

Since 1954

SUPERTEC[®]

The Finest Solution

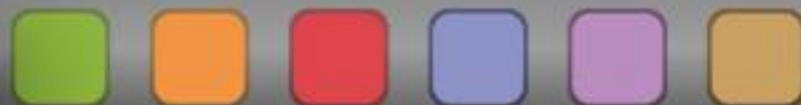
SUPERTEC

CNC

CYLINDRICAL GRINDER



CNC
Cylindrical





SUPERTEC®

Since 1954

Plunge Feed / Angular Feed

CNC CYLINDRICAL GRINDER

Advanced Functions, Easy to Operate.
Quality Constructed, Top Performance.

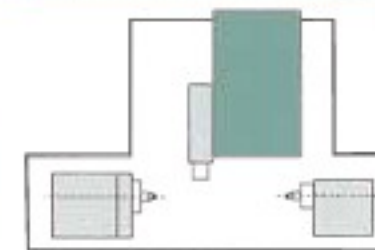
Rigid structure design, high positioning accuracy, best production quality and easy-to-operate interface make SUPERTEC CNC Cylindrical grinder series one of the best cylindrical grinders in the world.

Top Performance – Unmatched Stability

- Ruggedly constructed throughout for ultra-high stability.
- The wheel spindle runs on a combination of hydrostatic and hydrodynamic bearings, providing higher rigidity and minimum vibration.
- The table moves on hydrodynamic slideways to enhance smooth and stable movement.
- X, Z-axis are driven by servo motors.
- Straight feed and angular feed series to choose from.
- A wide range of automated devices are available to achieve highly automated grinding operations.



PLUNGE FEED AND ANGULAR FEED WHEEL HEADS



PLUNGE FEED WHEEL HEAD

G20P-50CNC	200mm x 500mm
G25P-50CNC	250mm x 500mm
G32P-50CNC	320mm x 500mm
G32P-60CNC	320mm x 600mm
G32P-75CNC	320mm x 750mm
G32P-100CNC	320mm x 1000mm
G32P-150CNC	320mm x 1500mm
G32P-200CNC	320mm x 2000mm

Bigger swing capacity is available, such as G38P/G45P



The Finest Solution

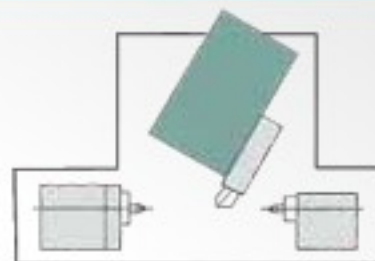


- Stable Dimensional Accuracy and Surface Finish Performance
- Roundness $0.5 \mu\text{m}$
- Cylindricity $1.0 \mu\text{m}$
- Surface Roughness $Ra 0.15 \mu\text{m}$



G25A-35CNC	250mm x 350mm
G32A-35CNC	320mm x 350mm
G32A-50CNC	320mm x 500mm
G32A-80CNC	320mm x 800mm
G32A-120CNC	320mm x 1200mm

Bigger swing capacity is available, such as G38A/G45A



ANGULAR FEED WHEEL HEAD



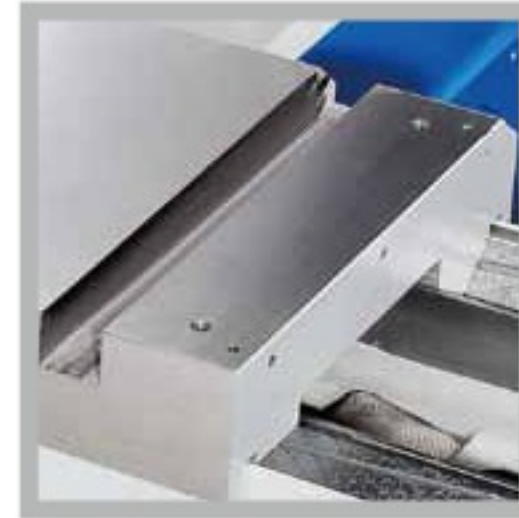


SUPERTEC®

Since 1954

Massive Base Construction Stable, Rigid, Deformation-free

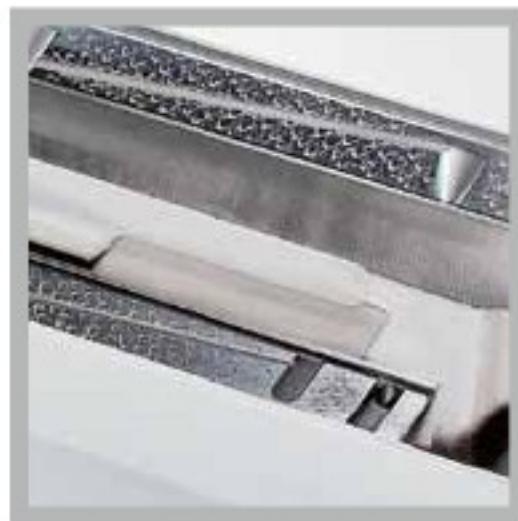
- The base is manufactured from high quality Meehanite cast iron, tempered and stress relieved to guarantee deformation-free performance.
- The base is a box-type structure with internal rib reinforcement for optimal rigidity and stability.
- Large size "V" and "flat" guideways of Z axis increase effective contact area. That, combined with a large span between guideways increase stability when performing heavy stock removal.



