

Low-Closure-Force Static Sealing

No. 5409B1-USA

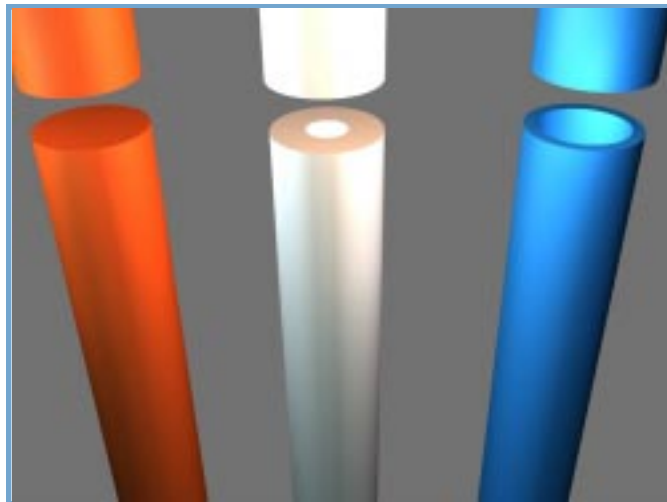
JBL Hollow Cross-Section, Low-Closure-Force (LCF) Seals Reduce Bolt Loading and Flange Requirements

The need for easy-to-compress, low-closure-force seals is rapidly increasing in many commercial, electronic and communications applications. If you require efficient, reliable seals for light-weight enclosures with minimal bolts, fasteners or latches in combination with thin sheet metal or plastic flanges, consider JBL LCF Seals. LCF Seals can drastically reduce the amount of closure force (compression) and the resulting stress generated on the sealed components.

JBL's Hollow Cross-Sectional Seals offer the seal designer and user a low-closure-force sealing solution for many applications. JBL LCF Seals may be supplied as either:

- Long Length Extrusions
- Spliced Rings/Gaskets
- Cut to Length Extrusions

To date, the most common method for reducing closure force has been to reduce the Shore hardness of the elastomeric seal material or change to a foam-type of material. The best method to achieve a dramatic reduction in closure-force is to change from a solid to a hollow cross-sectional profile without lowering the durometer hardness. Controlling wall thickness is key to lowering the lbs/in compression force required.



Require Spliced Rings?

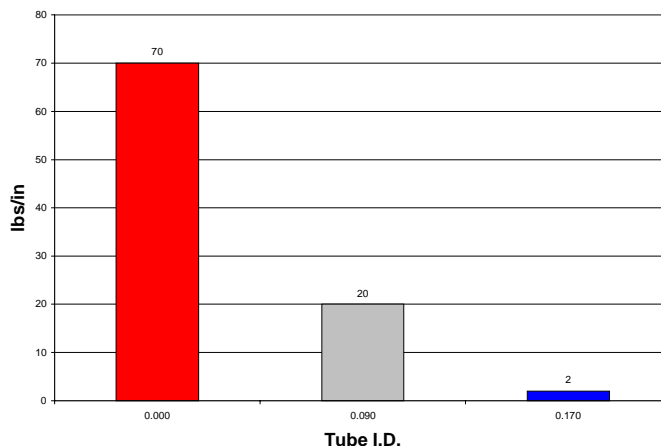


The Parker JBL Division has developed a number of proprietary splicing and bonding methods for joining cord stock and extruded profiles into large diameter O-rings and seals. For additional information on the unique capability of the JBL Division, ask for a copy of Bulletin No. 5407B1-USA

30 % Deflection/Compression

Notice the effect wall thickness has on closure force

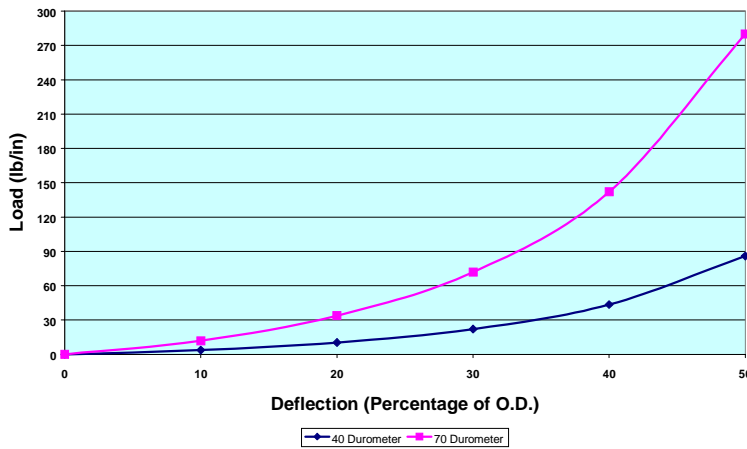
- **Solid-O .250 C/S**
- Approx: 70 lbs/in
- **Hollow-O .250 C/S x .090 ID**
- Approx: 20 lbs/in
- **Hollow-O .250 C/S x .170 ID**
- Approx: 2 lbs/in



