CITIZEN

Cincom

L20

LFV technology

Sliding Headstock Type CNC Automatic Lathe

The new L20 - 3 models to choose from

A machine synonymous with the history of Cincom re-designed for the new age with 3 versions depending on your requirement.

From a 7 axis machine with excellent cost performance ratio to a high-end machine with B axis capability on both spindles and a back spindle with an additional Y axis.

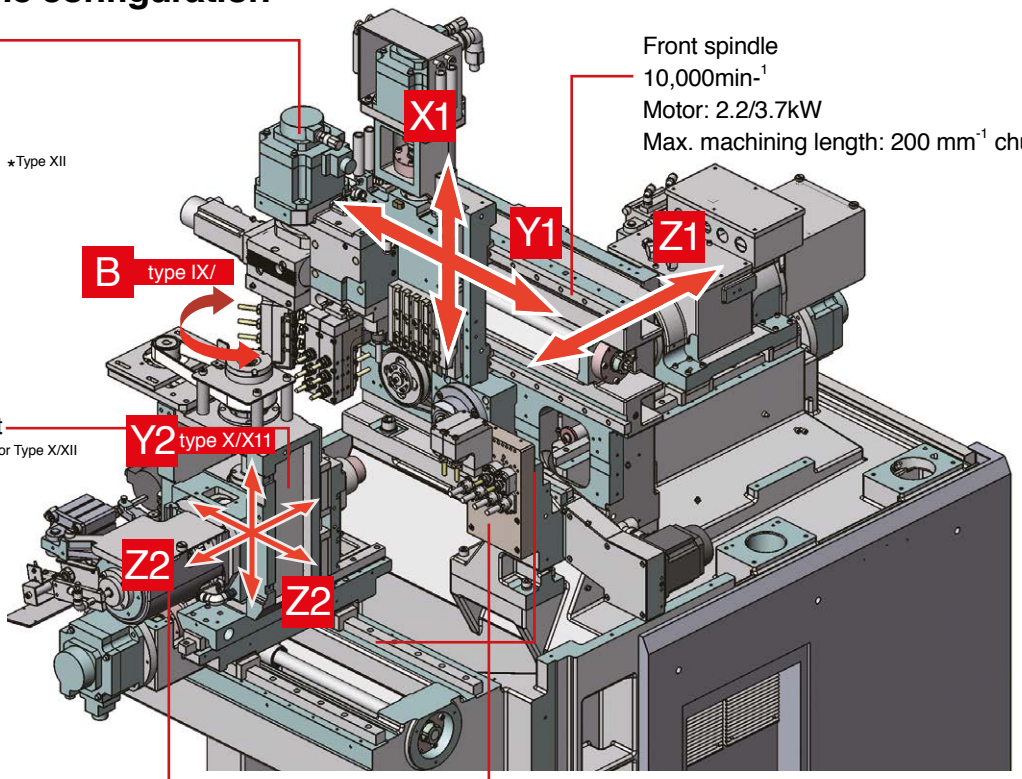
An easily removable guide bush is also standard enabling the machine to run in non-guide bush mode for shorter parts.

The machine is also capable of using up to 25.4mm / 1" material with optional expansion kit.

L20 machine configuration

Rotary tools on
the gang tool post
9,000min-^{1}(Max)
4,500min-^{1}(rating)
B-axis rotary tools *Type XII
12,000min-^{1}(Max)
6,000min-^{1}(rating)
Motor: 1.0kW

Front spindle
10,000min-^{1}
Motor: 2.2/3.7kW
Max. machining length: 200 mm^{-1} chucking (GB)

