

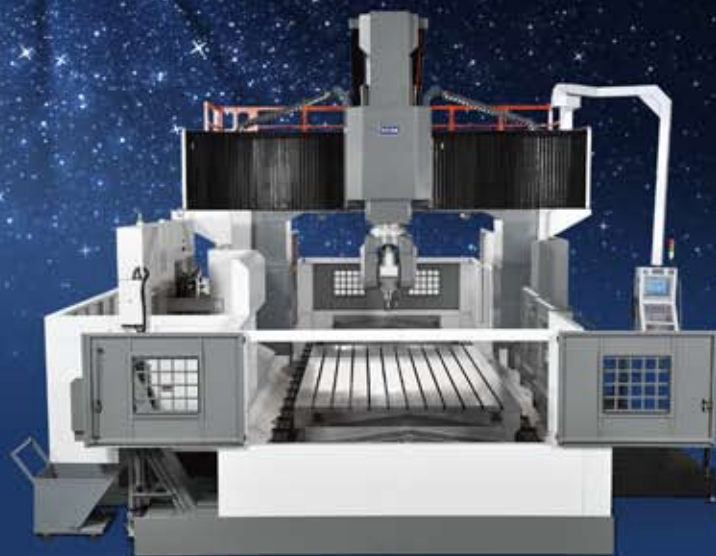
YCM[®]

YCM Ultimate 5-axis Technology



TCV3000A-5AF/5AX

High Performance Traveling Column Multi-face
Vertical Machining Center



DCV4030B-5AF/5AX

5-axis Advanced Double Column
Vertical Machining Center



NBX102A

High Performance Swivel Head 5-axis
Vertical Machining Center



FX380A

High Performance 5-axis Vertical Machining Center



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FX 380A

HIGH PERFORMANCE 5-AXIS VERTICAL MACHINING CENTER



FX 380A

The high performance YCM FX 380A 5-axis vertical machining center is designed especially for small, complex high-quality parts mainly for aerospace, automotive, medical, job shop and die & mold applications. From roughing to finishing, the FX380A enables manufacturers to reduce setup time and overall lead-time while increasing machining quality and improving precision of complex machining processes.



