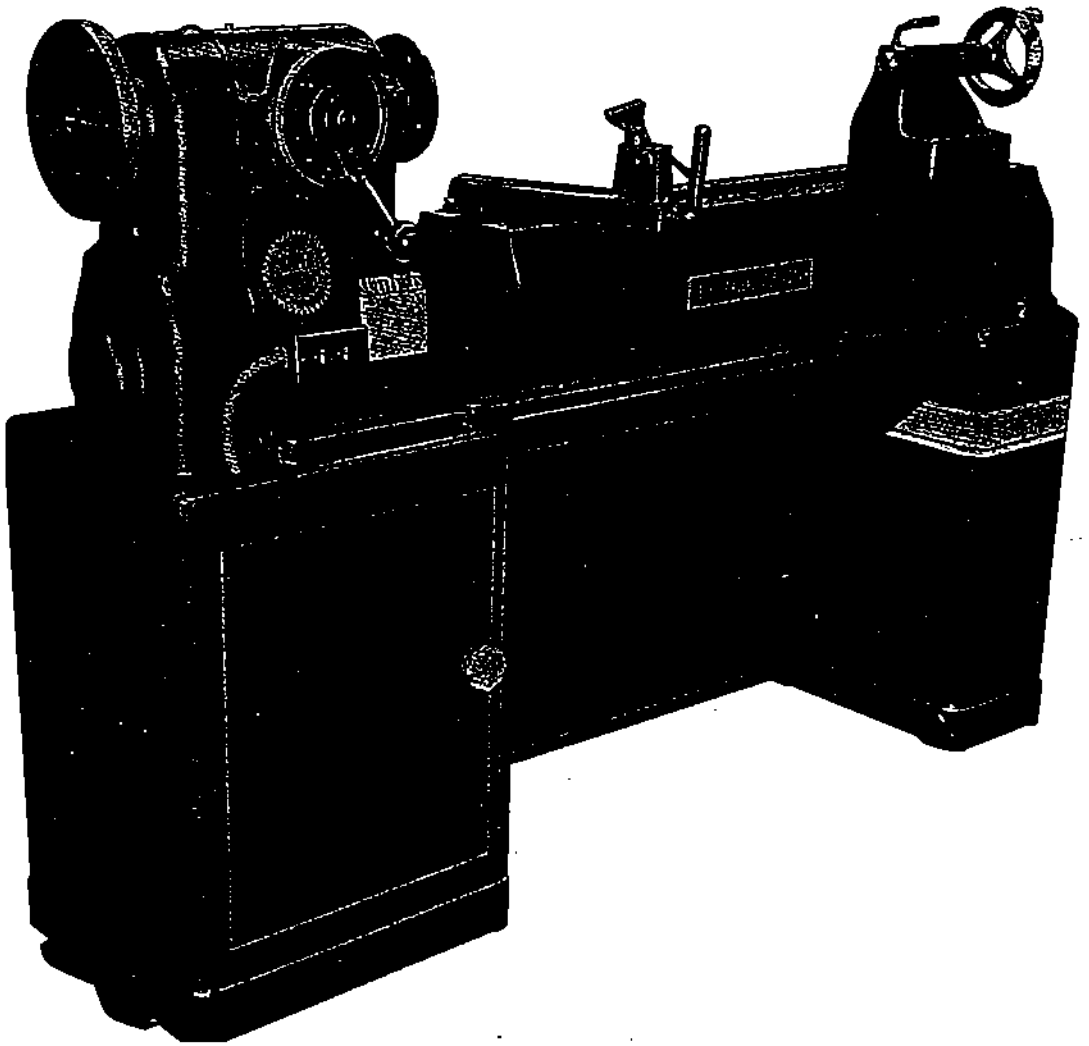
Model 90
12" Lathe

MAINTENANCE INSTRUCTIONS AND PARTS LIST



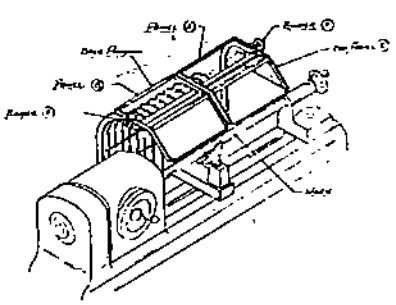
POWERMATIC®

Strength and performance right down the line.

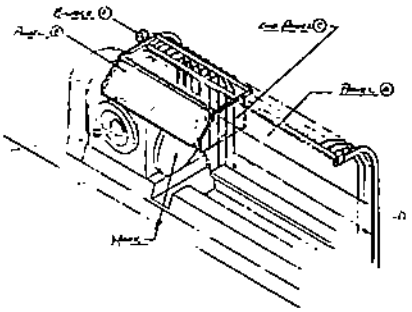
POWERMATIC HOUDAILLE, INC.
McMinnville, Tennessee 37110

OPERATING INSTRUCTIONS

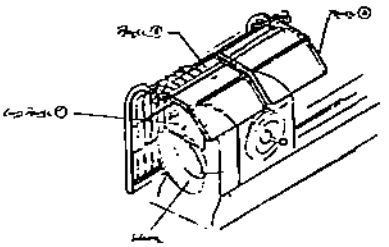
Your Powermatic wood lathe guard is made with flexibility to allow its use in all turning operations for stock up to 17" in diameter. Shown below are the three basic positions the guard is used. All adjustments to the guard are available from the operators normal position.



ON CENTERS TURNING



INBOARD FACING



OUTBOARD FACING

The guard slides along its rear supports for repositioning. For inboard facing, the right hand panel (A) is removed. The end guard (C) is made to mount on the right or left end of the left hand panel (B). Be sure to use it in doing facing work. The panels slide front to back to allow them to be adjusted for different diameters of stock by using the binders (E & F). When using the left hand panel only, binder (F) locks the panel to the frame. Be sure to adjust them as close to the stock as possible to allow the hands to be outside the guard as much as possible. For loading and unloading stock, pull forward on the handle of the center mounting and latch bracket to unlock guard and push guard to its rear tipped back position. Use an anti-static polish and cleaner to minimize dust adherence and scratches.

WOOD TURNING LATHE SPEEDS

DIAMETER OF WORK	ROUGHING R.P.M.	GEN. CUTTING R.P.M.	FINISHING R.P.M.
Under 2"	1520	3000	3000
2 to 4"	760	1600	2480
4 to 6"	510	1080	1650
6 to 8"	380	810	1240
8 to 10"	300	650	1000
10 to 12"	255	540	830
12 to 14"	220	460	710
14 to 16"	190	400	620

POWERMATIC HOUDAILLE
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AC 615-473-5551

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SEPT. 1980

FORWARD

SAFETY FIRST

This manual has been prepared for the owner and operators of a Powermatic wood-turning lathe.

In order to obtain maximum life and efficiency from your Powermatic lathe and to aid in operating the lathe with safety, read the manual thoroughly and follow all instructions carefully.

The specifications listed were in effect when the manual was published. However, because of Powermatic's policy of continuous improvement, Powermatic reserves the right to change specifications at any time without notice and without incurring obligations.

WARRANTY

This machine and its component parts have been carefully inspected at various stages of production and each finished machine is subjected to a final inspection before shipment. We agree that for a period of eighteen (18) months from date of delivery from our authorized dealer to replace, at our option, any machine (or component part thereof) proving defective within the above period, F.O.B. our plant providing such machine (or component part) is returned prepaid to our plant, or a designated service center of the undersigned, for our examination. **THIS WARRANTY DOES NOT INCLUDE REPAIR OR REPLACEMENT REQUIRED BECAUSE OF MISUSE, ABUSE, OR BECAUSE OF NORMAL WEAR AND TEAR; OR ELECTRICAL MOTORS WHICH ARE WARRANTED BY THEIR MANUFACTURER AND WHICH SHOULD BE TAKEN TO THEIR LOCAL AUTHORIZED REPAIR STATION FOR SERVICE. FURTHER, WE CANNOT BE RESPONSIBLE FOR THE COST OF REPAIRS MADE OR ATTEMPTED OUTSIDE OF OUR FACTORY OR DESIGNATED SERVICE CENTER WITHOUT OUR AUTHORIZATION. NO CLAIMS FOR DEFECTS WILL BE HONORED IF SERIAL NUMBER PLATE HAS BEEN REMOVED. THIS WARRANTY IS MADE EXPRESSLY IN PLACE OF ALL OTHER WARRANTIES OR GUARANTEES, EXPRESS OR IMPLIED, WITH RESPECT TO FITNESS, MERCHANTABILITY, QUALITY OR OPERATIVENESS. THIS WARRANTY BECOMES EFFECTIVE ONLY WHEN THE ACCOMPANYING CARD IS FULLY AND PROPERLY FILLED OUT AND RETURNED TO THE FACTORY WITHIN TEN (10) DAYS FROM DATE OF DELIVERY.**

MODEL 90 LATHE GUARD
FACTORY ASSEMBLY INSTRUCTIONS

A. Installing Mountings Brackets And Rear Panel:

1. On older model lathes the mounting holes for the mounting brackets must be added in the locations shown in the figure at left.
2. Attach two mounting brackets (3063287) to the mounting holes at each end at the rear of the lathe bed (3047011 or 3047012) with four hex head screws (6715032).
3. Attach the center mounting and latch bracket (3063291) to the center mounting holes at the rear of the lathe bed with two hex head screws (6715032). All six mounting screws (6715032) are provided in a plastic shipping bag.
4. Slide one handle between the lathe bed and the stand assembly so it will attach to the center mounting and latch bracket as shown in the figure at the left.
5. Attach the handle to the center mounting and latch bracket (3063291) with a mounting pin and cotter pin. Attach one spring to the handle (in the top hole) and the center mounting and latch bracket. The mounting pin, cotter pin and spring are also provided in a plastic shipping bag.
6. Pull forward on the handle of the center mounting and latch bracket and hold, then set the rear panel (3578241) into all three mounting brackets.
7. Release the handle on the center mounting and latch bracket. This causes the spring to retract and forces the two locking plates forward against the base of the rear panel.
8. For loading and unloading stock, pull forward on the handle on the center mounting and latch bracket and hold. This causes the release of the two locking plates and permits the rear panel to be tilted back.

B. Installing Front Panels:

1. Both right front panel and left front panel are identical and can be interchanged.
2. Locate the clamp assembly at the headstock end of the rear panel (3578241). The clamp screw must be backed off enough to permit the left front panel to be placed between the outside clamp and the center guide.
3. Install the left front panel and retighten the clamp screw.
4. Locate the clamp assembly at the tailstock end of the rear panel (3578241). The clamp screw must be backed off enough to permit the right front panel to be placed between the outside clamp and the center guide.
5. Install the right front panel and retighten the clamp screw.
6. At this point both front panels may be moved toward or away from the operator to a desired position.

C. Installing The End Panel:

1. Located in the plastic shipping bag are three 6–32 X 1" Philips head screws with nuts and washers.
2. Remove the right front panel from the rear panel.
3. Slide the left front panel fully forward and tighten the clamp screw.
4. Mount the end panel on the outside area of the left front panel on the right hand end using the three screws, nuts and washers provided.
5. The end panel may be prepared for installation for outboard turning by mounting it on the outside left hand end in a similar fashion to step number four (4).

SAFETY RULES

A safety rules decal is installed on each machine as a reminder of basic rules to be followed, but it is not intended to negate the reading and understanding of this manual.

1. READ AND UNDERSTAND THE OPERATION MANUAL'S SAFETY AND OPERATING INSTRUCTIONS. Know the limitations and hazards associated with the operation of this machine.

2. BE SURE THE MACHINE FRAME IS ELECTRICALLY GROUNDED.

3. BE SURE MACHINE IS IN PROPER WORKING ORDER BEFORE PERFORMING ANY OPERATIONS. Note the caution decal on the front of the bed and refer to the maintenance section of this manual to proper corrective action on any operational problems.

4. REMOVE OR FASTEN LOOSE ARTICLES OF CLOTHING such as a necktie, long sleeves or coat, and confine long hair. Do not wear gloves.

5. REMOVE JEWELRY such as finger rings, watches and bracelets.

6. WEAR A SAFETY FACE SHIELD OR GOGGLES TO PROTECT EYES and other personnel protective equipment such as ear protectors as required.

7. KEEP THE FLOOR AROUND THE MACHINE CLEAN and free of stock, shavings, sawdust, oil or grease to minimize the danger of slipping. An anti-skid strip on the floor where an operator would normally stand is recommended.

8. MAKE SURE ALL GUARDS ARE IN PLACE AND FASTENED SECURELY.

9. MAKE USE OF THE "SPEED LIMITER" to control the maximum speed the lathe can run for each specific turning operation.

10. CHECK THE CONDITION OF THE STOCK TO BE TURNED. Be sure it is free of knots, warpage, checked ends, improperly made or cured glue joints and other conditions which can cause it to be thrown out of the lathe.

11. SECURELY FASTEN SPUR CENTERS to material being turned.

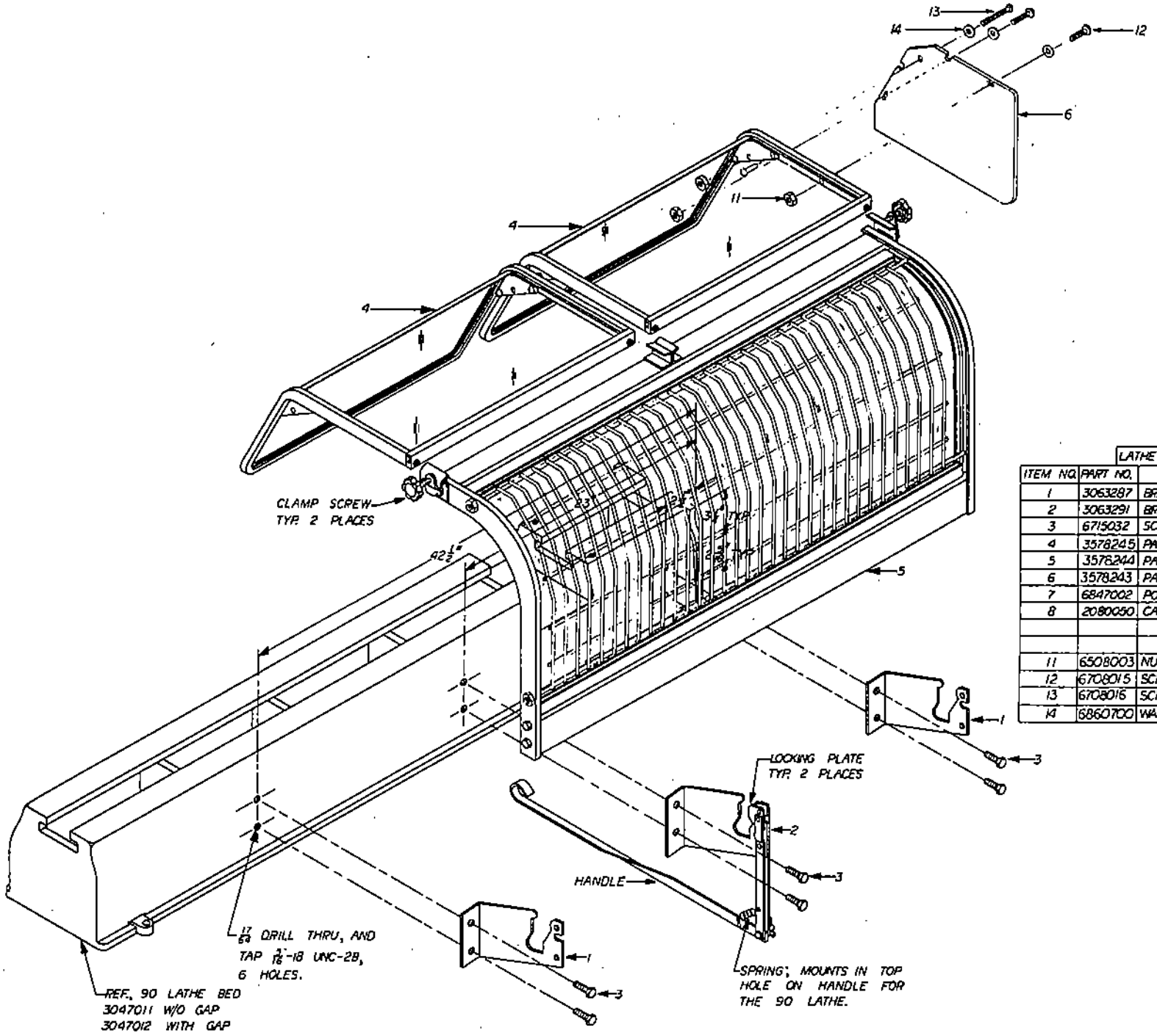
12. CHECK CENTERS AND CENTER SOCKETS in the headstock and tailstock to be sure they are free of dirt or rust and oil lightly before inserting centers.

13. TEST EACH SETUP by revolving the work by hand to insure it clears the work rest and bed and check setup at the slowest speed before increasing it to the operating speed.

14. USE THE CORRECT CUTTING TOOL for the operation to be performed and keep all tools in a sharpened condition.

15. USE LOW SPEEDS FOR ROUGHING AND FOR LONG OR LARGE DIAMETER WORK. If vibration occurs, stop the machine and correct the cause. See Table I for speed recommendations.

16. WHEN SANDING, REMOVE THE TOOL REST FROM THE MACHINE, apply light pressure, and use a slow speed to avoid head build up.



LATHE GUARD ASSY. 0340342

ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	3063287	BRACKET, MOUNTING	2
2	3063291	BRACKET, CENTER MOUNTING & LATCH	1
3	6715032	SCREW, HEX HD., 3/8-18 X 1	6
4	3578245	PANEL, FRONT LEFT & FRONT RIGHT	2
5	3578244	PANEL, REAR	1
6	3578243	PANEL, END	1
7	6847002	POLISH, NOVUS #1 (NOT SHOWN)	1/2 OZ.
8	2080050	CARTON ASSY. (NOT SHOWN)	1
11	6508003	NUT HEX. #8-32	3
12	6708015	SCREW RD. HD. MACH #8-32 x 3/4	2
13	6708016	SCREW RD HD MACH #8-32 x 1 1/4	1
14	6860700	WASHER FLAT #8	3

17. WHEN TURNING LARGE DIAMETER PIECES, SUCH AS BOWLS, ALWAYS OPERATE THE LATHE AT LOW SPEEDS.

18. NEVER USE DULL TURNING TOOLS - - sharp tools help to prevent the tool grabbing in the work and being jerked from operator's hands.

19. TAKE MEASUREMENTS ON THE PART ONLY WITH THE SPINDLE STOPPED.

20. DO NOT ATTEMPT TO ENGAGE THE SPINDLE LOCK PIN UNTIL THE SPINDLE IS STOPPED. If leaving the machine area, turn it off and wait until the spindle stops before departing.

21. GIVE THE WORK YOU'RE DOING YOUR UNDIVIDED ATTENTION. Looking around, carrying on a conversation and "horseplay" are careless acts that can result in serious injury.

22. MAKE NO ADJUSTMENTS EXCEPT SPEED CHANGE WITH THE SPINDLE ROTATING and always disconnect machine from power source when performing maintenance to avoid accidental starting or electrical shock.

23. BOLT THE LATHE TO THE FLOOR through the lag holes provided to avoid any tendency of the lathe to tip or shift during turning operations.

24. PROVIDE FOR ADEQUATE SURROUNDING WORK SPACE and overhead nonglare lighting. Powermatic recommends the use of a non-skid floor strip on the floor area where the operator normally stands and marking off a work area for each machine.

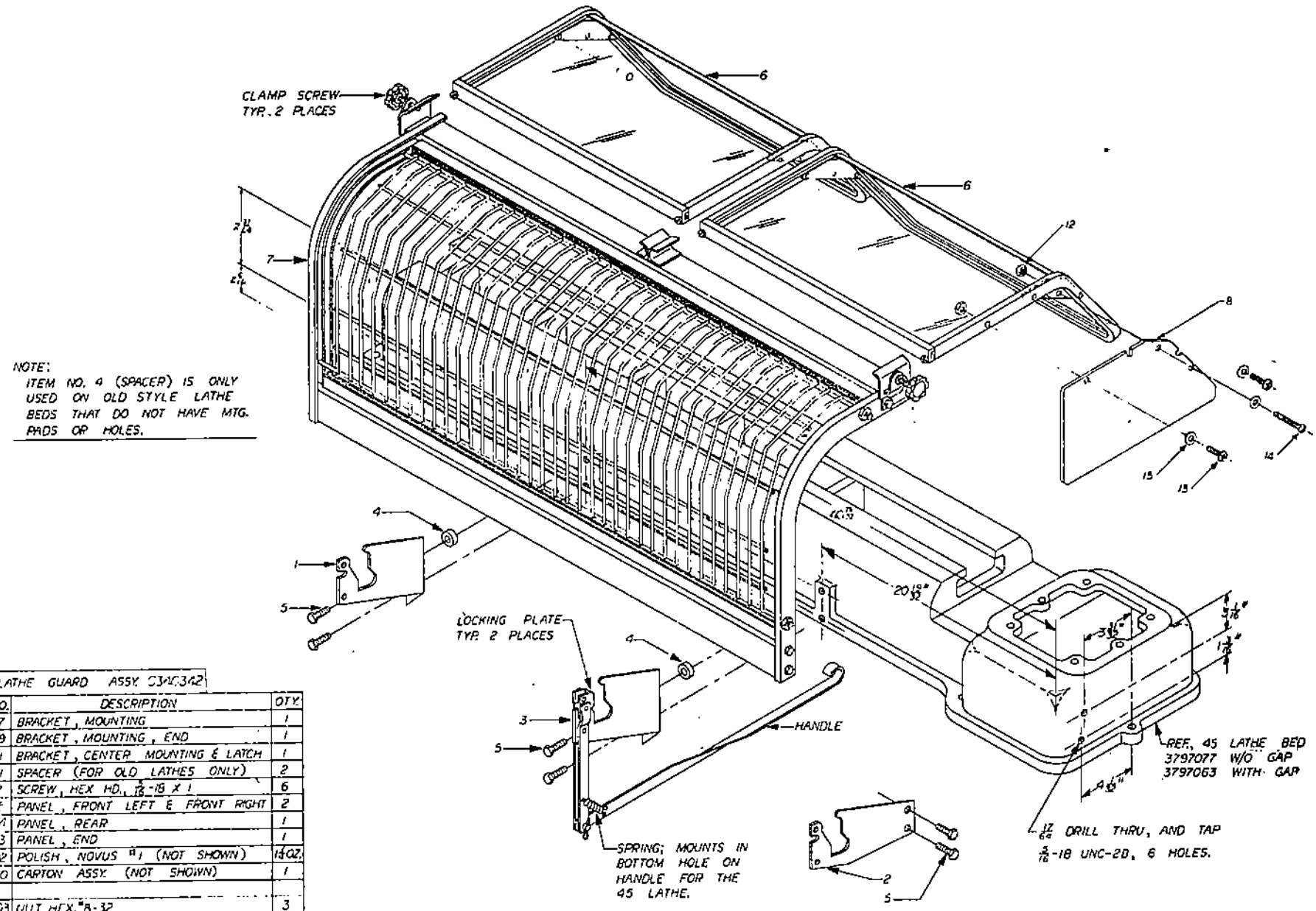
25. DON'T STAND IN LINE WITH ANY LARGE DIAMETER PART being turned OR ALLOW ANYONE ELSE TO DO SO.

26. When stopping the lathe, NEVER GRAB THE PART OR FACE PLATE TO SLOW IT DOWN. Let the work coast to a stop.

27. Use only Powermatic or factory authorized replacement parts and accessories; otherwise, the warranty and guarantee are null and void.

