

LOC Series CNC Lathes

***LOC500***  
***LOC650***

[ For Oil Country Applications ]



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**LOC650**  
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Collision Avoidance  
System



Machining  
Navi

## Okuma's large capacity lathes bring heavy muscle to the oil industry

So precisely designed for the needs of the oil industry, the LOC500 and the LOC650 are named for the specifications driving their development: Lathe Oil Country.

The 4-axis configuration makes them possible to perform the tightest threading functions on big pipes with precision and speed.

Each machine has three spindle bore variations specifically designed for the series, and is able to accommodate large diameter pipes.



**LOC500**



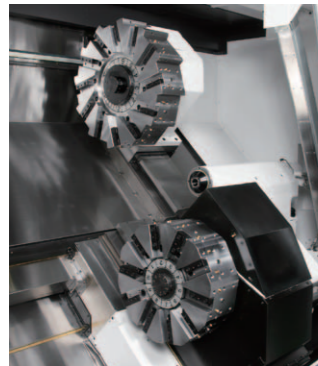
**LOC650**

Machine photos may show optional equipment.

# Tailored to the oil industry

## Thick solid-body turrets (Opt)

Upper/lower turrets: 200-mm thick (7.87 in.)

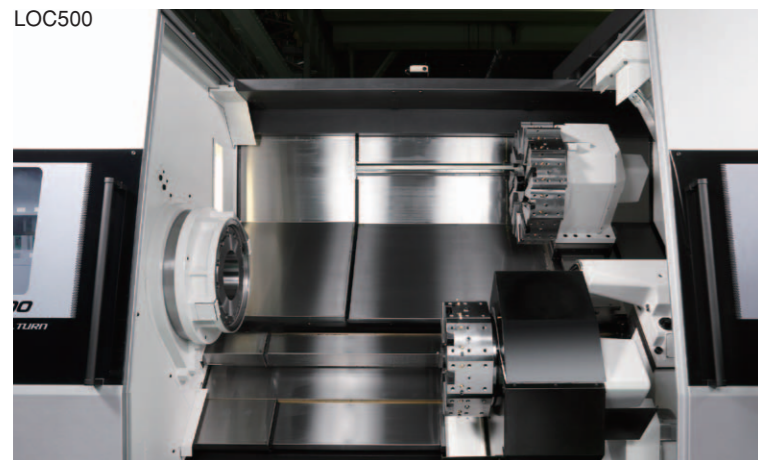


LOC500

Highlighted Specs	LOC500	LOC650
<b>Featuring:</b>		
• 4-axes productivity/simultaneous cutting using 2 tools		
• Spindle bores (max)	ø275 mm (10.8 in.)	ø560 mm (22 in.)
• Spindle power (max)	55 kW (75 hp)	45 kW (60 hp)
• Okuma's Oil Field (threading suite)		
<b>Options: (partial list)</b>		
• High pressure coolant		
• Auto door		
• Feed hold during threading		
• Collision Avoidance System (CAS)		
• Rear chuck		



LOC650



Max turning dia x length: ø600 x 2,000 mm (ø23.63 x 78.74 in.)

## Expansive turning area for big work envelopes

### Improved turning accuracies

- That means better premium thread applications
- For high mechanical and hydraulic performance (with multiple sealing areas; particularly efficient in moderate- to high-pressure gas well applications)
- The programmable tailstock and auto door reduces operator intervention and adds to the efficiency of the part transfer.

### Both machines also feature this Rear Chuck with manual clamp/unclamp operations



## Featuring an extensive array of threading capabilities

### Performing the tightest threading functions with 0.1 micron precision and speed

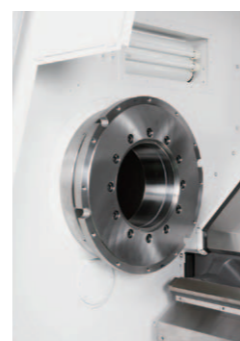
Okuma's Oil Field "Threading Suite" is custom designed to combine variable spindle speed threading (VSST) and harmonic spindle speed control (HSSC) that delivers an exact match between infeed patterns and cutting increments. Okuma lathes are known for their power and control. Though huge in scale, the LOC Series delivers Okuma precision with optimum efficiency.



