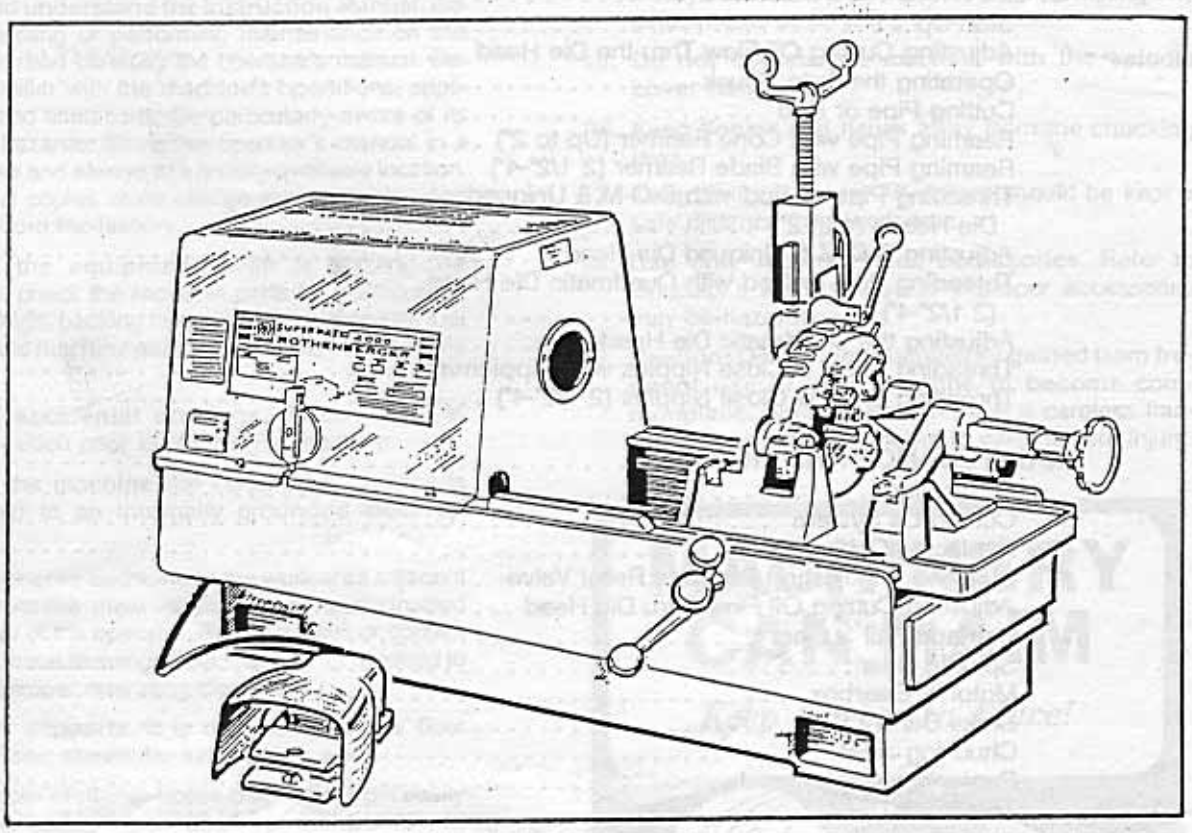
Manual:#20330
Revision B, 1/95

Operator's Manual and Parts Catalog

RHINO / SUPERMATIC 4000



WARNING

Before operating this unit, read and understand the Operator's Manual. Become familiar with the potential hazards of this unit.

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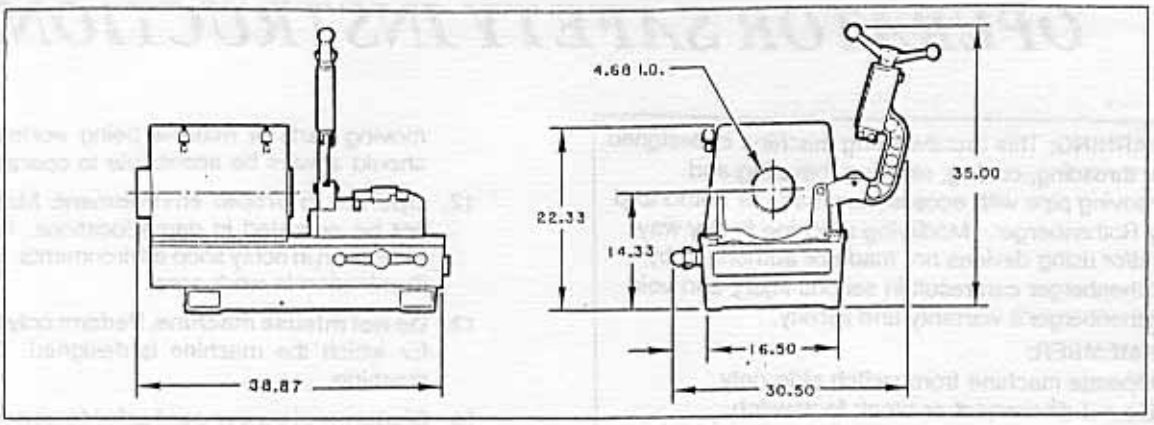
OPERATOR SAFETY INSTRUCTIONS

WARNING: This metalworking machine is designed for threading, cutting, reaming, beveling and grooving pipe with accessories made or authorized by Rothenberger. Modifying machine in any way and/or using devices not made or authorized by Rothenberger can result in serious injury and void Rothenberger's warranty and liability.

