

CITIZEN

# Cincom

## K16E

Sliding Headstock Type CNC Automatic Lathe



# Faster processing with outstanding ease-of-use

Citizen's highly successful K series evolves for the new age to meet the needs of the changing global market

## Up to 23 tools

To meet the trend to produce complex parts on a lower cost machine.

## Flexible tool layout

Up to 8 rotary tools can be mounted, including cross drilling/milling, face drilling & slitting.

## Back slitting and back cross drilling capability

Same holder is adaptable for both slitting and cross drilling.

## Faster processing

New control delivers significant cycle time savings for complex parts.

## Citizen's renowned ease-of-use

Citizen is the machine of choice for fast set-ups and changeovers. The new control and user interface makes using the K series even easier than before.

## Citizen's unique Cincom Control cuts non-cutting time to a minimum

Citizen's dynamic software development leads the Swiss type/sliding head sector.

## Rigid and compact

The acclaimed rigid but compact construction of the previous K series is carried forward with the K16E.

## High speed spindle

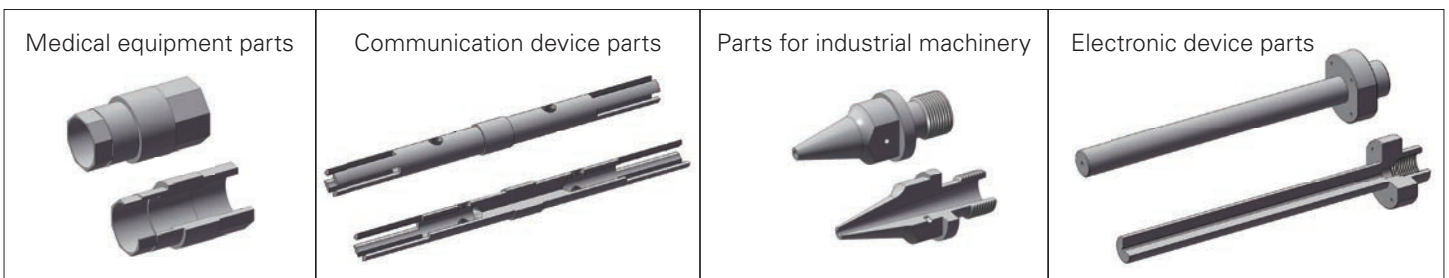
15,000 rpm main spindle is standard.

## Improved back spindle torque

The back spindle has improved torque at low rpm.



## Workpiece Examples



# Further reductions in cycle times

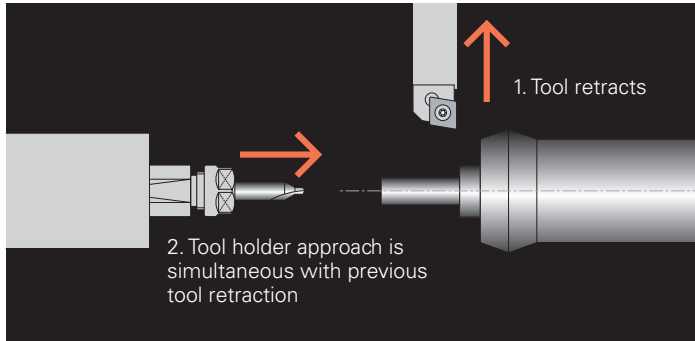
## Cincom Control cuts non-cutting time to a minimum

### Cincom Control

Citizen has developed a new control system for high-speed, smooth axis motion. "Cincom Control" reduces idle time, increases feed rates and substantially reduces cycle time.

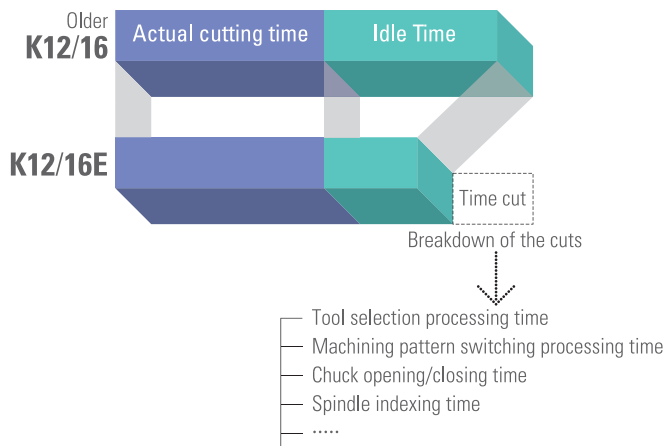
### Tool Overlap Function

For front machining, the K16E is equipped with independently controlled gang tool holder and opposed tool holder. Cincom Control positions next tool holder while previous tool holder retracts.