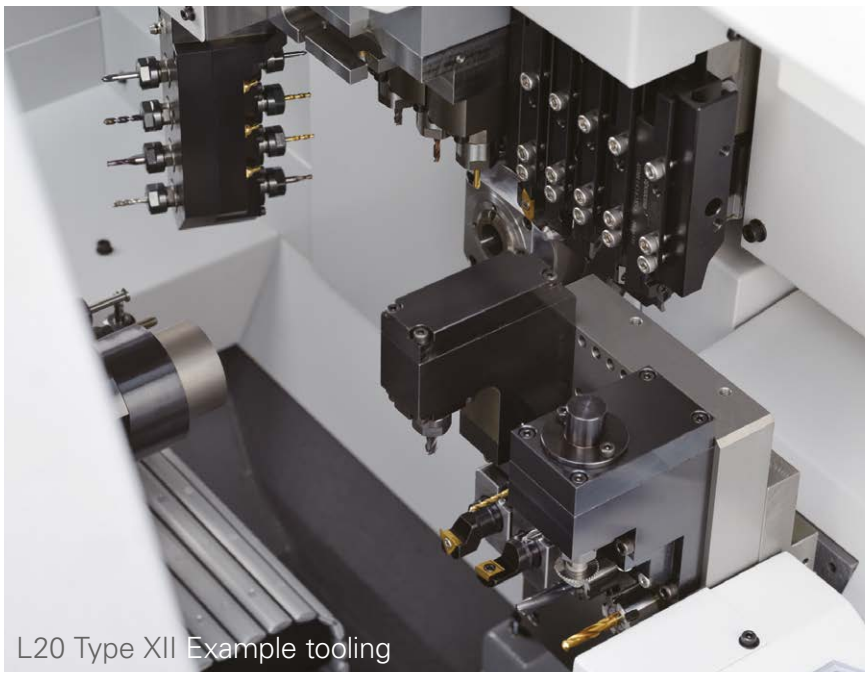


Opposite tool post
Rotary tools *Option for Type X/XII
7,500min-^{1}(Max)
6,000min-^{1}(rating)
Motor: 0.75kW

Back spindle
10,000min-^{1}
Motor: 0.75/2.2kW

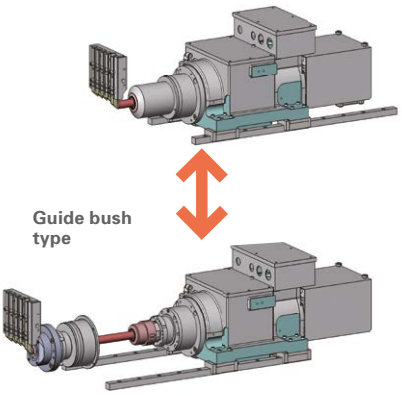
Rotary tools on
the back tool post
7,500min-^{1}(Max)
6,000min-^{1}(rating)
Motor: 0.75kW

		Type VIII	Type X	Type XII
B Axis (rotary tools on the gang tool post)		-	-	o
Opposite tool post	Y axis	-	o	o
	Number of tools	3	6	6
	Rotary tools	-	op	op
Back tool post	Number of tools	4	8	8
	Rotary tools	op	o	o



