 (50—150)	.004 (.002—.006)
			MP9140	100 (50—130)	.004 (.002—.006)

Notes:
- ∗ Actual cutting conditions are estimated to avoid chatter vibration with high rigidity of a machine or work material. Make appropriate adjustments when chatter and/or insert chipping occurs during cutting. Use with lowered conditions when there is a big overhang and/or when pocket-cutting.
- ∗ Feed rate for recommended cutting conditions table above based when axial depth of cut is ap=.098" with ARP5, and when depth of cut is ap=.118" with ARP6.
- ∗ Due to the chip thinning effect when the axial depth of cut fluctuates, feed rate compensation table below shows (correction values "F") to help calculate correct feed.
- ∗ Example: Feed recommended for ARP5, 304 Stainless steel, MP7130, ap=.039" is .008IPTx1.5(correction values "F")=.012IPT.
- ∗ For slotting, use 70% of the recommended feed rate listed above. For ramping, helical cutting, and plunging, use 50% of the recommended feed rate listed above.
- ∗ Internal coolant is recommended in titanium alloy and heat resistant alloy machining.

■ Feed rate compensation table, (correction values "F") based on axial depth of cut "ap" fluctuation.

Holder	ap = .020"	ap = .039"	ap = .059"	ap = .079"	ap = .098"	ap = .118"	ap = .138"	ap = .157"	ap = .197"	ap = .236"
ARP5	2.3	1.5	1.2	1.1	1.0	.9	.8	.8	.8	—
ARP6	2.5	1.7	1.3	1.1	1.0		.9	.9	.8	.8

∗ Tool body durability may weaken, when the amount of axial cutting exceeds ARP5=.197" and ARP6=.236".

■ Maximum Capacities for Each Type

(inch)

APMX	DCX	Order Number	Install	Type	Depth of Cut (4Seats) ap	Depth of Cut (4Seats) ae	Ramping RMPX(deg)	Helical Cutting DH min.	Helical Cutting DH max.	Plunging Depth AZ max.	Plunging A1
.197" 5mm	.984" 25mm	**ARP5PR2502AM1235**	Screw-in	Standard	≤ .098	≤1.00DCX	1.8°	1.575	1.890	.016	—
		ARP5PR2503AM1235	Screw-in	Fine Pitch	≤ .059	≤1.00DCX	1.8°	1.575	1.890	.016	—
		ARP5PR2503SA25M	Shank	Standard	≤ .059	≤1.00DCX	1.8°	1.575	1.890	.016	.039
		ARP5PR2502SA25L	Shank	Long	≤ .059	≤1.00DCX	1.8°	1.575	1.890	.016	.039
	1.000"	**ARP5UPR1603AM1235**	Screw-in	Fine Pitch	≤ .059	≤1.00DCX	1.9°	1.606	1.921	.018	.039
		ARP5UPR1603FA16M	Shank	Standard	≤ .059	≤1.00DCX	1.9°	1.606	1.921	.018	.039
		ARP5UPR1602SA16L	Shank	Long	≤ .098	≤1.00DCX	1.9°	1.606	1.921	.018	.039
	1.250"	**ARP5UPR2004AM1640**	Screw-in	Fine Pitch	≤ .098	≤1.00DCX	1.9°	2.106	2.421	.026	.039
		ARP5UPR2004FA20M	Shank	Standard	≤ .098	≤1.00DCX	1.9°	2.106	2.421	.026	.039
		ARP5UPR2003SA20L	Shank	Long	≤ .098	≤1.00DCX	1.9°	2.106	2.421	.026	.039
	1.260" 32mm	**ARP5PR3203AM1640**	Screw-in	Standard	≤ .098	≤1.00DCX	1.9°	2.126	2.441	.026	.039
		ARP5PR3204AM1640	Screw-in	Fine Pitch	≤ .098	≤1.00DCX	1.9°	2.126	2.441	.026	.039
		ARP5PR3204SA32M	Shank	Standard	≤ .098	≤1.00DCX	1.9°	2.126	2.441	.026	.039
		ARP5PR3203SA32L	Shank	Long	≤ .098	≤1.00DCX	1.9°	2.126	2.441	.026	.039
	1.500"	**ARP5UPR1504SA**	Arbor	Fine Pitch	≤ .098	≤1.00DCX	2.8°	2.606	2.921	.047	.079
		ARP5UPR1505SA	Arbor	Ex.-Fine	≤ .098	≤1.00DCX	2.8°	2.606	2.921	.047	.079
	1.575" 40mm	**ARP5P-040A05AR**	Arbor	Fine Pitch	≤ .098	≤1.00DCX	2.8°	2.756	3.071	.051	.079
	1.969" 50mm	**ARP5P-050A06AR**	Arbor	Fine Pitch	≤ .098	≤1.00DCX	2.9°	3.543	3.858	.073	.079
		ARP5P-050A07AR	Arbor	Ex.-Fine	≤ .059	≤1.00DCX	2.9°	3.543	3.858	.073	.079
	2.000"	**ARP5UPR0206AA**	Arbor	Fine Pitch	≤ .098	≤ .95DCX	2.9°	3.606	3.921	.007	.079
		ARP5UPR0207AA	Arbor	Ex.-Fine	≤ .059	≤ .95DCX	2.9°	3.606	3.921	.007	.079
	2.48" 63mm	**ARP5P-063A07AR**	Arbor	Fine Pitch	≤ .098	≤ .75DCX	3.0°	4.567	4.882	.098	.098
		ARP5P-063A08AR	Arbor	Ex.-Fine	≤ .059	≤ .75DCX	3.0°	4.567	4.882	.098	.098
	2.500"	**ARP5UPR2507CA**	Arbor	Fine Pitch	≤ .098	≤ .75DCX	2.9°	4.606	4.921	.098	.098
		ARP5UPR2508CA	Arbor	Ex.-Fine	≤ .059	≤ .75DCX	2.9°	4.606	4.921	.098	.098

