



KOVOSVIT MAS
machine your future



MCU 450V[T]-5X

Multifunctional five-axis machining center

www.kovosvit.cz

Main features of the machine

- Multifunctional five-axis machining center
- Continuous machining in 5 axes with possible turning
- Wide range of spindle units and clamping available
- Modular tool magazine
- Workpiece moves in three axes X, A, C
- Spindle moves in two axes Y, Z
- SIEMENS / HEIDENHAIN control system
- Cast machine basement
- Ready for automation and palleting
- Static and dynamic rigidity at level of machines with upper gantry



MAIN TECHNOLOGICAL CAPABILITIES

MCU 450V milling —————

MCU 450VT milling + turning —————



Milling from five sides



Shape milling



External turning



Face and inner turning

Industry and applications

- From small to middle sized components of diameter up to \varnothing 520mm
- Shape complex parts with increased accuracy with deviations at level of micrometers

Power engineering

Water turbine blades, steam turbine blades, stator and rotor wheels, impellers, pumps and compressors



Molds and tools

for pressure casting of wheels, injection of plastics, shear tools



Mechanical engineering

• cabinets, housing



Medical

• Joint replacements, prosthetics



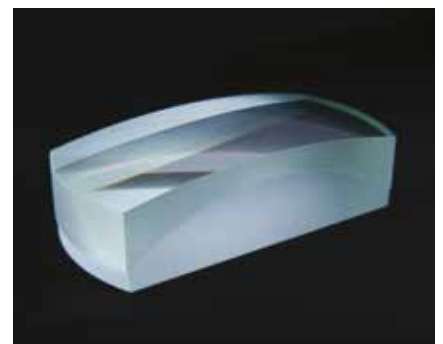
Prototypes

• alu wheels



Optics

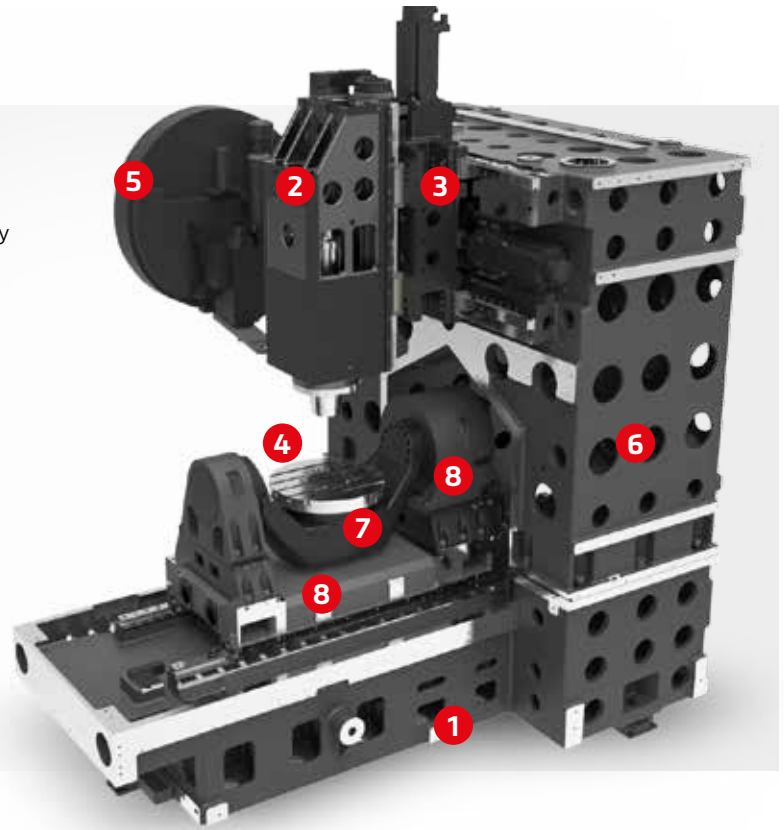
• optical elements



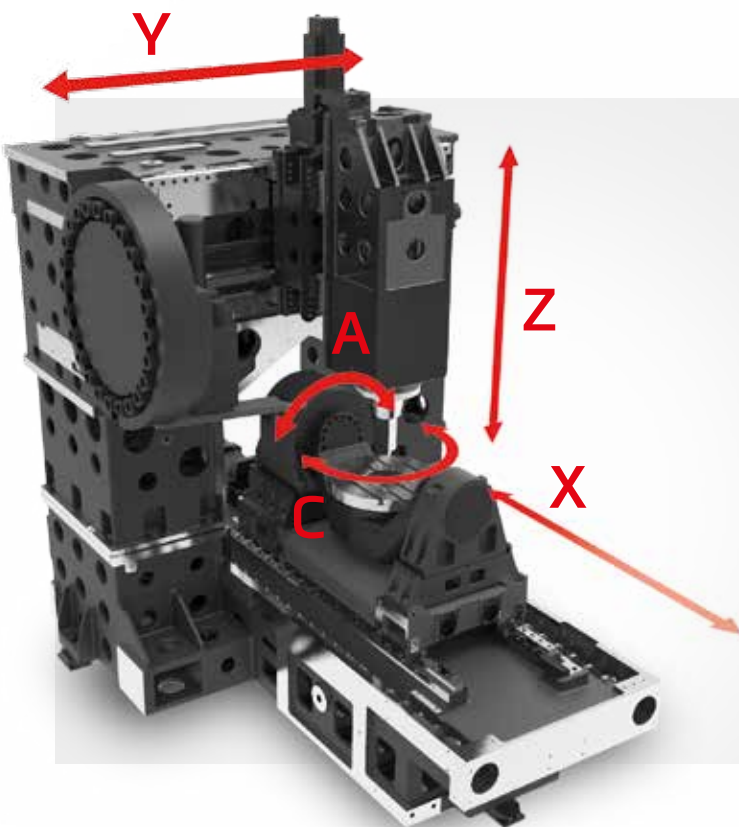
Basic concept of the machine

- Self-supporting bed fixed at three points
- Thermally symmetric structure with cooling of key components
- High rigidity structure, extreme accuracy of the machine

- 1 | Bed
- 2 | Ram
- 3 | Slide
- 4 | Spindle
- 5 | Tool magazine
- 6 | Stand
- 7 | Operation table
- 8 | Rotary and tilting axes of the table



Linear and rotation axes

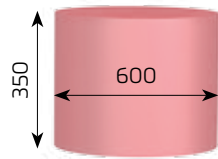


	Starting [mm]	Rapid feed [mm.min ⁻¹]	Acceleration [mm.s ⁻²]
Axis X	450		
Axis Y	800	60,000	6,000
Axis Z	400		

	Speed range [°]	Max. revolutions [min ⁻¹]	Torque moment, continuous [Nm]	Torque moment, braking [Nm]	
Axis A	±120	Torque motor V-5X milling	100	1,040	3,200
		Torque motor VT-5X turning	100	1,040	3,200
Axis C	360	Torque motor V-5X milling	200	400	2,000
		Torque motor VT-5X turning	1500	450	2,000

Working space

- Water tight cabin
- LED lighting
- Working area manual washing
- Automatic washing of telescopic covers
- Automatic roof removal



