

emcogroup

Designed for your profit

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



**To be the decisive step ahead.
HYPERTURN 65**

High-performance turn-mill centers for serial production of complex parts made from bar stock or as auto-loaded chucker parts.

HYPERTURN 65-1000 DUOTURN

HYPERTURN 65-1300 DUOTURN

[Main spindle]

- Integrated, water-cooled spindle motor
- Spindle nose A2-6 (A2-8)
- High drive power 29 (37) kW
- High torque 250 (360) Nm
- Large speed range
0 - 5000 (4000/3500) rpm
- Bar capacity diameter 65 (76,2/95) mm

[Tool system 1 / 2]

- 12-station tool turret
- VDI30 (VDI40) quick-change system
- 12 driven tool stations
- Optional with BMT55P turret
- Servo-controlled
- Rigid tapping
- Polygonal turning, etc.

[Y-axes 1 / 2]

- Travel +/- 50 mm
- Stable, compact construction
- Largely spaced guide ways
- Wedge-style design



**„Now available also
with BMT turret“**

[Work area]

- Large spindle distance 1050/1300 mm
- Optimum accessibility
- Straight chip drop
- Stainless steel covers and linings
- Tailstock/steady rest function on lower turret

Machine with optional equipment

[Control unit]

- Ergonomically arranged on the right from the working area
- Swivel action
- Adjustable height
- Side-to-side movement (version 1300)
- Sinumerik 840D sl with 15" colour screen
- Comprehensive machining cycles
- 3D simulation
- USB and Ethernet interface

The HYPERTURN 65 is a new development in the HYPERTURN range. Its smart modular design means it perfectly meets specific customer requirements. Two identical high-performance spindles set the basis for unlimited machining. Two turrets on the cross slide with optional Y-axis to ensure greater productivity. Each position on the tool turret can accommodate both stationary and driven milling/drilling heads.

[Workpieces]

[Counter spindle]

- A2-6 (A2-8) spindle nose
- Integrated, water-cooled spindle motor
- High drive power 29 kW
- High torque 250 Nm
- Large speed range 0-5000 (4000) rpm
- Incl. coolant-fed parts ejector
- Optional with Ø 65 (75) mm through hole for shaft unloading

[Chip conveyor]

- Hinged type conveyor belt
- Ejection height 1200 mm
- Integrated coolant tank 400/450 l
- Turret pumps: 2 x 14 bar
- Flushing pumps: 2 x 3.7 bar

[Automatic work piece pick up device]

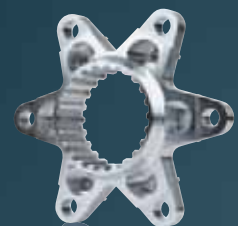
- Optional arranged on the right in the working area
- Universally on Main- and Counter spindle applicable
- Including along-integrated prefabricated part buffering belt



Eccentric flange
(Steel 42 Cr Mo 4)



Adapter
(Steel Ck 45)



Sprocket adapter
(Aluminium 7075)



Tappet
(Steel 16 Mn Cr 5)

HYPERTURN 65-1300 TRIPLETURN

[Main spindle]

- Integrated, water-cooled spindle motor
- Spindle nose A2-6 (A2-8)
- High drive power 29 (37) kW
- High torque 250 (360) Nm
- Large speed range 5000 (4000/3500) rpm
- Bar capacity diameter 65 (76.2/95)

[Tool system 1 / 2 / 3]

- 12-station tool turret
- VDI30 (VDI40) quick-change system
- 12 driven tool stations
- Optional with BMT55P turret
- Servo-controlled
- Rigid tapping
- Polygonal turning, tec.

[Counter Spindle]

- Integrated, water cooled spindle motor
- Spindle nose A2-6 (A2-8)
- High drive power 29 kW
- High torque 250 Nm
- Large speed range 0-5000 (4000) rpm
- Incl. coolant-fed parts ejector
- Optional with Ø 65 (75) mm through hole for shaft unloading



[Work area]

- Large spindle distance 1300 mm
- Optimum accessibility
- Straight chip drop
- Stainless steel covers and linings
- Tailstock/steady rest function on lower turret

[Control unit]

- Ergonomically arranged on the right from the working area
- Swivel action
- Adjustable height
- Side-to-side movement
- Sinumerik 840D sl with 15" colour screen
- Comprehensive machining cycles
- 3D simulation
- USB and Ethernet interface

The HYPERTURN as TRIPLETURN version has an additional 12-station turret. This serves as a „Joker“ on the one hand to reach a better productivity and on the other hand to increase the flexibility when machining complex parts in one clamping cycle. This means that generally three tools are in use simultaneously, which reduces part production time by up to 30%.

[Workpieces]

[Y-axes 1 / 2 / 3]

- Travel +/- 50 mm
- Stable, compact construction
- Largely spaced guide ways
- Wedge-style design

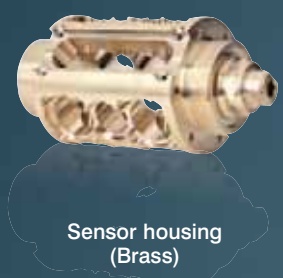
[Chip conveyor]

- Hinged type conveyor belt
- Ejection height 1200 mm
- Integrated coolant tank 450 l
- Turret pumps: 3 x 14 bar
- Flushing pumps: 2 x 3.7 bar

Machine with optional equipment

[Automatic work piece pick up device]

- Optional arranged in the right in the working area
- Universally on Main- and Counter spindle applicable
- Including along-integrated prefabricated part buffering belt



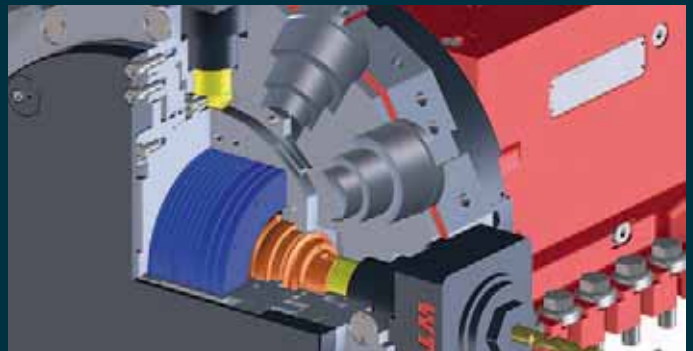
[Engineering]