Note 1) When drilling long chips may be generated.
Note 2) When cutting helical holes, do not exceed the largest APMX cutting depth per rotation.
Note 3) Calculate using the following formula for center tool tracks and ϕdc when cutting helical holes: Center tool tracks ϕdc=desired hole diameter ϕDH tool diameter ϕDCX
Note 4) Use of air blow to disperse chips effectively is strongly recommended.
Note 5) Insert pockets are small in fine pitch and small diameter cutters therefore care should be taken to avoid chip jamming. Regulate the feed and speed accordingly.
Note 6) When machining with a large diameter cutter at high feed rates, chip jamming may occur. Regulate the feed and speed accordingly.

Round Insert Cutter for Difficult-to-Cut Materials

(inch)

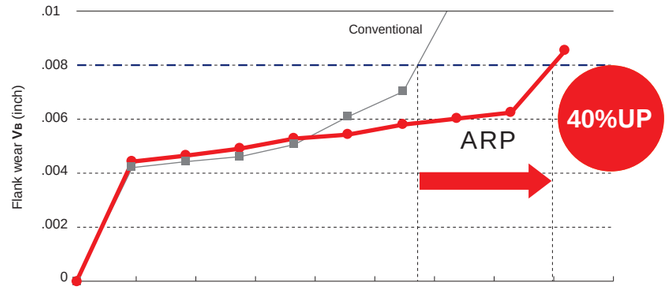
APMX	DCX	Order Number	Install	Type	Depth of Cut (4Seats) ap	Depth of Cut (4Seats) ae	Ramping RMPX(deg)	Helical Cutting DH min.	Helical Cutting DH max.	Plunging Depth AZ max.	Plunging A1
.236" 6mm	1.250"	ARP6UPR2003AM1640	Screw-in	Fine Pitch	≤ .138	≤1.00DCX	2.0°	2.028	2.421	.024	.039
		ARP6UPR2003FA20M	Shank	Standard	≤ .138	≤1.00DCX	2.0°	2.028	2.421	.024	.039
		ARP6UPR2002SA20L	Shank	Long	≤ .138	≤1.00DCX	2.0°	2.028	2.421	.024	.039
	1.260" 32mm	ARP6PR3202AM1640	Screw-in	Standard	≤ .138	≤1.00DCX	2.0°	2.047	2.441	.024	.039
		ARP6PR3203AM1640	Screw-in	Fine Pitch	≤ .138	≤1.00DCX	2.0°	2.047	2.441	.024	.039
		ARP6PR3203SA32M	Shank	Standard	≤ .138	≤1.00DCX	2.0°	2.047	2.441	.024	.039
		ARP6PR3202SA32L	Shank	Long	≤ .138	≤1.00DCX	2.0°	2.047	2.441	.024	.039
	1.575" 40mm	ARP6PR4003AM1640	Screw-in	Standard	≤ .138	≤1.00DCX	2.7°	2.677	3.071	.045	.098
		ARP6PR4004AM1640	Screw-in	Fine Pitch	≤ .138	≤1.00DCX	2.7°	2.677	3.071	.045	.098
		ARP6PR4004SA32M	Shank	Standard	≤ .138	≤1.00DCX	2.7°	2.677	3.071	.045	.098
		ARP6PR4003SA32L	Shank	Long	≤ .138	≤1.00DCX	2.7°	2.677	3.071	.045	.098
		ARP6P-040A04AR	Arbor	Fine Pitch	≤ .138	≤1.00DCX	2.7°	2.677	3.071	.045	.079
	1.500"	ARP6UPR2404AM1640	Screw-in	Fine Pitch	≤ .138	≤1.00DCX	2.7°	2.528	2.921	.041	.079
