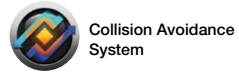


MA-12500H
SPACE CENTER
Large Horizontal Machining Center



MA-12500H SPACE CENTER

Large Horizontal Machining Center



Innovative productivity of large components

■ High-power and high-speed movement improves productivity

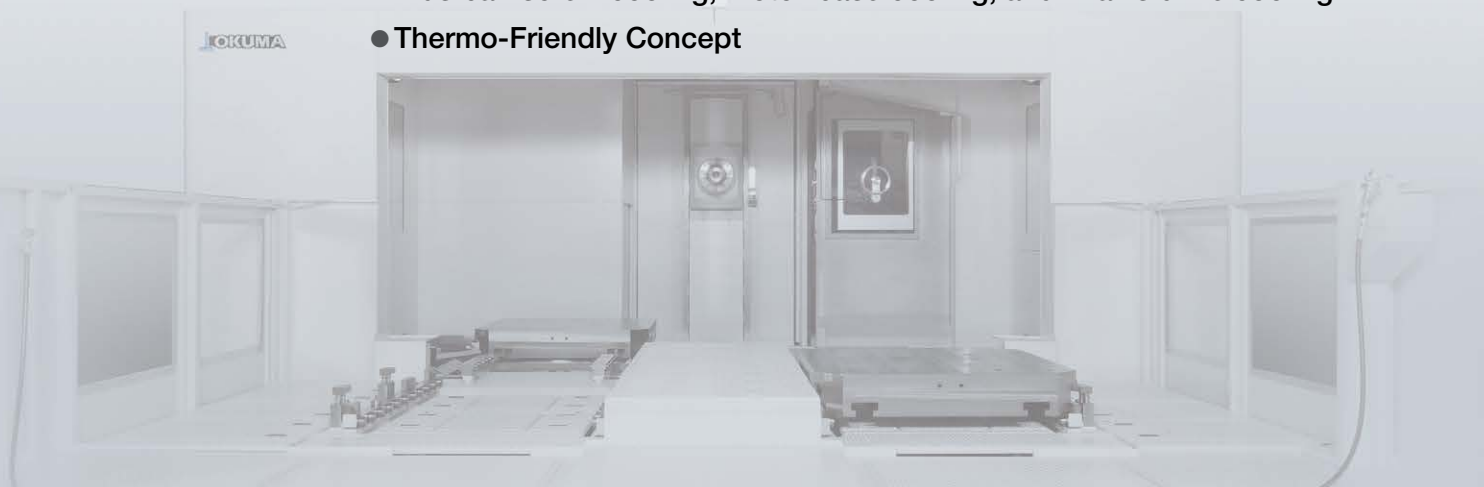
- 45 kW, 1,071 N-m spindle
- 40 kW, 1,920 N-m spindle (option)
- Rapid traverse: 42 m/min X-, Y-, Z-axis

■ Automatic tool change for super large diameter tool enables long-run unattended operation

- ATC of boring tools up to $\phi 580$ mm is possible

■ 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
- Rapid traverse: X-, Y-, Z-axis 42 m/min

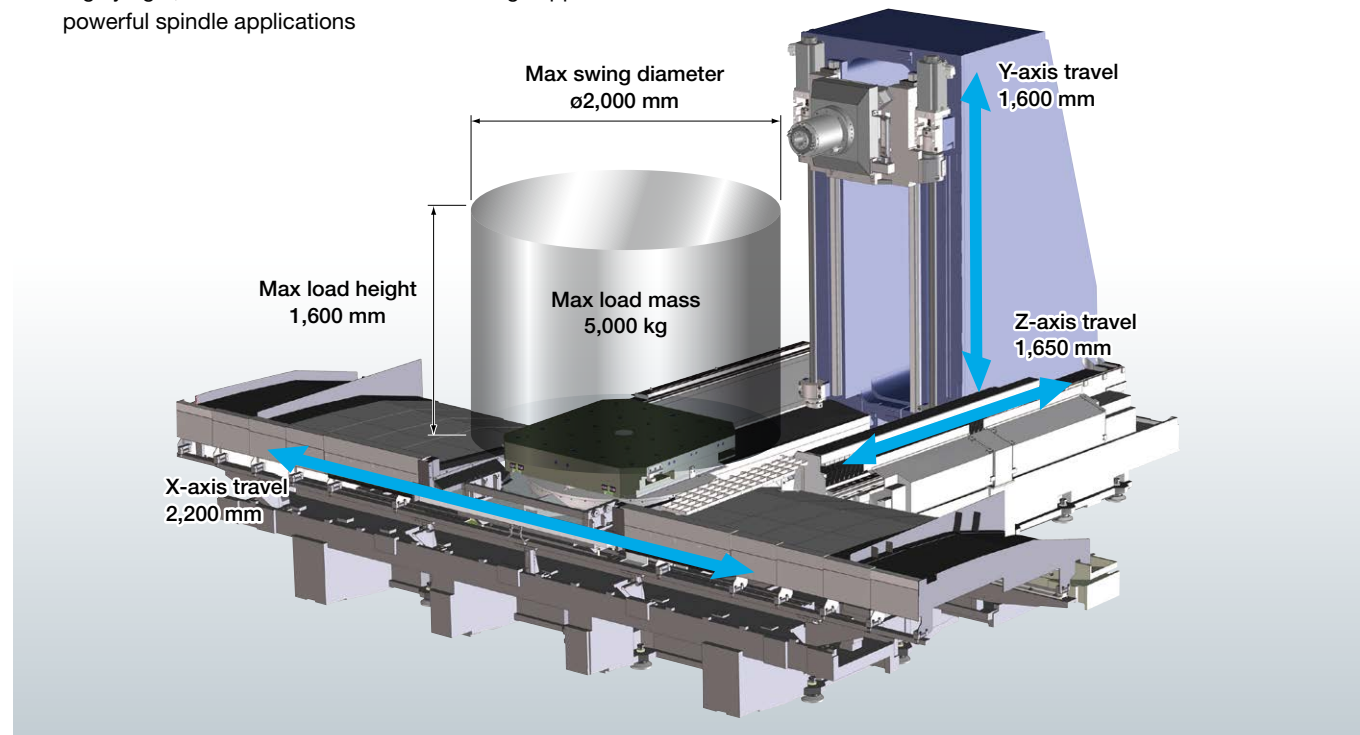
Powerful, high-torque spindle provides plenty of big-diameter tool performance

- Highly rigid, wide column with fortified ribbing supports powerful spindle applications

Stable machining accuracy in long-term continuous machining

- 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



Low pallet-top surface makes it easier to work inside the machine

- B-axis with double-motor drive system minimizes table thickness and lowers pallet top height

Fast swivel table

- 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 (option): **1,920 N-m**



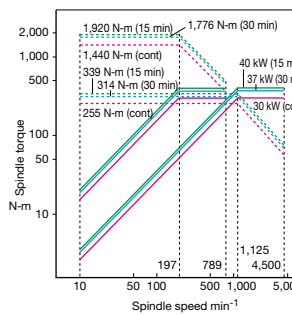
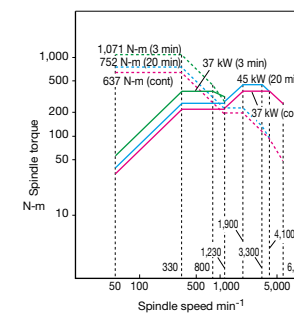
Optimal for difficult-to-cut materials and heavy-duty cutting

