



KX *Five* **Series**

**5 axes high performances
machining centres**

**Performance
Technology
Power
Accuracy**





KX *Five* Series

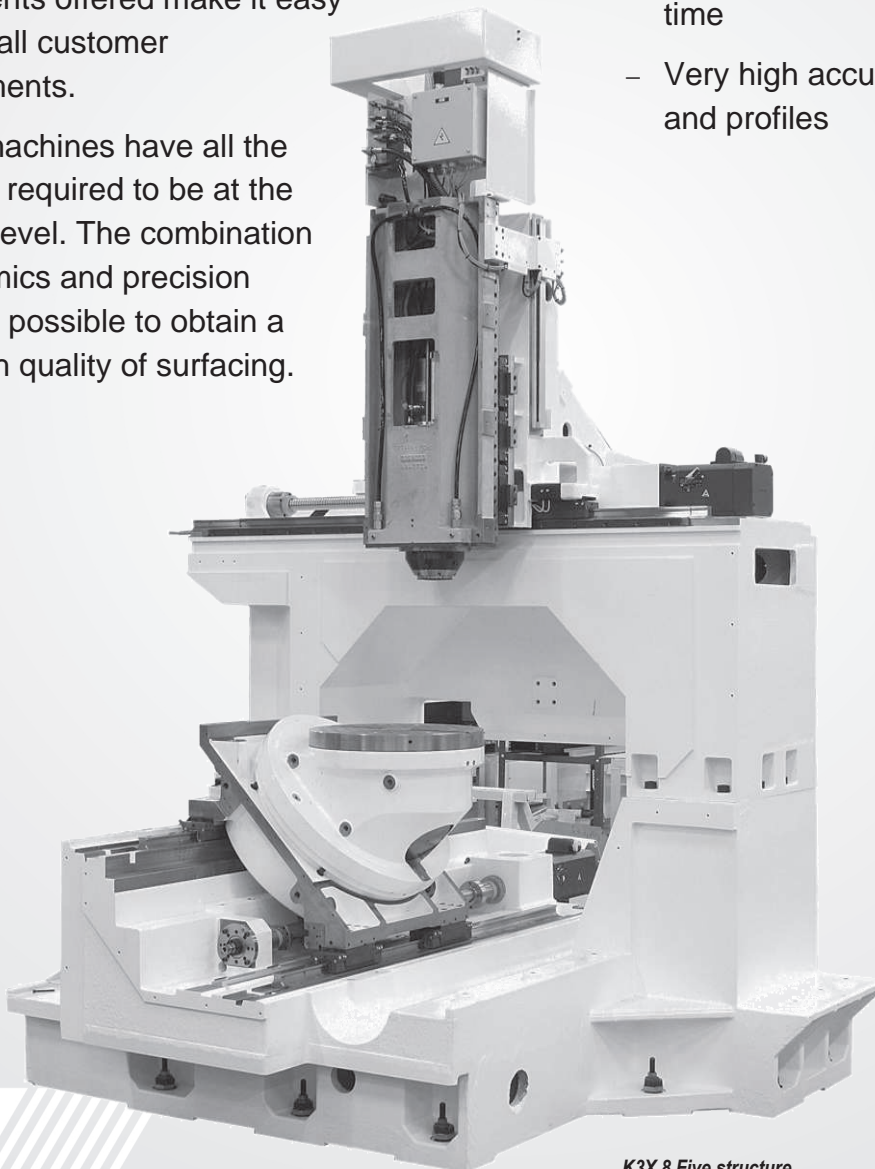
KX Five, a range of very high performance machines for the machining of complex parts in 5 axes and on 5 sides.

The HURON KX Five 5-axis high-speed milling range enables the machining of all complex parts such as injection molds, aeronautical parts or parts of precision mechanics, on 5-sided and in 5 simultaneous axes, from roughing to finishing.

The modular design and the alternatives and equipments offered make it easy to meet all customer requirements.

These machines have all the qualities required to be at the highest level. The combination of dynamics and precision makes it possible to obtain a very high quality of surfacing.

