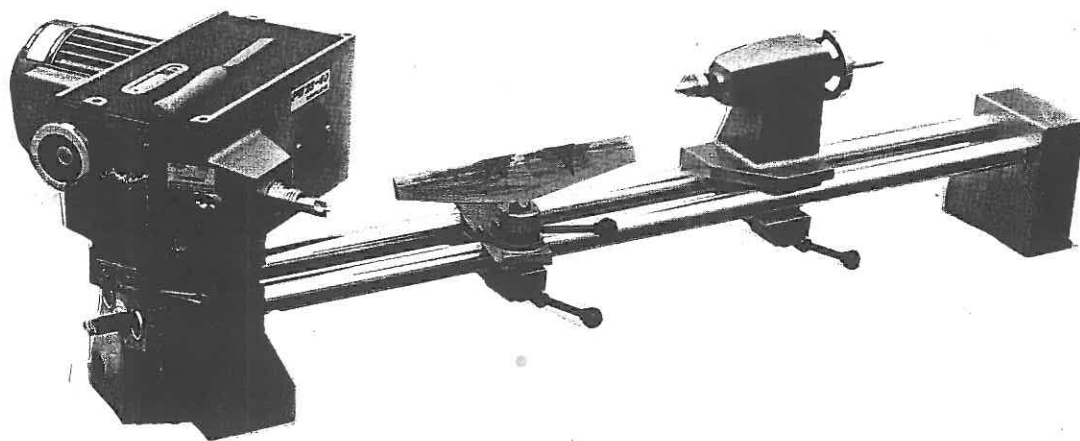


OWNERS MANUAL

The POOLE WOOD **PVW 28~40** *Lathe*



POOLEWOOD EQUIPMENT LTD.

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I M P O R T A N T

YOUR GUARANTEE OF QUALITY.....

Simplicity of design together with
quality control during all stages
of manufacture point towards a long
and trouble free life of the machine.

In the event however that warranty
repairs are necessary, POOLEWOOD are
happy to provide a **GUARANTEE OF QUALITY.**

For a full year we offer warranty against
all parts and labour charges on items
found to be faulty in design or manufacture.

ADDITIONALLY for a further **2 YEARS** any
faulty parts will be replaced. (Misuse
excepted)

**THIS ADDS UP TO 3 YEARS OF HAPPY AND
TROUBLE FREE TURNING.....GUARANTEED.**

(All warranty work is carried out at the discretion of
Poolewood. This does not affect your statutory rights)

INTRODUCTION

Congratulations in choosing the PW28-40 Superlathe. We wish you many hours of trouble free use. This manual intends to familiarise you with the lathe and to help in maintaining its reliable use. It is deliberately simple by design and major overhauls can be performed with basic tools and a little mechanical aptitude. (If you prefer, Poolewood can provide an engineer for servicing or repairs.)

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Section 1

DESCRIPTION

The PW28-40 is a conventional wood turning lathe, and has a speed range of 290 to 2700 rpm. It will accommodate workpieces 14" diameter x 40" long as standard. With a large diameter turning attachment workpieces up to 28" diameter can be machined.

The tailstock, headstock and toolrest incorporate a quick release clamping arrangement for speedy positioning.

Spindle speed is variable and adjusted whilst running. The spindle is belt driven (for quietness) through variable pulleys by a single phase 240v motor. The speed change handwheel (item 38, page 14) positions the pulleys (items 6 and 9, page 14) changing their diameters which in turn alters the spindle speed.

There is also a manual version with 5 speed step pulley. The speed is changed manually by releasing motor tension and repositioning the belt.

The on/off switch incorporates a safety feature called a nil voltage return. This ensures that the machine will not start unintentionally after a power cut.

The PW28-40 has the following features as standard:

Spindle lock (item 27, page 14)	to lock spindle when fitting face plate or during maintenance.
Tapered spindle bearings	adjustable for wear
Tailstock (item 14, page 13)	for end workpiece retention or for drilling with drill chuck or a deep hole boring tool.
Toolrests (item 39, page 13)	straight for general woodturning
Driving Centre (in)	for locating and driving workpiece
Centre removal tool (item 75, page 14)	for removal of either centre
Toolkit	

The PW28-40 also has the following optional extras which are available to increase the versatility of the machine:

Independent tool rest stand	for turning large diameters where a floor stand is required
Worklight	for extra light where needed
Faceplate (8" and 10")	for turning large diameter short pieces where the tailstock is not used
Large diameter turning attachment	capacity increased to 28" diameter of workpiece
Optional bars	extends standard lathe to accommodate workpieces 50" or 60" in length
Drillchuck	for use in tailstock with face plate
Bench leg kit	rigid foundation for machine where you supply the remaining wood to complete bench.
Bench kit	complete
Steady	for supporting long pieces of work
Rests	4", 8" and 15" and bowl turning rest
Various chucks	for holding a variety of workpieces

Section 2

UNPACKING

Note THE LATHE IS VERY HEAVY and could cause personal injury if dropped or a wrong lifting technique is used. For this reason we recommend that two people unpack the lathe. We also recommend that the following procedure is used:

1. remove top of crate and the loose items from the polystyrene packing.
2. fold back cardboard box lid and in a controlled manner roll the whole crate upside down.
3. remove crate, packaging and remaining components from polystyrene

