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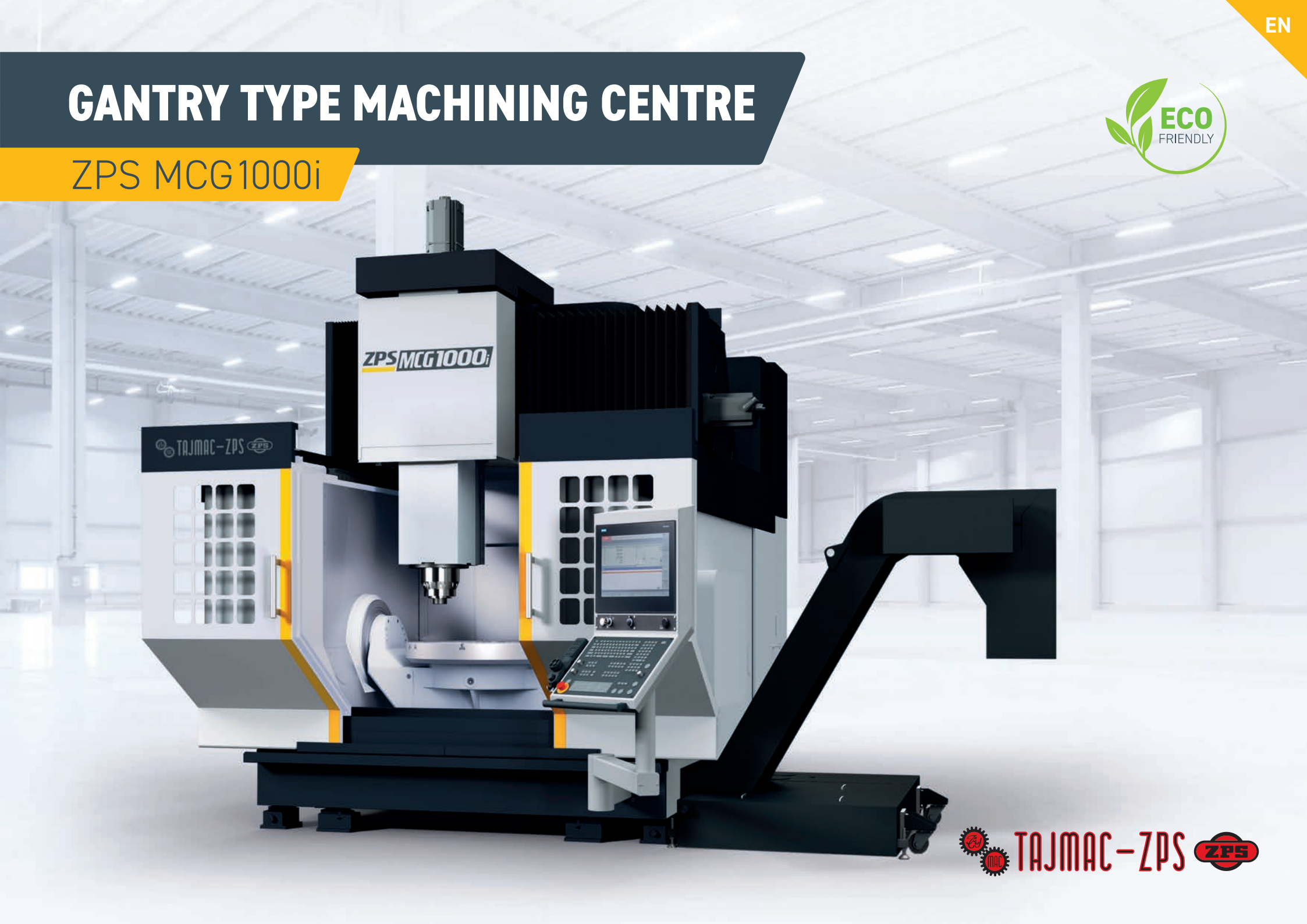
# GANTRY TYPE MACHINING CENTRE

