

**emco** group

Designed for your profit

**[ E[M]CONOMY ]**  
means:



## Multitasking at its best. **HYPERTURN 95/110**

The new generation of 'multitasking machines' for the highest levels of productivity and flexibility

# HYPERTURN 95/110

## [Control unit]

- Sinumerik 840D sl
- USB interface on the control panel
- Emco diagnosis
- Pivotal and mobile
- Clear arrangement of function keys
- Large monitor and PC keyboard, optional

## [Main spindle]

- A choice of 2 spindle solutions: A2-8, A2-11
- Main drive power of up to 52 kW (A2-11)
- High torque of up to 2480 Nm (A2-11)
- Large speed range of up to 3500 rpm (A2-8)
- Bar capacity diameter 95 mm (A2-8)
- Liquid-cooled headstock
- Stable and robust spindle bearings

## [Tool magazine]

- Integrated tool magazine with 40/80 positions
- Easy access for inspection and manual magazine loading

## [Machine cover]

- All-round protection
- Optimum accessibility
- Large work space opening
- Suitable for top-loading
- Chip conveyor and HD coolant pumps as standard

## [Lower tool turret]

- 12-station tool turret
- Max. turning diameter of up to 650 mm
- Fully covered guides
- VDI40 quick-change system
- 12 driven tool stations
- Servo-controlled - short indexing times
- Both spindles in use

The Hyperturn 95/110 was designed to enable further increases in productivity in mass production. Whether rod, shaft, flange, or cubic parts, the modular design of the many Hyperturn 95/110 models enables them to cover a wide range of machining tasks. They are particularly suited to the series production of workpieces in the automotive industry, mechanical engineering, plain-bearing technology, and aviation.

## [Workpieces]

### [Upper tool turret]

- Compact milling spindle
- Speed range up to 7000 rpm
- Latest spindle motor technology
- High torque of up to 128 Nm
- Internal coolant supply of up to 80 bar
- Quick tool change
- Large and easy to program travel range
- 12-station tool turret available
- Both spindles in use
- Y axis stroke +/- 120 mm



Shaft  
(steel)



Connection nozzle  
(stainless steel)



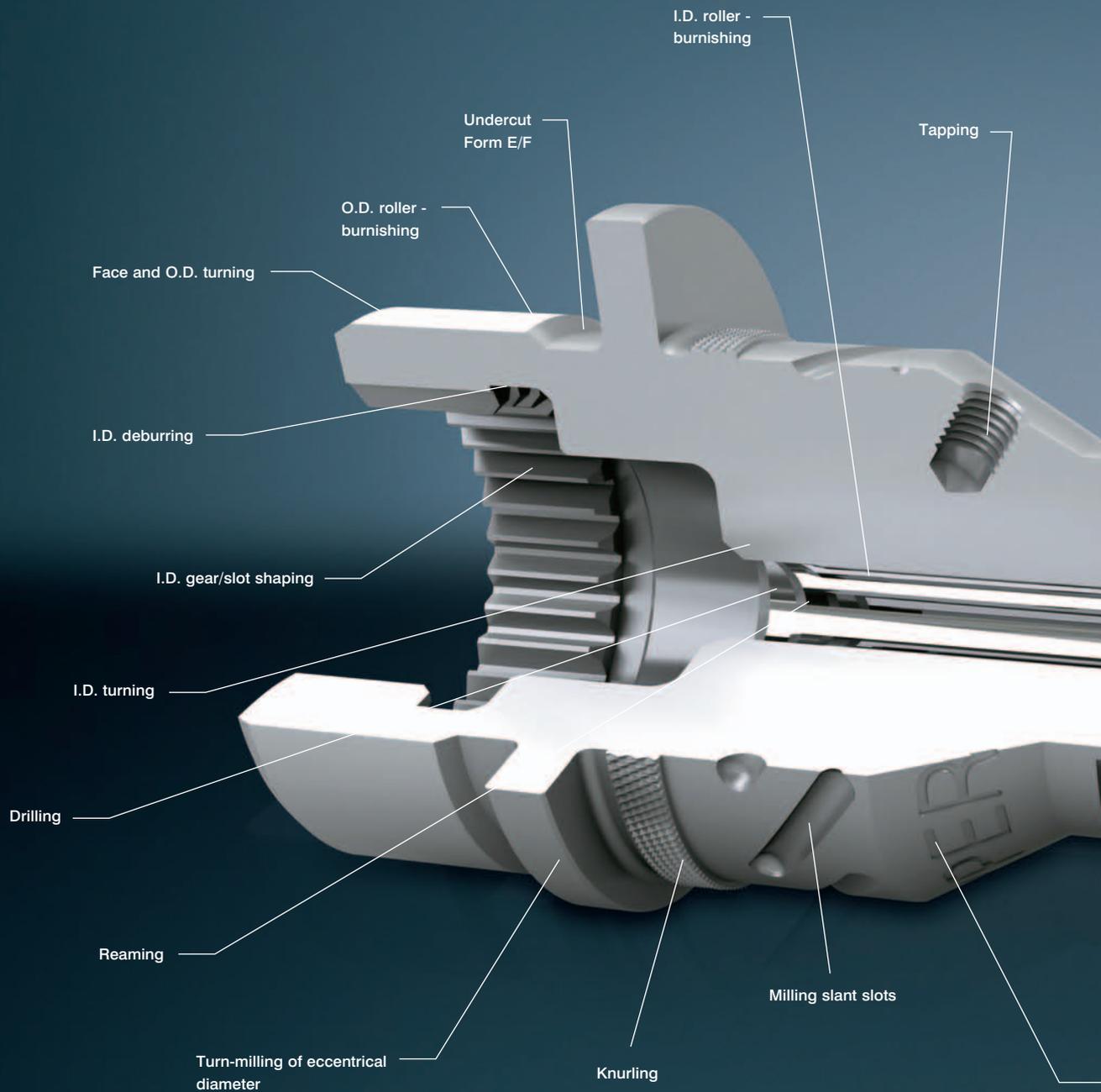
Radial cam housing  
(tempered steel)

### [Counter spindle]

- A choice of 2 spindle solutions: A2-8, A2-11
- Up to 42 kW power with high torque of up to 1040 Nm (A2-11)
- Large speed range of up to 3500 rpm and up to 30 KW power (A2-8)
- Same connection for main and counter spindle
- Partial hollow clamping
- Liquid-cooled headstock
- Stable and robust spindle bearings

