

CITIZEN

**Miyano**

**LX06 / 08E**

CNC Lathe





We proudly introduce 6-inch and 8-inch chucking machines developed for high accuracy, demanding workpieces in medium to high volumes.

The scraped square slideways that provide high rigidity, the turret that features excellent vibration damping, the rigid spindle supported by double row cylindrical roller bearings and angular contact ball bearings, and the heavy 30° slant bed structure are essential characteristics for high accuracy and long tool life.

The high levels of rigidity are ideal for "hard turning" applications which can eliminate expensive grinding operations.



### Standard Specification Machine **LX06E / LX08E**

This unit is the base for all the models, and its excellent rigidity allows not just the heavy-duty cutting you might expect, but hard turning too.



### Double Hand Loader **LX06E**

A new type of loader featuring an inverting hand with a 180-degree turn function makes it possible to load workpieces regardless of their orientation during transport.



### Gantry Loader **LX06E / LX08E**

This is a 2-axis NC gantry loader with one saddle and two hands. Combining an extremely high speed gantry loader with a workpiece stocker, it enables extended periods of unmanned operation.



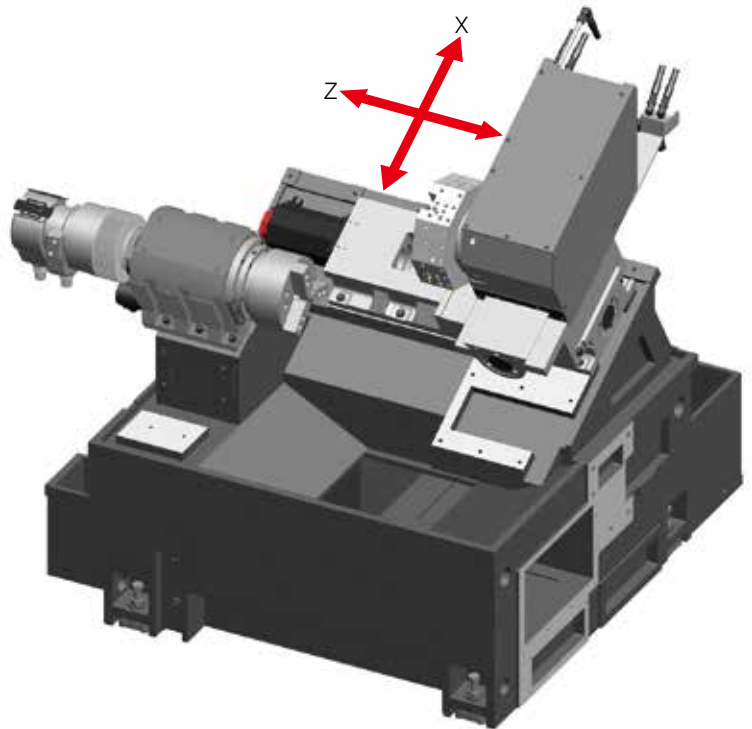
### In-machine Loader **LX06E**

A programmable NC high-speed loader and conveyor type workpiece stocker are combined to achieve the perfect unmanned operation solution for small-lot production.

## Rigid Base

The 30° slant bed, which is cast in one piece, provides outstanding thermal stability thanks to smooth chip flow to minimize dimensional changes during machining, and supports high-precision machining through the closed-structure rigid body.

And precision scraped square slideways are used on all axes to increase rigidity and improve vibration damping characteristics.



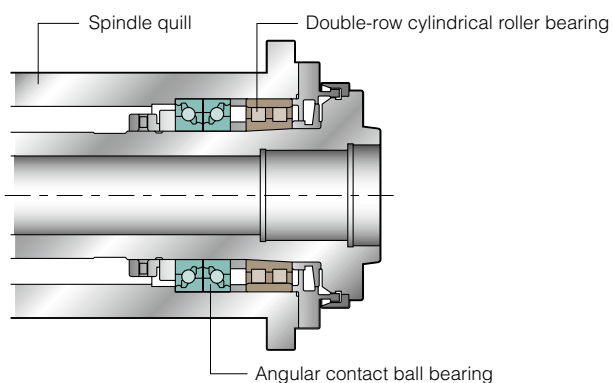
## Turret

Although subject to punishing cutting forces and vibration, the highly rigid turret allows heavy cutting because 25mm square shank tools (LX08E) or 20mm square shank tools (LX06E) can be mounted directly on it and can therefore be clamped securely with a short overhang.



## Spindle

Adopting double-row cylindrical roller bearings at the front and a set of angular contact ball bearings at the rear, the spindle maintains stable accuracy from the low to high speed ranges, while also achieving high rigidity.





