



# HXSeries

Horizontal Machining Centers



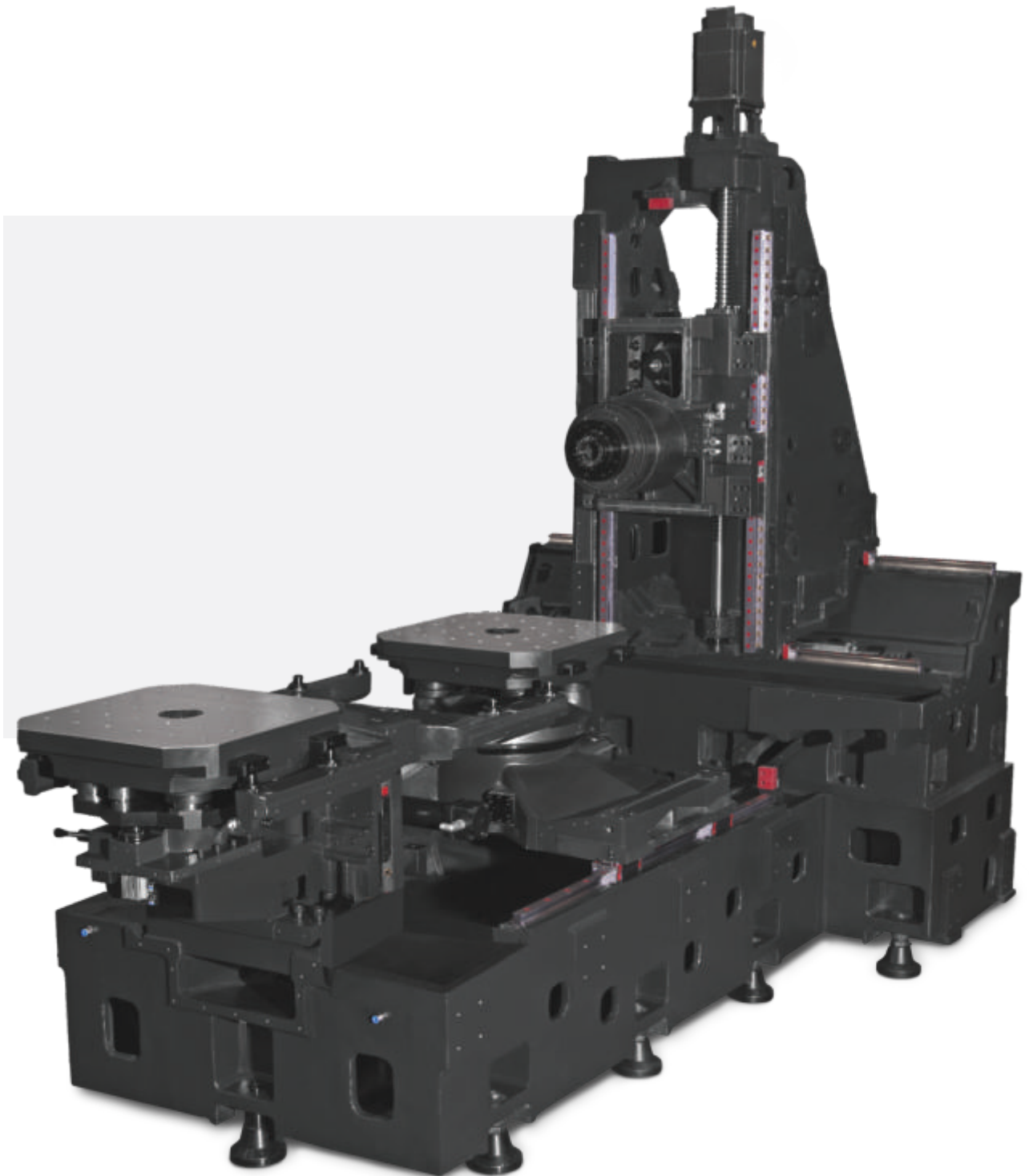
# HX Series

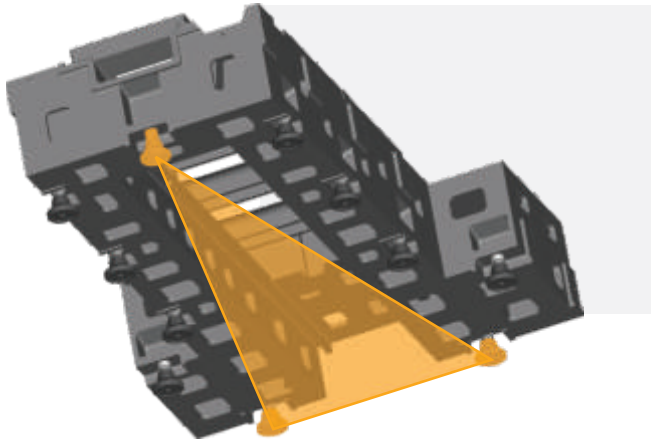
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## OVERVIEW

