

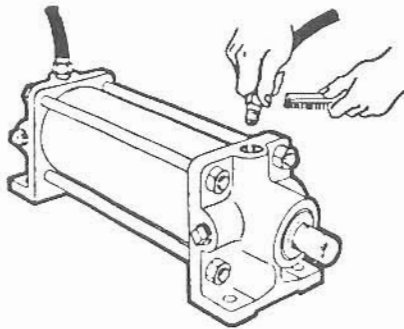
# OPERATING AND MAINTENANCE INSTRUCTIONS

## NOPAK CLASS 1 AND 2 CYLINDERS

For best results in maintaining trouble-free operation of Nopak air cylinders, proper provisions are recommended for filtering abrasive particles from the air stream and then atomizing oil in the air for lubrication.

This can readily be accomplished by inserting an air filter in the line ahead of the cylinder and, of course, preferably also ahead of the directional control valve so that the valve also may benefit by having clean filtered air passing through it. In most lubricators the oil is introduced into the air stream only when air velocity is present, in other words when the air stream is in motion. No. 5 mineral base oil or lighter should be used.

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

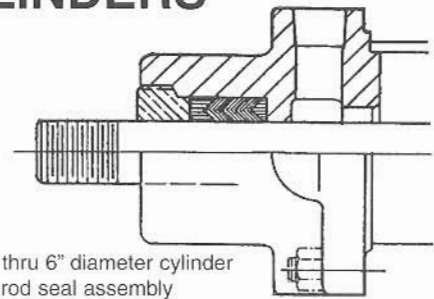


Pipe fittings and tubing connections should be thoroughly deburred and cleaned out before operating valves and cylinders are connected to the supply and connecting lines. It is particularly important to take these precautions because impurities downstream from the filter or in any portion of the line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

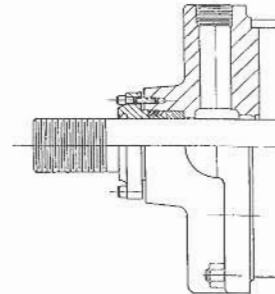
Depending upon the application, your cylinder may eventually require some maintenance and possible replacement of parts. Whenever a cylinder is disassembled it is good practice to carefully check and replace static and moving seals. Carefully note any worn or possibly scored parts to be replaced.

The rod V-packings are readily replaced by removing the screw type packing gland used as standard on Class 1 and 2 cylinders up to 6" dia. Cylinders of 8" thru 14" diameters have a 4-bolt retainer and gland for removal. The V-rings plus top and bottom adapters can readily be replaced. Care should be taken in inserting and tightening the new packing that not too much squeeze is applied. Merely screw down the glands firmly to the point where the packings are well seated and no leakage through the rod is apparent. Excessive tightening of the gland causes deformation and undue friction resulting in rapid wear.

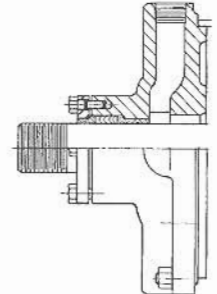
Replacement of the piston cups is relatively simple. On the smaller cylinders (5" dia. and under), the piston assembly retaining nut is removed and followers and cups are loosened for cup replacement. In the larger cylinders (6" dia. and over), the piston assembly cap screws only to be removed, the follower ring taken off and the piston assembly will readily come apart for cup replacement.



1-1/2" thru 6" diameter cylinder rod seal assembly

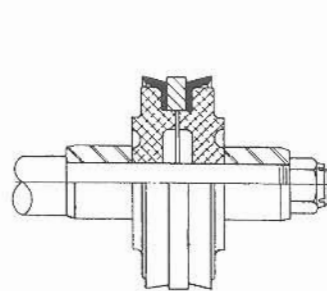


8" diameter cylinder rod seal assembly

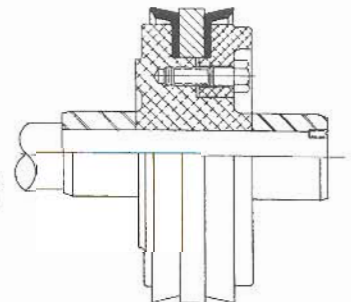


10" thru 14" diameter cylinder rod seal assembly

After installing new cups, care should be taken in the tightening of the piston assembly so that the followers and assembly are just tight enough to prevent rotation of the piston cups in the assembly. Excessive squeeze and tightening will tend to extrude the heel of the cup outward and cause the cup to wear at that point rather than seal at the cup lip.



1-1/2" thru 5" diameter cylinder piston assembly



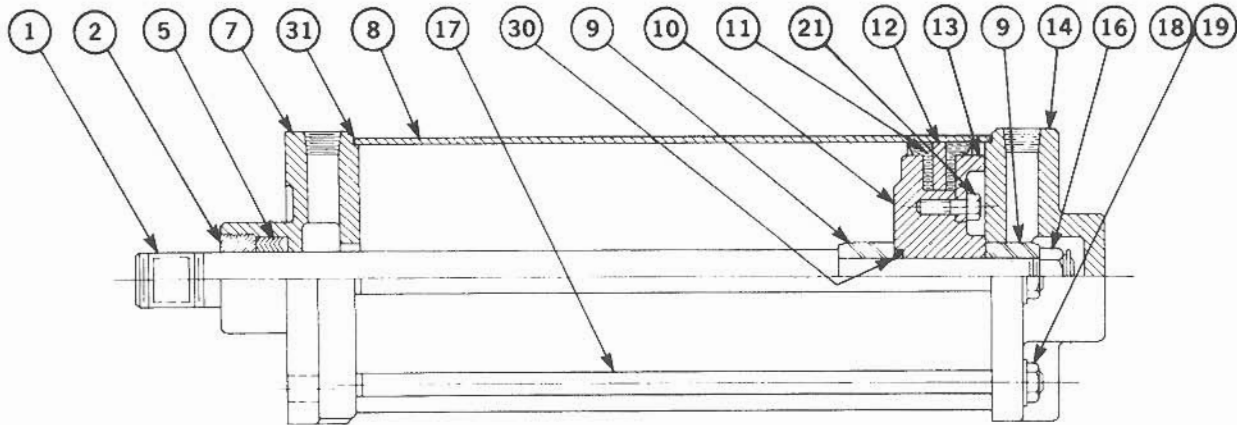
8" thru 14" diameter cylinder piston assembly