## Hard Turning

"Hard turning" is a turning process for machining pre-hardened materials using CBN or ceramic tools.

### Advantages of hard turning over grinding

1. Initial investment cost (machine price) is low.
2. Several grinding processes can be integrated into turning processes performed on a single NC lathe.
3. Since all machining processes including outer and inner turning, circular machining and free-form surface machining can be performed in one chucking, geometrical accuracy, such as straightness, squareness and concentricity, is considerably improved.
4. Cycle time can be reduced thanks to short loading and unloading time.
5. Dry cutting is environmentally friendly - reduced use of coolant, and recovery of resources by recycling chips instead of disposing of the sludge generated in grinding.

### Machining accuracy of the LX08E

#### Demonstration workpiece

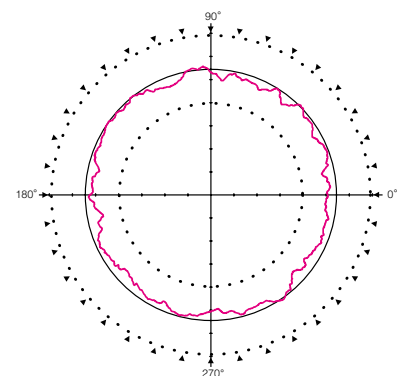
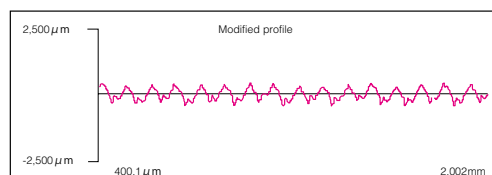
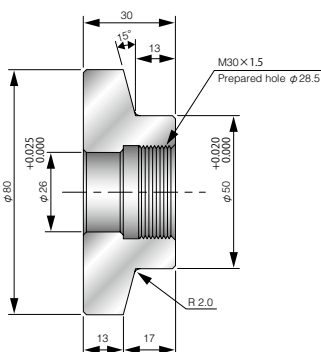
Material : SUJ2  
Hardness : HRC 60-65

