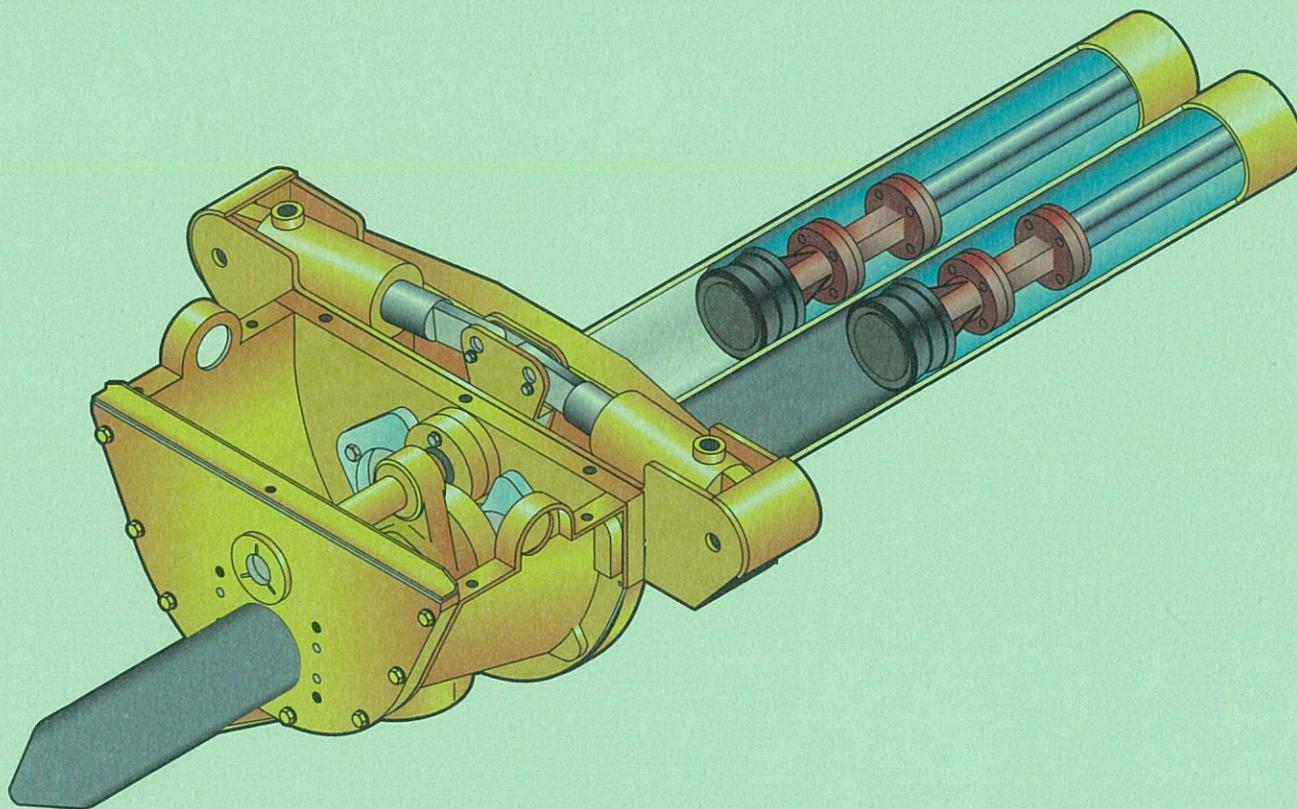


SCHWING
AMERICA INC.

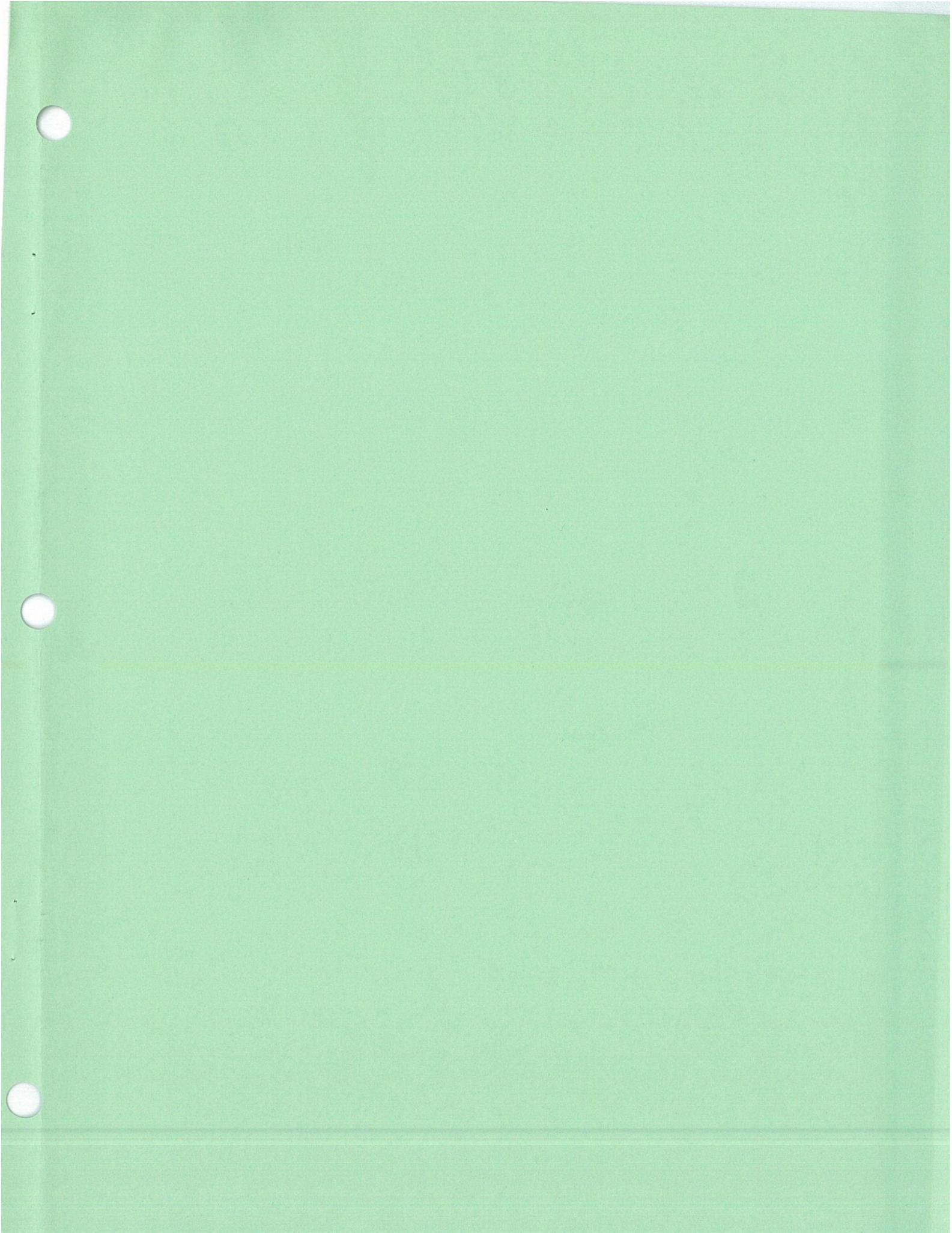
SERVICE REPAIR INSTRUCTIONS FOR
THE SP ROCK VALVE



DOCUMENT #98330783

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REV. 10/25/14



Small Rock Valve

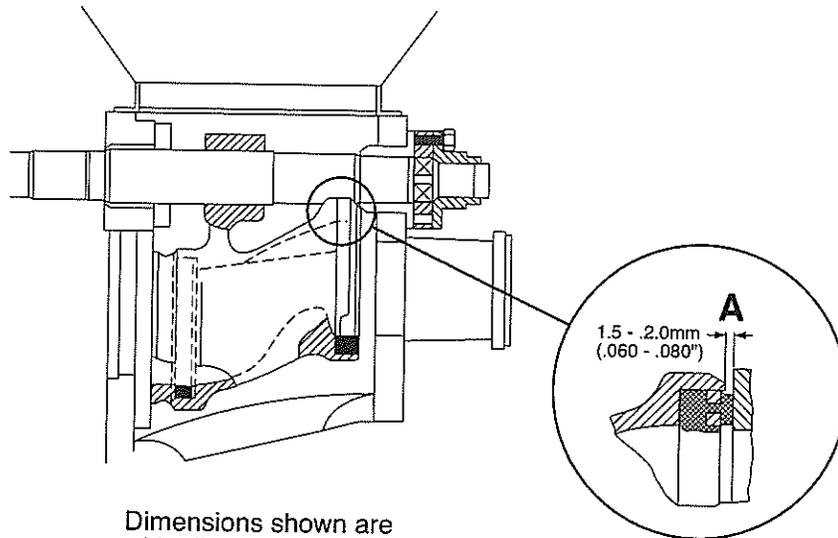
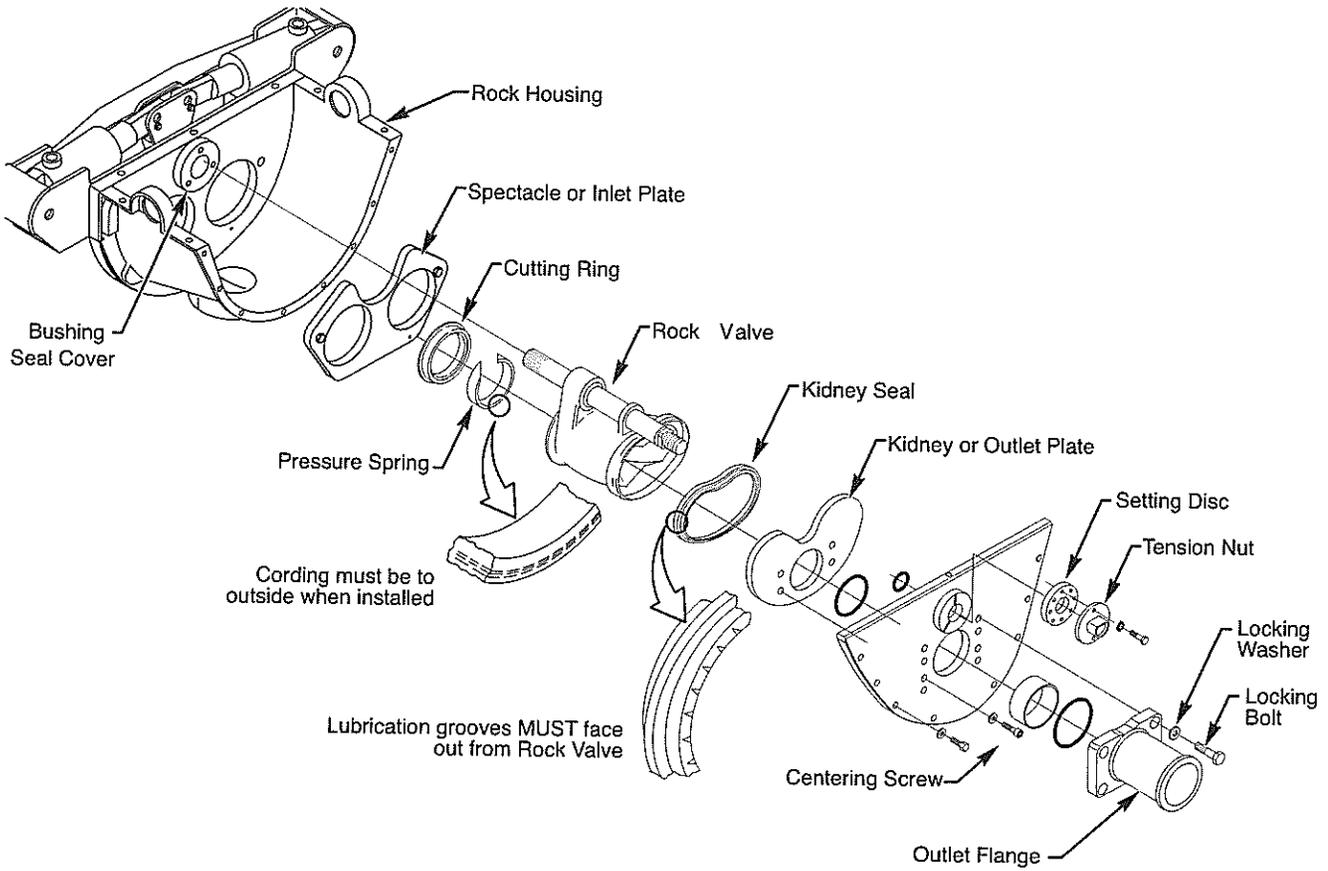
Safety Instruction