In any case, after the cylinder heads are loosened and removed for replacement of cups on one or both ends, or should any maintenance be required whatsoever in which the heads are removed, care should be taken in reassembling the cylinder. Diametrically opposite tie rod nuts as well as the cap screws holding the piston assembly together should always be given initial tightening in pairs. Working around the succeeding pairs of tie rod nuts or cap screws until all have been tightened a reasonable amount. Then follow with additional tightening until all the members are securely fastened. 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.

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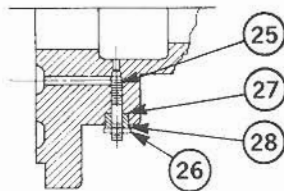
1025 South 40th Street ■ West Milwaukee, Wisconsin 53215  
 PHONE: 414-645-6000 ■ FAX: 414-645-6048  
 www.nopak.com ■ Email: sales@nopak.com

# NOPAK CAST HEAD CYLINDER PARTS LIST

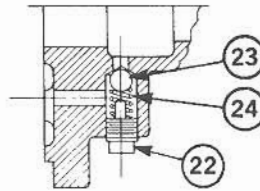


1-1/2" thru 6" diameter cylinder  
rod seal assembly

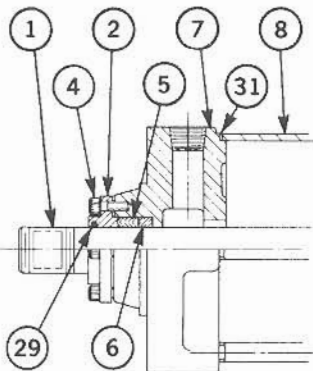
6" diameter cylinder  
piston assembly



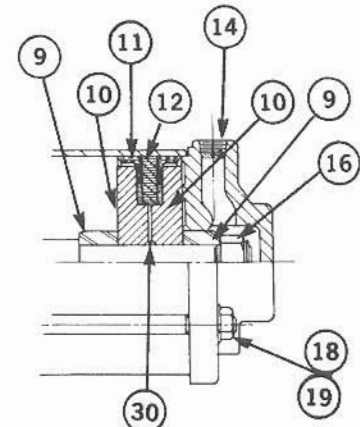
Adjustable needle valve



Ball check valve



8" diameter cylinder  
rod seal assembly



1-1/2" thru 5" diameter cylinder  
piston assembly

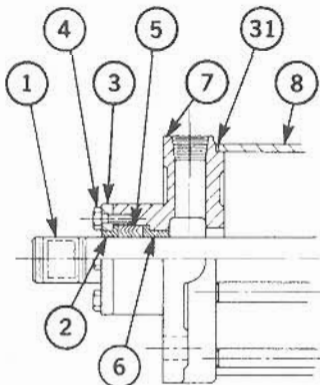
## PARTS ORDER INFORMATION

When using this parts list for replacements, be sure to:

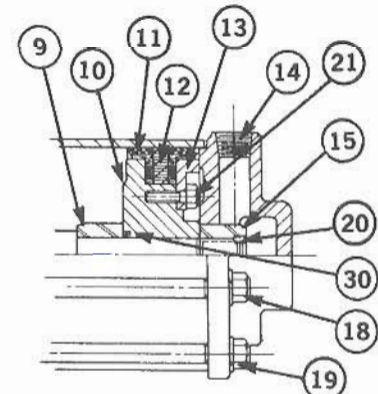
1. Identify part by name and item number;
2. Diameter of cylinder;
3. Model of cylinder;
4. Serial number on NOPAK cylinder label.

## Parts List

- |                             |                             |
|-----------------------------|-----------------------------|
| 1. Piston rod               | 17. Tie rods                |
| 2. Packing gland            | 18. Tie rod nuts            |
| 3. Gland ring               | 19. Lock washers            |
| 4. Gland ring screws        | 20. Set screws              |
| 5. V-ring packing           | 21. Piston cap screws       |
| 6. Piston rod bushing       | 22. Ball check plug         |
| 7. Rod end cylinder head    | 23. Ball check ball         |
| 8. Cylinder Tube            | 24. Ball check spring       |
| 9. Cushion sleeve           | 25. Needle valve            |
| 10. Piston follower         | 26. Needle valve lock nut   |
| 11. Piston cups             | 27. Needle valve packing    |
| 12. Piston                  | 28. Needle valve gland ring |
| 13. Follower ring           | 29. Wiper                   |
| 14. Blank end cylinder head | 30. O-ring ) Class 2 & M    |
| 15. Lock sleeve             | 31. Gasket)                 |
| 16. Piston lock nut         |                             |



10" thru 14" diameter cylinder  
rod seal assembly



8" thru 14" diameter cylinder  
piston assembly

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1025 South 40th Street ■ West Milwaukee, Wisconsin 53215  
PHONE: 414-645-6000 ■ FAX: 414-645-6048  
www.nopak.com ■ Email: sales@nopak.com