A-axis
± 120°

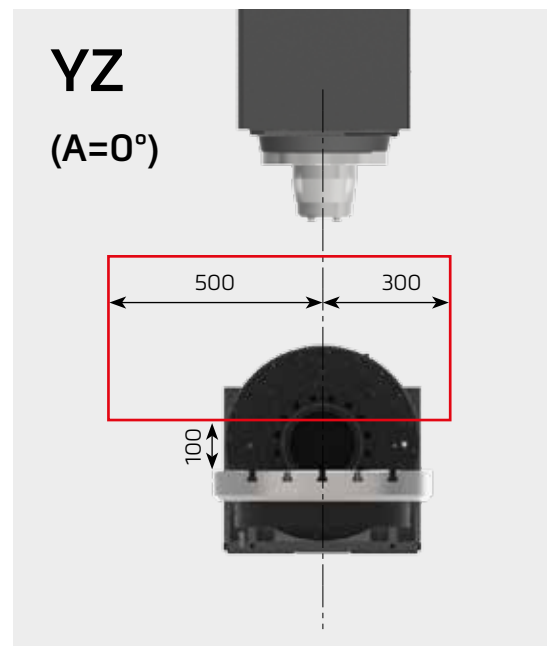
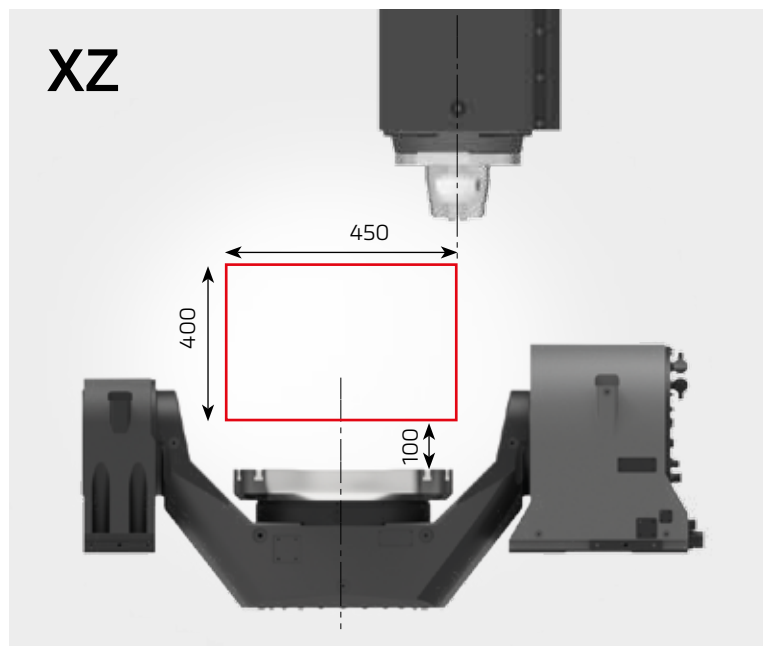
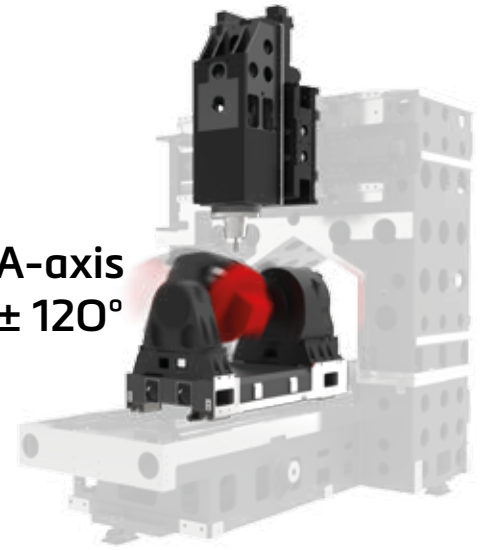


Table variants



Dimensions: **400 x 400mm**
Milling
 Load: **500kg**
 Rpm milling (C axis): **200 min⁻¹**

A 3D rendering of a square table with a central hole, showing the top surface.

Diameter: **500mm**
Milling / Turning – Torque motors
 Load: **500 / 350Kg**
 Rpm milling (C axis): **200 min⁻¹**
 Rpm turning (C axis): **1,500 min⁻¹**

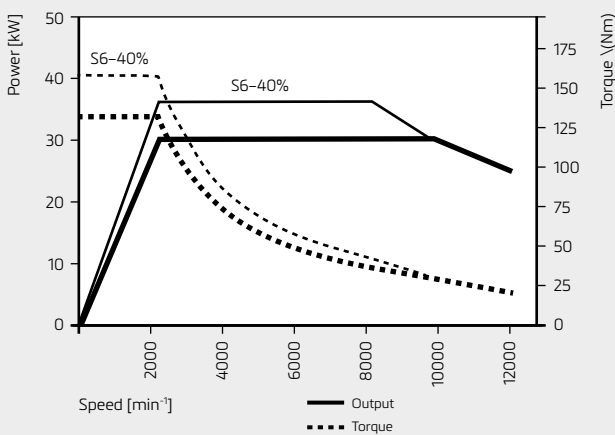
A 3D rendering of a circular table with a central hole, showing the top surface.

