

Double-Column Machining Center  
***MCV-AII***



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**MCV-AII**



Collision Avoidance  
System

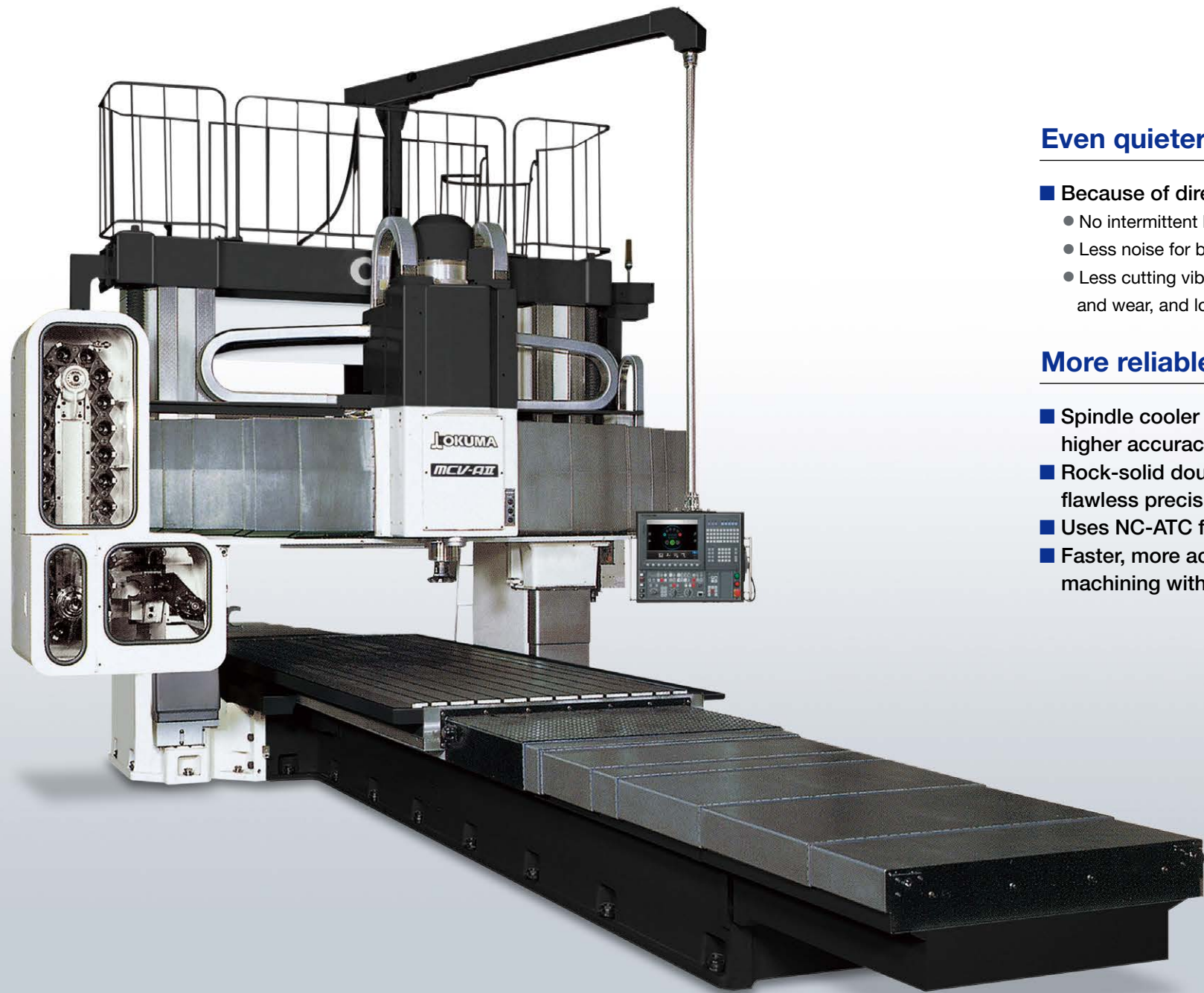


Machining  
Navi



SERVO NAVI

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
- Uses NC-ATC for fast ATC
- Faster, more accurate, and higher quality 3D machining with Hyper-Surface (Optional)

**Faster, more power**

- Spindle speed ..... 4,000 min<sup>-1</sup>  
(Opt: 6,000 min<sup>-1</sup>, 10,000 min<sup>-1</sup>)
- Spindle motor ..... 22/18.5 kW (30/25 hp)
- Faster rapids (X-Y axes) .. 20 m/min (65.62 fpm)
- Faster cutting feed ..... Max 10,000 mm/min  
(394 ipm)
- Spindle quill dia ..... ø210 mm (8.27 in.)
- Z-axis travel ..... 450 mm (17.72 in.)

**Easy to operate**

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

The Next-Generation Intelligent CNC

**OSP suite**

\* Craftsmanship-based manufacturing

# 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 fast and highly accurate 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.

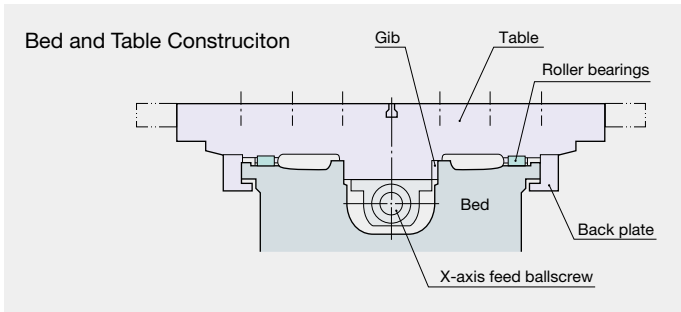


## Highly accurate and long guideways — with no fishtailing

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.

