5-Axis Vertical Machining Centers

UNIVERSAL CENTER MU-V series

MU-5000V/MU-6300V/MU-8000V
5-Axis Vertical Machining Centers

Innovations in volumetric accuracy
- Highly rigid trunnion table supports high accuracy and quality
- High accuracy maintained over long times with synergistic effect of Okuma Intelligent Technology

A 5-axis machine that really cuts
- Face milling: 504 cm³/min
- End milling: 672 cm³/min
- Process-intensive machining with turning
  - Turning: 3 mm²

The value of good visibility and operability required in 5-axis machining
- Superb operator access to the machining chamber
- Even with long travel and large workpieces, machining with space to spare
- Tools can be changed even with the trunnion table swung out

The MU-V series—Changing perceptions of what a 5-axis machine can do

Machining accuracy and capacity similar to 3-axis machines is achieved with a machine design that utilizes “M-E-I-K”.

The MU-V series combines the above with ease of use and has changed the way people think about 5-axis machines.

* The merging of Mechanics - Electronics - Information (IT) - Knowledge (Creation) technologies, only Okuma can provide, as Your Single Source for Machine & Control.

Photos used in this brochure include optional equipment.
High-accuracy machines that go beyond normal expectations of a 5-axis machine

Next generation of 5-axis machining centers bring innovations to volumetric accuracy in 5-axis machining

Highly rigid trunnion table supports high-accuracy 5-axis machining

- The indexing accuracies that take 5-axis machining to higher accuracies (MU-5000V Actual data)
  - Indexing accuracy
    - A-axis indexing accuracy/indexing return accuracy: ±0.68 sec/±0.40 sec
    - C-axis indexing accuracy/indexing return accuracy: ±0.78 sec/±0.14 sec
  - Fast operation
    - A-axis/C-axis 90° clamp/unclamp indexing time: 1.0 sec/1.2 sec

- High quality machined surfaces with the high following of 5-axis machining
  - Highly rigid trunnion table supports both ends
  - With ball-screw cooling (Std), reduced following error is achieved while maintaining highly accurate machining.

Maximized machining accuracies

Gauging and compensation of geometric error

5-Axis Auto Tuning System *(Optional)*

- Automatic tuning for geometric error is quick, easy, and can be done by anyone
  - Automatic tuning of a total of 11 different kinds of geometric error, including spindle misalignment and inclination
  - The accuracy of 5-axis machines is measured in less than 10 minutes to draw out maximum performance.

[Examples of geometric error]

- A-axis misalignment in Y-axis direction
- Perpendicularity of C and Y axis
- Perpendicularity of Z and X axis

High accuracy maintained over long times in 5-axis machining

The unique approach of “accepting temperature changes”

Thermo-Friendly Concept

- 5-Axis Auto Tuning System accuracy maintained
  - Accuracy changes due to changes in ambient temperature or spindle heat are minimized. When the 5-Axis Auto Tuning System is also used, a synergistic effect is achieved with the two Intelligent Technologies and high accuracy is maintained in 5-axis machining even when the environmental temperature changes.

Note: The data mentioned in this brochure are “actual data” and do not represent guaranteed accuracies.

Thermo-Friendly Concept

- With ball-screw cooling (Std), reduced following error is achieved while maintaining highly accurate machining.

MU-5000V thermal deformation over time (Actual data)

- Room temp [˚C]: 16, 20, 24
- Time [h]: 20, 24, 28

- X axis: 7 µm
- Y axis: 5 µm
- Z axis: 7 µm

- X axis: 45˚
- Y axis: 45˚
A 5-axis machine that really cuts

Beyond the limits of conventional 5-axis machining
Highly efficient machining with amazing machining capacity

Face milling capacity: 504 cm³/min (S45C)
- ø80 face mill 8 blade (coating)
  - Spindle speed: 895 min⁻¹
  - Cutting speed: 225 m/min
  - Feedrate: 2,250 mm/min
  - Cut width x infeed: 56 × 4 mm

End milling capacity: 672 cm³/min (S45C)
- ø20 roughing end mill 7 blade (carbide)
  - Spindle speed: 4,000 min⁻¹
  - Cutting speed: 251 m/min
  - Feedrate: 4,800 mm/min [2,800 mm/min]
  - Cut width x infeed: 7 × 20 mm [12 × 20 mm]

Turning capacity: 3 mm² (S45C)
- Machining dia: ø164 mm [ø250 mm]
  - Cutting speed: 130 m/min (table rotation: 252 min⁻¹)
  - Feedrate: 0.6 mm/rev
  - Infeed: 5 mm

Note: The above are actual examples. Your results may vary due to differences in specifications, tooling and cutting conditions.

