FOP

VERTICAL MACHINING CENTRES

VMC | VARIO | X-5

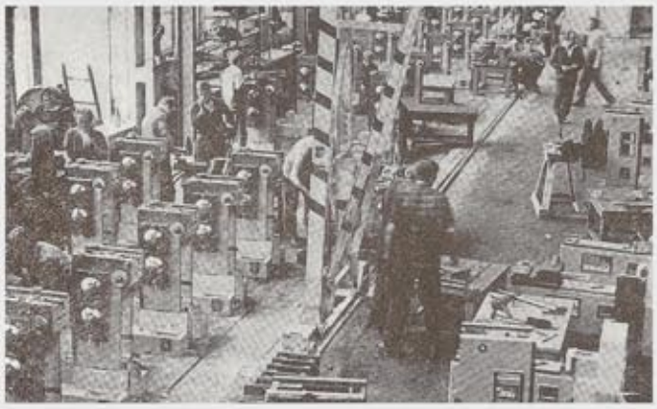
Fabryka Obrabiarek Precyzyjnych
AVIA S.A.

ABOUT US...

Fabryka Obrabiarek Precyzyjnych AVIA S.A. Warsaw, Poland (Precision Machine Tools Factory AVIA S.A.) was established in 1902 and is one of the oldest Polish industrial plants. For the last 70 years AVIA has been one of the leading Polish manufacturers of high quality machine tools. Nowadays our brand is widely recognized in Europe, especially in Germany, where we have over 4 500 installations.

Presence of our machine tools on highly industrialized markets stimulates constant growth and competitiveness of our Customers. Proven solutions from AVIA brand also support development of emerging markets in eastern part of Europe.

At present AVIA offers in its product range series of Vertical Machining Centres 3, 4 and 5 axis (continuous), CNC and Manual Universal Milling Machines and Slant Bed CNC Lathes. AVIA is also the manufacturer of machine tools key components i.e. spindles and precision ground ballscrews. We are supplier of ballscrews to some world leading machine tools producers.



Assembly line of AVIA Manual Universal Milling Machines - 1970's

New machine tool designs are made by our own R&D Department. The unique combination of highly skilled young engineers and very experienced designers, being with AVIA for many years, ensures that special “environment” of Research and Development process. Designs are made using computer systems for:

- Solid Modelling Design (CAD-3D),
- Finite Element Method optimization,
- Computer Aided Manufacturing (CAM).

Our aim is not only to develop state-of-the-art machines and deliver them to the Customers, but also to provide training, service and maintenance support as well as the spare parts availability for many years after sale of the machine.

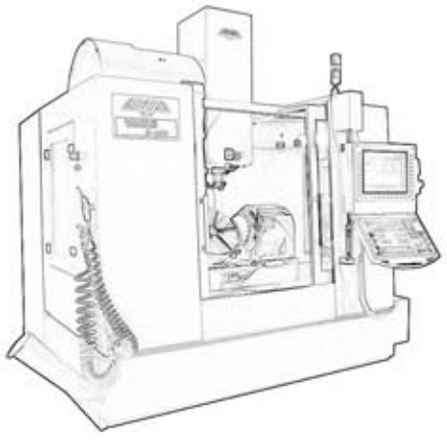
Company Headquartes and Factory:

FABRYKA OBRABIAREK PRECYZYJNYCH AVIA S.A.
ul. Siedlecka 47
03-768 Warsaw
POLAND

Contact data:

Headquarters: +48 22 818 62 11
Sales dept.: +48 22 619 90 81
Fax: +48 22 818 29 54
market@avia.com.pl
www.avia.com.pl

DISCOVER WIDE RANGE OF PRECISION VERTICAL MACHINING CENTRES OF AVIA |

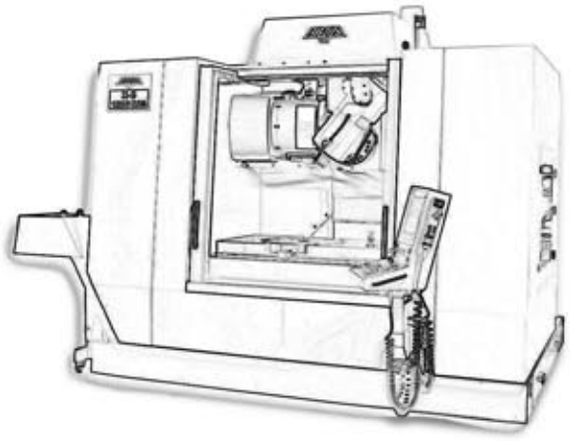


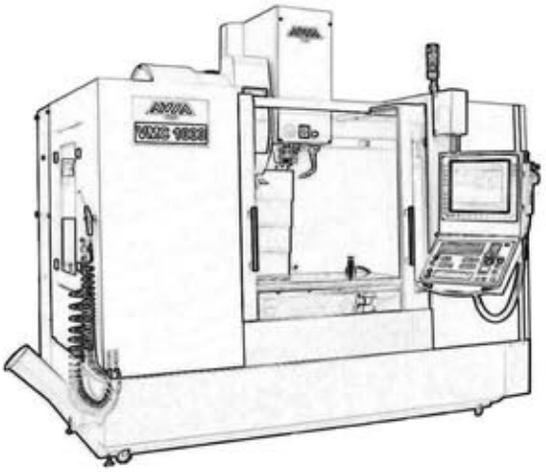
5-AXIS MACHINING CENTRES VARIO & VARIO HS SERIES |

- continuous 5-axis machining solution,
- 450 mm diameter rotary-tilting table,
- 400 kg max. table load (with fixture) for large workpieces,
- direct drive of tilting (A) and rotary (C) axes, by torque motors for top dynamics,
- wide choice of spindles from 10 000 do 24 000 rpm, for different machining requirements,
- acceleration in X/Y/Z axes – up to 1 G,
- rapid traverse 42 m/min, for maximum productivity,
- program single block processing time – 0,5 ms, for CAM generated 5-axis programs.

5-AXIS MACHINIG CENTRES X-5 SERIES |

- the most versatile 5-axis machining centre for your job-shop,
- continuously controlled swivel head with powerful motorspindles,
- large diameter built-in 500 or 630 mm rotary table,
- precision Heidenhain encoders +/- 5 arc. sec. built-in rotary axes centres for highest accuracy,
- spacious working area allows machining of large cubic work pieces,
- 5-axis simultaneous or 5-side machining of medium size workpieces or 4-axis machining of large size workpieces,
- heavy duty work table maximum loads,
- program single block processing time – 0,5 ms, for CAM generated 5-axis programs.





VERTICAL MACHINIG CENTRES VMC & VMC HS SERIES |

- high world-class HEIDENHAIN TNC 640 CNC control in std. SIEMENS SINUMERIK 840D, FANUC 0i-TF - option,
- program single block processing time – 0,5 ms,
- wide choice of spindles 10 000 do 24 000 rpm,
- rapid traverse up to 42 m/min,
- acceleration in X/Y/Z axes – up to 1 G,
- positioning accuracy reaches +/- 0,005 mm
- very rigid design thanks to mechanical components exceeding required standards, from reliable suppliers,
- large working area with heaviest allowable table loads on the market,
- exceptionally rich standard execution with useful equipment,
- highly accurate and dynamic,
- best solution for HSM machining (HS series).