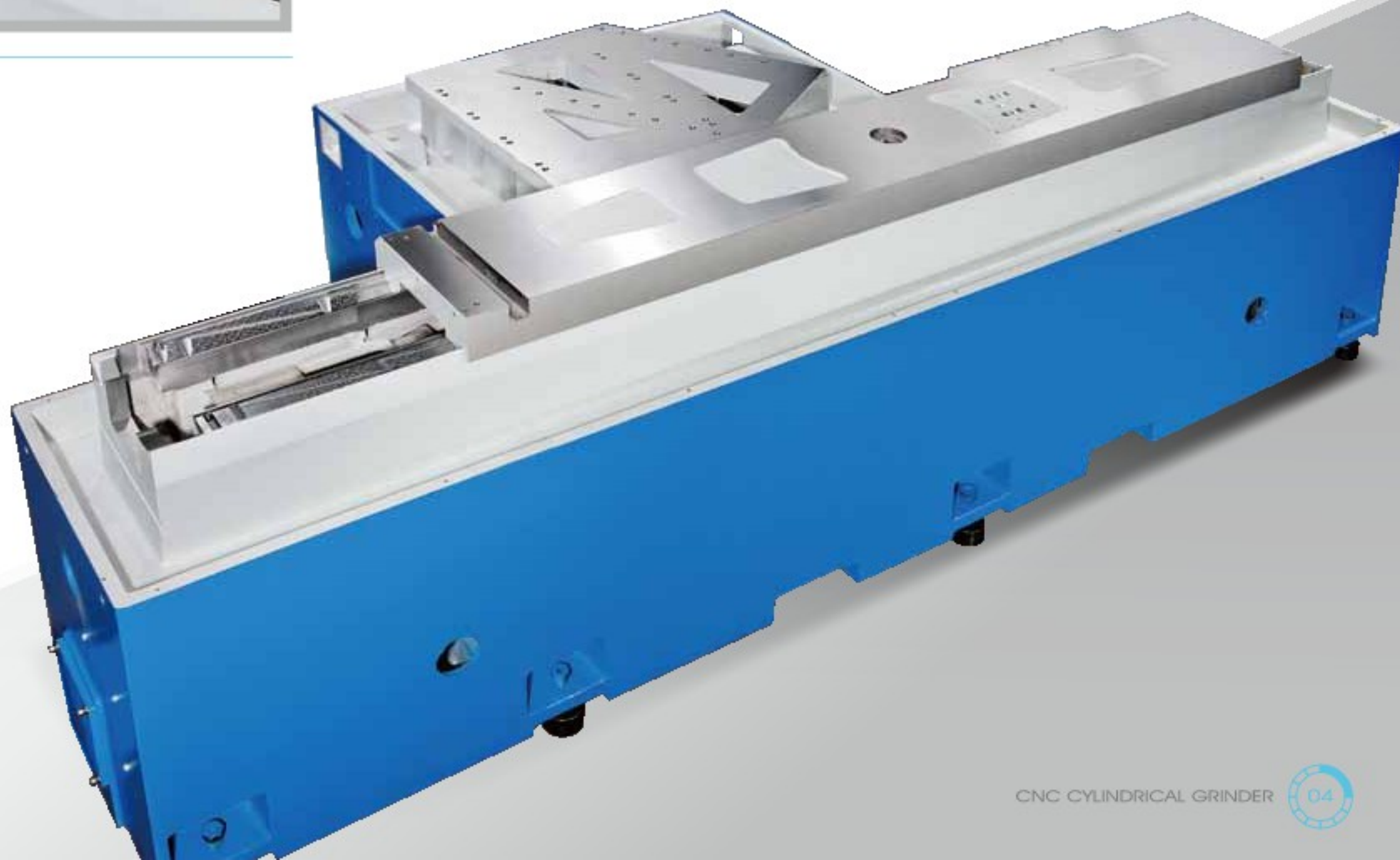
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CNC CYLINDRICAL GRINDER

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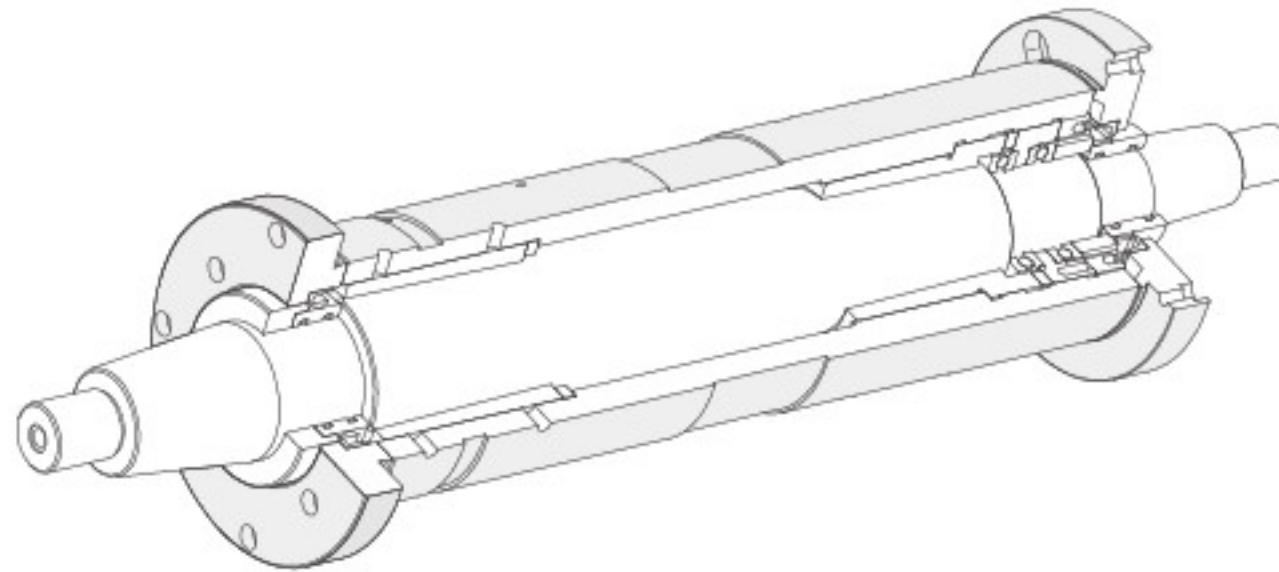
STRUCTURAL FEATURES

»» Workhead

- The ruggedly constructed workhead is mounted with 8 precision angular contact ball bearings to resist heavy loads in axial and radial directions.
- The spindle is driven by a servo motor (G20P/G25P except) permitting variable speed change.
- The workhead of G20P/G25P can be swiveled 45° CCW to 45° CW. For G32P and above series can be swiveled 0° to 90° CCW.
- A combination of live and dead-type spindle allows for quick change from center to chuck for clamping workpiece.
- The workhead spindle is equipped with a pneumatic positive pressure device to prevent cutting fluid from entering.
- Models G20/25 are available to equip with an optional 5C collet closer (with 5C center).
- Models G32/38 are available to install with MT-5 spindle or MT-5 spindle with 5C collet closer (optional)

»» Hydraulic Tailstock

- The tailstock body is manufactured from high quality Meehanite cast iron, featuring high stability and high rigidity.
- The tailstock quill is precision machined from alloy steel with hardening treatment for maximum wear resistance.
- Models G20/G25 accommodate MT-3 center.
- Models G32/G38 accommodate MT-4 center.
- Workpiece clamping force can be adjusted by turning a regulation knob at the rear side.
- Model G20P is equipped with a manual tailstock. Hydraulic tailstock is optional.



