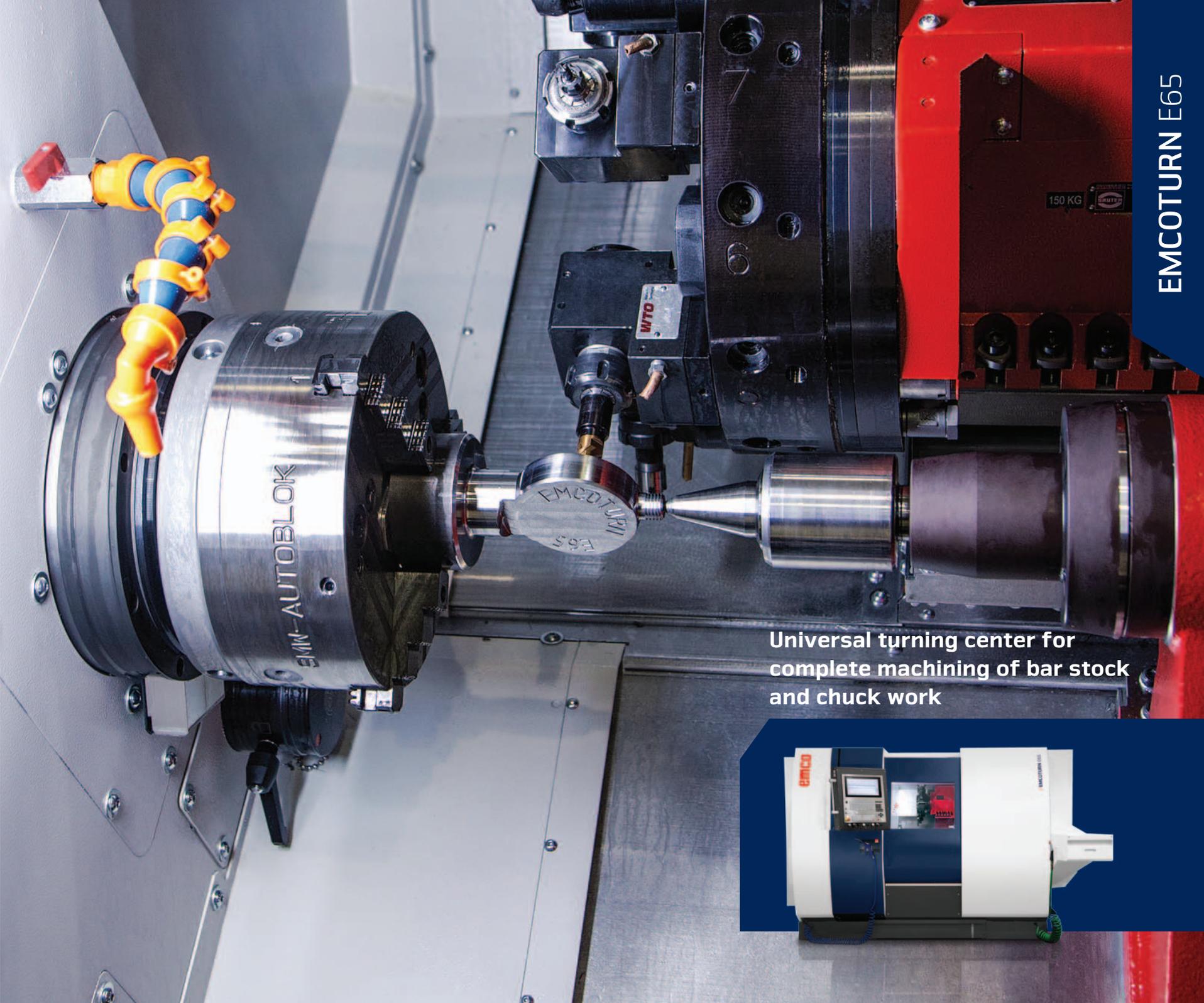


EMCO



Universal turning center for complete machining of bar stock and chuck work



EMCOTURN E65

EMCOTURN E65 IN THE TAILSTOCK VERSION

The new EMCOTURN E65 with tailstock underwent a complete redesign. As of now, it may be used with a Y-axis for the processing of complex turned/milled parts. A reduction in the auxiliary process times was achieved through increased rapid traverse speeds. There are two spindle sizes available: one with a bar capacity of up to 65 mm and another with up to 95 mm. Workpieces with a diameter of up to 95 mm may thus be automatically fed and processed by means of a short bar feeder.



Connection part
(Stainless steel)

1 WORK AREA

- / Easily accessible workspace
- / Optimal chip flow
- / Guideways fully covered

2 TOOL TURRET

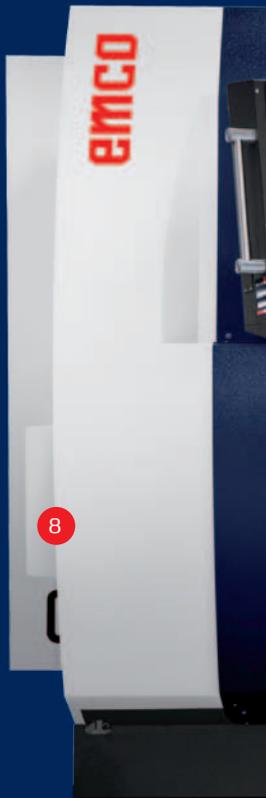
- / 12-position VDI30 (VDI40) axial
- / 12 driven tool stations
- / Servo-controlled
- / Rigid tapping
- / Polygonal turning, gear-cutting, etc.

3 Y-AXIS

- / Travel +/- 40 mm (1.6")
- / 90° implemented in the machine construction
- / Large distance between guide rails
- / Stable and compact construction without restrictions

4 MAIN SPINDLE

- / High drive performance
- / Thermoresistant construction
- / Large speed range
- / A2-6 (A2-8) spindle connection
- / Bar capacity \varnothing 65 (95) mm





5 CONTROL

- / State-of-the-art control technology
- / FANUC OiTF / 15" incl. Manual Guide i
- / SINUMERIK 828D / 15" incl. Shop Turn
- / HEIDENHAIN CNC PILOT 640 / 15,6" incl. Smart Turn
- / 90° pivot

6 MACHINE COVER

- / All-round protection from chips
- / 100% coolant retention
- / Large safety glass window in door
- / Clear view of the work area
- / Built-in buttons for operator convenience

7 MACHINE DESIGN

- / Compact machine design, requiring a comparatively small footprint

8 HYDRAULIC UNIT

- / Hydraulic system
- / Lateral arrangement of the hydraulic valves
- / Very good accessibility
- / Automatic setting of the pressure switches
- / Programmable clamping pressure – optional

EMCOTURN E65 IN THE COUNTER SPINDLE VERSION

The new EMCOTURN E65 S with counter spindle, radial turret and optional Y-axis is the entry-level machine for the complete processing of turned/milled parts. Thanks to the fully-developed counter spindle, it is possible to turn, mill and drill workpieces on both sides. The counter spindle may also be used as a tailstock for supporting long workpieces. If required, large shaft parts may even be unloaded through the counter spindle.



