

General Purpose Multi Corner Insert Type Face Milling Cutter

Environmentally Friendly Product

AHX Series


Grade
Expansion

Economical double sided inserts
with 14 cutting edges.



General Purpose Multi Corner Insert Type Face Milling Cutter

AHX Series

Unique 14 Corner Insert

Economical Heptagonal Double Sided Insert

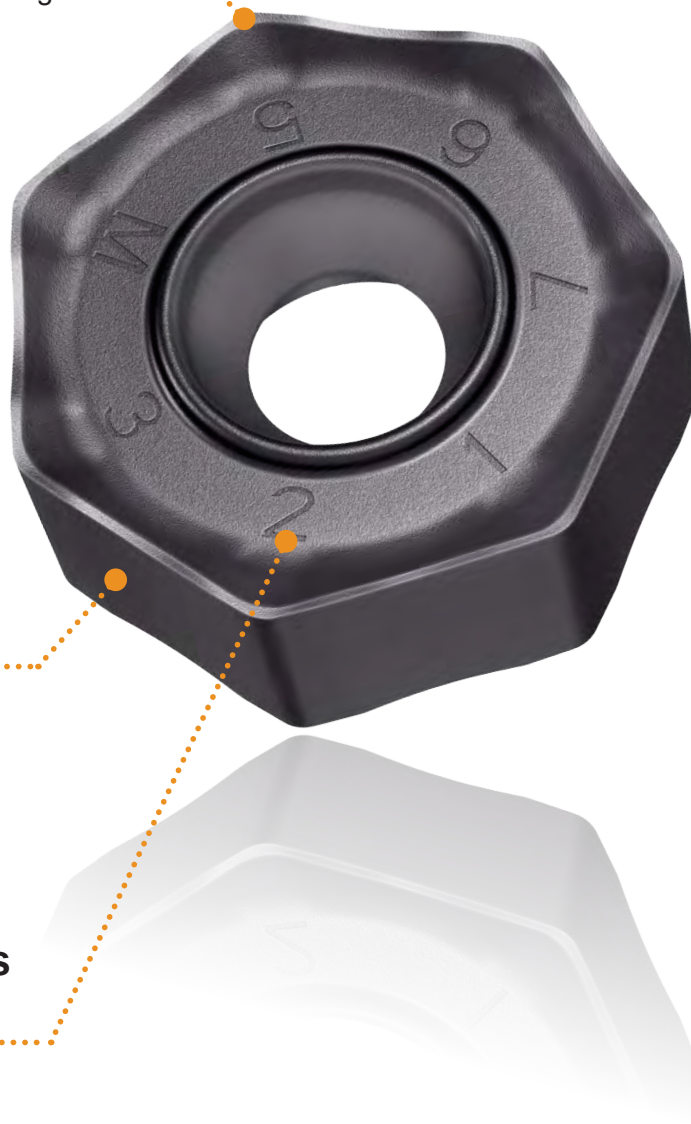
Double positive cutting edge geometry offers lower cutting resistance for improved machining efficiency.

(mm)		
Tool Holder Type	IC	APMX
AHX440S	13.4	3.0
AHX475S	13.4	1.6
AHX640S	20.0	6.0

"APMX" of AHX440 will vary depending on the chip breaker of the insert.

High Rigidity Created by Increasing the Thickness of the Inserts

Corner Number is
Clearly Shown



Please refer to the last page for more information on certified environmentally friendly products.

A Unique Face Mill for Machining of Steel, Stainless Steel and Cast Iron

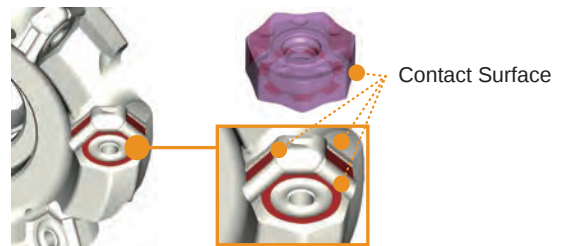
AHX440S AHX475S AHX640S

AHX475S is not compatible with stainless steel.

Designed to Control Abnormal Insert Breakage and Body Damage

The unique conical insert shim and Anti Fly mechanism (A.F.I) hold the insert securely. The outer edge of the insert is not in contact with the body, thereby preventing damage when sudden fracturing occurs.

The thick insert negates the need for a shim.



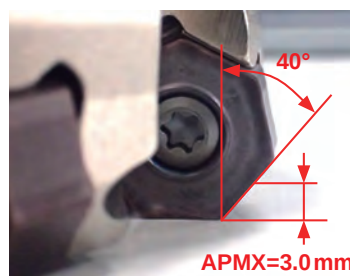
Through Coolant Holes

Improves chip discharge and prevents chip welding.

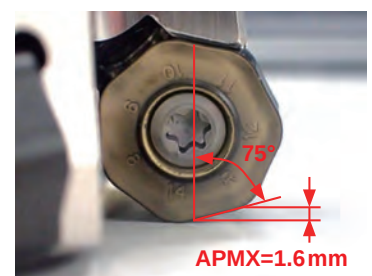
AHX475S For High Feed Machining

High feed is possible with AHX440S by setting an RE = 3.2 mm insert to be used in a cutter body with a corner angle of 75° (KAPR15°).

The maximum depths of cut (APMX) will be limited to 1.6 mm.



AHX440S L Breaker



AHX475S

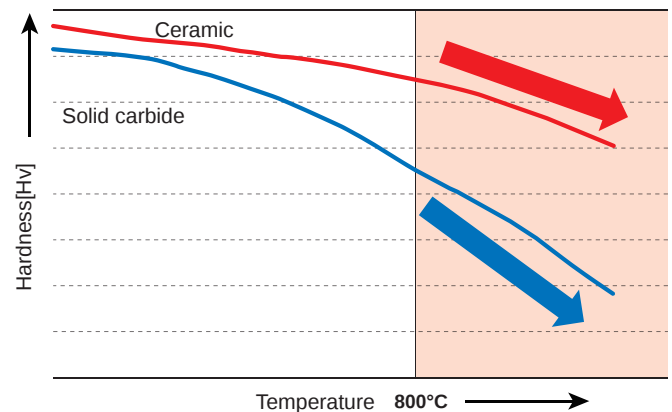
CVD Coated Ceramic Grade

XC5010 NEW

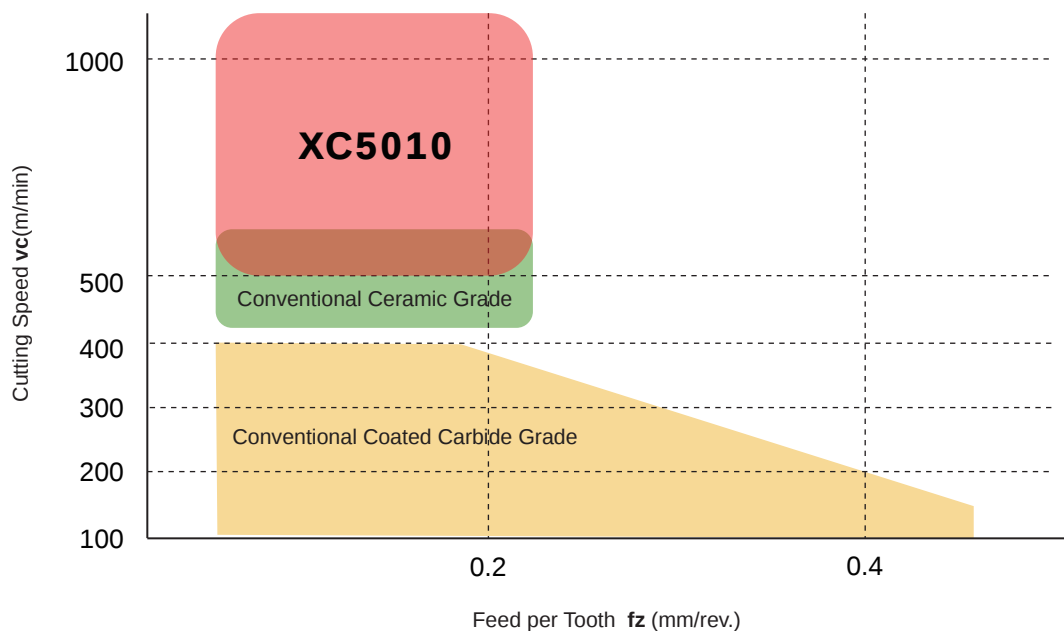
The strength of ceramics allows for stable machining even when cutting at high-speeds.

High Temperature Hardness of Cemented Carbide and Ceramic

Cemented carbide inserts are significantly reduced in strength when exceeding 800 degrees. However, the strength of ceramic inserts is not affected at these high temperatures, therefore can be used at the high-speeds and depths of cut required to generate sufficient heat to enable machining.

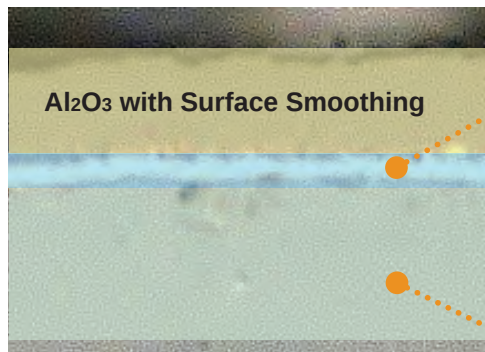


The combination of the unique shape and the coated ceramic grade achieves stable machining even at a cutting speeds of 1000 m/min.



Surface-smoothing Al₂O₃ coating suppresses the transmission of cutting heat

By applying an Al₂O₃ coating, which suppresses the transmission of cutting heat to the ceramic substrate, and together with a surface smoothing treatment, abnormal wear and adhesion of the workpiece material are suppressed.



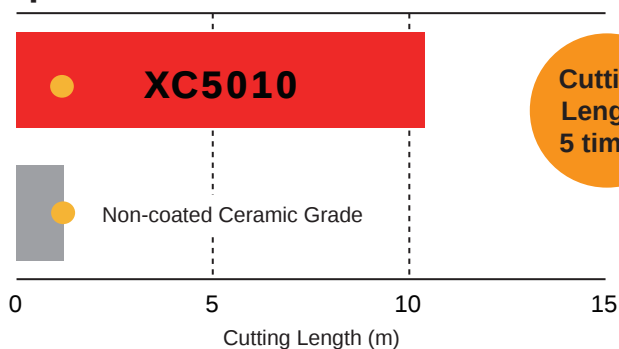
Technology Improves Adhesion Strength

Mitsubishi Materials' own adhesion technology has greatly improved the adhesion between the ceramic base material and the coating layer.

Silicon Nitride Ceramic Substrate

By adopting a high toughness silicon nitride ceramic substrate as the base material, ultra-high-speed milling of ductile cast iron can be achieved even at high temperatures with minimal loss of strength.

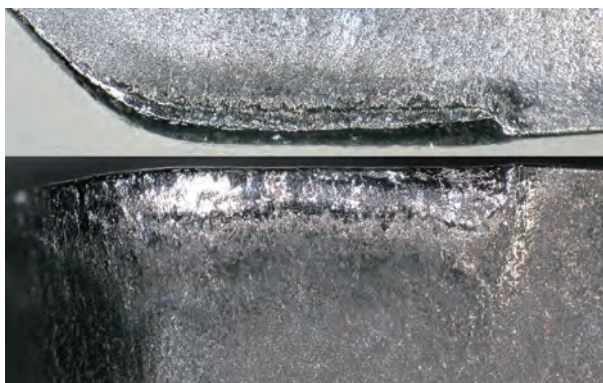
Achieves 5 times the cutting length of non-coated ceramic grade when used at high-speeds.



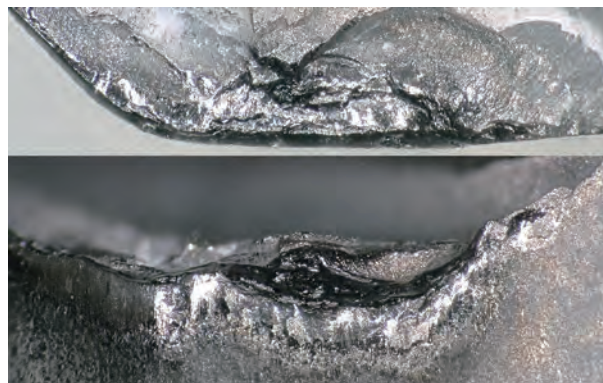
<Cutting Conditions>

Workpiece Material : JIS FCD600
Tool : AHX640S DC=80mm
Cutting Speed : vc=1000m/min
Feed per Tooth : fz=0.1mm/t
Depth of Cut : ap=2.0mm
ae=50mm
Cutting Mode : Dry Cutting

● After 1.2m Machining



XC5010



Non-coated Ceramic Grade

Machining video at VC=1200 m/min

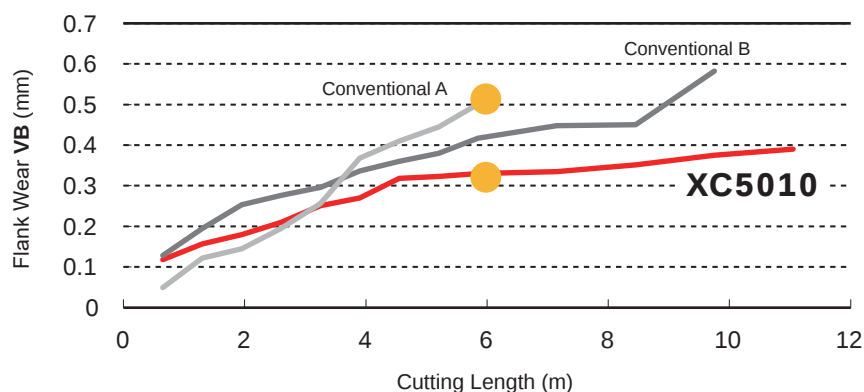


YouTube

Cutting Performance

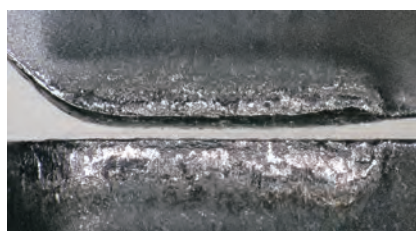
Comparison of Wear when machining FCD700 $vc=1000m/min$

Achieves a level of wear resistance that greatly surpasses carbide grades when high-speed roughing.

