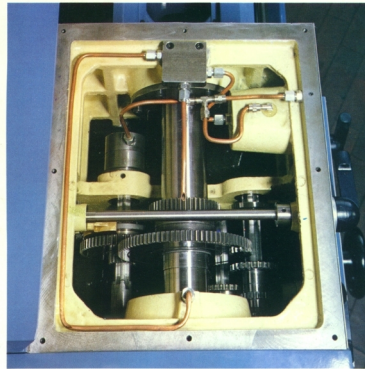


# SAG 12S1

The Sag 12S1 has been planned, like all the Sag lathes, in order to obtain performance of high efficiency and precision, but above all to allow the operator the easiest and quick-est means of operating. Its production meets the needs of industry and also of vocational schools where the improvement of the controls can be better appreciated due to the simplicity of operation.



#### CONTROL CABINET

On one console placed adjacent to the main carriage, there are the controls of the machine: spindle rotation direction selector, brake pushbutton, speed variation pushbuttons and the revolution counter.

#### HEADSTOCK AND CONTROLS

For the ultimate in simplicity, the headstock of the Sag 12S has just three levers: one for backgears, one

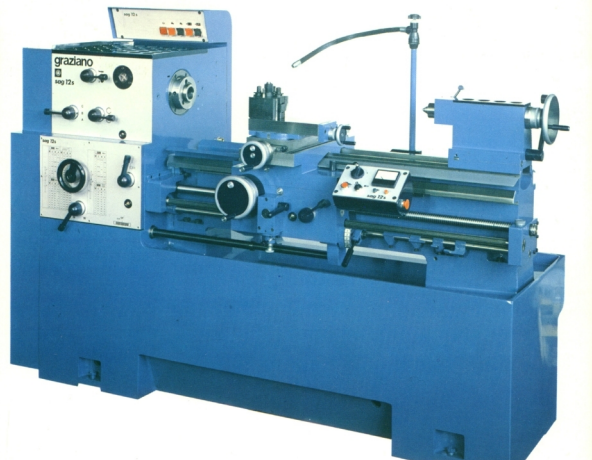
for reversing the lead screw and feed rod and the last one for feed and thread selection. All splines and shafts are chromenickel steel, hardened and ground. The spindle in high quality steel is mounted on high precision tapered roller bearings, lubricated under pressure by a filter easily stripped from outside for cleaning.

All gears rotate in a constant oil bath. The headstock, base and gear box are constructed as a single integral unit which helps to reduce tool vibration. Cam-lock attachment type D1-4". This feature ensures the interchangeability on all lathes without special faceplates and guarantees speed and reliability in mounting and dismounting the chucks.

GEAR BOX Transmission with all hardened and ground splined shafts and gears, all movements engaged by electromagnetic clutches.

Selectors on apron station for spindle reversing and engaging - spindle speeds -

FEED BOX fully-enclosed gear box has a simple 10-position handwheel. Two other levers provide 30 Whitworth and 30 Metric threads without a gear change. All gears in steel rotate in an oil bath and run on hardened and ground spline shafts.



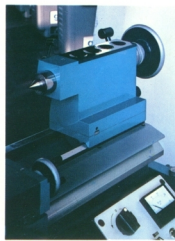
#### BED AND CARRIAGE

The bed, made of Meehanite cast iron, maintains the same characteristics of the Sag lathes: carriage ways are lower than the tailstock ways and protected by two steel plates, a wide and deep natural gap produced by the tailstock stops at a certain distance from the headstock.

The longitudinal slide moves on wide dimensioned ways which ensures a uniform and accurate movement. The cross slide and compound are made in steel and fitted with tapered gibs for backlashes. Leadscrews have easy-reading graduated dials.

#### APRON

The box-shaped apron is totally enclosed with gears and shafts running in an oil bath, ensuring all components are lubricated. A clutch device disengages all feeds in case of excessive stress.