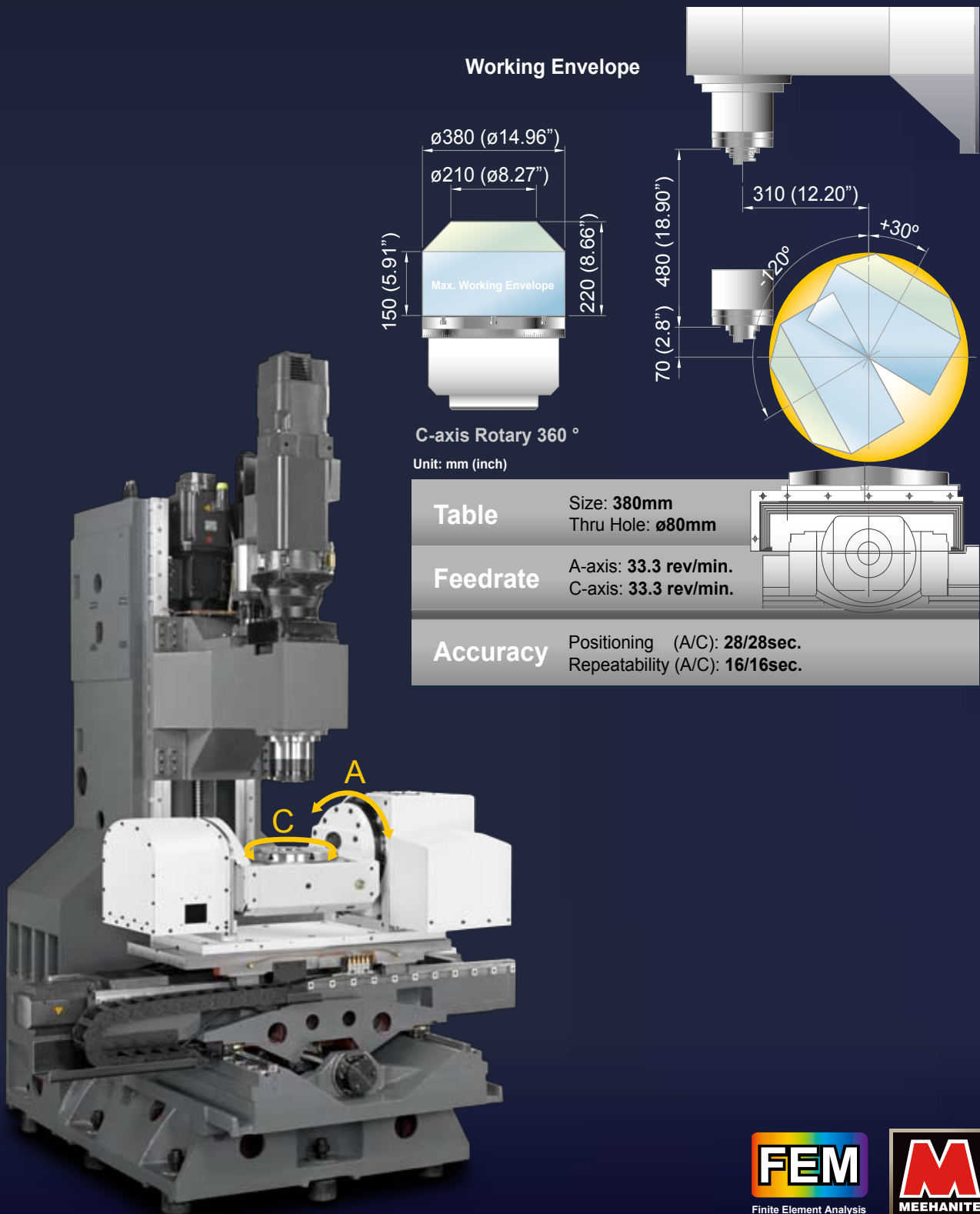


High Rigidity Body Structure Design

- Extra wide column and base design to ensure best support and cutting rigidity.
- High quality and rugged MEEHANITE® casting maintains optimum accuracy.

High Accuracy Axial Movement

- Linear guideways adopted for fast and smooth axial movement.
- Pre-tensioned ball screws with direct drive motors achieve high torque and low backlash.



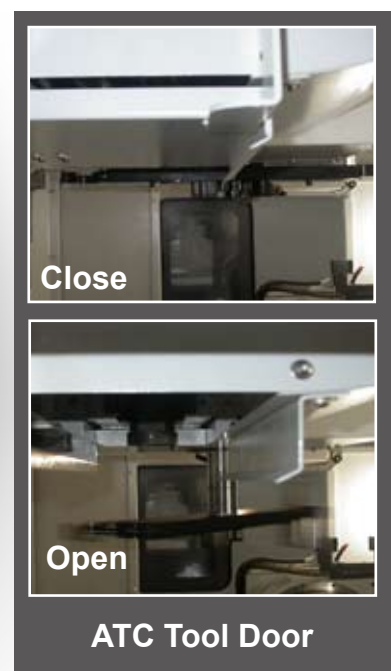
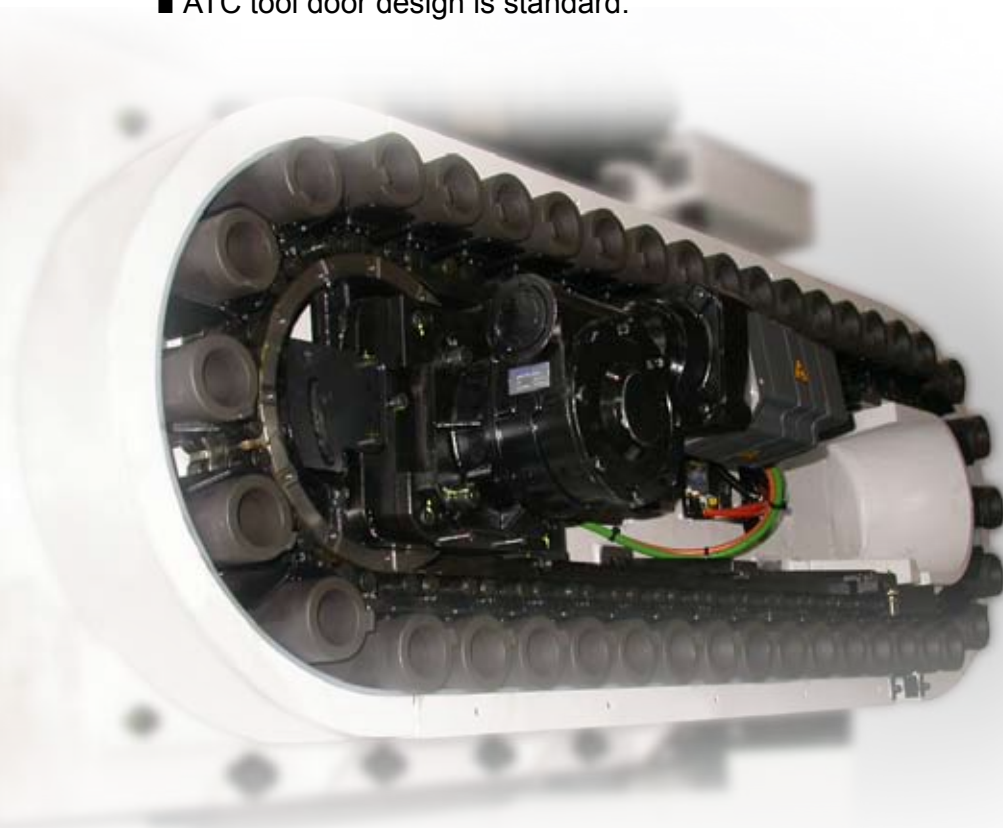
YCM In-house A/C-axis Rotary Table

- Rotary table surface leveled at the C-axis center to ensure machining accuracy and easy programming.
- $\varnothing 380\text{mm}$ ($\varnothing 14.96''$) table size with $\varnothing 80\text{mm}$ ($\varnothing 3.15''$) table-through hole design.
- $150^\circ (+30^\circ / -120^\circ)$ A-axis tilting angle increases the ability of machining.
- Hydraulic or pneumatic cable preparation.



Tool Magazine

- 30T storage capacity is standard.
- 40T/60T is servo driven.
- ATC tool door design is standard.