Highlights

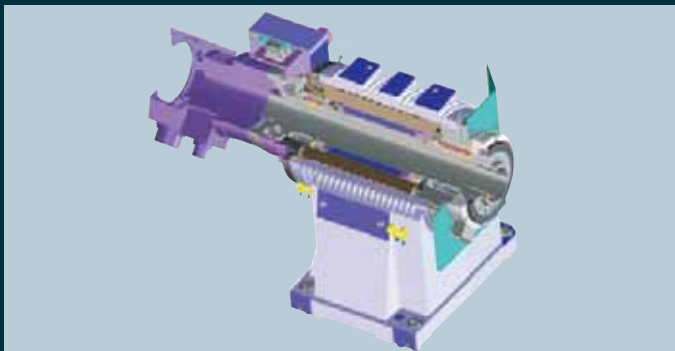
- 2 high performance and water cooled spindle motors
- 2x / 3x 12-times turret with VDI 30 / 40 quick-change system
- Optional with BMT-turrets and direct drive up to 12 000 rpm
- 2 / 3 Y-axes for processing of complex turned/milled parts
- Bar stock feed up to \varnothing 95 mm
- Optimum chip flow and user-friendly work area
- Sinumerik 840D sl for high-performance drive and controls
- Made in the Heart of Europe



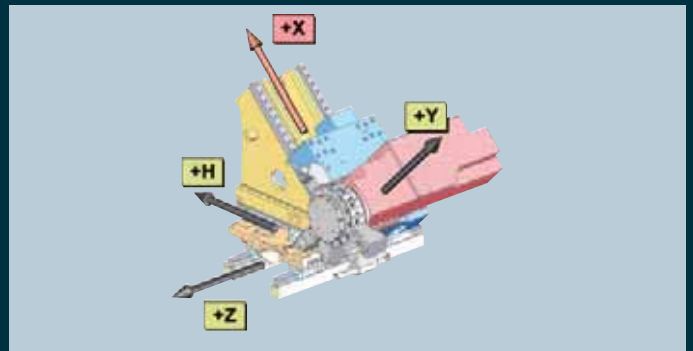
Tool turret. Fast 12-station servo turret with very short switching times for standardized VDI30 or VDI40 tools. All stations can hold driven tools for drilling, milling, and tapping. The operator is able to control the indexing speed with the override switch at any time.



BMT-turret. For economical production of complex turned/milled parts with mainly milling share, there is optional the BMT-turret with water cooled direct drive. With max. 12000 rpm, 30 Nm and 10 kW, this turret offers optimal prerequisites for the complete machining.



Integrated spindle motor (ISM). The latest synchronous technology guarantees the highest dynamics and exceptional torque in a compact design. Liquid cooling in conjunction with automatic temperature control maintains a constant temperature for all spindle motors.



High-precision Y-axis. The HYPERTURN's Y-axis is designed to distribute the cutting forces over two guide planes. The result: outstanding rigidity for all turning and milling operations. The ± 50 mm travel permits off-center milling and drilling.



Parts catcher. The HYPERTURN 65's electro-pneumatic parts catcher is controlled using M functions. When needed, it traverses to the front of the work area and pivots 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 onto a conveyor belt.



Prefabricated part conveyor belt. On the conveyor belt with in the machine casing, arranged lengthwise, with a storage surface of 1400 x 180 mm, the work pieces are put down damage free.



Tailstock. For shaft-type application, the HYPERTURN 65 offers two tailstock-versions. On the one hand an universal, hydraulic movable tailstock for manually loaded machines and on the other hand an NC-tailstock for fully automatic loaded machines. With the advantage of very short idle times.



Live-center / turret-steady-rest. For complete machining of shaft work on the one hand in the main spindle and on the other hand in the sub-spindle, there are a live center and if needed also a turret steady rest available. So that long, slim workpieces can be manufactured precisely and without chatter marks.



Deep hole drilling. For the processing of deep holes, high pressure cooling installations up to 80 / 150 bar with filtration and coolant temperature control are available. Internal coolant supply with stationary but also driven tool heads ensure a save cutting process.



For series production of turning/milling parts made of aluminum, brass, steel or grey cast iron offers a paper-band filtration unit. With it the coolant volume and also the life span of the cooling lubricant increases.



Tool measuring. The tool measuring arm equipped with two touch-probes enables fast and precise measuring of tools in the workspace. It is mounted manually in the bracket below the main spindle and returned to a storage tray after use.



Control. The Sinumerik 840 D sl with operate user interface is ergonomically arranged on the right from the working area, can be swiveled 80° and changed in height by 100 mm. A side-to-side movement is standard for the 1300 versions. On the bottom is a 230 Volt socket, which can be used for any electrical device.

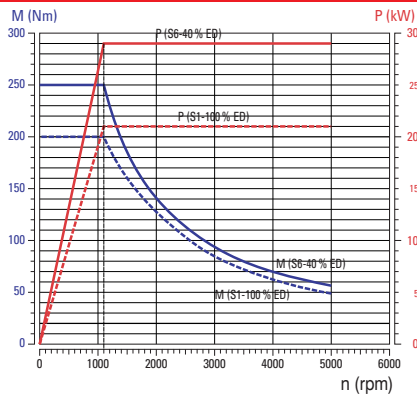


Spin window. The optional spin window enables the optimal insight in the working area, also during machining with coolant. Due to its very fast rotating glass plate, the coolant is slung away immediately after impact and the window stays clear.

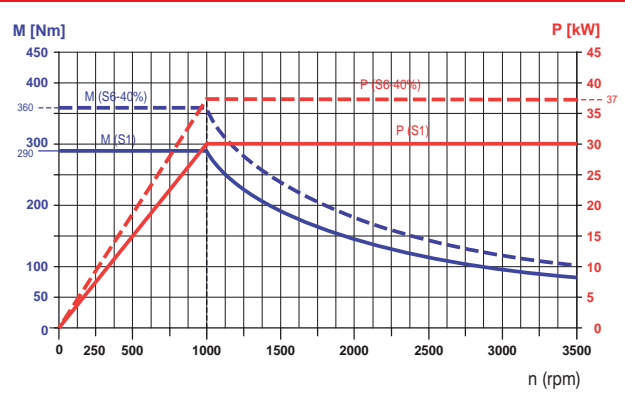


EMCO tool monitoring system. The tool status is monitored by evaluating the load on the various axis drive motors. Excessive loads point to tool wear or breakage. Too low a load indicates a tool is missing.

