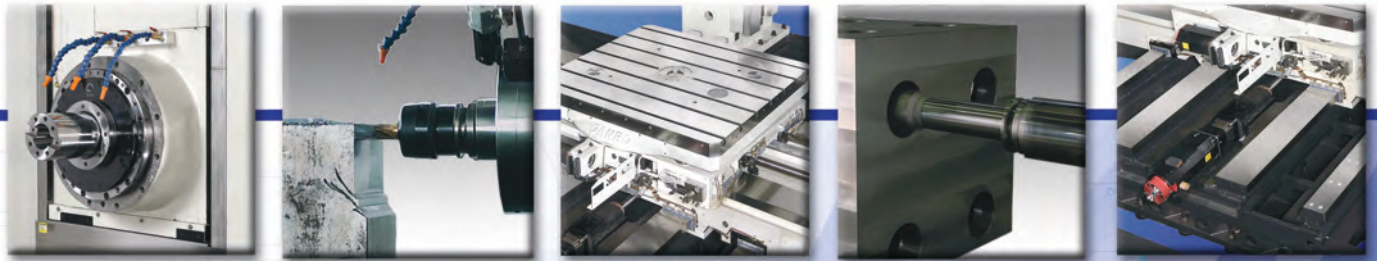


CHEVALIER®

Grinding / Turning / Milling



FBB Series

Horizontal Boring and Milling Machine

FBB-110 • 130

FBF Series

Extra-Large, Extra-High Column Design Greatly Increases Boring and Milling Capability

Wide Range of Machining Applications: With the heavy-duty, high precision design of this Series, the FBB-110 and 130 horizontal boring and milling machine with rotary table, offers more machining flexibility. Many FBB Series users in various industries, including the aerospace, automotive, energy, gas/oil, machining and job shop products fields, have experienced a dramatic increase in reliability and productivity. The series is designed for high performance, production batch machining of large work pieces for long cycle production with minimum non-cutting time.

Outstanding Structural Design: The series is perfect for your biggest projects. The extra rigid design of the main machine body and column ensure outstanding structural stability along with the one-piece machine base that includes four guide ways on the Z-axis for full table support.

The 26kW (35HP), 50-taper, large-diameter, cartridge-type, air-purged spindle runs with German made 2-speed gearbox that generates maximum 1,324NM (976 ft.-lbs.) at 188rpm to overcome most tough-material cutting conditions.

Spiral-type spindle cooling system provides constant, all-round lubrication, preventing thermal deformation and substantially prolonging the life of the spindle, bearings and gears. Combined with a gearbox, the spindle can be extended (W-axis) for deep-hole boring with high-rigidity and superior machining accuracy.

The series not only handles the big jobs but does it with cutting-edge control. The FANUC Oi-MD control comes with an AICC high-speed machining contour control, which has a smooth interpolation contouring control and an optional 200-block look-ahead function.

FBF-110 • 130 Series

Table Size: Up To 1,600mmL x 1,400mmW (63" x 55")

Table Load: Up To 10,000kg (22,000 lbs.)

X / Y / Z Travel: 2,000 x 1,800 x 1,500 (78.7" x 70.8" x 59")

Spindle Speed With Gear Box: Up To 2,500rpm

Spindle Motor: Up To 26kW (35HP)

Spindle Taper: #50

Bed Type With Full C-Axis Rotary Table

W-Axis Includes: 110mm (4.3") Quill or 130mm (5.1") Quill





Table dimension: 1,400x1,600mm(55.1"x62.9")

Note: The machine shown above includes optional semi-high splash guard and other options.

FBB Series

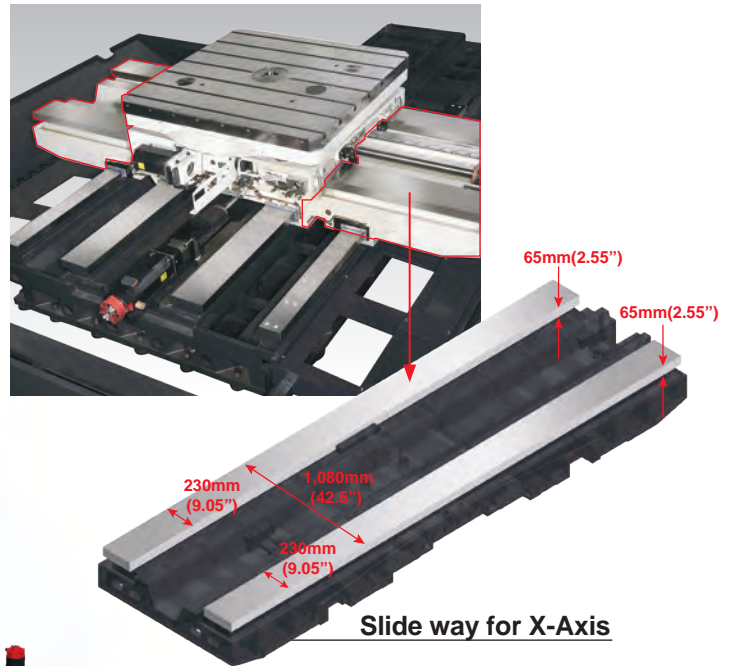
Machine Structure

Extremely Rigid Structure - The series features a heavy-duty guideway design on X,Y,Z-axis. One-piece Meehanite cast iron machine base design features four heavy-duty large box ways, which have been hardened and ground then coated with Trucite. The wide span in-between box ways ensure maximum stability when machining heavy loads.