REMEMBER:

* Operate machine from switch side only.
* Do not disconnect or block footswitch.
* Do not wear gloves, loose clothing or neckties.

1. **Read and understand the Instruction Manual.** Before operating or performing maintenance on this machine, read carefully the operator's manual. Become familiar with the machine's operations, applications and limitations. Be particularly aware of its specific hazards. Store the operator's manual in a clean area and always at a readily available location. Additional copies at no charge are available upon request from the factory.
2. **Inspect the equipment.** Prior to starting the machine, check the movable parts for obstructions such as rags, packing remnants, etc. Be certain that guards and machine parts are properly installed and secured.
3. **Prevent accidental startings.** Place switch in "OFF" position prior to plugging in machine.
4. **Ground the machine.** Be certain the machine is connected to an internally grounded electrical system.
5. **Keep work area clean.** Keep the work area adjacent to the machine clear of clutter for unobstructed movement of the operator. Remove all oil or coolant spills. Remove shavings from chip tray as required to maintain proper operating clearance.
6. **Use pipe supports.** It is mandatory to use floor mounted pipe stands for long, heavy work.
7. **Wear proper clothing.** Loose clothing can get easily tangled in moving parts. When operating machine, do not wear unbuttoned jackets, loose sleeve cuffs, gloves, neckties, long hair, etc. Safety glasses and shoes should be worn.
8. **Secure machine and work.** Make certain that the machine is bolted to a heavy work bench or proper stand.
9. **Always maintain machine.** Keep machine clean and cutting tools sharp for safe, dependable operation. Follow lubricating instructions. Report any unsafe condition for immediate correction.
10. **Keep alert.** Do not operate machine if ill or drowsy from medication or fatigue. Avoid horseplay around equipment and keep bystanders a safe distance from equipment.
11. **Operate on switch side only.** Machine should be operated on switch side only. Never reach across moving parts or material being worked on. Switch should always be accessible to operator.
12. **Operate in proper environment.** Machine should not be operated in damp locations. Wear hearing protection in noisy shop environments. Insure proper illumination in work area.
13. **Do not misuse machine.** Perform only the functions for which the machine is designed. Do not force machine.
14. **Disconnect power cord prior to servicing.** Repair should be attempted only by authorized personnel. Always disconnect power cord before making any adjustments or servicing the machine.
15. **Do not operate the machine with the spindle cover removed.**
16. **Keep fingers and hands** away from the chucking jaws.
17. **Keep visitors away.** All visitors should be kept a safe distance from work area.
18. **Use only recommended accessories.** Refer to Operator's Manual. Use of improper accessories may be hazardous.
19. **Caution: Do not allow familiarity gained from frequent use of your machine to become commonplace.** Always remember that a careless fraction of a second is sufficient to inflict severe injury.



RHINO / SM 4000 SPECIFICATIONS

THREADING CAPACITY (With two die heads min.)
- Galvanized & Black Pipe.....1/2" thru 4"
- Stainless Steel Pipe.....1/2" thru 2"
- Bolt (Mild Steel).....5/8" thru 2 1/4"

AUTOMATIC CHUCKING CAPACITY.....5/8" thru 4 1/2" Dia.

CUTTING CAPACITY
- Pipe.....1/2" thru 4"
- Bolt (Mild Steel).....5/8" thru 1"

REAMING CAPACITY, PIPE
- Cone Reamer.....1/2" thru 2"
- Flat Reamer.....2 1/2" thru 4"

CUTTING OIL SUMP CAPACITY.....2 1/2 Gal.

CUTTING OIL PUMP CAPACITY
- Single Phase Mach, no load.....2 3/4 GPM
- Single Phase Mach, Threading 4" pipe.....1 1/2 GPM

SPINDLE SPEED
- Single Phase Mach, no load.....25.0 RPM

THREADING SPEEDS, SINGLE PHASE MACH.
- Thrdng 1/2" Black or Galvanized Pipe.....25 Seconds
- Thrdng 4" Black or Galvanized Pipe.....60 Seconds
- Thrdng 5/8" Bolt x 1 1/16" long (Ledloy)....25 Seconds
- Thrdng 2 1/4" Bolt x 1 7/8" long (Ledloy)...37 Seconds (2 Passes)

MOTOR CURRENT CONSUMPTION
- 115V.1 Phase Mach, no load..... 8 Amps
- 115V.1 Phase Mach, Thrdng 4" galv/blk pipe..17 Amps
- 230V.1 Phase Mach, no load..... 4 Amps
- 230V.1 Phase Mach, Thrdng 4" galv/blk pipe.. 9 Amps

MOTOR
- Single Phase 115V.: Universal AC/DC, 1/2 HP 6-brush, 20 Amps.
- Single Phase 230V.: Universal AC/DC, 1/2 HP 6-brush, 10 Amps.

SWITCH, OPERATING
- Single Phase Mach.: Heavy-duty 20 Amp drum type, Release-Off-Thread

SWITCH, FOOT
- Heavy-duty oil and watertight with safety guard, On-Off

SWITCH, DIRECTIONAL (right & left mach. only)
- Rocker type, Right-Off-Left

NOISE LEVEL
- Single Phase Mach.: 84 dB max. ("A" scale, slow response)

GEARBOX
- Standard or Right & Left Single Phase Machine:
  - Helical gear construction with 16.70 : 1 reduction ratio.
  - Total reduction ratio including Spindle Gear: 216.7 : 1

SHIPPING WEIGHT (less dieheads)
- Single Phase Machines: 340 lbs.