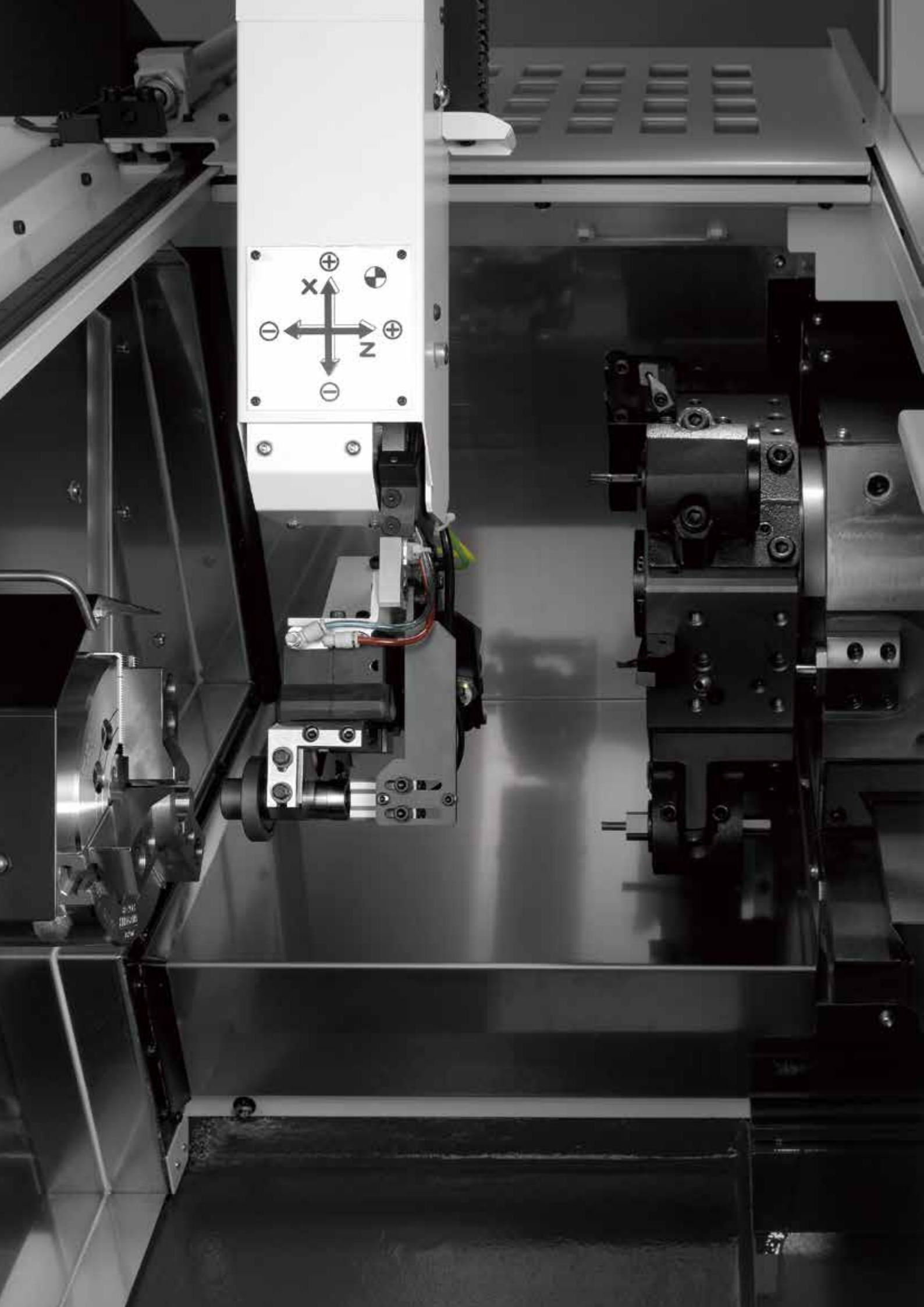
#### Surface roughness

O.D. : Rz = 1.436  $\mu\text{m}$   
I.D. : Rz = 0.855  $\mu\text{m}$

#### Roundness

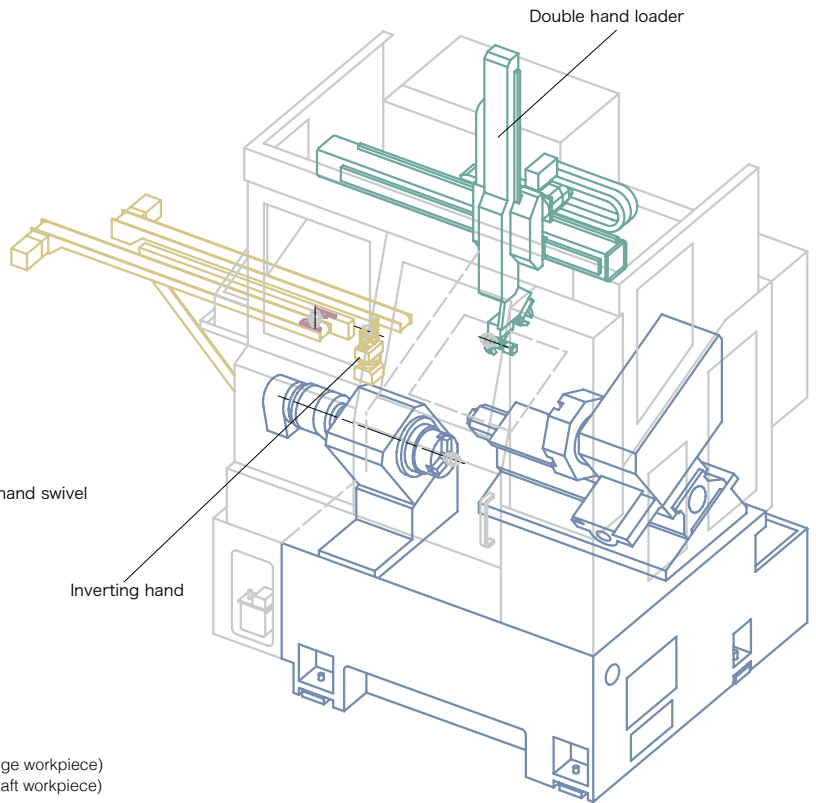
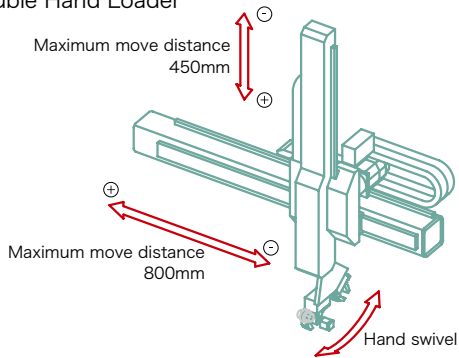
0.5  $\mu\text{m}$