L20 Type XII Example tooling

Non-guide bush type

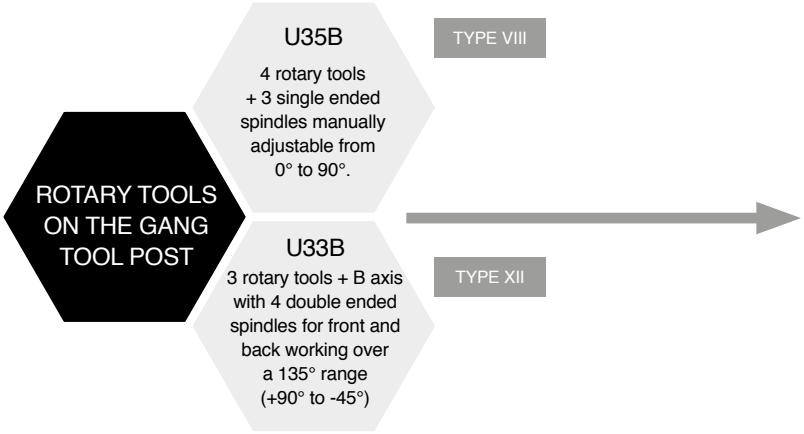


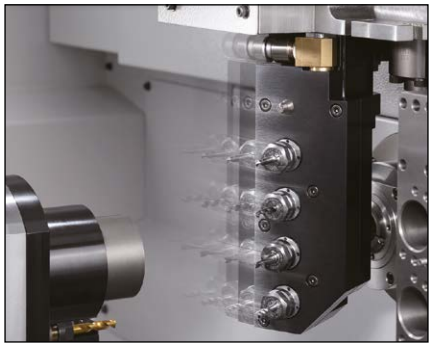
Guide bush type

Ability to use as a guide bush type or non-guide bush type

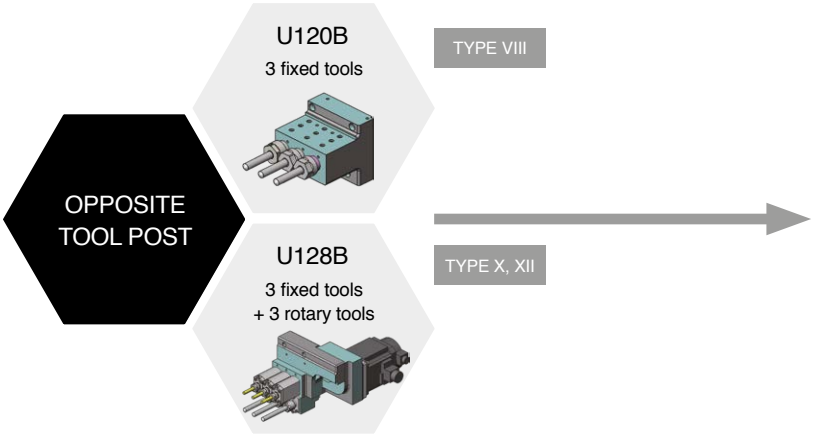
Selectable modules to improve your productivity and profitability

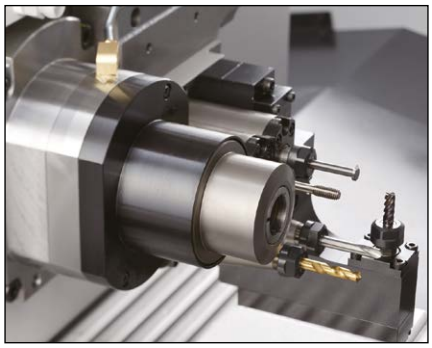
Function modules that can be combined without restrictions

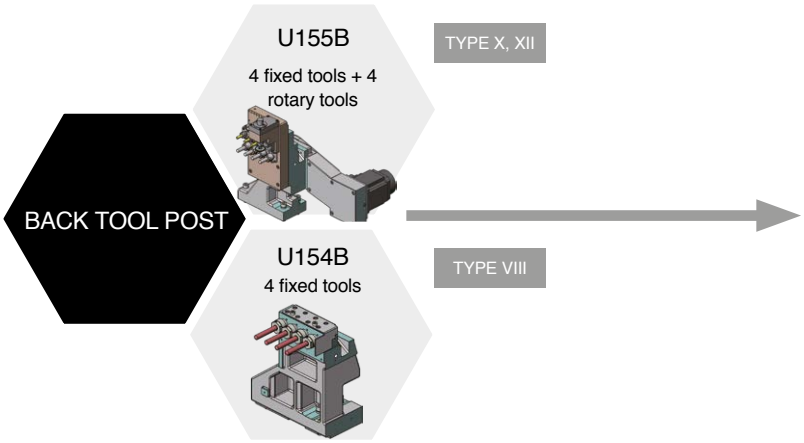




Features a B axis for rotary tools on the gang tool posts of Type XII machines as standard; capable of working on both spindles it can be programmed over a 135° range from 90° to -45°.







The back tool post on Type X and XII machines can accommodate a total of 8 tools: 4 rotary tools in the upper row and 4 fixed tools in the lower row.

Designed for optimum usability

The L20 has adopted a modular design, but also focuses on operability and working convenience.

