

CHEVALIER®

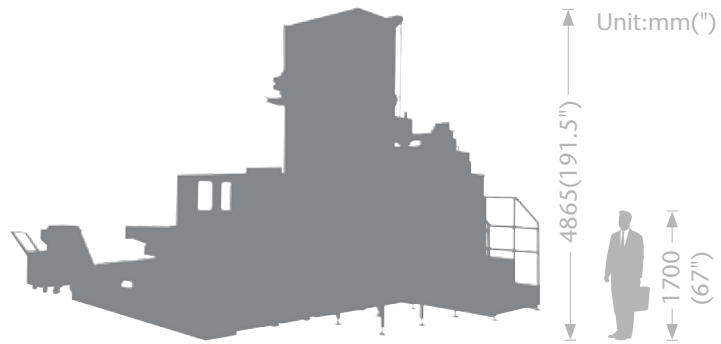


FBB SERIES

Horizontal Boring And Milling Machine
FBB-2020RQ

CHEVALIER®



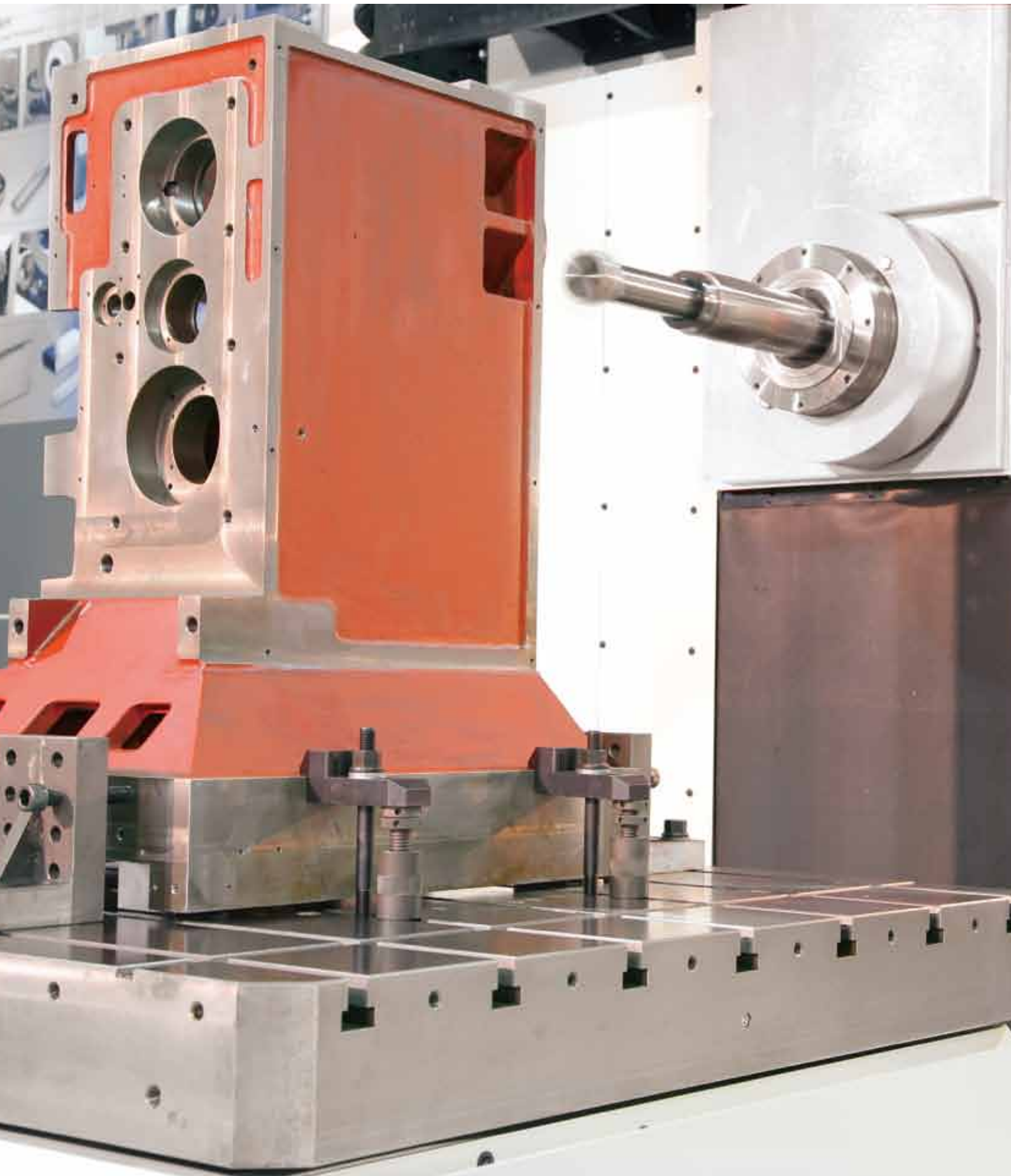


FBB SERIES

High Precision / Heavy Duty Cutting Capability / High Speed



- Spindle speed (With Gear Box)
3000 rpm / 2500 rpm for $\phi 135$
1500 rpm / 2500 rpm (Option)
- Tool Capacity
60 Chain-Type
80 Chain-Type (Option)
- Rapid on (X/Y/Z) Axes
12/12/10 m/min (472/472/393 IPM)





