

Cincom

D25

Sliding Headstock Type CNC Automatic Lathe

CITIZEN



Next Generation

New Concept

New Design

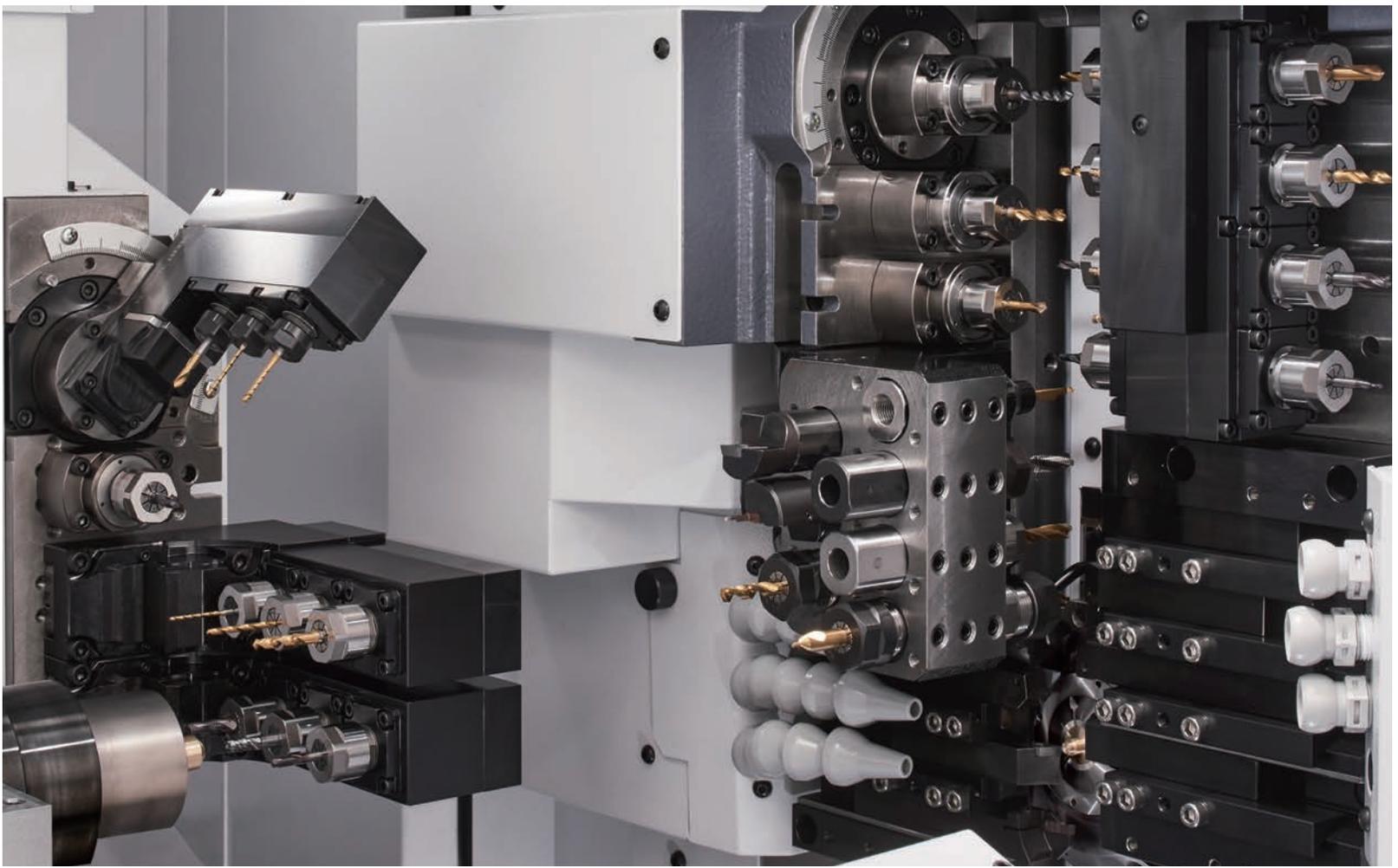
New Operability

New Styling

All-new Cincom D25

Citizen's Challenge The future starts here.





