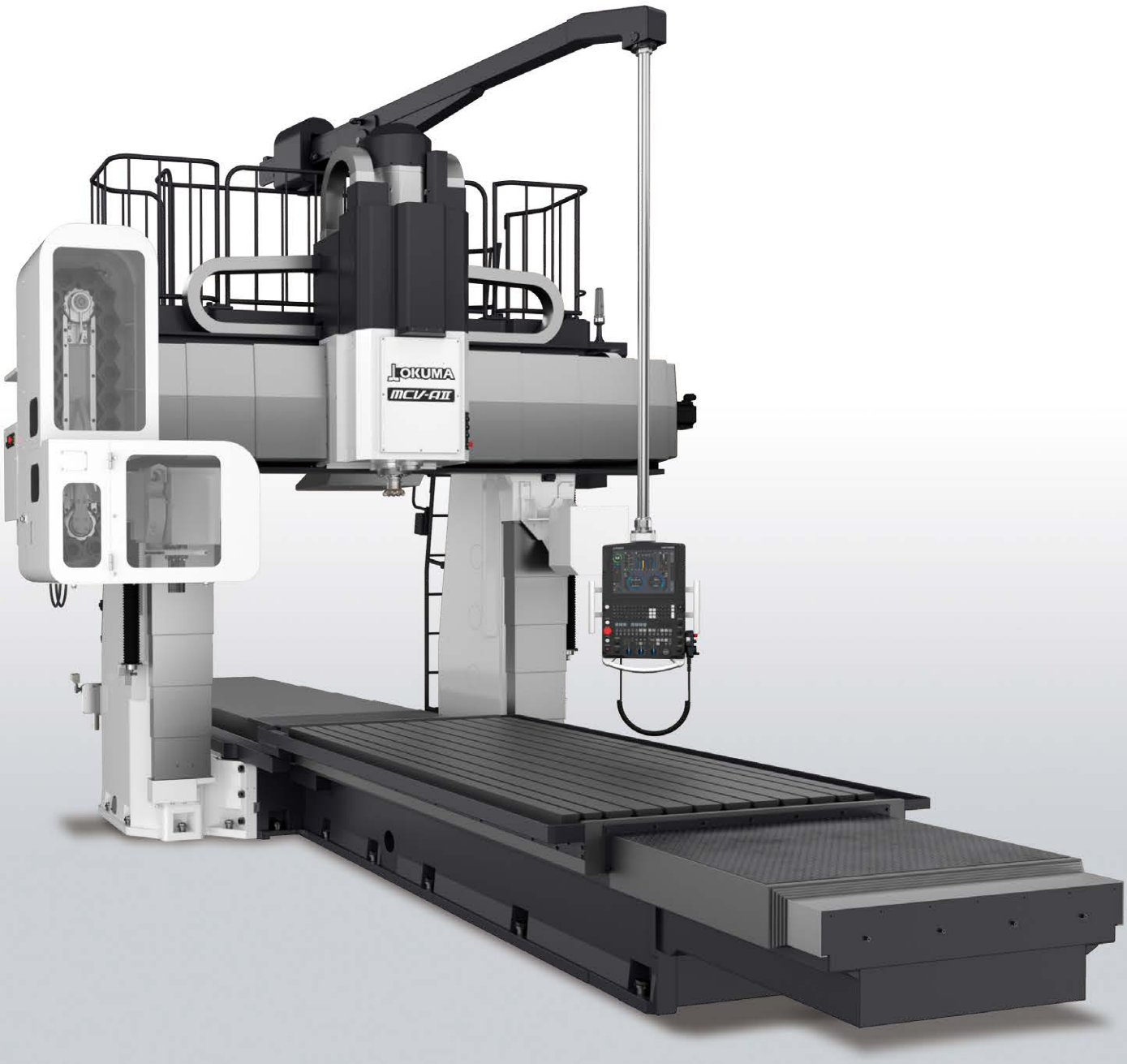
OKUMA

OPEN POSSIBILITIES

MCV-AII

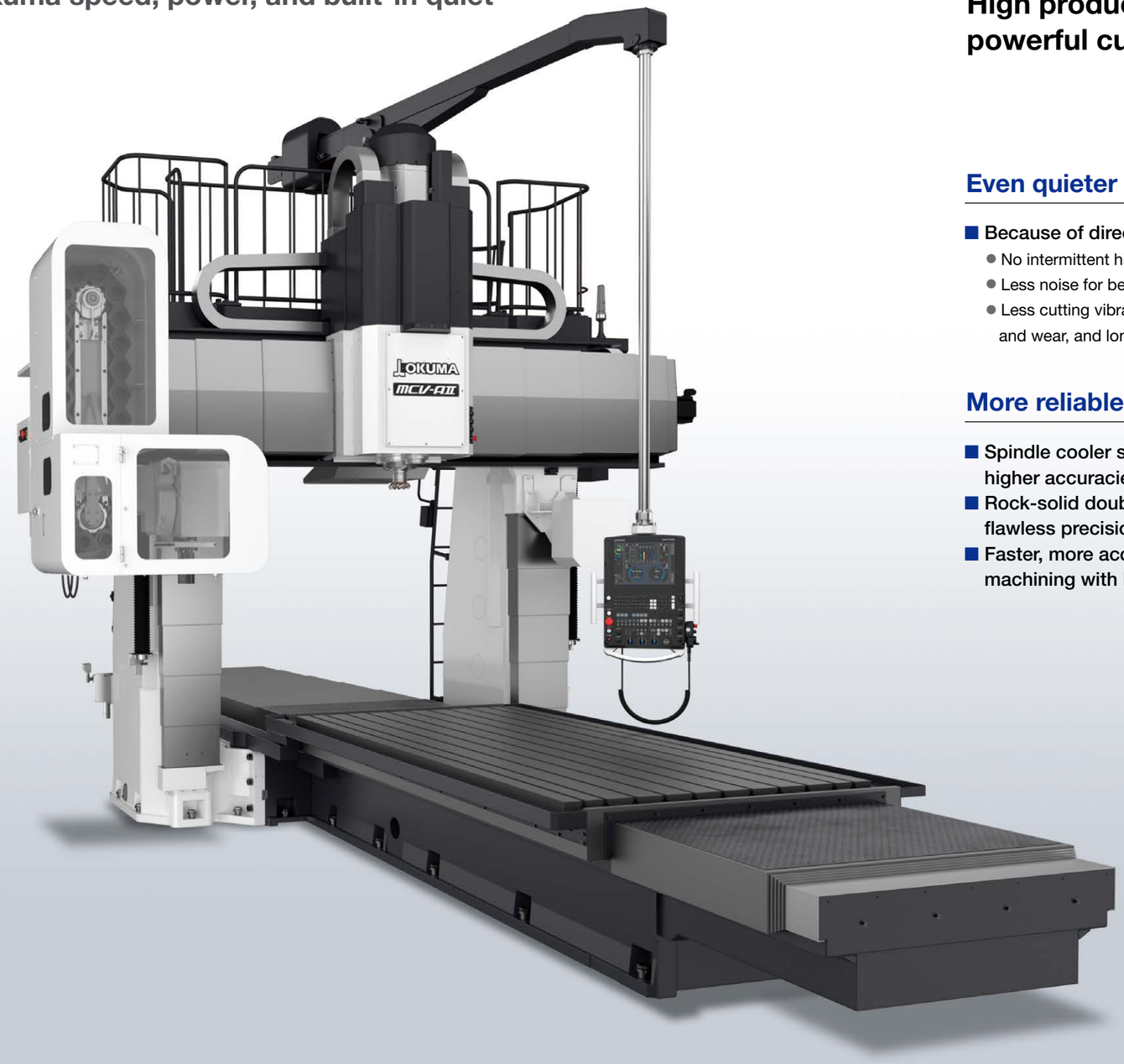
Double-Column Machining Center



MCV-AII
Double-Column Machining Center

Intelligent Technology | Collision Avoidance System | Machining Navi | SERVONAVI

For smooth performance from a double-column machining center . . .
Meet Okuma speed, power, and built-in quiet



Over 4,000 of these best selling machines have been sold. High productivity is achieved with medium and large parts from powerful cutting to high speed finishing.

Even quieter operation

- Because of direct (gearless) spindle drive:
  - No intermittent hissing when cutting
  - Less noise for better operator working conditions
  - Less cutting vibrations, reduced tool insert breaks and wear, and longer tool life

More reliable than ever

- Spindle cooler standard-equipped for consistently higher accuracies
- Rock-solid double-column construction insures flawless precision and rigidity
- Faster, more accurate, and higher quality 3D machining with Hyper-SurfaceII (option)

Faster, more power

- Spindle speed ..... 4,000 min^{-1}
  (Opt: 6,000 min^{-1}, 10,000 min^{-1})
- Spindle motor ..... 22/18.5 kW
- Rapid traverse (X-, Y-axis) .... 20 m/min
- Cutting feed rate ..... Max 10,000 mm/min
- Spindle quill dia ..... ø210 mm
- Z-axis travel ..... 450 mm

Easy to operate

- CNC—From machine controller to *monozukuri* * controller

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

  OSP-P500

