Important

For Your Own Safety

Before Assembling and Operating This Unit, Read This Operator's Manual Carefully and Completely. Learn The Operation, Applications and Potential Hazards Peculiar To This Unit.

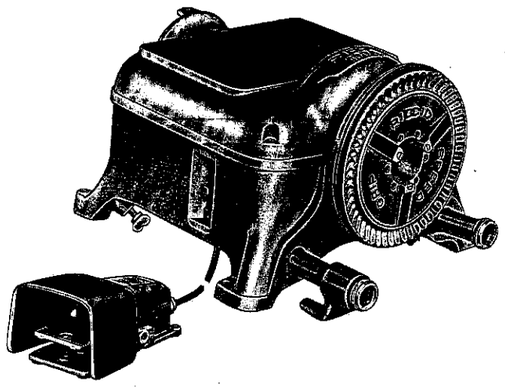
RIDGID

400A

Power Drive

With Speed Grip Chuck

Operator's Manual



RIDGID®

Pre-Tested
Work Saver® Tools

The Ridge Tool Company
400 Clark St., Elyria, Ohio 44036, U.S.A.

Form No. 400A-M-1179
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FOR YOUR FILE

PUBLICATIONS NOTICE

The Attached Literature Has Just Been Printed. **Date** April 14, 1979

400A Operators Manual

Reason

_____ **New**

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Signed H. Kishman

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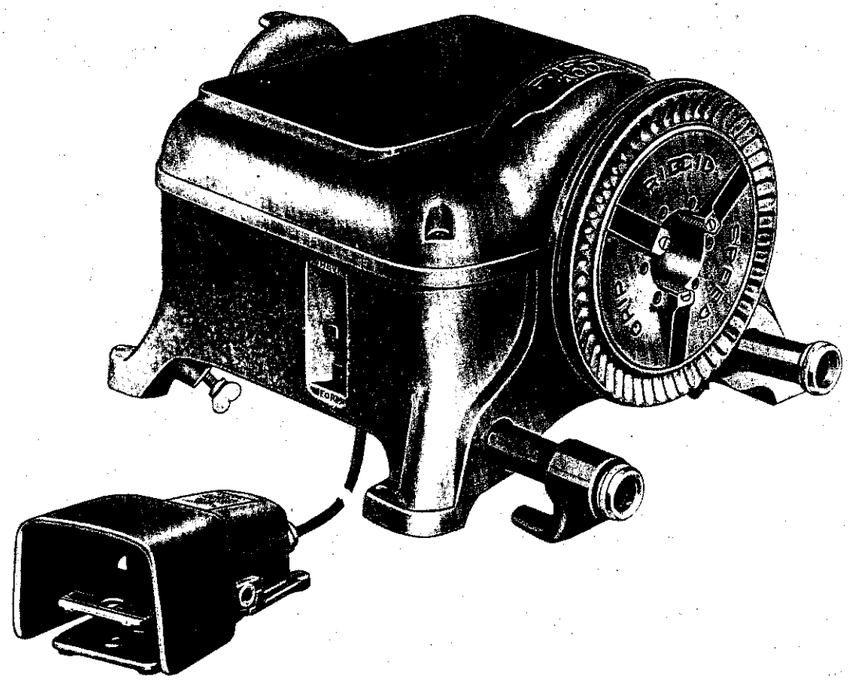
RIDGID No. 400A Power Drive

RIDGID®

400A

Power Drive With Speed Grip Chuck

Power Drive	
Record below and retain product model and serial numbers which are located on nameplate.	
Model No.	Serial No.



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Description, Specifications and Accessories

Description

The RIDGID No. 400A Power Drive is an electric-motor-driven Power Drive which centers and chucks pipe, conduit and rod (bolt stock) and rotates it while cutting, threading and reaming operations are performed. Forward (counterclockwise) or reverse (clockwise) rotation can be selected with REV/OFF/FOR Switch.

Specifications

Threading Capacity:
Pipe ..... 1/8'' through 2''
Bolt ..... 1/4'' through 2''

Chuck ..... speed grip chuck with replaceable jaw inserts.

Rear Centering Device ..... scroll type, rotates with chuck.

Support Bar (2) ..... heavy-duty

Switch (REV/OFF/FOR) ..... heavy-duty, bump-proof and reversible.

Motor ..... universal type.
Horsepower ..... 1/2 hp.
Volts ..... 115 single phase AC (25-60 Hz) (230v on request.)

Foot Switch (ON/OFF) ..... oil and water tight.

Power Source ..... 30 amp rated circuit

Weight ..... 152 lbs.

Accessories

Stands:
Kit ''A'' ..... wheel stand with tray.
Kit ''B'' ..... converts 4 leg stand to wheel stand.
Kit ''C'' ..... 4 leg stand with tray.
Kit ''D'' ..... tool tray with 4 fittings.
Kit ''E'' ..... set of 4 legs.

Geared Threaders:
No. 4PJ ..... threads 2-1/2'' through 4'' pipe with four sets of Dies.
No. 141 ..... threads 2-1/2'' through 4'' pipe with one set of Dies.
No. 161 ..... threads 4'' through 6'' pipe with one set of Dies.

No. 318 Oiler ..... stops oil waste, keeps dies flooded.

Threading Close-Coupled Method

	4PJ	141	161
No. 46 Pipe Support . . .	X	X	X
No. 758 Loop.	see note	X	
No. 844 Drive Bar . . .	X	X	X
No. 346 Support Arm (2)			X

Note: If Gear Case does not have loop hole, use No. 3675 Adapter Bracket instead of No. 758 Loop.

Threading with Drive Shaft:
No. 840 Universal Drive Shaft .... 41'' closed; 50'' extended
No. 450 Tristand Chain Vise ..folding with tray
No. 92 Adjustable Pipe Support .. large rollers allow free pipe movement

Power Drive Set Up Instructions

The RIDGID No. 400A Power Drive is designed to be bench or stand mounted. Two Stands are available: a Leg Stand with Tray and Wheel Stand with Tray. A Stand Kit is also available to convert a 4 Leg Stand to a Wheel Stand.

Mounting Power Drive on Bench

Place Power Drive on a solid bench, in desired position, and bolt securely with 3/8 inch bolts; Base has mounting holes.