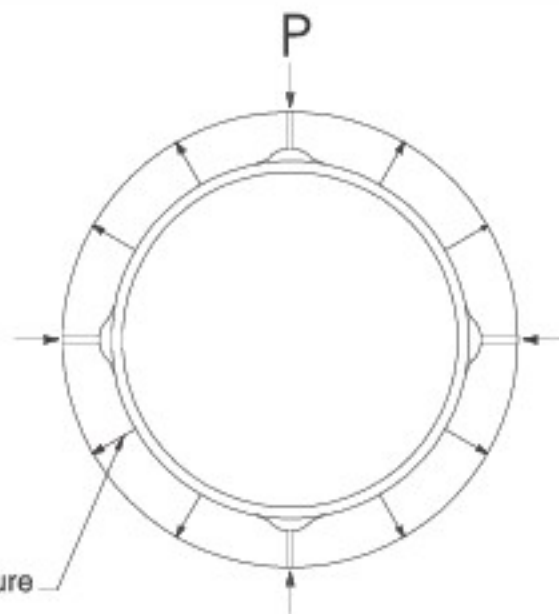
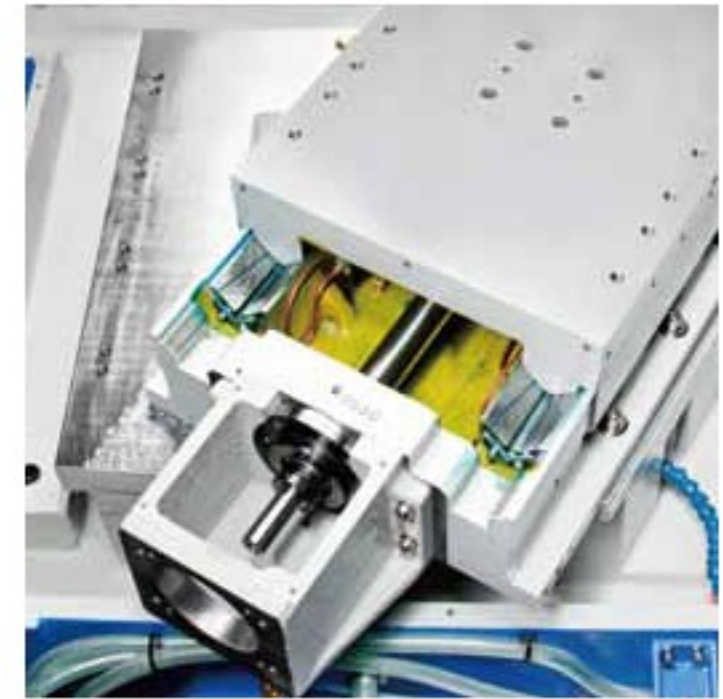
» Precision Wheel Spindle

The wheel spindle runs on a combination of hydrostatic and hydrodynamic bearings, which are surrounded by a high pressure oil film that prevents metal-to-metal contact and friction. The specially designed spindle features high rigidity as well as high vibration dampening performance.

Equipped with a pressure switch with interlock function that prevents spindle start-up until normal oil pressure is established. The pressure switch also stops the spindle if oil pressure falls. Both features assure high accuracy and longer life of the spindle.

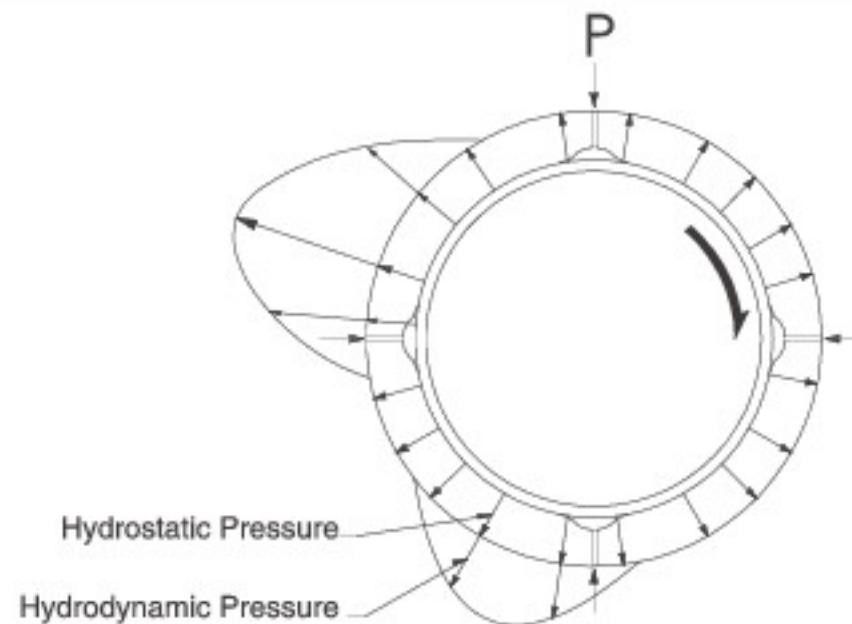
» Automatic Multiple Steps Peripheral Speed Compensation.

- During grinding process, the wheel diameter will wear out gradually. The automatic wheel linear speed compensation function may command the induction meter to increase running speed for achieving a consistent peripheral speed that does not require manual change of belt position or setting through a frequency inverter.



Spindle at Rest

When the wheel spindle is under a resting condition, the static pressure holds the wheel spindle firmly at the bearing center position.

