

EMCO



**Vertical turning machines
with integrated automation**



EMCO VERTICAL VT 400/260/160

VT160 CNC VERTICAL TURNING CENTRE WITH TWO-TRACK LOADING

The VT 160 is equipped with a highly dynamic drive unit and high-performance main spindle. The integrated pick-up system with „two track loading“ makes for a good supply of parts and short cycle times. This guarantees short chip-to-chip times (up to 5.5 seconds in the case of two track loading) and optimized productivity.



V-belt pulley
(steel)

1 MAIN SPINDLE AND DRIVE UNIT

- / Highly dynamic main spindle up to 7000 rpm and Sinamic drive unit
- / Energy-efficient modular design

2 WORK AREA

- / User-friendly work area
- / Optimized access to the clamping equipment, workpiece and tools

3 AUTOMATION

- / Two-track loading, good parts supply and short cycle times
- / Individual customer requests, such as pallet belts, towing frame, chain timing belts and the integration of feed systems can be implemented quickly and easily

4 RIGHT-HAND MACHINE

- / Mirror image version



Machine with optional equipment

5 CONTROL

- / Simple programming and operation thanks to the state-of-the-art control technology
- / Sinumerik 828D with Shopturn dialog programming and Sinamics drives

6 CHIP CONVEYOR

- / Guarantees optimized chip removal
- / Chip conveyor (hinge type belt) with integrated coolant device as standard

7 MACHINE STAND

- / An enclosed, compact system with an extremely small footprint: 8,5 m²
- / Quick and easy to set up by means of the crane-hook principle

8 TOOL TURRET

- / VDI 30 12-position turret with and without a milling drive
- / Multifunctional plate for stationary boring tools, milling unit and special tools

VT260 CNC VERTICAL TURNING CENTRE FOR CHUCK PARTS

Designed for heavy-duty machining, the VT 260 is equipped with an integrated self-loading system, yet it gets by with a small foot print. High productivity, high repeat accuracy and good operability are the impressive product features that characterize this machine.

The turning machine has an integrated pick-up system and self-loads chuck parts with a diameter of up to 260 mm, thus saving the user the additional costs and programming time involved with the use of an automated unit. The VT260 has the Siemens 828 control in the standard design and can optionally be equipped with Fanuc 31i or Siemens 840D sl. So it provides three cutting-edge controls which convince with their easy operability and programmability.



Wheel hub
(steel)

1 MAIN SPINDLE AND DRIVE UNITS

/ Powerful main spindle with a high torque for short cycle times

2 WORK AREA

/ Optimized access to the work area
/ Best ergonomics for operators

3 AUTOMATION

/ Fast loading of up to 24 workpieces because the blank is picked up directly from the conveyor via the spindle (Pick-up-concept)
/ Variable automation possible: The conveyor belt is not permanently integrated in the machine.

4 RIGHT-HAND MACHINE

/ Mirror image version



Machine with optional equipment

5 CONTROL

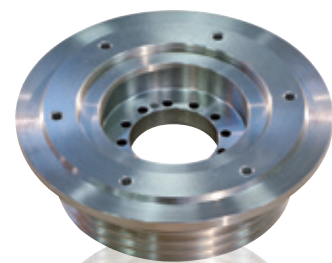
/ Optionally with Siemens 828D or 840D sl or new with Fanuc 31i
/ Simple programming and operation thanks to the state-of-the-art control technology

6 INDEPENDENT TOOL TURRET

/ VDI 40 12-position turret with and without a milling drive
/ Multifunctional plate for stationary boring tools, milling unit and special tools

VT400 FOR FLANGE-TYPE WORKPIECES

The VT 400 for chuck parts up to 400 mm completes the series of EMCO vertical lathes. This compact and robust vertical machine has all the features of a modern production lathe. It comes, for instance, with a compact guideway concept, a linear measuring system and digital drive technology, which enables high-quality parts to be machined. The VT 400 is used in the light truck or utility vehicle industry, in the manufacture of gearboxes, and in the production of brake disks and hubs. With its +/- 90 mm Y axis and its high-performance driven tools combined with the multifunctional plate, this machine is designed for the complete machining of large and heavy parts. This machine concept allows very efficient handling times to be achieved.



Belt pulley
(steel)

1 MAIN SPINDLE

- / Powerful, high-torque synchronous spindle
- / Thermally symmetrical headstock design for high-quality precision machining with a high degree of process reliability

2 WORK AREA

- / Generously sized machining compartment
- / Easy to change over and user-friendly
- / Optimum access to the clamping device tools and workpieces

3 AUTOMATION SOLUTIONS

- / Simple automation solutions that are easy to change over
- / Moving frame, pallet conveyors, chain conveyor belts, etc.
- / Pick-up system for the parts

4 CONTROL SYSTEM

- / Easy programming and operation thanks to modern control technology
- / Sinumerik 828D including ShopTurn interactive programming and Sinamics drives

5 CHIP CONVEYOR

- / Optimum chip outfeed guaranteed
- / Chip conveyor (hinged belt) with integrated coolant system included in the basic machine

6 TOOL SYSTEM

- / 12-position tool turret with VDI 40, with or without driven tools
- / Drilling and milling units can be loaded on all 12 stations
- / Use of the multifunctional plate for additional tools



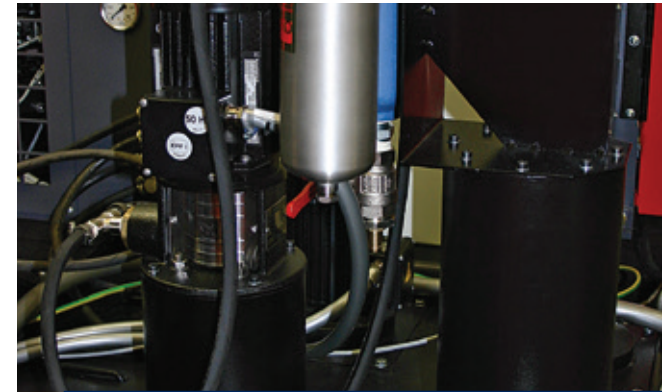
Machine with optional equipment

TECHNICAL HIGHLIGHTS



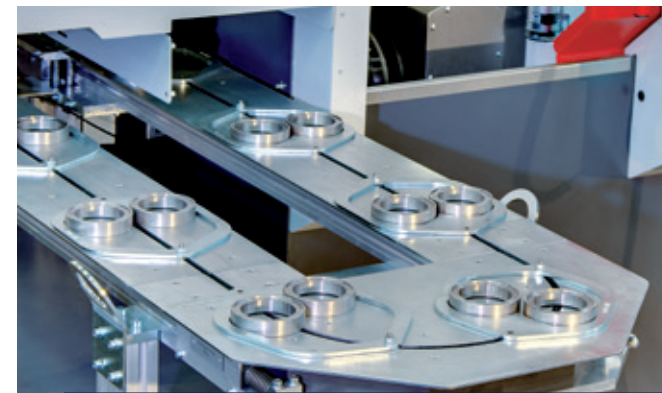
OPTIMAL ACCESS TO THE WORK AREA

Excellent accessibility when setting up the clamping devices, tools and workpieces. Free chip fall into the chip hopper and slat-band conveyor. One-piece work area covers on X, Z and Y axes for trouble-free operation.



