OKUMA

OPEN POSSIBILITIES

Horizontal Machining Center

SPACE CENTER MA-800HB

Horizontal Machining Center

SPACE CENTER MA-800HB

Intelligent Technology

Thermo-Friendly Concept

Collision Avoidance System

Machining Navi

Big, fast, and accurate — Horizontal Machining Center.
Okuma's MA-800HB maximizes the cost/performance ratio.
Meeting tough user demands for a high-production, big HMC.

Speedy and Accurate
High-speed HMC for Big Parts
Max Cost / Performance ratio

Okuma continues to roll out evolutionary changes in design and construction of machine and control for increased productivity, quality, versatility, and reliability.
Advancements include improved rigidity and less non-cutting time designed to boost machining capability and improve accuracy.
The MA-800HB embodies Okuma's exceptionally sound engineering and construction concepts to give you reliable and faster throughput.
Welcome to high-quality machining – for the big HMC applications.

What are the major advantages from Okuma?

- Speed...50 m/min rapid and cutting feeds (X-Y-Z)
- Large work envelopes...1,400 x 1,250 x 1,250 mm travels (X-Y-Z)
- Smart, compact design...4,745 x 6,465 x 3,410 mm (W x D x H)

By maintaining close, consistently repetitive tolerances, resulting in higher quality parts, you also reduce inspection costs and scrap. With careful work scheduling and integration with other CNC machines (FMS), that translates into reduced capital equipment, labor requirements, and excellent annual return on investment.

Welcome to well-balanced, horizontal machining applications – for businesses requiring advanced manufacturing technology.

Photos in this brochure include optional specifications.

Superb Productivity

Oil-air lubrication to extend spindle service life

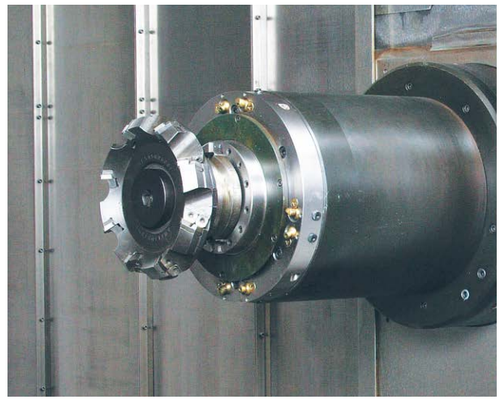
Standard spindle

- Spindle speed: 6,000 min^{-1}
- Max output: 30/22 kW (10 min/cont)
- Max torque: 606/349 N-m (10 min/cont)

Wide-range spindle (Optional)

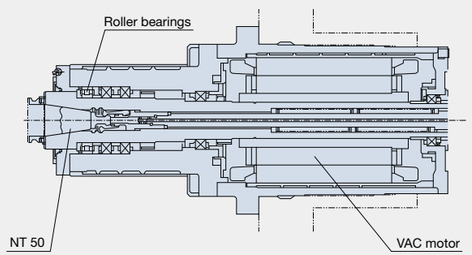
- Spindle speed: 12,000 min^{-1}
- Max output: 37/26 kW (10 min/cont)
- Max torque: 419/194 N-m (2 min/cont)

For heavy-duty cutting of steel or efficient machining of light aluminum alloys, Okuma has the right spindle to meet your application.

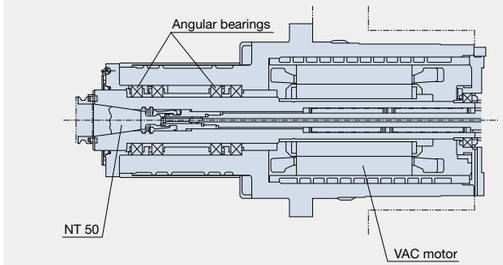


Spindle construction

- **Standard spindle** (6,000 min^{-1})
  Front roller bearings used for power cutting

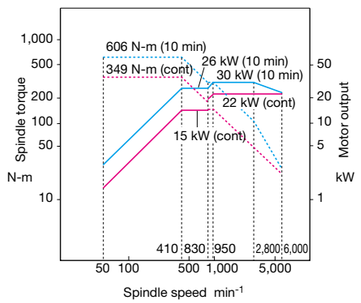


- **Wide-range spindle** (Optional: 12,000 min^{-1})
  Angular bearings for high-speed applications

