

# Cincom



## M20/32

Sliding Headstock Type Automatic CNC Lathe

**Cincom Innovation Line**

# M



**Cincom** **Miyano**

"Evolution and Innovation" is the Future

Innovation is having your own vision  
and creating new technology.

# M20/32

Cincom Innovation

## The market leader re-defined

- more tools
- more functions
- more flexibility
- higher productivity
- same floor space
- more value



The M20/32 is renowned for its leading capability for 3 tool simultaneous machining in a compact floor space. The all round

combination of flexible tooling, large tool capacity and outstanding ease of use has made the M20/32 our success story in the new century.

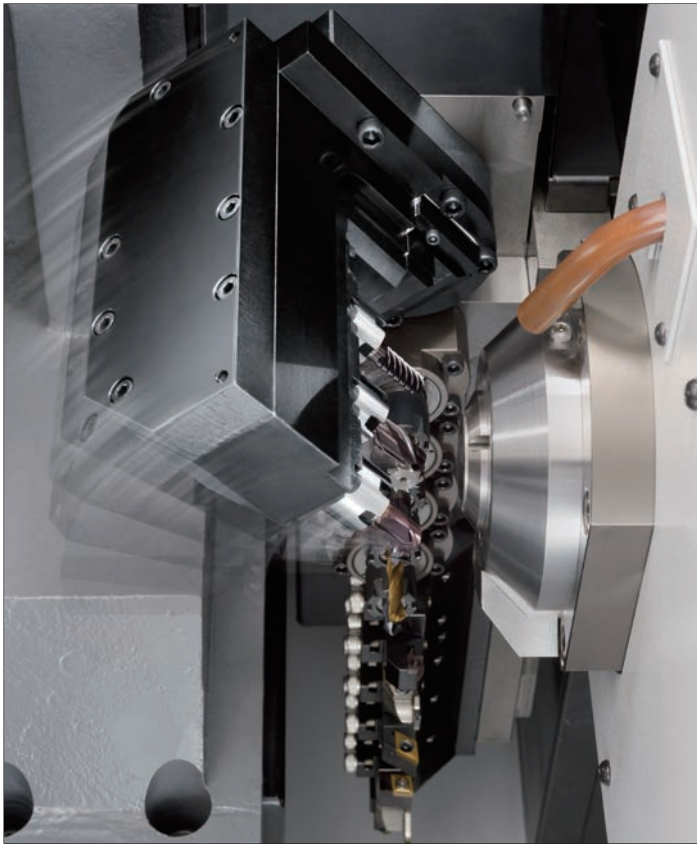
The next generation "M4" series increases the 3 tool simultaneous machining abilities with a new Y3 axis on the back tool post which carries up to 9 tools (up to 6 driven).

New advanced functions include a B axis on the gang tool post with 4 axis simultaneous contouring control. There are 4 types of the new M series: M20V, M32III/VII/VIII.

### Y axis on the back tool post (type VII & VIII)

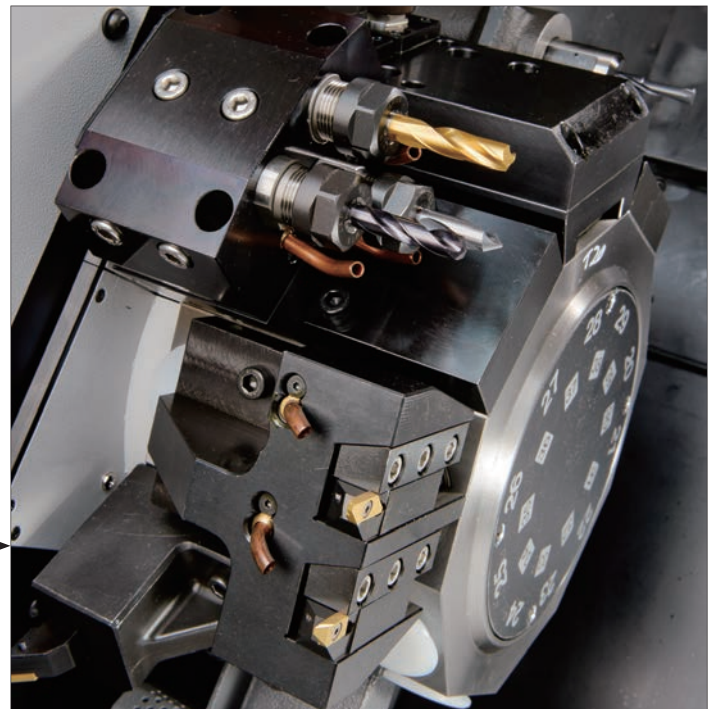
The back tool post can accommodate holders in 3 rows (two rows for rotary tools and one for fixed tools) — up to nine tools can be used. All 3 rows are under Y3 axis control. The specifications of the outer diameter milling spindle (GSC1110), 3-drilling spindle (GSE1510) and 3-sleeve holder (GDF1501) are common to those used on the gang tool post. All can be used on both the gang tool post and the back tool post.