## ZPS MCG1000i

ECO FRIENDLY



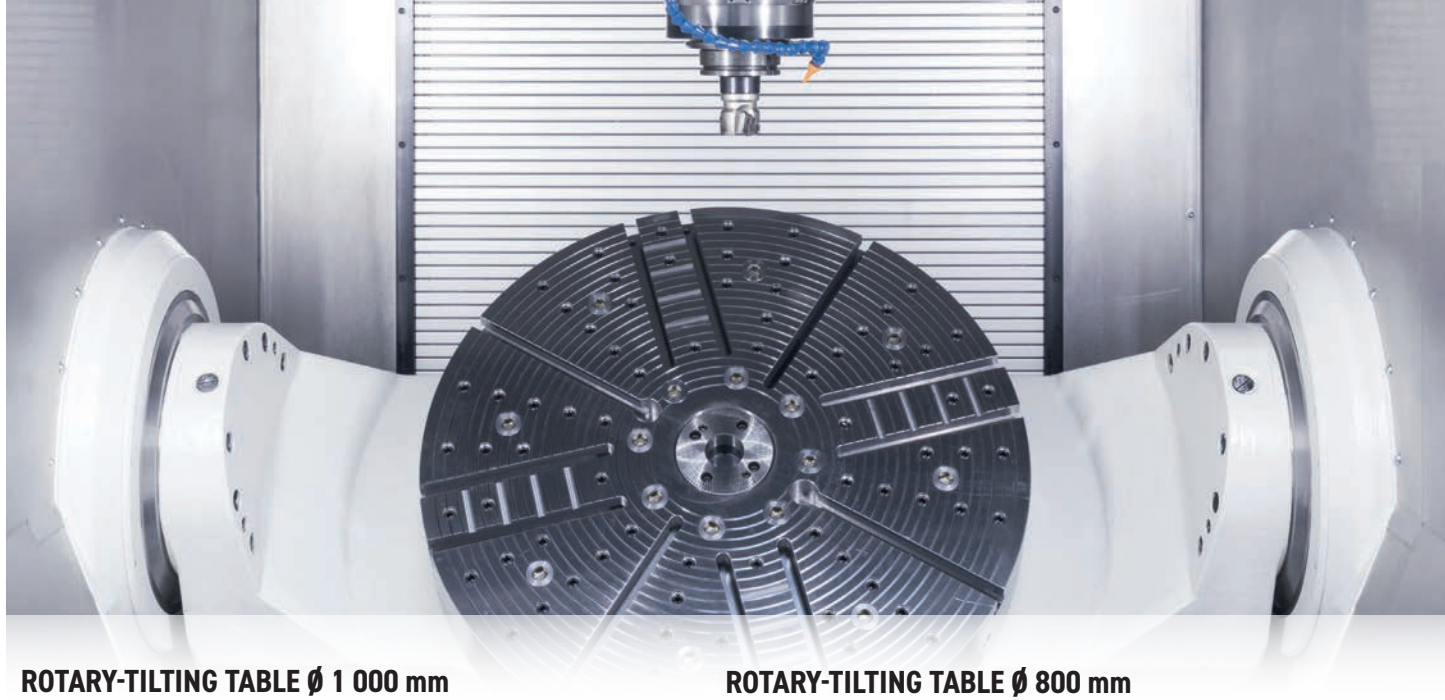

TAJMAC-ZPS

# GANTRY TYPE MACHINING CENTRE

## ZPS MCG1000i

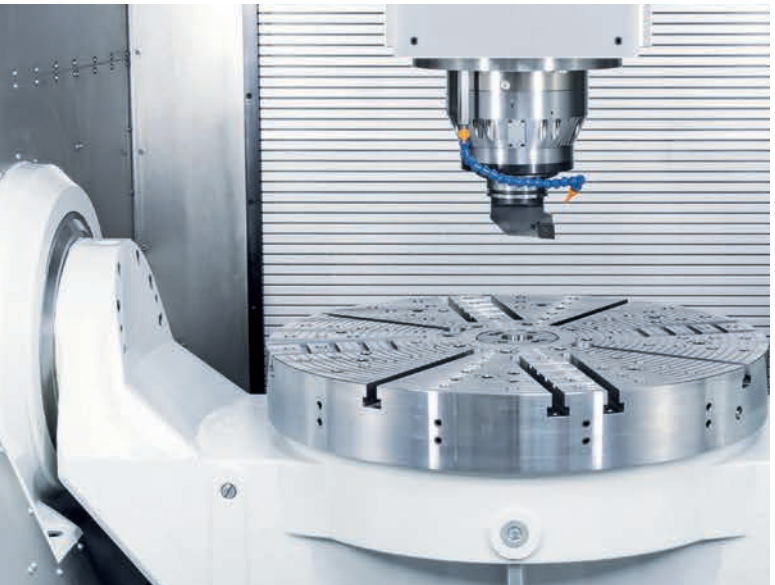
is a multifunctional machining centre of upper gantry-type designed for complex machining of spatially complicated and technologically demanding workpieces as well as of combined shapes, both within five-axis milling operations and full-featured turning operations. The centre enables milling in five axes, namely in three mutually perpendicular coordinate axes X, Y, Z, in the rotary C-axis – a rotary tilting table with built-in torque motor enabling turning operations, and in the tilting B-axis - a rotary tilting table with built-in torque motors.

It is a highly productive machine characterized by high dynamic and thermal stability and high accuracy of machining. The working axes X, Y, Z are moving along linear guideways. A direct measuring system in all axes is a part of the basic configuration.



## TECHNOLOGICAL CAPABILITIES OF THE MACHINE

The machine is intended for production of metallic parts for pressing, plastic-making, automotive and aviation industry. It is also well-suited for standard machining. It enables machining a workpiece from five sides. It allows milling, drilling, boring, reaming, thread cutting and turning technological operations. Featuring a 12 000 rpm spindle and utilizing ring motors in the rotary axes, the machine fully supports shape machining and HSC machining. The maximal diameter of the workpiece can be 1 000 mm, with weight of 1 300 kg for milling operations and 700 kg for turning operations.



