



Model LH – NFPA Low Pressure Hydraulic Cylinders

| Features | Advantage | Benefit |
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| 1. Heads and Caps | Square, precision-machined carbon steel to $\pm .002$ all sides | Assures concentricity of tube, bearing, cushion and piston rod. Can be modified to accommodate proximity switches without spacers. |
| 2. Cylinder Tube | D.O.M. seamless 1020 to 1026 steel tube precision honed I.D. to 10/15 micro inch finish and hard chrome plated .0003/.0005 thick. Thicker wall tube than traditional low-pressure cylinders. | Chrome Plating reduces wear on piston seals and tube I.D. surface. Thicker wall provides additional protection from leaks due to high-pressure spikes. Hard chrome plated I.D. provides corrosion resistance and minimizes tube scoring. |
| 3. Piston | One-piece steel piston threaded onto piston rod, staked and secured with Loctite™. A Delrin™ Wear Band is located around the piston also. Additional pinning onto rod is optional. | Delrin wear band prevents oil leakage and scoring of cylinder tube ID. Anchored onto piston rod with minimum undercut providing maximum strength. |
| 4. Tie Rods | Larger diameter tie rods are used and they are made from 100,000 psi minimum yield, stress-proof, medium carbon steel with rolled threads at each end. | Provides maximum strength for connecting cylinder mounts. Lock nuts prevent loosening in service. Accurate torquing prevents leaks at tube seals. |
| 5. Tube Seals | Buna-N Nitrile axial placed O-Rings. | When combined with accurately torqued larger diameter tie rods, prevents extrusion of seal and hydraulic leaks under normal operating pressures. |
| 6. Rod Seal | 95A durometer symmetrical pre-loaded urethane blend poly seal is positioned in a groove in the back end of the bearing cartridge ID. | Pre-loaded seal provides positive static and dynamic sealing of piston rod at both high and low pressures. |
| 7. Rod Wiper | 80 durometer, sharp double lip, pre-lubricated, carboxylated Nitrile seal provides additional sealing beyond rod seal. Additional materials can be used to combat various application demands, such as high heat. Severe external conditions could require the addition of a metallic rod scraper installed ahead of the rod wiper to effectively provide dual protection from the elements. | Prevents dust, dirt and grit from entering the bearing cartridge and cylinder, which significantly extends the cylinder life. |

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| 8. Piston Rod | 100,000 psi minimum yield strength high carbon steel with core hardness of RC 28-34. Case hardened to RC 50-55. Rod is hard chrome-plated (.0003/.0005 thick) and polished to 12/15 micro inch finish. Solid male threads contain radiused undercut. | Resists wear. All NFPA and metric rod and thread sizes, including female and studded male ends, are available with rolled threads. Solid male threads, with radiused undercut, minimize rod end breakage. |
| 9. Bearing Cartridge | Floating, self-aligning in either ductile iron or SAE 660 bronze. Optional “Slip Tuff” bearing is also available for heavy side loaded applications. Retained by plate with cap screws; strong and shock resistant. A Buna-N O-Ring with Teflon back-up ring located around the cartridge OD prevents leakage around the outside of bearing cartridge and seal extrusion. | Float condition minimizes piston rod misalignment and reduces side loading. Optional “Slip Tuff” bearing provides lubricated wear surface with hardness characteristics that significantly reduce galling and bearing cartridge failure under severe side loaded operating conditions. Easily removed for rod seal / wiper maintenance without requiring special tools to disassemble the cylinder. |
| 10. Ports | NPT or SAE O-ring are to be identified at time of order. Optional port sizes include flange ports, metric ports and oversized ports. | Universally adaptable to any hose or fitting. |
| 11. Piston Seals | 95A durometer sharp lip, symmetrical pre-loaded urethane blend poly seals are standard. Step cut cast iron piston rings, with a T-Seal centered in between, are also available as an option. | Pre-loaded seal prevents oil leakage at low pressures. The optional cast iron rings and T-Seal help prevent leakage and the probability of seal failure during high shock operating conditions. |
| 12. Cushion Seals | Floating 660 bronze, check type seal insert held in place by a snap type retaining ring; eliminates ball checks and their related parts. Ductile iron rod end cushion hub is polished to 8/12 microinch finish RMS, and black oxidized. Tapered leading edge assures proper entry into bronze seal. | Low friction breakaway under lower hydraulic pressures because of holes drilled through the face of the bronze inserts. The bronze “Step” which seats against the inside of the cylinder head provides maximum cushion effectiveness, thus assuring a longer cylinder life. |
| 13. Cushion Adjustment Screw | Steel needle valve with Buna-N O-Ring sealed screw is held captive with a snap ring. | Provides accurate fine adjustment of cushioning speed; no oil leakage and is safe for all users because it is held captive with snap ring. |

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| 14. Optional Air Bleed System (not shown) | Manual air bleed plug is located on the cylinder tube. | Eliminates trapped air from inside the cylinder. |
| 15. Optional Rod Cartridge Drain Back System (not shown) | Drain feature is an additional groove cut into the front end of the bearing cartridge, between the rod wiper and the rod seal, that drains off any accumulation of fluid between the seals. A cartridge drain port is located on the cartridge retainer plate for a user installed drain tube back to the reservoir. | Captures hydraulic fluid and drains it back to the reservoir. This minimizes the slow weepage of hydraulic fluid through the rod wiper onto the piston rod. |

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