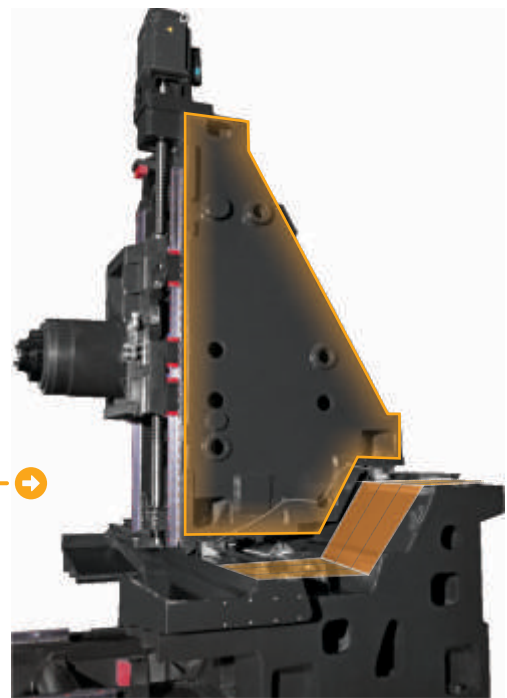
To match the demand of multiple face machining operations in single set-up with high accuracy and precision for heavy components like Gear Box Casing, Engine Head & Cylinder, Valve and Pump Body etc. and machining of components in multiple stacking with higher rigidity and productivity, Jyoti has developed state-of-art HX Series Horizontal Machining Centre Series. Rugged & graded cast iron T-Base structure with higher mechanical performance from roughing to finishing operation.





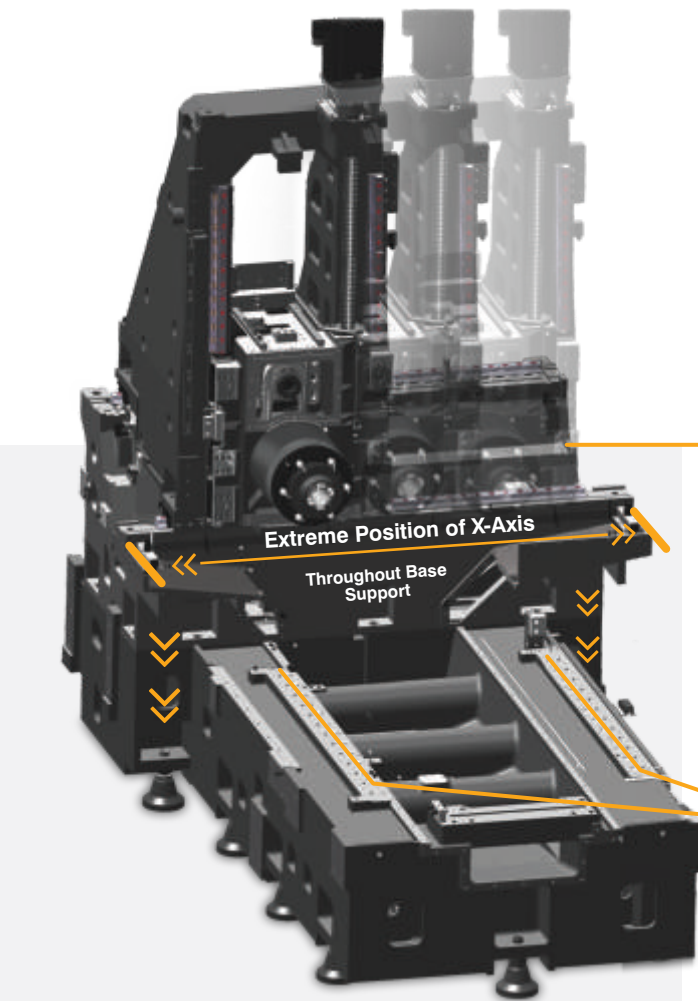
### 3-POINTS LEVELING

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.



### STEP-UP STRUCTURE WITH TRIANGULAR COLUMN

HX Series comprises of Step-up base construction for better load distribution and triangular column construction to support Y-Axis in extreme position ensuring higher rigidity, with higher cutting parameters.



### WIDE T-BASE STRUCTURE

Wide TBase structure provides structure stability to moving column for vibration free cutting of large job envelop supporting X-Axis in extreme position with no overhang effect ensuring cutting capability at higher parameters.



Widely Spaced LM

Optimum spacing of L.M. Guideways distribute load uniformly, give table geometrical accuracy in full travel of axis and different load condition.

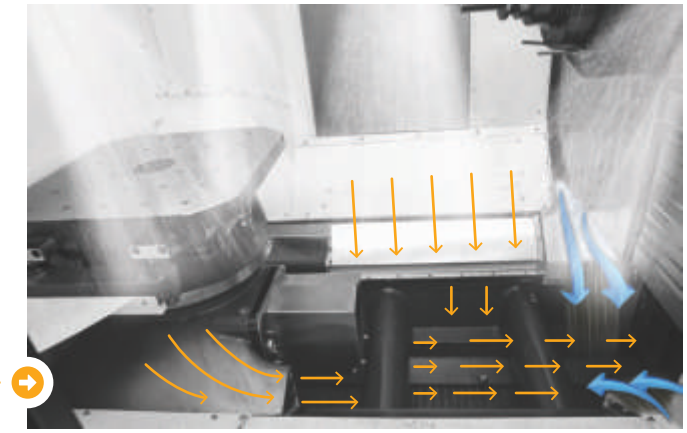


A bi-directional magazine taking shortest path, ATC magazine is located separately from the machine area. ATC can be operated simultaneously along with machining operation.

