1-Saddle CNC Lathe

**SPACE TURN LB3000 EX II**
LB that transcends LB

Okuma’s LB series of NC lathes have always been pioneers, leaving a path for others to follow behind. The LB series thus has an obligation to respond to the needs of the times, open possibilities for the next generation, and deliver new value to customers worldwide. That means constantly developing LBs that transcend LB.

Okuma’s advanced technology in its SPACE TURN LB EX II series continues to write new pages in world standards for machining quality, speed, power & torque, multitasking, ease of operation, and more.

Machine photo shows optional specifications.

The machine against which all others will be measured

- **Highest Quality**
  - Application of Thermo-Friendly Concept
  - Slanted-box bed construction

- **Super Rigidity Speed**
  - Equipped with new high-power, high-torque motor
  - Combination of larger and faster spindle
  - Large through-hole diameter, large working range

- **Extreme Versatility**
  - Abundant series variation
  - NC tailstock standard equipment

- **Easy Operation**
  - The Next-Generation Intelligent CNC OSP suite
High accuracy specifications overall assure machining with high thermal stability

**Thermo-Friendly Concept for unparalleled thermal stability**

Okuma’s Thermo-Friendly Concept is used on all the LB EX machines for extraordinary machining accuracy, using our unique machine design and thermal deviation control technology. Outstanding thermal stability in long-time continuous operation, multitasking, front and back side machining with a subspindle, and even Y-axis machining without troublesome compensation or warming up.

- The “actual data” referred to above for this brochure represent examples, and may not be obtained due to differences in specifications, tooling, cutting and other conditions.

**Slanted-box bed configuration with superior construction and rigidity**

The next evolution of the slanted-box bed construction that has been highly praised as a “rugged, Okuma-like construction” in the SPACE TURN series. The primary units of headstock and turret on a box bed is optimally placed for outstanding thermal stability and high rigidity. Exhibits stable machining accuracy even in heavy cutting.

- The “actual data” referred to above for this brochure represent examples, and may not be obtained due to differences in specifications, tooling, cutting and other conditions.

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**Machining dimensional change**

**Highest Quality**

**Over time: ø5 µm**

Actual data [LB3000 EX (L) turning] (ambient temperature: 8°C change)

- Cycle time: 60 sec
- X-axis travel: 60 mm
- Cutting conditions: 
  - Spindle speed: 4,000 min⁻¹
  - Cutting depth: 0.05 mm
  - Feed: 0.05 mm/rev
- Workpiece material: BsB

- Sub-spindle: 0.3 µm/4,000 min⁻¹
- Standard spindle: 0.2 µm/1,800 min⁻¹
- Sub-spindle: 0.3 µm/3,000 min⁻¹
- Standard spindle: 0.2 µm/1,800 min⁻¹

Material: BsB

---

**Roundness**

**Tool nose uniformity** (for better surface roughness)
Super Rigidity Speed

Powerful motor on the spindle gives turning capacity of 4.4 mm²
Spindle with a larger bearing internal diameter of ø120 mm can accommodate larger workpieces, and a turning capacity of 4.4 mm² is achieved with a high-speed, wide-area full power motor. Stable, high quality machining, from heavy to high speed cutting.

- Spindle size: Bearing ID ø120 (bore ø80)
- Spindle speed: 5,000 min⁻¹
- Output: 22 kW (30 hp)
- Torque: 427 N·m (314 ft-lbf)

Reduced operation time achieved with higher speed machine movements

- Rapid traverse
  - X: 25 m/min (984 ipm)
  - Z: 30 m/min (1,181 ipm)
- Spindle start/stop: 3.0 sec (5,000 min⁻¹)
- Turret rotate: 0.1 sec/index
- NC tailstock rapids: 12 m/min (472 ipm)

Turning 4.4 mm²
(Workpiece: S45C)

- ø59 (ø2.32) carbide insert drill
- Cutting speed V: 180 m/min (591 fpm)
- Feedrate f: 0.55 mm/rev (0.02 ipr)

