

MB-80V

Vertical Machining Center



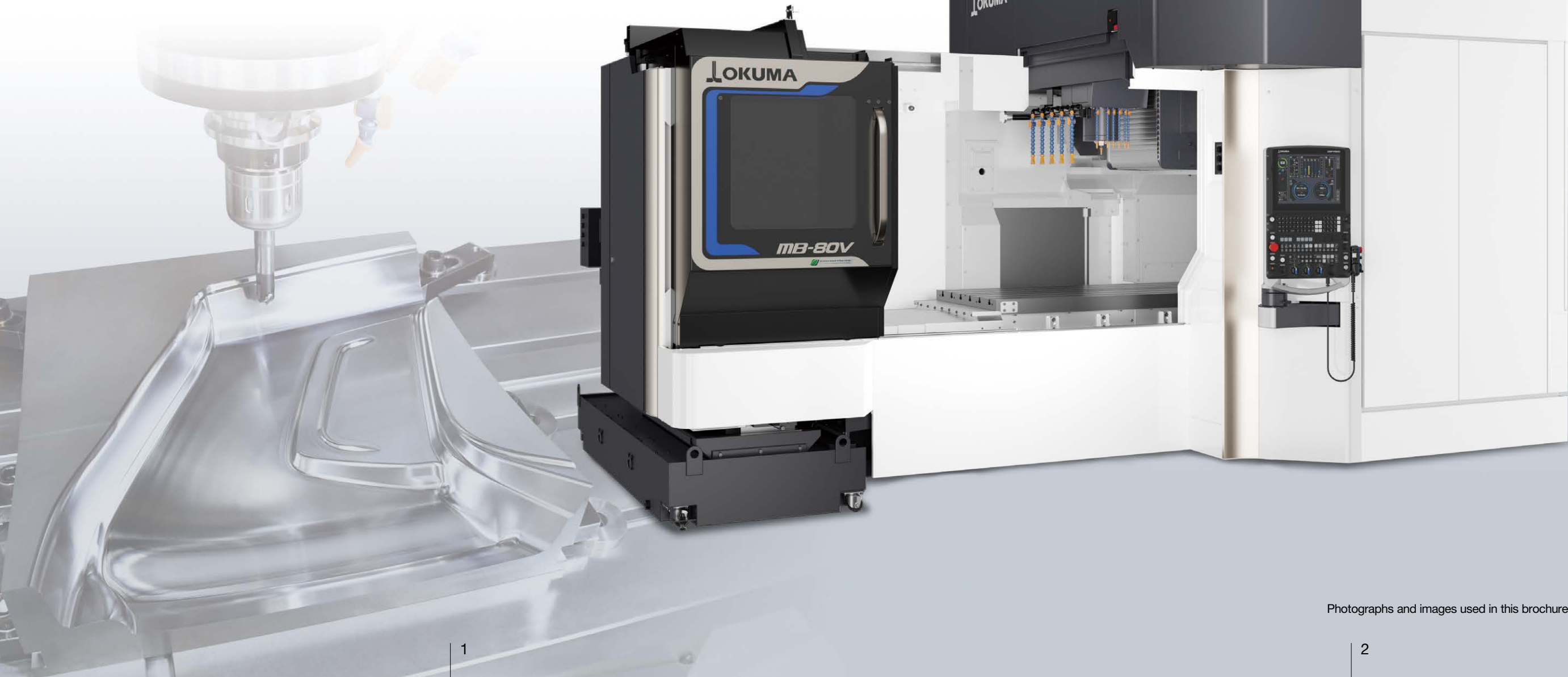
MB-80V

Vertical Machining Center



Achieving good workability and excellent maintainability
Significant productivity gains in machining medium to large parts, ranging from high-accuracy parts to large plastic dies/molds

— A highly accurate and large VMC —



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



MB-80V Large Vertical Machining Center [For Highly Accurate Applications]

Excellent productivity, high machining quality, ease of use
Achieving maximum reliability and floor space productivity with medium/large parts
From a continually evolving MB-V Series

Short cycle times with high cutting capacity

From roughing to high-quality finishing, highly efficient and large capacity machining can be completed on one machine.

Production lead times can be reduced with an ideal selection of spindles.

	Wide-range spindle <standard>	High-speed spindle <option>	Power spindle (roller bearings) <option>
Spindle taper	No. 40	No. 40	No. 40/No. 50
Spindle speed min ⁻¹	15,000	20,000	12,000
Output kW	26	30	33
Torque N-m	199	57	302

Achieving highly accurate machining of medium and large-sized components

With a wide table and work envelope ideal for cutting large dies, molds and semiconductor manufacturing equipment.

Space-saving design provides best-in-class footprint productivity. [Floor space to work envelope]

Table size mm	1,600 × 800 (2,000 × 800)
X-axis travel mm	1,600 (2,000)
Y-axis travel mm	1,050
Z-axis travel mm	600 <750>
Required floor space mm×mm	4,500 × 2,970 (5,900 × 2,970)

() : Indicates 2,000 mm X-axis travel specifications
 < > : Indicates 750 mm Z-axis travel specifications

Operator-friendly ease of use

Easy access to the spindle and table, and wide door opening makes it easy to set up large components. Accommodating a variety of hydraulic fixtures, which usually require significant time and effort to handle manually, becomes effortless.

The operator's workload can be alleviated by optimally designing the workflow, etc., particularly with APC specifications.

Greatly reduce operator clean-up time

The shielding, coolant, and chip conveyor are optimally designed for excellent chip discharge. The capacity to handle large amounts of aluminum chips also improves the machine operation rate and greatly reduces operator clean-up time.

Superb machining accuracy and predictive maintenance assure reliable long-term operation

Okuma's Thermo-Friendly Concept (accepting temperature changes) achieves outstanding dimensional accuracy stability over long runs, by minimizing dimensional variations due to fluctuating room temperatures and heat generated during cutting.

By predicting spindle and feed axis abnormalities with AI machine diagnostics, planned maintenance activities enhance the overall operation.

Highly efficient machining of die/mold and semiconductor manufacturing equipment parts

Cutting capacities **669 cm³/min / 704 cm³/min**

● **12,000 min⁻¹ (No. 50) power spindle, roller bearings** <option> (material: S45C)

Tool	Spindle min ⁻¹	Cutting m/min	Feed rate mm/min	Width mm	Depth mm	Chips cm ³ /min
ø100 face mill 5 blades (carbide)	955	300	1,910	70	5	669
ø20 roughing end mill, 7 flutes (carbide)	4,000	251	9,520	20	3.7	704

● **15,000 min⁻¹ (No. 40) wide-range spindle** <standard> (material: S45C)

Tool	Spindle min ⁻¹	Cutting m/min	Feed rate mm/min	Width mm	Depth mm	Chips cm ³ /min
ø100 face mill 5 blades (carbide)	955	300	1,429	70	4	400
ø63 insert drill	606	120	91	-	-	-
Tap M30P3.5	240	23	840	-	-	84% (Spindle load)

● **15,000 min⁻¹ (No. 40) wide-range spindle** <standard> (material: A5052)

Tool	Spindle min ⁻¹	Cutting m/min	Feed rate mm/min	Width mm	Depth mm	Chips cm ³ /min
ø63 face mill 5 blades (carbide)	15,000	2,969	8,523	44	4	1,500

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.



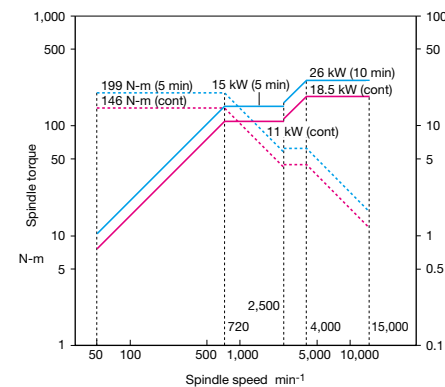
Wide spindle lineup provides the right match for general machinery parts to die/mold applications

In addition to the highly versatile 15,000 min⁻¹ wide range spindle (standard), a 20,000 min⁻¹ high-speed spindle and a 302 N-m maximum torque power spindle are also available (options). Highly rigid roller bearings are used for the power spindle, and No. 50-taper spindles can be selected.

