OKUMA

OPEN POSSIBILITIES

Large Horizontal Machining Center

SPACE CENTER MA-12500H

Large Horizontal Machining Center

SPACE CENTER MA-1250OH

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

Innovative productivity of large components

High power and high-speed movement improves productivity

- 45 kW, 1,071 N-m spindle
- 40 kW, 1,920 N-m spindle (Optional)
- Rapid traverse: 42-m/min X-Y-Z axes

Automatic tool change for super big bore tools enables long-run unattended operation

- ATC your boring tools up to ø600 mm

Long-run high-precision machining with machine design to inhibit thermal deformation

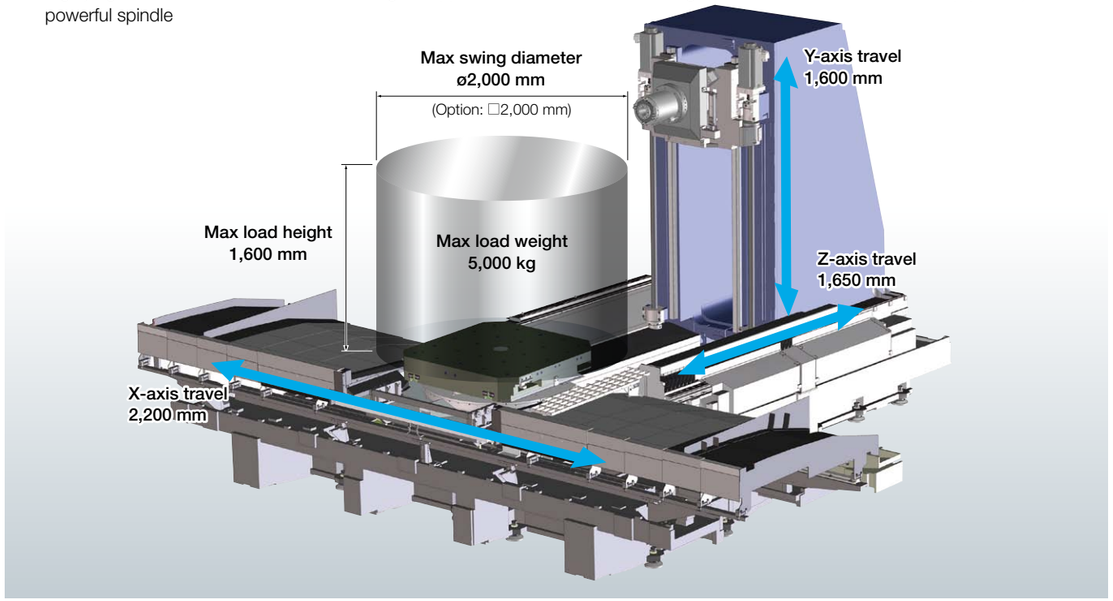
- Plus ball-screw cooling, motor base cooling, and B-axis drive cooling
- Thermo-Friendly Concept

Photographs used in this brochure may show optional equipment.
In the above image, portions of the enclosure shielding have been removed to reveal the interior. This view differs from the actual product.

Improved productivity through highly efficient large part machining

Innovative productivity of large components

- **Minimal following error and fast feeds move heavy workpieces quickly**
  - All axes use double ball-screws and roller guideways
  - X-Y-Z rapids: 42 m/min
- **Powerful, high torque spindle provides plenty of big-diameter tool performance**
  - Highly rigid, wide column with fortified ribbing in support of a powerful spindle
- **Long, continuous machining—with steady, cutting accuracy**
  - With minimal heat, and minimal thermal deformation
  - Plus ball-screw cooling, motor base cooling, and B-axis drive cooling
- **With large work envelope equivalent to double-column machine applications**
  - Max swing diameter: □2,000×ø2,400mm* (Optional)



* Limitations on possible B-axis rotational range

Jobs inside the machine are easy, with low pallet top surface, and fast table rotation

- B-axis double-motor drive design enables minimal table thickness, and lower height of pallet top surface.
- B-axis rotation speed: 9 min^{-1}
- Table indexing time: 2.1 sec (90°)

Outstanding machining capacity handles even hard-to-cut materials with ease

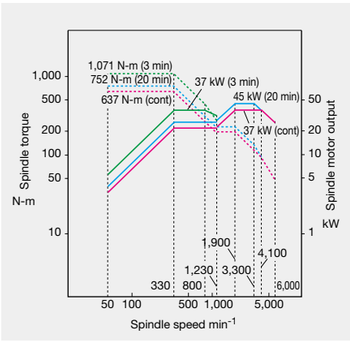
High-torque spindle for easy machining of titanium, Inconel and other difficult-to-cut materials

