



HSX Series

High Dynamic Horizontal Machining Centers



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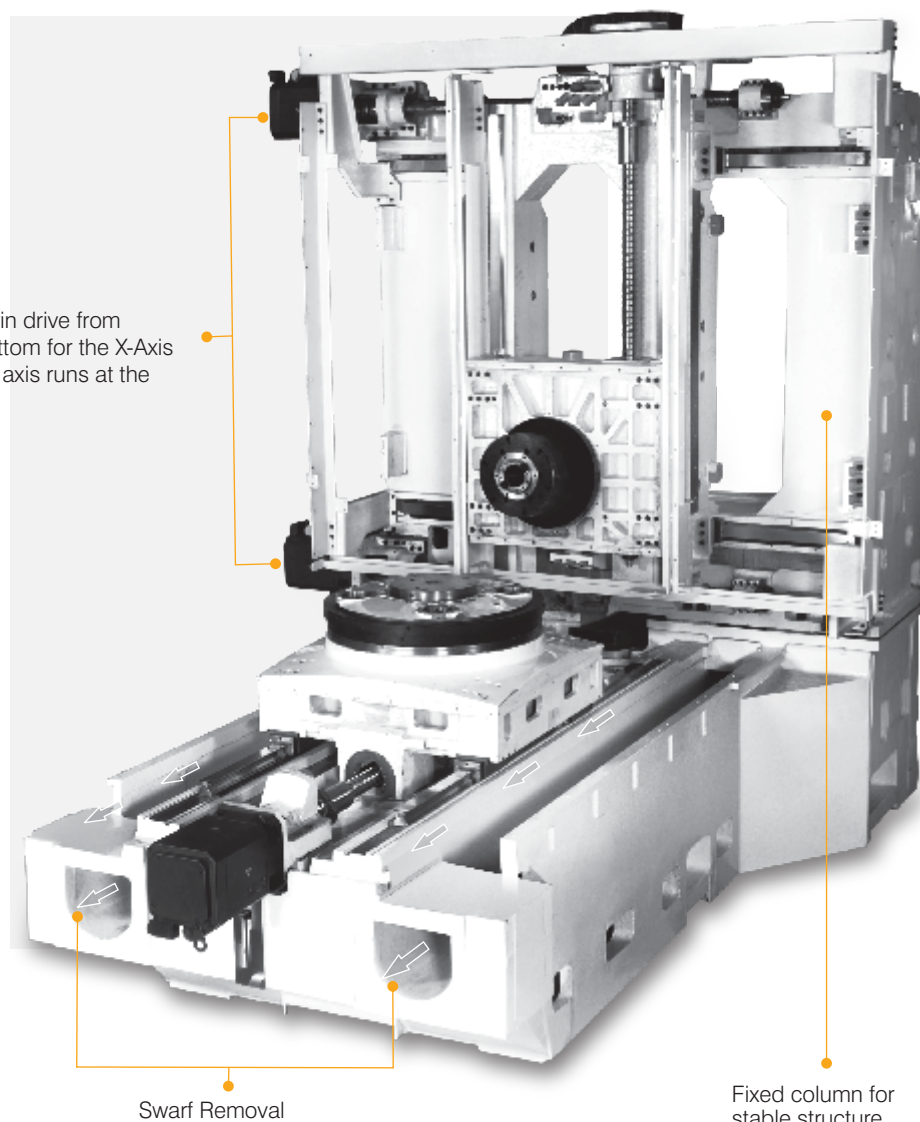
OVERVIEW

Jyoti has developed high speed, high precision Horizontal Machining Centers with worlds best available features to match the demanding requirement of industry for multiple face machining operations delivering productivity and added value for money in terms of performance. These machines can easily perform variety of operations starting from heavy roughing to precision finishing work using different types of tools starting from the heavy milling cutters to the small drills and taps.

A PERFECT STRUCTURE - HSX 650

The machine base and column are made of 60 grade SG iron casting to provide very good rigidity and geometrical accuracy. The machine is having a totally balanced and stable construction with optimum design features that makes vibration free and high speed cutting possible. In HSX 650, column is fixed and saddle is traveling to provide rigidity and excellent balance while machining operations are performed in all positions of X and Y-Axis. The X-Axis is driven by two ball screw drives with motors synchronized in master slave configuration, thus the Center of Gravity of the moving mass will remain always within the driving points of the slide. X slide is a cross ribbed structure which forms rigid support to Y slide.