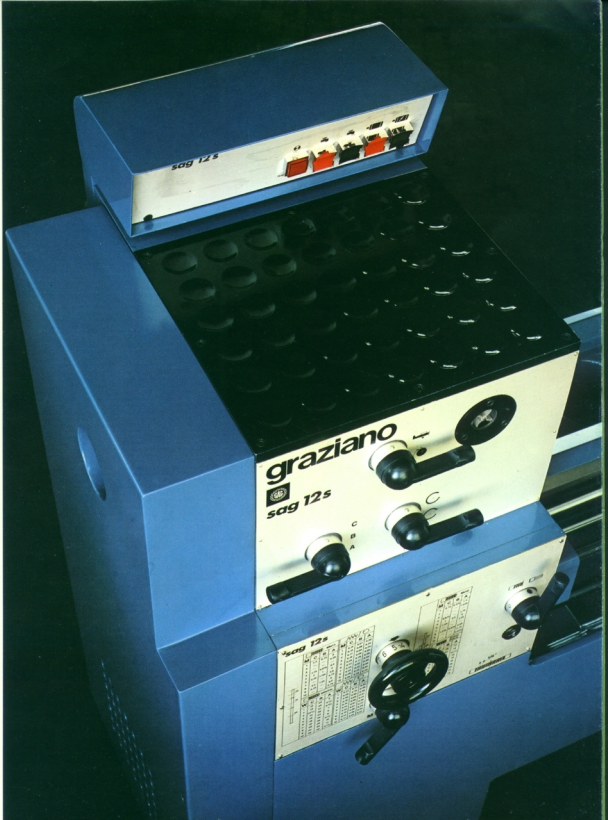
#### THE TAILSTOCK

The rugged tailstock has a hardened sleeve and a quick-acting lock by lever. The tailstock projects well over the ways so that short workpieces can be accommodated without excessive extension of the sleeve.

It can be adjusted radially for the machining of taper workpieces. A graduated dial permits the measurement of depth of cut.

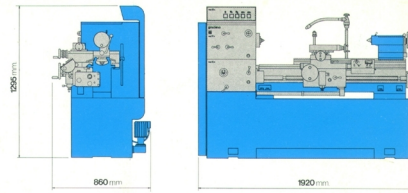
#### COOLANT UNIT

The coolant unit includes: self-priming electropump, pipes, connections, cock, chip pan and a built-in tank with gauge for coolant.



# SAG12S1

## MAIN FEATURES AND SPECIFICATIONS



### GENERAL FEATURES

Height of centers over bed .....	153	6"	30 pitch .....	Pitch	92-112	92 to 112
Distance between centers .....	800	32"	30 Modular pitches .....	Mod.	0.375/2.875	0.375 to 2.875
Swing over carriage .....	142	6 1/2"	Lead screw pitch .....	TPI	4	4
Swing over natural gap .....	440	17 5/16"				
<b>BED</b>			<b>CROSS SLIDE</b>			
Width of bed .....	245	9 5/8"	Length .....	mm	459	18 1/16"
Length of the natural gap in front of the dog plate .....	230	9 1/16"	Width .....	mm	150	6 7/8"
			Maximum travel .....	mm	180	7 1/8"
<b>HEADSTOCK</b>			<b>TOOLPOST SADDLE</b>			
Spindle bore .....	41	1 5/8"	Length .....	mm	244	9 5/8"
Cone Morse .....	5		Width .....	mm	110	3 15/16"
Spindle nose .....	Cam-Lock	D1-4"	Maximum total travel .....	mm	110	4 5/16"
			Rotation angle .....		360	360
			Maximum tool section .....	mm	20 x 20	3/4"
<b>SPINDLE SPEED</b>			<b>TAILSTOCK</b>			
Two available speed ranges:			Sleeve bore .....	mm	50	1.968
Low .....	RPM	71-120-200-300	Max length of sleeve .....	mm	225	8 7/8"
High .....	RPM	500-800-1250-2000	Maximum sleeve travel .....	mm	145	5 11/16"
			Cone Morse .....	N	3	3
			Support length on bed .....	mm	222	8 3/4"
<b>FEEDS AND THREADS</b>			<b>MOTOR</b>			
60 longitudinal feeds .....	mm	0.05-0.58	0.019 to 0.023	HP	4	4
60 cross feeds .....	mm	0.02-0.29	.0009 to .011	Approximate weight .....	Kg.	1 0
30 Whitworth pitches .....	TPI	46-6	46 to 6			Lbs 2208
30 metric pitches .....	mm	0.75-5.75	0.75 to 5.75			