YCM In-house IDD Spindle

- YCM self-manufactured IDD spindle.
- Powerful 22 kW, 12,000 rpm spindle for hi-power, hi-speed machining.
- Cooling system design on spindle motor seat, quill, and bearing offers most reliable machining capability.

Max. speed

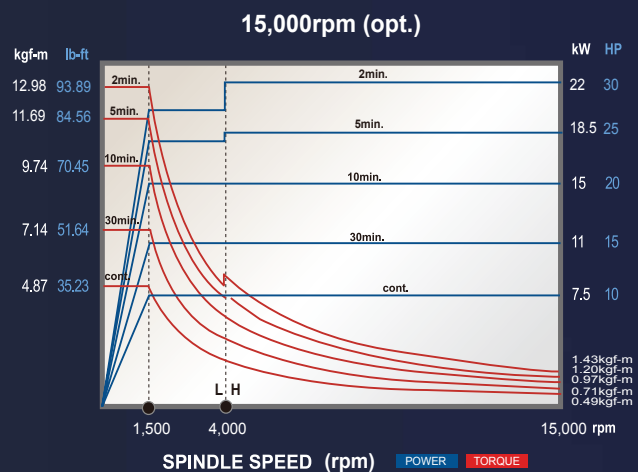
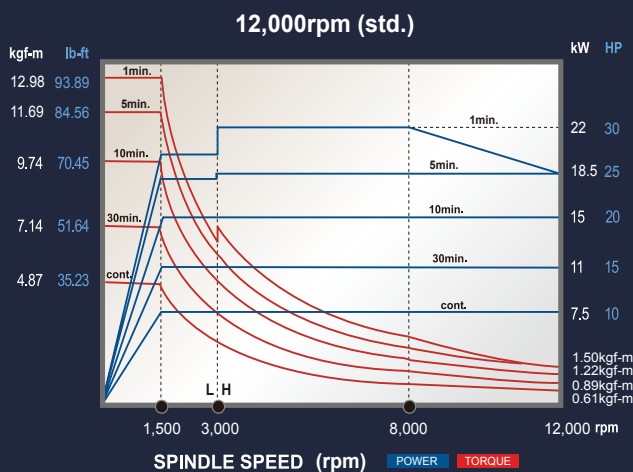
12,000rpm. (std.)

15,000rpm. (opt.)

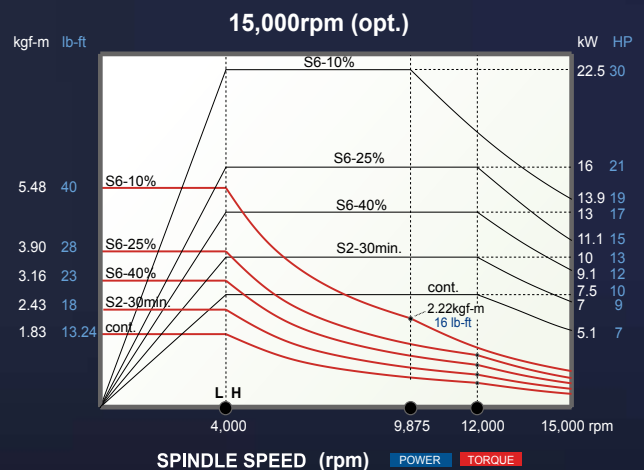
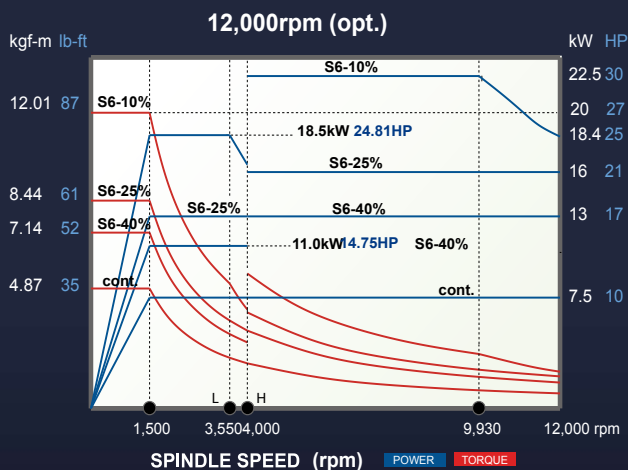


Power Chart

FANUC



HEIDENHAIN

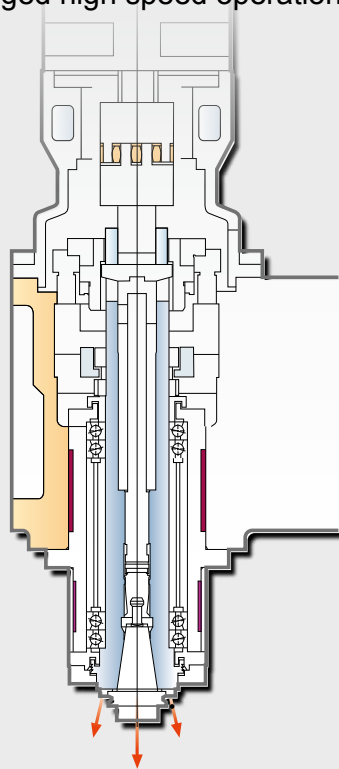


Spindle Oil Cooling Design

Oil-air lubrication design applied on each bearing, suitable for spindles with the speed of 12,000rpm and over to ensure prolonged high speed operations.



