High-Speed Horizontal Machining Centers

MB-H series

MB-4000H / MB-5000H
MB-8000H / MB-10000H
High-Speed Horizontal Machining Centers

**MB-H series**

**MB-4000H / MB-5000H / MB-8000H / MB-10000H**

- Thermo-Friendly Concept
- Collision Avoidance System
- Machining Navi

**High accuracy / High productivity**

Nimble and comfortable operation concept
Machining of mass production parts to large high value-added parts
The optimal series has been perfected.

- High productivity
- Reduced non-cutting time
- High accuracy
- Outstanding accuracy stability with use of Thermo-Friendly Concept
- Small footprint
- Compact
- Expandable
- Easy to add more specs (modular ATC, APC)
- Easy to operate
- User friendly

Photos in this brochure include optional specifications.
High productivity

Machining capacity

1,081 cm³/min

(Expressed as MB-8000H actual data)

- a200 face mill, material: S45C, high power spindle*2: 6,000 min⁻¹ (VAC 45/37 kW (20 min/cont))

<table>
<thead>
<tr>
<th>Tool</th>
<th>Spindle speed min⁻¹</th>
<th>Cutting m/min</th>
<th>Feedrate mm/min</th>
<th>Cut width mm</th>
<th>Cut depth mm</th>
<th>Chips cm³/min</th>
</tr>
</thead>
<tbody>
<tr>
<td>ø200 face mill 8 blades (carbide)</td>
<td>895</td>
<td>225</td>
<td>2,650</td>
<td>56</td>
<td>2.7</td>
<td>400</td>
</tr>
<tr>
<td>ø300 roughing end mill 7 flutes (carbide)</td>
<td>4,000</td>
<td>251</td>
<td>5,320</td>
<td>6</td>
<td>20</td>
<td>638</td>
</tr>
<tr>
<td>ø35 insert drill (carbide)</td>
<td>880</td>
<td>97</td>
<td>192</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Tap M30P3.5</td>
<td>320</td>
<td>30</td>
<td>1,120</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
</tbody>
</table>

- a200 face mill 8 blades (cermet) | 895 | 225 | 2,880 | 56 | 3 | 483 |
| ø300 roughing end mill 7 flutes (carbide) | 4,000 | 251 | 8,400 | 4 | 20 | 672 |
| ø35 insert drill (carbide) | 580 | 100 | 87 | – | – | – |
| Tap M30P3.5 | 320 | 30 | 1,120 | – | – | – |

- ø100 face mill 10 blades (carbide) | 955 | 300 | 3,220 | 70 | 4 | 901 |
| ø50 porcupine cutter (carbide) | 955 | 150 | 504 | 25 | 50 | 630 |
| ø35 insert drill (carbide) | 950 | 180 | 180 | – | – | – |
| Tap M42P4.5 | 90 | 12 | 405 | – | – | 81% (Spindle load) |

- ø200 face mill 10 blades (carbide) | 398 | 250 | 1,404 | 140 | 5.5 | 1,081 |

- Standard spindle 15,000 min⁻¹
- VAC 26/18.5 kW (10 min/cont)
- Material: S45C

- Standard spindle 15,000 min⁻¹
- VAC 26/18.5 kW (10 min/cont)
- Material: S45C

- Standard spindle 6,000 min⁻¹
- VAC 30/22 kW (10 min/cont)
- Material: S45C

- High power spindle*2 6,000 min⁻¹
- VAC 45/37 kW (20 min/cont)
- Material: S45C

Cycle time comparisons

- Rapid traverse X-Y-Z: 60 m/min
- Rapid acceleration: X: 0.8 G, Y: 1.0 G, Z: 0.9 G

Non-cutting time 30% reduction

Aluminum part comparison

Previous machine

Cutting time 64 sec
Non-cutting time 116 sec
3 min 00 sec

MB-5000H
Cutting time 64 sec
Non-cutting time 82 sec
2 min 26 sec

*1. The “actual data” referred to above for this brochure represent examples, and may not be obtained due to differences in specifications, tooling, cutting, and other conditions.

