TOYODA

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https://www.jtekt.co.jp

Type of Machinery: Grinder
Model Number: GE6i

Cat. No. M2006-7E

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Large CNC General Purpose
Cylindrical Grinders

GE6i SERIES

GE6i
GE6i-PRO

JTEKT
JTEKT CORPORATION

JTEKT
Koyo TOYODA

Taking highly accurate and user-friendly grinding to a new level

Large CNC General Purpose Cylindrical Grinders

GE6i

The machine in this photo is GE6i-400.
The machine shown includes optional accessories.

Long-term grinding accuracy

- TOYODA STAT BEARING
- High rigidity, low vibration bed
- High-accuracy feed mechanism
- Heat isolation cover

Simple and easy operation

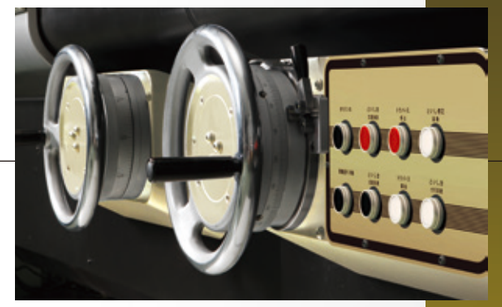
- Displaying craftsmen skill - that is manual intervention
- Improved efficiency of single part grinding
- Conversational controls allow for ease of use
- HMI TOYOPUC-Touch of the IoE* era

Various options

- TOYODA Smart Technology
- Radius crowning traverse grinding cycle
- Heavy Duty 1,000kg

*Rather than "IoT", JTEKT utilizes "IoE" ("Internet of Everything"), in which people, objects, information, and services are interconnected.

Specifications created by professionals, utilizing expert craftsmanship



Large CNC General Purpose Cylindrical Grinders

GE6i·PRO

Pursuing ease of operation - Professional handle

+ Achieves hydraulic machine operability using an NC machine
+ Customizable front operation panel

Enables high grade "monozukuri" that can be achieved by any operator

+ Improved efficiency for single-part grinding
+ Specialized screen display for handle operations

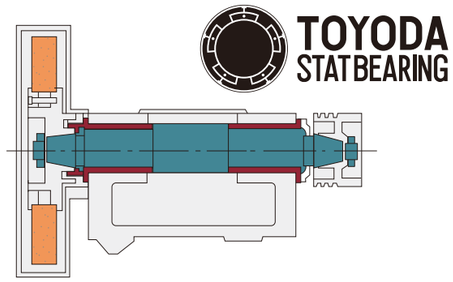
P. 15

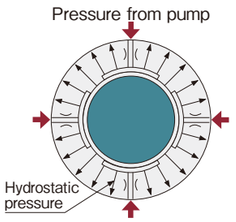
The machine in this photo is GE6i-160PRO.
The machine shown includes optional accessories.

Long-term grinding accuracy

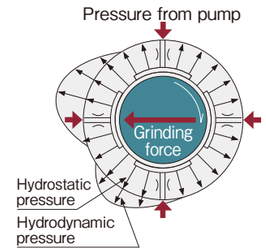
JTEKT's Proprietary TOYODA STAT BEARING

The heart of our wheel spindle is the TOYODA STAT BEARING. This bearing is uniquely designed as a hybrid bearing that combines static and dynamic pressure. Eliminating all metal-to-metal contact in the bearing reduces wear for machining longevity. It also features a highly rigid structure with excellent damping performance, which gives the spindle high rotational accuracy.





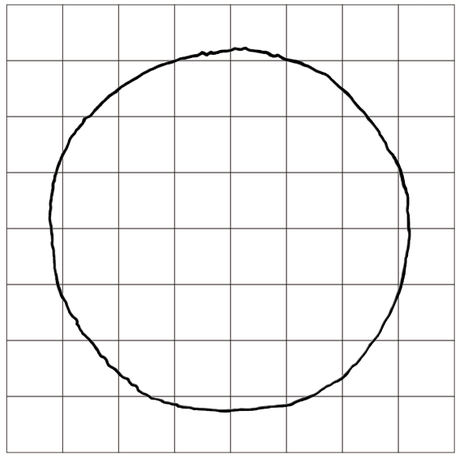
■Spindle at rest
Hydrostatic pressure lifts and holds the wheel spindle firmly at the bearing center position.



■Rotation spindle
Combination of hydrostatic and hydrodynamic pressures improves spindle rigidity and vibration absorbing performance.

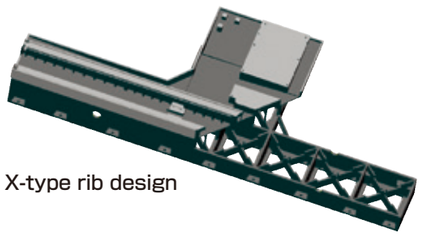
Wheel spindle rotational accuracy
0.016μm

An Example of Lissajou's Figure



High rigidity, low vibration bed

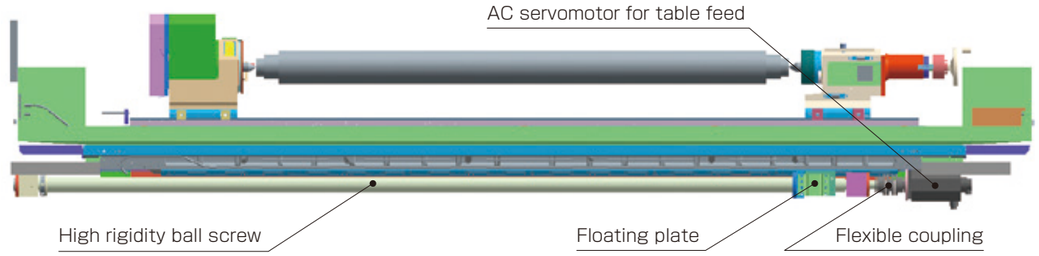
Employs the X type rib structure to achieve a low vibration, high rigidity bed. The bed, which serves as the foundation of the machine, boasts 30% higher rigidity than conventional beds and assures high accurate grinding over extended periods of time.
Full mold process is adopted as an alternative to using the wooden pattern, due to the characteristics of the X-type rib structure.

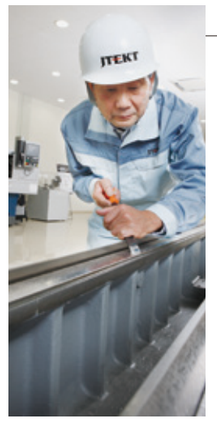


X-type rib design

Unique “floating plate” ballnut ensures repeatability

In order to provide highly accurate grinding over a long period of time, we adopt a JTEKT original type of wheelhead feed mechanism. Accuracy of roundness and cylindricity are improved as the runout of the ball screw are absorbed..



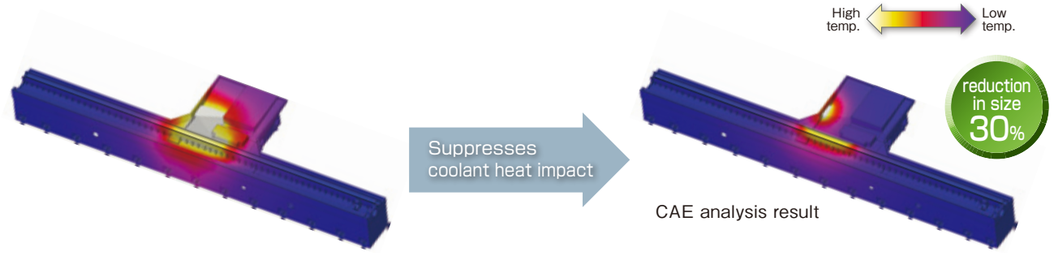


Master hand scraping

So that our customers may use our machine for an extended period of time with peace of mind, our expert technicians perform "scraping" on both the wheelhead slide and table slide.
This achieves high straightness, prevents wear of sliding faces and high-accuracy grinding, as well as enables accuracy to be maintained over the long-term.
Moreover, performing scraping on not only sliding portions, but also the upper side of the table and table mating face achieves stable movement of the spindlehead and tailstock, as well as the long-term stability of table swing.

Heat isolation cover

By adding an isolation cover, a layer of air is created between the bed and the coolant route, which reduces the amount of heat that is transferred to the bed.



Simple and easy operation

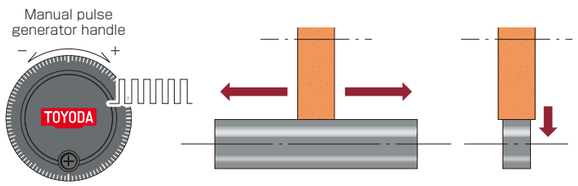
A CNC grinding machine developed to operate with ease, even for individual workpieces. Grinding has been made quick and simple even without the proficiency and skill normally required for grinding.

