



POTISJE ADA

**UNIVERSAL HIGH
PRODUCTIVE AND
PRECISION LATHES
FAMILY PA**



Main technical data for PA lathes

The family of PA lathes has the following main technical data:

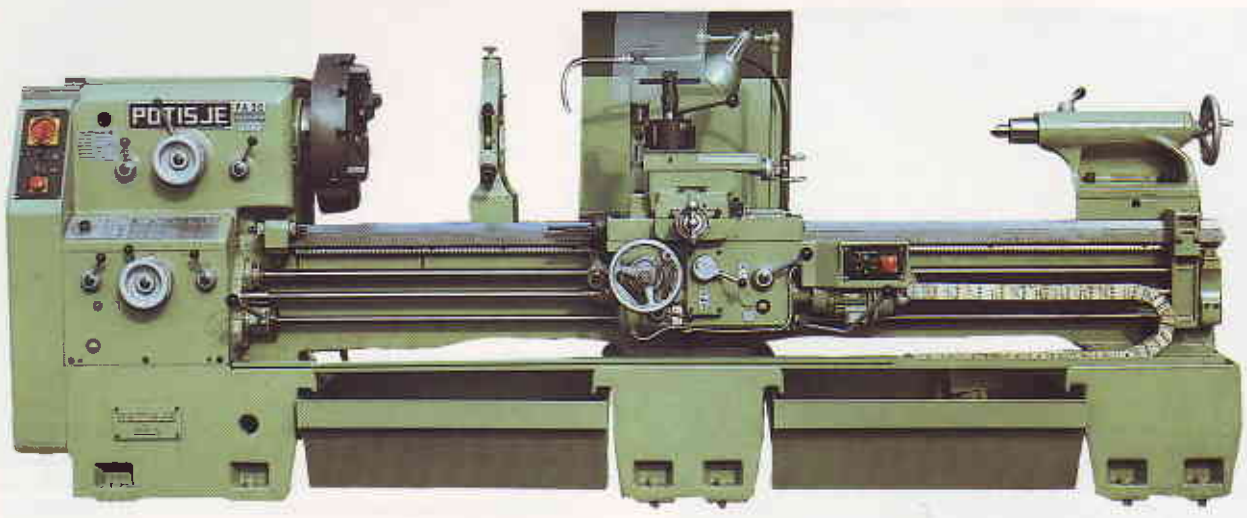
- height of centres 230 mm. ($9\frac{1}{16}$ "), 255 mm. ($10\frac{3}{64}$ ") and 300 mm. ($11\frac{13}{16}$ ");
- distance between centres 750 mm. ($29\frac{17}{32}$ "), 1000 mm. ($39\frac{3}{8}$ "), 1500 mm. ($59\frac{1}{16}$ "), 2000 mm. ($78\frac{47}{64}$ "), 3000 mm. ($118\frac{7}{64}$ ") and 4000 mm. ($157\frac{31}{64}$ ");
- they can be produced with or without gap in bed;
- metric and Whitworth treads;
- With or without taper turning device;
- lathes of the family can be universal lathes, copying lathes or coping programmed lathes. Owing to this the family may consist of more than one hundred machines which vary in use.

However, all members of PA lathe family have the following common technical data:

- stable bed with hardened and ground steel slide guides;

- slide guides ground in bed;
- headstock with cemented, hardened and ground gears for 24 speeds;
- spindle speeds 20 – 2000 (normal) or 24 – 2400 (increased);
- wide choice of metric, Whitworth and module threads without changing of gears;
- all moving parts are richly lubricated;
- Feed gearbox completely enclosed; gears cemented and hardened;
- all controls concentrated for simple handling;
- 10 HP (7,5 kW) electric driving motor (standard type) or 15 HP (11 kW) electric motor (for increased power);
- two-direction lamellar coupling;
- lamellar type brake.