Wide-range spindle (No. 40)

Highly efficient general machine part applications

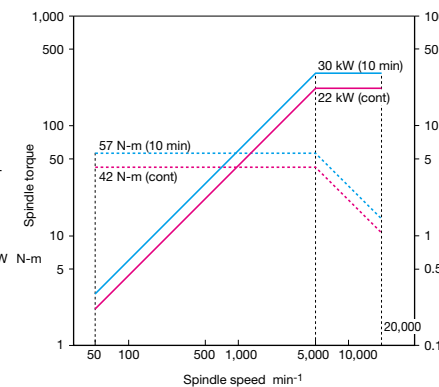
- Spindle speed: 15,000 min⁻¹ (standard)
- Max output: 26/18.5 kW (10 min/cont)
- Max torque: 199/146 N-m (5 min/cont)



High-speed spindle (No. 40)

Mainly for aluminum

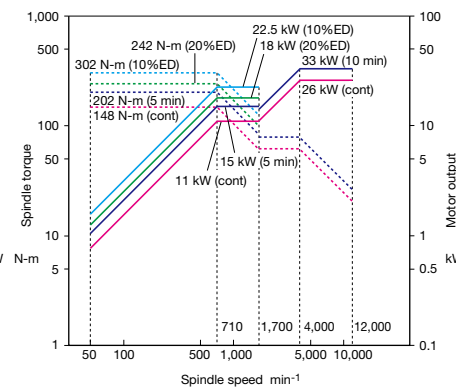
- Spindle speed: 20,000 min⁻¹ (option)
- Max output: 30/22 kW (10 min/cont)
- Max torque: 57/42 N-m (10 min/cont)



Power spindle (No. 40/50, roller bearings)

Roughing and finish of dies & molds

- Spindle speed: 12,000 min⁻¹ (option)
- Max output: 33/26 kW (10 min/cont)
- Max torque: 302/148 N-m (10%ED/cont)



Both wide Y-axis travel and excellent workability

Ideal work envelope for medium and large-size parts machining

Y-axis travel: **1,050 mm**

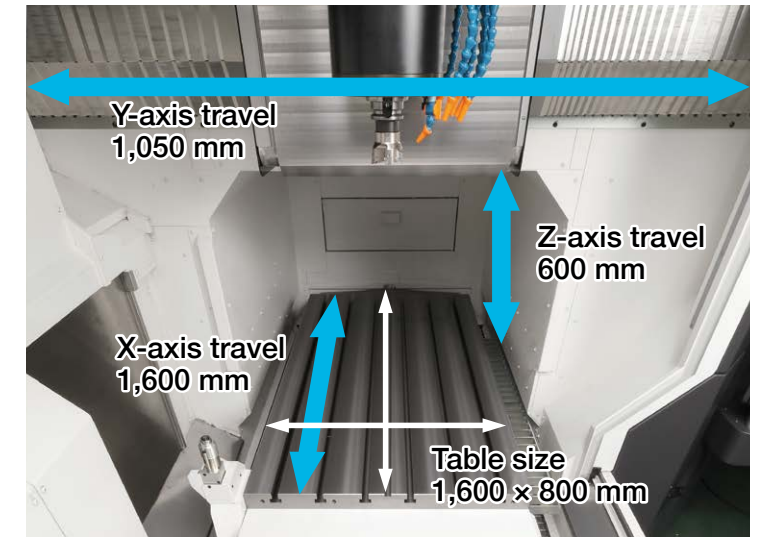
■ Compatible with medium and large parts machining, and large plastic molds/dies machining

The Y-axis travel is as long as 1,050 mm while the table size is 800 mm, realizing the best-in-class floor-space utilization rate*.

* Floor-space utilization rate: The ratio of the working range area required for the machine against the required floor space for machine

Even longer X-axis travel available **2,000 mm** (option)

- X-axis travel: 1,600 (2,000) mm
- Y-axis travel: 1,050 mm
- Z-axis travel: 600 <750> mm
- Table size: 1,600 × 800 (2,000 × 800) mm

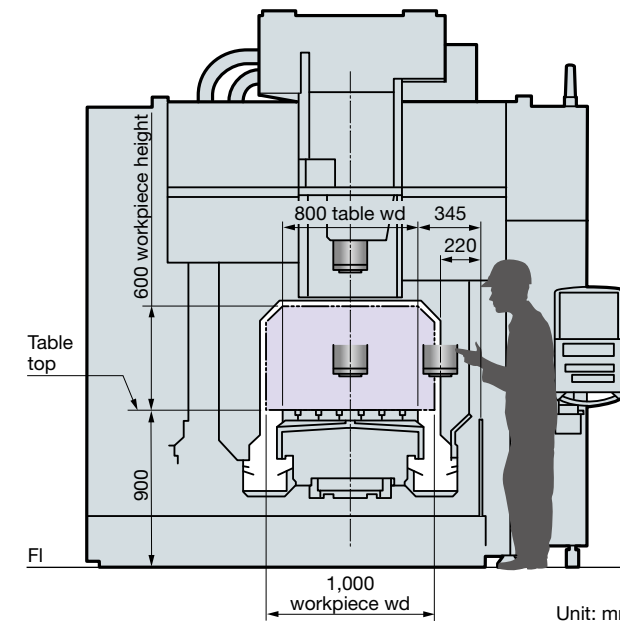


() : Indicates 2,000 mm X-axis travel specifications
< > : Indicates 750 mm Z-axis travel specifications

Outstanding table and spindle access provide excellent workability

Easy access to table and spindle

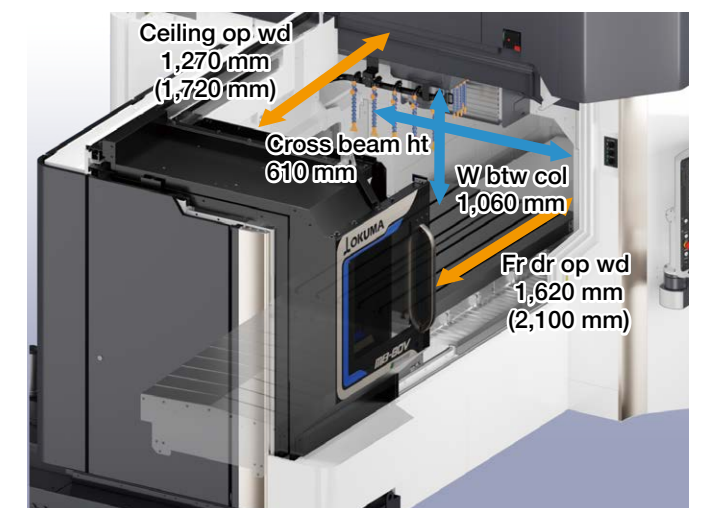
- Access to spindle: 220 mm
- Access to table: 345 mm
- Table height: 900 mm
- Front door opening: 1,620 mm (2,100 mm)



Maximum workpiece that can be loaded on the table

- Workpiece L × W × H: 2,630 (3,280) × 1,000 × 600 mm
- Load mass: 2,500 kg [4,000 kg option]

Notes: Varies per specification. Confirmation is required for workpiece load/load specifications.



() : Indicates 2,000 mm X-axis travel specifications

Manpower-saving solutions to solve labor shortages With APC and expandable fixture applications

Large amounts of aluminum chips also cleanly removed

- Wide in-machine chip conveyor
- Shower coolant system (option)
- In-machine vertical covers prevent chip accumulation



Wide in-machine hinged chip conveyors placed at table front and back. Large chip volumes discharged smoothly



Cross-rail mounted shower coolant (option) wash chips off the workpiece and table.