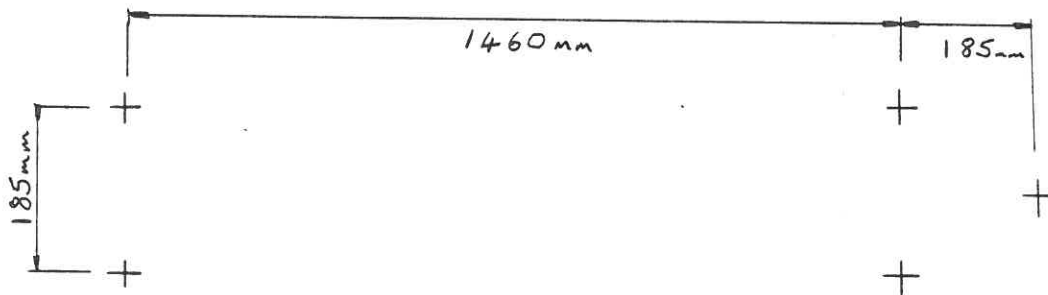
NOTE the lathe head is heavy and unbalanced. Care must be taken to support this whilst removing packaging.

Section 3

INSTALLATION

Consideration should be given as to where the lathe is to be sited, with regard to light, heating, power supply, space to rotate the headstock, solid foundations and your own comfort i.e. height of your lathe centres should ideally be the same as your elbows.

The lathe should be mounted on a rigid base able to take its weight, and heavy enough to damp out vibration when cutting wood. When our bench kit is used it is recommended that the base is filled with sand to damp out this vibration. Dimensions are provided below for drilling the bench to accept the lathe holding down bolts.



Note 1460mm dimension is for the standard 40" lathe bed. This must be increased for the optional bars of 50" or 60" (if used).

Section 4

ASSEMBLY AND ADJUSTMENTS

To assemble the lathe proceed as follows:

1. Bolt headstock to bench top wooden board.
Note: the headstock is unbalanced and needs supporting whilst another person bolts it down.
2. Assemble bars (item 40) to headstock base (item 1, page 13)
3. Thoroughly clean and oil headstock bores and ends of bars ensuring the 4 grub screws (item 9, page 13) do not protrude into the bores.
4. Assemble the bars into headstock base with a twisting pushing motion, ensuring that the machined flats align with the grub screws. (Do not tighten grub screws at this stage)
5. Clean and oil the tailstock end column (item 13, page 13) bores as with headstock.
6. Slide tailstock end column onto bars

7. Bolt tailstock end column to bench top wooden board
8. Tighten 8 grub screws (located in headstock and tailstock end column) onto bars
9. screw lathe assembly complete with bench top board to bench
10. To assemble tailstock (item 14, page 13) to bars

This assembly incorporates a quick release clamping arrangement which might require adjustment. For assembly and adjustment proceed as follows:
11. Screw ring (item 29, page 13) to bolt (item 34, page 13) approx. 5 turns. Do not tighten locknut at this stage.
12. Place tailstock on bars
13. Remove the keep plate (item 7, page 13) and eccentric bar (item 28, page 13) from lower casting (item 27).
14. Grease eccentric bar and fit locking handle (item 24, page 13) to it.
15. Position the lower casting under the tailstock and engage eccentric shaft into the ring. (The eccentric shaft might require rotation to achieve this)
16. Replace keep plate in shaft groove and tighten screws
17. Tighten lock nut (item 30, page 13) to ring (item 27, page 13)
18. Adjustment - operation of the clamp handle should have 1/4 turn from clamped to unclamped it should feel comfortable in use.
To achieve this the ring (item 29, page 13) must be adjusted on the bolt (item 34, page 13). To reduce handle movement screw it further on to the bolt and vice versa to increase movement. Re-tighten the lock nut.
19. Assemble toolrest to bars
20. Position and support the lower casting (item 27, page 13) under the bars ensuring that the dovetail (item 34, page 13) lies across the lathe.
21. Slide top casting (item 35, page 13) onto the dovetail.
22. Screw locking levers into eccentric shaft (item 24, page 13) and eccentric ring (item 26, page 13)

23. Place tool rest (item 39, page 13) in eccentric ring and lock with lever. (Lever adjustment is achieved by turning the screw (item 37, page 13) and re-tightening the lock nut (item 30, page 13))
24. Lock tool rest assembly to the bars and adjust if necessary as in 18.
25. Assemble speed change handle (item 38, page 14)

Note - on delivery you will find a small key taped to the shaft (item 36, page 14). Be careful not to lose it.
26. Connect to electricity supply.
Note: Your lathe must be earthed and protected by a 13 amp fuse. It is also important that local regulations are obeyed.
If at all in doubt, check with a local electrician.

Large diameter turning attachment (Optional extra) see page 15

27. Assemble bars to headstock as in section 4 nos. 3 and 4.
Do not tighten the 4 grub screws (item 9, page 13)
28. Assemble bracket (item 35) to bench leg and bars
Assemble two side stays (item 38) to bench leg and bracket (item 35). Position clamp body (item 20) pressure plate (item 17) to bars. Assemble end brackets (item 14) to cross slide bars (item 13).
Assemble cross slide (item 16) to clamp body (item 20).
Adjust clamp as in section 4 nos. 11 to 17.
Place toolrest stem (item 29) in toolrest holder and adjust its clamp if necessary as in Section 4 no. 18.
Assemble vertical stay (item 13, page 15a) into cross slide end bracket (item 14, page 15a) allowing it to contact the floor.
Note: if your lathe has a higher bench, then a wooden block will have to be placed below the stay.
Assemble horizontal stay (item 9, page 15a) to cross slide end bracket (item 14, page 15a) and end bracket (item 4, page 15a). Tighten all nuts and bolts.

