

## Original Line Cylinders

- How to Order 1.3
- Introduction to Bimba Cylinders 1.4-1.9
- Standard Air Cylinders 1.10-1.66
- Three-Position Cylinders 1.67-1.68
- Air Cylinders with Adjustable Cushions 1.69-1.76
- MRS® Cylinders 1.77-1.87
- Non-Rotating Air Cylinders 1.88-1.98
- PC Cylinders 1.99-1.104
- All Stainless Steel Non-Repairable Original Line Cylinders 1.105-1.113
- All Stainless Steel Repairable (Bell Ring Style) Original Line Cylinders 1.114-1.115
- Z Line Air Cylinders 1.116-1.121
- Rod Lock Cylinders 1.122-1.125
- 500 Hydraulic Cylinders 1.126-1.131
- Repairable Hole Punch Cylinder 1.132-1.133



# Bimba Original Line Cylinders

## WORKING WITH BIMBA GIVES YOU:

- The Original stainless steel body cylinder company — with more sizes and options than any other manufacturer.
- Fast service — many models and sizes kept in stock for immediate delivery.

- Worldwide availability through local stocking distributors
- Custom-design capabilities for your specific needs.

Rod threads roll-formed for high strength

Low friction Buna N "U" cup rod seal (optional)  
High or Low temperature options)

High strength aluminum alloy porting ends

Low friction Buna N "U" cup piston seals (optional High Temperature option or Low temperature seals)

High-strength aluminum alloy piston with blow-by flats

Piston rod — high strength carbon or Type 303 stainless steel (see page 1.5 for more info)

Oil-impregnated rod guide bushing (except 5/16", 7/16" and 9/16" single acting)

Double rolled-in construction

Type 304 stainless steel body

Piston rod threaded, sealed and riveted

## OUR ORIGINAL LINE CYLINDER FEATURES AND ADVANTAGES INCLUDE:

- 304 stainless steel body with mirror finish ID For long, reliable life.
- Pre-lubricated with semi-synthetic grease, no additional lubrication is required.
- Piston-to-rod connection is threaded, sealed and riveted securely in place.
- Low breakaway frictional characteristics: collapsible U-cup rod and piston seals; oil-impregnated, sintered bronze rod bushing on most sizes; and breakaway slots on each endcap for fast seal inflation.

- Roll-formed rod threads on both ends for high strength
- Blow-by flats on double acting model pistons ensures proper seal inflation.
- 250 psi rating.
- High strength aluminum alloy porting ends, machined for minimal breakaway during initial pressurization.

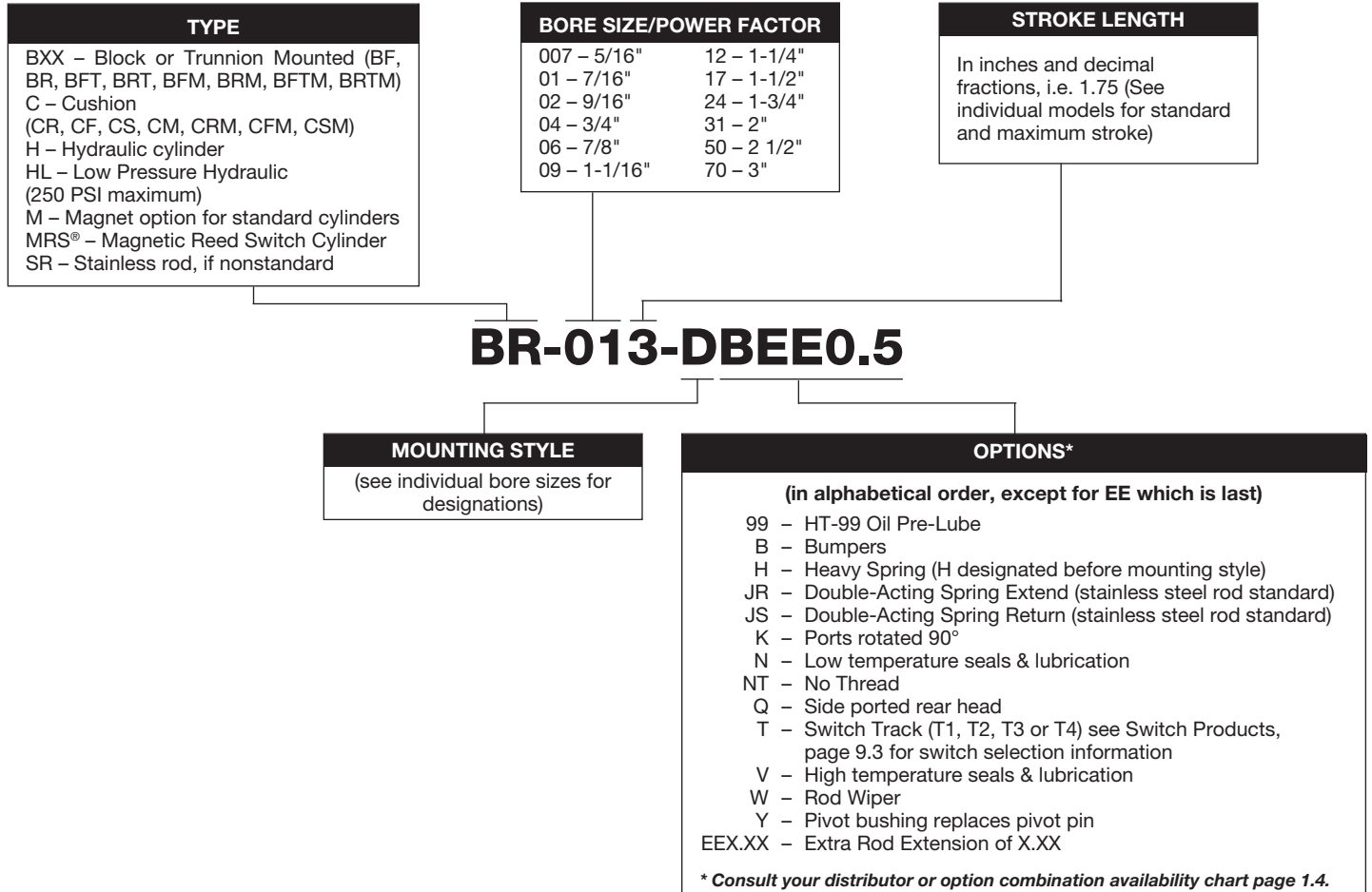


# Bimba Original Line - Stainless Steel Body Air Cylinders

## How to Order

The model number of all Original Line cylinders consists of three alphanumeric clusters. These designate product type, bore size and stroke length, and mounting styles and options.

Please refer to the charts below for an example of model number BR-013-DBEE0.5. This is a rear block, 7/16" bore, 3" stroke double acting cylinder with bumpers and an extra extension of 1/2".



### Approximate Power Factors

5/16" – 0.07
7/16" – 0.15
9/16" – 0.25
3/4" – 0.4
7/8" – 0.6
1-1/16" – 0.9
1-1/4" – 1.2
1-1/2" – 1.7
1-3/4" – 2.4
2" – 3.1
2-1/2" – 5.0
3" – 7.0

$$\text{FORCE} = \frac{\text{Airline Pressure}}{\text{Piston Area}} \times \text{Piston Area}$$

$$\text{PISTON AREA} = \text{Bimba Power Factor}$$

$$\text{FORCE} = \frac{\text{Airline Pressure}}{\text{Piston Area}} \times \text{Bimba Power Factor}$$

Bimba has made sizing a cylinder as easy as knowing the model number. Each base model number is developed by calculating the area of the cylinder bore. This area, or Power Factor, will provide the force the cylinder will exert when multiplied by the airline pressure.

# Bimba Original Line - Stainless Steel Body Air Cylinders

## Options

Many options can be added to our standard cylinders. Options vary by bore size. See individual bore sizes for valid options, pricing and length adders for that size. Consult specific cylinder types in this catalog for options available for those cylinder types.

### Option Combination Availability Chart

Due to design or compatibility restrictions, the following options may **NOT** be ordered in combination. For example, option K (ports rotated) and option Q (side ported rear head) are not a valid combination.

Options NT and EE are available independently, with each other or with all other options or viable option combinations.

Options	W <sup>3,4</sup>	B <sup>2</sup>	V <sup>2,4</sup> High Temperature	H Heavy Spring	K Ports Rotated 90°	Y Pivot Bushing	N <sup>2</sup> Low Temperature	Q Side Ported Rear Head	HL <sup>5</sup> Low Pressure Hydraulic
Size	Wiper	Bumper							
007	HL	STD	N	N/A	Q	STD	V, HL	K	N, H, W
01	HL	N, HL	N	N/A	Q	Q	B, V, HL	K, Y	B, N, H, W
02	HL	N, HL	N	N/A	Q	STD	B, V, HL	K	B, N, H, W
04, 09, 17	H, N	N, HL	N	W, HL	Q	Q	B, V, HL	K, Y	B, N, H
06, 12, 24	N/A	STD, HL	N	N/A	Q	Q	V, HL	K, Y	B, N, H
31, 50	N/A	N, HL	N	N/A	Q	STD	B, V, HL	K	B, N, H
70	N/A	N, HL	N	N/A	Q	STD	V, HL	K	B, N, H

#### Notes:

- Option M is designated as a prefix, (ie M-041-DXP). When M is specified, the piston rod will be made of 303 stainless steel. Certain bore sizes and mounting styles offer the stainless rod standard.
- When bumpers are standard and high or low temperature option is specified, the bumpers are omitted and the overall length of the cylinder may decrease. When bumpers and high temperature are ordered as options on the same cylinder, the bumper material will be standard Buna N.
- Wipers are available in double acting and reverse single acting models only. Wipers may not be available with certain mounting configurations. Consult the specific bore size in this catalog for detail.
- When high temperature and the magnetic options are combined, operating temperature remains at 200°F. This combination is recommended when Fluoroelastomer seals are specified for compatibility. When specifying the high temperature and wiper options together, a standard Buna N or Urethane wiper will be provided.
- Option HL applies only to Double Acting Original Line cylinders and is not available with the following series: Cushion, PC, MRS, NR, Z-Line, DNR, 500 Hydraulic and Multiple Position.

## Overall Length Reductions for Options N & V

Double Acting	
0070-DV	N/A
0070-DXPN	.08"
BF-0070-DN	.08"
060-D (V or N)	.22"
060-DXP (V or N)	.22"
060-DXDE (V or N)	.25"
120-D (V or N)	.19"
120-DP (V or N)	.19"
120-DXDE (V or N)	.25"
120-DXDEH (V or N)	.25"
240-D (V or N)	.25"
240-DP (V or N)	.25"
240-DXDE (V or N)	.25"

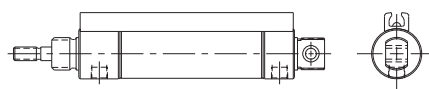
Single Acting	
0070-N	.04"
0070-XPN	.04"
0070-RN	.04"
0070-RPN	.04"
060- (V or N)	.09"
060-NR (V or N)	.09"
060-RP (V or N)	.125"
060-R (V or N)	.125"
120- (V or N)	.125"
120-NR (V or N)	.125"
120-NRP (V or N)	.125"
120-P (V or N)	.125"
120-R (V or N)	.125"
120-RP (V or N)	.125"
240- (V or N)	.125"
240-NR (V or N)	.125"
240-P (V or N)	.125"
240-R (V or N)	.125"

The switch track and port orientation when ordering the "Z" (Switch Track) & "K" (Ports Rotated) options on an Original Line MRS cylinder is shown below. Double track option Z and K cannot be ordered in combination.

#### MRS- -DXP



#### MRS- -DXPZK



\*0070 bumpers are high temperature option material and not removed when high temperature option is specified.

# **Bimba Original Line - Stainless Steel Body Air Cylinders**

## **Accessories**

---

Accessories have separate catalog numbers and are shown at the end of each bore size section. Most accessories are zinc-plated carbon steel. We also offer stainless steel accessories in some bore sizes.

## **Lubrication**

---

Standard Original Line Cylinders are pre-lubricated at our factory with a semi-synthetic grease and do not require additional lubrication during their service life. In some instances where a specified option is not conducive to our standard grease pre-lubrication, such as our High Temperature and Hydraulic options, alternate standard pre-lubrications will be applied. See below for complete details. Additional optional pre-lubrications are available upon customer request.

- Optional oil pre-lubrication is available in most models and can be ordered by specifying option "99".
- Cylinders ordered with our High Temperature seals are pre-lubricated with an oil more suitable for high temperature applications.
- Cylinders ordered with our Low Temperature seals are pre-lubricated with a grease more suitable for low temperature applications.
- All Hydraulic Cylinders are lubricated with our proprietary oil lubrication (HT-99).
- All Stainless Steel cylinders are pre-lubricated with food grade grease.

HT-99 and Magnalube G can be ordered through your local Bimba distributor.

HT-99-7CC  
MAG-G-3CC

## **Piston Rod Material**

---

Standard models feature ground and polished, high strength carbon steel piston rod or ground and roller burnished type 303 stainless steel. Stainless steel can also be ordered as an option on most models (see models for pricing). Stainless steel is standard on the following models:

- All 5/16", 7/16" and 9/16" bore cylinders
- All cylinders with adjustable cushions
- All 9/16" through 3" bore cylinders ordered with Magnet (M) option
- MRS cylinders
- "Z" Line cylinders
- Block and Trunnion-mounted cylinders
- Universal mount, double-end rod cylinders
- All Fail Safe models (options JS/JR)

Hard chrome plated rod is standard on "500" Hydraulic cylinders.

## **Temperature Range**

---

Buna N seals with a temperature range of -20° F (-29° C) to 200° F (90° C) are standard in all BIMBA air cylinders. Fluoroelastomer seals rated for higher temperature applications (up to 400° F) are available. When specifying our magnetic piston ("M" option), maximum operating temperature is 200° F based on the material of the magnet. If cylinders are operated at temperatures below 0° F for extended time periods, our low temperature seal and lubrication option (N) is recommended. This option has a temperature range of -40° F to 200° F. If cylinders are operated below -20° F with low temperature seals for extended time periods, cylinder performance will be affected by the cold temperature.

# **Bimba Original Line - Stainless Steel Body Air Cylinders**

---

## **Mounting**

---

Mounting should be by the threaded stud ends, pivot or bolt holes provided. Mount cylinders to provide alignment with the driven mechanism, avoiding side loads that restrict the free operation of the cylinder.

## **Free Test Cylinder**

---

Since 1975, our policy has been to provide a FREE TEST CYLINDER to any qualified original equipment manufacturer. This service is provided at no obligation, but we would appreciate a copy of your test results. Contact us or your local stocking BIMBA distributor for more information.

## **Special Cylinders**

---

Do you have a complicated or unusual application? BIMBA will custom-design and build the cylinder that will solve your problem. Whatever your needs—special stroke, mounting styles, rod-end configurations, seal materials, dimensional changes, etc.—contact us or your local stocking BIMBA distributor.

## **Delivery/ Availability**

---

Bimba cylinders are sold through local stocking distributors. Each distributor maintains an inventory of our most popular models. At the factory, Bimba classifies cylinders as shelving and nonshelving models. More than 125,000 units of various shelving models are kept in stock for immediate delivery. Standard stroke lengths shown in blue are stocked at Bimba. (Most stocked models shown in blue do not include options.) These stroke lengths are available in limited quantities for immediate shipment. Bimba also stocks a large quantity of cylinders with options such as stainless steel rods or bumpers. Nonstocked standard models are manufactured within 5 working days.

## **Cylinder Life Expectancy**

---

Bimba cylinders have been designed and tested for an expected life of 3,000 miles of travel when properly applied. Additional lubrication is not required. This life estimate applies to cylinders with our standard semi-synthetic grease pre lubricant, and may not include cylinders with design modifications, those exposed to harsh operating conditions or any unintended applications. Please note that for cylinders utilizing Fluoroelastomer seals, the life rating will be 1,400 miles of travel when properly applied.



# **Bimba Original Line - Stainless Steel Body Air Cylinders**

## **Types of Cylinders**

---

Bimba manufactures several different types of Original Line cylinders for your applications. These include the basic 5/16" to 3" bore cylinders described on pages 1.10-1.64. Weights published for each cylinder are approximate. Additional styles include:

### **Three-Position Cylinders**

---

This multi-position Original Line stainless body cylinder provides three positive stroke positions with a single cylinder.

### **Cushion Cylinders**

---

These include adjustable air cushions that slow cylinder speed at the end of stroke, reducing impact and extending cylinder life. Cushions can be ordered on rear, front or both ends, and can be ordered in combination with magnetic pistons.

### **MRS Cylinders**

---

These include a magnet on the piston, designed to operate Bimba switches to actuate programmable controllers, relays, solenoids, timers or other electrically operated equipment. Dimensional differences from the basic Original Line include larger mounting threads and longer overall lengths in certain bore sizes.

### **Non-Rotating Cylinders**

---

Double acting and reverse acting non-rotating cylinders have a unique square piston rod with rounded corners. They are dimensionally interchangeable with the standard Original Line.

### **PC Cylinders**

---

These cylinders include acetal resin end caps. They are ideal for applications and environments that require exposure to moisture, lubricants and specific solvents. All dimensions except 1½" bore nose threads are interchangeable with the Original Line.

### **All Stainless Steel Non-Repairable Cylinders**

---

The new all stainless Original Line cylinders are the perfect solution for applications in the food processing/packaging, medical, chemical, or marine environments where wash down solutions or other corrosives are present in the environment. Designed to be dimensionally interchangeable with our standard Original Line, these cylinders offer a cost effective method of extending cylinder life in difficult application environments.

### **All Stainless Steel Repairable Cylinders**

---

The new all stainless repairable Original Line cylinders are ideal for food processing, chemical, medical, pharmaceutical, offshore or marine equipment, and energy production or waste management applications. The bell ring design also offers the added benefit of full reparability without the need for hand tools by securing the body to the rod guide with a knurled, threaded nut.

### **Z-line Cylinders**

---

For extremely tough applications, with larger diameter, two-piece piston rod, elastomer bumpers and Buna N U-cup seals for low breakaway.

### **Rod Lock Cylinders**

---

This cylinder is a normally clamped unit that holds the piston rod in position when air pressure is not present. It is ideal for preventing drift at machine shut down.

### **500 Hydraulic Cylinders**

---

For hydraulic use, up to 500 psi.

### **Low Pressure Hydraulic Cylinders**

---

Designed for use in low pressure hydraulic circuits with pressures not exceeding 250 psi. The design incorporates chrome plated piston rods and hydraulic seals.

### **Hole Punchers**

---

These are designed to punch millions of holes in thin film or plastic materials 2 to 3 mils thick.

# Bimba Original Line - Stainless Steel Body Air Cylinders

## Stroke Lengths

Standard stroke lengths and recommended maximum stroke lengths are listed in each model description. Special stroke lengths are available upon request. Stroke lengths are available in lengths longer than published, but an application review may be required. The cost per inch of stroke is listed below the base price of each cylinder. On models with 1/2" standard stroke length increments, add 1/2 of the per inch price for the 1/2" inch of stroke.

**NOTE ON ROD MATERIAL:** Please refer to table to determine the maximum stroke lengths for cylinders with carbon steel rods. Stroke lengths greater than those shown require a stainless steel rod.

Maximum Stroke Without SR- Option		
Bore Size	Double Acting	Single Acting
3/4" (04)	12"	11"
7/8" (06)	12"	11"
1-1/16" (09)	12"	11"
1-1/4" (12)	12"	9"
1-1/2" (17)	12"	10"
1-3/4" (24)	12"	8"
2" (31)	6"	4"
2-1/2" (50)	6"	--
3" (70)	6"	--

## Fractional Stroke Lengths

Fractional stroke lengths for single and reverse acting cylinders, both standard and nonstandard, require special calculations to determine cylinder dimensions. The following equations apply:

### Single Acting Cylinders

Calculate the length of next whole standard increment of stroke, then subtract the difference between desired stroke and next longer whole increment of stroke.

*Example: 092.75*

090 Base length =	1.94"
Plus 1.56 per inch of stroke =	<u>+4.68"</u>
1.56 X 3.0 (next longer stroke increment)	
093 length =	6.62
Whole stroke increment =	3.00"
Minus desired stroke =	-2.75
Stroke difference =	.25 . . . <u>-0.25</u>
092.75 length =	6.37"

### Reverse Acting Cylinders

Calculate length of next longer standard increment of stroke, then subtract twice the difference between desired stroke and next longer standard increment of stroke.

*Example: 011.625-RP*

010-RP Base length =	2.38"
Plus 1.44 per each 0.5" of stroke =	<u>+5.76"</u>
1.44 X 4 (number of standard increments required for the next longer increment)	
012-RP length =	8.14
Standard stroke increment =	2.000"
Minus desired stroke =	-1.625
Stroke difference =	.375
Twice stroke difference =	.750 . . . <u>-0.75</u>
011.625 length =	7.39"

### Double Acting Cylinders

Add desired stroke length to base length of cylinder.

*Example: 041.25-D*

040-D Base length =	2.97"
Plus 1.25 stroke =	<u>+1.25"</u>
041.25-D length =	4.22

**NOTE:** Additional charges may be added for small quantity orders of fractional, nonstandard stroke lengths. Consult your local stocking BIMBA distributor.

## Spring Forces (approximate)

Bore Size	Relaxed		Heavy Spring	
	(lbs.)	Compressed (lbs.)	(lbs.)	Compressed (lbs.)
5/16"	.5	1	—	—
7/16"	1	2	—	—
9/16"	2	4	—	—
3/4"	3	6	4	10
7/8"	3	6	—	—
1-1/16"	3	6	6	12
1-1/4"	7.5	15	—	—
1-1/2"	7	14	8.5	17
1-3/4"	11	24	—	—
2"	15	30	—	—

### NOTES

- Heavy spring option may increase cylinder overall length
- Spring forces listed are for whole strokes



# Bimba Original Line - Stainless Steel Body Air Cylinders

## Nose Mount Torque Values

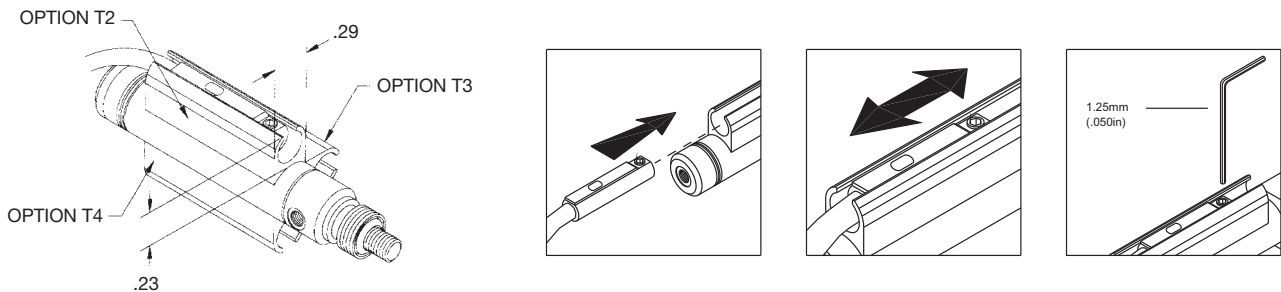
Thread Size	Torque (IN*LB) FT*LB	Bore Size
1/4-28 UNF	(27.6) 2.3	5/16" (007)
3/8-24 UNF	(60) 5	5/16" (007) & 7/16" (01)
7/16-20 UNF	(84) 7	7/16" (01) & 9/16" (02)
1/2-20 UNF	(144) 12	3/4" (04)
5/8-18 UNF	(336) 28	3/4" (04), 7/8" (06) & 1-1/16" (09)
3/4-16 UNF	(480) 40	3/4" (04), 1-1/16" (09), 1-1/4" (12) & 1-1/2" (17)
7/8-16 UNF	(780) 65	1-1/16" (09), 1-1/4" (12) & 1-1/2" (17)
1-14 UNF	(1200) 100	1-1/2" (17) & 1-3/4" (24)
1 1/8-12 UNF	(1320) 110	1-1/2" (17) & 1-3/4" (24)
1 1/4-12 UNF	(1440) 120	2" (31)
1 3/8-12 UNF	(1560) 130	2-1/2" (50)
1 1/2-12 UNF	(1680) 140	3" (70)

## Pressure Rating

Original Line, Cushioned Original Line, NR series, Z-line, MRS and hole punchers = 250 psi.  
 PC cylinder = 100 psi.  
 Bimba 500 Hydraulic = 500 psi hydraulic.  
 Reservoirs = 250 psi.

## Switch Track Kit Options

For Original Line cylinders, including MRS cylinders, with -T2, T3, and T4 options



## Switch Track for use with Bimba MR, MS, MSC, and MSK Switches

Miniature Position Sensing track lengths can now be purchased separately for field mounting of custom track locations. Simply specify the length of track desired after the part number.

Mounting recommendations:

- Clean body with acetone. Remove all oil from body surface.
- Avoid mounting track over rolled construction. Locate edge of track 0.175" from rolled construction.
- Use a solid continuous bead of glue for the entire length of track used. Bead should fill center channel of track.
- Adhere to recommended cure times as specified by the glue manufacturer.

Bores	Part Number		
007 - 04	D-74168-A-length		
06 - 31	D-78527-A-length		
50 - 70	D-78528-A-length		

Loctite U-05FL or similar adhesive is recommended (not included).

# 5/16" Bore Air Cylinders

- Ground and Roller Burnished 303 Stainless Steel Piston Rod Standard
- Force Exerted Approximately 0.07 of Air Line Pressure
- Enclosed Spring Force: .5 lb. Relaxed — 1 lb. Compressed
- Cushion Quiet Bumpers Standard on All Models

## OPTIONS:

(also see Option Combination Availability Chart Page 1.4)

- PORTS ROTATED (K)\* - NO CHARGE
- NO THREAD (NT) - NO CHARGE

\*Rod guide port rotated 90° clockwise in BF model.

- SIDE PORTED REAR HEAD (Q)  
Add .20" to nose mount overall length

**DOUBLE ACTING FAILSAFE**  
(JS=Spring Return, JR=Spring Extend)

**LOW TEMPERATURE (N)**  
Temperature Range: -40° to 200° F

## OPTIONS continued...

**HIGH TEMPERATURE "U" CUPS (V)**  
(overall length does not change)  
Temperature Range: 0° to 400° F (-18° to 205°C)


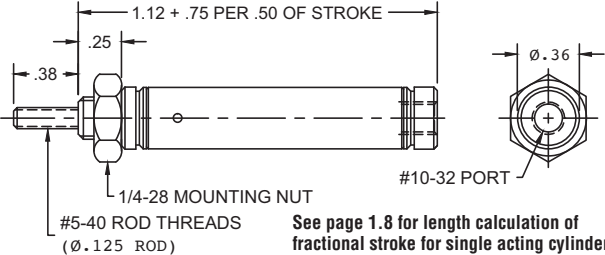

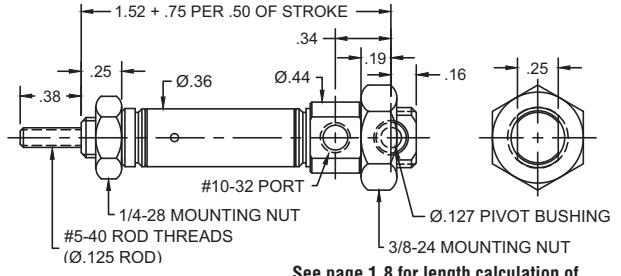

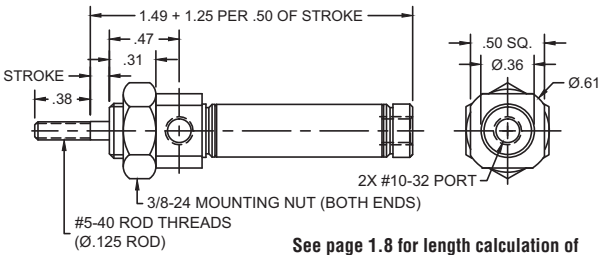
**ROD WIPER (W)**  
(not available in standard single acting)

**MAGNETIC POSITION SENSING (M)**  
• Add .15" to overall length  
• Must specify track(s) for use with Bimba's miniature


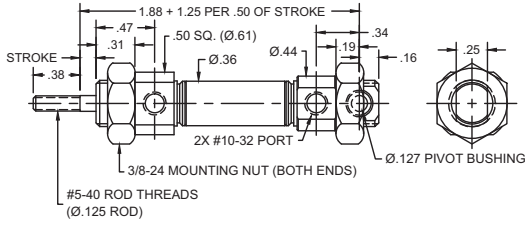

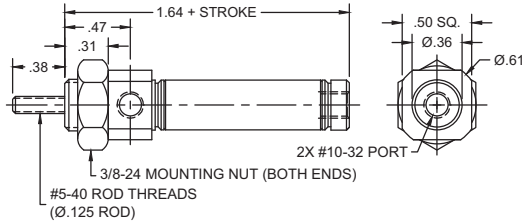

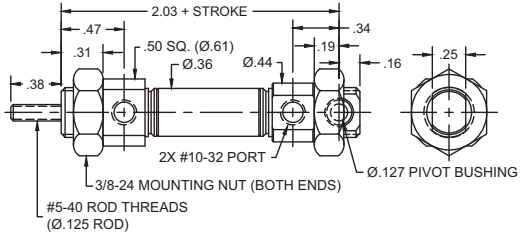

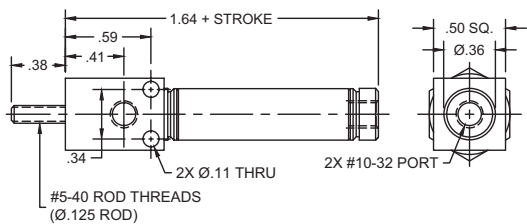
position sensing (T2, T3, T4)  
See page 1.9 for track location details. See Switch Products, page 9.3 for switch selection information.