Assembling Wheel Stand Kit "A" (Fig. 1)

1. Insert Front Legs into Power Drive Base. Front Legs have small posts to support Tray D-309. The lower posts must face toward Rear Legs. Tighten Wing Screws E-908.
2. Insert Rear Legs with bends as shown. Make sure that hubs are in a straight line for Axle. Tighten Wing Screws.
3. Slide Axle through both hubs. Add 2 Wheels Washers, and Cotter Pins.
4. Insert Tray D-309 by engaging holes on Front Leg posts. Adjust Supports E-443 and slide up as far as possible. Tighten Wing Screws E-976.
5. Thread Handles E-1348 into Brackets E-996.

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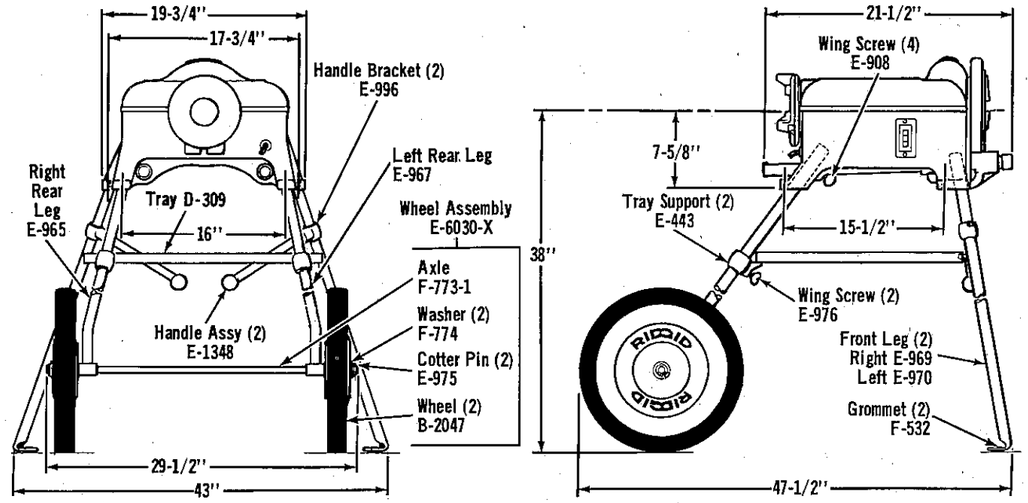

Figure 1. Assembling Wheel Stand Kit ''A''

Assembling Leg Stand Kit "C" (Fig. 2)

1. Insert Front Legs into Power Drive Base. Front Legs E-2574 Right and E-2575 Left have small posts which support Tray D-309. These must face toward Rear Legs.
2. The feet on Rear Legs F-544 should toe back, as shown. Tighten Wing Screws E-908.
3. Insert Tray by engaging holes in Tray onto Front Leg posts as shown. Adjust Supports E-443 and slide up as far as possible. Tighten Wing Screws E-976.

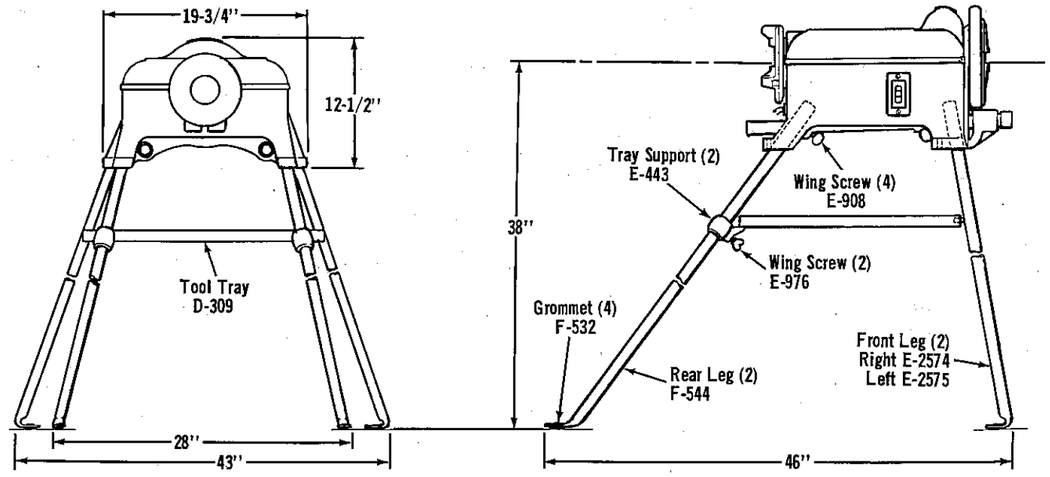

Figure 2. Assembling Leg Stand Kit ''C''.

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Safety Precautions

1. **Know your Power Drive.** Read Operator's Manual carefully. Know the limitations, as well as, the specific potential hazards peculiar to this Power Drive.
2. **Avoid accidental starting.** Make sure that Power Drive REV./OFF./FOR Switch is in OFF (center) position and Foot Switch operates freely before plugging in Power Cord.
3. **Ground Power Drive (Fig. 3).** This Power Drive should be grounded while in use to protect the operator from electric shock. The Power Drive is equipped with an approved three-conductor cord and three-prong grounding type plug to fit the proper type receptacle. The green (or green and yellow) conductor in the cord is the grounding wire. Never connect the green (or green and yellow) wire to a live terminal. If your unit is for use on less than 150 volts, it has a 115V plug. If it is for use on 150 to 250 volts, it has a 230V plug.

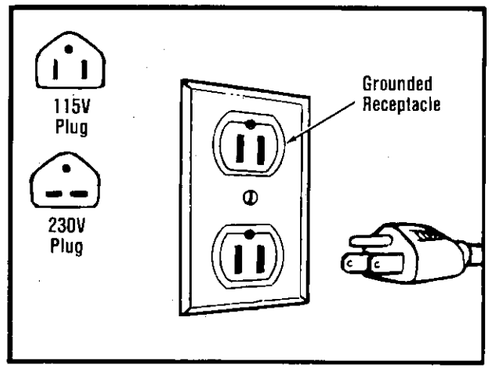

Figure 3. No. 400A Power Drive Grounding Instructions.

