








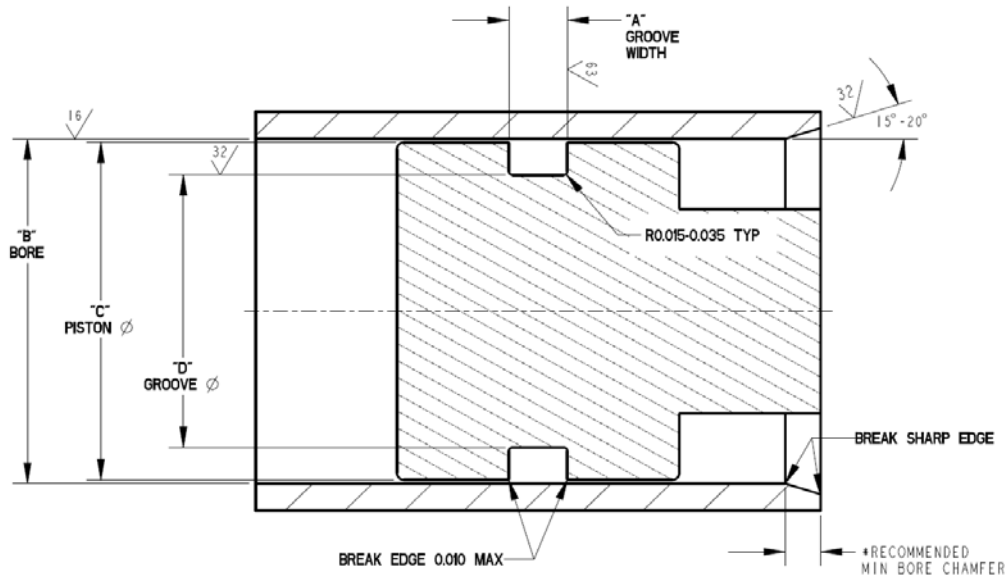


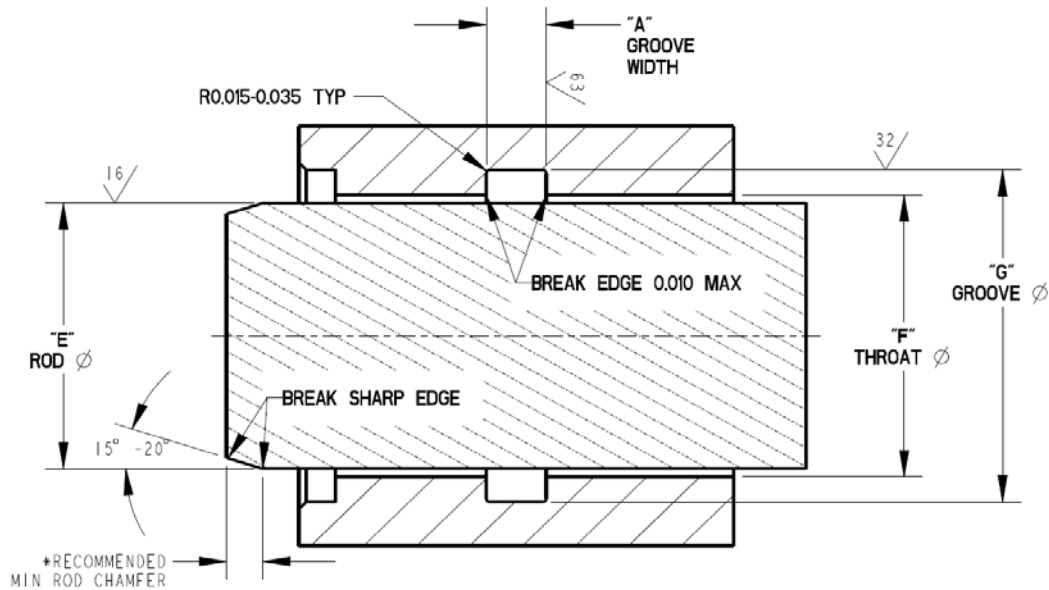
UNLOADED LIP U-CUP PART NUMBERING SYSTEM																			
UBR 	- 	2500 	- 																
2750 																			
- 																			
375 																			
- 																			
SC 																			
<div style="display: flex; justify-content: space-between;"> <div style="width: 20%;"> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr style="background-color: red; color: black;"> <th>SEAL TYPE</th> </tr> <tr> <td>UBR - Dual Lip Rod</td> </tr> <tr> <td>UNR - Asymmetrical Rod</td> </tr> <tr> <td>UNP - Asymmetrical Piston</td> </tr> <tr> <td>US - Symmetrical Piston</td> </tr> </table> </div> <div style="width: 20%;"> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr style="background-color: red; color: black;"> <th>CROSS SECTION</th> </tr> <tr> <td>i.e.: 1/4"</td> </tr> </table> </div> <div style="width: 20%;"> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr style="background-color: red; color: black;"> <th>INSIDE DIAMETER</th> </tr> <tr> <td>i.e.: 2 3/4"</td> </tr> </table> </div> <div style="width: 20%;"> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr style="background-color: red; color: black;"> <th>AXIAL LENGTH*</th> </tr> <tr> <td>i.e.: 3/8"</td> </tr> </table> </div> <div style="width: 20%;"> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr style="background-color: red; color: black;"> <th>MATERIAL CODE</th> </tr> <tr> <td>SC - Standard Urethane</td> </tr> <tr> <td>TC - High Performance Urethane</td> </tr> <tr> <td>RH - Thermoplastic Elastomer (Hytrel)</td> </tr> <tr> <td>HN1 - HNBR</td> </tr> </table> </div> </div>				SEAL TYPE	UBR - Dual Lip Rod	UNR - Asymmetrical Rod	UNP - Asymmetrical Piston	US - Symmetrical 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 - Thermoplastic Elastomer (Hytrel)	HN1 - HNBR
SEAL TYPE																			
UBR - Dual Lip Rod																			
UNR - Asymmetrical Rod																			
UNP - Asymmetrical Piston																			
US - Symmetrical Piston																			
CROSS SECTION																			
i.e.: 1/4"																			
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US																			
*Axial Length Omitted If Same As Cross Section																			
																			
																			
																			
UBR UNR UNP																			

PISTON U-CUP GROOVE DIMENSIONS



Nominal Seal Cross Section	*Recommended Min Bore Chamfer
1/8"	0.250"
3/16"	0.250"
1/4"	0.312"
5/16"	0.312"
3/8"	0.375"
1/2"	0.375"

ROD U-CUP GROOVE DIMENSIONS



Nominal Seal Cross Section	*Recommended Min Rod Chamfer
1/8"	0.250"
3/16"	0.250"
1/4"	0.312"
5/16"	0.375"
3/8"	0.500"
1/2"	0.625"

HPS UNLOADED LIP U-CUP FAMILY												
Nom Cross Section (inch)	Part Number	Nom I.D. (inch)	Nom O.D. (inch)	Nom Axial Length (inch)	Width "A" (inch)	Piston Application			Rod Application			
						Bore "B" (inch)	Piston "C" (inch)	Groove "D" (inch)	Rod "E" (inch)	Throat "F" (inch)	Groove "G" (inch)	
					[+0.010 -0.000]	[+0.002 -0.000]	[+0.000 -0.001]	[+0.000 -0.002]	[+0.000 -0.001]	[+0.002 -0.000]	[+0.002 -0.000]	
1/8	XXX -1250 -0125 -XX	1/8	3/8	1/8	0.138	0.375	0.374	0.125	0.125	0.126	0.375	
	XXX -1250 -0125 -250 -XX			1/4	0.275							
	XXX -1250 -0187 -XX	3/16	7/16	1/8	0.138	0.437	0.436	0.187	0.187	0.188	0.437	
	XXX -1250 -0187 -250 -XX			1/4	0.275							
	XXX -1250 -0250 -XX	1/4	1/2	1/8	0.138	0.500	0.499	0.250	0.250	0.251	0.500	
	XXX -1250 -0250 -250 -XX			1/4	0.275							
	XXX -1250 -0312 -XX	5/16	9/16	1/8	0.138	0.562	0.561	0.312	0.312	0.313	0.562	
	XXX -1250 -0312 -250 -XX			1/4	0.275							
	XXX -1250 -0375 -XX	3/8	5/8	1/8	0.138	0.625	0.624	0.375	0.375	0.376	0.625	
	XXX -1250 -0375 -250 -XX			1/4	0.275							
	XXX -1250 -0437 -XX	7/16	11/16	1/8	0.138	0.687	0.686	0.437	0.437	0.438	0.687	
	XXX -1250 -0437 -250 -XX			1/4	0.275							
	XXX -1250 -0500 -XX	1/2	3/4	1/8	0.138	0.750	0.749	0.500	0.500	0.501	0.750	
	XXX -1250 -0500 -250 -XX			1/4	0.275							
	XXX -1250 -0562 -XX	9/16	13/16	1/8	0.138	0.812	0.811	0.562	0.562	0.563	0.812	
	XXX -1250 -0562 -250 -XX			1/4	0.275							
	XXX -1250 -0625 -XX	5/8	7/8	1/8	0.138	0.875	0.874	0.625	0.625	0.626	0.875	
	XXX -1250 -0625 -250 -XX			1/4	0.275							
	XXX -1250 -0687 -XX	11/16	15/16	1/8	0.138	0.937	0.936	0.687	0.687	0.688	0.937	
	XXX -1250 -0687 -250 -XX			1/4	0.275							
	XXX -1250 -0750 -XX	3/4	1	1/8	0.138	1.000	0.999	0.750	0.750	0.751	1.000	
	XXX -1250 -0750 -250 -XX			1/4	0.275							
	XXX -1250 -0812 -XX	13/16	1 1/16	1/8	0.138	1.062	1.061	0.812	0.812	0.813	1.062	
	XXX -1250 -0812 -250 -XX			1/4	0.275							
	XXX -1250 -0875 -XX	7/8	1 1/8	1/8	0.138	1.125	1.124	0.875	0.875	0.876	1.125	
	XXX -1250 -0875 -250 -XX			1/4	0.275							
	XXX -1250 -0937 -XX	15/16	1 3/16	1/8	0.138	1.187	1.186	0.937	0.937	0.938	1.187	
	XXX -1250 -0937 -250 -XX			1/4	0.275							
	XXX -1250 -1000 -XX	1	1 1/4	1/8	0.138	1.250	1.249	1.000	1.000	1.001	1.250	
	XXX -1250 -1000 -250 -XX			1/4	0.275							
	XXX -1250 -1062 -XX	1 1/16	1 5/16	1/8	0.138	1.312	1.311	1.062	1.062	1.063	1.312	
	XXX -1250 -1062 -250 -XX			1/4	0.275							
	XXX -1250 -1125 -XX	1 1/8	1 3/8	1/8	0.138	1.375	1.374	1.125	1.125	1.126	1.375	
	XXX -1250 -1125 -250 -XX			1/4	0.275							

Note:
 Not all sizes listed are tooled.
 Please contact HPS for availability and custom sizes.

