Rubber Fab O-Ring Basics

Seal design is an important factor in food, dairy, beverage and pharmaceutical processing. An o-ring is a very important part of that design. O-rings are generally installed in a seal to prevent leaking, or loss of fluid. Rubber Fab offers AS568 Standard o-rings, metric, DIN and custom sizes in a wide variety of materials.

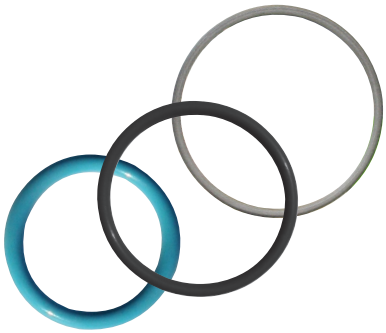
There are many factors to consider when choosing an elastomer for your application. O-rings and gaskets are FDA Compliant for use in food applications and Class VI tested for pharmaceutical applications. Rubber Fab Detectomer® products meet and exceed the standards set by the Food Safety Modernization Act. They are detectable by in-line x-ray inspection and metal detection systems, as well as, magnetic separators, therefore reducing costly product loss and recalls.

PHYSICAL PROPERTIES OF AN O-RING

- *Hardness:* O-rings are available in medium-hard (70 durometer), softer (50 & 60 durometer) & harder (85+ durometer). Standard is 70, +/- 5 with other durometers available.
- *Tensile Strength:* is the force (measured in psi) needed to break an o-ring at its ultimate strain. This is a good measure to determine if an o-ring is at the end of its life from being exposed to certain fluids.
- *Creep:* the characteristic of all elastomers to show a gradual decrease in the o-rings shape under a constant load over time.
- *Temperature:* is important when choosing an o-ring. Not all elastomers will react the same way in the same application. Temperature plays a large part in how an o-ring will function.

Rubber Fab's FDA, Class VI and Detectomer® o-rings ship with a certificate of conformance, ensuring complete lot and batch traceability. Rubber Fab also offers solid cord stock for field fabrication.

AVAILABLE MATERIALS



- Detectomer®
- Tuf-Steel®
- Buna
- EPDM
- FKM & Aflas® FFKM
- Kalrez®
- PTFE
- Platinum and Peroxide-Cured Silicone
- FEP Encapsulated EPDM, FKM & Silicone
- Other materials are available upon request

QUAD RINGS

Quad rings are a unique o-ring with a unique profile, doubling the sealing surface of a traditional o-ring. This design also provides lower friction and because it has more of a square profile, and can resist spiral twisting.

O-RING SIZING CONE

Have an o-ring that you need to replace and you don't know what size it is? Rubber Fab's o-ring cone is the best solution for sizing o-rings when you are unsure of what to order. Slide the o-ring down the cone to see what size is needed. Makes for easy measuring as the numbers are printed directly on the cone.

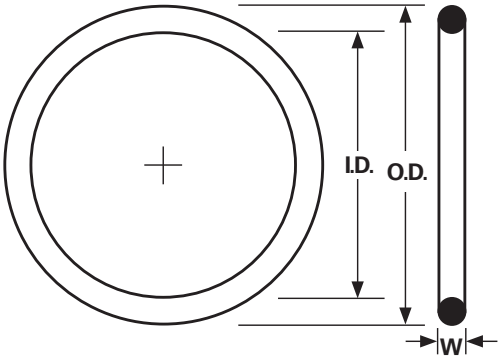
To learn more about Static vs Dynamic Applications, please see the reverse side. To learn more about o-rings, visit www.rubberfab.com

How to Measure & Quote

There is a simple way to measure an o-ring. Of course we suggest an o-ring cone to make sure that the size is exactly what you need. Formula to determine an o-ring diameter is:
Cut length ÷ 3.1415 = xx – cross section = I.D.

When quoting an o-ring, the following needs to be considered.

1. Which AS568# number, I.D. x cross section, or O.D. cross section
2. Material and Durometer needed (70 is standard)
3. Compliance required (FDA, Class VI, ADI, 3A)
4. Quantity is important. O-Ring pricing is quantity sensitive.
5. What is the application?
6. Application temperature?
7. Is the application static or dynamic? This is extremely important when quoting Detectomer® O-Rings.