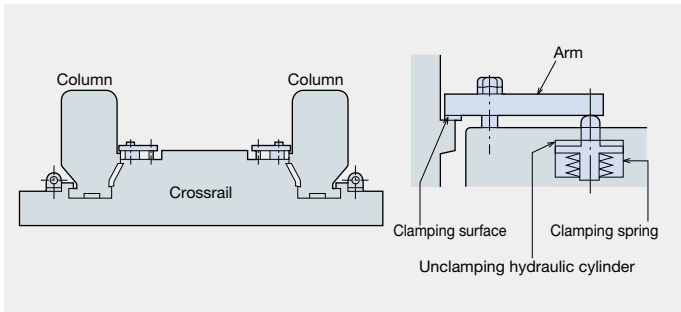
## Slide/roller guideways

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.



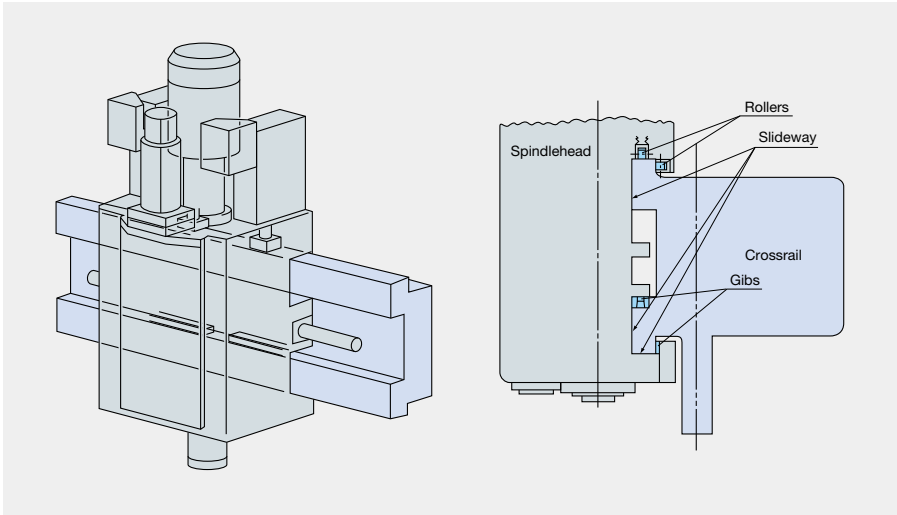
## Powerful clamping

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.



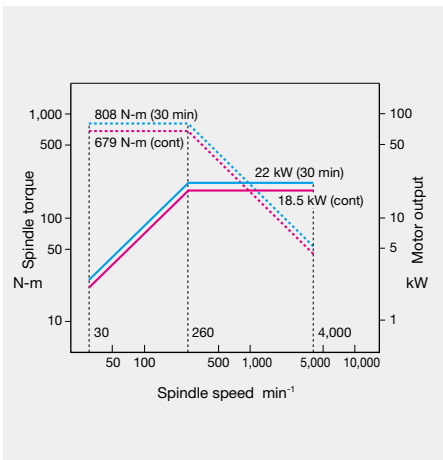
## Fast, powerful spindle

- Direct-drive gearless spindle  
Quiet, vibration free operation
- 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



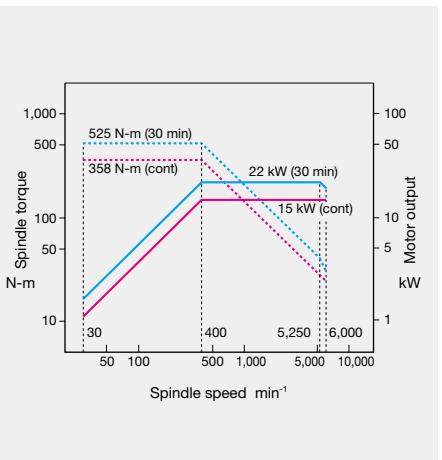
### ■ Standard

- Spindle speed : 4,000 min<sup>-1</sup>
- Max output : 22/18.5 kW (30 min/cont)
- Max torque : 808/679 N-m (30 min/cont)



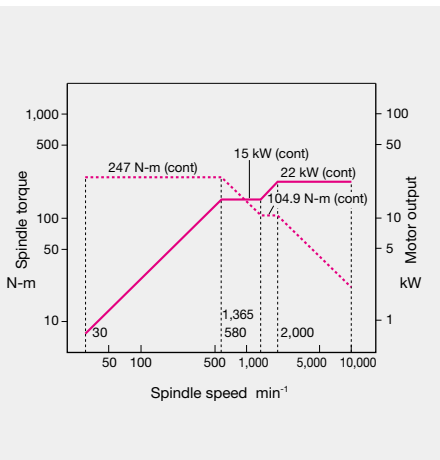
### ■ 6,000 min<sup>-1</sup> (Optional)

- Spindle speed : 6,000 min<sup>-1</sup>
- Max output : 22/15 kW (30 min/cont)
- Max torque : 525/358 N-m (30 min/cont)



### ■ 10,000 min<sup>-1</sup> (Optional)

- Spindle speed : 10,000 min<sup>-1</sup>
- Max output : 22 kW (cont)
- Max torque : 247 N-m (cont)





