AHX SERIES

FEATURING ECONOMICAL, HEPTAGONAL DOUBLE SIDED INSERTS WITH 14 CUTTING EDGES

DIAEDGE

MITSUBISHI MATERIALS

AHX SERIES

MULTI CORNER INSERT FACE MILLING CUTTERS

AHX440S

P
M
K
H

IDEAL FOR ROUGHING AND FINISHING ON SMALL AND LOW POWER MACHINES

- Diameter range Ø 40 – 160 mm (3 – 16 teeth)
- Double sided insert with 14 cutting edges
- Maximum depth of cut 3 mm (APMX)
- With through coolant holes (Ø 40 – 125 mm)
- Insert corner radius 0.8 mm and 3.2 mm

AHX475S

P
K
H

EFFICIENT HIGH-FEED MILLING AND PROCESS RELIABILITY

- Diameter range Ø 50 – 160 mm (4 – 12 teeth)
- Double sided insert with 14 cutting edges
- Maximum depth of cut 1.6 mm (APMX)
- With through coolant holes (Ø 50 – 160 mm)
- Feed rate up to 2 mm/tooth

AHX640S

P
M
K
H

IDEAL FOR GENERAL ROUGHING ON MEDIUM AND LARGER MACHINES

- Diameter range Ø 63 – 200 mm (4 – 12 teeth)
- Double sided insert with 14 cutting edges
- Maximum depth of cut 6 mm (APMX)
- With through coolant holes (Ø 63 – 125 mm)

AHX640W

K

IDEAL FOR GENERAL ROUGHING OF CAST IRON ON MEDIUM AND LARGER MACHINES

- Diameter range Ø 80 – 315 mm (8 – 44 teeth)
- Double sided insert with 14 cutting edges
- Maximum depth of cut 6 mm (APMX)
- High rigidity Anti-Fly (AFI) wedge clamping system

DOUBLE SIDED INSERT WITH 14 CUTTING EDGES FOR MACHINING OF STEEL, STAINLESS STEEL AND CAST IRON

ECONOMICAL HEPTAGONAL DOUBLE SIDED INSERT

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

CUTTING EDGE STABILITY

Thicker inserts ensure greater stability and enable reliable machining.

SIMPLE INDICATION OF THE CUTTING EDGE

For easy handling and to recognize used and unused corners.

GRADES FOR MACHINING A WIDE RANGE OF MATERIALS

P	PVD	M	PVD	K	PVD	CVD	S	PVD	H	PVD
P10	VP15TF, VP20RT, MP6120, MP6130	M10	VP15TF, VP20RT, MP7030, MP7130, MP7140	K10	VP15TF, VP20RT	XC5010, MC5020	S10	VP20RT, MP9120, MP9130	H10	VP15TF
P20		M20		K20			S20		H20	
P30		M30		K30			S30		H30	
P40		M40		K40			S40		H40	

MP6120
For general milling of steel

MP6130
For interrupted milling of steel

MP7030
For general milling of stainless steel

MP7130
For general milling of stainless steel

MP7140
For unstable milling of stainless steel

MC5020
For general milling of cast iron

MP9120
For general milling of HRSA and titanium alloy

MP9130
For interrupted and general milling of HRSA and Titanium alloy

XC5010
The strength of ceramics allows for stable machining even when cutting at high-speeds

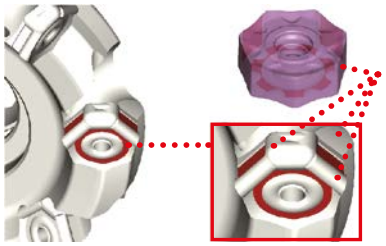
AHX440S / AHX475S / AHX640S

A UNIQUE FACE MILL FOR MACHINING OF STEEL, STAINLESS STEEL AND CAST IRON

AHX440S

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

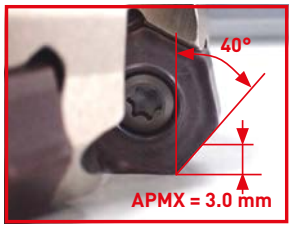
Improves chip discharge and prevents chip welding.

AHX475S

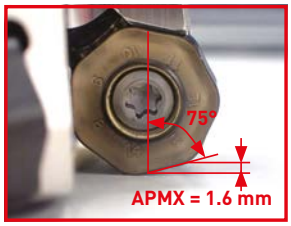
AHX475S

For high feed machining
High feed is possible with AHX475S by setting an RE = 3.2 mm insert to be used in a cutter body with a corner angle of 75° (KAPR 15°).
The maximum depths of cut (APMX) will be limited to 1.6 mm.

AHX640S



AHX440S
L Breaker



AHX475S

⚠ AHX475S is not compatible with stainless steel.

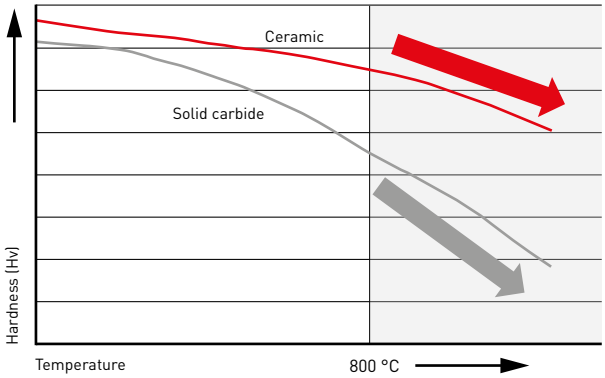
NEW

XC5010

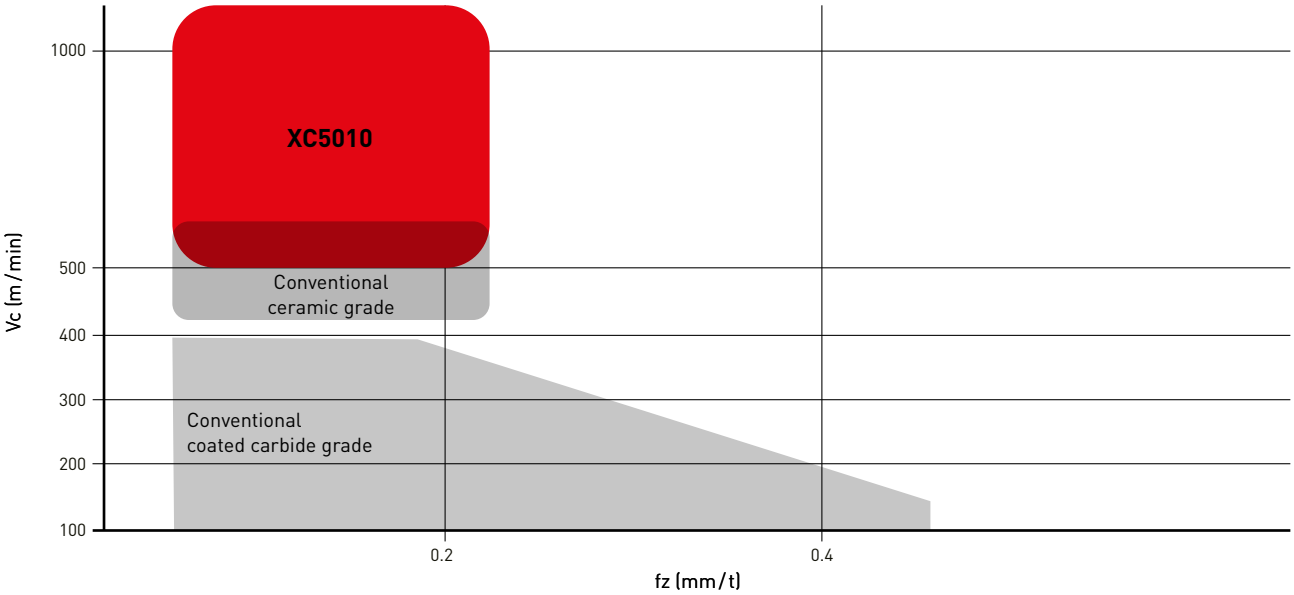
THE STRENGTH OF CERAMICS ALLOWS FOR STABLE MACHINING EVEN WHEN CUTTING AT HIGH-SPEEDS

HIGH TEMPERATURE HARDNESS OF CEMENTED CARBIDE AND CERAMIC

Cemented carbide inserts are significantly reduced in strength when temperatures exceed 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



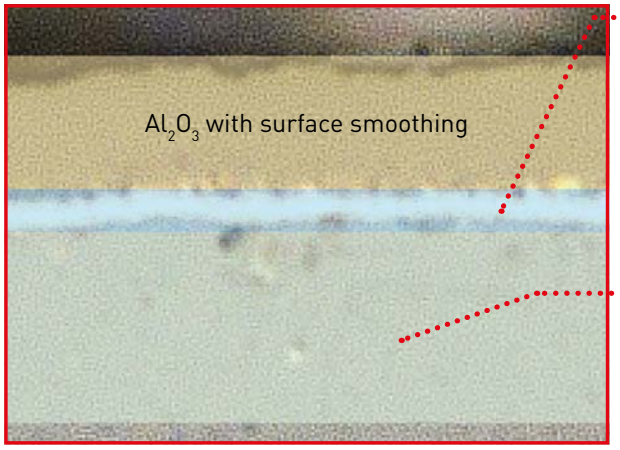
NEW

XC5010

THE STRENGTH OF CERAMICS ALLOWS FOR STABLE MACHINING EVEN WHEN CUTTING AT HIGH-SPEEDS

SURFACE-SMOOTHING AL_2O_3 COATING SUPPRESSES THE TRANSMISSION OF CUTTING HEAT

By applying an Al_2O_3 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.



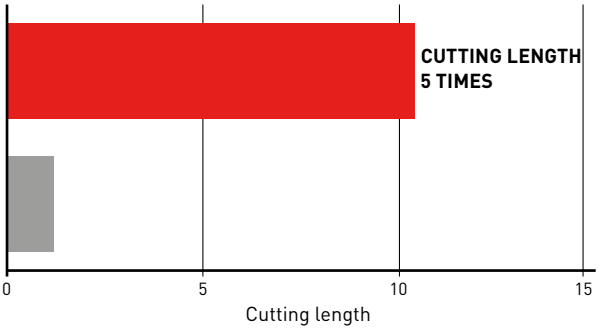
TECHNOLOGY IMPROVES ADHESION STRENGTH

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.

