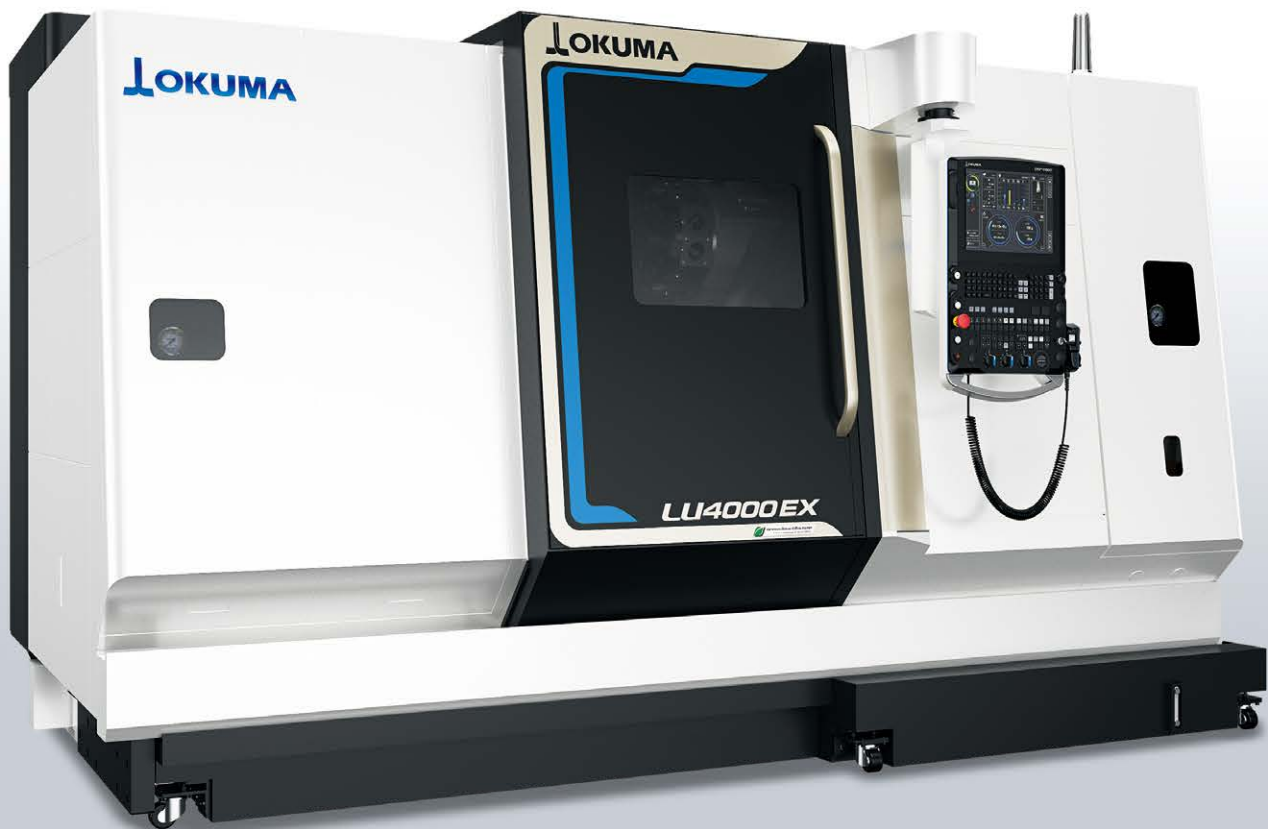


LU4000EX

2-Saddle CNC Lathe



LU4000EX

2-Saddle CNC Lathe



Max power 2-saddle CNC Lathe for even higher productivity

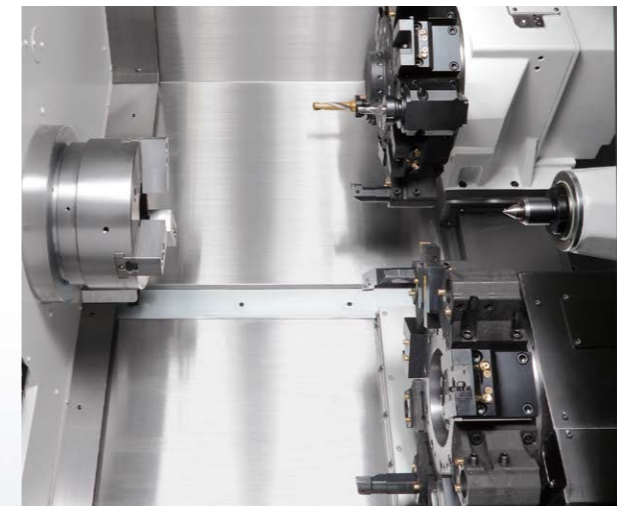
Huge productivity gains at higher performance levels.

With a 3,000 mm DBC, long workpieces can be produced efficiently.

Wide array of intelligent technologies are powerful support for operator.



LU4000EX

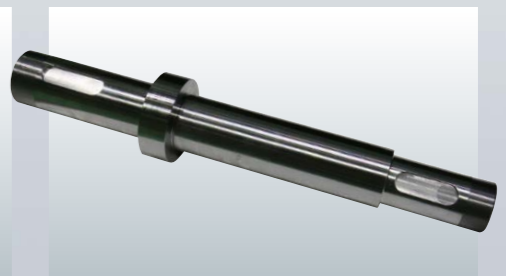
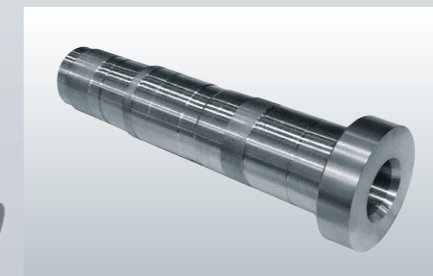
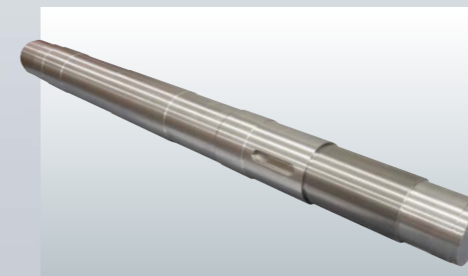


Standard chuck size	10-inch
Max turning dia	ømm Upper: 480, lower: 310
Max work length	mm 650, 1,250, 2,080, 3,080
Spindle speed	min ⁻¹ 4,200
No. of tools	Upper: 12, lower: 10
Spindle motor	kW 22/15 (30 min/cont)
Machine size (W × D × H)	mm Work length 650: 3,570 × 2,310 × 2,200
	Work length 1,250: 4,780 × 2,620 × 2,440
	Work length 2,080: 6,480 × 2,837 × 2,440
	Work length 3,080: 8,405 × 2,471 × 2,309
Spec extensions	L: UT* and LT* turning
	M: UT milling
	MY: UT Y-axis control milling

* UT: Upper turret, LT: Lower turret

Shaft shapes are machined with high efficiency

- Part name: Shaft (Aircraft Engine Component)
- Size: ø90 × 980 mm
- Part name: Spindle
- Size: ø145 × 465 mm
- Part name: Drive shaft
- Size: ø100 × 500 mm



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



Powerful machining and rapid movements mean shorter cycle times

High-performance simultaneous (heavy) turning with power to spare (actual data)

Turning

- Heavy-duty **6.0 mm²**
- OD (S45C)
 - Cutting speed: 96 m/min
 - Cutting depth: 10 mm
 - Feed rate: 0.6 mm/rev
- ø63 carbide drill (S45C)
 - Cutting speed: 150 m/min
 - Feed rate: 0.23 mm/rev

Milling

- Chip volume **240 cm³/min**
- 7-Flute, carbide, ø20 mm end mill (S45C)
 - Cutting speed: 200 m/min
 - Cutting width: 3.0 mm
 - Cutting depth: 18 mm
 - Feed rate: 1.4 mm/rev
- ø28 carbide drill (S45C)
 - Cutting speed: 90 m/min
 - Feed rate: 0.20 mm/rev
- Tapping (S45C) M24 P3

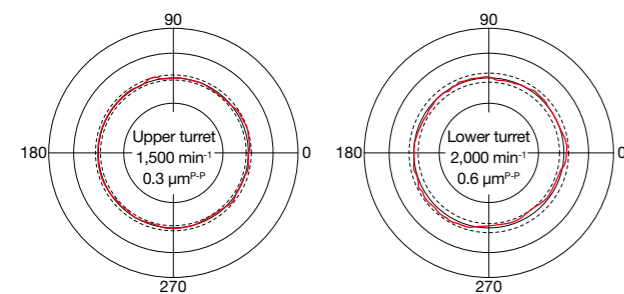
Note: The "actual data" referred to above for this brochure represent examples, and may not be obtained due to differences in specifications, tooling, cutting conditions, and others.

Highly accurate machining of shafts

Example of high accuracy machining (Big-Bore spindle actual data)

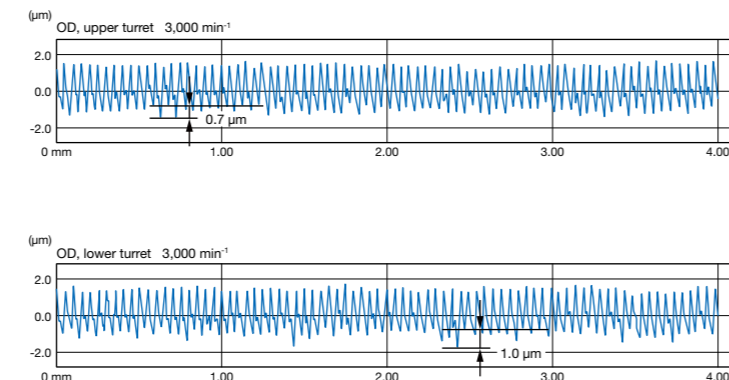
Roundness

- 0.3 µm (upper turret)/0.6 µm (lower turret)



Surface roughness (tool edge uniformity)

- 0.7 µm (upper turret)/1.0 µm (lower turret)



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

High-rigidity hydraulic quill tailstock

- Smooth, easy tailstock positioning by using upper saddle. (clamping/unclamping, coupling of tailstock itself is done manually)

Dead sleeve	MT No. 5
(Option: Built-in)	MT No. 5)
Quill dia:	ø120 mm
Quill travel:	150 mm
Maximum tailstock thrust:	6,860 N
Double-centered support mass:	700 kg (including chuck)



Quick moving components shorten non-cutting times

- **Rapid feedrates** X-axis 25 m/min
Z-axis 30 m/min

- **Turret indexing time** 0.2 sec/index

Thermo-Friendly Concept Manageable Deformation—Accurately Controlled

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

Fewer tool compensation checks

Compensation due to ambient temperature changes and temporary midday or evening machine stops is performed fewer times thanks to outstanding dimensional stability. This leads to better machine utilization, improving efficiency especially for mass-production machining.

Simple machine construction

Machine designs that equalize ambient temperatures

Machine start up

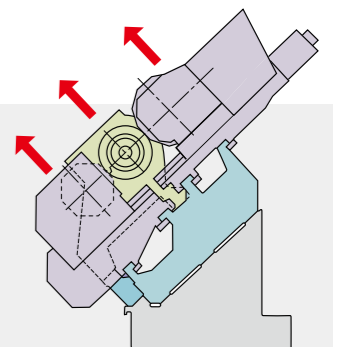
Machining restart

Room temp change

High dimensional stability

Slanted-box bed

With the main units of the headstock and turret located on the box bed, the groundbreaking configuration of the equipment combines both thermal stability and high rigidity.



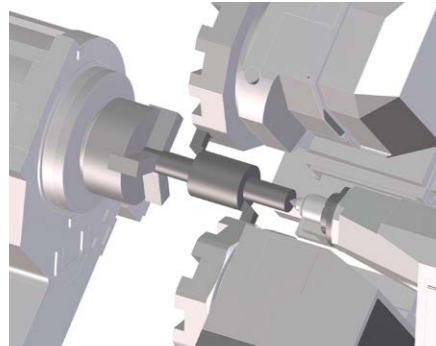
Many types of machining with the flexibility of 4 axes

Wide working ranges for upper and lower turrets

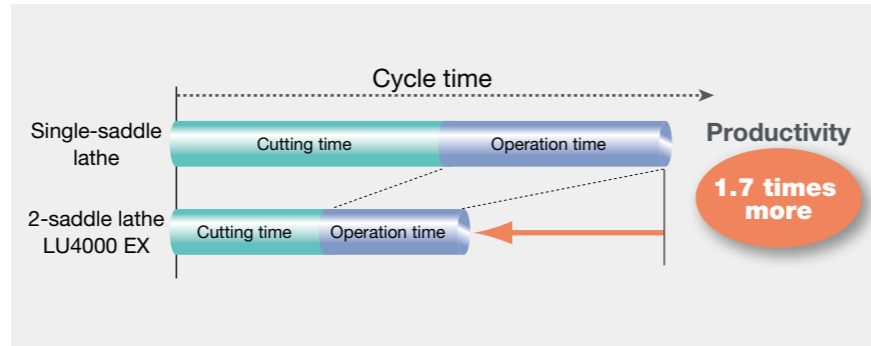
	X-axis travel	Z-axis travel
Upper turret	300 mm	740 mm, 1,340 mm, 2,140 mm, 3,140 mm
Lower turret	195 mm	700 mm, 1,300 mm, 2,100 mm, 3,100 mm

Huge reduction in machining time with simultaneous 4-axis machining on upper and lower turrets

In other words, simultaneous OD/OD or OD/ID operations drastically reduce cycle times. In addition, with optional shaft cradle or a steadyrest attached to the lower turret—the possibilities are endless.