The high level of basic performance found in features like the adjustable operation panel that makes it possible to monitor the interior of the cutting room while looking at the operation screen, the centralised lubrication system that helps to lessen the maintenance workload and the coolant tank with a wide opening to facilitate chip clearance, makes the operators' daily work run smoothly.

What is more, material up to 25.4mm (1") can also be supplied as an option.
This expands the range of machinable workpieces beyond what was possible with the previous L20.

LFV Function (optional)

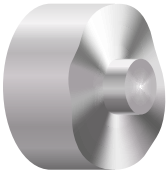
LFV technology

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

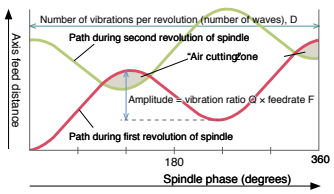
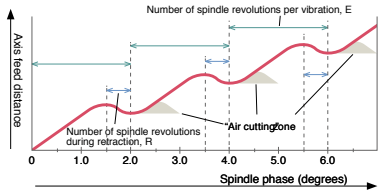
It offers unprecedented levels of chip control and is highly effective for both small diameter drilling and when machining difficult to cut materials.

* "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 customary cutting

Chips generated by cutting using LFV

LFV specifications

Model	Type	Front side LFV (X1, Z1)	Back tools LFV (X2, Z2)
L20	Types VIII	○	○
	Types X, XII	○	×

Note 1. On the L20 X and XII models, LFV machining cannot be performed on the back ($2) side.
Note 2. LFV machining cannot be performed with the Y axis.
Note 3. LFV machining can be performed simultaneously on a maximum of 1 pair of axes.
Note 4. Simultaneous LFV machining on the Z1 axis on the front side and Z2 axis on the back side is not possible (type VIII only).
Note 5. For LFV machining with rotary tools, the "LFV function" and "rotary tool feed per revolution" options are required.

Key features

Product receiver box

The workpiece gripped in the back spindle is unloaded into the product chute for collection.

Adjustable operation panel

By swiveling the adjustable operation panel, you can perform operations while watching the machining area.

In-machine lighting

Bright, highly visible LED lighting is standard giving a pleasant working area.

Coolant nozzle

A good supply of coolant is available from the numerous pipes throughout the working area.

Swarf tray

The large opening allows chips to be easily removed. Chip conveyor options are also available.

Central lubrication device

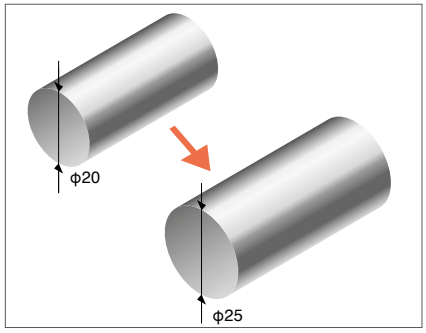
Supplying lubricating oil to all ball screws with this device eliminates the need for manual greasing.

NC program I/O

NC programs can be input and output via. USB memory stick, CompactFlash card, RS232 connection or (with optional PC-based software) via. Ethernet.

Workpiece conveyor

A parts conveyor can be specified to unload the parts safely to the edge of the machine.



Support for stock up to 25.4mm (1”)

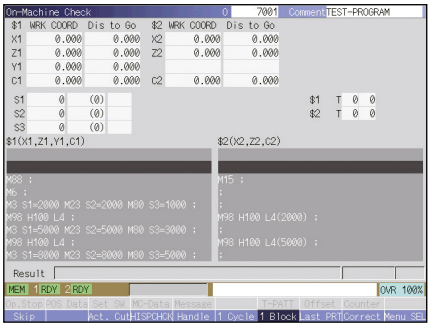
Fitting optional chuck devices enables supply of bar stock of up to 25.4mm (1”).

Note: The long workpiece device can collect workpieces with a diameter of up to 20 mm.

