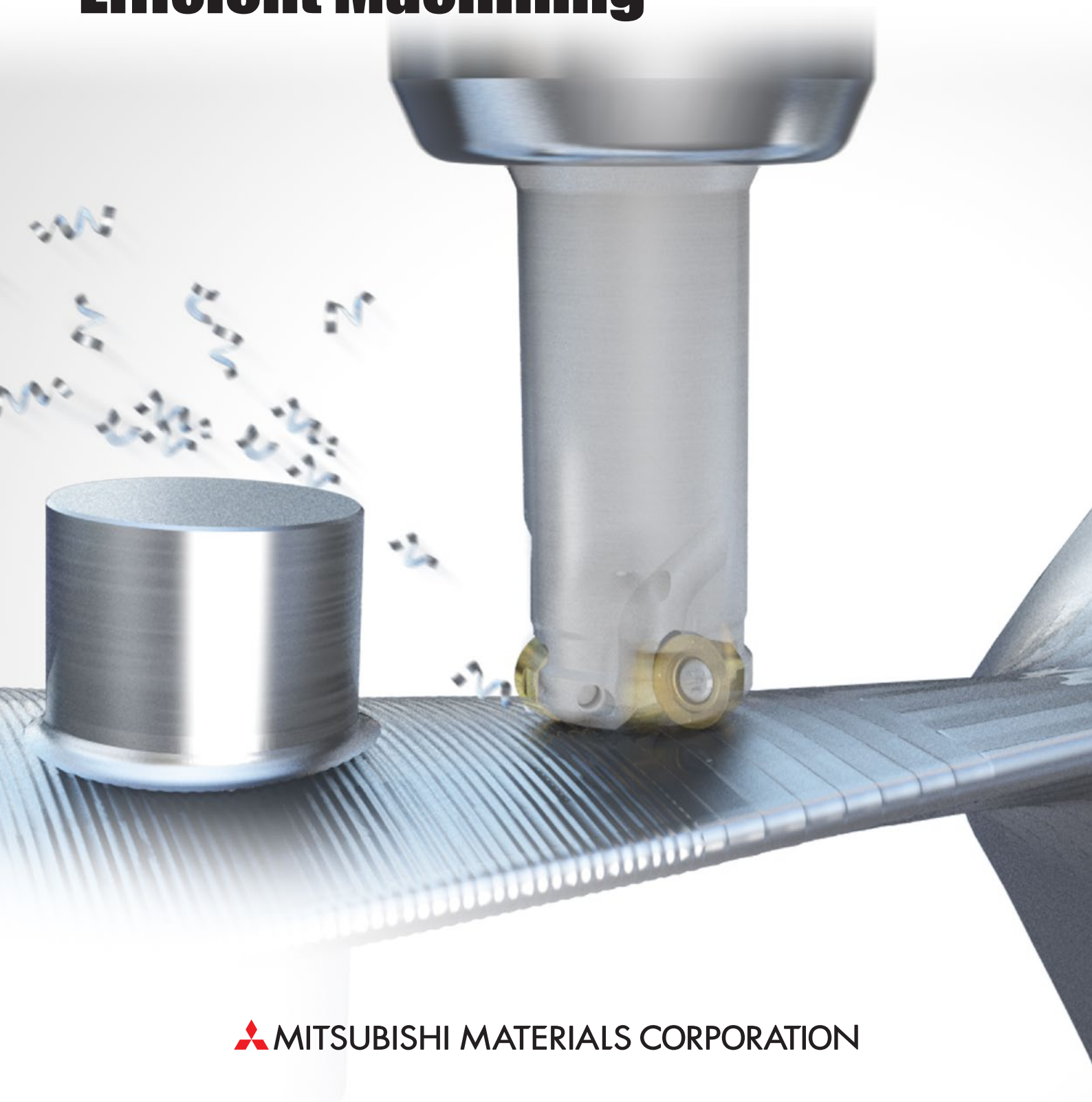


Round Insert Cutter for Difficult-to-cut Materials

ARP Series

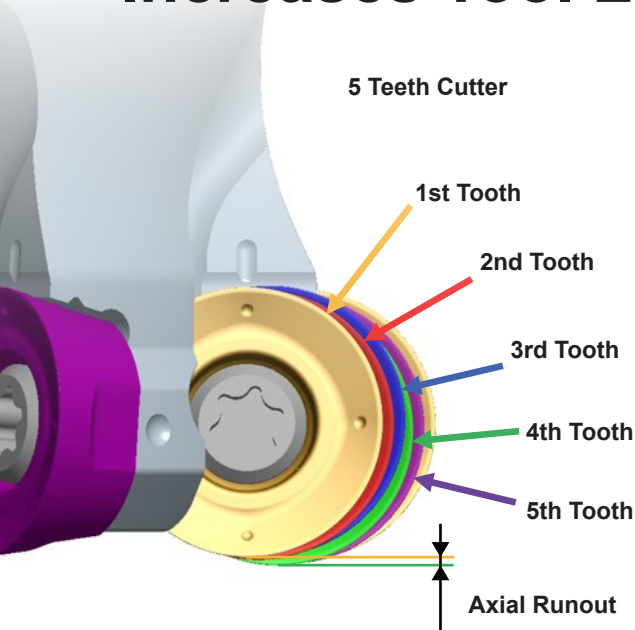
High Accuracy Run-out Provides
Efficient Machining



