

CITIZEN

Cincom

L12

Sliding Headstock Type CNC Automatic Lathe



The L12 - The perfect solution for small diameter work with switchable guide bush and 15,000 rpm spindle

Building on the legacy of Citizen's L series machines, setting the benchmark of functionality and performance.

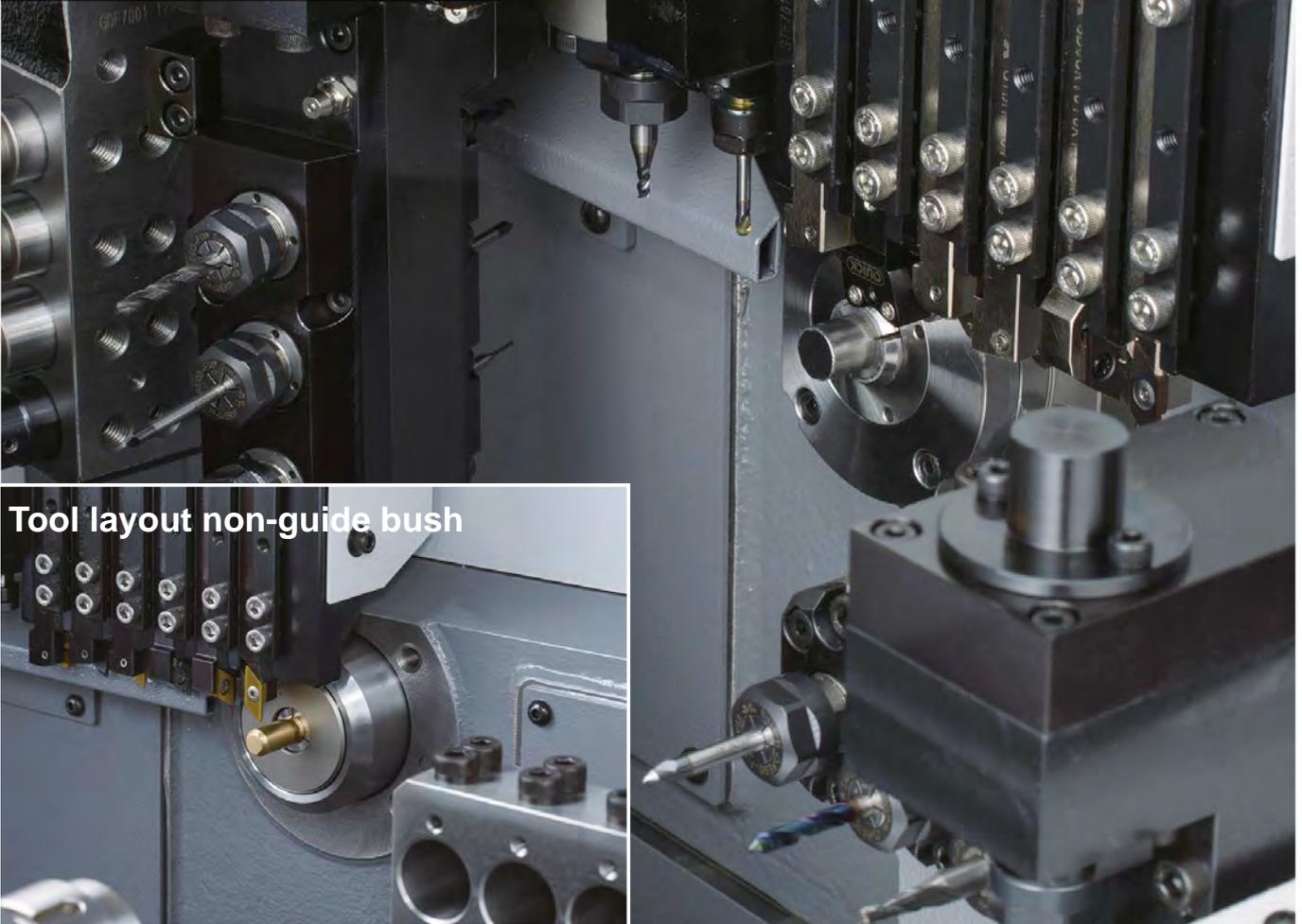
Outstanding performance for machining high speed, small diameter applications with 15,000 rpm on main spindle and 10,000 rpm on sub spindle.

