SUPER RIGIDITY
Structure Design Providing Ultimate Heavy-duty Cutting Performance

AWEA in house made gear box spindle provides the best torque combination. Box way on 3 axes to fulfill reliable and stable heavy-duty cutting requirement. Precise hand scraping on key contact surfaces to ensure the best support and consistent machine accuracy.
Super Rigidity
Vertical Machining Centers

With the advanced R&D technology and strict quality control, BM series is specially made for heavy cutting machining needs, which have rigid and stable machine structure for extensive application.

BM series offers excellent performance with reasonable and affordable price.

- Depends on the different machining requirement, we provides various modular spindle combinations to achieve optimal cutting performance.
- 3 axes are equipped with box ways which is precisely grinded and throughly heat treated, especially suitable for heavy cutting.
- Highly efficient 24T arm type magazine design provides fast and reliable tool change system.
- The wide range BM series, X travel start from 850 mm to 2,500 mm; Y / Z travel start from 600 mm to 1,000 mm to meet your various machining requirements.
Super Rigidity Vertical Machining Centers

- The Finite Element Analysis (FEA) provides optimal machine design and light-weight structure advantage while ensuring super rigidity of machine.
- \( \Delta \) (Delta) Wide span column construction provides superior cutting stability. The headstock retains stable even under high speed movement.
- Based on BESSEL POINTS concept, provides the stable support on Y-axis saddle to keep in minimum deformation, thus to enhance the table dynamic accuracy.

- High precision dual-nuts ball screw provides excellent heavy cutting rigidity while ensuring machining accuracy and extend durability of ball screw.
- Three axial system are adopted with FANUC \( \alpha \) absolute AC servo motor direct drive to provide great thrust and fast acceleration / deceleration movement. Plus, it efficiently decreases motor load and reduces generation of heat while maintaining the ultimate performance and accuracy.

\( \Delta \) (Delta) Wide span column structure
Super Rigidity Vertical Machining Centers

- BM Series
  - BM-1400 super rigidity structure
  - BM-2100 / BM-2500, the table base is equipped with 6 guideways to solve over-hang problem and provide the fully support to ensure the rigidity.

- Working table with double ribbed design to enhance the structure strength, while securing the table will not deform even load heavily for a long time.

- Copper piping auto lubrication system delivers metered amounts of lubrication to the slide ways, ball screws, and vital components with ensured reliability.

- BM-2100 / BM-2500, the table base is equipped with 6 guideways to solve over-hang problem and provide the fully support to ensure the rigidity.
High Performance Spindle System

- Gear spindle combines with High-Low 2 steps gear box design to provide large torque output.
- High hardness Nickel-molybdenum-chromium alloy gear mechanism with auto lubrication and cooling system ensures the performance and lifetime of gear transmission box.
- High speed spindle and affordable belt type spindle options, which can be adapted with different kinds of spindle motor to fulfill variety of requirement.

- Spindle, spindle motor, and gear box all pass through the completely running test ensures the performance and lifetime.
All the sliding or fix surface of machine bed, column, saddle, headstock, and ball screw holder are hand scraped to provide excellent assembly precision and load distribution, ensuring long term accuracy.
BM series 24T arm type ATC system provide high speed tool exchange solution, and we also offer 30T / 40T arm type tool magazine to fulfill the variety of machining requirement.

- Standard shortcut tool change function can shorten tool change time and increase working efficiency.
- Ultra fast tool exchange system (opt.)

High Speed ATC System

24T Disc type tool magazine
Chip Disposal System

- All series are equipped with 1 / 3 / 5 screw type chip auger according to the machine size, thus to provide high chip remove efficiency.

- The optional high pressure chips flush coolant system is also available.
High Efficiency APC System

In order to lower the labor cost and meet the requirement of high speed mass production, BM850-APC adapted with four box way, combines with APC system, which provides the best produce solution for automobile industry, especially suitable for gearbox, inlet manifold, or others parts.

AWEA’s self-developed iConsole intelligent software enhancement system provides you with a user-friendly interface, real-time machine status information and diagnosis functions. It not only effectively reduces complex working process but also increases intelligent machining abilities.

Multiple Functions
- Real time operation information
- Tool list
- Work piece measurement
- M code illustration
- PLC function
- Calculator
- CNC optimize parameter (Opt.)
- Spindle thermal compensation (Opt.)

Status Display

Trouble Shooting
When the alarm appears, the program will display the breakdown cause and a troubleshooting procedure. Users can easily troubleshoot minor problems to save machine shutdown time.

Circular Work Piece Measurement
The circular work piece program can calculate the center coordinate of a work piece by measuring point A, B and C coordinates.

Rectangular Work Piece Measurement
The rectangular work piece program can calculate the center coordinate and the slant angle of a work piece by measuring point A, B, C, D and E coordinates; the calculated center coordinate can be inputted into the work piece coordinate program (G54~G59).

