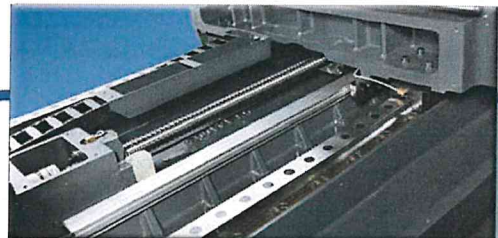
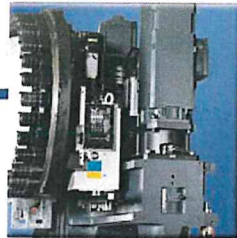
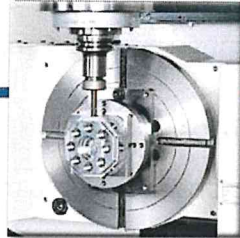
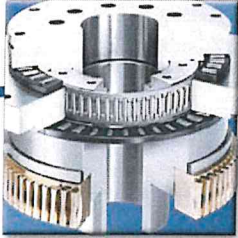


CHEVALIER®

Grinding / Turning / Milling



UNi5X-400
5-Axis Vertical Machining Center

UNi5X-400

Machine Features

- Three axes high-precision linear guideway design performs high-rigidity and high-precision machining.
- 6 carriages on X-axis and 4 carriages on both Y-axis and Z-axis design ensure the stability and high accuracy of the machine.
- A-axis is equipped with absolute encoders as standard to ensure a precise complex 5-axis simultaneous machining.
- High rigidity direct drive spindle, the output torque can be up to 95.5 Nm.
- 30T/24T tool magazine are compact design and space saving. Driven by servo motor, automatic tool changing is fast and precise.
- The controller position and swivel are ergonomically designed to facilitate the user to operate the controller and monitor the machining status easily.

Benefits for Customers

- Suitable for various complex shapes and high-precision parts or molds machining
- Simplify production process and save fixture costs.
- No special cutting tools needed.
- Machining by a single pass instead of many small incremental can improve the surface to present a better machining quality.
- Increased tool cutting length while keeping the same cutting feed rate, to reduce cutting forces and increase tool life.
- Fewer machines in use can save shop floor space to simplify the management of machines.
- Decrease machining cost as well as increase higher productivity.

UNi5X-400

5-Axis Machining Center with 2-Axis Rotary Table Engineered for Machining Complex-shaped Workpieces

Chevalier's NEW UNi5X-400 is a high-speed VMC which features 4+1 capability or simultaneous 5-axis machining. The standard machine is integrated with 4th and 5th axis table. The UNi5X-400 provides better accuracy and productivity, requires less manpower and increases profit. This machine is designed for high-speed, high-precision and high-productivity machining that is suitable for such industries such as aerospace, automotive industries, mold making or job shops.

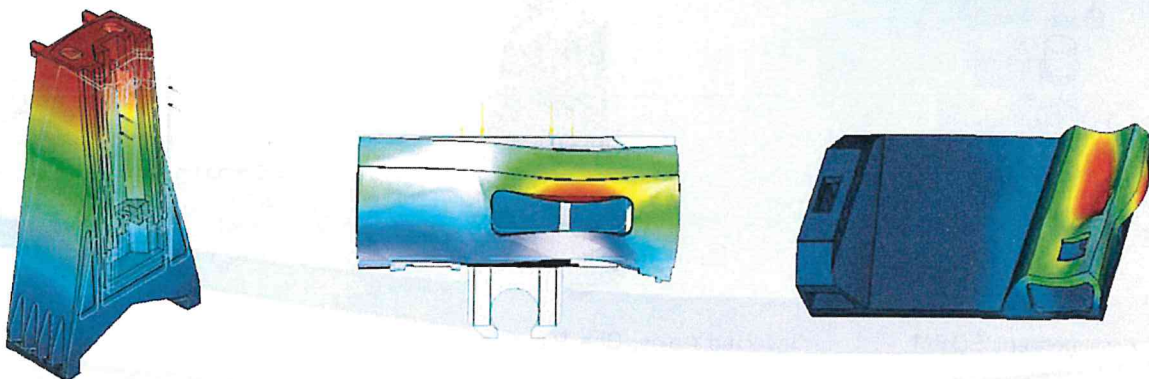
Heavy-duty construction offers high rigidity with major parts of the machine constructed out of high grade, dense cast iron, which offers superior stability. The column design is an inverted Y shape construction for superior rigidity and stability. The pretensioned Class C3 ballscrews are used in all three axes. All servo motors are directly coupled to ballscrews, increasing movement sensitivity while dramatically reducing backlash.