Now with the added flexibility of using in either standard guide bush or non-guide bush mode with simple setup of both modes.



Tool layout with guide bush

(Shown with back rotary tool option)



Tool layout non-guide bush

Achieving optimum machining conditions

High-speed spindle and rotary tools

The maximum speed of the front spindle is 15,000 min⁻¹ even when using a rotary guide bush (maximum machining length: 135mm per chuck), and rotary tools are able to reach speeds of 10,000 min⁻¹. This makes it possible to use the optimum machining conditions when machining small diameter bar material or using small diameter drills or end mills.

Handles workpieces with complex shapes

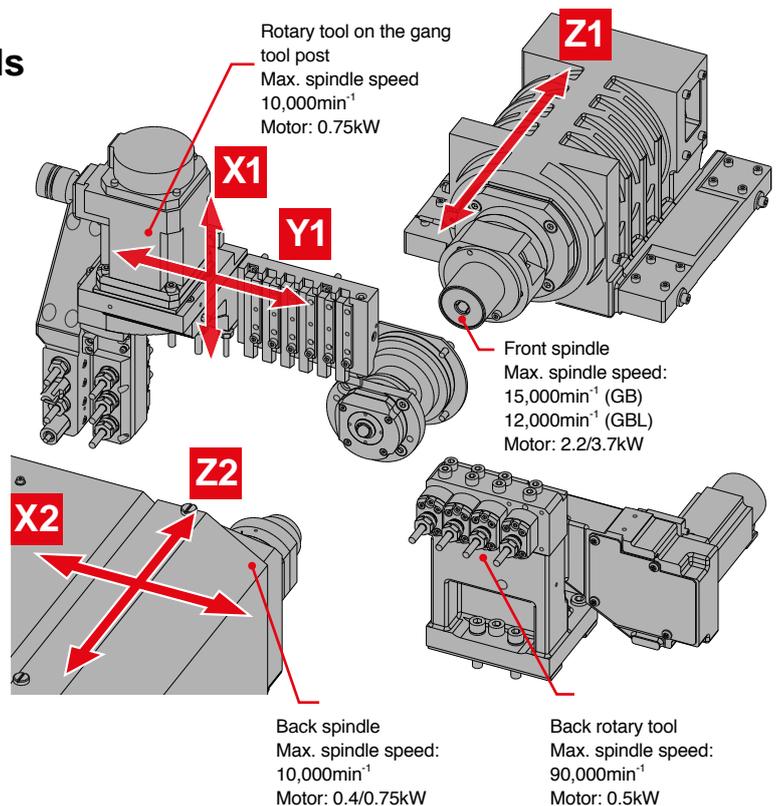
Comprehensive tooling

A full range of optional tooling is available. Three double ended rotary tools (angle adjustable from 0° to 30°) can be mounted among the rotary tools on the gang tool post. In addition, adopting rotary tool specifications for the back tool post has made it possible to mount end face rotary tools and a slitting spindle for back machining.

Improved productivity per unit area

Compact design

The design is only 1,760 mm wide by 820 mm deep. You can introduce a high-productivity, 5-axis machine into the same space as required to install a B12 machine up until now.



Automatic lathe offering 2 part lengths in 1 machine: handles both long and short workpieces



Ability to switch between guide bush and non-guide bush modes

Now available with easy to change switchable guide bush. The regular guide bush can be used for long or slender parts. The non-guide bush mode can be used for short parts to save material wastage.

The LFV function available as an option for effective machining of difficult-to-cut material



LFV* (low frequency vibration) is Citizen's latest, unique control technology which oscillates the X & Z servo axes in synchronisation with the spindle.

