

*Improved productivity for complex machining*

# CINCOM

Sliding Headstock Type CNC Automatic Lathe

## L20



# Cincom Technology, Support and Financing.

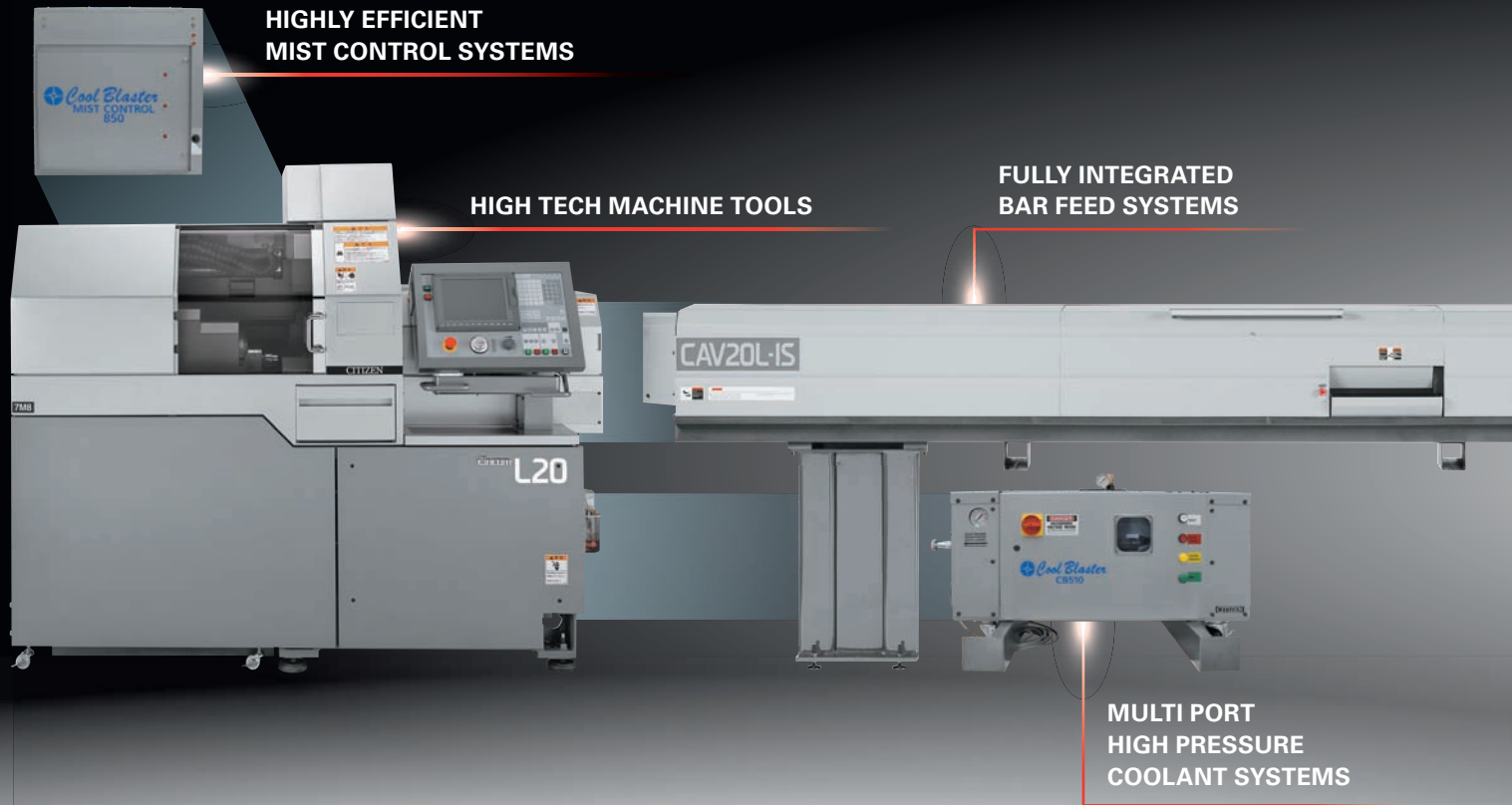
**Marubeni Citizen-Cincom is your single source provider of Swiss type lathes and accessories.**

SAVE TIME with the "CINCOM ADVANTAGE," an exceptional opportunity for US manufacturers to obtain a turning center with all related accessories from one contact:

- High tech Citizen Swiss turning machines
- CAV Integrated Bar Feed Systems
- Cool Blaster Multi Port High Pressure Coolant Systems
- Cool Blaster Mist Control 850 mist and smoke control system

And there's no need to let financing hold you back—we also offer a leasing program that's fast and easy.

Valuable production time can be wasted while you wait for financing or while trying to coordinate support for your machine and all its accessories. With the Cincom Advantage you only need one contact for all your requirements—from purchasing to financing to support!



## CAV Bar Feeders

- Fully enclosed system
- Quick change separation system
- Space saving pusher design
- Automatic remnant retraction
- Integrated hydraulic tank, oil pump, oil-level indicator
- Shares same CNC controller and electrical system with Cincom machines

## Cool Blaster High Pressure Coolant System

- Up to 10 independent high pressure output lines
- Heat exchanger (standard on 10 line system)
- System control monitoring
- Clogged filter alarm with auto drain
- 5 micron filter system
- Space saving low profile design

## Cool Blaster Mist Control 850

- Triple Pass ESP Filtration Technology
- Variable Speed Controller
- Fused overload protection
- E stop interlock system
- Mounting hardware

