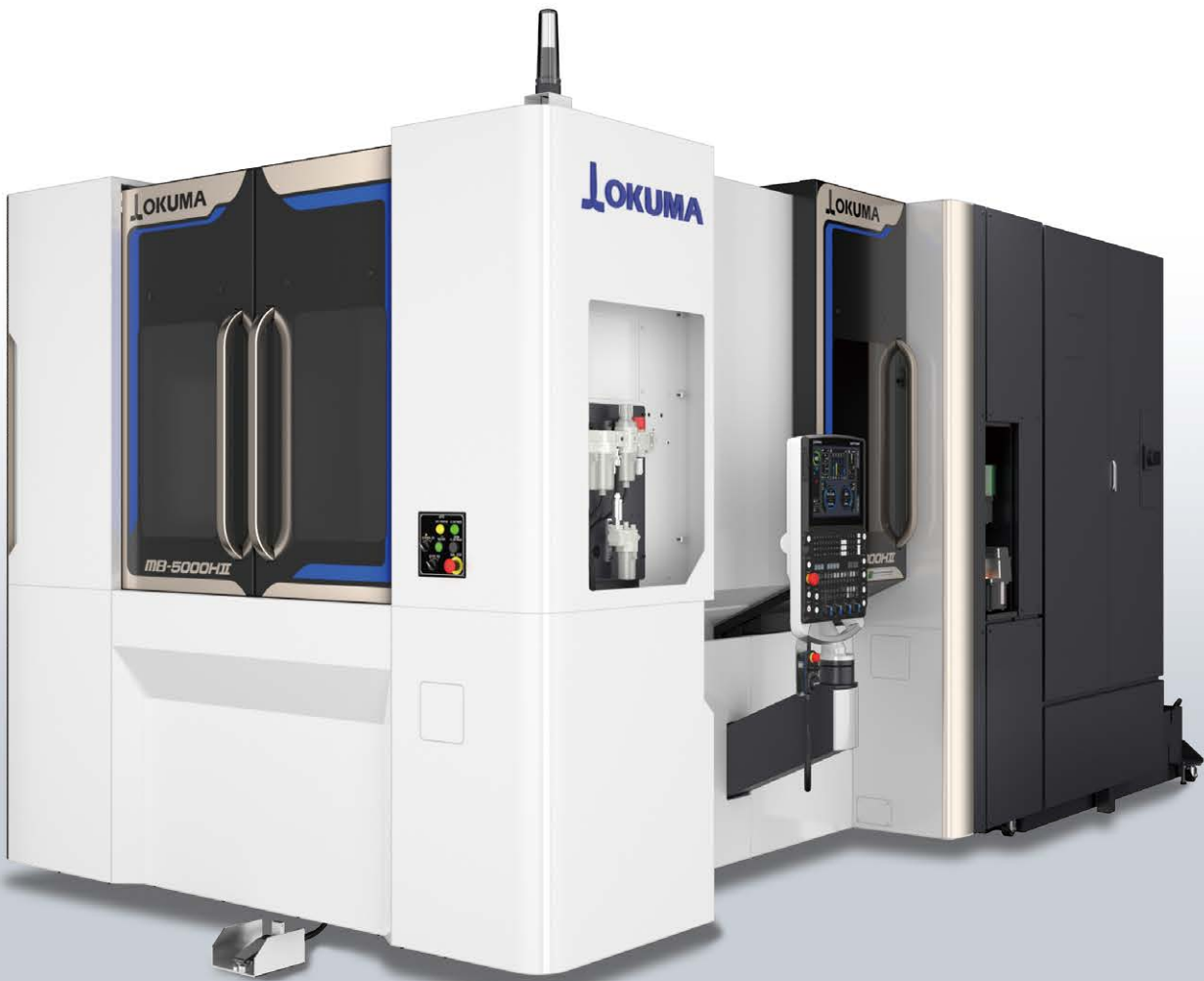


MB-5000HII

Horizontal Machining Center



MB-5000HII

Horizontal Machining Center



**The fastest machine in its class.
Provides stable and high-accuracy machining,
while doing it within the shortest cycle times.**

Due to labor shortages and the decline of skilled workers at production sites, there is a growing need for highly productive machines that can quickly produce parts that have consistent quality while relying on fewer operators.

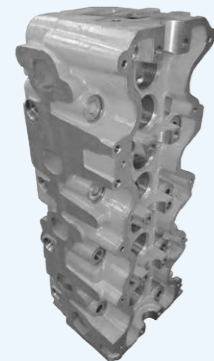
The MB-5000HII is a space-saving horizontal machining center equipped with a □500 table that provides the fastest machining performance in its class. With its ability to quickly accelerate, decelerate, and change tools, non-cutting time is reduced allowing cycle times to be minimized.

This machine reduces cycle time required for mass-produced aluminum castings by 34% compared to conventional models. It also offers a lineup with various spindle configurations, so customer can choose spindle specification that best matches their requirements. This includes spindles that can machine steel materials with high efficiency. All of this is to enhance production efficiency on the shop floor.

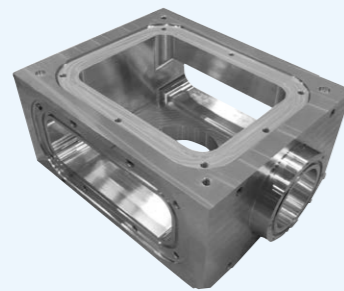
In addition to a machine structure that ensures stable and high-accuracy machining during long runs of continuous operations, the MB-5000HII provides smooth evacuation of the large volume of chips generated during heavy cutting.

It ensures trouble-free continuous operation and maximizes machine uptime, while the tower APC and large-capacity ATC magazine enable long periods of continuous unmanned operation.

The MB-5000HII achieves high productivity through high-speed machining and stable operation in all production styles, from mass production to high-mix, variable-volume manufacturing.



Automotive components
Cylinder head



Semiconductor components
Vacuum chamber



Automotive components
Transmission case

Photographs and images used in this brochure may include optional equipment.



High accuracy

Secured accuracy enables to reduce workload in controlling dimensions and realize stable machining over long hours

Outstanding dimensional stability greatly shortens compensation and warm-up time and improves productivity

Reliable machining with high accuracy and excellent thermal stability

The Thermo-Friendly Concept is an Okuma Intelligent Technology intended to achieve amazing machining accuracy with unique structural design and thermal deformation control technology. It eliminates the need for cumbersome dimensional compensation and warm-up and demonstrates outstanding dimensional stability, even when operation continues over many hours or when the room temperature changes.



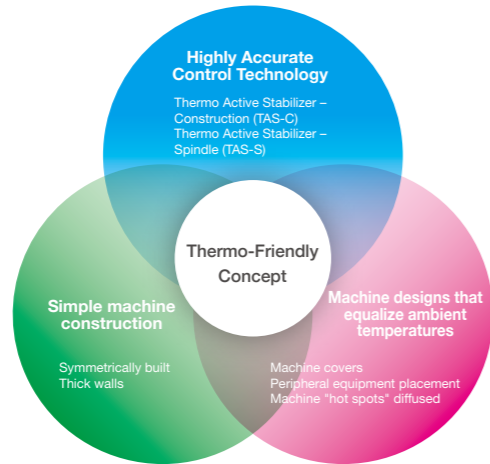
Thermo-Friendly Concept
The Okuma Intelligent Technology that enables machines to autonomously maintain high accuracy stability

Thermo-Friendly construction gives outstanding thermal stability

Forced cooling and restraining of thermal deformation

- 1 Minimal temperature deviation
- 2 Manageable thermal deformation
- 3 Accurate compensation

Thermo Active Stabilizer - Construction TAS-C
Thermo Active Stabilizer - Spindle TAS-S

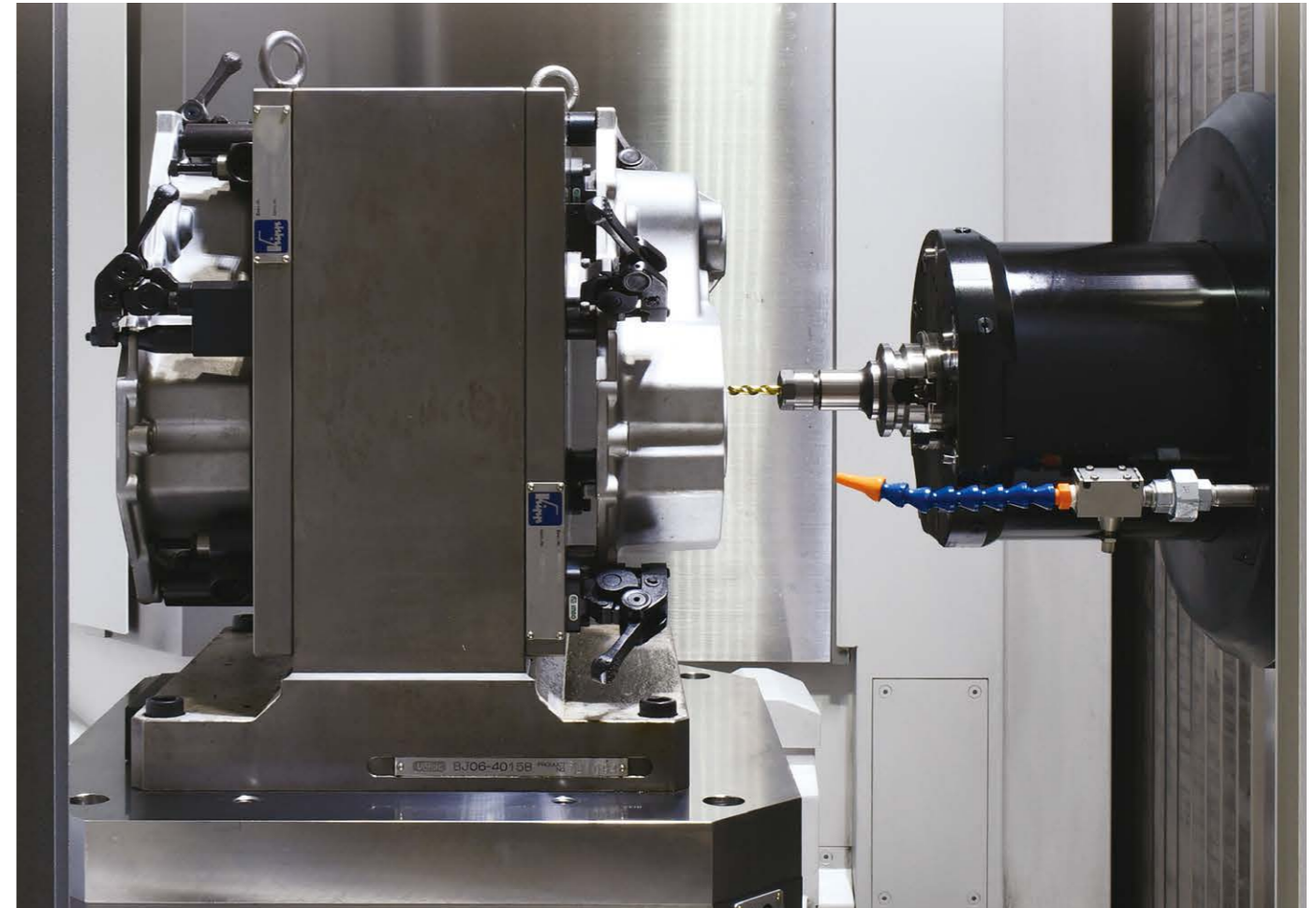


Machining dimensional change over time minimized with outstanding dimensional stability

Eliminate waste with the Thermo-Friendly Concept

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.

- Machine startup
 - Machining restart
 - Room temp change
- High dimensional stability**



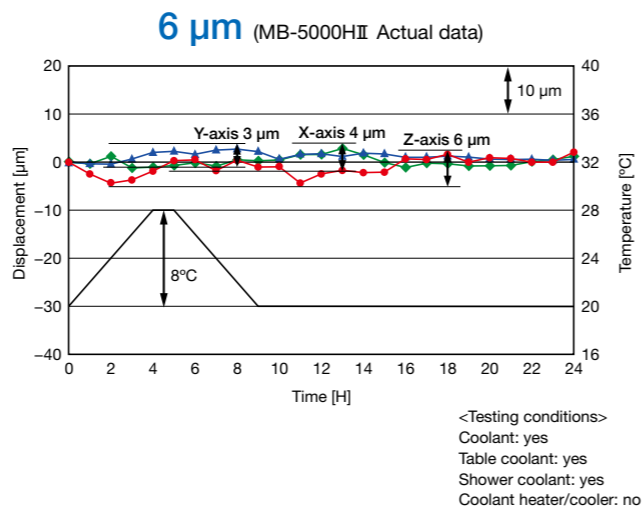
TAS-C Thermo Active Stabilizer - Construction

When machining under changing ambient temperatures, machining dimensional changes are affected by expanding/contracting machine components as well as workpiece position. TAS-C, based on machine thermal characteristics, with appropriately placed temperature sensors and feed axis position data, will predict and accurately control thermal deformation in machine construction when ambient temperatures change.