Intuitive screen display is readable at a glance

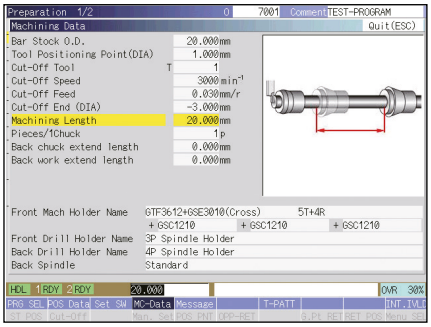
Equipped with high-speed NC

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.



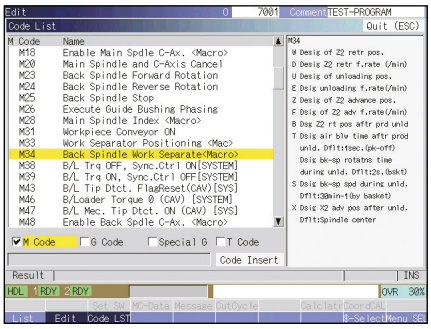
On-machine program check function

The program can be ran 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.



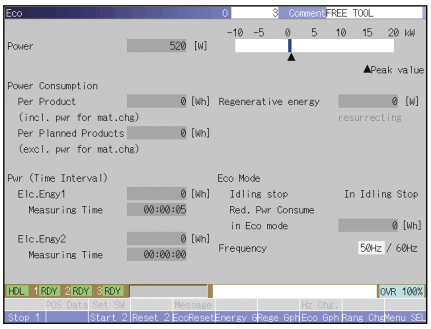
Display of easily understood illustrations

Illustrations appropriate for each item are displayed. You can see what they mean at a glance (the screen shown above displays the machining data).



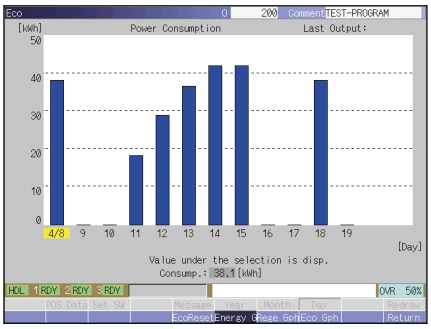
Display of code list

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



Eco screen

The current power consumption is shown on the screen, along with the cumulative power consumption and the power regeneration (generation) status.



Eco screen (example graph display)

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

The next process starts before the current one ends

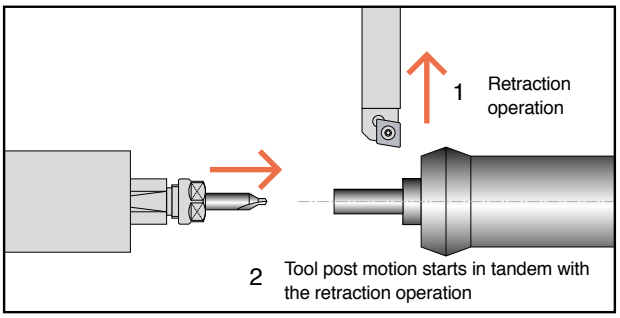
Cincom Control saves time between processes

Cincom Control

Citizen's unique control system realises rapid, yet smooth, operation reducing idle time and lowering cycle times.

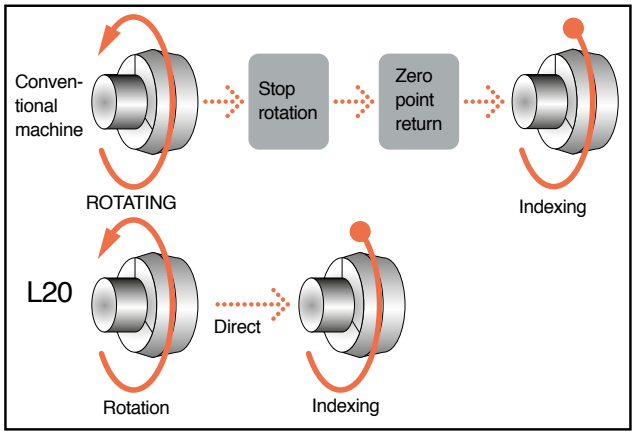
Multiple tool post overlapping function

Independent opposite and gang tool posts are provided. In front machining, idle time has been completely eliminated by using a unique control method whereby the tool post to be used next starts the preparation for machining without waiting for the other one to complete its retraction operation.