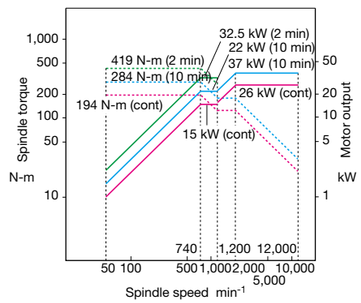


Spindle power diagrams

- **Standard spindle** (6,000 min^{-1})



- **Wide-range spindle** (Optional: 12,000 min^{-1})



Speed & Accuracy

Rapid traverse

Using roller guides (linear guideways)

Box-in-box construction

- Lightweight moving components (faster rapids)

Rapids

- X: 50 m/min (1969 ipm)
- Y: 50 m/min (1969 ipm)
- Z: 50 m/min (1969 ipm)

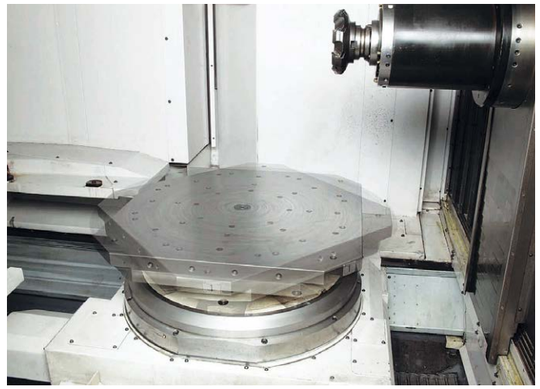
Rapid accel/decel

- X: 0.7 G
- Y: 0.7 G
- Z: 0.7 G

Fast table indexing

Indexing times

	90°	180°
1° indexing:	1.8 sec	2.5 sec
0.001° indexing: (Optional)	2.5 sec	3.3 sec



Quick ATC

An NC-ATC, for less non-cutting time and higher reliability

- Tool change*1 T-T: 2.0 sec
  C-C: 5.5 sec
- Tool storage 40 tools
  (Opt: 60, 100, 150, 200, 240, 320, 400 tools)

*1. JIS-based Okuma measurements

Speedy APC

A reliable automatic pallet changer that facilitates workpiece transfers and handling – easy, smooth, and fast.

- Pallet change*2 15 sec
- Max load 2,000 kg (4,400 lb)

*2. MAS-based Okuma measurements

Accurate & Compact

Big machine built for high accuracy

■ Thermo-Friendly Concept, for the MA-800HB

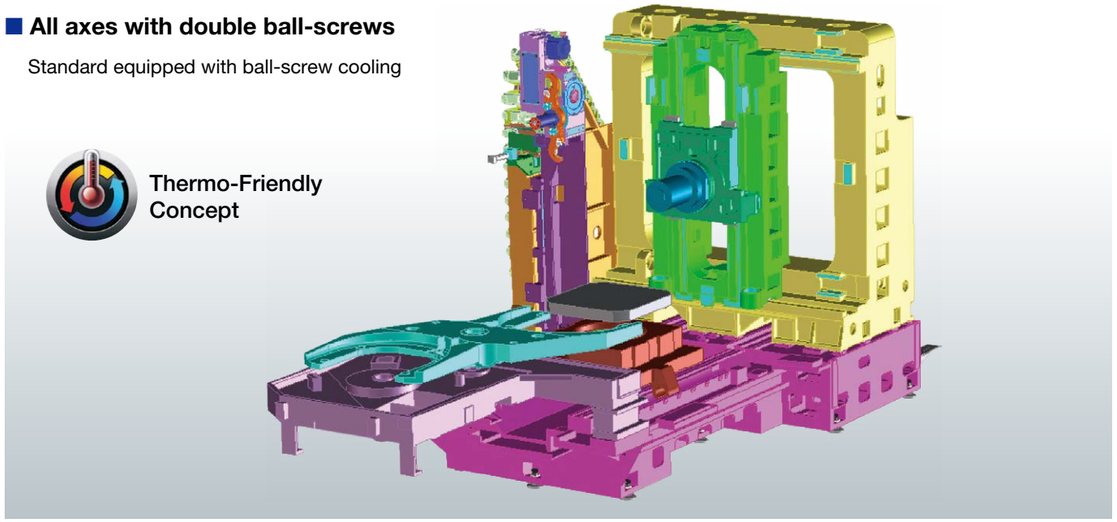
Thermally stable construction with “box build” frames and building block design

