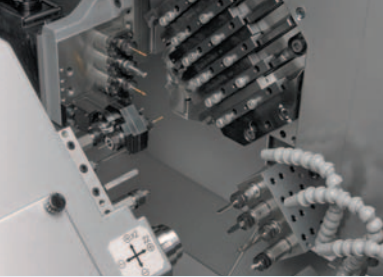


Cincom

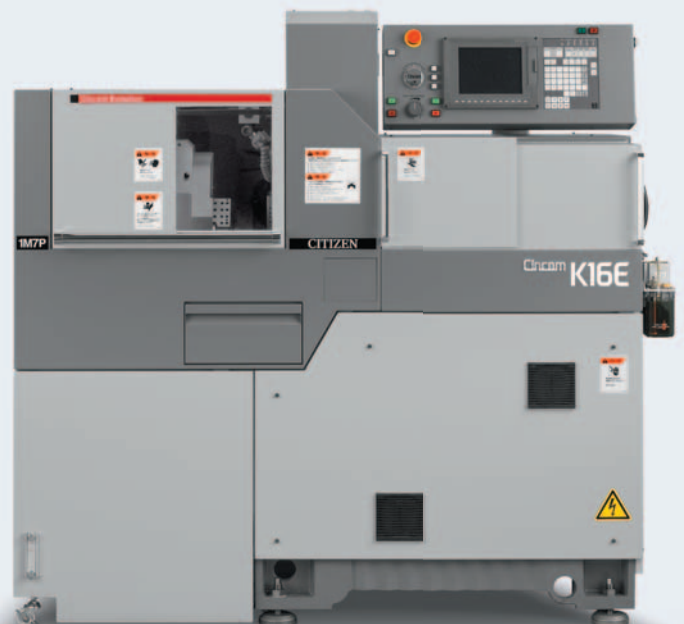


Cincom Evolution Line

Sliding Headstock Type Automatic CNC Lathe

K16E

K



Efficient Production – Impressive Value

Cincom Evolution line from Citizen

Introducing the K16E – 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 tooling layout

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

Now with 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 Evolution Line

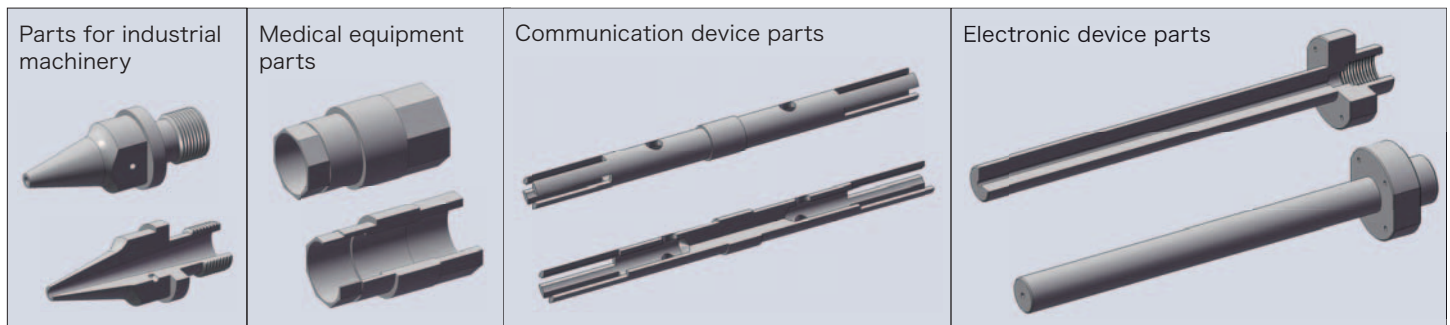
High speed spindle

15,000 rpm main spindle is standard

Improved back spindle torque

The back spindle has improved torque at low rpm

K16E Workpiece Examples



Further reductions in cycle times

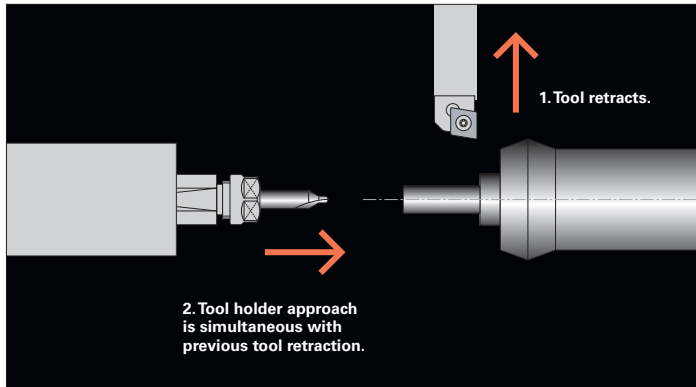
Cincom Control cuts non-cutting time to a minimum

