Cincom

Cincom Evolution Line

Sliding Headstock Type Automatic CNC Lathe

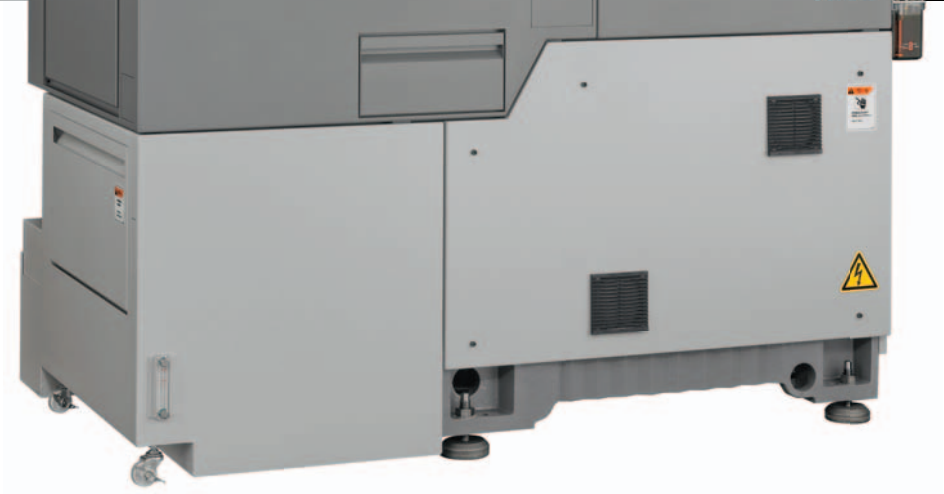
K16E

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

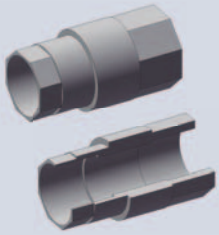
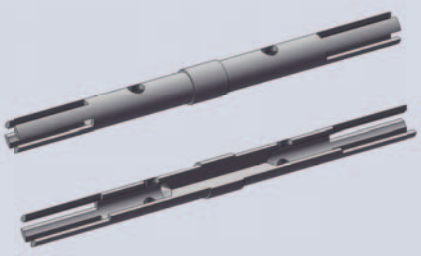
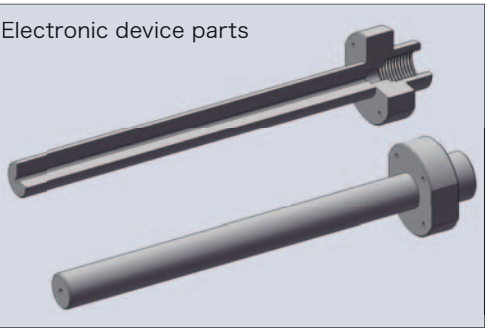
Citizen's unique Cincom Control cuts non-cutting time to a minimum
Citizen's dynamic software development leads the Swiss type/sliding head sector

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

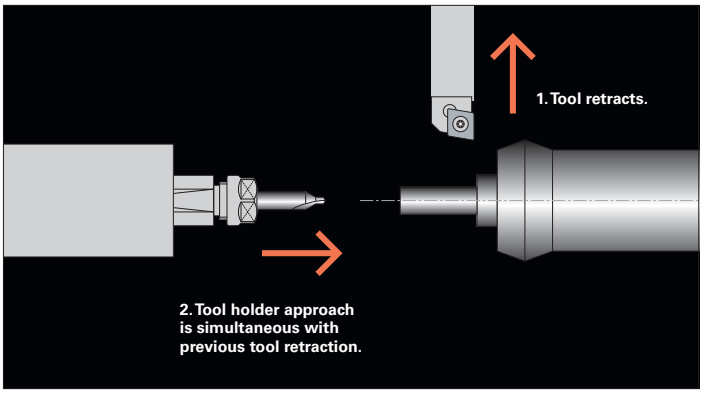
Parts for industrial machinery	Medical equipment parts	Communication device parts	Electronic device parts
			