		ARP6UPR2404FA20M	Shank	Standard	≤ .138	≤1.00DCX	2.7°	2.528	2.921	.041	.079
		ARP6UPR2403SA20L	Shank	Long	≤ .138	≤1.00DCX	2.7°	2.528	2.921	.041	.079
		ARP6UPR1504SA	Arbor	Fine Pitch	≤ .138	≤1.00DCX	2.7°	2.528	2.921	.041	.079
	1.969" 50mm	ARP6PR5005SA42M	Shank	Standard	≤ .138	≤1.00DCX	2.9°	3.465	3.858	.067	.098
		ARP6PR5004SA42L	Shank	Long	≤ .138	≤1.00DCX	2.9°	3.465	3.858	.067	.098
		ARP6P-050A05AR	Arbor	Fine Pitch	≤ .138	≤1.00DCX	2.9°	3.465	3.858	.067	.079
		ARP6P-050A06AR	Arbor	Ex.-Fine	≤ .098	≤1.00DCX	2.9°	3.465	3.858	.067	.079
	2.000"	ARP6UPR3205FA24M	Shank	Standard	≤ .138	≤1.00DCX	2.8°	3.528	3.921	.067	.098
		ARP6UPR3204SA24L	Shank	Long	≤ .138	≤1.00DCX	2.8°	3.528	3.921	.067	.098
		ARP6UPR0205AA	Arbor	Fine Pitch	≤ .138	≤ .95DCX	2.8°	3.528	3.921	.067	.079
		ARP6UPR0206AA	Arbor	Ex.-Fine	≤ .098	≤ .95DCX	2.8°	3.528	3.921	.067	.079
	2.48" 63mm	ARP6P-063A06AR	Arbor	Fine Pitch	≤ .138	≤ .75DCX	3.1°	4.488	4.882	.098	.098
		ARP6P-063A07AR	Arbor	Ex.-Fine	≤ .098	≤ .75DCX	3.1°	4.488	4.882	.098	.098
	2.500"	ARP6UPR2506CA	Arbor	Fine Pitch	≤ .138	≤ .75DCX	3.1°	4.528	4.921	.098	.098
		ARP6UPR2507CA	Arbor	Ex.-Fine	≤ .098	≤ .75DCX	3.1°	4.528	4.921	.098	.098
	3.000"	ARP6UPR0308CA	Arbor	Fine Pitch	≤ .138	≤ .65DCX	2.4°	5.528	5.921	.098	.098
		ARP6UPR0309CA	Arbor	Ex.-Fine	≤ .098	≤ .65DCX	2.4°	5.528	5.921	.098	.098
	3.150" 80mm	ARP6PR08008CA	Arbor	Fine Pitch	≤ .138	≤ .60DCX	2.3°	5.827	6.220	.098	.098
		ARP6PR08009CA	Arbor	Ex.-Fine	≤ .098	≤ .60DCX	2.3°	5.827	6.220	.098	.098
		ARP6P-080A08AR	Arbor	Fine Pitch	≤ .138	≤ .60DCX	2.3°	5.827	6.220	.098	.098
		ARP6P-080A09AR	Arbor	Ex.-Fine	≤ .098	≤ .60DCX	2.3°	5.827	6.220	.098	.098
	3.937" 100mm	ARP6PR10009DA	Arbor	Fine Pitch	≤ .138	≤ .50DCX	1.7°	7.402	7.795	.098	.098
		ARP6PR10011DA	Arbor	Ex.-Fine	≤ .098	≤ .50DCX	1.7°	7.402	7.795	.098	.098
		ARP6P-100B09AR	Arbor	Fine Pitch	≤ .138	≤ .50DCX	1.7°	7.402	7.795	.098	.098
		ARP6P-100B11AR	Arbor	Ex.-Fine	≤ .098	≤ .50DCX	1.7°	7.402	7.795	.098	.098
	4.000"	ARP6UPR0409EA	Arbor	Fine Pitch	≤ .138	≤ .45DCX	1.7°	7.528	7.921	.098	.098
		ARP6UPR0411EA	Arbor	Ex.-Fine	≤ .098	≤ .45DCX	1.7°	7.528	7.921	.098	.098

