

# GANTRY-TYPE MACHINING CENTRES

ZPS MCG810i / 820i



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## ZPS MCG810i / 820i

The machine functions are directed by a CNC control system which enables the machining of the spatially complicated shapes when the tool follows the path resulting from the 3D CAD program output. The machine construction is formed by an upper-gantry type portal whose frame consists of two side walls firmly attached to the base. The cross rail (Y-axis) moves along the upper sides of the side walls in the longitudinal direction. A cross slide with a sliding ram (X-axis) is moving in the transversal direction. The sliding ram moves in the vertical direction (Z-axis) and can be fitted with an electro-spindle or with a CyTec two-axis head. The CyTec head enables rotary movement (C-axis) around the vertical axis as well as a swinging movement (A-axis) around the horizontal axis.

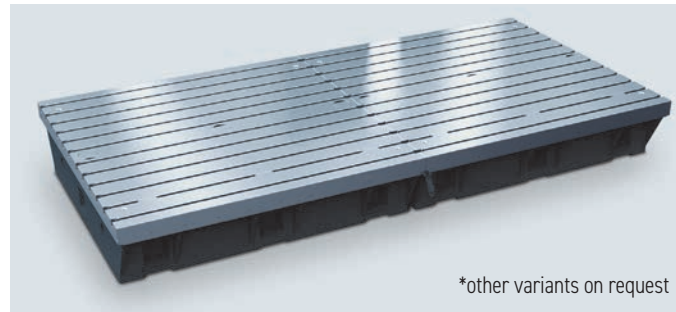
As standard on the 810 series machines, the clamping surface for the workpiece is formed by a stationary (fixed) work table. For machines of the 820 series, the clamping surface for the workpiece consists of two fixed work tables. Instead of the fixed table, a two-axis rotary table (optional equipment) consisting of a rotating part (C axis) and a tilting part (A axis) can be installed on the machine. All X, Y, Z guides are made up of linear guides with rolling units. Their dimensions and location allow not only a high load on all moving units while maintaining high dimensional accuracy and the quality of the workpiece surface even during intermittent cutting, but also ensures a long service life of the machine. The operational movements of the cross rail, the cross slide and the sliding ram are performed by an AC regulating motors with digital control via rotating ball screws with a ball nut. Measurement of positions in X, Y, Z axes is performed directly either by means of incremental or absolute linear measuring units.

### TECHNOLOGICAL CAPABILITIES OF THE MACHINE

This vertical machining centre is a highly productive machine designed primarily for the production of moulds in the press, plastic, automotive and aerospace industries. Due to its design, it is suitable for machining of complex precise spatial shapes in both three-axis and five-axis machining. Typical products are moulds for the production of pressing and forming tools, dies for forging or moulds for injection of plastic materials, various equipment for forming plastic and rubber, and other machine products with complex shapes. A large scope for of the machine utilization also lies in the sphere of tool engineering and conventional manufacture, i.e. in a classical milling, drilling, countersinking and reaming of holes, cutting and milling of threads. Machines equipped with a rotary table and a lathe spindle unit also enable turning operations, such as outer and inner surfaces turning, face turning, outer and inner thread turning, etc. Due to the high dynamics, very high rigidity and damping properties of the structure, the machine enables the use of the advantages of HSC technology.

### FIXED TABLE PARAMETERS\*

MACHINE TYPE	MCG810i	MCG820i
Clamping surface	1,200 × 1,000 mm	1,200 × 2,000 mm
T-slots dimension	18H8 mm	18H8 mm
Maximal load	3,000 kg/m <sup>2</sup>	3,000 + 3,000 kg/m <sup>2</sup>
Clamping surface from floor	750 mm	800 mm