■ Motor cooling for feed axis drives

To control thermal deformation from motor heat

■ All axes with double ball-screws

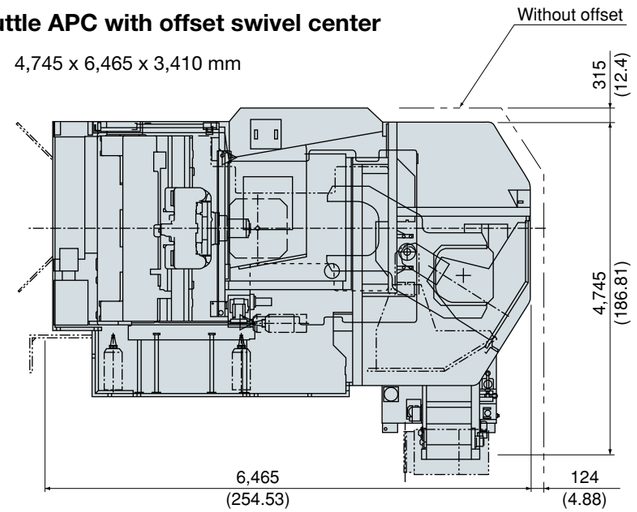
Standard equipped with ball-screw cooling



Compact – small footprint

■ 2-pallet rotary shuttle APC with offset swivel center

Width x depth x height: 4,745 x 6,465 x 3,410 mm



unit: mm (in.)

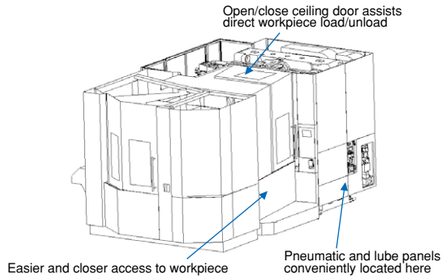
Eco-Friendly Equipment

Easy to operate

■ Open/close ceiling door

- [open width: 980 mm (38.59 in.)]

■ Carrier traverse system provides for superb access to workpiece and spindle



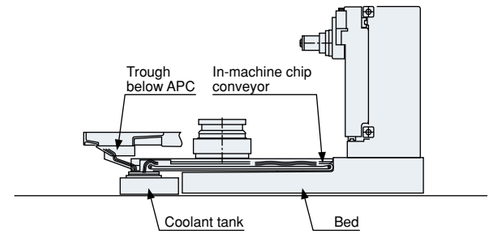
■ Easy to mount workpieces on the pallet inside the machine

■ Daily maintenance operations placed near the operator station

Complete chip disposal

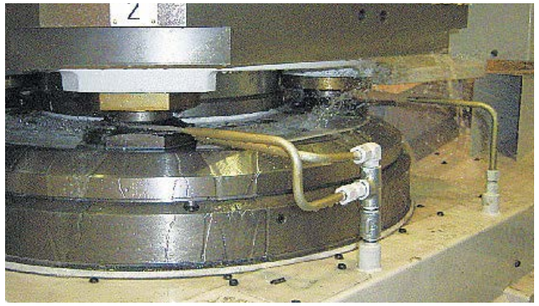
■ Chips fall straight down from the spindle, so hot chips discharged right away

- Center trough design
  (wide chip catch directly below spindle)
- Central chip conveyor



■ Pallet bottom washing

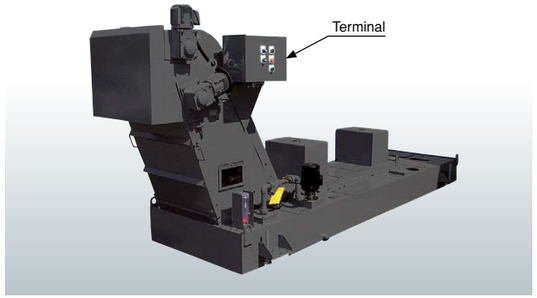
- Pallet bottom washing is linked to the machine start signal to perform a flush out.