High-performance machining in hardened material

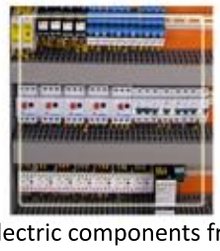
Centralized lubrication for roller guideways and precision ground ballscrews

Limitless capabilities of continuous 5-axis machining on AVIA machine toolsa

Interior made of stainless steel

Wide linear roller guideways - 45 mm

Centralized FESTO pneumatic equipment for easy maintenance

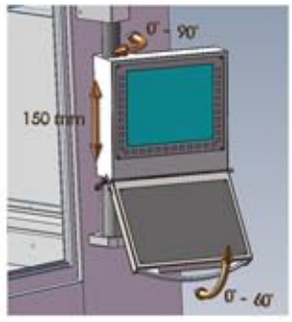


Electric components from reliable suppliers, easily available on the market for maintenance

DISCOVER VERTICAL MACHINING CENTRES DESIGNED TO YOUR NEEDS |

HEIDENHAIN TNC640 |

- most modern and reliable CNC control,
- 21 GB SSDR space for all your CNC programs,
- single block processing time in standard - 0,5 ms,
- 19-inch large display for comfortable operations and programming at the machine tool,
- control panel - re-designed and thought for users :
  # height adjustment 150 mm,
  # keyboard tilting range 0° - 60°,
  # rotary display 0° - 90°.



REGULATION
IN 3 PLANES

AUTOMATIC TOOL CHANGER |

- 30 tools capacity swing arm ATC - in standard execution,
- reliable solution tested in hundreds of machine tools,
- fast tool change time - 2,0 s *tool-to-tool.*

IMPROVED ACCURACY AND DYNAMICS |

- rapid traverse up to 42 m/min shortens idle times,
- positioning accuracy up to +/- 0,005 mm,
- repeatability of positioning up to 0,005 mm,
- VMC series executed with 10 000 or 15 000 rpm spindles,
- VMC HS, VARIO and X-5 series executed with motorspindles up to 24 000 rpm.

Precision ground C3 class ballscrews made by AVIA. Double nut, preloaded design and anchored at both ends for maximum accuracy and rigidity.

RELIABLE KEY COMPONENTS |

Precisely balanced (G0,4) cartridge housed spindles made by AVIA are used for long time, breakage free operation with very high rpm and high torque. Motorspidles come from well-known suppliers. Availability of versions:

- 10 000 rpm - belt drive,
- 15 000 rpm - direct drive,
- 10 000 rpm - motorspindle,
- 18 000 rpm - motorspindle,
- 24 000 rpm - motorspindle.

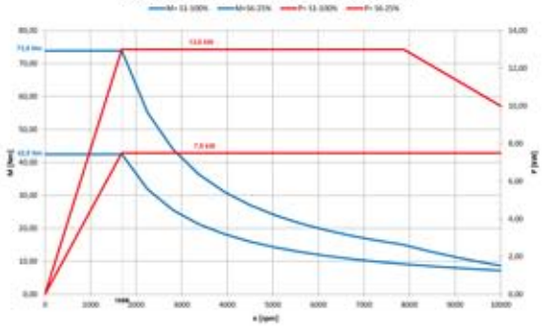
VMC SERIES |

for demanding applications

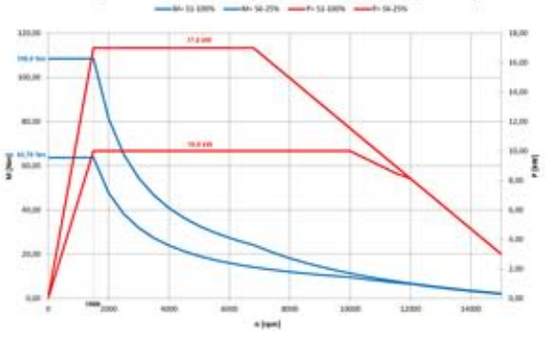
VMC SERIES |

- very rigid design thanks to mechanical components, exceeding required standards, from reliable suppliers,
- large working areas with heaviest allowable table load on the market,
- reliable CNC systems from world-class suppliers: HEIDENHAIN TNC640 19“, SIEMENS 840D 19“, FANUC 0i-15“
- exceptionally rich standard execution with very useful equipment,
- highly accurate and dynamic,
- widest range of application in order to meet modern workshop requirements.

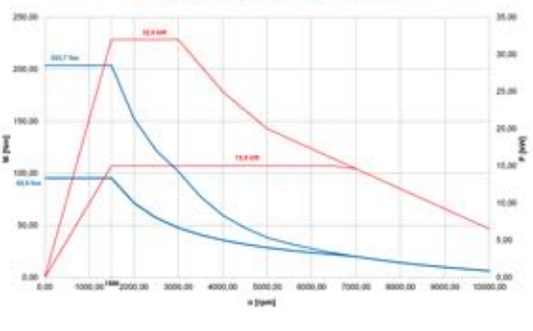
VMC 650, Heidenhain TNC 640 HSCI, 10 000 rpm



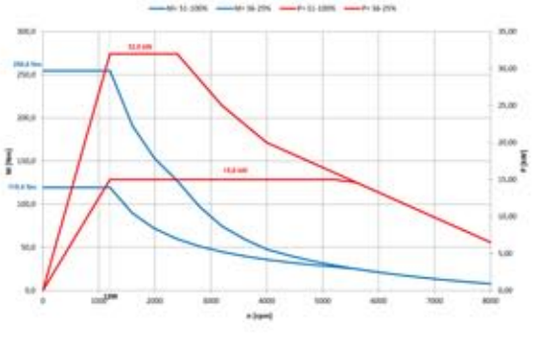
VMC 650, VMC800 and VMC1000, Heidenhain TNC 640 HSCI, 15 000 rpm



VMC 1300, Heidenhaim TNC 640, 10 000 rpm



VMC 1300, ISO50 Heidenhain TNC 640 HSCI, 8 000 rpm



Technical data		VMC 650	VMC 800	VMC 1000	VMC 1300
TABLE:					
Table surface	mm	800 x 540	1000 x 540	1200 x 540	1500 x 710
T-slots: number / width / spacing	mm	5 / 18 / 100	5 / 18 / 100	5 / 18 / 100	5 / 18 / 125
Max. table load	kg	700	850	1000	1500
TRAVELS:					
Longitudinal (X)	mm	650	800	1000	1300
Cross (Y)	mm	540	540	540	700
Vertical (Z)	mm	620	620	620	670
SPINDLE 10 000 rpm – belt drive					
Max. spindle speed	rpm	10 000	10 000	10 000	10 000
Spindle taper		ISO 40	ISO 40	ISO 40	ISO 40
Max. power S1 / S6 (25%)*	kW	7,5/13	10/17	10/17	15/32
Max spindle torque S1 /S6 (25%)*	Nm	42/73	56/96	56/96	95/204
Min. / Max. distance from spindle nose to table surface	mm	150 / 770	150 / 770	150 / 770	100 / 770
SPINDLE 15 000 rpm – direct drive					
Max. spindle speed	rpm	15 000	15 000	15 000	15 000
Spindle taper		ISO 40	ISO 40	ISO 40	ISO 40
Max. power S1 / S6 (25%)*	kW	10 /17	10/17	10/17	10/17
Max spindle torque S1 /S6 (25%)*	Nm	64/108	64/108	64/108	64/108
Min. / Max. distance from spindle nose to table surface	Mm	120/740	120 / 740	120 / 740	100 / 720
SPINDLE 8 000 rpm – belt drive					
Max. spindle speed	rpm	n/a	n/a	n/a	8 000
Spindle taper		n/a	n/a	n/a	ISO 50
Max. power S1 / S6 (25%)*	kW	n/a	n/a	n/a	15/32
Max spindle torque S1 /S6 (25%)*	Nm	n/a	n/a	n/a	119/254
Min. / Max. distance from spindle nose to table surface	mm	n/a	n/a	n/a	100 / 770
TOOL CHANGER:					
Tool changer type		swinging arm ATC (cam type)	swinging arm ATC (cam type)	swinging arm ATC (cam type)	swinging arm ATC (chain type)
Number of tools	pcs.	30	30	30	40
Tool to tool change time	sec.	2,0	2,0	2,0	2,0
Max tool diameter	mm	85/130**	85/130**	85/130**	75/130**
Max tool weight	kg	7	7	7	8
Max tool length	mm	300	300	300	300
FEEDS:					
Feed rate X / Y / Z	m/min	0 – 35/35/35	0 – 35/35/35	0 – 35/35/35	0 – 24/24/24
Rapid traverse X / Y / Z	m/min	35/35/35	35/35/35	35/35/35	24/24/24
STEROWANIA CNC:					
Standard	HEIDENHAIN	TNC 640 19"	TNC 640 19"	TNC 640 19"	TNC 640 19"
Option	SIEMENS	840D-SL 19"	840D-SL 19"	840D-SL 19"	840D-SL 19"
Option	FANUC	0i-MF 15''	0i-MF 15''	0i-MF 15''	0i-MF 15''
MISCELLANEOUS:					
Accuracy of positioning (option)***	mm	±0,005 (±0,004)	±0,005 (±0,004)	±0,005 (±0,004)	±0,005
Repeatability (option)***	mm	0,005 (0,004)	0,005 (0,004)	0,005 (0,004)	0,005
Total power installed	kVA	c.a. 25	27	27	45
Overall Dimensions X / Y / Z	mm	2785/2650/2750 (3030)	3065/2650/2750	3450/2600/2750	3550/3900/3000
Weight approx. gross	kg	c.a. 4400	c.a. 4950	c. a. 5300	c.a. 9300