TAS-S Thermo Active Stabilizer - Spindle

Thermal deformation of the spindle changes greatly both when the spindle is turning and when it is stopped, affecting machining accuracy. TAS-S considers not only spindle temperature information but also spindle rotation, spindle speed changes, and spindle stoppage. Thermal deformation of the spindle is accurately controlled even when spindle speed changes frequently.

Machining dimensional change with ambient temperature range of 8°C



High-accuracy machining

- | High accuracy | High-precision index table | Highly rigid bed |
|--|--|---|
| <ul style="list-style-type: none"> Even higher accuracy with Y-axis motor base cooling (standard) and ball screw cooling (option) | <ul style="list-style-type: none"> NC 0.001° indexing (option) Indexing time (90°/180°) 1.0/1.2 sec A roller gear cam is used for the drive The pallet seating on a tapered cone achieves highly accurate positioning and excellent durability | <ul style="list-style-type: none"> A highly rigid 3-point support bed is used to enable easy installation and stabilize accuracy for a long time |

MB-5000HII with AbsoScale; actual data (measurement method based on ISO 230-2)

The exactness of bi-directional positioning		Bi-directional repeatability	
X-axis (travel 760 mm)	1.5 μm	X-axis (travel 760 mm)	1.0 μm
Y-axis (travel 760 mm)	1.8 μm	Y-axis (travel 760 mm)	1.4 μm
Z-axis (travel 810 mm)	2.4 μm	Z-axis (travel 810 mm)	1.0 μm

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

High productivity

Enhances productivity with high-efficiency machining and shorter non-cutting time

Delivers the shortest cycle time in its class with high-speed machining and reduced non-cutting time

Cycle time reduction by shortening non-cutting time

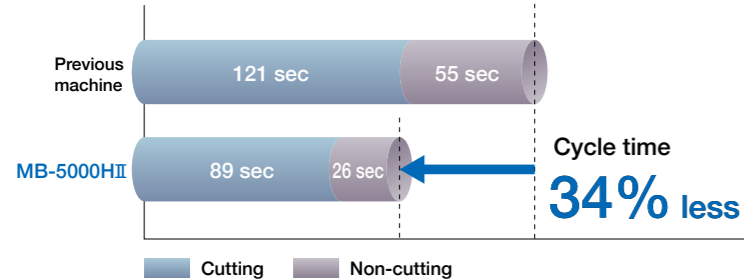
Fast machining of aluminum parts in mass production

The cycle time became 34% less compared to the previous machine. In addition, with the high-speed machining spindle* (20,000 min⁻¹, 30/22 kW) (option) for aluminum, tapping and other applications can be faster.

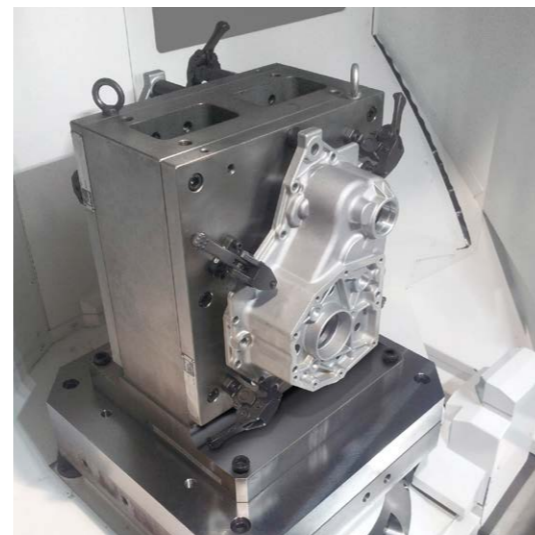
* Spindle ramp up for 0 → 15,000 min⁻¹: 1.3 sec (standard specs 2.1 sec)

High-speed machining example of aluminum mass production

Non-machining time can be shortened by shortening the operation time such as an increase in the rapid traverse acceleration and tool change. The reduction of the machining time leads to an increase in productivity over the same amount of time.



- Drilling and tapping are performed with a high-speed tapping cycle.
- High-speed spindle for aluminum machining: 20,000 min⁻¹.
- High-speed B-axis rotation and high-speed ATC.



Quick machine movements

With fast accel/decel axis feeds designed to reduce positioning times. In addition, a roller gear cam mechanism is used for the 0.001-degree indexing table (option), which has minimized indexing time. Shorter positioning times and high-speed table rotation enable cycle times among the fastest in the world.

Rapid traverse (max)	X-, Y-, Z-axis	60 m/min
Rapid traverse acceleration (max)	X-, Z-axis	1.0 G
	Y-axis	1.1 G
Table indexing time (0.001° indexing table*)	90° indexing	1.0 sec
	180° indexing	1.2 sec

* The 0.001° indexing table is available as an option.

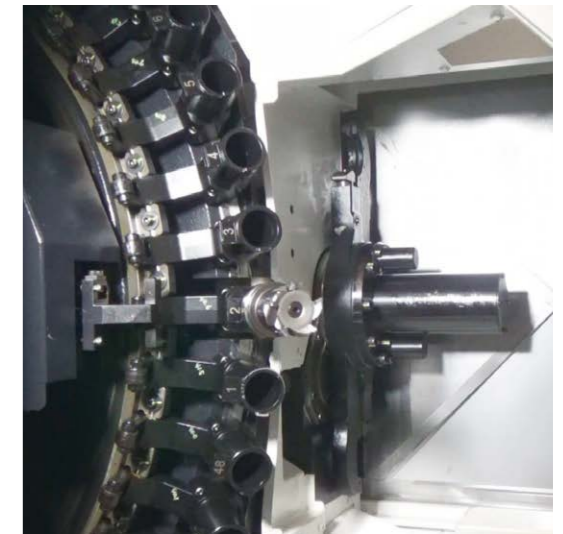
Reduced ATC times

Disc-type ATC magazine

The ATC disk magazine provides faster operations. The farthest tool magazine indexing time possible is 5.1 seconds.

ATC tools		48 tools
ATC time	T-T*1	0.9 sec (tool mass: 4 kg or less)
		1.3 sec (tool mass: 4 kg or higher)
	CTC min*2	2.1 sec (tool mass: 4 kg or less)
		2.5 sec (tool mass: 4 kg or higher)
Farthest pot indexing		5.1 sec (With 48-tool magazine)

*1. MAS standard measurements (formerly JIS B 6013)
*2. ISO 10791-9 (2001) (JIS B 6336-9) measurements



Reduced tool change time

Suction of excess coolant in spindle recommended option

Residual coolant in tools is removed instantly in 0.6 seconds (actual value for drill tools). The suction of coolant in spindles eliminates the need for air blowing to remove residual coolant (at least 15 seconds), and so shortens tool change time.

Coolant suction time **1.0 sec***

* The coolant suction time varies depending on the tool.
Note: It can be selected in the thru-spindle coolant specification.



Photo shows the MA-4000H

High productivity

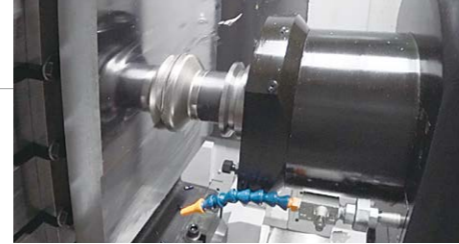
Higher productivity with high-rigidity, high-torque spindles and a space-saving, highly efficient design

A lineup of high-rigidity, high-torque spindles is available, capable of high-speed machining of mass-produced aluminum parts and powerful cutting of steel materials

High-efficiency machining is achieved with powerful spindles equipped with roller bearings

Powerful cutting of steel materials

Spindles using roller bearings, offering higher rigidity than ball bearings, are available (Special specification). In addition to the No. 40 spindle specification, a No. 50 spindle specification is also available. This enables deep-hole and extended-reach machining that requires tool rigidity, such as with large-diameter side cutters and long boring bars. (Maximum tool length: 510 mm; Maximum tool mass 12 kg [No. 40 spindle], 15 kg [No. 50 spindle])

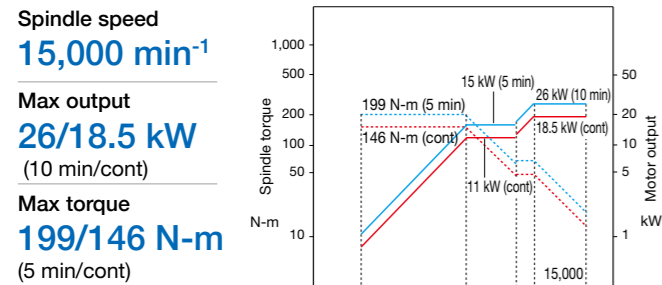


The lineup of highly rigid and highly torqued spindles

The spindle lineup

For highly efficient machining of general machine parts

Standard spindle No. 40



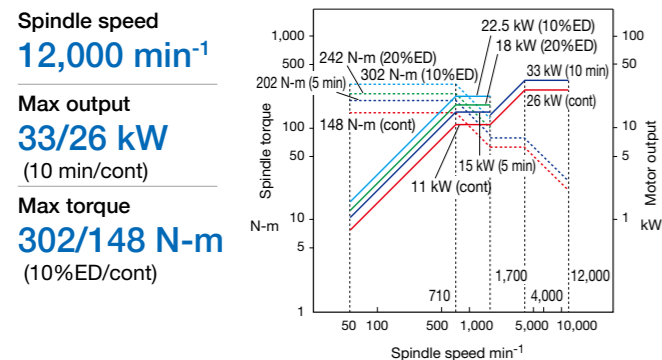
Material: S45C Actual data

Chip volume **483 cm³/min** (Face milling)

Tool	Spindle speed min ⁻¹	Cutting m/min	Feed rate mm/min	Cut width mm	Cut depth mm
ø80 face mill 8 blades (cermet)	1,194	300	3,750	56	2.3

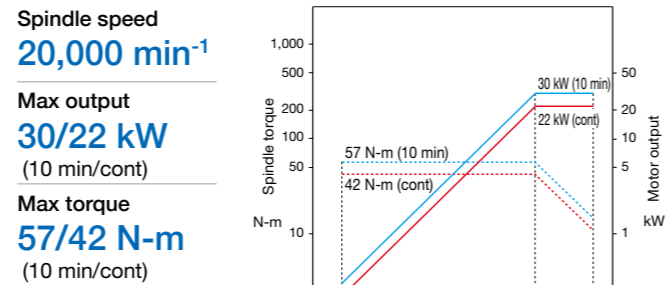
For powerful cutting of castings and cast steel parts

Power spindles (No. 40/No. 50) (option)



For fast machining of aluminum

High-speed spindle No. 40 for aluminum applications (option)



Material: A5052 Actual data

Chip volume **2,700 cm³/min** (Face milling)

Tool	Spindle speed min ⁻¹	Cutting m/min	Feed rate mm/min	Cut width mm	Cut depth mm
ø63 face mill 5 blades (carbide)	15,000	2,968	20,455	44	3

Material: S45C Actual data

Chip volume **704 cm³/min** (End milling)
628 cm³/min (Face milling)

Tool	Spindle speed min ⁻¹	Cutting m/min	Feed rate mm/min	Cut width mm	Cut depth mm
ø20 roughing end mill 7 flutes	4,029	253	8,800	4	20
ø100 face mill 5 blades (cermet)	955	300	1,910	70	4.7

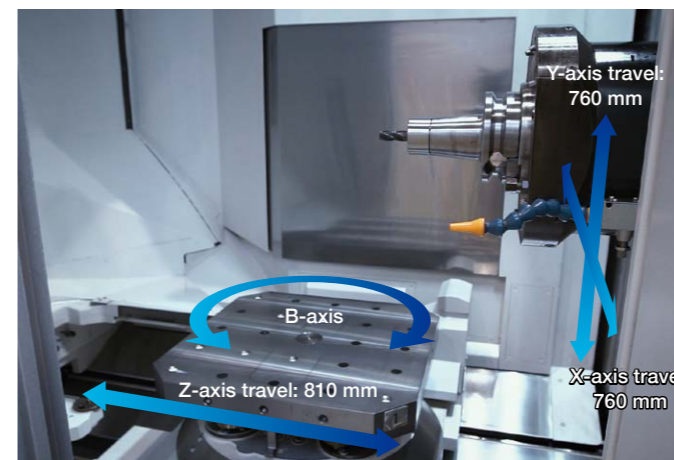
Note: The "actual data" referred to above for this brochure represent examples, and may not be obtained due to differences in specifications, tooling, cutting condition, and others.