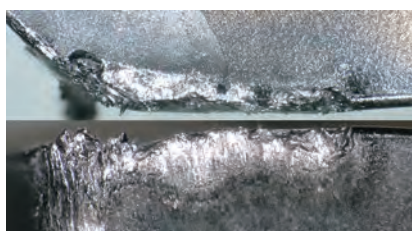


<Cutting Conditions>
 Workpiece Material : JIS FCD700
 Tool : AHX640S DC=80mm
 Cutting Speed : $vc=1000m/min$
 Feed per Tooth : $fz=0.1mm/t$
 Depth of Cut : $ap=2.0mm$
 $ae=40mm$
 Cutting Mode : Dry Cutting
 Single Insert

● After Machining 6m



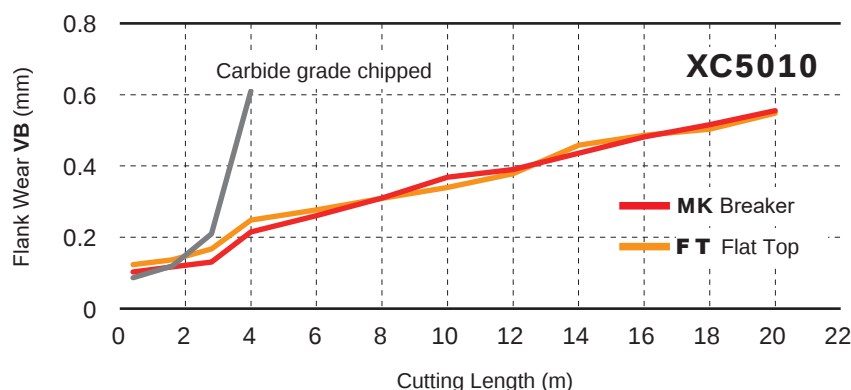
XC5010



Conventional A, Coated Carbide Grade

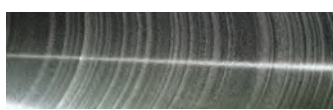
Comparison of finished surfaces when machining FCD700 at $vc=1000m/min$

A high quality machined surface is maintained even after a cutting length of 20m.

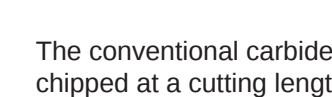
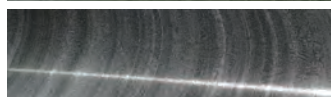
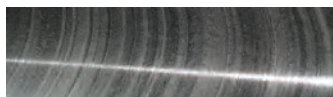


<Cutting Conditions>
 Workpiece Material : JIS FCD700
 Tool : AHX640S DC=125mm
 Cutting Speed : $vc=1000m/min$
 Feed per Tooth : $fz=0.1mm/t$
 Depth of Cut : $ap=2.0mm$
 $ae=100mm$
 Cutting Mode : Dry Cutting

Cutting Length 4m



Cutting Length 20m



XC5010

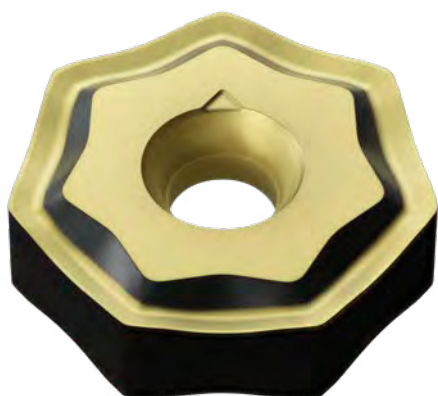
MK Breaker

XC5010

FT Flat Top

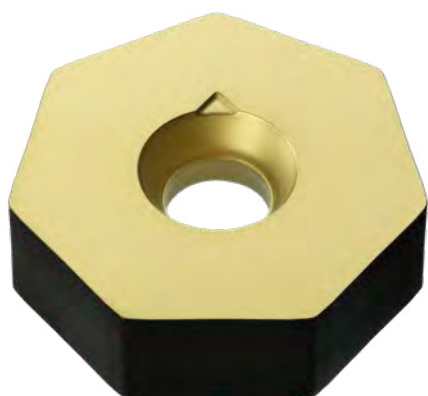
The conventional carbide grade chipped at a cutting length of 4m.

XC5010 Chip Breaker System



MK Breaker **General Cutting**

When compared to flat top inserts, the cutting resistance is lower when using the MK breaker. This reduces the load on the spindle thereby making it suitable for high speed cutting.



FT Flat Top **Cutting Edge Strength**

The high cutting edge strength of the flat top type enables stable cutting over long periods and helps to prevent sudden edge chipping.

The height setting when using MK inserts is different than when using FT type inserts.

FCD600 Finish Surface Comparison

A high quality machined surface is maintained even when high speed cutting conditions are used.



Cutting Speed : **vc=250m/min**



Cutting Speed : **vc=1000m/min**



Conventional, Coated Carbide Grade



XC5010 **MK Breaker**

<Cutting Conditions>

Workpiece Material : JIS FCD600

Tool : AHX640S DC=63mm

Feed per Tooth : fz=0.1 mm/t

Depth of Cut : ap=1.0mm

ae=32mm

Cutting Mode : Dry Cutting



YouTube

AHX Steel Series

Selection Reference Table (Cutting Edge Count and Cutting Conditions)

(mm)

DC	Type	Number of Teeth	AHX440S			AHX475S			AHX640S		
			General Cutting			High Feed Machining			General Cutting		
			Stock	fr (mm/rev)	APMX	Stock	fr (mm/rev)	APMX	Stock	fr (mm/rev)	APMX
40	Fine Pitch	3	●	0.6—1.2	3						
	Extra Fine Pitch	4	●	0.8—1.6	3						
50	Fine Pitch	4	●	0.8—1.6	3	●	2.4—4.0	1.6			
	Extra Fine Pitch	5	●	1.0—2.0	3	●	3.0—5.0	1.6			
	Super Extra Fine Pitch	6	●	1.2—2.4	3						
63	Coarse Pitch	4							●	0.8—1.6	6
	Fine Pitch	5	●	1.0—2.0	3	●	3.0—5.0	1.6	●	1.0—2.0	6
	Extra Fine Pitch	6	●	1.2—2.4	3	●	3.6—6.0	1.6			
	Super Extra Fine Pitch	8	●	1.6—3.2	3						
80	Coarse Pitch	4							●	0.8—1.6	6
	Fine Pitch	6	●	1.2—2.4	3	●	3.6—6.0	1.6	●	1.2—2.4	6
	Extra Fine Pitch	8	●	1.6—3.2	3	●	4.8—8.0	1.6			
	Super Extra Fine Pitch	10	●	2.0—4.0	3						
100	Coarse Pitch	5							●	1.0—2.0	6
	Fine Pitch	7	●	1.4—2.8	3	●	4.2—7.0	1.6	●	1.4—2.8	6
		9				●	5.4—9.0	1.6			
	Extra Fine Pitch	10	●	2.0—4.0	3						
	Super Extra Fine Pitch	12	●	2.4—4.8	3						
125	Coarse Pitch	6							●	1.2—2.4	6
	Fine Pitch	8	●	1.6—3.2	3	●	4.8—8.0	1.6	●	1.6—3.2	6
		10				●	6.0—10.0	1.6			
	Extra Fine Pitch	12	●	2.4—4.8	3						
	Super Extra Fine Pitch	14	●	2.8—5.6	3						
160	Coarse Pitch	7							●	1.4—2.8	6
	Fine Pitch	10	●	2.0—4.0	3	●	6.0—10.0	1.6	●	2.0—4.0	6
		12				●	7.2—12.0	1.6			
	Extra Fine Pitch	14	●	2.8—5.6	3						
	Super Extra Fine Pitch	16	●	3.2—6.4	3						
200	Coarse Pitch	8							●	1.6—3.2	6
	Fine Pitch	12							●	2.4—4.8	6

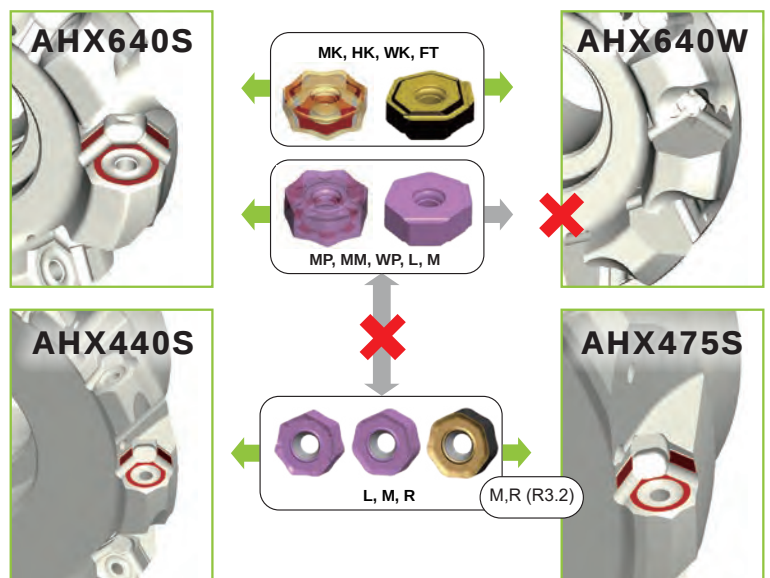
(Note 1) fr: Feed rate per revolution (AHX475S: the feed rate per cutter (fz) will be limited by the cutting width ae. Please refer to page 21 for details.)

(Note 2) APMX: Maximum depths of cut (AHX440S: the maximum depths of cut will vary depending on the type of chip breaker.)

(Note 3) The depths of cut and feed rate are identical to the recommended conditions for carbon steel and alloy steel.

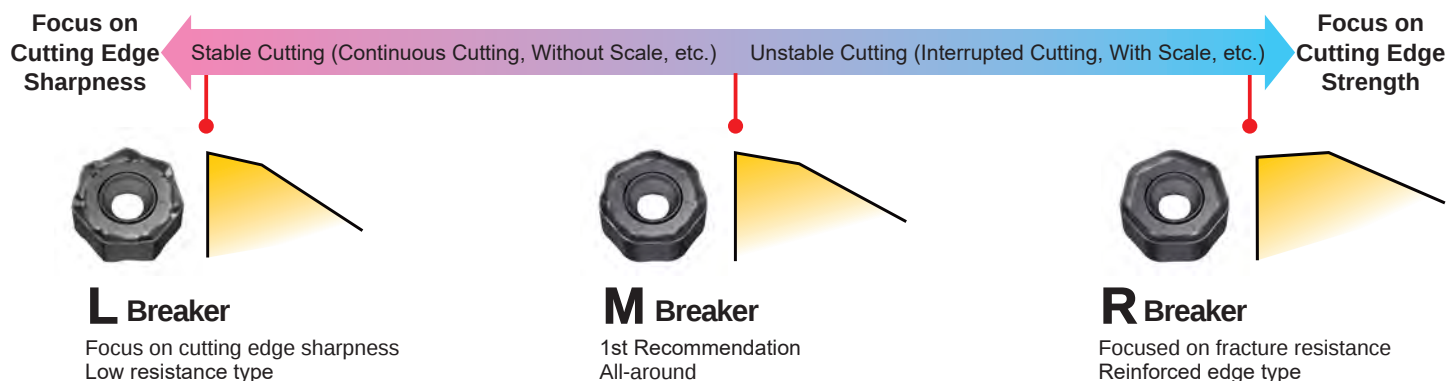
Compatibility with Inserts for AHX Series

The RE = 3.2 mm insert for use with AHX440S can be mounted on AHX475S. All inserts for use with AHX640 can be mounted on AHX640S (note, however, that the height setting will differ). The inserts for mounting on AHX640W are the MK, HK, WK and FT breakers for casting.



Chip Breaker System

Chip Breaker System for Varied Cutting Conditions



Workpiece Material	Cutting Conditions		
	Stable Cutting	General Cutting	Unstable Cutting
P	AHX440S	M (R3.2) Shared with AHX475	R Shared with AHX475
	L With Wiper	M (R0.8) With Wiper	
M	AHX640S	M MP	
	AHX440S	M (R0.8) With Wiper	M (R3.2) R
K	AHX640S	MM	
	AHX440S	M (R0.8) With Wiper	M (R3.2) Shared with AHX475 R Shared with AHX475
K	AHX640S	MK	HK FT

Wiper Insert of AHX640S

Based on the number of inserts and the cutting conditions, use of wiper inserts can improve overall surface finishes.



Face Milling Cutter for High Efficiency Machining of Cast Iron

AHX640W

**High Rigidity Inserts
Suitable for High Feed
Milling of Cast Iron**

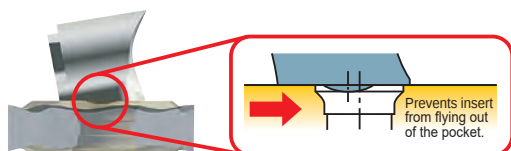


Sloped cutting edge and large rake angle



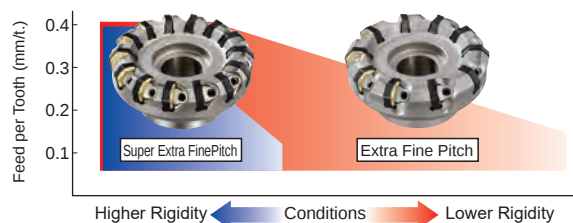
Innovative Clamp System

New wedge geometry developed to increase the permissible number of teeth.
Unique wedge geometry uses a protruding section that fits inside the insert hole and acts as an Anti-Fly Insert (AFI) mechanism.



2 Variations for Different Applications

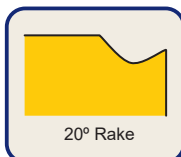
Extra fine pitch and super extra fine pitch types allow high efficiency milling under various machining conditions. Additionally, left hand types for use on special machines are also available as standard. Inserts can be used with both right and left hand type cutters.



Insert Applications



MK General-Purpose Insert



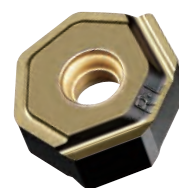
Accurate tolerance M-class insert.
Neutral, double sided 14 corners.
20° rake angle for low cutting resistance.
First recommendation for roughing and finishing.

HK Strong Cutting Edge Insert



Accurate tolerance M-class insert.
Neutral, double sided 14 corners.
High cutting edge strength to prevent fracturing of the cutting edge during unstable machining of non-uniform workpieces and high feed machining.

WK Wiper Insert



Improved Surface Finish

Right-hand 2 corners, left-hand 2 corners.
Based on the number of inserts and the cutting conditions, by using the wiper inserts it is possible to improve the overall surface finish.

The insert for AHX640W is compatible with AHX640S.
Please refer to P6 for the proper use of the XC5010 insert.

