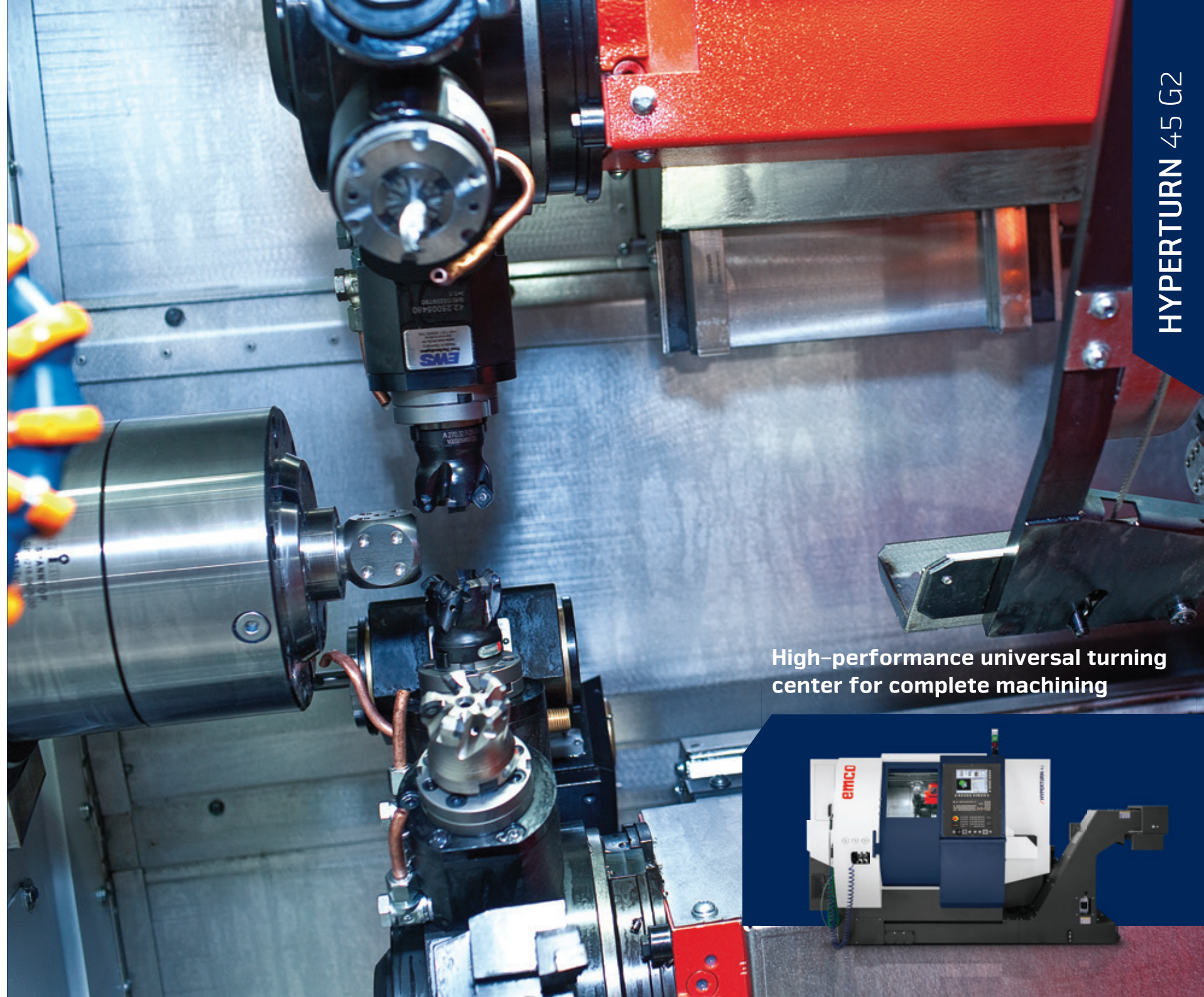


**emco**



High-performance universal turning center for complete machining



**HYPERTURN 45 G2**



# / HIGHLY PRO- DUCTIVE AND YET EXTREMELY FLEXIBLE

The new Hyperturn 45 is characterized by its dynamics and great flexibility. With two high-performance spindles, two tool turrets and a Y-axis, it is designed to handle challenging production requirements with ease. Its compact dimensions and high static and dynamic rigidity provide the best possible conditions for manufacturing medium to large quantities of precision workpieces. It is particularly suited to use in general machinery and equipment engineering and also in the high-precision areas of medical technology and the jewelry industry.



Hip joint cup  
(Titanium alloy)

## 1 UPPER TOOL TURRET

- / 12-station tool turret
- / VDI25 quick-change system
- / 12 driven tool stations
- / Servo-controlled
- / Rigid tapping
- / Polygonal turning, etc.

## 2 MAIN SPINDLE

- / Integrated, water-cooled spindle motor (ISM)
- / High drive power: 15 kW
- / High torque: 100 Nm
- / Wide speed range: 0 – 7000 rpm
- / Extremely dynamic
- / Bar capacity  $\varnothing$  45 (51) mm

## 3 COMPACT MACHINE DESIGN

- / Minimal floor space

## 4 LOWER TOOL TURRET

- / 12-station tool turret
- / VDI25 quick-change system
- / 12 driven tool stations
- / Servo-controlled
- / Rigid tapping
- / Polygonal turning, etc.

## 5 Y-AXIS

- / Travel +40 / -30 mm
- / 90° implemented in the machine construction
- / Large distance between guides
- / Stable and compact construction

## 6 CONTROL UNIT

- / Ergonomically placed
- / Sinumerik ONE with 22" touch screen
- / Fanuc 31i-B with 15" colour screen
- / incl. ShopTurn or ManualGuide i

## 7 CHIP CONVEYOR

- / Slant-bed conveyor belt
- / Ejection height 1200 mm
- / Integrated coolant tank 300 l
- / Turret pumps: 2 x 14 bar
- / Flushing pumps: 2 x 3.7 bar

## 8 COUNTER SPINDLE

- / Integrated, water-cooled spindle motor (ISM)
- / High drive power 15 kW
- / High torque: 100 Nm
- / Wide speed range: 0 – 7000 rpm
- / Highly dynamic
- / Bar capacity  $\varnothing$  45 mm (optional)