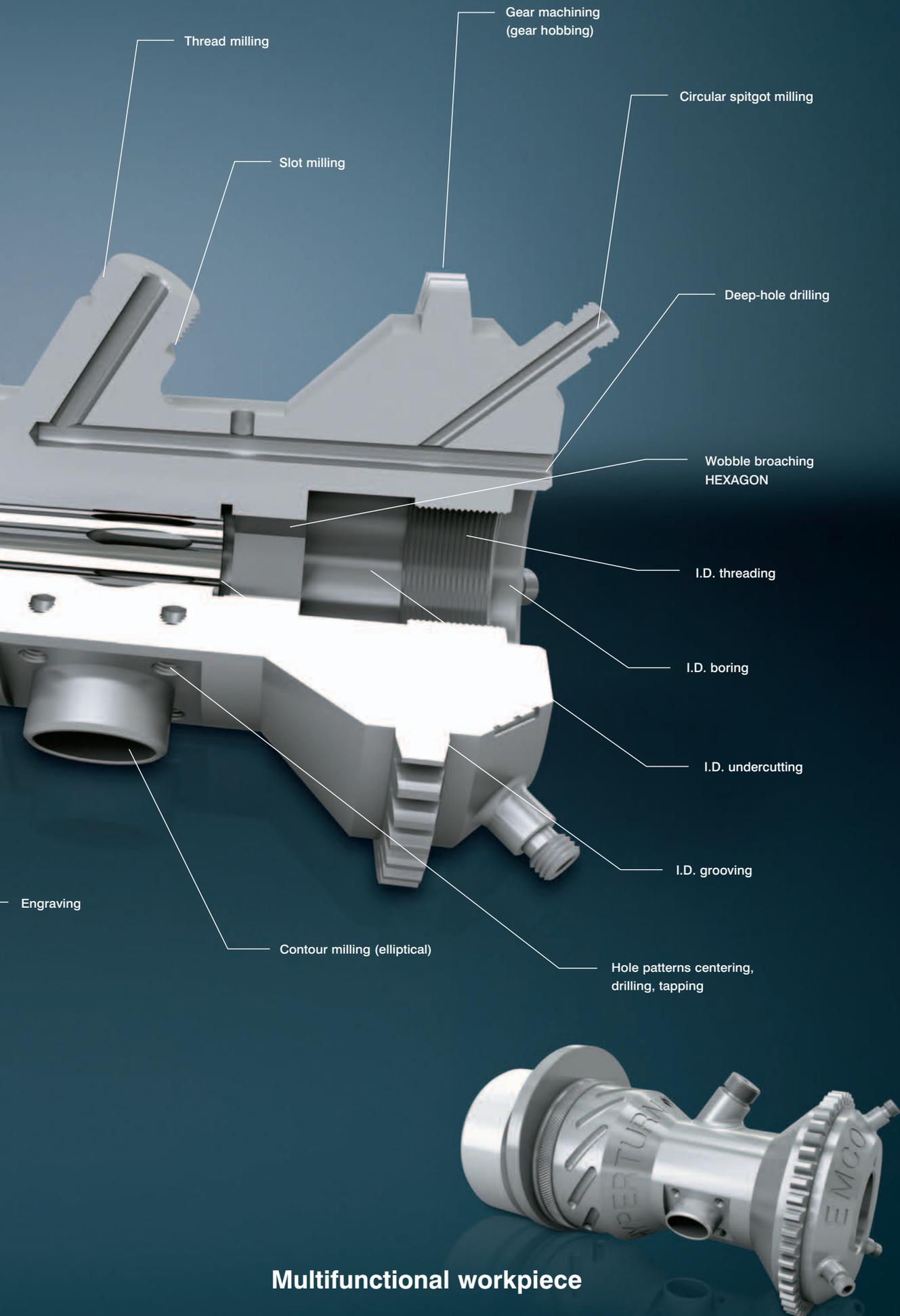
### [Chip conveyor]

- Slat-band conveyor belt
- Integrated coolant tank 690/740 l
- Turret pumps 2 x 14 bar
- Flushing pumps 2 x 6 bar



# Hyper-Flexibility

Machine flexibility is often sacrificed for the sake of productivity. Not with the HYPERTURN: with its high-performance and exceptionally mobile milling spindle and an almost inexhaustible tool magazine, the HYPERTURN can do nearly anything - and very quickly.



**Multifunctional workpiece**

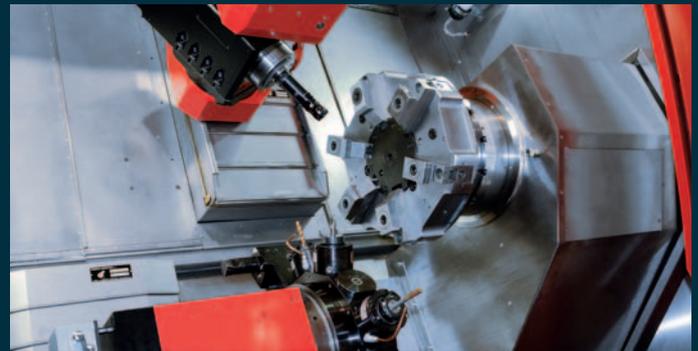
# [Engineering]

## Highlights

- Main and counter spindle for complex complete machining
- Two tool turrets with VDI rapid change system, high pressure and/or hydraulic steady rest
- Large work area for optimal ergonomics and a wider range of parts
- Machine cover: New interior and exterior design
- State-of-the-art Siemens control unit Sinumerik 840D sl
- Stable and precise C-axis for accurate contour milling and milling-turning work
- Strong Y-axis with a large stroke
- Dynamic B-axis with "PowerMill" milling spindle for maximum flexibility
- Full NC tailstock with integrated quill for complete machining of shafts
- FEM-optimized machine construction for more precise results
- Made in the Heart of Europe



Main spindle view with clamping device  $\varnothing$  315 mm and milling spindle. The lower tool turret is unrestricted when machining workpieces with large diameters.



Counter spindle view with 6-position jaw chuck  $\varnothing$  500 mm. The upper turret is replaced by a 21 kW liquid-cooled milling spindle in the B axis version. The B axis travel range is 205°. This is infinitely variable with 0.001° resolution. In addition, the B axis can be clamped in any position with 5° indexing.