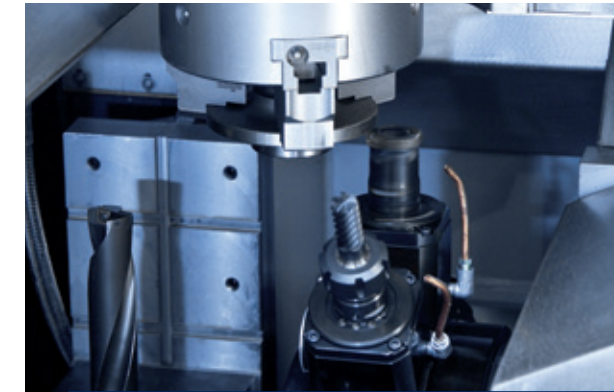
COOLANT SYSTEM

The standard coolant system contains a 14 bar pump which delivers the coolant to the tool tip via the tool turret. It optionally comes with a chip flushing system for cleaning the inside of the machines of chips; a coolant pistol or coolant through the spindle can be added.



TWO TRACK LOADING

Two track loading is possible up to a part diameter of 100 mm. The benefits for you: good parts supply, short chip-to-chip times up to 5.5 seconds.



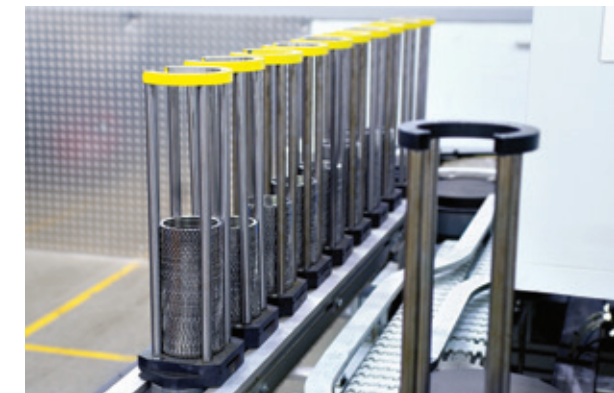
COMPLETE MACHINING

Complete machining without compromises: The large stroke of the Y axis satisfies every wish during complete machining.
VT 400: Y-axis + / -90 mm
VT 260: Y axis +70 / -90 mm
VT 160: Y axis + / -65 mm



EXHAUST SYSTEM

Because of the completely closed work area it is possible to integrate an exhaust system. With these measures the machine is much more environmentally friendly in its operation. The oil vapors are filtered out of the working area and only clean air escapes from the machines.



STACKABLE TOOL MAGAZINES

Stackable tool magazines for line production are the preferred solution for vertical machines alongside drag conveyors and pallet systems. This magazine with 10 individual stackable magazines is ideal for circular parts such as clutch plates, synchroniser rings, etc. Each magazine shaft can stack up to 60 parts, transporting 600 parts to the VT 160 vertical machine.



HIGHLIGHTS

- / Robust, thermally stable machine concept
- / Latest drive technology from Siemens
- / Integrated spindle motor with 600 Nm
- / Linear guides size 55/45 for maximum stability
- / Digital drive technology and high traverse speeds to reduce main and ancillary times
- / Machining compartment that is easy to change over and easily accessible
- / +/- 90 mm Y axis
- / Multiple automation options
Automation designed for diameters up to 400 mm
- / Right- and left-sided machine version
- / Complete machining (OP 10 + OP 20) for high flexibility
- / Made in the Heart of Europe

TECHNICAL HIGHLIGHTS



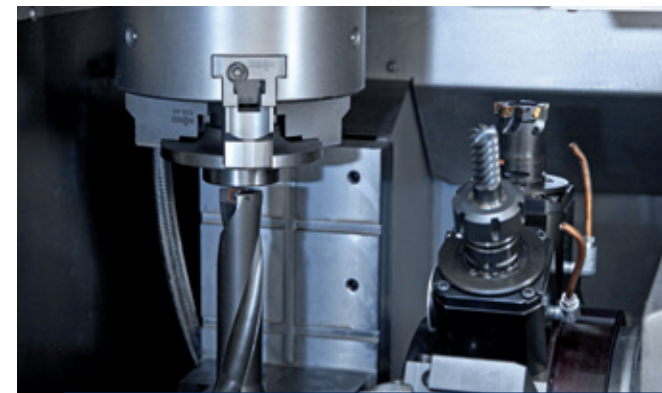
PALLET SYSTEM

The pallet system of the VT400 is designed to hold up to 15 parts with a diameter of 50 – 320 mm. As an alternative, a conveyor belt with carrier-prism can be offered. This can hold 12 parts with a diameter of 200 – 320 mm.



WORK PIECE MEASURING DEVICE

Integrated work piece measuring device: With the touch probe mounted between the work area and the loading position it is possible to gauge the work piece. During machining, the probe will be completely covered and protected from chips and coolant.



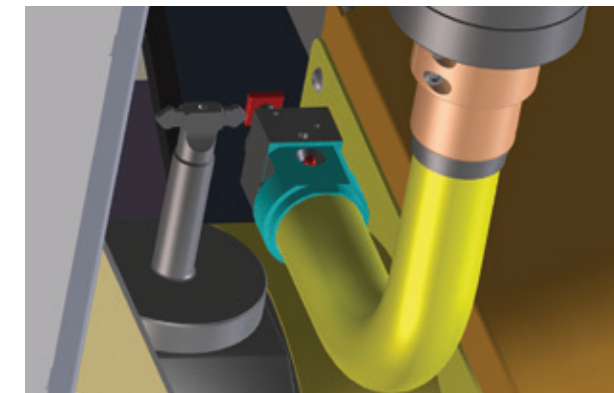
MULTIFUNCTIONAL PLATE

Very stable multifunctional plate. In the version without a Y axis, it also supports the use of long drilling tools.