*\*The use of GSE1510 and GDF1501 on the gang tool post is applicable to type III, V and VII.*



### B axis with 3 rotary tools on the gang tool post (type VIII)

The B axis is the slant axis in reference to the Y1 axis. When drilling a slant hole on a conventional machine, an adjustable angle spindle on the turret was required, but now rotary tools incorporating a B axis can be used to change the angle by program command, enabling slanted holes at a number of angles. Contouring with simultaneous 4-axis control is also possible (the angle range is -10° to 95°).



### Improved turret capability

The turret geometry is carried over from the previous generation to deliver tool holder compatibility. An improved Z2 axis stroke allows simultaneous machining with opposed turning tools or rotary tools on the gang tool post thus enabling pinch/balanced turning and pinch/balanced cross drilling and milling. Turret indexing can take place in any position which reduces cycle time.



# Choice of 4 models

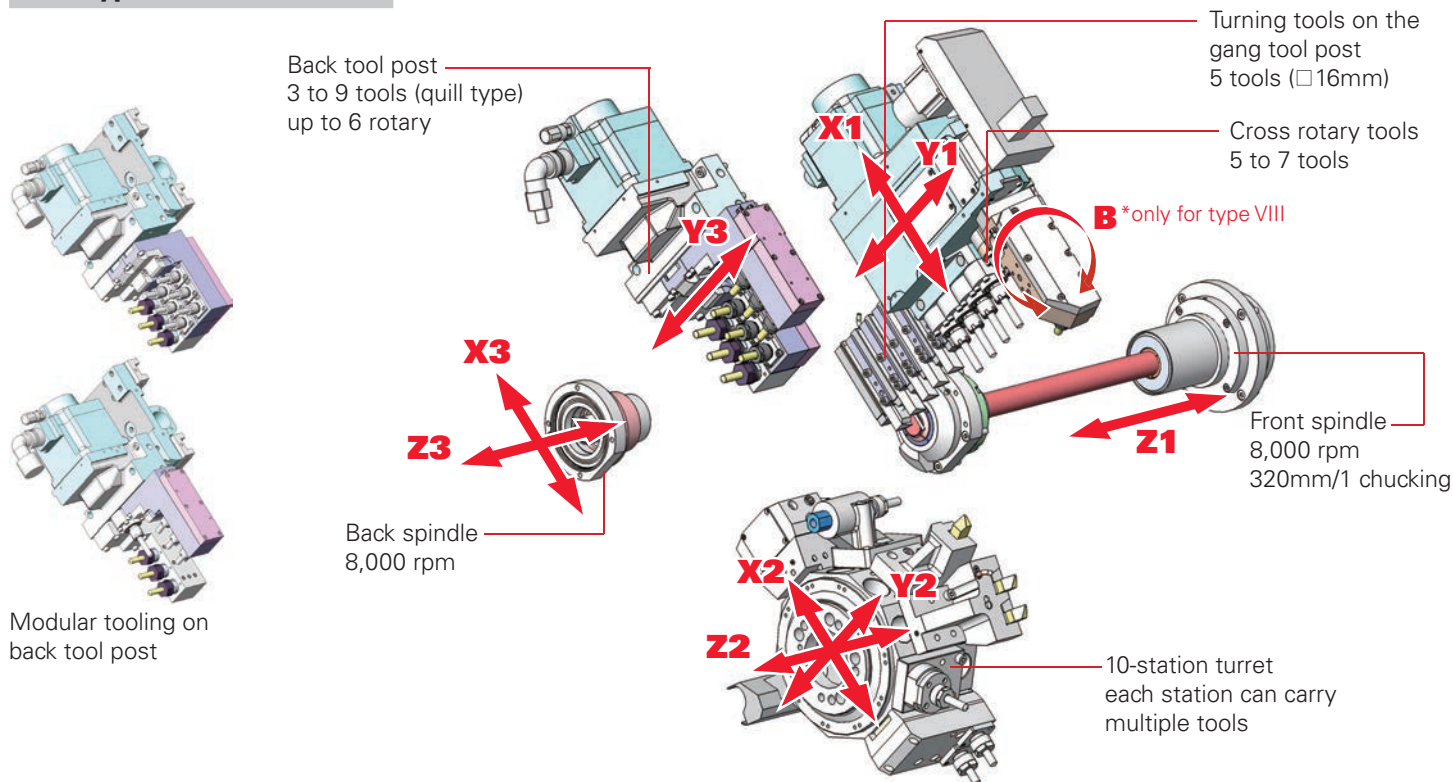
Selectable by 1, 2 or 3 Y axes and B axis