Copyright © 1997, Parker Hannifin Corporation, Cleveland, OH. All Rights Reserved

Silicone Deflection Curves

O.D. = .250, Solid-O



Solid-O .250 C/S

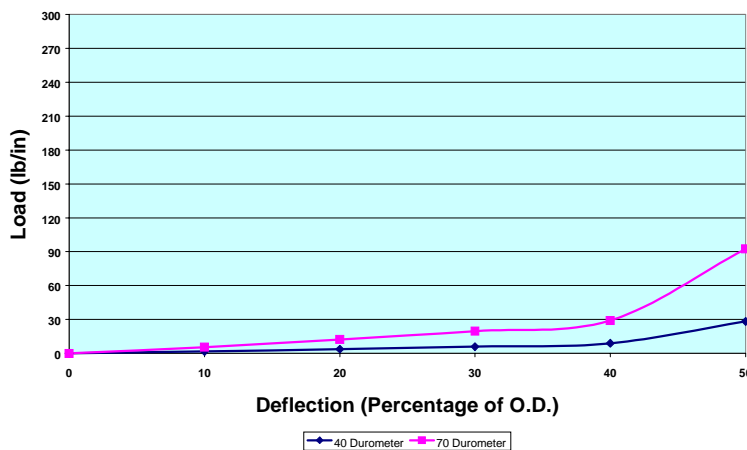


Deflection (squeeze)

Durometer (Shore A)
40 70

10%	=	3.7 lb/in	11.9 lb/in
20%	=	10.3 lb/in	33.8 lb/in
30%	=	22.0 lb/in	71.8 lb/in
40%	=	43.5 lb/in	142.0 lb/in
50%	=	85.9 lb/in	280.0 lb/in

O.D. = .250, I.D. = .090



Hollow-O .250 C/S x .090 ID

Low-Closure Profile

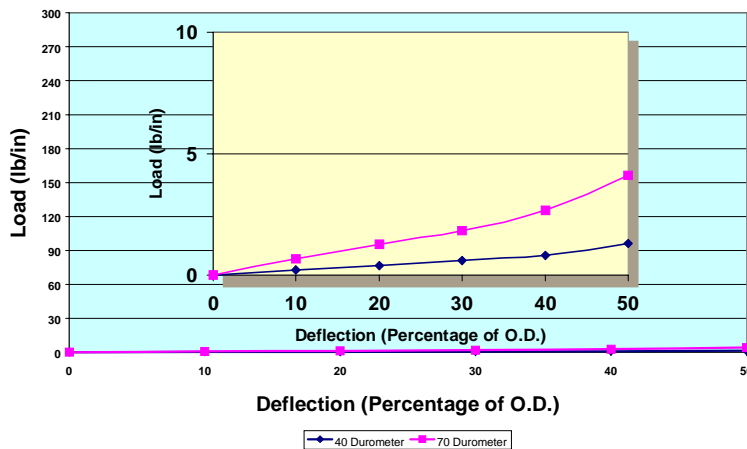


Deflection (squeeze)

Durometer (Shore A)
40 70

10%	=	1.7 lb/in
-----	---	-----------

O.D. = .250, I.D. = .170



Hollow-O .250 C/S x .170 ID

Ultra Low-Closure Profile



Deflection (squeeze)

Durometer (Shore A)
40 70

10%	=	.2 lb/in	.7 lb/in
20%	=	.4 lb/in	1.3 lb/in
30%	=	.6 lb/in	1.8 lb/in
40%	=	.8 lb/in	2.7 lb/in
50%	=	1.3 lb/in	4.1 lb/in

Note

Notice, lowering the durometer from 70 to 40 does have an impact on lb/in compression force required for a given percent of deflection (squeeze). However, the most dramatic impact on lb/in compression force required for a given percent deflection (squeeze) can be accomplished by changing from a Solid-O cross-section to a Hollow-O cross-section.