Further reductions in cycle times

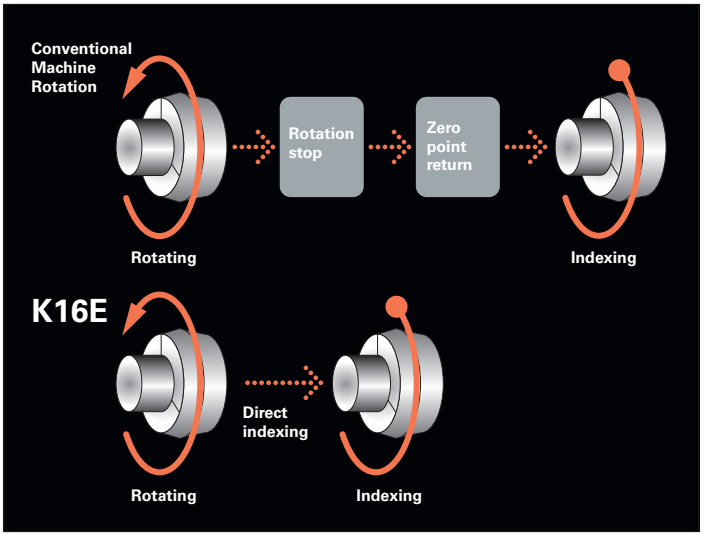
Cincom Control cuts non-cutting time to a minimum

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.

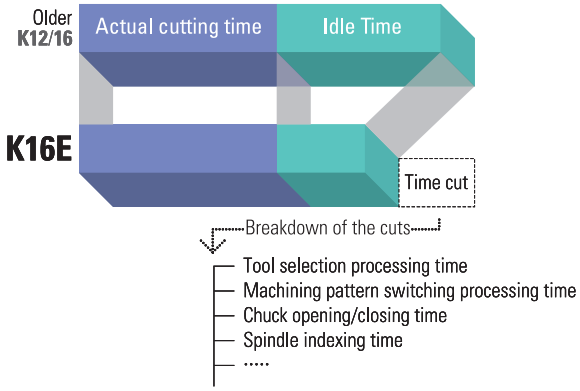


Direct Spindle Indexing
The direct spindle indexing function significantly reduces spindle indexing time. The spindle decelerates directly into the required index position, eliminating the time taken to stop, reference and index.



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.



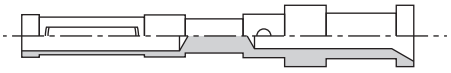
Example targets for idle time cuts

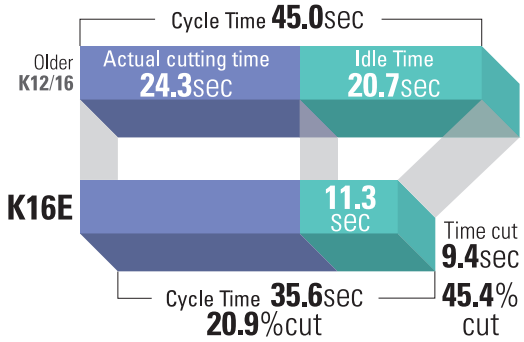
Tool selection/machining pattern switching processing time
The processing speed in operations where a tool is called by a command such as T01* or operations where a machining pattern is declared by a command such as G610, has been speeded up by installing the latest NC unit and reviewing the macro processing.

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

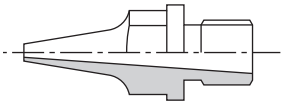
Spindle indexing time
Direct spindle indexing operation controlled by Cincom Control has been speeded up by the installation of the latest NC unit.

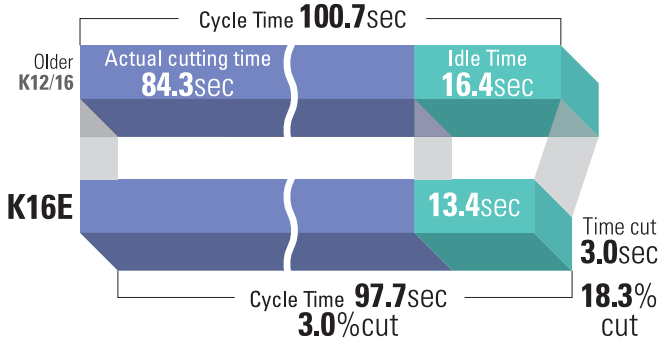
■ Sample work 1





■ 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.