Chain wheel adapter
(Aluminium)

1 WORK AREA

- / Easily accessible workspace
- / Optimal chip flow
- / Guideways fully covered

2 TOOL TURRET

- / 12-position VDI30 (VDI40) radial
- / 12 driven tool stations
- / Servo-controlled
- / Rigid tapping
- / Polygonal turning, gear-cutting, etc.

3 COUNTER SPINDLE

- / Complete machining of components
- / Incl. C-axis for milling operations
- / Incl. part ejector
- / Incl. flushing
- / Optionally available with a passage for unloading long shaft parts

4 Y-AXIS

- / Travel +/- 40 mm (1.6")
- / 90° implemented in the machine construction
- / Large distance between guide rails
- / Stable and compact construction without restrictions

5 EMCO SHORT BAR LOADER SL1200

- / Bar diameter 8 - 95 mm
- / Bar length 250 - 1200 mm
- / Material storage area 560 x 1210 mm
- / Dimensions 1700 x 1250 mm
- / 400 mm travel range





6 CONTROL

- / State-of-the-art control technology
- / FANUC 0iTF / 15" incl. Manual Guide i
- / SINUMERIK 828D / 15" incl. Shop Turn
- / HEIDENHAIN CNC PILOT 640 / 15,6" incl. Smart Turn
- / 90° pivot

7 MACHINE COVER

- / All-round protection from chips
- / 100% coolant retention
- / Large safety glass window in door
- / Clear view of the work area
- / Built-in buttons for operator convenience

8 MACHINE DESIGN

- / Compact machine design, requiring a comparatively small footprint

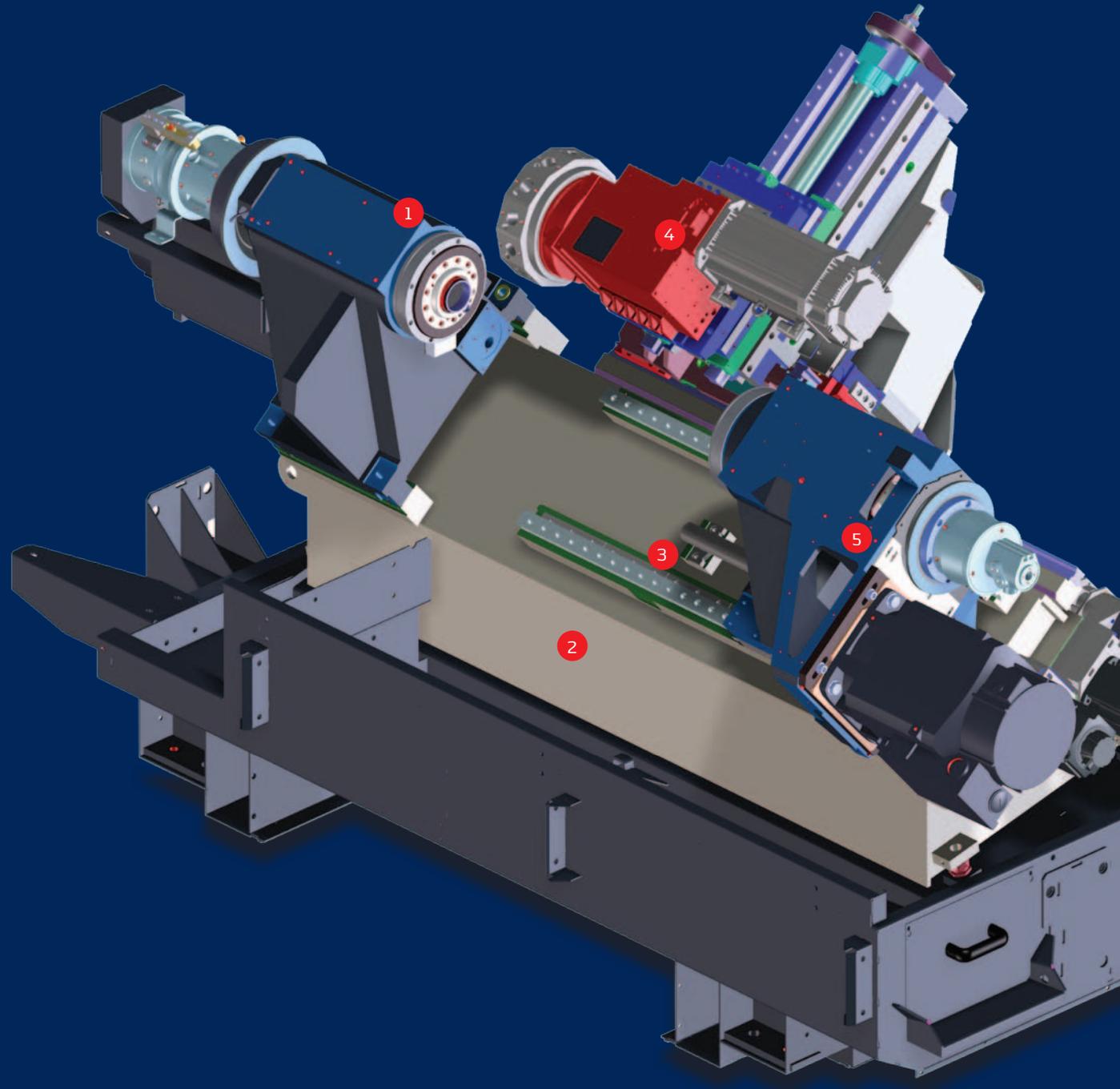
9 HYDRAULIC UNIT

- / Hydraulic system
- / Lateral arrangement of the hydraulic valves
- / Very good accessibility
- / Automatic setting of the pressure switches
- / Programmable clamping pressure – optional

10 FINISHED PARTS CONVEYOR

- / Large storage capacity
- / Automatic indexing
- / incl. chip drawer

CONSTRUCTION



1 MAIN SPINDLE

- / High drive power
- / Compact, thermostable construction
- / Large speed range
- / A2-6 (A2-8) spindle connection
- / Bar capacity diameter 65 (95) mm

2 MACHINE BASE

- / Extremely stiff welded steel fabrication
- / Compact structure
- / Very high thermostability
- / Filled with vibration-absorbing material

3 ROLLER GUIDES

- / In all linear axes
- / Preloaded
- / No backlash in any direction of force
- / High rapid motion speed
- / No wear
- / Minimal lubrication

4 TOOL TURRET

- / VDI quick change system
- / 12 driven tool stations
- / No alignment of the tool holder
- / Can be used on both spindles
- / Swivel speed adjustable with override

5 COUNTER SPINDLE

- / Large speed range
- / C-axis
- / Spindle clamp
- / A2-6 spindle connection

6 MACHINE STAND

- / Thermally isolated from the machine base
- / Large coolant container that is easy to clean
- / No leveling necessary
- / 100% sealed against coolant leaks