Synchronized twin drive from the top & the bottom for the X-Axis ensures that the axis runs at the center of gravity



Swarf Removal

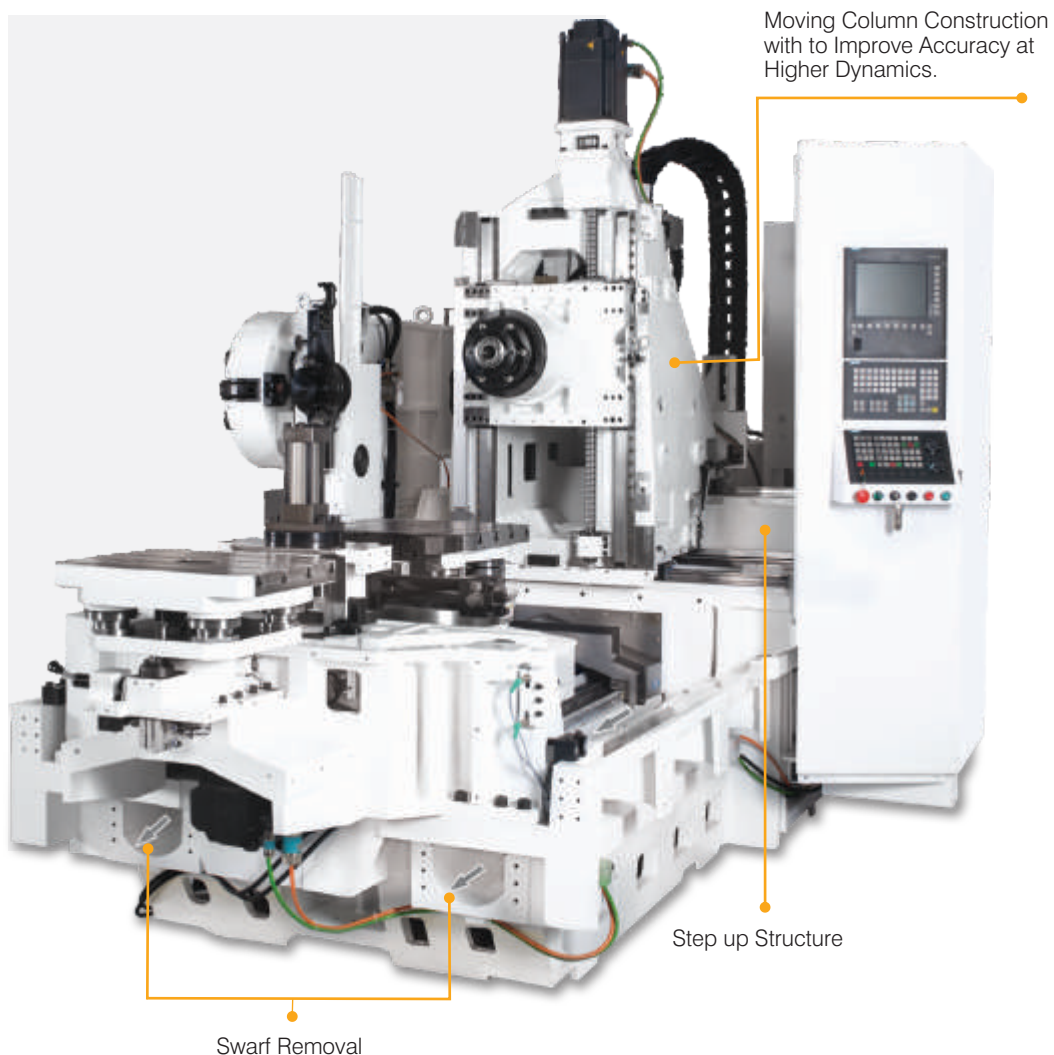
Fixed column for stable structure



RIGID AND STABLE STRUCTURE

HSX 540/860/1080/1210 have a structure with X & Y-Axis on moving column having step-up structure design to help working on higher parameters even on higher Y-Axis strokes. Z-Axis for complete series is mounted with B-Axis Rotary Table. These machines have thermally stable graded cast-iron body with widely spaced, heavily ribbed base, to damp vibration and enable higher cutting parameters with better accuracy and dynamic performance.

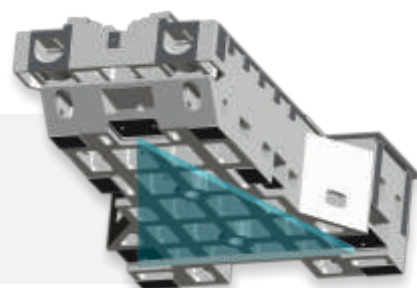
(Structure for HSX - 540/860/1080/1210)



3 - POINT LEVELING



3-point leveling system prevents the deformation & twisting of the bed when subject to higher load simulating high level of rigidity against bending. It also helps to install & re-install the machine quickly.