Intelligent technologies draw out maximum machine and tool capabilities

Cutting condition search for milling
Machining Navi M-i, M-g II+ (Optional)

- Automatically changes to optimum spindle speed (M-i)
  Built-in sensors measure chatter vibration and the machine automatically changes to the best spindle speed.

- Adjust cutting conditions while monitoring the data (M-g II+)
  Navigates effective measures by detecting and analyzing machining chatter with a microphone attached to the machine.

Eliminate chatter with Machining Navi
Machining Navi OFF Machining Navi ON
w/ chatter w/o chatter
Get a real sense of the good visibility and operability demanded in 5-axis machining

Superb operator access to the machining chamber

- Structure allows easy tool edge confirmation during setup and machining
- Best table, spindle, and operation panel layout in terms of operability
- Large step platform for easy working
- Operating stress reduced with large platform so that operator does not have to worry about footing
- Large window for good visibility in machining compartment

Large machining range; tools can be changed with trunnion still in swing position

The tool reaches the end of the workpiece even with the table at various inclination angles, enabling wide-range 5-axis machining. Tools can be changed with the trunnion still in a swing position, leading to reduced cycle times and higher machining accuracies.

Even the largest workpieces are machined with capacity to spare

Even the largest workpieces are machined with capacity to spare

Visibility of the cutting edge at the time of cutting also excellent

Process-intensive machining and high-accuracy 1-chuck machining achieved with multitasking in which turning can also be done

MU-5000V-L

- Turning spindle
  - Table spindle speed: 1,000 min\(^{-1}\)
  - Max output: 17/13 kW (15 min/cont)
  - Max torque: 621/477 N·m (15 min/cont)

MU-6300V-L, MU-8000V-L

- Turning spindle
  - Table spindle speed: 800 min\(^{-1}\)
  - Max output: 16/12 kW (15 min/cont)
  - Max torque: 1,019/764 N·m (15 min/cont)
Productivity can be further improved with a wide array of automation options

**Flexible automation options**

- **ATC magazines**
  - 48 tools, 64 tools: Chain magazine system
  - Over 64 tools: Matrix magazine system

- **Auto pallet changer (APC)**
  - External setup of workpiece preparations improve machine utilization
  - Good access to machine interior even with APC specs
  - Turning specs can also be selected

- **Extra ports for complex hydraulic/ pneumatic fixture arrangements**
  - Max ports: 8 ports* (Optional)

- **Auto tool gauging with workpiece mounted**
  - Gauge
  - Tool breakage detection/ Auto tool length compensation

- **Automatically measures workpiece alignment and dimensions**
  - Interface
  - Auto zero offset / Auto gauging (radio transmission)

**Safe, reliable chip discharge**

**Excellent chip discharge**

- Quick and smooth chip discharge with saddle-mounted washer and in-machine coil chip conveyor

- Safe, reliable chip discharge

- **Recommended Chip Conveyors**

  (Please contact an Okuma sales representative for details.)

