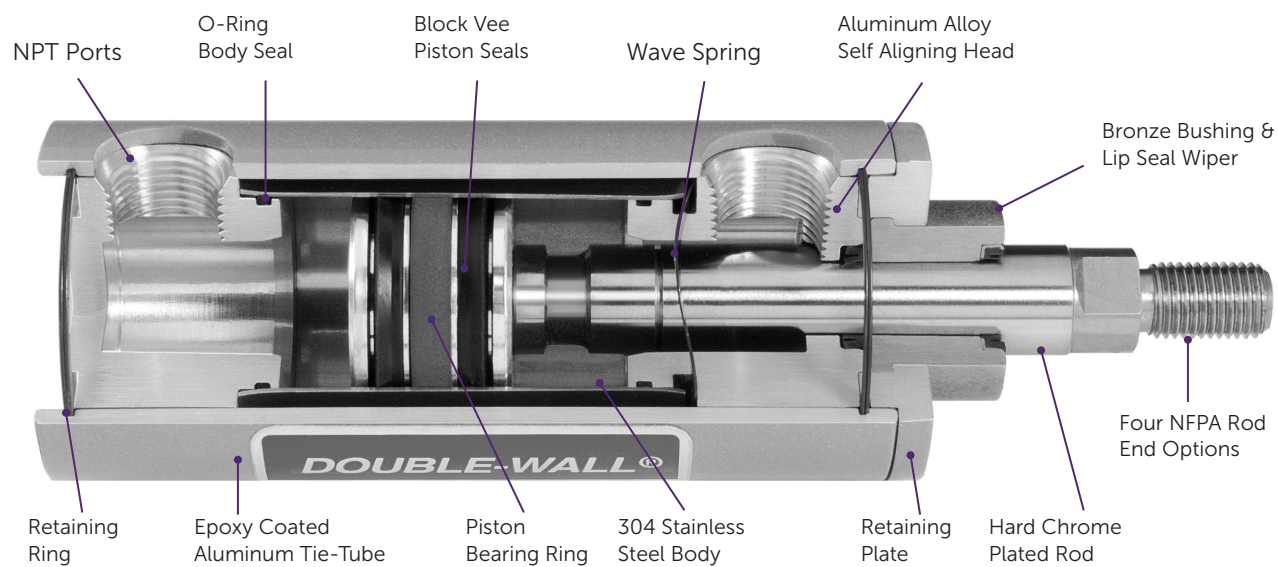


## Double-Wall® Cylinders





## Piston Rod Diameter

5/8" and 1" diameter rods are standard. These rods are made of high strength steel and are suitable for most applications. On long stroke, high thrust applications caution should be exercised and the column strength and stop length chart on page 435 should be reviewed.

## Material

Hard chrome plated rods are supplied as standard on all models except 1-1/2" MRS, which are 303 stainless steel. Special materials such as 303 stainless steel are available on request.

## Rod End Options

IMI Bimba offers six popular NFPA rod end styles (see page 443). IMI Bimba considers the one-piece male style #2, as the primary standard rod end. A small male rod stud, style #2S, is also offered as a standard option. The stud is made from 125,000 PSI minimum yield steel and is roll threaded for increased strength. Special rod ends with different thread lengths, pitch and class are available upon request.

## Cushions

The Double-Wall® offers exclusive Stainless-Cushions®, type 304 stainless steel sleeves which enhance cushion performance and life. The cushion seal is contained on the piston rod for easy inspection and replacement when necessary. Air cushions may be specified on either or both ends without changing the cylinder's overall length.

The cushion design allows for a flush mounted adjustment screw even in the fully open setting. Unless otherwise specified, cushioned models are shipped with the adjustment screws located in positions 4 and 8 as shown on the cylinder dimensional drawings.

Adjustment screws may be ordered in other than standard positions at no additional charge. Simply add these designations as the last digits of the model number:

- A2 – Head Adjustment Screw – Position 2
- A3 – Head Adjustment Screw – Position 3
- A6 – Cap Adjustment Screw – Position 6
- A7 – Cap Adjustment Screw – Position 7
- A26 – Adjustment Screws – Positions 2 and 6
- A37 – Adjustment Screws – Positions 3 and 7

## Mountings

Double-Wall cylinders utilize easy to assemble "bolt on" mounting kits. Basic cylinders (less mountings) and mounting kits are ordered and shipped as separate items. All necessary hardware is contained in the kit. The clevis mounting kit for example contains the clevis cap, pivot pin, retaining rings, and mounting cap screws.

The clevis and pivot caps are high strength aluminum die castings and have oil-filled bronze bushings. Side and end lug kits contain brackets which are stamped from high strength steel. Flange kits are offered in both steel and aluminum. All mountings are epoxy coated.

"Bolt on" Double-Wall mounting kits give your local IMI Bimba Distributor inventory versatility allowing him to stock Basic cylinders of various popular strokes and bores without committing them exclusively to one mounting style. This means greater "off the shelf" availability for you.

## Delivery

Ordering standard cylinders with the primary standard style #2 rod end will allow you to take advantage of a substantial local Distributor stock of Double-Wall cylinders. A very large stock of cushioned (both ends) and non-cushioned finished cylinders is always maintained at our Monee, Illinois plant. In addition we maintain a vast inventory of finished heads, caps, rods, etc. for quick assembly of your optional feature or non-standard stroke requirement.

## Specials

IMI Bimba Manufacturing welcomes the opportunity to custom design a cylinder to meet your exact specifications and requirements. As a leading manufacturer of custom special cylinders, we can provide the engineering expertise to help you with whatever design problem you face. We also maintain a specials department within our manufacturing facilities to assure you of the most expedient delivery possible. Please contact your local IMI Bimba Distributor or Customer Service Department with details of your special requirement.

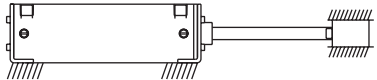
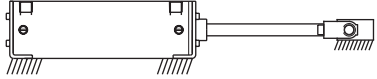
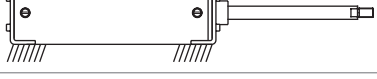
## Engineering Specifications

|                       |                                                            |
|-----------------------|------------------------------------------------------------|
| <b>Tie Tube:</b>      | Epoxy coated Aluminum                                      |
| <b>Cylinder Body:</b> | Smooth 304 stainless steel                                 |
| <b>Piston Rod:</b>    | Hard Chrome Plated standard; 303 stainless optional        |
| <b>Seals:</b>         | Buna N Standard; High Temperature Fluoroelastomer optional |
| <b>Lubrication:</b>   | PTFE Grease                                                |

|                         |                                                                                |
|-------------------------|--------------------------------------------------------------------------------|
| <b>Temperature:</b>     | -20° to 200° F standard; 0° to 300° F with high temperature option             |
| <b>Pressure Rating:</b> | 200 PSI; 150 PSI with high temperature option                                  |
| <b>Life:</b>            | 1400 miles of travel when lubricated (Lubrication every 500 miles recommended) |
| <b>Stroke Maximum:</b>  | 72" (strokes beyond 72" require an application review)                         |

## Double-Wall® Long Stroke Cylinder Selection

Application of Long Stroke Cylinders are controlled by two factors: column strength of piston rod and mounting configuration. Dual Piston construction provides needed additional bearing surface through the cycle of the cylinder. Dual Pistons consist of mounting two pistons on the rod, separated a calculated distance to provide the required stop length. Available in one inch increments, required stop lengths are determined from mounting class and stroke information.

| Determining Mounting Class                                                                   | Mounting Style                | Rod End Connection                        |
|----------------------------------------------------------------------------------------------|-------------------------------|-------------------------------------------|
| Class 1<br> | Side Lug<br>End Lug<br>Flange | Rigidly guided, pivoted                   |
| Class 2<br> | Side Lug<br>End Lug<br>Flange | Pivoted, supported but not rigidly guided |
| Class 3<br> | Pivot<br>Clevis               | Pivoted, supported                        |
| Class 4<br> | Side Lug<br>End Lug<br>Flange | Free end unguided and unsupported         |

