EMCO

HYPERTURN 100 PM

Turning and Milling Centre for the Complete Machining of Complex Workpieces

/ MULTI-FUNCTIONAL TURNING AND MILLING CENTER

The HYPERTURN 100 is a powerful multitasking machine for the machining of complex workpieces with a maximum turning diameter of 800 mm* and a maximum turning length of 3100 mm (between the tips). The 40 or 100 available tool stations allow high flexibility during processing.

* without lower turret, pay attention to workpiece weight

1 MAIN AND COUNTER SPINDLE

/ Dual drive motor for a backlash free C-axis (A2-11")
/ Integrated spindle motor with C-axis (A2-8")
/ Impressive performance values (A2-8"/A2-11"):
33/53 kW – 800/4400 Nm – 3500/2500 rpm
/ Liquid cooling with automatic temperature regulation

2 MILLING SPINDLE

/ Moving column structure for high stiffness
/ Integrated B-axis
/ Excellent technical data: 165 Nm, 33.8 kW, 12000 rpm
/ Integrated Torque motor
/ Large swivel range

3 TOOL MAGAZINE

/ Perfect accessibility for tool setup and inspection
/ Up to 100 tool stations
/ 3 additional stations for boring bars and large dimensioned tools

4 Y-AXIS

/ Large working stroke +/– 210 mm
/ Compact construction
/ Preloaded roller guides
/ Large distance between the guides

5 CONTROL

/ Ergonomically arranged
/ Can be rotated by 90°
/ Height adjustment +/– 100 mm
/ Sinumerik 840D sl
/ 22" multi-touch display including IPC and EMCONNECT process assistant

6 CHIP CONVEYOR

/ T-carpet chip conveyor
/ Chip ejection height 1130 mm
/ Coolant volume 500/600/700 l
/ Milling spindle pump 14 bar
/ Turret pump 14 bar
/ 2 washing pumps of 7 bar

7 MACHINE DESIGN

/ Optimum use of space
/ Innovative protection system against flying chips and coolant
/ Large workspace
/ Good ergonomics and acessibility
/ Standard serial workspace flushing

8 TOOL TURRET

/ 12 fixed or motorized tool positions
/ External or internal coolant, up to 50 bar
/ Integrated servo drive
/ Taps without length compensation, polygonal turning, and many other technologies
/ Comprehensive support and reduction of production times

STRUCTURE

1 MACHINE BENCH

/ One-piece machine construction
/ Torsion-resistant welded steel construction
/ Machine Bench filled with special concrete with DMP® system
/ 3 available bed lengths with space between the tips 1700 -2400-3300 mm

2 ROLLER GUIDES

/ In all linear axes
/ Large guide distances

3 TOOL TURRET

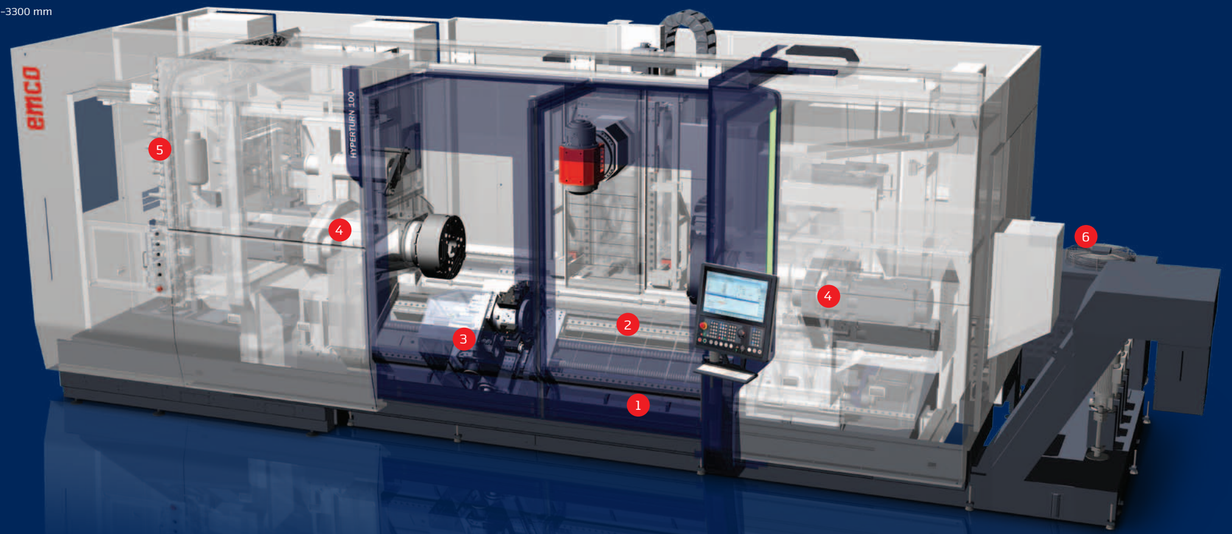
/ 12-fold with BMT65P/VDI40 interface with Direct Drive Technology
/ Water-cooled direct drive 6000 rpm
/ Max. coolant pressure 50 (100) bar