CONTROL

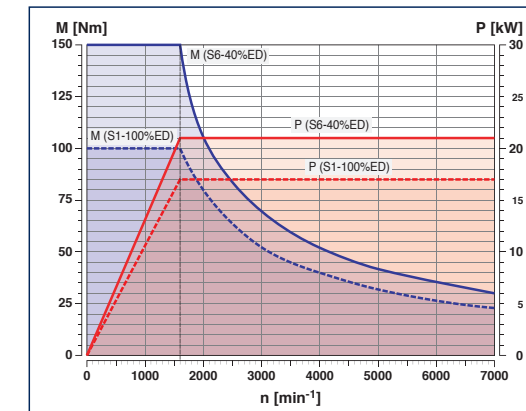
The state-of-the-art 828D control contains the latest functions from the Siemens „Operate“ controller interface. Based on „solution line technology“, the 828D is an ideal solution for single-channel machines like the VT 400, VT 260 and the VT 160. The communication with the controller is possible via a USB or ethernet-interface or CF-card in the front of the controller.



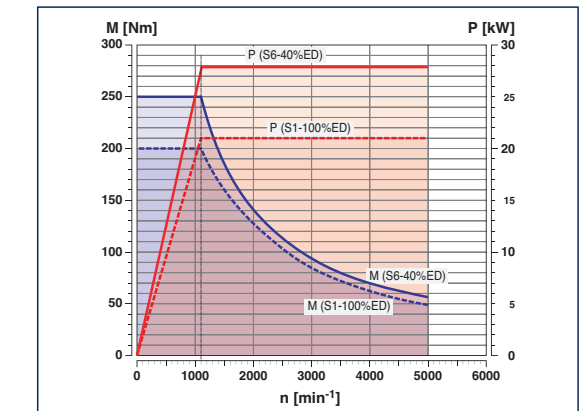
TOOL PROBES

For measuring the tools located in the machine. The measuring arm is manually positioned on the spindle in the workspace and can be used for the tool turret. After use, the arm can be put aside and placed into a special storage section on the machine. The advantage: shorter retooling times and precise tool measurement.

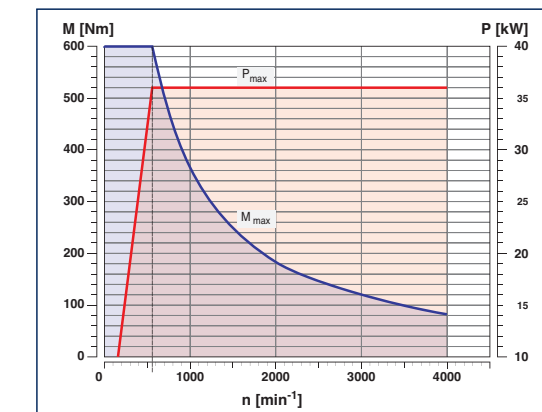
PERFORMANCE AND TORQUE



Motor characteristics for hollow spindle motor VT 160



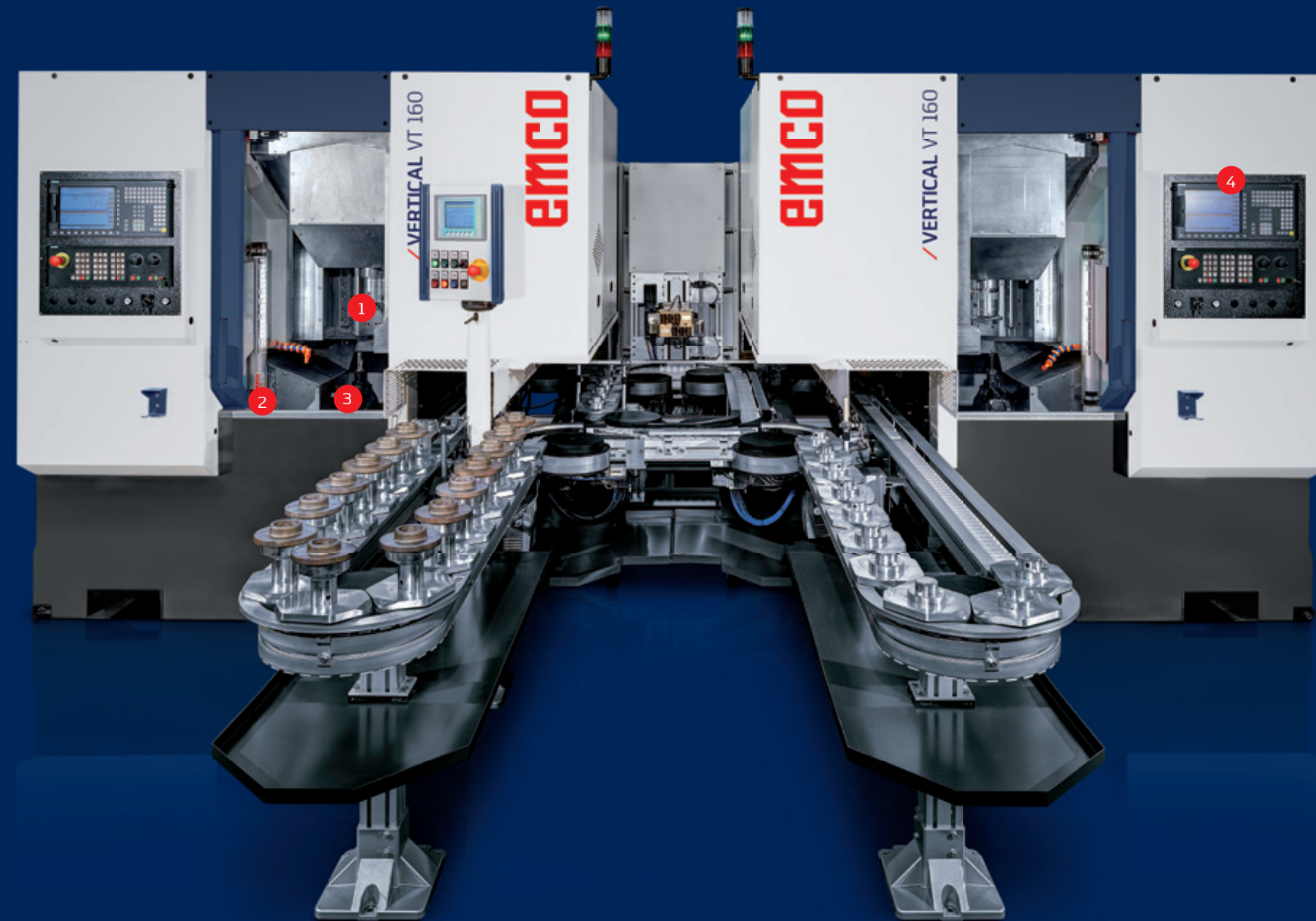
Motor characteristics for hollow spindle motor VT 260



Motor characteristics for hollow spindle motor VT 400

VT DUOZELLE

For more productivity: both the purchasing price and the performance values, such as the cycle time, use of manpower, etc., show the great efficiency of this right-hand and left-hand vertical turning machine in their interplay. Workpieces can be fully machined, independently of one another in the two separate workspaces – in other words, identical and different production processes are possible. The two machines are connected by a turning station. The two separate workspaces offer greater flexibility and safety in production processes. The Y axis, driven tools and multifunctional plate offer ideal preconditions for complete machining without any compromises.