28. DO NOT USE THIS POWERMATIC WOOD LATHE FOR OTHER THAN ITS INTENDED USE. IF USED FOR OTHER PURPOSES, POWERMATIC DISCLAIMS ANY REAL OR IMPLIED WARRANTY AND HOLDS ITSELF HARMLESS FROM AN INJURY THAT MAY RESULT FROM THAT USE.

WARNING: DO NOT EQUIP OR USE THIS MACHINE WITH A MOTOR LARGER THAN ONE HORSEPOWER AT 1800 RPM. THE USE OF A LARGER OR HIGHER SPEED MOTOR VOIDS THE WARRANTY AND POWERMATIC HOLDS ITSELF HARMLESS FROM ANY INJURY THAT MAY RESULT.



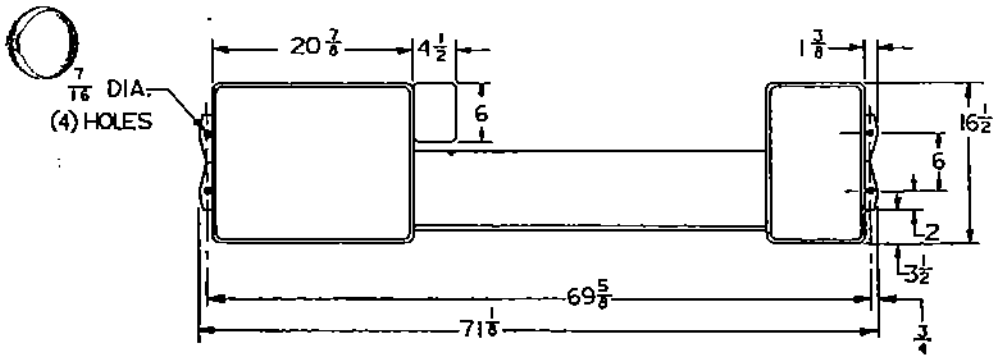
NOTE:
ITEM NO. 4 (SPACER) IS ONLY USED ON OLD STYLE LATHE BEDS THAT DO NOT HAVE MTG. PADS OR HOLES.

LATHE GUARD ASSY. 3WC342

ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	3063287	BRACKET, MOUNTING	1
2	3063289	BRACKET, MOUNTING, END	1
3	3063291	BRACKET, CENTER MOUNTING & LATCH	1
4	3738201	SPACER (FOR OLD LATHES ONLY)	2
5	6715032	SCREW, HEX HD., 5/16-18 X 1	6
6	3578241	PANEL, FRONT LEFT & FRONT RIGHT	2
7	3578244	PANEL, REAR	1
8	3578243	PANEL, END	1
9	6847002	POLISH, NOVUS #1 (NOT SHOWN)	12 OZ.
10	2080050	CARTON ASSY. (NOT SHOWN)	1
12	6508003	NUT, HEX. #8-32	3
13	6708015	SCREW, RD. HD. MACH. #8-32 x 3/4	3
14	6708015	SCREW. RD. HD. MACH. #8-32 x 1 1/8	2
15	6860200	WASHER, FLAT #8	1

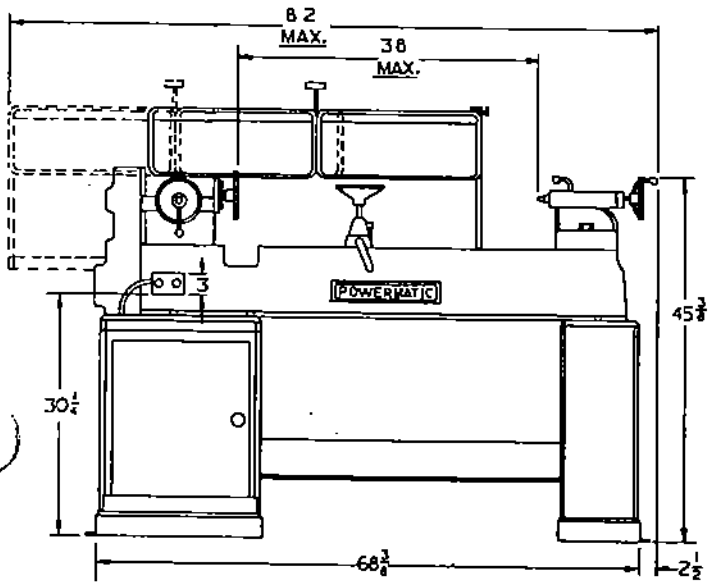
MODEL 90 LATHE SPECIFICATIONS

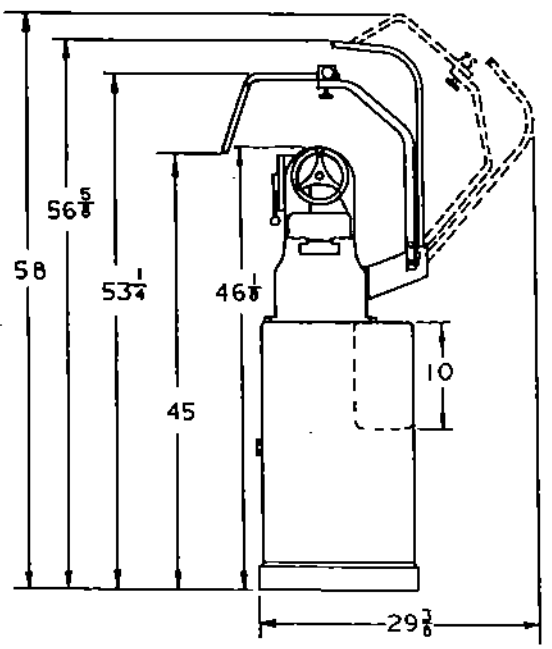
Swing Over Straight Bed	12"
Swing Over Gap	17"
Swing Over Tool Rest	8"
Width of Gap	5-1/4"
Width of Gap from Face Plate	4"
Distance Between Centers	38"
Height of Spindle Centering to Floor	42-1/2"
Length of Standard Bed	60"
Overall Length, Width and Height	67" L. x 16" W. x 46-1/2" H.
Motor	1 HP
Speed Range	Standard 320 — 2100
	Optional Low Range 215 — 1375
	Optional High Range 460 — 3000
Shipping Weight Crated	700 Lb.



DISTANCE BETWEEN CENTERS-38"
SWING OVER BED-12"
SWING OVER GAP-17"
WIDTH OF GAP-5 1/4"
TAILSTOCK QUILL TRAVEL-4 3/8"

FLOOR PLAN





FOREWARD

This manual has been prepared for the benefit of those responsible for installing Lathe Guards on new or existing machines. The following pages cover installations in detail and if followed step by step, will simplify the Lathe Guard installation process. Break-out illustrations are incorperated herein, together with complete parts lists.

CAUTION: Do not exceed speed recommended in the table shown on page 6 for the diameters being turned. Stored energy increases with the square of the number of revolutions per minute and if the speeds are exceeded and the turning explodes, damage to the guard and serious injury to the operator or bystanders may result.

MODEL 45 LATHE GUARD
FACTORY ASSEMBLY INSTRUCTIONS

A. Installing Mounting Brackets And Rear Panel:

1. On older lathes the mounting holes for the mounting brackets must be added in the locations shown in the figure at right. Spacers (3738201) must also be used on the upper holes as shown.
2. Attach one mounting bracket (3063287) to the mounting holes at the tailstock end at the rear of the lathe bed (3797063 or 3797077) with two hex head screws (6715032).
3. Attach one end mounting bracket (3063289) to the mounting holes at the headstock end at the left side of the lathe bed with two hex head screws (6715032).
4. Attach the center mounting and latch bracket (3063291) to the center mounting holes on the rear of the lathe bed with two hex head screws (6715032). All six mounting screws (6715032) are provided in a plastic shipping bag.
5. Slide one handle between the lathe bed and the stand assembly so it will attach to the center mounting and latch bracket as shown in figure at right. It will be necessary on older model lathes to bend down the lip on the center section of the stand assembly so that the handle will slide freely.
6. Attach the handle to the center mounting and latch bracket (3603291) with a mounting pin and cotter pin. Attach one spring to the handles (in the bottom hole) and the center mounting and latch bracket. The mounting pin, cotter pin and spring are also provided in a plastic shipping bag.
7. Pull forward on the handle of the center mounting and latch bracket and hold, then set the rear panel (3578241) into all three mounting brackets.
8. Release the handle on the center mounting and latch bracket. This causes the spring to retrace and forces the two locking plates forward against the base of the rear panel.
9. For loading and unloading stock, pull forward on the handle on the center mounting and latch bracket and hold. This causes the release of the two locking plates and permits the rear panel to be tilted back.

B. Installing Front Panels:

1. Both right front panel and left front panel are identical and can be interchanged.
2. Locate the clamp assembly at the headstock end of the rear panel (3578241). The clamp screw must be backed off enough to permit the left front panel to be placed between the outside clamp and the center guide.
3. Install the left front panel and retighten the clamp screw.
4. Locate the clamp assembly at the tailstock end of the rear panel (3578241). The clamp screw must be backed off enough to permit the right front panel to be placed between the outside clamp and the center guide.
5. Install the right front panel and retighten the clamp screw.
6. At this point both front panels may be moved toward or away from the operator to a desired position.

C. Installing The End Panel:

1. Located in the plastic shipping bag are three 6–32 X 1" Philips head screws with nuts and washers.
2. Remove the right front panel from the rear panel.
3. Slide the left front panel fully forward and tighten the clamp screw.
4. Mount the end panel on the outside area of the left front panel on the right hand end, using the three screws, nuts and washers provided. The clamps will bear against the plastic on the inside of the end panel. The thumb screws will bear against the outside of the aluminum frame of the rear panel.
5. The end panel may be prepared for installation for outboard turning by mounting it on the outside left hand end in a similar fashion to step number four (4).

WOOD TURNING LATHE SPEEDS

DIA. OF WORK	ROUGHING R. P. M.	GEN. CUTTING R. P. M.	FINISHING R. P. M.
Under 2"	1520	3000	3000
2 to 4"	760	1600	2480
4 to 6"	510	1080	1650
6 to 8"	380	810	1240
8 to 10"	300	650	1000
10 to 12"	255	540	830
12 to 14"	220	460	710
14 to 16"	190	400	620

MACHINE INSTALLATION, ADJUSTMENTS AND MAINTENANCE

RECEIVING:

Remove the lathe from the shipping container and check for damage. Report any damage to your distributor immediately. Accessories are packaged in a separate carton which will be on the shelf of the machine stand. Clean protective coating from the bed, spindles, work rest and face plate. Read the instruction manual thoroughly for assembly, maintenance, operational and safety instructions.

INSTALLATION:

Mount the lathe on a solid foundation and lag to the floor through the four holes provided in the machine base. Connect the machine to its power source and be sure the machine frame is properly grounded. Check to insure that the rotation of the spindle is counterclockwise facing the spindle from the tailstock end. Correct if required. Remove the belt cover on the left-hand end of the headstock. Check the belt position. In stop position, it should be flush with the O.D. of the spindle mounted variable speed pulley. If it is not, readjust as indicated in the maintenance instructions.

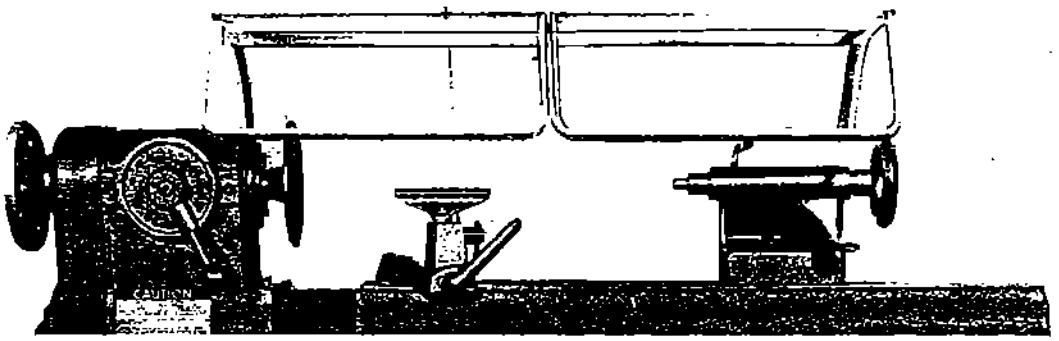
To check motor or jackshaft position and belt tension, grasp both sides of the variable speed belt midway between the top and bottom variable speed pulleys and squeeze together. If the two sides touch, the motor or jackshaft must be lowered to provide the correct speed range. Disconnect the machine from its power source and readjust motor or jackshaft as indicated in the maintenance instructions.

To start the machine, move the speed dial slowly to start position. On currect models with magnetic controls, the start button on the control station on the front of the bed must be held depressed until the drive motor starts. Run the lathe through its complete speed range to check for proper operation. If excessive noise or vibration occurs, contact your distributor. Do not use the machine until all problems have been corrected. Reinstall the belt guard.

MODEL 45 & 90 LATHE GUARD

INSTALLATION INSTRUCTIONS

Price $2.50



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MAINTENANCE INSTRUCTIONS

GENERAL:

Maintenance on the 90 lathe should be performed at periodic intervals to insure that the machine is in proper working order, that all fasteners are tight, and that the machine is in adjustment. The more use the machine is subjected to, the more often it should be inspected and maintained. Inspection and maintenance should be performed at least twice a year.

CAUTION: Disconnect machine from power source before performing any maintenance on the machine to prevent accidental starting or electrical shock.

MOTOR:

The lathe is equipped with a 1 HP, 1800 RPM motor, single or 3 PH mounted, and depending on the model mounted either to the lathe bed or to a motor mounting bracket. To inspect or service the motor on bed-mounted motor models, remove the belt guard at the left end of the machine. On bracket-mounted motor models, open the cabinet door for access to the motor. Inspect the motor for sawdust accumulation in the fan area and vacuum out any accumulation in the motor and in the surrounding area.

The position of the motor on bed-mounted models is important to the adjustment of the speed range of the lathe. If the motor is moved or replaced, readjust its position as indicated in the section of belt adjustment. The correct rotational direction of the motor is clockwise facing the shaft end of the motor which will give counterclockwise rotation to the lathe spindle when viewing it from the tailstock end.

MOTOR SWITCH:

The motor switch is mounted inside the headstock and is operated through a switch arm and a cam section of the variable speed dial on the front of the lathe. To service or replace the switch, remove the variable speed dial by removing the screw (A) (Fig. 1) in its center. Remove the two screws shown in Fig. 1 (B). It may be necessary on older models with bed mounted motors to remove the motor for easier access to the switch. To drop the motor on these models, remove the variable speed belt, (see section on belt and drive adjustment), and remove the four motor-mounting screws at the back of the bed. On reinstalling motor, refer to the section on belt and drive adjustment. Reinstall the switch after servicing or replacing it.

SPEED DIAL:

To remove the speed dial, remove the central bolt (A) (Fig. 1). To replace it, loop a piece of string or wire over the switch arm and pull down to hold the switch arm down, hold the dial at the 1000 position, and install in the headstock cavity with a caming type motion from right to left so as not to catch the switch arm back of its speed dial cam section and to compress the interlock pin spring. With the cam in position, the string is then removed and the central mounting screw together with its spring and washers reinstalled and locked down tight. NOTE: The variable speed dial comes factory equipped with a speed limiter screw which can be placed in a series of tapped holes in the face of the dial. This screw regulates the maximum position to which the dial can be rotated. It provides the safety of selecting a pre-set maximum RPM position for each operation. Be sure this stop screw is in the dial and obtain a replacement from Powermatic if it is not.

SUGGESTIONS FOR ORDERING PARTS

1. Determine the part number from the assembly drawing
2. Determine the part name from the parts list.
3. Include BOTH the part's name and number on your order.
4. Include the model number, serial number and date of purchase of the machine.
5. PRINT your name and address on the order.

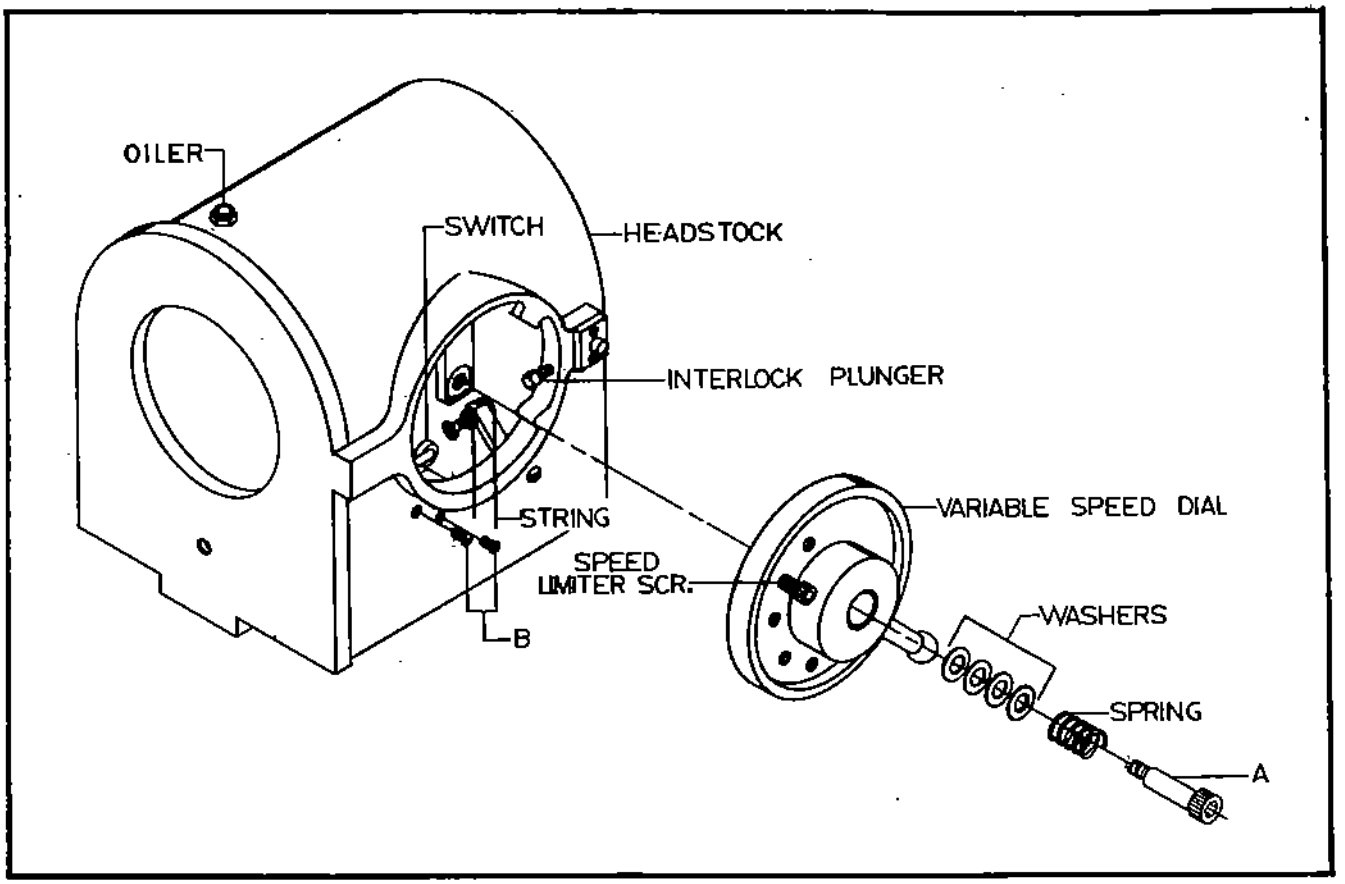


FIGURE 1

SPINDLE:

To remove the spindle, first remove the face plate (A) (Fig. 2) by locking the spindle with the locking pin (B) (Fig. 2) and removing the face plate (left-hand threads). Remove the guard, drive belt and speed dial. Loosen the two setscrews on the locking collar (C) on old models or soc. hd. cap screw on current models and unscrew the collar (left-hand threads). Loosen the setscrew (O) in the outer variable speed sheave (D)

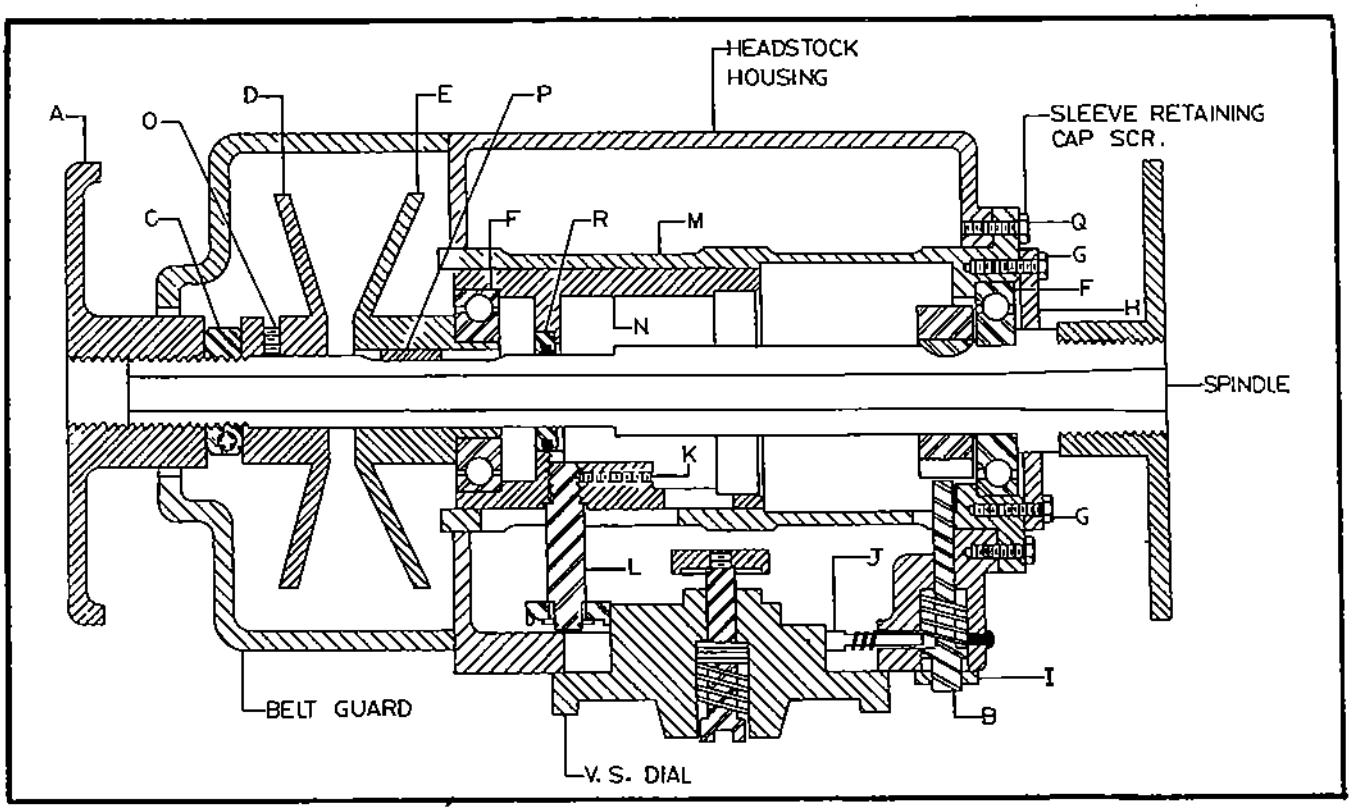


FIGURE 2

90 LATHE PARTS LIST

Part No.	Nomenclature	Quantity Required
90-194	Setscrew 5/16-18 x ¼	3
90-195	Spacer, Sheave Locking	1
90-196	Tool Rest 90° L-33	1
90-197	Block, Switch Mounting, Magnetic	1
90-199	Spring, Single Phase Switch 90-20	1
90-201	Pulley, Rigid, Motor D-27	1
90-201A	Bronze Bushing 1¼ x 1⅜ x 1⅝	2
90-201B	Key, Var. Speed Pulley 1200-112	1
90-202	Metal Spinning Tool Rest 12"	1
90-203	Pulley, Sliding, Motor D-41	1
90-207	Lock, Top Bracket	2
90-208	Tool Rest 24" L-34	1
90-208A	Post, Tool Rest	2
90-213	Shaft, Door Lock	1
90-214	Setscrew ¼-20 x ¼	2
90-215	Handle, Door 1000-8 x ⅜	1
90-216	Spacer, Door Lock 900-65A ⅜ x ⅝ x ½	1
90-217	Spacer, Door Hinge 90-129 ¼ x ½ x ½	2
90-218	Splitpin ¼ x 1¼	2
90-219	Flat Washer ¼	2
90-221	Thumbscrew ¼-20 x ½	1
90-222	Screw 8-32 x 1¼ Fill. Head	2
90-223	Nut 8-32 Hex	2
90-224	Screw 6-32 x 1½ Fill. Head	1
90-225	Screw 6-32 x 11¼ Fill. Head	1
90-226	Nut 6-32 Hex	2
90-227	Screw 10-24 x ½ Rd Hd	1
90-228	Micro-Switch BZ2GW822	1
90-229	Bolt 7/16-14 x 1¾ Hex Head	2
90-230	Flat Washer 7/16	1
90-231	Bolt ⅜-16 x 3" Soc Head	2
90-232	Setscrew ⅜-16 x ⅜	1
90-233	Handle UV100	2
90-234	Knob UV101	6
90-236	Drive Screw 3/32 x ¼	4
90-237	Grease Seal #551	1
90-238	Bolt ½-13 x 2" Hex Head	2
90-239	Lock Washer ½	2
90-240	Bolt ⅜-16 x 1" Hex Head	6
90-241	Lock Washer ⅜	6
90-242	Flat Washer ⅜	6
90-243	Turning Tools, Set of 8	1
90-244	Turning Tools, Set of 5 (Metal)	1
90-245	⅝-Cup Center	1
90-246	1" Spur Center	1
90-247	3" Rossette Chuck (3" Face Plate Modifed)	1
90-248	Center Drift Rod	1
90-249	Ball Bearing Center	1
90-250	Center Drift Rod (Metal)	1
90-251	Handle, Lockscrew (5/16 x 5")	1
90-252	Casting, Offset Tool Rest L-35	1
90-253	Identification Plate	2
90-254	Dust Plug (Rubber)	1
90-255	Screw ¼-20 x 1¾ Truss Hd	1
90-256	Motor	1
90-257	Belt, Pulley	1
90-258	Bolt, Motor Mounting 5/16 Hex	4
90-259	Splitpin 5/16 x 1"	1
90-260	Screw, ¼-20 x 1" round Head	4
90-261	Mounting Bar, Compound Slide Attachment	2
90-262	Compound Slide Rest	1
90-211	Insert, Live Center	1
90-167A	Knob, 95 x ⅜	1
90-133A	Clamp, Headstock L-16	2