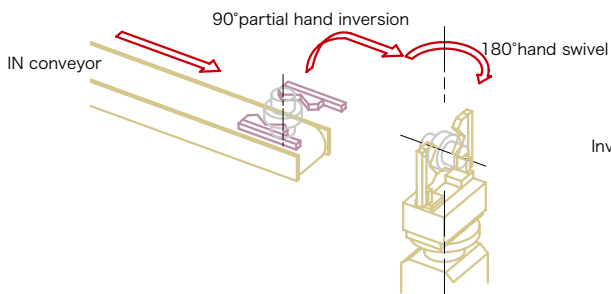


# Double Hand Loader **LX06E**

## Double Hand Loader



## IN conveyor and inverting hand



- Maximum conveyable size : 70 x 80 mm Dia. (flange workpiece)
- : 50 x 200 mm Dia. (shaft workpiece)
- Maximum conveyable workpiece weight : 1kg
- Z axis rapid traverse : 123 m/ min
- X axis rapid traverse : 90 m/ min
- Loading time : 9 seconds

## Loading with 90° partial inversion

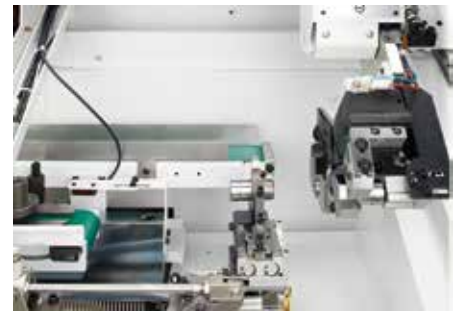
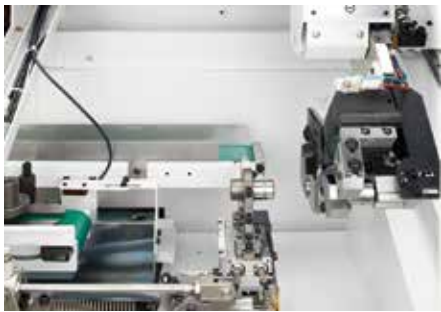