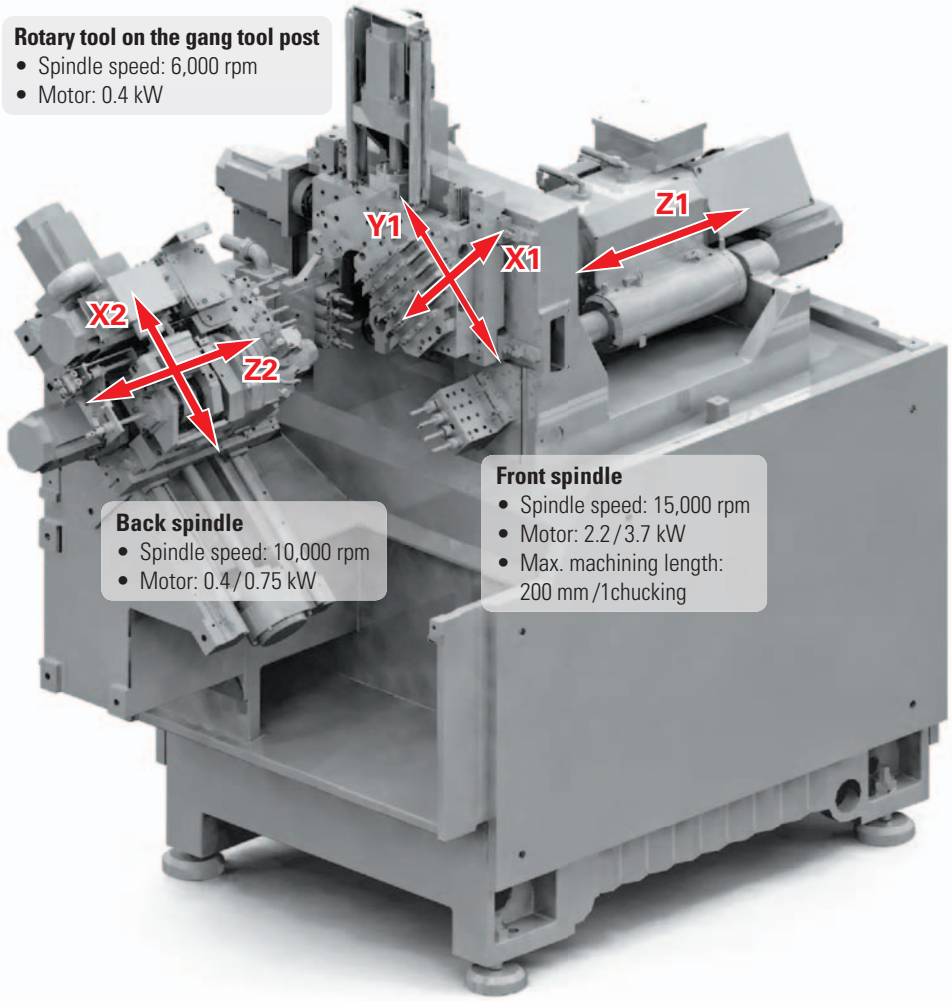
Efficient, fast and highly productive

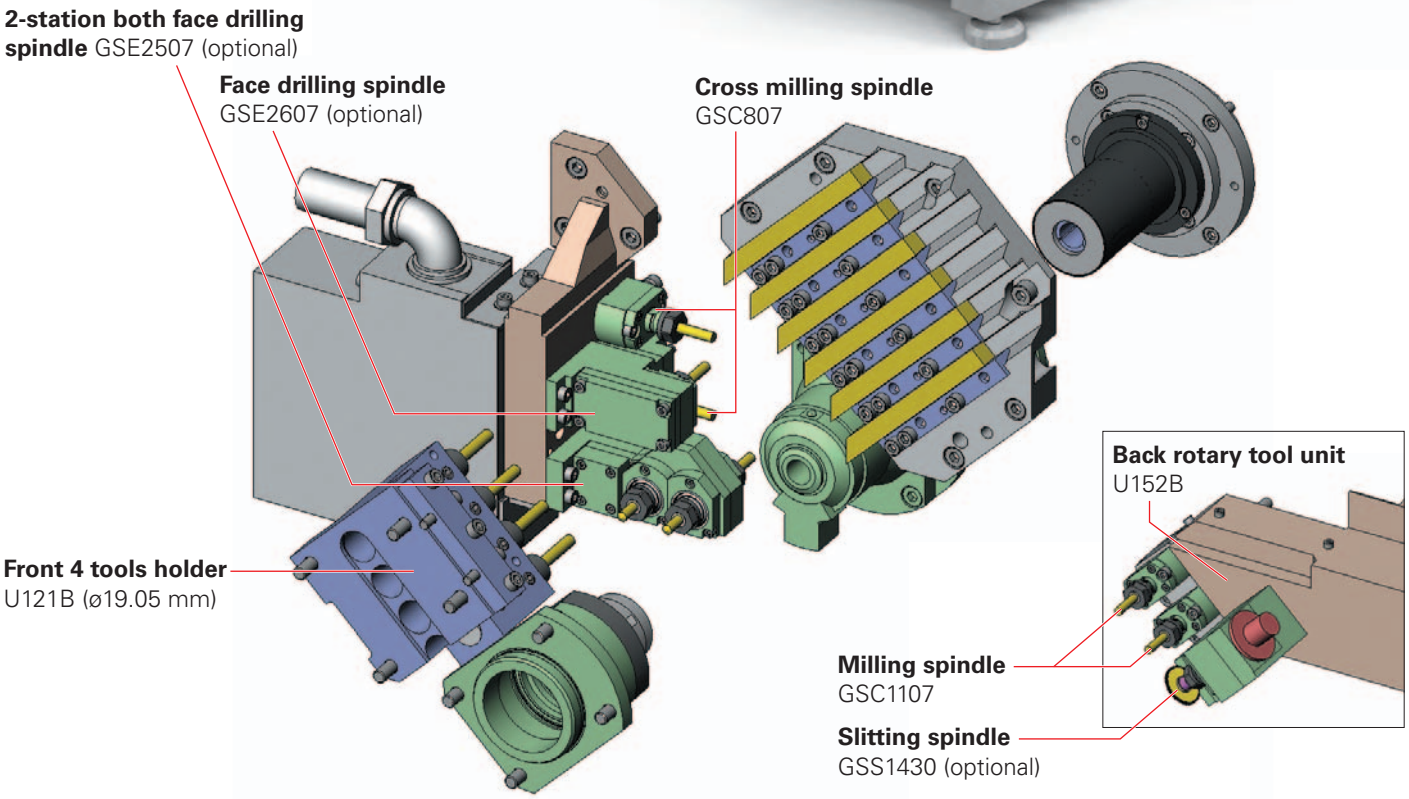
Covers wide range of complex machining needs and allows selection of the machine configuration to suit your applications

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.

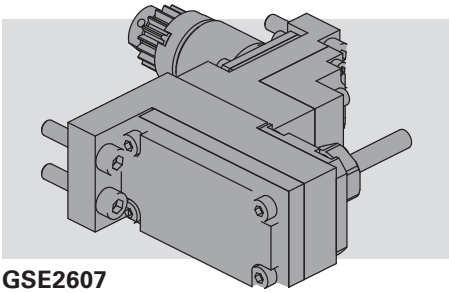
Citizen's renowned ease-of-use ensures fast set-ups and rapid changeovers.



