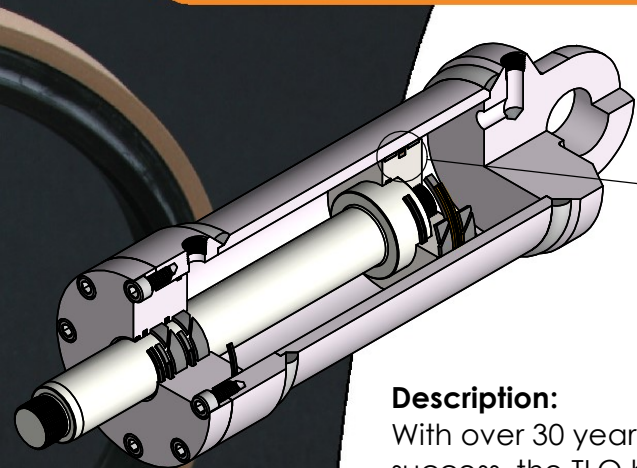
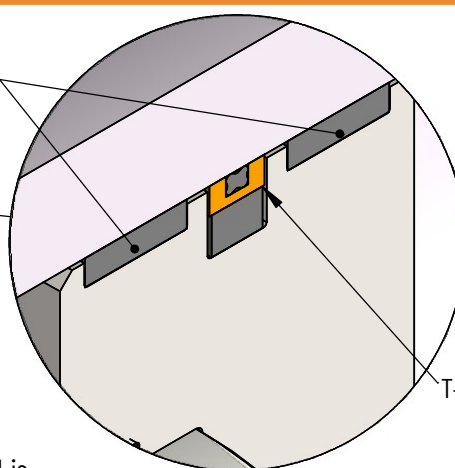




Wear Rings



T-LON® "TLQ" Seal

## Description:

With over 30 years of application success, the TLQ hydraulic piston seal is a proven reliable "zero-leak" seal for both low and high pressure systems for applications requiring holding loads for an extended time period.

The TLQ seal is a double-acting filled T-LON® PTFE compound designed to function either with a square elastomer energizer or o-ring energizer in reciprocating applications along with an x-ring elastomer energizer on the OD to minimize leakage / OD blow-by. In-house and field testing have shown improved performance using an o-ring energizer including lower seal drag and heat generation. The filled PTFE seal ring is manufactured with an interference fit with the bore and optimum compression with the ID and x-ring energizers. This offers excellent sealability at low pressures and high pressures when the cylinder experiences ballooning.

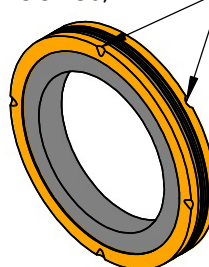
## Advantages:

- Low seal drag/friction (Minimize energy loss)
- No Stick-slip (Smooth Operation)
- Long seal life from T-LON® filled PTFE compounds
- Available for cylinders up to 20" dia

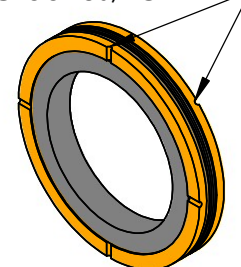
## Face Grooves (Optional):

For applications of high pressure rise rates, pressure spikes, and rapid change of direction, the seal is apt to experience blow-by. To prevent blow-by and to energize the seal rapidly, face grooves are added to both sides of the seal. The redesigned conical face grooves, "N", have been tested to eliminate energizer nibbling. Standard face grooves, "G", are available.

Conical Face Grooves, "N"