Standard spindle

- Spindle Speed 6,000 min⁻¹
- Max output 45/37 kW (20 min/cont)
- Max torque 1,071/637 N-m (3 min/cont)

Gear spindle (option)

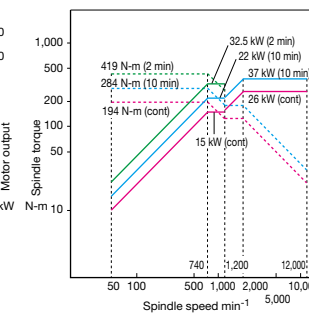
- Spindle Speed 4,500 min⁻¹
- Max output 40/30 kW (15 min/cont)
- Max torque 1,920/1,440 N-m (15 min/cont)



Ideal for machining a wide range of materials, from aluminum to steel

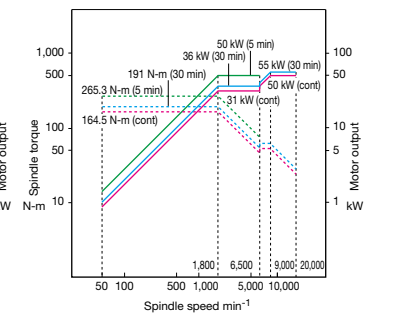
Wide-range spindle (option)

- Spindle Speed 12,000 min⁻¹
- Max output 37/26 kW (10 min/cont)
- Max torque 419/194 N-m (2 min/cont)



Wide-range spindle (option)

- Spindle Speed 20,000 min⁻¹
- Max output 55/50 kW (30 min/cont)
- Max torque 265.3/164.5 N-m (5 min/cont)



Machining capacity (Material: S45C)

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

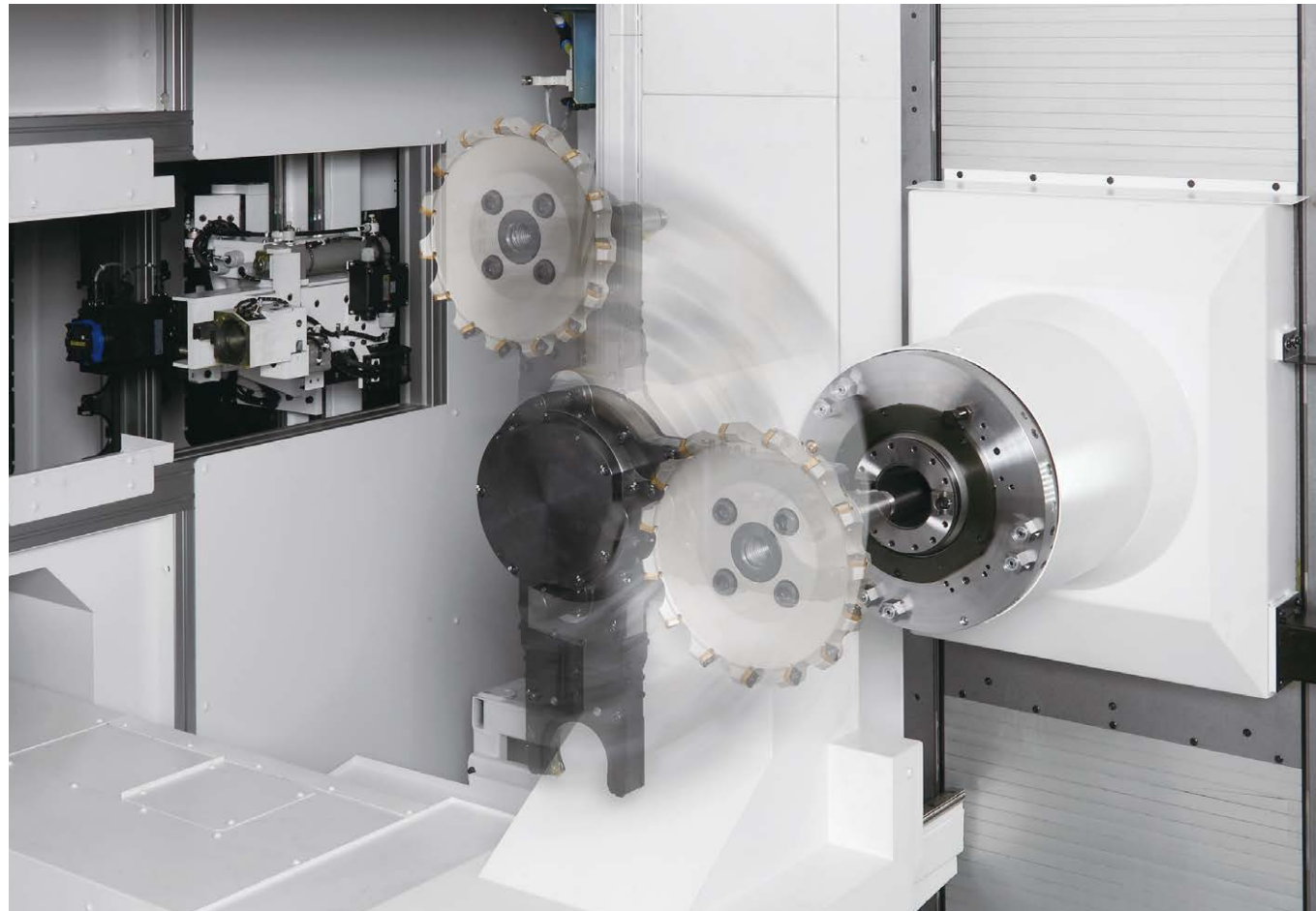
Tool	Spindle speed min ⁻¹	Cutting m/min	Feed rate mm/min	Cut width mm	Cut depth mm	Chips cm ³ /min
ø160 face mill: 16 blades (carbide)	500	251	2,688	112	4	1,204
ø63 roughing end mill: 4 flutes (carbide)	1,266	251	1,495	15	35	785
M42 P4.5 tap	91	12	409	-	-	-

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

Enabling long unattended machining of large parts

ATC of large tools for the big component jobs

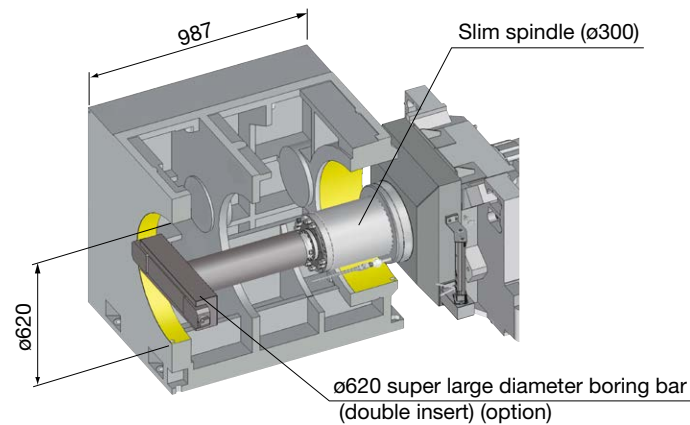
Even large boring bars, face mills and other manually changed big tools can handled by the ATC, for long and unattended large-part machining.