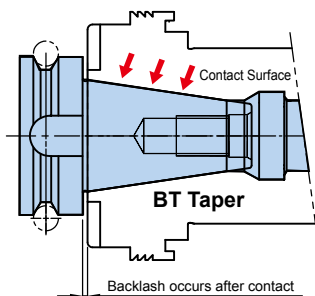
Oil-air Lubrication System



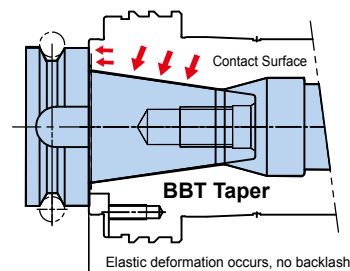
Head Cooling System

BBT40 Spindle Design

- Spindle and taper dual surface contact.
- Exceptional cutting rigidity, with high accuracy.
- Longer tooling life span.



Single Surface Contact Spindle



Dual Surface Contact Spindle

**Laser Tool Measurement
(opt.)**

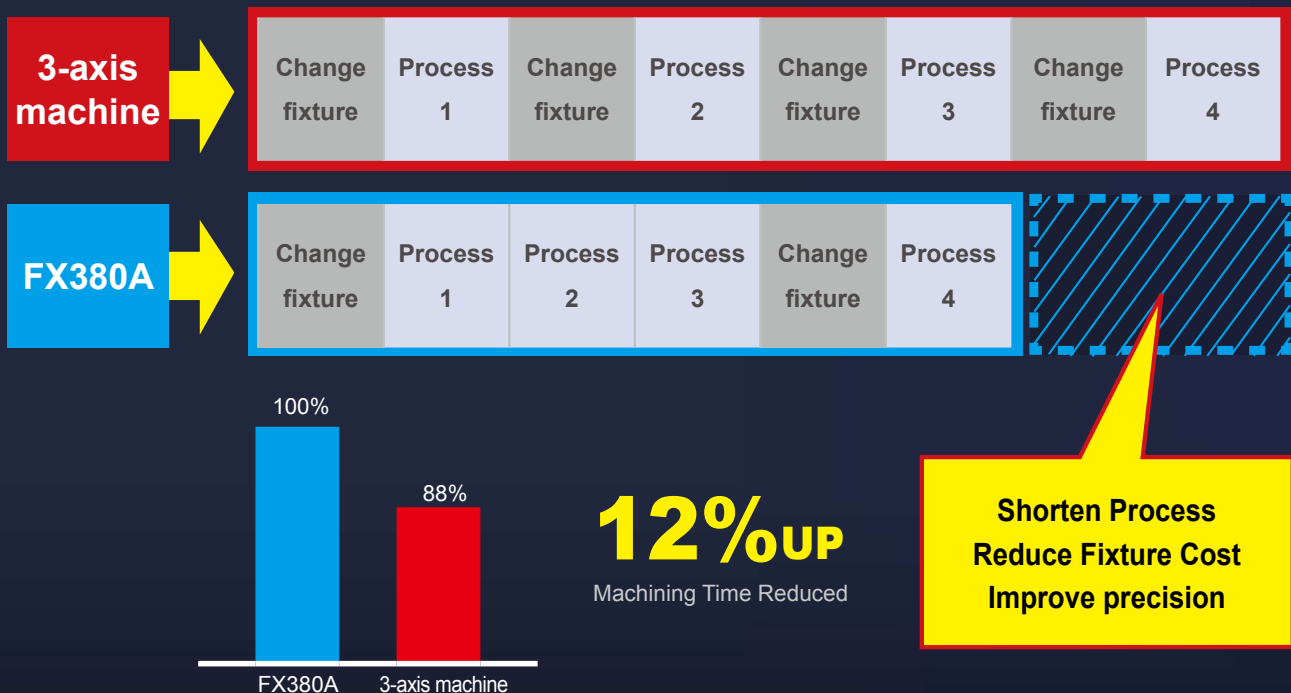




Advantages of 5-axis Machining

- Enhance precision, quality and efficiency of 3D surface machining.
- Reduce tool length and increase rigidity to obtain superior machining quality.
- Cutting with the belly and edge of the tool to increase tool life.
- Reduce fixture error and lessen workpiece loading/uploading time.
- Saves manufacturing cost for fixture and electrode costs.
- Reduces machining process, machining cost while improving productivity.

Differences between 3-axis and 5-axis machining





Automation Advantages

- Increase productivity through unmanned machining.
- Enhance quality and reliability of products.
- Reduce non-cutting or change waiting time.