graziano

graziano & c. s.p.a. in s.r.l.  
15027 borone - via bertario, 15  
teléfono (0131) 813911 (12 linee r.a.)  
telex 210376 graz i - telex 212454 sag ass i





GB

**graziano**  
Sag210n/nr



## Sag 210n

SAG 210 series lathes are constructed in a manner that guarantees very high production while taking future requirements into consideration. These models have been designed for maximum efficiency. In addition to standard modes of operation, they employ new degrees of automation to suit your particular requirement. These are completely new machines. Every individual component has been studied, evaluated and re-tested to assure simpler, faster operation. Control levers, handwheels, pushbuttons, reading zones and even the travel of moving parts have been constructed for this purpose. This results in outstanding efficiency and accuracy. The modular concept of the SAG 210 permits the creation of a whole series of lathes, along with the addition of new features and attachments.

### SPEED SELECTOR, BRAKE

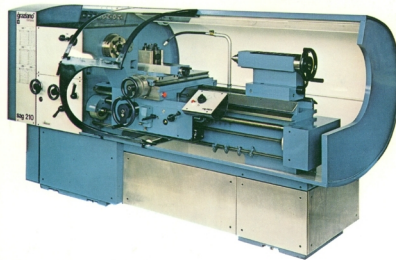
The Model SAG 210 N responds at once to all of the operator's commands; a speed selector, placed in a console on the apron allows for reversing the spindle, stopping it, or selecting any of four speed ranges by the turning of a lever.

### The headstock

A three-position lever on the headstock provides 12 spindle speeds. Additional 12 speeds are available through an optional drive belt change. All gears are of chrome nickel hardened and ground.

### The spindle

A solid forged hardened and ground spindle is used. This spindle is accurately supported by Gamet microprecision tapered roller bearings. Constant thrust is maintained by a unique, springloaded rear bearing. This feature keeps spindle play to a minimum, regardless of spindle heat. Ultra precision inspection and assembly of the spindle guarantees half of the normal Schiesinger tolerances. The D1-6 Cam Lock ensures the interchangeability of the self-centering chucks on all lathes without special flanges.



**Feed box.**

The fully enclosed feed box has a simple, 10 position handwheel. Two more levers provide 40 metric and Whitworth threads without a gear change. All gears are hardened and ground, rotating in oil bath and running on hardened and ground spline shafts.

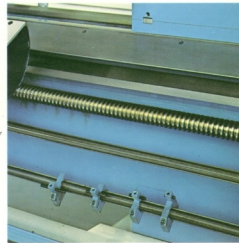
**The bed**

The bed, one of the key features of this machine, is made of Meehanite cast iron. The over dimensional apron bed ways are lowered in respect to the tailstock and covered by two steel plates.

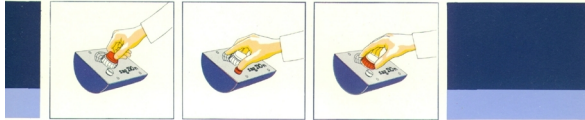
The slides are therefore covered and protected from chips to maintain the working precision of the lathe. The unique bed provides a wide, natural gap, permitting the machining of workpieces up to 22-13/16" in diameter without removing any gap blocks. When working large diameters, the carriage is supported along its entire length. The bed ways of both, carriage and tailstock, are flame-hardened and ground.