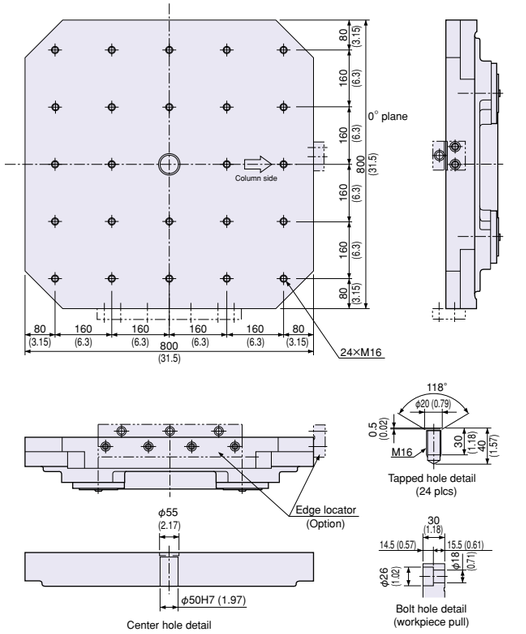
Coolant washes below the pallet during an APC to keep the four positioning cones free of chips.

■ Drum filter lift-up chip conveyor – handles various types of chips (Optional)

- Designed to eliminate chip piles
- Chips disposed of right away

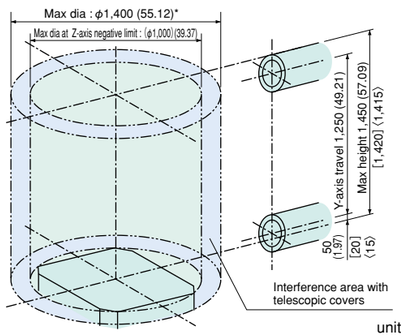


Pallet dimensions



unit: mm (in.)

Maximum workpiece size



unit: mm (in.)

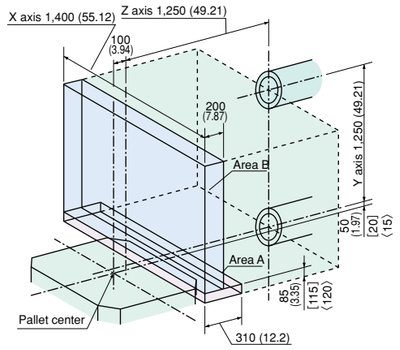
* : When performing APC operation in the Z-axis negative limit, ensure that the max workpiece diameter is ø1,000 (39.37) to avoid interference with the X/Y telescopic cover.

[ ] : Pallet with metric T-slots < > : Pallet with inch T-slots
<Note> The spindle interferes with the pallet if located in a position where both Z-axis and Y-axis are in their negative limits.

Expansive working ranges

Huge machining area accepts a variety of workpieces

● **Travels** X axis: 1,400 mm (55.12 in.)
Y axis: 1,250 mm (49.21 in.)
Z axis: 1,250 mm (49.21 in.)



[ ] : Pallet with metric T-slots < > : Pallet with inch T-slots
<Note> Operate the machine with reference to the following interference ranges.
Part A : Spindlehead interference range
Part B : Interference range applied when the max workpiece diameter is in the range from φ1,000 (39.37) to 1,400 (55.12).

unit: mm (in.)

Machining capacity

S45C (Machine: 6,000 min^{-1}, 30/22 kw)

Tool / Cutting conditions		φ160 face mill 5 blade*	φ50 end mill, 2 blade (carbide porcupine)	
			Side	Groove
Spindle speed	min^{-1}	400	890	640
Cutting speed	m/min (fpm)	200 (656)	140 (459)	100 (39.37)
Cutting feedrate	mm/min (ipm)	1,100 (43.31)	490 (19.29)	450 (17.72)
Cutting width	mm (in.)	112 (4.41)	25 (0.98)	50 (1.97)
Cutting depth	mm (in.)	6 (0.24)	50 (1.97)	25 (0.98)
Chip volume	cm^3/min (in.^{3}/min)	740 (45.14)	615 (37.52)	560 (34.16)

*cermet

AL5052 (Machine: 12,000 min^{-1}, 37/26 kw)

Tool / Cutting conditions		φ63 face mill 2 blade**	φ30 end mill (carbide 2 flute)	
			Side	Groove
Spindle speed	min^{-1}	12,000	12,000	12,000
Cutting speed	m/min (fpm)	2,375 (7,790)	1,130 (3,706)	1,130 (3,706)
Cutting feedrate	mm/min (ipm)	16,500 (649.6)	3,700 (145.67)	4,000 (157.48)
Cutting width	mm (in.)	45 (1.77)	15 (0.59)	30 (1.18)
Cutting depth	mm (in.)	4 (0.16)	45 (1.77)	15 (0.59)
Chip volume	cm^3/min (in.^{3}/min)	2,970 (181)	2,500 (153)	1,800 (110)

**carbide

<Note> 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.