When performing maintenance on Schwing Equipment, the safety regulations must be followed. The observation of these regulations is the responsibility of the maintenance personnel. The following are some supplementary recommendations.



1. **WARNING!** Read and understand the operation manual of the machine before attempting any repairs. If in doubt, call the manufacturer. Incorrectly done repairs endanger operational safety of the machine.
2. **WARNING!** Burning hazard! Never work on a hydraulic system with hot oil.
3. **WARNING!** Falling hazard! If you cannot work at ground level, you must use a suitable work platform.
4. **WARNING!** If maintenance work requires that you use a crane, hoist, fork truck, etc., you must read and understand the safety regulations for that equipment.
5. **WARNING!** If working the machine requires that it be operated, and you are not qualified as an operator, you must get someone who is qualified to assist you.
6. **WARNING!** If you will be working in a hidden area inside the machine, protect yourself by taking the key from the ignition and putting a “DO NOT OPERATE” sign on the controls. In the case of electrically driven units, disconnect the main circuit breaker and lock it in the disconnected position.
7. **WARNING!** Never activate the system hydraulics without checking if another workman is in a hidden position. Always yell “CLEAR”, and allow time for response, before starting the prime mover.
8. **WARNING!** Never use gasoline or diesel fuel as a cleaning solvent. This is critical to remember when cleaning hydraulic oil reservoirs, because gas and diesel fuels are highly explosive, and gasoline or diesel fuel traces left in the oil may ignite when compressed.
9. **WARNING!** Always use the correct tools for the job. Tools should be kept clean, and in good condition.
10. If you see a co-worker engaging in an unsafe practice, explain the dangers. Safety is always in the hands of those on the job.
11. **WARNING!** Never work on a pressurized hydraulic system. Stop the prime mover and relieve the accumulator circuit (if so equipped) before you open the hydraulic system.

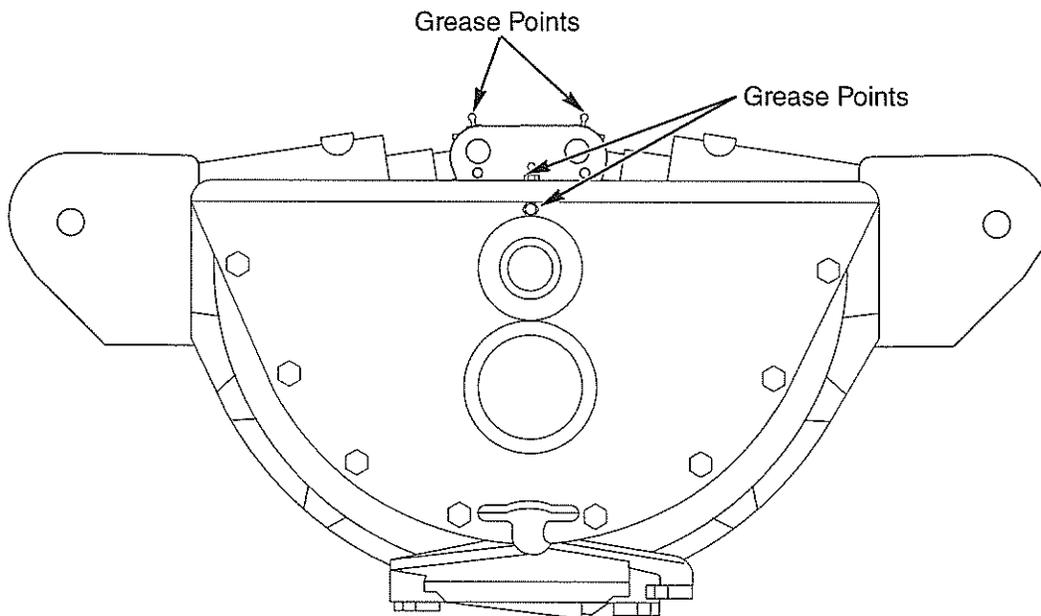
Rock Valve Parts Identification and Clearance Specifications



Dimensions shown are with all new wear parts.

Small Rock Valve Lubrication Points

Use a grease gun with the recommended grease listed in the chart below. Locate the grease points, clean the grease fitting before filling it, and inject grease until you see old grease displaced by the new grease. Lubricate the grease points at 8 hour intervals and whenever the machine work is completed for the day.

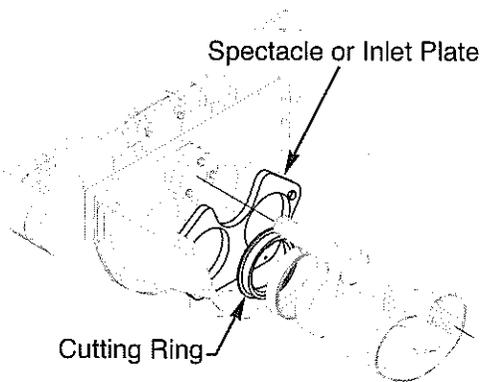


Minimum Specifications for grease.
Lithium base high-pressure grease KP 2 K per DIN 51502.

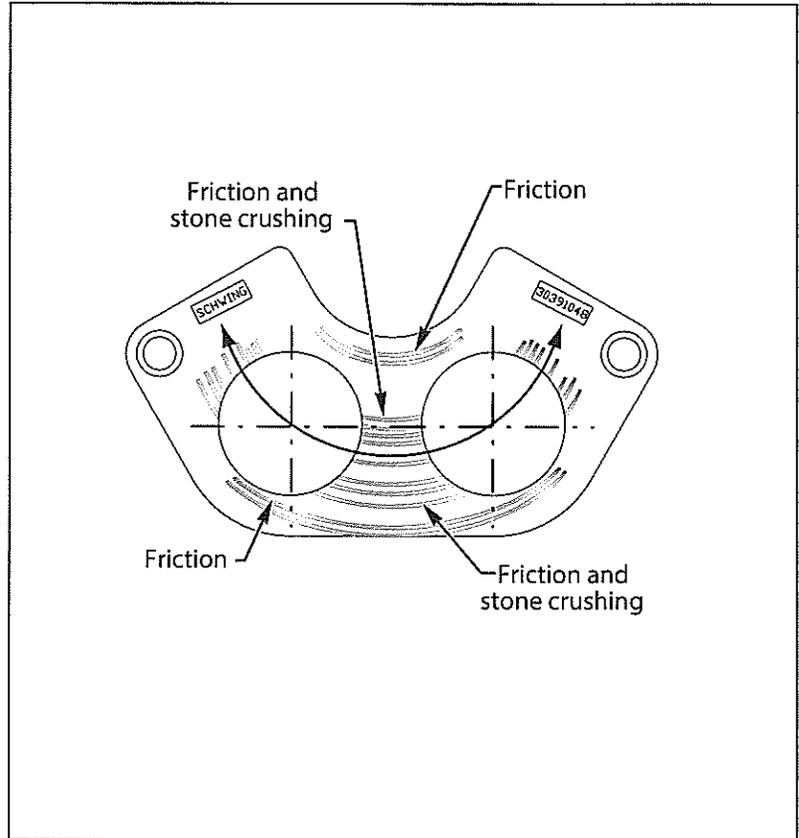
BP	Energrease LS2
MOBIL	Mobilith AW 2
SHELL	Alvania grease R2
TEXACO	Multifak 20
ARAL	HLP 2
ESSO	Beacon 2
OPTIMAL	Olitsa longtme 2EP

Lengthening the Service Life of the Spectacle Plate and Cutting Ring

Conditioned by outside influences (material variations), as well as by differing work strains on partial sections, the cutting ring and the housing lining wear out unequally.