Round Insert Cutter for Difficult-to-cut Materials

ARP Series

Highest Level of Run-out Accuracy Increases Tool Life



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

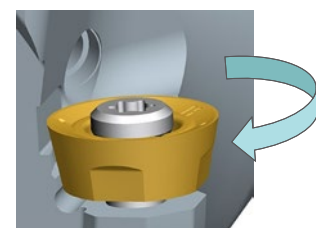
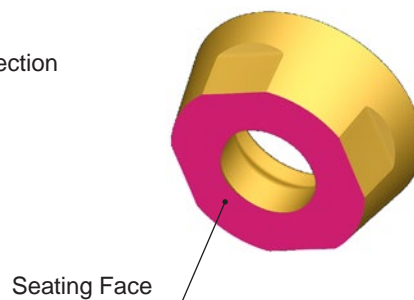
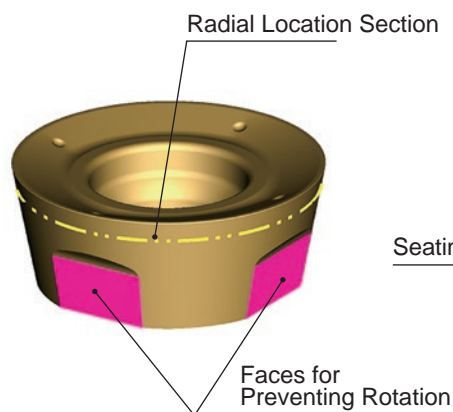
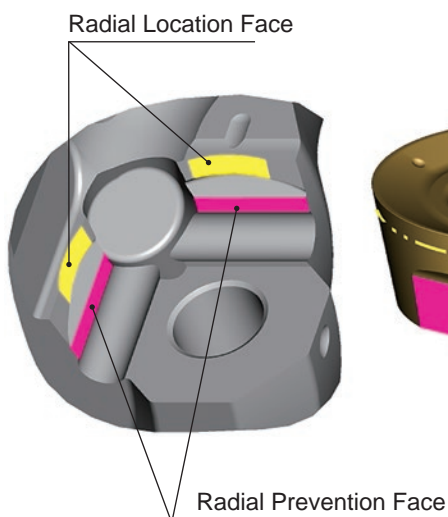
Compared to conventional tools

Axial runout
25%
improvement



Strong Clamping System

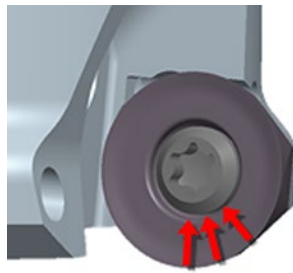
A wide seating face and 2 side location faces prevent inserts from moving during cutting.



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

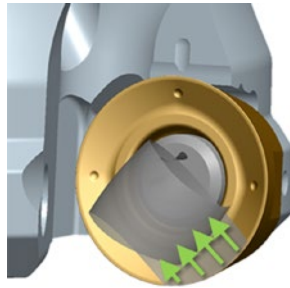
Choose 4 or 8 Corner Insert According to the Depth of Cut

8-corner inserts are economical for small depth of cut machining.

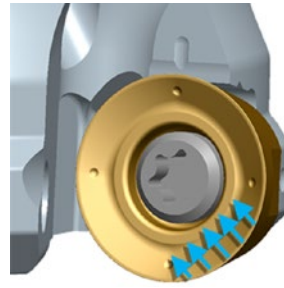


Rake design of 8 corner insert

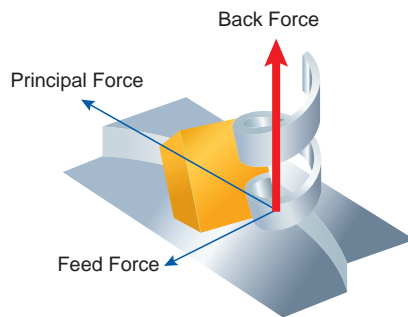
When the cutting depth is medium or higher, the rake face is in the same direction as the chip flow, achieving low cutting resistance. (4 corner insert)



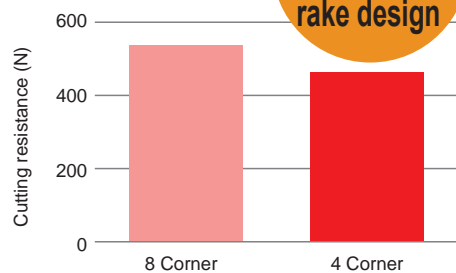
Even chip flow



Rake design of 4 corner insert

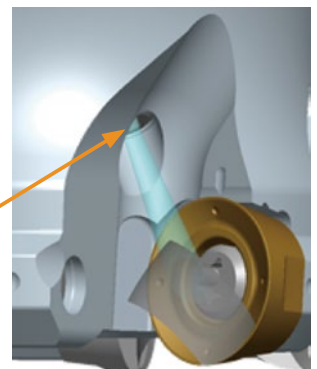
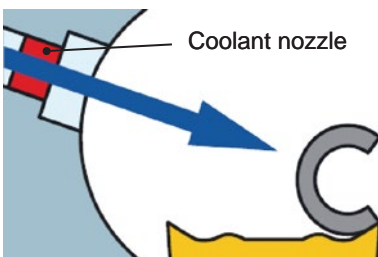


[Comparison of the back force]



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.



Select of coolant nozzle.

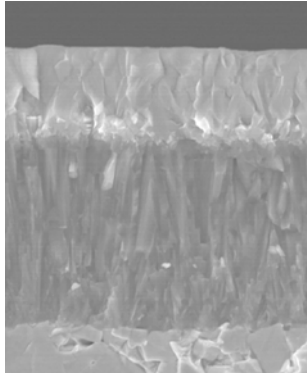
It prevents welding to the cutting edge by using a nozzle that can discharge chip at high pressure.

CVD Coated Grade for Machining of Stainless Steels

MC7020

MC7020 has 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 Al₂O₃ and fibrous TiCN layers deliver excellent wear resistance when milling a wide range of cast irons.

Improved Fracture Resistance

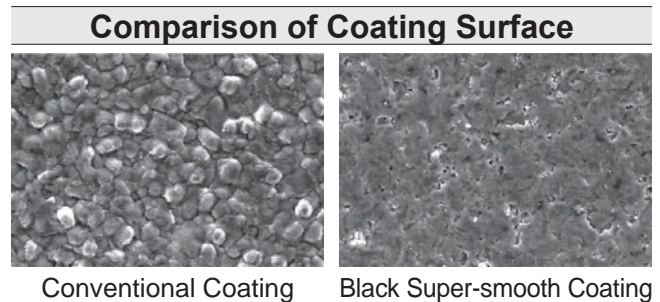
Use of a specially developed cemented carbide that provides superior resistance to fracture and thermal cracking prevents the cutting edge from sudden fracturing.