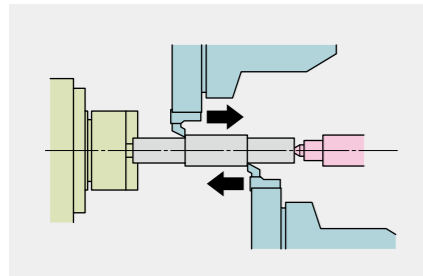


High-efficiency machining from simultaneous 4-axis machining

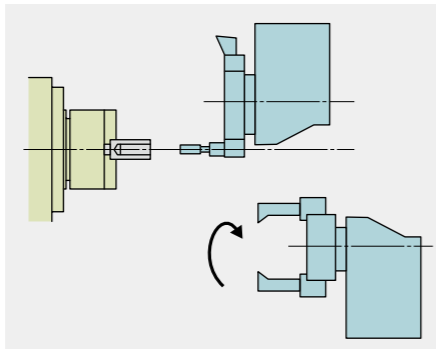


Reduced machining time due to simultaneous machining with the upper and lower turrets

Simultaneous OD machining

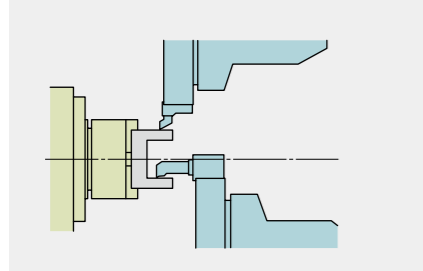


Operation time reduction



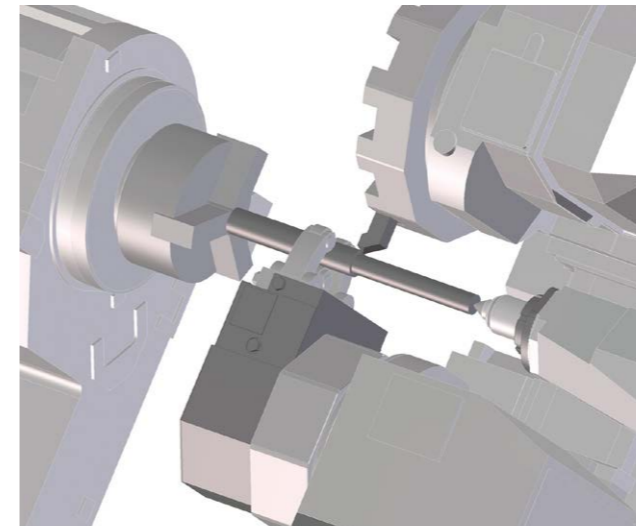
When a workpiece is too small for simultaneous cutting due to tool interference, the upper and lower turrets alternately index and approach the workpiece during cutting to shorten the operation time.

Simultaneous OD/ID machining



Turning long shafts with a steadyrest—without chatter

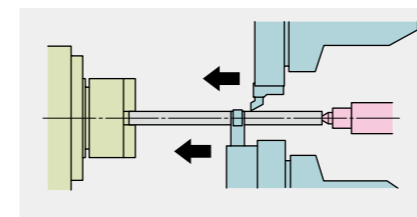
A steadyrest (option) mounted on the lower turret does provide steady workpiece support. With an NC programmed upper turret and simultaneous control, long shafts will always be supported near the cutting point.



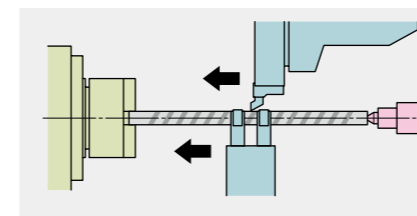
Prevents chatter with synchronized control of the upper turret and a steadyrest

Avoiding chatter of long workpieces

Attach a steadyrest to the lower turret



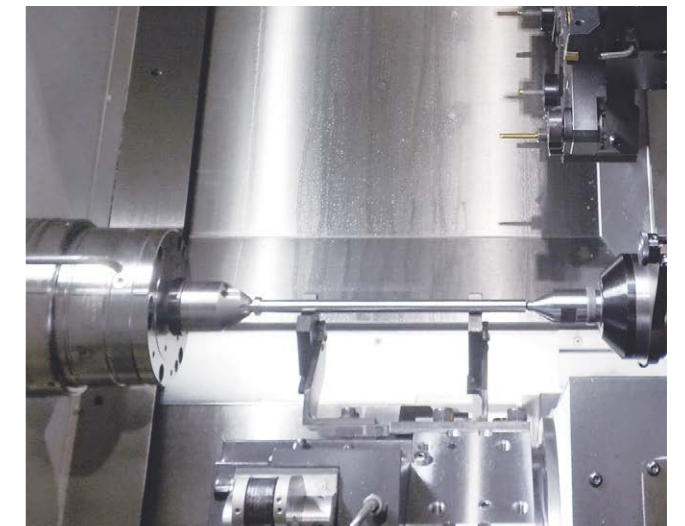
Attach twin steadyrests to the lower saddle cross-slide



With two steadyrests (twin steadyrests), even super-long workpieces prone to chatter, such as ball-screws, can be machined with stability.

Reducing operator burden by auto part load/unload

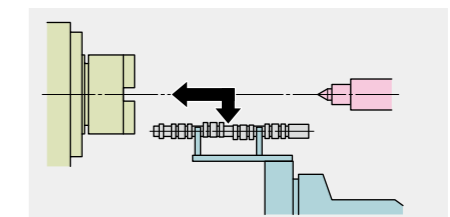
A shaft cradle (option) is attached to the lower turret to automate part load/unload and reduce the workload of the operator.



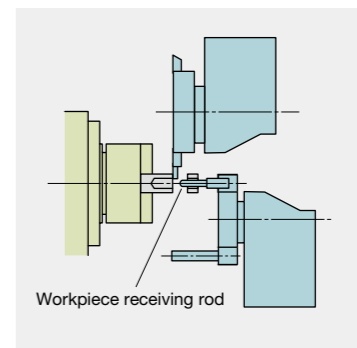
Shaft cradle reduces operator burden

Reducing the burden of part load/unload

A shaft cradle is attached to the lower turret



Reducing the burden during unloading



One turret is equipped with a receiving rod, tray, etc. to receive workpieces on cutoff, then carry to designated position by turret rotation.

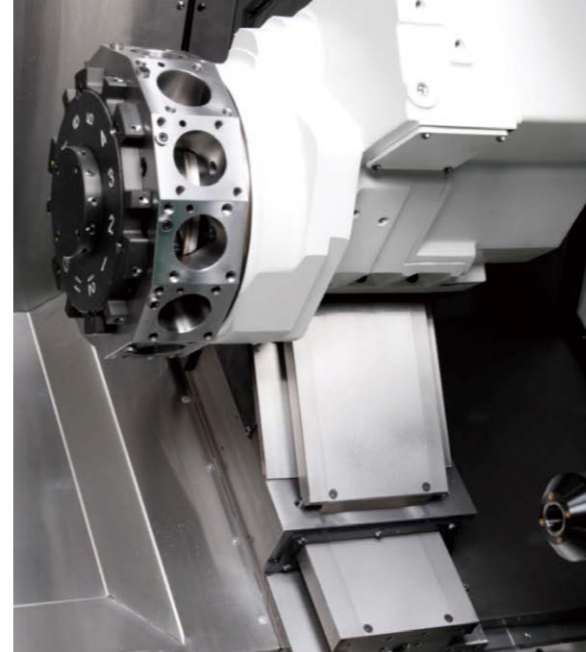
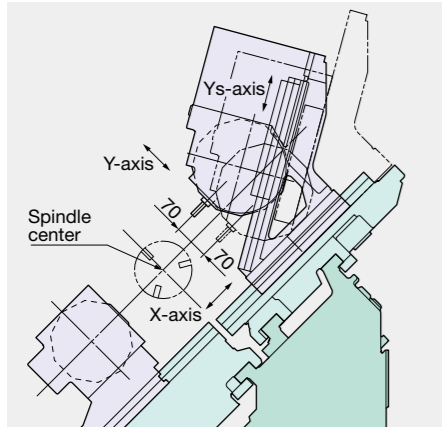
Achieve the best production system with our wide-ranging lineup

Complete multitasking with Y-axis functions One chuck machining even with irregularly shaped workpieces (MY)

A variety of milling operations can be accommodated with high-accuracy, wide-range Y-axis control using a double slide system. Achieves complete multitasking with a single chucking. (Y-axis control is applied to the upper turret.)

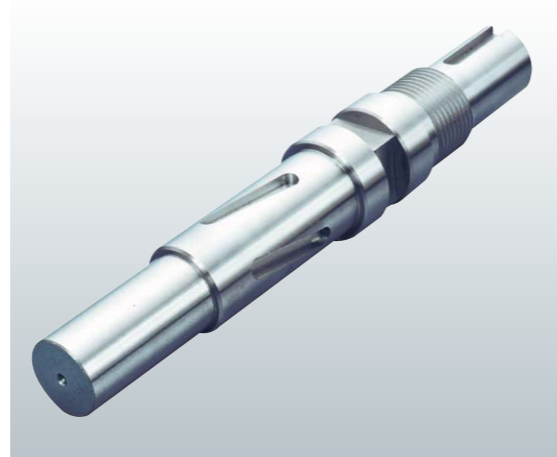
Y-axis travel	140 mm (+70 to -70)
Y-axis rapid traverse	12.5 m/min

● (MY) specs



M function and Y-axis integration enable process-intensive machining

Part name: Shaft
Size: $\phi 50 \times 300$ mm
Material: S45C
(Keyway width is controlled via Y-axis)



Automation that meets your needs enables labor-saving and long periods of operation

Labor shortages can be solved with a wide variety of automated systems

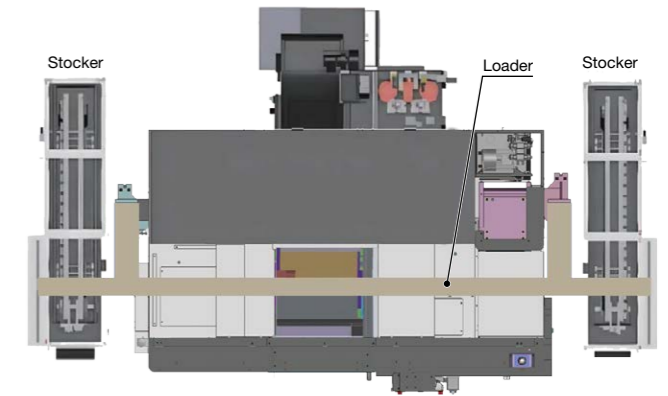
Automated system with stand-alone articulated robots

Highly versatile to be compatible with a variety of workpieces. Automation of high-mix, low-volume production, and system upkeep, such as measurement and cleaning, including peripheral equipment is also freely configurable. Automation with a high degree of freedom can be achieved according to production demands, such as process transfer between multiple machines and combination with a machining center.



Automated system with a loader

This workpiece transport and load/unload system is suitable for medium-scale to mass production of workpieces with similar shapes. The loader options include a stand-alone gantry loader with stand-alone legs that support the beam, or an on-machine loader mounted on the upper section of the machine. Because the space above the machine can be used effectively, the need for a large space is eliminated, and the workflow in front of the machine is also secured. The most suitable line configurations are proposed, ranging from a cell system with one machine and one loader to a multi-process line connecting multiple devices, as well as combinations of workpiece conveyors and measuring, flip, cleaning, and other peripheral devices. The system realizes long periods of reliable and stable automatic operation.



● Main loader specifications

OGL30-P stand-alone gantry loader

Maximum workpiece size	Shaft	$\phi 80 \times 400$ mm
	Flange	$\phi 170 \times 150$ mm
Portable mass		15 kg \times 2

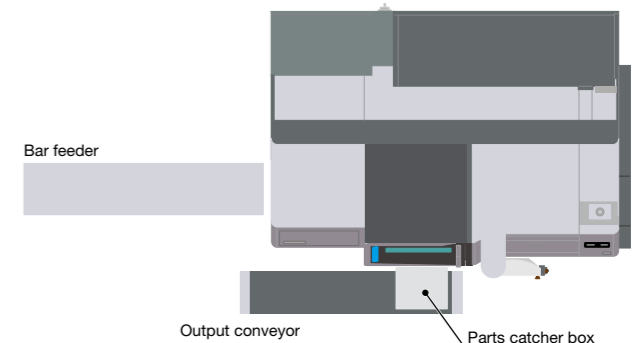
OGL10-O on-machine loader

Maximum workpiece size	Shaft	$\phi 80 \times 250$ mm
	Flange	$\phi 250 \times 150$ mm
Portable mass		5 kg \times 2

There may be limitations for the workpiece size or portable mass. Please use the data as a guide. Many other specifications are available. Please consult your Okuma representative.

Automation with the supply of bar materials via a bar feeder

An automated system for bar materials, covering operations from supply to process completion, can be constructed using a bar feeder, parts catcher, and output conveyor.



Reducing operator burden with comfortable machine operation

User-friendly operation panel and machine design



Swivel operation panel

The 15-inch operation panel can be swiveled to match the work position, ensuring comfortable setup in the machining chamber.

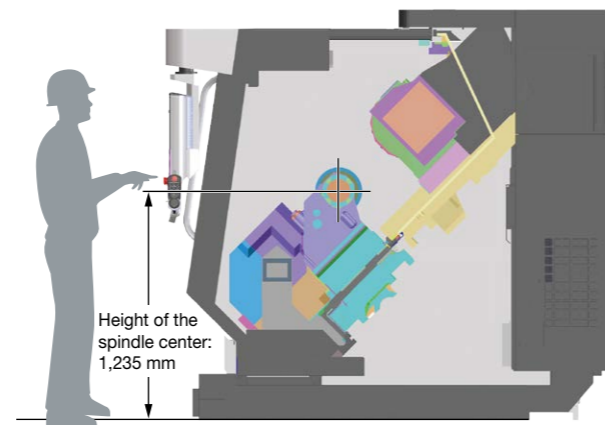


45° slanted bed

The 45° slanted bed structure has good workability and visibility of the upper and lower turrets, spindle, and tailstock to eliminate the burden on the operator.