MXP-200 FB/FC

YCM CONTROL
by **FANUC**

- High Performance AC Digital Servo & Spindle Drives with High Definition Absolute Positioning Encoders
- AI NANO CNC for High Precision Operation in Nanometers and Acknowledged HRV Control
- AICC II High Speed High Accuracy JERK Function & Auto Switching on/off Machining Control Function
- High Speed High Precision Rigid Tapping, Helical Interpolation, Custom Marco B, and Tool Path Graphics
- Manual Guide i with Big & Double Screen Display (MXP-200FC, opt.)
- Program File Management for Easy Program Classifying
- USB Port for Easy Parameters & CNC Programs Transfer
- Large Program Capacity with 1,280 Meters of Memory
- High Speed Positioning Function (MXP-200FC, opt.)
- Memory Card Program Edit & Operation (opt.)
- 3D Interference Check
- NANO Smooth Interpolation (opt.)

i-Direct A remote monitoring system

The YCM Production Line Monitoring System i-Direct overcomes the limitations of time and distance. This software provides plant operators with instant production status, including production value, output, standby, alarm time, status display and malfunction records of the machine. These data could be browsed online and printed. When incidents occur, i-Direct will automatically warn plant operators through e-mail or MMS message. With i-Direct Production Line Monitoring System the plant operators can easily keep track of production statuses regardless of time and distance.



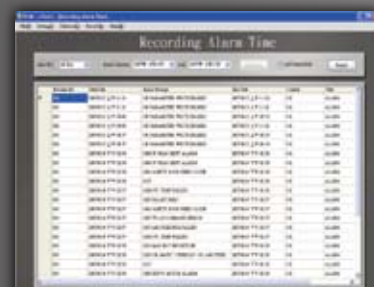
Single Machine Status Browsing
Machine Status Browsing



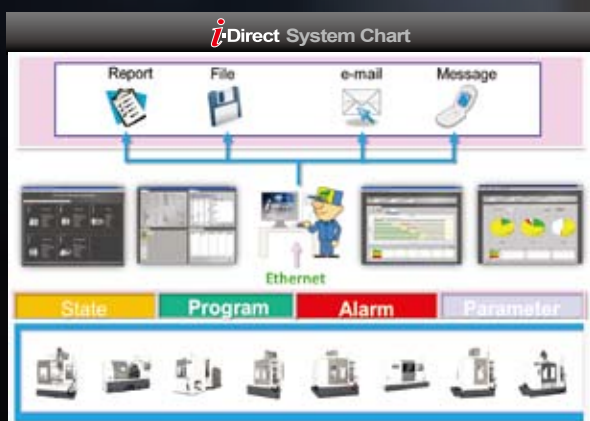
Plant Operation Status Monitoring



Machine connection, MMS and e-mail settings



Machine Status Time Record



Production Status Process Record



Production Management Statistics

i-OPERATION *Plus II*

Software Enhancement Exclusively from YCM



Pre-machining Preparation

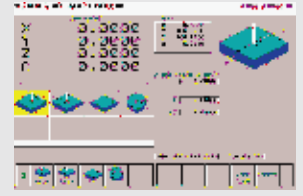
Intelligent Tool Data Management
Comprehensive tool data management function allows operators to monitor and manage all positions in tool magazine



Tool Length Measurement
Graphic measuring interface provides automatic tool length measurement function



Workpiece Coordinate Calculation
Conversational operating window provides convenient and fast setup of workpiece coordinates



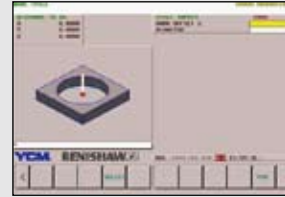
NEW

RENISHAW GUI System (Conversational Graphic Operating Interface)

Tool measurement & measurement correction



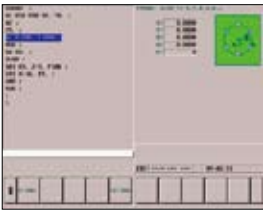
Workpiece measurement



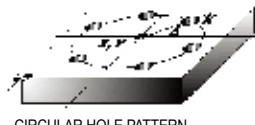
Programming

NEW

I_PATTERN



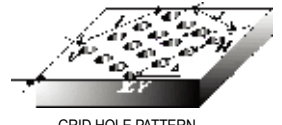
15 sets of machining cycle program
Reduces program input and memory time
Graphic interface & conversational command input



CIRCULAR HOLE PATTERN
(G120 P1) Function



RECTANGULAR HOLE PATTERN
(G120 P4) Function

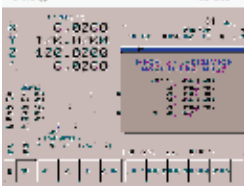


GRID HOLE PATTERN
(G120 P5) Function

Machining

High Performance Machining Mode M300

With 5 sets of parameter settings, the users choose the most suitable mode for optimum machining



High Speed Machining Mode M400

Increases drilling and tapping speed, reduces machining time for job shop and precision mold machining



NEW

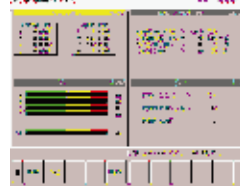
Tool Load Management

Instant tool load monitoring with alarm function



Multi-display Function

Displays 4 statuses simultaneously with configurable status display



NEW

Tool Life Management

Indicates tool status of each group with tool life alert



Instant Message Alert

Pop-up Alarm Display

Instantly provides troubleshooting procedure Quick response to alarm



Wireless Message Notification

Machine status sent to a designated cellphone number.