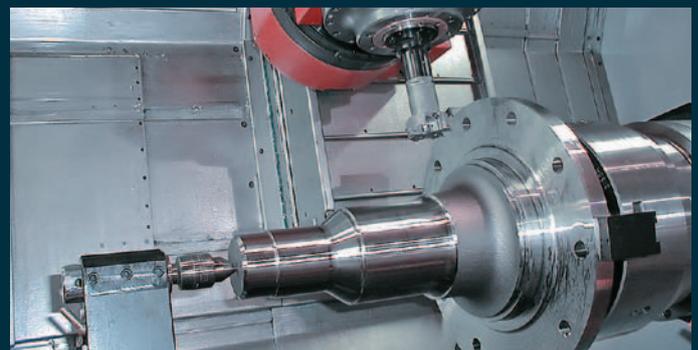
The work area provides the highest level of ergonomics with excellent accessibility to the individual components. Generous amounts of free space ensure optimal chip flow, even when machining complex materials. All guides are covered in stainless steel sheets to prevent damage.



The modular machine concept also enables the use of a tailstock in combination with an NC-controlled steady rest instead of the lower tool turret, depending on the customer's requirements. The steady rest can be hydraulically lowered 250 mm if required.



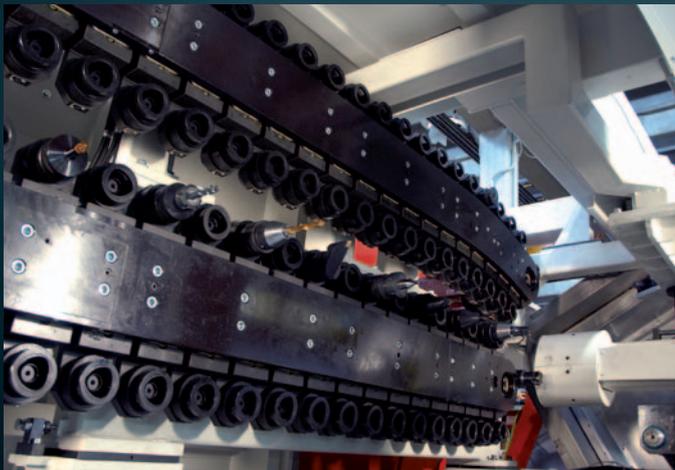
**Tool turret:** Fast indexing 12 station tool turret for standardized VDI40 or CDI80 (CAPTO) tooling. All stations can be used with driven tools for drilling, milling and tapping operation. The turret indexing movement can be controlled by the operator at any time. Max. turning diameter for lower turret is 650 mm.



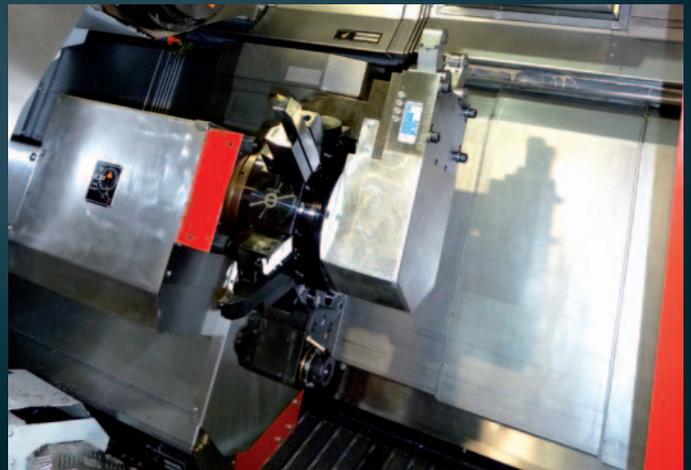
The lower tool turret can be fitted with a live center point and can act as a tailstock for machining large workpieces.



For complex, complete machining, the system uses a modular, building block system with two base lengths (1700 or 2300 mm), two spindle sizes, with a milling spindle and a B-axis or with two turrets.



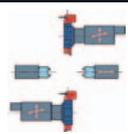
Tool magazine with 80 pockets integrated to machine layout.



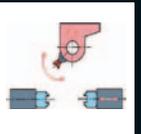
Turret steady rest: Hydraulically operated steady rest for diameter 8 – 125 mm to guarantee highest flexibility when machining shafts.

## Versions EMCO HYPERTURN 95/110

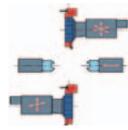
HT 95/110 with two turning spindles and two tool turrets



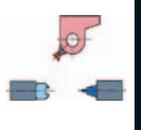
HT 95/110 with two turning spindles, a swivelling milling spindle and a Y axis



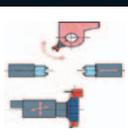
HT 95/110 with two turning spindles, two tool turrets and a Y axis in upper slide system



HT 95/110 with turning spindle, tail-stock, a swivelling milling spindle and an Y axis



HT 95/110 with two turning spindles, a swivelling milling spindle, a Y axis and an additional tool turret.





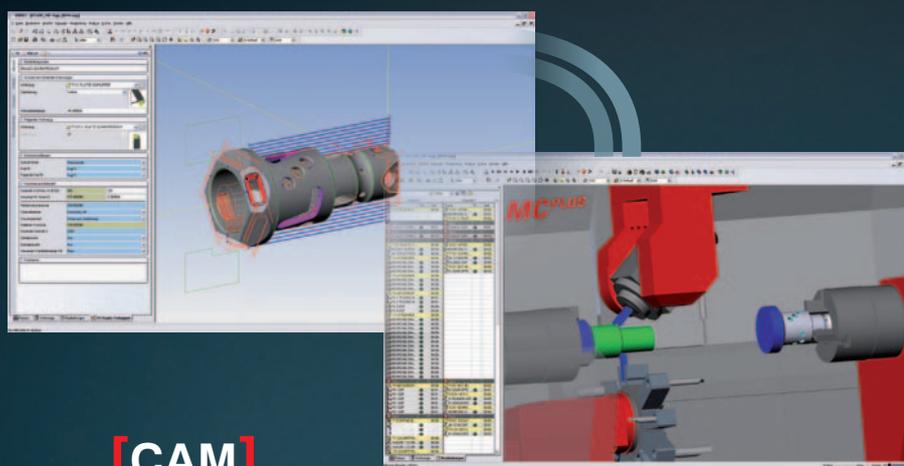
The Esprit CAM system offers high flexibility and process security, a comprehensive selection of machining cycles, maximum tool control, and cross-machine technology for your entire production facility.