Note : Machine shown with optional accessories

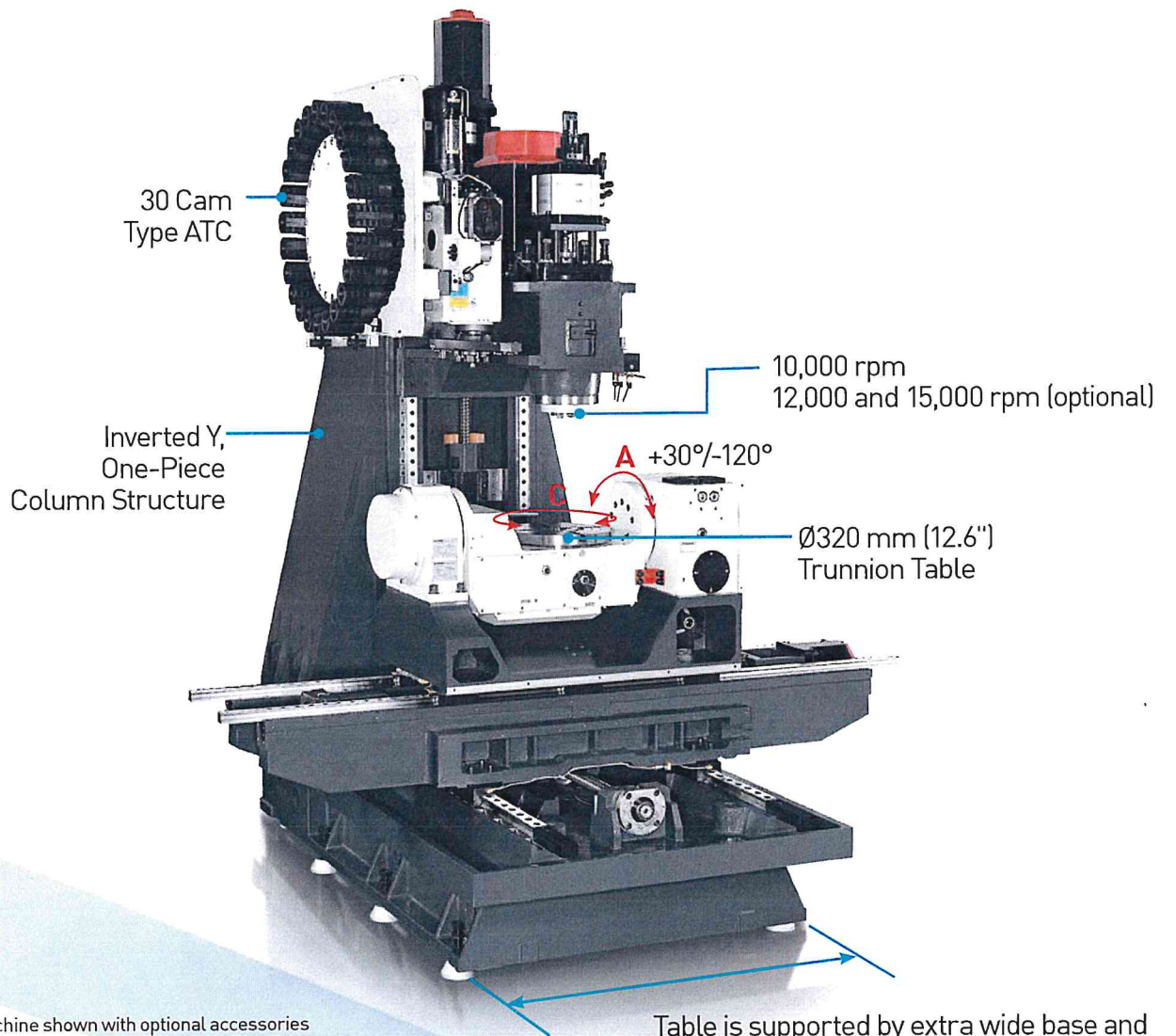
Topology Analysis & Finite Element Method (FEM)

Simulation uses topology analysis & FEM methods to calculate the displacements and stresses in a machine design from operational loads such as: forces, pressures, to ensure superior stability and rigidity.