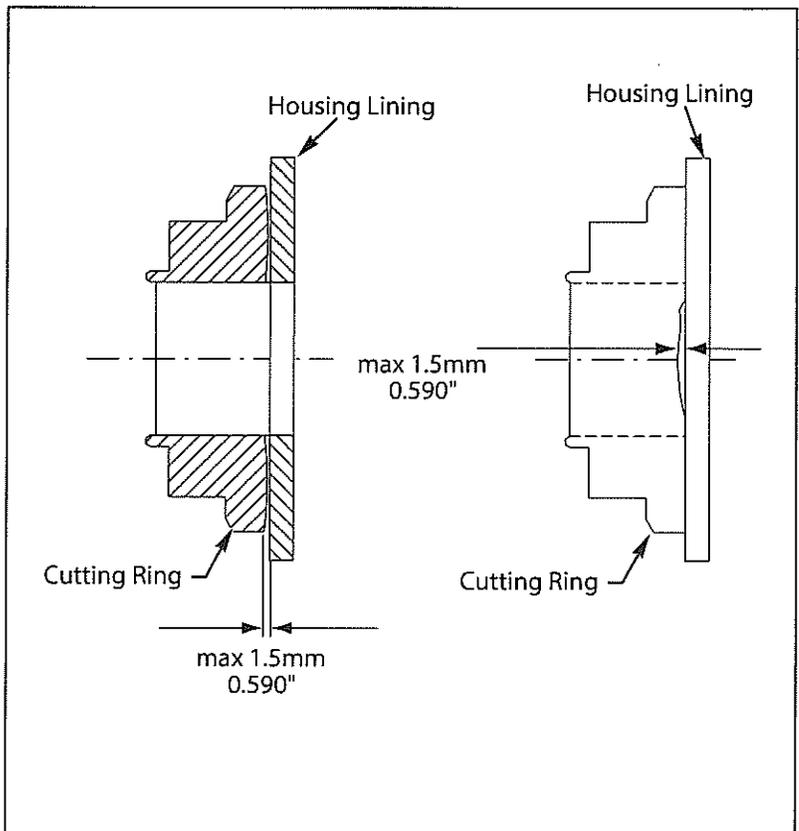


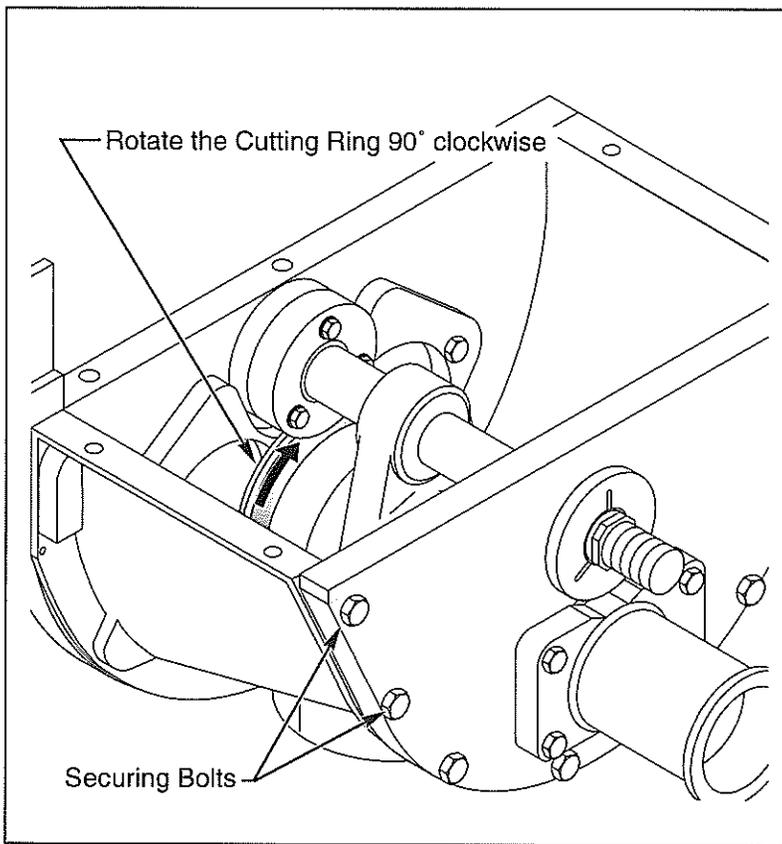
The grooves resulting from operation are irrelevant as long as the armouring is not worn out completely.



To ensure uniform wear and, thus, **considerably longer service lives**, we recommend the following:

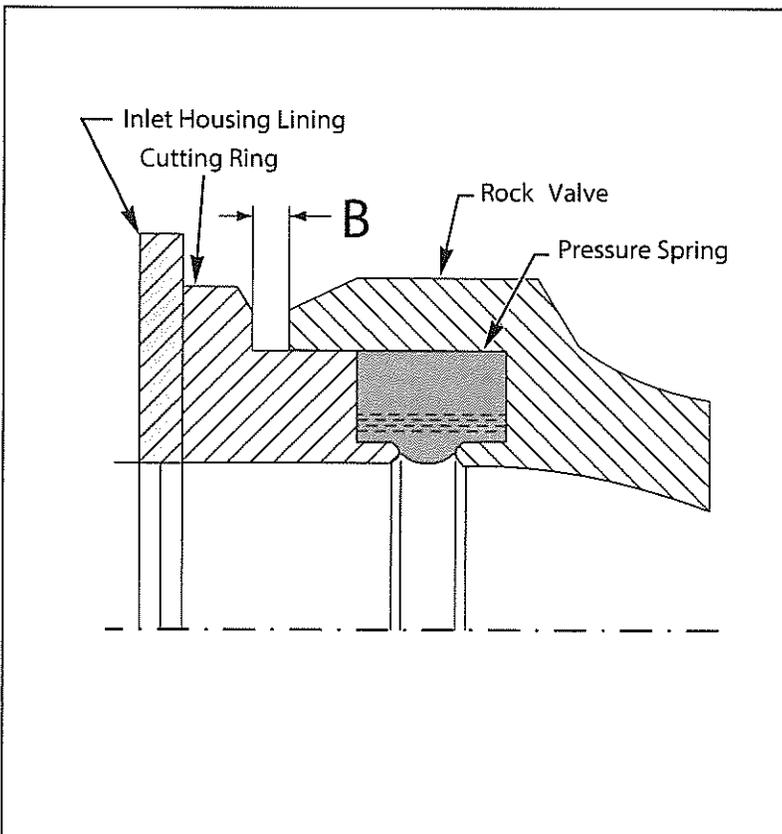
1. Move the Rock Valve to the left and right end position once a week after thorough cleaning, and check the condition of both the Cutting Ring and the Housing Lining.
2. Turn the Cutting Ring 90° when there is a clearance greater than 1.5mm-2.0mm (.0590"-.0590") between the Cutting Ring and the Housing Lining. The Cutting Ring typically wears at the 3 and 9 o'clock position. Turning the Cutting Ring 90° will ensure uniform wear and lengthen the service life.





Check for the gap at several points along the Cutting Ring circumference, and always turn the Cutting Ring in the same direction.

It is only necessary to loosen the Securing Bolts of the Housing Cover approximately 10mm (.3937") in order to release the Pressure Spring and turn the Cutting Ring.



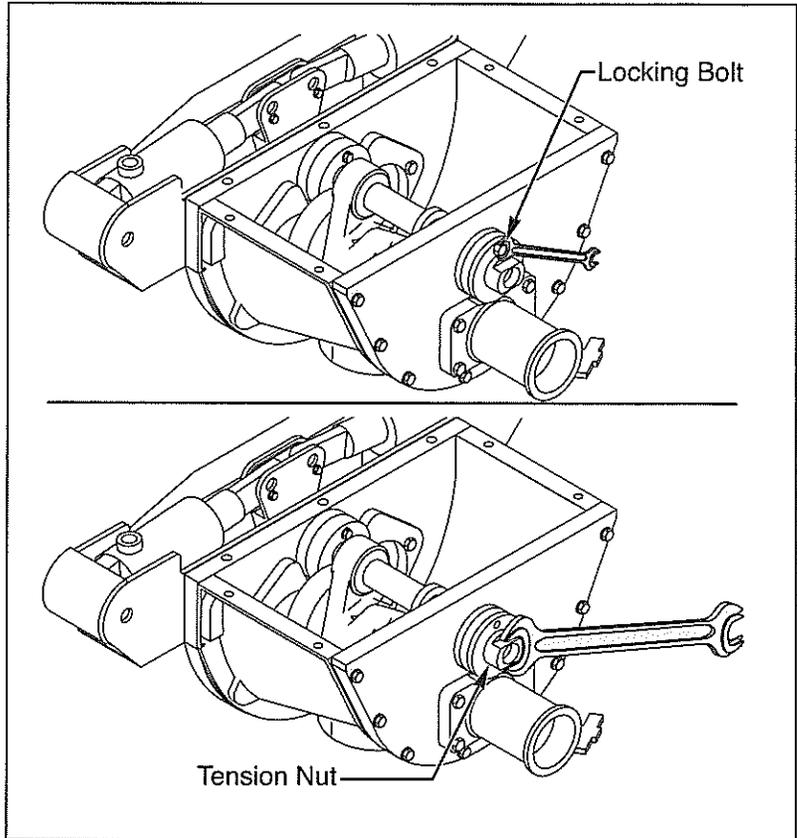
3. Check the distance between the Cutting Ring and the Rock after each turn of the Cutting Ring. If it exceeds 8mm (.315"), the pretension of the Pressure Spring is not enough to correctly press the worn cutting ring up against the Spectacle Plate. In this case, the Cutting Ring has to be replaced