The new M32III (the successor to the original M32 with Y axis to the gang tool post) now has the capability of an angle adjustable 3-rotary tool holder on the gang tool post. In addition, the M20V has a Y2 axis to the turret and the M32VII adds the new Y3 axis and the 9 position back tool post with 6 driven and 3 fixed tool positioning. The M32VIII has all 3 Y axes and the B axis fully programmable 3 rotary tool holder on the gang tool post.

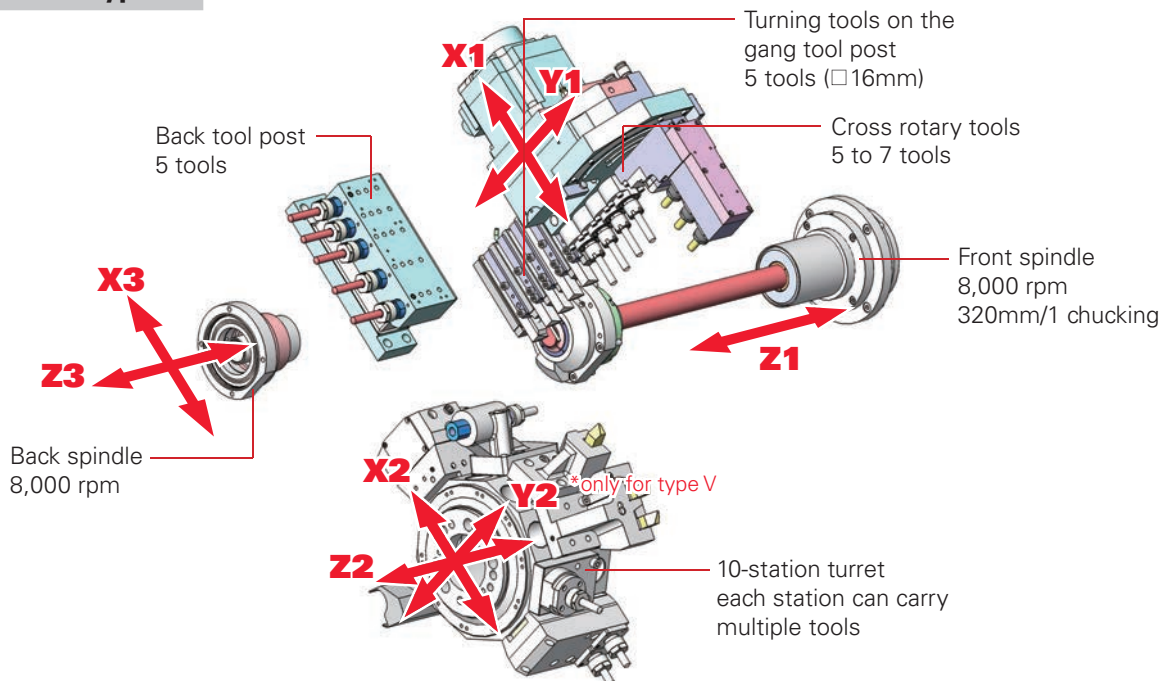
Machine configuration by type (M20V only, M32 III/VII/VIII)

| Type:                                      | III | V | VII | VIII |
|--|-----|---|-----|------|
| Y2 axis (turret Y axis)                    | —   | ○ | ○   | ○    |
| Y3 axis (back tool post Y axis)            | —   | — | ○   | ○    |
| B axis (rotary tools on the gang too post) | —   | — | —   | ○    |