**The carriage**

Longitudinal travel is precise and exact. Cross-slide and compound are of steel fitted with tapered gibs. The compound can be moved on the dovetail length of the cross-slide to any position desired. Rear toolposts or extra components are offered. This system allows installation of a rear toolpost or copying attachment. The lead screws of the crossslide and compound are protected and are provided with graduated dials with easy-to-read divisions. The carriage is also supplied with a graduated dial on a large-diameter handwheel. The mechanical feed direction, longitudinal or crosswise, is engaged by actuating a lever located on the apron. Overload clutches are supplied for all axis.







**The apron**

The box-shaped apron forms an oil reservoir for constant lubrication of gears. The feed is equipped with an overload feature. The apron is equipped with longitudinal stops.


**The tailstock**

The over designed tailstock has a precision hardened sleeve and a quick-acting lock. It can be adjusted crosswise for turning slightly tapered pieces. A graduated dial on the tailstock permits measurement of depth of cut.

**Cylindrical housing**

Special care has been taken to protect the operator. Headstock, bed carriage and tailstock are in oval housing that helps carry away chips and coolant. In the front, protection is given by a strong plexiglass splash guard combined with a lamp for lighting the working area. The base is covered by stainless steel panels. A removable chip pan is provided.

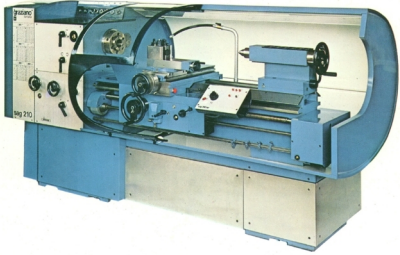





**Sag 210nr**

**Rapid movements.**  
The SAG 210 NR offers additional ease of operation controls. Three pushbuttons give rapid and semirapid movement to the apron in either direction. This is accomplished by means of an independent motor providing two different speeds of carriage movement. The first, 0,25 m/1' is the slow speed rapid traverse of the carriage to approach or retract from the workpiece. A simple pushing of one of outer

pushbuttons accomplished this. The other speed, 6 m/1', is the rapid traverse of the carriage. It is controlled by pushing contemporaneously one of the outer and the central pushbuttons. Speedy ease of operation of the carriage with no operation fatigue is the end result. Other two additional pushbuttons on the console control the feed bar rotation and its stopping.

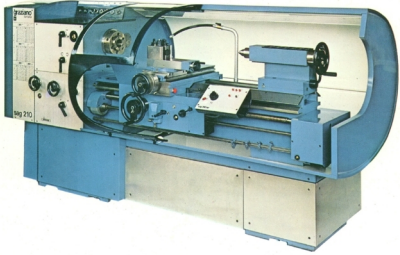


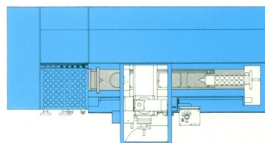
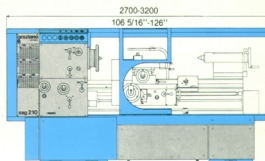
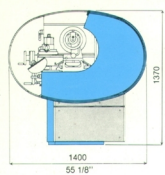


**Sag 210nr**

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**MAIN FEATURES AND SPECIFICATIONS**

**TECHNICAL DATA**

Height of centers	8 1/4"	mm 210	40 Modular threads	Mod 0.25-2.875	Mod 0.25-2.875
Distance between centers	40°-60°	mm 1000-1500	Lead screw thread	3/8"	3/8"
Swing over cross slide	10 17/32"	mm 268	<b>Cross slide</b>		
Swing over natural gap	22 13/16"	mm 580	Length	22 13/16"	mm 580
<b>Bed</b>			Width	7 5/16"	mm 186
Bed width	13"	mm 330	Maximum stroke	9 1/2"	mm 240
Length of natural gap in front of flange	12 7/16"	mm 316	<b>Compound</b>		
<b>Head</b>			Length	10 13/16"	mm 275
Spindle bore	2 1/4"	mm 57	Width	4 3/4"	mm 120
Spindle nose	Cam Lock D 1-6	Typ D 1-6"	Overall maximum stroke	5 1/8"	mm 130
<b>Speed</b>			Rotation angle	°60	°60
Spindle speeds	n. 24	n. 24	Maximum section of tool	3/4" x 3/4"	mm 20 x 20
Range	rpm 38-2000	rpm 38-2000	<b>Tailstock</b>		
<b>Feeds and threads</b>			Diameter of sleeve	2 11/16"	mm 68
80 longitudinal feeds	0.008" - 0.174	mm 0.020-0.44	Length of sleeve	13 1/4"	mm 338
80 cross feeds	0.004" - 0.085"	mm 0.10-0.22	Overall maximum stroke of sleeve	77/8"	mm 200
40 Whitworth	T.P.L. 46-3	T.P.L. 46-3	Morse taper	No. 5	No. 5
Ø Metric threads	375-5-75	mm 0.375-5,75	Length of support on bed	12"	mm 300
40 Pitch threads	Pitch 92-6	Pitch 92-6	<b>Motor</b>	HP 10	HP 10
			Approximate net weight	Lbs 4718-5159	Kg 2270-2470