Coated Carbide Grade for Milling

MV1020/MV1030

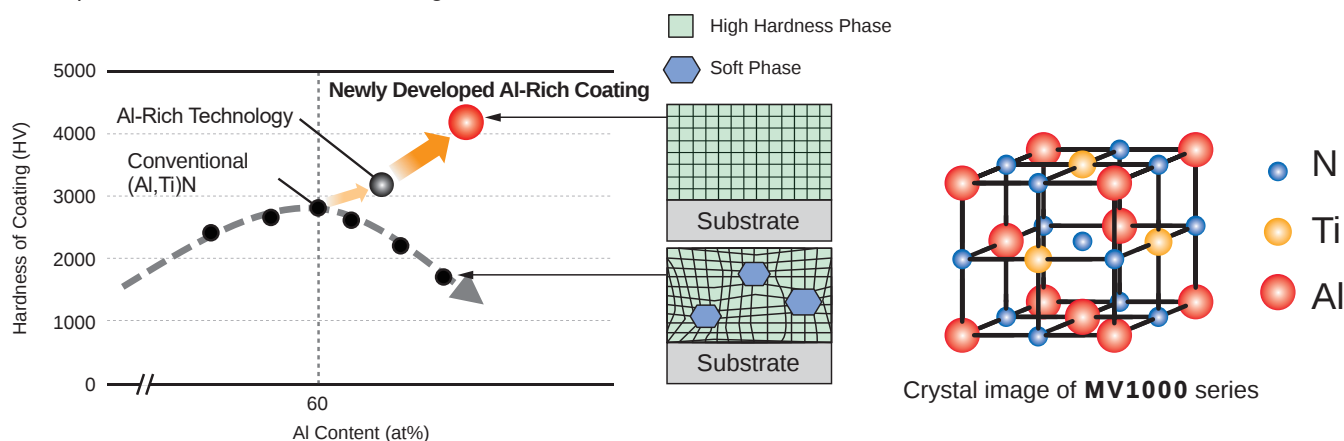
Newly Developed Al-Rich Coating

Advanced Wear and Thermal Shock Resistant

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

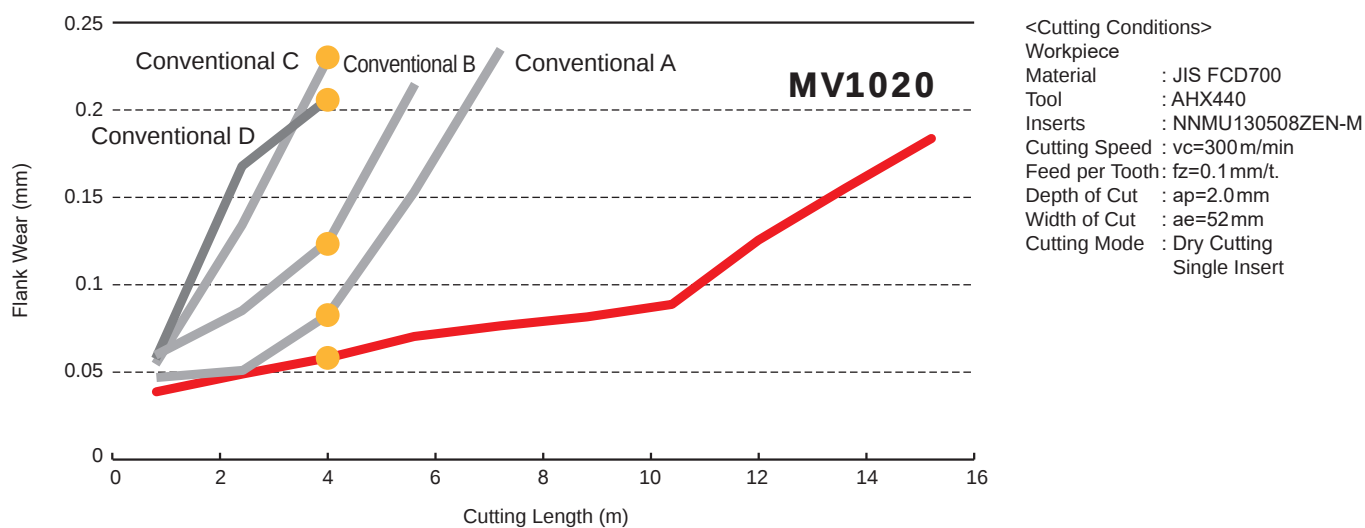
The extreme heat resistance of this new series achieves amazing stability not only during dry cutting, but also when wet cutting where inserts are usually prone to thermal cracking.

MV1020 offers overwhelmingly superior performance in high-speed cutting, and MV1030 achieves stable performance during interrupted and stainless steel machining.



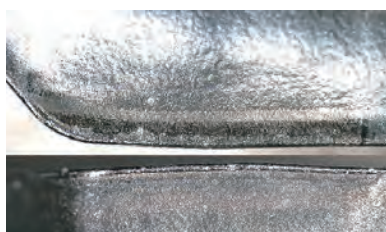
Cutting Performance

Comparison of wear resistance when machining ductile cast Iron FCD700



<Cutting Conditions>

Workpiece : JIS FCD700
 Material : AHX440
 Tool : NNMU130508ZEN-M
 Inserts :
 Cutting Speed : $v_c=300$ m/min
 Feed per Tooth: $f_z=0.1$ mm/t.
 Depth of Cut : $a_p=2.0$ mm
 Width of Cut : $a_e=52$ mm
 Cutting Mode : Dry Cutting
 Single Insert



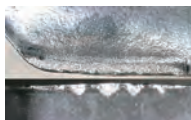
MV1020



Conventional A



Conventional B



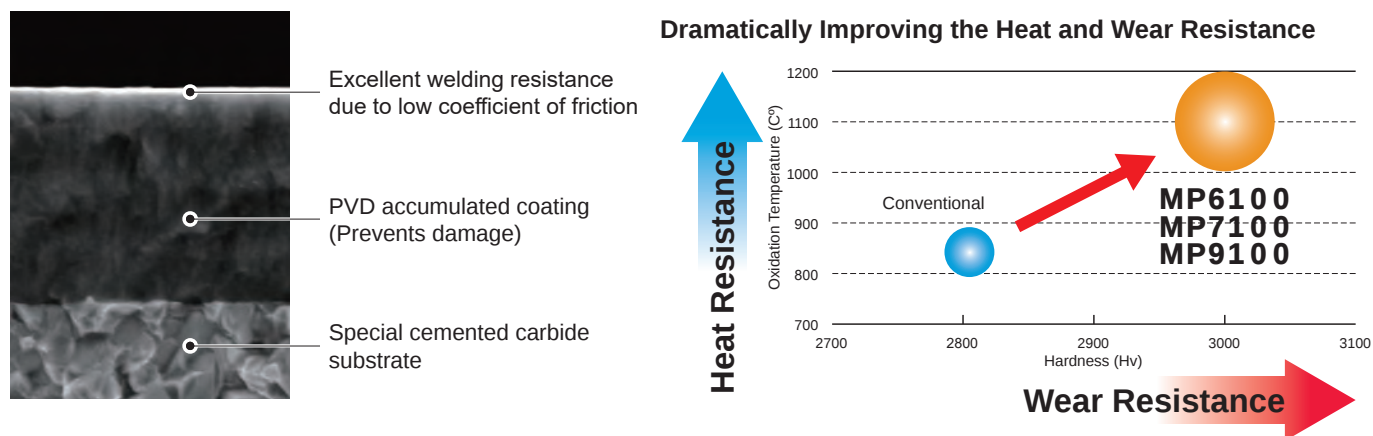
Conventional C



Conventional D

Insert Grades for a Wide Range of Materials

Accumulated Al-Ti-Cr-N Based PVD Coating



Excellent Welding Resistance due to Low Coefficient of Friction

	Workpiece Material	Grade	Coefficient of Friction		
			Measured at 600 Degree		
			S55C	SUS304	Ti-6Al-4V
P	Carbon Steel, Alloy Steel	MP6100	0.4		
M	Stainless Steel	MP7100		0.5	
S	Titanium and Heat Resistant Alloys	MP9100			0.3
	Conventional		0.7	0.7	0.7

TOUGH-Σ Technology

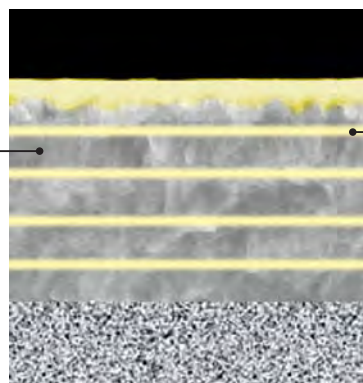
A fusion of the separate coating technologies; PVD and multi-layering realizes extra toughness.

Accumulated Al-Ti-Cr-N Based PVD Coating

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.



*Graphical Representation.

Each Grade has a Layer Suitable for Each Application Area

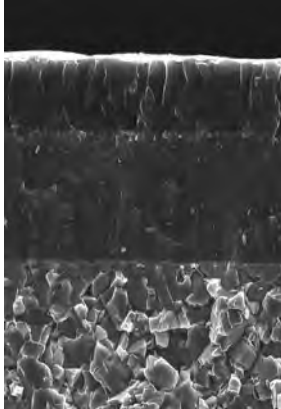
P		(Al,Cr)N	Tough Against Thermal Cracks
M		TiN	Tough Against Notching
S		CrN	Tough! Resistant Chipping

Selection Standard

ISO		PVD		ISO		PVD		ISO		CVD		PVD		ISO		PVD		ISO		PVD									
Steel σ		10	MP6120	VP15TF	MP6130	Stainless Steel σ		10	MP7130	MP7030	VP15TF	MP7140	Cast Iron κ		10	XC5010	MC5020	VP15TF	VP20RT	Heat Resistant Alloy • Ti Alloy σ		10	MP9120	VP15TF	MP9130	Hardened Steel H		10	VP15TF
		20						20				20						20						20					
		30						30				30						30						30					
		40						40				40						40						40					

MC5020

MC5020 has excellent wear, chipping and thermal crack resistance. These features prevent the problems usually associated with machining cast iron over prolonged periods.



Structure of
MC5020

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

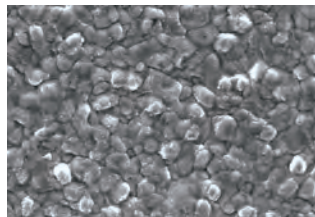
Use of a specially developed cemented carbide that provides superior resistance to fracture and thermal cracking prevents the cutting edge from sudden fracturing.

Reduced Abnormal Damage

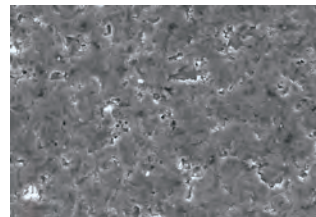
A black super smooth coating prevents abnormal damage such as weld chipping.

Black Super Smooth Coating

Comparison of Coating Surface



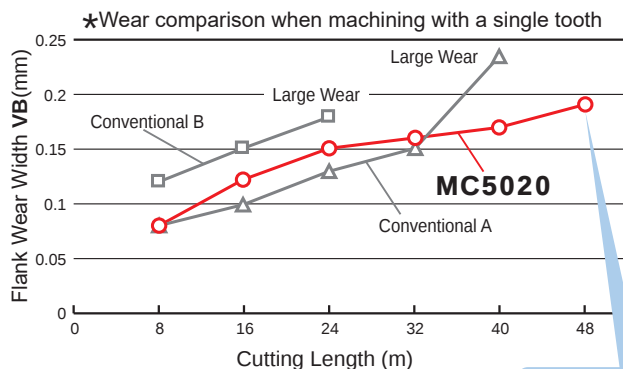
Conventional Coating



Black Super Smooth Coating

Cutting Performance

Wear Resistance



<Cutting Conditions>

Workpiece Material : JIS FC300

Tool : AHX640WR10010D

Insert : NNMU200608ZEN-MK
(1 piece)

Cutting Speed : 300 m/min

Feed per Tooth : 0.3 mm/t.

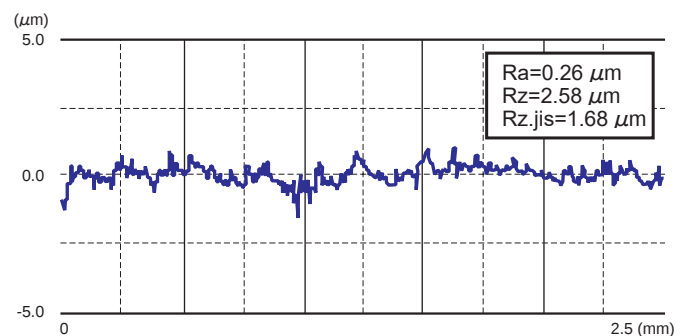
Depth of Cut : $a_p=5$ mm

Cutting Mode : Dry Cutting
Single Insert



MC5020

Surface Finish



Surface Finish Condition



<Cutting Conditions>

Workpiece Material : JIS FCD700

Tool : AHX640WR10014D

Insert : NNMU200608ZEN-MK (13 piece)

Wiper Insert : WNEU2006ZEN7C-WK (1 piece)

Cutting Speed : 350 m/min

Feed per Tooth : 0.1 mm/t.

Depth of Cut : $a_p=0.4$ mm

Cutting Mode : $a_e=80$ mm

Cutting Mode : Air Blow

FACE MILLING

<GENERAL CUTTING>



AHX440S

P M K N S H



Fig. 1

ø40
ø50
ø63
ø80

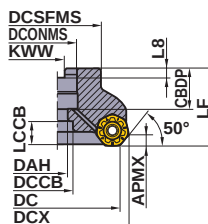


Fig. 2

ø100
ø125
ø160

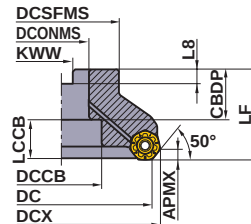
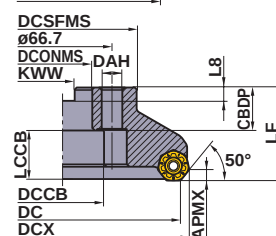


Fig. 3

ø160



Right hand tool holder only.

DC=mm size, DCON=Inch size

(mm)

DC	Order Number	Stock	Coolant Hole	No.T	LF	DCX	DCONMS	Fig.	WT(kg)	APMX
80	AHX440SR08006CA	●	○	6	50	88.4	25.4	1	1.1	3
	AHX440SR08008CA	●	○	8	50	88.4	25.4	1	1.1	3
	AHX440SR08010CA	●	○	10	50	88.4	25.4	1	1.1	3
100	AHX440SR10007DA	●	○	7	50	108.4	31.75	2	1.6	3
	AHX440SR10010DA	●	○	10	50	108.4	31.75	2	1.6	3
	AHX440SR10012DA	●	○	12	50	108.3	31.75	2	1.6	3
125	AHX440SR12508EA	●	○	8	63	133.4	38.1	2	3.0	3
	AHX440SR12512EA	●	○	12	63	133.4	38.1	2	3.0	3
	AHX440SR12514EA	●	○	14	63	133.3	38.1	2	2.9	3
160	AHX440SR16010FA	●	○	10	63	168.4	50.8	2	4.8	3
	AHX440SR16014FA	●	○	14	63	168.4	50.8	2	4.6	3
	AHX440SR16016FA	●	○	16	63	168.4	50.8	2	4.7	3

(Note 1) The cutter body does not have a set bolt for an arbor. Please refer to page 15 when ordering.

(Note 2) The above "APMX" will vary depending on the chip breaker insert.

