



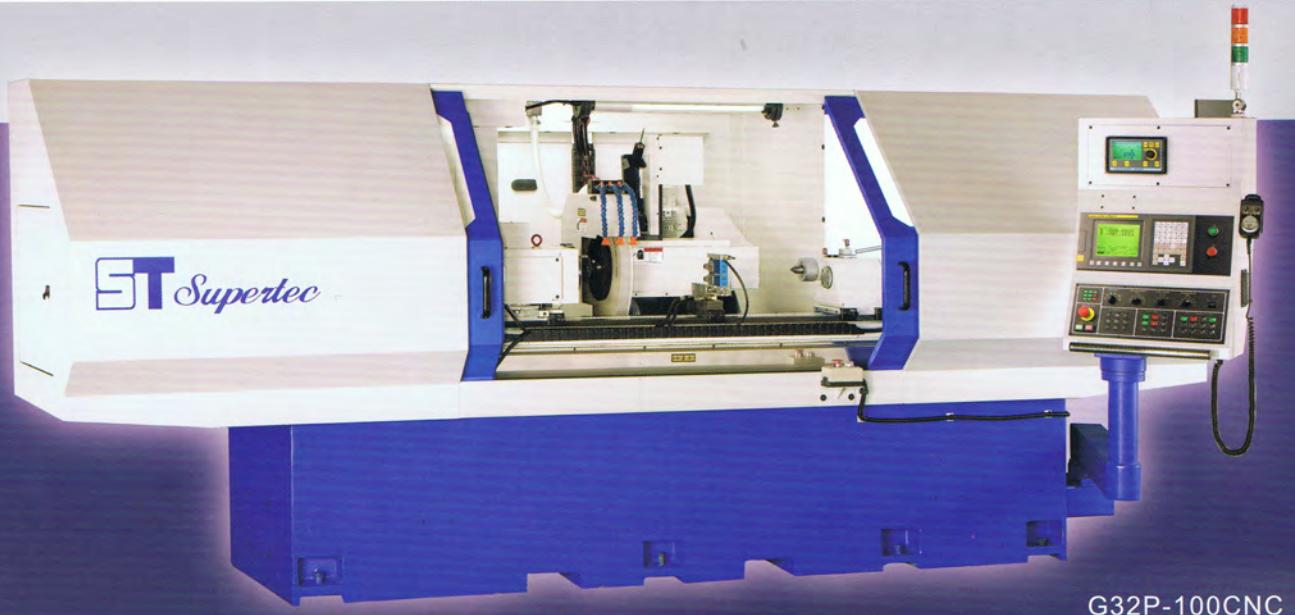
SUPERTEC®

Since 1954

**The Finest
Solution**

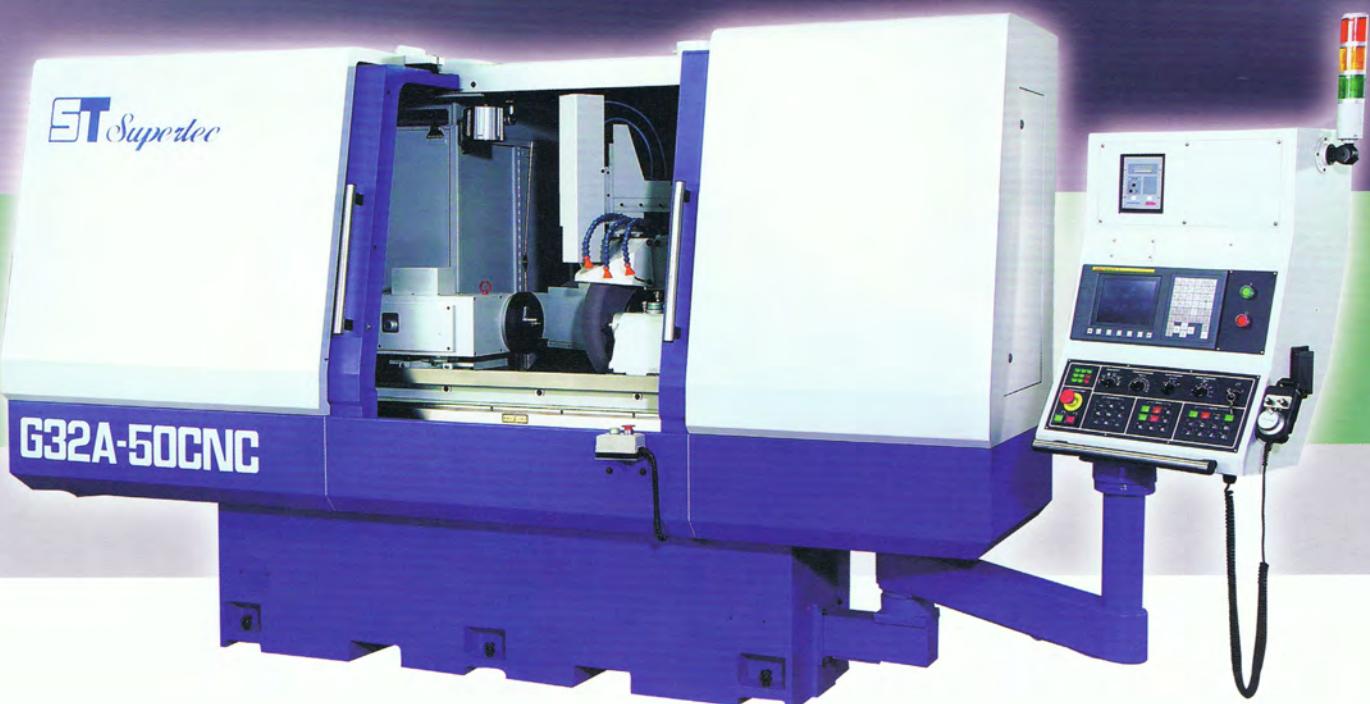
CNC CYLINDRICAL GRINDER

The **SUPERTEC** series of CNC cylindrical grinding machines have been designed for ease of operation while continuing to be some of the most reliable machines in their class. These machines offer solutions that satisfy the user's need for a wide variety of applications including toolroom or production environments. Models are available in many capacities between centers, center heights, and a choice of straight wheelhead or angular slide wheelhead. These machines utilize either the Fanuc control or other controllers that support a wide selection of highly-automated options.