Machine Specifications

	Item	Unit	MA-800HB
Travel	X-axis (carrier hor)	mm (in.)	1,400 (55.12)
	Y-axis (spindlehead ver)	mm (in.)	1,250 (49.21)
	Z-axis (table front-back)	mm (in.)	1,250 (49.21)
	Spindle center to pallet surface	mm (in.)	50 to 1,300 (1.97 to 51.18)
	Spindle nose to pallet center	mm (in.)	100 to 1,350 (3.94 to 53.15)
Pallet	Size	mm (in.)	800 x 800 (31.50 x 31.50)
	Max workpiece weight	kg (lb)	2,000 (4,400)
	Min indexing angle	degree	1 [0.001]
	Max workpiece size	mm (in.)	ø1,400 x 1,450 (ø55.12 x 57.09)
Spindle	Spindle speed	min^{-1}	50 to 6,000 [50 to 12,000]
	Bore taper		NT50 [HSK-A100]
	Spindle bearing ID	mm (in.)	ø100 (ø3.94) [ø100 (ø3.94)]
Feedrate	Rapid traverse (X-Y-Z)	mm/min(ipm)	50,000 (1969)
	Cutting feedrate (X-Y-Z)	mm/min(ipm)	1 to 50,000 (0.04 to 1969)
Motors	Spindle drive (10 min/cont.)	kW (hp)	30/22 (40/30) [37/26 (50/35)]
	Axis feed (X/Y/Z)	kW (hp)	4.6 x 2 (6.1 x 2)
	Table index	kW (hp)	4.6 (6.1)
ATC	Tool shank		MAS403 BT50 [HSK-A100]
	Pull stud		MAS type 2
	Tool storage capacity	tools	40 [60,100,150,200,240,320,400]
	Max tool dia (w/adjacent tools)	mm (in.)	ø140 (5.51)
	Max tool dia (w/o adjacent tools)	mm (in.)	ø240 (9.45)
	Max tool length	mm (in.)	600 (23.62)
	Max tool weight	kg (lb)	25 (55)
	Tool selection method		Memory random*
Machine Size	Height	mm (in.)	3,410 (134.25)
	Required floor space (W x D)	mm (in.)	4,745 x 6,465 (186.81 x 254.53)
	Weight	kg (lb)	33,600 (73,920)

* Fixed address for 100 tools or more [ ]: Optional

Standard Specifications & Accessories

Name	Qty	Type, Size
Spindle speed	1	6,000 min^{-1} 30/22 kW (40/30 hp) [10 min/cont]
ATC tool storage capacity	1	40 tools
Spindlehead cooling unit	1	
Ball screw cooling unit	1	X, Y, Z-axes
Auto lube oiler	1	With oil level alarm and pressure alarm
Coolant system	1	Tank capacity: 890 L (235 gal) (effective: 530 L (140 gal)) Pump: 390 W (At 50 Hz)
Internal chip conveyor	1	Hinge type
ATC air blower (blast)	1	
Chip air blower (blast)	1	Nozzle type
Air filter and oiler	1	
Telescoping cover	1	
Hydraulic unit	1	
Auto 1° indexing table	1	
2-pallet rotary APC	1	2 pallets with M16 tapped holes
Full-enclosure shielding	1	For 2-pallet rotary-shuttle APC
Operation panel	1	
ATC manual operation panel	1	
Ventilation fan	1	Control cabinet
3-level status indicator	1	Signal tower Red (alarm), Yellow (operation end), Green (NC running)
Foundation washers, jack bolts	1	
Tool release lever	1	
Tapered bore cleaning bar	1	
Hand tools	1	
Tool box	1	