4 MAIN AND COUNTER SPINDLE

/ Emco 11" tandem drive solution with wide speed range
/ C axis for milling up to 2800 Nm (11")
/ Emco 8" Integrated spindle motor (15M) with synchronous technology and water cooling
/ Additional holding brake and clamping pressure programmable as standard version
/ Spindle connection DIN A2-8" or 11" (6" -15" optional)
/ Full clamping cylinder with clamping stroke monitoring

5 TOOL MAGAZINE

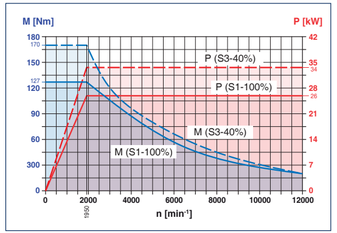
/ Chain magazine with 40/100/120 tool stations
/ Space-saving integrated in the basic machine
/ Servocontrolled swivel arm changer
/ Short changing times
/ Max. tool length 500 mm
/ Max. tool diameter 90 (150) mm
/ Max. tool weight 12 kg



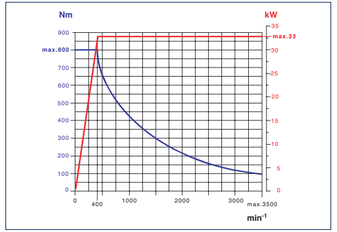
6 COOLING DEVICE

/ Standard version
/ Temperature process monitoring of milling spindle, main and counter spindle and drive direct from the tool turret
/ Temperature process monitoring of hydraulic oil (opt.)

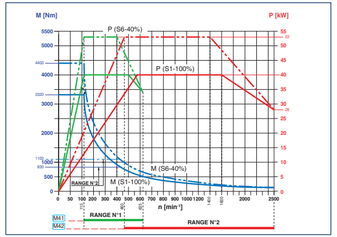
Performance and Torque



Milling Spindle (standard version) with 12000 rpm



Main- and Counter Spindle (A2-8")



Main- and Counter Spindle (A2-11")

TECHNICAL HIGHLIGHTS

MAIN SPINDLE AND COUNTER SPINDLE (A2-11")

Featuring performance data that enable all types of machining without any compromises. The EMCO spindle concept comes with two servomotors that also act as a C-axis. The motors work synchronously, guarantee back-lash compensation and enable the achievement of the outputs and torques shown in the diagram. The main spindle and the counter spindle are equipped with a special EMCO cooling system that optimises the temperature stability and guarantees maximum precision in every processing. A mechanical gear on the counter spindle is available as an option.

MILLING SPINDLE

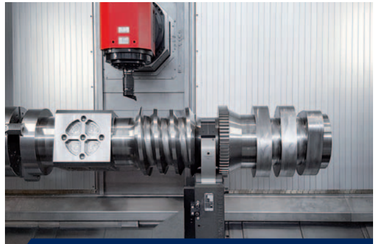
The standard version comes with 12000 rpm and is suitable for all turning, drilling and milling operations and technologies. The water-cooled ISM (integrated spindle motor) can be delivered with up to 33,8 kW and a maximum torque of 165 Nm as well as with HSK-T 63 or PSC63 (Capto C6). Coolant inside and outside (up to 80 bar), which allows the efficient production of turned and milled parts.