With a small footprint, providing a large machining area

Class smallest installation space

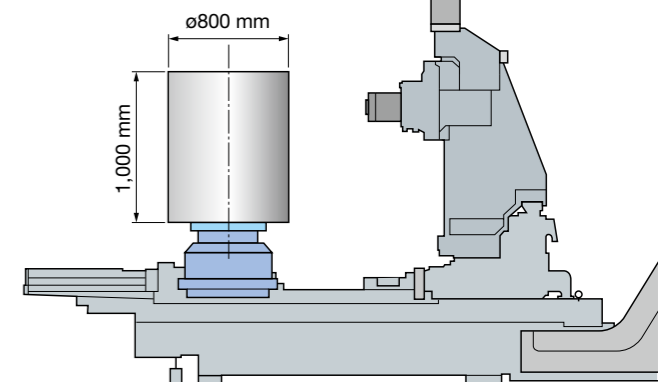


Class largest, wide machining area



Max workpiece dimensions

Max machining dia: **ø800 mm**
Max machining height: **1,000 mm**



Stable operation

Chip troubles are eliminated to maintain stable operation over long hours

High chip disposal performance for smooth discharge of large volumes of chips

Machining chamber with accumulated chips and biting into covers – thoroughly removed

In-machine covers renewed. Flat covers are used to drastically improve chip discharge. Moreover, with simpler designs, chip accumulation and biting-in troubles have been prevented. The machine has the high durability fully capable of withstanding the long continuous runs required for mass production at maximum rapid-traverse rates and machining capacity.

In-machine covers with enhanced reliability prevent chip entanglement

X-/Y-axis with armored bellows, and the Z-axis with a single steel sheet cover minimize chip biting-in damage.



Single stainless steel cover (Z-axis)



X-/Y-axis armored bellow covers

Full center trough achieves chip discharge from any type of machining application

All areas of the machining chamber converge with the in-machine chip conveyor. It prevents chip accumulation in the machine chamber. Larger directly-below-spindle discharge port. Smoother out-machine chip discharge possible.



A high-flow shower coolant prevents chip accumulation

Below pallet wash, table both-side chip flush are standard. Long continuous runs are strongly supported by in-machine covers preventing chip accumulation in any. Large-volume shower coolant washes machining chamber corners and table periphery, to prevent chip accumulation.



Flexible, long-hour automated production for a wide variety of workpieces

Space-saving automation for high-mix production with up to 20 pallets

Tower APC option

The transfer unit moves vertically to exchange pallets. The pallet stocker features a multi-tier structure with up to three levels, accommodating a maximum of 20 pallets.

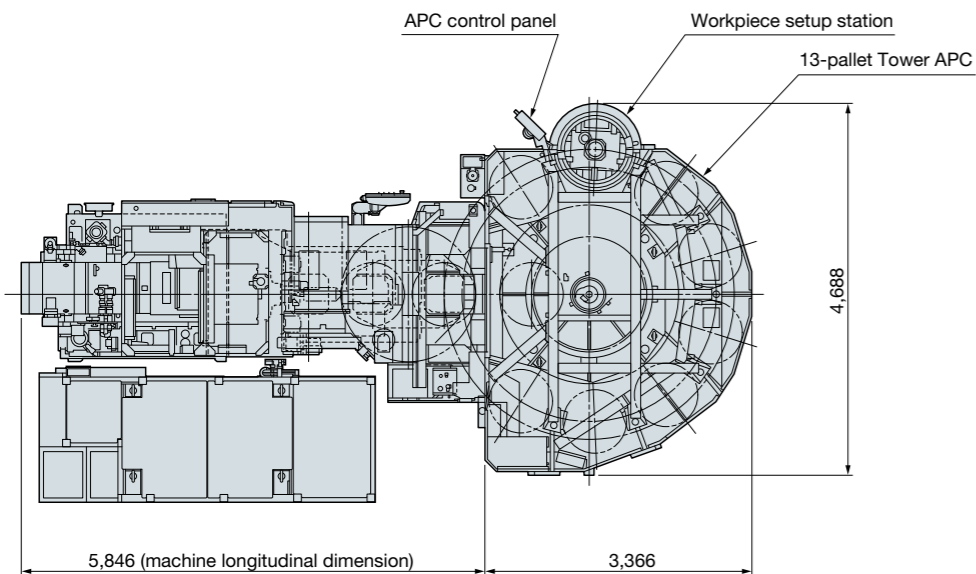


13-pallet Tower APC



Setup station

Unit: mm



Tower APC Specifications

Pallet dimensions	Max workpiece dimensions	Maximum load capacity (excluding pallet)	Number of pallets
500 mm × 500 mm	ø800 mm × H1,000 mm	500 kg 700 kg (option)	13 pallets / 20 pallets

Large-capacity magazine that stores a large number of tools in a compact space

SLIM matrix magazine option

By arranging the tool storage direction parallel to the spindle and eliminating the need for tool rotation, the required floor space has been reduced by 20% compared to conventional matrix magazines. In addition, the newly installed ready station pot and sub-arm mechanism shorten the next tool change time by 7 seconds compared to conventional matrix magazines.



Exterior view of SLIM matrix magazine

SLIM matrix magazine

ATC magazine capacity	Magazine type	ATC tool			
		Standard	Mid-size ¹	Large size ¹	Maximum length, mass, moment
No. 40 156 tools, 208 tools, 260 tools	Middle	ø70 mm	ø130 mm	ø170 mm	Max length 510 mm ² Max mass 12 kg Mass moment 11.76 N-m

¹. The number of tools that can be stored is limited by tool diameter.
². Certain restrictions apply to the length of tools that can be stored. Please contact us for details.

Matrix magazine option

The No. 40 specification can store up to 340 tools, and the No. 50 specification up to 240 tools. Magazines can be configured according to the required number of tools, providing flexible support for automation needs.



Matrix magazine

ATC magazine capacity	Magazine type	ATC tool			
		Standard	Mid-size ¹	Large size ¹	Maximum length, mass, moment
No. 40 140 tools, 180 tools	Short				Max length 510 mm Max mass 12 kg Mass moment 11.76 N-m
No. 40 220 tools, 260 tools	Middle	ø70 mm	ø90 mm	ø170 mm	
No. 40 300 tools, 340 tools	Long				
No. 50 90 tools, 120 tools	Short				Max length 510 mm Max mass 15 kg Mass moment 19.11 N-m
No. 50 150 tools, 180 tools	Middle	ø105 mm	—	ø170 mm	
No. 50 210 tools, 240 tools	Long				

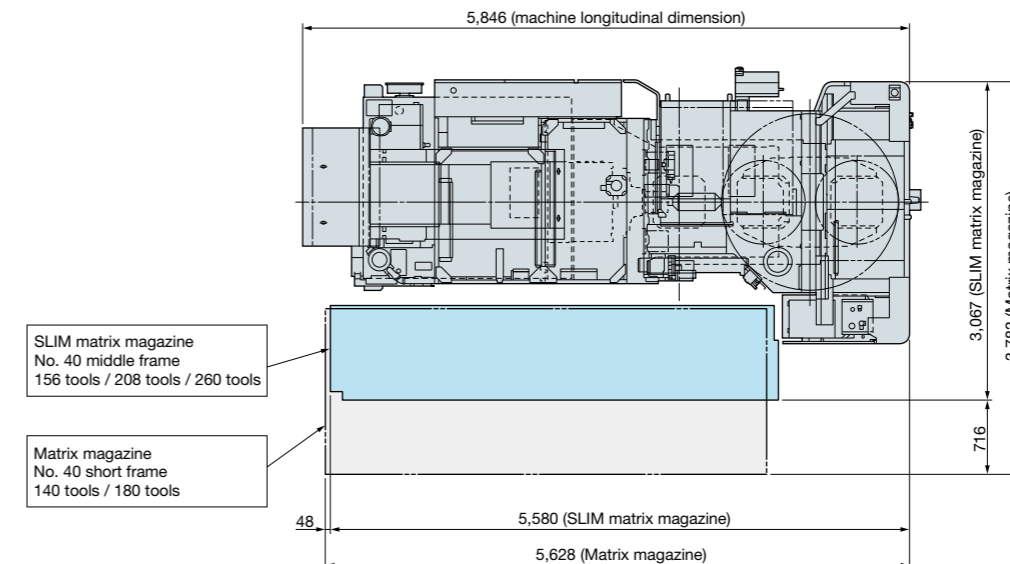
¹. The number of tools that can be stored is limited by tool diameter.

Comparison of installation space

Comparison of installation space by magazine type

Note: In the case of CP2000 H1200

Unit: mm



Floor space
Reduced by 20%
(Compared to conventional matrix magazines)

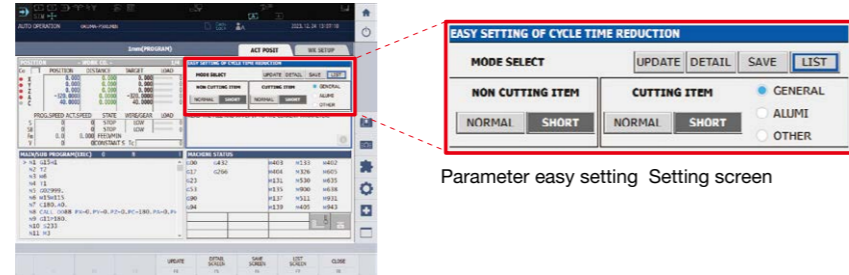
Note: Including the machine

Okuma's advanced technology - effective for shop floors

Significantly shortens cycle times and reduces power consumption

Cycle time reduction

- Operation time reduction: The non-cutting time is shortened by simultaneously performing multiple operations, such as spindle rotation and axis feed, and allowing the rotary axis to take the shortest path.
- Machining time shortening: The cycle time is reduced for parts machining with frequent switches between cutting feed and rapid traverse by using feeder-mode high-speed switching and optimal acceleration/deceleration.
- Easy parameter setting: Collects parameters related to cycle time reduction in a single screen for enabling changes and reuse in a single operation.



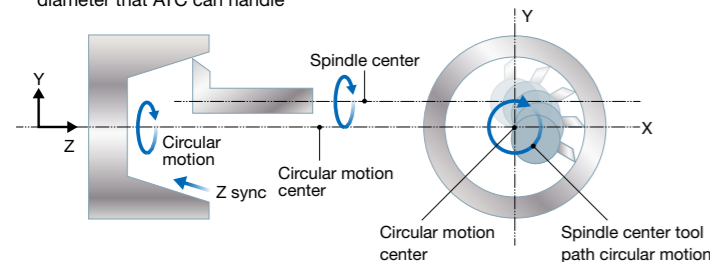
Shorter lead times with process-intensive machining

Turn-cut option

Turning operations on machining centers

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
- IDs and ODs can be machined when they exceed the maximum tool diameter that ATC can handle



Note: AbsoScale detection and ball-screw cooling required.

Turning valve parts

With Turn-Cut, it's possible to turn the seating surfaces required by gas pipe sealing conditions.



Grooving with high sealability

Flat-Tool Grooving option

Airtight seal grooving

The spindle phase is precisely synchronized with cutting edge motion, to perform highly accurate grooving.

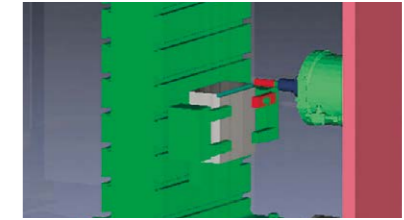
- Getting high sealability without hand finishing.
- Complex seal groove curves also cut with flat tools.