## M32 type VII & VIII

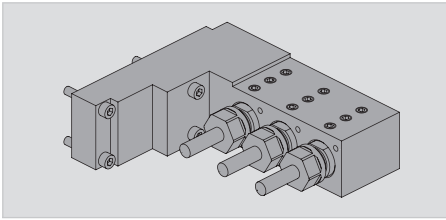


## M20 type V & M32 type III



# Tooling options for endless machining possibilities

## Flexible multiple tooling combinations

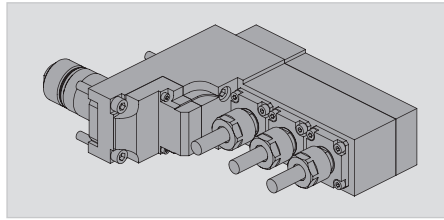


### **GDF1501** **3-tool sleeve holder**

Up to three fixed drill sleeves can be carried. The GDF1501 is mountable in one of the rotary tool positions of the gang tool post (U34B) of type III, V and VII models, or in back rotary tool drive device (U152B) of type VII and VIII machines.

Sleeve dia:  $\varnothing 25.4\text{mm}$

*\*This figure shows the holder installed with three sleeves.*

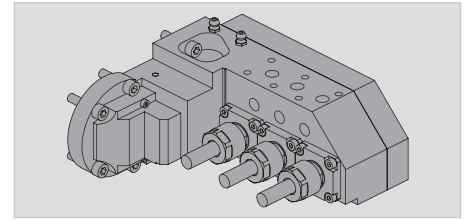


### **GSE1510** **3-tool drilling spindle**

Used for drilling and end milling. Mountable in the 5th rotary position of the gang tool post (U34B) of type III, V and VII models, or in back rotary tool drive device (U152B) of type VII and VIII machines. When mounted in U34B the angle can be manually adjusted between  $0^\circ$  and  $90^\circ$ .

Max. chuck dia:  $\varnothing 10\text{mm}$

Chuck model: ER16

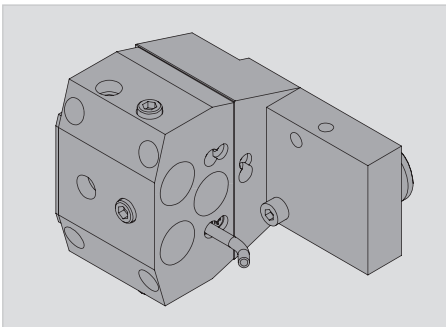


### **SEU810** **3-tool drilling spindle**

Used for face, cross or angle drilling/milling. Mountable in the 5th rotary position of the gang tool post (U33B) of type VIII. The angle can be designated by B axis command  $-10^\circ$  to  $+95^\circ$ . Simultaneous 4 axis contouring is possible.

Max. chuck dia:  $\varnothing 10\text{mm}$

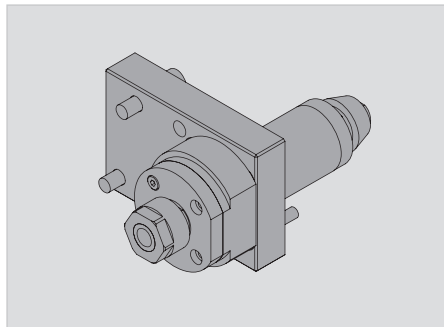
Chuck model: ER16



### **CDF901** **Fixed type sleeve holder (triple sleeve)**

Up to three fixed drill sleeves can be mounted on one turret position (includes coolant nozzle). Not usable on type III.

Sleeve dia:  $\varnothing 25.4\text{mm}$

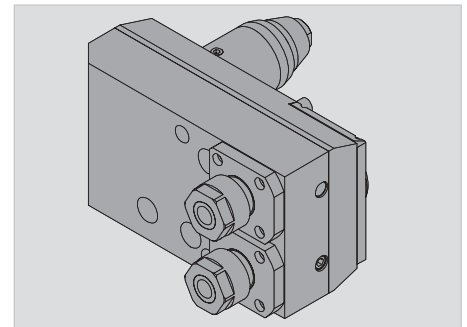


### **KSC110** **Cross drilling spindle**

Turret mounted holder used for drilling and end milling in the cross machining direction. Suitable for pinch/balanced cross drilling in conjunction with rotary tools on gang tool post.