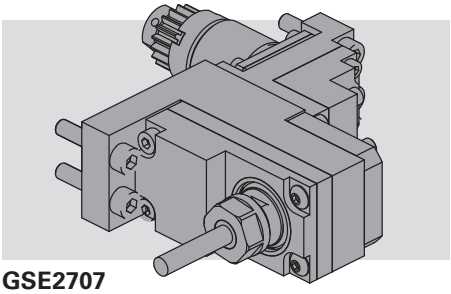


Wide range of tooling and accessories

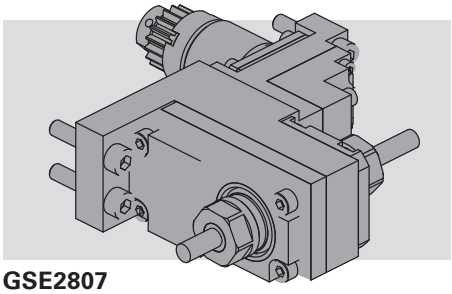
Outstanding versatility



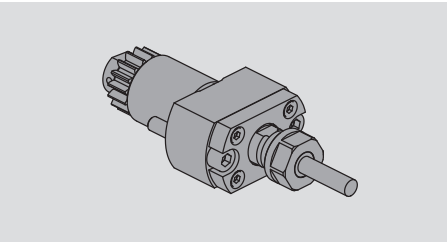
GSE2607
Front end-face drilling spindle
Used for eccentric drilling process to end face. This spindle can be mounted on T12 to T14. When one spindle is mounted, another spindle cannot be mounted at an adjacent station. Chuck type: ER11