- High performance both in roughing and finishing
- 5 axes machining for workpieces with weight up to 500 kg (up to 750 kg reducing feedrates and accelerations)
- Hard material machining in minimal time
- Very high accuracy in contouring and profiles



K3X 8 Five structure



Structure : rigidity and accuracy

- Fixed portal structure in ribbed cast iron with stiffeners to reduce the torsional forces, weighed base
- 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
- The modular design and the alternatives and equipments offered make it easy to meet all customer requirements.
- Electrical cabinet protected IP54

Environment - Ergonomics

- Evacuation channels for chips equipped with washing device
- Evacuation of chips by coolant liquid
- The automatic tool changer is placed outside the working area and is protected from the machining area. The tools can be loaded simultaneously at the machining.
- Full safeguard ensuring safety of the machine, the operator and its environment
- Very large accessibility to the table and the workpiece from top and side of the machine thanks to a large opening of doors on the corner and possibility to load with lifting equipment
- Operator panel

Maintenance

- Very good accessibility to all maintenance points

Linear axes

- Pre-stressed ball screws with expansion compensation system
- Preloaded drive bearings to eliminate reverse clearance and axial forces on ball screws for high surfacing quality
- Automatic lubrication of ball screws and bearings to reduce the pollution of the cutting fluid

Tilting and rotating table

- Table equipped with torque motors
- Table on an inclined plane
- Tilting angle to avoid chips accumulation on the table
- Possibility to work continuously from the vertical to the horizontal position
- Combined axial and radial pre-stressed bearing
- High rotation and high acceleration
- No backlash
- No wear
- Rigidity : high clamping torque enabling high power during roughing

Numerical controller

- Ergonomics design
- High memory and calculation capacities
- Interactive programming
- Graphic simulation before machining for optimal safety



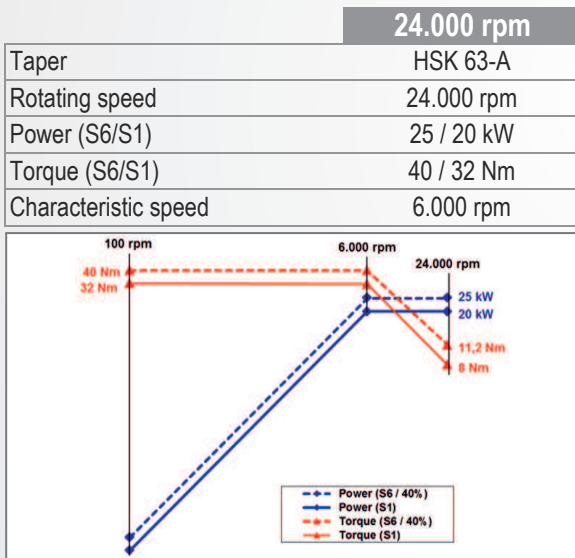
KX Five Series

Spindle 24.000 rpm

- Electrospindle combining speed, torque and power for a high chip removal rate
- Possibility of finishing operations thanks to the high rotational speed
- Axial / radial stiffness of the tool guaranteed

Equipments :

- Air wall for spindle protection
- Control sensor for angular positioning of the spindle
- Cooling device
- Mechanical clamping
- Tool release with hydraulic control
- Air/oil greasing of bearings
- Taper cleaning by compressed air



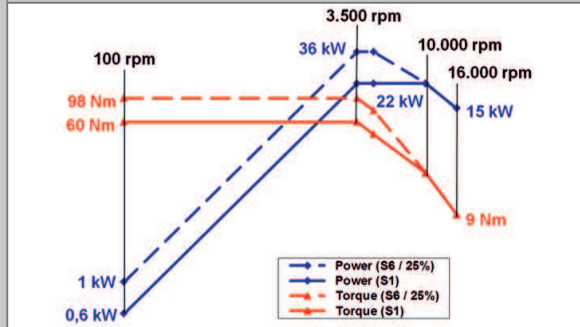
Vibrations monitoring

Vibration monitoring ensures safe operation of the machine components, tool and workpiece. The system consists of a vibration sensor and an electronic signal processing unit.