Performance and torque diagram

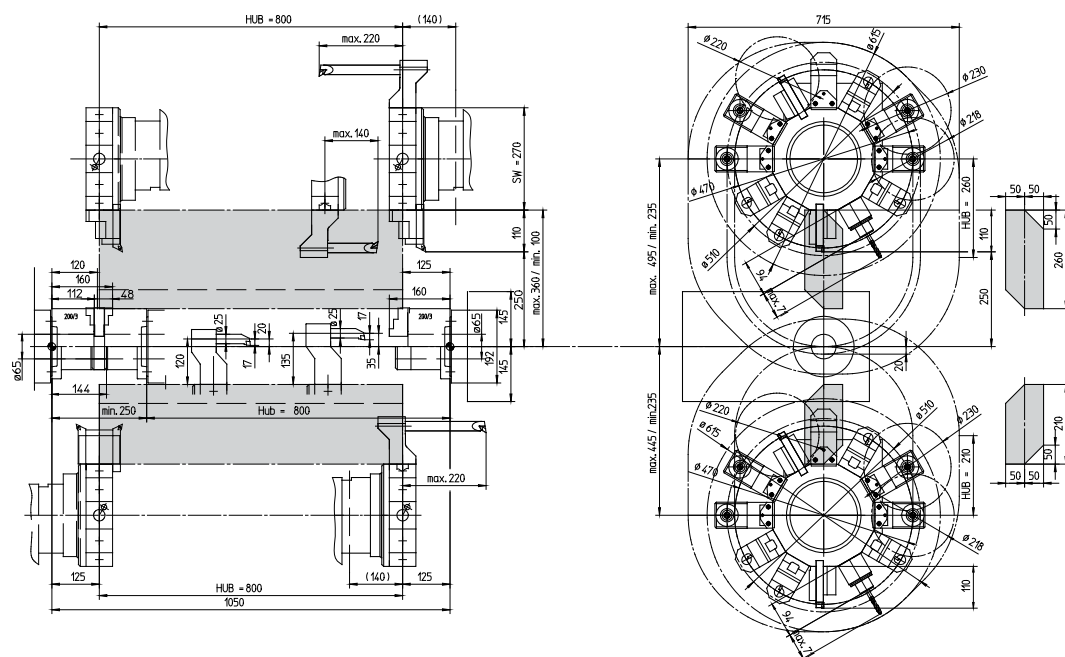


HYPERTURN 65 main and counter spindle ø 65/76 mm



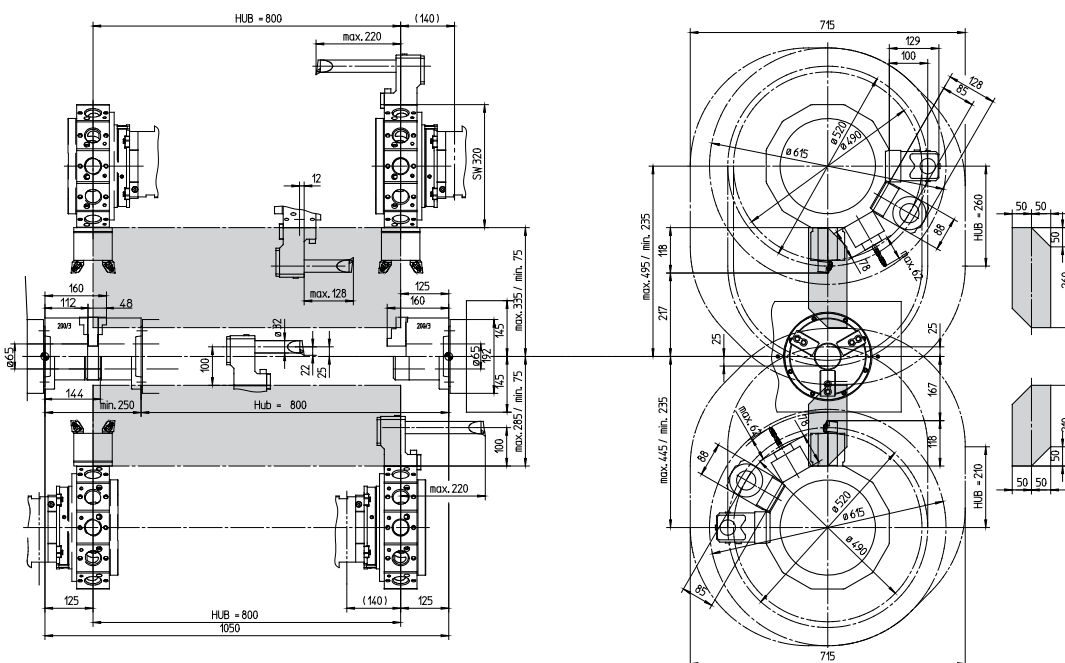
HYPERTURN 65 main spindle ø 95 mm

Workspace HYPERTURN 65-1000 Duoturn with VDI30



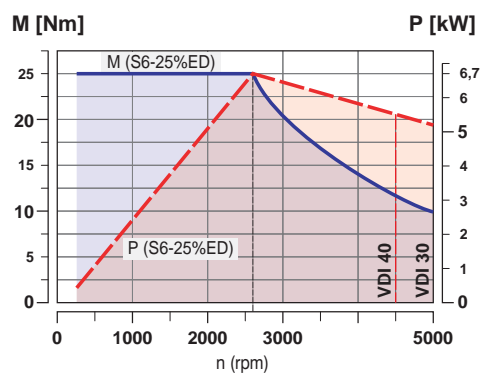
Indications in millimeters

Workspace HYPERTURN 65-1000 Duoturn with VDI40

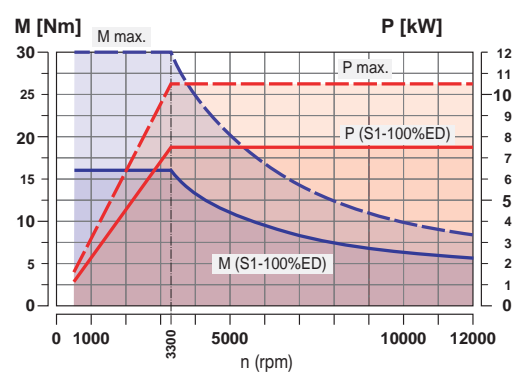


Indications in millimeters

Performance and torque diagram

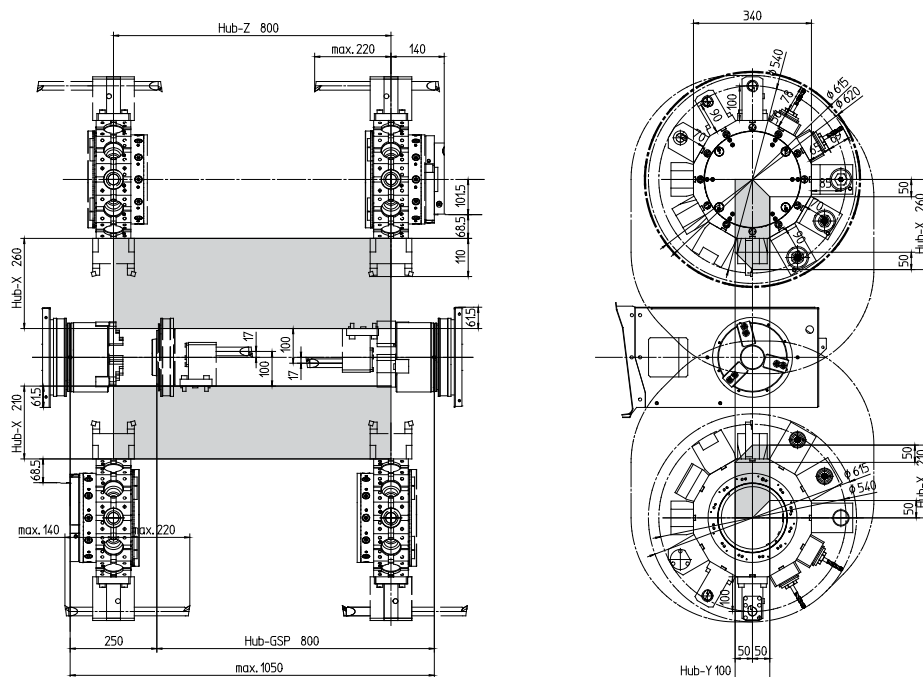


Tool turret - driven tools VDI 30/40



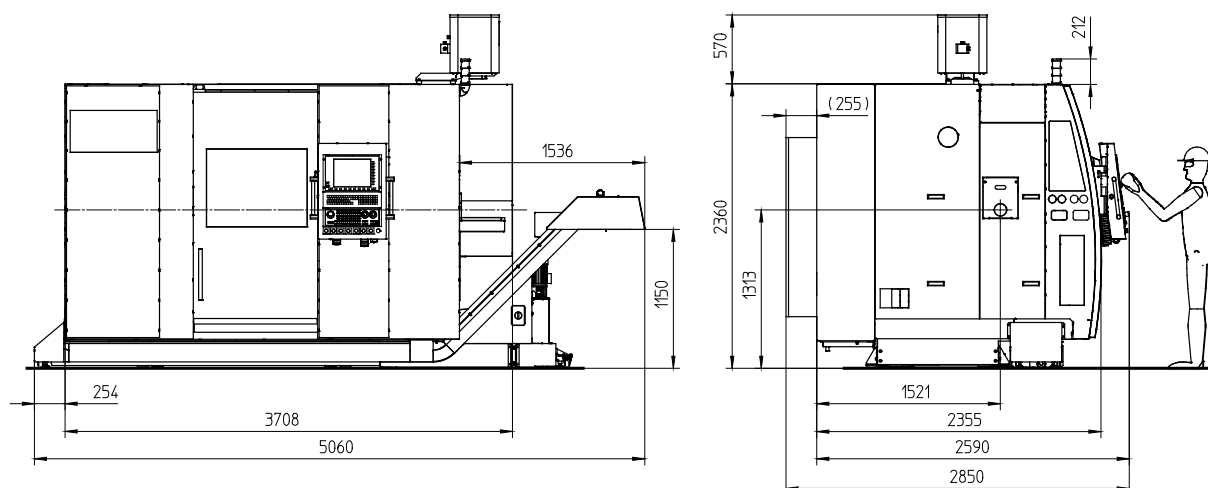
Tool turret - driven tools BMT55P

Workspace HYPERTURN 65-1000 Duoturn with BMT55



Indications in millimeters