Max. chuck dia:  $\varnothing 10\text{mm}$

Chuck model: ER16

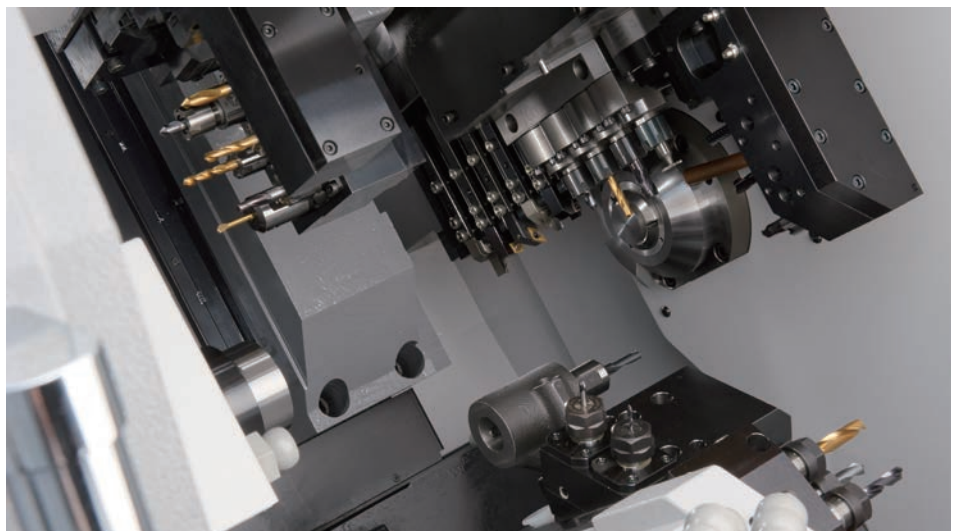


### **KSC510** **Cross drilling spindle (double)**

Turret mounted holder used for drilling and end milling in the cross machining direction. Suitable for pinch/balanced cross drilling in conjunction with rotary tools on gang tool post. Not usable on type III.

Max chuck dia:  $\varnothing 10\text{mm}$

Chuck model: ER16



M432 Type VIII tooling example

# User friendly operation

You can add the product unloader device and chip conveyor



## Latest high speed CNC unit

Start-up time, screen switching and processing times are considerably shorter. "Cincom Control" is utilized to further reduce cycle times.



## Operation panel

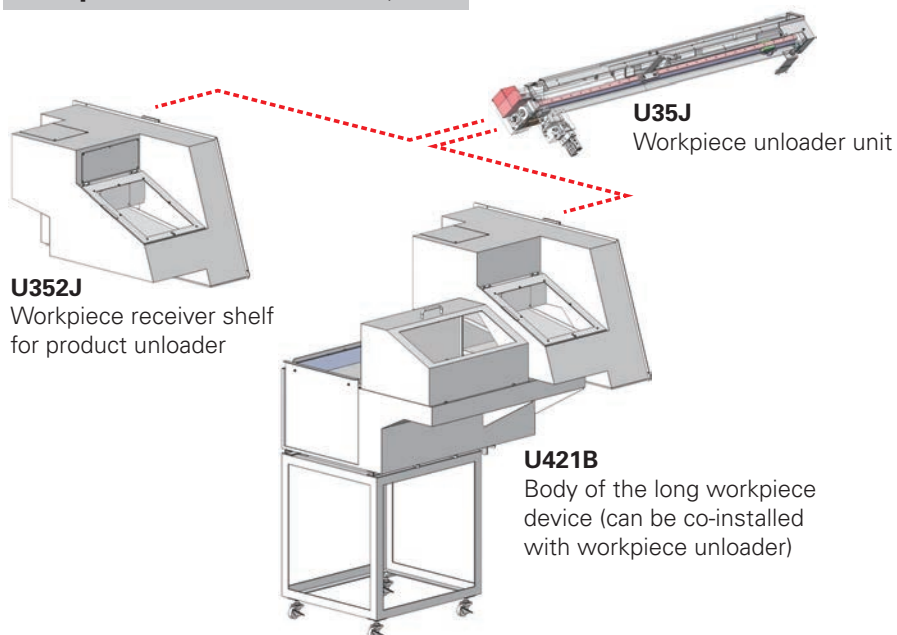
The pivoting operation panel enables easy operation while simultaneously viewing the machining process.