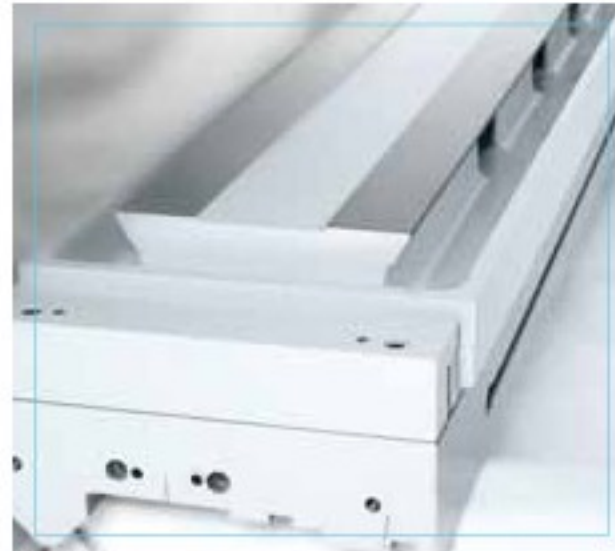
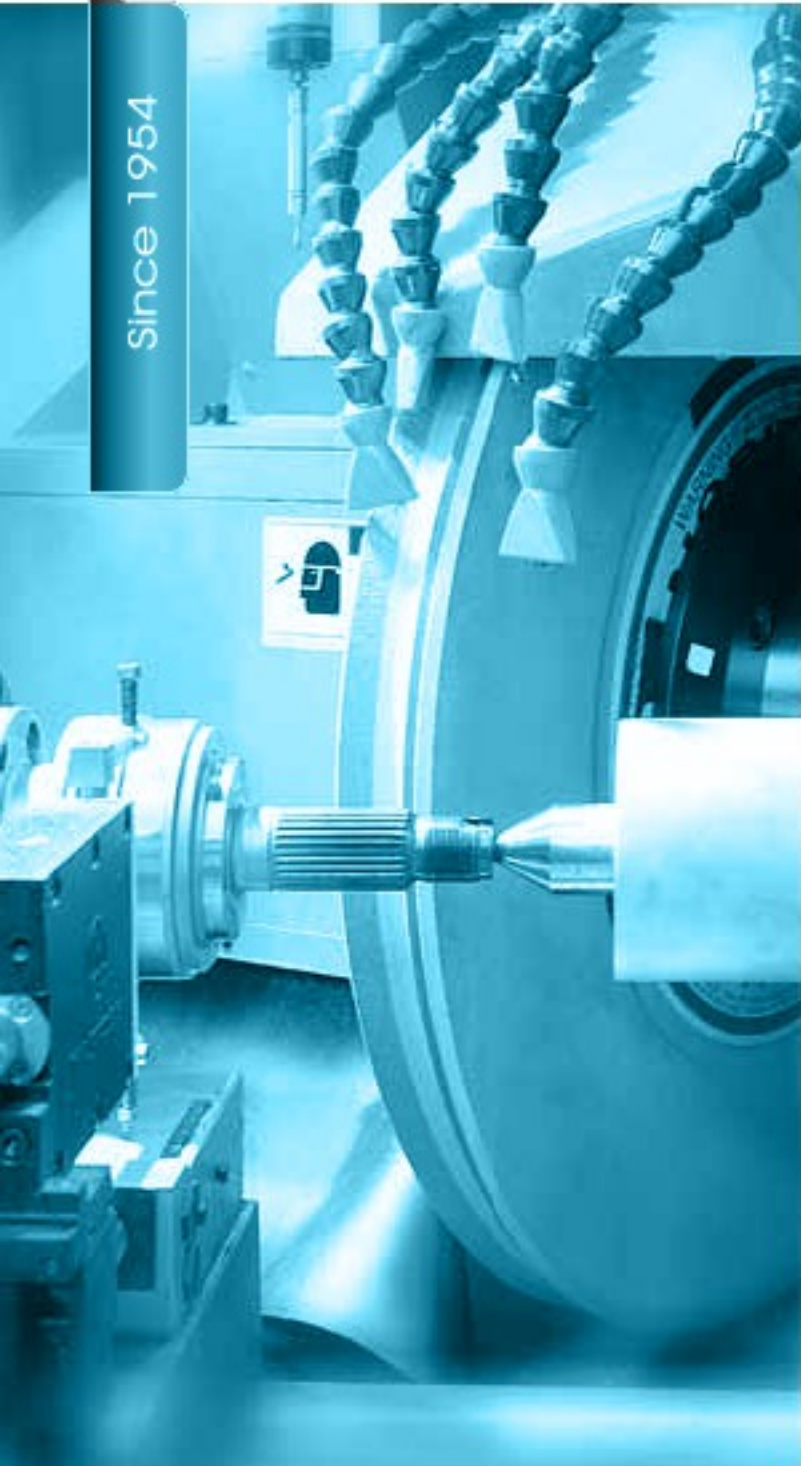


Rotating Spindle

A combination of hydrostatic and hydrodynamic pressure provides the wheel spindle with high rigidity and high dampening performance.

» Saddle (X-axis)

- The saddle feeds on double "V" slideways. Way surfaces are coated with Turcite-B wear-resistant media and precision scraped in combination with automatic lubrication on slideways enabling the wheelhead to feed smoothly.
- The wheelhead feed is driven by an AC servo motor and transmitted through a precision ball screw. In addition, a high resolution (0.001 mm.) linear scale is also fitted for closed loop feedback control. These enhance outstanding positioning accuracy and repeatability.
- The base under the saddle is a tilting design providing fast coolant drainage. This prevents the base from thermal deformation affecting the grinding accuracy.



Table

- The table slideways are designed with hydrodynamic slideways. The table moves on oil film existing on the slideways without friction problems between metals surfaces.
- An automatic lubrication system continuously delivers oil to the slideways, enabling the table to move smoothly with consistent accuracy.
- The Z-axis is driven by an AC servo motor and transmitted through a pre-tensioned ball screw to achieve high positioning accuracy and repeatability.
- The table swiveling is accurately indicated by a dial gauge that makes cylindricity corrections faster, and is applicable for taper grinding.
- The table is fully supported over the entire travel without overhang problem.



Automatic Lubrication System

- The machine is equipped with an automatic lubrication system for automatically and continuously delivering lubrication oil to the slideways, ball screws and spindle. It ensures these parts work smoothly and extends the service life of the machine, while enabling it to remain at high precision conditions at all times.
- The coolant and lubrication system is separately mounted outside of the machine to prevent the system-vibration from affecting the machine and to facilitate heat dissipation.



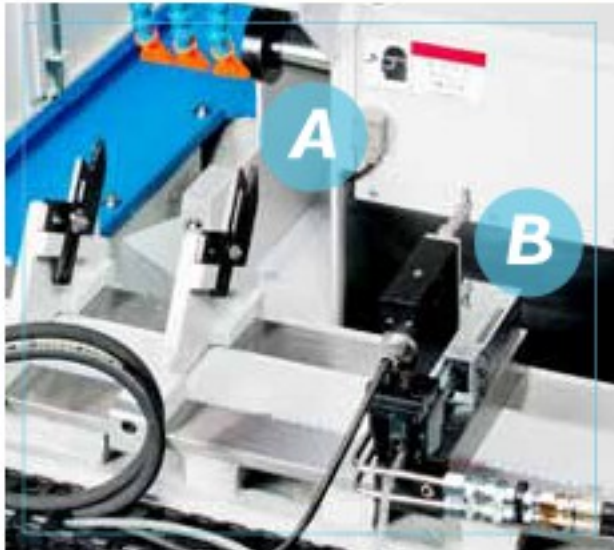
Touch Probe Gauge (optional)

The touch probe gauge is applied for quick and accurate detection of a reference point on the end face that may save set-up time, while increasing efficiency.



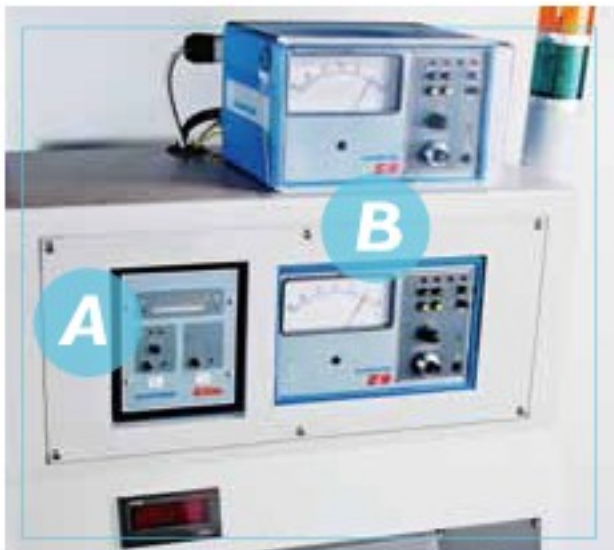
Dynamic Balance System (optional)

With the use of the dynamic balance system, the operator can perform wheel balancing at any time. Wheel balancing is convenient to operate, saving wheel balancing time. In addition, superior grinding quality can be obtained.