It offers unprecedented levels of chip control and is highly effective for both small diameter drilling and machining difficult to cut materials.

* "LFV" is a registered trademark of Citizen Watch Co., Ltd.

Representation of the cutting



Vibration mode

Item	LFV mode 1	LFV mode 2
Operation	Multiple vibrations per spindle revolution	Multiple spindle revolutions per vibration
Specification	The axes execute multiple vibrations during one spindle revolution, reliably breaking chips up into small pieces.	Machining is carried out while rotating the spindle multiple revolutions per vibration
Application	Ideal for outer/inner diameter machining and groove machining	Ideal for micro-drilling, where peripheral speed is required
Waveform		

Comparison of chips

Material: SUS304
Weight: 14.3 g (same scale)



Chips generated by conventional cutting

Chips generated by cutting using LFV

LFV specifications

Model	Type	Front side LFV (X1, Z1)	Back side LFV (X2, Z2)
L12	VII	○ Conventional cutting on the back side	○ Conventional cutting on the front side

Note 1 : LFV machining cannot be performed with the Y axis.

Note 2 : LFV machining can be performed simultaneously on a maximum of 1 pair of axes.

Note 3 : For LFV machining with rotary tools, the "LFV function" and "rotary tool feed per revolution" options are required

Key features



Wide operator access

A lift-up cover gives an extensive opening without taking up space at the rear of the machine and improves usability.



NC program I/O

NC programs can be input and output using a USB memory stick or compact flash card. An RS-232C interface, is also provided.



Product receiver box

The workpiece gripped in the back spindle is unloaded into the product chute for collection. Workpiece conveyor and support for scratch prevention are both provided.



Coolant tank

The coolant tank has a large capacity of 100 litres and is easily removed.



Swarf receiver box

With its large opening, the chip collection port is designed for easy cleaning. Swarf conveyor is available as an option.



Central lubrication device

Supplying lubricating oil to all ball screws improves maintainability.



Up to 27 tools

A maximum of 27 tools can be mounted.



Deep hole drilling

A drilling tool can be added to the opposite tool post, which is effective for deep hole machining.

Intuitive screen display is easy to use and read

Screen designed from the operator's perspective and comfortable to use



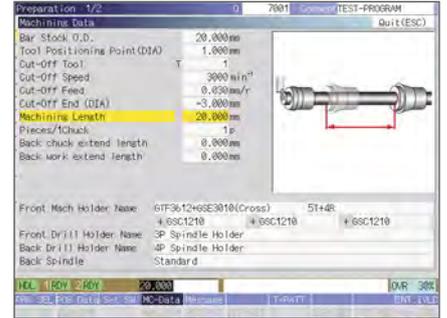
Equipped with high-speed NC

The machine is equipped with the latest NC model to drastically reduce the start-up and screen switching time compared to conventional machines with advanced functions. This feature provides a stress-free operation environment.



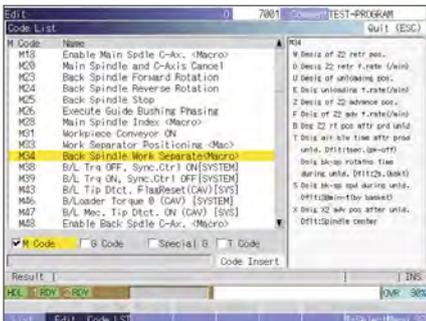
On-machine program check function

The program can be run round using the handwheel giving enhanced user confidence. The program can run in forward or reverse directions and can be paused to edit before restarting.



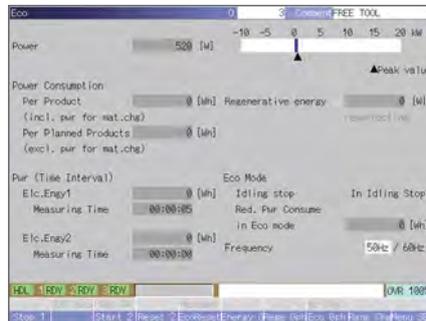
Display of easily understood illustrations

In response to the selection of an item, the corresponding illustration is displayed on the screen so that the operator can easily recognise the meaning of the selected item. (The screen shown above displays the machining data.)



