KXG Series

5 axes machining centres
Mobile traverse, high performance

Performance
Technology
Power
Accuracy

KXG Series

Powerful, Rapid, Accurate
5 axes Gantry machining centre
Hgh performance

The 5-axis Gantry milling centre is a very large machine that allows machining operations on 5-axis and 5-sided to be carried out in one setup part clamping, from roughing to finishing.

It is particularly suitable for large complex parts intended for machining molds, dies, stamping tools, models and precision parts in the automotive, aeronautical and industrial mechanics industries.

- 5-axis machining for workpieces up to 52.000 kg
- Very high accuracy in contouring and profiles
- Complete automation of the machine

Structure : Rigidity and Accuracy

- Gantry structure with mobile traverse
- Fixed components and concrete walls specifically adapted to the dynamic and vibratory requirements of the machine, reinforcing rigidity and ensuring an excellent damping coefficient of the vibrations generated during machining
- Moving elements, slide, carriage and crossbar made of mechanically welded steel with specially designed walls to guarantee high dynamics, reducing moving masses, maintaining high rigidity
- Structure integrating glazed surfaces allowing easy control of machining
- Machine secured to the ground by several fixing points, distributing the load equally in order to guarantee extreme rigidity and high geometric stability
- Very high modularity offering a wide range of configurations and allowing easy adaptation to the customer's technical requirements
- Air-conditioned electrical cabinet, protected to IP54

Linear axes

- Axis X can be driven by a rack and pinion system (**KXG-P**) or by linear motors (**KXG-L**). In both cases, the synchronization of the systems on the top of each wall ensures precise and dynamic control
- Y and Z axes controlled by asynchronous motors coupled at the end of high precision ball screws
- Guide rails with slider low friction recirculating roller bearings
- Automatic lubrication of ball screws and guide rails
- Absolute measurement by linear scales and in accordance with VDI/DGQ 3441

Head / Rotating axes

- Direct drive by torque motors for perfect synchronization with linear movements
- Direct mounting angular encoders offering high positioning accuracy on both axes
- Continuous high speed, high accelerations, no backlash and no wear
- Rigidity: high locking torque thanks to hydraulic brakes, allowing the spindle power to be fully exploited during roughing operations

Spindle

- Powerful and high-torque spindle for high chip removal
- Vibration monitoring during machining allowing a secured work for the machine elements, for the tool as well as for the part

Numerical controller

- Data processing performance
- Extremely ergonomic design
- Large memory
- Interactive programming
- Graphical simulation before machining for optimal safety

Environment - Ergonomics

- Chips evacuation channel by means of a screw conveyor on both side of the table
- Tools magazine outside the working area
- Complete machine safeguard for protection of the machine, the operator and his environment
- High accessibility to the table and the workpiece from the top thanks to a retractable bellows
- Operator control panel on arm
- Energy efficiency for the production of large parts

Maintenance

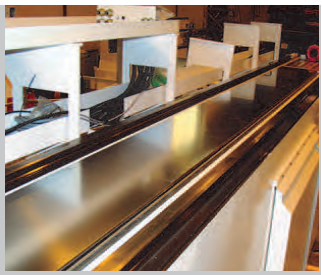
- Very good accessibility to the main regular maintenance points
- Clustering of fluid, pneumatic and electrical components in a common cabinet

KXG-P
X-axis drive with rack and pinion gear

Rack and pinion drive system consisting of 2 planetary servo gearboxes connected in parallel, with electrical preload, located on the mobile crossbar. The rack is fixed on both walls.

The rack and pinion systems have a high level of geometric accuracy ensuring high accuracy. In addition, an electric servo-based preload using 1 servo motor to control each gearbox allows an antagonistic torque to be applied to the 2 output gears, eliminating backlash.

The accelerations and displacements speeds obtained are identical to those of a linear motor drive.



KXG-L
X-axis drive with linear motor

Drive system by linear motor composed of a three-phase primary (fixed on the machine crossbar), and several modules constituting the secondary with permanent magnets, fixed on the 2 walls.

The primary is equipped with a water cooling system that ensures the dissipation of the heat generated and therefore the accuracy of the positioning.

Eliminating the conversion of rotary motion to linear motion reduces moving parts, increasing accuracy, acceleration and speed, while eliminating play.

Reduced periodic maintenance due to the absence of mechanical components, which also reduces noise emissions during displacements, and increases the average life of the drive.

