



LP/LPM Series

Non-Lube Air Cylinder



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800.696.6165

E51

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Parker Hannifin Corporation
Pneumatic Division
Wadsworth, Ohio
www.parker.com/pneumatics

Piston Rod Seal

Buna-N quad seal provides positive sealing to keep pressure in and dirt out for less maintenance and trouble free performance.

Piston Rod

High strength steel, hard chrome plated for reliable smooth performance, long life, and extended seal life.

Cylinder Body

Hard coated heavy wall aluminum alloy. The tube I.D. coating has extreme hardness, excellent wear and seizure resistance, low coefficient of friction, and high corrosion resistance. This provides excellent wear qualities and quick break-a-ways.

Piston

Attached securely to the rod to provide maximum strength and durability.

Rod Bearing

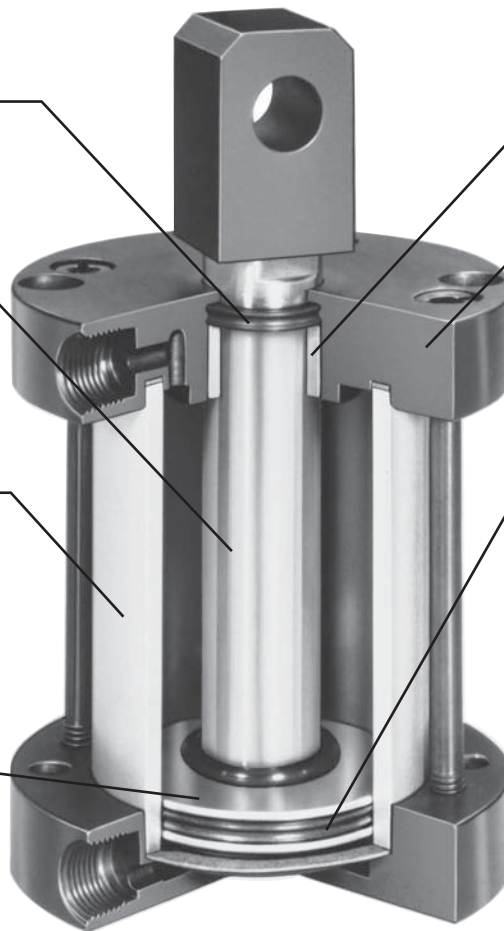
High density iron provides maximum support for longer life.

Heads and Caps

Anodized aluminum alloy for solid, lightweight, high strength performance. This provides excellent corrosion resistance, durability, and a long lasting quality appearance.

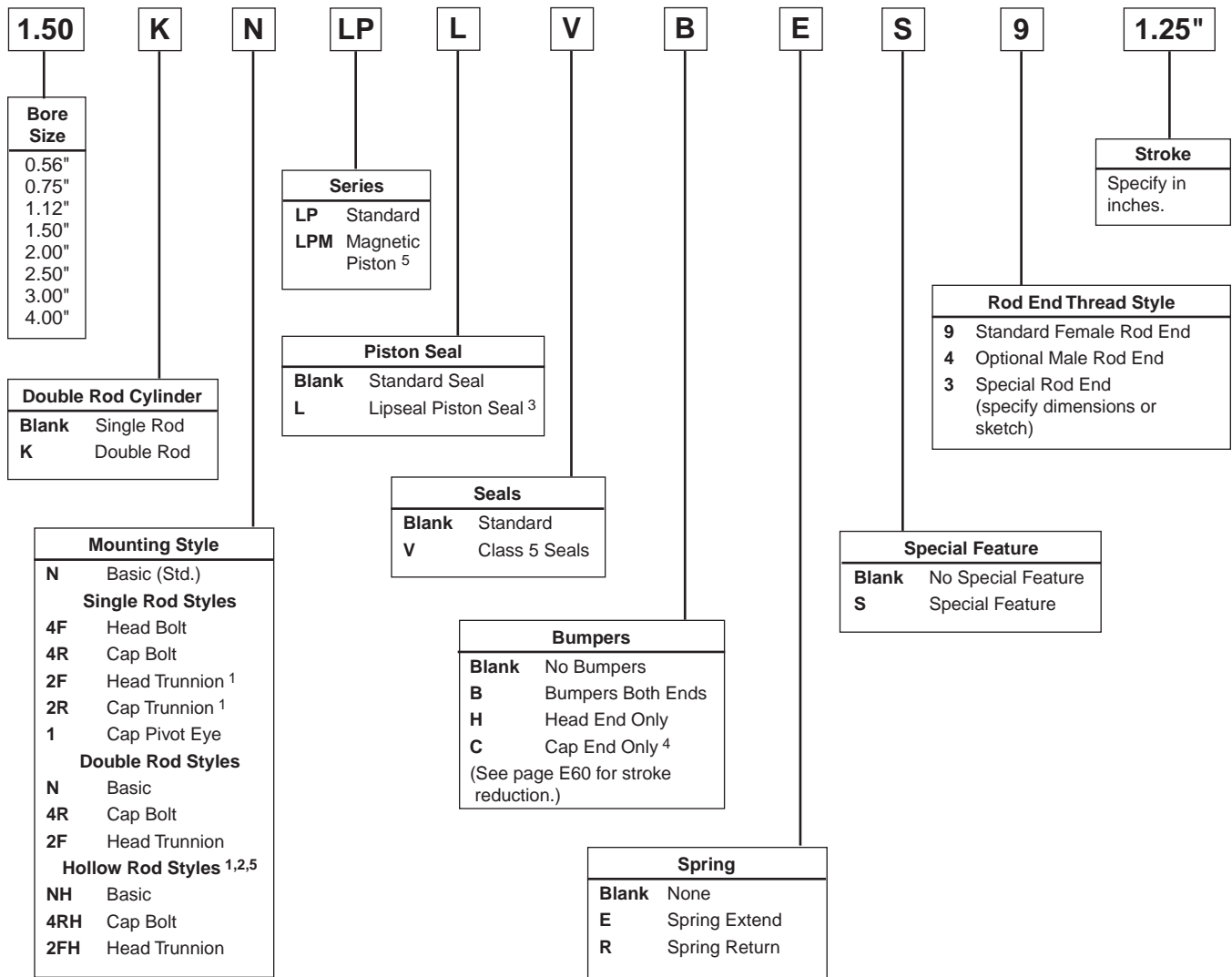
Piston Seal

Buna-N quad seal provides positive sealing with air.