The extra large, extra high column construction greatly increases machining flexibility. The heavy-duty, high precision rotary table offers a wide range of machining applications. The series is designed for high performance, production batch machining of large work pieces for long cycle production with minimum non-cutting time.

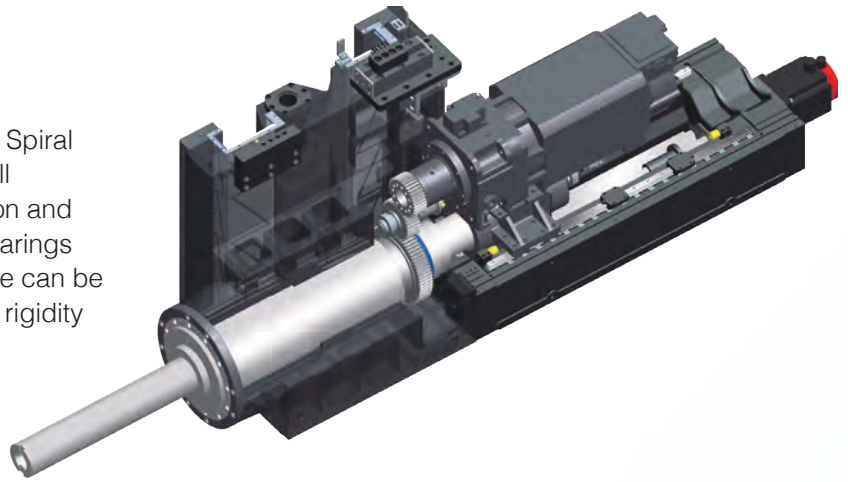
The minimum indexing angle for this servo controlled table is 0.001-degree and Heidenhain rotary encoder has been installed for better positioning accuracy.

Column and Base - This machine has an over-sized box way type column, bed and saddle which features outstanding structural rigidity during heavy-duty boring and milling.



8,930mm(L) x 6,024mm(W) x 5,000mm(H)
352" x 237" x 197"

Advanced High-Performance Spindle Design - Spiral type spindle cooling system provides constant, all around lubrication, preventing thermal deformation and substantially prolonging the life of the spindle, bearings and gears. Combined with a gear box, the spindle can be extended (W-axis) for deep hole boring with high rigidity and superior machining accuracy.

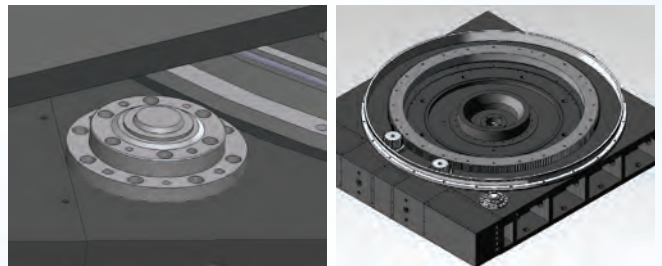


Coolant System - The coolant nozzles positioned around the spindle features side cooling, which greatly increases the cooling effect for cutting tools and work-pieces. The process prevents a build-up on the edge of the tool and thermal deformation of the work-piece. The coolant through spindle feature shoots coolant directly to the cutting edge. This feature prolongs tool life, allows higher cutting speeds and flushes chips out during deep drilling.



Rotary Table - Fully programmable rotary table with Heidenhain scale that indexes at a minimum 0.001°, the combination of worm shaft and worm gear design ensures excellent machining accuracy. Using axial/radial bearings allows for heavy loading on the rotary table up to 10,000kg (22,000 lbs.).

To assure the rigidity of the table, the machine has a hydraulic break which locks the table in any position, plus a locking pin every 90°.



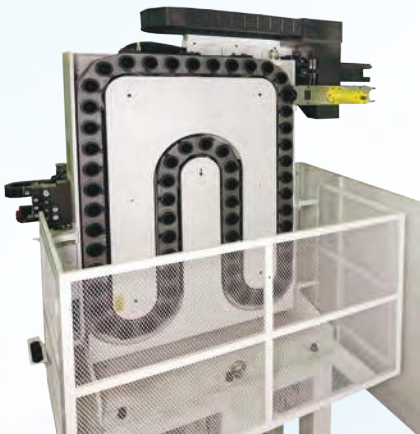
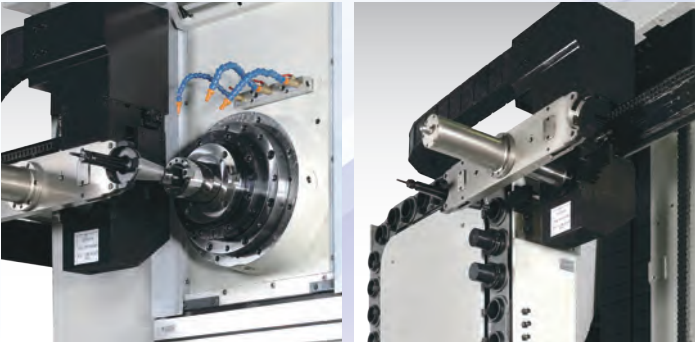
Ball screws - Large Ø63mm (Ø2.4") / Ø63mm (Ø2.4") / Ø80mm (Ø3.1") C3 Class ballscrew equipped on X / Y / Z axes for precision and heavy-duty cutting operation. During assembling of the ballscrew, the laser unit is applied for calibration to ensure geometric accuracy.

