



# MX4

High Performances 5 Axis Machining Center

Performance  
Technology  
Power  
Accuracy





# MX4

## **Powerfull, Rapid and Accurate** **5 Axes High Performance Machining Center**

The MX multifunction machining center offers high levels of flexibility enabling machining operations in 5 axes and on 5 sides, in one setup part clamping, from roughing to finishing, as well as turning operations.

- 5 axes machining for work piece up to 250 kg
- Hard material machining in a minimal time
- Very high accuracy in contouring and profiles
- Complete automation of the machine





## Structure : Rigidity and Accuracy

- Structure with portal configuration
- Cast iron with a high mechanical performance which maximises structure rigidity and allows optimum harmonic stability and maximum damping during demanding cutting conditions
- Machine secured on foundation with weight equally distributed over fixing points enabling extreme rigidity and a very high geometrical stability
- Modular design allows maximum flexibility in machine configuration to adapt to the technical requirements of customer
- Electrical cabinet protected IP54

## Linear Axes

- Ball screw on X axis with integrated system of compensation for expansion
- Linear motors on Y and Z axes allowing an optimum feedrates
- Roller guide rails ensuring minimum friction and efficient axis drive at low or high feedrates
- Automatic grease lubrication of ballscrews and bearings minimising the pollution of coolant
- Incremental measurement by optical encoders in conformity with norm VDI/DGQ 3441

## Spindle

- Powerful spindle allowing high metal removal rates
- Spindle vibration monitoring allowing a very high level of harmonic stability

## Rotary Table

- Table equipped with torque motor : **TRIM®** technology
- Table on a 45° plane allowing tilting from -45° to +180°
- Continuous tilting from horizontal position to vertical position
- High rate of rotational and acceleration
- No backlash
- No wear
- Rigidity : high clamping torque enabling high power during roughing

## Numerical Controller

- Ergonomic design
- Very high capacity of memory and calculation
- Interactive programming
- Graphic simulation before machining for optimal safety