Machine with optional equipment

# Structure

## 1 ROLLER GUIDES

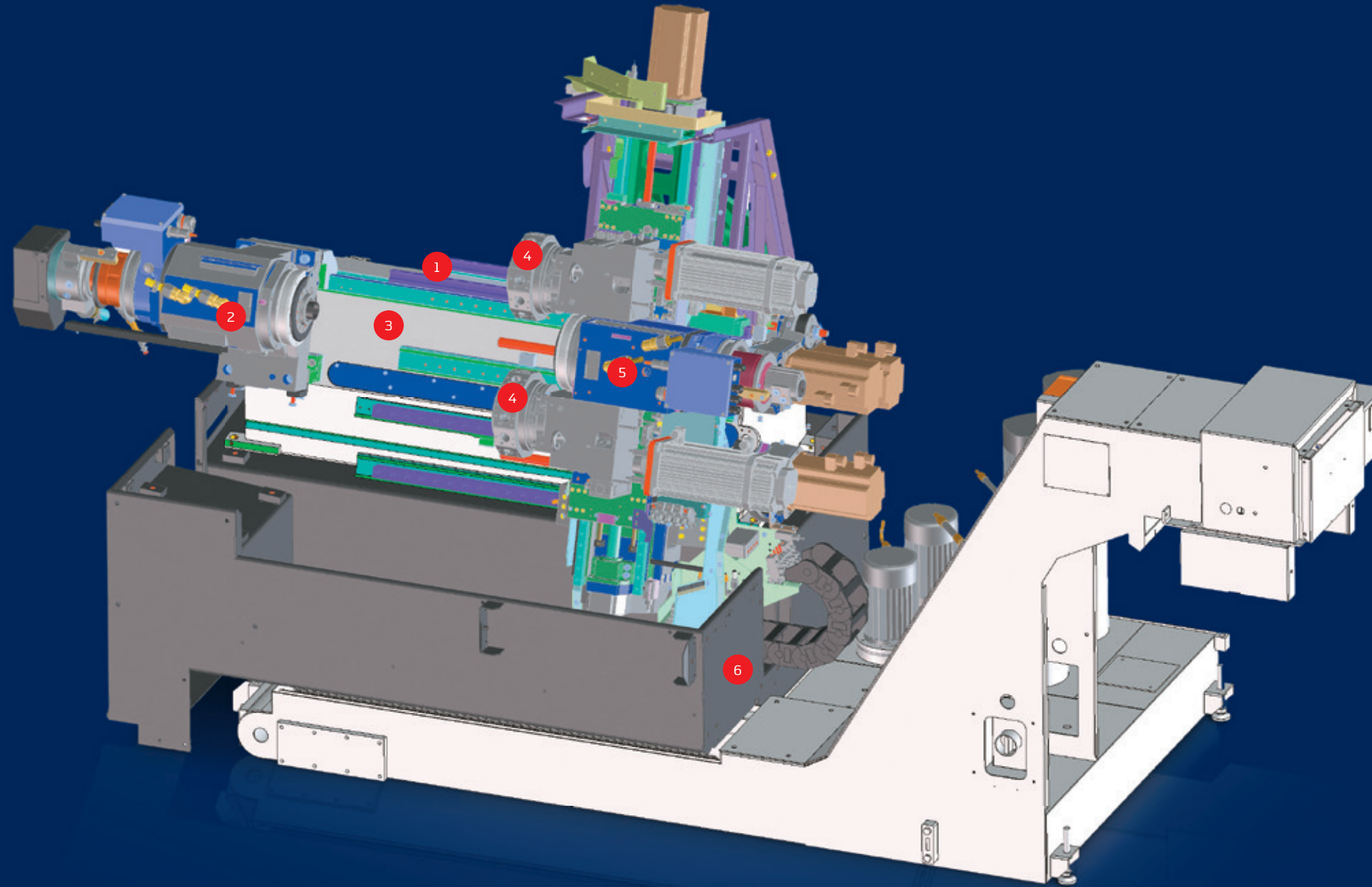
- / In all linear axes
- / Preloaded and backlash-free
- / High rapid motion speeds
- / No wear
- / Minimal lubrication required

## 2 MAIN SPINDLE

- / Wide speed range
- / C-axis for milling
- / Spindle clamp
- / A2-5 spindle nose
- / Hollow clamping system  $\varnothing 45$  (51) mm
- / Programmable clamping stroke monitor

## 3 MACHINE BASE

- / Extremely rigid, welded-steel machine construction
- / Compact design
- / Very high thermostability
- / Filled with vibration-absorbing material



## 4 TOOL TURRET

- / 2 x 12-position VDI25 turrets
- / HSC-tool turret optional
- / No alignment of the tool holder
- / Can be used flexibly on both spindles
- / Swivel speed adjustable with override

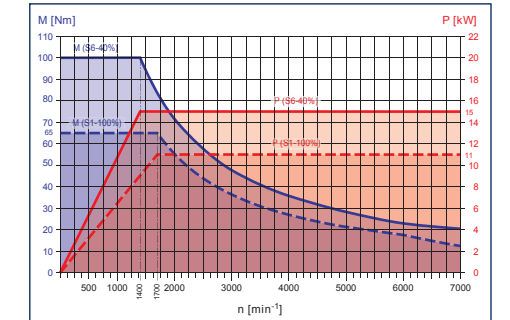
## 5 COUNTER SPINDLE

- / Wide speed range
- / C-axis for milling
- / Spindle clamp
- / A2-5 spindle nose
- / Full clamping system with parts ejector  $\varnothing 45$  mm
- / Programmable clamping stroke monitor

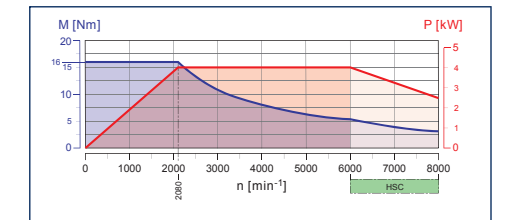
## 6 MACHINE STAND

- / Solid welded-steel design
- / Thermally separate from the machine base
- / Filled with vibration-absorbing material
- / 100% sealed against coolant leaks

# Performance and Torque



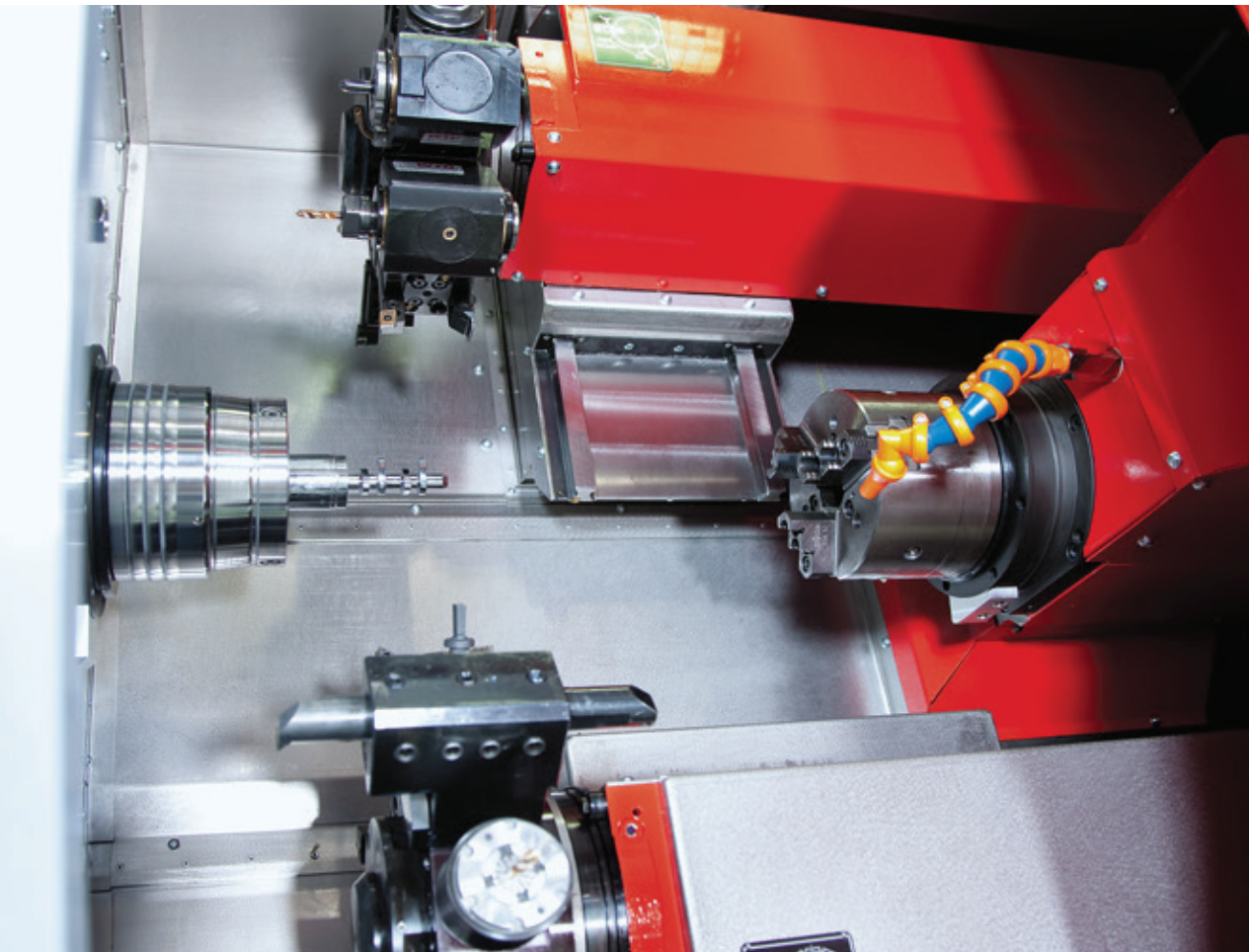
HYPERTURN 45 main spindle / counter spindle



