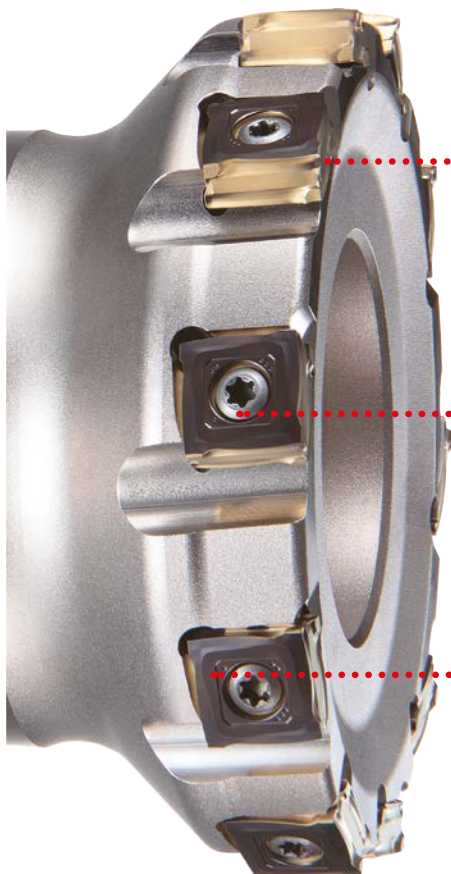

VOX400

VOX CUTTER WITH VERTICAL INSERTS
FOR ULTRA HIGH EFFICIENCY



VOX400

VERTICAL INSERTS WITH HIGH STRENGTH CUTTING EDGE. SUITABLE FOR A WIDE RANGE CAST IRON ROUGHING MILLING APPLICATIONS



CUTTER BODY FEATURES

HIGH RIGIDITY DESIGN

Arranging the inserts vertically absorbs the principal cutting force through the thickness of the insert and achieves extremely high rigidity.

EASY TO CLAMP INSERT

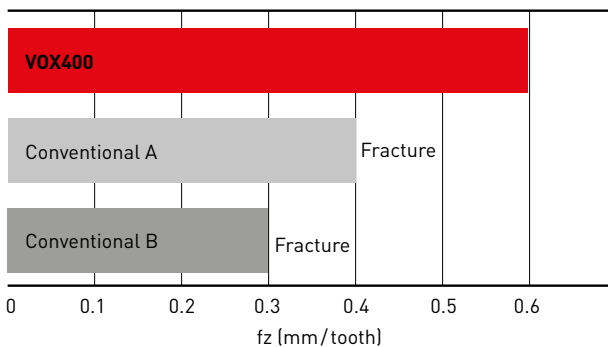
The insert profile is precisely matched to the insert seats in the tool body. This enables user friendly, accurate positioning and provides extra secure clamping.

WIDE SELECTION OF BODIES

VOX400 meets the needs for a wide range of cast iron milling applications. Available as standard are cutter bodies with normal, fine and extra fine tooth pitches for high productivity.

FRACTURE RESISTANCE

The original insert shape with a convex cutting edge and shaped relief face offers excellent sharpness and outstanding fracture resistance.



Tool	VOX400-080A08R(Ø80)
Insert	SONX1206PER(MC5020)
Workpiece	GGG70
Vc (m/min)	200
fz (mm/tooth)	0.2-0.6
ap (mm)	5
ae (mm)	40
Coolant	Dry Cut

VOX400

INSERT FEATURES

UNIQUE VERTICAL INSERT

- 8 usable corners with a high strength cutting edge.
- Fracture resistance is significantly improved due to a convex curve cutting edge and a specially shaped relief face.
- Maximum depth of cut is 10 mm.



MC5020

- Ideal for milling cast iron.
- The "Black Super Smooth" coating surface protects against built-up edge, thus ensuring longer tool life.
- Dry machining is recommended.



VP15TF

- A PVD coated grade for application versatility.
- Ideal for ductile cast iron, unstable cutting conditions and low rigidity workpieces.
- Wet cutting is possible.

SELECTION OF NUMBER OF TEETH

To achieve higher efficiency, the number of teeth can be increased with stable workpiece clamping and with sufficient machine power. In these cases we recommend milling cutters with fine or extra fine pitches when machining gray cast iron.