WORK AREA

The spacious work area has been designed for workpieces featuring a turning diameter of up to 720 mm. The complete machining of complex workpieces in one setup is possible when using an CNC-bezels and a counter-spindle.

MAIN SPINDLE AND COUNTER SPINDLE (A2-8")

The A2-8" spindle version with dynamic direct drive and a maximum of 3500 rpm and 33 kW is available as an alternative. The standard spindle brake allows for additional stability during high-performance milling. Identical performance data are offered by the movable counter spindle, which helps achieve a secure automated machining process.



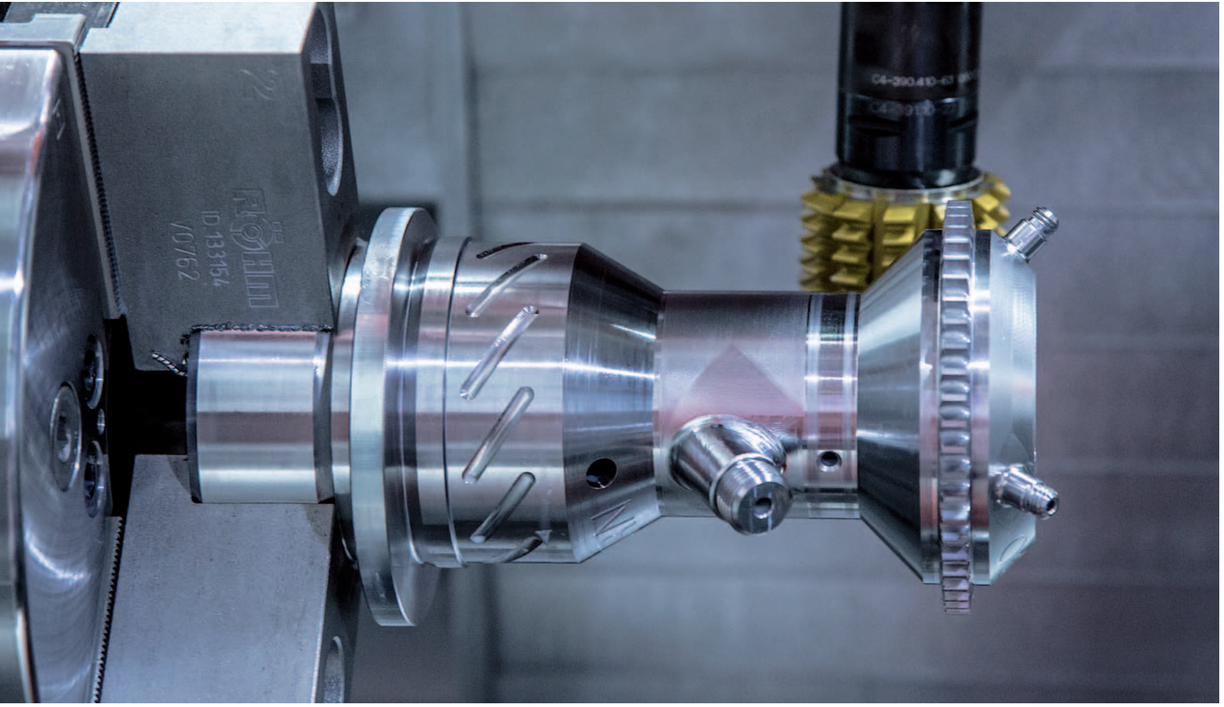
HYPERFLEXIBILITY

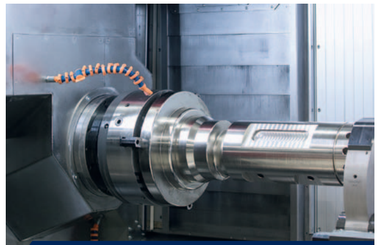
The HYPERTURN 100 machine concept enables a wide range of machining operations in one setup, including off-centre turning and milling, bore levelling, gear milling, contour milling, 5-axis machining and much more.