Maintenance

Intelligent Maintenance

Provide users with periodic maintenance options and descriptions

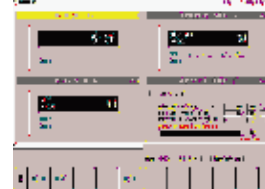
Instantly provide users with maintenance notifications



Counter Function

Allow users to keep count of workpieces with the function of overtime cycle alarm provides easy control over machining cycle time

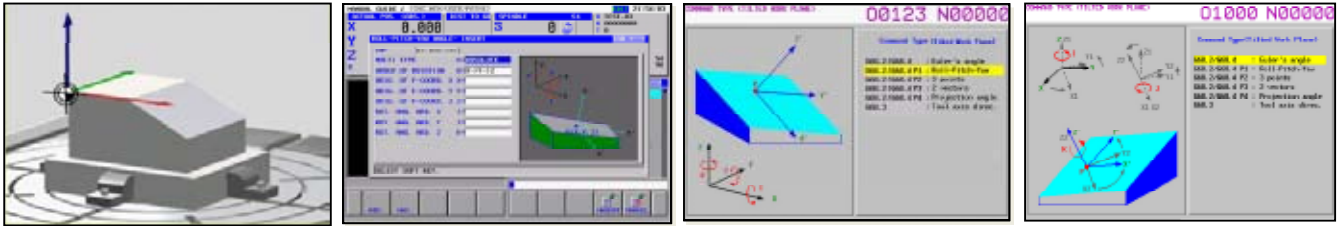
1. Main Counter
2. Periodical Counter
3. Daily Counter
4. Over Cycle Alarm



FANUC Control (4+1 Axis)

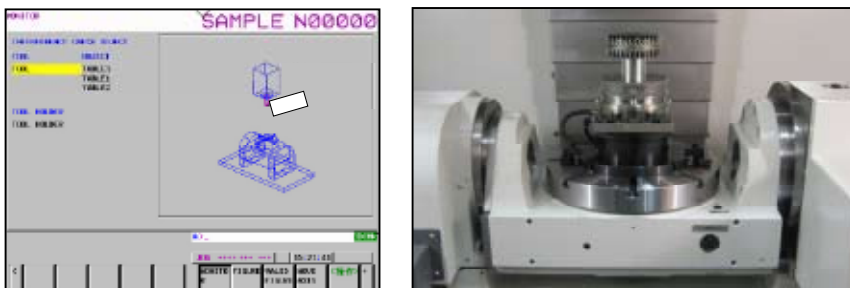
Tilted Working Plane Command

- Program order automatic exchange X-Y-Z coordinates.
- Easy program edition, easy machining for Tilted Working Plane.



3D Interference Simulation

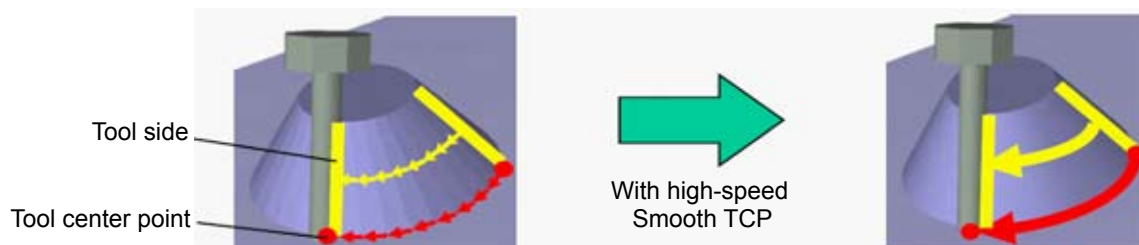
- 3D Interference Simulation function can help to reduce the danger of collision in 5th axis application.



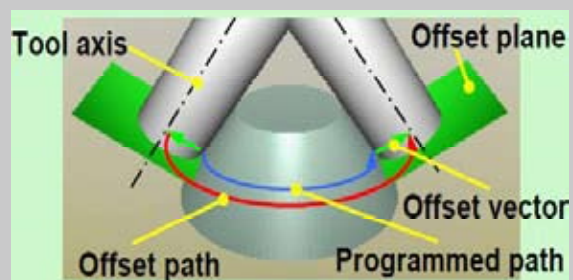
FANUC 31i-MB5 only

STCP (Smooth Tool Center Point)

- Simultaneous 5-axis Machining with tool end / tool side.
- Smooth motion with tool end by compensating tool direction (Angle of rotary axis)
- Smooth machining with tool side by smoothing tool posture



3-dimensional cutter compensation



HEIDENHAIN Control

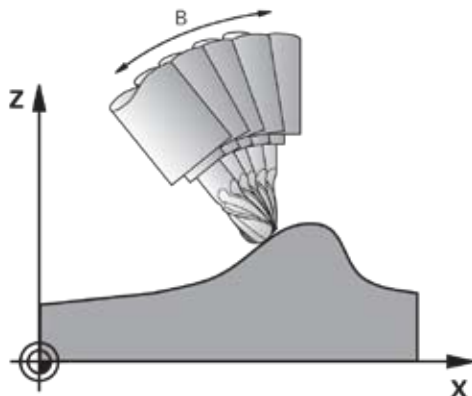


Heidenhain iTNC 530 HSCI

- Simultaneous 5-axis control
- TFT color flat-panel display 15-inch
- Storage medium: SSDR solid state disk with 32 GB
- Programming in HEIDENHAIN conversational format, with Smart.NC or according to DIN/ISO
- Short block processing time (0.5 ms)

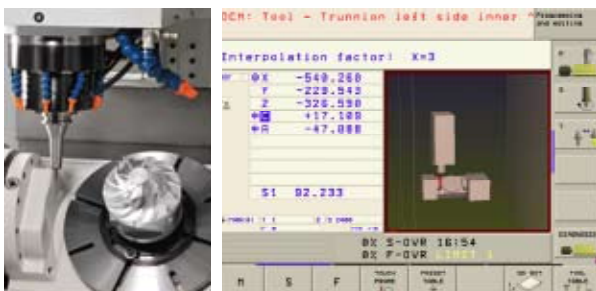
TCPM (Tool Center Point Management)

The offset of the tilting axes is compensated so that the tool tip remains on the contour.