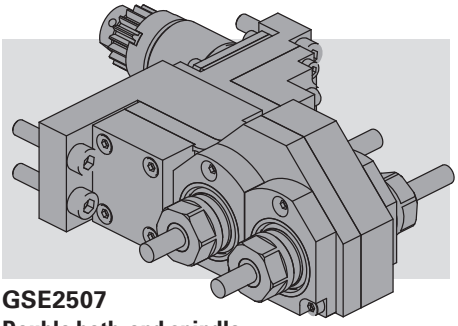
GSE2707
Back end-face drilling spindle
Used for eccentric drilling process to end face. This spindle can be mounted on T12 to T14. When one spindle is mounted, another spindle cannot be mounted at an adjacent station. Chuck type: ER11



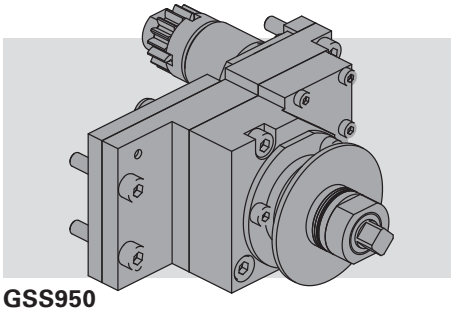
GSE2807
Both-end drilling spindle
Used for eccentric drilling process to end face. This spindle can be mounted on T12 to T14. When one spindle is mounted, another spindle cannot be mounted at an adjacent station. Chuck type: ER11



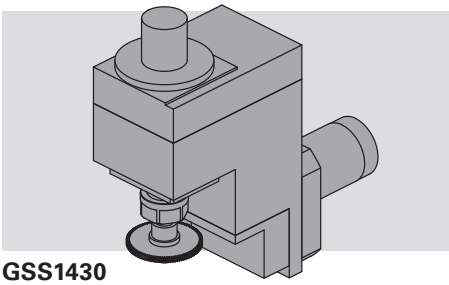
GSC807
Cross-drilling spindle
Used for cross drilling and D-cutting. Up to 4 spindles can be mounted on T11 to T14 in standard configuration.
Chuck type: ER11



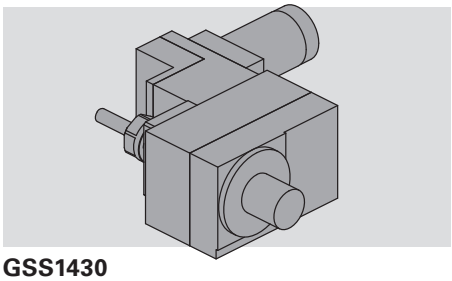
GSE2507
Double both-end spindle
Used for eccentric drilling process to end face. This spindle can be mounted on T14 only. Chuck type: ER11



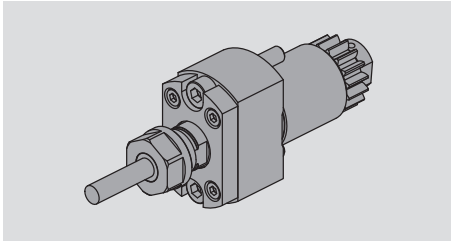
GSS950
Slitting spindle
Used for slitting process. This spindle can be mounted on T13 only. Maximum cutter size is 50 mm in diameter.
GSS950: ⌀50 × 15.875 / 12.7 mm



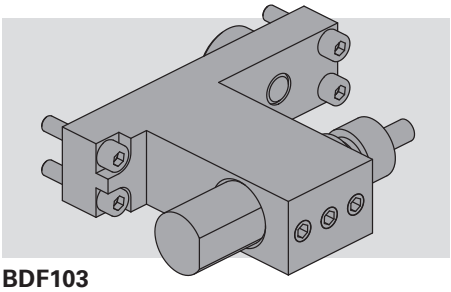
GSS1430
Back slitting spindle
This is for performing back slitting. This spindle is mounted on back rotary tool post.
Max. cutter dia.: ⌀30 mm
Max. collet dia.: ⌀7 mm
Chuck type: ER11
Spindle speed: max 2700 rpm (5/3 reduction).