## Product collection

The workpiece is ejected from the back spindle into the product chute or optional workpiece conveyor for collection. See below for optional fully programmable workpiece unloader unit which offers the advantage of controlled removal of the workpiece from the back spindle.

## Workpiece Unloader Unit (optional)



## Workpiece collection with hand

Maximum workpiece collection length when using U35J:

### Type III and V

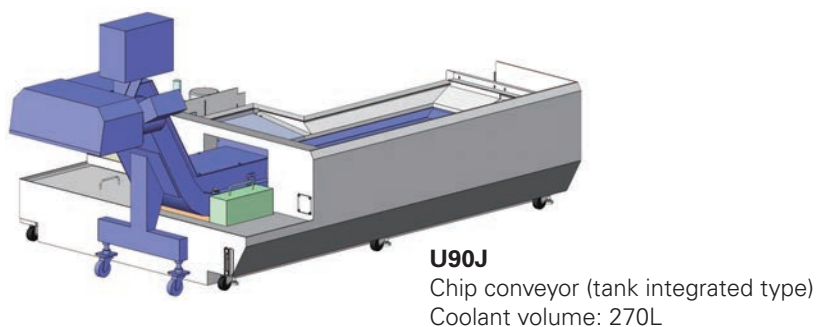
- 225 mm (with hand) - up to 315 mm possible with the knock-out device removed
- 110 mm (with basket U351J)

### Type VII and VIII

- 195 mm (with hand)
- 110 mm (with basket U351J)

*U35J longitudinal motion is programmable; hand clamp/unclamp by M code.*

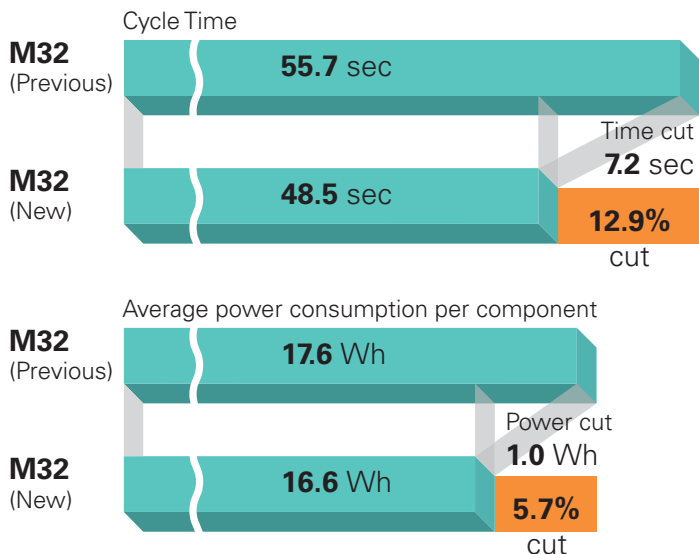
## Chip Conveyor (optional)



# Environmentally friendly products

Reducing not only cycle time but also power consumption

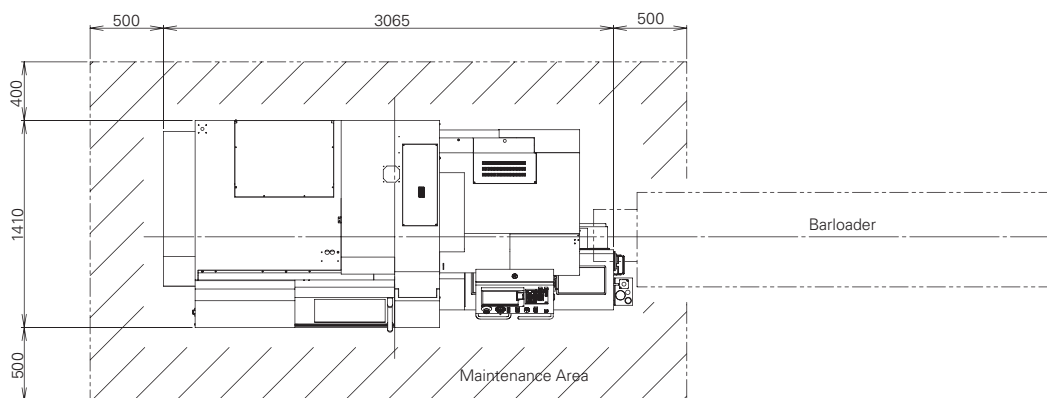
## Cycle time and power consumption comparison with previous model



