



PARAGON since 1968

Unparalleled, Choice CNC Grinding Solutions

● **CNC series**

- GU-2020CNC
- GU-3250CNC
- GU-32120CNC
- Ultra GU-3550CNC
- SuperB GU-35100CNC
- GUH-3540CNC (Heavy-Duty)
- GUH-3580CNC (Heavy-Duty)
- GUH-35100CNC (Heavy-Duty)
- GUH-35150CNC (Heavy-Duty)

● **P series** (Hydraulic Driven Auto Feed)

- GU-3250P
- GU-3275P
- GU-32100P

● **NC series**

- GU-3250NC
- GU-3275NC
- GU-32100NC

● **S series** (Hand Feed)

- GU-3250S
- GU-3275S
- GU-32100S



Universal Cylindrical Grinding Machines

- CNC Series**
- NC Series**
- Economical Series**

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UNIVERSAL CYLINDRICAL GRINDING MACHINE CNC SERIES

Max. Grinding Wheel: Peripheral Speed 45m/s

Unique PARAGON Hydrostatic Bearings Assembled with Grinding Wheel Spindle

The GU series are compact universal cylindrical grinding machines by PARAGON, and can achieve up to 0.1 μm positioning accuracy. They are suitable for long, multi-steps, and profile cylindrical grinding. Along with the optional internal grinding unit attachment, they provide more flexibility and offer the best choice for your needs. The main features are :

- Grinding wheelhead spindle with unique hydrostatic bearings.
- Multi-function, high roundness workhead.
- Hydraulic and manual adjustable tailstock.
- Highly rigid machine base with hydrostatic lubrication on guideways.
- X and Z-axes have high torque servo motor directly coupled to the class C1 ballscrew. (ϕ 40mm)
- Heidenhain sub- μm linear scale with close-loop feedback.



Example of Grinding Workpieces



The GU-3250CNC Polygon Grinder

GU-3250CNC Polygon Grinder is the ultimate design for both eccentric and non-round grinding. Infeed movement in nanometer by fanuc 31i controller with feed-backs to controller from the angle encoder in C-axis. Applications include eccentric grinding, camshaft grinding and crankshaft grinding etc.

Polygon Workpiece



Controller

Rexroth MTX Micro

- ✓ PARAGON CNC series universal cylindrical grinding machines, each with a color screen have the latest technology in digital control systems.
- ✓ Powerful processor can shorten CNC and PLC processing time.
- ✓ Compact multi-server drive, which adapting smaller installing space and showing high processing accuracy.
- ✓ Paragon's self-developed CAD/CAM software can get users start quickly with its rapid NC program output and conversational input interface.

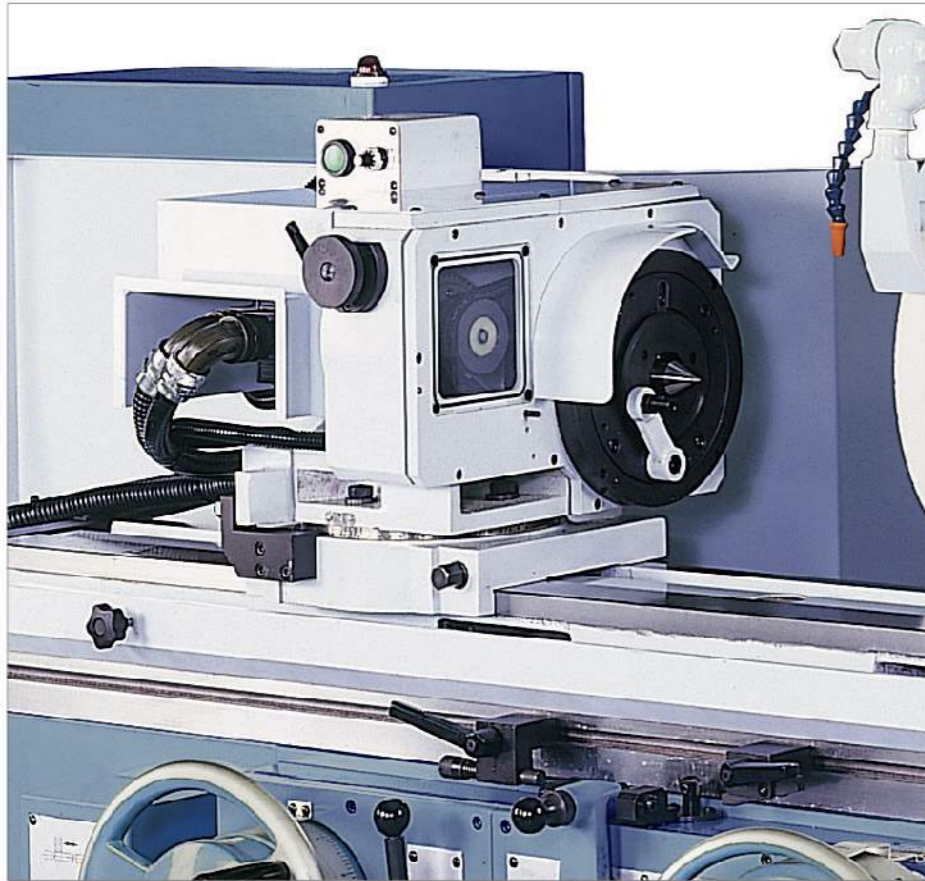
Applicable Industries:

- Aerospace parts
- Medical applications
- Precision bearings
- High precision machine parts
- Hydraulic & pneumatic parts
- Electrical / Electronic equipments
- Automotive and motorcycle parts
- Cutting tools

PARAGON

WORKHEAD

Multi-Functional. High Precision Bearings.

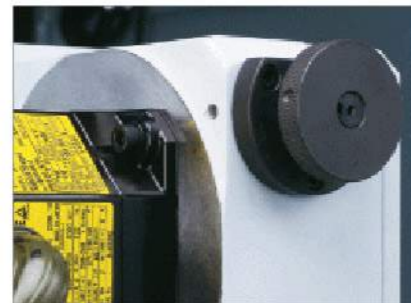


The workhead's rigid design, driven by servo motor, features reliable and precise operation. NN roller bearings and angular contact bearings in the workhead spindle reduce edge stress and friction, improving concentricity and surface finish of workpieces. The table is enabled to swivel between 30° (clockwise)~90° (counterclockwise)



Sensor
This technology optimizes the grinding processes:

- Rotation rpm monitoring.
- Belt status indication. Alarm will be activate if belt is broken.
- Easy loading and unloading of workpieces to reduce set-up time.



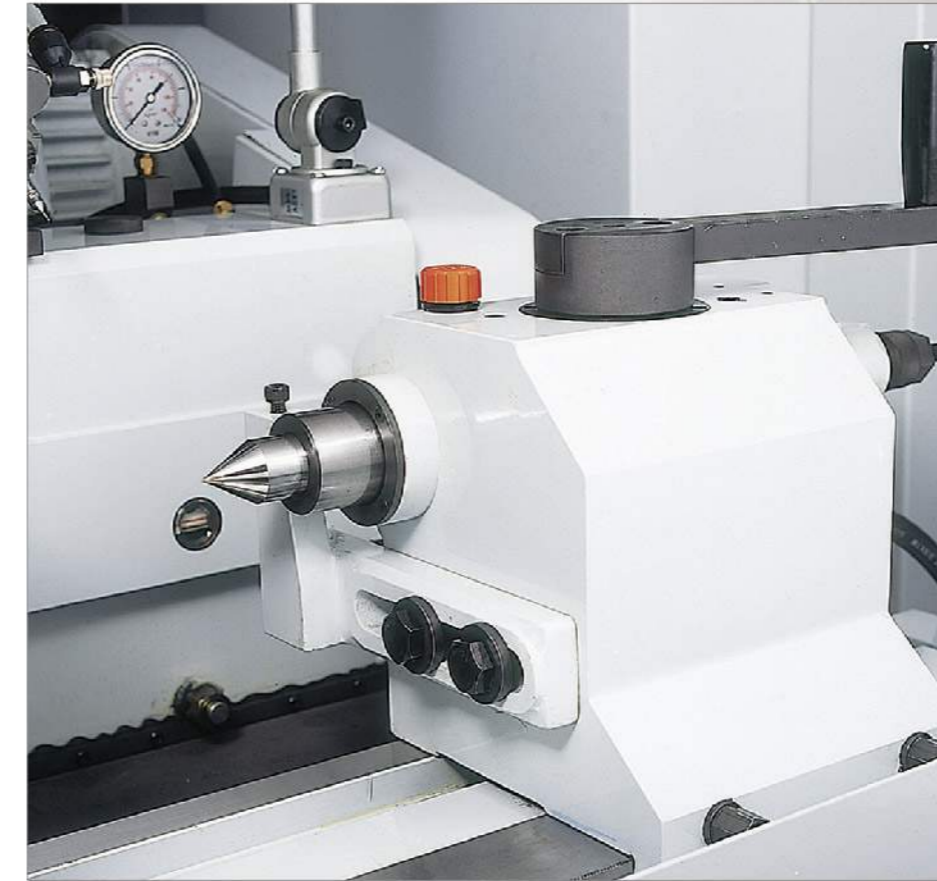
Belt Tension Adjustment
Used to assure full power transmission.



Spindle Nose
Workhead can be equipped with rotary cylinder, chuck and fixture applications for easier grinding of various workpieces.

TAILSTOCK

Flexible and Easy Operation



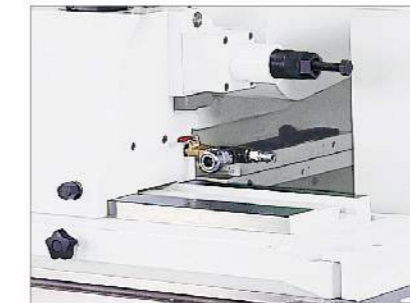
The rigid tailstock is equipped with hydraulic actuated barrel retraction by foot paddle and manual handle for easy work-piece loading and unloading. It is designed for the use of M.T.4 taper centers.

Center pressure can be adjusted for high precision which is required for small and thin workpieces.

Unique fixed-type wheel dresser featuring constant coordinate position without calibration. Diamond dresser holder mounted beside tailstock. (Optional)



Micro Taper Adjustment (Optional)
The fine adjustment makes the taper correction in the range below 1 μm possible when grinding between centres.

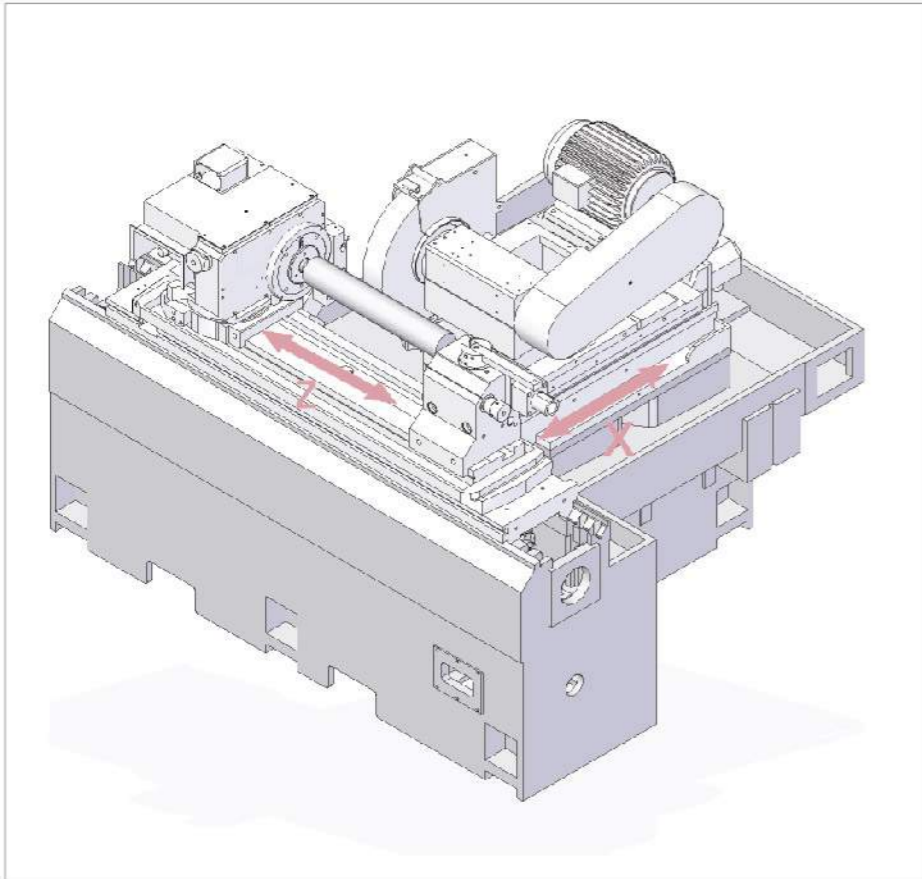


Air Impulsion
Tailstock equipped with air inlet for easy manual movement.



Table Taper Correction Device
The fine adjustment makes the finest table taper correction possible.

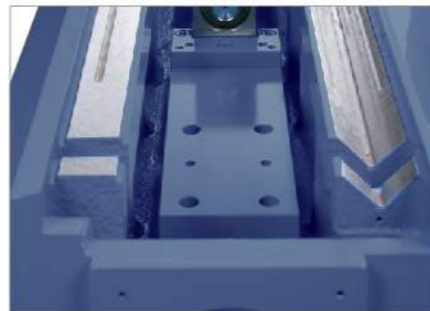
MACHINE BASE New Structural Design Concepts



The machine base is manufactured from high quality Meehanite cast iron, with low center of gravity, featuring rigidity over 10^8 N/m and natural frequency over 150 Hz, analyzed by advanced Finite Element Method (FEM). Along with vibration stress release, these outstanding structural features assure high strength, maximum damping capability and longer service life.



Class C1 Ballscrews
Features hydrostatic lubrication, low friction coefficient, and is pretensioned for increased rigidity and high positioning accuracy, providing minimum feeding accuracy in $0.1 \mu\text{m}$.



Guideways
Machine Base with extra wide V and Flat guideways on base combined with great span in between exhibit outstanding stability during grinding operation.



Hand-Scraping
Extra fine hand scraped over the entire contact surface of guideways and an oil lubrication system guarantee high accuracy and maximum durability for axes movement.

ACCESSORIES Optimized Performance and Customized Automation



Touch Probe (CNC Series Optional)
The reliable touch probe can quickly and accurately detect the end face position on workface, reducing idle time and boosting productivity.

Controller



Gap Eliminator / Crush Control (CNC Series Optional)
You can get both or one of the devices according to function and needs; Gap Eliminator: signal detection of G.W. and workpiece contact, rapidly approaches workpiece for grinding to save time. Crush Control: This device will automatically detect the setting up or machining condition. If any abnormal condition occurs, the grinding wheel will rapidly retract for safety.



Automatic in-process Gauge (CNC Series Optional)
This device automatically and continuously measures the workpiece being machined and compares the actual size to pre-set values, bringing the workpiece to the accurate dimension.



Rotary-type Dressing Unit (CNC Series Optional)
Two types of Rotary Dressing Unit can be supplied. One type is with small diamond wheel for dressing of normal grinding wheel. One type is with small aluminum oxide wheel for truing the surface of new diamond grinding wheel to enhance grinding accuracy.



Inverter for Grinding Wheel Spindle (CNC Series Optional)
Multi-step variable speed change in the G.W. allows easy testing to enhance grinding efficiency and precision level. When G.W. is wearing out, it maintains constant peripheral speed, grinding efficiency and surface precision through the controller. Gradual activation and halt avoid affecting life-expectancy of hydrostatic spindle and eliminate strident noise caused by belt.



Heidenhain sub- μm linear scale for X-axis (CNC Series Standard)



Grinding Wheel Replacement Device



Dynamic Wheel Balancer



Workpiece Chucked Indicator Device

GRINDING EXAMPLES



Face Grinding

Grinding a face with workhead set 90 degrees from an ordinary position.



Plunge Grinding

Automatic infeed allows excellent results in short face grinding.



Taper Grinding

Grinding a tapered workpiece held between centers or by chuck. Table is easily swiveled for this operation.



Traverse Grinding

Automatic intermittent infeed and hydraulic table-traverse for efficient traverse grinding jobs.



Shoulder Grinding

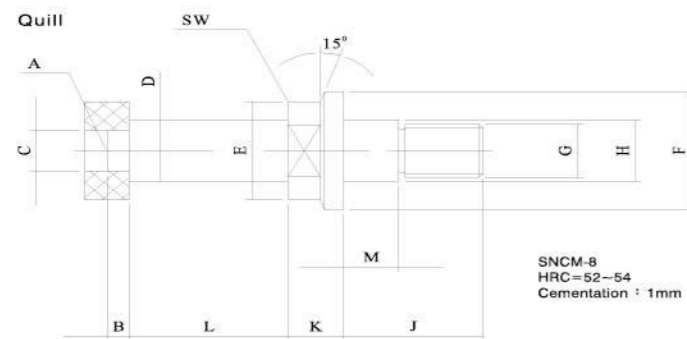
Grinding diameter and adjacent shoulder on a workpiece held between centers in a single infeed.



Internal Grinding (Optional)

Grinding an internal diameter with a hinged type Internal Grinding Attachment.

INTERNAL GRINDING ATTACHMENT (OPTIONAL ACCESSORIES)



NOTE: The ratio of grinding hole diameter to length is 1:3. Maximum length is 150 mm.

HOLE ϕ	SPINDLE TYPE (r.p.m.)	SIZE										
		A	B	C	D	E	F	G	H	J	K	SW
80-150	grease-8,000	M8	12	12	ϕ 40 x 50	50	57	M26 x 2.0P	28	42	16	18
					ϕ 40 x 106							
40-80	grease-10,000	M8	10	10	ϕ 20 x 50	32	38	M16 x 1.5P	17	29	15	12
	oil mist-20,000				ϕ 25 x 70							
					ϕ 30 x 90							
25-40	grease-20,000	M6	8	8	ϕ 16 x 40	24	32	M14 x 1.5P	15	27	10.5	11
	oil mist-30,000				ϕ 20 x 58							
					ϕ 24 x 80							
16-25	grease-30,000	M4	8	6	ϕ 10 x 25	21	26	M10 x 1.5P	10.5	21	9.5	9
	oil mist-40,000				ϕ 13 x 30							
					ϕ 16 x 40							
13-16	grease-40,000	M4	/	/	ϕ 8 x 25	17	23	M8 x 1.25P	8.5	19	8.5	7
	oil mist-50,000				ϕ 10 x 30							
					ϕ 12 x 40							
10-13	grease-50,000	M4	/	/	ϕ 6 x 20	15	20	M7 x 1.0P	7.5	18	7	7
	oil mist-60,000				ϕ 7 x 25							
					ϕ 8 x 30							

UNIVERSAL CYLINDRICAL GRINDING MACHINES

GU-3250 / GU-3275 / GU-32100

- ◆ Swing Over Table: 320mm
- ◆ Max. Load Held Between Centers: 150kg
- ◆ Grinding Wheel Peripheral Speed: 33m/sec
- ◆ Max. Workpiece Diameter to be Ground: ϕ 280mm
- ◆ Distance between Centers: 500mm/750mm/1000mm
- ◆ Touch-sensing Screen PLC Interface

✓ NC Series



✓ S Series: (Hand Feed)

✓ P Series: (Hydraulic Driven Auto. Feed)



ACCESSORIES

	GU-2020 CNC	GU-32 CNC	Ultra	GU-32 NC	GU-32 S/P	GUH-35 CNC	Super B
CNC Controller(FANUC/SIEMENS/MITSUBISHI)	○	○	○	×	×	○	○
NC Controller(PROFACE)	×	×	×	○	×	×	×
Accumulator	△	△	△	△	△	△	×
Inverter	△	△	○	△	△	△	△
Linear Scale for X-axis	○	○	○	△	△	○	○
Linear Scale for Z-axis	△	△	△	△	△	△	△
Touch Probe	△	△	△	×	×	△	○
OD In-process Gauge	△	△	△	△	△(P)/X(S)	△	△
Gap eliminator/Crush Control	△	△	△	×	×	△	△
Coolant Tank with Pump	○	○	○	○	○	○	○
Oil Mist Separator	△	△	△	△	△	△	△
Paper Filter	△	△	△	△	△	△	△
Magnetic Coolant Separator	△	△	△	△	△	△	△
Electrical Cabinet Air Cooler	△	△	△	×	×	△	△
Electrical Cabinet Heat Exchanger	○	○	○	×	×	○	○
Wheel Balancing Stand & Arbor	△	△	△	△	△	△	△
Cam Locked Driving Dog	△	△	△	△	△	△	△
Adjustable 3-point Steady Rest	×	△	△	△	△	△	△
Hydraulic Steady Rest	×	△	△	△	△	△	×
Workpiece Holder (1set = 2pcs)	△	△	△	△	△	△	△
Micro feed Dresser Holder	×	×	×	△	△	×	×
Tailstock-mounted Dresser Holder	×	△	△	△	△	△	×
Table-mounted Dresser Holder	×	×	×	○	○	△	×
Slide-mounted Dresser Holder	○	○	○	×	×	○	○
Vibration Meter	△	△	△	△	△	△	△
Internal Grinding Attachment	×	△	×	△	△	×	△
Grinding Wheel + Flange	○	○	○	○	○	○	○
Jig Crane for Grinding Wheel	×	×	×	×	×	○	×
Rotary-type Dressing Unit (For Diamond Grinding Wheel)	×	△	△	×	×	△	×
Grinding Wheel Replacement Device	×	△	△	×	×	○	○
Dynamic Wheel Balancer	×	△	△	×	×	△	△
ID Spindle	×	△	△	△	△	×	△
Hydraulic Tank with Pump	○	○	○	○	○	○	○
Hydraulic Oil Cooler	△	○	○	△	△	○	○
Fully Enclosed Splash Guard	△	△	△	×	×	△	○
Micro Taper Adjustment of Tailstock	△	△	△	△	△	△	○
Hydraulic / Manual Tailstock	△	○	○	△	△	○	○
Workpiece Chucked Indicator Device	△	△	△	△	△	△	△
Scroll 3-jaw chuck with Back Plate	△	△	△	△	△	△	△
Hydraulic 3-jaw chuck + Rotary Cylinder	△	△	△	△	△	△	△

○ Standard Equipment △ Optional Equipment X Not Applicable

OPTIONAL ACCESSORIES



Micro feed dresser holder



Hydraulic form dressing attachment (mounted on wheelhead)



Scroll 3-jaw chuck with black plate



Wheel balancing stand & arbor



Electrical cabinet air cooler



Dynamic wheel balance device



Tailstock-mounted dresser holder



Angular dresser holder



Adjustable 2-point steady rest



Magnetic coolant separator



Internal grinding attachment



Grinding wheel replacement device



Workpiece holder



Radius dresser holder



Adjustable 3-point steady rest



Cam-locked driving dog



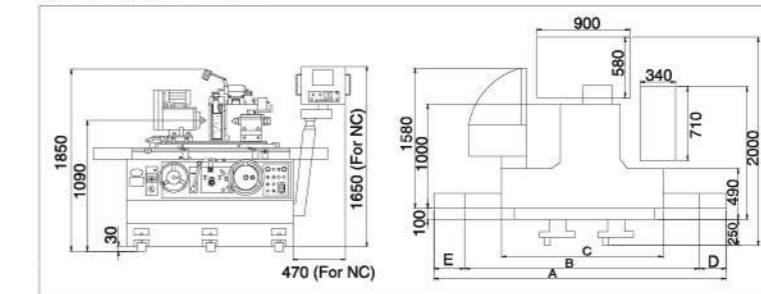
Paper filter



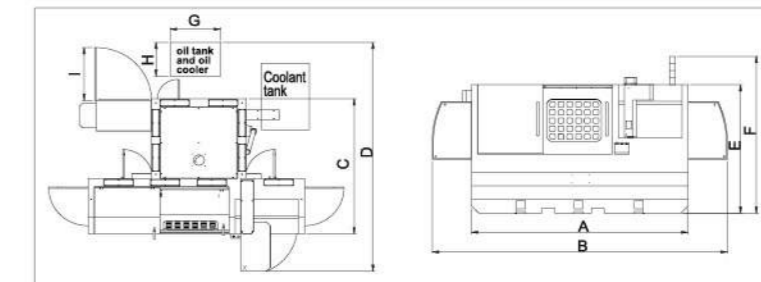
Workpiece chucked indicator device

MACHINE LAYOUT

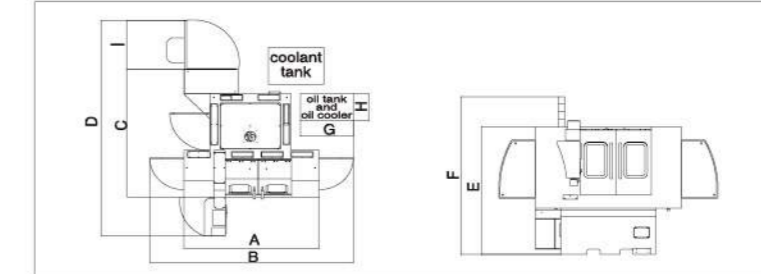
GU-32NC/P/S Series



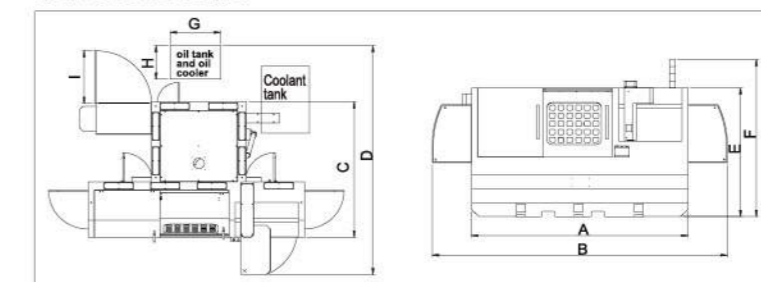
GU-32CNC Series



GU-2020CNC



GUH-35CNC Series



Unit:mm

	GU-3250NC/P/S	GU-3275NC/P/S	GU-32100NC/P/S
A	2810	3665	4630
B	2260	2865	3580
C	1555	2020	2475
D	275	400	525
E	275	400	525

	GU-2020CNC	GU-3250CNC	GU-32100CNC
A	1800	3000	4200
B	2700	4000	5650
C	2300	2000	1900
D	3150	3380	2800
E	1770	1860	1860
F	2160	2260	2260
G	700	950	950
H	400	800	800
I	720	760	750

*The machine layout is based on grinders with fully enclosed splash guard

	GUH-3540CNC	GUH-3580CNC	GUH-35100CNC
A	3030	4040	4400
B	4110	5180	5380
C	2000	2000	2000
D	3380	3380	3380
E	1860	1860	1860
F	2260	2260	2260
G	950	950	950
H	800	800	800
I	760	760	760

*The machine layout is based on grinders with fully enclosed splash guard

SPECIFICATIONS CNC Series

MODEL		GU-2020CNC	GU-3250CNC	SuperB GU-35100CNC	GU-32120CNC	Ultra GU-3550CNC
CAPACITY						
Swing over table	mm	200	320	320	320	350
Distance between centers	mm	200	500	1000	1,200	500
Max. grinding diameter	mm	φ160	φ280		φ280	φ320
Max. grind wheel dimensions	mm	φ355x50x127	φ405x56x127	φ510	φ405x56x127	φ405x56x127
Max. load held between centers	kg	30	150	100	150	150
Max. grinding wheel peripheral speed	m/s	33(45)	45	45	45	45
CONTROL SYSTEM						
Controller		FANUC / SIEMENS / MITSUBISHI				Rexroth MTX Micro
FEED SLIDE						
X-axis minimum resolution increment	mm	0.0001	0.0001	0.00005	0.0001	0.0001
X-axis rapid traverse speed	m/min	5	6	60	6	6
Z-axis minimum resolution increment	mm	0.0001	0.0001	0.00005	0.0001	0.0001
Z-axis max. traverse speed	m/min	6	8	8	8	8
Z-axis can be swiveled manually in deg.	deg.	-0.5 ~ +6	0 ~ +8	-0.5 ~ +5	-0.5 ~ +5	-0.5 ~ 7.5
WORKHEAD						
Spindle speed	r.p.m.	5-750	5-750	5~750	5~750	5~700
Center		M.T.3	M.T.4	M.T.4 / M.T.5	M.T.4	M.T.4 / M.T.5
Swiveling angle (counterclockwise-clockwise)	deg.	-	90° - 30°	0	90° / 30°	-
TAILSTOCK						
Hydraulic sleeve retraction	mm	25	35	35	35	-
Center		M.T.3	M.T.4	M.T.4 / M.T.5	M.T.4	-
TANK CAPACITY						
Hydraulic tank	L	50	50	24	45	45
Coolant tank	L	80	80	80	80	80
Wheelhead lubrication	L	35	45		45	45
Tailstock lubrication	L	0.4	0.4	30 (optional)	0.4	-
DRIVEN MOTORS						
Wheel spindle	HP	3	5	16	5	5
Wheelhead feed (servo motor)	kw	1.2	1.6	1.2	1.6	18.8
Table feed (servo motor)	kw	1.2	3.0	3.0	3.0	1.2
Workhead spindle (servo motor)	kw	1	1.2	1.0	1.2	10.9
Hydraulic pump	HP	2	1	1	1	1
Wheel spindle lubricant	HP	1	1	-	1	1
Coolant pump	HP	1/4	1/4	0.5	1/4	1/4
Internal grinding	HP	-	1	1hp2p	1	-
OTHERS						
Machine dimensions	mm	1,800 x 2,300 x 2,160	3,000 x 2,000 x 2,260	4,200 x 2,000 x 2,260	5,550 x 3,600 x 2,260	3,200x2,000x2,260
Machine weight	kg	2,500	3,500	7,600	6,740	4,100

*Design and specifications are subject to change without prior notice
*The machine dimension and weight are based on standard equipment

SPECIFICATIONS CNC Series (Heavy-Duty)

MODEL		GUH-3540CNC	GUH-3580CNC	GUH-35100CNC	GUH-35150CNC
CAPACITY					
Swing over table	mm	350	350	350	350
Distance between centers	mm	400	800	1000	1500
Max. grinding diameter	mm	φ320	φ320	φ320	φ320
Max. grinding wheel dimensions	mm	φ610x100x203.2	φ610x100x203.2	φ610x100x203.2	φ610x115x203.2
Max. load held between centers	kg	150	150	150	150
Max. grind wheel peripheral speed	m/s	45(60optional)	45(60optional)	45(60optional)	45 (60 optional)
CONTROL SYSTEM					
Controller		FANUC /SIEMENS/MITSUBISHI			
FEED SLIDE					
X-axis min. resolution increment	mm	0.0001	0.0001	0.0001	0.0001
X-axis rapid traverse speed	m/min	6	6	6	10
Z-axis min. resolution increment	mm	0.0001	0.0001	0.0001	0.0001
Z-axis max. traverse speed	m/min	8	8	8	12
Z-axis manual swivel	deg.	-0.5~5	-0.5~5	-0.5~5	-0.5~4.5
WORKHEAD					
Spindle speed	r.p.m.	5~750	5~750	5~750	5~750
Center		M.T.4	M.T.4	M.T.5	M.T.5
TAILSTOCK					
Hydraulic sleeve retraction	mm	35	35	35	35
Center		M.T.4	M.T.4	M.T.5	M.T.5
TANK CAPACITY					
Hydraulic tank	L	50	50	50	45
Coolant tank	L	80	80	80	80
Wheelhead lubrication	L	45	45	45	45
DRIVEN MOTORS					
Wheel spindle	HP	20	20	20	20
Wheelhead feed (servo motor)	kw	3.0	3.0	3.0	3.0
Spindle driver (servo motor)	kw	1.2	1.2	1.8	1.8
Table feed (servo motor)	kw	3.0	3.0	3.0	3.0
Hydraulic pump	HP	1	1	1	1
Wheel spindle lubricant	HP	1	1	1	1
Coolant pump	HP	1/2	1/2	1/2	3/4
Oil cooler	HP	1	1	1	1
Internal grinding motor	HP	-	1	1	1
OTHERS					
Machine dimensions	mm	3,030 x 2,000 x 2,260	4,040 x 2,000 x 2,260	4,400 x 2,000 x 2,260	5,040x2,000x2,260
Machine weight	kg	6,600	7,000	7,200	8,500

*Design and specifications are subject to change without prior notice
*The machine dimension and weight are based on standard equipment

SPECIFICATIONS NC/S/P Series

MODEL		GU-3250	GU-3275	GU-32100
CAPACITY				
Swing over table	mm	320	320	320
Distance between centers	mm	500	750	1,000
Max. grinding diameter	mm	φ280	φ280	φ280
Max. grinding wheel dimensions	mm	φ405 x 56 x 127	φ405 x 56 x 127	φ405 x 56 x 127
Max. load held between centers	kg	150	150	150
Max. grinding wheel peripheral speed	m/s	33	33	33
Wheelhead handwheel feed stroke	mm	160	160	160
Wheelhead automatic rapid feed stroke	mm	40	40	40
Wheelhead automatic infeed stroke	mm	0.001	0.001	0.001
Movement per turn handwheel	mm	1	1	1
CONTROL SYSTEM (NC Series)				
NC controller		PROFACE (For NC)		
Wheelhead feed (Servo Motor)	kw	0.4	0.4	0.4
FEED SLIDE				
X-axis minimum resolution increment	mm	0.001	0.001	0.001
X-axis rapid traverse speed	m/min	6	6	6
Z-axis minimum resolution increment	mm	≈0.01	≈0.01	≈0.01
Z-axis max. traverse speed	m/min	4	4	4
Z-axis can be swiveled manually in deg.	deg.	0 ~ +8	0 ~ +5	0 ~ +5
Z-axis movement per turn of handwheel	mm	12.5(1.25)	12.5(1.25)	12.5(1.25)
Z-axis min. automatic reciprocating stroke	mm	10~14	10~14	10~14
WORKHEAD				
Spindle speed	r.p.m.	5-750	5-750	5-750
Center		M.T.4	M.T.4	M.T.4
Swiveling angle (counterclockwise-clockwise)	deg.	90° - 30°	90° - 30°	90° - 30°
TAILSTOCK				
Hydraulic sleeve retraction	mm	35	35	35
Center		M.T.4	M.T.4	M.T.4
TANK CAPACITY				
Hydraulic tank	L	50	50	50
Coolant tank	L	80	80	80
Wheelhead lubrication	L	30	30	30
Tailstock lubrication	L	0.4	0.4	0.4
DRIVEN MOTORS				
Wheel spindle	HP	5	5	5
Workhead spindle (servo motor)	kw	1	1	1
Hydraulic pump	HP	2	2	2
Wheel spindle lubricant	HP	1	1	1
Coolant pump	HP	1/4	1/4	1/4
Internal grinding	HP	1	1	1
OTHERS				
Machine dimensions	mm	2,810 x 2,270 x 1,850	3,665 x 2,270 x 1,850	4,630 x 2,270 x 1,850
Machine weight	kg	2,800	3,700	3,900

*Design and specifications are subject to change without prior notice
*The machine dimension and weight are based on standard equipment