Small Rock Valve

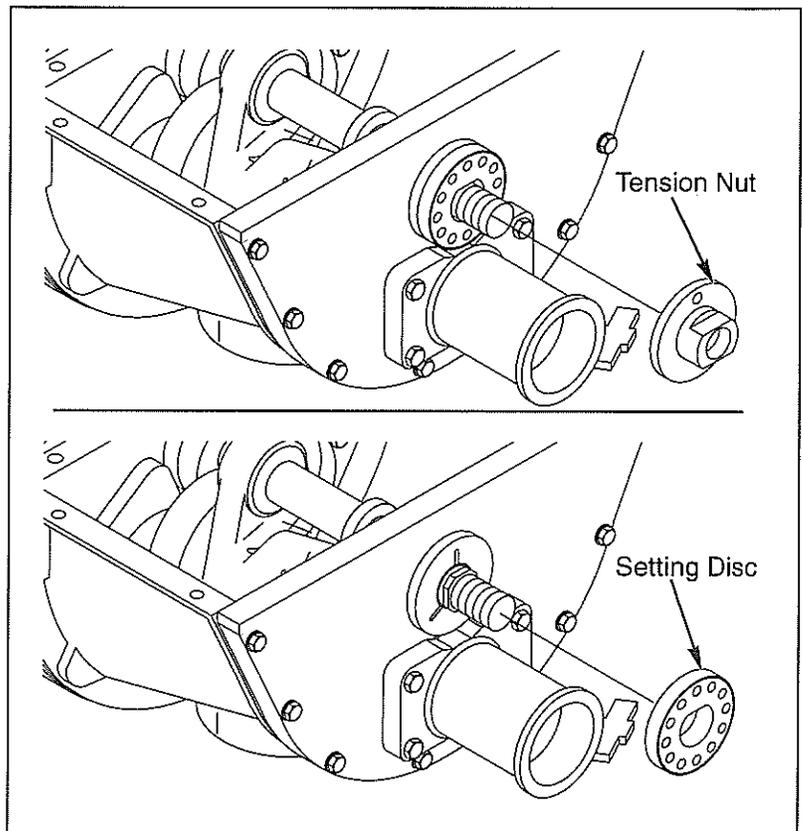
Rebuilding the Rock Valve

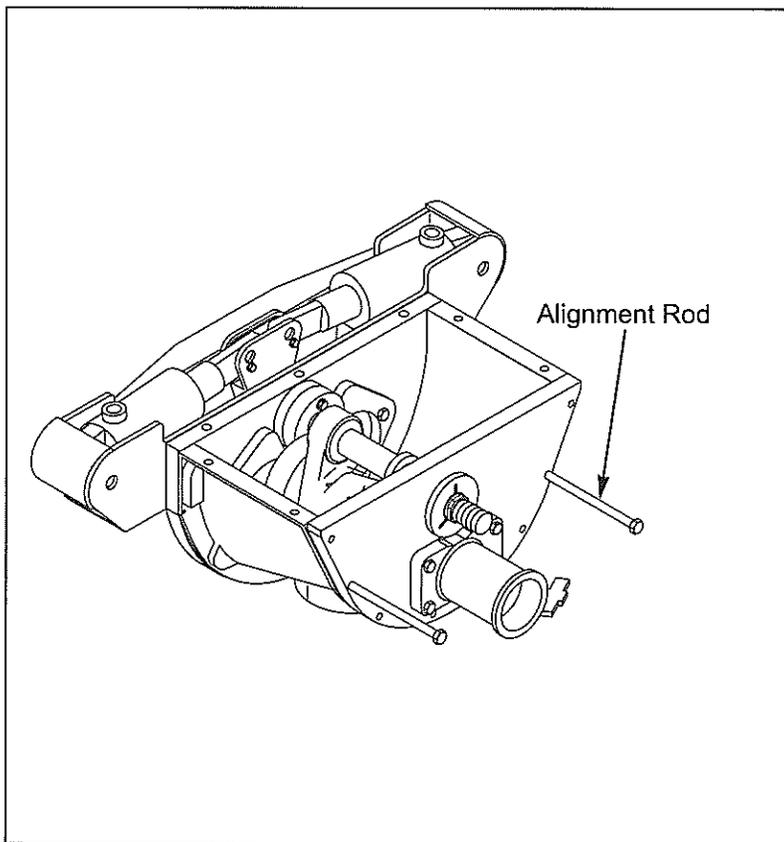
1. Remove the Locking Bolt from the Tension Nut.
2. Loosen the Tension Nut.

NOTE: It's ok to remove the Tension Nut with a wrench, but it must never be tightened more than hand tight

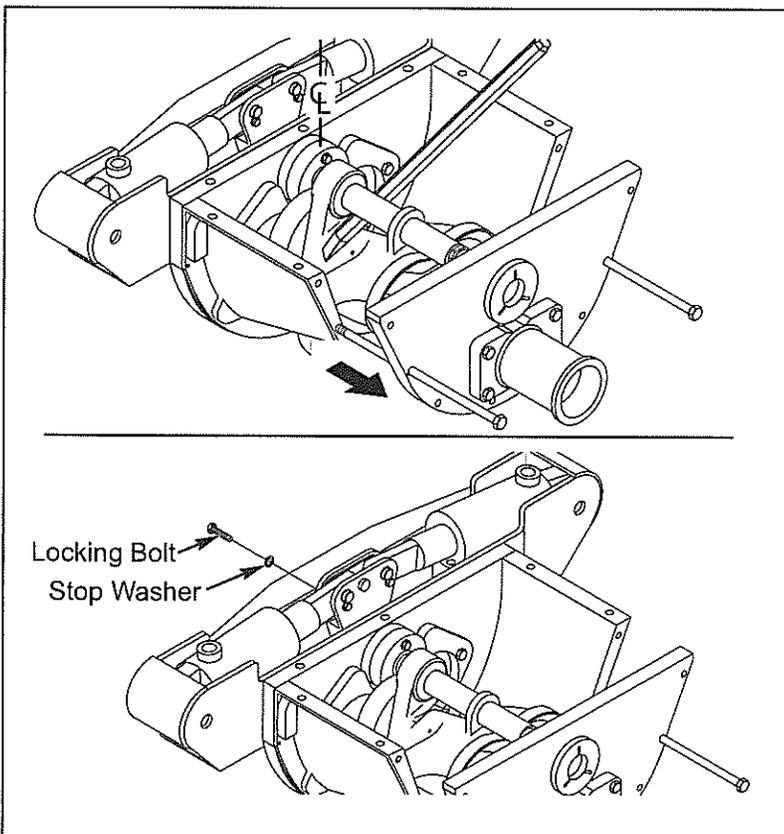


3. Remove the Tension Nut.
4. Remove the Setting Disc





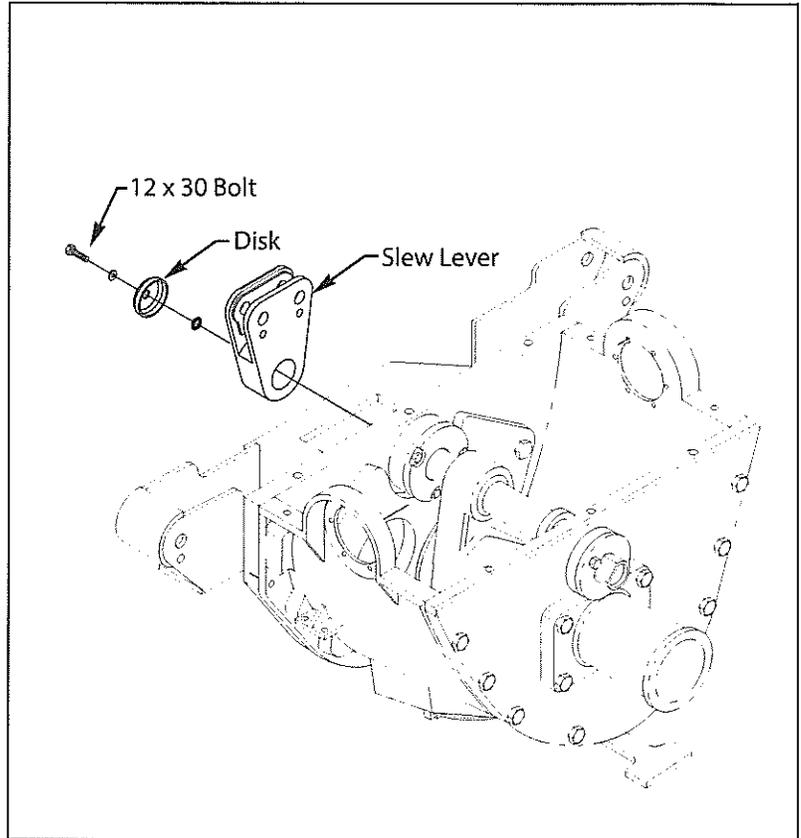
5. Install the alignment rods
 - SAI Part #30309007



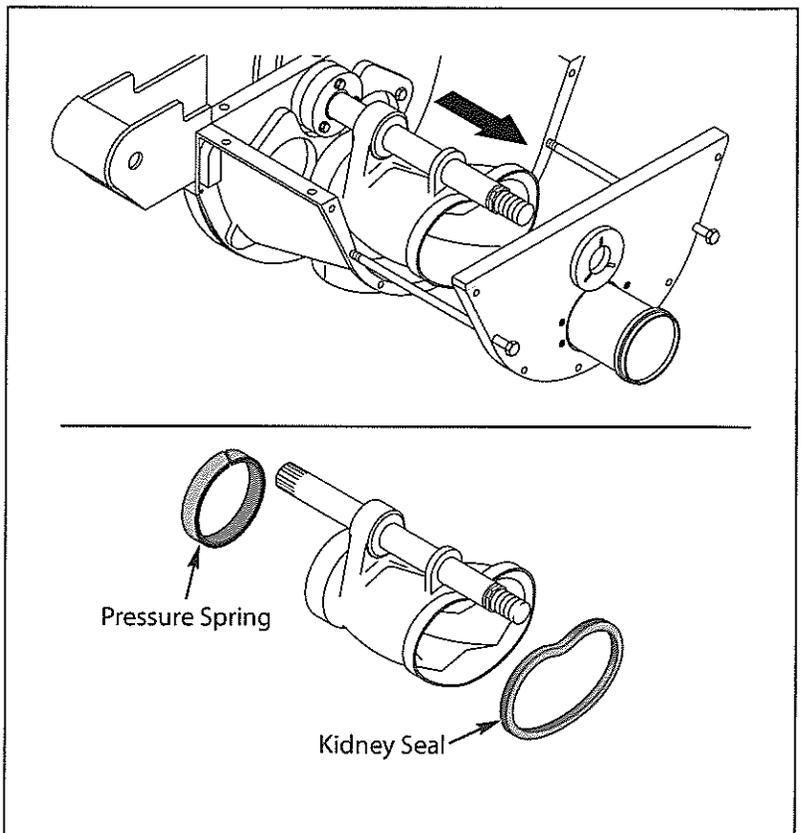
6. Slide the rear housing cover back slightly.
7. Center Rock Valve using a pry bar, so the lever is straight up.
8. Remove the Locking Bolt for the Cylinder Pin on the Slewing Yoke
9. Using a drift punch, drive pin out of the hole.
10. Pull yoke up and out of the slew lever. Move out of the way and tie up.

