LYNAIR INC.

Standard Cylinder Seals (Buna-N and Polyurethane)

Standard cylinders include seals of Buna-N, Polyurethane, and Teflon with the seal compound and location of use dependent on the design purpose of each model.

Seals of Buna-N are predominant as they are used for static seals in all cylinders to prevent leakage between non-moving surfaces, and as dynamic rod or piston seals in other models.

Seals of internally lubricated Polyurethane are also used as rod and piston seals with the material selected for use based on its performance characteristics and the application requirements.

Teflon is used to seal the Cushion Adjusting Screw and Ball Check assemblies and for Piston Seals and Back Up Washers for certain seals in units suitable for high pressure service.

The seal material specifications for any particular cylinder can be determined by referring to the "Design Feature" information given for available models.

Seals of standard cylinders are compatible with the following types of operating media:
- **Air**
- **Petroleum oils and fluids**
- **Water soluble oil (to + 150^{O}F Max.)**
- **Water Glycol fluids (to + 150^{O}F Max.)**
- **Water/Oil Emulsions (to + 150^{O}F Max.)**

Buna-N material is suitable for use within a temperature range of -40^{O}F to +250^{O}F. Polyurethane may be used from -65^{O}F to +200^{O}F. Teflon is unaffected by extreme temperatures and is not a factor in limiting service conditions.

Cylinder operation is not suggested near either end of the seal temperature range. Standard models are recommended for use at temperatures from -20^{O}F to +180^{O}F (-29^{O}C to +83^{O}C). When the operating fluid contains water, the maximum operating temperature should not exceed +150^{O}F due to adverse effects of hot water on seals of Polyurethane.

Alternate seal materials are available upon request for use with other types of operating fluid or higher temperature requirements.

Cylinder Cushion Information

Internal cushions at the end of the cylinder stroke are optional and can be supplied at either one or both ends of the unit as desired. The use of a cushion is recommended for high speed, high impact applications to reduce noise, vibration, and the destructive hammering effect of the piston assembly bottoming against the cylinder end cap. The use of cushions does not affect cylinder envelope or mounting dimensions.

The cushion functions by closing off the inner exhaust orifice, trapping the operating media (either air or hydraulic fluid), and developing a backpressure against the advancing piston which slows, or cushions, the travel speed.

As the piston approaches the cushioned end of the cylinder, the exhaust flow is closed off by a bushing or plunger which enters the close fitting cushion cavity of the end cap.

A cushion adjusting screw and ball check valve are provided in the end cap of all cushioned models with the exception of the rod end head of 1 1/2, 2, and 2 1/2 bore cylinders equipped with the largest available oversize piston rod. These size combinations are provided with a non-adjustable cushion due to insufficient clearance in the head for adjustment and ball check fittings.

The rate of effective cushioning can be regulated by use of the cushion adjusting screw. When the mating cushion surfaces engage, and the operating media being exhausted is trapped by the advancing piston, the exhaust flow closes off the ball check valve by seating the ball against the bottom of its orifice.

The cushion screw orifice then provides the primary passageway for trapped pressure to escape the cylinder. The degree of cushion effect can be regulated by metering the flow of trapped operating media through the orifice. Turning the adjusting screw affects the rate at which the trapped pressure is relieved and permits control of the cushion to the desired level.

The function of the ball check valve is to assist in disengaging the cushion when the stroke direction is to be reversed.

Without the ball check valve, fluid pressure applied through the cylinder port can act only upon the cross sectional area of the cushion itself. The ball check orifice permits incoming flow from the port to go directly to the full face of the piston, thus greatly increasing the cylinder thrust capability and reduces the time necessary to breakaway from the engaged cushion.

Cushion adjusting screw and ball check valves are interchangeable with each other and do not protrude beyond the edge of the cylinder head.

The cushion adjusting screw is normally located on side #2 unless the mounting style or port position does not permit. This component can be identified by the socket head of the screw. The cushion effect can be controlled by turning the inner screw with a standard hex key wrench. Turning this screw in a clockwise direction will increase the cushion effect, while turning it in a counterclockwise direction will decrease the cushion effect.

The ball check valve is normally located on side #4 unless the mounting style or port position does not permit. This component may be identified by its slotted plug. The ball check valve requires no adjusting and need not be changed from its initial setting.

Cylinders having the cushion adjusting screw at a position other than on side #2 may be ordered if desired. Include this information with order and specify the position by using the reference number assigned to the side location required. Refer to the "model number development" instructions given in the ordering information pertaining to the model desired for data related to numbered side locations.