CITIZEN

Cincom

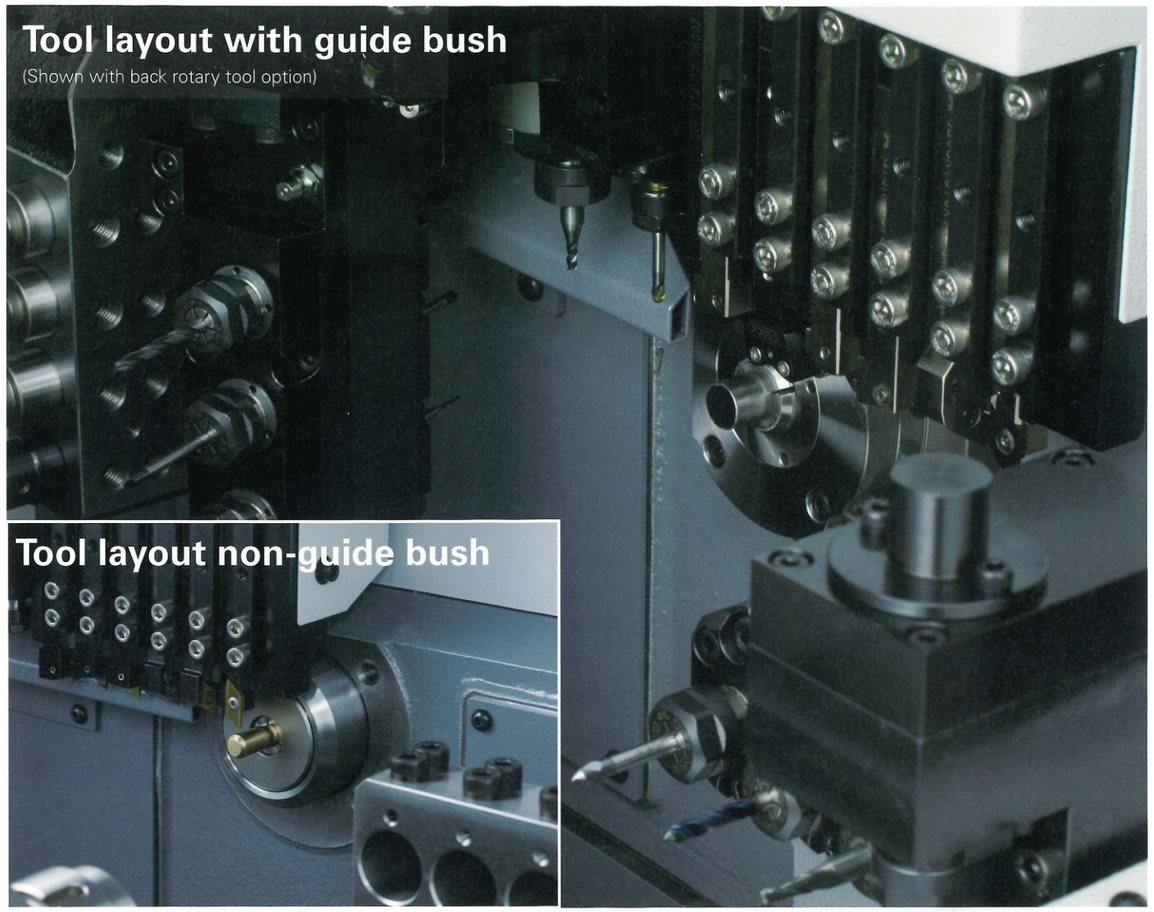
L12

Sliding Headstock Type CNC Automatic Lathe

The L12: Handling all small-diameter work with 5-axis control

Detachable guide bushing and 15,000min^{-1} high-speed spindle

Machining using a guide bushing is a useful method for long, slender workpieces. On the other hand, using a guide bushing with short workpieces leaves a long remnant bar, increasing material costs. The optimum machine configuration differs according to the workpiece to be machined, and up until now a variety of different machines have been required. The L12 solves this problem.
It is a simple matter to fit or remove the guide bushing, so the machine configuration can be changed to suit the workpiece to be machined. As an automatic lathe that encompasses two roles in a single unit, it can be used to machine both long and short workpieces effectively. It also shows uncompromising performance as a machine for high-speed, small-diameter applications.
It shortens cycle times with a front spindle capable of high-speed rotation of 15,000 min^{-1} and 10,000 min^{-1} rotary tools. The L series that has built Cincom's history is now creating the new 'standard' in automatic lathes for function and performance.