*2. Optional
High speed and power machining

Standard spindle which can be used across many applications, high speed and wide-range spindle for high precision machining of aluminum and molds, and high power spindle for difficult-to-machine materials and heavy-duty cutting with high machining allowance.

<table>
<thead>
<tr>
<th>Machine performance</th>
<th>Reduced non-cutting time</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MB-4000H</strong></td>
<td><strong>MB-5000H</strong></td>
</tr>
<tr>
<td>X-Y-Z: 60 m/min</td>
<td>X-Y-Z: 60 m/min</td>
</tr>
<tr>
<td>Rapid traverse</td>
<td>Rapid traverse</td>
</tr>
<tr>
<td>Tool change</td>
<td>Tool change</td>
</tr>
<tr>
<td>Pallet change</td>
<td>Pallet change</td>
</tr>
<tr>
<td><strong>MB-8000H</strong></td>
<td><strong>MB-5000H</strong></td>
</tr>
<tr>
<td>X-Y-Z: 50 m/min</td>
<td>X-Y-Z: 50 m/min</td>
</tr>
<tr>
<td>Rapid traverse</td>
<td>Rapid traverse</td>
</tr>
<tr>
<td>Tool change</td>
<td>Tool change</td>
</tr>
<tr>
<td>Pallet change</td>
<td>Pallet change</td>
</tr>
<tr>
<td><strong>MB-10000H</strong></td>
<td><strong>MB-5000H</strong></td>
</tr>
<tr>
<td>X-Y-Z: 50 m/min</td>
<td>X-Y-Z: 50 m/min</td>
</tr>
<tr>
<td>Rapid traverse</td>
<td>Rapid traverse</td>
</tr>
<tr>
<td>Tool change</td>
<td>Tool change</td>
</tr>
<tr>
<td>Pallet change</td>
<td>Pallet change</td>
</tr>
</tbody>
</table>

- **Spindle**
  - **Standard spindle**
    - 7/24 taper No. 40, HSK-A63*  
      - Spindle speed: 15,000 min⁻¹  
      - Output: VAC 26/18.5 kW (10 min/cont)  
      - Torque: 163/120 N·m (5 min/cont)  
  - **High-speed spindle**
    - HSK-A63  
      - Spindle speed: 20,000 min⁻¹  
      - Output: VAC 30/22 kW (10 min/cont)  
      - Torque: 57/42 N·m (10 min/cont)
- **MB-5000H**
  - **Standard spindle**
    - 7/24 taper No. 40, HSK-A63*  
      - Spindle speed: 15,000 min⁻¹  
      - Output: VAC 26/18.5 kW (10 min/cont)  
      - Torque: 199/146 N·m (10 min/cont)  
  - **High-speed spindle**
    - HSK-A63  
      - Spindle speed: 20,000 min⁻¹  
      - Output: VAC 30/22 kW (10 min/cont)  
      - Torque: 57/42 N·m (10 min/cont)
- **MB-8000H**
  - **Standard spindle**
    - 7/24 taper No. 50, HSK-A100*  
      - Spindle speed: 6,000 min⁻¹  
      - Output: VAC 30/22 kW (10 min/cont)  
      - Torque: 606/439 N·m (10 min/cont)
  - **Wide-range spindle**
    - 7/24 taper No. 50, HSK-A100*  
      - Spindle speed: 12,000 min⁻¹  
      - Output: VAC 37/26 kW (10 min/cont)  
      - Torque: 419/284/194 N·m (2 min/10 min/cont)
- **MB-10000H**
  - **Standard spindle**
    - 7/24 taper No. 50, HSK-A100*  
      - Spindle speed: 6,000 min⁻¹  
      - Output: VAC 30/22 kW (10 min/cont)  
      - Torque: 606/349 N·m (10 min/cont)
  - **Wide-range spindle**
    - 7/24 taper No. 50, HSK-A100*  
      - Spindle speed: 12,000 min⁻¹  
      - Output: VAC 37/26 kW (10 min/cont)  
      - Torque: 284/194 N·m (10 min/cont)