1 MAIN SPINDLE

/ Powerful main spindle with a high torque for short cycle times

2 WORK AREA

/ Optimized access to the work area
/ Best ergonomics for operators

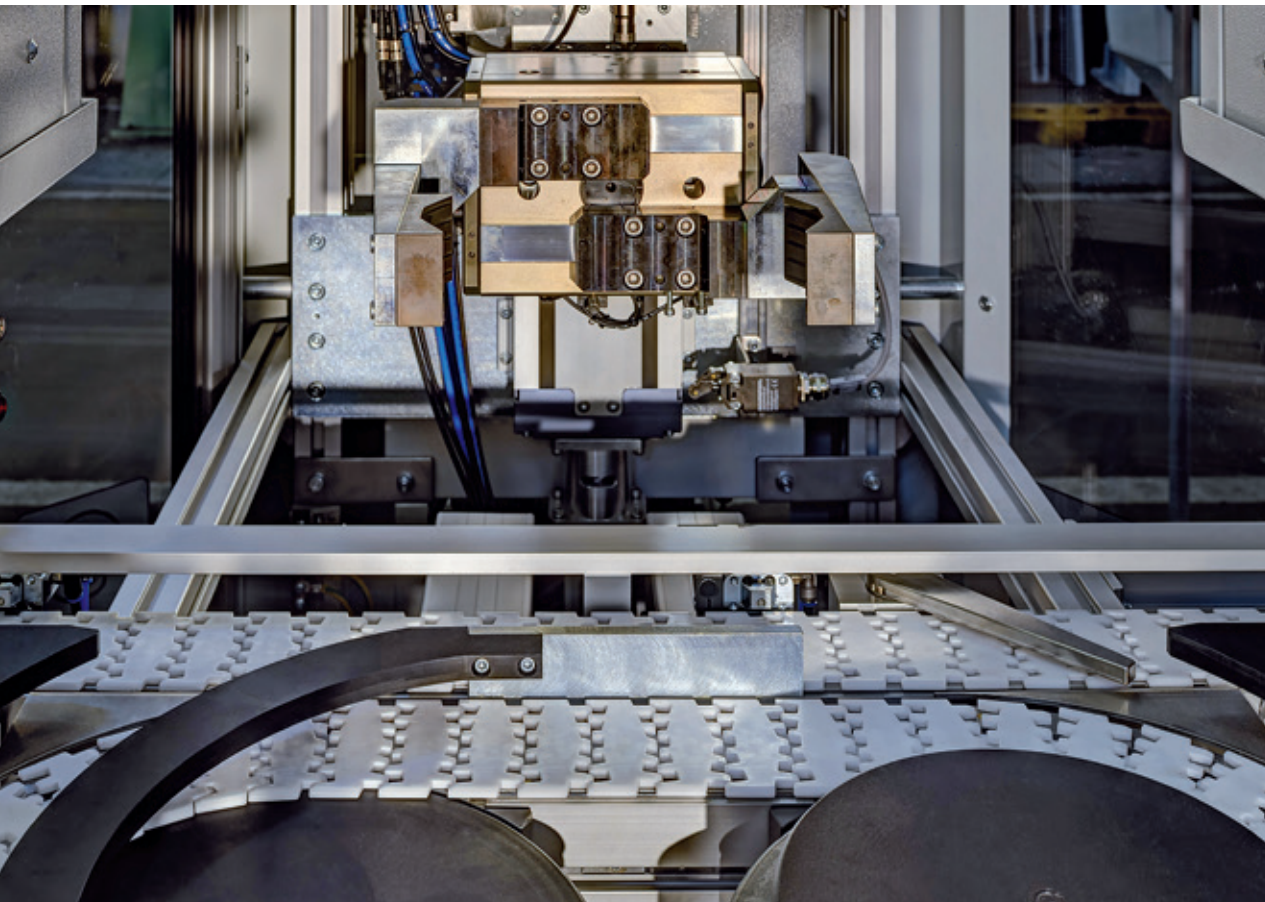
3 TOOL TURRET

/ Turret equipped with 12 tool holder fixtures (stationary and driven tools available)
/ Multifunctional plate for stationary boring tools, milling unit and special tools in the model range of VT-machines

4 CONTROL

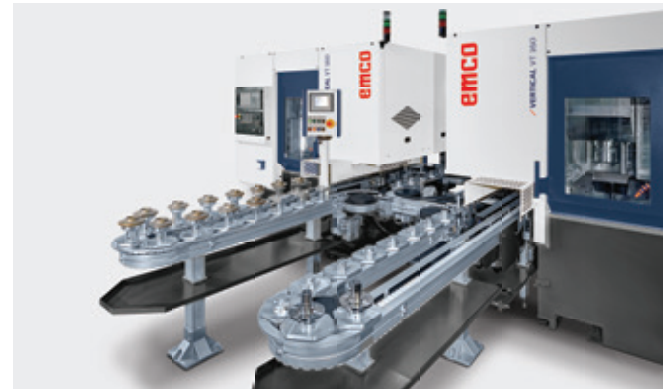
/ Simple programming and operation thanks to the state-of-the-art control technology
/ Sinumerik 828D with Shopturn dialog programming and Sinamics drives

TECHNICAL HIGHLIGHTS



WORKPIECE SWITCH

180° workpiece turner with workpiece switch for pallet 1 and pallet 2.



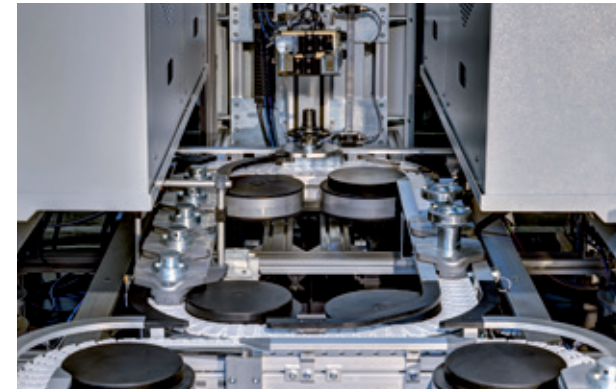
LATERALLY REVERSED MACHINES

For front and rear end workpiece machining. The DUO VT is available in a meander version equipped with a 180-degree turning unit and an optional separator. Depending on the operation, it is possible to use 25 pallets. An independent control unit is available for different operation modes (manual, setup, automatic).