Tool turret - driven tools

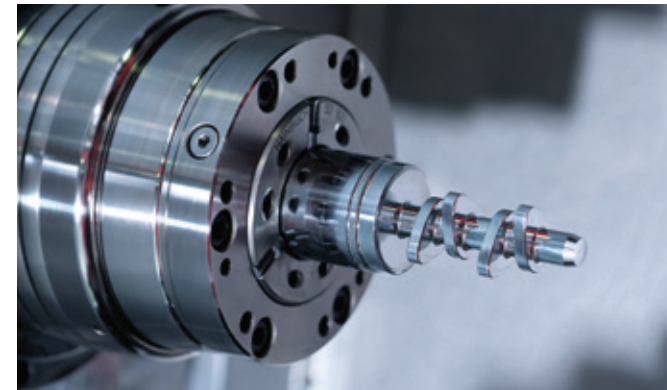


# TECHNICAL HIGHLIGHTS



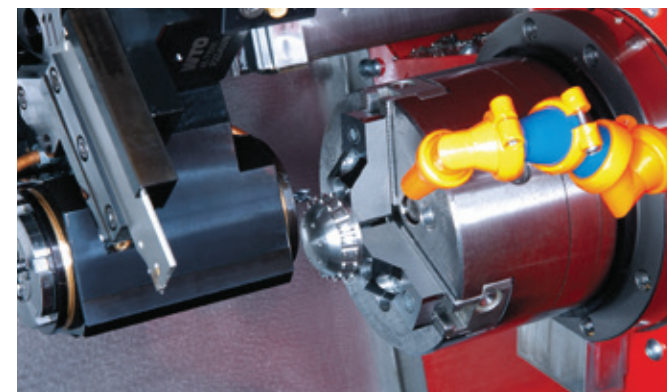
## WORK AREA

The generous work area provides space for several tools on both turrets and ensures a continuous chip flow even when few machine technicians are at work. Additional coolant pumps and a sophisticated pipe system clears the chips into the chip conveyor.



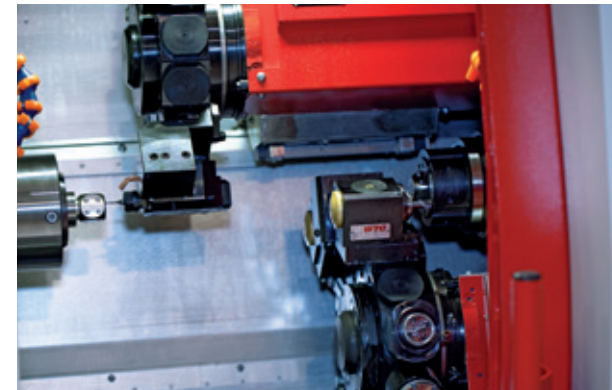
## MAIN SPINDLE

The 15 kW motor spindle with its integrated water cooling system provides high dynamics but low thermal displacement. A high-resolution shaft encoder provides the optimum conditions for accurate contour milling and drilling.



## COUNTER SPINDLE

A 15 kW, water-cooled spindle motor ensures dynamic performance and high levels of precision. The standard machine is equipped with a coolant-fed parts ejector. This places the finished workpieces in the parts catcher and at the same time clears the clamping surface from chips. Additionally, a flexible coolant pipe is mounted above the counter spindle for cleaning.



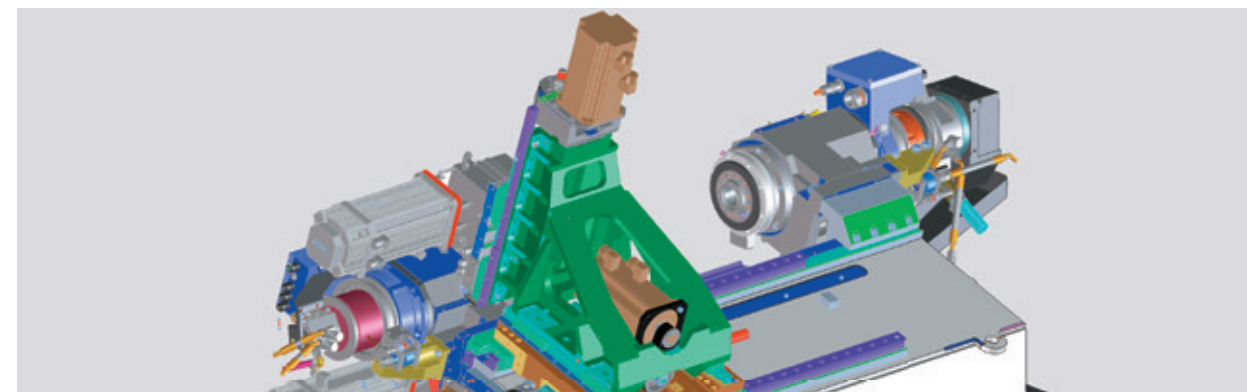
## TOOL TURRETS

Rapid 12-fold servo turrets with very short cycle times for standardised VDI25 tools. All stations may accommodate driven tool holders for drilling, milling or thread-cutting operations. The operator may influence the swing speed at any time.



## HSC TOOL TURRETS

For the economical production of complex turn/mill components with predominantly milling and drilling operations, there are optionally HSC tool turrets with a larger speed range (0 – 8000 rpm), higher duty cycle and oil / air lubrication in the transmission available.

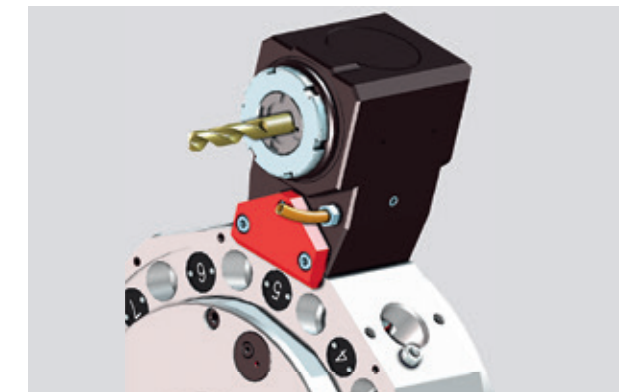


## Y-AXIS

The Y axis is integrated into the basic machine structure and stands at 90° to the X axis. Extremely short projections form the basis for solid turning and drilling operations and also for milling operations without interference contours.

## HIGHLIGHTS

- / Highly dynamic drives in all axes
- / Two high-performance work spindles
- / Two highly flexible, 12-station tool turrets
- / Stable Y-axis with 70 mm travel
- / State-of-the-art control and drive technology
- / User-friendly dialog control with 3D graphics
- / Compact dimensions
- / Made in the Heart of Europe



## TOOL ALIGNMENT PLATE

The angled workpiece holders provided by EMCO are delivered along with a precise alignment plate. Thus, it is not required to align the holders in the machine. The parallelism of the locating bore to the main spindle axis is guaranteed by the precise adjustment plate attached to the holders.



# NETWORKS ARE CREATED INDIVIDUALLY – OUR SOLUTIONS AS WELL



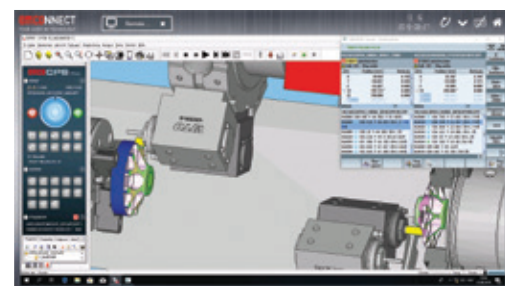
Staying in touch is important not only among human beings. Persons, machines and the whole production environment must also be connected perfectly and safely in order to ensure efficient procedures during the production process. With EMCONNECT, the machine is optimally equipped for this purpose. The optional EMCONNECT Digital Services offer innovative online services for optimized machine operation. The user has always the control of the machine status. The automatic notification in case of malfunctions or standstill of the machine as well as the extended capabilities for remote maintenance, minimise downtimes.



