OKUMA

OPEN POSSIBILITIES

MULTUS U Series

MULTUS U3000
MULTUS U4000
MULTUS U5000

Intelligent Multitasking Machines

MULTUS U Series

MULTUS U3000 / MULTUS U4000 / MULTUS U5000

Intelligent Multitasking Machines

Intelligent Technology | Thermo-Friendly Concept | Collision Avoidance System | Machining Navi | 5-Axis Auto Tuning System | SERVONAVI

Highly accurate, rigid, hi-tech, and process-intensive All that's required and packed in the ultimate multitasking machine

- Flexible machining from all directions
- Max productivity for milling and turning
- 2 saddles for minimum cycle times
- Process-intensive machining that goes beyond the framework of multitasking machines
- To support long and stable machining accuracies
- Maximizing machine tool performance
- Shorter lead-times with easy first part machining

MULTUS U3000

<DBC 1,000 mm 1SW>

MULTUS U4000

<DBC 1,500 mm 2SW>

MULTUS U5000

<DBC 2,000 mm 2SC>

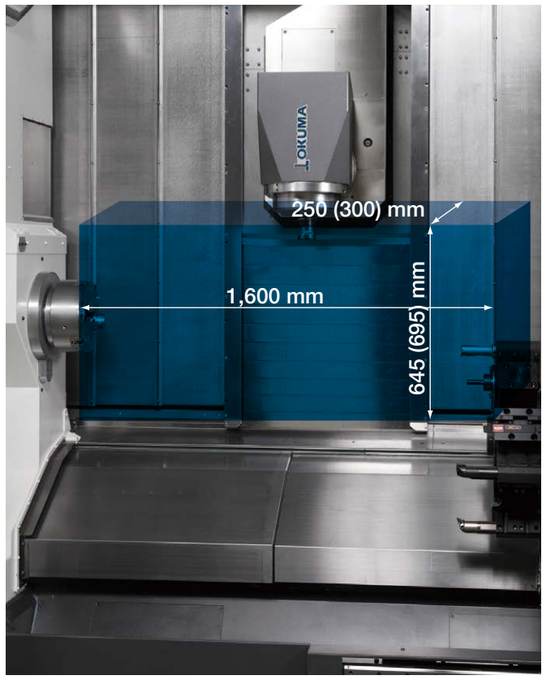
25 diverse variations in all

Spec extension		MULTUS U3000		MULTUS U4000		MULTUS U5000	
Distance between centers (DBC)		1000	1500	1500	2000	1500	2000
Upper turret (1S)	Chuck work	●	—	—	—	—	—
	Tailstock (C)	●	●	●	●	●	●
	Opposing spindles (W)	●	●	●	●	●	●
Upper and lower turrets (2S)	Tailstock (C)	●	●	●	●	●	●
	Opposing spindles (W)	●	●	●	●	●	●

Door shape differs with 1S and 2S specifications.
Photos shown in this brochure include optional equipment.

Flexible machining from all directions

Tough cutting in entire Y-axis range

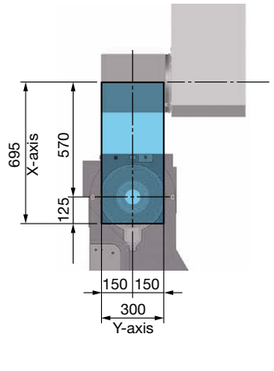


DBC 1500 illustration
( ) figures for the MULTUS U4000/U5000

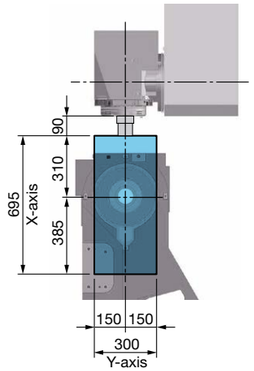
With the ideal, large work envelope for lots of milling of complex parts. The class best Y-axis travel is fully utilized with a highly rigid traveling column, for powerful cutting along the entire Y axis.

X-/Y-axis working range

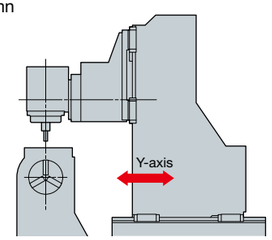
MULTUS U4000/U5000
B-axis 0°



MULTUS U4000/U5000
B-axis 90°



● Traveling column



Wide B-axis swing: 240°

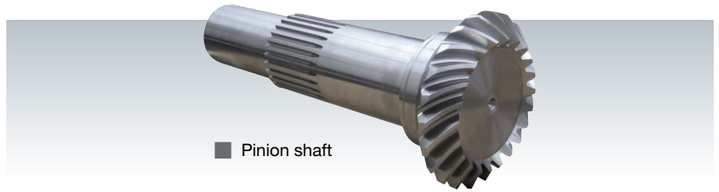
The wide 240-degree swing of the B-axis spindle allows it to have equivalent machining areas for both the main and opposing spindle. With the NC B-axis, roller gears are used to achieve “0” backlash during B-axis drive, and highly accurate 5-axis machining.

Superb C-axis positioning accuracy: 0.0001° control

As an option*, a highly accurate C-axis function is used for both the main and opposing spindles. This will support end-users requiring very accurate machining of component shapes that are quite complex. Moreover, heavy-duty milling, with a solid retention mechanism, makes possible applications that require both high accuracy and high efficiency.

* Standard in certain markets.

High-efficiency production for a wide variety of machining applications with process-intensive machining



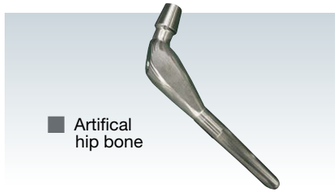
Spline machining

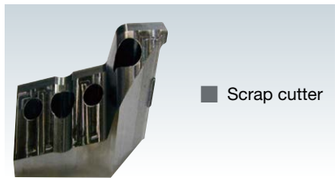
Done by mounting a hob cutter on a milling tool spindle and synchronizing it to C-axis rotation (optional hobbing function).

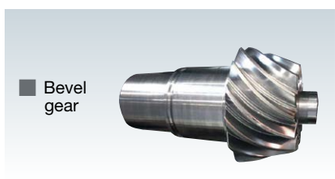
Cutting a spiral bevel gear

C-/B-axis indexing with X-Y-Z axes generated to cut a spiral bevel gear.

Workpiece samples



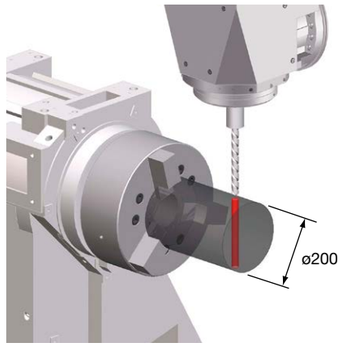




Machining examples

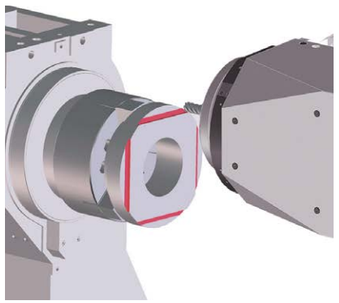
Thru-holes up to ø200 mm

Long X-axis travel makes possible side-face thru-holes in ø200 mm workpieces—without C-axis rotation. (MULTUS U4000/U5000)



Maximum □230 mm contouring

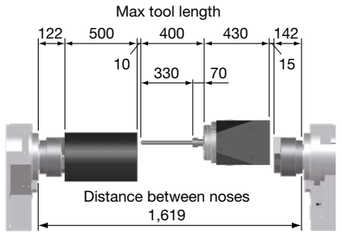
Cutting the outline of a □230 mm workpiece without C-axis rotation is also possible.
Square parts can be cut with machining-center-equivalent geometric accuracy. (MULTUS U4000/U5000)



When using a ø20 mm end mill

Deep drilling: 330 mm

With the DBC 1,000 mm machine, 500 mm long workpieces can be drilled (330 mm tool projection) to make deep holes. (MULTUS U3000 with 1SW specifications, standard main and opposing spindles)



Unit : mm

Outstanding productivity for turning and milling

Achieving highly efficient cutting of difficult-to-machine materials

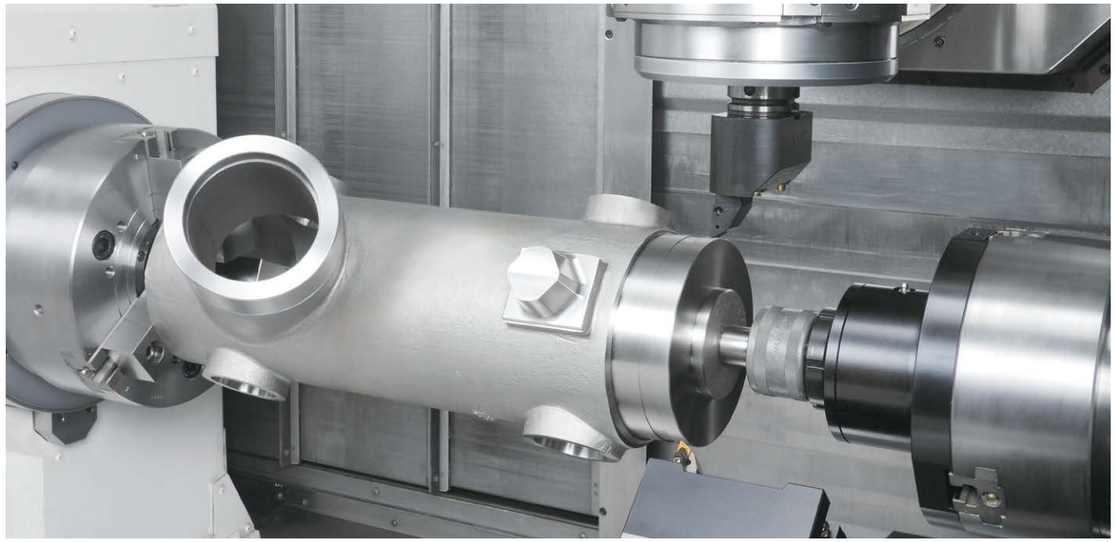
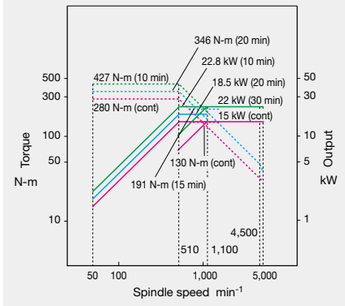


Photo shows a tailstock attachment mounted on the opposing spindle with tailstock control.

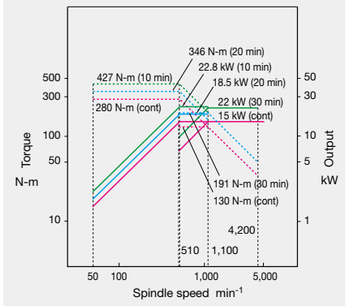
		MULTUS U3000	MULTUS U4000/MULTUS U5000
Turning		**Heavy-duty: 4.8 mm²**	**Heavy-duty: 5.0 mm²** (ø160 spindle)*
● OD (S45C)	Cutting Speed	150 m/min	150 m/min
	Cutting depth	8 mm	8 mm
	Feed rate	0.6 mm/rev	0.625 mm/rev
● Insert drill (S45C)		ø63 Throwaway	ø63 Throwaway
	Cutting Speed	150 m/min	150 m/min
	Feed rate	0.23 mm/rev	0.23 mm/rev
Milling		**Chip volume: 604 cm³/min**	**Chip volume: 604 cm³/min**
● End milling (S45C)	Tooling	ø20-mm end mill 7-flute	ø20-mm end mill 7-flute
	Cutting Speed	192 m/min	192 m/min
	Cutting depth	6.5 × 20 mm	6.5 × 20 mm
	Feed rate	1.52 mm/rev	1.52 mm/rev
	Removal Rate	604 cm³/min	604 cm³/min
● Face milling (S45C)	Tooling	ø50 milling cutter 5-flute	ø50 milling cutter 5-flute
	Cutting Speed	300 m/min	300 m/min
	Cutting depth	6 × 35 mm	6 × 35 mm
	Feed rate	2,865 mm/min	2,865 mm/min
	Removal Rate	602 cm³/min	602 cm³/min
● Insert drill (S45C)		ø50 Throwaway	ø50 Throwaway
	Cutting Speed	150 m/min	150 m/min
	Feed rate	0.12 mm/rev	0.12 mm/rev
● TAP (S45C)		M30 P3.5	M30 P3.5

* Optional on MULTUS U4000, standard on MULTUS U5000
Note: The “actual data” referred to above for this brochure represent examples, and may not be obtained due to differences in specifications, environmental conditions during measurement, tooling, cutting, and other conditions.