CNC Optimized Parameter
From rough cutting to fine machining, users can select different working modes, determine the allowable tolerance and the weight of the work piece, based on your desired working condition.

Manual Tool Length Measurement
After manually measuring the tool length, the controller will automatically calculate the tool tip position and input the data into the tool length offset table.

<table>
<thead>
<tr>
<th>Model</th>
<th>BM850-APC</th>
<th>Model</th>
<th>BM850-APC</th>
</tr>
</thead>
<tbody>
<tr>
<td>X / Y / Z axes travel</td>
<td>850 / 600 / 600 mm</td>
<td>Spindle taper</td>
<td>BT40 / BT50 (Opt.)</td>
</tr>
<tr>
<td>Table size</td>
<td>460 x 800 mm</td>
<td>Spindle motor (cont. / 30 min.)</td>
<td>7.5 / 11 kW</td>
</tr>
<tr>
<td>Table rotating range</td>
<td>180˚</td>
<td>Spindle speed</td>
<td>8,000 rpm</td>
</tr>
<tr>
<td>Repeatability for each table</td>
<td>0.01 mm</td>
<td>X / Y / Z axes rapid feed rate</td>
<td>24 / 24 / 20 m/min.</td>
</tr>
<tr>
<td>Repeatability between two tables</td>
<td>0.02 mm</td>
<td>Cutting feed rate</td>
<td>15 m/min.</td>
</tr>
<tr>
<td>Table load capacity</td>
<td>200 kg</td>
<td>Tool magazine capacity</td>
<td>24 T</td>
</tr>
</tbody>
</table>

Table size
Table rotating range
Table load capacity
### Tool Shank and Pull Stud Dimensions

<table>
<thead>
<tr>
<th>Models</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>BM-850</td>
<td>1,060</td>
<td>800</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>BM-1020</td>
<td>1,120</td>
<td>800</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>BM-1200</td>
<td>1,280</td>
<td>800</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>BM-1460</td>
<td>1,500</td>
<td>800</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>BM-1460</td>
<td>1,750</td>
<td>800</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>BM-1700</td>
<td>2,200</td>
<td>1,000</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>BM-2100</td>
<td>2,350</td>
<td>1,000</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>BM-2500</td>
<td>2,550</td>
<td>1,000</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>BM-850-APC</td>
<td>982</td>
<td>800</td>
<td>150</td>
<td>100</td>
</tr>
</tbody>
</table>

### Table Dimensions

### T-slot Dimensions

### Machine Dimensions

Specifications are subject to change without notice.
### SPECIFICATIONS

<table>
<thead>
<tr>
<th></th>
<th>BM-850</th>
<th>BM-1020</th>
<th>BM-1200</th>
<th>BM-1460</th>
</tr>
</thead>
<tbody>
<tr>
<td>X-axis travel</td>
<td>mm</td>
<td>850</td>
<td>1,020</td>
<td>1,200</td>
</tr>
<tr>
<td>Y-axis travel</td>
<td>mm</td>
<td>600</td>
<td>600</td>
<td>600</td>
</tr>
<tr>
<td>Z-axis travel</td>
<td>mm</td>
<td>600</td>
<td>600</td>
<td>600</td>
</tr>
<tr>
<td>Distance from spindle center to column</td>
<td>mm</td>
<td>680</td>
<td>680</td>
<td>680</td>
</tr>
<tr>
<td>Distance from spindle nose to table center</td>
<td>mm</td>
<td>125 ~ 725</td>
<td>125 ~ 725</td>
<td>125 ~ 725</td>
</tr>
</tbody>
</table>

### WORKING TABLE

| Table size (X direction) | mm    | 1,050   | 1,120   | 1,120   | 1,120   |
| Table size (Y direction) | mm    | 600     | 600     | 600     | 600     |
| Table load capacity (kg) |    | 850     | 1,000   | 1,000   | 1,000   |

### SPINDLE

- Spindle taper: BT40 / BT50 (Opt.)
- Spindle motor (cont. / 30 min.): kW 7.5 / 11
- Spindle speed: Belt-drive 8,000 rpm

### FEED RATE

- X / Y axes rapid feed rate: m/min. 24
- Z-axis rapid feed rate: m/min. 20
- Cutting feed rate: m/min. 1-15

### TOOL Magazine

- Tool magazine capacity: T 24
- Max. tool length: 250
- Max. tool weight (kg): 7
- Max. tool diameter / adj. pocket empty (mm): Ø 75 / Ø 150

### ACCURACY

- Positioning accuracy (JIS B 6338): ± 0.01 / Full Travel
- Positioning accuracy (VDI 3441): P ≤ 0.012
- Repeatability (JIS B 6338): ± 0.003
- Repeatability (VDI 3441): Ps ≤ 0.008

### GENERAL

- Control system: FANUC Oi- MF / 31i-MB, MITSUBISHI M80 / M800
- Pneumatic pressure requirement (kg/cm²): 6
- Power requirement (kVA): 25
- Coolant tank capacity (liter): 250
- Machine weight (kg): 6,500