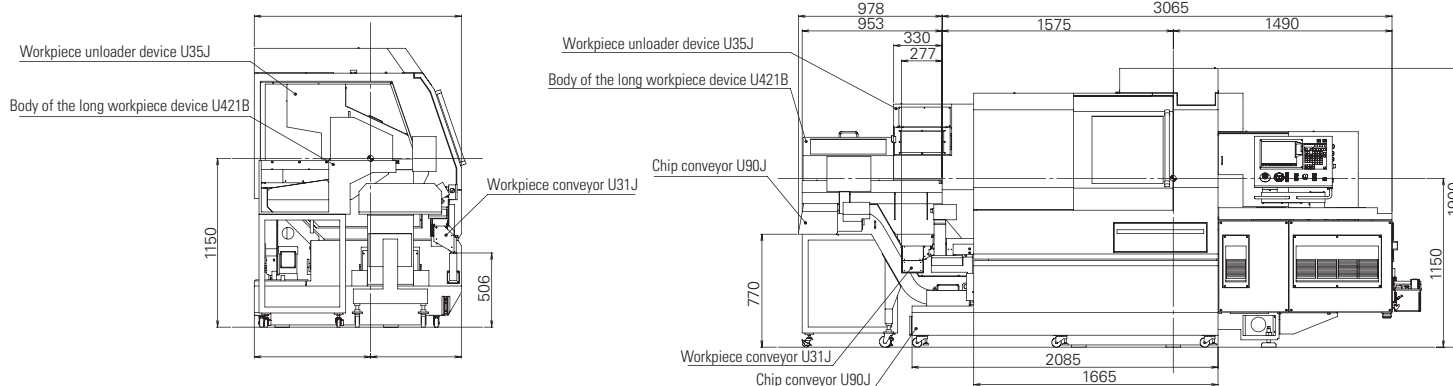
Citizen has developed a new control system for high-speed, smooth axis motion. "Cincom Control" reduces not only cycle time but also power consumption. Consideration has been given to saving energy and resources by adopting control methods that reduce power consumption, such as the idling stop function, and by optimizing consumption of oil/air for lubrication.

Consideration has also been given to the environment by using materials that are easy to recycle, increasing the percentage of recyclable materials used, and eliminating hazardous substances in conformity with the RoHS Directive.

## M20/32 Machine Layout (with options)



## M20/32 Machine Layout





# Machine Specifications

| Item  | M32III                       | M20V   | M32VII    | M32VIII |
|---|------------------------------|--------|-----------|---------|
| Maximum machining diameter (D)                        | ø32 mm                       | ø20 mm | ø32 mm    |         |
| Maximum machining length (L)                          | 320 mm / 1 chucking          |        |           |         |
| Maximum front drilling diameter                       | ø12 mm                       |        |           |         |
| Maximum front tapping diameter (tap, die)             | M10                          |        |           |         |
| Spindle through-hole diameter                         | ø36 mm                       |        |           |         |
| Main spindle speed                                    | 8,000 rpm                    |        |           |         |
| Max. drilling diameter for the gang rotary tool       | ø8 mm                        |        |           |         |
| Max. tapping diameter for the gang rotary tool        | M6                           |        |           |         |
| Spindle speed of the gang rotary tool                 | 6,000 rpm (rating 4,500 rpm) |        |           |         |
| Max. drilling diameter for turret rotary tool         | ø10 mm                       |        |           |         |
| Max. tapping diameter for turret rotary tool          | M8                           |        |           |         |
| Spindle speed of turret rotary tool                   | 6,000 rpm                    |        |           |         |
| Max. drilling diameter for the back spindle           | ø10 mm                       |        |           |         |
| Max. tapping diameter for the back spindle            | M10                          |        |           |         |
| Back spindle speed                                    | 8,000 rpm                    |        |           |         |
| Max. drilling diameter for back tool post rotary tool | —                            |        | ø8 mm     |         |
| Max. tapping diameter for back tool post rotary tool  | —                            |        | M6        |         |
| Spindle speed of back tool post rotary tool           | —                            |        | 6,000 rpm |         |
| Max. chuck diameter of back spindle                   | ø32 mm                       |        |           |         |
| Max. protrusion length of back spindle workpiece      | 65 mm                        |        |           |         |
| Max. protrusion length                                | 145 mm                       |        |           |         |
| Number of tools to be mounted                         | 25                           | 27     | 31        |         |
| Turning tool  | 5                            |        |           |         |
| Gang rotary tool                                      | 5                            |        | 7         | 4       |
| Gang B axis rotary tool                               | 0                            |        |           | 3       |