## Integration into control

EMCONNECT offers several possibilities of operation according to different situations. For quick access, apps may be used simultaneously in the side panel of controlling.

In this way, you can always look at your familiar numerical control, the well-known centrepiece of the machine.



## An innovative concept

These powerful apps may be used independently from the control, while in the background the machine is busy in the production process. With only one click, you can change at any moment between numerical control and EMCONNECT. This is possible with the help of an innovative and ergonomic control panel, equipped with a modern 22" multi-touch display, an industrial PC with associated keyboard and HMI hotkeys.



## The control panel as central platform

With EMCONNECT, the control panel of the machine becomes the central platform for the access to all the operative functions. The user gets every type of support from the apps, which directly provide all the necessary applications, data and documents. In this way, EMCONNECT makes an important contribution to a highly efficient processing at the machine.



## Comprehensive connectivity options

With the remote support, the web browser and the remote desktop, there are numerous connectivity options, even beyond the direct production environment. With the help of the integrated remote support, it is easily possible to carry out the remote diagnosis and remote maintenance. The optionally available OPC UA interface enables data exchange with the IT system environment and interaction with other machines for automation at shop floor level.

## EMCONNECT HIGHLIGHTS AND FUNCTIONS

### / Fully connected

Connection to all applications via remote control of the office computer and the web browser

### / Structured

Clear monitoring of the machine state and the production data

### / Customized

Open platform for modular integration of customer-specific applications

### / Compatible

Interface for seamless integration into the operating environment

### / User-friendly

Intuitive and production-optimized touch operation

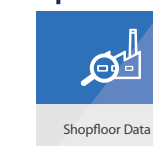
### / Future-proof

Continuous extensions as well as easy updates and upgrades

## Standard Apps

Control	Dashboard
Machine Data	System
Remote Desktop	Web Browser
Remote Support	Settings
Cutting Calculator	Calculator
Notes	Service
Documents	EMCO TechSheet
GD&T	File Import
Shopfloor Data	Thread Reference
	Tricalc

## Optional





/ Ing. Johann Brisker  
Brisker GmbH

*"All EMCO turning machines are automated with short bar or bar loaders, which frees up employees for other tasks and, as a consequence, increases productivity."*

## / The EMCO short bar loaders. Universal and powerful.



## SHORT AND TO THE POINT.

The EMCO SL1200 is the perfect solution for automatic feeding and loading of cut-to-length bars. The key advantages are a small footprint and rapid loading times resulting from shorter strokes.

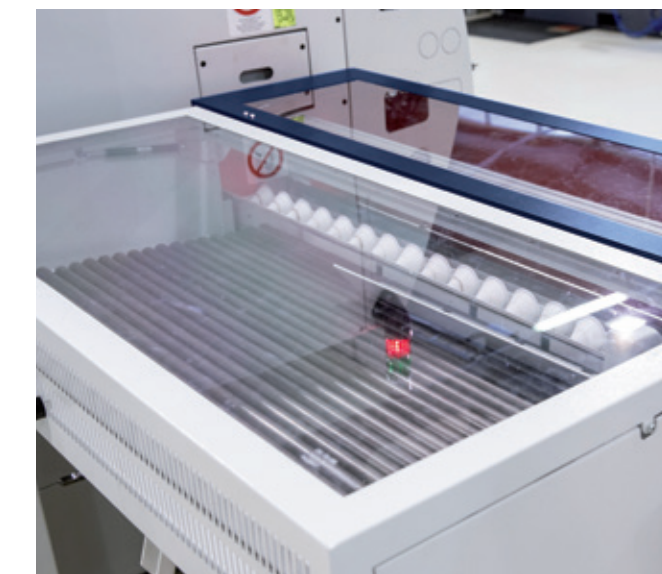
The technology. The SL1200 can be used immediately as a "plug-and-play" solution. Their extremely small footprint enables processes to be automated even if space is tight. Apart from complying with the latest safety requirements, it is easy to operate and moveable

for service purposes. Besides, it can comfortably be incorporated into the production process using the machine control's programme input masks. Minimum setup efforts are required when switching over to other bar diameters.



### EMCO SL1200

Space-saving and cost-effective bar loading magazine. Operation and programming could not be easier. May also be used for loading single items through the lathe's main spindle.



### MATERIAL STORAGE

The material storage surface with a length of 560 mm is arranged at the rear of the bar loader in a manner with no influence whatsoever on the space available. Depending on the diameter it is possible to store a different number of short bars.

## THE BENEFITS

- / Small footprint
- / Easy to use
- / Short feed times
- / Fast, straightforward changeover
- / Option to load individual workpieces
- / Central diameter adjustment
- / The loader operates without oil
- / Ergonomic EMCO design

Technical data	SL1200
Bar diameter	Ø 8 – 95 mm
Max. bar length	1200 mm
Min. bar length	150 mm
Max. bar weight	45 kg
Material storage length	approx. 560 mm
Feed rate	0 – 60 m/min
Bar change time	approx. 15 sec.
Dimensions (L x W)	1700 x 1250 mm
Weight	approx. 500 kg



# THE EMCO SWING LOADER. THE INTEGRATED SOLUTION.

Tailor-made solutions. For preformed blanks and parts with a diameter larger than the spindle capacity, we offer an integrated swing loader for fully automatic loading and part removal. This has been designed to form a harmonious single entity with the machine. The machine control system takes care of positioning. A short bar loader and a 3-meter bar loader are available from EMCO for workpieces from bar stock.



## ADVANTAGES

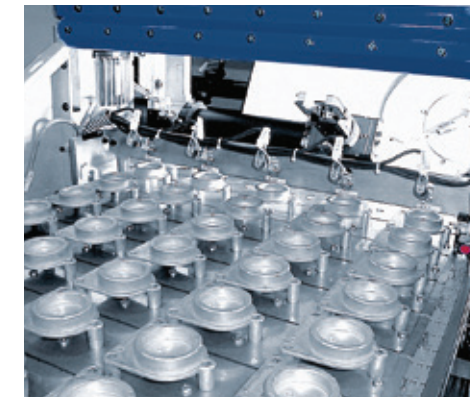
- / Fully automated loading and unloading of the workpieces
- / Short loading and unloading time
- / Flexible for shaft or flange parts
- / Oriented loading into the clamping device
- / Simple programming via the Sinumerik control
- / CNC-controlled movements

## MAXIMUM OUTPUT – MINIMUM SPACE REQUIRED.

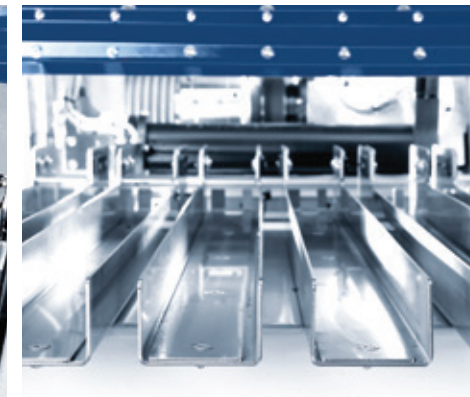
The EMCO swing loader is a universal loading system for all types of preformed blanks. It can be customized individually to the customer's requirements using numerous gripper and handling systems. How we do it: we standardize the components but create a customized solution. The result: a custom-tailored machine for the same price as a standard unit.

### Blank feeding systems, gripper and handling systems

Feed systems specific to particular blanks allow preformed workpieces to be loaded in the working spindle correctly oriented, which enables economical unmanned operation.