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

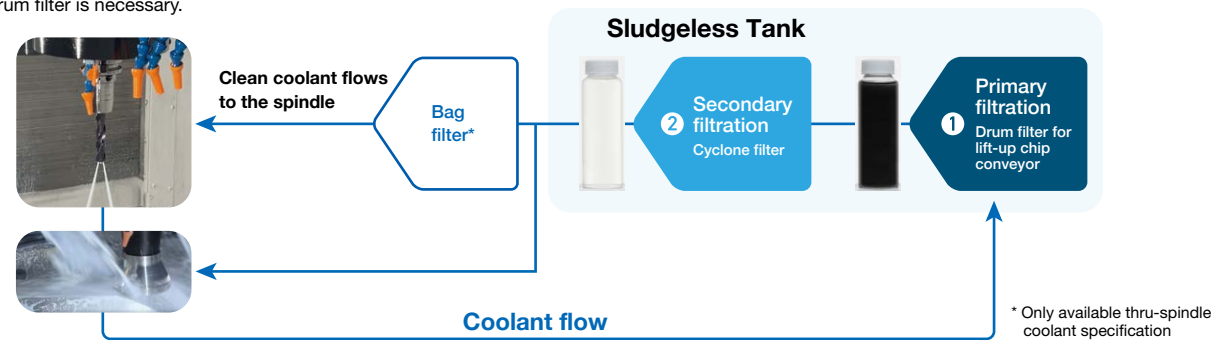
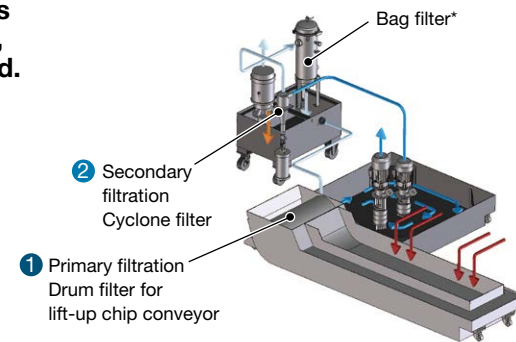
Sludgeless Tank (option)

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

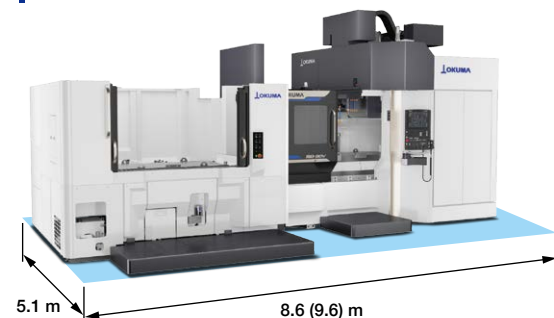
No coolant tank cleaning for 3 years (okuma equipment actual data)

No coolant replacement for 3 years (okuma equipment actual data)

Note: For the Sludgeless Tank, selection of a hinge + scraper type chip conveyor with drum filter is necessary.

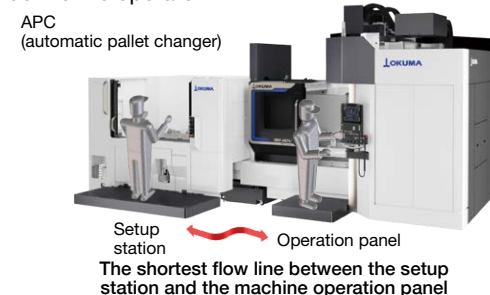


Improve utilization with automatic pallet changer



Floor space dimensions for machine with No. 50 spindle, and 166-tool matrix magazine with operator platform. (): Indicates 2,000 mm X-axis travel specifications

Changing large parts significantly reduces utilization rates. With the two-pallet APC external setup station, utilization rates improve and unattended operating times become longer. Placing the parallel-shuttle 2P-APC to the side of the machine also provides a layout to work efficiently with the operation panel, for shorter walking distance and less burden to the operator.



Always highly accurate machining



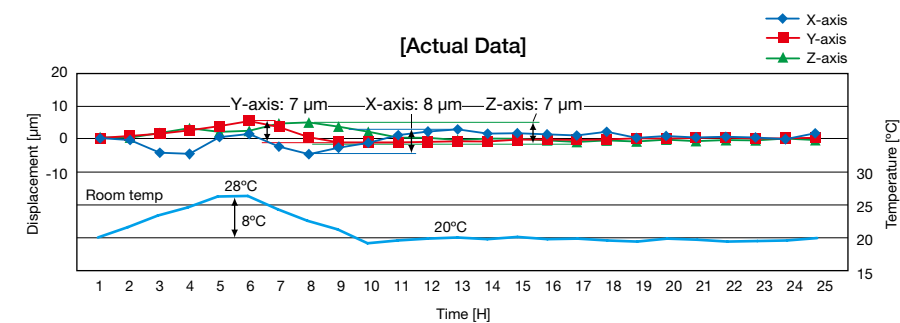
Thermo-Friendly Concept

Working with temperature changes

The “Thermo-friendly” concept enables remarkable machining accuracy through original structural design and thermal deformation control technology. It frees you from troublesome dimensional compensation and warm-up. Exhibits excellent dimensional stability even during consecutive operation over long periods and environmental temperature change in the plant.

MB-80V Thermal deformation over time: 8 μm

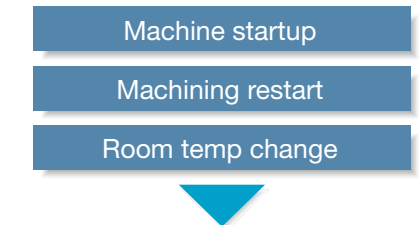
Room temperature change: 8°C



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: Thermo Active Stabilizer—Construction

“Proactively” keeps the machine [construction] in optimum, stable condition during shop environment temperature change—resulting in superb (stable) machining accuracies.

TAS-S: Thermo Active Stabilizer—Spindle

Spindle deformation will be accurately controlled even during operations with frequent speed changes.

3D Smart Calibration System (option)

Calibrating the volumetric accuracy of the machine

Any operator can easily calibrate machine accuracy

Factory floor surface deformation over the long term affects machine accuracy.

The 3D Smart Calibration System checks and calibrates the machine accuracy (positioning, straightness, perpendicularity) by automatically measuring the accuracy master (the absolute accuracy reference) using an easy-to-operate touch probe.

By calibrating accuracy at the right time, high accuracy is maintained throughout the machining space over the long term.

Notes: The machine accuracy that can be calibrated differs depending on the machine specifications and type of accuracy master (option) used. The floor deformation of the customer’s machine shop foundation may be large and require machine level adjustments.



Automatic measurement of ball beam by touch probe

Self-diagnosis of changes in machine accuracy

The Accuracy Stability Diagnosis Function estimates the change in machine accuracy due to shop floor thermal deformation and non-uniform factory temperatures, and quantifies it as “accuracy stability.”

It also provides a timely notification to perform an accuracy calibration.

Contribution to the realization of a carbon-free society

Highly productive, accurate and eco-friendly **Green-Smart Machine**

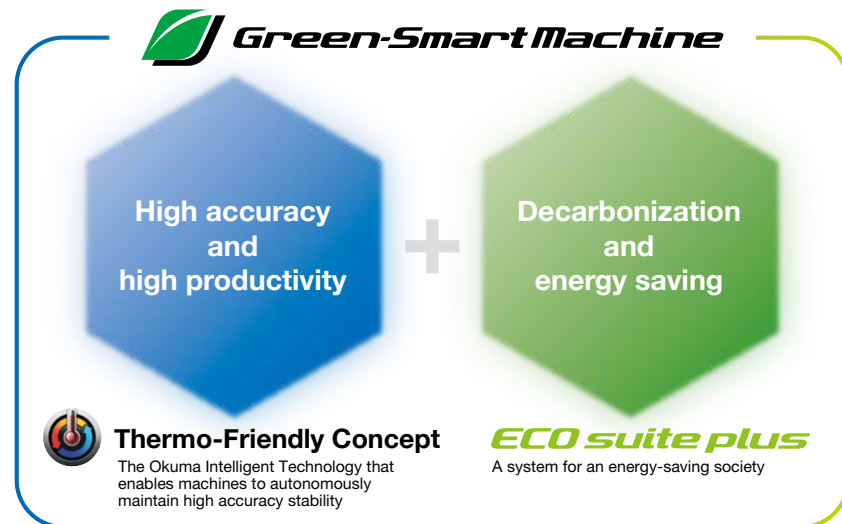
Okuma has worked to reduce energy consumption in order to achieve carbon neutrality at the three factories in Japan which are our main production bases.

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 supplying them all over the world, we will work together with our customers to help solve the social issues faced by the manufacturing industry.

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



Thermo-Friendly Concept

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

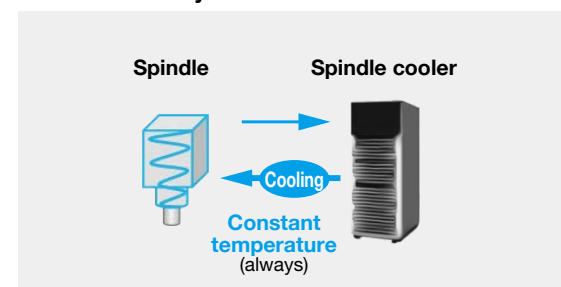
Reduction of power used for air conditioning

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

The Okuma way to cool



By always setting a constant coolant supply temperature, the cooler power consumption is reduced.