- **Spindle torque / output diagram (Std specs)**
  - Spindle speed: 15,000 min⁻¹  
    - Max output: VAC 26/18.5 kW*1 (35/25 hp)  
    - Max torque: 163/120 N·m*2 (120/88 ft-lbf)
  - Spindle speed: 6,000 min⁻¹  
    - Max output: VAC 30/22 kW*1 (40/30 hp)  
    - Max torque: 606/349 N·m*1 (446/257 ft-lbf)

- **Spindle torque / output diagram (Optional specs)**
  - Spindle speed: 6,000 min⁻¹  
    - Max output: VAC 30/22 kW*1 (40/30 hp)  
    - Max torque: 606/349 N·m*2 (446/257 ft-lbf)

- **Integral motor/spindle**
  - High-speed cartridge spindle
  - Long-life oil air lubrication
  - Thermo Active Stabilizer – Spindle (TAS-S)

* Optional
High-accuracy machining

Thermo-Friendly Concept

High accuracy is enabled in normal factory environments. The unique approach of “accepting temperature changes.”

The machining accuracy of the workpiece changes significantly due to temperature change in the machine’s periphery, heat generated from the machine itself, and heat generated from machining.

This unique thermo-friendly concept, which accommodates such temperature changes, achieves high accuracy in normal factory environments.

Graph: Machining dimensional change over time less than 10 \( \mu m \) (MB-5000H actual data*).

Environmental economic benefits of Okuma’s Thermo-Friendly Concept

In environments with normal temperature changes, machining accuracies equivalent to those in temperature-controlled rooms are achieved. As long as the operator is comfortable, there is no need for air conditioning to ensure accuracy.

- Amount of energy consumed for temperature-controlled room per year: Savings of approximately 135,000 kWh
- Prevents CO\(_2\) emissions equivalent to about 7,500 beech trees

Positioning accuracy

MB-5000H AbsoScale actual data* (Based on ISO 230-2 machine tool test conditions)

- The exactness of bi-directional positioning
  - X-axis (travel 760 mm): 1.9 \( \mu m \)
  - Y-axis (travel 760 mm): 2.7 \( \mu m \)
  - Z-axis (travel 760 mm): 1.8 \( \mu m \)

- Bi-directional repeatability
  - X-axis (travel 760 mm): 1.2 \( \mu m \)
  - Y-axis (travel 760 mm): 1.9 \( \mu m \)
  - Z-axis (travel 760 mm): 1.2 \( \mu m \)

* Note: The “actual data” referred to above represent examples of data obtained by using ISO 230-2 test methods done at Okuma factories, and they are not guaranteed values.

*1: The “actual data” referred to above for this brochure represent examples, and may not be obtained due to differences in specifications, tooling, cutting, and other conditions.

*2: Calculations are examples only, and may differ from actual circumstances. Temperature-controlled room capacity: 10 m \( \times \) 10 m \( \times \) 3 m \( \pm \) 2 \( ^{\circ} \)C.

The MB-10000H has a “box in box” structure (X axis carrier system).
Thermo-Friendly Concept

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

TAS-C (Thermo Active Stabilizer—Construction)
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 the location information of the feed shaft.

TAS-S (Thermo Active Stabilizer—Spindle)
The TAS-S spindle thermal deformation control takes into account various conditional changes such as the spindle’s temperature data, modification of the spindle rotation and speed, as well as spindle stoppage. The spindle’s thermal deformation will be accurately controlled, even when the rotating speed changes frequently.

High dimensional stability

Thermo-Friendly Concept

Eliminate waste with the Thermo-Friendly Concept
In addition to maintaining high dimensional accuracy when room temperature changes, Okuma’s Thermo-Friendly Concept provides high dimensional accuracy during machine startup and machining restart. To stabilize thermal deformation, warming-up time is shortened and the burden of dimensional correction during machining restart is reduced.