- Integral motor/spindle: **1,071 N-m**
- Gear spindle (Optional): **1,920 N-m**

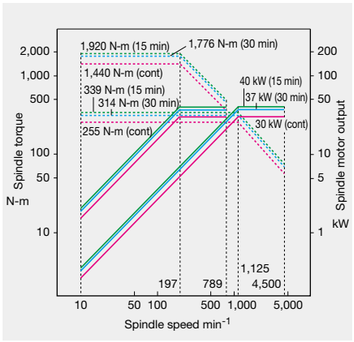
Spindle torque / Power graph

- **Optimal for difficult-to-cut materials and heavy-duty cutting**
- **Ideal for machining a wide range of materials, from aluminum to steel**

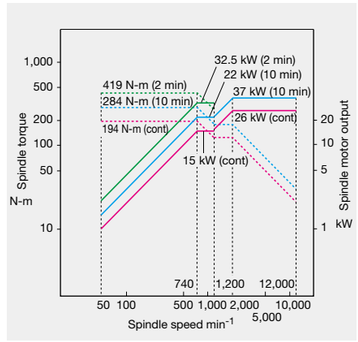
Standard spindle
- Spindle Speed 6,000 min^{-1}
- Max output VAC 45/37 kW (20 min/cont)
- Max torque 1,071/637 N-m (3 min/cont)



Gear spindle (Optional)
- Spindle Speed 4,500 min^{-1}
- Max output VAC 40/30 kW (15 min/cont)
- Max torque 1,920/1,440 N-m (15 min/cont)



Wide-range spindle (Optional)
- Spindle Speed 12,000 min^{-1}
- Max output VAC 37/26 kW (10 min/cont)
- Max torque 419/194 N-m (2 min/cont)



Machining capacity (Material: S45C)

- Standard spindle: 6,000 min^{-1}
  45/37 kW (20 min/cont)

Tool	Spindle speed min^{-1}	Cutting m/min	Feedrate mm/min	Cut width mm	Cut depth mm	Chips cm^3/min
ø160 face mill: 16 blades (carbide)	500	251	2,688	112	4	**1,204**
ø63 roughing end mill: radial 4 flutes (carbide)	1,266	251	1,495	15	35	**785**
M42 P4.5 tap	91	12	409	–	–	**–**

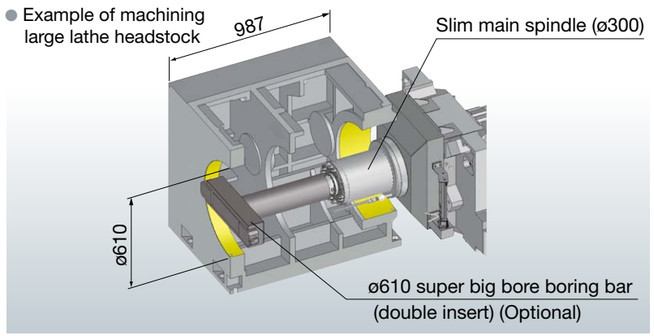
*The “actual data” referred to above for this brochure represent examples, and may not be obtained due to differences in specifications, tooling, cutting, and other conditions.

Long, untended operations of the big components

ATC of large tools for the big component jobs

Enables automatic tool changes, even with large-diameter boring bars, milling cutters, and other large tools generally changed manually for long, untended operations of the big components.

● Example of machining large lathe headstock



Automatic tool changer

High-precision machining on a large machine

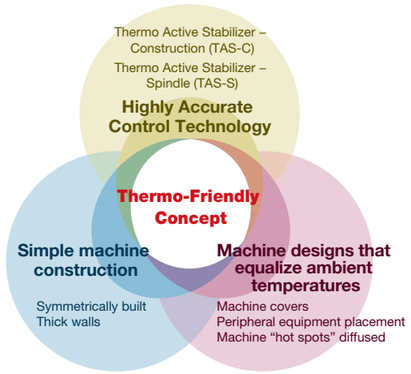
The unique approach of “accepting temperature changes”
Thermo-Friendly Concept

Thermo-Friendly structure gives outstanding thermal stability

~~Forced cooling and restraining of thermal deformation~~

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

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.

Machine startup
Machining restart
Room temp change

High dimensional stability

TAS-C (Optional)

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 feed axis positioning information.

TAS-S

Thermo Active Stabilizer—Spindle

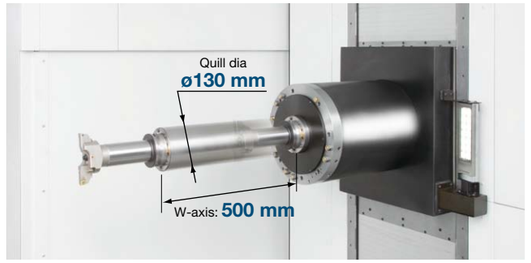
The TAS-S spindle thermal deformation control takes into account various conditional changes such as the spindle’s temperature data, modification of the spindle rotation and speed, as well as spindle stoppage. The spindle’s thermal deformation will be accurately controlled, even when the rotating speed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

W-axis delivers effective deep-hole and pocket milling for large components (Optional)