Reduced Abnormal Damage

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

Black Super-smooth Coating

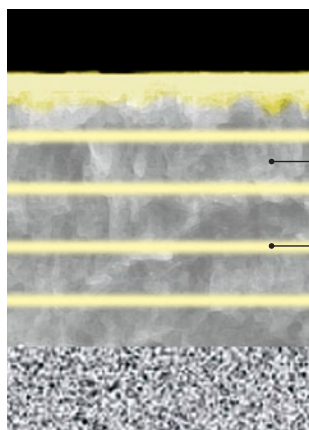
This smooth outer layer helps to prevent weld chipping.



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.

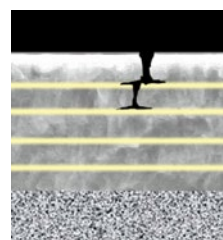


*Graphical representation.

Base Layer High Al-(Al, Ti)N




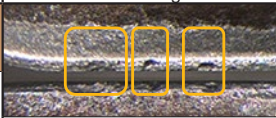
The new technology Al-(Al, Ti)N coating provides stabilisation of the high hardness phase and succeeds in dramatically improving wear, crater and welding resistance.

Each Grade Has a Layer Suitable for Each Application Area



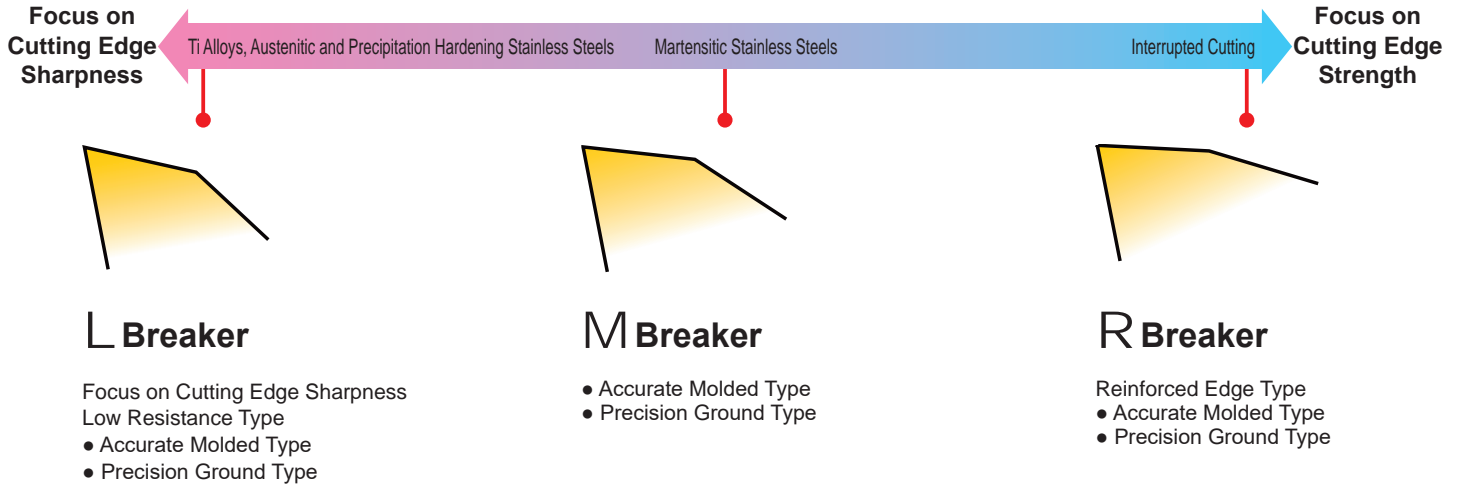
*Graphical representation.

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

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

Breaker System

Breaker series for various applications



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

ISO	CVD	PVD
10		
20	MC7020	
30		MP7130
40		

Stainless Steel **M**

ISO	PVD
10	
20	MP9130
30	
40	

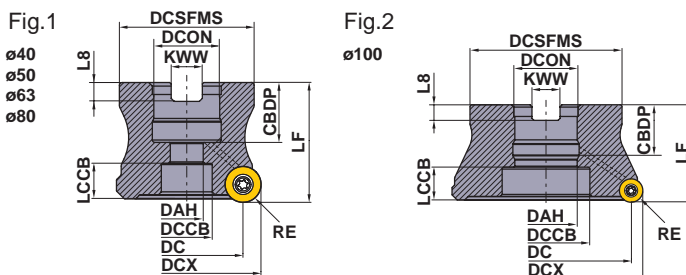
Heat Resistant Alloy • Ti Alloy **S**

Round Insert Cutter for Difficult-to-cut Materials

MULTI FUNCTIONAL MILLING



ARP



Right hand tool holder only.

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

Arbor Type

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

DCX	Order Number	Stock R	RE	*1 No.T	DC	LF	DCON	WT (kg)	Max. Depth of Cut		RMPX	Fig.	Insert Type
									A1	AZ			
80	ARP6PR08008CA	●	6	8	68	50	25.4	0.9	2.5	2.5	2.3°	1	RPOT1248
80	ARP6PR08009CA	●	6	9	68	50	25.4	0.9	2.5	2.5	2.3°	1	RPOT1248
100	ARP6PR10009DA	●	6	9	88	50	31.75	1.4	2.5	2.5	1.7°	2	RPOT1248
100	ARP6PR10011DA	●	6	11	88	50	31.75	1.4	2.5	2.5	1.7°	2	RPOT1248