**LOW PRESSURE HYDRAULIC (HL)**  
• 250 psi maximum  
• Double acting models only  
• Option specified as a prefix

Enter Stroke Length as 4th Digit

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<b>007</b> <input type="checkbox"/> 	<b>Single Acting – Spring Return – Front Nose Mounting</b> <b>Standard Stroke Lengths:</b> ½", 1", 1½", 2", 2½", 3", 4" <b>Maximum Stroke – 4"</b> Stainless Steel Rod Standard <b>Optional Accessory:</b> D-26731 Mounting Bracket <b>Base Weight: .03</b> <b>Adder Per Inch of Stroke: .02</b>	 <p>1.12 + .75 PER .50 OF STROKE</p> <p>.25</p> <p>.38</p> <p>Ø.36</p> <p>1/4-28 MOUNTING NUT</p> <p>#10-32 PORT</p> <p>#5-40 ROD THREADS (Ø.125 ROD)</p> <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>
<b>007</b> <input type="checkbox"/> -XP 	<b>Single Acting – Spring Return – Double End or Rear Pivot Mounting</b> <b>Standard Stroke Lengths:</b> ½", 1", 1½", 2", 2½", 3", 4" <b>Maximum Stroke – 4"</b> Stainless Steel Rod Standard <b>Optional Accessories:</b> D-26731 Mounting Bracket D-26689 Pivot Bracket D-26690 Piston Rod Clevis <b>Base Weight: .04</b> <b>Adder Per Inch of Stroke: .02</b>	 <p>1.52 + .75 PER .50 OF STROKE</p> <p>.25</p> <p>.38</p> <p>Ø.36</p> <p>Ø.44</p> <p>.19</p> <p>.16</p> <p>.25</p> <p>Ø.127 PIVOT BUSHING</p> <p>1/4-28 MOUNTING NUT</p> <p>#10-32 PORT</p> <p>3/8-24 MOUNTING NUT</p> <p>#5-40 ROD THREADS (Ø.125 ROD)</p> <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>
<b>007</b> <input type="checkbox"/> -R 	<b>Reverse Single Acting – Pull Type – Rod Normally Extended – Spring Return – Front Nose Mounting</b> <b>Standard Stroke Lengths:</b> ½", 1", 1½", 2", 2½", 3" <b>Maximum Stroke – 4"</b> Stainless Steel Rod Standard <b>Optional Accessory:</b> D-26765 Mounting Bracket <b>Base Weight: .05</b> <b>Adder Per Inch of Stroke: .03</b>	 <p>1.49 + 1.25 PER .50 OF STROKE</p> <p>.47</p> <p>.31</p> <p>.38</p> <p>STROKE</p> <p>Ø.36</p> <p>Ø.61</p> <p>2X #10-32 PORT</p> <p>3/8-24 MOUNTING NUT (BOTH ENDS)</p> <p>#5-40 ROD THREADS (Ø.125 ROD)</p> <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>

# 5/16" Bore Air Cylinders

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<b>007 □ -RP</b> 	<b>Reverse Single Acting – Pivot and Pull Type – Rod Normally Extended – Spring Return – Rear Pivot Mounting</b> <b>Standard Stroke Lengths:</b> ½", 1", 1½", 2", 2½", 3" <b>Maximum Stroke – 4"</b> <b>Stainless Steel Rod Standard</b> <b>Optional Accessories:</b> D-26765 Mounting Bracket D-26689 Pivot Bracket D-26690 Piston Rod Clevis <b>Base Weight: .05</b> <b>Adder Per Inch of Stroke: .03</b>	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>
<b>007 □ -D</b> 	<b>Double Acting – Air Return – Front Nose Mounting</b> <b>Standard Stroke Lengths:</b> ½", 1", 1½", 2", 2½", 3", 4" <b>Maximum Stroke – 4"</b> <b>Stainless Steel Rod Standard</b> <b>Optional Accessory:</b> D-26765 Mounting Bracket <b>Base Weight: .05</b> <b>Adder Per Inch of Stroke: .01</b>	
<b>007 □ -DXP</b> 	<b>Double Acting – Air Return – Double End or Rear Pivot Mounting</b> <b>Standard Stroke Lengths:</b> ½", 1", 1½", 2", 2½", 3", 4" <b>Maximum Stroke – 4"</b> <b>Stainless Steel Rod Standard</b> <b>Optional Accessories:</b> D-26765 Mounting Bracket D-26689 Pivot Bracket D-26690 Piston Rod Clevis <b>Base Weight: .06</b> <b>Adder Per Inch of Stroke: .01</b>	
<b>BF-007 □ -D</b> 	<b>Double Acting – Front Block Mounting – Air Return</b> <b>Standard Stroke Lengths:</b> ½", 1", 1½", 2", 2½", 3", 4" <b>Maximum Stroke – 4"</b> <b>Stainless Steel Rod Standard</b> <b>Base Weight: .05</b> <b>Adder Per Inch of Stroke: .01</b>	

Standard Air Cylinders

Three-Position Cylinders

Cushion Cylinders

MRS® Cylinders

Non-Rotating Cylinders

PC Cylinders

All Stainless Non-Repairable

All Stainless Repairable

Z Line Air Cylinders

Rod Lock Cylinders

500 Hydraulic Cylinders

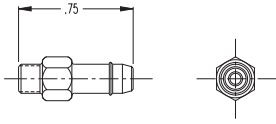
Repairable Hole Punch Cylinders

# 5/16" Bore Air Cylinders

## 5/16" Bore Accessories

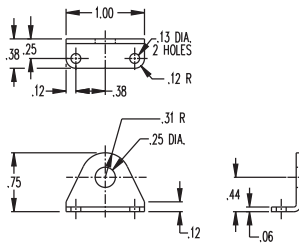
### D-3229-A

PACKAGE OF SIX



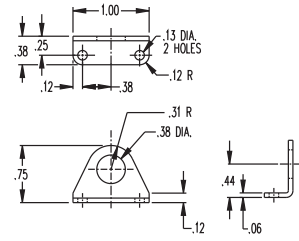
Aluminum Alloy Barbed Fitting.  
1/4" Hose (O.D.) Barbed Fitting Supplied with  
Gasket, No. 10-32 to 1/4" O.D. Tubing.

### D-26731



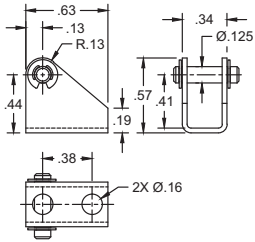
Mounting Bracket  
(for Single Acting Models)

### D-26765



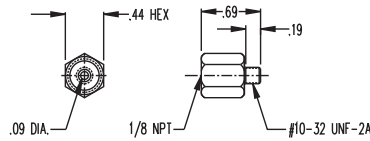
Mounting Bracket  
(for Double Acting Models)

### D-26689



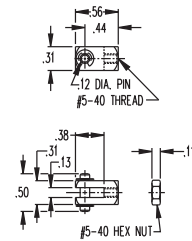
Pivot Bracket with Pin

### D-855-A



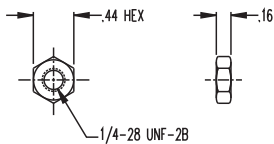
Adaptors (10-32 to 1/8 NPT Female)  
Supplied with Gasket

### D-26690



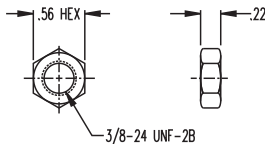
Piston Rod Clevis  
(with Pin)

### D-344



Mounting Nut

### D-801



Mounting Nut

# 7/16" Bore Air Cylinders

- Ground and Roller Burnished 303 Stainless Steel Piston Rod Standard
- Force Exerted Approximately 0.15 of Air Line Pressure
- Enclosed Spring Force: 1 lb. Relaxed — 2 lbs. Compressed

## OPTIONS:

### NO CHARGE

- PORTS ROTATED (K) (Not available in block mount)
- NO THREAD (NT)
- SIDE PORTED REAR HEAD (Q)  
Add .19" to nose mount overall length
- PIVOT BUSHING (Y)  
.157" ID (Use bracket D-12321-A)

### SINGLE AND REVERSE ACTING BUMPER (B)

### DOUBLE ACTING BUMPER (B)

### EXTRA EXTENSION (EE)

- Single, reverse and double acting extension
- DXDE

### DOUBLE ACTING FAILSAFE

(JS = Spring Return, JR = Spring Extend)

## OPTIONS continued...

### LOW TEMPERATURE (N)

Temperature Range: -40° to 200°F

### HIGH TEMPERATURE "U" CUPS (V)

Temperature Range: 0° to 400°F (-18° to 205°C)

### MAGNET (prefix M)

- Add 0.25" to Double Acting overall length

- Add 0.20" to Single Acting overall length
- Must specify track(s) for use with miniature position sensing (T2, T3, T4) . See page 1.9 for track location details. See Switch Products, page 9.3 for switch selection information.


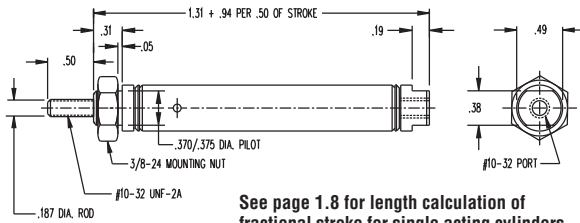

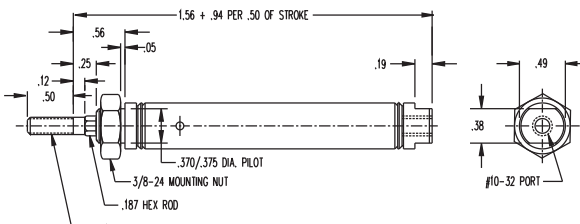
### ROD WIPER (W)

(not available in standard single acting)

### LOW PRESSURE HYDRAULIC (HL)

- 250 psi maximum
- Double acting models only
- Option specified as a prefix

Enter Stroke Length as 3rd Digit

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<b>01</b> <input type="checkbox"/> 	<b>Single Acting – Spring Return – Front Nose Mounting</b> <b>Standard Stroke Lengths:</b> ½", 1", 1½", 2", 2½", 3", 4" Maximum Stroke – 6" Stainless Steel Rod Standard Optional Accessory: D-775 Mounting Bracket Base Weight: .04 Adder Per Inch of Stroke: .04	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>
<b>01</b> <input type="checkbox"/> -NR 	<b>Single Acting – Non-rotating – Hexagon Rod – Spring Return – Front Nose Mounting</b> <b>Standard Stroke Lengths:</b> ½", 1", 1½", 2", 2½", 3", 4" Maximum Stroke – 6" Stainless Steel Rod Standard Optional Accessory: D-775 Mounting Bracket Base Weight: .04 Adder Per Inch of Stroke: .04	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>

Standard Air Cylinders

Three-Position Cylinders

Cushion Cylinders

MRS® Cylinders

Non-Rotating Cylinders

PC Cylinders

All Stainless Non-Repairable

All Stainless Repairable


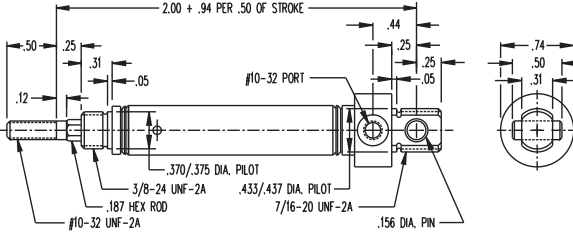

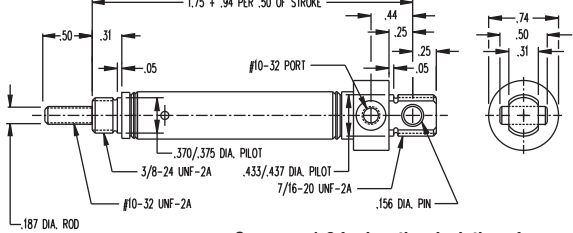

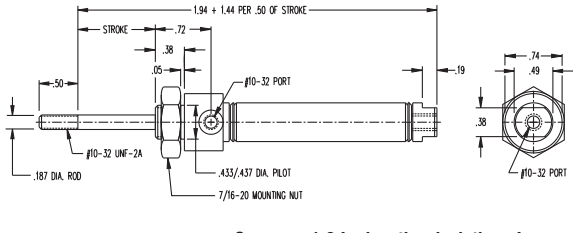

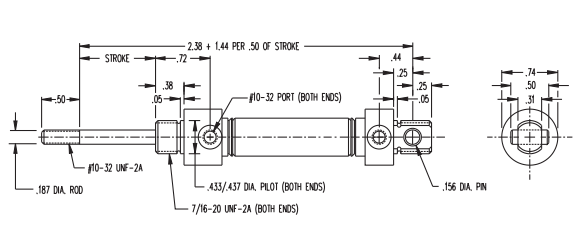

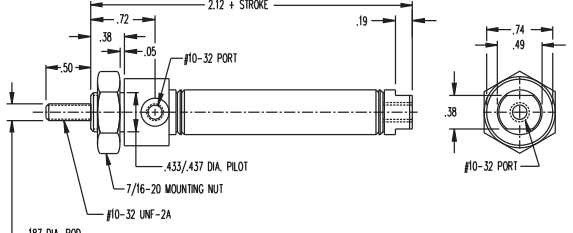
7 Line Air Cylinders

Rod Lock Cylinders

500 Hydraulic Cylinders


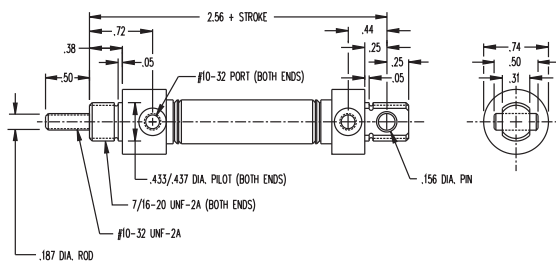

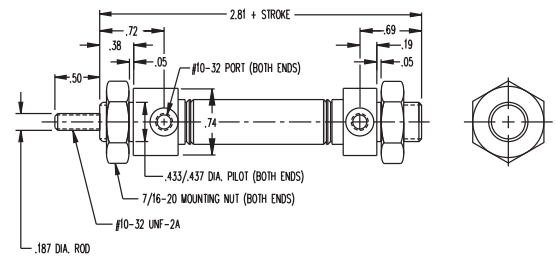

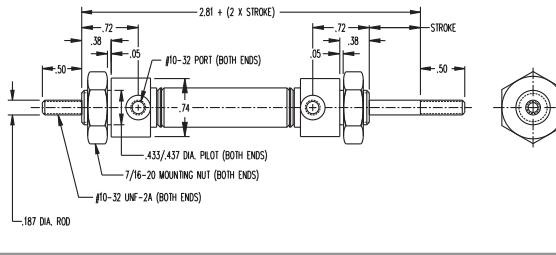
Repairable Hole Punch Cylinders

# 7/16" Bore Air Cylinders

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<p><b>01 □ -NRP</b></p> 	<p><b>Single Acting – Non-rotating Hexagon Rod – Pivot Type – Spring Return – Rear Pivot Mounting</b>  <b>Standard Stroke Lengths:</b>            ½", 1", 1½", 2", 2½", 3", 4"  <b>Maximum Stroke – 6"</b>  <b>Stainless Steel Rod Standard</b>  <b>Optional Accessories:</b>            D-850 Rod Clevis            D-780 Pivot Brackets  <b>Base Weight: .04</b>  <b>Adder Per Inch of Stroke: .04</b></p>	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>
<p><b>01 □ -P</b></p> 	<p><b>Single Acting – Pivot Type – Spring Return – Rear Pivot Mounting</b>  <b>Standard Stroke Lengths:</b>            ½", 1", 1½", 2", 2½", 3", 4"  <b>Maximum Stroke – 6"</b>  <b>Stainless Steel Rod Standard</b>  <b>Optional Accessories:</b>            D-780 Pivot Brackets            D-850 Piston Rod Clevis  <b>Base Weight: .04</b>  <b>Adder Per Inch of Stroke: .04</b></p>	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>
<p><b>01 □ -R</b></p> 	<p><b>Reverse Single Acting – Pull Type – Rod Normally Extended – Spring Return – Front Nose Mounting</b>  <b>Standard Stroke Lengths:</b>            ½", 1", 1½", 2", 2½", 3"  <b>Maximum Stroke – 6"</b>  <b>Stainless Steel Rod Standard</b>  <b>Optional Accessory:</b>            D-770 Mounting Bracket  <b>Base Weight: .08</b>  <b>Adder Per Inch of Stroke: .03</b></p>	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>
<p><b>01 □ -RP</b></p> 	<p><b>Reverse Single Acting – Pivot and Pull Type – Rod Normally Extended – Spring Return – Rear Pivot Mounting</b>  <b>Standard Stroke Lengths:</b>            ½", 1", 1½", 2", 2½", 3"  <b>Maximum Stroke – 6"</b>  <b>Stainless Steel Rod Standard</b>  <b>Optional Accessories:</b>            D-780 Pivot Brackets            D-850 Piston Rod Clevis  <b>Base Weight: .08</b>  <b>Adder Per Inch of Stroke: .03</b></p>	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>
<p><b>01 □ -D</b></p> 	<p><b>Double Acting – Air Return – Front Nose Mounting</b>  <b>Standard Stroke Lengths:</b>            ½", 1", 1½", 2", 2½", 3", 4"  <b>Maximum Stroke – 12"</b>  <b>Stainless Steel Rod Standard</b>  <b>Optional Accessory:</b>            D-770 Mounting Bracket  <b>Base Weight: .07</b>  <b>Adder Per Inch of Stroke: .02</b></p>	


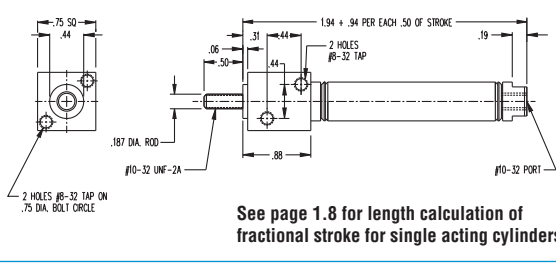

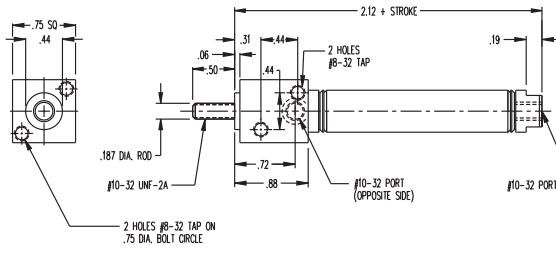


# 7/16" Bore Air Cylinders

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<b>01</b> <input type="checkbox"/> <b>-DP</b> 	<b>Double Acting – Pivot Type – Air Return – Rear Pivot Mounting</b> <b>Standard Stroke Lengths:</b> ½", 1", 1½", 2", 2½", 3", 4" <b>Maximum Stroke – 12"</b> Stainless Steel Rod Standard <b>Optional Accessories:</b> D-780 Pivot Brackets D-850 Piston Rod Clevis <b>Base Weight: .08</b> <b>Adder Per Inch of Stroke: .02</b>	
<b>01</b> <input type="checkbox"/> <b>-DX</b> 	<b>Double Acting – Double End Mount – Air Return</b> <b>Standard Stroke Lengths:</b> ½", 1", 1½", 2", 2½", 3", 4" <b>Maximum Stroke – 12"</b> Stainless Steel Rod Standard <b>Optional Accessory:</b> D-770 Mounting Bracket <b>Base Weight: .11</b> <b>Adder Per Inch of Stroke: .02</b>	
<b>01</b> <input type="checkbox"/> <b>-DXDE</b> 	<b>Double Acting – Double End Rod – Air Return – Double End Mount</b> <b>Standard Stroke Lengths:</b> ½", 1", 1½", 2", 2½", 3", 4" <b>Maximum Stroke – 6"</b> Stainless Steel Rod Standard <b>Optional Accessory:</b> D-770 Mounting Bracket <b>Base Weight: .14</b> <b>Adder Per Inch of Stroke: .03</b>	


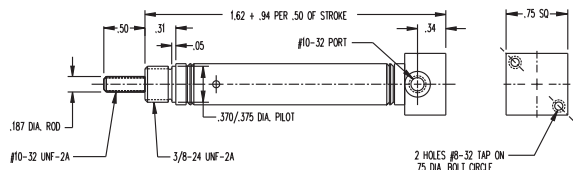

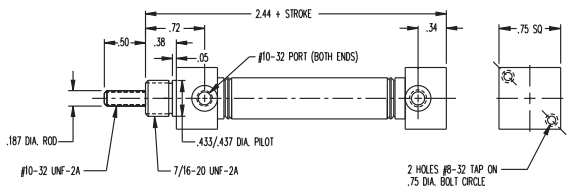
- Standard Air Cylinders
- Three-Position Cylinders
- Cushion Cylinders
- MRS® Cylinders
- Non-Rotating Cylinders
- PC Cylinders
- Non-Repairable
- All Stainless
- All Stainless Repairable
- 7 Line Air Cylinders
- Rod Lock Cylinders
- 500 Hydraulic Cylinders
- Repairable Hole Punch Cylinders

## 7/16" Bore Block Mounted Air Cylinders


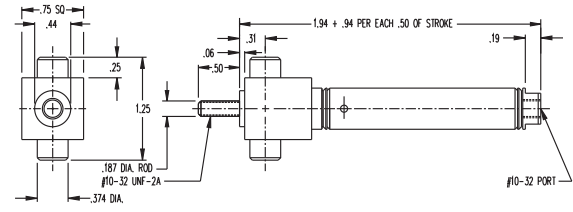

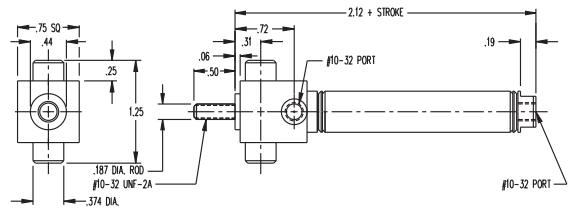

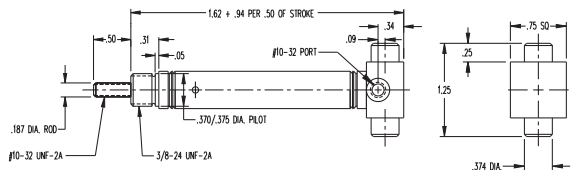
MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<b>BF-01</b> <input type="checkbox"/> 	<b>Single Acting – Front Block Mounting – Spring Return</b> <b>Standard Stroke Lengths:</b> ½", 1", 1½", 2", 2½", 3", 4" <b>Maximum Stroke – 6"</b> Stainless Steel Rod Standard <b>Base Weight: .07</b> <b>Adder Per Inch of Stroke: .04</b>	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>
<b>BF-01</b> <input type="checkbox"/> <b>-D</b> 	<b>Double Acting – Front Block Mounting – Air Return</b> <b>Standard Stroke Lengths:</b> ½", 1", 1½", 2", 2½", 3", 4" <b>Maximum Stroke – 12"</b> Stainless Steel Rod Standard <b>Base Weight: .07</b> <b>Adder Per Inch of Stroke: .02</b>	

# 7/16" Bore Air Cylinders

## 7/16" Bore Block Mounted Air Cylinders (continued)


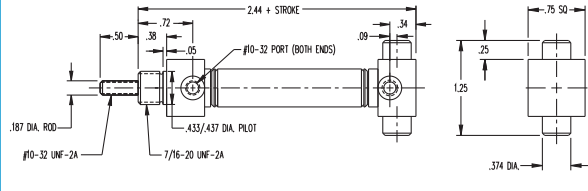
MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<b>BR-01</b> <input type="checkbox"/> 	<b>Single Acting – Rear Block Mounting for Vertical Positioning – Spring Return</b> Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4" Maximum Stroke – 6" Stainless Steel Rod Standard Base Weight: .05 Adder Per Inch of Stroke: .04	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>
<b>BR-01</b> <input type="checkbox"/> -D 	<b>Double Acting – Rear Block Mounting for Vertical Positioning – Air Return</b> Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4" Maximum Stroke – 12" Stainless Steel Rod Standard Base Weight: .08 Adder Per Inch of Stroke: .02	

## 7/16" Bore Trunnion Mounted Air Cylinders

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<b>BFT-01</b> <input type="checkbox"/> 	<b>Single Acting – Front Block Trunnion Mounting – Spring Return</b> Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4" Maximum Stroke – 6" Stainless Steel Rod Standard Optional Accessories: TRB-1 Trunnion Brackets D-850 Rod Clevis Base Weight: .09 Adder Per Inch of Stroke: .04	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>
<b>BFT-01</b> <input type="checkbox"/> -D 	<b>Double Acting – Front Block Trunnion Mounting – Air Return</b> Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4" Maximum Stroke – 12" Stainless Steel Rod Standard Optional Accessories: TRB-1 Trunnion Brackets D-850 Rod Clevis Base Weight: .09 Adder Per Inch of Stroke: .02	
<b>BRT-01</b> <input type="checkbox"/> 	<b>Single Acting – Rear Block Trunnion Mounting – Spring Return</b> Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4" Maximum Stroke – 6" Stainless Steel Rod Standard Optional Accessories: TRB-1 Trunnion Brackets D-850 Rod Clevis Base Weight: .07 Adder Per Inch of Stroke: .04	

# 7/16" Bore Air Cylinders

## 7/16" Bore Block Mounted Air Cylinders (continued)

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<b>BRT-01</b> <input type="checkbox"/> -D 	<b>Double Acting – Rear Block Trunnion Mounting – Air Return</b> <b>Standard Stroke Lengths:</b> 1/2", 1", 1 1/2", 2", 2 1/2", 3", 4" <b>Maximum Stroke – 12"</b> <b>Stainless Steel Rod Standard</b> <b>Optional Accessories:</b> TRB-1 Trunnion Brackets D-850 Rod Clevis <b>Base Weight: .10</b> <b>Adder Per Inch of Stroke: .02</b>	

Standard Air Cylinders

Three-Position Cylinders

Cushion Cylinders

## 7/16" Bore Accessories

MRS® Cylinders

Non-Rotating Cylinders

PC Cylinders

All Stainless Non-Repairable

All Stainless Repairable

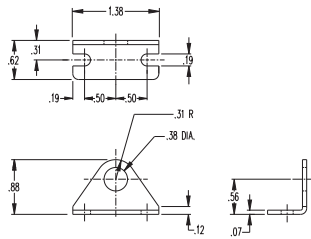
7 Line Air Cylinders

Rod Lock Cylinders

500 Hydraulic Cylinders

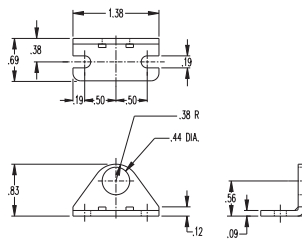
Repairable Hole Punch Cylinders

### D-775



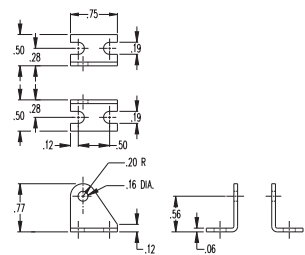
Mounting Bracket  
(for Single Acting Models)

### D-770



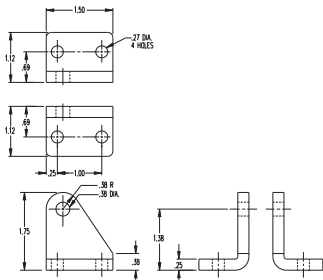
Mounting Bracket  
(for Double Acting Models)

### D-780



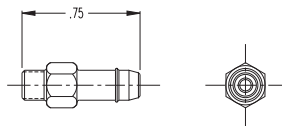
Pivot Brackets

### TRB-1



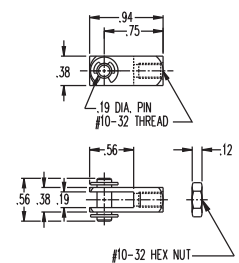
Trunnion Brackets

### D-3229-A



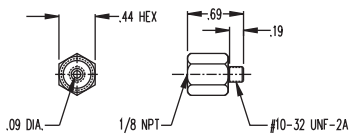
Aluminum Alloy Barbed Fitting. 1/4" Hose (O.D.) Barbed Fitting Supplied with Gasket, No. 10-32 to 1/4" O.D. Tubing

### D-850



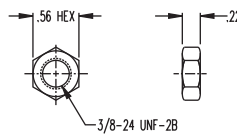
Piston Rod Clevis

### D-855-A



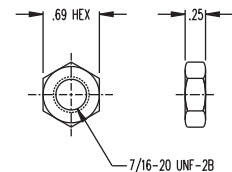
Adaptors (10-32 to 1/8 NPT Female)  
Supplied with Gasket

### D-801



Mounting Nut

### D-154



Mounting Nut

# 9/16" Bore Air Cylinders

- Ground and Roller Burnished 303 Stainless Steel Piston Rod Standard
- Force Exerted Approximately 0.25 of Air Line Pressure
- Enclosed Spring Force: 2 lbs. Relaxed — 4 lbs. Compressed

## OPTIONS:

- PORTS ROTATED (K)
  - NO THREAD (NT)
  - SIDE PORTED REAR HEAD (Q)  
Add .03" to nose mount overall length
- SINGLE AND REVERSE ACTING BUMPER (B)**
- Add .062 to overall length

- DOUBLE ACTING BUMPERS (B)**
- Add .125 to overall length

- EXTRA EXTENSION (EE)**
- Single, reverse and double acting, add \$1.05 per inch of extension
  - DXDE

- DOUBLE ACTING FAILSAFE**  
(JS = Spring Return, JR = Spring Extend)
- See page 1.65 and 1.66 for overall length adders

## OPTIONS continued...

- MAGNET (prefix M)**
- Single and reverse acting add .125" to overall length
  - Must specify track(s) for use with miniature position sensing (T2, T3, T4). See page 1.9 for track location details. See Switch Products, page 9.3 for switch selection information.


