Birth of the 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 EX series continues to write new pages in world standards for machining quality, speed, power & torque, multitasking, ease of operation, and more.

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 compensation system. Outstanding thermal stability in long-time continuous operation, multitasking, and even Y-axis machining without troublesome compensation or warming up.

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.

Optimized X-axis feed element

Thermal deformation minimized on Z-axis

Heat sources eliminated and thermal deformation suppressed from the machine’s construction

Machining dimensional change over time: ø7 µm

Roundness*

Tool nose uniformity* (for better surface roughness)

* Actual data

| Cycle time: 60 sec
| Spindle speed: 4,000 min⁻¹
| Cutting depth: 0.1 mm
| Feed: 0.05 mm/rev

Material: BsB

| Standard spindle:
| 0.3 µm at 2,000 min⁻¹

Material: BsB

* Actual data

| Standard spindle:
| 0.4 µm at 2,000 min⁻¹

Material: BsB

* Actual data

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| 0.4 µm at 2,000 min⁻¹

Material: BsB

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* Actual data

| Standard spindle:
| 0.3 µm at 2,000 min⁻¹

Material: BsB

* Actual data
**Super Rigidity Speed**

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

New PREX motor on the spindle gives turning capacity of 4 mm²

Spindle with a larger bearing internal diameter of ø140 mm can accommodate larger workpieces, and a turning capacity of 4 mm² is achieved with a high-speed, wide-area full power PREX motor. Stable, high quality machining, from heavy to high speed cutting.

- **Spindle size** Bearing ID ø140 (bore ø91)
- **Spindle speed** 4,200 min⁻¹
- **Output** 30 kW (40 hp)
- **Torque** 700 N·m (515 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 3.7 sec (4,200 min⁻¹)
- Turret rotate 0.2 sec/revolution
- NC tailstock rapids 12 m/min (472 ipm)

**Turning 4 mm²**

(Actual results)

- Cylindrical, heavy-duty cutting
  - ø45 (1.77 in.)
  - Cutting speed V: 150 m/min (492 fpm)
  - Cutting depth t: 7 mm (0.28 in.)
  - Feedrate f: 0.6 mm/rev (0.02 ipr)
- ø59 (2.32) carbide throwaway drill
  - Cutting speed V: 100 m/min (328 fpm)
  - Feedrate f: 0.2 mm/rev (0.008 ipr)

Built-in PREX motor—Okuma’s own powerful motor—retains full power over a wide area. There are no gears or belts that can cause vibration or bending, for stable machining without chatter.

**Spindle/motor variations**

- **Standard spindle**
  - ø140, 4,200 min⁻¹
  - 30/22 kW (30 min/cont)
  - 700 N·m (515 ft-lbf)

- **High power specs**
  - ø160, 3,000 min⁻¹
  - 37/30 kW (30 min/cont)
  - 1,178 N·m (866 ft-lbf)

Improved productivity: 20% shorter cycle time*

- Previous machine
  - LB4000 EX

- Non-cutting time
  - LB4000 EX: 16.5 minutes
  - Previous: 19.4 minutes

- * Previous machine comparison
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.

6,000 min⁻¹
7.5 kW (10 hp)
58.1 Nm (43.7 ft-lbf)

JIS A2-8 10-in. chuck
12-in. chuck
12-in. chuck
15-in. chuck
JIS A2-11

0.2 sec/ index
0.4 sec (6,000 min⁻¹)
1.5 sec

Wide working range
Max machining dia: ø480 mm (M turret: ø430 mm)
Standard spindle: JIS A2-8 10-in. chuck
12-in. chuck
Big-bore spindle: JIS A2-11 12-in. chuck
15-in. chuck
Distance between centers: 770/1,520 mm

Spindle thru hole: Bigger
Standard spindle: ø91 mm (ø3.59 in.)
Big-bore spindle: ø112 mm (ø4.41 in.)