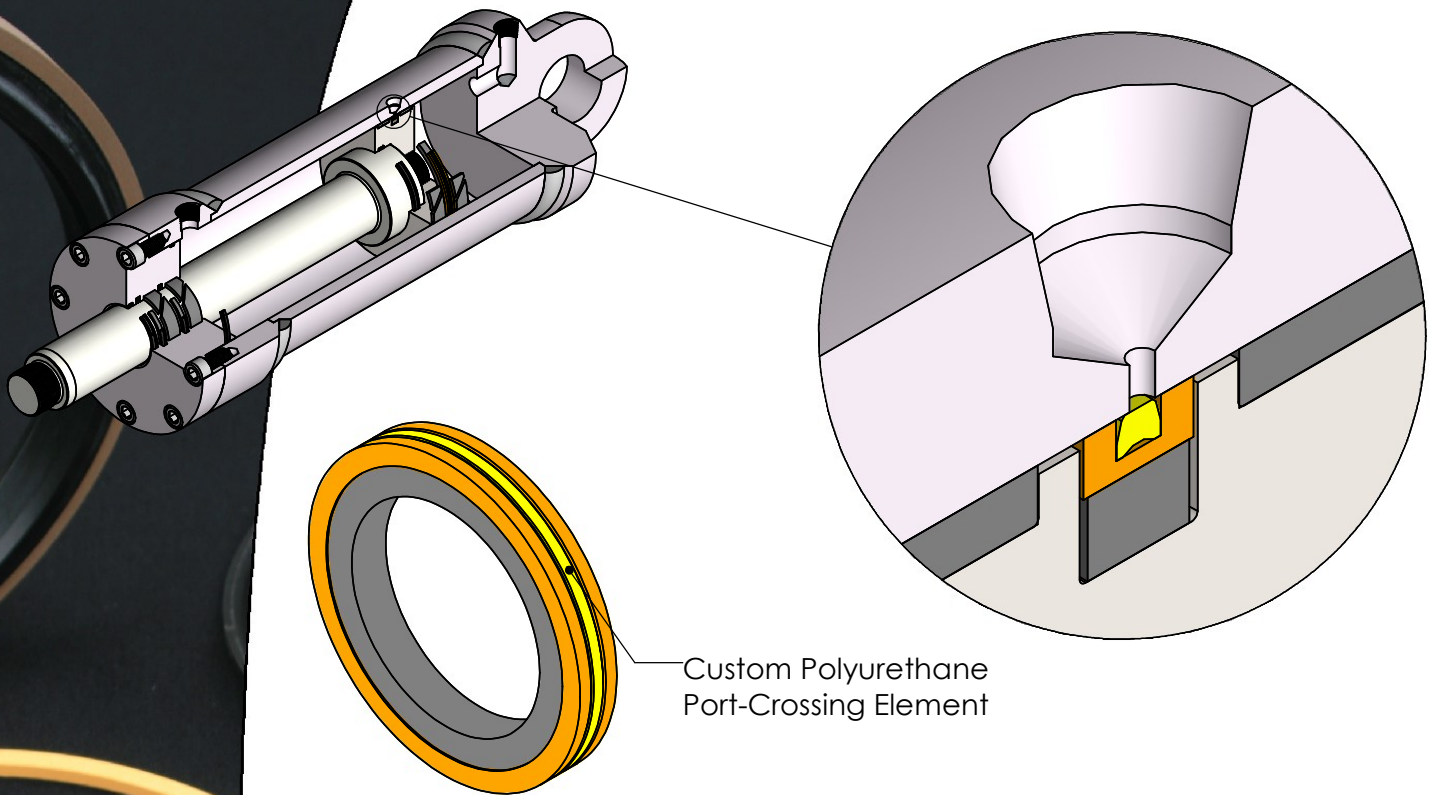
Standard Face Grooves, "G"



## Applications:

- Accumulators
- Mobile Hydraulic Cylinders
- Lift Cylinders
- Agriculture Equipment
- Holding Cylinders
- Filling Machines
- Testing Machinery





## Port-crossing Element (optional):

For applications with disruptions in the bore, the x-ring will extrude and/or get damaged. Replacing the x-ring with this port-crossing element will alleviate this potential issue and maintain all of the benefits of the "TLQ" seal.