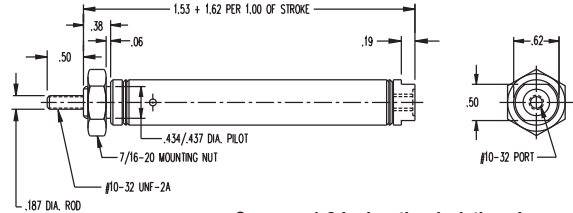

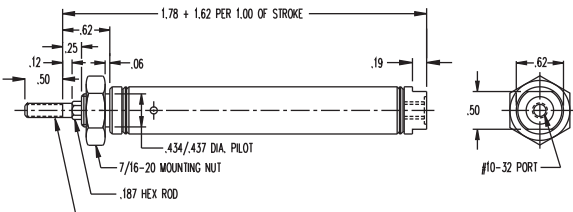
- LOW TEMPERATURE (N)**  
Temperature Range: -40° to 200°F

- HIGH TEMPERATURE "U" CUPS (V)**  
Temperature Range: 0° to 400°F (-18° to 205°C)


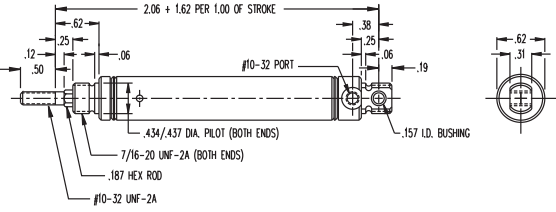

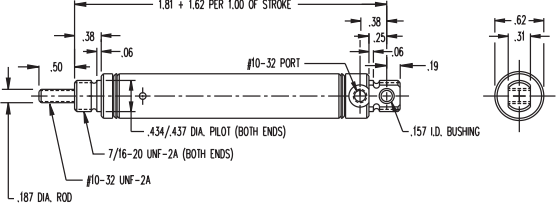

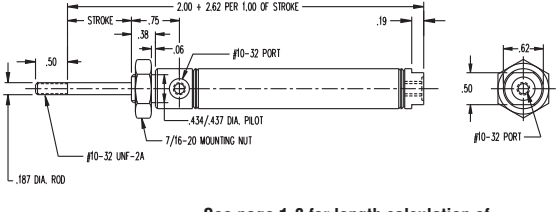

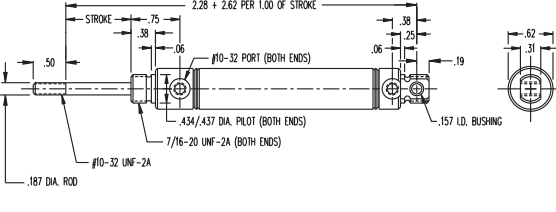

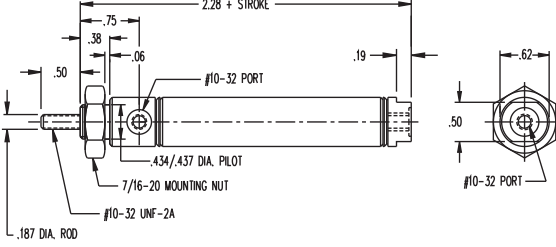
- ROD WIPER (W)**  
(not available in standard single acting)

- LOW PRESSURE HYDRAULIC (HL)**
- 250 psi maximum
  - Double acting models only
  - Option specified as a prefix

Enter Stroke Length as 3rd Digit

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<b>02</b> <input type="checkbox"/> 	<p><b>Single Acting – Spring Return – Front Nose Mounting</b> Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4" Maximum Stroke – 6" Stainless Steel Rod Standard Optional Accessory: D-770 Mounting Bracket Base Weight: .06 Adder Per Inch of Stroke: .05</p>	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>
<b>02</b> <input type="checkbox"/> -NR 	<p><b>Single Acting – Non-rotating Hexagon Rod – Spring Return – Front Nose Mounting</b> Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4" Maximum Stroke – 6" Stainless Steel Rod Standard Optional Accessory: D-770 Mounting Bracket Base Weight: .06 Adder Per Inch of Stroke: .05</p>	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>

# 9/16" Bore Air Cylinders

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<p><b>02 □ -NRP</b></p> 	<p><b>Single Acting – Non-rotating Hexagon Rod – Pivot Type – Spring Return – Rear Pivot Mounting</b>  <b>Standard Stroke Lengths:</b> ½", 1", 1½", 2", 2½", 3", 4"  <b>Maximum Stroke – 6"</b>  <b>Stainless Steel Rod Standard</b>  <b>Optional Accessories:</b>                      D-850 Rod Clevis                      D-12321-A Pivot Bracket  <b>Base Weight: .06</b>  <b>Adder Per Inch of Stroke: .05</b></p>	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>
<p><b>02 □ -P</b></p> 	<p><b>Single Acting – Pivot Type – Spring Return – Rear Pivot Mounting</b>  <b>Standard Stroke Lengths:</b> ½", 1", 1½", 2", 2½", 3", 4"  <b>Maximum Stroke – 6"</b>  <b>Stainless Steel Rod Standard</b>  <b>Optional Accessories:</b>                      D-850 Rod Clevis                      D-12321-A Pivot Bracket  <b>Base Weight: .06</b>  <b>Adder Per Inch of Stroke: .05</b></p>	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>
<p><b>02 □ -R</b></p> 	<p><b>Reverse Single Acting – Pull Type – Rod Normally Extended – Spring Return – Front Nose Mounting</b>  <b>Standard Stroke Lengths:</b> ½", 1", 1½", 2", 2½", 3"  <b>Maximum Stroke – 6"</b>  <b>Stainless Steel Rod Standard</b>  <b>Optional Accessory:</b>                      D-770 Mounting Bracket  <b>Base Weight: .08</b>  <b>Adder Per Inch of Stroke: .04</b></p>	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>
<p><b>02 □ -RP</b></p> 	<p><b>Reverse Single Acting – Pivot and Pull Type – Rod Normally Extended – Spring Return – Rear Pivot Mounting</b>  <b>Standard Stroke Lengths:</b> ½", 1", 1½", 2", 2½", 3"  <b>Maximum Stroke – 6"</b>  <b>Stainless Steel Rod Standard</b>  <b>Optional Accessories:</b>                      D-850 Rod Clevis                      D-12321-A Pivot Bracket  <b>Base Weight: .08</b>  <b>Adder Per Inch of Stroke: .04</b></p>	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>
<p><b>02 □ -D</b></p> 	<p><b>Double Acting – Air Return – Front Nose Mounting</b>  <b>Standard Stroke Lengths:</b> ½", 1", 1½", 2", 2½", 3", 4"  <b>Maximum Stroke – 12"</b>  <b>Stainless Steel Rod Standard</b>  <b>Optional Accessory:</b>                      D-770 Mounting Bracket  <b>Base Weight: .09</b>  <b>Adder Per Inch of Stroke: .02</b></p>	

Standard Air Cylinders

Three-Position Cylinders

Cushion Cylinders

MRS® Cylinders

Non-Rotating Cylinders

PC Cylinders

All Stainless Non-Repairable

All Stainless Repairable

7 Line Air Cylinders


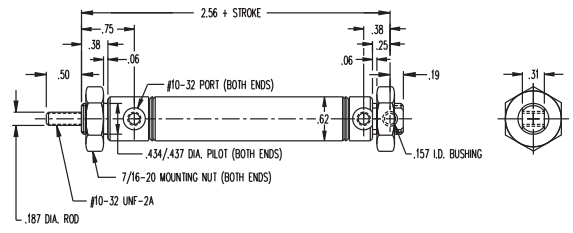

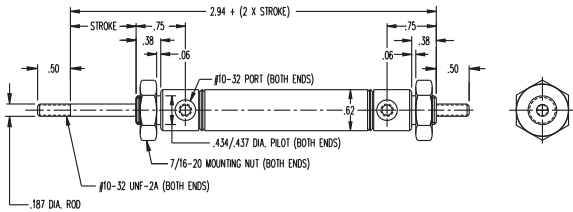
Rod Lock Cylinders

500 Hydraulic Cylinders

Repairable Hole Punch Cylinders

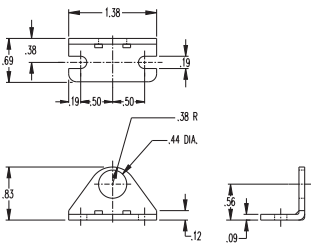


# 9/16" Bore Air Cylinders

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<b>02 □ -DXP</b> 	<b>Double Acting – Double End or Rear Pivot Mounting – Air Return</b> <b>Standard Stroke Lengths:</b> ½", 1", 1½", 2", 2½", 3", 4" <b>Maximum Stroke – 12"</b> <b>Stainless Steel Rod Standard</b> <b>Optional Accessories:</b> D-770 Mounting Bracket D-850 Rod Clevis D-12321-A Pivot Bracket <b>Base Weight: .09</b> <b>Adder Per Inch of Stroke: .02</b>	
<b>02 □ -DXDE</b> 	<b>Double Acting – Double End Rod – Air Return – Double End Mounting</b> <b>Standard Stroke Lengths:</b> ½", 1", 1½", 2", 2½", 3", 4" <b>Maximum Stroke – 6"</b> <b>Stainless Steel Rod Standard</b> <b>Optional Accessory:</b> D-770 Mounting Bracket <b>Base Weight: .16</b> <b>Adder Per Inch of Stroke: .03</b>	

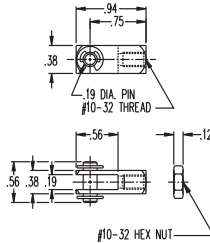
## 9/16" Bore Accessories

### D-770



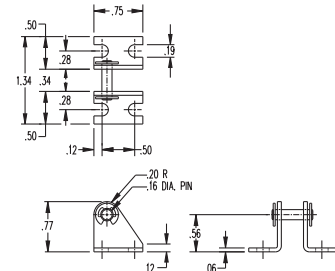
Mounting Bracket

### D-850



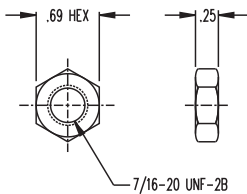
Piston Rod Clevis

### D-12321-A



Pivot Bracket with Pin

### D-154



Mounting Nut



# 3/4" Bore Air Cylinders

- Ground and Polished, High Strength Carbon Steel Piston Rod Standard — 303 Stainless Steel Rod Available as an Option — Bronze Rod Guide Bushing Standard
- Force Exerted Approximately 0.4 of Air Line Pressure
- Enclosed Spring Force: 3 lbs. Relaxed — 6 lbs. Compressed
- Rod Wipers Available on D, DP, DXP and DXDE Models

## OPTIONS:

### NO CHARGE:

- PORTS ROTATED (K)
- NO THREAD (NT)
- SIDE PORTED REAR HEAD (Q)  
Add .44" to nose mount overall length
- PIVOT BUSHING (Y)  
.250" ID

### SINGLE AND REVERSE ACTING BUMPER (B)

- Add .125 to overall length

### DOUBLE ACTING BUMPERS (B)

- No change in overall length

### EXTRA EXTENSION (EE)

- Single, reverse and double acting
- DXDE

### DOUBLE ACTING FAILSAFE

(JS = Spring Return, JR = Spring Extend)

Enter Stroke Length as 3rd Digit

## OPTIONS continued...

**ROD WIPER (W)** (not available in standard single acting) (now available in block mount)

**HEAVY SPRING** (available on single acting and reverse acting) (H)

- Spring Force: 4 lbs. relaxed — 10 lbs. compressed

**MAGNET** (prefix M)

- Single and reverse acting add .125" to overall length
- Stainless steel rod becomes standard with this option
- Must specify track(s) for use with miniature position sensing (T2, T3, T4) See page 1.9 for track location details. See Switch Products, page 9.3 for switch selection information.

**LOW TEMPERATURE (N)**

Temperature Range: -40° to 200°F

**HIGH TEMPERATURE "U" CUPS (V)**

Temperature Range: 0° to 400°F (-18° to 205°C)

**STAINLESS STEEL ROD** (prefix SR)

Standard on M option, block mount, DXP and DXDE models

**LOW PRESSURE HYDRAULIC (HL)**

- 250 psi maximum
- Double acting models only
- Option specified as a prefix

Standard Air Cylinders

Three-Position Cylinders

Cushion Cylinders

MRS® Cylinders

Non-Rotating Cylinders

PG Cylinders

All Stainless Non-Repairable

All Stainless Repairable

7 Line Air Cylinders

Rod Lock Cylinders

500 Hydraulic Cylinders

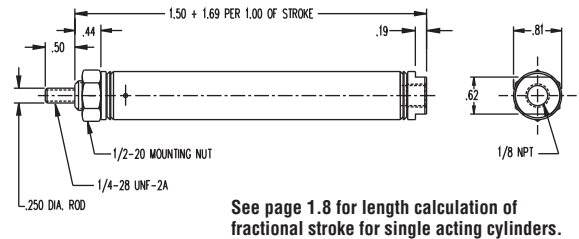
Repairable Hole Punch Cylinders

## MODEL/PRICE

04



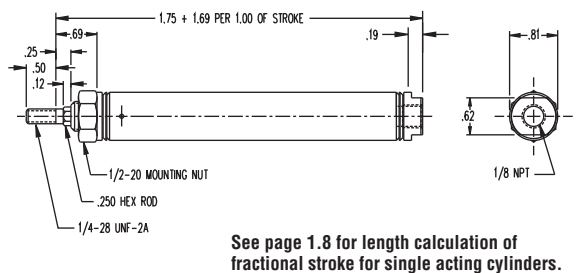
**Single Acting – Spring Return – Front Nose Mounting**  
Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4"  
Maximum Stroke – 6"  
Optional Stainless Steel Rod  
Optional Accessory:  
D-226 Mounting Bracket  
Base Weight: .10  
Adder Per Inch of Stroke: .08




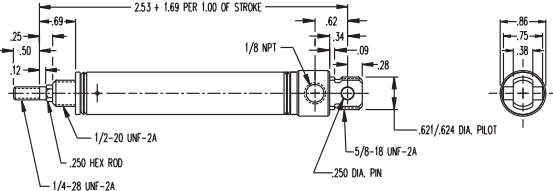

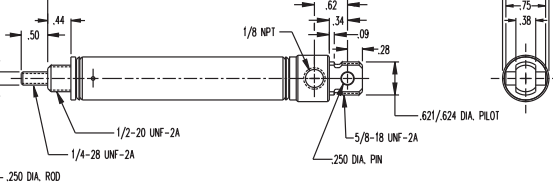

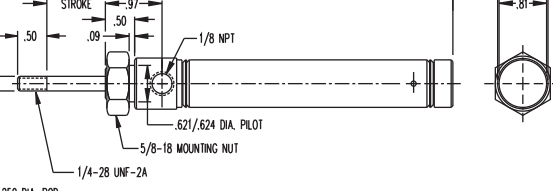

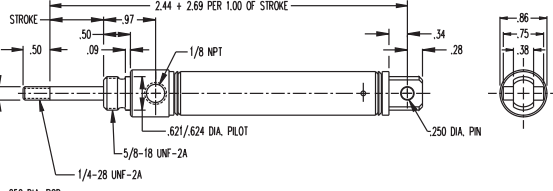

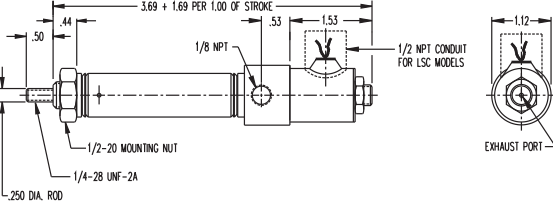
04 -NR




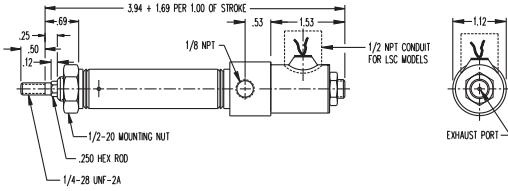

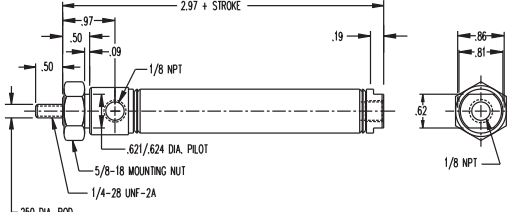

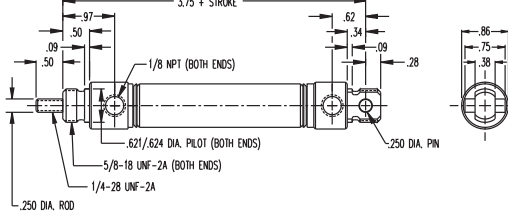

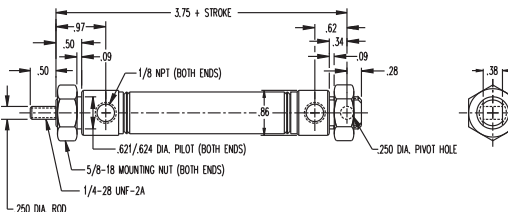
**Single Acting – Non-rotating Hexagon Rod – Spring Return – Front Nose Mounting**  
Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4"  
Maximum Stroke – 6"  
Optional Stainless Steel Rod  
Optional Accessory:  
D-226 Mounting Bracket  
Base Weight: .10  
Adder Per Inch of Stroke: .08



# 3/4" Bore Air Cylinders

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<p><b>04 □ -NRP</b></p> 	<p><b>Single Acting – Non-rotating Hexagon Rod – Pivot Type – Spring Return – Rear Pivot Mounting</b>  <b>Standard Stroke Lengths:</b>            ½", 1", 1½", 2", 2½", 3", 4"  <b>Maximum Stroke – 6"</b>  <b>Optional Stainless Steel Rod</b>  <b>Optional Accessories:</b>            D-166-3 Piston Rod Clevis            D-167 Pivot Brackets  <b>Base Weight: .12</b>  <b>Adder Per Inch of Stroke: .08</b></p>	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>
<p><b>04 □ -P</b></p> 	<p><b>Single Acting – Pivot Type – Spring Return – Rear Pivot Mounting</b>  <b>Standard Stroke Lengths:</b>            ½", 1", 1½", 2", 2½", 3", 4"  <b>Maximum Stroke – 6"</b>  <b>Optional Stainless Steel Rod</b>  <b>Optional Accessories:</b>            D-166-3 Piston Rod Clevis            D-167 Pivot Brackets  <b>Base Weight: .13</b>  <b>Adder Per Inch of Stroke: .08</b></p>	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>
<p><b>04 □ -R</b></p> 	<p><b>Reverse Single Acting – Pull Type – Rod Normally Extended – Spring Return – Front Nose Mounting</b>  <b>Standard Stroke Lengths:</b>            ½", 1", 1½", 2", 2½", 3", 4"  <b>Maximum Stroke – 6"</b>  <b>Optional Stainless Steel Rod</b>  <b>Optional Accessory:</b>            D-129 Mounting Bracket  <b>Base Weight: .18</b>  <b>Adder Per Inch of Stroke: .07</b></p>	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>
<p><b>04 □ -RP</b></p> 	<p><b>Reverse Single Acting – Pivot and Pull Type – Rod Normally Extended – Spring Return – Rear Pivot Mounting</b>  <b>Standard Stroke Lengths:</b>            ½", 1", 1½", 2", 2½", 3", 4"  <b>Maximum Stroke – 6"</b>  <b>Optional Stainless Steel Rod</b>  <b>Optional Accessories:</b>            D-166-3 Piston Rod Clevis            D-167 Pivot Brackets  <b>Base Weight: .18</b>  <b>Adder Per Inch of Stroke: .07</b></p>	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>
<p><b>04 □ -LS or LSC Conduit Outlet*</b></p> 	<p><b>Single Acting – Built-in Midget 3-Way Solenoid Operated Valve – Spring Return – Front Nose Mounting – 150 PSI, 3/64" Orifice</b>  <b>Standard Stroke Lengths:</b>            ½", 1", 1½", 2", 2½", 3", 4"  <b>Maximum Stroke – 6"</b>  <b>Optional Stainless Steel Rod</b>  <b>Standard Voltage – 115/60</b>  <b>Optional Voltages:</b>            24, 230 A.C. or 6, 12, 24 D.C.  <b>Optional Accessory:</b>            D-226 Mounting Bracket  <b>Base Weight: .38</b>  <b>Adder Per Inch of Stroke: .08</b></p>	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>

# 3/4" Bore Air Cylinders

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<b>04 □ -NRLS or NRLSC Conduit Outlet*</b> 	<b>Single Acting</b> – Non-rotating Hexagon Piston Rod – Built-in Midget 3-Way Solenoid Operated Valve – Spring Return – Front Nose Mounting – 150 PSI, 3/64" Orifice <b>Standard Stroke Lengths:</b> 1/2", 1", 1 1/2", 2", 2 1/2", 3", 4" <b>Maximum Stroke</b> – 6" Optional Stainless Steel Rod <b>Standard Voltage</b> – 115/60 <b>Optional Voltages:</b> 24, 230 A.C. or 6, 12, 24 D.C. <b>Optional Accessory:</b> D-226 Mounting Bracket <b>Base Weight:</b> .46 <b>Adder Per Inch of Stroke:</b> .08	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>
<b>04 □ -D</b> 	<b>Double Acting</b> – Air Return – Front Nose Mounting <b>Standard Stroke Lengths:</b> 1/2", 1", 1 1/2", 2", 2 1/2", 3", 4", 5", 6" <b>Maximum Stroke</b> – 12" Optional Stainless Steel Rod Optional Rod Wiper <b>Optional Accessory:</b> D-129 Mounting Bracket <b>Base Weight:</b> .21 <b>Adder Per Inch of Stroke:</b> .03	
<b>04 □ -DP</b> 	<b>Double Acting</b> – Pivot Type – Air Return – Rear Pivot Mounting <b>Standard Stroke Lengths:</b> 1/2", 1", 1 1/2", 2", 2 1/2", 3", 4", 5", 6", 7", 8", 9", 10", 11", 12" <b>Maximum Stroke</b> – 32" Optional Stainless Steel Rod Optional Rod Wiper <b>Optional Accessories:</b> D-166-3 Piston Rod Clevis, D-167 Pivot Brackets <b>Base Weight:</b> .21 <b>Adder Per Inch of Stroke:</b> .03	
<b>04 □ -DXP</b> 	<b>Double Acting</b> – Double End or Rear Pivot Mounting – Air Return <b>Standard Stroke Lengths:</b> 1/2", 1", 1 1/2", 2", 2 1/2", 3", 4", 5", 6", 7", 8", 9", 10", 11", 12" <b>Maximum Stroke</b> – 32" Stainless Steel Rod Standard Optional Rod Wiper <b>Optional Accessories:</b> D-129 Mounting Bracket, D-13498-A Pivot Bracket, D-166-3 Piston Rod Clevis <b>Base Weight:</b> .29 <b>Adder Per Inch of Stroke:</b> .03	

Standard Air Cylinders

Three-Position Cylinders

Cushion Cylinders

MRS® Cylinders

Non-Rotating Cylinders

PC Cylinders

All Stainless Non-Repairable

All Stainless Repairable



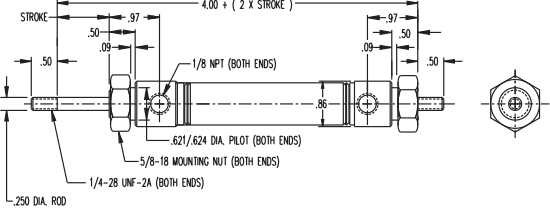
Z Line Air Cylinders

Rod Lock Cylinders



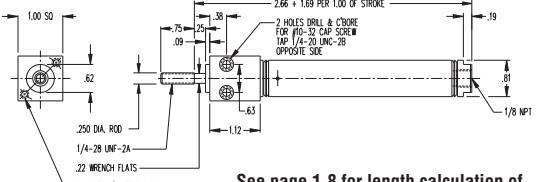


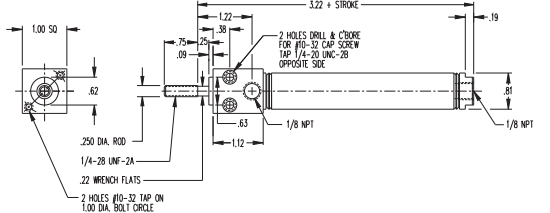


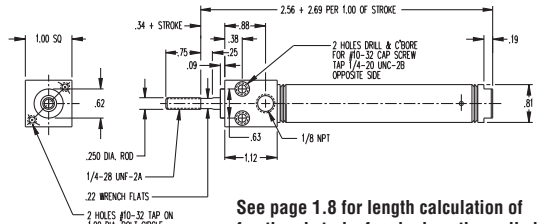
500 Hydraulic Cylinders

Repairable Hole Punch Cylinders

# 3/4" Bore Air Cylinders


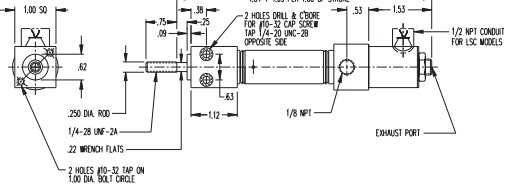

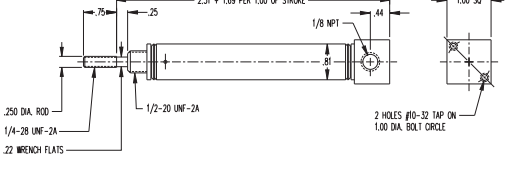

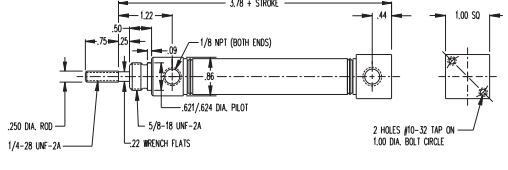

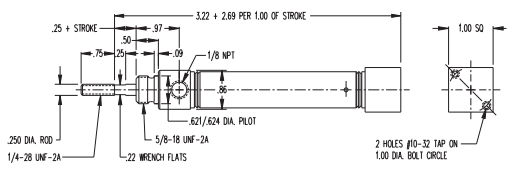
MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<b>04</b>  <b>-DXDE</b> 	<b>Double Acting – Double End Rod – Air Return – Double End Mounting</b> <b>Standard Stroke Lengths:</b> 1/2", 1", 1 1/2", 2", 2 1/2", 3", 4", 5", 6" <b>Maximum Stroke – 12"</b> <b>Stainless Steel Rod Standard</b> <b>Optional Rod Wiper</b> <b>Optional Accessory:</b> D-129 Mounting Bracket <b>Base Weight: .37</b> <b>Adder Per Inch of Stroke: .04</b>	

## 3/4" Bore Block Mounted

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<b>BF-04</b>  	<b>Single Acting – Front Block Mounting – Spring Return</b> <b>Standard Stroke Lengths:</b> 1/2", 1", 1 1/2", 2", 2 1/2", 3", 4" <b>Maximum Stroke – 6"</b> <b>Stainless Steel Rod Standard</b> <b>Base Weight: .18</b> <b>Adder Per Inch of Stroke: .08</b>	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>
<b>BF-04</b>  <b>-D</b> 	<b>Double Acting – Front Block Mounting – Air Return</b> <b>Standard Stroke Lengths:</b> 1/2", 1", 1 1/2", 2", 2 1/2", 3", 4", 5", 6" <b>Maximum Stroke – 12"</b> <b>Stainless Steel Rod Standard</b> <b>Base Weight: .22</b> <b>Adder Per Inch of Stroke: .03</b>	
<b>BF-04</b>  <b>-R</b> 	<b>Pull Type – Front Block Mounting – Rod Normally Extended – Reverse Single Acting – Spring Return</b> <b>Standard Stroke Lengths:</b> 1/2", 1", 1 1/2", 2", 2 1/2", 3", 4" <b>Maximum Stroke – 6"</b> <b>Stainless Steel Rod Standard</b> <b>Base Weight: .19</b> <b>Adder Per Inch of Stroke: .07</b>	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>

# 3/4" Bore Air Cylinders

## 3/4" Bore Block Mounted (continued)

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<p><b>BF-04</b> <input type="checkbox"/> <b>-LS</b> or <b>LSC*</b></p> 	<p><b>Built-in Midget 3-Way Solenoid Operated Valve – Single Acting – Spring Return – Front Block Mounting – 150 PSI, 3/64" Orifice</b>  <b>Standard Stroke Lengths:</b>            1/2", 1", 1 1/2", 2", 2 1/2", 3", 4"  <b>Maximum Stroke – 6"</b>  <b>Stainless Steel Rod Standard</b>  <b>Standard Voltage – 115/60</b>  <b>Optional Voltages:</b>            24, 230 A.C. or 6, 12, 24 D.C.  <b>Base Weight: .38</b>  <b>Adder Per Inch of Stroke: .08</b></p>	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>
<p><b>BR-04</b> <input type="checkbox"/></p> 	<p><b>Single Acting – Rear Block – Mounting for Vertical Positioning – Spring Return</b>  <b>Standard Stroke Lengths:</b>            1/2", 1", 1 1/2", 2", 2 1/2", 3", 4"  <b>Maximum Stroke – 6"</b>  <b>Stainless Steel Rod Standard</b>  <b>Base Weight: .15</b>  <b>Adder Per Inch of Stroke: .08</b></p>	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>
<p><b>BR-04</b> <input type="checkbox"/> <b>-D</b></p> 	<p><b>Double Acting – Rear Block – Mounting for Vertical Positioning – Air Return</b>  <b>Standard Stroke Lengths:</b>            1/2", 1", 1 1/2", 2", 2 1/2", 3", 4", 5", 6"  <b>Maximum Stroke – 12"</b>  <b>Stainless Steel Rod Standard</b>  <b>Base Weight: .26</b>  <b>Adder Per Inch of Stroke: .08</b></p>	
<p><b>BR-04</b> <input type="checkbox"/> <b>-R</b></p> 	<p><b>Pull Type – Rear Block Mounting for Vertical Positioning – Rod Normally Extended – Reverse Single Acting – Spring Return</b>  <b>Standard Stroke Lengths:</b>            1/2", 1", 1 1/2", 2", 2 1/2", 3", 4"  <b>Maximum Stroke – 6"</b>  <b>Stainless Steel Rod Standard</b>  <b>Base Weight: .15</b>  <b>Adder Per Inch of Stroke: .08</b></p>	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>

Standard Air Cylinders

Three-Position Cylinders

Cushion Cylinders

MRS® Cylinders

Non-Rotating Cylinders

PC Cylinders

All Stainless Non-Repairable

All Stainless Repairable

Z Line Air Cylinders

Rod Lock Cylinders


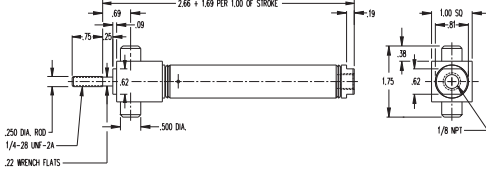

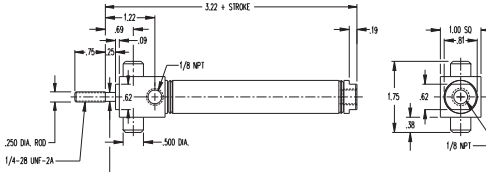

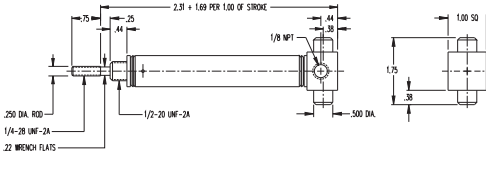

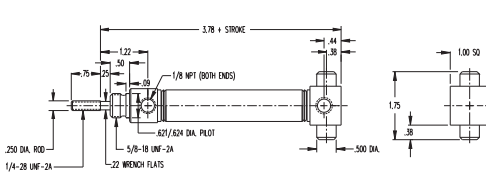
500 Hydraulic Cylinders

Repairable Hole Punch Cylinders



# 3/4" Bore Air Cylinders


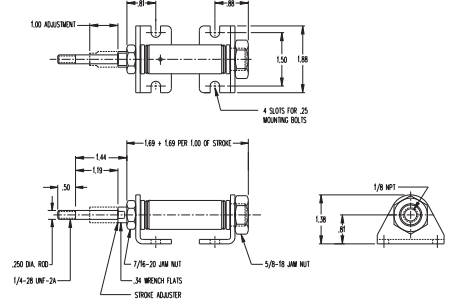

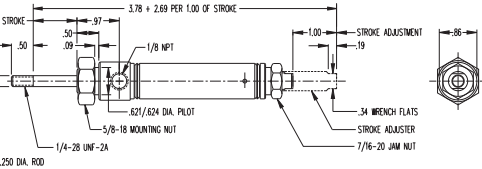

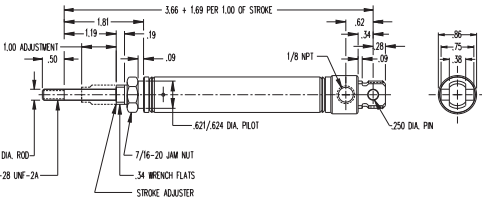
## 3/4" Bore Trunnion Mounted

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<b>BFT-04</b> <input type="checkbox"/> 	<p><b>Single Acting</b> – Front Block Trunnion Mounting – Spring Return</p> <p>Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4"</p> <p>Maximum Stroke – 6"</p> <p>Stainless Steel Rod Standard</p> <p>Optional Accessories: TRB-2 Trunnion Brackets D-166-3 Rod Clevis</p> <p>Base Weight: .24 Adder Per Inch of Stroke: .08</p>	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>
<b>BFT-04</b> <input type="checkbox"/> -D 	<p><b>Double Acting</b> – Front Block Trunnion Mounting – Air Return</p> <p>Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4"</p> <p>Maximum Stroke – 12"</p> <p>Stainless Steel Rod Standard</p> <p>Optional Accessories: TRB-2 Trunnion Brackets D-166-3 Rod Clevis</p> <p>Base Weight: .29 Adder Per Inch of Stroke: .03</p>	
<b>BRT-04</b> <input type="checkbox"/> 	<p><b>Single Acting</b> – Rear Block Trunnion Mounting – Spring Return</p> <p>Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4"</p> <p>Maximum Stroke – 6"</p> <p>Stainless Steel Rod Standard</p> <p>Optional Accessories: TRB-2 Trunnion Brackets D-166-3 Rod Clevis</p> <p>Base Weight: .19 Adder Per Inch of Stroke: .08</p>	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>
<b>BRT-04</b> <input type="checkbox"/> -D 	<p><b>Double Acting</b> – Rear Block Trunnion Mounting – Air Return</p> <p>Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4"</p> <p>Maximum Stroke – 12"</p> <p>Stainless Steel Rod Standard</p> <p>Optional Accessories: TRB-2 Trunnion Brackets D-166-3 Rod Clevis</p> <p>Base Weight: .28 Adder Per Inch of Stroke: .03</p>	