Effective deep-hole boring

W-axis travel reaches the back of deep holes

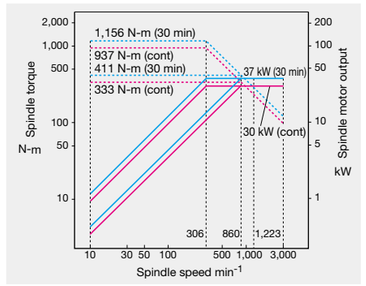
● 500-mm W-axis travel, ø130-mm quill diameter



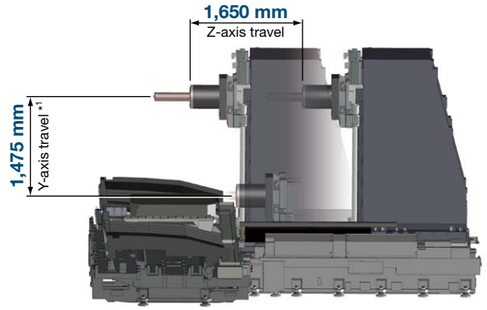
W-/Z-axis travels with good access to table center

● -275 to 1,875-mm range from pallet center

High-torque spindle provides highly efficient machining



Maximum torque:
1,156 N-m
- Spindle speed: 3,000 min^{-1}
- Maximum output: 37/30 kW (30 min/cont)



*1. Y-axis travel above pallet top surface: +50 to 1,525 mm
Note: +50 to 1,650 mm with standard pallet

Operator-friendly machine structure design

Superior ease-of-use reduces operator burden

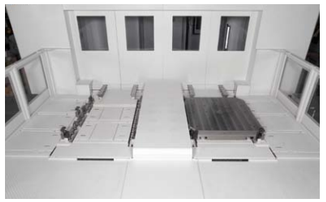
Z-axis column travel construction provides superior operability

● Door opening ensures good operability in the machine
● Simple and easy confirmation of tool edge machining area greatly reduces time in preparing tools and confirming programs

* The photograph 19-inch operation panel (Optional)

Reduces burden of setup

● Flattening within the machine for excellent operability



Setup station with excellent operability

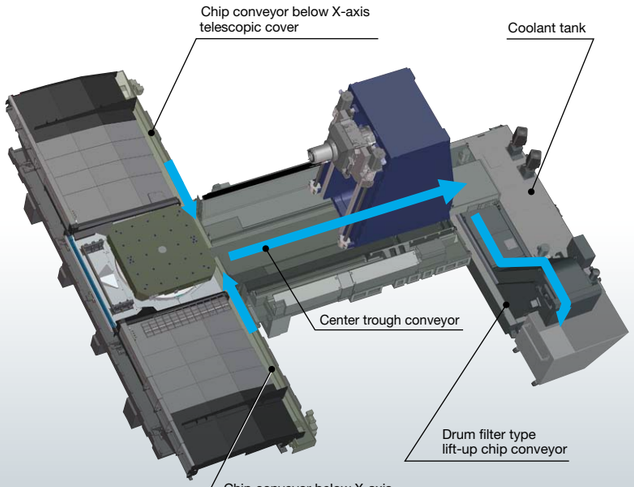
● Platforms surround the pallets to assist operator setups
● Being able to walk around the job makes it so much easier to handle difficult, heavy workpieces.

Smooth discharge of large volumes of chips from long-run machining

Smooth chip discharge

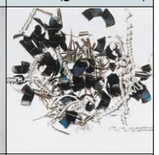
- Smooth discharge of chips with hinged conveyor situated beneath the spindle where the chips are generated.
- Clean, simple covering prevents chips from accumulating in the machining chamber.

In-machine chip conveyor (hinged)



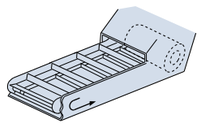
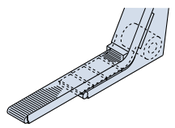
Recommended chip conveyors

○: Recommended specifications, △: Recommended specifications with conditions

Workpiece material			Steel	FC	Al / Nonferrous	Mixed (general use)
Chip shape						
In-machine	Hinge type	[Std] *	○	○	○	○
Off-machine	Scraper type (with drum filter)	[Opt]	—	○(Wet) w/magnet	△*3	—
	Hinge + scraper (with drum filter)	[Opt]	△*1	△(Wet) *2	○	○

* Scraper type is available as an option.
*1. When there are many fine chips *2. When chips are longer than 100 mm *3. When chips are shorter than 100 mm
Note: In the case of dry chips, clean out chips that have accumulated under the pallet or elsewhere in the machine as needed.