Duty cutting

- ø120, 5,000 min⁻¹
- Cutting depth t: 8 mm (0.31 in.)
- Cutting speed V: 150 m/min (492 fpm)
- Feedrate f: 0.25 mm/rev (0.01 ipr)

Huge reduction in machining time with an original high power motor and faster machine movements

Improved productivity: 20% shorter cycle time*

* The "actual data" referred to above for this brochure represent examples, and may not be obtained due to differences in specifications, tooling, cutting and other conditions.
Compact new PREX motor gives milling performance of 200 cm³/min

Compact, high-power, high-torque PREX motor also used for milling spindle of the multitasking V12 radial turret. This combined with a powerful, highly rigid bolt clamp system greatly increases multitasking speed.

- M spindle: 6,000 min⁻¹
- Output: PREX 7.1 kW (9.5 hp)
- Torque: 40.4 N·m (29.7 ft-lbf)

Wide working range, new longitudinal expansion

- End milling
  - Chip volume: 200 cm³/min (12.2 in³/min)
  - ø20 7-flute carbide
  - Cutting speed: V: 200 m/min (7,874 ipm)
  - Cutting depth: t: 20 × 2.5 mm (0.79 × 0.10 in.)
  - Feedrate: f: 1.26 mm/rev (0.05 ipr)

- Drilling
  - ø20 carbide solid drill
  - Cutting speed: V: 135 m/min (4,429 ipm)
  - Feedrate: f: 0.3 mm/rev (0.01 ipr)

- Tapping M20 P2.5
  - (Synchronized tapping)

Reduced operation time achieved with higher speed machine movements

- Turret rotate: 0.1 sec/ index
- M-spindle start/stop: 0.3 sec (6,000 min⁻¹)
- M-M switch: 0.7 sec

Milling capacity 200 cm³/min

(Actual data*)

(Workpiece: S45C)

Milling tool spindle

Max machining dia: ø410 mm (M turret: ø340 mm)

- Standard spindle: JIS A2-6 8-in. chuck, 10-in. chuck
- Big-bore spindle: JIS A2-8 10-in. chuck, 12-in. chuck
- Super big-bore spindle: JIS A2-11 15-in. chuck

Distance between centers:

- L · M specs: 500 / 1,000 / 1,300 mm
- MY specs: 450 / 950 / 1,200 mm
- W · MW · MYW spec: 500 / 800 mm

Spindle thru hole: Bigger

- Standard spindle: ø80 mm (ø3.15 in.)
- Big-bore spindle: ø91mm (ø3.59 in.)
- Super big-bore spindle: ø110mm (ø4.33 in.)

The “actual data” referred to above for this brochure represent examples, and may not be obtained due to differences in specifications, tooling, cutting and other conditions.

Greater efficiency with highest milling performance in its class and fast tool change times

Motor output

Spindle torque

- ø6,000 min⁻¹
- ø20 7-flute carbide
- ø20 carbide solid drill
- M20 P2.5

(Workpiece: S45C)
Extreme Versatility

NC tailstock that shortens setup and automates center work is standard equipment

Up to 10 pairs of tailstock positions can be set, enabling continuous machining of workpieces with 10 different lengths without setup. In addition, thrust can be switched between high and low without resetting the workpiece. (Tailstock thrust high/low switch: option)

High accuracy positioning is also possible with a high speed linear guide employing a ball screw guide.

- Tailstock thrust: 0.5 to 5 kN (Opt: 1 to 7.5 kN)
- Rapid traverse: 12 m/min (472 ipm)
- Approach: 10 m/min (394 ipm)
- Retract: 12 m/min (472 ipm)

Note: Please select a hydraulic quill for face driver machining

Integrated operations with sub-spindle

With these sub-spindle specifications, front and back machining can be done on a single LB3000 EXg. Interference is not a worry even in back face machining. (Compatible only with W, MW, MYW specs with distance between centers of 500 mm, 1000 mm)

Complete multitasking with Y-axis functions

One chuck machining even with irregularly shaped workpieces

A variety of milling operations can be accommodated with high-accuracy, wide-range Y-axis travel using a double slide system. Achieves complete multitasking with a single chucking (MY, MYW specifications).