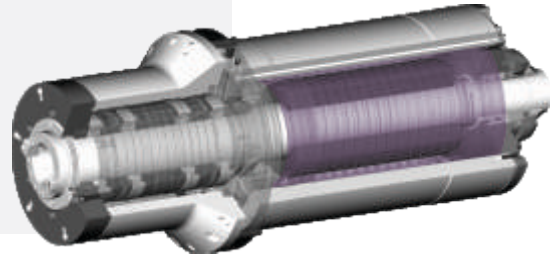


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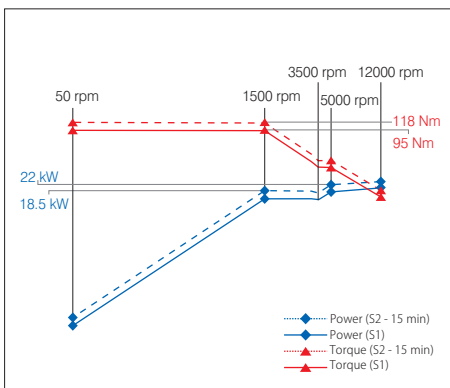
HIGH SPEED ELECTRO SPINDLE

HSX series are equipped with High Speed Electro Spindle for maximum cutting performance. Spindle is supported with a set of four ceramic angular contact bearings in the front and two angular contact bearings at the rear side. This arrangement provides high axial and radial rigidity to support variety of machining tasks. The thermal stability of the spindle is maintained by using a special temperature controlled liquid chiller. High Torque & High Speed Spindle with 6000 and 18000 rpm are available as options.

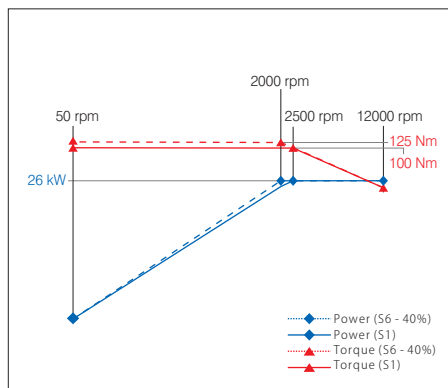


POWER TORQUE DIAGRAM

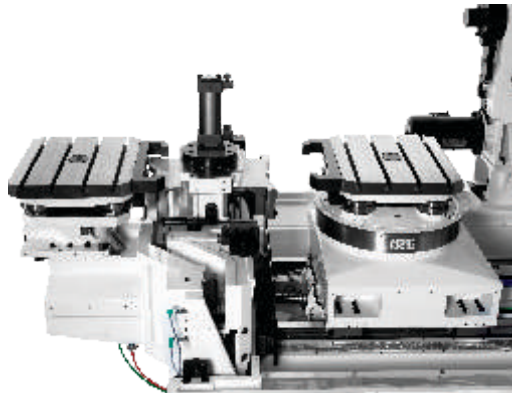
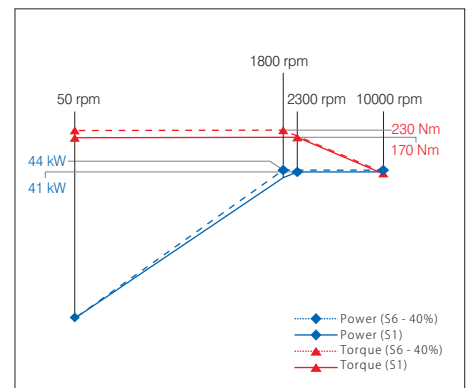
22 / 18.5 kW, 12000 rpm (Fanuc)



26 kW, 12000 rpm (Siemens)



41 kW, 10000 rpm (Siemens)

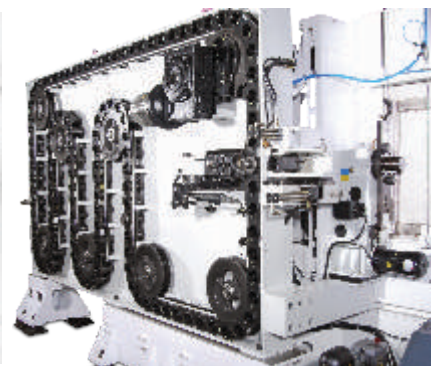
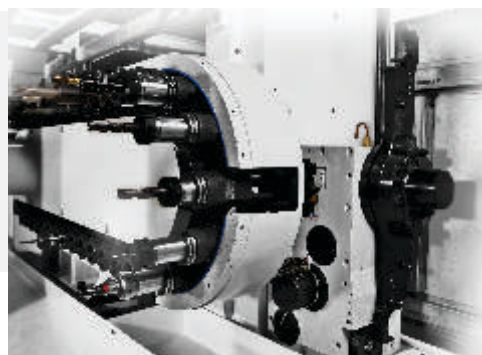


AUTO PALLET CHANGER

Auto Pallet Changer is fast and accurate with hydraulically actuated Rotary Indexing system. Such a system efficiently reduces setup change time drastically to deliver productivity in true sense.