Displaying craftsmen skill-that is manual intervention

1 MPG (Manual Pulse Generator) intervention during automatic operation

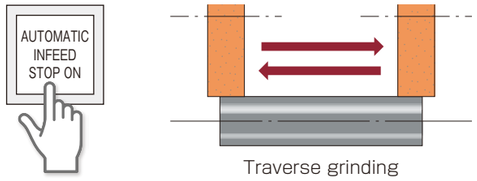
MPG operations are possible even during automatic operation, giving the feel of a manual machine.
For example, by feeding the wheelhead using a handle, the time until contact is made with the workpiece is shortened. (Less dry feed time upon traverse grinding)

A safety function has been adopted for MPG operations. Please see "Safety handle infeed (P. 9)



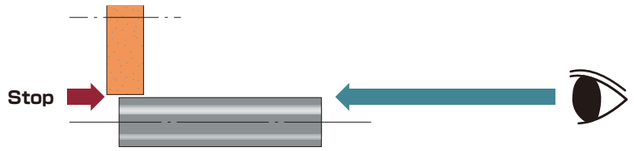
2 Automatic infeed stop

Even during the automatic cycle, it is possible to stop infeed. During traverse grinding, a speak-out (zero infeed) is quickly set without interruption of the traverse motion.
For example, if spark out traverse has begun and the automatic infeed stop button is pressed, the traverse operation is continuously repeated. If the button is pressed again after the workpiece has been completed, the wheelhead will retreat and grinding will end.



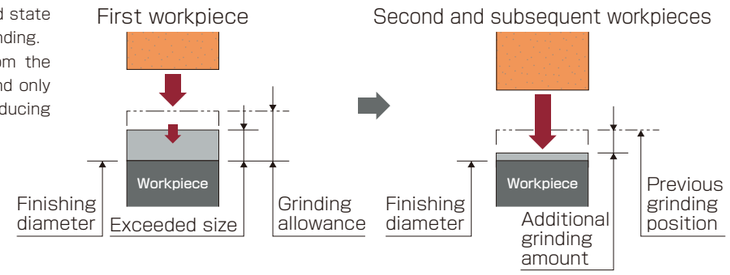
3 Stop before grinding

The machine can be stopped automatically before rough or finish grinding.
When grinding workpieces on several machines, if the machine is stopped before finish grinding is performed, it is possible to check the workpiece before grinding, thus providing peace of mind.



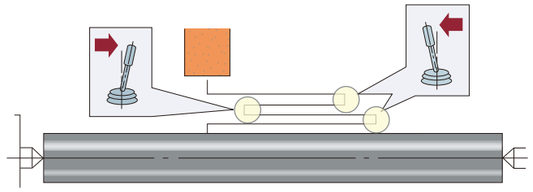
4 Additional grinding

By grinding the workpiece to an oversized state in advance, it is possible to avoid overgrinding.
For additional grinding, the position from the previous grinding is rapidly recovered and only the additional portion is ground, thus reducing dry feed time.



5 Manual table reversing (traverse grinding)

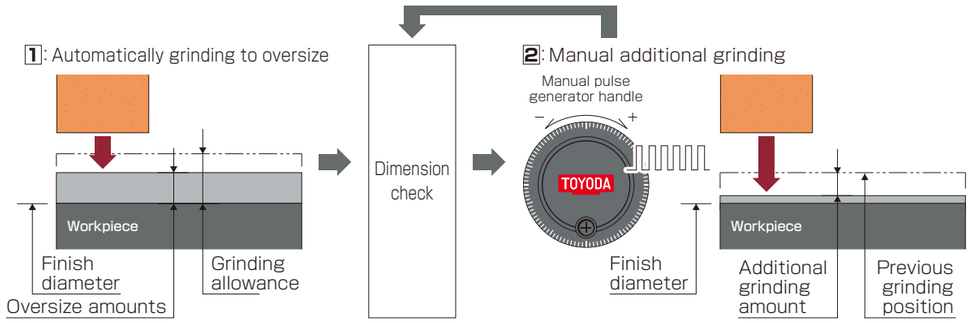
During automatic cycle of traverse grinding, the table can be changed from right advance to left advance by operating the lever.
This reduces the dry feed time until contact with the workpiece is made.
If the operator presses the automatic infeed stop button (page 9, item 2), he can move a lever to traverse to an arbitrary position so that grinding is concentrated on the remaining stock.



Various combinations of manual grinding are possible.

Example:Grinding the remaining stock manually, manual dimension inspection before final finish grinding

4 + 1 Additional grinding + MPG intervention during automatic operation



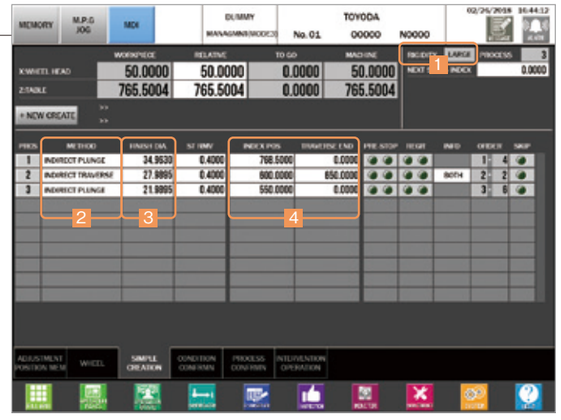
Simple and easy operation

We offer trouble-free operations to customers new to grinding or customers who have switched from hydraulic type general-purpose machines but wish to improve production efficiency by ensuring that accuracy is still easily achieved and the machine is still easy to use.

Improved efficiency of single part grinding

No time-consuming set ups. The grinding conditions are automatically determined with minimal data input.
The CNC can automatically determine grinding conditions that utilize the know-how of JTEKT's grinding specialists.

Up to 10 steps can be entered at a time on one screen.
Achieving simple and easy operation with a basic configuration.



Programming is completed while the first workpiece is ground. The second and subsequent workpieces can be ground automatically.

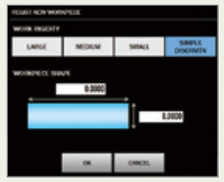
●To grind the following workpiece.

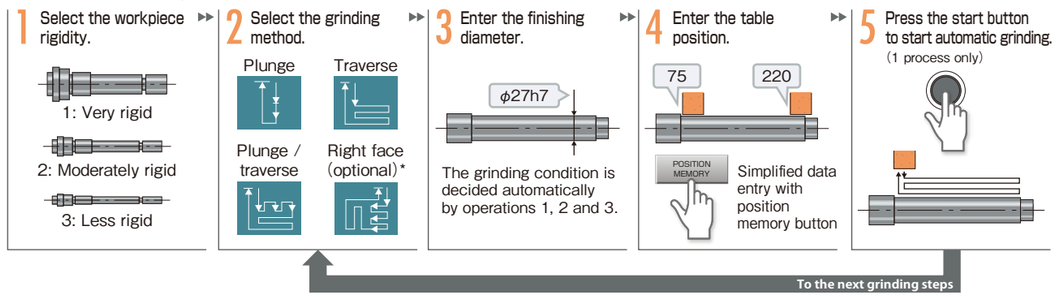
Includes these features:

Automatic judgment of workpiece rigidity

Automatic judgment of rigidity by entering workpiece length and diameter*

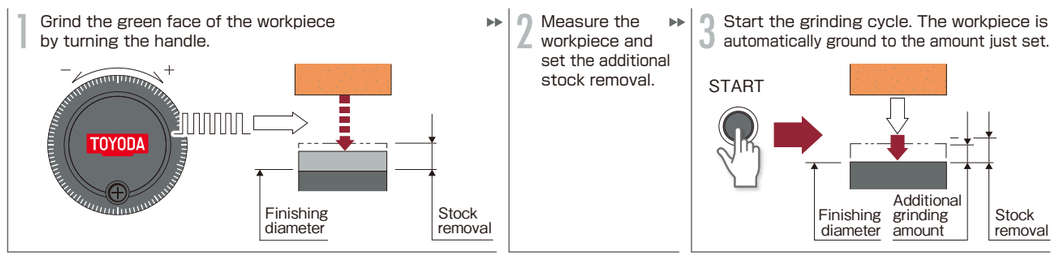
＊Average diameter





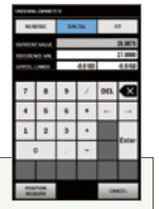
＊This is a right-face grinding cycle (optional) for the plain-head type. For the angular-head type, there is a shoulder grinding cycle. Please refer to "Grinding cycles" (P. 17).