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



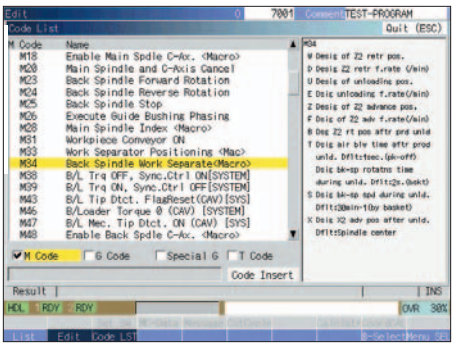
GSC1107
End face drilling spindle
This is for performing drilling and milling on the back end face. This spindle is mounted on back tool post.
Max. collet dia.: ⌀7 mm
Chuck type: ER11



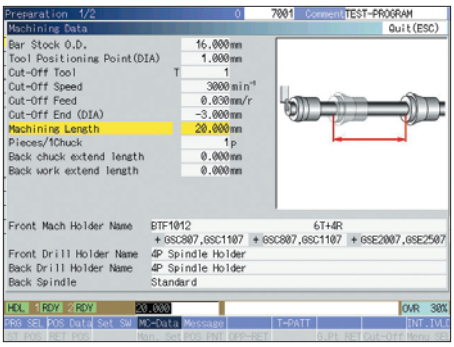
BDF103
1-tool sleeve holder
Used for drilling with drilling sleeve mounted. This holder can be mounted on T12 to T14.
BDF103: ⌀19.05 mm

Convenient, Real Time Operation

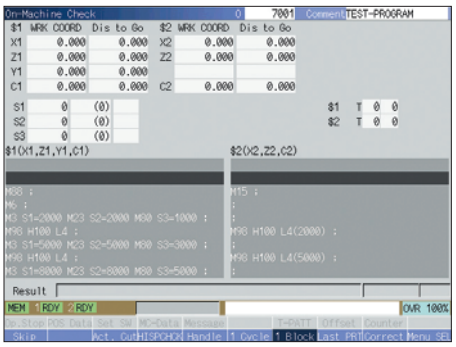
User friendly design displays the screens that are needed, when they are needed



Code List Display
Another aid in programming is a list of G and M codes accompanied by pictorial explanations of their purpose.