Section 5

OPERATING INSTRUCTIONS

Please read our recommendations prior to operating the lathe.

Warning do not switch on the lathe with spindle lock (item 27, page 14) engaged or engage it whilst the spindle is rotating. This will cause damage to the motor and spindle. The on/off switch is situated on the headstock. Spindle speed is changed only whilst running by turning handle (item 38, page 14) clockwise to reduce speed and vice versa. Centre location in spindle and tailstock is by friction. It is important that locating bores and tapered shafts are clean and dry. Their removal is by use of a special tool (item 75, page 14) which ejects centres by inserting from the rear of spindle or tailstock.

Section 6

MAINTENANCE

As a general rule this can be limited to lubrication, keeping the lathe clean, free from rust and periodic checks for tightness of bolts etc. There are no hard and fast rules for frequency of these tasks because of the variety of conditions from each owner i.e.

- a. sustained hard use, at constant speed
- b. frequent speed changing
- c. long periods of storage in damp conditions

will in comparison cause a variety of wear and possible rust deterioration of internals.

After 'bedding in' it is good practice to check tightness of lathe to bench securing bolts. Good housekeeping will pay dividends later and will give a pride in owning your lathe.

CLEANING - particular attention should be given to air intake louvres on motor and underneath the headstock.

LUBRICATION -

<u>Feature</u>	<u>Type of lubricant</u>	<u>Method</u>	<u>Frequency</u>
Spindle taper bearings (items 5 and 17, page 14)	HMP grease	grease gun	twice per year (when nipple fitted)
Spindle ball race (item 12, page 14)	not required	(sealed for life)	
Tailstock spindle	any grease	grease gun	once per year
Tailstock and toolrest clamp	any grease	hand	once per year
Speed change ramp and screws	any grease	hand	once per year
Driver floating pulley and shaft	HMP grease	hand	once per year

The above is for average use. Frequency of lubrication should be adjusted to your own particular circumstances.

For long term storage or use in humid conditions unprotected surfaces should be sprayed with WD40 or its equivalent.

Care should be taken when greasing or spraying WD40 not to contaminate the belt or contact surfaces of the pulleys.

Section 7

DISMANTLING AND ASSEMBLY INSTRUCTIONS

The following instructions are a guide to dismantling your lathe after prolonged use or for fault rectification:

Spindle removal and replacement (page 14)

1. Select slowest speed whilst running the motor
2. Isolate electrical supply
3. Remove top cover (item 57) after removing 4 screws
4. Remove index nut (item 20). Note - this is the only LH thread and is removed by clockwise rotation.
5. Remove grub screws (item 21)
6. Engage spindle lock (item 27) and remove nut (item 19)
7. Loosen 2 grub screws (item 7)

8. With a soft faced mallet drive out the spindle until bearing (item 17) is released.
9. The spindle can now be removed by hand pressure, sliding free from pulleys.
10. Clean bearings (items 17 and 5) in a parrafin bath and repack with grease. These should be replaced if worn or damaged.
11. Clean headstock interior and bearing outer races (items 17 and 5) free from dirt.
12. Re-assemble key (item 8), ensuring it locates at the end of it's keyway.
13. Assemble shaft through pulleys locating keys in keyways of spindle and both pulleys.
14. Replace bearing (item 17) with its dust excluder and nut (items 18 and 19).
15. Seat bearing (item 17) on shaft by tightening nut (item 19). Note, a short bar approx 8mm diameter x 50mm long can be inserted into the spindle lock hole to restrain spindle rotation. Ensure both dust excluders (items 4 and 18) enter headstock correctly until hard resistance is felt on nut (item 19).
16. Tighten pulley grub screws (item 7)
17. Loosen nut (item 19) and hand tighten to dust excluder then back off 1/8 turn.

At this point the spindle bearings have been set or re-adjusted

18. Refit grub screw (item 21) index nut (item 20) and cover (item 57).

Speed change removal see page 14

19. Perform tasks 1, 2 and 3 of previous section
20. Remove lock nut and nut (item 29) from threaded shaft (item 35).
21. Remove shaft (item 35) by anticlockwise rotation of hand wheel (item 38).
22. Loosen grub screw (item 33).
23. Tap out shaft (item 34)
24. Remove ramp (item 32)

25. Remove screw (item 30)

26. Assemble in reverse order

Motor removal (incorporating driver pulley (items 6 and 9) removal

27. Run motor and select highest speed

28. Isolate electrical supply

29. Remove top cover (item 57) after removing 4 screws (item 58) mark position of motor relative to its slot

30. Remove side cover (item 62)

31. Warning spring (item 50) is pre loaded and force is required to restrain it from uncontrolled release

32. Place 2 strips of approx. 3mm thick metal across side cover aperture

33. Unscrew bolt (item 53) ensuring the spring and washer (item 51) follows it. (if stuck a sharp tap with a mallet will release it before removing bolt)

34. Continue removing bolt until the spring 'sandwiches' the 2 strips of metal

35. Completely remove bolt

36. Compress spring with hammer shaft on washer, remove 2 strips and allow spring to extend out of the casing

37. Remove spring from pulley

38. Loosen 2 grub screws (item 7) from pulley

39. Disconnect wiring from capacitor box noting connections for correct re-assembly)

40. Support motor and remove 3 bolts (item 49)

41. Withdraw motor from casing by sliding pulleys off the shaft
NB electrical repair of the motor is inadvisable unless you are proficient in this task. Usually individuals are restricted to changing the capacitor or removing light pitting from the centrifugal switch contacts.