Spindle alternatives

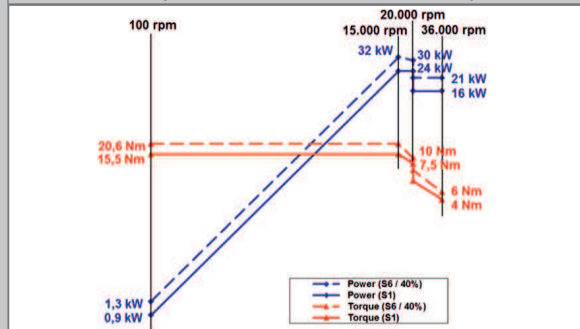
Electrospindle 16.000 rpm

Taper	HSK 63-A
Rotating speed	16.000 rpm
Power (S6/S1)	36 / 22 kW
Torque (S6/S1)	98 / 60 Nm
Characteristic speed	3.500 rpm



Electrospindle 36.000 rpm

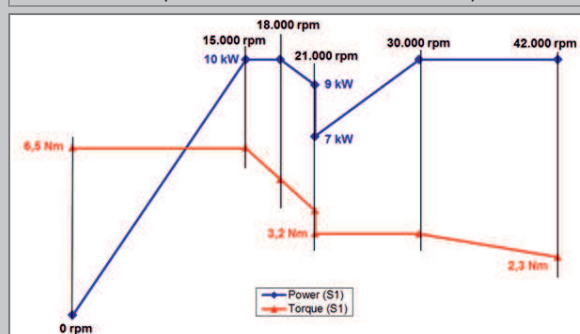
Taper	HSK 50-E
Rotating speed	36.000 rpm
Power (S6/S1)	32 / 24 kW
Torque (S6/S1)	20,5 / 15,5 Nm
Characteristic speed	15.000 rpm



Electrospindle 42.000 rpm

A 28 housings ATC is required

Taper	HSK 40-E
Rotating speed	42.000 rpm
Power (S6/S1)	12 / 10 kW
Torque (S6/S1)	6,54 / 9 Nm
Characteristic speed	15.000 rpm

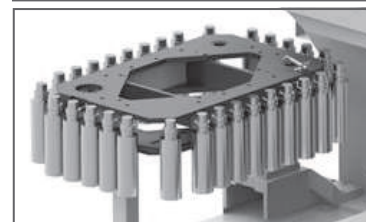




Tools changers

Automatic load/unload of the tool is made in vertical position.

	K3X 8 Five	K2X 10 Five
Nb of housings	24	30
Taper	HSK 63-A	HSK 63-A
Tool dimension :		
Ø	90 mm	90 mm
Length	250 mm	300 mm
Weight	7 kg	8 kg
Max. weight in the magazine	80 kg	120 kg
Tool changing time :		
tool/tool - chip/chip	5 - 15 sec	5 - 15 sec

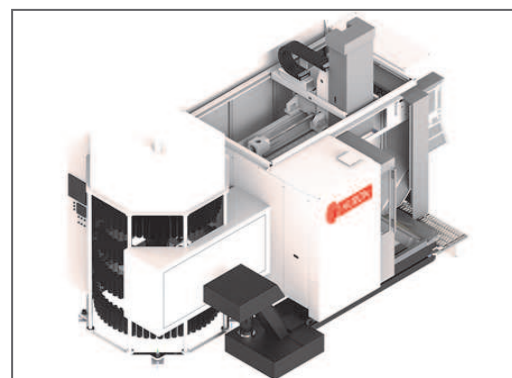
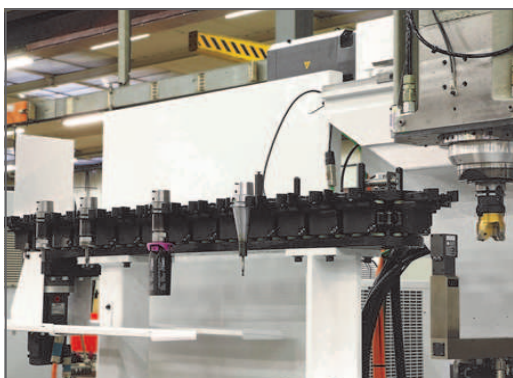