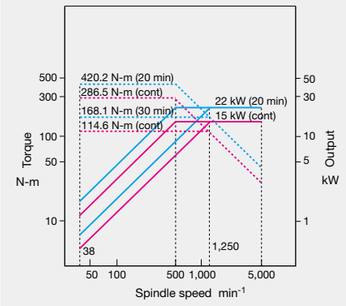
MULTUS U3000 ø120-mm Std spindle
ø120-mm Standard opposing spindle (1S)
- Spindle speed 5,000 min^{-1}
- Output 22/15 kW (30 min/cont)
- Torque 427/280 N-m (10 min/cont)



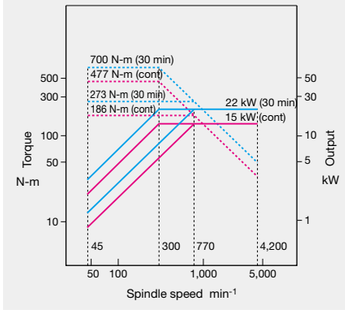
MULTUS U3000 ø140-mm Big-Bore spindle
ø120-mm Opposing big bore spindle (1S)
- Spindle speed 4,200 min^{-1}
- Output 22/15 kW (30 min/cont)
- Torque 427/280 N-m (10 min/cont)



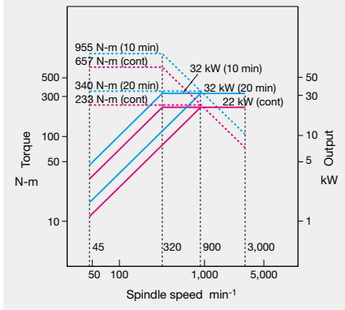
MULTUS U3000
ø100-mm Standard opposing spindle (2S)
- Spindle speed 5,000 min^{-1}
- Output 22/15 kW (20 min/cont)
- Torque 420.2/286.5 N-m (20 min/cont)



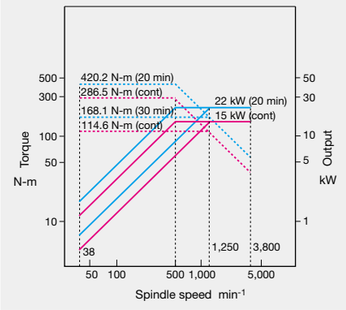
MULTUS U4000 ø140-mm Std spindle
ø140-mm Standard opposing spindle (1S)
- Spindle speed 4,200 min^{-1}
- Output 22/15 kW (30 min/cont)
- Torque 700/477 N-m (30 min/cont)



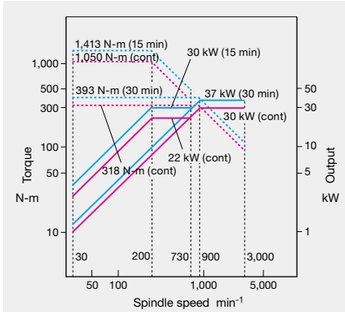
MULTUS U4000 ø160-mm Big-Bore spindle
ø160-mm Opposing big bore spindle (1S)
MULTUS U5000
ø160-mm Standard opposing spindle (1S)
- Spindle speed 3,000 min^{-1}
- Output 32/22 kW (20 min/cont)
- Torque 955/657 N-m (10 min/cont)



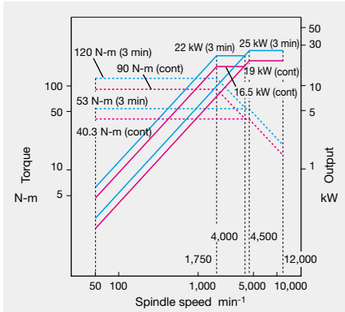
MULTUS U4000
ø120-mm Standard opposing spindle (2S)
MULTUS U5000
ø120-mm Standard opposing spindle (2S)
- Spindle speed 3,800 min^{-1}
- Output 22/15 kW (20 min/cont)
- Torque 420.2/286.5 N-m (20 min/cont)



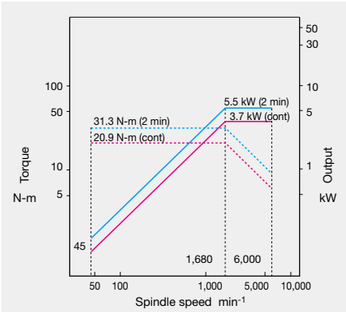
MULTUS U5000 ø160-mm Std spindle
- Spindle speed 3,000 min^{-1}
- Output 37/30 kW (30 min/cont)
- Torque 1,413/1,050 N-m (15 min/cont)



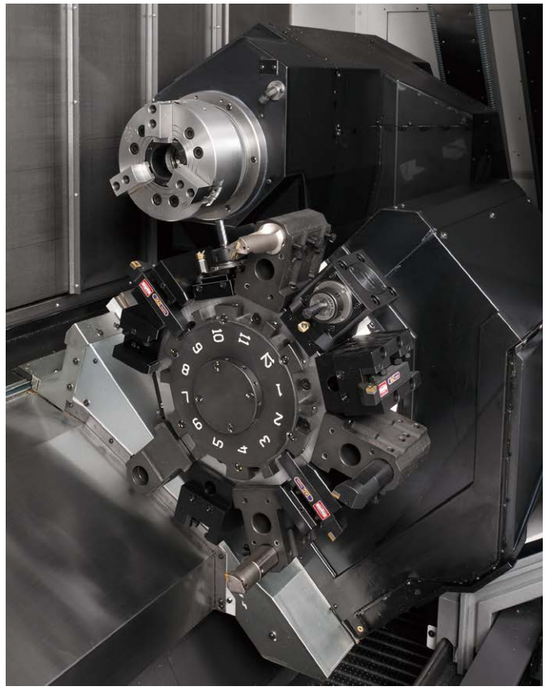
MULTUS U3000/U4000/U5000
Upper turret M-spindle
- Spindle speed 12,000 min^{-1}
- Output 25/19 kW (3 min/cont)
- Torque 120/90 N-m (3 min/cont)



MULTUS U3000/U4000/U5000
Lower turret M-spindle
- Spindle speed 6,000 min^{-1}
- Output 5.5/3.7 kW (2 min/cont)
- Torque 31.3/20.9 N-m (2 min/cont)



2 saddles for minimum cycle times



Powerful cuts from a rigid lower turret

In variable-mix, variable-volume production, cycle times can be minimized, and high productivity can be achieved with a 2-saddle machine. The lower turret is very sturdy, and supports real milling and turning jobs. (The opposing spindle capacity and working range near the opposing spindle differ with 1SW and 2SW specifications.)

■ Turning specs Lower turret

Many different types of machining are possible with 12 tools

- Turret type: V12 turret
- OD tool size: □25 mm
- Boring bar size: ø40 mm

■ Multitasking specifications Lower turret

A milling tool can be attached to the lower turret

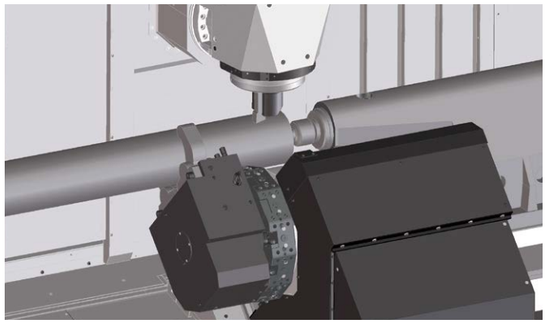
- Turret type: V12 multitasking turret
- Milling tool spindle speed: 6,000 min^{-1}
- Milling tool spindle motor: 5.5/3.7 kW (2 min/cont)

Note: With opposing spindle specifications only

Lower turret makes many types of machining possible

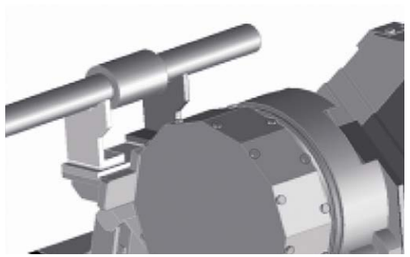
■ Steadyrest attachment (Optional)

A steadyrest can be attached to the lower turret to support the workpiece. Long or single-side clamped workpieces can then be cut with no chatter occurring.
[Turning applications turret]



■ Mounted workrest (Optional)

A workrest can also be mounted to the lower turret, to help automate workpiece load/unload operations—and reduce operator burden.



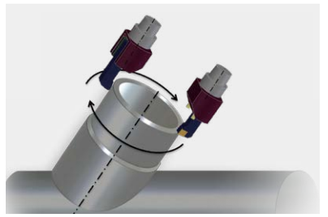
■ Tailstock attachment (Optional)

A tailstock attachment can be mounted on either side of the lower turret; facing the main spindle on the left or the opposing spindle on the right. The tailstock attachment uses a revolving center.

Achieves process-intensive machining beyond the framework of multitasking machines

Sloped axis turning
Turn-Cut (Optional)

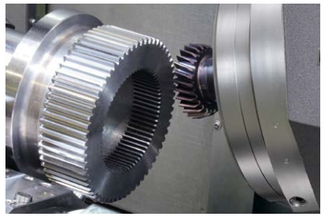
Turn-Cut is an original Okuma technology that enables turning with milling spindle. The circular turning of the feed axis and the spindle indexing angle are simultaneously controlled so that the tool edge is always facing the center of the milling spindle circular turning. Sloped axis turning can be done by sloping the B axis. Moreover, machining of any diameter can be done with a single tool. Inside and outside diameter machining that is larger than the maximum tool diameter can be done.
Note: Turn-Cut specifications require technical consultations.



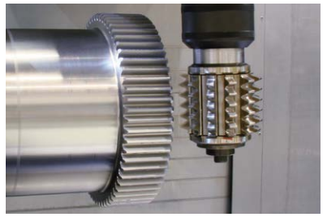
Turning can be done on a sloped axis

High accuracy gear cutting with a multitasking machine
Gear Machining Package (Optional)

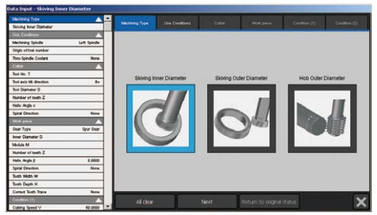
Gear cutting that previously required complex programming can now be done with ease. With easy programming, simply input the tool type, gear data, and cutting conditions to achieve highly accurate machining, reducing programming time to about one-tenth that of manual input. Process-intensive machining is achieved, including the gear cutting that used to be done on expensive special-purpose machines.



Skiving (OD/ID splines)



Hobbing



Input screen

3D measuring for multitasking machines
NC Gage (Optional)

Twenty types of geometrical accuracy, such as hole position and flatness, can be measured on the machine, greatly reducing workload before and after gauging. A program to measure the positional relationship between geometric tolerance and workpiece shape is automatically produced by teaching. Data storage of the measurement results is possible.

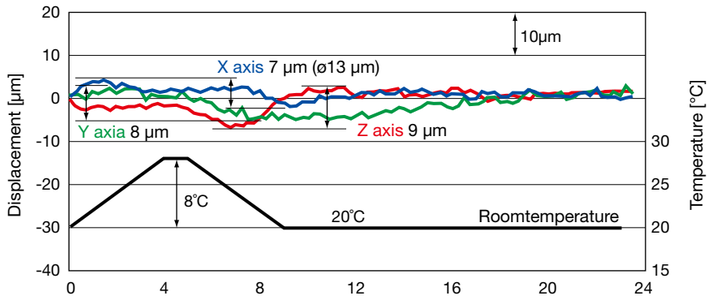
To support long and stable machining accuracies

Thermal deformation over time: less than 10 µm

Thermo-Friendly Concept

Okuma's "Thermo-friendly" concept enables remarkable machining accuracy through original structural design and thermal deformation control technology. Free from troublesome dimensional compensation and warm-up, it exhibits excellent dimensional stability even during consecutive operation over long periods and environmental temperature change in the plant.

Less than 10 µm Thermal deformation over time



[Operating conditions]

Main spindle	3,800 min^{-1}	2.5 min
Milling tool spindle	6,000 min^{-1}	6 min
	10,000 min^{-1}	6 min
Interval		0.5 min
Cycle time	Total	15 min
Coolant: Used		

Eliminate waste with the Thermo-Friendly Concept

In addition to maintaining high dimensional accuracy when room temperature changes, Okuma's Thermo-Friendly Concept provides high dimensional accuracy during machine startup and machining restart.
To stabilize thermal deformation, warming-up time is shortened and the burden of dimensional correction during machining restart is reduced.

Machine startup
Machining restart
Room temp change

High dimensional stability

TAS-C

(Thermo Active Stabilizer-Construction)
The machine is optimally controlled and machining accuracy is maintained when the ambient temperature changes.

TAS-S

(Thermo Active Stabilizer-Spindle)
Even when the spindle speed changes frequently, the thermal deformation of the milling tool spindle is accurately controlled.

Gauging and compensation of geometric error

5-Axis Auto Tuning System (Optional)

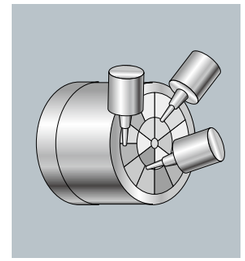
On multitasking machines there is "geometric error," such as spindle misalignment, that have huge effects on machining accuracy. The 5-Axis Auto Tuning System measures geometric error with a touch probe and datum sphere, and tunes multitasking machines for better operating accuracy through compensation control using the measurement results. This helps to achieve a higher level of 5-axis machining accuracy.*

Manual adjustment without 5-AATS
Machining surface error
Max 25 µm

After using 5-AATS
Max 10 µm
(Actual data with MULTUS U4000)

In multi-sided machining with tools inclined at different angles for each surface, accuracy is improved after use of the 5-Axis Auto Tuning System.

Note: May not be available for certain specifications.



Anyone can automatically check for geometric error quickly and easily

Manual measurement and adjustment of geometric error is bothersome and time-consuming. The 5-Axis Auto Tuning System conducts automatic tuning to correct geometric error in a short time.

Start of tuning

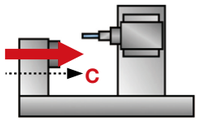
Set datum sphere on the chuck and move probe directly above it

Press START MEASURE key and cycle start button

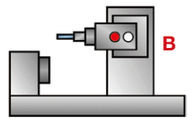
Auto measurement and then auto setting of compensation parameters

Tuning complete

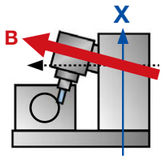
●Examples of geometric error



Misalignment of C-axis centerline and X-axis



Positional error of B-axis unit along the Z-axis

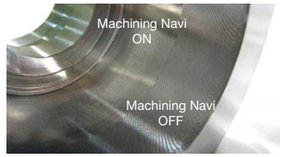


Perpendicularity of B-axis unit to X-axis

Maximizing machine tool performance

Machining Navi Cutting Conditions Search Function (Optional)

With optimal cutting conditions: longer tool life, shorter cycle time



Machining Navi instantly searches for the optimum cutting conditions and “visualizes” the machining status to help maximize machine and tooling capabilities, and provide improvements in productivity.

For turning

Chatter-free applications for lathes

Machining Navi L-*g* II (guidance)

Chatter in during turning can be suppressed by changing spindle speeds to the ideal amplitude and wave cycle.