### AUTO TOOL CHANGER



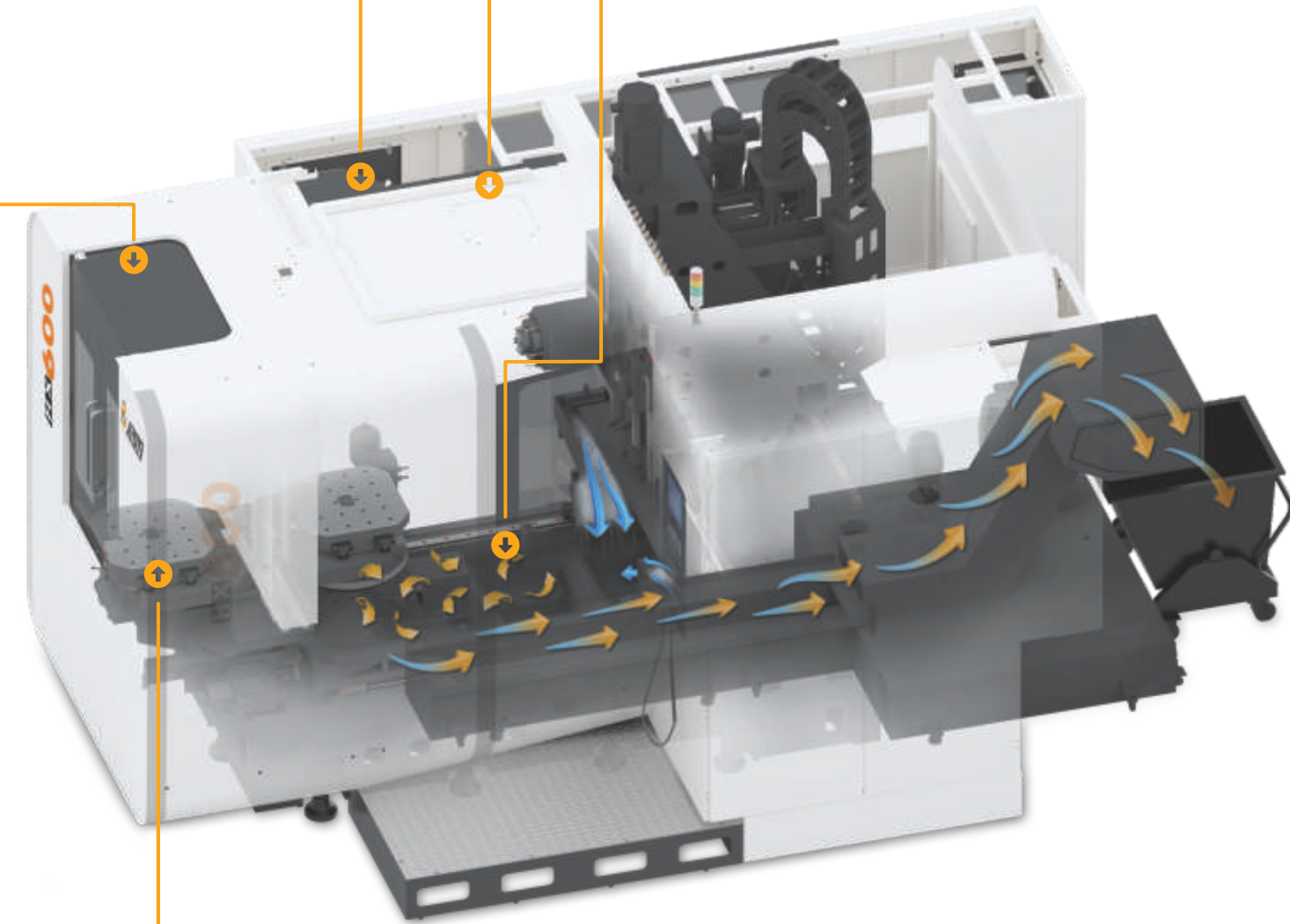
Shower coolant system to boost chips evacuation more efficiently



**EFFICIENT CHIP FLOW** Center chip trough design with flush system to evacuate large volumes of chips for improved reliability in continuous machining

### EASY ACCESSIBILITY FROM TOP SIDE

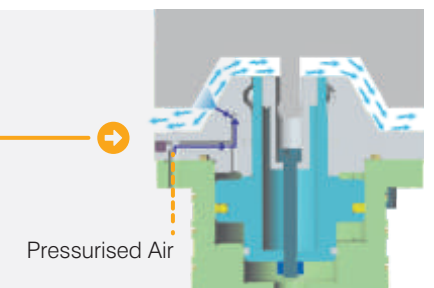
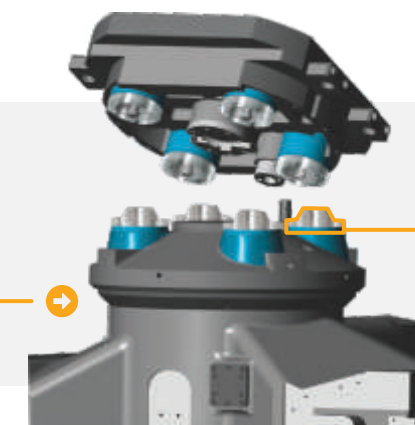
Due to large door opening heavy components can be easily loaded/unloaded from wide front door entry as well as from top of the machine with the help of crane.