G32P-100CNC

G32A-50CNC



G20P-50CNC



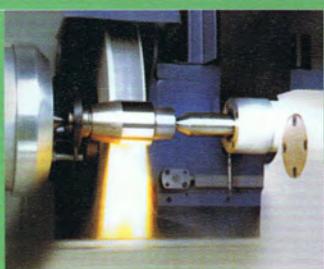
G25P-50CNC



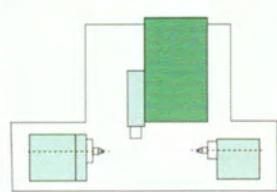
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CATEGORY GRINDER CLASSIFICATION

G20P-50CNC	8"x 20"
G25P-50CNC	10"x 20"
G32P-50CNC	12.6"x 20"
G32P-60CNC	12.6"x 24"
G32P-75CNC	12.6"x 30"
G32P-100CNC	12.6"x 40"
G32P-150CNC	12.6"x 60"
G32P-200CNC	12.6"x 80"

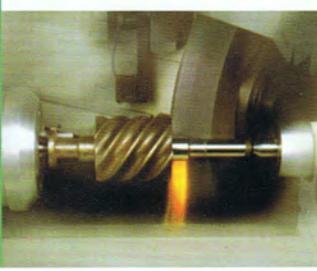
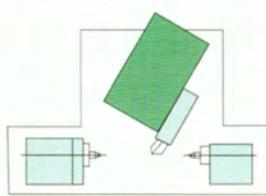


STRAIGHT WHEELHEAD



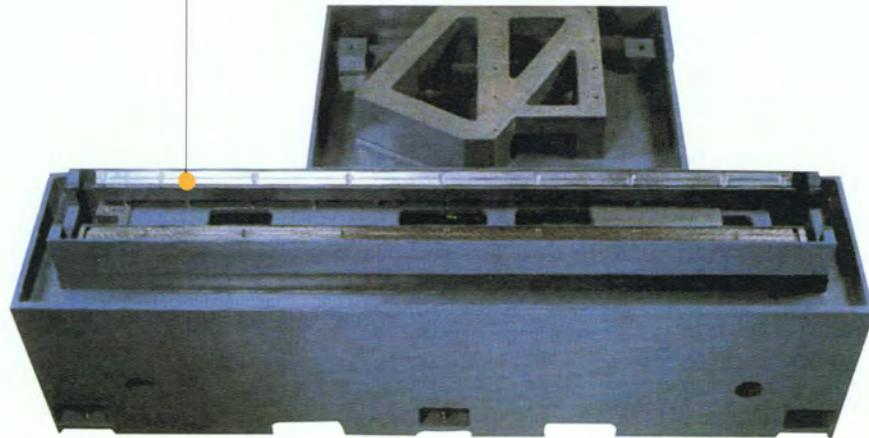
G32A-35CNC	12.6"x 14"
G32A-50CNC	12.6"x 20"
G32A-80CNC	12.6"x 32"
G32A-120CNC	12.6"x 48"

ANGULAR WHEELHEAD

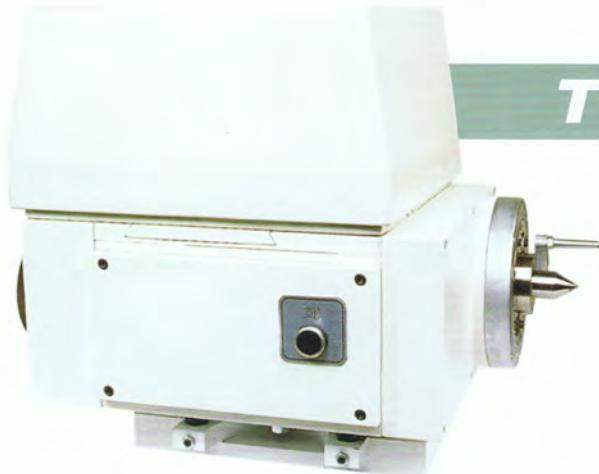


Machine Base

The Heavily ribbed box-type base is made of Meehanite casting, providing excellent rigidity to ensure machine stability. Optimum distance between the guideways offers excellent table support to increase Z axis positioning accuracy and repeatability.



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Workhead

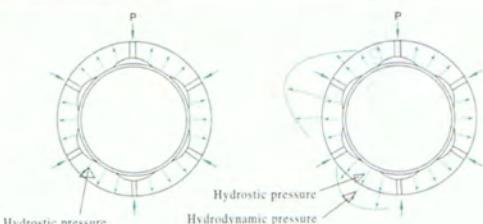
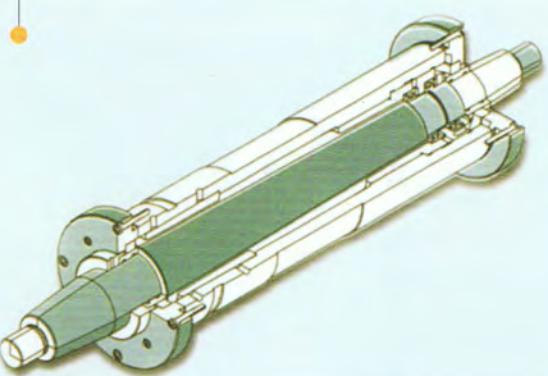
The sturdy rigid-designed workhead equipped with precision bearings is electronically controlled giving variable spindle speeds. Workhead swivels 90° counterclockwise to 30° clockwise for various grinding operations. A combination live and dead-type spindle allows for quick changeover from center to chuck operation or vice versa. A dual oil seal and cover prevents coolant seepage into the workhead.