## [CAD]

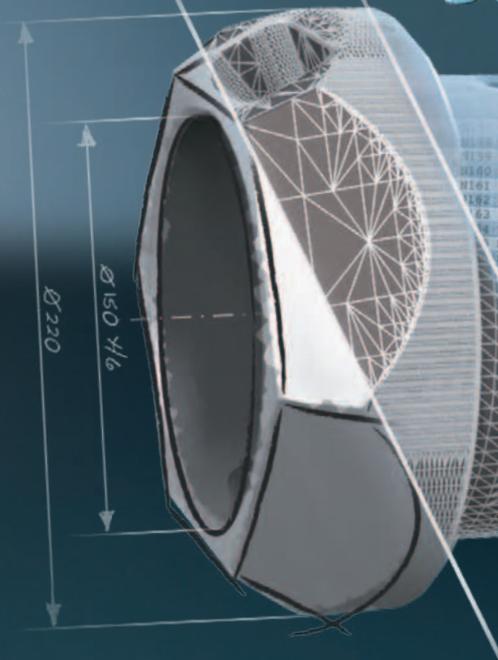
Direct CAD data import

- AutoCAD (DWG)
- Parasolid®
- Solid Edge®
- Solid Works®
- ACIS® (SAT)
- Optional interfaces: CATIA®, Pro/ENGINEER®, STEP, STL,...



## [CAM]

- 2-22 axis turning
- 2-5 axis milling
- Multi-tasking of turning and milling
- 3D machine space simulation
- Certified post-processors



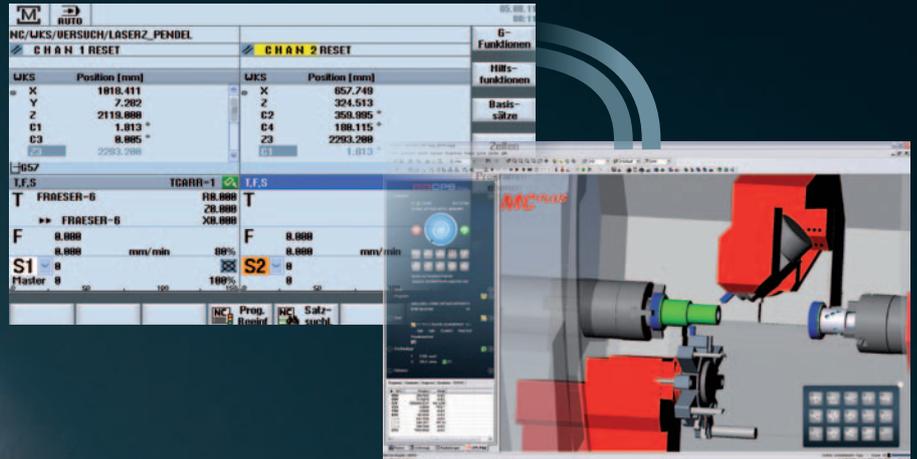
## [CAD]

# emcoCPS | Pilot

## The Virtual Machine

A 1:1 mapping of the real machine for defining and testing processes, optimizing machining sequences, and training new operators.

### [Process chain]



### [CPS]

- 1:1 simulation with collision detection
- Direct connection to CAM ESPRIT
- Process optimization
- Reverse simulation of existing NC codes
- Reduction in scrap rates
- Training on the virtual machine
- Simulation of loading systems (e.g. EMCO gantry loader)

### [CAM] [CPS] [Production]



### [Production]

- Reduction in set-up costs
- Reduction in downtimes
- Reduction in repair costs

**OPTIMUM MACHINE UTILIZATION**

# Automatic return on investment



As a highly productive industrial machine, the EMCO Hyperturn needs high-performance automation peripherals. The LM 1500 short bar loader is the perfect solution for automatic feeding and loading of cut-to-length bars. With a small footprint and short loading times this loader can be used immediately as a plug-and-play solution. A dedicated control unit guarantees the perfect connection to the machine interface. The LM 1500 offers comprehensive cycle support and is aligned to the machine spindle length. It may also be used to load individual workpieces.

## The benefits

- Small footprint
- Easy to operate
- Short feed times
- Fast, straightforward changeover
- Option to load individual workpieces
- Central diameter adjustment
- Dedicated control unit
- Bar stock is placed and stored at front side



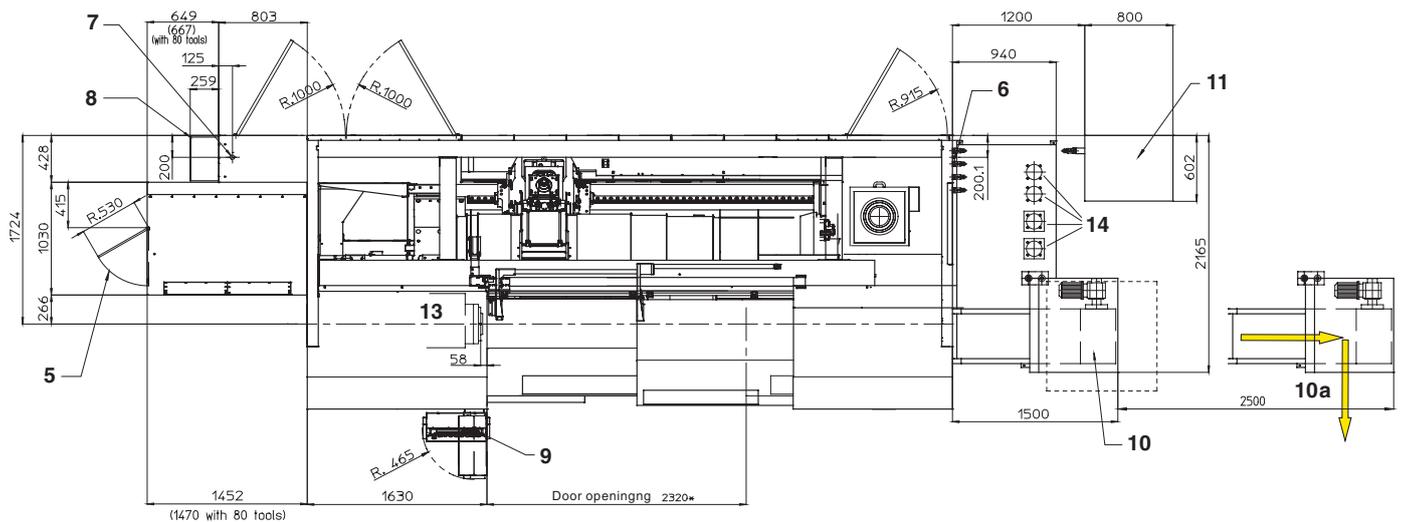
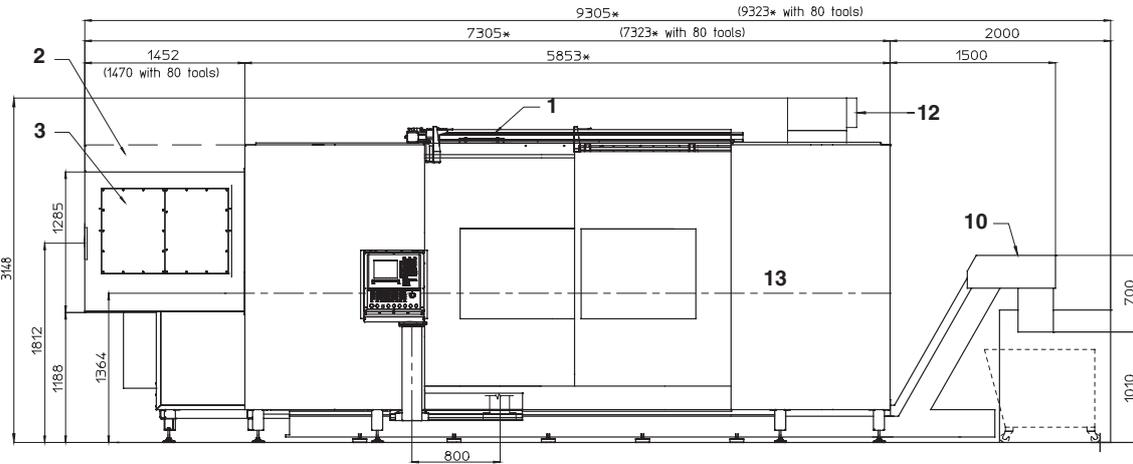
Infeed belt with prismatic rollers



