

Cincom

L20

Sliding Headstock Type CNC Automatic Lathe



Our best-selling L20 completely renewed

A machine synonymous with the history of Cincom has been designed for the new age with 4 models in modular design. Ranging from a 5-axis machine with excellent cost performance to a high-end machine equipped with B axis and a back spindle Y axis, you can select the machine according to the functions you require. This concept offers unrivalled versatility with two types of gang tool post, five types of opposite tool post and three types of back tool post are available to be specified according to the functions required.

L20 machine configuration

Rotary tools on the gang tool post

6,000min⁻¹(Max)
4,500min⁻¹(rating)
B-axis rotary tools *Type IX/XII
8,000min⁻¹(Max)
6,000min⁻¹(rating)
Motor: 1.0kW

Opposite tool post

Rotary tools *Option for Type X/XII
7,500min⁻¹(Max)
6,000min⁻¹(rating)
Motor: 0.75kW

Back spindle

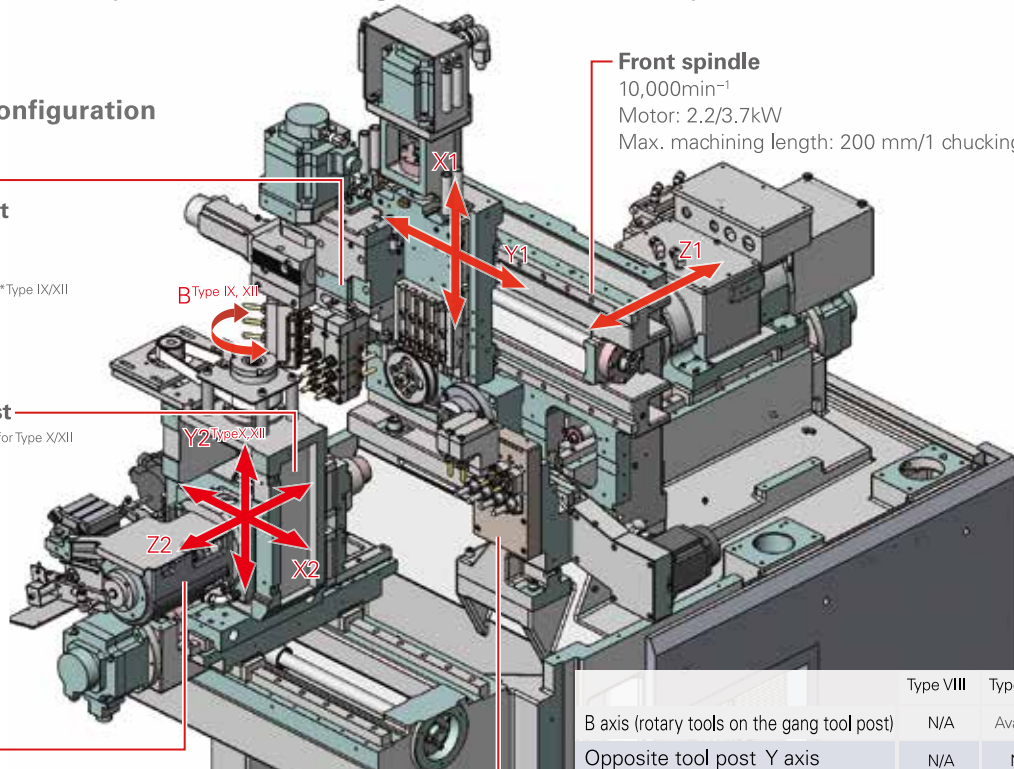
8,000min⁻¹
Motor: 0.75/1.5kW

Rotary tools on the back tool post

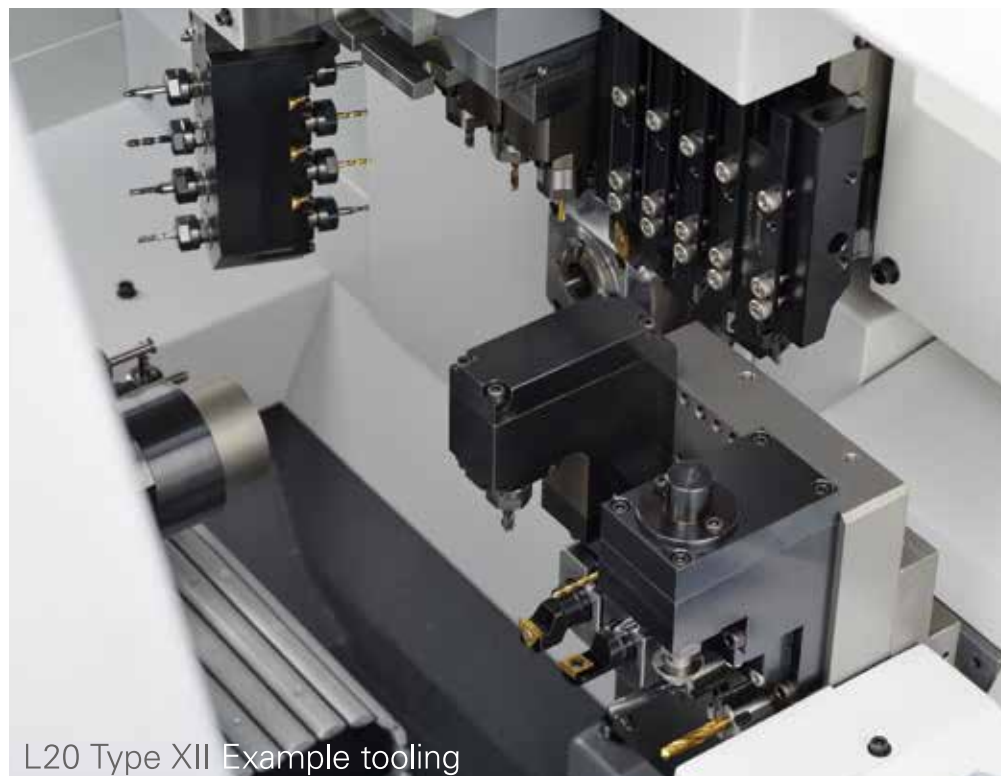
7,500min⁻¹(Max)
6,000min⁻¹(rating)
Motor: 0.75kW

Front spindle

10,000min⁻¹
Motor: 2.2/3.7kW
Max. machining length: 200 mm/1 chucking (GB)

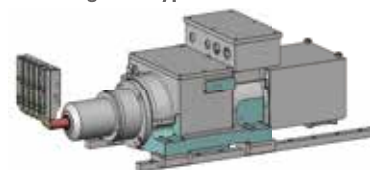


	Type VIII	Type IX	Type X	Type XII
B axis (rotary tools on the gang tool post)	N/A	Available	N/A	Available
Opposite tool post Y axis	N/A	N/A	Available	Available
Number of tools	3	3	6	6
Rotary tools	N/A	N/A	OP	OP
Back tool post Number of tools	4	4	8	8
Rotary tools	OP	OP	Available	Available