A. Ultrasonic Anti-Crash Control/Gap Eliminator (optional)

By using this device, the machine may automatically detect setting conditions and machining conditions. In case of an abnormal motion, the grinding wheel will retract immediately. This provides safety protection for the machine and the operator.



B. Auto Sizing Device (optional)

The auto sizing device provides automatic measuring on workpiece during grinding. The measure value is compared with the pre-set value to ensure accurate workpiece diameter.



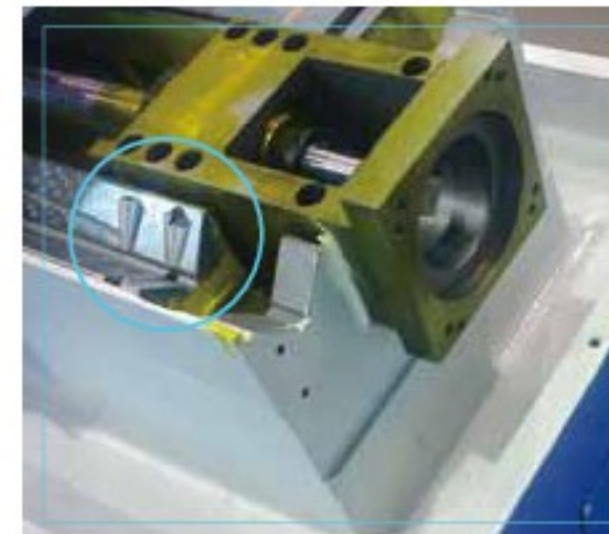
Lube Oil Temperature Regulator (opt for G20P/G25P)

The Lube Oil Temperature regulator allows the spindle to run at a constant temperature. This reduces thermal deformation of the spindle, while ensuring high grinding accuracy.



Internal Grinding Attachment (optional) (Available for plunge feed models only)

- The hinged, swing down internal grinding attachment swings down to working position easily and quickly.
- A patented locking function may prevent the ID attachment from swinging down abruptly for added safety.



Oil Cavities

The specially designed open type hydrodynamic oil cavities can reserve oil to ensure sufficient oil amount and normal oil supply at all times.

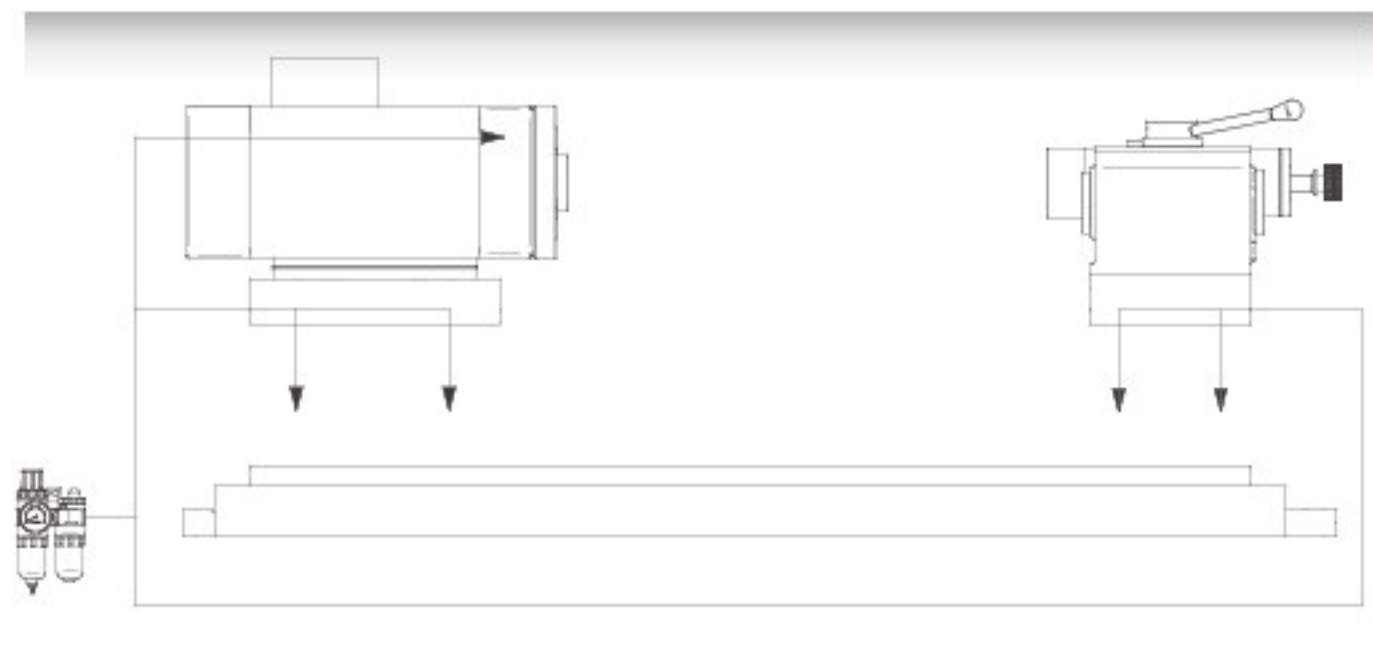
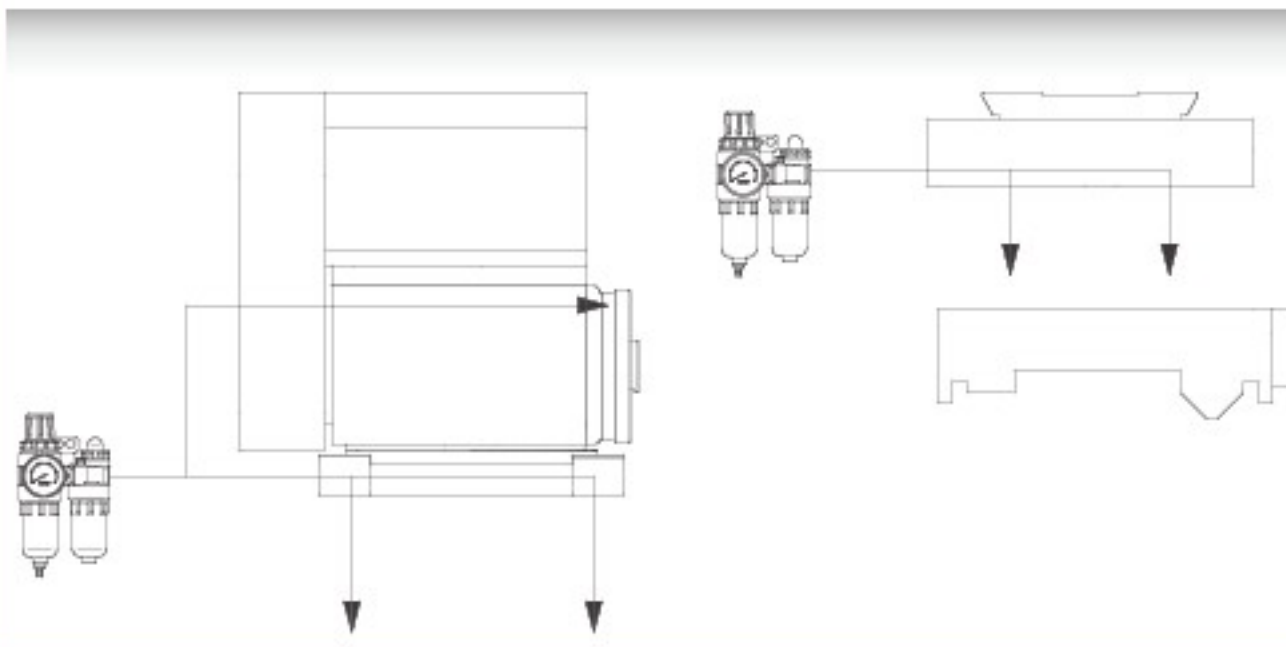