  * Craftsmanship-based manufacturing

Photographs and images used in this brochure may include optional equipment.
Not showing full-enclosure shielding and other items.

Highly rigid and accurate machine construction

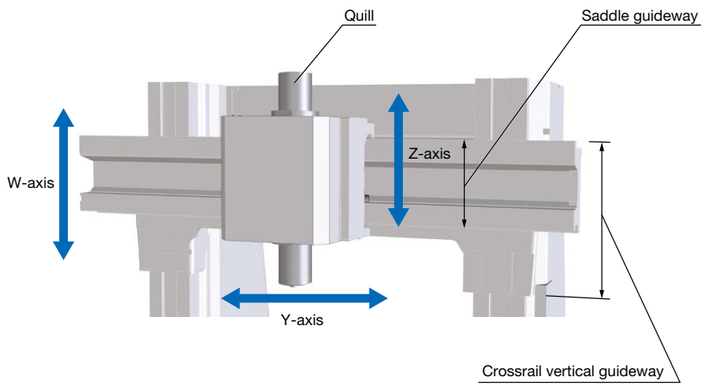
Big parts machining expertise. This machine was engineered with Okuma's field-proven experience of building in exceptional power, rigidity, and smooth operation to assure close tolerances over time and high production.
The shudder free design means heavy-duty face milling and flawless fine boring—superb for machining of dies and molds.
Parts that had to be cut on several machines can be finished on one MCV-AII for dramatic savings in prep times for each process. And the ATC, and APC for continuous operations provide even greater productivity.

Double column construction ensures high accuracy and rigidity

Heavy cutting of big parts at extremely high accuracies comes 'natural' to the set of stiff, square columns straddling the solid bed which supports the table. Virtually chatter-free rigidity under vertical, horizontal or torsional loads. Result: Okuma high accuracy.

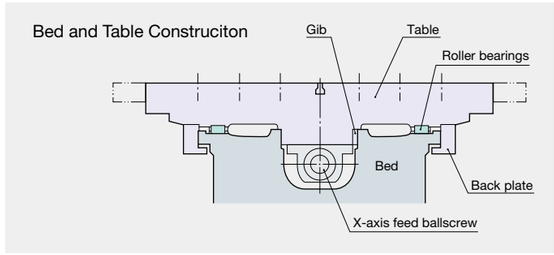
Highly accurate and long guideways — with no fishtailing

The vertical guideways of the crossrail are designed long to prevent fishtail wobbles, and maintain long, accurate service life. The horizontal guideway of the crossrail for the spindlehead is wide, with highly rigid rectangular cross section beams as the slideways.