Machine layout HYPERTURN 65-1000 Duoturn



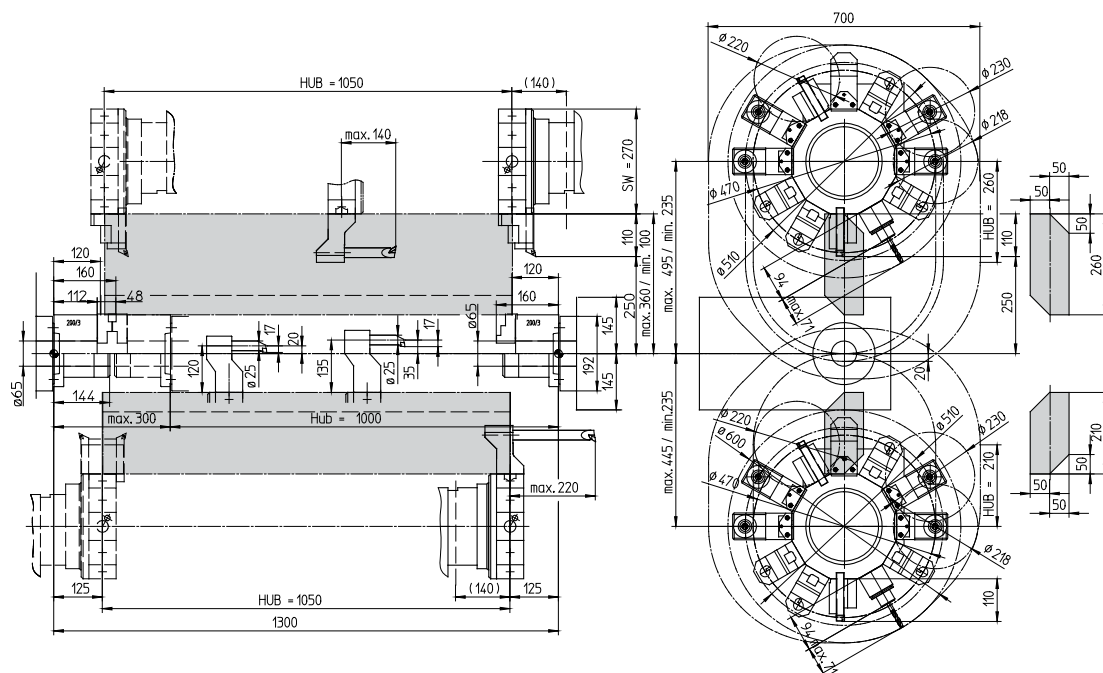
Indications in millimeters

Work area HT65-Duoturn

The HT65-Duoturn is available with two bed-lengths. Once with a distance between spindles of 1050 mm and once with 1300 mm. The shorter one is dedicated for shorter components, achieving shorter idle times. The longer version can be used to produce long shaft-type components using a steady-rest mounted at the turret but also using a full CNC-steady-rest instead of the lower tool turret. Also in case of machining deep holes at both ends of the components, the HT65-Duoturn is perfectly predestinated. Both turrets are mounted face-to-face. So long I.D. tooling can be used facing the main and counter spindle.