Re-assemble in reverse order with the following additions:

42. Take this opportunity to clean and regrease motor shaft and pulley bores

43. Ensure key engages at the end of the key way and does not obtrude into the path of the belt

44. Ensure the motor is in the same position relative to the elongated slot.
45. Drive belt replacement (see page 14)
To fit a new belt the spindle (item 3) should be partially removed and spring (item 50) completely removed, instructions 27 to 36 and 2 to 9 are relevant.

Section 8

FAULT FINDING

<u>Symptom</u>	<u>Fault</u>	<u>Solution</u>
motor will not run	blown fuse in the plug	identify cause rectify and then replace fuse
	capacitor not working	replace capacitor
	centrifugal switch not making contact	check contacts
	worn/damaged motor	replace motor
spindle will not run	ineffective switch	replace switch
	lock engaged (item 27, page 14)	disengage
	broken belt	replace belt
	broken spring	replace spring
spindle will not reach max speed or dramatically slows when machining	speed change with stationary spindle (trapped belt)	isolate electrics remove top cover rotate spindle by hand to free belt
	belt slip	remove grease from pulleys
	tight pulley on shaft (item 9, page 14)	remove, clean, grease and re-assemble
	worn belt	for slight wear re-position motor to take up slack
'chatter' when using face plate or large bowl attach.	worn speed change (item 32)	fit spacer to restrict forward movement
	spindle end float	re-adjust spindle bearings Section 7 nos. 15, 17 and 18

'whirling' or
screeching noise
at high rpm

spinning, dry or
worn spindle
bearing

remove, inspect and
possibly replace
bearing. Note ball
race (item 12, page 14
can be fitted with
loctite bearing.
Fit if loose in
aluminium casting

Section 9

RECOMMENDATIONS

Good working practices complement good workmanship and are important to maintain a safe work environment. It is perhaps even more important to practice health and safety at work when wood turning at home. Good working practices are mainly common sense and talking with other wood turners may stop bad habits from developing. As a general but not comprehensive guide we list the following to assist in your continued health.

Wear eye protection

Wear a dust mask

Wear tight fitting cuffs on clothing.

If you wear a tie be sure it is tucked inside outer garments.

If you have long hair protect it from moving parts by wearing a cap or hair net.

Keep the workplace clean and remember wood shavings are a fire risk.

Keep hands clear from driving centre or spindle.

Do not turn large diameter work pieces at high rpm especially if they are out of balance.

Use the lathe within its performance ability

Do not operate lathe with top or side cover removed

And for the health of your lathe -

Maintain it

Change spindle speed whilst running

Check spindle lock is disengaged before starting

Use WD40 to combat rust if not in use.

The lathe should be left in the high speed range if unused for long periods (this prolongs spring life).

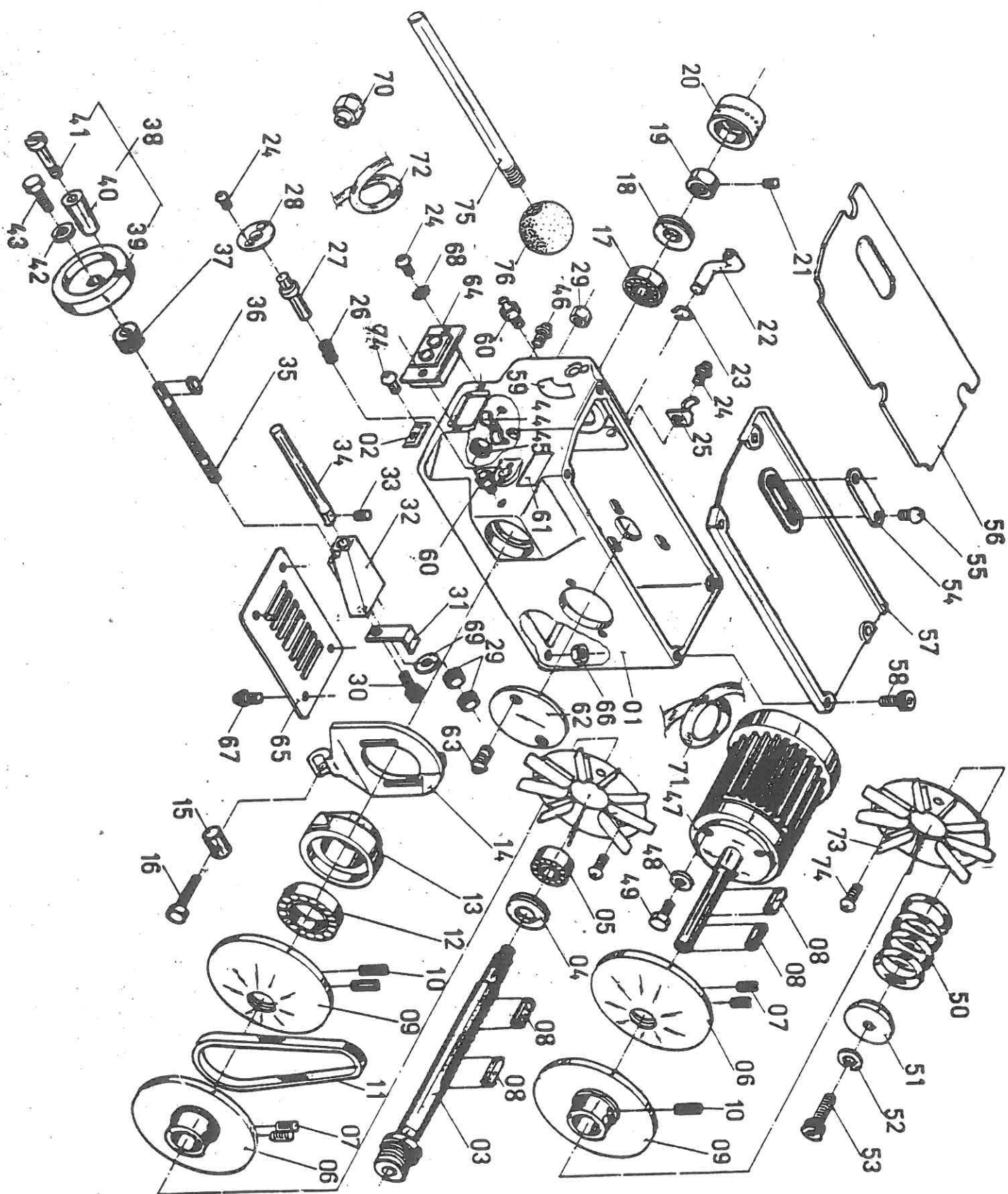
Do not cover air intake louvres at the rear of the motor or under the headstock.