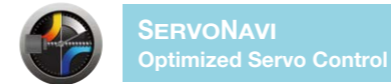
Allowing operators to focus on making parts



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



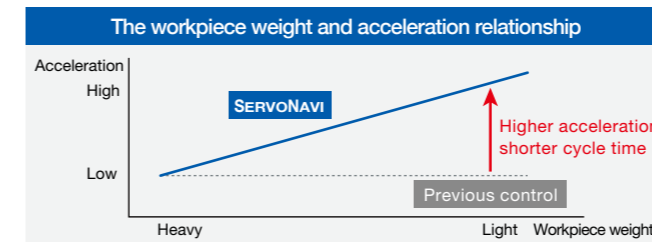
Achieves long term accuracy and surface quality



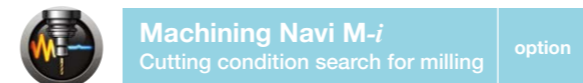
Cycle time shortened with faster acceleration

SERVONAVI AP (Automatic Parameter setting): Work Weight Auto Setting

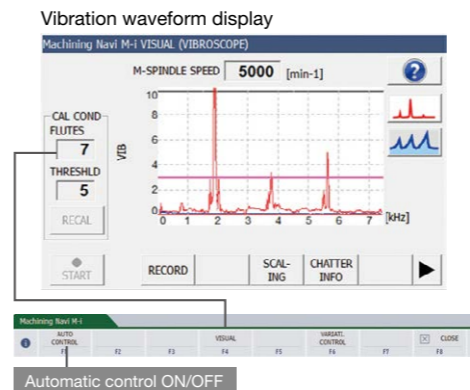
On table travel type machining centers, the table feed acceleration with the previous system was the same regardless of weight, such as workpieces and fixtures loaded on the table. Work Weight Auto Setting estimates the weight of the workpiece and fixture on the table and automatically sets the linear axis servo parameters, including acceleration, to the optimum values. Cycle times are shortened with no changes to machining accuracy.



Automatically changes to optimum spindle speed



Chatter vibration is measured by built-in sensors, and Machining Navi automatically changes spindle speed to the optimum speed.



Maintains machining accuracy and surface quality

SERVONAVI SF (Surface Fine-tuning): Reversal Spike Auto Adjustment

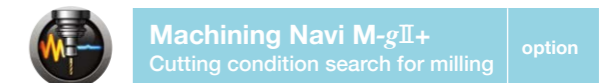
Slide resistance changes with length of time machine tools are utilized, and discrepancies occur with the servo parameters that were the best when the machine was first installed. This may produce crease marks at motion reversals and affect machining accuracy (part surface quality). Reversal Spike Auto Adjustment maintains machining accuracy by switching servo parameters to the optimum values matched to changes in slide resistance.

Contributes to longer machine life

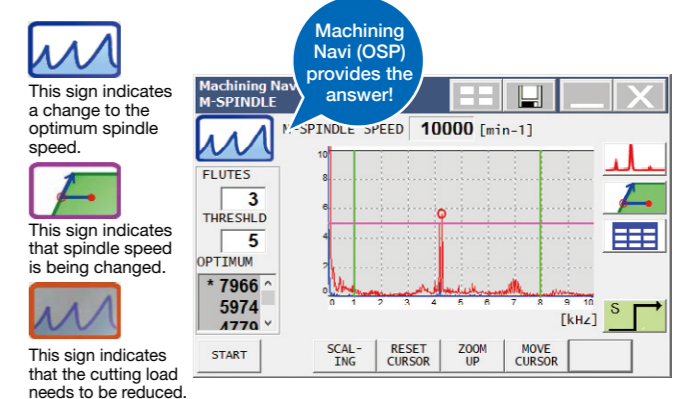
SERVONAVI SF (Surface Fine-tuning): Vibration Auto Adjustment

When aging changes machine performance, noise, vibration, crease marks, or fish scales may appear. Vibration Auto Adjustment can eliminate noise and vibration even from machines with years of operation.

Adjust cutting conditions while monitoring the data



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.



High productivity

Various advanced technologies that increase productivity

Okuma's advanced technology - effective for shop floors

With predictive maintenance, prevent machine stoppages just in time

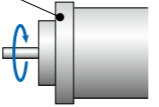
AI Machine Diagnosis Function
Machine tool diagnostics technology with artificial intelligence (AI) option

Okuma's AI-equipped control detects abnormalities in the machine spindle and feed axes, leading to the prevention of long machine downtime and achieving stable production over a long period of time. The operators themselves can easily diagnose the machine by following simple screen guidelines on the Okuma control.

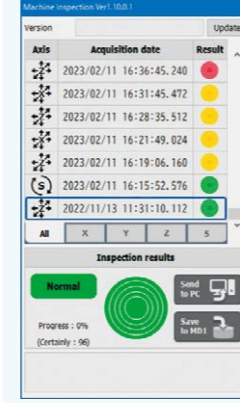
Notes:
AI diagnostic models are already installed, and diagnoses can be performed by the machine itself.
AI diagnostic models can be updated to the newest version through a computer connected to the internet.
AbsoScale detection specs is required for ball-screw wear detection.

AI Spindle Diagnosis Function

Detects damage to spindle bearings

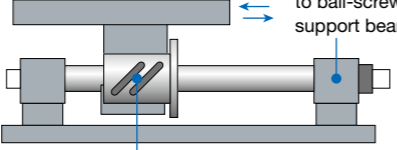


Self-diagnosis of spindle and feed axis status with AI

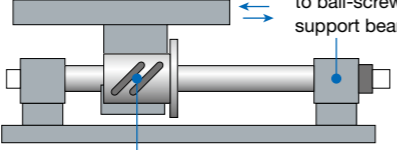


AI Feed Axis Diagnosis Function

Detects damage to ball-screw support bearings



Detects ball-screw wear condition


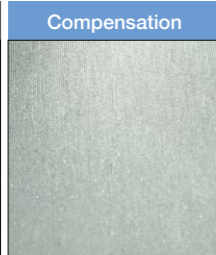
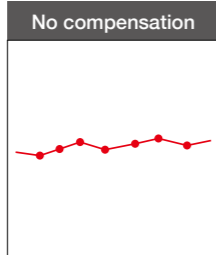
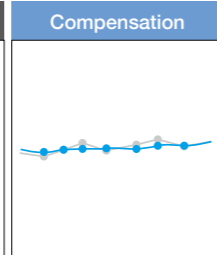
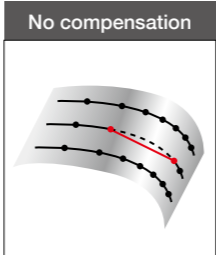
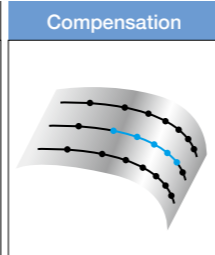


Improves the machined surface quality of dies and free-form surfaces.

Hyper-SurfaceII option

No need to modify NC data. Ridgelines and uneven surface edges are reduced, the machined surface quality is improved, and hand-polishing time is eliminated. Hyper-Surface automatically compensates for fluctuations in the CAM NC data, and for positional misalignment between edges and adjacent cutter paths, while maintaining the required shape accuracy. In addition, SMART for finishing suppresses vibration without reducing the speed at the corners, reduces the cycle time and improves the surface quality.

Notes: The effect varies depending on the machining shape.

No compensation	Compensation	No compensation	Compensation
			
Comparison of machined surface quality		Smooths minor fluctuations and variations in command points	
		Adjust steps errors between adjacent cutter paths	

Manpower saving

Manpower-saving solutions to labor shortages

Manpower-saving solutions that reduce the operator's workload

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

Sludgeless Tank recommended option

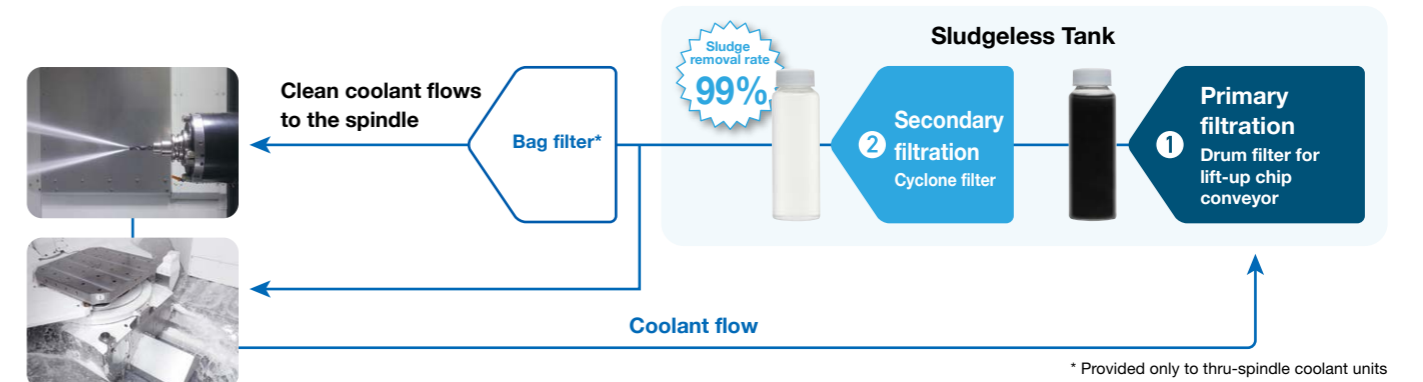
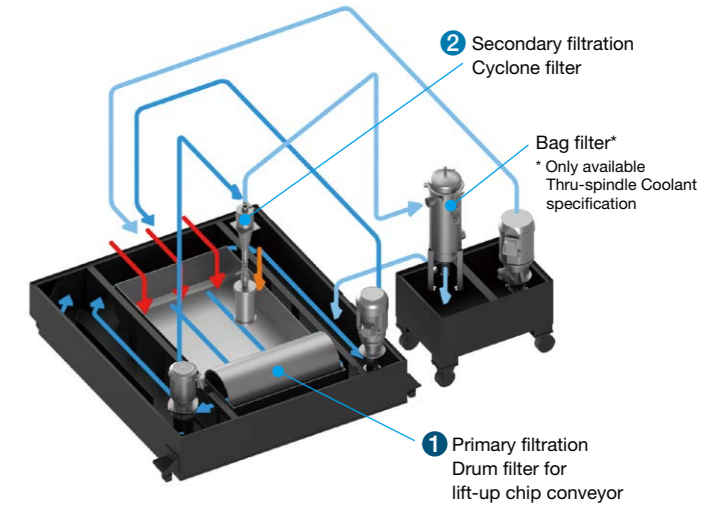
It is important to remove impurities (sludge) contained in the coolant for the stable operation of the machine, and coolant tank cleaning is indispensable. The Sludgeless Tank (option) circulates coolant at a constant speed in the tank to effectively collect sludge even during non-machining while reducing defects caused by the sludge contained in the coolant, such as scratches on machined surfaces and troubles of cutters, as well. Sludge accumulation in the tank is suppressed, which also drastically reduces the frequency of troublesome tank cleaning and enables stable operation over long hours. In addition, the frequency of coolant replacement can be greatly reduced, which also reduces the environmental impact of coolant disposal. In the thru-spindle coolant specification (option), the bag filter collects even finer sludge to improve the quality of machined surfaces.

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

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

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

Note:
It is necessary to select a chip conveyor with drum filter if the Sludgeless Tank option is chosen.



Keeping spindle tapers clean

The three filtration devices in the Sludgeless Tank and coolant suction inside the spindle reduce dirt on the spindle taper and lessen defective machining.

A next-generation CNC that makes customer manufacturing DX (digital transformation) a reality

OSP-P500

Improved productivity and stable production

As Your Single Source for M-E-I-K (Mechanics - Electronics - IT - Knowledge) merging technologies, Okuma offers this CNC to build an advanced “digital twin” that faithfully reproduces machine control and machining operations and creates new value. In addition, the product helps improve productivity and realize stable production, featuring ease of use that allows customers to use their machining know-how. Additional features are: control technology that achieves high-speed and high-accuracy machining and robust security functions to protect against the increasing threat of cyber-attacks.