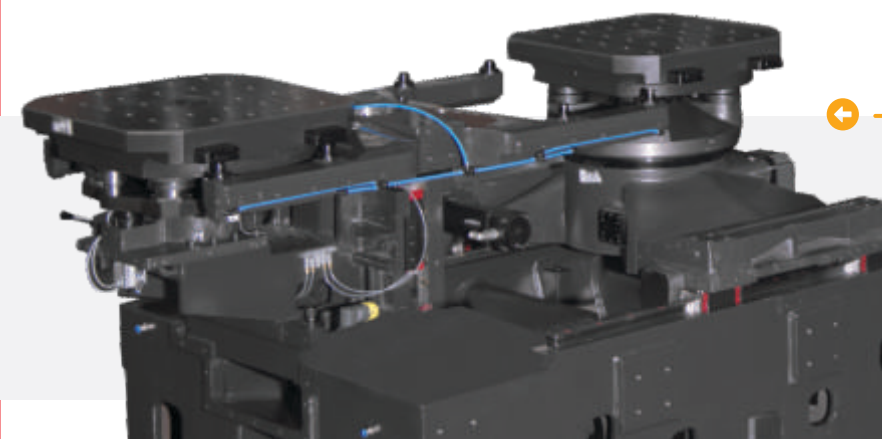
### AUTOMATIC PALLET CHANGER

HX Series consists of 180 rotary type Automatic Pallet changer. During pallet change cycle, strong jets of air are discharged from the taper cones which removes any chips & provides clean surface for location of pallet onto the machine ensuring high repeatability of pallet position