4. **Remove tools from Power Drive.** Form habit of checking to see that Power Drive is clear of wrenches or other tools before starting.
5. **Support work.** Support, long heavy work with a floor pipe support.
6. **Secure Power Drive.** Securely tighten Chuck Handwheel and rear Centering Device on work. Make sure that Power Drive and stand are stable. Power Drive Stand must be bolted to floor when using No. 840 Universal Drive Shaft.
7. **Wear proper apparel.** Wear safety shoes, hard hat, and safety goggles. No loose clothing (unbuttoned jackets or loose sleeve cuffs) or jewelry to get caught in moving parts.
8. **Do not overreach.** Operate Power Drive from Foot Switch side only. Keep proper footing and balance. Be sure foot can be removed safely from Foot Switch at all times. Do not reach across Power Drive and keep hands, body and tools away from moving part.
9. **Maintain Power Drive in top condition.** Use sharp cutting tools and keep Power Drive clean for best and safest performance. Follow lubricating instructions.
10. **Keep work area clean.** Cluttered areas, benches, and slippery floors invite accidents. If Power Drive is mounted on a bench make sure that the tools, not being used, are not in any way obstructing Power Drive.
11. **Avoid dangerous environment.** Do not use Power Drive in damp and wet locations. Keep work area well luminated. Allow sufficient space to operate Power Drive and accessories properly and for others to pass safely.
12. **Wear ear protection.** If exposed to long periods of very noisy shop operations keep ears protected.
13. **Keep visitors away.** All visitors should be kept a safe distance from work area.
14. **Use recommended accessories.** Refer to Operator's Manual. Use of improper accessories may be hazardous.
15. **Disconnect Power Cord.** When adjusting, servicing, or changing accessories disconnect Power Cord. Cord should be in top condition and examined at regular intervals.

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Operation Using Hand Tools

Warning: Operator should be thoroughly familiar with preceding Safety Precautions before attempting to operate this equipment.

Correct operating position for cutting, threading and reaming is to stand on switch side of the Power Drive with left foot operating Foot Switch. (Fig. 4).

Installing Pipe in Power Drive (Fig. 4)

1. Measure and mark length of pipe being worked.
2. If pipe is long enough to be retained by centering advice, insert pipe through front or rear of machine. If pipe is short, insert into front of machine.
3. Make certain that pipe is centered in centering device, if used, and tighten centering device.
4. Tighten Chuck Jaws with a repetitive counterclockwise snap spin of Handwheel. This hammering action tightens Jaws on pipe. A clockwise rotation snap spin releases Jaws.

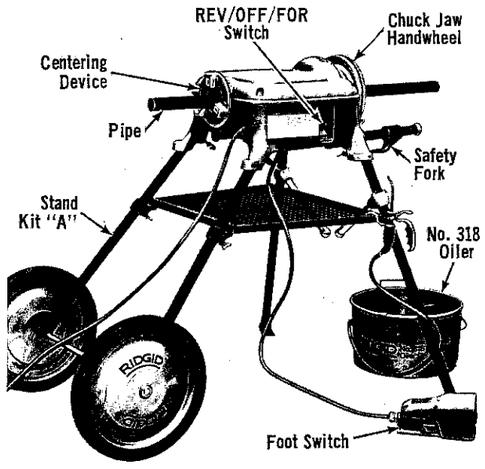

Figure 4. Power Drive with Pipe Installed, Stand, and No. 318 Oiler.

Cutting Pipe with Hand Cutter

1. Install pipe.
2. Engage Pipe Cutter with pipe and align Cutter Wheel with mark on pipe.
3. Rest Pipe Cutter Frame on Support Bar and hook Safety Fork over Handle (Fig. 5). Tighten Feed Screw Handle.
4. With Power Cord plugged in, turn REV/OFF/FOR Switch to FOR (forward) position (Fig. 4).
5. Place foot on Foot Switch (Fig. 4) to operate machine.
6. Continuously tighten Feed Screw Handle (Fig. 5) with both hands until pipe cutoff is completed.
7. Release Foot Switch and turn REV/OFF/FOR Switch to OFF position.

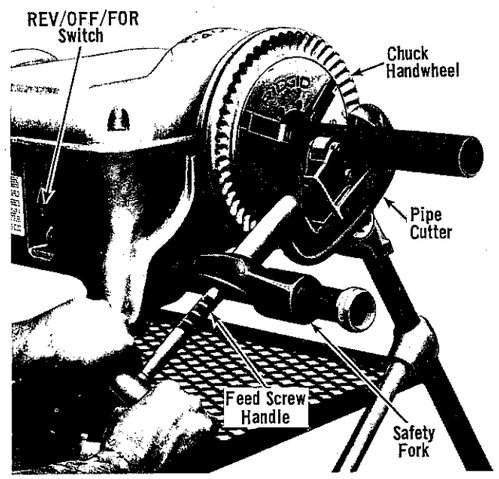

Figure 5. Cutting Pipe with Hand Cutter.

Threading Pipe with Hand Threader

1. Place Threader on end of pipe with Handle resting on Support Bar (Fig. 6) located on switch side. Hook Safety Fork over Handle.
2. Place No. 318 Oiler (Fig. 4) under Threader and apply RIDGID Thread Cutting Oil on pipe end.
3. Turn REV/OFF/FOR Switch to FOR (forward) position (Fig. 4).

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4. Step on Foot Switch and push Threader (Fig. 6) with right hand to engage Dies.

Note: Threader is self feeding once Dies are engaged. Apply plenty of oil (Fig. 7) until threads are completed.

5. Release Foot Switch once thread is completed.
6. Push back Support Bar (Fig. 7) on switch side.
7. Reverse Threader Ratchet Knob (Fig. 6).
8. Lower Threader Handle and pull Support Bar out. Threader Handle is now against lower side of Support Bar.
9. Turn REV/OFF/FOR Switch to REV (reverse) position (Fig. 4) and back off Threader by stepping on Foot Switch.
10. Release Foot Switch (Fig. 4) and turn REV/OFF/FOR Switch to OFF position.

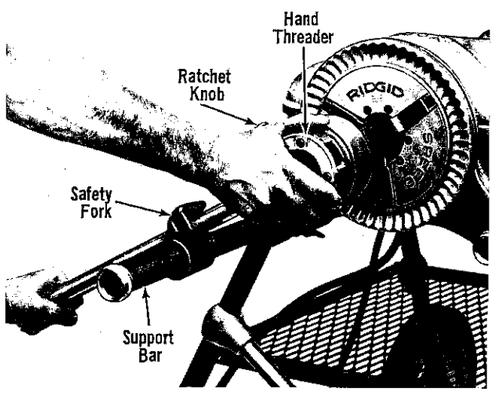

Figure 6. Pushing Hand Threader onto Pipe to Engage Dies.

