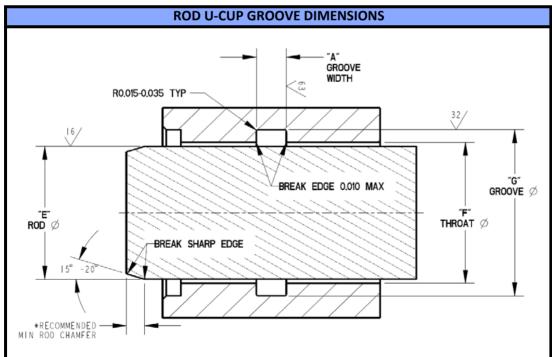


| Nominal Seal  | *Racommended |
|---------------|--------------|
| Cross Section | Min Bore     |
|               | Chamfer      |
| 1/8"          | 0.250"       |
| 3/16"         | 0.250"       |
| 1/4"          | 0.312"       |
| 5/16"         | 0.312"       |
| 3/8"          | 0.375"       |
| 1/2"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



| Nominal Seal  | *Racommended |
|---------------|--------------|
| Cross Section | Min Rod      |
| Cross Section | 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 UNLO              | ADED LIP                         | U-CUP FA                         | MILY                    |                           |                                   |                                 |   |                           |
|-----------------------------------|--------------------------|-----------------------|-----------------------|----------------------------------|----------------------------------|-------------------------|---------------------------|-----------------------------------|---------------------------------|---|---------------------------|
|                                   |                          |                       |                       |                                  |                                  | Pist                    | on Applica                | tion                              | Ro                              | d Applicati                                   | on                        |
| Nom<br>Cross<br>Section<br>(inch) | Part Number              | Nom<br>I.D.<br>(inch) | Nom<br>O.D.<br>(inch) | Nom<br>Axial<br>Length<br>(inch) | Width "A" (inch) [+0.010 -0.000] | Bore "B" (inch) [+0.002 | Piston "C" (inch) [+0.000 | Groove "D" (inch) [+0.000 -0.002] | Rod<br>"E"<br>(inch)<br>[+0.000 | Throat    "F"    (inch)    [+0.002    -0.000] | Groove "G" (inch) [+0.002 |
|                                   | XXX -1250 -0125 -XX      |                       |                       | 1/8                              | 0.138                            | -0.000]                 | -0.001]                   | -0.002]                           | -0.001]                         | -0.000]                                       | -0.000]                   |
|                                   | XXX -1250 -0125 -250 -XX | 1/8                   | 3/8                   | 1/4                              | 0.136                            | 0.375                   | 0.374                     | 0.125                             | 0.125                           | 0.126   | 0.375                     |
|                                   | XXX -1250 -0123 -230 -XX |                       |                       | 1/8                              | 0.138                            |                         |                           |                                   |                                 |   |                           |
|                                   | XXX -1250 -0187 -250 -XX | 3/16                  | 7/16                  | 1/4                              | 0.275                            | 0.437                   | 0.436                     | 0.187                             | 0.187                           | 0.188   | 0.437                     |
|                                   | XXX -1250 -0250 -XX      |                       |                       | 1/8                              | 0.138                            |                         |                           |                                   |                                 |   |                           |
|                                   | XXX -1250 -0250 -250 -XX | 1/4                   | 1/2                   | 1/4                              | 0.275                            | 0.500                   | 0.499                     | 0.250                             | 0.250                           | 0.251   | 0.500                     |
|                                   | XXX -1250 -0312 -XX      |                       |                       | 1/8                              | 0.138                            |                         |                           |                                   |                                 |   |                           |
|                                   | XXX -1250 -0312 -250 -XX | 5/16                  | 9/16                  | 1/4                              | 0.275                            | 0.562                   | 0.561                     | 0.312                             | 0.312                           | 0.313   | 0.562                     |
|                                   | XXX -1250 -0375 -XX      |                       | - 1-                  | 1/8                              | 0.138                            |                         |                           |                                   |                                 |   |                           |
|                                   | XXX -1250 -0375 -250 -XX | 3/8                   | 5/8                   | 1/4                              | 0.275                            | 0.625                   | 0.624                     | 0.375                             | 0.375                           | 0.376   | 0.625                     |
|                                   | XXX -1250 -0437 -XX      | 7/46                  | 44/46                 | 1/8                              | 0.138                            | 0.607                   | 0.505                     | 0.407                             | 0.407                           | 0.400   | 0.607                     |
|                                   | XXX -1250 -0437 -250 -XX | 7/16                  | 11/16                 | 1/4                              | 0.275                            | 0.687                   | 0.686                     | 0.437                             | 0.437                           | 0.438   | 0.687                     |
|                                   | XXX -1250 -0500 -XX      | 1/2                   | 2/4                   | 1/8                              | 0.138                            | 0.750                   | 0.740                     | 0.500                             | 0.500                           | 0.501   | 0.750                     |
|                                   | XXX -1250 -0500 -250 -XX | 1/2                   | 3/4                   | 1/4                              | 0.275                            | 0.750                   | 0.749                     | 0.500                             | 0.500                           | 0.501   | 0.750                     |
|                                   | 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 | 9/10                  | 13/10                 | 1/4                              | 0.275                            | 0.812                   | 0.811                     | 0.562                             | 0.502                           | 0.505   | 0.812                     |
| 1/8                               | XXX -1250 -0625 -XX      | 5/8                   | 7/8                   | 1/8                              | 0.138                            | 0.875                   | 0.874                     | 0.625                             | 0.625                           | 0.626   | 0.875                     |
| 1/0                               | XXX -1250 -0625 -250 -XX | 3/0                   | 770                   | 1/4                              | 0.275                            | 0.073                   | 0.074                     | 0.023                             | 0.023                           | 0.020   | 0.073                     |
|                                   | 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 | 11,10                 | 10, 10                | 1/4                              | 0.275                            | 0.557                   | 0.550                     | 0.007                             | 0.007                           | 0.000   | 0.507                     |
|                                   | 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                            |                         |                           |                                   |                                 |   |                           |



|              |     |                  |     |             | HPS UNLO    | ADED LIP     | U-CUP FA          | MILY              |                   |                   |                   |                   |                   |
|--------------|-----|------------------|-----|-------------|-------------|--------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
|              |     |                  |     | I           |             |              |                   | Pist              | on Applica        | tion              | Ro                | d Applicati       | on                |
| Nom<br>Cross |     | Part Number      |     | Nom<br>I.D. | Nom<br>O.D. | Nom<br>Axial | Width<br>"A"      | Bore<br>"B"       | Piston<br>"C"     | Groove<br>"D"     | Rod<br>"E"        | Throat<br>"F"     | Groove<br>"G"     |
| Section      |     | rait Nullibei    |     | (inch)      | (inch)      | Length       | (inch)<br>[+0.010 | (inch)<br>[+0.002 | (inch)<br>[+0.000 | (inch)<br>[+0.000 | (inch)<br>[+0.000 | (inch)<br>[+0.002 | (inch)<br>[+0.002 |
| (inch)       |     |                  |     |             |             | (inch)       | -                 |                   | •                 |                   |                   |                   |                   |
|              | XXX | -1250 -1187      | -XX |             |             | 1/8          | -0.000]<br>0.138  | -0.000]           | -0.001]           | -0.002]           | -0.001]           | -0.000]           | -0.000]           |
|              | XXX | -1250 -1187 -250 |     | 1 3/16      | 1 7/16      | 1/4          | 0.138             | 1.437             | 1.436             | 1.187             | 1.187             | 1.188             | 1.437             |
|              | XXX | -1250 -1250      | -XX |             |             | 1/4          | 0.273             |                   |                   |                   |                   |                   |                   |
|              | XXX | -1250 -1250 -250 |     | 1 1/4       | 1 1/2       | 1/4          | 0.138             | 1.500             | 1.499             | 1.250             | 1.250             | 1.251             | 1.500             |
|              | XXX | -1250 -1312      | -XX |             |             | 1/8          | 0.138             |                   |                   |                   |                   |                   |                   |
|              | XXX | -1250 -1312 -250 |     | 1 5/16      | 1 9/16      | 1/4          | 0.138             | 1.562             | 1.561             | 1.312             | 1.312             | 1.313             | 1.562             |
|              | XXX | -1250 -1375      | -XX |             |             | 1/8          | 0.138             |                   |                   |                   |                   |                   |                   |
|              | XXX | -1250 -1375 -250 |     | 1 3/8       | 1 5/8       | 1/4          | 0.275             | 1.625             | 1.624             | 1.375             | 1.375             | 1.376             | 1.625             |
|              | XXX | -1250 -1437      | -XX |             |             | 1/8          | 0.138             |                   |                   |                   |                   |                   |                   |
|              | XXX | -1250 -1437 -250 |     | 1 7/16      | 1 11/16     | 1/4          | 0.275             | 1.687             | 1.686             | 1.437             | 1.437             | 1.438             | 1.687             |
|              | XXX | -1250 -1500      | -XX |             |             | 1/8          | 0.138             |                   |                   |                   |                   |                   |                   |
|              | XXX | -1250 -1500 -250 | -XX | 1 1/2       | 1 3/4       | 1/4          | 0.275             | 1.750             | 1.749             | 1.500             | 1.500             | 1.501             | 1.750             |
|              | XXX | -1250 -1625      | -XX |             |             | 1/8          | 0.138             |                   |                   |                   |                   |                   |                   |
|              | XXX | -1250 -1625 -250 | -XX | 1 5/8       | 1 7/8       | 1/4          | 0.275             | 1.875             | 1.874             | 1.625             | 1.625             | 1.626             | 1.875             |
| 1/8          | XXX | -1250 -1750      | -XX |             | _           | 1/8          | 0.138             |                   |                   |                   |                   |                   |                   |
|              | XXX | -1250 -1750 -250 | -XX | 1 3/4       | 2           | 1/4          | 0.275             | 2.000             | 1.999             | 1.750             | 1.750             | 1.751             | 2.000             |
|              | XXX | -1250 -1875      | -XX | 4 7/0       | 2 4/0       | 1/8          | 0.138             | 2.425             | 2.424             | 4.075             | 4.075             | 4.076             | 2.425             |
|              | XXX | -1250 -1875 -250 | -XX | 1 7/8       | 2 1/8       | 1/4          | 0.275             | 2.125             | 2.124             | 1.875             | 1.875             | 1.876             | 2.125             |
|              | 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 |             | 2 1/4       | 1/4          | 0.275             | 2.250             | 2.249             | 2.000             | 2.000             | 2.001             | 2.250             |
|              | 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 | 2 1/0       | 2 3/0       | 1/4          | 0.275             | 2.575             | 2.574             | 2.123             | 2.123             | 2.120             | 2.575             |
|              | 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 | 2 1/4       | 2 1/2       | 1/4          | 0.275             | 2.500             | 2.453             | 2.230             | 2.230             | 2.231             | 2.500             |
|              | 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 | 2 3/0       | 2 3,0       | 1/4          | 0.275             | 2.023             | 2.024             | 2.575             | 2.575             | 2.570             | 2.023             |
|              | 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 | ,-          | _ 3, .      | 1/4          | 0.275             | 2.750             |                   |                   | 2.300             | 2.301             | 2.750             |