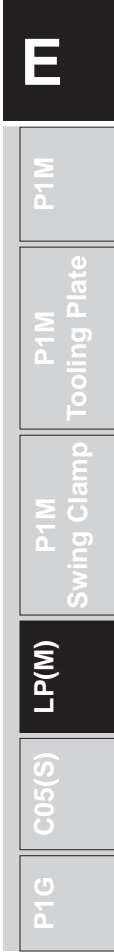
- Reduces Design Height
- Light Weight
- Reduces Cylinder Overhang
- Specials Available

How to Order LP/LPM Series Cylinders



1. Not available on 9/16" bore.
2. Hollow rods are used on double rod cylinders. All hollow rod options require the double rod prefix "K".
3. Lipseal piston is not available on LPM Series.
4. Not available on spring extend.
5. LPM Series with hollow rod option are not available on the 9/16", 3/4" and 1-1/8" bore sizes.

Note: For sensor specifications and part numbers, please refer to the Electronic Sensors section.



Specifications

- Low Profile Design
- 6 Mounting Styles
- 8 Bore Sizes from 9/16" to 4"
- Temperature Range: -10°F to 200°F
 (LPM Series 140°F max.)
- Strokes from 1/8" to 6"
- Permanent Lubrication
- Maximum Operating Pressure: 200 PSI Air

Technical Data

Push/Pull Forces

| Bore dia. | Rod area | Piston area Push/Pull | | PSI | | | | | | | | | |
|-----------|----------|-----------------------|-------|------|------|------|------|------|------|------|------|------|------|
| | | | | 40 | 50 | 60 | 80 | 100 | 125 | 150 | 175 | 200 | 250 |
| 9/16 | 0.048 | Push | 0.248 | 10 | 12.5 | 15 | 20 | 25 | 31 | 37 | 43 | 50 | 62 |
| | | Pull | 0.200 | 8 | 10 | 12 | 16 | 20 | 25 | 30 | 35 | 40 | 50 |
| 3/4 | 0.076 | Push | 0.442 | 17.5 | 22 | 26.5 | 35 | 44 | 55 | 66 | 77 | 88 | 111 |
| | | Pull | 0.366 | 14.6 | 18 | 22 | 29 | 37 | 46 | 55 | 64 | 73 | 92 |
| 1-1/8 | 0.196 | Push | 0.994 | 40 | 50 | 60 | 80 | 99 | 124 | 149 | 174 | 200 | 249 |
| | | Pull | 0.798 | 32 | 40 | 48 | 64 | 80 | 100 | 120 | 140 | 160 | 200 |
| 1-1/2 | 0.307 | Push | 1.767 | 71 | 88 | 106 | 141 | 177 | 221 | 265 | 309 | 353 | 443 |
| | | Pull | 1.460 | 58 | 73 | 88 | 117 | 146 | 182 | 219 | 256 | 292 | 365 |
| 2 | 0.442 | Push | 3.141 | 126 | 157 | 188 | 251 | 314 | 393 | 471 | 550 | 628 | 785 |
| | | Pull | 2.699 | 108 | 135 | 162 | 216 | 270 | 337 | 405 | 472 | 540 | 675 |
| 2-1/2 | 0.442 | Push | 4.908 | 196 | 245 | 294 | 393 | 491 | 613 | 736 | 859 | 982 | 1227 |
| | | Pull | 4.466 | 178 | 223 | 268 | 357 | 447 | 558 | 670 | 781 | 893 | 1116 |
| 3 | .601 | Push | 7.069 | 283 | 353 | 424 | 566 | 707 | 884 | 1060 | 1237 | 1414 | 1767 |
| | | Pull | 6.468 | 259 | 324 | 389 | 519 | 649 | 811 | 973 | 1135 | 1297 | 1622 |
| 4 | 0.781 | Push | 12.57 | 503 | 628 | 754 | 1006 | 1257 | 1571 | 1885 | 2200 | 2514 | 3142 |
| | | Pull | 11.79 | 471 | 589 | 707 | 942 | 1178 | 1484 | 1767 | 2062 | 2356 | 2945 |

Weights – Basic Cylinders

| Bore Dia. | Basic N Mount Weight in ounces* | Add per 1/8" of Stroke (ounces) |
|-----------|---------------------------------|---------------------------------|
| 9/16 | 1.1 | 0.08 |
| 3/4 | 2.0 | 0.1 |
| 1-1/8 | 5.0 | 0.2 |
| 1-1/2 | 8.5 | 0.4 |
| 2 | 11.7 | 0.5 |
| 2-1/2 | 18.6 | 0.6 |
| 3 | 25.1 | 0.7 |
| 4 | 51.1 | 1.1 |

* Base weight includes 1/8 inch of stroke.