Cincom Control

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

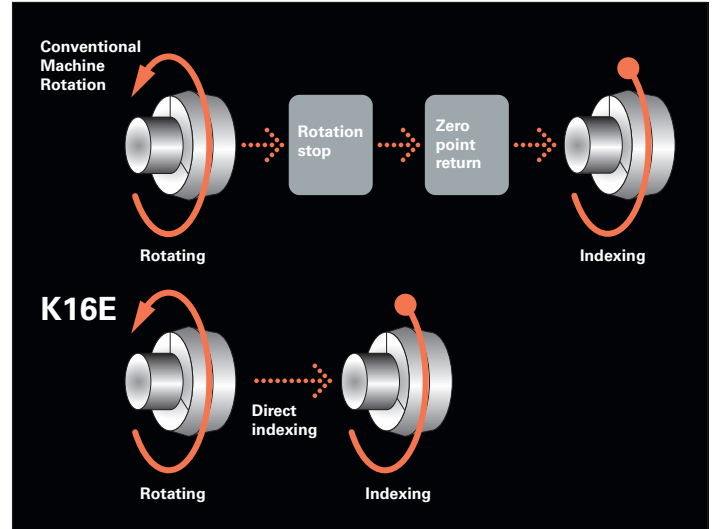
Tool Overlap Function

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



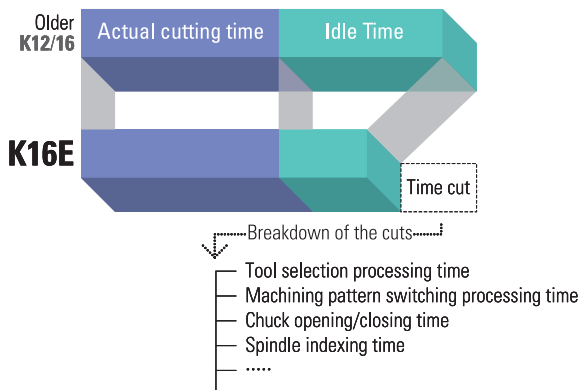
Direct Spindle Indexing

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.



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.