- Travel: MY specs: 120 mm (+70 to -50)
  MYW specs: 115 mm (+70 to -45)
- Y-axis rapid traverse: 12.5 m/min (492 ipm)

More efficient turning of long workpieces with auto follower rest

By synchronizing with turret in NC part program, support is always provided near the place being cut, even with long or cantilevered workpieces (optional for 1,300 DBC L/M, 1,200 DBC MY specs).

* Auto follower rest requires selection of auto tow-along tailstock and hydraulic tailstock

Providing rich variation and optimum ease of use

Sub-spindle

Spindle speed

Motor output

- 100 mm: 6,000 min⁻¹
- 117.5 kW (20 min/cont)
- 75 kW (cont)

- MYW specs: 115 mm (+70 to -45)
- 120 mm (+70 to -50)

- 109/75 N·m (20 min/cont)
- 110 kW (cont)
- 11 kW (20 min)

* Auto follower rest requires selection of auto tow-along tailstock and hydraulic tailstock
The Next-Generation Intelligent CNC

**OSP suite**

Every aspect of “monozukuri” encompassed with one finger

**Suite apps for visualization of all information, from preparation to machining**

**Suite operation for stress-free operability**

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**The Next-Generation Intelligent CNC**

It is a suite of premium applications to increase the efficiency of each manufacturing process by increasing status visibility and digitizing shop floor production instructions, setup information, machining and utilization, machine maintenance information and more. Intelligent, fast machining and efficient “monozukuri” (craftsmanship-based manufacturing) achieved with a control interface that can be operated on a new dimension.

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

Suite apps for the visualization of all kinds of information, from workpiece drawings, tooling and other information needed in machining preparation to information on machining and machine status; suite operation for the full command of those functions. Okuma’s next-generation intelligent CNC “OSP suite” combines intelligent technology to elicit maximum performance from machine tools with evolution of the CNC controller to all aspects of monozukuri, from production preparation to maintenance.

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**Suite apps**

In addition to Okuma’s Intelligent Technology, a rich array of applications is available for visualization and digitization of information needed on shop floors to support high-level “monozukuri”.

**Actual Load**

**MacMan Monitor**

**Tool Data**

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**Maintenance Monitor that displays daily and regular check items**

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**Suite operation**

A highly reliable touch panel suited to shop floors is used. Suite apps can be started by touching a function key icon on the right side of the screen. They are then displayed in a pop-up window. The icon layout is customizable. Suite apps can be accessed with one touch according to the desired phase of operation.
### Machine Specifications