and slip the sheave off the spindle. NOTE: It may be necessary to drive the sheave (D) forward and file the set screw burr off the spindle in order to remove the outer sheave. Use a screwdriver to apply pressure against the inner sheave (E) & headstock and slide out, together with bearings (F) and sheave key (P). Take out the two hex head screws (G), remove retaining cap (H) and gently bump spindle out (toward tailstock) with a block of wood. Replace in reverse order. To remove the two sleeves (N & M) after the spindle has been removed, remove plunger (B) by removing the plunger cap (I) and mounting screw. Care should be taken that the lock pin (J) & spring do not drop down into the headstock. Loosen setscrew (K) on older models by inserting a 5/32 Allen wrench through slot in sleeve, turn about one revolution and remove the variable speed shifting pin assembly (L). On models shipped after November, 1972, the variable speed shifting pin assembly screws into the sliding sleeve and can be removed using a 3/4 open-end wrench. Remove the sleeve retaining hex head cap screws (Q) and remove the variable speed sleeve (N) and bearing sleeve (M). Lubricate all parts with a thin coat of light oil before reassembly.

TOOL REST:

The tool rest is designed to allow adjustment for height, position on bed and angle to the work. Three blades are available; six inch straight length (std.), 12" inch straight length (opt.) and a right angle style (opt.). Periodically the tool rest should be disassembled and the parts cleaned and oiled to provide free movement of the parts to insure good clamp action. (Fig. 3).

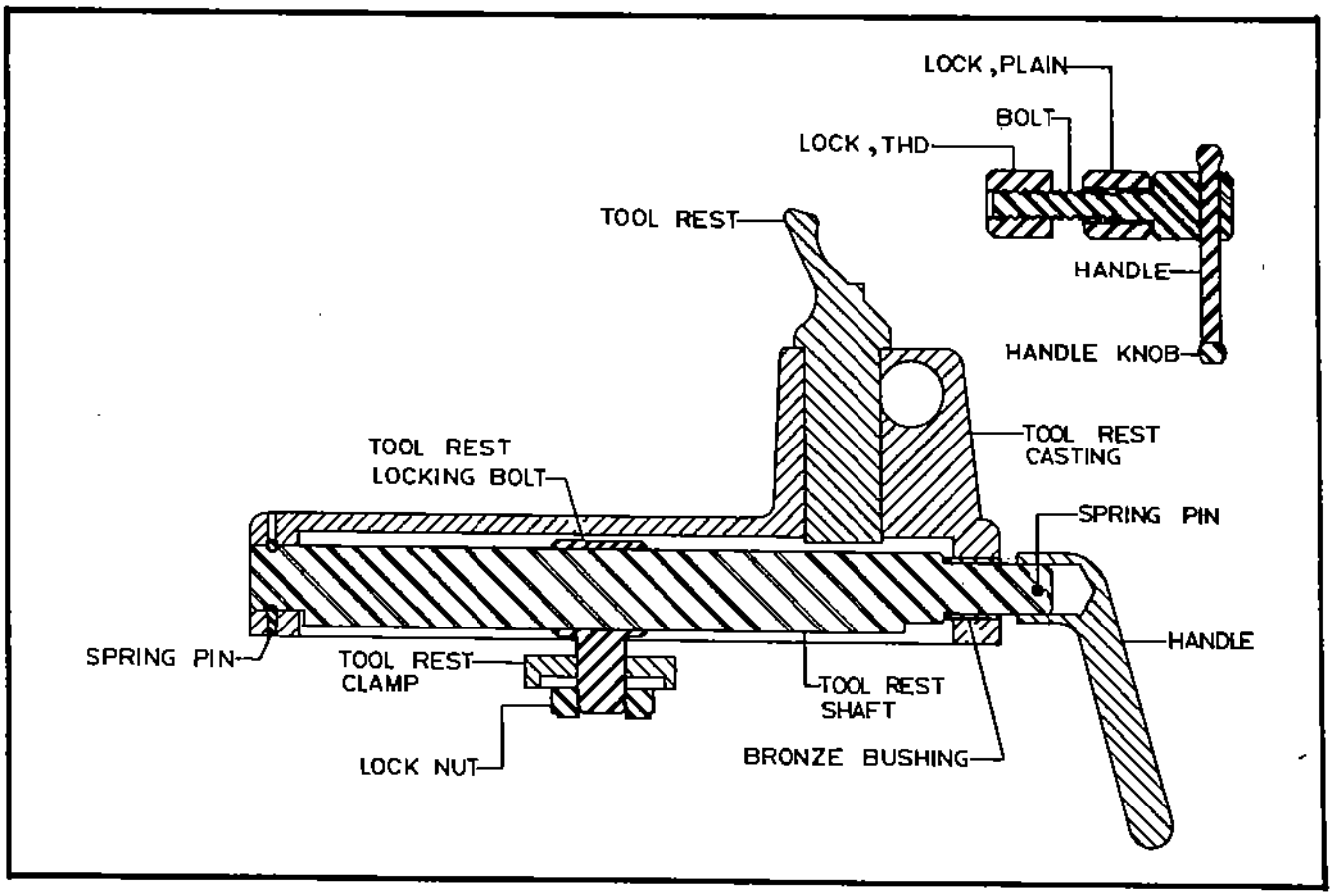


FIGURE 3

LUBRICATION:

All anti-friction bearings are sealed for life and require no lubrication. The area between bearing (F) and seal (R) (Fig. 2) is packed with grease at the factory to lubricate sliding sheave (N) on the spindle and should be re-packed only when the head has been dismantled for repair. The oil fitting on top of the headstock should be oiled with 5 or 6 drops of SAE 10 weight oil for each day's operation to insure free movement of the sliding sleeve.

MODEL 90 LATHE

Part No.	Nomenclature	Quantity Required
90-100	Spindle, Head	1
90-100A	Key, Spindle 3/16 x 3/16 x 1½	1
90-100B	Woodruff Key #810	1
90-100C	Splitpin, 3/32 x ¼	1
90-101	Sleeve, Spindle Bearing L-3	1
90-102	Sleeve, Variable Speed Slide L-5	1
90-103	Bearing, Inboard FAFNIR 207KLL	1
90-104	Seal, Grease 50189	1
90-105	Bearing, Outboard ND 88508	1
90-106	Sheave, Sliding, Variable Speed L-6	1
90-107	Sheave, Ridgid, Variable Speed L-9	1
90-107A	Setscrew ⅜-16 x ⅜	1
90-108	Guard, Belt L-12	1
90-108A	Bolt ½-13 x 4" Hex Head	1
90-109	Cap, Bearing Sleeve L-10	1
90-110	Bolt 5/16-18 x ¾ Hex Head	2
90-111	Bolt 5/16-18 x 1" Hex Head	2
90-112	Spring LP-75	1
90-113	Plunger, Spindle Lock	1
90-114	Pin, Plunger Lock 90-114	1
90-115	Spring, Plunger Lock Pin JS-4	1
90-116	Cam, Variable Speed L-37	1
90-117	Spring, Variable Speed Tension L-10	1
90-118	Bolt, Variable Speed Cam ⅜-11 x 2¼ Shoulder Soc Hd	1
90-119	Washer, Friction Lock ⅜ x ½ Fiber	1
90-120	Handle, Variable Speed	1
90-121	Knob 111 x ⅜	1
90-122	Pin, Variable Speed Shifting	1
90-123	Bearing, Variable Speed Shifting FAFNIR 201KT	1
90-124	Housing, Headstock	1
90-125	Setscrew 5/16-18 x ¾	1
90-126	Face Plate 3" L-19	1
90-127	Face Plate 6" L-17	1
90-128	Face Plate 8" L-18 (Alum.)	1
90-130	Casting, Tool Rest L-8	1
90-131	Shaft, Tool Rest Clamping	1
90-132	Stud, Tool Rest Locking	1
90-133	Clamp, Bed L-16 (Ductile Iron)	1
90-134	Nut, Tool Rest Stud ⅜-11 Lock & Stop	1
90-135	Clamp, Tool Rest	1
90-136	Handle, Tool Rest L-13	1
90-136A	Splitpin 3/16 x 1"	1
90-137	Oilite Bushing ⅜ x ¾ x 11/16	1
90-138	Handle UV100	1
90-138A	Knob, Handle UV101	2
90-139	Lockscrew	1
90-140	Face Plate 4" L-21	1
90-141	Quill, Tailstock	1
90-142	Pin, Tool Rest	1
90-143	Casting, Tail Stock L-2	1
90-143A	Splitpin 3/16 x ½	1
90-144	Screw, Quill Lead	1
90-145	Nut, Tailstock Shaft Housing	1
90-146	Bearing 603¼ NICE	1
90-147	Woodruff Key #404	1
90-148	Handwheel, Tailstock 12-0	1
90-148A	Handle, Handwheel (Nylon Machine Handle)	1
90-148B	Rivet, ¼ x 3"	1
90-149	Nut, Handwheel Shaft ½-13 Lock & Stop	1
90-150	Nut, Tailstock Clamp ⅝-11 x 1" Lg. Hex	1
90-151	Clamp, Tailstock L-16	1
90-152	Stud, Tailstock Clamp	1
90-154	Screw, Quill Lock	1
90-155	Lock, Quill	1
90-157	Starting Switch, Single Phase 80617DW	1
90-158	Bracket, Switch Mounting L-27	1
90-158A	Block, Switch Mounting	1
90-159	Cam, Switch Operating L-26	1
90-160	Screw, Switch Operating Cam ¼-20 x 1" Flat Hd Soc	1
90-160A	Nut, ¼-20 Hex	3
90-161	Base, Tool Rest L-28	1
90-161A	Setscrew ½-13 x ½	1
90-162	Column, Outboard Tool Rest	1
90-163	Tool Rest Holder, Outboard & Swivel L-29	1
90-164	Tool Rest 6" L-22	1
90-165	Tool Rest 12" L-23	1
90-166	Rod, Blueprint Holder	1
90-166A	Clip, Holder Hunt Clip #2	1
90-167	Rod, Knockout	1
90-168	Tool Rest, Metal Spinning	1
90-169	Pin, Metal Spinning Tool Rest	2
90-170	Pin, Tool Rest	2
90-171	Wrench, Tail Stock L-15	1
90-172	Lathe Bed, w/Gap L-7	1
90-173	Spacer Bushing, Cam Switch	1
90-173A	Lock Ring ½ Krupers	1
90-174	Face Plate 12" L-25	1
90-175	Mounting Plate	1
90-175A	Screw, ¼-20 x ½ Round Head	6
90-176	Dust Plate, Straight Bed	1
90-177	Base, Lathe	1
90-177A	Support, Base	2
90-178	Face Plate 8" L-24	1
90-179	Plate, Spindle Lock Plunger	1
90-179A	Screw 6-32 x ¼ Socket Head	2
90-180	Lathe Bed, w/Gap 7' L-30	1
90-181	Plug, Outboard Tool Rest Column	1
90-182	Screw, Speed Adj. 5/16-18 x ¾ Soc Hd (Modify)	1
90-183	Dust Plate, Gap Bed	1
90-184	Setscrew 5/16-18 x ⅜	1
90-185	Splitpin 5/16 x 1¾	1
90-186	Lock, Offset Tool Rest Holder	1
90-187	Lockscrew, Tool Rest Holder	1
90-188	Center Panel, Short Base	1
90-189	Center Panel, Long Base	1
90-190	Lock, Door B-12	1
90-191	Lathe Bed, Straight 7' L-30	1
90-192	Lathe Bed, Straight L-7	1
90-193	Sleeve Lock, Collar	1

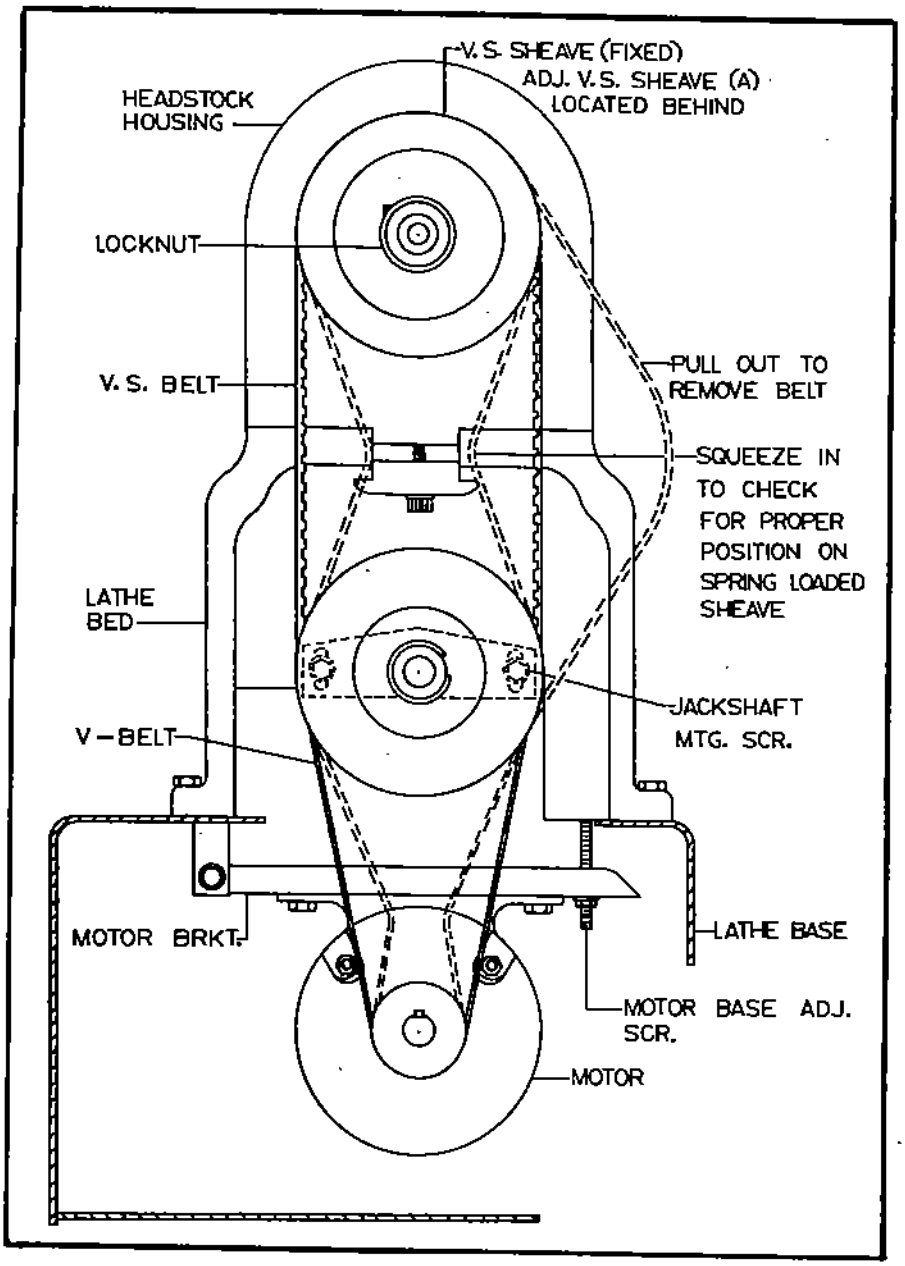


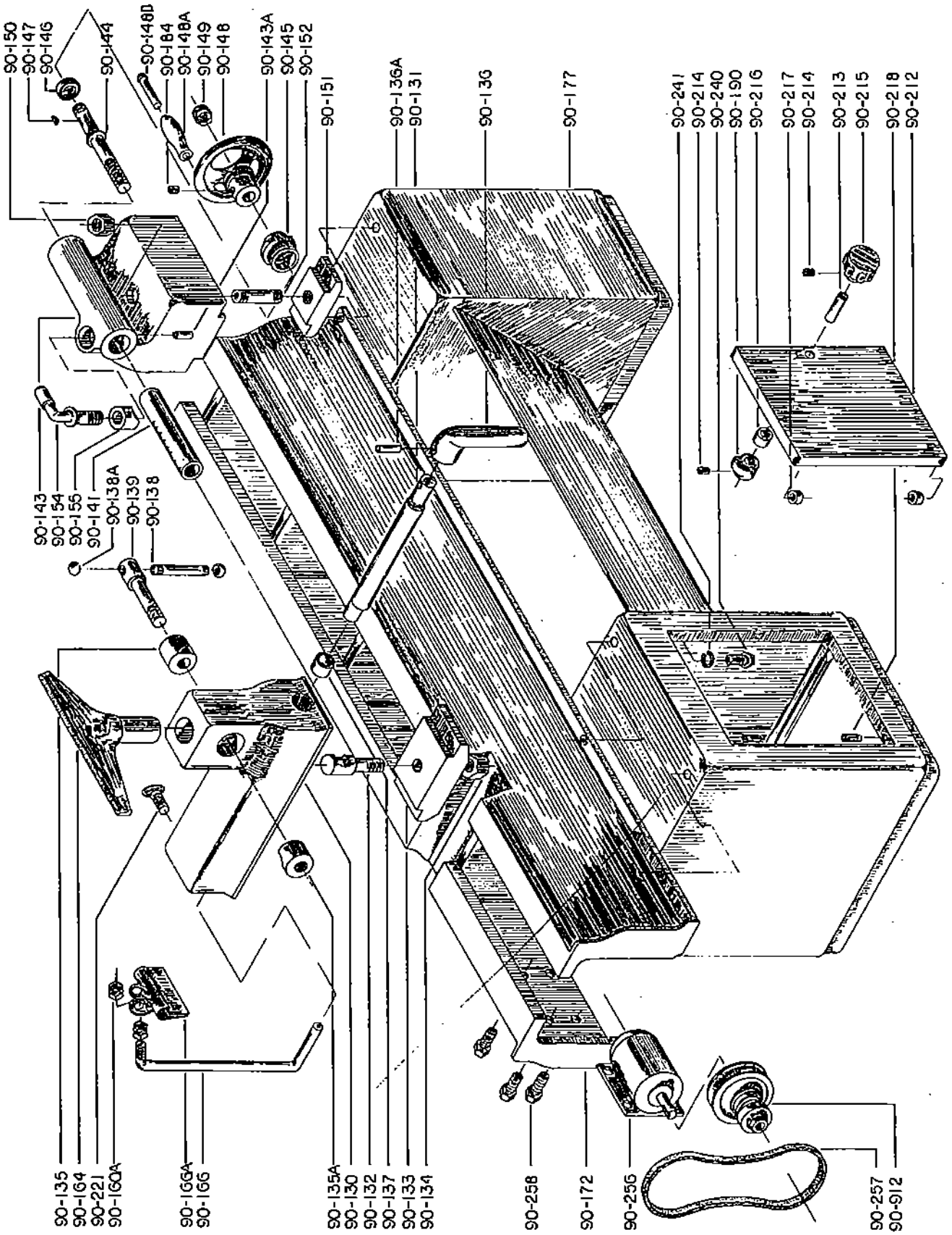
FIGURE 4

IMPORTANT

BELT AND DRIVE ADJUSTMENT:

CAUTION: Disconnect lathe from power source before performing any maintenance.

The drive system on this lathe uses a spring-loaded and an adjustable variable speed sheave to provide infinitely variable speeds. On older models, the spring-loaded sheave was mounted on the motor shaft and on current models the sheave is jackshaft mounted. On current models, the motor is mounted to a motor bracket and a V-belt system drives the jackshaft. To inspect this area, remove the guard at the left end of the lathe. (Fig. 4). With the speed dial in the stop position, the variable speed belt should be flush with the outside diameter of the spindle mounted adjustable variable speed sheave (A). To adjust the belt to this position, loosen the setscrews in the locknut or cap screw in current models and in the fixed half of the variable speed sheave, (O) (Fig. 2) alternately rotate the locknut counterclockwise (left-hand thread) and then the spindle until either the belt is flush with the sheave outside diameter or the fixed sheave bottoms against the adjustable half of the sheave. Relock the fixed sheave reposition locknut against sheave face lock setscrews on cap screw. If the belt is down from the outside diameter after spindle sheave adjustment by more than 1/8 inch, the belt is excessively worn and should be replaced. CAUTION: If the belt is not flush with the outside diameter of the spindle sheave at stop position, the speed of the spindle can be higher than indicated on the dial.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90-136A
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To remove the variable speed belt, move the speed dial to maximum speed, pull out on one side of the belt to compress the spring-loaded sheave and then remove the belt by slipping it over the outside flange or the spindle mounted sheave and then pulling it out of the motor sheave. To replace the belt, put it on the spring-loaded sheave, pull out on it to compress the spring and then put it over the spindle sheave flange. To bring the speed dial back to stop position, apply firm hand pressure against the handle and manually rotate the spindle. Do not force the handle back to stop position without rotating the spindle. Parts may be damaged which could cause a malfunction. The position of the motor on bed-mounted motor models or the jackshaft on current models is important in obtaining the speed indicated on the speed dial. To check for the proper position, if the driving and driven side of the belt can be squeezed together between the two variable speed sheaves by grasping each side and squeezing in, it is not properly tensioned and the motor or jackshaft is not low enough.