KXG Series

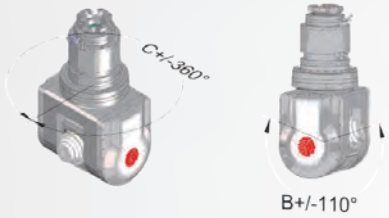
Standard head and spindle

- Fork head with 2 orthogonal moving axes
- B axis : evolves in the Z and Y-Z plane and swings around a horizontal axis
- C axis : moves in the X-Y plane and rotates around the vertical axis Z
- Angular encoder in the axis for high positioning and repeatability accuracy
- Torque motors for backlash-free and wear-free movings
- High clamping torque for heavy roughing
- Possibility to reach negative angles
- Allow the machining with 5 continuous axes

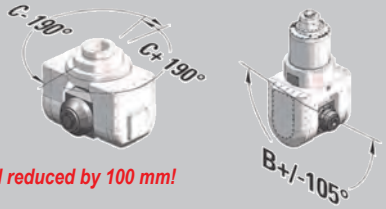
Vibration monitoring

Vibration monitoring during machining allowing a secured work for the machine elements, for the tool as well as for the part. The system consists of a vibration sensor and an electronic signal processing box.

	Standard head
Axes displacement	B : +/- 110° C : +/- 360°
Rotating speed (B, C)	100 rpm
Clamping torque (B, C)	4.000 Nm
Working torque : – B axis – C axis	 994 Nm 878 Nm



	Alternative for head
Axes displacement	B : +/- 105° C : +/- 190°
Rotating speed (B, C)	30 rpm
Clamping torque (B, C)	7.000 Nm
Working torque : – B axis – C axis	 1.150 / 750 Nm 1.100 / 500 Nm

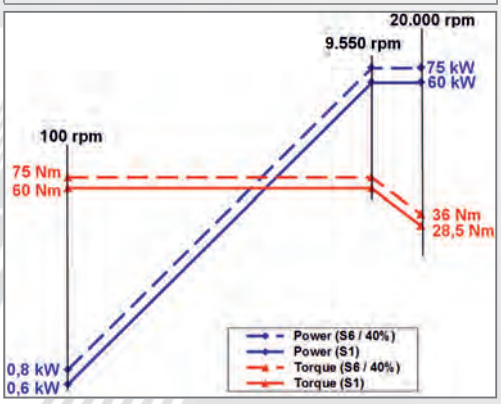


Y travel reduced by 100 mm!

Standard spindle

- Coolant by nozzles
- Air-barrier for spindle sealing
- Angular position control sensor
- Cooling circuit
- Mechanical tool clamping
- Release of tool by hydraulic control
- Lubrication of air/oil bearings
- Taper cleaning by compressed air

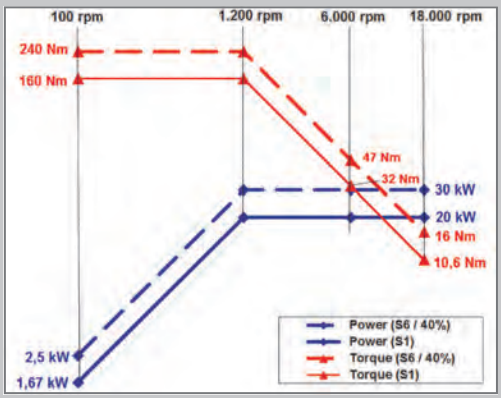
Taper	HSK 63-A
Rotating speed	20.000 rpm
Power (S6/S1)	75 / 60 kW
Torque (S6/S1)	75 / 60 Nm
Characteristic speed	9.550 rpm



With spindle

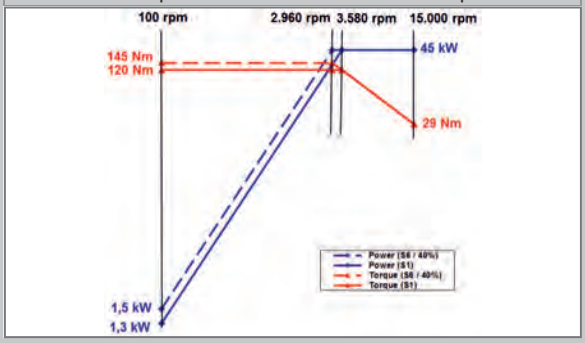
- Coolant by nozzles
- Angular position control sensor
- Cooling circuit
- Mechanical tool clamping
- Release of tool by hydraulic control
- Lubrication of air/oil bearings
- Taper cleaning by compressed air