Full Tool Configuration to Support High Productivity

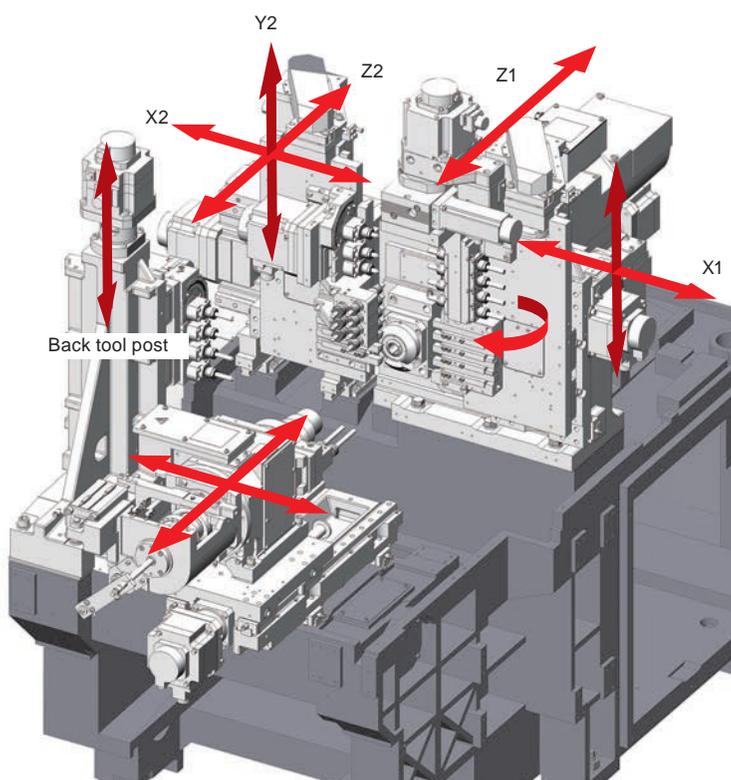
In addition to the “double gang tool” tool post, a B axis control for front machining is featured. The double gang tool configuration allows the tool post not engaged in machining to be prepared for the next machining, helping to shorten non-cutting time at tool selection, and cycle times.

A total of up to 59 front/back tools can be mounted, with up to 28 tools for back machining, enabling a full range of machining with a diversity of tools and realising high productivity by optimum division of processes for front/back machining

Complex machining can also be handled flexibly, including contouring on curved faces through simultaneous 5-axis control using the B axis. This presents new machining possibilities.

The machine is configured with two spindles and four tool posts, and tool post 2 features the Z2 axis. Combined with tool post 1, simultaneous machining including balanced cutting and drilling with outer diameter cutting is possible.

With type VIII, rotary tools on gang tool post 1 have a B axis, allowing complex machining with an even more comprehensive axis configuration. In addition, both models can be installed with the opposite tool post to realise high productivity with four tool posts.



Axis configuration and model types

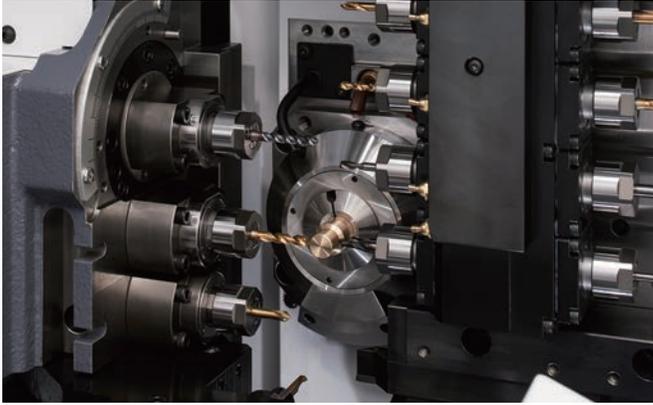
| | VII | VIII |
|---|------|------|
| Rotary tool on the gang tool post (Tool post 1) | T | T |
| Rotary tool on the gang tool post (Tool post 2) | T | T |
| B axis (rotary tools on the gang tool post) | F | T |
| Back rotary tool | T | T |
| Opposite tool post | Opt. | Opt. |