REGULAR PITCH CUTTER



Differential split milling cutters with a small number of cutting edges

- 1st choice for unstable machining due to the lowest cutting forces
- Limited machine performance
- Milling application with long overhangs

FINE PITCH CUTTER



Sufficient chip space for roughing ISO K materials

- 1st choice for roughing under stable conditions
- Excellent productivity

EXTRA FINE PITCH CUTTER



Equally spaced, fine pitch cutter with max. number of cutting edges

- 1st choice for high productivity in applications with a small side engagement
- Roughing of ISO K materials under stable cutting conditions

VOX400

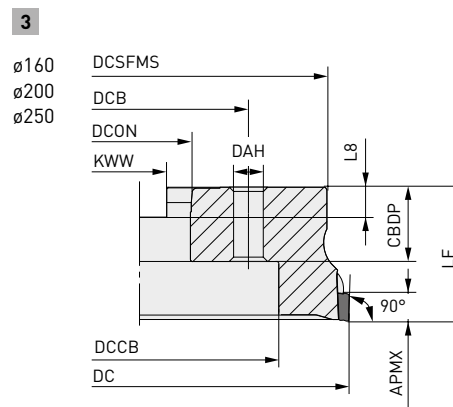
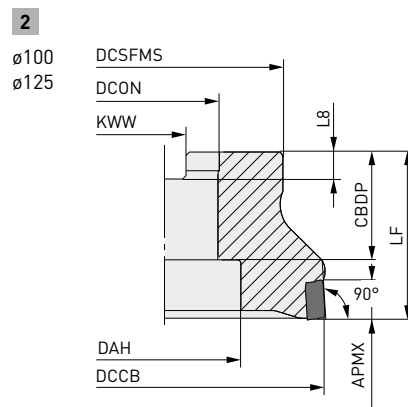
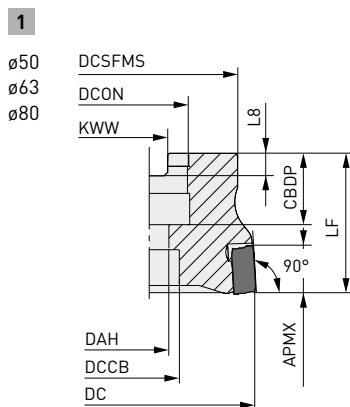


FOR CAST IRONS

K



KAPR :90°



Right hand tool holder only.

ARBOR TYPE

Order number	Stock	APMX	DC	DCON	LF	WT	ZNF	Type
COARSE PITCH								
VOX400-050A03R	●	10	50	22	40	0.3	3	1
VOX400-063A04R	●	10	63	22	40	0.6	4	1
VOX400-080A04R	●	10	80	27	50	1	4	1
VOX400-100B06R	●	10	100	32	50	1.7	6	2
VOX400-125B08R	●	10	125	40	63	3	8	2
VOX400-160C10R	●	10	160	40	63	5.4	10	3
VOX400-200C12R	●	10	200	60	63	8.1	12	3
VOX400-250C16R	●	10	250	60	63	11.8	16	3
FINE PITCH								
VOX400-050A05R	●	10	50	22	40	0.3	5	1
VOX400-063A06R	●	10	63	22	40	0.6	6	1
VOX400-080A08R	●	10	80	27	50	1	8	1
VOX400-100B10R	●	10	100	32	50	1.7	10	2
VOX400-125B12R	●	10	125	40	63	3	12	2
VOX400-160C16R	●	10	160	40	63	5.4	16	3
VOX400-200C20R	●	10	200	60	63	8.1	20	3
VOX400-250C24R	●	10	250	60	63	11.8	24	3

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

VOX400 - ARBOR TYPE



Order number	Stock	APMX	DC	DCON	LF	WT	ZNF	Type
EXTRA FINE PITCH								
VOX400-063A08R	●	10	63	22	40	0.5	8	1
VOX400-080A10R	●	10	80	27	50	1	10	1
VOX400-100B12R	●	10	100	32	50	1.6	12	2
VOX400-125B16R	●	10	125	40	63	2.8	16	2
VOX400-160C20R	●	10	160	40	63	5.2	20	3
VOX400-200C26R	★	10	200	60	63	7.9	26	3
VOX400-250C34R	★	10	250	60	63	11.5	34	3