Tailstock

The design of the tailstock is both rigid and robust. Housed in a Meehanite case body, the hardened nitr alloy steel sleeve is designed to carry a MT4 center for G32/G38 and a MT3 Center for G20P/G25P. Movement of the sleeve is adjusted by a knob to give a light or heavy load. An optional hydraulic tailstock with foot pedal is available for easy loading and unloading of parts.

The Finest Solution



SPINDLE AT REST
Static pressure holds
the wheel spindle firmly
at the bearing center
position

ROTATING SPINDLE
Static and dynamic pressure
combine to provide high
rigidity and high damping
performance

Wheel Spindle

A combination of hydrostatic and hydrodynamic bearings, surrounded by a high pressure oil film, eliminates metal-to-metal contact to provide high rigidity as well as high vibration damping performance. A pressure switch interlock prevents spindle start-up until oil pressure is established. This pressure switch interlock also stops the spindle if oil pressure fails. Both features ensure high accuracy and longer spindle life.



Saddle

The double V guideways are hand scraped and Turcite coated, and utilize an automatic lubrication system, precision ballscrew, AC servo motor and a 0.001mm (0.000020") linear feedback system. This combination allows for a smooth movement of the wheelhead which delivers a longer way life with superior positioning accuracy and repeatability. The enlarged and properly sloped drainage troughs under the wheelhead base help to control thermal growth and provides the rapid coolant drainage needed during heavy grinding cycles.

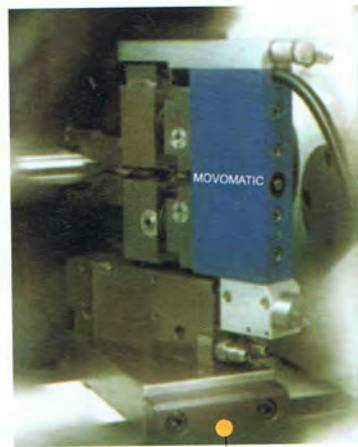
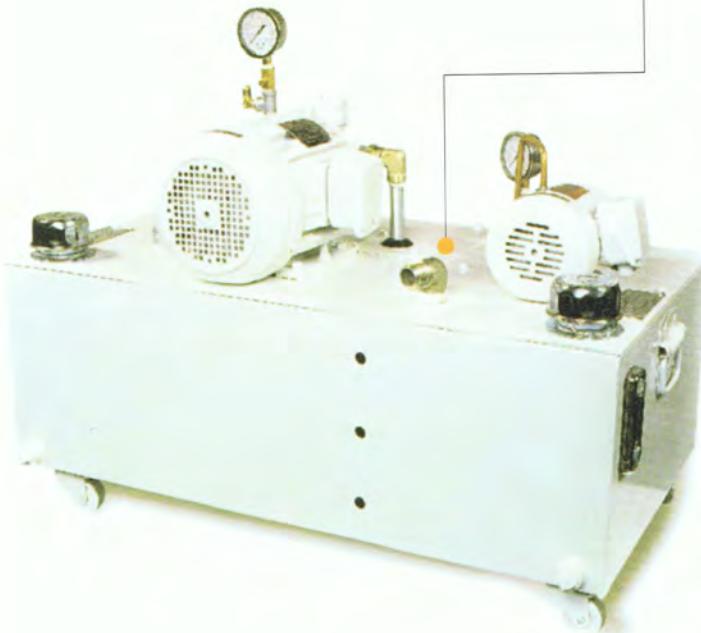


Work Table

The rigid table with box-type construction travels on a cushion of oil with no metal to metal contact. An automatic lubrication system operates continuously to ensure smooth movement and consistent accuracy. Z-axis positioning accuracy and repeatability is assured with an AC servo motor and high precision, pre-tensioned ballscrews. A swiveling table dial indicator enables rapid cylindrical corrections and taper grinding applications. The table is fully supported over the full travel to avoid any overhang.

Automatic Lubrication System

Slideways, ballscrews and spindle are continuously lubricated by an auto-lube system to ensure long service life and maintain maximum accuracy. Hydraulics coolant and lubrication systems are separated from machine to eliminate vibration and dissipate heat.



Systems for Automation

A highly-automated grinding system can be customized with a wide selection of optional equipment including an automatic OD sizing device, gap control, crash control and touch probe for axial positioning.