Alternatives with taper HSK 63-A

	K3X 8 Five	K3X 8 Five K2X 10 Five	K3X 8 Five K2X 10 Five
Nb of housings	30	40	60
Tool dimension :			
Ø	90 mm	90 mm	90 mm
Length	250 mm	8 Five = 250 mm 10 Five = 300 mm	8 Five = 250 mm 10 Five = 300 mm
Weight	8 kg	8 kg	8 kg
Max. weight in the magazine	120 kg	160 kg	240 kg
Tool changing time :			
tool/tool - chip/chip	5 - 15 sec	5 - 15 sec	5 - 15 sec

Alternatives with taper HSK 63-A

	K3X 8 Five	K3X 8 Five K2X 10 Five	K3X 8 Five K2X 10 Five
Nb of housings	90	160	190
Tool dimension :			
Ø	90 mm	90 mm	75 mm
Length	250 mm	8 Five = 250 mm 10 Five = 300 mm	8 Five = 250 mm 10 Five = 300 mm
Weight	8 kg	8 kg	15 kg
Max. weight in the magazine	kg	kg	kg
Tool changing time :			
tool/tool - chip/chip	5 - 8,5 sec	5 - 15 sec	5 - 15 sec





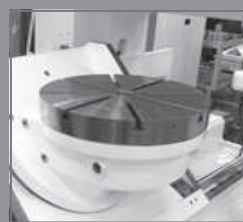
KXX Five Series

Standard tables

K3X 8 Five



K2X 10 Five



Characteristics

Structure : Table on inclined plane		Plane at 55°	Plane at 45°
Table dimension	mm	Ø 500	Ø 630
Admissible weight	kg	250 (*)	500 (*)
Max. workpiece dimension	mm	Ø 700 Height 280 mm	Ø 800 Height 540 mm
A axis : Tilting		-30° / +180°	-45° / +180°
Rotating speed	rpm	50	40
Measuring increment		0,001°	0,001°
Torque : working / clamping	Nm	872 / 1.630	941 / 2.500
C axis : Rotating table		360°, continuous	360°, continuous
Rotating speed	rpm	50	90
Measuring increment		0,001°	0,001°
Torque : working / clamping	Nm	554 / 990	493 / 1.200
Workpiece clamping		Holes M12 50/50 mm	8 slots 18H12
Reference		20H7 - Width 5	20H7 - Width 5
Central bore	mm	40H7 - Width 15	40H7 - Width 15

(*) reducing the feedrates and accelerations :