MOUNTING DIMENSIONS

Order number	CBDP	DAH	DCCB	DCSFMS	KWW	DBC	L8	Type
COARSE PITCH								
VOX400-050A03R	20	11	17	41	10.4	—	6.3	1
VOX400-063A04R	20	11	17	50	10.4	—	6.3	1
VOX400-080A04R	23	13	20	56	12.4	—	7	1
VOX400-100B06R	32	—	45	78	14.4	—	8	2
VOX400-125B08R	32	—	56	89	16.4	—	9	2
VOX400-160C10R	29	14	56	120	16.4	66.7	9	3
VOX400-200C12R	32	18	130	175	25.7	101.6	14.22	3
VOX400-250C16R	32	18	180	210	25.7	101.6	14.22	3
FINE PITCH								
VOX400-050A05R	20	11	17	41	10.4	—	6.3	1
VOX400-063A06R	20	11	17	50	10.4	—	6.3	1
VOX400-080A08R	23	13	20	56	12.4	—	7	1
VOX400-100B10R	32	—	45	78	14.4	—	8	2
VOX400-125B12R	32	—	56	89	16.4	—	9	2
VOX400-160C16R	29	14	56	120	16.4	66.7	9	3
VOX400-200C20R	32	18	130	175	25.7	101.6	14.22	3
VOX400-250C24R	32	18	180	210	25.7	101.6	14.22	3
EXTRA FINE PITCH								
VOX400-063A08R	20	11	17	50	10.4	—	6.3	1
VOX400-080A10R	23	13	20	56	12.4	—	7	1
VOX400-100B12R	32	—	45	78	14.4	—	8	2
VOX400-125B16R	32	—	56	89	16.4	—	9	2
VOX400-160C20R	29	14	56	120	16.4	66.7	9	3
VOX400-200C26R	32	18	130	175	25.7	101.6	14.22	3
VOX400-250C34R	32	18	180	210	25.7	101.6	14.22	3

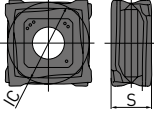

SPARE PARTS

Tool holder type	 *	
	Clamp screw	Wrench
Coarse Pitch		
Fine Pitch	CS401160T	TKY15T
Extra Fine Pitch		

* Clamp Torque (N • m) : CS401160T=3.5

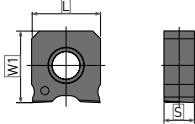

VOX400

INSERTS

Order number	Class	Edge preparation	Coated		Dimensions		Geometry <i>Right hand insert shown</i>	Shape
			MC5020	VP15TF	IC	S		
SONX1206PER	N	E	●	●	12.7	6.3		
SONX1206PEL	N	E		★	12.7	6.3		

1. Left hand inserts available for side and face cutters and special products.

WIPER INSERTS

Order number	Class	Honing	Coated		Dimensions			Geometry	Shape
			VP15TF	W1	L	S			
WOEX1206PER5C	E	E	●	13.025	12.5	5.5			

VOX400

RECOMMENDED CUTTING CONDITIONS

STANDARD PITCH

Material	Properties	Grade	Vc	Ø50 — Ø250		
				ae	ap	fz
Gray cast iron	≤200MPa	MC5020	300 (250—350)	≤DC	≤10	0.4 (0.3—0.5)
		VP15TF	250 (200—300)	≤DC	≤10	0.4 (0.3—0.5)
	≤350MPa	MC5020	220 (150—300)	≤DC	≤10	0.3 (0.2—0.4)
		VP15TF	200 (150—300)	≤DC	≤10	0.3 (0.2—0.4)
Ductile cast iron	≤450MPa	MC5020	200 (150—250)	≤DC	≤10	0.3 (0.2—0.4)
		VP15TF	170 (150—200)	≤DC	≤10	0.3 (0.2—0.4)
	≤800MPa	MC5020	170 (150—200)	≤DC	≤10	0.2 (0.1—0.3)
		VP15TF	150 (100—200)	≤DC	≤10	0.2 (0.1—0.3)