Leaving the motor pulley spring in the compressed condition, loosen the motor bolts or jackshaft bolts and lower to take the slack out of the belt. Retighten the motor or jackshaft mounting bolts and recheck for the proper positioning. Readjust if required on jackshaft models readjustment of the variable speed belt will require adjustment of the motor position to provide proper tension in the V-belt. Lower motor with motor base adjusting screw until V-belt driven and driving side can not be squeezed together. Closer than approximately 2". Access to the motor base adjusting screw is through opening at the front of the cabinet. Reinstall the end guard. If the end guard cannot be installed because of interference with the spring-loaded pulley, the belt has stretched or is worn to the point where it must be replaced. CAUTION: Operating the machine with the motor or jackshaft out of position can result in spindle speeds higher than indicated on the speed dial. This can cause the use of a speed which is too high for the operation to be performed and result in serious injury.

TAILSTOCK:

The tailstock assembly shown in Fig. 5 requires a minimum of service but the No. 2 Morse taper hole should be checked periodically to insure it is free of nicks and rust. The quill should be removed and the tapered socket and outside diameter wiped once a month with light machine oil. The tailstock screw & thrust bearing should be coated with Fiske Lubriplate 630A or equivalent.

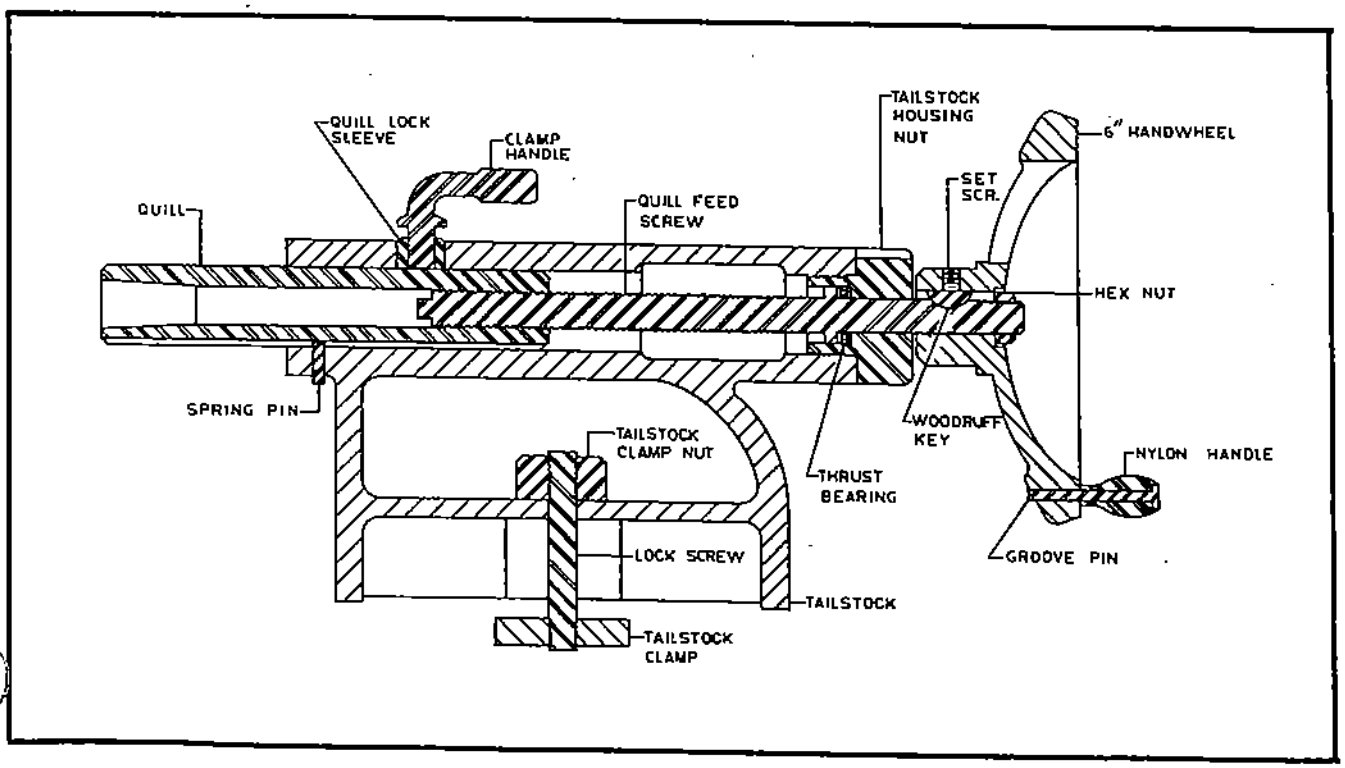
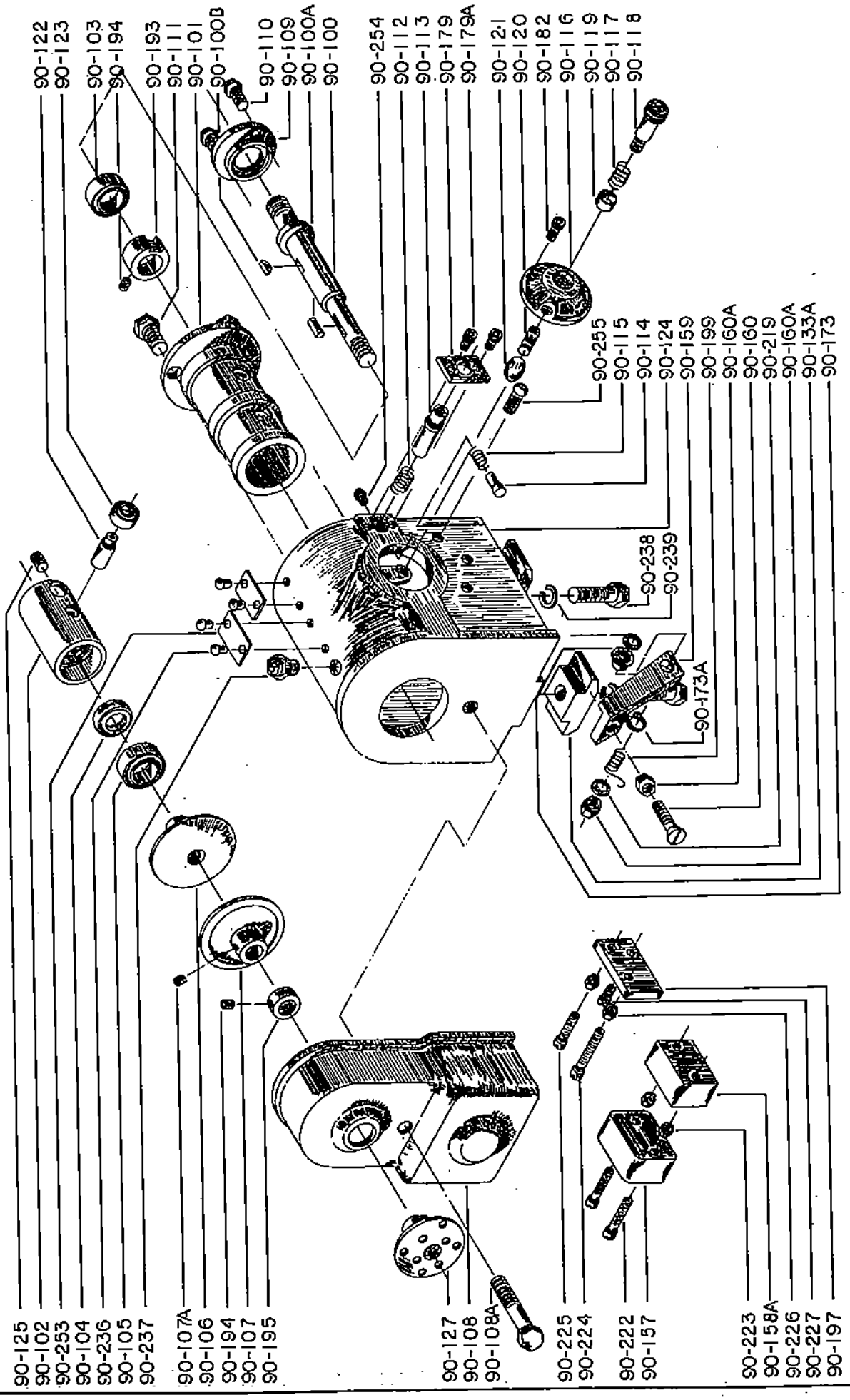


FIGURE 5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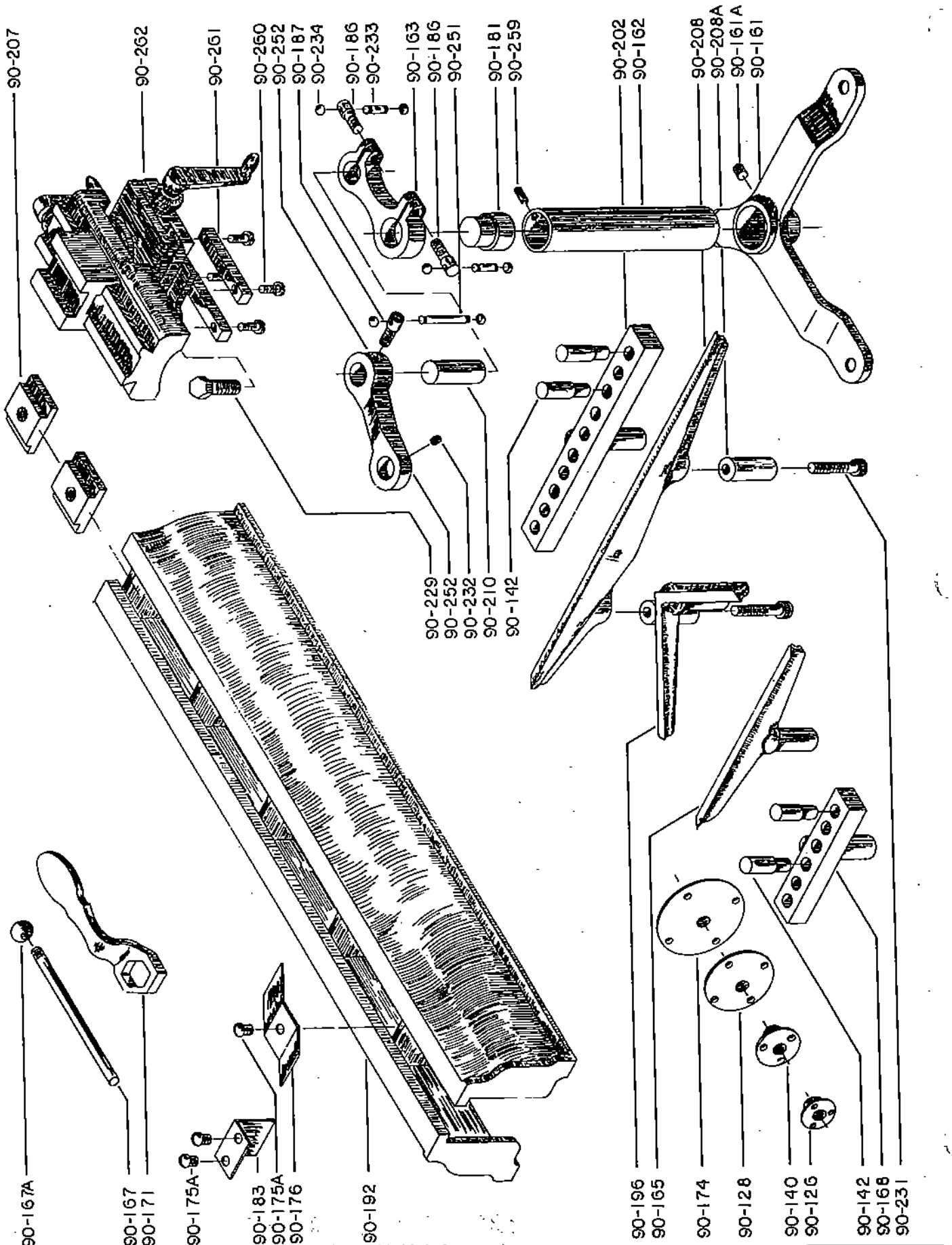
TROUBLE-SHOOTING HINTS

TROUBLE	POSSIBLE CAUSE	REMEDY
Excessive Vibration	1. Defective spindle bearings 2. Worn or defective belt 3. Defective motor 4. Work piece warped, out-of-round, has major flaw, or was improperly prepared for turning	1. Replace bearings 2. Replace belt 3. Replace motor 4. Correct problem by planing or sawing, or scrap work piece
Motor or Spindle Stalls	1. Excessive cut 2. Defective motor 3. Motor clogged with sawdust 4. Excessive belt wear 5. Improper belt adjustment 6. Fixed sheave on spindle out of position or frozen. 7. Belt between motor and jackshaft slipping 8. Spring loaded pulley frozen	1. Reduce cut depth 2. Replace motor 3. Clean motor 4. Replace belt 5. Readjust belt 6. Readjust position or lubricate sleeve with light weight oil 7. Retension belt 8. Free pulley and lubricate with silicone spray
Motor over Heats	1. Motor overloaded 2. Improper cooling on motor	1. Correct overload condition, such as reducing cut depth 2. Clean sawdust from fan and duct areas of motor
Motor Starts Slowly or Fails to Come Up to Speed	1. Low voltage 2. Centrifugal switch not operating 3. Defective motor	1. Request voltage check from power company and correct low-voltage condition 2. Replace switch or motor 3. Replace motor
Motor Fails to Develop Full Power	1. Power line overloaded 2. Undersize wires in supply system 3. Low voltage 4. Clogged motor fan area 5. Defective motor	1. Correct overload condition 2. Increase supply wire size 3. Request voltage check from power company and correct low-voltage condition 4. Clean motor fan area 5. Replace motor
Excessive Speed	1. Excessive wear on belt 2. Fixed spindle sheave is out-of-position 3. Motor or jackshaft out-of-position	1. Replace belt 2. Readjust per maintenance instructions 3. Readjust per maintenance instructions
Tools Tend to Grab or Dig in	1. Dull tools 2. Tool rest set too low 3. Tool rest set too far from work piece 4. Improper tool being used	1. Sharpen tools 2. Reposition tool rest height 3. Reposition tool rest closer to work piece 4. Use correct tool for the operation
Lathe Runs at One Speed	1. Drive or Driven variable speed pulley frozen	1. Free and lubricate with silicon spray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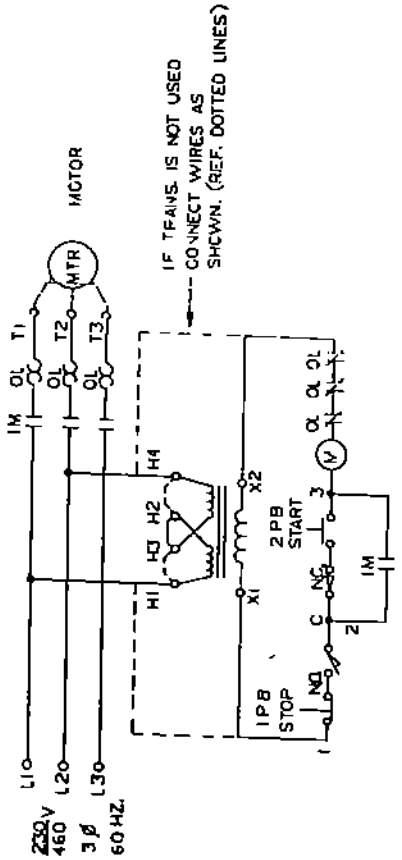
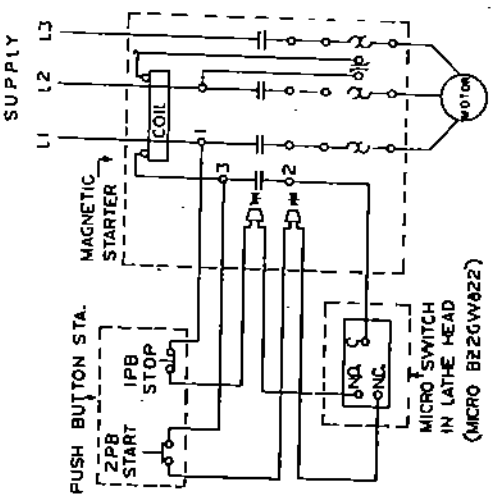
ELECTRICAL SCHEMATIC

REF.	QTY.	POWERMATIC NO.	MFG. DESCRIPTION
ILS	1	6816005	SWITCH, MICRO, *BZ2GW822
PB,2PB	1	6821180	SWITCH, FURNAS, 50CA3AA
	1	6821181	OPERATOR, START, FURNAS 05349300I
	1	6821182	OPERATOR, STOP, FURNAS 02213200I
IM	1	6816105	STARTER, IPH, FURNAS, 14CF12BA7
		6816111	STARTER, 3PH, FURNAS, 14BF32BC7I
		6816119	STARTER, 1PH, W/24V TRANS., FURNAS, 14CF107013
		6816138	STARTER, 1PH, W/115V TRANS., FURNAS, 14CF107017
		6816122	STARTER, 3PH, W/24V TRANS., FURNAS, 14BF32BJ7IBD
		6816126	STARTER, 3PH, W/115V TRANS., FURNAS, 14BF32BA7IBA
MTR	1	6471022	MOTOR, 1HP, 1PH, 115/230V, 1800RPM, 56 FR
		6471036	" " 3PH, 200V " "
		6471037	" " 3PH, 230/460V " "

NOTES:
1. TRANS. IS OPT.
2. FOR SINGLE PH. UNITS OMIT LINE L3
3. THE CONTROL SWITCH USES A 2 POLE, 2 STAGE, MICRO LIMIT SWITCH THAT SERVES THE SAME FUNCTION AS A NORMAL PUSH BUTTON STA. THE FIRST STAGE OR CLICK OF THE SWITCH CLOSES THE N.O. CONTACTS, AND WHEN THE START BUTTON IS HELD DOWN, ENERGISES THE STARTER COIL AND STARTS THE MOTOR. THE SEC. STAGE OR CLICK OPENS THE N.C. CONTACTS WHICH ARE PARALLELED BY A SET OF HOLDING CONTACTS ON THE STARTER, AND PROVIDES THE NORMAL LOW VOLTAGE AND RESTART PROTECTION. THE SWITCH IS ACTUATED BY A DETENT ON THE CAST CAM, AND MUST BE POSITIONED SO THAT BOTH STAGES OR CLICKS OF THE SWITCH ARE ACTUATED WHEN THE CAM IS TURNED TO THE START POS.





