CNC Vertical Boring & Turning Mills

VTB/VTC Series

- VTB-100T/100/125/125E/160/160E
- VTC-100/125/125E/140/140E/160/160E
High Quality Cast Iron Constructions
The column, cross rail, bed, saddle, and table are constructed of high quality Meehanite cast iron. These main components are densely ribbed, thick walled, and fully stress relieved for long lasting accuracy.

Guide Ways
The wide box type guide ways are induction-hardened and precision-ground. Mating surfaces of the sliding components are coated with fluroplastic resin and are hand scraped for perfect fit. Fully automatic metered lubrication system provided.

High Powered Table
The 60HP maintenance free Fanuc AC spindle motor and two gear ranges produce high table torque. Transmission of this enormous power is accomplished by the use of induction hardened and precision ground heavy duty gears and shafts of special alloy steel. Helical gears are used for their smooth and efficient power transmission characteristics. Extremely heavy table loads and full horse power cuts are attained by the use of extra large diameter high precision thrust roller bearing and tapered roller bearings. Forced lubrication system provided.

Elevating Cross Rail (VTB/VTC-E)
Vertical positioning of this massive cross rail is hydraulically powered. Positioning accuracy is assured by automatically actuated precision pins and 37.4 tons of hydraulic clamping force.

Ram
The extra large heavy duty ram, induction-hardened and precision-ground, is made of spheroidal graphite iron. Spheroidal-graphite-iron is used for unsurpassed rigidity and dampening characteristics. This hydraulically counter balanced ram is encased in the robust saddle to permit heavy duty machining. Ram sliding surfaces of the saddle are coated with fluroplastic resin.

Automatic Tool Changer
The standard 12 tool capacity(24 tools for model VTC) automatic tool changer system and a wide variety of available tooling enable uninterrupted fully automatic machining possible. This rigidly constructed carousel type tool changer features high speed random indexing and is capable of safely handling tools of up to 110 pounds.

Axis Drives
Each axis is driven by a high precision ballscrew and is powered by a high touque, maintenance free Fanuc digital AC servo motor. Ballscrews are supported on both ends by high precision bearings. The optional X axis linear scale feed back system combined with double anchor pretensioned design assures outstanding machining accuracy and repeatability. Rapid traverse rate of both X & Z axes is 12 m/min(480 ipm).

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VTB/VTC Series
100T/100/125/140/160(E)

Heavy Duty, High Precision, Vertical Boring and Turning Mills
Designed to Deliver Superior Performance

<table>
<thead>
<tr>
<th>Model</th>
<th>VTB/VTC</th>
</tr>
</thead>
<tbody>
<tr>
<td>D(Table dia.)</td>
<td>1000</td>
</tr>
<tr>
<td>S(Ram stroke)</td>
<td>800</td>
</tr>
<tr>
<td>H</td>
<td>950</td>
</tr>
<tr>
<td>Ind.chuck</td>
<td></td>
</tr>
<tr>
<td>Hyd.chuck</td>
<td></td>
</tr>
</tbody>
</table>

※Ind: Independent, Hyd: Hydraulic

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Ram Head Cutting Capability

Machining Range
Crossrail
Column
Table
Saddle
Ram
Bed

Machine Construction

- Turning
- Face milling
- End milling
- Drilling
The saddle enclosing the ram is one-piece casting to keep the high rigidity.

Huge 220mm (8.66") square spheroidal graphite iron ram, hardened and ground, is enclosed in the heavily ribbed saddle and is hydraulically counter balanced.

Low friction fluroplastic resin bonded to the ram sliding surfaces of the saddle minimizes friction.

Model VTC has milling spindle with high-speed that involves drilling, milling, and tapping.

Pull stud tool mounting and dismounting way of machining center type (P50T).

Automatic metered lubrication system ensures lasting accuracy.

Tool fall-safety device assures safe operation.

Heavy duty table and large diameter high precision spindle bearings guarantee heavy loads and heavy and precision machining.

Heavy duty 4-jaw independent chuck is standard (max. clamping force: 4 metric tons). Hydraulic power chuck and automatic pallet changer system are available.

The main spindle and drive gears are made of special alloy steel. They are induction hardened, fully stress relieved, and then precision ground for maximum performance.

The power is transmitted to the table through the automatically shifted two speed gear box which generates enough speed and torque to satisfy wide spectrum of most demanding machining requirements.

Helical gears are used of their smooth and efficient power transmission characteristics.

High-accurate table index by C-axis control: 0.001° on model VTC.