★ Number of Teeth

Spare Parts

Tool Holder Type	★	Wrench (Insert)
AHX440S	TS35R	TKY15T

★ Clamp Torque (N • m) : TS35R=3.5

General Purpose Multi Corner Insert Type Face Milling Cutter

DC=mm size, DCON=mm size

(mm)

DC	Order Number	Stock	Coolant Hole	No.T	LF	DCX	DCONMS	Fig.	WT(kg)	APMX
40	AHX440S-040A03AR	●	○	3	40	48.4	16	1	0.3	3
	AHX440S-040A04AR	●	○	4	40	48.4	16	1	0.2	3
50	AHX440S-050A04AR	●	○	4	40	58.4	22	1	0.4	3
	AHX440S-050A05AR	●	○	5	40	58.4	22	1	0.4	3
	AHX440S-050A06AR	●	○	6	40	58.4	22	1	0.4	3
63	AHX440S-063A05AR	●	○	5	40	71.4	22	1	0.6	3
	AHX440S-063A06AR	●	○	6	40	71.4	22	1	0.6	3
	AHX440S-063A08AR	●	○	8	40	71.4	22	1	0.5	3
80	AHX440S-080A06AR	●	○	6	50	88.4	27	1	1.1	3
	AHX440S-080A08AR	●	○	8	50	88.4	27	1	1.1	3
	AHX440S-080A10AR	●	○	10	50	88.4	27	1	1.1	3
100	AHX440S-100B07AR	●	○	7	50	108.4	32	2	1.6	3
	AHX440S-100B10AR	●	○	10	50	108.4	32	2	1.6	3
	AHX440S-100B12AR	●	○	12	50	108.3	32	2	1.6	3
125	AHX440S-125B08AR	●	○	8	63	133.4	40	2	3.0	3
	AHX440S-125B12AR	●	○	12	63	133.4	40	2	3.0	3
	AHX440S-125B14AR	●	○	14	63	133.3	40	2	2.9	3
160	AHX440S-160C10NR	●	—	10	63	168.4	40	3	4.8	3
	AHX440S-160C14NR	●	—	14	63	168.4	40	3	4.6	3
	AHX440S-160C16NR	●	—	16	63	168.4	40	3	4.7	3

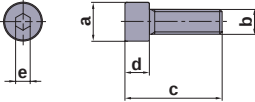
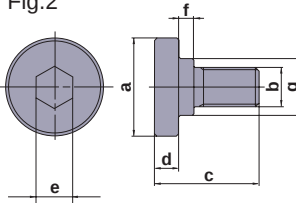
(Note 1) The cutter body does not have a set bolt for an arbor. Please refer to the table below when ordering.

(Note 2) The above "APMX" will vary depending on the chip breaker insert.

★ Number of Teeth

Optional Parts

(mm)

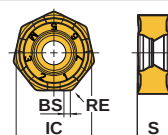
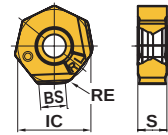
Tool Holder Type	Set Bolt		Fig.	Reference Dimensions							Geometry
	With Coolant Hole	Without Coolant Hole		a	b	c	d	e	f	g	
	Order Number	Order Number									
AHX440S-040A	HSC08025H	HSC08040	1	13	M8×1.25	33	8	5	—	—	Fig.1 
AHX440S-050A	HSC10030H	HSC10035	1	16	M10×1.5	40	10	6	—	—	
AHX440S-063A	HSC10030H	HSC10035	1	16	M10×1.5	40	10	6	—	—	
AHX440S-080A	HSC12035H	HSC12035 HSC12045	1	18	M12×1.75	47 57	12	10	—	—	Fig.2 
AHX440S-100B	MBA16033H	—	2	40	M16×2	43	10	14	6	23	
AHX440S-125B	MBA20040H	—	2	50	M20×2.5	54	14	17	6	27	
AHX440S-160C	No coolant hole	—	2	50	M20×2.5	54	14	17	6	27	
AHX440SR080	HSC12035H	HSC12035 HSC12045	1	18	M12×1.75	47 57	12	10	—	—	
AHX440SR100	MBA16033H	—	2	40	M16×2	43	10	14	6	23	
AHX440SR125	MBA20040H	—	2	50	M20×2.5	54	14	17	6	27	
AHX440SR160	MBA24045H	—	2	65	M24×3	59	14	17	10	37	

(Note 1) Internal coolant is necessary with the set bolt.

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

Inserts

(mm)

Workpiece Material		P	Steel	◆	◆		◆	◆		◆	◆	This is the selection guideline for AHX440S.						
		M	Stainless Steel	◆	◆				◆	◆	◆	Please note that the cutting conditions differ depending on multiple factors, for more details refer to the Recommended Cutting Conditions.						
		K	Cast Iron	◆	◆	◆					◆	Edge Preparation :						
		H	Hardened Steel								◆	E : Round						
Application	Shape	Order Number	Class	Honing	Coated							Dimensions (mm)					Geometry	
					MV1020	MV1030	MC5020	MP6120	MP6130	MP7130	MP7140	VP15TF	IC	RE	BS	S		APMX
Stable Cutting		NNMU130508ZER-L	M	E	●	●	●	●	●	●	●	●	13.4	0.8	1	5.09	3	
General Cutting		NNMU130508ZEN-M	M	E	●	●	●	●	●	●	●	●	13.4	0.8	1	5.09	*4	
		NNMU130532ZEN-M	M	E	●	●	●	●	●	●	●	●	13.4	3.2	—	5.09	*4	
Unstable Cutting		NNMU130532ZEN-R	M	E	●	●	●	●	●	●	●	●	13.4	3.2	—	5.09	*4	
Finish Cutting		WNEU1305ZEN4C-M	E	E			●	●				●	13.4	2.7	4	5.09	0.5	
	Wiper																	



Next corner radius to be used.

When the next corner is not to be used, the APMX is 4.0 mm. When the next corner is to be used later (clockwise insert indexing), the APMX is 3.5 mm. This is to ensure that the next cutting edge isn't already worn from use at 4.0 mm depth of cut.

Instructions for Use of Wiper Inserts

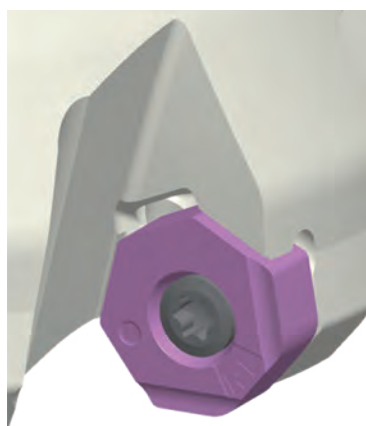


Fig.1



Fig.2

(Note 1) These wiper inserts have 2 cutting edges for left hand use and 2 corners for right hand use. Position as shown in figure 1.

(Note 2) A satisfactory finished surface can be achieved with one wiper insert.

However, if the feed rate per revolution will be equal to or greater than the width of the wiper edge, it is recommended to install the second and further wiper inserts spaced evenly within the cutting body.

General Purpose Multi Corner Insert Type Face Milling Cutter

Recommended Cutting Conditions

■ Dry Cutting

Dry Cutting							(mm)
Workpiece Material		Properties	Grade	vc (m/min)	fz (mm/t.)	ap (mm)	ae (mm)
P	Mild Steel	Hardness ≤180HB	MV1020	300 (200—400)	0.30 (0.20—0.40)	≤3	≤0.8DC
			MP6120,VP15TF	250 (200—300)	0.30 (0.20—0.40)	≤3	≤0.8DC
			MV1030	245 (190—300)	0.30 (0.20—0.40)	≤3	≤0.8DC
			MP6130	240 (190—290)	0.30 (0.20—0.40)	≤3	≤0.8DC
	Carbon Steel,Alloy Steel	Hardness 180-280HB	MV1020	260 (170—350)	0.30 (0.20—0.40)	≤3	≤0.8DC
			MP6120,VP15TF	220 (170—270)	0.30 (0.20—0.40)	≤3	≤0.8DC
			MV1030	210 (150—270)	0.30 (0.20—0.40)	≤3	≤0.8DC
			MP6130	200 (150—250)	0.30 (0.20—0.40)	≤3	≤0.8DC
	Carbon Steel,Alloy Steel	Hardness 280—350HB	MV1020	180 (100—250)	0.30 (0.20—0.40)	≤3	≤0.8DC
			MP6120,VP15TF	140 (100—180)	0.30 (0.20—0.40)	≤3	≤0.8DC
			MV1030	135 (90—180)	0.30 (0.20—0.40)	≤3	≤0.8DC
			MP6130	120 (90—150)	0.30 (0.20—0.40)	≤3	≤0.8DC
	Alloy Tool Steel	Hardness ≤350HB (annealing)	MP6120,VP15TF	140 (100—180)	0.15 (0.10—0.20)	≤1	≤0.8DC
			MP6130	120 (90—150)	0.15 (0.10—0.20)	≤1	≤0.8DC
	Pre-hardened Steel	Hardness 35—45HRC	MP6120	140 (100—180)	0.15 (0.10—0.20)	≤1	≤0.8DC
			MP6130	120 (90—150)	0.15 (0.10—0.20)	≤1	≤0.8DC
M	Austenitic Stainless Steel	Hardness ≤200HB	MP7130,VP15TF	200 (150—250)	0.20 (0.10—0.30)	≤3	≤0.8DC
			MV1030	185 (120—250)	0.20 (0.10—0.30)	≤3	≤0.8DC
			MP7140	180 (120—230)	0.20 (0.10—0.30)	≤3	≤0.8DC
		Hardness > 200HB	MP7130,VP15TF	150 (100—200)	0.20 (0.10—0.30)	≤3	≤0.8DC
			MV1030	140 (80—200)	0.20 (0.10—0.30)	≤3	≤0.8DC
			MP7140	130 (80—180)	0.20 (0.10—0.30)	≤3	≤0.8DC
	Ferritic and Martensitic Stainles Steel	Hardness ≤200HB	MP7130,VP15TF	200 (150—250)	0.20 (0.10—0.30)	≤3	≤0.8DC
			MV1030	185 (120—250)	0.20 (0.10—0.30)	≤3	≤0.8DC
			MP7140	180 (120—230)	0.20 (0.10—0.30)	≤3	≤0.8DC
		Hardness > 200HB	MP7130,VP15TF	150 (100—200)	0.20 (0.10—0.30)	≤3	≤0.8DC
			MV1030	140 (80—200)	0.20 (0.10—0.30)	≤3	≤0.8DC
			MP7140	130 (80—180)	0.20 (0.10—0.30)	≤3	≤0.8DC
	Two-Phase Stainless Steel	Hardness ≤280HB	MP7130,VP15TF	140 (100—180)	0.15 (0.05—0.25)	≤3	≤0.8DC
			MP7140	120 (80—160)	0.15 (0.05—0.25)	≤3	≤0.8DC
	Precipitation-Hardened Stainless Steel	Hardness < 450HB	MP7130,VP15TF	130 (100—160)	0.15 (0.05—0.25)	≤3	≤0.8DC
			MP7140	110 (80—140)	0.15 (0.05—0.25)	≤3	≤0.8DC
K	Gray Cast Iron	Tensile Strength ≤350MPa	MC5020	220 (150—300)	0.30 (0.20—0.40)	≤3	≤0.8DC
			VP15TF	180 (130—230)	0.30 (0.20—0.40)	≤3	≤0.8DC
	Ductile Cast Iron	Tensile Strength ≤450MPa	MV1020	240 (130—350)	0.20 (0.10—0.30)	≤3	≤0.8DC
			MC5020	220 (150—300)	0.20 (0.10—0.30)	≤3	≤0.8DC
			MV1030	185 (120—250)	0.20 (0.10—0.30)	≤3	≤0.8DC
			VP15TF	170 (120—220)	0.20 (0.10—0.30)	≤3	≤0.8DC
	Ductile Cast Iron	Tensile Strength ≤800MPa	MV1020	220 (80—350)	0.20 (0.10—0.30)	≤3	≤0.8DC
			MC5020	170 (150—200)	0.20 (0.10—0.30)	≤3	≤0.8DC
			MV1030	150 (100—200)	0.20 (0.10—0.30)	≤3	≤0.8DC
			VP15TF	140 (100—180)	0.20 (0.10—0.30)	≤3	≤0.8DC
H	Hardened Steel	Hardness 40—55HRC	VP15TF	80 (60—100)	0.15 (0.10—0.20)	≤1	≤0.8DC

Wet Cutting

(mm)

Workpiece Material	Properties	Grade	vc (m/min)	fz (mm/t.)	ap (mm)	ae (mm)
M	Austenitic Stainless Steel	Hardness ≤200HB	MP7130,VP15TF	125 (100—150)	0.15 (0.10—0.20)	≤3
			MP7140	100 (80—140)	0.15 (0.10—0.20)	≤3
		Hardness > 200HB	MP7130,VP15TF	100 (75—125)	0.15 (0.10—0.20)	≤3
			MP7140	80 (55—105)	0.15 (0.10—0.20)	≤3
	Ferritic and Martensitic Stainless Steel	Hardness ≤200HB	MP7130,VP15TF	125 (100—150)	0.15 (0.10—0.20)	≤3
			MP7140	100 (80—140)	0.15 (0.10—0.20)	≤3
		Hardness > 200HB	MP7130,VP15TF	100 (75—125)	0.15 (0.10—0.20)	≤3
			MP7140	80 (55—105)	0.15 (0.10—0.20)	≤3
	Two-Phase Stainless Steel	Hardness ≤280HB	MP7130,VP15TF	80 (60—100)	0.10 (0.05—0.15)	≤3
			MP7140	60 (40—80)	0.10 (0.05—0.15)	≤3
	Precipitation-Hardening Stainless Steel	Hardness < 450HB	MP7130,VP15TF	70 (50—90)	0.10 (0.05—0.15)	≤3
			MP7140	50 (30—70)	0.10 (0.05—0.15)	≤3

Cutting Conditions with Wiper Insert

(mm)

Workpiece Material	Properties	Grade	vc (m/min)	fz (mm/t.)	ap
P	Mild Steel	≤180HB	MP6120,VP15TF	250 (200—300)	0.3 (0.2—0.4)
	Carbon Steel, Alloy Steel	180—280HB	MP6120,VP15TF	220 (170—270)	0.3 (0.2—0.4)
		280—350HB	MP6120,VP15TF	140 (100—180)	0.3 (0.2—0.4)
	Alloy Tool Steel	≤350HB (annealing)	MP6120,VP15TF	140 (100—180)	0.15 (0.1—0.2)
	Pre-hardened Steel	35—45HRC	MP6120,VP15TF	140 (100—180)	0.15 (0.1—0.2)
M	Austenitic Stainless Steel	≤200HB	VP15TF	125 (100—150)	0.15 (0.1—0.2)
		> 200HB	VP15TF	100 (75—125)	0.15 (0.1—0.2)
	Ferritic and Martensitic Stainless Steel	≤200HB	VP15TF	125 (100—150)	0.15 (0.1—0.2)
		> 200HB	VP15TF	100 (75—125)	0.15 (0.1—0.2)
	Two-Phase Stainless Steel	≤280HB	VP15TF	80 (60—100)	0.1 (0.05—0.15)
	Precipitation-Hardening Stainless Steel	< 450HB	VP15TF	70 (50—90)	0.1 (0.05—0.15)
K	Gray Cast Iron	Tensile Strength ≤350MPa	MC5020	320 (250—400)	0.3 (0.2—0.4)
			VP15TF	220 (150—300)	0.3 (0.2—0.4)
	Ductile Cast Iron	Tensile Strength ≤450MPa	MC5020	250 (200—300)	0.2 (0.1—0.3)
			VP15TF	200 (150—250)	0.2 (0.1—0.3)
		Tensile Strength ≤800MPa	MC5020	220 (200—250)	0.2 (0.1—0.3)
			VP15TF	170 (150—200)	0.2 (0.1—0.3)
H	Hardened Steel	40—55HRC	VP15TF	80 (60—100)	0.15 (0.1—0.2)

(Note 1) Refer to the table above and set up cutting conditions according to cutting applications.

(Note 2) When placing emphasis on surface finish quality, wet cutting is recommended. (tool life is lowered when compared to dry cutting)

(Note 3) The recommended depth of cut differs according to insert geometry.