- K3X 8 Five up to 300 kg

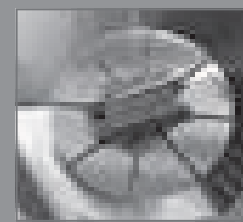
- K2X 10 Five up to 750 kg

Optional tables

K3X 8 Five



K2X 10 Five

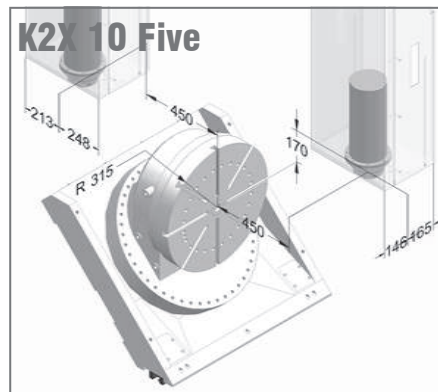
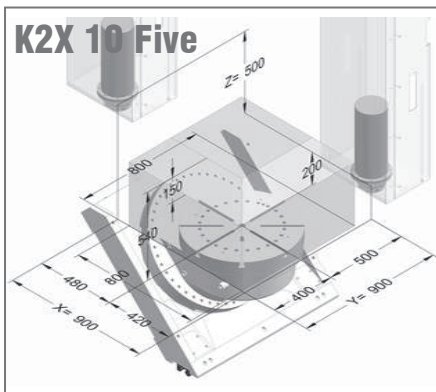
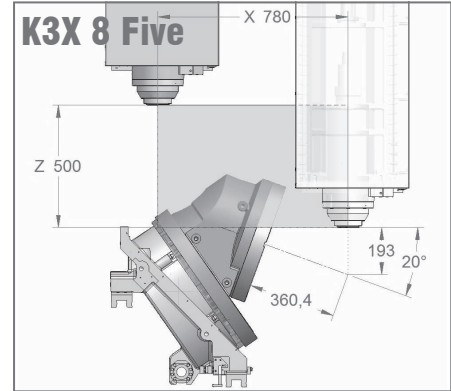
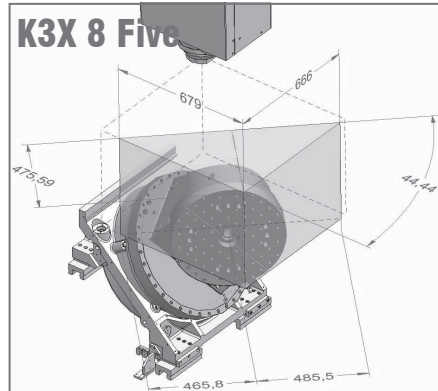
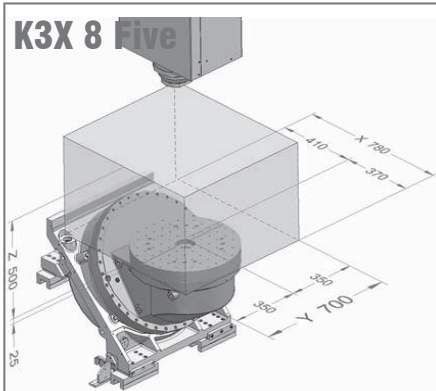


Characteristics

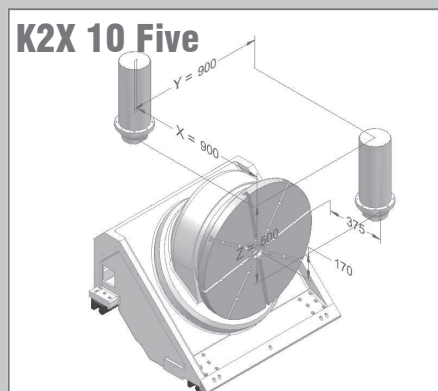
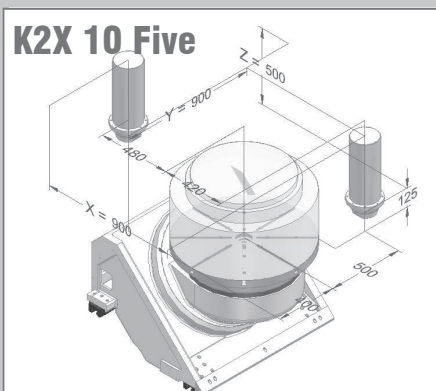
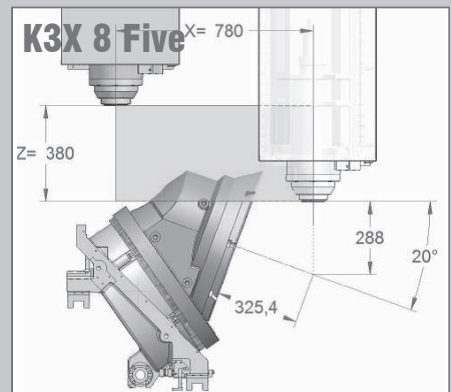
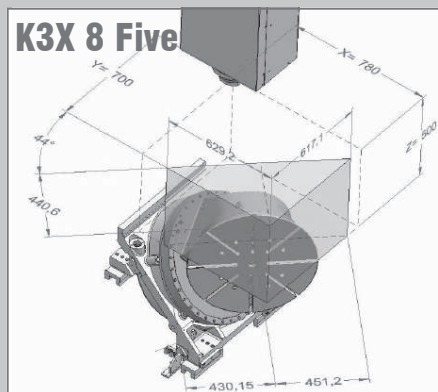
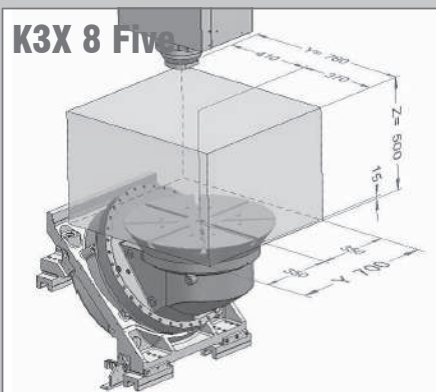
Structure : Table on inclined plane		Plane at 55°	Plane at 45°
Table dimension	mm	Ø 630	Ø 800
Admissible load	kg	250	500
Workpiece clamping		8 slots 18H12	8 slots 18H12
Reference		20H7 - Width 5	20H7 - Width 5
Central bore	mm	40H7 - Width 15	40H7 - Width 15