Excellent chip discharge

A chip conveyor (option) is placed at the chip discharge immediately beneath the chuck to achieve efficient chip discharge and maintain high productivity without the need to stop the machine.



Chip conveyor types and applications

Type	Hinge	Scraper	Magnet scraper	Hinge + scraper (with drum filter)
Application	<ul style="list-style-type: none"> For steel 	<ul style="list-style-type: none"> For castings 	<ul style="list-style-type: none"> For castings 	<ul style="list-style-type: none"> For steel, castings, nonferrous metal
Features	<ul style="list-style-type: none"> General use 	<ul style="list-style-type: none"> Magnet scraper for sludge processing Easy for maintenance Blade scraper 	<ul style="list-style-type: none"> Suitable with sludge Not suitable for nonferrous metals 	<ul style="list-style-type: none"> Filtration of long and short chips and coolant
Shape				

Notes: It is necessary to select a chip conveyor with hinges + scraper (with drum filter) if the Sludgeless Tank is chosen. Raised machine arrangements may be necessary depending on the type of conveyor.

Reducing operator burden with advanced technology



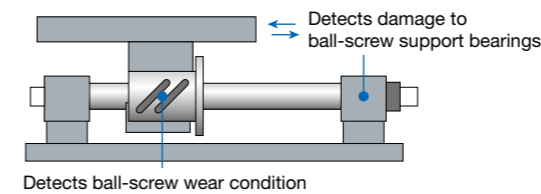
AI Machine Diagnosis Function (option) Machine tool diagnostics technology with artificial intelligence (AI)

Machine tool self-diagnosis technology "AI machine diagnosis function" can detect signs of failure. Machine downtime can be reduced by preventing machine shutdown. The OSP-AI installed in the CNC identifies the presence or absence of any abnormality in the feed axis and the location of the abnormality and detects damage to the ball-screw support bearing and wear of the ball-screw*.

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

Notes: AI diagnostic models are already installed, and diagnoses can be performed by the machine itself. AI diagnostic models can be updated through Okuma's Connect Plan.

Execute diagnostic tests from the screen guidelines



Sludgeless Tank (option)

Reducing waste liquid by suppressing coolant deterioration

Coolant maintenance work is significantly reduced

The environmental impact of coolant disposal is also minimized

The Sludgeless Tank continuously circulates cutting fluid within the tank, efficiently collecting sludge to prevent accumulation and significantly reducing issues and maintenance work.

This significantly reduces the frequency of tank cleaning, enabling stable operation over long periods and improving productivity.

It also extends the cutting fluid's lifespan, helps prevent spoilage and odors, and creates a better working environment.

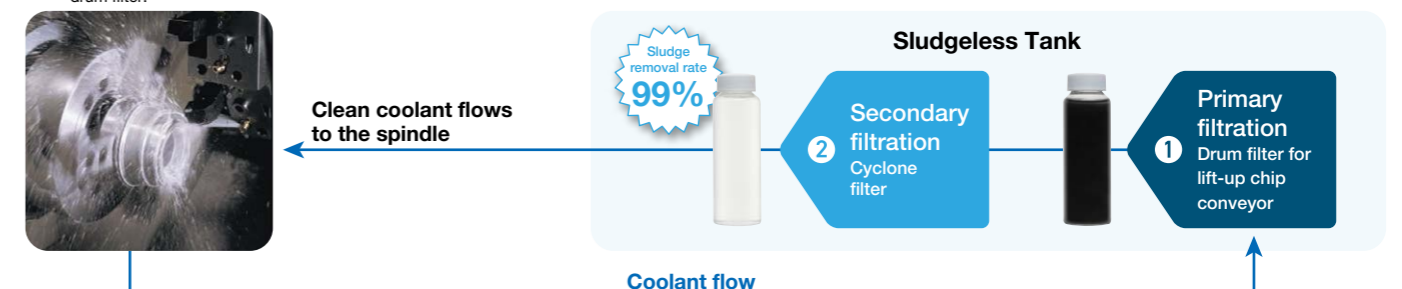
Furthermore, reducing the frequency of cutting fluid changes decreases industrial waste and lessens the environmental impact.

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

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

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

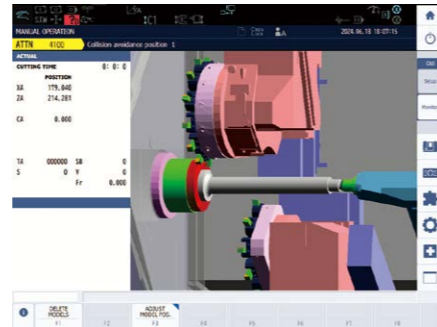
Note: If the Sludgeless Tank is chosen, it is necessary to select a hinge + scraper chip conveyor with a drum filter.



Collision Avoidance System (option)
Collision prevention

“Concentrate on machining” without collision worries

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 cycle times, and the confidence to focus on making parts.



Virtual machine (interference check)

Collision prevention during automatic operation

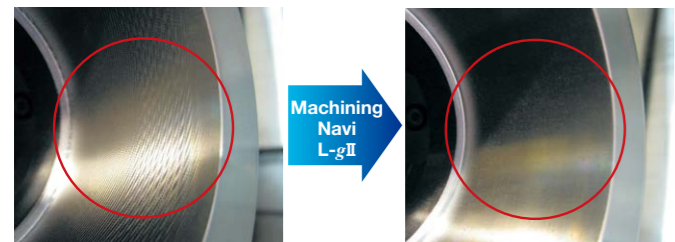
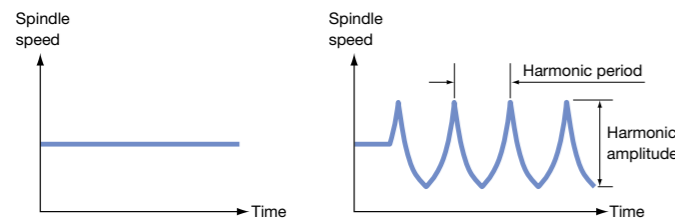
NC program is read in advance and axial travel commands are checked for interference with consideration of zero point and tool compensation values set in NC. Axial travel movement is stopped temporarily before collision occurs.

Collision avoidance in manual operation

Especially useful for machine operators setting up a job, collision avoidance in manual mode provides collision-free confidence and faster machining preparations.

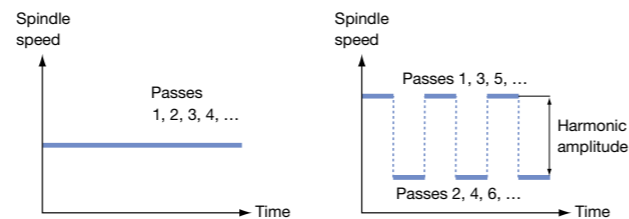
Machining Navi L-gII (option)
Cutting condition search for turning
(Harmonic Spindle Speed Control)

Varying the spindle speed in accordance with the best amplitude and period makes it possible to suppress chatter during turning operations. Tool life can be extended and cycle times reduced by using the optimum cutting conditions, producing significant effects in deep-hole boring bar and grooving applications.

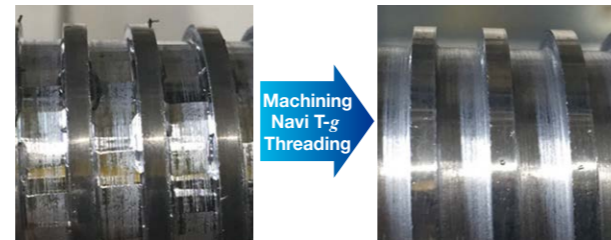


Machining Navi T-g Threading (option)
Cutting condition search for threading

When chattering occurred during threading, it was common to lower the cutting conditions or use special tools that resist chattering. Okuma's Machining Navi T-g (threading) breaks the vibration periodicity with a different spindle speed for each threading pass and suppresses chatter growth. The machining capacity of commonly used tools can be maximized for stable machining.



Chatter during threading **Machining Navi T-g Threading**



Chatter marks

Smooth surface

Contribution to the realization of a carbon-free society

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

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

We have realized high productivity through automation and process-intensive machining, in addition to high-accuracy machining, and we then introduced the use of green energy to transform the three domestic factories into carbon-neutral factories. “Green-Smart Machines” is our definition of Okuma’s intelligent machine tools, which autonomously achieve stable dimensional accuracy and reduced energy consumption, to support environmentally friendly production. Our policy is to deploy “Green-Smart Machines” fully, to help achieve a carbon-free society.

Starting with products manufactured at those carbon-neutral factories and distributing them globally, we will partner with our customers to address the social challenges faced by the manufacturing industry.

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

Green-Smart Machine Technology that achieves Green-Smart Machine

Thermo-Friendly Concept

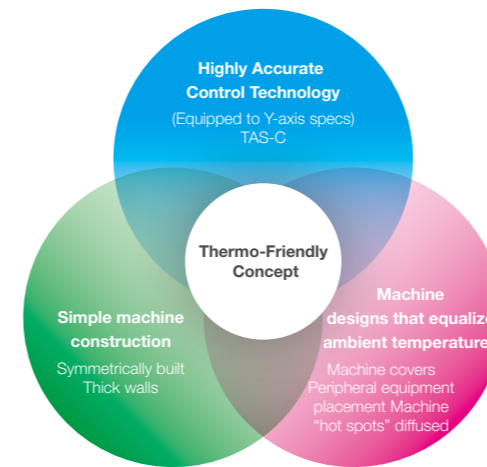
The Okuma Intelligent Technology that enables machines to autonomously maintain high accuracy stability

Reduction of warm-ups and dimensional compensation

Reduce the time needed for daily warm-ups and dimensional compensation to adjust to ambient temperature changes.

Reduction of power used for air conditioning

Maintain high stability of dimensional accuracy even if the air conditioning temperature range is expanded.

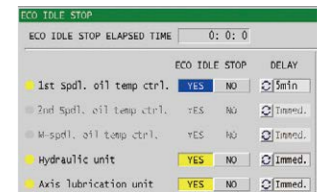


The unique concept of accepting temperature changes achieves consistent high accuracy without special coolers or excessive air conditioning.

ECO suite plus
A system for an energy-saving society

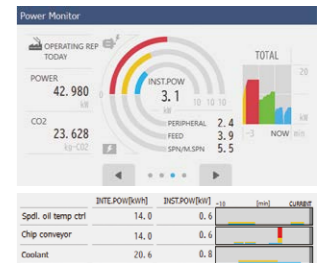
ECO Idling Stop

Auxiliary equipment consume a substantial portion of the power used in a factory. This function enables each of them to be turned off when not needed to reduce power consumption. In addition to when automatic operation is suspended, it is now possible to stop idling during manual operation. Power consumption and carbon dioxide emissions are reduced without conscious effort by the operator.



ECO Power Monitor

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



ECO Operation

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

ECO PARAMETER	ECO IDLE STOP (114)	ECO OPERATION
ECO IDLE STOP ELAPSED TIME	000:00:00	REMAINING TIME UNTIL ECO IDLE STOP READY 12:46
Chip conveyor interval control	OFF	
Chip conveyor interval:active time	100	[min]
Chip conveyor interval:suspended time	200	[min]