Automatic grinding is possible from the first workpiece with no need of mastering.



Drawing marks can be directly entered as they are!

Fitting marks and dimensional tolerances frequently used in drawing can be entered directly. Entry is completed in a short time without referring to conversion tables or use of a calculator.
(Extended data entry function)



●Dimensional tolerance input

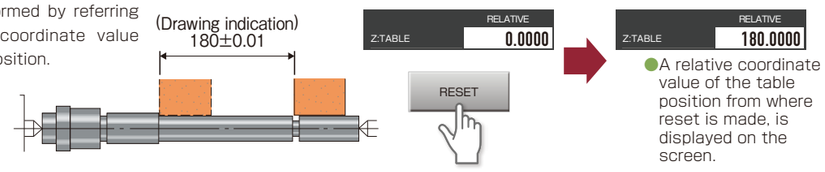
Drawing indication	ϕ27 -0.010 -0.015
Input screen	REFERENCE VAL. 27.0000 / UPPER, LOWER -0.0100 -0.0150

●Fitting mark input

Drawing indication	G, ϕ27h7
Input screen	SETTING VALUE 27h7
NC program	●Automatic grinding is performed by targeting the median of the tolerance. ϕ26.9770

Easy longitudinal sizing with displayed coordinate values

Manual infeed can be performed by referring to the displayed relative coordinate value which can be reset at any position.



●A relative coordinate value of the table position from where reset is made, is displayed on the screen.

Iconized operation buttons

Operations can be easily recognized through iconized operation buttons.

Main menu screen

Please refer to TOYOPUC-Touch (P. 13, P. 14) for details.

Perfected guidance function

Setup change, maintenance details, input data explanation, etc. can be easily understood from the graphical operation screen, and operations can be carried out smoothly.

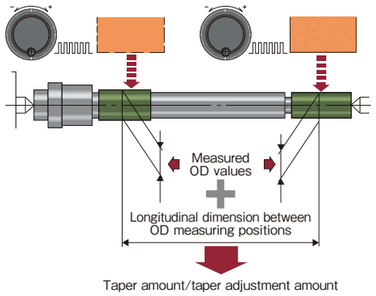
Position memory screen

Simple and easy operation

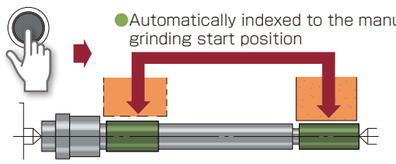
In pursuit of 'user-friendliness'

Easy taper adjustment

By entering measured values, the taper adjustment amount is displayed on the screen.

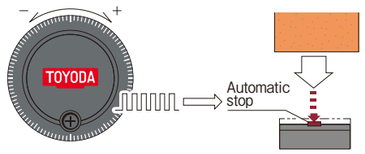


As automatic indexing is performed for the second and subsequent workpieces, no MGP interruption is required.



Safety handle infeed

In the case of MPG infeed, the wheelhead automatically stops if fed to a prior set position. The machine can be operated safely even if by a beginner. (software positive stop function)



Easy size compensation

Entry by pressing a single button avoids grinding data entry mistakes. (Extended entry function)

●To make the finishing diameter greater by 2μm:

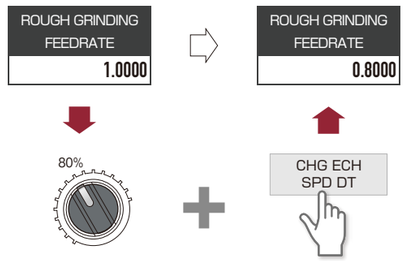
Move the cursor to the data you want to modify and press:

ADD (twice)

Straight forward data entry without calculations

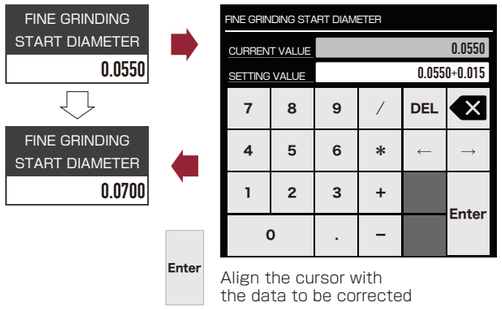
Speed data can be entered the way the operator desires, using the override selector switch.
(Speed data proportional compensation function)

●To reduce the rough grinding speed slightly:

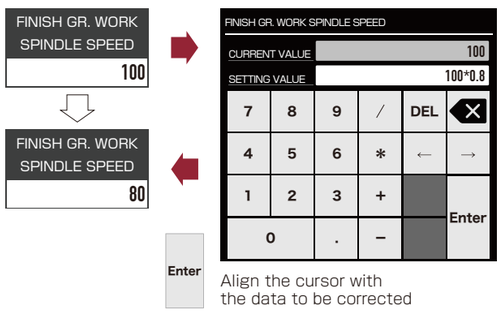


Addition, subtraction, multiplication and division are possible during data entry / modification without requiring a calculator. (Extended entry function)

●To make the fine grinding start position greater by ϕ0.015mm.:



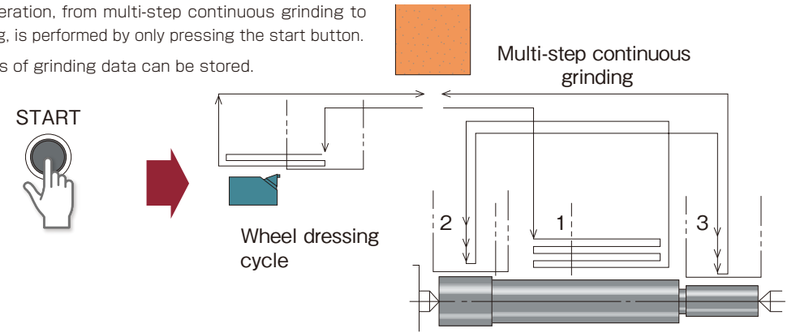
●To reduce the fine grinding workpiece speed slightly:



More efficient multi-step continuous grinding

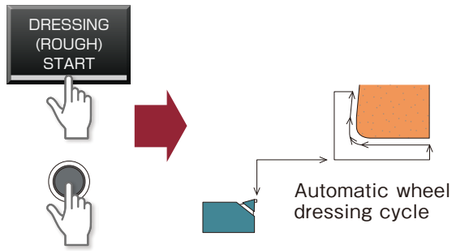
Automatic operation, from multi-step continuous grinding to wheel dressing, is performed by only pressing the start button.

Up to 64 kinds of grinding data can be stored.



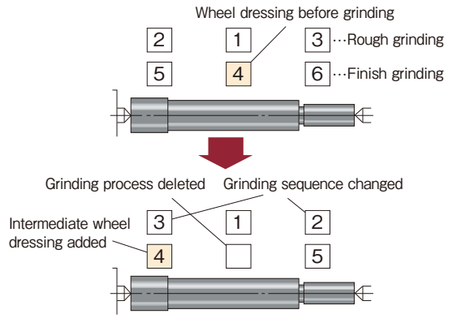
Wheel dressing performed by simplified operation

No set-up operations, such as diamond holder mounting/removal, wheelhead/table positioning, or table speed adjustment-required.



Flexibility for process changes

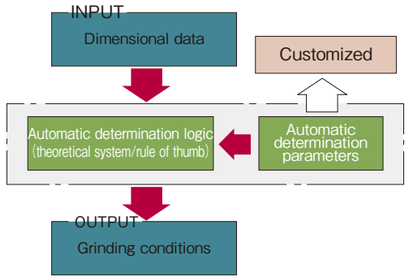
Changes such as grinding sequence adding/deleting intermediate wheel dressing are simple and easy.



Operator's experience reflected in the automatic determination system

Parameters for automatic determination can be modified based on the operator's know-how.

Simplified automatic determination system



Data batch backup function

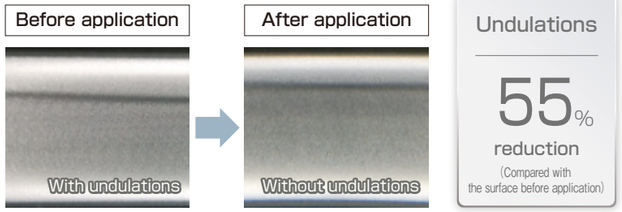
Allows the batch saving of all data, including grinding conditions, compensation data, parameters, etc. This function can also be of use in fault analysis of machine stoppage.

Various options

TOYODA Smart Technology　Surface Quality Improvement

Option

Just input the adjustment range for the workpiece spindle's rotation speed. Doing so will automatically determine the processing conditions, and improve the surface quality.