Reaming Pipe with Hand Reamer

1. Turn REV/OFF/FOR Switch to FOR (forward) position (Fig. 4).
2. Insert Straight Flute Reamer into end of pipe and hold firmly onto Handle and Handgrip (Fig. 8).
3. Step on Foot Switch and push on Reamer Handgrip (Fig. 8) with right hand to ream pipe.
4. Release Foot Switch, remove Reamer and turn REV/OFF/FOR Switch to OFF position.

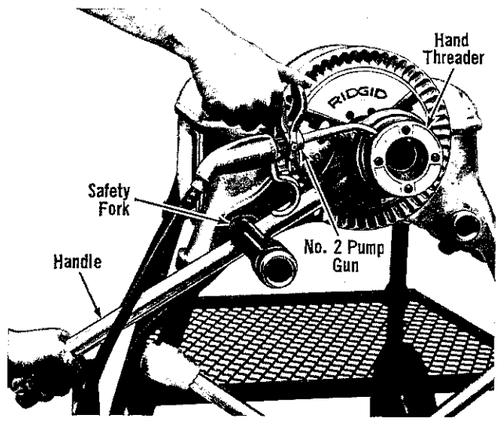

Figure 7. Oiling Hand Threader Dies.

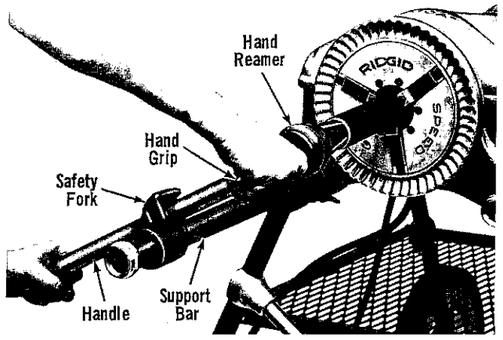

Figure 8. Reaming Pipe with Hand Reamer.

Operation Using Geared Threader

Warning: Operator should be thoroughly familiar with preceding Safety Precautions before attempting to operate this equipment.

Correct operating position for cutting, threading and reaming is to stand on the switch side of the Power Drive with left foot operating Foot Switch (Fig. 4).

Installing Nos. 4PJ, 141 and 161 Geared Threaders (Close-Coupled Method)

Warning: Do NOT plug Power Cord in until Geared Threader is installed and ready to thread.

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1. Adjust Threader being used. Refer to page 11 for Nos. 141 and 161 Threaders or page 12 for 4PJ Threader.
2. Place Threader on floor or workbench with Drive Shaft up. Install No. 844 Drive Bar on Threader Drive Shaft and tighten 2 Set Screws (Fig. 9).
3. Two men pick up Threader and insert Drive Bar into chuck of Power Drive (Figs. 10 and 11). Tighten Power Drive Chuck Jaws into three "V" shaped grooves in head of Drive Bar.

Note: Allow approximately 3/4" of grooves exposed in front of Chuck Jaws (Fig. 12) to allow space for oiling.

4. Close centering device on shaft of Drive Bar.
5. **161 Threader (Fig. 11)** - Insert No. 346 Support Arms into Support Bars.

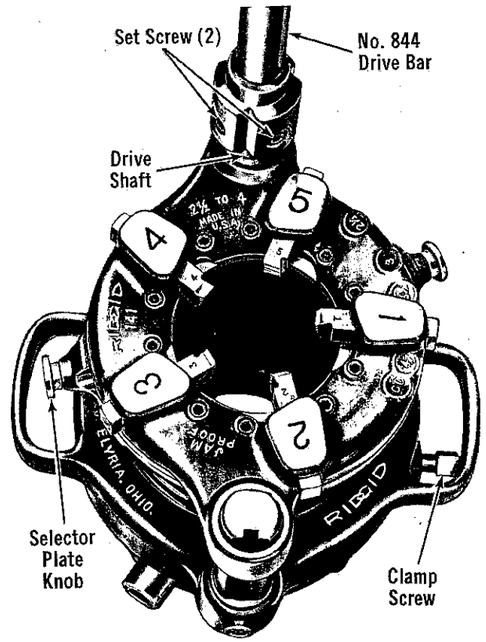

Figure 9. No. 141 Threader with No. 844 Drive Bar Installed (Nos. 161 and 4PJ Threaders Similar).

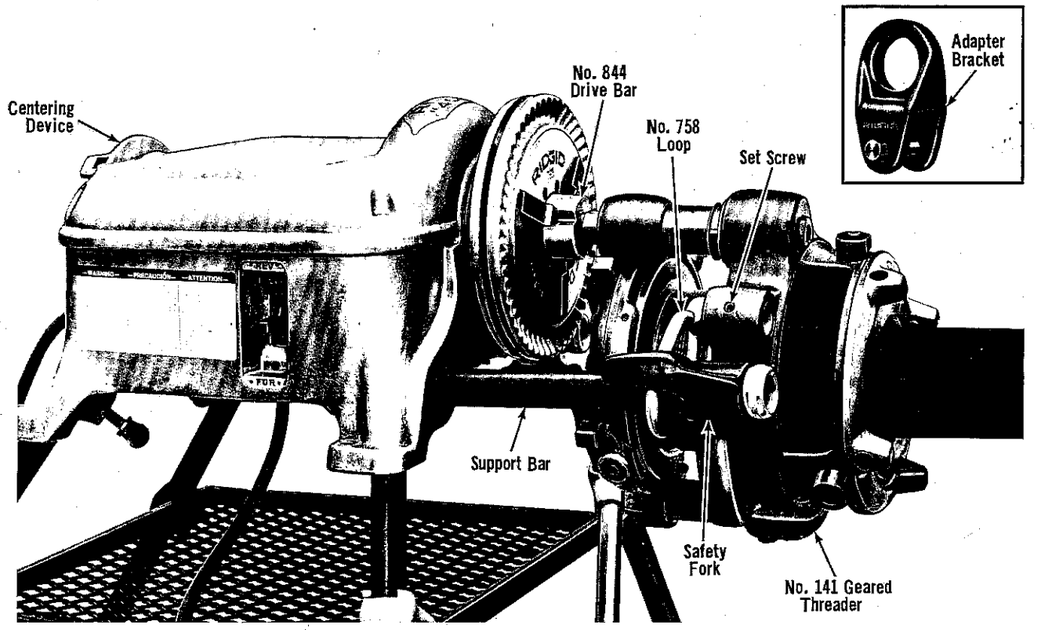

Figure 10. No. 141 Geared Threader Close-Coupled to Power Drive (No. 4PJ Threader Similar).