## Idle time reduced further

Even in comparison with the previous K series which substantially improved productivity, the K16E has slashed idle time still further and shortened cycle time.



## Example targets for idle time cuts

### Tool selection / machining pattern switching processing time

The processing speed in operations where a tool is called by a command such as T01\* or operations where a machining pattern is declared by a command such as G610, has been speeded up by installing the latest NC unit and reviewing the macro processing.

### Chuck opening/closing time

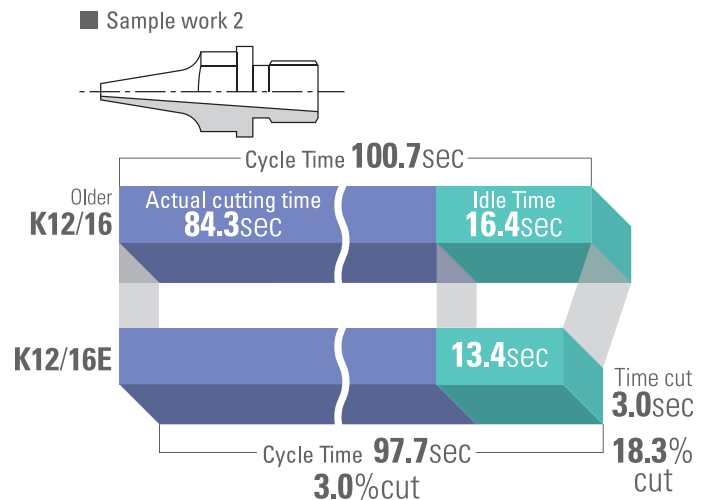
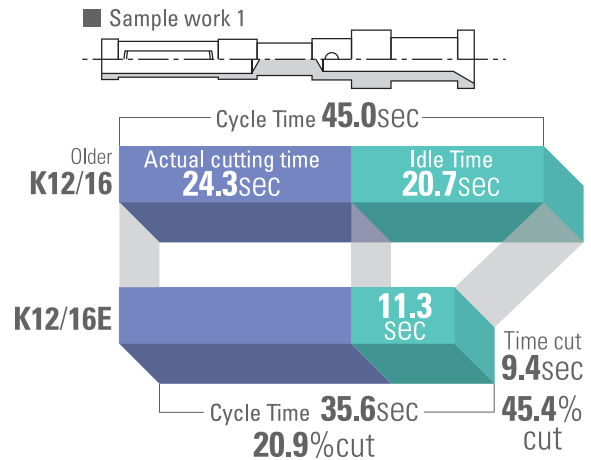
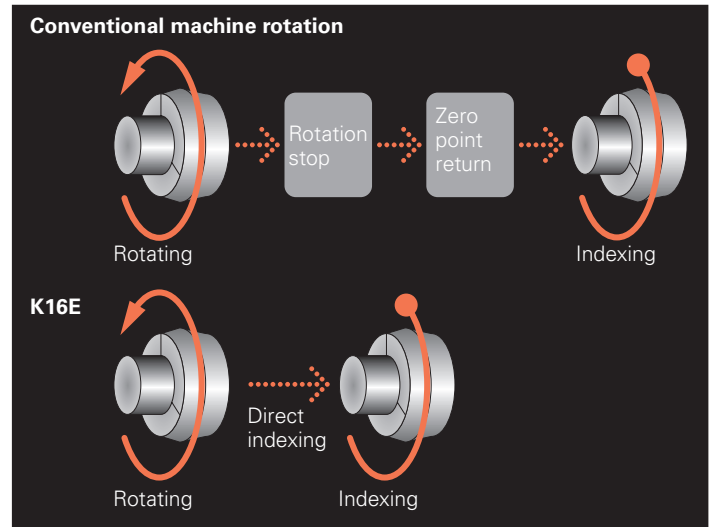
The chuck opening/closing operations of the front and back spindles have been speeded up by changing the chuck mechanism.

### Spindle indexing time

Direct spindle indexing operation controlled by Cincom control has been speeded up by the installation of the latest NC unit.

### 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 taken to stop, reference and index.



\*These are examples of comparison using samples. The effects of reduction on idle time will vary depending on the workpiece being machined.

# Efficient, fast and highly productive

Covers wide range of complex machining needs and allows selection of the machine configuration to suit your applications.