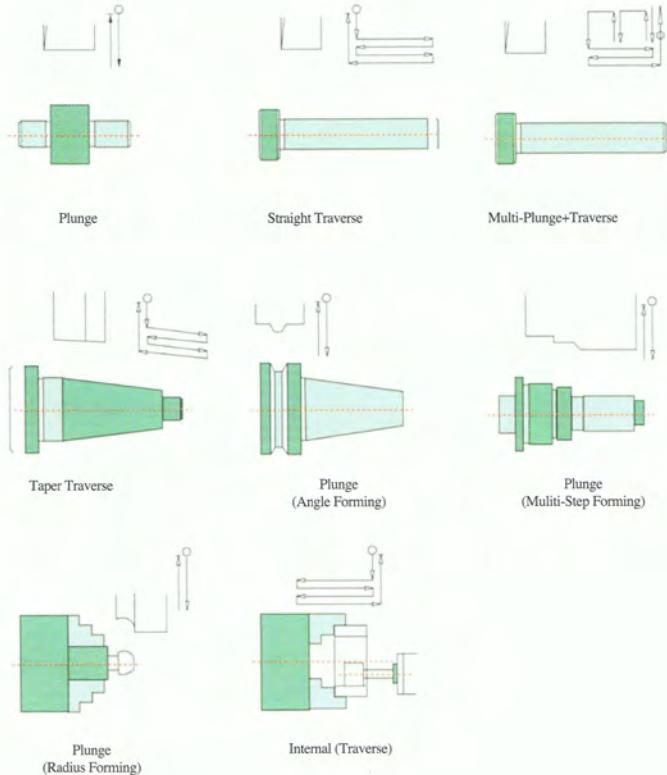
Optional Internal Grinding Attachment (except G32A/G38A)

The hinged, swing-down internal grinding attachment swings down into working position easily and quickly. A patented locking device adds safety as it prevents the ID attachment from swinging down abruptly.

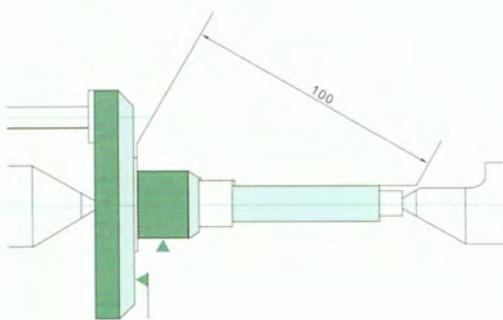
All specifications and features are subject to change without notice.

Grinding application

Straight type



GRINDING EXAMPLE ①

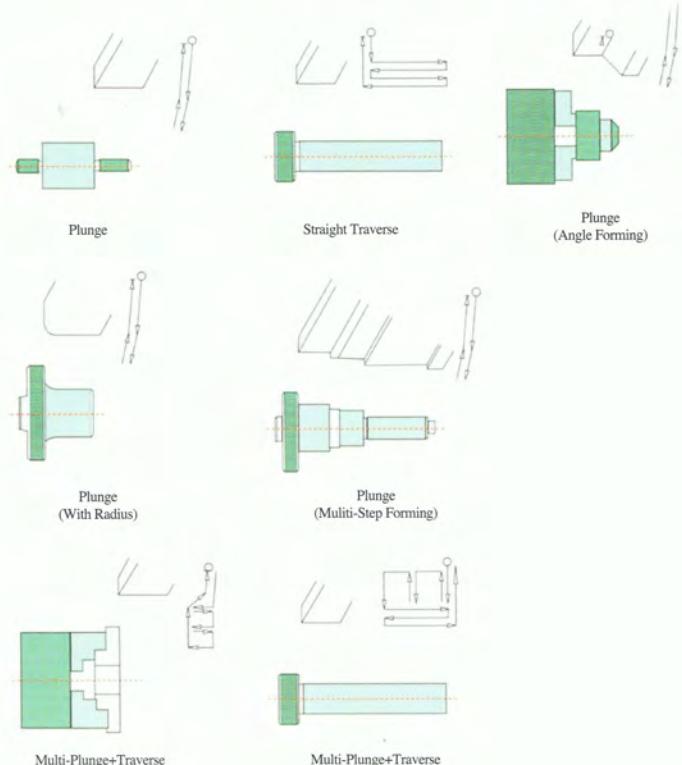


WORKPIECE	CRANK SHAFT
MATERIAL	CARBON STEEL
REMOVED STOCK	0.25mm(0.01")
CYCLE TIME	27 sec

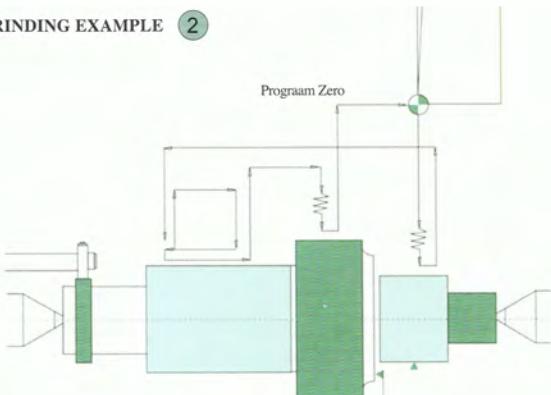
GRINDING ACCURACY

ROUNDNESS	0.5µm (0.000020")
CYLINDRICITY	1.0µm (0.000040")
ROUGHNESS	Ra 0.17µm (0.000007")
TOLERANCE	φ3µm(φ0.0001") /20pcs.