Large storage capacity chain feeding system for loading preformed blanks with the correct orientation.



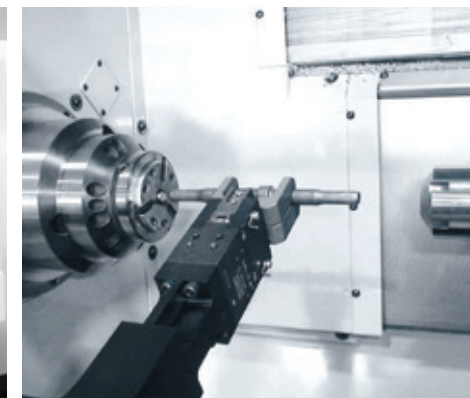
Multiple infeed chutes for loading rotationally-symmetrical blanks. The length of the blanks determines the number of infeed chutes.



Chain feeding system with V-supports for preformed shaft parts of various shapes.



Multiple infeed chutes for loading rotationally symmetrical blanks. A sensor monitors the availability of blank parts for each infeed chute.



Shaft gripper for automatically loading preformed shafts.

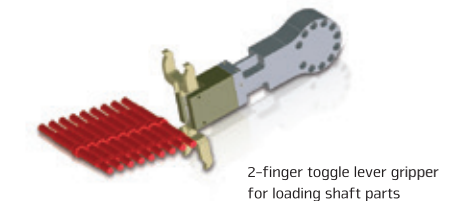


Fully automatic shaft loading. Feed-in via a conveyor belt, removal via the finished parts pick-up device.

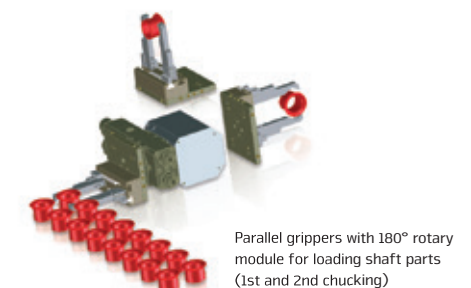
A wide range of gripper and handling systems.



2-finger gripper with 180° rotary module for loading blanks fed in vertically



2-finger toggle lever gripper for loading shaft parts



Parallel grippers with 180° rotary module for loading shaft parts (1st and 2nd chucking)



# THE EMCO GANTRY LOADER. INDIVIDUAL PROCESS OPTIMIZATION.

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



## ADVANTAGES

- / Fully automatic 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 spare time due to a loading hatch

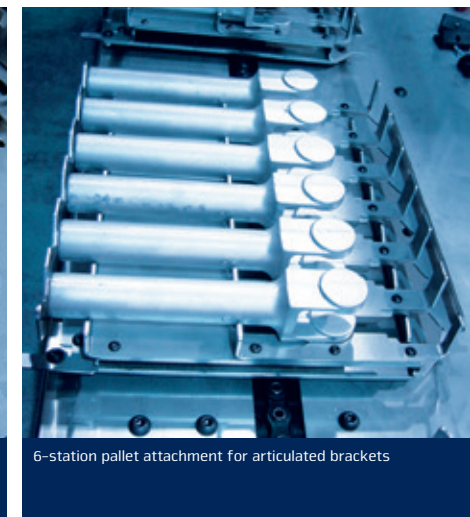
## AUTOMATIC RETURN ON INVESTMENT

### Workpiece magazine

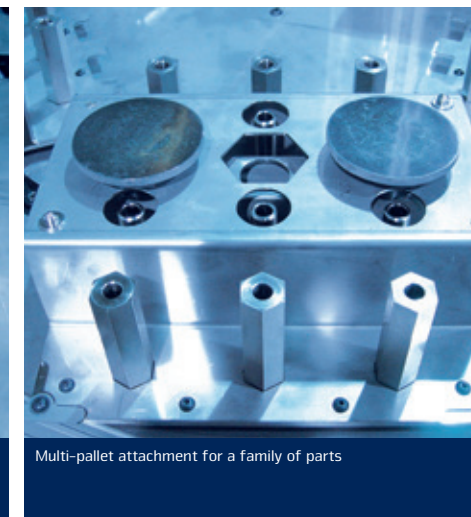
Blank-specific pallet attachments enable oriented loading of blanks into the machine and increase the parts stock for unmanned production. Changeover times are reduced or eliminated thanks to the perfect adjustment to the customer's parts.



4-station pallet attachment for tees



6-station pallet attachment for articulated brackets



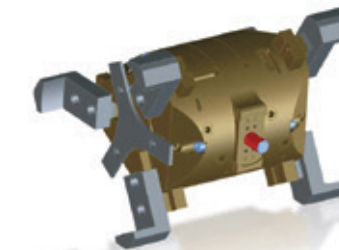
Multi-pallet attachment for a family of parts



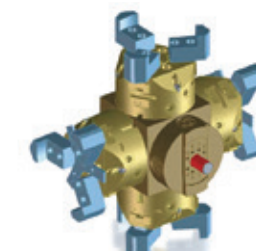
4-station pallet attachment for valve caps



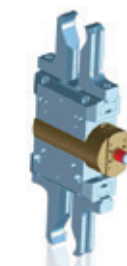
20-station pallet magazine with customer-specific pallets