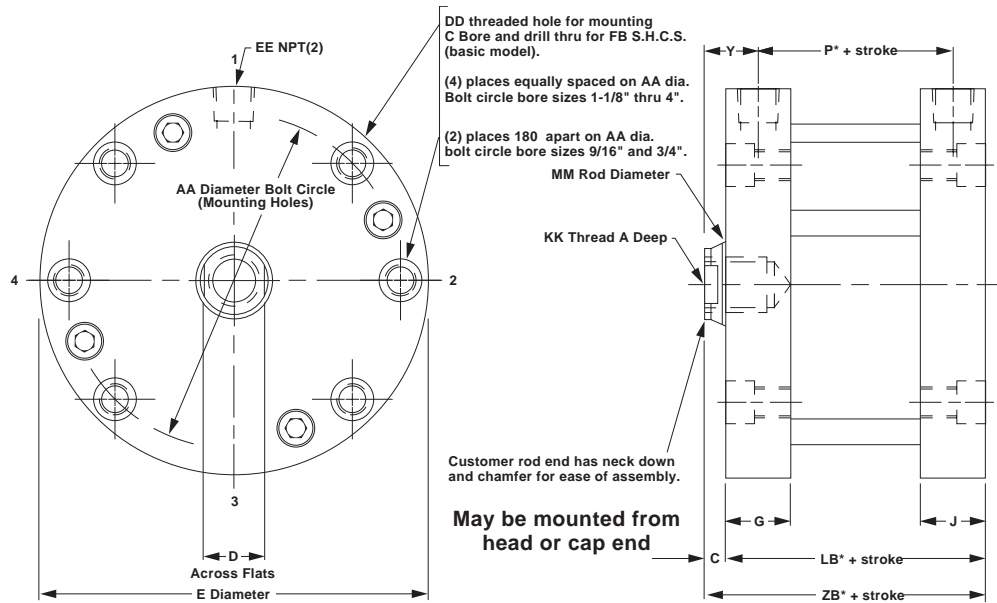
Tie Rod Torque

| Bore | Torque (inch pounds) |
|-------|----------------------|
| 9/16 | 8 - 10 |
| 3/4 | 20 - 25 |
| 1-1/8 | 20 - 25 |
| 1-1/2 | 35 - 40 |
| 2 | 35 - 40 |
| 2-1/2 | 50 - 60 |
| 3 | 70 - 80 |
| 4 | 150 - 160 |

Mounting Style N

Cylinder Dimensions
 Double Acting
 Single Rod End,
 Female Rod Style No. 9

Temperature: -10°F to 200°F (optional Fluorocarbon seals).
 All air cylinders are permanently lubricated.
 LPM Series maximum temperature 140°F.



| Bore Dia. | A | C | D | E | G | J | P* | Y | AA | DD | EE | FB | KK | LB* | MM | ZB* |
|-----------|-------|-----|------|-------|-------|-------|-------|-------|-------|---------|--------|------|---------|--------|------|---------|
| 9/16 | 0.40 | 1/8 | 7/32 | 1-1/8 | 23/64 | 23/64 | 11/32 | 17/64 | 0.875 | #8-32 | #10-32 | #4 | #8-32 | 5/8 | 1/4 | 3/4 |
| 3/4 | 0.44 | 1/8 | 1/4 | 1-1/2 | 23/64 | 23/64 | 3/8 | 17/64 | 1.219 | #10-32 | #10-32 | #6 | #10-32 | 21/32 | 5/16 | 25/32 |
| 1-1/8 | 0.62 | 1/8 | 7/16 | 2 | 1/2 | 1/2 | 27/64 | 3/8 | 1.687 | #10-32 | 1/8 | #6 | 5/16-24 | 59/64 | 1/2 | 1-3/64 |
| 1-1/2 | 0.62 | 1/8 | 1/2 | 2-5/8 | 1/2 | 1/2 | 1/2 | 3/8 | 2.187 | 1/4-28 | 1/8 | #10 | 3/8-24 | 1 | 5/8 | 1-1/8 |
| 2 | 0.70† | 1/8 | 5/8 | 3-1/8 | 1/2 | 1/2 | 9/16 | 3/8 | 2.687 | 1/4-28 | 1/8 | #10 | 1/2-20 | 1-1/16 | 3/4 | 1-3/16 |
| 2-1/2 | 0.70† | 1/8 | 5/8 | 3-3/4 | 5/8 | 5/8 | 5/8 | 7/16 | 3.250 | 5/16-24 | 1/4 | 1/4 | 1/2-20 | 1-1/4 | 3/4 | 1-3/8 |
| 3 | 0.75† | 1/8 | 3/4 | 4-1/4 | 43/64 | 43/64 | 21/32 | 7/16 | 3.781 | 5/16-24 | 1/4 | 1/4 | 5/8-18 | 1-9/32 | 7/8 | 1-13/32 |
| 4 | 0.75† | 1/8 | 7/8 | 5-1/2 | 27/32 | 27/32 | 49/64 | 17/32 | 4.937 | 3/8-24 | 3/8 | 5/16 | 3/4-16 | 1-5/8 | 1 | 1-3/4 |

* These dimensions are for the LP Series with standard piston.
 † For strokes less than 0.25", A dimension = 0.66".

Added Length Table for LPM or Lipseal Piston Options

| Bore Dia. | LPM Option* | | | | | | LP with Lipseal Piston Option | | | | |
|-----------|-------------|---------|---------|---------|---------|--------|-------------------------------|---------|---------|---------|---------|
| | P | LB | XD | XJ | ZB | Stroke | P | LB | XD | XJ | ZB |
| 9/16† | 15/16 | 1-7/32 | 2 | - | 1-11/32 | 1/2 | 5/8 | 29/32 | 1-11/16 | - | 1-1/32 |
| 3/4† | 31/32 | 1-1/4 | 2-1/32 | 1-3/16 | 1-3/8 | 1/2 | 21/32 | 15/16 | 1-23/32 | 7/8 | 1-1/16 |
| 1-1/8† | 63/64 | 1-31/64 | 2-3/8 | 1-23/64 | 1-39/64 | 9/16 | 43/64 | 1-11/64 | 2-1/16 | 1-3/64 | 1-19/64 |
| 1-1/2 | 1-1/8 | 1-5/8 | 2-13/16 | 1-1/2 | 1-3/4 | 7/16 | 13/16 | 1-5/16 | 2-1/2 | 1-3/16 | 1-7/16 |
| 2 | 1-9/32 | 1-25/32 | 3-1/32 | 1-21/32 | 1-29/32 | 7/16 | 61/64 | 1-29/64 | 2-45/64 | 1-21/64 | 1-37/64 |
| 2-1/2 | 1-21/64 | 1-61/64 | 3-21/64 | 1-3/4 | 2-5/64 | 1/2 | 1 | 1-5/8 | 3 | 1-27/64 | 1-3/4 |
| 3 | 1-27/64 | 2-3/64 | 3-53/64 | 1-53/64 | 2-11/64 | 1/2 | 1-3/32 | 1-23/32 | 3-1/2 | 1-1/2 | 1-27/32 |
| 4 | 1-1/2 | 2-23/64 | 4-11/64 | 2 | 2-31/64 | 1/2 | 1-11/64 | 2-1/32 | 3-27/32 | 1-43/64 | 2-5/32 |