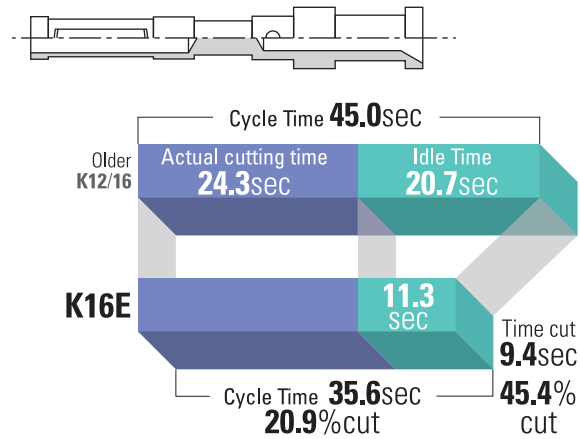
Chuck opening/closing time

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

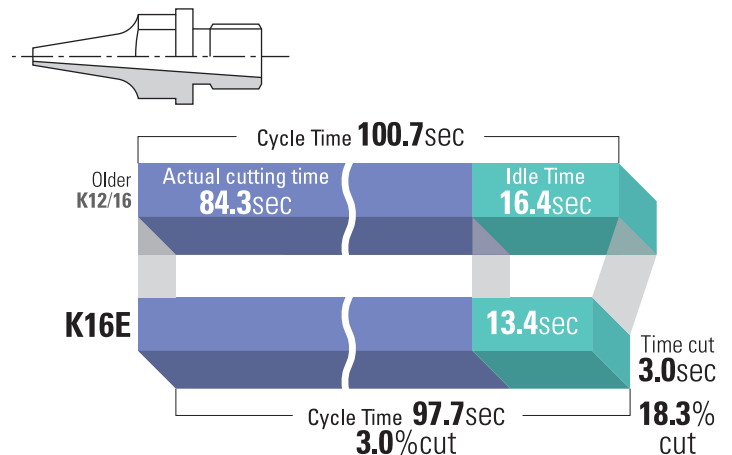
Spindle indexing time

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

Sample work 1



Sample work 2



* These are examples for 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

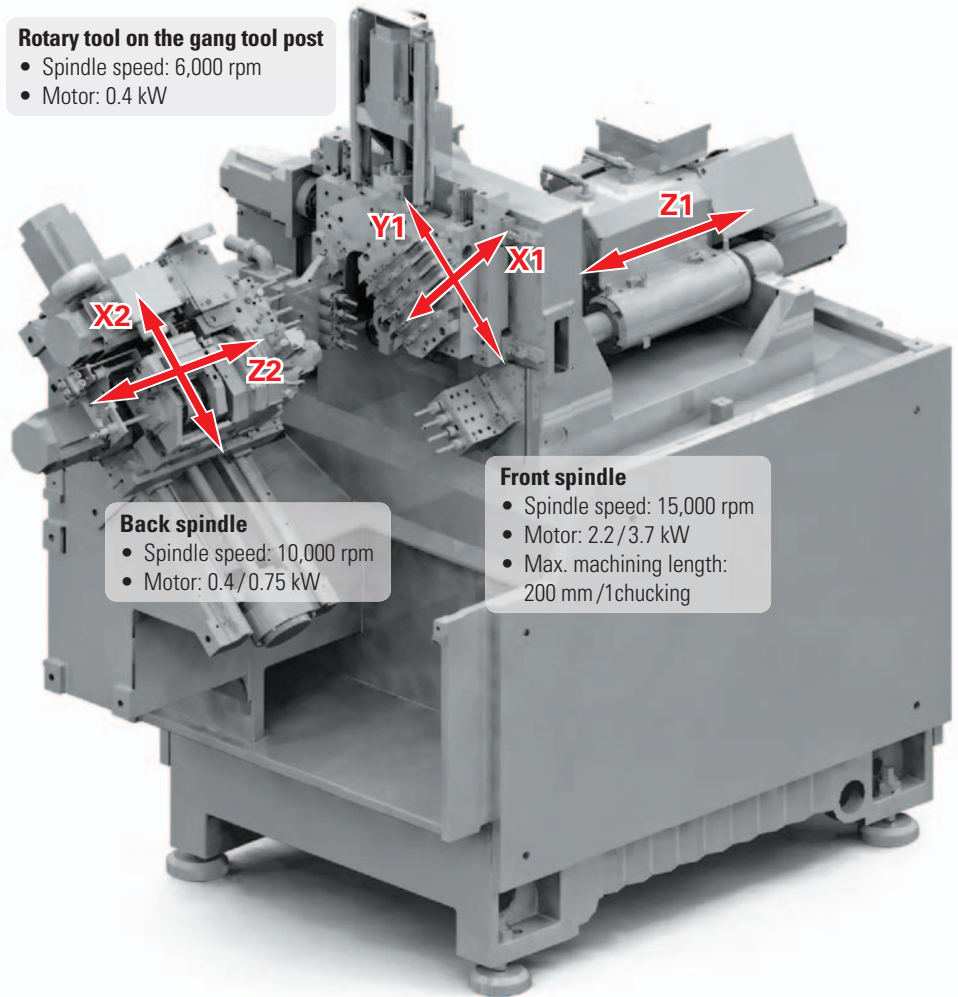
Mixed production makes high demands on the flexibility, performance and efficiency of a machine. The Cincom K series proves its worth in every aspect. Its particular strength lies in the production of high-accuracy complex parts up to 16 mm diameter in small to medium batch sizes. Next to short set-up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

Rotary tool on the gang tool post

- Spindle speed: 6,000 rpm
- Motor: 0.4 kW



Back spindle

- Spindle speed: 10,000 rpm
- Motor: 0.4/0.75 kW

Front spindle

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

2-station both face drilling spindle GSE2507 (optional)

Face drilling spindle GSE2607 (optional)

Cross milling spindle GSC807

Front 4 tools holder U121B (ø19.05 mm)

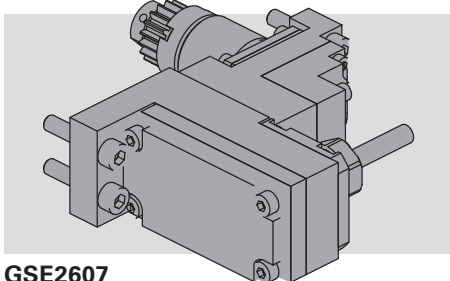
Back rotary tool unit U152B

Milling spindle GSC1107

Slitting spindle GSS1430 (optional)