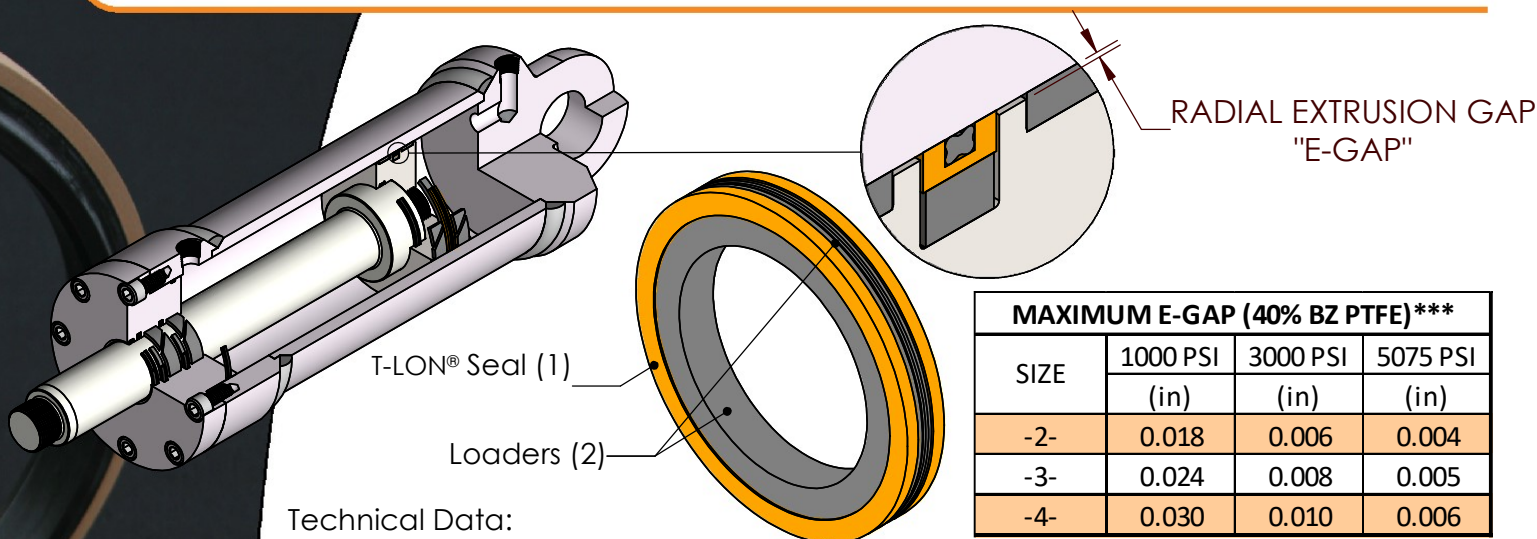
## Polyurethane ("U")

- Working Temp. Range -30°F to 230°F
- Commonly used with greases, aliphatic hydrocarbon mineral and vegetable oils, and various hydraulic fluids
- Resistance to Hydrolysis

## Applications:

- Rephasing/Resynchronizing Cylinders
- Air purge over piston seal
- Cylinders with hydraulic port in seal path





| MAXIMUM E-GAP (40% BZ PTFE)*** |          |          |          |
|--------------------------------|----------|----------|----------|
| SIZE                           | 1000 PSI | 3000 PSI | 5075 PSI |
|                                | (in)     | (in)     | (in)     |
| -2-                            | 0.018    | 0.006    | 0.004    |
| -3-                            | 0.024    | 0.008    | 0.005    |
| -4-                            | 0.030    | 0.010    | 0.006    |

\*\*\*USE PISTON WEAR RINGS SO E-GAP DOES NOT EXCEED TABLED VALUES

## Technical Data:

- (1) T-LON® seal compound determines allowable pressure and velocity ranges
- Velocity: Up to 10 ft/s
  - Pressure: Up to 8500 psi
- (Function of e-gap and T-LON® compound. Max velocity and pressure cannot be used together)

### Most Common:

#### BRONZE FILLED PTFE ("21" or "22")

- Highest Extrusion Resistance (Higher bronze content increases extrusion/wear resistance; I.E. larger e-gap allowable)
- Good sealability

#### GLASS/MoS2 FILLED PTFE ("31")

- Good wear resistance for tubes with rougher surface finish
- More chemical resistant and used in applications when seal could run dry

- (2) Loader compound determines temperature and chemical compatibility

### Most Common:

#### NBR SHORE 70 A ("P")

- Working Temp. Range -30°F to 230°F (250°F intermittent)
- Commonly used with greases, aliphatic hydrocarbon mineral and vegetable oils, and various hydraulic fluids