Threading chatter can be easily controlled by anyone

Machining Navi T-*g* (threading)

In the threading cycle, chatter during threading is controlled through appropriate change of the spindle speed in each pass.

For milling

Adjust cutting conditions while monitoring the data

Machining Navi M-*g* II +

(Optimum spindle speed/harmonic spindle speed control)

From chatter noise picked up by the microphone, Machining Navi will display the best options for chatter-free spindle speed. The operator can select a recommended speed and immediately confirm the result.

Simple, auto-mode—leave it to the machine
Finding optimum cutting conditions quickly

Machining Navi M-*i*

(Intelligently optimized spindle speed control)

Chatter vibration is measured by built-in sensors, and spindle speed is automatically changed to the optimum speed. In addition, advanced graphics of the optimal cutting conditions represent effective alternatives to suppress various chatter characteristics throughout the low to high speed zones.

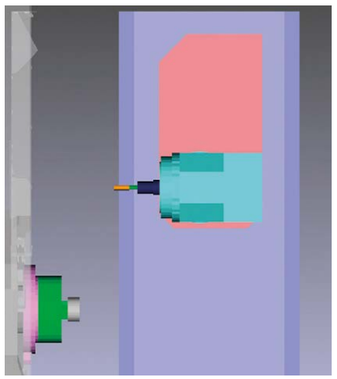
Collision Avoidance System

Setup, trial cut times reduced by 40%—preventing collisions

NC controller (OSP) with 3D model data of machine components—workpiece, tool, chuck, fixture, headstock, turret, tailstock—performs real time simulation just ahead of actual machine movements. It checks for interference or collisions, and stops the machine movement immediately before collision. Machinists (novice or pro) will benefit from reduced setup and trial machining times, and the confidence to focus on making parts. Troublesome settings eliminated. With easy tool preps, you can use the preset tool data just as it is.

Eliminate collision-related machine down time

When a multitasking machine breaks down, both L and M machining stop; causing large productivity losses. The Collision Avoidance System simply prevents this problem from occurring.



Virtual machine (advance simulation)

Actual machine

Shorter lead-times with easy first part machining

With keyboard operations reduced by: 1/2

For multitasking machines that handle high-mix low volume production, the Okuma Control considerably reduces the cost and time required to perform first-part trial cuts. Tool preparations, forming soft-jaws, zero offsets, all of the related machining preps required for the job can be done much easier simply because the CNC was produced by a machine tool manufacturer who has the experience and know-how to reduce keyboard input operations by half compared with the previous control.

Easy tool preparations

Just after loading a tool in the machine, simply select it from among the registered tools.
ATC manual operation does not require inputting the tool number.
Just select the tool from the list and press the function key.
(Touch Setter is optional.)

Define machining requirements

Forming soft jaws

Easy zero offsets and machining starts

A simple function key operation is all it takes to shift a zero offset to either the left or right end of a workpiece. The required zero offset will be calculated automatically based on jaw and workpiece lengths. (when the tool offset is set with reference to the turret tool mounting surface)

Work load reduced by operator-friendly designing

Eliminates troublesome tool checks

Tools can be easily and quickly loaded from the machine front; freeing the operator for other production tasks.

Reduced setup times

With considerably improved access to the spindle, and easier workpiece loading/unloading.

Maintenance

Service functions are concentrated in the maintenance area on the front side of the machine—a machine layout designed to make daily inspections easier.

OSP suite OSP-P300SA

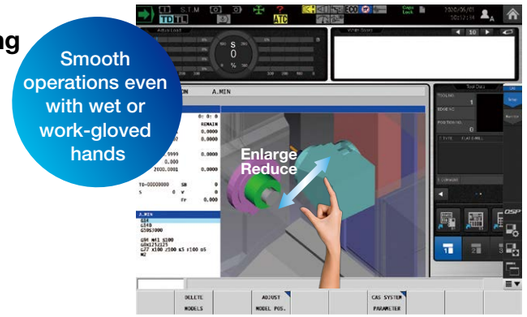
The Next-Generation Intelligent CNC

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

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

Smooth, comfortable operation with the feeling of using a 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: 19-in. operation panel (Optional) screen shots. 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.

Spindle Output Monitor
S11

Increased productivity through visualization of motor power reserve

The specified spindle output (red line: short time rating, green line: continuous rating) and the spindle output in current cutting (blue circle) are simultaneously displayed on the screen, for real-time view of power reserve during cutting. This allows speeding up cutting by increasing the spindle speed or feed rate while monitoring the graph to ensure that the blue circle does not cross the lines.

Scheduled Program Editor
SDF S10

Easy programming without keying in code

E-mail Notification
S15

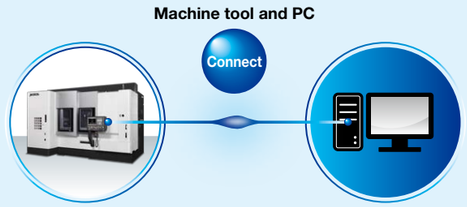
Monitoring utilization status even when away from the machine

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.



ECO suite

Next-Generation Energy-Saving System

Machine tool idling stop
ECO Idling Stop
Machine itself determines when to stop. Cooler is turned off while high accuracy is still maintained

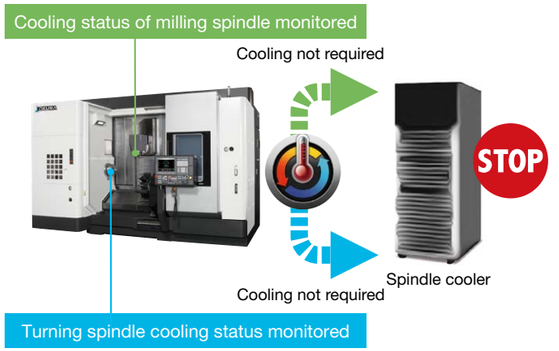
See energy-saving benefits right at the machine
ECO Power Monitor
Visual graphic of power consumption raises awareness of energy usage

Peripheral equipment runs only in the necessary amount and at the necessary time
ECO Operation (Optional)
Intermittent/linked operation of chip conveyor, or mist collector during machining

ECO Idling Stop

Accuracy ensured, cooler off

Intelligent energy-saving function with the Thermo-Friendly Concept. The machine itself determines whether or not cooling is needed and cooler idling is stopped with no loss to accuracy. (Standard application on machines with TAS-S/H1)

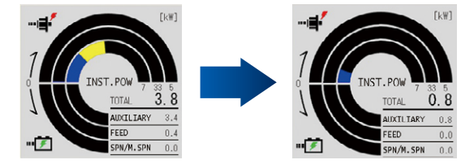


ECO Power Monitor

On-the-spot check of energy savings

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

● Power Monitor confirmation example

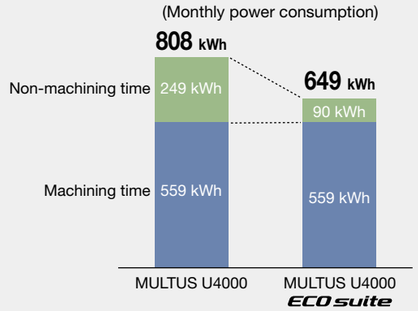


Before ECO Idling Stop — After ECO Idling Stop

The indicated values are one example.

Reduction in power consumption (example)

● Operating time 94 h, Non-operating time 66 h, Total 160 h (8 × 20 days)



Effects of ECO suite

Energy consumption during non-machining time greatly reduced with "ECO Idling Stop," which shuts down each piece of peripheral equipment not in use.

(Non-cutting time)

159 kWh (64%) reduction!

*ECO Idling Stop

*Calculated from actual power consumption data. Power consumption will differ depending on machine specifications and usage status.

Machine Specifications

Item			MULTUS U3000							
			1SC		1SW		2SC		2SW	
			1000	1500	1000	1500	1000	1500	1000	1500
Capacity	Swing over saddle	mm (in)	ø650 (25.59)				Upper: ø650 (25.59), Lower: ø320 (12.60)			
	Distance between centers	mm (in)	1,000 (39.37)	1,500 (59.06)	1,000 (39.37)	1,500 (59.06)	1,000 (39.37)	1,500 (59.06)	1,000 (39.37)	1,500 (59.06)
	Max machining dia	mm (in)	ø650 (25.59)				Upper: ø650 (25.59)*1, Lower: ø320 (12.60)			
	Max machining length	mm (in)	1,000 (39.37)	1,500 (59.06)	1,000 (39.37)	1,500 (59.06)	1,000 (39.37)	1,500 (59.06)	1,000 (39.37)	1,500 (59.06)
Travels	X axis	mm (in)	645 (25.39)				Upper: 645 (25.39), Lower: 235 (9.25)			
	Z axis	upper: mm (in)	1,100 (43.31)	1,600 (62.99)	1,100 (43.31)	1,600 (62.99)	1,100 (43.31)	1,600 (62.99)	1,100 (43.31)	1,600 (62.99)
		lower: mm (in)	–				961 (37.83)	1,461 (57.52)	1,100 (43.31)	1,584 (62.36)
	Y axis	mm (in)	250 (9.84) (±125 (4.92))							
	W axis	mm (in)	–		1,325 (52.17)	1,594 (62.76)	–		1,100 (43.31)	1,584 (62.36)
	B-axis / indexing angle	degree	–30 to +210 (min controlled angle 0.001)							
	C-axis / indexing angle	degree	360 (min controlled angle 0.0001)							
Spindle	Speed	min^{-1}	50 to 5,000							
	Speed ranges		2 auto ranges (2-speed motor coil switching)							
	Nose shape		JIS A2-6							
	Taper bore	mm (in)	ø80 (3.15)							
	Bearing dia	mm (in)	ø120 (4.72)							
Opposing spindle *	Speed	min^{-1}	–		50 to 5,000		–		38 to 5,000	
	Speed ranges		–		2 auto ranges (2-speed motor coil switching)		–		2 auto ranges (2-speed motor coil switching)	
	Nose shape		–		JIS A2-6		–		JIS A2-6	
	Taper bore	mm (in)	–		ø80 (3.15)		–		ø62 (2.44)	
	Bearing dia	mm (in)	–		ø120 (4.72)		–		ø100 (3.94)	
Turret (tool spindle)	Type		H1				Upper: H1, Lower: V12			
	No. of tools		L / M: 1				Upper: L / M: 1, Lower: 12			
	Tool shank dimensions	mm (in)	□25 (1 × 1)							
	ID tool shank diameter	mm (in)	ø40 (1-1/2)							
	Milling tool spindle	min^{-1}	Upper: 50 to 12,000							
	Milling tool spindle speed ranges		Upper: 2 auto ranges (2-speed motor coil switching)							
Feed rates	X, Z, Y axes	upper: m/min	X: 50, Z: 50, Y: 40							
		lower: m/min	–				X: 25, Z: 40			
	W-axis	m/min	20 (tailstock)	12 (tailstock)	30		20 (tailstock)	12 (tailstock)	30	
	C, B axes	min^{-1}	C: 200, B: 30							
Tailstock	Tapered bore		MT No. 5 (revolving center)		–		MT No. 5 (revolving center)		–	
	Travel	mm (in)	1,186 (46.69)	1,594 (62.76)	–		961 (37.83)	1,359.5 (53.52)	–	
ATC	Tool shank		HSK-A63							
	No. of tools	tools	40							
	Max tool dia	mm (in)	ø90 (3.54) (w/o adjacent tools: ø130 (5.12))							
	Max tool length	mm (in)	400 (15.75) (from gauge line)							
	Max tool mass	kg (lb)	10 (22)							
Motor	Main spindle motor	kW (hp)	22/15 (30/20) (30 min/cont)							
	Opposing spindle motor	kW (hp)	–		22/15 (30/20) (30 min/cont)		–		22/15 (30/20) (20 min/cont)	
	Milling tool spindle motor	kW (hp)	25/19 (33/25) (3 min/cont)							
	X-, Z-, Y-, B-axis motors	kW (hp)	X: 5.2, Z: 4.6, Y: 3.5, B: 3.0 (X: 6.9, Z: 6.1, Y: 4.7, B: 4.0)				XA: 5.2, ZA: 4.6, Y: 3.5, B: 3.0 (XA: 6.9, ZA: 6.1, Y: 4.7, B: 4.0) XB: 3.5, ZB: 3.5 (XB: 4.7, ZB: 4.7) (DBC 1,000)/ 4.6 (6.1) (DBC 1,500)			
	W-axis motor	kW (hp)	2.8 (3.7) (tailstock)		3.5 (4.7)	4.6 (6.1)	2.8 (3.7) (tailstock)		3.5 (4.7)	4.6 (6.1)
	Coolant motor (50Hz/60Hz)	kW (hp)	0.25/0.25 (0.33/0.33)×1, 0.55/0.75 (0.73/1.0)×3							
Machine size	Height	mm (in)	2,955 (116.34)				3,030 (119.29)			
	Floor space W × D (tank included)	mm × mm (in)	DBC 1,000: 4,925 × 2,995 (193.90 × 117.91) DBC 1,500: 5,425 × 2,995 (213.58 × 117.91)				DBC 1,000: 4,925 × 3,018 (193.90 × 118.82) DBC 1,500: 5,425 × 3,082 (213.58 × 121.34)			
	Mass	kg (lb)	DBC 1,000: 15,500 (34,100) DBC 1,500: 16,500 (36,300)				DBC 1,000: 16,500 (36,300) DBC 1,500: 17,500 (38,500)			
CNC			OSP-P300SA							