Wide range of tooling and accessories

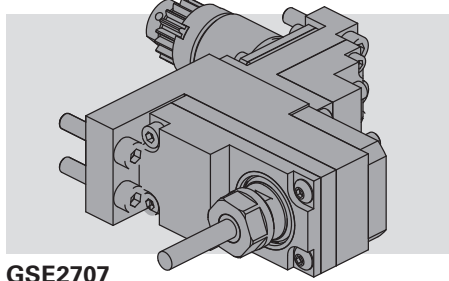
Outstanding versatility



GSE2607

Front end-face drilling spindle

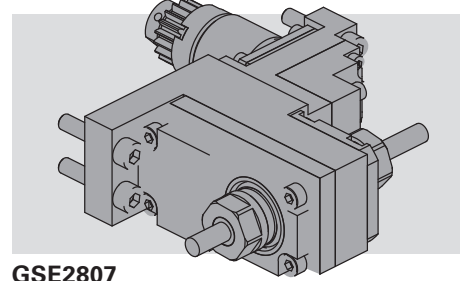
Used for eccentric drilling process to end face. This spindle can be mounted on T12 to T14. When one spindle is mounted, another spindle cannot be mounted at an adjacent station. Chuck type: ER11



GSE2707

Back end-face drilling spindle

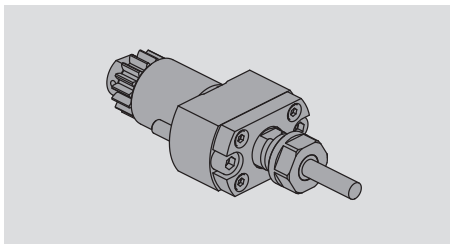
Used for eccentric drilling process to end face. This spindle can be mounted on T12 to T14. When one spindle is mounted, another spindle cannot be mounted at an adjacent station. Chuck type: ER11



GSE2807

Both-end drilling spindle

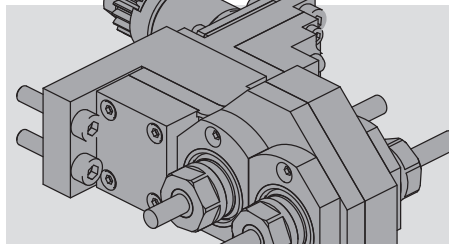
Used for eccentric drilling process to end face. This spindle can be mounted on T12 to T14. When one spindle is mounted, another spindle cannot be mounted at an adjacent station. Chuck type: ER11



GSC807

Cross-drilling spindle

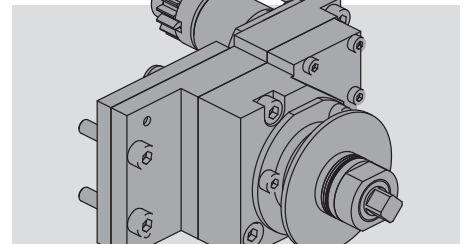
Used for cross drilling and D-cutting. Up to 4 spindles can be mounted on T11 to T14 in standard configuration. Chuck type: ER11



GSE2507

Double both-end spindle

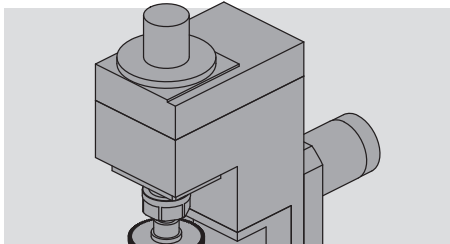
Used for eccentric drilling process to end face. This spindle can be mounted on T14 only. Chuck type: ER11



GSS950

Slitting spindle

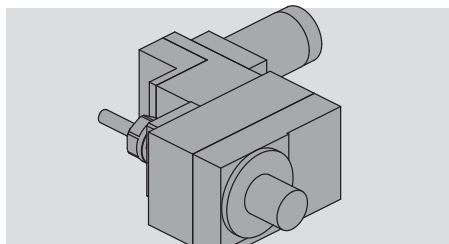
Used for slitting process. This spindle can be mounted on T13 only. Maximum cutter size is 50 mm in diameter. GSS950: $\varnothing 50 \times 15.875 / 12.7$ mm



GSS1430

Back slitting spindle

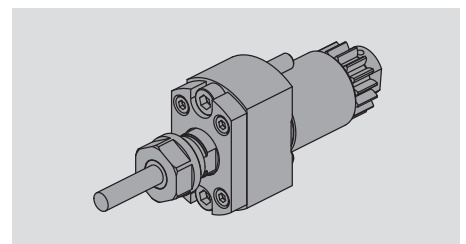
This is for performing back slitting. This spindle is mounted on back rotary tool post. Max. cutter dia.: $\varnothing 30$ mm
Max. collet dia.: $\varnothing 7$ mm
Chuck type: ER11
Spindle speed: max 2700 rpm (5/3 reduction).