All technical characteristics are not binding and may be changed anytime by the manufacturer.



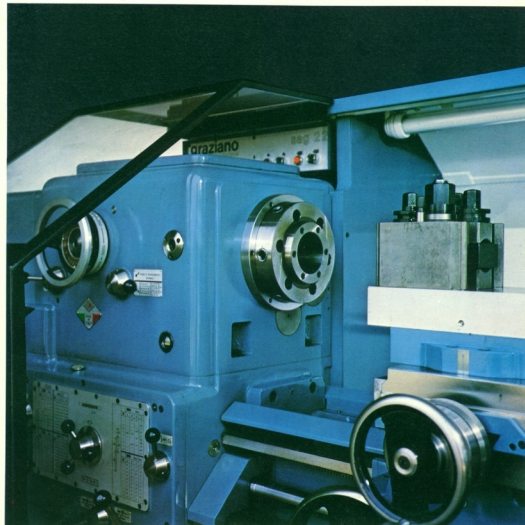
**graziano**

via Belfiore, 15  
 41013 Sorbara (Modena) - Italy  
 tel. 059/410081-410082-410083-410084-410085  
 fax 059/410086-410087  
 telex 210570 grai  
 telefax 210560 saag on

ENGINE LATHES

graziano

**Sag22n/nr/nrf**



# Sag22n

## HEADSTOCKS AND CONTROLS

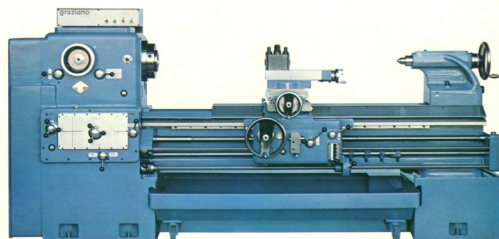
The SAG 22 Graziano lathe has the combination of ruggedness, power and precision required to perform today's toughest turning jobs. Construction, as with all Graziano lathes, is of the finest selected material to guarantee continuous efficiency. And the result is long years of dependable, precision operation.

For ease of operation, the headstock of the SAG 22 has very simple controls. A handwheel provides for selection of the 12 spindle speeds. There are two other levers, one for reversing the lead screw and feed rod, and the other, shift upwards for normal feeds and threads, shift downwards for engaging the rotation of feed box with a ratio of 8 - 1. All splines and shafts are chrome-nickel steel, hardened and ground. The splines are ground on the tooth profile.

The exceptionally rugged spindle has a 85 mm bore. The spindle is accurately supported by Gamet microprecision tapered roller bearings. For chuck attack, the D1-8" Cam Lock assures the interchangeability of the self-centering chucks on all lathes without special flanges. Quick and safe assembling and disassembling of the chucks. Spindle bearings are continually washed by oil under pressure supplied by a special pump. An easily removable filter assures maximum life for all spindle components.