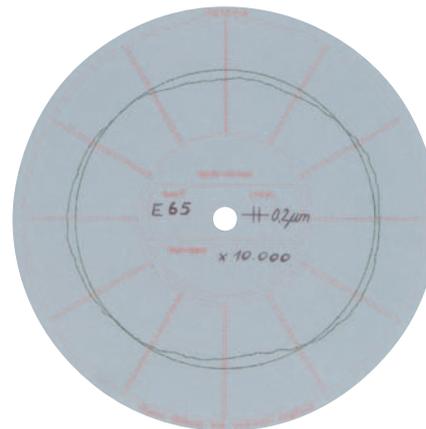
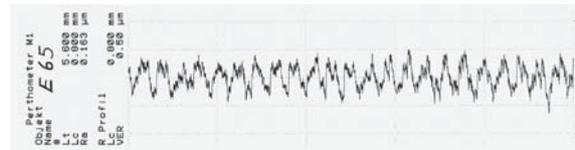
VALIDATED QUALITY

/ ROUNDNESS AND SURFACE QUALITY

| | |
|-------------------|---------------------------------|
| Material: | Brass (Cu Zn 40 Pb 2) |
| Cutting tool: | Carbide insert CCGX 09 T3 04-AL |
| Turning diameter: | ø 55 mm |
| Cutting speed: | 300 m/min |
| Feed rate: | 0.025 mm/rev |
| Cutting depth: | 0.03 mm |

/ AS MEASURED ...*

| | |
|-----------------|---------------|
| Roundness: | 0.45 µm |
| Surface finish: | Ra = 0.163 µm |



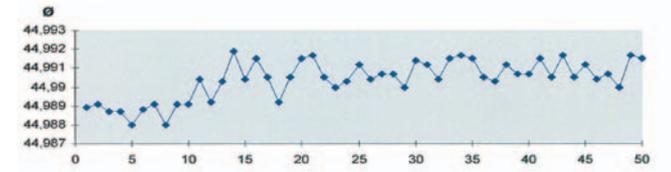
/ WIEDERHOLGENAUIGKEIT

| | |
|-------------------|--------------------|
| Material: | Steel – 16 Mn Cr 5 |
| Turning diameter: | ø45 h6 |
| Tolerance: | 16 µm |
| Spindle speed: | 2000 rpm |
| Feed rate: | 0.08 mm/rev |
| Cutting depth: | 0.2 mm |

LONG TERM MACHINING ACCURACY: 4 µm

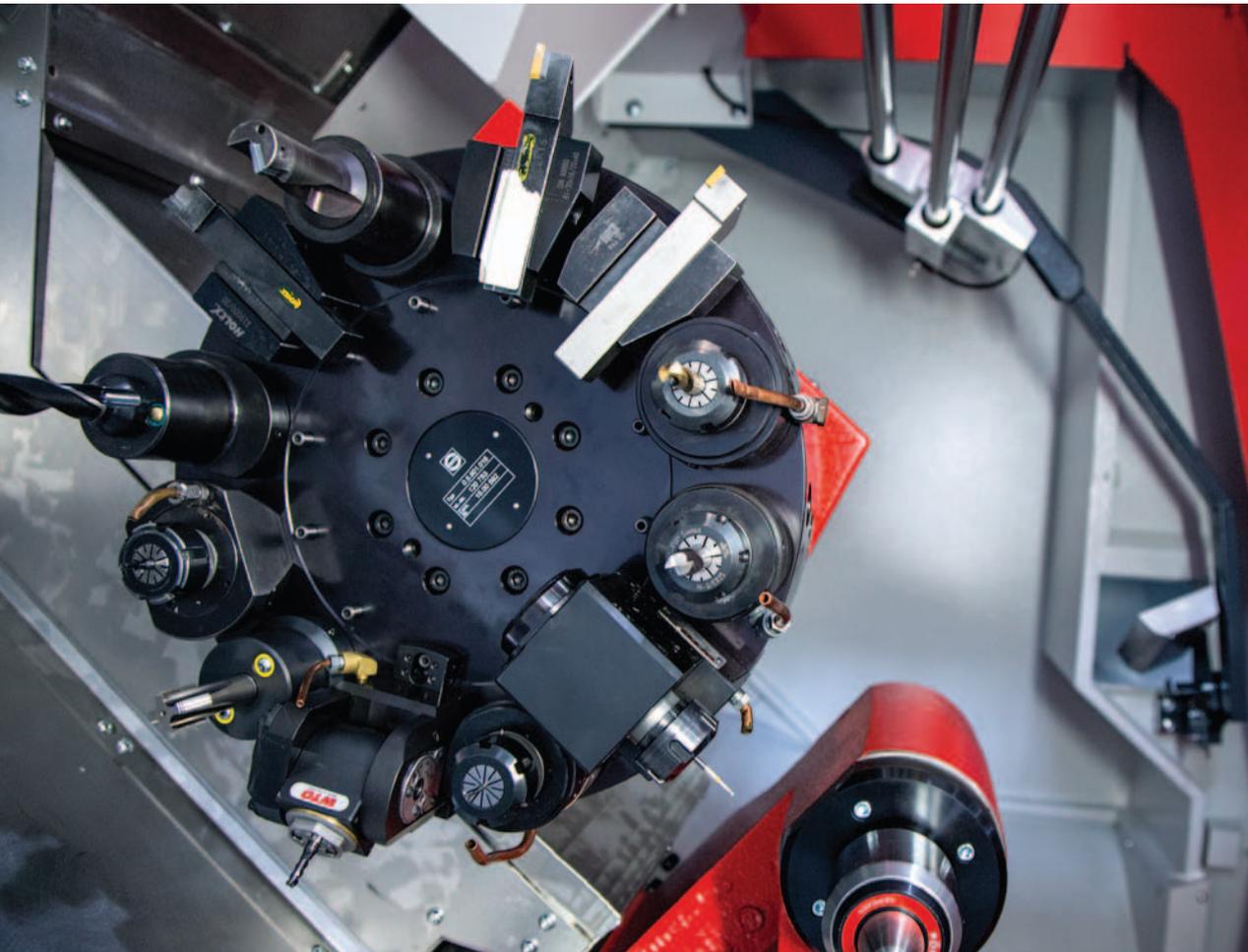
/ AS MEASURED ...*

| | |
|-----------|------|
| Range: | 4 µm |
| Cm value: | 2.57 |



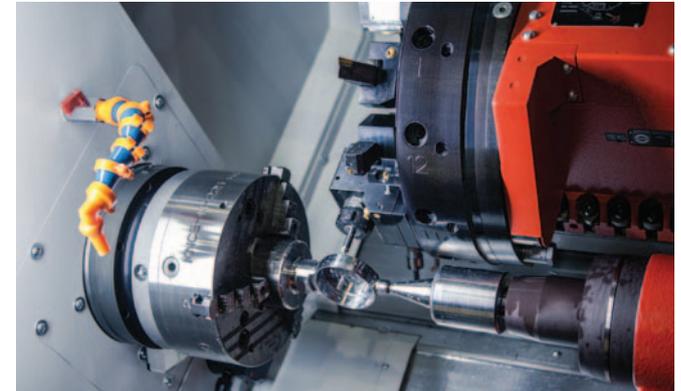
*...Due to a series of factors, such as warm-up cycles, speeds, feed rates, tools, coolants, materials, ambient temperature, etc., the actual results may differ from those specified above.