(Note 4) When clamp rigidity is low and tool overhang is long, we recommended to reduce the cutting speed and the feed rate by 30%.

(Note 5) Wet cutting is recommended for good surface finishing of stainless steel. (Tool life is short compared to dry cutting.)

FACE MILLING

<HIGH FEED CUTTING FOR CAST IRON>

AHX475S

P M **K** N S H

15°
KAPR



Fig.1

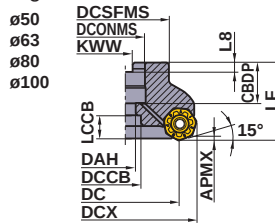
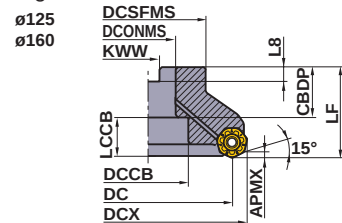


Fig.2



Right hand tool holder only.

DC=mm size, DCON=Inch size

(mm)

DC	Order Number	Stock	Coolant Hole	No.T	LF	DCX	DCONMS	Fig.	WT(kg)	APMX
80	AHX475SR08006DA	●	○	6	63	95.6	31.75	1	2.0	1.6
	AHX475SR08008DA	●	○	8	63	95.6	31.75	1	2.0	1.6
100	AHX475SR10007DA	●	○	7	63	115.6	31.75	1	3.2	1.6
	AHX475SR10009DA	●	○	9	63	115.6	31.75	1	3.2	1.6
125	AHX475SR12508EA	●	○	8	63	140.6	38.1	2	4.0	1.6
	AHX475SR12510EA	●	○	10	63	140.6	38.1	2	4.0	1.6
160	AHX475SR16010FA	●	○	10	63	175.6	50.8	2	5.5	1.6
	AHX475SR16012FA	●	○	12	63	175.6	50.8	2	5.5	1.6

(Note 1) The cutter body does not have a set bolt for an arbor. Please refer to page 20 when ordering.

★ Number of Teeth

DC=mm size, DCON=mm size

(mm)

DC	Order Number	Stock	Coolant Hole	No.T	LF	DCX	DCONMS	Fig.	WT(kg)	APMX
50	AHX475S-050A04AR	●	○	4	50	65.7	22	1	0.6	1.6
	AHX475S-050A05AR	●	○	5	50	65.7	22	1	0.6	1.6
63	AHX475S-063A05AR	●	○	5	50	78.7	22	1	1.0	1.6
	AHX475S-063A06AR	●	○	6	50	78.7	22	1	1.0	1.6
80	AHX475S-080A06AR	●	○	6	50	95.6	27	1	1.6	1.6
	AHX475S-080A08AR	●	○	8	50	95.6	27	1	1.6	1.6
100	AHX475S-100A07AR	●	○	7	63	115.6	32	1	3.3	1.6
	AHX475S-100A09AR	●	○	9	63	115.6	32	1	3.3	1.6
125	AHX475S-125B08AR	●	○	8	63	140.6	40	2	4.0	1.6
	AHX475S-125B10AR	●	○	10	63	140.6	40	2	4.0	1.6
160	AHX475S-160B10AR	●	○	10	63	175.6	40	2	6.0	1.6
	AHX475S-160B12AR	●	○	12	63	175.6	40	2	6.0	1.6

(Note 1) The cutter body does not have a set bolt for an arbor. Please refer to page 19 when ordering.

★ Number of Teeth

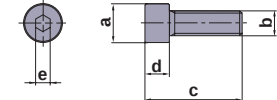
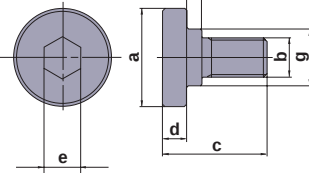
● : Inventory maintained in Japan. (10 inserts in one case)

Spare Parts

Tool Holder Type		
	Clamp Screw	Wrench (Insert)
AHX475S	TS35R	TKY15T

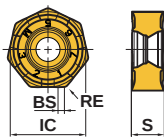
★ Clamp Torque (N • m) : TS35R=3.5

Optional Parts

Tool Holder Type	Set Bolt		Fig.	Reference Dimensions							Geometry
	With Coolant Hole	Without Coolant Hole		a	b	c	d	e	f	g	
	Order Number	Order Number									
AHX475S-050A $\odot\odot$ AR	HSC10030H	HSC10035	1	16	M10×1.5	40	10	6	—	—	Fig.1 
AHX475S-063A $\odot\odot$ AR	HSC10030H	HSC10035	1	16	M10×1.5	40	10	6	—	—	
AHX475S-080A $\odot\odot$ AR	HSC12035H	HSC12035 HSC12045	1	18	M12×1.75	47 57	12	10	—	—	Fig.2 
AHX475S-100B $\odot\odot$ AR	HSC16040H	—	1	24	M16×2	56	16	14	—	—	
AHX475S-125B $\odot\odot$ AR	MBA20040H	—	2	50	M20×2.5	54	14	17	6	27	
AHX475S-160C $\odot\odot$ AR	MBA20040H	—	2	50	M20×2.5	54	14	17	6	27	
AHX475SR080 $\odot\odot$ DA	HSC16040H	—	1	24	M16×2	56	16	14	—	—	
AHX475SR100 $\odot\odot$ DA	HSC16040H	—	1	24	M16×2	56	16	14	—	—	
AHX475SR125 $\odot\odot$ EA	MBA20040H	—	2	50	M20×2.5	54	14	17	6	27	
AHX475SR160 $\odot\odot$ FA	MBA24045H	—	2	65	M24×3	59	14	17	10	37	

(Note 1) Internal coolant is necessary with the set bolt.

Inserts

Workpiece Material		P	Steel	◆		◆		◆	◆	◆		This is the selection guideline for AHX475S. Please note that the cutting conditions differ depending on multiple factors, for more details refer to the Recommended Cutting Conditions. Edge Preparation : E : Round				
		K	Cast Iron	◆	◆	◆				◆						
		H	Hardened Steel							◆						
										◆						
Application	Shape	Order Number	Class	Honing	Coated						Dimensions (mm)					Geometry
					MV1020	MV1030	MC5020	MP6120	MP6130	VP15TF	IC	RE	BS	S	APMX	
General Cutting		NNMU130532ZEN-M	M	E	●	●	●	●	●	●	13.4	3.2	—	5.09	1.6	
Unstable Cutting		NNMU130532ZEN-R	M	E	●	●	●	●	●	●	13.4	3.2	—	5.09	1.6	

Recommended Cutting Conditions

■ Dry Cutting

(mm)

	Workpiece Material	Properties	Grade	vc (m/min)
P	Mild Steel	Hardness ≤180HB	MV1020	220 (170—270)
			MP6120	150 (100—200)
			MV1030	140 (80—200)
			MP6130	130 (80—180)
	Carbon Steel, Alloy Steel	Hardness 180—280HB	MV1020	200 (150—250)
			MP6120	130 (80—180)
			MV1030	120 (60—180)
			MP6130	110 (60—160)
	Carbon Steel, Alloy Steel	Hardness 280—350HB	MV1020	150 (100—200)
			MP6120	100 (50—150)
			MV1030	90 (30—150)
			MP6130	80 (30—130)
	Alloy Tool Steel	Hardness ≤350HB (annealing)	MP6120	100 (50—150)
			MP6130	80 (30—120)
	Pre-hardened Steel	Hardness 35—45HRC	MP6120	100 (70—130)
			MP6130	80 (50—110)
K	Gray Cast Iron	Tensile Strength ≤350MPa	MC5020	150 (100—200)
			VP15TF	120 (80—160)
	Ductile Cast Iron	Tensile Strength ≤450MPa	MV1020	200 (150—250)
			MC5020	150 (100—200)
			MV1030	140 (80—200)
			VP15TF	120 (80—160)
	Ductile Cast Iron	Tensile Strength ≤800MPa	MV1020	180 (130—230)
			MC5020	150 (100—200)
			MV1030	140 (80—200)
			VP15TF	120 (80—160)
H	Hardened Steel	Hardness 40—55HRC	VP15TF	70 (50—90)

■ Dry Cutting

(mm)

Workpiece Material		Properties	Grade	ap (mm)	Width of Cut ae					
					≤0.5DC		0.5DC—0.8DC		0.8DC—DC	
					Breaker	fz (mm/t.)	Breaker	fz (mm/t.)	Breaker	fz (mm/t.)
P	Mild Steel	Hardness ≤180HB	MV1020 MV1030 MP6120 MP6130	≤1.6	R	0.6	R	0.8	M	1.0
	Carbon Steel, Alloy Steel	Hardness 180—280HB	MV1020 MV1030 MP6120 MP6130	≤1.6	R	0.6	R	0.8	M	1.0
	Carbon Steel, Alloy Steel	Hardness 280—350HB	MV1020 MV1030 MP6120 MP6130	≤1.6	R	0.5	R	0.6	R	0.7
	Alloy Tool Steel	Hardness ≤350HB (annealing)	MP6120 MP6130	≤1.6	R	0.5	R	0.6	R	0.7
	Pre-hardened Steel	Hardness 35-45HRC	MP6120 MP6130	≤1.6	R	0.5	R	0.6	R	0.7
K	Gray Cast Iron	Tensile Strength ≤350MPa	MC5020	≤1.6	R	0.6	R	0.8	M	1.0
			VP15TF	≤1.6	M	0.6	M	0.8	M	1.0
	Ductile Cast Iron	Tensile Strength ≤450MPa	MV1020 MV1030 MC5020 VP15TF	≤1.6	R	0.6	R	0.8	M	1.0
	Ductile Cast Iron	Tensile Strength ≤800MPa	MV1020 MV1030 MC5020 VP15TF	≤1.6	R	0.5	R	0.6	R	0.7
H	Hardened Steel	Hardness 40—55HRC	VP15TF	≤1.6	R	0.4	R	0.5	R	0.6

FACE MILLING <GENERAL CUTTING>

AHX640S

P M K N S H



Fig. 1
ø63
ø80

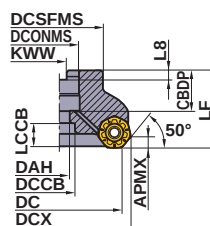


Fig. 2
ø100
ø125
ø160

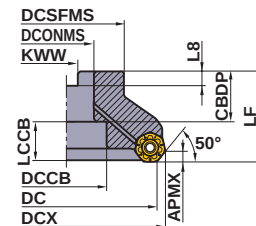
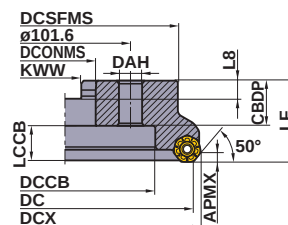


Fig. 3
ø200



Right hand tool holder only.

DC	Set Bolt	Geometry	
ø63	HSC10030H		
ø80	HSC12035H		
ø100	MBA16033H		
ø125	MBA20040H		
ø160	MBA24045H		
ø200	—		

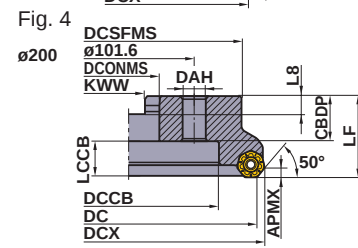
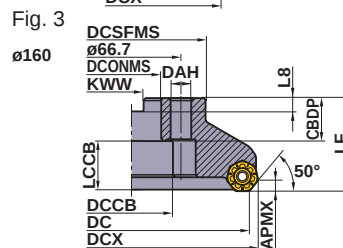
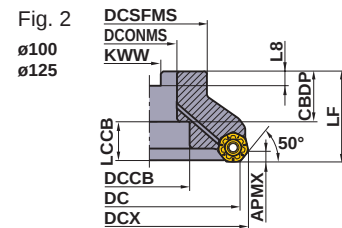
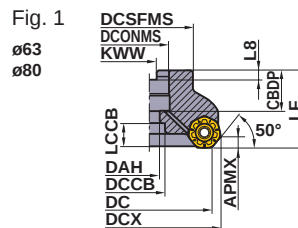
DC=mm size, DCON=Inch size

(mm)

DC	Order Number	Stock	Coolant Hole	No.T	LF	DCX	DCONMS	Fig.	WT(kg)	APMX
80	AHX640SR08004CA	●	○	4	50	92.55	25.4	1	1.1	6
	AHX640SR08006CA	●	○	6	50	92.55	25.4	1	1.0	6
100	AHX640SR10005DA	●	○	5	50	112.55	31.75	2	1.7	6
	AHX640SR10007DA	●	○	7	50	112.55	31.75	2	1.5	6
125	AHX640SR12506EA	●	○	6	63	137.55	38.1	2	3.0	6
	AHX640SR12508EA	●	○	8	63	137.55	38.1	2	2.9	6
160	AHX640SR16007FA	●	○	7	63	172.55	50.8	2	4.9	6
	AHX640SR16010FA	●	○	10	63	172.55	50.8	2	4.7	6
200	AHX640SR20008KN	●	—	8	63	212.55	47.625	3	8.2	6
	AHX640SR20012KN	●	—	12	63	212.55	47.625	3	7.9	6

★ Number of Teeth

● : Inventory maintained in Japan.



Right hand tool holder only.

DC	Set Bolt	Geometry	
φ63	HSC10030H	①	
φ80	HSC12035H		
φ100	MBA16033H	②	
φ125	MBA20040H		
φ160	—	—	—
φ200	—	—	—

DC=mm size, DCON=mm size

(mm)

DC	Order Number	Stock	Coolant Hole	★ No.T	LF	DCX	DCONMS	Fig.	WT(kg)	APMX
63	AHX640S-063A04AR	●	○	4	50	75.55	22	1	0.7	6
	AHX640S-063A05AR	●	○	5	50	75.55	22	1	0.6	6
80	AHX640S-080A04AR	●	○	4	50	92.55	27	1	1.1	6
	AHX640S-080A06AR	●	○	6	50	92.55	27	1	1.0	6
100	AHX640S-100B05AR	●	○	5	50	112.55	32	2	1.7	6
	AHX640S-100B07AR	●	○	7	50	112.55	32	2	1.6	6
125	AHX640S-125B06AR	●	○	6	63	137.55	40	2	3.1	6
	AHX640S-125B08AR	●	○	8	63	137.55	40	2	3.0	6
160	AHX640S-160C07NR	●	—	7	63	172.55	40	3	5.4	6
	AHX640S-160C10NR	●	—	10	63	172.55	40	3	5.2	6
200	AHX640S-200C08NR	●	—	8	63	212.55	60	4	7.8	6
	AHX640S-200C12NR	●	—	12	63	212.55	60	4	7.5	6

★ Number of Teeth

Spare Parts

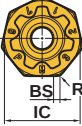
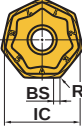
Tool Holder Type		
	Clamp Screw	Wrench (Insert)
AHX640S	CS5015060T	TKY20T

★ Clamp Torque (N • m) : CS5015060T=5.0

General Purpose Multi Corner Insert Type Face Milling Cutter

Inserts

(mm)

Workpiece Material		P	Steel																	This is the selection guideline for AHX640S. Please note that the cutting conditions differ depending on multiple factors, for more details refer to the Recommended Cutting Conditions.
		M	Stainless Steel																	
		K	Cast Iron																	
		S	Heat Resistant and Titanium Alloys																	
		H	Hardened Steel																	
Edge Preparation : E : Round																				
Application	Shape	Order Number	Class	Honing	Coated								Dimensions (mm)					Geometry		
					NEW XC5010	MC5020	MP6120	MP6130	MP7030	MP9120	MP9130	VP15TF	VP20RT	IC	RE	BS	S			APMX
For Titanium Alloys and Heat Resistant Alloys		NNMU200712ZER-L	M	E							●	●			20	1.2	1	7.24	6	 
General Cutting		NNMU200708ZEN-M	M	E			●	●							20	0.8	1	7.28	6	 
		NNMU200708ZEN-MP	M	E								●			20	0.8	1	7.28	6	 
		NNMU200712ZER-MM	M	E						●					20	1.2	1	7.28	6	 
	NNMU200608ZEN-MK	M	E		●	●					●	●		20	0.8	1	6.1	6	 	
For Cast Iron Strong Cutting Edge Type		NNMU200608ZEN-HK	M	E		●					●	●		20	0.8	1	6.1	6	 	
		NNMQ200708ZEN-FT	M	E		●									20	0.8	1	6.55	6	 

Note 1) The height of the cutter when setting MK or HK inserts is different from when setting MP, MM and FT inserts.