High-accuracy machining

- Integrated ball screw bracket (except on MB-10000H)
- Y axis motor base cooling
- Ball screw cooling
  - MB-4000H, 5000H (optional)
  - MB-8000H, 10000H (standard)
- Achieves highly stable accuracy by employing a highly rigid 3-point support bed. (MB-5000H)
- Bed supports rapid travel of large masses
- High accuracy indexing table
  - Pallet seating surface uses a taper cone system for high accuracy.
  - NC 0.001 degree:
    - MB-4000H (standard)
    - MB-5000H, 8000H, 10000H (optional)
- High dimensional stability
- In addition to maintaining high dimensional accuracy when room temperature changes, Okuma’s Thermo-Friendly Concept provides high dimensional accuracy during machine startup and machining restart. To stabilize thermal deformation, warming-up time is shortened and the burden of dimensional correction during machining restart is reduced.
- High accuracy double ball screw employed in all axes.
- Machine designs that equalize ambient temperatures
- Symmetrically built Thick walls
- Thermo Active Stabilizer - Construction (TAS-C)
- Thermo Active Stabilizer - Spindle (TAS-S)
- High accuracy indexing table
  - Pallet seating surface uses a taper cone system for high accuracy.
  - NC 0.001 degree:
    - MB-4000H (standard)
    - MB-5000H, 8000H, 10000H (optional)
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- High accuracy double ball screw employed in all axes.
Comfortable operation

Easy to operate

- **Independent left-side operation panel** (except on MB-10000H)
  - Easier to operate the switches and watch machining chamber movements at the same time. (Can swivel)

- **Front-facing ATC magazine** (MB-4000H and MB-5000H only)
  - Easy tool exchange: 48-tool, 64-tool tool magazines
  - Magazine door opens to the floor

- **Column traverse system** (MB-10000H uses a traverse carrier system)
  - Outstanding accessibility to pallet (workpiece), spindle

- **Ceiling door**
  - Good lighting and no coolant dripping

- **Chip discharge**
  - Chips discharged directly with center trough just under spindle
  - No accumulation of chips in the machining chamber
  - Neat and simple covering
  - Washing in-machine and under pallet

- **Chips discharged by conveyor**
  - MB-10000H will eject to the front of the machine

- **Chip pan (standard)**
  - In-machine chip conveyor (standard: hinge type)

- **Chip tank (standard)**
  - Coolant tank (standard)

- **Off machine chip disposal (optional)**
  - In-machine chip conveyor (standard: hinge type)
Expandable

- **Space-saving with large tool capacity**

**MB-4000H/MB-5000H**

- **Standard**
  - 40 tools: Chain system

- **Optional Specifications**
  - 64 tools: Chain system
  - 110 tool to 300 tool: Matrix system

**MB-8000H**

- **Standard**
  - 40 tools: Chain system

- **Optional Specifications**
  - 60 tools: Chain system
  - 81 tool to 285 tool: Matrix system
  - 320 tools, 400 tools Multiple magazine type

<table>
<thead>
<tr>
<th>MB-10000H</th>
<th>MB-8000H</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Standard</strong></td>
<td>40 tools: Chain system</td>
</tr>
<tr>
<td><strong>Optional Specifications</strong></td>
<td>60 tools: Chain system</td>
</tr>
<tr>
<td></td>
<td>81 tool to 285 tool: Matrix system</td>
</tr>
<tr>
<td></td>
<td>320 tools, 400 tools Multiple magazine type</td>
</tr>
</tbody>
</table>

Flexible APC units

- **Multi-pallet APC connects to standard 2-pallet rotary-shuttle APC**
- **Can be adapted flexibly to match plant layout and type of production (except on MB-10000H).**

**6-pallet APC**

**10-pallet APC**

**12-pallet APC**

Ready for FMS applications

- **A compact FMS designed to simplify the task of setting up 24-hour operations**

An FMS with a smart, expandable stacker crane system

- **Approx 30 m**
- **Approx 30 m**
- **Approx 30 m**
- **Handling station**
- **MB-8000H**
  - 4 pallets
  - Pallets: 32
  - Rack levels: 2
  - System height: approximately 3.5 m
  - Handling station: 1

[System layout example]

385 tool matrix magazine

- **Matrix system ATC magazine**
  - Chain system ATC magazine
  - (64 tool: optional)
  - MB-4000H, MB-5000H only

- **Matrix system ATC magazine**
  - Chain system ATC magazine

(Space-saving with large tool capacity)

- **Multi-pallet APC connects to standard 2-pallet rotary-shuttle APC**
- **Can be adapted flexibly to match plant layout and type of production (except on MB-10000H).**
### Machine Specifications