GSS1430

Back slitting spindle (mounted in cross direction)

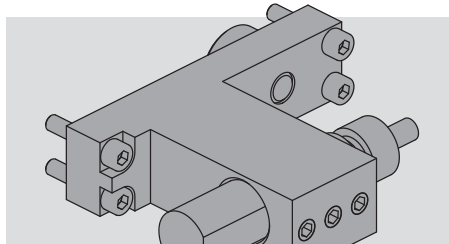
GSS1430 performs cross machining on the workpiece on back spindle. Note: occupies 3 positions of U152B. Chuck type: ER11
Spindle speed: max 2700 rpm



GSC1107

End face drilling spindle

This is for performing drilling and milling on the back end face. This spindle is mounted on back tool post. Max. collet dia.: $\varnothing 7$ mm
Chuck type: ER11



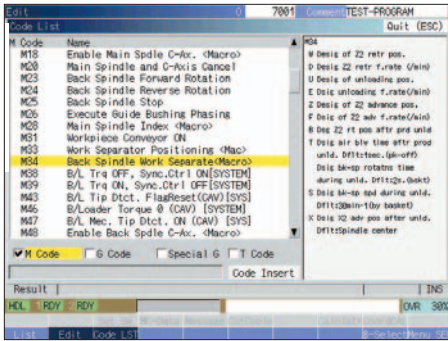
BDF103

1-tool sleeve holder

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

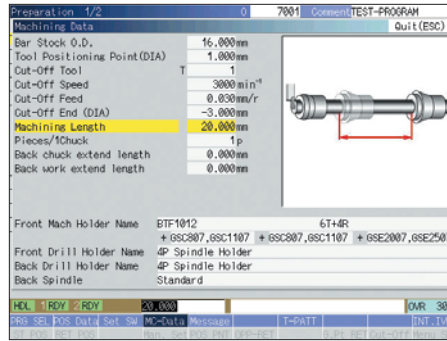
Convenient, Real Time Operation

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



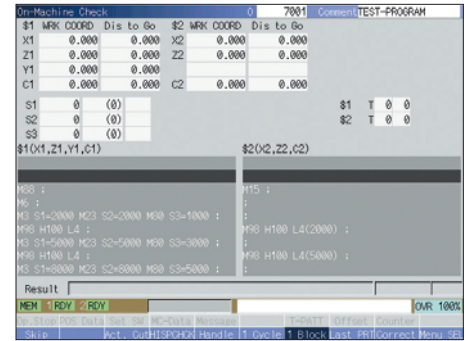
Code List Display

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).