### Dual Piston Stop Length Calculation

Select mounting class. Move over to the column showing a stroke length equal to or less than required. Figure at top of column is required Dual Piston stop length. Examples: Class 2, 62" stroke length = 2" stop length. Class 3, 62" - 5" stop length. All lengths shown here are in inches.

| Mounting Class | Dual Piston – Stop Length Required |    |      |     |     |     |     |    |    |    |     |     |
|----------------|------------------------------------|----|------|-----|-----|-----|-----|----|----|----|-----|-----|
|                | 1                                  | 2  | 3    | 4   | 5   | 6   | 7   | 8  | 9  | 10 | 11  | 12  |
| 1              | 64                                 | 88 | 1.10 | 130 | -   | -   | -   | -  | -  | -  | -   | -   |
| 2              | 46                                 | 62 | 78   | 93  | 108 | 122 | 136 | -  | -  | -  | -   | -   |
| 3              | 25                                 | 34 | 43   | 51  | 59  | 67  | 74  | 81 | 88 | 95 | 101 | 108 |
| 4              | 16                                 | 22 | 28   | 28  | 40  | 46  | 51  | 56 | 61 | 66 | 70  | 74  |

Net (effective) stroke + stop length = Gross stroke of cylinder. Mounting dimensions are determined from gross stroke. Consult your local distributor for Dual Piston Pricing.

### Column Strength Limitations

Select mounting class, rod diameter, and stroke length in inches: read maximum push force in pounds for that combination. Where no value is shown, the rod is safe for the maximum rated cylinder push force.

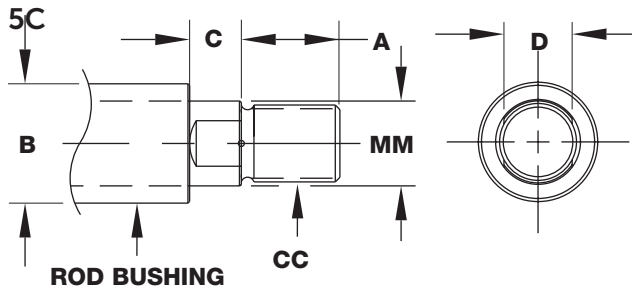
| Rod Diameter/<br>Inches Stroke | Class 1 |      | Class 2 |      | Class 3 |      | Class 4 |      |
|--------------------------------|---------|------|---------|------|---------|------|---------|------|
|                                | 5/8"    | 1"   | 5/8"    | 1"   | 5/8"    | 1"   | 5/8"    | 1"   |
| 10                             | -       | -    | -       | -    | -       | -    | 820     | -    |
| 15                             | -       | -    | -       | -    | 820     | -    | 360     | 2390 |
| 20                             | -       | -    | -       | -    | 460     | -    | 200     | 1340 |
| 25                             | -       | -    | -       | -    | 290     | 1940 | 130     | 860  |
| 30                             | -       | -    | 820     | -    | 200     | 1340 | 90      | 600  |
| 40                             | 820     | --   | 460     | -    | 110     | 750  | 50      | 330  |
| 50                             | 540     |      | 290     | 1940 | 70      | 480  | 30      | 210  |
| 60                             | 360     | 2390 | 200     | 1340 | 50      | 330  | 20      | 150  |

### Weights

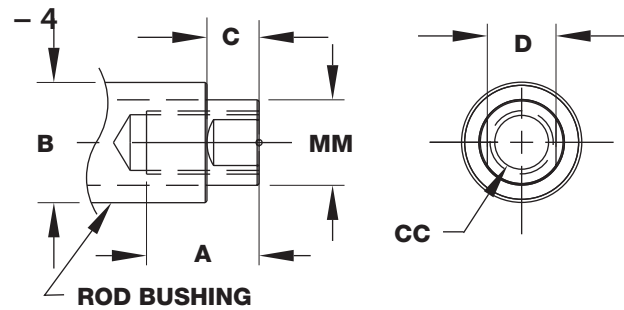
| Approximate Weights (lbs) |             |                          |
|---------------------------|-------------|--------------------------|
| Bore                      | Base Weight | Adder Per Inch Of Stroke |
| 1-1/2" (17)               | 1.36        | 0.19                     |
| 2" (31)                   | 1.81        | 0.22                     |
| 2-1/2" (50)               | 2.9         | 0.31                     |
| 3-1/4" (83)               | 5.62        | 0.51                     |
| 4" (125)                  | 7.5         | 0.57                     |

## Dimensions

### Rod Thread – 2, 2S, 1, 4C,



### Rod Thread



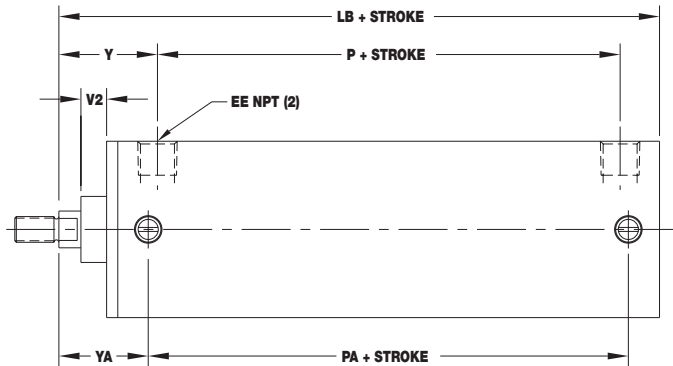
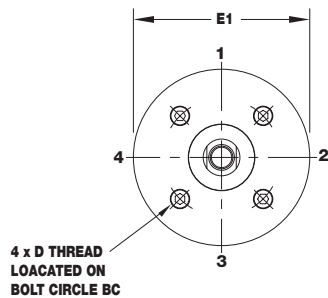
### Rod End (1-1/2", 2" and 2-1/2" Bores)

| Rod End Style | A    | B    | C   | Cc          | D  | Mm  |
|---------------|------|------|-----|-------------|----|-----|
| 2             | .75  | 1.12 | .38 | 7/16-20 UNF | .5 | .62 |
| 2S            | .75  | 1.12 | .38 | 7/16-20 UNF | .5 | .62 |
| 1             | .75  | 1.12 | .38 | 1/2-20 UNF  | .5 | .62 |
| 4 (tapped)    | .75  | 1.12 | .38 | 7/16-20 UNF | .5 | .62 |
| 4C            | 1.25 | 1.00 | .19 | 1/2-13 UNC  | .5 | .62 |
| 5C            | 1.25 | 1.00 | .19 | 5/8-11 UNC  | .5 | .62 |

### Rod End (3-1/4", 4" Bores)

| Rod End Style | A    | B   | C  | Cc         | D   | Mm   |
|---------------|------|-----|----|------------|-----|------|
| 2             | 1.12 | 1.5 | .5 | 3/4-16 UNF | .88 | 1.00 |
| 2S            | 1.12 | 1.5 | .5 | 3/4-16 UNF | .88 | 1.00 |
| 1             | 1.12 | 1.5 | .5 | 7/8-14 UNF | .88 | 1.00 |
| 4 (tapped)    | 1.12 | 1.5 | .5 | 3/4-16 UNF | .88 | 1.00 |