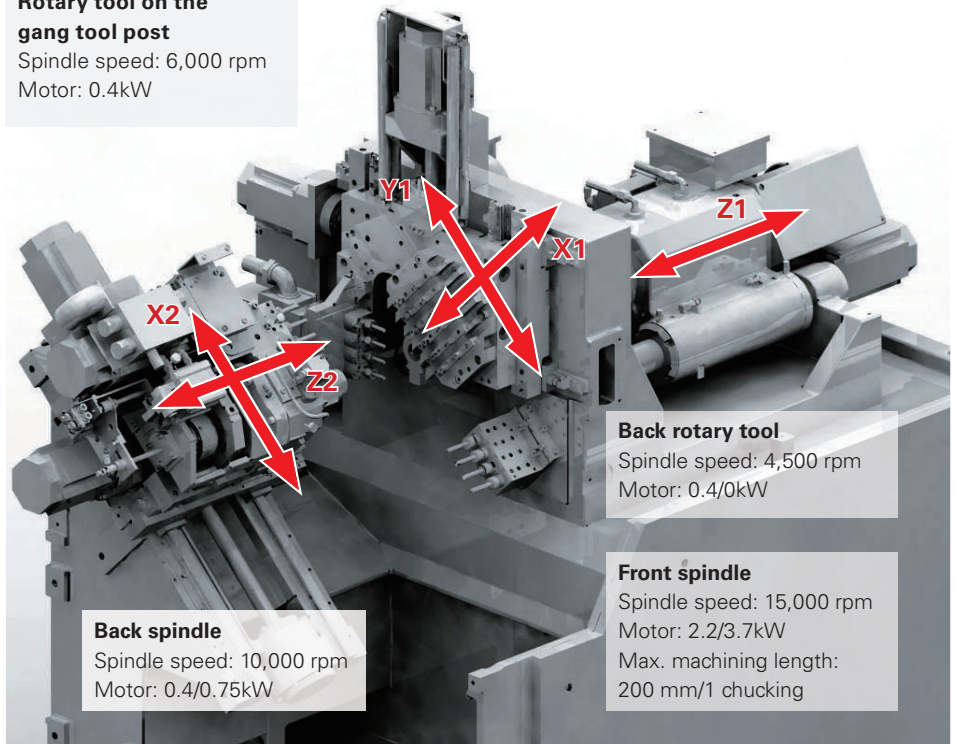
Mixed production makes high demands on the flexibility, performance and efficiency of a machine. The Cincom K series proves its worth in every aspect. Its particular strength lies in the production of high-accuracy complex parts up to 16 mm diameter in small to medium batch sizes.

Next to short set-up times, the K series also offers high productivity and efficiency thanks to faster rapid feed rates, improved axis deceleration/acceleration times of the axes, and faster program processing provided by the new control system.

A rigid machine bed combined with exceptional thermal stability ensures the precision of the machine. Due to the flexible modular tool holder system, holders for virtually any application are available. With its small footprint of just 3.7 x 6.2 ft., this machine offers a very compact and space-saving design.

Citizen's renowned ease-of-use ensure fast set-ups and rapid changeovers.