ECO suite plus A system for an energy-saving society

ECO Idling Stop

Auxiliary equipment consume a substantial portion of the power used in a factory. This function enables each of them to be turned off when not needed to reduce power consumption.

In addition to when automatic operation is suspended, it is now possible to stop idling during manual operation. Power consumption and carbon dioxide emissions are reduced without conscious effort by the operator.

ECO Operation

By using only the required peripherals (chip conveyor, mist collector), energy-saving operations are possible.

ECO Power Monitor

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.

1 Check carbon dioxide emissions on the spot

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

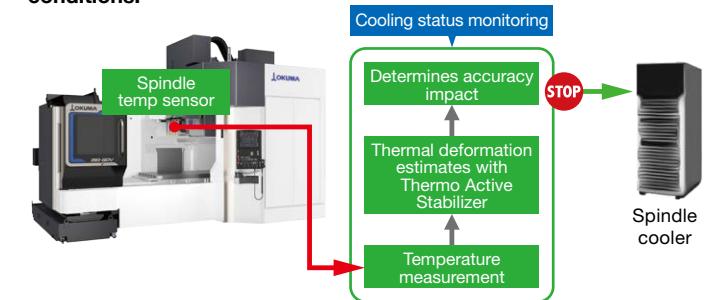
2 Simultaneously records operating status and carbon dioxide emissions

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

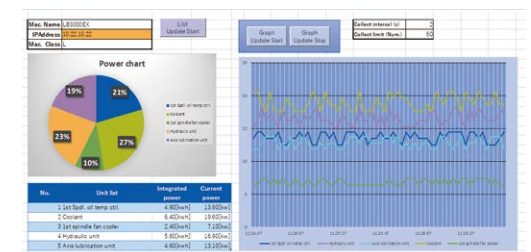
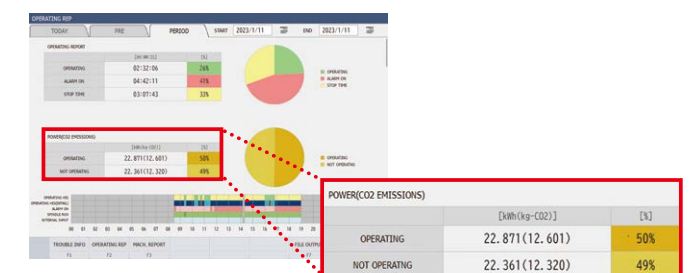
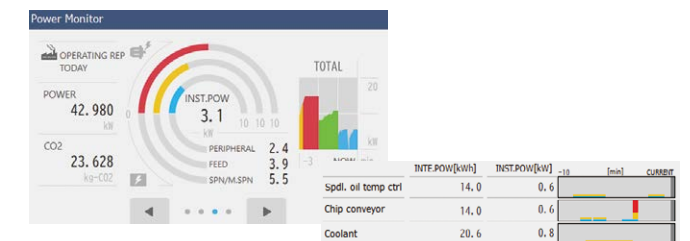
3 Analyze carbon dioxide emissions and improve machine tool operation

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.

The machine monitors the cooling level when not machining, and proactively turns off the cooler while maintaining high accuracy conditions.



ECO PARAMETER	ECO IDLE STOP (1/4)	ECO OPERATION
ECO IDLE STOP ELAPSED TIME	000:00:00	REMAINING TIME UNTIL ECO IDLE STOP READY 12:48
Chip conveyor interval control	OFF	PARAMETER UNIT
Chip conveyor interval/active time	100	[min]
Chip conveyor interval/suspended time	200	[min]



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

Okuma's advanced technology enhance machine shop performance

AI Machine Diagnosis Function (option)

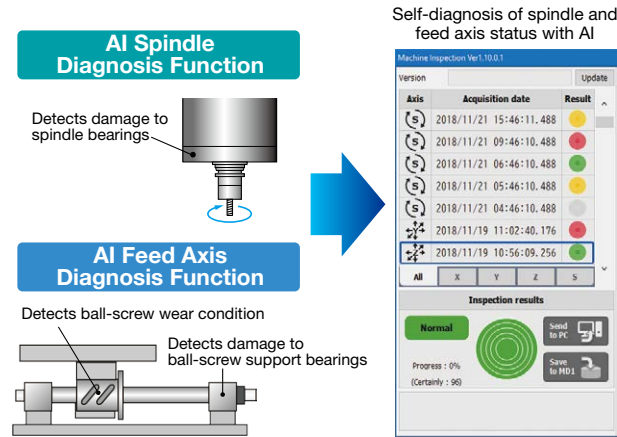
Machine tool diagnostics technology with artificial intelligence (AI)

With predictive maintenance, prevent machine stoppages just in time

Okuma's AI-equipped control diagnoses the presence or absence of abnormalities in the machine spindle and feed axes and identifies any irregularities found.

Downtime from machine stoppage is minimized, so the benefits are highly accurate, productive, and stable operations over the long term. 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 through Okuma's Connect Plan. With AbsoScale detection specs, ball-screw wear detection is possible.

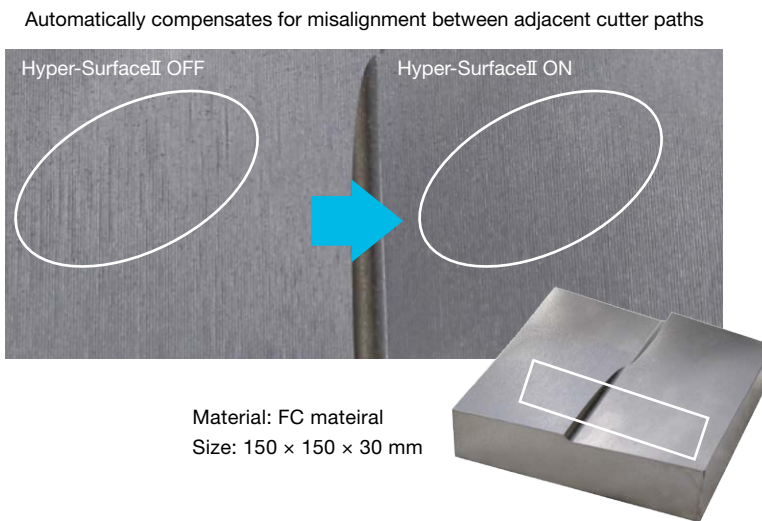


Hyper-SurfaceII (option)

Achieving high die/mold surface quality machining

Auto machining data compensation, easy and improved die/mold surface quality

By suppressing streaks and edge irregularities caused by CAM machining data, hand finish polishing time can also be reduced. In addition to the Sculptured-Surface Adaptive Acceleration Control with the previous Super-NURBS, the new Hyper-Surface function automatically compensates for edge positioning errors of the machining data output from CAM or the adjacent cutting path while maintaining shape accuracy.

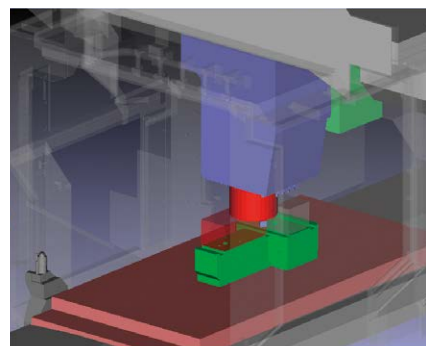


Collision Avoidance System (option)

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.



SERVONAVI

Optimized Servo Control

Achieves long term accuracy and surface quality

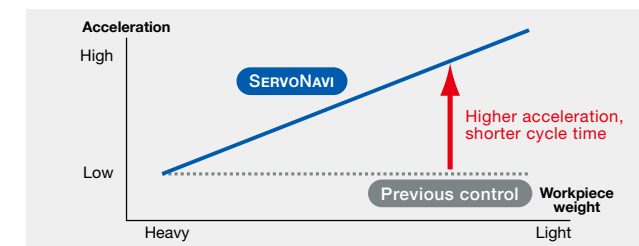
SERVONAVI AP (Automatic Parameter setting)

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.



Machining Navi M-i, M-gII+ (option)

Cutting condition search for milling

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.