Machine Specifications

Model/Spec	Item	Unit	LU4000 EX (L)					LU4000 EX (M)					LU4000 EX (MY)							
			2ST	2SC × 650	2SC × 1250	2SC × 2000	2SC × 3000	2ST	2SC × 650	2SC × 1250	2SC × 2000	2SC × 3000	2ST	2SC × 650	2SC × 1250	2SC × 2000	2SC × 3000			
Capacity	Swing over bed	mm (in)	ø695 (27.36)					ø695 (27.36)												
	Max turning dia, upper/lower	mm (in)	U: ø480/L: ø310 (U: ø18.90/L: ø12.20)					U: ø430/L: ø280 (U: ø16.93/L: ø11.02)												
	DBC*1	mm (in)	-	909 (35.79)	1,509 (59.41)	2,309 (90.91)	3,309 (130.28)	-	909 (35.79)	1,509 (59.41)	2,309 (90.91)	3,309 (130.28)	-	909 (35.79)	1,509 (59.41)	2,309 (90.91)	3,309 (130.28)			
	Max work length	mm (in)	400 (15.75)	650 (25.59)	1,250 (49.21)	2,080 (81.89)	3,080 (121.26)	400 (15.75)	650 (25.59)	1,250 (49.21)	2,080 (81.89)	3,080 (121.26)	400 (15.75)	650 (25.59)	1,250 (49.21)	2,080 (81.89)	3,080 (121.26)			
Travels	X-axis	mm (in)	U: 300/L: 195 (U: 11.81/L: 7.68)					U: 300/L: 195 (U: 11.81/L: 7.68)												
	Z-axis	mm (in)	U: 740/L: 700 (U: 29.13/L: 27.56)		U: 1,340/L: 1,300 (U: 52.76/L: 51.18)		U: 2,140/L: 2,100 (U: 84.25/L: 82.68)		U: 3,140/L: 3,100 (U: 123.62/L: 122.05)		U: 740/L: 700 (U: 29.13/L: 27.56)		U: 1,340/L: 1,300 (U: 52.76/L: 51.18)		U: 2,140/L: 2,100 (U: 84.25/L: 82.68)		U: 3,140/L: 3,100 (U: 123.62/L: 122.05)			
	Y-axis	mm (in)	-					-					140 <+70 to -70> (5.51<+2.76 to -2.76>)							
	C-axis	deg	-					-					360 (0.001)							
Spindle	Speed	min ⁻¹	42 to 4,200 [30 to 3,000]					42 to 4,200 [30 to 3,000]												
	Speed ranges		Two auto ranges (motor coil switching ranges)					Two auto ranges (motor coil switching ranges)												
	Spindle nose		JIS A2-8 [JIS A2-11]					JIS A2-8 [JIS A2-11]												
	Bore dia	mm (in)	ø91 [ø112] [ø3.58 [ø4.41]]					ø91 [ø112] [ø3.58 [ø4.41]]												
	Front bearing dia	mm (in)	ø140 [ø160] [ø5.51 [ø6.30]]					ø140 [ø160] [ø5.51 [ø6.30]]												
Turret	Type, upper/lower		U: V12/L: V10					U: Multitasking V12/L: V10 (L radial)												
	No. of tools, upper/lower		U: 12/L: 10					U: 12 (L/M)/L: 10												
	OD tool shank height	mm (in)	□25 (1)					□25 (1)												
	ID tool shank dia	mm (in)	ø40 (ø1-1/2)					ø40 (ø1-1/2)												
	Turret index time	sec/1 index	0.2					0.2												
Milling tool spindle	Spindle speed	min ⁻¹	-					45 to 6,000												
Feed rate	Rapid traverse	m/min (ipm)	X: 25, Z: 30 (X: 984, Z: 1,181)		X: 25, Z: 20 (X: 984, Z: 787)		X: 25, Z: 30 (X: 984, Z: 1,181), C: 200 min ⁻¹		X: 25, Z: 20 (X: 984, Z: 787), C: 200 min ⁻¹		X: 25, Z: 30, Y: 12.5 (X: 984, Z: 1,181, Y: 492), C: 200 min ⁻¹		X: 25, Z: 20, Y: 12.5, (X: 984, Z: 787, Y: 492) C: 200 min ⁻¹							
	Quill dia	mm (in)	-	ø120 (4.72)		-	ø120 (4.72)		-	ø120 (4.72)		-	ø120 (4.72)							
Tailstock	Quill bore taper [built in]		MT No. 5 (revolving center) [MT No. 5 (dead center)]					MT No. 5 (revolving center) [MT No. 5 (dead center)]					MT No. 5 (revolving center) [MT No. 5 (dead center)]							
	Quill travel	mm (in)	150 (5.91)					150 (5.91)					150 (5.91)							
Motor	Spindle	kW (hp)	22/15 (30/20) (30 min/cont) [32/22 (43/30) (20 min/cont)]					22/15 (30/20) (30 min/cont) [32/22 (43/30) (20 min/cont)]												
	Milling tool	kW (hp)	-					7.5/4.3 (10/5.7) (25 min/cont)												
	Axis drive	kW (hp)	XA: 3.5, XB: 3.0, ZA: 4.6, ZB: 4.6 (XA: 4.7, XB: 4.0, ZA: 6.1, ZB: 6.1)		XA: 3.5, XB: 3.0, ZA: 5.2, ZB: 5.2 (XA: 4.7, XB: 4.0, ZA: 6.9, ZB: 6.9)		XA: 3.5, XB: 3.0, ZA: 4.6, ZB: 4.6 (XA: 4.7, XB: 4.0, ZA: 6.1, ZB: 6.1)		XA: 3.5, XB: 3.0, ZA: 5.2, ZB: 5.2 (XA: 4.7, XB: 4.0, ZA: 6.9, ZB: 6.9)		XA: 3.5, XB: 3.0, ZA: 4.6, ZB: 4.6, Ys: 3.5 (XA: 4.7, XB: 4.0, ZA: 6.1, ZB: 6.1, Ys: 4.7)		XA: 3.5, XB: 3.0, ZA: 5.2, ZB: 5.2, Ys: 3.5 (XA: 4.7, XB: 4.0, ZA: 6.9, ZB: 6.9, Ys: 4.7)							
	Coolant pump (50 Hz/60 Hz)	kW (hp)	0.55/0.75 (3/4 /1)		0.55/0.75 (3/4 /1) × 2		0.55/0.75 (3/4 /1)		0.55/0.75 (3/4 /1) × 2		0.55/0.75 (3/4 /1)		0.55/0.75 (3/4 /1) × 2							
Machine size	Height	mm (in)	2,200*2 (86.61*2)		2,440 (96.06)		2,309 (90.91)		2,200*2 (86.61*2)		2,440 (96.06)		2,309 (90.91)		2,530*2 (99.61*2)		2,770 (109.06)		2,639 (103.90)	
	Floor space		3,570 × 2,362					3,570 × 2,362					3,570 × 2,362							
	Width × depth (including tank) <Big-Bore spindle>	mm (in)	<3,720 × 2,362> (140.55 × 92.99 <146.46 × 92.99>)		4,780 × 2,722 (188.19 × 107.17) 6,480 × 2,914 (255.12 × 114.72)		8,405 × 2,546 (330.91 × 100.24)		<3,720 × 2,362> (140.55 × 92.99 <146.46 × 92.99>)		4,780 × 2,722 (188.19 × 107.17) 6,480 × 2,914 (255.12 × 114.72)		8,405 × 2,546 (330.91 × 100.24)		<3,720 × 2,362> (140.55 × 92.99 <146.46 × 92.99>)		4,780 × 2,692 (188.19 × 105.98) 6,480 × 2,969 (255.12 × 116.89)		8,405 × 2,546 (330.91 × 100.24)	
		mm (in)	3,500 × 2,913 <3,650 × 2,913> (137.80 × 114.69 <143.70 × 114.69>)		-		-		3,500 × 2,913 <3,650 × 2,913> (137.80 × 114.69 <143.70 × 114.69>)		-		-		3,500 × 2,913 <3,650 × 2,913> (137.80 × 114.69 <143.70 × 114.69>)		-		-	
Mass (w/ CNC)	kg (lb)	9,000 (19,800)	9,600 (21,120)	11,400 (25,080)	14,500 (31,900)	17,500 (38,500)	9,100 (20,020)	9,700 (21,340)	11,500 (25,300)	14,500 (31,900)	17,500 (38,500)	9,600 (21,120)	10,200 (22,440)	12,000 (26,400)	15,000 (33,000)	18,000 (39,600)				
CNC		OSP-P500L					OSP-P500L													

[] : option
*1. DBC: Distance between centers
*2. Raised machine height of 70 mm is standard for rear chip discharge.

Standard Specifications

Specifications	LU4000 EX (L/M/MY)			
	L		M/MY	
	2ST	2SC	2ST	2SC
Headstock	JIS A2-8 42 to 4,200 min ⁻¹ Integral 22/15 kW (30 min/cont)			
Turret	Upper V12 + lower V10		Upper multitasking V12 + lower V10	
Milling tool spindle	—		Upper 45 to 6,000 min ⁻¹ 7.5/4.3 kW (25 min/cont)	
Tailstock	—	Dead hydraulic MT No. 5 Manual tow-along	—	Dead hydraulic MT No. 5 Manual tow-along
Accessories	Hydraulic unit			
	Coolant system			
	Full-enclosure shielding			
	Work lamp (LED)			
	Chuck foot switch			
	Chuck auto open/close confirmation			
	Lubrication monitor			
	Door interlock			
	Foundation washers, leveling bolts			
	Hand tools			
CNC	OSP-P500L			
	15-inch swivel operation panel			
	Pulse handle			

Chucking Kit

	LU4000 EX (L/M/MY)			
	Chuck	Standard soft jaw A	Standard soft jaw B	Hard jaw
A kit	N-10 solid 10-in	—	—	—
B kit	N-10 solid 10-in	5 sets	3 sets	2-step hard jaw 1 set
C kit	B-210 hollow 10-in, hole dia ø70 mm	5 sets	3 sets	2-step hard jaw 1 set
D kit	B-212 hollow 12-in, hole dia ø80 mm	5 sets	3 sets	2-step hard jaw 1 set
E kit	BR10* hollow 10-in, hole dia ø81 mm	5 sets	3 sets	3-step hard jaw 1 set

* For BR chucks, it is possible to select Tnut-Plus, a special T nut that can improve the mounting accuracy at the time of attaching and detaching the jaw in comparison with the standard T nut.(option)
(Tnut-Plus does not improve workpiece gripping accuracy.)

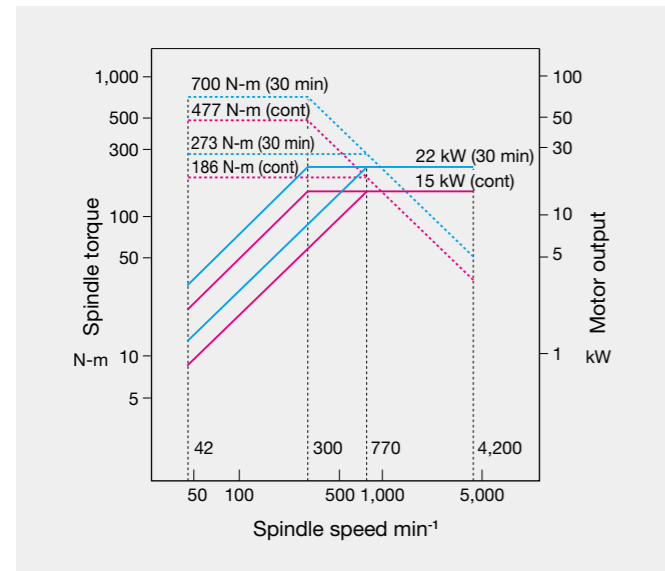
Optional Equipment & Accessories

Big-Bore spindle	JIS A2-11 30 to 3,000 min ⁻¹ Front bearing dia ø160 mm Spindle bore dia ø112 mm	For air blower (blast)	Air blow gun	
High-Power spindle	32/22 kW (20 min/cont)		Chuck	
L-VDI turret			Tailstock center	
Live quill hydraulic tailstock	MT No. 5		Spindle ID	
Tailstock	Auto tow-along hydraulic tailstock		Upper turret (internal piping, common coolant nozzle)	
Chucking kit	Solid/hollow hydraulic power chuck, soft jaws See details on page 15.		Lower turret (common coolant nozzle)	
Tooling kit	Various toolholders See details on page 18.		Upper and lower turret air blower discharge control (simultaneous, independent)	
Raised machine height	50 mm, 100 mm, 150 mm		For coolant blower	Coolant gun
Chip discharge	Chip pan			Shower coolant
Touch Setter	Chip conveyor (side discharge/rear discharge)			Control system
	Chip bucket	A (Synchronized control with turret discharge) / B (independent control)		
Hydraulic steadyrest	Lower turret mounted, lower cross-slide mounted	Spindle Internal Coolant		
Workpiece cradle	M (manual), A (auto)	Control system		
	Lower turret mounted, headstock mounted, tailstock mounted	A (Synchronized control with turret discharge) / B (independent control)		
Automation	Lower turret mounted, lower cross-slide mounted	Sizing stopper in spindle		Adjustment stroke 100 mm
	On-machine loader, gantry loader	Chuck internal sizing stopper		
Front cover	Robot, bar feeder	Coolant		Upper and lower turret coolant blower discharge control (independent)
	Front cover auto open/close (safety tape SW, area sensor)		Coolant high/low switch (upper, lower turret)	
For chucking	Two-hand cycle start button		Coolant detection (level, flow rate, level + flow rate detectors)	
	Chuck auto open/close confirm		Mist collector	With/without machine link
For tailstock	Chucking miss detection		Sludgeless Tank	
	Chuck high/low pressure switch with re-clamping		Sludge prevention	Oil skimmer, Magnetic separator
	Tailstock travel 260 mm		Automatic extinguisher	For oil-based coolant, fire damper
	Tailstock quill auto advance/retract with confirm		Parts catcher	ø100 × 200L, 7 kg
	Tailstock thrust high/low switch			Output conveyor
	Low tailstock thrust		High-accuracy specifications	Turcite® lining (XA-axis, ZA-axis, ZB-axis)
	Tailstock quill position detection	AbsoScale (XA-axis, ZA-axis, XB-axis)		
	2-speed tailstock quill	0.1 µm control		
	High tailstock thrust	Pitch error compensation		
	Door open/close tailstock quill advance speed switch	Coolant temperature regulator		
Dust proofing	Spindle air purging	Spindle temperature regulator		
	X-axis double wiper (XA) (standard for XB)	Hydraulic oil temperature regulator		
	Z-axis double wiper (ZA + ZB)	Inverter (energy-saving)		
For gauging	In-process workpiece gauging (upper turret mounted)	Specs for easy maintenance		Normal kit, economy kit
	Renishaw RLP40, System-D			
Front door with large window				

Spindle torque/output diagram

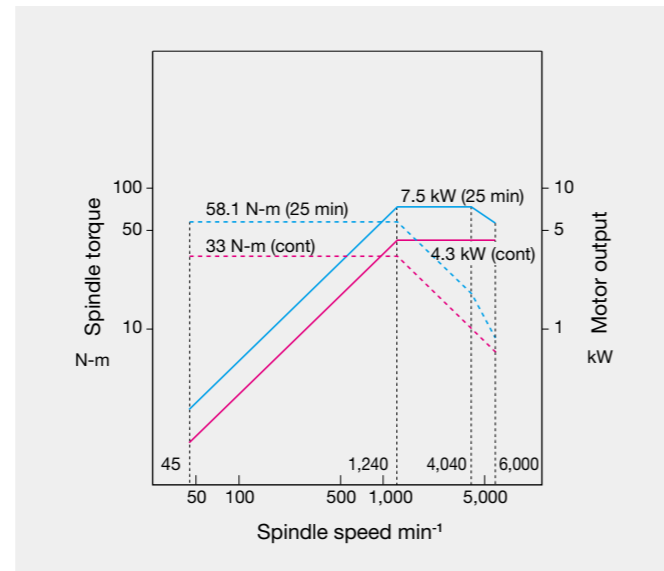
Turning spindle

Spindle speed 4,200 min⁻¹
 Output 22/15 kW (30 min/cont)
 Torque 700/477 N-m (30 min/cont)