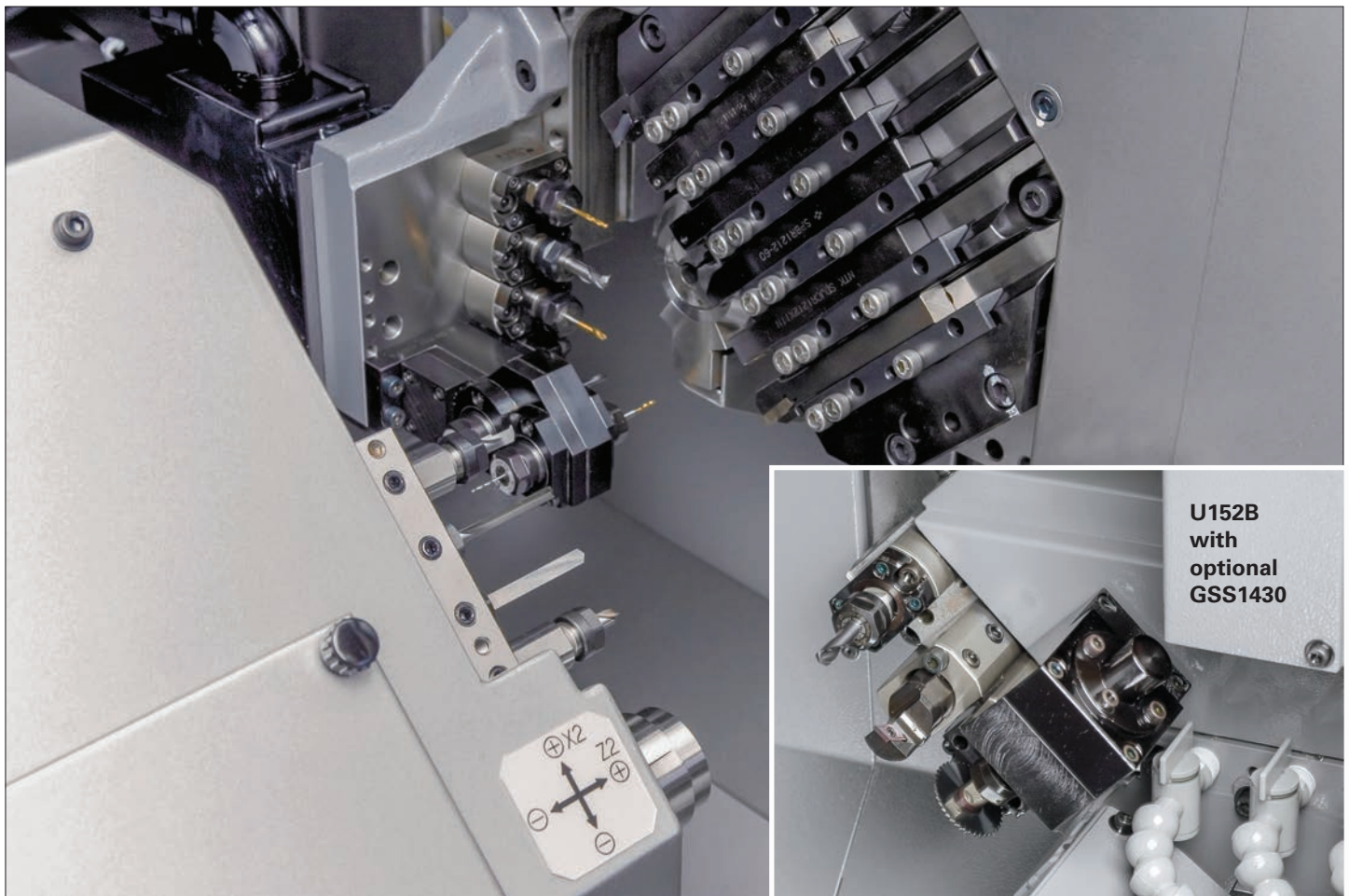
**Rotary tool on the gang tool post**  
Spindle speed: 6,000 rpm  
Motor: 0.4kW



**Back rotary tool**  
Spindle speed: 4,500 rpm  
Motor: 0.4/0kW

**Front spindle**  
Spindle speed: 15,000 rpm  
Motor: 2.2/3.7kW  
Max. machining length:  
200 mm/1 chucking

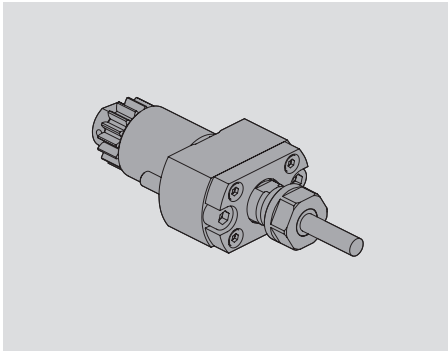
**Back spindle**  
Spindle speed: 10,000 rpm  
Motor: 0.4/0.75kW



**U152B  
with  
optional  
GSS1430**

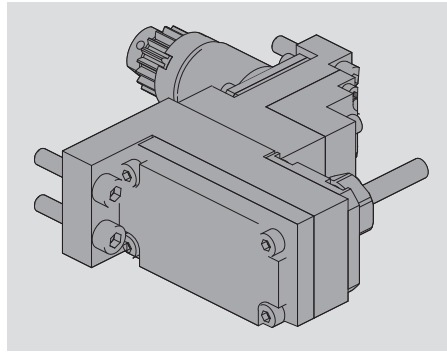
# Wide range of tooling and accessories

## Outstanding versatility



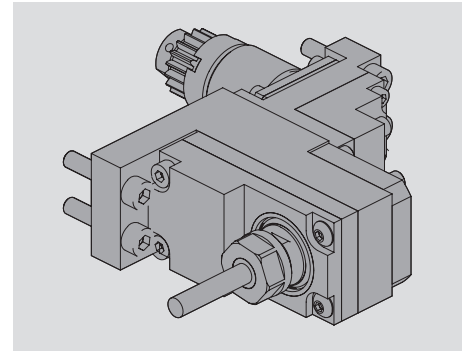
### **GSC807 (U31B), GSC1107 (U152B)** **Cross/End face-drilling spindle**

Up to 4 spindles on U31B and up to 3 spindles on U152B can be mounted in standard configuration.