### ROTARY TABLE



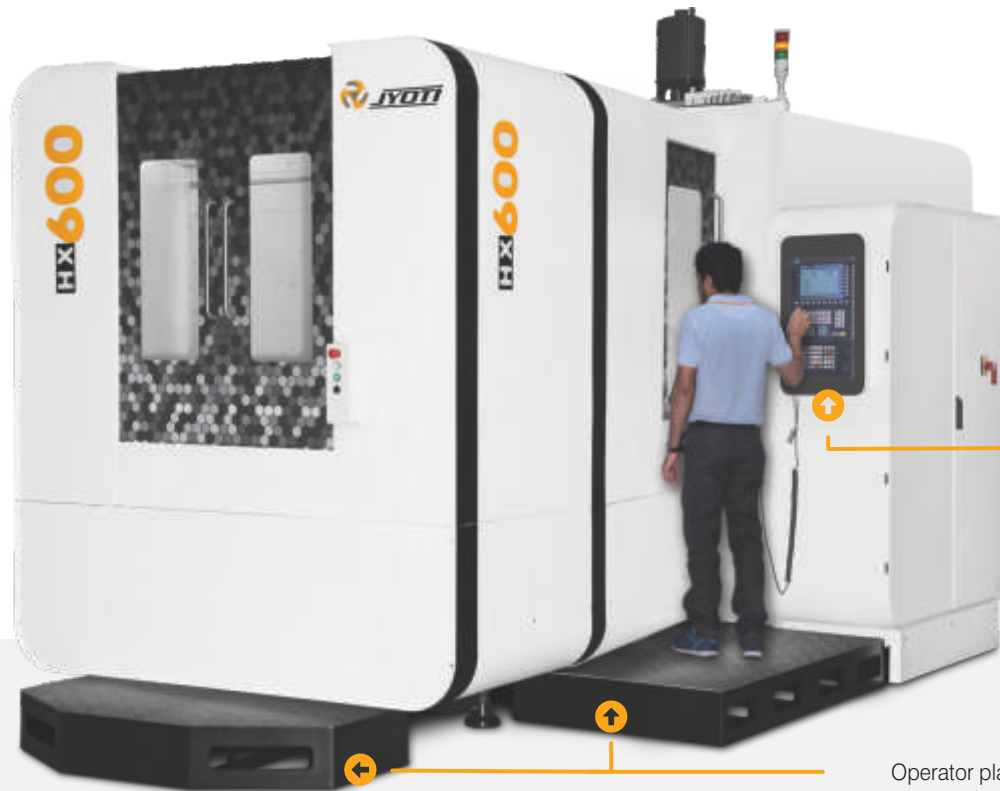
Pressurised Air



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## ERGONOMIC DESIGN

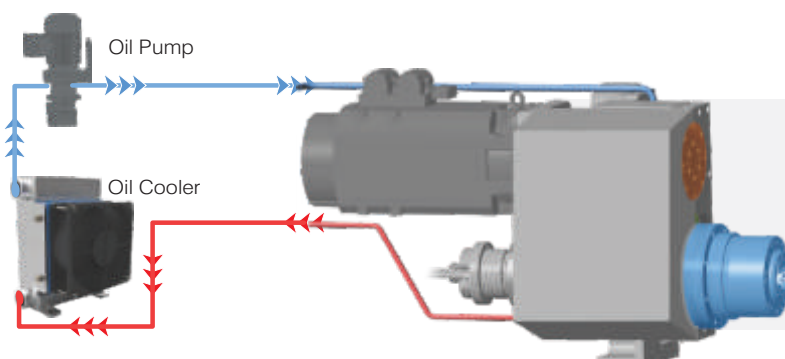
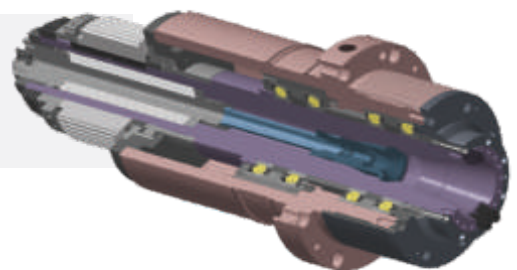


Position of operator panel helps the operator to view the machining area while operating.

Operator platform for easy reach at machining area

## HEAVY DUTY SPINDLE

The spindle are designed and manufactured in-house in dust free and temperature controlled environment to achieve high reliability and consistency for better working life.



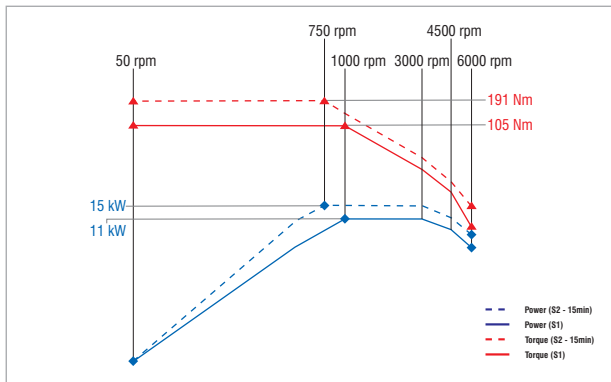
## HIGH TORQUE GEARED HEAD

For higher torque at low rpm application, we offer geared head spindles which provides an edge during demanding applications like large size milling cutters, rigid tapping and large size boring operations.

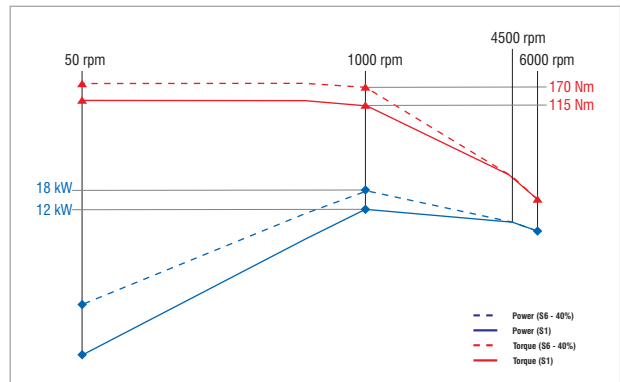


## POWER TORQUE DIAGRAM

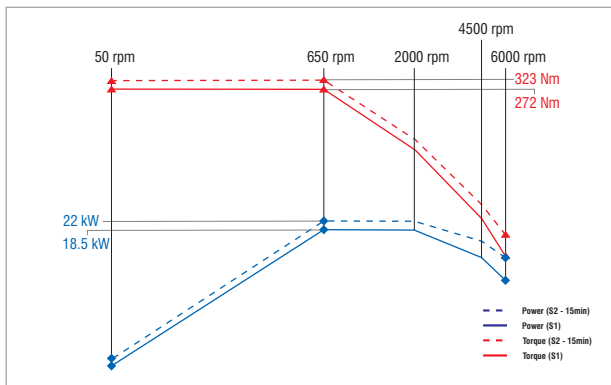
15 / 11 kW, 6000 rpm (Fanuc)



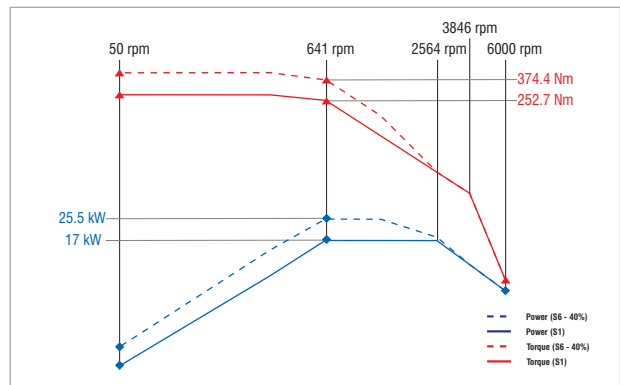
18 / 12 kW, 6000 rpm (Siemens)