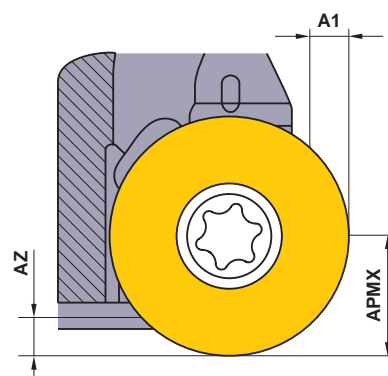
DCON=mm size, With Coolant Hole

DCX	Order Number	Stock R	RE	*1 No.T	DC	LF	DCON	WT (kg)	Max. Depth of Cut		RMPX	Fig.	Insert Type
									A1	AZ			
40	ARP5P-040A05AR	●	5	5	29.9	40	16	0.2	2.0	1.3	2.8°	1	RPOT1040
40	ARP6P-040A04AR	●	6	4	28	40	16	0.2	2.0	1.1	2.7°	1	RPOT1248
50	ARP5P-050A06AR	●	5	6	39.9	40	22	0.3	2.0	1.8	2.9°	1	RPOT1040
50	ARP5P-050A07AR	●	5	7	39.9	40	22	0.3	2.0	1.8	2.9°	1	RPOT1040
50	ARP6P-050A05AR	●	6	5	38	40	22	0.3	2.0	1.7	2.9°	1	RPOT1248
50	ARP6P-050A06AR	●	6	6	38	40	22	0.3	2.0	1.7	2.9°	1	RPOT1248
63	ARP5P-063A07AR	●	5	7	52.9	40	22	0.5	2.5	2.5	3.0°	1	RPOT1040
63	ARP5P-063A08AR	●	5	8	52.9	40	22	0.5	2.5	2.5	3.0°	1	RPOT1040
63	ARP6P-063A06AR	●	6	6	51	40	22	0.4	2.5	2.5	3.1°	1	RPOT1248
63	ARR6P-063A07AR	●	6	7	51	40	22	0.4	2.5	2.5	3.1°	1	RPOT1248
80	ARP6P-080A08AR	●	6	8	68	50	27	0.9	2.5	2.5	2.3°	1	RPOT1248
80	ARP6P-080A09AR	●	6	9	68	50	27	0.9	2.5	2.5	2.3°	1	RPOT1248
100	ARP6P-100B09AR	●	6	9	88	50	32	1.5	2.5	2.5	1.7°	2	RPOT1248
100	ARP6P-100B11AR	●	6	11	88	50	32	1.5	2.5	2.5	1.7°	2	RPOT1248

*1 Number of Teeth
 Note 1) For the maximum width of cut (APMX), Please refer to page 9.

Dimensions and Symbols (ISO 13399 Compliance)

- DCX = Maximum Hole Diameter
- RE = Corner R
- 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



● : Inventory maintained in Japan.




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 = Maximum Hole Diameter

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

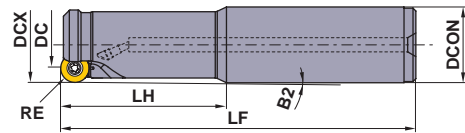


Fig.1

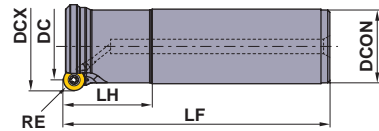


Fig.2

Arbor Type

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

(mm)

DCX	Order Number	Stock	RE	*1 No.T	DC	LF	LH	DCON	B2	WT (kg)	Max. Depth of Cut		RMPX	Fig.	Insert Type
		R									A1	AZ			
25	ARP5PR2503SA25M	●	5	3	15	140	60	25	1.10°	0.4	1.0	0.40	1.8°	1	RPOT1040
25	ARP5PR2502SA25L	●	5	2	15	180	80	25	0.80°	0.6	1.0	0.40	1.8°	1	RPOT1040
32	ARP5PR3204SA32M	●	5	4	22	150	70	32	0.92°	0.8	1.0	0.65	1.9°	1	RPOT1040
32	ARP6PR3203SA32M	●	6	3	20	150	70	32	0.51°	0.8	1.0	0.60	2.0°	1	RPOT1248
32	ARP5PR3203SA32L	●	5	3	22	200	120	32	0.94°	1.0	1.0	0.65	1.9°	1	RPOT1040
32	ARP6PR3202SA32L	●	6	2	20	200	120	32	0.52°	1.0	1.0	0.60	2.0°	1	RPOT1248
40	ARP6PR4004SA32M	●	6	4	28	150	50	32	-	0.9	2.5	1.15	2.7°	2	RPOT1248
40	ARP6PR4003SA32L	●	6	3	28	250	50	32	-	1.5	2.5	1.15	2.7°	2	RPOT1248
50	ARP6PR5005SA42M	●	6	5	38	150	50	42	-	1.5	2.5	1.70	2.9°	2	RPOT1248
50	ARP6PR5004SA42L	●	6	4	38	250	50	42	-	2.5	2.5	1.70	2.9°	2	RPOT1248

*1 Number of Teeth

Note 1) For the maximum width of cut (APMX), Please refer to page 9.

Dimensions and Symbols (ISO 13399 Compliance)

DCX = Maximum Hole Diameter

RE = Corner R

DC = Cutting Diameter

LF = Functional Length

LH = Neck Length

DCON = Connection Diameter

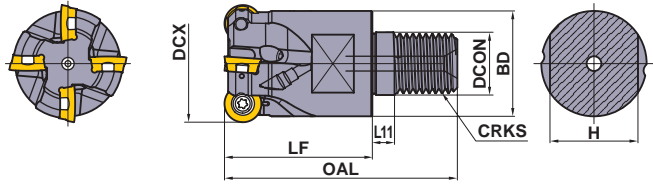
WT = Weight of Item

A1 = Max. Width of Cut in the Radius Direction

AZ = Plunge Depth Maximum

RMPX = Max.Ramping Angle

● : Inventory maintained in Japan.



