

VERTICAL MACHINING CENTERS

ZPS MCV1680i / 2080i



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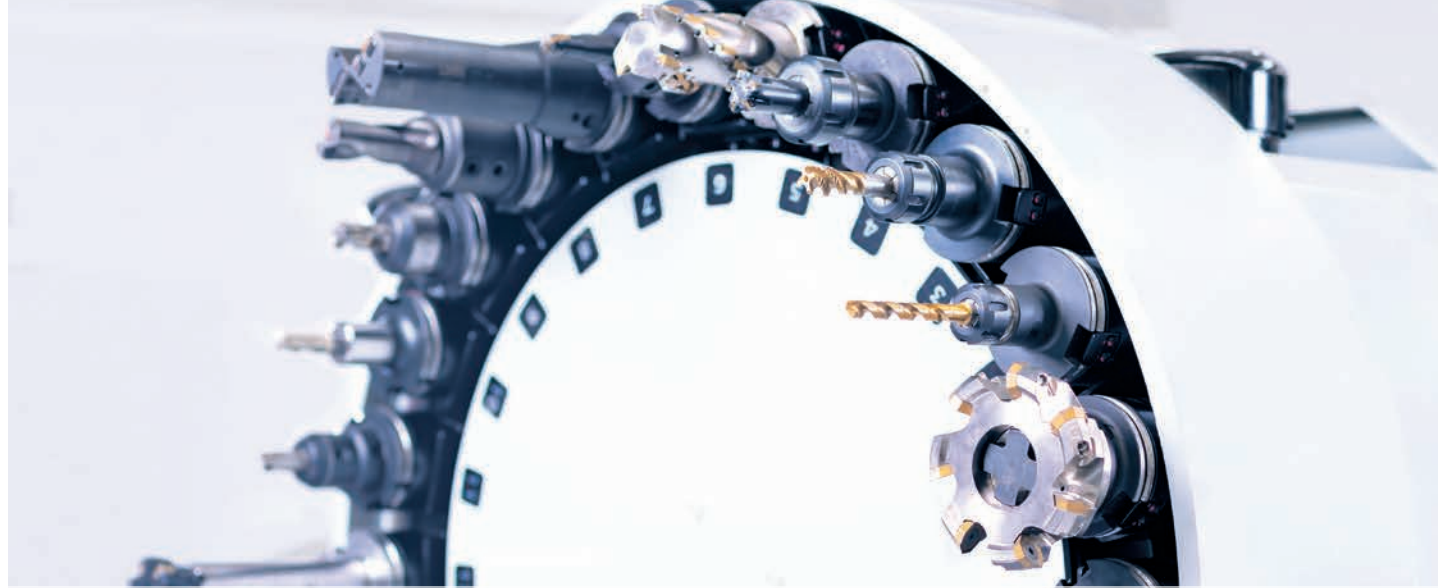
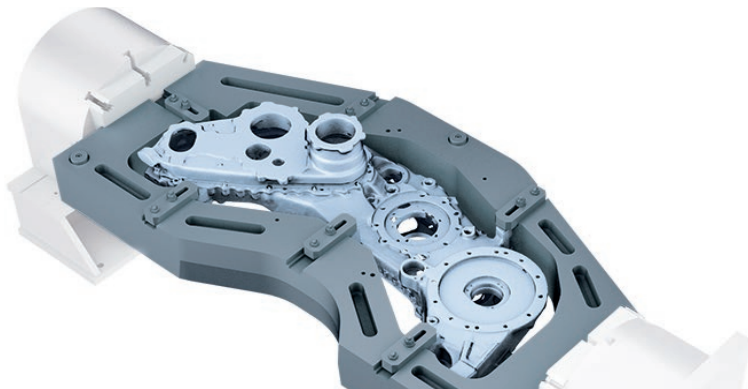
ZPS MCV1680i / 2080i