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

Milling tool spindle

Milling capacity 75 cm³/min
(Actual results)
End milling
Chip volume: 75 cm³/min (4.5 in.³/min)
ø25 5-blade roughing end mill
Cutting speed: V: 35 m/min (115 fpm)
Cutting depth: t: 9 mm (0.35 in.)
Feedrate: f: 0.75 mm/rev (0.03 ipr)

Drilling
ø23
Cutting speed: V: 30 m/min (98 fpm)
Feedrate: f: 0.45 mm/rev (0.02 ipr)

Tapping M24 P3
(Synchronized tapping)
Easy to Operate

One CPU control for simulations, NC commands, and no machine following error

OSP-P200L
The Okuma Control for the New Era

Personal computer touch for ease of use
Many other functions including collision prevention and interactive operation

Easy-to-read, easy-to-use touch panel system
- Large 15-inch display
  The display area is 2.1 times larger than previous models, increasing operation efficiency with the display of abundant machining information.
- Touch panel
  A tough dirt- and scratch-resistant panel is used so that data can be directly manipulated for huge improvement in work efficiency.
- USB ports
  Two USB ports are standard. Various peripheral devices can be connected for the intended use, such as USB memory for the transfer of large NC programs or bar recorders for production control.

Collision Avoidance System for peace of mind
- Collision avoidance in all settings, including manual and automatic operation, and huge reductions in setup and first part machining time. Various setting methods are provided in modeling as well, from simple dimension input to 3-dimensional CAD data.

Advanced One-Touch IGF minimizes bothersome input
Programs can be created and run from a single process sheet, for easy use even without memorizing the G/M codes. Windows the operator wants to work on can be moved directly as with personal computer shortcut keys. Work operations are reduced up to 76%, greatly increasing work efficiency.

One-Touch Spreadsheet for standardization of process control and setup
Excel files can be operated on the OSP, so that machining guidelines can be created in Excel files and referenced during setup work. Zero point, tools, and common variables can also be set and referenced from an Excel file.
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. High accuracy positioning is also possible with a high speed linear guide employing a ball screw guide.

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

- Tailstock thrust 1~7.5 kN (Opt: 1.5~10 kN)
- Rapid traverse 12 m/min (472 ipm)
- Approach 10 m/min (394 ipm)
- Retract 12 m/min (472 ipm)

**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 specifications).

- Travel 140 mm (+70~70) [5.51 in. (+2.76~2.76)]
- Y-axis rapid traverse 12.5 m/min (492 ipm)
## Machine Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>LB4000 EXD(L)</th>
<th>LB4000 EXH(B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>T-C</td>
<td>C= 750</td>
<td>C= 1500</td>
</tr>
<tr>
<td>C</td>
<td>0&gt;750</td>
<td>C</td>
</tr>
</tbody>
</table>

### Capacity
- **Motors**
- **Milling tool**
- **Spindle**
- **Travels**
- **Capacity**
- **Accessories**
- **Standard accessories**

### Translations
- **X axis** (mm) 300 (11.81)
- **Y axis** (mm) 840 (33.27) 840 (33.27) 1,620 (63.78) 1,620 (63.78)
- **Z axis** (mm) 1,500 (59.06) 1,500 (59.06) 1,500 (59.06)

### Spindle
- **Spindle bore dia / Front bearing dia**
- **Spindle nose**
- **C axis**

### Machine Specifications

### Optional Specs & Accessories

#### Feedstock
- **Big-Bore spindle**
  - Spindle bearing ID: ø160
  - JIS: A2-11 30~3,000 mm

#### Chucking
- **Chuck**
  - Chuck high pressure switch
- **Work stopper**
  - In spindle

### Gauges
- **In-process gauging system**
- **Touch sensor**

### Table lock
- **Machining center MT 5**
  - Table lock:
    - Built-in center MT 4
    - Threaded center MT 4
  - Table lock:
    - Built-in center MT 5
    - Threaded center MT 5
  - High thrust spacers
  - Thru-tool anti-lube sw switches