Parts catcher with conveyor: Finished parts are ejected with a coolant fed part ejector into the parts catcher and transferred with a conveyor to a storage area.

Technical data	LM1500
Bar diameter	Ø 16 – 95 mm
Max. bar length	1550 mm
Min. bar length	150 mm
Material support	approx. 550 mm
Feed rate	0 – 60 m/min
Bar change time	approx. 14 sec
Dimensions (L x W)	2500 x 1140 mm
Weight	approx. 550 kg

# Machine layout HT95/110 SMB



Space for operation  
and maintenance: app.  
12000 x 4200 mm

- 1.... Automated machine door
- 2.... Tool magazine 80 Pos.
- 3.... Tool magazine 40 Pos.
- 4.... Hydraulic aggregat
- 5.... Tool magazine door
- 6.... Pneumatic connection
- 7.... Elektric connection
- 8.... Cooling unit for el. box
- 9.... Operating panel
- 10.. Chip conveyor
- 10a Pull out chip conveyor for cleaning
- 11.. Recooling unit
- 12.. Oil mist seperator
- 13.. Spindle axis
- 14.. Coolant pump
- \* ... dimensions for bed length  
1700 by 600 mm shorter

# Quality components



## [Machine bases and slides]

When matching components, we place great value on high stability, good damping characteristics, and a thermoneutral design. We achieve high stability through a shorter force flow, thermal stability through symmetry, and dampening through the materials and interfaces selected.



[www.emco-magdeburg.de](http://www.emco-magdeburg.de)

## [Headstocks]

The design and manufacture of headstocks are two of EMCO's core competencies. During engineering, the focus is on precision, robustness, high rigidity, precise rotational characteristics, and a long service life.



[www.emco-magdeburg.de](http://www.emco-magdeburg.de)

## [Tool turret]

Rapid-indexing turrets with adjustable swivel speeds and milling drives represent the current state of the art. The backlash-free milling drive is not only ideal for milling and drilling, but also for rigid tapping, hobbing, and polygonal turning.



[www.sauter-feinmechanik.com](http://www.sauter-feinmechanik.com)

## [Hydraulic systems]

Compact dimensions, quiet operation, and high energy efficiency - just some of the advantages of the hydraulic assemblies used by EMCO. Monitored pressure switches prevent the need for time-consuming manual pressure adjustments.



[www.hawe.de](http://www.hawe.de)

## [Clamping cylinder / chuck]

Hydraulically activated clamping cylinders and chucks guarantee the precise, safe clamping of work pieces. Programmable sensors are used for stroke monitoring. There is no need for time-consuming adjustments of contactless limit switches.



[www.roehm.biz](http://www.roehm.biz)

## [Tool holder]

Innovative, fully developed tool holder systems form the basis for cost-effective machining. High changeover accuracy and stability result in short setup and cycle times.



[www.wto.de](http://www.wto.de)

## [Ball screws and roller guides]

Highly precise and generously dimensioned guide rails and ball screws with optimal pretensioning form the basis for the machining of precision parts.



[www.boschrexroth.com](http://www.boschrexroth.com)

## [Chip conveyor]

Slat band conveyors allow for flexible implementation and the safe removal of chips. A monitored overload clutch prevents damage from improper use.



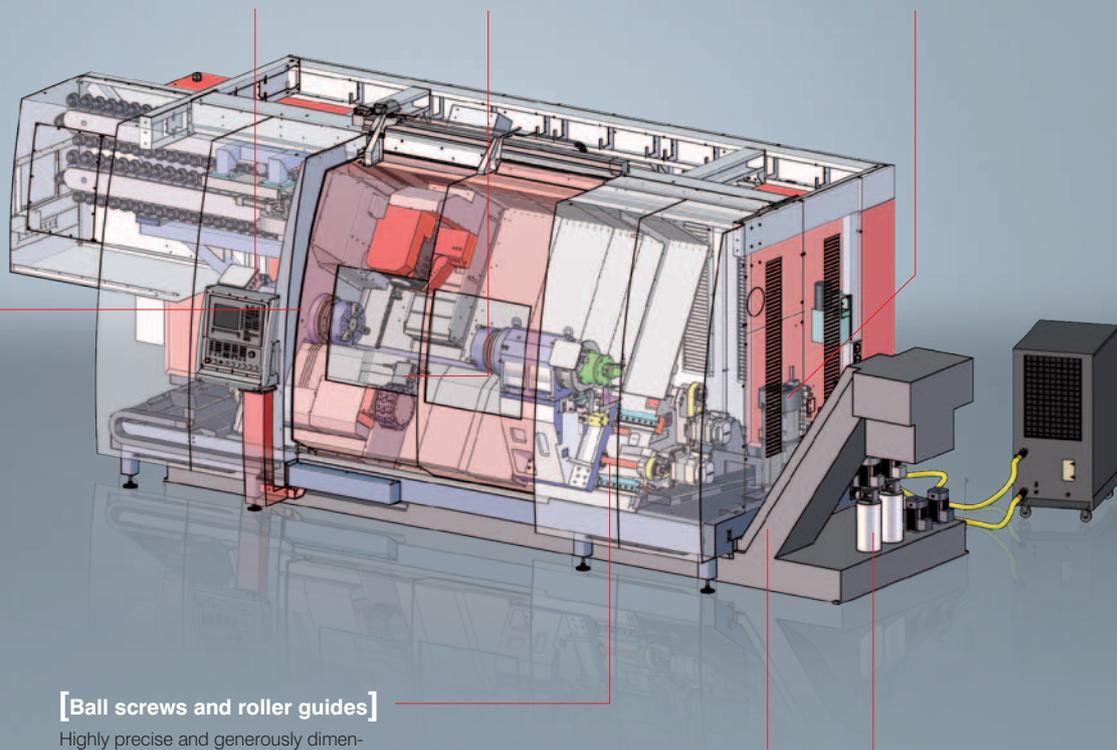
[www.knollmb.de](http://www.knollmb.de)

## [Coolant pumps]

Low-maintenance immersion pumps for pressures of up to 25 bar and flow rates of up to 1500 l/min provide optimum conditions for machining and enable reliable chip transportation.