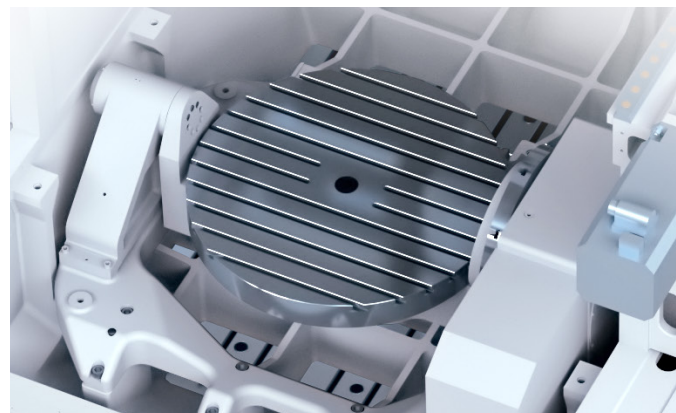


\*other variants on request

### TILTING ROTARAY TABLE PARAMETERS

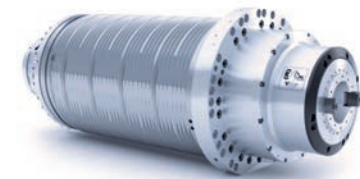
MACHINE TYPE	MCG810i	MCG820i
Clamping surface	∅ 600 (800*) mm	∅ 600 (800*) mm
T-slots dimension	14H8 mm	14H8 mm
Max. table load – tilt ± 15° (* ∅ 800 mm)	650 (560*) kg	650 (560*) kg
Max. table load – tilt ± 90° (* ∅ 800 mm)	450 (360*) kg	450 (360*) kg
Clamping surface from floor	875 mm	925 mm
<b>C-axis</b>		
Max. rotation speed (turning-milling table)	400 rpm	400 rpm
Max. rotation speed (milling table)	100 rpm	100 rpm
Torque S1/maximal – turning	653 / 1,000 Nm	653 / 1,000 Nm
Torque at clamping (80 bar)	3,000 Nm	3,000 Nm

\*valid for ∅ 800 mm clamping plate



### SPINDLE UNITS

#### 3 - 5 AXIAL MACHINES WITHOUT HEAD CHANGE



ISO-40	15,000 rpm	25 / 31 kW	160 / 200 Nm
HSK-A63	18,000 rpm	25 / 31 kW	160 / 200 Nm
HSK-A100	14,000 rpm	25 / 37 kW	160 / 236 Nm
HSK-T100*	12,000 rpm	25 / 30 kW	119 / 143 Nm

\* turning clamping 690 Nm

#### SPINDLE UNIT FOR CYTEC S8 TWO AXIS TOOL HEAD

HSK-A63	18,000 rpm	17.5 / 23 kW	56 / 72 Nm
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#### 1-axis or 2-axis head



### ECO FRIENDLY

The machine enclosure prevents from discharge of coolant, lubricants and machining fumes outside the workzone, thus minimizing its negative impacts on the environment. The machine design conforms to the requirements of the 2006/42/EC machinery directive, and fulfils all requirements of safety standards for the CE marking. The lubrication of movable and rotary parts of the machine (the linear axes, electrospindle) is ensured by the application of an automatic grease lubrication system which prevents from contamination of the coolant and machine parts.

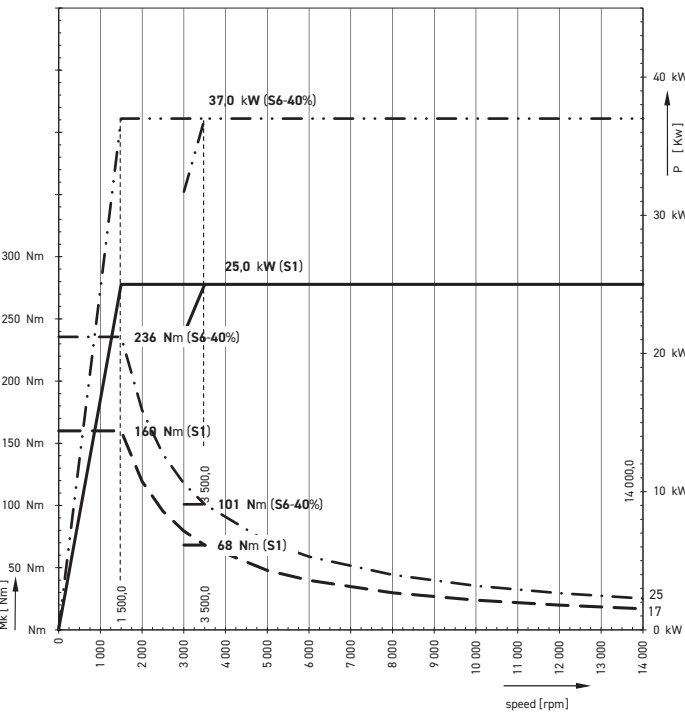
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## SPINDLE POWER AND TORQUE