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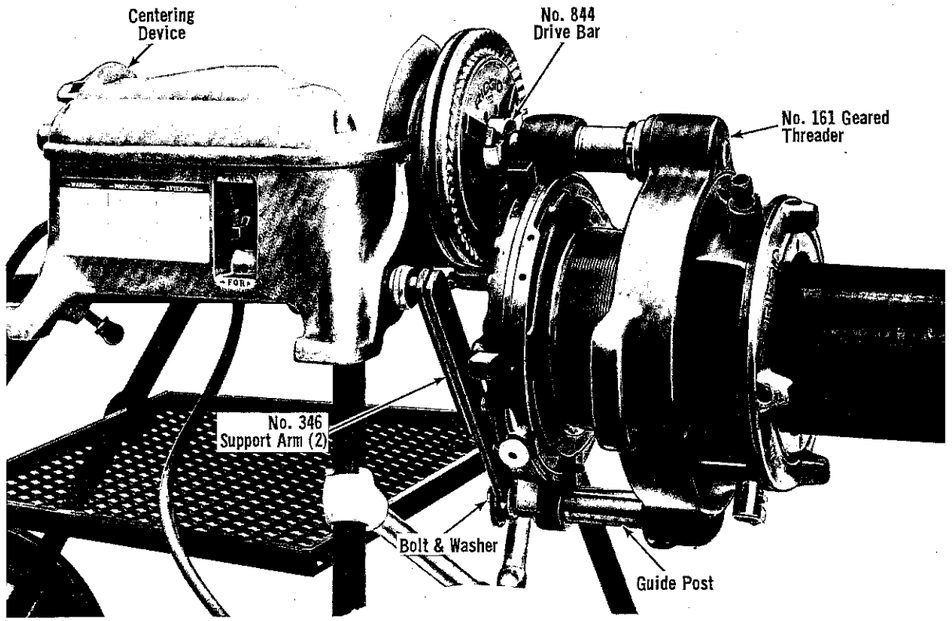


Figure 11. No. 161 Geared Threader Close-Coupled to Power Drive.

6. **4PJ and 141 Threaders (Fig. 10)** - Slip No. 758 Loop over Support Bar and secure to Gear Case loop with Set Screw.

   Note: Use No. E-3675 Adapter Bracket (Fig. 10), in place of No. 758 Loop, on all 4P and 4PJ Threaders without loop hole on Gear Case.

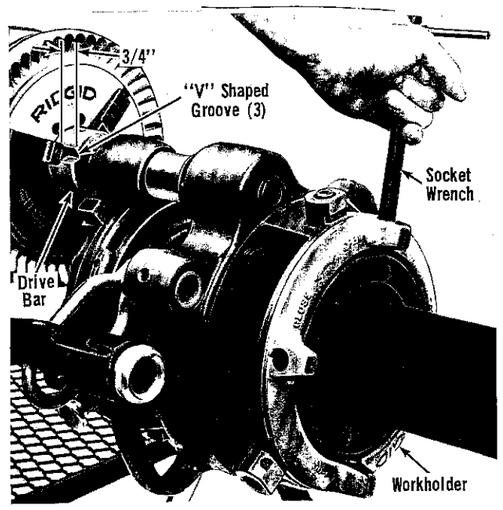
   161 Threader (Fig. 11) - Remove Set Screw (plug) from Threader Guide Post and secure Support Arms with Bolt and Washer.

7. Insert pipe in Threader and center end of pipe in throat of Dies. Tighten workholder with Socket Wrench (Fig. 12).

8. Tighten Clamp Screw (Fig. 12) securely.

9. Position No. 318 Oiler directly under Threader (Fig. 13).

10. Support long pieces of pipe with No. 46 Pipe Support (Fig. 13). Position approximately 2-1/2 feet from Threader.



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Threading Pipe Using Nos. 4PJ, 141, and 161 Geared Threaders (Close-Coupled Method)

1. Install Geared Threader and pipe.
2. Plug in Power Cord.
3. Turn Power Drive REV/OFF/FOR Switch to FOR (forward) position (Fig. 4).
4. Step on Foot Switch.
5. Flood Dies (Fig. 13) with RIDGID Thread Cutting Oil during threading operation to assure long Die life.
6. **4PJ only** - Release Foot Switch just before Die Head begins to press on Pressure Ring (Fig. 13) at base of Pinion Sleeve.

   141 and 161 - Release Foot Switch when red "STOP" line appears on Pinion Sleeve (Fig. 16).

   Note: RIDGID Geared Threaders are jam proof designed so that Pinion Shaft will automatically disengage if Threader is accidentally run on pipe past a full thread length.
7. Turn REV/OFF/FOR Switch (Fig. 4) to REV (reverse position.)
8. **4PJ only** - Step on Foot Switch and reverse Threader until Die Head is at starting position and Dies are free from end of pipe.

   Caution: Do not loosen Workholder until Dies have been disengaged from pipe.

   141 and 161 - Step on Foot Switch and reverse Threader one or two revolutions. Pull knobs (Fig. 13) and rotate Cam Plate as far as it will go towards CD mark on Head to disengage Dies.
9. **4PJ only** - Loosen Workholder Clamp Screw (Fig. 17) and remove pipe.

   141 and 161 - Loosen Jaw Clamp Screws (Fig. 12), turn Workholder to OPEN position and remove pipe.

   Note: Before threading next piece of pipe, run Threader Head beyond STANDARD line on Pinion Sleeve and then back to STANDARD line. This movement takes up slack in gearing for immediate response when cutting next thread.
10. Turn REV/OFF/FOR Switch to OFF position.

Caution: If, by accident, a RIDGID Geared Threader is backed off too far and Threaded Barrel becomes disengaged from Workholder, the Threader must be put on a bench and the threads re-engaged carefully by Hand. Do not attempt this by power.

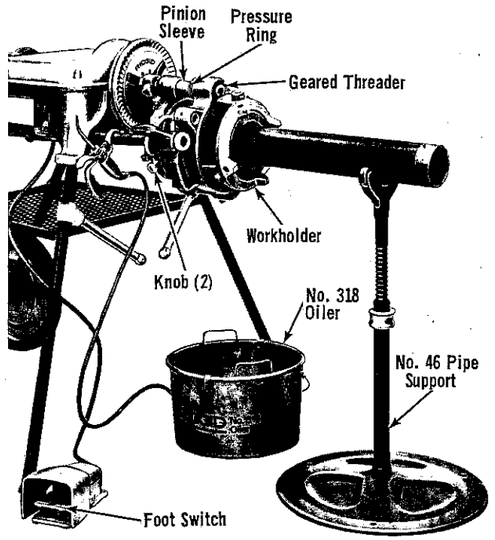

Figure 13. Threading Pipe with No. 141 Geared Threader (Close-Coupled Method) (Nos. 161 and 4PJ Threaders Similar)

Installing Nos. 4PJ, 141 & 161 Geared Threaders Using No. 840 Universal Drive Shaft (Fig. 14)

Warning: Do NOT plug Power Cord in until Geared Threader is installed and ready to thread.