Off-machine lift-up chip conveyors

Name	Scraper type (with drum filter)	Hinge + scraper (with drum filter)
Shape		

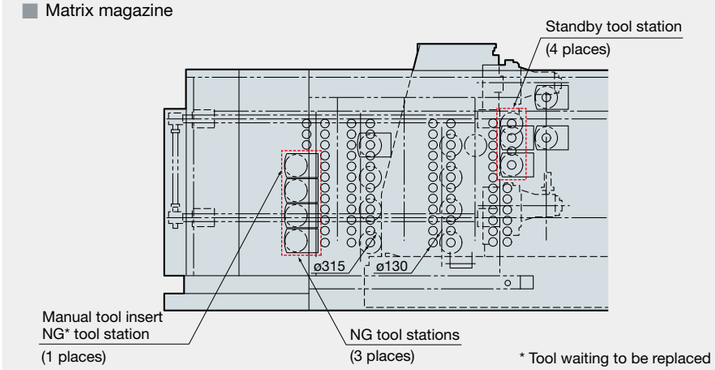
*Regular cleaning of coolant tank is necessary even for conveyors with drum filters.

Hinge + scraper (with drum filter) lift-up chip conveyor

Flexible production of large-variety workpiece applications

Tool changer (ATC), matrix magazine type

- Fast, space-saving matrix magazine system with low energy use drive (Standard)
- Open-ceiling magazine door for storage of heavy tools with crane
- Shorter tool preparation times: minimum 18 seconds
- Reduced machine width



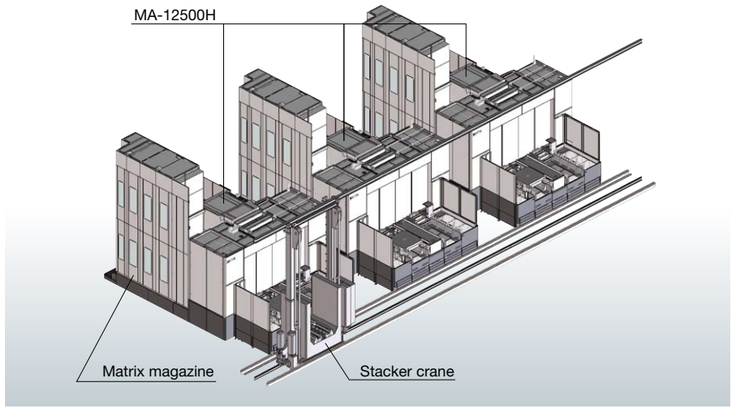
Open ceiling magazine door

ATC tools	ATC Tool Specs				
	Max diameter / storage				Max length, Mass, Moment
	w/ adjacent tools	Storage	w/o adjacent tools	Storage	
81 tools	ø130mm	81 tools (59 tools*)	ø315mm	8 tools	● Max length: 600 mm ● Max mass: 30 kg ● Mass moment: 37 N-m
129 tools		129 tools (107 tools*)			
177 tools		177 tools (155 tools*)			

* When 8 ø315-mm tools are stored with ø130-mm or smaller tools.

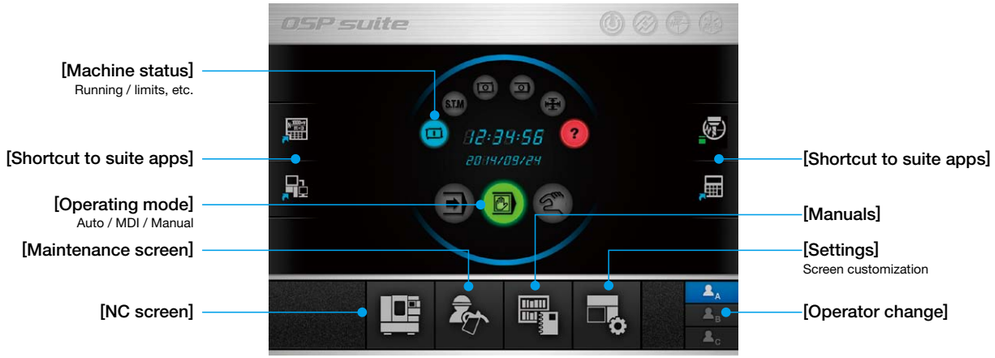
Ready for FMS applications
(Optional)

With several machines, stacker/transport system, and a control system, this FMS makes possible flexible production of high-mix, high-volume jobs. With long, untended operations, efficient (waste-less) machine utilization, reduced work-in-progress inventory, and space-saving arrangement raises shop productivity to high levels.



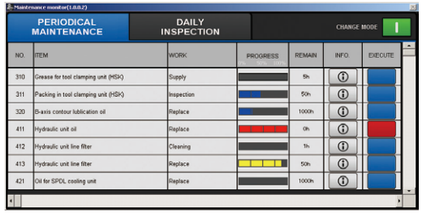
The Next-Generation Intelligent CNC OSP suite OSP-P300M

It is a suite of premium applications to increase the efficiency of each manufacturing process by increasing status visibility and digitizing shop floor production instructions, setup information, machining and utilization, machine maintenance information and more. Intelligent, fast machining and efficient “monozukuri” (craftsmanship-based manufacturing) achieved with a control interface that can be operated on a new dimension.



suite apps

In addition to Okuma's Intelligent Technology, a rich array of applications is available for visualization and digitization of information needed on shop floors to support high-level “monozukuri.”