Forced lubrication system provided.
VTB/VTC Series Line-up

VTB-100T

VTB(C)-100

VTB(C) Series

VTB(C)-E Series

VTB-V Series

VTB(C)-APC
## Machine Specifications

### Items

<table>
<thead>
<tr>
<th>Items</th>
<th>Unit</th>
<th>VTB/VTC</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>100T</td>
</tr>
<tr>
<td>Max. turning diameter</td>
<td>mm(inch)</td>
<td>1250(49.2)</td>
</tr>
<tr>
<td>Max. turning height</td>
<td>mm(inch)</td>
<td>800(31.5)</td>
</tr>
<tr>
<td>Max. torque</td>
<td>kglf/(ft-lbs)</td>
<td>1225(8860)</td>
</tr>
<tr>
<td>Max. cutting force</td>
<td>kglf(lbs)</td>
<td>2000(4410)</td>
</tr>
<tr>
<td>Max. workpiece weight</td>
<td>kg(lbs)</td>
<td>4000(8820)</td>
</tr>
<tr>
<td>Table diameter</td>
<td>mm(inch)</td>
<td>1000(39.4)</td>
</tr>
<tr>
<td>Table speeds</td>
<td>rpm</td>
<td>1.1~450</td>
</tr>
<tr>
<td>Table speed range</td>
<td>rpm</td>
<td>Auto, 2-step</td>
</tr>
<tr>
<td>Min. index angle</td>
<td>deg.</td>
<td>0.001</td>
</tr>
<tr>
<td>Cutting feedrate</td>
<td>deg/min</td>
<td>0~1200</td>
</tr>
<tr>
<td>Max. speed</td>
<td>rpm</td>
<td>3.333</td>
</tr>
<tr>
<td>Tool size</td>
<td>mm(inch)</td>
<td>1250(49.2)</td>
</tr>
<tr>
<td>Spindle taper</td>
<td>-</td>
<td>ISO 724 No.50</td>
</tr>
<tr>
<td>Mill spindle speeds</td>
<td>rpm</td>
<td>30~3000</td>
</tr>
<tr>
<td>Max. mill spindle torque</td>
<td>kglf/(ft-lbs)</td>
<td>-</td>
</tr>
<tr>
<td>Ram cross section</td>
<td>mm(inch)</td>
<td>220×220(8.66×8.66)</td>
</tr>
<tr>
<td>X-axis travel(Saddle horizontal)</td>
<td>mm(inch)</td>
<td>1390(55)</td>
</tr>
<tr>
<td>Z-axis travel(Ram Vertical)</td>
<td>mm(inch)</td>
<td>800(31.5)</td>
</tr>
<tr>
<td>Vertical travel of cross rail</td>
<td>mm(inch)</td>
<td>-</td>
</tr>
<tr>
<td>X/Z-axis cutting feedrate</td>
<td>mm/min(ipm)</td>
<td>Max.2000(78.7)</td>
</tr>
<tr>
<td>X/Z-axis rapid traverse</td>
<td>mm/min(ipm)</td>
<td>7500(295)</td>
</tr>
<tr>
<td>Cross rail rapid traverse</td>
<td>mm/min(ipm)</td>
<td>-</td>
</tr>
<tr>
<td>Type of tool holder</td>
<td>-</td>
<td>MAS BT50</td>
</tr>
<tr>
<td>Tool magazine capacity</td>
<td>VTB</td>
<td>Turning 6-tool: VTB-100T, Turning 12-tool: VTB-100/125/140/160</td>
</tr>
<tr>
<td></td>
<td>VTC</td>
<td>24-tool(Turning 12, Milling 12): VTC-125/140/160</td>
</tr>
<tr>
<td>Max. tool weight</td>
<td>kg(lbs)</td>
<td>50(110)</td>
</tr>
<tr>
<td>Type of pull stud</td>
<td>-</td>
<td>P50T~1</td>
</tr>
<tr>
<td>Table motor</td>
<td>kW(HP)</td>
<td>AC 37/30(50/40)</td>
</tr>
<tr>
<td>Mill spindle motor</td>
<td>(30min/cont.)</td>
<td>-</td>
</tr>
<tr>
<td>C-axis motor</td>
<td>kW(HP)</td>
<td>AC 4(5.3)</td>
</tr>
<tr>
<td>X/Z-axis servo motor</td>
<td>kW(HP)</td>
<td>AC 4(5.3)</td>
</tr>
<tr>
<td>Input power supply</td>
<td>-</td>
<td>AC 200/220V ±10%, 50/60Hz ±1%</td>
</tr>
<tr>
<td>Power capacity(VTB/VTC)</td>
<td>kVA</td>
<td>65/70</td>
</tr>
<tr>
<td>Height</td>
<td>mm(inch)</td>
<td>4505(159)</td>
</tr>
<tr>
<td>Floor space(L×W)</td>
<td>mm(inch)</td>
<td>4685×3865(184×153)</td>
</tr>
<tr>
<td>Weight</td>
<td>kg(lbs)</td>
<td>2850 (62800)</td>
</tr>
</tbody>
</table>

### Standard Accessories

- CNC controller, Fanuc 21i-TB
- AC table and servo drives and motor
- Heavy duty 4-jaw independent chuck
- Automatic tool changer(ATEC device 12/24 set)
- Table lubrication cooling system
- Hydraulic power unit
- Automatic lubrication system for guides
- Coolant system
- Through tool coolant
- Through spindle coolant(only VTC)
- C-axis scale(only VTC)
- Speed reducer(X/Z-axis)
- Splash guard
- X-axis telescopic steel cover
- NC power off
- Work light
- Warning light(RED, YELLOW, GREEN)
- Levelling block
- Foundation bolt & nut
- Operating tool box & tool kits

