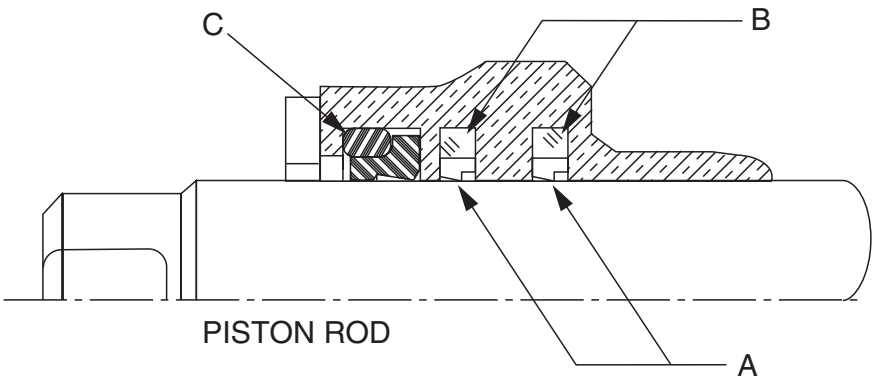
Parker Series 2H/3H Hydraulic Cylinders with Low Friction Seal Option

High Performance Cylinders for Your Demanding Applications

- Smooth-running operation – reduces “slip-stick” or “chatter”
- Ideally suited for use in servo applications
- Bronze-filled PTFE material for low friction, rapid break-in and long service life
- Innovative seal geometry for maximum sealing efficiency

Low Friction Rod Gland



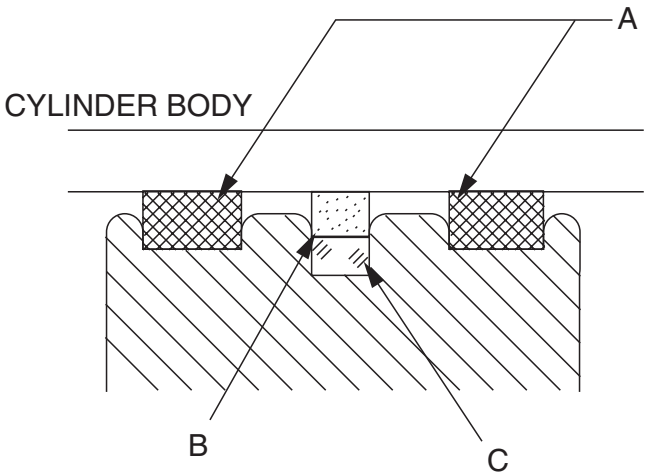
A - Dual step-seal rod seals ensure positive sealing and smooth operation up to 3,000 psi.

B - Square ring elastomer expander for pressure compensation and low pressure effectiveness.

C - Energized filled PTFE wiper keeps contaminants out.

D - Available in 1.000", 1.375", 1.750", 2.000", 2.500", 3.000", 3.500", 4.000", 4.500", 5.000", 5.500" diameter piston rods (1.50" - 8.00" Bore).

Low Friction Piston



A - Dual bronze-filled PTFE piston bearings for high load capacity, low friction and no metal-to-metal contact.

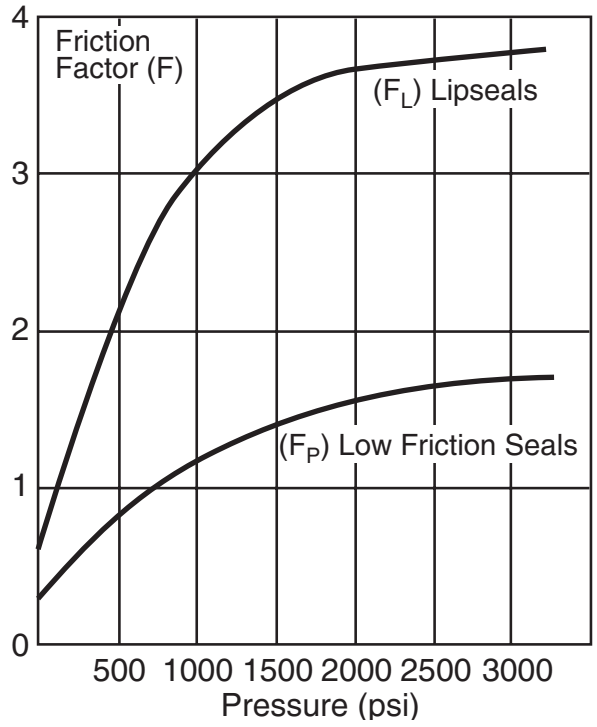
B - Bronze filled PTFE piston seal ensures maximum sealing efficiency.

C - Square-ring elastomer expander for pressure compensation

D - Available in 1.50" - 8.00" bore diameters

Seal Friction:

Seal friction under a given set of working conditions is not easily calculated due to the multiplicity of variables involved. The following graphs are offered as a guide for use in performance calculations, but for critical application measurements should be made under simulated or actual working conditions.



Calculation of Running Friction:

The seal friction attributable to the cylinder is calculated as the sum of the friction due to the individual sealing elements = (wiper seal friction + rod seal friction + piston seal friction), using the following formulae:

Option:	Formula:
Lipseal Rod + Piston	$12d + 12F_Ld + 24F_LD$
Lipseal Rod w/Low Friction Piston	$12d + 12F_Ld + 12F_pD$
Low Friction Rod + Piston	$12d + 30F_pd + 6F_pD$

Where: d = rod dia. (in.) D = bore dia. (in.)
F_L = friction factor for lipseals (F_L)
F_p = friction factor for PTFE (F_p)

Breakaway Friction:

Breakaway friction may be calculated by applying the following correction factors:

Correction factors:
Lipseals: $F_L \times 1.5$
Low Friction: $F_p \times 1.0$

Sample Calculation:

2HX Cylinder with 3.25 dia. bore + 1.75 dia. piston rod with low friction seals at 1500 psi.

Running Friction Calculation:

Friction (lbs. force) $\approx 12d + 30F_pd + 6F_pD$

Friction (lbs. force) $\approx 12\ (1.75) + 30\ (1.3 \times 1.75) + 6\ (1.3 \times 3.25)$

Friction (lbs. force) ≈ 115

Breakaway Friction Calculation:

$F_p \times 1.0 \approx F_p$

Based on zero pressure:

Friction (lbs. force) $\approx 12d + 30F_pd + 6F_pD$

Friction (lbs. force) $\approx 12\ (1.75) + 30\ (.3 \times 1.75) + 6\ (.3 \times 3.25)$

Friction (lbs. force) ≈ 43

Specifications for Low Friction Options:

Operating Pressure: 0 - 3000 psi

Operating Temperature: -10°F to +160°F.
For higher temperatures, consult factory.

Fluid Media: Petroleum based hydraulic oils.
For other fluids, consult factory.

How to Order Low Friction Option for Series 2H/3H Cylinders

When ordering Series 2H or 3H cylinders, place an “F” in the piston field for low friction seals.

Consult factory for availability of gland drain or other options.

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