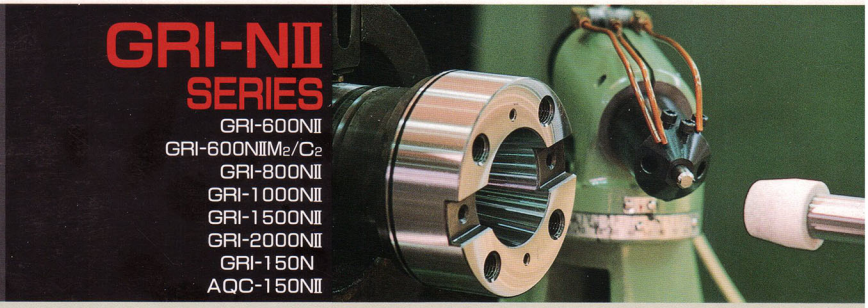
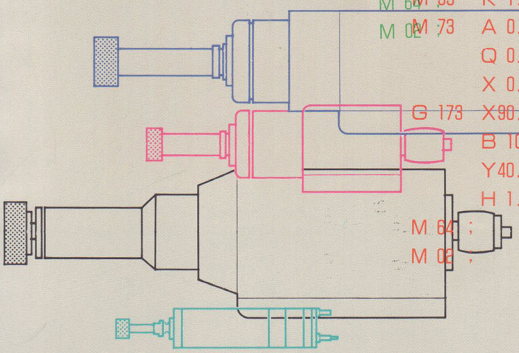
FULL CLOSED LOOP SYSTEM/2-AXIS CONTROL

CNC INTERNAL GRINDER

GRI-NII SERIES

GRI-600NII
GRI-600NIIM2/C2
GRI-800NII
GRI-1000NII
GRI-1500NII
GRI-2000NII
GRI-150N
AQC-150NII





TAISEI
NAGOYA JAPAN

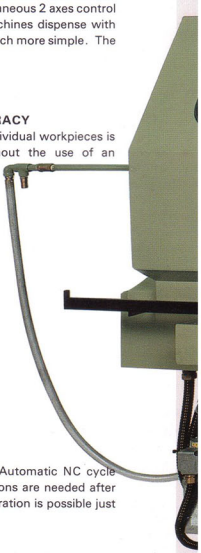
CNC INTERNAL GRINDING MACHINES FULL

EXCELLENCE OF TAISEI TECHNOLOGY THROUGHOUT THIS RANGE OF MACHINES PROVIDES HIGHEST ACCURACY AND RELIABILITY FOR YOUR INTERNAL GRINDING. TAISEI'S GRI-NII SERIES ARE THE THIRD GENERATION OF A LINE OF MACHINES FIRST DEVELOPED BY TAISEI IN JAPAN. THE ORIGINAL AND SECOND GRI-NII SERIES ACHIEVED REMARKABLE SALES AND MARKET ACCEPTANCE.

THE THIRD SERIES GRI-NII PROVIDES TWO UNIQUE POINTS

1 TAISEI have developed their own software programs, which are stored in the Fanuc OT-B control. This newly developed software permits automation of the internal grinding operation which normally requires very highly skilled technology.

2 A fully closed loop system by use of Sony magnescale is incorporated on the cross table (X axis) as well as the traverse table (Z axis). This provides high precision grinding by simultaneous 2 axes control for taper and spherical surface grinding, so that TAISEI Internal Grinding Machines dispense with unnecessary swivel functions of the spindle making the machine mechanism much more simple. The result is increased rigidity and stability of accuracy.



FEATURES

■CROSS TABLE (X AXIS)

The cross table on which the wheel spindle is mounted is moved by AC servo motor and transmitted through a precision ball screw. The table slides on linear guideways. Under the command of NC or by use of a pulse generator, the cross table moves truely and quickly in increments of 0.001mm in dia. according to the readout of moving position by magnescale. A backlash free, preloaded ball screw provides high accuracy of stop repeatability with less lost motion. This results in high grinding accuracy with less size variations in grinding.

■TRAVERSE TABLE (Z AXIS)

The design of the guideways of the traverse table (Z axis) are of V and flat configuration which is the most stable construction for internal grinding machines. The reciprocating motion of the traverse table is actuated by AC servo motor and transmitted by a backlash free ball screw. The stop repeatability of the traverse movement is precisely monitored by the magnescale, as it is on the X axis, in increments of 0.001mm. Excellence of synchronized motion between Z axis and X axis permits high accuracy reciprocating/traverse motion for taper or spherical grinding.

■THERMAL DISPLACEMENT AND ACCURACY ON X AND Z AXES

The fully closed loop system, precisely monitoring both X and Z axes by magnescale, can check the moving position continuously during operation. This provides improved grinding accuracy by eliminating the effect of thermal displacement which may be generated on the Ball screw.

■GRINDING PATTERN

After the setup of the program for dressing and grinding conditions on the CRT, the cycle start button is depressed and the whole cycle from dressing to completion of grinding operation is performed completely automatically. Grinding operations can be processed in three steps from rough to semi-finish and finish. Also the grinding amount (stock removal) and the number of spark-out and cycles per dresssing can be set at the operator's option. Automatic operation can be performed until the required size and surface roughness are obtained.