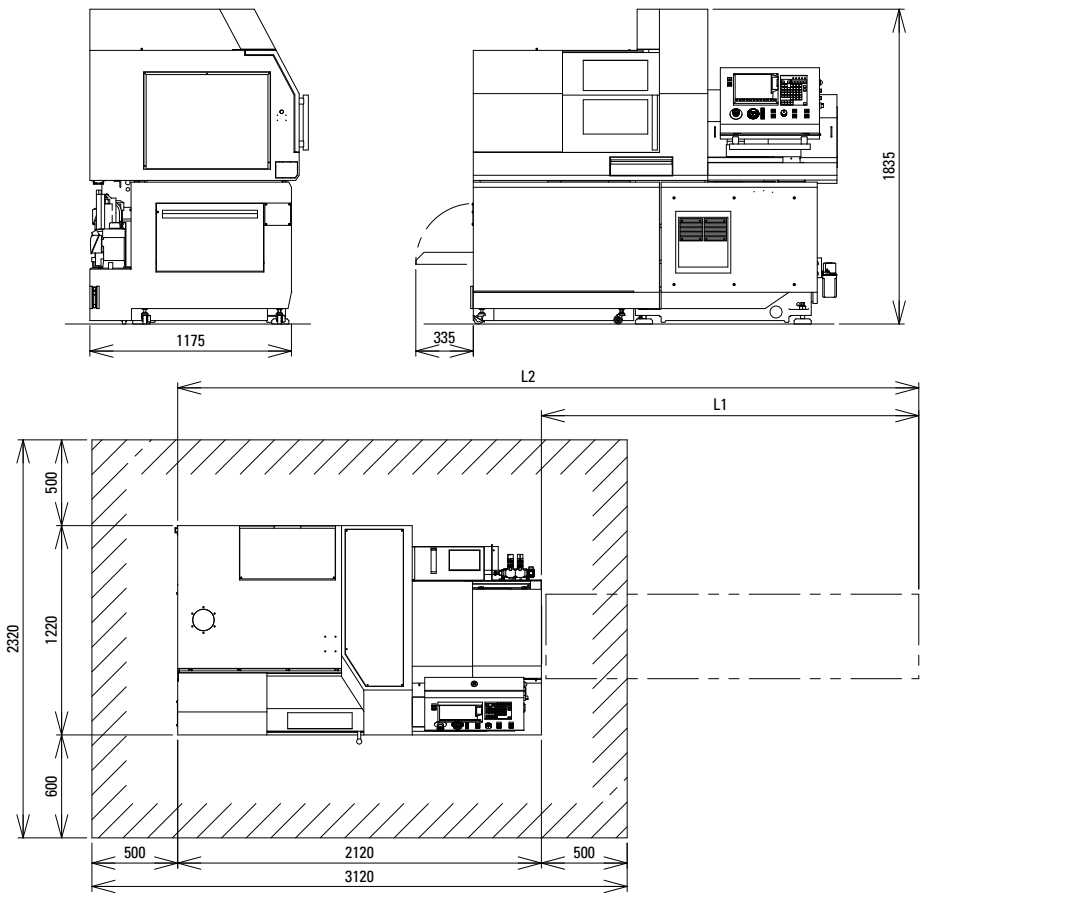
Direct spindle indexing function

This substantially reduces spindle indexing time. When indexing the spindle, this function allows the spindle to be decelerated and stopped at the required index position by specifying this position with a C axis command while the spindle is rotating. This eliminates the idle time up until rotation stops and improves working efficiency.