*for HEIDENHAIN TNC640
** second pocket empty
*** acc. to PN-ISO 230-2

STANDARD EQUIPMENT:

- roller-type linear guideways for all axes,
- directly driven ballscrews in all three axes,
- automatic tool changer,
- fully enclosed working area,
- lighting system with lamps,
- ethernet card, USB,
- complete coolant installation,
- coolant wash gun and compressed air gun,
- chip flushing system,
- electric handwheel HR510,
- screw type chip conveyor,
- telescopic covers of all guideways,
- pull studs – 6 pcs,
- operator's and programming manuals.

OPTIONAL EQUIPMENT:

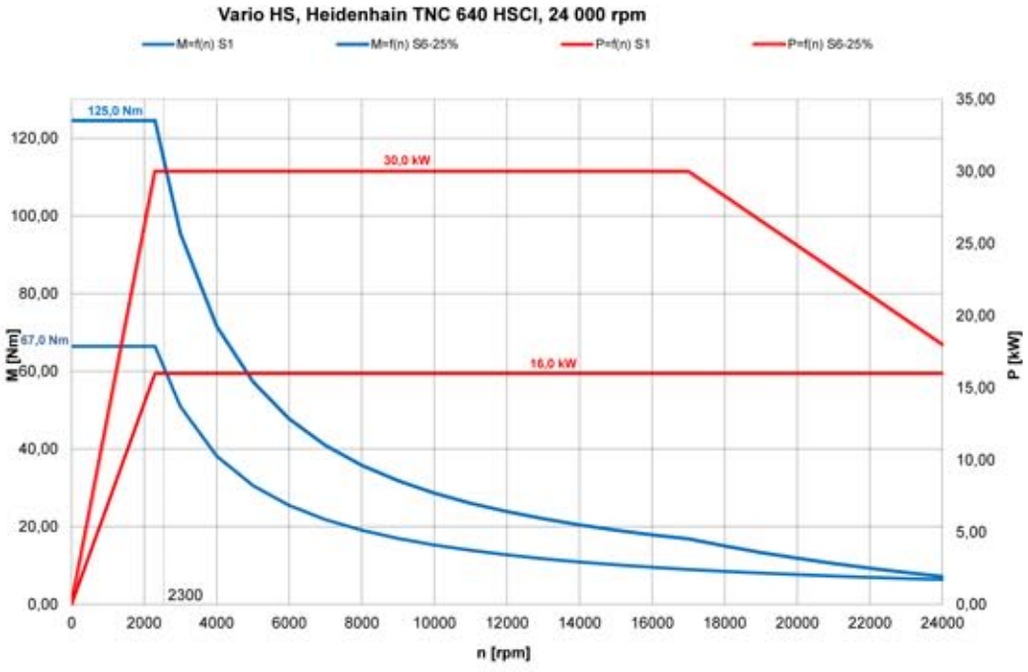
- Heidenhain linear scales for all three axes,
- tool probes, workpiece probes,
- cooling through spindle CTS (20 or 70 bar),
- cooling through spindle ATS (5 bar),
- tool cooling by compressed air (5 bar),
- CNC rotary tables (4th; 5th axis),
- spindle thermal stabilization,
- scraper type or hinge type chip conveyor,
- CAD/CAM software,
- two pallet changer,
- paper filter for nebulise materials,
- oil separator, oil mist collector with filter,
- Teleservice, Statemonitor (industry 4.0)
- other upon request.

VMC HS SERIES |

your HSM solution

VMC HS SERIES |

The best solution for High Speed Machining thanks to:
- reliable motorspindle 24 000 rpm,
- rapid traverse 42 m/min,
- acceleration in X/Y/Z axes – 0,5 G,
- acceleration in interpolation – 1 G,
- quickest program single block processing time – 0,5 ms for your complicated CAD-CAM programs.



Technical data		VMC 650 HS	VMC 800 HS	VMC 1000 HS
TABLE:				
Table surface	mm	800 x 540	1000 x 540	1200 x 540
T-slots: number / width / spacing	mm	5 / 18 / 100	5 / 18 / 100	5 / 18 / 100
Max. table load	kg	700	850	1000
TRAVELS:				
Longitudinal (X)	mm	650	800	1000
Cross (Y)	mm	540	540	540
Vertical (Z)	mm	620	620	620
SPINDLE 24 000 rpm				
Max. spindle speed	rpm	24 000	24 000	24 000
Spindle taper		HSK 63	HSK 63	HSK 63
Max. power S1 / S6 (25%)*	kW	16/30	16/30	16/30
Max spindle torque S1 /S6 (25%)*	Nm	67/125	67/125	67/125
Min. / Max. distance from spindle nose to table surface	mm	150 / 770	150 / 770	150 / 770
TOOL CHANGER:				
Tool changer type		swinging arm ATC (cam type)	swinging arm ATC (cam type)	swinging arm ATC (cam type)
Number of tools	pcs.	30	30	30
Tool to tool change time	sec.	2,0	2,0	2,0
Max tool diameter	mm	85/130**	85/130**	85/130**
Max tool weight	kg	7	7	7
Max tool length	mm	300	300	300
FEEDS:				
Feed rate X / Y / Z	m/min	0 – 42/42/42	0 – 42/42/42	0 – 42/42/42
Rapid traverse X / Y / Z	m/min	42/42/42	42/42/42	42/42/42
STEROWANIA CNC:				
Standard	HEIDENHAIN	TNC 640 19" TFT	TNC 640 19" TFT	TNC 640 19" TFT
Option	SIEMENS	840D-SL 19" TFT	840D-SL 19" TFT	840D-SL 19" TFT
MISCELLANEOUS:				
Accuracy of positioning (option)***	mm	±0,005 (±0,004)	±0,005 (±0,004)	±0,005 (±0,004)
Repeatability (option)***	mm	0,005 (0,004)	0,005 (0,004)	0,005 (0,004)
Total power installed	kVA	40	40	40
Overall Dimensions X / Y / Z	mm	2785x2650x2750	3065x2650x2750	3450/2600/2750
Weight approx. gross	kg	c.a. 4400	c.a. 5300	c. a. 5600

*for HEIDENHAIN TNC640
** second pocket empty
*** acc. to PN-ISO 230-2

STANDARD EQUIPMENT:

- roller-type linear guideways for all axes,
- directly driven ballscrews in all three axes,
- automatic tool changer,
- fully enclosed working area,
- lighting system with lamps,
- ethernet card, USB,
- complete coolant installation,
- Sofware-Option 2 TNC 640 HSCI
- coolant wash gun and compressed air gun,
- chip flushing system,
- electric handwheel,
- screw type chip conveyor,
- telescopic covers of all guideways,
- pull studs – 6 pcs,
- operator's and programming manuals.