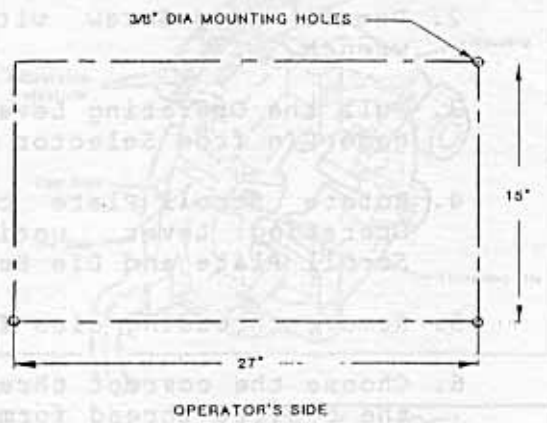
PREPARING FOR OPERATION

Mounting the Machine

Bolt the Supermatic 4000 securely to the Rothenberger Portable Stand or a substantial bench. 3/8" bolt holes are provided for this purpose in the base.

When mounting to a bench, use spacers to lift motor end of machine 1/2" higher than the carriage end to assure oil drainage into the sump.

When mounting on the Rothenberger Portable Stand, place motor end of machine over the wheel end of stand, which is built higher for proper oil drainage.



Material Support

It is essential to use a material support system with any work longer than 5 feet. For operator safety and to avoid machine damage, the material support system must be adjusted to the same center height as the machine spindle. An improperly adjusted support system will damage dies and chucking jaws and result in poor thread quality.

Power Connection

Before connecting to power supply, check name plate for the proper voltage and frequency. Also check power supply with a voltmeter to make sure that full voltage is available. Voltage must be within 5% of stated voltage on name plate.

GROUNDING: This machine must be grounded while in use to protect the operator from electric shock. Check the receptacle of the power source for proper grounding.

EXTENSION CORD: To prevent power loss, grounded extension cord of sufficient capacity must be used:

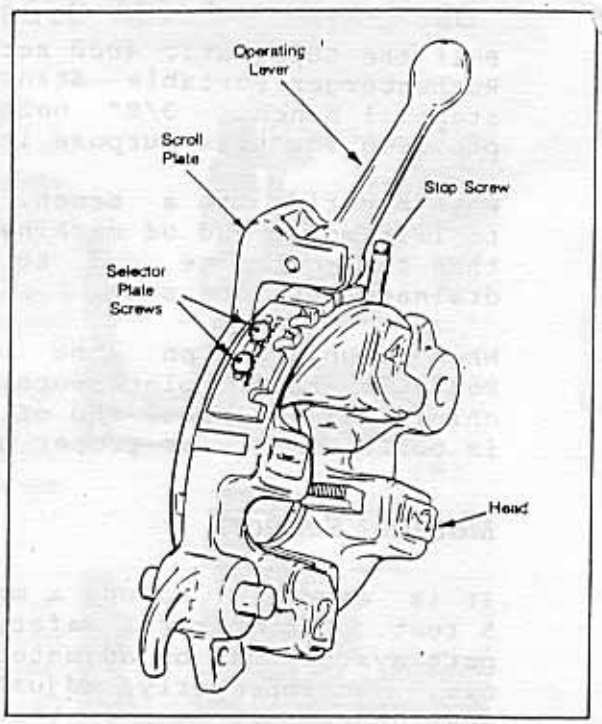
POWER	CORD LENGTH	WIRE SIZE
115V.	50' or less	#10-3
230V.	50' or less	#12-3

OIL PUMP

Pour two gallons of ROCOOL Cutting Oil into the Supermatic 4000 sump. The ROCOOL oil is a special oil designed to release anti-weld and anti-wear additives at low machining temperatures. Other oils may not have this characteristic, causing excessive die wear and poor thread quality. No priming of the Oil Pump is necessary since it is self-priming.

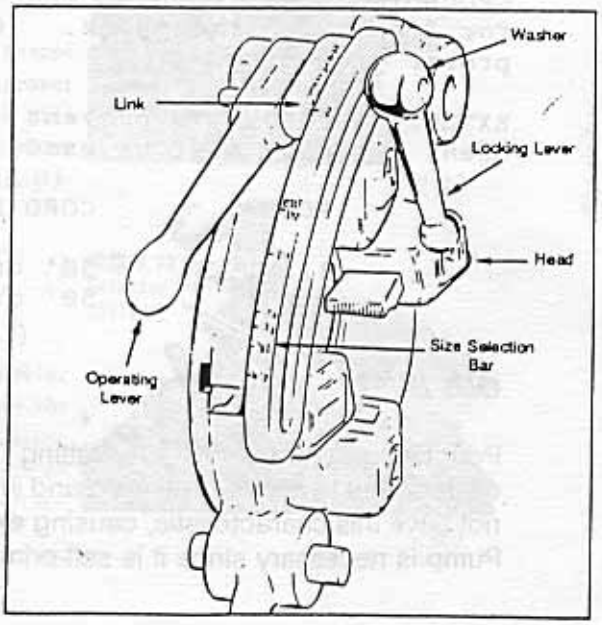
Installing Dies In Snap-O-Matic Die Head

1. Lay die head on bench with numbers facing up.
2. Remove Stop Screw with 3/16" allen wrench.
3. Pull the Operating Lever up to disengage Pin from Selector Plate.
4. Rotate Scroll Plate clockwise with Operating Lever until slots in Scroll Plate and Die Head line up.
5. Remove threading dies from Die Head.
6. Choose the correct threading dies for the desired thread form and size.
7. Matching die segment number with die slot number on die head, insert threading dies into slots and push them toward center until die pins are seated in Cam Slots of Scroll Plate.
8. Rotate Scroll Plate counterclockwise with Operating Lever, and replace Stop Screw.