Automatic tool changer

- Large part machining example
ATC of boring tools up to $\phi 620$ mm* (option) possible

* Standard $\phi 580$ mm (single-edge R290 boring bar)



Unit: mm

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

Effective deep-hole boring

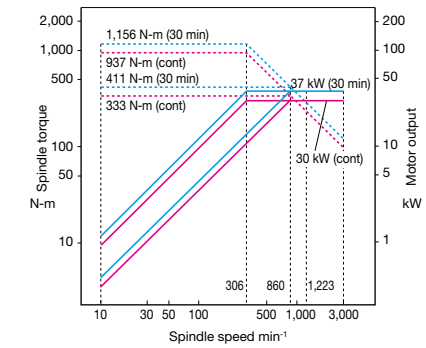
High-torque spindle provides highly efficient machining

- Machining capacity

500 cm³/min (W-axis 250 mm)
 $\phi 160$ face mill

400 cm³/min (W-axis 0 mm)
 $\phi 63$ end mill

M42 tap



Maximum torque:
1,156 N-m

- Spindle speed: 3,000 min⁻¹
- Maximum output: 37/30 kW (30 min/cont)

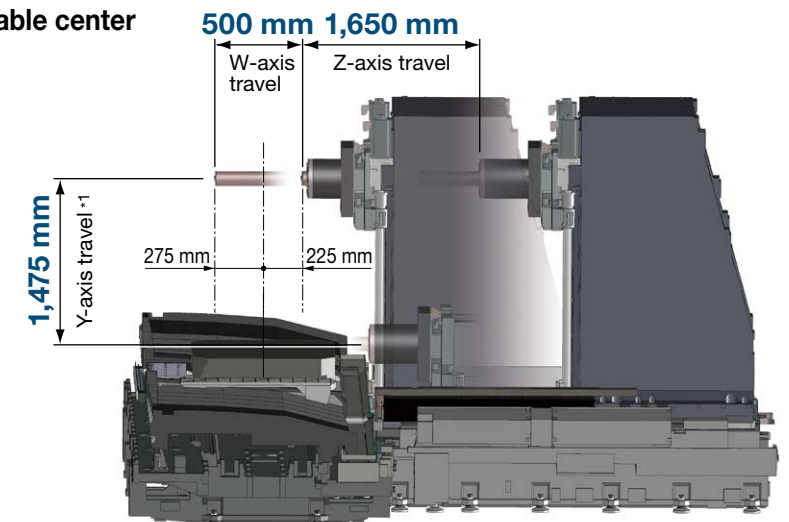
W-axis travel reaches the back of deep holes

- W-axis travel: 500 mm, spindle bar diameter: $\phi 130$ mm



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

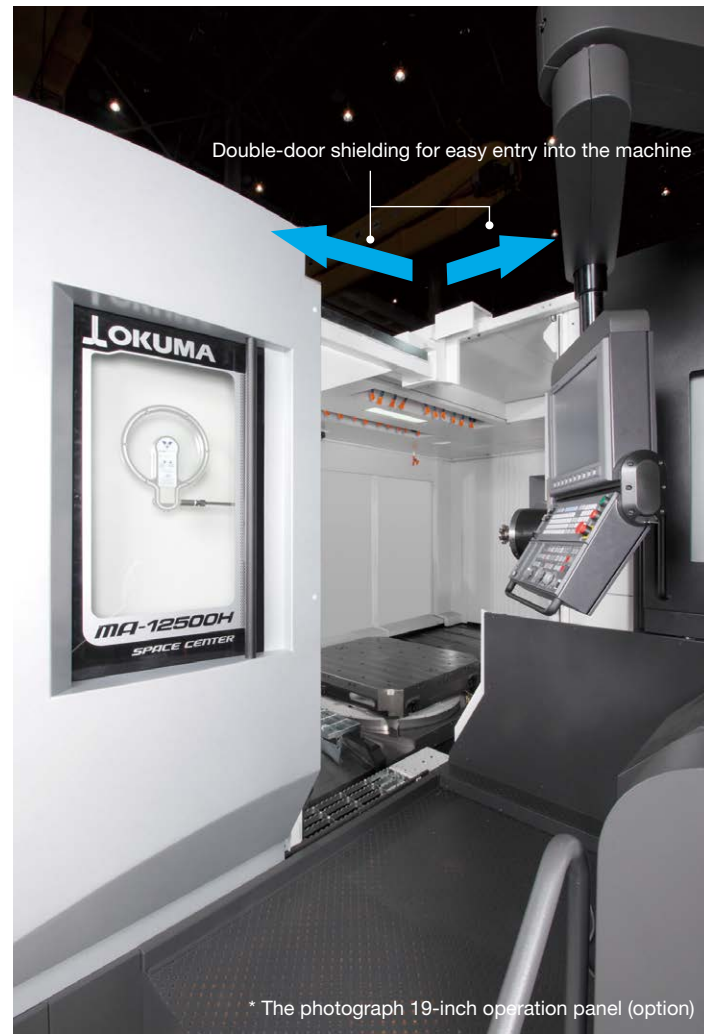
- -275 to 1,875 mm range from pallet center



*1. Y-axis travel above pallet top: +50 to 1,525 mm
W-axis specs: limited upper range travel
(Standard specs: +50 to 1,650 mm from pallet top)

Operator-friendly machine structure design

Superior ease-of-use reduces operator burden



Outstanding access to tools, workpieces

- Emphasis on operator visibility and easy confirmation of tool edge and machining portions



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.

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

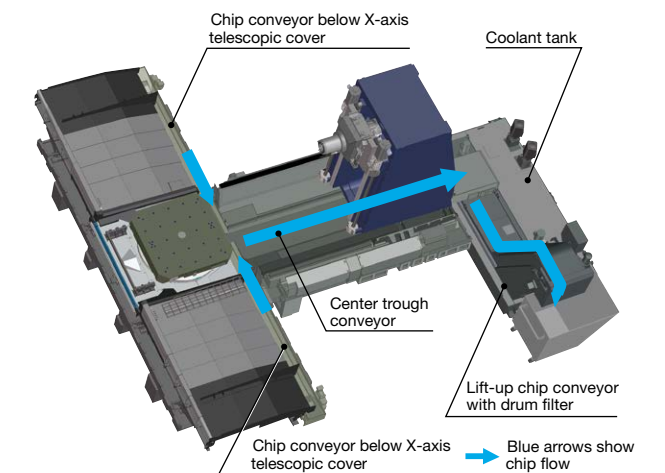
Smooth discharge of large volumes of chips from long-run machining

Smooth chip discharge

- Smooth discharge of chips with hinged conveyor situated beneath the spindle where the chips are generated.
- Neat covers prevent chips from accumulating in the workspace area.