Interferences layouts : standard tables



Interferences layouts : optional tables





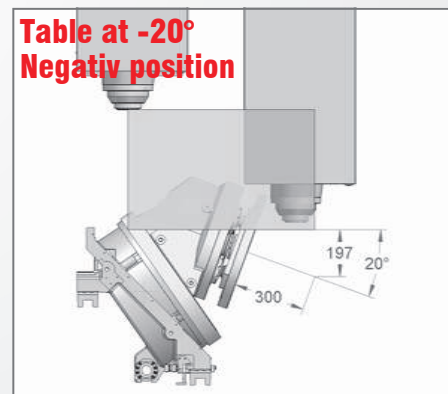
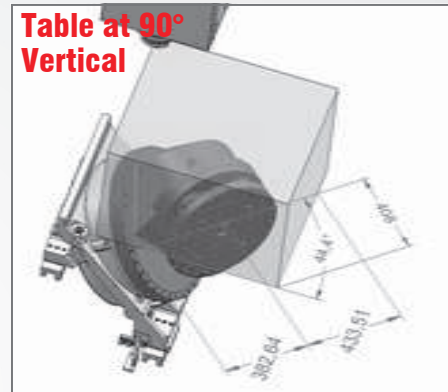
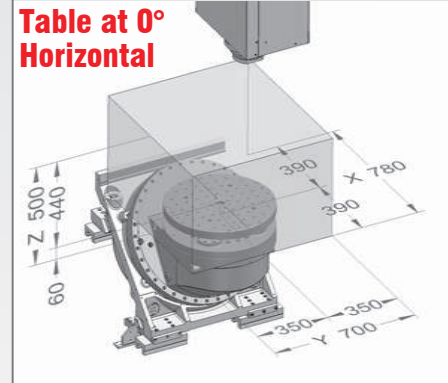
KXX Five Series

Optional palletised table for K3X 8 Five

The palletised table is positioned instead of the standard table on a 55° plane. It is equipped with a milling pallet.

The measurement on the rotary axes is carried out by incremental encoder on axis A and absolute encoder on axis C.

The resolution is 0,001°.



Characteristics

Structure : table on inclined plane		55° plane
Dimension pallet	mm	Ø 500
Admissible weight	kg	250
Max. workpiece dimension	mm	Ø 500 Height 285 mm
A axis : Tilting		
		-30° / +180°
Rotating speed	rpm	50
Incremental measurement		0,001°
Torque : working / clamping	Nm	872 / 1.630
C axis : Table rotating		
		360°, continuous
Rotating speed	rpm	50
Incremental measurement		0,001°
Torque : working / clamping	Nm	554 / 990
Workpiece clamping		
		Holes M12 50/50 mm
Reference		20H7 Width 5
Central bore	mm	40H7 Width 15



Palletizing (optional for K3X 8 Five)

To increase your productivity, to optimize your processes or increase your rates, HURON offers a 2-stations palletizing device for the K3X 8 Five.