<table>
<thead>
<tr>
<th>Workpiece material</th>
<th>Steel</th>
<th>FC</th>
<th>Aluminum / Nonferrous</th>
<th>Mixed (general use)</th>
</tr>
</thead>
<tbody>
<tr>
<td>In-machine</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coil (Standard)</td>
<td>○</td>
<td>○</td>
<td></td>
<td>○</td>
</tr>
<tr>
<td>Hinge</td>
<td>○</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Scraper</td>
<td>—</td>
<td>—</td>
<td>○ (Dry)</td>
<td>—</td>
</tr>
<tr>
<td>Scraper (with drum filter)</td>
<td>—</td>
<td>—</td>
<td>○ Wall with magnet</td>
<td>—</td>
</tr>
<tr>
<td>Hinge + scraper (with drum filter)</td>
<td>△ 1</td>
<td>△ 1</td>
<td>△ Wall with magnet</td>
<td>△ 3</td>
</tr>
<tr>
<td>Off-machine</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Optional)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coil (Standard)</td>
<td>○</td>
<td>○</td>
<td></td>
<td>○</td>
</tr>
<tr>
<td>Hinge</td>
<td>○</td>
<td>—</td>
<td>—</td>
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</tr>
<tr>
<td>Scraper</td>
<td>—</td>
<td>—</td>
<td>○ (Dry)</td>
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<td>—</td>
<td>○ Wall with magnet</td>
<td>—</td>
</tr>
<tr>
<td>Hinge + scraper (with drum filter)</td>
<td>△ 1</td>
<td>△ 1</td>
<td>△ Wall with magnet</td>
<td>△ 3</td>
</tr>
</tbody>
</table>

*1. When there are many fine chips  
*2. When chips are longer than 100 mm  
*3. When chips are shorter than 100 mm  
*4. When there are few fine chips

**Recommended Chip Conveyors**

(Photographed without front covers)

- In-machine chip discharge (coil) (Standard)
- Off-machine chip discharge (lift-up chip conveyor) (Optional)

*Different for turning specifications and APC specifications.
Thermo Active Stabilizer—Spindle (TAS-S)
Thermo Active Stabilizer—Construction (TAS-C)

and feed axis positioning information.

characteristics, temperature data from properly placed sensors, controls the machine’s structural thermal deformation; by taking

■ The TAS-C environmental thermal deformation control accurately

benefits from auxiliary equipment stopped with ECO Idling

auxiliaries on the OSP operation screen. The energy-saving

Power is shown individually for spindle, feed axes, and

needed and cooler idling is stopped with no loss to accuracy.

Intelligent energy-saving function with the Thermo-Friendly

Thermo-Friendly Concept

■ Thermo-friendly structure gives outstanding thermal stability

1. Minimal thermal deformation
2. Manageable thermal deformation
3. Accurate compensation

Thermo Active Stabilizer—Construction (TAS-C)
Thermo Active Stabilizer—Spindle (TAS-S)

Machining dimensional change over time minimized with outstanding dimensional stability

High dimensional stability

■ TAS-C (Thermo Active Stabilizer—Construction) (Optional)
The TAS-C environmental thermal deformation control accurately controls the machine’s structural thermal deformation; by taking into consideration the machine’s thermal deformation characteristics, temperature data from properly placed sensors, and feed axis positioning information.

Machine tool idling stop
ECO Idling Stop

Only the necessary units run

ECO suite benefits
Electricity consumption during non-machining time greatly reduced with “ECO Idling Stop”, which shuts down each piece of auxiliary equipment not in use.

ECO suite provides a suite of energy-saving functions that can be used on machines
* “ECO Idling Stop” for operation of necessary units only
* “ECO Power Monitor” for visual graphics of power
* Intermittent/continuous operation of chip conveyor and mist collector during operation — “ECO Operation” (Optional)
* Energy-saving hydraulic unit using servo control technology — “ECO Hydraulics” (Optional)

Gauging and compensation of geometric error
5-Axis Auto Tuning System (Optional)

■ Higher accuracies in 5-axis machining

5-axis machining accuracy is greatly affected by misalignment and other “geometric errors” on the rotary axis. The 5-Axis Auto Tuning System measures geometric error using a touch probe and datum sphere, and performs compensation using measurement results to tune the movement accuracy on 5-axis machines. In this way 5-axis machining accuracy on a higher level is achieved.

Quick and easy tuning by anyone
Previously, manual measurements of the indexing center were bothersome and time-consuming, but with the 5-Axis Auto Tuning System the measurements are made automatically by the machine. Measurements can therefore be done with stable accuracy in a short time by anyone. (Up to 11 geometric errors tuned automatically.) In addition, the results of tuning are applied regardless of whether the operation in auto, manual, or MDI and whether Tool Center Point Control is on or off. Setup and machining can therefore be done with the same operations as before.