Material	DIN GGG60
Tool	AHX640S
DC (mm)	80
Vc (m/min)	1000
fz (mm/t)	0.1
ap (mm)	2.0
ae (mm)	50
Cutting mode	Dry cutting



AFTER 1.2 M MACHINING

XC5010

Non-coated ceramic grade

Machining video
at Vc = 1200 m/min

■ : XC5010 ■ A : Non-coated ceramic grade

NEW

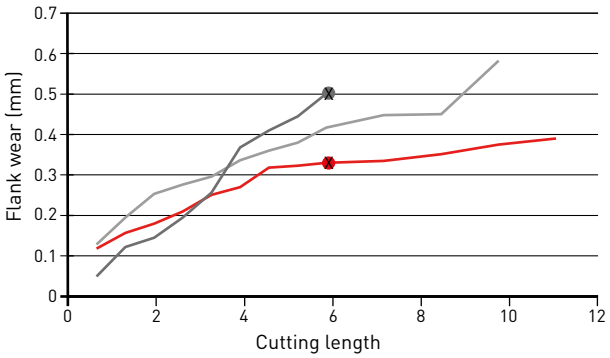
XC5010

CUTTING PERFORMANCE

COMPARISON OF WEAR WHEN MACHINING GGG70 Vc = 1000 M/MIN

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

Material	DIN GGG70
Tool	AHX640S
DC (mm)	80
Vc (m/min)	1000
fz (mm/t)	0.1
ap (mm)	2.0
ae (mm)	40
Cutting mode	Dry cutting Single insert



AFTER MACHINING 6 M

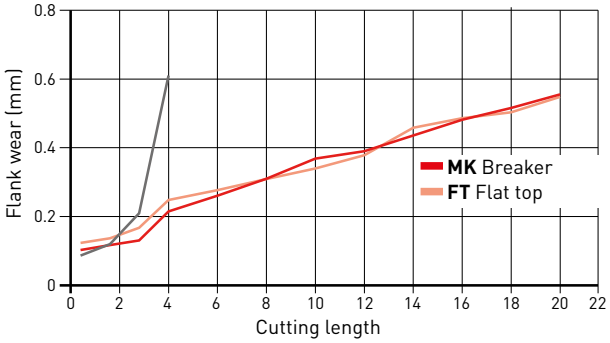
XC5010

Conventional A

COMPARISON OF FINISHED SURFACES WHEN MACHINING GGG70 AT Vc = 1000 M/MIN

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

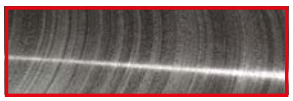
Material	DIN GGG70
Tool	AHX640S
DC (mm)	125
Vc (m/min)	1000
fz (mm/t)	0.1
ap (mm)	2.0
ae (mm)	100
Cutting mode	Dry cutting



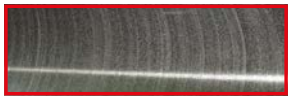
Cutting length 4 m

XC5010
MK Breaker

Cutting length 20 m



XC5010
MK Breaker



XC5010
FT Flat top

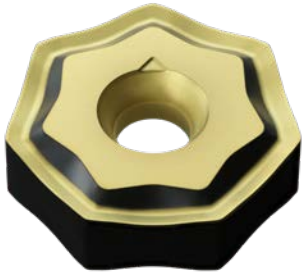
XC5010
FT Flat top

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

NEW

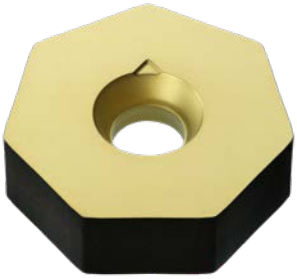
XC5010

CHIPBREAKER 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

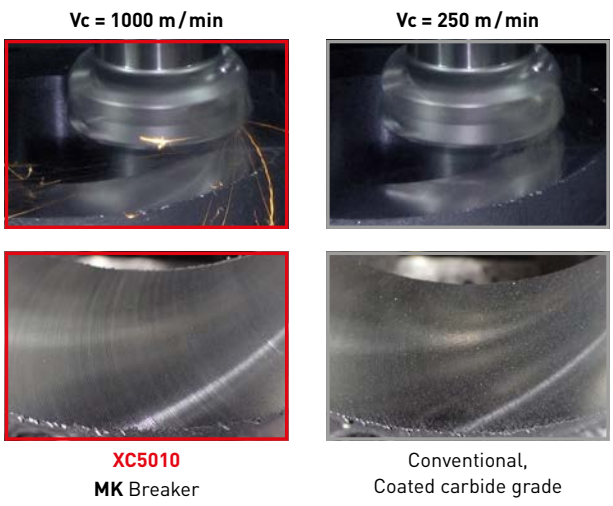
The high cutting edge strength of the flat top type enables stable cutting over long periods and helps to prevent sudden edge chipping.

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

GGG60 FINISH SURFACE COMPARISON

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

Material	DIN GGG60
Tool	AHX640S
DC (mm)	63
fz (mm/t)	0.1
ap (mm)	1.0
ae (mm)	32
Cutting mode	Dry cutting



AHX STEEL SERIES

SELECTION REFERENCE TABLE (CUTTING EDGE COUNT AND CUTTING CONDITIONS)

DC	Type	ZEFF	AHX440S			AHX475S			AHX640S		
			General cutting			High feed machining			General cutting		
			Stock	fr	APMX	Stock	fr	APMX	Stock	fr	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
	Extra fine pitch	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
	Extra fine pitch	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
	Extra fine pitch	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

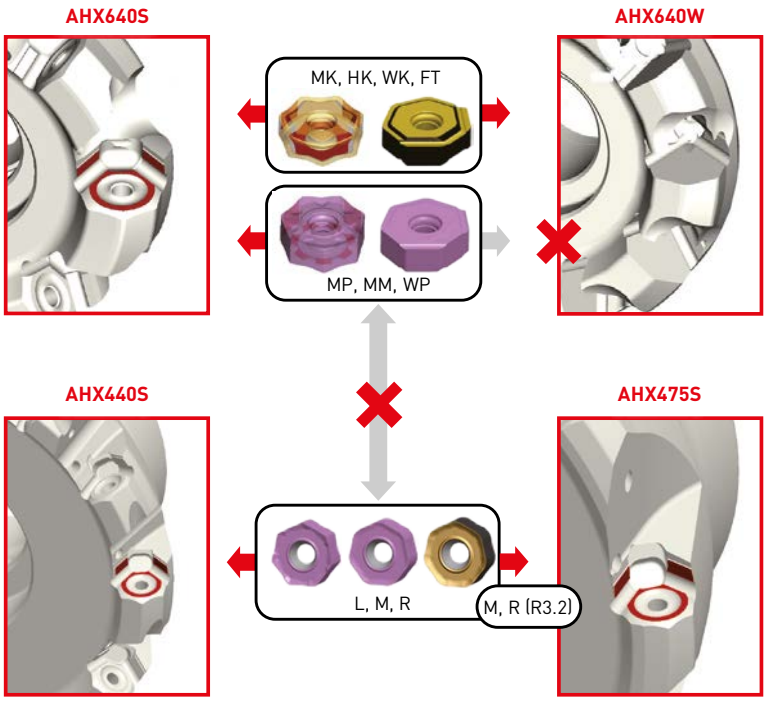
1. fr: Feed rate per revolution (AHX475S: the feed rate per cutter (fz) will be limited by the cutting width ae. Please refer to page 21 for details.)
2. APMX: Maximum depths of cut (AHX440S: the maximum depths of cut will vary depending on the type of chipbreaker.)
3. The depths of cut and feed rate are identical to the recommended conditions for carbon steel and alloy steel.

AHX STEEL SERIES

SELECTION REFERENCE TABLE (CUTTING EDGE COUNT AND CUTTING CONDITIONS)

COMPATIBILITY WITH INSERTS FOR AHX SERIES

The RE = 3.2 mm insert for use with AHX440S can be mounted on AHX475S type cutters.
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 breaker types for casting.

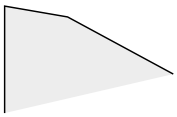


AHX STEEL SERIES

CHIPBREAKER SYSTEM

L Breaker

- Focus on cutting edge sharpness
- Low resistance type



M Breaker

- First Recommendation
- General use

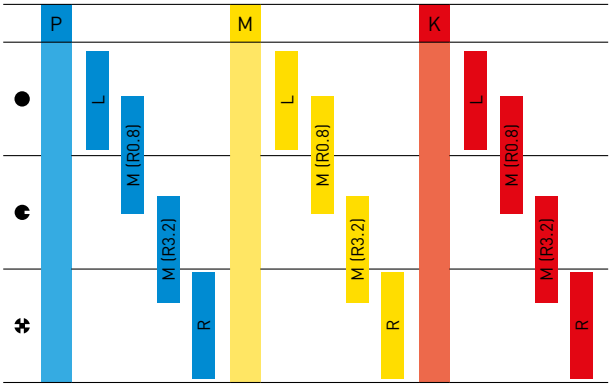
R Breaker

- Focus on fracture resistance
- Reinforced edge type

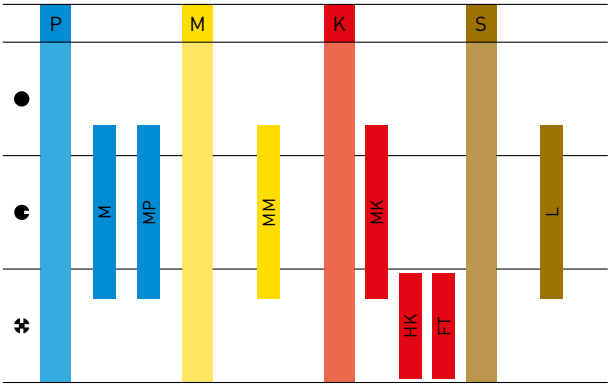
Cutting conditions:

●: Stable cutting ◔: General cutting ✠: Unstable cutting

AHX440S



AHX640S



WIPER INSERT OF AHX640S

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

P **WP** + combination with **MP**
Right-hand 2 corners,
left-hand 2 corners.

K **WK** + combination with **MK**
Right-hand 2 corners,
left-hand 2 corners.

AHX640W

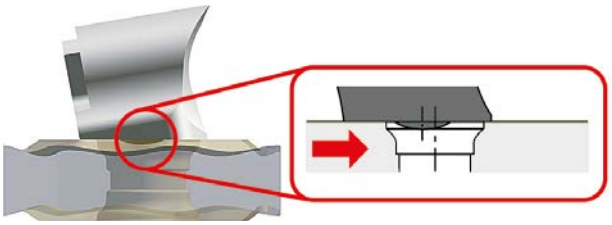
FACE MILLING CUTTER FOR HIGH EFFICIENCY MACHINING OF CAST IRON

HIGH RIGIDITY INSERTS SUITABLE FOR HIGH FEED MACHINING

Sloped cutting edge and large rake angle

INNOVATIVE CLAMP SYSTEM

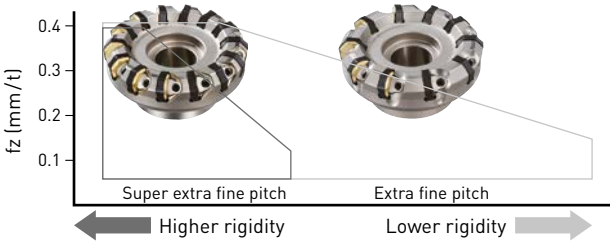
New type of wedge developed to increase the permissible number of teeth. Unique geometry uses a protruding section that fits inside the insert hole and acts as an Anti-Fly Insert (AFI) mechanism.



Prevents insert from flying out of the pocket.

2 VARIATIONS FOR DIFFERENT APPLICATIONS

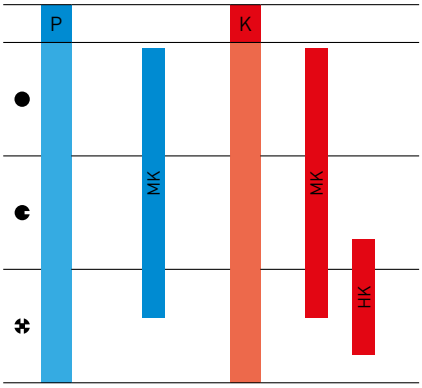
Extra fine pitch and super extra fine pitch types allow high efficiency milling under various machining conditions. Additionally, left hand types for use on special machines are also available as standard. Inserts can be used with both right and left hand type cutters.

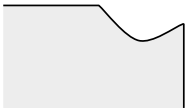


AHX640W

FACE MILLING CUTTER FOR HIGH EFFICIENCY MACHINING OF CAST IRON

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

- 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.

