# Service Instructions for Nitro-Dyne® Manifold Cylinders MOR® 400, DL 400, DLSB 400 Models

Hyson™ Products
Associated Spring

## Service Tools

| Model | Seal Kit P/N | Socket Wrench | Torque Spec. (ft·lb) |
|---|---|---|---|
| MOR® 400 | 20-072-7000 | 1 ¼" HEX | 80 +/-8 |
| DL 400, DLSB 400 | 63-072-7000 | | |

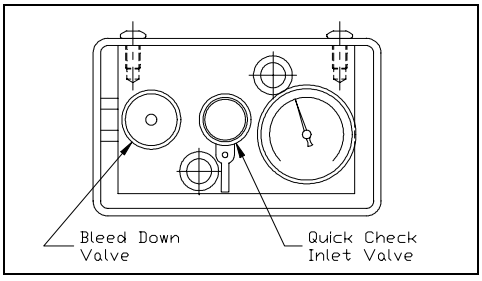
## Warnings

- Put on safety glasses and hearing protection before servicing any nitrogen gas spring system.
- Failure to exhaust all gas pressure prior to disassembly could result in serious injury.
- Do not depress piston rods with your hand directly. Place a block of wood between the rod and your hand. The piston rod may pop up after being manually depressed.
- The maximum charging pressure for a standard manifold is 103 bar (1500 psi). Higher pressure manifold systems do exist. Refer to the information tag attached to the manifold plate for maximum charge pressure information.
- Prior to pressurizing any manifold, inspect for proper assembly of cylinders and components. Cylinders and plugs are available in both English and metric thread types and may appear to be very similar in size. **Never mix thread types!** Intermixing English and metric thread types could result in serious injury. If there is any doubt about thread type, contact Hyson Products' Customer Service at 1-800-876-4976.

## Discharging manifold systems

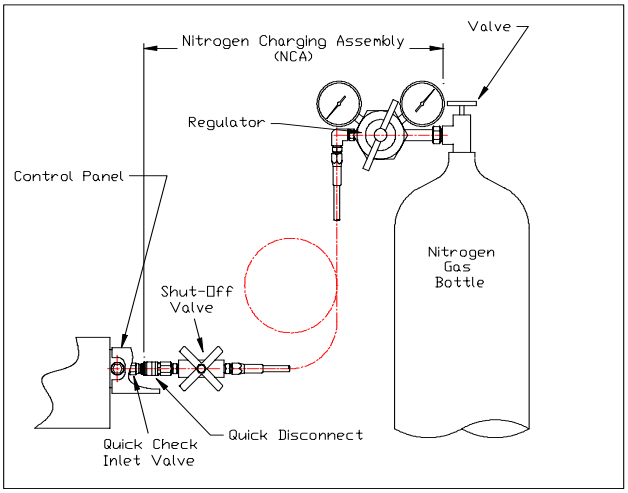
1. Slowly open bleed down valve on control panel.
2. When gauge reaches zero and the gas flow stops, depress piston rods.
3. Close bleed down valve on control panel.