<table>
<thead>
<tr>
<th>Item</th>
<th>T</th>
<th>C</th>
<th>G</th>
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<th>C</th>
<th>G</th>
<th>T</th>
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<tbody>
<tr>
<td><strong>Spindle</strong></td>
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<tr>
<td>Spindle bore dia</td>
<td>ø130 (ø4.96)</td>
<td>ø125 (ø4.92)</td>
<td>ø120 (ø4.72)</td>
<td>ø115 (ø4.53)</td>
<td>ø110 (ø4.33)</td>
<td>ø105 (ø4.13)</td>
<td>ø100 (ø4.00)</td>
<td>ø95 (ø3.74)</td>
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<td>Spindle nose</td>
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<tr>
<td>JIS A2-8 {JIS A2-8}</td>
<td>970 (38.19)</td>
<td>1,240 (49.04)</td>
<td>785 (30.91)</td>
<td>1,085 (42.72)</td>
<td>785 (30.91)</td>
<td>1,085 (42.72)</td>
<td>785 (30.91)</td>
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<td>Sub-spindle</td>
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<tr>
<td>Spindle speed</td>
<td>45 to 5,000 (22 to 2,830)</td>
<td>45 to 5,000 (22 to 2,830)</td>
<td>45 to 5,000 (22 to 2,830)</td>
<td>45 to 5,000 (22 to 2,830)</td>
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<td><strong>Cutting</strong></td>
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<td>Boring tool diameter</td>
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<td>JIS A2-6 {JIS A2-8}</td>
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<td>1,839 (72)</td>
<td>1,975 (77)</td>
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<td>Feedrate</td>
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<td>Rapid traverse (C)</td>
<td>200 (7.9)</td>
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<td><strong>CNC</strong></td>
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<td>OSP-P300L</td>
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<tr>
<td>Motor speed (rpm)</td>
<td>6,100 (240)</td>
<td>6,800 (267)</td>
<td>7,800 (310)</td>
<td>8,600 (331)</td>
<td>7,800 (310)</td>
<td>8,600 (331)</td>
<td>7,800 (310)</td>
<td>8,600 (331)</td>
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<tr>
<td><strong>Tooling</strong></td>
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<tr>
<td>Coolant pump</td>
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<td>Sub-spindle travel</td>
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<tr>
<td><strong>Machine size</strong></td>
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<tr>
<td>Floor space (idle dis./L type)</td>
<td>2,734 to 1,749 (1,089 to 663)</td>
<td>2,734 to 1,749 (1,089 to 663)</td>
<td>2,734 to 1,749 (1,089 to 663)</td>
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<tr>
<td>Floor space (idle dis./I type)</td>
<td>2,340 to 1,749 (929 to 696)</td>
<td>2,340 to 1,749 (929 to 696)</td>
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<td><strong>Work (CNC)</strong></td>
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<tr>
<td>Weight (CNC)</td>
<td>4,260 (8,668)</td>
<td>4,400 (8,880)</td>
<td>6,000 (13,200)</td>
<td>6,700 (14,745)</td>
<td>4,500 (9,500)</td>
<td>5,500 (11,000)</td>
<td>6,100 (13,420)</td>
<td>6,800 (14,991)</td>
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<tr>
<td>Workpiece size</td>
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<td>OSP-P300L</td>
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</tbody>
</table>
## Chip conveyor types and application

<table>
<thead>
<tr>
<th>Application</th>
<th>Hinge type</th>
<th>Scraping type</th>
<th>Magnet scraper type</th>
<th>Hinge scraper type</th>
</tr>
</thead>
<tbody>
<tr>
<td>General use</td>
<td>For steel</td>
<td>For castings</td>
<td>Suitable with sludge</td>
<td>Filtration of long and short chips and coolant</td>
</tr>
<tr>
<td>Features</td>
<td>For castings</td>
<td>Magnet scraper for sludge processing</td>
<td>Metal scraper for nonferrous metals</td>
<td>With drum filter</td>
</tr>
</tbody>
</table>

Note: Machine platform may be necessary depending on the type of conveyor.

---

## Standard Specifications & Accessories

<table>
<thead>
<tr>
<th>Model</th>
<th>Lubrication</th>
<th>Chucking</th>
<th>Headstock</th>
<th>Chucking Kit / Tooling Kit</th>
</tr>
</thead>
<tbody>
<tr>
<td>LB3000 EX T</td>
<td>LB3000 EX T</td>
<td>LB3000 EX T</td>
<td>LB3000 EX T</td>
<td>LB3000 EX T</td>
</tr>
</tbody>
</table>

### Specifications

- **Lubrication**
  - Lubrication (A-1 + oil source pressure detector)
- **Chucking**
  - Chuck: 8 in. color TFT (touch panel)
  - Chuck: NC travel
- **Headstock**
  - Big-Bore spindle: 30/22 kW (30 min/cont)
  - Super big bore spindle: 30/22 kW (30 min/cont)
  - High power spindle: 30/22 kW (30 min/cont)