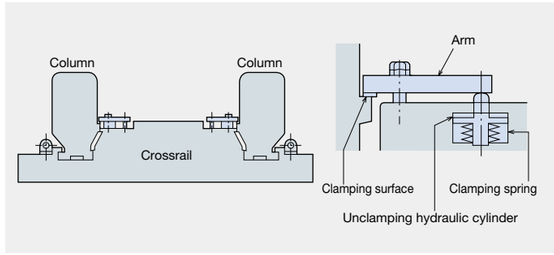
Slide/roller guideways

The table uses a combined roller pack and slideway system to absorb a high level of cutting vibrations. The roller bearings on the ways support the table and workpiece to enable smooth movement and high-accuracy positioning and maintain high accuracy over long periods.



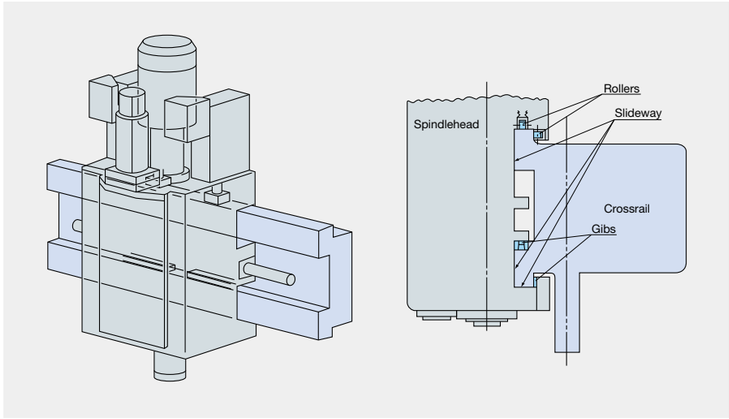
Powerful clamping

Powerful clamping devices that apply the principle of levers are used on crossrail clamps for powerful machining.



Spindlehead maintains stable high accuracy for long times

Positioning is fast and smooth with the roller-mounted weight balancing system. The sliding surface absorbs cutting vibration, leading to high quality cut surfaces.



Highly efficient machining of large parts

Powerful machining cases (standard spindle)

High cutting capacity realizes highly efficient machining.

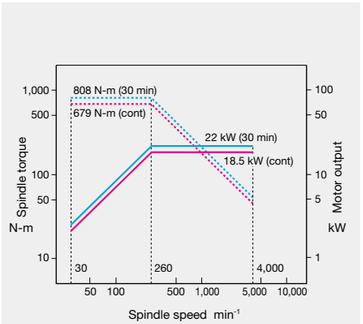
Material	Tool	Spindle Speed min^{-1}	Cutting Speed m/min	Feed rate mm/min	Cutting Width mm	Cutting Depth mm	Chip Volume cm^3/min	Power kW	Quill Projection mm
S45C	ø200 face mill (cermet)	285	180	740	135	6	600	20.5	435
	ø160 face mill (cermet)	320	160	1,000	110	6	660	20	420
	ø63 end mill (carbide)	400	79	350	31.5	50	500	18.5	440
		400	79	160	63	50	500	20.5	440
FC300	ø200 face mill (carbide)	175	110	560	135	7	530	20	440
	ø160 face mill (carbide)	265	133	1,120	110	7	860	17.5	440
	ø63 end mill (carbide)	400	79	640	31.5	50	1,005	19.5	445

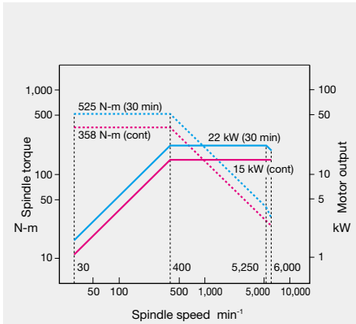
Spindle variations

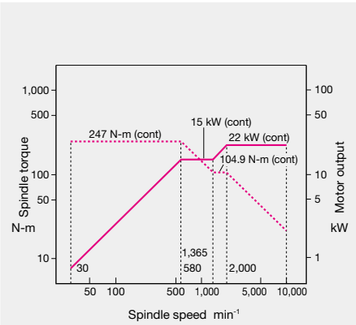
■ **Standard**
- Spindle speed : 4,000 min^{-1}
- Max output : 22/18.5 kW (30 min/cont)
- Max torque : 808/679 N-m (30 min/cont)

■ **6,000 min^{-1}** (option)
- Spindle speed : 6,000 min^{-1}
- Max output : 22/15 kW (30 min/cont)
- Max torque : 525/358 N-m (30 min/cont)

■ **10,000 min^{-1}** (option)
- Spindle speed : 10,000 min^{-1}
- Max output : 22 kW (cont)
- Max torque : 247 N-m (cont)







Fast, powerful spindle

■ **Direct-drive gearless spindle**
Quiet, vibration free operation and longer tool life

■ **Ultra-precise spindle bearings**
Double-row cylindrical bearings and special angular thrust bearings for 3-point support to assure consistently high accuracies and rigidity.