Maintenance Monitor that displays daily and regular check items

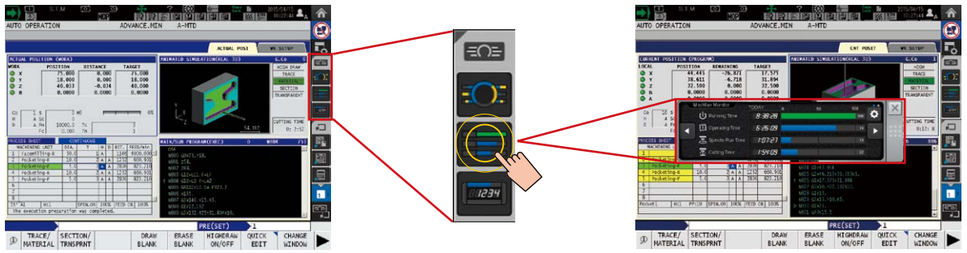
Actual Load

MacMan Monitor

Tool Data

suite operation

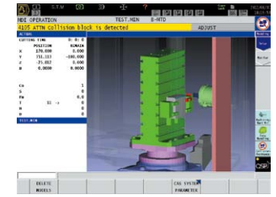
A highly reliable touch panel suited to shop floors is used. Suite apps can be started by touching a function key icon on the right side of the screen. They are then displayed in a pop-up window. The icon layout is customizable. Suite apps can be accessed with one touch according to the desired phase of operation.



Note: 15-in. operation panel screen

Okuma Intelligent Technology for competitive machine shops

Collision prevention
Collision Avoidance System (Optional)



World’s first “Collision-Free Machine”

CAS prevents collisions in automatic or manual mode, providing risk-free protection for the machine and great confidence for the operator.

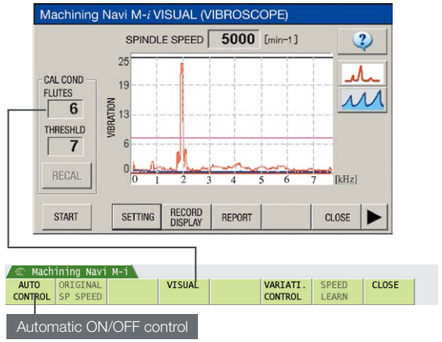
Cutting condition search for milling
Machining Navi M-*i*, M-*g*Ⅱ+, M-*g*Ⅱ* (Optional)

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.

- Available only with Okuma integral motor/spindles. (N/A with gear spindles.)

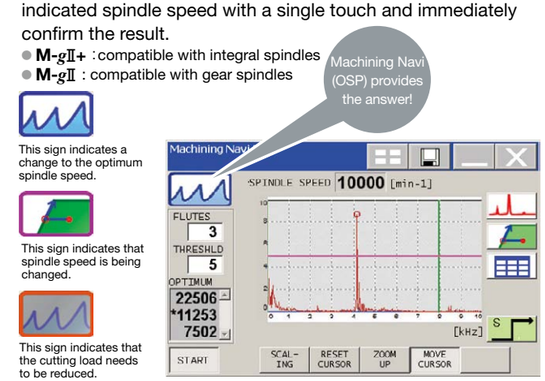
■ Vibration waveform display



Adjust cutting conditions while monitoring the data (M-*g*Ⅱ+, M-*g*Ⅱ)

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.

- **M-*g*Ⅱ+** : compatible with integral spindles
- **M-*g*Ⅱ** : compatible with gear spindles



* Harmonic Spindle Speed Control available only with M-*i* or M-*g*Ⅱ+. (N/A with M-*g*Ⅱ.)

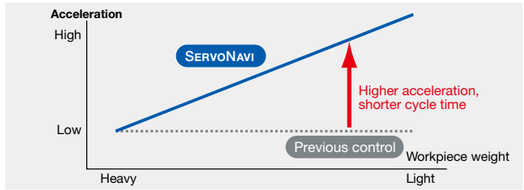
Optimized Servo Control
SERVONAVI

Achieves long term accuracy and surface quality

SERVONAVI 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.



SERVONAVI 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 accuracy (part surface quality).
SERVONAVI’s Reversal Spike Auto Adjustment maintains machining accuracy by switching servo parameters to the optimum values matched to changes in slide resistance.

Contributes to longer machine life Vibration Auto Adjustment

When aging 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.