1

2

3

## Loading with 180° swivel



1

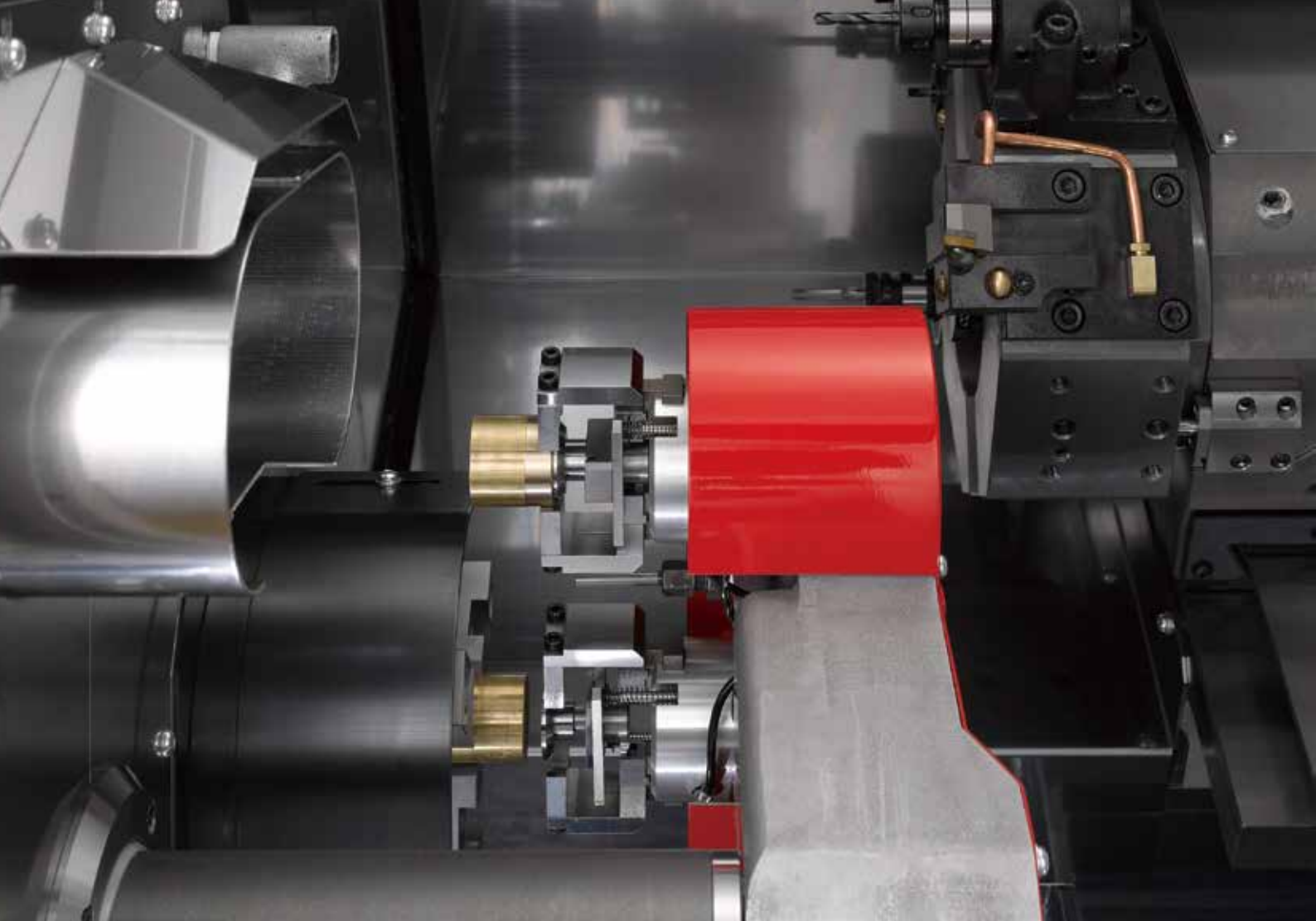
2

3

## Loading patterns

	IN conveyor	Inverting hand, 90°	Inverting hand, 180°	Double hand loader
Flange workpiece 1	machine surface up	90° partial inversion	-	Clamps side of workpiece to be machined
Flange workpiece 2	machine surface down	90° partial inversion	180° swivel	Clamps side of workpiece to be machined
Shaft workpiece	parallel with spindle	-	-	Clamps workpiece directly from IN conveyor
* External inversion / both-side machining (flange workpieces and shaft workpieces)	-	-	180° swivel	Swivels the turning hand 180° after 1st-operation. Re-inserts the workpiece into the spindle chuck

\* Restrictions may apply depending on the workpiece shape.



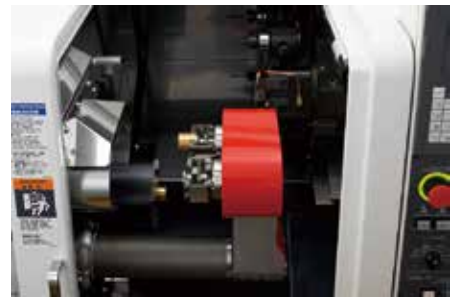
## In-machine Loader **LX06E**



1



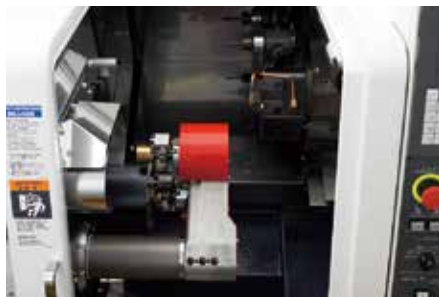
2



3



4



5



6

### Loading patterns

	IN conveyor	Inverting hand, 90°	Inverting hand, 180°	Double hand loader
Flange workpiece 1	machine surface up	90° partial inversion	-	Clamps side of workpiece to be machined
Flange workpiece 2	machine surface down	90° partial inversion	180° swivel	Clamps side of workpiece to be machined

Maximum conveyable size : 70 x 60 mm Dia. (flange workpiece)  
 Maximum conveyable workpiece weight : 700 kg (flange workpiece)  
 Z axis rapid traverse : 50 m/ min  
 Loading time : 4.5 seconds





## Gantry Loader **LX06E / LX08E**

### LX06E

Maximum conveyable size	: 100 x 100 mm Dia. (flange workpiece)
Maximum conveyable workpiece weight	: 1 kg
Z axis rapid traverse	: 90 m/ min
X axis rapid traverse	: 123 m/ min
Loading time	: 13.5 seconds