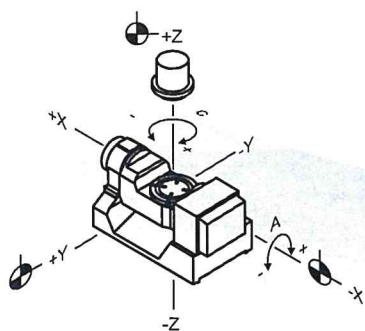
UNi5X-400

Machine Structure



Note : Machine shown with optional accessories

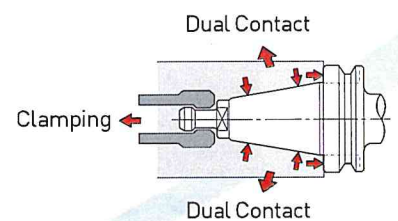
Table is supported by extra wide base and saddle which eliminates overhang problem.



Axis Arrangement ISO 841



Inverted Y-axis, One-Piece Column Structure



BBT Taper Dual Contact Spindle

UNi5X-400

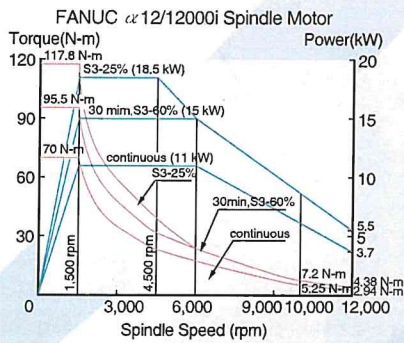
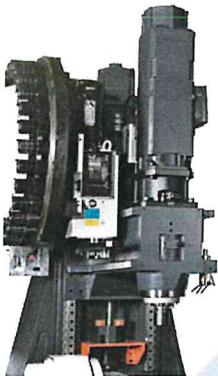
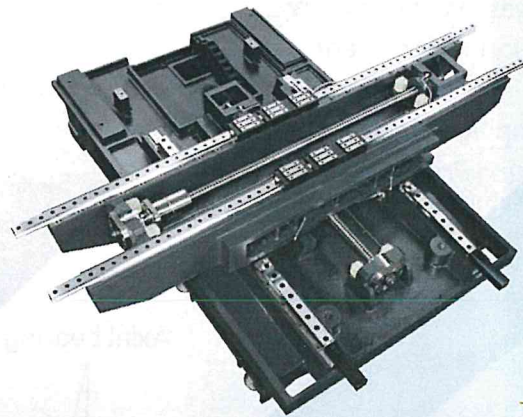
Spindle

- Spindle design: 40 taper BIG-PLUS® spindle design uses a four-piece P4 Class, high-precision angular-contact ball bearings to increase spindle rigidity and loading capacity; and to maintain high accuracy during high-speed machining.
- Direct spindle for low noise, vibration and thermal expansion.

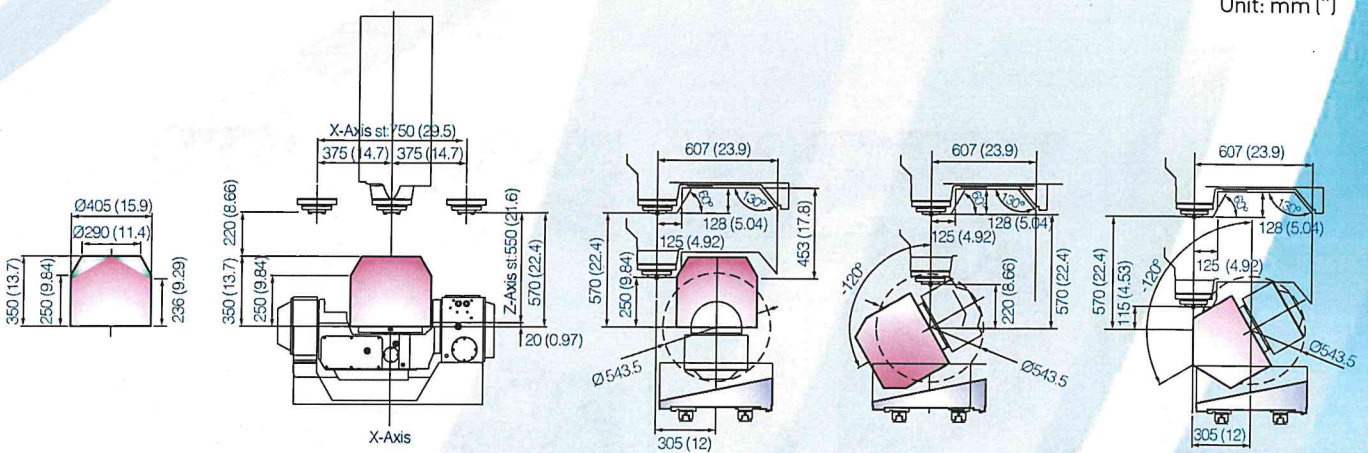
Spindle	Specification
Spindle Taper	#40 BIG-PLUS®
Spindle Speed	10,000 rpm (12,000, 15,000 optional)
Transmission Type	Direct drive
Spindle dia.	70 mm (2.750")