Angular type



GRINDING EXAMPLE ②



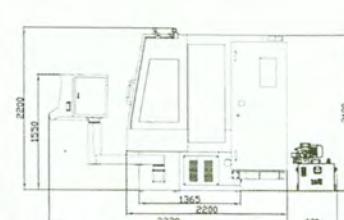
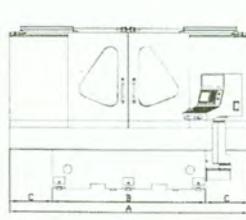
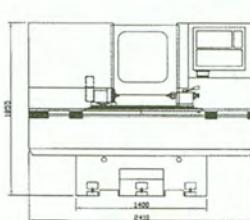
GRINDING ACCURACY

ROUNDNESS	0.45µm (0.000018")
CYLINDRICITY	1.0µm (0.000040")
ROUGHNESS	Ra 0.15µm (0.000006")
TOLERANCE	φ5µm(φ0.00018") /20pcs.

mm(inch)

MODEL		G20P/G25P-50CNC		G32P/G38P - 50/60/75/100/150/200CNC											
General Capacity	Swing over table	Ø200(Ø8") Ø250(Ø10")		Ø320 (Ø13") / Ø380 (Ø15")											
	Distance between centers	500(20")		500(20")	600(24")	750(30")	1000(40")	1500(60")	2000(80")						
	Max. grinding diameter	Ø200(Ø8") Ø250(Ø10")		Ø300 (Ø12") / Ø360 (Ø14")											
	Max. load held between centers kg (lb)	80(176)		150 (330)											
Grinding Wheel	Diameter x width x bore	Ø355 x 25 - 50 x Ø127 (Ø16" x 1"-2" x Ø5")		Ø405 x 50 x Ø127 (Ø18" x 2" x Ø5")	Ø510 x 50 ~ 100 x Ø152.4 / Opt. Ø610 x 75 ~ 150 Ø254 (Ø20" x 2" ~ 4" x Ø6" / Opt. Ø24" x 3" ~ 6" x Ø10")										
	Wheel speed rpm	1940		1650	1390/ Opt.1150										
	Max. peripheral speed m/min (Fit / Min)	1800(59)		2220 (72)											
Wheelhead	Sliding angle deg	90													
	Automatic rapid traverse m/min (in / min)	Ø6(236)		Ø10 (393)											
	Infeed travel	150(6") 160(6.2")		225 (9")											
	Min. increment infeed	Ø0.001 (Ø0.0001")													
Workhead	Spindle speed(Variable) rpm	50-500		30 - 350											
	Center taper	MT		No.3											
	Spindle type	Fixed (Opt. rotary)													
	Diameter of bore	Ø20(0.79")		Ø23 (Ø0.91")											
Tailstock	Quill travel	25 (1")													
	Center taper	MT		No.3		No.4 (Opt. No.5)									
Table	Rapid feedrate m/min (in / min)	8 (315)		10 (393)											
	Min. increment feed	0.001 (0.0001")													
	Swivelling angle deg	7°		9°		7°	5°	3°							
Motor	Wheel spindle motor HP (KW)	5 (3.75)		7.5 (5.6) / Opt.10 (7.5)											
	Workhead motor HP (KW)	1 / 2 (0.37)		2 (1.5)											
	Hydraulic pump HP (KW)	1 (1.33)		2 (1.5)											
	Lubrication pump HP (KW)	1/4 (0.19)													
	Coolant pump HP (KW)	1 / 8 (0.1)		1/4 (0.19)											
	Wheel (X axis) motor (fanuc)	1.2													
	Wheel (Z axis) motor (fanuc)	1.2													
Machine	Net weight (semi enclosed) kg(lb)	2000 (4400)		2900 (6380)	4200 (9240)	4300 (9460)	4600 (10120)	4700 (10340)	5300 (11660)	5700 (12540)					
	Gross weight kg(lb)	2500 (5500)		3300 (7260)	4600 (10120)	4900 (10780)	5000 (11000)	5200 (11440)	5800 (12760)	6200 (13640)					
	Packing dimension (L x W x H) mm(in)	2780 x 1750 x 2050 (110" x 60" x 81")		2980 x 1850 x 2150 (117" x 73" x 85")	3430 x 2300 x 2040 (137" x 92" x 82")	3540 x 2150 x 2240 (139" x 85" x 88")	3780 x 2300 x 2040 (149" x 91" x 80")	4320 x 2150 x 2240 (170" x 85" x 88")	5300 x 2150 x 2240 (209" x 85" x 88")	6000 x 2150 x 2240 (236" x 85" x 88")					

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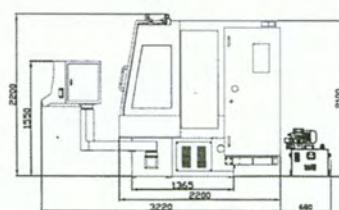
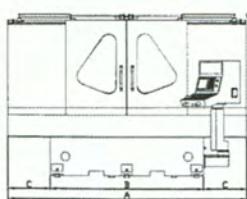


	G20P-50CNC
A	2410 (95")
B	1400 (55")
C	505 (20")

	G32P-50CNC	G32P-60CNC	G32P-75CNC	G32P-100CNC	G32P-150CNC
A	3330 (131")	3330 (31")	3830 (51")	4215 (161")	5200 (205")
B	2060 (81")	2060 (81")	2630 (93")	2630 (203")	3690 (145")
C	635 (25")	635 (25")	735 (29")	792.5 (31")	755 (30")

mm(inch)