Cutting condition search for milling
Machining Navi M-i, M-g, M-I (Optional)

Automatically changes to optimum spindle speed (M-i)
Sensors built in to the machine detect and analyze machining chatter. Machining Navi then navigates to the effective measures in a wide range of spindle speeds, from low to high.

■ Adjust cutting conditions while monitoring the data
(M-g, M-I)
Based on the chatter noise captured by the microphone, Machining Navi displays a number of optimal spindle speed possibilities on the screen. The operator can change to the indicated spindle speed with a single touch and immediately confirm the result.

Collision prevention
Collision Avoidance System (Optional)

■ World’s first “Collision-Free Machine”
GAS prevents collisions in automatic or manual mode, providing risk-free protection for the machine and great confidence for the operator.

ECO suite

Press START MEASURE key and cycle start button

Machine startup
Machining restart
Room temp restart

ECO Idling Stop

Accuracy around, cooler off
ECO Idling Stop

Intelligent energy-saving function with the Thermo-Friendly Concept. The machine itself determines whether or not cooling is needed and cooler idling is stopped with no loss to accuracy. (Standard application on machines with Thermo-Active Stabilizer—Spindle)

On-the-spot check of energy savings
ECO Power Monitor

Power is shown individually for spindle, feed axes, and auxiliaries on the OSP operation screen. The energy-saving benefits from auxiliary equipment stopped with ECO Idling Stop can be confirmed on the spot.
Achieves long term accuracy and surface quality

**SERVO NAVI AI (Automatic Identification)**
- Cycle time shortened with faster acceleration
- Work Weight Auto Setting

On table travel type machining centers, the table feed acceleration with the previous system was the same regardless of weight, such as workpieces and fixtures loaded on the table. Work Weight Auto Setting estimates the weight of the workpiece and fixture on the table and automatically sets servo parameters, including acceleration, to the optimum values. Cycle times are shortened with no changes to machining accuracy.

**Dynamic Tool Load Control (Optional)**
Prevents chipping, extends tool life

When machining of difficult-to-cut material, chipping from blade runout often occurs with insert-type end mills. To stabilize such machining, solid end mills with high tool costs have generally been used. Dynamic Tool Load Control gives uniform cutting force with advanced synchronization of spindle phase and feed rate to control insert-end mill chipping. This improves tool life and stabilizes machining. Switching from expensive solid tools also leads to reduced tool costs.

**SERVO NAVI SF (Surface Fine-tuning)**
- Maintains machining accuracy and surface quality
- Reversal Spike Auto Adjustment

Slide resistance changes with length of time machine tools are utilized, and discrepancies occur with the servo parameters that were the best when the machine was first installed. This may produce crease marks at motion reversals and affect machining quality (part surface quality). SERVO NAVI’s Reversal Spike Auto Adjustment maintains machining accuracy by switching servo parameters to the optimum values matched to changes in slide resistance.

**Vibration Auto Adjustment**
When machining changes machine performance, noise, vibration, crease marks, or fish scales may appear. Vibration Auto Adjustment can quickly eliminate noise and vibration even from machines with years of operation.

With simultaneous 5-axis control that produces excellent machined surface quality

**Simultaneous 5-axis kit makes it even easier**
Because “Machine & Control” OSP provides advanced features

- **High Speed Contouring**
  - **Super-NURBS (5-axis specs)** (Optional)
  - High speed NC function for high accuracy, high quality, and high speed machining of curved surfaces of any shape with newly-developed “sculptured-surface adaptive acceleration control.”

- **Tool center point control**
  - **Manual feed (Optional)**
  - This feature will provide rotary operation with a tool point as the center when operating the rotary axes manually. When the table is swiveled, axis movement will occur with no change in the tool position on the workpiece.

- **Table origin coordinate**
  - **Manual feed (Optional)**
  - A feature to perform X-Y-Z-axis manual feed (rapid traverse, cutting feed, pulse handle) when origin coordinate systems shift on a swiveling table.

- **Tool center point control** (Optional)
  - Function controls the path of the tool tip with respect to the workpiece on each axis so that the tool tip trajectory is linear with the axis travel command including the A, B, and C axes.
  - In the case of simultaneous Y-axis and A-axis commands with the linear command (G01), the tool path is a straight line when viewed from the workpiece.