High Productivity through Simultaneous Machining with Three Tools

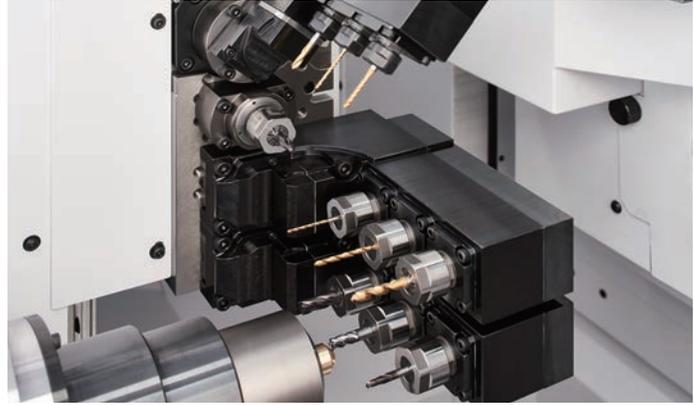
“Simultaneous machining with three tools” including additional machining with a back tool on the independent back tool post, in addition to simultaneous machining with two tools on the front

The two drills of the opposite tool post can machine holes up to 100 mm deep. O.D. cutting can be

performed simultaneously even with deep hole machining, further expanding the machining range. face with the double tool post, allows simultaneously machining with turning, drilling, milling and so on, shortening cutting time and achieving high productivity.

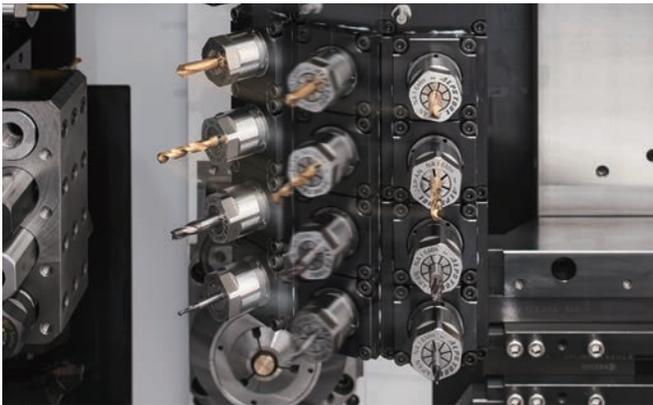


Simultaneous machining with two tools on the front face



Back machining with the independent back tool post

B Axis, Supporting Various Inclined Hole Machining (with Type VII)

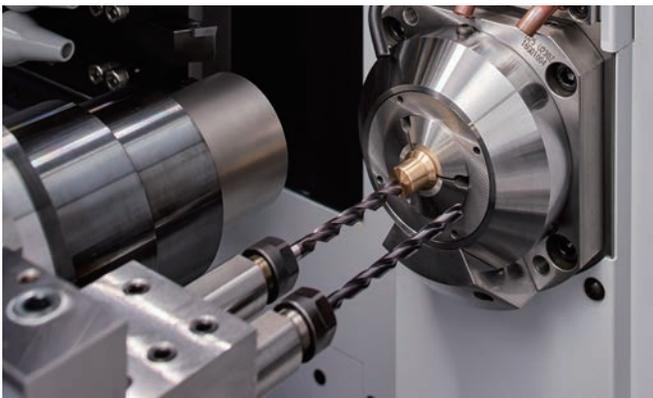


A B axis that can be used for either front or back machining is featured. It supports a variety of “inclined hole machining” including machining of inclined holes at multiple angles, and helical interpolation machining. Simultaneous five-axis control with three orthogonal axes and two rotational axes enables machining of complex shapes. The contouring machining function allows machining under the optimum cutting conditions, being able, for example, to maintain the tool angle perpendicular to the machining point even on curved faces.