● = NEW

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

(mm)

This is the selection guideline for AHX640S.
Please note that the cutting conditions differ depending on multiple factors, for more details refer to the Recommended Cutting Conditions.

Edge Preparation : E : Round



(Note 1) These wiper inserts have 2 cutting edges for left hand use and 2 corners for right hand use. Position as shown in figure 1.

(Note 2) A satisfactory finish surface can be achieved with one wiper insert.

However, if the feed rate per revolution will be equal to or greater than the width of the wiper edge, it is recommended to install the second and further wiper inserts spaced evenly within the cutting body.

General Purpose Multi Corner Insert Type Face Milling Cutter

Recommended Cutting Conditions

■ Dry Cutting

(mm)

	Workpiece Material	Properties	Cutting Conditions	Grade	Breaker	vc (m/min)	fz (mm/t.)	ap	ae
P	Mild Steel	Hardness ≤180HB	☑	MP6120	M	250(200—300)	0.3(0.2—0.4)	≤5	≤0.8DC
			☑	VP15TF	MP	250(200—300)	0.3(0.2—0.4)	≤5	≤0.8DC
			✖	MP6130	M	220(170—270)	0.4(0.3—0.5)	≤5	≤0.8DC
	Carbon Steel, Alloy Steel	Hardness 180—280HB	☑	MP6120	M	220(170—270)	0.3(0.2—0.4)	≤5	≤0.8DC
			☑	VP15TF	MP	220(170—270)	0.3(0.2—0.4)	≤5	≤0.8DC
			✖	MP6130	M	190(140—240)	0.4(0.3—0.5)	≤5	≤0.8DC
	Carbon Steel, Alloy Steel	Hardness 280—350HB	☑	MP6120	M	140(100—180)	0.3(0.2—0.4)	≤5	≤0.8DC
			☑	VP15TF	MP	140(100—180)	0.3(0.2—0.4)	≤5	≤0.8DC
			✖	MP6130	M	110(70—150)	0.4(0.3—0.5)	≤5	≤0.8DC
	Alloy Tool Steel	Hardness ≤350HB (annealing)	☑	MP6120	M	140(100—180)	0.15(0.1—0.2)	≤3	≤0.8DC
			☑	VP15TF	MP	140(100—180)	0.15(0.1—0.2)	≤3	≤0.8DC
			✖	MP6130	M	110(70—150)	0.25(0.2—0.3)	≤3	≤0.8DC
	Pre-hardened Steel	Hardness 35—45HRC	☑	MP6120	M	140(100—180)	0.15(0.1—0.2)	≤3	≤0.8DC
			☑	VP15TF	MP	140(100—180)	0.15(0.1—0.2)	≤5	≤0.8DC
			✖	MP6130	M	110(70—150)	0.25(0.2—0.3)	≤3	≤0.8DC
M	Austenitic Stainless Steel	Hardness ≤200HB	☑	MP7030	MM	200(150—250)	0.2(0.1—0.3)	≤5	≤0.8DC
	Austenitic Stainless Steel	Hardness > 200HB	☑	MP7030	MM	150(100—200)	0.2(0.1—0.3)	≤5	≤0.8DC
	Two-phase Stainless Steel	Hardness ≤280HB	☑	MP7030	MM	140(100—180)	0.15(0.05—0.25)	≤5	≤0.8DC
	Ferritic and Martensitic Stainless Steel	Hardness ≤200HB	☑	MP7030	MM	200(150—250)	0.2(0.1—0.3)	≤5	≤0.8DC
	Ferritic and Martensitic Stainless Steel	Hardness > 200HB	☑	MP7030	MM	150(100—200)	0.2(0.1—0.3)	≤5	≤0.8DC
	Precipitation-Hardening Stainless Steel	Hardness < 450HB	☑	MP7030	MM	130(100—160)	0.15(0.05—0.25)	≤5	≤0.8DC
K	Gray Cast Iron	Tensile Strength ≤350MPa	☑	XC5010	MK, FT	800(500—1000)	0.1(0.1—0.3)	≤3	≤0.8DC
			☑	MC5020	MK, HK	220(150—300)	0.3(0.2—0.4)	≤5	≤0.8DC
			☑	VP15TF	MP	180(130—230)	0.3(0.2—0.4)	≤5	≤0.8DC
			✖	VP15TF, VP20RT	MK, HK	180(130—230)	0.3(0.2—0.4)	≤5	≤0.8DC
	Ductile Cast Iron	Tensile Strength ≤450MPa	☑	XC5010	MK, FT	800(500—1000)	0.1(0.1—0.3)	≤3	≤0.8DC
			☑	MC5020	MK, HK	200(150—250)	0.2(0.1—0.3)	≤5	≤0.8DC
			☑	VP15TF	MP	170(120—220)	0.2(0.1—0.3)	≤5	≤0.8DC
			✖	VP15TF, VP20RT	MK, HK	170(120—220)	0.2(0.1—0.3)	≤5	≤0.8DC
	Ductile Cast Iron	Tensile Strength ≤800MPa	☑	XC5010	MK, FT	800(500—1000)	0.1(0.1—0.3)	≤3	≤0.8DC
			☑	MC5020	MK, HK	170(150—200)	0.2(0.1—0.3)	≤5	≤0.8DC
			☑	VP15TF	MP	140(100—180)	0.2(0.1—0.3)	≤5	≤0.8DC
			✖	VP15TF, VP20RT	MK, HK	140(100—180)	0.2(0.1—0.3)	≤5	≤0.8DC
H	Hardened Steel	40—55HRC	☑	VP15TF	MP	80(60—100)	0.15(0.1—0.2)	≤3	≤0.8DC

(Note1) Wet cutting is recommended for good surface finishing of stainless steel. (Tool life is short compared to dry cutting.)

(Note2) Wet cutting with internal coolant is recommended for titanium and heat resistant alloys.

(Note3) If the clamping rigidity of the work material is low and the tool overhang is long, adjust the cutting speed and feed in the table above.

Recommended Cutting Conditions

Wet Cutting

(mm)

	Workpiece Material	Properties	Breaker	Grade	vc (m/min)	fz (mm/t.)	ap	ae
M	Austenitic Stainless Steel	≤200HB	MP7030	MM	125 (100—150)	0.15 (0.1—0.2)	≤5	≤0.8DC
	Austenitic Stainless Steel	> 200HB	MP7030	MM	100 (75—125)	0.15 (0.1—0.2)	≤5	≤0.8DC
	Two-phase Stainless Steel	≤280HB	MP7030	MM	80 (60—100)	0.1 (0.05—0.15)	≤5	≤0.8DC
	Ferritic and Martensitic Stainless Steel	≤200HB	MP7030	MM	125 (100—150)	0.15 (0.1—0.2)	≤5	≤0.8DC
	Ferritic and Martensitic Stainless Steel	> 200HB	MP7030	MM	100 (75—125)	0.15 (0.1—0.2)	≤5	≤0.8DC
	Precipitation-Hardening Stainless Steel	< 450HB	MP7030	MM	70 (50—90)	0.1 (0.05—0.15)	≤5	≤0.8DC
S	Titanium Alloys	—	MP7030	MM	40 (20—50)	0.15 (0.1—0.2)	≤3	≤0.6DC
		—	MP9120	L	60 (50—70)	0.1 (0.05—0.15)	≤3	≤0.6DC
		—	MP9130	L	40 (20—50)	0.15 (0.1—0.2)	≤3	≤0.6DC
	Heat Resistant Alloys	—	MP7030	MM	40 (20—50)	0.15 (0.1—0.2)	≤3	≤0.6DC
		—	MP9120	L	60 (50—70)	0.1 (0.05—0.15)	≤3	≤0.6DC
		—	MP9130	L	40 (20—50)	0.15 (0.1—0.2)	≤3	≤0.6DC

(Note1) Wet cutting is recommended for good surface finishing of stainless steel. (Tool life is short compared to dry cutting.)

(Note2) Wet cutting with internal coolant is recommended for titanium and heat resistant alloys.

(Note3) When clamp rigidity is low and tool overhang is long, it is recommended to reduce the cutting speed and the feed rate by 30%.

Cutting Conditions with Wiper Insert

(mm)

	Workpiece Material	Properties	Main Insert	Grade	Wiper Insert	Grade	vc (m/min)	fz (mm/t.)	ap	ae
P	Mild Steel	Hardness ≤180HB	VP15TF	MP	VP15TF	WP	250 (200—300)	0.3 (0.2—0.4)	≤0.5	≤0.8DC
			MP6120	M	MP6120	M	250 (200—300)	0.3 (0.2—0.4)	≤0.5	≤0.8DC
	Carbon Steel, Alloy Steel	Hardness 180—280HB	VP15TF	MP	VP15TF	WP	220 (170—270)	0.3 (0.2—0.4)	≤0.5	≤0.8DC
			MP6120	M	MP6120	M	220 (170—270)	0.3 (0.2—0.4)	≤0.5	≤0.8DC
	Carbon Steel, Alloy Steel	Hardness 280—350HB	VP15TF	MP	VP15TF	WP	140 (100—180)	0.3 (0.2—0.4)	≤0.5	≤0.8DC
			MP6120	M	MP6120	M	140 (100—180)	0.3 (0.2—0.4)	≤0.5	≤0.8DC
K	Gray Cast Iron	Tensile Strength ≤350MPa	MC5020	MK, HK	MC5020	WK	320 (250—400)	0.3 (0.2—0.4)	≤0.5	≤0.8DC
			VP15TF	MP	VP15TF	WP	220 (150—300)	0.3 (0.2—0.4)	≤0.5	≤0.8DC
	Ductile Cast Iron	Tensile Strength ≤450MPa	MC5020	MK, HK	MC5020	WK	250 (200—300)	0.2 (0.1—0.3)	≤0.5	≤0.8DC
			VP15TF	MP	VP15TF	WP	200 (150—250)	0.2 (0.1—0.3)	≤0.5	≤0.8DC
	Ductile Cast Iron	Tensile Strength ≤800MPa	MC5020	MK, HK	MC5020	WK	220 (200—250)	0.2 (0.1—0.3)	≤0.5	≤0.8DC
			VP15TF	MP	VP15TF	WP	170 (150—200)	0.2 (0.1—0.3)	≤0.5	≤0.8DC
S	Heat Resistant Alloys	—	VP15TF	MP	VP15TF	WP	40 (20—50)	0.15 (0.1—0.2)	≤0.5	≤0.8DC
H	Hardened Steel	40—55HRC	VP15TF	MP	VP15TF	WP	80 (60—100)	0.15 (0.1—0.2)	≤0.5	≤0.8DC

(Note 1) When clamp rigidity is low and tool overhang is long, it is recommended to reduce the cutting speed and the feed rate by 30%.

(Note 2) Please use WP geometry insert in combination with MP geometry inserts, and use WK geometry insert in combination with MK or HK geometry inserts

General Purpose Multi Corner Insert Type Face Milling Cutter

FACE MILLING

<HIGH FEED CUTTING FOR CAST IRON>



AHX640W

P M **K** N S H



Fig.1
ø80

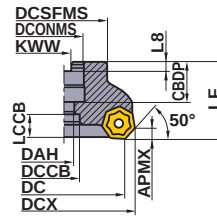


Fig.2
ø100
ø125
ø160

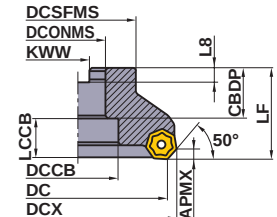


Fig.3
ø200
ø250

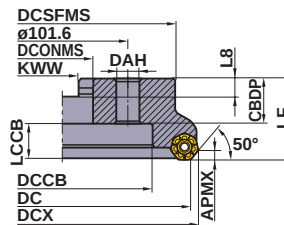
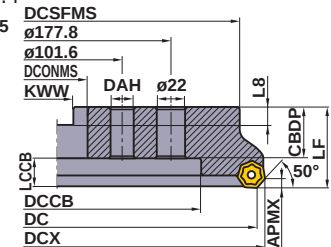


Fig.4
ø315



Right Hand Tool Holder
DC = mm size, DCON = Inch size

Right hand tool holder shown. (mm)

DC	Order Number	Stock	Coolant Hole	No.T	LF	DCX	DCONMS	Fig.	WT(kg)	APMX
80	AHX640WR08008C	●	—	8	50	92.6	25.4	1	1.5	6
	AHX640WR08010C	●	—	10	50	92.6	25.4	1	1.5	6
100	AHX640WR10010D	●	—	10	50	112.6	31.75	2	2.1	6
	AHX640WR10014D	●	—	14	50	112.6	31.75	2	2.1	6
125	AHX640WR12512E	●	—	12	63	137.6	38.1	2	3.5	6
	AHX640WR12518E	●	—	18	63	137.6	38.1	2	3.5	6
160	AHX640WR16016F	●	—	16	63	172.6	50.8	2	5.6	6
	AHX640WR16022F	●	—	22	63	172.6	50.8	2	5.6	6
200	AHX640WR20020K	●	—	20	63	212.6	47.625	3	9.0	6
	AHX640WR20028K	●	—	28	63	212.6	47.625	3	9.0	6
250	AHX640WR25024K	●	—	24	63	262.6	47.625	3	14.4	6
	AHX640WR25036K	●	—	36	63	262.6	47.625	3	14.4	6
315	AHX640WR31528P	●	—	28	63	327.6	47.625	4	23.8	6
	AHX640WR31544P	●	—	44	63	327.6	47.625	4	23.8	6

Left Hand Tool Holder
DC = mm size, DCON = Inch size

(mm)

DC	Order Number	Stock	Coolant Hole	No.T	LF	DCX	DCONMS	Fig.	WT(kg)	APMX
80	AHX640WL08008C	●	—	8	50	92.6	25.4	1	1.5	6
	AHX640WL08010C	●	—	10	50	92.6	25.4	1	1.5	6
100	AHX640WL10010D	●	—	10	50	112.6	31.75	2	2.1	6
	AHX640WL10014D	●	—	14	50	112.6	31.75	2	2.1	6
125	AHX640WL12512E	●	—	12	63	137.6	38.1	2	3.5	6
	AHX640WL12518E	●	—	18	63	137.6	38.1	2	3.5	6
160	AHX640WL16016F	●	—	16	63	172.6	50.8	2	5.6	6
	AHX640WL16022F	●	—	22	63	172.6	50.8	2	5.6	6
200	AHX640WL20020K	●	—	20	63	212.6	47.625	3	9.0	6
	AHX640WL20028K	●	—	28	63	212.6	47.625	3	9.0	6
250	AHX640WL25024K	●	—	24	63	262.6	47.625	3	14.4	6
	AHX640WL25036K	●	—	36	63	262.6	47.625	3	14.4	6
315	AHX640WL31528P	●	—	28	63	327.6	47.625	4	23.8	6
	AHX640WL31544P	●	—	44	63	327.6	47.625	4	23.8	6

★ Number of Teeth

● : Inventory maintained in Japan.