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 bushing (maximum machining length: 135 mm 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

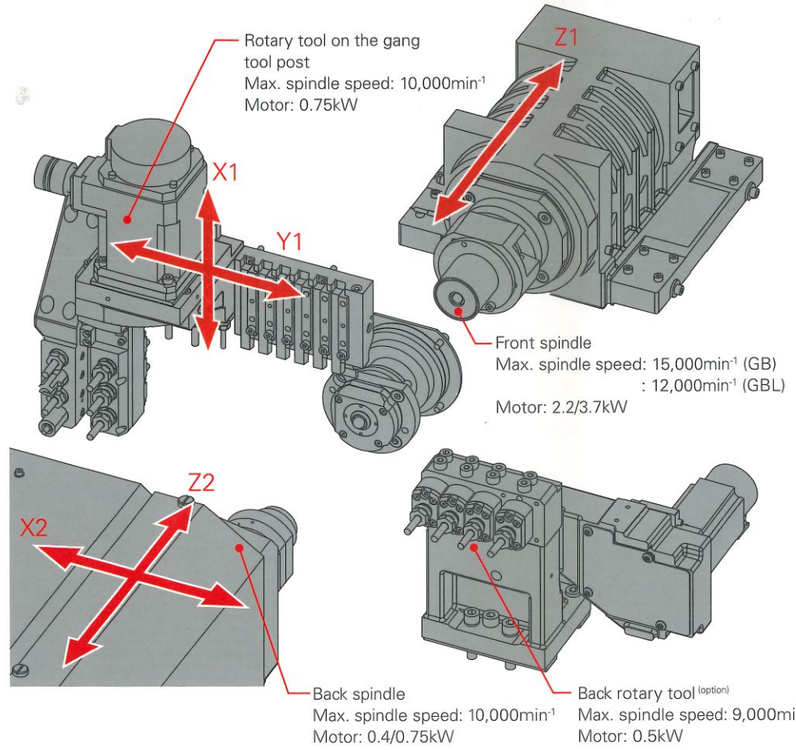
Comprehensive tooling

A full range of optional tooling is available.
Three both-end 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 an A12/16 series or B12 machine up until now.



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

Ability to switch between guide bush type and non-guide bush type in 30 minutes

The L12 is equipped with a detachable guide bushing as standard. This is a major and unprecedented feature. The L12 can be used as a regular guide bushing type automatic lathe when machining long thin workpieces, and with the guidebush removed, can be used for short workpieces thus leaving short remnant bars.

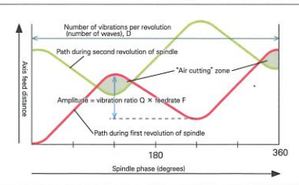
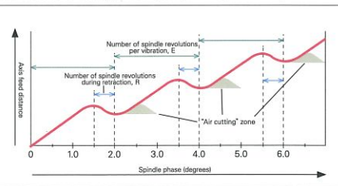
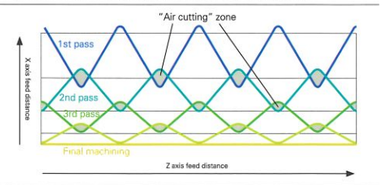
LFV technology

LFV technology

LFV* is a technology for performing machining while vibrating the X and Z servo axes in the cutting direction in synchrony with the rotation of the spindle.
It reduces various problems caused by chips entangling with the product or tool, and is effective for small-diameter deep hole machining and the machining of difficult-to-cut materials.

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

Vibration mode

	LFV mode 1	LFV mode 2	LFV mode 3
Operation	Multiple vibrations per spindle revolution	Multiple spindle revolutions per vibration	Vibration threading
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.	A vibrating behavior is applied in the direction of the cutting (notching) during threading with the timing of this vibration changing with each pass in relation to the rotary phase of the spindle to provide "air-cutting" during the machining and break up chips.
Application	Ideal for outer/inner diameter machining and groove machining	Ideal for micro-drilling, where peripheral speed is required	Optimal for threading of internal and external diameters
Waveform			

Model	Type	Front side LFV (X1, Z1)	Back side LFV (X2, Z2)
L12	VII型	○ 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

Convenient functions for easy operation and improve productivity

Ease of operation pursued for fast set-ups. Easy to maintain with optional functions for flexability of use

Wide operator access
A lift-up cover gives an extensive opening without taking up space at the rear of the machine, and improves operability.

