

KXFive Series

5-Axis High Performance Vertical Machining Centers





OVERVIEW

The HSM machining centers, JYOTI HURON KX Five series, enable machining operations in 5 simultaneous axes on 5 sides, from roughing to finishing, of all types of complex work pieces such as injection molds, complex aerospace components or high integrity mechanical parts. These machining centers are projected to be at the highest level in 5-Axis HSM Category. A combination of high dynamics and accuracy allows the KX Five to obtain very high surface quality.

 5-axis machining for work pieces up to 500 kg (possible to position up to 750 kg reducing feedrates and acceleration)



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STRUCTURE: RIGIDITY AND ACCURACY

- Structure with fixed portal in ribbed cast iron with stiffness wall
- 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 the customer
- Electrical cabinet protected IP54

LINEAR AXIS

- Preloaded ballscrews with integrated system of compensation for expansion
- Preloaded bearings to remove inversion backlash and axial stress on ballscrews enabling a high quality of surfacing
- Automatic grease lubrication of ballscrews and bearings minimising the pollution of coolant
- Incremental measurement by optical encoders in conformity with norm VDI/DGQ 3441

NUMERICAL CONTROLLER

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

SPINDLE

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

TILTING AND ROTATING TABLE

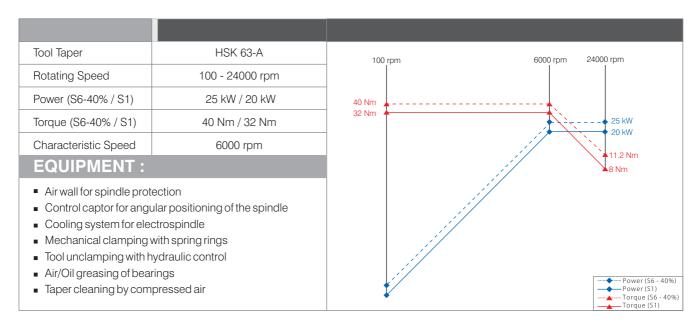
- Table equipped with torque motor : TRIM® technology
- Table on an inclined 55° plane allowing tilting from -30° to +180° for K3X 8 Five
- Table on an inclined 45° plane allowing tilting from -45° to +180° for K2X10 Five
- Tilting angle avoid chips accumulation on table
- Possibility to use all working planes between horizontal and vertical position
- Preloaded bearing with axial and radial combination
- High rate of rotational acceleration
- No backlash
- No wear
- Rigidity: high clamping torque enabling high power during roughing

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 from top and side of the machine thanks to a large opening of doors and possibility to load with lifting equipment



ELECTRO SPINDLE 24000 RPM



THE TOOL CHANGER

The automatic load/unload of the tool is made vertically						
	K3X 8 Five	K2X 10 Five	Only with 42000 rpm spindle			
Pockets Quantity	20	30	28			
Type of Magazine	Plate	Chain	Plate			
Tool Taper	HSK 63-A	HSK 63-A	HSK 40-E			
Tool Dimensions :						
Max. Ø Adjacent / Non Adjacent Tool	90 mm	90 mm	70 mm			
Max. Length	250 mm	300 mm	300 mm			
Max. Weight	8 kg	8 kg	8 kg			
Max. Weight Admissible in Magazine	80 kg	120 kg	80 kg			
Tool Changing Time :						
Tool to Tool	5 sec	5 sec	5 sec			
Chip to Chip	8.5 sec	15 sec	15 sec			





THE BIROTATIONAL TABLE

	K3X 8 Five		K	2X 10 Five
A-Axis Tilting Angle Rotating Speed Measuring Increment	-30° / +180° 50 rpm 0.001°	Angle on 55° plane	-45° / +180° 40 rpm 0.001°	Angle on 45° plane
C-Axis Rotating Angle of Table Rotating Speed Measuring Increment	360° 50 rpm 0.001°		360° 90 rpm 0.001°	
Table Area		Ø 500 mm		ў 630 mm
Admissible Load		250 kg		50 kg if reducing the and accelerations)
Clamping System Refering Centering	20 H	es M12 50/50 mm H 7 mm – Width 5 I 7 mm – Width 15	20 H 7	slots 18H12 ' mm – Width 5 mm – Width 15
	Table in horizontal position (0°)		Table in horizontal position (0°)	
	Table in vertical position (-20°)		Table in vertical po	osition (90°)