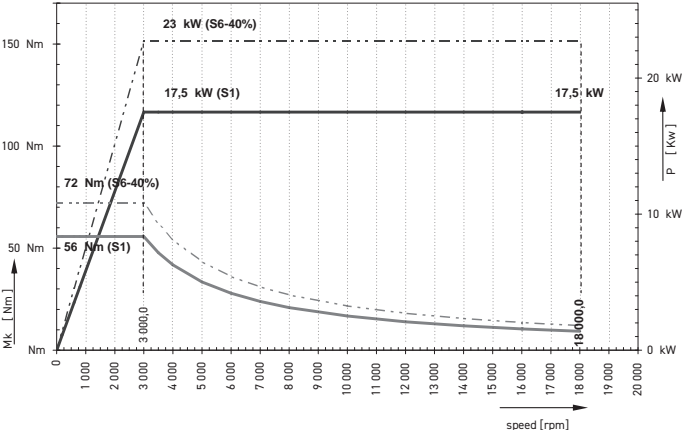
### HSK-A100 spindle power and torque

P/Mk/n characteristic Power/Torque/speed diagram

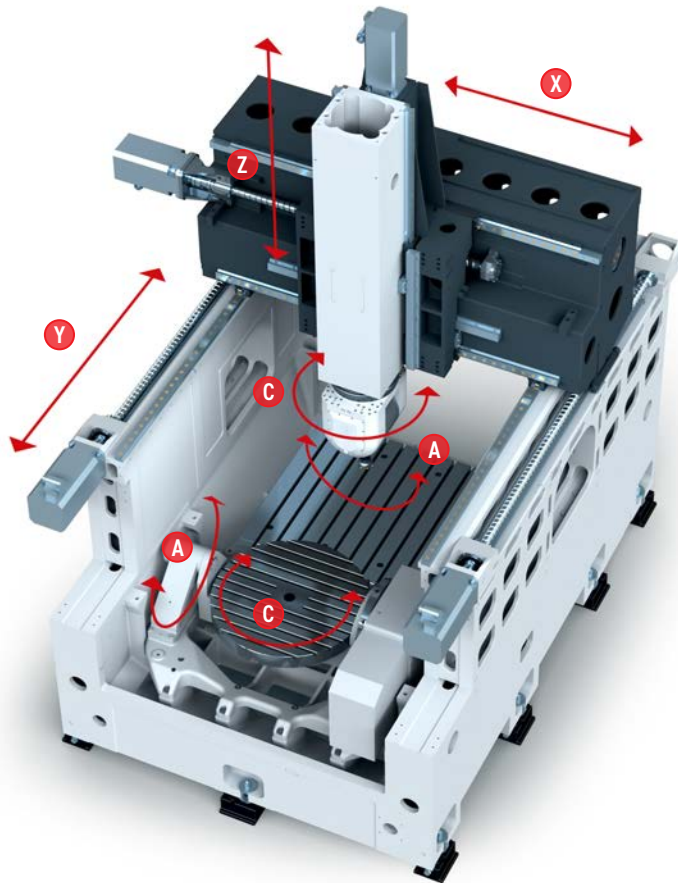


### HSK-A63 (with CyTec S8 head) spindle power and torque

P/Mk/n characteristic Power/Torque/speed diagram



## MACHINE MAIN PARTS

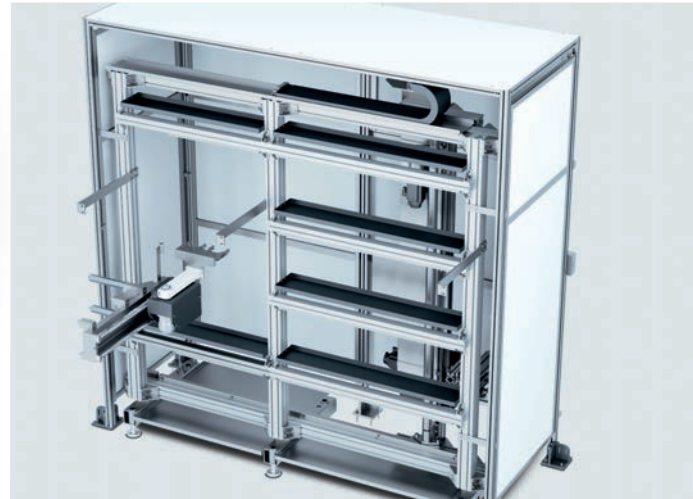


## MACHINE KINEMATICS

Machine functions are directed by a CNC control system which enables the machining of the spatially complicated shapes when the tool follows the path resulting from the 3D CAD program output. All guideways X, Y, Z are formed by linear guideways with rolling units. Their dimensions and position allow not only for the high loads of all wholes while maintaining the high dimensional accuracy and first-rate surface finish of workpieces even at interrupted cut, but also the machine long service life. Operational movements of the cross rail, cross slide and vertical saddle are performed by servopacks with digital motors via rotating ball screws with ball nuts. Measurement of positions in X, Y, Z axes is direct and performed either by incremental or absolute linear measuring units.