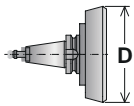
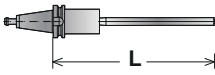
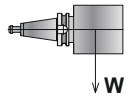


FBB Series

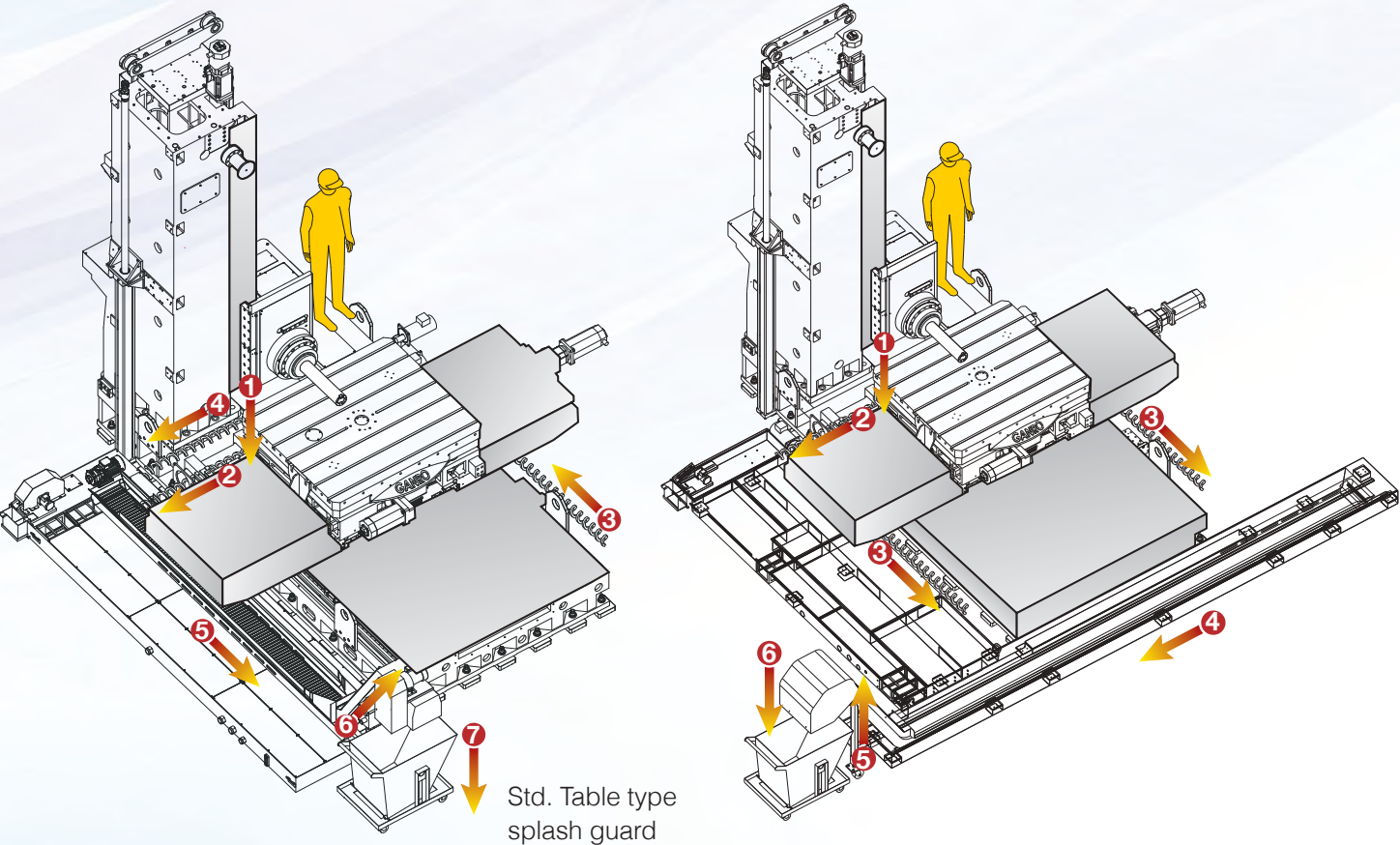
Machine Structure

Tool Changer and Chain Type Magazine - The doublearm type ATC features random access, bidirectional tool indexing. The easy access design offers safe fast loading and unloading. The tool-to-tool changing time is fifteen seconds, Standard 40 magazine capacity, Optional 60/80/100/120 tools CT50.



Max. Tool Diameter		D: Maximum tool diameter with adjacent tool: 125mm (4.9")
		D: Maximum tool diameter without adjacent tool: 215mm (8.5")
Max. Tool Length		L: 400mm (15.7")
Max. Tool Weight		W: 25Kg (55 lbs.)

Chip Removal - A dual chip channel with auger conveyor, located on the left and right sides of the machine base, moves the chips to a chain type chip conveyor for removal into a cart at the front side of the machine.



FBB Series

Control

User Friendly Control - The FANUC 0i-MD control's 10.4" color LCD is standard.

The control is designed to swing for optimum positioning and convenience of operation. The control is equipped with a M.P.G. handwheel to make the set-up more convenient.