Note 1) When drilling long chips may be generated.
Note 2) When cutting helical holes, do not exceed the largest APMX cutting depth per rotation.
Note 3) Calculate using the following formula for center tool tracks and ϕdc when cutting helical holes: Center tool tracks ϕdc=desired hole diameter ϕDH tool diameter ϕDCX
Note 4) Use of air blow to disperse chips effectively is strongly recommended.
Note 5) Insert pockets are small in fine pitch and small diameter cutters therefore care should be taken to avoid chip jamming. Regulate the feed and speed accordingly.
Note 6) When machining with a large diameter cutter at high feed rates, chip jamming may occur. Regulate the feed and speed accordingly.

Cutting Performance

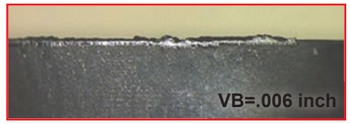
Cutting of 420 Stainless Steel

Long tool life! At least 40% more when compared to conventional tooling.

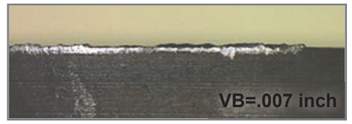


0	2	4	6	8	10	12	14	16	18	Cutting Time (min)
0	5.2	10.2	15.4	20.3	25.6	30.8	35.8	41.0	45.9	Cutting Length (feet)

<Cutting Conditions>
Tool : ARP5P-050A06AR
RPHT1040M0E4-R MC7020
Cutting Speed : 1150 SFM
Feed per Tooth : .014 IPT
Depth of Cut : ap=.098 inch
ae=.984 inch
Cutting Mode : Dry
Single Insert



ARP5 (Cutting Length 27.6 feet)

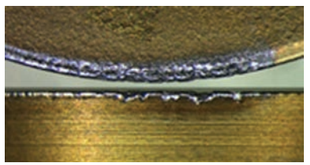


Conventional (Cutting Length 27.6 feet)

Cutting of 631 Precipitation Hardening Stainless Steel

Implementation of stable processing compared to conventional products with precipitation hardening stainless steel.