TECHNICAL HIGHLIGHTS



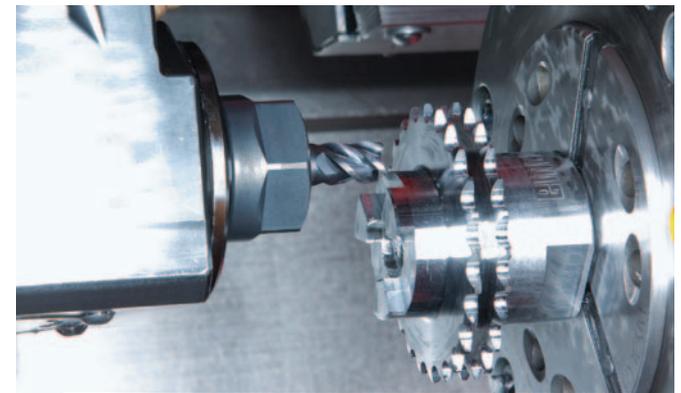
WORK AREA

The spacious work area offers room for a large number of tools on the tool turret, thus also ensuring a continuous chip flow during virtually unmanned production. During the machining process, the parts catcher is in its original position, which is why it does not restrict the machining process in any way whatsoever.



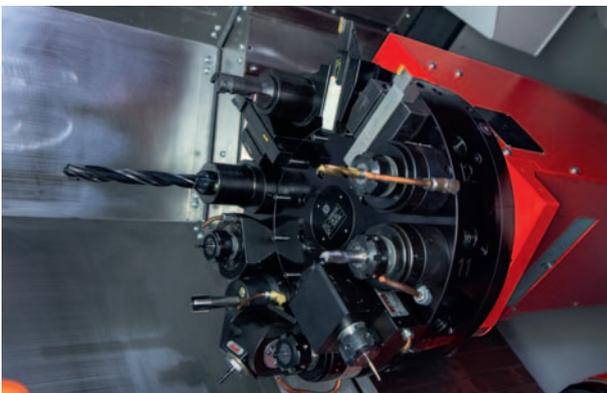
MAIN SPINDLE

There are two spindle sizes available for selection: one with a capacity of up to 65 mm with A2-6 and another with a capacity of up to 95 mm with A2-8. Both allow a wide range of clamping devices, such as collet chucks, 3-jaw chucks or face drivers, to be attached. For complex milling operations, the spindle can also be used for interpolation contouring or be clamped in any position.



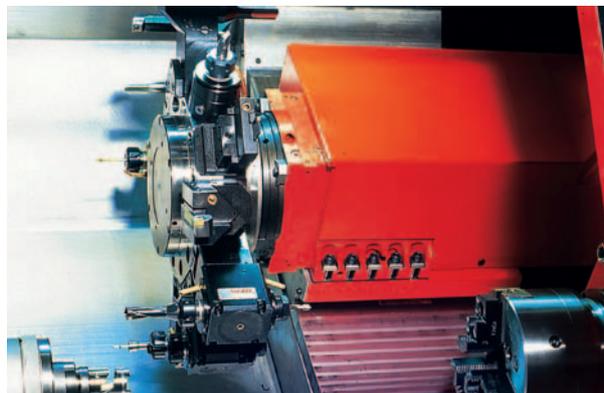
COUNTER SPINDLE

The counter spindle is available for complete workpiece machining. Turning, milling and drilling operations can thus also be performed on the back of the workpieces. The concentric takeover of the workpieces offers another advantage: the possibility to maintain a very high level of accuracy with regard to the coaxiality, concentricity and angular position values.



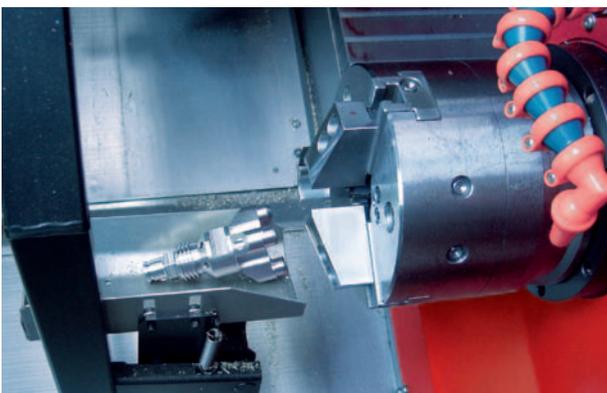
TOOL TURRET / TAILSTOCK VERSION

Axial tool turret for the tailstock version. Quick 12-fold servo turret with very short indexing times for standardized VDI30 or VDI40 tools. All stations can include driven tool holders for drilling, milling or thread-cutting operations. The operator can influence the swing speed at any time.



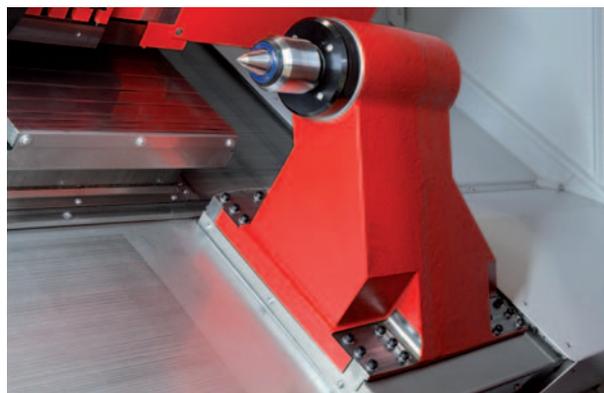
TOOL TURRET / COUNTER SPINDLE VERSION

Radial tool turret for the counter spindle version. Quick 12-fold servo turret with very short indexing times for standardized VDI30 or VDI40 tools. Angular holders equipped with ground alignment plates. No additional time consuming alignment necessary. All stations are driven and the indexing speed can be influenced by the operator at any time.



PART PICK-UP DEVICE

Finished parts are transported from the main and counter spindle to the finished parts holder with the part pick-up device. This proven EMCO concept with the pivoting pick-up tray ensures optimum accessibility to the work area, free chip flow and the gentle removal of the finished parts.

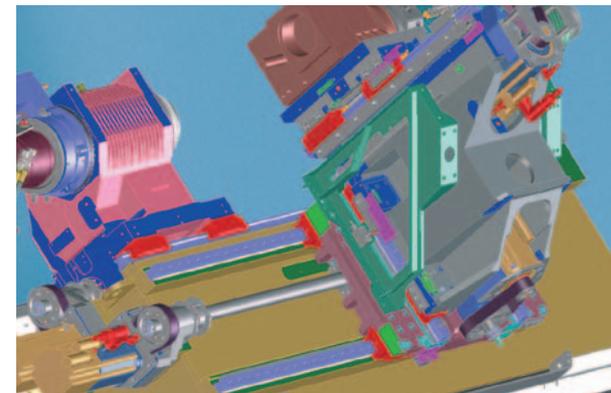


TAILSTOCK

In order to support slim components, the EMCOTURN E65 includes a fully automatic tailstock. It is hydraulically moved over a length of 500 mm. The centre with MT4 cone is directly included in the tailstock body. This ensures compactness and highest stability.