LOC500

## With effective thread chasing applications

Featuring	The Benefits
• Uniform helical threads (OD or ID)	• Better premium thread applications
• No backtracking	• Save time, less danger of thread damage
• More closely maintained limits	• Improved thread quality
• High mechanical and hydraulic performance (multiple sealing jobs)	• Efficient in moderate to high-pressure gas well applications



LOC650

## Major Specifications

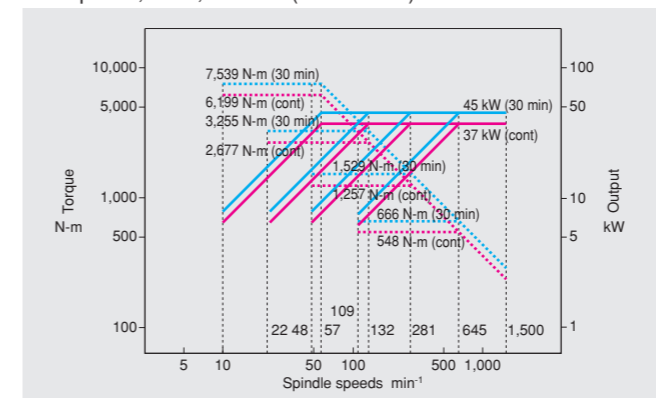
Model			LOC500			LOC650			
			B5.5	B07	B11	B15	B22		
Chuck size			15"	18"	24"	33"	40"		
Capacity	Swing over bed	mm (in.)	ø840 (ø33.07)			ø800 (ø31.50) (chuck: ø1,030 (ø40.55))			
	Distance between centers	mm (in.)	1,990 (78.35)	1,980 (77.95)	1,930 (75.98)	1,750 (68.90)			
	Max turning diameter	mm (in.)	ø555 (ø21.85)			ø650 (ø25.59) (1ST), ø500 (ø19.69) (2ST, 2SC)			
	Max work length	mm (in.)	1,990 (78.35)	1,980 (77.95)	1,930 (75.98)	1,750 (68.90)			
Travels	X-axis travel	Upper turret	440 (<+330 to -110>) (17.32 (<+12.99 to -4.33>))			470 (<+330 to -140>) (18.50 (<+12.99 to -5.51>))			
		Lower turret	305 (<+230 to -75>) (12.01 (<+9.06 to -2.95>))			270 (<+255 to -15>) (10.63 (<+10.04 to -0.59>))			
	Z-axis travel	Upper turret	2,075 (81.69)			2,040 (80.31)			
		Lower turret	2,010 (79.13)			1,425 (56.10) (2ST), 1,015 (39.96) (2SC)			
Spindle	Spindle speed	min <sup>-1</sup>	11 to 2,000	10 to 1,500	10 to 1,000	5 to 500			
	Spindle speed ranges		Infinitely variable x Automatic 4 speeds		Infinitely variable x Automatic 2 speeds	Infinitely variable x Automatic 2 speeds			
	Type of spindle nose		JIS A2-11	JIS A2-15	JIS A2-20	ASA A2-20	ø725 flat		
	Through spindle hole diameter	mm (in.)	ø142 (ø5.59)	ø185 (ø7.28)	ø275 (ø10.83)	ø375 (ø14.76)	ø560 (ø22.05)		
Spindle front bearing diameter		mm (in.)	ø220 (ø8.66)	ø280 (ø11.02)	ø380 (ø14.96)	ø476 (ø18.74)	ø700 (ø27.56)		
Turret	Turret type		Upper turret		V12		V12		
	Lower turret		V10		V8		V8		
	No. of tools		Upper turret		12 tools		12 tools		
	Lower turret		10 tools		8 tools		8 tools		
Feedrate	Tool shank height		mm (in.)		□32 (1.25)		□38.1 (1.5)		
	Boring bar shank diameter		mm (in.)		ø63 (ø2.48)		ø63.5 (2.5)		
	Rapid feedrate	X axis	m/min (ipm)	15 (591)			5 (197)		
		Z axis	m/min (ipm)	20 (787)			10 (394)		
Tailstock	Cutting feedrate		X/Z axis	mm/rev (ipr)	0.001 to 1,000.000 (0.001 to 40.0000)		0.01 to 1,000 (0.001 to 40.0000)		
	Tailstock quill diameter		mm (in.)		ø130 (ø5.12)		ø180 (ø7.09)		
	Tailstock tapered bore type		MT No.5 (built-in)		MT No.6		200 (7.87)		
Motor	Tailstock quill travel		mm (in.)		170 (6.69)		200 (7.87)		
	Spindle drive (30 min/cont)		kW (hp)		37/30 [45/37*] (50/40 [60/50])	45/37 (60/50)	55/45 (74/60)	45/37 (60/50)	
	Axis drive motors		X axis	kW (hp)	Upper: BL5.2 (7), Lower: BL3.0 (4)			Upper and Lower: BL2.8 (4)	
	Z axis		kW (hp)	Upper and lower: BL5.2 (7)			Upper and lower: BL3.5 (5)		
Coolant pump motors		kW (hp)		0.4 x 2 (0.5 x 2)		0.4 (0.5)			
Machine size	Height		mm		3,042 (119.76)		2,843 (111.93)		
	Floor space		mm		6,060 x 3,205 (238.58 x 126.18)	6,160 x 3,205 (242.52 x 126.18)	3,129 x 7,055 (123.19 x 277.76)		
	Weight (including CNC)		kg (lb)		21,500 (47,300)	22,000 (44,000)	23,300 (51,260)	20,700 (45,540) (1ST) 21,800 (47,960) (2ST) 23,300 (51,260) (2SC)	22,900 (50,380) (1ST) 24,000 (52,800) (2ST) 25,500 (56,100) (2SC)
	Control		OSP-P300L						