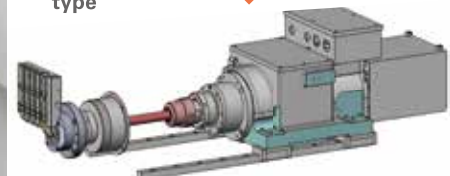


L20 Type XII Example tooling

Guide bushing-less type



Guide bushing type

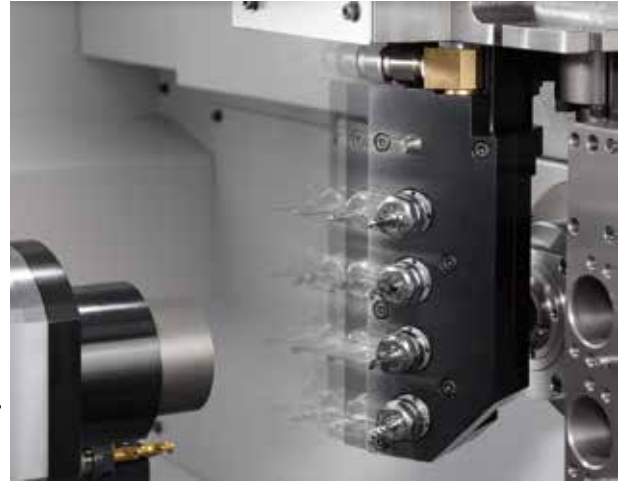
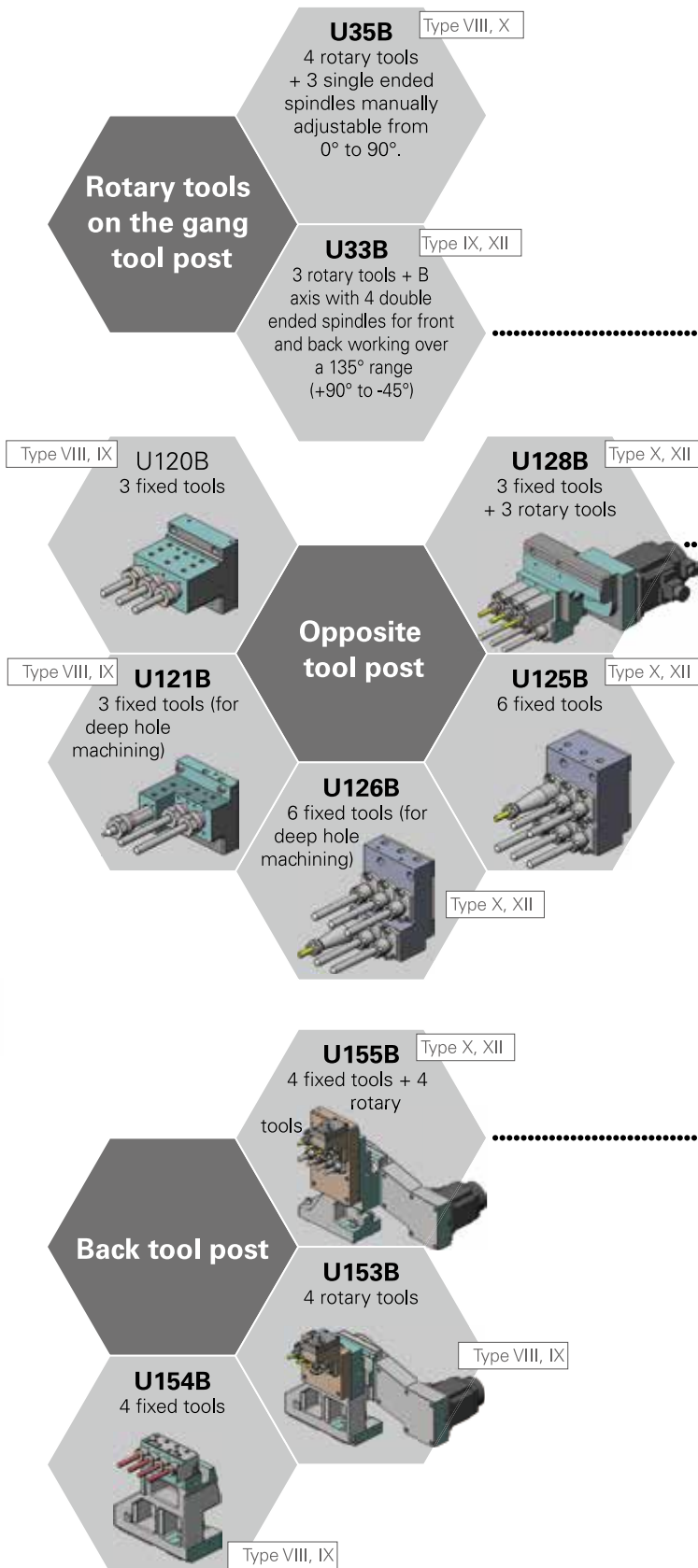


Ability to use as a guide bushing type or guide bushing-less type by switching between them

Either type can be selected as appropriate, when machining long, thin workpieces, when using cold drawn material, and in order to leave short remnant bars.

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 IX and XII machines as standard; it can be set over a 135° range from 90° to -45°.



For the opposite tool post, a tool post that is capable of pinch milling or one that can handle deep hole machining can also be selected as options.



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 with Operability and Working Convenience in

Many features with a high level of basic performance bring convenience to manufacturing.