Taper	HSK 63-A
Rotating speed	18.000 rpm
Power (S6/S1)	30 / 20 kW
Torque (S6/S1)	240 / 160 Nm
Characteristic speed	1.200 rpm

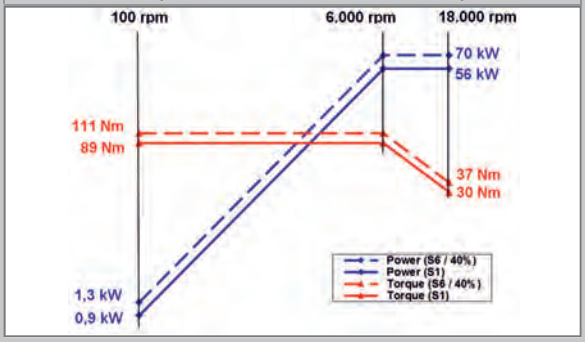


Spindle alternatives with standard head

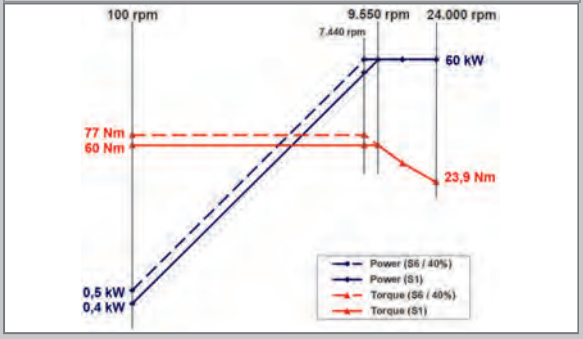
Electrospindle 15.000 rpm	
Taper	HSK 100-A
Rotating speed	15.000 rpm
Power (S6/S1)	45 / 45 kW
Torque (S6/S1)	145 / 120 Nm
Characteristic speed	3.580 rpm



Electrospindle 18.000 rpm	
Taper	HSK 63-A
Rotating speed	18.000 rpm
Power (S6/S1)	70 / 56 KW
Torque (S6/S1)	111 / 89 Nm
Characteristic speed	6.000 rpm

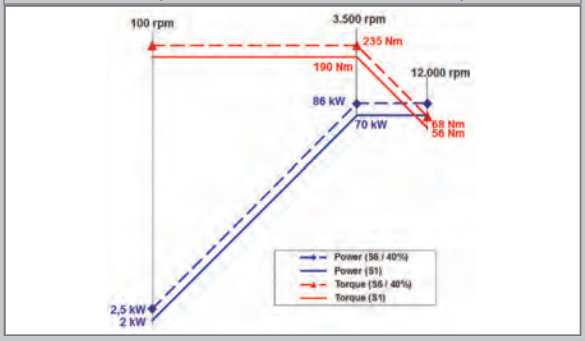


Electrospindle 24.000 rpm	
Taper	HSK 63-A
Rotating speed	24.000 rpm
Power (S6/S1)	60 / 60 KW
Torque (S6/S1)	77 / 60 Nm
Characteristic speed	9.550 rpm

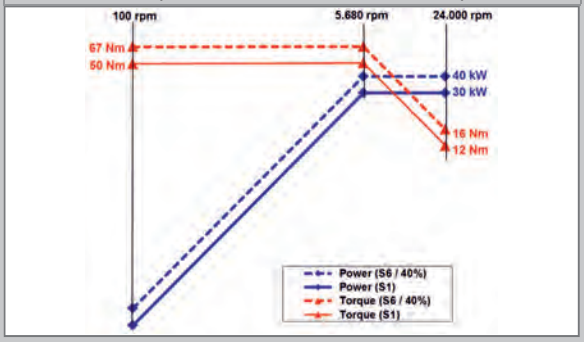


Spindle alternatives with alternative head

Electrospindle 12.000 rpm	
Taper	HSK 100-A
Rotating speed	12.000 rpm
Power (S6/S1)	86 / 70 kW
Torque (S6/S1)	235 / 190 Nm
Characteristic speed	3.500 rpm