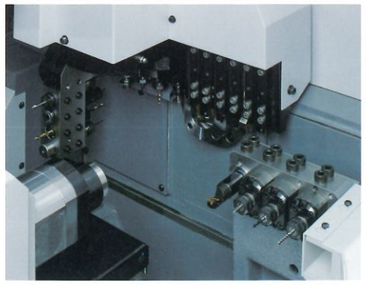
NC program I/O
NC programs can be input and output using a USB memory stick or compact flash card. An RS-232C inter-face, as featured on previous models, can also be used.

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 available.

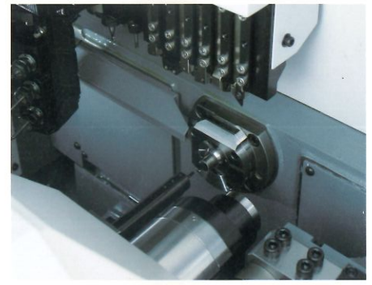
Coolant tank
The coolant tank has a large capacity of 100 liters and can be removed easily.

Chip receiver box
With its large opening, the chip collection port is designed for easy cleaning. Chip conveyor is optionally available.

Central lubrication device
Supplying lubricating oil to all ball screws improves maintainability.



Up to 27 tools
A maximum of 27 tools can be mounted.



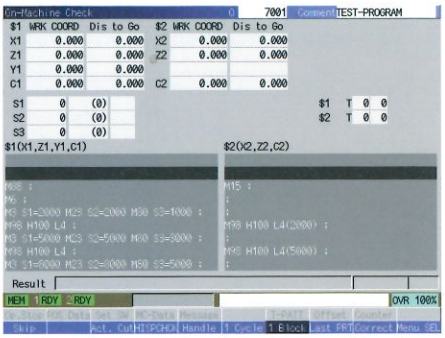
Deep hole drilling
A drilling tool can be added to the opposite tool post, which is effective for deep hole machining (for CS).

Intuitive screen display is easy to view and read

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

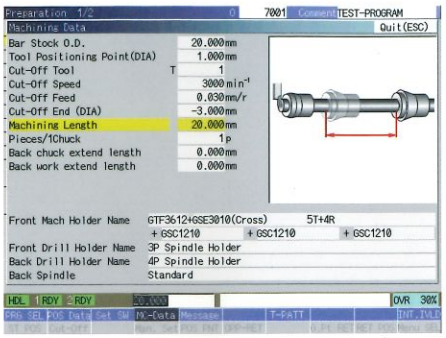
Equipped with high-speed NC

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.



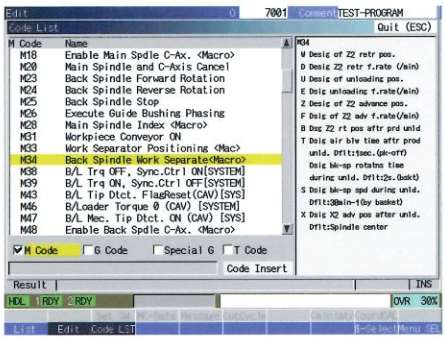
On-machine program check function

Using manual handle feed, operations can be run in the forward or reverse directions, and you can temporarily stop program operation, edit the program, and then restart operation. This helps to make programming go smoothly.



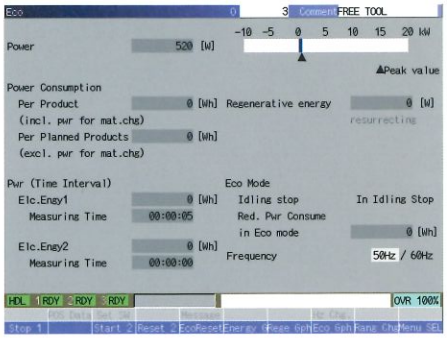
Display of easily understood illustrations

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



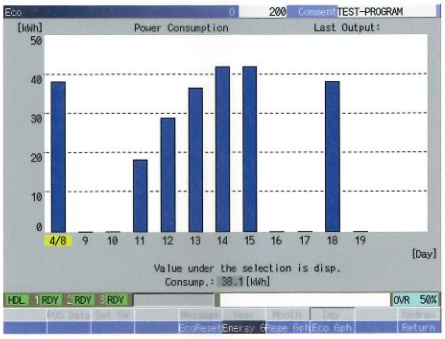
Display of code list

The function displays the list of G and M codes including explanations of the arguments to support programming.