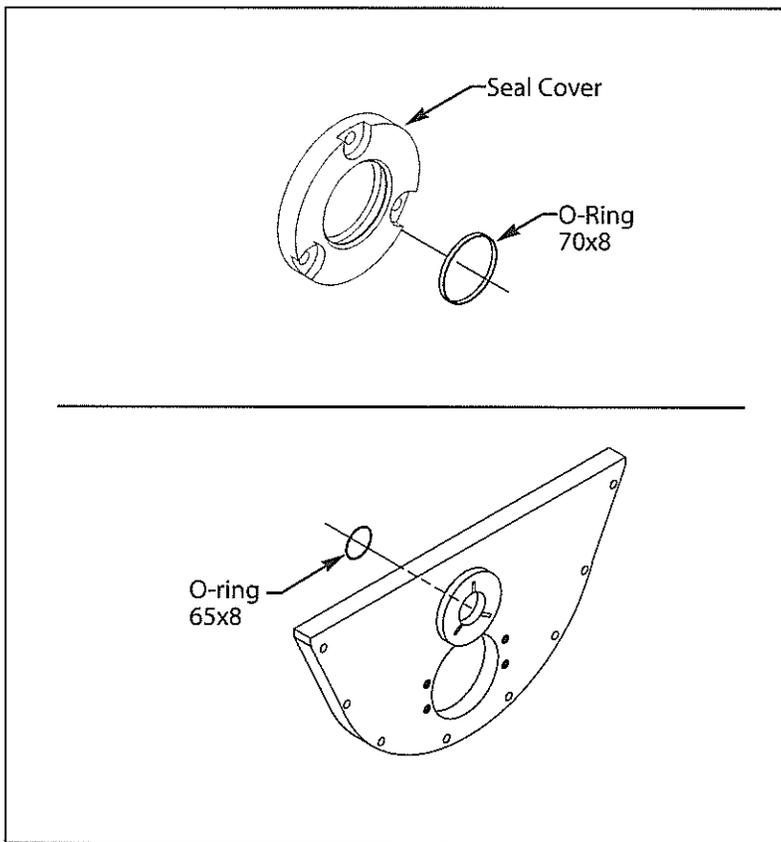
Small Rock Valve

11. Remove 12mm bolt and lever disk from Rock shaft
12. Remove slew lever.



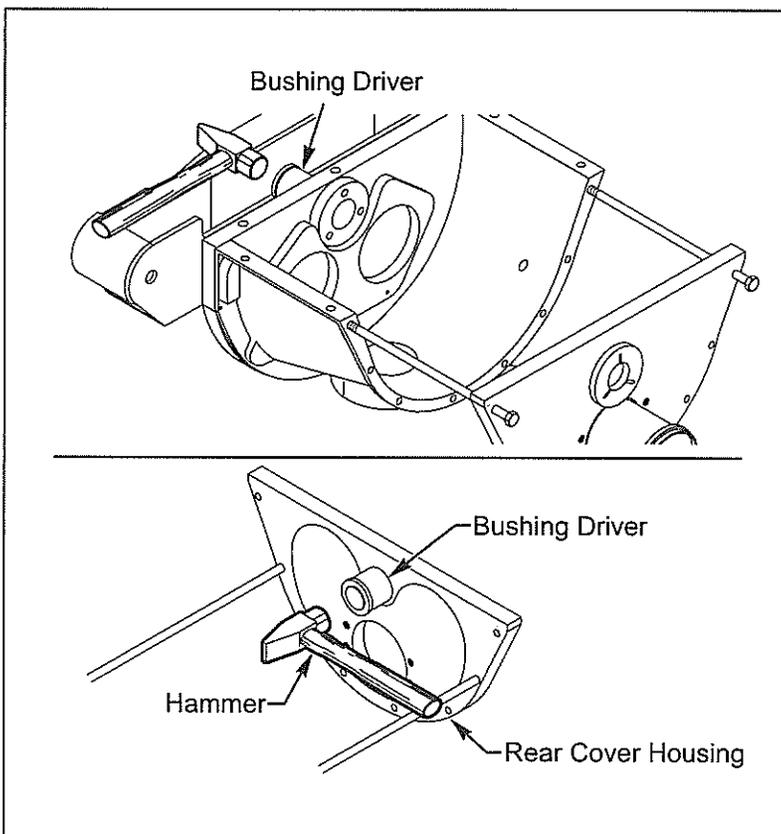
13. Using a lifting device, slide Rock Valve out of bushing and place on a work surface.
14. Remove Kidney Seal and Pressure Spring. Clean both ends of the Rock Valve, removing all concrete debris.





15. Remove the Seal Cover from the Rock Slew-ing Shaft and remove the O-ring.
16. Remove the O-ring from the groove of the Rock shaft bushing on the Rear Cover Hous-ing.
17. Clean the O-ring groove removing all con-crete debris, paying special attention to the grease journals are clean.

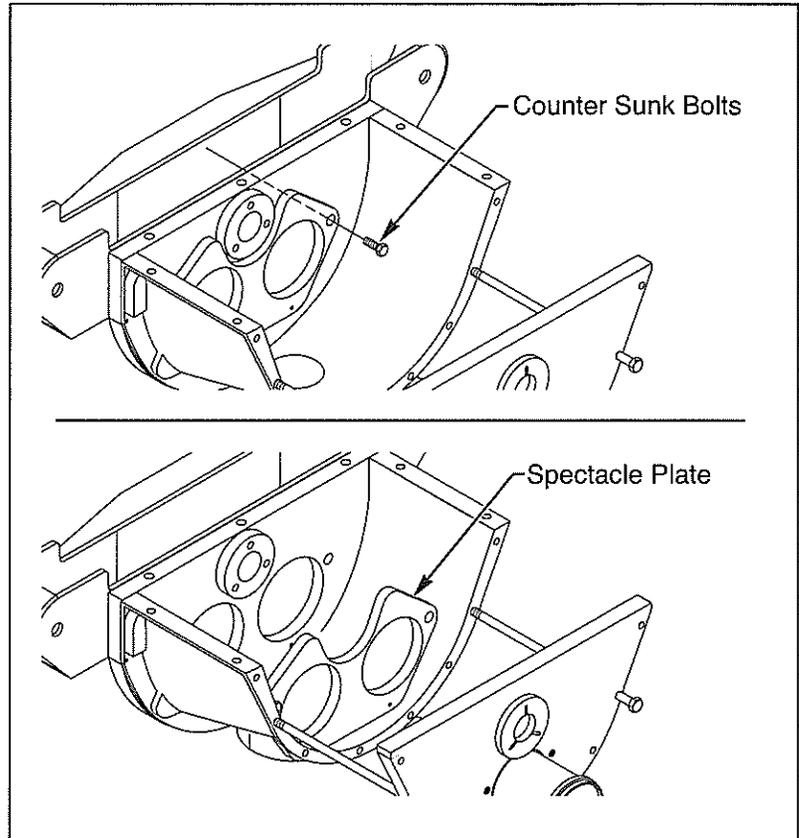
NOTE: Check that grease will come through from the zerk.



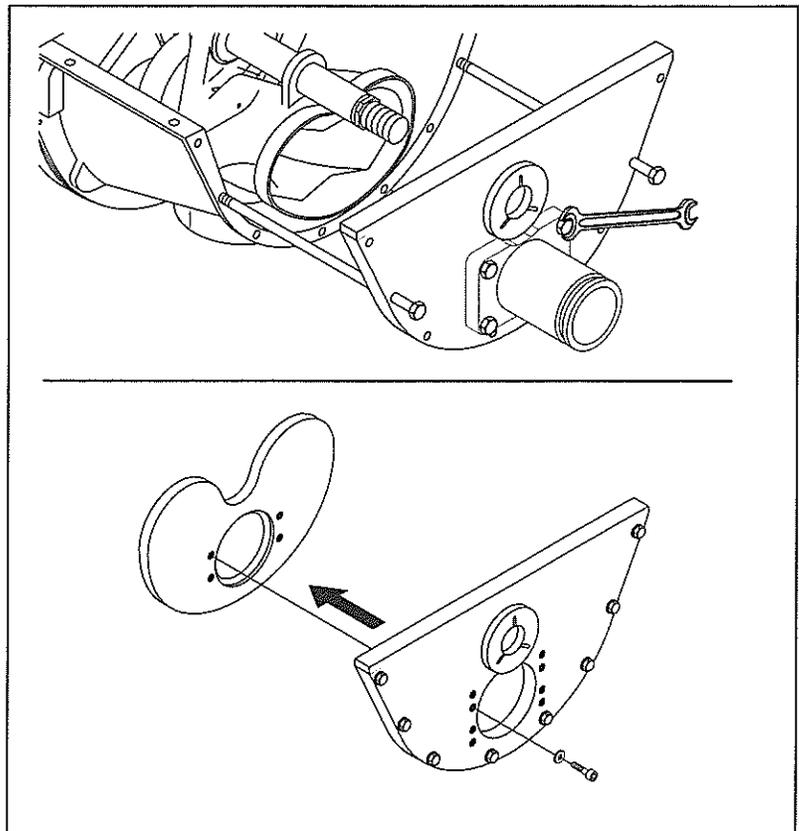
18. Using the correct size bushing driver, drive the old Rock shaft bushing out of the front cover of the Rock housing.
19. Using the correct size bushing driver, drive the old Rock Shaft Bushing out of the Rear Cover Housing.

Small Rock Valve

20. Remove the two bolts attaching the Spectacle Plate to the Front Cover.
21. Carefully remove the Spectacle Plate from the Rock Housing.

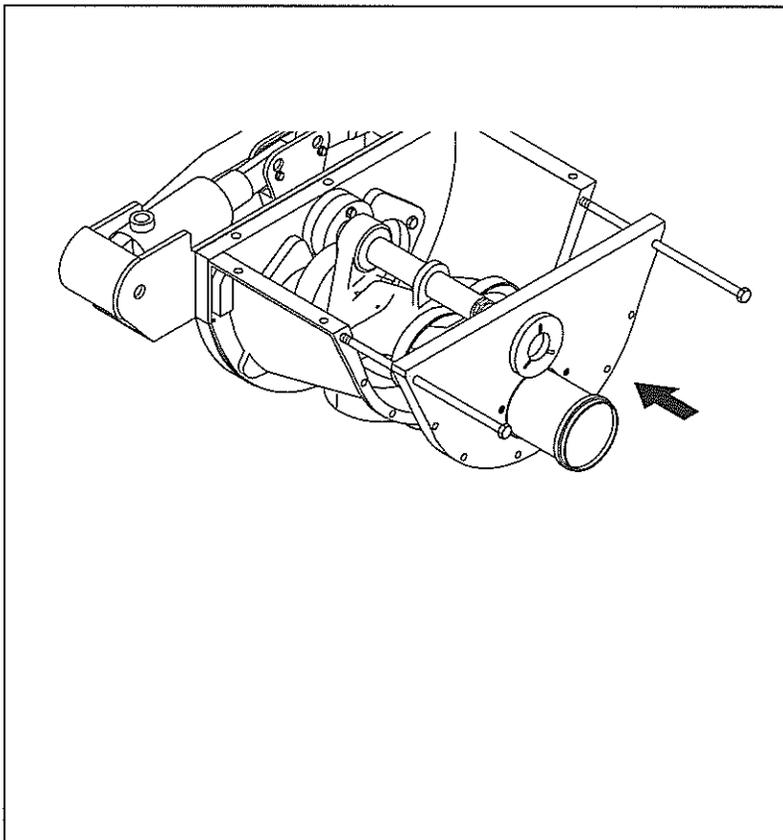


22. Remove the four, 20 mm bolts from the outlet delivery pipe.
23. Remove the four bolts from the rear cover that attach the Kidney Plate to the rear cover.
24. Remove the Kidney Plate.