- **Tool tilt compensation**
  - **(Included in Tool Center Point Control)**
  - The tool angle on a workpiece (tool tilt) in 5-axis machining will change on a waving surface. CAM processing errors will cause the tool to stagger with unnecessary accel /decel and reverse angles during axis feed. Simul 5-Axis TTC will keep feedrates steady with a smooth sequence of commands to automatically correct tool tilt angles—resulting in shorter cycle times and smoother surface finishes.

Note: The above are actual examples. Your results may vary due to differences in specifications, tooling and cutting conditions.
# Machine specifications

<table>
<thead>
<tr>
<th>Item</th>
<th>MU-5000V &lt;L2&gt;</th>
<th>MU-6000V &lt;L2&gt;</th>
<th>MU-8000V &lt;L2&gt;</th>
<th>MU-9000V &lt;L2&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Trains</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>X axis (table L/R)</td>
<td>mm (in.)</td>
<td>800 (31.50)</td>
<td>925 (36.40)</td>
<td>925 (36.40)</td>
</tr>
<tr>
<td>Y axis (spindle saddle front / back)</td>
<td>mm (in.)</td>
<td>1,050 (41.34)</td>
<td>1,050 (41.34)</td>
<td>1,050 (41.34)</td>
</tr>
<tr>
<td>Z axis (spindle ram vertical)</td>
<td>mm (in.)</td>
<td>600 (23.62)</td>
<td>600 (23.62)</td>
<td>600 (23.62)</td>
</tr>
<tr>
<td>A axis (trunnion swivel)</td>
<td>deg</td>
<td>+90 to -120</td>
<td>+90 to -120</td>
<td>+90 to -120</td>
</tr>
<tr>
<td>C axis (table swivel)</td>
<td>deg</td>
<td>360 (infinite)</td>
<td>360 (infinite)</td>
<td>360 (infinite)</td>
</tr>
<tr>
<td>Table surface to spindle nose</td>
<td>mm (in.)</td>
<td>80 to 880 (3.15 to 26.77)</td>
<td>160 to 768 (6.30 to 29.92)</td>
<td>200 to 800 (7.87 to 31.50)</td>
</tr>
<tr>
<td>Table size</td>
<td>mm (in.)</td>
<td>ø900 × H500 (ø3.54 × H19.69)</td>
<td>ø1,050 × H500 (ø3.18 × H19.69)</td>
<td>ø1,200 × H500 (ø3.94 × H19.69)</td>
</tr>
<tr>
<td>Max work size</td>
<td>mm (in.)</td>
<td>ø90/ø125 (ø3.54/ø4.92)</td>
<td>ø100/ø152 (ø3.94/ø5.98)</td>
<td>ø100/ø152 (ø3.94/ø5.98)</td>
</tr>
<tr>
<td>Table to table top</td>
<td>mm (in.)</td>
<td>1,140 (44.88)</td>
<td>1,150 (45.28)</td>
<td>1,210 (47.64)</td>
</tr>
<tr>
<td>Max load capacity*</td>
<td>kg (lb)</td>
<td>500 (1,100)</td>
<td>600 (1,320)</td>
<td>700 (1,540)</td>
</tr>
<tr>
<td>Spindle speed (rpm)</td>
<td></td>
<td>&lt;1,000</td>
<td>&lt;800</td>
<td>&lt;800</td>
</tr>
<tr>
<td>Spindle speed</td>
<td>min⁻¹</td>
<td>10,000 [15,000, 20,000, 25,000]</td>
<td>6,000 [12,000]</td>
<td>10,000 [15,000, 20,000, 25,000]</td>
</tr>
<tr>
<td>Taper bore</td>
<td>7/24 taper No.40 &lt;HSK-A63&gt;</td>
<td>7/24 taper No.50 &lt;HSK-A100&gt;</td>
<td>7/24 taper No.50 &lt;HSK-A100&gt;</td>