■ **Spindle cooling system standard**
Prevents thermal deviation of spindle

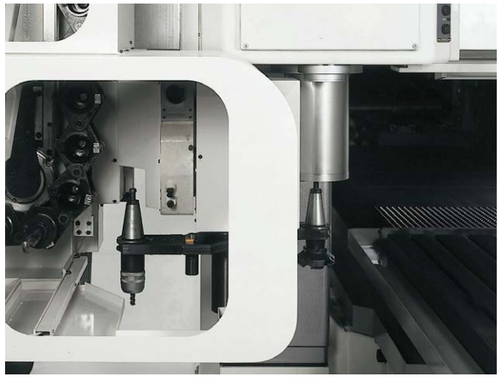
Fast ATC (Automatic Tool Changer)

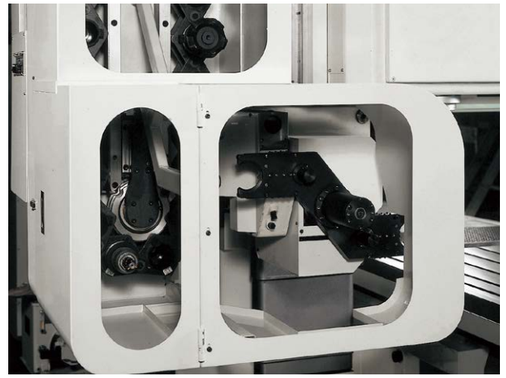
With the standard 24-tool ATC, the magazine is attached on the left side of the crossrail to shorten the ATC time.

With the 50, 72, and 100 tool options, magazine tools can be changed on the attachment heads in the shortest time with a swivel-type ready station.
Tools can also be moved from magazine to ready station during machining operation.

■ **24 tools** (standard)

■ **50, 72, 100 tools** (option)





Okuma Intelligent Technology exhibits powerful effect on machine shop floors

Collision Avoidance System (option)

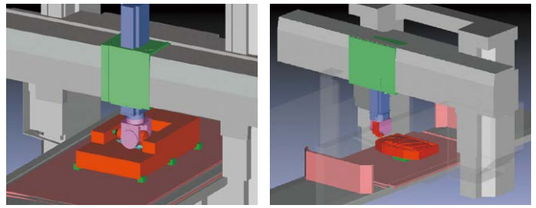
Collision prevention

Significantly reducing setup and trial times

■ “Concentrate on machining” without collision worries

NC controller (OSP) with 3D model data of machine components—workpiece, tool, fixture, attachment head— performs real time simulation just ahead of actual machine movements. In both automatic operation and manual movements, advance checks are made for interference or collisions and the machine movement is stopped.

Machinists (novice or pro) will benefit from reduced setup and trial cycle times, and the confidence to focus on making parts.



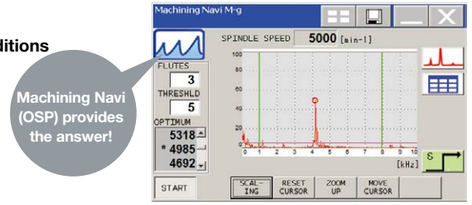
Machining Navi M-*g*Ⅱ (option)

Cutting condition search for milling/machining

Longer tool life and shorter machining times by optimizing cutting conditions

■ Maximizing machine tool performance

Navigates effective measures by detecting and analyzing machining chatter with a microphone attached to the machine. Effects are seen mainly on high rotation chatter with M-*g*Ⅱ.



SERVONAVI

Optimized Servo Control

Achieves long term accuracy and surface quality

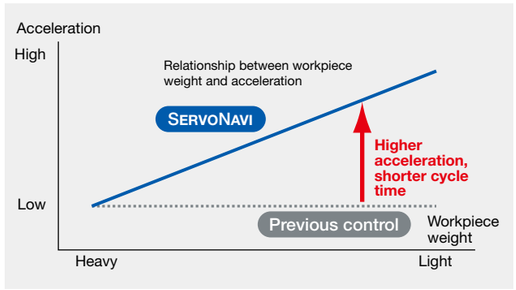
■ SERVONAVI AP (Automatic Parameter setting)

● 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.



■ 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.

● Deflection Auto Adjustment*

Maintaining high quality machined surfaces on dies/molds

With fast accleration/deceleration in the machining of dies and molds, etc, positioning error due to bending (ball screw expansion/contraction) can affect the machined surface quality.

Deflection Auto Adjustment maintains the surface quality of die/mold machined surfaces by automatically adjusting the servo parameters to match the amount of bending, even when the amount of bending of the ball screw has changed and positioning error has occurred as a result of changes over time.

* X-Y axes AbsoScale detection specs are needed.

Okuma’s merging “Machine & Control” technologies deliver faster, more accurate machining

Hyper-SurfaceⅡ (option)

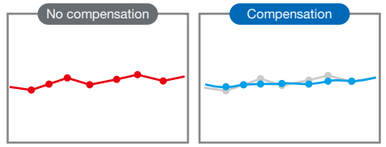
Improving the performance of machining dies and free-form surfaces

There is 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.

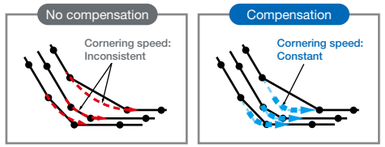
Hyper-SurfaceⅡ automatically compensates for fluctuations in the CAM NC data, and for positional misalignment between edges and adjacent cutter paths, while maintaining the required shape accuracy. In addition, SMART for finishing suppresses vibration without reducing the speed at the corners, reduces the cycle time and improves the surface quality.

Notes: Please contact us for 5-axis specifications.
The effect varies depending on the machining shape.