### Optional Accessories

- Automatic pallet changer(2-pallet/3-station)
- Hydraulic chucks
- Automatic index chucks(for large valve machining)
- Tool setter
- Work probe
- Linear scale feedback(X-axis & Z-axis)
- Chip conveyor
- Transformer
- Tool holders
FANUC 21i-TB Control Features

- Simultaneously controllable axes: 2
- Minimum programmable increment: 0.001mm (0.0001")
- Tape storage length: 160m (520 feet)
- Registerable programs: 63
- Backlash compensation
- Pitch error compensation
- Constant surface speed control
- Self diagnostic functions

Programming Features

- Circular interpolation by radius designation
- Tool nose radius compensation (G40-G42)
- Combined use of absolute/incremental command
- Inch/metric programming
- Chamfering, corner R
- Multiple repetitive cycles (G70-G76)
- canned cycles (G90, G92, G94)
- Decimal point programming
- Reference point return (G27-G30)
- Sub-program 4 holds nested
- Custom macro B

Operation Features

- 10.4" color LCD
- Absolute position encoders
- (no zero return required)
- Geometry and wear offsets
- 16 pairs of tool offsets
- Run hour display
- Automatic tool offset value measured
- Input/output interface (RS232C)
- Keyboard type manual data input
  (MDI full key)
- Program protect key
- Incremental offset
- Rapid traverse override
- Feed rate override
- Spindle speed override
- Tape code: EIA, ISO automatic recognition

Standard CNC Control Features

- Automatic Tool Changer Tool Setter
- Work Probe
- Automatic Pallet Changer (2 pallets)
- Hydraulic Chuck
- Automatic Index Chuck (for machining large valve)
- Automatic Index Chuck (for machining small valve)
- Electrical V-6 Turret (VTB-100T only)

Accessories & Special Applications
Tool Holders (Option)

**Square tool holder**

- **Model**: TA12B41000-0060
  - A: 160
  - B: 100
  - H: 306.8
  - Tool Size: 32

- **Model**: TA12B41000-0061
  - A: 200
  - B: 140
  - H: 346.8
  - Tool Size: 32

- **Model**: TA12B41000-0062
  - A: 250
  - B: 190
  - H: 396.8
  - Tool Size: 32

**Boring tool holder (BA type)**

- **Model**: TA12B41000-5040
  - A: 200
  - B: 356.8
  - Tool Size: 110

- **Model**: TA12B41000-5041
  - A: 250
  - B: 396.8
  - Tool Size: 110

- **Model**: TA12B41000-5042
  - A: 300
  - B: 446.8
  - Tool Size: 110

- **Model**: TA12B41000-5043
  - A: 350
  - B: 496.8
  - Tool Size: 110

**Square tool holder (Through tool coolant)**

- **Model**: TA12C41000-0160
  - A: 160
  - B: 100
  - H: 306.8
  - Tool Size: 32

- **Model**: TA12C41000-0161
  - A: 200
  - B: 140
  - H: 346.8
  - Tool Size: 32

- **Model**: TA12C41000-0162
  - A: 250
  - B: 190
  - H: 396.8
  - Tool Size: 32

**Boring tool holder (BP type)**

- **Model**: TA12B41000-5140
  - A: 200
  - B: 356.8
  - Tool Size: 110

- **Model**: TA12B41000-5141
  - A: 250
  - B: 396.8
  - Tool Size: 110

- **Model**: TA12B41000-5142
  - A: 300
  - B: 446.8
  - Tool Size: 110

- **Model**: TA12B41000-5143
  - A: 350
  - B: 496.8
  - Tool Size: 110

**Side lock holder**

- **Model**: TA12B41000-5240
  - A: 200
  - B: 356.8
  - D: Ø55
  - Tool Size: 25

- **Model**: TA12B41000-5241
  - A: 250
  - B: 396.8
  - D: Ø62
  - Tool Size: 32

- **Model**: TA12B41000-5242
  - A: 300
  - B: 446.8
  - D: Ø70
  - Tool Size: 40

- **Model**: TA12B41000-5243
  - A: 350
  - B: 496.8
  - D: Ø90
  - Tool Size: 50

**Boring tool holder (BF type)**

- **Model**: TA12B41000-5250
  - A: 200
  - B: 356.8
  - D: Ø55
  - Tool Size: 25

- **Model**: TA12B41000-5251
  - A: 250
  - B: 396.8
  - D: Ø62
  - Tool Size: 32

- **Model**: TA12B41000-5252
  - A: 300
  - B: 446.8
  - D: Ø70
  - Tool Size: 40

- **Model**: TA12B41000-5253
  - A: 350
  - B: 496.8
  - D: Ø90
  - Tool Size: 50

**Morse taper holder (MS type)**

- **Model**: TA12B41000-5550
  - A: 240
  - B: 356.8
  - Tool Size: MT No.5

- **Model**: TA12B41000-5560
  - A: 290
  - B: 496.8
  - Tool Size: MT No.6

[Image: Hankook Machine Tools]