# Highly efficient machining of large parts

## Powerful cutting conditions



Material	Tool	Spindle Speed min <sup>-1</sup>	Cutting Speed m/min (fpm)	Feed rate mm/min (ipm)	Cutting Width mm (in.)	Cutting Depth mm (in.)	Chip Volume cm <sup>3</sup> /min (in. <sup>3</sup> /min)	Power kW (hp)	Quill Projection mm (in.)
S45C	ø200 (7.87) face mill (cermet)	285	180 (591)	740 (29.13)	135 (5.31)	6 (0.24)	600 (37)	20.5 (27.3)	435 (17.13)
	ø160 (6.30) face mill (cermet)	320	160 (525)	1,000 (39.37)	110 (4.33)	6 (0.24)	660 (40)	20 (27)	420 (16.54)
	ø63 (2.48) end mill (carbide)	400	79 (259)	350 (13.78)	31.5 (1.24)	50 (1.97)	500 (31)	18.5 (24.7)	440 (17.32)
		400	79 (259)	160 (6.30)	63 (2.48)	50 (1.97)	500 (31)	20.5 (27.3)	440 (17.32)
FC300	ø200 (7.87) face mill (carbide)	175	110 (361)	560 (22.05)	135 (5.31)	7 (0.28)	530 (32)	20 (27)	440 (17.32)
	ø160 (6.30) face mill (carbide)	265	133 (436)	1,120 (44.09)	110 (4.33)	7 (0.28)	860 (52)	17.5 (23.3)	440 (17.32)
	ø63 (2.48) end mill (carbide)	400	79 (259)	640 (25.20)	31.5 (1.24)	50 (1.97)	1,005 (61)	19.5 (26)	445 (17.52)

## Recommended specifications for chip discharge (Optional)

### Recommended chip conveyors per type of chip

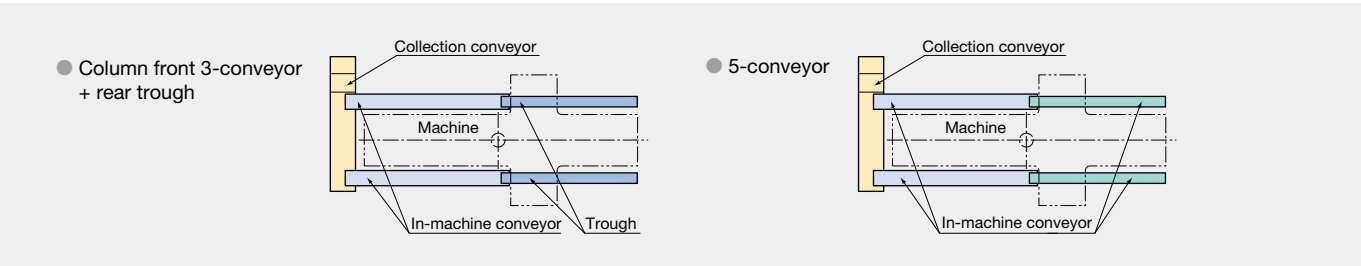
○ : Recommended    △ : Conditionally recommended

Material		Steel	FC	Al, Ti, NFM	Mixed (general)
Chip shape					
In-machine conveyors	Hinge	○	○	○	○
	Hinge	○	○ (Dry)	—	△ (*2)
	Scraper	—	—	—	—
	Magnetic scraper	—	○ (Wet)	—	—
Collection conveyor	Hinge + Scraper (w/drum filter)	△ (*1)	—	○	○ (*3)

\*1. For high-volume tiny chips \*2. Low-volume small chips \*3. With magnets

Please contact your Okuma dealer for further details.

### Example of conveyor and tank placement



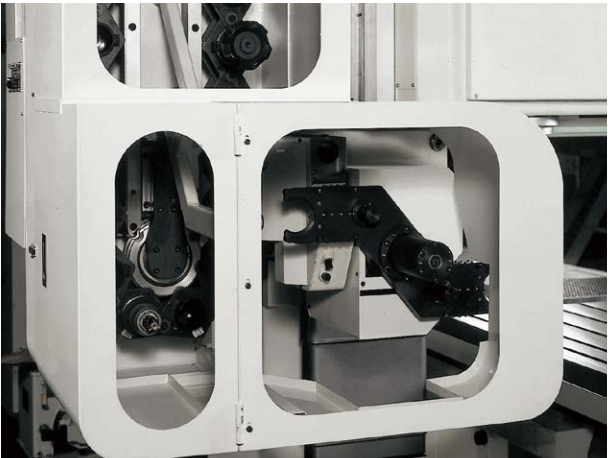
### Collection conveyor chip discharge (lift-up conveyors)

Type	Hinge	Scraper	Magnetic scraper	Hinge + Scraper (w/drum filter)
Shape				

## High-speed NC-ATC

NC controlled ATC provides quicker and more reliable tool changing.

- ATC tool magazine capacity
  - Standard: 24 tools
  - Optional: 50, 72, 100 tools



### Next-Generation Energy-Saving System

## ECO suite

A suite of energy saving applications for machine tools.

### ECO Idling Stop

Auto cooler turnoff, with accuracy assured

Introducing the world's first application designed to stop machine tool idling — with no loss to accuracy. By using Okuma's Thermo-Friendly Concept, the OSP control monitors milling and turning spindle cooling status, and automatically turns off their coolers when cooling is complete.

ECO Idling Stop also carefully stops peripheral equipment, so as power consumption and other hidden costs reduce, the benefits increase with longer machining preparation and other noncutting wait times. (A standard feature on machines with TAS-S)

### ECO Power Monitor

On-the-spot check of energy savings

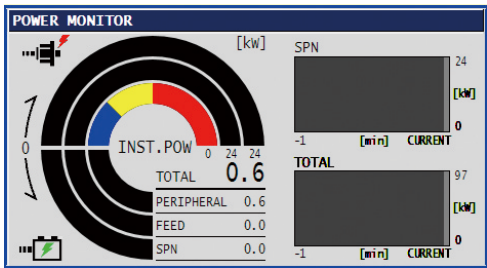
Power is shown individually for spindle, feed axes, and auxiliaries on the OSP operation screen. The energy-saving benefits from auxiliary equipment stopped with ECO Idling Stop can be confirmed on the spot.