# 3/4" Bore Air Cylinders

## 3/4" Bore Adjustable Stroke

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<b>04</b> <input type="checkbox"/> -A 	<p><b>Single Acting – Spring Return – Adjustable Stroke – Double End Mounting – Brass Piston Rod Bearing and Stroke Adjustment in 1", 2", 3". Mounting Brackets are included.</b></p> <p>1" Stroke Adjusts 0" – 1", 2" Stroke 1" – 2", and 3" Stroke 2" – 3" Maximum Stroke – 6"</p> <p>Optional Stainless Steel Rod  <b>Base Weight: .40</b>  <b>Adder Per Inch of Stroke: .07</b></p>	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>
<b>04</b> <input type="checkbox"/> -RA 	<p><b>Reverse Single Acting – Pull Type – Rod Normally Extended – Nose Mounting – Stroke Adjustment in 1", 2", 3".</b></p> <p>1" Stroke Adjusts 0" – 1", 2" Stroke 1" – 2", and 3" Stroke 2" – 3" Maximum Stroke – 6"</p> <p>Optional Stainless Steel Rod  <b>Optional Accessory:</b>            D-129 Mounting Bracket  <b>Base Weight: .23</b>  <b>Adder Per Inch of Stroke: .07</b></p>	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>
<b>04</b> <input type="checkbox"/> -AP 	<p><b>Single Acting – Pivot Type – Rear Pivot Mounting – Stroke Adjustment in 1", 2", 3".</b></p> <p>1" Stroke Adjusts 0" – 1", 2" Stroke 1" – 2", and 3" Stroke 2" – 3" Maximum Stroke – 6"</p> <p>Optional Stainless Steel Rod  <b>Optional Accessories:</b>            D-166-3 Piston Rod Clevis            D-167 Pivot Brackets  <b>Base Weight: .23</b>  <b>Adder Per Inch of Stroke: .07</b></p>	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>

Standard Air Cylinders

Three-Position Cylinders

Cushion Cylinders

MRS® Cylinders

Non-Rotating Cylinders

PC Cylinders

All Stainless Non-Repairable

All Stainless Repairable

Z Line Air Cylinders

Rod Lock Cylinders

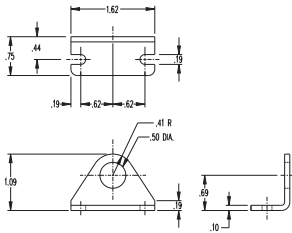
500 Hydraulic Cylinders

Repairable Hole Punch Cylinders

# 3/4" Bore Air Cylinders

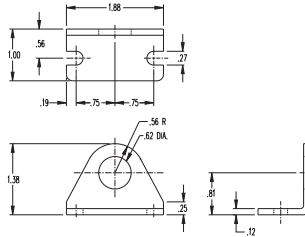
## 3/4" Bore Accessories

### D-226



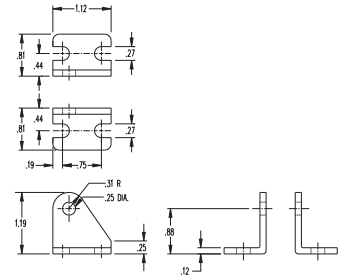
Mounting Bracket  
(for Single Acting Models)

### D-129



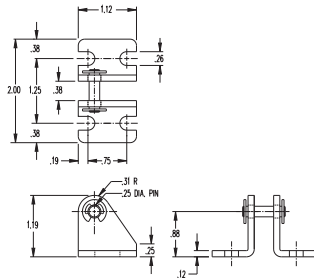
Mounting Bracket  
(for Double Acting Models)

### D-167



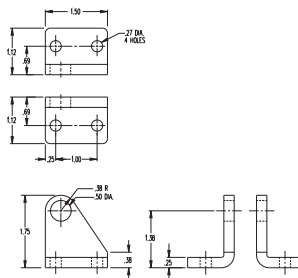
Pivot Brackets

### D-13498-A



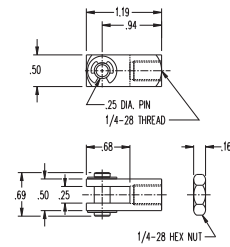
Pivot Bracket

### TRB-2



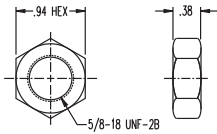
Trunnion Brackets

### D-166-3



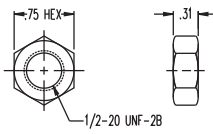
Piston Rod Clevis

### D-9



Mounting Nut

### D-98



Mounting Nut

# 7/8" Bore Air Cylinders

- Ground and Polished, High Strength Carbon Steel Piston Rod Standard — 303 Stainless Steel Rod Available as an Option — Bronze Rod Guide Bushing Standard
- Force Exerted Approximately 0.6 of Air Line Pressure
- Enclosed Spring Force: 3 lbs. Relaxed — 6 lbs. Compressed
- Cushion Quiet Bumpers Standard on All Models

## OPTIONS:

### NO CHARGE:

- PORTS ROTATED (K)
- NO THREAD (NT)
- SIDE PORTED REAR HEAD (Q)  
Add .28" to nose mount overall length
- PIVOT BUSHING (Y)  
.250" ID

### EXTRA EXTENSION (EE)

- Single, reverse and double acting
- DXDE, extension added to each end

### DOUBLE ACTING FAILSAFE

(JS = Spring Return, JR = Spring Extend)

### MAGNET (prefix M)

- All models add .125" to overall length
- Stainless steel rod becomes standard with this option
- Must specify track(s) for use with miniature position sensing (T2, T3, T4) See page 1.9 for track location details. See Switch Products, page 9.3 for switch selection information.

## OPTIONS continued...

### LOW TEMPERATURE (N)

Temperature Range: -40° to 200°F

### HIGH TEMPERATURE "U" CUPS

Temperature Range: 0° to 400°F (-18° to 205°C)

### ROD WIPER (W)


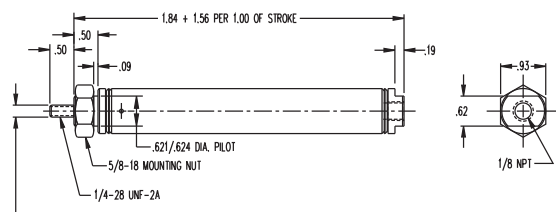

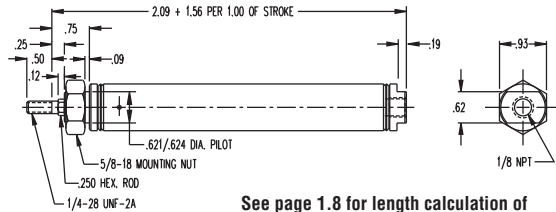
(not available in standard single acting)

### STAINLESS STEEL ROD (prefix SR)


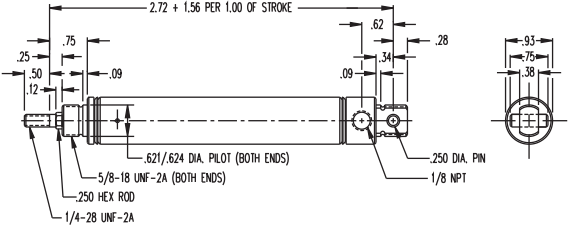

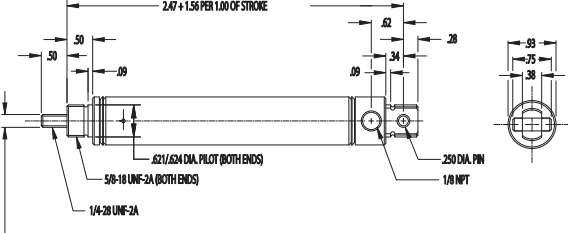

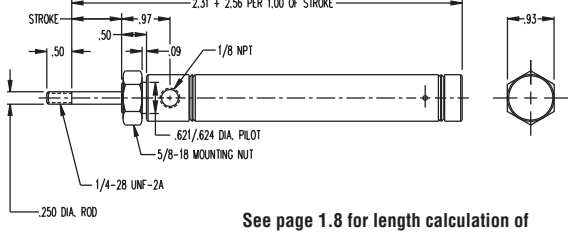

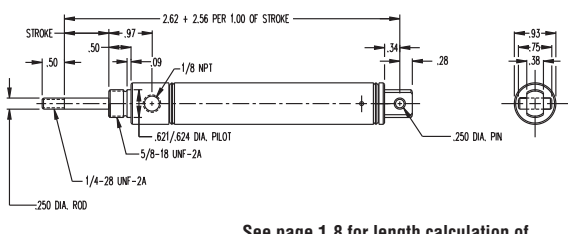

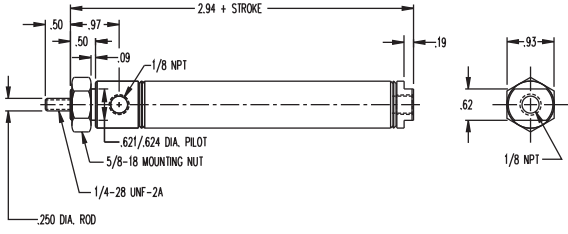
### LOW PRESSURE HYDRAULIC (HL)

- 250 psi maximum
- Double acting models only
- Option specified as a prefix


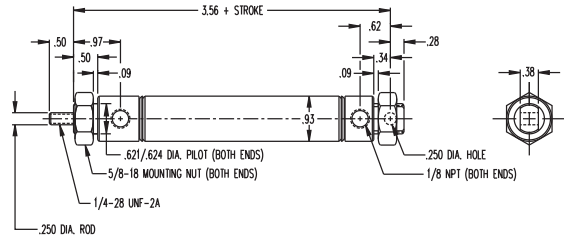

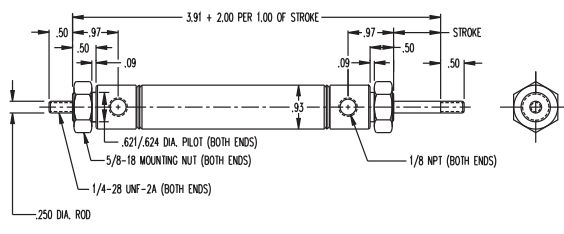
Enter Stroke Length as 3rd Digit

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<b>06</b> <input type="checkbox"/> 	<b>Single Acting – Spring Return – Front Nose Mounting</b> <b>Standard Stroke Lengths:</b> ½", 1", 1½", 2", 2½", 3", 4" Maximum Stroke – 6" Optional Stainless Steel Rod Optional Accessory: D-129 Mounting Bracket Base Weight: .17 Adder Per Inch of Stroke: .09	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>
<b>06</b> <input type="checkbox"/> -NR 	<b>Single Acting – Non-rotating Hexagon Rod – Spring Return – Front Nose Mounting</b> <b>Standard Stroke Lengths:</b> ½", 1", 1½", 2", 2½", 3", 4" Maximum Stroke – 6" Optional Stainless Steel Rod Optional Accessory: D-129 Mounting Bracket Base Weight: .17 Adder Per Inch of Stroke: .09	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>

# 7/8" Bore Air Cylinders

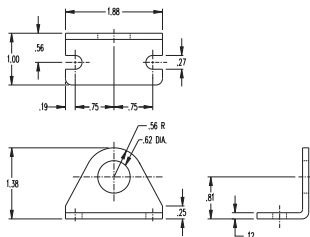
MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<p><b>06 □ -NRP</b></p> 	<p><b>Single Acting – Non-rotating Hexagon Rod – Pivot Type – Spring Return – Rear Pivot Mounting</b>  <b>Standard Stroke Lengths:</b>            ½", 1", 1½", 2", 2½", 3", 4"  <b>Maximum Stroke – 6"</b>  <b>Optional Stainless Steel Rod</b>  <b>Optional Accessories:</b>            D-166-3 Piston Rod Clevis            D-167 Pivot Brackets  <b>Base Weight: .17</b>  <b>Adder Per Inch of Stroke: .09</b></p>	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>
<p><b>06 □ -P</b></p> 	<p><b>Single Acting – Pivot Type – Spring Return – Rear Pivot Mounting</b>  <b>Standard Stroke Lengths:</b>            ½", 1", 1½", 2", 2½", 3", 4"  <b>Maximum Stroke – 6"</b>  <b>Optional Stainless Steel Rod</b>  <b>Optional Accessories:</b>            D-166-3 Piston Rod Clevis            D-167 Pivot Brackets  <b>Base Weight: .17</b>  <b>Adder Per Inch of Stroke: .09</b></p>	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>
<p><b>06 □ -R</b></p> 	<p><b>Reverse Single Acting – Pull Type – Rod Normally Extended – Front Nose Mounting</b>  <b>Standard Stroke Lengths:</b>            ½", 1", 1½", 2", 2½", 3", 4"  <b>Maximum Stroke – 6"</b>  <b>Optional Stainless Steel Rod</b>  <b>Optional Accessory:</b>            D-129 Mounting Bracket  <b>Base Weight: .20</b>  <b>Adder Per Inch of Stroke: .09</b></p>	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>
<p><b>06 □ -RP</b></p> 	<p><b>Reverse Single Acting – Pivot and Pull Type – Rod Normally Extended – Spring Return – Rear Pivot Mounting</b>  <b>Standard Stroke Lengths:</b>            ½", 1", 1½", 2", 2½", 3", 4"  <b>Maximum Stroke – 6"</b>  <b>Optional Stainless Steel Rod</b>  <b>Optional Accessories:</b>            D-166-3 Piston Rod Clevis            D-167 Pivot Brackets  <b>Base Weight: .20</b>  <b>Adder Per Inch of Stroke: .09</b></p>	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>
<p><b>06 □ -D</b></p> 	<p><b>Double Acting – Air Return – Front Nose Mounting</b>  <b>Standard Stroke Lengths:</b>            ½", 1", 1½", 2", 2½", 3", 4", 5", 6"  <b>Maximum Stroke – 12"</b>  <b>Optional Stainless Steel Rod</b>  <b>Optional Accessory:</b>            D-129 Mounting Bracket  <b>Base Weight: .25</b>  <b>Adder Per Inch of Stroke: .03</b></p>	

# 7/8" Bore Air Cylinders

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<b>06 □ -DXP</b> 	<b>Double Acting – Double End or Rear Pivot Mounting – Air Return</b> <b>Standard Stroke Lengths:</b> ½", 1", 1½", 2", 2½", 3", 4", 5", 6", 7", 8", 9", 10", 11", 12" <b>Maximum Stroke – 32"</b> <b>Stainless Steel Rod Standard</b> <b>Optional Accessories:</b> D-166-3 Piston Rod Clevis D-129 Mounting Bracket D-13498-A Pivot Bracket <b>Base Weight: .32</b> <b>Adder Per Inch of Stroke: .03</b>	
<b>06 □ -DXDE</b> 	<b>Double Acting – Double End Rod – Air Return – Double End Mounting</b> <b>Standard Stroke Lengths:</b> ½", 1", 1½", 2", 2½", 3", 4", 5", 6" <b>Maximum Stroke – 12"</b> <b>Stainless Steel Rod Standard</b> <b>Optional Accessory:</b> D-129 Mounting Bracket <b>Base Weight: .39</b> <b>Adder Per Inch of Stroke: .06</b>	

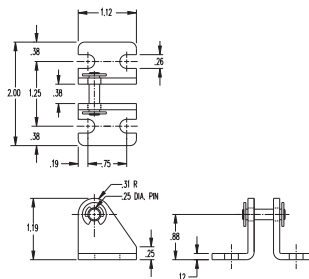
## 7/8" Bore Accessories

**D-129**



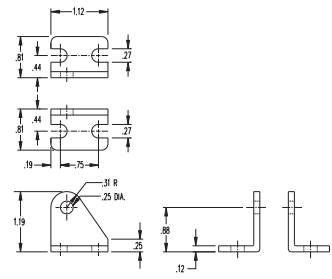
Mounting Bracket

**D-13498-A**



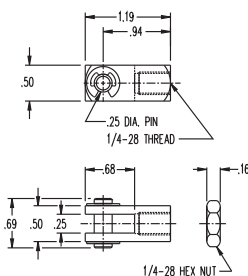
Pivot Bracket

**D-167**



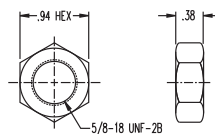
Pivot Brackets

**D-166-3**



Rod Clevis

**D-9**



Mounting Nut

Standard Air Cylinders  
 Three-Position Cylinders  
 Cushion Cylinders  
 MRS® Cylinders  
 Non-Rotating Cylinders  
 PG Cylinders  
 All Stainless Non-Repairable  
 All Stainless Repairable  
 7 Line Air Cylinders  
 Rod Lock Cylinders  
 500 Hydraulic Cylinders  
 Repairable Hole Punch Cylinders

# 1-1/16" Bore Air Cylinders

- Ground and Polished, High Strength Carbon Steel Piston Rod Standard — 303 Stainless Steel Rod Available as an Option — Bronze Rod Guide Bushing Standard
- Force Exerted Approximately 0.9 of Air Line Pressure
- Enclosed Spring Force: 3 lbs. Relaxed — 6 lbs. Compressed
- Rod Wipers Available on D, DP, DX and DXDE Models

## OPTIONS:

### NO CHARGE:

- PORTS ROTATED (K)

\*Front port rotated 90° on BF-090-D.

- NO THREAD (NT)
- SIDE PORTED REAR HEAD (Q)  
Add .25" to nose mount overall length
- PIVOT BUSHING (Y)  
.250" ID

### SINGLE AND REVERSE ACTING BUMPER (B)

- Add .125 to overall length

### DOUBLE ACTING BUMPERS (B)

- Add .125 to overall length
- Models DXDE and DXDEH add .500

### EXTRA EXTENSION (EE)

- Single, reverse and double acting,

- DXDE, extension added to each end
- DXDE hollow rod, extension added to each end

### DOUBLE ACTING FAILSAFE

(JS = Spring Return, JR = Spring Extend)

- See page 1.65 and 1.66 for overall length adders

HEAVY SPRINGS (H) are standard on all single acting block front and block rear mount and -NRLSC models, and reverse acting except -RA type

- Spring Force: 6 lbs. relaxed — 12 lbs. compressed

## OPTIONS continued...

### MAGNET (prefix M)

- Single acting and DXDE add .125" to overall length
- Use bumper length adder for DXDE and DXDEH when magnet and bumper are ordered together.
- Stainless steel rod becomes standard with this option
- Must specify track(s) for use with miniature position sensing (T2, T3, T4) See page 1.9 for track location details. See Switch Products, page 9.3 for switch selection information.

### LOW TEMPERATURE (N)

Temperature Range: -40° to 200°F

### HIGH TEMPERATURE "U" CUPS

(V) Temperature Range: 0° to 400°F (-18° to 205°C)

### ROD WIPER (W)

(not available in standard single acting)  
(now available in block mount)

Standard on DX, DXDE, DXDEH, All block mountings and M option

250 psi maximum  
Double acting models only  
Option specified as a prefix

Enter Stroke Length as 3rd Digit

## MODEL/PRICE

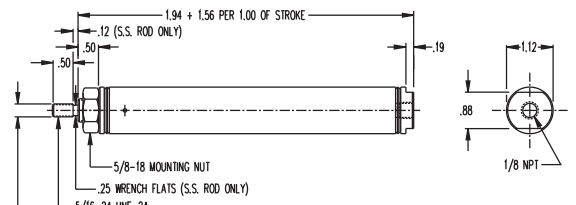
## DESCRIPTION/WEIGHT (lbs.)

## DIMENSIONS

09



**Single Acting – Spring Return – Front Nose Mounting**  
Standard Stroke Lengths:  
1/2", 1", 1 1/2", 2", 2 1/2", 3", 4"  
Maximum Stroke – 6"  
Optional Stainless Steel Rod  
Optional Accessory:  
D-129 Mounting Bracket  
Base Weight: .23  
Adder Per Inch of Stroke: .11

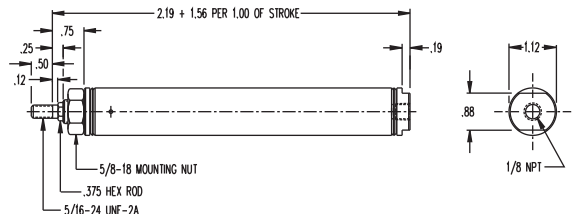


See page 1.8 for length calculation of fractional stroke for single acting cylinders.

09  -NR




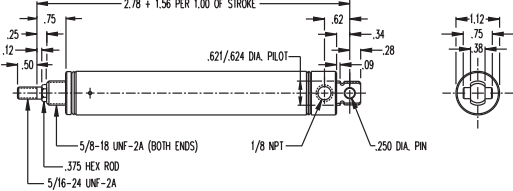

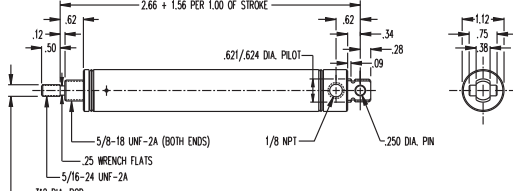

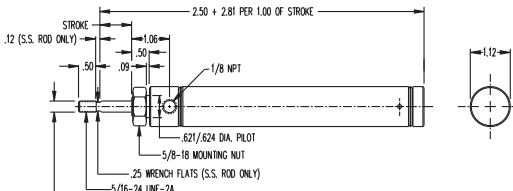

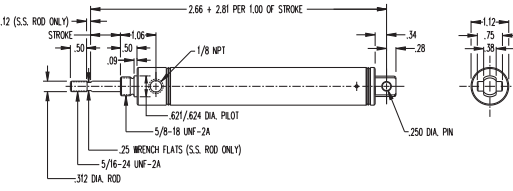
**Single Acting – Non-rotating Hexagon Rod – Spring Return – Front Nose Mounting**  
Standard Stroke Lengths:  
1/2", 1", 1 1/2", 2", 2 1/2", 3", 4"  
Maximum Stroke – 6"  
Optional Stainless Steel Rod  
Optional Accessory:  
D-129 Mounting Bracket  
Base Weight: .25  
Adder Per Inch of Stroke: .12



See page 1.8 for length calculation of fractional stroke for single acting cylinders.



# 1-1/16" Bore Air Cylinders

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<b>09</b> <input type="checkbox"/> <b>-NRP</b> 	<b>Single Acting – Non-rotating Hexagon Rod – Pivot Type – Spring Return – Rear Pivot Mounting</b> <b>Standard Stroke Lengths:</b> ½", 1", 1½", 2", 2½", 3", 4" <b>Maximum Stroke – 6"</b> Optional Stainless Steel Rod Optional Accessories: D-166-1 Piston Rod Clevis D-167 Pivot Brackets Base Weight: .25 Adder Per Inch of Stroke: .12	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>
<b>09</b> <input type="checkbox"/> <b>-P</b> 	<b>Single Acting – Pivot Type – Spring Return – Rear Pivot Mounting</b> <b>Standard Stroke Lengths:</b> ½", 1", 1½", 2", 2½", 3", 4" <b>Maximum Stroke – 6"</b> Optional Stainless Steel Rod Optional Accessories: D-166-1 Piston Rod Clevis D-167 Pivot Brackets Base Weight: .24 Adder Per Inch of Stroke: .11	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>
<b>09</b> <input type="checkbox"/> <b>-R</b> 	<b>Reverse Single Acting – Pull Type – Rod Normally Extended – Spring Return – Front Nose Mounting</b> <b>Standard Stroke Lengths:</b> ½", 1", 1½", 2", 2½", 3", 4" <b>Maximum Stroke – 6"</b> Optional Stainless Steel Rod Optional Accessory: D-129 Mounting Bracket Base Weight: .24 Adder Per Inch of Stroke: .16	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>
<b>09</b> <input type="checkbox"/> <b>-RP</b> 	<b>Reverse Single Acting – Pivot and Pull Type – Rod Normally Extended – Spring Return – Rear Pivot Mounting</b> <b>Standard Stroke Lengths:</b> ½", 1", 1½", 2", 2½", 3", 4" <b>Maximum Stroke – 6"</b> Optional Stainless Steel Rod Optional Accessories: D-166-1 Piston Rod Clevis D-167 Pivot Brackets Base Weight: .22 Adder Per Inch of Stroke: .16	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>

Standard Air Cylinders

Three-Position Cylinders

Cushion Cylinders

MRS® Cylinders

Non-Rotating Cylinders

PC Cylinders

All Stainless Non-Repairable

All Stainless Repairable


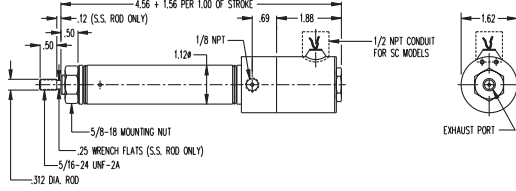

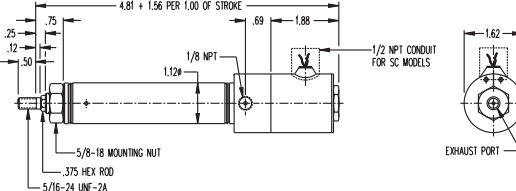

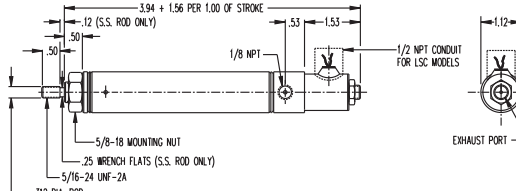
Z Line Air Cylinders

Rod Lock Cylinders


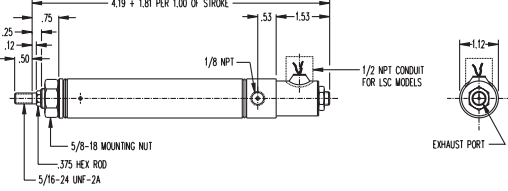

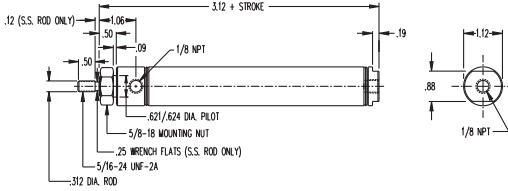

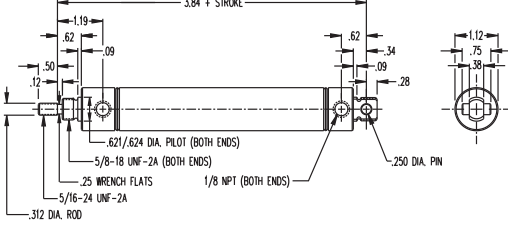

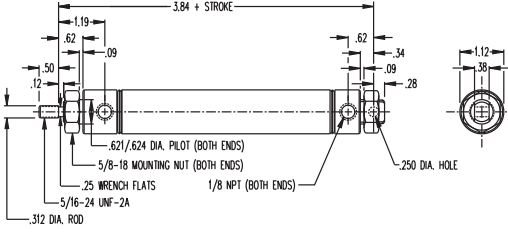
500 Hydraulic Cylinders

Repairable Hole Punch Cylinders

# 1-1/16" Bore Air Cylinders

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<p><b>09 □ -S or SC*</b></p> 	<p><b>Single Acting</b> – Built-in 3-Way Solenoid Operated Valve – Spring Return – Front Nose Mounting – 150 PSI, 1/16" Orifice Standard – 150 PSI, 3/64" Orifice Optional</p> <p>Standard Stroke Lengths: 1/2", 1", 1 1/2", 2", 2 1/2", 3", 4"</p> <p>Maximum Stroke – 6"</p> <p>Optional Stainless Steel Rod</p> <p>Standard Voltage – 115/60</p> <p>Optional Voltages: 24, 230 A.C. or 6, 12, 24 D.C.</p> <p>Optional Accessory: D-129 Mounting Bracket</p> <p>Base Weight: 1.11</p> <p>Adder Per Inch of Stroke: .11</p>	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>
<p><b>09 □ -NRS or NRSC*</b></p> 	<p><b>Single Acting</b> – Built-in 3-Way Solenoid Operated Valve – Non-rotating Hexagon Piston Rod – Spring Return – Front Nose Mounting – 150 PSI, 1/16" Orifice Standard – 150 PSI, 3/64" Orifice Optional</p> <p>Standard Stroke Lengths: 1/2", 1", 1 1/2", 2", 2 1/2", 3", 4"</p> <p>Maximum Stroke – 6"</p> <p>Optional Stainless Steel Rod</p> <p>Standard Voltage – 115/60</p> <p>Optional Voltages: 24, 230 A.C. or 6, 12, 24 D.C.</p> <p>Optional Accessory: D-129 Mounting Bracket</p> <p>Base Weight: 1.13</p> <p>Adder Per Inch of Stroke: .12</p>	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>
<p><b>09 □ -LS or LSC*</b></p> 	<p><b>Single Acting</b> – Built-in Midget 3-Way Solenoid Operated Valve – Spring Return – Front Nose Mounting – 150 PSI, 3/64" Orifice</p> <p>Standard Stroke Lengths: 1/2", 1", 1 1/2", 2", 2 1/2", 3", 4"</p> <p>Maximum Stroke – 6"</p> <p>Optional Stainless Steel Rod</p> <p>Standard Voltage – 115/60</p> <p>Optional Voltages: 24, 230 A.C. or 6, 12, 24 D.C.</p> <p>Optional Accessory: D-129 Mounting Bracket</p> <p>Base Weight: 1.20</p> <p>Adder Per Inch of Stroke: .11</p>	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>