HIGHLIGHTS

- Very large work area for the complete machining of large workpieces featuring a turning diameter of up to 720 mm and a maximum length of 3100 mm
- Powerful main spindle and counter spindle (A2-8", A2-11"), 33/53 kW and 800/4400 Nm
- Dynamic and precise B-axis with direct drive as well as high torque and performance
- Multitasking and multi-technology: Sinumerik 840D sl with EMCONNECT
- Main spindle and counter spindle: high-performance machining with vibration-damped boring bar, including a special magazine (option) with the same drive concept and identical performance data
- Automatic tool default settings and workpiece measuring probes
- One or several CNC-bezels
- 40 / 100 tool magazine stations
- Flexible milling spindle with 12000 rpm
- Boring bar pick-up system
- Simultaneous 5-axis machining
- High pressure coolant: 80 bar
- Virtual machine – collision monitoring
- EMCO tele-/network service
- Tool breakage monitoring
- Made in the Heart of Europe

TECHNICAL HIGHLIGHTS





MAIN SPINDLE

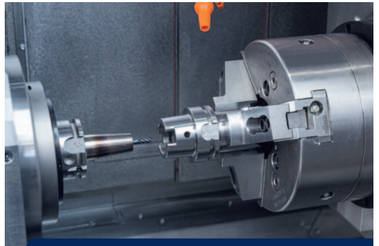
EMCO's spindle solutions are characterized by exceptional dynamic and technological precision, enabling perfect production.

MILLING SPINDLE

The B-axis of the HYPERTURN 100 Powermill is supported for state-of-the-art milling processes such as 5-axis machining, HSC or HPC machining with a 240° swivel range and a 100% monitored ISM motor solution. This means that complex turned or milled parts can be produced very efficiently. A high torque 450 Nm solution is available as an option, complemented by an HSK-T100 or PSC80 (C8) coupling.

MANUAL TOOL CHANGING

Tools can be loaded into the tool magazines from the front. This avoids the need for the user to go to the rear of the machine. Also tool wear or break inspections can be handled in a timesaving way.



COUNTER SPINDLE

The moving counter spindle offers identical performance data as the main spindle. The mechanical disc brake is also included in the standard equipment of the machine. Additionally, a stroke-monitored part ejector with internal liquid cleaning is integrated into the spindle. This ensures a reliable, unmanned machining process.

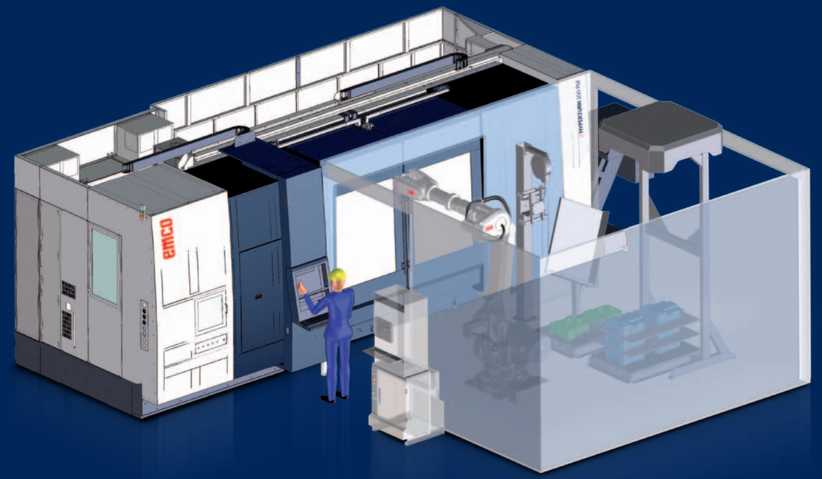
TOOL MAGAZINE

Depending on the version, the chain magazine can accommo-date 40 or 100 tool holders with HSK-A63 / HSK-T63 /PSC63 (C6), or 75 tool holders HSK-A100/ HSK-T100/ PSC80 (C8). shaft. Easily accessible from the front, the magazine has been integrated in the machine housing without occupying too much space.