ARP5 (Cutting Length 1.3 feet)



VB=.006 inch Minute Chipping

Conventional A (Cutting Length 1.3 feet)

VB=.014 inch Large Chipping

Conventional B (Cutting Length 1.3 feet)

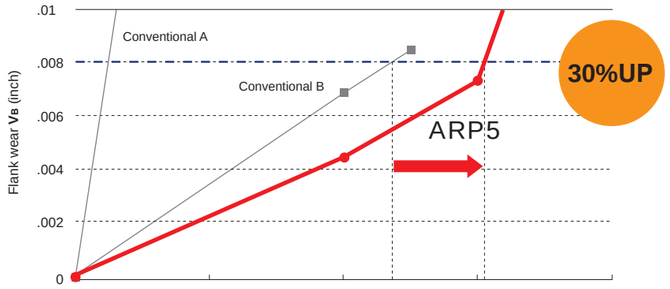
VB=.007 inch Chipping

<Cutting Conditions>
Tool : ARP5P-050A06AR
RPHT1040M0E4-L MP7130
Cutting Speed : 1150 SFM
Feed per Tooth : .010 IPT
Depth of Cut : ap=.098 inch
ae=.551 inch
Cutting Mode : Wet
Single Insert

Cutting Performance

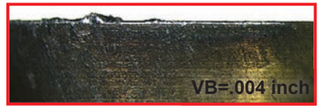
Cutting of 304 Stainless Steel

Long tool life! A 30% improvement when compared to conventional tooling.

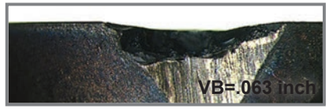


<Cutting Conditions>
Tool : ARP5P-050A06AR
RPHT1040M0E4-L MP7130
Cutting Speed : 720 SFM
Feed per Tooth : .014 IPT
Depth of Cut : ap=.098 inch
ae=.984 inch
Cutting Mode : Dry
Single Insert

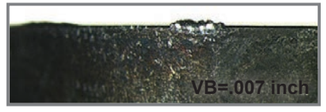
0	0.82	1.63	2.45	3.27	Cutting Time (min)
0	1.31	2.62	3.93	5.24	Cutting Length (feet)



ARP5 (Cutting Length 2.62 feet)



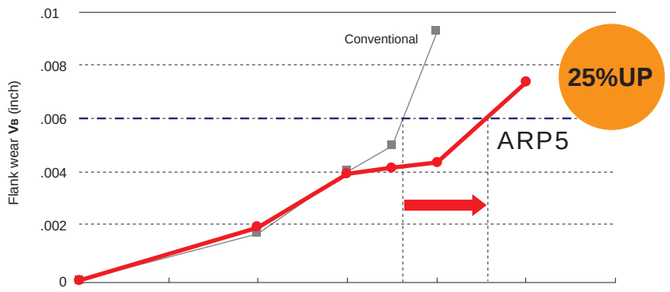
Conventional A (Cutting Length 2.62 feet)



Conventional B (Cutting Length 2.62 feet)

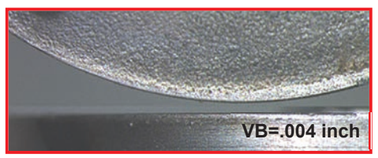
Cutting of Ti-6Al-4V

Long tool life! A 25% improvement when compared to conventional tooling.

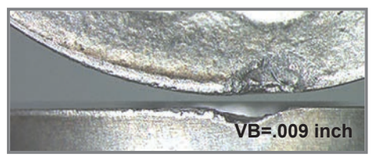


<Cutting Conditions>
Tool : ARP5P-050A06AR
RPHT1040M0E4-L MP9130
Cutting Speed : 195 SFM
Feed per Tooth : .004 IPT
Depth of Cut : ap=.098 inch
ae=.984 inch
Cutting Mode : Wet (Low Pressure)
Single Insert

0	13.1	26.2	39.3	52.4	65.4	78.5	Cutting Time (min)
0	1.64	3.28	4.92	6.56	8.20	9.84	Cutting Length (feet)