Linear Axis

- Large Y-axis travel gives more room for machining wider parts.
- All linear axes are directly coupled with a ballscrew and servo motor to reduce vibration and backlash.
- Standard linear roller guide ways in all three axes.



Work Range

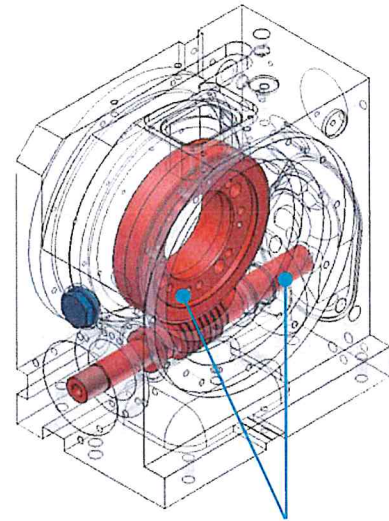


UNi5X-400

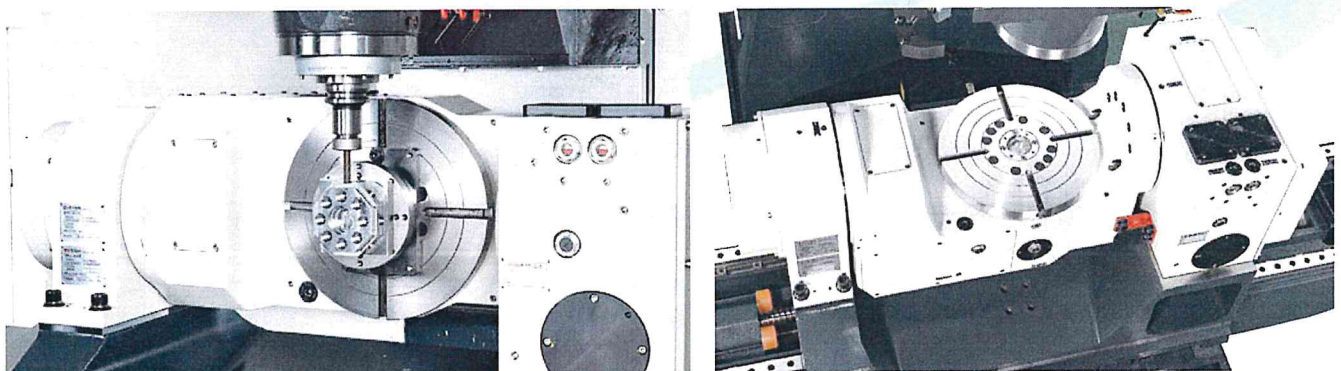
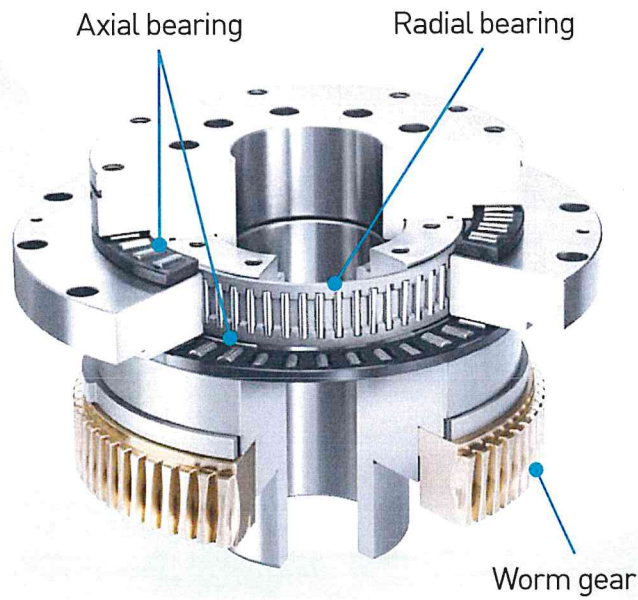
2-Axis Rotary Table

A heavy-duty 3-piece cross roller bearing provides excellent part loading and machining capability.
 ±10" angle encoder for A-axis.