MODEL		G32A/G38A-35/50/80/120CNC			
General Capacity	Swing over table	$\varnothing 320(\varnothing 13") / \varnothing 380 (\varnothing 15")$			
	Distance between centers	350 (14")	500 (20")	800 (32")	1200 (48")
	Max. grinding diameter	$\varnothing 300(\varnothing 12") / \varnothing 360 (\varnothing 14")$			
	Max.load held between centers kg(lb)	150 (330)			
Grinding Wheel	Diameter x width x bore	$\varnothing 510 \times 50 \sim 100 \times \varnothing 152.4 / \text{Opt. } \varnothing 610 \times 75 \sim 150 \varnothing 254$ ($\varnothing 20" \times 2" \sim 4" \times 6" / \text{Opt. } \varnothing 24" \times 3" \sim 6" \times \varnothing 10"$)			
	Wheel speed rpm	1390 / Opt. 1150			
	Max.peripheral speed m/min(fit/min)	2220 (72)			
Wheelhead	Sliding angle deg	60			
	Automatic rapid traverse m/min(in/min)	$\varnothing 10 (393)$			
	Infeed travel	225 (9")			
	Min. increment infeed	$\varnothing 0.001 (\varnothing 0.0001")$			
Workhead	Spindle speed (variable) rpm	30 - 350			
	Center taper MT	No.4 (Opt. No.5)			
	Spindle type	Fixed (Opt. rotary)			
	Diameter of bore	$\varnothing 23 (0.91")$			
Tailstock	Quill travel	25 (1")			
	Center taper MT	No.4 (Opt. No.5)			
Table	Rapid feedrate m/min(in/min)	10 (393)			
	Min. increment feed	0.001 (0.0001")			
	Swivelling angle deg	9°	7°	5°	
Motor	Wheel spindle motor HP(KW)	7.5 (5.6) / Opt. 10 (7.5)			
	Workhead motor HP(KW)	2 (1.5)			
	Hydraulic pump HP(KW)	2 (1.5)			
	Lubrication pump HP(KW)	1 / 4 (0.19)			
	Coolant pump HP(KW)	1 / 4 (0.19)			
	Wheel (x axis) motor (fanuc)	1.2			
Machine	Wheel (z axis) motor (fanuc)	1.2			
	Net weight (semi enclosed) kg(lb)	4200 (9240)	4600 (10120)	4700 (10340)	5300 (11660)
	Gross weight kg(lb)	4600 (10120)	5000 (11000)	5200 (11440)	5800 (12760)
Packing dimension (L x W x H) mm(in)		3430 x 2300 x 2040 (137" x 92" x 82")	3630 x 2300 x 2040 (145" x 92" x 82")	4320 x 2150 x 2240 (170" x 85" x 88")	5300 x 2150 x 2240 (209" x 85" x 88")



	G32A-35CNC	G32A-50CNC	G32A-780CNC
A	3330 (131")	3370 (133")	4215 (166")
B	2160 (85")	1960 (77")	2630 (104")
C	585 (23")	705 (28")	792.5 (31")

OPTIONAL ACCESSORIES



Wheel Flange



Back Plate



4-Jaw Chuck



3-Jaw Chuck



Coolant System
W / Mag. Sep. & Paper Filter

Item#	Description	Specification	G20P	G25P	G32/38P	G32/38A
AUTOMATION SYSTEMS						
1*	Hydraulic tailstock		o	o	o	o
2*	SBS Dynamic balance system		o	o	o	o
3*	Crash control		o	o	o	o
4*	Gap control		o	o	o	o
5*	Movomatic auto sizing device		o	o	o	o
6*	Marposs auto sizing device	8~80	o	o	o	o
7*	Touch probe		o	o	o	o
BACK PLATE & SCROLL CHUCKS						
8	3-Jaw scroll chuck (must order with back plate)	4" , 5"	o	o	-	-
9	3-Jaw scroll chuck (must order with back plate)	6" , 8"	-	-	o	o
10	4-Jaw scroll chuck (must order with back plate)	8"	-	-	o	o
11	5C back plate	4" , 5"	o	o	-	-
	5C back plate	6" , 8"	-	-	o	o
12	Fixed back plate	4" , 5"	o	o	-	-
	Fixed back plate	6" , 8"	-	-	o	o
13	Adjustable back plate	6" , 8"	-	-	o	o
COOLANT SYSTEM						
14	Coolant System W/Mag. Sep. & paper filter	20L/min,80L	o	-	-	-
15	Coolant system W/paper filter	20L/min,80L	o	-	-	-
16	Coolant System W/Mag. Sep. & paper filter	60L/min,120L	o	o	-	-
17	Coolant system W/paper filter	60L/min,140L	o	o	o	o
COLLET CLOSER & COLLETS						
18*	Manual 5c collet closer		o	o	-	-
19*	Royal manual lever type 5c collet closer		o	o	o	o
20*	Royal air-operated 5c collet closer (must order W/Air control)		o	o	o	o
21*	Kit w/hand-operated valve for air 5c		o	o	o	o
22*	5c collets (sizes are from 3/64"-1/8"by1/16")	4-20mm	o	o	o	o
DRESSING & GRINDING ATTACHMENT						
23*	Internal grinding attachment		o	o	o	-
STEADYREST						
24	2-point steady rest	Ø20 ~ Ø50	o	o	o	o
	2-point steady rest	Ø20 ~ Ø70	-	-	o	o
	2-point steady rest	Ø60 ~ Ø120	-	-	o	o
25	3-point steady rest	Ø20 ~ Ø60	o	o	o	o
	3-point steady rest	Ø40 ~ Ø100	-	-	o	o
	3-point steady rest	Ø80 ~ Ø140	-	-	o	o

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OPTIONAL ACCESSORIES

Item#	Description	Specification	G20P	G25P	G32/38P	G32/38A
OTHER ACCESSORIES						
26	Grinding wheel	Ø14" x 1" ~ 2" x Ø5"	0	0	-	-
27	Grinding wheel	Ø18" x 2" x Ø5"	-	0	-	-
28	Grinding wheel	Ø20" x 2" ~ 4" x Ø6"	-	-	0	0
29	Wheel flange	5"	0	0	-	-
30	Wheel flange	6"	-	0	0	0
31	Lube oil temperature regulator		-	0	0	0
32	Transformer		0	0	0	0
33	Full enclosure splash guard W/Oil & mist separator		0	0	0	0