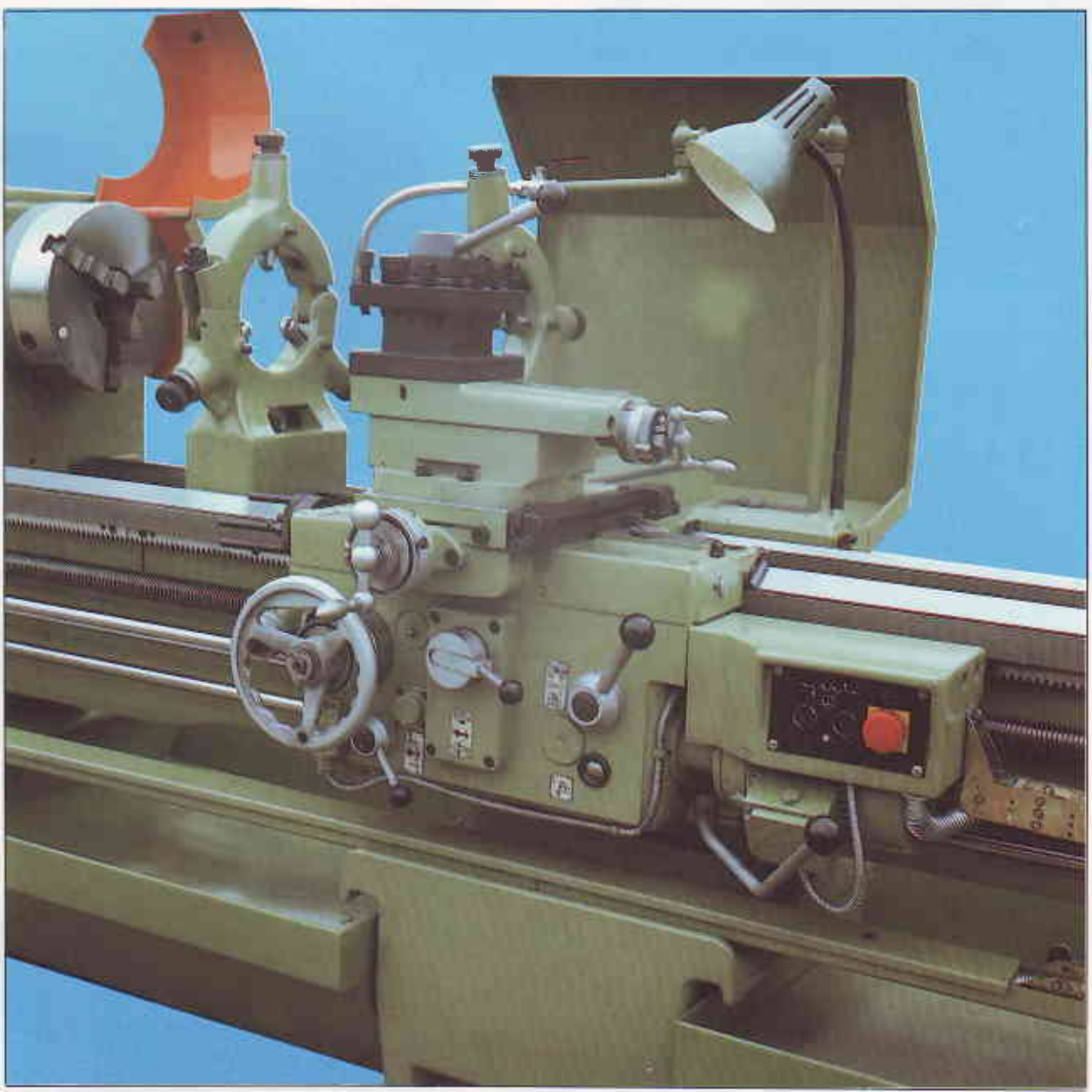




Lathes of PA family are of modern lines and of traditional quality; they are made under the licence of MORANDO firm of Torino, Italy. Owing to their quality, modern lines and contemporary components these machine tools match the best known lathes in the world market.