# Now the Ultimate in Speed – the L20 Modular Series.

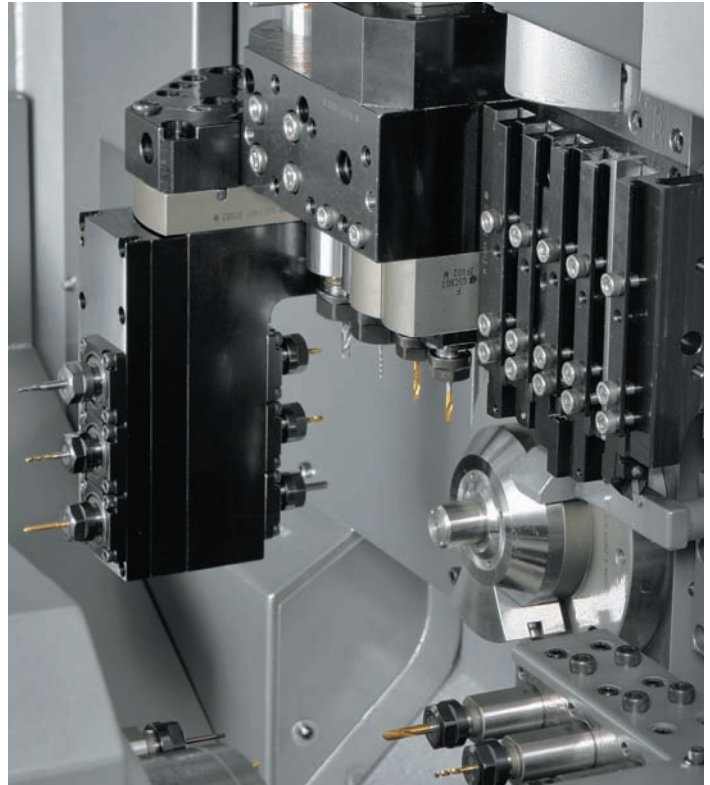
Streamline Control cuts non-cutting time to a minimum.

**IMPROVE PRODUCTIVITY** by reducing cycle time. The L20 accomplishes this by cutting idle time while maintaining existing high speeds and feeds with Citizen's unique control method **Streamline Control**. Idle time is reduced by:

- The tool holder's overlap function that shortens the tool change time for gang tool holder and opposed tool holder
- The axis motion overlap function that is effective for thread cutting and other operations
- The direct spindle indexing function used for milling and drilling

However, the improvements are not restricted to the machine itself: the speed of operations has also been greatly improved. The time it takes to "start-up" when the power is turned on is one quarter of the time of existing machines. Power shut-off, which previously had to be delayed until the HDD (hard disk drive) stopped, can now be executed immediately, and the time to switch between screens at mode changes has been cut in half.

The new L20 series has a flexible tooling line-up. Tools such as rotary tools that allow the simultaneous machining of front and back end faces, and tools whose mounting direction can be switched for the machining of an end face or cross machining, allows flexibility when machining complex shapes. Attention has also been paid to the ease of maintenance. Reliability is improved through elimination of the HDD and by the sealed construction of the control unit.

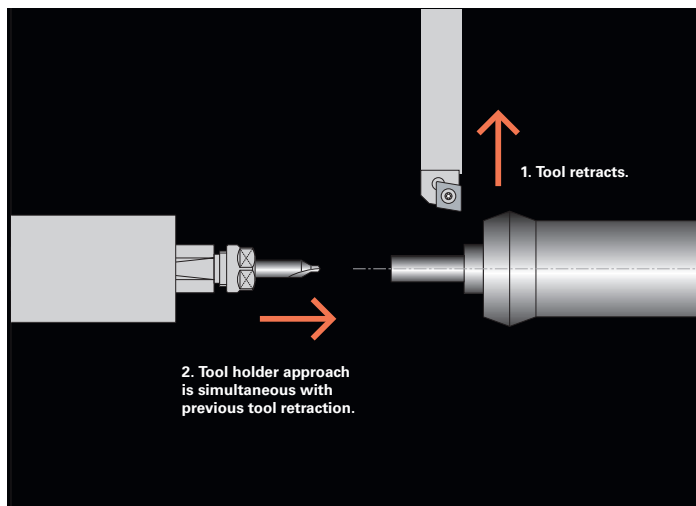


The L20 is a machine that guarantees improved productivity.

The next tool advances while the previous tool retracts.

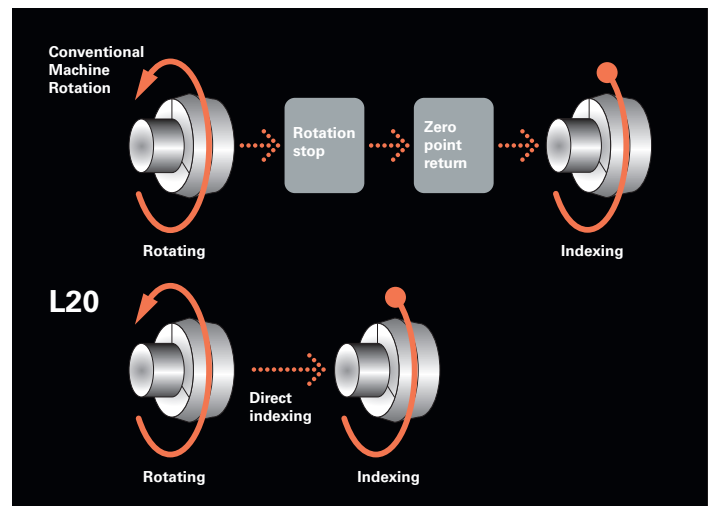
## Tool Overlap Function

For front machining, the L20 is equipped with an independently controlled gang tool holder and an opposed tool holder. Streamline Control positions the next tool holder while the previous tool holder retracts.



## Direct Spindle Indexing

The Direct spindle indexing function significantly reduces spindle indexing time. The spindle decelerates directly into the required index position, eliminating the time it takes to stop, reference and index.



# User Friendly Operation

A design that puts the user first by offering superb ease of operation



## Swing-out Operation Panel

The operation panel with high visibility color screen pivots on two points, allowing it to be conveniently positioned for tasks such as editing and tool setting.



## PC Card Slot

NC programs can be input and output using the PC card slot on the front face of the operation panel. The slot cover can be closed while a PC card is inserted.