Standard FBB 0i-MD Control Features

Control Axes

Controlled X / Y / Z –Axis
Simultaneously Controllable Axes
Maximum Simultaneously Controllable
4 Axes

Programmable Methods

Absolute/Incremental Programming
Decimal Point Programming
Inch/Metric Conversion

Interpolation

Positioning
Linear Interpolation
Circular Interpolation
Cylindrical Interpolation
Helical Interpolation
Circular Interpolation Plus Maximum
Two Linear Axes

Feed

Manual Handle Feed: 1 Unit
Manual Handle Feed Rate: x1, x10, x100
Rapid Traverse Rate Override: F0/25/100%
Feedrate Override: 0~150%

Program Storage And Editing

Part Program Storage: 1,280m (512KB)
Numbered of Stored Programs: 400

Operation And Display

Display Section 8.4" TFT LCD
Running Time Display/
Number Of Parts Display
Clock Function
I/O Interface: RS-232
Memory Card Interface
PCMCIA Front Slot
Ethernet
DNC Operation With Memory Card
(Front Card Slot/Data Server)

STN Function

Spindle Feed Function: 5 Digit S Code
Spindle Speed Override: 50~120%
Tool Function: 4 Digit T Code
M Function: 3 Digit M Code

Tool Offset

Tool Length Compensation
Number Of Tool Offsets: 400 Sets
Cutter Compensation C
Tool Offset

Coordinate System

Manual Reference Position Return
Automatic Reference Position Return
2nd Reference Position Return
3rd and 4th Reference Position Return
Reference Position Return Check

Operation Support System

Single Block
Dry Run
Machine Lock
Mirror Image
Extended Part Program Editing
Background Editing
Load Meter Display
Control Axis Detach
Tool Length Measurement
Program Restart
Sequence Number
Comparison And Stop
Manual Handle Interruption

Programming Support Function

Canned Cycles For Drilling
Sub-program
Custom Macro B
Exact Stop
Exact Stop Mode
Data Server
Programmable Data Input
Rigid Tapping
Programmable Mirror Image
Scaling
Polar Coordinate Command

Mechanical Accuracy

Compensatio

Backlash Compensation
Pitch Error Compensation
Rapid Traverse/Cutting Feed
Backlash Compensation

Automatic Support Function

Skip
High-speed Skip
Multi-step Skip
Tool Life Management
Extended Tool Life Management
Safety And Maintenance
Over Travel
Stored Stroke Check 1
Self-diagnosis Function
Alarm History Display
Help Function
Operation History Display
Stored Stroke Check 2

Setting And Display

Servo Setting Screen
Graphic Function
Dynamic Graphic Display

Operation Guidance

Function For Milling
Manual Guide 0i



Optional FBB 0i-MD Control Features

Program Storage And Editing

Part Program Storage:
5,120m (2MB)

Operation And Display

Display Screen 10.4" TFT LCD

Operation Support System

Machining Condition
Selecting Screen
Manual Handle I/F For I/O Link B
AI Contour Control: 200 Block
Data Servo Editing
Nano Smoothing
Jerk Control

Mechanical Accuracy

Compensation

Bi-directional Pitch Error
Compensation

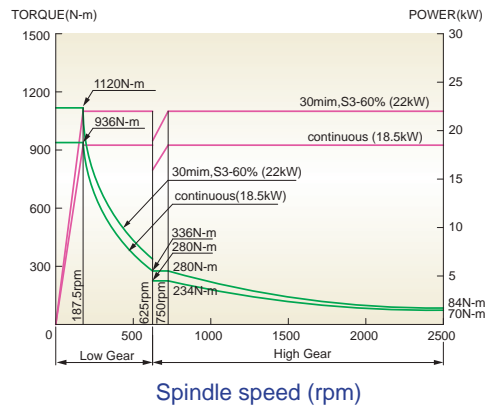
Operation Guidance Function For Milling

Manual Guide i

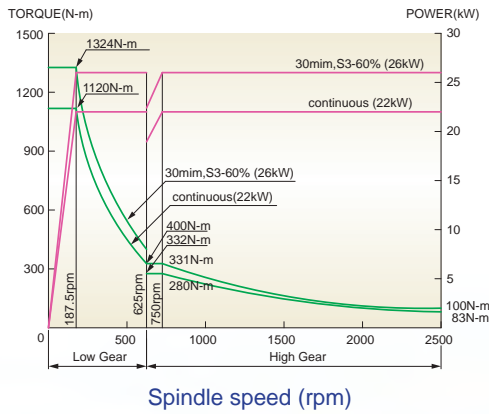
FBB Series

Spindle Torque Charts

For FBB-110
2500RPM SPINDLE (α 18/7000i-ZF250)



For FBB-110
2500RPM SPINDLE (α 22/7000i-ZF250)



For FBB-130
2000RPM SPINDLE (α 22/7000i-ZF250)

