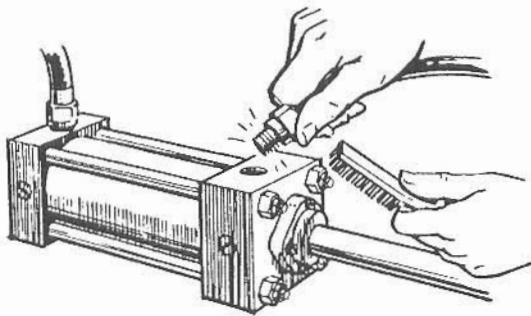


OPERATING AND MAINTENANCE INSTRUCTIONS

NOPAK CLASS 3 CYLINDERS / 3000 PSI HYDRAULIC

For best results in maintaining trouble-free operation on Nopak Class 3 cylinders for hydraulic service, proper provisions are recommended to assure a clean supply of fluid medium. Abrasive particles must be removed from the fluid stream. This is readily accomplished by incorporating a filter in the system, located ahead of the cylinder and directional control valves so that clean filtered fluid is passed through the components.

A word of caution is important in any initial installation and piping of components.

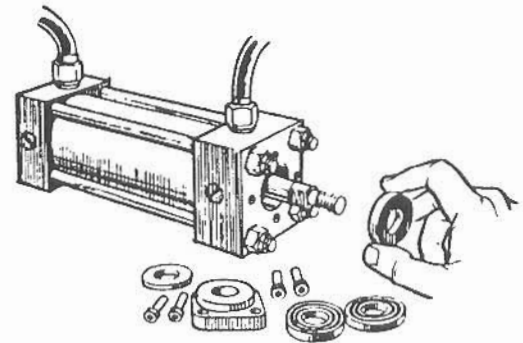


Pipe fittings and tubing should be thoroughly deburred and cleaned out before operating valves and cylinders are connected to the supply and drain lines. It is particularly important to take these precautions because impurities downstream from the filter or in any portion of the line will be carried into the valve and cylinder, possibly causing scoring and serious damage on the initial operation of the components.

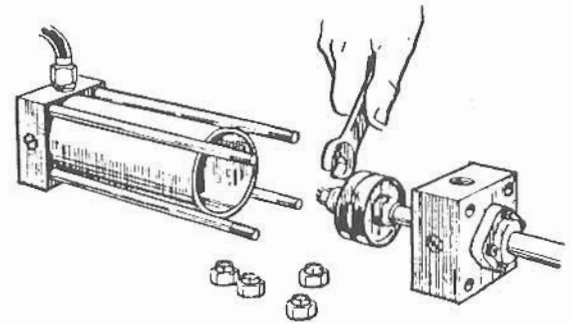
Depending upon the application, your cylinder may eventually require some maintenance and possible replacement of parts. Whenever a cylinder is disassembled it is good practice to carefully check and replace static and moving seals (excepting metallic piston rings which seldom require replacement), the down time and labor being the major portion of the cost of repair.

Carefully note any worn or possibly scored parts which should be replaced. The rod packings are readily replaced by removing the packing gland. The entire set can then readily be replaced. Care should be taken in inserting the packing, tightening down the gland bolts in uniform order.

Replacement of piston "T" seal is relatively simple. It is important however, that the back-up washers are always inserted along with the replaced seal.



In some cases it may not be necessary to remove the piston assembly from the entire cylinder, merely sliding the piston assembly out of the tube at one end. This will require removal of only one of the cylinder heads.