FANUC Control



SIEMENS Control

Advanced CNC Control

- The standard control is Fanuc control. Heidenhain & Siemens controls are also available. All machine control systems can control 4 axes (X, Y, Z, & W axes) simultaneously.

Machine Construction & Features

- Chevalier has developed this machine adopting 35 years of knowledge and expertise in the manufacturing of machine tools.
- The structural design has been optimised by the use of finite element calculation, always bearing in mind the aspects most valued by our customers.
- Research into the behaviour of different architectures and guiding system has also been a determining factor in this development.

High Precision Heavy Duty Cutting Capabilities High Speed

Very Rigid Machine Column

- The extra large, extra high column construction greatly increases machine capability.

Rotary Table Design

- The heavy duty, high precision rotary table offers a wide range of machining applications.
- The minimum indexing angle for this servo controlled table is 0.001° and Heidenhain rotary encoder has been installed for better positioning accuracy.

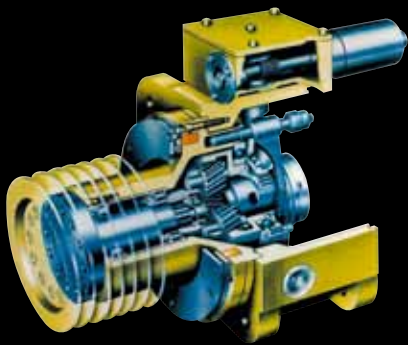


ility



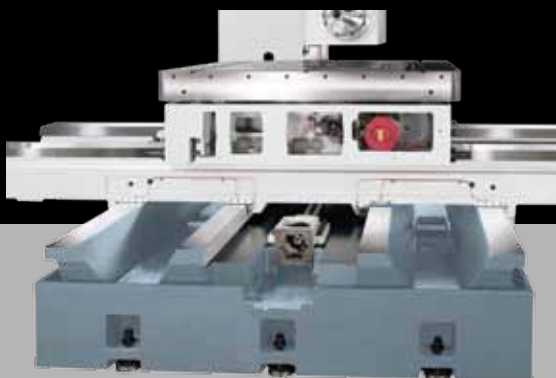
Spindle Design

- 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.
- The machine is designed for high performance, production batch machining of large workpieces . For long cycle production with minimum non-cutting time, the machine is equipped with a chain type 60-tool magazine, a large volume coolant tank and dual chip channel with auger type chip conveyor on each side of table.



ZF Gear Box

- The spindle is driven by a German ZF gearbox with high/low speed gear range: Low gear for high torque output during heavy cutting and high gear range for superior finish.



Machine Construction

- This machine has a box type column, bed and saddle which features outstanding structural rigidity during heavy duty boring and milling.
- One piece Meehanite cast iron machine base design features 4 heavy duty, large box ways which have been hardened and ground then coated with anti-friction media. The wide span in-between box ways ensure maximum stability when machining heavy loads.
- The X/Y/Z axis run with class C3 high precision, hollow ballscrews with coolant circulation. The ballscrews employ a temperature sensor to prevent thermal build-up during heavy cutting cycles, ensuring consistent positioning accuracy and repeatability.

Machine Construction

Auto Chip Conveyor Device

- A dual chip channel with auger type chip conveyor takes care of chip removal.
- An optional chain-type chip conveyor collects the chips and moves them up to the chip cart.



Chain-Type Tool Magazine

- Standard Capacity: 60 tools.
Option: 80 tools
- Maximum tool weight: 25 kgs.
- Maximum tool length: 350 mm.
- Maximum tool diameter: 215mm(no adjacent tool) /125mm(with adjacent tool).