OPTIONAL EQUIPMENT:

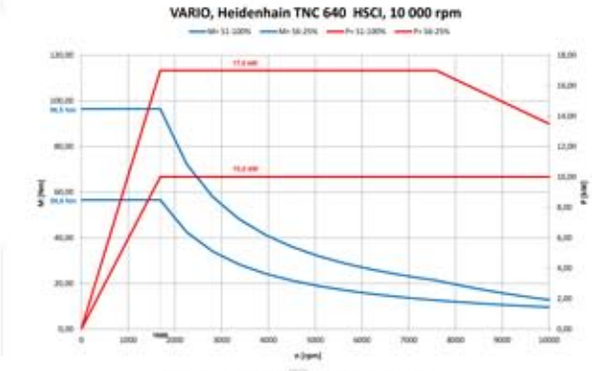
- Heidenhain linear scales for all three axes,
- tool probes, workpiece probes,
- cooling through spindle CTS (20 or 70 bar),
- cooling through spindle ATS (5 bar),
- tool cooling by compressed air (5 bar),
- CNC rotary tables (4th axis),
- scraper type or hinge type chip conveyor,
- CAD/CAM software,
- two pallet changer,
- paper filter for nebulise materials,
- oil separator,
- oil mist collector with filter,
- other upon request.

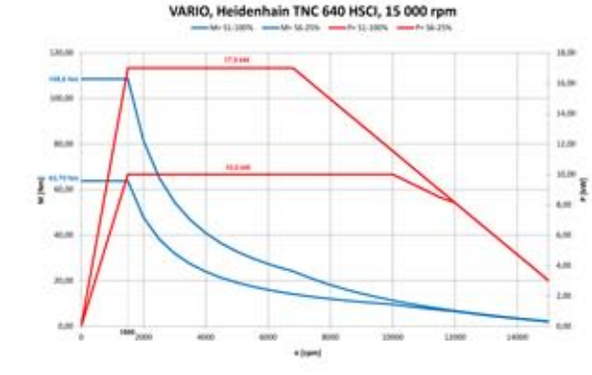
VARIO SERIES |

continuous 5-axis machining solution

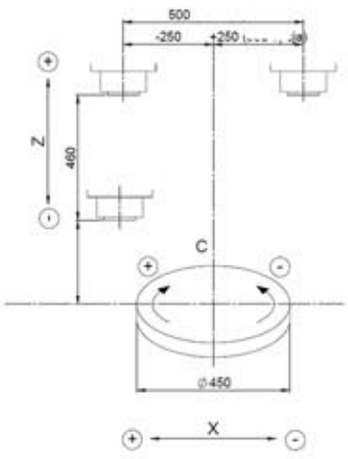
VARIO SERIES |

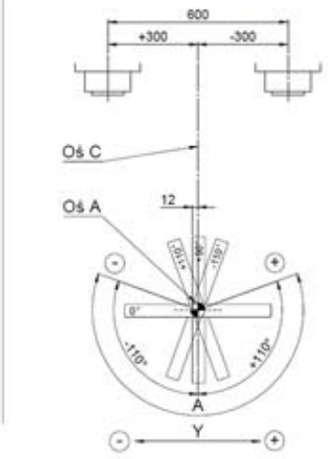
Ideal solution for 5-axis continuous machining thanks to :
- 450 mm diameter rotary-tilting table with 400 kg max. table load, for large workpieces,
- direct drives of rotary (C) and tilting (A) axes, by torquemotors, for top dynamics,
- precision Heidenhain encoders +/- 5 arc. sec. built in C and A axes centres for highest accuracy,
- wide choice of spindles form 10 000 to 24 000 rpm, for different machining requirements,
- acceleration in X/Y/Z axes – 0,5 G, Rapid traverse 42 m/min, for maximum productivity,
- program single block processing time – 0,5 ms, for CAM generated 5-axis programs.





WORK AREA - VARIO 5-axis





Technical data:		VARIO 5-axis	VARIO HS 5-axis
TABLES:			
Table surface	mm	Ø450	Ø450
T-slots: number /width / spacing	mm	6 / 14 / 60°	6 / 14 / 60°
Max. table load	kg	400	400
Max. distance from table surface in vertical position to spindle axis	mm	288	288
TRAVELS:			
Longitudinal (X)	mm	500 (580)	500 (580)
Cross (Y)	mm	600	600
Vertical (Z)	mm	460	460
Tilt (A)	deg.	+110° / -110°	+110° / -110°
Rotation (C)	deg.	n*360°	n*360°
SPINDLE - STANDARD		**Belt drive**	**Electro spindle**
Spindle taper		ISO 40	HSK63A
Max. spindle speed	rpm	10 000	24 000
Max. power S1 / S6 (25%)*	kW	10/17	16/30
Max spindle torque S1 /S6 (25%)*	Nm	56/96	67/125
Min. / Max. distance from spindle nose to table surface	mm	115 / 575	110/570
Min./Max Spindle nose to tilting axis distance	mm	127 / 587	122/582
SPINDLE OPTION			
Spindle taper		ISO 40	HSK63A
Max. spindle speed	rpm	15 000	18 000
Max. power S1 / S6 (25%)*	kW	10/17	25/43
Max spindle torque S1 /S6 (25%)*	Nm	64/108	86/120
Min. / Max. distance from spindle nose to table surface	mm	115 / 575	110/570
Min./Max Spindle nose to tilting axis distance	mm	127 / 587	122/582
TOOL CHANGER:			
Tool changer type		swinging arm ATC (cam type)	swinging arm ATC (cam type)
Number of tools	pcs	30	30
Tool to tool change time (tool-to-tool)	sec.	2,0	2,0
Max tool diameter	mm	85 / 130	85 / 130
Max tool weight	kg	7	7
Max tool length	mm	300	300
FEEDS:			
Feed rate X / Y / Z	m/min	0 – 42/42/42	0 – 42/42/42
Rapid traverse X / Y / Z	m/min	42/42/42	42/42/42
Max. speed of tilting and rotary (A/C) axes	rpm	60/120	60/120
Max. continuous torque of tilting and rotary (A/C) axes	Nm	685 / 231	685 / 231
Max. clamping torque of tilting and rotary (A/C) axes	Nm	2500 / 1250	2500 / 1250
CNC SYSTEMS:			
Standard	HEIDENHAIN	TNC 640 19''	TNC 640 19''
MISCELLANEOUS:			
Accuracy of positioning (optional)**	mm	±0,005 (±0,004)	±0,005 (±0,004)
Repeatability (optional)**	mm	0,005 (0,004)	0,005 (0,004)
Accuracy of positioning of rotary axes**	sec.	+/- 5"	+/- 5"
Total power installed	kVA	35	45
Overall Dimensions X / Y / Z	mm	3065x2650x2750 (3030)	3065x2650x2750
Weight approx.	kg	c.a. 5300	c.a. 5300

*for HEIDENHAIN TNC 640
** acc. to PN-ISO 230-2 with linear scale

STANDARD EQUIPMENT:

- roller-type linear guideways for all three axes,
- directly driven ballscrews in all axes,
- automatic tool changer,
- fully enclosed working area,
- lighting system with lamps,
- ethernet card, USB,
- electric handwheel,
- spindle and rotary-tilting table thermal stabilization,
- complete coolant installation,
- chip flushing system,
- chip conveyor,
- coolant wash gun and compressed air gun,
- software option 2 for TNC 640,
- telescopic covers of the guideways,
- pull studs – 6 pcs for ISO 40 spindles,
- operator's and programming manuals.

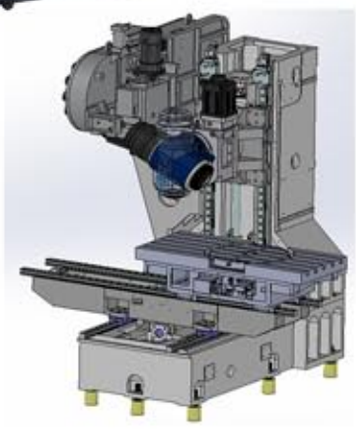
OPTIONAL EQUIPMENT:

- Heidenhain linear scales for all three linear axes,
- precision RCN 226 +/- 5 arc. sec rotary encoders for rotary axes,
- tool probes,
- workpiece probes,
- coolling through spindle CTS (20 and 70 bar),
- tool cooling by compressed air (5 bar),
- coolling through spindle ATS (5 bar),
- scraper type or hinge type chip conveyor,
- CAD/CAM software,
- other upon request.