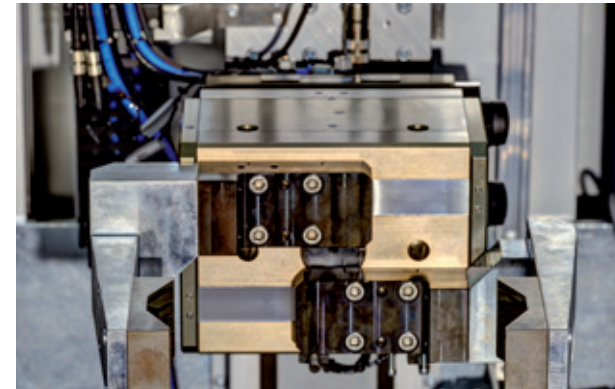
SPACE-SAVING MACHINE DESIGN

Changes and enhancements are possible thanks to requirements-driven configuration options in terms of the production environment, line layout and automation with extremely simple handling. A footprint of 21 m² is sufficient for this.



BYPASS LINE

An integrated bypass line allows both a simultaneous production of different workpieces, as well as a different voltage at OP 10 and OP 20.



AUTOMATIC TOOL TURNING UNIT

The machine is equipped with a 180° workpiece turner and a lifting station (lift height 300 mm). It can be operated pneumatically by a fixed stop or electrically by a NC axis. The gripper stroke is designed for diameters up to 220 mm. The turning station has a pneumatic drive.



PICK-UP STATION

The pick-up station for the blank is designed with gimbal suspension and drive-over protection.



GENTLE WORKPIECE TRANSPORT

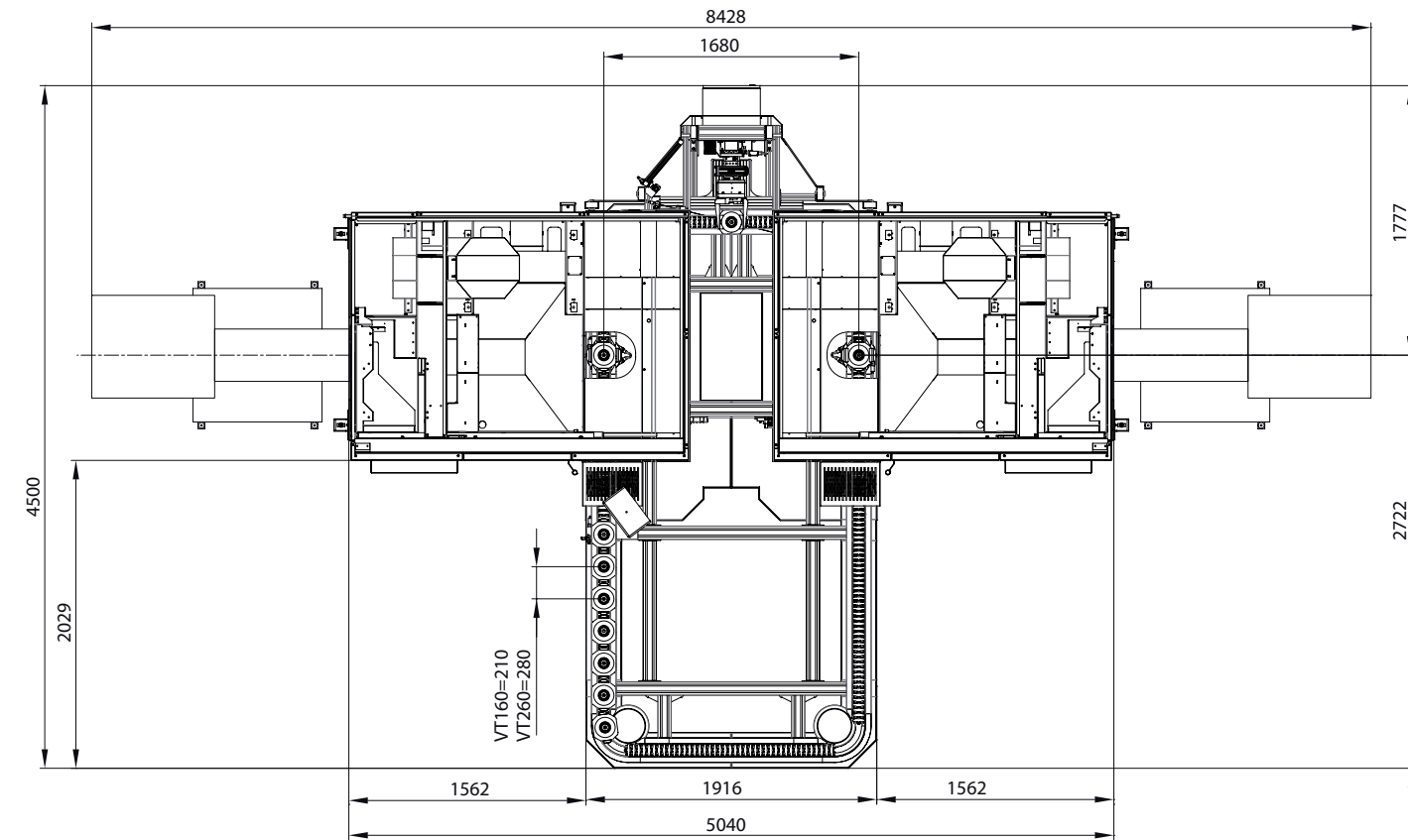
180° turning station with transport chain and workpiece carrier for the OP 20.