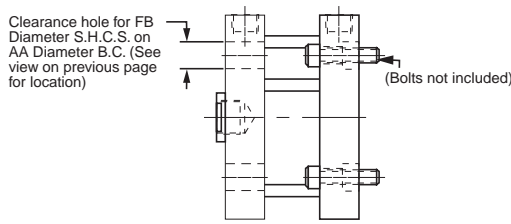
Note minimum strokes for LPM option.
 † These bore sizes not available for the LPM option with the hollow rod option.
 * The LPM option is only available with the standard quad seal.



P1M
P1M Tooling Plate
P1M Swing Clamp
LP(M)
C05(S)
P1G

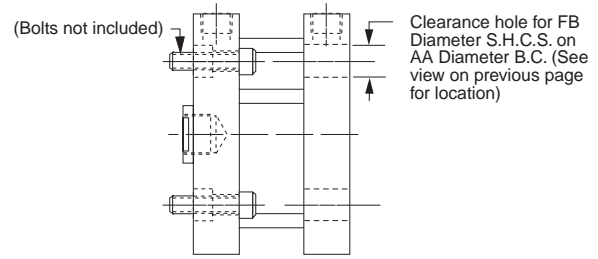
Head Bolt Clearance Holes

Mounting Style 4F
 Available Head End



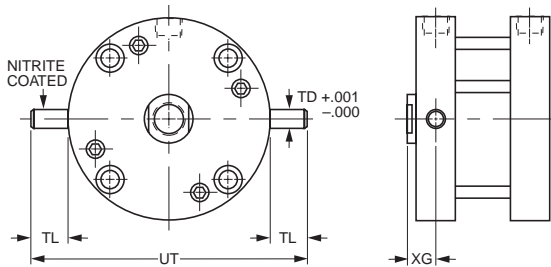
Cap Bolt Clearance Holes

Mounting Style 4R
 Available Cap End



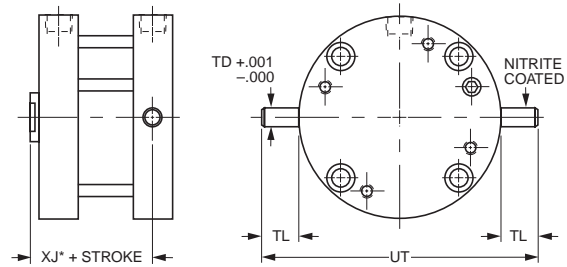
Head Trunnion

Mounting Style 2F (9/16" bore not available)



Cap Trunnion

Mounting Style 2R (9/16" bore not available)

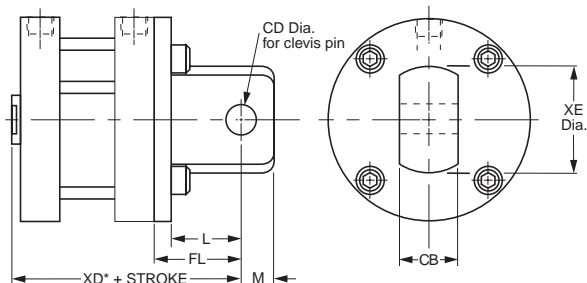


| Bore Dia. | TD | TL | UT | XG | XJ* |
|-----------|-------|------|-------|-------|---------|
| 3/4 | 0.125 | 5/16 | 2-1/8 | 5/16 | 19/32 |
| 1-1/8 | 0.250 | 1/2 | 3 | 3/8 | 51/64 |
| 1-1/2 | 0.250 | 1/2 | 3-5/8 | 3/8 | 7/8 |
| 2 | 0.250 | 1/2 | 4-1/8 | 3/8 | 15/16 |
| 2-1/2 | 0.312 | 5/8 | 5 | 29/64 | 1-3/64 |
| 3 | 0.312 | 5/8 | 5-1/2 | 15/32 | 1-1/16 |
| 4 | 0.375 | 3/4 | 7 | 35/64 | 1-17/64 |

* These dimensions are for the LP Series with standard piston.

Cap Pivot Eye

Mounting Style 1



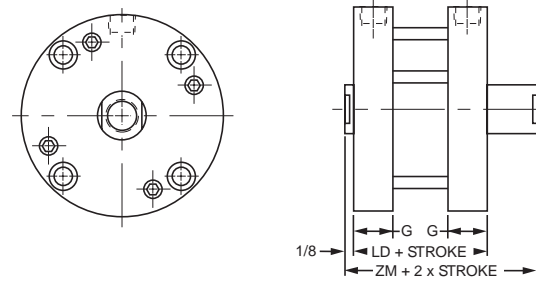
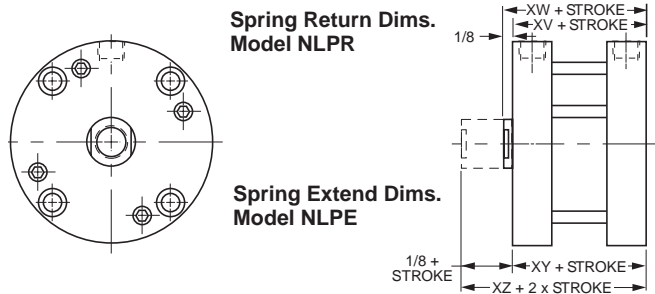
| Bore Dia. | L | M | CB | CD | FL | XD* | XE |
|-----------|--------|------|-----|------|---------|---------|-------|
| 9/16 | 1/2 | 1/4 | 3/8 | 3/16 | 21/32 | 1-13/32 | 19/32 |
| 3/4 | 1/2 | 1/4 | 3/8 | 3/16 | 21/32 | 1-7/16 | 3/4 |
| 1-1/8 | 1/2 | 1/4 | 3/8 | 3/16 | 49/64 | 1-13/16 | 3/4 |
| 1-1/2 | 13/16 | 7/16 | 3/4 | 3/8 | 1-1/16 | 2-3/16 | 1-3/8 |
| 2 | 13/16 | 7/16 | 3/4 | 3/8 | 1-1/8 | 2-5/16 | 1-3/8 |
| 2-1/2 | 13/16 | 7/16 | 3/4 | 3/8 | 1-1/4 | 2-5/8 | 1-3/8 |
| 3 | 1-9/32 | 9/16 | 1 | 5/8 | 1-21/32 | 3-1/16 | 1-7/8 |
| 4 | 1-9/32 | 9/16 | 1 | 5/8 | 1-11/16 | 3-7/16 | 1-7/8 |

Order clevis pin from accessories when required.

*These dimensions are for the LP Series with standard piston. See table on the previous page for dimensions for the lipseal piston or LPM options.

Spring Extend & Spring Return Cylinders
 (Available through 2" stroke)

**Double Rod Spring Extend &
 Spring Return Cylinders**
 (Available through 2" stroke)



| Bore Dia. | 1/8" to 1" Stroke | | | | Over 1" to 2" Stroke | | | | Add this length to XV, XW, XY, XZ for Lipseal Piston |
|-----------|-------------------|---------|---------|---------|----------------------|---------|---------|---------|--|
| | XV | XW | XY | XZ | XV | XW | XY | XZ | |
| 9/16 | 1 | 1-1/8 | 57/64 | 1-1/64 | 1-11/16 | 1-13/16 | 1-37/64 | 1-45/64 | 9/32 |
| 3/4 | 1-1/64 | 1-9/64 | 59/64 | 1-3/64 | 1-45/64 | 1-53/64 | 1-39/64 | 1-47/64 | 9/32 |
| 1-1/8 | 1-23/64 | 1-31/64 | 1-9/32 | 1-13/32 | 1-63/64 | 2-7/64 | 1-29/32 | 2-1/32 | 1/4 |
| 1-1/2 | 1-25/64 | 1-33/64 | 1-11/32 | 1-15/32 | 2-1/64 | 2-9/64 | 1-31/32 | 2-3/32 | 5/16 |
| 2 | 1-11/64 | 1-19/64 | 1-13/32 | 1-17/32 | 1-51/64 | 1-59/64 | 2-1/32 | 2-5/32 | 25/64 |
| 2-1/2 | 1-3/8 | 1-1/2 | 1-23/32 | 1-27/32 | 2 | 2-1/8 | 2-11/32 | 2-15/64 | 3/8 |
| 3 | 1-1/2 | 1-5/8 | 1-55/64 | 1-63/64 | 2-1/8 | 2-1/4 | 2-31/64 | 2-39/64 | 7/16 |
| 4 | 1-27/32 | 1-31/32 | 2-13/64 | 2-21/64 | 2-15/32 | 2-19/32 | 2-53/64 | 2-61/64 | 13/32 |

| Bore Dia. | G | Spring Return/Extend – LP | | | | | Spring Return/Extend – LPM | | | | |
|-----------|-------|---------------------------|---------|--------------|-----------|---------|----------------------------|---------|--------------|-----------|---------|
| | | ≥ 1/8", ≤ 1" | | | <1", ≤ 2" | | ≥ 1/8", >1" | | | >1", ≤ 2" | |
| | | LD | ZM | Min.* Stroke | LD | ZM | LD | ZM | Min.* Stroke | LD | ZM |
| 9/16 | 23/64 | 1-1/8 | 1-3/8 | 5/16 | 1-13/16 | 2-1/16 | 1-23/32 | 1-27/32 | 3/16 | 2-13/32 | 2-17/32 |
| 3/4 | 23/64 | 1-11/64 | 1-27/64 | 1/8 | 1-55/64 | 2-7/64 | 1-49/64 | 1-57/64 | 3/16 | 2-29/64 | 2-37/64 |
| 1-1/8 | 1/2 | 1-1/2 | 1-3/4 | 1/8 | 2-1/8 | 2-3/8 | 2-1/16 | 2-3/16 | 1/8 | 2-11/16 | 2-13/16 |
| 1-1/2 | 1/2 | 1-11/16 | 1-15/16 | 1/8 | 2-5/16 | 2-9/16 | 2-5/16 | 2-7/16 | 1/4 | 2-15/16 | 3-1/16 |
| 2 | 1/2 | 1-31/64 | 1-47/64 | 1/8 | 2-7/64 | 2-23/64 | 2-13/64 | 2-21/64 | 1/4 | 2-53/64 | 2-61/64 |
| 2-1/2 | 5/8 | 1-3/4 | 2 | 1/8 | 2-3/8 | 2-5/8 | 2-29/64 | 2-37/64 | 3/16 | 3-5/64 | 3-13/64 |
| 3 | 43/64 | 1-29/32 | 2-5/32 | 1/8 | 2-17/32 | 2-25/32 | 2-43/64 | 2-51/64 | 1/8 | 3-19/64 | 3-27/64 |
| 4 | 27/32 | 2-1/4 | 2-1/2 | 1/8 | 2-7/8 | 3-1/8 | 2-63/64 | 3-7/64 | 1/8 | 3-39/64 | 3-47/64 |

* Note minimum strokes for LPM option.

Spring Force Data

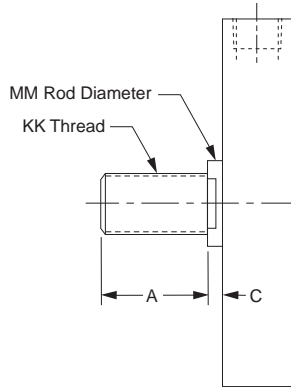
| 1/8" to 1" Stroke | | | Over 1" to 2" Stroke | | |
|-------------------|-------------------------|---------------------|----------------------|-------------------------|---------------------|
| Bore dia. | Max. Spring Force (lbs) | Spring Rate (lb/in) | Bore dia. | Max. Spring Force (lbs) | Spring Rate (lb/in) |
| 9/16 | 5.7 | 4.25 | 9/16 | 5.7 | 1.75 |
| 3/4 | 9 | 6 | 3/4 | 9 | 2.5 |
| 1-1/8 | 10 | 6 | 1-1/8 | 10 | 2.5 |
| 1-1/2 | 13 | 5.5 | 1-1/2 | 12 | 2.25 |
| 2 | 13 | 5.5 | 2 | 12 | 2.25 |
| 2-1/2 | 17.5 | 6 | 2-1/2 | 16 | 2.5 |
| 3 & 4 | 24 | 6.5 | 3 & 4 | 23 | 2.75 |



E
 P1M
 P1M Tooling Plate
 P1M Swing Clamp
 LP(M)
 C05(S)
 P1G

Optional Male Rod End

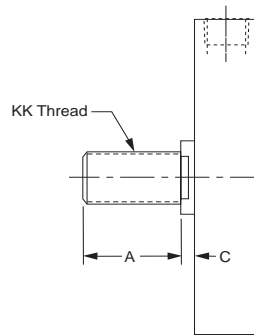
Specify #4



| Bore Dia. | A | C | KK | MM |
|-----------|------|-----|---------|------|
| 9/16 | 0.38 | 1/8 | #8-32 | 1/4 |
| 3/4 | 0.50 | 1/8 | #10-32 | 5/16 |
| 1-1/8 | 0.50 | 1/8 | 5/16-24 | 1/2 |
| 1-1/2 | 0.50 | 1/8 | 3/8-24 | 5/8 |
| 2 | 0.62 | 1/8 | 1/2-20 | 3/4 |
| 2-1/2 | 0.62 | 1/8 | 1/2-20 | 3/4 |
| 3 | 0.75 | 1/8 | 5/8-18 | 7/8 |
| 4 | 0.75 | 1/8 | 3/4-16 | 1 |

Non-Standard Rods

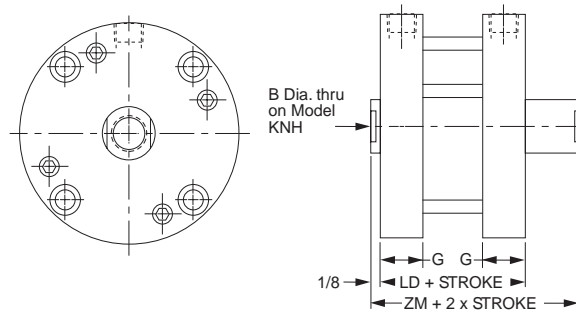
For non-standard rod ends, please specify rod thread style 3 and provide the KK, A, and C dimensions as needed.



E

Double or Hollow Rod Cylinders

Note: Cylinders with hollow rod option should not be bottomed out during stroke.

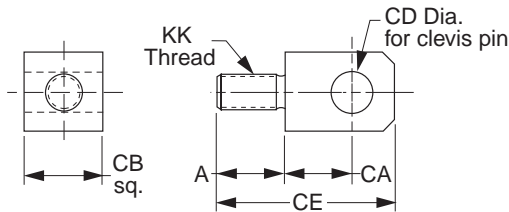


LP Double or Hollow Rod Option, LPM, Lipseal Piston

| Bore Dia. | B | G | Standard Double Rod End or with Hollow Rod | | LPM Option | | LP with Lipseal Piston Option | |
|-----------|------|-------|--|---------|------------|---------|-------------------------------|---------|
| | | | LD | ZM | LD | ZM | LD | ZM |
| 9/16 | * | 23/64 | 3/4 | 1 | 1-11/32 | 1-15/32 | 1-1/32 | 1-9/32 |
| 3/4 | 9/64 | 23/64 | 13/16 | 1-1/16 | 1-13/32 | 1-17/32 | 1-3/32 | 1-11/32 |
| 1-1/8 | 7/32 | 1/2 | 1-3/16 | 1-7/16 | 1-3/4 | 1-7/8 | 1-7/16 | 1-11/16 |
| 1-1/2 | 9/32 | 1/2 | 1-19/64 | 1-35/64 | 1-59/64 | 2-3/64 | 1-39/64 | 1-55/64 |
| 2 | 3/8 | 1/2 | 1-3/8 | 1-5/8 | 2-3/32 | 2-7/32 | 1-49/64 | 2-1/64 |
| 2-1/2 | 3/8 | 5/8 | 1-5/8 | 1-7/8 | 2-21/64 | 2-29/64 | 2 | 2-1/4 |
| 3 | 7/16 | 43/64 | 1-11/16 | 1-15/16 | 2-29/64 | 2-37/64 | 2-1/8 | 2-3/8 |
| 4 | 1/2 | 27/32 | 2-1/32 | 2-9/32 | 2-49/64 | 2-57/64 | 2-7/16 | 2-11/16 |

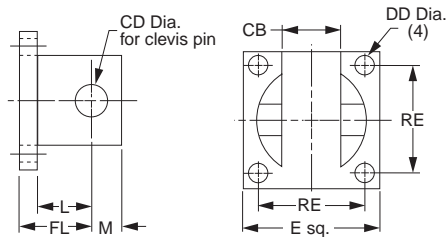
*Hollow rod not available on 9/16" bore.

Rod Eye



| Bore | Part # | A | CA | CB | CD | CE | KK |
|---------|------------|-------|-------|-----|------|---------|---------|
| 9/16 | L073810008 | 3/8 | 15/32 | 3/8 | 3/16 | 1-3/32 | #8-32 |
| 3/4 | L073810010 | 3/8 | 15/32 | 3/8 | 3/16 | 1-3/32 | #10-32 |
| 1-1/8 | L073810020 | 9/16 | 15/32 | 3/8 | 3/16 | 1-9/32 | 5/16-24 |
| 1-1/2 | L073810024 | 5/8 | 23/32 | 3/4 | 3/8 | 1-25/32 | 3/8-24 |
| 2-2-1/2 | L073810032 | 21/32 | 23/32 | 3/4 | 3/8 | 1-27/32 | 1/2-20 |
| 3 | L073810040 | 21/32 | 1 | 1 | 5/8 | 2-3/8 | 5/8-18 |
| 4 | L073810048 | 21/32 | 1 | 1 | 5/8 | 2-3/8 | 3/4-16 |

Clevis Bracket
 (Supplied with Pin)

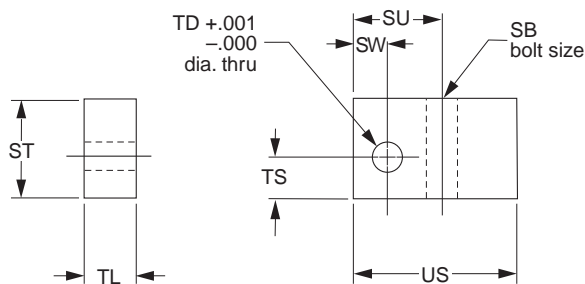


| Part # | E | L | M | CB | CD | DD | FL | RE |
|------------|-------|-------|-------|--------|------|-------|-------|-------|
| L073820012 | 1 | 13/32 | 7/32 | 25/64 | 3/16 | 9/64 | 9/16 | 3/4 |
| L073820024 | 1-3/4 | 25/32 | 13/32 | 49/64 | 3/8 | 11/64 | 15/16 | 1-3/8 |
| L073820040 | 2-1/2 | 1 | 9/16 | 1-1/64 | 5/8 | 17/64 | 1-1/4 | 2 |

Use L073820012 on 9/16", 3/4" and 1-1/8" bore.
 Use L073820024 on 1-1/2", 2" and 2-1/2" bore.
 Use L073820040 on 3" and 4" bore.

Note: The Clevis Bracket is an accessory for the rod eye or the cap pivot eye and cannot be mounted directly to the cylinder.

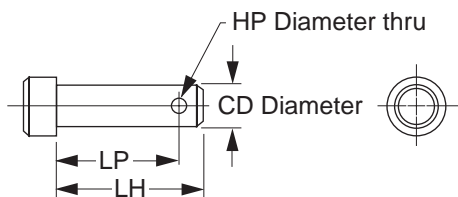
Trunnion Bracket



| Part # | SB | ST | SU | SW | TD | TL | TS | US |
|------------|------|-------|---------|------|------|-----|-------|-------|
| L073840016 | 1/4 | 7/8 | 13/16 | 5/16 | .252 | 1/2 | 3/8 | 1-1/2 |
| L073840020 | 5/16 | 1 | 15/16 | 3/8 | .314 | 5/8 | 29/64 | 1-5/8 |
| L073840024 | 3/8 | 1-1/4 | 1- 1/16 | 7/16 | .377 | 3/4 | 35/64 | 1-7/8 |

Use L073840016 on 1-1/8", 1-1/2" and 2" bore.
 Use L073840020 on 2- 1/2" and 3" bore.
 Use L073840024 on 4" bore.

Clevis Pin



| Part # | CD | HP | LH | LP |
|------------|------|------|-------|---------|
| L073830012 | 3/16 | 3/32 | 1 | 29/32 |
| L073830024 | 3/8 | 5/32 | 1-5/8 | 1-15/32 |
| L073830040 | 5/8 | 5/32 | 2 | 1-27/32 |

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P1M
 P1M
 Tooling Plate

P1M
 Swing Clamp

LP(M)

C05(S)

P1G

Noise Dampening Bumpers

Bumpers both ends – B
 Bumpers rod end – R
 Bumper cap end – C*

Bumpers are available at either or both ends of the cylinder to reduce noise for quieter operation. Bumper material is a 70 durometer nitrile.

The table shows the distance the stroke is reduced when incorporating bumpers. This varies with operating pressure as indicated in the table. Example: 1.50 NL PB9 x 0.50" stroke. Bumpers both ends cylinder will have a working stroke of 0.43" instead of 0.50" operating at 80 psi. For special applications call the factory.

NOTES:

Bumpers shorten actual strokes and are not practical on short stroke with low operating pressure.

Bumpers on Cap End or Both Ends will add the "BC" length in chart to "C" dimension (rod extension).

Bumpers on Double End Cylinders will add the "BR" length in chart to the "C" dimension (rod extension).

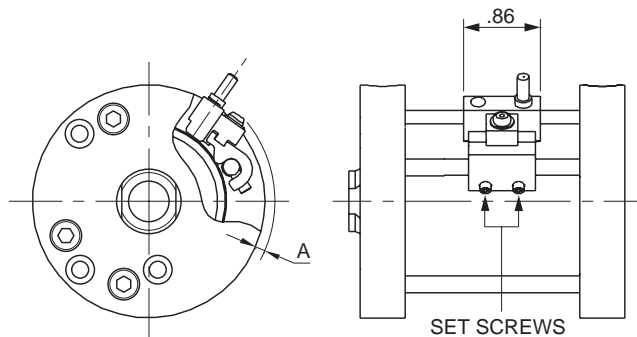
* Not available on spring extend.

Stroke Reduction (in.) Using Bumpers

| Bore Dia. | Bumper Location | Dim. | Operating Pressure (PSI) | | | | | |
|-----------|-----------------|------|--------------------------|------|------|------|------|------|
| | | | 0 | 20 | 40 | 60 | 80 | 100 |
| 0.56 | Cap End | BC | 0.03 | 0.02 | 0.02 | 0.01 | 0.01 | 0.01 |
| | Head End | BR | 0.07 | 0.07 | 0.06 | 0.06 | 0.05 | 0.04 |
| | Both Ends | BB | 0.10 | 0.09 | 0.08 | 0.07 | 0.06 | 0.05 |
| 0.75 | Cap End | BC | 0.07 | 0.07 | 0.06 | 0.05 | 0.05 | 0.04 |
| | Head End | BR | 0.07 | 0.06 | 0.05 | 0.05 | 0.04 | 0.03 |
| | Both Ends | BB | 0.14 | 0.13 | 0.11 | 0.10 | 0.09 | 0.07 |
| 1.12 | Cap End | BC | 0.10 | 0.09 | 0.09 | 0.07 | 0.07 | 0.06 |
| | Head End | BR | 0.10 | 0.09 | 0.08 | 0.07 | 0.07 | 0.06 |
| | Both Ends | BB | 0.20 | 0.18 | 0.17 | 0.14 | 0.14 | 0.12 |
| 1.50 | Cap End | BC | 0.11 | 0.10 | 0.09 | 0.08 | 0.07 | 0.06 |
| | Head End | BR | 0.10 | 0.08 | 0.08 | 0.07 | 0.06 | 0.06 |
| | Both Ends | BB | 0.21 | 0.18 | 0.17 | 0.15 | 0.13 | 0.12 |
| 2.00 | Cap End | BC | 0.11 | 0.09 | 0.08 | 0.07 | 0.06 | 0.05 |
| | Head End | BR | 0.10 | 0.08 | 0.06 | 0.06 | 0.06 | 0.05 |
| | Both Ends | BB | 0.21 | 0.17 | 0.14 | 0.13 | 0.12 | 0.10 |
| 2.50 | Cap End | BC | 0.08 | 0.06 | 0.05 | 0.03 | 0.03 | 0.03 |
| | Head End | BR | 0.10 | 0.07 | 0.06 | 0.05 | 0.05 | 0.04 |
| | Both Ends | BB | 0.18 | 0.13 | 0.11 | 0.08 | 0.08 | 0.07 |
| 3.00 | Cap End | BC | 0.10 | 0.06 | 0.04 | 0.03 | 0.02 | 0.01 |
| | Head End | BR | 0.14 | 0.09 | 0.08 | 0.08 | 0.07 | 0.07 |
| | Both Ends | BB | 0.24 | 0.15 | 0.12 | 0.11 | 0.09 | 0.08 |
| 4.00 | Cap End | BC | 0.10 | 0.08 | 0.05 | 0.03 | 0.03 | 0.02 |
| | Head End | BR | 0.21 | 0.15 | 0.13 | 0.12 | 0.11 | 0.11 |
| | Both Ends | BB | 0.31 | 0.23 | 0.18 | 0.15 | 0.14 | 0.13 |

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Sensor Mounting Data



To sense piston position, mount sensor along tie rod using 2 each small set screws.

| Size | A | Piston Travel at Midstroke (in ±0.01) (Sensor On) | Minimum Activation Distance from End of Stroke (in) | |
|-------|------|---|---|------|
| | | | Head | Cap |
| 9/16 | 0.32 | 0.20 | 0.13 | 0.13 |
| 3/4 | 0.25 | 0.23 | 0.13 | 0.13 |
| 1-1/8 | 0.20 | 0.32 | 0.13 | 0.13 |
| 1-1/2 | 0.10 | 0.32 | 0.07 | 0.07 |
| 2 | 0.10 | 0.35 | 0.06 | 0.06 |
| 2-1/2 | 0.03 | 0.42 | 0.06 | 0.06 |
| 3 | 0.03 | 0.47 | 0.12 | 0.12 |
| 4 | 0.00 | 0.47 | 0.12 | 0.12 |

Seal Kits (Standard Piston)

| Bore Size | Rod Dia. | Single Rod Cylinders | |
|-----------|----------|------------------------|------------------------|
| | | Class 1 Seals Part No. | Class 5 Seals Part No. |
| 9/16 | 1/4" | SKS05LP251 | SKS05LP255 |
| 3/4 | 5/16" | SKS07LP311 | SKS07LP315 |
| 1-1/8 | 1/2" | SKS12LP501 | SKS12LP505 |
| 1-1/2 | 5/8" | SKS15LP621 | SKS15LP625 |
| 2 | 3/4" | SKS20LP751 | SKS20LP755 |
| 2-1/2 | 3/4" | SKS25LP751 | SKS25LP755 |
| 3 | 7/8" | SKS30LP871 | SKS30LP875 |
| 4 | 1" | SKS40LP101 | SKS40LP105 |

Seal Kits (Lipseal Piston)

| Bore Size | Rod Dia. | Single Rod Cylinders | |
|-----------|----------|------------------------|------------------------|
| | | Class 1 Seals Part No. | Class 5 Seals Part No. |
| 9/16 | 1/4" | KS05LPL251 | KS05LPL255 |
| 3/4 | 5/16" | KS07LPL311 | KS07LPL315 |
| 1-1/8 | 1/2" | KS12LPL501 | KS12LPL505 |
| 1-1/2 | 5/8" | KS15LPL621 | KS15LPL625 |
| 2 | 3/4" | KS20LPL751 | KS20LPL755 |
| 2-1/2 | 3/4" | KS25LPL751 | KS25LPL755 |
| 3 | 7/8" | KS30LPL871 | KS30LPL875 |
| 4 | 1" | KS40LPL101 | KS40LPL105 |

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P1M

P1M
Tooling Plate

P1M
Swing Clamp

LP(M)

C05(S)

P1G

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