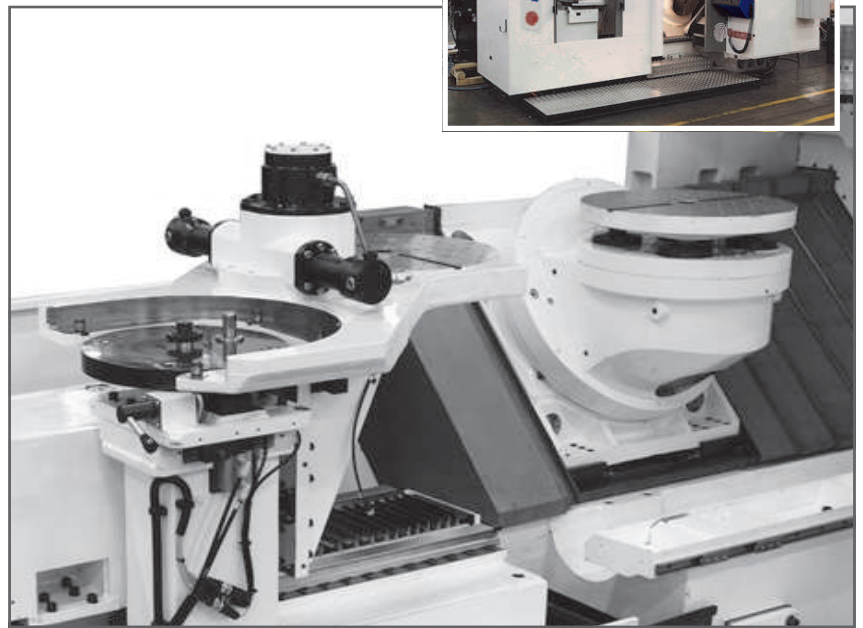
This device includes :

- 1 2-stations palletizing device
- 1 palletising table
- 2 milling pallets Ø 500 mm
- automatic opening of the door

Other palletizing configurations are possible and have already been carried out by our customers.

You can also customize your own palletizing system.

The preparation of the table with rotating pneumatic seal will allow the machine to subsequently receive the solution of your choice.



Testimony



« We work a lot in the aeronautics sector. To satisfy the demand and the level of quality demanded by our customers, we needed a dynamic, accurate and reliable production tool.

We chose a Huron K3X 8 Five milling center and the quality we get when we machine the parts meets our needs perfectly. The versatility and modularity that we have on this machine which is equipped with a 12-

stations pallet device and a tool changer with 190 housings allows us to increase and optimize our production as much as possible.

In addition, we have chosen to trust this historically renowned manufacturer who continues to manufacture its products in France. This proximity is reassuring. »



With the courtesy of **Philippe Keim**

BAZELLE MECA - France - www.bazelle-mecanique-precision-36.com



KX *Five* Series

HURON numerical controller cycles

PRECILIFE or how to manage tool life automatically ? (*)

This cycle provides automatic tool checking during machining or at tool change. If critical wear or a broken tool is detected, the system automatically triggers the replacement of the tool at the most appropriate time. It therefore safeguards the integrity of the workpiece and the cutting tools and optimizes tool use. The profitability of the machine is increased by reducing downtime and tooling costs.

MAIN FEATURES

- Automated tool measurement, inspection and replacement done in the machining process
- No change to the NC program
- Implemented by HURON
- Configurable wear and breakage detection tolerance for each tool
- Automatic replacement of tools

(*) Only with 3 axes machines, spindle in vertical position

PRECIPOWER or how to optimise roughing operations ?

It takes care of optimizing the roughing operation by automatically modulating and adapting the feedrate, in real time, to the value that result in peak material removal.