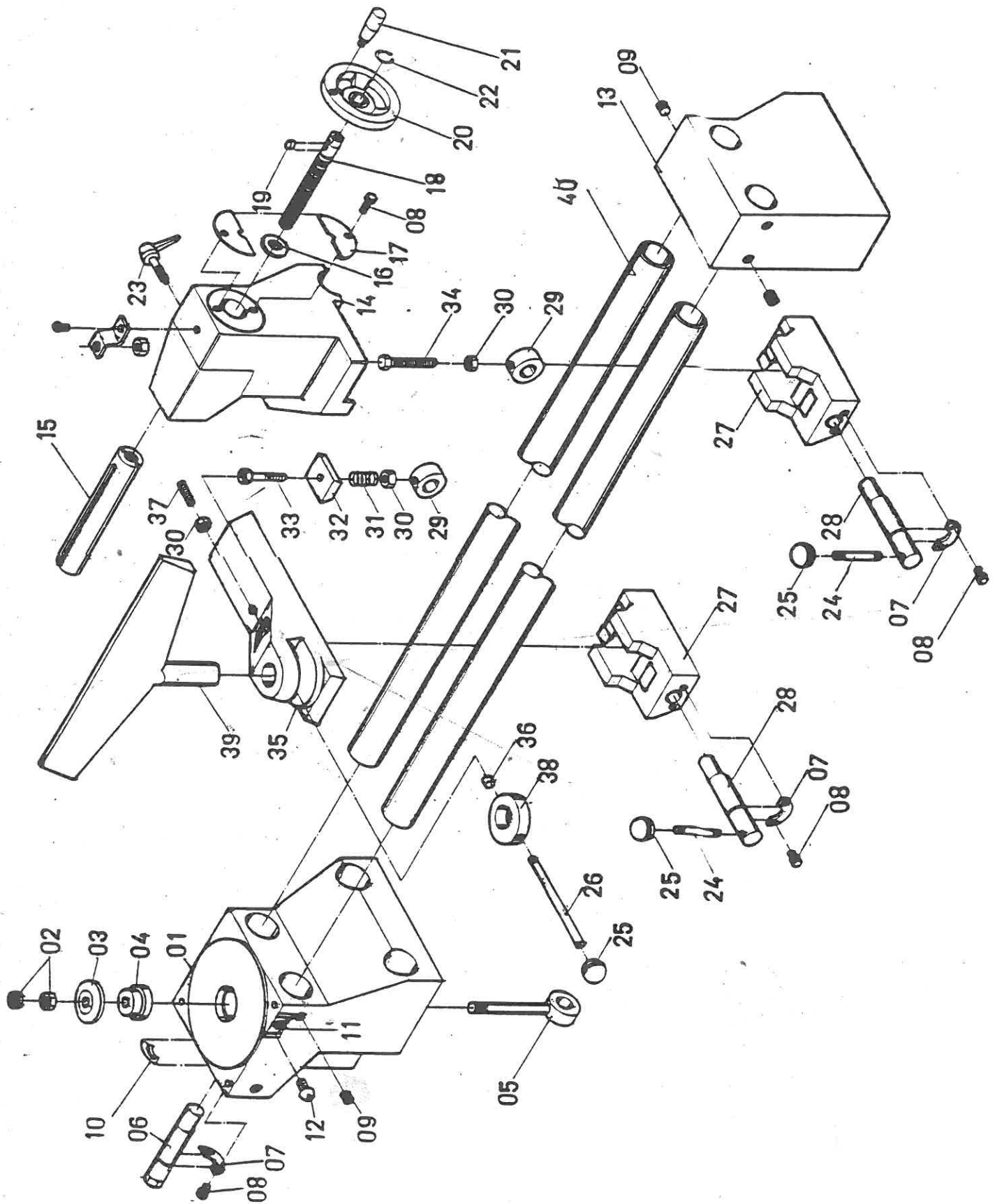
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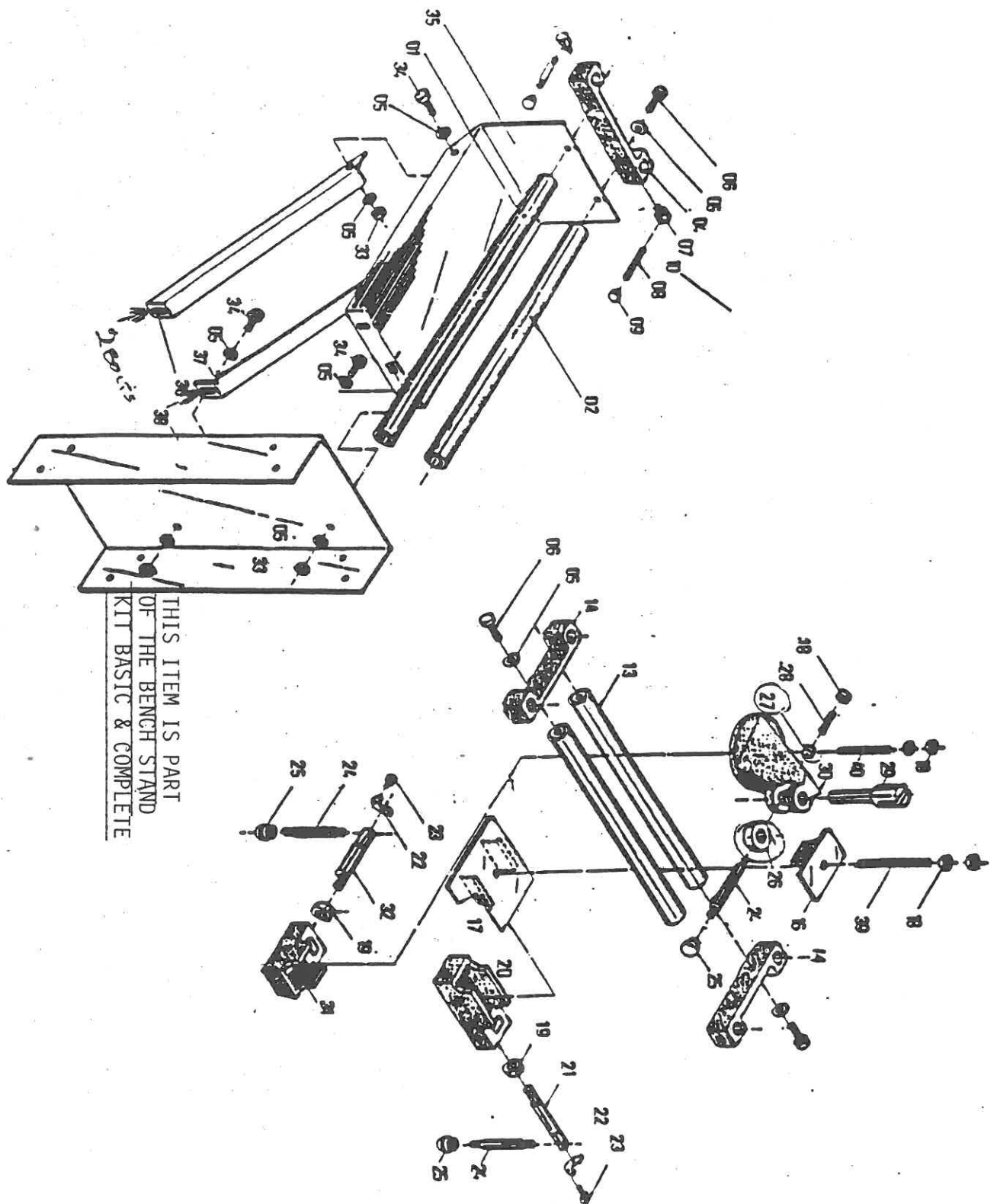
SPARES ORDERING