### ECO Hydraulics (Optional)

Energy-saving hydraulic unit using servo control technology

### ECO Operation (Optional)

Intermittent/linked operation of chip conveyor, or mist collector during machining



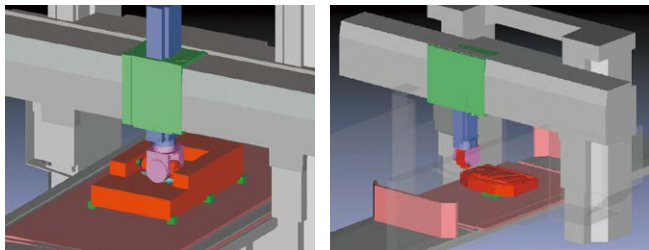
# Okuma's Intelligent Technologies enhance machine shop performance




Set-up, first part cycle time greatly reduced  
**Collision prevention Collision Avoidance System** (Optional)

### ■ Allowing operators to focus on making parts

NC controller (OSP) with 3D model data of machine components—workpiece, tool, fixture, spindle, 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.

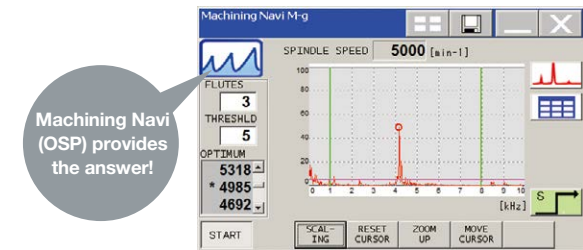





Longer tool life and shorter machining times by optimizing cutting conditions  
**Cutting condition search for milling/machining Machining Navi M-gII** (Optional)

### ■ 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-gII.





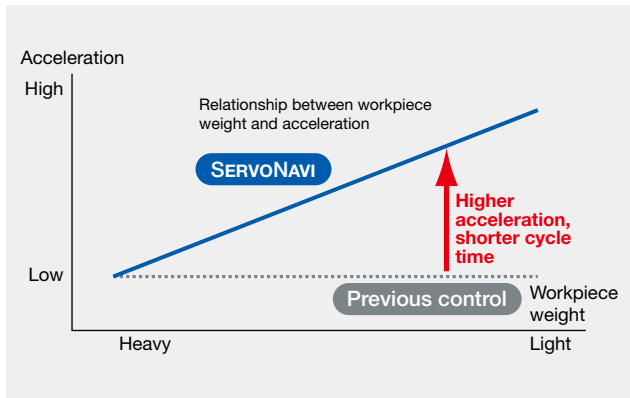
Better machining accuracy and surface quality, high-accuracy, stable machining maintained for long times with optimized servo control  
**Optimized Servo Control SERVO NAVI**

### ■ SERVO NAVI AI (Automatic Identification)

- Cycle time shortened with faster acceleration

#### Work Weight Auto Setting

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



### ■ SERVO NAVI SF (Surface Fine-tuning)

- Maintains machining accuracy and surface quality

#### Reversal Spike Auto Adjustment

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

- Contributes to longer machine life

#### Vibration Auto Adjustment

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

- Maintaining high quality machined surfaces on dies/molds

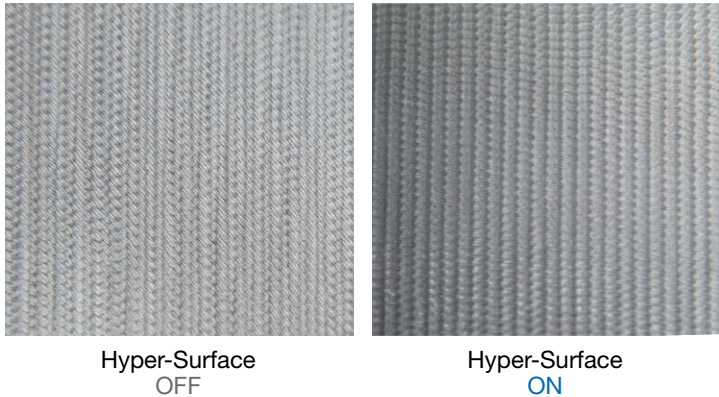
#### Deflection Auto Adjustment

With fast acceleration/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 positioning error (amount of bending) has changed as a result of changes over time.

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

Auto machining data compensation  
**Hyper-Surface** (Optional)

Machining data do not need to be revised. Ridges and uneven edges are reduced and machined surface quality is improved, reducing the time for hand polished finish processes. In addition to the sculptured-surface adaptive acceleration control with previous Super-NURBS, the new Hyper-Surface function automatically compensates for malpositioning with the edge portion of the machining data output from CAM or the adjacent cutting path while maintaining shape accuracy.  
Surface quality can be easily improved, and the time for hand polished finish processes reduced.