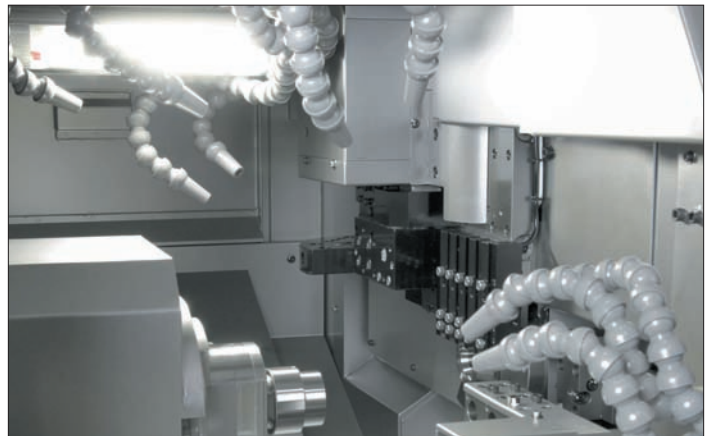






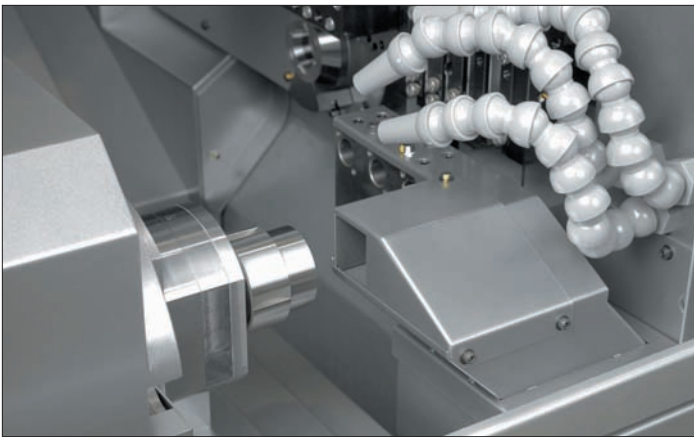
### Slide Cover with Wide Opening

To allow easy access to the cutting area, the slide cover has been given a wide opening which improves the accessibility of tool setting and machine maintenance.



### In-machine Lighting

Fluorescent lighting is standard inside the cutting area for optimum visibility.



### Part Chute

The product chute is positioned for fast part ejection after completion of back machining. As an option, the chute can be 'cushion' lined for delicate parts.



### Part Receiver

The products collected by the chute are discharged to the part receiver box. Parts can also be discharged to an optional workpiece conveyor.



### Coolant Tank

The large capacity (150 liters) coolant tank and 400W coolant pump help to maintain continuous production during unattended operation.

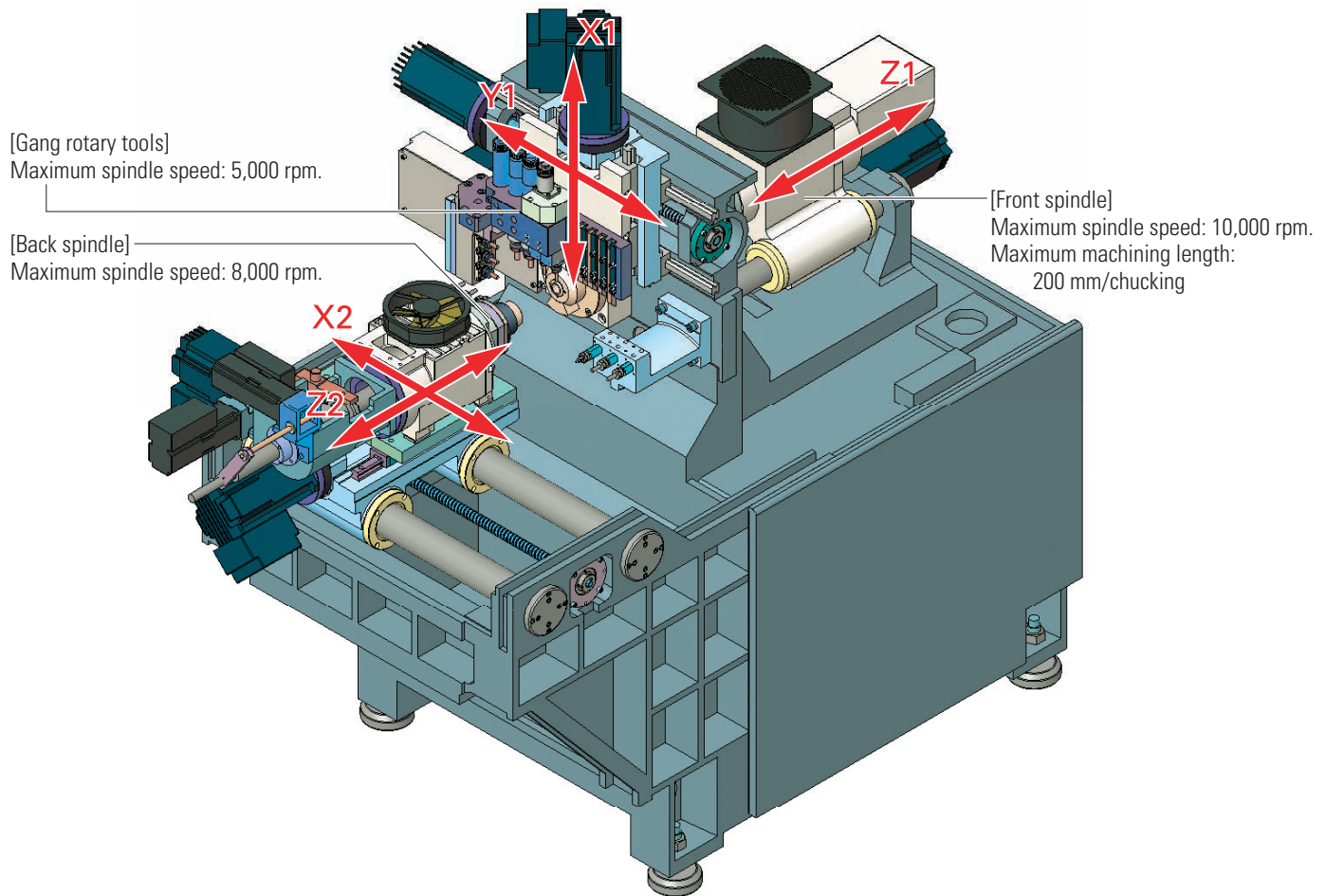


### Centralized Lubrication System

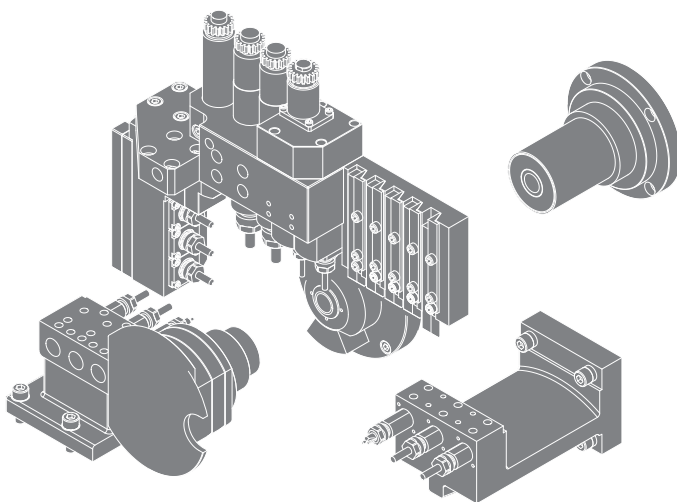
Centralized lubrication to all ball screws eliminates manual greasing and reduces maintenance.