### LX08E

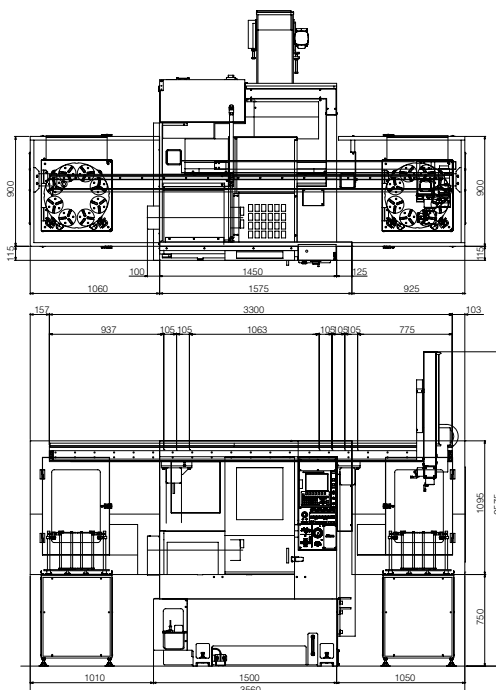
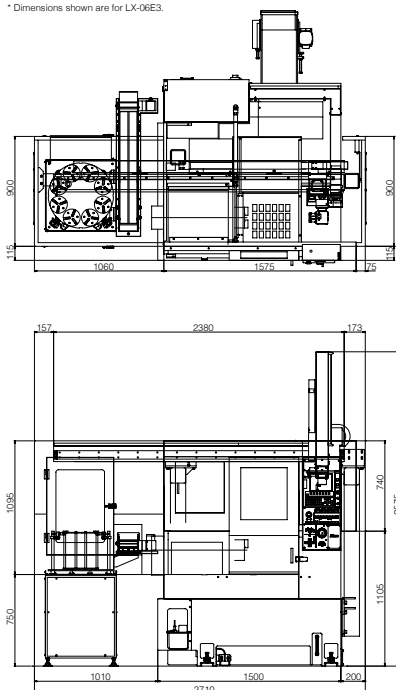
Maximum conveyable size	: 150 x 100 mm Dia. (flange workpiece)
	: 50 x 200 mm Dia. (shaft workpiece)
Maximum conveyable workpiece weight	: 2 kg
Z axis rapid traverse	: 90 m/ min
X axis rapid traverse	: 123 m/ min
Loading time	: 16 seconds

### Workpiece stocker

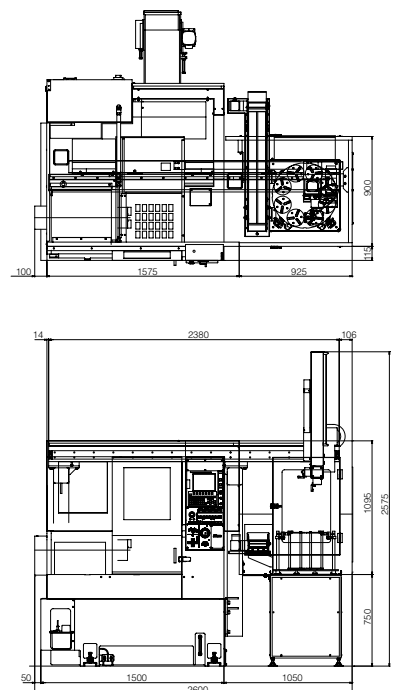
Stage 1 loading height	: 295 mm
Stage 1 loading mass	: 12 kg
Workpiece size	: 20 to 100 mm Dia. (O.D. guide)
	: 50 to 100 mm Dia. (I.D. guide)

### Single stocker (L type)

\* Dimensions shown are for LX-06E3.