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

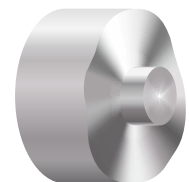
The high level of basic performance found in features like the position adjustable operation panel that makes it possible to monitor the interior of the cutting room while looking at the operation screen, the centralized lubrication system that helps to lessen the maintenance workload, and the coolant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

What is more, material up to $\phi 25$ mm can also be supplied as an option. This expands the range of machinable workpieces beyond what was possible with the previous L20, and you can also select a workpiece conveyor, chip conveyor, medium pressure coolant devices and so on.

LFV Function (Optional)

LFV (low-frequency vibration cutting) 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.

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 and IX	○ (Conventional cutting on the back side)	○ (Conventional cutting on the front side)
	Types X, XII	○	×

Note 1. On the L20 X and XII models, LFV machining cannot be performed on the back (S2) 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 (on the VIII and IX models).

Note 5. For LFV machining with rotary tools, the "LFV function" and "rotary tool feed per revolution" options are required.

Mind, to Make the Operators Daily Work Go Smoothly

Ease of Operation Pursued for Setup Changes and Maintenance,
and Optional Functions too



Product receiver box

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



Position adjustable operation panel

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



In-machine lighting

LED lighting is provided as standard in the cutting room. This gives an environment that is easy to work in; bright and with good visibility.



Coolant nozzle

Coolant can be supplied from various directions depending on the machining circumstances.



Chip receiver box

With its large opening, the chip collection port is designed for easy cleaning.



Central lubrication device

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



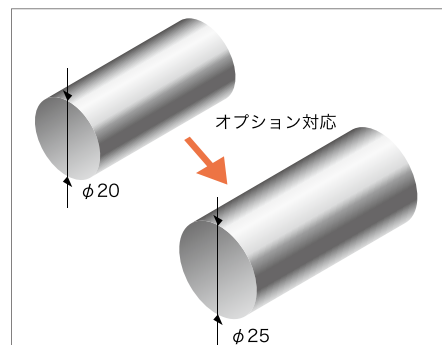
NC program I/O

NC programs can be input and output using a USB memory stick or compact flash card.



Workpiece conveyor

This conveyor (which is an option) is very easy to use; the conveying route can be opened up in a one-touch operation.



Support for Stock up to φ25 mm

Fitting optional chuck devices enables supply of bar stock of up to φ25 mm.

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.



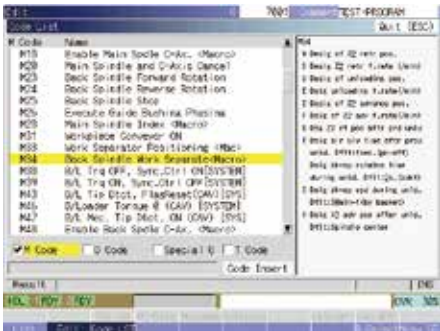
On-machine program check function

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.



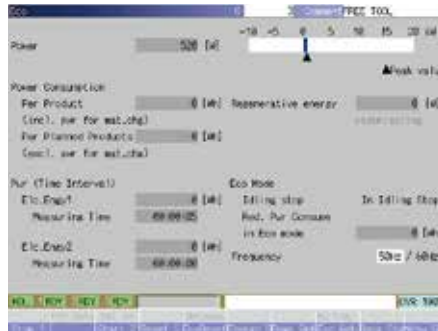
Display of easily understood illustrations

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



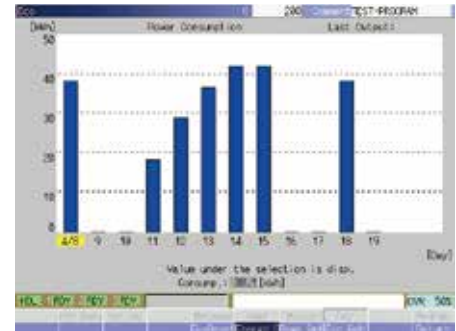
Display of code list

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

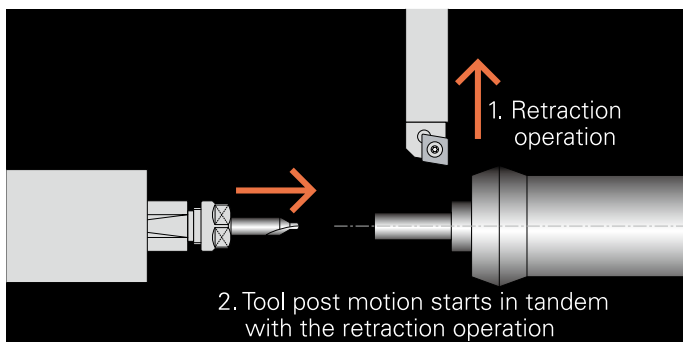
Cincom Control saves time between processes

Cincom Control

We have developed a new control system unique to Citizen that realizes fast and smooth operation. It reduces idle time and achieves faster rapid feed together with substantial shortening of cycle times.