Display of code list

The function displays the list of G and M codes including explanations of each code.



Eco screen

The current power consumption is shown on the screen, along with the maximum power consumption value, the power consumption record, the cumulative power consumption and the power regeneration (generation) status. Data can be output too.

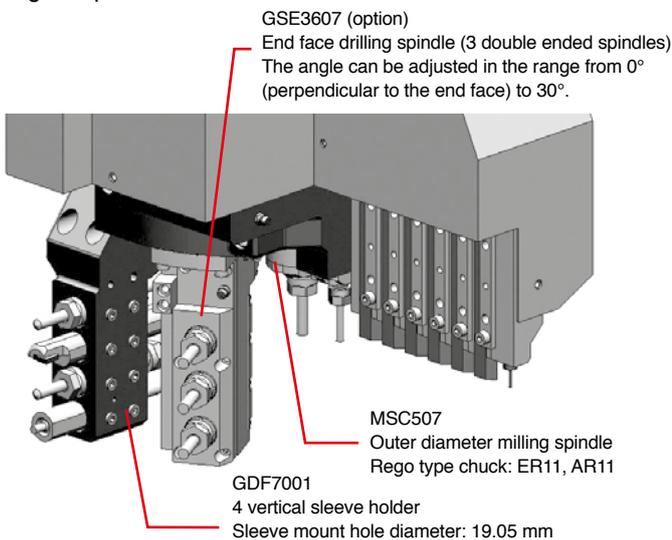


Eco screen

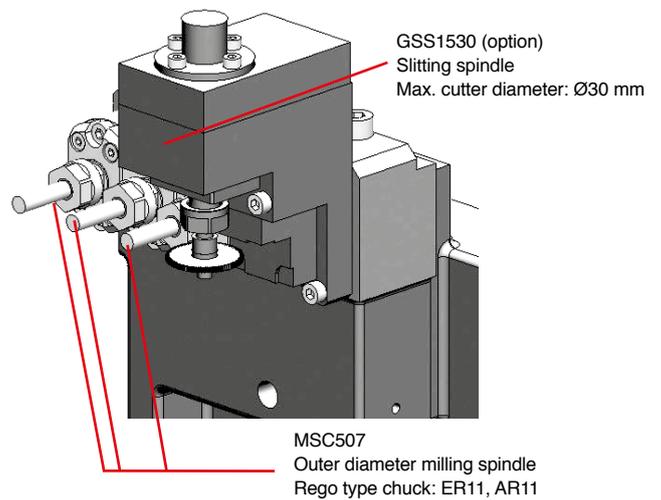
The machine's power consumption can be shown in the form of an easy-to-understand graph.