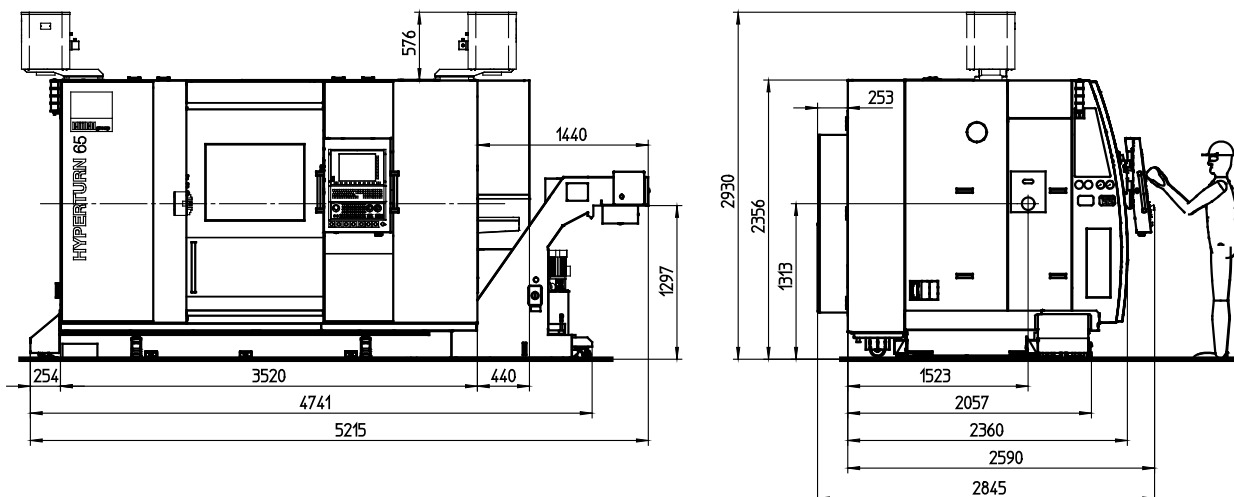


Workspace HYPERTURN 65-1300 Duoturn with VDI30



Indications in millimeters

Machine layout HYPERTURN 65-1300 Duoturn / Tripleturn



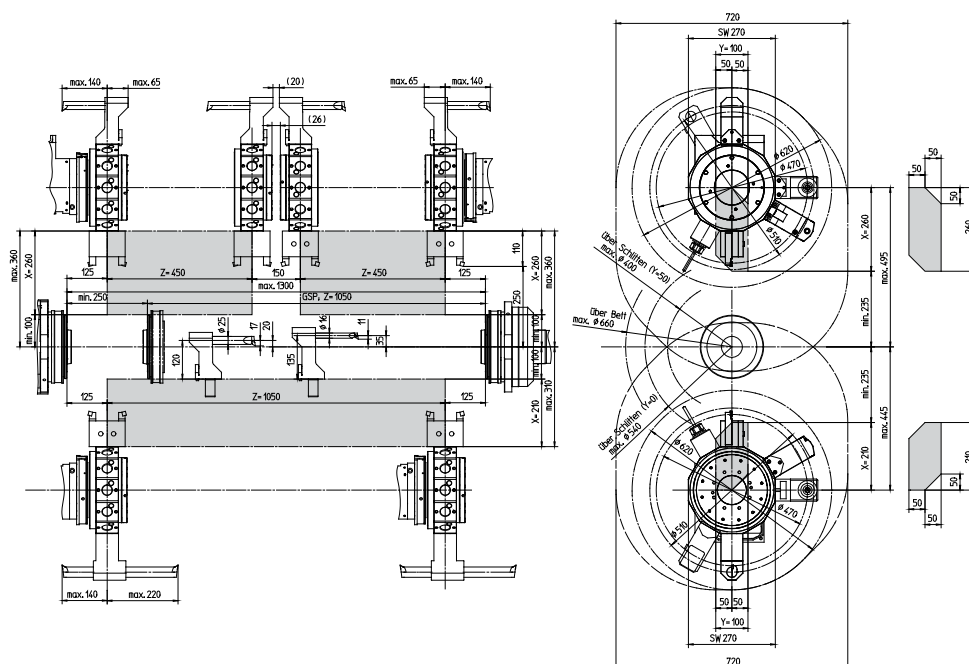
Indications in millimeters

Work area HT65-Tripleturn

The HT65-Tripleturn offers the largest work envelope in its class with a distance between spindles of 1300 mm and large X-axes strokes. So the machine can not only be used for bar work but also to machine larger chucking components. Chucks up to a diameter of 250 mm can be used without limitations at the main and counter spindle. Also there is plenty of power available at both spindles to run chuck work.