FINE PITCH

Material	Properties	Grade	Vc	Ø50. Ø63			Ø80		
				ae	ap	fz	ae	ap	fz
Gray cast iron	≤200MPa	MC5020	300 (250—350)	≤DC	≤10	0.4 (0.3—0.5)	≤DC	≤10	0.4 (0.3—0.5)
		VP15TF	250 (200—300)	≤DC	≤10	0.4 (0.3—0.5)	≤DC	≤10	0.4 (0.3—0.5)
	≤350MPa	MC5020	220 (150—300)	≤DC	≤10	0.3 (0.2—0.4)	≤DC	≤10	0.3 (0.2—0.4)
		VP15TF	200 (150—300)	≤DC	≤10	0.3 (0.2—0.4)	≤DC	≤10	0.3 (0.2—0.4)
Ductile cast iron	≤450MPa	MC5020	200 (150—250)	≤0.8 DC	≤10	0.3 (0.2—0.4)	≤0.6 DC	≤10	0.3 (0.2—0.4)
		VP15TF	170 (150—200)	≤0.8 DC	≤10	0.3 (0.2—0.4)	≤0.6 DC	≤10	0.3 (0.2—0.4)
	≤800MPa	MC5020	170 (150—200)	≤0.8 DC	≤10	0.2 (0.1—0.3)	≤0.6 DC	≤10	0.2 (0.1—0.3)
		VP15TF	150 (100—200)	≤0.8 DC	≤10	0.2 (0.1—0.3)	≤0.6 DC	≤10	0.2 (0.1—0.3)

Material	Properties	Grade	Vc	Ø100			Ø125		
				ae	ap	fz	ae	ap	fz
Gray cast iron	≤200MPa	MC5020	300 (250—350)	≤DC	≤10	0.4 (0.3—0.5)	≤DC	≤10	0.4 (0.3—0.5)
		VP15TF	250 (200—300)	≤DC	≤10	0.4 (0.3—0.5)	≤DC	≤10	0.4 (0.3—0.5)
	≤350MPa	MC5020	220 (150—300)	≤DC	≤10	0.3 (0.2—0.4)	≤DC	≤10	0.3 (0.2—0.4)
		VP15TF	200 (150—300)	≤DC	≤10	0.3 (0.2—0.4)	≤DC	≤10	0.3 (0.2—0.4)
Ductile cast iron	≤450MPa	MC5020	200 (150—250)	≤0.5 DC	≤10	0.3 (0.2—0.4)	≤0.4 DC	≤10	0.3 (0.2—0.4)
		VP15TF	170 (150—200)	≤0.5 DC	≤10	0.3 (0.2—0.4)	≤0.4 DC	≤10	0.3 (0.2—0.4)
	≤800MPa	MC5020	170 (150—200)	≤0.5 DC	≤10	0.2 (0.1—0.3)	≤0.4 DC	≤10	0.2 (0.1—0.3)
		VP15TF	150 (100—200)	≤0.5 DC	≤10	0.2 (0.1—0.3)	≤0.4 DC	≤10	0.2 (0.1—0.3)

Material	Properties	Grade	Vc	Ø160			Ø200 — Ø250		
				ae	ap	fz	ae	ap	fz
Gray cast iron	≤200MPa	MC5020	300 (250—350)	≤DC	≤10	0.4 (0.3—0.5)	≤DC	≤10	0.4 (0.3—0.5)
		VP15TF	250 (200—300)	≤DC	≤10	0.4 (0.3—0.5)	≤DC	≤10	0.4 (0.3—0.5)
	≤350MPa	MC5020	220 (150—300)	≤DC	≤10	0.3 (0.2—0.4)	≤DC	≤10	0.3 (0.2—0.4)
		VP15TF	200 (150—300)	≤DC	≤10	0.3 (0.2—0.4)	≤DC	≤10	0.3 (0.2—0.4)
Ductile cast iron	≤450MPa	MC5020	200 (150—250)	≤0.3 DC	≤10	0.3 (0.2—0.4)	≤0.2 DC	≤10	0.3 (0.2—0.4)
		VP15TF	170 (150—200)	≤0.3 DC	≤10	0.3 (0.2—0.4)	≤0.2 DC	≤10	0.3 (0.2—0.4)
	≤800MPa	MC5020	170 (150—200)	≤0.3 DC	≤10	0.2 (0.1—0.3)	≤0.2 DC	≤10	0.2 (0.1—0.3)
		VP15TF	150 (100—200)	≤0.3 DC	≤10	0.2 (0.1—0.3)	≤0.2 DC	≤10	0.2 (0.1—0.3)

VOX400

EXTRA FINE PITCH

Material	Properties	Grade	Vc	Ø63			Ø80		
				ae	ap	fz	ae	ap	fz
Gray cast iron	≤200MPa	MC5020	300 (250—350)	≤DC	≤10	0.4 (0.3—0.5)	≤DC	≤10	0.4 (0.3—0.5)
		VP15TF	250 (200—300)	≤DC	≤10	0.4 (0.3—0.5)	≤DC	≤10	0.4 (0.3—0.5)
	≤350MPa	MC5020	220 (150—300)	≤DC	≤10	0.3 (0.2—0.4)	≤DC	≤10	0.3 (0.2—0.4)
		VP15TF	200 (150—300)	≤DC	≤10	0.3 (0.2—0.4)	≤DC	≤10	0.3 (0.2—0.4)
Ductile cast iron	≤450MPa	MC5020	200 (150—250)	≤0.6 DC	≤10	0.3 (0.2—0.4)	≤0.5 DC	≤10	0.3 (0.2—0.4)
		VP15TF	170 (150—200)	≤0.6 DC	≤10	0.3 (0.2—0.4)	≤0.5 DC	≤10	0.3 (0.2—0.4)
	≤800MPa	MC5020	170 (150—200)	≤0.6 DC	≤10	0.2 (0.1—0.3)	≤0.5 DC	≤10	0.2 (0.1—0.3)
		VP15TF	150 (100—200)	≤0.6 DC	≤10	0.2 (0.1—0.3)	≤0.5 DC	≤10	0.2 (0.1—0.3)

Material	Properties	Grade	Vc	Ø100			Ø125		
				ae	ap	fz	ae	ap	fz
Gray cast iron	≤200MPa	MC5020	300 (250—350)	≤DC	≤10	0.4 (0.3—0.5)	≤DC	≤10	0.4 (0.3—0.5)
		VP15TF	250 (200—300)	≤DC	≤10	0.4 (0.3—0.5)	≤DC	≤10	0.4 (0.3—0.5)
	≤350MPa	MC5020	220 (150—300)	≤DC	≤10	0.3 (0.2—0.4)	≤DC	≤10	0.3 (0.2—0.4)
		VP15TF	200 (150—300)	≤DC	≤10	0.3 (0.2—0.4)	≤DC	≤10	0.3 (0.2—0.4)
Ductile cast iron	≤450MPa	MC5020	200 (150—250)	≤0.4 DC	≤10	0.3 (0.2—0.4)	≤0.3 DC	≤10	0.3 (0.2—0.4)
		VP15TF	170 (150—200)	≤0.4 DC	≤10	0.3 (0.2—0.4)	≤0.3 DC	≤10	0.3 (0.2—0.4)
	≤800MPa	MC5020	170 (150—200)	≤0.4 DC	≤10	0.2 (0.1—0.3)	≤0.3 DC	≤10	0.2 (0.1—0.3)
		VP15TF	150 (100—200)	≤0.4 DC	≤10	0.2 (0.1—0.3)	≤0.3 DC	≤10	0.2 (0.1—0.3)