Comprehensive tooling

Gang tool post

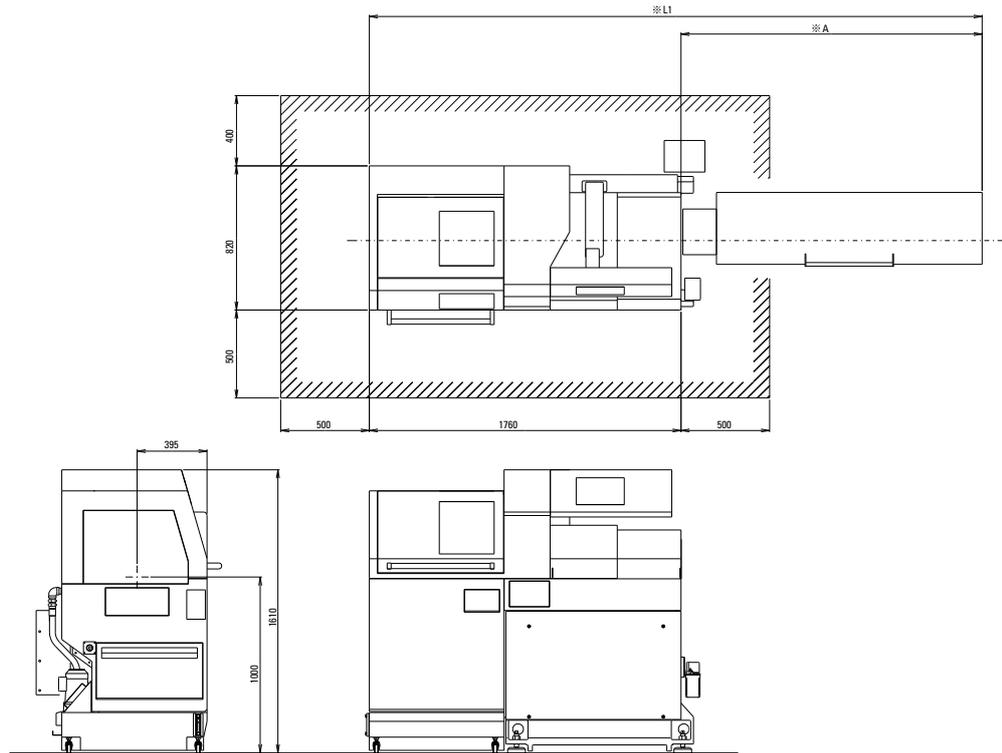


Back tool post

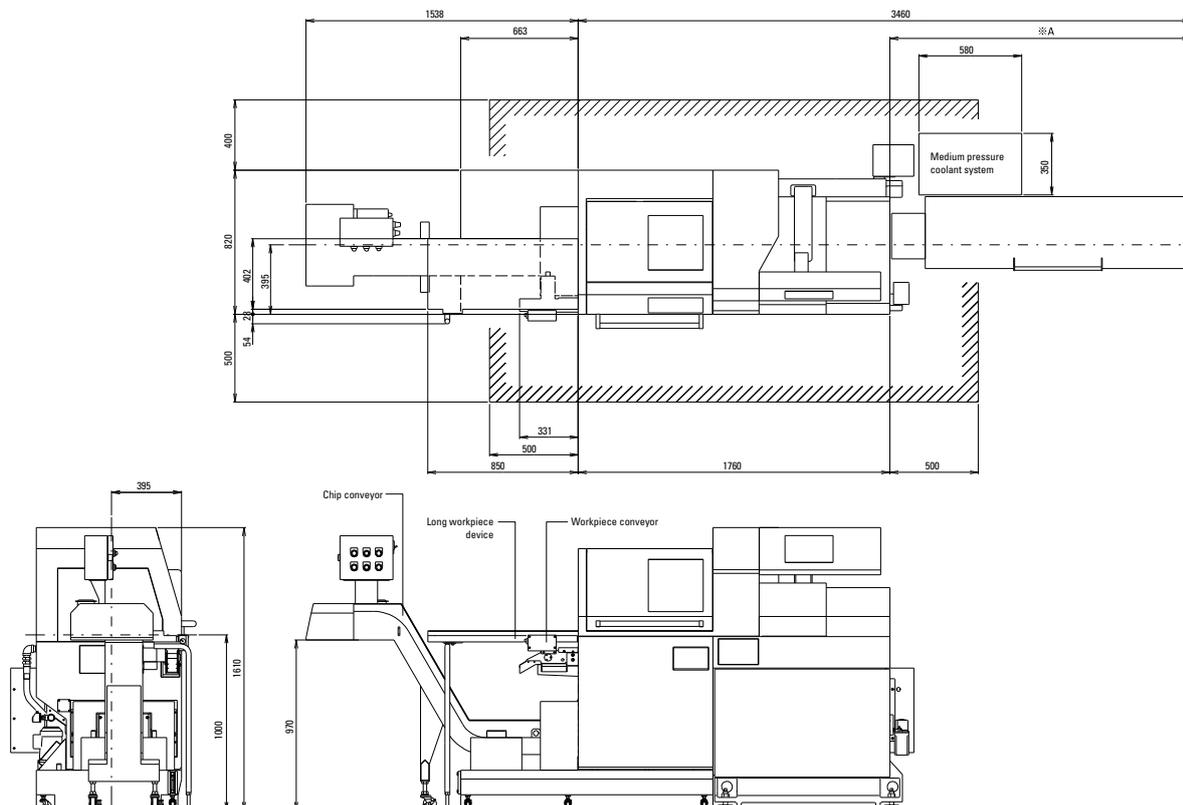


Machine layout

L12 standard machine



L12 machine with options



* swarf conveyor subject to specification.

Machine specification

Item	L12 type VII (L12-1M7)	Standard accessories
Maximum machining diameter (D)	12mm / 16mm option	Main spindle chucking unit
Maximum machining length (L)	GB: 135mm/1chuck GBL:30mm	Air-driven knock-out device for back machining
Spindle through-hole diameter	ø20mm	Back spindle chucking unit Machine relocation detector
Main spindle speed	GB:Max.15,000min ⁻¹ GBL:Max.12,000min ⁻¹	Gang rotary tool driving unit Door lock
Max. chuck diameter of the back spindle	ø12mm	Coolant device (with level detector) Workpiece separator
Max. protrusion length	80mm	Lubricating oil supply unit (with level detector)
Max. protrusion length of the back spindle workpiece	30mm	
Back spindle speed	Max.10,000min ⁻¹	Special accessories
Gang rotary tool		Rotary guide bushing unit
Spindle speed	Max.10,000min ⁻¹	Motor-driven knock-out device for back machining
Back tool post rotary tool Option		Cut-off tool breakage detector Workpiece conveyor
Spindle speed	Max.9,000min ⁻¹	Knock-out jig for through-hole workpiece
Number of tools to be mounted	27	Chip conveyor Scratch-free part of product chute
Gang turning tool	6	Medium-pressure coolant device Workpiece separator (for front face)
Gang rotary tool	4 - 9	Signal lamp Coolant flow rate detector
Gang drilling tool	Front 4, Back 4	3-colour signal tower
Back tool post	4	
Tool size		Standard NC functions
Tool	10mm	NC unit dedicated to the L12
Sleeve	ø19.05mm	Constant surface speed control function