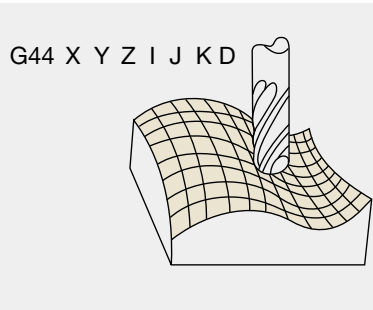
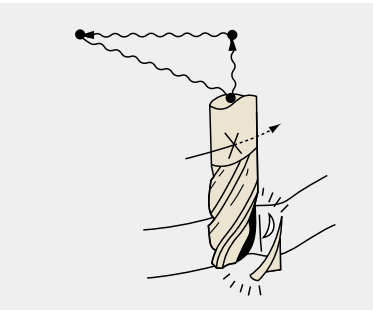


### ■ Sculptured-surface adaptive acceleration control

It provides machining paths that are easy on the machine so that tools can be moved smoothly with respect to the part program command path. Acceleration and deceleration of tool movement is done based on this smooth machining path. This achieves faster acceleration and deceleration to draw out the maximum machine performance while significantly reducing shock and vibration in the machine and drive system during high-speed feed.

## A full selection of software for advanced machining applications

Your factory needs are the specifications our OSP systems do best

Parameter F1 digit (Optional)	3-D tool compensation (Optional)	Mid-block restart (Optional)
<p>When it is difficult to program feedrates for die-making and you need different feedrates for specific cutting patterns, you can simply program using feedrate numbers.  Choose either the rotary switch or the keyboard type F1 parameters.</p>	 <p>See 3-dimensional tool offsets by commanding the I, J, and K offset directions with the coordinates.</p>	 <p>Resume cutting either from the beginning or midway into a desired block.</p>



Machine Specifications

		MCV-AⅡ 16		MCV-AⅡ 20		
Item		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 horizontal)	mm (in.)	1,600 (62.99)		2,000 (78.74)		
Z-axis (ram vertical)	mm (in.)	450 (17.72)				
W-axis (crossrail vertical)	mm (in.)	1,000 (39.37)		1,150 (45.28)		
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]* <sup>1</sup> (0 to 53.54) [0 to 54.33]		0 to 1,510 [0 to 1,530]* <sup>1</sup> (0 to 59.45) [0 to 60.24]		
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)
Table top shape [T-slots width x No. <center pitch>]	mm (in.)	20H7 x 9 (center 140, ends 100)		20H7 x 11 (center 140, ends 100)		
Height from machine bottom	mm (in.)	700 (27.56)		750 (29.53)		
Spindle						
Speed range	min <sup>-1</sup>	4,000 [6,000* <sup>3</sup> , 10,000* <sup>1</sup> ]				
Taper bore		7/24 taper No. 50				
Bearing diameter	mm (in.)	ø100 (3.94) [ø85 (3.35)* <sup>2</sup> ]				
Feed rates						
Rapid traverse	m/min	X-Y : 20, Z : 10				
Feed rate	mm/min	1 to 10,000				
Crossrail traverse	mm/min	420/500 (50/60Hz)* <sup>4</sup>				
Automatic Tool Changer						
Tool shank		MAS BT50				
Pull stud		MAS P50T-2				
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 weight	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)* <sup>3</sup> , 22 (30) (cont)* <sup>1</sup> ]				
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 traverse drive	kW (hp)	3.7 (4.9) (AC) [3.6 (4.8)* <sup>5</sup> ]				
Power Sources						
Electrical power supply	kVA	40* <sup>6</sup>				45* <sup>6</sup>
Compressed air supply	L/min (ANR)	500 (0.5 MPa or more)* <sup>6</sup>				
Machine Size						
Height	mm (in.)	4,375 (172.24) [4,535 (178.54)* <sup>1</sup> ]		4,585 (180.51) [4,745 (186.81)* <sup>1</sup> ]		
Floor space (machine only, 24-tool ATC)	mm (in.)	4,935 × 6,000 (194.29 × 236.22)	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)
Weight (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)

[    ] Optional    \*1: 10,000 min<sup>-1</sup> specs    \*2: 6,000 min<sup>-1</sup> specs, 10,000 min<sup>-1</sup> specs    \*3: 6,000 min<sup>-1</sup> specs  
\*4: With auto-positioning crossrail specifications: 16 type 400 mm/min, 20 type 340 mm/min    \*5: With auto-positioning crossrail specifications  
\*6: With standard specifications

Standard Accessories

Spindle drive, standard electricals	22/18.5 kW (30 min/cont)
Spindlehead cooler	Oil controller
Hydraulic unit	
Automatic tool changer (ATC)	Tool shank BT50
	MAS-2 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	

Sales kit

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

Optional Accessories and Specifications

Spindle speeds	6,000 min <sup>-1</sup> , 10,000 min <sup>-1</sup>
AbsoScale detection	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
Auto pallet changer (APC)	2-pallet front loading
NC rotary table	
Oil mist coolant system	
Oil hose coolant system*1	Simple, high/low pressure switch
Thru-spindle coolant*1*2	Medium pressure, high/low pressure switch
Sub table	
Pendant operation panel (elevating)	Vertical travel: 600 mm (23.62 in.)
Manual angular spindlehead	Quill mount type
Manual universal spindlehead	Quill mount type
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, 400 mm
Machine foundation pit work	
Full enclosure shielding	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.

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

Smart factories implement advanced digitization and networking (IoT) in manufacturing to achieve enhanced productivity and added value. The OSP has evolved tremendously as a CNC suited to advanced intelligent technology. Okuma's new control uses the latest CPUs for a tremendous boost in operability, rendering performance, and processing speed. The OSP suite also features a full range of useful apps that could only come from a machine-tool manufacturer, making smart manufacturing a reality.

Smooth, comfortable operation with the feeling of using a smart phone

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



Note: Collision Avoidance System (Optional) shown above.