### Accessories

- **Coolant**
  - Coolant control
  - Coolant volume: 1,000 m³
  - Coolant system: 1,000 m³
- **Tooling System**
  - Chuck: 8 in. color TFT (touch panel)
  - Chuck: NC travel
- **Lubrication**
  - Lubrication (A-1 + oil source pressure detector)
  - Lubrication (A-1 + oil source pressure detector)

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## Optional Specs & Accessories

- **Coolant**
  - Coolant control
  - Coolant volume: 1,000 m³
  - Coolant system: 1,000 m³
- **Headstock**
  - Big-Bore spindle: 30/22 kW (30 min/cont)
  - Super big bore spindle: 30/22 kW (30 min/cont)
- **Headstock**
  - High power spindle: 30/22 kW (30 min/cont)

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## Various chip conveyors

### Chip conveyor types and application

<table>
<thead>
<tr>
<th>Name</th>
<th>Hinge type</th>
<th>Scraping type</th>
<th>Magnet scraper type</th>
<th>Hinge scraper type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application</td>
<td>For steel</td>
<td>For castings</td>
<td>Suitable with sludge</td>
<td>Filtration of long and short chips and coolant</td>
</tr>
<tr>
<td>Features</td>
<td>For castings</td>
<td>Magnet scraper for sludge processing</td>
<td>Metal scraper for nonferrous metals</td>
<td>With drum filter</td>
</tr>
<tr>
<td>Shape</td>
<td>For steel</td>
<td>For castings</td>
<td>Suitable with sludge</td>
<td>Filtration of long and short chips and coolant</td>
</tr>
</tbody>
</table>

Note: Machine platform may be necessary depending on the type of conveyor.

*With drum filter
Environmental economic effect of Thermo-Friendly Concept

In environments with normal temperature changes, machining accuracies equivalent to those in temperature-controlled rooms are achieved. As long as the operator is comfortable, there is no need for air-conditioning to ensure accuracy.

- Amount of energy consumed for temperature-controlled room
  - Per year: Savings of approximately 135,000 kWh
  - Prevents CO₂ emissions equivalent to about 7,500 beech trees

Thermo-Friendly Concept

Ecology & Economy

Machines and technology to achieve eco-friendly "monozukuri" (making things)

Energy-saving function

- Power-saving function
  - Peripheral device power shutoff after completion of automatic operation
  - Spindle-cooler, etc.

- Energy-saving servos, NC units

- Uses PREX motor
  - Energy-saving control during no-load turning
  - Lightweight, low inertia, etc.

- Energy-saving display device

Energy-saving technology

- High-performance single CPU configuration
- Energy savings from simple design
- Energy-saving display device

Energy-savings from PREX motor

PREX motor developed by Okuma eliminates rotor winding and achieves small size and high performance.

- Energy efficiency: 5% increase
- Power consumption: 10% decrease

Machine tool idling stop

ECO Idling Stop

Only the necessary unit operates

- Operation only for the time required for each unit

ECO Idling Stop

Idling time can be set by individual unit for the spindle, feed axis, and peripheral equipment. By reducing the idling time, power consumption can also be reduced.

On-the-spot check of energy savings

ECO Power Monitor

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

- Intermittent/continuous operation of chip conveyor and mist collector during operation
  - "ECO Operation" (optional)

Example of equipment that can use Idling Stop

Example of ECO Power Monitor check

Before ECO Idling Stop

After ECO Idling Stop

The displayed values are one example.

Dimensional Drawings

Drawings shown are with standard spindle specs.

LB3000 EX (L / M) x500

LB3000 EX (L / M) x1,000

LB3000 EX (L / M) x1,300

Dimensions for H chip conveyor

Energy-saving control

Power consumption 10% decrease

Example of Power Monitor check

Energy-saving display device

- Energy savings from simple design

CPU configuration

High-performance single (previous model) compared with (optional)

Environmental economic effect

- Per year: Savings of approximately 135,000 kWh
- Prevents CO₂ emissions equivalent to about 7,500 beech trees

Energy-saving function

- Energy-saving control during no-load turning
- Lightweight, low inertia, etc.