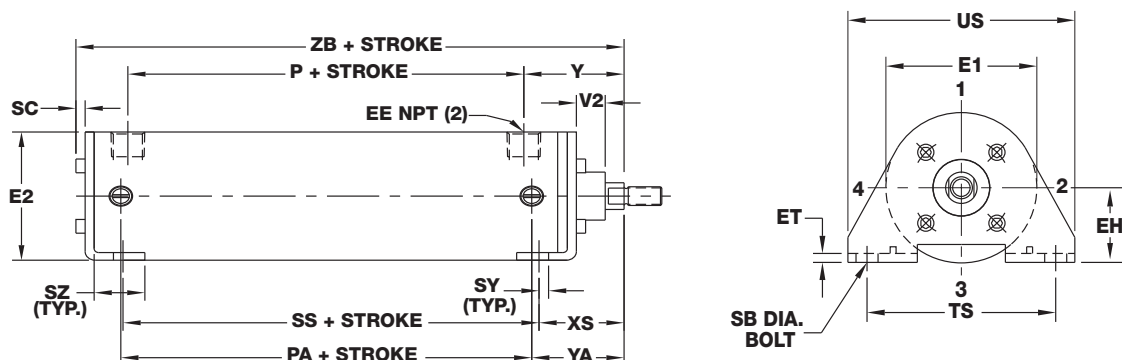
## Double-Wall (no mounting)



| Bore   | LB   | P    | Y    | V2  | EE      | YA   | PA   | E1   | D       | D Depth | BC   |
|--------|------|------|------|-----|---------|------|------|------|---------|---------|------|
| 1-1/2" | 4.62 | 2.28 | 1.67 | .44 | 3/8 NPT | 1.52 | 2.58 | 2.00 | #6-32   | 0.51    | 1.48 |
| 2"     | 4.62 | 2.28 | 1.67 | .44 | 3/8 NPT | 1.52 | 2.58 | 2.34 | #8-32   | 0.66    | 1.75 |
| 2-1/2" | 4.75 | 2.41 | 1.67 | .44 | 3/8 NPT | 1.52 | 2.70 | 2.94 | #10-24  | 0.69    | 2.00 |
| 3-1/4" | 5.63 | 2.62 | 2.19 | .74 | 1/2 NPT | 2.00 | 3.00 | 3.69 | 5/16-18 | 0.75    | 2.83 |
| 4"     | 5.63 | 2.62 | 2.19 | .74 | 1/2 NPT | 2.00 | 3.00 | 4.44 | 5/16-18 | 0.75    | 2.83 |

## Dimensions

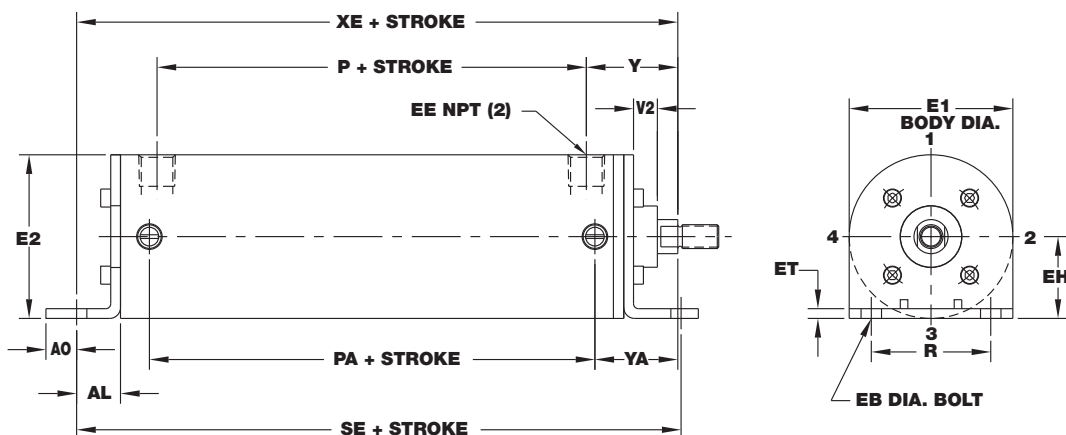
### Side Lug Mount (NFPA MS-2) (in)



| Bore   | Kit     | ZB   | P    | SS   | PA   | V2  | Y    | EE      | SY   | XS   | YA   |
|--------|---------|------|------|------|------|-----|------|---------|------|------|------|
| 1-1/2" | MSL-17  | 4.90 | 2.28 | 2.87 | 2.58 | .31 | 1.67 | 3/8 NPT | 0.19 | 1.38 | 1.52 |
| 2"     | MSL-31  | 4.92 | 2.28 | 2.87 | 2.58 | .31 | 1.67 | 3/8 NPT | 0.19 | 1.38 | 1.52 |
| 2-1/2" | MSL-50  | 5.12 | 2.41 | 3.00 | 2.70 | .26 | 1.67 | 3/8 NPT | 0.19 | 1.38 | 1.52 |
| 3-1/4" | MSL-83  | 6.11 | 2.62 | 3.25 | 3.00 | .49 | 2.19 | 1/2 NPT | 0.16 | 1.88 | 2.00 |
| 4"     | MSL-125 | 6.17 | 2.62 | 3.25 | 3.00 | .43 | 2.19 | 1/2 NPT | 0.16 | 1.88 | 2.00 |

| Bore   | Kit     | SC  | E2   | SZ   | US   | E1   | EH   | ET  | TS   | SB  |
|--------|---------|-----|------|------|------|------|------|-----|------|-----|
| 1-1/2" | MSL-17  | .14 | 2.00 | 1.00 | 3.51 | 2.00 | 1.00 | .13 | 2.75 | .38 |
| 2"     | MSL-31  | .16 | 2.34 | 1.00 | 4.01 | 2.34 | 1.25 | .13 | 3.25 | .38 |
| 2-1/2" | MSL-50  | .19 | 3.00 | 1.00 | 4.51 | 2.94 | 1.49 | .18 | 3.75 | .38 |
| 3-1/4" | MSL-83  | .23 | 3.75 | 1.25 | 5.76 | 3.69 | 1.87 | .25 | 4.75 | .50 |
| 4"     | MSL-125 | .23 | 4.50 | 1.25 | 6.51 | 4.44 | 2.24 | .31 | 5.50 | .50 |

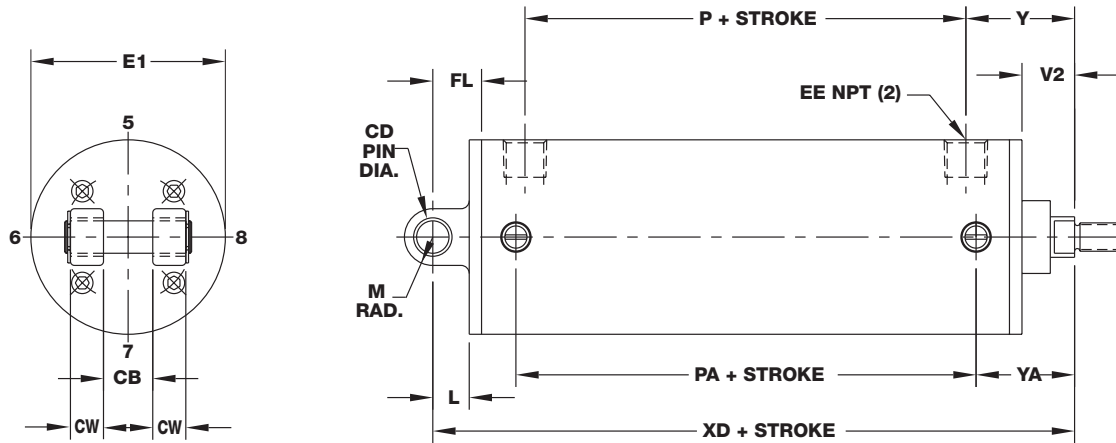
### End Lug Mount (NFPA MS-7) (in)