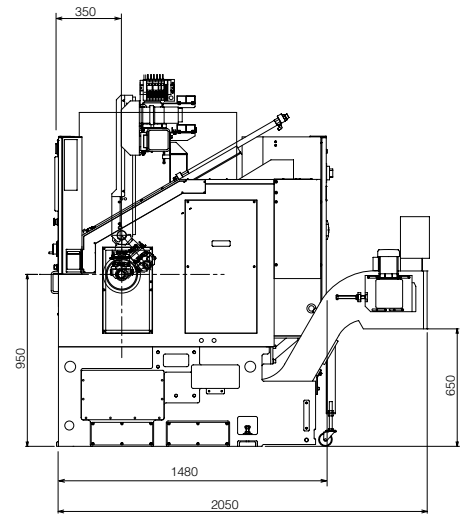
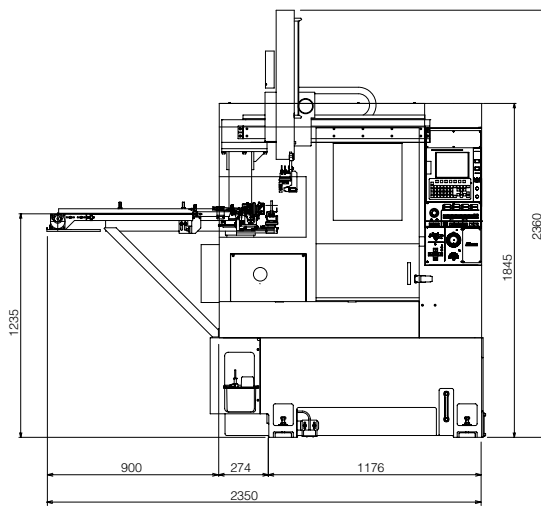
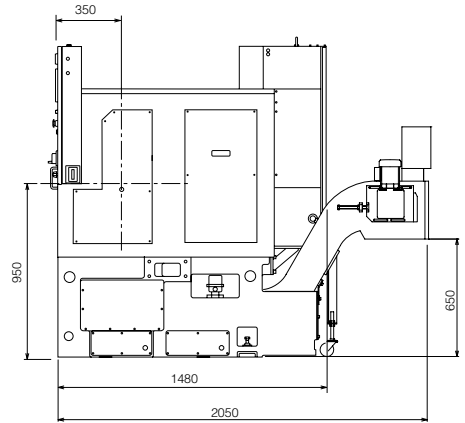
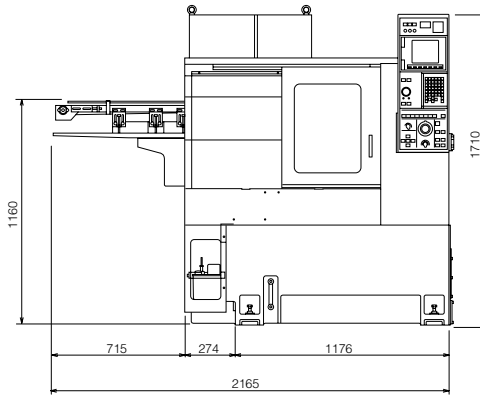
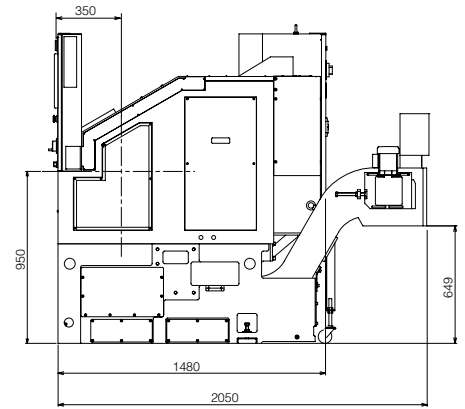
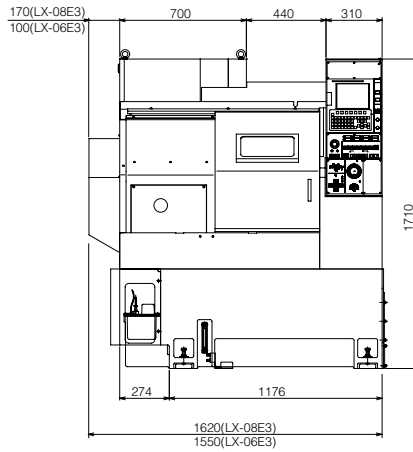
### Single stocker (R type)



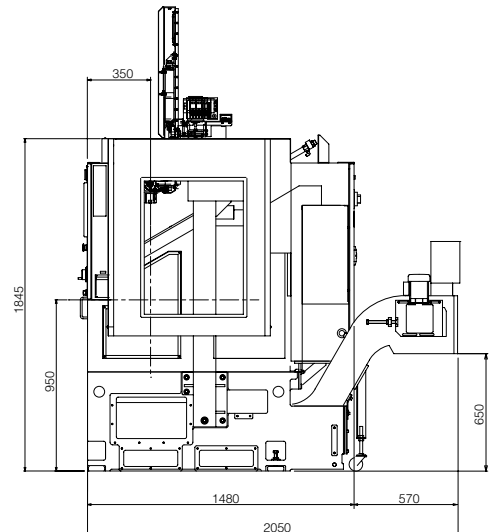
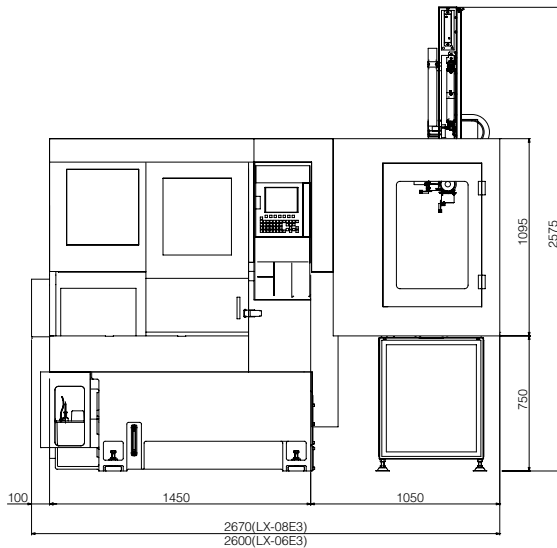