AIR FLOATING DEVICE

AIR FLOATING DIAGRAM

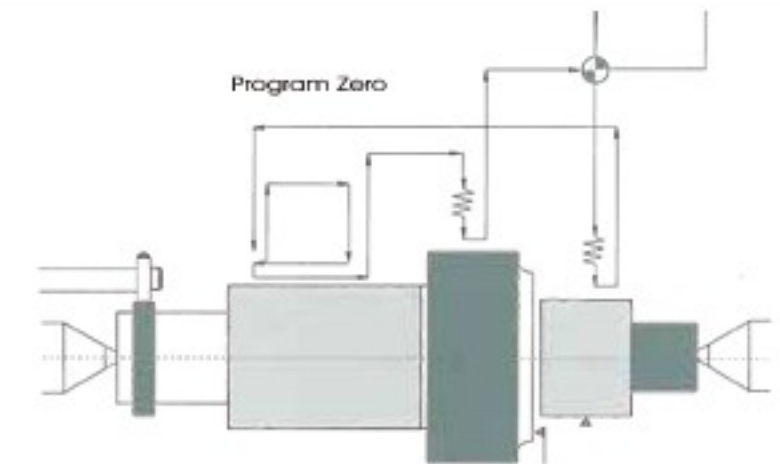
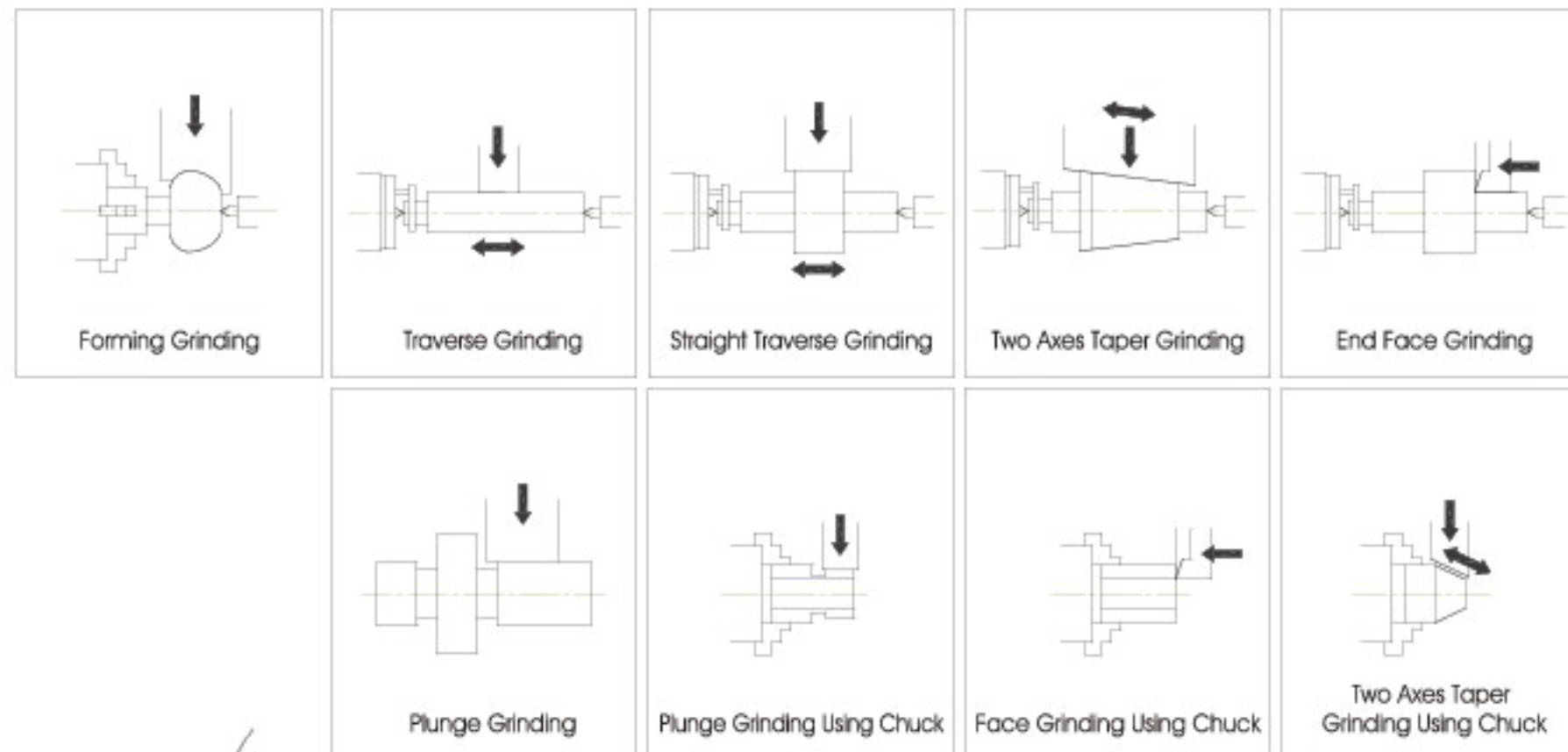
AIR FLOATING DEVICE FOR TABLE