# The concept: "Strong, Fast, Flexible"

Developed to meet customer needs and demands



## L20 Type VIII



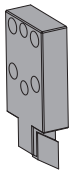
The type VIII uses a 3-tool cross/end-face drilling spindle [GSE1110] or a double-ended 6-tool cross/face drilling spindle [GSE1307]. Both units are normally indexable for either face or cross working, making the type VIII suitable for complex machining with multiple tools.

## L20 Modular Design

The modular concept of the L20 (offered in 3 model types) can support a wide variety of machining processes depending on your current or future parts machining requirements. When only turning is required the L20 Type V offers 5 turning tools on the gang plate with no live tools. As future live tool needs are required, the Type V model can be upgraded by purchasing additional live tool holders that easily fit into the existing gang tool plate. The L20 Type VII offers 5 turning and 5 live rotary tools (cross milling/drilling) on the gang plate. When cross machining is required three cross spindles—standard on the Type VIII model—can be mounted totaling eighteen tools: five turning, seven rotary, and six drilling.

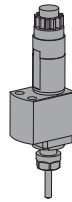
# Tooling options for endless machining possibilities

## Modular tool range for turning, milling and drilling



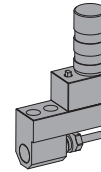
**GTF3712** (for type VIII)  
**1-tool holder**

This is a tool holder for front turning that is mounted on the 5-rotary-tool vertical holder GSD103. The GTF3711 for back turning and grooving is also available.



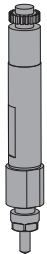
**GSC907** (for type VIII)  
**Cross-drilling spindle**

This spindle is for performing drilling on the outer diameter and milling on end faces. The maximum collet diameter is  $\phi 7$  mm and the chuck model is ER11.



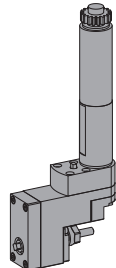
**GDF506**  
**End-drilling sleeve holder**

Mounted on a vertical holder, this holder is used for operations including drilling on end faces. The sleeve mounting hole diameter is  $\phi 19.05$  mm.



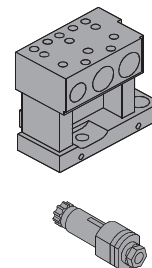
**GSC1010**  
**Cross-drilling/milling spindle**

This spindle is for performing operations including drilling on the outer diameter and milling on end faces. The maximum collet diameter is  $\phi 10$  mm and the chuck model is ER16.



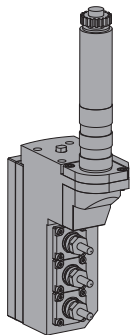
**GSE607**  
**End face drilling spindle**

Used for operations including drilling on end faces. The angle can be adjusted within the range of  $15^\circ$ . The maximum collet diameter is  $\phi 7$  mm and the chuck model is ER11.



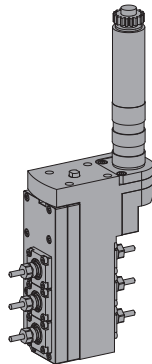
**L720-U121B** (Front)  
**L720-U151B** (Back)  
**Live tool units**

Two live tool spindles and 1 fixed sleeve. The front or back live tool unit replaces the existing stationary I.D. tool blocks and offers up to two live tools (GSE307) for end working. Also included are sleeves (SAU119) to accommodate stationary tools in live tool positions when necessary.



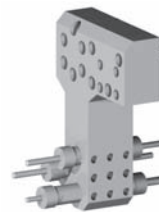
**GSE1110** (for type VIII)  
**3-tool cross machining/  
end face drilling spindle**

The mounting direction of this spindle can be switched for cross or end face machining, and it can perform drilling on the outer diameter or drill on the end face. The maximum chuck diameter is  $\phi 10$  mm and the chuck model is ER16.



**GSE1307** (for type VIII)  
**3-tool both-end face  
drilling spindle**

This spindle performs drilling on the front or back end face. It is capable of simultaneous machining on the front and back faces. The maximum collet diameter is  $\phi 7$  mm and the chuck model is ER11.



**GDF1107**  
**3-Sleeve Holder**

For  $\frac{3}{4}$ " Shank Size Sleeve



**CSMCC0233**  
**Adjustable Angle Holder**

0 to 90 degrees  
2 spindles – ER16 collets



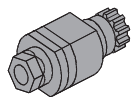
**GSE1407: Base**  
**Modular 6-position live  
tool spindle**

Front and back simultaneous  
forward rotation

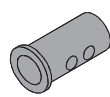


**LTA0156**  
**2" Saw Cutter Spindle**

$\frac{1}{2}$  Spindle Speed  
Arbor size is  $\frac{5}{8}$ "



**GSE1507**  
**Cross/Face drilling  
spindle for GSE1407**  
(ER11 collet)



**SAU621**  
**Fixed sleeve adapter  
for GSE1407**

To be used in place of  
GSE1507 for installing fixed  
ID tools



**LTR0183**  
**Thread Whirling Unit**



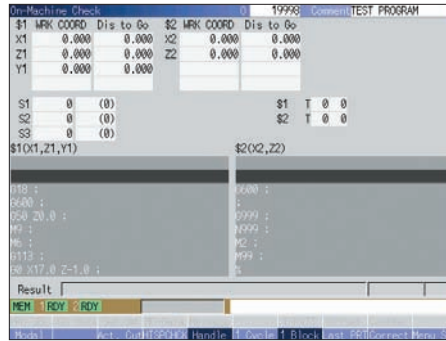
# Convenient operation keeps you informed in real time

Support for the operator by displaying the screens that are needed, when they are needed



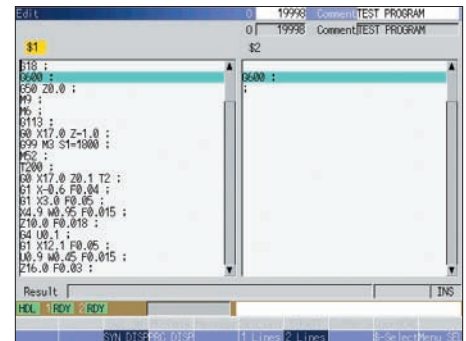
## High-speed NC Installed

Because the latest CNC unit is used, the start-up time and screen switching times are considerably shorter than on other machines with similar functions. The result is a stress-free operating experience.