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

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



Routine inspection support  
**Maintenance Monitor**

The Maintenance Monitor displays items for inspections before starting daily operation and regular inspections and the rough estimate of inspection timing. Touching the [INFO] button displays the PDF instruction manual file of relevant maintenance items.

PERIODICAL MAINTENANCE		DAILY INSPECTION		CHANGE MODE	
NO.	ITEM	WORK	PROGRESS	REMAIN	INFO
310	Grease for tool clamping unit (HGH)	Supply		1h	
311	Packing in tool clamping unit (HGH)	Inspection		50h	
320	Grass contour lubrication oil	Replace		1000h	
411	Hydraulic unit oil	Replace		OK	
412	Hydraulic unit fine filter	Cleaning		1h	
413	Hydraulic unit fine filter	Replace		50h	
421	Oil for SPCL cooling unit	Replace		1000h	



[INFO] button



Increased productivity through visualization of motor power reserve  
**Spindle Output Monitor**



Monitoring operating status even when away from the machine  
**E-mail Notification**



Comment display for greater ease of use and faster work  
**Common Variable Monitor**



Automatic saving of recorded alarms  
**Screen Capture**



Easy programming without keying in code  
**Scheduled Program Editor**

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 (100 sets)
	Min / Max inputs	8-digit decimal, ±99999.999 to 0.001 mm (3937.0078 to 0.0001 in.), 0.001° Decimal: 1 μm, 10 μm, 1 mm (0.0001, 1 in.) (1°, 0.01°, 0.001°)
	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
	Self-diagnostics	Automatic diagnostics and display of program, operation, machine, and NC system faults
	Program capacity	Program storage capacity: 4 GB; operation backup capacity: 2 MB
Programming	Program operations	Program management, editing, multitasking, scheduled program, fixed cycle, G-/M-code macros, arithmetic, logic statements, math functions, variables, branch commands, coordinate calculate, area calculate, coordinate convert, programming help
	“suite apps”	Applications to visualize and digitize information needed on the shop floor
Operations	“suite operation”	Highly reliable touch panel suited to shop floors. One-touch access to suite apps.
	Easy Operation	“Single-mode operation” to complete a series of operations
	Machine operations	MDI, manual (rapid traverse, manual cutting feed, pulse handle), load meter, operation help, alarm help, sequence return, manual interrupt/auto return, pulse handle overlap, parameter I/O, Self-diagnostics, PLC monitor, alignment compensation
	MacMan	Machining management: machining results, machine utilization, fault data compile & report, external output
Communications / Networking		USB (2 ports), Ethernet
High speed/accuracy specs		Hi-Cut Pro, pitch error compensation, Hi-G Control, SERVONAV
Energy-saving		ECO suite ECO Idling Stop*1, ECO Power Monitor*2

\*1. Spindle cooler Idling Stop is used on TAS-S machines. \*2. The power display shows estimated values. When precise electrical values are needed, select the wattmeter option.

Optional Specifications

Item	Kit Specs	NML		3D		AOT	
		E	D	E	D	E	D
Interactive functions							
Advanced One-Touch IGF-M (Real 3-D simulation included)						●	●
Interactive MAP (I-MAP)				●	●		
Programming							
Auto scheduled program update (Scheduled program is standard)		●	●	●	●	●	●
Additional G/M code macros							
Common variables	1,000 pcs						
(Std: 200 pcs)	2,000 pcs						
Program branch; 2 sets							
Program notes (MSG)			●		●		●
Coordinate system	100 sets	●		●		●	
selection	200 sets		●		●		●
(Std: 20 sets)	400 sets						
Helical cutting (within 360 degrees)		●	●	●	●	●	●
3-D circular interpolation							
Synchronized Tapping II							
Arbitrary angle chamfering		●	●	●	●	●	●
Cylindrical side machining							
Slope machining							
Tool max rotational speed setting							
F1-digit feed	4 sets, 8 sets, parameter						
Programmable travel limits (G22, G23)		●	●	●	●	●	●
Skip (G31)							
Axis naming (G14)							
3-D tool compensation							
Tool wear compensation			●		●		●
Drawing conversion	Programmable mirror image (G62)		●		●		●
	Enlarge/reduce (G50, G51)		●		●		●
User task 2	I/O variables (16 each)						
Tape conversion*							
Monitoring							
Real 3-D simulation				●	●	●	●
Simple load monitor	Spindle overload monitor	●	●	●	●	●	●
NC operation monitor	Hour meter, work counter	●	●	●	●	●	●
Hour meters	Power ON, spindle run/NC ON, machining						
Operation end buzzer	With M02, M30, and END commands						
Work counter	With M02 and M30						
MOP-TOOL	Adaptive control, overload monitor						
Tool life management	Hour meter, No. of workpieces	●	●	●	●	●	●
ECO suite (Energy-saving function)							
ECO Operation							
ECO Power Monitor	Wattmeter						
Energy-saving hydraulic unit	Inverter						