Electrospindle 24.000 rpm	
Taper	HSK 63-A
Rotating speed	24.000 rpm
Power (S6/S1)	40 / 30 KW
Torque (S6/S1)	67 / 50 Nm
Characteristic speed	5.680 rpm



KXG Series

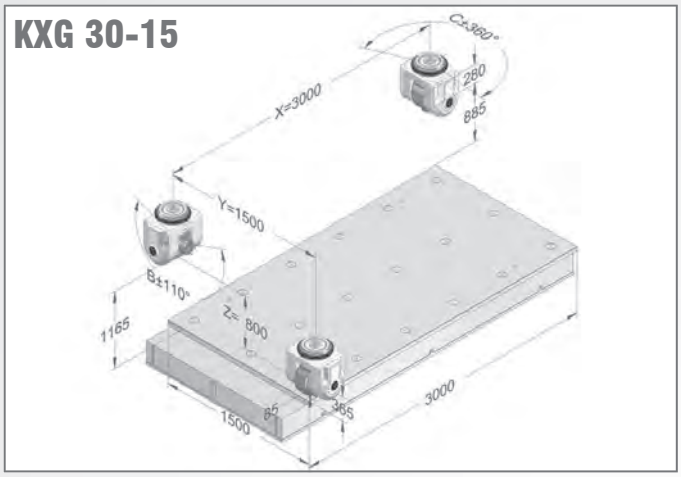
The table

Table allowing large parts machining.

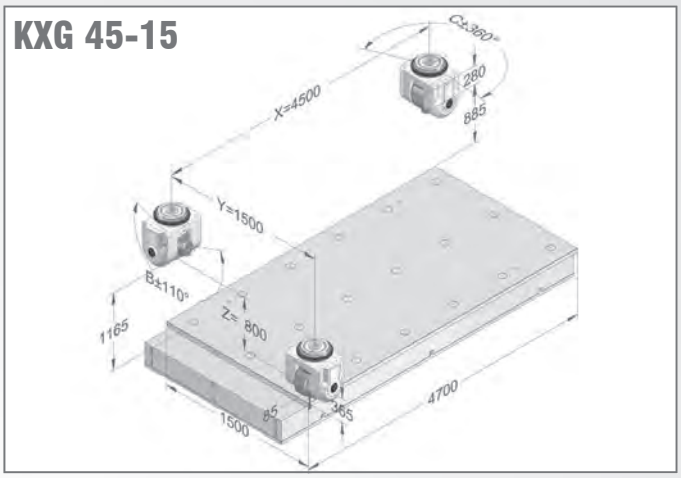
		KXG 30-15	KXG 45-15	KXG 45-25	KXG 60-25	KXG 90-25
Table dimension	mm	3.000 x 1.500	4.700 x 1.390	4.700 x 2.480	6.200 x 2.480	9.000 x 2.480
Admissible load	kg	13.000	18.000	21.000	25.000	52.000
Distance between portal	mm	2.600	2.600	3.500	3.500	3.500