## GEAR BOX

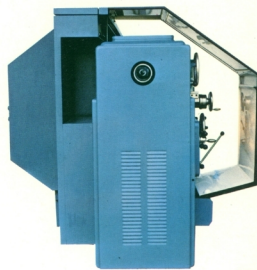
The fully-enclosed gear box has a simple, 10-position handwheel. Two other levers provide 40 U.S. and 40 Metric threads without a gear change. All gears are hardened and ground, and run on hardened and ground spline shafts rotating in an oil bath.



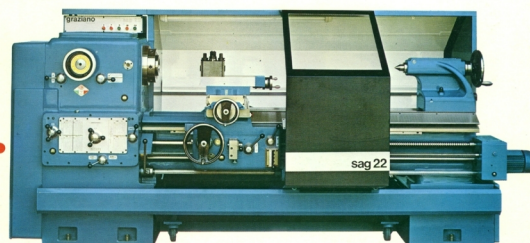
#### BED AND CARRIAGE

The bed features a unique design that constitutes one of the major advances in geared engine lathes. The carriage ways are lower than the tailstock ways, affording two distinct advantages: 1. The flame-hardened and ground bedways are further protected by heavy steel plates; and 2. A wide natural gap is provided making it possible to machine parts up to 760 mm in diameter without removing the gap blocks.

The longitudinal carriage has extra-long bearing surfaces, insuring long-lating accuracy. The debways on which are running the carriage and tailstock are flame-hardened with a new method and then ground.

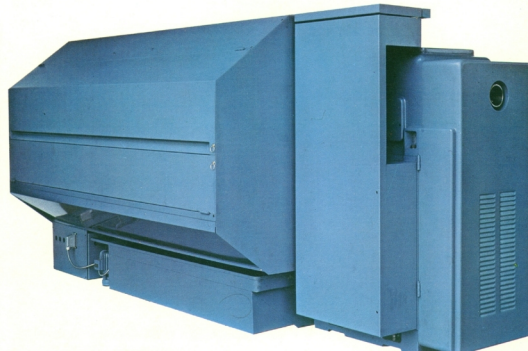


- The SAG 22 lathes can be equipped, on request, with or without the new housing.



Cross slide and compound are made of steel and are fitted with tapered gibs. The compound can be moved over the hole length of the cross slide on dovetail ways and locked into the desired position with socket head screws. The dovetail cross slide permits easy addition of rear toolpost or profile copying attachment.

Lead screws are protected and have easy-reading, graduated dials and large-diameter handwheels. The mechanical feed direction, longitudinal or crosswise, is engaged by actuating a lever on the apron.





#### APRON WITH 4-POSITION CONTROL

The box-shaped apron is totally enclosed, with gears and shafts running in an oil bath. Worm drive with friction clutch provides uniform feeds and perfect surface machining. A clutch device protects against overload. A special lever on the apron enables the operator to select up to four pre-set length of cut for automatically stopping the carriage.

#### Tailstock

The large, rugged tailstock has a precision hardened sleeve and a quick-acting lock. The tailstock projects well over the ways so that short workpieces can be accommodated without excessive extension of the sleeve. It can be adjusted crosswise for turning slightly tapered pieces. A graduated dial permits measurement of depth of cut.

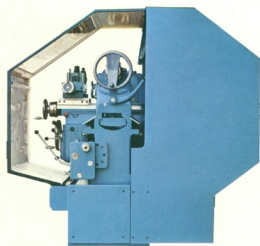
#### Coolant unit

The coolant unit, a standard accessory, consists of a coolant pump, piping and connections, with built-in tank and chip collector in lathe base.

#### HOUSING

Special care has been taken to protect the operator. Headstock, bed carriage and tailstock are in a housing that helps carry away chips and coolant. In the front, protection is given by a strong plexiglass splash guard combined with a lamp for lighting the working area.

The electric equipment is accommodated on a box within the housing. A removable desing appender is provided.



# Sag22nr

## RAPID CARRIAGE FEEDS

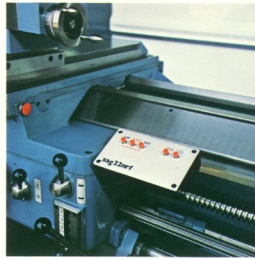
On the console there are pushbuttons for controlling the rapid feed in the two directions by means of an independent motor providing two different carriage speeds: 0,75 m', slow feed and 6 m' rapid feed.