MULTUS U4000							
1SC		1SW		2SC		2SW	
1500	2000	1500	2000	1500	2000	1500	2000
ø650 (25.59)				Upper: ø650 (25.59), Lower: ø320 (12.60)			
1,500 (59.06)	2,000 (78.74)	1,500 (59.06)	2,000 (78.74)	1,500 (59.06)	2,000 (78.74)	1,500 (59.06)	2,000 (78.74)
ø650 (25.59)				Upper: ø650 (25.59)*1, Lower: ø320 (12.60)			
1,500 (59.06)	2,000 (78.74)	1,500 (59.06)	2,000 (78.74)	1,500 (59.06)	2,000 (78.74)	1,500 (59.06)	2,000 (78.74)
695 (27.36)				Upper: 695 (27.36), Lower: 235 (9.25)			
1,600 (62.99)	2,100 (82.68)	1,600 (62.99)	2,100 (82.68)	1,600 (62.99)	2,100 (82.68)	1,600 (62.99)	2,100 (82.68)
–				1,461 (57.52)	1,961 (77.20)	1,524*2 (60.00)	2,045*3 (80.51)
300 (11.81) (±150 (5.91))							
–		1,554 (61.18)	2,054 (80.87)	–		1,524*2 (60.00)	2,024*3 (79.69)
–30 to +210 (min controlled angle 0.001)							
360 (min controlled angle 0.0001)							
45 to 4,200							
2 auto ranges (2-speed motor coil switching)							
JIS A2-8							
ø91 (3.58)							
ø140 (5.51)							
–		45 to 4,200		–		38 to 3,800	
–		2 auto ranges (2-speed motor coil switching)		–		2 auto ranges (2-speed motor coil switching)	
–		JIS A2-8		–		JIS A2-8	
–		ø91 (3.58)		–		ø80 (3.15)	
–		ø140 (5.51)		–		ø120 (4.72)	
H1				H1, Lower: V12		Upper: H1, Lower: V12	
L / M: 1				Upper: L / M: 1, Lower: 12			
□25 (1 × 1)							
ø40 (1-1/2)							
Upper: 50 to 12,000							
Upper: 2 auto ranges (2-speed motor coil switching)							
X: 50, Z: 50, Y: 40	X: 50, Z: 40, Y: 40	X: 50, Z: 50, Y: 40	X: 50, Z: 40, Y: 40	X: 50, Z: 50, Y: 40	X: 50, Z: 40, Y: 40	X: 50, Z: 50, Y: 40	X: 50, Z: 40, Y: 40
–				X: 25, Z: 40	X: 25, Z: 30	X: 25, Z: 40	X: 25, Z: 30
12 (tailstock)		30	20	12 (tailstock)		30	20
C: 200, B: 30							
MT No. 5 (revolving center)		–		MT No. 5 (revolving center)		–	
1,594 (62.76)	2,094 (82.44)	–		1,359.5 (53.52)	1,961 (77.20)	–	
HSK-A63							
40							
ø90 (3.54) (w/o adjacent tools: ø130 (5.12))							
400 (15.75) (from gauge line)							
10 (22)							
22/15 (30/20) (30 min/cont)							
–		22/15 (30/20) (30 min/cont)		–		22/15 (30/20) (20 min/cont)	
25/19 (33/25) (3 min/cont)							
X: 5.2, Z: 4.6 (X: 6.9, Z: 6.1) (DBC 1,500)/ 5.2 (6.9) (DBC 2,000), Y: 3.5 (4.7), B: 3.0 (4.0)				XA: 5.2, ZA: 4.6 (DBC 1,500), /5.2 (DBC 2,000) (XA: 6.9, ZA: 6.1 (DBC 1,500), /6.9 (DBC 2,000)) XB: 3.5, ZB: 4.6, Y: 3.5, B: 3.0 (XB: 4.7, ZB: 6.1, Y: 4.7, B: 4.0)			
2.8 (3.7) (tailstock)		4.6 (6.1)		2.8 (3.7) (tailstock)		4.6 (6.1)	
0.25/0.25 (0.33/0.33)×1, 0.55/0.75 (0.73/1.0)×3							
2,955 (116.34)				3,030 (119.29)			
DBC 1,500: 5,425 × 2,995 (213.58 × 117.91) DBC 2,000: 6,175 × 2,995 (243.11 × 117.91)				DBC 1,500: 5,425 × 3,082 (213.58 × 121.34) DBC 2,000: 6,175 × 3,082 (243.11 × 121.34)			
DBC 1,500: 17,000 (37,400) DBC 2,000: 19,000 (41,800)				DBC 1,500: 18,000 (39,600) DBC 2,000: 20,000 (44,000)			
OSP-P300SA							

*1: ø320 (swing over lower turret) during shaft work and when machining with opposing spindles.
*2: In the main Big-Bore spindle, it will be 1,500.
*3: In the main Big-Bore spindle, it will be 2,000.
*: The opposing spindle capacity and working range near the opposing spindle differ with 1SW and 2SW specifications.

Machine Specifications

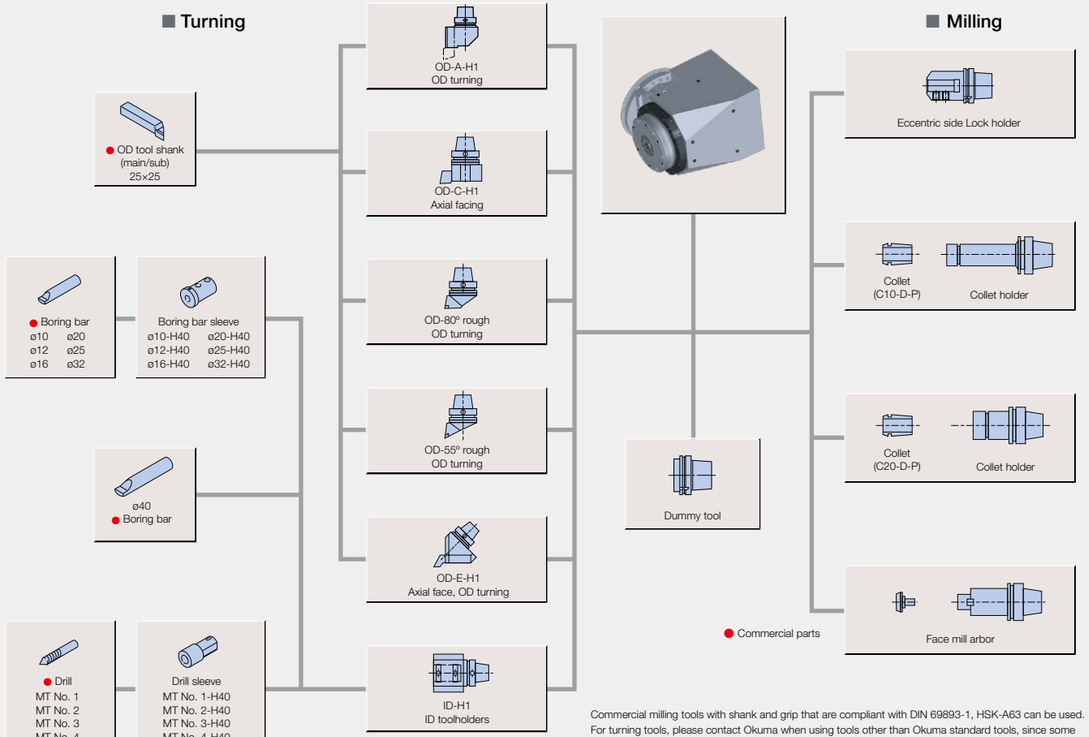
Item			MULTUS U5000							
			1SC		1SW		2SC		2SW	
			1500	2000	1500	2000	1500	2000	1500	2000
Capacity	Swing over saddle	mm (in)	ø650 (25.59)				Upper: ø650 (25.59), Lower: ø320 (12.60)			
	Distance between centers	mm (in)	1,500 (59.06)	2,000 (78.74)	1,500 (59.06)	2,000 (78.74)	1,500 (59.06)	2,000 (78.74)	1,500 (59.06)	2,000 (78.74)
	Max machining dia	mm (in)	ø650 (25.59)				Upper: ø650 (25.59)*1, Lower: ø320 (12.60)			
	Max machining length	mm (in)	1,500 (59.06)	2,000 (78.74)	1,500 (59.06)	2,000 (78.74)	1,500 (59.06)	2,000 (78.74)	1,500 (59.06)	2,000 (78.74)
Travels	X axis	mm (in)	695 (27.36)				Upper: 695 (27.36), Lower: 235 (9.25)			
	Z axis	upper: mm (in)	1,600 (62.99)	2,100 (82.68)	1,600 (62.99)	2,100 (82.68)	1,600 (62.99)	2,100 (82.68)	1,600 (62.99)	2,100 (82.68)
		lower: mm (in)	–				1,461 (57.52)	1,961 (77.20)	1,524 (60.00)	2,024 (79.69)
	Y axis	mm (in)	300 (11.81) (±150 (5.91))							
	W axis	mm (in)	–		1,554 (61.18)	2,054 (80.87)	–		1,500 (59.06)	2,000 (78.74)
	B-axis / indexing angle	degree	–30 to +210 (min controlled angle 0.001)							
	C-axis / indexing angle	degree	360 (min controlled angle 0.0001)							
Spindle	Speed	min^{-1}	30 to 3,000							
	Speed ranges		2 auto ranges (2-speed motor coil switching)							
	Nose shape		JIS A2-11							
	Taper bore	mm (in)	ø112 (4.41)							
	Bearing dia	mm (in)	ø160 (6.30)							
Opposing spindle *	Speed	min^{-1}	–		30 to 3,000		–		38 to 3,800	
	Speed ranges		–		2 auto ranges (2-speed motor coil switching)		–		2 auto ranges (2-speed motor coil switching)	
	Nose shape		–		JIS A2-11		–		JIS A2-8	
	Taper bore	mm (in)	–		ø112 (4.41)		–		ø80 (3.15)	
	Bearing dia	mm (in)	–		ø160 (6.30)		–		ø120 (4.72)	
Turret (tool spindle)	Type		H1				H1, Lower: V12			
	No. of tools		L / M: 1				Upper: L / M: 1, Lower: 12			
	Tool shank dimensions	mm (in)	□25 (1 × 1)							
	ID tool shank diameter	mm (in)	ø40 (1-1/2)							
	Milling tool spindle	min^{-1}	Upper: 50 to 12,000							
	Milling tool spindle speed ranges		Upper: 2 auto ranges (2-speed motor coil switching)							
Feed rates	X, Z, Y axes	upper: m/min	X: 50, Z: 50, Y: 40	X: 50, Z: 40, Y: 40	X: 50, Z: 50, Y: 40	X: 50, Z: 40, Y: 40	X: 50, Z: 50, Y: 40	X: 50, Z: 40, Y: 40	X: 50, Z: 50, Y: 40	X: 50, Z: 40, Y: 40
		lower: m/min	–				X: 25, Z: 40	X: 25, Z: 30	X: 25, Z: 40	X: 25, Z: 30
	W-axis	m/min	8 (tailstock)		30	20	8 (tailstock)		30	20
	C, B axes	min^{-1}	C: 200, B: 30							
Tailstock	Tapered bore		MT No. 5 (Built-in)		–		MT No. 5 (Built-in)		–	
	Travel	mm (in)	1,554 (61.18)	2,054 (80.87)	–		1,359.5 (53.52)	1,961 (77.20)	–	
ATC	Tool shank		HSK-A63							
	No. of tools	tools	40							
	Max tool dia	mm (in)	ø90 (3.54) (w/o adjacent tools: ø130 (5.12))							
	Max tool length	mm (in)	400 (15.75) (from gauge line)							
	Max tool mass	kg (lb)	10 (22)							
Motor	Main spindle motor	kW (hp)	37/30 (49/40) (30 min/cont)							
	Opposing spindle motor	kW (hp)	–		32/22 (42/30) (20 min/cont)		–		22/15/11 (30/20/15) (20 min/cont)	
	Milling tool spindle motor	kW (hp)	25/19 (33/25) (3 min/cont)							
	X-, Z-, Y-, B-axis motors	kW (hp)	X: 5.2, Z: 4.6 (DBC 1,500) /5.2 (DBC 2,000) (X: 6.9, Z: 6.1 (DBC 1,500) /6.9 (DBC 2,000)) Y: 3.5, B: 3.0 (Y: 4.7, B: 4.0)				XA: 5.2, ZA: 4.6 (DBC 1,500), /5.2 (DBC 2,000) (XA: 6.9, ZA: 6.1 (DBC 1,500), /6.9 (DBC 2,000)) XB: 3.5, ZB: 4.6, Y: 3.5, B: 3.0 (XB: 4.7, ZB: 6.1, Y: 4.7, B: 4.0)			
	W-axis motor	kW (hp)	2.8 (3.7) (tailstock)		4.6 (6.1)		2.8 (3.7) (tailstock)		4.6 (6.1)	
	Coolant motor (50Hz/60Hz)	kW (hp)	0.25/0.25 (0.33/0.33) × 1, 0.55/0.75 (0.73/1.0) ×3							
Machine size	Height	mm (in)	2,955 (116.34)				3,030 (119.29)			
	Floor space W × D (tank included)	mm × mm (in)	DBC 1,500: 5,530 × 2,995 (217.72 × 117.91) DBC 2,000: 6,280 × 2,995 (247.24 × 117.91)				DBC 1,500: 5,530 × 3,082 (217.72 × 121.34) DBC 2,000: 6,280 × 3,082 (247.24 × 121.34)			
	Mass	kg (lb)	DBC 1,500: 17,300 (38,060) DBC 2,000: 19,300 (42,460)				DBC 1,500: 18,300 (40,260) DBC 2,000: 20,300 (44,660)			
			OSP-P300SA							

*1: ø320 (swing over lower turret) during shaft work and when machining with opposing spindles.
*: The opposing spindle capacity and working range near the opposing spindle differ with 1SW and 2SW specifications.