■ Screw in Type

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

(mm)




DCX	Order Number	Stock	RE	*1 No.T	DC	DCON	DCSFMS	OAL	LF	S10	CRKS	WT (kg)	Max. Depth of Cut		RMPX	Insert Type
		R											A1	AZ		
25	ARP5PR2502AM1235	●	5	2	15	12.5	23.5	57	35	19	M12	0.1	-	0.40	1.8°	RPOT1040
25	ARP5PR2503AM1235	●	5	3	15	12.5	23.5	57	35	19	M12	0.1	-	0.40	1.8°	RPOT1040
32	ARP5PR3203AM1640	●	5	3	22	17.0	28.5	63	40	24	M16	0.2	1.0	0.65	1.9°	RPOT1040
32	ARP5PR3204AM1640	●	5	4	22	17.0	28.5	63	40	24	M16	0.2	1.0	0.65	1.9°	RPOT1040
32	ARP6PR3202AM1640	●	6	2	20	17.0	28.5	63	40	24	M16	0.2	1.0	0.60	2.0°	RPOT1248
32	ARP6PR3203AM1640	●	6	3	20	17.0	28.5	63	40	24	M16	0.2	1.0	0.60	2.0°	RPOT1248
40	ARP6PR4003AM1640	●	6	3	28	17.0	28.5	63	40	24	M16	0.2	2.5	1.15	2.7°	RPOT1248
40	ARP6PR4004AM1640	●	6	4	28	17.0	28.5	63	40	24	M16	0.2	2.5	1.15	2.7°	RPOT1248

*1 Number of Teeth

Note 1) For the maximum width of cut (APMX), Please refer to page 9.

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 = Maximum Hole Diameter

RE = Corner R

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



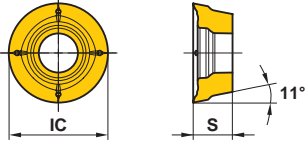
AZ = Plunge Depth Maximum

RMPX = Max. Ramping Angle

Round Insert Cutter for Difficult-to-cut Materials

Inserts

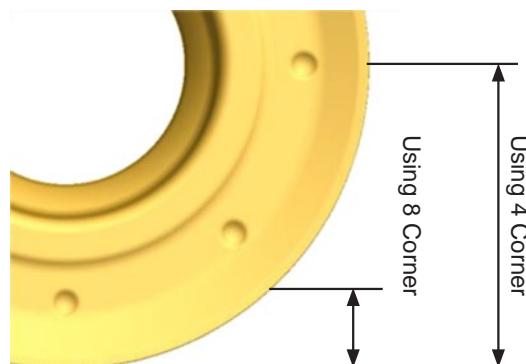
(mm)

Shape	Order Number	Class	Edge Preparation	Coated			IC	S	APMX		Geometry	
				MC7020	MP7130	MP9130			4 Corner	8 Corner		
Workpiece Material	M	Stainless Steel	●	●		Cutting Conditions (Guide) : ● : Stable Cutting ● : General Cutting ✖ : Unstable Cutting	Edge Preparation (Honing) : E : Round					
	S	Heat-resistant Alloy, Titanium Alloy			✖							
 	RPHT1040M0E4-L	H	E	●	●	●	10	3.97	5.0	-		
	RPHT1040M0E4-M	H	E	●	●	●	10	3.97	5.0	-		
	RPHT1040M0E4-R	H	E	●	●	●	10	3.97	5.0	-		
	RPHT1248M0E4-L	H	E	●	●	●	12	4.76	6.0	-		
	RPHT1248M0E4-M	H	E	●	●	●	12	4.76	6.0	-		
	RPHT1248M0E4-R	H	E	●	●	●	12	4.76	6.0	-		
	RPMT1040M0E4-L	M	E	●	●	●	10	3.97	5.0	-		
	RPMT1040M0E4-M	M	E	●	●	●	10	3.97	5.0	-		
	RPMT1040M0E4-R	M	E	●	●	●	10	3.97	5.0	-		
	RPMT1248M0E4-L	M	E	●	●	●	12	4.76	6.0	-		
	RPMT1248M0E4-M	M	E	●	●	●	12	4.76	6.0	-		
	RPMT1248M0E4-R	M	E	●	●	●	12	4.76	6.0	-		
	NEW	RPMT1040M0E8-L1	M	E	●	●	●	10	3.97	5.0		1.4
	NEW	RPMT1040M0E8-M1	M	E	●	●	●	10	3.97	5.0		1.4
	NEW	RPMT1040M0E8-R1	M	E	●	●	●	10	3.97	5.0		1.4
	NEW	RPMT1248M0E8-L1	M	E	●	●	●	12	4.76	6.0		1.7
	NEW	RPMT1248M0E8-M1	M	E	●	●	●	12	4.76	6.0		1.7
	NEW	RPMT1248M0E8-R1	M	E	●	●	●	12	4.76	6.0		1.7

● = NEW

About ap of 8 Corner Insert

8 corner insert can be machines with the same ap 4 corner.



● : Inventory maintained in Japan. (10 inserts in one case)

Recommended Cutting Conditions

■ Dry Cutting

	Work Material	Hardness	Grade	vc (m/min)	fz (mm/t.)
M	Austenitic Stainless Steels	≤200HB	MC7020	220 (170–270)	0.2 (0.1–0.35)
			MP7130	200 (150–250)	0.2 (0.1–0.35)
	Austenitic Stainless Steels	>200HB	MC7020	190 (140–240)	0.2 (0.1–0.35)
			MP7130	170 (120–220)	0.2 (0.1–0.35)
	Two-phase Stainless Steels	≤280HB	MC7020	180 (130–230)	0.2 (0.1–0.35)
			MP7130	160 (110–210)	0.2 (0.1–0.35)
	Ferritic and Martensitic Stainless Steels	≤200MPa	MC7020	240 (190–290)	0.2 (0.1–0.35)
			MP7130	200 (150–250)	0.2 (0.1–0.35)
	Ferritic and Martensitic Stainless Steels	>200HB	MC7020	240 (190–290)	0.2 (0.1–0.35)
			MP7130	200 (150–250)	0.2 (0.1–0.35)
	Precipitation Hardening Stainless Steels	<450HB	MC7020	170 (120–220)	0.2 (0.1–0.35)
			MP7130	150 (100–200)	0.2 (0.1–0.35)