CONTROL OF QUALITY

The built in material and components were tested by the most modern instruments before fitting. The precise final control of the lathe ensures preciseness and quality which meets the highest world standards.



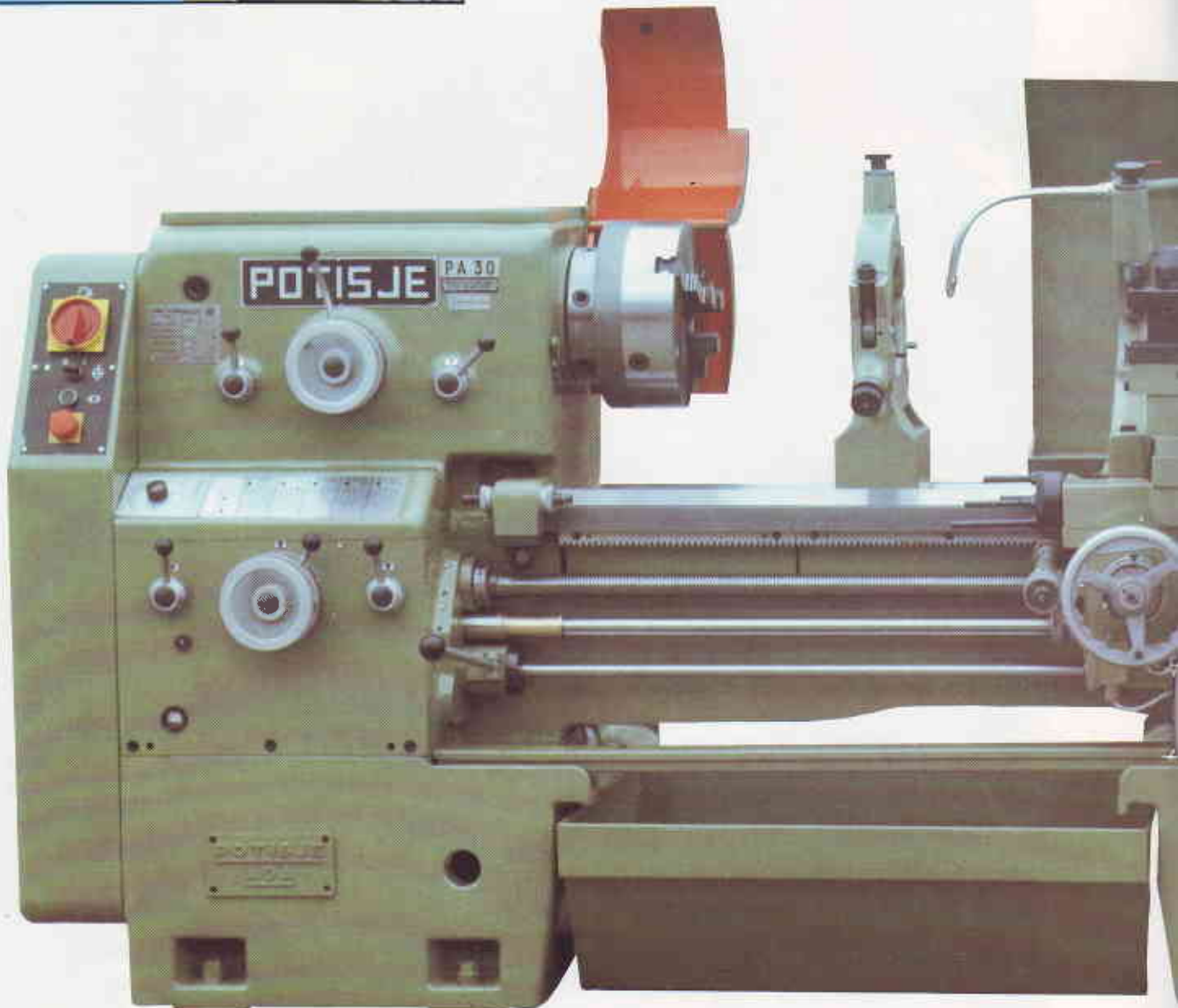


FEED GEARBOX

Feed gearbox ensures a wide range of power transmission which is possible without changing the gears outside the box. Selection of feeds and pitch of threads is similar to the selection of main spindle speed; it is performed by levers and drums. Such system of power transmission selection enables easy handling in operation. The gears and shafts are made of alloy steel; they were thermally treated and rotate in ball bearings.