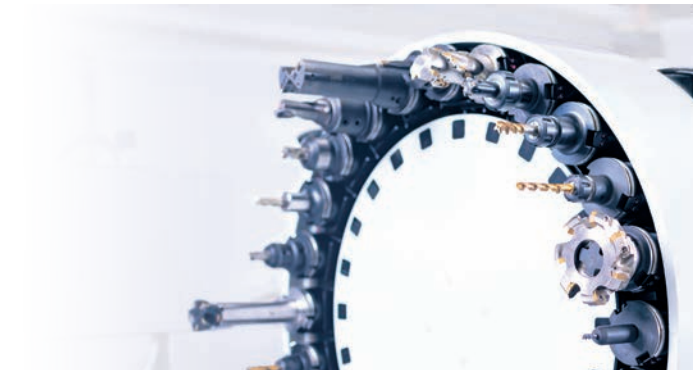
## RACK TYPE TOOL CHANGER

Number of tools in changer HSK63 / HSK100 (option)	50 (130) pcs
Tool max. diameter	110 mm
Tool max. diameter without adjacent tools	160 mm
Tool max. length (machine with electrospindle)	380
Tool max. length (machine with CyTec head)	240
Tool max. weight HSK63 / HSK100	8 / 15 kg
Tool change time	8 s



## AUTOMATIC TOOL CHANGER ISO 40 / HSK-A63 (only for the ZPS MCG810i machine)

Number of tools	30
Tool max. diameter	80 mm
Tool max. diameter without adjacent tools	115 mm
Tool max. length	250 mm
Tool max. weight	8 kg
Max. weight of all tools	150 kg
Tool change time	3.5 s



# SPECIFICATIONS

MACHINE TYPE	MCG810i	MCG820i
<b>Travels</b>		
X-axis	1,000 mm	1,000 mm
Y-axis (cross slide)	800 mm	1,800 mm
Z-axis (sliding ram)	600 mm	600 mm
A-axis CNC 2-axis head (tilting)	±115°	±115°
C-axis CNC 2-axis head (rotation)	±200°	±200°
A-axis rotary table (tilting)	±95°	±95°
C-axis rotary table (rotation)	360°	360°

<b>Feeds</b>		
Feedrate in X, Y, Z axes	40 m/min	40 m/min
Rapid traverse in X, Y, Z axes	40 m/min	40 m/min
Acceleration in X, Y, Z axes	5 m/s <sup>2</sup>	5 m/s <sup>2</sup>
A and C-axis feed, CNC head	60 rpm	60 rpm
A-axis feed, rotary table tilting	25 rpm	25 rpm
Max. rotation speed (turning-milling table)	400 rpm	400 rpm
Max. rotation speed (milling table)	100 rpm	100 rpm

<b>Dimensions</b>		
Fixed clamping plate	1,200 × 1,000 mm	1,200 × 2,000 mm
Rotary table	∅ 600, ∅ 800 mm	∅ 600, ∅ 800 mm

<b>Distances</b>		
Spindle nose to fixed table	150 - 750 mm	150 - 750 mm
Spindle nose to rotary table	25 - 625 mm	25 - 625 mm
Head spindle nose to fixed table	65 - 665 mm	65 - 665 mm
Clamping surface to floor (fixed table)	750 mm	800 mm
Clamping surface to floor (rotary table)	875 mm	925 mm

<b>Working accuracy (acc. to ISO 230-2)</b>		
Bidirectional positioning error (A) in X, Y, Z axes	0.008 mm	0.008 mm
Bidirectional repeatability of tool pos. (R) in X, Y, Z axes	0.0034 mm	0.0034 mm

<b>CNC head</b>		
Bidirectional positioning error (A) in C-axis	6 arc sec	6 arc sec
Bidirectional repeatability of tool pos. (R) in C-axis	2 arc sec	2 arc sec

