

# Parco

## Back-up Ring Size Chart



### Need to prevent O-ring extrusion?

Parco makes hard rubber, contoured back-up rings for use with O-rings in high-pressure applications. Parco back-up rings are more reliable, less costly, and easier to use than leather or Teflon.

Substantial improvement in extrusion resistance is attainable by 1) using harder O-rings, 2) decreasing the diametral clearance, or 3) using contoured hard rubber back-up rings.

### Understanding O-ring Extrusion

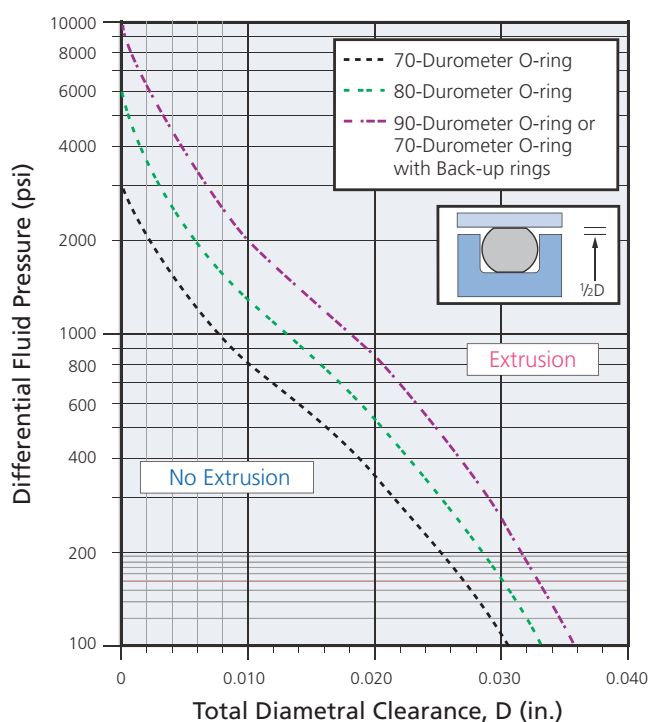
Back-up rings are generally required any time hydraulic pressures exceed 1500 psi. Typical applications include hydraulic cylinders and high-pressure valves. When pressures exceed 1500 psi, designers have two choices to maintain a good seal. They can insist on very tight machining tolerances of mating components, a costly choice, or they can maintain normal machining tolerances by allowing for a set of back-up rings in their design. Figure 1 indicates conditions that result in O-ring extrusion with and without back-up rings.

### Differential Pressure Resistance

Pressure applied evenly to both sides of a seal normally has no effect on sealing performance. When a pressure difference is anticipated, elastomer selection must also consider differential pressure resistance. High differential pressures will cause improperly specified O-rings to extrude, resulting in seal damage and eventual failure.

Fig. 1:

#### O-ring Extrusion from Differential Pressure



O-ring extrusion is rare at conditions lying to the left of a seal's performance line. For example, a 70-durometer seal with 0.005 inch gap ( $D=0.010$ ) will seal to 800 psi but may extrude at higher differential pressures. For higher operating pressures, consult Parco's nitrile and fluorocarbon selection guides for high-pressure applications.



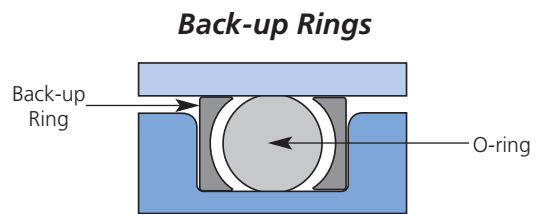


## Ordering Parco Back-up Rings

Parco's back-up ring sizes correspond with the AS568 O-ring size they are used with. To order back-up rings, please state the part number and Parco compound number. Parco's part numbers for standard-sized back-up rings are in the format 6331-xxx. The 6331 identifies the part is a back-up ring. The dash number (-xxx) is the standard AS568 O-ring size. Parco compound numbers are in the format xxxx-xx. The first four digits are the basic compound number. The next two digits are the hardness (durometer, Shore A).

For example, you may want to order back-up rings for a -224 O-ring. You may want those back-up rings in Parco's popular 90-durometer nitrile compound 4900-90. Please identify those back-up rings using Parco part number 6331-224 and Parco compound number 4900-90.

Fig. 3:



*Parco back-up rings serve as anti-extrusion devices. Our back-up ring sizes correspond with the AS568 O-ring size they are used with.*

## Parco Delivers Faster

Parco can provide sample back-up rings within ten working days. If you need sample parts even faster, Parco can deliver them in as few as three days through its Rapid Prototype Program.

For more information on Parco's back-up rings or to obtain samples, please contact a Parco customer service representative.

Fig. 4:

### Popular Compounds for Back-up Rings

Compound	Elastomer	Color	Description
2067-90	Nitrile	Black	90-durometer nitrile; extrusion and abrasion resistant; high pressure resistant.
4900-90	Nitrile	Black	Low cost; general purpose; 90-durometer nitrile.
9009-90	Fluorocarbon	Black	90-durometer fluorocarbon; high-temperature resistant; AMS 7259 and AMS R 83248 and MIL R 83248 compliant; QPL-listed.

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