The gearbox housing is hermetically sealed and that's why all movable parts work in very favourable condition regarding the lubrication. The oil level in feed gearbox is controlled on a meter indicator.

The mechanism of feed gearbox operates easily at negligible consumption of driving power.



TOOLPOST

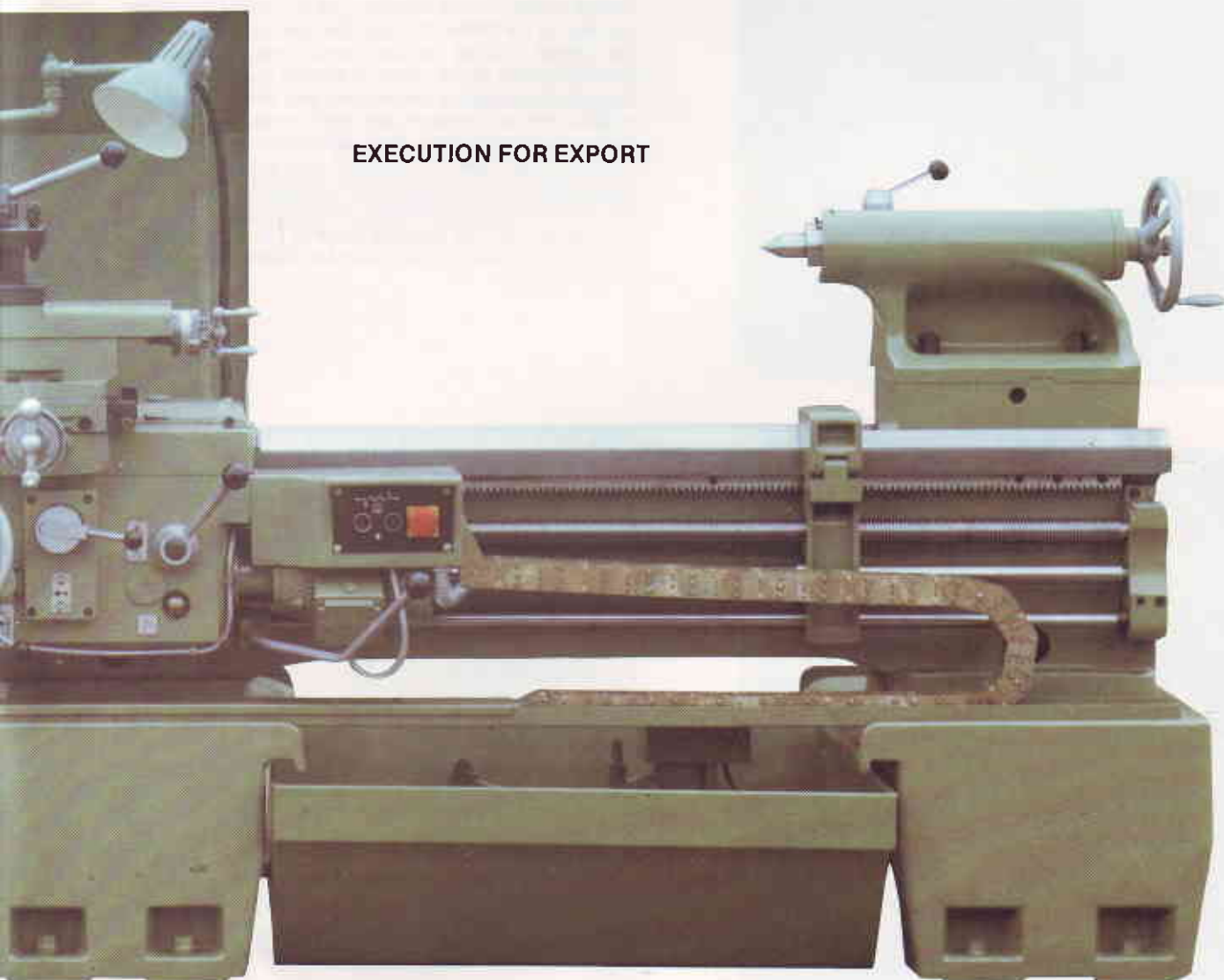
The toolpost is a massive and stable unit. Its sliding surfaces are well dimensioned and quality machined and guided over hardened slide guides of the bed. The clearances are precisely determined and adjusted so that any adjustment of clearances is not necessary for a long period of time. The toolpost is designed in such a manner that easy movability and stability in operation are ensured.