Tool spindles

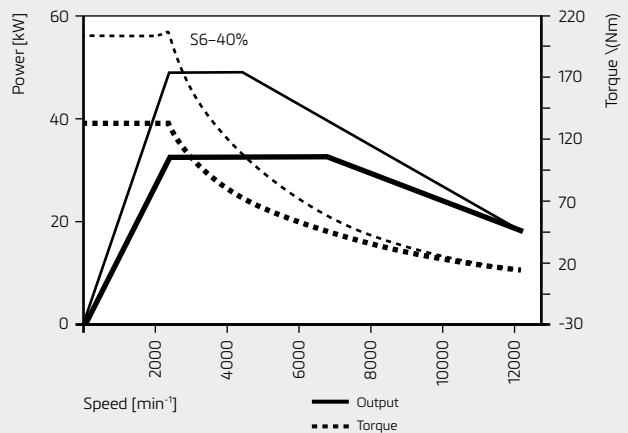
		MS 1200	SPEED	SPRINT	RAPID
Drive type		Integrated	Integrated	Integrated	Integrated
Cone (V – 5X)		ISO 40	ISO 40 HSK-A63	HSK-A63	HSK-A63
Turning variant		NO	YES / NO	YES	NO
Maximum speed	min ⁻¹	12,000	12,000	18,000	24,000
Nominal revolutions	min ⁻¹	2,200	2,330	2,800	2,980
Power S1/S6	kW	30/36	32/48	25/35	19/27
Torque S1/S6	Nm	130/157	130/200	87/130	60/86

- Wide range of spindles, from power spindles to the high-speed spindles
- Up-to-date spindles with built-in drive
- Water flow cooling of spindles by cooling aggregate with high cooling output
- Fluent regulation of revolutions
- Spindle for turning operations with hydraulic brake
- Easy loading of tools to the machine magazine even during machining

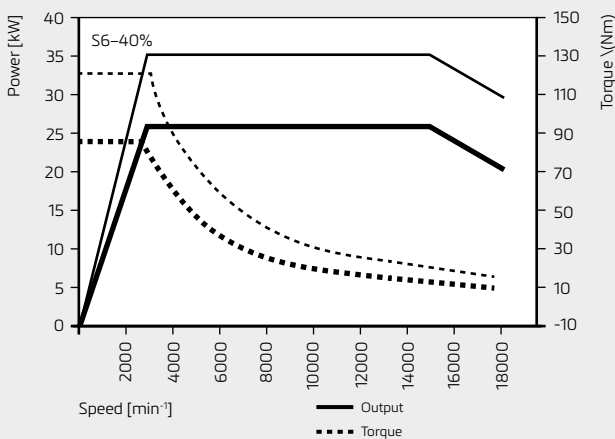
MS 12000 ISO 40



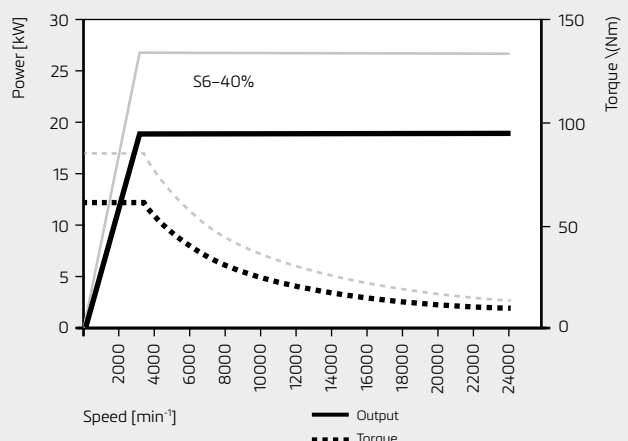
SPEED ISO 40 (HSK 63)