■TAISEI'S APPROACH TO GRINDING ACCURACY

The variation of the grinding accuracy between individual workpieces is normally within 0.010mm (+/-0.005mm) without the use of an automatic in-process sizing gauge. The grinding of the first workpiece should be done in such a manner that the operator stops the grinding operation at a position 0.010mm−0.030mm before final size. Infeed grinding with the addition of size compensation is then used. This manner allows the second and subsequent workpieces to obtain a grinding accuracy within the variation of +/-0.005mm by simply pressing the start button.

■GRINDING APPLICATION

Straight ID, Taper ID, Endface, reverse end face, OD, Radius, Spherical surface Providing that the diameter, length and shape of a workpiece are within the capacity of the machine, a continous grinding operation is possible by one chucking for various grinding processes.

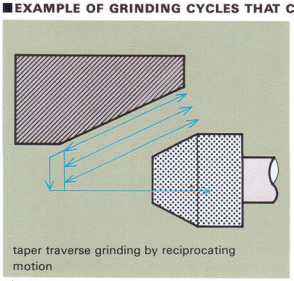
■USING THE PULSE GENERATOR

The manual pulse generator can be used during Automatic NC cycle operation. Also, when additional grinding operations are needed after completion of an automatic NC cycle, manual operation is possible just like a conventional machine.

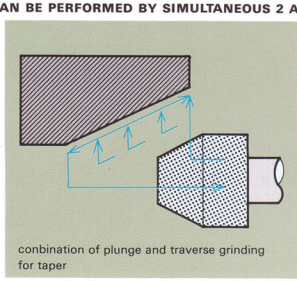
■BACK GROUND EDITING

Whilst the machine is under NC operation, it is possible to make a program for the next workpiece on the CRT MAIN OPERATOR'S PANEL.

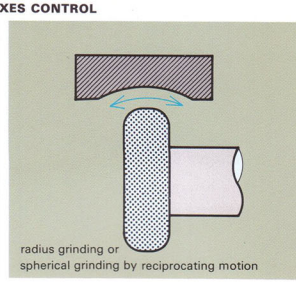
■EXAMPLE OF GRINDING CYCLES THAT CAN BE PERFORMED BY SIMULTANEOUS 2 AXES CONTROL



taper traverse grinding by reciprocating motion



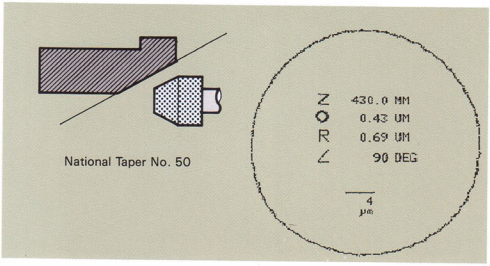
conbination of plunge and traverse grinding for taper



radius grinding or spherical grinding by reciprocating motion

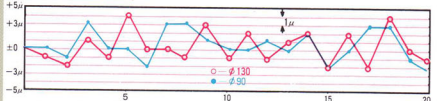
CLOSED LOOP SYSTEM

■ RESULT OF TAPER GRINDING/GROUND BY GRI-1000NI



▲ SURFACE ROUGHNESS (0.6μRZ)

▲ STRAIGHTNESS (0.5μ)



▲ Size variations for 20 pcs. of the workpiece which has step ID of φ130 and φ90 mm in dia.

■CNC system Specifications

Model	FANUC system OT-B
Type	Full-closed loop
Controlled axis	2 (X & Z)
Min.input Increment	X axis ϕ0.001mm (ϕ0.0001in.)
	Z axis 0.001mm (0.0001in.)
Data input	Absolute/Incremental
Input code	EIA (RS244-A)/ISO840

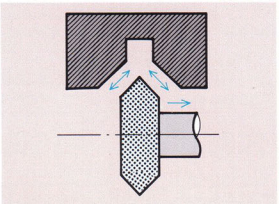
■Standard functions

CRT/MDI panel (9in. mono-collor)
Custom macro B
Number of registered programs 63 (include macro)
Door interlock
Work spindle speed override (50%~120 %)
Rapid traverse override (Fo, 25, 50, 100%)
Feed rate override (0 ~150 %, pre every 10%)
Machine lock
Single block
Optional block skip (1~5)
Tape memory capacity 80m (include macro)
Skip function (G 31)
Constant surface speed control (workspindle)
Stored stroke limit
Reader/puncher interface
Manual pulse generator
Manual interruption during automatic operation
Run time and parts count display
Graphic desplay
Back gound editing

■Optional functions

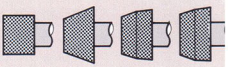
Clock function
Tape memory capacity 320m
Floppy cassette adaptor 3
FANUC cassette F1 floppy 3.5 in.
Potable tape reader (non reel)
FANUC PPR (tape reader/puncher/printer)
Optionol block skip (total 9)
Wheel no. menory capacity (max. 9)
Direct drawing dimensions programing

■Exsample of optional dress & grind

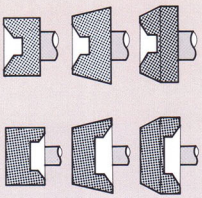


■Dress Cycle (Standard)