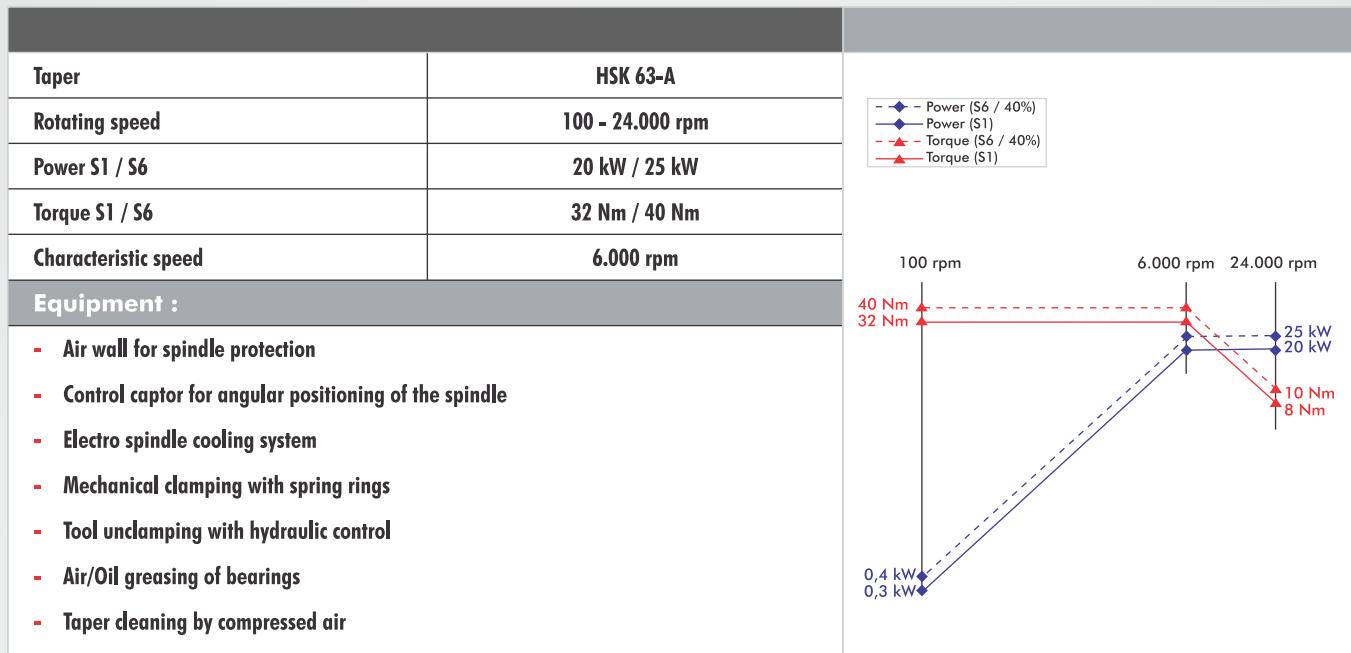
## Environment - Ergonomics

- Evacuation channels for chips equipped with washing device
- Tool magazine outside of working area
- Complete safeguard ensuring safety of the machine, the operator and environment
- Very large accessibility to the table and the work piece
- Operator panel



# MX4

## The Spindle 24.000 rpm



## The Table

A axis : - Table tilting on a 45° plane	-45° / +180°
C axis : - Table rotation	360°
Rotating speed	100 rpm
Table area	Ø 440 mm
Machining volume (ØxHeight)	Ø 440 mm x 405 mm
Admissible load	250 kg
Increment of measurement	0,001°
Torque : motor / clamping	A=740 Nm, C = 430 Nm / A,C = 2.500 Nm
Clamping system	Holes M12 – 50/50 mm
Referring	Ø 40H7
Positioning	Slot 20H7

The photograph shows the worktable of the MX4 machine. The table is circular with a diameter of 440 mm. It features a central hole and a grid of smaller holes for tool clamping. The table is mounted on a sturdy metal frame, and a blue clamping device is visible on the left side.



Table at 0° - Horizontal Position

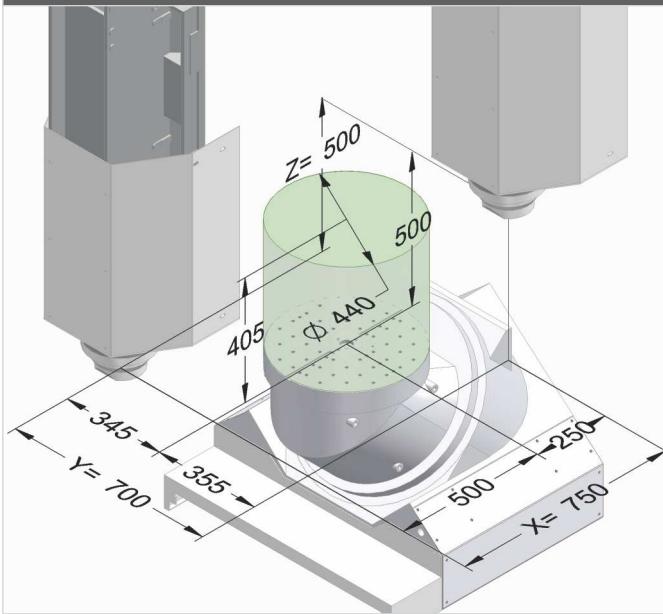
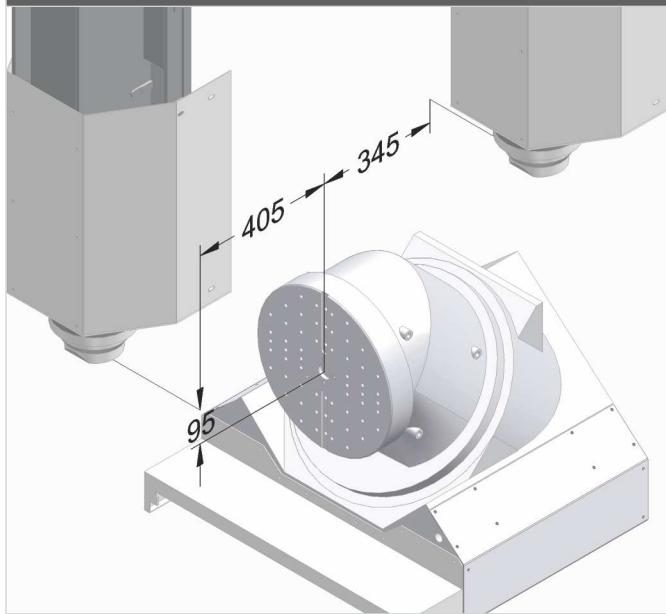


