



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)

NC series

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

• P series (Hydraulic Driven Auto Feed)

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

• S series (Hand Feed)

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



Universal Cylindrical Grinding Machines CNC Series

NC Series Economical Series

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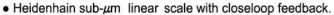


UNIVERSAL CYLINDRICAL GRINDING MACHINE CNC SERIES

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 $0.1 \,\mu\text{m}$ 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.(ø 40mm)





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.

PARAG

- 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



Unparalleled Quality Assurance and Control

The systematic development, production and assembly are carried out in a process oriented manner and in strict compliance with *ISO 9001* directives.

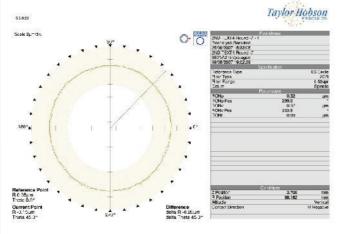
PARAGON's Q.C. staff conducts rigorous quality control throughout the entire manufacturing process before shipment. Our quality control process includes: a) Strict Incoming Materials Inspection; b) Geometric Accuracy Inspection; c) Unloaded Spindle Test and d) Grinding Test.

Quality Assurance

Over and Over Again, PARAGON's Dedication to Quality Wins Customer's Satisfaction and Trust.

In order to produce the highest quality and value-added products, PARAGON has invested a great amount in purchasing up-to-date and sophisticated automatic manufacturing equipments and measuring devices, including a CNC Horizontal Machining Center, Roundness Measuring Instrument, Roughness Measuring Instrument, Coordinate Measuring Machine, etc., and a nearly 23,000 square meter air conditioned plant, all of which is to provide a controlled environment and to improve the quality assurance.





Roundness Measuring Instrument



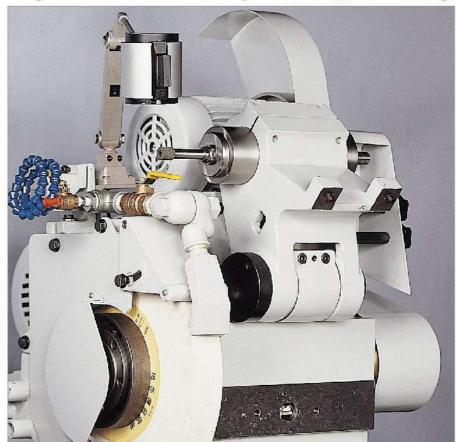


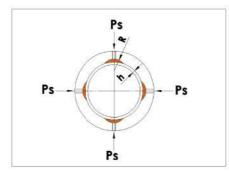
Coordinate Measuring Machine

Contour / Roughness



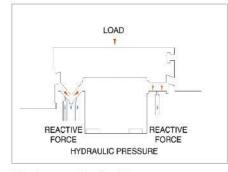
UNIVERSAL WHEELHEAD Rigid and Precise. Hydrostatic Bearings





Hydrostatic Bearings

- PARAGON'S unique design for accuracy assurance features: (a) no metal to metal friction (b) no overheat and no deformation (c) no oil leakage as no oil seal is installed.
- Equipped with a hydraulic and lubrication system with independent temperature control, providing minimum thermal displacement effect.

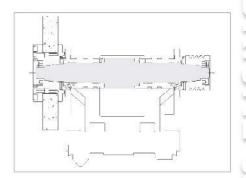


Hydrostatic Guideways

- Hand scraped and features an oil lubrication system which reduces the metal friction and guarantees constant high accuracy.
- Equipped with a hydraulic and lubrication system with independent temperature control, providing minimum thermal displacement effect.

The wheelhead is driven through V-shape belts by a powerful motor (5 or 7.5HP) to achieve peripheral speed 45m/s. Equipped class C1 ballscrew (• 40mm) and Heidenhain sub-µm linear scale with full closeloop feedback. Overall, the machine achieves ± 0.5 µm repeatability accuracy.

The compact wheelhead enables external and optional internal grinding of workpieces in the same setup, providing more flexibility. The internal grinding spindle is driven by 1 HP motor.