Item	A-Axis Tilting	C-Axis Rotation
Table Load	100 kg (220 lb)	
Through Hole	Ø50 mm	
Indexing Accuracy	12 sec	20 sec
Repeatability Accuracy	5 sec	10 sec
Min. Input Increment	0.001°	
Max. Table Rotation Speed	25 rpm	
Clamping Torque	140 kg-m	70 kg-m
Braking Pressure (Air Source)	5 kgf/cm ²	



Positioning by worm and worm gear.



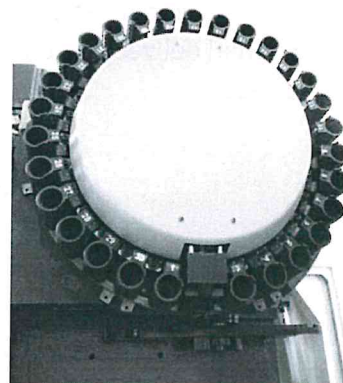
UNi5X-400

Tool Magazine System

- Tool Shank: #40
- Tool Capacity: 30 tools
- Max. Tool Length: 300 mm (11.8")
- Max. Tool Weight: 7 kg (15.4 lb)
- Max. Tool Diameter: With Neighbor Tool: 76 mm (3")
Without Neighbor Tool: 125 mm (4.9")
- Driven Type: Cam Type

Automatic Tool Changing System

- Tool Change Time: Tool to Tool: 2.5 sec
Chip to Chip: 4.3 sec



Allowable Loading Capacity		Allowable Work Movement	Allowable Loading (When Table Clamped)		
100 kg	100 kg	100 Nm	16,000 N	700 Nm	1,400 Nm

Standard FANUC 0iM Control for 4+1 Axis Applications



Note: Photo is for reference only.
Standard FANUC 0iM 10.4" screen available.

- 4-axis simultaneous controllable
- Part program storage length: 512K
- Manual Guide i
- Color 10.4" LCD
- Tilted working plane indexing G68.2

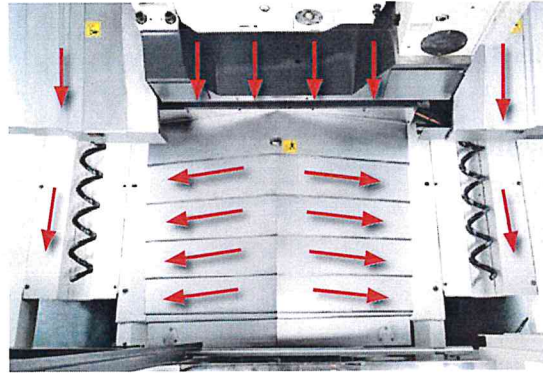
Optional Control

- SIEMENS 828D Control: 10.4" TFT LCD color monitor (4-Axis Simultaneous)
- FANUC 31iB-5: 10.4" TFT LCD color monitor (5-Axis Simultaneous)
- HEIDENHAIN TNC640 HSCI: 15" TFT LCD color monitor (5-Axis Simultaneous)

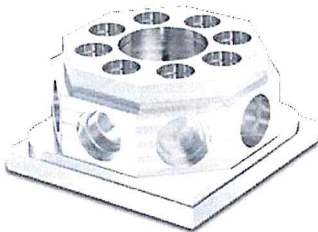
UNi5X-400

Efficient Chip Disposal Design

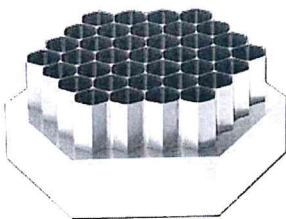
Automatic chip-flushing system brings cutting chips to the center of the machine base. Screw-type chip conveyor (optional) delivers cutting chips to the chip conveyor (optional), which is located at the front of the machine base.