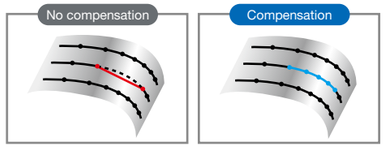
Smooths minor fluctuations and variations In command points



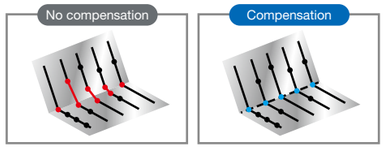
Consistent passing speeds to align corner paths



Adjust steps errors between adjacent cutter paths



Reproducing edge lines between sides



Comparison of machined surface quality

ECO suite plus

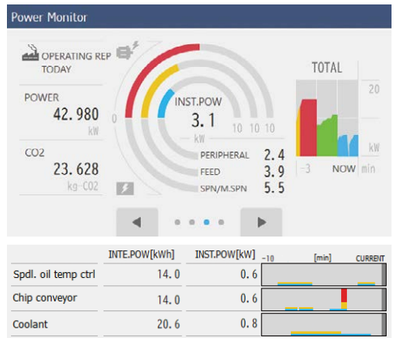
Next-Generation Energy-Saving System

A suite of energy-saving applications for machine tools

■ ECO Power Monitor

Evaluating energy savings and analyzing areas of reduced energy

The power consumption and carbon dioxide emissions for the spindle, feed axes, and auxiliary equipment are displayed separately on the OSP operation panel.
You can also analyze detailed carbon dioxide emissions per component on a PC using One-Touch Spreadsheet (option).



■ ECO Idling Stop

With accuracy assured, the cooler can be turned off

Auxiliary equipment (large consumers of plant power) can be turned off when not required.
For machines equipped with the optional Thermo Active Stabilizer—Spindle (TAS-S), the machine itself decides the need for cooling and stops the cooler of an idling spindle while maintaining stable accuracy levels.
Since no buttons need to be pushed, maximum carbon dioxide emission reductions are realized without operator intervention.

■ ECO Operation (option)

Peripheral equipment runs only when needed

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

Machine Specifications

Item		MCV-AⅡ16		MCV-AⅡ20		
		16 x 20	16 x 30	20 x 30	20 x 40	20 x 50
Travel						
X-axis (table front / back)	mm (in)	2,000 (78.74)	3,000 (118.11)	3,000 (118.11)	4,000 (157.48)	5,200 (204.72)
Y-axis (spindlehead left/right)	mm (in)	1,600 (62.99)		2,000 (78.74)		
Z-axis (quill up/down)	mm (in)	450 (17.72)				
W-axis (crossrail up/down)	mm (in)	1,000 (39.37)*1		1,150 (45.28)*1		
Effective width between columns	mm (in)	1,650 (64.96)		2,050 (80.71)		
Table to spindle nose	mm (in)	0 to 1,360 [0 to 1,380]*2 (0 to 53.54 [0 to 54.33]*2)		0 to 1,510 [0 to 1,530]*2 (0 to 59.45 [0 to 60.24]*2)		
Table						
Working surface	mm (in)	1,200 × 1,800 (47.24 × 70.87)	1,200 × 2,800 (47.24 × 110.24)	1,500 × 2,800 (59.06 × 110.24)	1,500 × 3,800 (59.06 × 149.61)	1,500 × 5,000 (59.06 × 196.85)
Maximum load	kg (lb)	6,000 (13,200)	8,000 (17,600)	10,000 (22,000)	12,000 (26,400)	16,000 (35,200)
T-slots 〔T-slots width x No. <center pitch>〕	mm	20H7 x 9 (center 140, both ends 100)		20H7 x 11 (center 140, both ends 100)		
Height from machine bottom	mm (in)	700 (27.56)		750 (29.53)		
Spindle						
Speed range	min-1	4,000 [6,000*4, 10,000*2]				
Taper bore		7/24 taper No. 50				
Bearing diameter	mm (in)	ø100 (3.94) [ø85 (3.35)*3]				
Feed rates						
Rapid traverse	m/min (ipm)	X, Y: 20 (787), Z: 10 (394)				
Cutting feed rate	mm/min (ipm)	1 to 10,000 (0.04 to 393.70)				
Crossrail traverse	mm/min (ipm)	412/495 (16.22/19.49) (50/60 Hz)*5				
Automatic Tool Changer (ATC)						
Tool shank		MAS BT50				
Pull stud		MAS2				
Tool magazine capacity	tools	24 [50, 72, 100]				
Max tool diameter	mm (in)	w/ adjacent tools: ø128 (5.04); w/o adjacent tools: ø230 (9.06)				
Max tool length	mm (in)	400 (15.75)				
Max tool mass	kg (lb)	20 (44)				
Tool selection		Fixed adress				
Motors						
Spindle drive	kW (hp)	22/18.5 (30/25) (30 min/cont) [22/15 (30/20) (30 min/cont)*4, 22 (30) (cont)*2]				
Axis feed drives	kW (hp)	X: 3.5 (4.7), Y, Z: 4.2 (5.6)		X, Y, Z: 4.2 (5.6)		X: 4.6 (6.1), Y, Z: 4.2 (5.6)
Crossrail elevating	kW (hp)	3.7 (5) (AC) [3.6 (4.8)*6]				
Power Sources						
Electrical power supply	kVA	40*7				45*7
Compressed air supply	L/min (ANR)	500 (0.5 MPa or more)*7				
Machine Size						
Height	mm (in)	4,375 (172.24) [4,535 (178.54)*2]		4,585 (180.51) [4,745 (186.81)*2]		
Floor space (machine only, 24-tool ATC)	mm (in)	4,935 × 6,260 (194.29 × 246.46)	4,935 × 8,000 (194.29 × 314.96)	5,335 × 8,100 (210.04 × 318.90)	5,335×10,100 (210.04 × 397.64)	5,335 × 12,920 (210.04 × 508.66)
Mass (machine only, 24-tool ATC)	kg (lb)	19,500 (42,900)	21,300 (46,860)	25,100 (55,220)	27,600 (60,720)	30,500 (67,100)