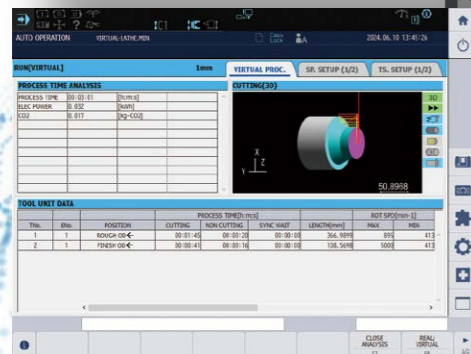
15-inch operation panel



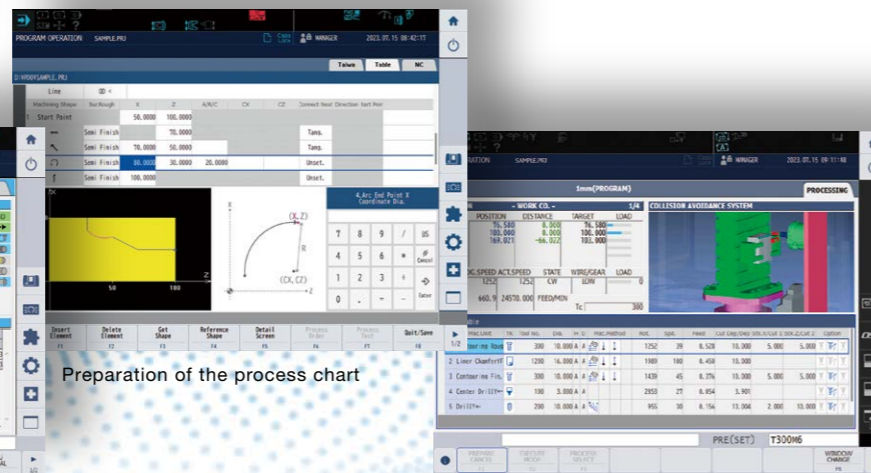
- 1 Faithful digital reproduction of machines and processes
 - | Ground-breaking concept of a digital twin
- 2 Realizing high-speed and high-accuracy machining
 - | Revolutionary control technology
- 3 Novice-friendly smart operation
 - | Innovative operability
- 4 Increasing cyber resilience
 - | Robust security



Home screen

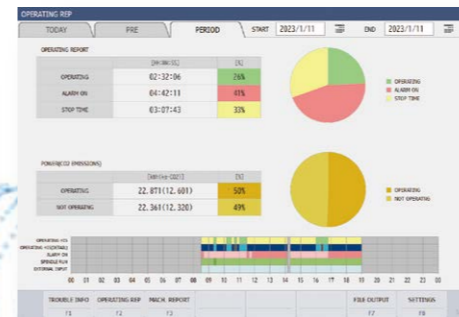


Virtual machining



Preparation of the process chart

Operation with the process chart



MacMan plus

CNC Significant increases in productivity are achieved through advance machining simulations (front loading) in order to reduce machinery downtime

OSP-P500 A next-generation CNC that makes customer manufacturing DX (digital transformation) a reality

1 Faithful digital reproduction of machines and processes

Digital Twin option

Ground-breaking concept of a digital twin

The digital twin calculates cycle time, machining shape, and electricity consumption through super high-speed and high-accuracy simulation. It supports accurate estimates of cycle time, development of the machining schedule, and quick and accurate estimates of delivery time and costs when an order is received.

Simulation using the latest machine information can be achieved even with an office PC or with the built-in OSP-P500.

This enables preparation for machining in advance in the office environment (front loading).

Physical machine preparation time can be reduced by using digital twin preparation results to prepare for machining the next parts while machining continues.

When a problem occurs on the shop floor, it can be solved quickly on site without going back to the office.



2 Realizing high-speed and high-accuracy machining

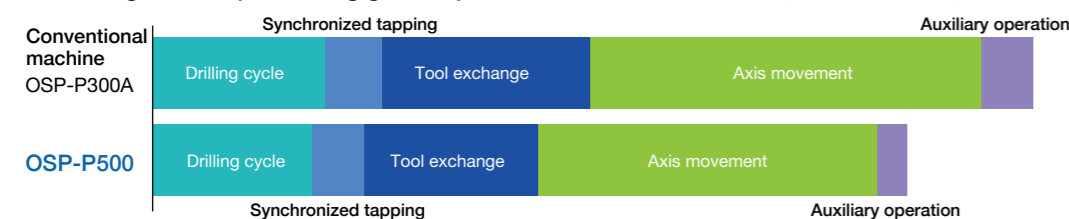
Revolutionary control technology

CNC operation performance has been doubled compared to the conventional model (OSP-P300A).

The processing capacity and the response speed between control modules have been improved to shorten the machining time.

The time for machining general parts can be shortened if the machining program and machining conditions are the same as before.

Machining time for processing general parts is reduced (same part program, same cutting conditions)



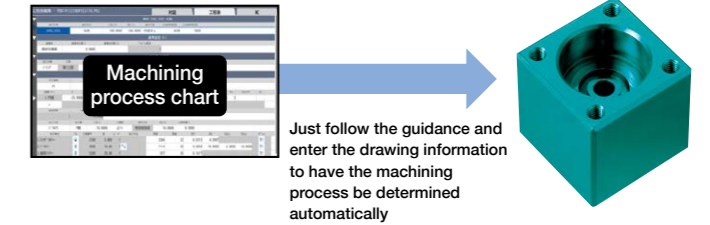
3 Novice-friendly smart operation

Smart OSP Operation option

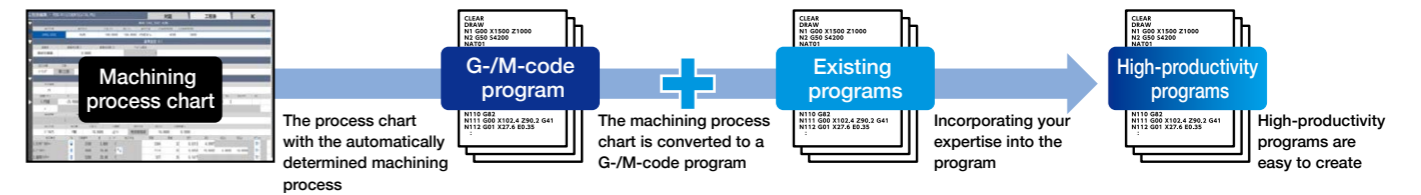
Innovative operability

Conventionally, machining operations are programmed with G-/M-code based on drawings. With OSP-P500, however, you only have to follow the guidance to enter drawing information. So you can prepare for machining quickly, even if you have no familiarity at all with the NC program language.

Operation without reliance on G-/M-codes enables easy, quick machining by anyone



High-productivity programs are easy to create



4 Protecting the operation of machines and precious assets such as part programs from cyber attacks

Robust security that increases cyber resilience

As digital networks develop and servers are increasingly connected to factory machines, the threat of cyber attacks increases, making it ever more important to protect against them. OSP-P500 is equipped with robust security functions for defense against and protection from cyber attacks, along with data restoration, to protect the operation of machines and precious assets such as part programs in the event of a cyber attack.



Defense	Prevent unauthorized access and connection	Identification of operators and communications, authentication function, etc.
Protection	Control damage	Anti-virus measures based on the allowlist, functions to prevent falsification and detect abnormalities, etc.
Data restoration	Preparation for emergencies	Control software and data backup function, etc.

OSP-VPSII (Virus Protection System II)

OSP-VPSII (Virus Protection System II) incorporates allowlisting*1 antivirus functions into the Okuma CNC (OSP) to prevent infection by viruses via networks and USB devices.

OSP-VPSII-STD

OSP-VPSII-STD [Standard] includes antivirus functions developed exclusively for Okuma's numerically controlled machines. Machines can be used safely, as only software tested by Okuma can be run.

Note: Because the allowlist is locked, only Okuma software can be run.

OSP-VPSII-EX (option)

OSP-VPSII-EX [Expert] includes antivirus functions made by TXOne Networks*2. The allowlist can be edited by the customer, so any software can be installed*3.

Note: Incorrectly editing the allowlist may prevent OSP from operating normally, so specialized knowledge of allowlisting antivirus functions is required.

*1. Allowlisting is a method in which safe software is listed and software not included in the list is prevented from running.

*2. TXOne Networks is a registered trademark of TXOne Networks Inc.

*3. This does not guarantee the operation of any software on OSP. Note that installed software may prevent OSP from operating properly.

Energy-saving technology

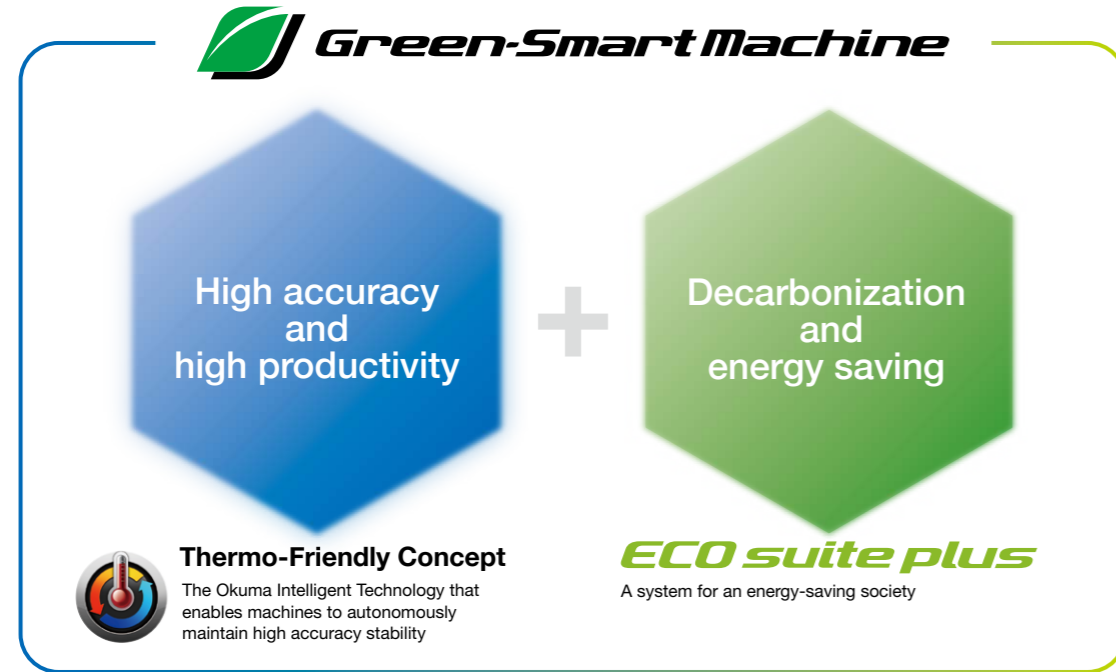
It contributes to providing both high productivity and high precision while being eco-friendly

Achieving high accuracy and high productivity while achieving decarbonization and energy saving



Okuma has worked to reduce energy consumption in order to achieve carbon neutrality at the three factories in Japan which are our main production bases. We have realized high productivity through automation and process-intensive machining, in addition to high-accuracy machining, and we then introduced the use of green energy to transform the three domestic factories into carbon-neutral factories. "Green-Smart Machines" is our definition of Okuma's intelligent machine tools, which autonomously achieve stable dimensional accuracy and reduced energy consumption, to support environmentally friendly production. Our policy is to deploy "Green-Smart Machines" fully, to help achieve a carbon-free society. Starting with products manufactured at those carbon-neutral factories and distributing them globally, we will partner with our customers to address the social challenges faced by the manufacturing industry.

Green-Smart Machines are **environmentally friendly** products that autonomously achieve stable dimensional accuracies and reduced energy consumption.

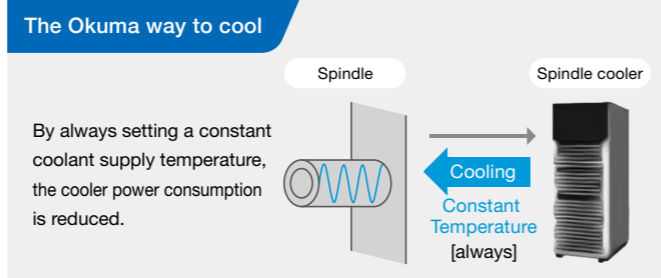


The Okuma Intelligent Technology that enables machines to autonomously maintain high accuracy stability



The unique concept of accepting temperature changes achieves consistent high accuracy without special coolers or excessive air conditioning.

- **Reduction of warm-ups and dimensional compensation**
Reduce the time needed for daily warm-ups and dimensional compensation to adjust to ambient temperature changes.
- **Reduction of power used for air conditioning**
Maintain high stability of dimensional accuracy even if the air conditioning temperature range is expanded.
- **Reduction of machine body coolers**
Achieve outstanding dimensional accuracy without any special machine body cooling being required to maintain accuracy.