[www.grundfos.at](http://www.grundfos.at)



# Minimum use of resources for maximum profit.



At EMCO, we take a consistent, responsible approach to the use of resources in machine tools in order to safeguard long-term investments. From the development of our machines through to their construction and manufacture, we place a strong focus on the sensible and sparing use of raw materials and energy. This enables us to achieve parallel savings in two areas:

1. Reduction in the basic power consumption of machine tools, e.g. assemblies are switched on and off as required and the installed connected loads are kept to a minimum.
2. Reduction in variable consumption: This can be seen in the lighter axes, energy recovery system, increased rate of good parts, and the shorter process chain enabled by complete machining.

Through these measures, which are constantly being refined and further optimized, EMCO truly demonstrates that its slogan of „Designed for your Profit“ is not just an empty promise: EMCO products help save the environment and provide intelligent customer savings without compromising on quality and flexibility.



**[Regenerative drive system]**  
Kinetic energy is converted into electrical energy and fed back into the grid.  
**Savings of up to 10%**



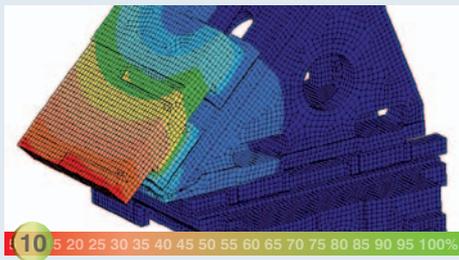
**[Compact hydraulics unit with pressure accumulator]**  
Thanks to its accumulator charging system, the pump only runs when required. If the pressure accumulator is full, the pump switches over to closed loop circulation.  
**Savings of up to 90%**



**[Roller guides]**  
Extremely low friction losses thanks to rolling friction. Highly dynamic performance with minimal lubricant consumption.  
**Savings of up to 50%**



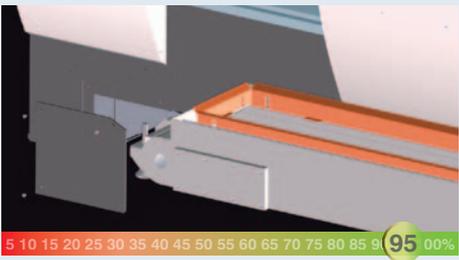
**[Structurally optimized mechanics]**  
FEM analysis is used to optimize the relevant components in terms of their rigidity while simultaneously reducing their weight.  
**Savings of up to 10%**



**[Highly efficient motors]**  
The use of energy-efficient motors (IE2) in the coolant preparation area guarantee highly cost-effective operation.  
**Savings of up to 10%**



**[Synchronized chip conveyor]**  
Programmable interval times enable optimal use of the chip conveyor independently of the machining process.  
**Savings of up to 95%**



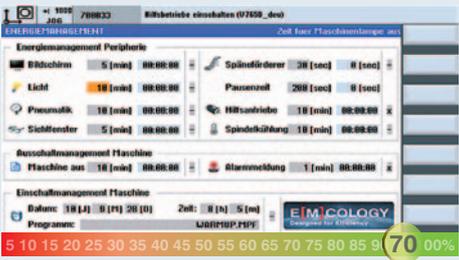
**[Intelligent standby concepts]**  
Reduced consumption by automatically switching off ancillary units and machine space/screen illumination after a defined period of inactivity on the control panel.  
**Savings of up to 50%**



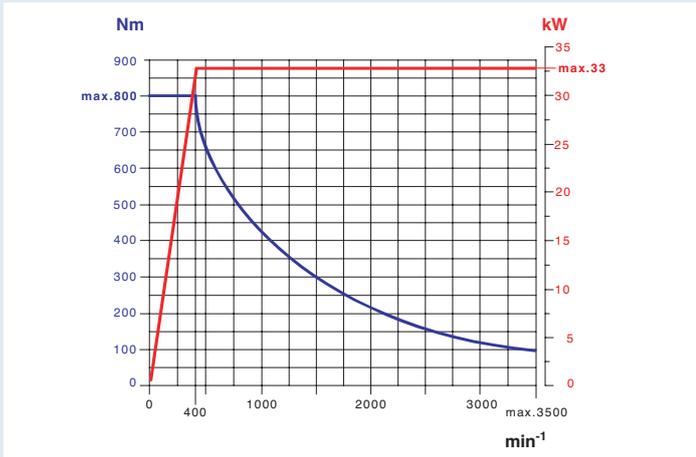
**[Virtual machine]**  
Significant reduction in the setup and running-in times on the machine through the use of highly developed simulation and programming software.  
**Savings of up to 85%**



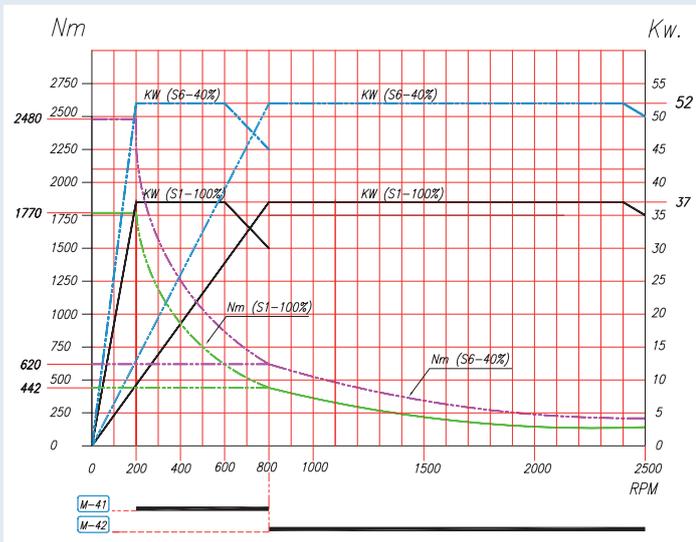
**[Intelligent energy management]**  
Intuitive data entry screens for activating the individual energy-saving functions.  
**Savings of up to 70%**