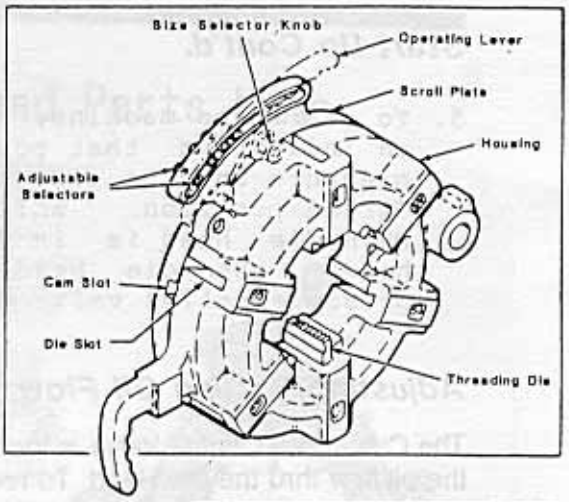
Installing Dies In Uniquad Die Head

1. Lay die head on bench with numbers facing up.
2. Swing Operating Lever to OPEN position.
3. Loosen Locking Lever approximately three turns.
4. Rotate Scroll Plate clockwise with Operating Lever until slots in Scroll Plate and Die Head line up.
5. Remove threading dies from Die Head.
6. Choose the correct threading dies for the desired thread form and size.
7. Matching die segment number with die slot number on die head, insert threading dies into slots and push them toward center until die pins are seated in Cam Slots of Scroll Plate.
8. Rotate Scroll Plate counterclockwise with Operating Lever until index line on Link is aligned with correct size mark on Size Selection Bar, and tighten Locking Lever.

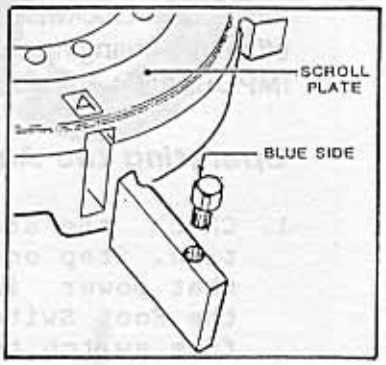


INSTALLING DIES IN QUADMATIC DIE HEAD

1. Lay die head on bench with Scroll Plate side facing up.
2. Pull the Size Selector Knob to disengage Size Selector Pin from the Adjustable Selectors. Swivel the Operating Lever and Size Selector Knob assembly away from the Adjustable Selectors.
3. Rotate Scroll Plate clockwise as far as it will go. In this position the Cam Slots and Die Slots will line-up allowing the loading or unloading of threading dies.
4. Remove threading dies from Die Head.
5. Choose the correct threading dies for the desired thread form and size.
6. If Die Pins are separate from Dies, insert them into holes as shown in illustration.



7. Matching die segment number with Die Slot number on die head, insert threading dies partially into slots, rotate Die Pins until Blue Side is aligned as shown in illustration, and push them toward center until die pins are seated in Cam Slots of Scroll Plate.
8. Rotate Scroll Plate until correct size is lined up with Size Selector Knob, and reengage the Pin. Close Operating Lever by pushing it down and away from operator. This action will move the six threading dies toward the center of the die head into position for threading.



OPERATING PROCEDURE

WARNING: The Supermatic 4000 is NOT A MAKE-ON MACHINE! The use of this machine for tightening and loosening pipe fittings or valves will void the warranty and may damage the motor, the chucking jaws, and the alignment of the spindle.
The Operator should be thoroughly familiar with preceding Safety Instructions before attempting to operate this equipment.

START-UP

1. Confirm that machine is mounted properly to stand or bench. See mounting instructions under Preparing for Operation.
2. Check the reservoir of the central lubricating system and refill if necessary with SEA 30 weight lubricating oil. Once a day, before starting machine for the first time, lift and release the lubricator plunger six (6) times. Then during normal operation, lift and release plunger four (4) times every two hours of operation.
4. The Supermatic 4000 is equipped with two electrical switches, a safety foot switch (On-Off), and an operating switch (Thread-Off-Release). The special right & left hand Supermatic 4000's have an additional directional switch (Right-Off-Left).
   The function of these switches are as follows: The safety foot switch is designed to provide the operator with a rapid method of stopping electrical power to the machine if an emergency should occur. Also, it insures that the machine cannot be operated unless the operator is in proper position.
   The Thread-Off-Release switch is the main operating switch. The Thread position closes the jaws and rotates the spindle, the Off position stops the machine, and the Reverse position opens the jaws. The reverse position is spring loaded to return to the Off position. The Right-Off-Left switch changes the direction of the motor and therefore the direction of the spindle.

OPERATING PROCEDURE *Cont'd.*

Start-Up Cont'd.

5. To start the machine, step on the foot switch. The green light will come on indicating that power is available to the motor. While maintaining pressure on the foot switch, move the operating switch lever to the Thread position. While machine is running, check cutting oil flow. When die head is in the down position, oil will flow through the die head. When die head is in the up position, oil will flow from bypass pressure relief valve directly into the sump.