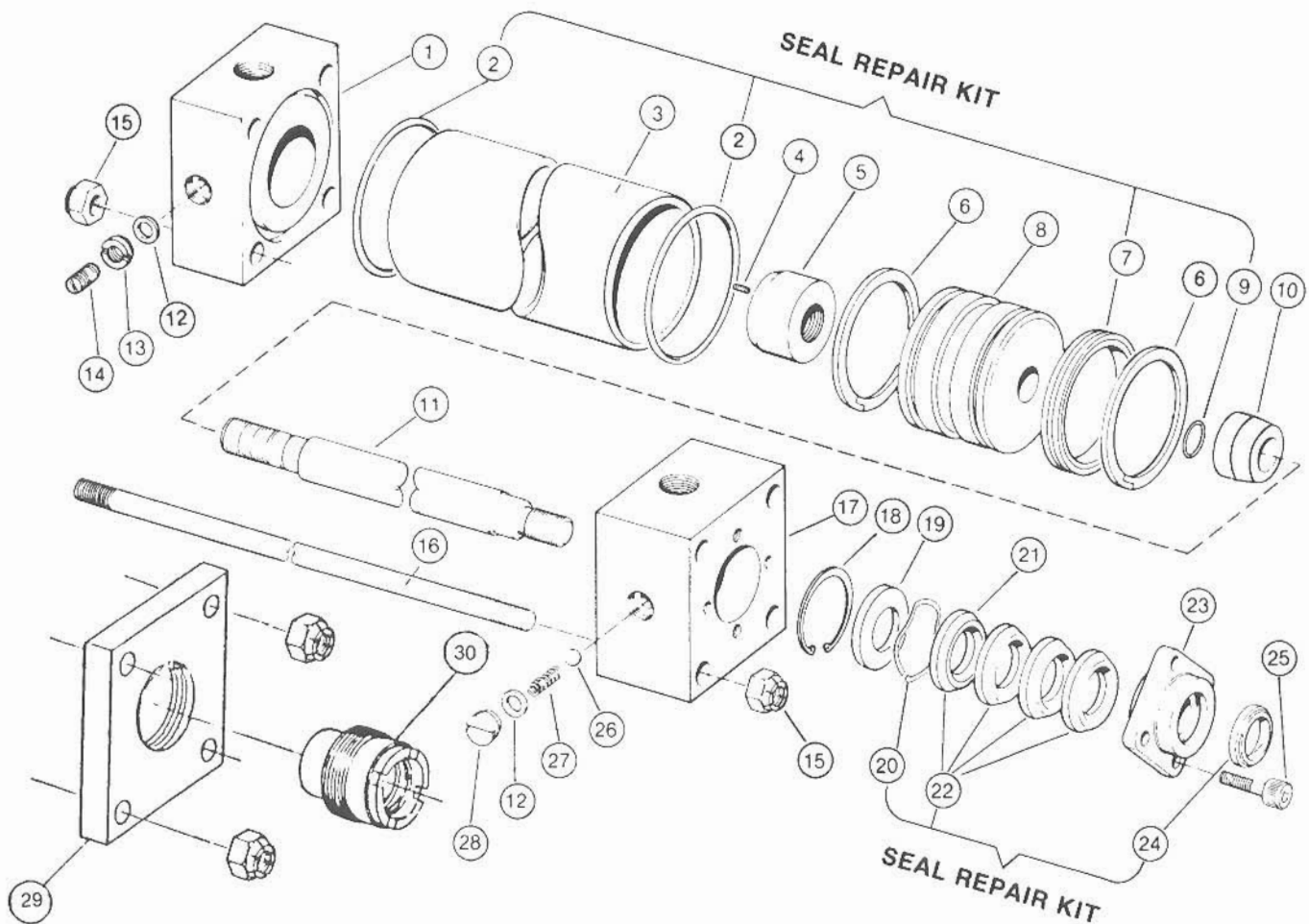
In any case, after the cylinder heads are loosened and removed for replacement of seals, or should any maintenance be required whatsoever in which the heads are removed, care should be taken in reassembling the cylinder. Be sure that the end sealing members in the heads are in place and finally the tie rods are properly torqued in accordance with the torque values found in Catalog 103, Page 35, Table A. Diametrically opposite tie rod nuts or cap screws should always be given initial tightening in pairs, working around the succeeding pairs of tie rod nuts until all have been tightened a reasonable amount. Then follow with additional tightening to torque value required, in the same sequence as before, until all tie rods are equally torqued.

By proceeding in this manner any undue strain and misalignment of parts will be avoided. If a reasonable amount of care is taken in the disassembly and reassembly of the cylinder when maintenance becomes necessary, a more satisfactory repair job will result.

GALLAND HENNING NOPAK, Inc.

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PARTS LIST — **NOPAK** CLASS 3 CYLINDERS



- | | | |
|----------------------------|-----------------------------------|-----------------------------|
| 1. Blind end head | 10. Cushion sleeve -- rod end | 19. Packing spacer †† |
| 2. Tube seal* | 11. Piston rod | 20. Wave spring*†† |
| 3. Tube | 12. Seal | 21. Bottom adapter ring*†† |
| 4. Lock screw | 13. Cushion adjusting screw gland | 22. Rod packing*†† |
| 5. Lock sleeve | 14. Cushion adjusting screw | 23. Packing gland †† |
| 6. Piston ring | 15. Tie rod nut | 24. Rod wiper* |
| 7. "T" seal and back-ups*† | 16. Tie rod | 25. Packing gland cap screw |
| 8. Piston | 17. Rod end head | 26. Check ball |
| 9. Piston O-ring* | 18. Snap ring †† | 27. Ball check spring |
| | | 28. Ball check plug |
- ★ Items are included in seal repair kits.
See page 5 for ordering information,
■ Item 21 is metallic for high temp. applications
- † "T" seal used thru 16" dia. bore, 18" and 20" fitted with piston rings.
- †† For 7" dia. rods and larger
Parts 18, 19, 20 and 21 are eliminated.
Part 22 replaced by a U-cup style seal.
Part 23 replaced by a rod bearing and multi-bolt gland retainer.
- IF APPLICABLE
29. Head Plate, Model AL, T, TR
30. Screw Gland, Model AL, T, TR, D, DD

Note: Head Plate and Screw Gland Option
Available in all Models except G (ME 5)

When ordering replacement parts be sure to specify:

- | | | |
|---------------|--------------------------------------|--------------------------------|
| • Nopak model | • Stroke | • Part by name and item number |
| • Bore | • Serial number shown on Nopak label | • Quantity required |

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