Radius crowning traverse grinding cycle

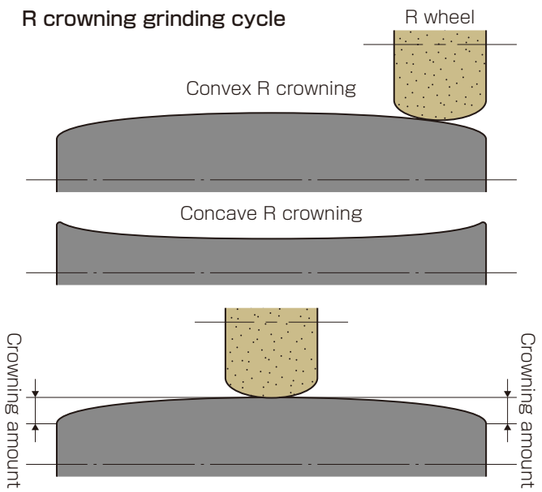
Option

For rolls, etc where crowning is required, a skilled operator with grinding know-how must constantly attend the machine, in some cases sacrificing productivity.

To avoid this, the GE6i features a Radius crowning traverse grinding cycle that makes it possible for Operators of all skill levels to grind a crowning shape by simple input, using the 2-axis CNC function.

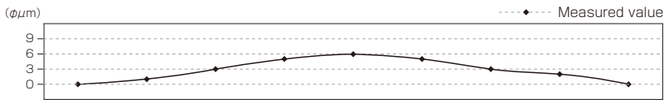
R crowning cycle procedure

①Input the range for which crowning is to be done
②Input crowning amount data
③CNC calculates R crowning grinding data automatically and crowning grinding begins
④Crowning dimensions are measured
⑤Correct crowning amount data to be only the difference between the crowning dimension and the measured value
⑥CNC recalculates R crowning grinding data automatically



Advantages of the crowning cycle

Overall workpiece length	3,500mm
Grinding diameter	φ220mm

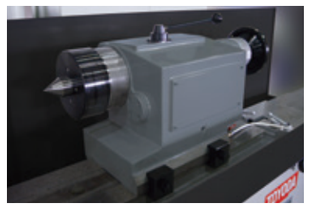


※ Carry out further grinding once completing trial grinding as the machining accuracy achieved by R crowning traverse grinding cycles differs depending on factors such as workpiece shape and heat displacement.

Heavy Duty 1,000kg

Option

We have prepared a heavy duty work head and footstock that can accommodate a workpiece weight of 1,000kg

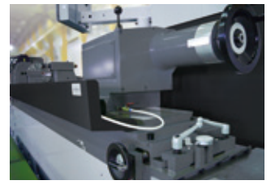


Options further improving ease of use

Using air pressure to simplify work head and footstock movement

Option

The GE6i uses air to aid movement of the work head and footstock and reduce the burden on the operator during set-up changeover. Due to this feature, labor is not only simplified but wear on the table top face is also reduced.



The photo is of a footstock with 1,000kg specifications

Footstock body movement device(rack & pinion type)

Option

The GE6i features a footstock body movement device(rack & pinion type) in order to make movement of the footstock quick and trouble-free at the time of set-up changeover. If the air-assisted footstock movement is used together with these specifications, movement is simplified and table top wear is reduced.

Manual footstock with pushing force adjustment simplification

Option

When grinding a range of work pieces from light(100kg)to heavy(1,000kg), the footstock center force for heavy work pieces is too great for light work pieces. The GE6i features a manual footstock with easily adjustable center pressure force and equipped both with pressure mechanisms for 500kg footstocks and 1,000kg footstocks

Internal grinding unit

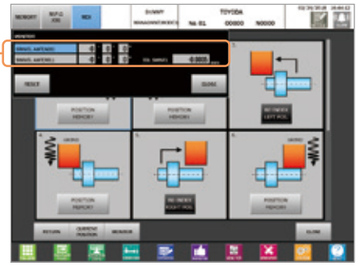
Option

We have prepared an internal grinding unit to make wheelhead attachment, and OD to internal grinding changeover, a breeze. Equipped with a highly-rigid, single-piece spindle, GE6i is also capable of grinding deep holes.

Digital display of taper angle adjustment amount

Option

A sensor has been installed on the swivel table to provide digital display and make it possible to detect the current position of swivel table tilt. This simplifies the setup changeover work due to taper angle difference.



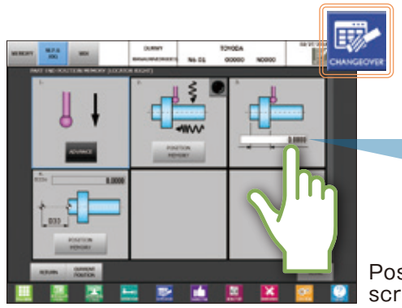
Renewed operability

J-Operate

Visible and effective operation thanks to batch data display

A 25% larger display has made it possible to concentrate information on one screen and display the required key panel when necessary

Operation status screen



Displays keypad window when input is necessary

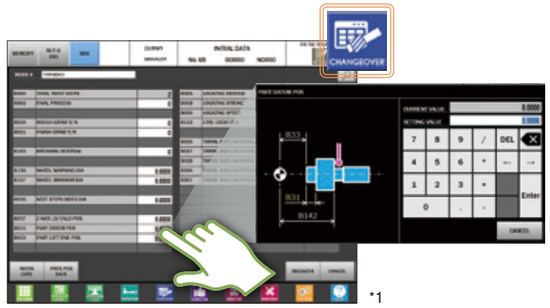
Position memory screen

Realization of simple operation

J-Navigate

Assists work during setting of workpiece data

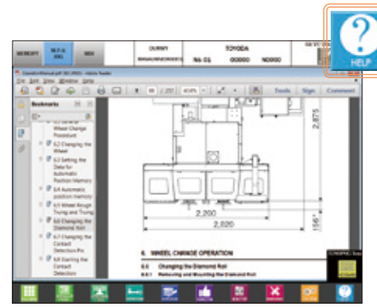
Workpiece data can be edited with an instruction display



*1

Manual display on the operation panel

The manual can be read on the operation screen and a key word search function makes it possible to extract the target information

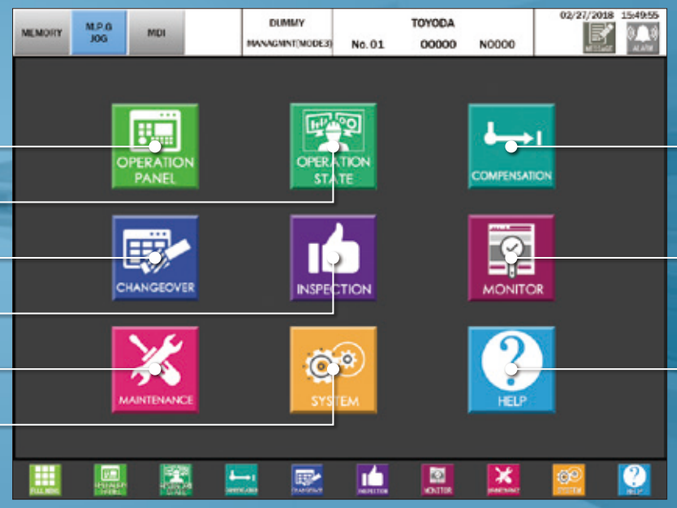


HMI in the IoE era –Simple, safe and connectable–

TOYOPUC-Touch

Minimized frequency of screen calling operations

Iconized menu enables screen calling from any screen in a maximum of two operations



Operation panel
Operation
Changeover
inspection
Maintenance
System

Compensation
Monitor
Help

Pictures and letters can be made easier to read by enlarging the display

Enables page scrolling and fast list searching

Realization of simple operation

Screen swiping and pinching in/out mimics the operability of a smart phone, making the TOYOPUC-Touch easy to use and easy to learn

Visualization of equipment status

J-Support

Supports operations performed at customer work sites with functions that visualize equipment status

Visualization of inspection - Periodic inspection function -

Clarifies inspection timing and supports accurate inspections

- Clarification of inspection timing
- Registration of completed past inspections / measurement results

*1

Visualization of status - Equipment monitor -

Supports production improvement with graphs showing previous operation and machining results

- ON/OFF status of devices can be viewed without having to check devices directly
- Internal ladder circuits can also be viewed easily

*1

Visualization of energy - Energy monitoring - Option

Supports energy saving activities by visualizing energy usage

- Current energy usage can be compared with past energy usage of the selected period
- Effects of enabling/disabling energy saving settings can be viewed

Visualization of longevity - Longevity management function -

Supports scheduled maintenance with notification functions that tracks the life of a part.