Eco screen

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



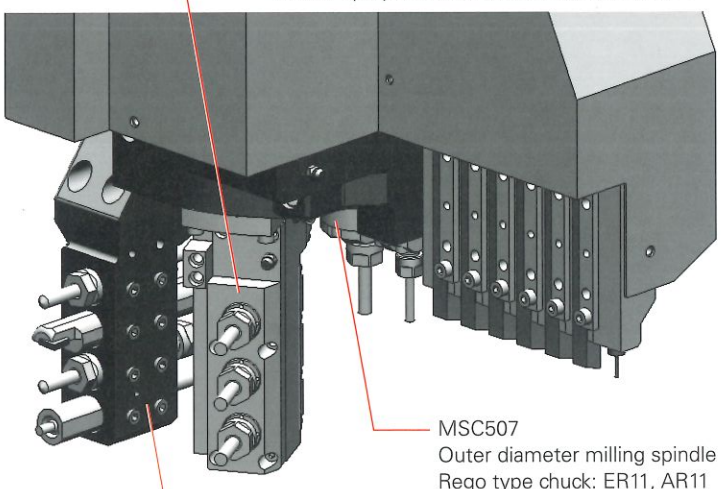
Eco screen

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

Comprehensive Tooling

Gang tool post

GSE3607
End face drilling spindle (3 double ended spindles)
The angle can be adjusted in the range
from 0° (perpendicular to the end face) to 30°.

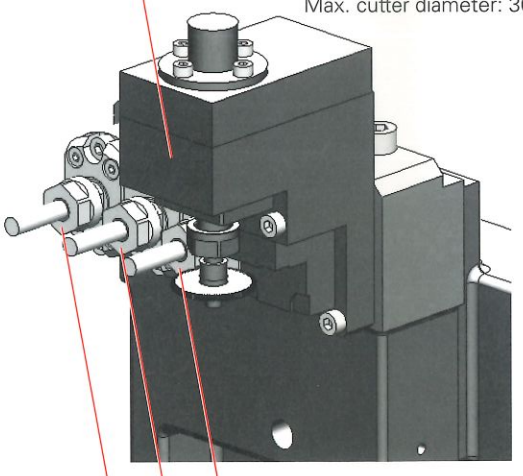


MSC507
Outer diameter milling spindle
Rego type chuck: ER11, AR11

GDF7001
4 vertical sleeve holder
Sleeve mount hole diameter: φ19.05 mm

Back tool post
(rotary tool specification option)

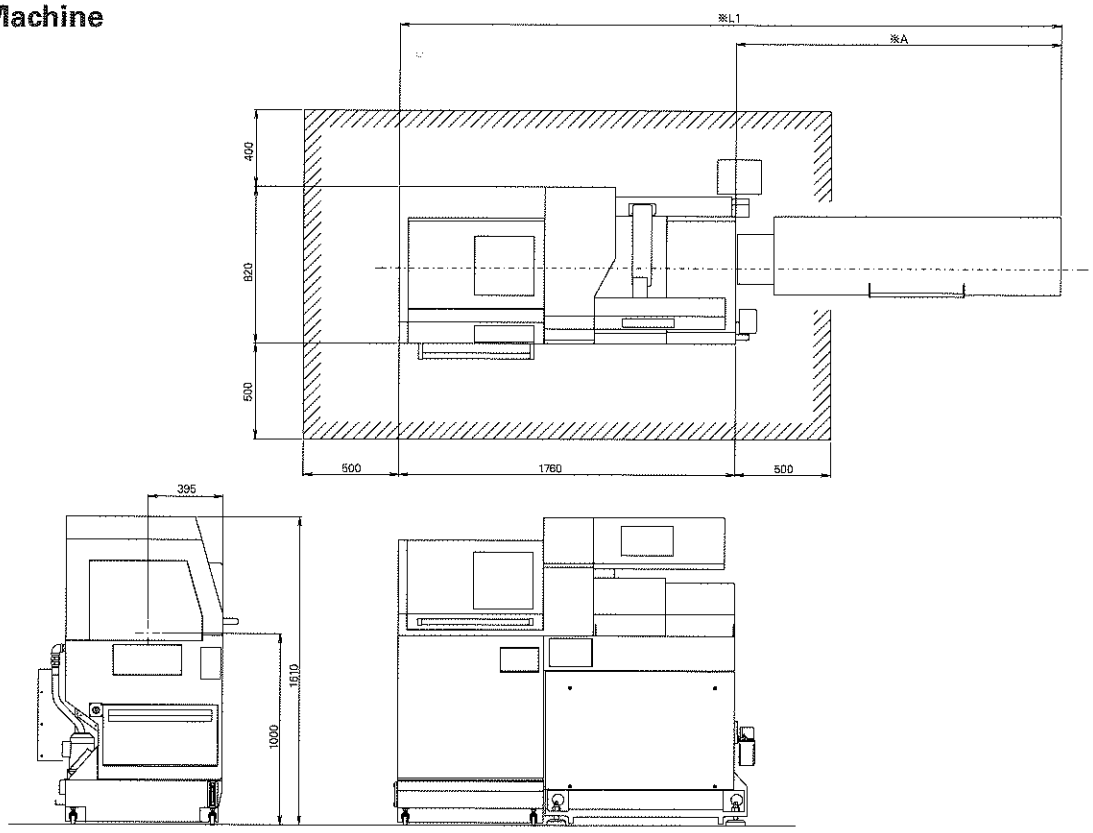
GSS1530
Slitting spindle
Max. cutter diameter: 30 mm Dia.