Adjusting Cutting Oil Flow Thru the Die Head

The Cutting Oil Control Valve is located on the front panel near the Operating Switch. This valve controls the oil flow thru the Die Head. To reduce flow, turn clockwise toward the OFF position. To increase flow, turn counterclockwise toward the ON position. To avoid oil splashing on operator, oil flow should be turned off before changing die head or removing small die head adapter.
IMPORTANT: Thread Cutting Oil must flood the pipe during threading!

Operating the Automatic Chuck

1. Check the status of the Operating Switch, it must be in the OFF position. Step on the Foot Switch. The green light will come on, indicating that power is available to the motor. During operation of the machine, the Foot Switch must be depressed. In case of an emergency, remove foot from switch to stop the machine instantly without having to move the Operator Switch lever to the OFF position.

2. Turn Operating Switch Lever momentarily to the RELEASE position to open jaws.

3. Swing die head, cutter, and reamer up and out of the way.

4. Insert material into spindle from either end of machine. If material is longer than five feet, an adjustable pipe stand must be used. See Preparing for Operation section for more detail.

5. Turn Operating Switch Lever to THREAD position to grip material and start rotation.

6. To release material, turn Operating Switch Lever to OFF position, allow spindle to come to a FULL STOP, and then rotate Operating Switch Lever to RELEASE. The material can now be removed from the spindle.

Cutting Pipe or Rod

1. Chuck material to be cut as instructed under Operating the Automatic Chuck. Stop the machine and rotate Carriage Handle until cutter is in the approximate area where the cut is to be made.

2. Start machine by turning Operating Switch Lever to THREAD

3. Lower cutter assembly over material and turn Cutter Handle counterclockwise if necessary to retract roller block sufficiently to clear the material. The edge of the cutting wheel can now be used for precise positioning.

OPERATING PROCEDURE *Cont'd.*

Cutting Pipe or Rod Cont'd.

4. Start cutting by turning Cutter Handle clockwise at a moderate speed, pausing occasionally allow the cutter wheel to "catch up". Forcing the Cutter Handle at an excessive rate of speed will cause pipe distortion, excessive burr, and possible damage to the cutter assembly.

   IMPORTANT: To avoid damage to cutter wheel or cutter assembly, never cut into threads or attempt to cut hardened material. Exceeding the bolt cutting capacity will also likely to cause damage.

5. After pipe is cut, turn Operating Switch Lever to OFF and raise cutter to out-of-way position.

Reaming Pipe with Cone Reamer (Up to 2")

1. Attach small die head adapter with cone reamer to carriage as instructed under Mounting Small Die Head Adapter. Raise cutter and die head up and lower reamer down into alignment with pipe.

2. The cone reamer can be extended, to ream short lengths, by sliding Reamer Knob toward pipe until it contacts the reamer holder. Rotate Reamer Knob counterclockwise 1/4 turn to lock into position.

3. With pipe chucked and rotating, turn Carriage Handle counterclockwise to feed cone reamer into pipe. Apply light pressure on Carriage Handle, to force reamer against pipe, until all the burr is removed. It is advisable to use a small amount of cutting oil to extend reamer life and improve finish.

4. Rotate Carriage Handle clockwise to move reamer away from pipe, retract reamer, turn Operating Switch Lever to OFF, and lift reamer into out-of-way position.

Reaming Pipe with Blade Reamer (2 1/2"-4")

1. Raise cutter and die head and lower reamer down into alignment with pipe. Blade reamer must be in center of pipe. To check center, move carriage toward the pipe until reamer is engaged. Adjust the position of the blade reamer if necessary, by loosening two setscrews on top of reamer bar, shifting reamer, and retightening setscrews.

2. With pipe chucked and rotating, turn Carriage Handle counterclockwise to feed blade reamer into pipe. Apply light pressure on Carriage Handle, to force reamer against pipe, until all the burr is removed. It is advisable to use a small amount of cutting oil to extend reamer life and improve finish.

3. Rotate Carriage Handle clockwise to move reamer away from pipe, turn Operating Switch Lever to OFF, and lift reamer into out-of-way position.

OPERATING PROCEDURE *Cont'd.*

Threading Pipe or Rod with Snap-O-Matic & Uniquad Die Heads (1/2"-2")

IMPORTANT: It is essential to ream the pipe before threading. Reaming after threading can result in distorted threads.

1. Attach small die head adapter to carriage as instructed under Mounting Small Die Head Adapter. Install the proper size die head on the pin of small die head adapter, and lower the die head into alignment with pipe.

2. a. Snap-O-Matic Die Heads: Select the correct size notch on the Selector Plate and engage the Operating Lever Pin.

   b. Uniquad Die Heads: Loosen the Locking Lever, rotate Scroll Plate until index line on Link is aligned with correct size mark on Size Selection Bar, and tighten Locking Lever.