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



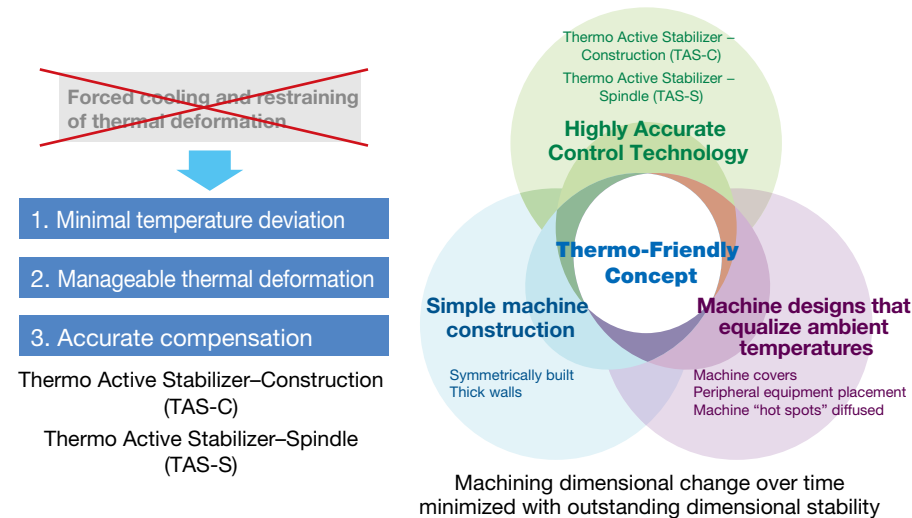
High-precision machining on a large machine



Thermo-Friendly Concept

The unique approach of "accepting temperature changes"

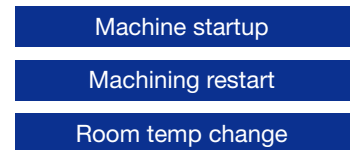
Thermo-Friendly construction gives outstanding thermal stability



Eliminate waste with the Thermo-Friendly Concept

Okuma's Thermo-Friendly Concept achieves high dimensional stability not only when the room temperature changes, but also at machine startups or when machining is resumed.

The warm-up operation time to stabilize thermal deformation is shortened, and the burden of dimensional correction when resuming machining is reduced.



High dimensional stability

TAS-C (option)

Thermo Active Stabilizer—Construction

TAS-C estimates and accurately controls the volumetric thermal deformation of the machine's construction due to ambient temperature changes; based on data from properly placed sensors, feed axis positions, and actual machine thermal deformation characteristics.

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.

ECO suite

Next-Generation Energy-Saving System

A suite of energy-saving applications for machine tools

ECO Idling Stop

Accuracy ensured, cooler off

This is the intelligent energy-saving application used by Okuma's Thermo-Friendly Concept.

When not machining, power consumption can be significantly reduced by frequently stopping unnecessary peripheral equipment.

Moreover, in machines equipped with the Thermo Active Stabilizer—Spindle (TAS-S), spindle cooler idling is automatically turned ON/OFF while maintaining stable accuracies.

ECO Power Monitor

On-the-spot check of energy savings

Power is shown individually for spindle, feed axes, and auxiliaries on the OSP operation screen. In addition to regenerative power, the energy-saving benefits from auxiliary equipment stopped with ECO Idling Stop can be confirmed on the spot.

ECO Operation (option)

Intermittent/continuous operation of chip conveyor and mist collector during operation

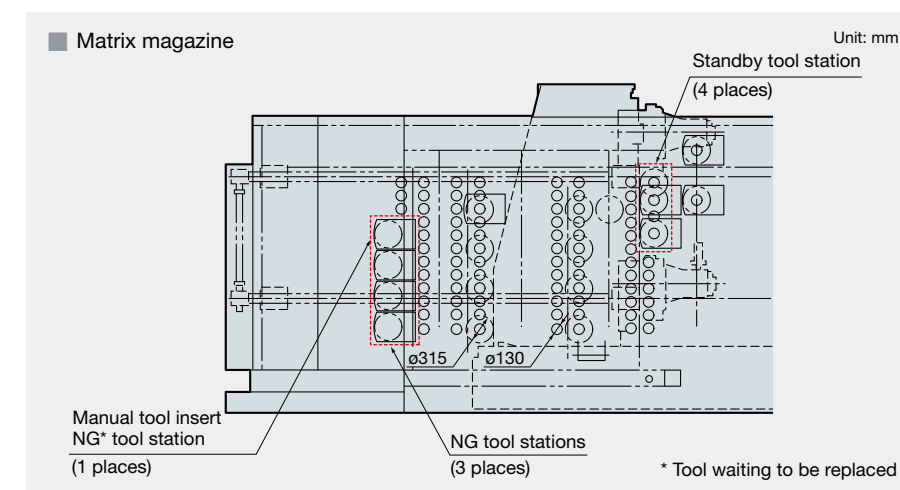
ECO Hydraulics (option)

Energy-saving hydraulic unit using servo control technology

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

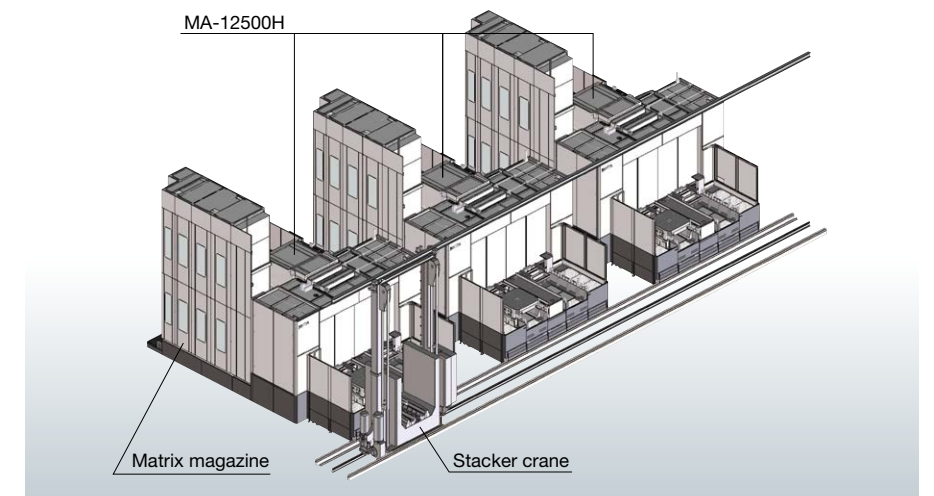
ATC tools	ATC Tool Specs				Max length, Mass, Moment
	Max diameter / storage				
	w/ adjacent tools	Storage	w/o adjacent tools	Storage	
81 tools	ø130 mm	81 tools (59 tools*)	ø315 mm	8 tools	<ul style="list-style-type: none"> ● Max length: 600 mm ● Max mass: 30 kg ● Mass moment: 37 N-m
129 tools		129 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

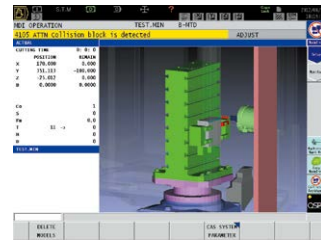
(option)

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



Okuma's advanced technology enhance machine shop performance

Collision Avoidance System (option) Collision prevention



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.