Optional Specifications & Accessories

Name	Qty	Type, Size	Name	Qty	Type, Size
Spindle speed	1	12,000 min^{-1}, 37/26 kW (50/35 hp) [10 min/cont]	Chip air blower	1	Adaptor
Dual contact spindle	1	HSK-A100, BIG-PLUS®	Lift-up chip conveyor	1	MOSNIC RDF (hinge + scraper + drum filter)
ATC magazine capacity	1	60 tools (chain) 100,150,200,240,320,400 tools (multi-magazine)	Chip bucket for above	1	Heights: 700, 1,000 mm (27.55, 39.37 in.)
AbsoScale detection	1	X-Y-Z axes	Hydraulic oil cooler	1	
Auto 0.001° indexing table	1	Built-in NC table	Coolant cooler	1	
Multi-pallet APC	1	6, 10 pallets, FMS	Tool breakage detection	1	With auto tool length offset (touch sensor)
Pallet top face special	1	T-slot specs, inch tap specs	Auto zero offset	1	With auto gauging (touch probe)
Spare pallets	1		Tool life management	1	Time accumulation, etc.
Edge locator	1		Overload monitor	1	With feed adaptive control
Through-tool coolant	1	1.5 MPa (217.7 psi)	Pull stud special	1	MAS I, CAT, DIN, JIS
Through-spindle coolant	1	1.5, 7.0 MPa (217.7, 1015.7 psi) Large flow type: 1.5, 7.0 MPa (217.7, 1015.7 psi)	Pull stud bolt	1	MAS II, MAS I, CAT, DIN, JIS
			Standard angle plate	1	
Shower coolant	1	10 nozzles	Standard T-column fixture	1	
Work wash gun	1		Standard square-column fixture	1	
Oil mist lubricator	1		Work lamp	2	LED

The Next-Generation Intelligent CNC

OSP suite OSP-P300MA

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 suite also features a full range of useful apps that could only come from a machine-tool manufacturer, making smart manufacturing a reality.

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

Note: 15-in. operation panel screen shots.
Collision Avoidance System (Optional) shown above.

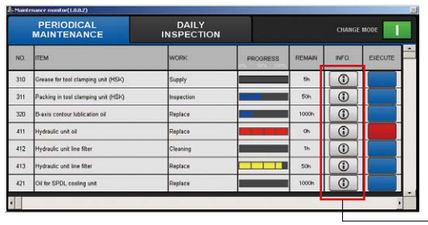
Features you wanted – loaded with OSP suite apps!

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

Maintenance Monitor

The Maintenance Monitor displays items for inspections before starting daily 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.



[INFO] button

Increased productivity through visualization of motor power reserve

Spindle Output Monitor

Making new machining technology simpler and easier to use

Turn-Cut Guide (Optional)

Comment display for greater ease of use and faster work

Common Variable Monitor

Automatic saving of recorded alarms

Screen Capture

Easy programing without keying in code

Scheduled Program Editor

Standard Specifications

Basic Specs	Control	X, Y, Z, simultaneous 3 axis, spindle control (1 axis)
	Position feedback	OSP full range absolute position feedback (zero point return not required)
	Coordinate functions	Machine coordinate system (1 set), work coordinate system (20 sets)
	Min / Max inputs	8-digit decimal, ±99999.999 to 0.001 mm (3937.0078 to 0.0001 in.), 0.001˚ Decimals as: 1 µm, 10 µm, 1 mm (0.0001,1 in.) (1˚, 0.01˚, 0.001˚)
	Feed	Cutting feed override 0 to 200%, rapid traverse override 0 to 100%
	Spindle control	Direct spindle speed commands, override 30 to 300%, multi-point indexing
	Tool compensation	No. of registered tools: Max 999 sets, tool length/radius compensation: 3 sets per tool
	Display	15-inch color LCD + multi-touch panel operations
	Self-diagnostics	Automatic diagnostics and display of program, operation, machine, and NC system faults
Programming	Program capacity	Program storage capacity: 4 GB; operation backup capacity: 2 MB
	Program operations	Program management, editing, multitasking, scheduled program, fixed cycle, G-/M-code macros, arithmetic, logic statements, math functions, variables, branch commands, coordinate calculate, area calculate, coordinate convert, programming help
Operations	"suite" apps	Applications to graphically visualize and digitize information needed on the shop floor
	"suite" operation	Highly reliable touch panel suited to shop floors. One-touch access to suite apps.
	Easy Operation	"Single-mode operation" to complete a series of operations, Advanced operation panel/graphics facilitate smooth machine control
	Machine operations	MDI, manual (rapid traverse, manual cutting feed, pulse handle), load meter, operation help, alarm help, sequence return, manual interrupt/auto return, Pulse handle overlap, parameter I/O, PLC monitor, alignment compensation
	MacMan	Machining management: machining results, machine utilization, fault data compile & report, external output
Communications / Networking		USB (2 ports), Ethernet
High speed/accuracy specs		Hi-G Control, Hi-Cut Pro, pitch error compensation
Energy-saving	ECO suite	ECO Idling Stop*1, ECO Power Monitor*2

*1. Spindle cooler Idling Stop is used on TAS-S machines.
*2. The power display shows estimated values. When precise electrical values are needed, select the on-machine wattmeter option.