# External view

Standard Specification Machine  
LX06E / LX08E



Gantry Loader  
LX06E / LX08E



# Machine specifications

Items	LX-06E3		LX-08E3	
Machining capacity				
Max. work length (with Tail stock)	70(250)mm	220 mm		
Max. machining dia.		165 mm Dia.		210 mm Dia.
Spindle				
Spindle speed range		60 - 5,000 min <sup>-1</sup>		40 - 4,000 min <sup>-1</sup>
Spindle draw tube dia.		36 mm Dia.		52 mm Dia.
Type of chucking system		Hydraulic thru-hole chuck cylinder		
Collet chuck type	Stationary type	Special pad		Hardinge S22 with pad
	Pull type	Special pad		Hardinge S22 with pad
Power chuck		6"		8"
Turret				
Number of turret	1			
Type of turret	8 st. turret			
Size of turning tools		20 mm Sq.		25 mm Sq.
Size of Drill & Boring tools		32 mm Dia.		40 mm Dia.
Turret index time	0.25 sec. / 1st.			
Slide				
Slide travel	X - axis	150 mm		
	Z - axis	300 mm		
Rapid feed rate	X - axis	15 m/ min		
	Z - axis	18 m/ min		
Tailstock (Option)				
Slide type Hydraulic				
Max. slide travel	100 + 185mm (Quill + Manual)			
Live center size	MT3			
Max. slide thrust	4.9 kN/ 1.9 Mpa			
Tank capacity				
Hydraulic oil capacity	7 L			
Lubricating oil capacity	2 L			
Coolant tank capacity	180 L			
Machine dimensions				
Machine height	1,710 mm			
Floor space	1,550 mm x 1,480 mm		1,620 mm x 1,480 mm	
Machine weight	2,500 kg		2,820 kg	
Motors				
Spindle drive	AC 7.5 / 5.5 kW		AC 11 / 7.5 kW	
Power supply				
Voltage	AC 200 V ± 10%, 50 / 60 Hz ± 1%			
Capacity	8 KVA		22 KVA	
Air supply	0.5 Mpa (5 kgf / cm <sup>2</sup> )			
Fuse	75 A			
Others				
Splash guard interlock, Machine light				
Option				
Collet system, Power chuck system, High pressure coolant, Pneumatic,				
Gantry loader, Double hand loader, Programmable NC loader, Air blow, Chip conveyor, Chip box,				
Coolant mist collector, Coolant level switch, Signal tower, Automatic power shut-off, Auto door,				
Inner coolant, Inner air blow, Tailstock, Tool setter, Sub operation switch, Total & preset counter.				

## NC specifications

	FANUC 0i -TD
Axial control	X, Z
Simultaneous control axis	2 axis (Positioning, Linear interpolation)
Minimum setting unit	0.001 mm
Minimum output unit	X: 0.0005 mm Z: 0.001 mm
Interpolation functions	G00, G01, G02, G03
Parts program storage capacity	512 Kbyte
Spindle function	S4 digit direct spindle speed input(G97) Constant cutting speed control(G96)
Feed	F3.4 digit feed per revolution F6 digit feed per min.
Feed rate override	0 - 50% (10% step)
Rapid feed	X: 15 m/ min, Z: 18 m/ min
Interpolation functions	G01, G02, G03
Thread cutting	G32, G92
Canned cycle	G90, G92, G94
Tool function	TAABB (AA= Tool number and geometry, BB= Wear offset number)
Direct input of tool position	by measured MDI
Input/ output interface	PC card slot, USB memory interface, RS232C
Automatic operation	1cycle/ Automatic operation, Single block, Block delete, Machine lock, Optional block skip, Dry run, Feed hold,
Others	8.4"color LCD/MDI, Program storage capacity addition: 400, A decimal point input, Manual pulse generator, Memory protect, AC digital servo motor, etc.
Standard NC functions	Circle radius R command, Nose radius compensation, Constant surface speed control (G96), Background editing, Programmable date input (G10), Run hour/ aparts count display, Multiple repetitive cycles(G70-G76), Spindle rigid tap (main), Cylindrical interpolation, Custom macro B, Canned cycles for drilling(G80-G86), Tool life management.

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