Drilling a parabolic shape by machining with 5-axis simultaneous control
The range of turning has been further expanded.

Opposite Tool Post



The two drills of the opposite tool post can machine holes up to 100 mm deep. O.D. cutting can be performed simultaneously even with deep hole machining, further expanding the machining range.

LFV Technology (optional)



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 lessens the 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 | | | |

Note 1: LFV machining can be performed with the X1, Z1, X3, Z3 axis.

Note 2: LFV machining can be performed simultaneously on a maximum of 1 pair of axes.

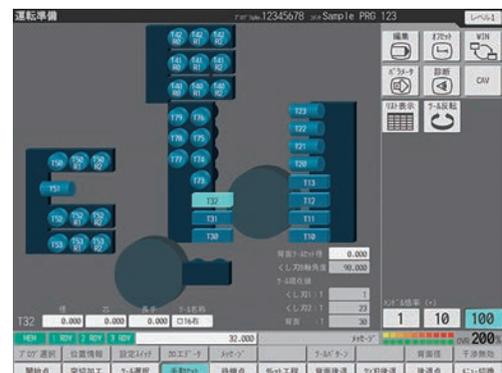
Note 3: For LFV machining with rotary tools, the "LFV function" and "rotary tool feed per revolution" options are required.

Evolved Operation Panel

The machine features a large 15-inch LCD touch panel screen. The graphical HMI (human machine interface) improves visibility and allows intuitive operation. For even better ease of use, a full keyboard is integrated in sheet keys. You can select either of two key arrangements: conventional or computer keyboard. NC programs can be input/output using a USB flash drive or SD card.



USB slot and SD card slot
External output operation using an SD card is supported.



Preparation screen.
Screen design evolved for good visibility while maintaining the renowned operability of the Cincom brand.



Automatic operation screen
Motor load information is displayed graphically, allowing intuitive status checks.

Operation panel
The combination of a full keyboard and 15-inch screen assures ease of use.

Comprehensive Standard Features

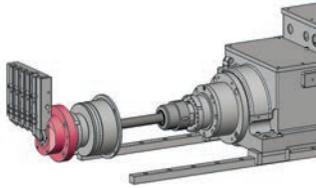
Front/back spindles and rotary tools are equipped with motors of ample capacity. Their comprehensive machining capabilities help improve productivity.

Spindle selection specifications are standard too, allowing you to switch between the guide bushing type*1 suited to machining long workpieces and the guide bushing-less type suited to leaving short

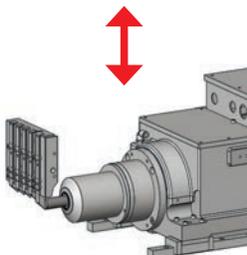
remnant bars. By making use of their features in accordance with the cutting conditions, the total running costs can be reduced.

The cutting room door assures an expansive, open operating space for good usability, facilitating the operator's work, such as mount tools.

GB



GBL



Workpiece conveyor
Unloads workpieces received from the workpiece separator outside the machine.

Switching between guide bushing / guide bushing-less type

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

Higher level of motor output

The motors of front / back spindles and rotary tools have the machining capability of larger-diameter models, are more versatile due to an expanded speed range, and also help to shorten cycle times.