Item	Kit Specs	NML		3D		AOT	
		E	D	E	D	E	D
Gauging							
Auto gauging	Touch probe (G31)	Incl in machine specs					
Auto zero offset	Includes auto gauging	Incl in machine specs					
Tool breakage detection	Touch sensor (G31)	Incl in machine specs					
	Includes auto tool offset						
Gauging data printout	File output						
Manual gauging (w/o sensor)		●	●	●	●	●	●
Interactive gauging (touch setter, touch probe required)							
External I/O communication							
RS-232-C connector							
DNC-T3							
DNC-B (RS-232C-Ethernet transducer used on OSP side)							
DNC-DT							
DNC-C/Ethernet							
Additional USB (Std: 2 ports)							
Automation / untended operation							
Auto power shut-off	M02, END, alarms, work preps done	●	●	●	●	●	●
Warm-up (calendar timer)							
External program selection	Button, rotary switch, BCD (2-digit, 4-digit)						
Cycle time reduction (ignores certain commands)							
High-speed, high-precision							
TAS-S (Thermo Active Stabilizer-Spindle)							
AbsoScale detection							
X-Y axes							
Hyper-Surface	3-axis Type A, type B						
Other							
Control cabinet lamp (inside)							
Circuit breaker							
Sequence operation	Sequence stop	●	●	●	●	●	●
Upgraded sequence restart	Mid-block return		●		●		●
Pulse handle	2 pcs, 3 pcs (Std: 1 pc)						
External M code	4-point, 8-point						
Collision Avoidance System							
Machining Navi M-gII (cutting condition search)							
One-Touch Spreadsheet							
Block skip	3 sets						
Feed axis retract							
OSP-VPS (virus protection system)							

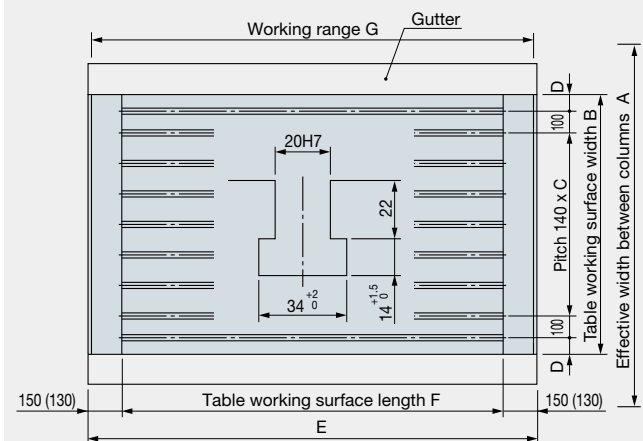
Kit full forms: NML: Normal, 3D: Real 3D simulation, AOT: Advanced One-Touch IGF-M

E: Economy, D: Deluxe

\* Spec confirmations required

Table Dimensions

Unit : mm (in.)



\* Numbers in parentheses are for 20 x 50 type

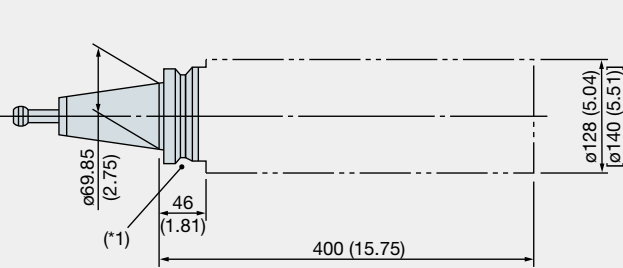
	Size	A	B	C	D	E	F	G
MCV-AII 16	16x20	1,650 (64.96)	1,200 (47.24)	6 (0.24)	80 (3.15)	2,100 (82.68)	1,800 (70.87)	2,000 (78.74)
	16x30					3,100 (122.05)	2,800 (110.24)	3,000 (118.11)
MCV-AII 20	20x30					3,100 (122.05)	2,800 (110.24)	3,000 (118.11)
	20x40	2,050 (80.71)	1,500 (59.06)	8 (0.31)	90 (3.54)	4,100 (161.42)	3,800 (149.61)	4,000 (157.48)
	20x50					5,260 (207.09)	5,000 (196.85)	5,200 (204.72)

Maximum ATC Tool Dimensions (24-tool ATC)

Unit : mm (in.)

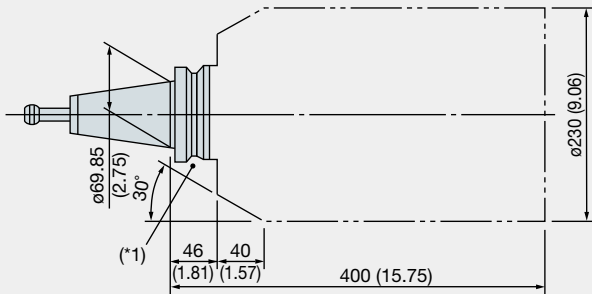
Maximum adjacent tool size

Maximum tool size with adjacent tools



Maximum non-adjacent tool size

Maximum tool size without adjacent tools



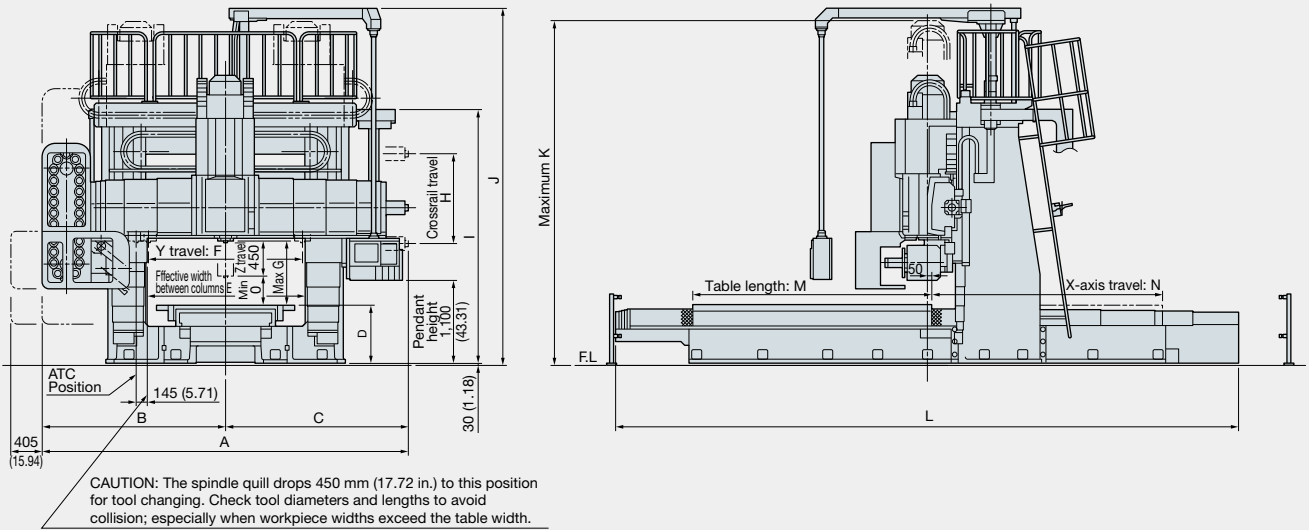
[ ] : Maximum tool diameter with diameter of tools on both sides less than ø115 mm (4.53 in).