## ROTARY-TILTING TABLE Ø 1 000 mm

| | |
|---|---|
| Working area | Ø 1 000 mm |
| Workpiece max. dimension (diameter x height) | Ø 1 000 × 550 mm |
| Table max. load (α=±0°) milling/turning | 1 100 / 700 kg |
| Table max. load (α=±90°) | 600 kg |

**Table axis**

| | B-axis (tilting axis) | C-axis (rotary axis) |
|---|---|---|
| Max. torque | | |
| Mkmax S1/S6-40% | 2 × 2 139 / 2 × 3 413 Nm | 1 580 / 2 080 Nm |
| Max. speed | 50 rpm | 800 rpm |

## ROTARY-TILTING TABLE Ø 800 mm

| | |
|---|---|
| Working area | Ø 800 mm |
| Workpiece max. dimension (diameter x height) | Ø 1 000 × 550 mm |
| Table max. load (α=±0°) milling/turning | 1 300 / 700 kg |
| Table max. load (α=±90°) | 700 kg |

**Table axis**

| | B-axis (tilting axis) | C-axis (rotary axis) |
|---|---|---|
| Max. torque | | |
| Mkmax S1/S6-40% | 2 × 2 139 / 2 × 3 413 Nm | 1 580 / 2 080 Nm |
| Max. speed | 50 rpm | 1 200 rpm |

## TOOL CHANGER

| | |
|---|---|
| No. of pockets in changer HSK63 / HSK100 | 50 (100) / 30 (60) pcs |
| Tool max. diameter HSK63 / HSK100 | 80 / 110 mm |
| Tool max. diameter without adjacent tools | 160 mm |
| Tool max. length | 380 mm |
| Tool max. weight HSK63 / HSK100 | 8 / 15 kg |
| Tool change time | 2,3 s |

## SPINDLE UNITS

| | | | |
|---|---|---|---|
| **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 |
| **HSK-T100** | 10 000 rpm | 48 / 71 kW | 300 / 452 Nm |

* Turning operations can only be performed with the HSK-T100 spindles.