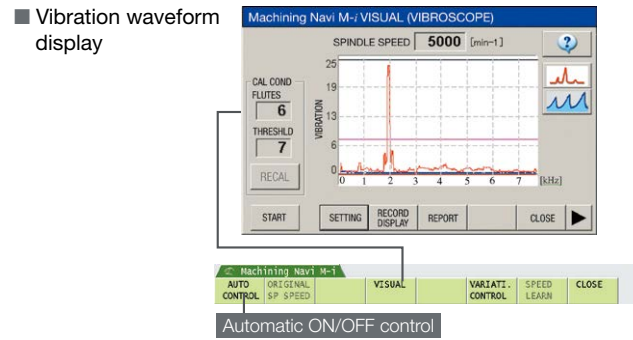
Machining Navi M-i, M-g II+, M-g II* (option) Cutting condition search for milling

* Harmonic control of spindle speed is available only with M-i or M-g II+. (N/A with M-g II.)

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.

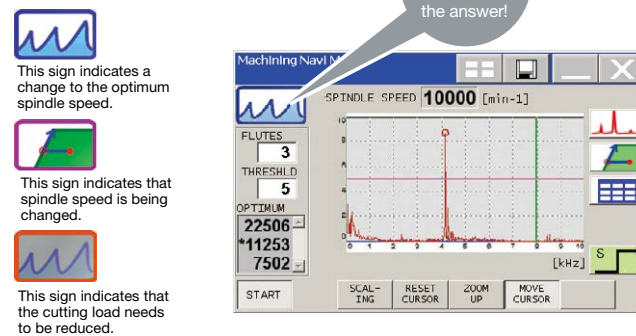
- Available only with Okuma integral motor/spindles. (N/A with gear spindles.)



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



This sign indicates a change to the optimum spindle speed.

This sign indicates that spindle speed is being changed.

This sign indicates that the cutting load needs to be reduced.

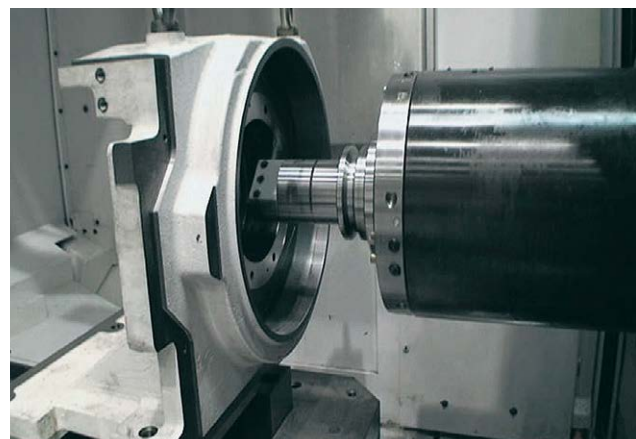
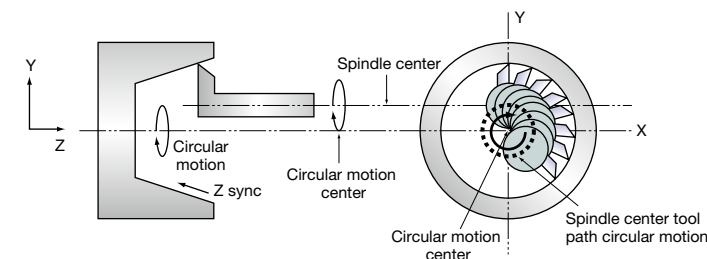
Machining Navi (OSP) provides the answer!

Turn-Cut (option)

Turning on a machining center

Simultaneously controlling X-Y circular motion with the tool edge position rotated by the spindle tool enables lathe-like turning.

- Tapers also possible
- Hole making with different diameters — with one tool
- Machine IDs/ODs with ATC-oversized large tool diameters



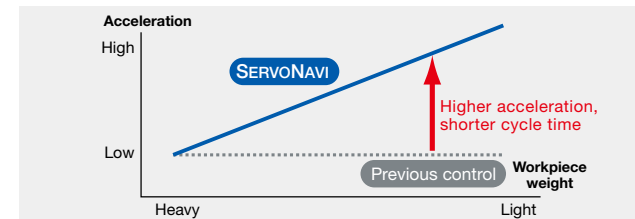
SERVONAVI Optimized Servo Control Achieves long term accuracy and surface quality

SERVONAVI AI (Automatic Identification)

Work Weight Auto Setting

Cycle time shortened with faster acceleration
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 the linear axis servo parameters, including acceleration, to the optimum values. Cycle times are shortened with no changes to machining accuracy.



Rotary Axis Inertia Auto Setting

Maintains high accuracy and stable movements
Depending on the workpiece or fixtures, inertia will vary, and with each variation the rotary axis positioning error in some cases became much larger.

Rotary Axis Inertia Auto Setting is able to estimate inertia from workpiece/fixture acceleration and deceleration, and automatically set the optimum the rotary axis servo parameters to maintain highly accurate and stable machine movements.

SERVONAVI SF (Surface Fine-tuning)

Reversal Spike Auto Adjustment

Maintains machining accuracy and surface quality
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).

Reversal Spike Auto Adjustment maintains machining accuracy by switching servo parameters to the optimum values matched to changes in slide resistance.

Vibration Auto Adjustment

Contributes to longer machine life
When aging changes machine performance, noise, vibration, crease marks, or fish scales may appear.

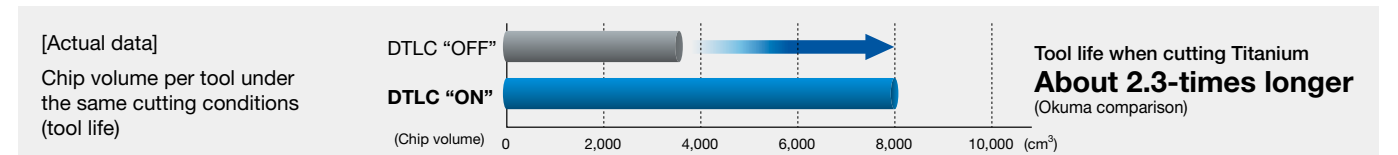
Vibration Auto Adjustment can quickly eliminate noise and vibration even from machines with years of operation.

Dynamic Tool Load Control (option)

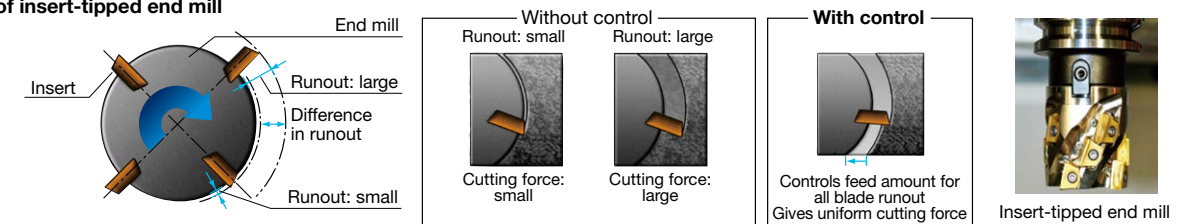
Prevents chipping, extends tool life

When machining of difficult-to-cut material, chipping from blade runout often occurs with insert-type end mills. To stabilize such machining, solid end mills with high tool costs have generally been used.

Dynamic Tool Load Control gives uniform cutting force with advanced synchronization of spindle phase and feed rate to control insert-type end mill chipping. This improves tool life and stabilizes machining. Switching from expensive solid tools also leads to reduced tool costs.