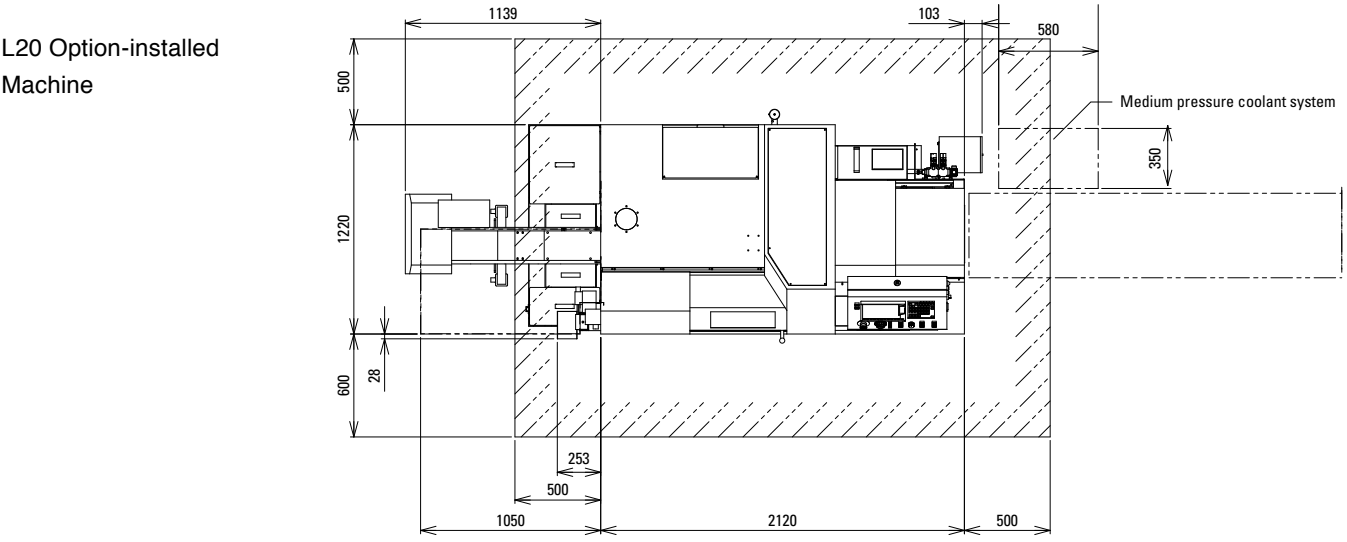


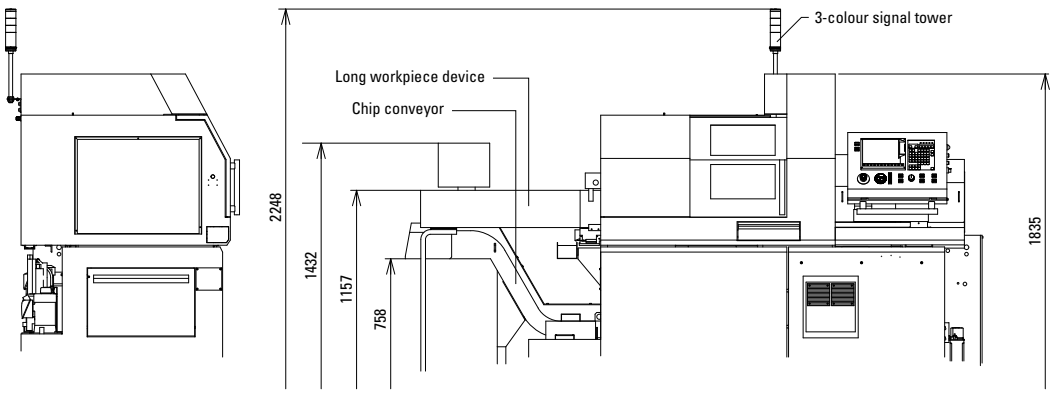
Machine layout

L20 Standard Machine



L20 Option-installed Machine





Machine specification

Item	L20		
	Type VIII	Type X	Type XII
	L20E-2M8	L20E-2M10	L20E-2M12
Max. machining diameter (D)	20mm Dia. (25mm Dia.^{OP})		
Max. machining length (L)	GB: 200mm/1chucking		
	(188mm 25mm Dia spec.) GBL: 2.5D		
Spindle through-hole diameter	26mm Dia.		
Main spindle speed	Max.10,000min^{-1}		
Max. chuck diameter of the back spindle	20mm Dia. (25mm Dia.^{OP})		
Max. protrusion length of the back			
spindle workpiece	30mm		
Max. protrusion length	80mm		
Back spindle speed	Max. 10,000min^{-1}		
Gang rotary tool			
Spindle speed	Max. 9,000min^{-1} (Rating 4,500min^{-1})		
B-axis speed	12,000min^{-1}		
Back tool post rotary tool *type X, XII			
Spindle speed	OP	Max. 7,500min^{-1}	
		(Rating 6,000min^{-1})	
Front rotary tool *			
Spindle speed	-	Max. 7,500min^{-1}	
		(Rating 6,000min^{-1})	
Number of tools to be mounted max	37	44	40
Gang turning tool	5		
Gang rotary tool	25	25	21
Front drilling tool	3	6	
Back drilling tool	4	8	
Tool size			
Gang turning tool	12mm Sq. (13mm Sq., 16mm Sq.)		
Sleeve	19.05mm (3/4") DIA.		
Chuck and bushing			
Main spindle collet chuck	F25/F30 (OP)		
Back spindle collet chuck	F25/F30 (OP)		
Rotary tool collet chuck	ER11, ER16		
Chuck for drill sleeves	ER11, ER16		
Guide bushing	B261		
Rapid feed rate			
All axes (except Y2)	32m/min		
Y2 axis	-	8m/min	
Motors			
Spindle drive	2.2/3.7kW		
Gang tool post rotary tool drive	2.2kW		
Back spindle drive	0.75/2.2kW		
Back tool post rotary tool drive *1	-	0.75kW	
Front rotary tool drive *2	0.75kW		
Coolant oil	0.4kW		
Lubricating oil	0.003kW		
Centre height	1,050mm		
Rated power consumption	7.3KVA		
Full-load current	32A		
Main breaker capacity	40A		
Air pressure	0.5MPa		
Weight	2,350kg	2,400kg	

*Front rotary tool drive unit is optional

Standard accessories	
Standard accessories	Door lock
Main spindle chucking unit	Cut-off tool breakage detector