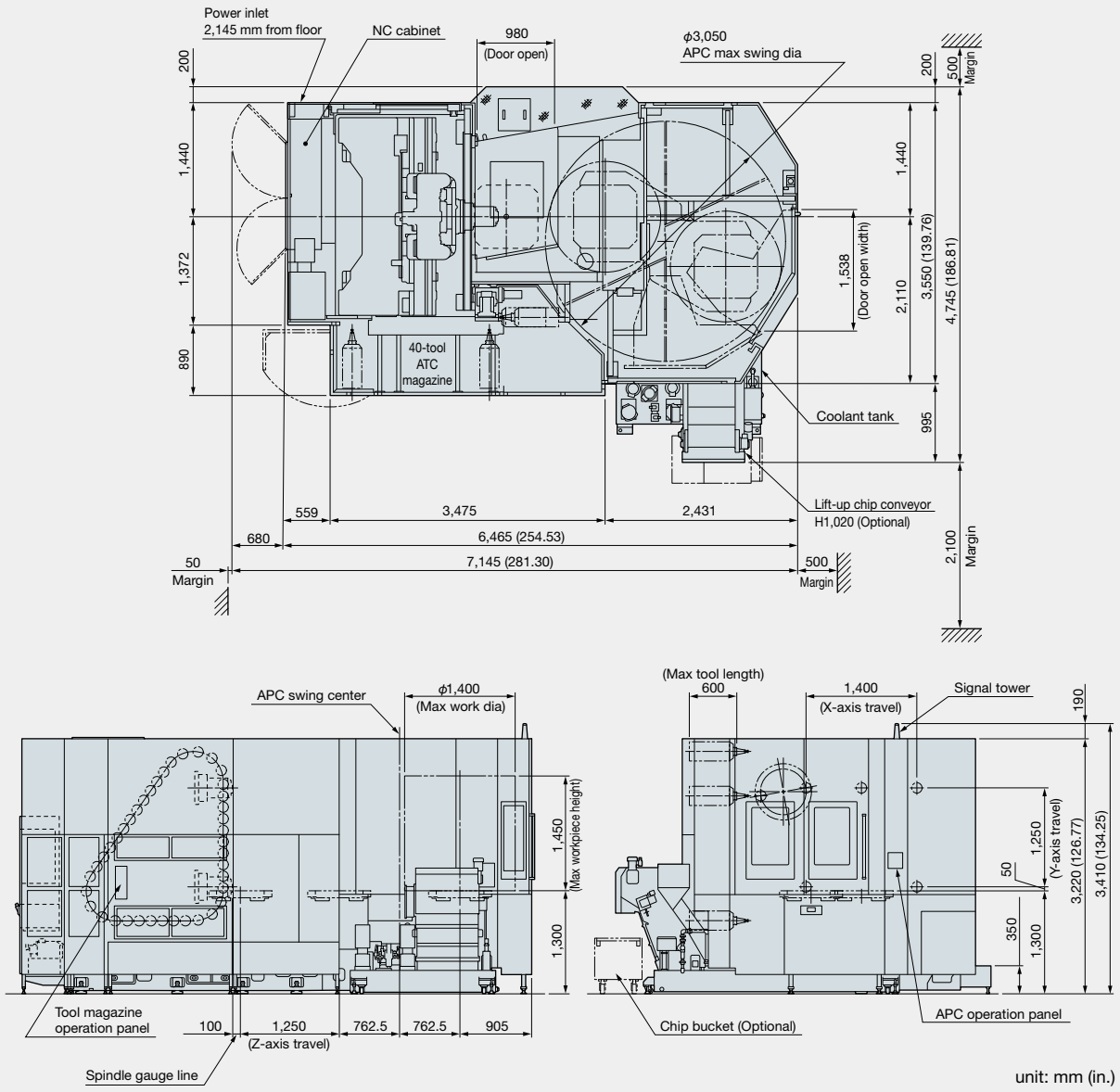
Optional Specifications

Item	Kit Specs*1	NML E	NML D	3D E	3D D	AOT E	AOT D
Interactive functions							
Advanced One-Touch IGF-M (Real 3D simulation included)						●	●
Interactive MAP (I-MAP)				●	●		
Programming							
Auto scheduled program update		●	●	●	●	●	●
G/M-code macros							
Common variables (Std: 200 pcs)	1,000 pcs						
	2,000 pcs						
Program branch; 2 sets							
Program notes (MSG)			●		●		●
Coordinate system selection (Std: 20 sets)	100 sets	●		●		●	
	200 sets		●		●		●
	400 sets						
Helical cutting (within 360˚)		●	●	●	●	●	●
3D circular interpolation							
Synchronized Tapping II		●	●	●	●	●	●
Arbitrary angle chamfering		●	●	●	●	●	●
Cylindrical side facing							
Slope machining							
Tool grooving (flat-tool free-shaped grooving)							
Turn-cut							
Tool max rotational speed setting							
F1-digit feed	4 sets, 8 sets, parameter						
Programmable travel limits (G22, G23)		●	●	●	●	●	●
Skip (G31)							
Axis naming (G14)							
3D tool compensation							
Tool wear compensation			●		●		●
Drawing conversion	Programmable mirror image (G62)		●		●		●
	Enlarge/reduce (G50, G51)		●		●		●
User task 2	I/O variables (16 each)						
Tape conversion*2							
Monitoring							
Real 3D simulation				●	●	●	●
Simple load monitor	Spindle overload monitor	●	●	●	●	●	●
NC operation monitor	Hour meter, work counter	●	●	●	●	●	●
Hour meters	Power, spindle, NC, cutting						
Operation end buzzer	With M02, M30, and END commands						
Work counter	With M02 and M30 commands						
MOP-TOOL	Adaptive control, overload monitor						
Tool life management	Hour meter, No. of workpieces	●	●	●	●	●	●
Gauging							
Auto gauging	Touch probe (G31)	Included in machine specs					
Auto zero offset	Includes auto gauging	Included in machine specs					
Tool breakage detection	(touch sensor) (G31) Includes auto tool offset	Included in machine specs					
Gauging data printout	File output						
Manual gauging (w/o sensor)		●	●	●	●	●	●
Interactive gauging (touch sensor, touch probe required)							