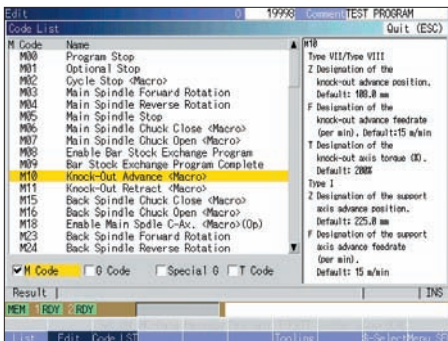
## On-machine Program Check Function

This function allows program operation to be run forward or backward, and program editing and continuation of operation after a temporary stop. It is an effective aid to smooth programming that also has a high speed program check function.



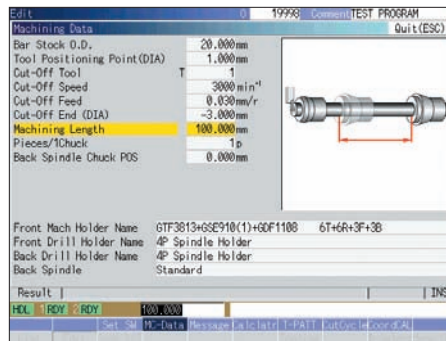
## Program Editing

Easy to understand program editing can be performed by switching between the synchronized displays for two axis control groups, and copying and pasting between programs including MDI.



## Code List Display

Another aid in programming is a list of G and M codes accompanied by pictorial explanations of their purpose.



## Easy to understand Illustrations

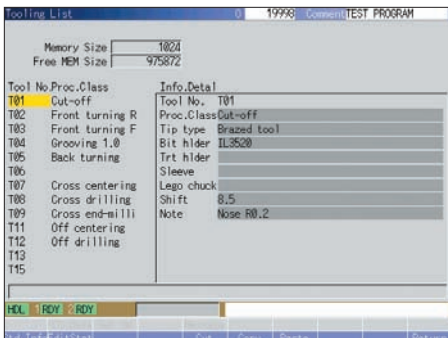
An illustration is displayed for each item, so that it can be immediately visualized (the screen displaying the machining data).



## Original Bar Feeder Operation

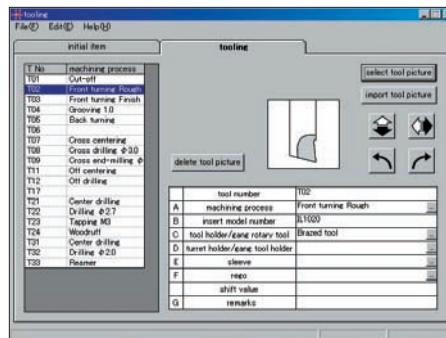
This can be used with Citizen's CAV series of original bar feeders; bar feeder operation is controlled from the operation panel.

## Advanced tooling management



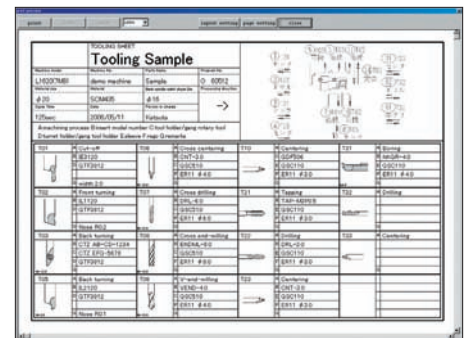
## Tooling List (Machine Screen)

You can input the tool number and shift amount for each tool into the NC program. Since this input information is specific to the machine, when you change to another NC program the tooling information will be stored for easy reference.



## Editing at a Personal Computer

Optional tooling information editing software (under development) allows editing operations to be performed on a PC in the same way as they are performed on the machine. You can also compile an easy to understand tooling list just by selecting the illustrations of the relevant tools.



## Printing a Tool Layout (PC Screen)

The tooling information editing software (under development) allows you to print out a compiled tooling list. All you have to do is set the paper size (A4 landscape, A4 portrait, A3 landscape, or letter size) and the optimum layout is automatically applied.

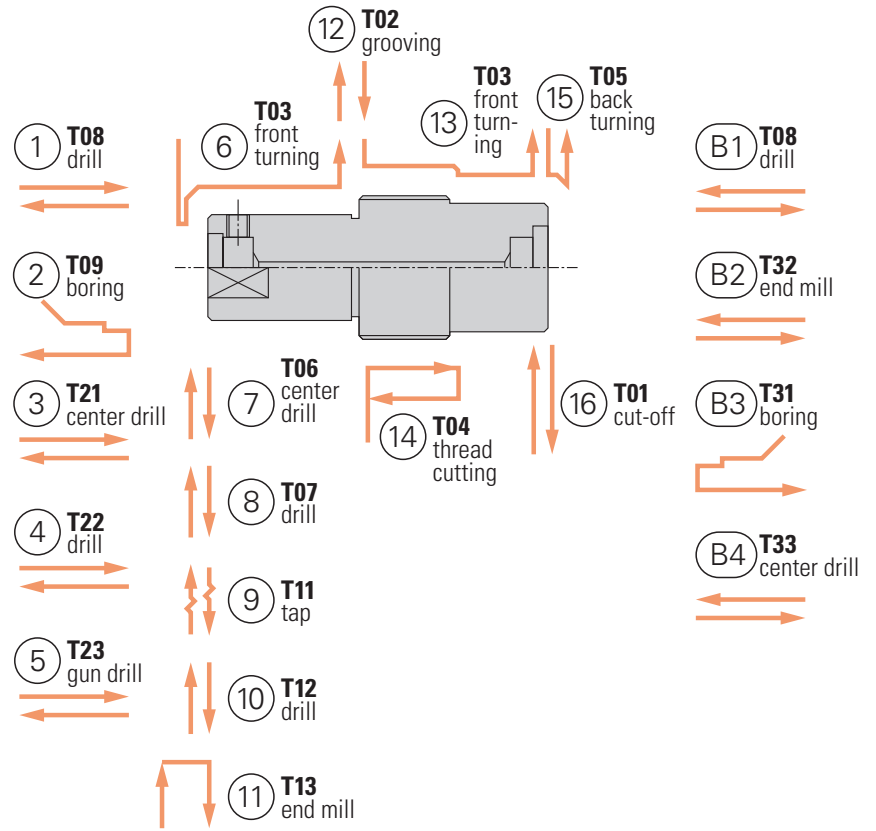
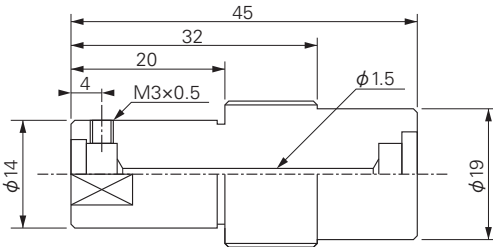