22 / 18.5 kW, 6000 rpm (Fanuc)

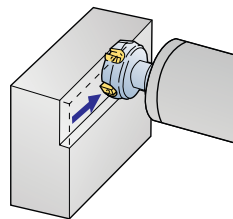


25.5 / 17 kW, 6000 rpm (Siemens)

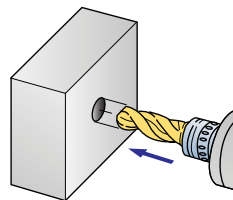


## CUTTING CAPABILITIES

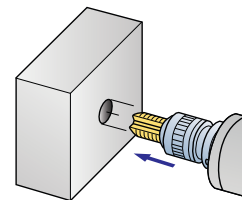
### Face Milling



### Drilling



### Tapping



### Siemens 25 / 17.5 kW Motor Power

Material	(Cutter Dia, Dept of Cut X MRR)	(Dia X Feed)	(Size X Pitch)
Steel	Ø125 mm, 4.0 mm X 267 cu.cm\min	Ø80 mm X 0.10 mm/rev	M39 X 4.0 mm
Cast Iron	Ø125 mm, 5.0 mm X 375 cu.cm\min	Ø86 mm X 0.13 mm/rev	M42 X 4.5 mm
Aluminium	Ø160mm , 4.0 mm X 713 cu.cm\min	Ø86 mm X 0.20 mm/rev	M60 X 5.5 mm

### Fanuc 22 / 18.5 kW Motor Power

Material	(Cutter Dia, Dept of Cut X MRR)	(Dia X Feed)	(Size X Pitch)
Steel	Ø125 mm, 4.5 mm X 300 cu.cm\min	Ø80 mm X 0.12 mm/rev	M42 X 4.0 mm
Cast Iron	Ø125 mm, 5.5 mm X 412 cu.cm\min	Ø86 mm X 0.13 mm/rev	M45 X 4.5 mm
Aluminium	Ø160mm , 5.5 mm X 980 cu.cm\min	Ø86 mm X 0.20 mm/rev	M60 X 5.5 mm

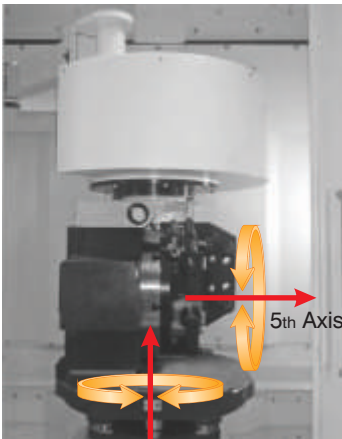


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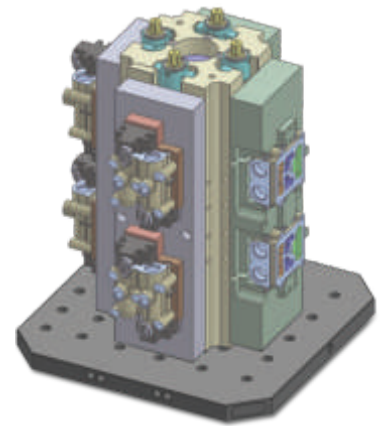
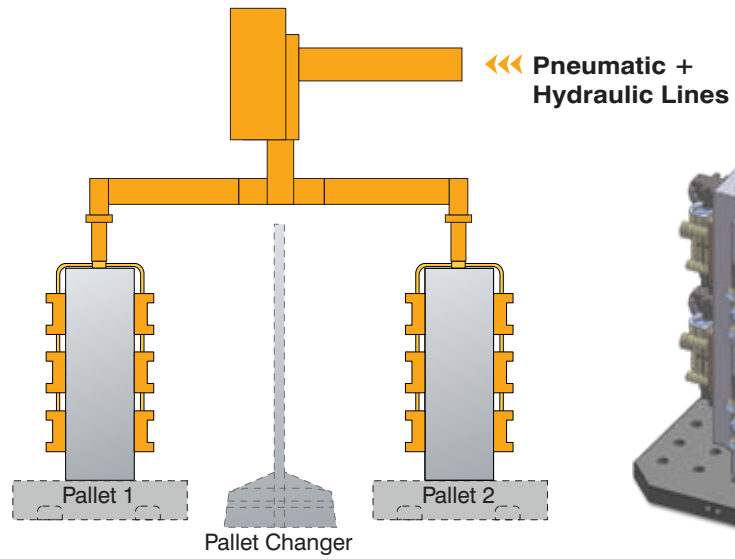