#### Spindle head cooling system

- **Oil controller**: Oil controller
- **Work lamp**: LED, 1 location\(^{27}\)
- **Hydraulic unit**: Status indicator
  - **3-lamp signal tower**

#### Centralized lubrication automatic oil supplier

- **MB-4000H**: Tank 6 L, Foundation blocks
- **MB-5000H**: Oil level alarm and pressure alarm equipped
- **MB-8000H**: Tank 20 L
- **MB-10000H**: Oil level alarm and pressure alarm equipped

#### Cooant supply system

- **MB-4000H**: Tank 800 L (550 L\(^{\text{(*)}}\)), Pump motor 1500 W (double use for nozzle and in-machine)
- **MB-5000H**: Tank 1,190 L (630 L\(^{\text{(*)}}\)), Pump motor 390 W (for nozzle), 1200 W (for in-machine wash)
- **MB-8000H**: Tank 1,960 L (1,190 L\(^{\text{(*)}}\)), Pump motor 390 W (for nozzle), 1200 W (pallet wash)
- **MB-10000H**: In-machine chip discharge*4

#### Coolant nozzle

- **Eyeball nozzle type**: In-machine chip discharge
- **Table area wash**: In-machine and under-pallet wash (below APCh)
- **ATC air blower (brass)**: Ball screw cooling

#### Maximum tool dimensions

- **Maximum tool size (adjacent tools)**
  - In tool magazine
    - MB-4000H
    - MB-5000H
    - MB-8000H
    - MB-10000H
- **Maximum single tool size (no adjacent tools)**
  - MB-4000H
  - MB-5000H
  - MB-8000H
  - MB-10000H
- **Maximum tool mass moment**: MB-4000H

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1. Machine component movements become slower with this optional specification.
2. Tool size 2 pots away can not exceed ø135 mm (5.32 in.).
3. Shutter open/close times become longer with the optional specification.
4. Fixed address for 110 or more tools.
5. Maximum workpiece diameters may be limited by required tool lengths.
6. Fixed address for 81 or more tools.
7. Fixed address for 100 or more tools

\(^{(*)}\): Optional
### Pallet dimensions

| MB-4000H | 400 | 80 | 40 | 0.7 |
| MB-5000H | 500 | 100 | 50 | 0.7 |
| MB-6000H | 600 | 120 | 60 | 0.7 |
| MB-10000H | 1000 | 200 | 100 | 0.5 |

### Working range

- MB-4000H
  - Area B
    - 1,300
  - Area C
    - 1,250
  - Area D
    - 550

- MB-5000H
  - Area A
    - 1,400
  - Area B
    - 1,250
  - Area C
    - 550

- MB-10000H
  - Area A
    - 1,500
  - Area B
    - 1,350
  - Area C
    - 500

### Maximum workpiece dimensions

- MB-4000H
  - ø80
  - 80
  - 40
  - 0.7

- MB-5000H
  - ø80
  - 80
  - 50
  - 0.7

- MB-6000H
  - ø80
  - 80
  - 60
  - 0.7

- MB-10000H
  - ø100
  - 100
  - 100
  - 0.5

### Optional Specifications

#### Spindle speeds

- **MB-4000H**: 50 to 20,000 min⁻¹, HSK-A63, VAC 30/22 kW
  - Table area wash/discharge
  - Work wash gun: 250-W pump
  - Mist lubricator
  - Chip air blower: Adapter

- **MB-5000H**: 50 to 12,000 min⁻¹, HSK-A63, VAC 37/26 kW
  - Oil mist lubricator
  - Chip air blower: Adapter

- **MB-6000H**: 50 to 8,000 min⁻¹, HSK-A63, VAC 45/37 kW, 1,071 N·m
  - Chip air blower: Adapter

#### Dual contact spindle

- **MB-4000H**: HSK-A63, BIG-PLUS®
  - In-machine discharge
  - Scraper type chip conveyor

- **MB-5000H**: HSK-A100, BIG-PLUS®
  - Off-machine chip discharge
  - Refer to Recommended chip conveyors on page 19