The transversal toolpost is guided over the wide slide guides while the upper support of rotary type enables machining of tapers under various angles (by means of a graduated scale).

Lubrication of sliding surface of the bed is performed by means of two vessels cast in each arm of the bed. Other sliding surfaces are lubricated through oilers by a grease gun. The lathe is equipped also with a massive square tool holder if no specified different by the contract.



EXECUTION FOR EXPORT



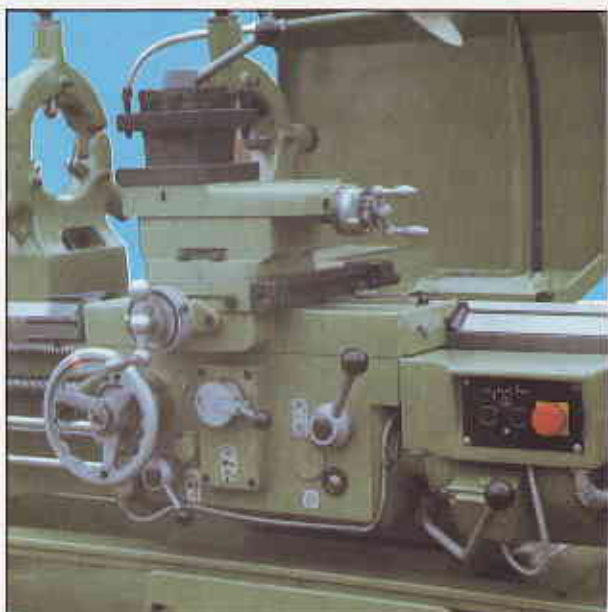


HEADSTOCK

The headstock with main spindle bore $\phi 62$ mm. ($2\frac{7}{16}$ " or 90 mm. ($3\frac{35}{64}$ ")) is lubricated richly. In spite of the heaviest operation regime the gears of the headstock operate under very favourable hydrodynamic conditions. Oil that lubricates the gears of the headstock and all bearings (including the main spindle bearings) passes through an oil filter in which manner the cleanness of the lubricant is ensured. The coupling and the lamellar type brake of own construction are controlled by a hand lever which is installed in an appropriate manner to be always at operator's hand; these parts ensure transmission of the driving motor power and rapid braking.

The range of 24 speeds from 20 to 2000 r.p.m. has been obtained through three segments of gears which are controlled by one lever and two axial drums. A lever installed on the left hand side actuates the gear box; in the first position the ratio is 1 : 1 in the second position 8 : 1.

All gears are cemented, hardened and ground and they operate noiselessly owing to rich lubrication through a gear pump installed in the headstock.