NEW

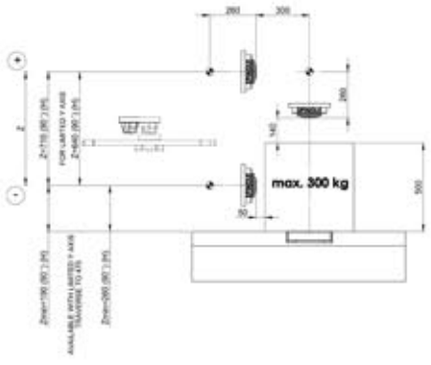
X-5 SERIES |

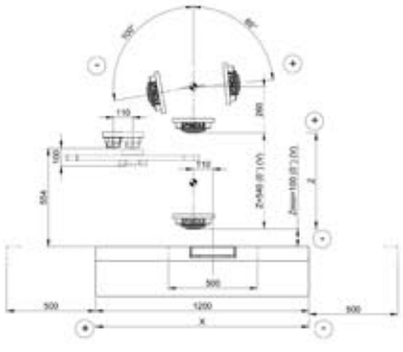
universal 5-axis machining centres with swivel head and rotary table

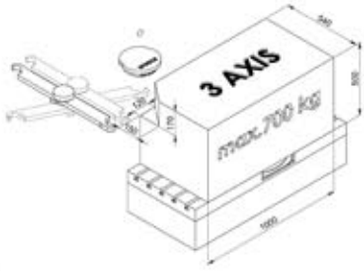


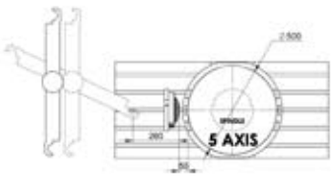
X-5 SERIES |

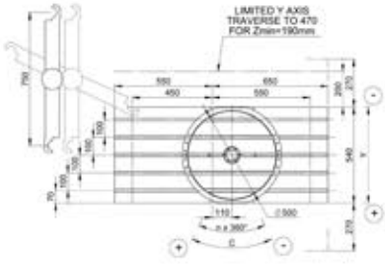
The most versatile 5-axis machining centre for your job-shop :
- continuously controlled swivel head with powerful motorspindle,
- large diameter built-in 500 mm rotary table,
- precision encoders +/- 5 arc. sec. built-in rotary axes centres for highest accuracy,
- spacious working area allows machining of large cubic workpieces,
- 5-axis of 5-side machining of medium size workpieces or 4-axis machining of large workpieces,
- heavy duty work table, maximum loads,
- program single block processing time – 0,5 ms, for CAM generated 5-axis programs.

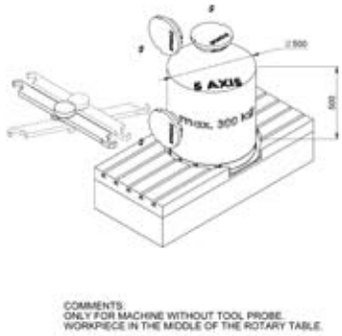












Technical data		X-5 1000 / 500
TABLE:		
Table surface plain / rotary	mm	1200 x 540 / Ø500
T-slots: number /width / spacing	mm	5 / 18 / 100
Max. table load plain / rotary	kg	700 / 300
TRAVELS:		
Longitudinal (X)	mm	1000
Cross (Y)	mm	540
Vertical (Z)	mm	540 (V) / 640 (H)
Swivel Head (B)	deg.	+110° / -85°
Rotation (table) (C or A)	deg.	n*360° vertical axis (C)
Min. / Max. distance from spindle nose to table surface	mm	100/640
Min. / Max. distance from spindle nose to table surface at 90°	mm	260/900
ELECTROSPINDLE 15 000 rpm – standard:		
Spindle taper		ISO 40
Max spindle speed	rpm	15 000
Max. power S1 / S6 (25 %)*	kW	18/28
Max. torque S1 / S6 (25 %)*	Nm	45/71
TOOL CHANGER:		
Tool changer type		swinging arm ATC (chain type)
Number of tools	pcs	40
Max tool diameter	mm	76/127
Max tool length	mm	300
Max tool weight	kg	7
FEEDS:		
Feed rate X / Y / Z	m/min	0 – 35/35/35
Rapid traverse X / Y / Z	m/min	35/35/35
Max. speed of B and C axes	rpm	30/100
Max. continuous torque of tilting (B) and rotary (C) axes		520/231
Max. clamping torque of tilting (B)and rotary (C) axes		1500/1250
CNC SYSTEMS:		
Standard	HEIDENHAIN	TNC 640 19"
MISCELLANEOUS:		
Accuracy of positioning**	mm	±0,005
Repeatability**	mm	0,005
Accuracy of positioning of rotary axes B and C**	sec.	+/- 5"
Total power installed	kVA	c.a. 50
Overall Dimensions	mm	3065/2650/2750
Weight approx. gross	kg	c.a. 5500

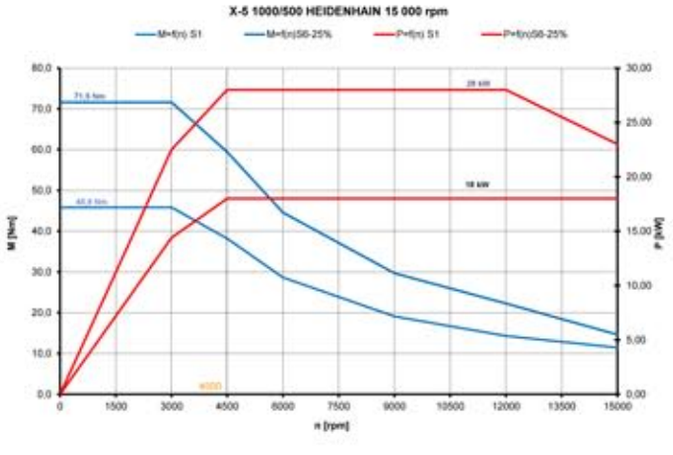
*for HEIDENHAIN TNC 640
** acc. to PN-ISO 230-2

STANDARD EQUIPMENT:

- Heidenhain linear scales for all three linear axes and precision (+/- 5 arc. sec) rotary encoders for rotary axes *,
- roller-type linear guideways for all three axes,
- directly driven ballscrews in all three axes,
- automatic tool changer,
- fully enclosed working area,
- lighting system with lamps,
- ethernet card, USB and RS232 port,
- electric handwheel,
- spindle and rotary-tilting table thermal stabilization,
- complete coolant installation,
- chip flushing system,
- 2 pcs of screw type + 1 pc of scraper type chip conveyor,
- coolant wash gun and compressed air gun,
- software option 1+2 for TNC 640,
- telescopic covers of the guideways,
- operator's and programming manuals,
- other upon request.

CIONAL EQUIPMENT:

- coolant through spindle CTS (20 or 70 bar),
- tool cooling by compressed air (5 bar),
- tool cooling by oil mist,
- dynamic collision monitoring (DCM) function,
- workpiece probes,
- tool probes,
- CAD/CAM software,
- other upon request.