Item	Kit Specs*1	NML E	NML D	3D E	3D D	AOT E	AOT D
External I/O communication							
RS-232-C connector							
DNC-T3							
DNC-B (232C-Ethernet transducer used on OSP side)							
DNC-DT							
DNC-C/Ethernet							
Additional USB (Additional 2 ports, Std: 2 ports)							
Automation / untended operation							
Auto power shut-off	M02 and END alarms, work preps done	●	●	●	●	●	●
Warm-up (calendar timer)							
External program selection	Button, rotary switch, digital switch, BCD (2-digit, 4-digit)						
Cycle time reduction (Ignores certain commands)		●	●	●	●	●	●
Pallet pool control (PPC) (Required for multi-pallet APC)							
Robot, loader I/F							
High-speed, high-precision							
AbsoScale detection	X-, Y-, Z-axis						
Inductosyn detection	A-, B-, C-axis						
Super-NURBS							
0.1 µm control (linear axis commands)							
TAS-S (Thermo Active Stabilizer—Spindle)							
TAS-C (Thermo Active Stabilizer—Construction)							
ECO suite (energy saving functions)							
ECO Operation							
ECO Power Monitor	Wattmeter						
Energy-saving hydraulic unit	Inverter						
	ECO Hydraulics						
Other							
CNC cabinet lamp							
Circuit breaker							
Sequence operation	Sequence stop	●	●	●	●	●	●
Upgraded sequence restart	Mid-block return		●		●		●
Pulse handles	2 pcs, 3 pcs (Std: 1 pc)						
External M signals	4, 8 signals						
Collision Avoidance System							
Machining Navi M-*i*, M-*g*II+ (cutting condition search)							
One-Touch Spreadsheet							
Block skip; 3 sets							
Additional axis	A, B, C, U axes [preps, specs]						
Fixture offset							
OSP-VPS (OSP Virus Protection System)							
19-in.-display operation panel w/ adjustable-tilt key board							

*1. NML: Normal, 3D: Real 3D simulation, E: Economy, D: Deluxe, AOT: Advanced One-Touch IGF-M
*2. Requires technical consultation.

MA-800HB
Dimensional and Installation Drawings



unit: mm (in.)

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SPACE CENTER MA-800HB

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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