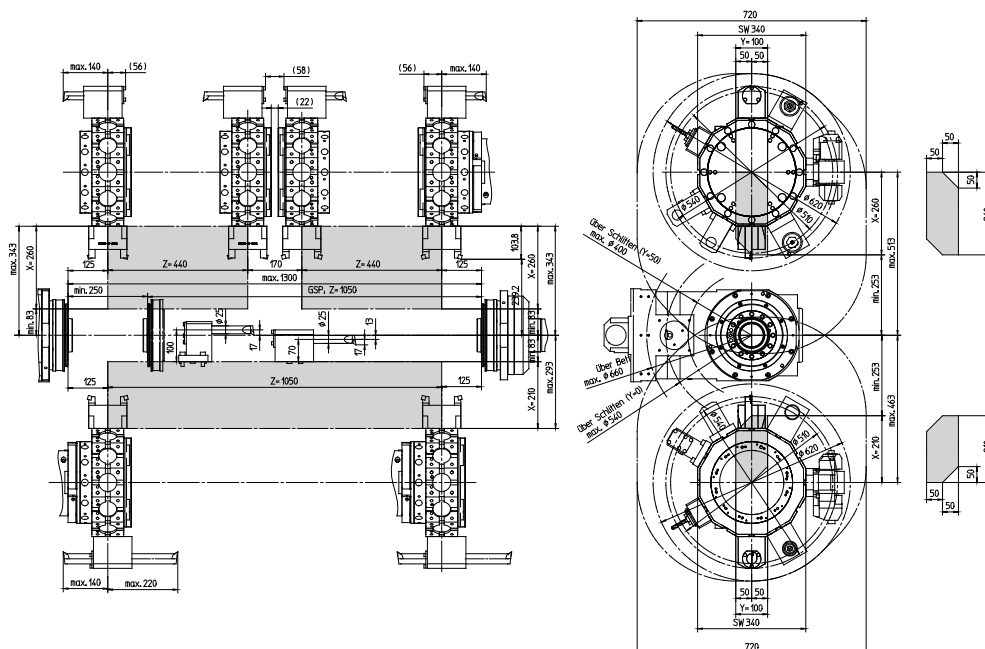


Workspace HYPERTURN 65-1300 Tripleturn with VDI30



Indications in millimeters

Workspace HYPERTURN 65-1300 Tripleturn with BMT55P



Indications in millimeters

Automatic Return on Investment

The HYPERTURN gantry loader is a universal loading and unloading device for all models in the HYPERTURN Series. EMCO Automation can equip it to your individual needs with numerous gripper and handling systems. How we do it: we standardize the components and customize the solution. The goal: a custom-tailored machine for the same price as a standard unit.

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



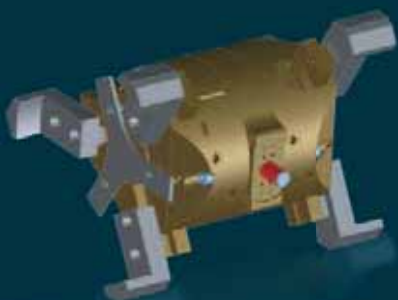
Multi-pallet attachment for a family of parts



4-station pallet attachment for valve caps



20-station pallet magazine with customer-specific pallets



2x3-jaw double gripper head



4x3-jaw gripper head



Shaft gripper head



Pivoting B axis

The special feature of the HYPERTURN gantry loader is the integrated B axis as swivel unit. It enables blanks to be loaded into devices at an angle and simultaneous pivoting and positioning. This means not only almost unlimited flexibility in loading and unloading, it also dramatically reduces cycle times.



Measuring system

An integrated measuring unit allows serial production of high precision components with minimum man-power. Tool offset changes are done fully automatically. Each workpiece is loaded into the measuring system via the gantry loader and measured using the feeler. Good parts are pushed into the storage box and bad parts are separated into a special chute.



Short and to the point

In view of the ever-increasing pressure on floorspace for machines, EMCO has developed the most compact short loader on the market: the EMCO LM1200. Custom-made for the HYPERTURN – and the perfect solution for automatic feeding and loading of cut-to-length bars.



EMCO TOP LOAD

A bar-loader which automatically reloads 3-meter bar stock. The loader is exceptionally reliable and has a patented guidance system that allows you to switch to a different bar stock diameter in just a minute or two. If required, the loader can also be extended by adding several material storage strips and can therefore be operated automatically for even longer periods.

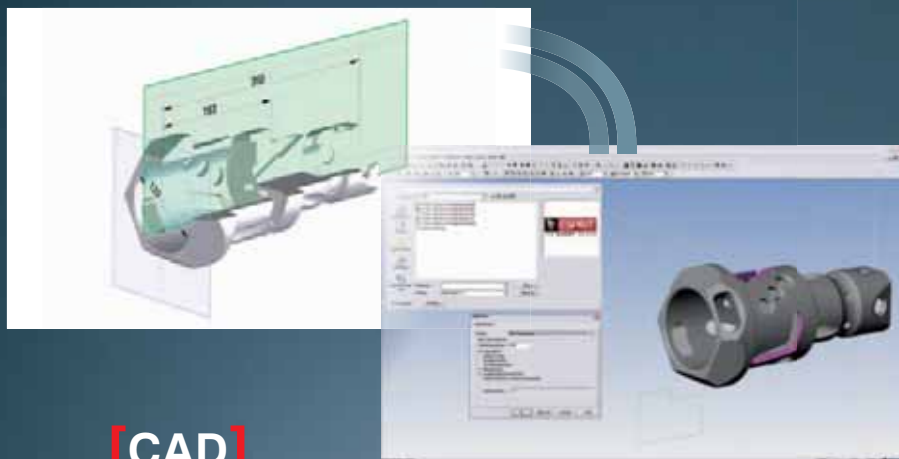


Unloading through the counter spindle

Long, thin workpieces can be removed from the machine using the counter spindle. Long parts can be stored in different ways. Finished parts can simply be allowed to roll away via a sloping surface or can be gathered to the side for storage using a timed belt.