AIR FLOATING DEVICE FOR WORKHEAD AND TAILSTOCK



Grinding Cycle Diagram

GRINDING APPLICATIONS

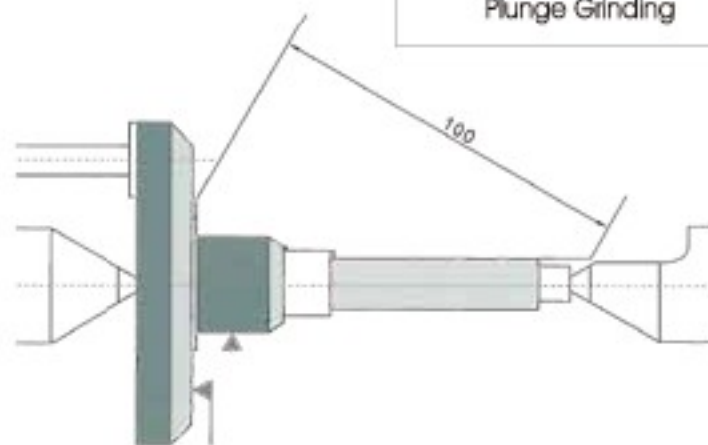


GRINDING EXAMPLE

Workpiece	Testing Part
Material	Carbon Steel
Stock Removal	0.25mm (0.01")
Cycle Time	6min & 45sec

GRINDING ACCURACY

Roundness	0.45 μ m (0.000018")
Cylindricity	1.0 μ m (0.000040")
Surface Roughness	Ra 0.15 μ m (0.000006")
Tolerance	$\pm 5 \mu$ m (± 0.00018 ") / 20pcs.

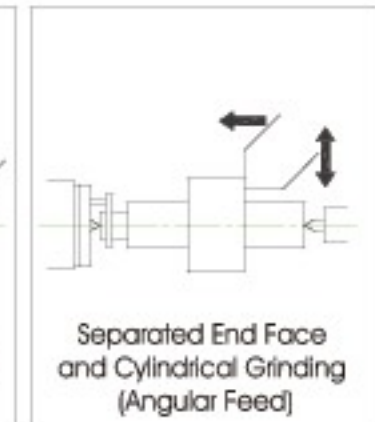
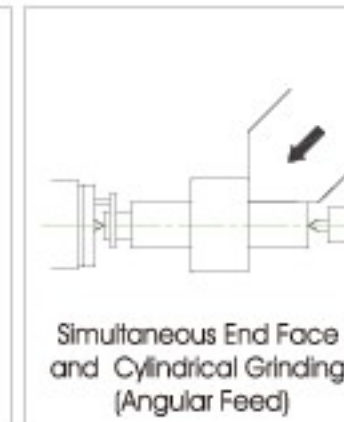
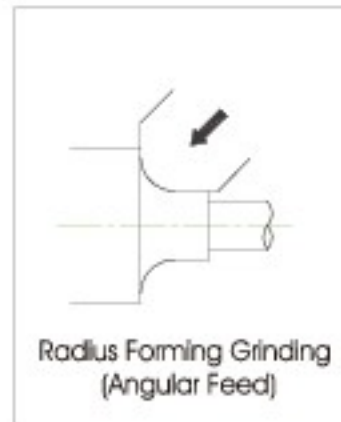


GRINDING EXAMPLE

Workpiece	Crank Shaft
Material	Carbon Steel
Stock Removal	0.25mm (0.01")
Cycle Time	27sec

GRINDING ACCURACY

Roundness	0.5 μ m (0.000020")
Cylindricity	1.0 μ m (0.000040")
Surface Roughness	Ra 0.17 μ m (0.000007")
Tolerance	$\pm 3 \mu$ m (± 0.00011 ") / 20pcs.



STANDARD ACCESSORIES

ITEM	DESCRIPTION	SPECIFICATION	G20P	G25P	G25A	G32/38P	G32/38A
1.1	CNC Controller (Fanuc)	OIM-TD	std.	std.	—	std.	—
1.2	CNC Controller (Fanuc)	OIM-TD+Angular Axis	—	—	std.	—	std.
2.1	Grinding Wheel	355x38x127 mm	std.	—	—	—	—
2.2	Grinding Wheel	405x50x127 mm	—	std.	—	—	—
2.3	Grinding Wheel	455x50x127 mm	—	—	std.	—	—
2.4	Grinding Wheel	510x50x152.4 mm	—	—	—	std.	std.
3.1	Wheel Flange (Bearing type)	5"	std.	std.	—	—	—
3.2	Wheel Flange	5"	—	—	std.	—	—
3.3	Wheel Flange	6"	—	—	—	std.	std.
4	Wheel Extractor		std.	std.	std.	std.	std.
5	Halogen Lamp		std.	std.	std.	std.	std.
6	Linear Scale (DRO)	X-axis	std.	std.	std.	std.	std.
7	Balancing Stand w/Arbor		std.	std.	std.	std.	std.
8	Leveling Screw w/Blocks		std.	std.	std.	std.	std.
9	Tool Box w/Adjusting Tools		std.	std.	std.	std.	std.
10	Semi-Enclosed Splash Guard		std.	std.	std.	std.	std.
11	Operation Manual w/Parts List		std.	std.	std.	std.	std.
12	Lube Oil Temperature Regulator		—	—	std.	std.	std.
13.1	Manual Tailstock		std.	—	—	—	—
13.2	Hydraulic Tailstock		—	std.	std.	std.	std.
14.1	Carbide Tipped Center	MT3x2	std.	std.	—	—	—
14.2	Carbide Tipped Center	MT3 Fullx1, Halfx1	—	—	std.	—	—
14.3	Carbide Tipped Center	MT4x2	—	—	—	std.	—
14.4	Carbide Tipped Center	MT4 Fullx1, Halfx1	—	—	—	—	std.
15.1	Diamond Dresser w/Holder	Single Point	std.	std.	—	std.	—
15.2	Diamond Dresser w/Holder	Axe Style	—	—	std.	—	std.
16.1	Coolant System w/Mag. Sep. & Paper Filter	120L,40L/min,40L/min	std.	—	—	—	—
16.2	Coolant System w/Mag. Sep. & Paper Filter	140L,60L/min,60L/min	—	std.	std.	—	—
16.3	Coolant System w/Mag. Sep. & Paper Filter	160L,120L/min,80L/min	—	—	—	std.	std.

