OKUMA

OPEN POSSIBILITIES

Green-Smart Machine
Powered by Intelligent Technology

MA-4000H

Horizontal Machining Center

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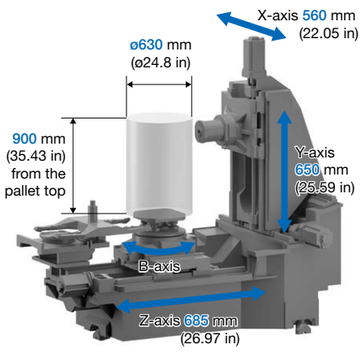
Thermo-Friendly Concept | Collision Avoidance System | Machining Navi | SERVONAVI

An Agile, Compact Machine with High Machining Performance

The compact MA-4000H has one of the largest machining areas in its class. It provides high-speed, optimized machining for all types of production, from mass production to variable-type and variable-volume production. The design of the internal cover improves chip discharge and prevents chip accumulation, ensuring top performance even in harsh production environments. It also contributes to the achievement of a low-carbon society with advanced solutions for reducing carbon emissions as well as enhanced flexibility for reducing energy and labor requirements, providing both high productivity and high precision while being eco-friendly.

A compact machine with one of the largest machining areas in its class



This machining center has a large machining area despite its efficient use of floor space

Floor space
2,300 × 5,065 mm (90.55 × 199.41 in)
(11.6 m² (124.86 ft²))

Machining area
X-axis travel: 560 mm
Y-axis travel: 650 mm
(longer than previous machine)
Z-axis travel: 685 mm
(longer than previous machine)

Max workpiece size
ø630 × 900 mm (ø24.8 × 35.43 in)
(more than previous machine)
Note: Standard 2-pallet APC specifications only

Max tool length
450 mm (longer than previous machine)

Agile machine operation

Reduced positioning time
- Rapid traverse X-Y-Z axes: 60 m/min (2,362 ipm)
- Rapid traverse acceleration (max)
  X-Y axis: 1.0 G Z-axis: 1.1 G*

Reduced table indexing time
- 90° indexing: 0.8 seconds*
- 180° indexing: 0.98 seconds*

* At low inertia

Heavy-duty cutting possible throughout entire machining area

The highly rigid B-axis bearings enable heavy-duty cutting of steel even on the upper Y-axis.

Maximized operation time through chip control

Offers both improved chip discharge functionality and eco-friendly operation

The angle of the internal cover has been increased, and it has been designed with a flat cover inside the machining chamber to greatly improve chip discharge. A full center trough mechanism prevents chip accumulation by discharging chips from the entire machining area. Pinpoint cleaning of locations where chips tend to accumulate reduces the amount of coolant used and prevents the accumulation of chips while also being environmentally friendly. Easier chip discharge reduces the frequency of internal cleanings that are required, reducing the workload of operators.


Increased angle for internal cover


Flat machining chamber

"Sludgeless Tank" enhances stable operations (recommended option)

The number of troublesome coolant tank cleaning operations is significantly reduced, improving productivity. Furthermore, environmental impact due to coolant disposal is also reduced.

Sludge removal rate **99%** (when the material is casting and aluminum)
Notes: After secondary filtration (cyclone filter) permeation
Okuma evaluated removal rate

No coolant tank cleaning required for 3 years
(Okuma equipment actual data)

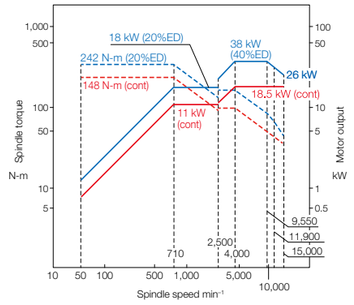
No coolant replacement required for 3 years
(Okuma equipment actual data)

Note: To use a sludgeless tank, you must select a chip conveyor with a drum filter.

The spindle lineup

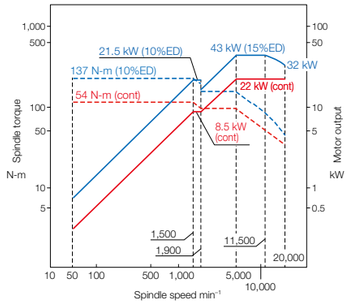
For highly efficient machining of general machine parts

Standard spindle No. 40
- Spindle speed: 15,000 min⁻¹
- Max output: 38/18.5 kW (40%ED /cont)
- Max torque: 242/148 N-m (20%ED /cont)



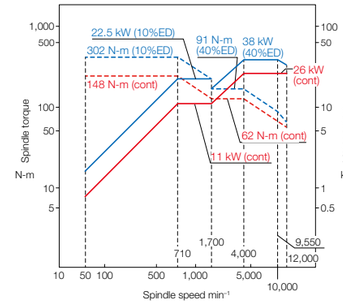
For fast machining of aluminum

High-speed spindle No. 40 for aluminum applications (option)
- Spindle speed: 20,000 min⁻¹
- Max output: 43/22 kW (15%ED /cont)
- Max torque: 137/54 N-m (10%ED /cont)



