

3. O-ring Applications

The O-ring is one of the most popular seal choices because:

1. The O-ring is cost effective in purchase price and the cost to machine the seal groove is relatively low.
2. As a bi-directional squeeze seal, the O-ring can be used in an extremely wide variety of successful applications, both static and dynamic.
3. The O-ring material allows for maximum stretch or compression and is therefore quite easy to install, generally requiring no special tools.

Static Applications:

There are four varieties of static applications as noted below:

1. Axial

The O-ring cross section is squeezed axially in the groove similar to a flat gasket. See figure 1-10.

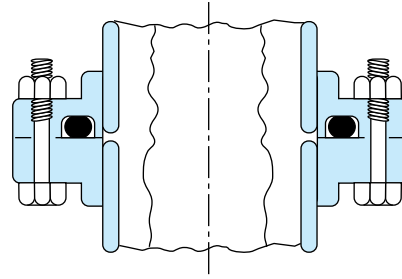


Fig. 1-10

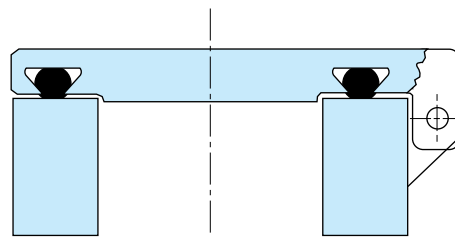


Fig. 1-12

2. Radial

The O-ring cross section is squeezed radially in the groove between the inside (ID) and outside (OD). See figure 1-11.

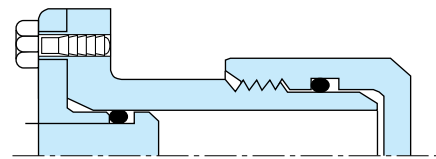


Fig. 1-11

3. Dovetail

The O-ring is also axially squeezed in a dovetail groove. The groove design allows the O-ring to be retained in the face seal during assembly and maintenance. This is beneficial for special applications where the O-ring has to be fixed by the groove e.g. a lid which opens regularly. See figure 1-12.

4. Boss Seals

The O-ring is used for sealing straight thread tube fittings in a boss. A boss is a cylindrical projection on a casting or forging. The end of that projection is machined to provide a flat, smooth surface for sealing. Straight threads used with an O-ring provide a better seal than tapered threads used alone. See figure 1-13.

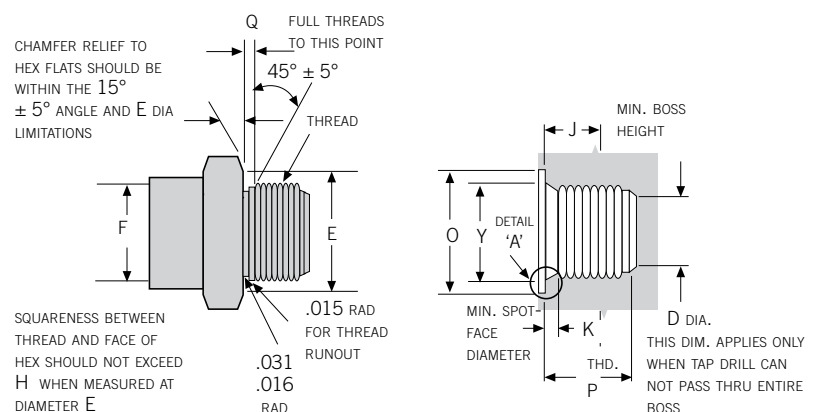


Fig. 1-13

3. O-ring Applications

Dynamic Applications:

There are three varieties of dynamic applications as noted below:

1. Reciprocating

Reciprocating seals refer to seals used in applications that slide back and forth. This motion introduces friction, which creates design considerations different from those of static seals. The O-ring may be housed in a groove (rod seal) in the cylinder wall instead of a groove in the piston surface (piston seal) without any change in design limitations or seal performance. See figure 1-14.

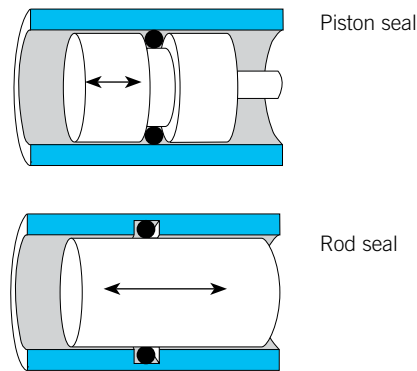


Fig. 1-14

2. Oscillating

Oscillating applications are those seeing both rotary and reciprocating movement. A valve spindle is an example of an oscillating application. See figure 1-15.

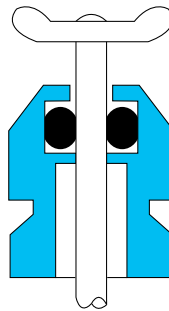


Fig. 1-15

3. Rotary

Rotary seals refer to seals used in applications that rotate. See figure 1-16.

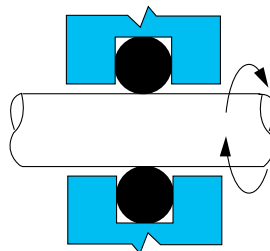


Fig. 1-16

Miscellaneous Applications

O-rings are used in a variety of applications. Wipers, buffers, and drive belt applications are just some of the examples. See figure 1-17.

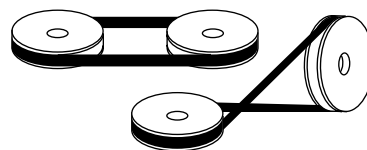


Fig. 1-17 a
Belt

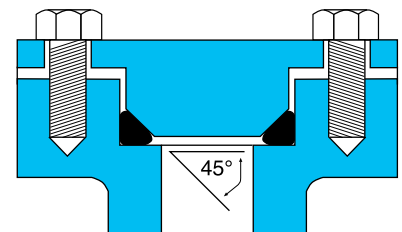


Fig. 1-17 b
Crush seal application