# Easy machining of complex shapes

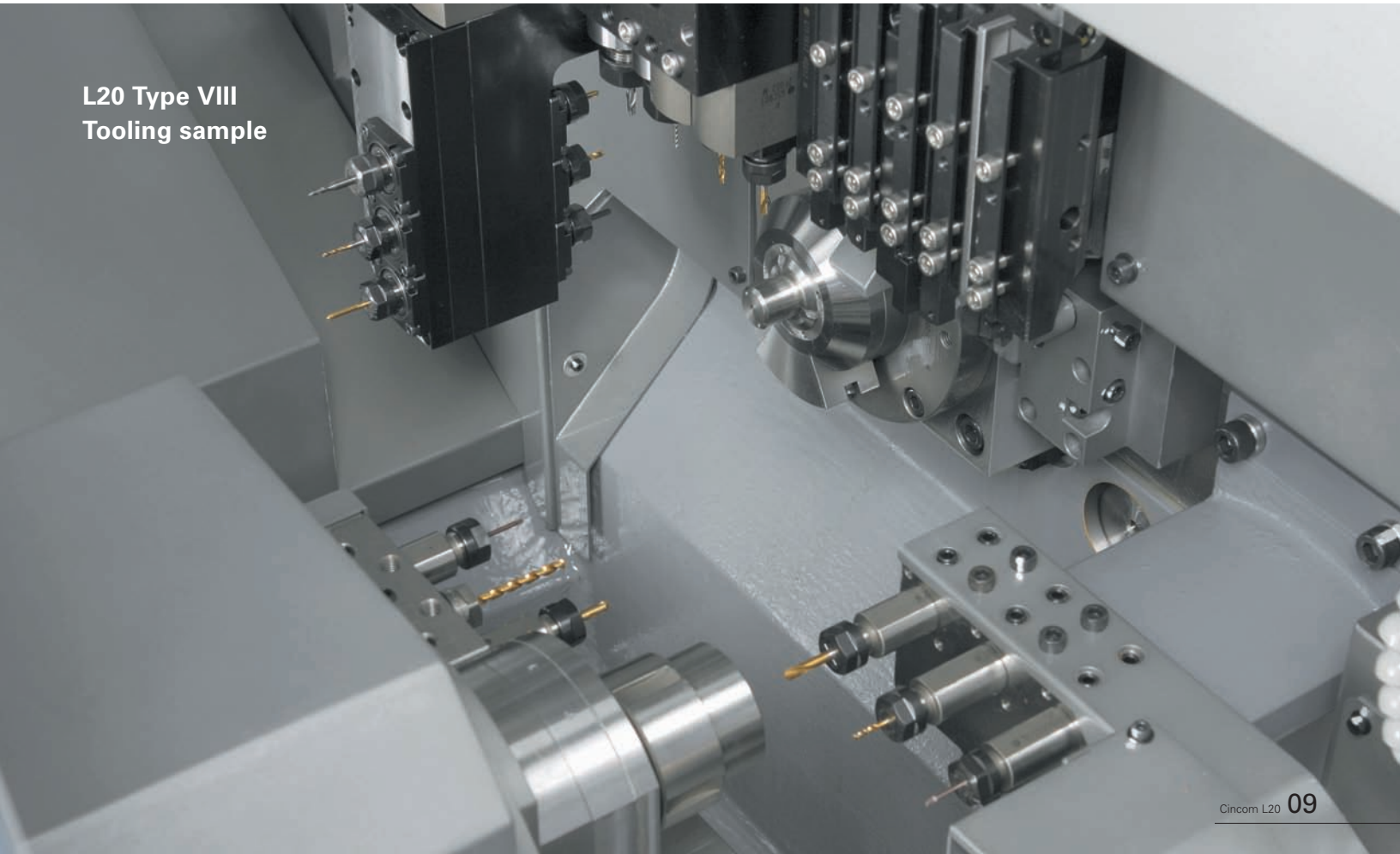
Flexible multiple tooling combinations meet today's sophisticated machining needs



Machine model: L20-type VII  
 Material diameter:  $\phi 20.0$   
 Material: Mild steel  
 Machining time: 244 seconds



L20 Type VIII  
 Tooling sample



# Wide range of accessories and functions

## Optional Accessories



### Long Workpiece Machining Unit

This unit enables the discharge of long workpieces through the hollow back-spindle. Workpieces are unloaded to the left side of the machine into a work receiving tray.

### Front Rotary Tool Drive Unit

The front drilling tools on opposing tool holder include two rotary and one fixed, permitting unconventional holes to be machined on end faces. By using an adaptor, the rotary tools can be used for fixed tools.

### Back Rotary Tool Drive Unit

Three back drilling tools can be equipped as two rotary and one fixed, permitting off center face milling and drilling. This unit can be used in conjunction with the front rotary tool drive unit.



### Chip Conveyor

The chip conveyor discharges chips outside the machine. The coolant tanks available are the standard coolant tank (150 liters), the integrated tank (230 liters) that can replace the standard tank, and the sub tank that can be connected to the standard coolant tank for a combined capacity of 190 liters.

### Cut-off Tool Breakage Detection Unit

This unit checks whether or not a workpiece has been cut off after the completion of machining. If the workpiece is left in place, for example because the cut-off tool has broken, automatic operation of the machine is stopped.

### Through-hole Knock-out Jig

This unit prevents the entry of chips into the back spindle when machining workpieces with through holes. The workpiece is forward ejected after machining.