Runout of insert-tipped end mill



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-12500H	MA-12500H [W-axis specs]	
Travel	X-axis (pallet left/right)	mm (in)	2,200 (86.61)		
	Y-axis (spindlehead up/down)	mm (in)	1,600 (62.99)	1,475 (58.07)	
	Z-axis (column front/back)	mm (in)	1,650 (64.96)		
	W-axis	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	Speed	min ⁻¹	50 to 6,000 [10 to 4,500 <gear spindle>] [50 to 12,000 <integral motor/spindle>] [50 to 20,000 <integral motor/spindle>]	10 to 3,000 <gear spindle>	
	Speed ranges		Infinitely variable [2 <gear spindle>, Infinitely variable <integral motor/spindle>]		
	Tapered bore		7/24 taper No. 50 [HSK-100, HSK-A125*2]		
	Bearing ID (front bearing)	mm (in)	ø100 (3.94) [ø110 (4.33) <gear spindle>]	ø200 (7.87)	
	W-axis feed spindle diameter *1	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 feed rate		mm/min (ipm)	X, Y, Z: 1 to 42,000 (0.04 to 1,654)		
		deg/min	B: 3,240		
Motor	Spindle	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>] [55/50 (75/67) (30 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	tools	[81, 129, 177]		
ATC	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)*3		
	Max tool length	mm (in)	600 (23.62)		
	Max tool mass	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>		
	Mass	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>		
Controller		OSP-P300MA			

[]: Option *1. Spindle bar diameter *2. HSK-A125 only 4,500min⁻¹ *3. 20,000min⁻¹ is ø150mm

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 temperature controller	Full enclosure shielding	
Ball-screw cooler	X-Y-Z axes	Operation panel	
B-axis cooler	Oil temperature controller	Operator platform	
Centralized lubrication	With oil level and pressure alarms	ATC manual operation panel	
Coolant supply system	Tank: 1,400 L (effective 1,000 L) Pump: 555/885 W (50/60Hz)	Work lamp	LED
		Status indicator	3 phase C type
In-machine chip discharge	Chip conveyor below X-axis telescopic cover Center trough chip conveyor	Air filter and oiler	
		Hydraulic unit	
In-machine chip washer	1,500 W × 2	Foundation washers, jack bolts	
ATC air blower (blast)		Tool release lever	
Chip air blower (blast)	Nozzle type	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 20,000 min ⁻¹ , 55/50 kW (30 min/cont)*2	Off-machine chip discharge	Lift-up chip conveyor with drum filter Mosnic RDF
Spindle speed W-axis	3,000 min ⁻¹ , 37/30 kW, No. 50*1	Chip bucket for above	Height 700 mm, 1,000 mm
Dual contact spindle	HSK, BIG-PLUS®	Hydraulic oil cooler	
ATC magazine capacity (tools)	81, 129, 177 tools (matrix magazine type)	Coolant heater/cooler	
AbsoScale detection	X-Y-Z axes, W-axis	ATL*4 comp/breakage detect	Laser sensor
Automatic pallet changer	FMS	Auto zero offset/gauging	Touch probe
Pallet top surface configuration	T-slot	In-magazine tool breakage detection	Touch sensor
Spare pallet		Tool life management	By hour meter
Edge locator		Turn-Cut	AbsoScale detection and ball screw cooling required.
Oil-hole coolant system	1.5 MPa	Operation panel	Link arm type
Thru-spindle coolant*3	1.5, 7.0 MPa Large flow specs: 1.5, 7.0 MPa	Pull stud bolt shape	MAS 1, CAT, DIN, JIS
		Pull studs bolt	MAS 2, MAS 1, CAT, DIN, JIS
Shower coolant system		Machine anchoring	Chemical anchors, foundation bolts
Workpiece wash gun		B-axis hydraulic clamp	
Chip air blower (blast)	Adapter type	High-precision B-axis indexing	
		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

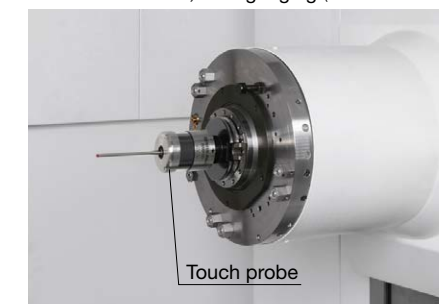
● Shower coolant, coolant nozzle



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



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



● In-magazine tool breakage detection



Receiver
(sends and receives touch probe signals)

Recommended chip conveyors

Workpiece material	Steel	Cast iron	Aluminum/non-ferrous metal	Mixed (general use)
Chip shape				
In-machine	Hinge type (standard)*	○	○	○
Off-machine	Scraper type with drum filter (option)	—	○ (Wet) w/magnet	—
	Hinge + scraper with drum filter (option)	△*1	△ (Wet)*2	○

○: Recommended △: Conditionally recommended

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.

* 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

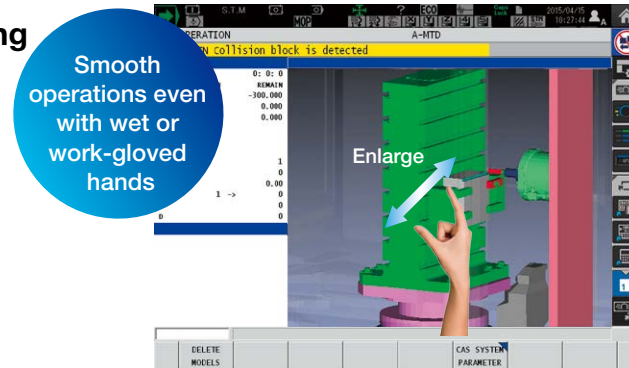
Note: In the case of dry chips, clean out chips that have accumulated under the pallet or elsewhere in the machine as needed.

With revamped operation and responsiveness—ease of use for machine shops first!

Smart factories are using advanced digitization and networking (IIoT) in manufacturing to achieve enhanced productivity and added value. The OSP has evolved tremendously as a CNC 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 smartphone

Improved rendering performance and use of a multi-touch panel achieve intuitive graphical operation. Moving, enlarging, reducing, and rotating 3D models, as well as list views of tool data, programs, and other information can be accomplished through smooth, speedy operations with the same feel as using a smartphone. The screen display layout on the operation screen can also be changed to suit operator preferences and customized for the novice and/or veteran machinists.



Note: 15 inch operation panel screen shots. Collision Avoidance System (option) shown above.

“Just what we wanted.”— Refreshed OSP suite apps

This became possible through the addition of Okuma's machining expertise based on requests we heard from real, machine-shop customers. The brain power packed into the CNC, built by a machine tool manufacturer, will “empower shop floor” management.

Maintenance Monitor

Routine inspection support

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

Spindle Output Monitor

Increased productivity through visualization of motor power reserve

Turn-Cut Guide (option)

Making new machining technology simpler and easier to use

E-mail Notification

Monitoring operating status even when away from the machine

Screen Capture

Automatic saving of recorded alarms

Scheduled Program Editor

Easy programming without keying in code

Connect Plan

Get Connected, Get Started, and Get Innovative with Okuma “Monozukuri”

Connect, Visualize, Improve

Okuma's Connect Plan is a system that provides analytics for improved utilization by connecting machine tools and visual control of factory operation results and machining records. Simply connect the OSP and a PC and install Connect Plan on the PC to see the machine operation status from the shop floor, from an office, from anywhere. The Connect Plan is an ideal solution for customers trying to raise their machine utilization.