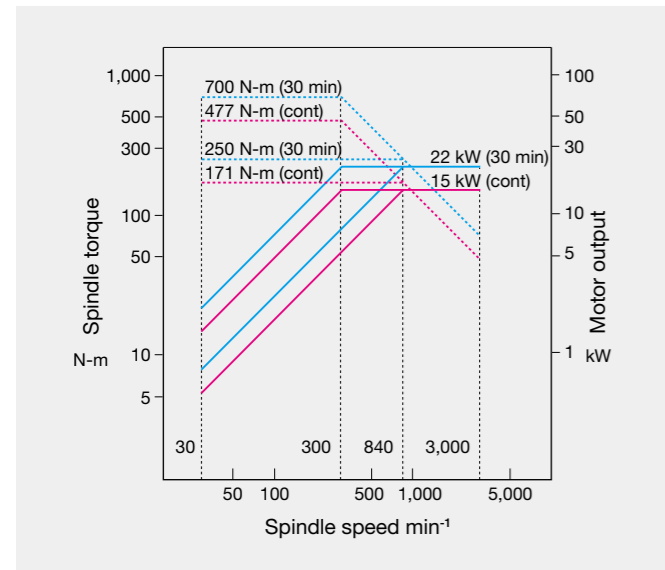
Milling tool spindle

Spindle speed 6,000 min⁻¹
 Output 7.5/4.3 kW (25 min/cont)
 Torque 58.1/33 N-m (25 min/cont)



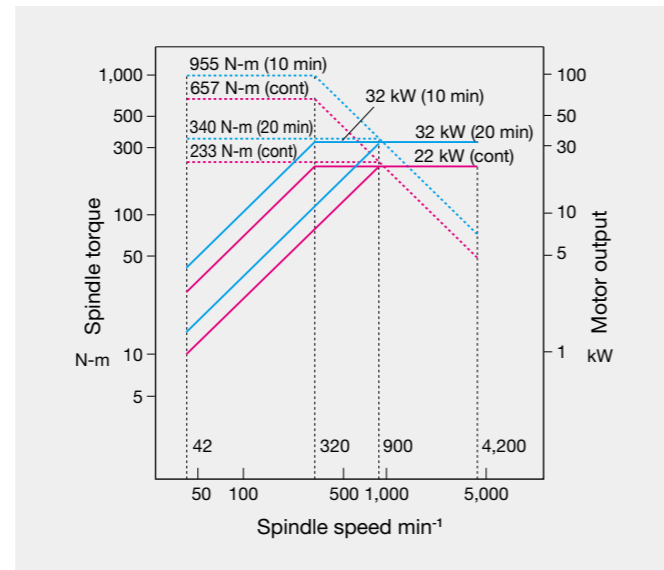
Big-Bore spindle (option)

Spindle speed 3,000 min⁻¹
 Output 22/15 kW (30 min/cont)
 Torque 700/477 N-m (30 min/cont)



High power spindle (option)

Spindle speed 4,200 min⁻¹
 Output 32/22 kW (20 min/cont)
 Torque 955/657 N-m (10 min/cont)

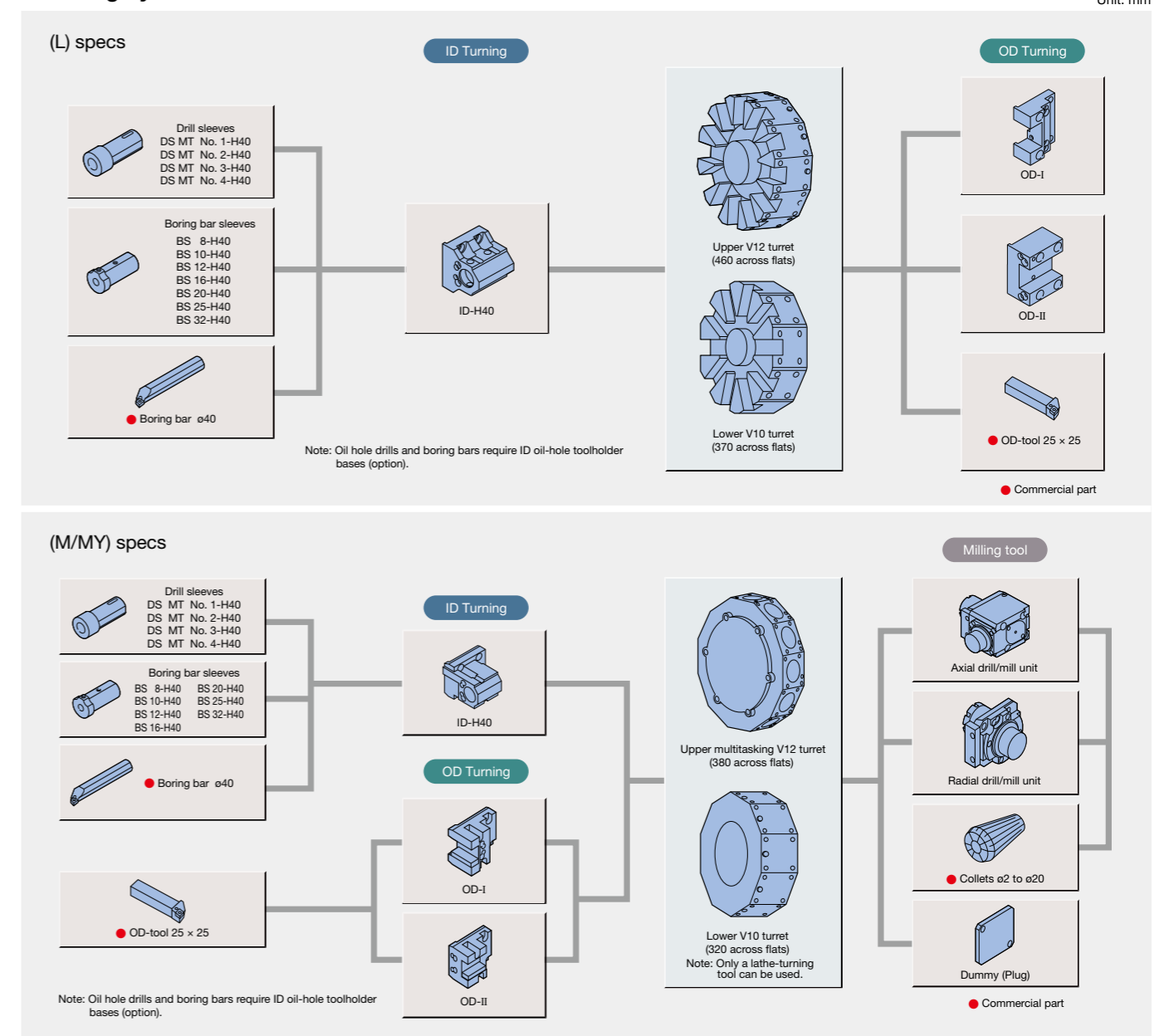


Tooling Kit

	LU4000 EX (L) specs				LU4000 EX (M/MY) specs			
	2ST		2SC		2ST		2SC	
	E	D	E	D	E	D	E	D
OD-I	6	8	8	10	6	8	6	8
OD-II	4	6	2	4	2	4	2	4
ID-H40	8	10	8	10	8	10	8	10
BS 10-H40	-	2	-	2	-	2	-	2
BS 12-H40	-	2	-	2	-	2	-	2
BS 16-H40	-	2	-	2	-	2	-	2
BS 20-H40	4	4	4	4	4	4	4	4
BS 25-H40	4	4	4	4	4	4	4	4
BS 32-H40	-	2	-	2	-	2	-	2
DS MT No. 1-H40	-	1	-	1	-	1	-	1
DS MT No. 2-H40	-	1	-	1	-	1	-	1
DS MT No. 3-H40	1	1	1	1	1	1	1	1
Axial drill/mill unit					2	4	2	3
Radial drill/mill unit					2	3	2	4
Dummy holder					3	3	3	3
Revolving center MT No. 5	-	-	1	1	-	-	1	1

E kit: Economy
 D kit: Deluxe

Tooling System

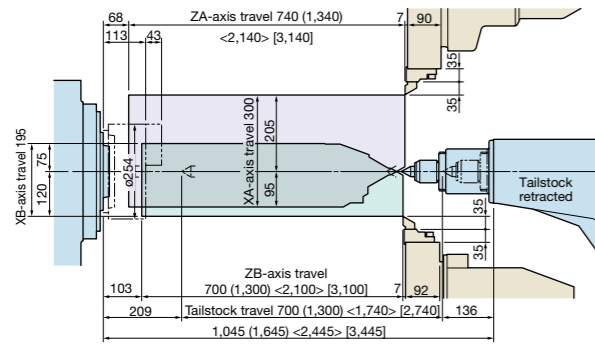


Working Ranges

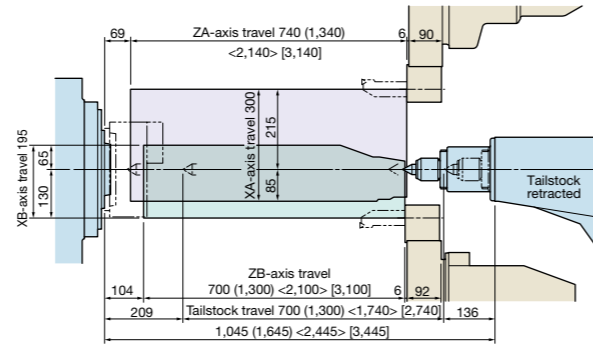
Unit: mm

(L) specs

OD-I



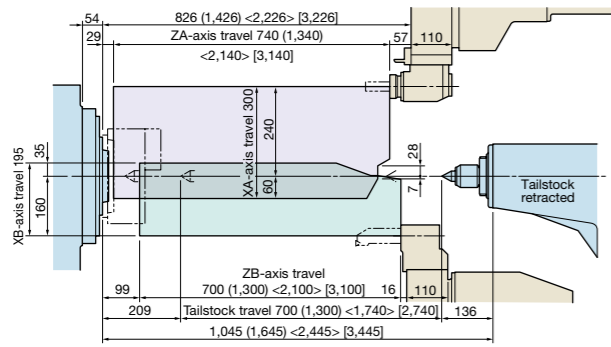
ID



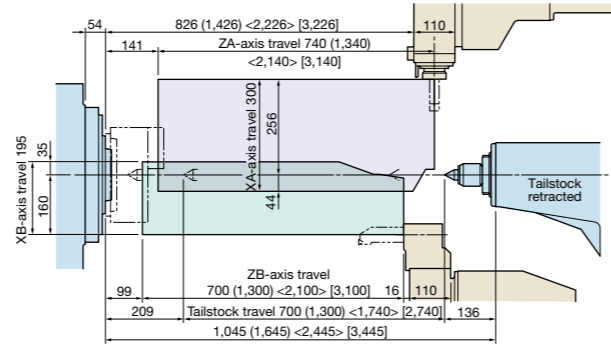
This drawing refers to the 650 DBC machine specification.
(): DBC 1250.
< >: DBC 2000.
[]: DBC 3000.

(M) specs

Axial drill/mill unit



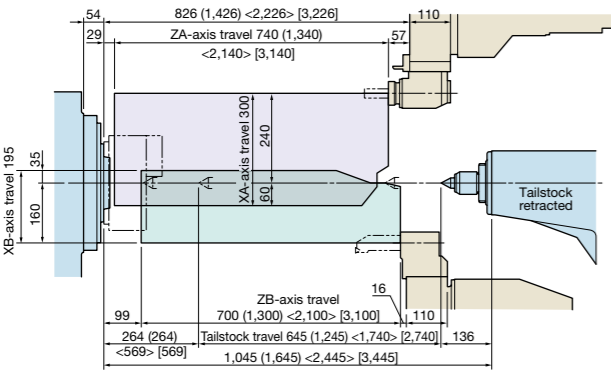
Radial drill/mill unit



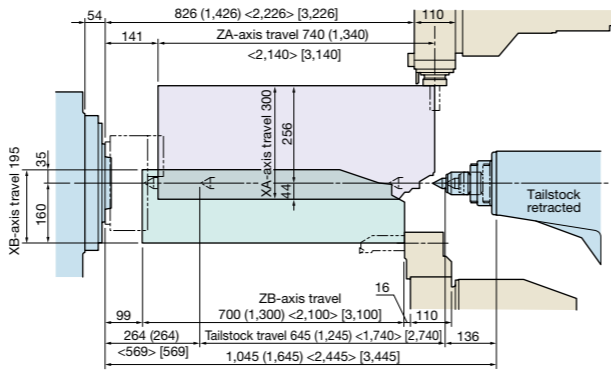
This drawing refers to the 650 DBC machine specification.
(): DBC 1250.
< >: DBC 2000.
[]: DBC 3000.