1. The insert for AHX640W is compatible with AHX640S.
2. Please refer to page 8 for the proper use of the XC5010 insert.

NEW

MV1000 SERIES

COATED CARBIDE GRADE FOR MILLING

ADVANCED WEAR RESISTANCE

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

ADVANCED THERMAL SHOCK RESISTANCE

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

Graphical representation

EXCELLENT WELDING RESISTANCE

Smooth surface.

OUTSTANDING WEAR RESISTANCE

Newly developed Al-Rich coating.

EXCELLENT CHIPPING RESISTANCE FOR STABLE MACHINING

Newly developed bonding layer.

FRACTURE RESISTANCE FOR THE ULTIMATE STABILITY

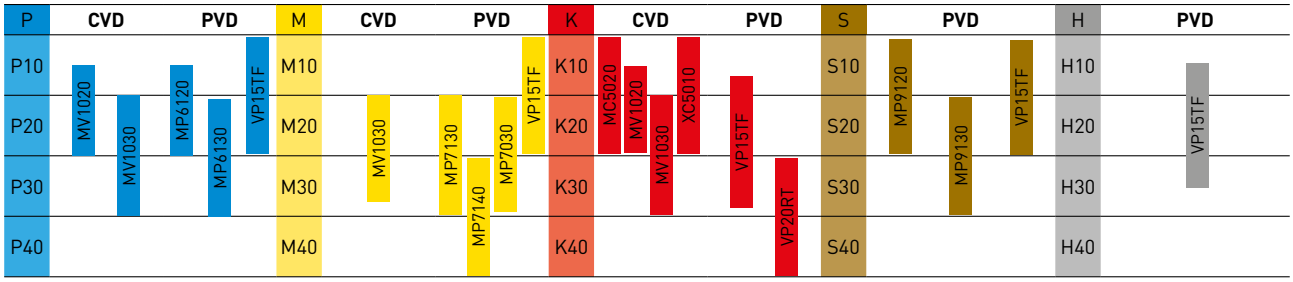
Exclusive cemented carbide substrate.

MV1020

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

MV1030

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



1. Dry cutting is recommended for machining stainless steel with MV1030.

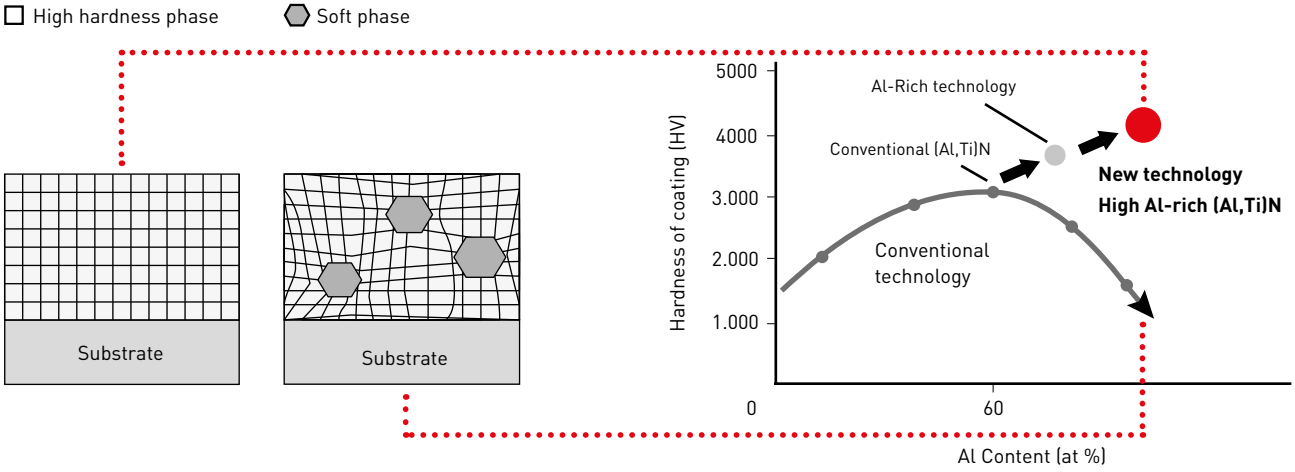
NEW

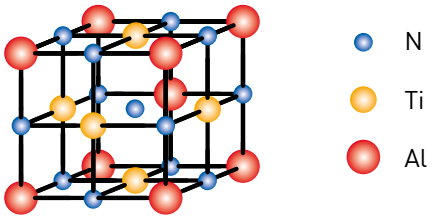
MV1020 / MV1030

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 when dry cutting, but also during 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.



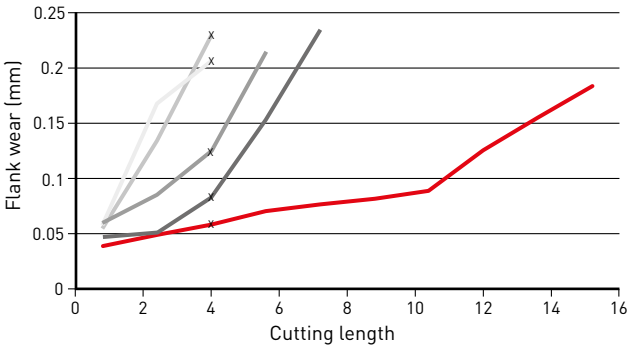


Crystal image of **MV1000** series

CUTTING PERFORMANCE

COMPARISON OF WEAR RESISTANCE WHEN MACHINING DUCTILE CAST IRON

Material	DIN GGG70
Tool	AHX440
Insert	NNMU130508ZEN-M
Vc (m/min)	300
fz (mm/t)	0.1
ap (mm)	2.0
ae (mm)	52
Cutting mode	Dry cutting Single insert



TAKEN AFTER CUTTING LENGTH OF 4.0 M

MV1020

Conventional A

Conventional B

Conventional C

Conventional D

■ : MV1020 ■ A ■ B ■ C ■ D : Conventional tool

MP6100 / MP7100 / MP9100

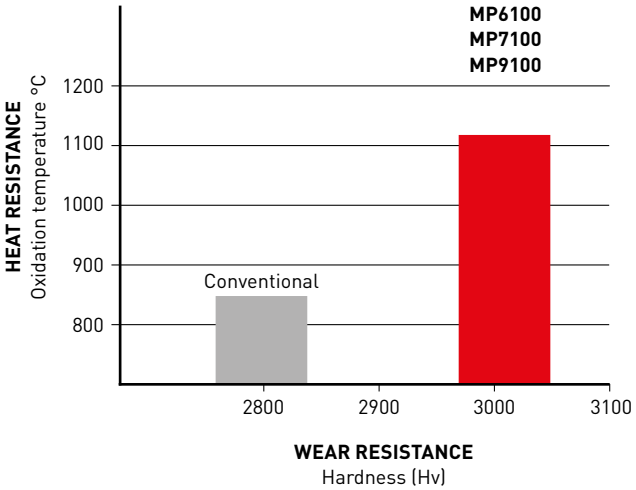
INSERT GRADES FOR A WIDE RANGE OF MATERIALS

ACCUMULATED Al-Ti-Cr-N BASED PVD COATING

Excellent welding resistance due to a low coefficient of friction.

PVD accumulated coating.

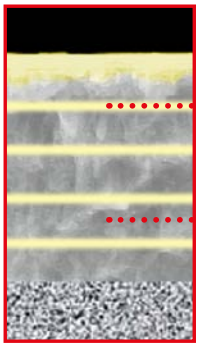
Special cemented carbide substrate.



COEFFICIENT OF FRICTION

	Material	Grade	Coefficient of friction (Measured at 600 °C)		
			C55	X10CrNi18-9	Ti6Al4V
P	Carbon steel, Alloy steel	MP61○○	0.4		
M	Stainless steel	MP71○○		0.5	
S	Titanium alloy, Heat resistant alloy	MP91○○		0.7	0.3
	Conventional		0.7		0.7

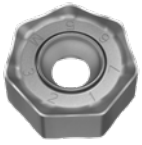
TOUGH-Σ



Graphical representation

Each grade has a layer suitable for each application area

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.

P	**(Al,Cr)N** Tough against thermal cracks	
M	**TiN** Tough against notching	
S	**CrN** Tough resistant chipping	

P	PVD			M	PVD			K	CVD		PVD		S	PVD		H	PVD
P10	MP6120		VP15TF	M10			VP15TF	K10	MC5020	XC5010			S10	MP9120	VP15TF	H10	
P20		MP6130		M20	MP7130	MP7030		K20			VP15TF		S20			H20	VP15TF
P30				M30				K30				VP20RT	S30		MP9130	H30	
P40				M40	MP7140			K40					S40			H40	

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

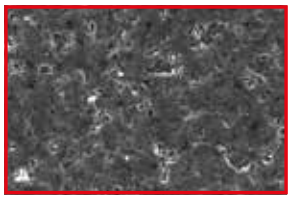
Use of a specially developed cemented carbide that provides superior resistance to fracture and thermal cracking prevents the cutting edge from sudden fracturing.

REDUCED ABNORMAL DAMAGE

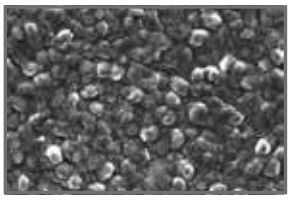
A black super smooth coating prevents abnormal damage such as weld chipping.

BLACK SUPER SMOOTH COATING

COMPARISON OF COATING SURFACE



MC5020



Conventional

CUTTING PERFORMANCE

WEAR RESISTANCE

MC5020

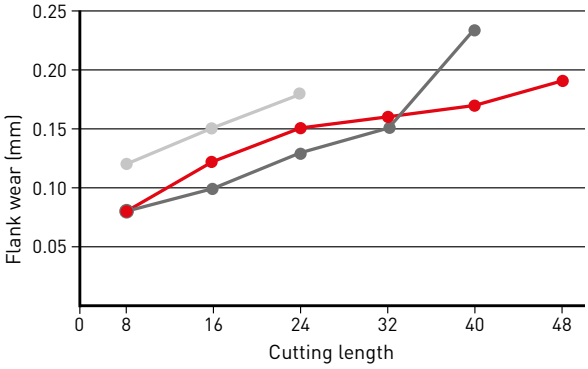
SURFACE FINISH

Surface finish condition

CUTTING PERFORMANCE

WEAR RESISTANCE

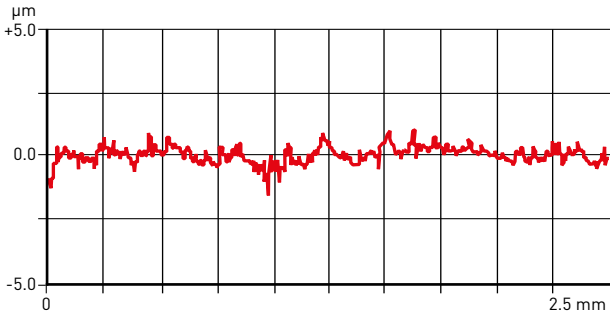
Material	DIN GG30
Tool	AHX640WR10010D
Insert	NNMU200608ZEN-MK
Vc (m/min)	300
fz (mm/t)	0.3
ap (mm)	5.0
ae (mm)	100
Cutting mode	Dry cutting Single insert



Wear comparison when machining with a single tooth.