Control Panel



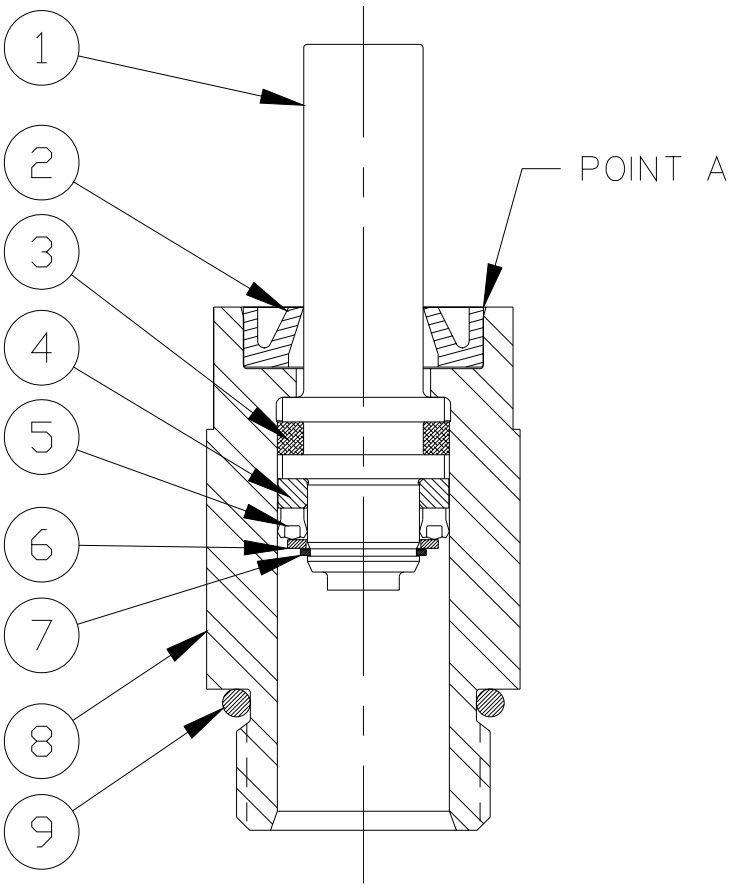

## Charging manifold systems

1. Attach Nitrogen Charging Assembly (NCA) to nitrogen gas bottle.
2. Set NCA regulator to zero pressure.
3. Close the shut-off valve on NCA hose.
4. Close bleed down valve on control panel.
5. Attach NCA quick disconnect to quick check inlet valve on control panel.
6. Open valve on nitrogen gas bottle.
7. Set desired pressure on NCA regulator.
8. Slowly open shut-off valve on NCA hose.
9. When correct pressure is obtained, close valve on NCA hose.
10. Disconnect NCA from control panel.
11. Replace protective cap on quick check inlet valve.
12. Close valve on nitrogen bottle.
13. Open shut-off valve on NCA hose to vent charging assembly.
14. When gas flow stops, close NCA shut-off valve.




## Verification of assembly (Leak test)

1. Charge the manifold to at least 69 bar (1000 psi). Refer to charging instructions.
2. Pour lightweight oil on the rod scraper (2). If bubbles appear, nitrogen is leaking past the piston seal. **Note**: It may take several minutes for a small leak to be seen. If a leak is found, the cylinder would need to be discharged, disassembled, and inspected. A scratch on the cylinder body bore, rod or seal could be the cause.
3. Pour lightweight oil around the base of the cylinder body (8). If bubbles appear, nitrogen is leaking past the o-ring (9). **Note**: It may take several minutes for a small leak to be seen. If a leak is found, the cylinder would need to be discharged, removed and inspected. A scratch on the cylinder body could be the cause.




## Disassembly

1. Verify all pressure has been exhausted from the system by following the discharging instructions.
2. Remove the manifold cylinder from the plate by unthreading the cylinder body (8). Once the cylinder is removed from the plate, cover the port to prevent dirt from falling into the manifold plate.
3. Remove the piston rod (1) from the cylinder body (8).
4. Remove the seal retainer ring (7). The washer (6), seal (5), and piston bearing (4) can now be removed. **Note:** If using a screwdriver to pry the seal off the piston, be careful not to scratch the piston.
5. Remove the lubrication ring (3).
6. Remove the body o-ring (9) from the cylinder body (8).
7. Insert the end of a flat blade screwdriver between the cylinder body (8) and the rod scraper (2) at point A. Strike the screwdriver towards the center of the cylinder to deform the rod scraper (2). The rod scraper can then be pried out. **Note:** A new rod scraper will be supplied in the seal kit.
8. Save the piston rod (1) and cylinder body (8). All other parts are included in the seal kit and used parts can be discarded.

## Inspection

9. Clean the piston rod (1) and cylinder body (8).
10. Visually inspect components. The inner diameter of the cylinder body and the surface of the piston rod where the seal rests are critical. Any scratches or dents will lead to premature leakage. If defects exist, replace the parts.

## Assembly

11. Unpack the seal kit.
12. The seal kit contains Nitro-Dyne® Lube XP-072. This is used as assembly oil. The remaining oil is poured into the manifold.
13. Install the rod scraper (2) into the cylinder body (8).
14. Install the lubrication ring (3) onto the piston rod (1).
15. Lightly lubricate the piston rod (1) and all components that are installed on the piston rod. Install the bearing (4), seal (5), washer (6) and seal retainer ring (7).
16. Liberally lubricate the inner diameter of the cylinder body (8). Push the piston rod assembly (1) into the cylinder body (8). **Note:** Do not push piston rod through rod scraper (2).
17. Liberally lubricate the o-ring (9) and install onto cylinder body (8).



10367 Brecksville Road • Brecksville, Ohio 44141 USA
800.876.4976 • Tel: 440-526-5900 • Fax: 440-838-7684


Part No.: MOR 400 SK-0104