\*High-power motor

## High-torque motor plus gear driven spindles

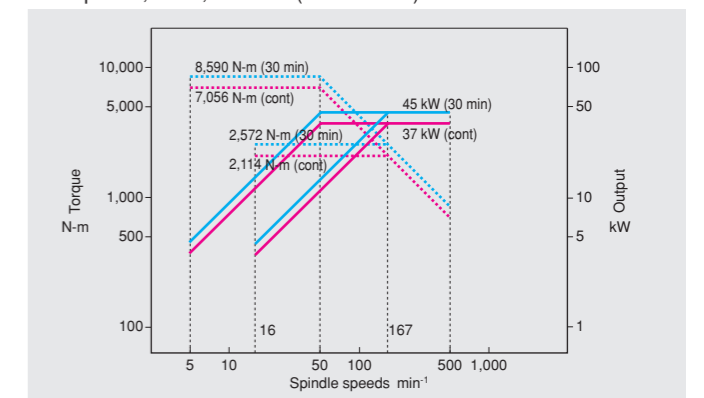
### LOC500 [B-07]

- Spindle 1,500 min<sup>-1</sup>
- Output 45/37 kW (30 min/cont)
- Torque 7,539/6,199 N-m (30 min/cont)



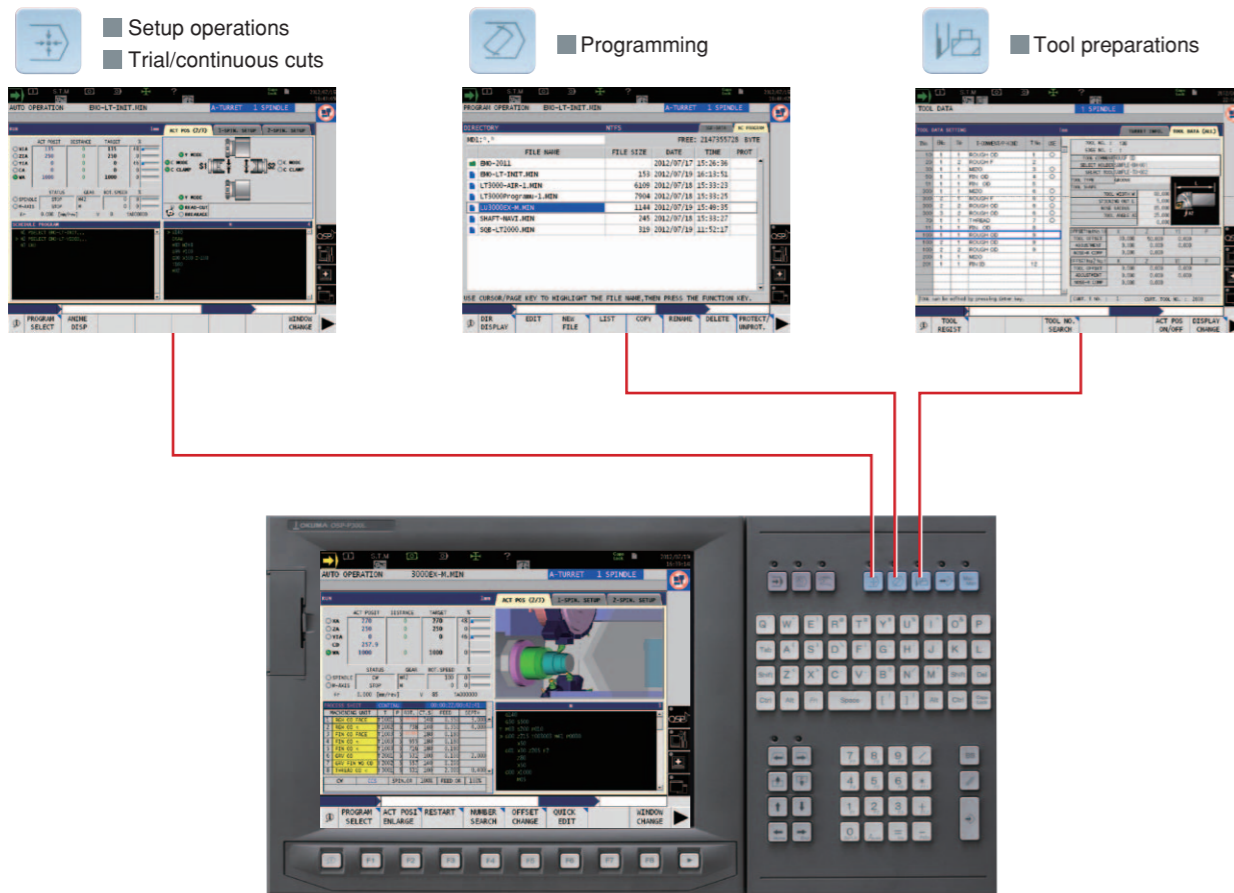
### LOC650 [B-15]

- Spindle 500 min<sup>-1</sup>
- Output 45/37 kW (30 min/cont)
- Torque 8,590/7,056 N-m (30 min/cont)



# Satisfaction from complete control of a machine tool

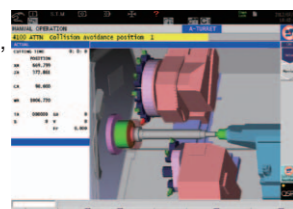
As a “machine & control” builder, Okuma makes further strides in machine tool manufacturing with this superb Control featuring “Easy Operation.” Okuma took a close look at the way machinists actually operate machine tools, to help them create smoother and more effective ways of producing parts. Novice operators as well as professional machinists get complete control—and satisfaction. Moreover, 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 Machines”**

CAS prevents collisions in automatic or manual mode, providing risk-free protection for the machine and great confidence for the operator.

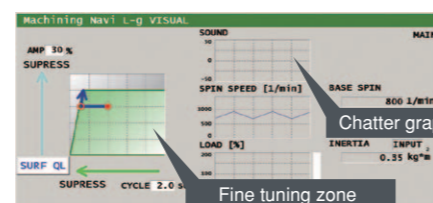


Virtual machine (collision check)

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

**Chatter-free applications for lathes**

Chatter in a lathe can be suppressed by changing spindle speeds to the ideal amplitude and wave cycle—without decreasing spindle speed.