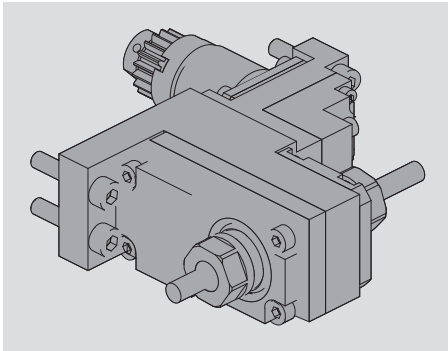
### **GSE2607** **Front end-face drilling spindle**

Used for eccentric drilling process to end face. This spindle can be mounted on T12 to T14. When one spindle is mounted, another spindle cannot be mounted at an adjacent station. Chuck type: ER11



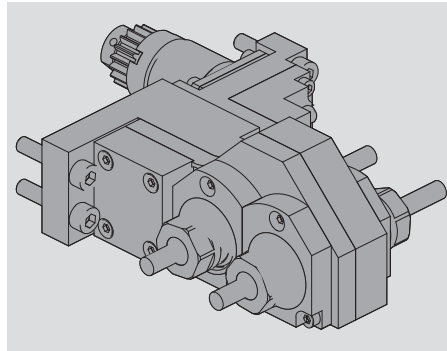
### **GSE2707** **Back end-face drilling spindle**

Used for eccentric drilling process to end face. This spindle can be mounted on T12 to T14. When one spindle is mounted, another spindle cannot be mounted at an adjacent station. Chuck type: ER11



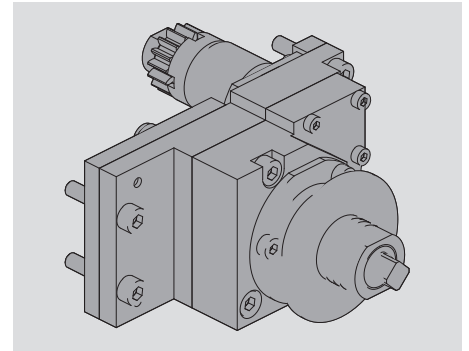
### **GSE2807** **Both-end drilling spindle**

Used for eccentric drilling process to end face. This spindle can be mounted on T12 to T14. When one spindle is mounted, another spindle cannot be mounted at an adjacent station. Chuck type: ER11



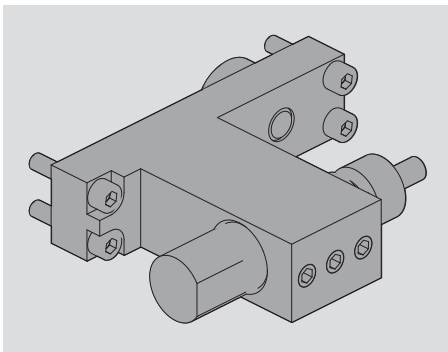
### **GSE2507** **Double both-end spindle**

Used for eccentric drilling process to end face. This spindle can be mounted on T14 only. Chuck type: ER11



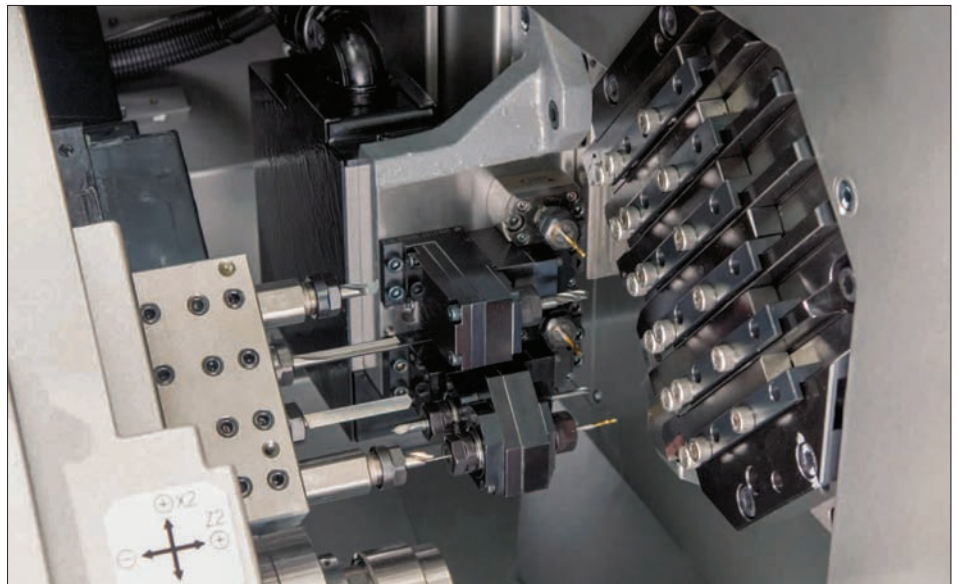
### **GSS950** **Slitting spindle**

Used for slitting process. This spindle can be mounted on T13 only. Maximum cutter size is 50 mm in diameter.  
GSS950:  $\text{Ø}50 \times 15.874/12.7 \text{ mm}$