When threading pipe larger than 2 inches, the Power Drive must be bolted to floor. Chain Vise must be securely anchored with Jack Screw Assembly and post to ceiling or bolted to floor.

1. Adjust Threader being used. Refer to page 11 for Nos. 141 and 161 Threaders or page 12 for 4PJ Threader.
2. Slide long hexagon end of the Universal Drive Shaft into front chuck of Power Drive. Tighten chuck and Centering Device Head.

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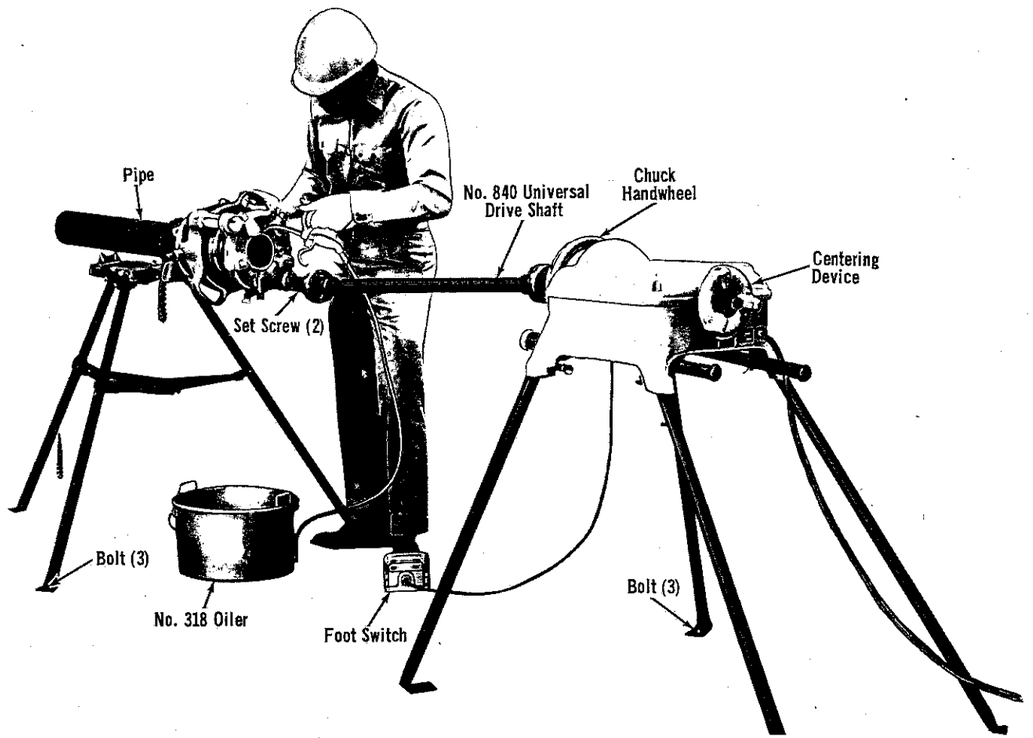

Figure 14. Threading with Nos. 141, 161, and 4PJ Geared Threaders using No. 840 Universal Drive Shaft.

3. Locate Chain Vise in line, on same level, and approximately length of Universal Drive Shaft away from Power Drive front chuck.
4. Tightly secure pipe in No. 450 Tristand Chain Vise.
5. Support long pieces of pipe with No. 92 Pipe Support.
6. Position Workholder so that a Jaw is on top center and slide Threader onto pipe. Carefully center end of pipe in throat of Dies.
7. Tighten Workholder Clamp Screw (Figs. 15 and 17) securely.
8. Slip square socket of No. 840 Universal Drive Shaft over square end of Threader Drive Shaft and tighten 2 Set Screws.

Note: When properly positioned, sliding shank of Universal Shaft should be approximately centered to allow movement in either direction.

9. Position No. 318 Oiler directly under Threader.

Threading Pipe Using Nos. 4PJ, 141, and 161 Geared Threaders with No. 840 Universal Drive Shaft

1. Install Geared Threader and pipe.
2. Plug in Power Cord.
3. Turn Power Drive REV/OFF/FOR Switch to FOR (forward) position (Fig. 3).
4. Step on Foot Switch.
5. Flood Dies (Fig. 14) with RIDGID Thread Cutting Oil during threading operation to assure long Die life.
6. **4PJ only** - Release Foot Switch just before Die Head begins to press on Pressure Ring (Fig. 17) at base of Pinion Sleeve.

   141 and 161 - Release Foot Switch when red "STOP" line appears on Pinion Sleeve (Fig. 16).

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Note: RIDGID Geared Threaders are jam proof designed so that Pinion Shaft will automatically disengage if Threader is accidentally run on pipe past a full thread length.

7. Turn REV/OFF/FOR Switch (Fig. 4) to REV (reverse) position.
8. **4PJ only** - Step on Foot Switch and reverse Threader until Die Head is at starting position and Dies are free from end of pipe.

Note: Do not loosen Workholder until Dies have been disengaged from pipe.

141 and 161 - Step on Foot Switch and reverse Threader one or two revolutions. Pull knobs (Fig. 15) and rotate Cam Plate as far as it will go towards CD mark on Head to disengage Dies.

9. Turn REV/OFF/FOR Switch to off position.
10. Loosen Chain Vise and remove pipe.

Removing Geared Threader and No. 840 Universal Drive Shaft

Note: Do not loosen Workholder until Dies have been disengaged from pipe.

1. Loosen 2 Set Screws (Fig. 14) and remove Universal Drive Shaft from Threader.
2. **4PJ only** - Loosen Workholder Clamp Screw (Fig. 18) and remove Threader.

   141 and 161 - Loosen Jaw Clamp Screw (Fig. 15) and turn Workholder to OPEN position.

Adjusting Nos. 141 and 161 Geared Threaders

Cam Plate (Pipe Size) Adjustment Procedure

1. Place Threader on floor or workbench with Drive Shaft up.
2. Pull Knobs (Fig. 15) of Cam Plate and rotate Cam Plate to desired pipe size marking on top of Die Head. Release Knobs when Locating Pins drop into holes in Selector Plate.