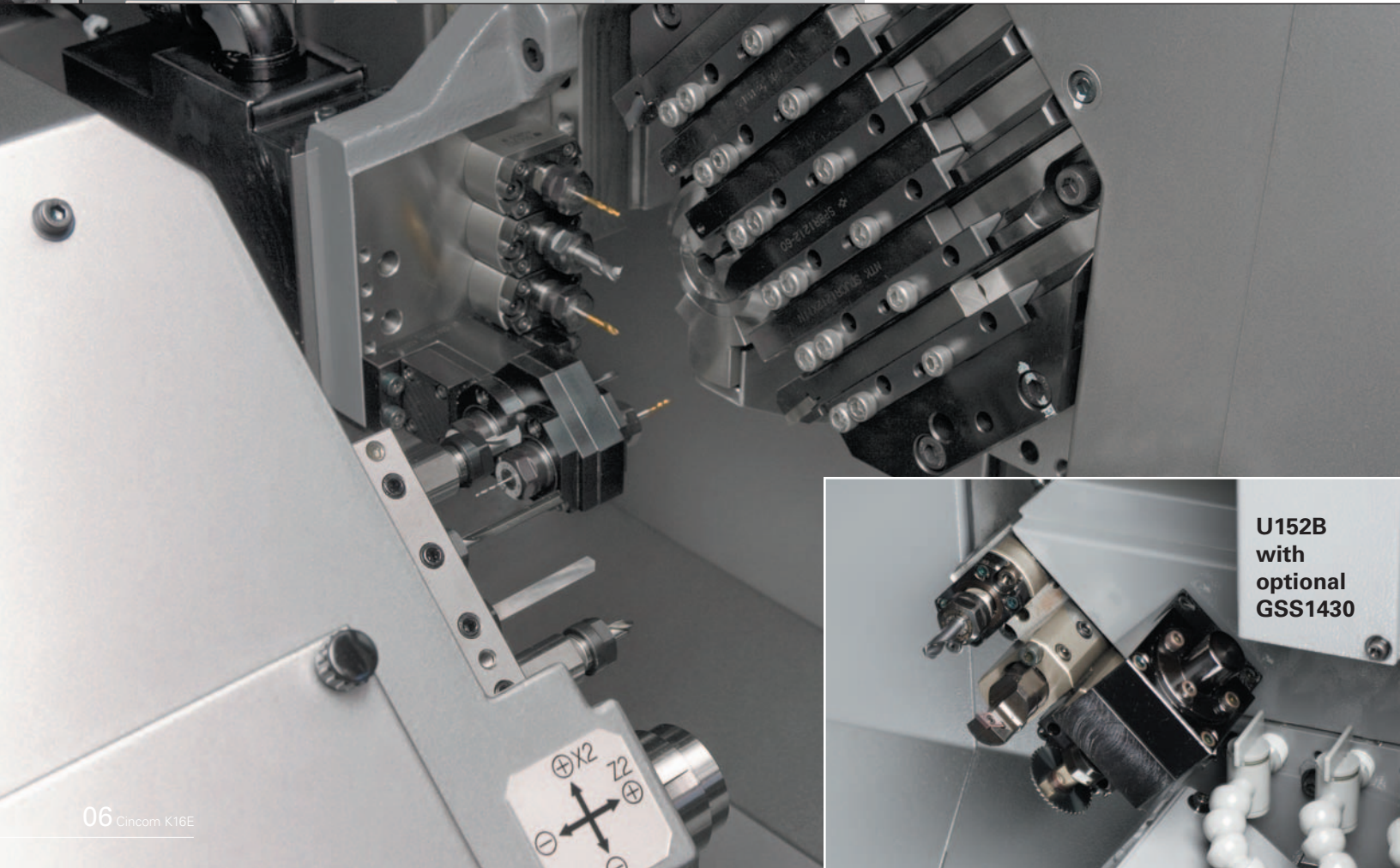
On-machine Program Check Function

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.