For powerful cutting of castings and cast steel parts

Power spindle No. 40 (option)
- Spindle speed: 12,000 min⁻¹
- Max output: 38/26 kW (40%ED /cont)
- Max torque: 302/148 N-m (10%ED /cont)



Material : S45C actual data

● Chips: **483 cm³/min** (Face milling, S45C) **704 cm³/min** (End milling, S45C)

Tool	Spindle speed min⁻¹	Cutting m/min	Feed rate mm/min	Cut width mm	Cut depth mm
ø100 face mill 7 blades (carbide)	955	300	2,300	70	3
ø20 roughing end mill 7 flutes (carbide)	4,000	251	8,800	4	20

Material : A5052 actual data

● Chips: **4,022 cm³/min** (Face milling, A5052) **4,340 cm³/min** (End milling, A5052)

Tool	Spindle speed min⁻¹	Cutting m/min	Feed rate mm/min	Cut width mm	Cut depth mm
ø63 face mill 5 blades (carbide)	8,000	1,583	12,000	44	7.6
ø25 roughing end mill 3 flutes (carbide)	8,000	628	8,000	15.5	35

Note: The "actual data" referred to above for this brochure represent examples, and may not be obtained due to differences in specifications, tooling, cutting condition, and others.

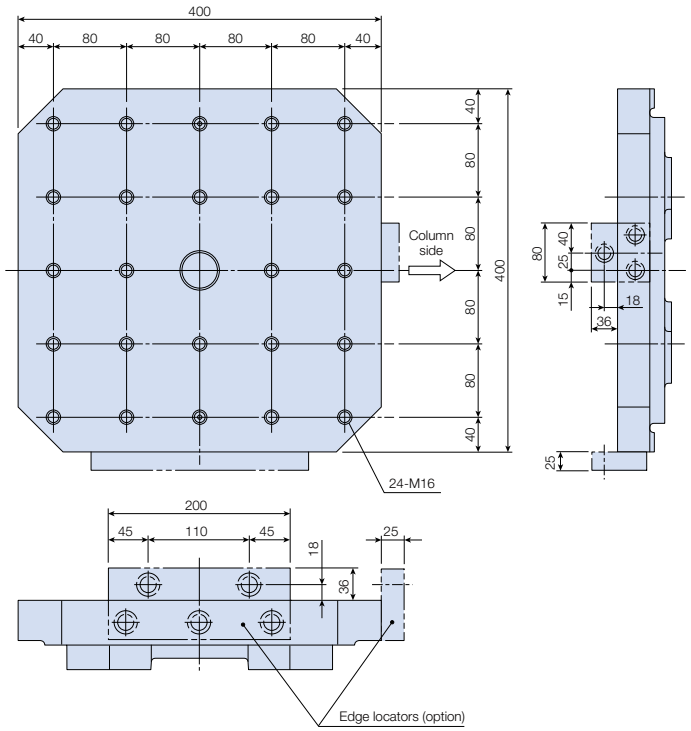
Machine Specifications

	Item	Unit	MA-4000H
Travels	X-axis (Left/right column)	mm (in)	560 (22.05)
	Y-axis (spindle up/down)	mm (in)	650 (25.59)
	Z-axis (table front/back)	mm (in)	685 (26.97)
	Spindle center to pallet top	mm (in)	80 to 730 (3.15 to 28.74)
	Spindle nose to pallet center	mm (in)	85 to 770 (3.35 to 30.31)
Pallet	Pallet size	mm (in)	400 × 400 (15.75 × 15.75)
	Max load capacity	kg (lb)	400 (880)
	Indexing angle	deg	0.001
	Max workpiece dimensions	mm (in)	ø630 × 900 (ø24.8 × 35.43)
Spindle	Spindle speed	min⁻¹	15,000 [12,000, 20,000]
	Tapered bore		7/24 taper No. 40 [HSK-A63]*1
	Bearing dia	mm (in)	ø70 (ø2.76) [ø90 (ø3.54)]
Feed rate	Rapid traverse	m/min (ipm)	X, Y, Z: 60 (2,362)
	Cutting feed rate	mm/min (ipm)	X, Y, Z: 1 to 60,000 (0.04 to 2,362)
Motors	Spindle	kW (hp)	38/18.5 (51/25) [12,000 min⁻¹: 38/26 (51/35)] [20,000 min⁻¹: 43/22 (57/29)]
	Feed axes	kW (hp)	X: 5.2 (6.9) Y, Z: 4.6 (6.1)
	Table indexing	kW (hp)	3.0 (4.0)