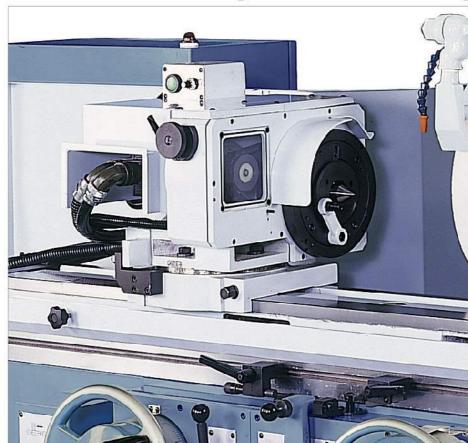


Spindle

The grinding wheel spindle is made of high quality alloy steel (SNCM-439) and treated through: normalized, tempered, carburized hardening and then sub-zero treatmant. Then follows precision grinding processes: rough grinding, semi-finish grinding, finish grinding and lapping process assures superior surface finish and greatly enhances spindle life and stability and deformation free performance throughout its durable service life.

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 between30° (clockwise)~90° (counterclockwise)



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 workpiece loading and unloading. It is designed for the use of M.T.4 taper centers.

PARAGIN

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 μ m possible when grinding between centres.



Air Impulsion

Tailstock equipped with air inlet for easy manual movement.

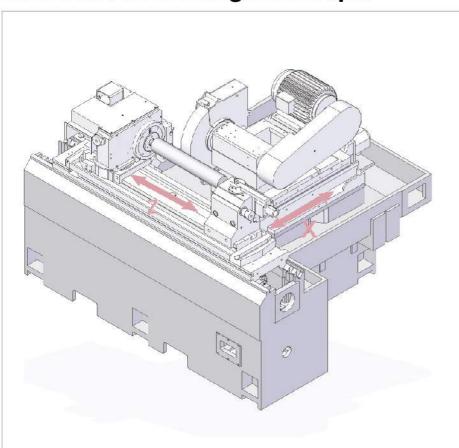


Table Taper Correction Device

The fine adjustment makes the finest table taper correction possible.

PARAGON

MACHINE BASE New Structural Design Concepts



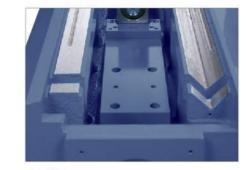
The machine base is manufactured from high quality Meehanite cast iron, with low center of gravity, featuring rigidity over 10⁸ N/m and natural frequency over 150 Hz, analyzed by advanced Finite Element Method (FEM). Along with vibration stress release, these outstanding structural features assure high strength, maximum damping capability and longer service life.



Class C1 Ballscrews

NIVERSAL GYLINDRIGE

Features hydrostatic lubrication, low friction coefficiency, and is pretensioned for increased rigidity and high positioning accuracy, providing minimum feeding accuracy in 0.1 μ 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 earing out, it maintains constant peripheral speed, grinding efficency 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

Q

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.

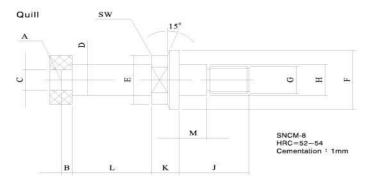


Shoulder Grinding Grinding diameter and adjacent shoulder on a workpiece held between centers in a single infeed.



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 ø	COUNTY F TYPE ()	SIZE											
HOLE	SPINDLE TYPE (r.p.m.)	Α	В	С	D	E	F	G	Н	J	K	SW	
80-150	grease-8,000	M8	12	12	φ 40 x 50 φ 40 x 106	50	57	M26 x 2.0P	28	42	16	18	
40-80	grease-10,000 oil mist-20,000	M8	10	10	φ 20 x 50 φ 25 x 70 φ 30 x 90	32	38	M16 x 1.5P	17	29	15	12	
25-40	grease-20,000 oil mist-30,000	M6	8	8	φ 16 x 40 φ 20 x 58 φ 24 x 80	24	32	M14 x 1.5P	15	27	10.5	11	
16-25	grease-30,000 oil mist-40,000	M4	8	6	φ 10 x 25 φ 13 x 30 φ 16 x 40	21	26	M10 x 1.5P	10.5	21	9.5	9	
13-16	grease-40,000 oil mist-50,000	M4	1	1	φ 8 x 25 φ 10 x 30 φ 12 x 40	17	23	M8 x 1.25P	8.5	19	8.5	7	
10-13	grease-50,000 oil mist-60,000	M4	1	1	φ6 x 20 φ7 x 25 φ8 x 30	15	20	M7 x 1.0P	7.5	18	7	7	