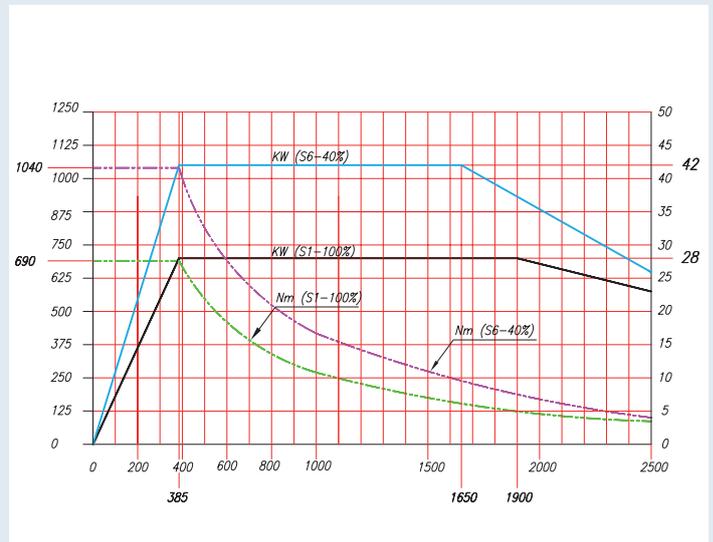
# Performance HT 95/110



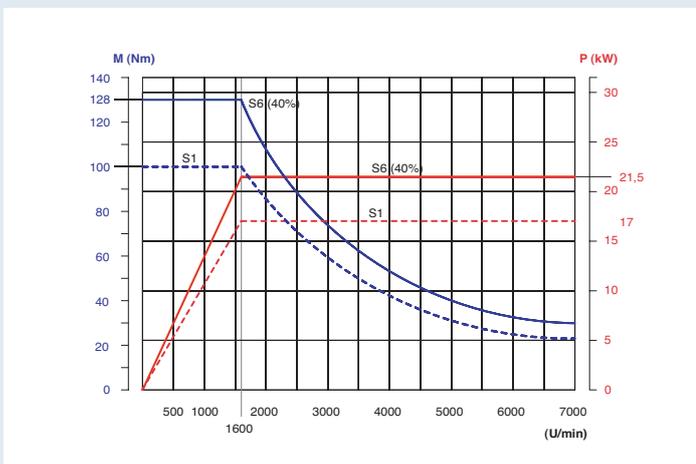
Main spindle A2-8 – counter spindle A2-8



