Vertical shaft machining VTC 100-2

VTC 100-2 VTC 100-4





Shaft machining in medium to large scale production places special challenges on the machine concept. Short idle times, flexible automation systems for workpiece families and the use of the perfect manufacturing technology are the main criteria for ensuring efficient production processes. EMAG supplies machines which are perfectly tailored to these requirements in the form of the VTC 100-2 and VTC 100-4. The sturdy machine design, their dynamic axes and

V T C 1 0 0 - 2 V T C 1 0 0 - 4

simple operation open the way for new possibilities for machining precision shafts. Workpieces up to 63 mm in diameter and 400 mm in length can be machined automatically on these machines.









VTC 100-2 – 2-axis shaft machining.

The VTC 100-2 is specially designed for vertical shaft machining and turns this classic horizontal machining process on its head. Users of these vertical turning centers benefit from minimized throughput times, safer processes and high accuracy. The VTC 100-2 is loaded by a gripper in the turret. This picks up the workpieces from the lateral workpiece supply and places them in the spindle / tailstock.





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The benefits

- Integrated loading and unloading
- Raw and finished parts storage areas form an integral part of the machine
- Can be used as a stand-alone machine or as part of a manufacturing system
- The vertical design of the machine ensures the free flow of chips and prevents the build-up of chip clusters
- Short tooling and retooling times due to excellent accessibility and ease of operation
- Direct-driven machine axes and modern control systems reduce the need and expenditure for sensors
- Smaller footprint due to compact, vertical design

VTC 100-2

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VTC 100-4 – 4-axis shaft machining.

The strength of the VTC 100-4 is its 4-axis machining of large quantities of shafts up to 400 mm in length. Since the machine concept comprises a fully integrated automated loading and unloading system, a manufacturing system can be created which features very short transport distances. The machine is loaded and unloaded by the two turrets which ensures that the process is fast and straightforward. In addition, it has a powerful main spindle (40% duty cycle – 34 kW, 144 Nm, 6,000 rpm). For the machining process, there are two turrets with eleven tool positions which can be equipped with either turning tools or driven tools. There are closed transport belts on both sides of the machining area. This is where the raw and finished parts are stored.





The benefits

- Reduced machining times due to four-axis machining
- Integrated loading and unloading
- Shorter idle times with simultaneous loading and unloading of components
- Raw and finished parts storage areas form an integral part of the machine
- Can be used as a stand-alone machine or as part of a manufacturing system
- Lower costs for automation and peripherals
- The vertical design of the machine ensures the free flow of chips and prevents the build-up of chip clusters



MINERALIT® polymer concrete – longer tool service life and higher workpiece quality.

All vertical pick-up turning machines from EMAG have a machine base made of MINERALIT® polymer concrete which has eight times better damping properties than gray cast iron.

The benefits

- Excellent vibration damping, resulting in extended tool life and superb surface finishes
- MINERALIT[®] polymer concrete is thermally stable which ensures constant production results.

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The EMAG turret.

The high-speed, 12-station, disk-type turret features very short swiveling times. Powered tools can be used on all 11 turret stations for drilling or milling operations. The EMAG turret gear box combines high speeds with high capacity while requiring minimum floor space.



Complete operator comfort.

EMAG attaches a great deal of value to the ease of operation and high accessibility of its machines. For example, large doors provide easy access to the machining area. This means that tools, clamping jaws and chucks can be changed quickly and easily. The EMAG control panel is another new feature. Its control interface remains the same regardless of the control unit, making EMAG machines easy to set up while also reducing the amount of training required.

V T C 1 0 0 - 2 V T C 1 0 0 - 4



Quality and ease of servicing.

The ergonomic design of the EMAG machine provides the basis for excellent working conditions. All access points for the operator are within reach to facilitate operation and servicing. The layout ensures very short maintenance and servicing times with clear views and full access to all the units (hydraulics, cooling system, cooling lubricant and central lubrication system).



Automation.

Automatic loading and unloading is an integral part of the concept for the VTC 100-2 / VTC 100-4.

The raw parts are transported from the workpiece belt in a vertical position into the machine by a workpiece gripper in the turret. The belt takes the form of a chain cycle belt with workpiece carriers.

Different workpiece heights and diameters are defined in the NC part program.



Technical data.

Capacity		VTC 100-2	VTC 100-4
Chuck diameter	mm	160	160
Workpiece diameter max	mm	0.3 63	63
	in	2.5	2,5
X-axis travel	mm	340	340
Zavia traval	in	13.4	13.4
	in	24.6	24.6
Workpiece			
Length, max.	mm	400* 15.8*	400* 15.8*
Weight, max.	kg	10	10
	dl	22	22
Loading time, depending on workpiece and	S	4 – 5	8
clamping mode Chin-to-chin time depending on workpiece			
clamping mode and machining cycle	S	6 – 7	10
5 · · · · · · · · · · · · · · · · · · ·			
Main spindle			
Main spindle	Qty	1	1
Spindle nose to DIN 55 026-A	Size	5	5
Spindle bearing, front	dia. in mm	80	80
Speed, max.	rpm	6,000	6,000
Main drive			
Power rating, 40% / 100% duty cycle	kW	19.5 / 12.5	34 / 26.5
, , , , , , , , , , , , , , , , , , ,	hp	26/17	46 / 36
Full power at speed of	rpm	2,500	2,250
Torque, 40% / 100% duty cycle	Nm Ibf ft	75 / 48 55 / 35	144 / 112 106 / 83
or			
Power rating, 40% / 100% duty cycle	kW hp	34 / 26.5 46 / 36	19.5 / 12.5 26 / 17
Full power at speed of	rpm	2,250	2,500
Torque, 40% / 100% duty cycle	Nm Ibf ft	144 / 112	72.5 / 48
Food drives		100700	00700
Rapid-traverse rate X / Z	m/min ipm	30 / 30 1,181 / 1,181	30 / 30 1,181 / 1,181
Feed force X / Z	kN Ibf	5 / 7.5 1,124 / 1,686	5 / 7.5 1,124 / 1,686
Ball screw X / Z	dia. in mm dia. in inch	32 / 40 1.3 / 1.6	32 / 40 1.3 / 1.6

Tool carrier		VTC 100-2	VTC 100-4
EMAG disc-type turret	Qty	1	2
Tool receptors per turret for BMT55	Qty	11	11
Optional			
for cylindrical shanks to DIN 69 880	Qty	11	11
Shank diameter	mm in	30 1.2	30 1.2
Loading gripper / unloading gripper	Qty	1	2 x 1
Electrical equipment			
Operating voltage	V	400	400
Control voltage DC	V	24	24
Control voltage AC	V	230	230
Frequency	Hz	50	50
Electrics to		VDE 0113	VDE 0113

Control system

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SIEMENS SINUMERIK 840D sl with integral PLC S7-300

Dimensions and weights

Depth	mm	3,555	3,555
	in	140.0	140.0
Width	mm	1,250	1,580
	in	49.2	62.2
Width with automation	mm	1,620	2,350
	in	63.8	92.5
Height	mm	2,495	2,495
	in	98.2	98.2
Weight	approx. kg	6,000	7,000
	lb	13,227	15,432

Technical data.

Floor plan VTC 100-2

Dimensions in mm









Floor plan VTC 100-4

Dimensions in mm



At home in the world.

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