SURFACE FINISH

Material	DIN GGG70
Tool	AHX640WR10014D
Insert	NNMU200608ZEN-MK
Wiper insert	WNEU2006ZEN7C-WK
Vc (m/min)	350
fz (mm/t)	0.1
ap (mm)	0.4
ae (mm)	80
Cutting mode	Air blow



■ : MC5020 ■ A ■ B : Conventional tool

AHX440S

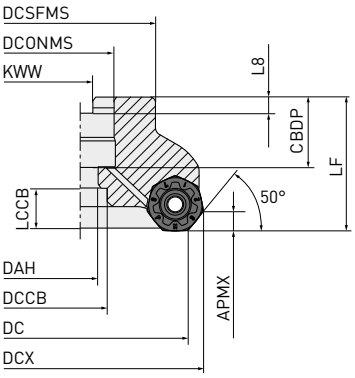
FACE MILL

P M K H

KAPR: 50°
GAMP: -10°
GAMF: -7°

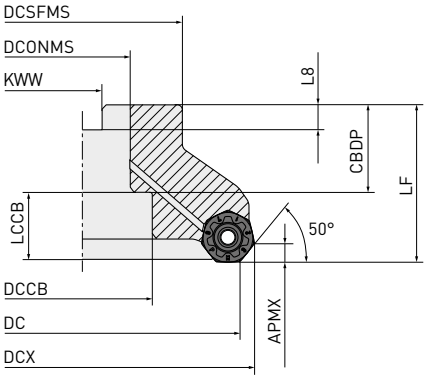
1

Ø 40
Ø 50
Ø 63
Ø 80



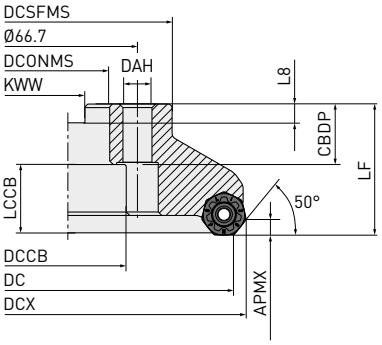
2

Ø 100
Ø 125
Ø 160



3

Ø 160



Right hand tool holder only.

Tool holder type	Set bolt order number			Geometry
AHX440S-040A○○AR	HSC08025H	HSC08040	1	1
AHX440S-050A○○AR	HSC10030H	HSC10035		
AHX440S-063A○○AR	HSC10030H	HSC10035		
AHX440S-080A○○AR	HSC12035H	HSC12035		
		HSC12045		
AHX440S-100B○○AR	MBA16033H	—	2	2
AHX440S-125B○○AR	MBA20040H	—		

AHX440S – FACE MILL

ARBOR TYPE

Order number	Stock	APMX	DC	DCONMS	LF	WT	ZEFF		Type
AHX440S-040A03AR	●	3	40	16	40	0.3	3	○	1
AHX440S-040A04AR	●	3	40	16	40	0.2	4	○	1
AHX440S-050A04AR	●	3	50	22	40	0.4	4	○	1
AHX440S-050A05AR	●	3	50	22	40	0.4	5	○	1
AHX440S-050A06AR	●	3	50	22	40	0.4	6	○	1
AHX440S-063A05AR	●	3	63	22	40	0.6	5	○	1
AHX440S-063A06AR	●	3	63	22	40	0.6	6	○	1
AHX440S-063A08AR	●	3	63	22	40	0.5	8	○	1
AHX440S-080A06AR	●	3	80	27	50	1.1	6	○	1
AHX440S-080A08AR	●	3	80	27	50	1.1	8	○	1
AHX440S-080A10AR	●	3	80	27	50	1.1	10	○	1
AHX440S-100B07AR	●	3	100	32	50	1.6	7	○	2
AHX440S-100B10AR	●	3	100	32	50	1.6	10	○	2
AHX440S-100B12AR	●	3	100	32	50	1.6	12	○	2
AHX440S-125B08AR	●	3	125	40	63	3.0	8	○	2
AHX440S-125B12AR	●	3	125	40	63	3.0	12	○	2
AHX440S-125B14AR	●	3	125	40	63	2.9	14	○	2
AHX440S-160C10NR	●	3	160	40	63	4.8	10	—	3
AHX440S-160C14NR	●	3	160	40	63	4.6	14	—	3
AHX440S-160C16NR	●	3	160	40	63	4.7	16	—	3

1/1

1. The cutter body is not supplied with the set bolt for the arbor. Please order a set bolt seperately.
2. ○ = With through coolant holes

21 Vc

MOUNTING DIMENSIONS

Order number	CBDP	DAH	DCCB	DCONMS	DCSFMS	DCX	KWW	L8	Type
AHX440S-040A03AR	18	9	—	16	37	48.4	8.4	5.6	1
AHX440S-040A04AR	18	9	—	16	37	48.4	8.4	5.6	1
AHX440S-050A04AR	20	11	—	22	47	58.4	10.4	6.3	1
AHX440S-050A05AR	20	11	—	22	47	58.4	10.4	6.3	1
AHX440S-050A06AR	20	11	—	22	47	58.4	10.4	6.3	1
AHX440S-063A05AR	20	11	—	22	50	71.4	10.4	6.3	1
AHX440S-063A06AR	20	11	—	22	50	71.4	10.4	6.3	1
AHX440S-063A08AR	20	11	—	22	50	71.4	10.4	6.3	1
AHX440S-080A06AR	23	13	—	27	56	88.4	12.4	7	1
AHX440S-080A08AR	23	13	—	27	56	88.4	12.4	7	1
AHX440S-080A10AR	23	13	—	27	56	88.4	12.4	7	1
AHX440S-100B07AR	32	—	45	32	78	108.4	14.4	8	2
AHX440S-100B10AR	32	—	45	32	78	108.4	14.4	8	2
AHX440S-100B12AR	32	—	45	32	78	108.3	14.4	8	2
AHX440S-125B08AR	40	—	56	40	89	133.4	16.4	9	2
AHX440S-125B12AR	40	—	56	40	89	133.4	16.4	9	2
AHX440S-125B14AR	40	—	56	40	89	133.3	16.4	9	2
AHX440S-160C10NR	40	—	56	40	100	168.4	16.4	9	3
AHX440S-160C14NR	40	—	56	40	100	168.4	16.4	9	3
AHX440S-160C16NR	40	—	56	40	100	168.4	16.4	9	3

1/1

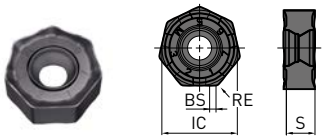
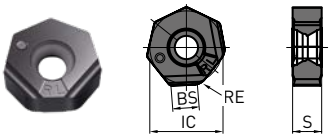
● : Inventory maintained. ★ : Inventory maintained in Japan.

AHX440S – INSERTS

P	Steel	◐	✣				◐	◐	◐		
M	Stainless steel			◐	✣			◐	◐		
K	Cast iron					◐	◐	◐	◐		
H	Hardened steel								◐		

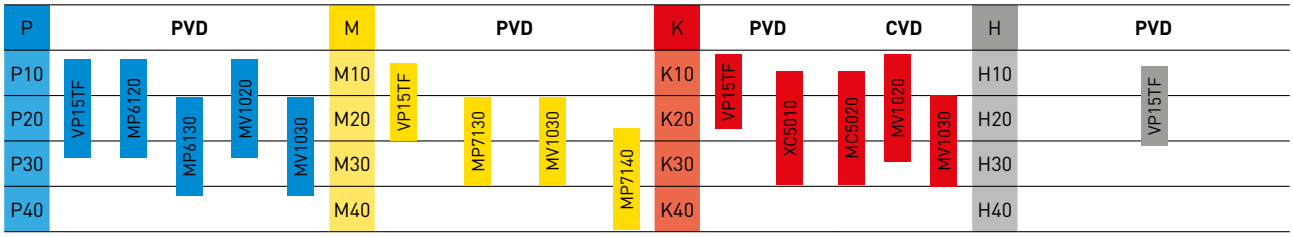
Cutting conditions :
●: Stable cutting ◐: General cutting ✣: Unstable cutting

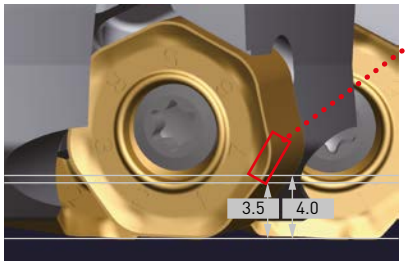
Honing:
E: Round

Order number	Class	Honing	MP6120	MP6130	MP7130	MP7140	MC5020	MV1020	MV1030	VP15TF	IC	S	BS	RE	APMX	Geometry
NNMU130508ZER-L	M	E	●	●	●	●	●	●	●	●	13.4	5.09	1	0.8	3	
NNMU130508ZEN-M	M	E	●	●	●	●	●	●	●	●	13.4	5.09	1	0.8	4*	
NNMU130532ZEN-M	M	E	●	●	●	●	●	●	●	●	13.4	5.09	—	3.2	4*	
NNMU130532ZEN-R	M	E	●	●	●	●	●	●	●	●	13.4	5.09	—	3.2	4*	
WNEU1305ZEN4C-M	E	E	●				●			●	13.4	5.09	4	2.7	0.5	

* Without using the wiper, APMX = 3.0 mm

GRADE SELECTION





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

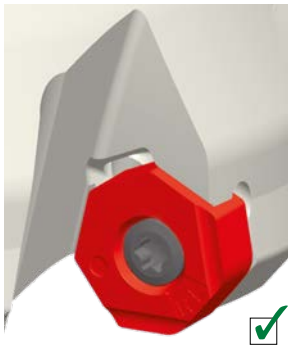


Fig. 1

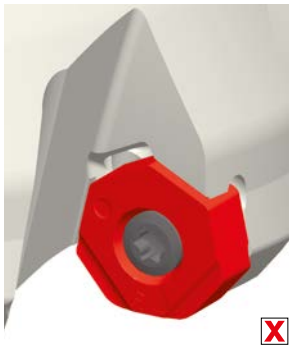


Fig. 2

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.
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.

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

AHX440S

RECOMMENDED CUTTING CONDITIONS

DRY CUTTING

	Material	Properties	Grade	Vc	fz	ap	ae
P	Mild steel	<180HB	MV1020	300 (200–400)	0.30 (0.20–0.40)	≤3	≤0.8DC
			MP6120	250 (200–300)	0.30 (0.20–0.40)	≤3	≤0.8DC
			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	180–280HB	MV1020	260 (170–350)	0.30 (0.20–0.40)	≤3	≤0.8DC
			MP6120	220 (170–270)	0.30 (0.20–0.40)	≤3	≤0.8DC
			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
		280–350HB	MV1020	180 (100–250)	0.30 (0.20–0.40)	≤3	≤0.8DC
			MP6120	140 (100–180)	0.30 (0.20–0.40)	≤3	≤0.8DC
			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	≤350HB	MP6120	140 (100–180)	0.15 (0.20–0.20)	≤ 1	≤0.8DC
			VP15TF	140 (100–180)	0.15 (0.20–0.20)	≤ 1	≤0.8DC
			MP6130	120 (90–150)	0.15 (0.20–0.20)	≤ 1	≤0.8DC
	Pre-hardened steel	35–45HRC	MP6120	140 (100–180)	0.15 (0.20–0.20)	≤ 1	≤0.8DC
			MP6130	120 (90–150)	0.15 (0.20–0.20)	≤ 1	≤0.8DC
M	Austenitic stainless steel	≤200HB	MP7130	200 (150–250)	0.20 (0.10–0.30)	≤3	≤0.8DC
			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
		≥200HB	MP7130	150 (100–200)	0.20 (0.10–0.30)	≤3	≤0.8DC
			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 stainless steel	≤200HB	MP7130	200 (150–250)	0.20 (0.10–0.30)	≤3	≤0.8DC
			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
		≥200HB	MP7130	150 (100–200)	0.20 (0.10–0.30)	≤3	≤0.8DC
			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	≤280HB	MP7130	140 (100–180)	0.15 (0.20–0.20)	≤3	≤0.8DC
			VP15TF	140 (100–180)	0.15 (0.20–0.20)	≤3	≤0.8DC
			MP7140	120 (80–160)	0.15 (0.20–0.20)	≤3	≤0.8DC
	Hardened stainless steel	≤450HB	MP7130	130 (100–160)	0.15 (0.20–0.20)	≤3	≤0.8DC
			VP15TF	130 (100–160)	0.15 (0.20–0.20)	≤3	≤0.8DC
			MP7140	110 (80–140)	0.15 (0.20–0.20)	≤3	≤0.8DC

1/2

1. Reduce the cutting speed when using coolant.

AHX440S

RECOMMENDED CUTTING CONDITIONS

DRY CUTTING

	Material	Properties	Grade	Vc	fz	ap	ae
K	Grey cast iron	<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	<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	<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	40–55HRC	VP15TF	80 (60–100)	0.15 (0.10–0.20)	≤1	≤0.8DC

1. Reduce the cutting speed when using coolant.

AHX440S

RECOMMENDED CUTTING CONDITIONS

WET CUTTING

	Material	Properties	Grade	Vc	fz	ap	ae
M	Austenitic stainless steel	≤200HB	MP7130	125 (100–150)	0.15 (0.10–0.20)	≤3	≤0.8DC
			VP15TF	125 (100–150)	0.15 (0.10–0.20)	≤3	≤0.8DC
			MP7140	100 (80–140)	0.15 (0.10–0.20)	≤3	≤0.8DC
		≥200HB	MP7130	100 (75–125)	0.15 (0.10–0.20)	≤3	≤0.8DC
			VP15TF	100 (75–125)	0.15 (0.10–0.20)	≤3	≤0.8DC
			MP7140	80 (55–105)	0.15 (0.10–0.20)	≤3	≤0.8DC
	Ferritic and martensitic stainless steel	≤200HB	MP7130	125 (100–150)	0.15 (0.10–0.20)	≤3	≤0.8DC
			VP15TF	125 (100–150)	0.15 (0.10–0.20)	≤3	≤0.8DC
			MP7140	100 (80–140)	0.15 (0.10–0.20)	≤3	≤0.8DC
		≥200HB	MP7130	100 (75–125)	0.15 (0.10–0.20)	≤3	≤0.8DC
			VP15TF	100 (75–125)	0.15 (0.10–0.20)	≤3	≤0.8DC
			MP7140	80 (55–105)	0.15 (0.10–0.20)	≤3	≤0.8DC
	Two-phase stainless steel	≤280HB	MP7130	80 (60–100)	0.10 (0.05–0.15)	≤3	≤0.8DC
			VP15TF	80 (60–100)	0.10 (0.05–0.15)	≤3	≤0.8DC
			MP7140	60 (40– 80)	0.10 (0.05–0.15)	≤3	≤0.8DC
	Hardened stainless steel	≤450HB	MP7130	70 (50– 90)	0.10 (0.05–0.15)	≤3	≤0.8DC
			VP15TF	70 (50– 90)	0.10 (0.05–0.15)	≤3	≤0.8DC
			MP7140	50 (30– 70)	0.10 (0.05–0.15)	≤3	≤0.8DC

AHX440S

RECOMMENDED CUTTING CONDITIONS

CUTTING CONDITIONS FOR WIPER INSERT

	Material	Properties	Grade	Vc	fz	ap
P	Mild steel	<180HB	MP6120	250 (200–300)	0.30 (0.20–0.40)	≤0.5
			VP15TF	250 (200–300)	0.30 (0.20–0.40)	≤0.5
	Carbon steel Alloy steel	180–280HB	MP6120	220 (170–270)	0.30 (0.20–0.40)	≤0.5
			VP15TF	220 (170–270)	0.30 (0.20–0.40)	≤0.5
		280–350HB	MP6120	140 (100–180)	0.30 (0.20–0.40)	≤0.5
			VP15TF	140 (100–180)	0.30 (0.20–0.40)	≤0.5
	Alloy tool steel	≤350HB	MP6120	140 (100–180)	0.15 (0.10–0.20)	≤0.5
			VP15TF	140 (100–180)	0.15 (0.10–0.20)	≤0.5
	Pre-hardened steel	35–45HRC	MP6120	140 (100–180)	0.15 (0.10–0.20)	≤0.5
			VP15TF	140 (100–180)	0.15 (0.10–0.20)	≤0.5
M	Austenitic stainless steel	≤200HB	VP15TF	125 (100–150)	0.15 (0.10–0.20)	≤0.5
		≥200HB	VP15TF	100 (75–125)	0.15 (0.10–0.20)	≤0.5
	Ferritic and martensitic stainless steel	≤200HB	VP15TF	125 (100–150)	0.15 (0.10–0.20)	≤0.5
		≥200HB	VP15TF	100 (75–125)	0.15 (0.10–0.20)	≤0.5
	Two-phase stainless steel	≤280HB	VP15TF	80 (60–100)	0.10 (0.05–0.15)	≤0.5
	Hardened stainless steel	≤450HB	VP15TF	70 (50– 90)	0.10 (0.05–0.15)	≤0.5
K	Grey cast iron	<350MPa	MC5020	320 (250–400)	0.30 (0.20–0.40)	≤0.5
			VP15TF	220 (150–300)	0.30 (0.20–0.40)	≤0.5
	Ductile cast iron	<450MPa	MC5020	250(200–300)	0.20 (0.10–0.30)	≤0.5
			VP15TF	200 (150–250)	0.20 (0.10–0.30)	≤0.5
		<800MPa	MC5020	220 (200–250)	0.20 (0.10–0.30)	≤0.5
			VP15TF	170 (150–200)	0.20 (0.10–0.30)	≤0.5
H	Hardened steel	40–55HRC	VP15TF	80 (60–100)	0.15 (0.10–0.20)	≤0.5

1/1

1. Refer to the table above and set up cutting conditions according to cutting applications.
2. When placing emphasis on surface finish quality, wet cutting is recommended.
   (Tool life is lowered when compared to dry cutting)
3. The recommended depth of cut differs according to insert geometry.
4. When clamp rigidity is low and tool overhang is long, we recommended to reduce the cutting speed and the feed rate by 30 %.
5. Wet cutting is recommended when good surface finishes are needed on stainless steel.
   (Tool life is short wehn compared to dry cutting).

AHX475S

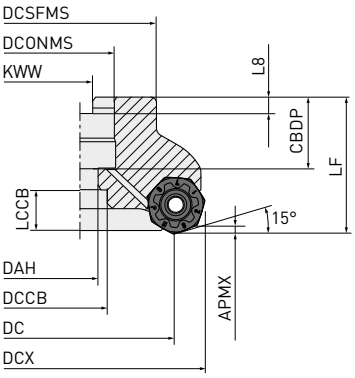
HIGH FEED MILLING CUTTER

P K H

KAPR: 15°
T: 16°
GAMP: -6°/9°
GAMF: -10°

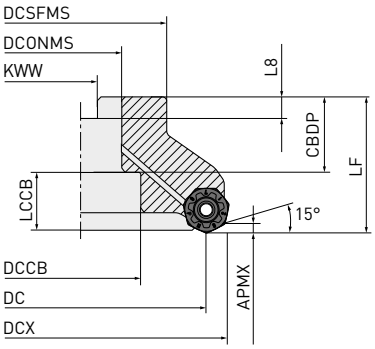
1

Ø 50
Ø 63
Ø 80
Ø 100

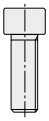
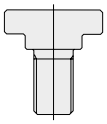


2

Ø 125
Ø 160



Right hand tool holder only.

Tool holder type	Set bolt order number		Geometry	
				
AHX475S-050A○○AR	HSC10030H	HSC10035	1	1 
AHX475S-063A○○AR	HSC10030H	HSC10035		
AHX475S-080A○○AR	HSC12035H	HSC12035		
		HSC12045		
AHX475S-100B○○AR	HSC16040H	—		
AHX475S-125B○○AR	MBA20040H	—	2	2 
AHX475S-160B○○AR	MBA20040H	—		

AHX475S – HIGH FEED MILLING CUTTER

ARBOR TYPE

Order number	Stock	APMX	DC	DCONMS	LF	WT	ZEFF		Type
AHX475S-050A04AR	●	1.6	50	22	50	0.6	4	○	1
AHX475S-050A05AR	●	1.6	50	22	50	0.6	5	○	1
AHX475S-063A05AR	●	1.6	63	22	50	1.0	5	○	1
AHX475S-063A06AR	●	1.6	63	22	50	0.9	6	○	1
AHX475S-080A06AR	●	1.6	80	27	50	1.6	6	○	1
AHX475S-080A08AR	●	1.6	80	27	50	1.5	8	○	1
AHX475S-100A07AR	●	1.6	100	32	63	3.2	7	○	2
AHX475S-100A09AR	●	1.6	100	32	63	3.2	9	○	2
AHX475S-125B08AR	●	1.6	125	40	63	3.8	8	○	2
AHX475S-125B10AR	●	1.6	125	40	63	3.8	10	○	2
AHX475S-160B10AR	●	1.6	160	40	63	5.4	10	○	2
AHX475S-160B12AR	●	1.6	160	40	63	5.3	12	○	2

1/1

1. The cutter body is not supplied with the set bolt for the arbor. Please order a set bolt seperately.
2. ○ = With through coolant holes

28 Vc

MOUNTING DIMENSIONS

Order number	CBDP	DAH	DCCB	DCONMS	DCSFMS	DCX	KWW	L8	Type
AHX475S-050A04AR	20	11	17	22	47	65.6	10.4	6.3	1
AHX475S-050A05AR	20	11	17	22	47	65.6	10.4	6.3	1
AHX475S-063A05AR	20	11	17	22	60	78.6	10.4	6.3	1
AHX475S-063A06AR	20	11	17	22	60	78.6	10.4	6.3	1
AHX475S-080A06AR	23	13	20	27	76	95.6	12.4	7	1
AHX475S-080A08AR	23	13	20	27	76	95.6	12.4	7	1
AHX475S-100A07AR	26	17	26	32	96	115.6	14.4	8	2
AHX475S-100A09AR	26	17	26	32	96	115.6	14.4	8	2
AHX475S-125B08AR	40	56	—	40	100	140.6	16.4	9	2
AHX475S-125B10AR	40	56	—	40	100	140.6	16.4	9	2
AHX475S-160B10AR	40	56	—	40	100	175.6	16.4	9	2
AHX475S-160B12AR	40	56	—	40	100	175.6	16.4	9	2

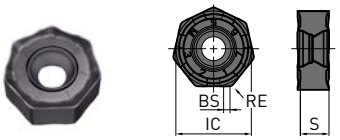
1/1

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

AHX475S – INSERTS

P	Steel	◔	✲		◔	◔	◔	**Cutting conditions :** ●: Stable cutting ◔: General cutting ✲: Unstable cutting
K	Cast iron			◔	◔	◔	◔	
H	Hardened steel						◔	**Honing:** E: Round

Order number	Class	Honing	MP6120	MP6130	MC5020	MV1020	MV1030	VP15TF	IC	S	BS	RE	APMX	Geometry
NNMU130532ZEN-M	M	E	●	●	●	●	●	●	13.4	5.09	—	3.2	1.6	
NNMU130532ZEN-R	M	E	●	●	●	●	●	●	13.4	5.09	—	3.2	1.6	



GRADE SELECTION

P	PVD					K	PVD		CVD		H	PVD
P10	VP15TF	MP6120		MV1020		K10	VP15TF	MV1020	MV1030	MC5020	H10	
P20			MP6130		MV1030	K20					H20	VP15TF
P30						K30					H30	
P40						K40					H40	

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

AHX475S

RECOMMENDED CUTTING CONDITIONS

DRY CUTTING

	Material	Properties	Grade		Vc	fz	ap	ae
P	Mild steel	<180HB	MV1020	R	220 (170 – 270)	0.6	≤1.6	≤0.5DC
			MV1020	R	220 (170 – 270)	0.8	≤1.6	0.5 – 0.8DC
			MV1020	M	220 (170 – 270)	1.0	≤1.6	0.8 – 1DC
			MP6120	R	150 (100 – 200)	0.6	≤1.6	≤0.5DC
			MP6120	R	150 (100 – 200)	0.8	≤1.6	0.5 – 0.8DC
			MP6120	M	150 (100 – 200)	1.0	≤1.6	0.8 – 1DC
			MV1030	R	140 (80 – 200)	0.6	≤1.6	≤0.5DC
			MV1030	R	140 (80 – 200)	0.8	≤1.6	0.5 – 0.8DC
			MV1030	M	140 (80 – 200)	1.0	≤1.6	0.8 – 1DC
			MP6130	R	130 (80 – 180)	0.6	≤1.6	≤0.5DC
			MP6130	R	130 (80 – 180)	0.8	≤1.6	0.5 – 0.8DC
			MP6130	M	130 (80 – 180)	1	≤1.6	0.8 – 1DC
	Carbon steel Alloy steel	180–280HB	MV1020	R	200 (150 – 250)	0.6	≤1.6	≤0.5DC
			MV1020	R	200 (150 – 250)	0.8	≤1.6	0.5 – 0.8DC
			MV1020	M	200 (150 – 250)	1.0	≤1.6	0.8 – 1DC
			MP6120	R	130 (80 – 180)	0.6	≤1.6	≤0.5DC
			MP6120	R	130 (80 – 180)	0.8	≤1.6	0.5 – 0.8DC
			MP6120	M	130 (80 – 180)	1.0	≤1.6	0.8 – 1DC
			MV1030	R	140 (80 – 200)	0.6	≤1.6	≤0.5DC
			MV1030	R	140 (80 – 200)	0.8	≤1.6	0.5 – 0.8DC
			MV1030	M	140 (80 – 200)	1.0	≤1.6	0.8 – 1DC
			MP6130	R	110 (60 – 160)	0.6	≤1.6	≤0.5DC
			MP6130	R	110 (60 – 160)	0.8	≤1.6	0.5 – 0.8DC
			MP6130	M	110 (60 – 160)	1	≤1.6	0.8 – 1DC
	Carbon steel Alloy steel	280–350HB	MV1020	R	150 (100 – 200)	0.5	≤1.6	≤0.5DC
			MV1020	R	150 (100 – 200)	0.6	≤1.6	0.5 – 0.8DC
			MV1020	R	150 (100 – 200)	0.7	≤1.6	0.8 – 1DC
			MP6120	R	100 (50 – 150)	0.5	≤1.6	≤0.5DC
			MP6120	R	100 (50 – 150)	0.6	≤1.6	0.5 – 0.8DC
			MP6120	R	100 (50 – 150)	0.7	≤1.6	0.8 – 1DC
			MV1030	R	90 (30 – 150)	0.5	≤1.6	≤0.5DC
			MV1030	R	90 (30 – 150)	0.6	≤1.6	0.5 – 0.8DC
			MV1030	R	90 (30 – 150)	0.7	≤1.6	0.8 – 1DC
			MP6130	R	80 (30 – 130)	0.5	≤1.6	≤0.5DC
			MP6130	R	80 (30 – 130)	0.6	≤1.6	0.5 – 0.8DC
			MP6130	R	80 (30 – 130)	0.7	≤1.6	0.8 – 1DC
	Alloy tool steel	<350HB	MP6120	R	100 (50 – 150)	0.5	≤1.6	≤0.5DC
			MP6120	R	100 (50 – 150)	0.6	≤1.6	0.5 – 0.8DC
			MP6120	R	100 (50 – 150)	0.7	≤1.6	0.8 – 1DC
			MP6130	R	80 (30 – 120)	0.5	≤1.6	≤0.5DC
			MP6130	R	80 (30 – 120)	0.6	≤1.6	0.5 – 0.8DC
			MP6130	R	80 (30 – 120)	0.7	≤1.6	0.8 – 1DC
	Pre-hardened steel	35–45HRC	MP6120	R	100 (70 – 130)	0.5	≤1.6	≤0.5DC
			MP6120	R	100 (70 – 130)	0.6	≤1.6	0.5 – 0.8DC
			MP6120	R	100 (70 – 130)	0.7	≤1.6	0.8 – 1DC
			MP6130	R	80 (50 – 110)	0.5	≤1.6	≤0.5DC
			MP6130	R	80 (50 – 110)	0.6	≤1.6	0.5 – 0.8DC
			MP6130	R	80 (50 – 110)	0.7	≤1.6	0.8 – 1DC

AHX475S

RECOMMENDED CUTTING CONDITIONS

DRY CUTTING

	Material	Properties	Grade		Vc	fz	ap	ae
K	Grey cast iron	<350MPa	MC5020	R	150 (100 – 200)	0.6	≤1.6	≤0.5DC
			MC5020	R	150 (100 – 200)	0.8	≤1.6	0.5 – 0.8DC
			MC5020	M	150 (100 – 200)	1.0	≤1.6	0.8 – 1DC
			VP15TF	R	120 (80 – 160)	0.6	≤1.6	≤0.5DC
			VP15TF	R	120 (80 – 160)	0.8	≤1.6	0.5 – 0.8DC
			VP15TF	M	120 (80 – 160)	1.0	≤1.6	0.8 – 1DC
	Ductile cast iron	<450MPa	MV1020	R	200 (150 – 250)	0.6	≤1.6	≤0.5DC
			MV1020	R	200 (150 – 250)	0.8	≤1.6	0.5 – 0.8DC
			MV1020	M	200 (150 – 250)	1.0	≤1.6	0.8 – 1DC
			MC5020	R	150 (100 – 200)	0.6	≤1.6	≤0.5DC
			MC5020	R	150 (100 – 200)	0.8	≤1.6	0.5 – 0.8DC
			MC5020	M	150 (100 – 200)	1.0	≤1.6	0.8 – 1DC
			MV1030	R	140 (80 – 200)	0.6	≤1.6	≤0.5DC
			MV1030	R	140 (80 – 200)	0.8	≤1.6	0.5 – 0.8DC
			MV1030	M	140 (80 – 200)	1.0	≤1.6	0.8 – 1DC
			VP15TF	R	120 (80 – 160)	0.6	≤1.6	≤0.5DC
			VP15TF	R	120 (80 – 160)	0.8	≤1.6	0.5 – 0.8DC
			VP15TF	M	120 (80 – 160)	1	≤1.6	0.8 – 1DC
	Ductile cast iron	<800MPa	MV1020	R	180 (130 – 230)	0.5	≤1.6	≤0.5DC
			MV1020	R	180 (130 – 230)	0.6	≤1.6	0.5 – 0.8DC
			MV1020	R	180 (130 – 230)	0.7	≤1.6	0.8 – 1DC
			MC5020	R	150 (100 – 200)	0.5	≤1.6	≤0.5DC
			MC5020	R	150 (100 – 200)	0.6	≤1.6	0.5 – 0.8DC
			MC5020	R	150 (100 – 200)	0.7	≤1.6	0.8 – 1DC
			MV1030	R	140 (80 – 200)	0.5	≤1.6	≤0.5DC
			MV1030	R	140 (80 – 200)	0.6	≤1.6	0.5 – 0.8DC
			MV1030	R	140 (80 – 200)	0.7	≤1.6	0.8 – 1DC
			VP15TF	R	120 (80 – 160)	0.5	≤1.6	≤0.5DC
			VP15TF	R	120 (80 – 160)	0.6	≤1.6	0.5 – 0.8DC
			VP15TF	R	120 (80 – 160)	0.7	≤1.6	0.8 – 1DC
H	Hardened steel	40–55HRC	VP15TF	R	70 (50 – 90)	0.4	≤1.6	≤0.5DC
			VP15TF	R	70 (50 – 90)	0.5	≤1.6	0.5 – 0.8DC
			VP15TF	R	70 (50 – 90)	0.6	≤1.6	0.8 – 1DC

AHX640S

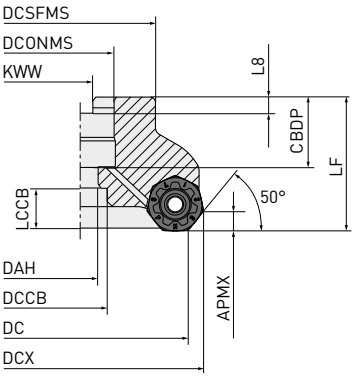
FACE MILL

P M K S H

KAPR: 50°
GAMP: -5°
GAMF: -6°

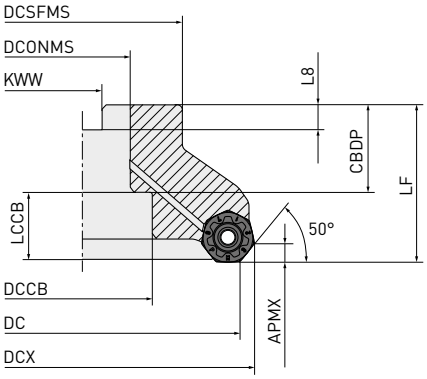
1

Ø 63
Ø 80



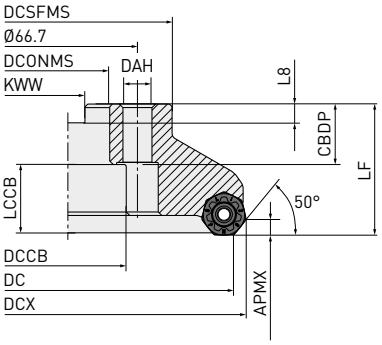
2

Ø 100
Ø 125



3

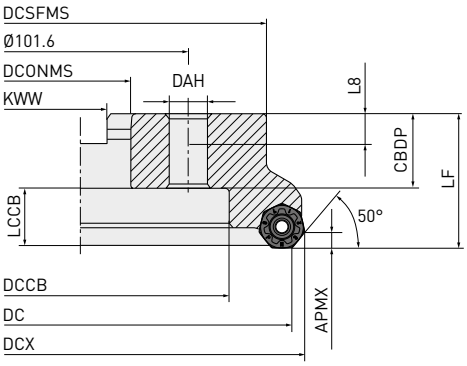
Ø 160



Right hand tool holder only.