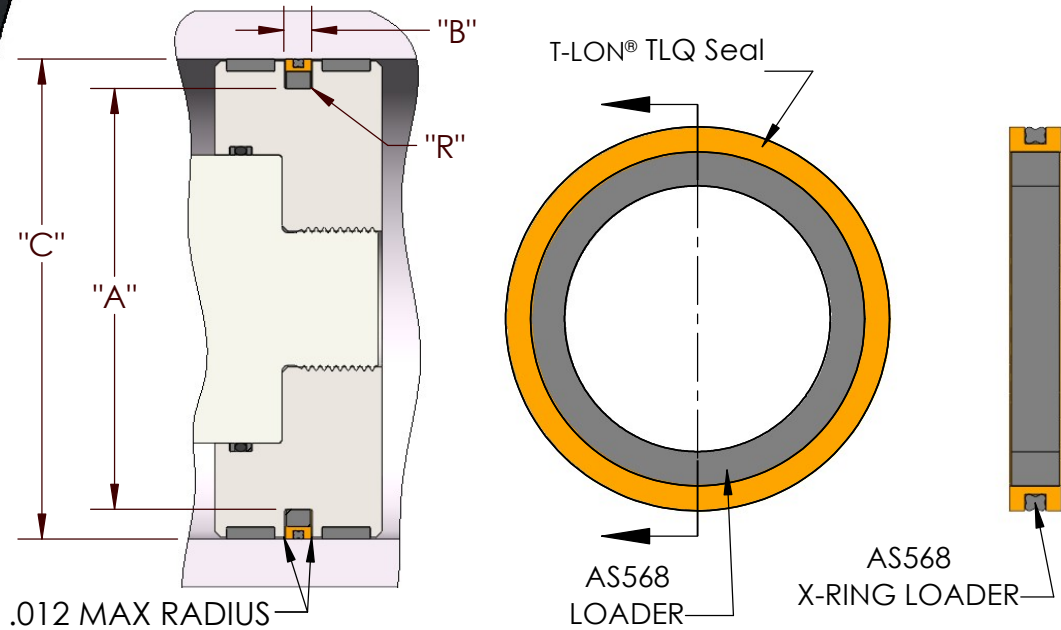
#### FKM SHORE 75 A ("V")

- Working Temp. Range -10°F to 400°F
- Commonly used in higher temperature applications or with acids, alcohols, fuels, and transmission fluids.

## ORDERING INFORMATION

TLQ -

| BORE                                                                               | LOADERS | T L O N  | GROOVE | PACKAGING | LOAD MATERIAL | OMIT IF NO PORT CROSSING REQ'D<br>"U" = URETHANE ELEMENT                                         |
|------------------------------------------------------------------------------------|---------|----------|--------|-----------|---------------|--------------------------------------------------------------------------------------------------|
| "0150" = 1.50"<br>"1050" = 10.50"                                                  |         | MATERIAL | OPTION |           |               | OMIT IF NO LOADERS REQ'D<br>"1" = O-RING NBR 70A<br>"P" = SQUARE LOADER NBR 70A<br>"V" = FKM 75A |
| "2" = 200 SERIES AS568<br>"3" = 300 SERIES AS568<br>"4" = 400 SERIES AS568         |         |          |        |           |               | OMIT IF NO PACKAGING REQ'D<br>"B" = BULK PACKAGE COMPONENTS<br>"I" = INDIVIDUALLY PACKAGE SEALS  |
| "31" = 15% GLASS/ 5% MoS2 PTFE<br>"21" = 40% BRONZE PTFE<br>"22" = 60% BRONZE PTFE |         |          |        |           |               | OMIT IF NO FACE GROOVES REQ'D<br>"N" = CONICAL FACE GROOVES<br>"G" = STANDARD FACE GROOVES       |