# 1-1/16" Bore Air Cylinders

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<p><b>09 □ -NRLS or NRLSC*</b></p> 	<p><b>Single Acting</b> – Non-rotating Hexagon Piston Rod – Built-in Midget 3-Way Solenoid Operated Valve – Spring Return – Front Nose Mounting – 150 PSI, 3/64" Orifice</p> <p><b>Standard Stroke Lengths:</b> ½", 1", 1½", 2", 2½", 3", 4"</p> <p><b>Maximum Stroke – 6"</b></p> <p>Optional Stainless Steel Rod</p> <p><b>Standard Voltage – 115/60</b></p> <p><b>Optional Voltages:</b> 24, 230 A.C. or 6, 12, 24 D.C.</p> <p><b>Optional Accessory:</b> D-129 Mounting Bracket</p> <p><b>Base Weight: 1.20</b></p> <p><b>Adder Per Inch of Stroke: .11</b></p>	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>
<p><b>09 □ -D</b></p> 	<p><b>Double Acting</b> – Air Return – Front Nose Mounting</p> <p><b>Standard Stroke Lengths:</b> ½", 1", 1½", 2", 2½", 3", 4", 5", 6"</p> <p><b>Maximum Stroke – 12"</b></p> <p>Optional Stainless Steel Rod</p> <p>Optional Rod Wiper</p> <p><b>Optional Accessory:</b> D-129 Mounting Bracket</p> <p><b>Base Weight: .33</b></p> <p><b>Adder Per Inch of Stroke: .05</b></p>	
<p><b>09 □ -DP</b></p> 	<p><b>Double Acting</b> – Pivot Type – Air Return – Rear Pivot Mounting</p> <p><b>Standard Stroke Lengths:</b> ½", 1", 1½", 2", 2½", 3", 4", 5", 6", 7", 8", 9", 10", 11", 12"</p> <p><b>Maximum Stroke – 32"</b></p> <p>Optional Stainless Steel Rod</p> <p>Optional Rod Wiper</p> <p><b>Optional Accessories:</b> D-166-1 Piston Rod Clevis, D-167 Pivot Bracket</p> <p><b>Base Weight: .33</b></p> <p><b>Adder Per Inch of Stroke: .05</b></p>	
<p><b>09 □ -DX</b></p> 	<p><b>Double Acting</b> – Universal Mounting Pivot, or Double End Mounting – Air Return</p> <p><b>Standard Stroke Lengths:</b> ½", 1", 1½", 2", 2½", 3", 4", 5", 6", 7", 8", 9", 10", 11", 12"</p> <p><b>Maximum Stroke – 32"</b></p> <p>Stainless Steel Rod Standard</p> <p>Optional Rod Wiper</p> <p><b>Optional Accessories:</b> D-13498-A Pivot Bracket, D-129 Mounting Bracket, D-166-1 Piston Rod Clevis</p> <p><b>Base Weight: .33</b></p> <p><b>Adder Per Inch of Stroke: .05</b></p>	

Standard Air Cylinders

Three-Position Cylinders

Cushion Cylinders

MRS® Cylinders

Non-Rotating Cylinders

PC Cylinders

All Stainless Non-Repairable

All Stainless Repairable


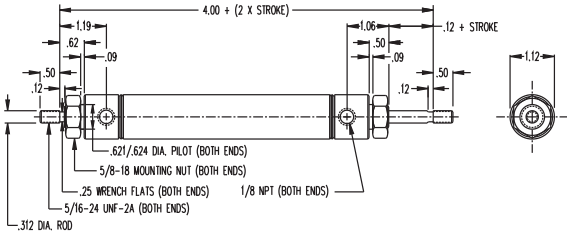

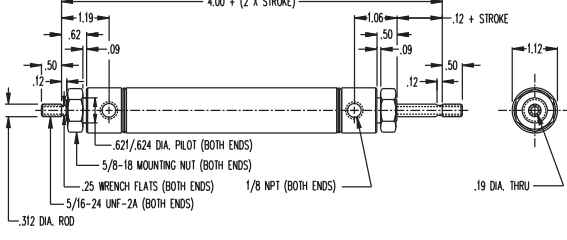
Z Line Air Cylinders

Rod Lock Cylinders


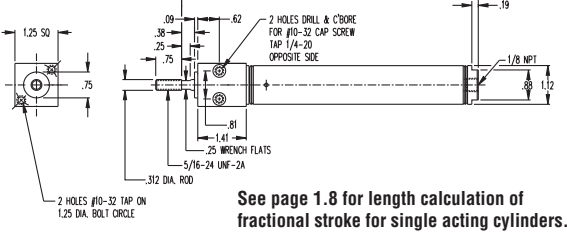

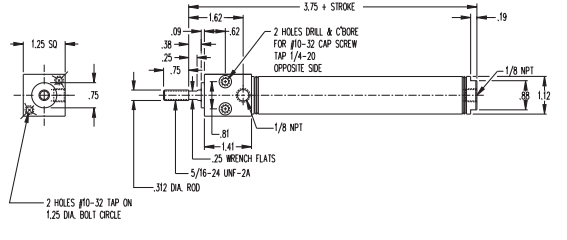
500 Hydraulic Cylinders

Repairable Hole Punch Cylinders

# 1-1/16" Bore Air Cylinders


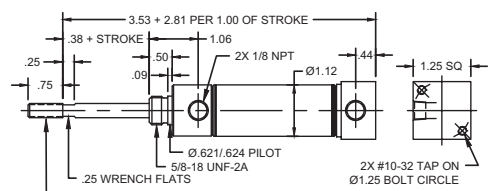

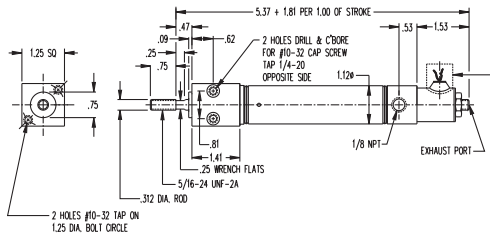

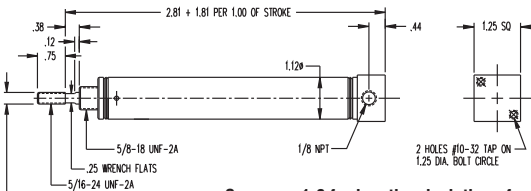

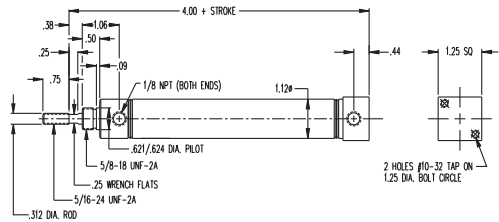

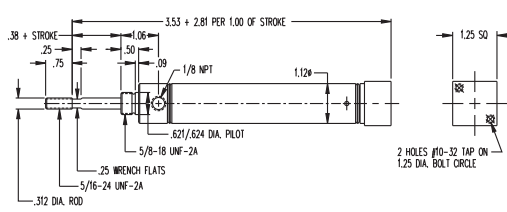
MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<b>09 □ -DXDE</b> 	<b>Double Acting – Double End Rod – Air Return – Double End Mounting</b> <b>Standard Stroke Lengths:</b> ½", 1", 1½", 2", 2½", 3", 4", 5", 6" <b>Maximum Stroke – 12"</b> Stainless Steel Rod Standard Optional Rod Wiper <b>Optional Accessory:</b> D-129 Mounting Bracket <b>Base Weight: .48</b> <b>Adder Per Inch of Stroke: .07</b>	
<b>09 □ -DXDEH</b> 	<b>Double Acting – Double End Hollow Rod – Air Return – Double End Mounting</b> <b>Standard Stroke Lengths:</b> ½", 1", 1½", 2", 2½", 3", 4", 5", 6" <b>Maximum Stroke – 12"</b> Stainless Steel Rod Standard <b>Optional Accessory:</b> D-129 Mounting Bracket <b>Base Weight: .47</b> <b>Adder Per Inch of Stroke: .07</b>	

## 1-1/16" Bore Block Mounted - Spring Force: 6 lbs. Retracted, 12 lbs. Extended

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<b>BF-09 □</b> 	<b>Single Acting – Front Block Mounting – Spring Return</b> <b>Standard Stroke Lengths:</b> ½", 1", 1½", 2", 2½", 3", 4" <b>Maximum Stroke – 6"</b> Stainless Steel Rod Standard <b>Base Weight: .43</b> <b>Adder Per Inch of Stroke: .11</b>	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>
<b>BF-09 □ -D</b> 	<b>Double Acting – Front Block Mounting – Air Return</b> <b>Standard Stroke Lengths:</b> ½", 1", 1½", 2", 2½", 3", 4", 5", 6" <b>Maximum Stroke – 12"</b> Stainless Steel Rod Standard <b>Base Weight: .49</b> <b>Adder Per Inch of Stroke: .05</b>	

# 1-1/16" Bore Air Cylinders

## 1-1/16" Bore Block Mounted (continued)


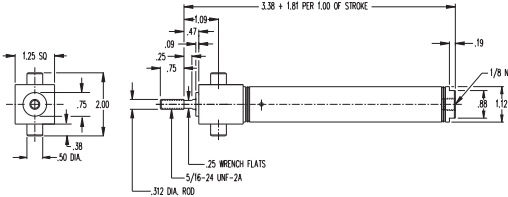

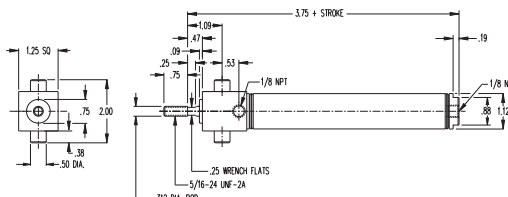

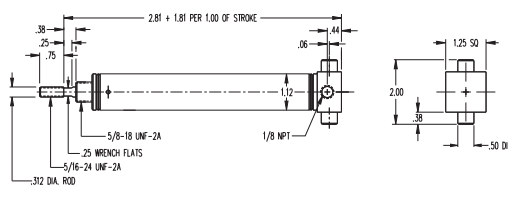

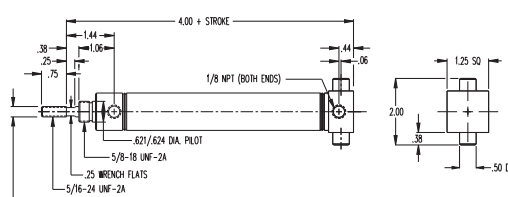
MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS	Standard Air Cylinder
<b>BF-09</b> <input type="checkbox"/> -R 	<b>Pull Type – Front Block Mounting – Rod Normally Extended – Reverse Single Acting – Spring Return</b> Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4" Maximum Stroke – 6" Stainless Steel Rod Standard Base Weight: .36 Adder Per Inch of Stroke: .16	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>	Three-Position Cylinders Cushion Cylinders
<b>BF-09</b> <input type="checkbox"/> -LS or LSC* 	<b>Built-in Midget 3-Way Solenoid Operated Valve – Single Acting – Spring Return – Front Block Mounting – 150 PSI, 3/64" Orifice</b> Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4" Maximum Stroke – 6" Stainless Steel Rod Standard Standard Voltage – 115/60 Optional Voltages: 24, 230 A.C. or 6, 12, 24 D.C. Base Weight: 1.31 Adder Per Inch of Stroke: .11	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>	MRS® Cylinders Non-Rotating Cylinders
<b>BR-09</b> <input type="checkbox"/> 	<b>Single Acting – Rear Block Mounting for Vertical Positioning – Spring Return</b> Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4" Maximum Stroke – 6" Stainless Steel Rod Standard Base Weight: .36 Adder Per Inch of Stroke: .16	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>	PC Cylinders All Stainless Non-Repairable
<b>BR-09</b> <input type="checkbox"/> -D 	<b>Double Acting – Rear Block Mounting for Vertical Positioning – Air Return</b> Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4" Maximum Stroke – 12" Stainless Steel Rod Standard Base Weight: .39 Adder Per Inch of Stroke: .05		All Stainless Repairable 7 Line Air Cylinders
<b>BR-09</b> <input type="checkbox"/> -R 	<b>Pull Type – Rear Block Mounting for Vertical Positioning – Rod Normally Extended – Reverse Single Acting – Spring Return</b> Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4" Maximum Stroke – 6" Stainless Steel Rod Standard Base Weight: .32 Adder Per Inch of Stroke: .16	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>	Rod Lock Cylinders 500 Hydraulic Cylinders

Repairable Hole Punch Cylinders



# 1-1/16" Bore Air Cylinders


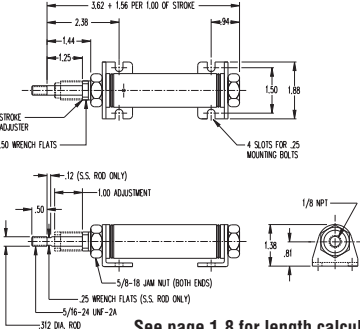

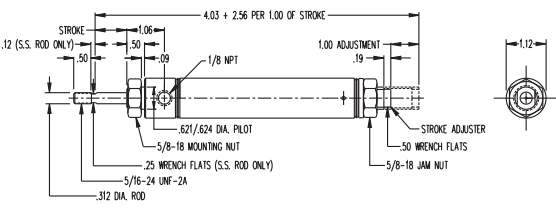

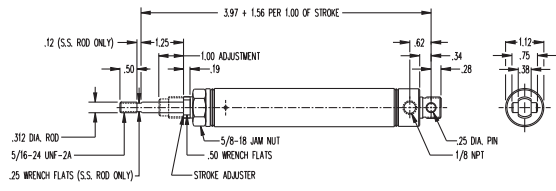
**1-1/16" Bore Trunnion Mounted - Spring Force: 6 lbs. Retracted, 13 lbs. Extended**

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<p><b>BFT-09</b> <input type="checkbox"/></p> 	<p><b>Single Acting – Front Block Trunnion Mounting – Spring Return</b>  <b>Standard Stroke Lengths:</b>            ½", 1", 1½", 2", 2½", 3", 4"  <b>Maximum Stroke – 6"</b>  <b>Stainless Steel Rod Standard</b>  <b>Optional Accessories:</b>            TRB-2 Trunnion Brackets            D-166-1 Rod Clevis  <b>Base Weight: .45</b>  <b>Adder Per Inch of Stroke: .11</b></p>	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>
<p><b>BFT-09</b> <input type="checkbox"/> -D</p> 	<p><b>Double Acting – Front Block Trunnion Mounting – Air Return</b>  <b>Standard Stroke Lengths:</b>            ½", 1", 1½", 2", 2½", 3", 4"  <b>Maximum Stroke – 12"</b>  <b>Stainless Steel Rod Standard</b>  <b>Optional Accessories:</b>            TRB-2 Trunnion Brackets            D-166-1 Rod Clevis  <b>Base Weight: .49</b>  <b>Adder Per Inch of Stroke: .05</b></p>	
<p><b>BRT-09</b> <input type="checkbox"/></p> 	<p><b>Single Acting – Rear Block Trunnion Mounting – Spring Return</b>  <b>Standard Stroke Lengths:</b>            ½", 1", 1½", 2", 2½", 3", 4"  <b>Maximum Stroke – 6"</b>  <b>Stainless Steel Rod Standard</b>  <b>Optional Accessories:</b>            TRB-2 Trunnion Brackets            D-166-1 Rod Clevis  <b>Base Weight: .37</b>  <b>Adder Per Inch of Stroke: .11</b></p>	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>
<p><b>BRT-09</b> <input type="checkbox"/> -D</p> 	<p><b>Double Acting – Rear Block Trunnion Mounting – Air Return</b>  <b>Standard Stroke Lengths:</b>            ½", 1", 1½", 2", 2½", 3", 4"  <b>Maximum Stroke – 12"</b>  <b>Stainless Steel Rod Standard</b>  <b>Optional Accessories:</b>            TRB-2 Trunnion Brackets            D-166-1 Rod Clevis  <b>Base Weight: .43</b>  <b>Adder Per Inch of Stroke: .05</b></p>	



# 1-1/16" Bore Air Cylinders

## 1-1/16" Bore Adjustable Stroke

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<b>09</b> <input type="checkbox"/> <b>-A</b> 	<b>Single Acting – Spring Return – Adjustable Stroke – Double End Mounting – Brass Piston Rod Bearing and Stroke Adjustment in 1", 2", 3"</b> 1" Stroke Adjusts 0" – 1", 2" Stroke 1" – 2", and 3" Stroke 2" – 3". Mounting brackets are included. Maximum Stroke – 6" Optional Stainless Steel Rod Base Weight: .58 Adder Per Inch of Stroke: .11	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>
<b>09</b> <input type="checkbox"/> <b>-RA</b> 	<b>Reverse Single Acting – Pull Type – Rod Normally Extended – Spring Force: 6 lbs. Retracted, 3 lbs. Extended – Nose Mounting – Stroke Adjustment in 1", 2", 3"</b> 1" Stroke Adjusts 0" – 1", 2" Stroke 1" – 2", and 3" Stroke 2" – 3". Maximum Stroke – 6" Optional Stainless Steel Rod Optional Accessory: D-129 Mounting Brackets Base Weight: .41 Adder Per Inch of Stroke: .11	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>
<b>09</b> <input type="checkbox"/> <b>-AP</b> 	<b>Single Acting – Pivot Type – Rear Pivot Mounting – Stroke Adjustment in 1", 2", 3"</b> 1" Stroke Adjusts 0" – 1", 2" Stroke 1" – 2", and 3" Stroke 2" – 3". Maximum Stroke – 6" Optional Stainless Steel Rod Optional Accessories: D-166-1 Piston Rod Clevis D-167 Pivot Brackets Base Weight: .40 Adder Per Inch of Stroke: .11	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>

Standard Air Cylinders

Three-Position Cylinders

Cushion Cylinders

MRS® Cylinders


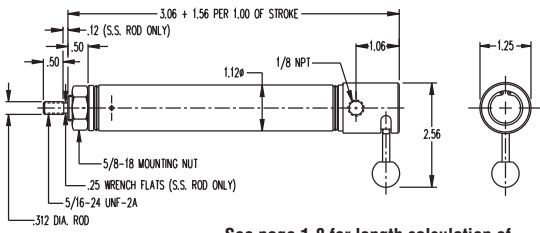
Non-Rotating Cylinders

PC Cylinders

All Stainless Non-Repairable

All Stainless Repairable

## 1-1/16" Bore Built-in Manual Valve

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<b>09</b> <input type="checkbox"/> <b>-M</b> 	<b>Single Acting – Built-in 3-Way Manual Valve – Spring Return – Front Nose Mounting Standard Stroke Lengths: 1/2", 1", 1 1/2", 2", 2 1/2", 3", 4"</b> Maximum Stroke – 6" Optional Stainless Steel Rod Optional Accessory: D-129 Mounting Bracket Base Weight: .45 Adder Per Inch of Stroke: .11	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>

7 Line Air Cylinders


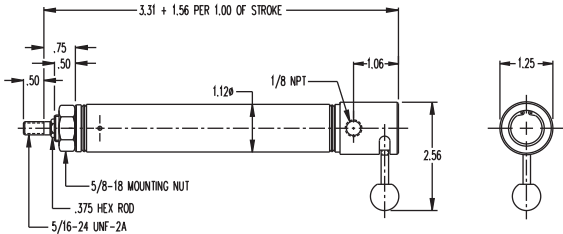
Rod Lock Cylinders

500 Hydraulic Cylinders

Repairable Hole Punch Cylinders

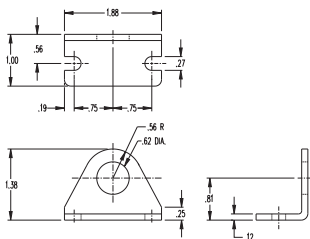
# 1-1/16" Bore Air Cylinders

## 1-1/16" Bore Built-in Manual Valve (continued)

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<p><b>09</b> <span style="border: 1px solid black; padding: 0 2px;"> </span> -NRM</p> 	<p><b>Single Acting – Built-in 3-Way Manual Valve – Non-rotating Hexagon Rod – Spring Return</b>  <b>Standard Stroke Lengths:</b>            1/2", 1", 1 1/2", 2", 2 1/2", 3", 4"  <b>Maximum Stroke – 6"</b>  <b>Optional Stainless Steel Rod</b>  <b>Optional Accessory:</b>            D-129 Mounting Bracket  <b>Base Weight: .47</b>  <b>Adder Per Inch of Stroke: .12</b></p>	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>

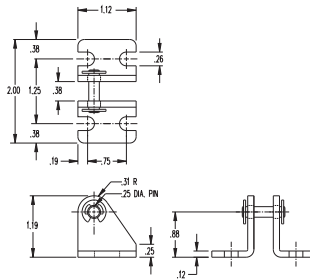
## 1-1/16" Bore Accessories

### D-129



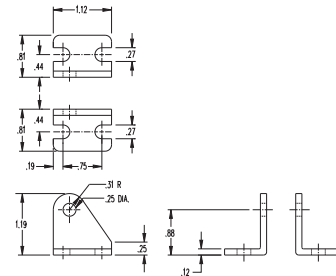
Mounting Bracket  
(for Single & Double Acting Models)

### D-13498-A



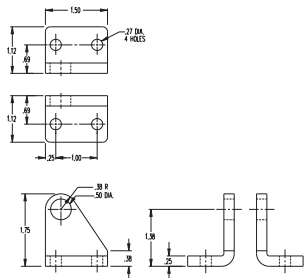
Pivot Bracket

### D-167



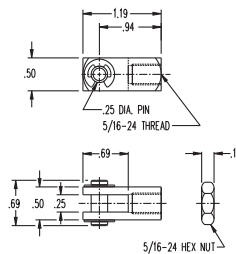
Pivot Brackets

### TRB-2



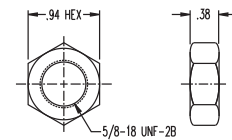
Trunnion Brackets

### D-166-1



Piston Rod Clevis

### D-9



Mounting Nut

# 1-1/4" Bore Air Cylinders

- Ground and Polished, High Strength Carbon Steel Piston Rod Standard — 303 Stainless Steel Rod Available as an Option — Bronze Rod Guide Bushing Standard
- Force Exerted Approximately 1.2 of Air Line Pressure
- Enclosed Spring Force: 7.5 lbs. Relaxed — 15 lbs. Compressed
- Cushion Quiet Bumpers Standard

## OPTIONS:

### NO CHARGE:

- PORTS ROTATED (K)
- NO THREAD (NT)
- SIDE PORTED REAR HEAD (Q)  
Add .31" to nose mount overall length
- PIVOT BUSHING (Y)  
.250" ID

### EXTRA EXTENSION (EE)

- Single, reverse and double acting
- DXDE, extension added to each end
- DXDE hollow rod, extension added to each end

### DOUBLE ACTING FAILSAFE

- (JS = Spring Return, JR = Spring Extend)  
• See page 1.65 and 1.66 for overall length adders

Enter Stroke Length as 3rd Digit

## OPTIONS continued...

### MAGNET (prefix M)

- Single acting and DXDE add .125" to overall length
- Stainless steel rod becomes standard with this option
- Must specify track(s) for use with miniature position sensing (T2, T3, T4) See page 1.9 for track location details. See Switch Products, page 9.3 for switch selection information.

### LOW TEMPERATURE (N)

Temperature Range: -40° to 200°F

### HIGH TEMPERATURE "U" CUPS (V)

Temperature Range: 0° to 400°F (-18° to 205°C)

### STAINLESS STEEL ROD (prefix SR)

- Standard on DXDE, DXDEH and M option ROD

### WIPER (W)

(not available in standard single acting)

### LOW PRESSURE HYDRAULIC (HL)

- 250 psi maximum
- Double acting models only
- Option specified as a prefix

Standard Air Cylinders

Three-Position Cylinders

Cushion Cylinders

MRS® Cylinders

Non-Rotating Cylinders

PG Cylinders

All Stainless Non-Repairable

All Stainless Repairable

7 Line Air Cylinders

Rod Lock Cylinders

500 Hydraulic Cylinders

Repairable Hole Punch Cylinders

## MODEL/PRICE

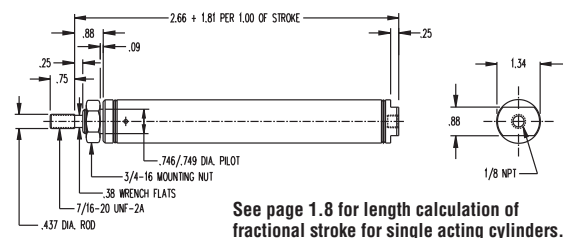
12



## DESCRIPTION/WEIGHT (lbs.)

**Single Acting – Spring Return – Front Nose Mounting**  
Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4"  
Maximum Stroke – 6"  
Optional Stainless Steel Rod  
Optional Accessory:  
D-241 Mounting Bracket  
Base Weight: .39  
Adder Per Inch of Stroke: .21

## DIMENSIONS

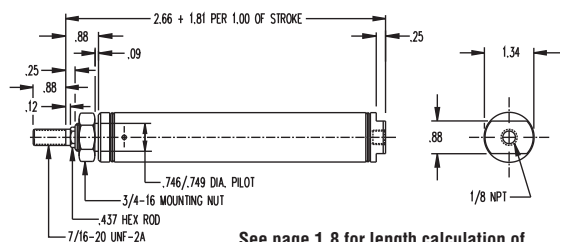


See page 1.8 for length calculation of fractional stroke for single acting cylinders.

12 -NR


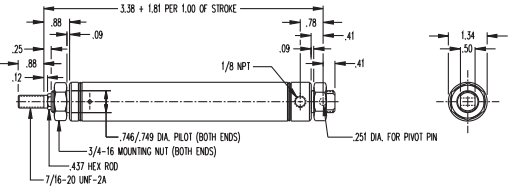

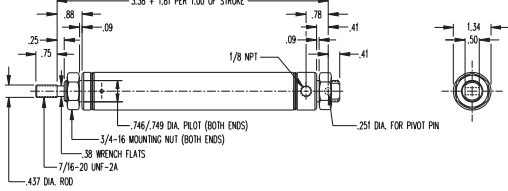

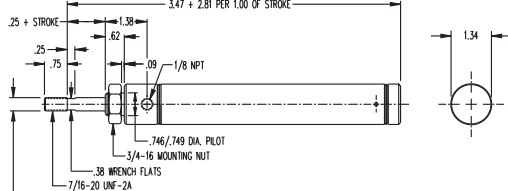

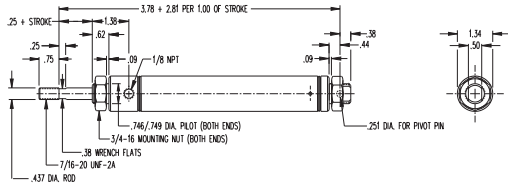


**Single Acting – Non-rotating Hexagon Rod – Spring Return – Front Nose Mounting**  
Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4"  
Maximum Stroke – 6"  
Optional Stainless Steel Rod  
Optional Accessory:  
D-241 Mounting Bracket  
Base Weight: .41  
Adder Per Inch of Stroke: .20


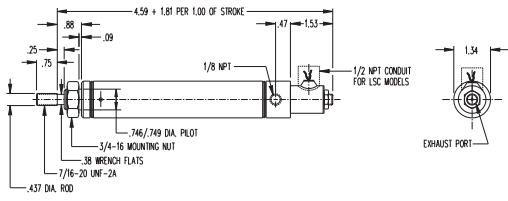

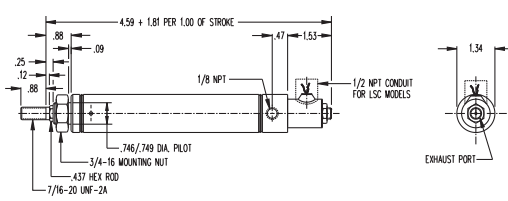

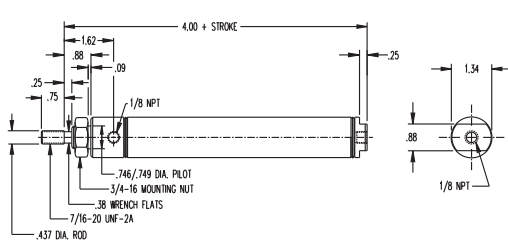

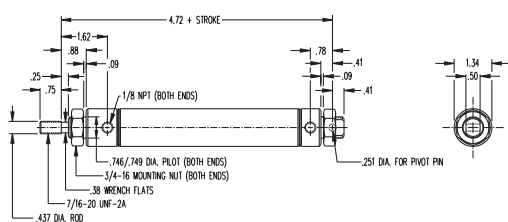


See page 1.8 for length calculation of fractional stroke for single acting cylinders.

# 1-1/4" Bore Air Cylinders

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<p><b>12□-NRP</b></p> 	<p><b>Single Acting – Non-rotating Hexagon Rod – Pivot Type – Spring Return – Rear Pivot or Double End Mounting</b>  <b>Standard Stroke Lengths:</b> 1/2", 1", 1 1/2", 2", 2 1/2", 3", 4"  <b>Maximum Stroke – 6"</b>  <b>Optional Stainless Steel Rod</b>  <b>Optional Accessories:</b>            D-231-1 Piston Rod Clevis            D-1360 Pivot Brackets  <b>Base Weight: .41</b>  <b>Adder Per Inch of Stroke: .20</b></p>	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>
<p><b>12□-P</b></p> 	<p><b>Single Acting – Pivot Type – Spring Return – Rear Pivot or Double End Mounting</b>  <b>Standard Stroke Lengths:</b> 1/2", 1", 1 1/2", 2", 2 1/2", 3", 4"  <b>Maximum Stroke – 6"</b>  <b>Optional Stainless Steel Rod</b>  <b>Optional Accessories:</b>            D-231-1 Piston Rod Clevis            D-1360 Pivot Brackets  <b>Base Weight: .53</b>  <b>Adder Per Inch of Stroke: .21</b></p>	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>
<p><b>12□-R</b></p> 	<p><b>Reverse Single Acting – Pull Type – Rod Normally Extended – Spring Return – Front Nose Mounting</b>  <b>Standard Stroke Lengths:</b> 1/2", 1", 1 1/2", 2", 2 1/2", 3", 4"  <b>Maximum Stroke – 6"</b>  <b>Optional Stainless Steel Rod</b>  <b>Optional Accessory:</b>            D-241 Mounting Bracket  <b>Base Weight: .50</b>  <b>Adder Per Inch of Stroke: .21</b></p>	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>
<p><b>12□-RP</b></p> 	<p><b>Reverse Single Acting – Pivot and Pull Type – Rod Normally Extended – Spring Return – Rear Pivot Mounting</b>  <b>Standard Stroke Lengths:</b> 1/2", 1", 1 1/2", 2", 2 1/2", 3", 4"  <b>Maximum Stroke – 6"</b>  <b>Optional Stainless Steel Rod</b>  <b>Optional Accessories:</b>            D-231-1 Piston Rod Clevis            D-1360 Pivot Bracket  <b>Base Weight: .57</b>  <b>Adder Per Inch of Stroke: .21</b></p>	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>

# 1-1/4" Bore Air Cylinders

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<b>12□-LS or LSC*</b> 	<b>Single Acting</b> – Built-in Midget 3-Way Solenoid Operated Valve – Spring Return – Front Nose Mounting – 150 PSI, 3/64" Orifice <b>Standard Stroke Lengths:</b> ½", 1", 1½", 2", 2½", 3", 4" <b>Maximum Stroke</b> – 6" Optional Stainless Steel Rod <b>Standard Voltage</b> – 115/60 <b>Optional Voltages:</b> 24, 230 A.C. or 6, 12, 24 D.C. <b>Optional Accessory:</b> D-241 Mounting Bracket <b>Base Weight:</b> 1.30 <b>Adder Per Inch of Stroke:</b> .21	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>
<b>12□-NRLS or NRLSC*</b> 	<b>Single Acting</b> – Non-rotating Hexagon Piston Rod – Built-in Midget 3-Way Solenoid Operated Valve – Spring Return – Front Nose Mounting – 150 PSI, 3/64" Orifice <b>Standard Stroke Lengths:</b> ½", 1", 1½", 2", 2½", 3", 4" <b>Maximum Stroke</b> – 6" Optional Stainless Steel Rod <b>Standard Voltage</b> – 115/60 <b>Optional Voltages:</b> 24, 230 A.C. or 6, 12, 24 D.C. <b>Optional Accessory:</b> D-241 Mounting Bracket <b>Base Weight:</b> 1.30 <b>Adder Per Inch of Stroke:</b> .21	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>
<b>12□-D</b> 	<b>Double Acting</b> – Air Return – Front Nose Mounting <b>Standard Stroke Lengths:</b> ½", 1", 1½", 2", 2½", 3", 4", 5", 6" <b>Maximum Stroke</b> – 12" Optional Stainless Steel Rod <b>Optional Accessory:</b> D-241 Mounting Bracket <b>Base Weight:</b> .58 <b>Adder Per Inch of Stroke:</b> .08	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>
<b>12□-DP</b> 	<b>Double Acting</b> – Pivot Type – Air Return – Rear Pivot or Double End Mounting <b>Standard Stroke Lengths:</b> ½", 1", 1½", 2", 2½", 3", 4", 5", 6", 7", 8", 9", 10", 11", 12" <b>Maximum Stroke</b> – 32" Optional Stainless Steel Rod <b>Optional Accessories:</b> D-231-1 Piston Rod Clevis, D-1360 Pivot Brackets, D-241 Mounting Bracket <b>Base Weight:</b> .71 <b>Adder Per Inch of Stroke:</b> .08	

Standard Air Cylinders

Three-Position Cylinders

Cushion Cylinders

MRS® Cylinders

Non-Rotating Cylinders

PC Cylinders

All Stainless Non-Repairable

All Stainless Repairable


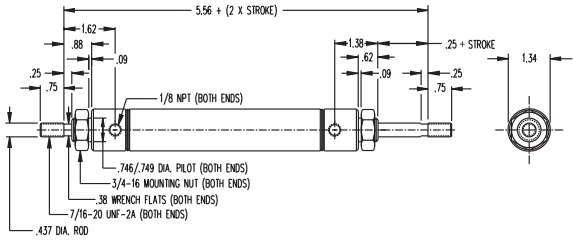

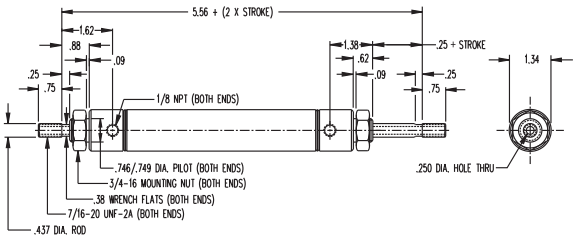
7 Line Air Cylinders

Rod Lock Cylinders

500 Hydraulic Cylinders

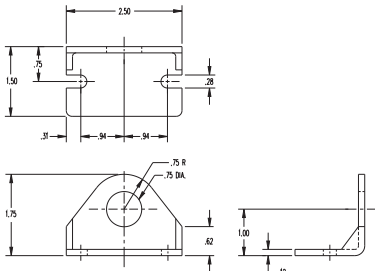
Repairable Hole Punch Cylinders

# 1-1/4" Bore Air Cylinders

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<b>12 □ -DXDE</b> 	<b>Double Acting - Double End Rod - Air Return - Double End Mounting</b> <b>Standard Stroke Lengths:</b> 1/2", 1", 1 1/2", 2", 2 1/2", 3", 4", 5", 6", 7", 8", 9", 10", 11", 12" <b>Maximum Stroke - 12"</b> <b>Stainless Steel Rod Standard</b> <b>Optional Accessory:</b> D-241 Mounting Bracket <b>Base Weight: .98</b> <b>Adder Per Inch of Stroke: .12</b>	
<b>12 □ -DXDEH</b> 	<b>Double Acting - Double End Hollow Rod - Air Return - Double End Mounting</b> <b>Standard Stroke Lengths:</b> 1/2", 1", 1 1/2", 2", 2 1/2", 3", 4", 5", 6" <b>Maximum Stroke - 12"</b> <b>Stainless Steel Rod Standard</b> <b>Optional Accessory:</b> D-241 Mounting Bracket <b>Base Weight: .97</b> <b>Adder Per Inch of Stroke: .12</b>	

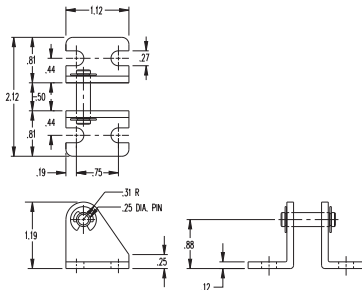
## 1-1/4" Bore Accessories

### D-241



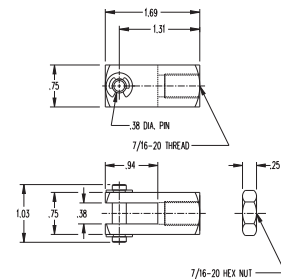
Mounting Bracket  
(for Single & Double Acting Models)

### D-1360



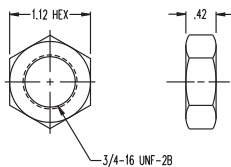
Pivot Brackets

### D-231-1



Piston Rod Clevis

### D-3556



Mounting Nut



# 1-1/2" Bore Air Cylinders

- Ground and Polished, High Strength Carbon Steel Piston Rod Standard — 303 Stainless Steel Rod Optional — Bronze Rod Guide Bushing Standard
- Force Exerted Approximately 1.7 of Air Line Pressure
- Enclosed Spring Force: 7 lbs. Relaxed — 14 lbs. Compressed
- Rod Wipers Available on D, DP, DX, DXDE, and DXDEH Models

## OPTIONS:

### NO CHARGE:

- PORTS ROTATED (K)

\*Front port rotated 90° on BF models.

- NO THREAD (NT)
- SIDE PORTED REAR HEAD (Q)  
Add .19" to nose mount overall length and DNR; BF and BFT add .38"
- PIVOT BUSHING (Y)  
.375" ID (use D-620-1 pivot bracket)

### SINGLE AND REVERSE ACTING BUMPERS (B)

- Add .125 to overall length

### DOUBLE ACTING BUMPERS (B)

- Add .125 to overall length

### EXTRA EXTENSION (EE)

- Single, reverse and double acting, extension
- DXDE, extension added to each end
- DXDE hollow rod, extension added to each end

### DOUBLE ACTING FAILSAFE

(JS = Spring Return, JR = Spring Extend)

- See page 1.65 and 1.66 for overall length adders

HEAVY SPRINGS (H) are standard on all single acting block front and block rear mount, and all reverse acting and stroke adjust models.

- Spring Force: 8.5 lbs. relaxed — 17 lbs. compressed

## OPTIONS continued...

### MAGNET (prefix M)

- Single and reverse acting add .125" to overall length
- Stainless steel rod becomes standard with this option
- Must specify track(s) for use with miniature position sensing (T2, T3, T4) See page 1.9 for track location details. See Switch Products, page 9.3 for switch selection information.

### LOW TEMPERATURE (N)

Temperature Range: -40° to 200°F

### HIGH TEMPERATURE "U" CUPS (V)

Temperature Range: 0° to 400°F (-18° to 205°C)

### ROD WIPER (W)

(not available in standard single acting)  
(now available in block mount)

### STAINLESS STEEL ROD (prefix SR)

- Standard on DX, DXDE, DXDEH, DNR, DXNR, All block mounts, and M option

### LOW PRESSURE HYDRAULIC (HL)

- 250 psi maximum
- Double acting models only
- Option specified as a prefix

Enter Stroke Length as 3rd Digit

## MODEL/PRICE

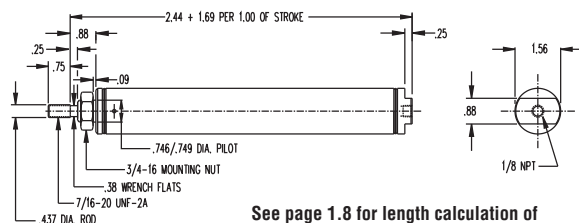
## DESCRIPTION/WEIGHT (lbs.)

## DIMENSIONS

17



**Single Acting – Spring Return – Front Nose Mounting**  
Standard Stroke Lengths:  
1/2", 1", 1 1/2", 2", 2 1/2", 3", 4"  
Maximum Stroke – 6"  
Optional Stainless Steel Rod  
Optional Accessory:  
D-241 Mounting Bracket  
Base Weight: .44  
Adder Per Inch of Stroke: .22

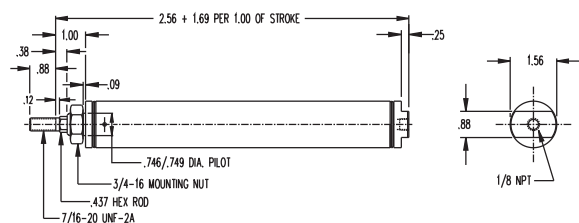


See page 1.8 for length calculation of fractional stroke for single acting cylinders.

17 -NR



**Single Acting – Non-rotating Hexagon Rod – Spring Return – Front Nose Mounting**  
Standard Stroke Lengths:  
1/2", 1", 1 1/2", 2", 2 1/2", 3", 4"  
Maximum Stroke – 6"  
Optional Stainless Steel Rod  
Optional Accessory:  
D-241 Mounting Bracket  
Base Weight: .45  
Adder Per Inch of Stroke: .22



See page 1.8 for length calculation of fractional stroke for single acting cylinders.

Standard Air Cylinders

Three-Position Cylinders

Cushion Cylinders

MRS® Cylinders

Non-Rotating Cylinders

PC Cylinders

All Stainless Non-Repairable

All Stainless Repairable


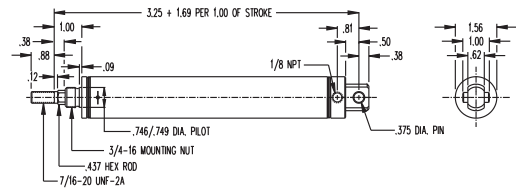

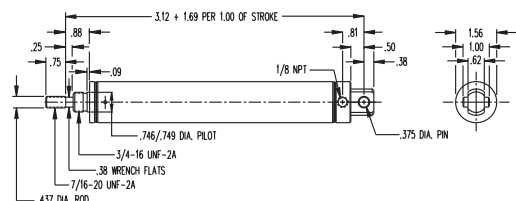

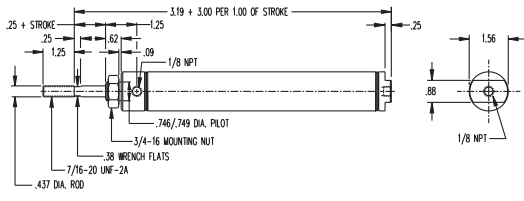

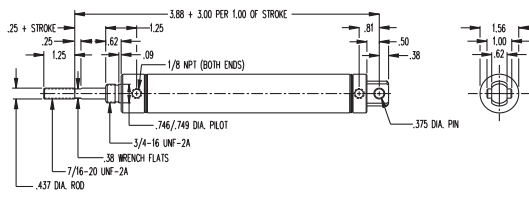
7 Line Air Cylinders

Rod Lock Cylinders


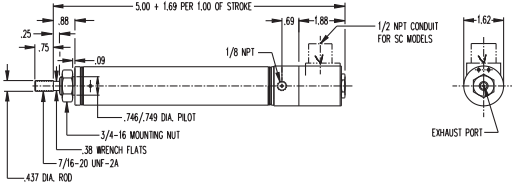

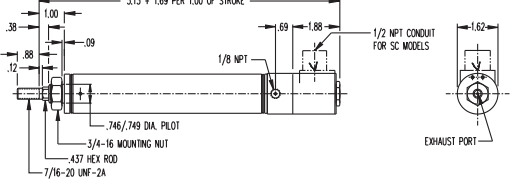

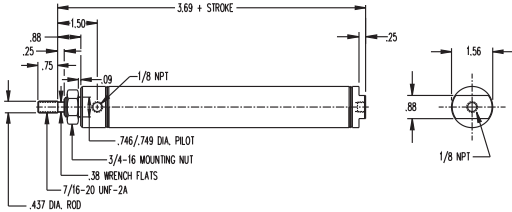

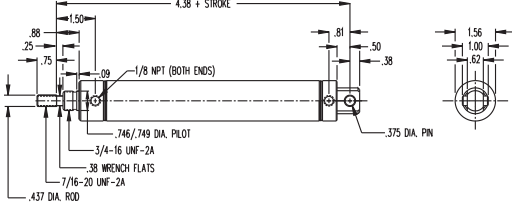
500 Hydraulic Cylinders

Repairable Hole Punch Cylinders

# 1-1/2" Bore Air Cylinders

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<b>17□-NRP</b> 	<b>Single Acting – Non-rotating Hexagon Rod – Spring Return – Rear Pivot Mounting</b> Standard Stroke Lengths: 1/2", 1", 1 1/2", 2", 2 1/2", 3", 4" Maximum Stroke – 6" Optional Stainless Steel Rod Optional Accessories: D-231-1 Piston Rod Clevis D-229 Pivot Brackets Base Weight: .46 Adder Per Inch of Stroke: .22	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>
<b>17□-P</b> 	<b>Single Acting – Pivot Type – Spring Return – Rear Pivot Mounting</b> Standard Stroke Lengths: 1/2", 1", 1 1/2", 2", 2 1/2", 3", 4" Maximum Stroke – 6" Optional Stainless Steel Rod Optional Accessories: D-231-1 Piston Rod Clevis D-229 Pivot Brackets Base Weight: .45 Adder Per Inch of Stroke: .22	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>
<b>17□-R</b> 	<b>Reverse Single Acting – Pull Type – Rod Normally Extended – Spring Return – Spring Force 8.5 lbs. Extended, 17 lbs. Retracted – Front Nose Mounting</b> Standard Stroke Lengths: 1/2", 1", 1 1/2", 2", 2 1/2", 3", 4" Maximum Stroke – 6" Optional Stainless Steel Rod Optional Accessory: D-241 Mounting Bracket Base Weight: .44 Adder Per Inch of Stroke: .22	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>
<b>17□-RP</b> 	<b>Reverse Single Acting – Pivot and Pull Type – Rod Normally Extended – Spring Return – Spring Force 8.5 lbs. Extended, 17 lbs. Retracted – Rear Pivot Mounting</b> Standard Stroke Lengths: 1/2", 1", 1 1/2", 2", 2 1/2", 3", 4" Maximum Stroke – 6" Optional Stainless Steel Rod Optional Accessories: D-231-1 Piston Rod Clevis D-229 Pivot Brackets Base Weight: .45 Adder Per Inch of Stroke: .22	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>

# 1-1/2" Bore Air Cylinders

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<p><b>17□-S or SC*</b></p> 	<p><b>Single Acting</b> – Built-in 3-Way Solenoid Operated Valve – Spring Return – Front Nose Mounting – 150 PSI, 1/16" Orifice Standard – 150 PSI, 3/64" Orifice Optional  <b>Standard Stroke Lengths:</b> 1/2", 1", 1 1/2", 2", 2 1/2", 3", 4"  <b>Maximum Stroke</b> – 6"                      Optional Stainless Steel Rod                      Standard Voltage – 115/60                      Optional Voltages: 24, 230 A.C. or 6, 12, 24 D.C.                      Optional Accessory: D-241 Mounting Bracket  <b>Base Weight:</b> 1.38  <b>Adder Per Inch of Stroke:</b> .22</p>	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>
<p><b>17□-NRS or NRSC*</b></p> 	<p><b>Single Acting</b> – Non-rotating Piston Rod – Built-in 3-Way Solenoid Operated Valve – Spring Return – Front Nose Mounting – 150 PSI, 1/16" Orifice Standard – 150 PSI, 3/64" Orifice Optional  <b>Standard Stroke Lengths:</b> 1/2", 1", 1 1/2", 2", 2 1/2", 3", 4"  <b>Maximum Stroke</b> – 6"                      Optional Stainless Steel Rod                      Standard Voltage – 115/60                      Optional Voltages: 24, 230 A.C. or 6, 12, 24 D.C.                      Optional Accessory: D-241 Mounting Bracket  <b>Base Weight:</b> 1.38  <b>Adder Per Inch of Stroke:</b> .22</p>	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>
<p><b>17□-D</b></p> 	<p><b>Double Acting</b> – Air Return – Front Nose Mounting  <b>Standard Stroke Lengths:</b> 1/2", 1", 1 1/2", 2", 2 1/2", 3", 4", 5", 6"  <b>Maximum Stroke</b> – 12"                      Optional Stainless Steel Rod                      Optional Rod Wiper                      Optional Accessory: D-241 Mounting Bracket  <b>Base Weight:</b> .69  <b>Adder Per Inch of Stroke:</b> .08</p>	
<p><b>17□-DP</b></p> 	<p><b>Double Acting</b> – Pivot Type – Air Return – Rear Pivot Mounting  <b>Standard Stroke Lengths:</b> 1/2", 1", 1 1/2", 2", 2 1/2", 3", 4", 5", 6", 7", 8", 9", 10", 11", 12"  <b>Maximum Stroke</b> – 32"                      Optional Stainless Steel Rod                      Optional Rod Wiper                      Optional Accessories: D-231-1 Piston Rod Clevis, D-229 Pivot Brackets  <b>Base Weight:</b> .73  <b>Adder Per Inch of Stroke:</b> .08</p>	

Standard Air Cylinders

Three-Position Cylinders

Cushion Cylinders

NRS® Cylinders

Non-Rotating Cylinders

PC Cylinders

All Stainless Non-Repairable

All Stainless Repairable


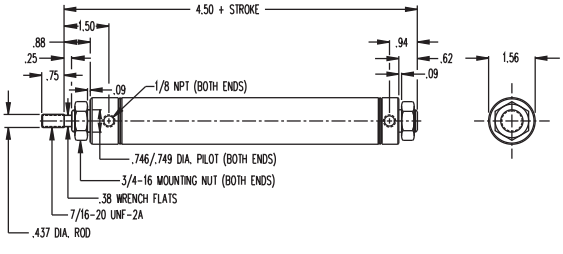

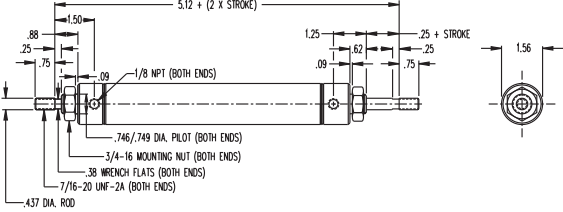

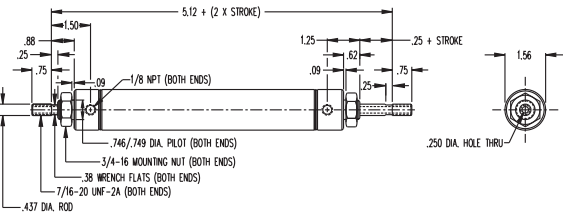
Z Line Air Cylinders

Rod Lock Cylinders

500 Hydraulic Cylinders


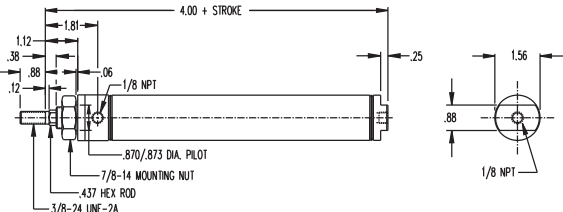
Repairable Hole Punch Cylinders

# 1-1/2" Bore Air Cylinders

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<b>17 □ -DX</b> 	<b>Double Acting – Double End Mounting – Air Return</b> Standard Stroke Lengths: 1/2", 1", 1 1/2", 2", 2 1/2", 3", 4", 5", 6", 7", 8", 9", 10", 11", 12" Maximum Stroke – 32" Stainless Steel Rod Standard Optional Rod Wiper Optional Accessory: D-241 Mounting Bracket Base Weight: .82 Adder Per Inch of Stroke: .08	
<b>17 □ -DXDE</b> 	<b>Double Acting – Double End Rod – Air Return – Double End Mounting</b> Standard Stroke Lengths: 1/2", 1", 1 1/2", 2", 2 1/2", 3", 4", 5", 6" Maximum Stroke – 12" Stainless Steel Rod Standard Optional Rod Wiper Optional Accessory: D-241 Mounting Bracket Base Weight: 1.17 Adder Per Inch of Stroke: .13	
<b>17 □ -DXDEH</b> 	<b>Double Acting – Double End Hollow Rod – Air Return – Double End Mounting</b> Standard Stroke Lengths: 1/2", 1", 1 1/2", 2", 2 1/2", 3", 4", 5", 6" Maximum Stroke – 12" Stainless Steel Rod Standard Optional Rod Wiper Optional Accessory: D-241 Mounting Bracket Base Weight: 1.16 Adder Per Inch of Stroke: .13	



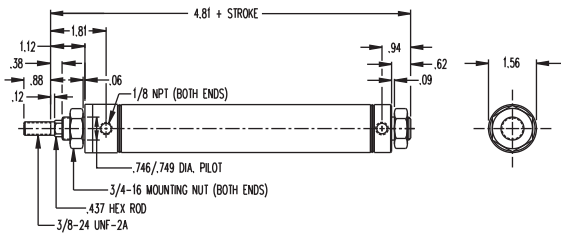


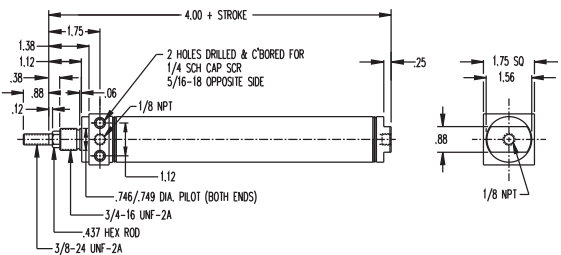


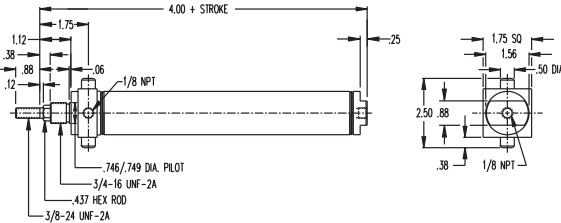
## 1-1/2" Bore Double Acting, Non-Rotating Rod Repair Parts

Rod Seal	Rod Bearing	DXNR Rod Guide	DNR Rod Guide 7/8-14 mounting threads
D-2500	D-2501	D-1117	D-2509

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<b>17 □ -DNR</b> 	<b>Double Acting – Non-rotating Hexagon Rod – Front Nose Mounting – Air Return</b> Standard Stroke Lengths: 1/2", 1", 1 1/2", 2", 2 1/2", 3", 4", 5", 6" Maximum Stroke – 12" Stainless Steel Rod Standard Optional Accessory: D-2669 Mounting Bracket Base Weight: .77 Adder Per Inch of Stroke: .09	

# 1-1/2" Bore Air Cylinders

## 1-1/2" Bore Double Acting, Non-Rotating Rod (continued)

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<b>17</b>  <b>-DXNR</b> 	<b>Double Acting – Non-rotating Hexagon Rod – Double End Mounting – Air Return</b> <b>Standard Stroke Lengths:</b> 1/2", 1", 1 1/2", 2", 2 1/2", 3", 4", 5", 6" <b>Maximum Stroke – 12"</b> Stainless Steel Rod Standard <b>Optional Accessories:</b> D-241 Mounting Bracket D-8310-A Rod Clevis Base Weight: .87 Adder Per Inch of Stroke: .08	
<b>BF-17</b>  <b>-DNR</b> 	<b>Double Acting – Non-rotating Hexagon Rod – Front Block Mounting – Air Return</b> <b>Standard Stroke Lengths:</b> 1/2", 1", 1 1/2", 2", 2 1/2", 3", 4", 5", 6" <b>Maximum Stroke – 12"</b> Stainless Steel Rod Standard <b>Optional Accessory:</b> D-8310-A Rod Clevis Base Weight: .71 Adder Per Inch of Stroke: .09	
<b>BFT-17</b>  <b>-DNR</b> 	<b>Double Acting – Non-rotating Hexagon Rod – Front Trunnion Mounting – Air Return</b> <b>Standard Stroke Lengths:</b> 1/2", 1", 1 1/2", 2", 2 1/2", 3", 4", 5", 6" <b>Maximum Stroke – 12"</b> Stainless Steel Rod Standard <b>Optional Accessories:</b> TRB-2 Trunnion Brackets D-8310-A Rod Clevis Base Weight: .78 Adder Per Inch of Stroke: .09	

Standard Air Cylinders

Three-Position Cylinders

Cushion Cylinders

MRS® Cylinders



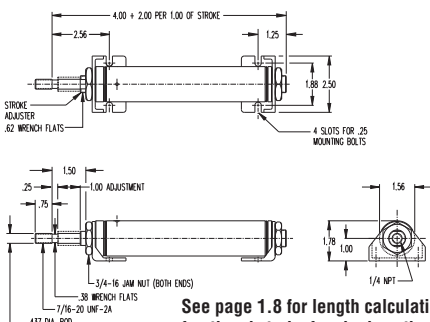
Non-Rotating Cylinders

PC Cylinders

All Stainless Non-Repairable

All Stainless Repairable

## 1-1/2" Bore Adjustable Stroke

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<b>17</b>  <b>-A</b> 	<b>Single Acting – Spring Return – Adjustable Stroke – Double End Mounting – Brass Piston Rod Bearing and Stroke Adjustment in 1" increments to 3". Mounting Brackets are included.</b> 1" Stroke Adjusts 0" to 1", 2" Stroke 1" to 2", 3" Stroke 2" to 3" <b>Maximum Stroke – 6"</b> Optional Stainless Steel Rod Base Weight: .75 Adder Per Inch of Stroke: .25	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>

7 Line Air Cylinders

Rod Lock Cylinders


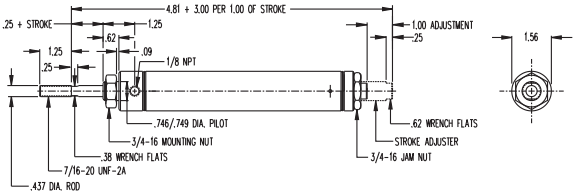

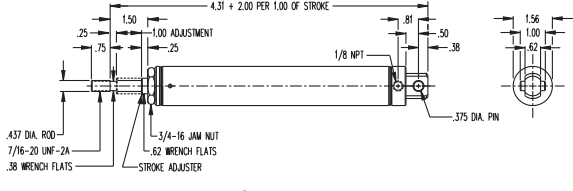
500 Hydraulic Cylinders

Repairable Hole Punch Cylinders


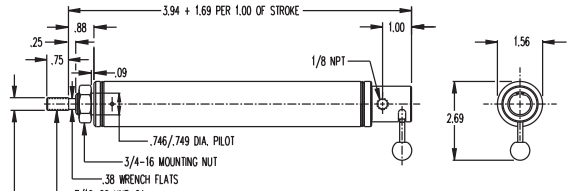

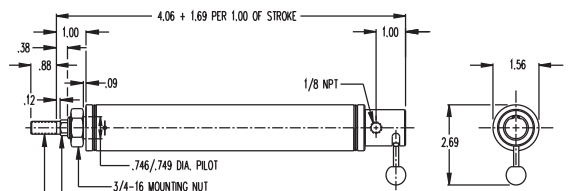


# 1-1/2" Bore Air Cylinders

## 1-1/2" Bore Adjustable Stroke (continued)

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<b>17 □ -RA</b> 	<b>Reverse Single Acting – Pull Type</b> – Rod Normally Extended – Nose Mounting – Stroke Adjustment in 1" increments to 3". 1" Stroke Adjusts 0" to 1", 2" Stroke 1" to 2", 3" Stroke 2" to 3" Maximum Stroke – 6" Optional Stainless Steel Rod Optional Accessory: D-241 Mounting Bracket Base Weight: .50 Adder Per Inch of Stroke: .25	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>
<b>17 □ -AP</b> 	<b>Single Acting – Pivot Type – Rear Pivot Mounting</b> – Stroke Adjustment in 1" increments to 3". 1" Stroke Adjusts 0" to 1", 2" Stroke 1" to 2", 3" Stroke 2" to 3" Maximum Stroke – 6" Optional Stainless Steel Rod Optional Accessories: D-231-1 Piston Rod Clevis D-229 Pivot Brackets Base Weight: .50 Adder Per Inch of Stroke: .25	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>


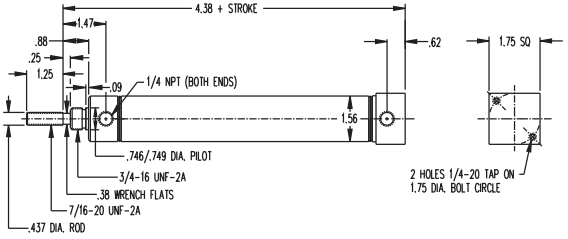

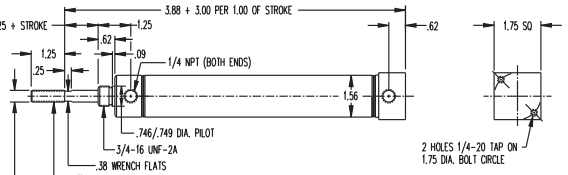
## 1-1/2" Bore Built-In Manual Valve

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<b>17 □ -M</b> 	<b>Single Acting – Built-in 3-Way Manual Valve – Spring Return – Front Nose Mounting</b> Standard Stroke Lengths: 1/2", 1", 1 1/2", 2", 2 1/2", 3", 4" Maximum Stroke – 6" Optional Stainless Steel Rod Optional Accessory: D-241 Mounting Bracket Base Weight: .75 Adder Per Inch of Stroke: .22	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>
<b>17 □ -NRM</b> 	<b>Single Acting – Built-in 3-Way Manual Valve – Non-rotating Hexagon Rod – Spring Return</b> Standard Stroke Lengths: 1/2", 1", 1 1/2", 2", 2 1/2", 3", 4" Maximum Stroke – 6" Optional Stainless Steel Rod Optional Accessory: D-241 Mounting Bracket Base Weight: .75 Adder Per Inch of Stroke: .22	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>


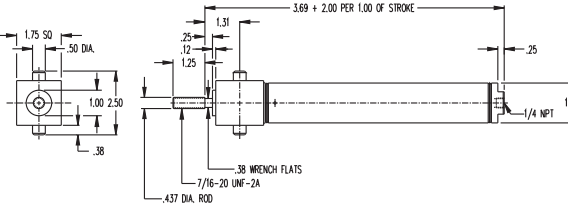

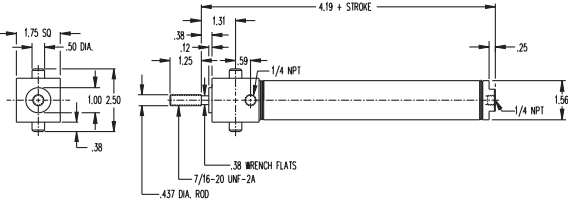

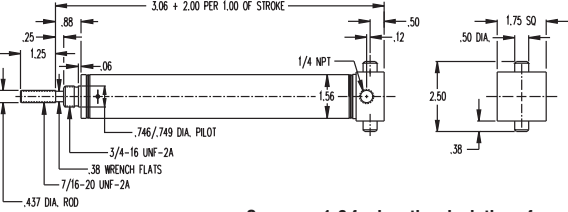


# 1-1/2" Bore Air Cylinders

## 1-1/2" Bore Block Mounted (continued)


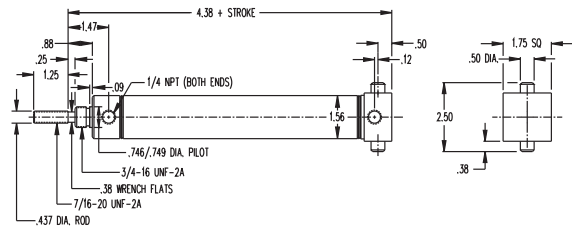
MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<b>BR-17</b> <input type="checkbox"/> -D 	<b>Double Acting</b> – Rear Block Mounting for Vertical Positioning – Air Return Standard Stroke Lengths: 1/2", 1", 1 1/2", 2", 2 1/2", 3", 4", 5", 6" Maximum Stroke – 12" Stainless Steel Rod Standard Base Weight: .87 Adder Per Inch of Stroke: .08	
<b>BR-17</b> <input type="checkbox"/> -R 	<b>Pull Type</b> – Rear Block Mounting for Vertical Positioning – Rod Normally Extended – Reverse Single Acting – Spring Return Standard Stroke Lengths: 1/2", 1", 1 1/2", 2", 2 1/2", 3", 4" Maximum Stroke – 6" Stainless Steel Rod Standard Base Weight: .90 Adder Per Inch of Stroke: .10	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>

## 1-1/2" Bore Trunnion Mounted - Spring Force: 8.5 lbs. Retracted, 17 lbs. Extended

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<b>BFT-17</b> <input type="checkbox"/> 	<b>Single Acting</b> – Front Block Trunnion Mounting – Spring Return Standard Stroke Lengths: 1/2", 1", 1 1/2", 2", 2 1/2", 3", 4" Maximum Stroke – 6" Stainless Steel Rod Standard Optional Accessories: TRB-2 Trunnion Brackets D-231-1 Rod Clevis Base Weight: 1.20 Adder Per Inch of Stroke: .22	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>
<b>BFT-17</b> <input type="checkbox"/> -D 	<b>Double Acting</b> – Front Block Trunnion Mounting – Air Return Standard Stroke Lengths: 1/2", 1", 1 1/2", 2", 2 1/2", 3", 4" Maximum Stroke – 12" Stainless Steel Rod Standard Optional Accessories: TRB-2 Trunnion Brackets D-231-1 Rod Clevis Base Weight: 1.06 Adder Per Inch of Stroke: .08	
<b>BRT-17</b> <input type="checkbox"/> 	<b>Single Acting</b> – Rear Block Trunnion Mounting – Spring Return Standard Stroke Lengths: 1/2", 1", 1 1/2", 2", 2 1/2", 3", 4" Maximum Stroke – 6" Stainless Steel Rod Standard Optional Accessories: TRB-2 Trunnion Brackets D-231-1 Rod Clevis Base Weight: 1.06 Adder Per Inch of Stroke: .22	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>

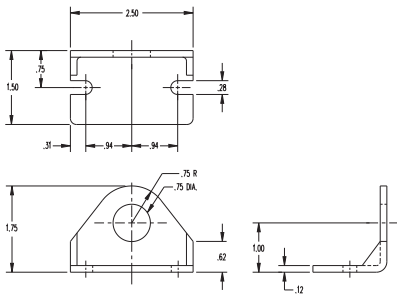
# 1-1/2" Bore Air Cylinders

## 1-1/2" Bore Block Mounted (continued)

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<b>BRT-17</b> <input type="checkbox"/> -D 	<b>Double Acting – Rear Block Trunnion Mounting – Air Return</b> <b>Standard Stroke Lengths:</b> 1/2", 1", 1 1/2", 2", 2 1/2", 3", 4" <b>Maximum Stroke – 12"</b> <b>Stainless Steel Rod Standard</b> <b>Optional Accessories:</b> TRB-2 Trunnion Brackets D-231-1 Rod Clevis <b>Base Weight: .91</b> <b>Adder Per Inch of Stroke: .08</b>	 <p>                         4.38 + STROKE                          .88                          .25                          1.25                          .09                          1/4 NPT (80TH ENDS)                          .746/.749 DIA. PILOT                          .38 WRENCH FLATS                          7/16-20 UNF-2A                          .437 DIA. ROD                          .50                          .12                          1.56                          2.50                          1.75 SQ                          .50 DIA.                          .38                     </p>

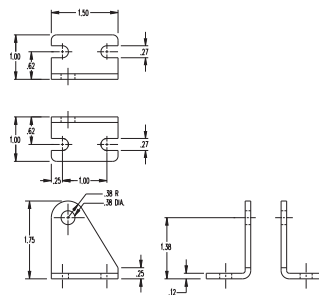
## 1-1/2" Bore Accessories

### D-241



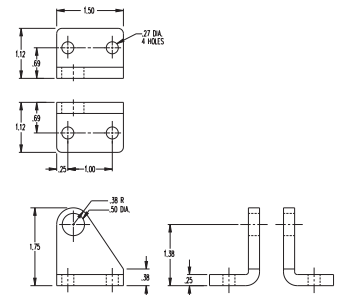
Mounting Bracket

### D-229



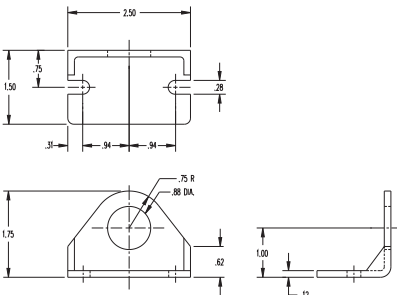
Pivot Bracket

### TRB-2



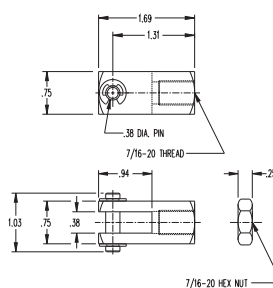
Trunnion Brackets

### D-2669



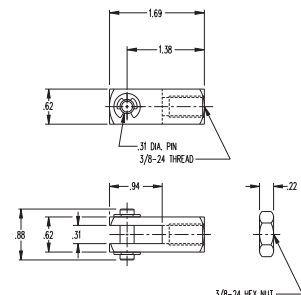
Mounting Bracket

### D-231-1



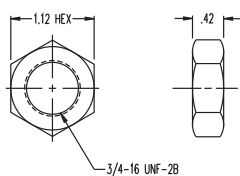
Piston Rod Clevis

### D-8310-A



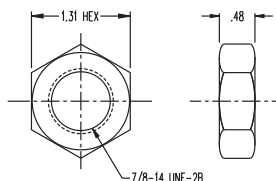
Rod Clevis

### D-3556



Mounting Nut

### D-2545



Mounting Nut

Standard Air Cylinders

Three-Position Cylinders

Cushion Cylinders

MRS® Cylinders

Non-Rotating Cylinders

PC Cylinders

All Stainless Non-Repairable

All Stainless Repairable

Z Line Air Cylinders

Rod Lock Cylinders

500 Hydraulic Cylinders

Repairable Hole Punch Cylinders

# 1-3/4" Bore Air Cylinders

- Ground and Polished, High Strength Carbon Steel Piston Rod Standard — 303 Stainless Steel Rod Available as an Option — Bronze Rod Guide Bushing Standard
- Force Exerted Approximately 2.4 of Air Line Pressure
- Enclosed Spring Force: 11 lbs. Relaxed — 24 lbs. Compressed
- Cushion Quiet Bumpers Standard

## OPTIONS:

### NO CHARGE:

- PORTS ROTATED (K)
- NO THREAD (NT)
- SIDE PORTED REAR HEAD (Q)  
Add .56" to nose mount overall length
- PIVOT BUSHING (Y)  
.375" ID

### EXTRA EXTENSION (EE)

- Single, reverse and double acting
- DXDE, extension added to each end
- DXDE hollow rod, extension added to each end

### DOUBLE ACTING FAILSAFE

(JS = Spring Return, JR = Spring Extend)

## OPTIONS continued...

### MAGNET (prefix M)

- Single and reverse acting add .125" to overall length
- Stainless steel rod becomes standard with this option
- Must specify track(s) for use with miniature position sensing (T2, T3, T4) See page 1.9 for track location details. See Switch Products, page 9.3 for switch selection information.

### LOW TEMPERATURE (N)

Temperature Range: -40° to 200°F

### HIGH TEMPERATURE "U" CUPS (V)

Temperature Range: 0° to 400°F (-18° to 205°C)

### ROD WIPER (W)

(not available in standard single acting)


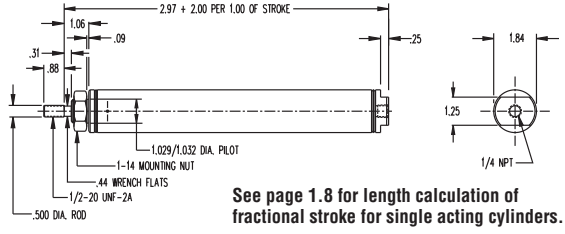

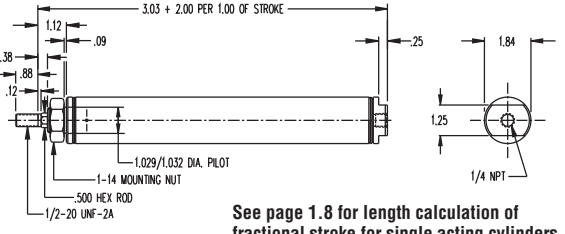
### STAINLESS STEEL ROD (prefix SR)

- Standard on DXDE, DXDEH


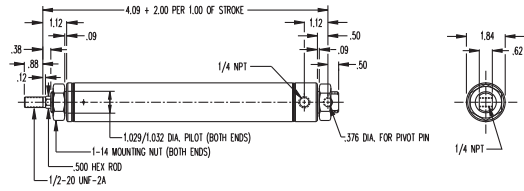

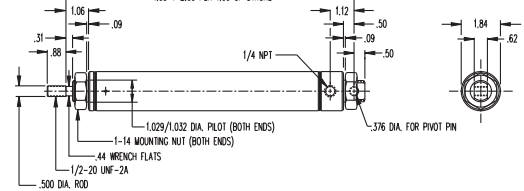

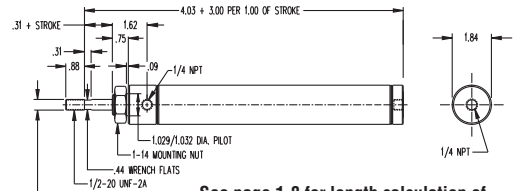

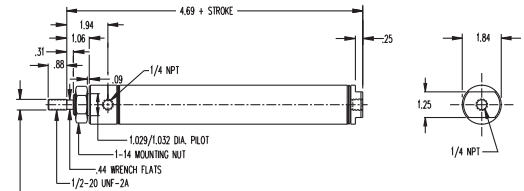
### LOW PRESSURE HYDRAULIC (HL)

- 250 psi maximum
- Double acting models only
- Option specified as a prefix

Enter Stroke Length as 3rd Digit

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<b>24</b> <input type="checkbox"/> 	<b>Single Acting – Spring Return – Front Nose Mounting</b> <b>Standard Stroke Lengths:</b> ½", 1", 1½", 2", 2½", 3", 4" Maximum Stroke – 6" Optional Stainless Steel Rod Optional Accessory: C-1337 Mounting Bracket Base Weight: .85 Adder Per Inch of Stroke: .36	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>
<b>24</b> <input type="checkbox"/> -NR 	<b>Single Acting – Non-rotating Hexagon Rod – Spring Return – Front Nose Mounting</b> <b>Standard Stroke Lengths:</b> ½", 1", 1½", 2", 2½", 3", 4" Maximum Stroke – 6" Optional Stainless Steel Rod Optional Accessory: C-1337 Mounting Bracket Base Weight: .86 Adder Per Inch of Stroke: .36	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>

# 1-3/4" Bore Air Cylinders

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<b>24□-NRP</b> 	<b>Single Acting – Non-rotating Hexagon Rod – Pivot Type – Spring Return – Rear Pivot or Double End Mounting</b> <b>Standard Stroke Lengths:</b> ½", 1", 1½", 2", 2½", 3", 4" <b>Maximum Stroke – 6"</b> <b>Optional Stainless Steel Rod</b> <b>Optional Accessories:</b> D-231-3 Piston Rod Clevis D-620-1 Pivot Brackets C-1337 Mounting Bracket <b>Base Weight: .86</b> <b>Adder Per Inch of Stroke: .36</b>	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>
<b>24□-P</b> 	<b>Single Acting – Pivot Type – Spring Return – Rear Pivot or Double End Mounting</b> <b>Standard Stroke Lengths:</b> ½", 1", 1½", 2", 2½", 3", 4" <b>Maximum Stroke – 6"</b> <b>Optional Stainless Steel Rod</b> <b>Optional Accessories:</b> D-231-3 Piston Rod Clevis D-620-1 Pivot Brackets C-1337 Mounting Bracket <b>Base Weight: .86</b> <b>Adder Per Inch of Stroke: .36</b>	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>
<b>24□-R</b> 	<b>Reverse Single Acting – Pull Type – Rod Normally Extended – Spring Return – Front Nose Mounting</b> <b>Standard Stroke Lengths:</b> ½", 1", 1½", 2", 2½", 3", 4" <b>Maximum Stroke – 6"</b> <b>Optional Stainless Steel Rod</b> <b>Optional Accessory:</b> C-1337 Mounting Bracket <b>Base Weight: 1.17</b> <b>Adder Per Inch of Stroke: .31</b>	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>
<b>24□-D</b> 	<b>Double Acting – Air Return – Front Nose Mounting</b> <b>Standard Stroke Lengths:</b> ½", 1", 1½", 2", 2½", 3", 4", 5", 6" <b>Maximum Stroke – 12"</b> <b>Optional Stainless Steel Rod</b> <b>Optional Accessory:</b> C-1337 Mounting Bracket <b>Base Weight: 1.29</b> <b>Adder Per Inch of Stroke: .11</b>	

Standard Air Cylinders

Three-Position Cylinders

Cushion Cylinders

MRS® Cylinders

Non-Rotating Cylinders

PC Cylinders

All Stainless Non-Repairable

All Stainless Repairable

7 Line Air Cylinders

Rod Lock Cylinders

500 Hydraulic Cylinders

Repairable Hole Punch Cylinders

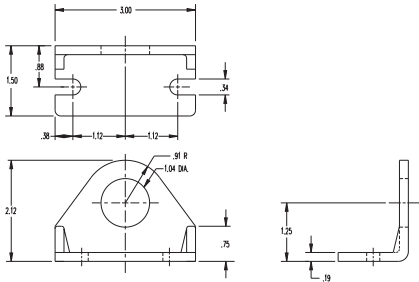
# 1-3/4" Bore Air Cylinders

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<p><b>24-<span style="border: 1px solid black; padding: 0 2px;"> </span>-DP</b></p> -DP air cylinder" data-bbox="54 156 241 214"/>	<p><b>Double Acting – Pivot Type – Air Return – Rear Pivot or Double End Mounting</b>  <b>Standard Stroke Lengths:</b>            1/2", 1", 1 1/2", 2", 2 1/2", 3", 4", 5", 6", 7", 8", 9", 10", 11", 12"  <b>Maximum Stroke – 32"</b>  <b>Optional Stainless Steel Rod</b>  <b>Optional Accessories:</b>            D-231-3 Piston Rod Clevis            D-620-1 Pivot Brackets            C-1337 Mounting Bracket  <b>Base Weight: 1.64</b>  <b>Adder Per Inch of Stroke: .11</b></p>	-DP air cylinder showing side and end views with dimensions." data-bbox="525 143 884 254"/> <p>Technical drawing showing side and end views of the 24-<span style="border: 1px solid black; padding: 0 2px;"> </span>-DP air cylinder. Dimensions include: 5.75 + STROKE (total length), 1.94, 1.06, .31, .88, .09, 1/4 NPT (BOTH ENDS), 1.12, .50, .09, 1.84, .62, .376 DIA. FOR PIVOT PIN, 1.029/1.032 DIA. PILOT (BOTH ENDS), 1-14 MOUNTING NUT (BOTH ENDS), .44 WRENCH FLATS, 1/2-20 UNF-2A, and .500 DIA. ROD.</p>
<p><b>24-<span style="border: 1px solid black; padding: 0 2px;"> </span>-DXDE</b></p> -DXDE air cylinder" data-bbox="51 328 241 381"/>	<p><b>Double Acting – Double End Rod – Air Return – Double End Mounting</b>  <b>Standard Stroke Lengths:</b>            1/2", 1", 1 1/2", 2", 2 1/2", 3", 4", 5", 6", 7", 8", 9", 10", 11", 12"  <b>Maximum Stroke – 12"</b>  <b>Stainless Steel Rod Standard</b>  <b>Optional Accessory:</b>            C-1337 Mounting Bracket  <b>Base Weight: 1.87</b>  <b>Adder Per Inch of Stroke: .18</b></p>	-DXDE air cylinder showing side and end views with dimensions." data-bbox="525 311 884 418"/> <p>Technical drawing showing side and end views of the 24-<span style="border: 1px solid black; padding: 0 2px;"> </span>-DXDE air cylinder. Dimensions include: 6.56 + (2 X STROKE) (total length), 1.94, 1.06, .31, .88, .09, 1/4 NPT (BOTH ENDS), 1.62, .75, .31 + STROKE, .88, .31, 1.84, 1.029/1.032 DIA. PILOT (BOTH ENDS), 1-14 MOUNTING NUT (BOTH ENDS), .44 WRENCH FLATS, 1/2-20 UNF-2A (BOTH ENDS), and .500 DIA. ROD.</p>
<p><b>24-<span style="border: 1px solid black; padding: 0 2px;"> </span>-DXDEH</b></p> -DXDEH air cylinder" data-bbox="51 471 241 524"/>	<p><b>Double Acting – Double End Hollow Rod – Air Return – Double End Mounting</b>  <b>Standard Stroke Lengths:</b>            1/2", 1", 1 1/2", 2", 2 1/2", 3", 4", 5", 6"  <b>Maximum Stroke – 12"</b>  <b>Stainless Steel Rod Standard</b>  <b>Optional Accessory:</b>            C-1337 Mounting Bracket  <b>Base Weight: 1.80</b>  <b>Adder Per Inch of Stroke: .16</b></p>	-DXDEH air cylinder showing side and end views with dimensions." data-bbox="525 458 884 561"/> <p>Technical drawing showing side and end views of the 24-<span style="border: 1px solid black; padding: 0 2px;"> </span>-DXDEH air cylinder. Dimensions include: 6.56 + (2 X STROKE) (total length), 1.94, 1.06, .31, .88, .09, 1/4 NPT (BOTH ENDS), 1.62, .75, .31 + STROKE, .88, .31, 1.84, .328 DIA. HOLE THRU, 1.029/1.032 DIA. PILOT (BOTH ENDS), 1-14 MOUNTING NUT (BOTH ENDS), .44 WRENCH FLATS, 1/2-20 UNF-2A (BOTH ENDS), and .500 DIA. ROD.</p>

# 1-3/4" Bore Air Cylinders

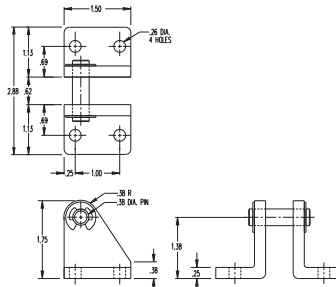
## 1-3/4" Bore Accessories

### C-1337



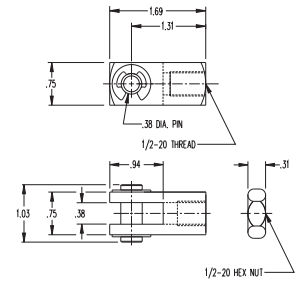
Mounting Bracket

### D-620-1



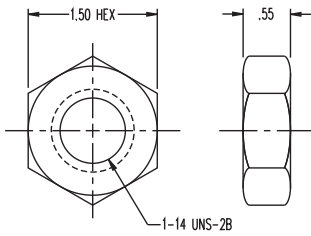
Pivot Brackets

### D-231-3



Piston Rod Clevis

### D-1331



Mounting Nut

Standard Air Cylinders

Three-Position Cylinders

Cushion Cylinders

MRS® Cylinders

Non-Rotating Cylinders

PG Cylinders

All Stainless Non-Repairable

All Stainless Repairable

Z Line Air Cylinders

Rod Lock Cylinders

500 Hydraulic Cylinders

Repairable Hole Punch Cylinders



# 2" Bore Air Cylinders

- Ground and Polished, High Strength Carbon Steel Piston Rod Standard — 303 Stainless Steel Rod Available as an Option — Bronze Rod Guide Bushing Standard
- Force Exerted Approximately 3.1 of Air Line Pressure
- Enclosed Spring Force: 15 lbs. Relaxed — 30 lbs. Compressed
- Mounting Nuts Not Included

## OPTIONS:

- PORTS ROTATED (K)
  - NO THREAD (NT)
  - SIDE PORTED REAR HEAD (Q)  
Add .38" to nose mount overall length
- SINGLE AND REVERSE ACTING BUMPERS (B)**

- Add .125 to overall length
- DOUBLE ACTING BUMPERS (B)**

- Add .250 to overall length
- EXTRA EXTENSION (EE)**
- Single, reverse and double acting
  - DXDE, extension added to each end

**DOUBLE ACTING FAILSAFE**  
(JS = Spring Return, JR = Spring Extend)  
• See page 1.65 and 1.66 for overall length adders

## OPTIONS continued...

### MAGNET (prefix M)

- Single and reverse acting add .125" to overall length
- Stainless steel rod becomes standard with this option
- Must specify track(s) for use with miniature position sensing (T2, T3, T4) See page 1.9 for track location details. See Switch Products, page 9.3 for switch selection information.

### LOW TEMPERATURE (N)

Temperature Range: -40° to 200°F

### HIGH TEMPERATURE "U" CUPS (V)

Temperature Range: 0° to 400°F (-18° to 205°C)

### ROD WIPER (W)

(not available in standard single acting)

### STAINLESS STEEL ROD (prefix SR)

- Standard on DXP, DXDE, XP, M option
- LOW PRESSURE HYDRAULIC (HL)**
- 250 psi maximum
  - Double acting models only
  - Option specified as a prefix

Enter Stroke Length as 3rd Digit

## MODEL/PRICE

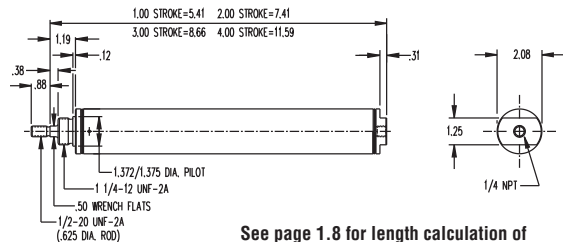
## DESCRIPTION/WEIGHT (lbs.)

## DIMENSIONS

31



**Single Acting – Spring Return – Front Nose Mounting**  
Standard Stroke Lengths:  
½", 1", 1½", 2", 2½", 3", 4"  
Maximum Stroke – 4"  
Optional Stainless Steel Rod  
Optional Accessories:  
D-615 Mounting Bracket  
D-508 Mounting Nut  
Base Weight: 1.04  
Adder Per Inch of Stroke: .43

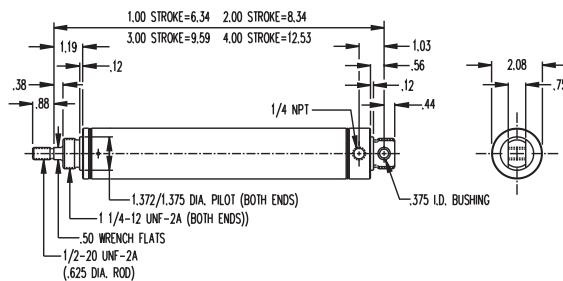


See page 1.8 for length calculation of fractional stroke for single acting cylinders.

31  -XP


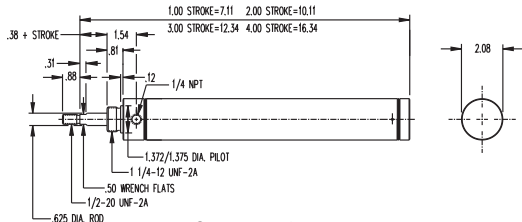

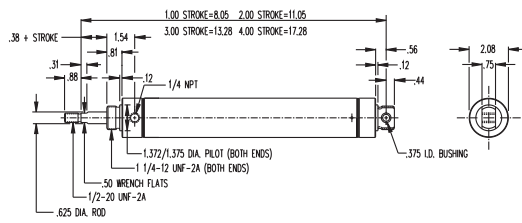

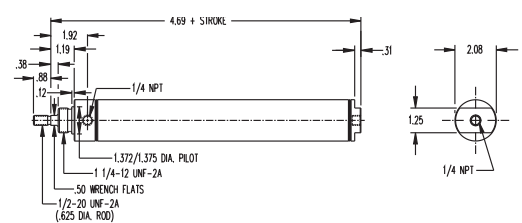

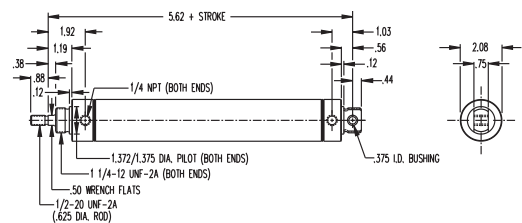


**Single Acting – Universal Mounting Type – Nose, Pivot or Double End – Spring Return – Bronze Rod Bushing and Bronze Pivot Bushing**  
Standard Stroke Lengths:  
½", 1", 1½", 2", 2½", 3", 4"  
Maximum Stroke – 4"  
Stainless Steel Rod Standard  
Optional Accessories:  
D-231-3 Piston Rod Clevis  
D-615 Mounting Bracket  
D-620 Pivot Brackets  
D-508 Mounting Nut  
Base Weight: 1.26  
Adder Per Inch of Stroke: .43



See page 1.8 for length calculation of fractional stroke for single acting cylinders.

# 2" Bore Air Cylinders

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<b>31 □ -R</b> 	<b>Reverse Single Acting – Pull Type</b> – Rod Normally Extended – Spring Return – Front Nose Mounting Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4" Maximum Stroke – 4" Optional Stainless Steel Rod Optional Accessories: D-615 Mounting Bracket D-508 Mounting Nut Base Weight: 1.24 Adder Per Inch of Stroke: .43	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>
<b>31 □ -RP</b> 	<b>Reverse Single Acting – Pivot and Pull Type</b> – Rod Normally Extended – Spring Return – Rear Pivot Mounting Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4" Maximum Stroke – 4" Optional Stainless Steel Rod Optional Accessories: D-231-3 Piston Rod Clevis D-620 Pivot Bracket D-508 Mounting Nut D-615 Mounting Bracket Base Weight: 1.46 Adder Per Inch of Stroke: .43	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>
<b>31 □ -D</b> 	<b>Double Acting – Air Return – Front Nose Mounting</b> Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4", 5", 6" Maximum Stroke – 12" Optional Stainless Steel Rod Optional Accessories: D-508 Mounting Nut D-615 Mounting Bracket Base Weight: 1.40 Adder Per Inch of Stroke: .15	
<b>31 □ -DXP</b> 	<b>Double Acting – Universal Mounting Type – Pivot or Double End – Air Return – Bronze Pivot Bushing</b> Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4", 5", 6", 7", 8", 9", 10", 11", 12", 13", 14", 15", 16", 17", 18", 19", 20", 21", 22", 23", 24" Maximum Stroke – 32" Stainless Steel Rod Standard Optional Accessories: D-231-3 Piston Rod Clevis D-615 Mounting Bracket D-620 Pivot Brackets D-508 Mounting Nut Base Weight: 1.62 Adder Per Inch of Stroke: .15	

Standard Air Cylinders

Three-Position Cylinders

Cushion Cylinders

MRS® Cylinders

Non-Rotating Cylinders

PC Cylinders

All Stainless Non-Repairable

All Stainless Repairable

Z Line Air Cylinders

Rod Lock Cylinders

500 Hydraulic Cylinders

Repairable Hole Punch Cylinders

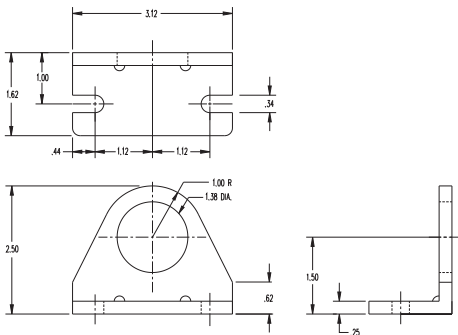
# 2" Bore Air Cylinders

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<b>31 □ -DXDE</b>	<p><b>Double Acting – Double End Rod – Air Return – Double End Mounting</b></p> <p><b>Standard Stroke Lengths:</b>                      ½", 1", 1½", 2", 2½", 3", 4", 5", 6", 7", 8", 9", 10", 11", 12"</p> <p><b>Maximum Stroke – 12"</b></p> <p><b>Stainless Steel Rod Standard</b></p> <p><b>Optional Accessories:</b>                      D-615 Mounting Bracket                      D-508 Mounting Nut                      Base Weight: 1.97                      Adder Per Inch of Stroke: .24</p>	<p>6.56 + (2 X STROKE)                      1.92                      1.19                      .12                      .88                      .38                      1/4 NPT (BOTH ENDS)                      1.372/1.375 DIA. PILOT (BOTH ENDS)                      1 1/4-12 UNF-2A (BOTH ENDS)                      .50 WRENCH FLATS (BOTH ENDS)                      1/2-20 UNF-2A (BOTH ENDS)                      (.625 DIA. ROD)                      1.54                      .81                      .12                      .88                      .38                      .38 + STROKE                      2.08</p>



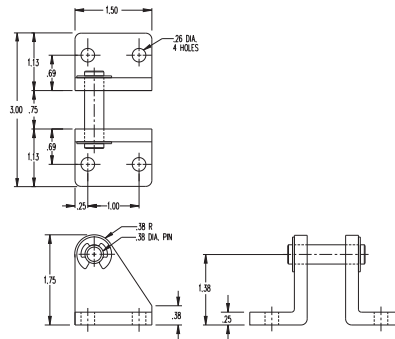
## 2" Bore Accessories

**D-615**



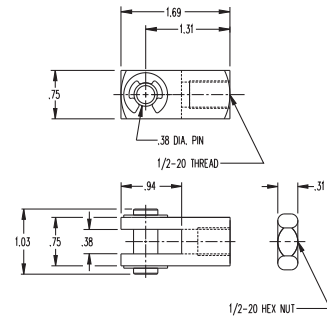
Mounting Bracket

**D-620**



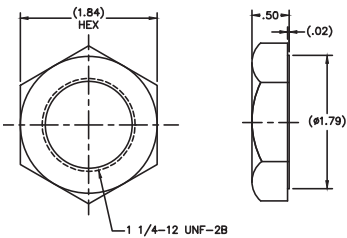
Pivot Brackets

**D-231-3**



Piston Rod Clevis

**D-508**



Mounting Nut

# 2-1/2" Bore Air Cylinders

- Ground and Polished, High Strength Carbon Steel Piston Rod Standard — 303 Stainless Steel Rod Available as an Option — Bronze Rod Guide Bushing Standard
- Force Exerted Approximately 5.0 of Air Line Pressure
- Double Acting Only
- Mounting Nuts Not Included

## OPTIONS:

- PORTS ROTATED (K)
- NO THREAD (NT)
- SIDE PORTED REAR HEAD (Q)  
Add .38" to nose mount overall length
- DOUBLE ACTING BUMPERS (B)
  - Add .250 to overall length
- EXTRA EXTENSION (EE)
  - Double acting
  - DXDE, extension added to each end

Enter Stroke Length as 3rd Digit

## OPTIONS continued...

### MAGNET (prefix M)

- Stainless steel rod becomes standard with this option
- Must specify track(s) for use with miniature position sensing (T2, T3, T4). See page 1.9 for track location details. See Switch Products, page 9.3 for switch selection information.