THE CONTROL PANEL

The control panel is completely closed. It is equipped with necessary control devices for safety operation of the lathe. The control levers are so arranged that simple control of the lathe is ensured. The automatic longitudinal feed is performed through the driving spindle while the thread cutting is performed through precision leading spindle and a chuck. A special mechanism protects the lathe against overloading and, at the same time enables precise operation with rigid single-positioned or multi-positioned limitors. This mechanism can be easily adjusted. The lathe is equipped with longitudinal and transversal limitors. Setting of the longitudinal and transversal limitors and adjustment of the chuck is performed simultaneously. The movable parts of the control panel are lubricated with oil; the oil level is indicated on the oil level indicator.



THE BED WITH SLIDE GUIDES

The lathe bed is made of quality grey cast iron of homogeneous consistence. The rational form of the bed ensures special rigidity.

The bed is of high stability. Deformations are not possible due to natural and artificial ageing. The side wall of the bed are interconnected with „U” rib fasteners. In addition, the inside of rib fasteners is hone combed which gives special rigidity to the bed. The built in slide guides are of high durability owing to decreased coefficient of friction.

The slide guides are made of steel, they are cemented and hardened. The hardness of slide guides is 450 HB (after hardening).

Grinding of slide guides is of particular importance. They are ground with modern and precision machines. Each bed is carefully tested after grinding by precision optical instruments. The results of such tests are put on a label which is delivered together with the lathe bed. The label contains all necessary data about machining and preciseness of the bed.

Precisely machined and rationally shaped bed ensures precision machining of workpieces and long life of the lathe.

TAILSTOCK

The tailstock is of rigid construction having the tail of $\phi 80 \text{ mm. } 3 \frac{5}{32}''$. The great rigidity of the tailstock and of the tail enables high quality of machining.

The tailstock tail is adjustable by a hand wheel and by means of the spindle the length of which is precisely determined. In the end rear position the spindle pushes out the Morse cone from the bearing.

Instead of the standard tailstock the lathe may be equipped with the hydraulic drive or the pneumatic drive tailstock.



ELECTRIC EQUIPMENT

The electric equipment is very simple but functional. It consists of two electric groups. The first group is installed in the front leg and has the function of a control panel; it is equipped with necessary control devices. The second group is very accessible as it is installed at the rear of the lathe bed, under the headstock.

The electric system of the lathe is composed of quality elements of domestic and foreign make, located in metal cases with removable sheet covers.



SHEARS

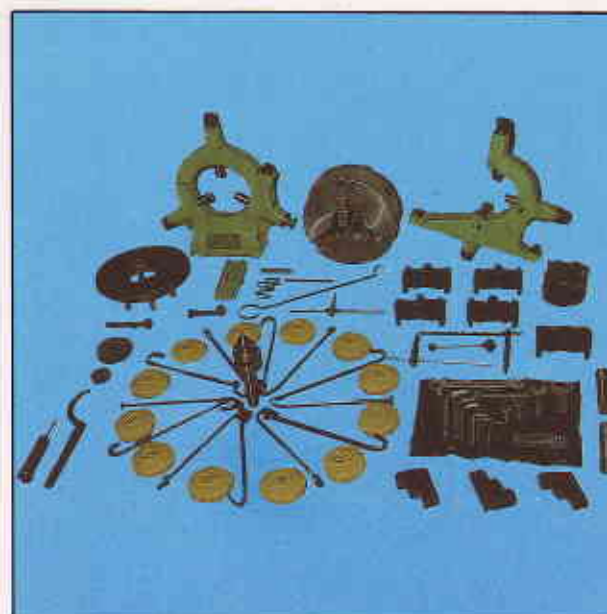
Through the shears rotation of the main spindle is transferred to the feed gear box. When nonstandard threads are to be cut the specific gears should be installed.

RESTS

For supporting of long workpieces of small diameter the lathe is supplied with a following and a steady rest of robust construction. In addition, these devices serve for mounting of workpieces of large diameter and of heavy weight. The lathe may be equipped also with rests for chucking of workpieces up to 400 mm. ($15 \frac{3}{4}''$) in diameter.