CONTROL UNIT

The Sinumerik 840D sl control unit is located on the right side of the workspace of the HYPERTURN 100 Powermill swiveling in a height-adjustable panel in. This ensures maximum ergono-mics for the set-up and running in of the machine.

EMCO AUTOMATION SOLUTIONS: OPTIMIZATION OF PRODUCTION PROCESSES WITH HIGH-LEVEL FLEXIBILITY

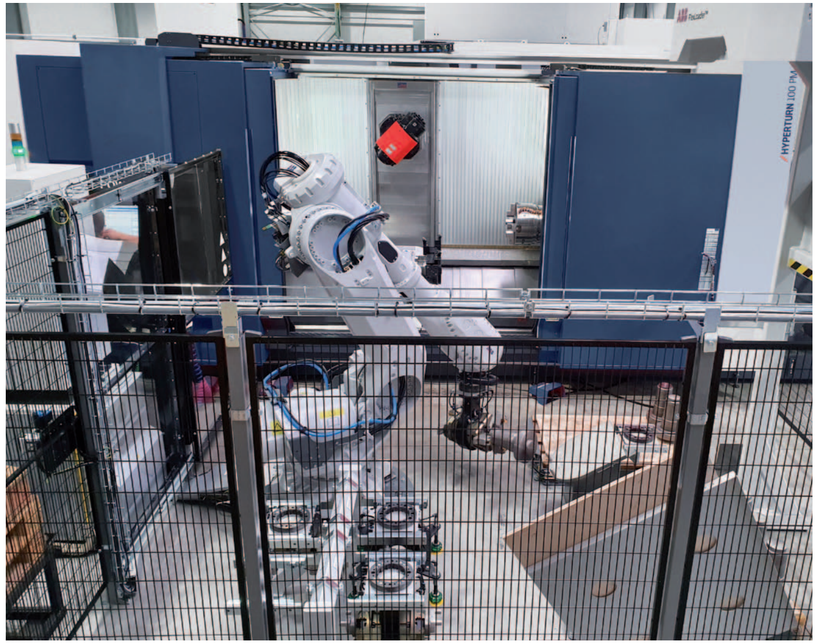


ADVANTAGES

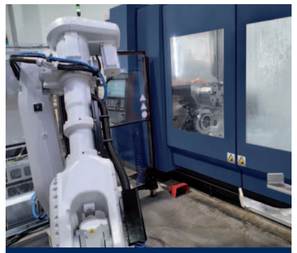
- **Fully automatic loading and unloading of the workpieces**
- **Multi-channel Sinumerik control incl. user cycles**
- **Seamless interplay between the machine tool and the loading device**
- **Varied possibilities of customer-specific adaptation**
- **Possibility of integration of measuring station, signing station, cleaning station, etc.**
- **Reduction of the set-up time due to a loading hatch**
- **Worldwide service**

NONSTOP RETURN ON INVESTMENT

EMCO solutions focus on customer-specific requirements.
The perfect implementation of customer-specific requirements shortens production times. The compact installation dimensions of 8900 x 7200 mm optimally match the conditions in production. The robot head change with different grippers, the flexible self-centering solution for different parts, the combination of parts by the tool turret and the B-axis expand the system and meet the demand for high productivity. Pallets- Scanners for blanks enable oriented loading of the blanks into the machine and increase the autonomy for unattended production.



In cooperation with ABB, the robot IRB6700 / 245 kg, the pallet system FLEXLOADER FP800 with 2D / 3D camera and the completion of the system from the baking station with automatic changeover are the basis for a perfect result that meets the customer's requirements.



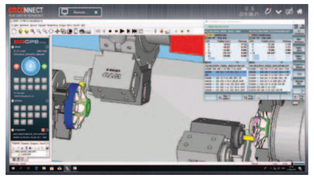
The very short set-up times, the optimal software solution and the user-friendliness with highest safety are the decisive factors for a profitable production.

NETWORKS ARE CREATED INDIVIDUALLY. OUR SOLUTIONS AS WELL.