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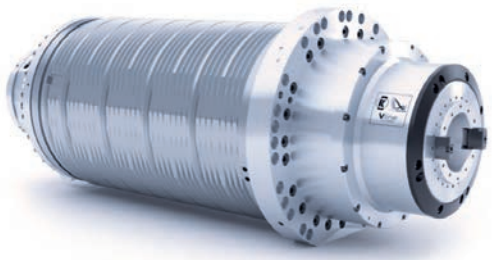
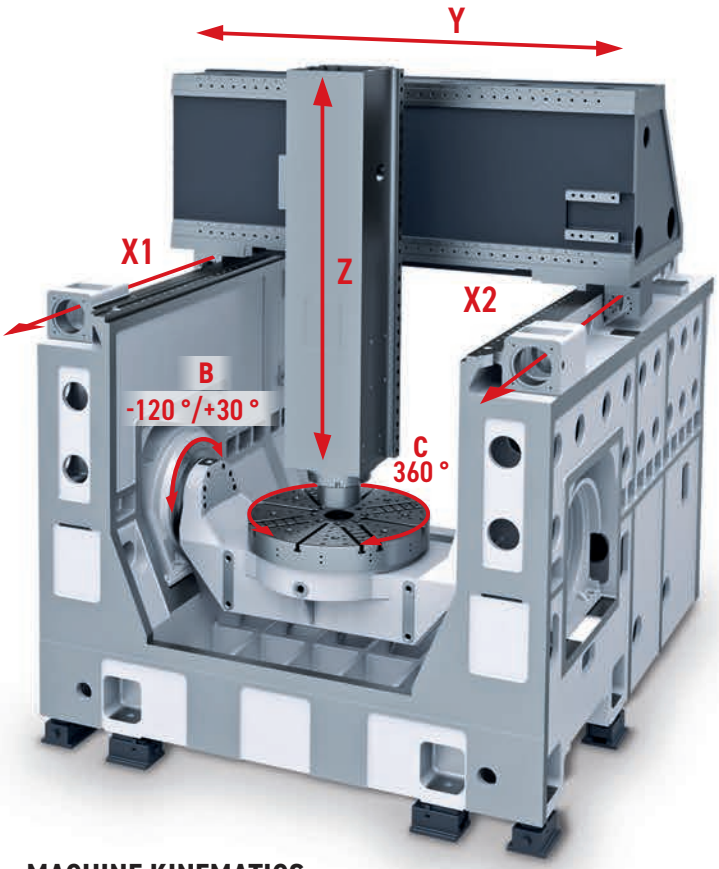
## ERGONOMIC ARRANGEMENT OF THE MACHINE

The arrangement of the control elements allows easy and safe operation of the machine. The working area is fully enclosed and enables usage of high-pressure cooling as well as emulsive aerosol suction device. The concept of the enclosure ensures good access and visibility into workzone, thus enabling easy manipulation with the workpiece during its loading and unloading to/from the workzone and during machining technology setting-up.

The safety of work is ensured by passive and active elements preventing from contact with the rotating tools or machine moving wholes. The noise levels and vibrations of all operational parts fulfil the hygienic standards of European directives.