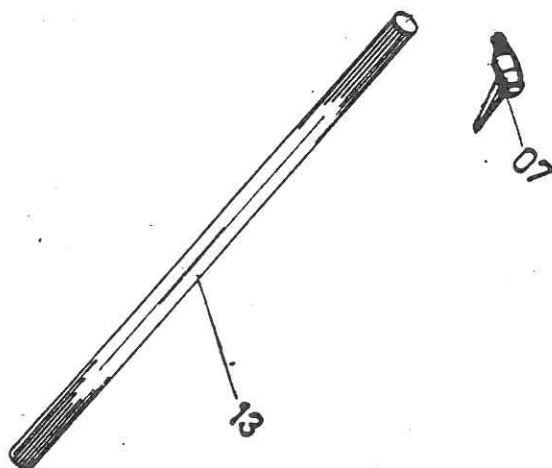
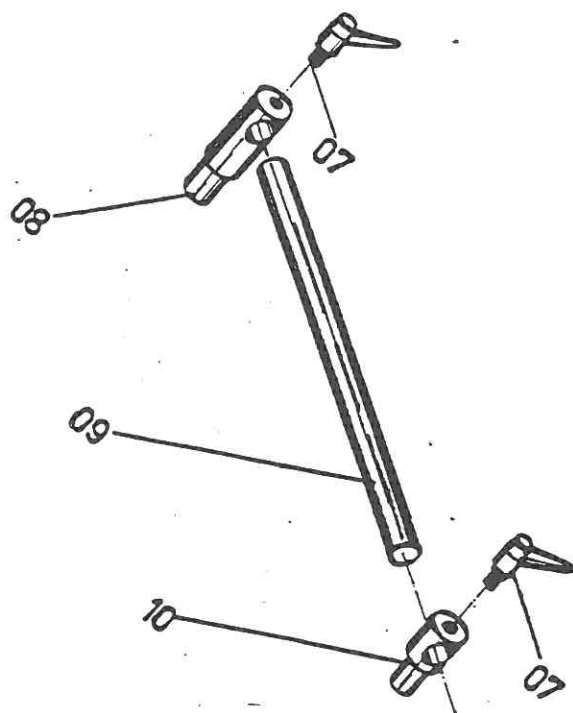
If you should require spares, please contact Poole Wood