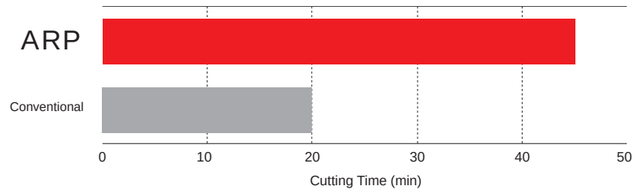
ARP5 (Cutting Length 6.56 feet)



Conventional (Cutting Length 6.56 feet)

Stainless Steel, Tool Life Comparison

MP9140 prevents breakage, it achieved more than twice longer tool life than Conventional.



<Cutting Conditions>
Workpiece Material : Stainless Steel
Cutter Dia : 1.575 inch
Cutting Speed : vc=765 SFM
Feed per Tooth : fz=.006 IPT
Depth of Cut : ap=.079 inch
ae=.787 inch
Cutting Mode : Dry Cutting

Application Examples

Cutter Body		**ARP6P-050A05AR**	**ARP6P-050A06AR**	**ARP6P-050A06AR**
Insert (Grade)		**RPHT1248M0E4-M (MC7020)**	**RPMT1248M0E4-R (MP7130)**	**RPMT1248M0E4-L (MP7130)**
Workpiece			Martensitic Stainless Steel 	Martensitic Stainless Steel 
Component		Power Generator Parts	Power Generator Parts	Aerospace Parts
Cutting Conditions	Cutting Speed (SFM)	930	820	655
	Feed per Tooth (IPT)	.01	.018	.01
	Depth of Cut (inch)	ap=.118 ae=1.18	ap=.098 ae=1.58	ap=.039 ae=.787
Cutting Mode		Air Blow	MQL	Dry
Results		Further machining still possible after completing double the normal cutting length.	Machining efficiency increased by 20% and insert life by 30%.	Successfully completed component with improved cutting conditions and some tool life remaining. Cycle time reduced by 47%.

Memo

DIA EDGE

MITSUBISHI MATERIALS U.S.A. CORPORATION

California Office (Headquarters)

3535 Hyland Avenue, Suite 200
Costa Mesa, CA 92626
Customer Service: 800.523.0800
Technical Service: 800.486.2341

North Carolina-MTEC (Marketing & Technical Center)

105 Corporate Center Drive, Suite A
Mooresville, NC 28117
Main: 980.312.3100
Fax: 704.746.9292

Chicago Office (Engineering)

1314B North Plum Grove Road
Schaumburg, IL 60173
Main: 847.252.6300
Fax: 847.519.1732

Toronto Office (Canada Branch)

3535 Laird Road
Units 15 & 16
Mississauga, Ontario, Canada L5L 5Y7
Main: 905.814.0240
Fax: 905.814.0245

MMC Metal de Mexico, S.A. DE C.V.

Av. La Cañada No.16,
Parque Industrial Bernardo
Quintana, El Marques,
Queretaro C.P. 76246 MEXICO
Main: +52.442.221.61.36
Fax: +52.442.221.61.34

Detroit Office (Moldino CS)

41700 Gardenbrook Road, Suite 120
Novi, MI 48375
Main: 248.308.2620
Fax: 248.308.2627

For Your Safety

- Don't handle inserts and chips without gloves.
- Please machine within the recommended application range and exchange expired tools with new ones in advance of breakage.
- Please use safety covers and wear safety glasses.
- When using compounded cutting oils, please take fire precautions.
- When attaching inserts or spare parts, please use only the correct wrench or driver.
- When using rotating tools, please make a trial run to check run-out, vibration and abnormal sounds etc.

MITSUBISHI MATERIALS U.S.A.

Product Brands Crafted by Mitsubishi Materials U.S.A.

DIA EDGE MOLDINO

www.DIAEDGE.MMUS.com
www.mmus-carbide.com

Tools specifications subject to change without notice.

B222A-US-2020.11