### **BDF103** **1-tool sleeve holder**

Used for drilling with drilling sleeve mounted. This holder can be mounted on T12 to T14.  
BDF103:  $\text{Ø}19.05 \text{ mm}$



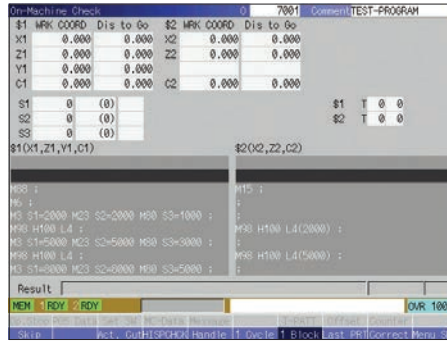
# Convenient, real time operation

User-friendly design displays the screens that are needed, when they are needed.



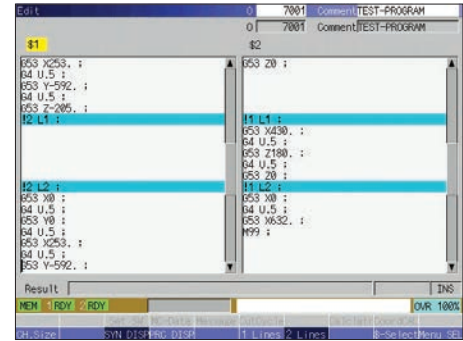
## High-speed NC Installed

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.



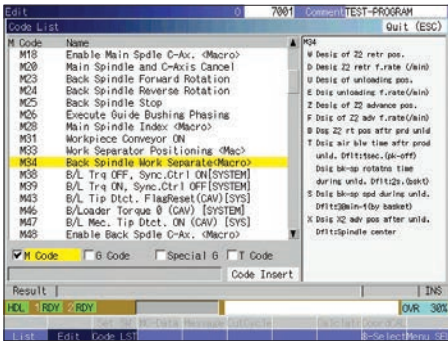
## On-machine Program Check Function

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. It also has a high speed program check function.



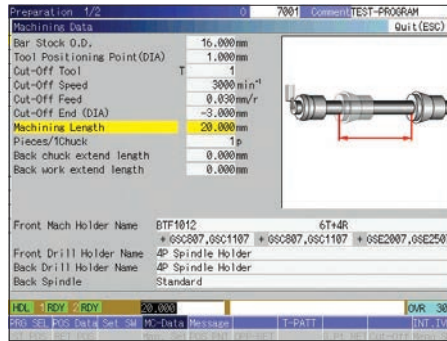
## Program Editing

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.



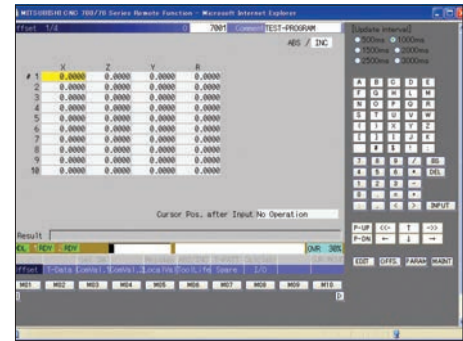
## Code List Display

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).