■ Wet Cutting

	Work Material	Hardness	Grade	vc (m/min)	fz (mm/t.)
M	Austenitic Stainless Steels	≤200HB	MC7020	150 (100–200)	0.2 (0.1–0.35)
			MP7130	130 (80–180)	0.2 (0.1–0.35)
	Austenitic Stainless Steels	>200HB	MC7020	120 (70–170)	0.2 (0.1–0.35)
			MP7130	100 (80–150)	0.2 (0.1–0.35)
	Two-phase Stainless Steels	≤280HB	MC7020	120 (70–170)	0.2 (0.1–0.35)
			MP7130	100 (80–150)	0.2 (0.1–0.35)
	Ferritic and Martensitic Stainless Steels	≤200MPa	MC7020	170 (120–220)	0.2 (0.1–0.35)
			MP7130	130 (80–180)	0.2 (0.1–0.35)
	Ferritic and Martensitic Stainless Steels	>200HB	MC7020	170 (120–220)	0.2 (0.1–0.35)
			MP7130	130 (80–180)	0.2 (0.1–0.35)
	Precipitation Hardening Stainless Steels	<450HB	MC7020	110 (60–160)	0.2 (0.1–0.35)
			MP7130	90 (50–140)	0.2 (0.1–0.35)
S	Titanium Alloys	–	MP9130	45 (30–55)	0.1 (0.05–0.15)
	Heat Resistant Alloys	–	MP9130	35 (15–45)	0.1 (0.05–0.15)

* Actual cutting conditions are estimated to avoid chatter vibration with high rigidity of a machine or workpiece.

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.

* The setting level for feeding 1 blade is $a_p = 2.5\text{mm}$ with ARP5 axial cutting. With ARP6, use $a_p = 3\text{mm}$.

Use while matching the a_p fluctuation and correction value F of the respective table.

Ex. Feed for the recommended 1 blade when ARP5, SUS304, MP7130, $a_p=1$: $0.2\text{ mm/t.} \times 1.5$ (correction value F) = 0.3 mm/t.

* For grooving, use feed at the recommended 70% level. For ramping, drilling, and plunging, use 50% level.

* Internal coolant is recommended in titanium alloy and heat resistant alloy cutting.

When the coolant nozzle of separately sold is used, it is more effective.

■ Correction Level F Feed Amount for 1 Blade, Based on Axial Cutting a_p Fluctuation

Holder	$a_p=0.5\text{mm}$	$a_p=1\text{mm}$	$a_p=1.5\text{mm}$	$a_p=2\text{mm}$	$a_p=2.5\text{mm}$	$a_p=3\text{mm}$	$a_p=3.5\text{mm}$	$a_p=4\text{mm}$	$a_p=5\text{mm}$	$a_p=6\text{mm}$
ARP5	2.3	1.5	1.2	1.1	1.0	0.9	0.8	0.8	0.8	–
ARP6	2.5	1.7	1.3	1.1	1.0	1.0	0.9	0.9	0.8	0.8

* Tool body durability may weaken, when the amount of axial cutting exceeds ARP5=5mm and ARP6=6mm.

Round Insert Cutter for Difficult-to-cut Materials

Depth of Cut and Width of Cut

(mm)

Install Type	DCX	RE	Order Number	No. of Teeth	When Used 4 Corners	
					Depth of Cut ap	Width of Cut ae
Arbor	40	5	ARP5P-040A05AR	5	≤2.5	≤1.0DCX
		6	ARP6P-040A04AR	4	≤3.5	≤1.0DCX
	50	5	ARP5P-050A06AR	6	≤2.5	≤1.0DCX
		6	ARP5P-050A07AR	7	≤1.5	≤1.0DCX
			ARP6P-050A05AR	5	≤3.5	≤1.0DCX
			ARP6P-050A06AR	6	≤2.5	≤1.0DCX
	63	5	ARP5P-063A07AR	7	≤2.5	≤0.75DCX
			ARP5P-063A08AR	8	≤1.5	≤0.75DCX
		6	ARP6P-063A06AR	6	≤3.5	≤0.75DCX
			ARP6P-063A07AR	7	≤2.5	≤0.75DCX
	80	6	ARP6PR08008CA	8	≤3.5	≤0.6DCX
			ARP6PR08009CA	9	≤2.5	≤0.6DCX
	100	6	ARP6PR10009DA	9	≤3.5	≤0.5DCX
			ARP6PR10011DA	11	≤2.5	≤0.5DCX
Screw-in	25	5	ARP5PR2502AM1235	2	≤2.5	≤1.0DCX
			ARP5PR2503AM1235	3	≤1.5	≤1.0DCX
	32	5	ARP5PR3203AM1640	3	≤2.5	≤1.0DCX
			ARP5PR3204AM1640	4	≤2.5	≤1.0DCX
		6	ARP6PR3202AM1640	2	≤3.5	≤1.0DCX
			ARP6PR3203AM1640	3	≤3.5	≤1.0DCX
	40	6	ARP6PR4003AM1640	3	≤3.5	≤1.0DCX
			ARP6PR4004AM1640	4	≤3.5	≤1.0DCX

(mm)

Install Type	DCX	RE	Tool Holder Type	When Used 4 Corners	
				Depth of Cut ap	Width of Cut ae
Shank	25	5	ARP5PR25	≤1.5	≤1.0DCX
	32	5	ARP5PR32	≤2.5	≤1.0DCX
		6	ARP6PR32	≤3.5	≤1.0DCX
		6	ARP6PR40	≤3.5	≤1.0DCX
	50	6	ARP6PR50	≤3.5	≤1.0DCX

Maximum Capacities by Each Cutting

(mm)

Install Type	DCX	RE	Tool Holder Type	Ramping	Helical Drilling		Drilling Depth	Plunging
				RMPX	DH max.	DH min.	Maximum AZ	AE1
Arbor	40	5	ARP5P-040A	2.8°	70	78	1.30	2.0
		6	ARP6P-040A	2.7°	68	78	1.15	2.0
	50	5	ARP5P-050A	2.9°	90	98	1.85	2.0
		6	ARP6P-050A	2.9°	88	98	1.70	2.0
	63	5	ARP5P-063A	3.0°	116	124	2.50	2.5
		6	ARP6P-063A	3.1°	114	124	2.50	2.5
	80	6	ARP6PR080	2.3°	148	158	2.50	2.5
	100	6	ARP6PR100	1.7°	188	198	2.50	2.5
Shank	25	5	ARP5PR25	1.8°	40	48	0.40	1.0
		5	ARP5PR32	1.9°	54	62	0.65	1.0
	32	6	ARP6PR32	2.0°	52	62	0.60	1.0
		6	ARP6PR40	2.7°	68	78	1.15	2.5
	50	6	ARP6PR50	2.9°	88	98	1.70	2.5
Screw-in	25	5	ARP5PR25	1.8°	40	48	0.40	-
		5	ARP5PR32	1.9°	54	62	0.65	1.0
	32	6	ARP6PR32	2.0°	52	62	0.60	1.0
		6	ARP6PR40	2.7°	68	78	1.15	2.5

Note 1) When drilling, be careful of long scattered cutting chips

Note 2) When cutting helical holes, do not exceed the largest APMX cutting depth per one rotation.