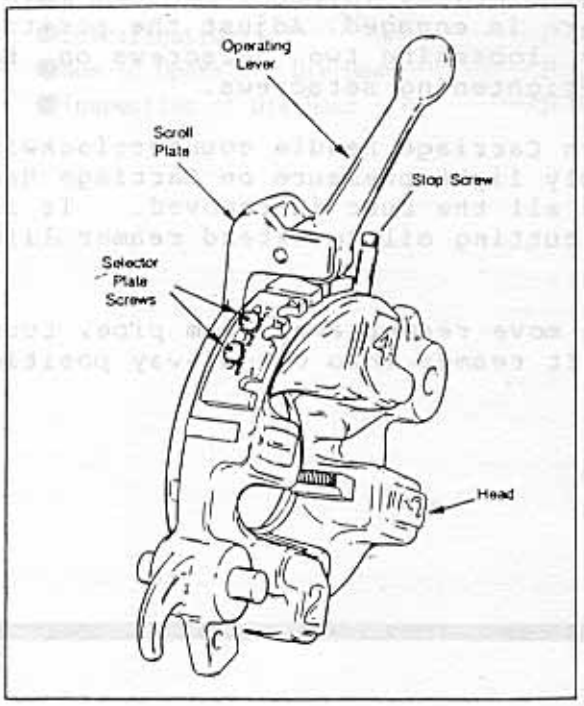
3. Chuck material to be threaded and while machine is running, turn Carriage Handle counterclockwise to bring dies against material. Apply slight pressure on Carriage Handle until a couple of threads have been cut, after which the die head will feed itself automatically.

   CAUTION: When chucking material to be threaded, it is important to have sufficient material exposed so thread can be completed before carriage gets near the spindle cover. If carriage strikes the spindle cover during threading, excessive strain is put on the machine and damage may result. If machine has an optional limit switch installed, the power will be disconnected before carriage reaches the spindle cover.

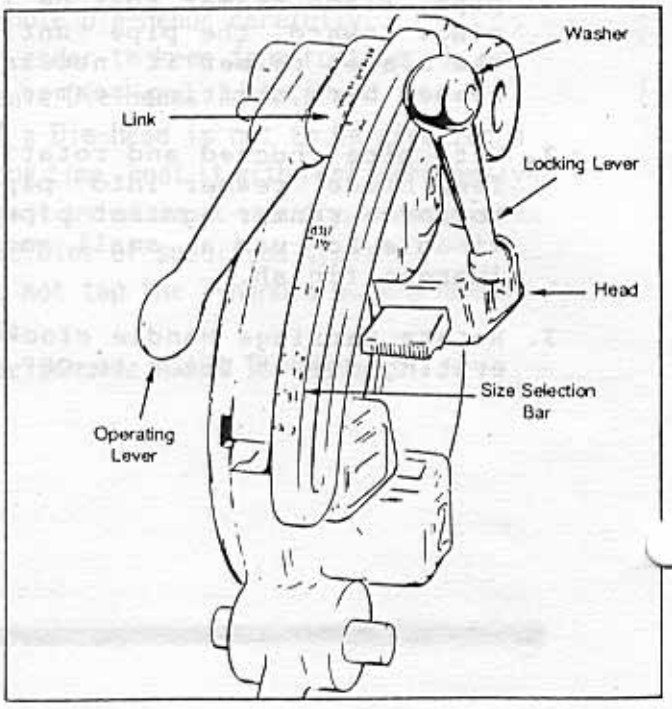
4. Correct thread length is normally obtained when material reaches the outside edge of threading dies. At that point, open or disengage the Operating Lever to withdraw dies from the thread.

6. Turn Operating Switch Lever to OFF and rotate Carriage Handle clockwise to clear the die head from the material.

Snap-O-Matic Head



Uniquad Head



OPERATING PROCEDURE *Cont'd.*

Adjusting the Snap-O-Matic & Uniquad Die Heads (1/2"-2")

1. Make a thread as instructed above. Check thread size using a thread ring gauge. Before going ahead with die head adjustment, be certain that out-of-size condition is not caused by incorrect thread length due to early or late opening of die head.

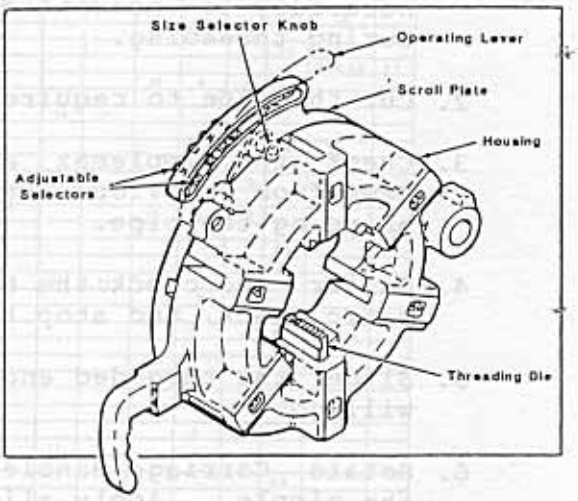
2. a. Snap-O-Matic Die Heads: Using a 5/32" allen wrench, loosen the Selector Plate Screws. Slide Selector Plate in the direction indicated to increase or decrease size of thread.

   b. Uniquad Die Heads: Loosen the Locking Lever, shift Scroll Plate in the direction indicated to increase or decrease size of thread and tighten Locking Lever.

Threading Pipe or Rod with Quadmatic Die Head (2 1/2"-4")

1. Install the quadmatic die head on the Carriage Pin and lower it down into alignment with material.

2. Pull the Size Selector Knob to disengage Size Selector Pin from the Adjustable Selectors. Rotate Scroll Plate until correct size is lined up with Size Selector Knob, and reengage the Pin. Close Operating Lever by pushing it down and away from operator. This action will move the six threading dies toward the center of the die head into position for threading.



3. Chuck material to be threaded and while machine is running, turn Carriage Handle counterclockwise to bring dies against material. Apply slight pressure on Carriage Handle until a few threads have been cut, after which the die head will feed itself automatically.