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 command	±99999.999 mm, ±9999.9999° 8-digit decimal, command units: 0.001 mm, 0.01 mm, 1 mm, 0.0001°, 0.001°, 1°
	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
Programming	Self-diagnostics	Automatic diagnostics and display of program, operation, machine, and NC system faults
	Program capacity	Program storage capacity: 4 GB; operation buffer: 2 MB
Operations	Program operations	Program management, editing, scheduled program, fixed cycle, G-/M-code macros, arithmetic, logic statements, math functions, variables, branch commands, coordinate calculate, area machining, coordinate convert, programming help
	“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, easy setting of cycle time reduction
MacMan	Machining management: machining results, machine utilization, fault data compile & report, external output	
Communications / Networking	USB (2 ports), Ethernet, DNC-T1	
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 Idling Stop, ECO Power Monitor*1	

*1. The power display shows estimated values. When precise electrical values are needed, select the wattmeter option.

Optional Specifications

Item	Kit Specs*1	NML		3D		AOT	
		E	D	E	D	E	D
Interactive functions							
Advanced One-Touch IGF-M (Real 3D simulation included)							
Interactive MAP (I-MAP)							
Programming							
Operation buffer 10 MB							
Auto scheduled program update							
G/M-code macros							
Common variables (Std: 200 pcs)	1,000 pcs						
	2,000 pcs						
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						
Machine Status Logger							
Cutting Status Monitor							
AI Machine Diagnosis Function*3	Spindle, feed axes						
Tool life management	Hour meter, No. of workpieces						
Gauging							
Auto gauging	Touch sensor (G31)						
Auto zero offset	Includes auto gauging						
Tool breakage detection	Touch sensor (G31)						
	Includes auto tool offset						
Manual gauging (w/o sensor)							
Interactive gauging (touch sensor, touch probe required)							

*1. NML: Normal, 3D: 3D Simulation, E: Economy, D: Deluxe,

AOT: Advanced One-Touch IGF-M

*2. Requires technical consultation.

*3. With AbsoScale detection specs, ball screw wear detection is possible.

*4. There are limitations when Hyper-Surface and Collision Avoidance System are used simultaneously.

*5. There are limitations when Super-NURBS and Collision Avoidance System are used simultaneously.

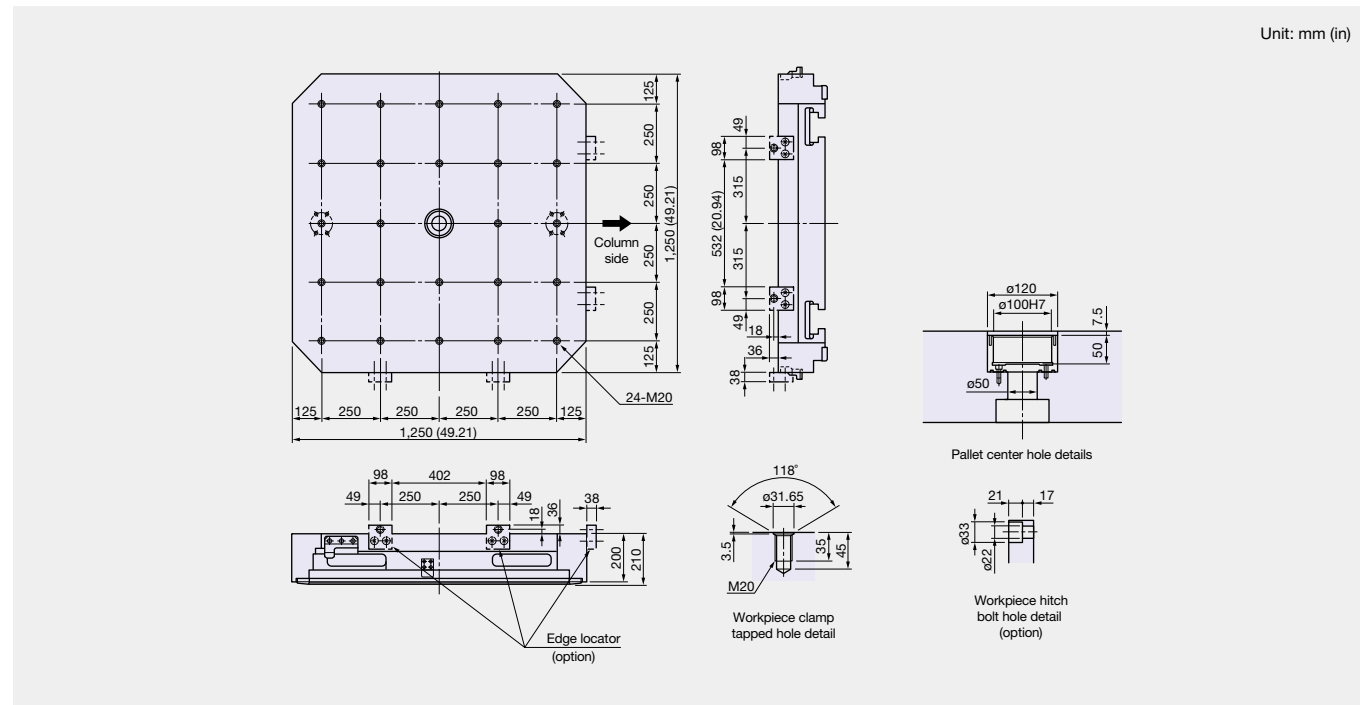
*6. Select Super-NURBS for simultaneous linear and rotational axis machining.

*7. Harmonic control of spindle speed is available only with M-i or M-gII+.

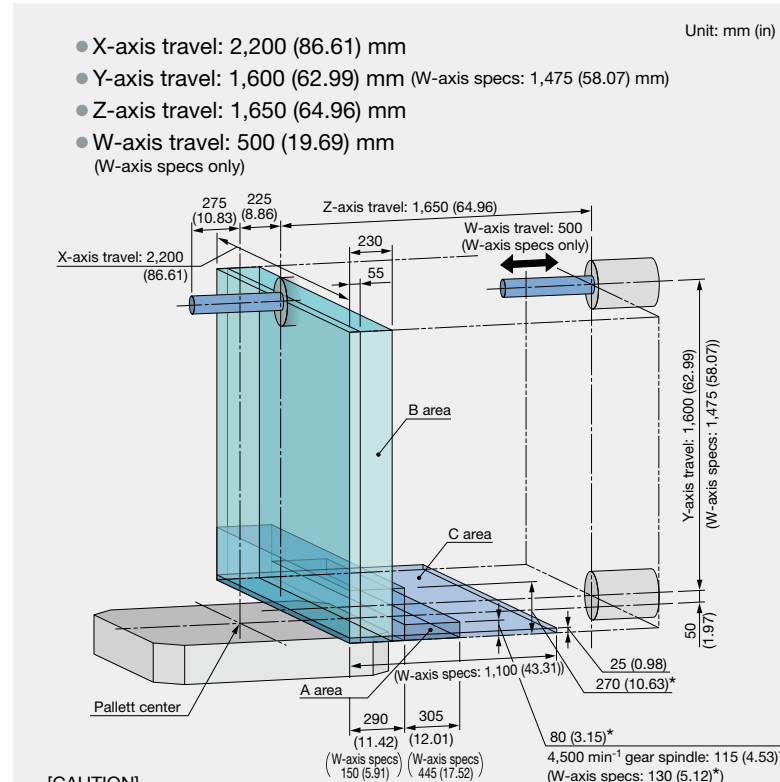
*8. Machining Navi M-i or M-gII+ are available with integral motor/spindles.

