



An important consideration when specifying a pneumatic or hydraulic actuator is selecting the proper seal material for the application.

Lehigh's pneumatic actuators are supplied with nitrile seals as standard. These seals are rated for 0 to 165 degrees Fahrenheit. Optional seals are available for low temperature service down to -65 degrees Fahrenheit. For high temperature applications, up to 300 degrees Fahrenheit, fluorocarbon (Viton) seals can be specified.

When selecting seal materials for hydraulic actuators, other factors in addition to temperature must be considered. Operating pressure and hydraulic fluid type also affect seal material selection. Lehigh's medium pressure and high pressure hydraulic actuators use urethane seals as standard. These seals are ideally suited for petroleum based hydraulic fluid at the operating pressures for which the actuators are rated. The optimal temperature range for the urethane seals is 0 to 165 degrees Fahrenheit.

There are many alternative hydraulic seal materials available. The most common are fluorocarbon (Viton), nitrile, and ethylene propylene (EPR). Each has specific applications where it should be specified in place of the standard urethane seal material.

The main advantage of the fluorocarbon seal material is its high temperature resistance. Fluorocarbon seals can be used in continuous service in temperatures up to 300 degrees Fahrenheit and have a maximum temperature rating of 400 degrees. Fluorocarbon is also resistant to some phosphate ester based hydraulic fluids and some acids. Since the fluorocarbon seal material is relatively soft, a back-up must be employed in actuators rated for 3000 psi. Lehigh uses filled Teflon back-ups for these applications.

Nitrile seals should be used in place of urethane when water-based, vegetable oil based, bio-degradable or glycol-based hydraulic fluids will be used. Nitrile seals are also generally soft and require a back-up for 3000 psi service.

Ethylene Propylene seals are specified for phosphate ester based fluids, brake fluid, and aircraft fluid (Skydrol). However, this seal material is not compatible with petroleum based fluids. Care must be taken not to expose these seals to hydraulic oils, lubricants and solvents normally found in industrial settings. Ethylene Propylene seals also require a back-up for 3000 psi service.

Where other manufacturers may compromise trying to make standard seals suffice, Lehigh's goal is to manufacture an actuator that meets all of our customer's exact

requirements. Lehigh has experience solving the most demanding sealing applications in industries including:

- Nuclear power generation (radiation exposure, high temperatures)
- Waste to energy (high temperatures, high contamination)
- Food processing (acidic washdown conditions)
- Marine (deep sea environment, salt water)
- High temperature valve actuation (extreme 400 degree plus temperature)
- Steam valve actuators (high temperature, fireproof fluid)