SPRINT HSK 63



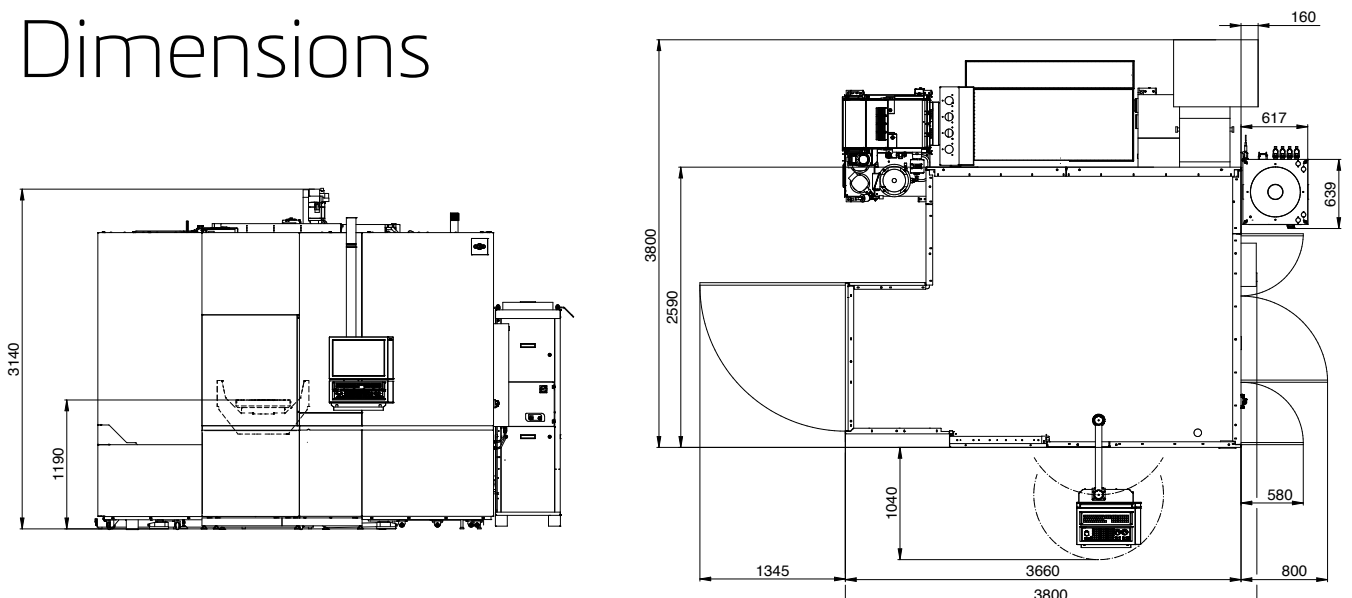
RAPID HSK 63



Technical specifications

		MCU 450V-5X milling	MCU 450VT-5X turning	
Linear axes	X-axis travel	mm	450	
	Y-axis travel	mm	800	
	Z-axis travel	mm	400	
	Distance of spindle face to table	mm	100-500	
	Work feed in axes X, Y, Z	mm.min ⁻¹	1 - 60,000	
	Rapid traverse in axes X, Y, Z	mm.min ⁻¹	60,000	
	Acceleration in axes X, Y, Z	mm.s ⁻²	6,000	
	Programmable increment	mm	0.001	
Rotation axes	A, C axis drive		Torque motor	Torque motor
	A axis tilt range	°	±120	
	C axis rotation range	°	Unlimited	
	Max. revolutions of A axis	min ⁻¹	100	100
	Max. revolutions of C axis	min ⁻¹	200	1500
Tables	A, C axis calibratin accuracy	°	0.001	
	Table clamping area size	mm	500	500
	Maximum workpiece diameter	mm	600	
	Maximum workpiece height	mm	350	
Accuracy ČSN ISO 230-2	Maximum load on the table	kg	500	350
	Positioning accuracy	mm	0.004	
Accuracy VDI/DGQ3441	Repeatability	mm	0.007	
	Positioning accuracy	mm	0.004	
Accuracy JIS B 6336	Repeatability	mm	0.007	
	Positioning accuracy	mm	±0.003	
Energy connection and consumption	Repeatability	mm	±0.002	
	AC voltage		3 × 400V, 50Hz	
	Rated current	A	125	
	Total machine input	kVA	55	
	Reccomended power line supply	mm ²	5 × 35 Cu	
	Pneumatic equipment operatin preassure	MPa	0.6	
Machine dimensions	Compressed air consumption (min – max)	m ³ /hod	8 - 20	
	Machine dimensions	mm	3800 × 3 800 × 3 140	
	Machine transport dimensions	mm	3 800 × 2 300 × 2 810	
	Machine weight	kg	14,000	
Tool magazine	Tool number	pcs	30 (60)	
	Max. tool diameter	mm	80 / 160 (75/130)	
	Max. tool weight	kg	6.5 (8)	
	Max. length of teh tool	mm	300	
	Time of replacement (tool – tool)	s	2.5 (3)	
Control system		HEIDENHAIN TNC 640		
		SIEMENS SIN 840D SL		

Dimensions





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