*—WIRE NUT TIE CONNECTION LOCATED INSIDE STARTER BOX

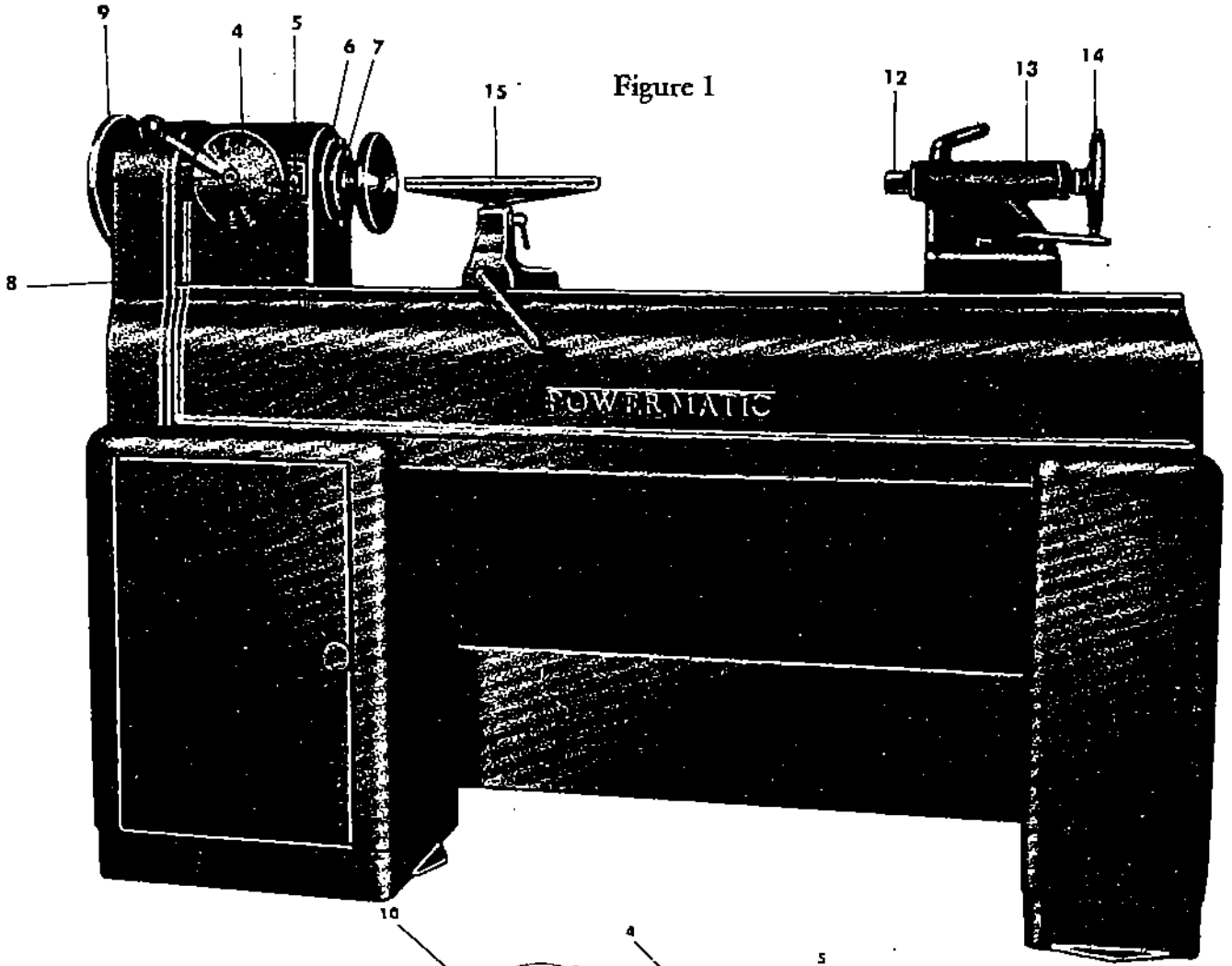


Figure 1

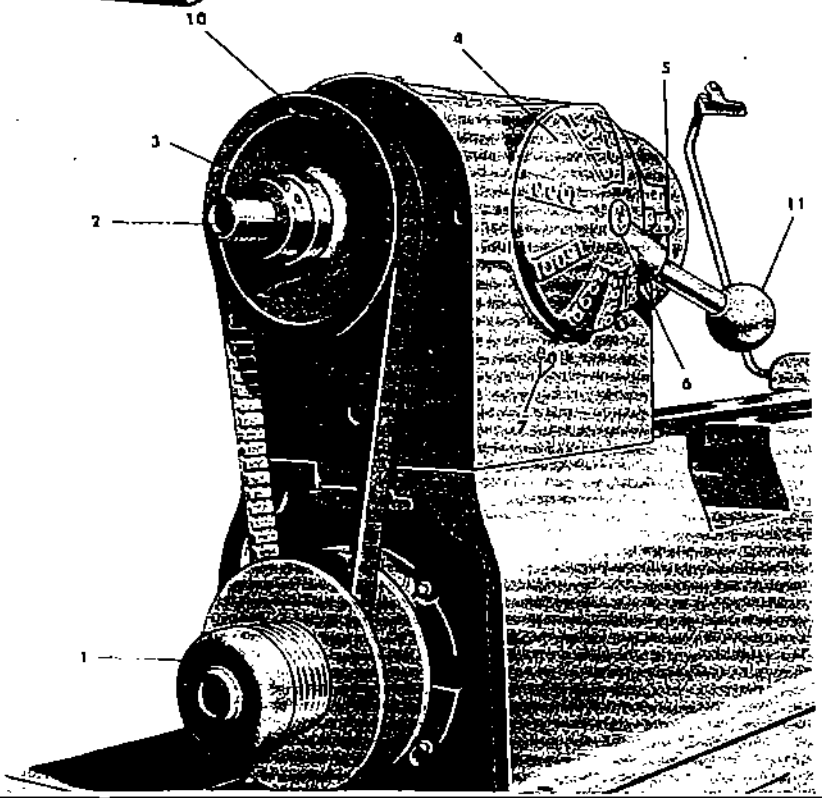
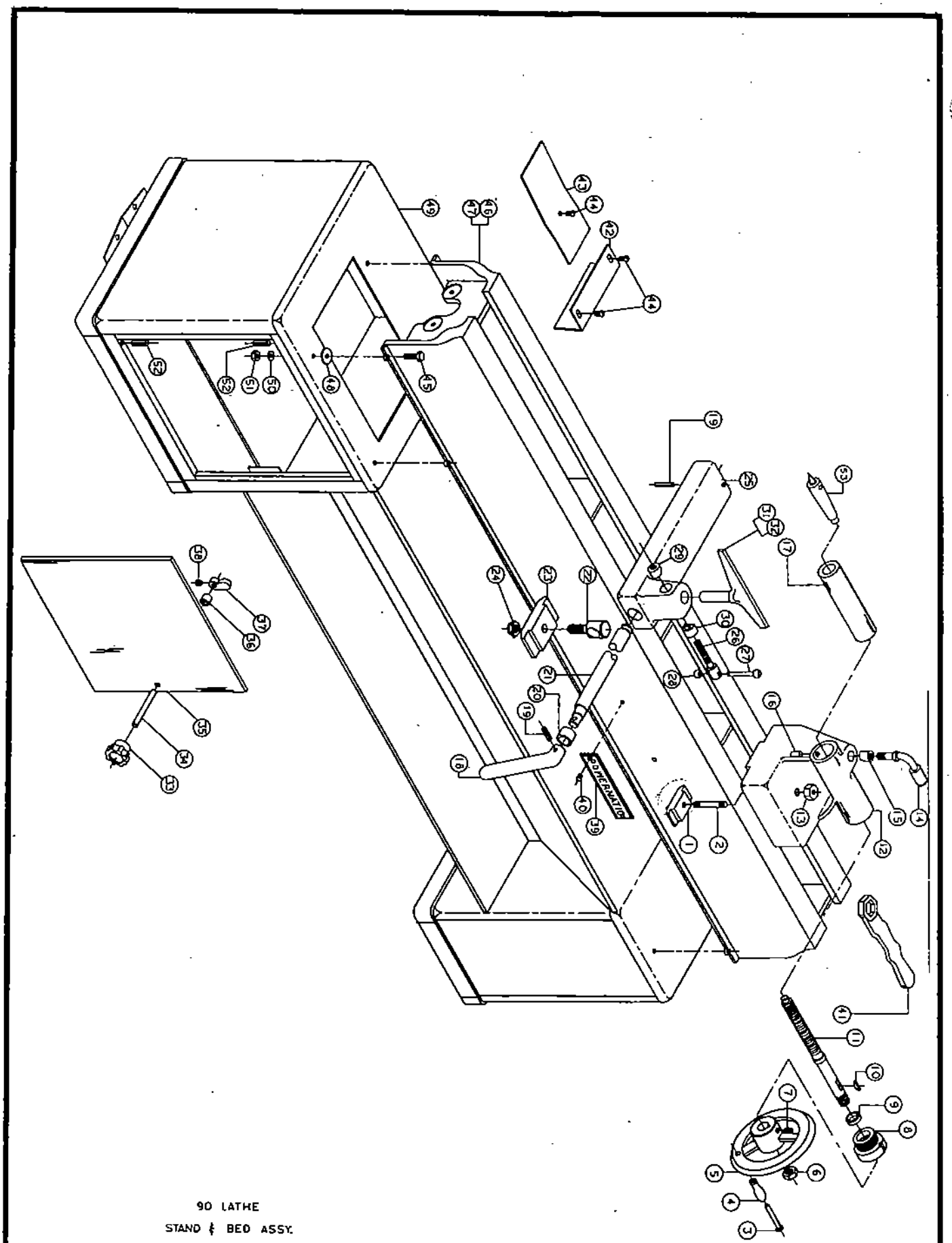


Figure 2



90 LATHE

STAND & BED ASSY.

III. OPERATING INSTRUCTIONS

MOTOR: The lathe is equipped with a 1 HP 1800 RPM motor, mounted in lathe bed. The motor is checked at the factory and should give years of trouble free service. To inspect and service motor, remove guard (8) fig. 1, from end of lathe head stock by removing bolt in guard.

BELT AND DRIVE: The lathe spindle is driven with two variable split sheaves and a flat V-belt. The motor sheave is spring operated (10) fig. 2, and the lathe sheave spring operated (1) fig. 2, by a cam inside the lathe head and controlled with the variable speed plate (4) fig. 1. To remove drive belt, turn the power OFF the power line to the lathe, remove guard, turn the variable speed handle to the 4000 RPM position and remove belt. To replace belt, set variable speed dial to 4000 RPM position and replace belt. Turn variable speed handle back to the "stop" position, apply a steady pressure on the variable speed handle and rotate the spindle by hand until the belt has been forced to the outside of the spindle sheave. DO NOT FORCE HANDLE WITHOUT ROTATING SPINDLE.

MOTOR SWITCH: The motor switch is mounted inside the head stock and is operated with the variable speed handle (11) fig. 2. The switch may be replaced or serviced in the following manner: remove the speed dial plate by removing bolt (6) fig. 2, loosen the four motor mounting screws in back of head stock and lower or remove motor; use an 11/32 wrench to hold the motor switch mounting screw nuts (7) fig. 2 on the inside of the head and use a screw driver to remove the two switch mounting screws. Pull the switch downward.

SPEED DIAL: To remove the speed dial, remove the variable speed dial bolt (6) fig. 2. To replace, set the dial on the 1000 RPM position, place on head about two inches above center and slide downward to correct position, replace bolt.

SPINDLE: To remove the spindle, first remove the face plate (9) fig. 1 by locking the spindle with the locking pin (5) fig. 1 and removing the face plate (left hand threads). Remove the guard, drive belt and speed dial. Loosen the two set screws on the locking collar (3) fig. 2 and unscrew the collar (left hand threads). Loosen the set screw in the outer variable speed sheave (Part #107) and slip the sheave off the spindle. Use a screw driver to apply pressure against the inner sheave (Part #106) and slide out, together with bearings (#105) and sheave key. Take out the two set screws (#110), remove retaining cap (#109) and gently bump spindle out (toward tail stock) with a block of wood. Replace in reverse order.

SLEEVES, VARIABLE SPEED AND BEARING: To remove the two sleeves after the spindle has been removed, remove plunger (5) fig. 1 by removing the plunger cap. Care should be taken that the lock pin (#114) does not drop down into the head stock. Loosen set screw (#125) by inserting a 5/32 allen wrench through slot in sleeve, turn about one round and remove the variable speed shifting pin (#122). Remove the sleeve retaining cap (6) fig. 1 and remove the variable speed sleeve (#102) and bearing sleeve (#101). Oil with a thin coat of oil before installing.

STOP: The variable speed control cam is drilled for "stop" screws to regulate maximum speed of lathe. Insert screw in desired maximum RPM and speed dial cam cannot be operated beyond pre-set RPM.

TOOL REST: The tool rest (15) fig. 1 can be adjusted to any desired angle, height or position on the lathe bed.

LUBRICATION: The bearings are sealed for life bearings and require no lubrication. The area between bearing (#105) and seal (#104) is packed with grease at the factory to lubricate sliding sheave (#106) and should be re-packed only when the head has been dismantled for repair. The oil fitting on the head stock should be oiled with 5 or 6 drops of No. 10 weight oil for each day's operation.

STAND AND BED ASSEMBLY

M	PART NO.	DESCRIPTION	QTY.
	2800002	TAILSTOCK ASSY (ITEMS 1 THRU 17)	
	2092003	TAILSTOCK CLAMP ASSY (ITEMS 1 & 2)	
1	3092004	TAILSTOCK CLAMP	1
2	3695030	LOCK SCREW	1
	2271012	HANDWHEEL ASSY (ITEMS 3 THRU 5)	
3	6624006	GROOVE PIN, 1/4 x 3	1
4	3268201	NYLON HANDLE	1
5	3271049	6" HANDWHEEL	1
6	6568010	THIN HT LT HEX NUT, 1/2–20	1
7	6715013	CUP PT SOC SET SCR, 5/16–18 x 3/8	1
8	3529011	TIALSTOCK HOUSING NUT	1
9	6064000	BEARING, 1/4, NICE NO. 603	1
10	6420000	KEY, WOODRUFF NO. 404	1
11	3692003	QUILL FEED SCREW	1
12	3799002	TAILSTOCK	1
13	3526204	SPEC. TAILSTOCK CLAMP NUT	1
14	3268001	QUILL LOCK HANDLE	1
15	3728005	QUILL LOCK SLEEVE	1
16	6636028	SPRING PIN, 3/16 x 1/2	1
17	3640002	TAILSTOCK QUILL	1
	2063011	TOOL REST BRACKET ASSY (ITEMS 18 THRU 25)	
18	3268003	TOOL REST HANDLE	1
19	6626032	SPRING PIN, 3/16 x 1-1/4	2
20	6095038	BRONZE BUSHING, 7/8 x 1 x 7/8	1
21	3708006	TOOL REST CLAMPING LOCK SHAFT	1
22	3058001	TOOL SUPPORT BOLT	1
	3092005	TOOL REST CLAMP	1
	6520009	THIN HT FLEXLOC HEX LOCK NUT, 5/8–11	1
25	3658001	TOOL REST (CASTING)	1
	2440003	TOOL REST LOCK ASSY (ITEMS 26 THRU 30)	
	2695016	LOCK SCREW ASSY (ITEMS 26 THRU 28)	
26	3058005	TOOL SUPPORT CLAMP BOLT	1
27	3268002	HANDLE	1
28	3406016	HANDLE KNOB	1
29	3448009	THREADED LOCK	1
30	3448009	PLAIN LOCK	1
31	3658010	TOOL REST, 6"	1
32	3658009	TOOL REST, 12"	1
33	3406018	KNOB	1
34	3708002	LOWER DOOR LOCK SHAFT	1
35	2136014	90 LATHE DOOR ASSY (WELDMENT)	1
36	3738201	DOOR SHAFT SPACER	1
37	3448002	DOOR LOCK	1
38	6714004	CUP PT SOC SET SCR, 1/4–20 x 1/4	1
39	3312251	I. D. PLATE	1
40	6747000	DR RD HD SCR, NO. 4 x 3/16	2
41	3868001	TAILSTOCK WRENCH	1
42	3595007	GAP BED DUST PLATE	1
43	3595206	STRAIGHT BED DUST PLATE	1
44	6714063	RD HD SCR, 1/4–20 x 1/2	A/R
45	6716037	HEX HD CAP SCR, 3/8–16 x 2	6
46	3047011	LATHE BED W/O GAP	1
47	3047012	LATHE BED W/ GAP	1
48	3837223	NEOPHRENE WASHER	6
	2759015	STAND ASSY (WELDMENT)	1
	6861300	LOCK WASHER, 3/8	6
51	6516001	HEX NUT, 3/8–16	6
52	6626038	SPRING PIN, 1/4 x 1	2
53	6112002	NO. 2 MT SHANK CUP CENTER W/ CENTER	1
54	6112004	TIALSTOCK CENTER BALL BRG (OPT)	1
55	2787005	OFFSET TOOL SUPPORT (COMP)	1

ITEM NO.	PART NO.	DESCRIPTION	QTY.
54	6112004	TAILSTOCK CENTER;BALL BEARING (OPT) NOT SHOWN	1
55	2787005	OFFSET TOOL SUPPORT (COMP) (OPT) NOT SHOWN	1

I. MACHINE DESCRIPTION AND SPECIFICATIONS

BED: Made from the finest grey iron castings, reinforced with ribs to give maximum rigidity. Standard bed 60" long, can be furnished in longer lengths.

HEAD STOCK: The head stock has built-in variable speed which offers a complete range from 500 to 4000 RPM. The spindle runs in extra large precision sealed for life ball bearings.

TAIL STOCK: The tail stock has a 1⅜" spindle and is bored for a No. 2 Morse Taper. The center is easily removed by backing off the tail stock screw with the large handwheel.

SPINDLE: The spindle is machined from special carbon steel, precision ground for accuracy. Spindle nose is threaded 1½" (right hand threads) and is bored for a No. 2 Morse Taper. The outboard end of the spindle is threaded 1⅛" (left hand thread) for outboard face plate. The spindle has a locking pin to lock the spindle for removing face plates. Spindle cannot be locked with locking pin unless the switch is in "off" position, thus eliminating any possibility of locking spindle while the lathe is in operation.

MOTOR DRIVE: The motor is mounted in the bed of the lathe and is easily accessible by removing drive guard on end of machine. The motor drives the spindle with two variable sheaves and a wide V belt. The complete drive unit may be inspected by removing the drive guard. The outboard drive makes it possible to remove the belt without dismantling any part of the lathe.

LATHE BASE: The lathe bed is mounted on an enclosed base which features a door for tool storage.

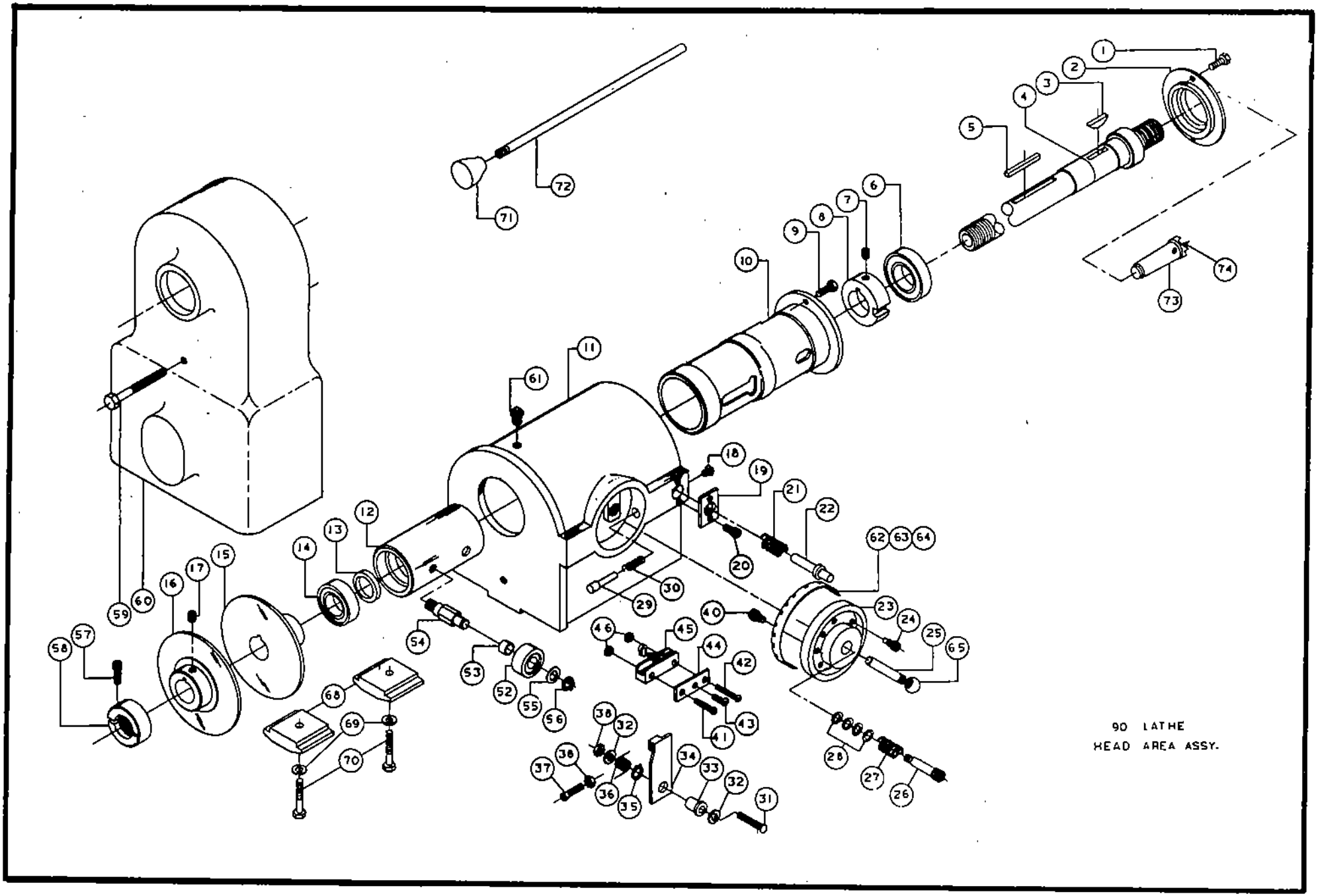
MOTOR SWITCH: Motor switch is operated by the variable speed control, and can only be started at slow speed.

SPECIFICATIONS:

Swing over straight bed	12"
Swing over Gap	17"
Width of Gap	5¼"
Distance between centers	38"
Height of bed from floor	36"
Length of standard bed	60"
Overall length	67"
Width	16"
Motor	1 HP 3 or single phase
Switch	Manual with overload protection only
Variable speed	500 to 4000 RPM
Shipping weight, domestic crated	700 lbs.
Shipping weight, export crated	850 lbs.
Cu. Ft. Crated for export	60.4

II. GENERAL SET-UP AND ALIGNMENT

1. RECEIVING
   Uncrate and check for shipping damage. Clean all coated and greased surfaces. Read instructions thoroughly. Locate all lubrication points, adjustments and methods of drive.
2. MOUNTING
   Mount machine securely to solid foundation; concrete base mounting preferred. Locate in clean, dry and well ventilated building if possible. Motor and electrical connections should be protected when not in operation or if exposed to weather elements.
3. INSPECTION
   The above machine requires a minimum amount of attention in service. Periodic or regular inspections are recommended to insure machine is in proper adjustment and has positive electrical connections; also, to check for worn or loose belts and loose or heating bearings.
4. BEFORE OPERATING
   Check motor nameplate data or wiring of motor and switch for proper voltage connection before wiring into line. Run motor without load to check the connections and direction of rotation (motor must operate so stock will be coming from back to front). Always refer to motor nameplate for rotation connections.


90 LATHE
HEAD AREA ASSY.

OPERATING AND SAFETY SUGGESTIONS

1. Remove or fasten loose articles of clothing, such as necktie, sleeves, coat, etc.
2. Remove finger rings and watch.
3. Locate dead centers and lubricate tail stock end with wax or grease, place material in lathe, tighten tail stock with hand wheel, but do not bind, lock securely in place.
4. Securely fasten spur center to material being turned.
5. Test the set-up by revolving work by hand.
6. The tool rest should be adjusted so the point of the cutting tool is about ⅛" above center. Tools held below center will not give top quality turning and are hazardous not only to the operator but to others in the area.
7. Use face shield or goggles to protect eyes.
8. Use correct cutting tool.
9. Use slower speeds for roughing and long work, increasing speed correspondingly to finishing operations.
10. For sanding, move tool rest back from work, apply light pressure and use same speed as for turning.
11. When face plate turning, be sure the stock is securely fastened to plate, the stock is centered and the tool rest adjusted so cutting tool will be on center line.
12. Before inserting end centers, check to be sure they are free from dirt or rust. Oil lightly before inserting.
13. When turning large objects such as glued pieces for bowls, **always** operate lathe at low speeds until finishing operations. This will prevent "exploding."
14. Make use of "speed limiter" to control top speed of lathe for each specific turning operation.
15. Never "horse around" or play around lathe when in operation. Nine out of ten accidents are caused by carelessness or playing with a machine as though it were a toy.
16. Always disconnect power source when making adjustments in order to avoid accidental starting.
17. Use only Powermatic or factory authorized replacement parts and accessories, otherwise all warranty and guarantee is null and void.
18. Never use dull turning tools—sharp instruments prevent "grabbing" or the jerking of tools from operator's hand.
19. Base of lathe should be grounded to water pipe or central grounding system.