[ ] Option *1. With Full enclosure shielding specifications: 16 type 700 mm, 20 type 850 mm *2. 10,000 min-1 specs
*3. 6,000 min-1 specs, 10,000 min-1 specs *4. 6,000 min-1 specs
*5. With auto-positioning crossrail specifications: 16 type 392 mm/min, 20 type 337 mm/min *6. With auto-positioning crossrail specifications
*7. With standard specifications

MCV-AⅡ Standard Specifications

Main motor and standard electricals	22/18.5 kW (30 min/cont)
Spindle cooler	Oil temperature controller
Hydraulic unit	
Automatic Tool Changer (ATC)	Tool shank BT50
	MAS2 pull stud
	Tool magazine capacity: 24
ATC air blower (blast)	
Tool kit/tool box	
Work lamp	LED lamp under crossrail
Crossrail positioning	Manual
90° manual angular attachment: Preparations	
Door interlock	

MCV-AⅡ Kit Specifications

Coolant systems	Insert nozzle
	Tank capacity 200 L (type 16), 400 L (type 20)
	Pump motor 750 W
Chip air blower (blast)	Insert nozzle (switch w/coolant available)
Crossrail screw cover	
Column slideway covers	
Ladder and top beam fence	
Foundation methods	Foundation bolt type
Status indicator	3-color LED signal tower
Lamp in control box	

MCV-AⅡ Optional Specifications

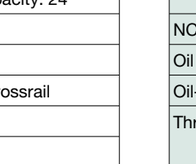
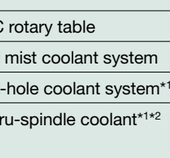
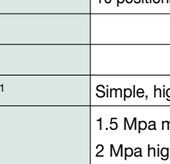
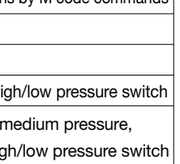
Spindle speeds	6,000 min-1, 10,000 min-1
AbsoScale detection	X-Y axes, X-Y-Z axes
ATC magazine capacities	50, 72, or 100 tools
Tool shank/pull stud configuration	
Auto-positioning crossrail	W-axis NC (only with 24-tool ATC) 10 positions by M code commands
NC rotary table	
Oil mist coolant system	
Oil-hole coolant system*1	Simple, high/low pressure switch
Thru-spindle coolant*1*2	1.5 Mpa medium pressure, 2 Mpa high/low pressure switch
Pendant operation panel (elevating)	Elevation: 600 mm
Manual angular spindlehead	Quill mount type
Manual universal spindlehead	Quill mount type
Chip discharge	Chip conveyor
T-slot width	22H7, 24H7
Additional cross groove (1)	20H7, 22H7, 24H7, depth 12 mm, in center
Automatic tool length compensation/ tool breakage detection	Touch sensor, vertical axis only
Auto work gauging, auto zero offset	
Hand lamp	LED spotlight
High column spec	200 mm
Machine foundation pit work	
Foundation methods	Chemical anchor type
Full enclosure shielding*3	Open ceiling type, with ceiling
Machine color	

*1. Must select one or the other (oil hose or thru-spindle).
*2. Okuma pull stud required with Thru-Spindle Coolant.
*3. W-axis travel (crossrail vertical) is 300 mm shorter on the lower side.

Recommended chip conveyors (option)

Recommended chip conveyors per type of chip

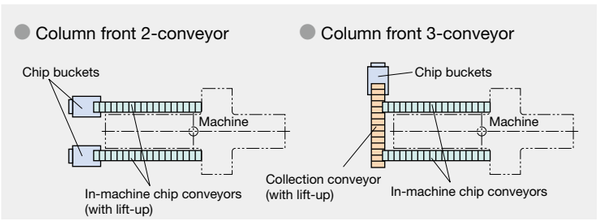
○: Recommended
△: Conditionally recommended

Workpiece material		Steel, stainless steel	Cast iron	Aluminum / Nonferrous	Mixed (general use)
Chip shape					
In-machine	Hinge type	○	○	○	○
Off-machine	Hinge type	○	○ (Dry)	—	△*2
	Hinge + scraper with drum filter	△*1	—	○	○*3

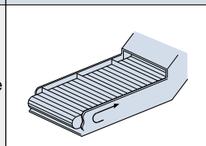
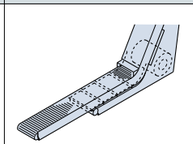
*1. When there are many fine chips *2. When there are few fine chips *3. With magnet

Please contact an Okuma sales representative for details.

Example of chip conveyor placement



Off-machine lift-up chip conveyors

Type	Hinge	Hinge + scraper with drum filter
Shape		

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 creates 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

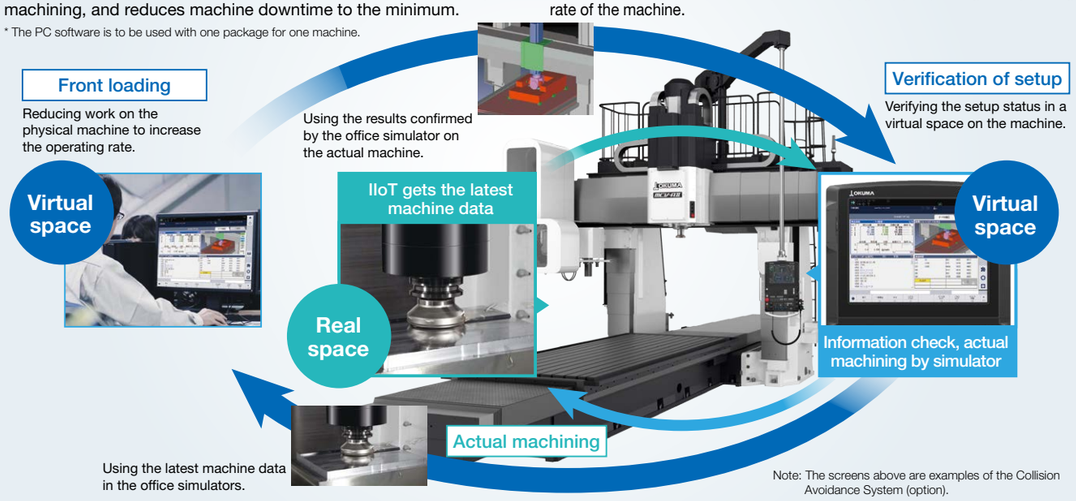
Front loading is performed with the actual status matched with the data on the office PC to further improve productivity.
Highly accurate pre-verification minimizes trial and error in first part machining, and reduces machine downtime to the minimum.