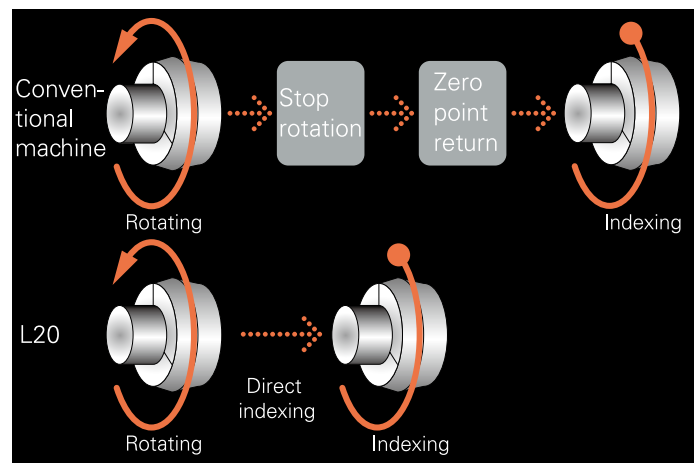
Multiple tool post overlapping function

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.



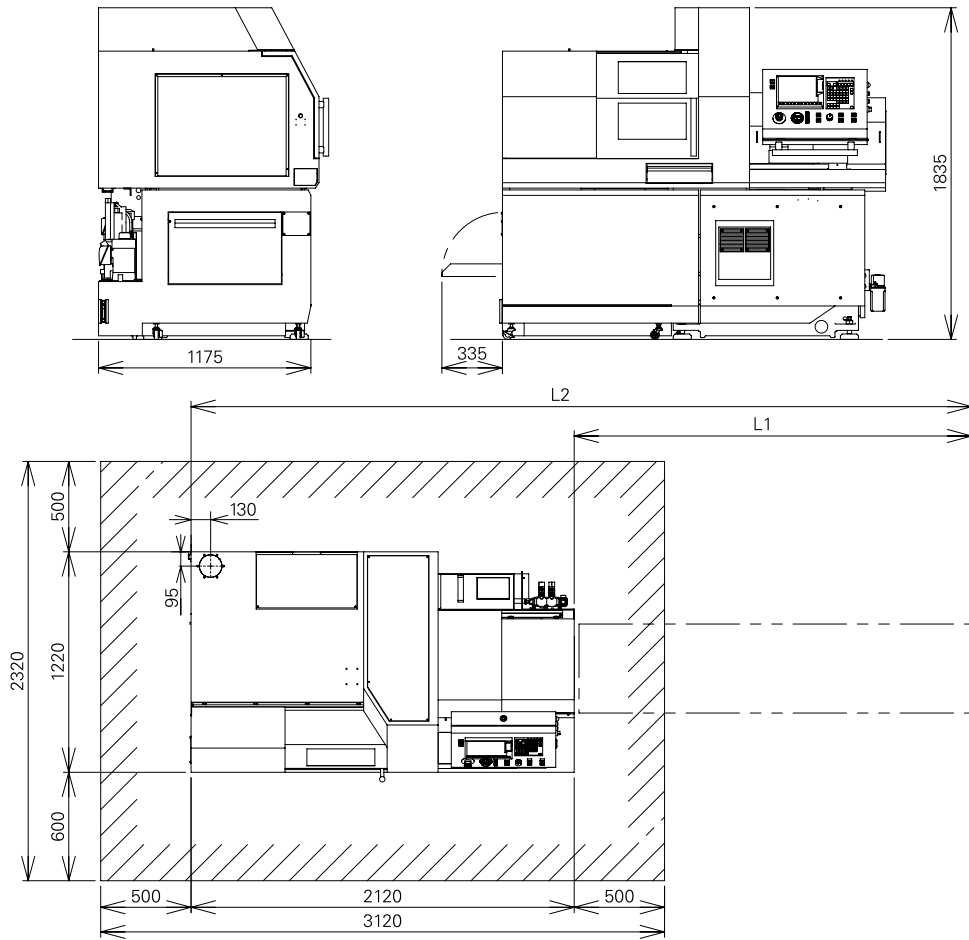
Direct spindle indexing function

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.