Coolant nozzles and coolant pumps

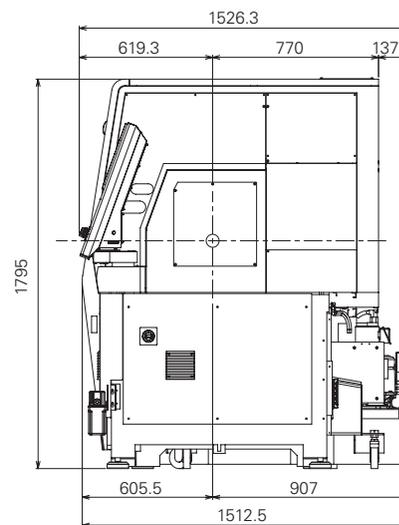
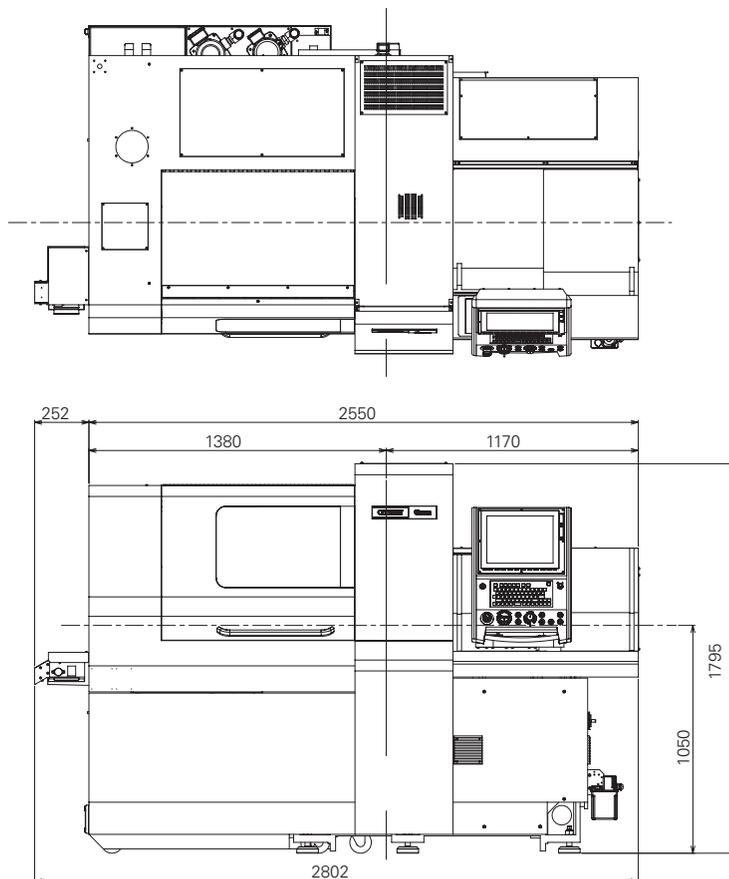
As a measure against entangling chips, an adequate number of chip coolant nozzles are provided. Furthermore, two pumps are installed to resolve the issue of chip entanglement.



Wide opening

The flip-up door provides good access inside the machine and ample working space.