### Workpiece Conveyor

Ideal for unattended operation of medium/large batches or for separation of delicate parts. Discharge is to the right front of the machine.

### Signal Lamp

A signal lamp that is interlocked with alarm indicators on the machine operation panel is installed on top of the machine.

### 3-color Signal Tower

A signal tower with three color indications—green, yellow and red—is installed on top of the machine. During continuous operation it shows green; yellow during a 1-cycle stop; and red when an alarm occurs.

### Coolant Flow Rate Detector

This device detects the flow rate of coolant from the coolant nozzles and, if the flow rate falls below the set value, automatically stops operation of the machine.

## Optional CNC Functions

### Main Spindle C Axis, Sub Spindle C Axis

The spindle and back spindle drive motors serve as C axis control servomotors and the spindles are set at any required position in contour positioning control. Positioning is achieved by the holding force of the motor only, with no mechanical lock.

### Back Spindle 1° Indexing Function

Indexes the back spindle in 1-degree increments and positioning is achieved by the holding force of the motor only, with no mechanical lock.

### Constant Surface Speed Control for Back Spindle

Automatically controls the spindle speed in relation to the position of the tool so that the

surface cutting speed at the cutting point is kept constant during cutting.

### Back Spindle Threading

Enables thread cutting with the back spindle.

### Rigid Tapping

Enables tapping with rotation and feed synchronized. There are three kinds of rigid tapping, performed with a main spindle, back spindle or rotary tool spindle.

### Rigid Tapping Phase Matching

Makes repeat tapping possible, for example the deburring of threaded holes.

### High-speed Rigid Tapping

Enables rigid tapping at high speed.

### Synchronized Spindle

Synchronizes the rotational phases of the main spindle and back spindle.

### Differential Speed Rotary Tool

Used for performing drilling and tapping operations where two spindles are used at different rotational speeds.

### Milling Interpolation

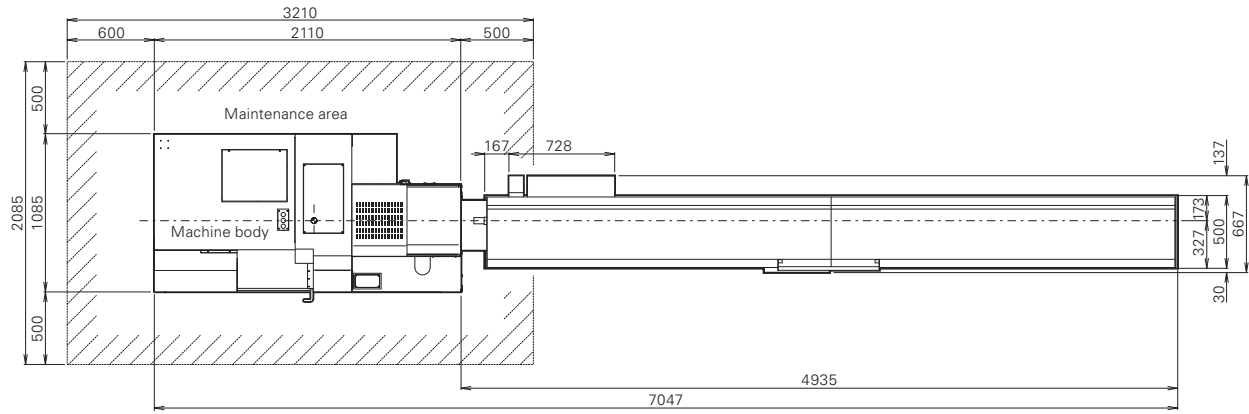
Contouring control is performed on the workpiece end face using the linear axes and the rotary axis (C axis).

### Submicron Commands

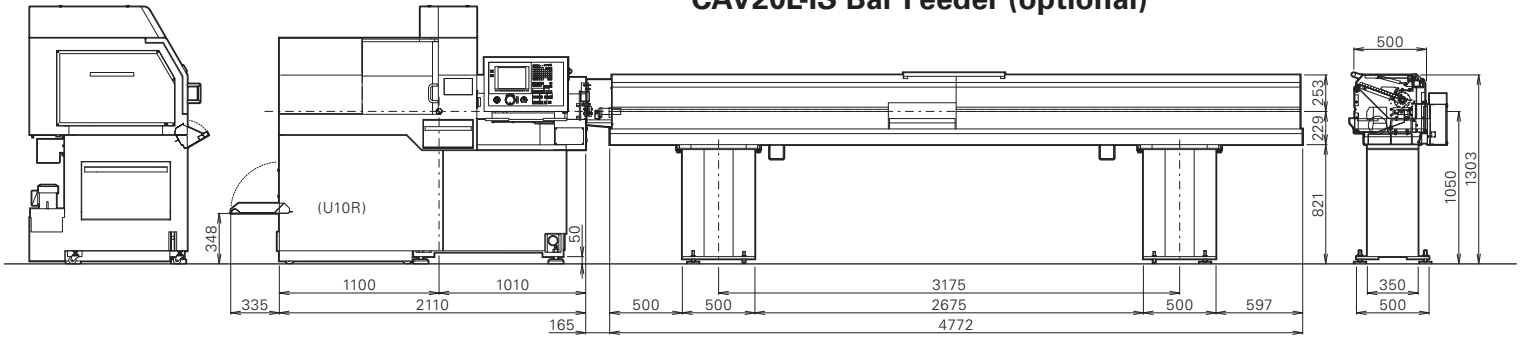
Allows commands to be issued with a minimum setting unit of 0.0001 mm.