MAIN FEATURES

- Full use of available spindle power
- Automatic feedrate modulation
- Maximize material removal rate
- Spindle and rotating axes overload protection during roughing

PRECIFIVE or how to get an accurate and automatic calibration of the machine kinematic ?

Automate the calibration of the kinematics by carrying out the measurement of the position and the orientation of the rotation axes. The calibration can be executed directly in an NC program to ensure optimum accuracy during critical machining operations.

MAIN FEATURES

- Quick, accurate, repeatable measuring system
- Optimized machining accuracy
- Compensation of the thermal expansion of the machine
- Reduces rejected parts
- Rapid evaluation following a machine collision
- Control report

PRECIPROTECT or how to save time while protecting the machine and the workpieces ?

This cycle allows real-time monitoring of toolpaths and machine movements in order to anticipate any form of collision. The machine and the part are thus preserved.

MAIN FEATURES

- Conserve machine accuracy
- Save time : no simulation required, control is done in real-time
- Save money : No more repair or machine stop due to a collision
- Increase profitability : preserve integrity of the machine and workpiece ; no more delivery delays to customers
- Reliability : detection of an imminent collision triggers an immediate and automatic stop of the movements of the machine
- Peace of mind : let the machine work unsupervised



Technical characteristics

Linear axes X / Y / Z		K3X 8 Five	K2X 10 Five
X travel	mm	780	900
Y travel	mm	700	900
Z travel	mm	500	500
Rapid feedrates	m/min	50	50
Acceleration per axis	m/s ²	5	5
Vectorial acceleration	m/s ²	9	9
Rotating table		K3X 8 Five	K2X 10 Five
Structure		on a 55° plane	on a 45° plane
Table dimension	mm	Ø 500 mm	Ø 630 mm
Admissible load	kg	250 kg	500 kg
Distance spindle nose / top table (0°)	mm	525 mm	700 mm
Distance angle spindle / table (0°)	°	0° / 110°	0° / 90°
Negativ angle	°	-20°	-
A axis - Tilting	°	+30° / -180°	+45° / -180°
Rotating speed	rpm	50	40
C axis - Rotation	°	360° continuous	360° continuous
Rotating speed	rpm	50	90
Spindle		K3X 8 Five	K2X 10 Five
Rotating speed	rpm	24.000	24.000
Taper		HSK 63-A	HSK 63-A
Power - Torque (S6/S1)	kW - Nm	25 / 20 - 40 / 32	25 / 20 - 40 / 32
Characteristic speed	rpm	6.000	6.000
Accuracies (VDI DGQ 3441)		K3X 8 Five	K2X 10 Five
Linear axes (X/Y/Z)			
- Positioning (P)	mm	0,004	0,004
- Repeatability (Ps medium)	mm	0,002	0,002
Rotating axes (A, C)			
- Positioning (P)	sec	7,2	7,2
- Repeatability (Ps medium)	sec	3,6	3,6
Tools changers		K3X 8 Five	K2X 10 Five
Nb of housings		24	30
Tool length	mm	250	300
Tool Ø	mm	90	90
Tool weight / total weight in the magazine	kg	7	8 / 120
Tool changing time : tool/tool - chip/chip	sec	5 - 15	5 - 15
Coolant		K3X 8 Five	K2X 10 Five
Flow - Pressure	l/min - bar	30 - 3	30 - 3
Tank	litres	230	230
Over-all measurments		K3X 8 Five	K2X 10 Five
Weight of the machine	kg	10.000	14.500
Length	mm	2.690	3.510
Width	mm	4.710	4.910
Height	mm	3.320	3.470

Optional equipments

Tables alternatives - Spindles alternatives - Tools changers alternatives - High pressure coolant 50 / 70 bar - Coolant by microspraying - Air blast - Workpiece probe - Tool probe - Pallet device - Graphit dust removal system - Oil extraction system - Oil skimmer - Pressurization of measuring scales - Electrical cabinet conditioning - Sight glass



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