The machine centre presents an innovated type of a vertical milling centre with a modern, efficient and stable enclosure. The machine is composed of two stationary castings - the base and the column. The column is provided with guideways along which the spindle head travels. The work table travels in the longitudinal direction (X-axis) along the cross saddle. The cross saddle moves in the transverse direction (Y-axis) along the base. All guideways are formed by linear rails with rollers. The size and placing of the linear rails not only enable high loads while maintaining high accuracy of dimensions and surface quality of the workpiece but also guarantee higher service life of the machine. Compared with the up to now manufactured model, the innovated machine has, among others, a spindle with a higher power output, wider travel range of axes, larger working table and quicker tool change. The design of the machine framework allows its enormous load as can be seen in the presented power output diagram. The machines are also favoured in the FSW technologies which require high pressure force in the Z-axis.

The work table clamping surface is provided with T-slots with a calibrated central slot. The machine can be equipped with an automatic pallet changer. Measuring of positions of all axes is of a direct type, comprising of linear optoelectronic absolute measuring units. The machine is equipped with a chip conveyor whose chip disposal can be oriented to the left or to the right side of the machine.

POSSIBILITIES OF THE MACHINE

The machine centre is provided with three mutually perpendicular and continuously controlled axes which enable milling, drilling, boring, reaming and threading operations on workpieces made of steel, cast iron and light-metal as well as nonferrous metal alloys.



AUTOMATIC TOOL CHANGER ISO 50 / CAT 50 / BT 50 / HSK-A100

Number of tools (Option)	24 (48)
Tool maximal diameter	110 mm
Tool maximal diameter without adjacent tools	210 mm
Tool maximal length	350 mm
Tool maximal weight	20 kg
Maximal weight of all tools (Option)	240 kg (480 kg)
Tool change time – left tool changer	3,5 s
Tool change time – right tool changer	3,9 s

AUTOMATIC TOOL CHANGER ISO 40 / CAT 40 / BT 40 / HSK-A63

Number of tools (Option)	30 (60)
Tool maximal diameter	80 mm
Tool maximal diameter without adjacent tools	160 mm
Tool maximal length	400 mm
Tool maximal weight	8 kg
Maximal weight of all tools (Option)	150 kg (300 kg)
Tool change time – left tool changer	2,9 s
Tool change time – right tool changer	3,9 s

AUTOMATIC PALLET CHANGER

Pallet exchange time (*acc. to technological application)	30 s*
Spindle nose to pallet	50-770 mm
Travel in Z-axis	720 mm

PALLET

Working area MCV1680i/MCV2080i	1 800 x 780 / 2 200 x 780 mm
No. of T-slots x width	5 x 18 mm
Central T-slot dimension	18 H6 mm
Diameter of central hole	30 H6 mm
Pitch of T-slots	160 mm
Maximal load	1 500 kg

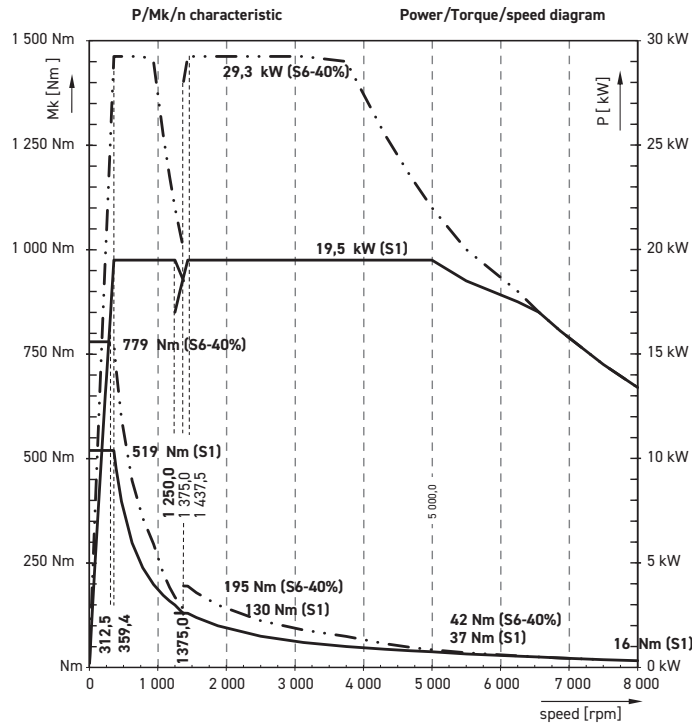
Possibility of connection of the 4th axis (a rotary table) into automatic pallet change (option).