4

Ø 200



Tool holder type	Set bolt		Geometry
AHX640S-063A○○AR	HSC10030H	1	1
AHX640S-080A○○AR	HSC12035H		
AHX640S-100B○○AR	MBA16033H		
AHX640S-125B○○AR	MBA20040H	2	2
AHX640S-160C○○NR	—	—	
AHX640S-200C○○NR	—	—	

AHX640S – FACE MILL

ARBOR TYPE

Order number	Stock	APMX	DC	DCONMS	LF	WT	ZEFF		Type
AHX640S-063A04AR	●	6	63	22	50	0.7	4	○	1
AHX640S-063A05AR	●	6	63	22	50	0.6	5	○	1
AHX640S-080A04AR	●	6	80	27	50	1.1	4	○	1
AHX640S-080A06AR	●	6	80	27	50	1.0	6	○	1
AHX640S-100B05AR	●	6	100	32	50	1.7	5	○	2
AHX640S-100B07AR	●	6	100	32	50	1.6	7	○	2
AHX640S-125B06AR	●	6	125	40	63	3.1	6	○	2
AHX640S-125B08AR	●	6	125	40	63	3.0	8	○	2
AHX640S-160C07NR	●	6	160	40	63	5.4	7	—	3
AHX640S-160C10NR	●	6	160	40	63	5.2	10	—	3
AHX640S-200C08NR	●	6	200	60	63	7.8	8	—	4
AHX640S-200C12NR	●	6	200	60	63	7.5	12	—	4

1/1

1. ○ = With through coolant holes

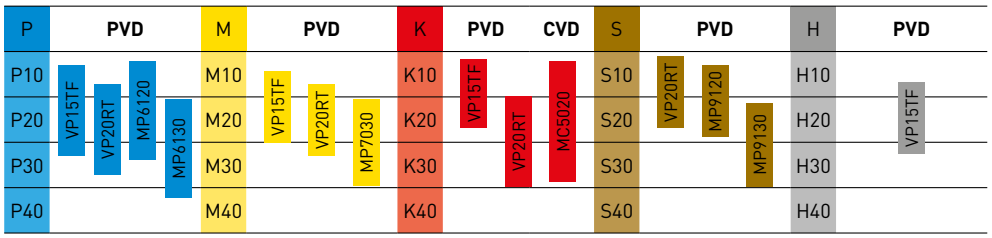
33 Vc

MOUNTING DIMENSIONS

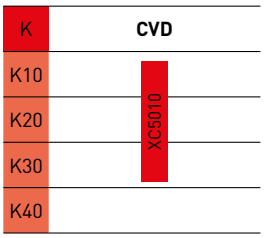
Order number	CBDP	DAH	DCCB	DCONMS	DCSFMS	DCX	KWW	L8	Type
AHX640S-063A04AR	20	11	—	22	50	75.55	10.4	6.3	1
AHX640S-063A05AR	20	11	—	22	50	75.55	10.4	6.3	1
AHX640S-080A04AR	23	13	—	27	56	92.55	12.4	7	1
AHX640S-080A06AR	23	13	—	27	56	92.55	12.4	7	1
AHX640S-100B05AR	32	—	45	32	78	112.55	14.4	8	2
AHX640S-100B07AR	32	—	45	32	78	112.55	14.4	8	2
AHX640S-125B06AR	42	—	56	40	89	137.55	16.4	9	2
AHX640S-125B08AR	42	—	56	40	89	137.55	16.4	9	2
AHX640S-160C07NR	29	—	56	40	120	172.55	16.4	9	3
AHX640S-160C10NR	29	—	56	40	120	172.55	16.4	9	3
AHX640S-200C08NR	32	—	140	60	175	212.55	25.7	14.22	4
AHX640S-200C12NR	32	—	140	60	175	212.55	25.7	14.22	4

1/1

GRADE SELECTION CARBIDE



GRADE SELECTION CERAMIC



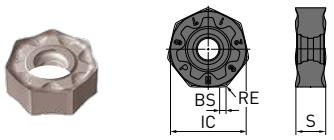
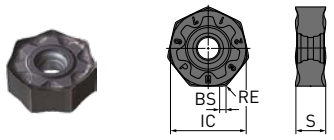
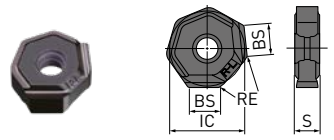
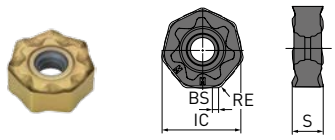
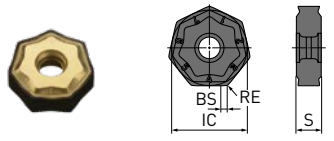
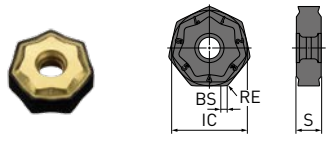
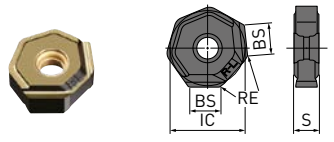
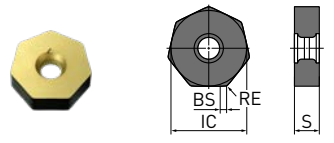
● : Inventory maintained. ★ : Inventory maintained in Japan.

AHX640S – INSERTS

		XC5010	MC5020	MP6120	MP6130	MP7030	MP9120	MP9130	VP15TF	VP20RT
P	Steel			◔	✣				◔	◔
M	Stainless steel					◔			◔	◔
K	Cast iron	◔	◔						✣	◔
S	Heat-resistant alloy, Titanium alloy						◔	✣	◔	◔
H	Hardened steel								◔	

Cutting conditions :
●: Stable cutting ◔: General cutting ✣: Unstable cutting

Honing:
E: Round

Order number	Class	Honing	IC	S	BS	RE	APMX	Geometry
L								
NNMU200712ZER-L	M	E	20	8.0	1.0	1.2	6	
M/MP								
NNMU200708ZEN-MP	M	E	20	8.0	1.0	0.8	6	
NNMU200708ZEN-M	M	E	20	8.0	1.0	0.8	6	
WP (Wiper)								
WNEU2007ZEN7C-WP	M	E	20	7.2	7.1	0.8	6	
MM								
NNMU200712ZER-MM	M	E	20	8.0	1.0	1.2	6	
MK								
NNMU200608ZEN-MK	M	E	20	6.55	1.0	0.8	6	
HK								
NNMU200608ZEN-HK	M	E	20	6.55	1.0	0.8	6	
WK* (Wiper)								
WNEU2006ZEN7C-WK	M	E	20	6.55	7.4	0.8	6	
FT								
NNMQ200708ZEN-FT	M	E	20	6.55	1.0	0.8	6	

* The MK/HK/WK breaker insert is compatible with AHX640S.

1. Possible wiper combinations: MK/HK with WK (wiper) & MP/L/M with WP (wiper).
2. Note that the height differs when MK/HK chipbreaker inserts are used.

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

AHX640S

RECOMMENDED CUTTING CONDITIONS

DRY CUTTING

	Material	Properties	Conditions	Grade		Vc	fz	ap	ae
P	Mild steel	<180HB		MP6120	M	250 (200–300)	0.30 (0.20–0.40)	≤5	≤0.8DC
				VP15TF	MP	250 (200–300)	0.30 (0.20–0.40)	≤5	≤0.8DC
				MP6130	M	220 (170–270)	0.40 (0.30–0.50)	≤5	≤0.8DC
	Carbon steel, Alloy steel	180–280HB		MP6120	M	220 (170–270)	0.30 (0.20–0.40)	≤5	≤0.8DC
				VP15TF	MP	220 (170–270)	0.30 (0.20–0.40)	≤5	≤0.8DC
				MP6130	M	190 (140–240)	0.40 (0.30–0.50)	≤5	≤0.8DC
		280–350HB		MP6120	M	140 (100–180)	0.30 (0.20–0.40)	≤5	≤0.8DC
				VP15TF	MP	140 (100–180)	0.30 (0.20–0.40)	≤5	≤0.8DC
				MP6130	M	110 (70–150)	0.40 (0.30–0.50)	≤5	≤0.8DC
	Alloy tool steel	≤350HB		MP6120	M	140 (100–180)	0.15 (0.10–0.20)	≤3	≤0.8DC
				VP15TF	MP	140 (100–180)	0.15 (0.10–0.20)	≤3	≤0.8DC
				MP6130	M	110 (70–150)	0.25 (0.20–0.30)	≤3	≤0.8DC
	Pre-hardened steel	35–45HRC		MP6120	M	140 (100–180)	0.15 (0.10–0.20)	≤3	≤0.8DC
				VP15TF	MP	140 (100–180)	0.15 (0.10–0.20)	≤5	≤0.8DC
				MP6130	M	110 (70–150)	0.25 (0.20–0.30)	≤3	≤0.8DC
M	Austenitic stainless steel	≤200HB		MP7030	MM	200 (150–250)	0.20 (0.10–0.30)	≤5	≤0.8DC
		≥200HB		MP7030	MM	150 (100–200)	0.20 (0.10–0.30)	≤5	≤0.8DC
	Two-phase stainless steel	≤280HB		MP7030	MM	140 (100–180)	0.15 (0.05–0.25)	≤5	≤0.8DC
	Ferritic and martensitic stainless steel	≤200HB		MP7030	MM	200 (150–250)	0.20 (0.10–0.30)	≤5	≤0.8DC
		≥200HB		MP7030	MM	150 (100–200)	0.20 (0.10–0.30)	≤5	≤0.8DC
	Precipitation hardening stainless steel	≤450HB		MP7030	MM	130 (100–160)	0.15 (0.05–0.25)	≤5	≤0.8DC
K	Grey cast iron	<350MPa		XC5010	MK, FT	800 (500–1000)	0.10 (0.10–0.30)	≤3	≤0.8DC
				MC5020	MK, HK	220 (150–300)	0.30 (0.20–0.40)	≤5	≤0.8DC
				VP15TF	MP	180 (130–230)	0.30 (0.20–0.40)	≤5	≤0.8DC
				VP15TF, VP20RT	MK, HK	180 (130–230)	0.30 (0.20–0.40)	≤5	≤0.8DC
	Ductile cast iron	<450MPa		XC5010	MK, FT	800 (500–1000)	0.10 (0.10–0.30)	≤3	≤0.8DC
				MC5020	MK, HK	200 (150–250)	0.20 (0.10–0.30)	≤5	≤0.8DC
				VP15TF	MP	170 (120–220)	0.20 (0.10–0.30)	≤5	≤0.8DC
				VP15TF, VP20RT	MK, HK	170 (120–220)	0.20 (0.10–0.30)	≤5	≤0.8DC
		<800MPa		XC5010	MK, FT	800 (500–1000)	0.10 (0.10–0.30)	≤3	≤0.8DC
				MC5020	MK, HK	170 (150–200)	0.20 (0.10–0.30)	≤5	≤0.8DC
				VP15TF	MP	140 (100–180)	0.20 (0.10–0.30)	≤5	≤0.8DC
				VP15TF, VP20RT	MK, HK	140 (100–180)	0.20 (0.10–0.30)	≤5	≤0.8DC
H	Hardened steel	40–55HRC		VP15TF	MP	80 (60–100)	0.15 (0.10–0.20)	≤3	≤0.8DC

1/1

1. Wet cutting is recommended for good surface finishing of stainless steel. (Tool life is short compared to dry cutting.)
2. Wet cutting with internal coolant is recommended for titanium and heat resistant alloys.
3. 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.