   CAUTION: When chucking material to be threaded, it is important to have sufficient material exposed so thread can be completed before carriage gets near the spindle cover. If carriage strikes the spindle cover during threading, excessive strain is put on the machine and damage may result. If machine has an optional limit switch installed, the power will be disconnected before carriage reaches the spindle cover.

4. Correct thread length is normally obtained when material reaches the outside edge of threading dies. At that point, open the Operating Lever by pulling it up and toward the operator to withdraw dies from the thread.

6. Turn Operating Switch Lever to OFF and rotate Carriage Handle clockwise to clear the die head from the material.

OPERATING PROCEDURE *Cont'd.*

Adjusting the Quadmatic Die Head (2 1/2"-4")

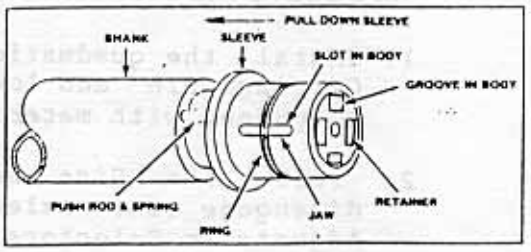
1. Make a thread as instructed above. Check thread size using a thread ring gauge. Before going ahead with die head adjustment, be certain that out-of-size condition is not caused by incorrect thread length due to early or late opening of die head.

2. Pull the Size Selector Knob to disengage Size Selector Pin from the Adjustable Selectors. With a 3/16" allen wrench, loosen the appropriate Adjustable Selector Screw, shift the Selector in the direction indicated to increase or decrease size of thread and tighten Selector Screw.

Threading Short or Close Nipples with the Nipplemax (1/2"-2")

1. Ream the inside of the pipe and thread one end. Refer to threading instructions under Operating Procedure.

   IMPORTANT: Reaming prior to threading is necessary to prevent slippage of nipple during threading.



2. Cut the pipe to required length.

3. Check the Nipplemax and clean if necessary. Chips and dirt around the Jaws from previous threading will prevent the jaws from expanding and gripping the pipe.

4. Center and chuck the Nipplemax, as instructed under Operating the Automatic Chuck, and stop the machine.

5. Slide the threaded end of the pipe over the Nipplemax Jaws as far as it will go.

6. Rotate Carriage Handle counterclockwise to bring threading dies against the nipple. Apply slight pressure on Carriage Handle and start the machine.

   IMPORTANT: Applying pressure with dies against nipple BEFORE starting machine will prevent slippage.

7. After thread is completed, the nipple can easily be removed by hand.

Threading Short or Close Nipples (2 1/2"-4")

Refer to separate Operator's Manual for 2 1/2"-6" Nipple Chuck.

MAINTENANCE AND REPAIR

WARNING: Always unplug power cord before servicing machine.

NOTE: If any maintenance is required other than that listed below take machine to an authorized Rothenberger Warranty Repair Center or return to factory.

LUBRICATION

IMPORTANT: Proper lubrication of the Spindle Bearings and Brake Band is essential for trouble-free operation and long life of the machine. The central lubricating system of the Supermatic 4000 makes this a very easy procedure.

1. Check the reservoir of the central lubricating system and refill if necessary with SAE 30 weight lubricating oil. Once a day, before starting machine for the first time, lift and release the lubricator plunger six (6) times. Then during normal operation, lift and release plunger four (4) times every two hours of operation.

2. Replace Filter Element once a year on the central lubricator pump.

CUTTING OIL SYSTEM

IMPORTANT: The use of proper thread cutting oil cannot be over emphasized! If you are getting poor thread quality and short die life, it is very likely caused by improper grade of cutting oil, over-used cutting oil, or water contaminated oil. We recommend the use of our ROCOOL cutting oil. It is a special oil designed to release anti-weld and anti-wear additives at low machining temperatures encountered during pipe threading.

REPLACING CUTTING OIL

1. Replace Thread Cutting Oil after every fourty (40) hours of operation, or sooner if it becomes contaminated or dirty. To drain oil, position a container under Drain Plug and remove plug. The Drain Plug is located on the front side of the Base.

2. Remove and clean the Chip Tray frequently. The Chip Tray is located under the Carriage and it slides out on the right side of the Base.

3. Clean Oil Sump of metal chips and sediment particularly around the Oil Pump Strainer.

4. Replace Drain Plug and pour two (2) gallons of ROCOOL oil into the Sump. Replace Chip Tray.

CLEANING AND ADJUSTING PRESSURE RELIEF VALVE

IMPORTANT: The Oil Pressure Relief Valve must be cleaned periodically to avoid loss of pressure through the die head. Low cutting oil pressure will result in poor thread quality and reduced die life.

1. Locate the Oil Pressure Relief Valve in the Sump next to the Strainer.

2. Remove Pressure Relief Valve Assembly from Reducer Bell. Remove Setscrew, Spring, and Ball from Valve Assembly. Check and clean all components and reassemble.

3. Readjust Valve Assembly by turning slotted Setscrew clockwise until it is flush with the bottom of the hexagon Valve Housing, and then turn Setscrew two (2) more turns clockwise.

ADJUSTING CUTTING OIL FLOW THRU THE DIE HEAD

The Cutting Oil Control Valve is located on the front panel near the Operating Switch. This valve controls the oil flow thru the Die Head. To reduce flow, turn clockwise toward the OFF position. To increase flow, turn counterclockwise toward the ON position. To avoid oil splashing on operator, oil flow should be turned off before changing die head or removing small die head adapter.