High-speed NC Installed

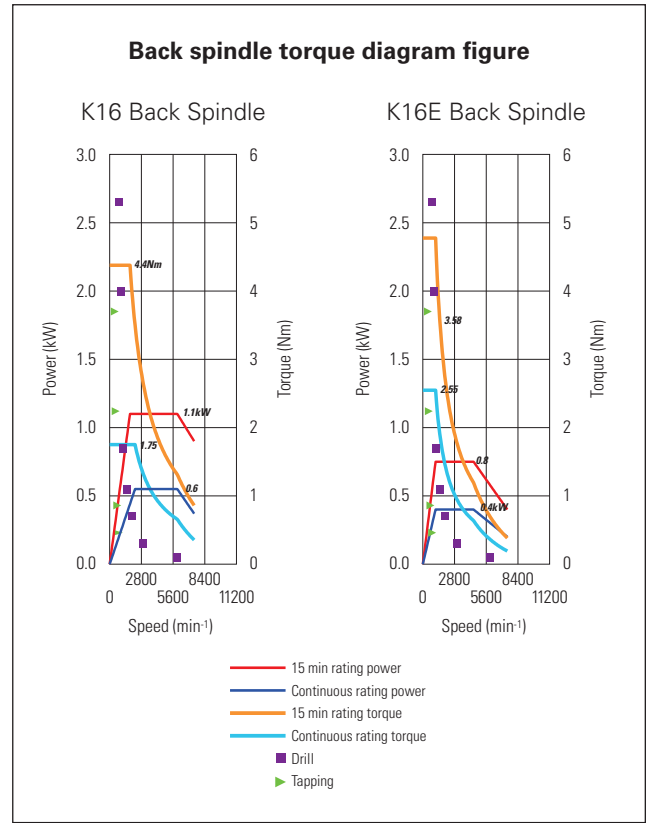
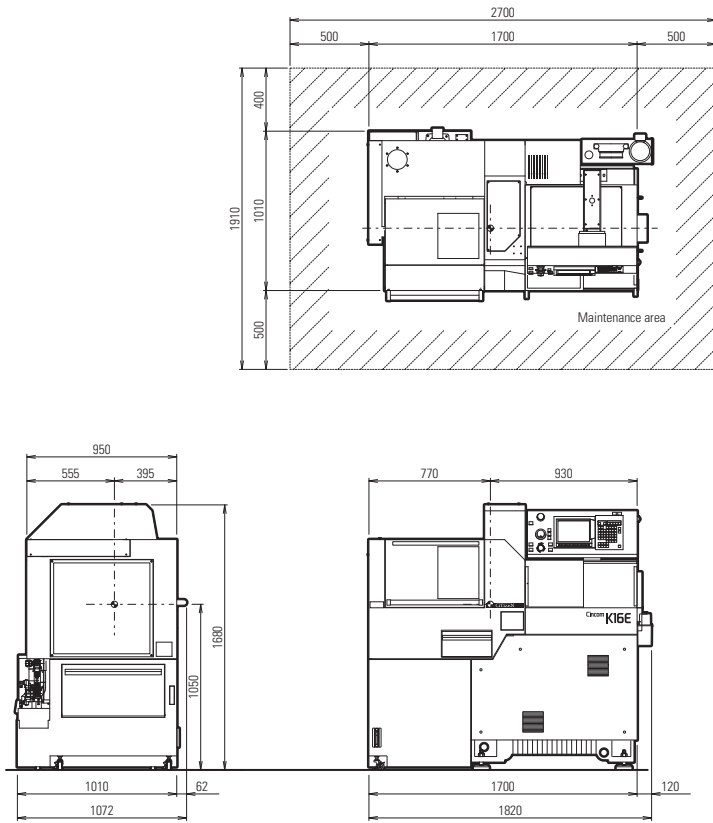
Because the latest CNC unit is used, the start-up time and screen switching times are considerably shorter than on other machines with similar functions. The result is a stress-free operating experience.