HPS UNLOADED LIP U-CUP FAMILY												
Nom Cross Section Section (inch)	Part Number	Nom I.D. (inch)	Nom O.D. (inch)	Nom Axial Length (inch)	Width "A" (inch)	Piston Application			Rod Application			
						Bore "B" (inch)	Piston "C" (inch)	Groove "D" (inch)	Rod "E" (inch)	Throat "F" (inch)	Groove "G" (inch)	
					[+0.010 -0.000]	[+0.002 -0.000]	[+0.000 -0.001]	[+0.000 -0.002]	[+0.000 -0.001]	[+0.002 -0.000]	[+0.002 -0.000]	
1/8	XXX -1250 -1187 -XX	1 3/16	1 7/16	1/8	0.138	1.437	1.436	1.187	1.187	1.188	1.437	
	XXX -1250 -1187 -250 -XX			1/4	0.275							
	XXX -1250 -1250 -XX	1 1/4	1 1/2	1/8	0.138	1.500	1.499	1.250	1.250	1.251	1.500	
	XXX -1250 -1250 -250 -XX			1/4	0.275							
	XXX -1250 -1312 -XX	1 5/16	1 9/16	1/8	0.138	1.562	1.561	1.312	1.312	1.313	1.562	
	XXX -1250 -1312 -250 -XX			1/4	0.275							
	XXX -1250 -1375 -XX	1 3/8	1 5/8	1/8	0.138	1.625	1.624	1.375	1.375	1.376	1.625	
	XXX -1250 -1375 -250 -XX			1/4	0.275							
	XXX -1250 -1437 -XX	1 7/16	1 11/16	1/8	0.138	1.687	1.686	1.437	1.437	1.438	1.687	
	XXX -1250 -1437 -250 -XX			1/4	0.275							
	XXX -1250 -1500 -XX	1 1/2	1 3/4	1/8	0.138	1.750	1.749	1.500	1.500	1.501	1.750	
	XXX -1250 -1500 -250 -XX			1/4	0.275							
	XXX -1250 -1625 -XX	1 5/8	1 7/8	1/8	0.138	1.875	1.874	1.625	1.625	1.626	1.875	
	XXX -1250 -1625 -250 -XX			1/4	0.275							
	XXX -1250 -1750 -XX	1 3/4	2	1/8	0.138	2.000	1.999	1.750	1.750	1.751	2.000	
	XXX -1250 -1750 -250 -XX			1/4	0.275							
	XXX -1250 -1875 -XX	1 7/8	2 1/8	1/8	0.138	2.125	2.124	1.875	1.875	1.876	2.125	
	XXX -1250 -1875 -250 -XX			1/4	0.275							
	XXX -1250 -2000 -XX	2	2 1/4	1/8	0.138	2.250	2.249	2.000	2.000	2.001	2.250	
	XXX -1250 -2000 -250 -XX			1/4	0.275							
	XXX -1250 -2125 -XX	2 1/8	2 3/8	1/8	0.138	2.375	2.374	2.125	2.125	2.126	2.375	
	XXX -1250 -2125 -250 -XX			1/4	0.275							
	XXX -1250 -2250 -XX	2 1/4	2 1/2	1/8	0.138	2.500	2.499	2.250	2.250	2.251	2.500	
	XXX -1250 -2250 -250 -XX			1/4	0.275							
	XXX -1250 -2375 -XX	2 3/8	2 5/8	1/8	0.138	2.625	2.624	2.375	2.375	2.376	2.625	
	XXX -1250 -2375 -250 -XX			1/4	0.275							
	XXX -1250 -2500 -XX	2 1/2	2 3/4	1/8	0.138	2.750	2.749	2.500	2.500	2.501	2.750	
	XXX -1250 -2500 -250 -XX			1/4	0.275							

HPS UNLOADED LIP U-CUP FAMILY												
Nom Cross Section (inch)	Part Number	Nom I.D. (inch)	Nom O.D. (inch)	Nom Axial Length (inch)	Width "A" (inch)	Piston Application			Rod Application			
						Bore "B" (inch)	Piston "C" (inch)	Groove "D" (inch)	Rod "E" (inch)	Throat "F" (inch)	Groove "G" (inch)	
					[+0.010 -0.000]	[+0.002 -0.000]	[+0.000 -0.002]	[+0.000 -0.002]	[+0.000 -0.002]	[+0.002 -0.000]	[+0.002 -0.000]	
3/16	XXX -1870 -0187 -XX	3/16	9/16	3/16	0.207	0.562	0.561	0.187	0.187	0.188	0.562	
	XXX -1870 -0187 -312 -XX			5/16	0.344							
	XXX -1870 -0250 -XX	1/4	5/8	3/16	0.207	0.625	0.624	0.250	0.250	0.251	0.625	
	XXX -1870 -0250 -312 -XX			5/16	0.344							
	XXX -1870 -0312 -XX	5/16	11/16	3/16	0.207	0.687	0.686	0.312	0.312	0.313	0.687	
	XXX -1870 -0312 -312 -XX			5/16	0.344							
	XXX -1870 -0375 -XX	3/8	3/4	3/16	0.207	0.750	0.749	0.375	0.375	0.376	0.750	
	XXX -1870 -0375 -312 -XX			5/16	0.344							
	XXX -1870 -0437 -XX	7/16	13/16	3/16	0.207	0.812	0.811	0.437	0.437	0.438	0.812	
	XXX -1870 -0437 -312 -XX			5/16	0.344							
	XXX -1870 -0500 -XX	1/2	7/8	3/16	0.207	0.875	0.874	0.500	0.500	0.501	0.875	
	XXX -1870 -0500 -312 -XX			5/16	0.344							
	XXX -1870 -0562 -XX	9/16	15/16	3/16	0.207	0.937	0.936	0.562	0.562	0.563	0.937	
	XXX -1870 -0562 -312 -XX			5/16	0.344							
	XXX -1870 -0625 -XX	5/8	1	3/16	0.207	1.000	0.999	0.625	0.625	0.626	1.000	
	XXX -1870 -0625 -312 -XX			5/16	0.344							
	XXX -1870 -0687 -XX	11/16	1 1/16	3/16	0.207	1.062	1.061	0.687	0.687	0.688	1.062	
	XXX -1870 -0687 -312 -XX			5/16	0.344							
	XXX -1870 -0750 -XX	3/4	1 1/8	3/16	0.207	1.125	1.124	0.750	0.750	0.751	1.125	
	XXX -1870 -0750 -312 -XX			5/16	0.344							
	XXX -1870 -0812 -XX	13/16	1 3/16	3/16	0.207	1.187	1.186	0.812	0.812	0.813	1.187	
	XXX -1870 -0812 -312 -XX			5/16	0.344							
	XXX -1870 -0875 -XX	7/8	1 1/4	3/16	0.207	1.250	1.249	0.875	0.875	0.876	1.250	
	XXX -1870 -0875 -312 -XX			5/16	0.344							
	XXX -1870 -0937 -XX	15/16	1 5/16	3/16	0.207	1.312	1.311	0.937	0.937	0.938	1.312	
	XXX -1870 -0937 -312 -XX			5/16	0.344							
	XXX -1870 -1000 -XX	1	1 3/8	3/16	0.207	1.375	1.374	1.000	1.000	1.001	1.375	
	XXX -1870 -1000 -312 -XX			5/16	0.344							
	XXX -1870 -1062 -XX	1 1/16	1 7/16	3/16	0.207	1.437	1.436	1.062	1.062	1.063	1.437	
	XXX -1870 -1062 -312 -XX			5/16	0.344							
	XXX -1870 -1125 -XX	1 1/8	1 1/2	3/16	0.207	1.500	1.499	1.125	1.125	1.126	1.500	
	XXX -1870 -1125 -312 -XX			5/16	0.344							

HPS UNLOADED LIP U-CUP FAMILY												
Nom Cross Section (inch)	Part Number	Nom I.D. (inch)	Nom O.D. (inch)	Nom Axial Length (inch)	Width "A" (inch)	Piston Application			Rod Application			
						Bore "B" (inch)	Piston "C" (inch)	Groove "D" (inch)	Rod "E" (inch)	Throat "F" (inch)	Groove "G" (inch)	
					[+0.010 -0.000]	[+0.002 -0.000]	[+0.000 -0.002]	[+0.000 -0.002]	[+0.000 -0.002]	[+0.002 -0.000]		
3/16	XXX -1870 -1187 -XX	1 3/16	1 9/16	3/16	0.207	1.562	1.561	1.187	1.187	1.188	1.562	
	XXX -1870 -1187 -312 -XX			5/16	0.344							
	XXX -1870 -1250 -XX	1 1/4	1 5/8	3/16	0.207	1.625	1.624	1.250	1.250	1.251	1.625	
	XXX -1870 -1250 -312 -XX			5/16	0.344							
	XXX -1870 -1312 -XX	1 5/16	1 11/16	3/16	0.207	1.687	1.686	1.312	1.312	1.313	1.687	
	XXX -1870 -1312 -312 -XX			5/16	0.344							
	XXX -1870 -1375 -XX	1 3/8	1 3/4	3/16	0.207	1.750	1.749	1.375	1.375	1.376	1.750	
	XXX -1870 -1375 -312 -XX			5/16	0.344							
	XXX -1870 -1437 -XX	1 7/16	1 13/16	3/16	0.207	1.812	1.811	1.437	1.437	1.438	1.812	
	XXX -1870 -1437 -312 -XX			5/16	0.344							
	XXX -1870 -1500 -XX	1 1/2	1 7/8	3/16	0.207	1.875	1.874	1.500	1.500	1.501	1.875	
	XXX -1870 -1500 -375 -XX			3/8	0.413							
	XXX -1870 -1625 -XX	1 5/8	2	3/16	0.207	2.000	1.999	1.625	1.625	1.626	2.000	
	XXX -1870 -1625 -375 -XX			3/8	0.413							
	XXX -1870 -1687 -XX	1 11/16	2 1/16	3/16	0.207	2.062	2.061	1.687	1.687	1.688	2.062	
	XXX -1870 -1687 -375 -XX			3/8	0.413							
	XXX -1870 -1750 -XX	1 3/4	2 1/8	3/16	0.207	2.125	2.124	1.750	1.750	1.751	2.125	
	XXX -1870 -1750 -375 -XX			3/8	0.413							
	XXX -1870 -1875 -XX	1 7/8	2 1/4	3/16	0.207	2.250	2.249	1.875	1.875	1.876	2.250	
	XXX -1870 -1875 -375 -XX			3/8	0.413							
	XXX -1870 -2000 -XX	2	2 3/8	3/16	0.207	2.375	2.374	2.000	2.000	2.001	2.375	
	XXX -1870 -2000 -375 -XX			3/8	0.413							
	XXX -1870 -2125 -XX	2 1/8	2 1/2	3/16	0.207	2.500	2.499	2.125	2.125	2.126	2.500	
	XXX -1870 -2125 -375 -XX			3/8	0.413							
	XXX -1870 -2250 -XX	2 1/4	2 5/8	3/16	0.207	2.625	2.624	2.250	2.250	2.251	2.625	
	XXX -1870 -2250 -375 -XX			3/8	0.413							
	XXX -1870 -2375 -XX	2 3/8	2 3/4	3/16	0.207	2.750	2.749	2.375	2.375	2.376	2.750	
	XXX -1870 -2375 -375 -XX			3/8	0.413							
	XXX -1870 -2500 -XX	2 1/2	2 7/8	3/16	0.207	2.875	2.874	2.500	2.500	2.501	2.875	
	XXX -1870 -2500 -375 -XX			3/8	0.413							
	XXX -1870 -2625 -XX	2 5/8	3	3/16	0.207	3.000	2.999	2.625	2.625	2.626	3.000	
	XXX -1870 -2625 -375 -XX			3/8	0.413							
	XXX -1870 -2750 -XX	2 3/4	3 1/8	3/16	0.207	3.125	3.124	2.750	2.750	2.751	3.125	
	XXX -1870 -2750 -375 -XX			3/8	0.413							

Note:
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 Please contact HPS for availability and custom sizes.

HPS UNLOADED LIP U-CUP FAMILY												
Nom Cross Section Section (inch)	Part Number	Nom I.D. (inch)	Nom O.D. (inch)	Nom Axial Length (inch)	Width "A" (inch)	Piston Application			Rod Application			
						Bore "B" (inch)	Piston "C" (inch)	Groove "D" (inch)	Rod "E" (inch)	Throat "F" (inch)	Groove "G" (inch)	
					[+0.010 -0.000]	[+0.002 -0.000]	[+0.000 -0.002]	[+0.000 -0.002]	[+0.000 -0.002]	[+0.002 -0.000]	[+0.002 -0.000]	
3/16	XXX -1870 -2875 -XX	2 7/8	3 1/4	3/16	0.207	3.250	3.249	2.875	2.875	2.876	3.250	
	XXX -1870 -2875 -375 -XX			3/8	0.413							
	XXX -1870 -3000 -XX	3	3 3/8	3/16	0.207	3.375	3.374	3.000	3.000	3.001	3.375	
	XXX -1870 -3000 -375 -XX			3/8	0.413							
	XXX -1870 -3125 -XX	3 1/8	3 1/2	3/16	0.207	3.500	3.499	3.125	3.125	3.126	3.500	
	XXX -1870 -3125 -375 -XX			3/8	0.413							
	XXX -1870 -3250 -XX	3 1/4	3 5/8	3/16	0.207	3.625	3.624	3.250	3.250	3.251	3.625	
	XXX -1870 -3250 -375 -XX			3/8	0.413							
	XXX -1870 -3375 -XX	3 3/8	3 3/4	3/16	0.207	3.750	3.749	3.375	3.375	3.376	3.750	
	XXX -1870 -3375 -375 -XX			3/8	0.413							
	XXX -1870 -3500 -XX	3 1/2	3 7/8	3/16	0.207	3.875	3.874	3.500	3.500	3.501	3.875	
	XXX -1870 -3500 -375 -XX			3/8	0.413							
	XXX -1870 -3625 -XX	3 5/8	4	3/16	0.207	4.000	3.999	3.625	3.625	3.626	4.000	
	XXX -1870 -3625 -375 -XX			3/8	0.413							
	XXX -1870 -3750 -XX	3 3/4	4 1/8	3/16	0.207	4.125	4.124	3.750	3.750	3.751	4.125	
	XXX -1870 -3750 -375 -XX			3/8	0.413							
	XXX -1870 -3875 -XX	3 7/8	4 1/4	3/16	0.207	4.250	4.249	3.875	3.875	3.876	4.250	
	XXX -1870 -3875 -375 -XX			3/8	0.413							
	XXX -1870 -4000 -XX	4	4 3/8	3/16	0.207	4.375	4.374	4.000	4.000	4.001	4.375	
	XXX -1870 -4000 -375 -XX			3/8	0.413							
	XXX -1870 -4125 -XX	4 1/8	4 1/2	3/16	0.207	4.500	4.499	4.125	4.125	4.126	4.500	
	XXX -1870 -4125 -375 -XX			3/8	0.413							
	XXX -1870 -4250 -XX	4 1/4	4 5/8	3/16	0.207	4.625	4.624	4.250	4.250	4.251	4.625	
	XXX -1870 -4250 -375 -XX			3/8	0.413							
	XXX -1870 -4375 -XX	4 3/8	4 3/4	3/16	0.207	4.750	4.749	4.375	4.375	4.376	4.750	
	XXX -1870 -4375 -375 -XX			3/8	0.413							
	XXX -1870 -4500 -XX	4 1/2	4 7/8	3/16	0.207	4.875	4.874	4.500	4.500	4.501	4.875	
	XXX -1870 -4500 -375 -XX			3/8	0.413							

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HPS UNLOADED LIP U-CUP FAMILY															
Nom Cross Section (inch)	Part Number					Nom I.D. (inch)	Nom O.D. (inch)	Nom Axial Length (inch)	Width "A" (inch)	Piston Application			Rod Application		
										Bore "B" (inch)	Piston "C" (inch)	Groove "D" (inch)	Rod "E" (inch)	Throat "F" (inch)	Groove "G" (inch)
										[+0.010 -0.000]	[+0.003 -0.000]	[+0.000 -0.002]	[+0.000 -0.003]	[+0.000 -0.002]	[+0.003 -0.000]
1/4	XXX -2500 -0250 -XX	1/4	3/4	1/4	0.275	0.750	0.749	0.250	0.250	0.251	0.750				
	XXX -2500 -0250 -375 -XX			3/8	0.413										
	XXX -2500 -0312 -XX	5/16	13/16	1/4	0.275	0.812	0.811	0.312	0.312	0.313	0.812				
	XXX -2500 -0312 -375 -XX			3/8	0.413										
	XXX -2500 -0375 -XX	3/8	7/8	1/4	0.275	0.875	0.874	0.375	0.375	0.376	0.875				
	XXX -2500 -0375 -375 -XX			3/8	0.413										
	XXX -2500 -0437 -XX	7/16	15/16	1/4	0.275	0.937	0.936	0.437	0.437	0.438	0.937				
	XXX -2500 -0437 -375 -XX			3/8	0.413										
	XXX -2500 -0500 -XX	1/2	1	1/4	0.275	1.000	0.999	0.500	0.500	0.501	1.000				
	XXX -2500 -0500 -375 -XX			3/8	0.413										
	XXX -2500 -0562 -XX	9/16	1 1/16	1/4	0.275	1.062	1.061	0.562	0.562	0.563	1.062				
	XXX -2500 -0562 -375 -XX			3/8	0.413										
	XXX -2500 -0625 -XX	5/8	1 1/8	1/4	0.275	1.125	1.124	0.625	0.625	0.626	1.125				
	XXX -2500 -0625 -375 -XX			3/8	0.413										
	XXX -2500 -0687 -XX	11/16	1 3/16	1/4	0.275	1.187	1.186	0.687	0.687	0.688	1.187				
	XXX -2500 -0687 -375 -XX			3/8	0.413										
	XXX -2500 -0750 -XX	3/4	1 1/4	1/4	0.275	1.250	1.249	0.750	0.750	0.751	1.250				
	XXX -2500 -0750 -375 -XX			3/8	0.413										
	XXX -2500 -0812 -XX	13/16	1 5/16	1/4	0.275	1.312	1.311	0.812	0.812	0.813	1.312				
	XXX -2500 -0812 -375 -XX			3/8	0.413										
	XXX -2500 -0875 -XX	7/8	1 3/8	1/4	0.275	1.375	1.374	0.875	0.875	0.876	1.375				
	XXX -2500 -0875 -375 -XX			3/8	0.413										
	XXX -2500 -0937 -XX	15/16	1 7/16	1/4	0.275	1.437	1.436	0.937	0.937	0.938	1.437				
	XXX -2500 -0937 -375 -XX			3/8	0.413										
	XXX -2500 -1000 -XX	1	1 1/2	1/4	0.275	1.500	1.499	1.000	1.000	1.001	1.500				
	XXX -2500 -1000 -375 -XX			3/8	0.413										
	XXX -2500 -1062 -XX	1 1/16	1 9/16	1/4	0.275	1.562	1.561	1.062	1.062	1.063	1.562				
	XXX -2500 -1062 -375 -XX			3/8	0.413										
	XXX -2500 -1125 -XX	1 1/8	1 5/8	1/4	0.275	1.625	1.624	1.125	1.125	1.126	1.625				
	XXX -2500 -1125 -375 -XX			3/8	0.413										
	XXX -2500 -1187 -XX	1 3/16	1 11/16	1/4	0.275	1.687	1.686	1.187	1.187	1.188	1.687				
	XXX -2500 -1187 -375 -XX			3/8	0.413										
	XXX -2500 -1250 -XX	1 1/4	1 3/4	1/4	0.275	1.750	1.749	1.250	1.250	1.251	1.750				
	XXX -2500 -1250 -375 -XX			3/8	0.413										

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HPS UNLOADED LIP U-CUP FAMILY												
Nom Cross Section (inch)	Part Number	Nom I.D. (inch)	Nom O.D. (inch)	Nom Axial Length (inch)	Width "A" (inch)	Piston Application			Rod Application			
						Bore "B" (inch)	Piston "C" (inch)	Groove "D" (inch)	Rod "E" (inch)	Throat "F" (inch)	Groove "G" (inch)	
					[+0.010 -0.000]	[+0.003 -0.000]	[+0.000 -0.002]	[+0.000 -0.003]	[+0.000 -0.002]	[+0.003 -0.000]	[+0.003 -0.000]	
1/4	XXX -2500 -1312 -XX	1 5/16	1 13/16	1/4	0.275	1.812	1.811	1.312	1.312	1.313	1.812	
	XXX -2500 -1312 -375 -XX			3/8	0.413							
	XXX -2500 -1375 -XX	1 3/8	1 7/8	1/4	0.275	1.875	1.874	1.375	1.375	1.376	1.875	
	XXX -2500 -1375 -375 -XX			3/8	0.413							
	XXX -2500 -1437 -XX	1 7/16	1 15/16	1/4	0.275	1.937	1.936	1.437	1.437	1.438	1.937	
	XXX -2500 -1437 -375 -XX			3/8	0.413							
	XXX -2500 -1500 -XX	1 1/2	2	1/4	0.275	2.000	1.999	1.500	1.500	1.501	2.000	
	XXX -2500 -1500 -375 -XX			3/8	0.413							
	XXX -2500 -1625 -XX	1 5/8	2 1/8	1/4	0.275	2.125	2.124	1.625	1.625	1.626	2.125	
	XXX -2500 -1625 -375 -XX			3/8	0.413							
	XXX -2500 -1750 -XX	1 3/4	2 1/4	1/4	0.275	2.250	2.249	1.750	1.750	1.751	2.250	
	XXX -2500 -1750 -375 -XX			3/8	0.413							
	XXX -2500 -1875 -XX	1 7/8	2 3/8	1/4	0.275	2.375	2.374	1.875	1.875	1.876	2.375	
	XXX -2500 -1875 -375 -XX			3/8	0.413							
	XXX -2500 -2000 -XX	2	2 1/2	1/4	0.275	2.500	2.499	2.000	2.000	2.001	2.500	
	XXX -2500 -2000 -375 -XX			3/8	0.413							
	XXX -2500 -2125 -XX	2 1/8	2 5/8	1/4	0.275	2.625	2.624	2.125	2.125	2.126	2.625	
	XXX -2500 -2125 -375 -XX			3/8	0.413							
	XXX -2500 -2250 -XX	2 1/4	2 3/4	1/4	0.275	2.750	2.749	2.250	2.250	2.251	2.750	
	XXX -2500 -2250 -375 -XX			3/8	0.413							
	XXX -2500 -2375 -XX	2 3/8	2 7/8	1/4	0.275	2.875	2.874	2.375	2.375	2.376	2.875	
	XXX -2500 -2375 -375 -XX			3/8	0.413							
	XXX -2500 -2500 -XX	2 1/2	3	1/4	0.275	3.000	2.999	2.500	2.500	2.501	3.000	
	XXX -2500 -2500 -375 -XX			3/8	0.413							
	XXX -2500 -2625 -XX	2 5/8	3 1/8	1/4	0.275	3.125	3.124	2.625	2.625	2.626	3.125	
	XXX -2500 -2625 -375 -XX			3/8	0.413							
	XXX -2500 -2750 -XX	2 3/4	3 1/4	1/4	0.275	3.250	3.249	2.750	2.750	2.751	3.250	
	XXX -2500 -2750 -375 -XX			3/8	0.413							
	XXX -2500 -2875 -XX	2 7/8	3 3/8	1/4	0.275	3.375	3.374	2.875	2.875	2.876	3.375	
	XXX -2500 -2875 -375 -XX			3/8	0.413							
	XXX -2500 -3000 -XX	3	3 1/2	1/4	0.275	3.500	3.499	3.000	3.000	3.001	3.500	
	XXX -2500 -3000 -375 -XX			3/8	0.413							
	XXX -2500 -3125 -XX	3 1/8	3 5/8	1/4	0.275	3.625	3.624	3.125	3.125	3.126	3.625	
	XXX -2500 -3125 -375 -XX			3/8	0.413							

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HPS UNLOADED LIP U-CUP FAMILY												
Nom Cross Section (inch)	Part Number	Nom I.D. (inch)	Nom O.D. (inch)	Nom Axial Length (inch)	Width "A" (inch)	Piston Application			Rod Application			
						Bore "B" (inch)	Piston "C" (inch)	Groove "D" (inch)	Rod "E" (inch)	Throat "F" (inch)	Groove "G" (inch)	
					[+0.010 -0.000]	[+0.003 -0.000]	[+0.000 -0.002]	[+0.000 -0.003]	[+0.000 -0.002]	[+0.003 -0.000]	[+0.003 -0.000]	
1/4	XXX -2500 -3250 -XX	3 1/4	3 3/4	1/4	0.275	3.750	3.749	3.250	3.250	3.251	3.750	
	XXX -2500 -3250 -375 -XX			3/8	0.413							
	XXX -2500 -3375 -XX	3 3/8	3 7/8	1/4	0.275	3.875	3.874	3.375	3.375	3.376	3.875	
	XXX -2500 -3375 -375 -XX			3/8	0.413							
	XXX -2500 -3500 -XX	3 1/2	4	1/4	0.275	4.000	3.999	3.500	3.500	3.501	4.000	
	XXX -2500 -3500 -375 -XX			3/8	0.413							
	XXX -2500 -3625 -XX	3 5/8	4 1/8	1/4	0.275	4.125	4.124	3.625	3.625	3.626	4.125	
	XXX -2500 -3625 -375 -XX			3/8	0.413							
	XXX -2500 -3750 -XX	3 3/4	4 1/4	1/4	0.275	4.250	4.249	3.750	3.750	3.751	4.250	
	XXX -2500 -3750 -375 -XX			3/8	0.413							
	XXX -2500 -3875 -XX	3 7/8	4 3/8	1/4	0.275	4.375	4.374	3.875	3.875	3.876	4.375	
	XXX -2500 -3875 -375 -XX			3/8	0.413							
	XXX -2500 -4000 -XX	4	4 1/2	1/4	0.275	4.500	4.499	4.000	4.000	4.001	4.500	
	XXX -2500 -4000 -562 -XX			9/16	0.619							
	XXX -2500 -4125 -XX	4 1/8	4 5/8	1/4	0.275	4.625	4.624	4.125	4.125	4.126	4.625	
	XXX -2500 -4125 -562 -XX			9/16	0.619							
	XXX -2500 -4250 -XX	4 1/4	4 3/4	1/4	0.275	4.750	4.749	4.250	4.250	4.251	4.750	
	XXX -2500 -4250 -562 -XX			9/16	0.619							
	XXX -2500 -4375 -XX	4 3/8	4 7/8	1/4	0.275	4.875	4.874	4.375	4.375	4.376	4.875	
	XXX -2500 -4375 -562 -XX			9/16	0.619							
	XXX -2500 -4500 -XX	4 1/2	5	1/4	0.275	5.000	4.999	4.500	4.500	4.501	5.000	
	XXX -2500 -4500 -562 -XX			9/16	0.619							
	XXX -2500 -4625 -XX	4 5/8	5 1/8	1/4	0.275	5.125	5.124	4.625	4.625	4.626	5.125	
	XXX -2500 -4625 -562 -XX			9/16	0.619							
	XXX -2500 -4750 -XX	4 3/4	5 1/4	1/4	0.275	5.250	5.249	4.750	4.750	4.751	5.250	
	XXX -2500 -4750 -562 -XX			9/16	0.619							
	XXX -2500 -4875 -XX	4 7/8	5 3/8	1/4	0.275	5.375	5.374	4.875	4.875	4.876	5.375	
	XXX -2500 -4875 -562 -XX			9/16	0.619							
	XXX -2500 -5000 -XX	5	5 1/2	1/4	0.275	5.500	5.499	5.000	5.000	5.001	5.500	
	XXX -2500 -5000 -562 -XX			9/16	0.619							
	XXX -2500 -5125 -XX	5 1/8	5 5/8	1/4	0.275	5.625	5.624	5.125	5.125	5.126	5.625	
	XXX -2500 -5125 -562 -XX			9/16	0.619							
	XXX -2500 -5250 -XX	5 1/4	5 3/4	1/4	0.275	5.750	5.749	5.250	5.250	5.251	5.750	
	XXX -2500 -5250 -562 -XX			9/16	0.619							

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HPS UNLOADED LIP U-CUP FAMILY												
Nom Cross Section (inch)	Part Number	Nom I.D. (inch)	Nom O.D. (inch)	Nom Axial Length (inch)	Width "A" (inch)	Piston Application			Rod Application			
						Bore "B" (inch)	Piston "C" (inch)	Groove "D" (inch)	Rod "E" (inch)	Throat "F" (inch)	Groove "G" (inch)	
					[+0.010 -0.000]	[+0.003 -0.000]	[+0.000 -0.002]	[+0.000 -0.003]	[+0.000 -0.002]	[+0.003 -0.000]	[+0.003 -0.000]	
1/4	XXX -2500 -5375 -XX	5 3/8	5 7/8	1/4	0.275	5.875	5.874	5.375	5.375	5.376	5.875	
	XXX -2500 -5375 -562 -XX			9/16	0.619							
	XXX -2500 -5500 -XX	5 1/2	6	1/4	0.275	6.000	5.999	5.500	5.500	5.501	6.000	
	XXX -2500 -5500 -562 -XX			9/16	0.619							
	XXX -2500 -5625 -XX	5 5/8	6 1/8	1/4	0.275	6.125	6.124	5.625	5.625	5.626	6.125	
	XXX -2500 -5625 -562 -XX			9/16	0.619							
	XXX -2500 -5750 -XX	5 3/4	6 1/4	1/4	0.275	6.250	6.249	5.750	5.750	5.751	6.250	
	XXX -2500 -5750 -562 -XX			9/16	0.619							
	XXX -2500 -5875 -XX	5 7/8	6 3/8	1/4	0.275	6.375	6.374	5.875	5.875	5.876	6.375	
	XXX -2500 -5875 -562 -XX			9/16	0.619							
	XXX -2500 -6000 -XX	6	6 1/2	1/4	0.275	6.500	6.499	6.000	6.000	6.001	6.500	
	XXX -2500 -6000 -562 -XX			9/16	0.619							
	XXX -2500 -6250 -XX	6 1/4	6 3/4	1/4	0.275	6.750	6.749	6.250	6.250	6.251	6.750	
	XXX -2500 -6250 -562 -XX			9/16	0.619							
	XXX -2500 -6500 -XX	6 1/2	7	1/4	0.275	7.000	6.999	6.500	6.500	6.501	7.000	
	XXX -2500 -6500 -562 -XX			9/16	0.619							
	XXX -2500 -6750 -XX	6 3/4	7 1/4	1/4	0.275	7.250	7.249	6.750	6.750	6.751	7.250	
	XXX -2500 -6750 -562 -XX			9/16	0.619							
	XXX -2500 -7000 -XX	7	7 1/2	1/4	0.275	7.500	7.499	7.000	7.000	7.001	7.500	
	XXX -2500 -7000 -562 -XX			9/16	0.619							
	XXX -2500 -7250 -XX	7 1/4	7 3/4	1/4	0.275	7.750	7.749	7.250	7.250	7.251	7.750	
	XXX -2500 -7250 -562 -XX			9/16	0.619							
	XXX -2500 -7500 -XX	7 1/2	8	1/4	0.275	8.000	7.999	7.500	7.500	7.501	8.000	
	XXX -2500 -7500 -562 -XX			9/16	0.619							
	XXX -2500 -7750 -XX	7 3/4	8 1/4	1/4	0.275	8.250	8.249	7.750	7.750	7.751	8.250	
	XXX -2500 -7750 -562 -XX			9/16	0.619							
	XXX -2500 -8000 -XX	8	8 1/2	1/4	0.275	8.500	8.499	8.000	8.000	8.001	8.500	
	XXX -2500 -8000 -562 -XX			9/16	0.619							
	XXX -2500 -8250 -XX	8 1/4	8 3/4	1/4	0.275	8.750	8.749	8.250	8.250	8.251	8.750	
	XXX -2500 -8250 -562 -XX			9/16	0.619							
	XXX -2500 -8500 -XX	8 1/2	9	1/4	0.275	9.000	8.999	8.500	8.500	8.501	9.000	
	XXX -2500 -8500 -562 -XX			9/16	0.619							
	XXX -2500 -8750 -XX	8 3/4	9 1/4	1/4	0.275	9.250	9.249	8.750	8.750	8.751	9.250	
	XXX -2500 -8750 -562 -XX			9/16	0.619							

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HPS UNLOADED LIP U-CUP FAMILY											
Nom Cross Section (inch)	Part Number	Nom I.D. (inch)	Nom O.D. (inch)	Nom Axial Length (inch)	Width "A" (inch)	Piston Application			Rod Application		
						Bore "B" (inch)	Piston "C" (inch)	Groove "D" (inch)	Rod "E" (inch)	Throat "F" (inch)	Groove "G" (inch)
						[+0.010 -0.000]	[+0.003 -0.000]	[+0.000 -0.002]	[+0.000 -0.003]	[+0.000 -0.002]	[+0.003 -0.000]
1/4	XXX -2500 -9000 -XX	9	9 1/2	1/4	0.275	9.500	9.499	9.000	9.000	9.001	9.500
	XXX -2500 -9000 -562 -XX			9/16	0.619						
	XXX -2500 -9250 -XX	9 1/4	9 3/4	1/4	0.275	9.750	9.749	9.250	9.250	9.251	9.750
	XXX -2500 -9250 -562 -XX			9/16	0.619						
	XXX -2500 -9500 -XX	9 1/2	10	1/4	0.275	10.000	9.999	9.500	9.500	9.501	10.000
	XXX -2500 -9500 -562 -XX			9/16	0.619						
	XXX -2500 -9750 -XX	9 3/4	10 1/4	1/4	0.275	10.250	10.249	9.750	9.750	9.751	10.250
	XXX -2500 -9750 -562 -XX			9/16	0.619						
	XXX -2500 -10000 -XX	10	10 1/2	1/4	0.275	10.500	10.499	10.000	10.000	10.001	10.500
	XXX -2500 -10000 -562 -XX			9/16	0.619						

HPS UNLOADED LIP U-CUP FAMILY															
Nom Cross Section (inch)	Part Number					Nom I.D. (inch)	Nom O.D. (inch)	Nom Axial Length (inch)	Width "A" (inch)	Piston Application			Rod Application		
										Bore "B" (inch)	Piston "C" (inch)	Groove "D" (inch)	Rod "E" (inch)	Throat "F" (inch)	Groove "G" (inch)
										[+0.010 -0.000]	[+0.003 -0.000]	[+0.000 -0.002]	[+0.000 -0.004]	[+0.000 -0.002]	[+0.003 -0.000]
5/16	XXX -3120 -0375 -XX	3/8	1	5/16	0.344	1.000	0.998	0.375	0.375	0.377	1.000				
	XXX -3120 -0375 -500 -XX			1/2	0.550										
	XXX -3120 -0437 -XX	7/16	1 1/16	5/16	0.344	1.062	1.060	0.437	0.437	0.439	1.062				
	XXX -3120 -0437 -500 -XX			1/2	0.550										
	XXX -3120 -0500 -XX	1/2	1 1/8	5/16	0.344	1.125	1.123	0.500	0.500	0.502	1.125				
	XXX -3120 -0500 -500 -XX			1/2	0.550										
	XXX -3120 -0562 -XX	9/16	1 3/16	5/16	0.344	1.187	1.185	0.562	0.562	0.564	1.187				
	XXX -3120 -0562 -500 -XX			1/2	0.550										
	XXX -3120 -0625 -XX	5/8	1 1/4	5/16	0.344	1.250	1.248	0.625	0.625	0.627	1.250				
	XXX -3120 -0625 -500 -XX			1/2	0.550										
	XXX -3120 -0687 -XX	11/16	1 5/16	5/16	0.344	1.312	1.310	0.687	0.687	0.689	1.312				
	XXX -3120 -0687 -500 -XX			1/2	0.550										
	XXX -3120 -0750 -XX	3/4	1 3/8	5/16	0.344	1.375	1.373	0.750	0.750	0.752	1.375				
	XXX -3120 -0750 -500 -XX			1/2	0.550										
	XXX -3120 -0812 -XX	13/16	1 7/16	5/16	0.344	1.437	1.435	0.812	0.812	0.814	1.437				
	XXX -3120 -0812 -500 -XX			1/2	0.550										
	XXX -3120 -0875 -XX	7/8	1 1/2	5/16	0.344	1.500	1.498	0.875	0.875	0.877	1.500				
	XXX -3120 -0875 -500 -XX			1/2	0.550										
	XXX -3120 -0937 -XX	15/16	1 9/16	5/16	0.344	1.562	1.560	0.937	0.937	0.939	1.562				
	XXX -3120 -0937 -500 -XX			1/2	0.550										
	XXX -3120 -1000 -XX	1	1 5/8	5/16	0.344	1.625	1.623	1.000	1.000	1.002	1.625				
	XXX -3120 -1000 -500 -XX			1/2	0.550										
	XXX -3120 -1062 -XX	1 1/16	1 11/16	5/16	0.344	1.687	1.685	1.062	1.062	1.064	1.687				
	XXX -3120 -1062 -500 -XX			1/2	0.550										
	XXX -3120 -1125 -XX	1 1/8	1 3/4	5/16	0.344	1.750	1.748	1.125	1.125	1.127	1.750				
	XXX -3120 -1125 -500 -XX			1/2	0.550										
	XXX -3120 -1187 -XX	1 3/16	1 13/16	5/16	0.344	1.812	1.810	1.187	1.187	1.189	1.812				
	XXX -3120 -1187 -500 -XX			1/2	0.550										
	XXX -3120 -1250 -XX	1 1/4	1 7/8	5/16	0.344	1.875	1.873	1.250	1.250	1.252	1.875				
	XXX -3120 -1250 -500 -XX			1/2	0.550										
	XXX -3120 -1312 -XX	1 5/16	1 15/16	5/16	0.344	1.937	1.935	1.312	1.312	1.314	1.937				
	XXX -3120 -1312 -500 -XX			1/2	0.550										
	XXX -3120 -1375 -XX	1 3/8	2	5/16	0.344	2.000	1.998	1.375	1.375	1.377	2.000				
	XXX -3120 -1375 -500 -XX			1/2	0.550										

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HPS UNLOADED LIP U-CUP FAMILY												
Nom Cross Section (inch)	Part Number	Nom I.D. (inch)	Nom O.D. (inch)	Nom Axial Length (inch)	Width "A" (inch)	Piston Application			Rod Application			
						Bore "B" (inch)	Piston "C" (inch)	Groove "D" (inch)	Rod "E" (inch)	Throat "F" (inch)	Groove "G" (inch)	
					[+0.010 -0.000]	[+0.003 -0.000]	[+0.000 -0.002]	[+0.000 -0.004]	[+0.000 -0.002]	[+0.003 -0.000]	[+0.004 -0.000]	
5/16	XXX -3120 -1437 -XX	1 7/16	2 1/16	5/16	0.344	2.062	2.060	1.437	1.437	1.439	2.062	
	XXX -3120 -1437 -500 -XX			1/2	0.550							
	XXX -3120 -1500 -XX	1 1/2	2 1/8	5/16	0.344	2.125	2.123	1.500	1.500	1.502	2.125	
	XXX -3120 -1500 -500 -XX			1/2	0.550							
	XXX -3120 -1625 -XX	1 5/8	2 1/4	5/16	0.344	2.250	2.248	1.625	1.625	1.627	2.250	
	XXX -3120 -1625 -500 -XX			1/2	0.550							
	XXX -3120 -1750 -XX	1 3/4	2 3/8	5/16	0.344	2.375	2.373	1.750	1.750	1.752	2.375	
	XXX -3120 -1750 -500 -XX			1/2	0.550							
	XXX -3120 -1875 -XX	1 7/8	2 1/2	5/16	0.344	2.500	2.498	1.875	1.875	1.877	2.500	
	XXX -3120 -1875 -500 -XX			1/2	0.550							
	XXX -3120 -2000 -XX	2	2 5/8	5/16	0.344	2.625	2.623	2.000	2.000	2.002	2.625	
	XXX -3120 -2000 -500 -XX			1/2	0.550							
	XXX -3120 -2125 -XX	2 1/8	2 3/4	5/16	0.344	2.750	2.748	2.125	2.125	2.127	2.750	
	XXX -3120 -2125 -500 -XX			1/2	0.550							
	XXX -3120 -2250 -XX	2 1/4	2 7/8	5/16	0.344	2.875	2.873	2.250	2.250	2.252	2.875	
	XXX -3120 -2250 -500 -XX			1/2	0.550							
	XXX -3120 -2375 -XX	2 3/8	3	5/16	0.344	3.000	2.998	2.375	2.375	2.377	3.000	
	XXX -3120 -2375 -500 -XX			1/2	0.550							
	XXX -3120 -2500 -XX	2 1/2	3 1/8	5/16	0.344	3.125	3.123	2.500	2.500	2.502	3.125	
	XXX -3120 -2500 -500 -XX			1/2	0.550							
	XXX -3120 -2625 -XX	2 5/8	3 1/4	5/16	0.344	3.250	3.248	2.625	2.625	2.627	3.250	
	XXX -3120 -2625 -500 -XX			1/2	0.550							
	XXX -3120 -2750 -XX	2 3/4	3 3/8	5/16	0.344	3.375	3.373	2.750	2.750	2.752	3.375	
	XXX -3120 -2750 -500 -XX			1/2	0.550							
	XXX -3120 -2875 -XX	2 7/8	3 1/2	5/16	0.344	3.500	3.498	2.875	2.875	2.877	3.500	
	XXX -3120 -2875 -500 -XX			1/2	0.550							
	XXX -3120 -3000 -XX	3	3 5/8	5/16	0.344	3.625	3.623	3.000	3.000	3.002	3.625	
	XXX -3120 -3000 -500 -XX			1/2	0.550							
	XXX -3120 -3125 -XX	3 1/8	3 3/4	5/16	0.344	3.750	3.748	3.125	3.125	3.127	3.750	
	XXX -3120 -3125 -500 -XX			1/2	0.550							
	XXX -3120 -3250 -XX	3 1/4	3 7/8	5/16	0.344	3.875	3.873	3.250	3.250	3.252	3.875	
	XXX -3120 -3250 -500 -XX			1/2	0.550							
	XXX -3120 -3375 -XX	3 3/8	4	5/16	0.344	4.000	3.998	3.375	3.375	3.377	4.000	
	XXX -3120 -3375 -500 -XX			1/2	0.550							

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HPS UNLOADED LIP U-CUP FAMILY												
Nom Cross Section (inch)	Part Number	Nom I.D. (inch)	Nom O.D. (inch)	Nom Axial Length (inch)	Width "A" (inch)	Piston Application			Rod Application			
						Bore "B" (inch)	Piston "C" (inch)	Groove "D" (inch)	Rod "E" (inch)	Throat "F" (inch)	Groove "G" (inch)	
					[+0.010 -0.000]	[+0.003 -0.000]	[+0.000 -0.002]	[+0.000 -0.004]	[+0.000 -0.002]	[+0.003 -0.000]	[+0.004 -0.000]	
5/16	XXX -3120 -3500 -XX	3 1/2	4 1/8	5/16	0.344	4.125	4.123	3.500	3.500	3.502	4.125	
	XXX -3120 -3500 -500 -XX			1/2	0.550							
	XXX -3120 -3625 -XX	3 5/8	4 1/4	5/16	0.344	4.250	4.248	3.625	3.625	3.627	4.250	
	XXX -3120 -3625 -500 -XX			1/2	0.550							
	XXX -3120 -3750 -XX	3 3/4	4 3/8	5/16	0.344	4.375	4.373	3.750	3.750	3.752	4.375	
	XXX -3120 -3750 -500 -XX			1/2	0.550							
	XXX -3120 -3875 -XX	3 7/8	4 1/2	5/16	0.344	4.500	4.498	3.875	3.875	3.877	4.500	
	XXX -3120 -3875 -500 -XX			1/2	0.550							
	XXX -3120 -4000 -XX	4	4 5/8	5/16	0.344	4.625	4.623	4.000	4.000	4.002	4.625	
	XXX -3120 -4000 -562 -XX			9/16	0.619							
	XXX -3120 -4125 -XX	4 1/8	4 3/4	5/16	0.344	4.750	4.748	4.125	4.125	4.127	4.750	
	XXX -3120 -4125 -562 -XX			9/16	0.619							
	XXX -3120 -4250 -XX	4 1/4	4 7/8	5/16	0.344	4.875	4.873	4.250	4.250	4.252	4.875	
	XXX -3120 -4250 -562 -XX			9/16	0.619							
	XXX -3120 -4375 -XX	4 3/8	5	5/16	0.344	5.000	4.998	4.375	4.375	4.377	5.000	
	XXX -3120 -4375 -562 -XX			9/16	0.619							
	XXX -3120 -4500 -XX	4 1/2	5 1/8	5/16	0.344	5.125	5.123	4.500	4.500	4.502	5.125	
	XXX -3120 -4500 -625 -XX			5/8	0.688							
	XXX -3120 -4625 -XX	4 5/8	5 1/4	5/16	0.344	5.250	5.248	4.625	4.625	4.627	5.250	
	XXX -3120 -4625 -625 -XX			5/8	0.688							
	XXX -3120 -4750 -XX	4 3/4	5 3/8	5/16	0.344	5.375	5.373	4.750	4.750	4.752	5.375	
	XXX -3120 -4750 -625 -XX			5/8	0.688							
	XXX -3120 -4875 -XX	4 7/8	5 1/2	5/16	0.344	5.500	5.498	4.875	4.875	4.877	5.500	
	XXX -3120 -4875 -625 -XX			5/8	0.688							
	XXX -3120 -5000 -XX	5	5 5/8	5/16	0.344	5.625	5.623	5.000	5.000	5.002	5.625	
	XXX -3120 -5000 -625 -XX			5/8	0.688							
	XXX -3120 -5125 -XX	5 1/8	5 3/4	5/16	0.344	5.750	5.748	5.125	5.125	5.127	5.750	
	XXX -3120 -5125 -625 -XX			5/8	0.688							
	XXX -3120 -5250 -XX	5 1/4	5 7/8	5/16	0.344	5.875	5.873	5.250	5.250	5.252	5.875	
	XXX -3120 -5250 -625 -XX			5/8	0.688							
	XXX -3120 -5375 -XX	5 3/8	6	5/16	0.344	6.000	5.998	5.375	5.375	5.377	6.000	
	XXX -3120 -5375 -625 -XX			5/8	0.688							
	XXX -3120 -5500 -XX	5 1/2	6 1/8	5/16	0.344	6.125	6.123	5.500	5.500	5.502	6.125	
	XXX -3120 -5500 -625 -XX			5/8	0.688							

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HPS UNLOADED LIP U-CUP FAMILY												
Nom Cross Section (inch)	Part Number	Nom I.D. (inch)	Nom O.D. (inch)	Nom Axial Length (inch)	Width "A" (inch)	Piston Application			Rod Application			
						Bore "B" (inch)	Piston "C" (inch)	Groove "D" (inch)	Rod "E" (inch)	Throat "F" (inch)	Groove "G" (inch)	
					[+0.010 -0.000]	[+0.003 -0.000]	[+0.000 -0.002]	[+0.000 -0.004]	[+0.000 -0.002]	[+0.003 -0.000]	[+0.004 -0.000]	
5/16	XXX -3120 -5625 -XX	5 5/8	6 1/4	5/16	0.344	6.250	6.248	5.625	5.625	5.627	6.250	
	XXX -3120 -5625 -625 -XX			5/8	0.688							
	XXX -3120 -5750 -XX	5 3/4	6 3/8	5/16	0.344	6.375	6.373	5.750	5.750	5.752	6.375	
	XXX -3120 -5750 -625 -XX			5/8	0.688							
	XXX -3120 -5875 -XX	5 7/8	6 1/2	5/16	0.344	6.500	6.498	5.875	5.875	5.877	6.500	
	XXX -3120 -5875 -625 -XX			5/8	0.688							
	XXX -3120 -6000 -XX	6	6 5/8	5/16	0.344	6.625	6.623	6.000	6.000	6.002	6.625	
	XXX -3120 -6000 -625 -XX			5/8	0.688							
	XXX -3120 -6125 -XX	6 1/8	6 3/4	5/16	0.344	6.750	6.748	6.125	6.125	6.127	6.750	
	XXX -3120 -6125 -625 -XX			5/8	0.688							
	XXX -3120 -6250 -XX	6 1/4	6 7/8	5/16	0.344	6.875	6.873	6.250	6.250	6.252	6.875	
	XXX -3120 -6250 -625 -XX			5/8	0.688							
	XXX -3120 -6375 -XX	6 3/8	7	5/16	0.344	7.000	6.998	6.375	6.375	6.377	7.000	
	XXX -3120 -6375 -625 -XX			5/8	0.688							
	XXX -3120 -6500 -XX	6 1/2	7 1/8	5/16	0.344	7.125	7.123	6.500	6.500	6.502	7.125	
	XXX -3120 -6500 -625 -XX			5/8	0.688							
	XXX -3120 -6625 -XX	6 5/8	7 1/4	5/16	0.344	7.250	7.248	6.625	6.625	6.627	7.250	
	XXX -3120 -6625 -625 -XX			5/8	0.688							
	XXX -3120 -6750 -XX	6 3/4	7 3/8	5/16	0.344	7.375	7.373	6.750	6.750	6.752	7.375	
	XXX -3120 -6750 -625 -XX			5/8	0.688							
	XXX -3120 -6875 -XX	6 7/8	7 1/2	5/16	0.344	7.500	7.498	6.875	6.875	6.877	7.500	
	XXX -3120 -6875 -625 -XX			5/8	0.688							
	XXX -3120 -7000 -XX	7	7 5/8	5/16	0.344	7.625	7.623	7.000	7.000	7.002	7.625	
	XXX -3120 -7000 -625 -XX			5/8	0.688							
	XXX -3120 -7125 -XX	7 1/8	7 3/4	5/16	0.344	7.750	7.748	7.125	7.125	7.127	7.750	
	XXX -3120 -7125 -625 -XX			5/8	0.688							
	XXX -3120 -7250 -XX	7 1/4	7 7/8	5/16	0.344	7.875	7.873	7.250	7.250	7.252	7.875	
	XXX -3120 -7250 -625 -XX			5/8	0.688							
	XXX -3120 -7375 -XX	7 3/8	8	5/16	0.344	8.000	7.998	7.375	7.375	7.377	8.000	
	XXX -3120 -7375 -625 -XX			5/8	0.688							

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Nom Cross Section (inch)	Part Number	Nom I.D. (inch)	Nom O.D. (inch)	Nom Axial Length (inch)	Width "A" (inch)	Piston Application			Rod Application			
						Bore "B" (inch)	Piston "C" (inch)	Groove "D" (inch)	Rod "E" (inch)	Throat "F" (inch)	Groove "G" (inch)	
					[+0.010 -0.000]	[+0.004 -0.000]	[+0.000 -0.002]	[+0.000 -0.005]	[+0.000 -0.002]	[+0.004 -0.000]	[+0.005 -0.000]	
3/8	XXX -3750 -0500 -XX	1/2	1 1/4	3/8	0.413	1.250	1.248	0.500	0.500	0.502	1.250	
	XXX -3750 -0500 -625 -XX			5/8	0.688							
	XXX -3750 -0562 -XX	9/16	1 5/16	3/8	0.413	1.312	1.310	0.562	0.562	0.564	1.312	
	XXX -3750 -0562 -625 -XX			5/8	0.688							
	XXX -3750 -0625 -XX	5/8	1 3/8	3/8	0.413	1.375	1.373	0.625	0.625	0.627	1.375	
	XXX -3750 -0625 -625 -XX			5/8	0.688							
	XXX -3750 -0687 -XX	11/16	1 7/16	3/8	0.413	1.437	1.435	0.687	0.687	0.689	1.437	
	XXX -3750 -0687 -625 -XX			5/8	0.688							
	XXX -3750 -0750 -XX	3/4	1 1/2	3/8	0.413	1.500	1.498	0.750	0.750	0.752	1.500	
	XXX -3750 -0750 -625 -XX			5/8	0.688							
	XXX -3750 -0812 -XX	13/16	1 9/16	3/8	0.413	1.562	1.560	0.812	0.812	0.814	1.562	
	XXX -3750 -0812 -625 -XX			5/8	0.688							
	XXX -3750 -0875 -XX	7/8	1 5/8	3/8	0.413	1.625	1.623	0.875	0.875	0.877	1.625	
	XXX -3750 -0875 -625 -XX			5/8	0.688							
	XXX -3750 -0937 -XX	15/16	1 11/16	3/8	0.413	1.687	1.685	0.937	0.937	0.939	1.687	
	XXX -3750 -0937 -625 -XX			5/8	0.688							
	XXX -3750 -1000 -XX	1	1 3/4	3/8	0.413	1.750	1.748	1.000	1.000	1.002	1.750	
	XXX -3750 -1000 -625 -XX			5/8	0.688							
	XXX -3750 -1062 -XX	1 1/16	1 13/16	3/8	0.413	1.812	1.810	1.062	1.062	1.064	1.812	
	XXX -3750 -1062 -625 -XX			5/8	0.688							
	XXX -3750 -1125 -XX	1 1/8	1 7/8	3/8	0.413	1.875	1.873	1.125	1.125	1.127	1.875	
	XXX -3750 -1125 -625 -XX			5/8	0.688							
	XXX -3750 -1187 -XX	1 3/16	1 15/16	3/8	0.413	1.937	1.935	1.187	1.187	1.189	1.937	
	XXX -3750 -1187 -625 -XX			5/8	0.688							
	XXX -3750 -1250 -XX	1 1/4	2	3/8	0.413	2.000	1.998	1.250	1.250	1.252	2.000	
	XXX -3750 -1250 -625 -XX			5/8	0.688							
	XXX -3750 -1312 -XX	1 5/16	2 1/16	3/8	0.413	2.062	2.060	1.312	1.312	1.314	2.062	
	XXX -3750 -1312 -625 -XX			5/8	0.688							
	XXX -3750 -1375 -XX	1 3/8	2 1/8	3/8	0.413	2.125	2.123	1.375	1.375	1.377	2.125	
	XXX -3750 -1375 -625 -XX			5/8	0.688							
	XXX -3750 -1437 -XX	1 7/16	2 3/16	3/8	0.413	2.187	2.185	1.437	1.437	1.439	2.187	
	XXX -3750 -1437 -625 -XX			5/8	0.688							
	XXX -3750 -1500 -XX	1 1/2	2 1/4	3/8	0.413	2.250	2.248	1.500	1.500	1.502	2.250	
	XXX -3750 -1500 -625 -XX			5/8	0.688							

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HPS UNLOADED LIP U-CUP FAMILY												
Nom Cross Section (inch)	Part Number	Nom I.D. (inch)	Nom O.D. (inch)	Nom Axial Length (inch)	Width "A" (inch)	Piston Application			Rod Application			
						Bore "B" (inch)	Piston "C" (inch)	Groove "D" (inch)	Rod "E" (inch)	Throat "F" (inch)	Groove "G" (inch)	
					[+0.010 -0.000]	[+0.004 -0.000]	[+0.000 -0.002]	[+0.000 -0.005]	[+0.000 -0.002]	[+0.004 -0.000]	[+0.005 -0.000]	
3/8	XXX -3750 -1625 -XX	1 5/8	2 3/8	3/8	0.413	2.375	2.373	1.625	1.625	1.627	2.375	
	XXX -3750 -1625 -625 -XX			5/8	0.688							
	XXX -3750 -1750 -XX	1 3/4	2 1/2	3/8	0.413	2.500	2.498	1.750	1.750	1.752	2.500	
	XXX -3750 -1750 -625 -XX			5/8	0.688							
	XXX -3750 -1875 -XX	1 7/8	2 5/8	3/8	0.413	2.625	2.623	1.875	1.875	1.877	2.625	
	XXX -3750 -1875 -625 -XX			5/8	0.688							
	XXX -3750 -2000 -XX	2	2 3/4	3/8	0.413	2.750	2.748	2.000	2.000	2.002	2.750	
	XXX -3750 -2000 -625 -XX			5/8	0.688							
	XXX -3750 -2125 -XX	2 1/8	2 7/8	3/8	0.413	2.875	2.873	2.125	2.125	2.127	2.875	
	XXX -3750 -2125 -625 -XX			5/8	0.688							
	XXX -3750 -2250 -XX	2 1/4	3	3/8	0.413	3.000	2.998	2.250	2.250	2.252	3.000	
	XXX -3750 -2250 -625 -XX			5/8	0.688							
	XXX -3750 -2375 -XX	2 3/8	3 1/8	3/8	0.413	3.125	3.123	2.375	2.375	2.377	3.125	
	XXX -3750 -2375 -625 -XX			5/8	0.688							
	XXX -3750 -2500 -XX	2 1/2	3 1/4	3/8	0.413	3.250	3.248	2.500	2.500	2.502	3.250	
	XXX -3750 -2500 -625 -XX			5/8	0.688							
	XXX -3750 -2625 -XX	2 5/8	3 3/8	3/8	0.413	3.375	3.373	2.625	2.625	2.627	3.375	
	XXX -3750 -2625 -625 -XX			5/8	0.688							
	XXX -3750 -2750 -XX	2 3/4	3 1/2	3/8	0.413	3.500	3.498	2.750	2.750	2.752	3.500	
	XXX -3750 -2750 -625 -XX			5/8	0.688							
	XXX -3750 -2875 -XX	2 7/8	3 5/8	3/8	0.413	3.625	3.623	2.875	2.875	2.877	3.625	
	XXX -3750 -2875 -625 -XX			5/8	0.688							
	XXX -3750 -3000 -XX	3	3 3/4	3/8	0.413	3.750	3.748	3.000	3.000	3.002	3.750	
	XXX -3750 -3000 -625 -XX			5/8	0.688							
	XXX -3750 -3125 -XX	3 1/8	3 7/8	3/8	0.413	3.875	3.873	3.125	3.125	3.127	3.875	
	XXX -3750 -3125 -625 -XX			5/8	0.688							
	XXX -3750 -3250 -XX	3 1/4	4	3/8	0.413	4.000	3.998	3.250	3.250	3.252	4.000	
	XXX -3750 -3250 -625 -XX			5/8	0.688							
	XXX -3750 -3375 -XX	3 3/8	4 1/8	3/8	0.413	4.125	4.123	3.375	3.375	3.377	4.125	
	XXX -3750 -3375 -625 -XX			5/8	0.688							
	XXX -3750 -3500 -XX	3 1/2	4 1/4	3/8	0.413	4.250	4.248	3.500	3.500	3.502	4.250	
	XXX -3750 -3500 -625 -XX			5/8	0.688							
	XXX -3750 -3625 -XX	3 5/8	4 3/8	3/8	0.413	4.375	4.373	3.625	3.625	3.627	4.375	
	XXX -3750 -3625 -625 -XX			5/8	0.688							

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HPS UNLOADED LIP U-CUP FAMILY												
Nom Cross Section (inch)	Part Number	Nom I.D. (inch)	Nom O.D. (inch)	Nom Axial Length (inch)	Width "A" (inch)	Piston Application			Rod Application			
						Bore "B" (inch)	Piston "C" (inch)	Groove "D" (inch)	Rod "E" (inch)	Throat "F" (inch)	Groove "G" (inch)	
					[+0.010 -0.000]	[+0.004 -0.000]	[+0.000 -0.002]	[+0.000 -0.005]	[+0.000 -0.002]	[+0.004 -0.000]	[+0.005 -0.000]	
3/8	XXX -3750 -3750 -XX	3 3/4	4 1/2	3/8	0.413	4.500	4.498	3.750	3.750	3.752	4.500	
	XXX -3750 -3750 -625 -XX			5/8	0.688							
	XXX -3750 -3875 -XX	3 7/8	4 5/8	3/8	0.413	4.625	4.623	3.875	3.875	3.877	4.625	
	XXX -3750 -3875 -625 -XX			5/8	0.688							
	XXX -3750 -4000 -XX	4	4 3/4	3/8	0.413	4.750	4.748	4.000	4.000	4.002	4.750	
	XXX -3750 -4000 -625 -XX			5/8	0.688							
	XXX -3750 -4125 -XX	4 1/8	4 7/8	3/8	0.413	4.875	4.873	4.125	4.125	4.127	4.875	
	XXX -3750 -4125 -625 -XX			5/8	0.688							
	XXX -3750 -4250 -XX	4 1/4	5	3/8	0.413	5.000	4.998	4.250	4.250	4.252	5.000	
	XXX -3750 -4250 -625 -XX			5/8	0.688							
	XXX -3750 -4375 -XX	4 3/8	5 1/8	3/8	0.413	5.125	5.123	4.375	4.375	4.377	5.125	
	XXX -3750 -4375 -625 -XX			5/8	0.688							
	XXX -3750 -4500 -XX	4 1/2	5 1/4	3/8	0.413	5.250	5.248	4.500	4.500	4.502	5.250	
	XXX -3750 -4500 -625 -XX			5/8	0.688							
	XXX -3750 -4625 -XX	4 5/8	5 3/8	3/8	0.413	5.375	5.373	4.625	4.625	4.627	5.375	
	XXX -3750 -4625 -625 -XX			5/8	0.688							
	XXX -3750 -4750 -XX	4 3/4	5 1/2	3/8	0.413	5.500	5.498	4.750	4.750	4.752	5.500	
	XXX -3750 -4750 -625 -XX			5/8	0.688							
	XXX -3750 -4875 -XX	4 7/8	5 5/8	3/8	0.413	5.625	5.623	4.875	4.875	4.877	5.625	
	XXX -3750 -4875 -625 -XX			5/8	0.688							
	XXX -3750 -5000 -XX	5	5 3/4	3/8	0.413	5.750	5.748	5.000	5.000	5.002	5.750	
	XXX -3750 -5000 -625 -XX			5/8	0.688							
	XXX -3750 -5125 -XX	5 1/8	5 7/8	3/8	0.413	5.875	5.873	5.125	5.125	5.127	5.875	
	XXX -3750 -5125 -625 -XX			5/8	0.688							
	XXX -3750 -5250 -XX	5 1/4	6	3/8	0.413	6.000	5.998	5.250	5.250	5.252	6.000	
	XXX -3750 -5250 -625 -XX			5/8	0.688							
	XXX -3750 -5375 -XX	5 3/8	6 1/8	3/8	0.413	6.125	6.123	5.375	5.375	5.377	6.125	
	XXX -3750 -5375 -625 -XX			5/8	0.688							
	XXX -3750 -5500 -XX	5 1/2	6 1/4	3/8	0.413	6.250	6.248	5.500	5.500	5.502	6.250	
	XXX -3750 -5500 -625 -XX			5/8	0.688							
	XXX -3750 -5625 -XX	5 5/8	6 3/8	3/8	0.413	6.375	6.373	5.625	5.625	5.627	6.375	
	XXX -3750 -5625 -625 -XX			5/8	0.688							
	XXX -3750 -5750 -XX	5 3/4	6 1/2	3/8	0.413	6.500	6.498	5.750	5.750	5.752	6.500	
	XXX -3750 -5750 -625 -XX			5/8	0.688							

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HPS UNLOADED LIP U-CUP FAMILY												
Nom Cross Section (inch)	Part Number	Nom I.D. (inch)	Nom O.D. (inch)	Nom Axial Length (inch)	Width "A" (inch)	Piston Application			Rod Application			
						Bore "B" (inch)	Piston "C" (inch)	Groove "D" (inch)	Rod "E" (inch)	Throat "F" (inch)	Groove "G" (inch)	
					[+0.010 -0.000]	[+0.004 -0.000]	[+0.000 -0.002]	[+0.000 -0.005]	[+0.000 -0.002]	[+0.004 -0.000]	[+0.005 -0.000]	
3/8	XXX -3750 -5875 -XX	5 7/8	6 5/8	3/8	0.413	6.625	6.623	5.875	5.875	5.877	6.625	
	XXX -3750 -5875 -625 -XX			5/8	0.688							
	XXX -3750 -6000 -XX	6	6 3/4	3/8	0.413	6.750	6.748	6.000	6.000	6.002	6.750	
	XXX -3750 -6000 -625 -XX			5/8	0.688							
	XXX -3750 -6250 -XX	6 1/4	7	3/8	0.413	7.000	6.998	6.250	6.250	6.252	7.000	
	XXX -3750 -6250 -625 -XX			5/8	0.688							
	XXX -3750 -6500 -XX	6 1/2	7 1/4	3/8	0.413	7.250	7.248	6.500	6.500	6.502	7.250	
	XXX -3750 -6500 -625 -XX			5/8	0.688							
	XXX -3750 -6750 -XX	6 3/4	7 1/2	3/8	0.413	7.500	7.498	6.750	6.750	6.752	7.500	
	XXX -3750 -6750 -625 -XX			5/8	0.688							
	XXX -3750 -7000 -XX	7	7 3/4	3/8	0.413	7.750	7.748	7.000	7.000	7.002	7.750	
	XXX -3750 -7000 -625 -XX			5/8	0.688							

HPS UNLOADED LIP U-CUP FAMILY												
Nom Cross Section (inch)	Part Number	Nom I.D. (inch)	Nom O.D. (inch)	Nom Axial Length (inch)	Width "A" (inch)	Piston Application			Rod Application			
						Bore "B" (inch)	Piston "C" (inch)	Groove "D" (inch)	Rod "E" (inch)	Throat "F" (inch)	Groove "G" (inch)	
					[+0.010 -0.000]	[+0.005 -0.000]	[+0.000 -0.003]	[+0.000 -0.007]	[+0.000 -0.003]	[+0.005 -0.000]	[+0.007 -0.000]	
1/2	XXX -5000 -1000 -XX	1	2	1/2	0.550	2.000	1.998	1.000	1.000	1.002	2.000	
	XXX -5000 -1000 -750 -XX			3/4	0.825							
	XXX -5000 -1250 -XX	1 1/4	2 1/4	1/2	0.550	2.250	2.248	1.250	1.250	1.252	2.250	
	XXX -5000 -1250 -750 -XX			3/4	0.825							
	XXX -5000 -1375 -XX	1 3/8	2 3/8	1/2	0.550	2.375	2.373	1.375	1.375	1.377	2.375	
	XXX -5000 -1375 -750 -XX			3/4	0.825							
	XXX -5000 -1500 -XX	1 1/2	2 1/2	1/2	0.550	2.500	2.498	1.500	1.500	1.502	2.500	
	XXX -5000 -1500 -750 -XX			3/4	0.825							
	XXX -5000 -1750 -XX	1 3/4	2 3/4	1/2	0.550	2.750	2.748	1.750	1.750	1.752	2.750	
	XXX -5000 -1750 -750 -XX			3/4	0.825							
	XXX -5000 -2000 -XX	2	3	1/2	0.550	3.000	2.998	2.000	2.000	2.002	3.000	
	XXX -5000 -2000 -750 -XX			3/4	0.825							
	XXX -5000 -2250 -XX	2 1/4	3 1/4	1/2	0.550	3.250	3.248	2.250	2.250	2.252	3.250	
	XXX -5000 -2250 -750 -XX			3/4	0.825							
	XXX -5000 -2375 -XX	2 3/8	3 3/8	1/2	0.550	3.375	3.373	2.375	2.375	2.377	3.375	
	XXX -5000 -2375 -750 -XX			3/4	0.825							
	XXX -5000 -2500 -XX	2 1/2	3 1/2	1/2	0.550	3.500	3.498	2.500	2.500	2.502	3.500	
	XXX -5000 -2500 -750 -XX			3/4	0.825							
	XXX -5000 -2750 -XX	2 3/4	3 3/4	1/2	0.550	3.750	3.748	2.750	2.750	2.752	3.750	
	XXX -5000 -2750 -750 -XX			3/4	0.825							
	XXX -5000 -3000 -XX	3	4	1/2	0.550	4.000	3.998	3.000	3.000	3.002	4.000	
	XXX -5000 -3000 -750 -XX			3/4	0.825							
	XXX -5000 -3250 -XX	3 1/4	4 1/4	1/2	0.550	4.250	4.248	3.250	3.250	3.252	4.250	
	XXX -5000 -3250 -750 -XX			3/4	0.825							
	XXX -5000 -3500 -XX	3 1/2	4 1/2	1/2	0.550	4.500	4.498	3.500	3.500	3.502	4.500	
	XXX -5000 -3500 -750 -XX			3/4	0.825							
	XXX -5000 -3750 -XX	3 3/4	4 3/4	1/2	0.550	4.750	4.748	3.750	3.750	3.752	4.750	
	XXX -5000 -3750 -750 -XX			3/4	0.825							
	XXX -5000 -4000 -XX	4	5	1/2	0.550	5.000	4.998	4.000	4.000	4.002	5.000	
	XXX -5000 -4000 -750 -XX			3/4	0.825							
	XXX -5000 -4250 -XX	4 1/4	5 1/4	1/2	0.550	5.250	5.248	4.250	4.250	4.252	5.250	
	XXX -5000 -4250 -750 -XX			3/4	0.825							
	XXX -5000 -4375 -XX	4 3/8	5 3/8	1/2	0.550	5.375	5.373	4.375	4.375	4.377	5.375	
	XXX -5000 -4375 -750 -XX			3/4	0.825							

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HPS UNLOADED LIP U-CUP FAMILY												
Nom Cross Section (inch)	Part Number	Nom I.D. (inch)	Nom O.D. (inch)	Nom Axial Length (inch)	Width "A" (inch)	Piston Application			Rod Application			
						Bore "B" (inch)	Piston "C" (inch)	Groove "D" (inch)	Rod "E" (inch)	Throat "F" (inch)	Groove "G" (inch)	
					[+0.010 -0.000]	[+0.005 -0.000]	[+0.000 -0.003]	[+0.000 -0.007]	[+0.000 -0.003]	[+0.005 -0.000]	[+0.007 -0.000]	
1/2	XXX -5000 -4500 -XX	4 1/2	5 1/2	1/2	0.550	5.500	5.498	4.500	4.500	4.502	5.500	
	XXX -5000 -4500 -750 -XX			3/4	0.825							
	XXX -5000 -4750 -XX	4 3/4	5 3/4	1/2	0.550	5.750	5.748	4.750	4.750	4.752	5.750	
	XXX -5000 -4750 -750 -XX			3/4	0.825							
	XXX -5000 -5000 -XX	5	6	1/2	0.550	6.000	5.998	5.000	5.000	5.002	6.000	
	XXX -5000 -5000 -750 -XX			3/4	0.825							
	XXX -5000 -5250 -XX	5 1/4	6 1/4	1/2	0.550	6.250	6.248	5.250	5.250	5.252	6.250	
	XXX -5000 -5250 -750 -XX			3/4	0.825							
	XXX -5000 -5375 -XX	5 3/8	6 3/8	1/2	0.550	6.375	6.373	5.375	5.375	5.377	6.375	
	XXX -5000 -5375 -750 -XX			3/4	0.825							
	XXX -5000 -5500 -XX	5 1/2	6 1/2	1/2	0.550	6.500	6.498	5.500	5.500	5.502	6.500	
	XXX -5000 -5500 -750 -XX			3/4	0.825							
	XXX -5000 -5750 -XX	5 3/4	6 3/4	1/2	0.550	6.750	6.748	5.750	5.750	5.752	6.750	
	XXX -5000 -5750 -750 -XX			3/4	0.825							
	XXX -5000 -6000 -XX	6	7	1/2	0.550	7.000	6.998	6.000	6.000	6.002	7.000	
	XXX -5000 -6000 -750 -XX			3/4	0.825							
	XXX -5000 -6250 -XX	6 1/4	7 1/4	1/2	0.550	7.250	7.248	6.250	6.250	6.252	7.250	
	XXX -5000 -6250 -750 -XX			3/4	0.825							
	XXX -5000 -6500 -XX	6 1/2	7 1/2	1/2	0.550	7.500	7.498	6.500	6.500	6.502	7.500	
	XXX -5000 -6500 -750 -XX			3/4	0.825							
	XXX -5000 -6750 -XX	6 3/4	7 3/4	1/2	0.550	7.750	7.748	6.750	6.750	6.752	7.750	
	XXX -5000 -6750 -750 -XX			3/4	0.825							
	XXX -5000 -7000 -XX	7	8	1/2	0.550	8.000	7.998	7.000	7.000	7.002	8.000	
	XXX -5000 -7000 -750 -XX			3/4	0.825							
	XXX -5000 -7250 -XX	7 1/4	8 1/4	1/2	0.550	8.250	8.248	7.250	7.250	7.252	8.250	
	XXX -5000 -7250 -750 -XX			3/4	0.825							
	XXX -5000 -7500 -XX	7 1/2	8 1/2	1/2	0.550	8.500	8.498	7.500	7.500	7.502	8.500	
	XXX -5000 -7500 -750 -XX			3/4	0.825							
	XXX -5000 -7750 -XX	7 3/4	8 3/4	1/2	0.550	8.750	8.748	7.750	7.750	7.752	8.750	
	XXX -5000 -7750 -750 -XX			3/4	0.825							
	XXX -5000 -8000 -XX	8	9	1/2	0.550	9.000	8.998	8.000	8.000	8.002	9.000	
	XXX -5000 -8000 -750 -XX			3/4	0.825							
	XXX -5000 -8250 -XX	8 1/4	9 1/4	1/2	0.550	9.250	9.248	8.250	8.250	8.252	9.250	
	XXX -5000 -8250 -750 -XX			3/4	0.825							

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HPS UNLOADED LIP U-CUP FAMILY												
Nom Cross Section (inch)	Part Number	Nom I.D. (inch)	Nom O.D. (inch)	Nom Axial Length (inch)	Width "A" (inch)	Piston Application			Rod Application			
						Bore "B" (inch)	Piston "C" (inch)	Groove "D" (inch)	Rod "E" (inch)	Throat "F" (inch)	Groove "G" (inch)	
					[+0.010 -0.000]	[+0.005 -0.000]	[+0.000 -0.003]	[+0.000 -0.007]	[+0.000 -0.003]	[+0.005 -0.000]	[+0.007 -0.000]	
1/2	XXX -5000 -8500 -XX	8 1/2	9 1/2	1/2	0.550	9.500	9.498	8.500	8.500	8.502	9.500	
	XXX -5000 -8500 -750 -XX			3/4	0.825							
	XXX -5000 -8750 -XX	8 3/4	9 3/4	1/2	0.550	9.750	9.748	8.750	8.750	8.752	9.750	
	XXX -5000 -8750 -750 -XX			3/4	0.825							
	XXX -5000 -9000 -XX	9	10	1/2	0.550	10.000	9.998	9.000	9.000	9.002	10.000	
	XXX -5000 -9000 -750 -XX			3/4	0.825							
	XXX -5000 -9250 -XX	9 1/4	10 1/4	1/2	0.550	10.250	10.248	9.250	9.250	9.252	10.250	
	XXX -5000 -9250 -750 -XX			3/4	0.825							
	XXX -5000 -9500 -XX	9 1/2	10 1/2	1/2	0.550	10.500	10.498	9.500	9.500	9.502	10.500	
	XXX -5000 -9500 -750 -XX			3/4	0.825							
	XXX -5000 -9750 -XX	9 3/4	10 3/4	1/2	0.550	10.750	10.748	9.750	9.750	9.752	10.750	
	XXX -5000 -9750 -750 -XX			3/4	0.825							
	XXX -5000 -10000 -XX	10	11	1/2	0.550	11.000	10.998	10.000	10.000	10.002	11.000	
	XXX -5000 -10000 -750 -XX			3/4	0.825							
	XXX -5000 -10500 -XX	10 1/2	11 1/2	1/2	0.550	11.500	11.498	10.500	10.500	10.502	11.500	
	XXX -5000 -10500 -750 -XX			3/4	0.825							
	XXX -5000 -11000 -XX	11	12	1/2	0.550	12.000	11.998	11.000	11.000	11.002	12.000	
	XXX -5000 -11000 -750 -XX			3/4	0.825							
	XXX -5000 -11500 -XX	11 1/2	12 1/2	1/2	0.550	12.500	12.498	11.500	11.500	11.502	12.500	
	XXX -5000 -11500 -750 -XX			3/4	0.825							
	XXX -5000 -12000 -XX	12	13	1/2	0.550	13.000	12.998	12.000	12.000	12.002	13.000	
	XXX -5000 -12000 -750 -XX			3/4	0.825							
	XXX -5000 -12500 -XX	12 1/2	13 1/2	1/2	0.550	13.500	13.498	12.500	12.500	12.502	13.500	
	XXX -5000 -12500 -750 -XX			3/4	0.825							
	XXX -5000 -13000 -XX	13	14	1/2	0.550	14.000	13.998	13.000	13.000	13.002	14.000	
	XXX -5000 -13000 -750 -XX			3/4	0.825							
	XXX -5000 -13500 -XX	13 1/2	14 1/2	1/2	0.550	14.500	14.498	13.500	13.500	13.502	14.500	
	XXX -5000 -13500 -750 -XX			3/4	0.825							
	XXX -5000 -14000 -XX	14	15	1/2	0.550	15.000	14.998	14.000	14.000	14.002	15.000	
	XXX -5000 -14000 -750 -XX			3/4	0.825							
	XXX -5000 -14500 -XX	14 1/2	15 1/2	1/2	0.550	15.500	15.498	14.500	14.500	14.502	15.500	
	XXX -5000 -14500 -750 -XX			3/4	0.825							
	XXX -5000 -15000 -XX	15	16	1/2	0.550	16.000	15.998	15.000	15.000	15.002	16.000	
	XXX -5000 -15000 -750 -XX			3/4	0.825							

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