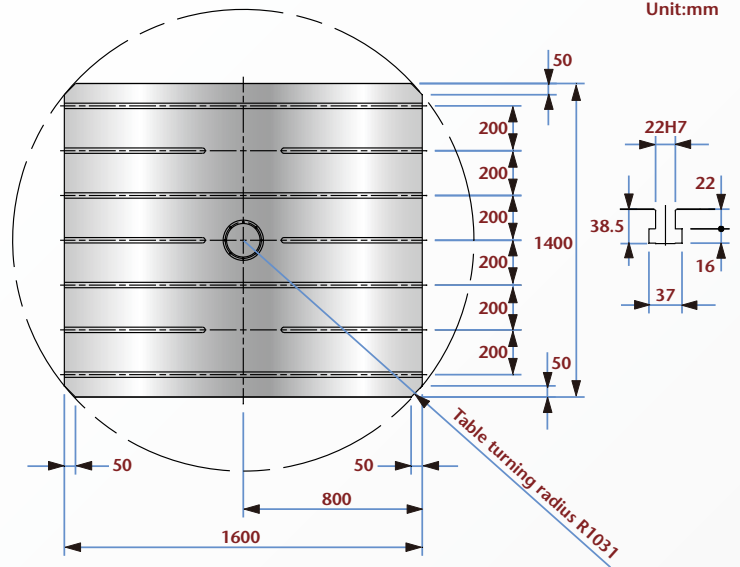
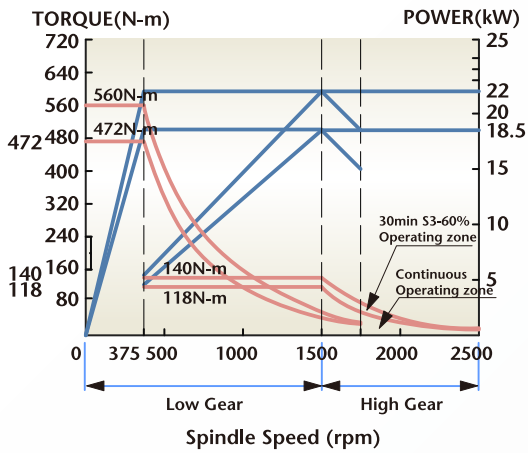
Spindle Oil Chiller

- This controls the various temperature changes in the spindle during machining for maintaining consistent workpiece accuracy.

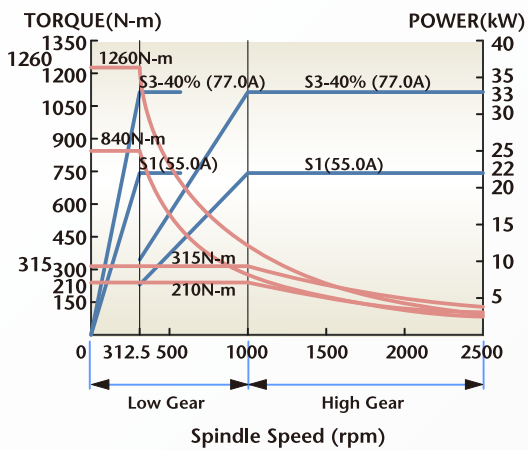
Spindle Torque Chart

Spindle Torque Chart

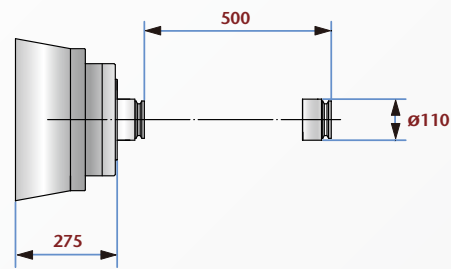
FANUC Spindle (α 18/7000i)
7000rpm-ZF



SEIMENS Spindle (1PH7), Opt.
8000rpm-ZF



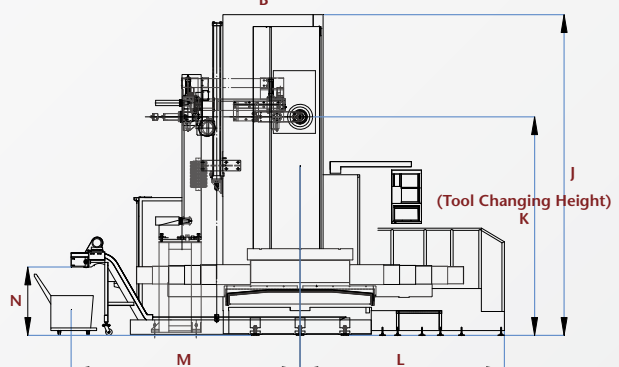
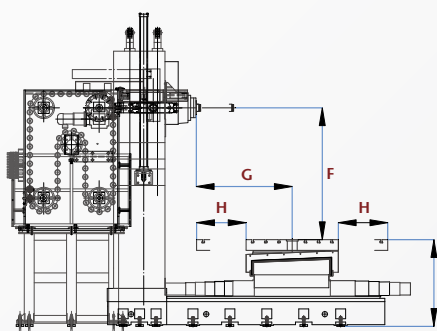
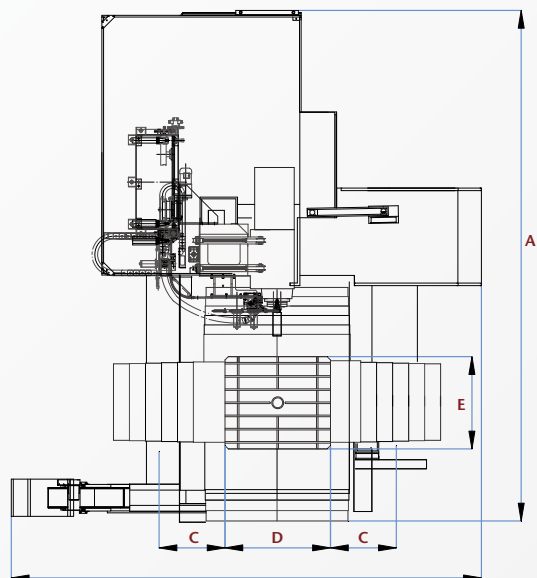
Spindle Extension Length (W axis)