Staying in touch is important not only among human beings. Persons, machines and the whole framework of production must also be connected perfectly and safely in order to ensure efficient procedures during the production process. With EMCONNECT you have the key to optimized connectivity for a digital factory.
Perfectly integrated into numerical control, EMCONNECT enhances this type of system continuously its powerful functions for the modern generation of controllers (SIEMENS, HEIDENHAIN, FANUC).

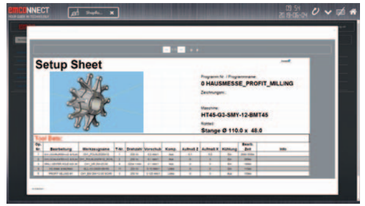
Integration into control

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.



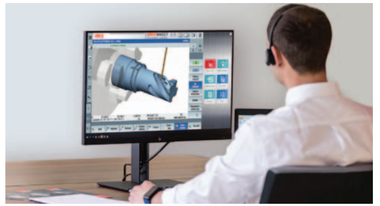
An innovative concept

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 uses, data and documents. In this way, EMCONNECT makes an important contribution to a highly efficient working method at the machine.



Comprehensive connectivity options

With the remote support, the web browser and the remote desktop, there are numerous connectivity options, even outside of the immediate production environment. With the help of the integrated remote support, it is easily possible to carry out the remote diagnosis and remote maintenance. If desired by you, the experienced support team from the EMCO helpdesk will connect itself directly with your machine and will thus be able to help you quickly and cost effectively in case of problems. In this way, it will be possible to reduce all on-site service activities and costly downtimes of your machines to a minimum.

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

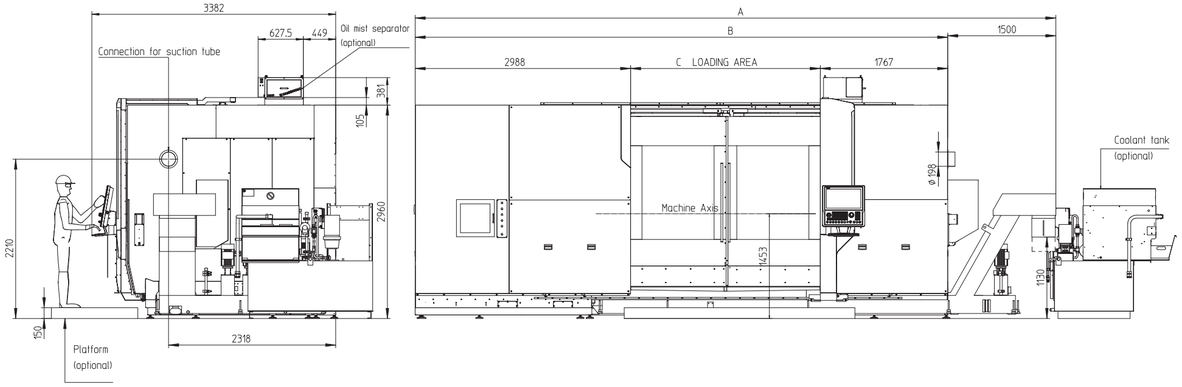
- Control
- Dashboard
- Machine Data
- System
- Remote Desktop
- Web Browser
- Remote Support
- Settings
- Cutting Calculator
- Calculator
- Notes
- Service
- Documents
- EMCO TechSheet
- GD&T
- File Import

Optional Apps

- Shopfloor Data
- OPC UA

INSTALLATION PLAN

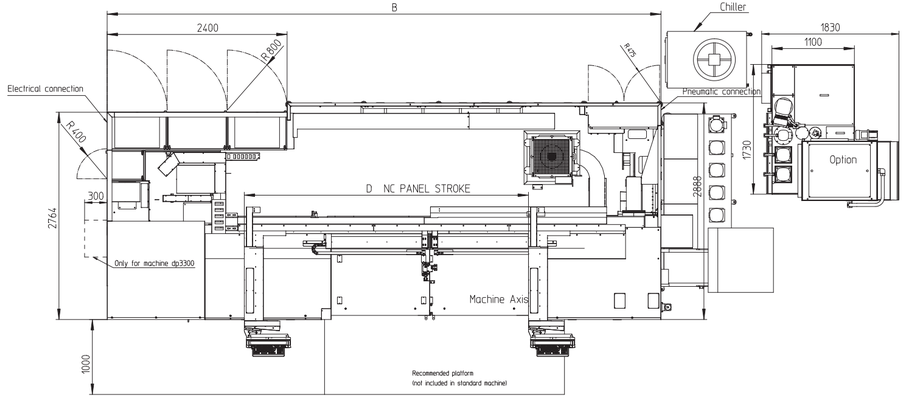
Installation Plan HT 100 PM with cooling unit and band filter system