NOTE: The Kidney Plate should have a smooth, mirror-like finish, free of any scratches, gouges, or wear grooves.

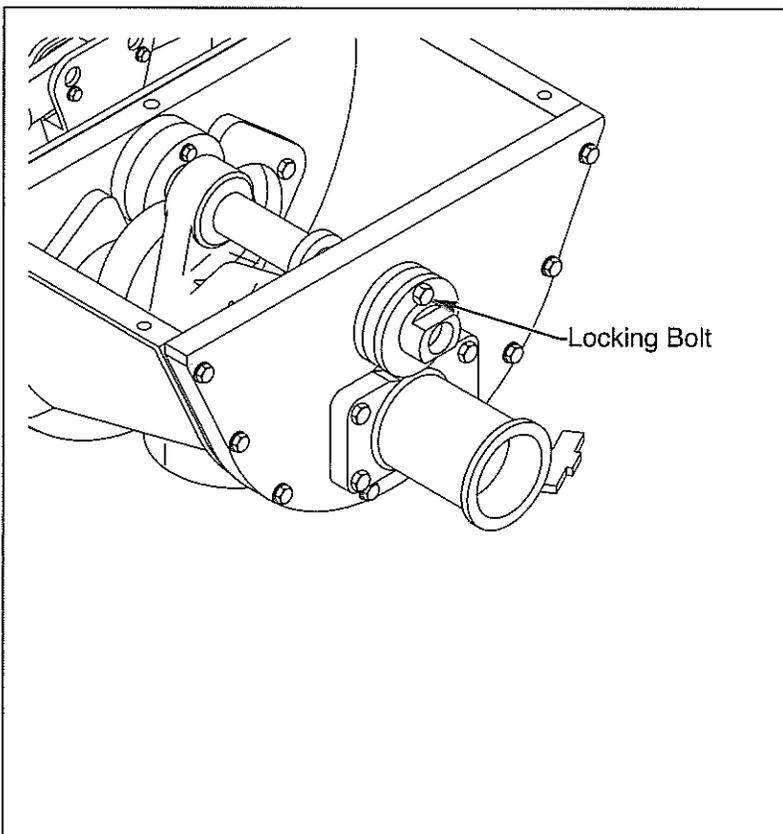
NOTE: Before reassembly, make sure that all components are thoroughly cleaned.



25. Reassemble the Rock Valve assembly in the reverse order that it was disassembled. Slide the cover back in place.

NOTE: Upon reassembly, generously grease the Kidney Seal, Kidney Plate, Cutting Ring and the Spectacle Plate. This is important, because after you have assembled the Rock and done some necessary adjustment, you are going to have to shift the Rock several times before making the final adjustments.

26. Adjust the Tension Nut, which is tightened only hand tight. If the Locking Bolt shown can be installed in the Setting Disc freely, then do so. If the hole in the Tension Nut does not align with the thread hole in the Setting Disc, loosen the Tension Nut to the previous hole, and install the Locking Bolt.



NOTE: Check to make sure that the proper clearance is obtained between the Rock Valve and the Cutting Ring and between the Rock Valve and the Kidney Plate. If the Rock components are worn, the dimensions may be larger than specified.

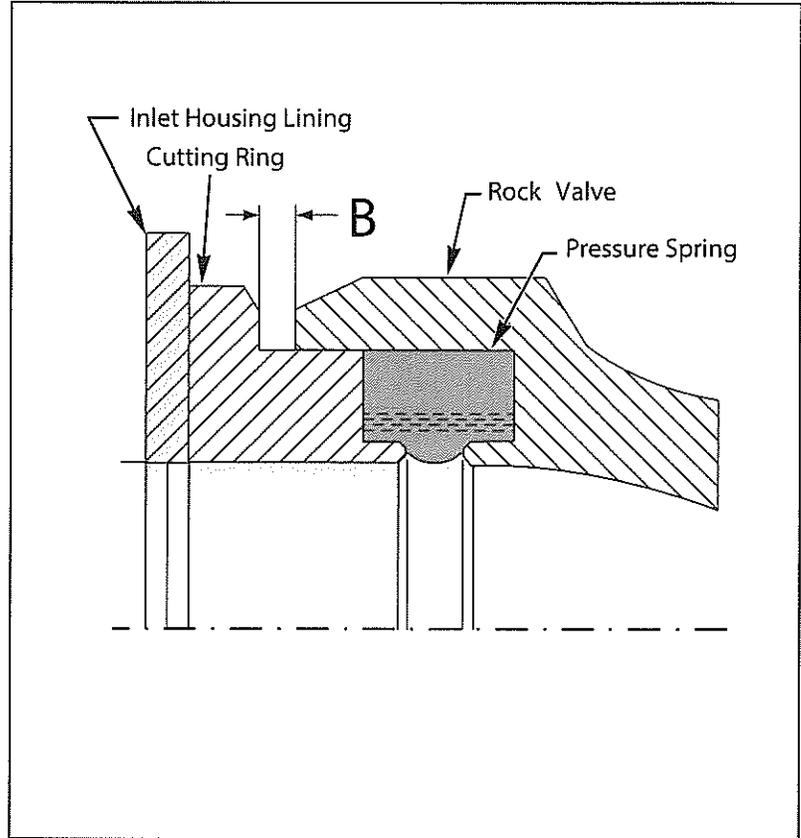
If the dimensions are too small, loosen the Adjusting Nut and pry the Rock Valve in the direction needed. Stroke the unit several times, and recheck the dimensions. If the dimensions are correct, reinstall the Tension Nut and re-adjust.

IMPORTANT! At no time should you operate the Rock Valve without first lubricating the outlet wear plate. Spraying the plate with water or oil will usually be adequate prior to start-up for pumping. Moving the kidney seal against a dry plate will cause excessive wear and premature failure.

Small Rock Valve

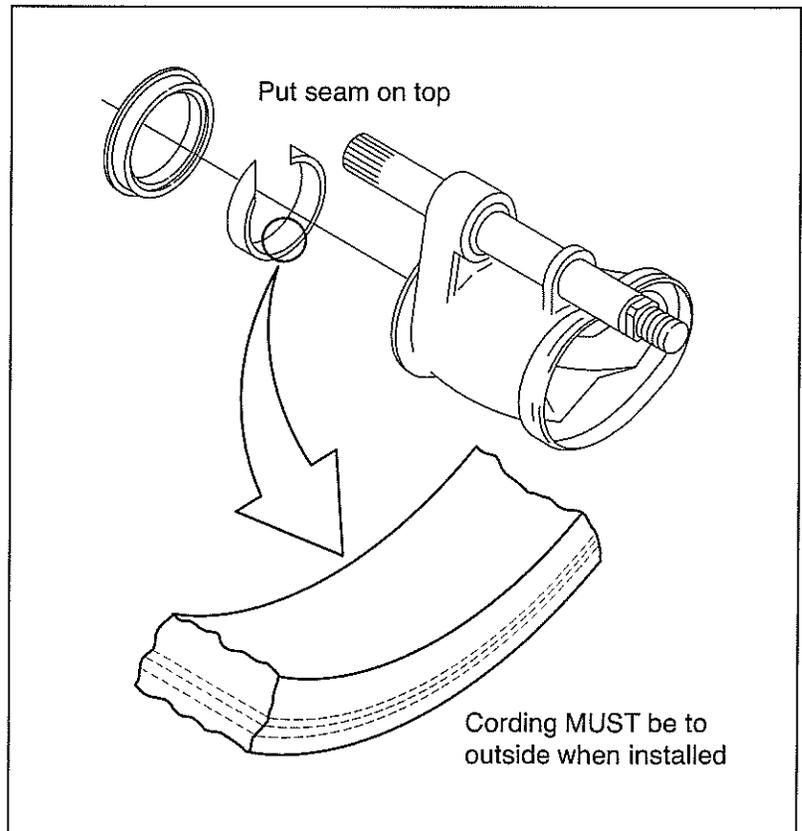
Mounting a New Pressure Spring

If the Pressure Spring has to be replaced, remove the old spring and clean the vacant area thoroughly to clear it of concrete residue. If dust and residue is ignored, the new spring cannot be installed correctly, and the flow of concrete could pull it out of the groove. Furthermore, the high pretension resulting from reassembling with concrete residue in the area of the spring leads to premature wear of the Cutting Ring and Housing Lining.



NOTE: Slightly grease the new Pressure Spring when installing it. The same applies to the Kidney Seal. Do not use too much grease, because grease accumulating in the spring chamber operates as a spacer, increasing the spring pretension.

Although these components will withstand a great deal of hard usage, the Pressure Spring and Kidney Seal should be inspected whenever the Cutting Ring is replaced.



Determining Wear on the Kidney Seal & Housing Lining - Outlet Side

Replace the kidney seal if any of the following conditions exist:

- A considerable formation of cracks are found in the areas marked by arrows. This problem is very rare.
- The lip is completely worn to the point that the pressure relief grooves are no longer recognizable.
- The distance indicated by "M" of the released kidney seal does not exceed 30mm (1.1875").

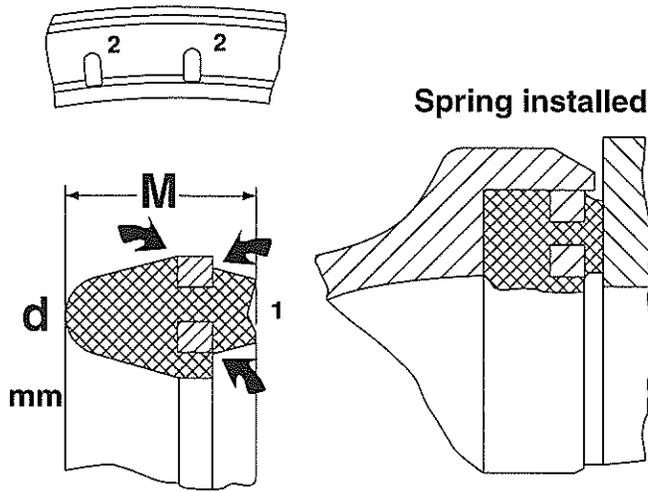


Figure 1

Replace the outlet housing lining (kidney plate) only if scores deeper than 1.5mm are found in the area that contacts the kidney seal. You can measure this by placing a steel ruler across the kidney plate in several places and using a depth gauge to determine the gap.