<td>7/24 taper No.50 &lt;HSK-A100&gt;</td>
</tr>
<tr>
<td>No. of spindle ranges</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bearing dia</td>
<td>mm (in.)</td>
<td>ø70 (2.76)</td>
<td>ø80 (3.15)</td>
<td>ø80 (3.15)</td>
</tr>
<tr>
<td>Feed</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rapid traverse</td>
<td>m/min (ipm)</td>
<td>A: 18,000 (50 min⁻¹)</td>
<td>C: 18,000 (50 min⁻¹)</td>
<td>A: 10,800 (30 min⁻¹)</td>
</tr>
<tr>
<td>Rapid traverse</td>
<td>degree/min</td>
<td>A: 18,000 (50 min⁻¹)</td>
<td>C: 18,000 (50 min⁻¹)</td>
<td>A: 10,800 (30 min⁻¹)</td>
</tr>
<tr>
<td>Cutting feedrate</td>
<td>mm/min (ipm)</td>
<td>X-Y-Z: 1 to 50,000</td>
<td>X-Y-Z: 1 to 50,000</td>
<td>X-Y-Z: 1 to 50,000</td>
</tr>
<tr>
<td>Motors</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spindle (10 min/cont)</td>
<td>kW (hp)</td>
<td>11/7.5 (15/10) [22/18.5 (30/25)]</td>
<td>11/7.5 (15/10) [22/18.5 (30/25)]</td>
<td>11/7.5 (15/10) [22/18.5 (30/25)]</td>
</tr>
<tr>
<td>Feed axis</td>
<td>kW (hp)</td>
<td>X: 5.2 (6.9), Y: 3.5 (4.7), Z: 3.5 (4.7)</td>
<td>X: 5.2 (6.9), Y: 3.5 (4.7), Z: 3.5 (4.7)</td>
<td>X: 5.2 (6.9), Y: 3.5 (4.7), Z: 3.5 (4.7)</td>
</tr>
<tr>
<td>ATC</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tool selection</td>
<td>Memory random (matrix magazine is fixed address system)</td>
<td>Memory random (matrix magazine is fixed address system)</td>
<td>Memory random (matrix magazine is fixed address system)</td>
<td></td>
</tr>
<tr>
<td>Pull stud</td>
<td>MAS2 &lt;— &gt;</td>
<td>MAS2 &lt;— &gt;</td>
<td>MAS2 &lt;— &gt;</td>
<td></td>
</tr>
<tr>
<td>Max tool dia (adjacent / w/o adjacent)</td>
<td>mm (in.)</td>
<td>ø60/ø125 (ø3.15/ø4.92)</td>
<td>ø80/ø152 (ø3.15/ø5.98)</td>
<td>ø80/ø152 (ø3.15/ø5.98)</td>
</tr>
<tr>
<td>Max tool length</td>
<td>mm (in.)</td>
<td>400 (15.75)</td>
<td>400 (15.75)</td>
<td>400 (15.75)</td>
</tr>
<tr>
<td>Max tool weight</td>
<td>kg (lb)</td>
<td>8 (17.6)</td>
<td>12 (26.4)</td>
<td>8 (17.6)</td>
</tr>
<tr>
<td>Machine size</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Height</td>
<td>mm (in.)</td>
<td>3,453 (135.24)</td>
<td>3,525 (138.78)</td>
<td>3,060 (120.72)</td>
</tr>
<tr>
<td>Floor space</td>
<td>W x D x H (operator platform)</td>
<td>3,995 x 2,750 x 1,087 (157.28 x 108.27)</td>
<td>3,995 x 2,840 (157.28 x 111.81)</td>
<td>4,850 x 2,990 (190.94 x 117.72)</td>
</tr>
<tr>
<td>Weight</td>
<td>kg (lb)</td>
<td>15,400 (33,860)</td>
<td>15,650 (34,430)</td>
<td>17,500 (38,000)</td>
</tr>
</tbody>
</table>

* With APC specifications, there are limits on maximum pallet load and maximum workpiece dimensions

| ] | Optional
| ] | Turning specifications
### Standard specifications / accessories