*Factory installation required



Auto Sizing Device



3-Point Steady Rest



2-Point Steady Rest



Lube Oil Temperature Regulator

STANDARD ACCESSORIES

Item#	Description	Specification	G20P	G25P	G32/38P	G32/38A
1	Wheel	Ø14" x 1.5" x Ø5"	Std.	-	-	-
2	Wheel	Ø18" x 2" x Ø5"	-	Std.	-	-
3	Wheel	Ø20" x 2" x Ø6"	-	-	Std.	Std.
5	Wheel flange	5"	Std.	Std.	-	-
6	Wheel flange	6"	-	-	Std.	Std.
7	Wheel extractor		Std.	Std.	Std.	Std.
8	Balancing arbor		Std.	Std.	Std.	Std.
9	Leveling screw W / blocks		Std.	Std.	Std.	Std.
10	Tool box W / adjusting tools		Std.	Std.	Std.	Std.
11	Diamond dresser		Std.	Std.	Std.	Std.
12	Halogen lamp		Std.	Std.	Std.	Std.
13	Carbide tip center	MT3 x 2	Std.	Std.	-	-
14	Carbide tip center	MT4 x 2	-	-	Std.	Std.
15	Semi-enclosed splash guard		Std.	Std.	Std.	Std.
16	Coolant system W / magnetic separator	20L/min	Std.	-	-	-
17	Coolant system W / Mag. Sep. & paper filter	40L/min	-	Std.	-	-
18	Coolant system W / Mag. Sep. & paper filter	60L/min	-	-	Std.	Std.
19	Balancing stand		Std.	Std.	Std.	Std.
20	Fanuc CNC controller	Fanuc	Std.	Std.	Std.	Std.
21	Hydraulic tailstock		-	-	Std.	Std.
22	Lube oil temperature regulator		-	-	-	Std.
23	Operation manual W / part list		Std.	Std.	Std.	Std.



Unit:mm (inch)

DESCRIPTION / MODEL		G38TH-50CNC	G38TH-100CNC	G38TH-200CNC	G38TH-300CNC	G38TH-400CNC			
General Capacity	Max. grinding diameter			300 (12")					
	Max. grinding length	500 (20")	1000 (40")	2000 (80")	3000 (120")	4000 (160")			
	Swing over table			380 (15")					
	Max. load held between centers	192 kgs (422 lbs)		650 kgs (1430 lbs)					
Grinding Wheel	Diameter x width x bore	$\varnothing 510 \times 50 \times \varnothing 152.4$ (20" x 2" x 6")							
	Wheel speed	1250 rpm							
	Max. peripheral speed	33 M / sec							
Wheelhead	X axis	Sliding angle	90°						
		Automatic rapid traverse	6 M						
		Min. increment infeed	0.0001 (0.00004")						
	Z axis	Infeed travel	225 (8.9")						
		Rapid feedrate	0 - 150						
		Min. increment feed	0.0001 (0.00004")						
Workhead	Spindle speed	50 ~ 350 rpm							
	Center taper	MT 4		MT 6					
Tailstock	Quill travel	25 (1")		50 (2")					
	Center taper	MT 4		MT 5					
Motor	Wheel spindle motor	5.5 KW (opt. 7.5 KW)							
	Workhead spindle motor	1.2 KW							
	Hydraulic pump	0.75 KW							
	Coolant pump	0.18 KW							
	Wheel motor (Xaxis)	1.2 KW							
	Wheel motor (Zaxis)	1.2 KW		1.8 KW					
Machine	Packing dimension (L x W x H)	3930 x 2250 x 2450 (155" x 89" x 96")	5280 x 2280 x 2250 (208" x 90" x 89")	6360 x 2280 x 2250 (250" x 90" x 89")	6640 x 2280 x 2250 (261" x 90" x 89")	6980 x 2280 x 2360 (275" x 90" x 93")			



Unit:mm (inch)

DESCRIPTION / MODEL		GU-650	GU-1000
General Capacity	Swing over table	Ø310 (Ø12.2")	
	Distance between centers	600 (24")	1000 (40")
	Max. grinding diameter	Ø300 (Ø12")	
	Max. load held between centers	100 kgs (220 lbs)	
Grinding Wheel	Diameter X width X bore (LH)	Ø355 x 50 x Ø127 (Ø14" x 2" x Ø5") opt. Ø405 x 50 x Ø127 (Ø16" x 2" x Ø5")	
	Diameter X width X bore (RH)	Ø305 x 25 x Ø127 (Ø12" x 1" x Ø5")	
	Wheel speed	2065 rpm	
	Max. peripheral speed	1800 M/min (59 ft/min)	
Wheelhead	Swivelling angle	180°	
	Max. increment speed	10 M/min (393 in/min)	
	Infeed travel	250 (10")	
	Min. increment infeed	Ø0.001 (Ø0.0001")	
Workhead	Spindle speed (variable)	30 ~ 350 rpm	
	Center taper	MT 4 (opt. MT 5)	
	Spindle type	Fixed & Rotary	
	Diameter of bore	Ø23 (Ø0.9")	
Tailstock	Quill travel	25 (1")	
	Center taper	MT 3	
Table	Rapid feedrate	10 (393")	
	Min. increment feed	0.001 (0.0001")	
	Swivelling angle C.C.W.	9°	7°
	Swivelling angle C.W.	-9°	-7°
Motor	Wheel spindle motor	5 HP	
	Lubrication pump	1 / 4 HP	
	Coolant pump	1 / 4 HP	
	Servo motor for workhead	Fanuc 1.5 KW	
	Servo motor for infeed (X axis)	Fanuc 1.2 KW	
	Servo motor for infeed (Z axis)	Fanuc 1.2 KW	
Machine	Net weight	5600 kgs (12320 lbs)	5800 kgs (12760 lbs)
	Gross weight	6420 kgs (14124 lbs)	7500 kgs (16500 lbs)
	Packing dimension (L x W x H)	4760 x 2280 x 2260 (188" x 90" x 89")	5280 x 2280 x 2280 (208" x 90" x 90")