(MY) specs

Axial drill/mill unit Y=0



Radial drill/mill unit Y=0

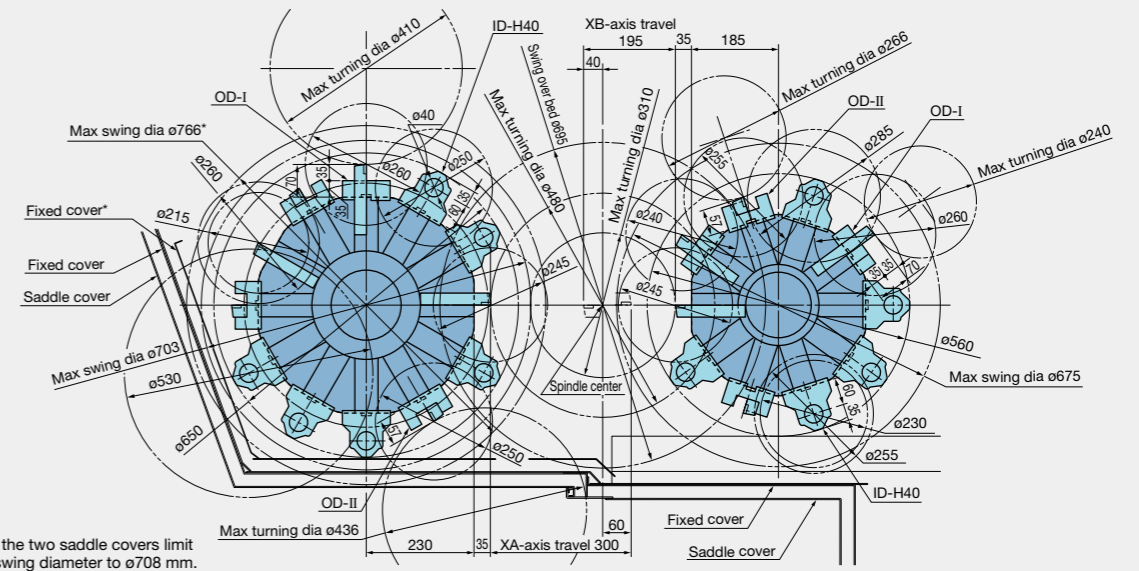


This drawing refers to the 650 DBC machine specification.
(): DBC 1250.
< >: DBC 2000.
[]: DBC 3000.

Turret Interference Diagrams

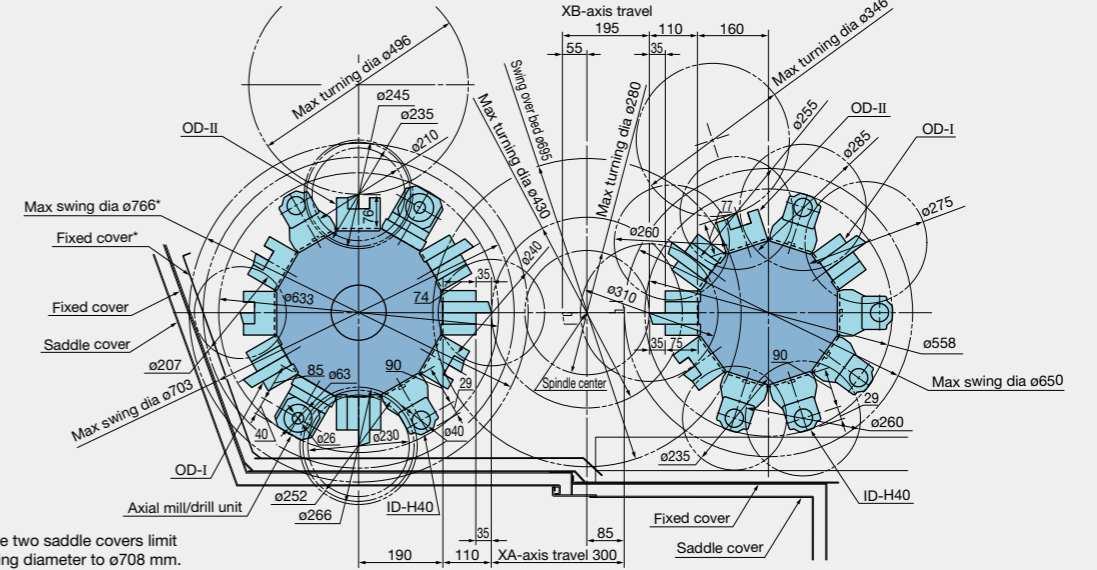
Unit: mm

(L) specs



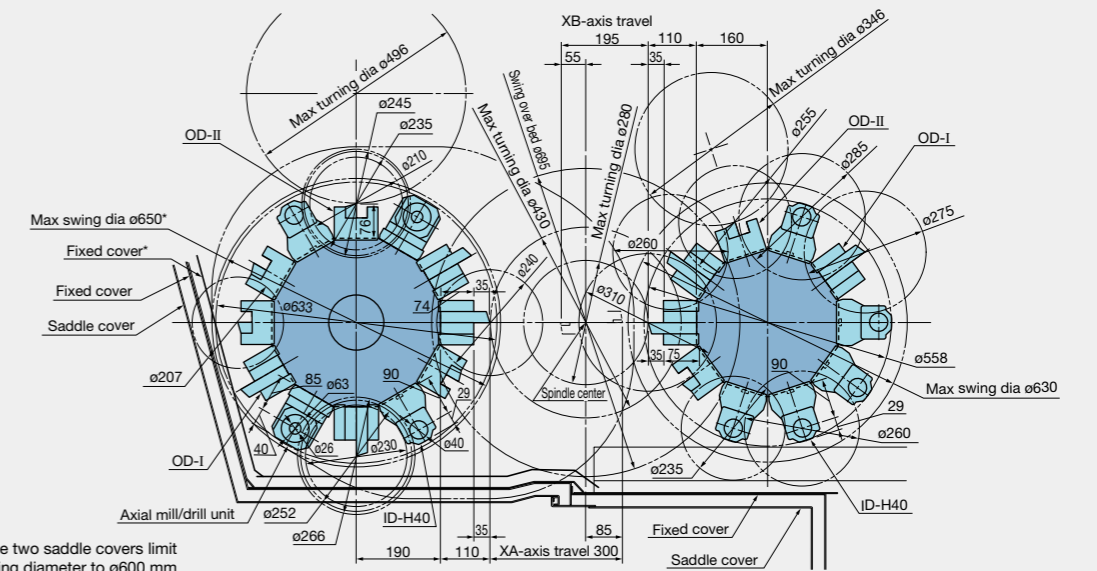
* For 3000 DBC, the two saddle covers limit the maximum swing diameter to ø708 mm.

(M) specs



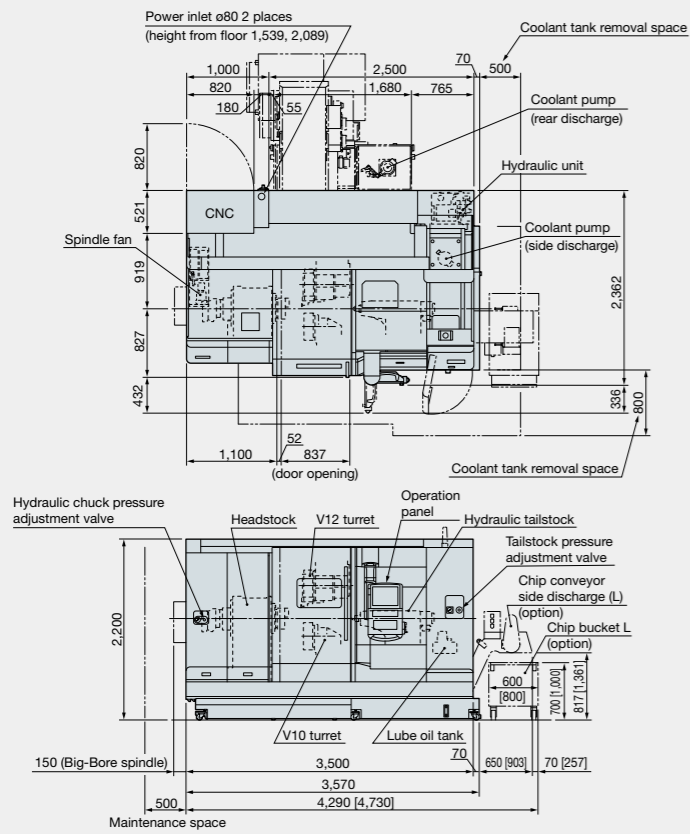
* For 3000 DBC, the two saddle covers limit the maximum swing diameter to ø708 mm.

(MY) specs

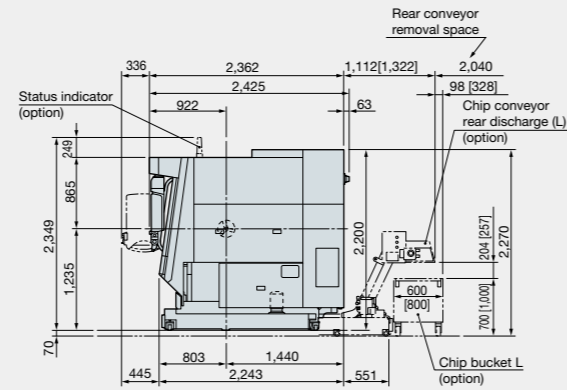


* For 3000 DBC, the two saddle covers limit the maximum swing diameter to ø600 mm.

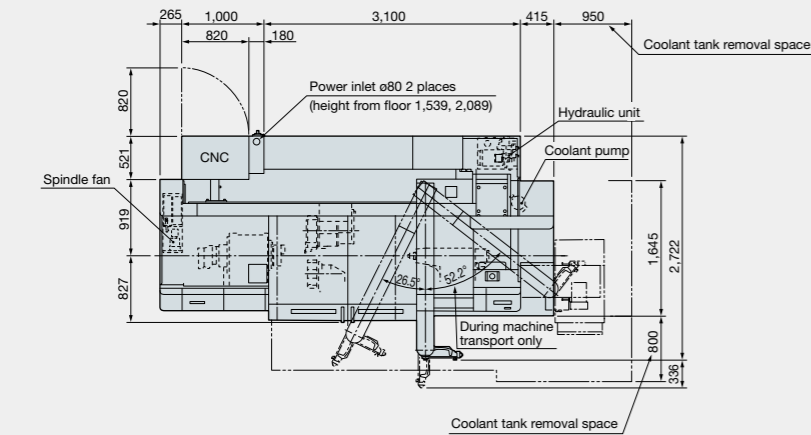
LU4000 EX (L/M) specs DBC 650



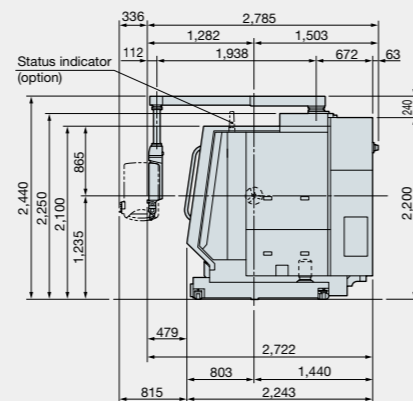
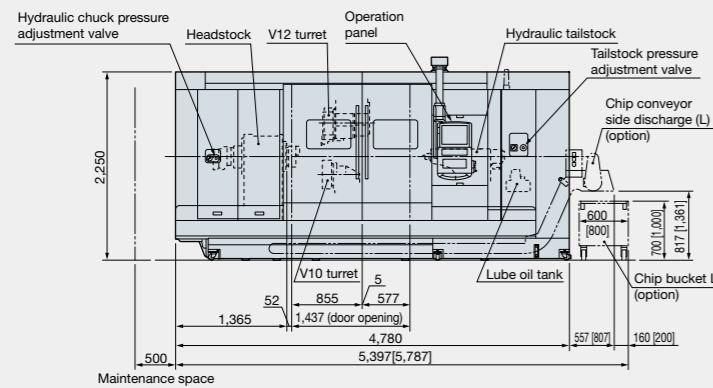
[] : H chip conveyor
Note: Raised machine height of 70 mm is standard for rear discharge.