<table>
<thead>
<tr>
<th>Accessory</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coolant supply system</td>
<td>* 1</td>
</tr>
<tr>
<td>Washing device on saddle</td>
<td></td>
</tr>
<tr>
<td>C axis table</td>
<td>Operation panel with color LCD</td>
</tr>
<tr>
<td>Oil cleaner (filter)</td>
<td>Ball screw cooling</td>
</tr>
<tr>
<td>Rapid feedrate</td>
<td>No. 40 Spindle speed 50 to 10,000 min⁻¹</td>
</tr>
<tr>
<td>Spindle Spindlehead Oil cooler</td>
<td>Multifeeding up to 12,000 min⁻¹</td>
</tr>
<tr>
<td>Tapered bore cooling</td>
<td>Air cleaner (filter)</td>
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<tr>
<td>Spindle</td>
<td>No. 40: 17.5 kW (20/5 hp) (10 min/cont)</td>
</tr>
<tr>
<td>Spindle torque</td>
<td>No. 50: 26/18.5 kW (35/25 hp) (10 min/cont)</td>
</tr>
<tr>
<td>Spindle speed min⁻¹</td>
<td>No. 50: 22/18.5 kW (30/25 hp) (10 min/cont)</td>
</tr>
<tr>
<td>Spindle speed</td>
<td>No. 40: 752 mm (30 in.) Center to Center</td>
</tr>
<tr>
<td>Spindle overhang</td>
<td>No. 50: 743 mm (29.25 in.) Center to Center</td>
</tr>
<tr>
<td>Spindle output (5 min)</td>
<td>No. 40: 11 kW (10 min/cont)</td>
</tr>
<tr>
<td>Spindle output (10 min)</td>
<td>No. 50: 20 kW (10 min/cont)</td>
</tr>
</tbody>
</table>

### Optional specifications / accessories

<table>
<thead>
<tr>
<th>Accessory</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spindle</td>
<td>High-speed spindle No. 70 (Optional)</td>
</tr>
<tr>
<td>Spindle</td>
<td>Speed 25,000 min⁻¹</td>
</tr>
<tr>
<td>Spindle</td>
<td>Max output 15/11 kW (30/25 hp) (10 min/cont)</td>
</tr>
<tr>
<td>Spindle</td>
<td>Max torque 200 N·m (290 ft·lb) (10 min/cont)</td>
</tr>
<tr>
<td>Spindle</td>
<td>No. 40 Spindle speed 50 to 20,000 min⁻¹</td>
</tr>
<tr>
<td>Spindle</td>
<td>Multifeeding up to 20,000 min⁻¹</td>
</tr>
<tr>
<td>Spindle</td>
<td>No. 50: 30 kW (40/30 hp) (10 min/cont)</td>
</tr>
<tr>
<td>Spindle</td>
<td>No. 50: 20 kW (25/30 hp) (10 min/cont)</td>
</tr>
<tr>
<td>Spindle</td>
<td>No. 40: 11/7.5 kW (15/10 hp) (10 min/cont)</td>
</tr>
<tr>
<td>Spindle</td>
<td>Max output 752 mm (30 in.) Center to Center</td>
</tr>
<tr>
<td>Spindle</td>
<td>No. 50: 743 mm (29.25 in.) Center to Center</td>
</tr>
<tr>
<td>Spindle</td>
<td>No. 40: 11 kW (10 min/cont)</td>
</tr>
<tr>
<td>Spindle</td>
<td>No. 50: 20 kW (10 min/cont)</td>
</tr>
<tr>
<td>Spindle</td>
<td>No. 40: 752 mm (30 in.) Center to Center</td>
</tr>
<tr>
<td>Spindle</td>
<td>No. 50: 743 mm (29.25 in.) Center to Center</td>
</tr>
</tbody>
</table>

### Standard spindle No. 40

- **Spindle**: 10,000 min⁻¹ (8,000 min⁻¹ with turning specifications)
- **Max output**: 11/7.5 kW (10 min/cont)
- **Max torque**: 198/135 N·m (5 min/cont)

### Standard spindle No. 50

- **Spindle**: 6,000 min⁻¹
- **Max output**: 15/11 kW (10 min/cont)
- **Max torque**: 198/135 N·m (5 min/cont)

### Wide-range spindle No. 40 (Optional)

- **Speed**: 15,000 min⁻¹ (12,000 min⁻¹ with turning specifications)
- **Max output**: 22/18.5 kW (10 min/cont)
- **Max torque**: 198/135 N·m (10 min/cont)