# Machine Layout

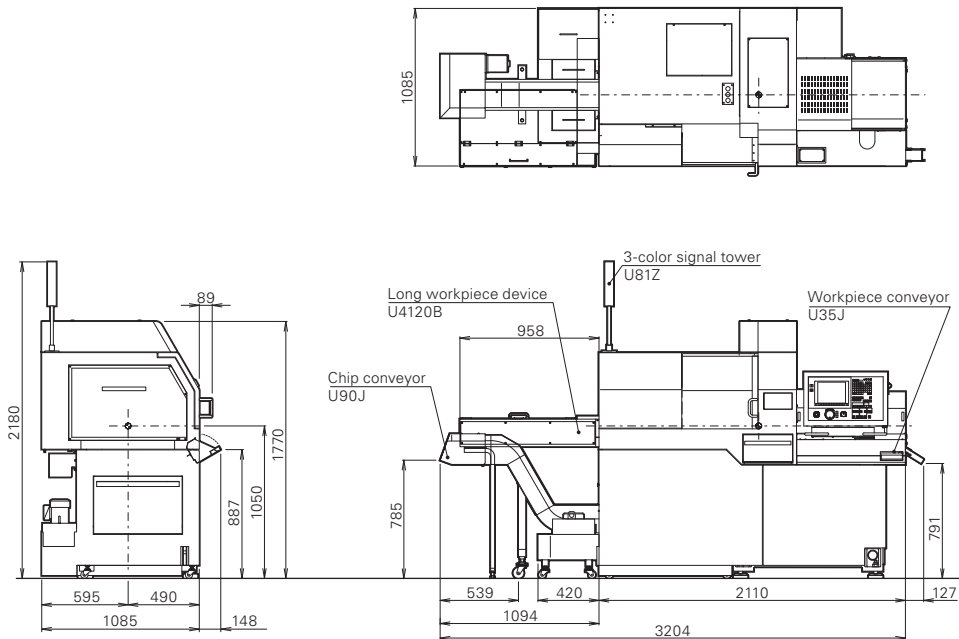
## L20 Standard Machine



## CAV20L-IS Bar Feeder (optional)



## L20 Machine with Options





# Machine Specifications

Item	L20V	L20VII	L20VIII
Max. machining diameter	φ20 mm (.79")	φ20 mm (.79")	φ20 mm (.79")
Max. machining length	200 mm (7.87")	200 mm (7.87")	200 mm (7.87")
Max. front drilling diameter	φ10 mm (.39")	φ10 mm (.39")	φ10 mm (.39")
Max. front tapping size (with tap and die)	M8	M8	M8
Spindle through-hole diameter	φ24 mm (.94")	φ24 mm (.94")	φ24 mm (.94")
Main spindle speed	10,000 rpm	10,000 rpm	10,000 rpm
Max. drilling diameter in the rotary gang tool machining process	φ7 mm (.28")	φ7 mm (.28")	φ8 mm (.32")
Max. tapping diameter in the rotary gang tool machining process	M6	M6	M6
Rotary spindle speed	—	4,500 rpm	4,500 rpm
Max. chuck diameter of the back spindle	φ20 mm (.79")	φ20 mm (.79")	φ20 mm (.79")
Max. workpiece length for the front side collection from the back spindle	80 mm (3.15")	80 mm (3.15")	80 mm (3.15")
Max. drilling diameter in the back machining process	φ8 mm (.32")	φ8 mm (.32")	φ8 mm (.32")
Max. tapping diameter in the back machining process	M6	M6	M6
Back spindle speed	8,000 rpm	8,000 rpm	8,000 rpm
Number of tools to be mounted	11	16	18~21
Turning tools on the gang tool post	5	5	5
Rotary tools on the gang tool post	—	5	7
Rotary tools for front spindle	—	—	2 (option)
Tools for front spindle	3	3	3
Rotary tools for back spindle	—	—	2 (option)
Tools for back spindle	3	3	3
Tool size			
Gang tool post (tool)	½" (T01 ⅝")	½" (T01 ⅝")	½" (T01 ⅝")
Sleeve	φ19.05 mm (.75")	φ19.05 mm (.75")	φ19.05 mm (.75")
Rapid feed rate			
All axes	32 m/min (104.99 ft/min)	32 m/min (104.99 ft/min)	32 m/min (104.99 ft/min)
Motor			
Main spindle drive	2.2/3.7 KW	2.2/3.7 KW	2.2/3.7 KW
Tool spindle drive	1.0 KW	1.0 KW	1.0 KW
Back spindle drive	0.75/1.5 KW	0.75/1.5 KW	0.75/1.5 KW
Cutting oil	0.4 KW	0.4 KW	0.4 KW
Center height	1,050 mm (41.34")	1,050 mm (41.34")	1,050 mm (41.34")
Input power capacity	6 KVA	6 KVA	6 KVA
Air pressure and air flow rate for air-driven equipment	0.5 MPa · 50 NI/min	0.5 MPa · 50 NI/min	0.5 MPa · 50 NI/min
Weight	2,100 Kg (4,629.7 lbs)	2,100 Kg (4,629.7 lbs)	2,100 Kg (4,629.7 lbs)

## Main standard accessories

Main spindle chucking device  
 Rotary guide bushing drive device  
 Rotary guide bushing device  
 Coolant device (with level sensor)  
 Door switch/Door lock  
 Workpiece separator  
 Lubrication device (with level sensor)  
 Back spindle chucking device  
 Rotary tool spindle drive unit for gang tool \*  
 Work light  
 \* Only type VII and VIII

## Optional accessories

Fixed guide bushing device  
 Rotary tool spindle drive device for  
 the front/back spindle  
 Cut-off tool breakage detector  
 Workpiece conveyor  
 Chip conveyor  
 Coolant flow-rate detecting device  
 Signal lamp  
 Long workpiece device

## Standard NC functions

NC unit dedicated to CINCOM L series  
 10.4-inch color liquid crystal display  
 Product counter display: Up to 8 digits  
 Operation time display  
 Nose R compensation function  
 Preparation function  
 Three-dimensional interference check function  
 Corner chamfering rounding function  
 On-machine program check function  
 Main spindle speed change detection function  
 Back spindle speed change detection function  
 Automatic power-off function  
 Program work area 160m  
 Thread cutting canned cycle  
 Continuous threading cycle  
 Multiple repetitive cycle  
 Main spindle C axis function  
 Back spindle C axis function  
 Canned cycle for drilling  
 Main spindle rigid tapping function  
 Tool spindle rigid tapping function

## Standard NC functions cont'd.

Back spindle rigid tapping function  
 Spindle synchronization control function  
 Milling interpolation function  
 User macro  
 Helical interpolation function  
 Tool life control I  
 Tool life control II  
 Sub-inch command  
 Circular threading cycle  
 Tool offset pairs: 80 pairs

## Optional NC functions

Program work area 320m, 600m or 1200m  
 Tooling function 1280m or 2560m  
 Custom macro G code call

# Marubeni Citizen-Cincom Inc.

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 Allendale, NJ 07401  
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1801 F Howard Street  
 Elk Grove Village, IL 60007  
 (847) 364-9060

17815 Newhope Street, Suite P  
 Fountain Valley, CA 92708  
 (714) 434-6224

[www.marucit.com](http://www.marucit.com)



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