2 x 3-jaw double gripper head



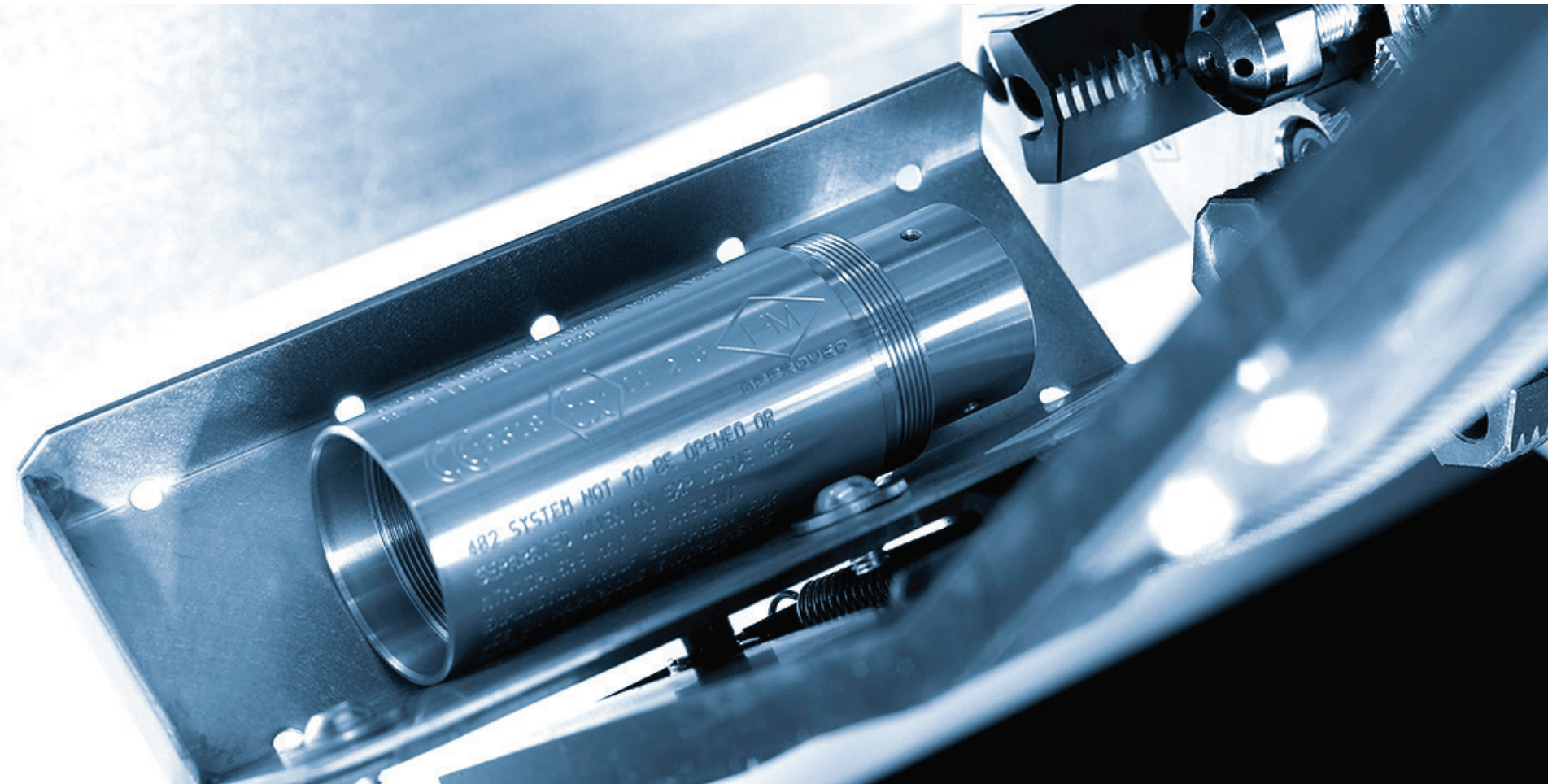
4 x 3-jaw gripper head



Shaft gripper head



## /OPTIONS



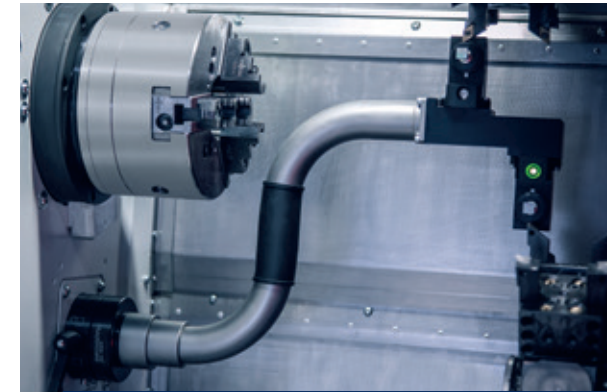
### PARTS CATCHER

The HYPERTURN 45's pneumatic parts catcher is controlled using M functions. When needed, it traverses to the front of the work area and travels to the spindle center. The finished part is removed from the clamping device and transferred to the catcher tray. The parts catcher then moves back to its initial position and the part is tipped into a catching box or onto a conveyor belt.

drive 1		drive 2		drive 3	
BRAKE	load alarm	BRAKE	load alarm	BRAKE	load alarm
1.5	4.5	1.5	4.5	1.5	4.5
100	100	100	100	100	100
95	97	91	90	90	90
97	97	90	91	90	90
100	97	90	90	100	100
95	97	90	90	90	90
100	100	100	100	100	100
95	90	100	97	95	90
95	90	100	97	95	90

### TOOL BREAKAGE MONITORING SYSTEM

The tool status is monitored by evaluating the load on the various axis drive motors. Excessive loads point to wear or broken tools. Too low a load indicates a tool is missing.



### TOOL GAUGE

The tool gauge allows tools to be measured quickly and accurately on both turrets in the work area. It is mounted manually in the holder in the work area and, after use, is replaced in a storage space in the machine housing.



### BAND FILTER SYSTEM WITH HIGH-PRESSURE COOLANT PUMPS

A coolant pressure of 25/40/60/80 bar can be set as necessary. This enables coolant-fed drilling and milling tools to be used to their best advantage.



### FINISHED PART CONVEYOR

With the parts catcher the finished parts are placed on an accumulating belt, with a usable storage area of 350 x 870 mm. The belt is indexed to prevent the parts, some of which are very complex, from falling on top of each other.



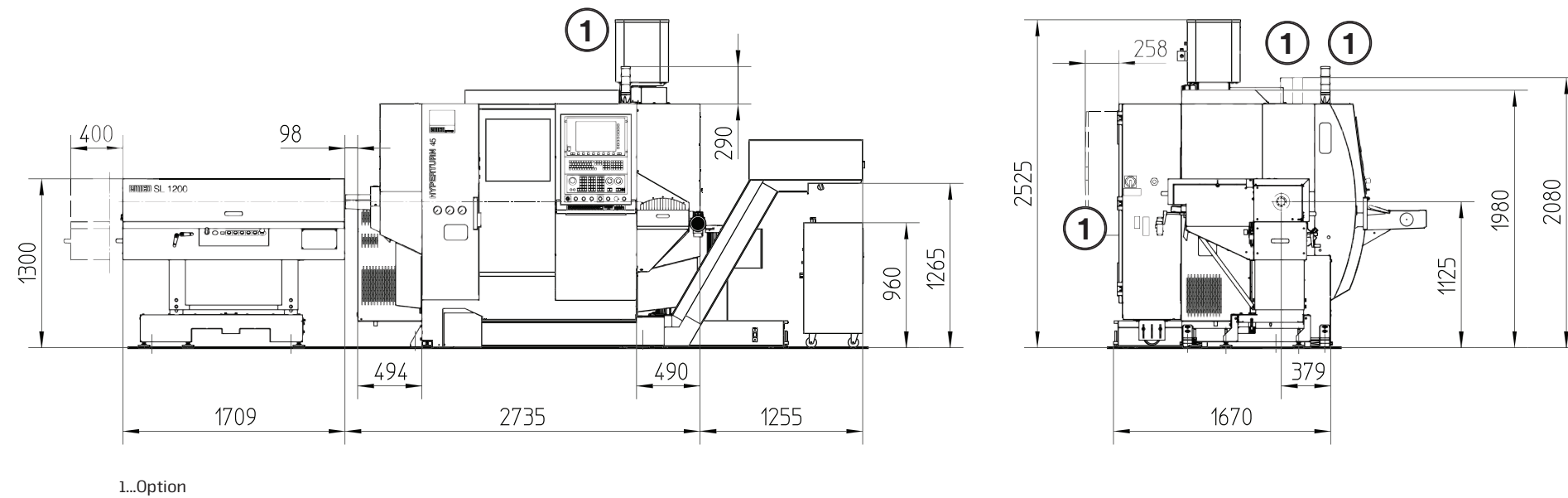
### UNLOADING THROUGH THE COUNTER SPINDLE

Long, thin workpieces with diameters of up to 45 mm can be removed from the machine using the counter spindle. Parts are mostly stored on a sloping surface or, if necessary, also on a controlled conveyor to prevent any kind of damage occurring.