A system for an energy-saving society

ECO suite plus

The "ECO suite plus" retains the concept of achieving both high machining accuracy stability and energy savings (less carbon dioxide emissions) achieved by the Thermo-Friendly Concept and the "ECO suite" that was put into practical use in 2014. It is an energy-saving system with enhanced high-accuracy/-productive functionality and advanced eco-friendly support.

Ensure accuracy and actively turn off unnecessary peripherals

ECO Idling Stop

All auxiliary equipment when not needed (most of factory power consumption), can be turned off. The ECO Idling Stop button enables diligent idle stop operations even during machining and maintenance work. The cooling system necessary for maintaining accuracy uses Thermo-Friendly Concept technology, and the machine itself decides when to cool and stop idling while maintaining high accuracy. With ECO suite plus, the machine automatically detects the operating status, eliminating the need to push buttons while reducing carbon dioxide emission as much as possible without operator awareness.

Peripheral equipment runs only when needed

ECO Operation

By using only the required peripherals (chip conveyors, mist collectors, etc.), energy-saving operations that also maintain high productivity are possible. ECO suite plus enables more detailed tuning of operations to thoroughly support carbon dioxide emission reduction activities that do not reduce productivity.

ECO PARAMETER	ECO IDLE STOP	ECO OPERATION
ECO IDLE STOP ELAPSED TIME	000:00:00	REMAINING TIME UNTIL ECO IDLE STOP READY 12:48
Chip conveyor interval control	OFF	UNIT
Chip conveyor interval active time	100 [min]	
Chip conveyor interval/suspended time	200 [min]	

Confirming energy savings and analyzing reductions

ECO Power Monitor

Making it possible for the OSP control to analyze the operating status of each device. The decarbonization cycle on the shop floor is supported through the three phases, 1. View, 2. Record, and 3. Analyze.

1 Check carbon dioxide emissions on the spot

With ECO suite plus, you can also check the power consumption of each device.



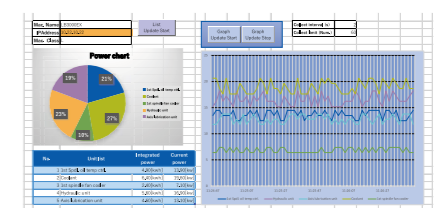
2 Simultaneously records operating status and carbon dioxide emissions

With ECO suite plus, recording carbon dioxide emissions for each device, and data output is possible.



3 Analyze carbon dioxide emissions and improve machine tool operation

With ECO suite plus, not only the display on the machine but data analysis for each device is also possible on a PC, to see a more detailed carbon dioxide emission analysis.



Example of utilizing One-Touch Spreadsheet (option) to create visual feedback of machine's power consumption and carbon dioxide emissions.

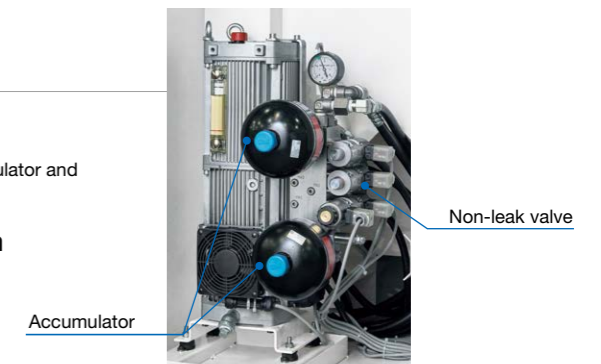
Energy-saving solutions that reduce environmental impact

Energy-saving hydraulic unit

By adopting an intermittent-operation-type hydraulic unit equipped with an accumulator and non-leak valve,

the power consumption of the hydraulic unit has been reduced by **90%*** compared to the previous model

* The calculation conditions are 10 times ATC, 10 times B-axis indexing, and 2 times APC in 10 minutes



Machine Specifications

		MB-5000HII	
		No. 40	[No. 50] ^{*1}
Travels	X-axis (right/left column)	mm (in)	760 (29.92)
	Y-axis (spindle up/down)	mm (in)	760 (29.92)
	Z-axis (table front/back)	mm (in)	810 (31.89)
	Spindle center to pallet top	mm (in)	50 to 810 (1.97 to 31.89)
	Spindle nose to pallet center	mm (in)	100 to 910 (3.94 to 35.83)
Pallet	Pallet size	mm (in)	500 × 500 (19.69 × 19.69)
	Max load capacity	kg (lb)	500 (1,100)
	Indexing angle	deg	1 [0.001]
	Max workpiece dimensions	mm (in)	ø800 × 1,000 (31.5 × 39.37)
Spindle	Speed	min ⁻¹	15,000 [12,000, 20,000]
	Tapered bore		7/24 taper No. 40 [HSK-A63]
	Bearing dia	mm (in)	ø70 (2.76) [12,000 min ⁻¹ : ø90 (3.54)] [20,000 min ⁻¹ : ø70 (2.76)]
Feed rate	Rapid traverse	m/min (ipm)	X, Y, Z: 60 (2,362)
	Cutting feed rate	mm/min (ipm)	X, Y, Z: 1 to 60,000 (0.04 to 2,362)
Motors	Spindle (10 min/cont)	kW (hp)	26/18.5 (35/25) [12,000 min ⁻¹ : 33/26 (44/35)] [20,000 min ⁻¹ : 30/22 (40/30)]
	Feed axes	kW (hp)	X, Y, Z: 5.2 (6.9)
	Table indexing	kW (hp)	3.0 (4.3) [4.6 (5.7)]
Auto tool changer (ATC)	Tool shank		MAS403 BT40 [CAT40, DIN40, HSK-A63]
	Pull stud		MAS2 [MAS1, CAT, DIN, JIS]
	Magazine capacity	tools	48 ^{*2} [64] ^{*2} [100] ^{*3} [140, 180, 220, 260, 300, 340] ^{*4} [156, 208, 260] ^{*5}
	Max tool dia (w/ adjacent)	mm (in)	ø90 (ø3.54)
	Max tool dia (w/o adjacent)	mm (in)	ø170 (ø6.69)
	Max tool length	mm (in)	510 (20.08)
	Max tool mass	kg (lb)	12 (26.4)
Tool selection		Memory random [fixed address] ^{*6}	
Machine Size	Height	mm (in)	2,885 (113.58)
	Floor space; width × depth (RDF specs) ^{*7}	mm (in)	2,540 × 5,620 (100 × 221.26)
	Mass	kg (lb)	13,700 (30,140)
Controller			OSP-P500M

*1. No. 50 spindle is optional *2. Disk magazine *3. Chain magazine *4. Matrix magazine *5. SLIM matrix magazine
*6. Chain, matrix magazine, and SLIM matrix magazine types use a fixed address system. *7. With RDF drum filter lift-up chip conveyor []: option

Standard Specifications





Spindle speed	15,000 min ⁻¹ , 26/18.5 kW (10 min/cont)	X-/Y-axis armored bellows	
ATC magazine capacity	48 tools	Hydraulic unit	
Spindlehead cooling system	Oil temperature controller	Automatic 1° indexing table	
Centralized lubrication auto grease supply unit	Grease cartridge 700 ml, and with grease level and pressure warnings	2-pallet rotary-shuttle APC	Pallet top surface M16 tap
Coolant supply system	Tank 1,000 L (effective: 710 L), pump 3.3/3.8 kW (50/60 Hz)	Full enclosure shielding	For 2-pallet rotary-shuttle APC
In-machine chip discharge	Hinge type chip conveyor	ATC operation panel	
Chip pan for above		Work lamp	LED lamp
ATC air blower (blast)		Status indicator	3 phase C type Red (alarm), Yellow (end), Green (running)
Chip air blower (blast)	Nozzle type	Foundation washers, jack bolts	
In-machine chip washer		Tool release lever	
Shower coolant system 10 nozzles		Tapered bore cleaning bar	
Below pallet washing		Hand tools	
Air filter and oiler		TAS-S	Thermo Active Stabilizer – Spindle
		TAS-C	Thermo Active Stabilizer – Construction

Optional Specifications

Spindle speeds	12,000 min ⁻¹ , 33/26 kW (10 min/cont)
* See P7 for details	20,000 min ⁻¹ , 30/22 kW (10 min/cont)
Dual contact spindle ^{*1}	HSK ^{*2} , BIG-PLUS [®]
ATC magazine capacity (No. 40)	64 (disk magazine), 100 (chain) 140, 180, 220, 260, 300, 340 (matrix magazine) 156, 208, 260 (SLIM matrix magazine)
ATC magazine capacity (No. 50)	60 (disk magazine), 80 (chain) 90, 120, 150, 180, 210, 240 (matrix magazine)
AbsoScale detection	X-Y-Z axes
Auto 0.001° indexing table	Built-in NC table
Auto pallet changer (APC)	6-P horizontal shuttle, 13/20-P tower, FMS
Pallet top	T-slots, inch holes
Spare pallets	
Edge locator	
Oil-hole coolant system	1.5 MPa
Thru-spindle coolant ^{*3}	1.5, 7.0 MPa, Large flow 1.5, 7.0 MPa
Workpiece wash gun	

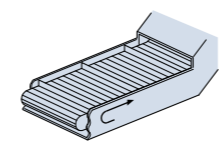
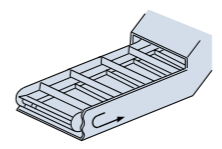
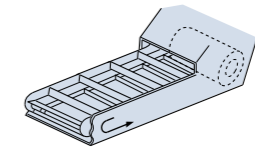
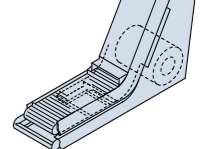
*1. Be sure to select this specification when BIG-PLUS[®] holder is used. *2. Use an HSK holder equipped with a coolant supply pipe.
*3. Okuma pull stud required with Thru-Spindle Coolant.

Recommended chip conveyors (Please contact an Okuma sales representative for details.)

		Steel	Cast iron	Aluminum / Non-ferrous metal	Mixed (general use)
Chip shape					
In-machine	Hinge type (standard) ^{*1}	○	○	○	○
	Hinge type	○	—	—	△ ^{*2}
	Off-machine chip discharge (option)	—	○ (Dry)	—	—
	Scrapper type	—	○ (Wet) with magnet	△ ^{*3}	—
	Scrapper type with drum filter	—	○ (Wet) with magnet	△ ^{*3}	—
	Hinge + scrapper with drum filter	△ ^{*4}	△ (Wet) ^{*5}	○	○

*1. Scrapper type (option) can be selected. *2. When there are few fine chips *3. When chips are longer than 100 mm *4. When there are many fine chips
*5. When chips are shorter than 100 mm

Off-machine lift-up chip conveyors

Hinge	Scrapper	Scrapper with drum filter	Hinge + scrapper with drum filter*
			

* It is necessary to select a chip conveyor with hinge + scrapper (with drum filter) if Sludgeless Tank option is chosen.