Back spindle chucking unit	Lighting
Gang rotary tool driving unit	Main spindle coolant unit
Coolant unit (with level detector)	Back tool post rotary unit *type X,XII
Lubricating oil supply unit (with level detector)	
Machine relocation detector	

Special accessories	
Rotary guide bushing unit	Coolant flow rate detector
Workpiece conveyor	Signal lamp
Chip conveyor	3-color signal tower
Medium-pressure coolant unit	Front rotary tool unit *type X,XII
LFV	Workpiece separator
Knock-out jig for through-hole workpiece	

Standard NC functions	
CINCOM SYSTEM M70LPC-VU (Mitsubishi)	
8.4 inch colour LCD	
USB slot,SD card slot	
Program storage capacity:40m(approx,16KB)	
Tool offset pairs : 40	
Product counter indication (up to 8 digits)	
Operating time display function	
Machine operation information display	
Multiple repetitive cycle for turning	
Interference check function	
Spindle speed change detector	
Constant surface speed control function	
Automatic power-off function	
Main spindle indexing at 1° intervals	
On-machine program check function	
Chamfering, corner R	Nose radius compensation
Eco indication	B axis control function *type XII

Special NC functions	
Variable lead thread cutting	Optional block skip (9 sets)
Arc threading function	Back machining program skip function
Geometric function	Tool life management I
Spindle synchronized function	Tool life management II
Spindle C axis function	External memory program driving
Milling interpolation	Submicron commands
Back spindle 1°indexing function	User macros
Back spindle C axis function	Helical interpolation function
Back spindle chasing function	Hob function
Canned cycle drilling	Polygon function
Rigid tapping function	Inch command
High speed Rigid tapping function	Sub inch command
Tool offset pairs: 80	Network I/O function
Synchronised tapping phase adjustment function	
Differential speed rotary tool function	
Program storage capacity 600m(approx. 240KB)	

CITIZEN

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