Machine Layout Drawing



Machine Specification

| Item | D25 | |
|---|--|---------------------|
| | Type VII (D25-1M7) | Type VIII (D25-1M8) |
| Max. machining diameter (D) | 12 mm dia. / 16mm dia. (OPT) | |
| Max. machining length (L) | | |
| Guide bushing | 250 mm | |
| Guide bushing-less | 2.5 D | |
| Max. front drilling diameter | 12 mm dia. | |
| Max. front tapping diameter (Cutting tap) | M10 | |
| Spindle speed | Max. 10,000 min ⁻¹ | |
| Max. drilling diameter by rotary tool on gang tool post | 10 mm dia. | |
| Max. tapping diameter by rotary tool on gang tool post | M8 | |
| Gang tool spindle speed | Max. 9,000 min ⁻¹ | |
| Max. chuck diameter of the back spindle | 25 mm dia. | |
| Max. workpiece protrusion length from the back spindle | 50 mm | |
| Max. drilling diameter in back machining | 12 mm dia. | |
| Max. tapping diameter in back machining | M10 | |
| Back spindle speed | Max. 10,000 min ⁻¹ | |
| Tool capacity Standard (Maximum) | 35 (59) | 35 (43) |
| Cutting tool | 7 - 13 | 7 - 9 |
| Front drilling tools | 4 - 23 | 4 - 13 |
| Front cross drilling tools | 7 - 12 | 7 |
| Back drilling tools | 6 - 35 | 6 - 25 |
| Back cross drilling tools | 4 - 6 | 4 - 6 |
| Tool size | | |
| Turning tool | 16 mm sq./ 19 mm sq./ | |
| Sleeve | 25.4 mm sq./ | |
| Chuck / bushing | | |
| Spindle collet chuck | TF30 | |
| Back spindle collet chuck | TF30 | |
| Guide bushing FG521-M | T227 | |
| Rapid feed rate | | |
| All axes (other than Z2) | 32 m/ min | |
| Z2 axis | 24 m/ min | |
| Motor | | |
| For spindle drive | 3.7/ 5.5 kW | |
| For driving rotary tools on the gang tool post | 2.2 kW | |
| For back spindle drive | 2.2/ 3.7 kW | |
| For driving rotary tools on the back tool post | 1.0 kW | |
| Rated power consumption | 13 kVA | |
| Total load current | 33 A | |
| Main breaker capacity | 60 A | |
| Pneumatic device | | |
| Required pressure | 0.5 MPa(5kgf/cm ²) | |
| Flow rate | Up to 60 NL/min (Power on) Up to 180 NL/min (With air blow) | |
| Tank capacity | 0.8 L | |
| Coolant tank capacity | 200 L | |
| Machine size | | |
| Machine height | 1,795 mm | |
| Required floor area | 2,440×1,380 mm | |
| Required floor area | 1,050 mm | |
| Required floor area | 3,450 kg | |

Standard Accessories

| | |
|--|-----------------------------------|
| Spindle chucking device | Cut-off tool breakage detector |
| Back spindle chucking device | Workpiece conveyor |
| Rotary tool spindle drive device of the gang tool post | Work light |
| Coolant tank (with level detector) | Rotary guide bushing drive device |
| Central lubrication device (with level) detector) | Spindle cooling device |
| Machine relocation detector | Door lock |
| Rotary guide bushing device | Signal lamp |
| Knockout device for through hole workpiece | 3-colour signal tower |
| Coolant flow rate detector | Opposite tool post |

Special Accessories

| | |
|---------------|--------------------------------|
| Chip conveyor | Medium-pressure coolant device |
|---------------|--------------------------------|

D25 dedicated tools

Standard NC Functions

| | |
|---|--|
| D25 dedicated NC unit | 15-inch touch panel screen |
| User disk space: 10 MB | Program storage capacity 160 m (64kB) |
| Tool offset pairs: 99 pairs | Preparation function |
| On-machine program check function | Run hour display |
| USB slot | Door lock function |
| Interference check function | Machine operation information display |
| Collision detection function | Spindle speed fluctuation detection function |
| Spindle constant surface speed control function | Tool nose radius compensation |
| B axis control function (type VIII) | Thermal displacement correction function |
| Back spindle chasing function | Back spindle 1° indexing function |
| Drilling canned cycle | Back spindle C-axis function |
| Spindle C-axis function | RS-232C connector |

Optional NC functions

| | |
|---|---|
| Circular thread cutting | Variable lead thread cutting |
| Differential speed rotary tool function | User macro |
| Milling interpolation function | High-speed synchronised tapping function |
| Coordinate rotation command function | Helical interpolation function |
| User disk space: 100 MB | Program storage capacity 4800 m (1920 kB) |
| Run using program in external memory | Tool life management I |
| Tool life management II | Network I/O function |
| Sub-micron command | Optional block skip (9 sets) |
| 3D chamfering function | |

CITIZEN

CITIZEN MACHINERY CO., LTD.

Japan

Citizen Machinery Co Ltd
4017-6 Miyota, Miyota-machi, Kitasaku-gun,
Nagano-ken, 389-0206, Japan

Tel: 81-267-32-5901 Fax: 81-267-32-5908

Europe - UK

Citizen Machinery UK Ltd
1 Park Avenue, Bushey, WD23 2DA, UK

Tel: 44-1923-691500 Fax: 44-1923-691599

www.citizenmachinery.co.uk

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