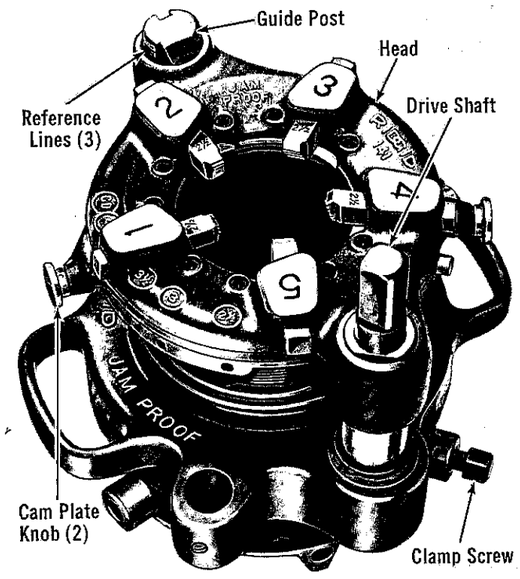

Figure 15. No. 141 Geared Threader with Drive Shaft Up (No. 161 Threader Similar).

Thread Size Adjustment Procedure

Grasp Workholder and turn square end of Drive Shaft or turn Gear Case by hand to respective reference lines on Guide Post (Fig. 16).

Standard Size Thread - Either one of following 2 reference lines may be used.

Reference Line 1: Set bottom surface of Die Head at red "Standard" line on Pinion Sleeve.

Reference Line 2: Set upper surface of Die Head which houses Guide Post even with center line at top end of Guide Post.

Oversize Thread - For oversize (shallow thread) set Head at bottom line on Guide Post. This line is marked (2T OVER).

Undersize Thread - For undersize (deep thread) set head at top line on Guide Post. This line is marked (2T UNDER).

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Changing Guide Post for Straight or Tapered Threads (Fig. 16)

1. Adjust Threader to cut standard size threads.
2. Remove Screw from Gear Case at base of Guide Post.
3. Pull Guide Post up until Guide Block attached to Selector Plate is disengaged from angle slot in Guide Post.
4. Turn Guide Post until straight slot faces inward for straight thread, or tapered slot inward for tapered thread.
5. Engage Guide Block in slot and push Guide Post down into position.
6. Replace Guide Post Screw.

Note: Unit is now set to cut straight threads (NPSM or BSPP) or taper threads (NPT or BSPT).

Changing Dies

1. Remove Stop Screw (Fig. 16) from Selector Plate.
2. Pull Knobs (Fig. 15) and rotate Cam Plate to CD mark on top of Die Head.
3. Remove worn set of Dies (Fig. 16) and insert new set of Dies.

Caution: Be sure to replace complete set of Dies and that Die numbers correspond with slot numbers.

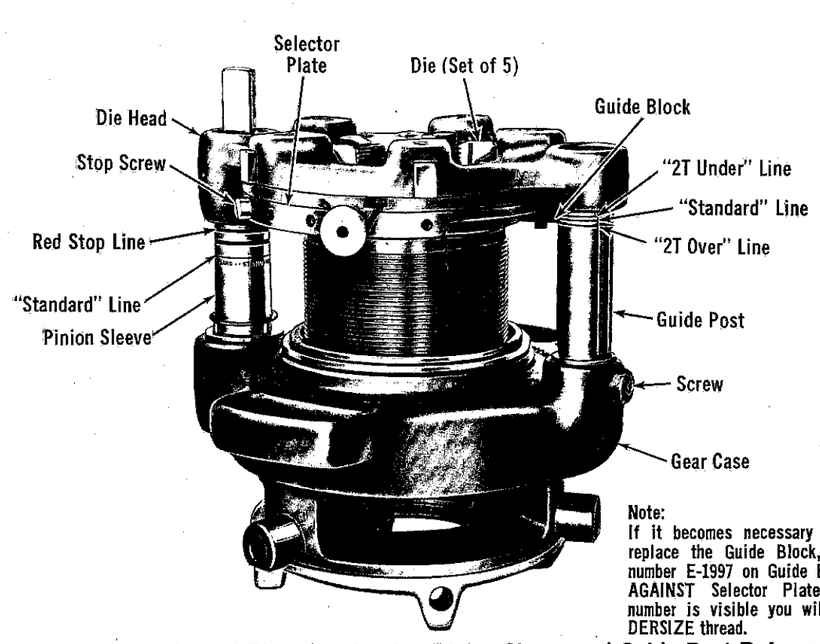
4. Replace Stop Screw.

Note: If it becomes necessary to remove or replace the Guide Block, the stamped number E-1997 on Guide Block must be AGAINST Selector Plate. If stamped number is visible you will cut an UNDERSIZE thread.

Adjusting No. 4PJ Geared Threader

Workholder (Pipe Size) Adjustment Procedure (Fig. 17)

1. Place Threader on floor or workbench with Workholder up.
2. Loosen 2 Gauge Screws.
3. Adjust Gauge Plate to desired size pipe.
4. Tighten Gauge Screws against Gauge Plate.
5. Back out Clamp Screw so that Workholder will slip over pipe when installed.



Note:
If it becomes necessary to remove or replace the Guide Block, the stamped number E-1997 on Guide Block must be AGAINST Selector Plate. If stamped number is visible you will cut an UNDERSIZE thread.

Figure 16. No. 141 Geared Threader showing Pinion Sleeve and Guide Post Reference Lines.

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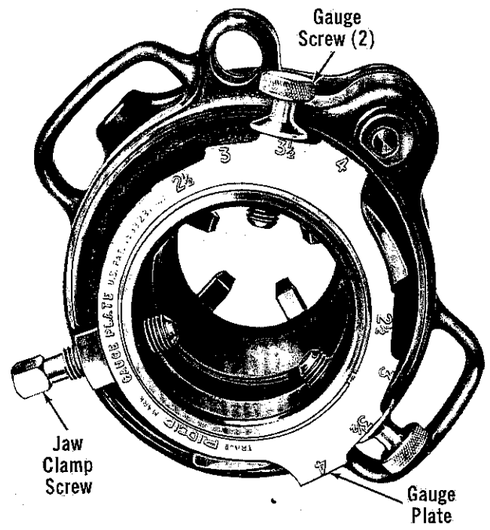

Figure 17. No. 4PJ Geared Threader with Workholder Up.