## T-LON® "TLQ" Series Piston Seal Sizes (More Available Upon Request)

Groove dimensions for "TLQ" Series

| Size   | Bore Dia<br>( C ) | T O L          | Groove Dimension |                |                               | Square or O-ring Loader No. | X-Ring Loader No. |                  |
|--------|-------------------|----------------|------------------|----------------|-------------------------------|-----------------------------|-------------------|------------------|
|        |                   |                | Dia ( A )        | T O L          | Width ( B )<br>+.005<br>-.000 |                             |                   | Max Radius ( R ) |
| 0100-2 | 1.000             | +0.003 / -.000 | 0.576            |                | 0.210                         | 0.015                       | -207              | -020             |
| 0113-2 | 1.125             |                | 0.701            |                |                               |                             | -209              | -022             |
| 0125-2 | 1.250             |                | 0.826            |                |                               |                             | -211              | -024             |
| 0138-2 | 1.375             |                | 0.951            |                |                               |                             | -213              | -026             |
| 0150-2 | 1.500             |                | 1.076            |                |                               |                             | -215              | -028             |
| 0150-3 | 1.500             |                | 0.884            | + .000 / -.003 | 0.288                         | 0.025                       | -316              | -125             |
| 0200-3 | 2.000             |                | 1.384            |                |                               |                             | -324              | -133             |
| 0225-3 | 2.250             |                | 1.634            |                |                               |                             | -326              | -137             |
| 0250-3 | 2.500             |                | 1.884            |                |                               |                             | -328              | -141             |
| 0275-3 | 2.750             |                | 2.134            |                |                               |                             | -330              | -145             |
| 0300-3 | 3.000             |                | 2.384            |                |                               |                             | -332              | -149             |
| 0325-3 | 3.250             |                | 2.634            |                |                               |                             | -334              | -151             |
| 0350-3 | 3.500             |                | 2.884            |                |                               |                             | -336              | -152             |
| 0375-3 | 3.750             |                | 3.134            |                |                               |                             | -338              | -153             |
| 0400-3 | 4.000             |                | 3.384            |                |                               |                             | -340              | -154             |
| 0425-3 | 4.250             | 3.634          | -342             |                |                               |                             | -155              |                  |
| 0450-3 | 4.500             | 3.884          | -344             |                |                               |                             | -156              |                  |
| 0475-3 | 4.750             | 4.134          | -346             |                |                               |                             | -157              |                  |
| 0500-3 | 5.000             | 4.384          | -348             |                |                               |                             | -158              |                  |
| 0550-4 | 5.500             | +.005 / -.000  | 4.660            | + .000 / -.005 | 0.375                         | 0.035                       | -426              | -252             |
| 0600-4 | 6.000             |                | 5.160            |                |                               |                             | -430              | -256             |
| 0650-4 | 6.500             |                | 5.660            |                |                               |                             | -434              | -259             |
| 0700-4 | 7.000             |                | 6.170            |                |                               |                             | -437              | -261             |
| 0750-4 | 7.500             |                | 6.670            |                |                               |                             | -439              | -263             |
| 0800-4 | 8.000             |                | 7.170            |                |                               |                             | -441              | -265             |
| 0900-4 | 9.000             |                | 8.160            |                |                               |                             | -445              | 269              |
| 1000-4 | 10.000            |                | 9.160            |                |                               |                             | -447              | -273             |
| 1050-4 | 10.500            |                | 9.580            |                |                               |                             | -448              | -274             |
| 1100-4 | 11.000            |                | 10.080           |                |                               |                             | -449              | -275             |
| 1150-4 | 11.500            |                | 10.580           |                |                               |                             | -450              | -276             |
| 1200-4 | 12.000            |                | 11.080           |                |                               |                             | -451              | -277             |

| Size   | Bore Dia<br>( C ) | T O L           | Groove Dimension |                 |                                  | Square or<br>O-ring<br>Loader<br>No. | X-Ring<br>Loader<br>No. |                        |
|--------|-------------------|-----------------|------------------|-----------------|----------------------------------|--------------------------------------|-------------------------|------------------------|
|        |                   |                 | Dia<br>( A )     | T O L           | Width<br>( B )<br>+.005<br>-.000 |                                      |                         | Max<br>Radius<br>( R ) |
| 1250-4 | 12.500            | 000' - / 900' + | 11.580           | 900' - / 000' + | 0.375                            | 0.035                                | -452                    | -278                   |
| 1300-4 | 13.000            |                 | 12.080           |                 |                                  |                                      | -453                    | -278                   |
| 1350-4 | 13.500            |                 | 12.580           |                 |                                  |                                      | -454                    | -279                   |
| 1400-4 | 14.000            |                 | 13.080           |                 |                                  |                                      | -455                    | -279                   |
| 1450-4 | 14.500            |                 | 13.580           |                 |                                  |                                      | -456                    | -280                   |
| 1500-4 | 15.000            |                 | 14.080           |                 |                                  |                                      | -457                    | -280                   |
| 1550-4 | 15.500            |                 | 14.580           |                 |                                  |                                      | -458                    | -281                   |
| 1600-4 | 16.000            |                 | 15.080           |                 |                                  |                                      | -459                    | -281                   |
| 1650-4 | 16.500            |                 | 15.580           |                 |                                  |                                      | -460                    | -282                   |
| 1700-4 | 17.000            |                 | 16.080           |                 |                                  |                                      | -461                    | -282                   |
| 1750-4 | 17.500            |                 | 16.580           |                 |                                  |                                      | -462                    | -283                   |
| 1800-4 | 18.000            |                 | 17.080           |                 |                                  |                                      | -463                    | -283                   |
| 1850-4 | 18.500            |                 | 17.580           |                 |                                  |                                      | -464                    | -284                   |
| 1900-4 | 19.000            |                 | 18.080           |                 |                                  |                                      | -465                    | -284                   |
| 1950-4 | 19.500            |                 | 18.580           |                 |                                  |                                      | -466                    | -284                   |
| 2000-4 | 20.000            |                 | 19.080           |                 |                                  |                                      | -467                    | -284                   |