Optional Specifications

Big-Bore spindle	MULTUS U3000	4,200 min^{-1} A2-8 ø140 22/15 kW (30 min/cont)
	MULTUS U4000	3,000 min^{-1} A2-11 ø160 32/22 kW (20 min/cont)
Opposing spindle	MULTUS U3000	1S Big-Bore 4,200 min^{-1} A2-8 ø140 22/15 kW (30 min/cont)
	MULTUS U4000	1S Big-Bore 3,000 min^{-1} A2-11 ø160 32/22 kW (20 min/cont)
B-axis indexing		NC B-axis
Lower turret		V12 multitasking 6,000 min^{-1} PREX 5.5/3.7 kW (2 min/cont)
High pressure coolant		Upper turret, upper + lower turret
Tailstock		Hydraulic quill (self-propelled) (Standard with 2S)
Tailstock sleeve system		Built-in type MT No. 4
Tool shank profile		CAPTO C6
ATC tool magazine capacity		80 tools, 120 tools, 180 tools (matrix)
Chip conveyor		Drum filter type, hinge type, scraper type
Conveyor-related options		Chip conveyor torque limiter (alarm C at detection), intermittent feed chip conveyor, machine linked chip conveyor
Chip buckets		L type, H type
Coolant sludge prevention		Oil skimmer mounted
High pressure coolant unit		7 MPa
Turret coolant high/low pressure switch		L/M thru high/low pressure switch, M peripheral low pressure; L/M thru high/low pressure switch; M peripheral high/low pressure switch
Lower turret coolant high/low pressure switch		
Lubrication monitor		B-2 (w/ warning lamp)
Cover-related options		Upper door auto open/close, front door auto open/close, auto open/close on both upper + front door
Front cover auto open/close safety devices		Safety tape switch
Dual palm start buttons (door close interlock)		
Front cover open/close inching		
Chuck auto open/close confirm		Chuck auto open/close confirm, chuck high/low pressure switch (re-gripping) (main, opposing), chucking miss detection (main, opposing)
Tailstock-related options		Tailstock quill auto advance/retract confirmation, tailstock thrust high/low switch
Opposing spindle tailstock control		
Air blower (blast) options		Chuck air blower, tailstock air blower, spindle ID air blower (main, opposing) Turret air blower (L/M thru-spindle during rotation only, L/M thru-spindle during rotation/M periphery, M periphery only) Lower turret air blower (internal piping, common coolant nozzle)
Coolant-related options		Shower coolant (main/opposing: A, B), thru-spindle coolant (main/opposing: A, B), ceiling shower coolant (A, B)
Dust-proofing		Spindle air purge (main, opposing), guideway double wiper (X + Y + Z, X + Y + Z + Xb + Zb) Ball screw double wiper (X + Y + Z, X + Y + Z + Xb + Zb)
5-Axis Auto Tuning System		Standard kit, High spec kit
NC Gage		Standard kit, High spec kit
In-process work gauging		Renishaw
Touch Setter		M (manual), A (auto)
Workrest		
Work stopper in spindle		
Chuck internal sizing stopper		Main, opposing
Additional coolant pump		0.8 kW
Coolant tank		Thickener bags, line filter, backwashing filter
Coolant sensor		Level detection, flow sensor, Level + flow sensor
Coolant gun mounted		
Steadyrest		1S: Self-propelled (no relieving), 2S: lower turret, lower cross-slide
Mist collector		
High accuracy options		AbsoScale (Xa-axis, Xb-axis, Ya-axis, Za-axis), temperature regulator (coolant, hydraulic oil, spindle temperature)
Bar feeder		
Work sizing stopper		Upper turret, lower turret
Parts catcher-related options		Main spindle side eject, opposing spindle side eject, Workpiece ejector (spring type, air type) Workpiece eject conveyor (finished parts right eject)
Workpiece unloader		
Gantry loader		OGL10-P, OGL30-P, OGL50-P
CNC		High class (B-axis contouring)

Upper Turret Tooling System (HSK-A63)

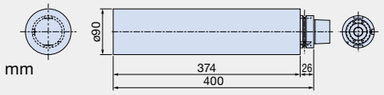


Commercial milling tools with shank and grip that are compliant with DIN 69893-1, HSK-A63 can be used. For turning tools, please contact Okuma when using tools other than Okuma standard tools, since some dimensions are specially designed to improve fitting accuracy.
Outside toolholders A and C are for large diameter tools, and require empty adjacent tool pots when stored in the tool magazine.

Max Tool Dimensions

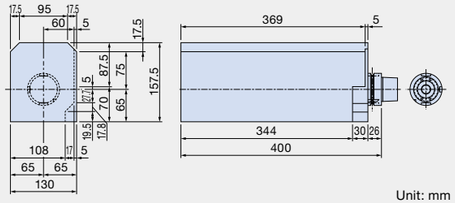
Standard tool

ø90 × 400 mm
10 kg



Unit: mm

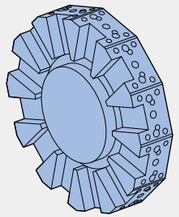
Super big dia tool



Unit: mm

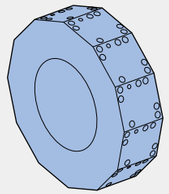
Lower turret for each specification

2SC specs, lower turret L



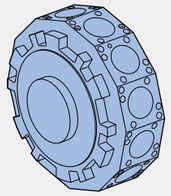
Lower V12 turret (L direct mounting)
(400 across flats)

2SW specs, lower turret L



Lower V12 turret (L radial)
(340 across flats)

2SW specs, lower turret M

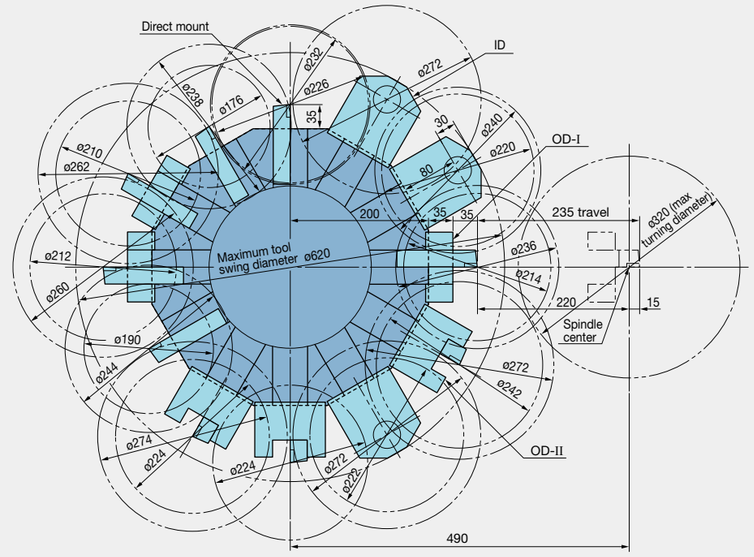


Lower V12 turret (M radial)
(340 across flats)

*Lower turret multitasking is only with opposing spindle specifications

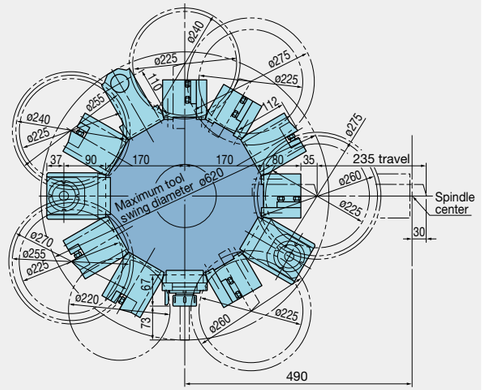
Lower turret tool interference drawing

2SC specs lower turret L OD toolholder



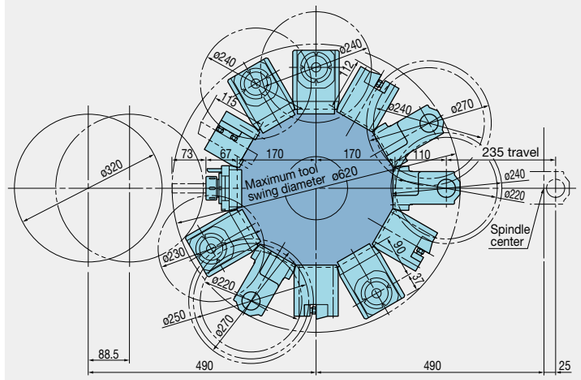
Unit: mm

2SW specs lower turret M OD toolholder



Unit: mm

2SW specs lower turret M ID toolholder



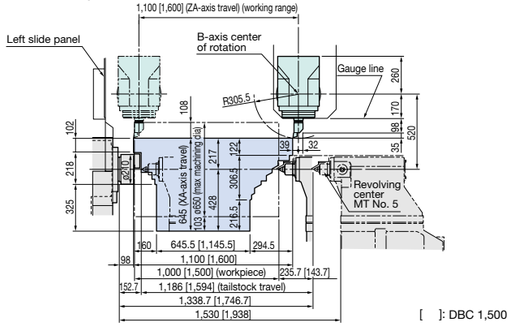
Unit: mm

■ Working Range

MULTUS U3000 1SC (DBC: 1,000, 1,500)

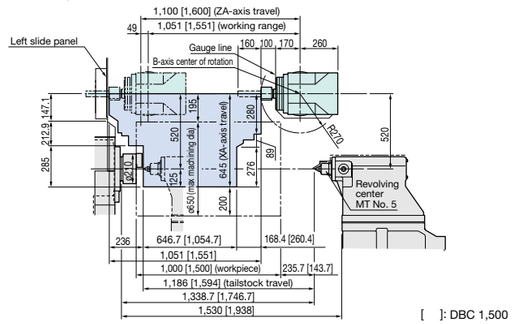
Unit: mm

OD-A, Main spindle



[ ]: DBC 1,500

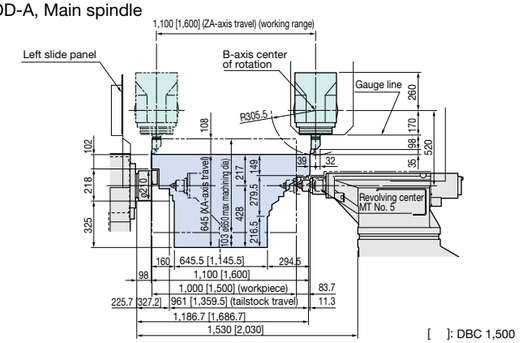
ID, Main spindle



[ ]: DBC 1,500

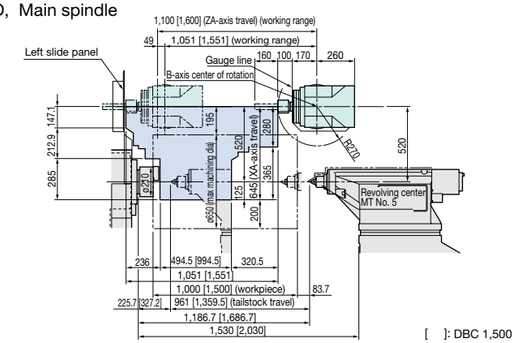
MULTUS U3000 2SC (DBC: 1,000, 1,500)

OD-A, Main spindle



[ ]: DBC 1,500

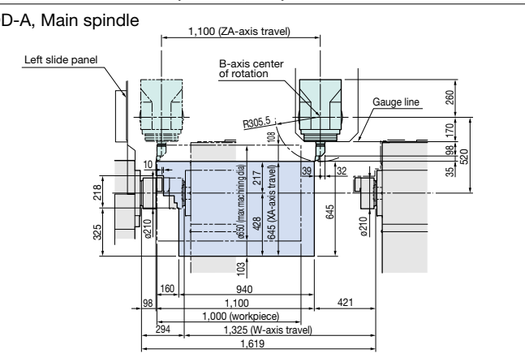
ID, Main spindle



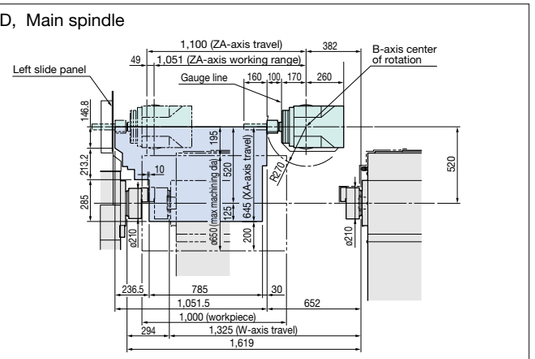
[ ]: DBC 1,500

MULTUS U3000 1SW (DBC: 1,000)

OD-A, Main spindle

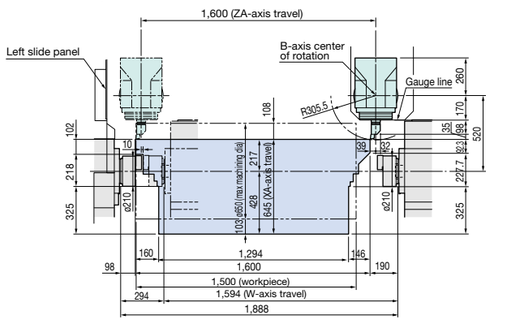


ID, Main spindle

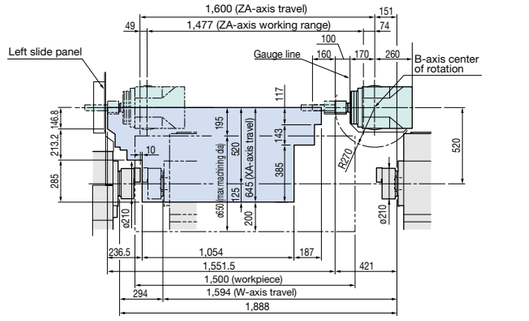


MULTUS U3000 1SW (DBC: 1,500)

OD-A, Main spindle



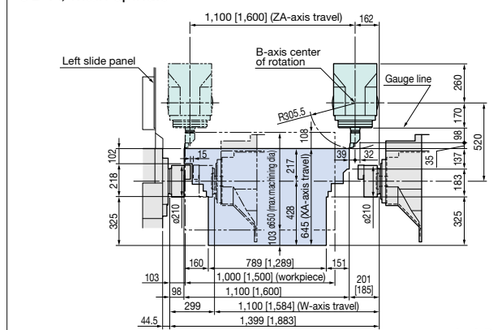
ID, Main spindle



MULTUS U3000 2SW (DBC: 1,000, 1,500)