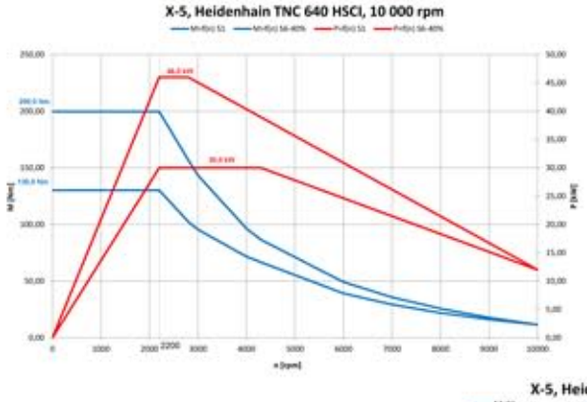


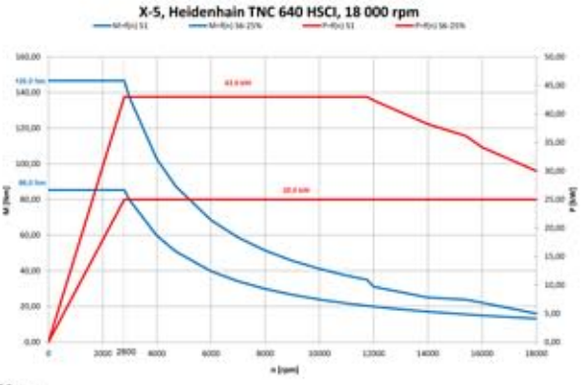
X-5 SERIES |

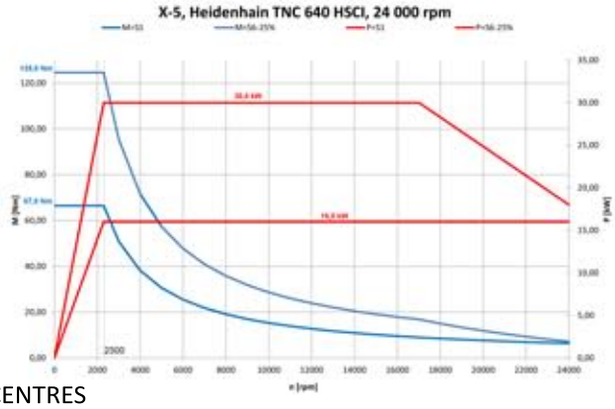
universal 5-axis machining centres with swivel head and rotary table

X-5 SERIES |

The most versatile 5-axis machining centre for your job-shop :
- continuously controlled swivel head with powerful motorspindle,
- large diameter built-in 630 mm rotary table or 400 mm rotary table with horizontal axis,
- precision Heidenhain encoders +/- 5 arc. sec. built-in rotary axes centres for highest accuracy,
- spacious working area allows machining of large cubic workpieces,
- 5-axis continuous or 5-side machining of medium size workpieces or 4-axis machining of large workpieces,
- heavy duty work table, maximum loads,
- program single block processing time – 0,5 ms, for CAM generated 5-axis programs,
- turning - milling capabilities for ultimate versatility (X-5 MILLturn).







Technical data		X-5 1300/630	X-5 1300/400 Blademaker	X-5 MILLturn
TABLE:				
Table surface plain / rotary	mm	1500 x 710 / Ø630	1500 x 710	1500 x 710 / Ø400
T-slots: number /width / spacing	mm	5 / 18 / 125	5 / 18 / 125	5 / 18 / 125
Max. table load plain / rotary	kg	1000/700	1000/400	1000/500
TRAVELS:				
Longitudinal (X)	mm	1300	1300	1300
Cross (Y)	mm	700	700	700
Vertical (Z)	mm	710	810	710
Swivel Head (B)	deg.	+115° / -85°	+115° / -85°	+115° / -85°
Rotation (table) (C or A)	deg.	n*360° vertical axis (C)	n*360° vertical axis (C)	n*360° horizontal axis (A)
Min. / Max. distance from spindle nose to table surface	mm	90/800	219/929	90/800
Min. / Max. distance from spindle nose to table surface at 90°	mm	260/970	389/1099	260/970
ELECTROSPINDLE 18 000 rpm – Standard:				
Spindle taper		HSK63	HSK63	HSK63
Max spindle speed	rpm	18 000	18 000	18 000
Max. power S1 / S6 (25 %)*	kW	25/43	25/43	25/43
Max. torque S1 / S6 (25 %)*	Nm	86/146	86/146	86/146
ELECTROSPINDLE 10 000 rpm – Option:				
Spindle taper		HSK63	HSK63	-
Max spindle speed	rpm	10 000	10 000	-
Max. power S1 / S6 (40 %)*	kW	30/46	30/46	-
Max. torque S1 / S6 (40 %)*	Nm	130/200	130/200	-
ELECTROSPINDLE 24 000 rpm – Option:				
Spindle taper		HSK63	HSK63	-
Max spindle speed	rpm	24 000	24 000	-
Max. power S1 / S6 (25 %)*	kW	16/30	16/30	-
Max. torque S1 / S6 (25 %)*	Nm	67/125	67/125	-
TOOL CHANGER:				
Tool changer type		swinging arm ATC (chain type)	swinging arm ATC (chain type)	swinging arm ATC (chain type)
Number of tools	pcs	40	40	40
Max tool diameter	mm	75/150	75/150	75/150
Max tool length	mm	300	300	300
Max tool weight	kg	8	8	8
FEEDS:				
Feed rate X / Y / Z	m/min	0 – 24/24/24	0 – 24/24/24	0 – 24/24/24
Rapid traverse X / Y / Z	m/min	24/24/24	24/24/24	24/24/24
Max. speed of B and C axes	rpm	33,3 / 25	33,3 / (16,7)	33,3 / 500
Max. continuous torque of tilting (B) and rotary (C or A) axes	Nm	1500 / 1800 (C)	1500 / 800 (A)	1500 / 1300 (C)
Max. clamping torque of tilting (B)and rotary (C or A) axes	Nm	3000 / 4500 (C)	3000 / 2000 (A)	3000 / 2500 (C)
CNC SYSTEMS:				
Standard	HEIDENHAIN	TNC 640 19"	TNC 640 19"	TNC 640 19"
Option	SIEMENS	840D SL 19"	840D SL 19"	n/a
MISCELLANEOUS:				
Accuracy of positioning**	mm	±0,005	±0,005	±0,005
Repeatability**	mm	0,005	0,005	0,005
Accuracy of positioning of rotary axes B and C**	sec.	+/- 5"	+/- 5"	+/- 5"
Total power installed	kVA	c.a. 65	c.a. 65	c.a. 65
Overall Dimensions	mm	3500/4100/3200	3500/4100/3200	3500/4100/3200
Weight approx. gross	kg	c.a.12 800	c.a. 12 800	c.a. 12 800

*for HEIDENHAIN iTNC530
** acc. to PN-ISO 230-2

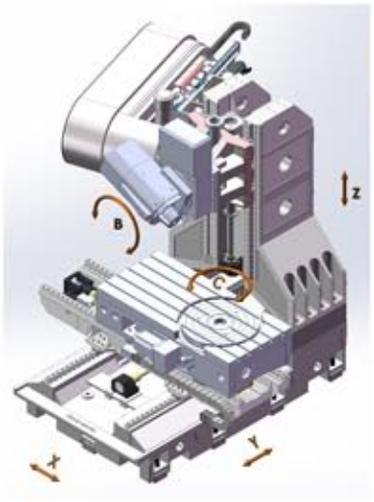
STANDARD EQUIPMENT:

- Heidenhain linear scales for all three linear axes and precision +/- 5 arc. sec rotary encoders for rotary axes,
- roller-type linear guideways for all three axes,
- directly driven ballscrews in all three axes,
- automatic tool changer,
- fully enclosed working area,
- lighting system with lamps,
- ethernet card, USB and RS232 port,
- electric handwheel,
- spindle and rotary-tilting table thermal stabilization,
- complete coolant installation,
- chip flushing system,
- 2 pcs of screw type + 1 pc of scraper type chip conveyor,
- coolant wash gun and compressed air gun,
- software option 2 for TNC 640,
- telescopic covers of the guideways,
- operator's and programming manuals,
- other upon request.