| Bore   | Kit     | XE   | P    | PA   | SE   | V2  | Y    | EE      | YA   | AO  | AL   | E2   | E1   | EH   | ET  | EB  | R    |
|--------|---------|------|------|------|------|-----|------|---------|------|-----|------|------|------|------|-----|-----|------|
| 1-1/2" | MEL-17  | 5.38 | 2.28 | 2.58 | 5.12 | .31 | 1.67 | 3/8 NPT | 1.52 | .26 | .75  | 2.00 | 2.00 | 1.00 | .13 | .25 | 1.43 |
| 2"     | MEL-31  | 5.56 | 2.28 | 2.58 | 5.50 | .31 | 1.67 | 3/8 NPT | 1.52 | .32 | .94  | 2.34 | 2.34 | 1.25 | .13 | .31 | 1.84 |
| 2-1/2" | MEL-50  | 5.81 | 2.41 | 2.70 | 5.88 | .26 | 1.67 | 3/8 NPT | 1.52 | .30 | 1.07 | 3.00 | 2.94 | 1.49 | .18 | .31 | 2.19 |
| 3-1/4" | MEL-83  | 6.50 | 2.62 | 3.00 | 6.00 | .49 | 2.19 | 1/2 NPT | 2.00 | .38 | 1.18 | 3.75 | 3.69 | 1.87 | .25 | .38 | 2.76 |
| 4"     | MEL-125 | 6.63 | 2.62 | 3.00 | 6.25 | .43 | 2.19 | 1/2 NPT | 2.00 | .37 | 1.32 | 4.50 | 4.44 | 2.24 | .31 | .38 | 3.32 |

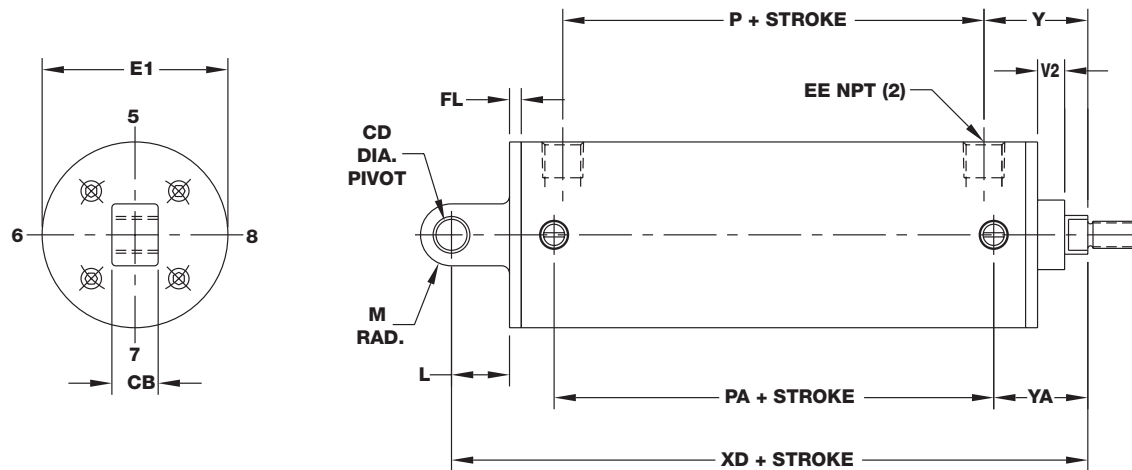
## Dimensions

### Clevis Mount (NFPA MP-1) (in)



| Bore   | Kit    | P    | PA   | XD   | Y    | V2   | EE      | YA   | FL   | CD  | M   | L   | E1   | CB   | CW  |
|--------|--------|------|------|------|------|------|---------|------|------|-----|-----|-----|------|------|-----|
| 1-1/2" | MC-17  | 2.28 | 2.58 | 5.38 | 1.67 | .82  | 3/8 NPT | 1.52 | .75  | .50 | .44 | .56 | 2.00 | .76  | .51 |
| 2"     | MC-31  | 2.28 | 2.58 | 5.38 | 1.67 | .82  | 3/8 NPT | 1.52 | .75  | .50 | .44 | .56 | 2.34 | .76  | .51 |
| 2-1/2" | MC-50  | 2.41 | 2.70 | 5.50 | 1.67 | .82  | 3/8 NPT | 1.52 | .75  | .50 | .50 | .56 | 2.94 | .76  | .51 |
| 3-1/4" | MC-83  | 2.62 | 3.00 | 6.88 | 2.19 | 1.24 | 1/2 NPT | 2.00 | 1.26 | .75 | .69 | .88 | 3.69 | 1.26 | .62 |
| 4"     | MC-125 | 2.62 | 3.00 | 6.88 | 2.19 | 1.24 | 1/2 NPT | 2.00 | 1.26 | .75 | .69 | .88 | 4.44 | 1.26 | .62 |

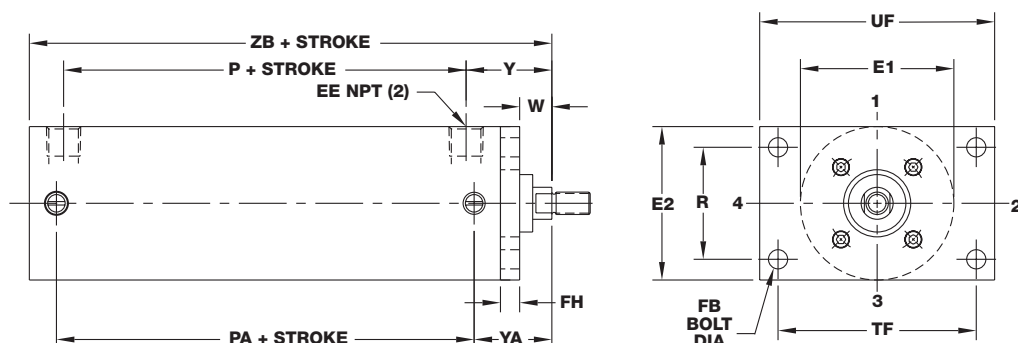
### Pivot Mount (NFPA MP-4) (in)



| Bore   | Kit    | P    | PA   | XD   | Y    | V2  | EE      | YA   | FL  | CD  | M   | L    | E1   | CB   |
|--------|--------|------|------|------|------|-----|---------|------|-----|-----|-----|------|------|------|
| 1-1/2" | MP-17  | 2.28 | 2.58 | 5.75 | 1.67 | .44 | 3/8 NPT | 1.52 | .19 | .50 | .50 | .93  | 2.00 | .75  |
| 2"     | MP-31  | 2.28 | 2.58 | 5.75 | 1.67 | .44 | 3/8 NPT | 1.52 | .19 | .50 | .50 | .93  | 2.34 | .75  |
| 2-1/2" | MP-50  | 2.41 | 2.70 | 5.87 | 1.67 | .44 | 3/8 NPT | 1.52 | .19 | .50 | .50 | .93  | 2.94 | .75  |
| 3-1/4" | MP-83  | 2.62 | 3.00 | 7.50 | 2.19 | .74 | 1/2 NPT | 2.00 | .50 | .75 | .69 | 1.38 | 3.69 | 1.25 |
| 4"     | MP-125 | 2.62 | 3.00 | 7.50 | 2.19 | .74 | 1/2 NPT | 2.00 | .50 | .75 | .69 | 1.38 | 4.44 | 1.25 |

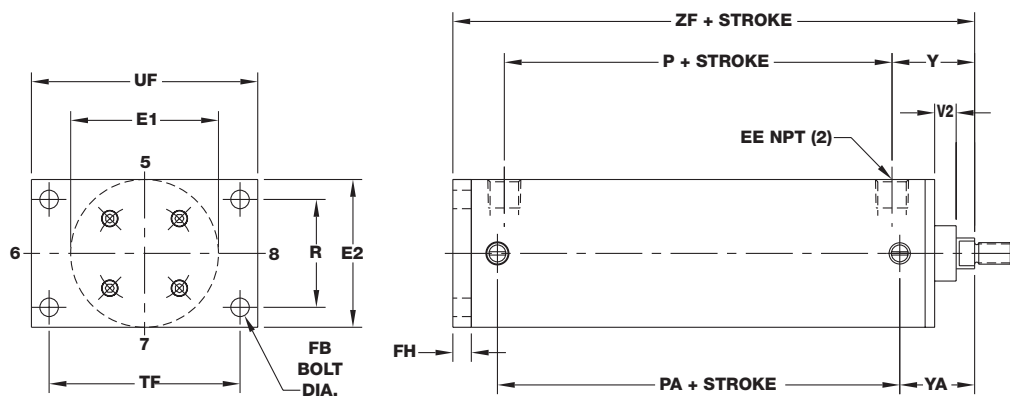
## Dimensions

### Front Flange Mount (NFPA MF-1) (in)



| Bore   | Kit                  | ZB   | P    | PA   | Y    | W   | EE      | YA   | FH  | UF   | E1   | E2   | R    | TF   | FB  |
|--------|----------------------|------|------|------|------|-----|---------|------|-----|------|------|------|------|------|-----|
| 1-1/2" | MFFA-17<br>MFFS-17   | 4.62 | 2.28 | 2.58 | 1.67 | .63 | 3/8 NPT | 1.52 | .38 | 3.38 | 2.00 | 2.00 | 1.43 | 2.75 | .25 |
| 2"     | MFFA-31<br>MFFS-31   | 4.62 | 2.28 | 2.58 | 1.67 | .63 | 3/8 NPT | 1.52 | .38 | 4.12 | 2.34 | 2.50 | 1.84 | 3.38 | .31 |
| 2-1/2" | MFFA-50<br>MFFS-50   | 4.75 | 2.41 | 2.70 | 1.67 | .63 | 3/8 NPT | 1.52 | .38 | 4.62 | 2.94 | 3.00 | 2.19 | 3.88 | .31 |
| 3-1/4" | MFFA-83<br>MFFS-83   | 5.63 | 2.62 | 3.00 | 2.19 | .75 | 1/2 NPT | 2.00 | .62 | 5.50 | 3.69 | 3.75 | 2.76 | 4.69 | .38 |
| 4"     | MFFA-125<br>MFFS-125 | 5.63 | 2.62 | 3.00 | 2.19 | .75 | 1/2 NPT | 2.00 | .62 | 6.25 | 4.44 | 4.50 | 3.32 | 5.44 | .38 |

### Rear Flange Mount (NFPA MF-2) (in)

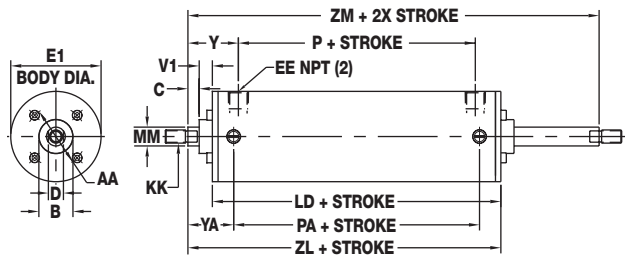


| Bore   | Kit                  | ZF   | P    | PA   | Y    | V2  | EE      | YA   | FH  | UF   | E1   | E2   | R    | TF   | FB  |
|--------|----------------------|------|------|------|------|-----|---------|------|-----|------|------|------|------|------|-----|
| 1-1/2" | MFRA-17<br>MFRS-17   | 5.00 | 2.28 | 2.58 | 1.67 | .44 | 3/8 NPT | 1.52 | .38 | 3.38 | 2.00 | 2.00 | 1.43 | 2.75 | .25 |
| 2"     | MFRA-31<br>MFRS-31   | 5.00 | 2.28 | 2.58 | 1.67 | .44 | 3/8 NPT | 1.52 | .38 | 4.12 | 2.34 | 2.50 | 1.84 | 3.38 | .31 |
| 2-1/2" | MFRA-50<br>MFRS-50   | 5.12 | 2.41 | 2.70 | 1.67 | .44 | 3/8 NPT | 1.52 | .38 | 4.62 | 2.94 | 3.00 | 2.19 | 3.88 | .31 |
| 3-1/4" | MFRA-83<br>MFRS-83   | 6.25 | 2.62 | 3.00 | 2.19 | .74 | 1/2 NPT | 2.00 | .62 | 5.50 | 3.69 | 3.75 | 2.76 | 4.69 | .38 |
| 4"     | MFRA-125<br>MFRS-125 | 6.25 | 2.62 | 3.00 | 2.19 | .74 | 1/2 NPT | 2.00 | .62 | 6.25 | 4.44 | 4.50 | 3.32 | 5.44 | .38 |

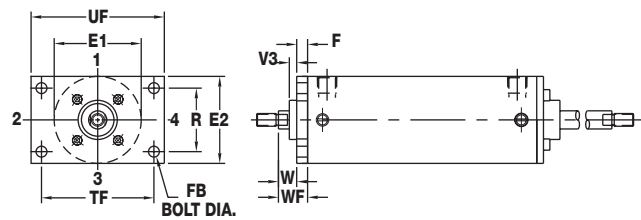
## Dimensions (Double End Rod Models)