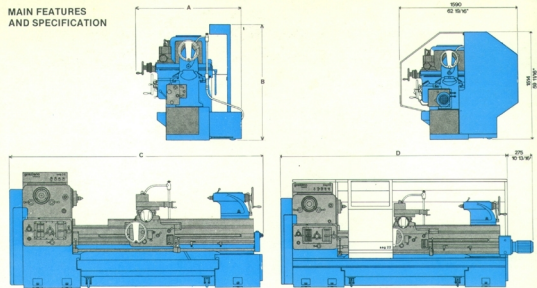
# Sag22nrf

## SPINDLE BRAKE

Both lathes, SAG 22 n and SAG 22 nr can be equipped with an electromagnetic spindle brake. Braking is obtained by putting a lever into loose position. With a commutator the device is excluded.



**MAIN FEATURES AND SPECIFICATION**



**TECHNICAL DATA**

	A	B	C	D
Sag 22x1000 - 40°	1270 - 50"	1470 - 57"	2020 - 103"	2600 - 102"
Sag 22x1000 - 60°	1270 - 50"	1470 - 57"	2150 - 122"	2700 - 122"
Sag 22x2000 - 80°	1270 - 50"	1470 - 57"	3580 - 140"	3565 - 140"
Sag 22x2000 - 100°	1270 - 50"	1470 - 57"	4080 - 160"	4065 - 160"

Height of centers over bed	mm	293	11 3/32"
Distance between centers	mm	1000-1500	40" - 60"
	mm	2000-2500	80" - 100"
Swing over cross slide	mm	327	14 27/32"
Swing over natural gap	mm	750	29 15/16"

<b>Bed</b>			
Bed width	mm	360	14 3/16"
Length of natural gap in front of range	mm	322-322	12 21/32" - 12 21/32"
	mm	422-422	16 5/8" - 16 5/8"

<b>Head</b>			
Spindle bore	mm	85	3 11/32"
Spindle nose	Carb Lock	Ø1-8"	

<b>Speed</b>			
Spindle speeds	N	12	
Range	rpm	30-1500	

<b>Feeds and threads</b>			
80 longitudinal feeds	mm	0.06 - 7.25	from 0.012" to 0.285"
80 cross feeds	mm	0.15 - 3.62	from 0.006" to 0.142"
40 Whitworth	T.P.I.	44 - 3	from 44 to 3
40 Metric threads	mm	3.75 - 5.5	from 3.75 to 5.5
40 Pitch threads	Pitch	88 - 6	from 88 to 6
40 Modular threads	Mod.	25 - 2.75	from 25 to 2.75
Lead screw thread			1/2"

<b>Cross slide</b>			
Length	mm	690	27 1/8"
Width	mm	220	8 21/32"
Max stroke	mm	305	12"

<b>Compound</b>			
Length	mm	340	13 3/8"
Width	mm	150	5 25/32"
Overall max stroke	mm	195	7 11/16"
Rafter angle	°	360	
Max tool section	mm	23x25	1" sq

<b>Talstock</b>			
Sleeve diameter	mm	70	2 7/8"
Sleeve length	mm	340	13 3/8"
Overall max stroke	mm	200	7 7/8"
Mounting	N	5	
Length of support on bed	mm	343	13 1/2"
MOTOR	HP	15	
Approximate net weight	kg	2250-2350	Lbs. 4980-5200
		2650-2850	Lbs. 5880-6320

All technical characteristics are not binding and may be changed anytime by the manufacturer.

**graziano**

graziano & c. s.p.a. - torni  
15057 tortona (Italy) via bertarino, 15  
telefono 01131 613011 (2 linee r.a.)  
telex 210370 graz. i - telex 210460 sag on i  
assistenza tecnica

15057 tortona - via bertarino, 4/A - tel. 01131 868429 - 868543