SPINDLE POWER AND TORQUE DIAGRAM

Planetary gearbox ISO 50



SPINDLE UNITS

Planetary gearbox

ISO 40, HSK-A80	10 000 rpm	22,5 / 31,5 kW	244 / 342 Nm
ISO 50	8 000 rpm	19,5 / 29,3 kW	519 / 779 Nm
ISO 50	8 000 rpm	29,0 / 43,5 kW	428 / 657 Nm
HSK-100	8 000 rpm	19,5 / 29,3 kW	519 / 779 Nm
ISO 50	3 500 rpm	19,5 / 29,3 kW	893 / 1339 Nm

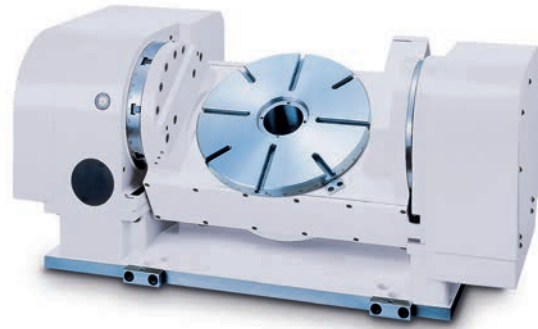
Belt transmission

ISO 40	12 000 rpm	19,5 / 29,3 kW	95 / 143 Nm
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Electrospindle

ISO 40	15 000 rpm	25,0 / 31,0 kW	160 / 200 Nm
HSK-A63	18 000 rpm	25,0 / 31,0 kW	160 / 200 Nm
HSK-100	14 000 rpm	25,0 / 37,0 kW	160 / 236 Nm

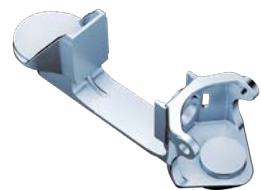
More variants upon inquiry



The machine can be equipped with one or two-axial CNC rotary table.