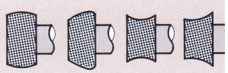
G135 V1
STRAIGHT DRESS



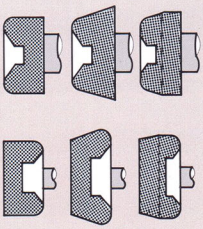
G135 V2
FACE DRESS



G135 V3
R (RADIUS)
DRESS

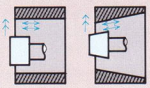


G135 V4
R-STRAIGHT
DRESS

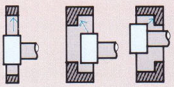


■Grind Cycle (Standard)

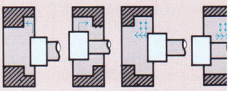
G173
TRAVERSE GRIND



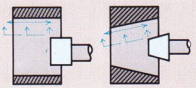
G174
PLUNGE GRIND



G175
FACE GRIND



G176
PLUNGE-
TRAVERSE GRIND



■Example of programing for Taper grind

```
O 10  ;
M 63  ;
M 77  T 100. S 1.  ;
M 35  U 0.002 F 800. K 2 ;
G 135 V 4.  ;
M 64  ;
M 02  ;
```

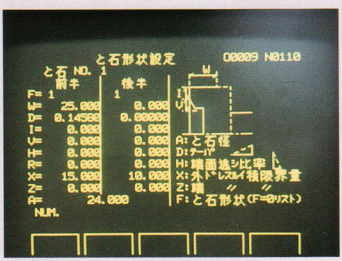
1. Dress Align [Straight]

1) O : PROGRAM NO.
2) M 63 : POSITION
3) M 77 : SELECT WHEEL
4) T : WHEEL NO.
5) S : WHEEL DATUM NO.
6) M 35 : DRESS DATA
7) U : DRESS AMOUNT(FORWARD)
8) V : DRESS AMOUNT(BACKWARD)
9) F : DRESS LEAD
10) K : DRESS PASS
11) G135 : DRESS CYCLE
12) V : DRESS RUN
13) M 64 : RETURN
14) M 02 : END

```
O 20  ;
M 63  ;
M 77  T 100. S 1.  ;
M 35  K 1.  ;
M 73  A 0. B 0. U 0. H 0.
      Q 0. K 0. W 0. F 0.
      X 0.  ;
G 173 X90. Z60. A99.9
      B 100.2 C 100.18
      Y40. Q 1. R 1. S 0.
      H 1. M 0. V 1.  ;
M 64  ;
M 02  ;
```

2. Grind Cycle [Traverse]

1) O : PROGRAM NO.
2) M 63 : POSITION
3) M 77 : SELECT WHEEL
4) T : WHEEL NO.
5) S : WHEEL DATUM NO.
6) M 35 : DRESS DATA
7) K : DRESS PASS
8) M 73 : TRAVERSE GRIND DATA
9) A : GRIND AMOUNT PAR DRESS
10) B : RETRACT
11) U : INFEED AMOUNT ROUGH
12) H : INFEED AMOUNT FINISH
13) Q : X SPARK ROUGH
14) K : X SPARK FINISH
15) W : RAPID INFEED
16) F : X TRAVERSE FEED RATE
17) X : GRIND FACTER
18) G 173 : TRAVERSE GRIND CYCLE
19) X : CLEAR DIA.(NON-INTERFERENCE DIA.)
20) Z : TABLE POSITION
21) A : RAPID FEED DIA.
22) B : X FINISH DIA.
23) C : X ROUGH FINAL DIA.
24) Y : TRAVERSE LENGTH
25) Q : TARRY AT L-HANDE
26) R : TARRY AT R-HANDE
27) S : COOLANT NOZZLE
28) H : GRIND PROCESS NO.
29) M : SIZE CONTROL SYSTEM
30) V : DRESS PATTERN
31) M 64 : RETURN
32) M 02 : END

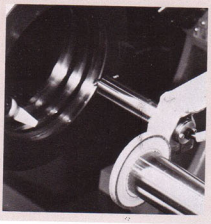


WHEEL SHAPE SET SCREEN

EXAMPLES OF TAISEI'S OPTIONAL EQUIPMENT

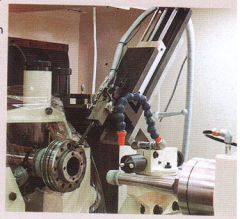
■AUTOMATIC GROOVE MEASURING DEVICE

This device automatically measures the width and inner diameter of the grooves to be ground and calculates the stock removal.
During Cycle operation, the remaining amount of stock is continuously fed back until final size is achieved.
This device is very effective for multi−step groove grinding operations, providing high productivity and acuracy.



■AUTOMATIC FACE POSTIONING DEVICE

This device automatically senses the position of the workpiece face to establish the datum. It then feeds back the information to the NC, so that the starting position of taper grinding by simultaneous 2 axes control or grinding size of an inner reverse face may be precisely monitored automatically.



■DIGITAL READOUT DISPLAY UNIT FOR WORKHEAD POSITIONING

This unit determines the movement of the main spindle in increments of 0.001 mm when the operator needs to slide the main spinde crossways in the X axis direction for grinding outer diameters of large workpieces. It helps the operator to measure the amount of the movement. This device is combined with magnescales on the machine.

