

# BASIC PARAMETERS APPLICABLE TO BOTH AIRSTROKE™ ACTUATORS AND AIRMOUNT™ ISOLATORS

## MEDIA

Air springs are designed for use with compressed air. Nitrogen is also acceptable. Air springs may be filled with water or water-glycol (automotive antifreeze) solutions. If water is to be used, rust inhibitors should be added to protect the end closures. Two reasons for liquid filling an air spring are:

1. To reduce the internal volume of air (and therefore, *increase* the natural frequency of the air spring) and,
2. To use a media which is incompressible. Accurate positioning would be one reason to do this.

Petroleum base fluids (most hydraulic oils fall into this category) are **NOT RECOMMENDED**. Moderately lubricated air will not harm the bellows.

## PRESSURE

1. 100 PSIG MAXIMUM FOR 2 PLY.
2. 175 PSIG MAXIMUM FOR HIGH STRENGTH.

We recommend that there be a minimum three times safety factor between maximum internal air pressure and burst pressure. So, as an example, if 100 psig is required, the burst should be at 300 psig or greater. For convoluted air springs, the burst pressure decreases as height increases. Therefore, the determining factors are twofold: What is the maximum height into extension and what is the internal pressure at that point? Please see the Airstroke Inflation Pressure Chart (for single, double, and triple convoluted air springs) on page 17 for specific pressure vs. height information.

For AIRMOUNT applications (where the part is used at a height very close to the shaded area), it is best to stay within 100 psig maximum for a two ply, and 150 psig maximum for a four ply or high strength cord air spring.

## STORAGE

The best storage environment is a dark, dry area at normal room temperature.

## TEMPERATURE

1. **STANDARD ALL NATURAL RUBBER BELLOWS (LOW TEMPERATURE COMPOUND)**. Our standard industrial air springs should be limited to use in the range:

**-65° F to +135° F**

2. **EPICHLOROHYDRIN (HIGH TEMPERATURE COMPOUND)**. Most convoluted parts are available in this material. The operating temperature range for it is:

**0° F to 225° F**

Additionally, Epichlorohydrin has very good oil resistance. **ALL EPICHLOROHYDRIN APPLICATIONS MUST BE APPROVED BY FIRESTONE**. For more information on Epichlorohydrin (also known as Herclor), ask for Technigram number 111.

3. **NEOPRENE (HIGH TEMPERATURE COMPOUND)**. Neoprene is more resistant to damage from oil. For this reason, Firestone Neoprene has been used as the inside layer in two configurations to reduce the hazard of having oil in the pneumatic plumbing system. The third configuration includes an outer layer of Firestone Neoprene for applications that expose the exterior of the air spring to an oil environment. In addition, Firestone Neoprene is able to withstand higher temperatures than natural rubber:

**-35° to +165° F**

## CONTAMINATES

Shielding should be used to protect the bellows from exposure to hot metal, sand, petroleum base fluids, acids, etc. Please consult Firestone if you wish to know how the bellows will withstand a specific contaminant (For liquids such as acids, it is important to know both concentration and temperature).

## WARNING

DO NOT INFLATE ASSEMBLY WHEN IT IS UNRESTRICTED. ASSEMBLY MUST BE RESTRICTED BY SUSPENSION OR OTHER ADEQUATE STRUCTURE. DO NOT INFLATE BEYOND PRESSURES RECOMMENDED IN DESIGN LITERATURE (CONTACT FIRESTONE FOR INFORMATION). IMPROPER USE OR OVERINFLATION MAY CAUSE ASSEMBLY TO BURST CAUSING PROPERTY DAMAGE OR SEVERE PERSONAL INJURY.