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

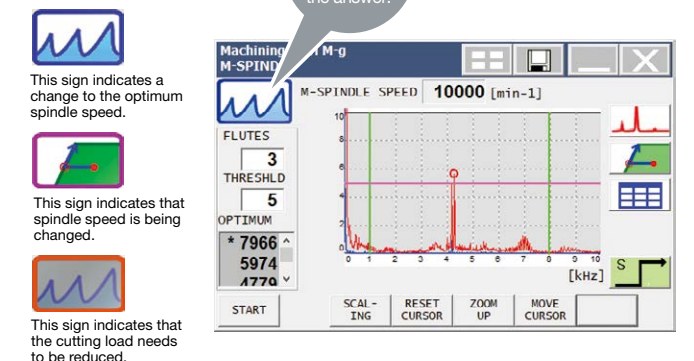
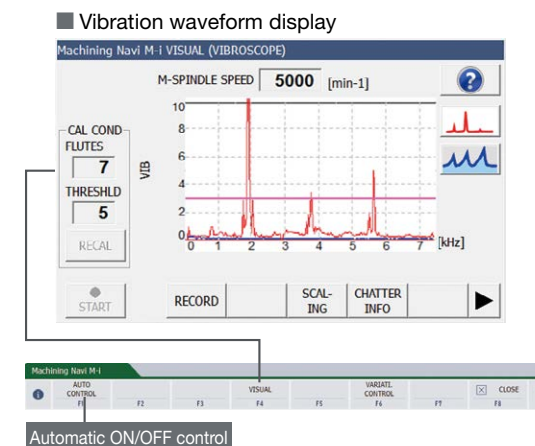
Contributes to longer machine life

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.

Adjust cutting conditions while monitoring the data (M-gII+)

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.



Machine Specifications

Item	MB-80V	
	No. 40 spindle	No. 50 spindle
Travels	X-axis (table L/R) mm (in)	1,600 (62.99) [2,000 (78.74)]*1
	Y-axis (ram saddle front/back) mm (in)	1,050 (41.34)
	Z-axis (spindlehead vertical) mm (in)	600 (23.62) [750 (29.53)]*2
Table	Table top [pallet top]*3 mm (in)	200 to 800 (7.87 to 31.50) [150 to 750 (5.91 to 29.53)]*3 [200 to 950 (7.87 to 37.40)]*2 [150 to 900 (5.91 to 35.43)]*2*3
	Floor to table top [pallet top]*3 mm (in)	900 (35.43) [1,150 (45.28)]*3
	Max load capacity*4 kg (lb)	2,500 (5,500) [4,000 (8,800)]*5 [1,500 (3,300)]*3 [2,000 (4,400)]*3*5
Spindle	Speed min ⁻¹	15,000 [12,000]*6 [20,000]*7
	Speed ranges	Infinitely variable
	Tapered bore	7/24 taper No. 40 [HSK-A63]*8 7/24 taper No. 50 [HSK-A100]*8
Feed rate	Rapid traverse*4 m/min	X: 42 [30]*1*3 [20]*5, Y: 42 [42]*1*3 [20]*5, Z: 32 [32]*1*3 [20]*5
	Cutting feed rate*4 mm/min	X: 32,000 [30,000]*1*3 [20,000]*5 Y: 32,000 [32,000]*1*3 [20,000]*5, Z: 32,000 [32,000]*1*3 [20,000]*5
Motors	Spindle (10 min/cont) kW (hp)	26/18.5 (35/25) [33/26 (44/35)]*6 [30/22 (40/30)]*7
	Feed axes kW (hp)	X: 5.2 (6.9), Y:Z: 3.5 (4.7)
Auto tool changer	Tool shank	MAS403 BT40 [HSK-A63]*8 MAS403 BT50 [HSK-A100]*8
	Pull stud	MAS2, [-]*9
	Magazine capacity tool	32 (chain magazine) [48, 64 (chain magazine), 64 or more (matrix magazine)]*9
	Max tool dia (w/adjacent tool) mm (in)	ø90 (ø3.54) ø100 (ø3.94)
	Max tool dia (w/o adjacent tool) mm (in)	ø125 (ø4.92) ø152 (ø5.98)
	Max tool length mm (in)	400 (15.75)
	Max tool mass kg (lb)	8 (17.6) 12 [15] [26.4 [33.0]]*10
	Max tool mass moment N-m (ft-lbf)	7.8 (5.7) 15.3 [19.1] [11.3 [14.0]]*10
	Tool selection	Memory random (matrix magazine is fixed address system)
Machine size	Height mm (in)	3,320 (130.71) [3,520 (138.58)]*3 [3,500 (137.80)]*2 [3,700 (145.67)]*2*3
	Floor space (machine only) mm (in)	4,500 × 2,970 (177.17 × 116.93) [5,900 × 2,970 (232.28 × 116.93)]*1 [6,955 × 3,780 (273.82 × 148.82)]*3 [8,705 × 3,780 (342.72 × 148.82)]*1*3
	Mass (32-tool ATC, machine only) kg (lb)	16,750 (36,850) [18,250 (40,150)]*1 [18,600 (40,920)]*3 [20,450 (44,990)]*1*3 17,000 (37,400) [18,500 (40,700)]*1 [18,500 (40,700)]*3 [20,700 (45,540)]*1*3

[]*1 2,000 mm spec X-axis travel distance []*2 750 mm spec Z-axis travel distance []*3 APC spec
*4 When the load is 4,000 kg (max mass), the rapid and cutting feed rate limit is 20 m/min.
[]*5 Die/mold kit []*6 Power spindle []*7 High-speed spindle []*8 Dual contact spindle (HSK)
[]*9 Additional ATC tool storage capacity []*10 15 kg tool mass support spec

MB-80V Standard Specifications

No. 40 Spindle speed 15,000 min ⁻¹ *1	26/18.5 kW [10 min/cont]	Chip pan*2	91 L
Rapid traverse	X:Y: 42 m/min, Z: 32 m/min	ATC air blower (blast)	
Spindle/spindlehead cooler	Oil temperature controller	Chip air blower (blast)	Nozzles
Ball screw cooling	X-Y-Z axes	Spindle air blower (blast)	
TAS-S	Thermo Active Stabilizer—Spindle	Foundation washers (with jack bolts)	14 pcs
TAS-C	Thermo Active Stabilizer—Construction	3-lamp status indicator	Type C (LED signal tower) Red (alarm), yellow (end), green (running)
Air cleaner (filter)	Regulator included	Work lamp	LED lamps (installed on right and left sides)
Spindle oil-air lubricator		Tapered bore cleaning bar	
Auto lube system (ALS)	Ball screw, guideway, magazine	Y-axis armored bellows (way cover)	
ATC magazine	32 tools	Hand tools	
ATC magazine shutter		Tool box	
Tool unclamp package		Controller	OSP-P500M
Table	Metric Table slots: 18H7 x 6, cross groove (1)	Color LCD operation panel	15 inch
Coolant system	Tank 550 L (effective 360 L) Pump motor 3.3/3.8 kW (50/60 Hz)	Pulse handle	
Coolant nozzles	Adjustable type: 6 tools	Door interlock	
Full enclosure shielding	With ceiling		
In-machine chip discharge	Hinge-type chip conveyor		

Note: Fire prevention measures are necessary, as oil-based coolants may cause fire. Never operate machine unattended.

*1. For spindle tapered bore, 7/24 taper No. 40 (BT40, BIG-PLUS®, CAT40, DIN40) or HSK-A63 are available.

*2. "Required" optional specs.