### Steadystats
- **Rolvers (fixed position)**
- **Auto steadystead (self-centering)**

### Lubrication
- **Lube monitor**
- **Coolable**

### Coolant
- **Spindle cooling**
- **Cutter cooling**
  - 0.2

### Chip handling
- **Chip conveyor**

### Automation
- **Air pressure**
- **Bar feeder**

### Machine Specifications

#### Standard Specifications & Accessories

<table>
<thead>
<tr>
<th>Model</th>
<th>LB4000 EX</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Specifications</strong></td>
<td><strong>I</strong></td>
</tr>
<tr>
<td><strong>Spindle</strong></td>
<td>ø21- ø26 45~4,700 mm/min</td>
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<tr>
<td><strong>Sub spindle</strong></td>
<td>V12 bell clutch</td>
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<td><strong>Air locks</strong></td>
<td>ø60 (2.36) 20,000 rpm</td>
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<td><strong>Table lock</strong></td>
<td>NC travel</td>
</tr>
<tr>
<td><strong>No. of tool shank</strong></td>
<td>ø140 (5.51)</td>
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<td><strong>Chip handling</strong></td>
<td>Hollow 10 in.</td>
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<td><strong>Coolant</strong></td>
<td>M-V12 NC turret</td>
</tr>
<tr>
<td><strong>Control</strong></td>
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</tbody>
</table>

### Chucking Kit / Tooling Kit

<table>
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<tr>
<th>Model</th>
<th>LB4000 EX</th>
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<tr>
<td><strong>Specifications</strong></td>
<td><strong>L</strong></td>
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<tr>
<td><strong>Chuck</strong></td>
<td>Solid 10 in.</td>
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<tr>
<td><strong>Chucks</strong></td>
<td>B120AB (2)</td>
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<td><strong>Spindles</strong></td>
<td>SS1770</td>
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<tr>
<td><strong>Boring tools</strong></td>
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<td><strong>Boring tools</strong></td>
<td>3</td>
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<tr>
<td><strong>Drill tools</strong></td>
<td>3</td>
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<td><strong>Stubs</strong></td>
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⚠ Fire Safety Precautions

To protect your factory and equipment from fire and assure continued safe operation, observe the following fire safety precautions whenever you operate machinery.

Whenever possible, avoid the use of oil-based coolants for cutting operations. Sparks caused by hot chips, tool friction, and grinding can cause fires.

Always observe the following safety measures to ensure safe operation when machining flammable materials or when performing dry machining.

1. Oil-based coolant

   (1) Use nonflammable cutting fluid coolant.
   
   (2) When the use of an oil-based coolant is unavoidable:
     - **Before** you begin machining, check cutting tools to make sure of their service life and the condition of the tool edge, and choose cutting conditions that will not cause a fire.
     - Periodically clean the coolant filter to maintain sufficient coolant discharge, and frequently verify that coolant is discharging normally.
     - Take measures to control the outbreak of fire: Place a fire extinguisher near the machine, have an operator constantly monitor operation, and install an automatic fire extinguishing system.
     - Do not place flammable materials near the machine.
     - Do not allow chips to over accumulate.
     - Periodically clean the inside of the machine and the area surrounding it.
     - Check that the machine is operating normally.
     - Never run the machine unattended.
     - Since an automatic fire extinguishing system and other peripherals are needed for grinding operations, please let us know as soon as possible if you plan to perform such operations.

2. Precautions regarding machining of potentially flammable materials

   Before machining any material designated by law as a flammable substance, e.g., plastic, rubber, wood, acquaint yourself with the special characteristics of the material in terms of fire prevention, and observe the precautions given in (2) above to ensure safe operation.

   Example: When machining magnesium, there is a danger that magnesium chips and water-soluble coolants will react to produce hydrogen gas, resulting in an explosive fire if any chip should ignite.

3. Dry machining

   Dry machining is a fire hazard because workpieces, tools, and chips are not cooled. To ensure safe operation, do not place any flammable objects near the machine and do not allow chips to over accumulate.

   In addition, be sure to check cutting tools to make sure of their service life and the condition of the tool edge, and observe the precautions regarding oil-based coolants given in (2) above.