Fig.1
ø80

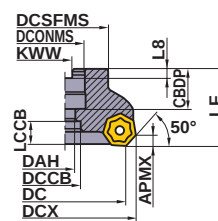


Fig.2
ø100
ø125

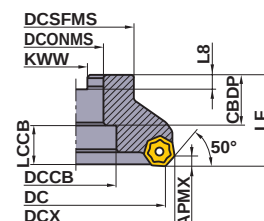


Fig.3
ø160

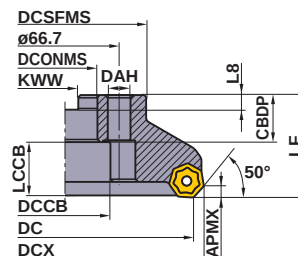


Fig.4
ø200
ø250

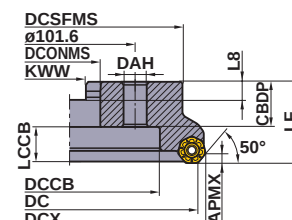
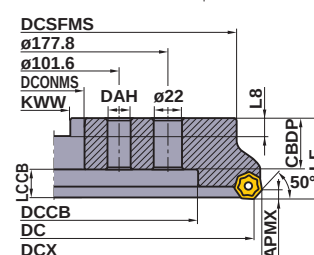


Fig.5
ø315



Right Hand Tool Holder
DC=mm size, DCON=mm size

Right hand tool holder shown. (mm)

DC	Order Number	Stock	Coolant Hole	No.T	LF	DCX	DCONMS	Fig.	WT(kg)	APMX
80	AHX640W-080A08R	●	—	8	50	92.6	27	1	1.5	6
	AHX640W-080A10R	●	—	10	50	92.6	27	1	1.5	6
100	AHX640W-100B10R	●	—	10	50	112.6	32	2	2.1	6
	AHX640W-100B14R	●	—	14	50	112.6	32	2	2.1	6
125	AHX640W-125B12R	●	—	12	63	137.6	40	2	3.1	6
	AHX640W-125B18R	●	—	18	63	137.6	40	2	3.1	6
160	AHX640W-160C16R	●	—	16	63	172.6	40	3	5.6	6
	AHX640W-160C22R	●	—	22	63	172.6	40	3	5.6	6
200	AHX640W-200C20R	●	—	20	63	212.6	60	4	8	6
	AHX640W-200C28R	●	—	28	63	212.6	60	4	8	6
250	AHX640W-250C24R	●	—	24	63	262.6	60	4	12.6	6
	AHX640W-250C36R	●	—	36	63	262.6	60	4	12.6	6
315	AHX640W-315C28R	●	—	28	80	327.6	60	5	31.5	6
	AHX640W-315C44R	●	—	44	80	327.6	60	5	31.5	6

Left Hand Tool Holder
DC=mm size, DCON=mm size

(mm)

DC	Order Number	Stock	Coolant Hole	No.T	LF	DCX	DCONMS	Fig.	WT(kg)	APMX
80	AHX640W-080A08L	●	—	8	50	92.6	27	1	1.5	6
	AHX640W-080A10L	●	—	10	50	92.6	27	1	1.5	6
100	AHX640W-100B10L	●	—	10	50	112.6	32	2	2.1	6
	AHX640W-100B14L	●	—	14	50	112.6	32	2	2.1	6
125	AHX640W-125B12L	●	—	12	63	137.6	40	2	3.1	6
	AHX640W-125B18L	●	—	18	63	137.6	40	2	3.1	6
160	AHX640W-160C16L	●	—	16	63	172.6	40	3	5.6	6
	AHX640W-160C22L	●	—	22	63	172.6	40	3	5.6	6
200	AHX640W-200C20L	●	—	20	63	212.6	60	4	8.0	6
	AHX640W-200C28L	●	—	28	63	212.6	60	4	8.0	6
250	AHX640W-250C24L	●	—	24	63	262.6	60	4	12.6	6
	AHX640W-250C36L	●	—	36	63	262.6	60	4	12.6	6
315	AHX640W-315C28L	●	—	28	80	327.6	60	5	31.5	6
	AHX640W-315C44L	●	—	44	80	327.6	60	5	31.5	6

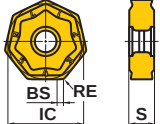
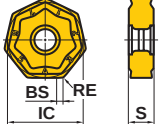
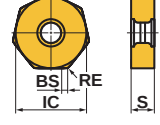
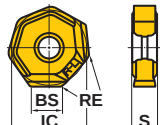
★ Number of Teeth

MOUNTING DIMENSION > P35
CUTTING CONDITIONS > P32

General Purpose Multi Corner Insert Type Face Milling Cutter

Inserts

(mm)

Workpiece Material		K	Cast Iron	◆	◆	◆	This is the selection guideline for AHX640W. Please note that the cutting conditions differ depending on multiple factors, for more details refer to the Recommended Cutting Conditions. Edge Preparation : E : Round							
Application	Shape	Order Number	Class	Honing	Coated			Dimensions(mm)					Geometry	
					NEW XC5010	MC5020	VP20RT	IC	RE	BS	S	APMX		
General Cutting		NNMU200608ZEN-MK	M	E	●	●	●	20	0.8	1.0	6.1	6		
Unstable Cutting		NNMU200608ZEN-HK	M	E	●	●		20	0.8	1.0	6.1	6		
		NNMQ200708ZEN-FT	M	E	●				20	0.8	1.0	6.55	6	
Finishi Cutting	 Wiper	WNEU2006ZEN7C-WK	E	E	●				20	0.8	7.4	6.55	0.5	

● = NEW

Spare Parts



Tool Holder Type			
	Wedge	Clamp Screw	Wrench
AHX640W	CWAHX640WN	LS0622T	TKY15T

★ Clamp Torque (N • m) : LS0622T=6.0

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

Recommended Cutting Conditions

■ Dry-Wet Cutting

(mm)

	Workpiece Material	Properties	Cutting Conditions	Grade	Breaker	vc (m/min)	fz (mm/t.)	ap	ae
K	Gray Cast Iron	Tensile Strength ≤350MPa	☞	XC5010	MK, FT	800(500—1000)	0.1(0.1—0.3)	≤3	≤0.8DC
			☞	MC5020	MK, HK	220(150—300)	0.3(0.2—0.4)	≤5	≤0.8DC
			☞ ✖	VP15TF,VP20RT	MK, HK	180(130—230)	0.3(0.2—0.4)	≤5	≤0.8DC
	Ductile Cast Iron	Tensile Strength ≤450MPa	☞	XC5010	MK, FT	800(500—1000)	0.1(0.1—0.3)	≤3	≤0.8DC
			☞	MC5020	MK, HK	200(150—250)	0.2(0.1—0.3)	≤5	≤0.8DC
			☞ ✖	VP15TF,VP20RT	MK, HK	170(120—220)	0.2(0.1—0.3)	≤5	≤0.8DC
	Ductile Cast Iron	Tensile Strength ≤800MPa	☞	XC5010	MK, FT	800(500—1000)	0.1(0.1—0.3)	≤3	≤0.8DC
			☞	MC5020	MK, HK	170(150—200)	0.2(0.1—0.3)	≤5	≤0.8DC
			☞ ✖	VP15TF,VP20RT	MK, HK	140(100—180)	0.2(0.1—0.3)	≤5	≤0.8DC

(Note 1) With reference to the above examples, adjust the cutting conditions according to the machining set up.

(Note 2) Tool life when wet cutting is short compared to dry cutting.

■ Finishing (Use of Wiper Inserts)

(mm)

	Workpiece Material	Properties	Cutting Conditions	Grade	Breaker	vc (m/min)	fz (mm/t.)	ap
K	Gray Cast Iron	Tensile Strength ≤350MPa	☞	MC5020	MK, HK	320(250—400)	0.2(0.1—0.3)	<0.5
			☞	MC5020	MK, HK	270(200—350)	0.2(0.1—0.3)	0.5—3
	Ductile Cast Iron	Tensile Strength ≤450MPa	☞	MC5020	MK, HK	270(200—350)	0.2(0.1—0.3)	<0.5
			☞	MC5020	MK, HK	220(200—250)	0.2(0.1—0.3)	0.5—3

(Note 3) Please use 2-3 pcs of Wiper inserts where the feed rate exceeds 6mm/rev.

AHX440S, AHX475S, AHX640S Mounting Dimensions

Fig. 1

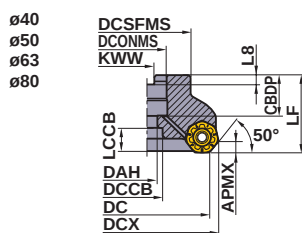


Fig. 2

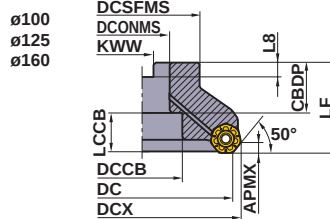
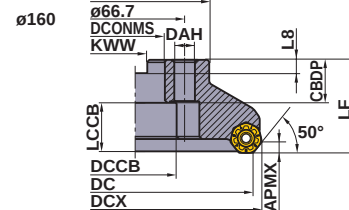


Fig. 3



Right hand tool holder only.

(mm)

DCONMS	DC	Order Number	CBDP	DAH	DCCB	LCCB	DCSFMS	KWW	L8	Fig.
16	40	AHX440S-040A03AR	18	9	14	13.9	37	8.4	5.6	1
16	40	AHX440S-040A04AR	18	9	14	13.9	37	8.4	5.6	1
22	50	AHX440S-050A04AR	20	11	17	11.9	47	10.4	6.3	1
22	50	AHX440S-050A05AR	20	11	17	11.9	47	10.4	6.3	1
22	50	AHX440S-050A06AR	20	11	17	11.9	47	10.4	6.3	1
22	50	AHX475S-050A04AR	20	11	17	16.7	47	10.4	6.3	5
22	50	AHX475S-050A05AR	20	11	17	16.7	47	10.4	6.3	5
22	63	AHX440S-063A05AR	20	11	17	11.9	50	10.4	6.3	1
22	63	AHX440S-063A06AR	20	11	17	11.9	50	10.4	6.3	1
22	63	AHX440S-063A08AR	20	11	17	11.9	50	10.4	6.3	1
22	63	AHX475S-063A05AR	20	11	17	16.7	60	10.4	6.3	5
22	63	AHX475S-063A06AR	20	11	17	16.7	60	10.4	6.3	5
22	63	AHX640S-063A04AR	20	11	17	16.2	50	10.4	6.3	1
22	63	AHX640S-063A05AR	20	11	17	16.2	50	10.4	6.3	1
25.4	80	AHX440SR08006CA	26	13	20	14.9	56	9.5	6	1
25.4	80	AHX440SR08008CA	26	13	20	14.9	56	9.5	6	1
25.4	80	AHX440SR08010CA	26	13	20	14.9	56	9.5	6	1
25.4	80	AHX640SR08004CA	26	13	20	14.2	56	9.5	6	1
25.4	80	AHX640SR08006CA	26	13	20	14.2	56	9.5	6	1
27	80	AHX440S-080A06AR	23	13	20	14.9	56	12.4	7	1
27	80	AHX440S-080A08AR	23	13	20	14.9	56	12.4	7	1
27	80	AHX440S-080A10AR	23	13	20	14.9	56	12.4	7	1
27	80	AHX475S-080A06AR	23	13	20	14.7	76	12.4	7	5
27	80	AHX475S-080A08AR	23	13	20	14.7	76	12.4	7	5
27	80	AHX640S-080A04AR	23	13	20	15.2	56	12.4	7	1
27	80	AHX640S-080A06AR	23	13	20	15.2	56	12.4	7	1
31.75	80	AHX475SR08006DA	32	17	26	19.7	76	12.7	8	5
31.75	80	AHX475SR08008DA	32	17	26	19.7	76	12.7	8	5
31.75	100	AHX440SR10007DA	37	—	45	11.9	70	12.7	8	2
31.75	100	AHX440SR10010DA	37	—	45	11.9	70	12.7	8	2
31.75	100	AHX440SR10012DA	37	—	45	11.9	70	12.7	8	2
31.75	100	AHX475SR10007DA	32	17	26	19.7	96	12.7	8	5
31.75	100	AHX475SR10009DA	32	17	26	19.7	96	12.7	8	5
31.75	100	AHX640SR10005DA	35	—	45	13.2	70	12.7	8	2
31.75	100	AHX640SR10007DA	35	—	45	13.2	70	12.7	8	2

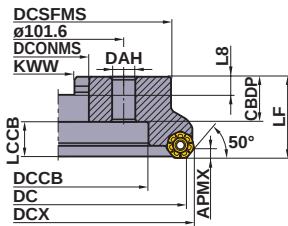
Fig. 4
ø200

Fig.5

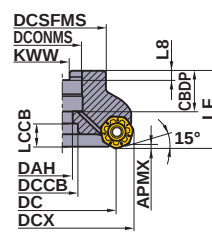
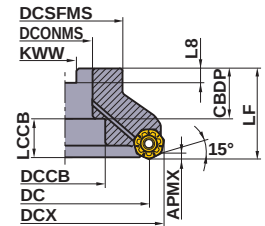
ø50
ø63
ø80
ø100

Fig.6

ø125
ø160

Right hand tool holder only.