Machine Specifications

	Item	Unit	MA-12500H	MA-12500H W *1
Travel	X-axis travel (table L/R)	mm (in.)	2,200 (86.61)	
	Y-axis travel (spindlehead vertical)	mm (in.)	1,600 (62.99)	1,475 (58.07)
	Z-axis travel distance (column front/back)	mm (in.)	1,650 (64.96)	
	W-axis travel distance	mm (in.)	–	500 (19.69)
	B axis (pallet swivel)	deg	±360	
	Pallet top to spindle centerline	mm (in.)	Tapping specs: 50 to 1,650 (1.97 to 64.96), [T-slot specs: 20 to 1,620 (0.79 to 63.78)]	Tapping specs: 50 to 1,525 (1.97 to 60.04), T-slot specs: 20 to 1,495 (0.79 to 58.86)
	Pallet centerline to spindle nose	mm (in.)	225 to 1,875 (8.86 to 73.82)	–
	Pallet centerline to W-axis spindle nose	mm (in.)	–	-275 to 1,875 (-10.83 to 73.82)
Pallet	Pallet dimensions	mm (in.)	□1,250 (49.21)	
	Max load capacity	kg (lb)	Tapping specs: 5,000 (11,000), [T-slot specs: 4,600 (10,120)]	
	Indexing angle	deg	0.001	
	Max workpiece dimensions	mm (in.)	Tapping specs: ø2,000 (78.74) × h1, 600 (62.99) [T-slot specs: ø2,000 (78.74) × h1, 570 (61.81)]	
Spindle	Spindle speed	min^{-1}	50 to 6,000 [10 to 4,500 <gear spindle>] [50 to 12,000 <integral motor/spindle>]	3,000 <gear spindle>
	Spindle speed ranges		Stepless [2 <gear spindle>, Stepless <integral motor/spindle>]	
	Tapered bore		7/24 taper No. 50 [HSK-100, HSK-A125]	
	Bearing dia (front bearing)	mm (in.)	ø100 (3.94) [ø110 (4.33) <gear spindle>]	ø200 (7.87)
	W-axis feed spindle diameter (Quill dia)	mm (in.)	–	ø130 (5.12)
Feed	Rapid traverse	m/min (ipm)	X-Y-Z: 42 (1,654)	X-Y-Z: 42 (1,654), W: 8 (315)
		deg/min	B: 3,240	
	Cutting feedrate	mm/min (ipm)	X-Y-Z: 1 to 42,000 (0.04 to 1,654)	
		deg/min	B: 3,240	
Motors	Spindle drive	kW (hp)	45/37 (60/50) (20 min/cont) [40/37/30 (55/50/40) (15 min/30 min/cont) <gear spindle>] [37/26 (50/35) (10 min/cont) <integral motor/spindle>]	37/30 (50/40) (30 min/cont) <gear spindle>
	Feed axes	kW (hp)	X-Z: 5.2 (7) × 2, Y: 5.1 (7) × 2, B: 4.6 (6) × 2	X-Z: 5.2 (7) ×2, Y: 5.1 (7) ×2, B: 4.6 (6) ×2, W: 3.5 (4.7)
ATC	Tool capacity	tools	[81, 129, 177]	
	Tool shank		MAS BT50 [CAT No. 50, DIN No. 50, HSK-A100, HSK-A125*2]	
	Pull stud		MAS-2 [MAS-1, CAT, CAT Special, DIN, JIS]	
	Max tool dia (w/ adjacent tool)	mm (in.)	ø130 (5.12)	
	Max tool dia (w/o adjacent tool)	mm (in.)	ø315 (12.40)	
	Max tool length	mm (in.)	600 (23.62)	
	Max tool weight	kg (lb)	30 (66)	
	Max tool moment	N-m (ft-lbf)	37 (27)	
	Tool selection		Fixed address	
APC	No. of pallets		2 [6]	
	Pallet change system		2-pallet parallel shuttle	
Machine size	Height	mm (in.)	3,781 (148.86)	
	Floor space W x D	mm (in.)	6,880 × 12,512 (270.87 × 492.60) (81-tool ATC magazine), × 13,214 (520.24) (129-tool ATC magazine), × 14,137 (556.57) (177-tool ATC magazine)	
	Weight	kg (lb)	63,100 (138,820) (81-tool ATC magazine), 63,700 (140,140) (129-tool ATC magazine), 64,000 (140,800) (177-tool ATC magazine)	
CNC			OSP-P300M	

[ ] Optional *1. W-axis specs are Optional. *2. HSK-A125 shank not available for 6,000 and 12,000 min^{-1} spindles.