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



- √ S Series: (Hand Feed)
- √ P Series: (Hydraulic Driven Auto. Feed)



Economical Series

ŀ	ACCESSOR
(CNC Controller(FANUC/SIEM
1	NC Controller(PROFACE)
-	Accumulator
ı	nverter
-	inear Scale for X-axis
-	inear Scale for Z-axis
-	Touch Probe
-	OD In-process Gauge
-	Gap eliminator/Crush Contro
-	Coolant Tank with Pump
_	Oil Mist Separator
-	Paper Filter
-	Magnetic Coolant Separator
_	Electrical Cabinet Air Cooler
-	Electrical Cabinet Heat Exch
_	Wheel Balancing Stand & Ar
(Cam Locked Driving Dog
1	Adjustable 3-point Steady Re
H	Hydraulic Steady Rest
١	Workpiece Holder (1set = 2p
1	Micro feed Dresser Holder
1	Failstock-mounted Dresser I
7	Table-mounted Dresser Hold
5	Slide-mounted Dresser Hold
١	/ibration Meter
1	nternal Grinding Attachmen
(Grinding Wheel + Flange
	lig Crane for Grinding Whee
	Rotary-type Dressing Unit (For
_	Grinding Wheel Replacemen
	Dynamic Wheel Balancer
-	D Spindle
H	Hydraulic Tank with Pump
ŀ	Hydraulic Oil Cooler
F	Fully Enclosed Splash Guard
1	Micro Taper Adjustment of T
	Judusulia / Manual Tailataal

ACCESSORIES	GU-2020 CNC	GU-32 CNC	Ultra	GU-32 NC	GU-32 S/P	GUH-35 CNC	SuperE
CNC Controller(FANUC/SIEMENS/MITSUBISHI)	0	0	0	X	Х	0	0
NC Controller(PROFACE)	Χ	X	X	0	X	X	X
Accumulator	Δ	Δ	Δ	Δ	Δ	Δ	X
nverter	Δ	Δ	0	Δ	Δ	Δ	Δ
Linear Scale for X-axis	0	0	0	Δ	Δ	0	0
inear Scale for Z-axis	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Touch Probe	Δ	Δ	Δ	Х	Х	Δ	0
DD In-process Gauge	Δ	Δ	Δ	Δ	$\Delta(P)/X(S)$	Δ	Δ
Gap eliminator/Crush Control	Δ	Δ	Δ	X	X	Δ	Δ
Coolant Tank with Pump	0	0	0	0	0	0	0
Dil Mist Separator	Δ	Δ	Δ	Δ	Δ	Δ	Δ
aper Filter	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Magnetic Coolant Separator	Δ	Δ	Δ	Δ	Δ	Δ	Δ
lectrical Cabinet Air Cooler	Δ	Δ	Δ	Х	Х	Δ	Δ
lectrical Cabinet Heat Exchanger	0	0	0	Х	X	0	0
Vheel Balancing Stand & Arbor	Δ	Δ	Δ	Δ	Δ	Δ	Δ
am Locked Driving Dog	Δ	Δ	Δ	Δ	Δ	Δ	Δ
djustable 3-point Steady Rest	Х	Δ	Δ	Δ	Δ	Δ	Δ
ydraulic Steady Rest	Х	Δ	Δ	Δ	Δ	Δ	X
Vorkpiece Holder (1set = 2pcs)	Δ	Δ	Δ	Δ	Δ	Δ	Δ
ficro feed Dresser Holder	Х	Х	X	Δ	Δ	Χ	X
ailstock-mounted Dresser Holder	Х	Δ	Δ	Δ	Δ	Δ	X
able-mounted Dresser Holder	Х	Х	×	0	0	Δ	X
ilide-mounted Dresser Holder	0	0	0	Х	Х	0	0
ibration Meter	Δ	Δ	Δ	Δ	Δ	Δ	Δ
nternal Grinding Attachment	Х	Δ	X	Δ	Δ	Х	Δ
Grinding Wheel + Flange	0	0	0	0	0	0	0
ig Crane for Grinding Wheel	Х	Х	Х	Х	X	0	X
totary-type Dressing Unit (For Diamond Grinding Whee	l) X	Δ	Δ	Х	Х	Δ	Х
Grinding Wheel Replacement Device	Х	Δ	Δ	Х	Х	0	0
ynamic Wheel Balancer	Х	Δ	Δ	Х	Х	Δ	Δ
) Spindle	X	Δ	Δ	Δ	Δ	X	Δ
lydraulic Tank with Pump	0	0	0	0	0	0	0
lydraulic Oil Cooler	Δ	0	0	Δ	Δ	0	0
ully Enclosed Splash Guard	Δ	Δ	Δ	Х	Х	Δ	0
Micro Taper Adjustment of Tailstock	Δ	Δ	Δ	Δ	Δ	Δ	0
lydraulic / Manual Tailstock	Δ	0	0	Δ	Δ	0	0
Vorkpiece Chucked Indicator Device	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Scroll 3-jaw chuck with Back Plate	Δ	Δ	Δ	Δ	Δ	Δ	Δ
		201 4					