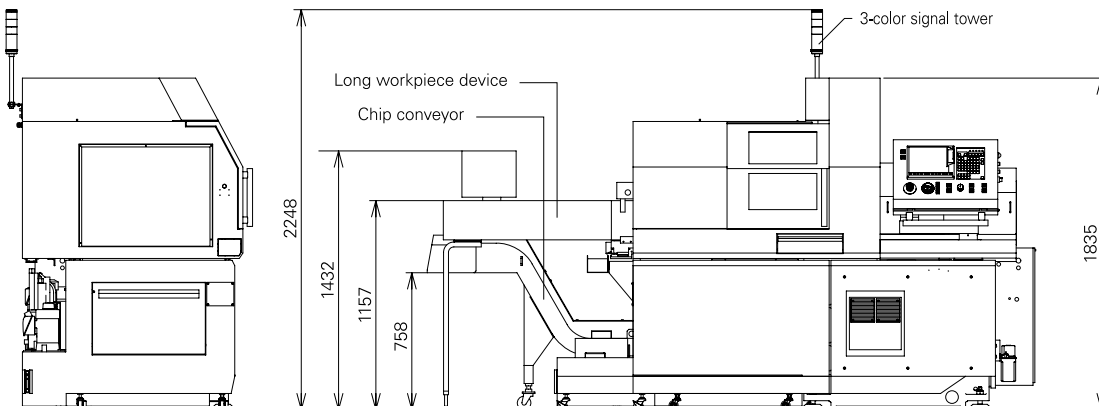
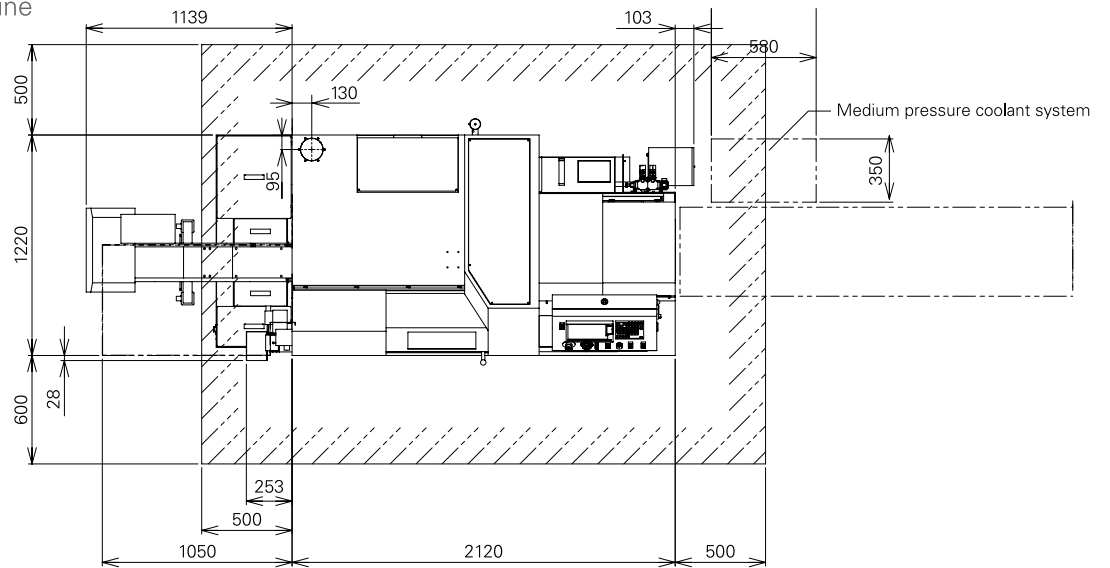