- Notifies the user of inspections for parts that are close to the end of its lifecycle.
- Minimizes machine stop time through preventive inspection / part preparation

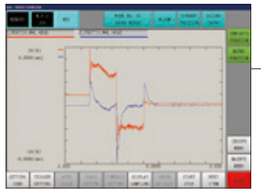
*1

Visualization of performance - Operation monitor -

Supports production control and improvement via graphs showing past operation performance / machining performance

- Performance can be viewed easily on graphs and tables, and data entry is also possible
- Current performance can be compared with past performance of the selected period

Visualization of servo status - servo sampling function -



Enables equipment status to be confirmed and supports countermeasures

- Enables the recording and display of sampling data such as current, position deviation and speed
- A normal value comparison function helps the recovery and diagnosis of machine faults

Rapid support in remote operation Option

J-Care

Accurate support reducing fault recovery time

Support provided whenever required by the customer

*1: Information on ID/Password

*1 *2

Connects to equipment in real time

*2: Remote access

TOYODA

Recovery support
Equipment diagnosis

*1: A production machine-support screen is available as an option.

Specifications created by professionals, utilizing expert craftsmanship

Large CNC General Purpose Cylindrical Grinders

GE6i-PRO

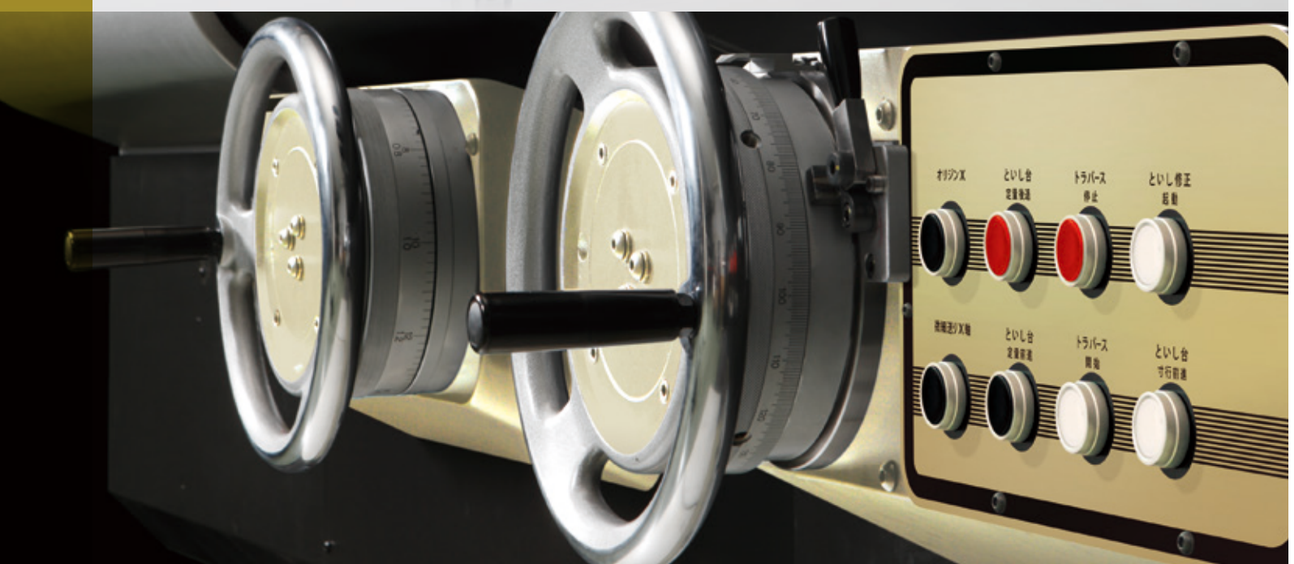
Pursuing ease of operation - Professional handle

+ Achieves hydraulic machine operability using an NC machine
+ Customizable front operation panel

Enables high grade "monozukuri" that can be achieved by any operator

+ Improved efficiency for single-part grinding
+ Specialized screen display for handle operations

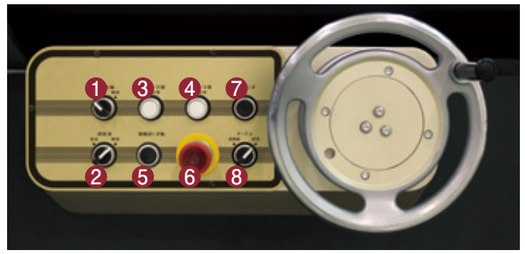
The machine in this photo is GE6i-160PRO.
The machine shown includes optional accessories.

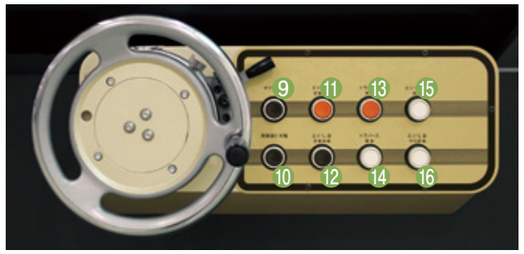


GE6i-PRO: Excellent operability

With handle operation that feels like a hydraulic machine, this grinder is optimal for high-accuracy machining of individual workpieces. A single GE6i-PRO enables skilled technicians to use the machine as though it were hydraulic, and allows those with less experience to use it as an NC-controlled machine. This enables intuitive operation,digitization of know-how, and the passing down of technical knowledge to be achieved through the machine.

Explanation of operation panel functions





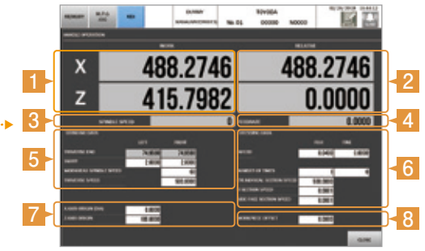
No.	Name	Function
1	Work spindle "Enable/disable" setting switch	If "Enable", the work spindle rotates at wheelhead constant advance
2	Coolant "Enable/disable" setting switch	If "Enable", coolant is discharged from the coolant nozzle at wheelhead constant advance
3	Left traverse end position memory button	Sets the table travel zone and memorizes the left side reverse position
4	Right traverse end position memory button	Sets the table travel zone and memorizes the right side reverse position
5	Micro-feed (Z-axis) button	Table feed: 1 μm infeed per push
6	Emergency stop button	Stops the machine in an emergency
7	Origin Z button	Relative coordinate of Z-axis is reset to the value of the origin
8	Table "Standard/high-precision" setting switch	Selects handle magnification

No.	Name	Function
9	Origin X button	Relative coordinate of X-axis is reset to the value of the origin
10	Micro-feed (X-axis) button	Wheelhead feed: $\phi 2$ μm infeed per push
11	Wheelhead constant retract button	Wheelhead retracts at 80 mm dia.
12	Wheelhead constant advance button	Wheelhead advances at 80 mm dia.
13	Traverse stop button	Stops table traverse motion
14	Traverse start button	Starts table traverse motion
15	Wheel dressing start button	The "CNC running" lamp lights up, and the rough wheel dressing cycle starts
16	Wheelhead jog advance button	The wheelhead advances while this button is being pressed

Manual operation screen

Specialized operation panel display screen for handle operations

Example of manual operation screen

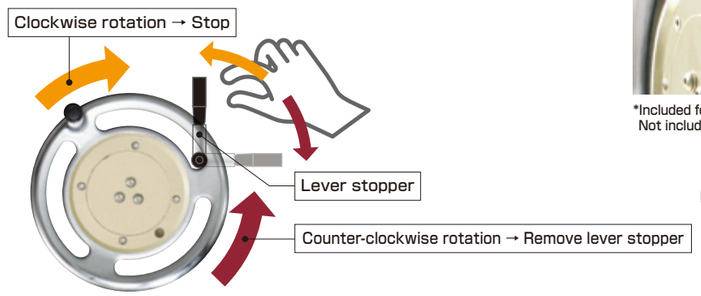


Example of screen display contents

No.	Screen display contents
1	Workpiece coordinate display
2	Relative coordinate display (can be reset via origin function)
3	Work spindle rotation display
4	Traverse feedrate display
5	Grinding condition settings (work spindle rotation and traverse machining conditions)
6	Wheel dressing condition settings
7	Relative coordinate reset value settings
8	Combination of workpiece dimensions and screen coordinates

Mechanical wheelhead positive stop function

The lever stopper is used during final dimension adjustment of wheelhead feed to enable simplified setting of the wheelhead advanced end position without changing the data settings of the grinding feed amount.

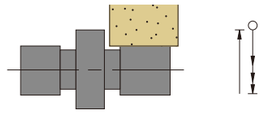


*Included for standard handle rotation direction (figure on bottom).
Not included for reverse handle rotation direction.