## ON-LINE FIXTURE INTERFACE (HYDRAULIC + PNEUMATIC)



4th Axis

5th Axis



Various Combination of Pneumatic & Hydraulic ports for online fixture

Air-Seat Check for Job Clamping Confirmation

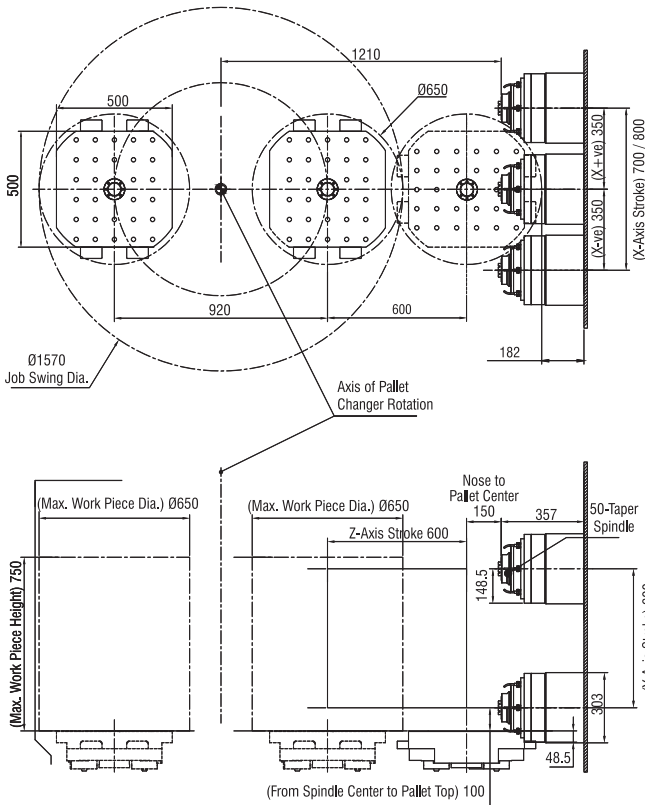
5<sup>th</sup> Axis Rotary Table Interfacing



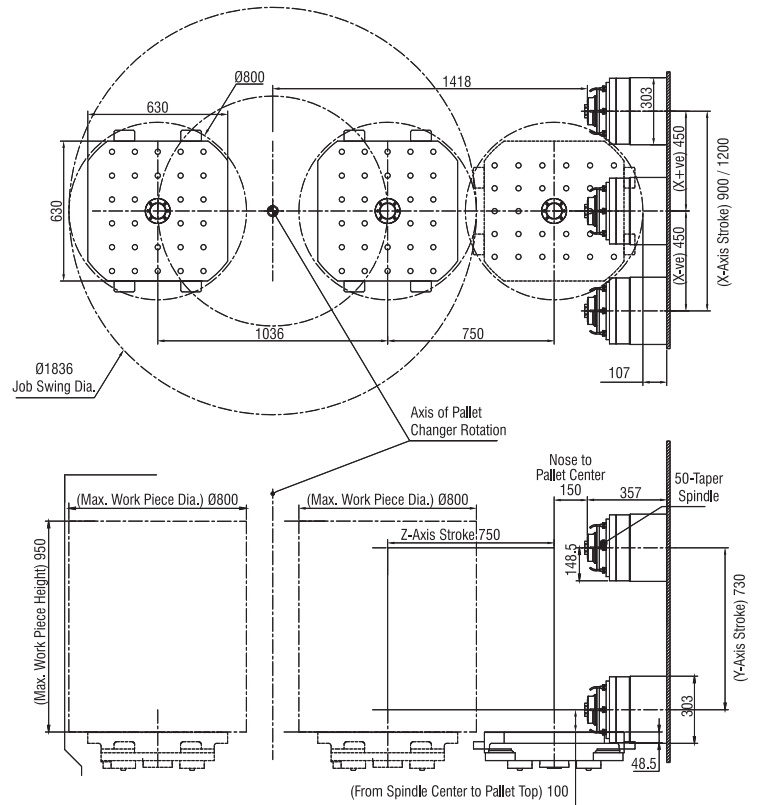


## MACHINING RANGE & INTERFERENCE DIAGRAM

### HX 500 / HX 510



### HX 600 / HX 610



All dimensions are in mm

## LARGE JOB ENVELOPE

Special interference free design for big size components requiring large machining envelope capability even during pallet change-over.

Ø : 800 mm

h : 950 mm



\*Machine HX 600



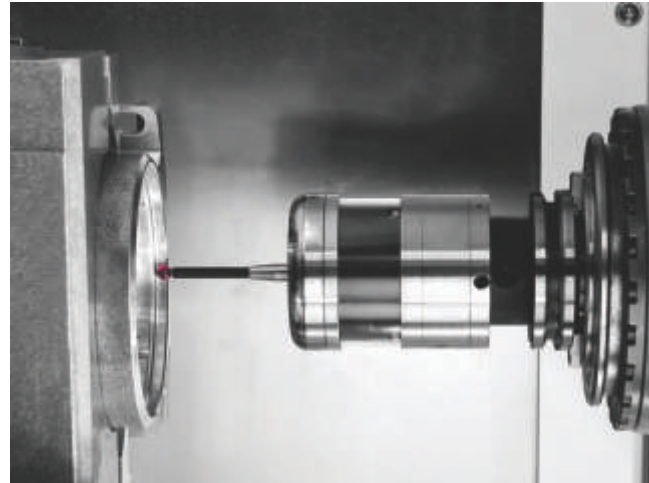
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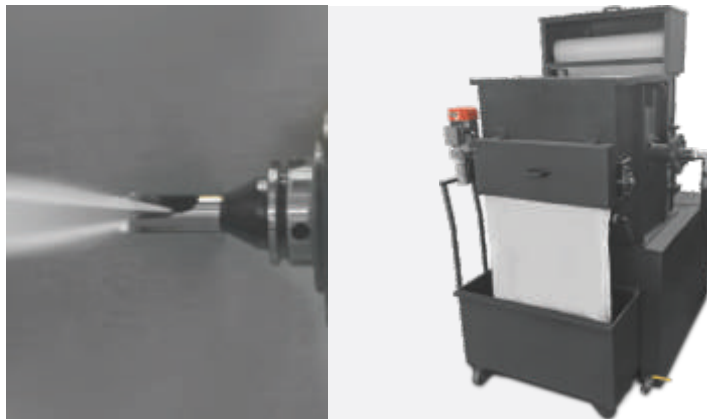
## 120 TOOL ATC SYSTEM