HIGHLIGHTS

- / Powerful driven tools
- / Y-axis for complex milling operations
- / Counter spindle for complete machining
- / Flexible automatic tailstock
- / Top machining precision
- / Very compact machine layout
- / State-of-the-art control technology from Siemens Sinumerik 828D, Fanuc0iTF or Heidenhain CNC PILOT 640 incl. Shop Turn / Manual Guide i / Smart Turn
- / Made in the Heart of Europe



Y-AXIS CARRIAGE

The 90° offset machine base with the broad-based, prestressed guide rails ensures short overhangs and top stability for complete machining.

THE CNC CONTROL UNIT: THE BRAINS OF EACH CNC LATHE

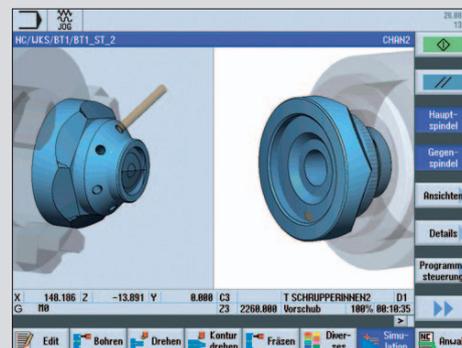
Machine tools are facing ever-increasing requirements. They are supposed to be ever faster, ever more precise and ever more user-friendly! Nowadays, these criteria are met by modern CNC control units. What is new, however, is the wish for networking, something that the state-of-the-art controls included in EMCO's machine tool programme are capable of. Many customers are asking for standardized control units within their production. In order to cater for these needs, the EMCOTURN E 65 is available with three control versions.

SINUMERIK 828D

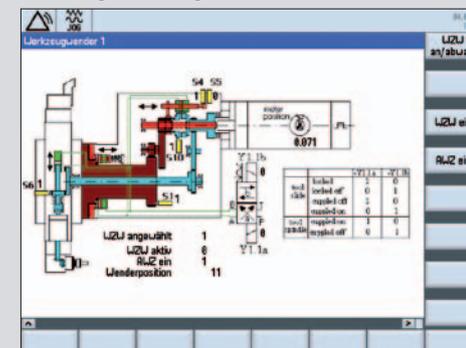
High-performance CNC control for maximum precision and processing speed. Thanks to a flexible CNC programming language and unique ShopTurn work stage programming, both large-scale production parts and individual workpieces may be programmed and machined with maximum efficiency. With powerful kinematic transformations and a comprehensive set of technology cycles, the SINUMERIK 828D is also ideal for sophisticated machining with driven tools and counter spindle.



3D simulation



EMCO diagnostic images



FANUC OiTF

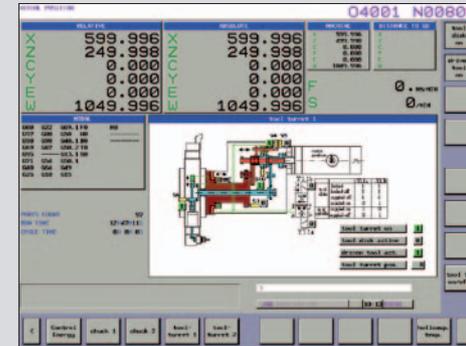
The CNC-series OiTF model is the ideal solution for compact high-end lathes. An attractive price-performance ratio teamed with unmatched dynamics, precision and reliability. This control unit is characterised by easy operation and programmability. Using the FOCAS interface, it can easily be connected to higher-level IT systems, whilst offering maximum performance and functionality. Easy and rapid automation by means of a robot or gantry loader is guaranteed.



3D simulation



EMCO diagnostic images

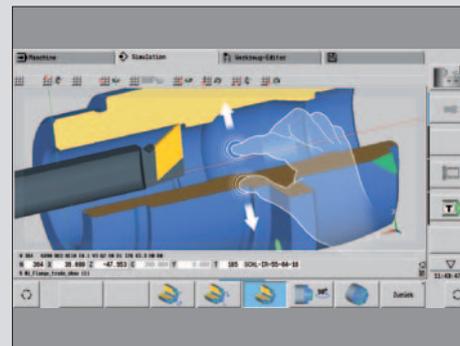


HEIDENHAIN CNC PILOT 640

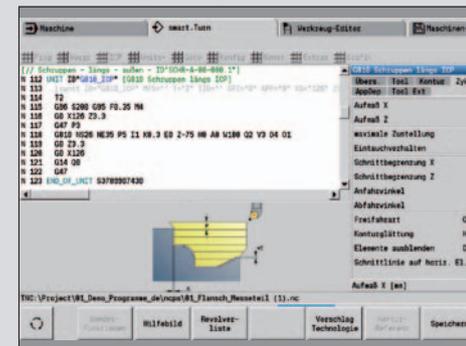
Thanks to the flexible design and due to its versatile programming possibilities, Heidenhain's CNC PILOT 640 always offers the right support – regardless of whether you manufacture simple or complex workpieces. The CNC PILOT 640 is characterised by easy operation and programming, which is why it requires only little training.



3D simulation



SmartTurn programming assistant



THE EMCO GANTRY LOADER. INDIVIDUAL PROCESS OPTIMIZATION.

- 1 GANTRY LOADER
- 2 PALLET MAGAZINE (20-station)
- 3 GRIPPER SYSTEM



ADVANTAGES

- / Fully automated loading and unloading of the workpieces
- / Multi-channel Sinumerik control incl. user cycles
- / Seamless interplay between the machine tool and the loading device
- / Varied possibilities of customer-specific adaptation
- / Possibility of integration of measuring station, signing station, cleaning station, etc.
- / Short non-productive times due to a loading hatch

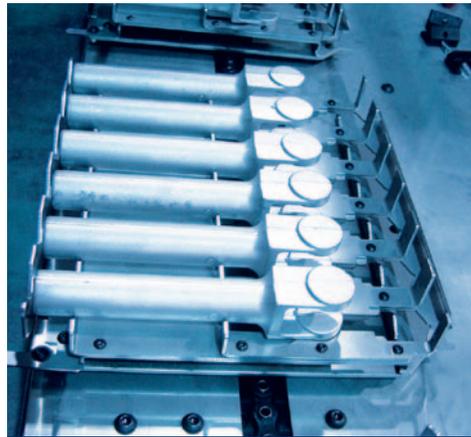
AUTOMATIC RETURN ON INVESTMENT

Workpiece magazine

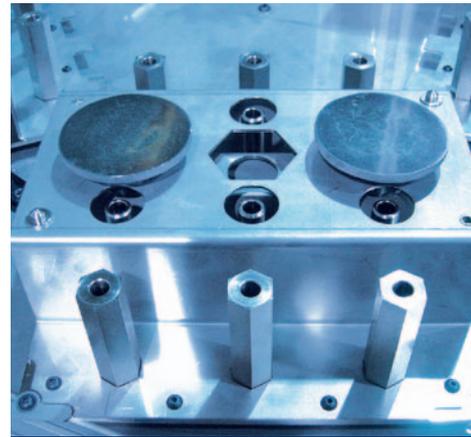
Blank-specific pallet attachments enable oriented loading of blanks into the machine and increase the parts stock for unmanned production. Changeover times are reduced or eliminated thanks to the perfect adjustment to the customer's parts.