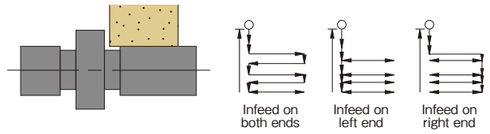
X: Wheelhead feed

Grinding cycles

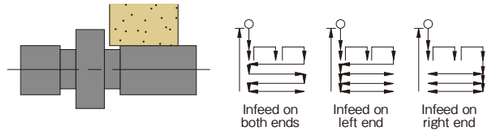
1. Plunge (indirect sizing)



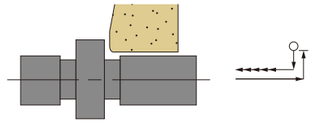
2. Traverse (indirect sizing)



3. Plunge/traverse (indirect sizing)

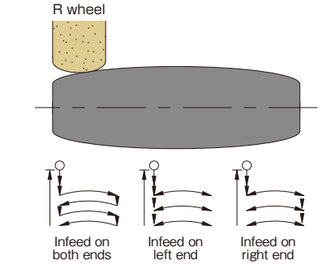


4. Right face Option

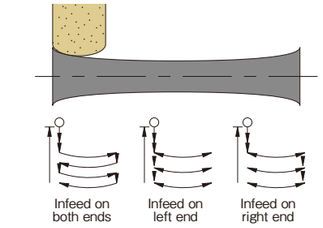


5. R crowning traverse Option

Convex R crowning

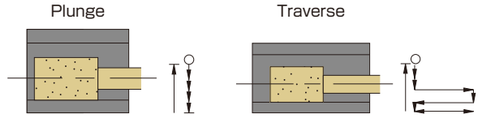


Concave R crowning



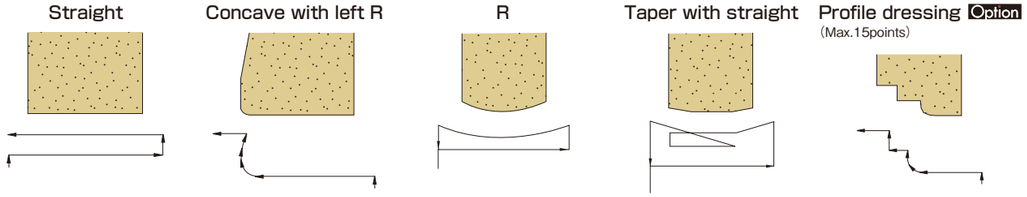
6. Internal grinding Option

(OD grinding cycle is used)



Notes 1: The above grinding cycles can be divided into rough and finish grinding cycles by using the cycle dividing function.
2: A special option has been provided to perform right-face grinding in the automatic cycle. This requires a lateral locator. Manual grinding is performed using manual intervention operations or manual operatoin.
3: Direct sizing plunge, direct sizing traverse or direct sizing plunge/traverse grinding cycles are optionally available.
4: Please carry out the grinding of the R crowning traverse (option) after performing the R wheel dressing.
5: Only indirect sizing cycle is available (direct sizing cycle is not available) for the internal grinding cycle.
6: Displayed coordinates for internal grinding do not correspond with the workpiece.
7: Internal multi-step grinding can be performed manually.

Wheel dressing cycles



Notes 1: Up to 5 patterns of wheel shape can be registered.
2: 3 wheel dressing conditions; "rough" , "semi-finish" and "finish" can be set.
3: The automatic dressing function for internal griding wheels is not provided.
Dress them manually using an internal/external diamond tool holder to be mounted on the table.

TOYOPUC-GC70

●: Standard □: Option

Item	No.	Specifications	Accessories
Controlled axes	1	X-axis (wheelhead feed)	●
	2	Z-axis (table feed)	●
HMI	3	TOYOPUC-Touch	●
Display	4	15 inch TFT color	●
File management	5	Structured data management (Production, grinding and maintenance)	●
	6	Grinding data patterns: Max. 64 (30processes/pattern, Max. 1,920 processes)	●
Coordinate setting	7	Position memory (various)	●
	8	Relative coordinates	●
Compensation function	9	Size compensation	●
Display	10	Operation monitor display	●
	11	Manual switch and lamp display	●
	12	Operation procedure display	●
	13	Display of items for inspection and maintenance	●
	14	Metric display	●
	15	Inch display	□
Operation	16	Canned cycle	●
	17	Test cycle	●
	18	Wheel dressing cycle	●
	19	Return cycle	●
	20	Single block	●
	21	Grinding step skip	●
	22	Rapid feed override 0, 10, 50, 100%	●
	23	Grinding feed override (X-axis) 0-150%, in units of 10%	●
	24	Grinding feed override (Z-axis) 0-150%, in units of 10%	●
	25	Work spindle override 50~200%, in units of 10%	●
	26	MPG intervention during auto operation	●

Item	No.	Specifications	Accessories
Manual intervention operation	27	Taper corrector	●
	28	Cycle division function	●
	29	Cycle interruption and manual size compensation	●
	30	Cycle interruption and infeed function	●
	31	Software positive stop function	●
	32	Manual table reverse turning function	●
	33	Auto-sizer manual additional grinding function	□
Auto-sizer	34	Auto-sizer control unit	□
Programming function	35	Simplified automatic determination *	●
	36	Speed data proportional compensation function	●
	37	Extended data entry function	●
	38	Operation entry function	●
	39	Process editing function	●
Maintenance	40	Wheel change prediction display	●
	41	Min. wheel dia. display	●
	42	Self diagnosis	●
	43	Alarm history display	●
	44	Batch backup function	●
	45	Servo sampling function	●
Counter	46	Production counter	●
	47	Wheel dressing interval counter	●
Cycle time display	48	Machine operation hours	●
	49	Processing cycle time	●
	50	Grinding cycle time	●
	51	Wheel dressing time	●
Others	52	USB memory I/F	●
	53	Wheel return at power failure	●

*GE6i and GE6i-PRO's optional internal grinding device cannot be included.

Description of main functions

7	Position memory	The wheel dia., diamond tool position, and longitudinal workpiece position can be stored by one touch of a button.
26	MPG intervention during auto operation	M.P.G. operation is valid during automatic operation.
27	Taper corrector	By entering values measured at 2 points after manual grinding, the taper compensation amount is displayed on CRT. Automatic indexing to the grinding start position is performed for the second and subsequest workpieces.
28	Cycle division function	A workpiece is automatically ground by dividing the grinding cycle into rough and finish grinding cycles.
29	Cycle interruption and manual size compensation	Automatic operation is suspended to allow table position compensation and manual shoulder grinding.
30	Cycle interruption and infeed function	Automatic operation is suspended to allow finishing dia. compensation by entering the additional infeed amount obtained through comparision with the measured grinding dia.
31	Software positive stop function	The wheelhead and table automatically stopped at the preset positions when fed using the M.P.G.
33	Auto-sizer manual additional grinding funtion	Manual infeed can be performed while referring to the values output from the auto-sizer amplifer.
36	Speed data proportional compensation function	The infeed speed and traverse speed can be changed using the override selector switch.
37	Extended data entry function	Drawing mark entry, additional taper grinding amount calculation, addition/subtraction/division /multiplication, and entry by one touch of a button are possible.
38	Operation entry function	The wheelhead and table positioning data can be entered by pressing buttons.
39	Grinding cycle editing function	The grinding sequence can be changed and intermediate wheel dressing can be addad/deleted with an easy operation.

List of accessories

(When an optional A accessory is chosen, the corresponding standard one is not supplied.)