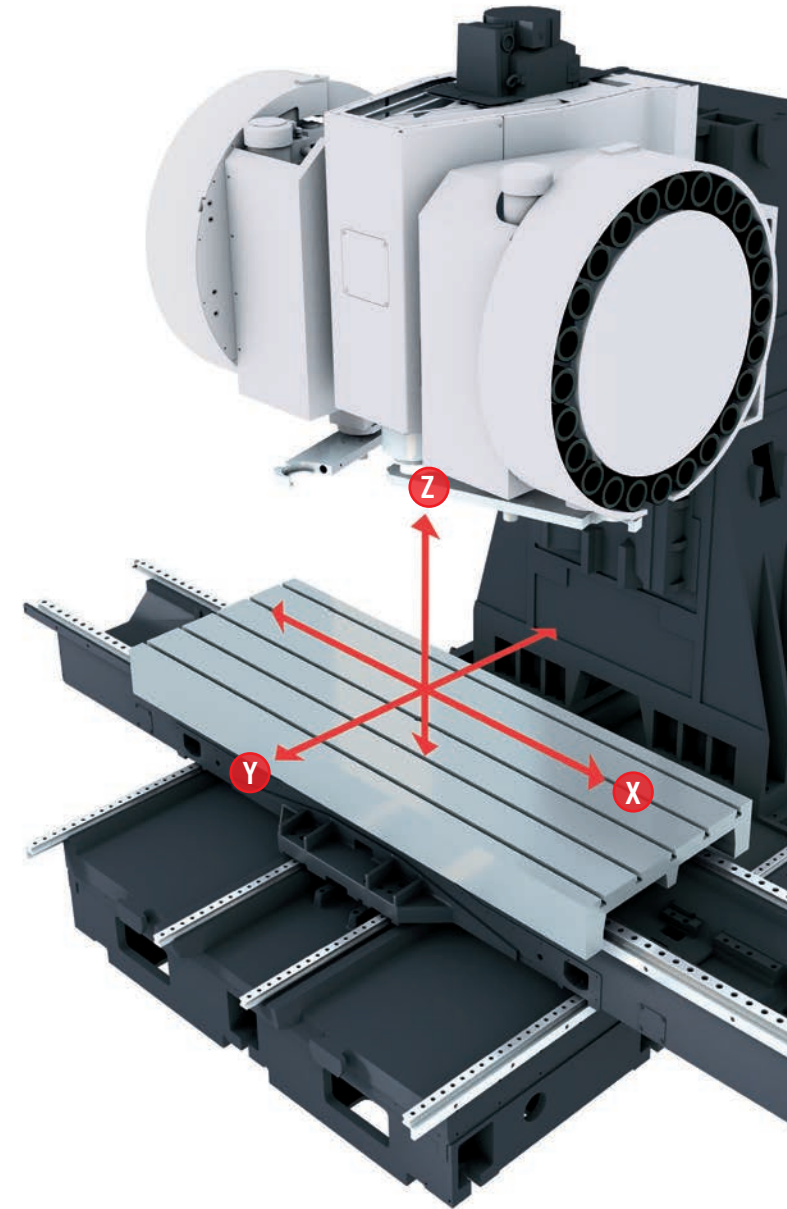
ECO FRIENDLY

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.



MACHINE KINEMATICS

The operational movements of the spindle head, cross saddle and the work table (longitudinal saddle) are performed by digitally controlled AC motors via ball screws with preloaded ball nuts.



TECHNICAL DATA

MACHINE TYPE

MCV1680i

MCV2080i

Travels without APC

	Travels	Travels
X-axis (work table)	1 700 mm	2 100 mm
Y-axis (cross saddle)	840 mm	840 mm
Z-axis (spindle head)	840 mm	840 mm
Spindle nose to table	110 – 950 mm	110 – 950 mm
Maximal working feed	30 m/min	30 m/min
Rapid traverse	30 m/min	30 m/min
Acceleration	3,5 m/s ²	3,5 m/s ²

Table

Working area	1 800 × 780 mm	2 200 × 780 mm
Number of T-slots × width × pitch	5 × 18 mm × 160 mm	5 × 18 mm × 160 mm
Maximal load	2 500 kg	3 000 kg

Working accuracy (According to ISO 230-2)

Bidirectional positioning error (A) in X, Y, Z axis	0,009 mm	0,009 mm
Bidirectional repeatability of R pos. setting in X, Y, Z axis	0,0034 mm	0,0034 mm
Measuring system in X, Y, Z axis	direct (linear absolute rulers)	

Energy supply

Nominal voltage	3 × 400 V/50 Hz	3 × 400 V/50 Hz
Operational power input – acc. to motor	35 kVA	35 kVA
Compressed air	0,6 – 0,8 MPa	0,6 – 0,8 MPa

Pump

(coolant delivery / max. pressure)

Tool outer cooling pump	50 L.min ⁻¹
Telescopic covers wash-out pump	100 L.min ⁻¹
Workzone wash-out pump	50 L.min ⁻¹
Tool cooling through spindle axis pump	25 L.min ⁻¹
with through-flow filter	2,5 MPa
Tool cooling through spindle axis pump	30 L.min ⁻¹
on filtering unit	7 MPa
Tool cooling through spindle axis pump	40 L.min ⁻¹
on filtering unit / optional pressures	7 MPa