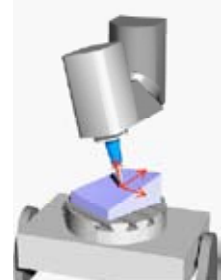
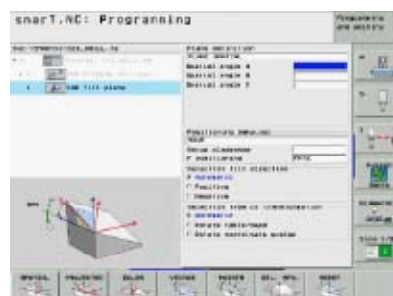
Dynamic Collision Monitoring (DCM)

Dynamic collision monitoring to protect operators and machine.



Tilted Working Plane Command

The PLANE function is a powerful function for defining tilted working planes in various manners.



Kinematic Compensation

- 1) Position of the rotary axis in the kinematics model of the control.
- 2) Actual position of the rotary axis.
- 3) Resulting position error during tilting.

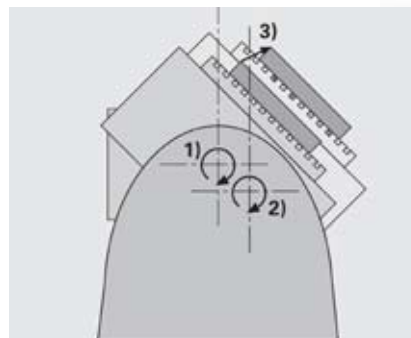
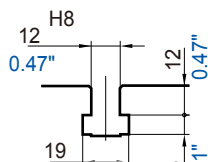
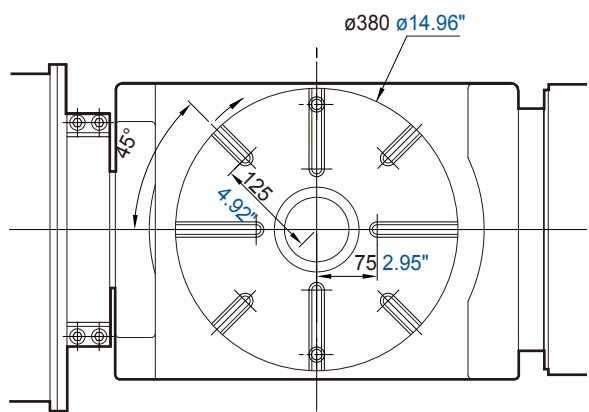
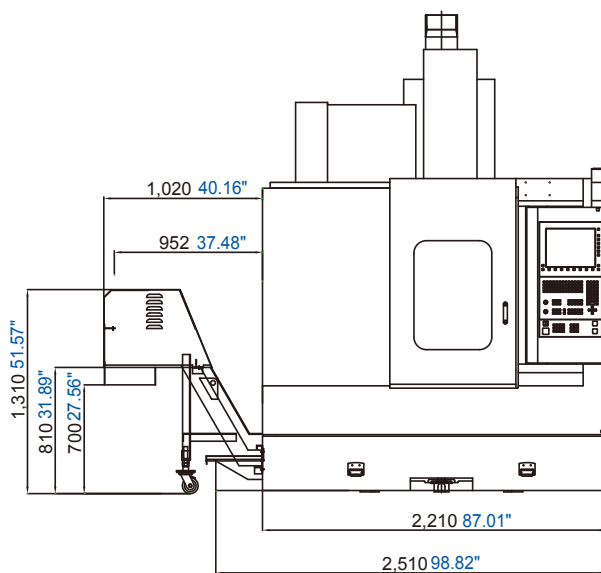
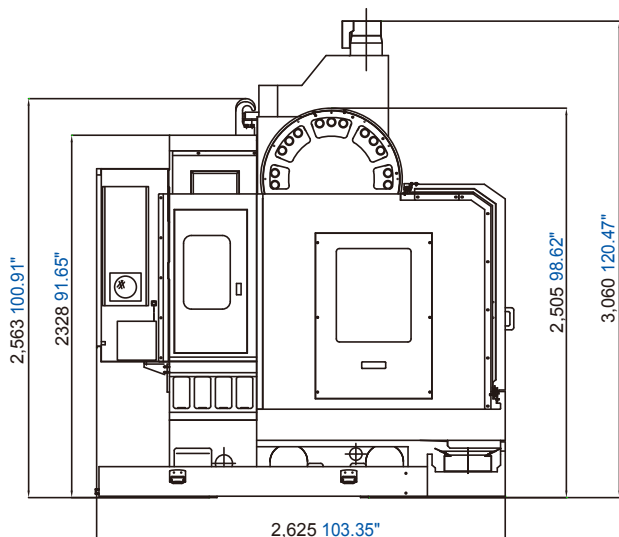
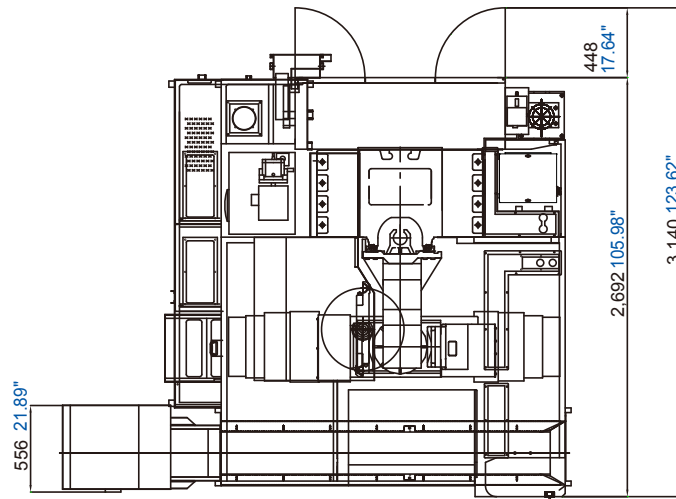