OPCIONAL EQUIPMENT:

- coolant through spindle CTS (20 or 70 bar),
- tool cooling by compressed air (5 bar),
- tool cooling by oil mist,
- dynamic collision monitoring (DCM) function,
- workpiece probes,
- tool probes,
- CAD/CAM software,
- other upon request.

DISCOVER BASIC VERSIONS OF MACHINE SERIES X-5 |



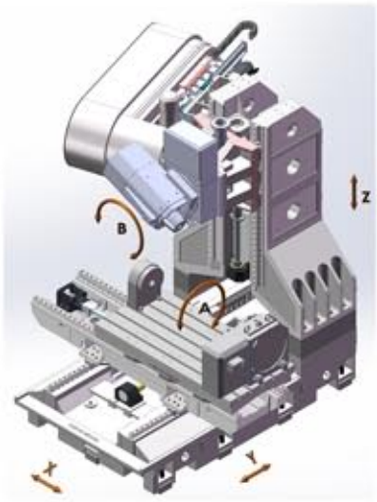
X-5 1300/630 |

4th axis has been solved by the rotation of large rotary table dia. 630 mm built in plane table 1500 x 710 mm.

5th axis is provided by continuously controlled swivel head with built in electro spindle. Swivel range is +/- 100 degrees.

This kind of solution increases versatility of usage of this machining centre. Applications of 4-axis machining of large parts and 5-axis machining of medium size workpieces are possible on one machine.

This model is perfectly suitable for machining of complicated parts as well as mold and die making.



X-5 1300/400 BLADEMAKER |

4th axis has been solved by the rotation of rotary table dia. 400 mm (horizontal axis) mounted on plane table 1500x710 mm.

5th axis is provided by continuously controlled swivel head with built in electro spindle. Swivel range is +/- 100 degrees.

This model is designed to make blade-shape parts for different kind of turbines.

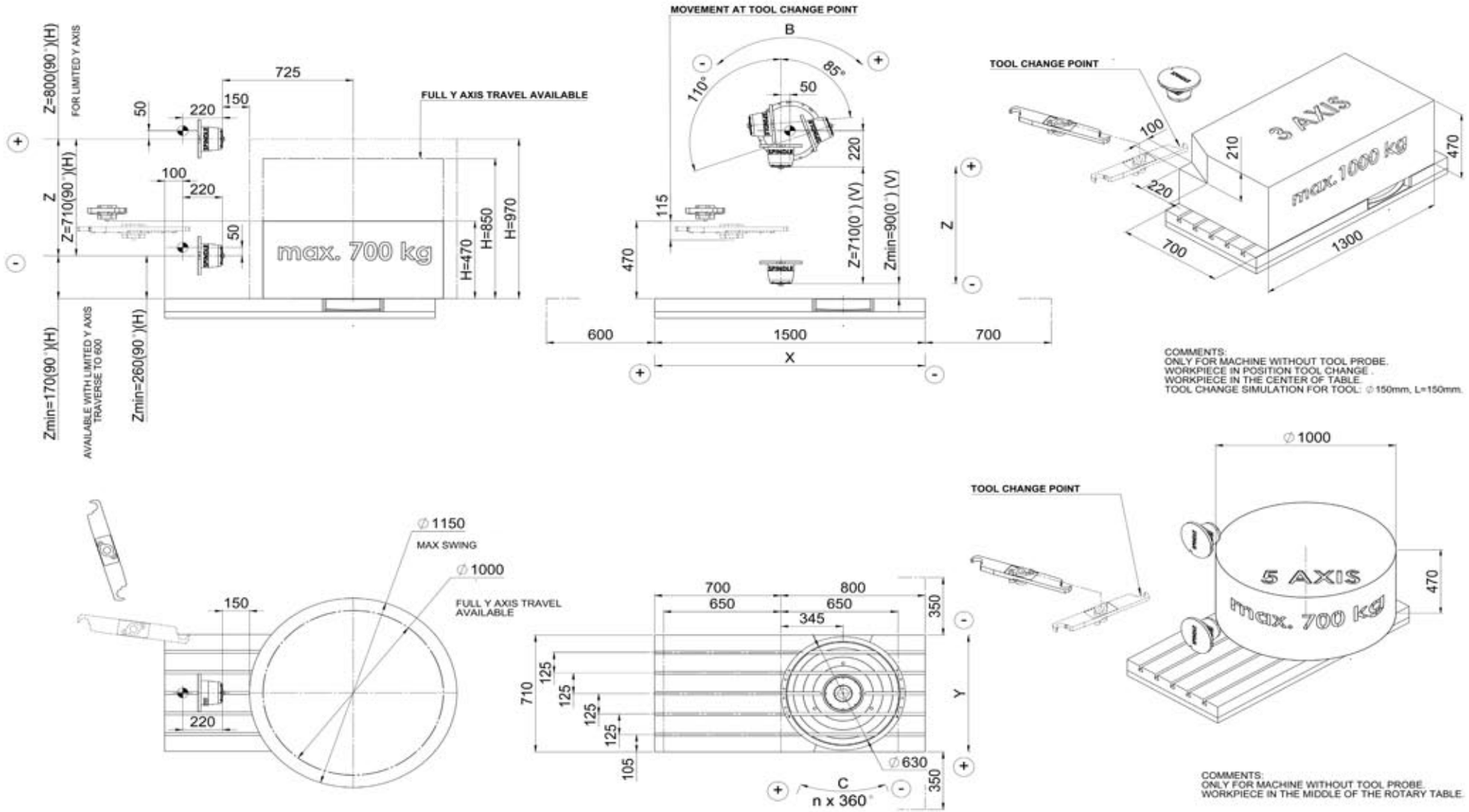
Machine could be applied for 4-axis machining of large moulds and dies as well, when rotary table is dismantled on plane table.

X-5 1300/630 MILLTURN |

FOR MILLING AND TURNING |

CNC swivel head with 18,000 rpm electrospindle with built-in brake and mechanical locking of the B-axis position in three positions as standard.
CNC rotary table (C-axis) with a diameter of 630 mm, driven by a torque motor, enables speeds of up to 500 rpm.

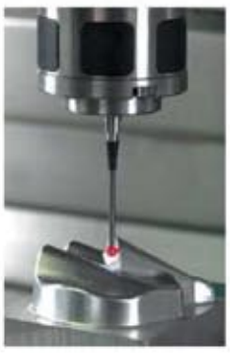
Application: Carry out filming without removing details from the machine. Carry out planning, internal and external turning, chamfering and grooving directly at the machining center. All thanks to the best components and the control function of the TNC 640


Z=800(90°)(H)
FOR LIMITED Y AXIS
Z
Z=710(90°)(H)
Zmin=170(90°)(H)
AVAILABLE WITH LIMITED Y AXIS TRAVERSE TO 600
Zmin=260(90°)(H)
725
50
220
150
100
220
50
FULL Y AXIS TRAVEL AVAILABLE
max. 700 kg
H=470
H=850
H=970
MOVEMENT AT TOOL CHANGE POINT
B
110°
85°
50
220
115
470
Z=710(0°) (V)
Zmin=90(0°) (V)
Z
600
1500
700
X
TOOL CHANGE POINT
100
210
3 AXIS
max. 1000 kg
470
220
700
1300
COMMENTS:
ONLY FOR MACHINE WITHOUT TOOL PROBE.
WORKPIECE IN POSITION TOOL CHANGE .
WORKPIECE IN THE CENTER OF TABLE.
TOOL CHANGE SIMULATION FOR TOOL: ∅150mm, L=150mm.
∅1150
MAX SWING
∅1000
150
FULL Y AXIS TRAVEL AVAILABLE
220
700
650
800
650
345
350
710
125
125
125
125
105
Y
∅630
C
n x 360°
350
∅1000
TOOL CHANGE POINT
5 AXIS
max. 700 kg
470
COMMENTS:
ONLY FOR MACHINE WITHOUT TOOL PROBE.
WORKPIECE IN THE MIDDLE OF THE ROTARY TABLE.

Discover more technological capabilities...