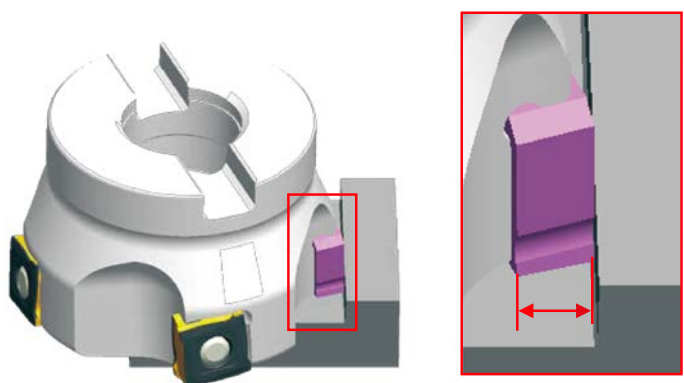
Material	Properties	Grade	Vc	Ø160			Ø200 — Ø250		
				ae	ap	fz	ae	ap	fz
Gray cast iron	≤200MPa	MC5020	300 (250—350)	≤DC	≤10	0.4 (0.3—0.5)	≤DC	≤10	0.4 (0.3—0.5)
		VP15TF	250 (200—300)	≤DC	≤10	0.4 (0.3—0.5)	≤DC	≤10	0.4 (0.3—0.5)
	≤350MPa	MC5020	220 (150—300)	≤DC	≤10	0.3 (0.2—0.4)	≤DC	≤10	0.3 (0.2—0.4)
		VP15TF	200 (150—300)	≤DC	≤10	0.3 (0.2—0.4)	≤DC	≤10	0.3 (0.2—0.4)
Ductile cast iron	≤450MPa	MC5020	200 (150—250)	≤0.25 DC	≤10	0.3 (0.2—0.4)	≤0.15 DC	≤10	0.3 (0.2—0.4)
		VP15TF	170 (150—200)	≤0.25 DC	≤10	0.3 (0.2—0.4)	≤0.15 DC	≤10	0.3 (0.2—0.4)
	≤800MPa	MC5020	170 (150—200)	≤0.25 DC	≤10	0.2 (0.1—0.3)	≤0.15 DC	≤10	0.2 (0.1—0.3)
		VP15TF	150 (100—200)	≤0.25 DC	≤10	0.2 (0.1—0.3)	≤0.15 DC	≤10	0.2 (0.1—0.3)

1. DC is cutter diameter.
2. When using wiper insert, please reduce the feed per tooth to half the normal rate.

USABLE CUTTING EDGE WIDTH OF WIPER INSERTS

The width of the wiper insert itself is 5.5 mm, however the actual functioning cutting edge width after installation to the body is 4.5 mm, as shown in the diagram.

With one wiper insert, it is possible to machine up to $f_n=4$ mm feed per revolution. When exceeding $f_n=4$ mm, use two or more wiper inserts. Note that there is a possibility to exceed $f_n=4$ mm when using a holder with more than 24 inserts.



GERMANY

MMC HARTMETALL GMBH
Comeniusstr. 2 . 40670 Meerbusch
Phone +49 2159 91890 . Fax +49 2159 918966
Email admin@mmchg.de

U.K.

MMC HARDMETAL U.K. LTD.
Mitsubishi House . Galena Close . Tamworth . Staffs. B77 4AS
Phone +44 1827 312312 . Fax +44 1827 312314
Email sales@mitsubishicarbide.co.uk

SPAIN

MITSUBISHI MATERIALS ESPAÑA, S.A.
Calle Emperador 2 . 46136 Museros/Valencia
Phone +34 96 1441711 . Fax +34 96 1443786
Email comercial@mmevalencia.es

FRANCE

MMC METAL FRANCE S.A.R.L.
6, Rue Jacques Monod . 91400 Orsay
Phone +33 1 69 35 53 53 . Fax +33 1 69 35 53 50
Email mmfsales@mmc-metal-france.fr

POLAND

MMC HARDMETAL POLAND SP. Z O.O
Al. Armii Krajowej 61 . 50-541 Wrocław
Phone +48 71335 1620 . Fax +48 71335 1621
Email sales@mitsubishicarbide.com.pl

RUSSIA

MMC HARDMETAL 000 LTD.
Electrozavodskaya St. 24 . build. 3 . Moscow . 107023
Phone +7 495 725 58 85 . Fax +7 495 981 39 79
Email info@mmc-carbide.ru

ITALY

MMC ITALIA S.R.L.
Viale Certosa 144 . 20156 Milano
Phone +39 0293 77031 . Fax +39 0293 589093
Email info@mmc-italia.it

TURKEY

MMC HARTMETALL GMBH ALMANYA - İZMİR MERKEZ ŞUBESİ
Adalet Mahallesi Anadolu Caddesi No: 41-1 . 15001 35580 Bayraklı/İzmir
Phone +90 232 5015000 . Fax +90 232 5015007
Email info@mmchg.com.tr

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