MB-80V Optional Specifications

No. 40 High-speed spindle 20,000 min ⁻¹ *1 △	30/22 kW [10 min/cont]	Installation specifications for the NC rotary table	
No. 40 High power spindle 12,000 min ⁻¹ *1 △	33/26 kW [10 min/cont]	High-crossrail specs △	+200 mm (required with APCs)
No. 50 High power spindle 12,000 min ⁻¹ *2 △	33/26 kW [10 min/cont]	Thru-spindle coolant*4	Specify 1.5 MPa or 7.0 MPa
Dual contact spindle*3 △	HSK, BIG-PLUS®	Chip air blower (adapter)	
ATC magazine △	Chain type: 48, 64 Matrix magazine: 64, 98, 132, 166, 200, 243, 268	Oil mist coolant	
Pull stud specs △	MAS1, CAT, DIN, JIS	Mist collector	
Attachment preps	Accelerator attachment Angle-head attachment Oil-hole supplier	Semi-dry machining	
X-axis travel 2,000 mm △	Foundation washer (with jack bolts): 18 pcs	Shower coolant systems	Crossrail mounted, ceiling mounted
Die/mold kits	Rapid traverse: X-, Y-, Z-axis 20 m/min Cutting feed rate: X-, Y-, Z-axis 20 m/min Table loading max mass: 4,000 kg Large foundation blocks Hyper-SurfaceII, 0.1 μm control AbsoScale: X-Y-Z axes	Workpiece wash gun	
AbsoScale	X-Y-Z axes	Sludgeless Tank	
Automatic pallet changer (APC)	2-pallet parallel shuttle APC (left side)	Off-machine chip discharge △	Hinge, scraper Hinge + scraper
Automation	Loader, robot, FMS	Chip bucket △	
Automatic door		Auto tool length compensation / tool breakage detection	With touch sensor*5
NC rotary table	Specify chuck, tailstock requirements, rotary table type	Auto zero offset / Auto gauging	With touch probe
		Collision Avoidance System	
		Machining Navi M-i, M-gII+	Cutting condition search
		NC Gage	Standard kit, high spec kit
		3D Smart Calibration System	Includes linear axis error measurement and volumetric error compensation
		Chemical anchors	
		Y-axis armored bellows specs	Recommended when the main material to be machined is aluminum (excluding die/mold kits specs)

△: Corresponding standard specification is deleted

*1. For spindle tapered bore, 7/24 taper No. 40 (BT40, BIG-PLUS®, CAT40, DIN40) or HSK-A63 are available.

*2. For spindle tapered bore, 7/24 taper No. 50 (BT50, BIG-PLUS®, CAT50, DIN50) or HSK-A100 are available.


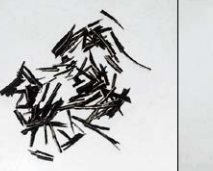
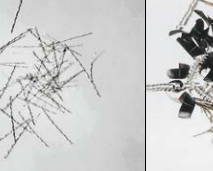

*3. Be sure to select this specification when BIG-PLUS® holder is used.

*4. Okuma pull stud required (general commercial products have different end-face grinding, ring, and through hole diameter)

*5. Table mounted; which may limit available working range.

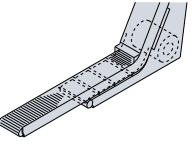
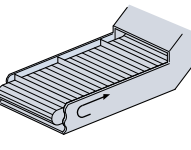
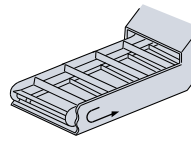
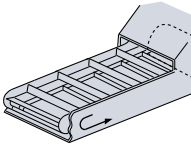
Recommended Chip Conveyors (Please contact an Okuma sales representative for details.)

○: Recommended
△: Recommended with conditions

Workpiece material	Steel	Cast iron	Aluminum / Nonferrous	Mixed (general use)
Chip shape				
In-machine	○	○	○	○
Off-machine (option)	Hinge (standard)	○	○	○
	Hinge + scraper with drum filter	○	○	○
	Hinge	○	—	△*1
Scraper	—	○ (dry)	—	—
Scraper with drum filter	—	○ (wet) with magnet	△*2	—

*1. When there are few fine chips *2. When chips are shorter than 100 mm

Off-machine lift-up chip conveyors

Type	Hinge + scraper with drum filter	Hinge	Scraper	Scraper with drum filter
Shape				

Note: If Sludgeless Tank (option) is selected, the conveyor type is hinge + scraper with drum filter.

A next-generation CNC that makes 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 technology, Okuma offers this CNC to build an advanced "digital twin" that faithfully reproduces machine control and machining operations and create new value. In addition, Okuma offers productivity improvement and stable production with ease of use that allows customers to use their machining know-how, an energy-saving solutions that achieve both high accuracy/productivity and eco-friendly products, with robust security protection against increasing threats of cyber attacks.



15-inch operation panel

Faithful reproduction of machines and processing — Digital support for shop floor work
Digital Twin (option)

“Okuma’s **two digital twins**” made possible by an office PC and a next-generation CNC reduce machine downtime and improve machine utilization

Simulation using the latest machine information can be achieved with an office PC and OSP-P500 installed on the physical machine. This enables preparation for machining in advance in the office environment (front loading). Preparing machining for the next part while continuing machining can reduce the preparation time for the physical machine. When a problem occurs on the shop floor, it can be solved quickly on site without going back to the office.

1 Digital Twin On PC* Simulate shop machines in the office

Front loading is performed with the actual status matched with the data on the office PC to further improve productivity. Highly accurate pre-verification minimizes trial and error in first part machining, and reduces machine downtime to the minimum.

* The PC software is to be used with one package for one machine.

2 Digital Twin On Machine Simulating the CNC of a real machine

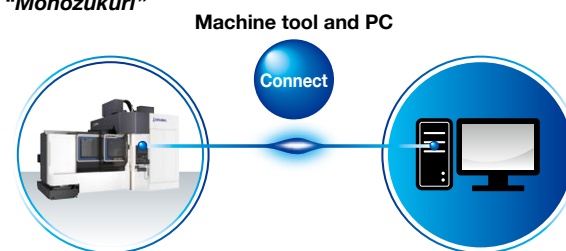
Super-fast and super-accurate machining simulations are performed with the CNC of a real machine on-site to minimize machining preparation work. Actual machining can be started immediately, greatly improving the operating rate of the machine.



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.



OSP-P500M 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%
	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
	Security	Operator authentication, Lock screen, OSP-VPSII-STD
	Programming	Program capacity
Program operations		Scheduled program, fixed cycle, G-/M-code macros, arithmetic, logic statements, math functions, variables, branch commands, Coordinate calculate, area machining, coordinate convert, programming help, user task, keyway cycle
Operations	OSP suite	"suite apps" to graphically visualize and digitize information needed on the shop floor, "suite operation" enable 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
	MacMan plus	Machining management: aggregation and display of machining records, operating records and problem information, Visualization of power consumption, file output
	Machine operations	Operation help, load meter, alarm help, sequence return, manual interrupt/auto return, pulse handle overlap, parameter I/O, PLC monitor, auto power shut-off
Communications / Networking		USB (2 ports), Ethernet, DNC-T1, Smart I/F
High speed/accuracy specs		Thermo Active Stabilizer—Spindle (TAS-S), Thermo Active Stabilizer—Construction (TAS-C), Hi-Cut Pro, Pitch error compensation, Hi-G control, SERVO NAVI, cycle time reduction (operation time reduction, machining time reduction, easy parameter setting)
Energy-saving	ECO suite plus	ECO Idling Stop, ECO Operation, oil temperature controller auto control, ECO Power Monitor
	Power Regeneration System	Regenerative power is used when the spindle and feed axes decelerate to reduce energy waste.