Interferences diagrams

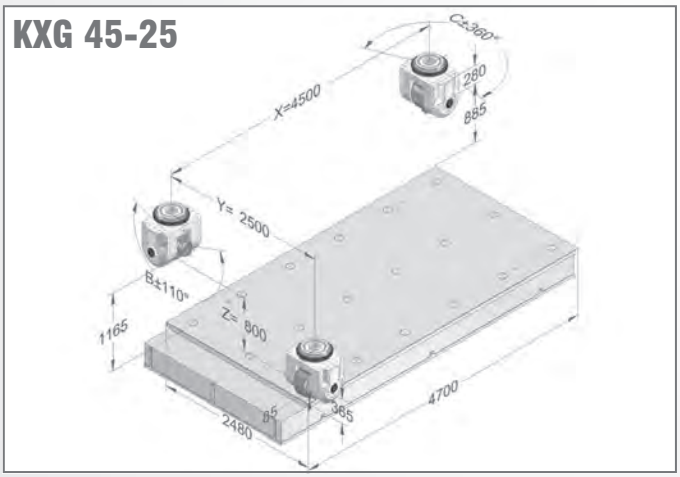
KXG 30-15



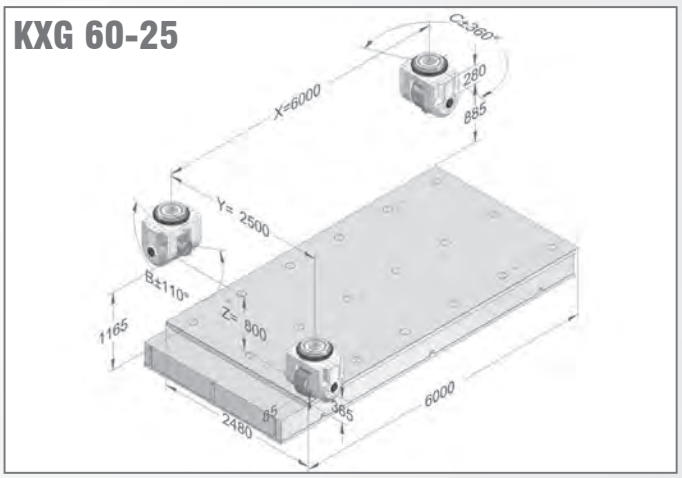
KXG 45-15



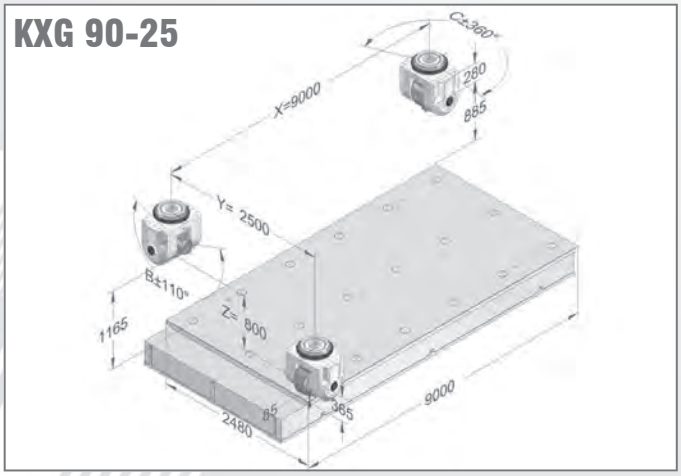
KXG 45-25



KXG 60-25



KXG 90-25



Standard tool changer

Chain with 2 wheels
The automatic loading/unloading of tools is done vertically.

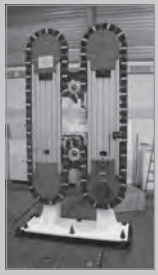
Number of housings	40
Taper	HSK 63-A
Tool size Ø - length - weight Max. weight in the magazine	 90 mm - 300 mm - 8 kg 160 kg
Tool changing time : tool to tool - chip to chip	 5 - 15 sec

Alternatives with HSK 63-A taper

Number of housings	60	100
Tool size Ø - length - weight Max. weight in the magazine	 90 mm - 300 mm - 5 kg 150 kg	 90 mm - 300 mm - 5 kg 250 kg
Tool changing time : tool to tool - chip to chip	 5 - 15 sec	 5 - 20 sec

Alternatives with HSK 100-A taper

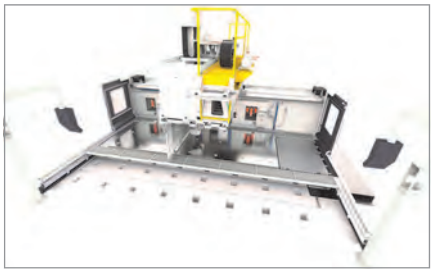
Number of housings	40	60
Tool size Ø - length - weight Max. weight in the magazine	 120 mm - 300 mm - 10 kg 200 kg	 120 mm - 300 mm - 10 kg 300 kg
Tool changing time : tool to tool - chip to chip	 6 - 16 sec	 6 - 20 sec



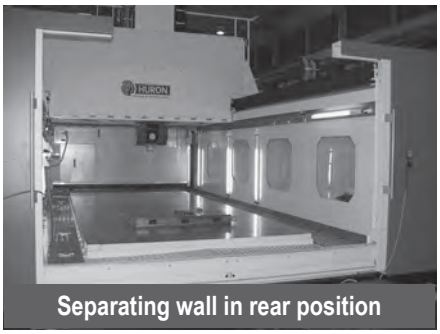
TWIN version - Pendulum machining (optional)

Adaptability and flexibility of the workspace to easily meet the customer's production requirements