Automatic measuring solutions |

Range of tool and workpiece probes are available from reliable world leading suppliers:
- touch tool probes (infrared and with cable),
- automatic workpiece probles,
- laser tool probes,
- separate measuring stations acc. to Customer's request.



Efficient chip management |

Efficient swarf removal system should be configured according to type of materials used and chips type.
Standard chip auger can be altered:
- with scraper type chip conveyour,
- with hinge type chip conveyor

HINGE TYPE | SCRAPER TYPE

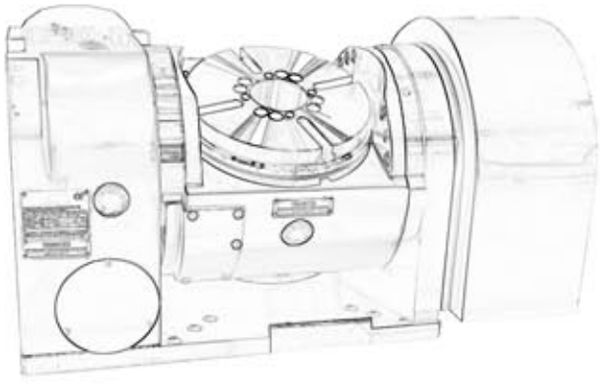
Selection of rotary tables - 4th axis |

Reliable solution for demanding application.
- 4th axis in sized from dia 150 mm up to 400 mm
- worm gear / worm wheel solutions for high torque
- torque motors solution for high speeds and special application (i.e. dual drive for turbine blades)

dia 350 mm dia. 250 mm dia. 200 mm torque motor table

Rotary-tilting table 4th and 5th axis |

Original equipment from AVIA enable to expand capabilities of Vertical Machining Centres ni terms of technology and efficiency. Rotary-tilting table (4th and 5th axis option) diamter 200 mm can be installed along Y axis to save working table space.



... thanks to optional equipment available with your AVIA machine tools

Never ending options list |

Coolant Though Spindle (CTS) 20 bar or 70 bar with coolant tank.

Air Through Spindle (ATS) and tool cooling with air (5bar).

Separate filternig station with paper filter.

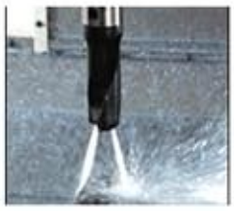
Water curtain around the spindle for nebulise materials i.e. graphite

Oil mist separator from working area with air filtration.

Mechanical coolant/ oil separator exceed lifespan for coolant.

Spindle thermostabilization with chiller.

Robotization and automatization preparation for serial production tasks.



CTS 20 bar or CTS 70 bar

water curtain around spindle

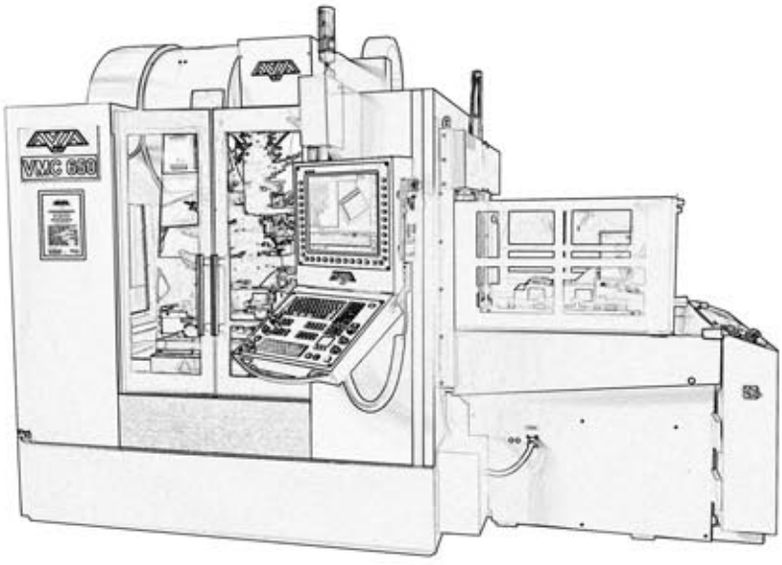
paper filter

oil mist separator

dedicated technological solutions

Pallet changer for simplest automation |

Automate your prodution with reliable and fast solution.
Pallet changer can be ordered with the machie or added to your existing solution.
Has own controller, power and air supply.
Available with VMC 650; VMC800; VMC 1000



Main technical data

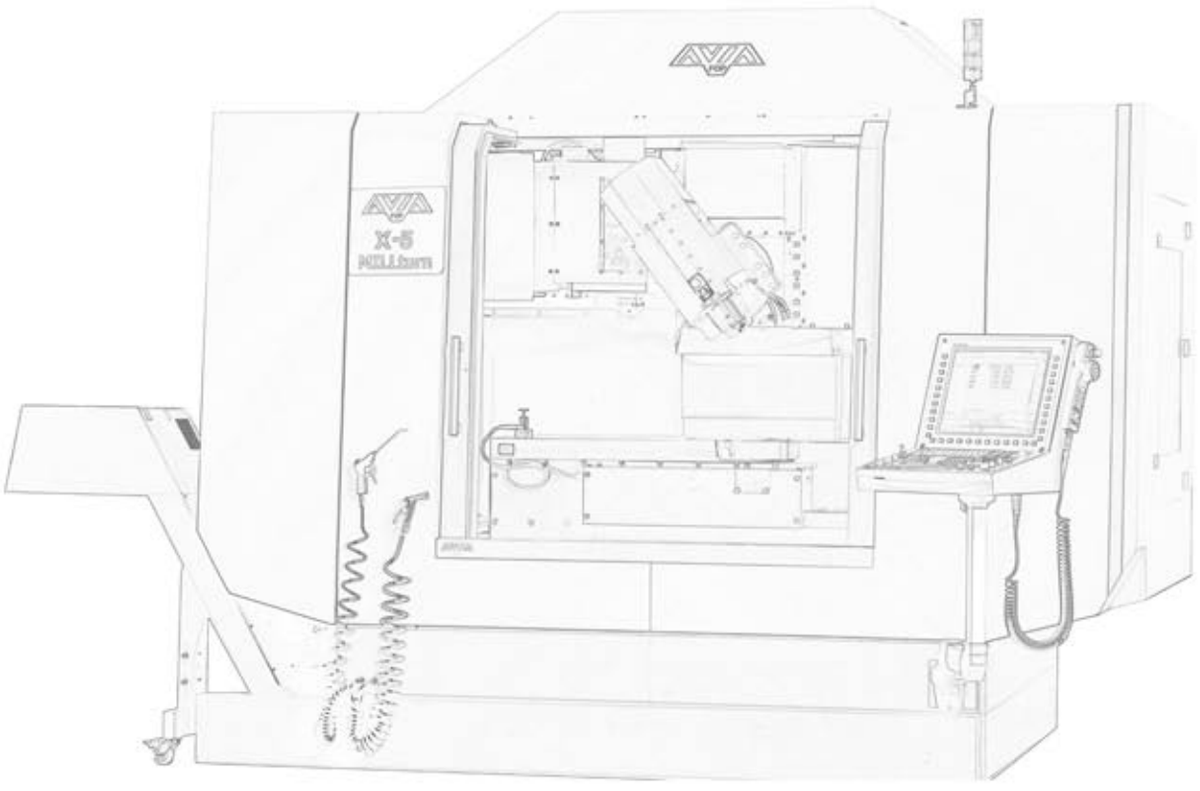
Pallet size: 800 x 490 mm

no. of pllets: 2 pcs

Pallet changing time: 15 sec

Load capacity: 450 kg/ pallet

Pallet top: tapped holes M12 - 35 pcs
optional T-slots available



Factory:

FABRYKA OBRABIAREK PRECYZYJNYCH AVIA S.A.
ul. Siedlecka 47
03-768 Warsaw
POLAND

Sales dept.:+48 22 619 90 81
market@avia.com.pl
www.avia.com.pl

Your sales representative: