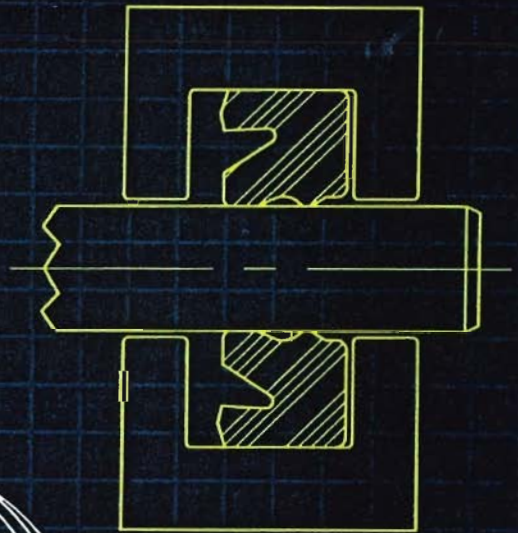
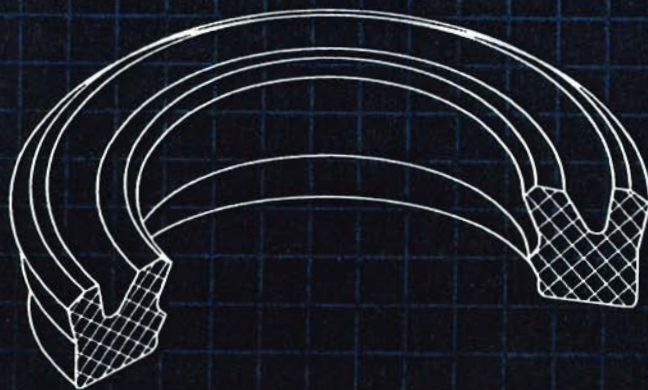
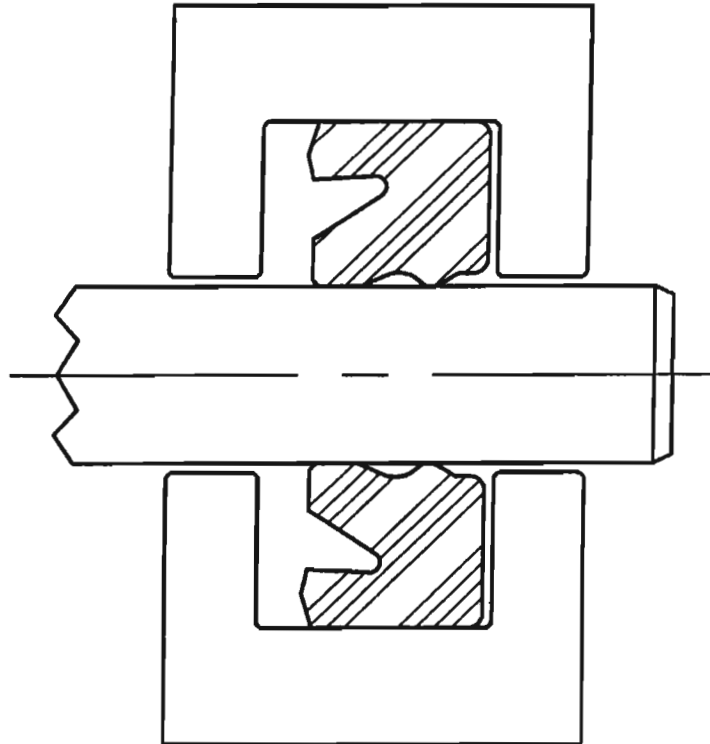


# HPS inc

## THE U CUP FAMILY



**THE NEW STANDARD OF  
EXCELLENCE FOR UNLOADED  
LIP ROD SEALS**



The UBR Rod Seal is an asymmetrical U-cup lip seal with a secondary sealing contact. The pocket reservoir formed between the two dynamic sealing lips carries lubrication to reduce wear and frictional drag of both the primary and the secondary dynamic sealing lips.

The proprietary design of this additional seal contact point effectively stabilizes the seal so that it always stays in contact with the rod with up to .020" rod deflection. The secondary lip keeps the rod seal properly aligned on the rod to insure optimum function of the seal design.

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## REDUCED LEAKAGE

The UBR seal outperforms conventional asymmetrical rod seals as well as older technology O-ring loaded lip U-cups when used in conjunction with a properly selected rod wiper.

## LOWER FRICTION

Lubrication is retained in the pocket formed by the secondary (heel) lip. The geometry of the UBR has reduced friction as much as 30% in mobile hydraulic applications. This reduction in friction is directly related to increased seal life.

## IMPROVED STABILITY

The secondary seal lip stabilizes the UBR seal so that it always stays in contact with the rod with up to .020" deflection. By keeping the seal properly aligned, the secondary seal contact point of the UBR insures optimum function of the seal design.

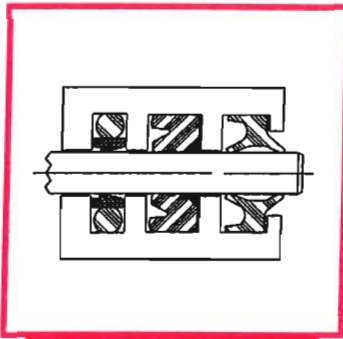
## LONGER LIFE

The reduction in friction attributable to the lubrication retained in the reservoir formed by the secondary lip is responsible for a significant increase in effective seal life.

## EXCELLENT EXTRUSION RESISTANCE

HPS's high modulus premium seal materials can be complemented by the use of integral anti-extrusion devices. All HPS UBR seals are available with an optional delta shaped nylon anti-extrusion ring.

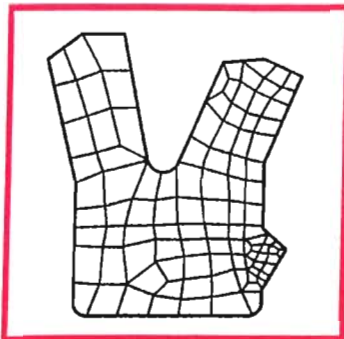
## THE UBR SEALING SYSTEM



ROD GLAND UBR

The UBR seal has produced outstanding results when used in conjunction with a properly selected rod wiper. HPS has found that the design of a total sealing system – primary seal, buffer seal (if required) and rod wiper, produces greatly improved results. Why not have the HPS engineering team recommend a sealing system designed specifically for “your” application?

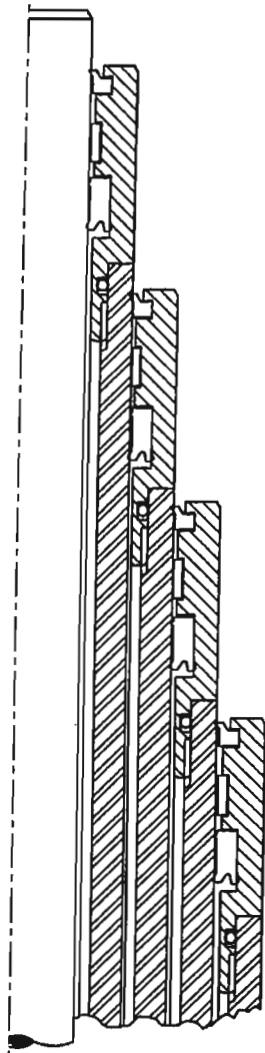
## WIDE SELECTION OF MATERIAL



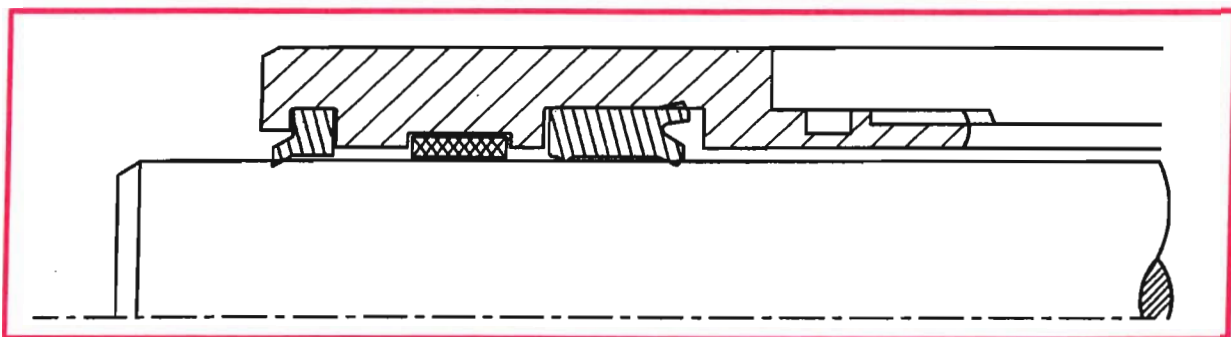
UBR

The UBR seal is available in a wide variety of materials including several high performance polyurethane compounds, as well as Fluorotrel and HNBR. This variety of materials to choose from allows the UBR seal to be used in a broad spectrum of fluid media and temperature extremes.

## THE EXTENDED LENGTH UBR SEAL

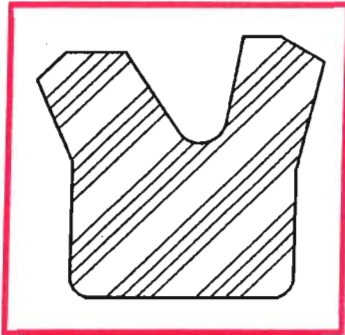


The extended length UBR seal is designed specifically to replace V-packing in telescopic cylinders. This revolutionary new sealing system has solved many of the problems inherent with telescopic cylinders and has dramatically improved sealing capability – thus eliminating the problem of cylinder mis-staging. This specialized UBR seal locks itself on the rod and as the rod starts to bend and flex, the seal follows this motion and keeps itself aligned. In addition, the premium grade thermoplastic seal material allows the seal to react faster to changes in dynamic motion and system pressure. No axial preload tension is required due to the proper design interference built into the radial lip cross-section. This results in not only a better seal, but also considerably reduced friction.



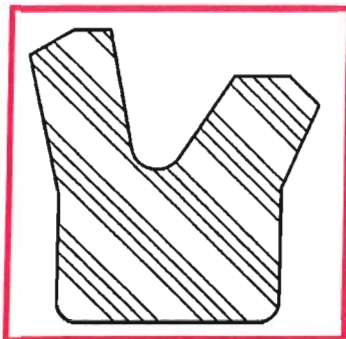
EXTENDED LENGTH UBR SEAL

## HPS UNR AND UNP SEALS



**UNR ROD SEAL**

The HPS UNR seals are single acting, asymmetrical U-cup style rod seals. This design has been proven effective in light, medium, and heavy duty hydraulic cylinders. They can be used for reciprocating, oscillating, and slow rotary motion. The UNR seal is manufactured with the seal OD somewhat larger than the diameter of its groove. This causes the outside diameter of the seal to fit tightly into the installed groove. This design feature solves the problems of shrinkage, pumping, and low temperature leakage.



**UNP PISTON SEAL**

The HPS UNP are single acting, asymmetrical U-cup style piston seals. This design has been proven effective in light, medium, and heavy duty single acting hydraulic cylinders. This design is also used in double acting cylinders, but consideration must be given to the possibility of pressure trap between the seals. The UNP is manufactured with a smaller ID than the diameter of the intended groove. Therefore, during installation, the seal must be stretched. This compensates for thermal expansion of the elastomer during operation.

## PART NUMBERING SYSTEM

U B R - 2 5 0 0 - 2 7 5 0 - 3 7 5 - X X

**SEAL TYPE**

UBR - Dual Lip Rod  
UNR - Asymmetrical Rod  
UNP - Asymmetrical Piston

**CROSS SECTION**

i.e.: 1/4"

**INSIDE DIAMETER**

i.e.: 2 3/4"

**AXIAL LENGTH**

i.e.: 3/8"

**MATERIAL CODE**

SC - Standard Urethane  
TC - High Performance Urethane  
RH - Fluorotrel  
HNBR - HN1

## GLAND DESIGN

CROSS SECTION (Radial Wall Thickness)		1/8	3/16	1/4	5/16	3/8	1/2	5/8	3/4	1		
Minimum Rod Diameter		1.000	1.750	2.750	3.500	5.000	8.000	8.500	9.000	10.000		
Recommended Axial Length		1/4	5/16	3/8	1/2	5/8	3/4	1	1-1/4	1-1/2		
TOLERANCES	A	Rod Diameter - Determined by Designer		+0.000 -0.001	+0.000 -0.002	+0.000 -0.002	+0.000 -0.002	+0.000 -0.002	+0.000 -0.003	+0.000 -0.003	+0.000 -0.004	+0.000 -0.005
	B	Groove Diameter = $A_{nom} + (2 \times \text{Cross Sect.})$		+0.002 -0.000	+0.002 -0.000	+0.003 -0.000	+0.004 -0.000	+0.005 -0.000	+0.007 -0.000	+0.009 -0.000	+0.011 -0.000	+0.015 -0.000
	C	Throat Diameter* = $A_{max} + .002$		+0.002 -0.000	+0.002 -0.000	+0.003 -0.000	+0.003 -0.000	+0.004 -0.000	+0.005 -0.000	+0.006 -0.000	+0.007 -0.000	+0.009 -0.000
	D	Gland Length = Axial Length + 10%		+0.010 -0.000	+0.010 -0.000	+0.010 -0.000	+0.010 -0.000	+0.010 -0.000	+0.010 -0.000	+0.010 -0.000	+0.015 -0.000	+0.015 -0.000

\*When used with rod wear rings, throat diameters will be increased to accommodate wear ring metal to metal clearance.

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# ***HPS inc***

*Leaders in Seal Technology*

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## **HEADQUARTERS, TECH CENTER AND SERVICE CENTER**

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