Energy-saving technology

- High-performance single CPU configuration
- Energy savings from simple design
- Energy-saving display device

Ecology & Economy

- Energy-savings from PREX motor
  - Power consumption: 10% decrease

Energy-saving display device

- Energy savings from simple design
- CPU configuration
- High-performance single (previous model) compared with (optional)

Thermo-Friendly Concept

- Energy-saving function
- Power-saving function
- Peripheral device power shutoff after completion of automatic operation
- Spindle-cooler, etc.

- Energy-saving servos, NC units

- Uses PREX motor
  - Energy-saving control during no-load turning
  - Lightweight, low inertia, etc.

- Energy-saving display device

Environmental economic effect

- Per year: Savings of approximately 135,000 kWh
- Prevents CO₂ emissions equivalent to about 7,500 beech trees

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- Energy-saving control during no-load turning
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- Energy savings from simple design
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Ecology & Economy

- Energy-savings from PREX motor
  - Power consumption: 10% decrease

Energy-saving display device

- Energy savings from simple design
- CPU configuration
- High-performance single (previous model) compared with (optional)
Dimensional Drawings

Drawings shown are with standard spindle specs.

LB3000 EX (MY)  x450

LB3000 EX (MY)  x950

LB3000 EX (MY)  x1,200

LB3000 EX (W / MW)  x500

LB3000 EX (W / MW)  x800

LB3000 EX (MYW)  x450

LB3000 EX (MYW)  x800

( ) dimensions for H chip conveyor

Coolant pump
Pressure valve
Hyd chuck
LB3000 EX (MY)
Headstock
Maintenance space
500 3,210 (3,700)
50* 2,290 870 (1,360)
3,850 3,330 960 (1,450)
3,420 4,290 (4,780)

V12 turret
922 (1,176) 38 (274)

Lube tank
Tailstock
Operation panel
Chip conveyor
Chip bucket
700
700
Chip conveyor
Chip bucket
700
615
700
(1,000)
2,250
891
1,050
1,250 155
428
1,320
414
1,320
697 (929)

Conveyor removal
Space for rear chip

Spindle fan
Tank removal
Space for side

NC
585
720
1,300 434 704 (862)

Hydraulic unit

Tank removal
Spindle cooler

Coolant pump (rear)

Hydraulic unit

( ) dimensions for H chip conveyor
What you want to see and do, conveniently come together in a “single-mode operation.”

First, select one of three operation screens.

Then simply touch the screen or press a function key to see and do your job.

Collision prevention
Collision Avoidance System (Optional)

World’s first “Collision-Free Machine”
CAS prevents collisions in automatic or manual mode, providing risk-free protection for the machine and great confidence for the operator.

Collision condition search for turning
Machining Navi L-3 (Optional)

Chatter-free applications for lathes
Chatter is suppressed by navigating to the best amplitude and wave cycle—without decreasing spindle speed.

[Easy Operation]

Collision prevention
Collision Avoidance System (Optional)

World’s first “Collision-Free Machine”
CAS prevents collisions in automatic or manual mode, providing risk-free protection for the machine and great confidence for the operator.

Collision condition search for turning
Machining Navi L-3 (Optional)

Chatter-free applications for lathes
Chatter is suppressed by navigating to the best amplitude and wave cycle—without decreasing spindle speed.

[Easy Operation]

Cutting condition search for turning
Machining Navi L-3 (Optional)

Chatter-free applications for lathes
Chatter is suppressed by navigating to the best amplitude and wave cycle—without decreasing spindle speed.
This product is subject to the Japanese government Foreign Exchange and Foreign Trade Control Act with regard to security controlled items; whereby Okuma Corporation should be notified prior to its shipment to another country.

The specifications, illustrations, and descriptions in this brochure vary in different markets and are subject to change without notice.

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