Multiple tooling system option for demanding productivity applications specially with high mix of regularly produced parts. Such system helps operator plan better tool strategy reducing non-cutting time.



## TOOL PROBE AND JOB PROBE

A wide choice of spindle and surface-sensing probes as tool and job probes with infrared/radio/laser transmission technology are available for increased spindle utilization and reduce non productive time



## 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
- 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		HX 500	HX 510	HX 600	HX 610
X-Axis Travel	mm	700	800	900	1200
Y-Axis Travel	mm	600	600	730	730
Z-Axis Travel	mm	600	600	750	750
Distance from Pallet Surface to Spindle Center	mm	100-700	100-700	100-830	100-830
Distance from Pallet Center to Spindle Nose	mm	150-750	150-750	150-900	150-900
<b>Automatic Pallet Changer</b>					
Pallet Size	mm	500 x 500	500 x 500	630 x 630	630 x 630
Max. Workpiece Size (Ø x Height)	mm	650 x 750	650 x 750	800 x 950	800 x 950
Clamping System		Hole M12 100/100 Ø 40 H6	Hole M12 100/100 Ø 40 H6	Hole M16 100/100 Ø 50 H6	Hole M16 100/100 Ø 50 H6
Max. Weight on Pallet	kg	500	500	800	800
Min. Pallet Indexing*	deg.	1°	1°	1°	1°
Pallet Indexing Time	sec.	8	8	15	15
<b>Main Spindle</b>					
Spindle Taper		BT-50	BT-50	BT-50	BT-50
Max. Spindle Speed	rpm	0-6000	0-6000	0-6000	0-6000
Spindle Motor Power - Fanuc 0i MF	kW	15 / 11	15 / 11	22 / 18.5	22 / 18.5
Spindle Motor Power - Siemens 828D	kW	18 / 12	18 / 12	25.5 / 17	25.5 / 17
Spindle Drive Type		Belt Drive	Belt Drive	Belt Drive	Belt Drive
<b>Feed</b>					
Rapid Traverse (X,Y & Z Axis)	m/min	30	30	30	30
Cutting Feed	m/min	10	10	10	10
<b>Automatic Tool Changer</b>					
No.of Tool		40	40	40	40
Max. Tool Dia. Pockets (All/Adj. Empty)	mm	125 / 250	125 / 250	125 / 250	125 / 250
Max. Tool Length	mm	350	350	350	350
Max. Tool Weight	kg	15	15	15	15
Tool Changing Time	sec.	3.5	3.5	3.5	3.5
<b>Accuracy (as per VDI/DGQ 3441)</b>					
Positioning Uncertainty (P)	mm	0.010	0.010	0.015	0.015
Repeatability (Ps medium)	mm	0.005	0.005	0.007	0.007
<b>Other Data</b>					
Machine Weight (Approx.)	kg	13500	13800	15500	15800
Machine Dimension (Approx.): Length	mm	5200	5200	5800	5800
Width	mm	3270	3370	3500	3800
Height	mm	3150	3150	3250	3250

### STANDARD FEATURES

- AC Spindle Drive
- AC Servo Axis Drive
- BT-50 Belt Driven Spindle
- Automatic Pallet Changer for Productivity Improvement
- 360 X 1° Rotary Table
- High Precision Linear Motion Guideways
- Auto & Manual Head Coolant System
- Laser Calibrated Axis for High Precise Positioning Accuracy
- Flush Coolant for Chip Flushing
- Centralized Programmable Lubrication
- Electrical with Quality Devices
- Panel A.C.
- MPG Unit
- Tower Light

### PRODUCTIVITY IMPROVING OPTIONS

- Chip Conveyor
- High Torque Geared Head
- 60, 90 & 120 Tool ATC
- BBT Spindle Taper
- High Pressure Coolant Through Spindle
- Linear Glass Scale
- Tool Probe & Job Probe
- Tool Breakage Sensor
- Table on Table Rotary Table
- Online Fixture Interface System
- Tool Tip Air Nozzle for Dry Cutting
- Auto Door
- Spin Window
- Coolant gun & Air gun
- Oil Skimmer
- Fully Toolled up Solutions to Meet Customer Needs

**JYOTI CNC AUTOMATION LTD.**

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App



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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