## 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 inputs	8-digit decimal, ±99999.999 ~0.001 mm (±3937.0078~0.0001 in.), 0.001" Decimal: 1 μm, 10 μm, 1 mm (0.0001, 1 in.) (1°, 0.01°, 0.001°)
	Feed	Override: 0 to 200%
	Spindle control	Direct spindle speed commands, Override 50~200% Constant cutting speed, optimum turning speed designate
	Tool compensation	Tool selection: 32 sets, tool offset: 32 sets
	Display	15-inch color display operational panel, touch panel
	Self-diagnostics	Automatic diagnostics and display of program, operation, machine, and NC system problems
	Program capacity	Program storage: 2 GB, operation buffer: 2 MB
	Operations	Easy Operation
Programming		Program management, edit, multitasking, scheduled programs, fixed cycles, special fixed cycles, tool nose R compensation, M-spindle synchronized tapping, fixed drilling cycles, arithmetic functions, logic statements, trig functions, variables, branch statements, auto programming (LAP4), programming help
Machine operations		MDI, manual (rapid traverse, manual cutting feed, pulse handle), load meter, operations help, alarm help, sequence, return, manual interrupt & auto return, threading slide hold, data I/O, chuck open/close during spindle rotation, spindle orientation (electric)
MacMan		Machining Management: machining results, machine utilization, fault data compile & report, external output
Communications/Networks	USB ports, Ethernet, RS232C interface (1 channel)	
High speed/accuracy	Hi-G control	