### Standard Accessories

- 3 axes auto lubrication system
- 3 axes ball screw pretension
- Spindle air curtain
- Coolant nozzle around spindle
- Air blow system
- Front side chip auger
- Two sides chip auger
- Fully enclosed splash guard
- Rigid tapping
- Lubricating oil recovering system
- Heat exchanger for electrical cabinet
- Tool box
- Air gun
- Water gun
- Alarm light
- Foundation bolt kit
- Automatic power-off system

### Optional Accessories

- Arm type tool magazine
- Belt-drive spindle
- Gear spindle
- Spindle air curtain
- Fully enclosed splash guard
- Tool box
- Automatic lubrication system
- Coolant through spindle (Form A)
- Coolant through tool adapter
- HEIDENHAIN, SIEMENS controllers

### Specifications

- Specifications are subject to change without notice.

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### SPECIFICATIONS

<table>
<thead>
<tr>
<th></th>
<th>BM-1400</th>
<th>BM-1600</th>
<th>BM-1800</th>
<th>BM-2100</th>
<th>BM-2500</th>
</tr>
</thead>
<tbody>
<tr>
<td>X-axis travel</td>
<td>mm</td>
<td>1,400</td>
<td>1,400</td>
<td>1,800</td>
<td>2,100</td>
</tr>
<tr>
<td>Y-axis travel</td>
<td>mm</td>
<td>800</td>
<td>800</td>
<td>800</td>
<td>800</td>
</tr>
<tr>
<td>Z-axis travel</td>
<td>mm</td>
<td>700</td>
<td>700</td>
<td>900</td>
<td>1,000</td>
</tr>
<tr>
<td>Distance from spindle center to column</td>
<td>mm</td>
<td>900</td>
<td>900</td>
<td>1,100</td>
<td>1,100</td>
</tr>
<tr>
<td>Distance from spindle nose to table center</td>
<td>mm</td>
<td>200 ~ 900</td>
<td>200 ~ 1,000</td>
<td>200 ~ 1,000</td>
<td>200 ~ 1,200</td>
</tr>
</tbody>
</table>

### WORKING TABLE

| Table size (X direction) | mm    | 1,500   | 1,700   | 2,000   | 2,300   | 2,700   |
| Table size (Y direction) | mm    | 800     | 800     | 800     | 1,000   | 1,000   |
| Table load capacity (kg) | 1,800  | 2,000   | 2,200   | 3,000   | 4,000   |

### SPINDLE

- Spindle taper: BT50 / BT40 (Opt.)
- Spindle motor (cont. / 30 min.): kW 11 / 15
- Spindle speed: Belt-drive 6,000 rpm, Gear Spindle 6,000 rpm

### FEED RATE

- X / Y axes rapid feed rate: m/min. 20
- Z-axis rapid feed rate: m/min. 18
- Cutting feed rate: m/min. 1-12

### TOOL Magazine

- Tool magazine capacity: T 24
- Max. tool length: 250
- Max. tool weight (kg): 15
- Max. tool diameter / adj. pocket empty (mm): Ø 105 / Ø 210

### ACCURACY

- Positioning accuracy (JIS B 6338): ± 0.01 / Full Travel
- Positioning accuracy (VDI 3441): P ≤ 0.012
- Repeatability (JIS B 6338): ± 0.003
- Repeatability (VDI 3441): Ps ≤ 0.008

### GENERAL

- Control system: FANUC Oi- MF / 31i-MB, MITSUBISHI M80 / M800
- Pneumatic pressure requirement (kg/cm²): 6
- Power requirement (kVA): 40
- Coolant tank capacity (liter): 590
- Machine weight (kg): 13,000

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### Specifications

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### Standard Accessories

- 3 axes auto lubrication system
- 3 axes ball screw pretension
- Spindle air curtain
- Coolant nozzle around spindle
- Air blow system
- Front side chip auger
- Two sides chip auger
- BM-1400 ~ 2500
- Fully enclosed splash guard
- Rigid tapping
- Lubricating oil recovering system
- Heat exchanger for electrical cabinet
- Tool box
- Air gun
- Water gun
- Alarm light
- Foundation bolt kit
- Automatic power-off system
- Coolant through spindle (Form A)
- Coolant through tool adapter
- HEIDENHAIN, SIEMENS controllers
- Chips flush coolant system
- Caterpillar type chip conveyor & bucket
- Scraper type chip conveyor
- Transformer
- Oil skimmer
- Coolant through the tool adapter
- Data server

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### Optional Accessories

- Arm type tool magazine
- Direct driven spindle
- Belt-drive spindle
- Gear spindle
- Spindle air curtain
- Fully enclosed splash guard
- Tool box
- Automatic lubrication system
- Coolant through spindle (Form A)
- Coolant through tool adapter
- HEIDENHAIN, SIEMENS controllers

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