Standard Specifications

Spindle speed	6,000 min^{-1} (45/37 kW [20 min/cont])	2-pallet parallel shuttle APC	Pallet top: M20 tap
Spindle/spindlehead cooler	Oil controller	Full enclosure shielding	
Ball screw cooler	X-Y-Z axes	Operation panel	
B axis cooler	Oil controller	Operator platform	
Centralized lube auto unit	With oil level and pressure alarms	ATC manual operation panel	
Coolant system	Tank: 1,400 L (Effective 1,000 L)	Work lamp	LED
	Pump: 555/885 W (50/60Hz)	Status indicator	3-color C type
In-machine chip discharge	Chip conveyor below X-axis telescopic cover	Air filter and oiler	
	Center trough chip conveyor	Hydraulic unit	
In-machine chip washer	1,100 W	Foundation blocks, jack bolts	
ATC air blower (blast)		Tool release lever	
Chip air blower (blast)	Nozzle	Tapered bore cleaning bar	
Table washer		Hand tools	
Telescopic cover	And in-machine washer	Tool box	
Auto 0.001° indexing table	Built-in NC table	Thermo Active Stabilizer—Spindle	TAS-S

Optional Specifications

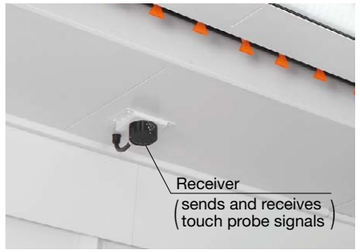
Spindle speed	4,500 min^{-1}, 40/37/30 kW, No. 50*1 12,000 min^{-1}, 37/26 kW, No. 50*2	Off machine chip discharge	Drum filter type lift-up conveyor Mosnic RDF
Spindle speed W-axis	3,000 min^{-1}, 37/30 kW (Gear spindle)	Chip bucket for above	Height 700 mm, 1,000 mm
Dual contact spindle	HSK, BIG-PLUS®	Hydraulic unit cooler	
ATC tool magazine capacity	81, 129, 177 tools (matrix)	Coolant heater/cooler	
AbsoScale detection	X, Y, Z axes	ATL*4 comp/breakage detect	Laser sensor
Automatic pallet changer	FMS	Auto zero offset/gauging	Touch probe
Pallet upper surface shape	T groove specs	In-magazine tool breakage detection	Touch sensor
Spare pallet		Tool life management	Time counter, etc.
Edge locator		Operation panel	Link arm type
Oil-hole coolant system	1.5 MPa	Pull stud shape	MAS-1, CAT, DIN, JIS
Thru-spindle coolant*3	1.5, 7.0 MPa Large flow specs: 1.5, 7.0 MPa	Pull studs	MAS-2, MAS-1, CAT, DIN, JIS
		Machine anchoring	Chemical anchors, foundation bolts
Shower coolant system		B-axis hydraulic clamp	
Workpiece washing gun		High-precision B-axis indexing	
Chip air blower (blast)	Adapter type	Thermo Active Stabilizer—Construction	TAS-C

*1. Gear spindle *2. Integral motor/spindle *3. Okuma pull stud required *4. ATL: auto tool length

Main special specifications

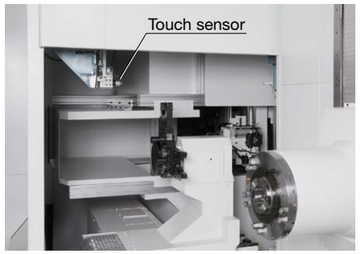
● Shower coolant, coolant nozzle

● Auto zero offset, auto gauging (wireless touch probe)



● Auto tool length compensation, breakage detection (laser sensor)

● In-magazine tool breakage detection



Machine tool idling stop

ECO Idling Stop

ECO suite

Only the necessary units run

Accuracy ensured, 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.

ECO suite benefits

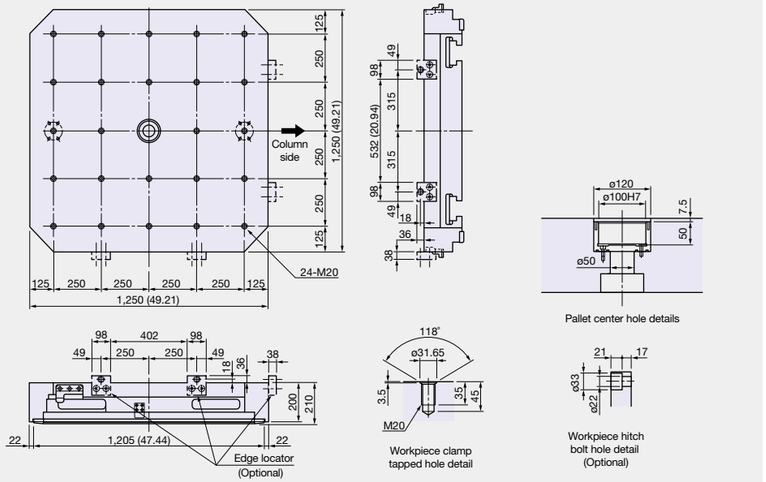
Electricity consumption during non-machining time greatly reduced with “ECO Idling Stop”, which shuts down each piece of auxiliary equipment not in use.