OSP-P500M kit/optional specifications

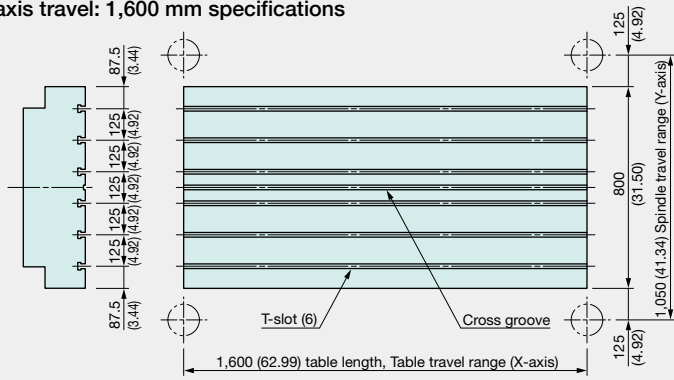
Item	Kit Specs	NML		AOT		DT		DT AOT	
		E	D	E	D	E	D	E	D
Digital Twin									
Virtual Machining						●	●	●	●
Quick Modeling						●	●	●	●
OPC UA for Machine Tools						●	●	●	●
OSP API KIT						●	●	●	●
Interactive functions									
Advanced One-Touch IGF-M (w/ Real 3-D simulation)				●	●			●	●
Interactive MAP (I-MAP)						●	●	●	●
Smart OSP Operation				●	●	●	●	●	●
Programming									
Operation buffer 10MB		●	●	●	●	●	●	●	●
Program notes (MSG)		●	●	●	●	●	●	●	●
Auto scheduled program update		●	●	●	●	●	●	●	●
Block skip: 9 sets									
Program branch: 9 sets									
Coordinate system select (Std: 20 sets)				●	●	●	●	●	●
100 sets				●	●	●	●	●	●
200 sets				●	●	●	●	●	●
400 sets				●	●	●	●	●	●
Helical cutting		●	●	●	●	●	●	●	●
3-D circular interpolation									
Skip									
Synchronized Tapping II		●	●	●	●	●	●	●	●
Arbitrary angle chamfering		●	●	●	●	●	●	●	●
Cylindrical side facing									
Tool max rotational speed setting									
F1-digit feed	External switch type, parameter type								
Programmable travel limits (G22, G23)		●	●	●	●	●	●	●	●
Slope machining	Type I, Type II								
Axis name designation									
Fixture offset II									
Dynamic fixture offset									
Tool grooving									
Turn-Cut									
Dynamic Tool Load Control									
3-D tool compensation									
Coordinate change and drawing conversion	Programmable mirror image (G62)			●	●	●	●	●	●
	Enlarge/reduce (G50, G51)			●	●	●	●	●	●
User task	Common variables 1,000, 2,000 pcs								
	G-code macros: 80 sets added								
	I/O variables (16 each)								
Sequence stop		●	●	●	●	●	●	●	●
Sequence return	Mid-block sequence return			●	●	●	●	●	●
Tool wear compensation	Includes input restriction	●	●	●	●	●	●	●	●
Tool life management	Includes warning	●	●	●	●	●	●	●	●
External I/O communication									
RS-232C connector									
DNC connection	DNC-T3, DNC-B, DNC-DT								
	DNC-C/Ethernet								
Gauging									
Auto tool length offset/breakage detection									
In-magazine tool breakage detection									
Auto Workpiece Gauging/Auto zero offset									
Manual gauging (w/o sensor)		●	●	●	●	●	●	●	●
Interactive gauging (touch sensor, touch probe required)									
Monitoring									
21.5-inch color LCD operation panel tilt adjustment									
One-Touch Spreadsheet									
Collision Avoidance System									
Real 3-D Simulation						●	●	●	●
Simple load monitor	Spindle overload monitor	●	●	●	●	●	●	●	●
NC operation monitor	Hour meter, workpiece counter	●	●	●	●	●	●	●	●
Status indicator									
Operation end buzzer									
Workpiece counters on machine									
Tool breakage no-load detection						●	●	●	●
MOP-TOOL	Adaptive control, overload monitor								
AI machine diagnostics*	Spindle + feed axes, or feed axes only								
Machine Status Logger									
Cutting Status Monitor									
Machining Navi M-i, M-g II+(cutting condition search)									
Feed axis retraction									
Tool retract cycle									
Automation / unattended operation									
Warm-up (calendar timer)									
External program	Button, rotary switch								
	Digital switch, BCD (2-digit, 4-digit)								
Pallet pool control (PPC) (Required for multi-pallet APC)									
Connection with automated devices	Robot, loader I/F								
	Stacker crane I/F								
	FMS link I/F								
High-speed, high-precision									
AbsoScale detection	X-Y-Z axes								
Dynamic displacement compensation		●	●	●	●	●	●	●	●
0.1 μm control (linear axis commands)									
Hyper-Surface II	3 linear axes, 3 linear axes + 2 rotary axes								
ECO suite plus									
ECO Power Monitor	On-machine wattmeter								
Spindle Power Peak Limiter									
Energy-saving hydraulic unit	ECO Hydraulics								
External output interface of consumed electricity									
Other									
Circuit breaker									
OSP-VPSII (Virus Protection System)									
Pulse handles	2 pcs, 3 pcs								
External M codes	4 sets, 8 sets								

Notes: NML: Normal kit, AOT: Advanced One-Touch IGF-M kit, DT: Digital Twin kit, DT AOT: Digital Twin Advanced One-Touch IGF-M, E: Economy, D: Deluxe VE and VD kits are also equipped with the Digital Twin on PC function, allowing running from a PC. Specifications, etc. are subject to change without notice.
* With AbsoScale detection specs, ball-screw wear detection is possible.

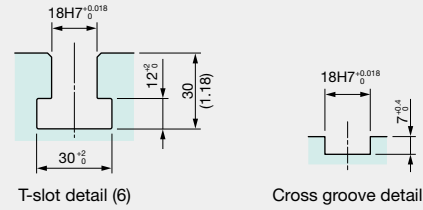
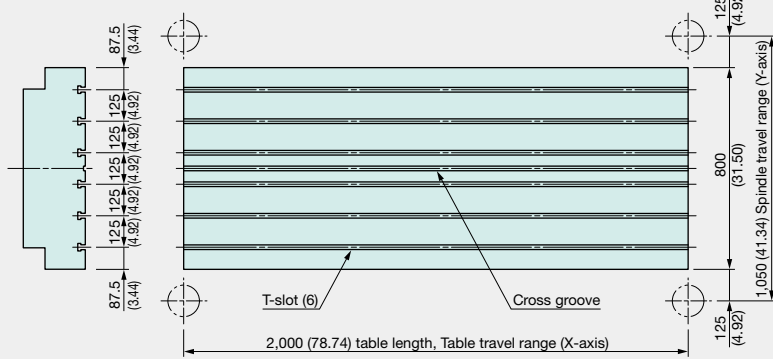
Table Size

Unit: mm (in)

X-axis travel: 1,600 mm specifications



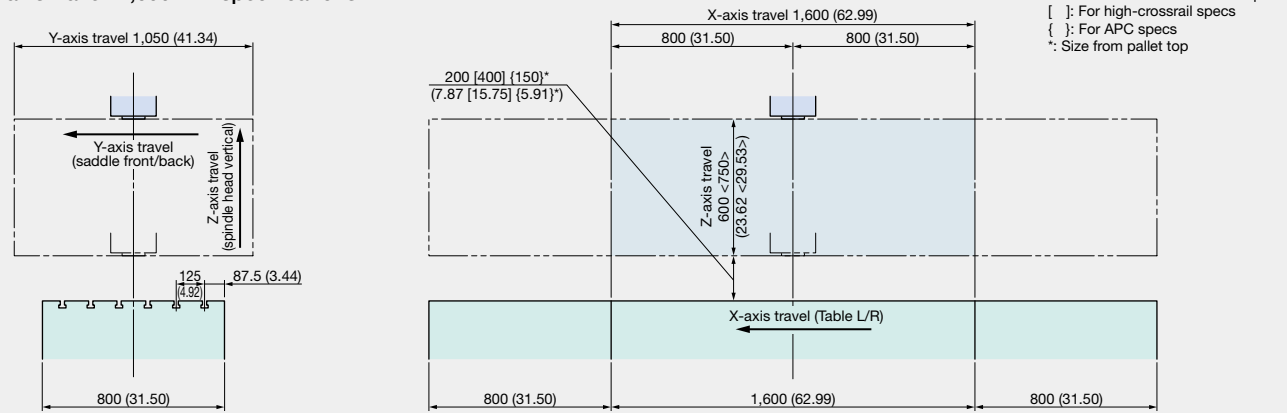
X-axis travel: 2,000 mm specifications



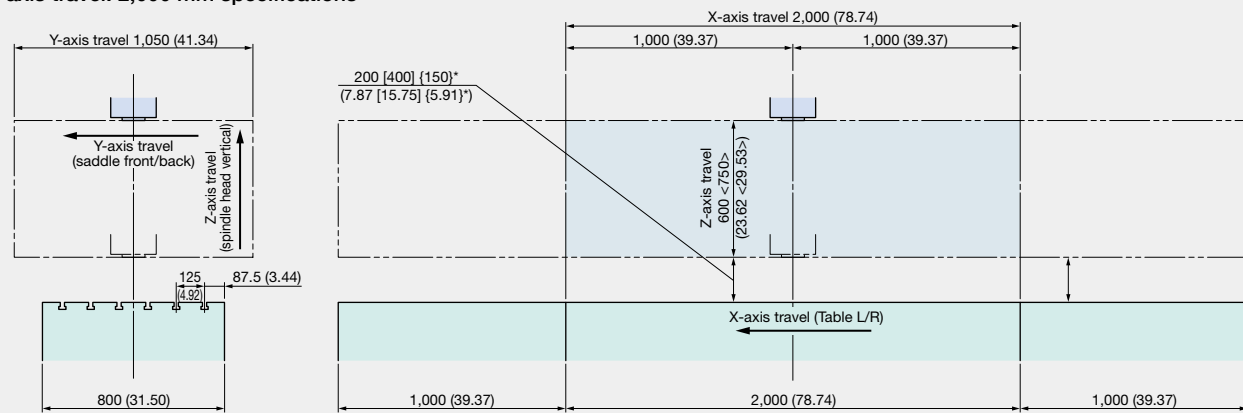
Working Ranges

Unit: mm (in)