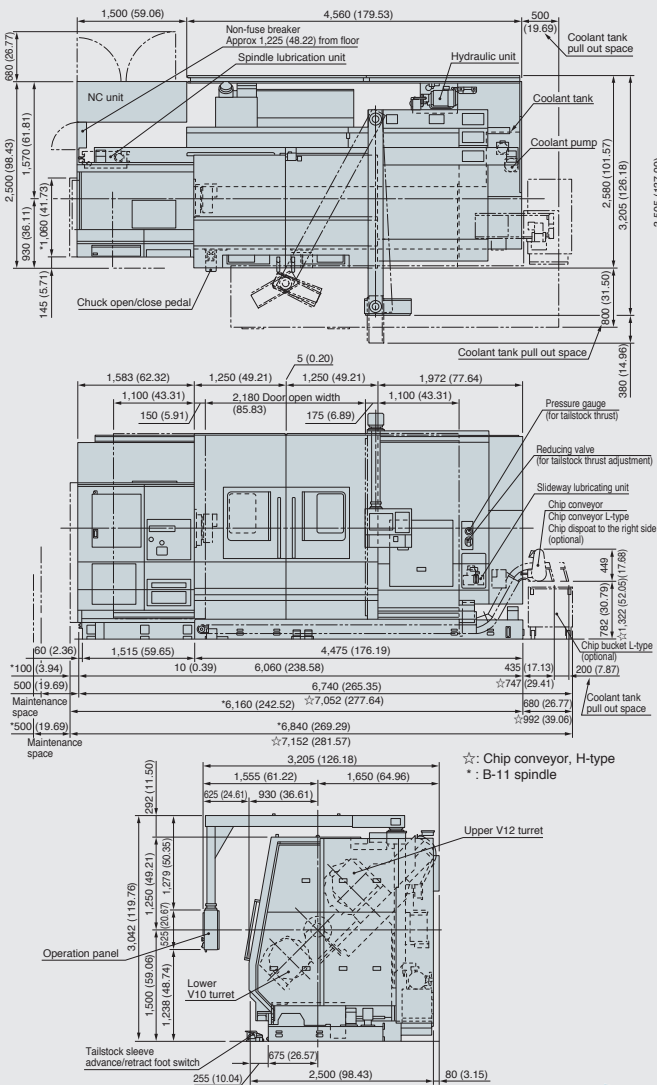
## Optional Specifications

Item	Kit Specs *1	NML		3D		OT-IGF	
		E	D	E	D	E	D
<b>New Operations</b>							
Advanced One-Touch IGF-L *2							
Advanced One-Touch IGF-L Multitasking *2							
<b>Programming</b>							
Circular threading							
Program notes							
User task 2 I/O variables, 8 ea							
Work coordinate system select	10 sets						
	50 sets						
	100 sets						
Tool compensation (Std: 32 sets)	Tool compensation 64 sets						
	Tool compensation 96 sets						
	Tool compensation 200 sets						
	Tool compensation 999 sets						
Common variables 1,000 sets (Std: 200 sets)							
Thread matching (spindle orientation required)							
Threading slide hold (G34, G35)							
Variable spindle speed threading (VSST)							
Inverse time feed							
Spindle synchronized tapping (rigid tapping)							
Helical cutting (within 360 degrees)							
<b>Monitoring</b>							
Real 3-D simulation							
Cycle time over check							
Load monitor (spindle, feed axis)							
Load monitor no-load detection (load monitor ordered)							
Tool life management							
Tool life warning							
Operation end buzzer							
Chuck miss detection							