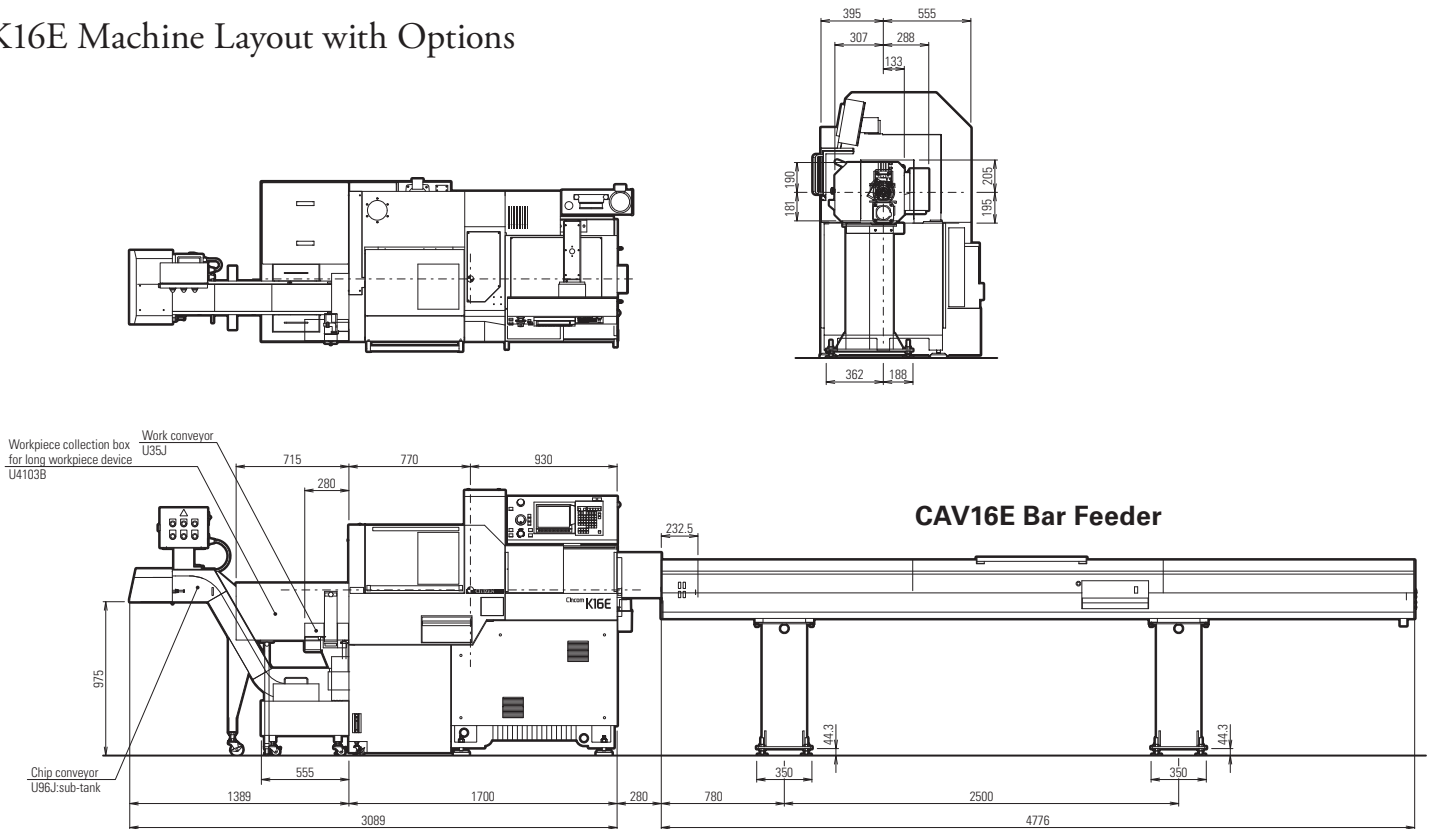
U152B
with
optional
GSS1430

Machine Layout

K16E Standard Layout



K16E Machine Layout with Options



Machine Specifications

Item	K16E VII
Maximum machining diameter (D)	Ø16 mm
Maximum machining length (L)	200 mm/1 chucking
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
Maximum drilling diameter for gang rotary tool	Ø5 mm
Maximum tapping diameter for gang rotary tool	M4
Spindle speed of gang rotary tool (Rating)	6,000 rpm (Rating: 4,500 rpm)
Maximum chuck diameter of back spindle	Ø16 mm
Maximum protrusion length of back spindle workpiece	40 mm
Maximum protrusion length	80 mm
Maximum drilling diameter for back spindle	Ø6 mm
Maximum tapping diameter for back spindle	M5
Back spindle speed	10,000 rpm
Maximum drilling diameter for back tool post rotary tool	Ø5 mm
Maximum tapping diameter for back tool post rotary tool	M5
Spindle speed of back tool post rotary tool (Rating)	4,500 rpm (Rating: 3,000 rpm)
Maximum number of tools to be mounted	23
Turning tools on the gang tool post	6~7
Cross rotary tools	4~8
Rotary tools for front drilling	4
Tools for front drilling	3~4
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	24 m/min
Z1, X2 and Z2 axes	32 m/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	1,050 mm
Input power capacity	8 kVA
Air pressure and air flow rate for pneumatic devices	0.5 MPa · 70 NI/min
Weight	2,200 kg

Main standard accessories

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

Optional accessories

Fixed guide bushing device
 Long workpiece device
 Dedicated magazine barfeeder
 Cut-off tool breakage detector
 Workpiece conveyor
 Chip conveyor
 Coolant flow-rate detecting device
 Back spindle 15 degree indexing (with mechanical lock pin)
 Signal lamp
 Work light

Standard NC functions

8.4" color LCD
 8-bit B-code function
 Canned cycle for threading
 Chamfer/Corner rounding function
 Constant surface speed control (main & back)
 Continuous threading cycle
 Inch/metric conversion
 Multiple repetitive cycle
 Number of tool offset (40 pairs)
 Program memory (80m tape length)
 Single point threading
 Spindle speed fluctuation detection
 Tool breakage detector (spindle speed check)
 Tool nose radius compensation
 Main/back spindle synchronization
 C-axis control (main)
 C-axis control (back)
 Canned cycles for drilling
 User macro
 Milling interpolation
 Polygon turning function
 Hobbing function
 Synchronous tapping
 Differential speed tap function option
 Tool Life Management I
 Tool Life Management II
 Sub inch designation (min. increment 0.00001")
 Helical interpolation
 Slant helical interpolation
 Circular thread cutting
 Variable lead thread cutting
 Geometric command function
 Synchronous tapping phasing function
 External memory running

Optional NC Functions

Program memory capacity 160m/320m/600m
 Network I/O function
 Tool offset 80 pairs

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