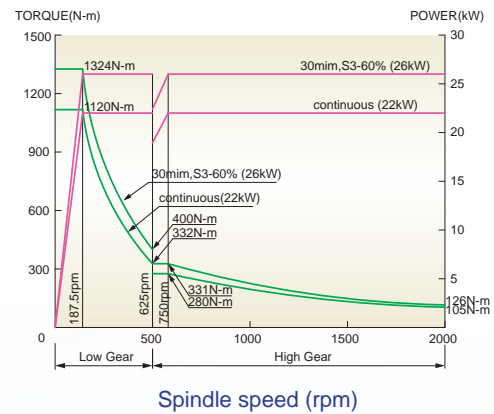
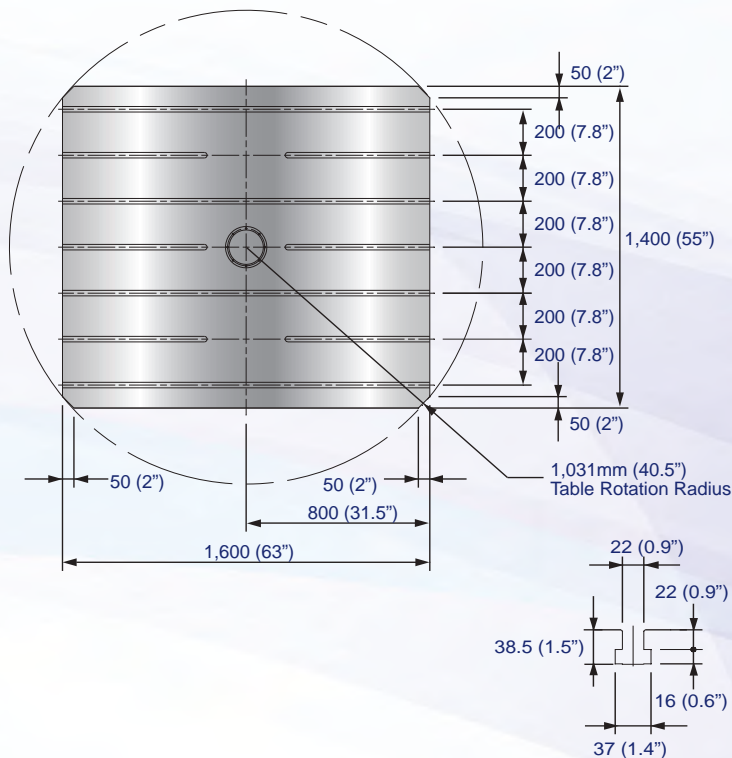
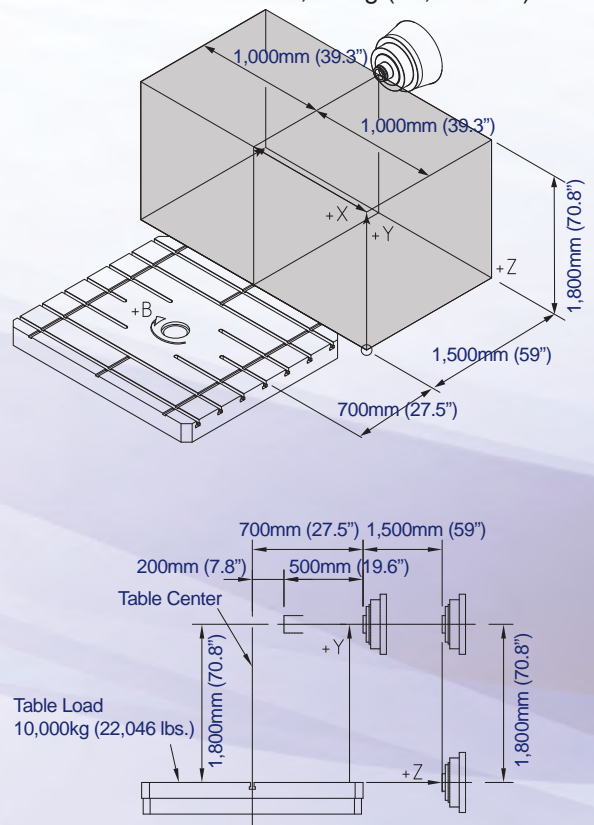


Table and T-Slots Dimensions



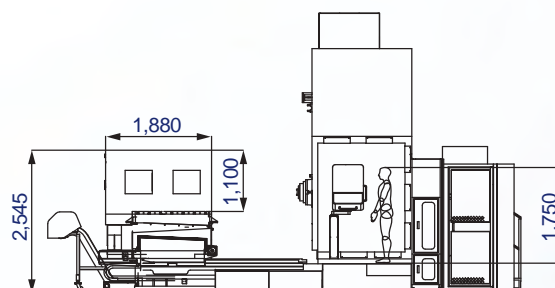
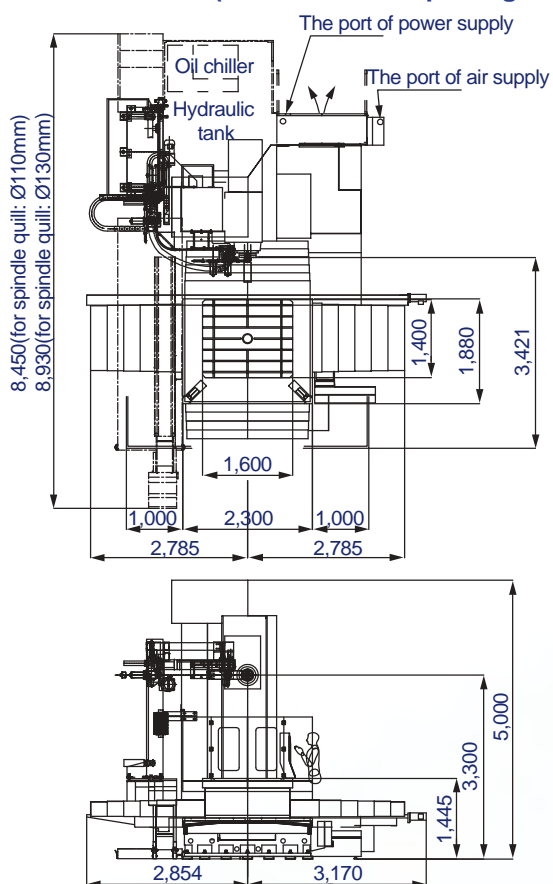
UNIT: mm (")
Table Load 10,000kg (22,000 lbs.)