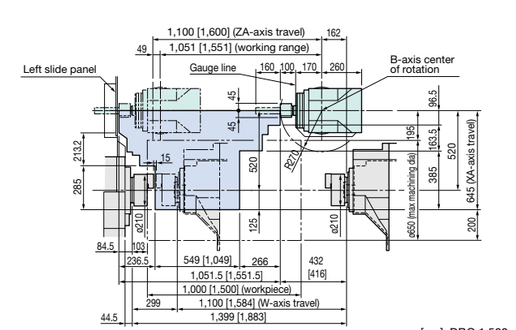
Unit: mm

OD-A, Main spindle



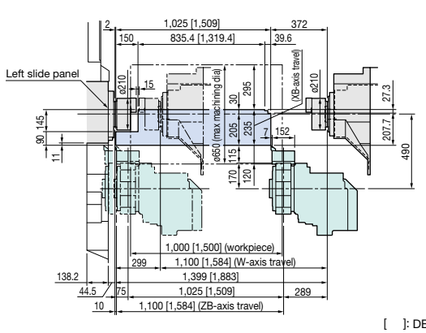
[ ]: DBC 1,500

ID, Main spindle



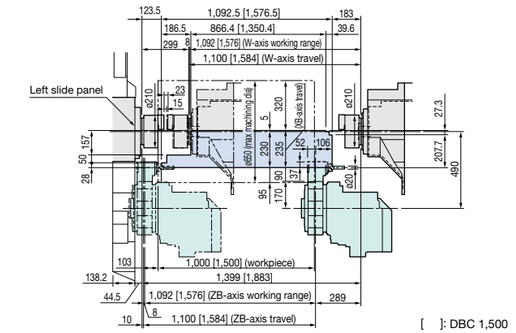
[ ]: DBC 1,500

Lower Turret, OD-I



[ ]: DBC 1,500

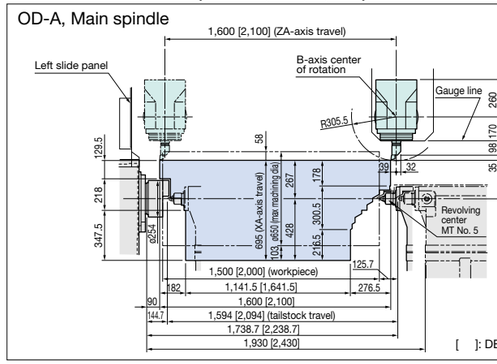
Lower Turret, Axial mill/drill, Opposing spindle



[ ]: DBC 1,500

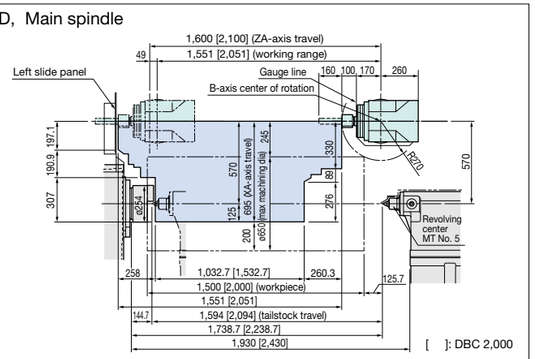
MULTUS U4000 1SC (DBC: 1,500, 2,000)

OD-A, Main spindle



[ ]: DBC 2,000

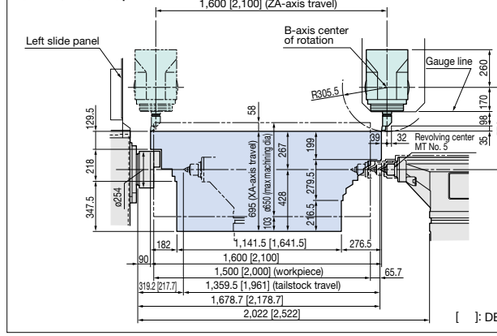
ID, Main spindle



[ ]: DBC 2,000

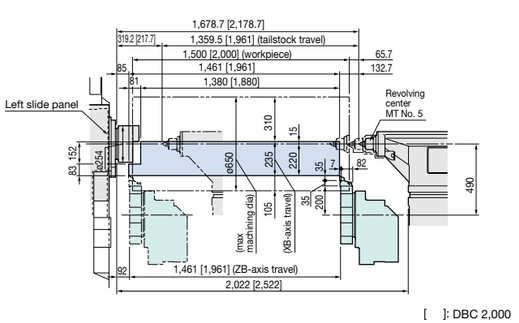
MULTUS U4000 2SC (DBC: 1,500, 2,000)

OD-A, Main spindle



[ ]: DBC 2,000

Lower Turret, OD-I, Main spindle



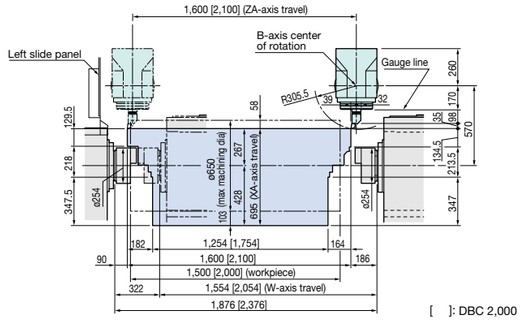
[ ]: DBC 2,000

■ Working Range

MULTUS U4000 1SW (DBC: 1,500, 2,000)

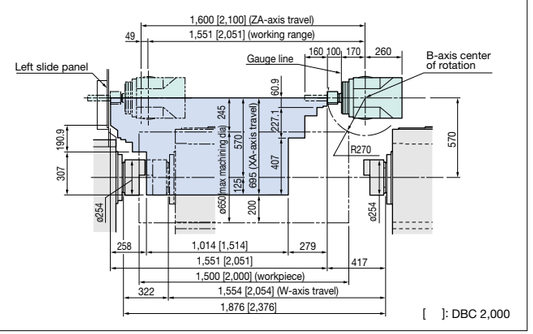
Unit: mm

OD-A, Main spindle



[ ]: DBC 2,000

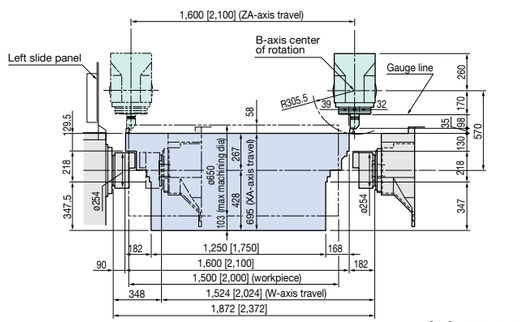
ID, Main spindle



[ ]: DBC 2,000

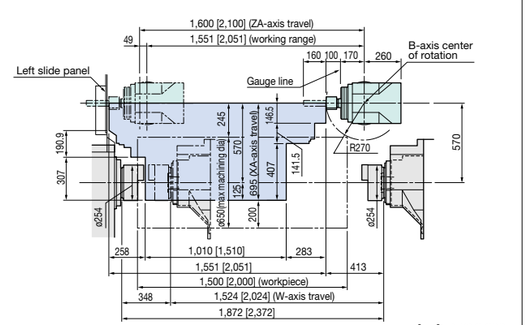
MULTUS U4000 2SW (DBC: 1,500, 2,000)

OD-A, Main spindle



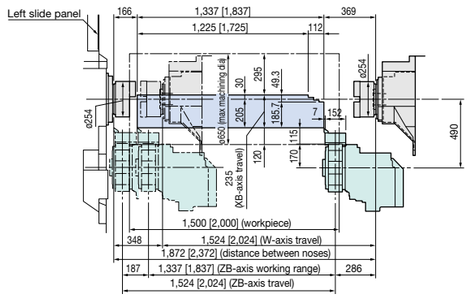
[ ]: DBC 2,000

ID, Main spindle



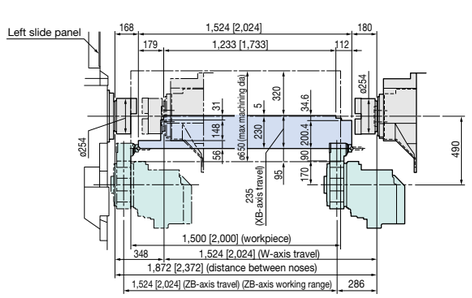
[ ]: DBC 2,000

Lower Turret, OD-I



[ ]: DBC 2,000

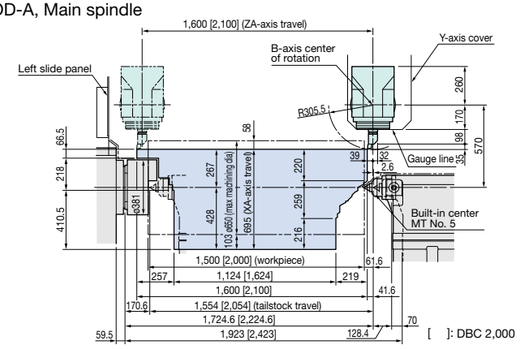
Lower Turret, Axial mill/drill, Opposing spindle



[ ]: DBC 2,000

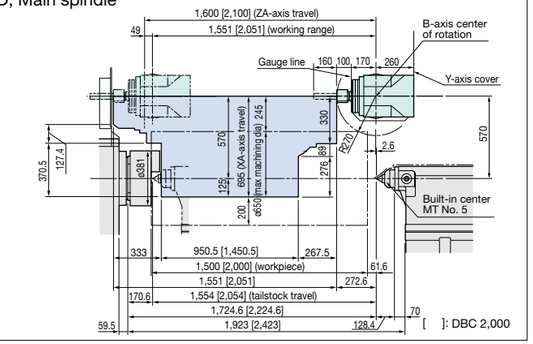
MULTUS U5000 1SC (DBC: 1,500, 2,000)

OD-A, Main spindle



[ ]: DBC 2,000

ID, Main spindle

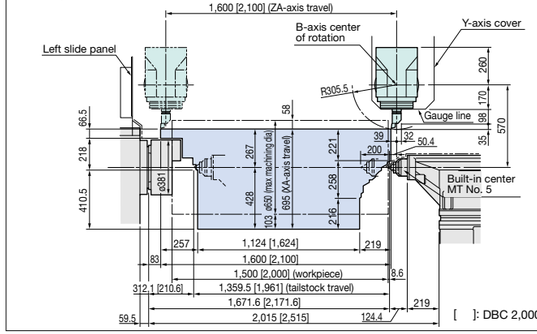


[ ]: DBC 2,000

MULTUS U5000 2SC (DBC: 1,500, 2,000)

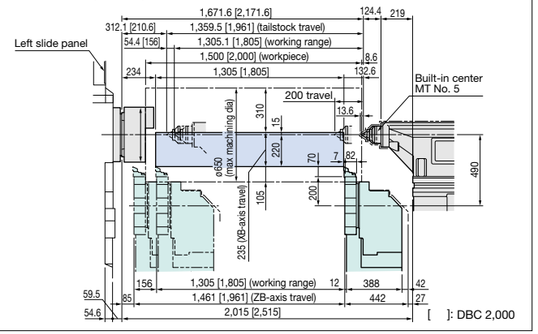
Unit: mm

OD-A, Main spindle



[ ]: DBC 2,000

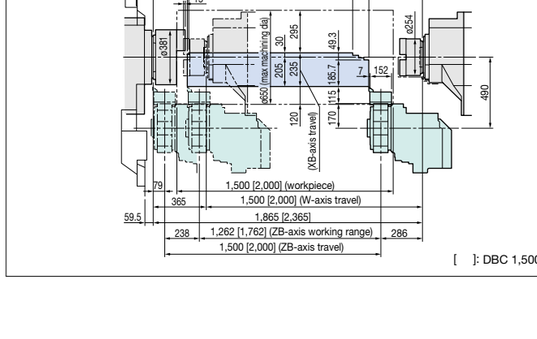
Lower Turret, OD-I, Main spindle



[ ]: DBC 2,000

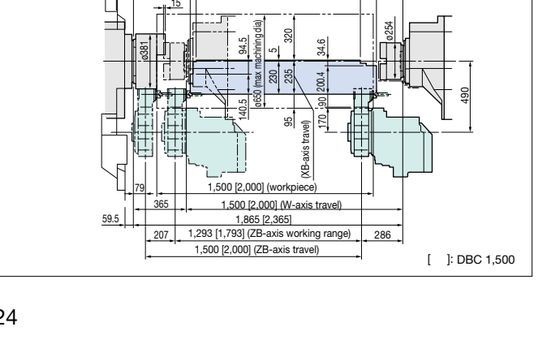
MULTUS U5000 1SW (DBC: 1,500, 2,000)

OD-A, Main spindle



[ ]: DBC 2,000

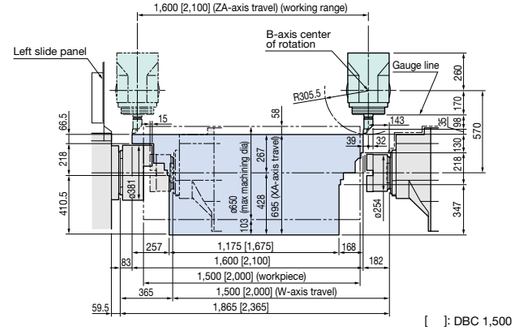
ID, Main spindle



[ ]: DBC 2,000

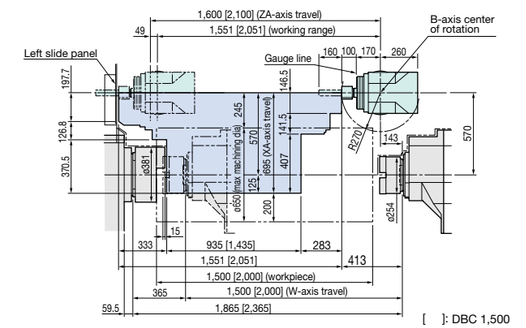
MULTUS U5000 2SW (DBC: 1,000, 1,500)