<b>Rotary table</b>		
Bidirectional positioning error (A) in A-axis	12 arc sec	12 arc sec
Bidirectional repeatability of tool pos. (R) in A-axis	4 arc sec	4 arc sec
Bidirectional positioning error (A) in C-axis	6 arc sec	6 arc sec
Bidirectional repeatability of tool pos. (R) in C-axis	3 arc sec	3 arc sec

<b>Tool axial cooling</b>		
Supplied amount	25 - 40 l/min	25 - 40 l/min
Max. pressure	55 - 70 bar	55 - 70 bar
Filtration	5 µm	5 µm

<b>Pneumatic unit</b>		
Air pressure on inlet	0,6 - 0,8 Mpa	0,6 - 0,8 Mpa
Air consumption	10 m <sup>3</sup> /hour	10 m <sup>3</sup> /hour
Working pressure	0.55 MPa	0.55 MPa

<b>Requirements on electrical energy</b>		
Connecting voltage	3 × 400 V / 50 Hz or 3 × 480 V / 60 Hz	
Operating power	45 kVA	45 kVA
Current at full load	125 A	125 A

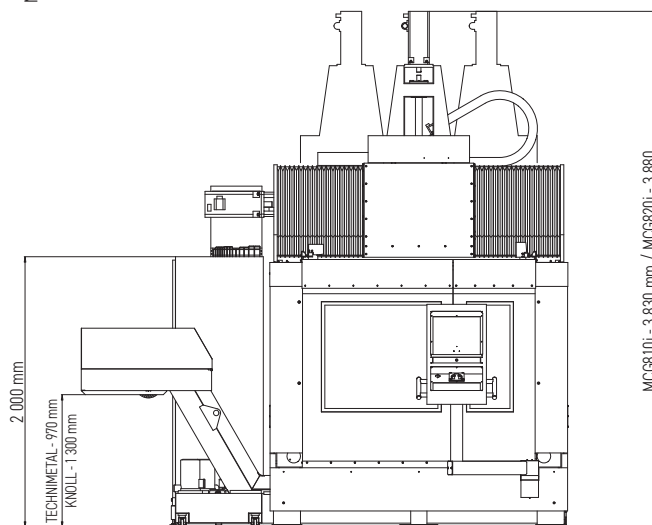
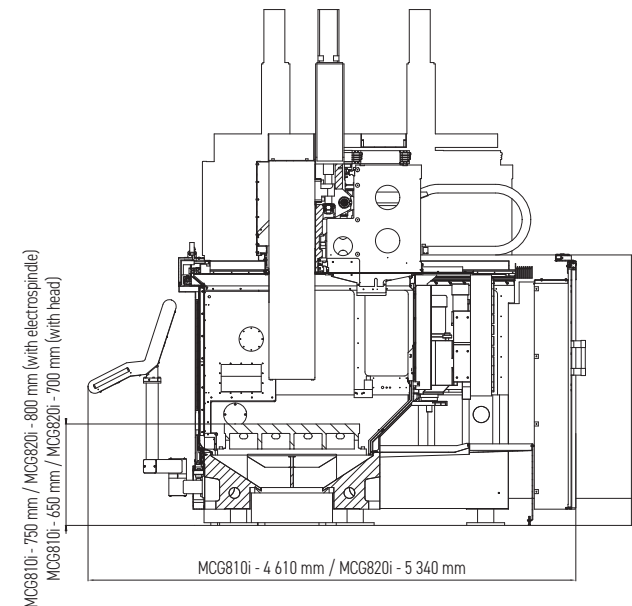
<b>Weight</b>		
Machine without optional equipment	11,500 kg	14,500 kg

## STANDARD EQUIPMENT

- Digital drives
- Direct linear measuring
- Thermal stability of spindle and rotary table
- Spindle automatic blowing-off
- Tool outer cooling
- Fully enclosed workzone
- Chip conveyors with integrated coolant tank
- Drum-type GIFU tool changer with capacity of 30 tools - ZPS MCG810i
- Rack-type tool changer with capacity of 50 tools - ZPS MCG820i

## OPTIONAL EQUIPMENT

- Two-axis CNC head
- Two-axis rotary table
- Turning option for rotary table and HSK-T100 spindle
- Workpiece or tool measuring probe
- Spindle axial cooling by coolant or air
- Oil-mist cooling outer or through spindle axis
- Rack-type tool changer with capacity of 130 tools
- Suction of oil mist in workzone
- Manual wash-out gun
- Remote diagnostics
- Machine hibernation



Specifications and illustrations may not always correspond with the machine latest version. 8/2024

## CONTACT

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