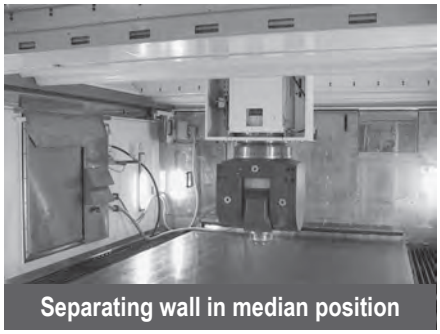
- 2 independent working and machining areas obtained by a separating wall fixed on 2 guide carriages allowing pendulum work
- 3 different positions: Front, Median, Rear
- « Parking » position of the separating wall to allow the use of all the travel X
- Passing the machining head from one area to another through the « guillotine door »
- Access to each area through sliding doors at the front and rear of the machine
- Each area is equipped with a tool changer, an operator panel and any other equipment necessary for machining the part.



	KXG 60-23 TWIN		KXG 90-23 TWIN	
Table dimension	6.200 x 2.480 mm		9.000 x 2.480 mm	
Position of the separating wall	**Area A**	**Area B**	**Area A**	**Area B**
- front	1.000 mm	4.050 mm	2.500 mm	5.550 mm
- median	1.500 mm	3.550 mm	3.000 mm	5050 mm
- rear	2.000 mm	3.050 mm	3.500 mm	4.550 mm
Admissible load on table	30.000 kg		52.000 kg	



Separating wall in rear position



Separating wall in median position

Guillotine door

Technical characteristics

Linear axes X / Y / Z		KXG 30-15	KXG 45-15	KXG 45-25	KXG 60-25	KXG 90-25
Travel X	mm	3.000	4.500	4.500	6.000	9.000
Travel Y	mm	1.500	1.500	2.500	2.500	2.500
Travel Z	mm	800 / 1.250	800 / 1.250	800 / 1.250	800 / 1.250	800 / 1.250
Rapid feedrates	m/min	X / Y = 60 - Z = 45				
Head / Rotating axes B, C						
B axis tilting	°	+/- 110°				
C axis rotation	°	+/- 360°				
Rotating speed	rpm	100				
Torque : clamping / working	Nm	B,C = 4.000 / B = 994 Nm / C = 878 Nm				
Table		**KXG 30-15**	**KXG 45-15**	**KXG 45-25**	**KXG 60-25**	**KXG 90-25**
Table size	mm	3.000 x 1.500	4.700 x 1.390	4.700 x 2.480	6.200 x 2.480	9.000 x 2.480
Admissible load	kg	13.000	18.000	21.000	25.000	52.000
Spindle						
Rotating speed / Taper	rpm	20.000 / HSK 63-A				
Power - Torque	kW - Nm	75 - 60				
Characteristic speed	rpm	9.550				
Accuracies (VDI DGQ 3441)		**KXG 30-15**	**KXG 45-15**	**KXG 45-25**	**KXG 60-25**	**KXG 90-25**
Linear axes (X/Y/Z)						
– Positioning (P)	mm	X = 0,025 Y/Z = 0,010	X = 0,025 Y/Z = 0,010	X = 0,025 Y/Z = 0,010	X = 0,035 Y/Z = 0,010	X = 0,050 Y/Z = 0,010
– Repeteability (Ps medium)	mm	X/Y/Z = 0,005	X/Y/Z = 0,005	X/Y/Z = 0,005	X = 0,006 Y/Z = 0,005	X = 0,006 Y/Z = 0,005
Rotating axes (B, C)						
– Positioning (P)	sec	10	10	10	10	10
– Repeteability (Ps medium)	sec	5	5	5	5	5
Tools changer						
Number of housings		40				
Ø - Length - Weight		90 mm - 300 mm - 8 / 160 kg				
Tool changing time : tool to tool - chip to chip	sec	5 / 15				
Overall measurements *(Doors opened + conveyor)*		**KXG 30-15**	**KXG 45-15**	**KXG 45-25**	**KXG 60-25**	**KXG 90-25**
Width	mm	8.110	8.110	8.500	9.300	10.210
Depth	mm	9.060	11.000	12.000	11.700	14.500
Height	mm	5.735	5.800	5.800	5.800	5.800
Weight of the machine	kg	55.000	60.000	80.000	90.000	130.000

Optional equipments

Extension of Z travel to 1.250 mm - Various spindles and heads - Various tools changers - Pendulum machining - T-slots on table - Washing rail - Microspraying - Air blowing - Part probe - Tool probe - Oil mist extraction - Oil separator - Pressurization of measuring scales

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