ALTERNATIVE TO TABLE: PALETTISED TABLE



		K3X 8 Five	K	2X 10 Five	
A-Axis Tilting Angle Rotating Speed Measuring Increment C-Axis Rotating Angle of Table Rotating Speed Measuring Increment	-30° / +180° 50 rpm 0.001° 360° 50 rpm 0.001°	Angle on 55° plane	-45° / +180° 40 rpm 0.001° 360° 90 rpm 0.001°	Angle on 45° plane	
Table Area Admissible Load		Ø 500 mm 250 kg	Ø 630 mm 500 kg (750 kg if reducing the feedrates and accelerations)		
Clamping System Refering Centering	20 H	es M12 50/50 mm H 7 mm – Width 5 I 7 mm – Width 15	20 H 7 40 H 7	slots 18H12 ' mm – Width 5 mm – Width 15	
		norizontal position (0°)	lable in nor	rizontal position (0°)	
	Table in vertical position (-20°)		Table in ve	ertical position (90°)	

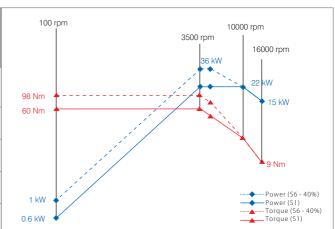


ALTERNATIVE TO TOOL CHANGER

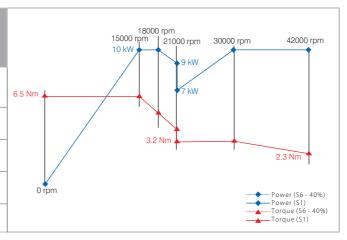
Pockets Quantity	30	40	60	100
Type of Magazine	Pick-Up	Pick-Up	Pick-Up	Transfer Arm
Tool Taper	HSK 63-A	HSK 63-A	HSK 63-A	HSK 63-A
TOOL DIMENSIONS:				
Max. Ø Adjacent / Non Adjacent	70 / 80 mm	90 mm	90 mm	90 mm
Tool				
Max. Length	250 mm	250 mm	250 mm	250 mm
Max. Weight	8 kg	8 kg	8 kg	8 kg
Max. Weight Admissible	80 kg	160 kg	240 kg	40 kg
TOOL CHANGING TIME :				
Tool to Tool	5 sec	5 sec	5 sec	5 sec
Chip to Chip	8.5 sec	15 sec	15 sec	30 sec

ALTERNATIVE TO SPINDLE

16000	0 rpm	
Tool Taper	HSK 63-A	98
Rotating Speed	16000 rpm	60
Power (S6-40% / S1)	36 kW / 22 kW	
Torque (S6-40% / S1)	98 Nm / 60Nm	1
Characteristic Speed	3500 rpm	0.6



42000 rpm With this spindle, standard tool magazine = 28 pockets					
Tool Taper	HSK 40-E				
Rotating Speed	100 - 42000 rpm				
Power (S6-40% / S1)	12 kW / 10 kW				
Torque (S6-40 / S1)	9 Nm / 6.54 Nm				
Characteristic Speed 15000 rpm					





PALETTIZATION DEVICE

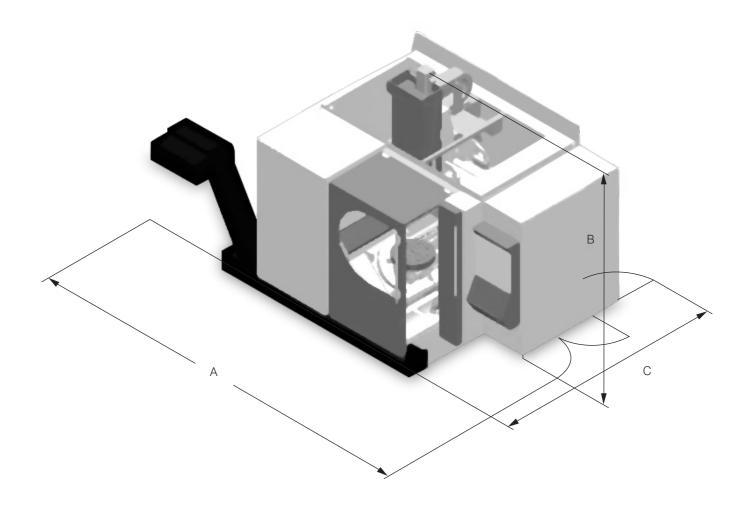
	K	3X 8 Five	K2X 10 Five		
Pallet Area Admissible Load : Pallet + Workpiece Clamping System	Ø 500 250 kg Holes		Ø 630 750 kg Holes		
Refering Centering	M12 50/50 mm Ø 40 H7 Slot 20H7		M12 50/50 mm Ø 50 H6 Slot 20H6		