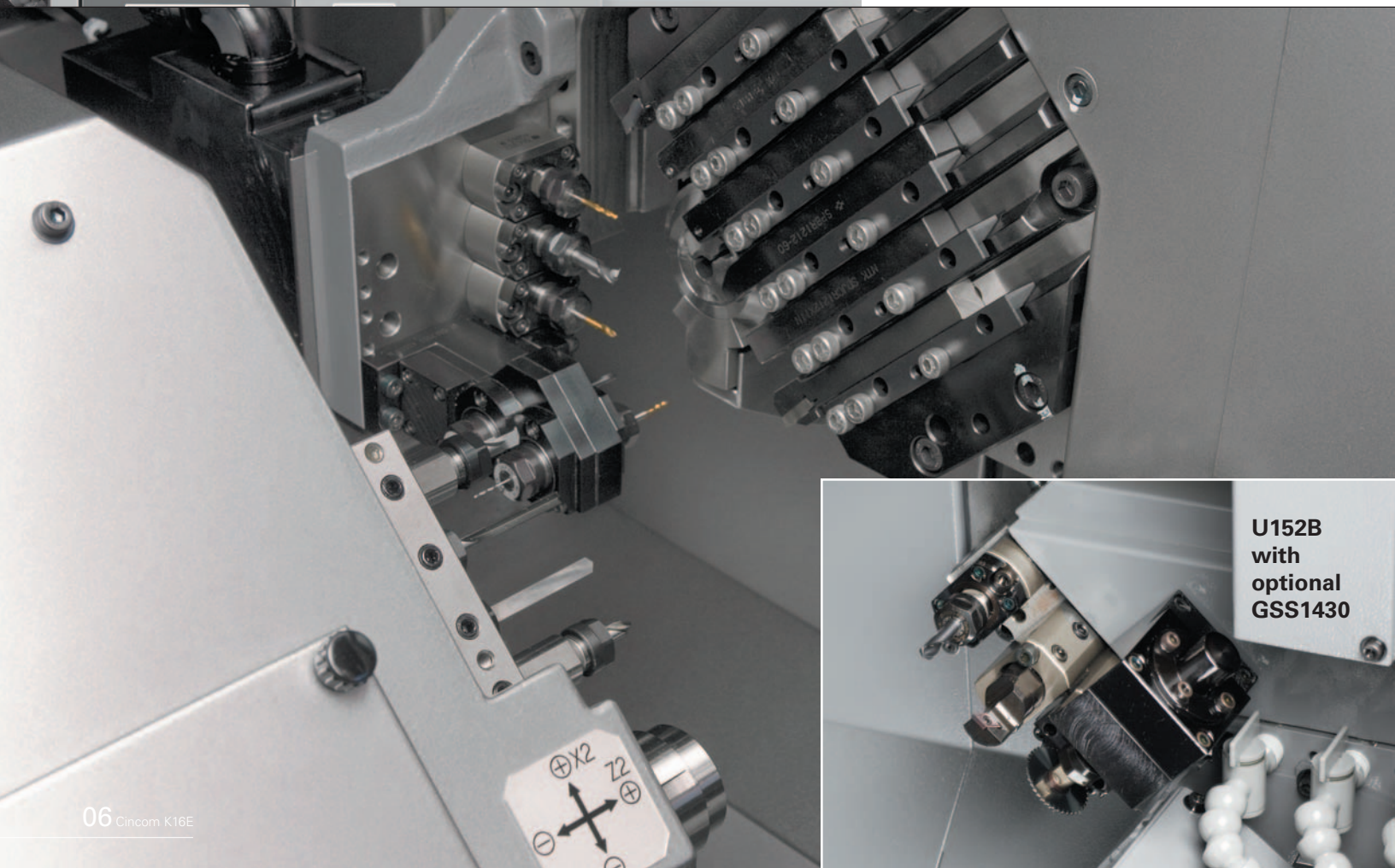


Easy to Understand Illustrations
An illustration is displayed for each item so that it can be immediately visualized (the screen displaying the machining data).



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.

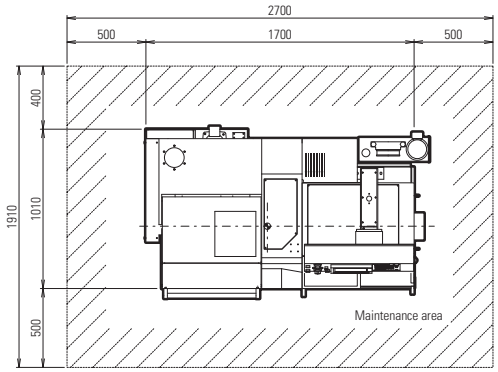
High-speed NC Installed
Because the latest CNC unit is used, the start-up time and screen switching times are considerably shorter than on other machines with similar functions. The result is a stress-free operating experience.