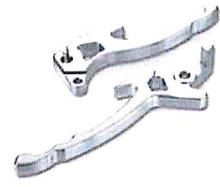
Application



Workpiece	Cutting Material	Tool	Cutting Mode	Speed (RPM)	Feed Rate (mm/min)	Total Time
Standard part 102 x 102 x 45 (mm)	AL-6061	EDM D12	Rough	6,000	1,800	1:01:40
		DRILL D12	Rough	1,800	80	
		EDM D10	Rough	6,000	1,200	
		EMD D10	Finish	4,200	480	
		Chamfering D6	Finish	8,000	600	



Workpiece	Cutting Material	Tool	Cutting Mode	Speed (RPM)	Feed Rate (mm/min)	Total Time
Honeycomb 100 x 100 x 40 (mm)	AL-6061	EDM D10	Rough	8,000	2,400	1:21:57
		DRILL D10	Rough	2,000	80	
		EDM D4	Rough	8,000	1,200	
		EDM D4	Finish	10,000	1,000	



UNi5X-400

Inspection

After assembly, all machines are measured and calibrated by laser calibration, Ball Bar testing and Non Bar Dynamic Accuracy Measuring.

5-Axis Machine Tool Dynamic Accuracy Measurement and Compensation System

This measurement technology includes measuring and compensating the static/dynamic backlash of the transmission and the rotary axes. Especially for static backlash calibration, the static backlash error of transmission axis can be compensated to 1 μm , and the rotary axis static backlash error can be compensated to 0.001°. Thus the machining accuracy of the machine can be increased.



Standard Accessories

1. Direct-drive spindle (10,000 rpm)
2. Spindle air seal
3. Cutting blast
4. Spindle oil chiller
5. FANUC OiM control
6. 10.4" TFT monitor
7. User-friendly control panel
8. Remote MPG
9. RS232 / USB Interface / Ethernet
10. Fully enclosed
11. 3-axes telescopic cover
12. 30 arm-type ATC
13. A-axis angle encoder ($\pm 10''$)
14. Automatic way lubrication system
15. Pneumatic system
16. Rear chip flush system
17. Electric cabinet power indication lamp
18. Air gun
19. Led work lamp
20. 3 Color warning lamp
21. Coolant system
22. Tool box
23. Operation manual
24. Leveling bolts and pads
25. Receiver for workpiece measurement system (Blum)

Optional Accessories

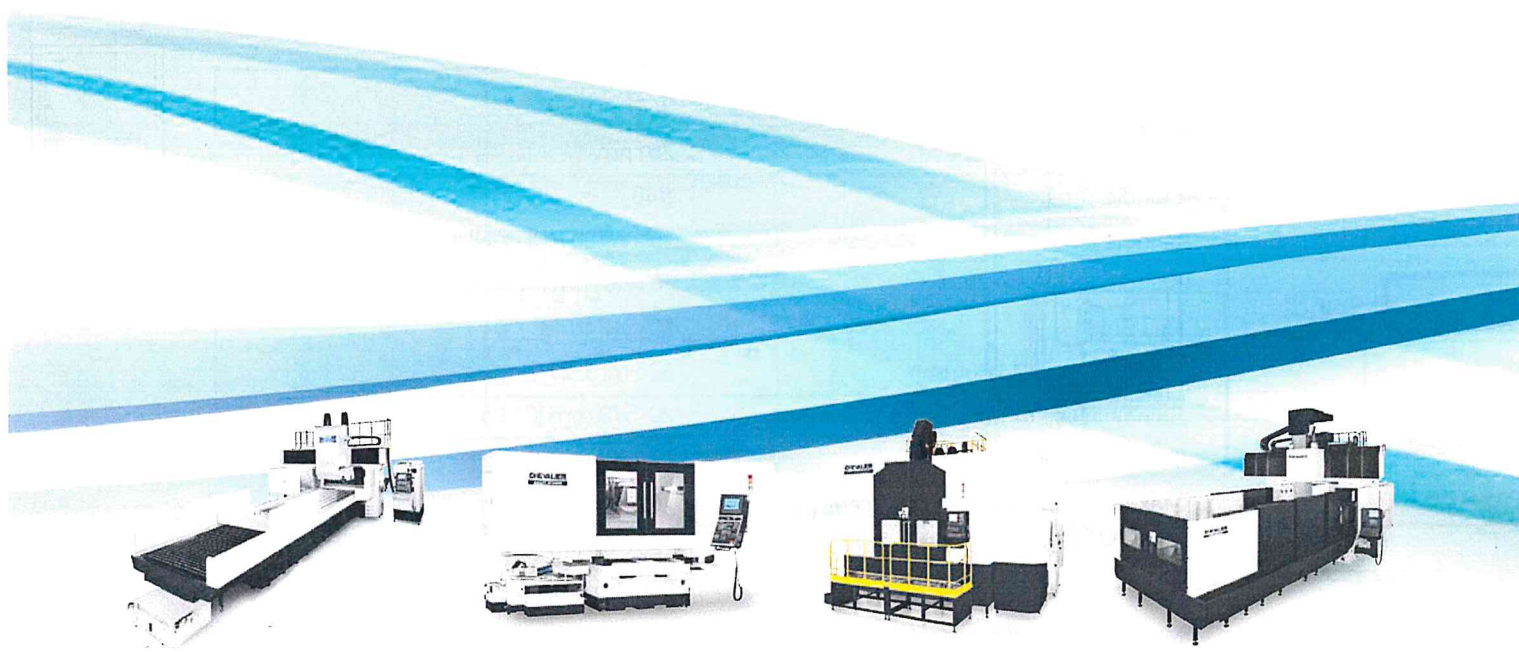
1. Direct-drive spindle (12,000 and 15,000 rpm)
2. CTS preparation
3. High pressure coolant through spindle
4. 40-station, chain type ATC
5. 3-axes linear scales
6. C-axis angle encoder ($\pm 5''$)
7. Workpiece measurement system
8. Tool length measurement
9. Internal dual-screw chip augers
10. Lift-up chip conveyor
11. Oil skimmer
12. Water gun
13. Air conditioner for electric cabinet
14. Transformer
15. Oil mist collector
16. SIEMENS 828D control: 10.4" TFT LCD color monitor (4-axis simultaneous)
17. FANUC 31iB-5: 10.4" TFT LCD color monitor (5-axis simultaneous)
18. HEIDENHAIN TNC640HSCI: 15" TFT LCD color monitor (5-axis simultaneous)