| Item                             | M32III        | M20V   | M32VII   | M32VIII |
|----------------------------------|---------------|--------|----------|---------|
| Number of turret stations        | 10            |        |          |         |
| Back tool post station           | 5             |        | 9        |         |
| Tool size                        |               |        |          |         |
| Tool (gang tool post)            | 5/8"          |        |          |         |
| Sleeve                           | ø1"           |        |          |         |
| Chuck and Bushing                |               |        |          |         |
| Main spindle collet chuck        | TF37-SP       | TF25   | TF37-SP  |         |
| Back spindle collet chuck        | TF37-SP       | TF25   | TF37-SP  |         |
| Guide bushing                    | TD32          | TD25NS | TD32     |         |
| Rapid feed rate                  |               |        |          |         |
| All axes (except Y2)             | 32 m/min      |        |          |         |
| X2 axis                          | 18 m/min      |        |          |         |
| Y2 axis                          | —             |        | 8 m/min  |         |
| Y3 axis                          | —             |        | 32 m/min |         |
| Motors                           |               |        |          |         |
| Spindle drive                    | 3.7 / 7.5 kW  |        |          |         |
| Gang tool post rotary tool drive | 1.0 kW        |        |          |         |
| Back spindle drive               | 2.2 / 3.7 kW  |        |          |         |
| Back tool post rotary tool drive | —             |        | 1.0 kW   |         |
| Turret rotary tool drive         | 0.75 / 1.5 kW |        |          |         |
| Coolant oil                      | 0.4 kW        |        |          |         |
| Lubricating oil                  | 0.003 kW      |        |          |         |
| Center height                    | 1150 mm       |        |          |         |
| Input power capacity             | 18 kVA        |        |          |         |
| Weight                           | 3350 kg       |        | 3450 kg  |         |

## Environmental Information

|  |                                     |   |   |
|--|-------------------------------------|---|---|
| <b>Basic Information</b>                     | <i>Energy Usage</i>                 | Power supply voltage  | AC 200V   |
|  |                                     | Electrical power requirement  | 18 kVA  |
|  |                                     | Required pneumatic pressure   | 0.5 MPa   |
| <b>Environmental Performance Information</b> | <i>Power Consumption</i>            | Standby power <sup>*1</sup>   | 0.524 kW  |
|  |                                     | Power consumption with model workpiece <sup>*2</sup>  | 0.017 kWh/cycle                                 |
|  |                                     | Power consumption value above converted to a CO <sub>2</sub> value <sup>*3</sup>  | 8.1 g/cycle                                     |
|  | <i>Air Consumption</i>              | Required air flow rate  | 90 NL/min (max. 240 NL/min., during air blow)   |
|  | <i>Lubricant Consumption</i>        | At power ON   | 5.5 cc/30 min                                   |
|  | <i>Noise Level</i>                  | Value measured based on JIS   | 80 dB   |
| <b>Approach to Environmental Issues</b>      | <i>Environmental load reduction</i> | RoHS Directive / REACH regulations  | Compliant                                       |
|  | <i>Recycling</i>                    | Indication of the material names of plastic parts   | Covered in the instruction manual <sup>*4</sup> |
|  | <i>Environmental management</i>     | We pursue "Green Procurement" by prioritizing purchases for goods and services that show consideration for the environment. |   |

\*1: This is the standby power in the idle stop mode (a function that turns servomotor excitation off when it is not necessary, for example during program editing).

\*2: This is the power consumption in program operation (when not cutting) for one of our standard test pieces, shown for the purpose of comparing the environmental performance with that of existing models.

\*3: This is the value converted in accordance with the CHUBU Electric Power CO<sub>2</sub> emissions coefficient for 2009 as published by the Ministry of the Environment.

\*4: If polyvinyl chloride (PVC) and fluorine resin are not processed correctly they can generate harmful gases. When recycling these materials, commission a contractor that is capable of processing them appropriately.

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QMI-SAI Global

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Catalog No. M4 0312