		Bi-pallet device with table or palettized table
BI-PALLET DEVICE Pallets Quantity Pallet Changing Time: Pallet to Pallet Loading Station Quantity	2 12 sec 1	

		Pallet device with 6 pallets with table or palettized table
PALLET DEVICE Pallets Quantity Pallet Changing Time: Pallet to Pallet Loading Station Quantity	6 12 sec 1	



OVERALL MEASUREMENTS – STANDARD MACHINE



	K3X 8 Five	K2X 10 Five
A: Length	5260 mm	5700 mm
C : Width	3150 mm	3660 mm
B : Height	3180 mm	3470 mm
Weight of the Machine	9700 kg	13000 kg



TECHNICAL FEATURES

Linear Axis X / Y / Z		K3X 8 Five K2X 10 Fiv) Five	
Travels	mm	780 x 700 x 500 900 x 900 x 50		0 x 500	
Rapid Feedrates	m/min	50			
Acceleration on Axis	m/s²			5	
Structure		Table on	a 55° plane	Table on	a 45⁰ plane
Rotating Axis A/C (On Table)		A axis	C axis	A axis	C axis
		Tilting	Rotation	Tilting	Rotation
Angle		-30° / +180°	360°	-45° / +180°	360°
Working Positioning		Horizonta	l position = 0°	Horizontal	position = 0°
(Angle Spindle Axis / Table)		Vertical po	osition = 90°	Vertical po	osition = 90°
		Inclined	$I = -20^{\circ}$		
Table					
Area	mm	Ø 5	500	Ø 630	
Admissible Load on Table	kg	25	50	500 (750 kg if re	educing
				feedrates and accelerations)	
Rotating Speeds	rpm	50	50	40	90
Accuracies					
Uncertainty : P		Linear axes X – Y – Z : 4 μ m – Rotating axes A – C : 7.2 sec			C: 7.2 sec
Repeatability: Ps Medium		Linear axes X – Y – Z : 2 μ m – Rotating axes A – C : 3.6 sec			2: 3.6 sec
Spindle					
Rotating Speed	rpm		24	000	
Tool Taper			HSK	. 63-A	
Power – Torque (S6-40% / S1)	kW - Nm		25 / 20	- 40 / 32	
Characteristic Speed	rpm		60	000	
Tool Magazine					
Pockets Quantity		20			
Tool Taper		HSK 63-A			
Tool Dimensions: Length-Diameter-Weight	mm-Ømm-kg	250-90-8			
Coolant					
Flow – Pressure	I/min – bar		30	-3	
Tank	Litres	230			





ALTERNATIVES

Spindles		16000 rpm	42000 rpm
Rotating Speed	rpm	16000	42000
Tool Taper		HSK 63-A	HSK 40-E
Power – Torque (S6-40% / S1)	kW - Nm	36 / 22 – 98 / 60	12 / 10 – 9 / 6.54
Characteristic Speed	rpm	3500	15000

ROTATING AXIS C – PALLETIZED TABLE			
Table Area	mm	Ø 500	Ø 630
Admissible Load on Table	kg	250	500
Rotating Speed	rpm	A - 50, C - 50	A - 40, C - 90

TOOL MAGAZINES					
Pockets Quantity		30	40	60	100
ToolTaper		HSK 63-A	HSK 63-A	HSK 63-A	HSK 63-A
Tool Dimensions : Length – Diameter – Weight m	m-Ømm-kg 2	250-80-8	250-90-8 25	0-90-8 250	-90-8

OPTIONAL EQUIPMENTS

- Pallettization Device
- Air Blast
- Oil Extraction System
- Air Conditioning of Electrical Cabinet
- Micro Spraying Coolant
- Component Probe
- Graphite Dust Removal System
- Sigh Glass

- High Pressure Coolant 50 Bar
- Tool Probe
- Pressurization of Measuring Scales
- Oil Separator

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Note: Specified information are subject to change arising out of continuous product improvement without notice. The description standard accessories/feature conforms to its list; not the photo of machine show in the catalogue. Other controller will have different configuration. Machine images are shown with option.