*9. Machining Navi M-gII is available with gear spindles.

Pallet dimensions

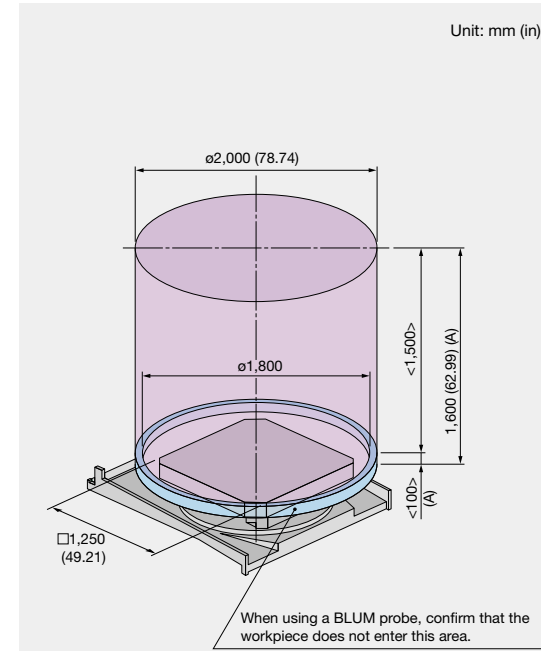


Working Ranges



- [CAUTION]
There are interference areas listed below; use with caution.
- A area: Spindlehead interference
 - B area: Dimensions = 230 mm . . . When the maximum diameter of the workpiece is ø1,560 to 2,000 mm Y-axis telescopic cover interference area
Dimensions = 55 mm . . . Pallet rotation and Y-axis telescopic cover interference area
 - C area: Interference between the W-axis spindle and pallet rotation when the W-axis protrudes by 500 mm
 - * Indicates when using T-slot pallets (option); the interference area will increase by +30 mm.

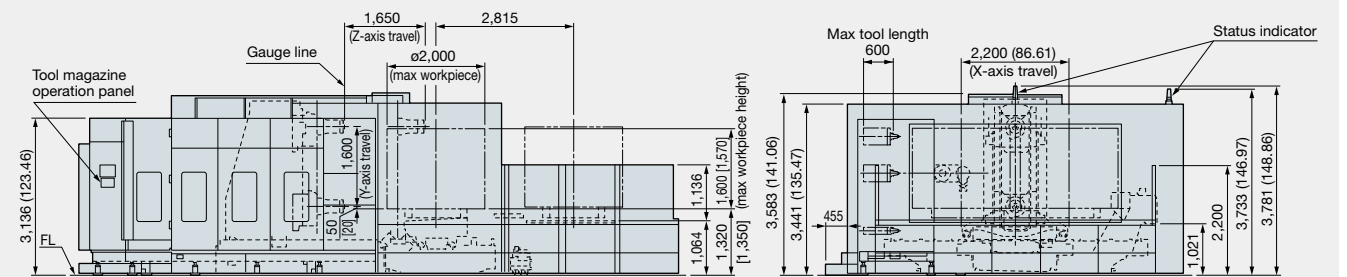
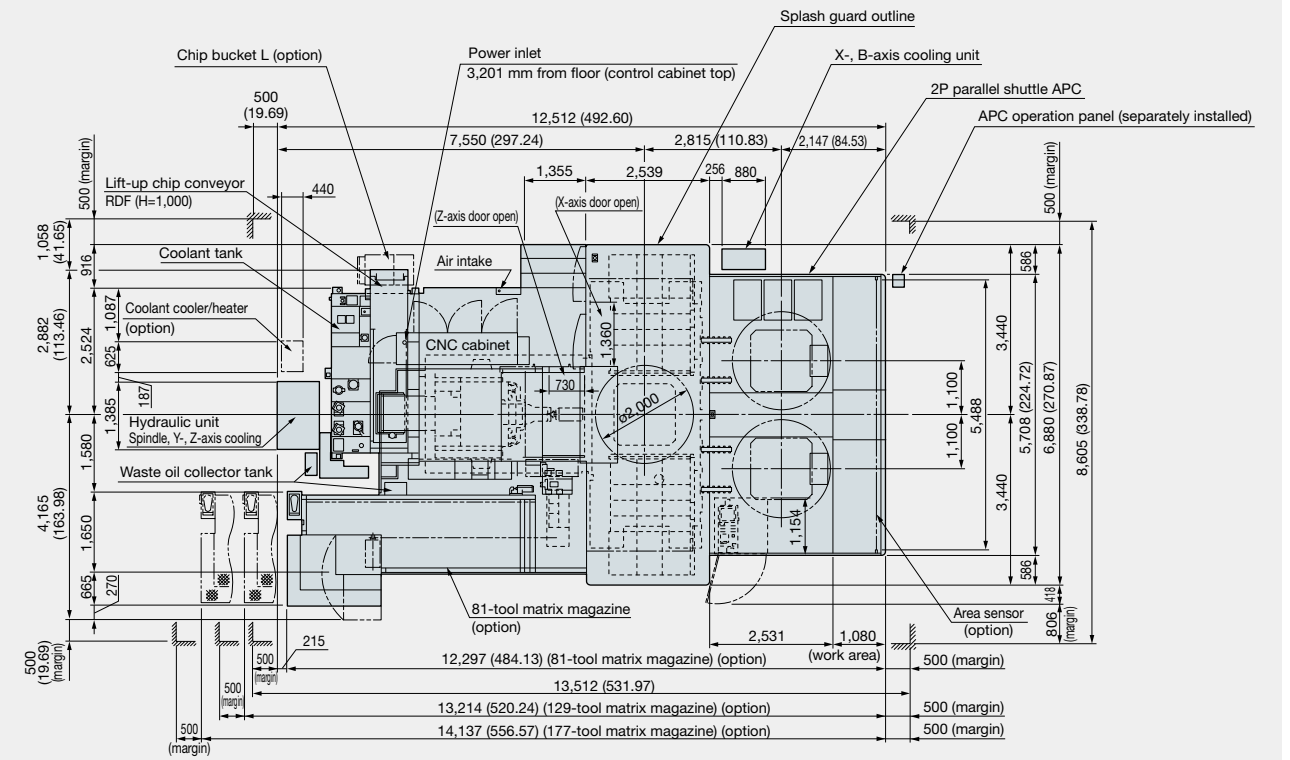
Maximum Workpiece Dimensions



This drawing represents standard tap pallet related specifications.
If the pallet is thicker than the standard tap pallet, the (A) thickness will be smaller.

MA-12500H Dimensional/Installation Drawing

81-tool matrix magazine specs



[]: T-slot pallet specs Unit: mm (in)

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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OKUMA Corporation

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