OD-A, Main spindle



[ ]: DBC 1,500

ID, Main spindle



[ ]: DBC 1,500

Lower Turret, OD-I, Main spindle

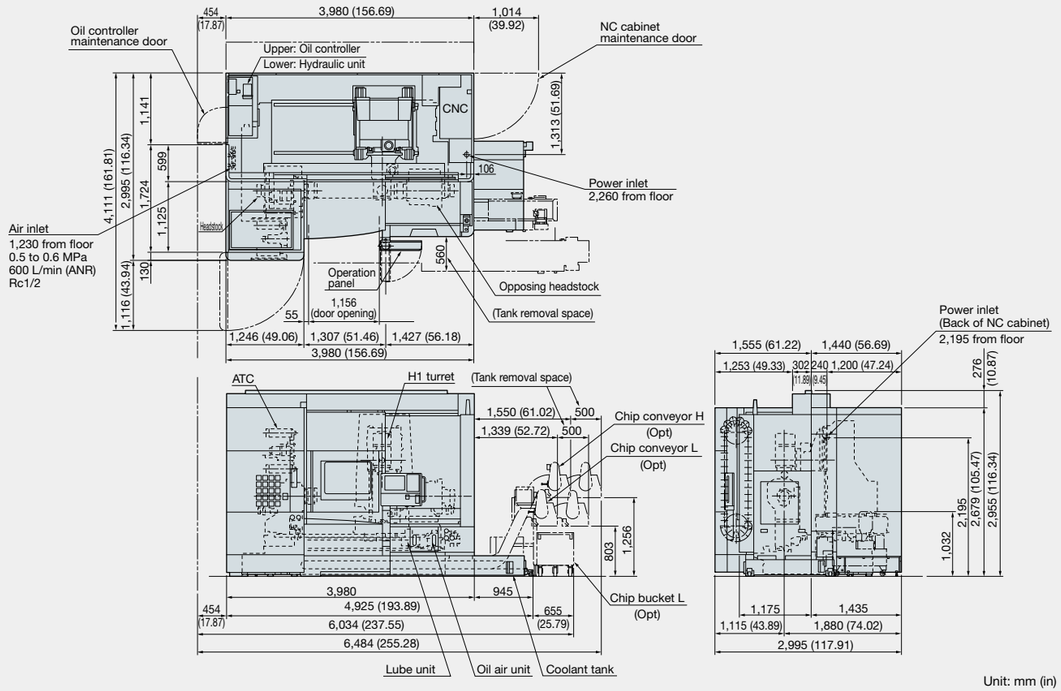
[ ]: DBC 1,500

Lower Turret, Axial mill/drill, Opposing spindle

[ ]: DBC 1,500

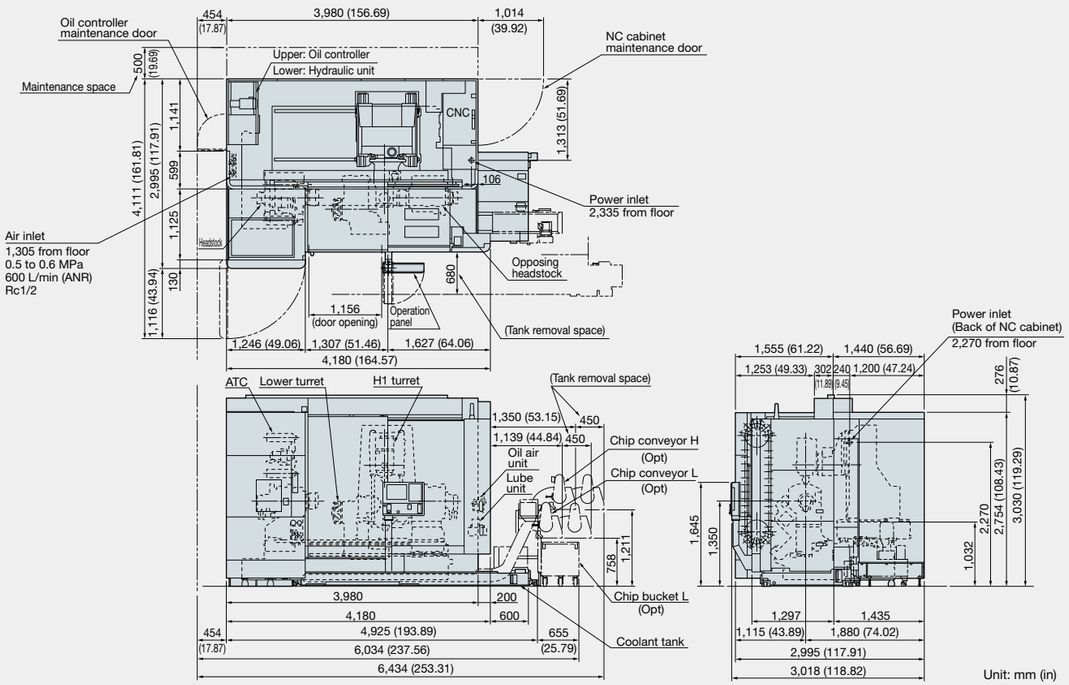
Dimensional and Installation Drawings

MULTUS U3000 (DBC: 1,000 1SW)



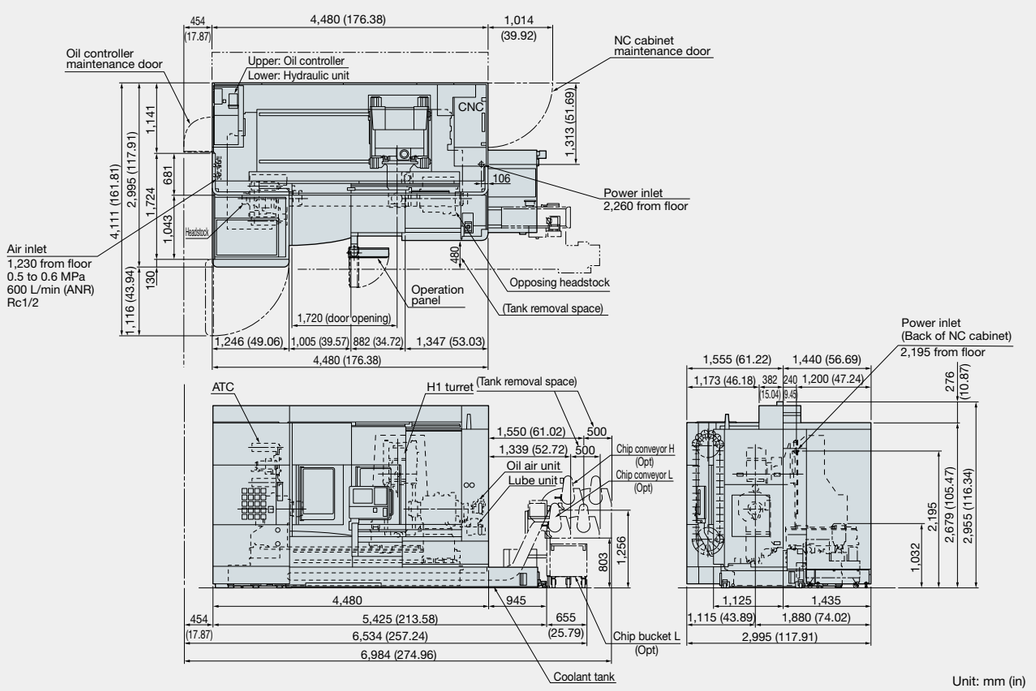
Unit: mm (in)

MULTUS U3000 (DBC: 1,000, 2SW)



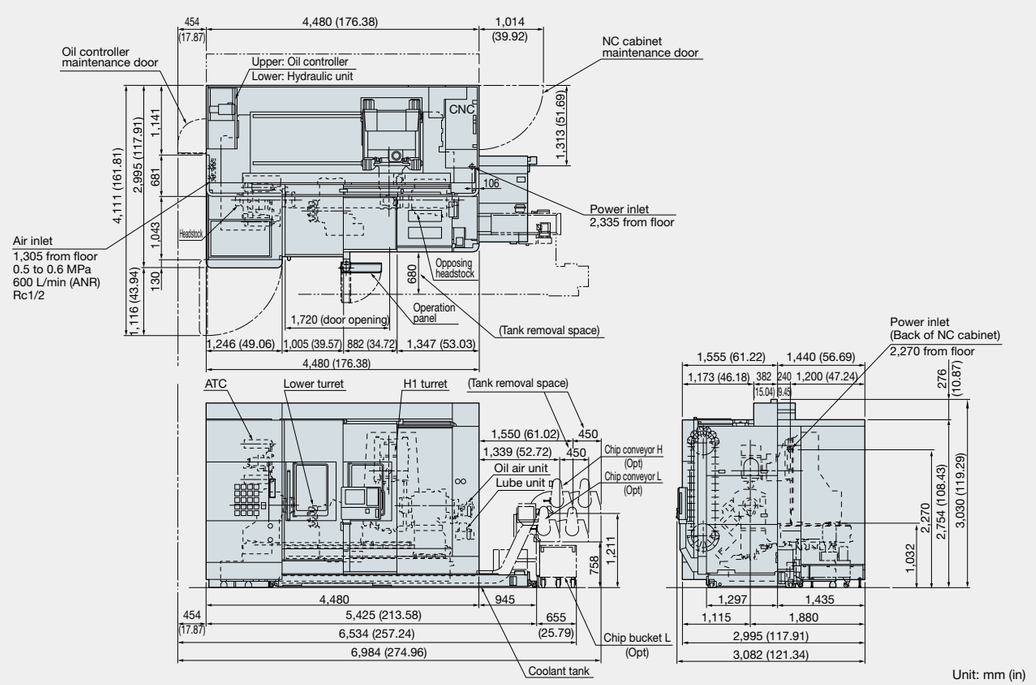
Unit: mm (in)

MULTUS U3000/MULTUS U4000 (DBC: 1,500, 1SW)



Unit: mm (in)

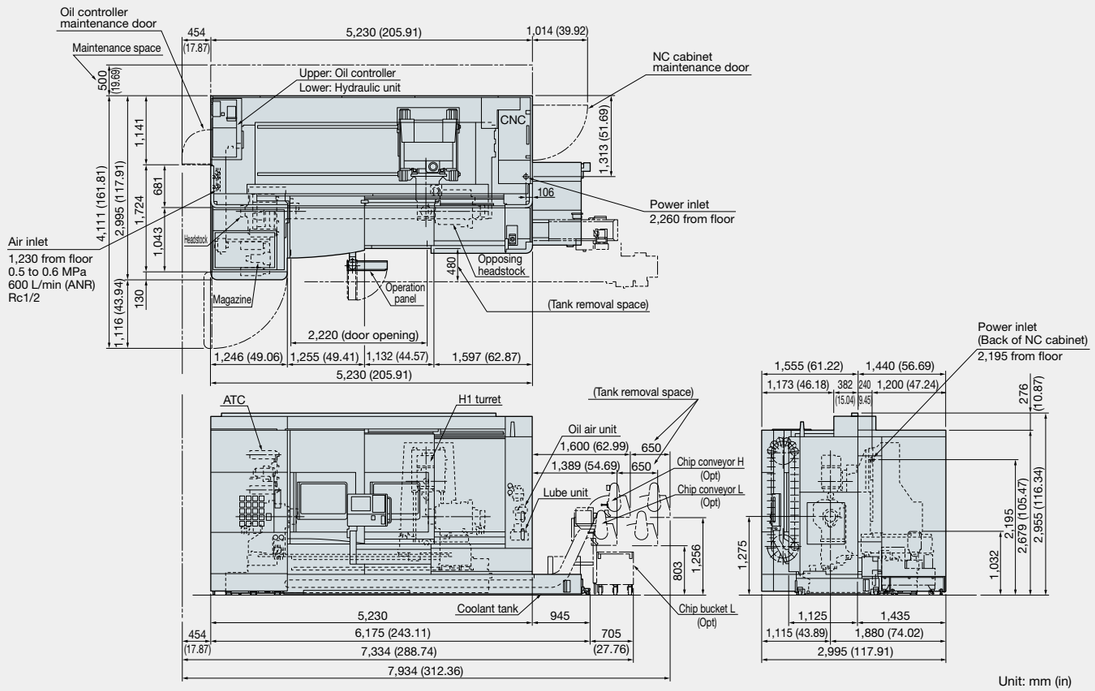
MULTUS U3000/MULTUS U4000 (DBC: 1,500, 2SW)



Unit: mm (in)

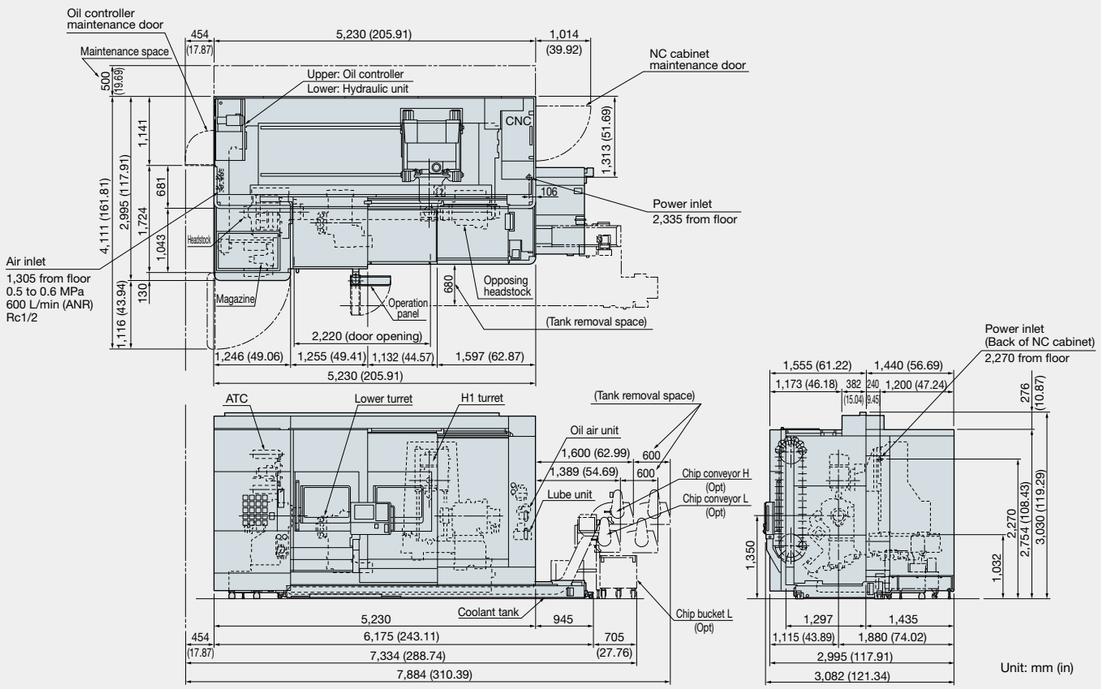
Dimensional and Installation Drawings

MULTUS U4000 (DBC: 2,000, 1SW)