COOLING SYSTEM

The movable metal dust collector and a dripping pan are installed under the lathe bed. The electric pump of 30 l/min capacity is installed on the collector. The flexible pipes and mechanisms with joints and a movable sprinkler enable coolant to reach all points which are to be cooled.



TEHNICAL DATA

PA - 25

PA - 30

PA - 35

	mm	inch	mm	inch	mm	inch
HEIGHT OF CENTRES						
— over bed	255	10 ^{3/64}	300	11 ^{13/16}	350	13 ^{25/32}
— in gap	380	14 ^{31/32}	425	16 ^{47/64}	525	20 ^{43/64}
TURNING DIAMETER						
— over bad	530	20 ^{7/18}	610	24 ^{1/64}	700	27 ^{9/16}
— over saddle	310	12 ^{13/64}	400	15 ^{3/4}	500	19 ^{11/16}
— in face plate	500	19 ^{11/16}	500	19 ^{11/16}	500	19 ^{11/16}
— in gap	720	28 ^{11/32}	810	31 ^{57/64}	910	35 ^{53/64}
— width of gap in front of face plate	260	10 ^{15/64}	260	10 ^{15/64}	260	10 ^{15/64}
— maximum swing diameter in gap	760	29 ^{59/64}	850	33 ^{15/32}	950	37 ^{13/32}
MAIN SPINDLE						
— nose and bore diameter of main spindle			ASA L 1 \varnothing 62 2 ^{7/16} CAMLOCK \varnothing 90 3 ^{35/64} DIN 55027 \varnothing 90 3 ^{35/64} ASA L 1 \varnothing 105 4 ^{9/64}			
— front bearing inside diameter			CAMLOCK \varnothing 30 DIN 55027 \varnothing 90 } \varnothing 130 5 ^{1/8}			
— number of speeds			24			
— speed range - normal	r.p.m.		20 — 2000			
BED AND SADDLE						
— bed width			400	15 ^{3/4}		
— saddle slideways length			590	23	15/64	
— cross slide travel	300	11 ^{13/16}	300	11 ^{13/16}	350	13 ^{25/32}
— top slide travel			150	5 ^{29/32}		
— lead screw pitch			6,35	1/4		
— tool section tolerant	mm ²		6	15/64		
			25x25	63/64x63x64		
FEEDS						
— number			48			
— range of longitudinal	ins./rev.		0,04 — 9,14-00157 — 36			
— range of cross			0,02 — 4,59-0008 — 18			
THREADS						
— number			48			
— range of metric			0,28 — 64			
— range of Whitworths	at 1"		9/16 — 128			
— range of module			0,07 — 16			
TAILSTOCK						
— tailstock sleeve diameter			80	3 ^{5/32}		
— tailstock sleeve Morse taper	No			5		
— tailstock sleeve travel			185	7 ^{9/32}		
STADIES						
— travelling steady opening diameter			10 — 150	25/64 — 5 ^{29/32}		
— fixed steady opening diameter			10 — 180	25/64 — 7 ^{3/32}		
ELECTRIC MOTOR						
— power	HP		10 — 15			
— revolution number	min ⁻¹		1440			
LOADING TOLERANT						
— between centres without steady	cca		2000 kp	4410 Lbs		
— between centres with steady	cca		2500 kp	5510 Lbs		
— n face plate	cca		600 kp	1323 Lbs		

						Net weight approx. Lbs.					
Distance		Bed length		Area needed		PA - 25		PA - 30		PA - 35	
mm	inch	mm	inch	mm	inch	kp	Lbs	kp	Lbs	kp	Lbs
1000	40	2520	100	2825x1025	113x41	2420	5310	2550	5620	2700	5950
1500	60	3020	120	3325x1025	131x41	2560	5650	2690	5920	2760	6082
2000	80	3520	140	3825x1025	151x41	2930	6450	3060	6730	3160	6964
3000	120	4520	180	4825x1025	190x41	3210	7080	3340	7350	3500	7712
4000	180	5520	220	5825x1025	230x41	3720	8200	3850	8500	3990	8792

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