UNi5X-400

Specifications

Description		UNi5X-400
Capacity	Working Table Size	Ø320 mm (Ø12.6")
	Workpiece Dimensions	Ø400 x H350 mm (Ø15.7" x H13.7")
	Table Load	100 kg (220 lb)
Linear Axis Travel	X-Axis	750 mm (29.5")
	Y-Axis	610 mm (24")
	Z-Axis	550 mm (21.6")
X/Y/Z-Axis Feed Rate	Rapid Speed	36/36/30 m/min (1,417/1,417/1,181 ipm)
	Cutting Feed Rate	10/10/10 m/min (394/394/394 ipm)
Accuracy	VDI3441 Positioning	0.010 mm (0.0004")
	VDI3441 Repeatability	0.007 mm (0.0003")
	A-Axis Positioning	12 sec
	C-Axis Positioning (While with Optional Angle Encoder)	20 (12) sec
	A-Axis Repeatability	5 sec
	C-Axis Repeatability (While with Optional Angle Encoder)	10 (4) sec
Rotary Axis	A-Axis	(+30° / -120°)
	C-Axis	360°
	A/C-Axis Rotation Speed	25 rpm
Spindle	Spindle Taper	#40
	Spindle Power	15 kW (20 HP) FANUC
	Spindle Speed	10,000 rpm (Optional 12,000, 15,000 rpm)
	Pull Stud	MAS-P40T-1
	Spindle Center to Column	685 mm (27")
	Spindle Nose to Table Surface	20-570 mm (0.785" ~ 22.4")
	Tool Storage Capacity	ATC 30 Tools
Tool Magazine	Max. Tool Diameter with Adjacent Tool	76 mm (3")
	Max. Tool Diameter without Adjacent Tool	125 mm (4.9")
	Maximum Tool Length	300 mm (11.8")
	Maximum Tool Weight	7 kg (15.4 lb)
	Air Source	5.5 kg/cm ²
Other	Water Tank Capacity	570 L
	Control	FANUC 0iM
Total Power Consumption (Approx.)		25 kVA
Machine Size	Floor Space (W x L x H)	2,450 x 2,250 x 3,020 mm (96.5" x 88.5" x 119")
	Machine Weight	7,050 kg (15,510 lb)

* All content is for reference only and may be subject to change without notice or obligation.



Grinding Machines

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