Machine Layout

L20 Standard Machine



L20 Option-installed Machine



Machine Specification

Item	L20			
	Type VIII (L20E-2M8)	Type IX (L20E-2M9)	Type X (L20E-2M10)	Type XII (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			
Max. front drilling diameter	10mm Dia.			
Max. front tapping diameter	M8 (Cut tap)			
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			
Max. drilling diameter for the back spindle	8mm Dia.			
Max. tapping diameter for the back spindle	M6			
Back spindle speed	Max.8,000min ⁻¹			
Gang rotary tool				
Max. drilling diameter	8mm Dia.			
Max. tapping diameter	M6(Cut tap)			
Spindle speed	Max.6,000min ⁻¹ (Rating 4,500min ⁻¹)			
Back tool post rotary tool *type X,XII				
Max. drilling diameter	OP		5mm Dia.	
Max. tapping diameter	OP		M4 (Cut tap)	
Spindle speed	OP		Max.7,500min ⁻¹ (Rating 6,000min ⁻¹)	
Front rotary tool*				
Max. drilling diameter	---		5mm Dia.	
Max. tapping diameter	---		M4 (Cut tap)	
Spindle speed	---		Max.7,500min ⁻¹ (Rating 6,000min ⁻¹)	
Number of tools to be mounted max	37	33	44	40
Gang turning tool	5			
Gang rotary tool	25	21	25	21
Front drilling tool	3			
Back drilling tool	4			
Tool size				
Gang turning tool	12mm Sq.,13mm Sq., 16mm Sq.)			
Sleeve	25mm Dia.(GDS107, 210), 19.05mm Dia.			
Chuck and bushing				
Main spindle collet chuck	FC034-M, FC071-M			
Back spindle collet chuck	FC034-M-K, FC071-M-K			
Rotary tool collet chuck	ER11, ER16			
Chuck for drill sleeves	ER11, ER16			
Guide bushing	WFG206-M			
Rapid feed rate				
All axes (except Y2)	32m/min			
Y2 axis	--			
Motors				
Spindle drive	2.2/ 3.7kW			
Gang tool post rotary tool drive	1.0kW (2.2kW Opt.)			
Back spindle drive	0.75/1.5kW			
Back tool post rotary tool drive	--			
Front rotary tool drive*	0.75kW			
Coolant oil	0.4kW			
Lubricating oil	0.003kW			
Center height	1,050mm			
Rated power consumption	7.3kVA			
Full-load current	32A (37A Opt.)			
Main breaker capacity	50A			
Air pressure	0.5MPa			
Weight	2,350kg			

*Front rotary tool drive unit is optional

Standard accessories	
Main spindle chucking unit	Door lock
Back spindle chucking unit	Cut-off tool breakage detector
Gang rotary tool driving unit	Lighting
Coolant unit (with level detector)	Main spindle coolant unit
Lubricating oil supply unit (with level detector)	Back tool post rotary unit *type X,XII
Machine relocation detector	
Special accessories	
Rotary guide bushing unit	Coolant flow rate detector
Knock-out jig for through-hole workpiece	Signal lamp
Workpiece conveyor	3-color signal tower
Chip conveyor	Front rotary tool unit *type X,XII
Medium-pressure coolant unit	Workpiece separator
LFV	
Standard NC functions	
CINCOM SYSTEM M70LPC-VU (Mitsubishi)	Interference check function
8.4 inch color LCD	Spindle speed change detector
USB slot,SD card slot	Constant surface speed control function
Program storage capacity:40m(approx,16KB)	Automatic power-off function
Tool offset pairs : 40	Main spindle indexing at 1° intervals
Product counter indication (up to 8 digits)	On-machine program check function
Operating time display function	Chamfering, corner R
Machine operation information display	Nose radius compensation
Multiple repetitive cycle for turning	Eco indication
	B axis control function *type IX,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	Program storage capacity 600m(approx. 240KB)
Milling interpolation	External memory program driving
Back spindle 1°indexing function	Submicron commands
Back spindle C-axis function	User macros
Back spindle chasing function	Helical interpolation function
Canned cycle drilling	Hob function
Rigid tapping function	Polygon function
High speed Rigid tapping function	Inch command
Synchronized tapping phase adjustment function	Sub inch command
Differential speed rotary tool function	Network I/O function
Tool offset pairs : 80	

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