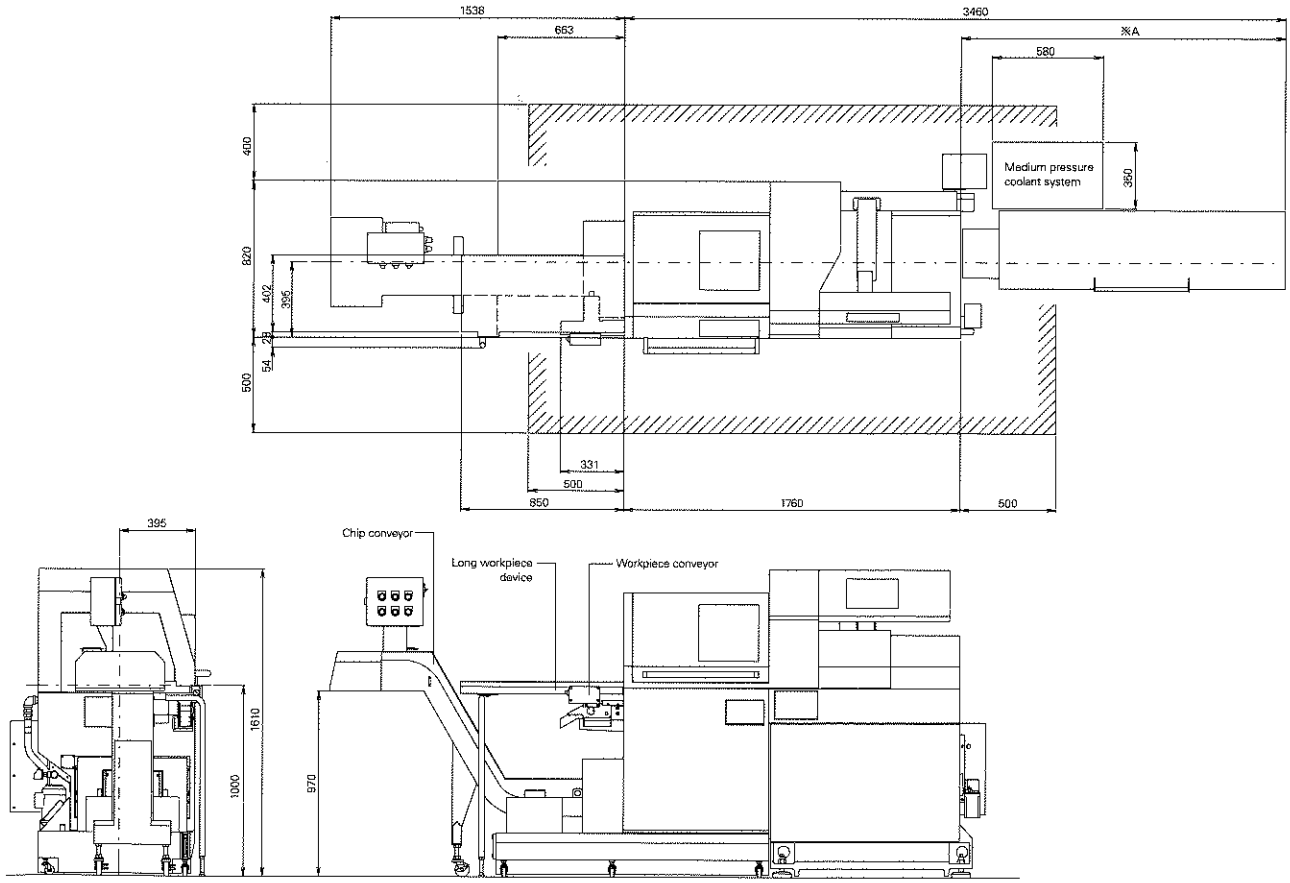
MSC507
Outer diameter milling spindle
Rego type chuck: ER11, AR11