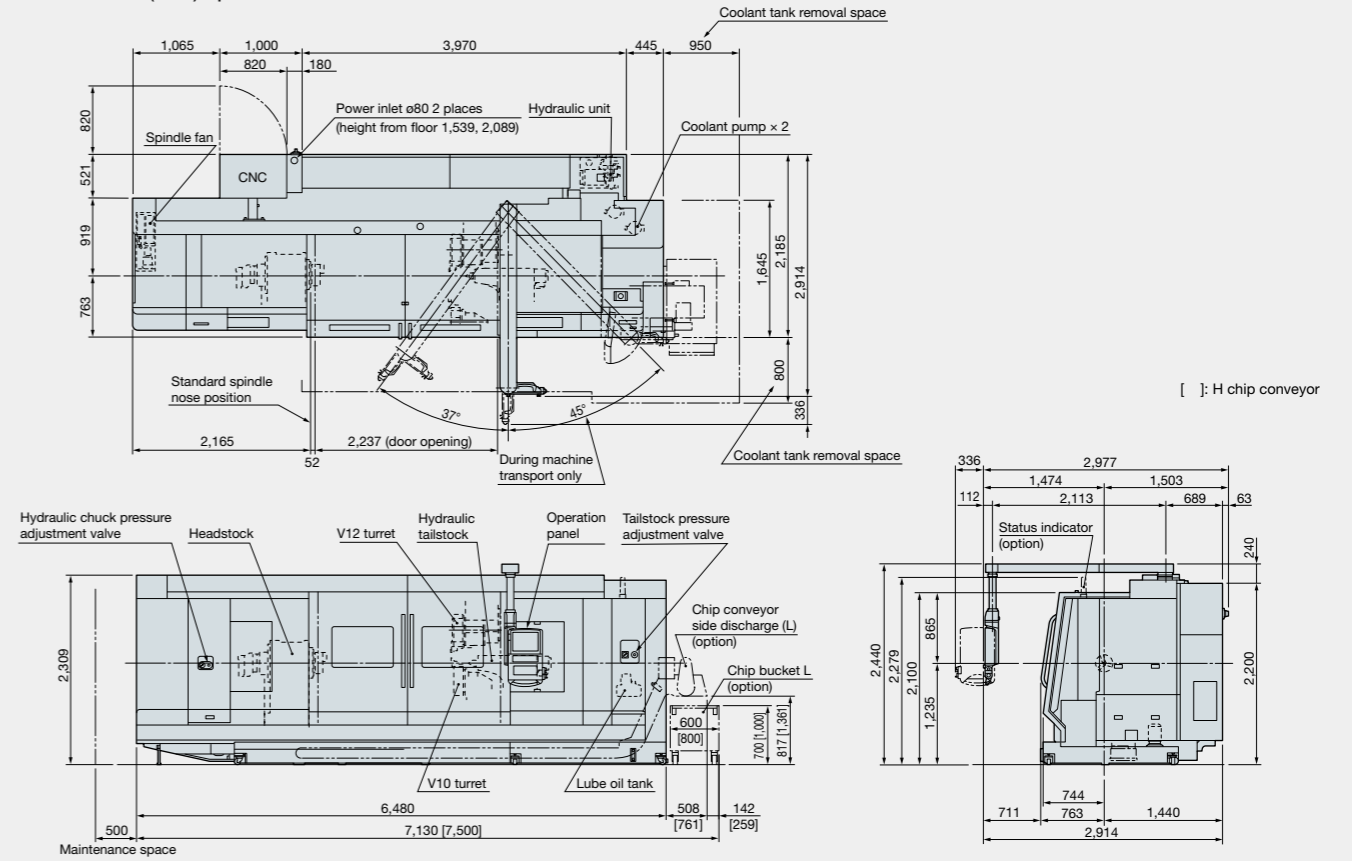
LU4000 EX (L/M) specs DBC 1250



[] : H chip conveyor

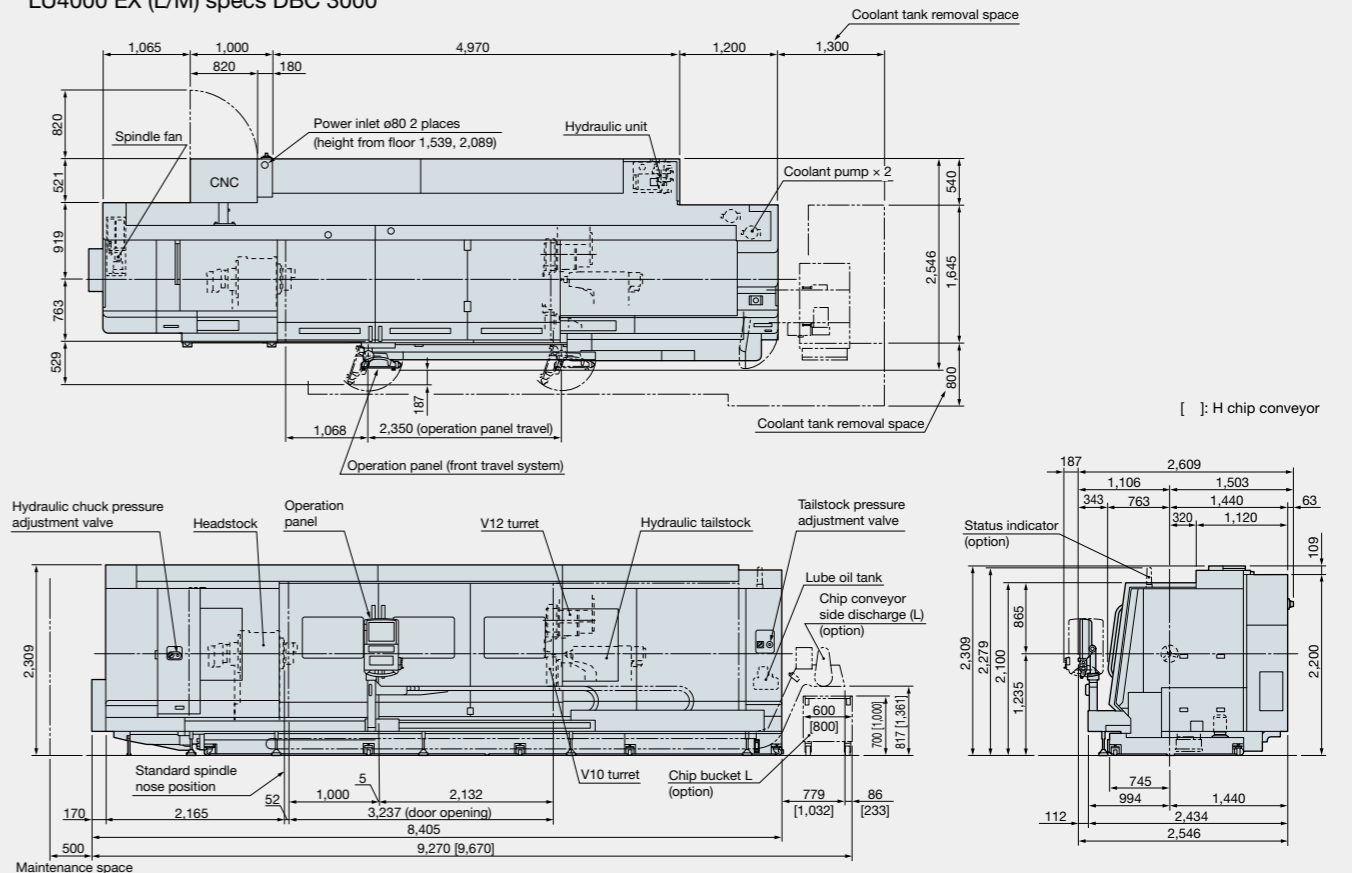


LU4000 EX (L/M) specs DBC 2000



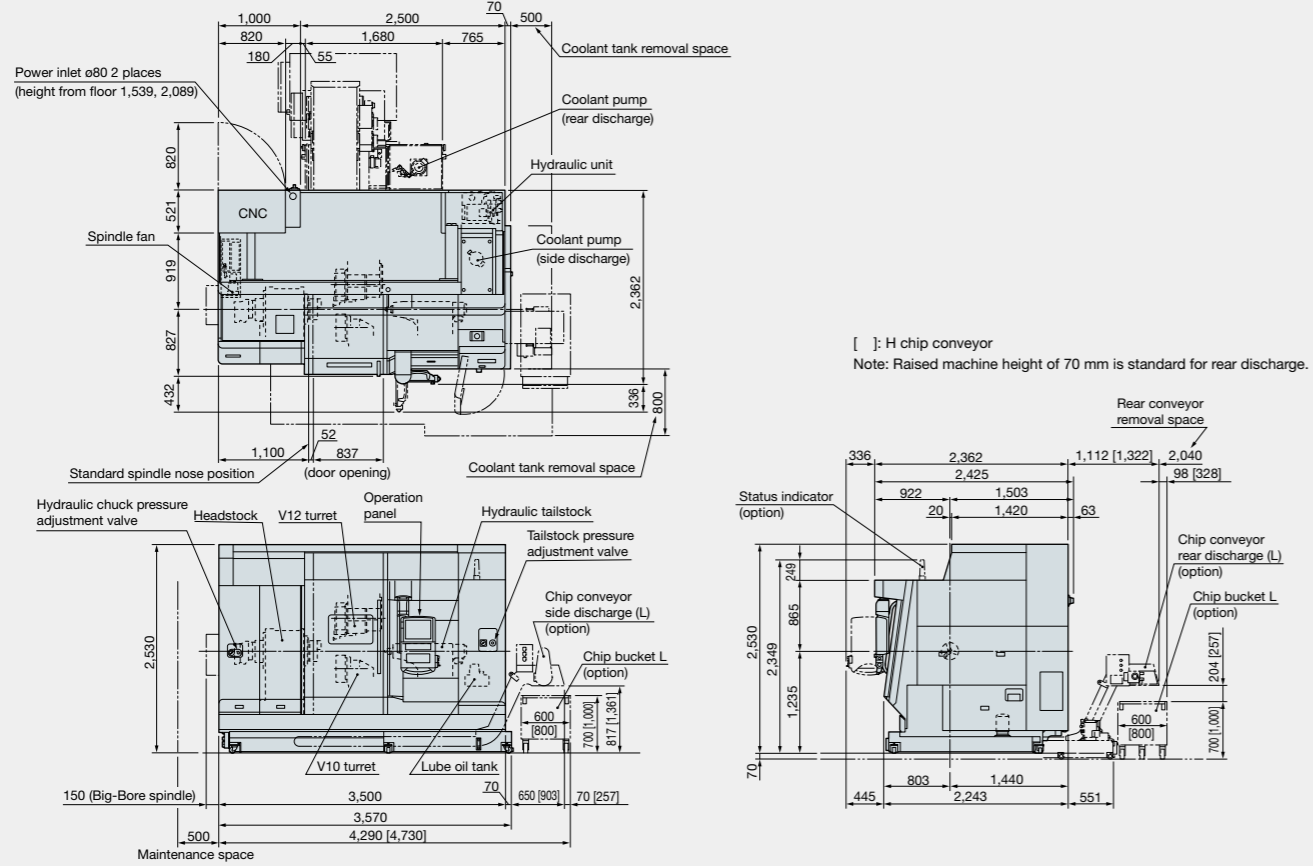
[] : H chip conveyor

LU4000 EX (L/M) specs DBC 3000

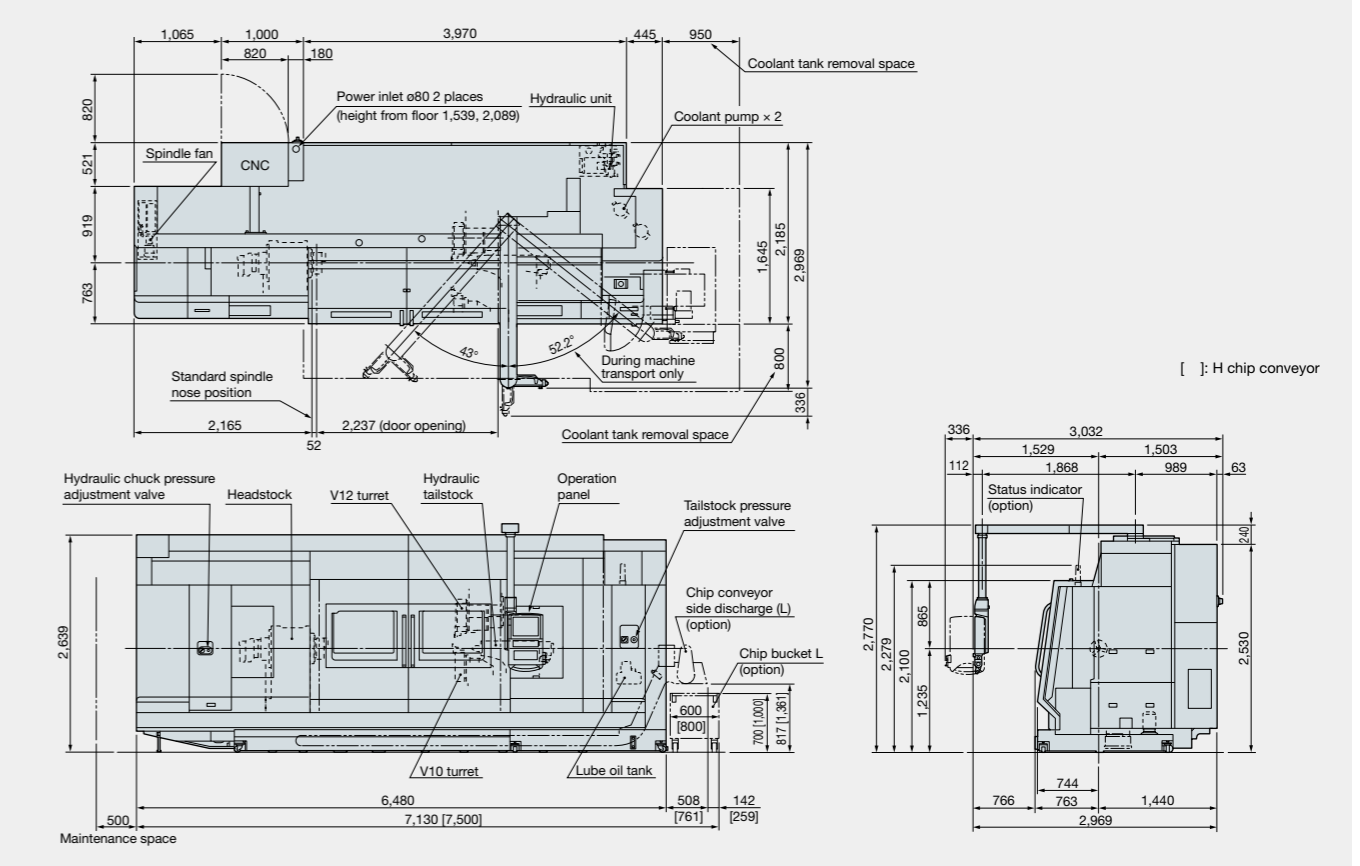


[] : H chip conveyor

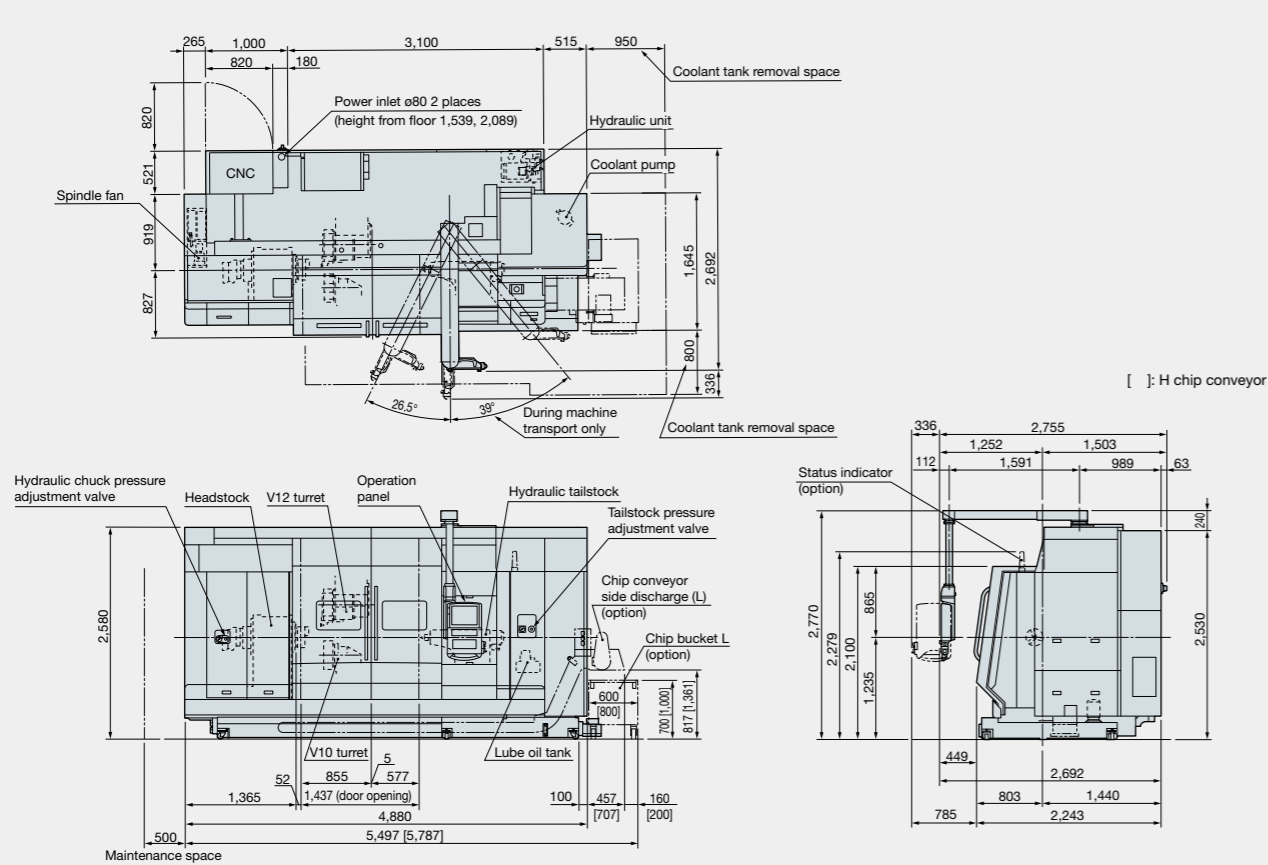
LU4000 EX (MY) specs DBC 650



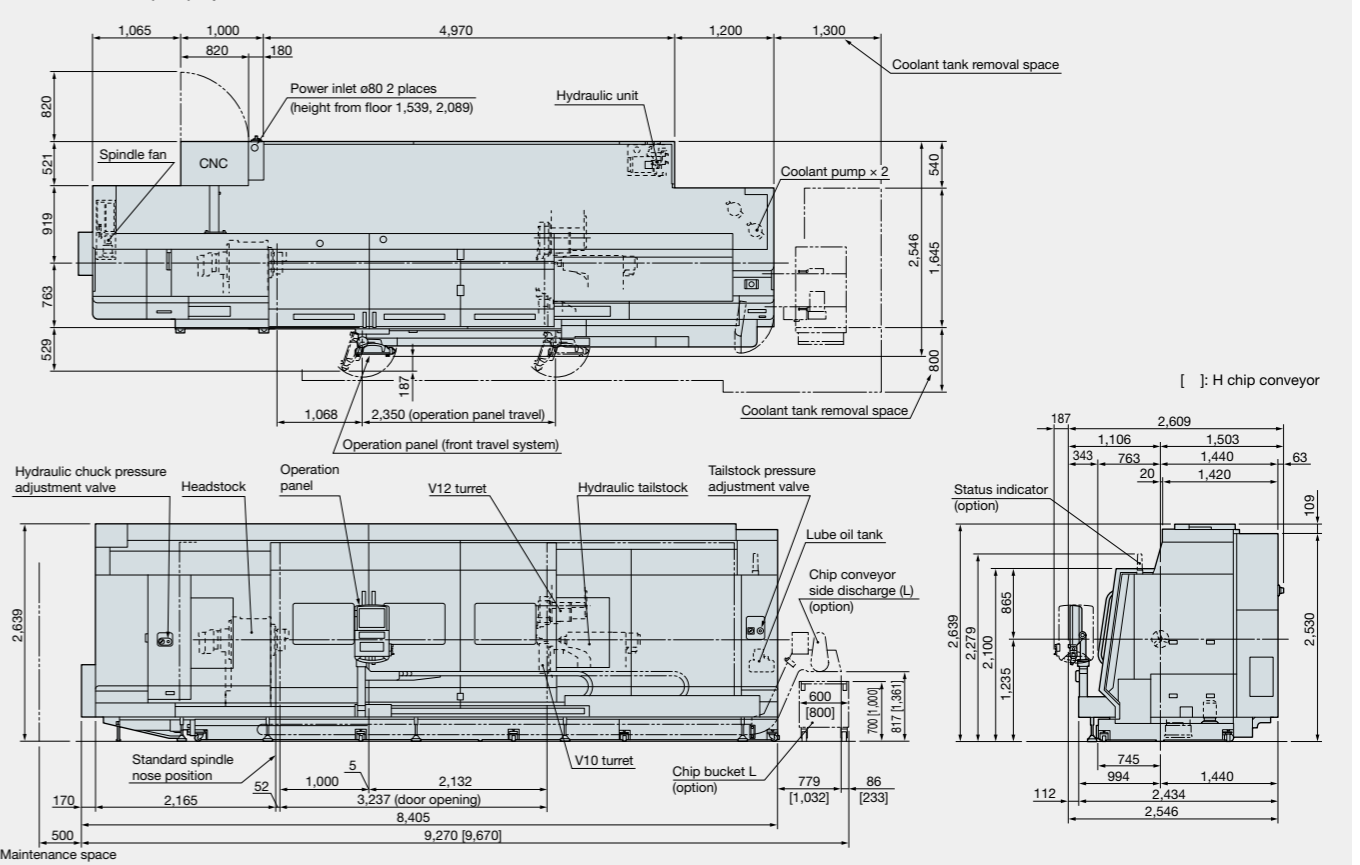
LU4000 EX (MY) specs DBC 2000



LU4000 EX (MY) specs DBC 1250



LU4000 EX (MY) specs DBC 3000



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

OSP-P500

Improved productivity and stable production

As Your Single Source for M-E-I-K (Mechanics - Electronics - IT - Knowledge) merging technology, Okuma offers this CNC to build an advanced “digital twin” that faithfully reproduces machine control and machining operations and creates new value. In addition, Okuma offers productivity improvement and stable production with ease of use that allows customers to use their machining know-how, an energy-saving solutions that achieve both high accuracy/productivity and eco-friendly products, with robust security protection against increasing threats of cyber-attacks.



15-inch operation panel

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

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

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

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

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

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

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

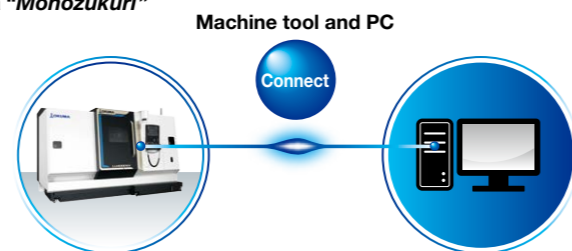
Super-fast and super-accurate machining simulations are performed with the CNC of a real machine on-site to minimize machining preparation work. Actual machining can be started immediately, greatly improving the operating rate of the machine.



Connect Plan Get Connected, Get Started, and Get Innovative with Okuma “Monozukuri”

Connect, Visualize, Improve

Okuma’s Connect Plan is a system that provides analytics for improved utilization by connecting machine tools and visual control of factory operation results and machining records. Simply connect the OSP and a PC and install Connect Plan on the PC to see the machine operation status from the shop floor, from an office, from anywhere. The Connect Plan is an ideal solution for customers trying to raise their machine utilization.



OSP-P500L standard specifications

Basic specs	Control	Turning: X, Z simultaneous 2-axis + 2-axis. Multitasking: X, Z, C simultaneous 3-axis
	Position feedback	OSP full range absolute position feedback (zero-point return not required)
	Min/max command	±99999.999 mm, 8-digit decimal, command unit: 0.001 mm, 0.01 mm, 1 mm,
	Feed	Override: 0 to 200%
	Spindle control	Direct spindle speed commands override 50 to 200%, Constant cutting speed, Optimum turning speed designate
	Tool compensation	Tool selection: 32 sets, tool offset: 32 sets
	Display	15-inch color LCD + multi-touch panel operations
Programming	Security	Operator authentication, lock screen, OSP-VPSII-STD (Virus Protection System)
	Program capacity	Program storage: 4 GB, operation buffer: 2 MB
Operations	Programming	Program management, edit, scheduled programs, user task (G/M code macros, arithmetic, logic statements, math functions, variables, Branch commands), fixed threading cycle, groove cutting spindle cycle, auto programming (LAP4), programming help, block skip; 1 sets, Oriented spindle stop
	OSP suite	Various “suite apps” support the series of machining operations, and “suite operation” enables one-touch access to those apps
	Easy Operation	“Single-mode operation” for a series of operations from a single screen. Easy-to-use operation panel supports complete machine control.
	Machine operations	MDI, manual (rapid traverse, pulse handle), load meter, operations help, alarm help, sequence return, manual interrupt & auto return, Parameter I/O
Communications / Networking	MacMan plus	Machining management: machining results, machine utilization, fault data compile & report, visualization of power consumption, External output
	USB ports, Ethernet, DNC-T1, Smart I/F	
High speed/accuracy	Hi-G control, SERVONAVI AP, Cycle time reduction (machining time shortening, easy parameter setting)	
Energy-saving functions	ECO suite plus	ECO Idling Stop, ECO Operation, ECO Power Monitor (on machine watt meter is optional)
	Power Regeneration System	Regenerative power is used when the spindle and feed axes decelerate to reduce energy waste.