●: Standard accessory ○: Optional A accessory □: Optional B accessory

Category	No.	Unit name	Remarks	GE6i	GE6i-PRO
Table	1	Table swivel unit		●	●
	2	Table swivel angle sensor Digital display	＊1, 2	□	□
	3	Table end cover (bellows type)		●	●
	4	Table front Fixed cover		●	●
	5	Insert type Front cover		□	□
	6	Manual open and close Front cover	No confirmation device, no windows	○	○
	7	Manual open and close Front cover Door close confirmation device	No windows	○	○
Workhead	8	Dead spindle workhead with infinitely variable speed 500 kg grade, MT No. 5		●	●
	9	Dead spindle workhead with infinitely variable speed 1,000 kg grade, MT No. 6		○	○
	10	Live/dead spindle workhead (infinitely variable speed, swiveling) 500 kg grade, MT No. 5	＊3 Maximum live spindle load: 80 kg (including workpiece and workpiece holder)	○	○
	11	Live/dead spindle workhead (infinitely variable speed, non swiveling) 1,000 kg grade, MT No. 6	Maximum live spindle load: 150 kg (including workpiece and workpiece holder)	○	○
	12	Carbide-tipped center (MT No.5)		●	●
	13	Carbide-tipped center (MT No.6)		○	○
	14	Spindle head weight air reduction unit	＊4	□	□
	15	Spindle in-position stop unit (proximity type switch)		□	□
Footstock	16	Manual footstock 500 kg grade, MT No. 5	Manual lever type: 32 mm stroke, 30mm handle	●	●
	17	Manual footstock 1,000 kg grade, MT No. 6	Manual handle: 45mm stroke	○	○
	18	Hydraulic footstock (pedal-start type)	＊5, 6 Hydraulic type: 32 mm stroke + Manual handle adjustment: 30 mm	○	○
	19	Manual footstock for easier pressing force adjustment Manual lever and manual handle, common use type	500 kg grade Manual lever type: 40 mm stroke + Handle 50 mm 1,000 kg grade Handle 90 mm	○	○
	20	Carbide-tipped center (MT No.5)		●	●
	21	Carbide-tipped center (MT No.6)		○	○
	22	Footstock weight air reduction unit	＊4	□	□
Wheelhead	23	33m/s wheel surface speed one speed specification	11kW wheel spindle motor	●	●
	24	33m/s wheel surface speed two-speed specification	11kW wheel spindle motor	○	○
	25	45m/s wheel surface speed one speed specification	11kW wheel spindle motor	○	○
	26	φ760mm specification response (max. wheel width: 100mm)	33m/s wheel surface speed, 11kW wheel spindle motor	○	○
	27	φ760mm specification response (max. wheel width: 100mm)	45m/s wheel surface speed, 11kW wheel spindle motor	○	○
	28	Wheel surface speed variable speed unit (inverter control [deceleration only], manual adjustment)	* Only when wheel surface speed 45 m/s specification is included	□	□
	29	Standard wheel for 33m/s surface speed φ610mm × 75mm ×φ254mm	Wheel width 75mm	●	●
	30	Special specification wheel	Selected by surface speed, wheel diameter and wheel width	□	□
	31	Wheel flange for φ610mm (round nut: 33～80mm in width)	1 set	●	●
	32	Wide wheel flange for φ610mm (round nut: 75～125mm in width)		□	□
	33	Wheel flange for φ760mm (round nut: 50～75mm in width)		□	□
	34	Wide wheel flange for φ760mm (round nut: 75～100mm in width)		□	□
	35	Responding to wide wheels (wheel width: up to max of 125mm) φ610mm		○	○
	36	Responding to wide wheels (wheel width: up to max of 100mm) φ760mm		○	○
	37	Wheel spindle overload detection		□	□
Pump unit	38	Lubricant pump unit (20L)	No confirmation device for no oil	●	●
	39	Lubricant pump unit (20L)	With confirmation device for no oil	□	□
	40	Hydraulic oil pump unit (20L)	No confirmation device for no oil	□	□

＊1: 100V power required. ＊2: For center-to-center distances 1,600 mm, 2,500 mm, 3,200 mm and 4,000 mm, sensors are attached on the left and right of the table.
＊3: Workhead position change is necessary when operating the machine by swiveling the workhead, as the workhead interferes with the wheel dresser mounted on the traverse table.
＊4: Pneumatic unit is required. ＊5: No confirmation unit. ＊6: Hydraulic oil pump unit required. ＊7: Auxiliary tank for pumping is equipped.
＊8: Processing capability of approximately 1L/m for every 1mm of wheel width. Select a magnetic separator appropriate to the wheel width and coolant washing level.

Category	No.	Unit name	Remarks	GE6i	GE6i-PRO
Coolant supply unit	41	Coolant supply unit (350L)	Without washing pump	●	●
	42	Coolant supply unit with paper filter (350L tank, 80L/min processing capacity)	No washing pump	○	○
	43	Coolant supply unit with paper filter (370L tank, 120L/min processing capacity)	With washing pump	○	○
	44	Coolant supply unit with paper filter (350L tank, 80L/min processing capacity)	With washing pump, with coolant cooling function	○	○
	45	Coolant supply unit with paper filter (370L tank, 120L/min processing capacity)	With washing pump, with coolant cooling function	○	○
	46	High accuracy filtering coolant unit Cleanliness: 30 ppm (Tank capacity: 410 L, Processing ability: 95 L/min)	＊7 With washing pump		
	47	High cleanliness type coolant supply unit K100 Cleanliness: 5 ppm (48L collection tank, 190L primary tank, 260L secondary tank, magnet separator with 120L/min processing capacity, cyclone attached)	＊7 With washing pump With coolant cooling function With lower limit confirmation device	○	○
	48	Magnetic separator ferrite type (select either 80L/min,120L/min or 150L/min processing capacity)	＊8	□	□
	49	Magnetic separator rare earth type (select either 80L/min,120L/min or 150L/min processing capacity)	＊8	□	□
	50	Coolant lower limit confirmation device		□	□
	51	Washing pump		□	□
	52	Base, table washing	＊8 Washing pump required	□	□
	53	Auto-sizer cooling	Washing pump required	□	□
	54	Flexible coolant nozzle		●	●
	55	One port coolant nozzle (for standard wheel width)		○	○
Wheel dresser	56	Standard wheel dresse (workhead-mounted)		●	●
	57	Wheel dresser (swivel table-mounted)		□	□
	58	Wheel dresser (footstock-mounted)		□	□
	59	Angular wheel dresser (swivel table-mounted)		□	□
	60	Wheel dresser for ID/OD grinding (swivel table-mounted)		□	□
	61	Formed diamond tool (shank diameter: 8mm)		□	□
	62	Single-point diamond tool (shank diameter: 8mm)		□	□
Tool	63	Tools (special-purpose tools)		●	●
	64	Tools (wrench / spanner)		□	□
	65	Wheel lifting hook		□	□
	66	Wheel balancing arbor / Wheel balancing stand	Special-purpose wheel balance stand specific to wheel diameter is required	□	□
	67	Jib crane for wheel changes (for 100kg)		□	□
Steady rest	68	Manual steady rest (φ20～φ200mm, φ120～φ300mm)		□	□
	69	3-point manual steady rest (φ15～φ200mm, φ160～φ400mm)		□	□
Driving dog	70	Driving dog (φ5～φ50mm, φ50～φ80mm, φ80mm～φ190mm)		□	□
	71	Automatic dog (φ5～φ45mm, φ45～φ80mm)		□	□
Chuck	72	3-jaw scroll chuc (7'', 9'', 10'' available)	＊9, 10	□	□
	73	Independent 4-jaw chuck (8'', 10'', 12'' available)	＊9, 10	□	□
	74	4-slot face plate (φ410mm)	＊9	□	□
Work holder	75	Workpiece holder (one each for R and L φ20～φ190mm)		□	□
	76	Workpiece holder		□	□
	77	Contact (φ150～φ180mm、φ180～φ220mm、 φ220～φ260mm、φ260～φ300mm)		□	□
Auto sizer	78	Auto sizer for large dia. cylindrical workpieces (3P, φ10 to φ160mm)	＊6 JTEKT-made, CNC built-in amplifier	□	□
Lateral locator	79	Automatic lateral locator Mounted on the wheelhead	＊6, 11	□	□
Pneumatic-related	80	Pneumatic unit		□	□
Mist collector	81	Mist collector 1 set	Hood type	□	□
CBN supported	82	CBN wheel specifications		□	□

＊9: Live/dead spindle workhead is necessary.
＊10: Depending on wheel shape, there is a possibility that the wheel may interfere with the chuck cover during wheel dressing. Check before performing wheel dressing.
＊11: When an internal grinding unit is attached, the end face measuring range may be limited because it is mounted on the wheel guard. Please consult with our sales representatives.
＊12: We will listen to the requests of each customer. Please consult with our sales representatives.

List of accessories

(When an optional A accessory is chosen, the corresponding standard one is not supplied.)