Equipment Tel: 0602 677833 quoting serial no (from the lathe identification plate) and the part required (from the exploded drawing (please give page and item number)









POOLEWOOD EQUIPMENT LIMITED.

PW 28-40 SUPERLATHE

OWNER'S MANUAL

BENCH CONSTRUCTION:

The lathe stand or bench can contribute a great deal to the performance and working convenience of the machine - or otherwise. Basic criteria are: firstly that it should be as heavy and stable as possible and, secondly, that it should set the lathe at a comfortable height in relation to your own build.

The stands available from proprietary lathe manufacturers should by no means be taken as a reference in meeting either of these important considerations.

Benches can be built from steel angle or box sections but these, whilst possibly being strong, mostly fail to provide the essential dead-weight and total rigidity that will greatly improve real turning performance. Loose ballasting with concrete blocks or similar will only be minimally effective in achieving the desired effect as the bench frame will still be free to resonate and amplify the natural frequency vibrations set up by an out of balance turning load. Sandbags will give slightly better results as they will tend to bear more directly on the bench frame, but will still not give the best results.

By far the best method of adding dead weight to the lathe/bench assembly is to cast 'wet' (a dryish mix in fact) concrete into a trough formed between the two uppermost bench rails. Another excellent alternative is oil damped sand, using a mix of approximately one to two pints of oil per bucket of dry sand, well mixed and tamped into the trough. It is a good idea in both instances to seal the trough before filling to prevent seepage. If using concrete, also remember to make a depression in the surface under the head and tailstock to allow for the bolt heads. Likewise around the L.D. rest fixing holes in the bench panel end which must be accessible.

The lathe itself is bolted to the bench top and then the lathe/bench top assembly screwed down onto the bench frame rails. In this way the ballast becomes an integral part of the assembly and exerts its influence directly under the mounting points of the lathe raised blocks (or feet) rather than at a lower level where its effect is much reduced. The benefits will be felt, not only in the machine's increased resistance to the massive low-frequency vibrations set up by very heavy workpieces but, just as importantly, in the elimination of all traces of tool chatter when taking the most delicate cuts on fine work.

It is certainly not a difficult project to anyone with even the most modest woodworking skills to build a bench based on the design shown. Alternatively, you can order a BENCH STAND KIT (complete), (less the concrete ballast), for the standard bed Superlathe. This includes the two end panels, upper and lower rails, shelf, 30mm thick bench top, shuttering (to form the trough for ballasting) and all the necessary hardware. It should take no more than an hour to complete the assembly.

Another very economical way to construct your bench is simply to order the BENCH STAND KIT (Basic), shown on the price list. This Kit includes the two heavy steel leg panels and all the bolts, screws, etc., needed to assemble the bench using your own timber components. In this way you avoid the need to make any timber joints or housing, as construction is simply a matter of crosscutting readily available, standard timber sections and boards to length, and bolting them to the pre-drilled steel panels. Also, of course, there is no restriction on the length of the stand and long bed versions of the Superlathe can be catered for. The leg panels are also drilled to accept the L.D. rest attachment bracket so that this accessory can be added without further modification to the stand at any time.

NOTE: WHEN ASSEMBLYING THE TIMBER COMPONENTS OF THE BENCH, ENSURE THAT THE HOLES IN THE BENCH LEG PANEL AT THE HEADSTOCK END ARE NOT OBSTRUCTED AS THESE ARE USED WHEN THE L.D. REST IS FITTED. IF NECESSARY, CHISEL AWAY THE PORTION OF THE RAIL OR SHELF BEARER THAT IS OBSTRUCTING THE HOLE TO MAKE ROOM FOR A WASHER AND NUT.

ALSO NOTE: THE HOLES ON THE END FACES OF THE PANELS MUST BE ARRANGED SO THAT THE UPPER PAIR ARE 120mm FROM THE TOP EDGE OF THE PANEL.