AHX640S

RECOMMENDED CUTTING CONDITIONS

WET CUTTING

	Material	Properties	Grade		Vc	fz	ap	ae
M	Austenitic stainless steel	≤200HB	MP7030	MM	125 (100–150)	0.15 (0.10–0.20)	≤5	≤0.8DC
		≥200HB	MP7030	MM	100 (75–125)	0.15 (0.10–0.20)	≤5	≤0.8DC
	Two-phase stainless steel	≤280HB	MP7030	MM	80 (60–100)	0.10 (0.05–0.15)	≤5	≤0.8DC
	Ferritic and martensitic stainless steel	≤200HB	MP7030	MM	125 (100–150)	0.15 (0.10–0.20)	≤5	≤0.8DC
		≥200HB	MP7030	MM	100 (75–125)	0.15 (0.10–0.20)	≤5	≤0.8DC
	Precipitation hardening stainless steel	≤450HB	MP7030	MM	70 (50– 90)	0.10 (0.05–0.15)	≤5	≤0.8DC
S	Titanium alloy	—	MP7030	MM	40 (20– 50)	0.15 (0.10–0.20)	≤3	≤0.6DC
			MP9120	L	60 (50– 70)	0.10 (0.05–0.15)	≤3	≤0.6DC
			MP9130	L	40 (20– 50)	0.15 (0.10–0.20)	≤3	≤0.6DC
	Heat resistant alloy	—	MP7030	MM	40 (20– 50)	0.15 (0.10–0.20)	≤3	≤0.6DC
			MP9120	L	60 (50– 70)	0.10 (0.05–0.15)	≤3	≤0.6DC
			MP9130	L	40 (20– 50)	0.15 (0.10–0.20)	≤3	≤0.6DC

1/1

1. Wet cutting is recommended for good surface finishing of stainless steel. (Tool life is short compared to dry cutting.)
2. Wet cutting with internal coolant is recommended for titanium and heat resistant alloys.
3. 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 FOR WIPER INSERT

	Material	Properties	Main insert		Wiper insert		Vc	fz	ap	ae
P	Mild steel	≤180HB	VP15TF	MP	VP15TF	WP	250 (200–300)	0.30 (0.20–0.40)	≤0.5	≤0.8DC
			MP6120	M	MP6120	M	250 (200–300)	0.30 (0.20–0.40)	≤0.5	≤0.8DC
	Carbon steel, Alloy steel	180–280HB	VP15TF	MP	VP15TF	WP	220 (170–270)	0.30 (0.20–0.40)	≤0.5	≤0.8DC
			MP6120	M	MP6120	M	220 (170–270)	0.30 (0.20–0.40)	≤0.5	≤0.8DC
		280–350HB	VP15TF	MP	VP15TF	WP	140 (100–180)	0.30 (0.20–0.40)	≤0.5	≤0.8DC
			MP6120	M	MP6120	M	140 (100–180)	0.30 (0.20–0.40)	≤0.5	≤0.8DC
K	Grey cast iron	≤350MPa	MC5020	MK, HK	MC5020	WK	320 (250–400)	0.30 (0.20–0.40)	≤0.5	≤0.8DC
			VP15TF	MP	VP15TF	WP	220 (150–300)	0.30 (0.20–0.40)	≤0.5	≤0.8DC
	Ductile cast iron	≤450MPa	MC5020	MK, HK	MC5020	WK	250 (200–300)	0.20 (0.10–0.30)	≤0.5	≤0.8DC
			VP15TF	MP	VP15TF	WP	200 (150–250)	0.20 (0.10–0.30)	≤0.5	≤0.8DC
		≤800MPa	MC5020	MK, HK	MC5020	WK	220 (200–250)	0.20 (0.10–0.30)	≤0.5	≤0.8DC
			VP15TF	MP	VP15TF	WP	170 (150–200)	0.20 (0.10–0.30)	≤0.5	≤0.8DC
S	Heat resistant alloy	—	VP15TF	MP	VP15TF	WP	40 (20– 50)	0.15 (0.10–0.20)	≤0.5	≤0.8DC
H	Hardened steel	40–55HRC	VP15TF	MP	VP15TF	WP	80 (60–100)	0.15 (0.10–0.20)	≤0.5	≤0.8DC

1/1

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 %.
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

AHX640W

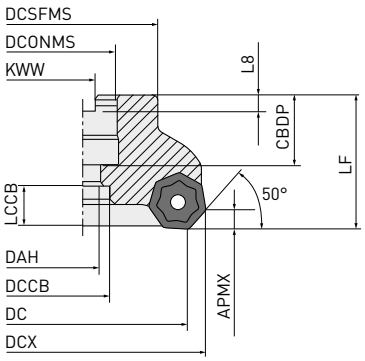
FACE MILLING
HIGH FEED MACHINING OF CAST IRON

K

KAPR: 50°
GAMP: -5°
GAMF: -6°

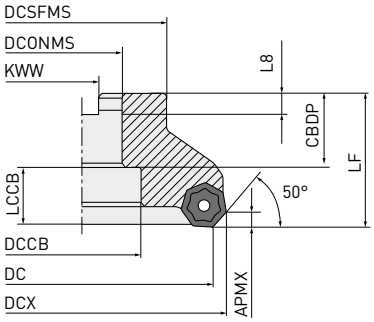
1

Ø 80



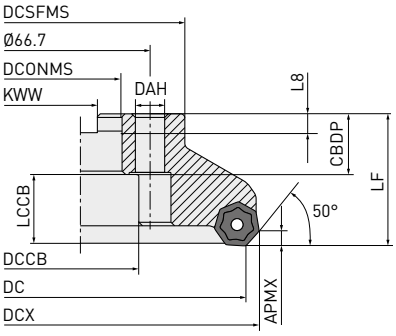
2

Ø 100
Ø 125



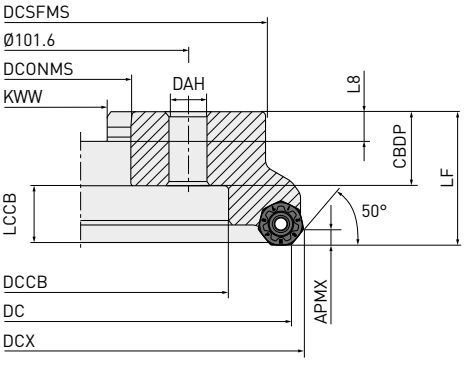
3

Ø 160



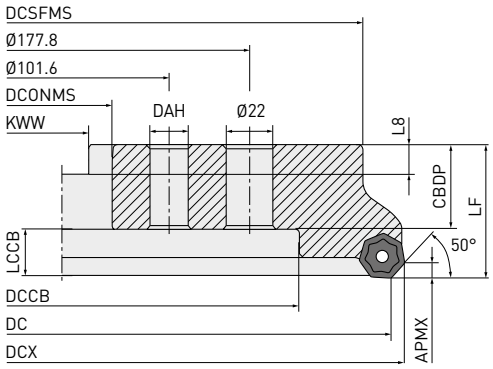
4

Ø 200
Ø 250



5

Ø 315



Right hand tool holder only.

AHX640W – FACE MILLING
HIGH FEED MACHINING OF CAST IRON

ARBOR TYPE

Order number	Stock		APMX	DC	DCONMS	LF	WT	ZEFF	Type
	R	L							
AHX640W-080A08R/L	●	●	6	80	27	50	1.5	8	1
AHX640W-080A10R/L	●	●	6	80	27	50	1.5	10	1
AHX640W-100B10R/L	●	●	6	100	32	50	2.1	10	2
AHX640W-100B14R/L	●	●	6	100	32	50	2.1	14	2
AHX640W-125B12R/L	●	●	6	125	40	63	3.1	12	2
AHX640W-125B18R/L	●	●	6	125	40	63	3.1	18	2
AHX640W-160C16R/L	●	●	6	160	40	63	5.6	16	3
AHX640W-160C22R/L	●	●	6	160	40	63	5.6	22	3
AHX640W-200C20R/L	●	●	6	200	60	63	8.0	20	4
AHX640W-200C28R/L	●	●	6	200	60	63	8.0	28	4
AHX640W-250C24R/L	●	●	6	250	60	63	12.6	24	4
AHX640W-250C36R/L	●	●	6	250	60	63	12.6	36	4
AHX640W-315C28R/L	●	●	6	315	60	80	31.5	28	5
AHX640W-315C44R/L	●	●	6	315	60	80	31.5	44	5

1/1

38 Vc

MOUNTING DIMENSIONS

Order number	CBDP	DAH	DCCB	DCONMS	DCSFMS	DCX	KWW	L8	Type
AHX640W-080A08R/L	23	13	—	27	56	92.6	12.4	7	1
AHX640W-080A10R/L	23	13	—	27	56	92.6	12.4	7	1
AHX640W-100B10R/L	32	—	45	32	70	112.6	14.4	8	2
AHX640W-100B14R/L	32	—	45	32	70	112.6	14.4	8	2
AHX640W-125B12R/L	32	—	56	40	80	137.6	16.4	9	2
AHX640W-125B18R/L	32	—	56	40	80	137.6	16.4	9	2
AHX640W-160C16R/L	29	—	56	40	100	172.6	16.4	9	3
AHX640W-160C22R/L	29	—	56	40	100	172.6	16.4	9	3
AHX640W-200C20R/L	32	—	135	60	155	212.6	25.7	14	4
AHX640W-200C28R/L	32	—	135	60	155	212.6	25.7	14	4
AHX640W-250C24R/L	32	—	180	60	200	262.6	25.7	14	4
AHX640W-250C36R/L	32	—	180	60	200	262.6	25.7	14	4
AHX640W-315C28R/L	57	—	225	60	285	327.6	25.7	14	5
AHX640W-315C44R/L	57	—	225	60	285	327.6	25.7	14	5

1/1

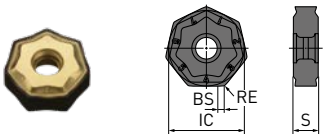
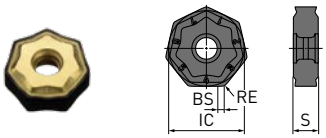
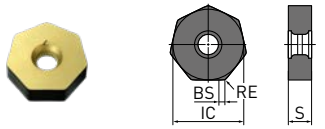
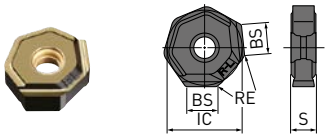
● : Inventory maintained. ★ : Inventory maintained in Japan.

AHX640W – INSERTS

K	Cast iron

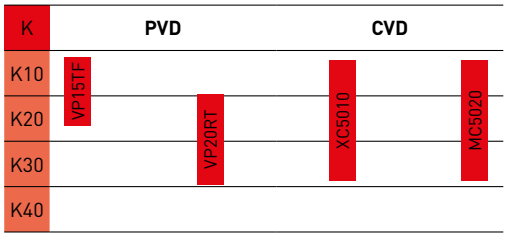
Cutting conditions :
●: Stable cutting ◔: General cutting ✥: Unstable cutting

Honing:
E: Round

Order number	Class	Honing	XC5010	MC5020	VP15TF	VP20RT	IC	S	BS	RE	APMX	Geometry
MK												
NNMU200608ZEN-MK	M	E	●	●	●	●	20	6.1	1.0	0.8	6	
HK												
NNMU200608ZEN-HK	M	E		●	●	●	20	6.1	1.0	0.8	6	
FT												
NNMQ200708ZEN-FT	M	E	●		●		20	6.55	1.0	0.8	6	
WK												
WNEU2006ZEN7C-WK	E	E		●			20	6.55	7.4	0.8	0.5	

1. The inserts can be used with both right and left hand cutters.

GRADE SELECTION



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

AHX640W

RECOMMENDED CUTTING CONDITIONS

GENERAL CUTTING

	Material	Properties	Conditions	Grade		Vc	fz	ap	ae
K	Gray cast iron	<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	<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
		<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

1/1

1. With reference to the above examples, adjust the cutting conditions according to the machining set up.
2. Tool life when wet cutting is short compared to dry cutting.

FINISHING (USE OF WIPER INSERTS)

	Material	Properties	Conditions	Grade		Vc	fz	ap
K	Gray cast iron	<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	<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

1/1

1. Please use 2 – 3 wiper inserts when the feed is greater than 6 mm/rev.

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