4-station pallet attachment for tees



6-station pallet attachment for articulated brackets



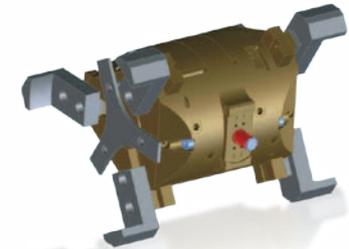
Multi-pallet attachment for a family of parts



4-station pallet attachment for valve caps



20-station pallet magazine with customer-specific pallets



2 x 3-jaw double gripper head

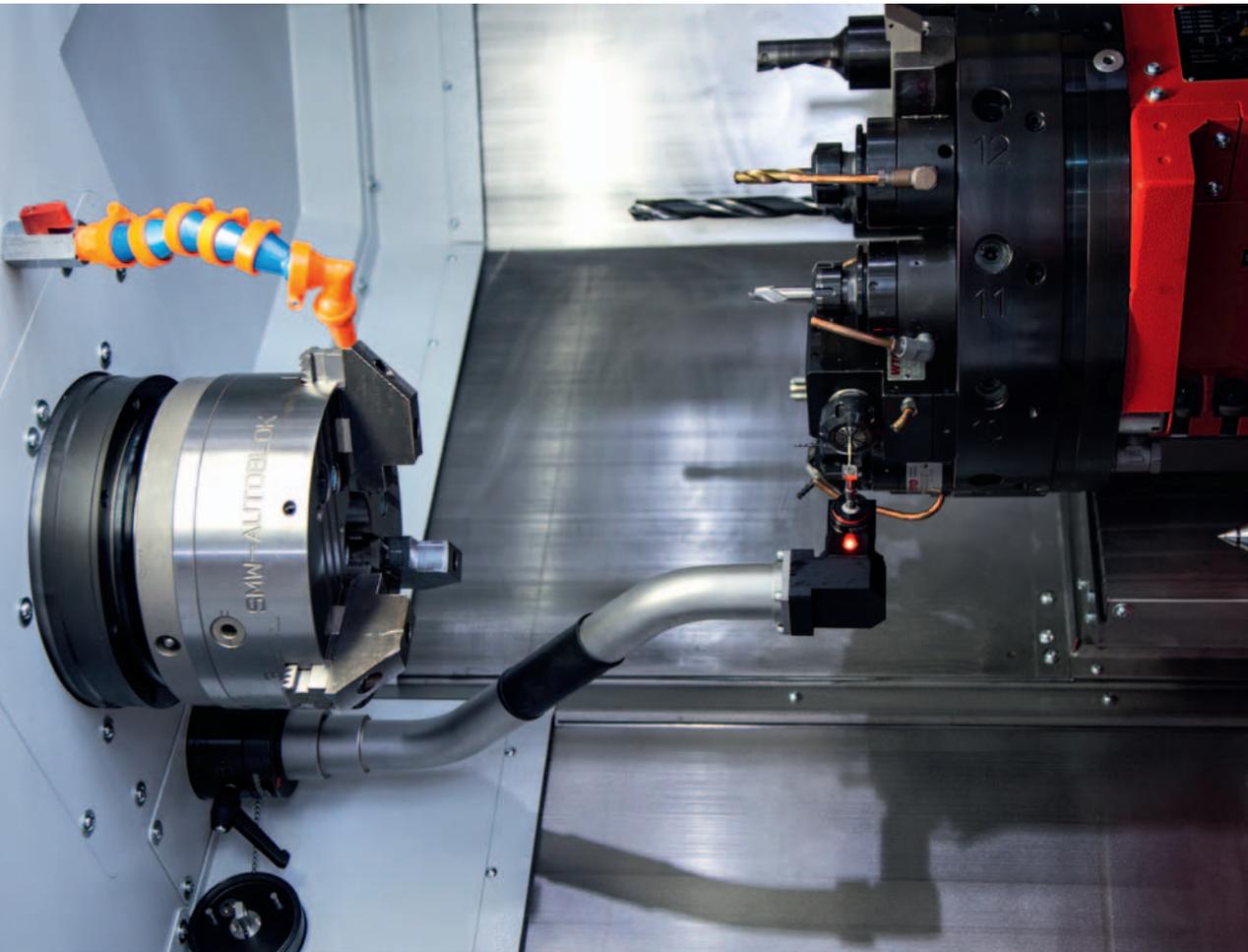


4 x 3-jaw gripper head



Shaft gripper head

OPTIONS



TOOL MEASUREMENT

The optional tool measuring sensor in the work area allows for fast and precise tool measurement within the machine. It is manually mounted below the main spindle. After use, it is removed and placed onto a tray on the left-hand side of the machine casing.



INCREASED COOLANT PRESSURE

A 14 bar coolant pump is available as an option and alternative to the 3.5 bar version. It completes the pumps in the basic machine. For maintenance purposes and to clean the coolant tray, the pumps can easily be swung out so that the coolant tray can be pulled out towards the front.



BELT FILTER SYSTEM

If required, it is possible to install an optional 600-litre belt filter system with 25 bar high-pressure coolant pumps. It increases both the cooling emulsion volume and the coolant's service life.



SPIN WINDOW

The optional spin window allows for a perfect view into the work area, also during machining with coolant. Thanks to the spinning pane, the coolant is slung away immediately after the impact. Thus, the pane remains perfectly clear.



MEASURING SENSOR STORAGE

Protected storage area for the measuring sensor and the adjustment gauge.



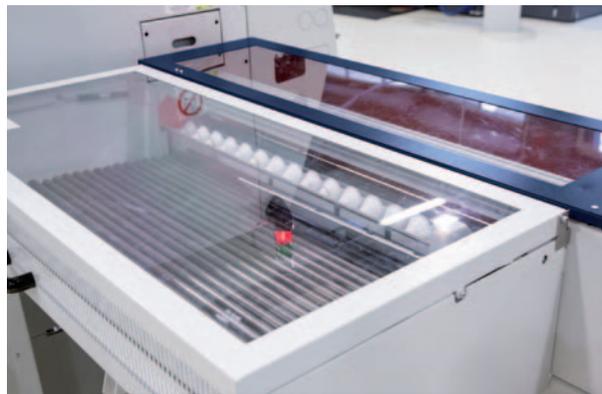
FINISHED PARTS CONVEYOR

The finished parts catcher places the machined parts onto a collector belt. Since the belt is clocked, the parts – which are often very complex – are kept from falling on top of each other.