Table & Dimensions



T-SLOTS



Unit: mm inch

Specifications

FX380A

SPINDLE

Spindle Speed/Power (std.) FANUC controller	12,000rpm 7.5/11/15/18.5/22kW 10/15/20/25/30HP (cont./30min./10min./5min./1min.)
Spindle Speed/Power (opt.1) FANUC controller	15,000rpm 7.5/11/15/18.5/22kW 10/15/20/25/30HP (cont./30min./10min./5min./2min.)
Spindle Speed/Power (opt.2) HEIDENHAIN controller	12,000rpm 7.5/13/16/22.5kW 10/17/22/30HP (cont./S6-40%/S6-25%/S6-10%)
Spindle Speed/Power (opt.3) HEIDENHAIN controller	15,000rpm 7.5/13/16/22.5kW 10/17/22/30HP (cont./S6-40%/S6-25%/S6-10%)
Spindle Taper	BBT40

TRAVEL

X-axis Travel	700mm 27.56"
Y-axis Travel	520mm 20.47"
Z-axis Travel	480mm 18.90"

TABLE

Table Size/T-Slots	ø380mm / 12mm ø14.96" / 0.47" Radial
Max. Load on Table (Vertical)	200kg 441lb
Max. Load on Table (Horizontal)	200kg 441lb
Available Torque on Table	30kg-m 217lb-ft

A/C AXIS

A-axis	150°(+30°/-120°)
C-axis	360°
A/C Axis Feedrate	33.3 rev/min.
A/C Axis Positioning Accuracy	28sec.
A/C Axis Repeatability Accuracy (A-axis Optical Scales is standard)	16sec.

FEEDRATE

X/Y/Z Rapid Feedrate	36 / 36 / 24m/min 1417.32 / 1417.32 / 944.88ipm
Cutting Feedrate	1~10,000mm/min 0.04~393.7ipm

ACCURACY

	ISO 10791-4	JIS B 6338
Positioning	0.010mm 0.00039"	0.003mm 0.00012"
Repeatability	0.007mm 0.00028"	±0.002mm ±0.00008"

ATC

Tool Magazine Capacity(opt.)	30T (40/60T)
Max. Tool Weight	6kg 13.2 lb
Max. Tool Length	ø76 x 280mm ø3" x 11.02"

GENERAL

Pneumatic Supplier	5.5kg/cm ²
Power Consumption (Transformer)	FANUC: 34kVA (40kVA) HEIDENHAIN: 47kVA (50kVA)
Machine Weight	6,210kg

Note: The manufacturer reserves the right to modify the design, specifications, mechanisms, etc., to improve the performance of the machine without notice. All the specifications shown above are just for reference.

STANDARD ACCESSORIES

- Tool Kit
- Work Lamp
- Pilot Lamp
- Spindle Air Blast
- Spindle Air Seal
- Cutting Air Blast
- Spindle Cooling System
- Guideway Cover (X, Y, Z)
- Oil Skimmer
- Coolant Gun
- Coolant System
- Central Lubrication System
- Hydraulic Unit (for 4th and 5th Axes)
- Complete Chip Enclosure (With Top Cover)
- Leveling Bolts and Pads
- Heat Exchanger for Electrical Cabinet
- Mechanical, Maintenance, Electrical and Operating Manuals
- Safety Door
- CNC Control: FANUC MXP-200FB

OPTIONAL ACCESSORIES

- CE
- Foundation Bolts
- Chip Conveyor
- Coolant Through Spindle System (CTS)
- Heavy Duty Coolant Pump
- Auto Tool Measurement System (Blum Laser Mini NT)
- CNC Control: FANUC MXP-200FC
- CNC Control: FANUC 31i-MB5
- CNC Control: HEIDENHAIN iTNC530

User-friendly Design



■ Convenient Swivel Control Panel.



■ Chip flush coolant system increase chips removal efficiency.



■ Tool magazine with window design is easy for tool changing.