HIGHLIGHTS

- / Right- and left-hand machines
- / Complete machining (OP 10+OP 20) for maximum flexibility
- / Tooling-friendly workspaces
- / Stable guideway concept (BG 45) on the X and Z axis
- / 12 station turret with driven tools
- / Transfer unit with 180° turning device

LAYOUT PALLET TRANSPORT

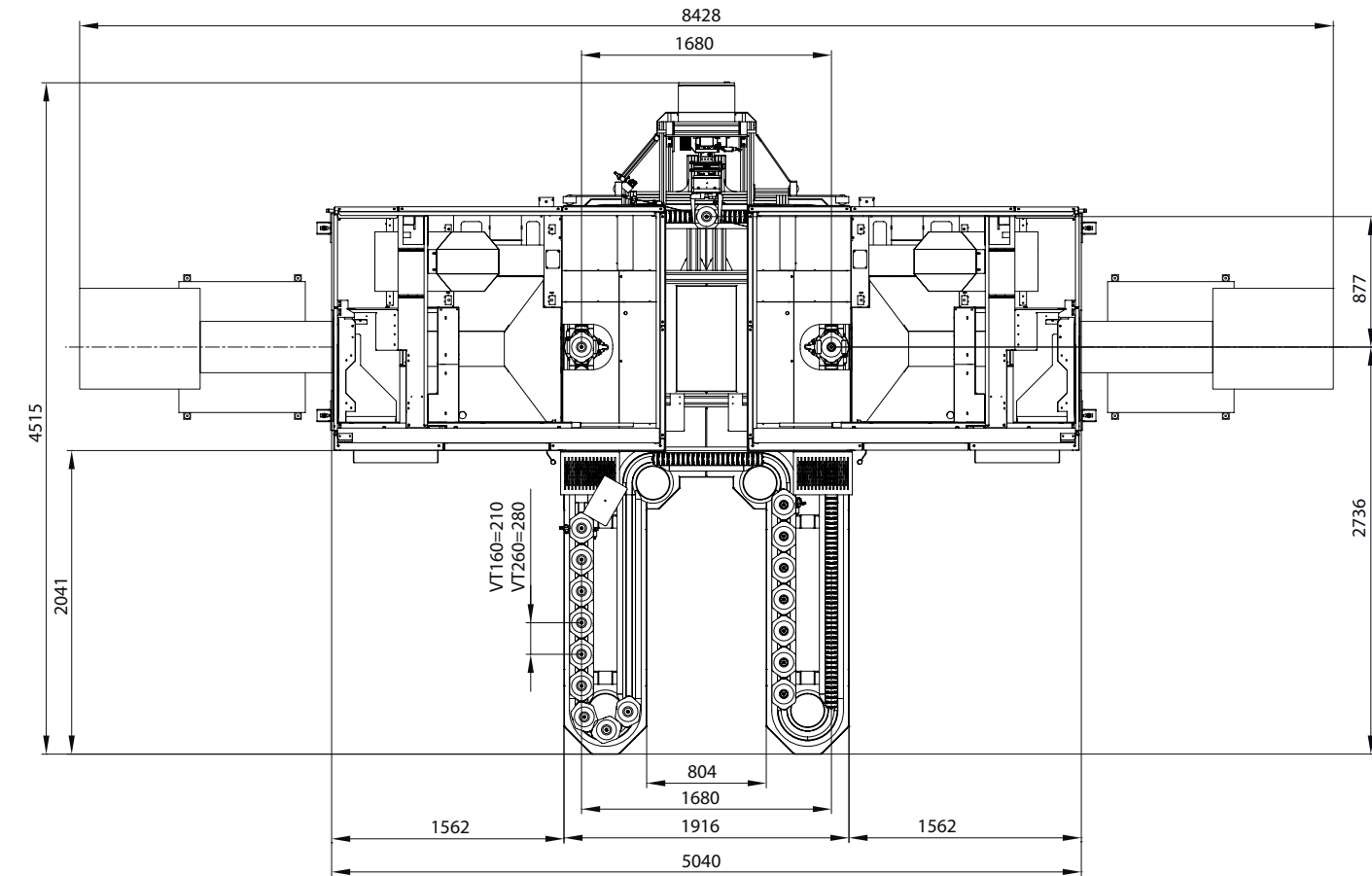
Layout pallet transport OVAL



Details in millimeters

LAYOUT PALLET TRANSPORT

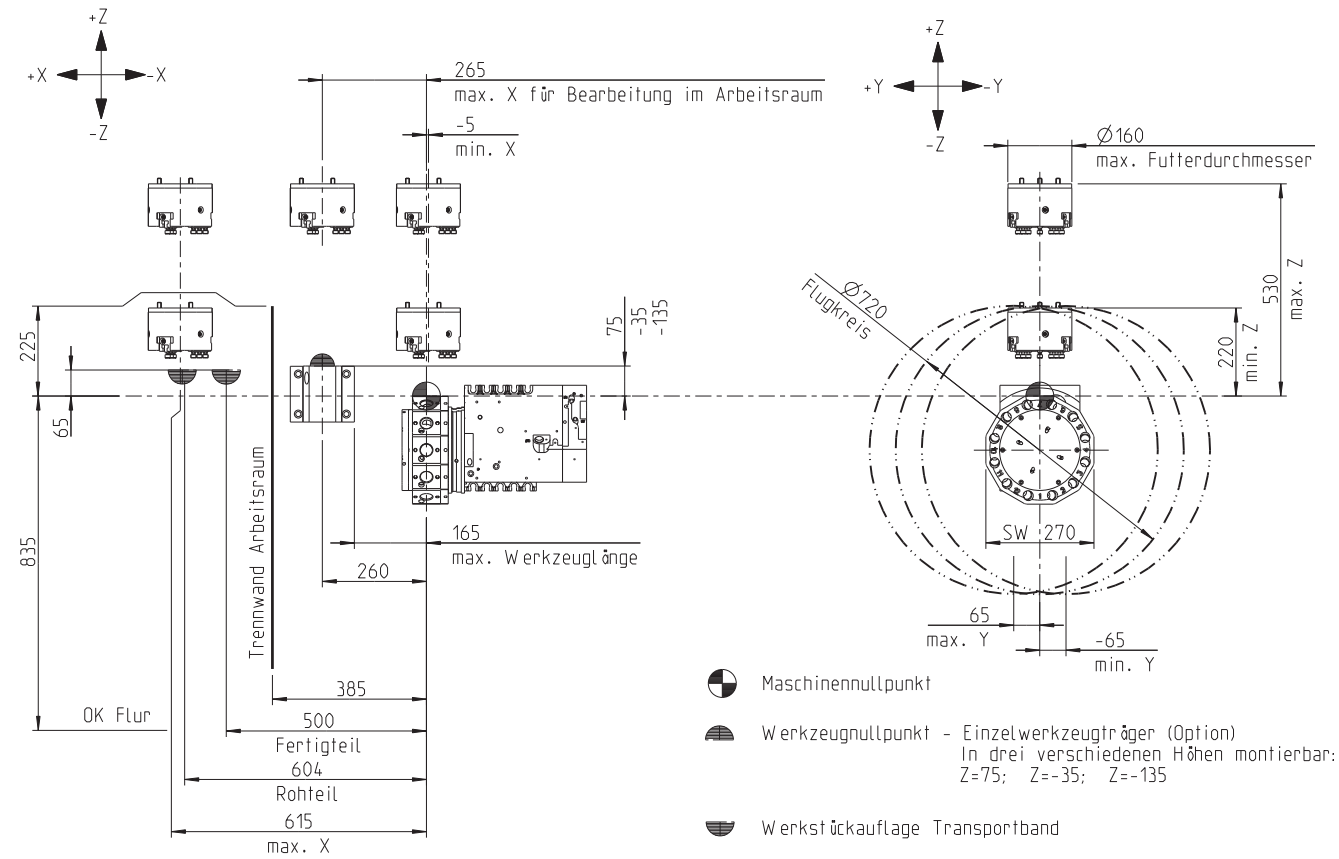
Layout pallet transport MR and MRW



Details in millimeters

WORKSPACE

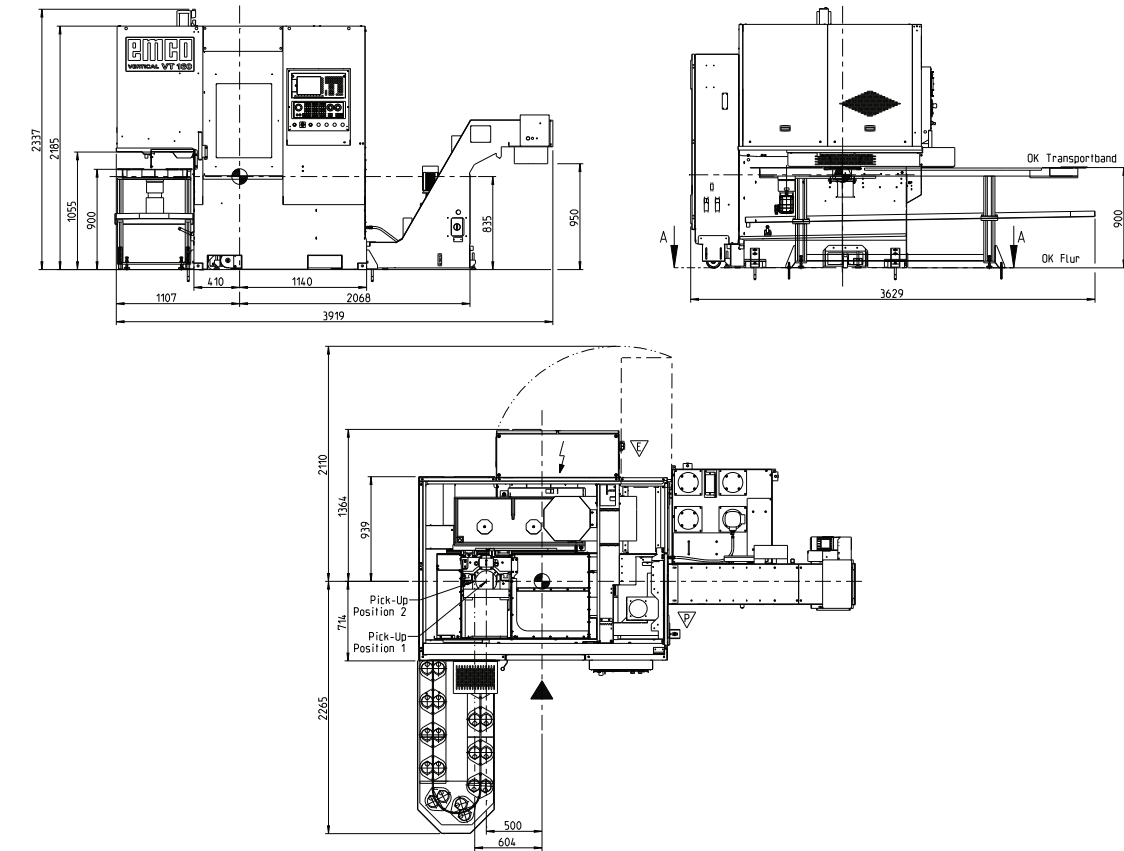
EMCO VERTICAL VT 160 Workspace



Details in millimeters

INSTALLATION PLAN

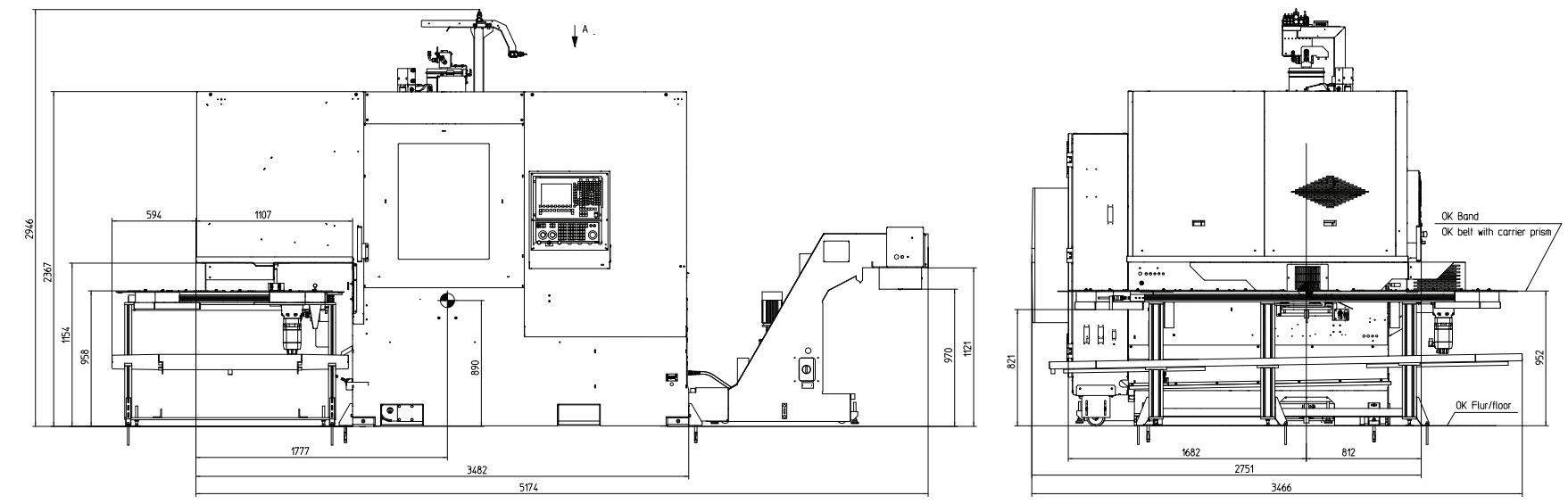
EMCO VERTICAL VT 160 Installation plan



Details in millimeters

INSTALLATION PLAN

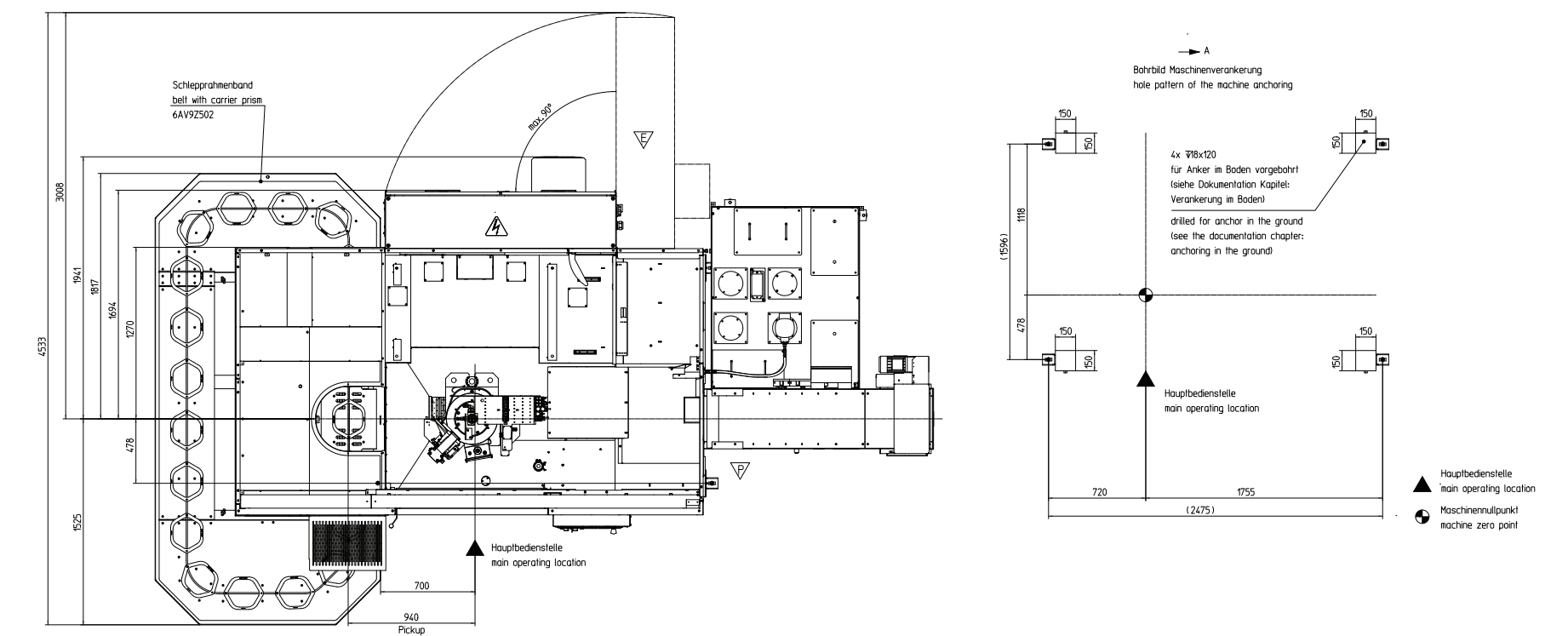
EMCO VERTICAL VT 400
Installation plan



Details in millimeters

INSTALLATION PLAN

EMCO VERTICAL VT 400
Installation plan



Details in millimeters

TECHNICAL DATA

Work area	EMCO VERTICAL VT 400	EMCO VERTICAL VT 260	EMCO VERTICAL VT 160