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.

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



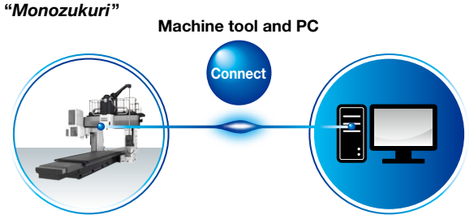
Note: The screens above are examples of the Collision Avoidance System (option).

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%, rapid traverse override 0 to 100%
	Spindle control	Direct spindle speed commands, override 30 to 300%, multi-point indexing
	Tool compensation	No. of registered tools: Max 999 sets, tool length/radius compensation: 3 sets per tool
	Display	15-inch color LCD + multi-touch panel operations
	Security	Operator authentication, Lock screen, OSP-VPSII-STD (Virus Protection System)
Programming	Program capacity	Program storage capacity: 4 GB; operation buffer: 2 MB
	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		Hi-Cut Pro, Pitch error compensation, Hi-G control, SERVONAVI*1, Cycle time reduction (operation time reduction, machining time shortening, easy parameter setting)
Energy-saving functions	ECO suite plus	ECO Idling Stop, ECO Operation, ECO Power Monitor*2
	Power Regeneration System	Regenerative power is used when the spindle and feed axes decelerate to reduce energy waste.

*1. For Deflection Auto Adjustment included in the specs, X-Y axes AbsoScale detection specs are needed.
*2. The power display shows estimated values. When precise electrical values are needed, select the wattmeter option.

OSP-P500M kit specifications/optional specifications

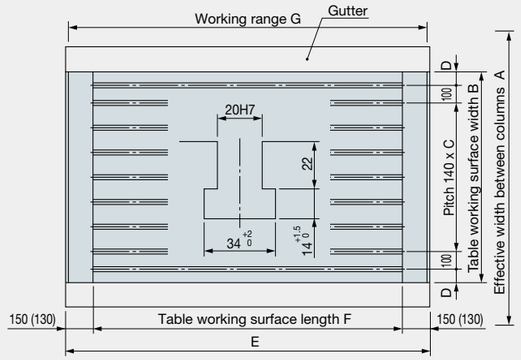
Item	Kit specs	NML E	NML D	AOT E	AOT D	DT E	DT D	DT AOT E	DT AOT D
Digital Twin									
Virtual Machining						● (VE)	● (VD)	● (VE)	● (VD)
Quick Modeling						● (VE)	● (VD)	● (VE)	● (VD)
OPC UA for Machine Tools						●	●	●	●
OSP API KIT						●	●	●	●
Interactive functions									
Advanced One-Touch IGF-M (w/ Real 3-D Simulation)				●	●			●	●
Interactive MAP (I-MAP)						●	●		
Smart OSP Operation				●	●	●	●	●	●
Programming									
Operation buffer 10 MB		●	●	●	●	●	●	●	●
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 (within 360 degrees)		●	●	●	●	●	●	●	●
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									
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									
Auto Workpiece Gauging/Auto zero offset									
Manual gauging (w/o sensor)		●	●	●	●	●	●	●	●
Interactive gauging (touch sensor, touch probe required)									

Item	Kit specs	NML E	NML D	AOT E	AOT D	DT E	DT D	DT AOT E	DT AOT D
Monitoring									
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*	Feed axes								
Machine Status Logger									
Cutting Status Monitor									
Machining Navi M-gII (cutting condition search)									
Feed axis retraction									
Tool retract cycle									
Automation / Unattended operation									
Warm-up (calendar timer)									
External program	Button, rotary switch								
	BCD (2-digit, 4-digit)								
High-speed, high-precision									
TAS-S (Thermo Active Stabilizer – Spindle)									
AbsoScale detection	X-Y axes, X-Y-Z axes								
Straightness compensation									
Dynamic displacement compensation		●	●	●	●	●	●	●	●
0.1 µm control (linear axis commands)									
Hyper-SurfaceII	3-axis, Type A, Type B								
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									
Oil temperature controller auto control									
Other									
Circuit breaker									
OSP-VPSII-EX (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 Dimensions

Unit : mm



	Size	A	B	C	D	E	F	G
MCV-AⅡ 16	16 × 20	1,650	1,200	6	80	2,100	1,800	2,000
	16 × 30					3,100	2,800	3,000
MCV-AⅡ 20	20 × 30	2,050	1,500	8	90	3,100	2,800	3,000
	20 × 40					4,100	3,800	4,000
	20 × 50					5,260	5,000	5,200

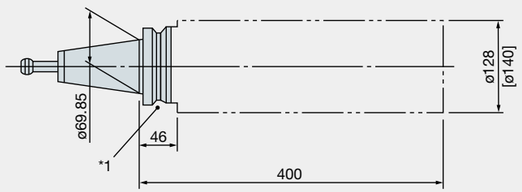
* Numbers in parentheses are for 20 x 50 type

Maximum ATC Tool Dimensions (24-tool ATC)