Indications in millimetres

INSTALLATION PLAN

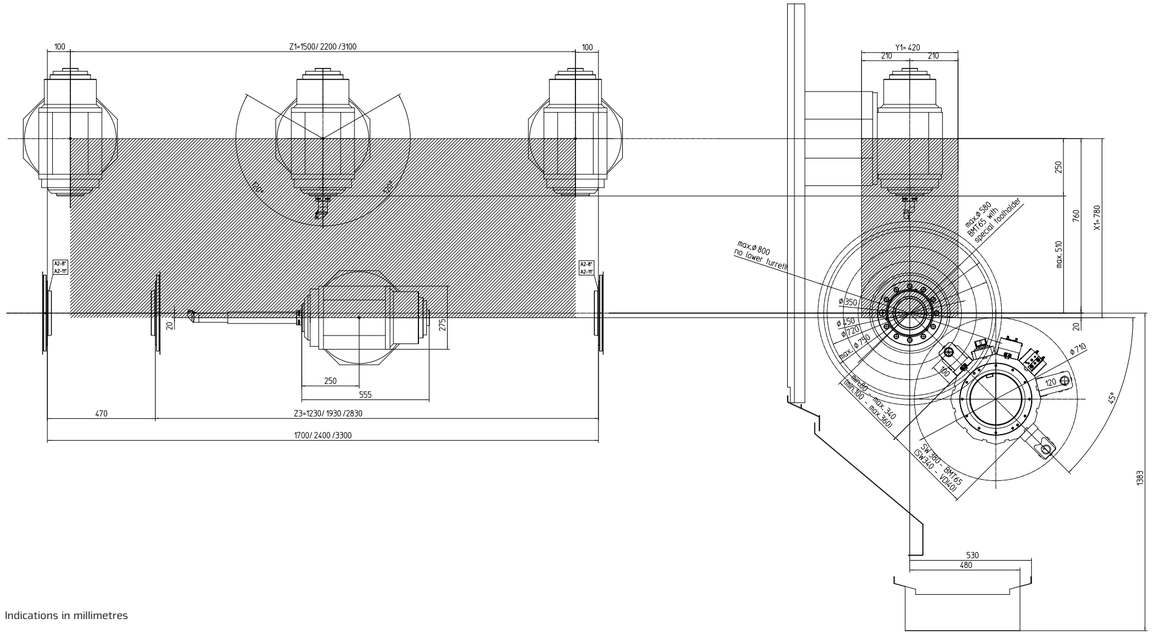
Installation Plan HT 100 PM with cooling unit and band filter system