### Wide-range spindle No. 50 (Optional)

- **Speed**: 20,000 min⁻¹
- **Max output**: 26/18.5 kW (10 min/cont)
- **Max torque**: 199/146 N·m (5 min/cont)

### Multi-pallet APC dimensional drawing (with MU-6300V) (Optional)

<table>
<thead>
<tr>
<th>APC Type</th>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-pallet APC</td>
<td></td>
</tr>
<tr>
<td>6-pallet APC</td>
<td></td>
</tr>
</tbody>
</table>

### Standard spindle No. 60

- **Spindle**: 10,000 min⁻¹ (8,000 min⁻¹ with turning specifications)
- **Max output**: 15/11 kW (10 min/cont)
- **Max torque**: 198/135 N·m (5 min/cont)
With revamped operation and responsiveness—ease of use for machine shops first!

Smart factories implement advanced digitization and networking (IoT) in “Monozukuri,” (manufacturing) achieving enhanced productivity and added value.

The OSP has evolved tremendously as CNC control suited to advanced intelligent technology. Okuma’s new control uses the latest CPUs for a tremendous boost in operability, rendering performance, and processing speed.

The OSP also features a full range of useful apps that only a machine-tool manufacturer, such as Okuma, can make and offer, all from one control.

Smooth, comfortable operation with the feeling of using a smart phone

Improved rendering performance and use of a multi-touch panel achieve intuitive graphical operation. Moving, enlarging, reducing, and rotating 3D models, as well as list views of tool data, programs, and other information can be accomplished through smooth, speedy operations with the same feel as using a smartphone.

The screen display layout on the operation screen can also be changed to suit operator tastes, and customized for needs from beginners to veteran operators.

Features you wanted – loaded with OSP suite apps!

We made these real through the addition of Okuma’s machining expertise based on requests we heard from customers in the machine shop. These are filled with intelligence that enhances the “strength in the field” that CNC control can accomplish because it’s created by a machine-tool manufacturer.

Routine inspection support

Increased productivity through visualization of motor power reserve

Easy programming without keeping in mind

Simple mode for non-specialists

Screen Capture

Easy operation

Quick access to tool data

Spindle Output Monitor

Monitoring utilization status even when away from the machine

NC operation monitor

Common Variable Monitor

Automatic saving of recorded alarms

Tool life management

Simple maintenance

Not only the machine

Spindle Overload Monitor

Monitoring utilization status even when away from the machine

NC operation monitor

Screen Capture

Easy operation

Quick access to tool data

Options you wanted – loaded with OSP suite apps!

We made these real through the addition of Okuma’s machining expertise based on requests we heard from customers in the machine shop. These are filled with intelligence that enhances the “strength in the field” that CNC control can accomplish because it’s created by a machine-tool manufacturer.

Maintenance monitor

The Maintenance Monitor displays items for inspections before starting operation and regular inspections and the rough estimate of inspection timing. Touching the [INFO] button displays the PDF instruction manual file of relevant maintenance items.

Spindle Output Monitor

Monitoring utilization status even when away from the machine

NC operation monitor

Common Variable Monitor

Automatic saving of recorded alarms

Screen Capture

Easy operation

Quick access to tool data

- Other
### Working range

**MU-5000V**
- Max table load capacity: 500 kg

**MU-6300V**
- Max table load capacity: 600 kg

**MU-8000V**
- Max table load capacity: 700 kg

### Max workpiece dimensions (with APC)

**MU-5000V (P)**
- Max pallet load capacity: 400 kg

**MU-6300V (P)**
- Max pallet load capacity: 450 kg

**MU-8000V (P)**
- Max pallet load capacity: 550 kg
When using Okuma products, always read the safety precautions mentioned in the instruction manual and attached to the product.

The specifications, illustrations, and descriptions in this brochure vary in different markets and are subject to change without notice.

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This product is subject to the Japanese government Foreign Exchange and Foreign Trade Control Act with regard to security controlled items, whereby Okuma Corporation should be notified prior to its shipment to another country.

Oguchi-cho, Niwa-gun, Aichi 480-0193, Japan
TEL: +81-587-95-7825  FAX: +81-587-95-6074