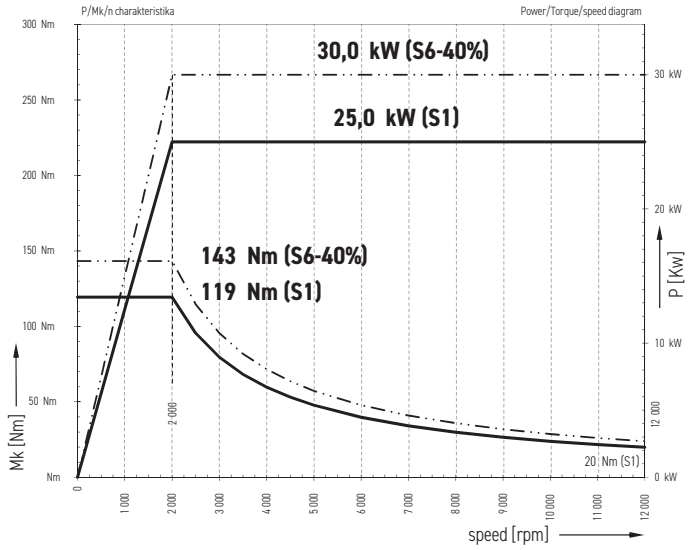

## MACHINE KINEMATICS

The machine construction is formed by the upper-gantry type portal whose frame consists of two side walls fixed to the base. The cross rail moves in the longitudinal direction (X-axis) along the upper sides of the side walls. Along the cross rail, the cross slide with the slide ram is moving in the transversal direction (Y-axis).

The sliding ram with an electrospindle moves in the vertical direction (Z-axis). A two-axis rotary table, consisting of a rotary part (C´-axis) and a tilting part (B´-axis) is installed on the machine.