# / MACHINE LAYOUT AND FLOOR PLAN

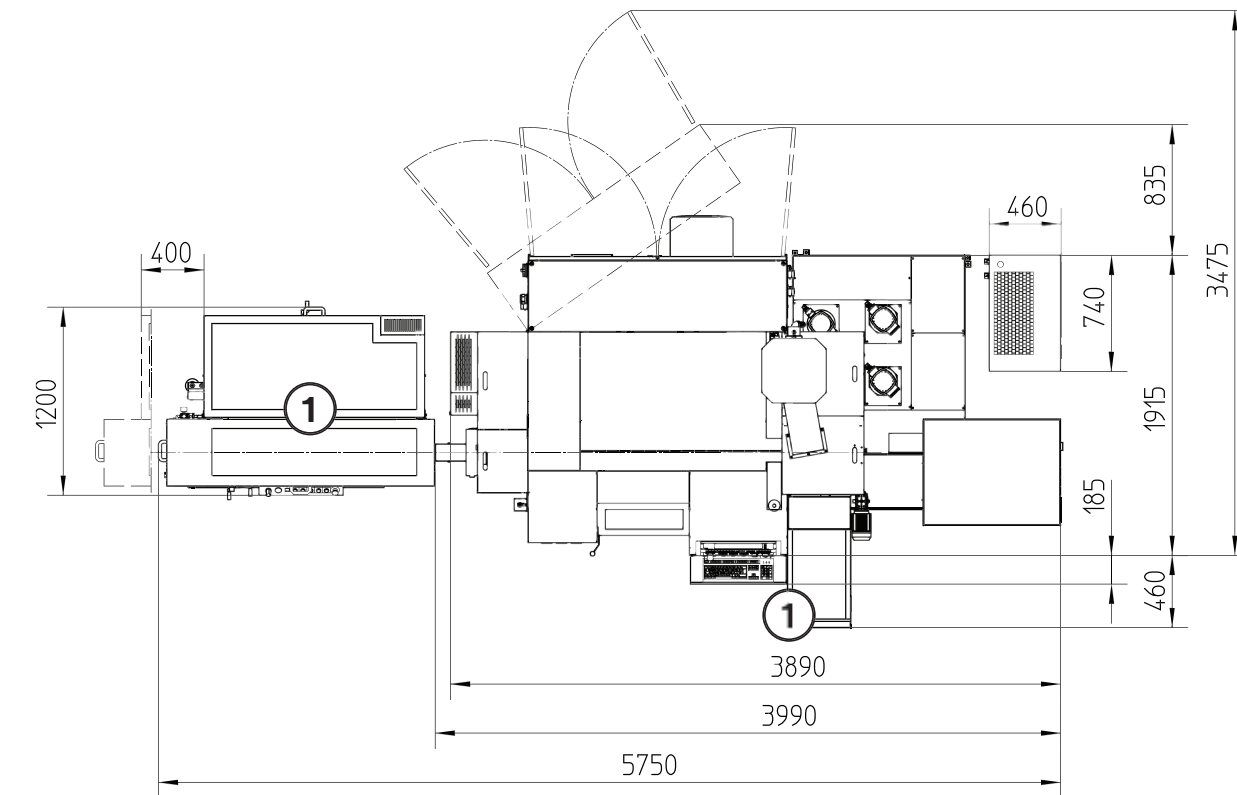
Machine layout HT45 G2  
with EMCO SL1200



Indications in millimetres

# / MACHINE LAYOUT AND FLOOR PLAN

Floor plan HT45 G2 with  
EMCO SL1200

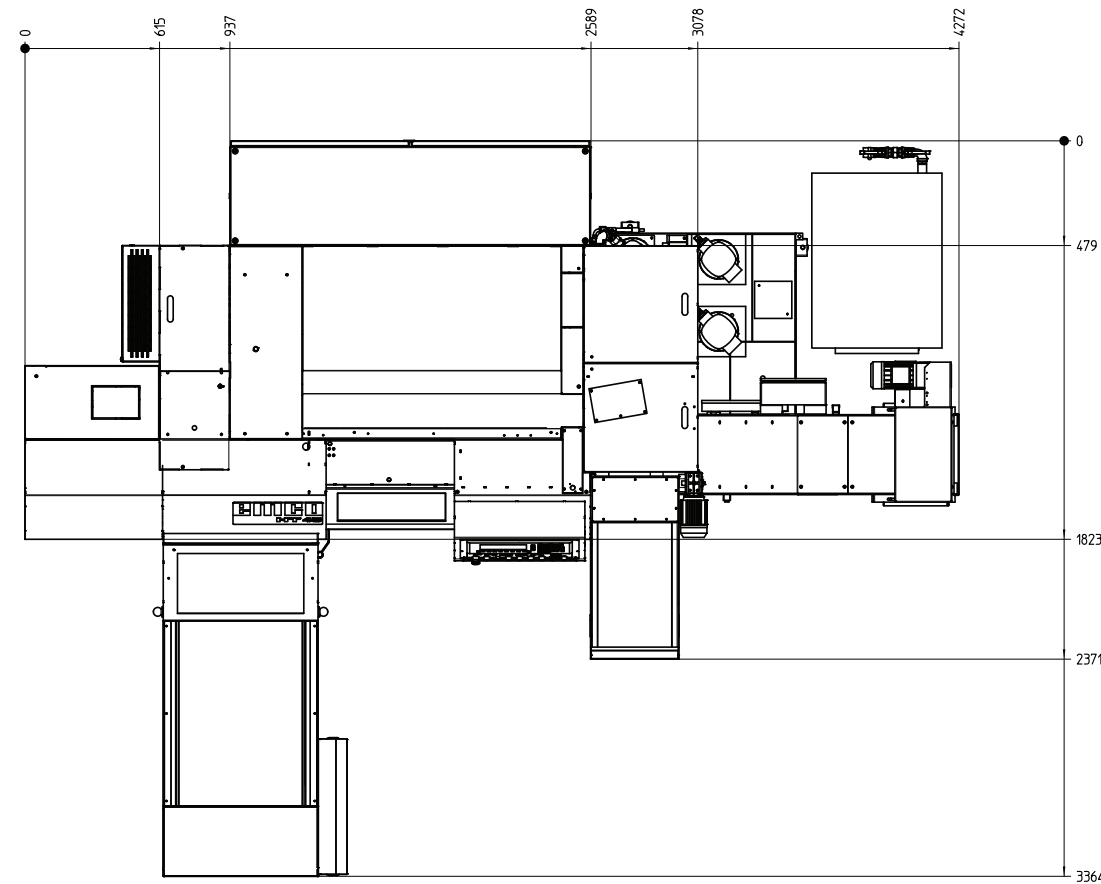


Indications in millimetres



# MACHINE LAYOUT AND FLOOR PLAN

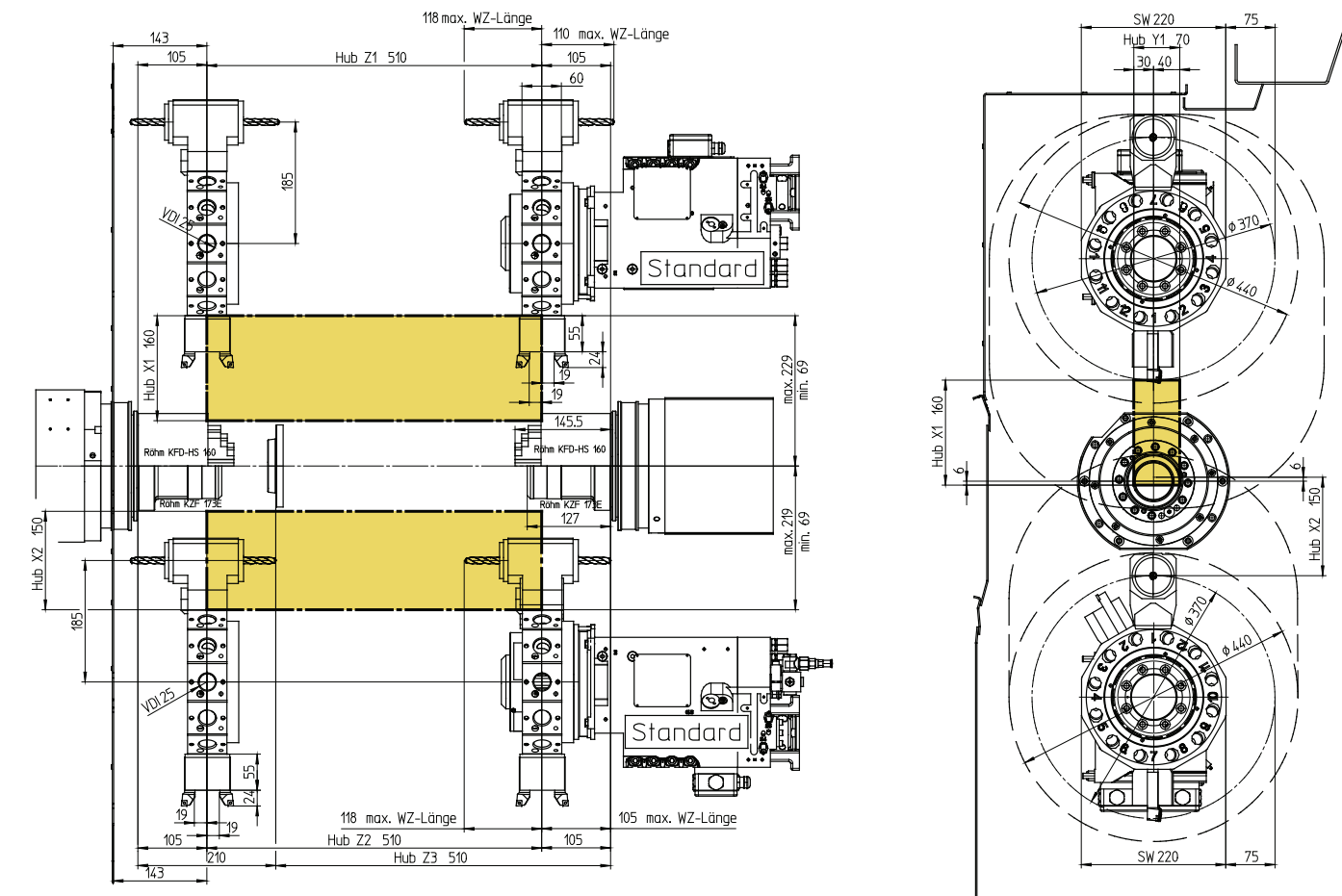
Floor plan HT45 G2 with  
EMCO swing loader