Note 3) Calculate using the following formula for center tool tracks and ϕ_{dc} when cutting helical holes: Center tool tracks ϕ_{dc} =desired hole diameter ϕ_{DH} tool diameter ϕ_{DCX}

Note 4) For preventing trouble with cutting chip biting, especially when grooving, ramping, helical cutting, and drilling, thoroughly eliminate cutting chips with an air blower or the like.

Note 4) Cutting chip pockets are small for extra-multiple cutting and small diameter cutters.

Use with caution the ae and ap feed due to the possibility of cutting blockage.

Note 6) When cutting large ae with large diameter cutter, blockage from long cuttings is possible.

Regulate ap and feed.

Advice for High Efficiency Machining

Fine and super fine pitch cutters improve efficiency by 10-20% when compared to a regular pitch type.

■ Comparison of Number of Teeth in Arbor Type

DCX	ARP5		ARP6	
	Fine Pitch	Extra Fine Pitch	Fine Pitch	Extra Fine Pitch
40	5		4	
42	5	6		
50	6	7	5	6
63	7	8	6	7
80			8	9
100			9	11

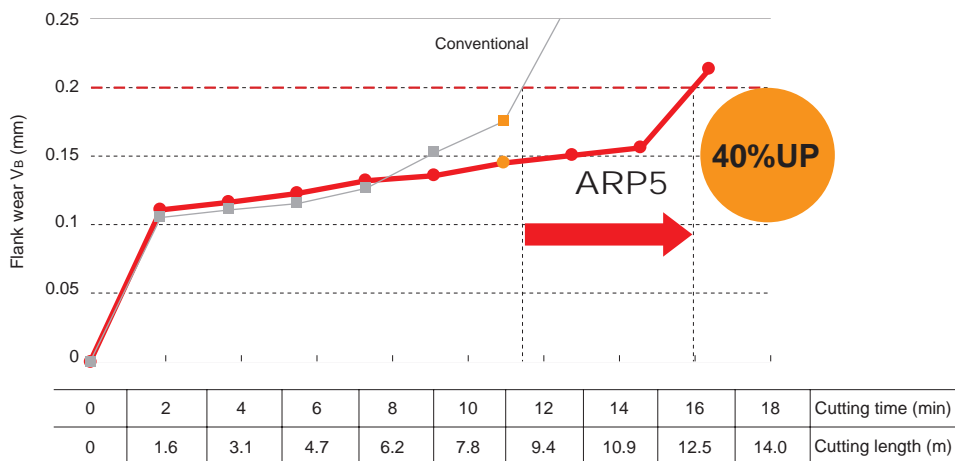
(mm)

**Efficiency
10-20%
UP**

Cutting Performance

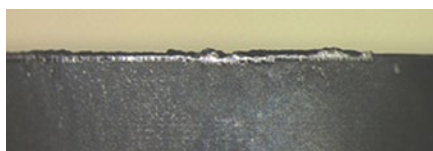
JIS SUS420J1 Wear Resistance Comparison

Longer life of by at least 40% compared with conventional.



<Cutting Conditions>
 Workpiece Material : JIS SUS420J1
 Cutter Dia. : DCX=ø50
 Insert : RPHT1040M0E4-R
 Grade : MC7020
 Cutting Speed : $v_c = 350$ m/min
 Feed per Tooth : $f_z = 0.35$ mm/t.
 Depth of Cut : $a_p = 2.5$ mm
 Width of Cut : $a_e = 25$ mm
 Cutting Mode : Dry Cutting
 Single insert

Cutting Length 8.4m



ARP5 (VB=0.141)



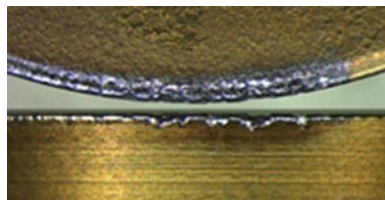
Conventional (VB=0.172)