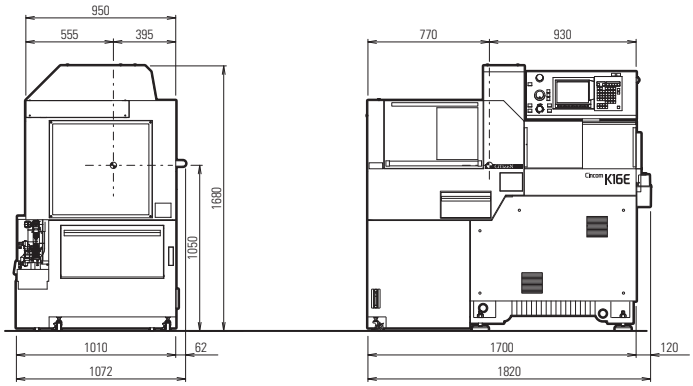


U152B with optional GSS1430

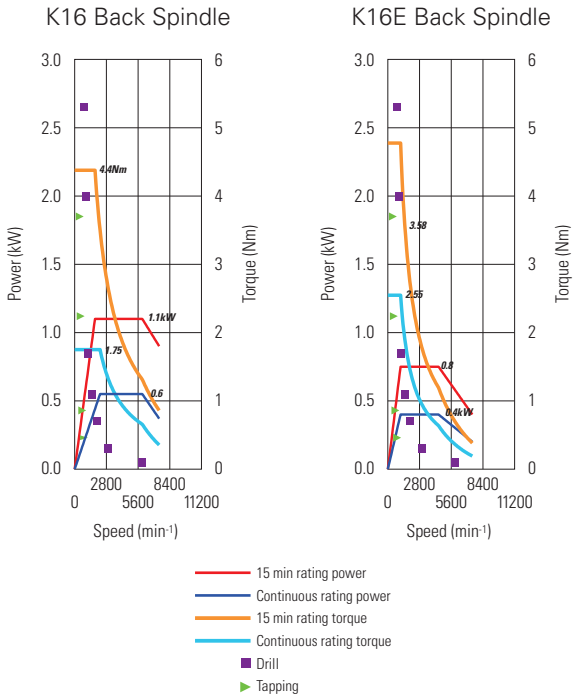
Machine Layout

K16E Standard Layout

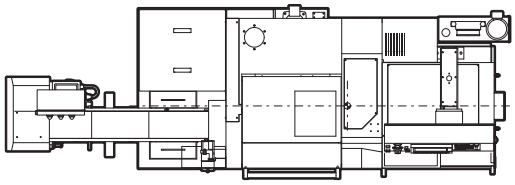


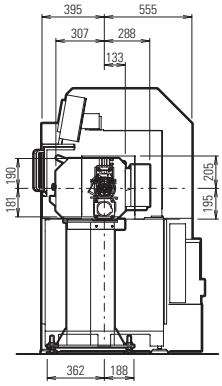


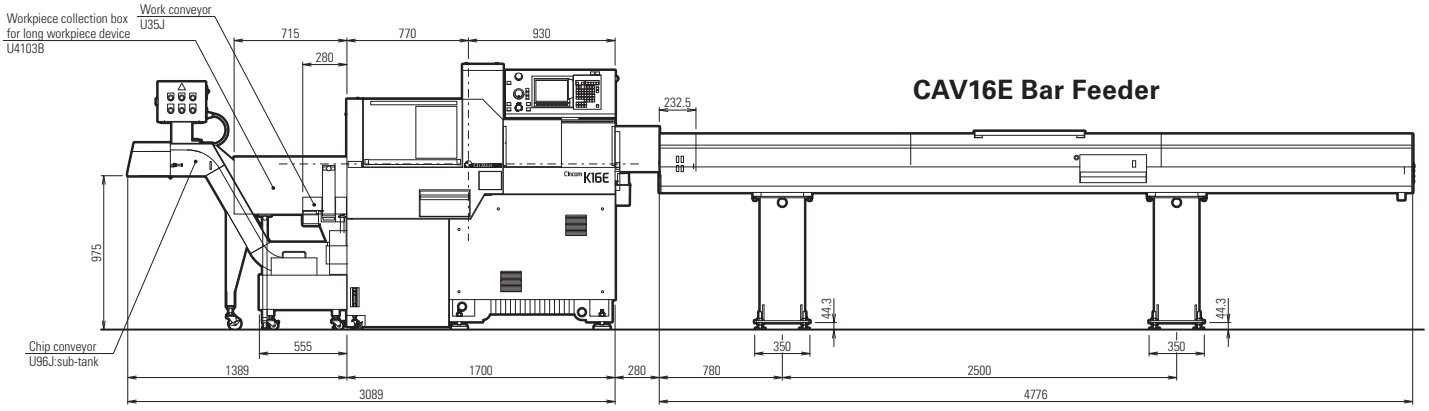
Back spindle torque diagram figure



K16E Machine Layout with Options







CAV16E Bar Feeder

Machine Specifications

Item	K16E VII
Maximum machining diameter (D)	⌀16 mm
Maximum machining length (L)	200 mm/1 chucking
Maximum front drilling diameter	⌀10 mm
Maximum front tapping diameter (tap, die)	M8
Spindle through-hole diameter	⌀20 mm
Main spindle speed	15,000 rpm
Maximum drilling diameter for gang rotary tool	⌀5 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	⌀16 mm
Maximum protrusion length of back spindle workpiece	40 mm
Maximum protrusion length	80 mm
Maximum drilling diameter for back spindle	⌀6 mm
Maximum tapping diameter for back spindle	M5
Back spindle speed	10,000 rpm
Maximum drilling diameter for back tool post rotary tool	⌀5 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	⌀¾"
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 Nl/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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Catalog No. K16E 0910