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	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°, 0.01°, 1°
	Feed override	Cutting feed override 0 to 200%, rapid traverse override 0 to 100%
	Spindle override	Override 30 to 300%
	Tool information management	Compensation, life management, shape data, etc. are collectively managed for each tool (999 tools can be registered)
	Tool compensation	Tool length compensation / tool radius compensation 3 sets for each of the registered tools (up to 999 tools), maximum number of total sets: 999
	Operation panel	15-inch operation panel (15-inch XGA screen + multi-touch panel operations), Operation panel tilt adjustment, portable pulse handle (type A), Keyboard QWERTY layout, window operation that is optimal on machine shops
	Security	Operator authentication, lock screen, OSP-VPSII-STD (Virus Protection System)
Machining programming	Program capacity	Program storage: 4 GB, operation buffer: 2 MB
	Programming	Program editing, file name index display, scheduled programs, Hole drilling fixed cycles (drill, deep bore drill, high-speed deep bore drill cycles, etc.), combined use of mm/min, keyway cycle, Coordinate calculation, area machining, coordinate change (shift, rotation and copying of the workpiece coordinate), Block skip (1 set), User Task (GOTO statement, IF statement, arithmetic operations, IF/THEN, DO/WHILE, GOTO (variables) statement, etc., functional operations, logic statements, inverse trigonometric functions, Common variables (std: 200 sets), local variables, system variables, sub-programs, G-/M-code macros (G-code: 20 sets, M-code: 20 sets), READ/WRITE/GET/PUT), basic interpolation, circular radius designate, taper angle designate, NCYL command, home position, Program operation type (A-Operation, B-Operation, S-Operation), oriented spindle stop, programming help
Operations	OSP suite	Various "suite" apps support the series of machining operations, and "suite operation" enables one-touch access to those apps
	Easy Operation	"Single-mode operation" to complete a series of operations, "Setup data" to set the zero point easily using the measuring function (option)
	Operations	Manual cutting feed, sequence return, sequence number search, manual interrupt & auto return, MDI input, Pulse handle overlap, Library programs, parameter I/O, relative actual position display, PLC monitor, operation help, Alarm help, Continued operation when instantaneous voltage drops
Monitoring, Adaptive control		Real 2D display, load meter display, maintenance monitor, collection of log data for maintenance, SERVONAVI AP, SERVONAVI SF, rotary axis notch filter switch, local variables display, display of remaining machining time
MacMan plus		Aggregation and display of machining records, operating records, operating history and trouble information, Visualization of power consumption, Records, output of records and trouble info file
Automation/Unattended operation		Auto power shutoff
Communications/Networks		USB3.0 interface (2 ports), Ethernet interface, DNC-T1, Smart I/F (Connect Plan interface), browser
High-Speed/		Hi-G control, Hi-Cut Pro, pitch error compensation, TAS-S (Thermo Active Stabilizer–Spindle),
High-Accuracy Functions		TAS-C (Thermo Active Stabilizer–Construction), cycle time reduction (operation time reduction, machining time reduction, easy parameter setting), in-position check, exact stop check, variable lost motion compensation
Energy-saving functions	ECO suite plus	ECO Idling Stop, ECO Operation, oil temperature controller auto control (ECO Idling Stop), ECO Power Monitor*1
	Power Regeneration System	Regenerative power is used when the spindle and feed axes decelerate to reduce energy waste

*1. The displayed power is an approximate value. If you need an accurate power value, please select the option to attach a wattmeter.

Kit Specifications

		NML		OT-IGF		Digital Twin				Digital Twin OT-IGF			
		E	D	E	D	E	D	VE	VD	E	D	VE	VD
Interactive functions	Advanced One-Touch IGF-M (including real 3-D simulation)			●	●					●	●	●	●
	Interactive MAP (I-MAP)					●	●	●	●				
	Smart OSP Operation Machining process chart preparation and operation			●	●	●	●	●	●	●	●	●	●
High-Speed/High-Accuracy Functions	Dynamic displacement compensation	●	●	●	●	●	●	●	●	●	●	●	●
Digital Twin On Machine	Virtual Machining					●	●	●	●	●	●	●	●
	Quick modeling					●	●	●	●	●	●	●	●
	OPC UA for Machine Tools					●	●	●	●	●	●	●	●
	OSP API KIT					●	●	●	●	●	●	●	●
Digital Twin On PC	Virtual Machining								●	●			●
	Quick modeling								●	●			●
Programming Machining Operations	Operation buffer 10 MB	●	●	●	●	●	●	●	●	●	●	●	●
	Program notes	●	●	●	●	●	●	●	●	●	●	●	●
	Coordinate system selection	●	●	●	●	●	●	●	●	●	●	●	●
	100 sets												
	(STD: 20 sets)			●	●	●	●	●	●	●	●	●	●
	200 sets												
	Helical cutting (within 360°)	●	●	●	●	●	●	●	●	●	●	●	●
	Synchronized Tapping II	●	●	●	●	●	●	●	●	●	●	●	●
	Arbitrary angle chamfering	●	●	●	●	●	●	●	●	●	●	●	●
	Programmable travel limits	●	●	●	●	●	●	●	●	●	●	●	●
Coordinate change and drawing conversion	Programmable mirror image			●	●	●	●	●	●	●	●	●	●
	Enlarge/reduce			●	●	●	●	●	●	●	●	●	●
Sequence stop	●	●	●	●	●	●	●	●	●	●	●	●	
Sequence return	●	●	●	●	●	●	●	●	●	●	●	●	
Mid-block sequence return													
Auto scheduled program update	●	●	●	●	●	●	●	●	●	●	●	●	
Tool management	Tool wear compensation	●	●	●	●	●	●	●	●	●	●	●	●
	Tool wear compensation input restriction	●	●	●	●	●	●	●	●	●	●	●	●
	Tool life management (including prior notice, warning, and special prior notice/warning)	●	●	●	●	●	●	●	●	●	●	●	●
Monitoring	Real 3-D Simulation			●	●	●	●	●	●	●	●	●	●
	Simple load monitor	●	●	●	●	●	●	●	●	●	●	●	●
	NC operation monitor (counter, totaling)	●	●	●	●	●	●	●	●	●	●	●	●
	Tool breakage no-load detection			●	●	●	●	●	●	●	●	●	
Measuring	Manual measuring (not including sensors)	●	●	●	●	●	●	●	●	●	●	●	

Notes. NML: Normal, OT-IGF: One-Touch IGF, E: Economy, D: Deluxe, VE: Virtual Economy, VD: Virtual Deluxe.
For each specification, please refer to Optional Specifications in P27 and P28.

Optional Specifications

Operation panel	Monitor, operation panel	21.5-inch operation panel 21.5-inch Full HD touch screen
	Pulse handle	Portable pulse handle with function buttons (Type B1) Pulse handle with touch panel Pulse handle addition (3 pieces in total)
	Keyboard	Keyboard ABC layout
Interactive functions	Advanced One-Touch IGF-M	Auto operation decision (drilling, milling) A variety of machining including contouring, grooving, pocket machining, milling, boring and linear chamfering Realistic 3D simulated test cuts Direct from machining order tables (no G-/M-code) Slope machining, 5-face machining
	Interactive MAP (I-MAP)	Part programs can be edited according to guide maps (with figure calculation function)
	Interactive MAP (I-MAP-B)	Solid shape machining function added to I-MAP pattern cycle
	Interactive MAP (I-MAP-C)	Functions to determine cutting conditions and automatically determine drilling cycle added to I-MAP
	Smart OSP Operation	Machining process chart preparation and editing functions: By using the process chart to follow the guidance, rapid preparation for machining operations is possible even without knowing G-/M-code. Machining process chart operating functions: Direct operation from the machining order chart (no G-/M-code). Independent operation for each process or from the middle of a process is possible.
Digital Twin	Virtual Machining	Confirmation tasks are more efficient in a virtual space. Machining trajectories, material scraping, interference checks.*1 High-speed, high-precision machining time estimation. Power consumption (carbon dioxide emissions) estimation.
	Quick modeling	Easy preparation of 3D models of tools, jigs and workpieces. Supply of affluent 3D model data. Selecting 3D models of tools allows not only virtual spaces for digital twins but also automated configuration of real space control data.
	OPC UA for Machine Tools	Communication specification for machine tools compatible with OPC UA communication Compatible with OPC UA version 1.00 (essential functions)
	OSP API KIT	API for Windows®-based application development
Programming Machining Operations	Imperial/metric switch	Program commands and data setting operations are switchable between metric and imperial.
	Operation buffer	10 MB
	Sub-program large capacity operation	When a sub-program is called and executed, the relevant sub-program is searched for and executed
	Program notes	To show notes in part program screens
	Auto scheduled program update	Updates part programs during a scheduled run
	Block skip	Use soft ON/OFF keys on screen to skip execution of a part program Block skip 9 sets
	Program branch	The branch of the part program can be turned ON/OFF with soft keys on the screen (number of sets: 9)
	Work coordinate system	Number of selected sets: 100, 200, 400
	Helical cutting	Circular interpolation + helical axis interpolation
	3D circular interpolation	Three dimensional interpolation
	Skip	Axis travel by G-code, movement skip by sensor input
	Arbitrary angle chamfering	Easy chamfering at an arbitrary corner angle (C, R)
	Synchronized Tapping II	Synchronized tapping, deep bore synchronized tapping, high-speed deep bore synchronized tapping cycle
	Cylindrical side machining	Can easily carry out machining of cylindrical side
	Tool max rotational speed setting	The rotation speed limit is set for each milling tool
	F1-digit feed	Feed speed command by designating the number - external switch type/parameter type
	Programmable travel limits	Per G22, G23
	Axis name designation	Can change axis name by G-code
	Slope machining	Type I/Type II
	Fixture offset	The workpiece coordinate of the rotary/tilting axis is offset
	Dynamic fixture offset	The workpiece coordinate is automatically offset according to the movement of the rotary axis
	Harmonic Spindle Speed Control (HSSC)	The spindle speed is periodically changed to avoid chatter during cutting
	Tool grooving	Hale machining (simultaneous XY + spindle)
	Turn-Cut	Simultaneous XY arc + spindle
	Inverse time feed	Feed rate command with cutting time
	Spindle path control	Contouring per simultaneous control of spindle C and X-Y-Z axes
	Dynamic Tool Load Control	Control of chipping due to tool runout during the machining of difficult-to-cut materials
	Punch tap cycle	High-speed threading cycle using tools dedicated to punch tap
	Coordinate change and drawing conversion	Enlarges and reduces drawings, programmable mirror image
	User Task	Common variables: 1,000 or 2,000 sets G-code macros: 100 sets (80 sets added) Input/output variables (16 points each)
	Sequence stop	Stops machining at prescribed sequence number
	Sequence return	Mid-block sequence return
	Pulse handle angle and arc feed	Angle and arc feed with simultaneous 2-axis control by pulse handle
Tool management	Tool life management	The cumulative number of machined workpieces or cumulative cutting time is calculated, and when the preset value is reached, a spare tool is automatically assigned. Life data of each tool are displayed as graphs; tool life prior notice, tool life warning, tool life special prior notice/warning
	Tool wear compensation	Compensation for the wear amount of the tool
	Tool wear compensation input restriction	Limitation on the amount of tool wear compensation
	3D tool compensation	Designates offset direction at I, J, K
	TOOL-ID (with chips)	Central management of tool data for tools with ID chips
	TOOL-ID (without chips)	Integration of tool data with tools for management and storage
	TOOL-IC	Tool management with Factory Manager manufactured by BIG DAISHOWA SEIKI