Table at 90° - Vertical Position



All dimension in mm

## The Tool Changer

- The tool magazine is a chain type
- The automatic load/unload of the tool is made vertically

Pockets qty	36
Taper	HSK 63-A
Tool Dimensions :	
Max. Ø adjacent tools / non adjacent tools	70 / 90 mm
Max. length	250 mm
Max. weight	5 kg
Max. weight admissible in magazine	240 kg
Tool Changing Time :	
tool to tool	3 sec
chip to chip	8 sec



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## Alternative : Spindle

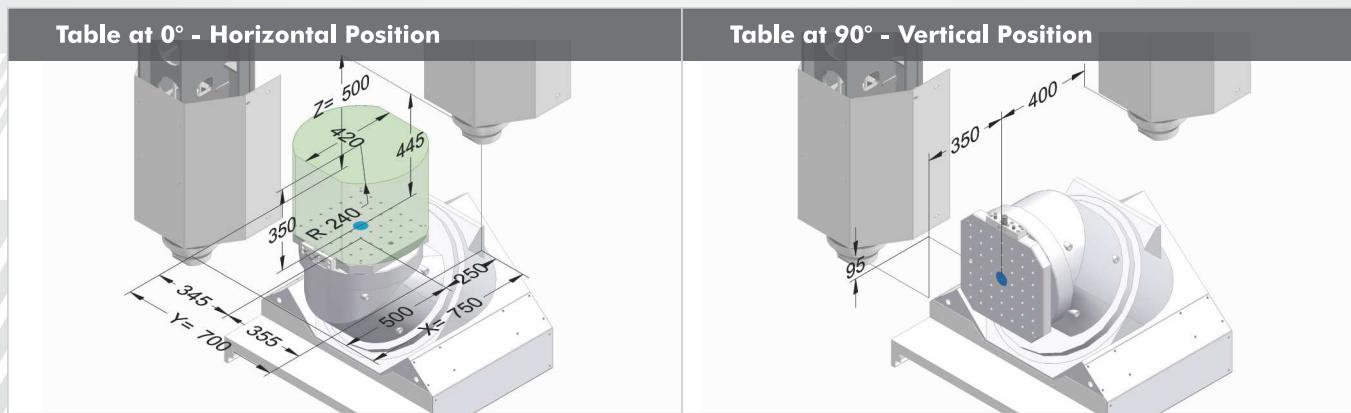
Taper	HSK 63-A		
Rotating speed	100 - 16.000 rpm		
Power S1 / S6	22 kW / 36 kW		
Torque S1 / S6	60 Nm / 98 Nm		
Characteristic speed	3.500 rpm		
<b>Equipment :</b>			
- Air wall for spindle protection - Control captor for angular positioning of the spindle - Electro spindle cooling system - Mechanical clamping with spring rings - Tool unclamping with hydraulic control - Air/Oil greasing of bearings - Taper cleaning by compressed air			

The graph plots Power (kW) and Torque (Nm) against Rotating Speed (rpm). It shows two power curves (dashed blue for S6, solid blue for S1) and two torque curves (dashed red for S6, solid red for S1). Key data points are:

Speed (rpm)	Power S6 (kW)	Power S1 (kW)	Torque S6 (Nm)	Torque S1 (Nm)
100	0.6	1	60	98
3.500	36	36	98	60
10.000	22	22	60	45
16.000	15	15	45	22
100	0.6	1	60	98

## Alternative : Palletized Table

A axis : Table tilting on a 45° plane	-45° / +180°
C axis : Table rotation	360°
Rotating speed	100 rpm
Table area	Ø 400 x 400 mm
Machining volume (ØxHeight)	Ø 400 mm x 350 mm
Admissible load	200 kg
Increment of measurement	0,001°
Torque : motor / clamping	A=740 Nm, C = 430 Nm / A,C = 2.500 Nm
Clamping system	Holes M12 – 50/50 mm
Referring	Ø 50H6
Positioning	Slot 20H6



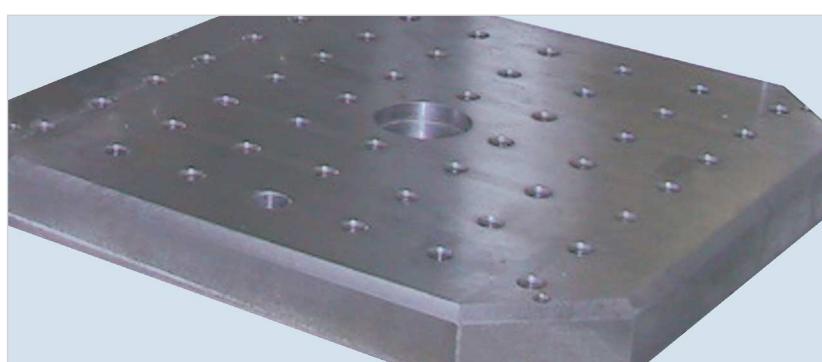
## Alternative : Tool Changers

Pockets qty	42	84	162	210
Type	Chain Transfer arm	Double chain Transfer arm	Tower with 4 plates Transfer arm	Tower with 5 plates Transfer arm
Taper	HSK 63-A	HSK 63-A	HSK 63-A	HSK 63-A
<b>Tool Dimensions :</b>				
Max. Ø contiguous / non contiguous	70 / 90 mm	70 / 90 mm	70 / 90 mm	70 / 90 mm
Max. length	300 mm	300 mm	300 mm	300 mm
Max. weight	5 kg	5 kg	5 kg	5 kg
Max. weight admissible in magazine	210 kg	360 kg	720 kg	720 kg
<b>Tool Changing Time :</b>				
tool to tool	6 sec	6 sec	6 sec	6 sec
chip to chip	10 sec	12 sec	12 sec	12 sec

## Alternative : Pallet Device



Station qty	2
Type	Milling pallet on palletized table
Pallet changing time	12 sec



A axis : - Table tilting on a 45° plane	-45° / +180°
C axis : - Table rotation	360°
Rotating speed	100 rpm
Table area	Ø 400 x 400 mm
Machining volume (ØxHeight)	Ø 400 mm x 350 mm
Admissible load	250 kg
Increment of measurement	0,001°
Torque : motor / clamping	A=740 Nm, C = 430 Nm / A,C = 2.500 Nm
Clamping system	Holes M12 – 50/50 mm
Referring	Ø 50H6
Positioning	Slot 20H6