Main spindle collet chuck	FC096-M	8.4 inch colour liquid crystal display (LCD)
Guide bushing	WFG541-M	Automatic power-off function
Back spindle collet chuck	FC096-M-K	Program storage capacity : 40m (approx.16KB)
Rapid feed rate (all axes)	35m/min	Main spindle indexing at 1° intervals
Motors		Tool offset pairs : 40 Nose radius compensation
Spindle drive	2.2/3.7kW	Product counter indication (up to 8 digits)
Gang tool post rotary tool drive	0.75kW	Chamfering, corner R Operating time display function
Back spindle drive	0.4/0.75kW	On-machine program check function
Back tool post rotary tool drive Option	0.5kW	Spindle speed change detector
Coolant oil	0.25kW	
Centre height	1,000mm	Special NC functions
Rated power consumption	6.1kVA	Variable lead thread cutting Tool offset pairs: 80
Full-load current	22A	Arc threading function Tool life management I
Main breaker capacity	30A	Geometric function Tool life management II
Air pressure and air flow rate		Spindle synchronised function
for pneumatic devices	0.5MPa, 60NL (Max.190NL)	Program storage capacity 600m (approx. 240KB)
Weight	1,700kg	Spindle C-axis function External memory program driving
		Milling interpolation Network I/O function
		Back spindle 1°indexing function Submicron commands
		Back spindle C-axis function User macros
		Back spindle chasing function Helical interpolation function
		Canned cycle drilling Inclined helical interpolation function
		Rigid tapping function Hob function
		High speed Rigid tapping function Polygon function
		Inch command Sub inch command
		Rigid tapping phase adjustment function
		Differential speed rotary tool function

*Front rotary tool drive unit is optional

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