EMCO SHORT LOADER

In order to tackle the ever-increasing pressure relating to machine footprints, EMCO has developed the most compact short loader available on the market: EMCO SL 1200.



MATERIAL SUPPORT

The material support attached to the back of the SL 1200 features a surface of 560 x 1210 mm and allows stocking a large number of bars. This allows for unmanned production. To ensure compliance with the safety guidelines, the material support is covered by a hood.

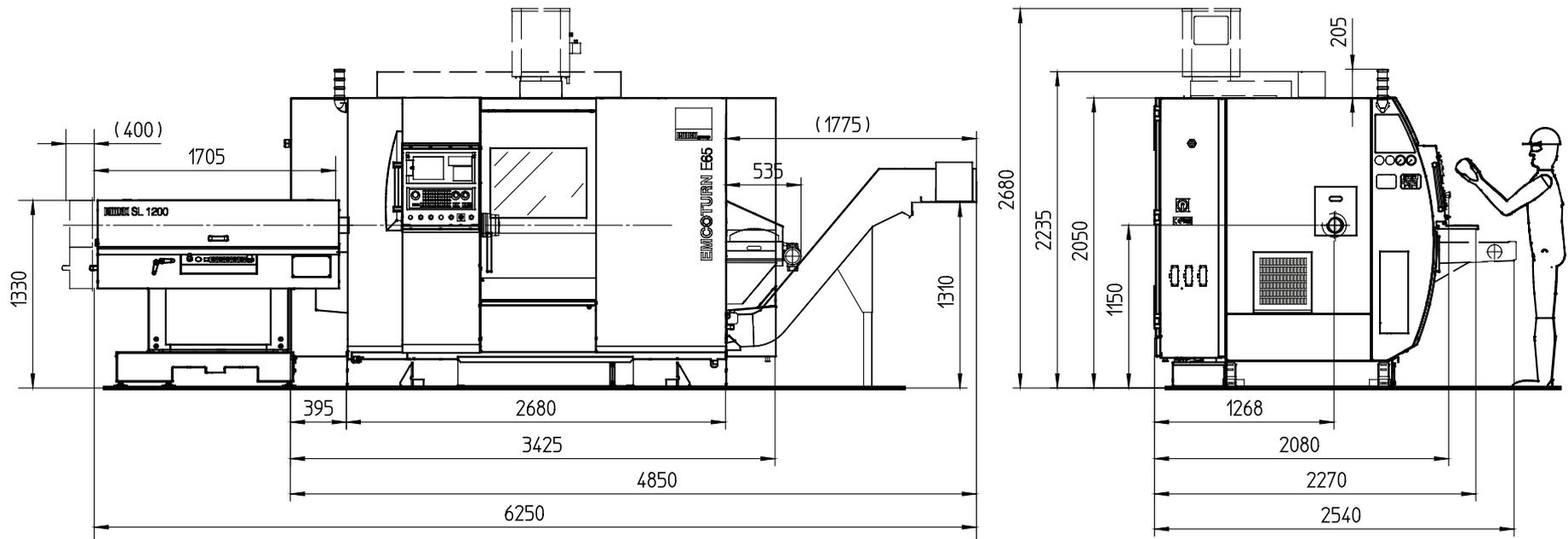


OPERATING PANEL

The operating buttons and the diameter adjustment are located on the front side of the SL 1200. If required, the loader can easily be moved 400 mm to the left.