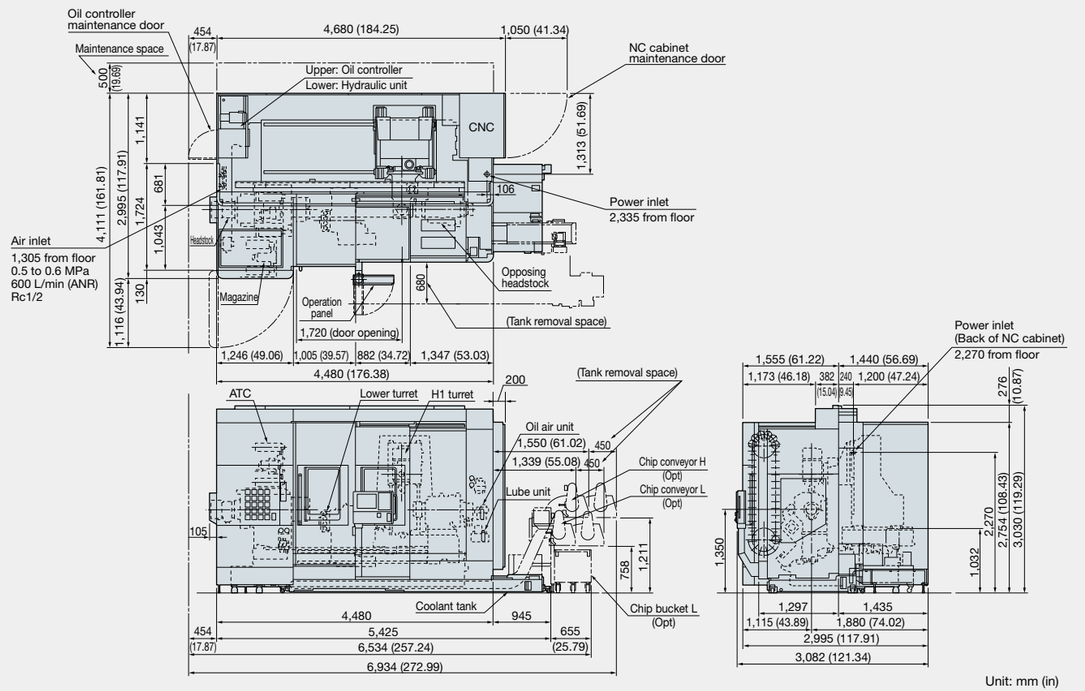
Unit: mm (in)

MULTUS U4000 (DBC: 2,000, 2SW)



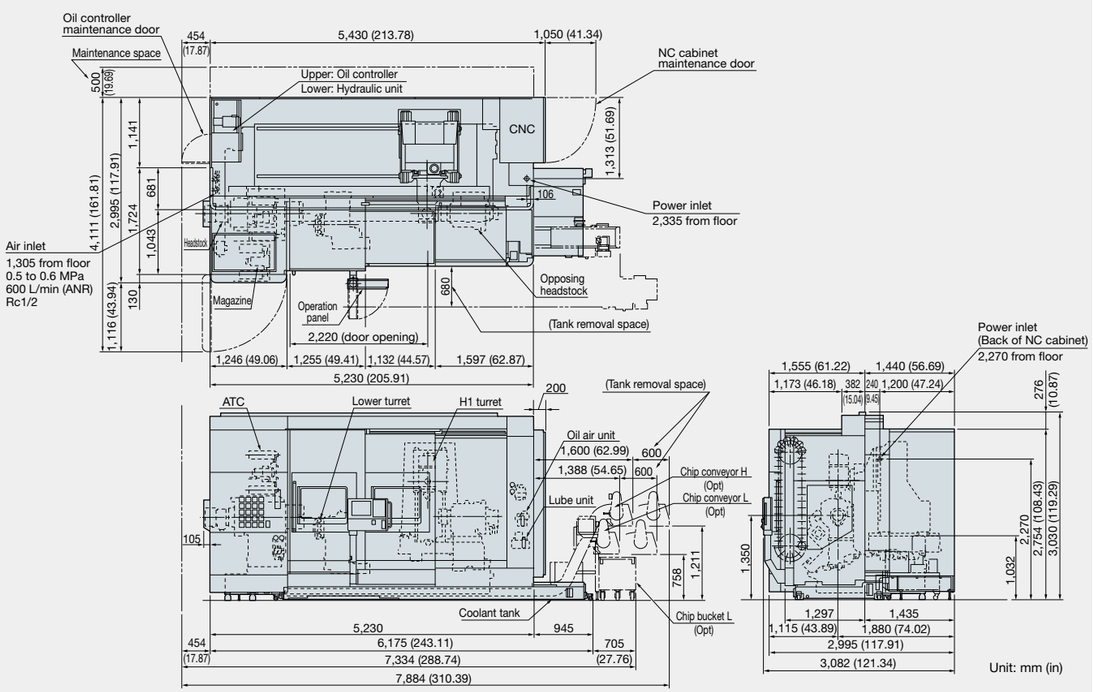
Unit: mm (in)

MULTUS U5000 (DBC: 1,500, 2SW)



Unit: mm (in)

MULTUS U5000 (DBC: 2,000, 2SW)



Unit: mm (in)

Standard Specifications

Basic Specs	Control	Turning: X, Z simultaneous 2-axis, Multitasking: X, Y, Z, B, C simultaneous 5-axis, Spindle control max 4 axes (2 spindles, 2 milling tool spindles)
	Position feedback	OSP full range absolute position feedback (zero point return not required)
	Min / Max command	±99999.999 mm, ±99999.999° 8-digit decimal, command unit: 0.001 mm, 0.01 mm, 1 mm, 0.001°, 0.01°, 1°
	Feed	Override: 0 to 200%
	Spindle control	Direct spindle speed commands override 50~200%, Milling tool override 30-200%, Constant cutting speed, optimum turning speed designate
	Tool commands	2-digit tool no. + 4-digit tool no. (max tool registration: 1000 sets)
	Tool compensation	Tool offset, nose R comp: 20 sets per tool, multi-coordinate tool compensation
	Display	15-inch color display operational panel, multi touch panel operations
	Self-diagnostics	Automatic diagnostics and display of program, operation, machine, and NC system problems
	Program capacity	Program storage: 4 GB, operation buffer: 2 MB
Operations	“suite apps”	Applications to graphically visualize and digitize information needed on the shop floor
	“suite operation”	Highly reliable touch panel suited to shop floors. One-touch access to suite apps.
	Easy Operation	“Single-mode operation” for a series of operations from a single screen. Easy-to-use operation panel supports complete machine control.
	Collision Avoidance System	Prevents interference during manual, automatic operation Easy modeling of shape data (there are limits in interference prevention unit, unit movement)
	Programming	Program management, edit, scheduled programs, fixed cycles, special fixed cycles, tool nose R compensation, slope machining, M-spindle synchronized tapping, fixed drilling cycles, arithmetic operations, logic operations, math functions, variables, branch statements, auto programming (LAP4), programming help
	Machine operations	MDI, manual (rapid traverse, pulse handle), load meter, operations help, alarm help, sequence return, manual interrupt & auto return, data I/O, easy setting of cycle time reduction
	MacMan	Machining Management: machining results, machine utilization, fault data compile & report, external output
	Com / Net	USB ports, Ethernet
High speed/ accuracy	TAS-C	Thermo Active Stabilizer—Construction: corrects machine construction thermal deformation error during shop temperature change.
	TAS-S	Thermo Active Stabilizer—Spindle: corrects milling tool spindle thermal deformation error during spindle rotation.
	High speed/accuracy	Hi-G control
Energy-saving	ECO suite	ECO Idling Stop, ECO Power Monitor

19-inch operation panel with adjustable angle

Ergonomically-based, operator-friendly operation panel (Optional)

Large 19-inch monitor

Large, easy-to-use 19-inch monitor available. “Single-screen operation,” which lets you see and do all you want on a single operation screen, has even greater visibility with larger monitor.

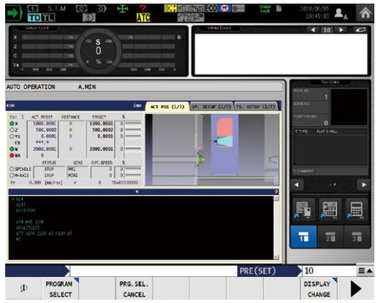
Adjustable-tilt keyboard

The keyboard angle can be adjusted for ease of use, and reduced work-related stress on the operator.

• Four tilt angle positions from 0° to 45°

OSP suite is even more convenient with large screen

Greater amounts of information on screen makes OSP suite even easier to use.



Ergonomic control panel (Optional*)

·19” display ·Adjustable-tilt keyboard

*Standard in certain markets.

Optional Specifications

Optional	Kit spec	NML E	NML D	3D E	3D D	AOT-M E	AOT-M D
Interactive Programming							
Advanced One-Touch IGF-L Multitasking (w/Real 3D)						●	●
Programming							
Operation buffer (10 MB)							
Circular threading			●		●		●
Program notes			●		●		●
User task 2 I/O variables, 8 each							
Work coordinate system select	10 sets	●	●	●	●	●	●
	50 sets						
	100 sets						
1,000 common variables (200 is standard)							
Thread matching							
Threading slide hold (G34, G35)							
Variable Spindle Speed Threading (VSST)							
Inverse time feed							
Spindle synchronized tapping							
Coordinate convert		●	●	●	●	●	●
Profile generate		●	●	●	●	●	●
Flat turning							
Coordinate calculation (with NCYL commands)		●	●	●	●	●	●
Coordinate shifting, rotation, copying		●	●	●	●	●	●
Helical cutting							
Slope machining							
Profile helical cutting							
Hobbing							
Multi-flute cutter function							
C-axis torque skip function							
3-dimensional coordinate conversion							
Monitoring							
Real 3-D simulation				●	●	●	●
Cycle time over check		●	●	●	●	●	●
Load monitor (spindle, feed axis)				●	●	●	●
Load monitor no-load detection (load monitor ordered)							
AI machine diagnostics (spindle, feed axes)							
Machine Status Logger							
Tool life management			●		●		●
Tool life prior notice							
Operation end buzzer							
Work counters	Count only						
	Cycle stop						
	Start disabled						
Hour meters	Power ON						
	Spindle rotation						
	NC operating						
NC operation monitor (counter, totaling)		●	●	●	●	●	●
Status indicator (3-color C type) [A type, B type]		●	●	●	●	●	●
Measuring							
In-process work gauging		Included in machine specs					
Z-axis automatic zero offset by touch sensor							
C-axis automatic zero offset by touch sensor							
Y-axis gauging							
Gauge data output	File output						
Post-process work gauging interface	Quantitative compensation (five level, seven level)						
	BCD						
	RS-232C (w/dedicated channel)						
Touch Setter [M, A]		Included in machine specs					

Note. NML: Normal, 3D: Real 3D simulation, AOT-M: Advanced One-Touch IGF-L Multitasking, E: Economy, D: Deluxe

*1. Engineering discussions required.

Optional	Kit spec	NML E	NML D	3D E	3D D	AOT-M E	AOT-M D
Energy saving ECO suite							
ECO operation	Chip conveyor intermittent/linked operation						
	Mist collector intermittent/linked operation						
	Spindle power peak cutting						
External Input/Output and Communication Functions							
RS-232C connector							
DNC links	DNC-T3						
	DNC-C / Ethernet						
	DNC-DT						
USB	2 additional ports possible						
Automation / Untended Operation							
Auto power shutoff M02, alarm							
Warm-up function (by calendar timer)							
Tool retract cycle							
External program selections	A (pushbutton), 8 types						
	B (rotary switch), 8 stages						
	C1 (digital switch), 2-digit BCD						
	C2 (external input), 4-digit BCD						
Okuma loader (OGL) interfaces		Included in Loader specs					
Third party robot and loader interface *1	TYPE B (machine)						
	TYPE C (robot and loader)						
	TYPE D						
	TYPE E						
Bar feeders	Bar feeder	Included in machine specs					
	Interface only						
Cycle time reduction*1	Operation time reduction	●	●	●	●	●	●
High-Speed /High-Accuracy Functions							
B axis NC control							
Simultaneous 5-axis kit	Super-NURBS						
	Tool center point control II						
	Inverse time feed						
	DNC-DT						
	Tool posture command						
	3-dimensional coordinate conversion						
	Herical cutting						
	Slope machining						
0.1 µm control *1							
Pitch error compensation							
Hi-Cut Pro		●	●	●	●	●	●
Super-NURBS	Linear axes						
	Linear and rotational axes						
5-Axis Auto Tuning System	Standard, high spec						
Tool center point control II							
Tool tilt command							
Other Functions							
One-Touch Spreadsheet							
Gear machining package							
Machining Navi [M-*g*II+, M-*i*]							
Machining Navi [L-*g*II, T-*g* threading]							
Harmonic Spindle Speed Control (HSSC)		●	●	●	●	●	●
Spindle dead-slow cutting							
Synchronized C-axis control							
Y-axis alignment compensation							
Feed shaft retract							
Short circuit breaker							
External M signals [2 sets, 4 sets, 8 sets, 16 sets]							
Edit interlock							
OSP-VPS (Virus Protection System)							
19-inch operation panel with adjustable angle							

MULTUS U Series

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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