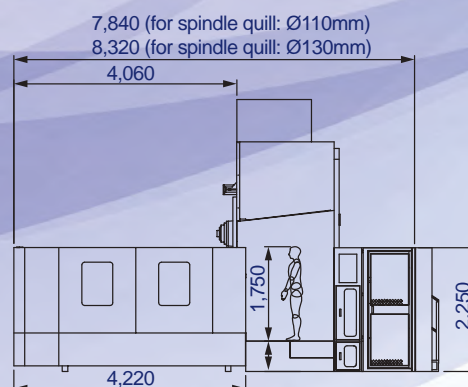
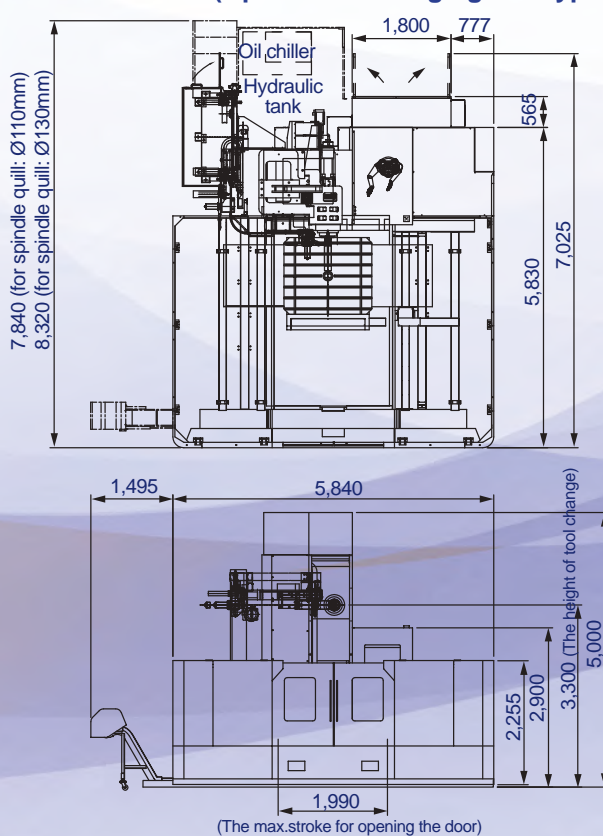
FBB Series

Dimensional Drawings

Spindle quill: Ø110/130mm
(Standard table splash guard type dimensional drawings)



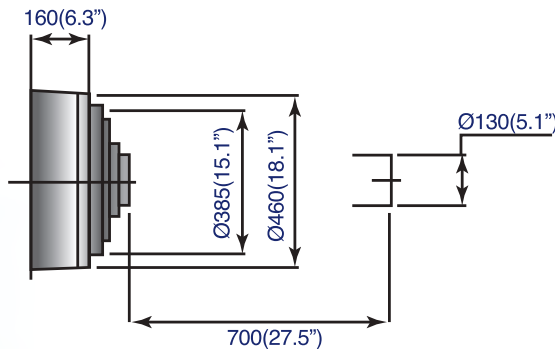
Spindle quill: Ø110/130mm
(Optional semi-high guard type dimensional drawings)



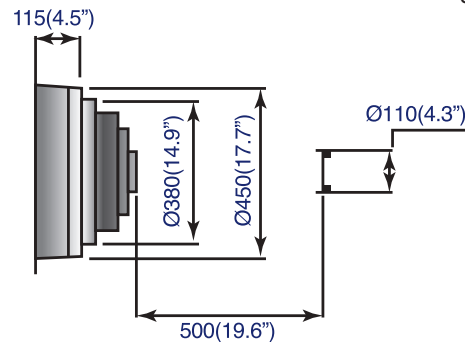
FBF Series

Spindle Extension Length (W-Axis)

UNIT: mm (")



Spindle quill size: Ø130mm (5.1")

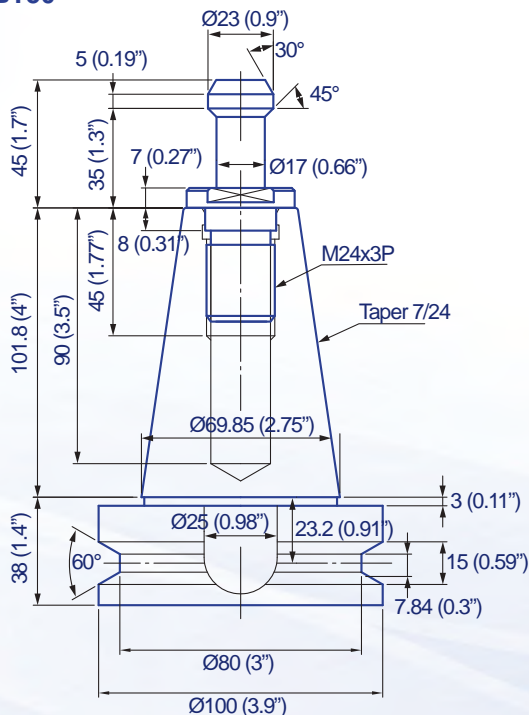


Spindle quill size: Ø110mm (4.3")