■GAP ELIMINATOR

The grinding wheel, when contacting the workpiece, generates a very small amount of electric load, which is detected by the gap eleminator in the form of a signal, and is fed back to the NC.
When the grinding operation cycle starts, the grinding wheel approaches the workpiece at a rapid−speed and starts grinding upon contact of the workpiece. This method can eliminate lost time due to air-cutting and increase productivity. When the grinding wheel is excessively overloaded, each axis retracts to the reference point for safety.

■COOLANT TEMPERATURE CONTROLLER

This unit is used to maintain coolant at an even temperature and eliminate the effect on grinding accuracy of the change of coolant temperature during operation in a Factory or in a temperature controlled room.
When a ceramic workpiece is ground, it is quite effective to protect against heat expansion of the diamond grinding wheel or wear caused by high heat.

■AUTOMATIC IN-PROCESS GAUGING UNIT

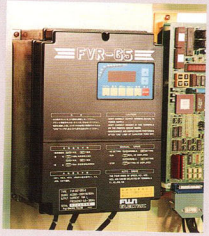
TAISEI'S GRI−NII series Internal Grinding Machines are controlled by fully closed loop systems with magnescales on both X and Z axes. In the case of grinding operations where there is an allowable accuracy of about +/−0.005mm in size tolerance, the indirect size−gauging method is adequate to obtain the accuracy.
The Automatic in−process gauging method is for continuous large lot runs and is more effective for achieving much higher accuracies than the above mentioned tolerance of +/−0.005 mm.

■HIGH PRESSURE COOLANT GENERATOR

This unit generates a high pressure coolant jet up to 75 kg·f/cm² to clean a loaded wheel and keep it sharp, providing higher productivity and reduced dressing frequency and amount. Also, it is very effective for prevention of loading of the diamond wheel for ceramic grinding.

■FREQUENCY INVERTER FOR WHEEL SPRINDLE MOTOR

The frequency inverter allows motor speed to be infinitely varied in the range of +20% and −50% of the normal speed by frequency control.

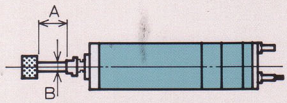


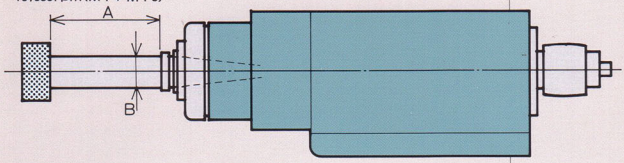
■MAGNETIC CENTERLESS SHOE CHUCK

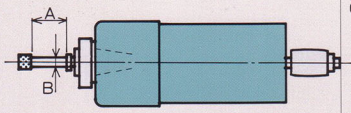
This chuck is used for workpieces such as very thin wall ringe like bearing races which need very high accuracy for out−of−roundness. Also other chucks are available for various kinds of workpieces.

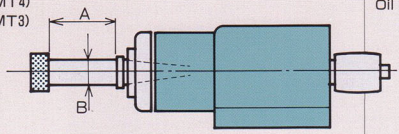
KINDS OF GRINDING WHEEL SPINDLE

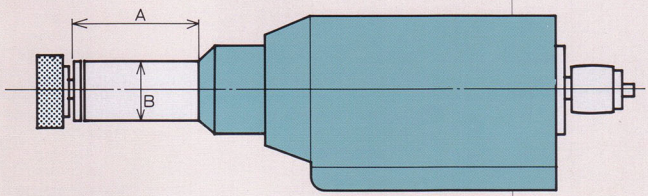
RANGE OF ROTATION SPEED	RUBRICATION METHOD	APPLICABLE MODEL
■QUILL CHANGE TYPE		
20,000~ 60,000rpm 60,000~ 80,000rpm 80,000~120,000rpm	High Frequency mist type	GRI-150N GRI-150NII GRI-600NII GRI-600NII M2/C2
~7,000rpm(MT4.5) 10,000rpm(MT4·MT5)	Grease type	GRI-600NII GRI-800NII GRI-1000NII GRI-1500NII GRI-2000NII
~15,000rpm(MT3) ~20,000rpm(MT2) ~30,000rpm(MT1)	Oil mist type	GRI-150N GRI-150NII GRI-600NII GRI-800NII GRI-1000NII
10,000~20,000rpm(MT4) 20,000~30,000rpm(MT3)	Oil air type	GRI-150NII GRI-600NII GRI-800NII GRI-1000NII
■SLEEVE TYPE 2,500~10,000rpm	Grease type	GRI-600NII GRI-800NII GRI-1000NII GRI-1500NII GRI-2000NII











GRINDING WHEEL SPINDLE SPEED CHANGES IN THE FOLLOWING CASE.

1) High frequency inverter provides infinitely variable speed by frequency control.
2) Spindle speed on the quill changing type and sleeve type can be changed by exchange of grinding wheel spindle pulley or motor pulley.
3) Variable speed range can be obtained within +20% to −50% by frequency inverter.

■ Standard circumferential speed of grinding wheel is 1,800 m/min. ■ Determine quill dimension of A and B.

Specifications GRI-600NII

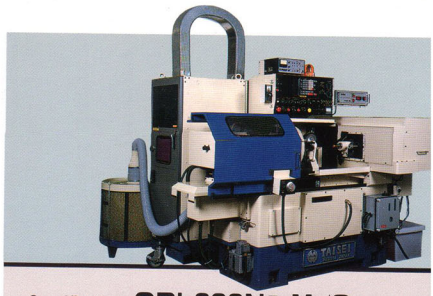
Hole Dia. to be ground	ϕ10～ϕ200mm	
Max. Hole Length (Depth) to be ground	200mm	
Swing over Table	ϕ500mm	
Swing inside chuck guard	ϕ350mm	
Range of Work Spindle Speeds	15～500rpm	
Maximum Stroke of Table	(Z-axis) 570mm	
Rapid-Traverse Rate	(Z-axis) 9,000mm/min	
Range of Feed Rates	(Z-axis) 0.1～4,000mm/min	
Movement of Wheelhead (X-axis) (from spindle center)	100mm toward front 150mm toward rear	
Rapid-Traverse Rate	(X-axis) 4.500mm/min	
Wheel Infeed Rates	(X-axis) 0.1～4,000mm/min	
Electric Motors		
Work Spindle Drive	1.5KW AC 1S	
Wheel Spindle Drive	2.2KW V3	
Wheelhead (X-axis) Drive	0.9KW AC 5S	
Table (Z-axis) Drive	1.8KW AC 10S	
Coolant Pump	40W	
Table Lube Oil Pump	10W	
Magnetic Separator	25W	
Center Height from Floor Level	1,100mm	
Overall Machine Dimensions	Height	2,180mm
	Length	2,575mm
	Width	2,180mm
Approx. Machine Weight	2,500kg	

Standard equipment & accessories

grinding wheel spindle 10,000rpm	1 set
grinding wheel dresser	1 set
3-jaw scroll chuck 9 in.	1 set
machine lighting equipment	1 set
diamond dressing tool	1 pce
CNC system FANUC-OTB	1 set

Optional equipment & accessories

grinding wheel spindle 15,000rpm (oil-mist type)
20,000rpm (oil-mist type)
30,000rpm (oil-mist type)
oil mist lubricating unit
grinding wheel spindle inverter
magnetic separator
coolant tank & pump equipment
face plate
chuck (air, hydraulic, manual 6～12in.)
gap eliminator



Specifications GRI-600NII-M_2/C_2

Hole Dia. to be ground	ϕ10～ϕ200mm	
Max. Hole Length (Depth) to be ground	200mm	
Swing over Table	ϕ500mm	
Swing inside chuck guard	ϕ350mm	
Range of Work Spindle Speeds	15～500rpm	
Maximum Stroke of Table	(Z-axis) 570mm	
Rapid-Traverse Rate	(Z-axis) 9,000mm/min	
Range of Feed Rates	(Z-axis) 0.1～4,000mm/min	
Movement of Wheelhead (X-axis) (from spindle center)	100mm toward front 150mm toward rear	
Rapid-Traverse Rate	(X-axis) 4.500mm/min	
Wheel Infeed Rates	(X-axis) 0.1～4,000mm/min	
Electric Motors		
Work Spindle Drive	1.5KW AC 1S	
No. 1 Wheel Spindle Drive	3.7KW V3 (oil-air spindle)	
No. 2	1.3KW (for high frequency spindle)	
Wheelhead (X-axis) Drive	0.9KW AC 5S	
Table (Z-axis) Drive	1.8KW AC 10S	
Coolant Pump	40W	
Table Lube Oil Pump	10W	
Magnetic Separator	25W	
Center Height from Floor Level	1,100mm	
Overall Machine Dimensions	Height	2,180mm
	Length	2,690mm
	Width	2,990mm
Approx. Machine Weight	2,500kg	

Standard equipment & accessories

grinding wheel spindle (oil-air type) 10,000～20,000rpm	1 set
grinding wheel spindle (high-frequency type) 20,000～60,000rpm	1 set
wheel spindle inverter	2 set
lubricator for grinding wheel spindles	2 set
grinding wheel dresser	1 set
3-jaw scroll chuck 9 in.	1 set
machine lighting equipment	1 set
diamond dressing tool	1 pce
CNC system FANUC-OTB	1 set

Optional equipment & accessories

grinding wheel spindle (oil-air type) 20,000～30,000rpm
grinding wheel (high-frequency type) 60,000 to 120,000rpm
magnetic separator
coolant tank & pump equipment
face plate
high pressure coolant generator
coolant temperature controller
mist collecting equipment

Specifications GRI-800NII

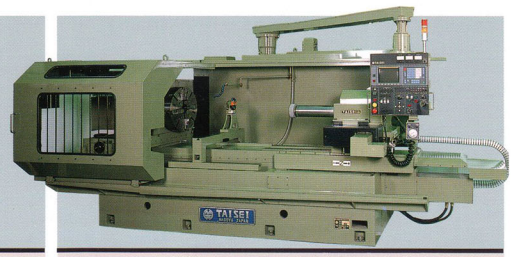
Hole Dia. to be ground	ϕ30～ϕ500mm
Max. Hole Length (Depth) to be ground	300mm
Swing over Table	ϕ800mm
Cross Adjustment of Workhead (from table center)	100mm toward front 350mm toward rear
Range of Work Spindle Speeds	28～500rpm
Longitudinal Adjustment of Wheelhead	300mm
Maximum Stroke of Table	(Z-axis) 800mm
Rapid-Traverse Rate	(Z-axis) 9,000mm/min
Range of Feed Rates	(Z-axis) 0.1～4,000mm/min
Movement of Wheelhead (X-axis) (from table center)	100mm toward front 150mm toward rear
Rapid-Traverse Rate	(X-axis) 4.500mm/min
Wheel Infeed Rates	(X-axis) 0.1～4,000mm/min
Electric Motors	
Work Spindle Drive	3.7KW AC 3S
Wheel Spindle Drive	5.5KW 2P V3
Wheelhead (X-axis) Drive	0.9KW AC 5S
Table (Z-axis) Drive	3.5KW AC 20S
Coolant Pump	100W
Table Lube Oil Pump	75W
Magnetic Separator	25W
Center Height from Floor Level	1,220mm
Overall Machine Dimensions	Height 2,250mm Length 4,700mm Width 3,700mm
Approx. Machine Weight	6,000kg

Standard equipment & accessories

grinding wheel spindle 10,000rpm	1 set
grinding wheel dresser	1 set
4-jaw independent chuck 20 in.	1 set
magnetic spporator	1 set
coolant tank & pump equipment	1 set
machine lighting equipment	1 set
CNC system FANUC-OTB	1 set

Optional equipment & accessories

grinding wheel spindle 15,000rpm (oil-mist type)
20,000rpm (oil-mist type)
30,000rpm (oil-mist type)
grinding wheel spindle (Sleeve type) 2,000～10,000rpm
oil mist lubricating unit
grinding wheel spindle inverter
face plate
gap eliminator
digital readout display unit for workhead positioning
automatic in-process gauging unit
automatic face positioning device
coolant temperature controller
diamond dressing tool



Specifications GRI-1000NII

Hole Dia. to be ground	ϕ50～ϕ500mm
Max. Hole Length (Depth) to be ground	500mm
Swing over Table	ϕ800mm (ϕ1,000mm)
Cross Adjustment of Workhead (from table center)	100mm toward front 350mm toward rear
Range of Work Spindle Speeds	10～180rpm
Longitudinal Adjustment of Wheelhead	500mm
Maximum Stroke of Table	(Z-axis) 1,000mm
Rapid-Traverse Rate	(Z-axis) 9,000mm/min
Range of Feed Rates	(Z-axis) 0.1～4,000mm/min
Movement of Wheelhead (X-axis) (from table center)	100mm toward front 150mm toward rear
Rapid-Traverse Rate	(X-axis) 4.500mm/min
Wheel Infeed Rates	(X-axis) 0.1～4,000mm/min
Electric Motors	
Work Spindle Drive	3.7KW AC 3S
Wheel Spindle Drive	5.5KW 2P V3
Wheelhead (X-axis) Drive	0.9KW AC 5S
Table (Z-axis) Drive	3.5KW AC 20S
Coolant Pump	100W
Table Lube Oil Pump	75W
Magnetic Separator	25W
Center Height from Floor Level	1,220mm (1,320mm)
Overall Machine Dimensions	Height 2,250mm Length 4,950mm Width 3,700mm
Approx. Machine Weight	7,500kg

Standard equipment & accessories

grinding wheel dresser	1 set
4-jaw independent chuck 20 in.	1 set
magnetic separator	1 set
coolant tank & pump equipment	1 set
machine lighting equipment	1 set
work-rest base	1 set
CNC system FANUC-OTB	1 set

Optional equipment & accessories

grinding wheel spindle 7,000rpm (Quill Change type)
15,000rpm (oil mist type)
ϕ60×250mm～ϕ120×500mm (sleeve type)
15,000rpm (oil mist type)
oil mist lubricating unit
grinding wheel spindle inverter
face plate
3-jaw work-rest ϕ50～ϕ150 、ϕ150 ～ϕ300 2-jaw work-rest ϕ420
gap eliminator
automatic in-process gauging unit
automatic face positioning device
coolant temperature controller
digital readout display unit for workhead positioning
face grinding attachment
diamond dressing tool

Specifications GRI-1500NII

Hole Dia. to be ground	ϕ50～ϕ500mm
Max. Hole Length (Depth) to be ground	600mm
Swing over Table	ϕ800mm (ϕ1,000mm)
Cross Adjustment of Workhead	100mm toward front
(from table center)	350mm toward rear
Range of Work Spindle Speeds	10～180rpm
Longitudinal Adjustment of Wheelhead	800mm
Maximum Stroke of Table	(Z-axis) 1,500mm
Rapid-Traverse Rate	(Z-axis) 9,000mm/min
Range of Feed Rates	(Z-axis) 0.1～4,000mm/min
Movement of Wheelhead	100mm toward front
(X-axis)(from table center)	150mm toward rear
Rapid-Traverse Rate	(X-axis) 4.500mm/min
Wheel Infeed Rates	(X-axis) 0.1～4,000mm/min
Electric Motors	
Work Spindle Drive	3.7KW AC 3S
Wheel Spindle Drive	5.5KW 2P V3
Wheelhead (X-axis) Drive	0.9KW AC 5S
Table (Z-axis) Drive	3.5KW AC 20S
Coolant Pump	100W
Table Lube Oil Pump	75W
Magnetic Separator	25W
Center Height from Floor Level	1,220mm (1,320mm)
Overall Machine Dimensions	Height 2,250mm
	Length 5,950mm
	Width 3,700mm
Approx. Machine Weight	8,500kg

Standard equipment & accessories

grinding wheel dresser	1 set
4-jaw independent chuck 20in.	1 set
magnetic separator	1 set
coolant tank & pump equipment	1 set
machine lighting equipment	1 set
work-rest base	1 set
CNC system FANUC-OTB	1 set

Optional equipment & accessories

grinding wheel spindle 7,000rpm (Quill Change type)
15,000rpm (oil mist type)
ϕ60×250mm ～ ϕ120 ×600mm (sleeve type)
oil mist lubricating unit
grinding wheel spindle inverter
face plate
3-jaw work-rest ϕ50～ϕ150 、ϕ150 ～ϕ300
2-jaw work-rest ϕ420
gap eliminator
automatic in-process gauging unit
automatic face positioning device
coolant temperature controller
digital readout display unit for workhead positioning
face grinding attachment
diamond dressing tool

Specification GRI-2000NII

Hole Dia. to be ground	ϕ50～ϕ500mm
Max. Hole Length (Depth) to be ground	1,000mm
Swing over Table	ϕ1,000mm
Cross Adjustment of Workhead	100mm toward front
(from table center)	350mm toward rear
Range of Work Spindle Speeds	10～180rpm
Longitudinal Adjustment of Wheelhead	1,100mm
Maximum Stroke of Table	(Z-axis) 1,650mm
Rapid-Traverse Rate	(Z-axis) 9,000mm/min
Range of Feed Rates	(Z-axis) 0.1～4,000mm/min
Movement of Wheelhead	200mm toward front
(X-axis) (from table center)	250mm toward rear
Rapid-Traverse Rate	(X-axis) 4.500mm/min
Wheel Infeed Rates	(X-axis) 0.1～4,000mm/min
Electric Motors	
Work Spindle Drive	3.7KW AC 3S
Wheel Spindle Drive	5.5KW 2P V3
Wheelhead (X-axis) Drive	0.9KW AC 5S
Table (Z-axis) Drive	3.3KW AC 30S
Coolant Pump	100W
Table Lube Oil Pump	75W
Magnetic Separator	25W
Center Height from Floor Level	1,450mm
Overall Machine Dimensions	Height 2,500mm
	Length 7,110mm
	Width 3,500mm
Approx. Machine Weight	13,500kg

Standard equipment & accessories

grinding wheel dresser	1 set
4-jaw independent chuck 24in.	1 set
magnetic separator	1 set
coolant tank & pump equipment	1 set
machine lighting equipment	1 set
work-rest base	1 set
CNC system FANUC-OTB	1 set

Optional equipment & accessories

grinding wheel spindle 7,000rpm (Quill Change type)
15,000rpm (oil mist type)
ϕ70×320mm ～ϕ120 ×1,000mm (sleeve type)
oil mist lubricating unit
grinding wheel spindle inverter
face plate
3-jaw work-rest ϕ50～ϕ150 、ϕ150 ～ϕ300
2-jaw work-rest ϕ420
gap eliminator
automatic in-process gauging unit
automatic face positioning device
coolant temperature controller
digital readout display unit for workhead positioning
face grinding attachment
diamond dressing tool

Specifications GRI-150N

Hole Dia. to be ground	ϕ10～ϕ80mm
Max. Hole Length (Depth) to be ground	25mm
Max.dia of workpiece	ϕ145mm
Range of Work Spindle Speeds	350, 500, 800, 1,000, 1,200, 1,500rpm
Grinding method	cam-oscillation 120 ～360cpm
Maximum Stroke of Table	(Z-axis) 160mm
Rapid-Traverse Rate	(Z-axis) 9,000mm/min
Range of Feed Rates	(Z-axis) 0.1～4,000mm/min.
Movement of Wheelhead	80mm toward front
(X-axis) (from table center)	20mm toward rear
Rapid-Traverse Rate	(X-axis) 4.500mm/min
Wheel Infeed Rates	(X-axis) 0.1～4,000mm/min

Electric Motors	
Work Spindle Drive	1.5KW 4P
Wheel Spindle Drive	5.5KW 2P V3
Wheelhead (X-axis) Drive	0.8KW DC 5M
Table (Z-axis) Drive	0.75KW 4P
Coolant Pump	100W
Table Lube Oil Pump	20W
Magnetic Separator	25W
Center Height from Floor Level	1,050mm
Overall Machine Dimensions	Height 1,920mm
	Length 2,500mm
	Width 2,750mm
Approx. Machine Weight	3,000kg

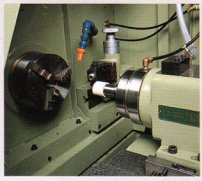
Standard equipment & accessories

grinding wheel dresser	1 set
hydraulic power unit	1 set
machine lighting equipment	1 set
CNC system FANUC-MATE PD	1 set

Optional equipment & accessories

grinding wheel spindle
- 10,000rpm (grease type)
- 15,000rpm (oil mist type)
- 20,000rpm (oil mist type)
- 30,000rpm (oil mist type)

oil mist lubricating unit
automatic in-process gauging unit
magnetic separator
chuck (air, hydraulic, manual)
gap eliminator
autoloader unit
coolant tank & pump equipment
diamond dressing tool



Specification AQC-150NII

Hole Dia. to be ground	ϕ25～ϕ80mm
Max. Hole Length (Depth) to be ground	50mm
Max dia. of workpiece	ϕ120mm
Range of Work Spindle Speeds	170.58～684rpm, 500 ～1,500rpm
Table oscillation	180 ～540cpm/60Hz
Range of wheel spindle speeds	7,500 ～30,000rpm (high frequency spindle)
Automatic quill changer	
Range of wheel dia.	ϕ20～ϕ60
Number of quill can be stocked	9 pcs
Sizing control system	direct inprocess gauging and indirect sizematic control
Maximum Stroke of Table	(Z-axis) 180mm
Rapid-Traverse Rate	(Z-axis) 9,000mm/min
Range of Feed Rates	(Z-axis) 4,000mm/min
Movement of Wheelhead	80mm toward front
(X-axis) (from table center)	30mm toward rear
Rapid-Traverse Rate	(X-axis) 4.500mm/min
Wheel Infeed Rates	(X-axis) 0.1～4,000mm/min

Electric Motors	
Work Spindle Drive	0.75KW 4P
Wheel Spindle Drive	5.5/3.0KW
Wheelhead (X-axis) Drive	0.8KW DC 5M
Table (Z-axis) Drive	0.8KW DC 5M
Coolant Pump	40W
Table Lube Oil Pump	0.02KW 4P
Oil Pump	1.5KW 6P
Hydro static bearing oil pump	6.0KW
Hydraulic pump	0.75KW 4P
Overall Machine Dimensions	
	Length 5,000mm
	Width 4,200mm
Approx. Machine Weight	5,000kg

The Model AQC-150 NII is available in two types of table depending upon the grinding application.

Normally, a simultaneous 2 axes controlled table is the standard without oscillation which is recommended for multi-end faced workpieces or multi-stepped I.D. grinding. The other type is the so-called "W " table with hydrostatec slides which permit oscillating motion for high speed operation. Both types are available for the AQC-150 NII with a fully closed loop system applicable to high speed grinding operations and higher productivity for large lot production.

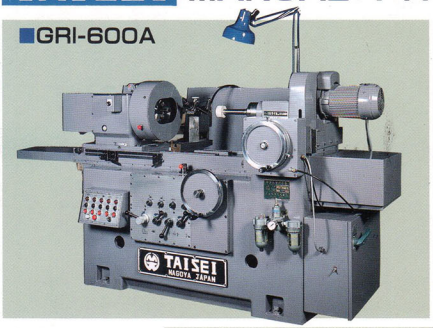
This model is equipped with a magazine storing 8 grinding wheels, capable of automatic quill change (AQC) of 9 wheels in total and automatic dressing, permitting 24 hours of unmanned grinding operation.

Without using oscillation, the machine provides normal plunge and traverse grinding functions.

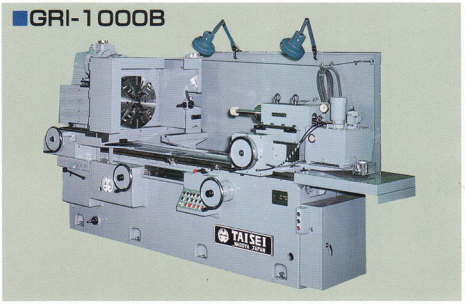
Automatic quill change of the different kinds of grinding wheels and different quill diameters can be used to make possible grinding operations by a single chucking for a workpiece which may require quite complicated or multi-grinding operations.

TAISEI MANUAL TYPE INTERNAL GRINDER

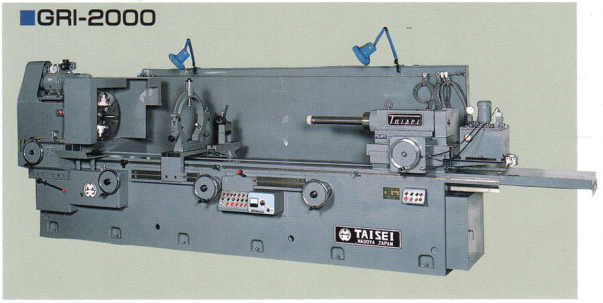
■GRI-600A



■GRI-1000B



■GRI-2000



SPECIFICATION	GRI-600A	GRI-1000B	GRI-2000
Hole Dia. to be ground	ϕ10~ϕ200 mm	ϕ50~ϕ500 mm	
Max. Hole Length (Depth) to be ground	200 mm	500 mm	1,000 mm
Max. Workpiece Length	200 mm	1,000 mm	2,000 mm
Swing over Table	ϕ500 mm	ϕ800 mm (ϕ1,000 mm)	
Movement of Wheelhead (X-axis)	75 mm toward front 75 mm toward rear (from spindle center)	100 mm toward front 100 mm toward rear (from table center)	
Cross Adjustment of Workhead	———	100 mm toward front 350 mm toward rear (from table center)	
Swivel Adjustment of Workhead	±15°(+10°)	±15°	
Overall Machine Dimensions	(L)2,535×(W)1,700 mm	(L)4,000×(W)1,700 mm	(L)5,500×(W)1,700 mm

TAISEI MACHINERY CO., LTD
67 Kaededai, Mino City, Gifu Pref., Japan
Telephon:(0575)35-3311