## 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.




* the graph represents the HSK-T100, 12 000 rpm

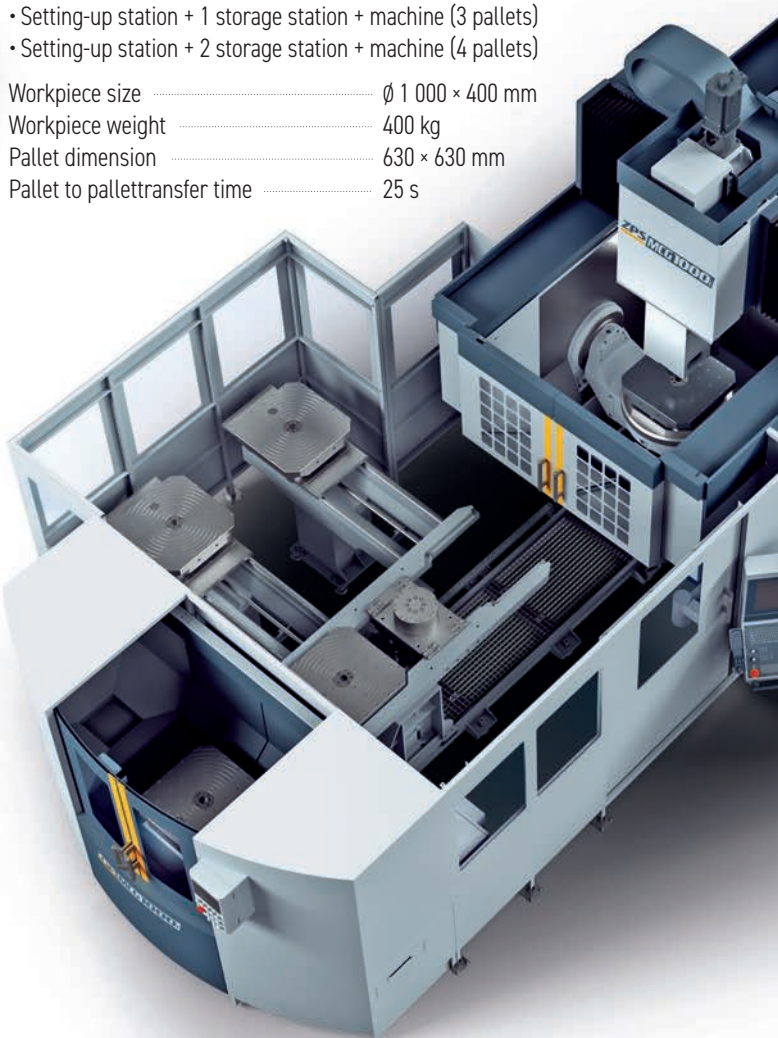
## AUTOMATIC PALLET CHANGE

Machines equipped with an automatic pallet changer for two or more pallets allow clamping, unclamping and measuring of the workpiece on the pallet outside the machine working area while the workpiece clamped on the second pallet is being machined. This significantly increases work productivity. The pallet change is carried out in an automatic cycle after the operator releases the pallet for change. The transfer of the pallets is carried out by means of a pallet carrier with a rotary fork moving along a pair of linear guides via a toothed gear drive. The pallets are moved from the storage station to the pallet carrier by means of a preloaded ball nut, which is moved by a ball screw driven by a brushless motor with digital control. The machine is equipped with an automatic door opening from the pallet change system to the machine.

**Possible variants for the pallet change system:**

- Setting-up station + machine (2 pallets)
- Setting-up station + 1 storage station + machine (3 pallets)
- Setting-up station + 2 storage station + machine (4 pallets)

| | |
|---|---|
| Workpiece size | Ø 1 000 × 400 mm |
| Workpiece weight | 400 kg |
| Pallet dimension | 630 × 630 mm |
| Pallet to pallettransfer time | 25 s |



# TECHNICAL DATA

| | | |
|---|---|---|
| **Travels** | | |
| Travel in X-axis | | 1 200 mm |
| Travel in Y-axis | | 1 000 mm |
| Travel in Z-axis | | 700 mm |
| B-AXIS: | | -120 °/+30 ° |
| C-AXIS: | | 360 ° |
| **Feeds** | | |
| Rapid traverse in X, Y, Z axes | | 60 m/min |
| Max. working feed in X, Y, Z axes | | 60 m/min |
| Acceleration | | 6 m/s$^2$ |
| **Working accuracy (According to ISO 230-2)** | | |
| Bidirectional repeatability of R pos. setting in X, Y, Z axis | | 0,0034 mm |
| Bidirectional positioning error (A) in X, Y, Z axis | | 0,008 mm |
| Measuring system | | HEIDENHAIN LC115 direct measuring system |
| **B-AXIS (According to ISO 230-2)** | | |
| Bidirectional positioning error (A) | | 12 arc sec |
| Bidirectional repeatability of R position setting | | 4 arc sec |
| **C-AXIS (According to ISO 230-2)** | | |
| Bidirectional positioning error (A) | | 6 arc sec |
| Bidirectional repeatability of R position setting | | 2 arc sec |
| **Spindle - milling** | **HSK-A63** | **HSK-A100** |
| Tool clamping taper | | |
| Maximal speed | 18 000 rpm | 14 000 rpm |
| Motor power output S1-100% / S6-40% | 25 / 31 kW | 25 / 37 kW |
| Max. spindle torque S1-100% / S6-40% | 160 / 200 Nm | 160 / 236 Nm |
| Spindle nose to table plate | 50-750 mm | 50-750 mm |
| **Spindle - milling/turning** | **HSK-T100** | **HSK-T100** |
| Tool clamping taper | | |
| Maximal speed | 12 000 rpm | 10 000 rpm |
| Motor power output S1-100% / S6-40% | 25 / 30 kW | 48 / 71 kW |
| Max. spindle torque S1-100% / S6-40% | 119 / 143 Nm | 300 / 452 Nm |
| Spindle nose to table plate | 50-750 mm | 50-750 mm |
| **Tool changer** | | |
| No. of pockets in changer HSK63 / HSK100 | | 50 (100) / 30 (60) pcs |
| Tool max. diameter HSK63 / HSK100 | | 80 / 110 mm |
| Tool max. diameter without adjacent tools | | 160 mm |
| Tool max. length | | 380 mm |
| Tool max. weight HSK63 / HSK100 | | 8 / 15 kg |
| Tool change time | | 2,3 s |
| **Connection to the mains** | | |
| Nominal voltage | | 3 × 400V/50 Hz |
| Operational power input | | 80 kVA |
| Full load current | | 150 A |
| Air pressure | | 0,6 – 0,8 Mpa |