Indications in millimetres

WORK AREA

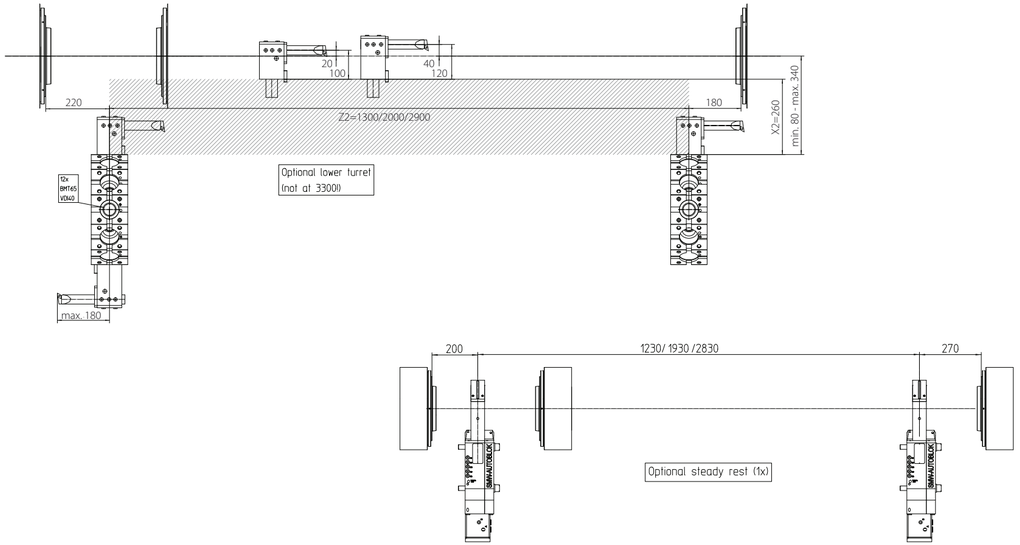
Layout HT 100 PM and side view with counter spindle, turret BMT65P



Indications in millimetres

WORK AREA

Work area HYPERTURN 100 PM



* Various workspace solutions with options on request

TECHNICAL DATA

Working area

Swing over bed	750 mm (without tool turret)
Max. turning diameter	750 mm (with milling spindle)
Length between spindle and centre	1700 / 2400 / 3300 mm
X1-axis	780 (+760/-20) mm
Y-axis	420 mm
Z1-axis	1500 / 2200 / 3100 mm

Main spindle - counter spindle

Spindle connection (DIN 55026)	A2-8'' // A2-11''
Power chuck diameter	315 / 630 // 400 / 630 mm
Max. spindle speed (11'' with transmission)	3500 // 2500 rpm
Max. drive power, main spindle	33 // 53 kW
Max. torque (11'' with transmission)	800 // 4400 Nm
Max. weight incl. chuck	350 // 500 // 700 kg
Max. weight between the centres incl. chuck	800 // 1500 kg

Tailstock with quill MK 5

Travel distance (without steady rest)	1230 / 1930 / 2830 mm
Travel distance, quill	150 mm
Quill diameter	150 mm
Max. contact pressure	2500 – 22200 N
Movement speed, tailstock	15 m/min

X-, Z-, Y-axes

X1-X2_Z2 / Z1 and counter-spindle	30 / 40 / 20 m/min
Feed force X1 / X2	1640 daN
Feed force Z1 / Z2	1640 daN
Counter-spindle Z3	1640 daN

Millingspindle - Powermill

Speed range	0 – 12000 rpm
Max. Torque	165 Nm
Max. drive power	33,8 kW
Tool holder	HSK-T63/PSC63 (Capto C6)

B-axis

Travel range	240°
Detend torque of clamp	6000 Nm
Drive torque interpolated	880 Nm

Driven Tools (BMT 65P - VDi 40)

Speed range	6000 rpm
Torque	62 Nm
Drive power (max.)	21 kW
Number of driven tools (max.)	12

Tool magazine

Tool magazine stations	40 / 100
Max. tool length	500 mm
Max. tool diameter	90 mm
Max. turning tool weight	12 kg

Coolant system

Coolant pressure (max. milling Spindle / tool turret)	80 / 50 bar
Flushing system in the work area	2 x 14 bar
Cooling tank capacity	ab 600 l

Power consumption (in relation to the desired machine version)

Connected load (max.)	117 KVA
Compressed air connection	6 bar

Dimensions (in relation to the desired machine version)

Height above floor	1450 mm
Total length including chip conveyor	8100 / 8800 / 9600 mm
Height	3000 mm
Width / with control panel	3200 mm
Weight	18000 – 22000 kg

ELECTRICAL CONNECTION

	A2-8''	A2-11''
Voltage 3/p	400 V	400 V
Voltage tolerance	+10/-10 %	+10/-10 %
Mains power	65 kVA	86 kVA
Short circuiting power	4000 kVA	4000 kVA
Main fuse	125 [A gG/gL]	160 [A gG/gL]
Electrical cable	3P+G35 mm²	3P+G95 mm²

EMCO

beyond standard

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