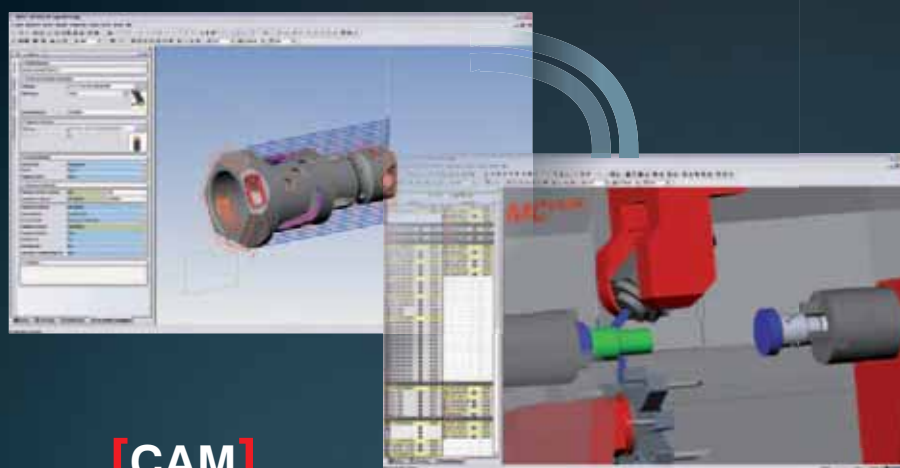
The Esprit CAM system offers high flexibility and process security, a comprehensive selection of machining cycles, maximum tool control, and cross-machine technology for your entire production facility.



[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



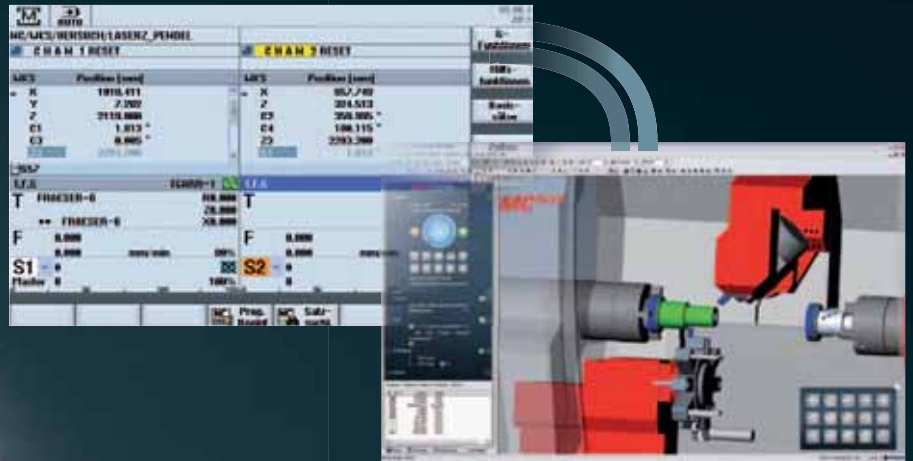
[CAD]

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

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

[Headstocks]

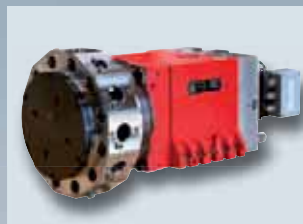
The design and manufacture of headstocks are two of EMCO's core competencies. During engineering, the focus is on precision, robustness, high rigidity, precise rotational characteristics, and a long service life.



www.emco-magdeburg.de

[Tool turret]

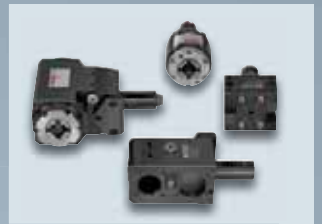
Rapid-indexing turrets with adjustable swivel speeds and milling drives represent the current state of the art. The backlash-free milling drive is not only ideal for milling and drilling, but also for rigid tapping, hobbing, and polygonal turning.



www.sauter-feinmechanik.com

[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

[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

[Hydraulic systems]

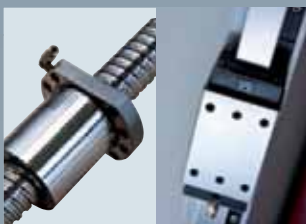
Compact dimensions, quiet operation, and high energy efficiency - just some of the advantages of the hydraulic assemblies used by EMCO. Monitored pressure switches prevent the need for time-consuming manual pressure adjustments.



www.hawe.de

[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

[Chip conveyor]

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



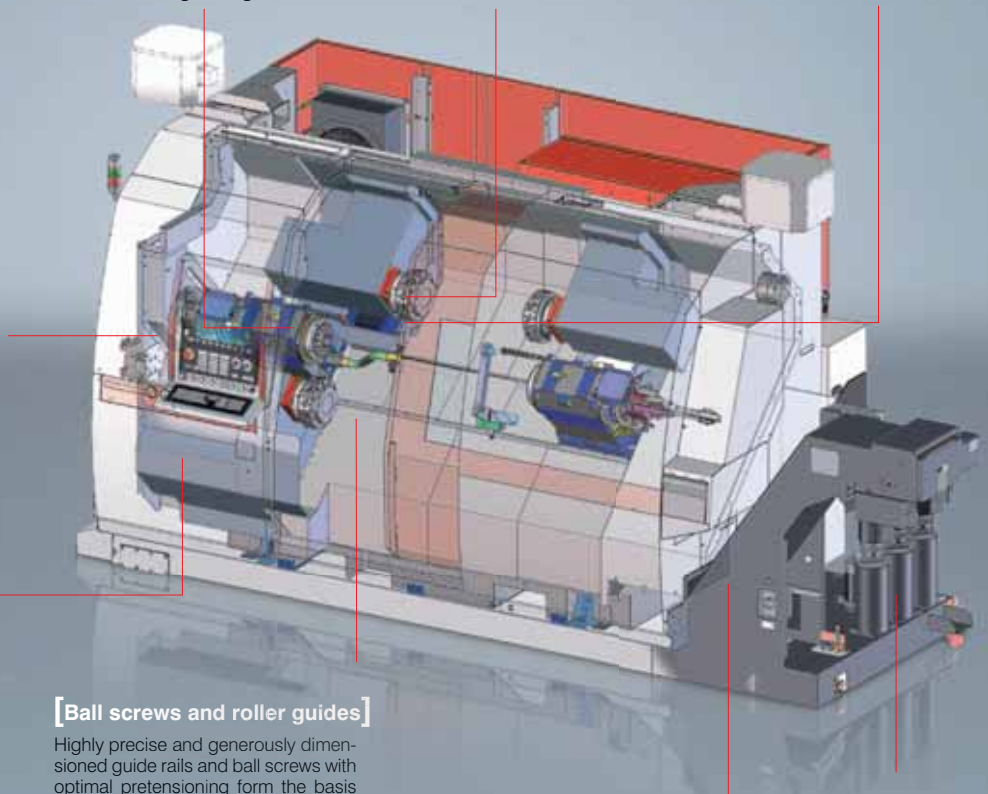
www.knollmb.de

[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



Minimum use of resources for maximum profit.