AUTOMATIC TOOL CHANGER

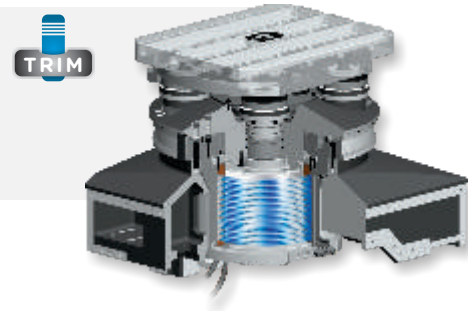
Auto Tool Changer is having 40 Tool, chain magazine with twin arm type. Tool Change time is 1.9 sec for HSX 540, 3 sec for HSX 650 and 3.5 sec for HSX 860 / 1080 / 1210. ATC with 60 / 90 / 120 tools are also available as an option.





B- AXIS ROTARY TABLE

Table with Rotary Integral Motor (TRIM) concept with unique feature of rotary axis resolution 0.001 deg. The concept has trimmed the complexity of mechanical gears into a new direct torque transmission system with an integrated High Torque Motor directly driving the Table.



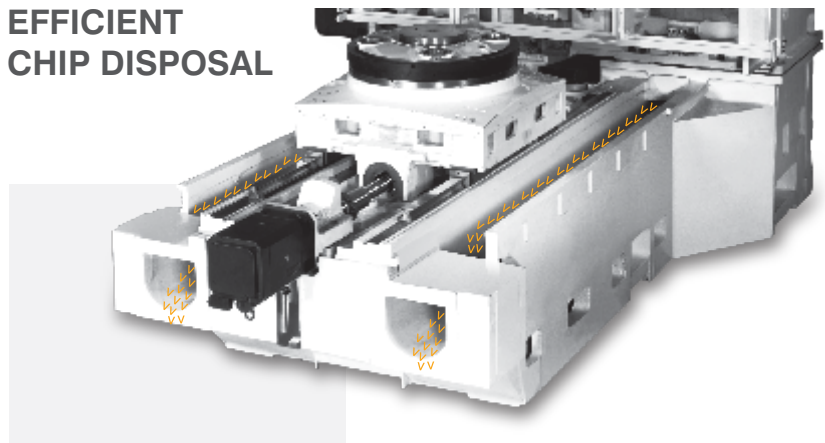
ERGONOMIC DESIGN



OPERATOR PANEL

The newly designed Easy-to-Operate operator panel of the machine is made considering the reliability and the operator friendliness and help the operator to view the machining area while operating.

EFFICIENT CHIP DISPOSAL



Ergonomically designed concept of HSX Series enables to give efficient chip disposal system via auger type chip disposal system for applications with higher material removal rates or applications requiring long un-interrupted cutting.

EASY ACCESSIBILITY

Due to large door opening, heavy components can be easily loaded/unloaded from wide front door entry as well as from top of the machine with the help of crane. Operator platform for easy reach at machining area & for loading/unloading.



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PRODUCTIVITY IMPROVING OPTIONS

MULTIPLE PALLET SYSTEM

Multiple Pallet System becomes highly effective for applications demanding various machined components to be assembled for finish products. Such a system can accommodate different fixtures on multiple pallet, that can be called on demand almost nullifying set-up time even for batch size productions. One such a system that can be opted is 6-pallet system MP Pro.



CTS WITH PAPER FILTRATION

Coolant Through Spindle with paper filtration system provides high pressure filtered coolant directly to the cutting edge minimizing heat distortion, ensuring maximum productivity with today's high performance tooling. Highly recommend for jobs demanding deep hole drilling and tapping.