Work counters	Count only						
	Cycle stop						
	Start disabled						
Hour meters	Power ON						
	Spindle rotation						
	NC operating						
NC operation monitor (counter, totaling)							
NC work counter (stops at full count with alarm)							
Status indicator (triple lamp) Type C [Type A, Type B]							
<b>Measuring</b>							
In-process work gauging							
Z-axis automatic zero offset by touch sensor							
C-axis automatic zero offset by touch sensor							
Gauge data output	File output						
Post-process work gauging interface	Set levels (5-level, 7-level)						
	BCD						
	RS-232-C (dedicated channel)						
Touch setter [M, A]							

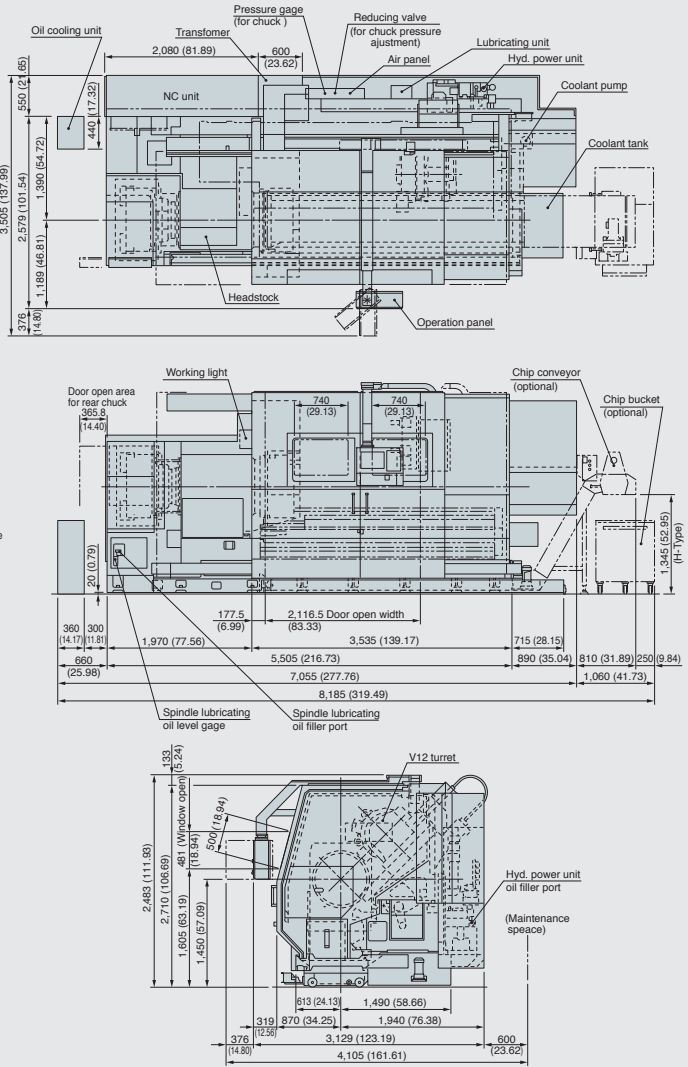
\*1. NML: Normal, 3D: Real 3D simulation, OT-IGF: One-Touch IGF  
 E: Economy, D: Deluxe  
 \*2. Real 3-D Simulation included  
 \*3. Engineering discussions required.  
 Note: ▲ Triangle items for M function (milling tool) machines only.

## Dimensional/Installation Drawings

LOC500

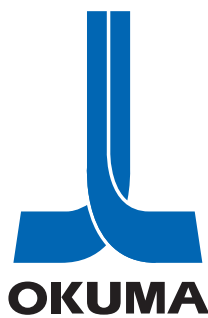


LOC650



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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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.