External input output Communication functions Networking	DNC connection	DNC-C/Ethernet DNC-T3 DNC-B DNC-DT	Connected to host using Ethernet I/F for MacMan-net Ethernet RS-232C for OSP, connects to host RS-232C; remote buffer operations Remote operation using Ethernet: part programs are downloaded from PCs for the machining operation
	RS-232C interface		RS-232C interface 1CH to 4CH
	FL-net		Connected to host and other machines using FL-net
	Ethernet/IP		Connected to host and other machines using Ethernet/IP
	OSP-MTConnect		MTConnect I/F for production management systems produced by other companies
Measuring	Auto tool length offset/		Automatically performs tool length compensation and tool breakage detection
	Auto tool breakage detection		Continuous tool gauging: Multiple tools are continuously gauged automatically
	In-magazine tool breakage detection		Automatically performs tool breakage detection in the magazine
	Auto gauging		Checks workpiece dimension, and auto zero offset; Measured data output to file
	Manual measurement		Easy manual tool length compensation, workpiece gauging and zero setting according to guidance on the display
	Interactive gauging		Easy semi-automatic tool length compensation, workpiece gauging and zero setting according to guidance on the display
	NC Gage		Workpiece dimensions and geometrical tolerance can be measured
Monitoring, Adaptive control	One-Touch Spreadsheet		Excel® files assist machining setups
	Collision Avoidance System (Units and actions to prevent interference are limited)		Interference during automatic, MDI and manual operations is prevented Easy modeling of shape data Simultaneous movement with Hyper-Surface II and Tool Center Point Control II
	Real 3-D Simulation		Real time simulation of all machining modes (auto, MDI, manual operation) Solid/cross section/transmission display of workpieces, tool path display, tool shape display With cycle time calculator
	Simple load monitor		Monitors spindle overload (machining stops when overloaded)
	NC operation monitor		NC hour meters for NC start, spindle rotation, cutting, etc. and 4 NC workpiece counters
	Status indicator		NC running lamp, alarm lamp, machining end lamp
	Tool breakage no-load detection		In drilling, detects the no-load cutting status of the spindle caused by tool breakage, triggers an alarm and stops operation
		Synchronized tapping torque monitoring MOP-TOOL	
	AI Machine Diagnosis*2		AI-based spindle and feed axis diagnostics
	Machine Status Logger		Commands, operations and spindle and feed axis loads are recorded to increase, analyze and improve machining traceability
		Cutting Status Monitor	To reduce machining failure, spindle and feed axis loads are monitored to trigger an alarm, pause operations, and/or trigger evacuation operations
		Machining Navi M-i	Based on chatter vibration during machining, the spindle speed is automatically optimized to stabilize machining
		Machining Navi M-gII+	Chatter vibration during machining is visualized to help automatically select the optimal spindle speed for stable machining
		Feed axis retraction	Pull back in axial direction during power failures
		Tool retract cycle	Execute shelter cycle according to interruption signal
		Workpiece counters on machine	Counted with M02 and M30 or dedicated M-code
		Hour meters on machine	The power ON time, spindle rotation time, NC running time and cutting time are counted
		Operation end buzzer	A buzzer goes off at M02/M30 and M00/M01 and also when an alarm is generated
		Tapping retraction	Retract the tapping tool when a power failure occurs during tapping
		Adaptive control (AC) using external signals	Interruption program function, slide hold, feed axis override activated using external signals
		Tool monitoring system	CARON TMAC8 I/F
		General purpose overload detection	Detect overload in external devices and display an alarm
Automation/Unattended operation functions	Warm-up		Automatically turn on the power to perform warm-up at the preset time
	External program		Push button, rotary switch, digital switch, BCD
	Connection with automated devices		Robot loader I/F, stacker crane I/F, FMS link I/F
	Pallet pool control (PPC)		Decides or changes machining schedule to meet pallets
High-Speed/High-Accuracy functions	AbsoScale detection		X-Y-Z axes
	Dynamic displacement compensation		Dynamic displacement during acceleration/deceleration is compensated for, to improve machining accuracy
	0.1 μm control		0.1 μm command increments
	Hyper-Surface II		3 linear axes, 3 linear axes + 2 rotary axes
	Inductosyn detection, DD encoder detection		A-axis, B-axis, C-axis
	Straightness compensation		Compensation for linear axis motion
	Misalignment compensation		Compensation for misalignment of the rotary axis rotation center
Energy-saving functions	ECO suite plus		ECO Power Monitor (on-machine wattmeter), ECO Hydraulics, Spindle Power Peak Limiter, External output interface of consumed electricity, oil temperature controller auto control (ECO Operation)*3
Other functions	Circuit breaker		Power shutoff with the detection of earth leakage
	External M-signals		[4 sets, 8 sets] Signals for controlling external devices such as rotary indexing tables
	OSP-VPSII-EX (Virus Protection System)		Allowlist-based virus protection system
	Monitor display language (multi-language)		Language switchable

*1. If the Collision Avoidance System specs are enabled, then interference checks can be performed for structural components of the machine in addition to workpiece, tools, and fixtures.

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

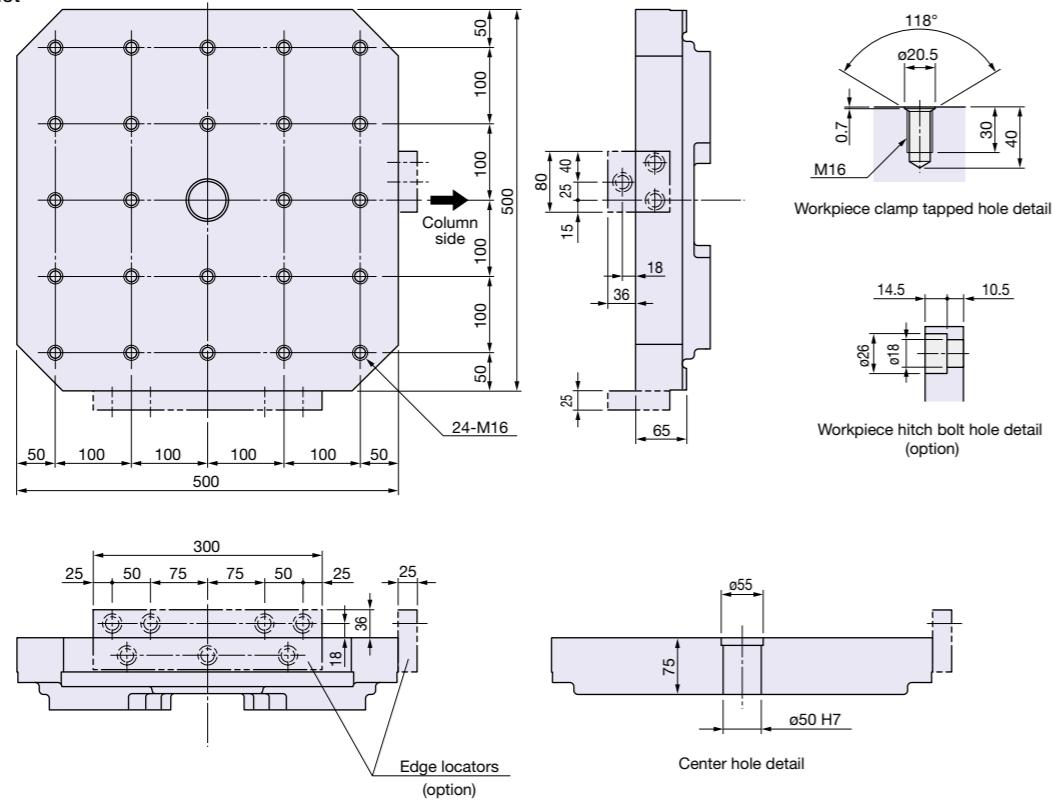
*3. 15,000 min⁻¹ spindle only

Note: Cannot be selected for some machine specifications.

▬ Pallet dimensions

Unit: mm

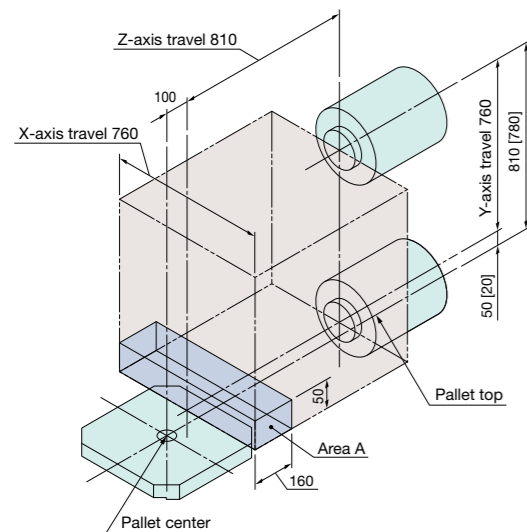
Metric tap pallet



▬ Working range

Unit: mm

X-axis travel: 760 mm
Y-axis travel: 760 mm
Z-axis travel: 810 mm

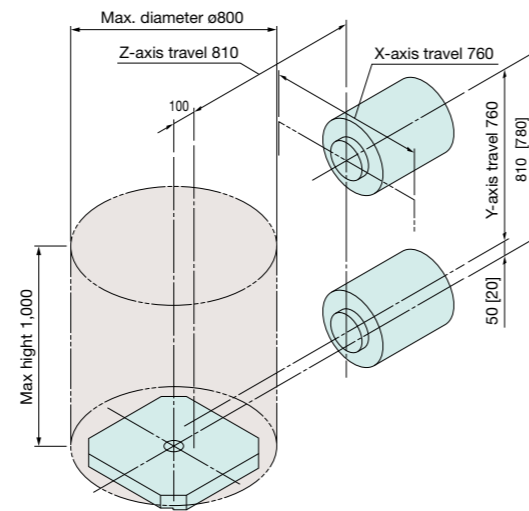


[]: T-slot pallets
Note: The machine should be operated with caution and with reference to the following interference areas described below.
Area A: Spindlehead interference
● 160 mm when the B-axis is 0, 90, 270, or 360 degrees.
● 160 mm or larger when the B-axis is other than 0, 90, 270, or 360 degrees.

▬ Maximum workpiece dimensions

Unit: mm

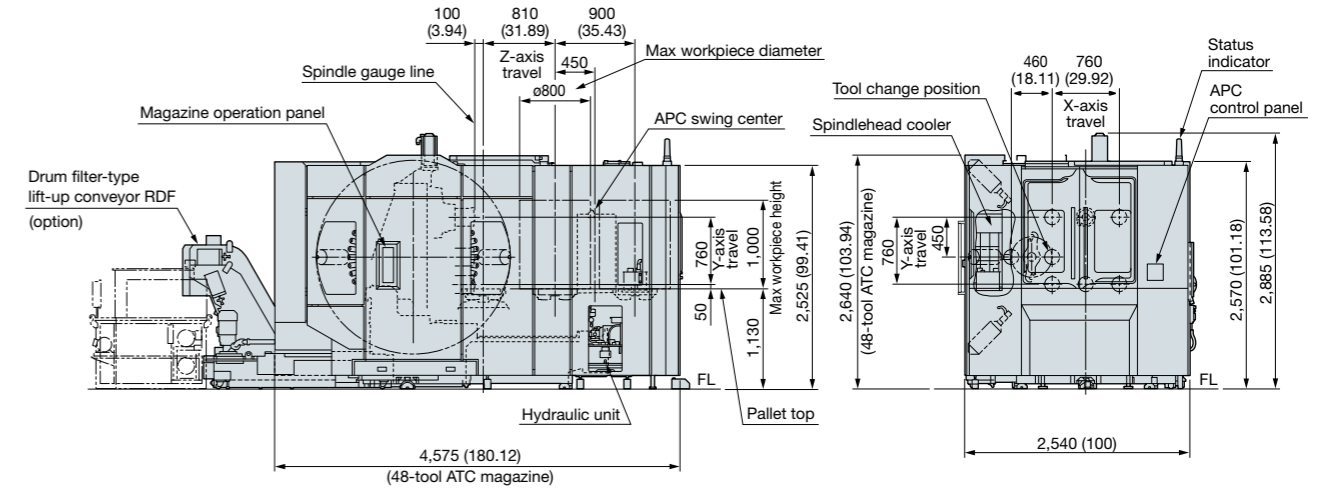
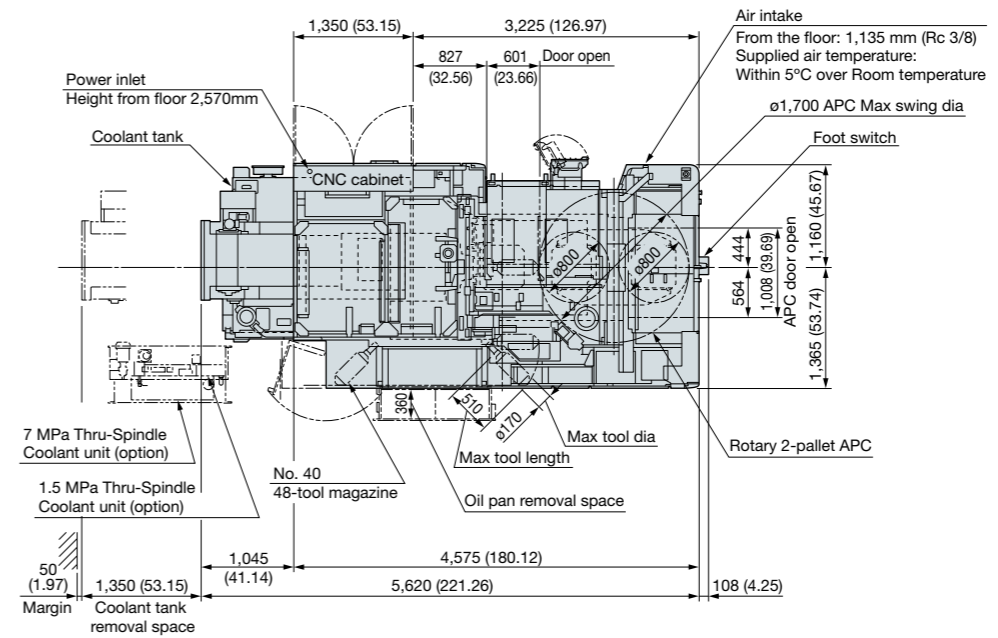
2-pallet rotary-shuttle APC specification



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

▬ MB-5000HII Dimensional and Installation Drawings (No. 40 Spindle)

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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This product is subject to the Japanese government Foreign Exchange and Foreign Trade Control Act with regard to security controlled items; whereby Okuma Corporation should be notified prior to its shipment to another country.



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