Dimensional Drawings

Model FBB-2020RQ

| | | | |
|----------|------------|----------|-------------|
| A | 7746(304) | H | 750(29.5) |
| B | 7132(280) | I | 1315(51.7) |
| C | 1000(39.3) | J | 4865(191.5) |
| D | 1600(63) | K | 3315(130.5) |
| E | 1400(55) | L | 3100(122) |
| F | 2000(78.7) | M | 3473(136.7) |
| G | 1455(57.2) | N | 1036(40.7) |



| Item | Description | Unit | FBB-2020RQ(Bed type) |
|-------------------------|-------------------------------|--------------------|---|
| Controller | Controller Brand | | FANUC/HEIDENHAIN/SIEMENS |
| Table | Table Size | mm/(") | 1600x1400(63x55.1) |
| | Table Loading | Kg/(lbs) | 7000(15400) |
| | T Slots (W×P.C×Pitch) | mm | 22x7x200 |
| | Rotary Table Motor | Kw(HP) | 7(9) |
| Travel | X Axis | mm/(") | 2000(78.7) |
| | Y Axis | mm/(") | 2000(78.7) |
| | Z Axis | mm/(") | 1500(59) |
| | W Axis | mm | ø110/500, Opt. ø135/700 |
| Spindle | Spindle Taper | | BT/CAT/DIN 50 |
| | Spindle Speed (With gear box) | rpm | 3000/2500 for ø135 |
| | Spindle Power | Kw(HP) | con. 30min, 18(25)/22.5(30) |
| | Spindle Chiller | | With 22# Oil circulated cooling |
| Feed Rate | X/Y Axis Rapid Traverse | | 12 |
| | Z Axis Rapid Traverse | M/min | 10 |
| | Cutting Feed | | 1~7 |
| A.T.C | Numbers of tool | pcs | 60/Opt. 80 |
| | Max.Tool Length | mm/(") | 125(4.9) With adjacent tool 215(8.5) Without adjacent tool |
| | Max.Tool Length | mm/(") | 350(13.7) |
| | Max.Tool Weight | Kg/(lbs) | 25(55) |
| Guide Way | X Axis Box Way width | mm/(") | Box Way: 200(7.8) |
| | Y Axis Box Way width (2 pcs) | mm/(") | Box Way: 200(7.8), 150(5.9) |
| | Z Axis Box Way width (4 pcs) | mm/(") | Box Way: 150(5.9)x2, 120(4.7)x2 |
| Axes Motors | X/Y/Z/W Axes Motor Power | Kw(HP) | 7/9/9/4 (9/9/12/5) |
| Ballscrew | X/Y/Z/W Axes Ballscrew Dia. | mm | ø63/ø80/ø80/ø40 |
| Lubrication Unit | Lub. Tank (2 sets) | L | 4,12 |
| Air Unit | Air System Tank | L | 1500 |
| | Air System Pressure | kg/cm ² | 6 |
| Power | Required Electric Power | KVA | 55 |
| Machine Size | Floor Space (L×W×H) | mm/(") | 8200x6300x4300(322x248x169) |
| | Machine Weight | Kgs/(lbs) | 29500(64900) |



Standard Accessory

1. Automatic power shutoff
2. Automatic Lubrication system
3. Automatic air blast
4. Rigid tapping
5. RS232C interface
6. Spindle oil cooling system
7. 3 Axes ball screw with coolant system
8. B-axis rotary table
9. Air conditioned electric cabinet
10. Dual screw type chip conveyor
11. Coolant system
12. Pilot lamp & Machine lamp
13. Tool Box and Tools
14. Leveling bolts and pads
15. Operation manual

Optional Accessory

1. 80-station ATC
2. Chipping cooling system
3. Chip conveyor and Bucket
4. Automatic tool length measurement
5. Automatic workpieces measuring system
6. Spindle extension sleeve
7. Angle milling head
8. Facing head
9. Oil skimmer
10. Angle head
11. Coolant through tool
12. X/Y/Z axis with Heidenhain linear scale