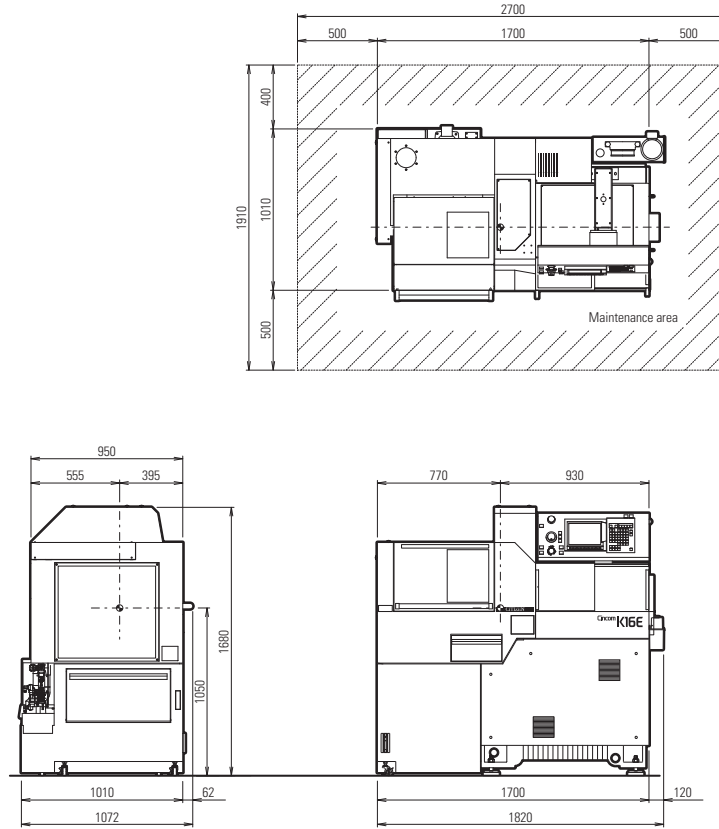
## Remote diagnosis function

You can edit the NC program and input the offset by remote access with your office PC.