(\*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.

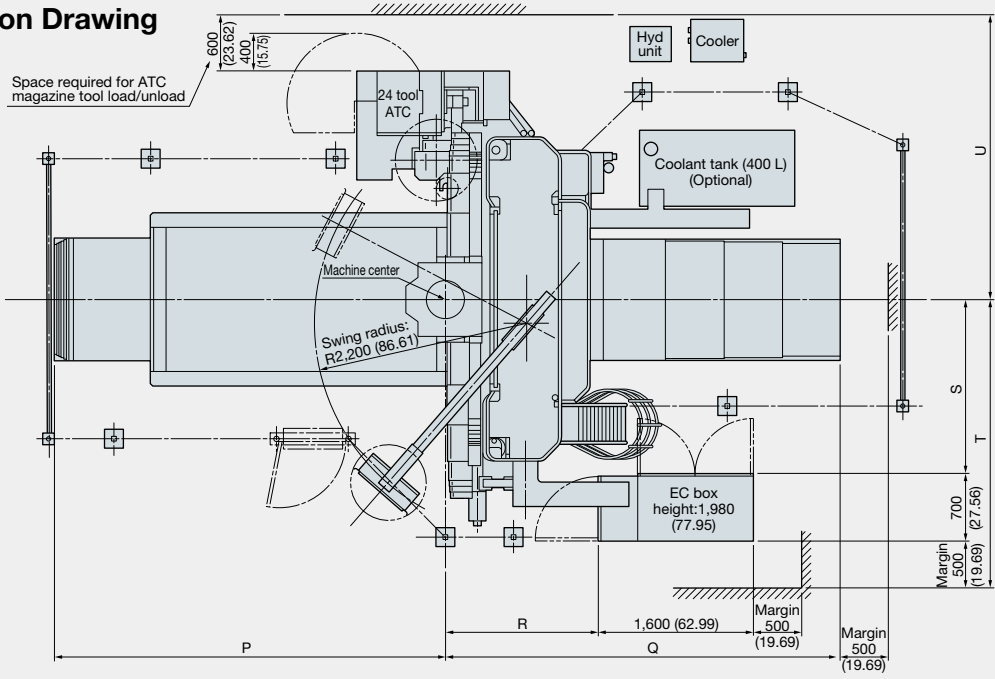
Maximum tool mass moment: 29.4 N-m

Mass including shank is taken to be up to 196 N (20 kg). At that time the center of gravity position corresponds to 150 mm from the datum diameter (ø69.85).

Dimensional Drawing



Installation Drawing



Unit : mm (in.)

	Size	A	B	C	D	E	F	G	H	I	J
MCV-AII 16	16 x 20	4,335 (170.67)	2,190 (86.22)	2,145 (84.45)	700 (27.56)	1,650 (64.96)	1,600 (62.99)	0 to 1,360 (0 to 53.54)	1,000 (39.37)	3,070 (120.87)	4,375 (172.24)
	16 x 30							(0 to 1,380) (0 to 54.33)			(4,535) (178.54)
MCV-AII 20	20 x 30							0 to 1,510 (0 to 59.45)			4,585 (180.51)
	20 x 40	4,735 (186.42)	2,390 (94.09)	2,345 (92.32)	750 (29.53)	2,050 (80.71)	2,000 (78.74)	(0 to 1,530) (0 to 60.24)	1,150 (45.28)	3,270 (128.74)	(4,745) (186.81)
	20 x 50										

	Size	K	L	M	N	P	Q	R	S	T	U
MCV-AII 16	16 x 20	4,220 (166.14)	6,000 (236.22)	2,100 (82.68)	2,000 (78.74)	3,000 (118.11)	3,000 (118.11)	1,440 (56.69)	1,640 (64.57)	2,840 (111.81)	2,790 (109.84)
	16 x 30	(4,380) (172.44)	8,000 (314.96)	3,100 (122.05)	3,000 (118.11)	4,000 (157.48)	4,000 (157.48)				
MCV-AII 20	20 x 30	4,420 (174.02)	8,100 (318.90)	3,100 (122.05)	3,000 (118.11)	4,050 (159.45)	4,050 (159.45)	1,575 (62.01)	1,840 (72.44)	3,040 (119.69)	2,990 (117.72)
	20 x 40	(4,580) (180.31)	10,100 (397.64)	4,100 (161.42)	4,000 (157.48)	5,050 (198.82)	5,050 (198.82)				
	20 x 50		12,920 (508.66)	5,000 (196.85)	5,200 (204.72)	6,460 (254.33)	6,460 (254.33)				

\* Numbers in parentheses are with 10,000 min<sup>-1</sup> specifications



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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