Unit:mm (inch)

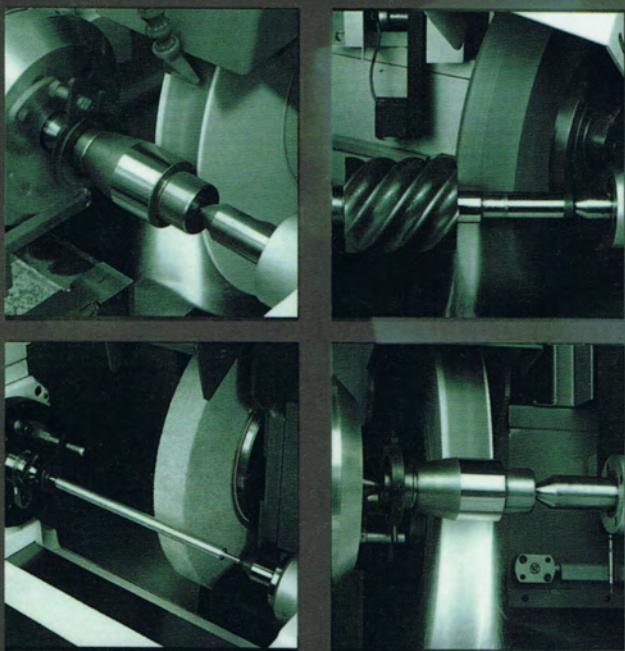
DESCRIPTION / MODEL		G151-48CNC
General Capacity	Range of grinding internal diameter	Ø5 ~ Ø150 (0.2" ~ 6")
	Swing over table	600 (24")
	Swing for coolant visor	300 (12")
	Workhead spindle speed	20 ~ 1000 rpm
	Wheel spindle speed	10000 ~ 50000 rpm
	Swivelling angle (R&L)	+ 8° ~ -30°
	Max.travel for X axis	400 (16")
	Max.travel for Z axis	450 (18")
	Rapid feedrate for X axis	8 mm / min (0.3 in / min)
	Min. increment feed for X axis	0.001 (0.00004")
	Rapid feedrate for Z axis	8 mm / min (0.3 in / min)
	Min. increment feed for Z axis	0.001 (0.00004")
Motor	Wheel spindle motor	2.2 KW (2P)
	Workhead motor	3.7 KW (4P)
	Servo motor for X axis	Fanuc AC 1.2 KW
	Servo motor for Z axis	Fanuc AC 1.2 KW
	Hydraulic motor	0.75 KW (4P)
	Coolant motor	-
Machine	Floor plan (L x W x H)	2680 x 2300 x 2000 x (106" x 91" x 79")
	Weight	4800 kgs (10560 lbs)
	Packing dimension (L x W x H)	3600 x 2300 x 2260 (142" x 91" x 89")

FANUC OI-TC Specifications

○ : Standard ☆ : Option

NO.	Item	Specification	
1	Last input increment	0.001mm(0.0001")	○
2	Least command increment	0.001mm(0.0001")	○
3	Rapid traverse override	F0,25,50,100%	○
4	Automatic acceleration / deceleration		○
5	Linear acceleration / deceleration after Cutting feed interpolation		○ ○
6	Feedrate override 0 to 150%		○
7	Positioning		○
8	Linear interpolation		○
9	Circular interpolation		○
10	Reference position return		○
11	Reference position return check		○
12	9" CRT/MDI (full key)	High-resolution monochrome	○
13	9" CRT/MDI (full key) Color		☆
14	Manual handle feed	1 unit	○
15	Incremental feed	x1, x10, x100	○
16	Dwell (per sec)		○
17	Interlock		○
18	Machine lock all axes		○
19	External deceleration		○
20	Position signal output		○
21	Battery alarm output		○
22	Backlash compensation		○
23	Stored pitch error compensation		○
24	MDI operation		○
25	Reset		○
26	Dry run		○
27	Single block		○
28	Program protect signal		○
29	self-diagnosis function		○
30	Emergency stop		○
31	Status display		○

NO.	Item	Specification	
32	Incremental pulse coder interface		○
33	Coordinate system setting		○
34	Automatic coordinate system setting		○
35	Workpiece coordinate system	G54-G59	○
36	Special G code input		○
37	Programming input of offset data		○
38	Custom macro B		○
39	Inch/metric conversion		○
40	Canned cycles for grinding		○
41	X-axis diameter/radius programming		○
42	Radius designation on arc		○
43	EIA/ISO automatic recognition		○
44	Angular axis control		☆
45	Multi step skip		○
46	Miscellaneous function	M3-digit	○
47	Tool offset memory	16 pairs	○
48	Tool offset		○
49	Partprogram storage length	80m	○
50	Partprogram storage length	320m	☆
51	Registered programs	63 pieces	○
52	Sequence number search		○
53	Program number search		○
54	Program protection		○
55	Background editing		☆
56	Multi-language display	English/Japanese/Chinese	○
57	Run hour and parts count display		○
58	Display of spindle speed		○
59	Actual speed display		○
60	External message		○
61	External data input		☆
62	External I/O device control		○



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