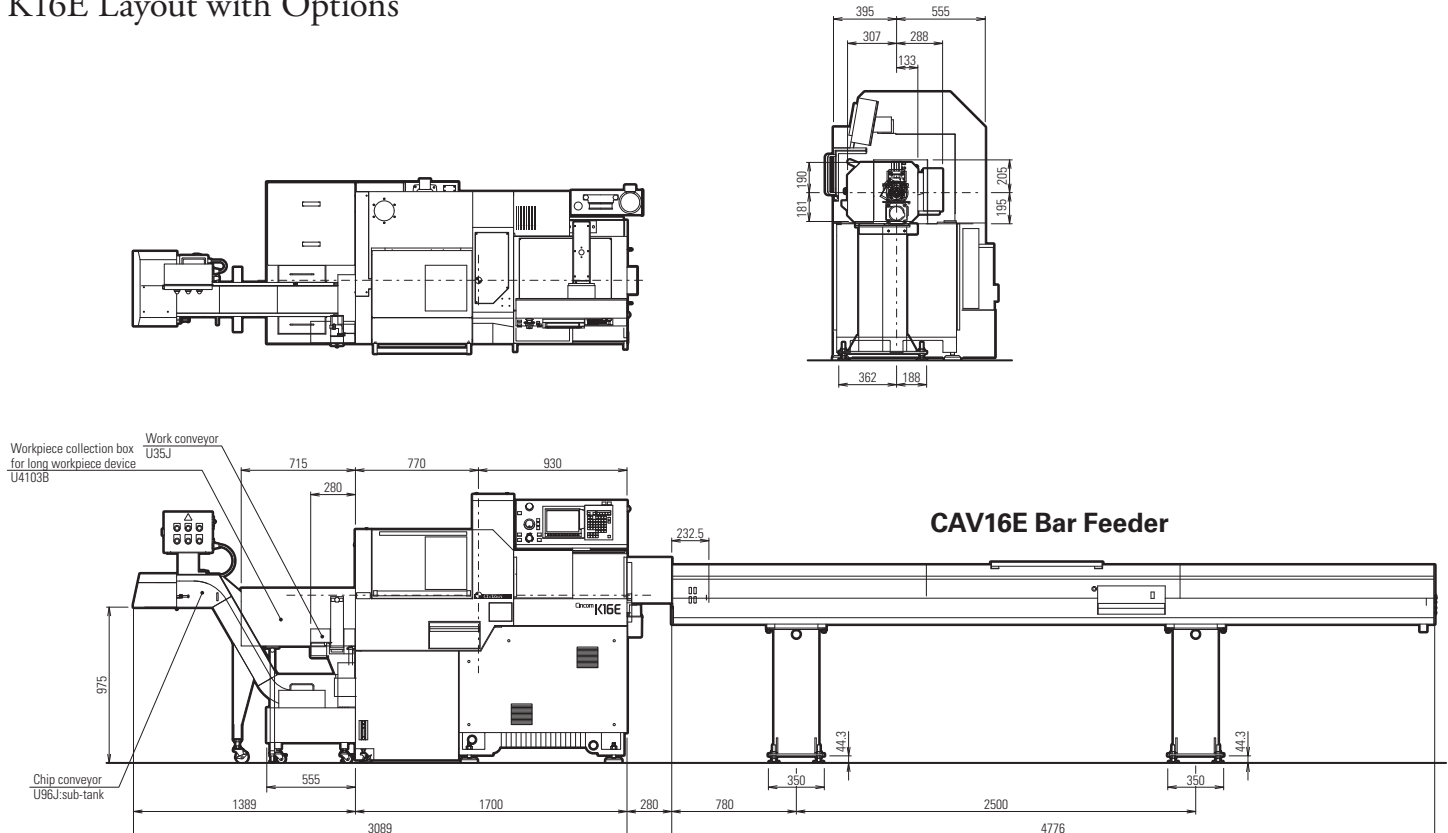


# Machine layout drawing

## K16E Standard Layout



## K16E Layout with Options



# Machine Specification

<b>K16EVII</b>	
Maximum machining diameter (D)	Ø16 mm
Maximum machining length (L)	200 mm/1chucking
Maximum front drilling diameter	Ø10 mm
Maximum front tapping diameter (tap, die)	M8
Spindle through-hole diameter	Ø20 mm
Main spindle speed	15,000 rpm
Max. drilling diameter for the gang rotary tool	Ø5 mm
Max. tapping diameter for the gang rotary tool	M4
Spindle speed of the gang rotary tool (Rating)	6,000 rpm (Rating: 4,500 rpm)
Max. chuck diameter of the back spindle	Ø16 mm
Max. protrusion length of the back spindle workpiece	40 mm
Maximum protrusion length	80 mm
Max. drilling diameter for the gang rotary tool	Ø6 mm
Max. tapping diameter for the gang rotary tool	M5
Back spindle speed	10,000 rpm
Max. drilling diameter for the back tool post rotary tool	Ø5 mm
Max. tapping diameter for the back tool post rotary tool	M5
Spindle speed of the back tool post rotary tool (Rating)	4,500 rpm (Rating: 3,000 rpm)
Turning tools on the gang tool post	6
Cross rotary tools	4
Front ID tools (stationary)	4
Live tool on back tool post	3
Tool size	
Tool (gang tool post)	□ ½"
Sleeve	Ø¾"
Chuck and bushing	
Main spindle collet chuck	TF20
Back spindle collet chuck	TF20
Rotary tool collet chuck	ER11
Chuck for drill sleeves	ER11, ER16
Guide bushing	0201
Rapid feed rate	
X1 and Y1 axes	24m/min (Composite speed: 34m/min)
Z1, X2 and Z2 axes	32m/min
Motors	
Spindle drive	2.2/3.7 kW
Gang tool post rotary tool drive	0.4 kW
Back spindle drive	0.4/0.75 kW
Back tool post rotary tool drive	0.4 kW
Coolant oil	0.25 kW
Lubricating oil	0.003 kW
Center height	1050 mm
Rated power consumption	7 kVA
Full-load current	26A
Main braker capacity	50A
Air pressure and air flow rate for pneumatic devices	0.5 MPa • 70 NI/min
Weight	2200 kg

## Main Standard Accessories

Main spindle chucking device	Workpiece separator
Rotary guide bushing drive device	Air seal pneumatic device
Rotary guide bushing device	Back spindle chucking device
Coolant device (with level sensor)	Rotary tool spindle drive unit for gang tool and back tool post
Door switch/door lock	Machine relocation detector
Lubricating oil supply unit (with level detector)	

## Optional Accessories

Fixed guide bushing device	Back spindle 15 degree indexing (with mechanical lock pin)
Long workpiece device	Knock-out jig for through-hole workpiece
Dedicated magazine barfeeder	Signal lamp
Cut-off tool breakage detector	3-color signal tower
Workpiece conveyer	Work light (LED)
Chip conveyer	
Coolant flow-rate detecting device	

## Standard NC Functions

NC unit dedicated to the K16	C-axis control (main)
8.4 inch LCD	C-axis control (back)
8-bit B-code function	Canned cycles for drilling
Canned cycle for threading	User macro
Chamfer/Corner rounding function	Milling interpolation
Constant surface speed control (main & back)	Polygon turning function
Continuous threading cycle	Hobbing function
Inch/metric conversion	Synchronous tapping
Multiple repetitive cycle	Tool life management I
Tool offset pairs: 40	Tool life management II
Part program work area: 80m (32k)	Sub inch designation (min. increment 0.00001")
Single point threading	Helical interpolation
Spindle speed fluctuation detection	Slant helical interpolation
Tool breakage detector (spindle speed check)	Circular thread cutting
Tool nose radius compensation	Variable lead thread cutting
Main/back spindle synchronization	Geometric command function
	Synchronous tapping phasing function
	External memory running
	Network I/O function

## Optional NC Functions

Tool offset pairs: 80
Program storage capacity: 160m/320m/600m

# Marubeni Citizen-Cincom Inc.

40 Boroline Road  
Allendale, NJ 07401  
201-818-0100

2316 Touhy Avenue  
Elk Grove Village, IL 60007  
847-364-9060

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

68 Moylan Lane  
Agawam, MA 01001  
413-786-6655

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