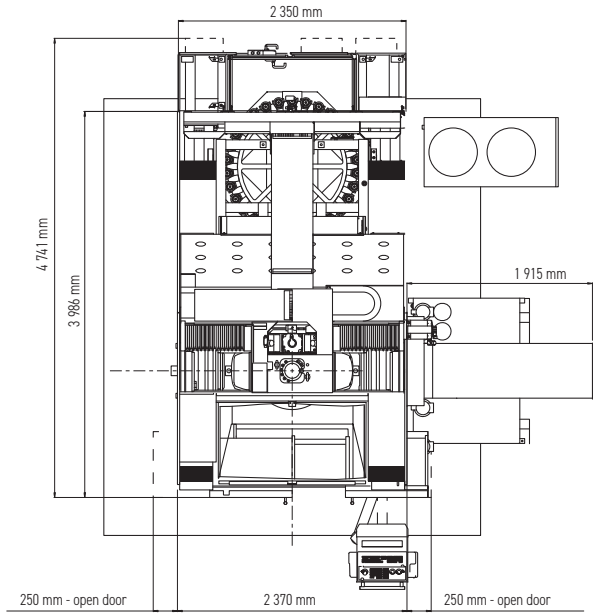
| | |
|---|---|
| **Basic data** | |
| Machine shipping dimensions (l × w × h) | 4 850 × 2 600 × 3 750 mm |
| Machine weight (without accessories) | 23 000 kg |

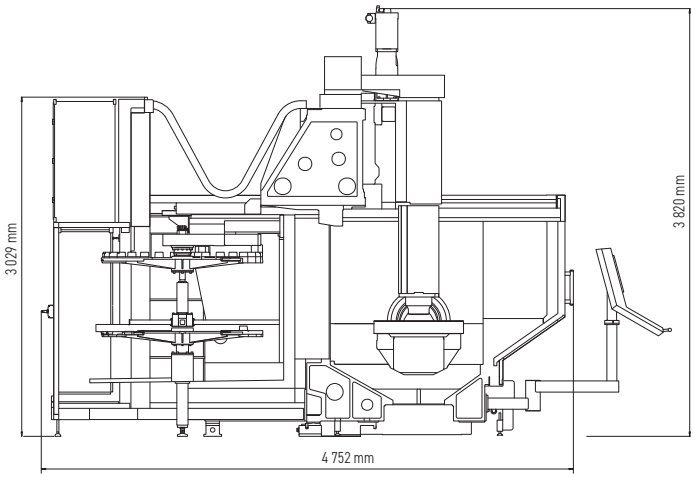
## STANDARD EQUIPMENT

- Sinumerik / Heidenhain / FANUC control system
- electrospindle with maximal speed of 18 000 rpm
- HSK-A63 clamping taper
- continuously controlled rotary-tilting table of Ø 800 mm
- digital feed drives
- one tool changer for 50 tool
- Heidenhain direct measuring system
- electronic compensation of thermal dilatations
- pneumatic elements
- central lubrication system
- tool holder automatic air-blasting
- cooling unit with tool outer cooling system
- spindle thermal stabilization
- chip conveyor
- electronic handwheel
- vibrodiagnostics

## OPTIONAL EQUIPMENT

- spindle units
- cooling through spindle axis of AD type – coolant, filtering unit
- electrical cabinet air conditioning
- cooling through spindle axis of AD type – air
- workpiece dimensions measuring probe
- tool measuring probe
- exhaustion of oil-mist from workzone
- oil-mist cooling
- work table of Ø 1 000 mm
- handheld wash-out gun
- remote diagnostic installation
- machine hibernation
- technological software
- viziport (spin viewport)
- work cycle signalling




*The herein stated description and specification may not correspond with the latest model of the machine.* ***8/2022***


## CONTACT

**TAJMAC-ZPS, a.s.**
třída 3. května 1180
763 02 Zlín, Malenovice
Czech Republic

**Phone:** +420 577 532 072
**E-mail:** info@tajmac-zps.cz
**Web:** www.tajmac-zps.cz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