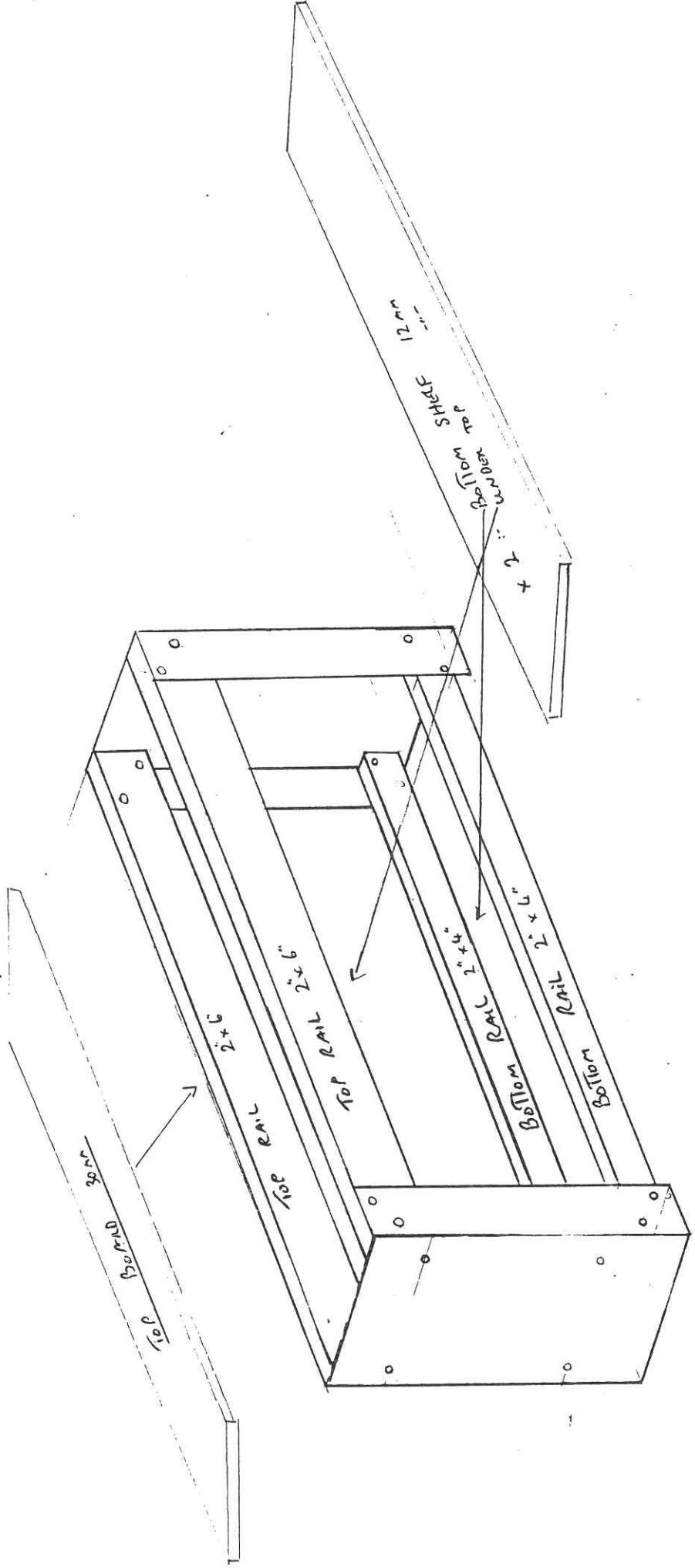
A lathe which is mounted at the wrong level in relation to your own height will be uncomfortable to use. To avoid excessive stretching or bending, rule-of-thumb height setting is that the lathe centres should be at approximately your own height.

Fine adjustments to the working height relationship between yourself and the lathe can additionally be made by the use of a floor plate of whatever thickness is required.

If you intend building your own bench entirely from scratch then, allowing for the centre height of the lathe over its own base (15" approx.), the overall bench height, including the thickness of the top, will be acceptable for most people as shown here:

YOUR HEIGHT	BENCH HEIGHT
Up to 5' 6"	1' 11"
Up to 5' 11"	2' 2"
Over 5' 11"	2' 5"

Using the steel leg panels of the appropriate height to suit yourself, the table below shows the timber components that are required to make a stand for any of the three versions of the Superlathe, that is 40", 50" or 60" centre capacities. In all cases the result will be a structure that will do full justice to the unique potential and qualities of the machine. (The dimensions of these components are the same irrespective of choice of leg panel height.)



POOLEWOOD EQUIPMENT LIMITED

L A T H E B E N C H E S

Material:	No.	A	B	C
M.D.F.	1 Top	68 $\frac{1}{2}$ " x 15" x 30mm	78 $\frac{1}{2}$ " x 15" x 30mm	88 $\frac{1}{2}$ " x 15" x 30mm
M.D.F.	1 Under top	67 $\frac{1}{4}$ " x 13 7/8" x 12mm	77 $\frac{1}{4}$ " x 13 7/8" x 12mm	87 $\frac{1}{4}$ " x 13 7/8" x 12mm
M.D.F.	1 Shelf	67 $\frac{1}{4}$ " x 13 7/8" x 12mm	77 $\frac{1}{4}$ " x 13 7/8" x 12mm	87 $\frac{1}{4}$ " x 13 7/8" x 12mm
M.D.F.	2 Feet	13 3/4" x 5 7/8" x 30mm	13 3/4" x 5 7/8" x 30mm	13 3/4" x 5 7/8" x 30mm
Timber	2 Top Rails	67 $\frac{1}{4}$ " x 6" x 2"	77 $\frac{1}{4}$ " x 6" x 2"	87 $\frac{1}{4}$ " x 6" x 2"
Timber	2 Bottom Rails	67 $\frac{1}{4}$ " x 4" x 2"	77 $\frac{1}{4}$ " x 4" x 2"	87 $\frac{1}{4}$ " x 4" x 2"
Ironmongery	5 Bolts	10mm x 50mm	10mm x 50mm	10mm x 50mm
Ironmongery	48 Woodscrews	2" x No. 10	2" x No. 10	2" x No. 10
Ironmongery	16 Coach bolts	10mm x 60mm	10mm x 60mm	10mm x 60mm
Ironmongery	16 Nuts 2 Washers	10mm	10mm	10mm