IMPORTANT: Thread Cutting Oil must flood the pipe during threading!

CARRIAGE RAILS AND GEAR

Keep clean and oil frequently with machine oil.

SPINDLE GEAR

The Spindle Gear is lubricated with a heavy, open-gear grease. It has self-lubricating metallic solids to provide long term lubrication. Additional grease should be added every six (6) months. To access the Spindle Gear, remove spindle cover and apply grease with a stiff brush.

MOTOR AND GEARBOX

Lubrication of the motor and gearbox is not required, they are permanently lubricated and sealed. Motor brushes should be checked for wear every (6) months. If motor is arcing around the brushes and lacks power, the most probable cause is dirty commutator, worn brushes or both. The following steps should be taken to remedy this problem:

1. Turn machine OFF and remove Spindle Cover and two sheet metal Motor End Bell covers to gain access to motor.

   WARNING: Machine will have to be turned on for a short period of time without the Spindle Cover. Extreme care must be taken to keep hands and fingers away from moving parts while machine is running! Loose clothing, necties, unbuttoned sleeve cuffs, etc., can get entangled in moving parts.

2. Without stepping on the Foot Switch, turn the Operating Switch Lever to THREAD. Move the Foot Swich to the motor end of the machine, step on the Foot Switch and while machine is running, insert a Commutator Cleaner Stick thru one of the opening slots in the End Bell of the motor. Move the Cleaner Stick back and forth several times over the Commutator until arcing is noticeably reduced. If problem persist, brushes will have to be replaced and/or the commutator will have to be turned down by an authorized service center.

BRAKE BAND

IMPORTANT: The Brake Band must be adjusted to the correct tension for the automatic chuck to work properly. Insufficient tension will allow the jaws to slip over the material being threaded, resulting in excessive wear on the jaws and poor thread quality. Excessive tension will overload the motor, reduce the power available for threading, and the high amperage may blow the fuse. If any of these problems surface, then the following steps should be taken:

1. Turn machine OFF and remove Spindle Cover.

   WARNING: Machine will have to be turned on for a short period of time without the Spindle Cover. Extreme care must be taken to keep hands and fingers away from moving parts while machine is running! Loose clothing, necties, unbuttoned sleeve cuffs, etc., can get entangled in moving parts.

2. Clean all eight (8) jaws by wire brushing the teeth.
3. Turn Operating Switch Lever to THREAD, allow spindle to achieve maximum speed, and then move Switch Lever to OFF. The spindle should coast one (1) complete revolution. If not, tighten or loose Brake Adjusting Bolt, and repeat this test.
4. Replace Spindle Cover.

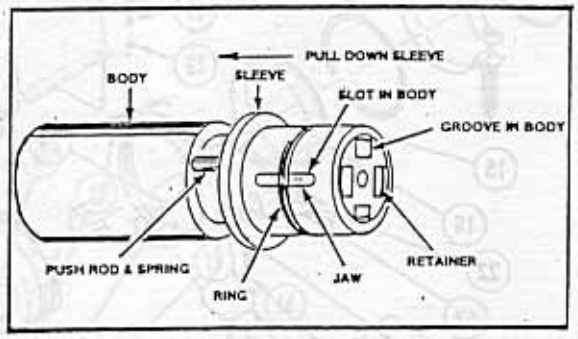
MAINTENANCE AND REPAIR Cont'd.

CHUCKING JAWS

IMPORTANT: Wire brush the teeth on the Jaws daily, thru the front and rear opening of the Spindle Cover. This will prevent material slippage and excessive wear on the Jaws. During cleaning, check the Jaws for wear. If machine has been used only for right-hand threading, indicated by wear on one side only, then the Jaws can be reversed rather then replaced. To replace or reverse the Jaws:

1. Unplug the machine and remove Spindle Cover.
2. Remove Retaining Rings holding Jaws and slide Jaws off the Jaw Shafts.
3. Inspect the Keyways and Woodruff Keys for wear. If the keyways in the Jaws or the Jaw Shafts are enlarged, they will have to be replaced. If the keyways are OK and only one side of the Jaws are worn, then they can be reversed.
4. Install replacement Jaws, Retaining Rings, and replace Spindle Cover.

REPLACING NIPPLEMAX JAWS



1. Pull down Sleeve.
2. Remove Retainer from Body with a screwdriver. Don't distort wire.
3. Pull up Sleeve to remove it from Body.
4. Remove Jaws from inside of Sleeve and remove Ring to clean Slots.
5. Clean Jaws, Grooves and Slots and put in new Jaws.
6. Put sleeve with Jaws on Body. If it was necessary to remove Ring to clean Slots, put Ring on Body.

THREADING DIES

Threading dies must be cleaned and inspected for sharpness frequently. Particular attention should be given to the Lead Angle of the die. This is the area that does most of the cutting and will indicate the need for sharpening. Prompt sharpening as soon as the Lead Angle start breaking down, will greatly extend die life. Threading dies designed to operate in matched sets, and must be sharpened as sets. Sharpening service is provided by the factory for a nominal charge. If a Surface Grinder is available, along with an operator who is familiar with tool room grinding techniques, then dies can be sharpened by following the procedure outlined below.

1. Measure the factory ground Rake Angle and Compund Angle of the die. Setup the grinder to duplicate these angles.
2. With each sharpening, grind the Rake Angle to remove .005"-.007" of material. This will increase the Step dimension by the same amount.

NOTE: Use plenty of coolant during grinding to prevent burning and softening the cutting edge.