Unit : mm

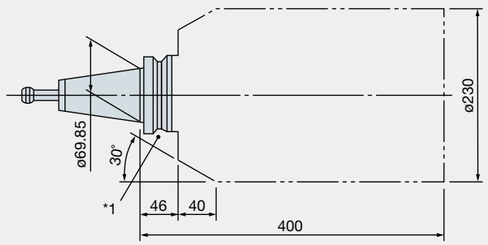
● Maximum adjacent tool size

Maximum tool size with adjacent tools



● Maximum non-adjacent tool size

Maximum tool size without adjacent tools



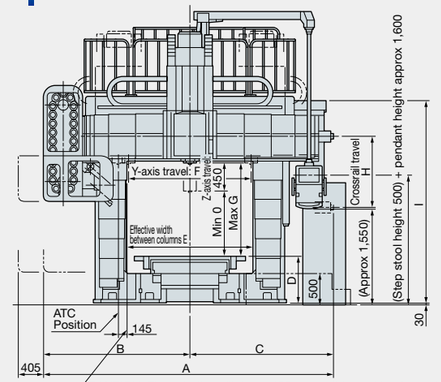
[ ]: Maximum tool diameter with diameter of tools on both sides less than ø115 mm.

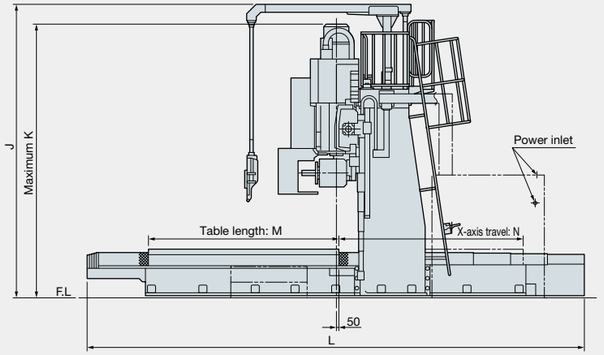
*1. With commercially available milling chucks, interference may occur between ATC tool change arm and the outer portions of tooling. Be sure to check the dimensions in the tooling maker's literature before using.

● Maximum tool mass moment: 29.4 N-m

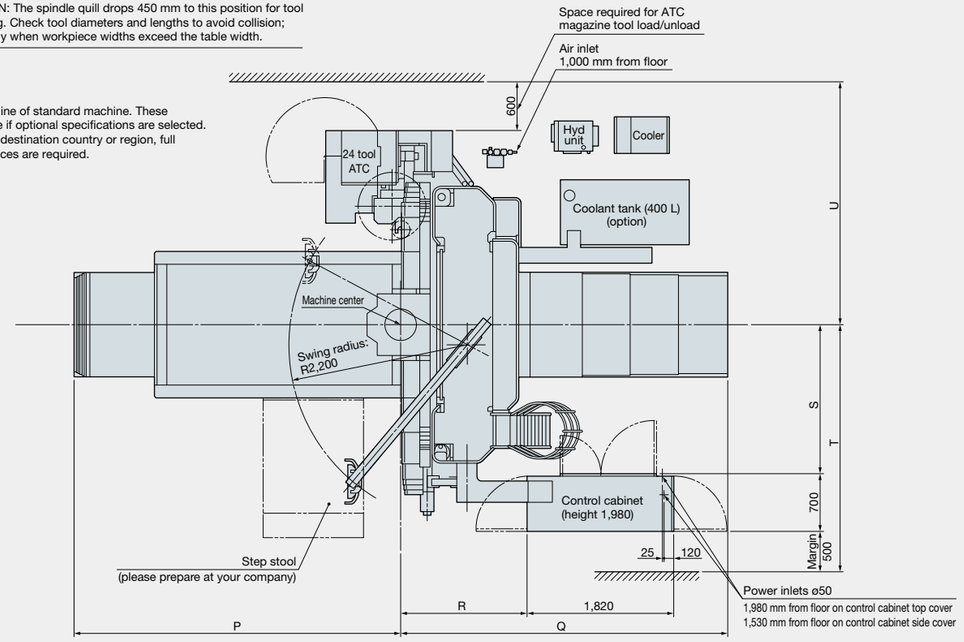
Mass including shank is taken to be up to 20 kg. At that time the center of gravity position corresponds to 150 mm from the datum diameter (ø69.85).

Dimensional Drawing and Installation Drawing





* This drawing show outline of standard machine. These dimensions will change if optional specifications are selected. And depending on the destination country or region, full enclosure or safety fences are required.



Unit : mm

	Size	A	B	C	D	E	F	G	H	I	J
MCV-AⅡ 16	16 x 20	4,330	2,190	2,140	700	1,650	1,600	0 to 1,360 (0 to 1,380)	1,000	3,070	4,375 (4,535)
	16 x 30										
MCV-AⅡ 20	20 x 30	4,730	2,390	2,340	750	2,050	2,000	0 to 1,510 (0 to 1,530)	1,150	3,270	4,585 (4,745)
	20 x 40										
	20 x 50										

	Size	K	L	M	N	P	Q	R	S	T	U
MCV-AⅡ 16	16 x 20	4,220 (4,380)	6,000	2,100	2,000	3,000	3,000	1,440	1,640	2,840	2,790
	16 x 30		8,000	3,100	3,000	4,000	4,000				
MCV-AⅡ 20	20 x 30	4,420 (4,580)	8,100	3,100	3,000	4,050	4,050	1,575	1,840	3,040	2,990
	20 x 40		10,100	4,100	4,000	5,050	5,050				
	20 x 50		12,920	5,000	5,200	6,460	6,460				

* Numbers in parentheses are with 10,000 min^{-1} specifications

MCV-AII

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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