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)

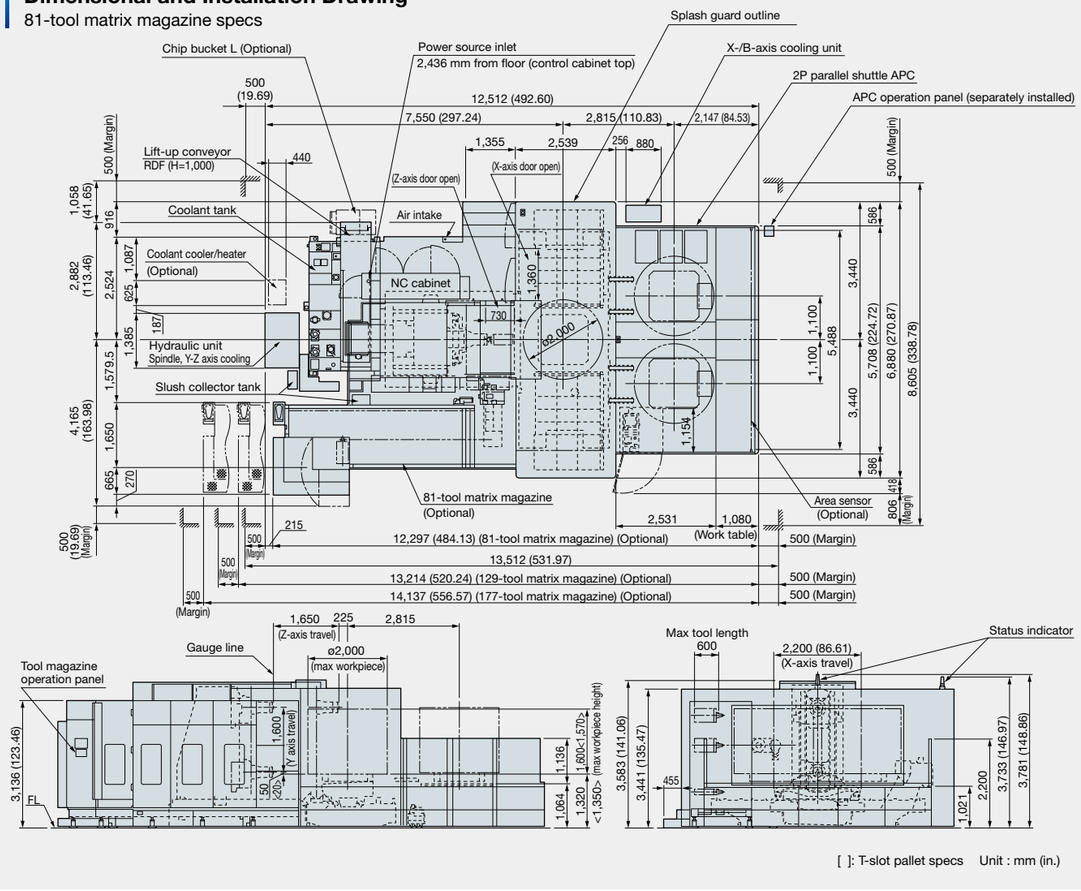
Pallet dimensions

Unit: mm (in.)



MA-12500H
Dimensional and Installation Drawing

81-tool matrix magazine specs



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 + 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
	MacMan	Machining management: machining results, machine utilization, fault data compile & report, external output
Communications / Networking		USB (2 ports), Ethernet, RS-232-C interface (1 channel)
High speed/accuracy specs		TAS-S (Thermo Active Stabilizer—Spindle), Hi-G Control, Hi-Cut Pro, pitch error compensation, ServoNavi M, Machining Time Shortening Function
Energy-saving function	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 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 sets)	1,000 sets						
	2,000 sets						
Program branch; 2 sets							
Program message (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 change	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							
Additional RS-232-C channel (Std specs include 1 channel)							
DNC-T3							
DNC-B (232C-Ethernet transducer used on OSP side)							
DNC-DT							
DNC-/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-C (Thermo Active Stabilizer—Construction)							
ECO suite (energy saving functions)							
ECO Operation							
ECO Power Monitor	Wattmeter						
Energy-saving hydraulic unit	Inverter						
	ECO Hydraulics						
Other							
Control cabinet lamp (inside)							
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*3 M-*i*4, M-gⅡ+*4, M-gⅡ*5 (cutting condition search)							
One-Touch Spreadsheet							
Block skip; 3 sets							
Additional axes	A, B, C axes [preps, specs]						
Fixture offset							
OSP-VPS (Virus Protection System)							
19-inch variable angle operating panel							

*1. NML: Normal, 3D: 3D Simulation, E: Economy, D: Deluxe, AOT: Advanced One-Touch IGF-M
*2. Requires technical consultation.
*3. Harmonic Spindle Speed Control available only with Machining Navi M-*i* or M-gⅡ+ specifications.
*4. Machining Navi M-*i* or M-gⅡ+ are available with integral motor/spindles.
*5. Machining Navi M-gⅡ is available with gear spindles.

SPACE CENTER
MA-12500H

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.
Pub No. MA-12500H-E-(3a)-300 (Aug 2016)

OKUMA

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