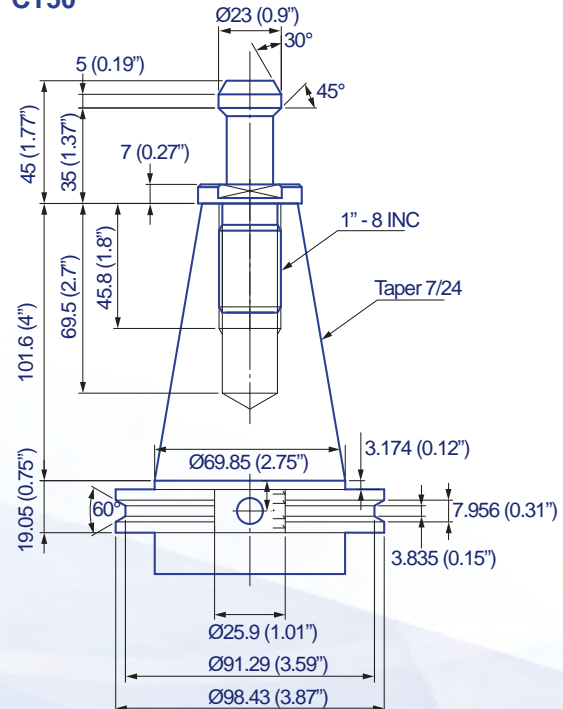
Pull Studs and Tool Shanks

UNIT: mm (")

BT50



CT50



Standard and Optional Accessories

Standard Accessory

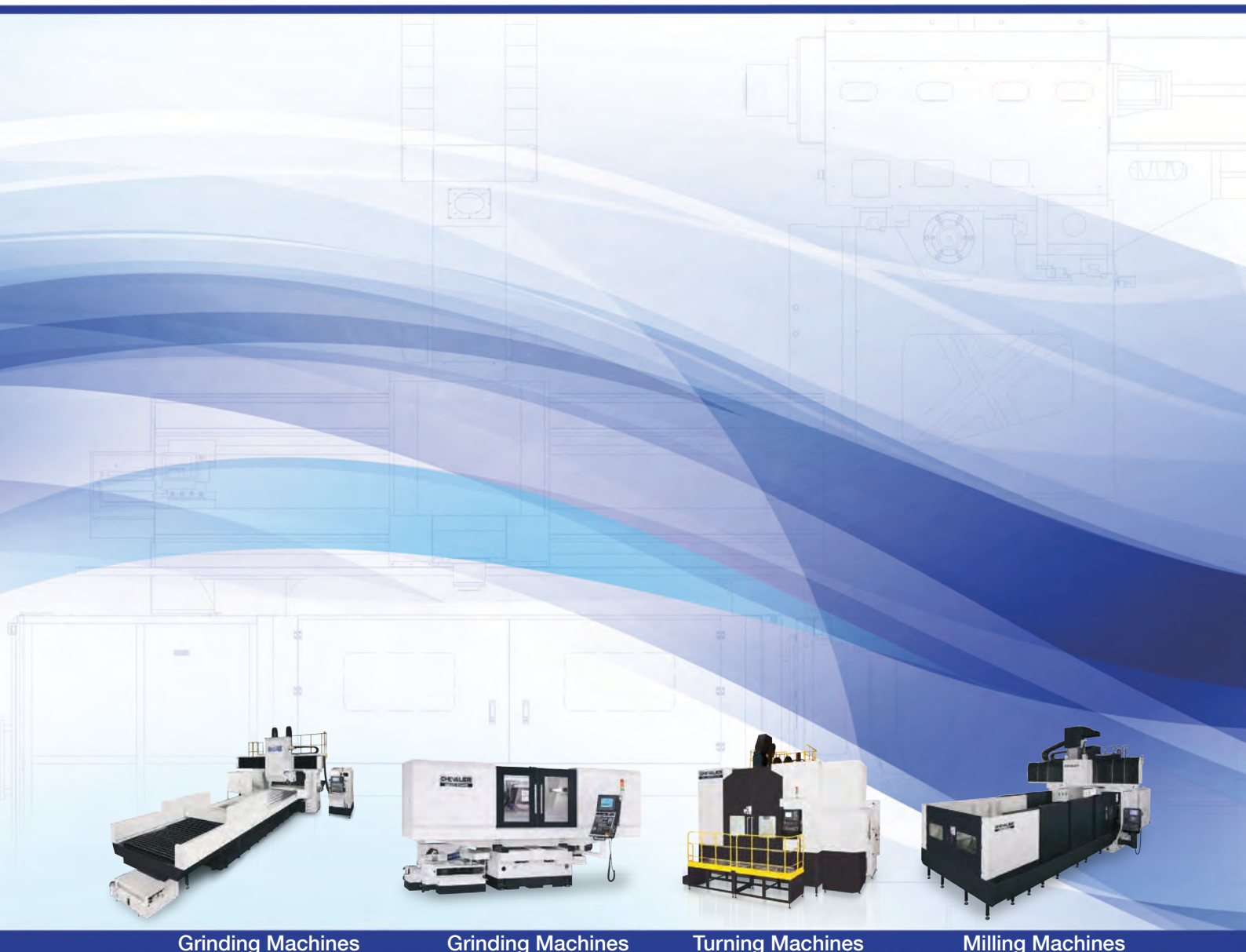
- Automatic power shut off
- Automatic lubrication system
- Automatic air blast
- 40 station tool magazine
- Rigid tapping
- Spindle oil chiller and oil skimmer
- Table splash guard
- B-axis rotary table and axis rotary scale
- Air conditioned electric cabinet
- Dual screw type chip auger
- Coolant system
- Pilot lamp and machine lamp
- Tool box and tools
- Leveling bolts and pads
- Operation Manual
- External chain type conveyor (with out cart)