## Technical Features

Linear Axes X / Y / Z		MX4	
Travels	mm	750 x 700 x 500	
Rapid feedrates	m/min	X = 60, Y – Z = 120	
Acceleration on axis	m/s <sup>2</sup>	X = 6, Y – Z = 10	
Rotating Axes on Table A – C			
A : Tilting table on a 45° plane	Deg.	-45° / + 180°	
C : Rotating table	Deg.	360°	
Working positioning (angle spindle axis / table)	Deg.	Horizontal position = 0° Vertical position = 90°	
Area	mm	Ø 440	
Admissible load	kg	250	
Rotating speed	rpm	100	
Torque : Motor / Clamping	Nm	A=740 Nm, C = 430 Nm / A,C = 2.500 Nm	
Accuracies		Linear Axes	Rotating Axes
Uncertainty : P		4 μ	7,2 sec
Repeatability : Ps medium		2 μ	3,6 sec
Spindle			
Rotating speed	rpm	24.000	
Taper		HSK 63-A	
Power – Torque (S1 / S6)	kW – Nm	20 / 25 – 32 / 40	
Characteristic speed	rpm	6.000	
Tool Magazine			
Pockets qty		36	
Taper		HSK 63-A	
Tool Dimension :			
Length – Diameter – Weight	mm – Ø mm – kg	250 - 70 - 5	
Coolant			
Flow – Pressure	l/min – bar	30 - 3	
Tank	Litres	250	

## Alternatives

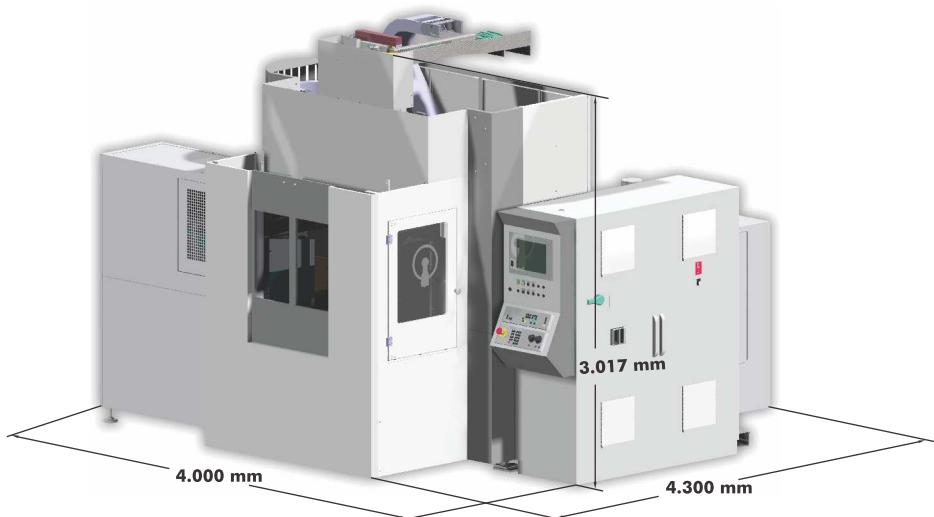
Spindle					
Rotating speed	rpm	16.000			
Taper		HSK 63-A			
Power – Torque (S1 / S6)	kW	22 / 36 – 60 / 98			
Characteristic speed	rpm	3.500			
Palletized Table					
A : Tilting table on a 45° plane	Deg.	-45° / + 180°			
C : Rotating table	Deg.	360°			
Working positioning (angle spindle axis / table)	Deg.	Horizontal position = 0° Vertical position = 90°			
Area	mm	Ø 400 x 400			
Admissible load	kg	250			
Rotating speed	rpm	100			
Torque : Motor / Clamping	Nm	A=740 Nm, C = 430 Nm / A,C = 2.500 Nm			
Tool Magazines					
Pockets qty		42	84	162	210
Taper		HSK 63A	HSK 63A	HSK 63A	HSK 63A
Tool Dimension :					
Length – Diameter – Weight	mm – Ø mm – kg	300 - 90 - 5	300 - 90 - 5	300 - 90 - 5	300 - 90 - 5

## Equipment as Options

- Pallet Changer
- Micro spraying coolant
- High pressure coolant 50 bar
- Air blast
- Components washing device
- Component probe
- Tool probe
- Oil extraction system
- Pressurization of measuring scales
- Air conditioning of electrical cabinet
- Sight glass
- Oil separator



### Overall Measurements – Standard Machine



### Overall Measurements – Machine with Pallet Device



ISO : 9001



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