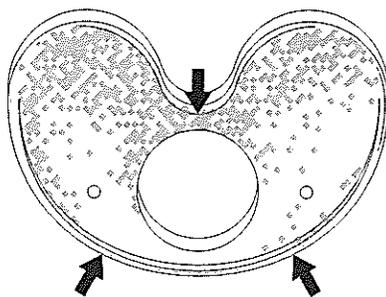


Figure 2

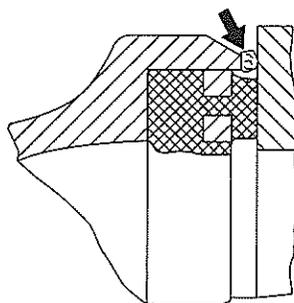


Figure 3

NOTE: Outside of the area that contacts the Kidney Seal, you may detect scores that are due to aggregate particles stuck between the Rock Valve and the Kidney Plate. (See fig. 2 and fig. 3) THESE SCORES DO NOT MATTER IN THE LEAST!

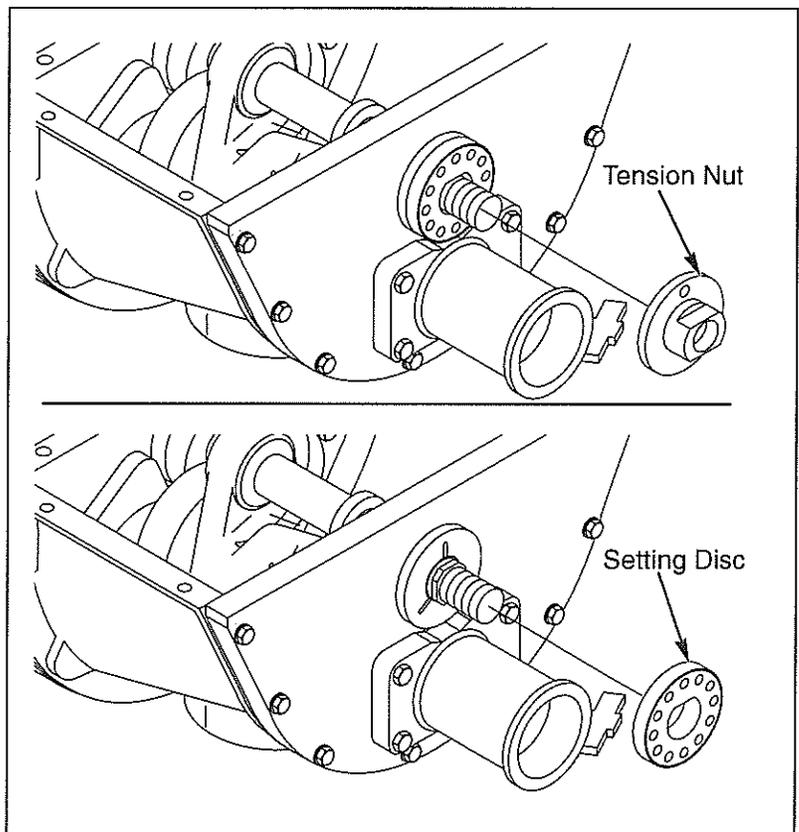
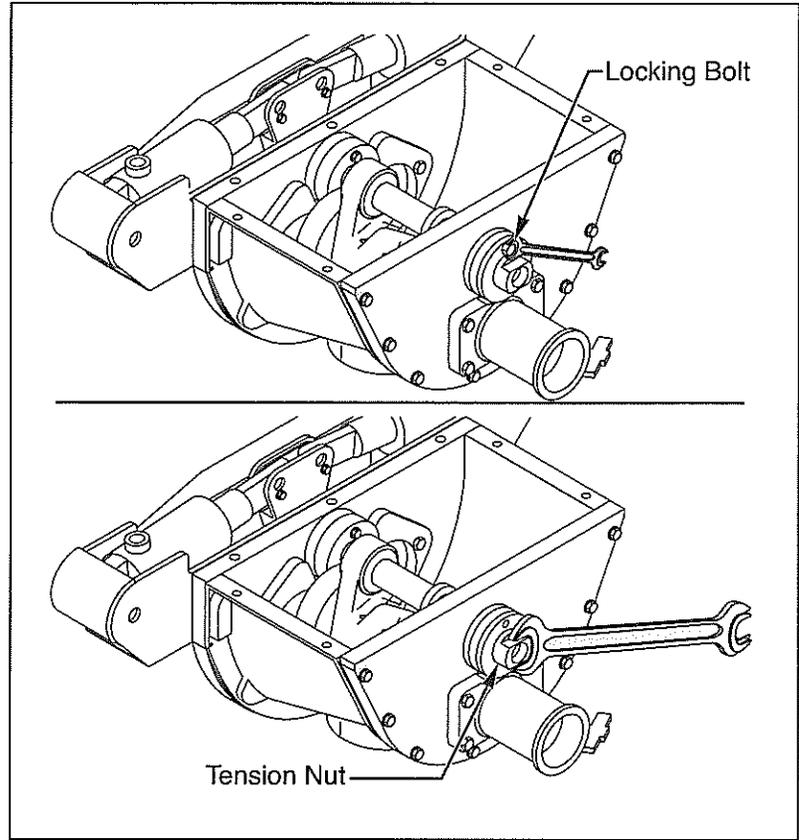
Replacement of Cutting ring and Kidney seal

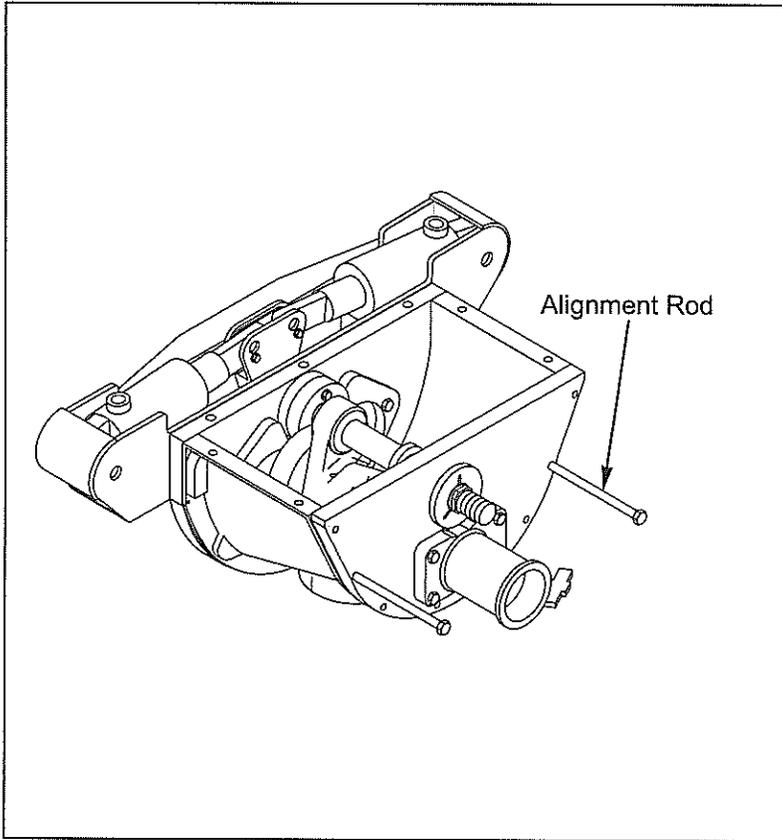
CAUTION! Under no circumstances should you allow the kidney seal to be run with a dry hopper. This will destroy the kidney seal and is the primary cause of premature wear encountered at the outlet side of the Rock Valve. If you will be repairing the Rock or troubleshooting a problem, always fill the hopper with water to the top of the Rock Valve before switching.

1. Remove the Locking Bolt from the Tension Nut.
2. Loosen the Tension Nut.

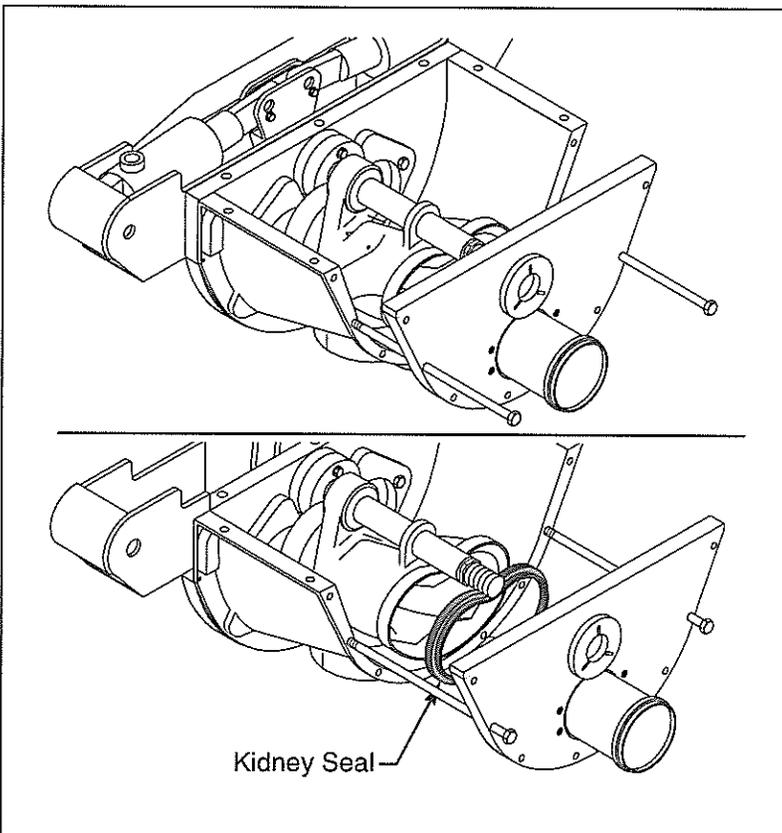
NOTE: It's ok to remove the Tension Nut with a wrench, but it must never be tightened more than hand tight.