HEAD AREA ASSEMBLY

ITEM NO.	PART NO.	DESCRIPTION	QTY.
	2277098	90 LATHE HEAD ASSY (ITEMS 1 THRU 58)	
1	6715035	HEX HD CAP SCR, 5/16–18 x 3/4	2
2	3078009	BEARING SLEEVE CAP, L–10	1
3	6420003	KEY, WOODRUFF NO. 810	1
4	3749006	HEAD SPINDLE	1
5	3388008	KEY, 3/16 x 3/16 x 1-1/2	1
6	6060037	BALL BEARING, FAFNIR NO. 207KLL	1
7	6715015	CUP PT SOC SET SCR, 5/16–18 x 1/4	2
8	3096041	LOCK SLEEVE COLLAR	1
9	6715032	HEX HD CAP SCR, 5/16–18 x 1	2
10	3728011	SPINDLE BEARING SLEEVE, L–3	1
11	3298061	HEADSTOCK HOUSING, L–1	1
12	3728045	V/S SLIDING SLEEVE	1
13	6804019	SEAL, NATIONAL NO. 50189	1
14	6060075	BALL BEARING, MRC NO. 208FFS	1
15	3719013	V/S SLIDING SHEAVE, L–6	1
16	3719014	V/S RIGID SHEAVE, L–9	1
17	6716003	CUP PT SOC SET SCR, 3/8–16 x 3/8	1
18	6636014	RUBBER BUMPER DUST PLUG	1
19	3448010	SPINDLE PLUNGER PLATE LOCK	1
20	6706004	NYLOK SOC HD CAP SCR, 6–32 x 1/4	2
21	6813038	COMP SPRING, LP–75	1
22	3601006	SPINDLE LOCK PLUNGER	1
23	3076043	V/S CAM, L–37	1
24	3690012	SPEED ADJ SCREW	1
25	3670029	V/S ROD HANDLE	1
26	3058006	SOC HD SHOULDER BOLT	1
27	6813041	V/S TENSION SPRING; L–10	1
28	6861702	NYLATRON WASHER, E–6	4
29	3585210	PLUNGER LOCK PIN	1
	6813040	LOCK PIN PLUNGER SPRING, JS–4	1
	6714106	TRUSS HD MACH SCR, 1/4–20 x 3/4	1
32	6861101	FLAT WASHER, 1/4	2
33	3070005	CAM SWITCH SPACER BUSHING	1
34	3076009	SWITCH MOUNTING CAM	1
35	6670087	RETAINING RING, TRUARC NO. 5105--50	1
36	3755202	SPRING	1
37	6714060	FLAT SOC HD MACH SCR, 1/4–20 x 1	1
38	6514001	HEX JAM NUT, 1/4–20	2
39	6626010	SRPING PIN, 3/32 x 5/16 (NOT SHOWN)	1
40	6715023 2793007	SOC HD CAP SCR, 5/16–18 x 1/2 SWITCH ASSY (ITEMS 41 THRU 51)	1
41	6706046	RD HD MACH SCR, 6–32 x 1-1/4	1
42	6706044	RD HD MACH SCR, 6–32 x 1-1/2	1
43	6710034	RD HD MACH SCR, 10–24 x 1/2	1
44	3055012	BLOCK SWITCH MTG	1
45	6816005	MICRO SWITCH, BZ2GW822	1
46	6506001	HEX NUT, 6–32	2
47	3856055	RED WIRE, 14 TW, (NOT SHOWN)	1
48	3856056	BLACK WIRE, 14 TW, (NOT SHOWN)	1
49	3856057	WHITE WIRE, 14 TW, (NOT SHOWN)	1
50	3077001	FLEXIBLE CABLE, 3/8 x 26" (NOT SHOWN)	1
51	3064003	CONDUIT MTG BRK, (NOT SHOWN)	1
	2673018	V/S ROLLER & PIN ASSY(ITEMS 52 THRU 56)	
	2673016	V/S ROLLER ASSY(ITEMS 52 & 53)	
52	3673033	V/S ROLLER	1
53	6095119	BRONZE BUSHING, .504 x .629 x 1/2	1
54	3582084	V/S ROLLER PIN	1
	6861512	FLAT ADJ WASHER, 1/2 x 3/4 x 1/32	1
	6670123	RETAINING RING, NO. 5160–50	1
	2526008	SHEAVE LOCK NUT ASSY (ITEMS 57 & 58)	

ITEM NO.	PART NO.	DESCRIPTION	QTY.
57	6715185	SOC HD CAP SCR, 5/16–18 x 3/4	1
58	3528002	SHEAVE LOCK NUT	1
59	6718022	HEX HD SCR, 1/2–13 x 4	1
60	3250062	BELT GUARD	1
61	6607004	OILER, GITS NO. 551	1
62	3684251	SPEED SCALE, (STANDARD)	1
63	3684252	SPEED SCALE, (HIGH SPEED)	1
64	3684254	SPEED SCALE, (SLOW SPEED)	1
65	6430010	ROUND KNOB, 1-7/8 W/ 5/8–18 INSERT	1
66	3330283	PLATE INSTRUCTION, (NOT SHOWN)	1
67	3330297	PLATE CAUTION, (NOT SHOWN)	1
68	3092006	HEADSTOCK CLAMP	2
69	6861500	LOCK WASHER, 1/2	2
70	6718017	HEX HD CAP SCR, 1/2–13 x 1-3/4	2
	2670008	KNOCKOUT ROD ASSY (ITEMS 71 & 72)	
71	3406201	TEARDROP KNOB	1
72	3670021	KNOCKOUT ROD	1
	2084001	CENTER SPUR & PIN ASSY (ITEMS 73 & 74)	
73	3081202	CENTER SPUR, 1", NO. 924	1
74	3582202	CENTER PIN	1
75	2085004	3" THREADED SCR CHUCK ASSY (OPT) (WELDMENT), (NOT SHOWN)	1
76	6118013	JACOBS CHUCK, NO. 6A-33 (OPT) (NOT SHOWN)	1
77	6023003	NO. 2 MT x NO. 33 JACOBS TAPER ARBOR, NO. AO233 (OPT) (NOT SHOWN)	1
78	6829019	SPECIAL HIGH PERFORMANCE TOOL SET, (OPT), (NOT SHOWN)	1

POWERMATIC®

OPERATING INSTRUCTIONS

AND

PARTS LIST

Model 90 Lathe

•

FOR SERIAL NUMBERS FROM 1000 UP

•

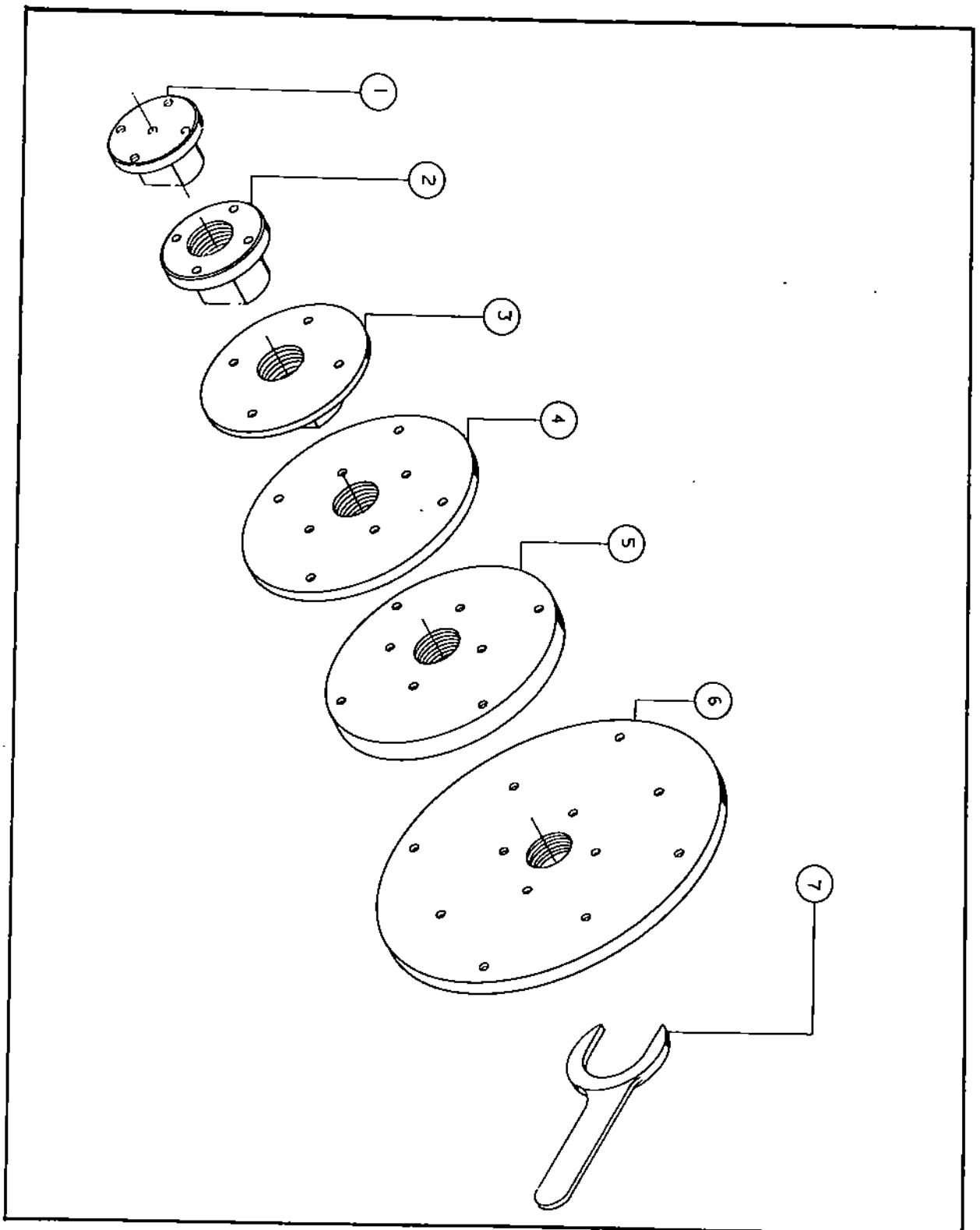
POWERMATIC
division of HOUDAILLE INDUSTRIES INC

McMINNVILLE, TENNESSEE 37110

NOVEMBER, 1967/1M

FACE PLATES

ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	3193005	3" FACE PLATE, 1-1/2–8 (STD)	1
2	3193004	4" FACE PLATE, 1-1/2–8 (OPT)	1
3	3193009	6" FACE PLATE, 1-1/2–8 (STD)	1
4	3193008	8" FACE PLATE, 1-1/2–8 (OPT)	1
5	3193010	8-1/2" FACE PLATE, 1-1/2–7 (STD)	1
6	3193012	12" FACE PLATE, 1-1/2–8 (OPT)	1
7	6960040	FACE PLATE WRENCH	1

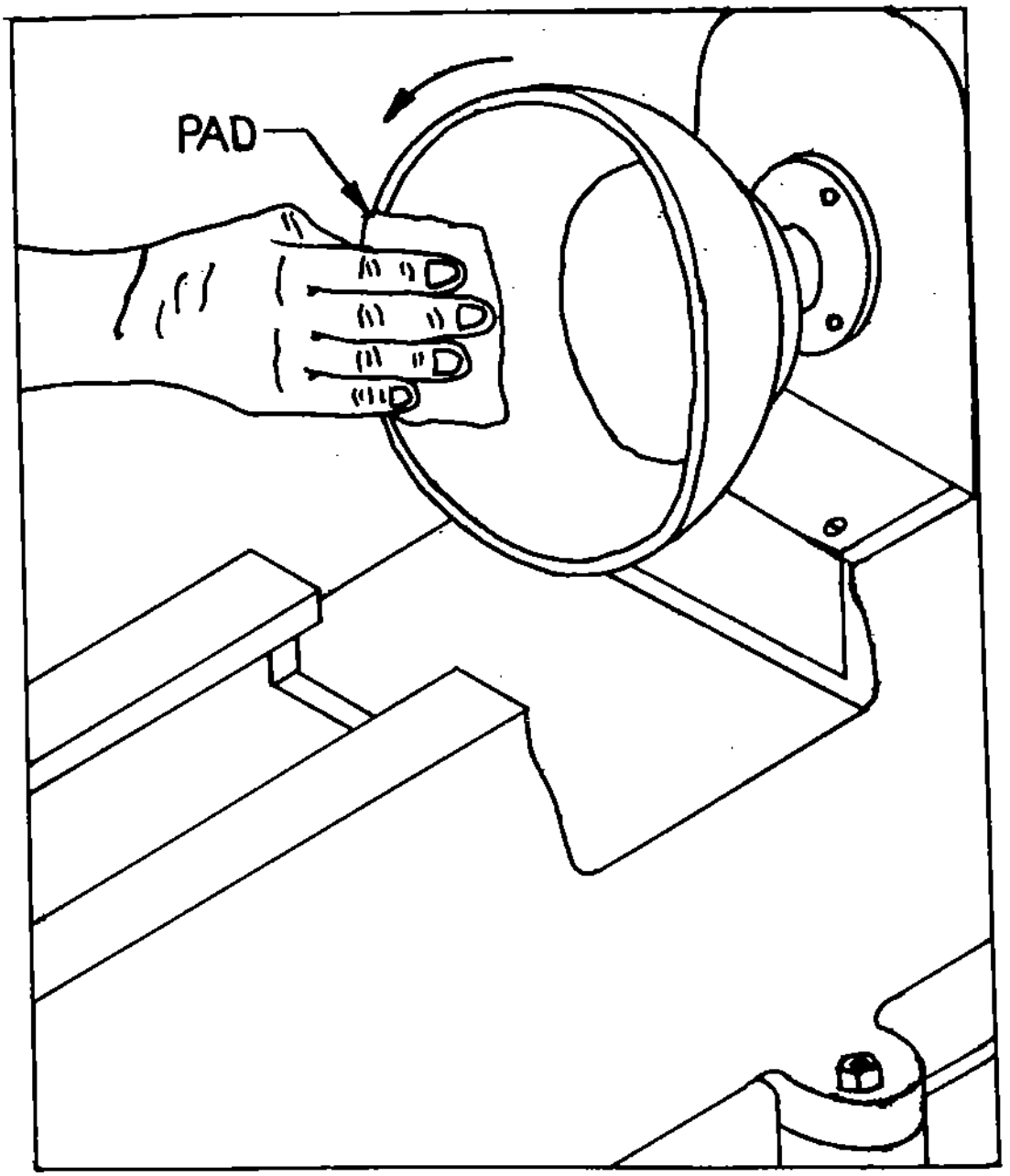


SANDING AND FINISHING:

1. After finish turning, remove the tool rest and adjust the speed to a low speed. High speeds will cause heat in sanding and can burn the sanding paper or work piece.

2. Sand to a smooth surface either by using the sand paper folded into a pad or using a strip held between the thumb and forefinger (Fig. 10). Do not hold the sand paper wrapped around the work piece since it could grab and be pulled from your grip.

3. Finishing operations such as rubbing and polishing can be performed on a lathe. Always use the slowest speed and use light pressure against a pad in applying coatings or when polishing.

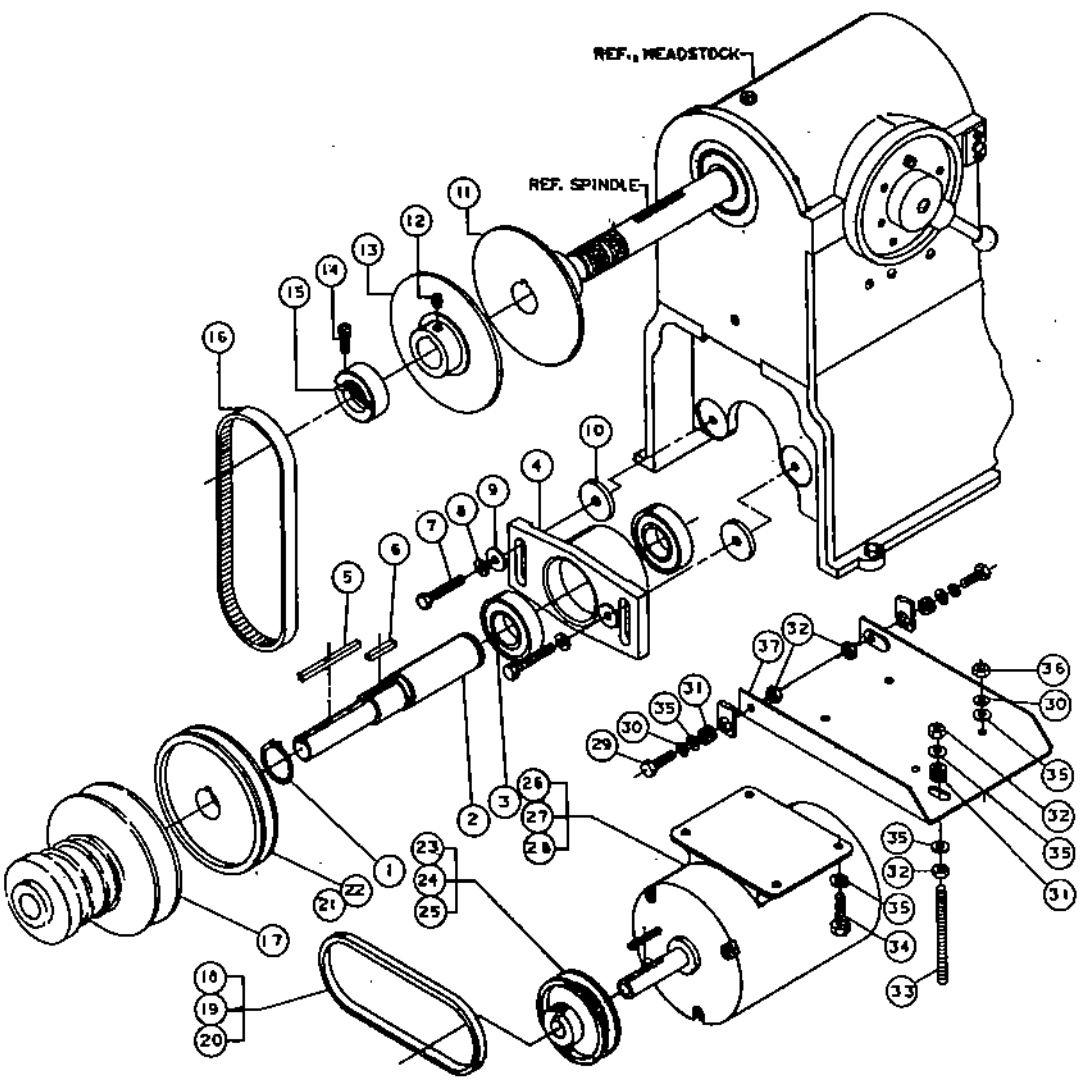


SANDING BOWL SURFACES
FIGURE 10

DRIVE AREA

ITEM NO.	PART NO.	DESCRIPTION	QTY.
	2705012	COUNTER SHAFT ASSY (ITEMS 1 THRU 4)	
-	6670005	RETAINING RING, TRUARC NO. 5100-100	1
2	3704034	COUNTER SHAFT	1
3	6060010	BALL BEARING, FAFNIR 205 PP	2
4	3298032	V/S SHAFT HOUSING	1
5	3388015	KEY, 3/16 x 3/16 x 2-1/4	1
6	3388004	KEY, 3/16 x 3/16 x 1	1
7	6716032	HEX HD CAP SCR, 3/8–16 x 1-1/2	2
8	6861300	LOCK WASHER, 3/8	2
9	6861301	FLAT WASHER, 3/8	2
10	3741022	COUNTER SHAFT SPACER	2
11	3719013	V/S SLIDING SHEAVE, L–6	1
12	6716003	CUP PT SOC SET SCR, 3/8–16 x 3/8	1
13	3719014	V/S RIGID SHEAVE, L–9	1
	2526008	SHEAVE LOCK NUT ASSY (ITEMS 14 & 15)	
14	6715185	SOC HD CAP SCR, 5/16–18 x 3/4	1
15	3528002	SHEAVE LOCK NUT	1
16	6077050	V/S BELT, GOODYEAR 1422V360	1
17	2719052	V/S DRIVING SHEAVE ASSY	1
18	6077010	SLOW SPEED BELT, 4L340	1
19	6077009	HIGH SPEED BELT, 4L330	1

ITEM NO.	PART NO.	DESCRIPTION	QTY.
20	6077135	STANDARD SPEED BELT, 4L310	1
21	6807040	SHEAVE W/ 7/8 BORE (STANDARD & HIGH SPEED)	1
22	6807049	SHEAVE W/ 7/8 BORE (SLOW SPEED)	1
23	6807101	SHEAVE W/ 5/8 BORE (STD SPEED)	1
24	6807035	SHEAVE W/ 5/8 BORE (HIGH SPEED)	1
25	6807027	SHEAVE W/ 5/8 BORE (SLOW SPEED)	1
26	6471022	1 HP, 1800 RPM, 115/230V MOTOR	1
27	6471036	1 HP, 1800 RPM, 200V MOTOR	1
28	6471037	1 HP, 1800 RPM, 230/460V MOTOR	1
29	6715032	HEX HD CAP SCR, 5/16–18 x 1	2
30	6861200	LOCK WASHER, 5/16	6
31	6336008	RUBBER GROMMET	3
32	6515007	HEX JAM NUT, 5/16–18	4
33	3773067	MOTOR ADJ STUD	1
34	6715035	HEX HD CAP SCR, 5/16–18 x 3/4	4
35	6861201	FLAT WASHER, 5/16	12
36	6515001	HEX NUT, 5/16–18	4
37	2042160	MOTOR ASSY BASE (WELDMENT)	1
		NOTE: ITEMS 11 THRU 15 ARE PART OF POWERMATIC ASSY NO 2277098 AND MAY BE PURCHASED AS SUCH OR SEPERATELY	



7. If the mounting screws interfere with the work piece to be made, use a backing block the same diameter as the face plate and glue it to the work piece with a piece of heavy paper in between (Fig. 8).

8. Remove the spur center from the headstock and move the tailstock to the right end of the machine out of the way.

9. Adjust the height of the tool rest so that it is on centerline and within 1/8" of the surface to be turned and use a straight or right angle tool rest blade as is appropriate.

10. Rotate the work piece manually 360° to make sure it clears the tool rest.

11. Set the speed limiter for the lowest speed.

12. Stand to one side and do not allow anyone to stand in line with the work piece and start the lathe at its lowest speed.

13. True the edges using a round-nose chisel or a spear point. Use a sharpened tool only and take very light cuts. Keep in mind that in certain areas that cutting will be done against the grain and therefore a certain amount of roughness will occur which will have to be sanded to achieve a smooth surface.

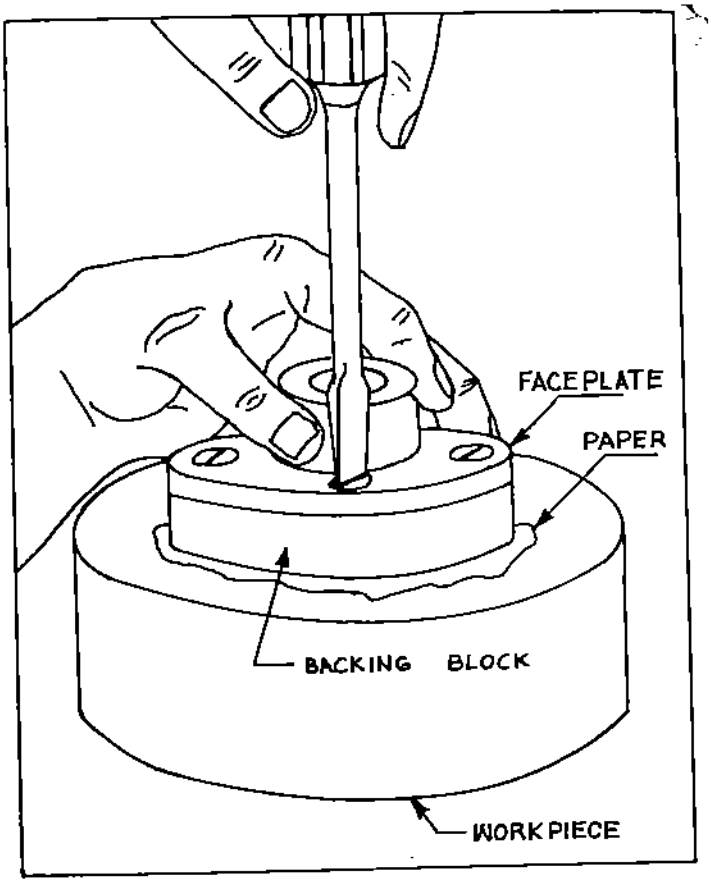
14. Face the end of the work piece off with a square nose chisel working from the outside towards the centerline (Fig. 9).

15. Reset the speed limiter to the maximum speed for the diameter, material (Fig. 1) and operations to be performed.

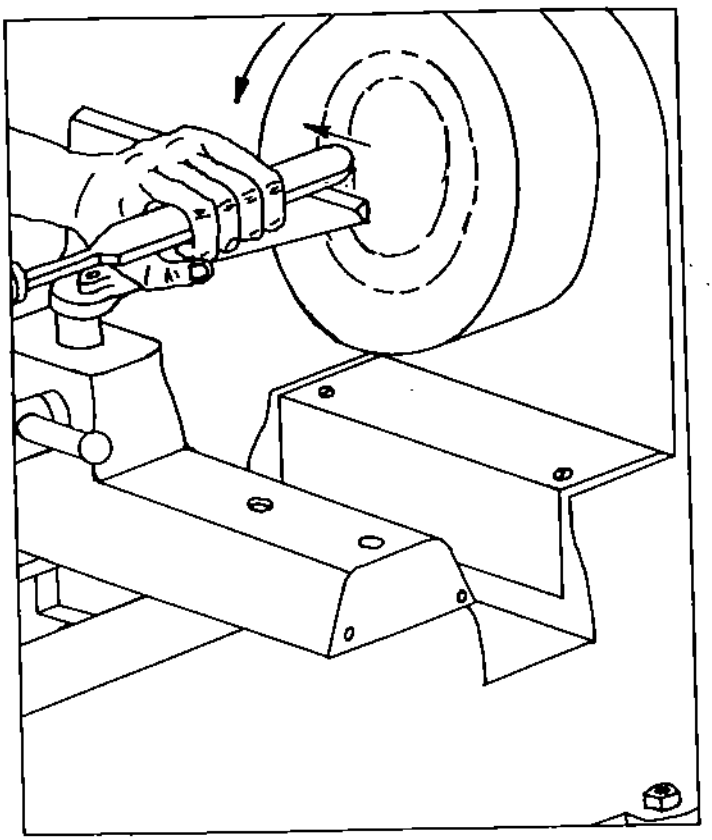
16. With the spindle stopped, mark the necessary lines to indicate the various cuts to be made.