E[M]COLOGY
Designed for Efficiency

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%



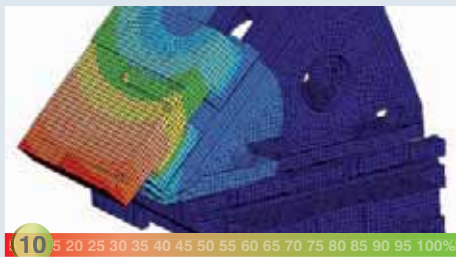
[Roller guides]

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%



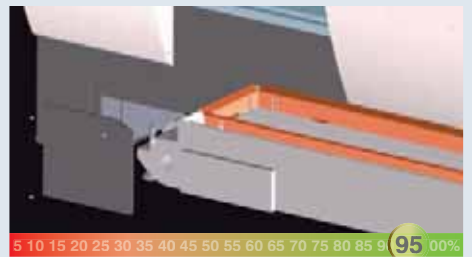
[Highly efficient motors]

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%



[Technical Data]



Designed for your profit

HYPERTURN 65

Work area	
Swing over bed	660 mm (26.0")
Swing over cross slide	540 mm (21.3")
Distance between spindle noses	1050 / 1300 mm (41.3 x 51.2")
Maximum turning diameter	500 mm (19.7")
Max. part length	750 / 1000 mm (29.5 x 39.4")
Max. bar-stock diameter	65 (76.2/95) mm (2.6") (3.0") (3.7")
Travel	
Traverse path X1 / X2 (HT65 DUOTURN)	260 / 210 mm (10.2 / 8.3")
Traverse path X1 / X2 / X3 (HT65 TRIPLETURN)	260 / 260 / 210 mm (10.2 / 10.2 / 8.3")
Traverse path Z1 / Z2 (HT65-1000 DUOTURN)	800 / 800 mm (31.5 / 31.5")
Traverse path Z1 / Z2 (HT65-1300 DUOTURN)	1050 / 1050 mm (41.3 / 41.3")
Traverse path Z1 / Z2 / Z3 (HT65 TRIPLETURN)	460 / 460 / 1050 mm (18.1 / 18.1 / 41.3")
Traverse path Y1 / Y2 / Y3	100 (+ / -50) mm (3.9" (+ / -2.0"))
Main spindle	
Speed range	0 – 5000 (4000 / 3500) rpm
Maximum torque	250 (250 / 360) Nm (184.4 265.5 ft/lbs)
Spindle nose DIN 55026	A2-6 (A2-8)
Spindle bearing (inside diameter)	105 (130 / 140) mm (4.1"(5.1")(5.5"))
Spindle bore (excluding draw-back rod)	73 (86 / 106) mm dia. (2.8" (3.4")(4.2")) dia.
Counter spindle	
Speed range (infinitely variable)	0 – 5000 rpm
Maximum torque	250 Nm (184.4 ft/lbs)
Spindle nose DIN 55026	A2-6 (A2-8)
Spindle bearing (inside diameter)	Ø 105 (130) mm (4.1" (5.1"))
C-axes	
Resolution	0,001°
Rapid traverse	1000 rpm
Drive power	
Main spindle (AC integrated-spindle motor)	29 (37) kW (38.9 (49.6) hp)
Counter spindle (AC integrated-spindle motor)	29 kW (38.9 hp)
Tool turret with VDI interface and direct drive	
Number of tools stations	2 / 3 x 12
VDI shaft (DIN 69880)	30 (40) mm (1.2" (1.6"))
Tool cross-section for square-shank tools	20 x 20 (25 x 25) mm (0.8 x 0.8" (1.0 x 1.0"))

Tool turret with VDI interface and direct drive	
Shank diameter for boring bars	32 mm (1.2")
Tool indexing time	0.7 sec
Driven tools	
Speed range	0 – 5000 (4500) rpm
Torque	25 Nm (18.4 ft/lbs)
Drive power	6.7 kW (9.0 hp)
Driven tools	2 / 3 x 12
Turret with BMT-interface and direct drive	
Number of tool positions	2 / 3 x 12
Precision interface	BMT-55P
Tool cross-section for square tools	20 x 20 (25 x 25) mm (0.78 x 0.78 (0.98 x 0.98"))
Shank diameter for boring bars	40 mm (1.6")
Tool change time	0,5 sec
Speed range of the driven tools	0 – 12000 rpm
Torque of the driven tools	30 Nm (22.1 ft/lbs)
Driving power of the driven tools	10 kW (13.4 hp)
Feed drives	
Rapid speed X1 / X2	30 m/min (1181 ipm)
Rapid speed Z1 / Z2 / Z3	30 m/min (1181 ipm)
Rapid speed Y1 / Y2	12 m/min (472 ipm)
Feed force X1 / X2	5000 N
Feed force Z1 / Z2 / Z3	8000 N
Feed force Y1 / Y2	7000 N
Tailstock	
Traverse path	800 / 1050 mm (31.5 / 41.3")
Max. contact force	8000 N
Inner cone for live-centre	MT 4
Coolant system	
Tank capacity	400 / 450 l (105 / 118 gal)
Pump capacity	2 / 3 x 2,2 kW (2.7 / 4.0 x 2.9 hp)
Power consumption	
Connected load	50 kVA
Compressed air	6 bar (87 PSI)
Dimensions	
Height of center above floor	1300 mm (51.2")
Overall height	2360 mm (92.9")
Required space L x D (with chip conveyor)	5060 / 5300 x 2850 mm (199.2 / 208.7 x 112.2")
Total weight	9500 kg (20943.9 lb)
Safety devices (approximately)	
	CE compliant

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