Thread Size Adjustment Procedure (Fig. 18)

1. Turn Threader over so Drive Shaft is up.
2. Grasp Workholder and turn square end of Drive Shaft or turn Gear Case by hand to reference lines on posts.

   Standard Size Thread - Set Head so surface of numbered pads is even with line around ends of Posts.

   Oversize Thread - For oversize (shallow thread) set numbered pads on Head below line on Posts. Each 1/8 inch of offset will change thread size one turn.

   Undersize Thread - For undersize (deep thread) set surface of numbered pads on Head above line on Posts. Each 1/8 inch of offset will change thread size one turn.

Changing Dies (Fig. 18)

1. Insert small screw driver in slot in Head between Post and Die. Push Die out.

Note: Die is retained by spring loaded ball.

2. Install replacement Die, seating firmly against Post.

Caution: Be sure that Die number corresponds with slot number and that slot and Post are free of chips and dirt. Replace complete set of Dies.

Note: 4PJ Threaders with E-2445 Straight Posts (NPSM - American Thread of BSPP - British Thread) must use special Dies for straight threads only. Threaders equipped with E-1946 Taper Posts must use standard Taper Pipe Dies (NPT-American Thread or BSPT - British Thread) only.

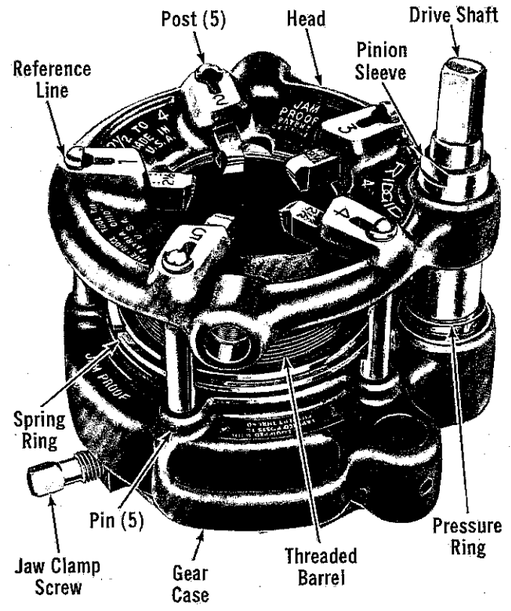

Figure 18. No. 4PJ Geared Threader with Drive Shaft Up.

Maintenance Instructions

Warning: Always unplug Power Cord before servicing Power Drive.

Note: If any maintenance is required other than that listed below, take Power Drive to an authorized RIDGID Warranty Repair Center or return it to the factory.

Motor Brush Replacement

Check motor Brushes every 6 months and replace when worn to less than 1/2 inch.

Motor Replacement

1. Remove 4 Screws and Cover.
2. Pull Motor 4-pronged plug from Switch Box.
3. Remove 4 Screws holding Motor and lift Motor and Bracket out.

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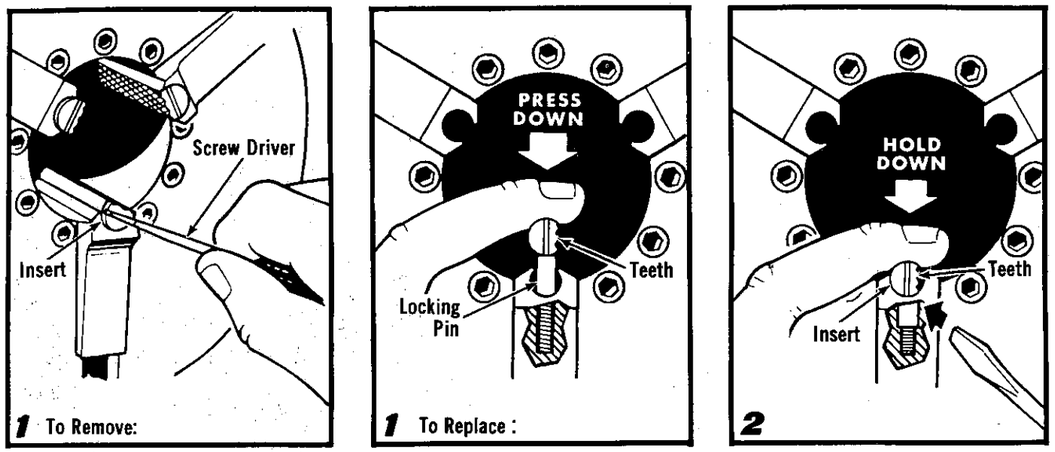
Jaw Insert Replacement (Fig. 19)

Note: Clean teeth of Jaw Inserts daily with wire brush. When teeth on Jaw Inserts become worn and fail to hold pipe or rod during operation, replace entire set of Jaw Inserts.

Lubrication

Proper lubrication is essential to trouble-free operation and long life of Power Drive.

Grease main shaft bearings every 2 to 6 months depending upon amount of Power Drive use. Grease fittings are provided on underside of base, one at each end of shaft. Use a good grade of cup grease.



1 To Remove: Place screw driver in Insert Slot and turn 90 degrees in either direction.

1 To Replace : Place Insert sideways on Locking Pin and press down as far as possible.

2 Hold Insert down firmly and with screw driver, turn so teeth face up.

Figure 19. Replacing Jaw Inserts.

Note: Wire colors in parenthesis represent European color code. European cord the same except for plug.

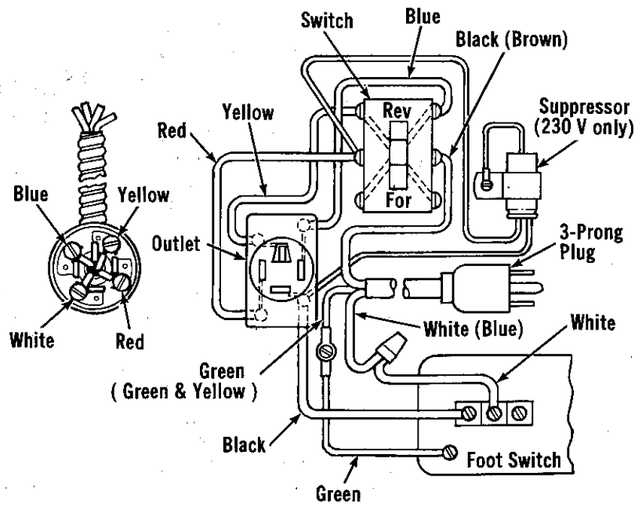


Figure 20. Machine Wiring Diagram.

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