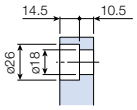
	Item	Unit	MA-4000H
ATC	Tool shank		MAS403 BT40 [CAT40, DIN40, HSK-A63]*1
	Pull stud		MAS2 [MAS1, CAT, DIN, JIS]
	Magazine capacity	tools	48*2 [64]*2 [140, 180, 220, 260, 300, 340]*3
	Max tool dia (w/ adjacent)	mm (in)	ø90 (ø3.54)
	Max tool dia (w/o adjacent)	mm (in)	ø170 (ø6.69)
	Max tool length	mm (in)	450 (17.72)
	Max tool mass	kg (lb)	12 (26.24)
	Tool selection		Memory random [fixed address]*4
Machine Size	Height	mm (in)	2,750 (108.27)
	Floor space; width × depth (RDF specs)*5	mm (in)	2,300 × 5,065 (90.55 × 199.41)
	Mass	kg (lb)	11,000 (24,200)
Controller			OSP-P500M

[ ]: option
*1. 20,000 min⁻¹ with HSK-A63 only
*2. Disk magazine
*3. Matrix magazine
*4. Matrix magazine types use the fixed address
*5. With RDF drum filter-type lift-up chip conveyor

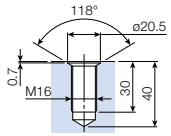
Pallet dimensions



Workpiece hitch bolt hole detail (option)

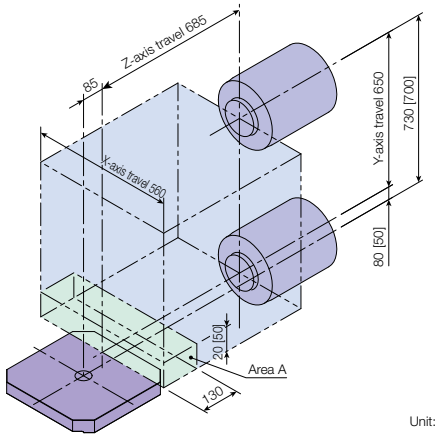


Workpiece clamp tapped hole detail



Unit: mm

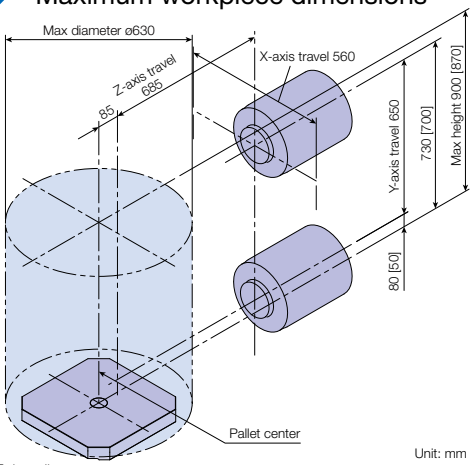
Working range



Unit: mm

[ ]: T-slot pallets
Note: The machine should be operated with caution and with reference to the following interference areas described below.
Area A: Spindlehead interference
- 130 mm when the B-axis is 0, 90, 270, or 360 degrees.
- 130 mm or larger when the B-axis is other than 0, 90, 270, or 360 degrees.
- 130 mm or larger if edge locators are installed.

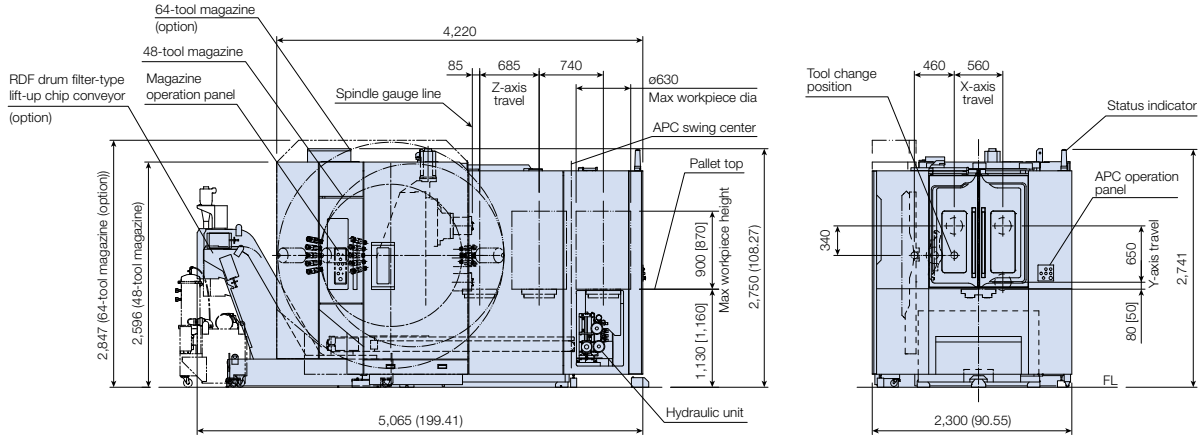
Maximum workpiece dimensions



Unit: mm

[ ]: T-slot pallets
Note: The Z and Y-axis minus limit area is a spindle / pallet interference zone.

Dimensional Drawings



[ ]: T-slot pallets

Unit: mm (in)

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