Indications in millimetres

# WORK AREA

Work area HT45 G2  
with standard tool turrets

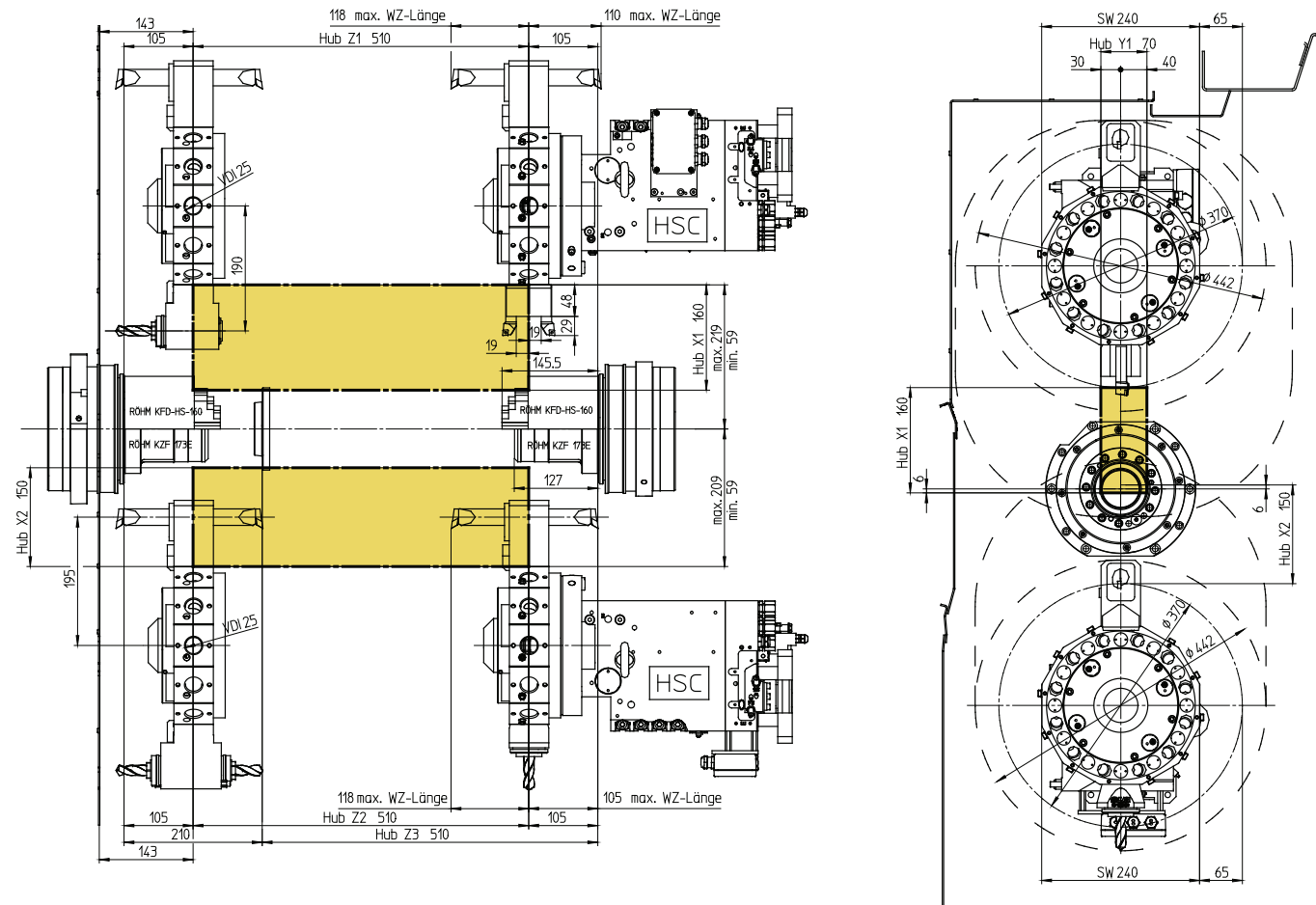


Indications in millimetres



WORK AREA

Work area HT45 G2  
with HSC-tool turrets



Indications in millimetres

## TECHNICAL DATA

## Working area

Swing over bed	Ø 430 mm
Swing over cross slide	Ø 300 mm
Distance from main spindle to counter spindle	720 mm
Max. turning diameter	Ø 300 mm
Max. part length	480 mm
Max. bar capacity	Ø 45 (51) mm

## Travel

Slide travel in X / X2	160 / 150 mm
Slide travel in Z / Z2 / Z3	510 / 510 / 510 mm
Travel in Y	+40 / -30 mm

## Main spindle

Speed range	0 – 7000 rpm
Max. torque on the spindle	100 Nm
Spindle nose DIN 55026	A2-5
Spindle bearing (inner diameter at front)	Ø 85 mm
Spindle bore	Ø 53 mm

## Counter spindle

Speed range	0 – 7000 rpm
Max. torque on the spindle	100 Nm
Spindle nose DIN 55026	A2-5
Spindle bearing (inner diameter at front)	Ø 85 mm
Spindle bore	Ø 53 mm

C-axis

Resolution	0,001°
Rapid motion speed	1000 rpm
Spindle indexing (disc brake)	0,01°

Drive power

Main spindle	15 kW
Counter spindle	15 kW

Tool turrets 1+2

Number of tool positions	2 x 12
Tool holding shaft in accordance with VDI (DIN 69880)	VDI 25
Tool cross section for square tools	16 x 16 mm
Shank diameter for boring bars	Ø 25 mm
Revolver switch time	0,2 sec

Driven tools 1+2

Speed range	0 – 6000 (0 – 8000) rpm
Torque	16 (16) Nm
Drive performance	4 (4) kW
Number of driven tools	2 x 12

## Feed drives

Rapid motion speed X / Y / Z	30 / 15 / 45 m/min
Feed force in the X axes / Y axis	4000 N
Feed force in the Z axis	5000 N
Feed force in the Z axis counter spindle	6000 N
Position variation Ps (VDI 3441) X / Y / Z	3 / 3 / 3 µm

## Coolant system

Tank volume	300 l
Coolant pumps for the tool turret	2 x 14 bar
Flushing pumps for the work area	2 x 3,7 bar

## Power consumption

Connected load	30 kVA
Supply pressure	6 bar

### Dimensions/weight

Height of center above floor	1126 mm
Machine height	1985 mm
Space occupied BxT (not including chip conveyor and coolant)	2680 × 1950 mm
Space occupied BxT (with chip conveyor and coolant)	3990 x 1950 mm
Total weight of machine	4200 kg

Safety devices CE compliant



beyond standard /

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[www.emco-world.com](http://www.emco-world.com)