MACHINE LAYOUT

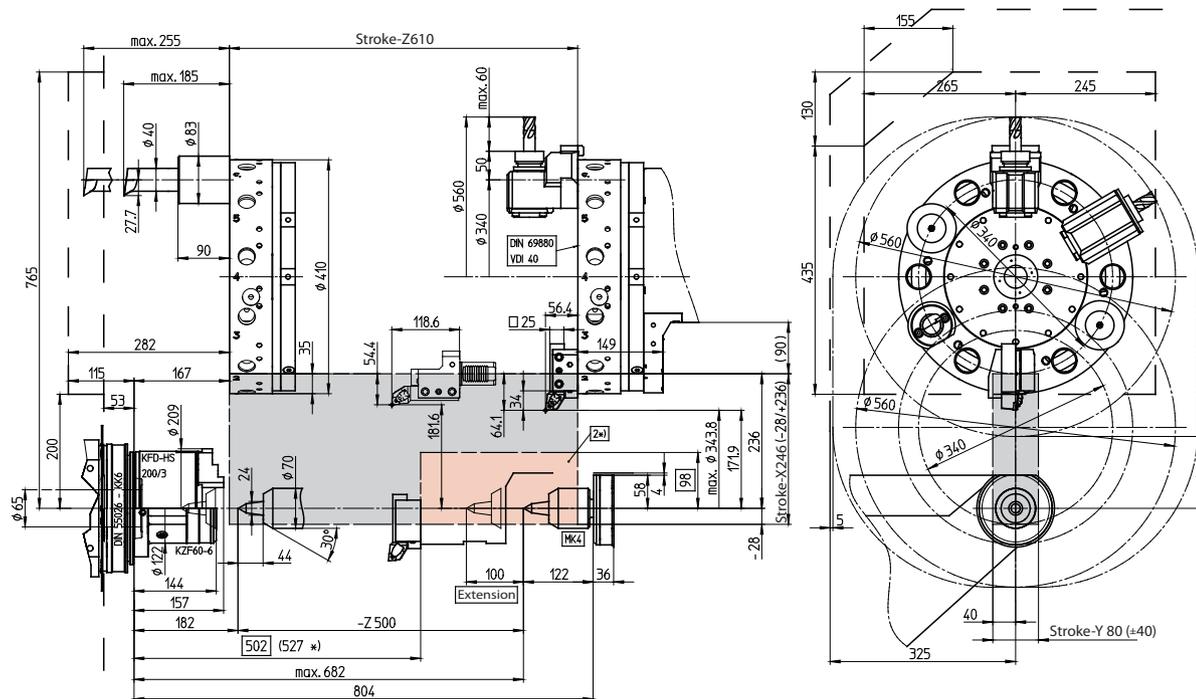
Machine layout E65
with EMCO SL1200



Specifications in millimeters

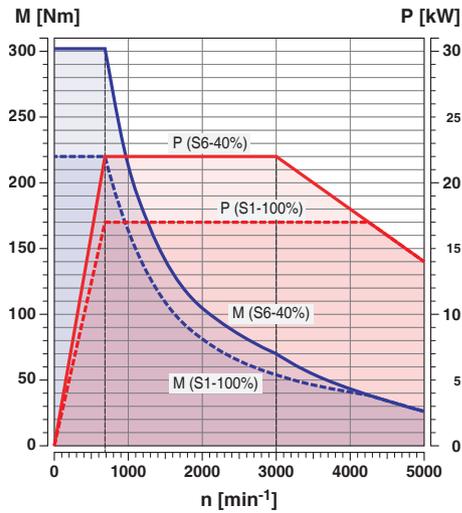
WORK AREA

Work area E65 with
tailstock - VDI40

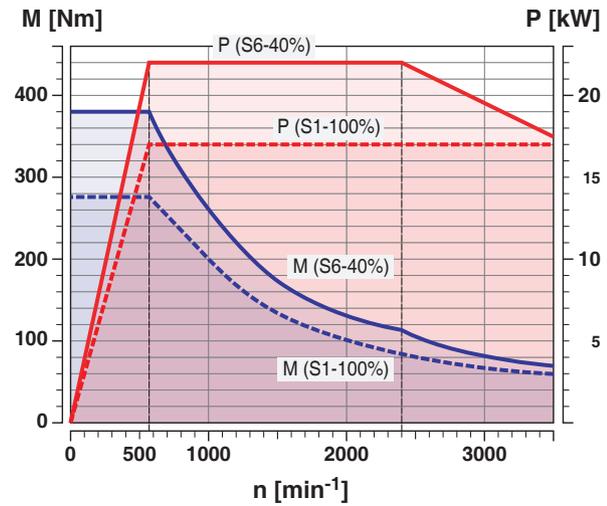


- *) Machine without Y axes
- 2*) through Software limit switches collision-protected area

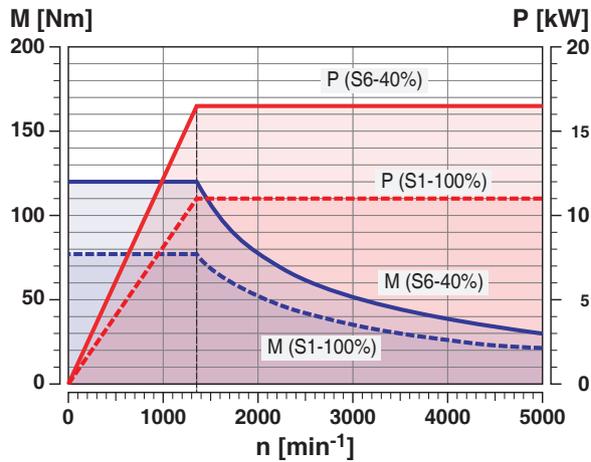
POWER AND TORQUE



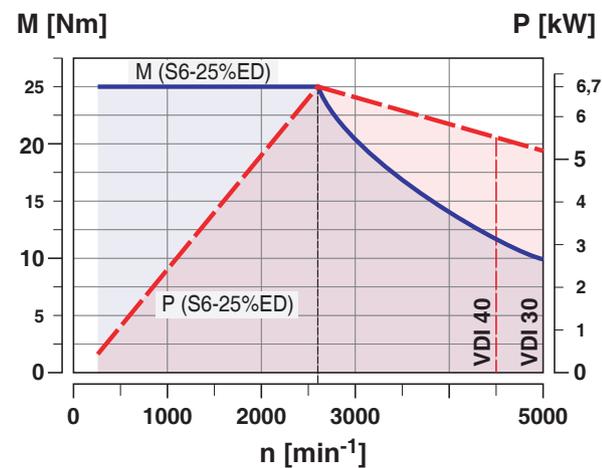
Motor characteristics for main spindle size 65



Motor characteristics for main spindle size 95



Motor characteristics for counter spindle



Tool turret motor characteristics for driven tools

Technical Data

Work area

| | |
|---|--------------|
| Swing over bed | Ø 610 mm |
| Swing over slide | Ø 360 mm |
| Distance between centers on tailstock version | 682 mm |
| Main spindle / counter spindle distance | 840 mm |
| Maximum turning diameter | Ø 500 mm |
| Maximum part length | 520 mm |
| Maximum bar diameter | Ø 65 (95) mm |

Travel

| | |
|-----------------|---------------|
| Travel in X / Z | 260 / 610 mm |
| Travel in Y | 80 (+/-40) mm |

Main spindle

| | |
|---|---------------------|
| Speed range | 0 – 5000 (3500) rpm |
| Maximum drive power | 22 kW |
| Max. torque on the spindle | 305 (380) Nm |
| Spindle nose DIN 55026 | A2-6 (A2-8) |
| Spindle bearing (inner diameter at front) | 105 (160) mm |
| Spindle bore hole | 73 (105) mm |

Counter spindle

| | |
|--|--------------|
| Speed range | 0 – 5000 rpm |
| Maximum drive performance | 16,5 kW |
| Max. torque on the spindle | 125 Nm |
| Spindle nose DIN 55026 | A2-6 |
| Spindle bearing (inside diameter at front) | 105 mm |
| Spindle bore hole | 73 mm |

Tailstock

| | |
|----------------------|------------------|
| Tailstock travel | 500 mm |
| Maximum thrust | 8000 N |
| Maximum travel speed | approx. 20 m/min |
| Tailstock bore taper | MT4 |

C-axis

| | |
|-----------------------|----------|
| Round axis resolution | 0,001° |
| Rapid motion speed | 1000 rpm |

Tool turret

| | |
|---------------------------------------|----------------------|
| Number of tool positions (all driven) | 12 |
| VDI shaft (DIN 69880) | 30 (40) mm |
| Tool cross-section for square tools | 20 x 20 (25 x 25) mm |
| Shaft diameter for boring bars | 32 mm |
| Tool change time | 0,2 (0,3) sec. |

Driven tools DIN 5480

| | |
|---------------------|---------------------|
| Speed range | 0 – 5000 (4500) rpm |
| Maximum torque | 25 Nm |
| Maximum drive power | 6,7 kW |

Feed drives

| | |
|--|----------------------|
| Rapid motion speed X / Y / Z | 30 / 15 / 30 m/min |
| Feed force in the X / Y / Z | 5000 / 7000 / 7000 N |
| Feed force in the Z2 axis (counter spindle) | 8000 N |
| Positioning scatter Ps VDI 3441 in X / Y / Z | 2 / 2 / 2 µm * |

* For machines including laser measurement and pitch error compensation

Coolant system

| | |
|-----------------------------|-------------------|
| Tank volume (optional) | 230 (830) liters |
| Coolant pressure (optional) | 3,5 (14 / 25) bar |
| Pump power (optional) | 0,57 (2,2 / 3) kW |

Power consumption

| | |
|----------------|--------|
| Connected load | 39 kVA |
| Compressed air | 6 bar |

Dimensions and weight

| | |
|--------------------------------------|-----------------|
| Height of spindle center above floor | 1150 mm |
| Machine height | 2100 mm |
| Machine footprint L x D | 3450 × 2080 mm |
| Total weight | approx. 6500 kg |

EMCO SL1200

| | |
|-------------------------|---------------------|
| Bar length | 250 – 1100 mm |
| Bar diameter | approx. Ø 8 – 95 mm |
| Material support | ca. 560 mm |
| Length | 1700 mm |
| Width | 1250 mm |
| Height (Spindle center) | 1090 – 1380 mm |
| Weight approx. | approx. 500 kg |

Safety devices CE compliant

beyond standard /

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