CONTROLLER FEATURES (SIEMENS 828D)

- M Dynamics Feed Forward Control
- High Resolution 10.4" Color Screen with Dynamic Graphic Display
- Integrated QWERTY keyboard & Multi Functional Display
- 5MB User Memory
- High Speed Rigid Tapping & Thread Milling
- Linear, Circle, Helical & Universal NURBS Interpolation
- Powerful Servo Axis Motors with Super Precision Absolute Encoder
- Advanced Surface Finishing
- Inch/Metric Conversion
- Technology Cycles for Drilling/Milling Operations
- Tool Management for Monitoring of Tool life
- Tool Display Unit
- MPG Unit for Operator Easiness
- High Speed Fast Ethernet for Data Communication
- Communication & Data Management Via USB, CF Card & RS 232C
- User Friendly Built-in Calculator





TECHNICAL SPECIFICATION

Capacity		HSX 540	HSX 650	HSX 860	HSX 1080	HSX 1210
X-Axis Travel	mm	630	800	1100	1400	1700
Y-Axis Travel	mm	600	730	900	1000	1000
Z-Axis Travel	mm	600	750	1000	1000	1200
Distance from Pallet Surface to Spindle Center	mm	80-680	80-810	80-980	80-1080	80-1080
Distance from Pallet Center to Spindle Nose	mm	100-700	100-850	100-1100	100-1100	100-1300
Auto Pallet Changer						
Pallet Size	mm	500 x 400	630 x 500	800 x 630	1000 x 800	1200 x 100
Max. Workpiece Size (Dia. x Height)	mm	650 x 750	800 x 950	1000 x 1100	1200 x 1250	1600 x 1250
T-Slot Size	mm	4x14x100	5x18x100	5x18x100	7x18x100	7x18x125
Max. Weight on Pallet	kg	400	700	1100	1500	2500
Min. Table Indexing*	deg.	1°	1°	1°	1°	1°
Pallet Indexing Time	sec.	8	15	25	40	40
Spindle						
Spindle Speed	rpm	12000	10000	10000	10000	10000
Spindle Motor Power - Siemens	kW	26	41	41	41	41
Spindle Motor Power - Fanuc	kW	18.5 / 22	---	---	---	---
Spindle Drive Type		Motorized	Motorized	Motorized	Motorized	Motorized
Spindle Taper		BT 40	BT 50	BT 50	BT 50	BT 50
Feedrate						
Rapid Traverse (X, Y & Z Axis)	m/min	50	50	40	20	20
Cutting Feed	m/min	20	20	10	10	10
Automatic Tool Changer						
No. of Tool		40	40	40	40	40
Max. Tool Dia. (All/Adj. Empty)	mm	75 / 127	125 / 230	125 / 230	125 / 230	125 / 230
Max. Tool Length	mm	300	350	350	350	350
Max. Tool Weight	kg	8	15	15	15	15
Tool Changing Time (Tool - to - Tool)	sec.	1.9	3	3.5	3.5	3.5
Accuracy (as per VDI/DGQ 3441)						
Positioning Uncertainty (P)	mm	0.010	0.010	0.015	0.015	0.015
Repeatability (Ps Medium)	mm	0.005	0.005	0.007	0.007	0.007
Other Data						
Machine Weight (Approx.)	kg	12000	19000	22000	28000	35000
Machine Dimension (Approx.) :						
Length	mm	6250	6450	9090	9330	10870
Width	mm	3840	5400	5550	6220	6430
Height	mm	2650	3410	3700	4010	4010

*-B-Axis with 0.001-deg will be offered as an option

STANDARD FEATURES

- The CNC System offered SIEMENS 828D (or FANUC Oi MF for HSX 540)
- Automatic Pallet Changer
- AC Spindle Drive & AC Servo Axis Drive
- L.M. Guide ways (Roller Type)
- Auto & Manual Coolant System
- Centralized & Programmable Lubrication
- Laser Calibrated Axis for High Precise Positioning Accuracy and Repeatability
- Electricals with Quality Devices & Panel with A.C.
- Chip Conveyor
- Work Light

PRODUCTIVITY IMPROVING OPTIONS

- B-Axis with Directly Driven Torque Motor (TRIM)
- BBT Spindle Taper
- Coolant Through Spindle
- Chip Flushing Coolant System
- High Torque Spindle
- 60 / 90 / 120 Tool ATC
- Multiple Pallets System
- Coolant Mist Collector
- Spin Window
- Oil Skimmer
- Linear Scale Feed Back
- Absolute Encoder
- Tool Probe
- Job Probe
- Tool Breakage Sensor
- Coolant Gun & Air Gun
- Online Hydraulic Fixture on Both Pallet
- Manual Guide i (Fanuc)
- Easy SMS System (Siemens)
- Fully Tooled up Solution to Meet Customer Needs

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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.



ISO 9001 : 2008