(mm)

DCONMS	DC	Order Number	CBDP	DAH	DCCB	LCCB	DCSFMS	KWW	L8	Fig.
32	100	AHX440S-100B07AR	32	—	45	16.9	78	14.4	8	2
32	100	AHX440S-100B10AR	32	—	45	16.9	78	14.4	8	2
32	100	AHX440S-100B12AR	32	—	45	16.9	78	14.4	8	2
32	100	AHX475S-100A07AR	26	17	26	25.7	96	14.4	8	5
32	100	AHX475S-100A09AR	26	17	26	25.7	96	14.4	8	5
32	100	AHX640S-100B05AR	32	—	45	16.2	78	14.4	8	2
32	100	AHX640S-100B07AR	32	—	45	16.2	78	14.4	8	2
38.1	125	AHX440SR12508EA	42	—	56	19.9	80	15.9	10	2
38.1	125	AHX440SR12512EA	42	—	56	19.9	80	15.9	10	2
38.1	125	AHX440SR12514EA	42	—	56	19.9	80	15.9	10	2
38.1	125	AHX475SR12508EA	42	—	56	19.7	100	15.9	10	6
38.1	125	AHX475SR12510EA	42	—	56	19.7	100	15.9	10	6
38.1	125	AHX640SR12506EA	42	—	56	19.2	80	15.9	10	2
38.1	125	AHX640SR12508EA	42	—	56	19.2	80	15.9	10	2
40	125	AHX440S-125B08AR	40	—	56	21.9	89	16.4	9	2
40	125	AHX440S-125B12AR	40	—	56	21.9	89	16.4	9	2
40	125	AHX440S-125B14AR	40	—	56	21.9	89	16.4	9	2
40	125	AHX475S-125B08AR	40	—	56	21.7	100	16.4	9	6
40	125	AHX475S-125B10AR	40	—	56	21.7	100	16.4	9	6
40	125	AHX640S-125B06AR	42	—	56	19.2	89	16.4	9	2
40	125	AHX640S-125B08AR	42	—	56	19.2	89	16.4	9	2
40	160	AHX440S-160C10NR	40	14	56	21.9	100	16.4	9	3
40	160	AHX440S-160C14NR	40	14	56	21.9	100	16.4	9	3
40	160	AHX440S-160C16NR	40	14	56	21.9	100	16.4	9	3
40	160	AHX475S-160B10AR	40	—	56	21.7	100	16.4	9	6
40	160	AHX475S-160B12AR	40	—	56	21.7	100	16.4	9	6
40	160	AHX640S-160C07NR	29	14	56	32.2	120	16.4	9	3
40	160	AHX640S-160C10NR	29	14	56	32.2	120	16.4	9	3
47.625	200	AHX640SR20008KN	35	18	140	26.2	175	25.4	14.22	4
47.625	200	AHX640SR20012KN	35	18	140	26.2	175	25.4	14.22	4
50.8	160	AHX440SR16010FA	45	—	72	16.9	100	19.1	11	2
50.8	160	AHX440SR16014FA	45	—	72	16.9	100	19.1	11	2
50.8	160	AHX440SR16016FA	45	—	72	16.9	100	19.1	11	2
50.8	160	AHX475SR16010FA	45	—	72	16.7	100	19.1	11	6
50.8	160	AHX475SR16012FA	45	—	72	16.7	100	19.1	11	6
50.8	160	AHX640SR16007FA	43	—	72	18.2	100	19.1	11	2
50.8	160	AHX640SR16010FA	43	—	72	18.2	100	19.1	11	2
60	200	AHX640S-200C08NR	32	18	140	29.2	175	25.7	14.22	4
60	200	AHX640S-200C12NR	32	18	140	29.2	175	25.7	14.22	4

AHX640W Mounting Dimensions

Fig.1

ø80

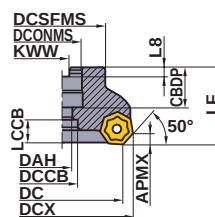
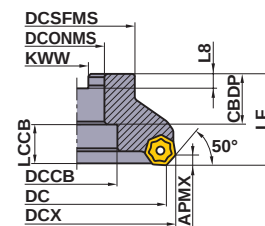


Fig.2

ø100
ø125
ø160



Right hand tool holder shown.

(mm)

DCONMS	DC	Order Number	CBDP	DAH	DCCB	LCCB	DCSFMS	KWW	L8	Fig.
25.4	80	AHX640WL08008C	26	13	20	14.8	56	9.5	6	1
25.4	80	AHX640WL08010C	26	13	20	14.8	56	9.5	6	1
25.4	80	AHX640WR08008C	26	13	20	14.8	56	9.5	6	1
25.4	80	AHX640WR08010C	26	13	20	14.8	56	9.5	6	1
27	80	AHX640W-080A08L	23	13	20	14.8	56	12.4	7	1
27	80	AHX640W-080A08R	23	13	20	14.8	56	12.4	7	1
27	80	AHX640W-080A10L	23	13	20	14.8	56	12.4	7	1
27	80	AHX640W-080A10R	23	13	20	14.8	56	12.4	7	1
31.75	100	AHX640WL10010D	32	—	45	16.8	70	12.7	8	2
31.75	100	AHX640WL10014D	32	—	45	16.8	70	12.7	8	2
31.75	100	AHX640WR10010D	32	—	45	16.8	70	12.7	8	2
31.75	100	AHX640WR10014D	32	—	45	16.8	70	12.7	8	2
32	100	AHX640W-100B10L	32	—	45	16.8	70	14.4	8	2
32	100	AHX640W-100B10R	32	—	45	16.8	70	14.4	8	2
32	100	AHX640W-100B14L	32	—	45	16.8	70	14.4	8	2
32	100	AHX640W-100B14R	32	—	45	16.8	70	14.4	8	2
38.1	125	AHX640WL12512E	35	—	56	26.8	80	15.9	10	2
38.1	125	AHX640WL12518E	35	—	56	26.8	80	15.9	10	2
38.1	125	AHX640WR12512E	35	—	56	26.8	80	15.9	10	2
38.1	125	AHX640WR12518E	35	—	56	26.8	80	15.9	10	2
40	125	AHX640W-125B12L	32	—	56	29.8	80	16.4	9	2
40	125	AHX640W-125B12R	32	—	56	29.8	80	16.4	9	2
40	125	AHX640W-125B18L	32	—	56	29.8	80	16.4	9	2
40	125	AHX640W-125B18R	32	—	56	29.8	80	16.4	9	2
40	160	AHX640W-160C16L	29	14	56	32.8	100	16.4	9	3
40	160	AHX640W-160C16R	29	14	56	32.8	100	16.4	9	3
40	160	AHX640W-160C22L	29	14	56	32.8	100	16.4	9	3
40	160	AHX640W-160C22R	29	14	56	32.8	100	16.4	9	3

Fig.3
ø160

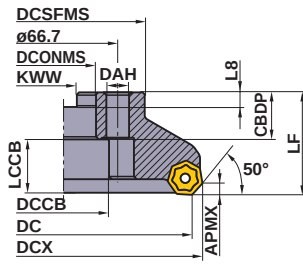


Fig.4

ø200
ø250

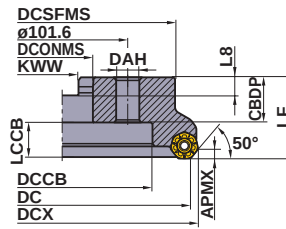
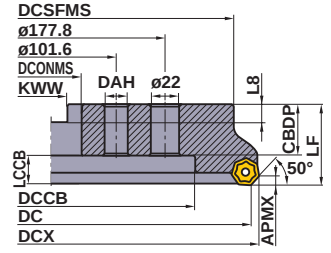


Fig.5

ø315

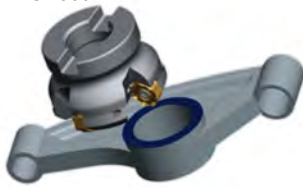
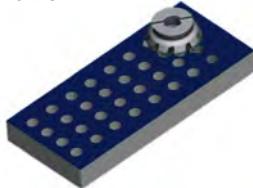


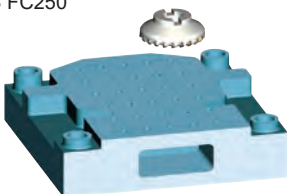
Right hand tool holder shown.

(mm)

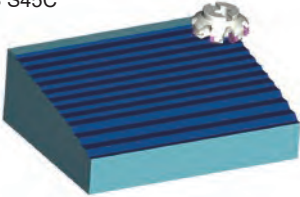
DCONMS	DC	Order Number	CBDP	DAH	DCCB	LCCB	DCSFMS	KWW	L8	Fig.
47.625	200	AHX640WL20020K	35	18	140	26.8	175	25.4	14.22	4
47.625	200	AHX640WL20028K	35	18	140	26.8	175	25.4	14.22	4
47.625	200	AHX640WR20020K	35	18	140	26.8	175	25.4	14.22	4
47.625	200	AHX640WR20028K	35	18	140	26.8	175	25.4	14.22	4
47.625	250	AHX640WL25024K	35	18	180	26.8	220	25.4	14.22	4
47.625	250	AHX640WL25036K	35	18	180	26.8	220	25.4	14.22	4
47.625	250	AHX640WR25024K	35	18	180	26.8	220	25.4	14.22	4
47.625	250	AHX640WR25036K	35	18	180	26.8	220	25.4	14.22	4
47.625	315	AHX640WL31528P	40	18	225	21.8	285	25.4	14.22	5
47.625	315	AHX640WL31544P	40	18	225	21.8	285	25.4	14.22	5
47.625	315	AHX640WR31528P	40	18	225	21.8	285	25.4	14.22	5
47.625	315	AHX640WR31544P	40	18	225	21.8	285	25.4	14.22	5
50.8	160	AHX640WL16016F	38	—	72	23.8	100	19.1	11	2
50.8	160	AHX640WL16022F	38	—	72	23.8	100	19.1	11	2
50.8	160	AHX640WR16016F	38	—	72	23.8	100	19.1	11	2
50.8	160	AHX640WR16022F	38	—	72	23.8	100	19.1	11	2
60	200	AHX640W-200C20L	32	18	135	29.8	155	25.7	14	4
60	200	AHX640W-200C20R	32	18	135	29.8	155	25.7	14	4
60	200	AHX640W-200C28L	32	18	135	29.8	155	25.7	14	4
60	200	AHX640W-200C28R	32	18	135	29.8	155	25.7	14	4
60	250	AHX640W-250C24L	32	18	180	29.8	200	25.7	14	4
60	250	AHX640W-250C24R	32	18	180	29.8	200	25.7	14	4
60	250	AHX640W-250C36L	32	18	180	29.8	200	25.7	14	4
60	250	AHX640W-250C36R	32	18	180	29.8	200	25.7	14	4
60	315	AHX640W-315C28L	57	18	225	21.8	285	25.7	14	5
60	315	AHX640W-315C28R	57	18	225	21.8	285	25.7	14	5
60	315	AHX640W-315C44L	57	18	225	21.8	285	25.7	14	5
60	315	AHX640W-315C44R	57	18	225	21.8	285	25.7	14	5

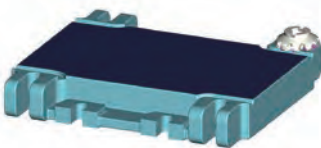
Application Example

Component		Parts for Turbo	Automobile Parts	Steel Plate for Pressure Containers
Workpiece		JIS SCH13X 	JIS FCD500 	W-nr 1.0425 
Tool		AHX440S-063A08AR	AHX440S-050A04AR	AHX440S-100B10AR
Cutting Conditions	Cutting Speed (m/min)	99	141	251
	Feed per Tooth (mm/t.)	0.3	0.15	0.15
	Depth of Cut ap (mm)	3	0.8	1.5
	Depth of Cut ae (mm)	50	35	80
Cutting Mode		Dry Cutting	Dry Cutting	Wet Cutting
Results		AHX440S achieved 1.4 times the tool life of conventional products.	AHX440S achieved 1.3 times the tool life of conventional products. The tool life, in rough and finish cutting was expanded.	AHX440S gave 1.3 times longer tool life than that of conventional products during heavy interrupted cutting. Tool life was evaluated based on wheather burrs were generated around the holes.

Component		Press Mould Base	Housing Case	Automotive Suspension Part
Workpiece		JIS FC250 	JIS FC250 	JIS FCD600 
		Tool	AHX640WR16016F	AHX640WR12512E
Cutting Conditions	Cutting Speed (m/min)	240	150	240
	Table Feed (mm/min)	3060	500	3000
	Feed per Tooth (mm/t.)	0.4	0.1	0.28
	Depth of Cut ap (mm)	3–4	3	3–4
	Depth of Cut ae (mm)	160	40	80
Cutting Mode		Dry Cutting	Dry Cutting	Dry Cutting
Results		In comparison with the conventional insert that suffered sudden fracturing during machining of surface scale, AHX640W gave a stable performance even at 3 times higher table feeds, thus substantially improving machining efficiency and reliability.	In comparison with a conventional 8 corner insert that fractured while machining an unstable component, the AHX640W gave double tool life. In combination with the longer tool life and the use of the extra cutting edges, substantial savings were made.	Even when machining ductile cast iron, AHX640W gave double tool life compared to a conventional tool.

- With reference to the above examples, adjust the cutting conditions according to the machine specifications, workpiece geometry and clamping method used.

Component		Machine Parts		Machine Parts		Mould	
Workpiece		JIS S45C 		JIS SCM440 		JIS SKT4 	
Tool		Conventional	AHX640SR10007DA	Conventional	AHX640SR10007DA	Conventional	AHX640SR10007DA
Cutting Conditions	Cutting Speed (m/min)	200	250	75	100	95	95
	Feed per Tooth (mm/t.)	0.19	0.22	0.05	0.17	0.2	0.26
	Depth of Cut ap (mm)	5	5	1	2	3	3
	Depth of Cut ae (mm)	75	75	70	70	60	60
Cutting Mode		Air Blow	Air Blow	Air Blow	Air Blow	Air Blow	Air Blow
Results		With older products, raising the cutting speed to 250 m/min caused chattering and damage to the inserts, but the AHX640S enables stable machining even when the feed is raised. In addition, the inserts have more usable corners, helping to reduce costs.		Previously, low rigidity workpiece clamping led to chattering, making it impossible to raise cutting conditions. However, with the low cutting resistance of the AHX640S, cutting conditions can be raised, achieving more than 6 times the efficiency of existing products.		With conventional products, insert wear occurred frequently. In contrast, the AHX640S with 30% higher feed enables stable cutting with no damage to the inserts.	

Component		Mould	
Workpiece		JIS FC300 	
Tool		Conventional	AHX640SR16010FA
Cutting Conditions	Cutting Speed (m/min)	70	240
	Feed per Tooth (mm/t.)	1.5	0.3
	Depth of Cut ap (mm)	1	3
	Depth of Cut ae (mm)	100	100
Cutting Mode		Air Blow	Air Blow
Results		Compared with older tools for high feed milling, depth of cut is 3 times greater with the equivalent table feed. In addition, the inserts have more usable corners than previous products, helping to reduce costs.	

- With reference to the above examples, adjust the cutting conditions according to the machine specifications, workpiece geometry and clamping method used.



General Purpose Multi Corner Insert Type Face Milling Cutter

AHX Series

Environmentally Friendly Product

This product has been certified as an environmentally friendly product in the machine tool industry by the Japan Cutting & Wear-resistant Tool Association. This is a product unique to the industry, in harmony with the environment, and with the aim of fulfilling the social responsibilities of the machine tool industry.

The Japan Cutting & Wear-resistant Tool Association evaluates the product's environmental impact during the manufacturing and usage stages and issues a certification according to the evaluation score.



AHX440S

For People, Society and the Earth

More information about MITSUBISHI MATERIALS' efforts to address social and environmental issues can be found in the website below or by scanning the QR code.

<https://mmc.disclosure.site/en/>



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 CORPORATION

MITSUBISHI MATERIALS CORPORATION

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<http://www.mmc-carbide.com/>

(Tools specifications subject to change without notice.)