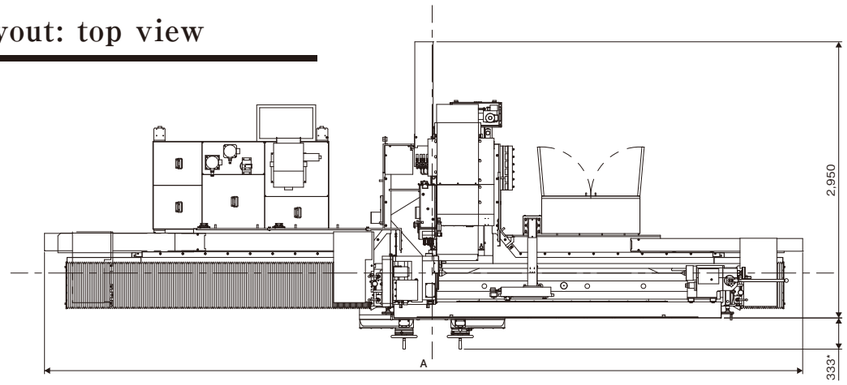
●: Standard accessory ○: Optional A accessory □: Optional B accessory

Category	No.	Unit name	Remarks	GE6i	GE6i-PRO
Control unit	83	Manual pulse generator (mounted on operation panel)		●	●
	84	Table direction selection lever		●	●
	85	Workhead spindle ON-OFF / inching switch		●	●
	86	One USB flash drive for TOYOPUC-GC70 (JTEKT-made, backup data entered)		●	●
	87	USB flash drive for TOYOPUC-GC70 (JTEKT-made)		□	□
	88	100V power		□	□
	89	100V outlet (mounted inside of control box)	＊1	□	□
	90	Machine front-face handle specifications	Pulse generator	□	×
	91	Machine front-face handle specifications Professional handle spec.	Pulse generator	×	●
	92	Signal tower - 3 color specification		□	□
	93	Electrical leak breaker		□	□
	94	Cabinet interior lighting		□	□
	95	Automatic power isolation		□	□
	96	Manual door close confirmation unit enable / disable switch	Manual door close confirmation unit is required	□	□
	97	Lighting unit (LED / fluorescent type)		□	□
	98	Lighting unit (LED / spotlight type)		□	□
Overseas supported	99	Multilanguage support	Please consult with us regarding available languages.	□	□
	100	Supporting different voltage		□	□
Machine color	101	JTEKT standard paint color (silver metallic, dark gray metallic, dark gray)		●	●
	102	Specified color other than JTEKT's standard specified color Machine body only 1 color		○	○
Customer's run off test	103	JTEKT's standard TP grinding		□	□
Instruction manual	104	Machine specifications, operation manual, maintenance manual, electric control drawings - 1 copy each (CD)	Submitted in CD form	●	●
	105	Machine specifications, operation manual, maintenance manual, electric control drawings - 1 copy each (bound)	Will bind and deliver	□	□
Internal grinding unit	106	For details on the internal grinding unit, please refer to the separate sheet regarding inner surface grinding units.		□	□
Special cycles	107	Profile dressing (15 point)	Please refer to the cycle pattern. P. 17	□	□
	108	Right-face cycle	Lateral locator is required	□	□
	109	R crowning cycle			
Full cover	110	Full-cover specifications	＊12 Manual open / close type	○	○
	111	Door close confirmation unit	＊12 Manual open / close type	□	□
High-accuracy support	112	Wheel spindle bearing oil fan cooler		●	●
	113	Wheel spindle bearing oil cooler		○	○
	114	Wheelhead / workhead coolant cooler (cooling with coolant)	Coolant supply unit with coolant cooling is required	□	□

＊1: 100V power required. ＊2: For center-to-center distances 1,600 mm, 2,500 mm, 3,200 mm and 4,000 mm, sensors are attached on the left and right of the table. ＊3: Workhead position change is necessary when operating the machine by swiveling the workhead, as the workhead interferes with the wheel dresser mounted on the traverse table. ＊4: Pneumatic unit is required. ＊5: No confirmation unit. ＊6: Hydraulic oil pump unit required. ＊7: Auxiliary tank for pumping is equipped. ＊8: Processing capability of approximately 1L/m for every 1mm of wheel width. Select a magnetic separator appropriate to the wheel width and coolant washing level. ＊9: Live/dead spindle workhead is necessary. ＊10: Depending on wheel shape, there is a possibility that the wheel may interfere with the chuck cover during wheel dressing. Check before performing wheel dressing. ＊11: When an internal grinding unit is attached, the end face measuring range may be limited because it is mounted on the wheel guard. Please consult with our sales representatives. ＊12: We will listen to the requests of each customer. Please consult with our sales representatives.

Machine layout: top view

(Unit: mm)



Machine specifications

Item		Unit	Specifications	GE6i-100 GE6i-100PRO	GE6i-160 GE6i-160PRO	GE6i-250 GE6i-250PRO	GE6i-320 GE6i-320PRO	GE6i-400 GE6i-400PRO
Distance between centers		mm	500kg specifications	1,000	1,600	2,500	3,200	4,000
			1,000kg specifications	875	1,475	2,375	3,075	3,875
Swing over table		mm	Common	ϕ560				
Grinding diameter		mm	Common	ϕ0～ϕ550				
Max. load between centers		kg	Standard	500				
			Option	1,000				
Wheel	Wheel OD × ID	mm	Standard	ϕ610 × ϕ254				
			Option	ϕ760 × ϕ304.8				
	Max. wheel dia.	mm	ϕ610 specifications	75 (Wide specification: 125)				
			ϕ760 specifications	75 (Wide specification: 100)				
	Surface speed	m/s	Standard	Standard 33				
			Option	Option 45				
Wheelhead feed	Rapid feed rate	m/min	Common	ϕ15				
Table feed	Rapid feed rate	m/min	Common	13	13	8	6	6
	Swiveling angle*1 (CCW～CW)	°	Common	+4.0～0.0°2	+3.0～0.0°2	+2.0～0.0°2	+1.6～0.0°2	+1.4～0.0°2
Workhead	Type		Standard	Dead spindle				
			Option	Live / dead spindle dual purpose				
	Center taper		500kg specifications	MT No.5				
			1,000kg specifications	MT No.6				
	Spindle speed	min-1	Common	7～140				
Footstock	Type		Standard	Manual lever type				
			Option	Hydraulic				
	Center taper		500kg specifications	MT No.5				
			1,000kg specifications	MT No.6				
	Quill stroke	mm	MT No.5 Manual lever type	Manual lever 32 + Manual handle adjustment 30				
			MT No.5 Hydraulic	Hydraulic 32 + Manual handle adjustment 30				
			MT No.6 Manual handle type	Manual handle adjustment 45				
			MT No.6 Hydraulic	Hydraulic 32 + Manual handle adjustment 30				
Electrical equipment		V	Common	Power supply voltage 200 Control circuit DC24				
Drive motors	Wheel spindle	kW	Common	11 (4P)				
	Work spindle	kW	Common	3.5 (brushless servomotor)				
	Wheelhead feed	kW	Common	3.1 (brushless servomotor)				
	Table feed	kW	Common	5.0 (brushless servomotor)				
	Wheel spindle bearing oil pump	kW	Common	0.5 (2P)				
	Lubricant pump	kW	Common	0.2 (4P)				
	Working oil pump unit	kW	Common	0.75 (4P)				
	Coolant pump	kW	Common	0.25 (2P)				
	Wheel spindle cooling unit	kW	Common	0.08				
	Magnetic coolant separator	kW	Common	0.025 (4P)				
Tank capacities	Wheel spindle bearing oil	L	Common	14				
	Lubricant oil	L	Common	20				
	Working oil	L	Common	20				
	Coolant	L	Common	350				
Required floor space (width × depth)*3		m	Common	5.0 × 2.95	6.2 × 2.95	8.1 × 2.95	9.6 × 2.95	11.4 × 2.45
Machine weight*3		kg	Common	8,000	10,000	12,000	14,000	17,000

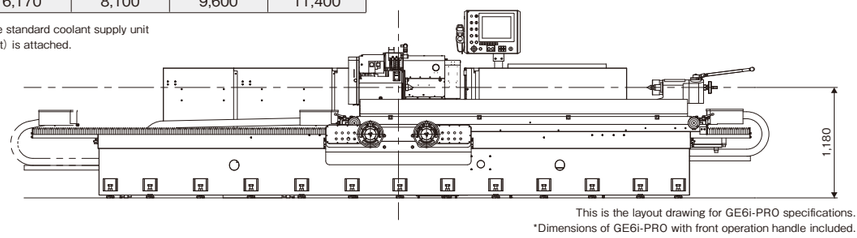
The specification may be restricted according to the tooling of customer. *1: In case footstock except manual footstock (standard accessory) in furnished, swiveling angle shall be limited.
*2: The special angle of the table swivel angle is supported individually. *3: Subject to change depending on accessory parts, etc

Machine layout: front view

Type	GE6i-100 GE6i-100PRO	GE6i-160 GE6i-160PRO	GE6i-250 GE6i-250PRO	GE6i-320 GE6i-320PRO	GE6i-400 GE6i-400PRO
A (mm)	5,000	6,170	8,100	9,600	11,400

*The left dimensions assume that the standard coolant supply unit (350 liters, without confirmation unit) is attached.

(Unit: mm)



This is the layout drawing for GE6i-PRO specifications.
*Dimensions of GE6i-PRO with front operation handle included.