OPTIONAL ACCESSORIES

ITEM	DESCRIPTION	SPECIFICATION	G20P
1※	Touch Probe		○
2※	Gap Control		○
3※	Crash Control		○
4※	Auto Sizing Device		○
5※	Hydraulic Tailstock		○
6※	Auto Wheel Balance System		○
7	3-Jaw Chuck (must order w/back plate)	4", 5"	○
8	3-Jaw Chuck (must order w/back plate)	6", 8"	—
9	4-Jaw Chuck (must order w/back plate)	8"	—
10	5C Back Plate (when 5C Closer is ordered)	4", 5"	○
11	Back Plate	4", 5"	○
12	Back Plate	6", 8"	—
13	Adjustable Back Plate	6", 8"	—
14※	5 C Collet Closer	Manual	○
15※	5 C Collet Closer	Air	○
16	5 C Collet	4 - 20 mm	○
17	2-Point Diamond Dresser		○
18	3-Point Diamond Dresser		○
19※	Internal Grinding Attachment		○
20	2-Point Steady Rest	∅20 ~ ∅50	○
21	2-Point Steady Rest	∅20 ~ ∅70	—
22	2-Point Steady Rest	∅60 ~ ∅120	—
23	3-Point Steady Rest	∅28 ~ ∅60	○
24	3-Point Steady Rest	∅40 ~ ∅100	—
25	3-Point Steady Rest	∅40 ~ ∅140	—
26	Spare Grinding Wheel	355x38x127 mm	○
27	Spare Grinding Wheel	405x50x127 mm	—
28	Spare Grinding Wheel	455x50x127 mm	—
29	Spare Grinding Wheel	510x50x152.4 mm	—
30	Spare Wheel Flange	5"	○
31	Spare Wheel Flange	6"	—
32	Transformer		○
33※	Auto Door		○
34	Oil Mist Separator		○
35※	Full Enclosure Splash Guard		○
36	Lube Oil Temperature Regulator		○

※ Factory installation required

CONTROL FUNCTIONS

Since 1954



1. Auto Operation (memory)
2. MDI Operation
3. DNC Operation
4. Program Number Search
5. Program Restart
6. Manual Intervention and Return
7. Abnormal Operation Prevention
8. Buffer Register
9. Dry Run
10. Jog Feed
11. Manual Reference Position Return
12. Incremental Feed
13. Jog and Handle Simultaneous Mode
14. Nano Interpolation
15. Positioning
16. Exact Stop Mode
17. Linear Interpolation
18. Circular Interpolation
19. Dwell
20. Multi-step Skip
21. Reference Position Return
22. 2nd, 3rd, 4th Reference Position Return
23. General Purpose Retract
24. Rapid Traverse Override
25. Auto Acceleration/Deceleration
26. Linear Acc./Dec. After Cutting Feed Interpolation
27. Feed Rate Override
28. Jog Override
29. External Deceleration
30. Rapid Traverse Block Overlap
31. Error Detection
32. Control Input/Output
33. Optional Block Skip
34. External Memory and Sub-program Calling Function
35. Absolute/Incremental Programming
36. Diameter/Radius Programming
37. Plane Selection
38. Rotary Axis Designation
39. Rotary Axis Roll-over
40. Automatic Coordinate System Setting
41. Workpiece Coordinate System Presetting
42. Manual Absolute Value On/Off
43. G Code System
44. Programmable Data/Parameter Input
45. Sub-program Call
46. Custom Macro B
47. Complex Canned Cycle
48. Spindle Override
49. Tool Position Offset
50. Grinding Function B (Angular feed model only)

Specifications

		G20P / G25P-50CNC		G32P / G38P / G45P-50 / 60 / 75 / 100 / 150 / 200CNC						G25A-35CNC	G32 A / G38A / G45A-35 / 50 / 80 / 120CNC				
General Capacity	Swing Over Table	mm	ø200	ø250	ø320 / ø380 / ø450						ø250	ø320 / ø380 / ø450			
	Distance Between Centers	mm	500		500	600	750	1000	1500	2000	350	350	500	800	1200
	Maximum Grinding Diameter	mm	ø200	ø250	ø300 / ø360 / ø430						ø250	ø300 / ø360 / ø430			
	Maximum Load Heid Between Centers	kg	80		150						80	150			
Grinding Wheel	Diameter x Width x Bore	mm	ø355x38xø127	ø405x50xø127	ø510 x 50 x ø152.4						ø455 x 50 x ø127	ø510 x 50 x ø152.4			
	Wheel Speed	rpm	1940	1650	1390						1650	1390			
	Maximum Peripheral Speed	M/min	1800		1800						1800	1800			
Wheelhead	Sliding Angle Degree		90°		90°						60°	60°			
	Automatic Rapid Traverse	M/min	ø4		ø4						ø4	ø4			
	Infeed Travel	mm	150	160	225						160	225			
	Minimum Increment Infeed	mm	ø0.001												
Workhead	Spindle Speed (Variable)	rpm	50—500		30~350						50~500	30~350			
	Center Taper	MT	MT 3		MT 4 (Opt. MT 5)						MT 3	MT 4 (Opt. MT 5)			
	Spindle Type		Fixed & Rotary		Fixed & Rotary						Fixed & Rotary	Fixed & Rotary			
	Diameter of Bore	mm	ø20		ø23						ø20	ø23			
Tailstock	Quill Travel	mm	25												
	Center Taper	MT	MT 3		MT 4 (Opt. MT 5)						MT 3	MT 4 (Opt. MT 5)			
Table	Rapid Feedrate	M/min	8		8						8	8			
	Minimum Increment Feed	mm	0.001												
	Swivelling Angle (CCW)		7°		9°	7°		5°	3°	7°	9°	7°		5°	
Motor	Wheel Spindle Motor	HP	5	5 / 7.5	7.5 (Opt.10)						7.5	7.5 (Opt.10)			
	Workhead Motor	HP	1/2		2						1/2	2			
	Hydraulic Pump	HP	1/4		1/4						1/4	1/4			
	Spindle Pump	HP	N/A	N/A or 1/4	1/4						1/4	1/4			
	Lubrication Pump	HP	N/A	N/A or 1	1						1	1			
	Coolant Pump	HP	1/8	1/4	1/4 + 1/8						1/4	1/4 + 1/8			
	Wheel (X Axis) Motor (Fanuc)	KW(Fanuc)	1.2												
	Wheel (Z Axis) Motor (Fanuc)	KW(Fanuc)	1.2												
Machine	Net Weight (Semi Enclosed)	kg	2500	3100	5200	5600	5800	5800	6300	6700	3100	5200	5600	5800	6300
	Gross Weight	kg	2800	3500	5600	6420	7000	7500	7800	8200	3500	5600	6420	7500	7800
	Packing Dimensions L x W X H	mm	2700x2250x2220	2970x2250x2250	4250x2280x2260	4760x2280x2260	3780x2300x2040	5280x2280x2280	5610x2280x2310	6360x2280x2310	2970x2250x2250	4250x2280x2260	4760x2280x2260	5280x2280x2280	5610x2280x2310



The Finest Solution

Since 1954



42881台中市大雅區科雅二路6號 (中部科學園區)
No.6, Keya 2nd Rd., Daya District, Taichung City,
42881 Taiwan.

E sales@supertec.com.tw

T +886-4-2567-6767 **F** +886-4-2568-2727

W <http://www.supertec.com.tw>



Shanghai Service Center

T 86-21-6222-7021

F 86-21-6222-7035

E biao_bing@163.com

Guangdong Service Center

T 86-769-3321-2231

F 86-769-8228-2120

E admin@spmatec.com

U.S.A. Service Center

T 1-562-220-1675

F 1-562-220-1677

E info@supertecusa.com