#### Off-spindle coolant

- **MB-4000H**: 81, 111, 141, 171, 195, 225, 255, 285 (matrix), 320, 400 (multiple matrix)
  - Full shut shape
  - Standard T-column fixture
  - Standard V-column fixture

#### Additional specifications

- **MB-10000H**: 30 (matrix)
  - 100, 150, 200, 240, 320, 400 (multiple matrix)

#### Edge locators

- **MB-4000H**: 25
- **MB-5000H**: 50
- **MB-10000H**: 85

### Optional Spindles

#### High-speed (60-400,000rpm)

- **MB-4000H**: 6,000 min⁻¹
  - Output: VAC 45/37 kW (50/55 hp)
  - Torque: 1,071/871 N·m (78/69 kW)

- **MB-5000H**: 12,000 min⁻¹
  - Output: VAC 37/26 kW (40/50 hp)
  - Torque: 419/194 N·m (36/143 kW)

- **MB-6000H**: 20,000 min⁻¹
  - Output: VAC 30/22 kW (30/44 hp)
  - Torque: 98/56 N·m (75/37 kW)

- **MB-10000H**: 50,000 min⁻¹
  - Output: VAC 20/12 kW (20/30 hp)
  - Torque: 38/18 N·m (29/14 kW)

#### Wide-range (60-800rpm)

- **MB-4000H**: 12,000 min⁻¹
  - Output: VAC 37/26 kW (50/55 hp)
  - Torque: 419/194 N·m (36/143 kW)

- **MB-5000H**: 20,000 min⁻¹
  - Output: VAC 30/22 kW (30/44 hp)
  - Torque: 98/56 N·m (75/37 kW)

- **MB-6000H**: 50,000 min⁻¹
  - Output: VAC 20/12 kW (20/30 hp)
  - Torque: 38/18 N·m (29/14 kW)
Compact

Space-saving design improves productivity per square footage

**MB-5000H**
32% Smaller footprint
(Compared to previous machine)

**MB-4000H**
10% smaller footprint
(Compared to MA-400HA)

Recommended chip conveyors
(Please contact an Okuma sales representative for MB-10000H recommendations.)

<table>
<thead>
<tr>
<th>Workpiece material</th>
<th>Steel</th>
<th>FC</th>
<th>Nonferrousmetal</th>
<th>Mixed (general use)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chip shape</td>
<td></td>
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<tr>
<td>In-machine</td>
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<tr>
<td>Hinge type (Standard)</td>
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<tr>
<td>Hinge type</td>
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<tr>
<td>Scraper type</td>
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</tr>
<tr>
<td>Scraper type (with drum filter)</td>
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<tr>
<td>Hinge + scraper (with drum filter)</td>
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<tr>
<td>In-machine integrated coil conveyor type</td>
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</table>

| Chip shape         |       |    |                  |                    |
| Off-machine chip discharge (optional) |       |    |                  |                    |
| Hinge type         |       |    |                  |                    |
| Scraper type       |       |    |                  |                    |
| Scraper type (with drum filter) |   |    |                  |                    |
| Hinge + scraper (with drum filter) |   |    |                  |                    |
| In-machine integrated coil conveyor type |   |    |                  |                    |

* With optional lift-up center coil conveyor tank

Recommended specification
Optional specification

Workpiece material
Steel
FC
Nonferrousmetal
Mixed (general use)

Chip shape

**MB-8000H**
3,960 x 7,505
(155 x 295)
MB-10000H
4,545 x 6,465
(178 x 255)

Notes:
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

* Scraper type (optional) can be selected.

Compartment

MB-8000H

10% smaller footprint
(Compared to MA-400HA)

Note: Chip conveyor size may require raised machine setup.

Off-machine lift-up chip conveyors

<table>
<thead>
<tr>
<th>Name</th>
<th>Hinge</th>
<th>Scraper</th>
<th>Scraper (with drum filter)</th>
<th>Hinge + scraper (with drum filter)</th>
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<tbody>
<tr>
<td>Shape</td>
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</table>

Note: Chip conveyor size may require raised machine setup.

Easy tool registration

With spreadsheet simplicity — tool offsets, tilt, shape, life, etc.— all the tool data required to cut a part can be registered here. Since the registered tool data is also used by Okuma auto programming (Advanced One-Touch IGF) and a collision check function (Collision Avoidance System), this screen will complete the entire registering process.