O-Ring Applications: Static vs Dynamic

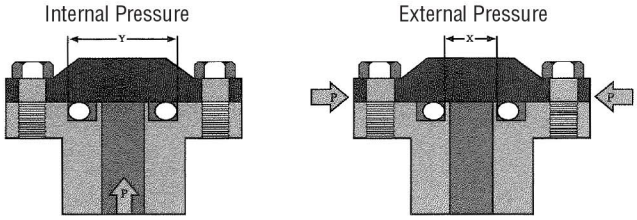
O-ring applications are categorized by the type of motion that is happening between the two surfaces. Static applications involve sealing between two parts that do not move. Dynamic sealing refers to applications where the two parts are moving in relation to each other. The following drawings depict static and dynamic sealing.

Used in situations involving reciprocating, rotating or oscillating machine movement relative to the o-ring, dynamic seal performance may be substantially affected by a number of operating environmental factors. Such factors include: seal swell in fluids, surface finish of metal parts, lubrication, system pressure, thermal cycling, o-ring squeeze, o-ring stretch and friction As many of these factors are interrelated, it is important to consider ALL of this in dynamic sealing situations.

Rubber Fab highly recommends pretesting in specific dynamic applications to determine acceptable life cycle.

STATIC APPLICATIONS

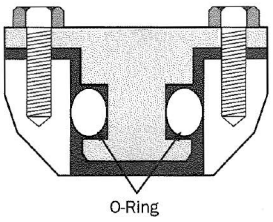
Axial Seals: The pressure is on the top and bottom of the cross section and is usually found in flange applications.



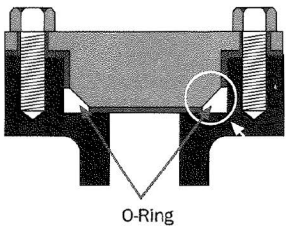
Y Max = O-ring Mean O.D.
Y Min = O-ring Mean O.D.
-1% UP to .060

X Max = O-ring Mean I.D.
X Min = O-ring Mean I.D.
+1% UP to .060

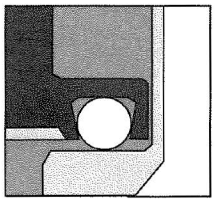
Radial Seals: The squeeze is on the I.D. and O.D. of the o-ring as found in most end cap applications.



Crush Seals: The squeeze is at an angle to the o-ring's axis due to its confinement in a triangle gland.

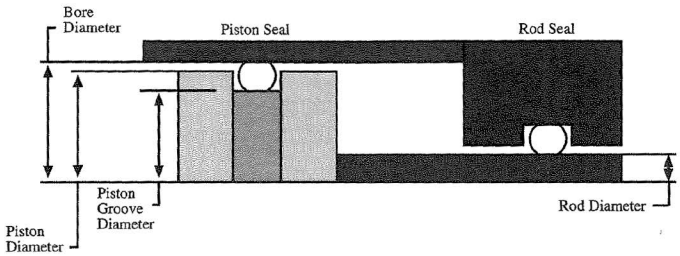


Dovetail Gland Seals: The squeeze in on the top and bottom of the o-ring's cross section while the special gland configuration is used to hold the o-ring in place during operation and/or assembly.

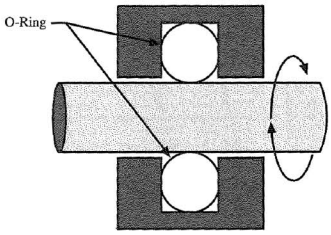


DYNAMIC APPLICATIONS

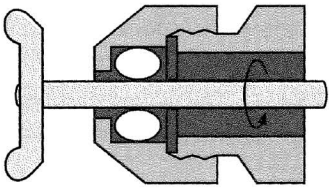
Reciprocating: Motion occurs in an alternating backward and forward direction. Frequently encountered in hydraulic cylinders.



Rotary: Motion occurs as a shaft rotates in relation to the o-ring, as in a pump or motor. Rotation usually occurs in only one direction.



Oscillating: Motion occurs when a shaft rotates backward and forward in a circular arc. Longitudinal motion is usually not significant. Example is a faucet valve stem.



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