Hydraulic 3-jaw chuck + Rotary Cylinder

100

OPTIONAL ACCSSORIES



Hydraulic form dressing attachment

Scroll 3-jaw chuck with black plate

Wheel balancing stand & arbor

(mounted on wheelhead)

Micro feed dresser holder



Tailstock-mounted dresser holder



Workpiece holder



Radius dresser holder



Adjustable 2-point steady rest

Magnetic coolant separator



Adjustable 3-point steady rest



Cam-locked driving dog



Paper filter



Workpiece chucked indicator

MACHINE LAYOUT

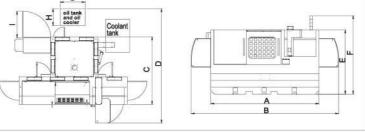
GU-32NC/P/S Series

Unit:mm

_ 900 _		GU-3250NC/P/S	GU-3275NC/P/S	GU-32100NC/P/S
089 340	Α	2810	3665	4630
e l	В	2260	2865	3580
710	С	1555	2020	2475
664	D	275	400	525
E - C	E	275	400	525

GU-32CNC Series

470 (For NC)

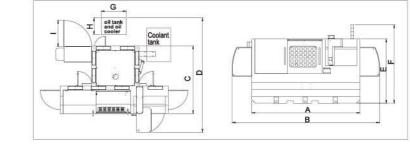


GU-2020CNC

GU-2020CNC GU-3250CNC GU-32100CNC 3000 4200 2700 4000 5650 1900 2300 2000 3150 1770 1860 1860 2160 2260 700 800 400

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

GUH-35CNC Series



	GUH-3540CNC	GUH-3580CNC	GUH-35100CNC
Α	3030	4040	4400
В	4110	5180	5380
С	2000	2000	2000
D	3380	3380	3380
E	1860	1860	1860
F	2260	2260	2260
G	950	950	950
Н	800	800	800
L	760	760	760

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



Electrical cabinet air cooler

Dynamic wheel balance device



Internal grinding attachment

Grinding wheel replacement device



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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		Ø280	Ø320
Max. grind wheel dimensions	mm	∮355x50x127	φ405x56x127	Ø510	Ø405x56x127	Ø405x56x127
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 / MITS	SUBISHI	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.	2	90° - 30°	0	90°/30°	-
TAILSTOCK	in table in the		1047524 104034	14000	0.00000 1000000000000000000000000000000	
Hydraulic sleeve retraction	mm	25	35	35	35	
Center	5-5000000	M.T.3	M.T.4	M.T.4/ M.T.5	M.T.4	-
TANK CAPACITY		8.00000			2002/2002	
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			<u> </u>	oo (op.io.i.a.)		
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	8-3	1	1hp2p	1	
OTHERS	(900)		*			
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

^{*}Design and specifications are subject to change without prior notice

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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	Ø320
Max. grinding wheel dimensions	mm	φ 610x100x203.2	φ 610x100x203.2	φ 610x100x203.2	Ø610x115xØ203.2
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 /SIEMEN	S/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	L				
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	9	1	1
Coolant pump	HP	1/2	1/2	1/2	3/4
Oil cooler	HP	1	9	1	1
Internal grinding motor	HP	<u> </u>	1	1	1
OTHERS	ture dis		51	>F	
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

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	φ 280	φ280	φ 280
Max. grinding wheel dimensions	mm	φ 405 x 56 x 127	φ 405 x 56 x 127	φ 405 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 1,8
Machine weight	kg	2,800	3,700	3,900

^{*}Design and specifications are subject to change without prior notice

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^{*}The machine dimension and weight are based on standard equipment

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