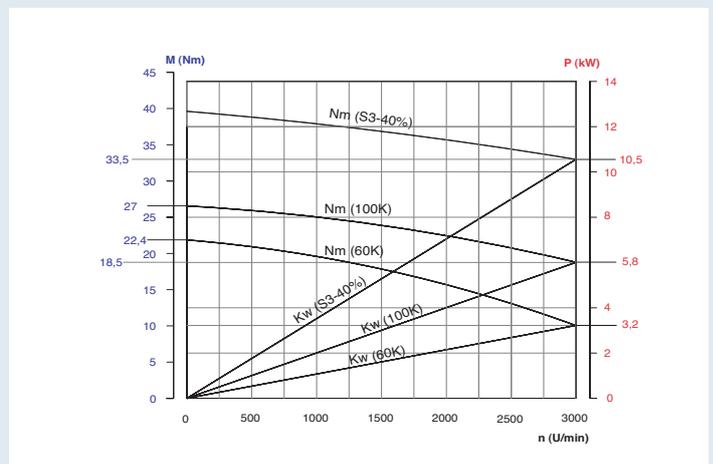
Main spindle A2-11



Counter spindle A2-11

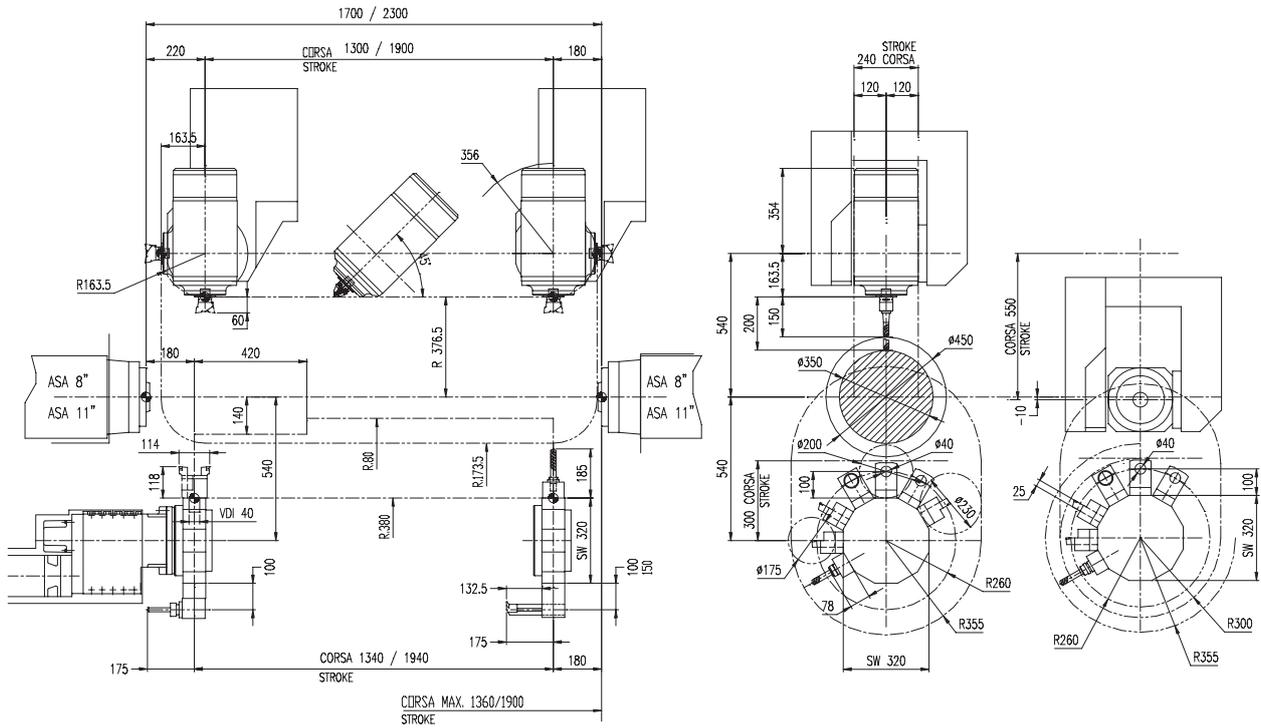


PowerMill milling spindle



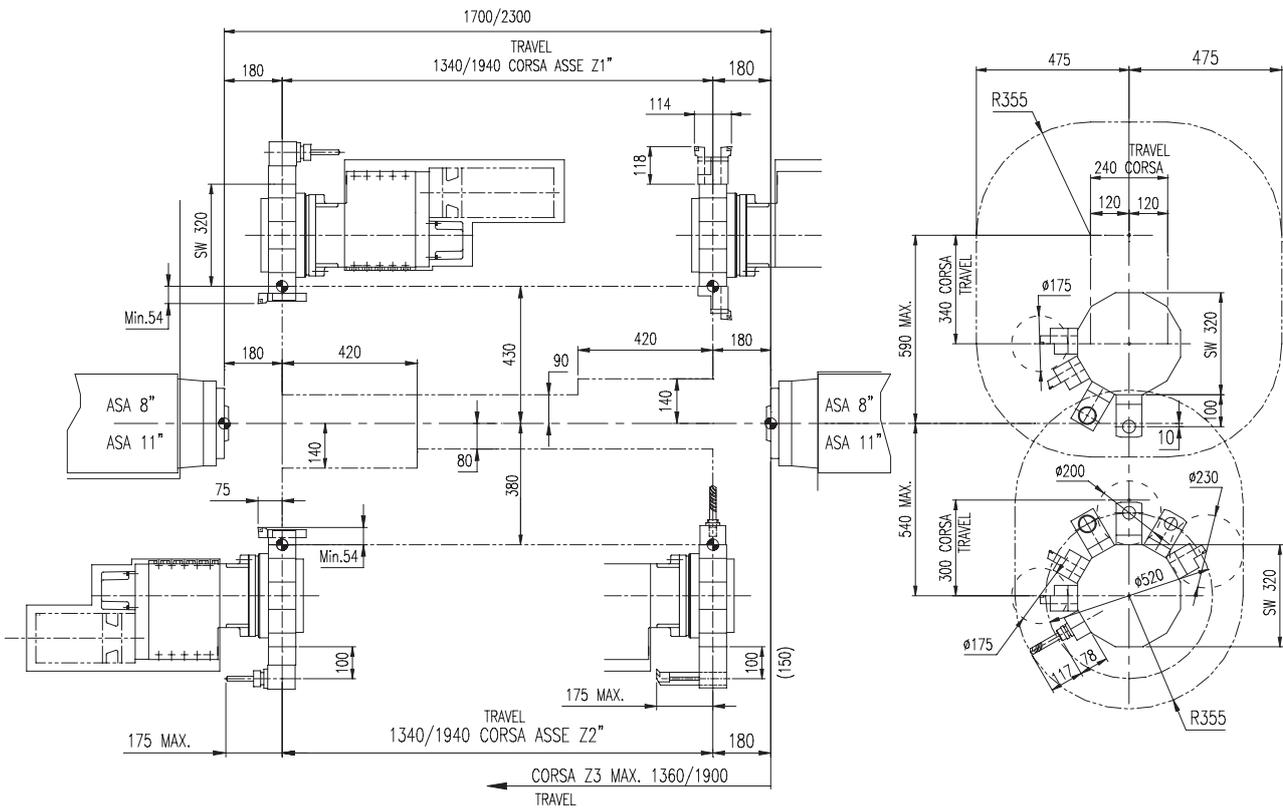
Tool turret, upper/lower

# Machine area HYPERTURN 95/110 SMB



Specifications in millimeters

# Work area HYPERTURN 95/110 SM2Y



Specifications in millimeters

# [Technical data]



Designed for your profit

## HYPERTURN 95/110

Work area	
Swing over bed	720 mm (28.3")
Distance between spindle noses	1700 – 2300 mm (66.9 – 90.6")
Max. Bore in Draw Tube (A2-8)	95 mm (3.7")
Travel	
Travel in with milling spindle X1 / Z1	550 / 1300 – 1900 mm (21.7 / 51.2 – 74.8")
Travel in 2 / Z2	300 / 1340 – 1940 mm (11.8 / 52.8 – 76.4")
Y travel in	240 mm (+/- 120 mm) (9.4" (+/- 4.7"))
Main and counter spindle (A2-8)	
Maximum speed	3500 rpm
Maximum power	33 kW (44.3 hp)
Maximum torque	800 Nm (590 ft/lbs)
Main and counter spindle (A2-11)	
Maximum speed	2500 rpm
Maximum power - main spindle	52 kW (69.7 hp)
Maximum torque - main spindle	2480 Nm (1828 ft/lbs)
Maximum power - counter spindle	42 kW (56.3 hp)
Maximum torque - counter spindle	1040 Nm (767 ft/lbs)
Tailstock	
Taper mounting (integrated bearing)	MT 5
Travel in	1100 / 1600 mm (43.3 / 74.8")
Quill stroke	150 mm (5.9")
Quill diameter	150 mm (5.9")
Tool turret top and bottom	
Number of tool positions	2 x 12
Tool holding shaft in accordance with VDI (DIN 69880)	40 mm (1.8")

Driven tools	
Speed range	0 – 3000 rpm
Torque	40 Nm (29.5 ft/lbs)
Drive performance	10.5 kW (14 hp)
Driven tools	2 x 12
B-axis and PowerMill	
Travel range	210°
Tool magazine positions	40 (80 optional)
Tool holder	HSK-T63 (PSC63)
Maximum torque	128 Nm (94.4 ft/lbs)
Maximum power	21.5 (26) kW (28.8 (34.8) hp)
Maximum speed	7000 (12000) rpm
Tool change time (tool - tool)	2.2 sec
Feed drives	
Rapid motion speed X / Z counter spindle	30 m/min (1181 ipm)
Rapid traverse speed in Y	15 m/min (590 ipm)
Coolant system	
Tank volume	690 / 740 liters (182.7 / 195.5 gal)
Pump capacity	14 bar / 17 l/min (203 PSI / 2.6 gal/min)
Dimensions	
Height of center above floor	1364 mm (53.7")
Overall height	2890 mm (113.8")
Space required inclusive tool magazine	8500 / 9100 x 3150 mm (334.6 / 358.3 x 124")
Total weight	18000 – 22000 kg (39683 – 48500 lb)
Safety devices	
	CE compliant



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