Chuck size	450 mm	280 mm	160 mm
Maximum work piece diameter	400 mm	260 mm	160 mm
Maximum work piece length	200 mm	180 mm	150 mm

Travel

Travel X / Y / Z axis	960 / +/- 90 / 400 mm	660 / +70 / -90 / 310 mm	620 / +/- 65 / 310 mm
Rapid motion speed X / Y / Z	45 / 15 / 30 m/min	60 / 15 / 30 m/min	60 / 15 / 30 m/min

Main spindle - ISM

Speed range	0 – 4000 rpm	0 – 5000 rpm	0 – 7000 rpm
Drive power	36 kW	29 kW	21 kW
Torque	600 Nm	280 Nm	150 Nm
Spindle nose / DIN 55026	A2-11	A2-6	A2-5

Tool turret

Number of tool holders	12	12	12
Tool shaft according VDI (DIN 69880)	VDI 40	VDI 40	VDI 30
Driven tools	12	12	12
Speed range	0 – 4000 rpm	0 – 4000 rpm	0 – 5000 rpm
Drive power	8,5 kW	8,5 kW	6,7 kW
Torque	40 Nm	40 Nm	25 Nm

Coolant system

Tank volume	320 litres	230 litres	230 litres
Coolant pressure standard / optional	3,7 / 14 bar	3,7 / 14 bar	3,7 / 14 bar

Dimensions and weight

Overall height	2939 mm	2360 mm	2360 mm
Floor space L x D (w/o chip conveyor and part feeder)	3482 x 2511 mm	2240 x 2185 mm	2240 x 2185 mm