OSP-P500L kit specifications/optional specifications

Item	Kit specs	NML				AOT-M				DT				DT AOT-M			
		E	D	E	D	E	D	E	D	E	D	E	D	E	D		
Digital Twin																	
Virtual Machining																	
Quick Modeling																	
OPC UA for Machine Tools																	
OSP API KIT																	
Interactive Programming																	
Advanced One-Touch IGF-L (w/Real 3D)*1																	
Smart OSP Operation																	
Programming																	
Circular threading																	
Program notes																	
User task I/O variables, 8 each																	
Common variables 1,000 sets (Std: 200 sets)																	
Work coordinate	10 sets																
system select	100 sets																
Thread matching																	
Pause for threading during non-fixed cycle																	
Variable Spindle Speed Threading (VSST)																	
Inverse time feed																	
Mid-block sequence return																	
Milling machine specs (M)	Synchronized C-axis control																
Coordinate convert																	
Profile generate																	
Flat turning																	
Coordinate calculation (with NCYL commands)																	
Helical cutting																	
Slope machining (TypeI, TypeII)																	
Hobbing																	
Harmonic Spindle Speed Control																	
Tool life management (include prior notice)																	
Block skip: 9 sets																	
Home position																	
Monitoring																	
Real 3-D simulation																	
Cycle time over check																	
Load monitor (spindle, feed axis)																	
No-load detection, part number expansion, Workpiece ejection detection																	
AI machine diagnostics (feed axes)*2																	
Machine Status Logger																	
Operation end buzzer																	
Workpiece 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]																	
External Input/Output and Communication Functions																	
RS-232C interface																	
Ethernet/IP																	
Networking	DNC-DT, DNC-T3																
	DNC-C/Ethernet																
Measuring																	
In-process workpiece gauging																	
Z-axis automatic zero offset																	
C-axis automatic zero offset																	
Y-axis zero offset and tool offset																	
Y-axis slope gauging																	
3-point gauging																	
Gauge data output	File output																
Post-process workpiece gauging	Quantitative compensation (five level, seven level)																
	BCD																
	RS-232C (w/dedicated channel)																
Energy-saving ECO suite plus																	
Spindle power peak cutting																	
ECO Power Monitor	On-machine wattmeter																
Automation / Unattended Operation																	
Auto power shutoff M02, alarm																	
Warm-up function (by calendar timer)																	
Tool retract cycle																	
External program	Pushbutton, rotary switch																
	Digital switch, BCD																
Connection with automated devices	Robot, loader I/F*3																
	Bar feeder I/F*3																
High-Speed/High-Accuracy																	
Cycle time reduction*3	Operation time reduction																
	Chuck and tailstock movement during spindle rotation																
0.1 μm control*3																	
Pitch error compensation																	
AbsoScale detection*3																	
Hi-Cut Pro																	
Other																	
One-Touch Spreadsheet																	
Machining Navi [L-gII, T-g threading]																	
Spindle dead-slow cutting																	
Y-axis center height offset																	
Feed axis retraction, tapping retraction																	
Short circuit breaker																	
External M codes [2 sets, 4 sets, 8 sets, 16 sets]																	
OSP-VPSII-EX (Virus Protection System)																	

Note: NML: Normal kit, AOT-M: Advanced One-Touch IGF-L kit, DT: Digital Twin kit, DT AOT-M: Digital Twin Advanced One-Touch IGF-L kit, E: Economy, D: Deluxe
VE and VD kits are also equipped with the Digital Twin on PC function, allowing running from a PC.
*1. Applied according to machine specifications.
*2. With AbsoScale detection specs, ball-screw wear detection is possible.
*3. Engineering discussions required.
▲: Supplied to the milling specs of each kit.
Specifications, etc. are subject to change without notice.

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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