X-axis travel: 1,600 mm specifications



X-axis travel: 2,000 mm specifications

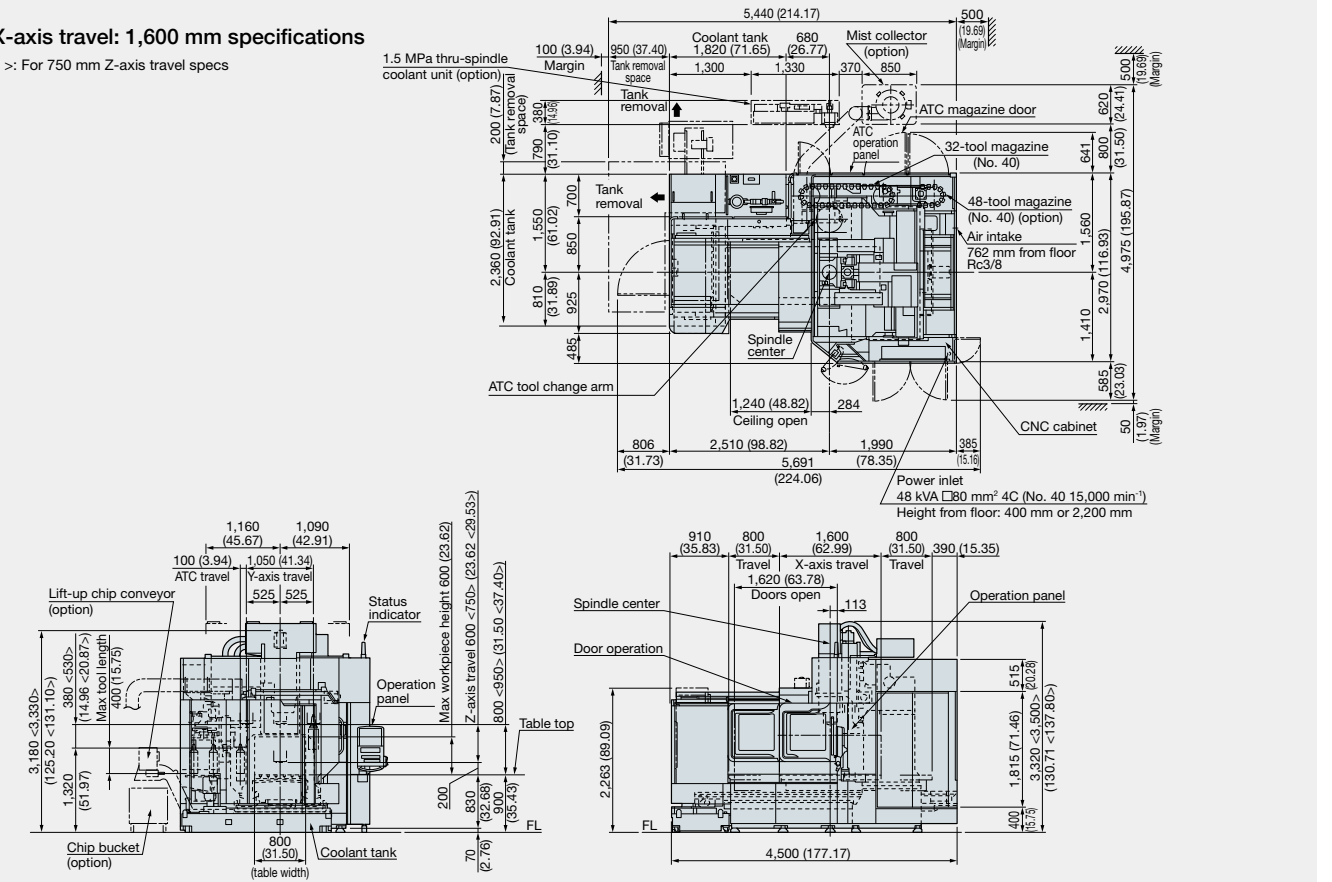


Dimensional and Installation Drawings

Unit: mm (in)

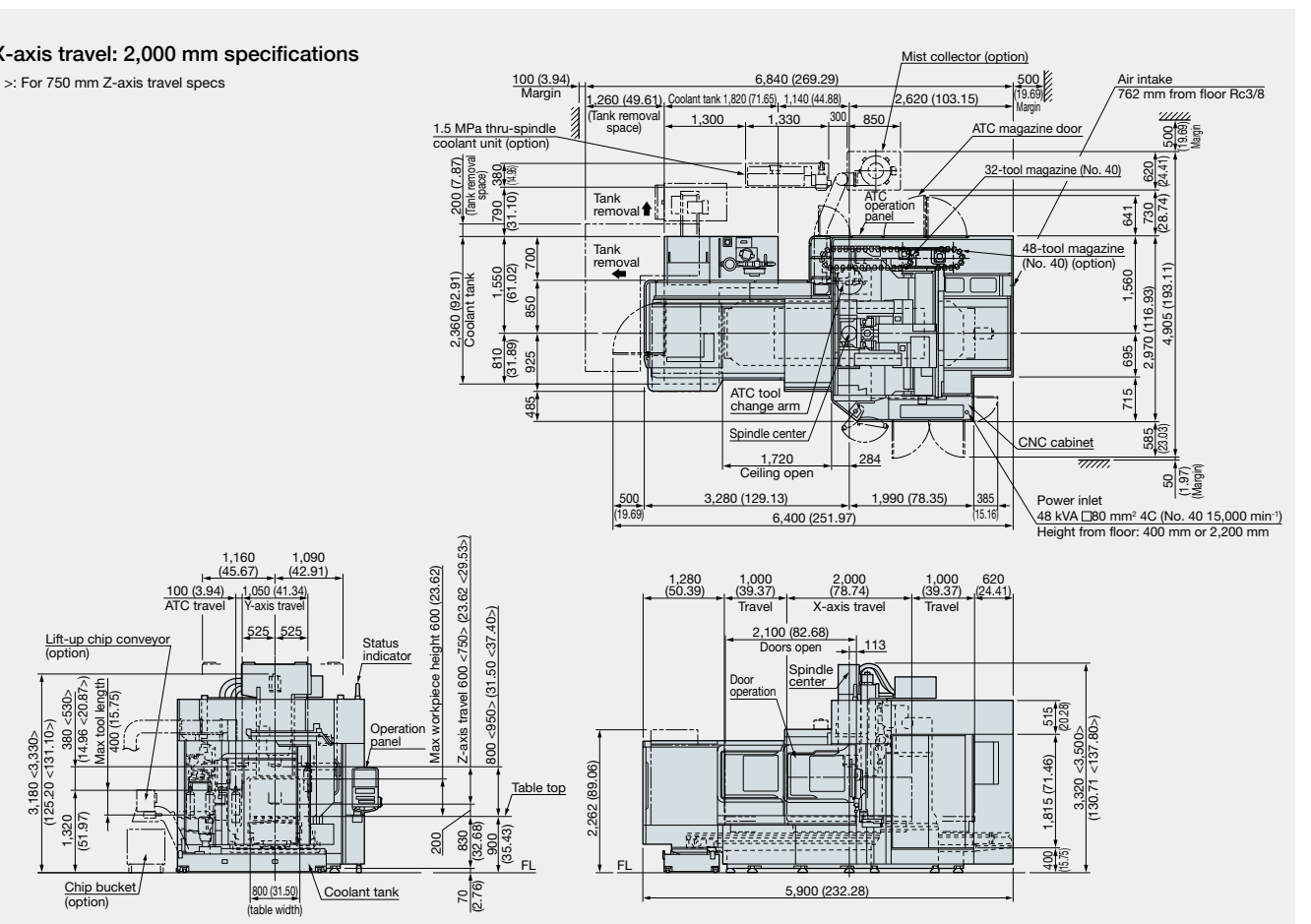
X-axis travel: 1,600 mm specifications

< >: For 750 mm Z-axis travel specs



X-axis travel: 2,000 mm specifications

< >: For 750 mm Z-axis travel specs



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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