Machine weight	8500 kg	4000 kg	3400 kg

Pallet transport Duo (Oval)	VT 160	VT 260
Processing	OP10 / OP20	
Workpiece diameter	160 mm	260 mm
Workpiece height	150 mm	180 mm
Loading/pallet	8 kg	
Storage and buffering capacity	15 pallets / OP	
Workpiece turning device Vertical axis (Z)	adjustable fixed stop	
Control unit	Siemens	
Operation	6" Touch-Panel	

Pallet transport Duo (MR)	VT 160	VT 260
Processing	OP10 / OP20	
Workpiece diameter	160 mm	260 mm
Workpiece height	150 mm	180 mm
Loading/pallet	8 kg	
Storage and buffering capacity	25 pallets / OP	
Workpiece turning device Vertical axis (Z)	adjustable fixed stop	
Control unit	Siemens	
Operation	6" Touch-Panel	

Pallet transport Duo (MRW)	VT 160	VT 260
Processing	OP10 / OP20 part A u. B	
Workpiece diameter	160 mm	260 mm
Workpiece height	150 mm	ww180 mm
Loading/pallet	8 kg	
Storage and buffering capacity	25 pallets / OP	
Workpiece turning device Vertical axis (Z)	NC-Achse	
Control unit	Siemens	
Operation	6" Touch-Panel	

beyond standard /

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