Optional Accessory

- FANUC 31i control
- Siemens 840D control
- Heidenhain iTNC 530 control
- 60/80/100/120 station tool magazine
- Chip cooling system
- Automatic tool length measurement
- Automatic work pieces measuring system
- High pressure coolant through spindle
- X/Y/Z-axis with Heidenhain linear scale
- High semi enclosed splash guard
- Spindel Supporting Sleeve 300mm(11.8") or 500mm(19.7")
- Chip cart
- Air gun
- Water gun

Specifications

Item	Description	Unit	FBB-110	FBB-130
Capacity	Max.workpiece weight	kg(lbs.)	7,000(15,400)	10,000 (22,000)
	Machining capacity(LxWxH)	mm(")	2,000 (78.7) x 1,500 (59) x 1,800 (70.8)	
	Height from the table surface to ground	mm(")	1,445 (56.8)	
Table	Table size	mm(")	1,400 (55) x 1,600 (63)	
	Table rotation speed	rpm	1 rpm	
	T-slots(wid. x dis. x no.)	mm(")	22 (0.8) x 200 (7.8) x 7	
	Max. radius. of table rotation	mm(")	R 1,031mm (40.5)	
Travel	X-axis stroke	mm(")	2,000 (78.7)	
	Y-axis stroke	mm(")	1,800 (70.8)	
	Z-axis stroke	mm(")	1,500 (59)	
	W-axis(spindle quill dia. & quill extension length)	mm(")	Ø110 (4.3) / 500 (19.6)	Ø130 (5.1) / 700 (27.5)
Spindle	Spindle speed	rpm	2,500rpm	2,000rpm
	Transmission type	-	Gear box	
	Spindle taper	-	#50	
Feed Rate	X-axis rapid traverse	m/in(ipm)	10 (393.7)	
	Y-axis rapid traverse	m/in(ipm)	8 (314)	
	Z-axis rapid traverse	m/in(ipm)	10 (393.7)	
	Cutting feed (X / Y / Z)	m/in(ipm)	1-7 (39.3~275.5)	
	Vertical axis equalizer	-	Hydraulic balance	
	X / Y / Z / W axes ball screw diameter	mm(")	Ø63 (2.4) / Ø63 (2.4) / Ø80 (3.1) / Ø40 (1.5)	
Automatic Tool Changer	Tool shank	-	BT / CAT / DIN50	
	Pull stud	-	P50T-1	
	Tool change system	-	Tools changer (Arm)	
	Tool storage capacity (Chain type Opt.)	pcs	40 (Optional: 60 / 80 / 100 / 120)	
	Max. tool diameter distance (with adjacent tool)	mm(")	Ø125 (4.9)	
	Max. tool diameter distance (without adjacent tool)	mm(")	Ø215 (8.4)	
	Max. tool length	mm(")	400 (15.7)	
	Max. tool weight	kg(lbs.)	25 (55)	
	Tool selection system	-	Random tool selection mode	
	Tool change time (tool-to-tool)	sec.	15 sec.	
Guide Way	Width of X-axis box way	mm(")	230 (9)	
	Width of Y-axis box way (2 pcs.)	mm(")	200 (7.8) / 150 (5.9)	
	Width of Z-axis box way (4 pcs.)	mm(")	200 (7.8) x 2 / 120 (4.7) x 2	
Motors	Spindle motor (30min)	kW(HP)	26 kW (35HP)	
	Drive motors (X / Y / Z / W)	kW(HP)	6 / 7 / 9 / 4 (7.5 / 9 / 12 / 5)	
	Rotary table motor	kW(HP)	7 (9.5)	
	Hydraulic motor	kW(HP)	7.5 (10)	
Power Requirement	Power required	kva	60kva	
	Voltage	V	220V	
Tank Capacity	Hydraulic tank capacity	L (gals.)	300 (79)	
	Spindle/Gear head coolant tank capacity	L(gals.)	45 (11.8)	
	Coolant tank capacity	L(gals.)	600 (158.5) / Opt. Semi-high splash guard 900(237)	
Machine Dimensions	Machine height (H)	mm(")	5,000 (196.8)	
	Required floor space (W x L) (splash guard type)	mm(")	6,024 (237) x 8,450 (332.6)	6,024 (237) x 8,930 (351.5)
	Required floor space (WxL) (semi-closed guard type)	mm(")	7,335 (288.7) x 7,840 (308.6)	7,335 (288.7) x 8,320 (327.5)
	Machine weight	kg(lbs.)	26,500 (58,300)	29,000 (63,800)



Grinding Machines

Grinding Machines

Turning Machines

Milling Machines

FALCON MACHINE TOOLS CO., LTD.

No. 34, Hsing Kong Road, Shang Kang, Chang Hua
TAIWAN 50971

Tel: +886 4 799-1126 Fax: +886 4 798-0011

www.chevalier.com.tw

overseas@chevalier.com.tw

TA-YA Factory TEL: +886 4 2567-3266

CHEVALIER MACHINERY INC.

9925 Tabor Place, Santa Fe Springs, CA 90670 U.S.A.

Tel: (562) 903-1929 Fax: (562) 903-3959

www.chevalierusa.com

info@chevalierusa.com