Additional data

Machine floor plan W/O chip conveyor	4 130 × 2 477 mm	4 830 × 2 477 mm
Machine maximal working height	3 533 mm	3 533 mm
Machine weight	13 800 kg	14 600 kg
Height with tool changer for 30 tools	2 875 mm	
Height with tool changer for 24 tools	2 991 mm	

Control system

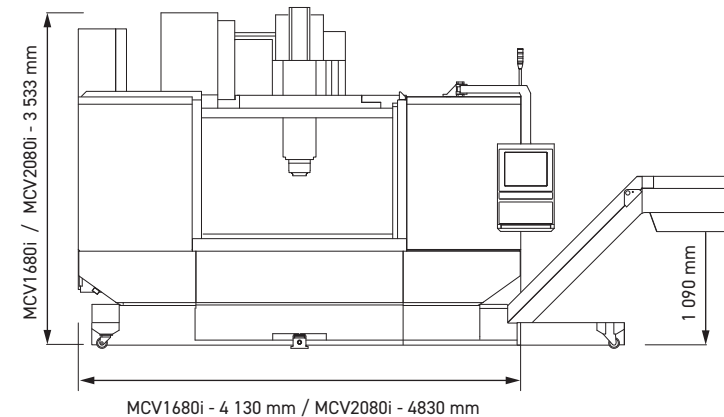
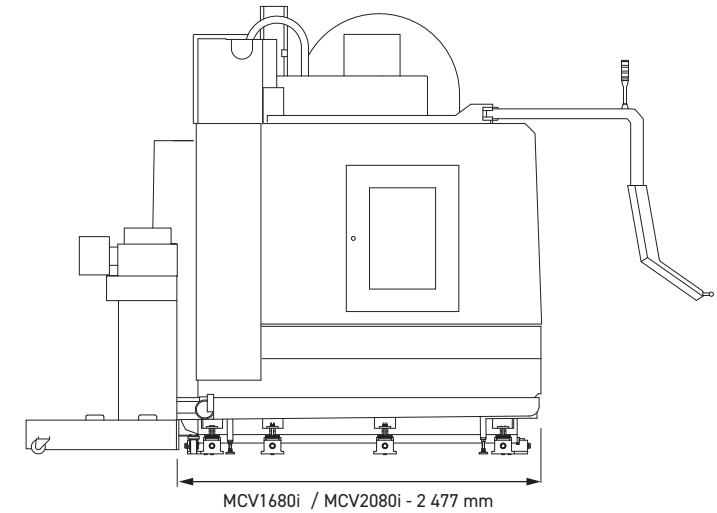
Heidenhain, Sinumerik, Fanuc

STANDARD ACCESSORIES

- Digital drives
- Linear optoelectrical absolute rulers
- Automatic central lubrication system
- Tool changer with change arm
- Tool holder automatic air-blasting
- Cooling unit with tool cooling system
- Telescopic covers wash-out
- Electronic compensation of thermal dilatations
- Chip conveyors
- Three-color tower lights for machine working status

OPTIONAL EQUIPMENT

- Tool clamping – ISO 40, ISO 50 (Big-Plus), HSK-A63, HSK-A80, HSK-A100, CAT 40, BT 40, CAT 50, BT 50
- Second magazine tool changer with capacity of 24 tools (ISO 50, HSK-A100) or 30 tools (ISO 40, HSK-A63)
- Tool axial cooling by coolant including cooling unit with filtering unit
- Tool axial cooling by air
- Oil-mist tool cooling
- Rotary table – 4th and 5th controlled axis
- Workpiece measuring probe
- Tool dimensions measuring probe
- Automatic pallet changer, with pallet dimensions identical with the working area
- Work zone wash-out
- Manual wash-out
- Emulsion-mist centrifugal separator from workzone
- Oil from coolant collecting device
- Window rotary cleaner
- Auxiliary spindle with speed up to 50 000 min⁻¹
- Supply of hydraulics or pneumatic to the machine work table
- Remote diagnostics
- Vibro-diagnostics
- Machine hibernation



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

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