3. Remove the Tension Nut.
4. Remove the Setting Disc.





5. Install the Alignment Rods
 - SAI Part #30309007.



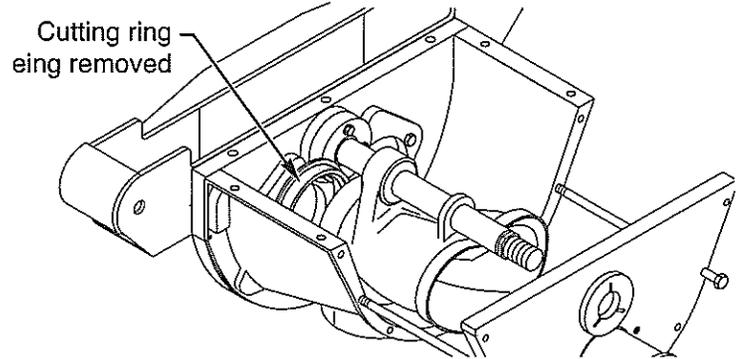
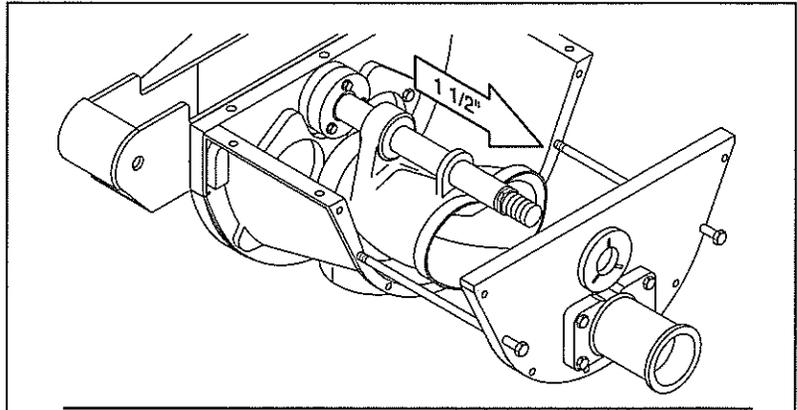
6. Slide the rear housing cover back slightly.
7. Remove the Kidney Seal for inspection, and replace it if necessary. See the previous section of this manual entitled *Determining Wear on the Kidney Seal and Housing Lining--Outlet Side* for reference.
8. Loosen the bolt that holds the slew lever on the Rock shaft, but do not remove

Small Rock Valve

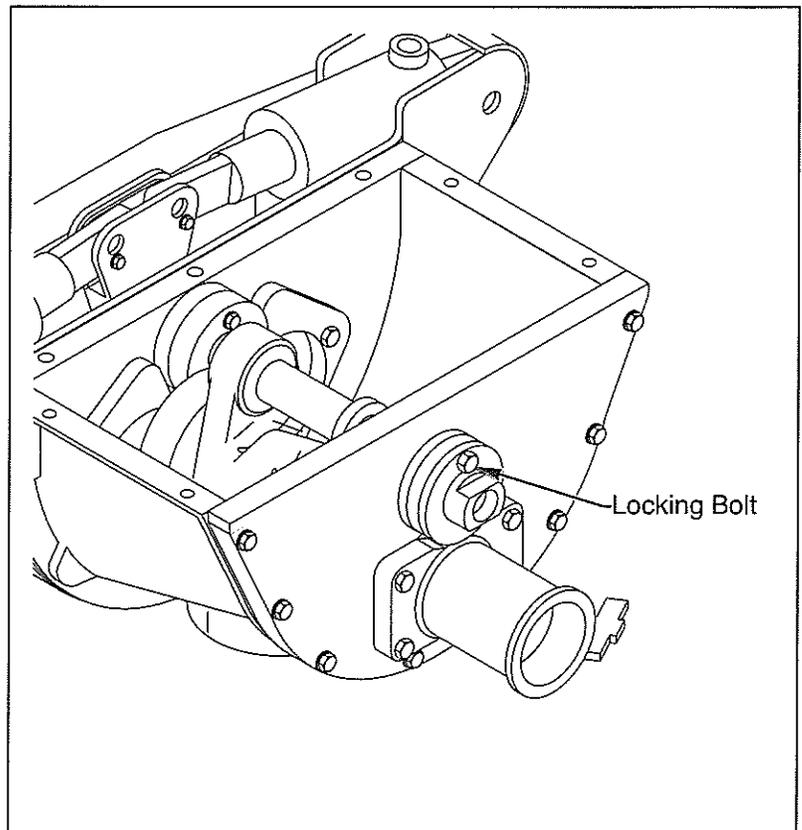
- Slide the Rock Valve back about 1.5 inches, and carefully remove the cutting ring.

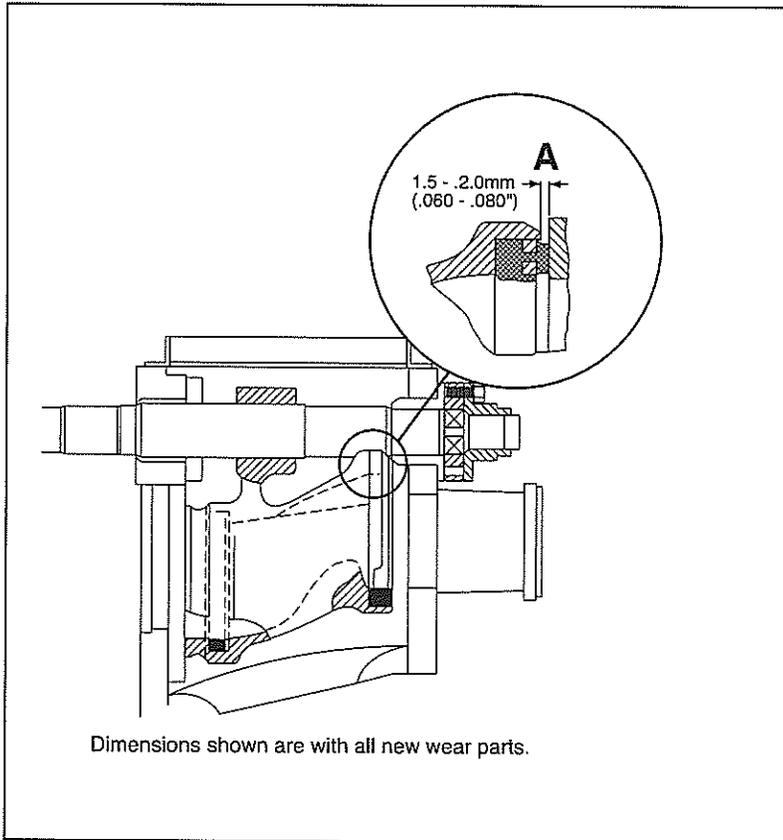
NOTE: If you are going to turn the Cutting Ring, you only have to move the Rock back far enough to allow you to loosen the ring and turn it 90 degrees. To determine if your Cutting Ring needs to be turned, refer to the previous section of this manual entitled *Lengthening the Service Life of the Spectacle Plate & Cutting Ring*.

- Make sure that all parts are thoroughly cleaned, and reassemble in reverse order. Slide the Rock cover back into place, and secure it with bolts.



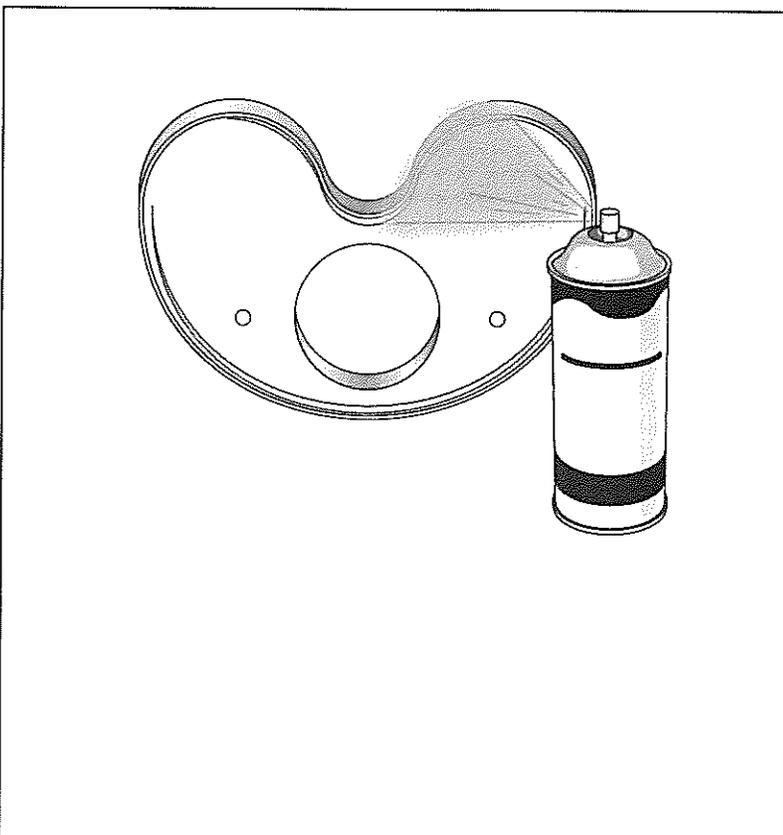
- Adjust the Tension Nut, which is tightened only hand tight. If the Locking Bolt shown can be installed in the Setting Disc freely, then do so. If the hole in the Tension Nut does not align with the thread hole in the Setting Disc, loosen the Tension Nut to the previous hole, and install the Locking Bolt.





NOTE: Check to make sure that the proper clearance is obtained between the Rock Valve and the Cutting Ring and between the Rock Valve and the Kidney Plate. If the Rock components are worn, the dimensions may be larger than specified.

If the dimensions are too small, loosen the Adjusting Nut and pry the Rock Valve in the direction needed. Stroke the unit several times, and recheck the dimensions. If the dimensions are correct, reinstall the Tension Nut and re-adjust.



IMPORTANT! At no time should you operate the Rock Valve without first lubricating the outlet wear plate. Spraying the plate with water or oil will usually be adequate prior to start-up for pumping. Moving the kidney seal against a dry plate will cause excessive wear and premature failure.

Small Rock Valve

These units were designed to have no adjustment. Before assembling slew lever, use a wire brush to clean splines on shaft and lever. Use grease or anti-seize to lubricate splines during assembly. If you do notice that the Rock is missing the material cylinder openings, you must check to see where the problem may be (i.e., articulated bearings, shifting cylinder (internal), or Rock slewing lever may need adjustment).

Please call the Schwing Service Department at (651) 429-0999 with any questions regarding this matter.

Slewing Yoke Timing

(Viewed From Cylinder End)

The slewing yoke is installed properly when the center line of the hydraulic cylinder rod is in line with the center line of both the slewing shaft and the inlet or cutting ring. Rock is hanging freely and the lever is flat on top. A torpedo level will be centered.