JIS SUS630 Chipping Resistance Comparison

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

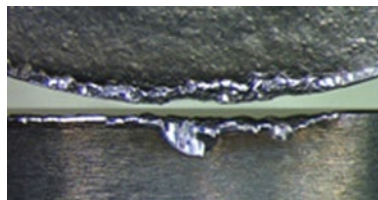
Cutting Length 0.4m

ARP5



VB=0.140 Minute chipping

Conventional A



VB=0.358 Large chipping

Conventional B

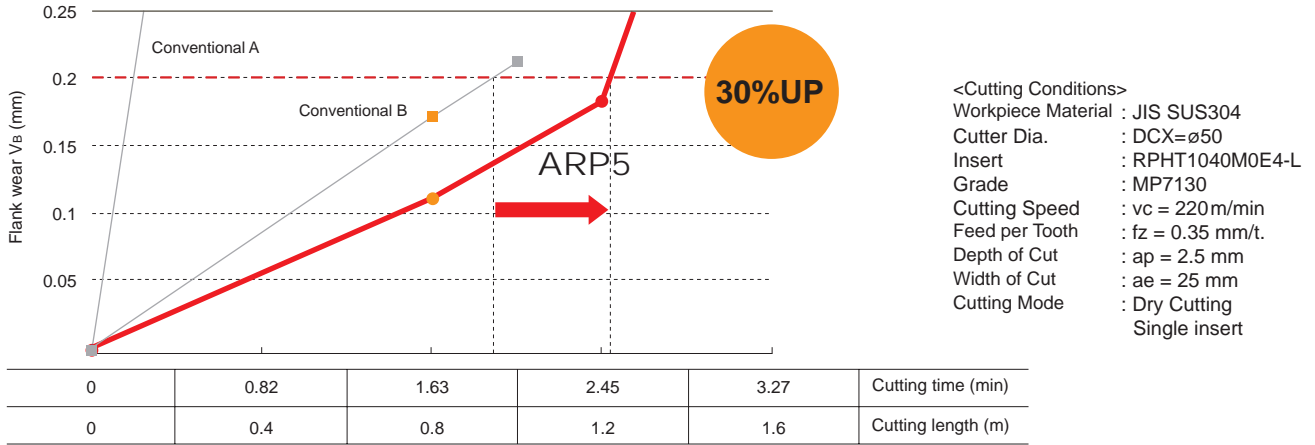


VB=0.172 Chipping

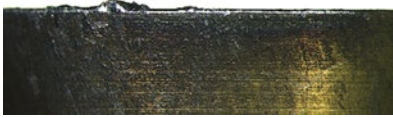
<Cutting Conditions>
 Workpiece Material : JIS SUS630
 Cutter Dia. : DCX=ø50
 Insert : RPHT1040M0E4-L
 Grade : MP7130
 Cutting Speed : $v_c = 350$ m/min
 Feed per Tooth : $f_z = 0.25$ mm/t.
 Depth of Cut : $a_p = 2.5$ mm
 Width of Cut : $a_e = 14$ mm
 Cutting Mode : Dry Cutting
 Single insert

JIS SUS304 Wear Resistance Comparison

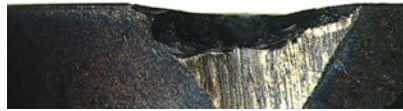
Longer life by 30% compared to conventional.



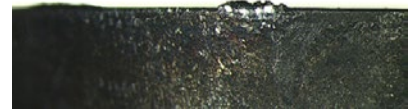
Cutting Length 0.8m



ARP5 (VB=0.112)



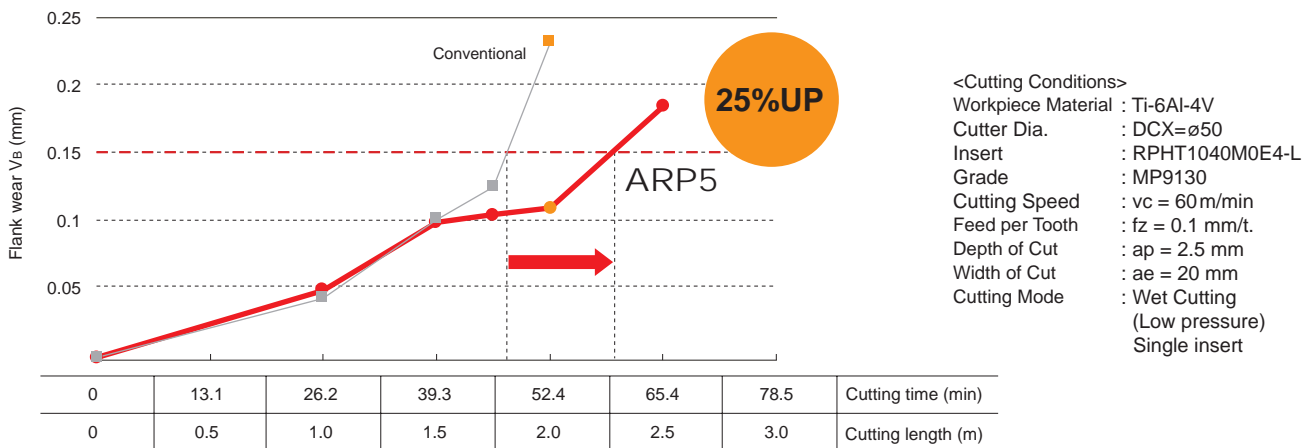
Conventional A (VB=1.608)



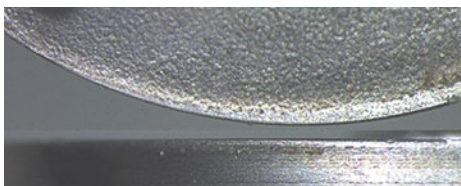
Conventional B (VB=0.171)

Ti-6Al-4V Wear Resistance Comparison

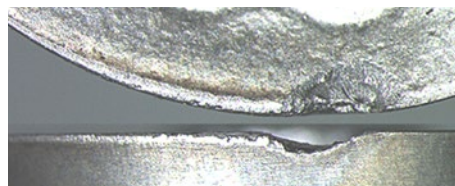
Longer life by 25% compared to conventional.



Cutting Length 2.0m






ARP5 (VB=0.110)



Conventional (VB=0.231)

Application Examples

Cutter Body		ARP6P-050A05AR	ARP6P-050A06AR	ARP6P-050A06AR
Insert (Grade)		RPHT1248M0E4-M (MC7020)	RPMT1248M0E4-R (MP7130)	RPMT1248M0E4-L (MP7130)
Workpiece Material		SUS403 	Martensitic Stainless Steel 	Martensitic Stainless Steel 
		Power Generator Parts	Power Generator Parts	Aerospace Parts
Cutting Conditions	Cutting Speed vc (m/min)	283	250	200
	Feed per Tooth fz (mm/t.)	0.25	0.45	0.25
	Depth of Cut ap (mm)	3	2.5	1
	With of Cut ae (mm)	30	40	20
Cutting Mode		Air blow	M. Q. L.	Wet
Results		Even after cutting double more than normal, stable cutting is possible.	Machining efficiency of current products improved by 20%, and insert life is also improved by 30%.	Success with improved cutting conditions for current products and preserving insert life. Cutting time reduced by 47%.

The above application examples are customer's application examples, so it can be different from the recommended conditions.

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.

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(Tools specifications subject to change without notice.)