Satisfaction from complete control of a machine tool

As a “machine & control” builder, Okuma makes further strides in machine tool manufacturing with this superb Control featuring “Easy Operation.” Okuma took a close look at the way machinists actually operate machine tools, to help them create smoother and more effective ways of producing parts. Novice operators as well as professional machinists get complete control— and satisfaction. Moreover, what you want to see and do conveniently come together in a “single-mode operation.”

First, select one of three operation screens. Then simply touch the screen or press a function key to see and do your job.
OSP-P300M advanced technology

Cutting condition search for milling/machining
Machining Navi M+g, M+-f (Optional)

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

- Automatically changes to optimum spindle speed (M+-f)

Hi-Cut Pro

- Faster! ... using max cutting feedrates
  By accelerating and decelerating cutting feedrates per upper limits, cycle times are reduced.

- More accurate! ... using machine tolerances
  The OSP automatically controls speeds and acceleration per shape commands (corner angle, arc).

Without Hi-Cut Pro With Hi-Cut Pro

Collision Prevention

Collision Avoidance System (Optional)

- The OSP automatically controls speeds and acceleration per shape command.
- 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.

- CAS prevents collisions in automatic or manual mode, providing risk-free protection in automatic or manual mode.

Turning Cut (Optional)

- Turning on a machining center
  Turning is done with synchronized control with X-Y coordinate arc and tool edge position of rotating spindle tool.
  - Machining of various diameters with a single tool
  - Machining of ID/OD greater than largest tool diameter
  - CAS prevents collisions in automatic or manual mode, providing risk-free protection.

Middleware

- CAS prevents collisions in automatic or manual mode, providing risk-free protection.

Standard Specifications

<table>
<thead>
<tr>
<th>Item</th>
<th>Kit Specifications</th>
<th>M80</th>
<th>E90</th>
<th>M100</th>
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<tr>
<td>Advanced-One-Touch GSP M (Real 3-D simulation included)</td>
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High-speed/accuracy spec

Hi-Cut Pro, Hi-Cut Plus, pit-in-axis compensation

OSP-U (Thermo Active Stabilizer—Spindle): MB-400H, MB-500H
MB-8000H
Dimensional and Installation Drawings

MB-10000H
Dimensional and Installation Drawings
Fire Safety Precautions

To protect your factory and equipment from fire and assure continued safe operation, observe the following fire safety precautions whenever you operate machinery.

1. Oil-based coolant
   (1) Use nonflammable cutting fluid coolant.
   (2) When the use of an oil-based coolant is unavoidable:
       • Before you begin machining, check cutting tools to make sure of their service life and the condition of the tool edge, and choose cutting conditions that will not cause a fire.
       • Periodically clean the coolant filter to maintain sufficient coolant discharge, and frequently verify that coolant is discharging normally.
       • Take measures to control the outbreak of fire: Place a fire extinguisher near the machine, have an operator constantly monitor operation, and install an automatic fire extinguishing system.
       • Do not place flammable materials near the machine.
       • Do not allow chips to over accumulate.
       • Periodically clean the inside of the machine and the area surrounding it.
       • Check that the machine is operating normally.
       • Never run the machine unattended.
       • Since an automatic fire extinguishing system and other peripherals are needed for grinding operations, please let us know as soon as possible if you plan to perform such operations.

2. Precautions regarding machining of potentially flammable materials
   Before machining any material designated by law as a flammable substance, e.g., plastic, rubber, wood, acquaint yourself with the special characteristics of the material in terms of fire prevention, and observe the precautions given in (2) above to ensure safe operation.
   Example: When machining magnesium, there is a danger that magnesium chips and water-soluble coolants will react to produce hydrogen gas, resulting in an explosive fire if any chip should ignite.

3. Dry machining
   Dry machining is a fire hazard because workpieces, tools, and chips are not cooled. To ensure safe operation, do not place any flammable objects near the machine and do not allow chips to over accumulate.
   In addition, be sure to check cutting tools to make sure of their service life and the condition of the tool edge, and observe the precautions regarding oil-based coolants given in (2) above.