17. When working on concave openings such as on a bowl, make cuts with a round-nose tool starting near the outside rim and working towards center. Convex cuts should be made in the opposite fashion working from an inside diameter outward to produce a smoother finish. Use only the scraping method of removing stock on concave surfaces and use only the scraping tools.

18. After finish sanding, the work piece can be removed from the face plate or separated from backing block.



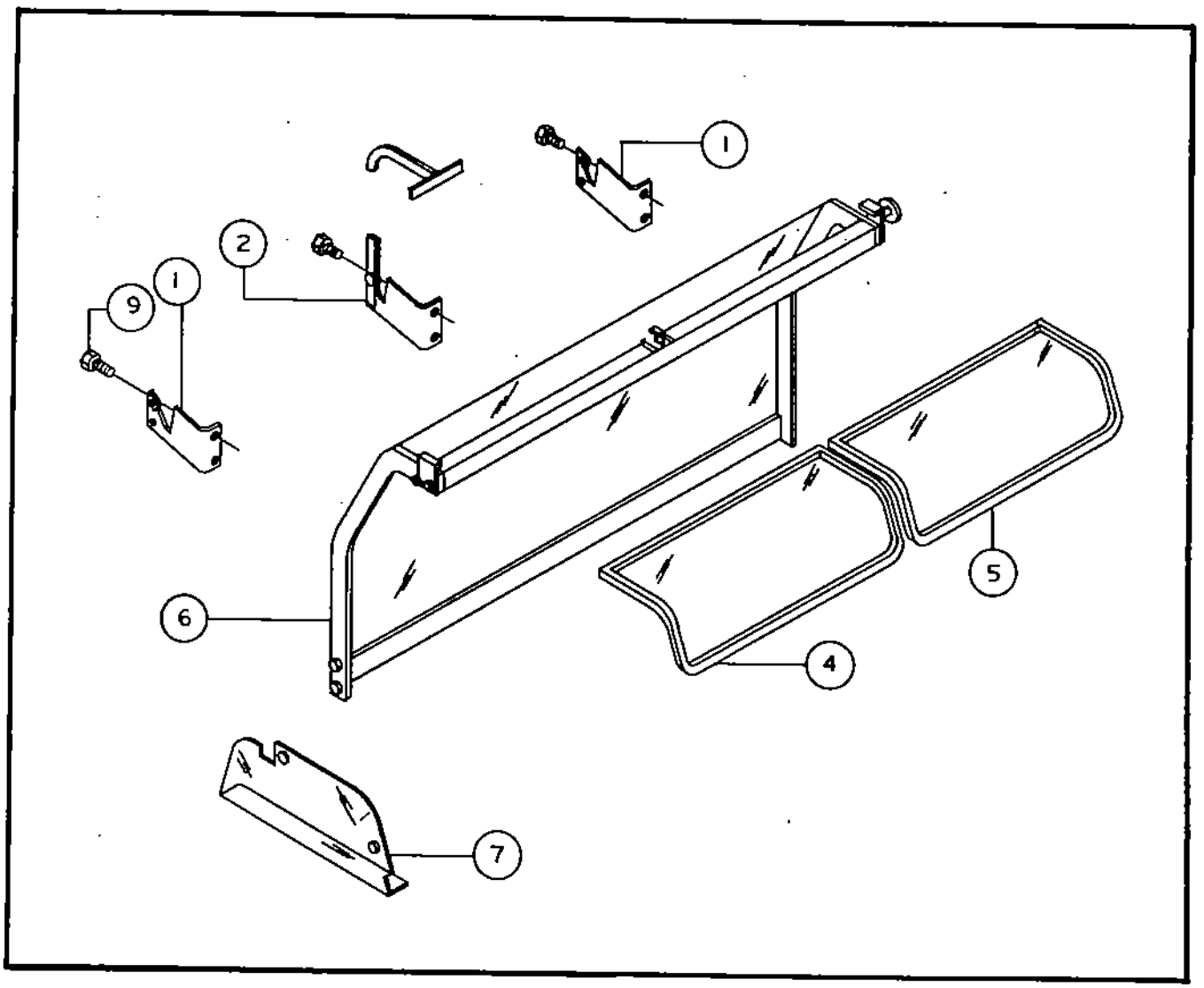
USE OF BACKING BLOCK
IN FACEPLATE TURNING
FIGURE 8



FACING BOWL BLANK
FIGURE 9

LATHE GUARD

ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	3063287	MTG BRK, (2–MOD 90 & 1–MOD 45)	
2	3063288	MTG BRK LATCH	1
3	3063289	MTG BRK END, (MOD 45 ONLY) (NOT SHOWN)	1
4	3578239	FRONT LEFT PANEL	1
5	3578240	FRONT RIGHT PANEL	1
6	3578241	REAR PANEL	1
7	3578242	END PANEL	1
8	3738201	SPACER (MOD 45 ONLY) (NOT SHOWN)	2
9	6715032	HEX HD SCR, 5/16–18 x 1	6
10	6847002	NOVUS POLISH, NO. 1 (NOT SHOWN)	



13. The second cut should start 2 –3" to the left of the first cut and feed left to right as in the first cut. (Fig. 6)

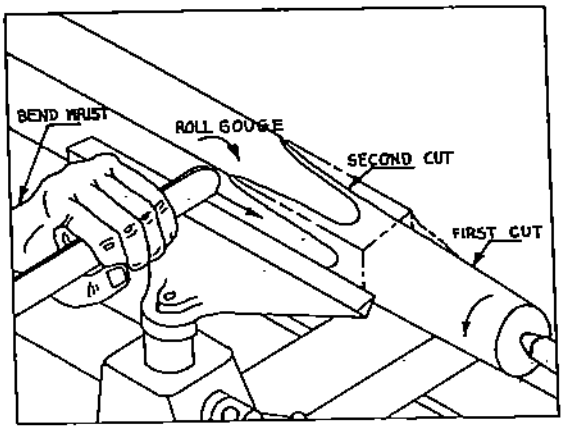
14. Proceed with additional cuts until the work piece is rounded except for 2 –3" at the headstock end.

15. Finish rounding by working towards the headstock end in a similar fashion, except the feed direction will be right to left.

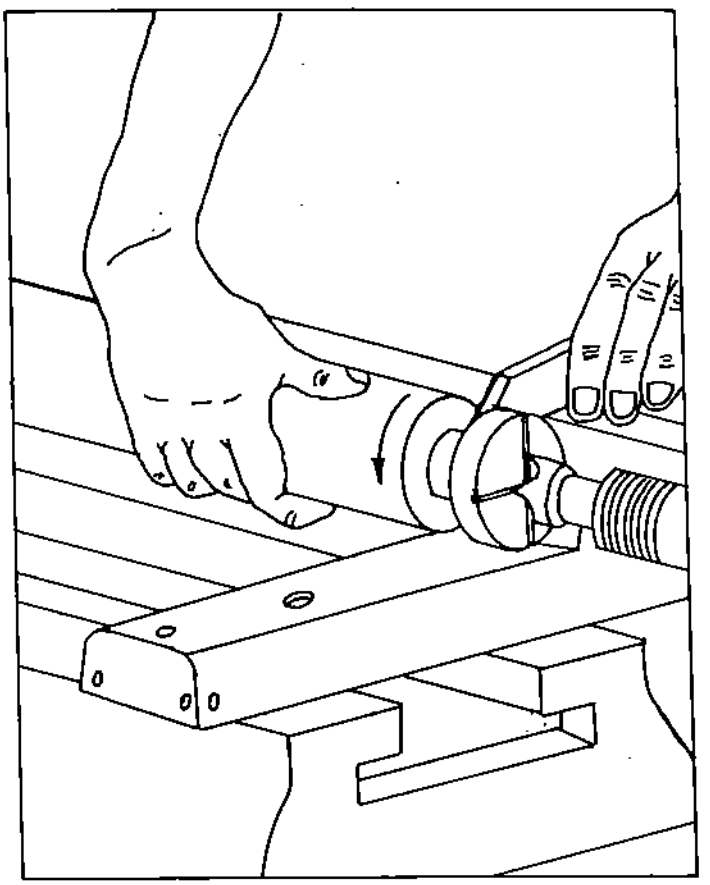
16. Always work towards the end of a work piece. Attempting to start at an end is dangerous because the tool can catch and be forced from the operator's hands.

17. Always stop the spindle before making a caliber measurement for size.

18. When cutting off stock, adjust the lathe to its slowest speed and hold the chisel in one hand and catch the work piece as the chisel separates it from the waste stub (Fig. 7).



PROGRESSION OF CUTS TO ROUND UP WORK PIECE
FIGURE 6



CUTTING OFF STOCK IN A LATHE
FIGURE 7

FACE PLATE TURNING:

1. Face plate work is done on either the inboard or outboard side of the headstock. Inboard turning is the most common.

2. Select stock that is at least 1/4" larger than each dimension on the finished work piece.

3. Always select the largest diameter face plate that can be used for the work piece to be turned.

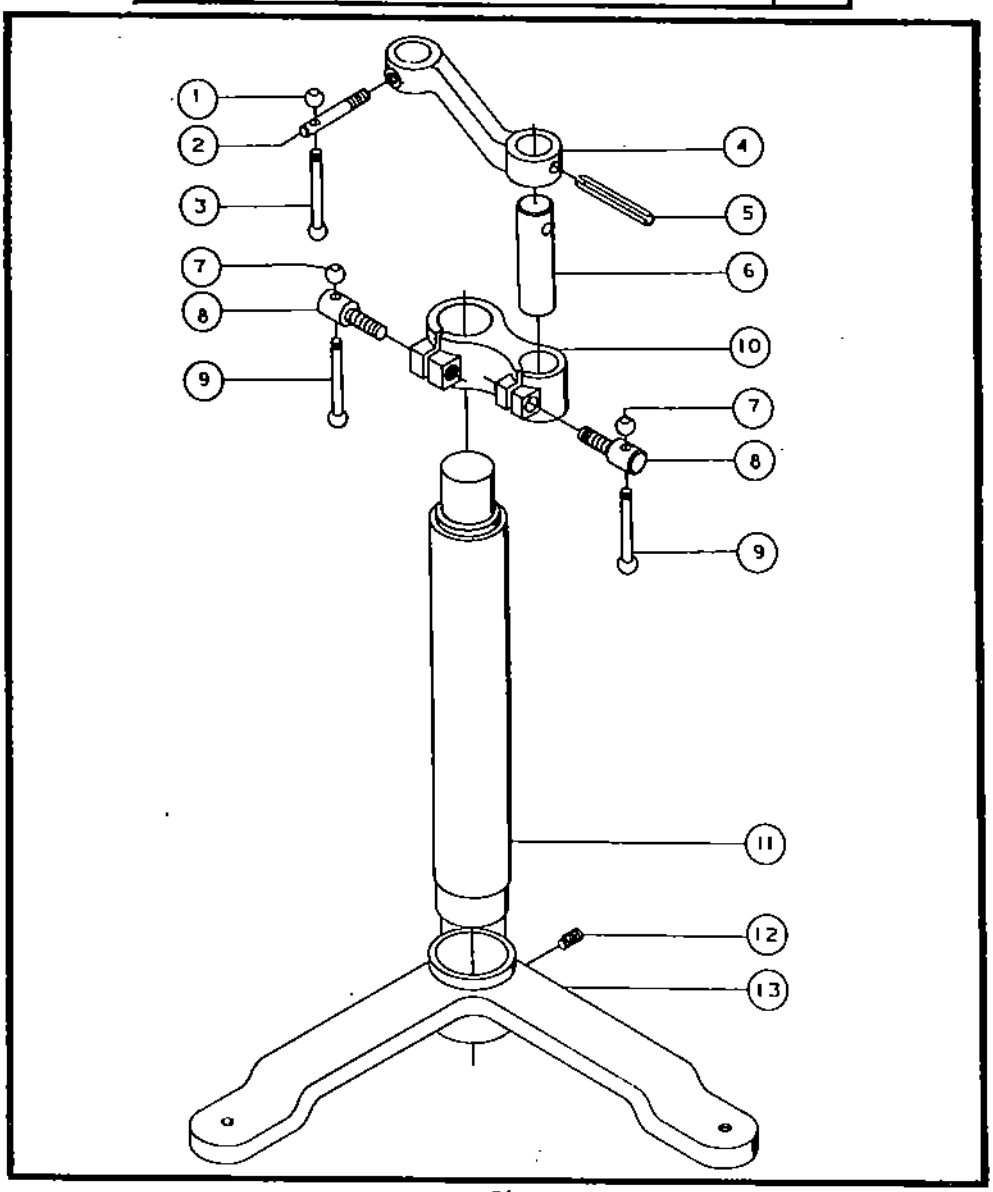
4. True one surface for mounting against the face plate surface.

5. Locate the center of the block to be turned, scribe a circle the diameter of the face plate to be used and one which is 1/8" or more larger in radius to the finished form. Band saw the block into a circular form following the scribed line.

6. Using the face plate as a template, mark the location of the mounting holes. Drill pilot holes of the appropriate size for the mounting screws to be used. Face plates are drilled and counter sunk for the use of No. 12 wood screws.

(OPTIONAL)
OUTBOARD TURNING STAND ASSEMBLY

ITEM NO.	PART NO.	DESCRIPTION	QTY.
	2025016	OFFSET TOOL REST ARM (ITEMS 1 THRU 6)	
	2695026	OFFSET TOOL REST ARM LOCK SCR ASSY (ITEMS 1 THRU 3)	
1	3406016	HANDLE KNOB	1
2	3695017	OFFSET TOOL REST ARM SCR, 5/8–18 x 2-5/8	1
3	3268002	LOCK SCR HANDLE	1
4	3658005	OFFSET ARM TOOL REST	1
5	6626044	SPRING PIN, 1/4 x 2-1/2	1
6	3584014	OFFSET TOOL REST SWIVEL PIN	1
	2759009	STD OUTBOARD TURNING TOOL SUPPLY ASSY (ITEMS 7 THRU 13)	
	2658003	TOOL REST OFFSET ASSY (ITEMS 7 THRU 10)	
	2695016	LOCK SCREW ASSY (ITEMS 7 THRU 9)	2
7	3406016	HANDLE KNOB	2
8	3058005	TOOL SUPPORT CLAMP BOLT	2
9	3268002	LOCK SCR HANDLE	2
10	3289018	OUTBOARD & SWIVEL TOOL REST HOLDER	1
11	2096035	COLUMN ASSY (WELDMENT)	1
12	6718034	1/2 DOG PT SOC SCR, 1/2–13 x 1/2	1
13	3042063	TOOL REST STAND BASE	1



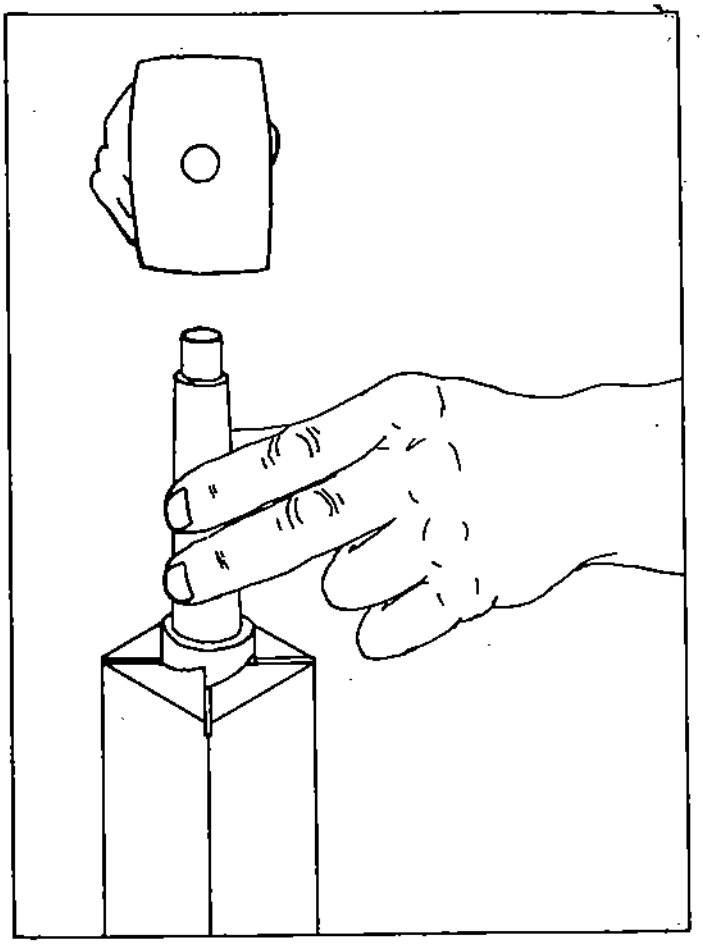
5. Seat the spur center in the work piece using a mallet (Fig. 3).

6. Install the spur center and work piece in the headstock spindle taper. Be sure the hole and center are clean and free of chips, rust, and other debris.

7. Bring the tailstock into position, lock it to the bed and advance the spindle with pressure so as to seat the center into the work piece. Retract the center and oil, grease, or wax it to minimize burning. Reseat the center and lock the tailstock spindle in position with the spindle binder.

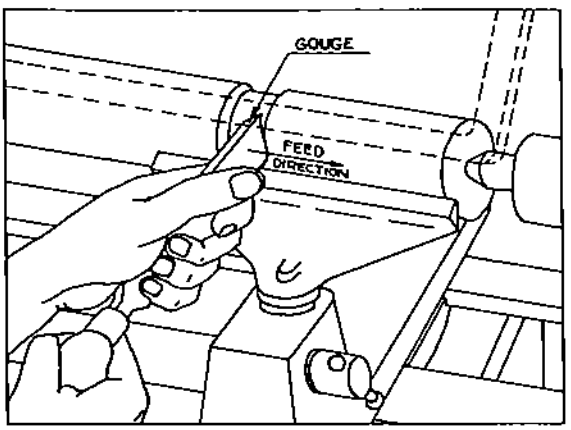
8. Move the tool rest into position. First cuts should be made on the work piece at the tailstock end. Adjust the tool rest so that it is 1/8" above center line and 1/8" from the largest radius on the work piece and lock in position. Rotate the work piece by hand 360° to make sure it clears the tool rest.

9. Set the speed limiter to limit the maximum speed that the initial roughing operation are to be performed at. (See Fig. No. 1) Recheck all clamps for tightness, be sure the cutting edges of tools to be used are sharp, and be sure the lathe guard is in place and properly adjusted.



CUTTING SPUR CENTER INTO STOCK
FIGURE 3

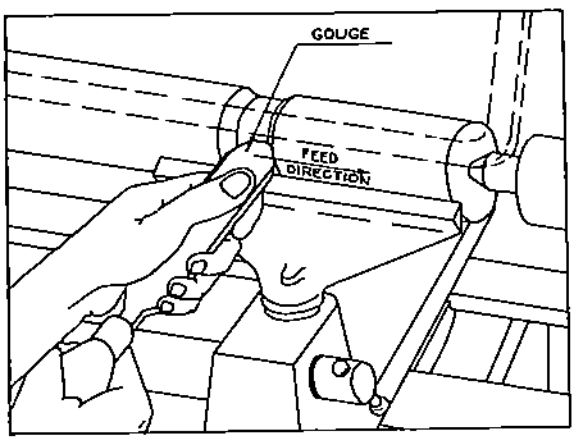
CUTTING METHOD OF TURNING
FIGURE 4



10. Stand to one side and start the machine. If there is excessive vibration, stop the lathe and correct the problem.

11. Two methods of turning are used either cutting (Fig. 4), or scraping (Fig. 5). It is recommended that beginners use the scraping method until they develop their skills. Scraping will produce a rougher surface but allows the tool to rest flat on the tool rest for added safety.

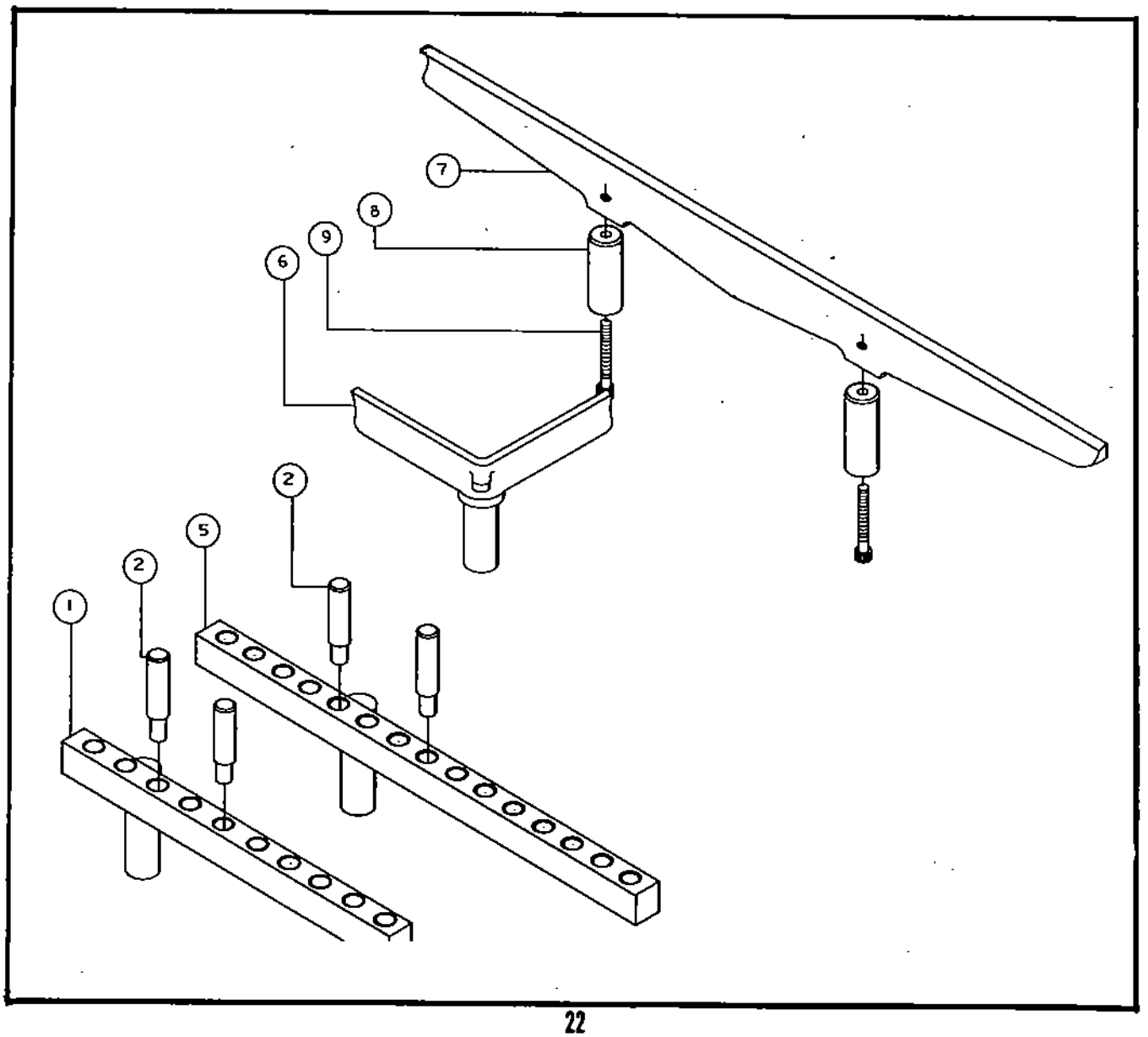
12. Start the first cut about 2 –3" from tailstock end, raise the handle of the tool slowly to bring the cutting edge into the work. Take a light cut, sliding the tool towards the tailstock end and past the end of the work piece.