Machine Layout

L12 Standard Machine



L12 Option-installed Machine



Machine Specification

Item	**L12** type VII (L12-1M7)
Maximum machining diameter (D)	12mm Dia.
Maximum machining length (L)	GB 135mm/1chuck GBL 30mm
Maximum front drilling diameter	8mm Dia.
Maximum front tapping diameter (tap, die)	M6
Spindle through-hole diameter	20mm Dia.
Main spindle speed	GB:Max.15,000min^{-1} GBL:Max.12,000min^{-1}
Max. chuck diameter of the back spindle	12mm Dia.
Max. protrusion length	80mm
Max. protrusion length of the back spindle workpiece	30mm
Max. drilling diameter for the back spindle	6mm Dia.
Max. tapping diameter for the back spindle	M5
Back spindle speed	Max.10,000min^{-1}
Gang rotary tool	
Maximum drilling diameter	5mm Dia.
Maximum tapping diameter	M4
Spindle speed	Max.10,000min^{-1}
Back tool post rotary tool Option	
Maximum drilling diameter	5mm Dia.
Maximum tapping diameter	M4
Spindle speed	Max.9,000min^{-1}
Number of tools to be mounted	27
Gang turning tool	6
Gang rotary tool	4-9
Gang drilling tool	Front 4, Back 4
Back tool post	4
Tool size	
Tool	10mm Sq.
Sleeve	19.05mm Dia.
Main spindle collet chuck	FC096-M
Guide bushing	WFG541-M
Back spindle collet chuck	FC096-M-K
Rapid feed rate(All axes)	35m/min
Motors	
Spindle drive	2.2/3.7kW
Gang tool post rotary tool drive	0.75kW
Back spindle drive	0.4/0.75kW
Back tool post rotary tool drive Option	0.5kW
Coolant oil	0.25kW
Center height	1,000mm
Rated power consumption	6.1kVA
Full-load current	22A
Main breaker capacity	30A
Air pressure and air flow rate for pneumatic devices	0.5MPa, 60NL (Max.190NL)
Weight	1,700kg

Standard accessories	
Main spindle chucking unit	Air-driven knock-out device for back machining
Back spindle chucking unit	Machine relocation detector
Gang rotary tool driving unit	Door lock
Coolant device (with level detector)	Workpiece separator
Lubricating oil supply unit (with level detector)	

Special accessories	
Rotary guide bushing unit	Motor-driven knock-out device for back machining
Cut-off tool breakage detector	Workpiece conveyor
Knock-out jig for through-hole workpiece	Chip conveyor
Scratch-free part of product chute	Medium-pressure coolant device
Workpiece separator (for front face)	Signal lamp
Coolant flow rate detector	3-color signal tower
Work light	LFV

Standard NC functions	
NC unit dedicated to the L12	Constant surface speed control function
8.4 inch color liquid crystal display (LCD)	Automatic power-off function
Program storage capacity : 40m (approx.16KB)	Main spindle indexing at 1° intervals
Tool offset pairs : 40	Nose radius compensation
Product counter indication (up to 8 digits)	Chamfering, corner R
Operating time display function	On-machine program check function
Spindle speed change detector	

Special NC functions	
Variable lead thread cutting	Tool offset pairs : 80
Arc threading function	Tool life management I
Geometric function	Tool life management II
Spindle synchronized function	Program storage capacity 600m (approx.240KB)
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
Rigid tapping phase adjustment function	Inch command
Differential speed rotary tool function	Sub inch command

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