### Basic Double-End Rod Cylinder

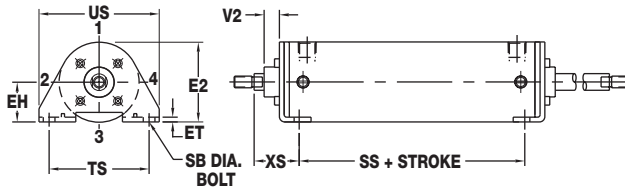


### Flange Mount (NFPA MF-1)



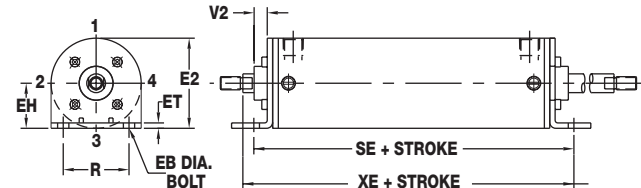
Mounting Kit # MFF

### Side Lug Mount (NFPA MS-2)



Mounting Kit #  
MSL

### End Lug Mounts (NFPA MS-7)



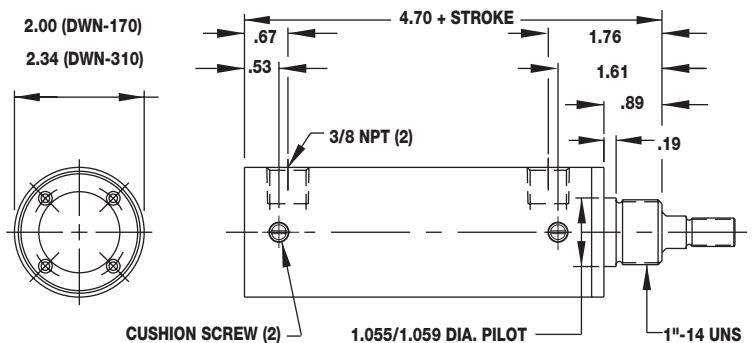
Mounting Kit #  
MEL

| Bore   | AA   | B     | C    | D    | EB   | EE   | EH   | ET  | E1   | E2   | F   | FB   | KK      | LD   | MM   | P    | PA   | R    |
|--------|------|-------|------|------|------|------|------|-----|------|------|-----|------|---------|------|------|------|------|------|
| 1-1/2" | 1.48 | 1.124 | .38  | .56  | .25  | 3/8  | 1.00 | .13 | 2.00 | 2.00 | .38 | .25  | 7/16-20 | 4.16 | .62  | 2.44 | 2.74 | 1.43 |
| 2"     | 1.75 | 1.124 | .38  | .56  | .31  | 3/8  | 1.25 | .13 | 2.34 | 2.50 | .38 | .31  | 7/16-20 | 4.16 | .62  | 2.44 | 2.74 | 1.84 |
| 2-1/2" | 2.00 | 1.124 | .38  | .56  | .31  | 3/8  | 1.49 | .18 | 2.94 | 3.00 | .38 | .31  | 7/16-20 | 4.16 | .62  | 2.44 | 2.74 | 2.19 |
| 3-1/4" | 2.83 | 1.499 | .50  | .88  | .38  | 1/2  | 1.87 | .25 | 3.69 | 3.75 | .62 | .38  | 3/4-16  | 4.64 | 1.00 | 2.75 | 3.12 | 2.76 |
| 4"     | 2.83 | 1.499 | .50  | .88  | .38  | 1/2  | 2.24 | .31 | 4.44 | 4.50 | .62 | .38  | 3/4-16  | 4.64 | 1.00 | 2.75 | 3.12 | 3.32 |
| Bore   | SB   | SE    | SS   | TF   | TS   | UF   | US   | V1  | V2   | V3   | W   | WF   | XE      | XS   | Y    | YA   | ZL   | ZM   |
| 1-1/2" | .38  | 5.46  | 3.22 | 2.75 | 2.75 | 3.38 | 3.51 | .44 | .31  | .25  | .62 | 1.00 | 5.72    | 1.38 | 1.67 | 1.52 | 4.96 | 5.77 |
| 2"     | .38  | 5.84  | 3.22 | 3.38 | 3.25 | 4.12 | 4.01 | .44 | .31  | .25  | .62 | 1.00 | 5.90    | 1.38 | 1.67 | 1.52 | 4.96 | 5.77 |
| 2-1/2" | .38  | 6.10  | 3.22 | 3.88 | 3.75 | 4.62 | 4.51 | .44 | .26  | .25  | .62 | 1.00 | 6.03    | 1.38 | 1.67 | 1.52 | 4.96 | 5.77 |
| 3-1/4" | .50  | 6.26  | 3.51 | 4.69 | 4.75 | 5.50 | 5.76 | .74 | .49  | .25  | .75 | 1.37 | 6.76    | 1.88 | 2.19 | 2.00 | 5.89 | 7.13 |
| 4"     | .50  | 6.51  | 3.51 | 5.44 | 5.50 | 6.25 | 6.51 | .74 | .43  | .25  | .75 | 1.37 | 6.89    | 1.88 | 2.19 | 2.00 | 5.89 | 7.13 |

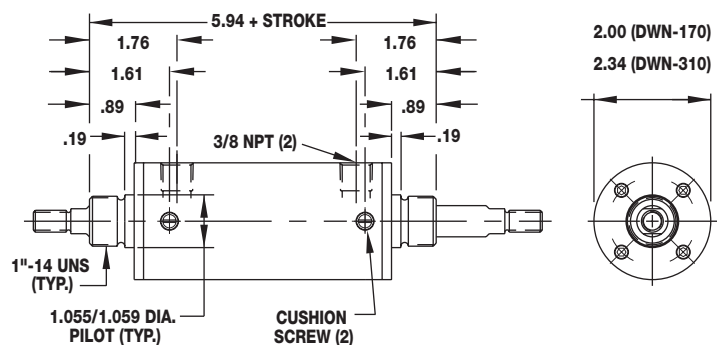
NOTE: When ordering "Cushions Both Ends," specify DWDC – One End DWDS. EE will provide extra extension on both ends.

### Double-Wall® Front Nose Mounting (in)

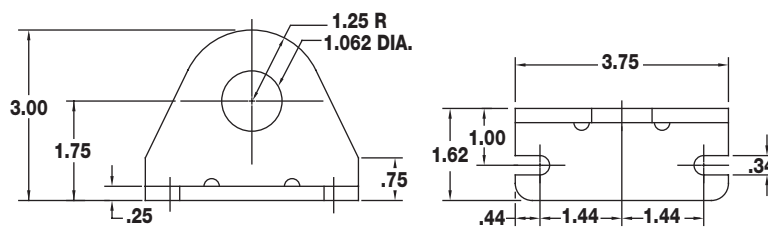
### Single End Rod



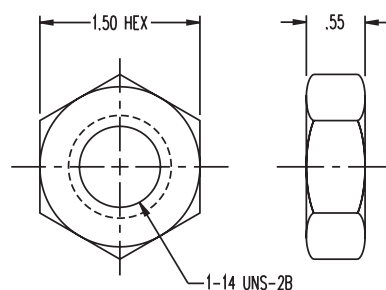
## Double End Rod



### Foot Bracket (D-17920) Accessory for Nose Mount



### Mounting Nut (D-1331)

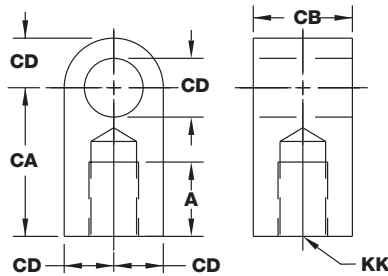


## Accessories

### Rod Eye

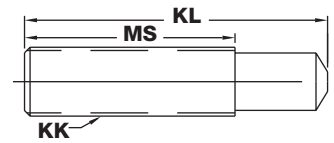
| Bore          | Part # |
|---------------|--------|
| 1-1/2 - 2-1/2 | ARE-1  |
| 3-1/4 - 4     | ARE-2  |

(For -2 Rod End style only)



### Rod Stud (Rolled Threads)

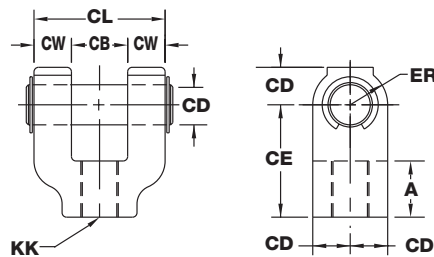
| Bore          | Part # |
|---------------|--------|
| 1-1/2 - 2-1/2 | ARS-1  |
| 3-1/4 - 4     | ARS-2  |



### Rod Clevis

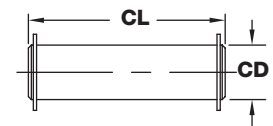
| Bore          | Part # |
|---------------|--------|
| 1-1/2 - 2-1/2 | ARC-1  |
| 3-1/4 - 4     | ARC-2  |

Nickel Steel includes Case Hardened Pin (For -2 Rod End style only)



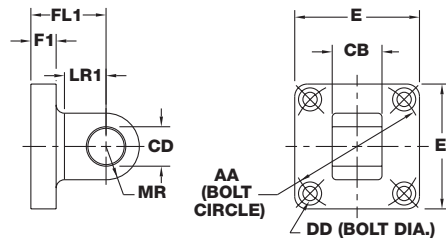
### Case Hardened Pivot Pin with Rings

| Bore          | Part # |
|---------------|--------|
| 1-1/2 - 2-1/2 | APP-1  |
| 3-1/4 - 4     | APP-2  |



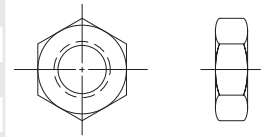
### Pivot Bracket

| Bore          | Part # |
|---------------|--------|
| 1-1/2 - 2-1/2 | APB-1  |
| 3-1/4 - 4     | APB-2  |



### Hex Nut (in)

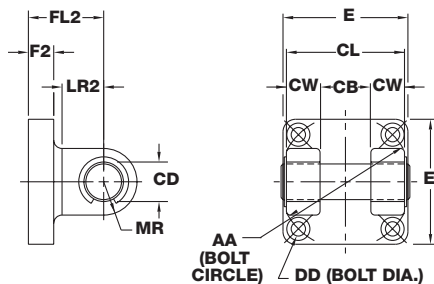
| Part   | Hex  | THD      | THK  |
|--------|------|----------|------|
| D-154  | 0.69 | 7/16"-20 | 0.25 |
| D-98   | 0.75 | 1/2"-20  | 0.31 |
| D-3556 | 1.12 | 3/4"-16  | 0.42 |
| D-2545 | 1.31 | 7/8"-14  | 0.48 |



### Clevis Bracket

| Bore          | Part # |
|---------------|--------|
| 1-1/2 - 2-1/2 | ACB-1  |
| 3-1/4 - 4     | ACB-2  |

(Includes Case Hardened Pin)

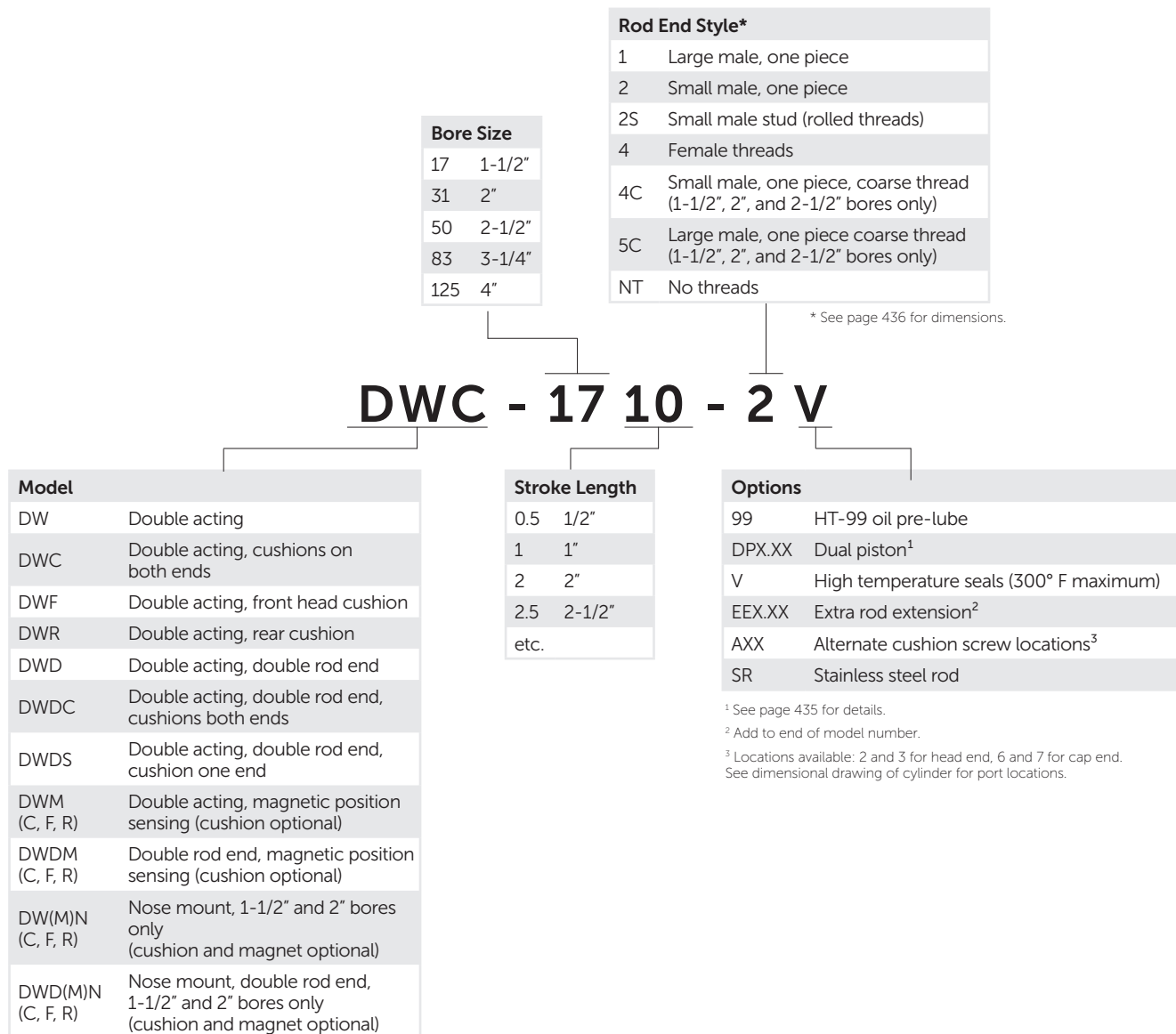


### Accessories Dimensions (in)

| Bore               | A    | AA   | CA   | CB   | CD   | CE   | CW        | CL   | DD    |       |      |
|--------------------|------|------|------|------|------|------|-----------|------|-------|-------|------|
| 1-1/2", 2", 2-1/2" | 0.75 | 2    | 1.5  | 0.75 | 0.5  | 1.5  | 0.5       | 1.75 | 0.19  |       |      |
| 3-1/4", 4"         | 1.12 | 2.83 | 2.06 | 1.25 | 0.75 | 2.38 | 0.62      | 2.5  | 0.312 |       |      |
| Bore               | E    | ER   | F1   | F2   | FL1  | FL2  | KK        | KL   | LR1   | LR2   | MR   |
| 1-1/2", 2", 2-1/2" | 1.88 | 0.59 | 0.38 | 0.38 | 1.12 | 1.12 | 7/16" -20 | 2.12 | 0.745 | 0.745 | 0.5  |
| 3-1/4", 4"         | 2.75 | 0.84 | 0.5  | 0.38 | 1.88 | 1.25 | 3/4" - 16 | 3.27 | 1.1   | 0.85  | 0.69 |

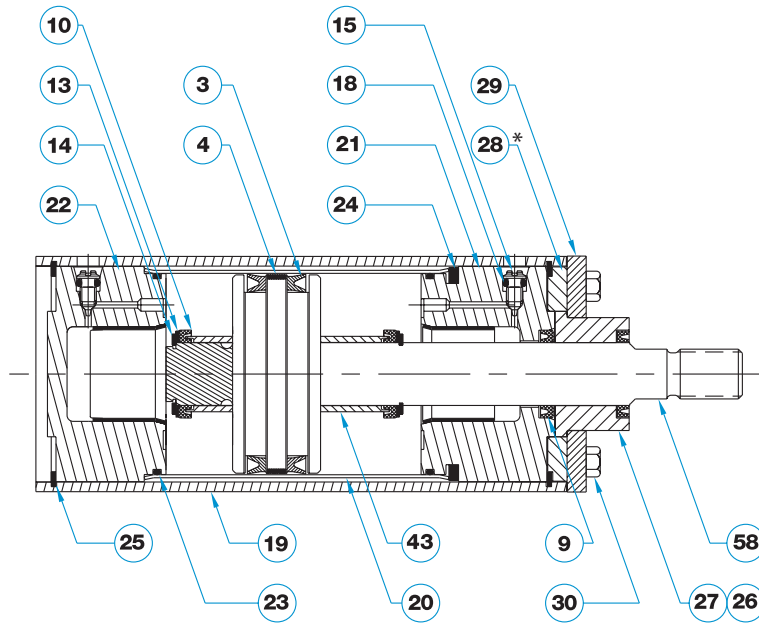
The model number of Double-Wall® pneumatic actuators consists of an alphanumeric cluster designating product type, bore size, stroke length, and other optional components that together make up the complete part number to use in ordering. Options are written with rod end options first, followed by special options, and extra extensions last. Mounting kits must be ordered as a separate item, and are shown with their respective bore sizes starting on page 440. Use the ordering information below to build a valid part number.

An example of a basic Double-Wall® unit with 1-1/2" bore, 10" stroke, and additional options is shown below.



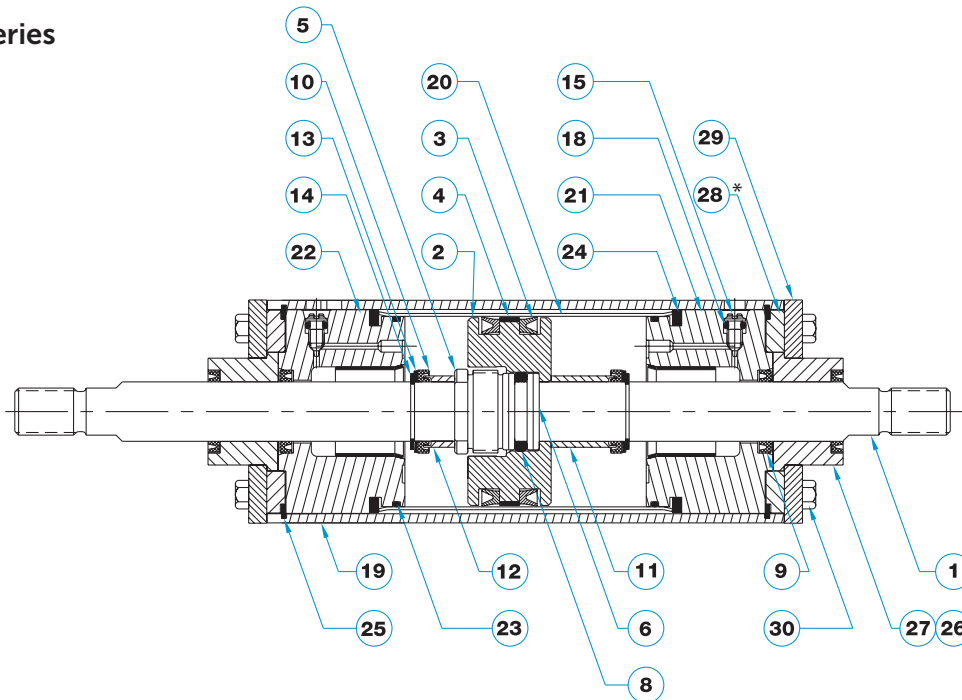
## Repair Instructions

### Basic DW Series



\* Used in most mounting kits and on all 3 1/4" and 4" bore basic cylinders.

### Basic DWD Series



\* Used on all 3-1/4" and 4" bore basic cylinders.

Individual Repair Parts and Kits are listed on page 445. When ordering, specify the applicable "P" number followed by the cylinder part number. For example, to get a rod seal for a DWC-1710-2 cylinder, order P-9-DWC-1710-2.

## Repair Parts

| No.       | Part Description              | Quantity By Model Type |     |     |     |     |      |      |
|-----------|-------------------------------|------------------------|-----|-----|-----|-----|------|------|
|           |                               | DW                     | DWF | DWR | DWC | DWD | DWDF | DWDC |
| P-1       | Rod                           |                        |     |     |     | 1   | 1    | 1    |
| P-2       | Piston                        |                        |     |     |     | 1   | 1    | 1    |
| P-3       | Piston Seal                   | 2                      | 2   | 2   | 2   | 2   | 2    | 2    |
| P-4       | Piston Bearing Ring           | 1                      | 1   | 1   | 1   | 1   | 1    | 1    |
| P-5       | Free Thread Nut*              |                        |     |     |     | 1   | 1    | 1    |
| P-6       | Free Thread Ring*             |                        |     |     |     | 4   | 4    | 4    |
| P-8       | O-Ring (Free Thread)*         |                        |     |     |     | 1   | 1    | 1    |
| P-9       | Rod Seal*                     | 1                      | 1   | 1   | 1   | 2   | 2    | 2    |
| P-10      | Cushion Seal*                 |                        | 1   | 1   | 2   |     | 1    | 2    |
| P-11      | Cushion Sleeve (Head End)*    |                        |     |     |     |     | 1    | 1    |
| P-12      | Cushion Sleeve (Cap End)*     |                        |     |     |     |     |      | 1    |
| P-13      | Cushion B/U Washer*           |                        | 1   | 1   | 2   |     | 1    | 2    |
| P-14      | Cushion Retaining Ring*       |                        | 1   | 1   | 2   |     | 1    | 2    |
| P-15      | Cushion Adjusting Screw       |                        | 1   | 1   | 2   |     | 1    | 2    |
| P-18      | O-Ring (Cushion Screws)*      |                        | 1   | 1   | 2   |     | 1    | 2    |
| P-19      | Tie-Tube                      | 1                      | 1   | 1   | 1   | 1   | 1    | 1    |
| P-20      | Stainless Steel Body          | 1                      | 1   | 1   | 1   | 1   | 1    | 1    |
| P-21      | Head                          | 1                      | 1   | 1   | 1   | 2   | 2    | 2    |
| P-22      | Cap                           | 1                      | 1   | 1   | 1   |     |      |      |
| P-23      | O-Ring (Stainless Steel Body) | 2                      | 2   | 2   | 2   | 2   | 2    | 2    |
| P-24      | Wave Spring                   | 1                      | 1   | 1   | 1   | 2   | 2    | 2    |
| P-25      | Retaining Ring (Tie-Tube)     | 2                      | 2   | 2   | 2   | 2   | 2    | 2    |
| P-26      | Rod Wiper (w/o Bushing)*      | 1                      | 1   | 1   | 1   | 2   | 2    | 2    |
| P-27      | Rod Wiper Bushing Assembly*   | 1                      | 1   | 1   | 1   | 2   | 2    | 2    |
| P-28      | Spacer                        | 1                      | 1   | 1   | 1   | 2   | 2    | 2    |
| P-29      | Retaining Plate               | 1                      | 1   | 1   | 1   | 2   | 2    | 2    |
| P-30      | Screw (Ret. Plate)            | 4                      | 4   | 4   | 4   | 8   | 8    | 8    |
| P-43      | Cushion Sleeve                |                        | 1   | 1   | 2   |     |      |      |
| P-58      | Piston/Rod Assembly           | 1                      | 1   | 1   | 1   |     |      |      |
| HT-99-7CC | Lubrication                   | 1                      | 1   | 1   | 1   | 1   | 1    | 1    |
| Mag-G-3CC | Polymer Grease Lubricant      | 1                      | 1   | 1   | 1   | 1   | 1    | 1    |

## Repair Kits

| Basic Repair Kit (K-B-_) Includes:**      |                           |   |
|-------------------------------------------|---------------------------|---|
| P-25                                      | Retaining Ring (Tie-Tube) | 2 |
| P-23                                      | O-ring                    | 2 |
| P-24                                      | Wave Spring               | 1 |
| P-3                                       | Piston Seal               | 2 |
| P-4                                       | Piston Bearing Ring       | 1 |
| DWD Basic Repair Kit (K-D-_) Includes: ** |                           |   |
| P-25                                      | Retaining Ring (Tie-Tube) | 2 |
| P-23                                      | O-ring                    | 2 |
| P-24                                      | Wave Spring               | 2 |
| P-3                                       | Piston Seal               | 2 |
| P-4                                       | Piston Bearing Ring       | 1 |

| Cushion Repair Kit (K-C-_) Includes:*       |                            |   |
|---------------------------------------------|----------------------------|---|
| P-10                                        | Cushion Seal               | 1 |
| P-13                                        | Cushion B/U Washer         | 1 |
| P-14                                        | Cushion Retaining Ring     | 1 |
| P-15                                        | Cushion Adjusting Screw    | 1 |
| P-18                                        | O-Ring (Cushion Screws)    | 1 |
| Rod Seal Repair Kit (K-A-_) Includes: *     |                            |   |
| P-27                                        | Rod Wiper Bushing Assembly | 1 |
| P-9                                         | Rod Seal                   | 1 |
| MRS Piston Repair Kit (K-P-M-_) Includes:** |                            |   |
| P-33                                        | Piston Seal Assembly       | 1 |
| P-34                                        | Magnet                     | 1 |
| P-4                                         | Piston Bearing Ring        | 1 |

\* Parts and kits that are common to multiple bore sizes, which are available in two sizes: 1-1/2", 2", 2-1/2" bores are designated as -S. 3-1/4", 4" bores are designated as -L.

\*\* Specify the bore code in the blank space.