SCRAPING METHOD OF TURNING
FIGURE 5

(OPTIONAL)
TOOL REST AND RELATED PARTS

ITEM NO.	PART NO.	DESCRIPTION	QTY.
	2397009	CONVERSION METAL SPINNING KIT (ITEMS 1 THRU 4)	
1	2658001	6" METAL SPINNING TOOL REST (WELDMENT)	1
2	3585011	TOOL REST PIN, 5/8 x .495 x 3-1/2	2
3	6112004	BALL BEARING TAILSTOCK CENTER (NOT SHOWN)	1
4	6829013	METAL SPINNING TOOL, SET OF 6, (NOT SHOWN)	1
5	2658002	12" METAL SPINNING TOOL REST, (WELDMENT)	1
6	3658007	90° TOOL REST	1
	2658007	24" TOOL REST ASSY (ITEMS 7 THRU 9)	
7	3658006	24" TOOL REST	1
8	3607001	TOOL REST POST	2
9	6716020	SOC HD CAP SCR, 3/8–16 x 3	2



WOOD TURNING LATHE SPEEDS

ROUGHING R. P. M.	GENERAL CUTTING R. P. M.	FINISHING R. P. M.
Under 2"	1520	3000
2 to 4"	760	2480
4 to 6"	510	1650
6 to 8"	380	1240
8 to 10"	300	1000
10 to 12"	255	830
12 to 14"	220	710
14 to 16"	190	620

FIGURE 1

PROPER OPERATING PROCEDURES

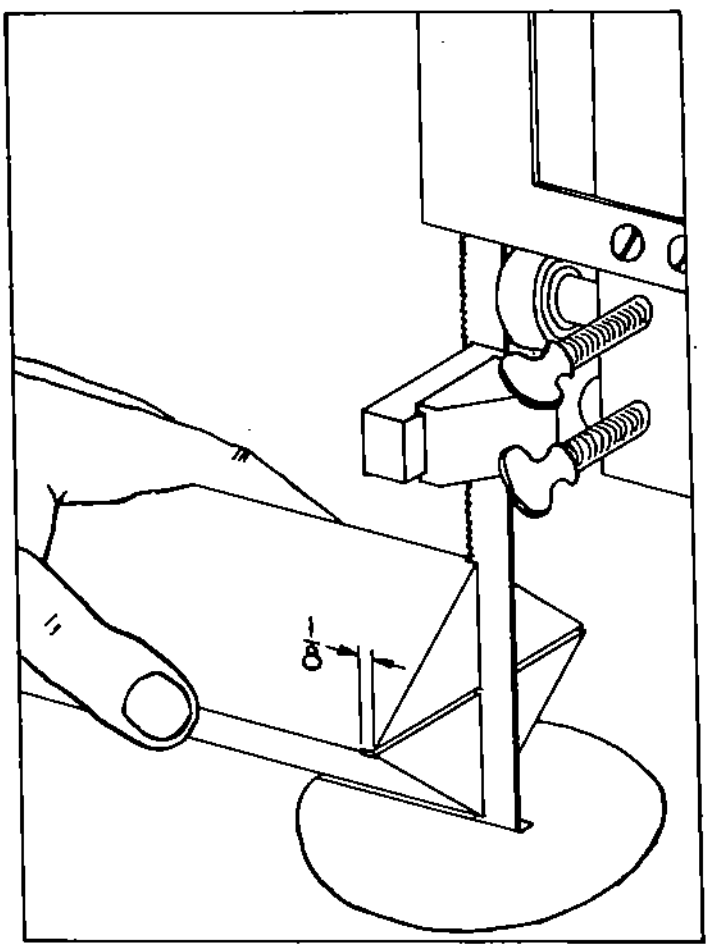
BETWEEN CENTER TURNING:

1. All spindle turning consists of one or more of the three basic profiles shapes: (a) Straight line, (b) Convex (beads), and (c) Concave (coves).

2. Select stock that is free of flaws such as knots and splits, and is 1/4" larger at its minimum point than the finished part.

3. Locate the centers by marking diagonals on each end using a combination square. Drill a 1/8" hole, 1/4" deep at the intersection of hardwoods or punch a hole with an awl or nail in softwoods. Make diagonal 90^{O} saw cuts 1/8" deep on the headstock end of the work piece. (Fig. 2).

4. If the stock is larger than 2" sq., trim the corners using a saw or hand plane to make it into an octagonal shape.

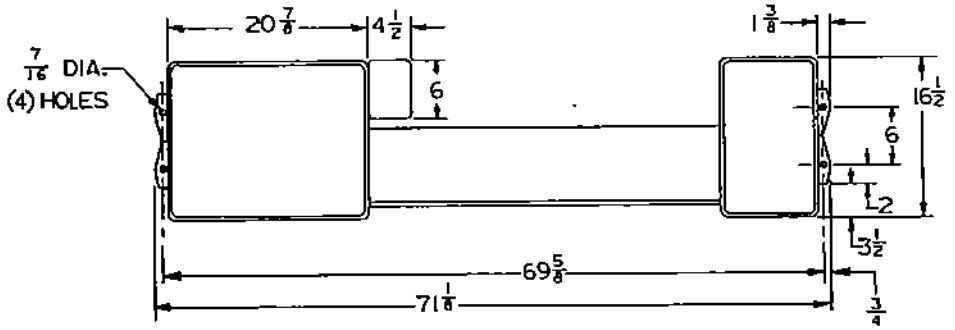


BAND SAWING DIAGONALS FOR SPUR CENTER
FIGURE 2

notes

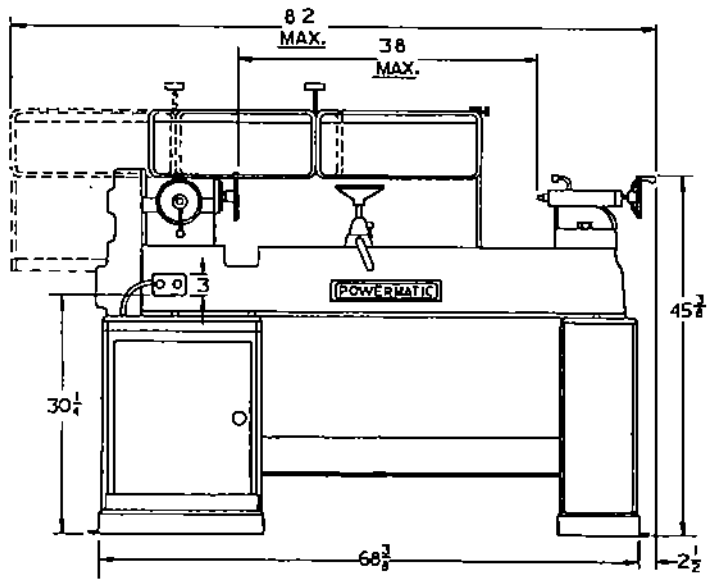
MODEL 90 LATHE SPECIFICATIONS

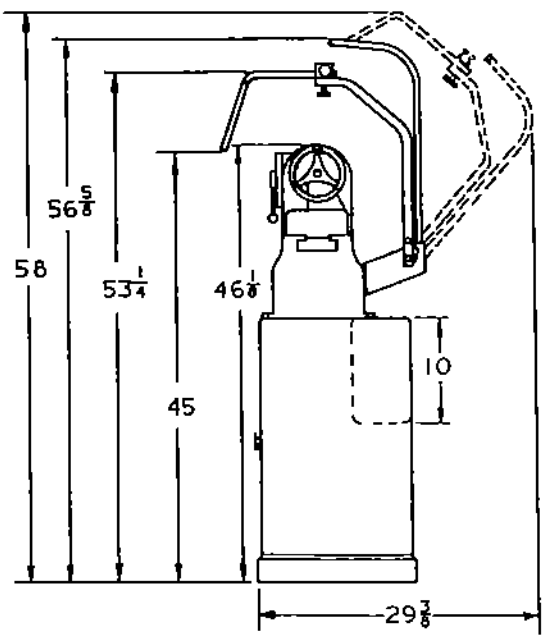
Swing Over Straight Bed	12"
Swing Over Gap	17"
Swing Over Tool Rest	8"
Width of Gap	5-1/4"
Width of Gap from Face Plate	4"
Distance Between Centers	38"
Height of Spindle Centering to Floor	42-1/2"
Length of Standard Bed	60"
Overall Length, Width and Height	67" L. x 16" W. x 46-1/2" H.
Motor	1 HP
Speed Range	Standard 320 – 2100
	Optional Low Range 215 – 1375
	Optional High Range 460 – 3000
Shipping Weight Crated	700 Lb.



DISTANCE BETWEEN CENTERS-38"
SWING OVER BED-12"
SWING OVER GAP-17"
WIDTH OF GAP -5 1/4"
TAILSTOCK QUILL TRAVEL-4 3/8"

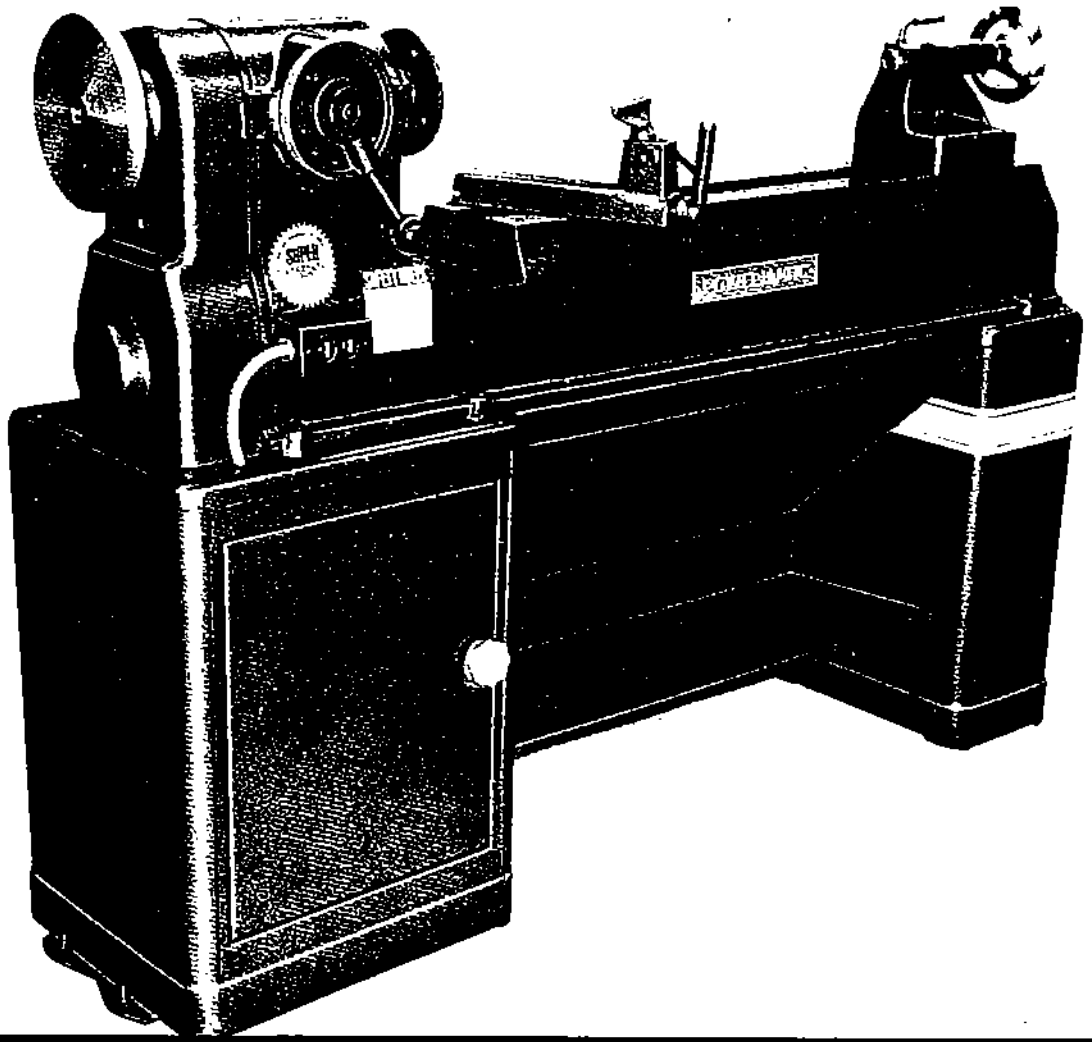
FLOOR PLAN





Model 90
12" Lathe

OPERATING INSTRUCTIONS



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Strength and performance right down the line.

POWERMATIC HOUDAILLE, INC.
McMinnville, Tennessee 37110
AC 615-473-5551

INSTRUCTIONS FOR LATHE OPERATIONS

1. Familiarize yourself with the location and operation of all controls and adjustments and with the use of all accessories and tools.

2. **SERIOUS INJURY OR DEATH CAN RESULT IF PARTS BEING TURNED ARE THROWN FROM THE LATHE.** Listed below are conditions which can cause this to happen.

   a. **EXCESS SPEED** for the condition or size of the part being turned.

   b. **IMPROPER GLUE JOINTS** on parts such as bowls and other laminated parts.

   c. **INFERIOR MATERIAL** with knots, checks and other flaws.

   d. **IMPROPER SEATING** of the centers.

   e. **IMPROPER MOUNTING** of parts on face plates.

   f. **SPLITS OR CHECKS** which develop in the work piece due to changes in temperature or moisture content.

   g. **EXCESSIVE VIBRATION** caused by out-of-round conditions.

   h. **DULL TOOLS.**

   i. **USE OF A GOUGE ON LARGE DIAMETER FACE PLATE TURNING.**

   j. **TRYING TO REMOVE AN EXCESSIVE AMOUNT** of stock in one pass.

   k. **HAVING THE TOOL REST TOO FAR FROM THE WORK.**

   l. **HAVING THE TOOL REST TOO LOW** causing tools to dig in.

   m. **WORK REST TOO CLOSE** so that the part strikes it on start up.

3. To minimize the possibility of an injury that could result from a part being thrown from a lathe:

   a. **WEAR A SAFETY FACE SHIELD OR GOGGLES.**

   b. **KEEP THE LATHE GUARD IN PLACE** for all operations.

   c. **MAKE SURE THE SPUR CENTER AND TAILSTOCK CENTER ARE PROPERLY SEATED AND THE TAILSTOCK SPINDLE AND BASE PROPERLY CLAMPED.**

   d. **MAKE SURE THAT THE WORKPIECE IS IN A CONDITION WHERE IT WILL NOT BE HAZARDOUS TO TURN IT ON A LATHE.**

   e. If face plate turning, **MAKE SURE THE PART MOUNTING SCREWS ARE TIGHT** before starting the spindle.

   f. **MAKE SURE THAT THE WORK REST IS AS CLOSE AS PRACTICAL** to the work and readjust periodically as stock is removed, stopping the lathe for each adjustment.

   g. **ADJUST THE TOOL REST TO THE PROPER HEIGHT, 1/8"** above center for long turning and outside work on large face plate type work and on center for inside work on face plate turning.

   h. **USE THE PROPER TOOL PROPERLY SHARPENED** for the work to be done.

   i. **ALWAYS USE A SLOW SPEED** for roughing and use the proper speed for the diameter, material condition, and operation to be performed. (See Fig. No. 1)

   j. Proper preparation of a piece will help to minimize vibration, but **IF EXCESSIVE VIBRATION OCCURS, STOP THE LATHE AND CORRECT THE PROBEM BEFORE PROCEEDING.**

FORWARD

SAFETY FIRST

This manual has been prepared for the owner and operators of a Powermatic wood-turning lathe.

In order to obtain maximum life and efficiency from your Powermatic lathe and to aid in operating the lathe with safety, read the manual thoroughly and follow all instructions carefully.

The specifications listed were in effect when the manual was published. However, because of Powermatic's reserves the right to change specifications at any time without notice and without incurring obligations.

WARRANTY

This machine and its component parts have been carefully inspected at various stages of production and each finished machine is subjected to a final inspection before shipment. We agree that for a period of eighteen (18) months from date of delivery from our authorized dealer to replace, at our option, any machine (or component part thereof) proving defective within the above period, F.O.B. our plant providing such machine (or component part) is returned prepaid to our plant, or a designated service center of the undersigned, for our examination. **THIS WARRANTY DOES NOT INCLUDE REPAIR OR REPLACEMENT REQUIRED BECAUSE OF MISUSE, ABUSE, OR BECAUSE OF NORMAL WEAR AND TEAR; OR ELECTRICAL MOTORS WHICH ARE WARRANTED BY THEIR MANUFACTURER AND WHICH SHOULD BE TAKEN TO THEIR LOCAL AUTHORIZED REPAIR STATION FOR SERVICE. FURTHER, WE CANNOT BE RESPONSIBLE FOR THE COST OF REPAIRS MADE OR ATTEMPTED OUTSIDE OF OUR FACTORY OR DESIGNATED SERVICE CENTER WITHOUT OUR AUTHORIZATION. NO CLAIMS FOR DEFECTS WILL BE HONORED IF SERIAL NUMBER PLATE HAS BEEN REMOVED. THIS WARRANTY IS MADE EXPRESSLY IN PLACE OF ALL OTHER WARRANTIES OR GUARANTEES, EXPRESS OR IMPLIED, WITH RESPECT TO FITNESS, MERCHANTABILITY, QUALITY OR OPERATIVENESS. THIS WARRANTY BECOMES EFFECTIVE ONLY WHEN THE ACCOMPANYING CARD IS FULLY AND PROPERLY FILLED OUT AND RETURNED TO THE FACTORY WITHIN TEN (10) DAYS FROM DATE OF DELIVERY.**

POWERMATIC HOUDAILLE, INC.
McMinnville, Tennessee 37110,

17. WHEN TURNING LARGE DIAMETER PIECES, SUCH AS BOWLS, ALWAYS OPERATE THE LATHE AT LOW SPEEDS.

18. NEVER USE DULL TURNING TOOLS - - sharp tools help to prevent the tool grabbing in the work and being jerked from operator's hands.

19. TAKE MEASUREMENTS ON THE PART ONLY WITH THE SPINDLE STOPPED.

20. DO NOT ATTEMPT TO ENGAGE THE SPINDLE LOCK PIN UNTIL THE SPINDLE IS STOPPED. If leaving the machine area, turn it off and wait until the spindle stops before departing.

21. GIVE THE WORK YOU'RE DOING YOUR UNDIVIDED ATTENTION. Looking around, carrying on a conversation and "horseplay" are careless acts that can result in serious injury.

22. MAKE NO ADJUSTMENTS EXCEPT SPEED CHANGE WITH THE SPINDLE ROTATING and always disconnect machine from power source when performing maintenance to avoid accidental starting or electrical shock.

23. BOLT THE LATHE TO THE FLOOR through the lag holes provided to avoid any tendency of the lathe to tip or shift during turning operations.

24. PROVIDE FOR ADEQUATE SURROUNDING WORK SPACE and overhead nonglare lighting. Powermatic recommends the use of a non-skid floor strip on the floor area where the operator normally stands and marking off a work area for each machine.

25. DON'T STAND IN LINE WITH ANY LARGE DIAMETER PART being turned OR ALLOW ANYONE ELSE TO DO SO.

26. When stopping the lathe, NEVER GRAB THE PART OR FACE PLATE TO SLOW IT DOWN. Let the work coast to a stop.

27. Use only Powermatic or factory authorized replacement parts and accessories; otherwise, the warranty and guarantee are null and void.

28. DO NOT USE THIS POWERMATIC WOOD LATHE FOR OTHER THAN ITS INTENDED USE. IF USED FOR OTHER PURPOSES, POWERMATIC DISCLAIMS ANY REAL OR IMPLIED WARRANTY AND HOLDS ITSELF HARMLESS FROM AN INJURY THAT MAY RESULT FROM THAT USE.

WARNING: DO NOT EQUIP OR USE THIS MACHINE WITH A MOTOR LARGER THAN ONE HORSEPOWER AT 1800 RPM. THE USE OF A LARGER OR HIGHER SPEED MOTOR VOIDS THE WARRANTY AND POWERMATIC HOLDS ITSELF HARMLESS FROM ANY INJURY THAT MAY RESULT.

SAFETY RULES

A safety rules decal is installed on each machine as a reminder of basic rules to be followed, but it is not intended to negate the reading and understanding of this manual.

1. READ AND UNDERSTAND THE OPERATION MANUAL'S SAFETY AND OPERATING INSTRUCTIONS. Know the limitations and hazards associated with the operation of this machine.

2. BE SURE THE MACHINE FRAME IS ELECTRICALLY GROUNDED.

3. BE SURE MACHINE IS IN PROPER WORKING ORDER BEFORE PERFORMING ANY OPERATIONS. Note the caution decal on the front of the bed and refer to the maintenance section of this manual to proper corrective action on any operational problems.

4. REMOVE OR FASTEN LOOSE ARTICLES OF CLOTHING such as a necktie, long sleeves or coat, and confine long hair. Do not wear gloves.

5. REMOVE JEWELRY such as finger rings, watches and bracelets.

6. WEAR A SAFETY FACE SHIELD OR GOGGLES TO PROTECT EYES and other personnel protective equipment such as ear protectors as required.

7. KEEP THE FLOOR AROUND THE MACHINE CLEAN and free of stock, shavings, sawdust, oil or grease to minimize the danger of slipping. An anti-skid strip on the floor where an operator would normally stand is recommended.

8. MAKE SURE ALL GUARDS ARE IN PLACE AND FASTENED SECURELY.

9. MAKE USE OF THE "SPEED LIMITER" to control the maximum speed the lathe can run for each specific turning operation.

10. CHECK THE CONDITION OF THE STOCK TO BE TURNED. Be sure it is free of knots, warpage, checked ends, improperly made or cured glue joints and other conditions which can cause it to be thrown out of the lathe.

11. SECURELY FASTEN SPUR CENTERS to material being turned.

12. CHECK CENTERS AND CENTER SOCKETS in the headstock and tailstock to be sure they are free of dirt or rust and oil lightly before inserting centers.

13. TEST EACH SETUP by revolving the work by hand to insure it clears the work rest and bed and check setup at the slowest speed before increasing it to the operating speed.

14. USE THE CORRECT CUTTING TOOL for the operation to be performed and keep all tools in a sharpened condition.

15. USE LOW SPEEDS FOR ROUGHING AND FOR LONG OR LARGE DIAMETER WORK. If vibration occurs, stop the machine and correct the cause. See Table I for speed recommendations.

16. WHEN SANDING, REMOVE THE TOOL REST FROM THE MACHINE, apply light pressure, and use a slow speed to avoid head build up.