|                                   |   |                       | HPS UNLC              | ADED LIP                         | U-CUP FA                         | MILY                    |                           |                           |                                 |                                   |                                   |
|-----------------------------------|---|-----------------------|-----------------------|----------------------------------|----------------------------------|-------------------------|---------------------------|---------------------------|---------------------------------|-----------------------------------|-----------------------------------|
|                                   |   | _                     |                       |                                  |                                  | Pist                    | on Applica                | tion                      | Ro                              | d Applicati                       | on                                |
| Nom<br>Cross<br>Section<br>(inch) | Part Number                                   | Nom<br>I.D.<br>(inch) | Nom<br>O.D.<br>(inch) | Nom<br>Axial<br>Length<br>(inch) | Width "A" (inch) [+0.010 -0.000] | Bore "B" (inch) [+0.002 | Piston "C" (inch) [+0.000 | Groove "D" (inch) [+0.000 | Rod<br>"E"<br>(inch)<br>[+0.000 | Throat     "F"     (inch) [+0.002 | Groove "G" (inch) [+0.002 -0.000] |
|                                   | XXX -1870 -0187 -X                            | ,                     |                       | 3/16                             | 0.207                            | -0.000]                 | -0.002]                   | -0.002]                   | -0.002]                         | -0.000]                           | -0.000]                           |
|                                   | XXX -1870 -0187 -312 -X                       | 3/16                  | 9/16                  | 5/16                             | 0.344                            | 0.562                   | 0.561                     | 0.187                     | 0.187                           | 0.188                             | 0.562                             |
|                                   | XXX -1870 -0250 -X                            | -                     |                       | 3/16                             | 0.207                            |                         |                           |                           |                                 |                                   |                                   |
|                                   | XXX -1870 -0250 -312 -X                       | 1/4                   | 5/8                   | 5/16                             | 0.344                            | 0.625                   | 0.624                     | 0.250                     | 0.250                           | 0.251                             | 0.625                             |
|                                   | XXX -1870 -0312 -X                            |                       |                       | 3/16                             | 0.207                            |                         |                           |                           |                                 |                                   |                                   |
|                                   | XXX -1870 -0312 -312 -X                       | 5/16                  | 11/16                 | 5/16                             | 0.344                            | 0.687                   | 0.686                     | 0.312                     | 0.312                           | 0.313                             | 0.687                             |
|                                   | XXX -1870 -0375 -X                            | ( 2/0                 | 2/4                   | 3/16                             | 0.207                            | 0.750                   | 0.740                     | 0.275                     | 0.275                           | 0.276                             | 0.750                             |
|                                   | XXX -1870 -0375 -312 -X                       | 3/8                   | 3/4                   | 5/16                             | 0.344                            | 0.750                   | 0.749                     | 0.375                     | 0.375                           | 0.376                             | 0.750                             |
|                                   | XXX -1870 -0437 -X                            | 7/16                  | 13/16                 | 3/16                             | 0.207                            | 0.812                   | 0.811                     | 0.437                     | 0.437                           | 0.438                             | 0.812                             |
|                                   | XXX -1870 -0437 -312 -X                       |                       | 13/10                 | 5/16                             | 0.344                            | 0.812                   | 0.811                     | 0.437                     | 0.437                           | 0.436                             | 0.812                             |
|                                   | XXX -1870 -0500 -X                            | 1/2                   | 7/8                   | 3/16                             | 0.207                            | 0.875                   | 0.874                     | 0.500                     | 0.500                           | 0.501                             | 0.875                             |
|                                   | XXX -1870 -0500 -312 -X                       |                       | 770                   | 5/16                             | 0.344                            | 0.073                   | 0.074                     | 0.300                     | 0.500                           | 0.501                             | 0.073                             |
|                                   | XXX -1870 -0562 -X                            | 9/16                  | 15/16                 | 3/16                             | 0.207                            | 0.937                   | 0.936                     | 0.562                     | 0.562                           | 0.563                             | 0.937                             |
|                                   | XXX -1870 -0562 -312 -X                       |                       |                       | 5/16                             | 0.344                            |                         |                           |                           |                                 |                                   |                                   |
|                                   | XXX -1870 -0625 -X                            | 5/8                   | 1                     | 3/16                             | 0.207                            | 1.000                   | 0.999                     | 0.625                     | 0.625                           | 0.626                             | 1.000                             |
| 3/16                              | XXX -1870 -0625 -312 -X                       | -                     |                       | 5/16                             | 0.344                            |                         |                           |                           |                                 |                                   |                                   |
|                                   | XXX -1870 -0687 -X                            | 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 -X                       | -                     |                       | 5/16                             | 0.344                            |                         |                           |                           |                                 |                                   |                                   |
|                                   | XXX -1870 -0750 -X                            | 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 -X<br>XXX -1870 -0812 -X | -                     |                       | 5/16                             | 0.344                            |                         |                           |                           |                                 |                                   |                                   |
|                                   | XXX -1870 -0812 -X<br>XXX -1870 -0812 -312 -X | 13/16                 | 1 3/16                | 3/16<br>5/16                     | 0.207                            | 1.187                   | 1.186                     | 0.812                     | 0.812                           | 0.813                             | 1.187                             |
|                                   | XXX -1870 -0812 -312 -X                       | -                     |                       | 3/16                             | 0.344                            |                         |                           |                           |                                 |                                   |                                   |
|                                   | XXX -1870 -0875 -312 -X                       | 7/8                   | 1 1/4                 | 5/16                             | 0.344                            | 1.250                   | 1.249                     | 0.875                     | 0.875                           | 0.876                             | 1.250                             |
|                                   | XXX -1870 -0937 -X                            | -                     |                       | 3/16                             | 0.207                            |                         |                           |                           |                                 |                                   |                                   |
|                                   | XXX -1870 -0937 -312 -X                       | 15/16                 | 1 5/16                | 5/16                             | 0.344                            | 1.312                   | 1.311                     | 0.937                     | 0.937                           | 0.938                             | 1.312                             |
|                                   | XXX -1870 -1000 -X                            | (                     | _                     | 3/16                             | 0.207                            |                         |                           |                           |                                 |                                   |                                   |
|                                   | XXX -1870 -1000 -312 -X                       | 1                     | 1 3/8                 | 5/16                             | 0.344                            | 1.375                   | 1.374                     | 1.000                     | 1.000                           | 1.001                             | 1.375                             |
|                                   | XXX -1870 -1062 -X                            |                       | 4 -4                  | 3/16                             | 0.207                            | 4.65                    | 4.000                     | 4.655                     | 4.655                           | 4.655                             | 4.607                             |
|                                   | XXX -1870 -1062 -312 -X                       | 1 1/16                | 1 7/16                | 5/16                             | 0.344                            | 1.437                   | 1.436                     | 1.062                     | 1.062                           | 1.063                             | 1.437                             |
|                                   | XXX -1870 -1125 -X                            | 1 1/0                 | 1 1/2                 | 3/16                             | 0.207                            | 1 500                   | 1 400                     | 1 125                     | 1 125                           | 1.120                             | 1 500                             |
|                                   | XXX -1870 -1125 -312 -X                       | 1 1/8                 | 1 1/2                 | 5/16                             | 0.344                            | 1.500                   | 1.499                     | 1.125                     | 1.125                           | 1.126                             | 1.500                             |



|                                   |   |                       | HPS UNLO              | ΔDFD LIP                         | II-CIIP FA               | MIIY                    |                           |                           |                                 |                                 |                           |
|-----------------------------------|---|-----------------------|-----------------------|----------------------------------|--------------------------|-------------------------|---------------------------|---------------------------|---------------------------------|---------------------------------|---------------------------|
|                                   |   |                       | III 3 OIVEO           | ADED EII                         | 0-001 17                 |                         | on Applica                | tion                      | Ro                              | d Applicati                     | on                        |
| Nom<br>Cross<br>Section<br>(inch) | Part Number                                     | Nom<br>I.D.<br>(inch) | Nom<br>O.D.<br>(inch) | Nom<br>Axial<br>Length<br>(inch) | Width "A" (inch) [+0.010 | Bore "B" (inch) [+0.002 | Piston "C" (inch) [+0.000 | Groove "D" (inch) [+0.000 | Rod<br>"E"<br>(inch)<br>[+0.000 | Throat    "F"    (inch) [+0.002 | Groove "G" (inch) [+0.002 |
|                                   | NW 1070 1107 NV                                 |                       |                       | 2/46                             | -0.000]                  | -0.000]                 | -0.002]                   | -0.002]                   | -0.002]                         | -0.000]                         | -0.000]                   |
|                                   | 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<br>XXX -1870 -1250 -XX |                       |                       | 5/16                             | 0.344                    |                         |                           |                           |                                 |                                 |                           |
|                                   | XXX -1870 -1250 -XX                             | 1 1/4                 | 1 5/8                 | 3/16<br>5/16                     | 0.207                    | 1.625                   | 1.624                     | 1.250                     | 1.250                           | 1.251                           | 1.625                     |
|                                   | XXX -1870 -1312 -XX                             |                       |                       | 3/16                             | 0.344                    |                         |                           |                           |                                 |                                 |                           |
|                                   | XXX -1870 -1312 -312 -XX                        | 1 5/16                | 1 11/16               | 5/16                             | 0.207                    | 1.687                   | 1.686                     | 1.312                     | 1.312                           | 1.313                           | 1.687                     |
|                                   | XXX -1870 -1375 -XX                             |                       |                       | 3/16                             | 0.344                    |                         |                           |                           |                                 |                                 |                           |
|                                   | XXX -1870 -1375 -312 -XX                        | 1 3/8                 | 1 3/4                 | 5/16                             | 0.344                    | 1.750                   | 1.749                     | 1.375                     | 1.375                           | 1.376                           | 1.750                     |
|                                   | XXX -1870 -1437 -XX                             |                       |                       | 3/16                             | 0.207                    |                         |                           |                           |                                 |                                 |                           |
|                                   | XXX -1870 -1437 -312 -XX                        | 1 7/16                | 1 13/16               | 5/16                             | 0.344                    | 1.812                   | 1.811                     | 1.437                     | 1.437                           | 1.438                           | 1.812                     |
|                                   | XXX -1870 -1500 -XX                             |                       |                       | 3/16                             | 0.207                    |                         |                           |                           |                                 |                                 |                           |
|                                   | XXX -1870 -1500 -375 -XX                        | 1 1/2                 | 1 7/8                 | 3/8                              | 0.413                    | 1.875                   | 1.874                     | 1.500                     | 1.500                           | 1.501                           | 1.875                     |
|                                   | XXX -1870 -1625 -XX                             |                       |                       | 3/16                             | 0.207                    |                         |                           |                           |                                 |                                 |                           |
|                                   | XXX -1870 -1625 -375 -XX                        | 1 5/8                 | 2                     | 3/8                              | 0.413                    | 2.000                   | 1.999                     | 1.625                     | 1.625                           | 1.626                           | 2.000                     |
|                                   | XXX -1870 -1687 -XX                             |                       |                       | 3/16                             | 0.207                    |                         |                           |                           |                                 |                                 |                           |
|                                   | XXX -1870 -1687 -375 -XX                        | 1 11/16               | 2 1/16                | 3/8                              | 0.413                    | 2.062                   | 2.061                     | 1.687                     | 1.687                           | 1.688                           | 2.062                     |
| 2/16                              | XXX -1870 -1750 -XX                             | 1 2/4                 | 2 4/0                 | 3/16                             | 0.207                    | 2.425                   | 2.424                     | 4.750                     | 4.750                           | 4.754                           | 2.425                     |
| 3/16                              | XXX -1870 -1750 -375 -XX                        | 1 3/4                 | 2 1/8                 | 3/8                              | 0.413                    | 2.125                   | 2.124                     | 1.750                     | 1.750                           | 1.751                           | 2.125                     |
|                                   | 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                        | 1 //6                 | 2 1/4                 | 3/8                              | 0.413                    | 2.230                   | 2.249                     | 1.675                     | 1.675                           | 1.870                           | 2.230                     |
|                                   | 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                        | 2                     | 2 3/8                 | 3/8                              | 0.413                    | 2.373                   | 2.374                     | 2.000                     | 2.000                           | 2.001                           | 2.373                     |
|                                   | 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                    |                         |                           |                           |                                 |                                 |                           |



|              |                          |                | HPS UNLC       | ADED LIP     | U-CUP FA     | MILY        |               |               |            |               |               |
|--------------|--------------------------|----------------|----------------|--------------|--------------|-------------|---------------|---------------|------------|---------------|---------------|
|              |                          |                |                |              |              | Pist        | on Applica    | tion          | Ro         | d Applicati   | on            |
| Nom<br>Cross |                          | Nom            | Nom            | Nom<br>Axial | Width<br>"A" | Bore<br>"B" | Piston<br>"C" | Groove<br>"D" | Rod<br>"E" | Throat<br>"F" | Groove<br>"G" |
| Section      | Part Number              | I.D.<br>(inch) | O.D.<br>(inch) | Length       | (inch)       | (inch)      | (inch)        | (inch)        | (inch)     | (inch)        | (inch)        |
| (inch)       |                          | (,             | (              | (inch)       | [+0.010      | [+0.002     | [+0.000       | [+0.000       | [+0.000    | [+0.002       | [+0.002       |
|              |                          |                |                |              | -0.000]      | -0.000]     | -0.002]       | -0.002]       | -0.002]    | -0.000]       | -0.000]       |
|              | 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 -X  |                | , -            | 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 -X  |                | ,              | 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 3,3          | 3/8          | 0.413        | 5.025       | 3.02          | 3.233         | 5.250      | 5.252         | 5.025         |
|              | 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 3, 1         | 3/8          | 0.413        | 3.730       | 3.7 13        | 3.373         | 3.373      | 3.370         | 3.730         |
|              | 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 7/0          | 3/8          | 0.413        | 3.073       | 3.074         | 3.300         | 3.300      | 5.501         | 3.073         |
|              | XXX -1870 -3625 -XX      | 3 5/8          | 4              | 3/16         | 0.207        | 4.000       | 3.999         | 3.625         | 3.625      | 3.626         | 4.000         |
| 3/16         | XXX -1870 -3625 -375 -XX |                | 7              | 3/8          | 0.413        | 4.000       | 3.333         | 3.023         | 3.023      | 3.020         | 4.000         |
| 3/10         | 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 |                | 4 1/0          | 3/8          | 0.413        | 4.123       | 4.124         | 3.730         | 3.730      | 3.731         | 4.123         |
|              | 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 |                | 4 1/4          | 3/8          | 0.413        | 4.230       | 4.249         | 5.675         | 5.675      | 3.670         | 4.250         |
|              | 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 |                | 4 3/8          | 3/8          | 0.413        | 4.375       | 4.374         | 4.000         | 4.000      | 4.001         | 4.373         |
|              | XXX -1870 -4125 -XX      |                | 4 1/2          | 3/16         | 0.207        | 4 500       | 4.400         | 4 135         | 4.125      | 4.126         | 4.500         |
|              | XXX -1870 -4125 -375 -XX | 4 1/8          | 4 1/2          | 3/8          | 0.413        | 4.500       | 4.499         | 4.125         | 4.125      | 4.126         | 4.500         |
|              | XXX -1870 -4250 -XX      |                | 4 5/0          | 3/16         | 0.207        | 4 635       | 1 624         | 4.350         | 4.350      | 4.254         | 4.625         |
|              | XXX -1870 -4250 -375 -XX | 4 1/4          | 4 5/8          | 3/8          | 0.413        | 4.625       | 4.624         | 4.250         | 4.250      | 4.251         | 4.025         |
|              | XXX -1870 -4375 -XX      |                | 4 2/4          | 3/16         | 0.207        | 4.750       | 4.740         | 4.275         | 4.275      | 4.276         | 4.750         |
|              | XXX -1870 -4375 -375 -XX | 4 3/8          | 4 3/4          | 3/8          | 0.413        | 4.750       | 4.749         | 4.375         | 4.375      | 4.376         | 4.750         |
|              | XXX -1870 -4500 -XX      |                | 4 7/0          | 3/16         | 0.207        | 4.675       | 4.674         | 4.500         | 4.500      | 4.504         | 4.675         |
|              | XXX -1870 -4500 -375 -XX | 4 1/2          | 4 7/8          | 3/8          | 0.413        | 4.875       | 4.874         | 4.500         | 4.500      | 4.501         | 4.875         |



|                                   |     |                                 |     |                       | HPS UNLO              | ADED LIP                         | U-CUP FA         | MILY                    |                   |                   |                      |                           |                           |
|-----------------------------------|-----|---------------------------------|-----|-----------------------|-----------------------|----------------------------------|------------------|-------------------------|-------------------|-------------------|----------------------|---------------------------|---------------------------|
|                                   |     |                                 |     |                       |                       |                                  |                  | Pist                    | on Applica        | tion              | Ro                   | d Applicati               | on                        |
| Nom<br>Cross<br>Section<br>(inch) |     | Part Number                     |     | Nom<br>I.D.<br>(inch) | Nom<br>O.D.<br>(inch) | Nom<br>Axial<br>Length<br>(inch) | Width "A" (inch) | Bore "B" (inch) [+0.003 | Piston "C" (inch) | Groove "D" (inch) | Rod<br>"E"<br>(inch) | Throat "F" (inch) [+0.003 | Groove "G" (inch) [+0.003 |
| (iiicii)                          |     |                                 |     |                       |                       | (iiicii)                         | -0.000]          | -0.0001                 | -0.002]           | -0.003]           | -0.002]              | -0.0001                   | -0.000]                   |
|                                   | XXX | -2500 -0250                     | -XX |                       |                       | 1/4                              | 0.275            | 0.000]                  | 0.002]            | 0.003]            | 0.002]               | 0.000]                    | 0.000]                    |
|                                   | XXX | -2500 -0250 -375                | -XX | 1/4                   | 3/4                   | 3/8                              | 0.413            | 0.750                   | 0.749             | 0.250             | 0.250                | 0.251                     | 0.750                     |
|                                   | XXX | -2500 -0312                     | -XX |                       |                       | 1/4                              | 0.275            |                         |                   |                   |                      |                           |                           |
|                                   | XXX | -2500 -0312 -375                | -XX | 5/16                  | 13/16                 | 3/8                              | 0.413            | 0.812                   | 0.811             | 0.312             | 0.312                | 0.313                     | 0.812                     |
|                                   | XXX | -2500 -0375                     | -XX |                       |                       | 1/4                              | 0.275            |                         |                   |                   |                      |                           |                           |
|                                   | XXX | -2500 -0375 -375                | -XX | 3/8                   | 7/8                   | 3/8                              | 0.413            | 0.875                   | 0.874             | 0.375             | 0.375                | 0.376                     | 0.875                     |
|                                   | XXX | -2500 -0437                     | -XX | 7/16                  | 15/16                 | 1/4                              | 0.275            | 0.007                   | 0.005             | 0.407             | 0.407                | 0.400                     | 0.007                     |
|                                   | XXX | -2500 -0437 -375                | -XX | 7/16                  | 15/16                 | 3/8                              | 0.413            | 0.937                   | 0.936             | 0.437             | 0.437                | 0.438                     | 0.937                     |
|                                   | XXX | -2500 -0500                     | -XX | 1/2                   | 1                     | 1/4                              | 0.275            | 1 000                   | 0.000             | 0.500             | 0.500                | 0.501                     | 1 000                     |
|                                   | XXX | -2500 -0500 -375                | -XX | 1/2                   | 1                     | 3/8                              | 0.413            | 1.000                   | 0.999             | 0.500             | 0.500                | 0.501                     | 1.000                     |
|                                   | 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 | 9/16                  | 1 1/16                | 3/8                              | 0.413            | 1.062                   | 1.061             | 0.562             | 0.562                | 0.563                     | 1.062                     |
|                                   | 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                   | 1 1/8                 | 3/8                              | 0.413            | 1.123                   | 1.124             | 0.023             | 0.023                | 0.020                     | 1.123                     |
|                                   | 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 | 11/10                 | 1 3/10                | 3/8                              | 0.413            | 1.107                   | 1.100             | 0.007             | 0.007                | 0.000                     | 1.107                     |
| 1/4                               | 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                     |
| 2,4                               | XXX | -2500 -0750 -375                | -XX |                       |                       | 3/8                              | 0.413            | 1.230                   | 112.13            | 0.750             | 0.750                | 0.752                     | 1.255                     |
|                                   | 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<br>-2500 -1187 -375 | -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<br>-2500 -1250 | -XX |                       |                       | 3/8<br>1/4                       | 0.413<br>0.275   |                         |                   |                   |                      |                           |                           |
|                                   | XXX | -2500 -1250<br>-2500 -1250 -375 | -XX | 1 1/4                 | 1 3/4                 | 3/8                              | 0.275            | 1.750                   | 1.749             | 1.250             | 1.250                | 1.251                     | 1.750                     |
|                                   | λXX | -2300 -1250 -3/5                | -XX |                       |                       | 5/ <b>ŏ</b>                      | 0.413            |                         |                   |                   |                      |                           |                           |



|                   |           |                                       |     |             | HPS LINLO   | ΔDFD LIP         | U-CUP FA          | MIIY              |                   |                   |                   |                   |                   |
|-------------------|-----------|---------------------------------------|-----|-------------|-------------|------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
|                   | ec        |                                       |     |             | III 3 CIVEO | ADED EII         | 0-001 17          |                   | on Applica        | tion              | Ro                | d Applicati       | on                |
| Nom<br>Cross      | Par       | t Number                              |     | Nom<br>I.D. | Nom<br>O.D. | Nom<br>Axial     | Width<br>"A"      | Bore<br>"B"       | Piston<br>"C"     | Groove<br>"D"     | Rod<br>"E"        | Throat<br>"F"     | Groove<br>"G"     |
| Section<br>(inch) |           | · · · · · · · · · · · · · · · · · · · |     | (inch)      | (inch)      | Length<br>(inch) | (inch)<br>[+0.010 | (inch)<br>[+0.003 | (inch)<br>[+0.000 | (inch)<br>[+0.000 | (inch)<br>[+0.000 | (inch)<br>[+0.003 | (inch)<br>[+0.003 |
| (men)             |           |                                       |     |             |             | (iiicii)         | -0.000]           | -0.0001           | -0.002]           | -0.0031           | -0.002]           | -0.0001           | -0.0001           |
|                   | XXX -2500 | -1312                                 | -XX |             |             | 1/4              | 0.275             | 0.000]            | 0.002]            | 0.003]            | 0.002]            | 0.0001            | 0.0001            |
|                   | XXX -2500 |                                       | -XX | 1 5/16      | 1 13/16     | 3/8              | 0.413             | 1.812             | 1.811             | 1.312             | 1.312             | 1.313             | 1.812             |
|                   | XXX -2500 | -1375                                 | -XX |             |             | 1/4              | 0.275             |                   |                   |                   |                   |                   |                   |
|                   | XXX -2500 | -1375 -375                            | -XX | 1 3/8       | 1 7/8       | 3/8              | 0.413             | 1.875             | 1.874             | 1.375             | 1.375             | 1.376             | 1.875             |
|                   | XXX -2500 | -1437                                 | -XX |             |             | 1/4              | 0.275             |                   |                   |                   |                   |                   |                   |
|                   | XXX -2500 | -1437 -375                            | -XX | 1 7/16      | 1 15/16     | 3/8              | 0.413             | 1.937             | 1.936             | 1.437             | 1.437             | 1.438             | 1.937             |
|                   | XXX -2500 | -1500                                 | -XX | 1 1/2       | 2           | 1/4              | 0.275             | 2.000             | 1.000             | 1 500             | 1.500             | 1 501             | 2,000             |
|                   | XXX -2500 | -1500 -375                            | -XX | 1 1/2       | 2           | 3/8              | 0.413             | 2.000             | 1.999             | 1.500             | 1.500             | 1.501             | 2.000             |
|                   | 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 | 1 5/6       | 2 1/6       | 3/8              | 0.413             | 2.125             | 2.124             | 1.025             | 1.025             | 1.020             | 2.125             |
|                   | 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 | 1 3/4       | 2 1/4       | 3/8              | 0.413             | 2.230             | 2.243             | 1.750             | 1.750             | 1.731             | 2.230             |
|                   | 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 |                                       | -XX |             |             | 3/8              | 0.413             |                   |                   |                   |                   |                   |                   |
| 1/4               |           | -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 |                                       | -XX |             |             | 3/8              | 0.413             |                   |                   |                   |                   |                   |                   |
|                   | XXX -2500 |                                       | -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 |                                       | -XX |             |             | 3/8              | 0.413             |                   |                   |                   |                   |                   |                   |
|                   | XXX -2500 | -2375                                 | -XX | 2 3/8       | 2 7/8       | 1/4              | 0.275<br>0.413    | 2.875             | 2.874             | 2.375             | 2.375             | 2.376             | 2.875             |
|                   | XXX -2500 |                                       | -XX |             |             | 3/8<br>1/4       | 0.413             |                   |                   |                   |                   |                   |                   |
|                   |           | -2500 -375                            | -XX | 2 1/2       | 3           | 3/8              | 0.273             | 3.000             | 2.999             | 2.500             | 2.500             | 2.501             | 3.000             |
|                   |           | -2625                                 | -XX |             |             | 1/4              | 0.275             |                   |                   |                   |                   |                   |                   |
|                   |           | -2625 -375                            | -XX | 2 5/8       | 3 1/8       | 3/8              | 0.413             | 3.125             | 3.124             | 2.625             | 2.625             | 2.626             | 3.125             |
|                   |           | -2750                                 | -XX |             |             | 1/4              | 0.275             |                   |                   |                   |                   |                   |                   |
|                   |           | -2750 -375                            | -XX | 2 3/4       | 3 1/4       | 3/8              | 0.413             | 3.250             | 3.249             | 2.750             | 2.750             | 2.751             | 3.250             |
|                   | XXX -2500 | -2875                                 | -XX | 2 = '2      | 0 6 /0      | 1/4              | 0.275             | 0.6==             | 0.57              | 0.6==             | 2.5==             | 2.5=2             | 2.5==             |
|                   | XXX -2500 | -2875 -375                            | -XX | 2 7/8       | 3 3/8       | 3/8              | 0.413             | 3.375             | 3.374             | 2.875             | 2.875             | 2.876             | 3.375             |
|                   | XXX -2500 | -3000                                 | -XX | 2           | 2 4/2       | 1/4              | 0.275             | 2 500             | 2.400             | 2.000             | 2.000             | 2.001             | 2 500             |
|                   | XXX -2500 | -3000 -375                            | -XX | 3           | 3 1/2       | 3/8              | 0.413             | 3.500             | 3.499             | 3.000             | 3.000             | 3.001             | 3.500             |
|                   | 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 1/8       | 5 5/8       | 3/8              | 0.413             | 3.025             | 3.024             | 3.123             | 5.125             | 3.120             | 3.025             |



|                                   |   |     |                       | HPS UNI O             | ADFD LIP                         | U-CUP FA                         | MIIY                    |                           |                                   |                                 |                           |                           |
|-----------------------------------|---|-----|-----------------------|-----------------------|----------------------------------|----------------------------------|-------------------------|---------------------------|-----------------------------------|---------------------------------|---------------------------|---------------------------|
|                                   | l                                       |     |                       | 5 5.1126              | 7.525 2                          | 0 00. 17                         |                         | on Applica                | tion                              | Ro                              | d Applicati               | on                        |
| Nom<br>Cross<br>Section<br>(inch) | Part Number                             |     | Nom<br>I.D.<br>(inch) | Nom<br>O.D.<br>(inch) | Nom<br>Axial<br>Length<br>(inch) | Width "A" (inch) [+0.010 -0.000] | Bore "B" (inch) [+0.003 | Piston "C" (inch) [+0.000 | Groove "D" (inch) [+0.000 -0.003] | Rod<br>"E"<br>(inch)<br>[+0.000 | Throat "F" (inch) [+0.003 | Groove "G" (inch) [+0.003 |
|                                   | XXX -2500 -3250                         | -XX |                       | 2.24                  | 1/4                              | 0.275                            |                         |                           |                                   |                                 |                           |                           |
|                                   | XXX -2500 -3250 -375                    | -XX | 3 1/4                 | 3 3/4                 | 3/8                              | 0.413                            | 3.750                   | 3.749                     | 3.250                             | 3.250                           | 3.251                     | 3.750                     |
|                                   | XXX -2500 -3375                         | -XX | 2 2/0                 | 2 7/0                 | 1/4                              | 0.275                            | 2.075                   | 2.074                     | 2 275                             | 2 275                           | 2.276                     | 2.075                     |
|                                   | XXX -2500 -3375 -375                    | -XX | 3 3/8                 | 3 7/8                 | 3/8                              | 0.413                            | 3.875                   | 3.874                     | 3.375                             | 3.375                           | 3.376                     | 3.875                     |
|                                   | 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 1/2                 | 4                     | 3/8                              | 0.413                            | 4.000                   | 3.999                     | 3.300                             | 3.300                           | 3.301                     | 4.000                     |
|                                   | 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 3/6                 | 4 1/0                 | 3/8                              | 0.413                            | 4.123                   | 4.124                     | 3.023                             | 3.023                           | 3.020                     | 4.123                     |
|                                   | 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 3, 1                |                       | 3/8                              | 0.413                            | 230                     | 1.2 13                    | 3.730                             | 3.730                           | 3.731                     | 1.230                     |
|                                   | 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 | 0 1/0                 | . 3, 5                | 3/8                              | 0.413                            |                         |                           | 0.070                             | 3.073                           | 5.676                     |                           |
|                                   | 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                            |                         |                           |                                   |                                 |                           |                           |
| 1/4                               | 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<br>XXX -2500 -5250 | -XX |                       |                       | 9/16                             | 0.619<br>0.275                   |                         |                           |                                   |                                 |                           |                           |
|                                   |   | -XX | 5 1/4                 | 5 3/4                 | 1/4                              |                                  | 5.750                   | 5.749                     | 5.250                             | 5.250                           | 5.251                     | 5.750                     |
|                                   | XXX -2500 -5250 -562                    | -XX |                       |                       | 9/16                             | 0.619                            |                         |                           |                                   |                                 |                           |                           |



|                                   |   |                       | HPS UNI O             | ADFD LIP                         | U-CUP FA                         | MIIY                    |                                   |                                   |                                 |                           |                                   |
|-----------------------------------|---|-----------------------|-----------------------|----------------------------------|----------------------------------|-------------------------|-----------------------------------|-----------------------------------|---------------------------------|---------------------------|-----------------------------------|
|                                   |   |                       | III 5 GIVEG           | ADED EII                         | 0 001 17                         |                         | on Applica                        | tion                              | Ro                              | d Applicati               | on                                |
| Nom<br>Cross<br>Section<br>(inch) | Part Number                                     | Nom<br>I.D.<br>(inch) | Nom<br>O.D.<br>(inch) | Nom<br>Axial<br>Length<br>(inch) | Width "A" (inch) [+0.010 -0.000] | Bore "B" (inch) [+0.003 | Piston "C" (inch) [+0.000 -0.002] | Groove "D" (inch) [+0.000 -0.003] | Rod<br>"E"<br>(inch)<br>[+0.000 | Throat "F" (inch) [+0.003 | Groove "G" (inch) [+0.003 -0.000] |
|                                   | XXX -2500 -5375 -XX                             | <b>5</b> 2/0          | 5 7/0                 | 1/4                              | 0.275                            | 5.075                   | 5.074                             | 5.075                             | 5.075                           | 5.076                     | 5.075                             |
|                                   | XXX -2500 -5375 -562 -XX                        | 5 3/8                 | 5 7/8                 | 9/16                             | 0.619                            | 5.875                   | 5.874                             | 5.375                             | 5.375                           | 5.376                     | 5.875                             |
|                                   | 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                        | 5 1/2                 | 6                     | 9/16                             | 0.619                            | 6.000                   | 5.999                             | 5.500                             | 5.500                           | 5.501                     | 0.000                             |
|                                   | 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                        | 3 3/0                 | 0 1/0                 | 9/16                             | 0.619                            | 0.123                   | 0.124                             | 3.023                             | 3.023                           | 3.020                     | 0.123                             |
|                                   | 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                        | 3 3/ 1                | 0 1/ !                | 9/16                             | 0.619                            | 0.230                   | 0.2 13                            | 3.730                             | 3.730                           | 3.731                     | 0.230                             |
|                                   | 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                            |                         |                                   |                                   |                                 | 0.0.0                     | 0.010                             |
|                                   | 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                            |                         |                                   |                                   |                                 |                           |                                   |
| 1/4                               | 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<br>XXX -2500 -7750 -562 -XX | 7 3/4                 | 8 1/4                 | 1/4<br>9/16                      | 0.275<br>0.619                   | 8.250                   | 8.249                             | 7.750                             | 7.750                           | 7.751                     | 8.250                             |
|                                   | XXX -2500 -7750 -562 -XX                        |                       |                       | 1/4                              | 0.619                            |                         |                                   |                                   |                                 |                           |                                   |
|                                   | XXX -2500 -8000 -562 -XX                        | 8                     | 8 1/2                 | 9/16                             | 0.273                            | 8.500                   | 8.499                             | 8.000                             | 8.000                           | 8.001                     | 8.500                             |
|                                   | XXX -2500 -8250 -XX                             |                       |                       | 1/4                              | 0.019                            |                         |                                   |                                   |                                 |                           |                                   |
|                                   | XXX -2500 -8250 -562 -XX                        | 8 1/4                 | 8 3/4                 | 9/16                             | 0.619                            | 8.750                   | 8.749                             | 8.250                             | 8.250                           | 8.251                     | 8.750                             |
|                                   | XXX -2500 -8500 -XX                             |                       |                       | 1/4                              | 0.275                            |                         |                                   |                                   |                                 |                           |                                   |
|                                   | XXX -2500 -8500 -562 -XX                        | 8 1/2                 | 9                     | 9/16                             | 0.619                            | 9.000                   | 8.999                             | 8.500                             | 8.500                           | 8.501                     | 9.000                             |
|                                   | XXX -2500 -8750 -XX                             |                       |                       | 1/4                              | 0.275                            |                         |                                   |                                   |                                 |                           |                                   |
|                                   | XXX -2500 -8750 -562 -XX                        | 8 3/4                 | 9 1/4                 | 9/16                             | 0.619                            | 9.250                   | 9.249                             | 8.750                             | 8.750                           | 8.751                     | 9.250                             |
|                                   | ,,,,  |                       | l                     | -,                               |                                  |                         |                                   |                                   |                                 |                           |                                   |



|                         |     |              |      |     |             | HPS UNLO    | ADED LIP               | U-CUP FA               | MILY                  |                         |                         |                      |                         |                         |
|-------------------------|-----|--------------|------|-----|-------------|-------------|------------------------|------------------------|-----------------------|-------------------------|-------------------------|----------------------|-------------------------|-------------------------|
|                         |     |              |      |     |             |             |                        |                        | Pist                  | on Applica              | tion                    | Ro                   | d Applicati             | on                      |
| Nom<br>Cross<br>Section |     | Part Num     | ber  |     | Nom<br>I.D. | Nom<br>O.D. | Nom<br>Axial<br>Length | Width<br>"A"<br>(inch) | Bore<br>"B"<br>(inch) | Piston<br>"C"<br>(inch) | Groove<br>"D"<br>(inch) | Rod<br>"E"<br>(inch) | Throat<br>"F"<br>(inch) | Groove<br>"G"<br>(inch) |
| (inch)                  |     |              |      |     | (inch)      | (inch)      | (inch)                 | [+0.010                | [+0.003               | [+0.000                 | [+0.000                 | [+0.000              | [+0.003                 | [+0.003                 |
|                         |     |              |      |     |             |             |                        | -0.000]                | -0.000]               | -0.002]                 | -0.003]                 | -0.002]              | -0.000]                 | -0.000]                 |
|                         | 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 | 3           | 3 1/2       | 9/16                   | 0.619                  | 3.300                 | 3.433                   | 3.000                   | 3.000                | 3.001                   | 3.300                   |
|                         | 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 1/4       | 9 3/4       | 9/16                   | 0.619                  | 9.730                 | 9.749                   | 9.230                   | 9.230                | 9.231                   | 9.730                   |
| 1/4                     | XXX | -2500 -9500  |      | -XX | 9 1/2       | 10          | 1/4                    | 0.275                  | 10.000                | 9.999                   | 9.500                   | 9.500                | 9.501                   | 10.000                  |
| 1/4                     | XXX | -2500 -9500  | -562 | -XX | 9 1/2       | 10          | 9/16                   | 0.619                  | 10.000                | 9.999                   | 9.500                   | 9.500                | 9.501                   | 10.000                  |
|                         | 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 3/4       | 10 1/4      | 9/16                   | 0.619                  | 10.230                | 10.249                  | 9.750                   | 9.750                | 9.751                   | 10.230                  |
|                         | XXX | -2500 -10000 |      | -XX | 10 10 1/2   | 1/4         | 0.275                  | 10.500                 | 10.500 10.499         | 10.000                  | 10.000                  | 10.001               | 10.500                  |                         |
|                         | XXX | -2500 -10000 | -562 | -XX | 10          | 10 1/2      | 9/16                   | 0.619                  | 10.500                | 10.499                  | 10.000                  | 10.000               | 10.001                  | 10.300                  |



|                                   |   |                       | HPS UNLO              | ADED LIP                         | U-CUP FA                 | MILY                    |                           |                           |                                 |                                   |                           |
|-----------------------------------|---|-----------------------|-----------------------|----------------------------------|--------------------------|-------------------------|---------------------------|---------------------------|---------------------------------|-----------------------------------|---------------------------|
|                                   |   |                       |                       |                                  |                          | Pist                    | on Applica                | tion                      | Ro                              | d Applicati                       | on                        |
| Nom<br>Cross<br>Section<br>(inch) | Part Number                                     | Nom<br>I.D.<br>(inch) | Nom<br>O.D.<br>(inch) | Nom<br>Axial<br>Length<br>(inch) | Width "A" (inch) [+0.010 | Bore "B" (inch) [+0.003 | Piston "C" (inch) [+0.000 | Groove "D" (inch) [+0.000 | Rod<br>"E"<br>(inch)<br>[+0.000 | Throat     "F"     (inch) [+0.003 | Groove "G" (inch) [+0.004 |
|                                   |   |                       |                       |                                  | -0.000]                  | -0.000]                 | -0.002]                   | -0.004]                   | -0.002]                         | -0.000]                           | -0.000]                   |
|                                   | 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                    |                         |                           |                           |                                 |                                   |                           |
| 5/16                              | 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<br>XXX -3120 -0937 -XX |                       |                       | 1/2                              | 0.550<br>0.344           |                         |                           |                           |                                 |                                   |                           |
|                                   | XXX -3120 -0937 -XX<br>XXX -3120 -0937 -500 -XX | 15/16                 | 1 9/16                | 5/16<br>1/2                      | 0.544                    | 1.562                   | 1.560                     | 0.937                     | 0.937                           | 0.939                             | 1.562                     |
|                                   | XXX -3120 -0937 -300 -XX                        |                       |                       | 5/16                             | 0.334                    |                         |                           |                           |                                 |                                   |                           |
|                                   | XXX -3120 -1000 -500 -XX                        | 1                     | 1 5/8                 | 1/2                              | 0.550                    | 1.625                   | 1.623                     | 1.000                     | 1.000                           | 1.002                             | 1.625                     |
|                                   | XXX -3120 -1000 -500 -XX                        |                       |                       | 5/16                             | 0.334                    |                         |                           |                           |                                 |                                   |                           |
|                                   | XXX -3120 -1062 -500 -XX                        | 1 1/16                | 1 11/16               | 1/2                              | 0.550                    | 1.687                   | 1.685                     | 1.062                     | 1.062                           | 1.064                             | 1.687                     |
|                                   | XXX -3120 -1002 -500 -XX                        |                       |                       | 5/16                             | 0.344                    |                         |                           |                           |                                 |                                   |                           |
|                                   | XXX -3120 -1125 -500 -XX                        | 1 1/8                 | 1 3/4                 | 1/2                              | 0.550                    | 1.750                   | 1.748                     | 1.125                     | 1.125                           | 1.127                             | 1.750                     |
|                                   | XXX -3120 -1187 -XX                             |                       |                       | 5/16                             | 0.344                    |                         |                           |                           |                                 |                                   |                           |
|                                   | XXX -3120 -1187 -500 -XX                        | 1 3/16                | 1 13/16               | 1/2                              | 0.550                    | 1.812                   | 1.810                     | 1.187                     | 1.187                           | 1.189                             | 1.812                     |
|                                   | XXX -3120 -1250 -XX                             |                       |                       | 5/16                             | 0.344                    |                         |                           |                           |                                 |                                   |                           |
|                                   | XXX -3120 -1250 -500 -XX                        | 1 1/4                 | 1 7/8                 | 1/2                              | 0.550                    | 1.875                   | 1.873                     | 1.250                     | 1.250                           | 1.252                             | 1.875                     |
|                                   | XXX -3120 -1312 -XX                             |                       |                       | 5/16                             | 0.344                    |                         |                           |                           |                                 |                                   |                           |
|                                   | XXX -3120 -1312 -500 -XX                        | 1 5/16                | 1 15/16               | 1/2                              | 0.550                    | 1.937                   | 1.935                     | 1.312                     | 1.312                           | 1.314                             | 1.937                     |
|                                   | XXX -3120 -1375 -XX                             |                       |                       | 5/16                             | 0.344                    |                         |                           |                           |                                 |                                   |                           |
|                                   | XXX -3120 -1375 -500 -XX                        | 1 3/8                 | 2                     | 1/2                              | 0.550                    | 2.000                   | 1.998                     | 1.375                     | 1.375                           | 1.377                             | 2.000                     |
|                                   | 3120 1373 300 -AA                               |                       |                       | -/ -                             | 0.550                    |                         |                           |                           |                                 |                                   |                           |



|                                   |                          |                       | APS LINLO             | ΔDFD LIP                         | U-CUP FA                         | MIIY                    |                           |                           |                        |                           |                                   |
|-----------------------------------|--------------------------|-----------------------|-----------------------|----------------------------------|----------------------------------|-------------------------|---------------------------|---------------------------|------------------------|---------------------------|-----------------------------------|
|                                   |                          |                       | 5 0.1120              | ADED EII                         | 0 001 17                         |                         | on Applica                | tion                      | Ro                     | d Applicati               | on                                |
| Nom<br>Cross<br>Section<br>(inch) | Part Number              | Nom<br>I.D.<br>(inch) | Nom<br>O.D.<br>(inch) | Nom<br>Axial<br>Length<br>(inch) | Width "A" (inch) [+0.010 -0.000] | Bore "B" (inch) [+0.003 | Piston "C" (inch) [+0.000 | Groove "D" (inch) [+0.000 | Rod "E" (inch) [+0.000 | Throat "F" (inch) [+0.003 | Groove "G" (inch) [+0.004 -0.000] |
|                                   | XXX -3120 -1437 -XX      | /                     |                       | 5/16                             | 0.344                            |                         |                           |                           |                        |                           |                                   |
|                                   | XXX -3120 -1437 -500 -XX | 1 7/16                | 2 1/16                | 1/2                              | 0.550                            | 2.062                   | 2.060                     | 1.437                     | 1.437                  | 1.439                     | 2.062                             |
|                                   | XXX -3120 -1500 -XX      | 1 1/2                 | 2 1/0                 | 5/16                             | 0.344                            | 2.425                   | 2 422                     | 1.500                     | 1.500                  | 1.502                     | 2.425                             |
|                                   | XXX -3120 -1500 -500 -XX | 1 1/2                 | 2 1/8                 | 1/2                              | 0.550                            | 2.125                   | 2.123                     | 1.500                     | 1.500                  | 1.502                     | 2.125                             |
|                                   | 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 5/6                 | 2 1/4                 | 1/2                              | 0.550                            | 2.250                   | 2.240                     | 1.025                     | 1.025                  | 1.027                     | 2.230                             |
|                                   | 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 3/4                 | 2 3/8                 | 1/2                              | 0.550                            | 2.373                   | 2.373                     | 1.730                     | 1.730                  | 1.732                     | 2.373                             |
|                                   | 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 7/0                 | 2 1/2                 | 1/2                              | 0.550                            | 2.300                   | 2.430                     | 1.875                     | 1.873                  | 1.077                     | 2.300                             |
|                                   | 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 |                       | 2 3,0                 | 1/2                              | 0.550                            | 2.023                   | 2.023                     | 2.000                     | 2.000                  | 2.002                     | 2.023                             |
|                                   | 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 |                       | _ 3, .                | 1/2                              | 0.550                            | 21730                   | 217 10                    |                           |                        | 21227                     | 21750                             |
|                                   | 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 | 500 -XX 2 1/4         | , -                   | 1/2                              | 0.550                            |                         |                           |                           |                        |                           |                                   |
| 5/16                              | 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 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                            |                         |                           |                           |                        |                           |                                   |



|                                   |                          |                       | HPS LINI O            | ΔDFD LIP                         | U-CUP FA                         | MIIY                    |                                   |                                   |                        |                                   |                                   |
|-----------------------------------|--------------------------|-----------------------|-----------------------|----------------------------------|----------------------------------|-------------------------|-----------------------------------|-----------------------------------|------------------------|-----------------------------------|-----------------------------------|
|                                   |                          |                       | III 5 CIVEC           | ADED EII                         | 0 001 17                         |                         | on Applica                        | tion                              | Ro                     | d Applicati                       | on                                |
| Nom<br>Cross<br>Section<br>(inch) | Part Number              | Nom<br>I.D.<br>(inch) | Nom<br>O.D.<br>(inch) | Nom<br>Axial<br>Length<br>(inch) | Width "A" (inch) [+0.010 -0.000] | Bore "B" (inch) [+0.003 | Piston "C" (inch) [+0.000 -0.002] | Groove "D" (inch) [+0.000 -0.004] | Rod "E" (inch) [+0.000 | Throat "F" (inch) [+0.003 -0.000] | Groove "G" (inch) [+0.004 -0.000] |
|                                   | XXX -3120 -3500 -XX      | 2 1/2                 | 4 1/0                 | 5/16                             | 0.344                            | 4.125                   | 4.122                             | 2.500                             | 2.500                  | 2.502                             | 4.125                             |
|                                   | XXX -3120 -3500 -500 -XX | 3 1/2                 | 4 1/8                 | 1/2                              | 0.550                            | 4.125                   | 4.123                             | 3.500                             | 3.500                  | 3.502                             | 4.125                             |
|                                   | 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 | 3 3/8                 | 4 1/4                 | 1/2                              | 0.550                            | 4.230                   | 4.246                             | 3.023                             | 3.023                  | 3.027                             | 4.230                             |
|                                   | 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 | 3 3/4                 | + 3/0                 | 1/2                              | 0.550                            | 4.373                   | 4.575                             | 3.730                             | 3.730                  | 3.732                             | 4.575                             |
|                                   | 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 | 3 770                 | . 1,2                 | 1/2                              | 0.550                            | 1.500                   | 1.150                             | 3.073                             | 3.073                  | 3.077                             | 1.500                             |
|                                   | 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                            |                         |                                   |                                   |                        |                                   |                                   |
| 5/16                              | XXX -3120 -4500 -XX      |                       | 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 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 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                             |                                  | 6.125                   | 6.123                             | 5.500                             | 5.500                  | 5.502                             | 6.125                             |
|                                   | XXX -3120 -5500 -625 -XX |                       |                       | 5/8                              | 0.688                            |                         |                                   |                                   |                        |                                   |                                   |



|                                   |   |                       | HPS UNLO              | ADED LIP                         | U-CUP FA         | MILY                    |                   |                           |                      |                           |                           |
|-----------------------------------|---|-----------------------|-----------------------|----------------------------------|------------------|-------------------------|-------------------|---------------------------|----------------------|---------------------------|---------------------------|
|                                   |   |                       |                       |                                  |                  | Pist                    | on Applica        | tion                      | Ro                   | d Applicati               | on                        |
| Nom<br>Cross<br>Section<br>(inch) | Part Number                                     | Nom<br>I.D.<br>(inch) | Nom<br>O.D.<br>(inch) | Nom<br>Axial<br>Length<br>(inch) | Width "A" (inch) | Bore "B" (inch) [+0.003 | Piston "C" (inch) | Groove "D" (inch) [+0.000 | Rod<br>"E"<br>(inch) | Throat "F" (inch) [+0.003 | Groove "G" (inch) [+0.004 |
| (,                                |   |                       |                       | (,                               | -0.000]          | -0.0001                 | -0.0021           | -0.0041                   | -0.002]              | -0.0001                   | -0.000]                   |
|                                   | XXX -3120 -5625 -XX                             |                       |                       | 5/16                             | 0.344            | -                       | ,                 | ,                         |                      | -                         |                           |
|                                   | XXX -3120 -5625 -625 -XX                        | 5 5/8                 | 6 1/4                 | 5/8                              | 0.688            | 6.250                   | 6.248             | 5.625                     | 5.625                | 5.627                     | 6.250                     |
|                                   | XXX -3120 -5750 -XX                             |                       |                       | 5/16                             | 0.344            |                         |                   |                           |                      |                           |                           |
|                                   | XXX -3120 -5750 -625 -XX                        | 5 3/4                 | 6 3/8                 | 5/8                              | 0.688            | 6.375                   | 6.373             | 5.750                     | 5.750                | 5.752                     | 6.375                     |
|                                   | XXX -3120 -5875 -XX                             | 5 7/8                 | 6 1/2                 | 5/16                             | 0.344            | 6.500                   | 6.409             | F 07F                     | г 07г                | г 077                     | 6.500                     |
|                                   | XXX -3120 -5875 -625 -XX                        | 5 //8                 | 6 1/2                 | 5/8                              | 0.688            | 6.500                   | 6.498             | 5.875                     | 5.875                | 5.877                     | 6.500                     |
|                                   | 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                        | U                     | 0 3/8                 | 5/8                              | 0.688            | 0.023                   | 0.023             | 0.000                     | 0.000                | 0.002                     | 0.023                     |
|                                   | 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                        | 0 1/0                 | 0 3/4                 | 5/8                              | 0.688            | 0.730                   | 0.740             | 0.123                     | 0.123                | 0.127                     | 0.730                     |
|                                   | 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                        | J 27 .                | 0 1,0                 | 5/8                              | 0.688            | 0.073                   | 0.075             | 0.250                     | 0.200                | 0.202                     | 0.075                     |
|                                   | 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            |                         |                   |                           |                      |                           |                           |
| 5/16                              | 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<br>5/8                      | 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  XXX -3120 -7000 -625 -XX   | 7                     | 7 5/8                 | 5/16                             | 0.344            | 7.625                   | 7.623             | 7.000                     | 7.000                | 7.002                     | 7.625                     |
| _                                 | XXX -3120 -7000 -023 -XX<br>XXX -3120 -7125 -XX |                       |                       | 5/16                             | 0.000            |                         |                   |                           |                      |                           |                           |
|                                   | XXX -3120 -7125 -625 -XX                        | 7 1/8                 | 7 3/4                 | 5/8                              |                  | 7.750                   | 7.748             | 7.125                     | 7.125                | 7.127                     | 7.750                     |
|                                   | XXX -3120 -7250 -XX                             |                       |                       | 5/16                             | 0.688            |                         |                   |                           |                      |                           |                           |
|                                   | XXX -3120 -7250 -625 -XX                        | 7 1/4                 | 7 7/8                 | 5/8                              | 0.688            | 7.875                   | 7.873             | 7.250                     | 7.250                | 7.252                     | 7.875                     |
|                                   | XXX -3120 -7375 -XX                             |                       |                       | 5/16                             | 0.344            |                         |                   |                           |                      |                           |                           |
|                                   | XXX -3120 -7375 -625 -XX                        | 7 3/8                 | 8                     | 5/8                              | 0.688            | 8.000                   | 7.998             | 7.375                     | 7.375                | 7.377                     | 8.000                     |
|                                   |   |                       | l                     | , -                              |                  |                         |                   |                           |                      |                           |                           |



| Nom Coss Section     Part Number   Nom LD, (inch)   Nom Avial   Cinch   Cinc |                  |                          |        | HPS UNLO | ADED LIP        | U-CUP FA      | MILY          |               |               |               |               |               |
|--|------------------|--------------------------|--------|----------|-----------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Coss Section   Part Number   Nom   |                  |                          |        |          |                 |               | Pist          | on Applica    | tion          | Ro            | d Applicati   | on            |
| XXX  | Cross<br>Section | Part Number              | I.D.   | O.D.     | Axial<br>Length | "A"<br>(inch) | "B"<br>(inch) | "C"<br>(inch) | "D"<br>(inch) | "E"<br>(inch) | "F"<br>(inch) | "G"<br>(inch) |
| XXX  |                  |                          |        |          |                 | -0.000]       | -0.000]       | -0.002]       | -0.005]       | -0.002]       | -0.000]       | -0.000]       |
| XXX  |                  | 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 -0562 -625 -XX   |                  | XXX -3750 -0500 -625 -XX | ,      | ,        | 5/8             | 0.688         |               |               |               |               |               |               |
| XXX  |                  | 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  |                  | XXX -3750 -0562 -625 -XX |        |          |                 | 0.688         |               |               |               |               |               |               |
| XXX  |                  | 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  |                  |                          |        |          |                 |               |               |               |               |               |               |               |
| XXX  |                  |                          | 11/16  | 1 7/16   |                 |               | 1.437         | 1.435         | 0.687         | 0.687         | 0.689         | 1.437         |
| XXX  |                  |                          |        |          |                 |               |               |               |               |               |               |               |
| XXX  |                  |                          | 3/4    | 1 1/2    |                 |               | 1.500         | 1.498         | 0.750         | 0.750         | 0.752         | 1.500         |
| XXX  |                  |                          |        |          |                 |               |               |               |               |               |               |               |
| XXX  |                  |                          | 13/16  | 1 9/16   |                 |               | 1.562         | 1.560         | 0.812         | 0.812         | 0.814         | 1.562         |
| 3/8  |                  |                          |        |          |                 |               |               |               |               |               |               |               |
| XXX   -3750   -0937   -XX  |                  |                          | 7/8    | 1 5/8    |                 |               | 1.625         | 1.623         | 0.875         | 0.875         | 0.877         | 1.625         |
| XXX   -3750   -0937   -625   -XX     15/16   111/16     5/8   0.688   1.687   1.685   0.937   0.937   0.939   1.687  |                  |                          |        |          |                 |               |               |               |               |               |               |               |
| XXX   -3750   -1000   -XX  |                  |                          | 15/16  | 1 11/16  |                 |               | 1.687         | 1.685         | 0.937         | 0.937         | 0.939         | 1.687         |
| 1   1   3/4   1   3/4   1   3/4   1   3/4   1   3/4   1   3/4    |                  |                          |        |          |                 |               |               |               |               |               |               |               |
| XXX  | 3/8              |                          | 1      | 1 3/4    |                 |               | 1.750         | 1.748         | 1.000         | 1.000         | 1.002         | 1.750         |
| XXX   -3750   -1062   -625   -XX     -255   -XX     -255   -XX     -255   -XX     -255   -XX     -255   -XX     -255   -XX   -255   -XX     -255   -XX     -255   -XX   -255 |                  |                          |        |          |                 |               |               |               |               |               |               |               |
| XXX  |                  |                          | 1 1/16 | 1 13/16  |                 |               | 1.812         | 1.810         | 1.062         | 1.062         | 1.064         | 1.812         |
| XXX   -3750   -1125   -625   -XX     1   1/8   1   7/8     5/8   0.688     1.875   1.873   1.125   1.125   1.127   1.875   |                  |                          |        |          |                 |               |               |               |               |               |               |               |
| XXX  |                  |                          | 1 1/8  | 1 7/8    |                 |               | 1.875         | 1.873         | 1.125         | 1.125         | 1.127         | 1.875         |
| XXX  |                  |                          |        |          |                 |               |               |               |               |               |               |               |
| XXX  |                  |                          | 1 3/16 | 1 15/16  |                 |               | 1.937         | 1.935         | 1.187         | 1.187         | 1.189         | 1.937         |
| XXX  |                  |                          |        |          |                 |               |               |               |               |               |               |               |
| XXX -3750 -1312  |                  |                          | 1 1/4  | 2        |                 |               | 2.000         | 1.998         | 1.250         | 1.250         | 1.252         | 2.000         |
| XXX -3750 -1312 -625 -XX   1 5/16   2 1/16   5/8   0.688   2.062   2.060   1.312   1.314   2.062     XXX -3750 -1375 -625 -XX   1 3/8   2 1/8   3/8   0.413     XXX -3750 -1437 -XX   1 7/16   2 3/16   5/8   0.688   2.125   2.123   1.375   1.375   1.377   2.125     XXX -3750 -1437 -625 -XX   1 7/16   2 3/16   5/8   0.688   2.125   2.123   1.375   1.375   1.377   2.125     XXX -3750 -1437 -625 -XX   1 7/16   2 3/16   5/8   0.688   2.125   2.123   1.375   1.377   2.125     XXX -3750 -1437 -625 -XX   1 7/16   2 3/16   5/8   0.688   2.125   2.123   1.375   1.377   2.125     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 -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 -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 -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 -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 -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 -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 -XX   1 1/2   2 1/4   3/8   0.413   2.250   2.248   1.500   1.500   1.500   1.500   2.250     XXX -3750 -1500 -XX   1 1/2   2 1/4   3/8   0.413   2.250   2.248   1.500   1.500   1.500   2.250   2.250   2.248   1.500   1.500   2.250   2.250   2.248   1.500   2.250   2.250   2.250   2.248   2.250   2.250   2.248   2.250   2 |                  |                          |        |          |                 |               |               |               |               |               |               |               |
| XXX -3750 -1375  |                  |                          | 1 5/16 | 2 1/16   |                 |               | 2.062         | 2.060         | 1.312         | 1.312         | 1.314         | 2.062         |
| XXX       -3750       -1375       -625       -XX       1       3/8       2       1/8       5/8       0.688       2.125       2.123       1.375       1.377       2.125         XXX       -3750       -1437       -625       -XX       1       7/16       2       3/8       0.413       2.187       2.185       1.437       1.437       1.439       2.187         XXX       -3750       -1500       -XX       1       1/2       2       1/4       3/8       0.413       2.250       2.248       1.500       1.502       2.250   |                  |                          |        |          |                 |               |               |               |               |               |               |               |
| XXX -3750 -1437 -XX  |                  |                          | 1 3/8  | 2 1/8    |                 |               | 2.125         | 2.123         | 1.375         | 1.375         | 1.377         | 2.125         |
| XXX -3750 -1437 -625 -XX   |                  |                          |        |          | -               |               |               |               |               |               |               |               |
| XXX -3750 -1500 -XX  |                  |                          | 1 7/16 | 2 3/16   |                 |               | 2.187         | 2.185         | 1.437         | 1.437         | 1.439         | 2.187         |
|  |                  |                          |        |          |                 | 0.413         |               |               |               |               |               |               |
| 2000 020 701   |                  | XXX -3750 -1500 -625 -XX | 1 1/2  | 2 1/4    | 5/8             | 0.688         | 2.250         | 2.248         | 1.500         | 1.500         | 1.502         | 2.250         |



|                                   |  |                       | HPS LINI O            | ΔDFD LIP                         | U-CUP FA                         | MIIV                    |                           |                           |                                 |                           |                           |
|-----------------------------------|--|-----------------------|-----------------------|----------------------------------|----------------------------------|-------------------------|---------------------------|---------------------------|---------------------------------|---------------------------|---------------------------|
|                                   |  |                       | III 5 CIVEC           | ADED EII                         | 0 001 17                         |                         | on Applica                | tion                      | Ro                              | d Applicati               | on                        |
| Nom<br>Cross<br>Section<br>(inch) | Part Number  | Nom<br>I.D.<br>(inch) | Nom<br>O.D.<br>(inch) | Nom<br>Axial<br>Length<br>(inch) | Width "A" (inch) [+0.010 -0.000] | Bore "B" (inch) [+0.004 | Piston "C" (inch) [+0.000 | Groove "D" (inch) [+0.000 | Rod<br>"E"<br>(inch)<br>[+0.000 | Throat "F" (inch) [+0.004 | Groove "G" (inch) [+0.005 |
|                                   | XXX -3750 -1625 -XX  |                       | 1-                    | 3/8                              | 0.413                            |                         |                           |                           |                                 |                           |                           |
|                                   | XXX -3750 -1625 -625 -XX   | 1 5/8                 | 2 3/8                 | 5/8                              | 0.688                            | 2.375                   | 2.373                     | 1.625                     | 1.625                           | 1.627                     | 2.375                     |
|                                   | XXX -3750 -1750 -XX  | 4 2/4                 | 2 4/2                 | 3/8                              | 0.413                            | 2.500                   | 2 400                     | 4.750                     | 4.750                           | 4.752                     | 2.500                     |
|                                   | XXX -3750 -1750 -625 -XX   | 1 3/4                 | 2 1/2                 | 5/8                              | 0.688                            | 2.500                   | 2.498                     | 1.750                     | 1.750                           | 1.752                     | 2.500                     |
|                                   | XXX -3750 -1875 -XX  | 1 7/0                 | 2 5/0                 | 3/8                              | 0.413                            | 2.625                   | 2 (22                     | 1.075                     | 1.075                           | 1 077                     | 2.625                     |
|                                   | XXX -3750 -1875 -625 -XX   | 1 7/8                 | 2 5/8                 | 5/8                              | 0.688                            | 2.625                   | 2.623                     | 1.875                     | 1.875                           | 1.877                     | 2.625                     |
|                                   | XXX -3750 -2000 -XX  | 2                     | 2 2/4                 | 3/8                              | 0.413                            | 2.750                   | 2 749                     | 2,000                     | 2,000                           | 2.002                     | 2.750                     |
|                                   | XXX -3750 -2000 -625 -XX   | 2                     | 2 3/4                 | 5/8                              | 0.688                            | 2.750                   | 2.748                     | 2.000                     | 2.000                           | 2.002                     | 2.750                     |
|                                   | XXX -3750 -2125 -XX  | 2 1/9                 | 2 7/9                 | 3/8                              | 0.413                            | 2.075                   | 2 072                     | 2 125                     | 2 125                           | 2 127                     | 2.875                     |
|                                   | XXX -3750 -2125 -625 -XX   | 2 1/8                 | 2 7/8                 | 5/8                              | 0.688                            | 2.875                   | 2.873                     | 2.125                     | 2.125                           | 2.127                     | 2.875                     |
|                                   | 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   | 2 1/4                 | 5                     | 5/8                              | 0.688                            | 3.000                   | 2.996                     | 2.230                     | 2.230                           | 2.252                     | 3.000                     |
| _                                 | XXX -3750 -2375 -XX  | 2 2/9                 | 3 1/8                 | 3/8                              | 0.413                            | 3.125                   | 3.123                     | 2.375                     | 2.375                           | 2.377                     | 3.125                     |
|                                   | XXX -3750 -2375 -625 -XX 2 3/8   | 2 3/6                 | 3 1/6                 | 5/8                              | 0.688                            | 3.123                   | 3.123                     | 2.373                     | 2.373                           | 2.377                     | 3.123                     |
|                                   | XXX -3750 -2500 -XX 2 1/2  | 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   | 2 1/2                 | 3 1/4                 | 5/8                              | 0.688                            | 3.230                   | 3.240                     | 2.300                     | 2.500                           | 2.502                     | 3.230                     |
| 3/8                               | 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                     |
| 3,0                               | XXX -3750 -2625 -625 -XX   | 2 3/0                 | 3 3,0                 | 5/8                              | 0.688                            | 3.373                   | 3.373                     | 2.023                     | 2.023                           | 2.027                     | 3.373                     |
|                                   | 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         XXX       -3750       -3250       -625       -XX       3 3/8       4         XXX       -3750       -3375       -625       -XX       3 3/8       4         XXX       -3750       -3500       -XX       3 1/2       4         XXX       -3750       -3500       -625       -XX       3 1/2       4 | 4                     | 3/8                   | 0.413                            | 4.000                            | 3.998                   | 3.250                     | 3.250                     | 3.252                           | 4.000                     |                           |
|                                   |  |                       | 5/8                   | 0.688                            |                                  |                         |                           |                           |                                 |                           |                           |
|                                   |  | 4 1/8                 | 3/8                   | 0.413                            | 4.125                            | 4.123                   | 3.375                     | 3.375                     | 3.377                           | 4.125                     |                           |
|                                   |  |                       | 5/8                   | 0.688                            |                                  |                         |                           |                           |                                 |                           |                           |
|                                   |  | 4 1/4                 | 3/8                   | 0.413                            | 4.250                            | 4.248                   | 3.500                     | 3.500                     | 3.502                           | 4.250                     |                           |
|                                   |  |                       | 5/8                   | 0.688                            |                                  |                         |                           |                           |                                 |                           |                           |
|                                   |  | 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 -XX<br>XXX -3750 -3625 -625 -XX 3 5/8  |                       | 5/8                   | 0.688                            |                                  |                         |                           |                           |                                 |                           |                           |



|                   |                          |             | HPS UNLC    | ADED LIP         | U-CUP FA          | MILY              |                   |                   |                   |                   |                   |
|-------------------|--------------------------|-------------|-------------|------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
|                   |                          |             |             |                  |                   | Pist              | on Applica        | tion              | Ro                | d Applicati       | on                |
| Nom               |                          |             |             | Nom              | Width             | Bore              | Piston            | Groove            | Rod               | Throat            | Groove            |
| Cross             | Part Number              | Nom<br>I.D. | Nom<br>O.D. | Axial            | "A"               | "B"               | "C"               | "D"               | "E"               | "F"               | "G"               |
| Section<br>(inch) | T die Hamber             | (inch)      | (inch)      | Length<br>(inch) | (inch)<br>[+0.010 | (inch)<br>[+0.004 | (inch)<br>[+0.000 | (inch)<br>[+0.000 | (inch)<br>[+0.000 | (inch)<br>[+0.004 | (inch)<br>[+0.005 |
| (ilicii)          |                          |             |             | (IIICII)         | -0.000]           | -0.000]           | -0.002]           | -0.005]           | -0.002]           | -0.0001           | -0.0001           |
|                   | XXX -3750 -3750 -XX      |             |             | 3/8              | 0.413             | -0.000]           | -0.002]           | -0.003]           | -0.002]           | -0.000]           | -0.000]           |
|                   | XXX -3750 -3750 -625 -XX | 3 3/4       | 4 1/2       | 5/8              | 0.413             | 4.500             | 4.498             | 3.750             | 3.750             | 3.752             | 4.500             |
|                   | XXX -3750 -3875 -XX      |             |             | 3/8              | 0.413             |                   |                   |                   |                   |                   |                   |
|                   | XXX -3750 -3875 -625 -XX | 3 7/8       | 4 5/8       | 5/8              | 0.688             | 4.625             | 4.623             | 3.875             | 3.875             | 3.877             | 4.625             |
|                   | XXX -3750 -4000 -XX      |             |             | 3/8              | 0.413             |                   |                   |                   |                   |                   |                   |
|                   | XXX -3750 -4000 -625 -XX | 4           | 4 3/4       | 5/8              | 0.688             | 4.750             | 4.748             | 4.000             | 4.000             | 4.002             | 4.750             |
|                   | XXX -3750 -4125 -XX      |             |             | 3/8              | 0.413             |                   |                   |                   |                   |                   |                   |
|                   | XXX -3750 -4125 -625 -XX | 4 1/8       | 4 7/8       | 5/8              | 0.688             | 4.875             | 4.873             | 4.125             | 4.125             | 4.127             | 4.875             |
|                   | XXX -3750 -4250 -XX      |             |             | 3/8              | 0.413             |                   |                   |                   |                   |                   |                   |
|                   | XXX -3750 -4250 -625 -XX | 4 1/4       | 5           | 5/8              | 0.688             | 5.000             | 4.998             | 4.250             | 4.250             | 4.252             | 5.000             |
|                   | XXX -3750 -4375 -XX      |             |             | 3/8              | 0.413             |                   |                   |                   |                   |                   |                   |
|                   | XXX -3750 -4375 -625 -XX | 4 3/8       | 5 1/8       | 5/8              | 0.688             | 5.125             | 5.123             | 4.375             | 4.375             | 4.377             | 5.125             |
|                   | XXX -3750 -4500 -XX      |             |             | 3/8              | 0.413             |                   |                   |                   |                   |                   |                   |
|                   | XXX -3750 -4500 -625 -XX | 4 1/2       | 5 1/4       | 5/8              | 0.688             | 5.250             | 5.248             | 4.500             | 4.500             | 4.502             | 5.250             |
|                   | XXX -3750 -4625 -XX      | 4 5/0       | 5 2/0       | 3/8              | 0.413             | E 275             | F 272             | 4.625             | 4.625             | 4.627             | F 27F             |
|                   | XXX -3750 -4625 -625 -XX | 4 5/8       | 5 3/8       | 5/8              | 0.688             | 5.375             | 5.373             | 4.625             | 4.625             | 4.627             | 5.375             |
| 3/8               | XXX -3750 -4750 -XX      |             | 5 1/2       | 3/8              | 0.413             | 5.500             | 5.498             | 4.750             | 4.750             | 4.752             | 5.500             |
| 5/6               | XXX -3750 -4750 -625 -XX | 4 3/4       | 5 1/2       | 5/8              | 0.688             | 5.500             | 5.496             | 4.750             | 4.750             | 4.752             | 5.500             |
|                   | 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 | 4 7/0       | 3 3/6       | 5/8              | 0.688             | 3.023             | 3.023             | 4.873             | 4.873             | 4.077             | 3.023             |
|                   | 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 | 3           | 3 3/4       | 5/8              | 0.688             | 3.730             | 3.740             | 3.000             | 3.000             | 3.002             | 3.730             |
|                   | 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             |
|                   |                          |             | -           | 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      |             | 6 1/4       | 3/8              | 0.413             | 6.250             | 6.248             | 5.500             | 5.500             | 5.502             | 6.250             |
|                   | XXX -3750 -5500 -625 -   |             |             | 5/8              | 0.688             |                   | 6.250 6.248       |                   |                   |                   |                   |
|                   | XXX -3750 -5625 -XX      | 5 5/8       | 6 3/8       | 3/8              | 0.413             | 6.375             | 5 6.373           | 5.625             | 5.625             | 5.627             | 6.375             |
|                   | XXX -3750 -5625 -625 -XX | 5 5/8 6 3/8 |             | 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             |                   |                   |                   |                   |                   |                   |



|                         |     |       |       |      |     |             | HPS UNLO    | ADED LIP               | U-CUP FA               | MILY                  |                         |                         |                      |                         |                         |
|-------------------------|-----|-------|-------|------|-----|-------------|-------------|------------------------|------------------------|-----------------------|-------------------------|-------------------------|----------------------|-------------------------|-------------------------|
|                         |     |       |       |      |     |             |             |                        |                        | Pist                  | on Applica              | tion                    | Ro                   | d Applicati             | on                      |
| Nom<br>Cross<br>Section |     | Part  | : Num | ber  |     | Nom<br>I.D. | Nom<br>O.D. | Nom<br>Axial<br>Length | Width<br>"A"<br>(inch) | Bore<br>"B"<br>(inch) | Piston<br>"C"<br>(inch) | Groove<br>"D"<br>(inch) | Rod<br>"E"<br>(inch) | Throat<br>"F"<br>(inch) | Groove<br>"G"<br>(inch) |
| (inch)                  |     |       |       |      |     | (inch)      | (inch)      | (inch)                 | [+0.010                | [+0.004               | [+0.000                 | [+0.000                 | [+0.000              | [+0.004                 | [+0.005                 |
|                         |     |       |       |      |     |             |             |                        | -0.000]                | -0.000]               | -0.002]                 | -0.005]                 | -0.002]              | -0.000]                 | -0.000]                 |
|                         | 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 3/8       | 5/8                    | 0.688                  | 0.025                 | 0.023                   | 5.875                   | 5.875                | 5.877                   | 0.025                   |
|                         | 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 | 6           |             | 5/8                    | 0.688                  | 0.750                 | 0.748                   | 6.000                   | 6.000                | 6.002                   | 0.750                   |
|                         | XXX | -3750 | -6250 |      | -XX | 6 1/2       | 7 1/4       | 3/8                    | 0.413                  | 7.000                 | 6 008                   | 6.250                   | 6.250                | 6.252                   | 7.000                   |
| 3/8                     | XXX | -3750 | -6250 | -625 | -XX |             |             | 5/8                    | 0.688                  | 7.000                 | 6.998                   | 6.250                   | 0.230                | 0.232                   | 7.000                   |
| 3/8                     | XXX | -3750 | -6500 |      | -XX |             |             | 3/8                    | 0.413                  | 7,250                 | 7.248                   | 6.500                   | 6.500                | 6.502                   | 7.250                   |
|                         | XXX | -3750 | -6500 | -625 | -XX |             | 7 1/4       | 5/8                    | 0.688                  | 7.250                 | 7.240                   | 0.500                   | 0.500                | 0.502                   | 7.230                   |
|                         | XXX | -3750 | -6750 |      | -XX |             | 7 1/2       | 3/8                    | 0.413                  | 7.500                 | 7 409                   | 6.750                   | 6.750                | 6.752                   | 7.500                   |
|                         | XXX | -3750 | -6750 | -625 | -XX |             | 7 1/2       | 5/8                    | 0.688                  |                       | 7.498                   | 0.750                   | 0.730                | 0.732                   | 7.500                   |
|                         | XXX | -3750 | -7000 |      | -XX | 7           | 7 3/4       | 3/8                    | 0.413                  | 7.750                 | 7.748                   | 3 7.000                 | 7.000 7.002          | 7.002                   | 7.750                   |
|                         | XXX | -3750 | -7000 | -625 | -XX | ,           |             | 5/8                    | 0.688                  |                       |                         | 7.000                   | 7.000                | 7.002                   | 7.750                   |



|                                   |   |                       | HPS LINI O            | ΔDFD LIP                         | U-CUP FA         | MIIY                  |                   |                           |                      |                                   |                           |
|-----------------------------------|---|-----------------------|-----------------------|----------------------------------|------------------|-----------------------|-------------------|---------------------------|----------------------|-----------------------------------|---------------------------|
|                                   |   |                       | III 3 CIVEO           | ADED EII                         | 0-001 17         |                       | on Applica        | tion                      | Ro                   | d Applicati                       | on                        |
| Nom<br>Cross<br>Section<br>(inch) | Part Number                                     | Nom<br>I.D.<br>(inch) | Nom<br>O.D.<br>(inch) | Nom<br>Axial<br>Length<br>(inch) | Width "A" (inch) | Bore<br>"B"<br>(inch) | Piston "C" (inch) | Groove "D" (inch) [+0.000 | Rod<br>"E"<br>(inch) | Throat     "F"     (inch) [+0.005 | Groove "G" (inch) [+0.007 |
|                                   |   |                       |                       |                                  | -0.000]          | -0.000]               | -0.003]           | -0.007]                   | -0.003]              | -0.000]                           | -0.000]                   |
|                                   | XXX -5000 -1000 -XX                             | 1                     | 2                     | 1/2                              | 0.550            | 2.000                 | 1 000             | 1.000                     | 1.000                | 1.002                             | 2.000                     |
|                                   | XXX -5000 -1000 -750 -XX                        | 1                     | 2                     | 3/4                              | 0.825            | 2.000                 | 1.998             | 1.000                     | 1.000                | 1.002                             | 2.000                     |
|                                   | 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                        | 1 1/4                 | 2 1/4                 | 3/4                              | 0.825            | 2.230                 | 2.240             | 1.230                     | 1.230                | 1.232                             | 2.230                     |
|                                   | 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                        | 1 3/5                 | 2 3/3                 | 3/4                              | 0.825            |                       | 2.575             | 1.070                     | 1.575                | 2.077                             | 2.075                     |
|                                   | 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            |                       | 21.50             | 1.500                     | 1.500                | 1.502                             | 2.000                     |
|                                   | 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            |                       |                   |                           |                      |                                   |                           |
| 1/2                               | 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<br>XXX -5000 -3250 -XX |                       |                       | 3/4                              | 0.825            |                       |                   |                           |                      |                                   |                           |
|                                   | XXX -5000 -3250 -XX<br>XXX -5000 -3250 -750 -XX | 3 1/4                 | 4 1/4                 | 1/2<br>3/4                       | 0.550<br>0.825   | 4.250                 | 4.248             | 3.250                     | 3.250                | 3.252                             | 4.250                     |
|                                   | XXX -5000 -3500 -XX                             |                       |                       | 1/2                              | 0.825            |                       |                   |                           |                      |                                   |                           |
|                                   | XXX -5000 -3500 -750 -XX                        | 3 1/2                 | 4 1/2                 | 3/4                              | 0.330            | 4.500                 | 4.498             | 3.500                     | 3.500                | 3.502                             | 4.500                     |
|                                   | XXX -5000 -3750 -XX                             |                       |                       | 1/2                              | 0.550            |                       |                   |                           |                      |                                   |                           |
|                                   | XXX -5000 -3750 -750 -XX                        |                       | 4 3/4                 | 3/4                              | 0.825            | 4.750                 | 4.748             | 3.750                     | 3.750                | 3.752                             | 4.750                     |
|                                   | XXX -5000 -4000 -XX                             |                       |                       | 1/2                              | 0.550            |                       |                   |                           |                      |                                   |                           |
|                                   | XXX -5000 -4000 -750 -XX                        |                       | 5                     | 3/4                              | 0.825            | 5.000                 | 4.998             | 4.000                     | 4.000                | 4.002                             | 5.000                     |
|                                   | XXX -5000 -4250 -XX                             |                       |                       | 1/2                              | 0.550            |                       |                   |                           |                      |                                   |                           |
|                                   | XXX -5000 -4250 -750 -XX                        | 4 1/4                 | 5 1/4                 | 3/4                              | 0.825            | 5.250                 | 5.248             | 4.250                     | 4.250                | 4.252                             | 5.250                     |
|                                   | XXX -5000 -4375 -XX                             |                       |                       | 1/2                              | 0.550            |                       |                   |                           |                      |                                   |                           |
|                                   | XXX -5000 -4375 -750 -XX                        | 4 3/8                 | 5 3/8                 | 3/4                              | 0.825            | 5.375                 | 5.373             | 4.375                     | 4.375                | 4.377                             | 5.375                     |
|                                   |   |                       |                       | •                                |                  |                       |                   |                           |                      |                                   |                           |



| Part Number   Nom   1.D.   (inch)   ( |                  |                          |       | HPS UNLO | ADED LIP        | U-CUP FA      | MILY          |               |               |               |               |                           |
|--|------------------|--------------------------|-------|----------|-----------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------------------|
| Part Number   Nom (inch)   No |                  |                          |       |          |                 |               | Pist          | on Applica    | tion          | Ro            | d Applicati   | on                        |
| XXX   -5000   -4500   -750   -XX   | Cross<br>Section | Part Number              | I.D.  | O.D.     | Axial<br>Length | "A"<br>(inch) | "B"<br>(inch) | "C"<br>(inch) | "D"<br>(inch) | "E"<br>(inch) | "F"<br>(inch) | Groove "G" (inch) [+0.007 |
| 1/2  |                  |                          |       |          |                 | -0.000]       | -0.000]       | -0.003]       | -0.007]       | -0.003]       | -0.000]       | -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   -4750   -750   -XX   |                  | XXX -5000 -4500 -750 -XX | ,_    | 3 1,1    | 3/4             | 0.825         | 3.333         | 51.50         | 555           |               |               | 5.500                     |
| XXX   -5000   -4750   -750   -XX   |                  | 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                     |
| 1/2  |                  | XXX -5000 -4750 -750 -XX |       | - ,      | 3/4             | 0.825         |               |               |               |               |               |                           |
| XXX   -5000   -5250   -750   -XX   |                  | XXX -5000 -5000 -XX      | 5     | 6        | 1/2             | 0.550         | 6.000         | 5.998         | 5.000         | 5.000         | 5.002         | 6.000                     |
| 1/2  |                  | XXX -5000 -5000 -750 -XX |       |          | 3/4             | 0.825         |               |               |               |               |               |                           |
| 1/2  |                  | 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                     |
| 1/2  |                  | XXX -5000 -5250 -750 -XX |       |          | 3/4             | 0.825         |               |               |               |               |               |                           |
| 1/2  |                  | 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                     |
| 1/2  |                  | XXX -5000 -5375 -750 -XX |       |          | 3/4             | 0.825         |               |               |               |               |               |                           |
| 1/2  |                  | 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                     |
| 1/2    1/2   | -                |                          |       |          | -               |               |               |               |               |               |               |                           |
| 1/2  |                  |                          | 5 3/4 | 6 3/4    | -               |               | 6.750         | 6.748         | 5.750         | 5.750         | 5.752         | 6.750                     |
| 1/2  |                  |                          |       |          | -               |               |               |               |               |               |               |                           |
| 1/2  |                  |                          | 6     | 7        | -               |               | 7.000         | 6.998         | 6.000         | 6.000         | 6.002         | 7.000                     |
| 1/2  |                  |                          |       |          | -               |               |               |               |               |               |               |                           |
| XXX       -5000       -6500       -XX       6       1/2       7       1/2       0.550       7.500       7.498       6.500       6.500       6.502       7.500         XXX       -5000       -6750       -XX       6       3/4       7       3/4       0.825       7.750       7.748       6.750       6.750       6.752       7.750         XXX       -5000       -6750       -750       -XX       7       8       1/2       0.550       8.000       7.998       7.000       7.000       7.002       8.000         XXX       -5000       -7250       -XX       1/2       0.550       8.000       7.998       7.000       7.000       7.002       8.000   | 1/2              |                          | 6 1/4 | 7 1/4    | -               |               | 7.250         | 7.248         | 6.250         | 6.250         | 6.252         | 7.250                     |
| XXX -5000 -6500 -750 -XX   |                  |                          |       |          | -               |               |               |               |               |               |               |                           |
| XXX -5000 -6750 -XX  |                  |                          | 6 1/2 | 7 1/2    | -               |               | 7.500         | 7.498         | 6.500         | 6.500         | 6.502         | 7.500                     |
| XXX -5000 -6750 -750 -XX   |                  |                          |       |          | -               |               |               |               |               |               |               |                           |
| XXX -5000 -7000 -XX 7 8 1/2 0.550 8.000 7.998 7.000 7.000 7.002 8.000 XXX -5000 -7250 -XX 1/2 0.550 1/2 0.550  |                  |                          | 6 3/4 | 7 3/4    | -               |               | 7.750         | 7.748         | 6.750         | 6.750         | 6.752         | 7.750                     |
| XXX -5000 -7000 -750 -XX   |                  |                          |       |          | -               |               |               |               |               |               |               |                           |
| XXX -5000 -7250 -XX 1/2 0.550  |                  |                          | 7     | 8        | -               |               | 8.000         | 7.998         | 7.000         | 7.000         | 7.002         | 8.000                     |
|  |                  |                          |       |          | -               |               |               |               |               |               |               |                           |
| XXX -5000 -7250 -750 -XX 7 1/4 8 1/4 3/4 0.825 8.250 8.248 7.250 7.250 7.252 8.25  |                  |                          | 7 1/4 | 8 1/4    | -               |               | 8.250         | 8.248         | 7.250         | 7.250         | 7.252         | 8.250                     |
| XXX -5000 -7500 -XX 1/2 0.550  |                  |                          |       |          |                 |               |               |               |               |               |               |                           |
| XXX -5000 -7500 -750 -XX 7 1/2 8 1/2 3/4 0.825 8.500 8.498 7.500 7.500 7.502 8.50  |                  |                          |       | 8 1/2    | -               |               | 8.500         | 8.498         | 7.500         | 7.500         | 7.502         | 8.500                     |
| XXX -5000 -7750 -XX 1/2 0.550  |                  |                          |       |          | -               |               |               |               |               |               |               |                           |
| XXX -5000 -7750 -750 -XX 7 3/4 8 3/4 3/4 0.825 8.750 8.748 7.750 7.750 7.752 8.75  |                  |                          |       | 8 3/4    | -               |               | 8.750         | 8.748         | 7.750         | 7.750         | 7.752         | 8.750                     |
| XXX -5000 -8000 -XX 1/2 0.550  |                  |                          |       |          |                 |               |               |               |               |               |               |                           |
| XXX -5000 -8000 -750 -XX 8 9 3/4 0.825 9.000 8.998 8.000 8.000 8.002 9.00  |                  |                          | 8     | 9        | _               |               | 9.000         | 8.998         | 8.000         | 8.000         | 8.002         | 9.000                     |
| XXX -5000 -8250 -XX 1/2 0.550  |                  | XXX -5000 -8250 -XX      |       |          | 1/2             | 0.550         |               |               |               |               |               |                           |
| XXX -5000 -8250 -750 -XX  8 1/4 9 1/4 3/4 0.825 9.250 9.248 8.250 8.252 9.25   |                  |                          | 8 1/4 | 9 1/4    | 3/4             | 0.825         | 9.250         | 9.248         | 8.250         | 8.250         | 8.252         | 9.250                     |



|                                   |                           |                       | HPS UNLC              | ADFD LIP                         | U-CUP FA                 | MIIY                    |                           |                           |                                 |                           |                           |
|-----------------------------------|---------------------------|-----------------------|-----------------------|----------------------------------|--------------------------|-------------------------|---------------------------|---------------------------|---------------------------------|---------------------------|---------------------------|
|                                   |                           |                       | 1 5 6.1126            |                                  | T CO. 17                 |                         | on Applica                | tion                      | Ro                              | d Applicati               | on                        |
| Nom<br>Cross<br>Section<br>(inch) | Part Number               | Nom<br>I.D.<br>(inch) | Nom<br>O.D.<br>(inch) | Nom<br>Axial<br>Length<br>(inch) | Width "A" (inch) [+0.010 | Bore "B" (inch) [+0.005 | Piston "C" (inch) [+0.000 | Groove "D" (inch) [+0.000 | Rod<br>"E"<br>(inch)<br>[+0.000 | Throat "F" (inch) [+0.005 | Groove "G" (inch) [+0.007 |
|                                   | XXX -5000 -8500 ->        | Χ .                   |                       | 1/2                              | 0.550                    | ,                       | ,                         | ,                         | ,                               |                           | ,                         |
|                                   | XXX -5000 -8500 -750 -X   | 8 1/2<br>X            | 9 1/2                 | 3/4                              | 0.825                    | 9.500                   | 9.498                     | 8.500                     | 8.500                           | 8.502                     | 9.500                     |
|                                   | XXX -5000 -8750 ->        | X 8 3/4               | 0. 2/4                | 1/2                              | 0.550                    | 0.750                   | 0.740                     | 0.750                     | 0.750                           | 0.752                     | 0.750                     |
|                                   | XXX -5000 -8750 -750 ->   |                       | 9 3/4                 | 3/4                              | 0.825                    | 9.750                   | 9.748                     | 8.750                     | 8.750                           | 8.752                     | 9.750                     |
|                                   | XXX -5000 -9000 ->        | X 9                   | 10                    | 1/2                              | 0.550                    | 10.000                  | 9.998                     | 9.000                     | 9.000                           | 9.002                     | 10.000                    |
|                                   | XXX -5000 -9000 -750 -X   |                       | 10                    | 3/4                              | 0.825                    | 10.000                  | 3.330                     | 3.000                     | 3.000                           | 3.002                     | 10.000                    |
|                                   | XXX -5000 -9250 ->        | Y 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 -X   |                       | ,                     | 3/4                              | 0.825                    |                         |                           |                           |                                 |                           |                           |
|                                   | XXX -5000 -9500 -X        | 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 -X   |                       |                       | 3/4                              | 0.825                    |                         |                           |                           |                                 |                           |                           |
|                                   | XXX -5000 -9750 ->        | 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 -X   |                       |                       | 3/4                              | 0.825                    |                         |                           |                           |                                 |                           |                           |
|                                   | XXX -5000 -10000 ->       | 10                    | 11                    | 1/2                              | 0.550                    | 11.000                  | 10.998                    | 10.000                    | 10.000                          | 10.002                    | 11.000                    |
|                                   | XXX -5000 -10000 -750 -X  | <del>-</del>          |                       | 3/4                              | 0.825                    |                         |                           |                           |                                 |                           |                           |
|                                   | XXX -5000 -10500 -X       | 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                    |                         |                           |                           |                                 |                           |                           |
| 1/2                               | XXX -5000 -11000 -X       | 11                    | 12                    | 3/4                              | 0.550<br>0.825           | 12.000                  | 11.998                    | 11.000                    | 11.000                          | 11.002                    | 12.000                    |
|                                   | XXX -5000 -11500 -730 -X  | <del>-</del>          |                       | 1/2                              | 0.550                    |                         |                           |                           |                                 |                           |                           |
|                                   | XXX -5000 -11500 -750 -X  | 11 1/2                | 12 1/2                | 3/4                              | 0.825                    | 12.500                  | 12.498                    | 11.500                    | 11.500                          | 11.502                    | 12.500                    |
|                                   | XXX -5000 -12000 -X       | -                     |                       | 1/2                              | 0.550                    |                         |                           |                           |                                 |                           |                           |
|                                   | XXX -5000 -12000 -750 -X  | 12                    | 13                    | 3/4                              | 0.825                    | 13.000                  | 12.998                    | 12.000                    | 12.000                          | 12.002                    | 13.000                    |
|                                   | XXX -5000 -12500 -X       | x                     |                       | 1/2                              | 0.550                    |                         |                           |                           |                                 |                           |                           |
|                                   | XXX -5000 -12500 -750 -X  | 12 1/2<br>X           | 13 1/2                | 3/4                              | 0.825                    | 13.500                  | 13.498                    | 12.500                    | 12.500                          | 12.502                    | 13.500                    |
|                                   | XXX -5000 -13000 -X       |                       | 1                     | 1/2                              | 0.550                    | 44                      | 40.000                    | 40.000                    | 40.000                          | 10.000                    | 44.000                    |
|                                   | XXX -5000 -13000 -750 -X  | 13<br>X               | 14                    | 3/4                              | 0.825                    | 14.000                  | 13.998                    | 13.000                    | 13.000                          | 13.002                    | 14.000                    |
|                                   | XXX -5000 -13500 -X       |                       | 14 1/2                | 1/2                              | 0.550                    | 14 500                  | 14.400                    | 12.500                    | 12 500                          | 12 502                    | 14 500                    |
|                                   | XXX -5000 -13500 -750 -X  | 13 1/2                | 14 1/2                | 3/4                              | 0.825                    | 14.500                  | 14.498                    | 13.500                    | 13.500                          | 13.502                    | 14.500                    |
|                                   | XXX -5000 -14000 -X       | X 14                  | 15                    | 1/2                              | 0.550                    | 15.000                  | 14.998                    | 14.000                    | 14.000                          | 14.002                    | 15.000                    |
|                                   | XXX -5000 -14000 -750 -X  |                       | 13                    | 3/4                              | 0.825                    | 15.000                  | 14.550                    | 14.000                    | 14.000                          | 14.002                    | 15.000                    |
|                                   | XXX -5000 -14500 -X       | X 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 -X  |                       | 15 1/2                | 3/4                              | 0.825                    | 13.300                  | 13,430                    | 11.500                    | 11.500                          | 11.502                    | 13.300                    |
|                                   | XXX -5000 -15000 -X       | X 15                  | 16                    | 1/2                              | 0.550                    | 16.000                  | 15.998                    | 15.000                    | 15.000                          | 15.002                    | 16.000                    |
|                                   | XXX -5000 -15000 -750 -X  |                       | -                     | 3/4                              | 0.825                    |                         |                           |                           |                                 |                           |                           |