### LOW TEMPERATURE (N)

Temperature Range: -40° to 200°F

### HIGH TEMPERATURE "U" CUPS (V)

Temperature Range: 0° to 400°F (-18° to 205°C)

### ROD WIPER (W)

(not available in standard single acting)

### STAINLESS STEEL ROD (prefix SR)

- Standard on M option, DXP, DXDE
- LOW PRESSURE HYDRAULIC (HL)
  - 250 psi maximum
  - Double acting models only
  - Option specified as a prefix

## MODEL/PRICE

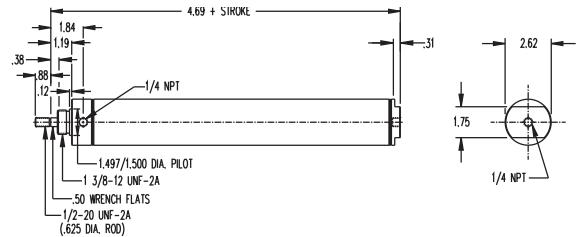
## DESCRIPTION/WEIGHT (lbs.)

## DIMENSIONS

50  -D



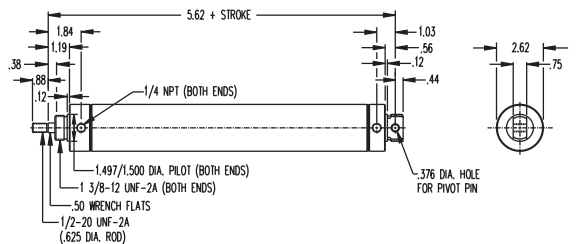
**Double Acting – Air Return – Front Nose Mounting**  
**Standard Stroke Lengths:**  
 1/2", 1", 1 1/2", 2", 2 1/2", 3", 4", 5", 6"  
**Maximum Stroke – 12"**  
**Optional Stainless Steel Rod**  
**Optional Accessories:**  
 D-615-1 Mounting Bracket  
 D-2540 Mounting Nut  
**Base Weight: 1.98**  
**Adder Per Inch of Stroke: .17**



50  -DXP



**Double Acting – Universal Mounting Type – Pivot or Double End – Air Return – Bronze Rod Bushing and Bronze Pivot Bushing**  
**Standard Stroke Lengths:**  
 1/2", 1", 1 1/2", 2", 2 1/2", 3", 4", 5", 6", 7", 8", 9", 10", 11", 12", 13", 14", 15", 16", 17", 18", 19", 20", 21", 22", 23", 24"  
**Maximum Stroke – 32"**  
**Stainless Steel Rod Standard**  
**Optional Accessories:**  
 D-231-3 Piston Rod Clevis  
 D-615-1 Mounting Bracket  
 D-620 Pivot Brackets  
 D-2540 Mounting Nut  
**Base Weight: 2.27**  
**Adder Per Inch of Stroke: .17**



Standard Air Cylinders

Three-Position Cylinders

Cushion Cylinders

MRS® Cylinders

Non-Rotating Cylinders

PC Cylinders

All Stainless Non-Repairable

All Stainless Repairable


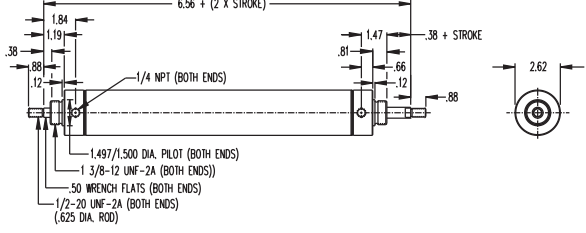
7 Line Air Cylinders

Rod Lock Cylinders

500 Hydraulic Cylinders

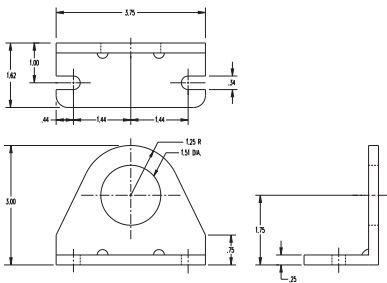
Repairable Hole Punch Cylinders

# 2-1/2" Bore Air Cylinders

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<b>50 □ -DXDE</b> 	<b>Double Acting – Double End Rod – Air Return – Double End Mounting</b> <b>Standard Stroke Lengths:</b> 1/2", 1", 1 1/2", 2", 2 1/2", 3", 4", 5", 6", 7", 8", 9", 10", 11", 12" <b>Maximum Stroke – 12"</b> <b>Stainless Steel Rod Standard</b> <b>Optional Accessories:</b> D-615-1 Mounting Bracket D-2540 Mounting Nut <b>Base Weight: 2.32</b> <b>Adder Per Inch of Stroke: .34</b>	 <p>6.56 + (2 X STROKE)</p> <p>1.84</p> <p>1.19</p> <p>.38</p> <p>.88</p> <p>.12</p> <p>1/4 NPT (BOTH ENDS)</p> <p>1.47</p> <p>.66</p> <p>.38 + STROKE</p> <p>.88</p> <p>2.62</p> <p>1.497/1.500 DIA. PILOT (BOTH ENDS)</p> <p>1 3/8-12 UNF-2A (BOTH ENDS)</p> <p>.50 WRENCH FLATS (BOTH ENDS)</p> <p>1/2-20 UNF-2A (BOTH ENDS) (.625 DIA. ROD)</p>

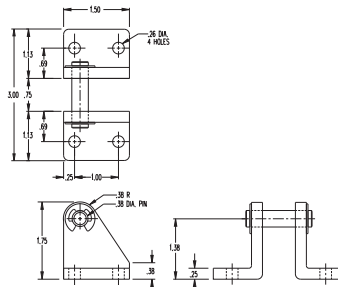
## 2-1/2" Bore Accessories

### D-615-1



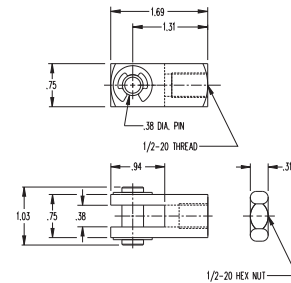
Mounting Bracket

### D-620



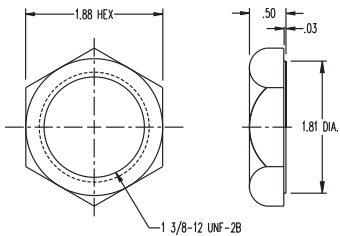
Pivot Brackets

### D-231-3



Piston Rod Clevis

### D-2540



Mounting Nut



# 3" Bore Air Cylinders

- Ground and Polished, High Strength Carbon Steel Piston Rod Standard — 303 Stainless Steel Rod Available as an Option — Bronze Rod Guide Bushing Standard
- Force Exerted Approximately 7.0 of Air Line Pressure
- Double Acting Only
- Mounting Nuts Not Included

## OPTIONS:

- PORTS ROTATED (K)
- NO THREAD (NT)
- SIDE PORTED REAR HEAD (Q)  
Add .44" to nose mount overall length
- DOUBLE ACTING BUMPERS (B)
  - Add .250 to overall length
- EXTRA EXTENSION (EE)
  - Double acting
  - DXDE, extension added to each end

Enter Stroke Length as 3rd Digit

## OPTIONS continued...

### MAGNET (prefix M)

- Stainless steel rod becomes standard with this option
- Must specify track(s) for use with miniature position sensing (T2, T3, T4) See page 1.9 for track location details. See Switch Products, page 9.3 for switch selection information.

### LOW TEMPERATURE (N)

Temperature Range: -40° to 200°F

### HIGH TEMPERATURE "U" CUPS (V)

Temperature Range: 0° to 400°F (-18° to 205°C)

### ROD WIPER (W)

(not available in standard single acting)

### STAINLESS STEEL ROD (prefix SR)

- Standard on DXP, DXDE, and M option
- LOW PRESSURE HYDRAULIC (HL)
  - 250 psi maximum
  - Double acting models only
  - Option specified as a prefix

Standard Air Cylinders

Three-Position Cylinders

Cushion Cylinders

MRS® Cylinders

Non-Rotating Cylinders

PG Cylinders

All Stainless Non-Repairable

All Stainless Repairable

7 Line Air Cylinders

Rod Lock Cylinders

500 Hydraulic Cylinders

Repairable Hole Punch Cylinders

## MODEL/PRICE

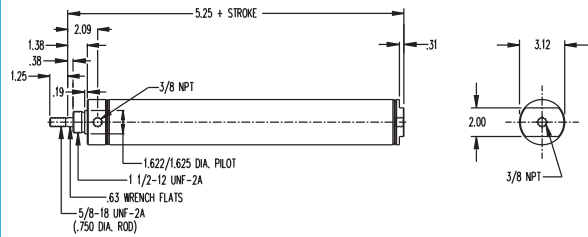
70  -D



## DESCRIPTION/WEIGHT (lbs.)

**Double Acting – Air Return – Front Nose Mounting**  
**Standard Stroke Lengths:**  
 ½", 1", 1½", 2", 2½", 3", 4", 5", 6"  
**Maximum Stroke – 12"**  
 Carbon Steel Piston Rod Standard  
 Optional Stainless Steel Rod  
**Optional Accessories:**  
 D-19127 Mounting Bracket  
 D-5379 Mounting Nut  
**Base Weight: 3.34**  
**Adder Per Inch of Stroke: .26**

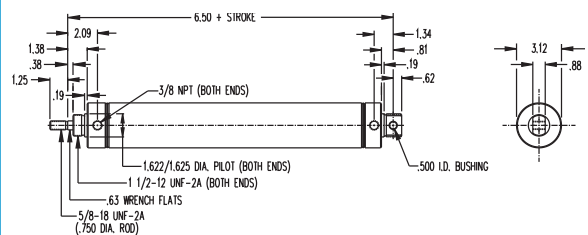
## DIMENSIONS



70  -DXP



**Double Acting – Universal Mount Pivot or Double End Mounting**  
**Standard Stroke Lengths:**  
 ½", 1", 1½", 2", 2½", 3", 4", 5", 6", 7", 8", 9", 10", 11", 12", 13", 14", 15", 16", 17", 18", 19", 20", 21", 22", 23", 24"  
**Maximum Stroke – 32"**  
 Stainless Steel Rod Standard  
**Optional Accessories:**  
 D-13512-A Pivot Bracket  
 D-19127 Mounting Bracket  
 D-8314-A Rod Clevis  
 D-5379 Mounting Nut  
**Base Weight: 3.87**  
**Adder Per Inch of Stroke: .26**

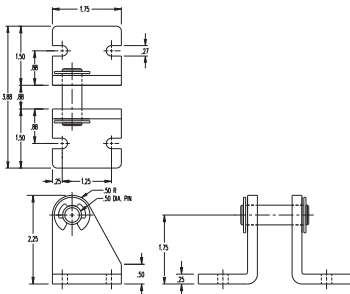


# 3" Bore Air Cylinders

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<b>70 <input type="checkbox"/> -DXDE</b>	<p><b>Double Acting – Double End Rod – Double End Mounting</b>  <b>Standard Stroke Lengths:</b>            ½", 1", 1½", 2", 2½", <b>3"</b>, 4", 5", 6", 7", 8", 9", 10", 11", 12"  <b>Maximum Stroke – 12"</b>  <b>Stainless Steel Rod Standard</b>  <b>Optional Accessories:</b>            D-19127 Mounting Bracket            D-5379 Mounting Nut  <b>Base Weight: 4.05</b>  <b>Adder Per Inch of Stroke: .52</b></p>	

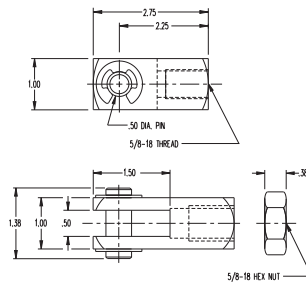
## 3" Bore Accessories

**D-13512-A**



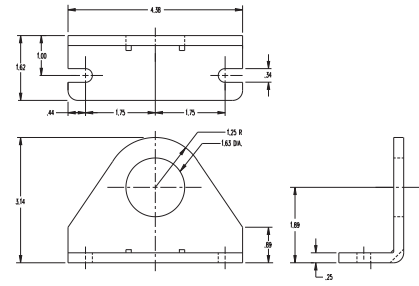
*Pivot Bracket*

**D-8314-A**



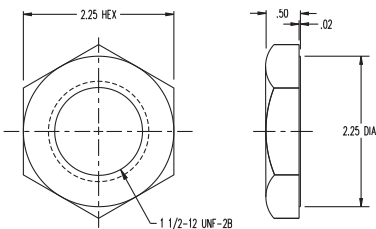
*Rod Clevis*

**D-19127**



*Mounting Bracket*

**D-5379**



*Mounting Nut*

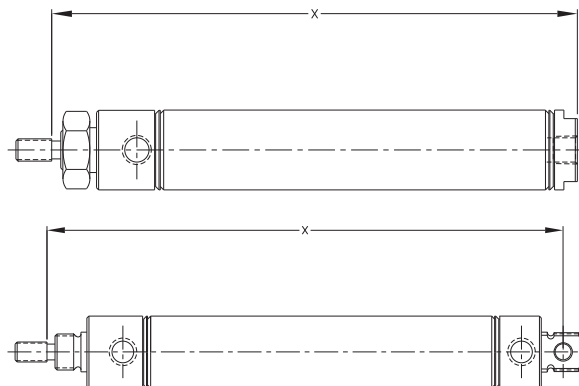
# Fail Safe Length Adders (Option JS)

Spring Return Length Adder		
Bore	Type	Overall Length Adder for -JS Option
5/16"	0070-D	1.65 + 0.75 per 0.50" of stroke
	0070-DXP	2.04 + 0.75 per 0.50" of stroke
	BF-0070-D	1.71 + 0.75 per 0.50" of stroke
7/16"	010-D, BF-010-D, BF-010-D & BFT-010-D	2.17 + 0.94 per 0.50" of stroke
	010-DP & 0010-DX	2.61 + 0.94 per 0.50" of stroke
	BR-010-D & BRT-010-D	2.49 + 0.94 per 0.50" of stroke
	010-DXDE	2.86 + 1.44 per 0.50" of stroke
9/16"	020-D	2.34 + 1.63 per 1" of stroke
	020-DXP	2.61 + 1.63 per 1" of stroke
	020-DXDE	3.00 + 2.63 per 1" of stroke
3/4"	040-D	3.03 + 1.69 per 1" of stroke
	040-DP, 040-DXP, BR-040-D & BRT-040-D	3.81 + 1.69 per 1" of stroke
	BF-040-D & BFT-040-D	3.28 + 1.69 per 1" of stroke
	040-DXDE	4.06 + 2.69 per 1" of stroke
7/8"	060-D	3.19 (3.10 High Temp.) + 1.56 per 1" of stroke
	060-DXP	3.82 (3.72 High Temp.) + 1.56 per 1" of stroke
	060-DXDE	4.16 (4.03 High Temp.) + 2.56 per 1" of stroke
1-1/16"	090-D	3.38 (3.50 SR) + 1.56 per 1" of stroke
	090-DP, 090-DX	4.10 + 1.56 per 1" of stroke
	BF-090-D, BFT-090-D	4.00 + 1.56 per 1" of stroke
	BR-090-D, BRT-090-D	4.25 + 1.56 per 1" of stroke
	090-DXDE	4.25 + 2.56 per 1" of stroke
1-1/4"	120-D	4.38 (4.25 High Temp.) + 1.81 per 1" of stroke
	120-DP	5.09 (5.03 High Temp.) + 1.81 per 1" of stroke
	120-DXDE	5.94 (5.81 High Temp.) + 2.81 per 1" of stroke
1-1/2"	170-D	3.75 + 1.69 per 1" of stroke
	170-DP	4.44 + 1.69 per 1" of stroke
	170-DX	4.56 + 1.69 per 1" of stroke
	BF-170-D, BFT-170-D	4.25 + 1.69 per 1" of stroke
	BR-170-D, BRT-170-D	4.44 + 1.69 per 1" of stroke
	170-DXDE	5.19 + 2.69 per 1" of stroke
1-3/4"	240-D	5.13 (5.00 High Temp.) + 2" per 1" of stroke
	240-DP	6.43 (6.07 High Temp.) + 3" per 1" of stroke
	240-DXDE	7.00 (6.87 High Temp.) + 3" per 1" of stroke

Spring Return Length Adder for 2" Bore					
Bore	Type	Stroke			
		Up to 1"	1" to 2"	2" to 3"	3" to 4"
2"	310-D	5.95 + stroke	6.95 + stroke	7.20 + stroke	9.14 + stroke
	310-DXP	6.88 + stroke	7.88 + stroke	8.13 + stroke	10.07 + stroke
	310-DXDE	7.82 + 2 x stroke	8.82 + 2 x stroke	9.07 + 2 x stroke	11.02 + 2 x stroke

Please use the drawings below as examples of the reference points for the overall length dimensions shown in the tables above. Length is always referenced to the base of the rod thread.

For models not shown in the drawings below (ex., BF, BR, DXDE, etc.), please refer to the applicable catalog drawing of the base model (double acting) without the failsafe option to determine your reference points for determining overall length.



Standard Air Cylinders

Three-Position Cylinders

Cushion Cylinders

MRS® Cylinders

Non-Rotating Cylinders

PC Cylinders

All Stainless Non-Repairable

All Stainless Repairable

Z Line Air Cylinders

Rod Lock Cylinders

500 Hydraulic Cylinders

Repairable Hole Punch Cylinders

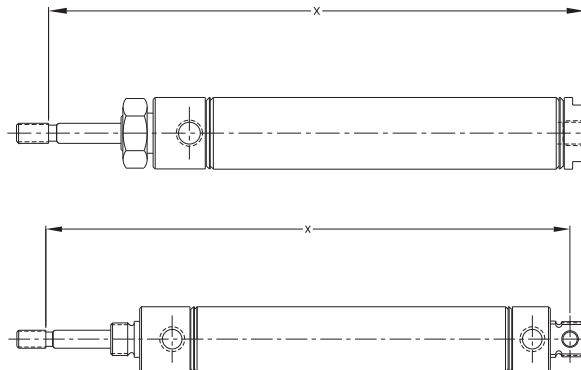
# Fail Safe Length Adders (Option JR)

Spring Extend Length Adder		
Bore	Type	Overall Length Adder for -JR Option
5/16"	0070-D	1.65 + 1.25 per 0.50" of stroke
	0070-DXP	2.04 + 1.25 per 0.50" of stroke
	BF-0070-D	1.71 + 1.25 per 0.50" of stroke
7/16"	010-D, BF-010-D & BFT-010-D	2.17 + 1.44 per 0.50" of stroke
	010-DP & 0010-DX	2.61 + 1.44 per 0.50" of stroke
	BR-010-D & BRT-010-D	2.49 + 1.44 per 0.50" of stroke
9/16"	020-D	2.34 + 2.63 per 1" of stroke
	020-DXP	2.61 + 2.63 per 1" of stroke
3/4"	040-D	3.03 + 2.69 per 1" of stroke
	040-DP, 040-DXP, BR-040-D & BRT-040-D	3.81 + 2.69 per 1" of stroke
	BF-040-D & BFT-040-D	3.28 + 2.69 per 1" of stroke
7/8"	060-D	3.19 (3.10 High Temp.) + 2.56 per 1" of stroke
	060-DXP	3.82 (3.72 High Temp.) + 2.56 per 1" of stroke
1-1/16"	090-D	3.38 (3.50 SR) + 2.56 per 1" of stroke
	090-DP, 090-DX	4.10 + 2.56 per 1" of stroke
	BF-090-D, BFT-090-D	4.00 + 2.56 per 1" of stroke
	BR-090-D, BRT-090-D	4.25 + 2.56 per 1" of stroke
1-1/4"	120-D	4.38 (4.25 High Temp.) + 2.81 per 1" of stroke
	120-DP	5.09 (5.05 High Temp.) + 2.81 per 1" of stroke
1-1/2"	170-D	3.75 + 2.69 per 1" of stroke
	170-DP	4.44 + 2.69 per 1" of stroke
	170-DX	4.56 + 2.69 per 1" of stroke
	BF-170-D, BFT-170-D	4.25 + 2.69 per 1" of stroke
	BR-170-D, BRT-170-D	4.44 + 2.69 per 1" of stroke
1-3/4"	240-D	5.13 (5.00 High Temp.) + 3" per 1" of stroke
	240-DP	6.43 (6.07 High Temp.) + 3" per 1" of stroke

Spring Extend Length Adder for 2" Bore					
Bore	Type	Stroke			
		Up to 1"	1" to 2"	2" to 3"	3" to 4"
2"	310-D	5.95 + 2 x stroke	6.95 + 2 x stroke	7.20 + 2 x stroke	9.14 + 2 x stroke
	310-DXP	6.88 + 2 x stroke	7.88 + 2 x stroke	8.13 + 2 x stroke	10.07 + 2 x stroke

Please use the drawings below as examples of the reference points for the overall length dimensions shown in the tables above. Length is always referenced to the base of the rod thread.

For models not shown in the drawings below (ex., BF, BR, DXDE, etc.), please refer to the applicable catalog drawing of the base model (double acting) without the failsafe option to determine your reference points for determining overall length.



# Three-Position Original Line Cylinders

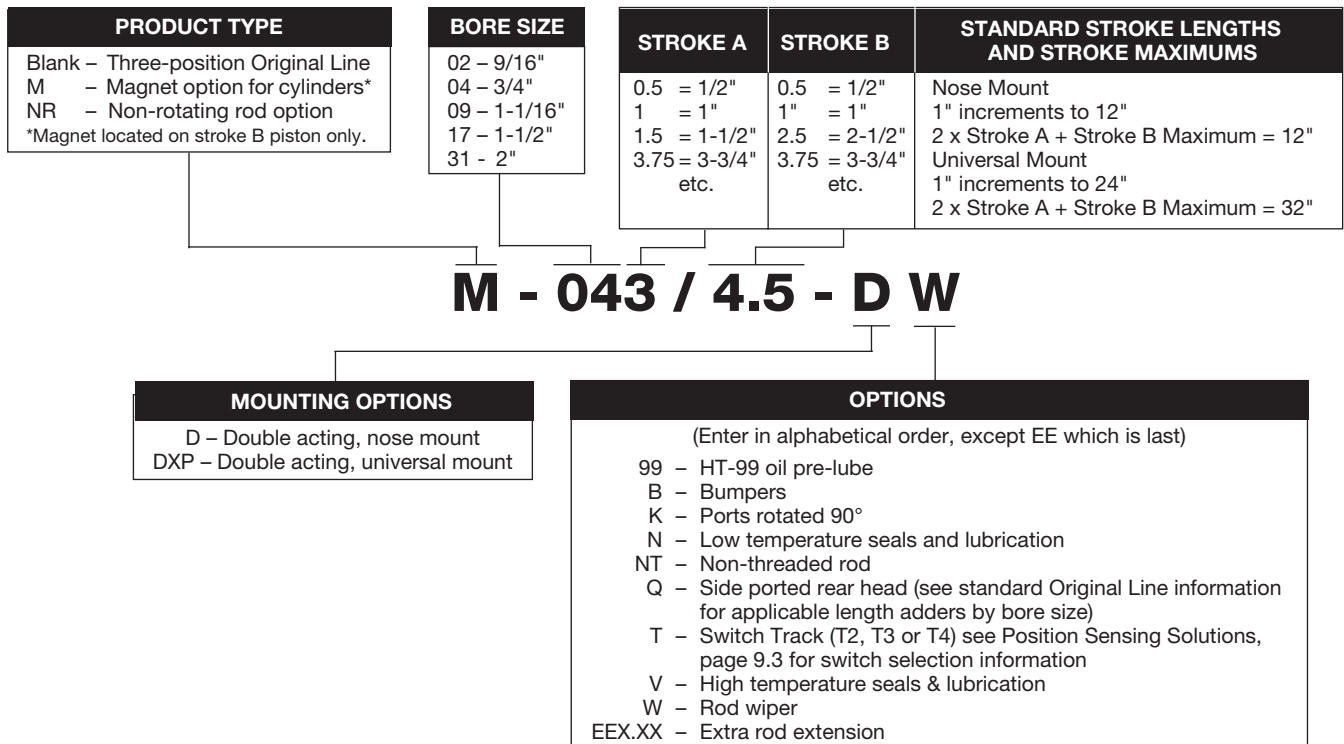


Bimba's Three-Position Original Line stainless steel body cylinder provides three positions with a single cylinder. Bimba offers the performance and quality of the unitized Original Line cylinder design along with its product breadth now in three positive stroke positions.

## How to Order

The model number for all Three-Position Original Line cylinders consists of three alphanumeric clusters. These designate product type, bore size and stroke length, and options. Please refer to the charts below

for an example of model number M-043/4.5-DW. This is a 3/4" bore, with a 3" stroke for position A, plus an additional 4-1/2" stroke for position B, double acting cylinder with a rod wiper.



Note: Consult page 1.4 for option combination compatibility.

## Specifications

Description	Specification
Expected life	3,000 miles without additional lubrication when properly applied
Total stroke tolerance 9/16" - 1-1/2" 2"	+ .075/- .040 + .095/- .060
Operating medium	Air only
Maximum operating pressure	250 psi
Temperature range	-20°F to 200°F
Standard lubrication	Semi-synthetic grease
Endcaps, center section, and piston material	Aluminum
Cylinder body	304 stainless steel
Piston and rod seals	Buna N "U" cups
Rod and pivot bushings	Sintered bronze
Piston rod	303 stainless steel

## Weights (lbs.)

Model	Base Weight	Adder per inch of Combined Stroke*
020/0-D	.13	Total combined stroke x .02
020/0-DXP	.13	Total combined stroke x .02
040/0-D	.24	Total combined stroke x .03
040/0-DXP	.32	Total combined stroke x .03
090/0-D	.36	Total combined stroke x .05
090/0-DXP	.45	Total combined stroke x .05
170/0-D	.96	Total combined stroke x .08
170/0-DXP	1.09	Total combined stroke x .08
310/0-D	2.25	Total combined stroke x .15
310/0-DXP	2.47	Total combined stroke x .15

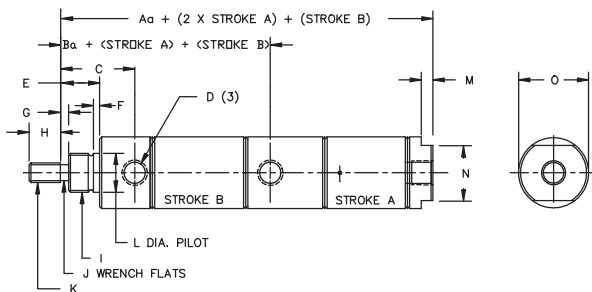
\*Total combined stroke = (2 x Stroke A) + Stroke B

# Three-Position Original Line Cylinders

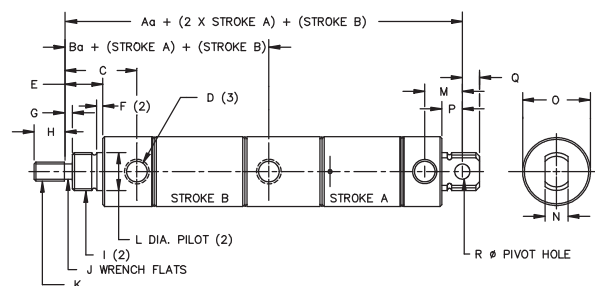

Bore	Options						
	M (Prefix) Magnetic Position Sensing	B Bumpers	N Low Temperature Seals	V High Temperature Seals and Lubrication	W Rod Wiper	EE Extra Rod Extension per inch	NR Prefix Non- rotating Rod
9/16" (02)							
3/4" (04)							
1-1/16" (09)							
1-1/2" (17)							
2" (31)							

## Dimensions

D Mounting Style (in.)



DXP Mounting Style (in.)



D Model																Bumper Option	
Bore	Aa	Ba	C	D	E	F	G	H	I	J	K	L	M	N	O	Aa	Ba
9/16" (02)	4.12	2.25	0.75	#10-32	0.38	0.06	N/A	0.50	7/16-20	N/A	#10-32	.434/.437	0.19	0.50	0.62	4.31	2.31
3/4" (04)	5.47	3.12	0.97	1/8 NPT	0.50	0.09	N/A	0.50	5/8-18	N/A	1/4-28	.621/.624	0.19	0.62	0.81	5.47	3.12
1-1/16" (09)	5.97	3.25	1.19	1/8 NPT	0.62	0.09	0.12	0.50	5/8-18	0.25	5/16-24	.621/.624	0.19	0.88	1.12	6.09	3.25
1-1/2" (17)	6.5	3.69	1.50	1/8 NPT	0.88	0.09	0.25	0.75	3/4-16	0.38	7/16-20	.746/.749	0.25	0.88	1.56	6.62	3.69
2" (31)	8.25	4.78	1.92	1/4 NPT	1.19	0.12	0.38	0.88	1-1/4-12	0.50	1/2-20	1.375/1.372	0.31	1.25	2.09	8.62	4.91

DXP Model																		Bumper Option		
Bore	Aa	Ba	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	Aa	Ba
9/16" (02)	4.41	2.25	0.75	#10-32	0.38	0.06	N/A	0.50	7/16-20	N/A	#10-32	.434/.437	0.38	0.31	0.62	0.25	0.19	0.157	4.59	2.31
3/4" (04)	6.25	3.12	0.97	1/8 NPT	0.50	0.09	N/A	0.50	5/8-18	N/A	1/4-28	.621/.624	0.62	0.38	0.86	0.34	0.28	0.250	6.25	3.12
1-1/16" (09)	6.56	3.25	1.19	1/8 NPT	0.62	0.09	0.12	0.50	5/8-18	0.25	5/16-24	.621/.624	0.62	0.38	1.12	0.34	0.28	0.250	6.68	3.25
1-1/2" (17)	7.18	3.69	1.50	1/8 NPT	0.88	0.09	0.25	0.75	3/4-16	0.38	7/16-20	.746/.749	0.81	0.62	1.56	0.50	0.38	0.375	7.31	3.69
2" (31)	9.19	4.78	1.92	1/4 NPT	1.19	0.12	0.38	0.88	1-1/4-12	0.50	1/2-20	1.375/1.372	1.03	0.75	2.08	0.56	0.44	0.500	9.56	4.91



# Air Cylinders with Adjustable Cushions\*

- Readily Accessible Cushion Needle For Easy Adjustment
- Double Acting Models
- Rated 250 PSI
- 304 Stainless Steel Body - Mirror Finish I.D.
- High Strength Aluminum Alloy Porting Ends
- Ground and Roller Burnished 303 Stainless Steel Piston Rod Standard
- Buna N "U" Cup Seals
- Low Breakaway Friction - Less Than 5 PSI
- Special Stroke Lengths Available on Request

## OPTIONS:

- PIVOT BUSHING (Y)  
.250" ID
- EXTRA EXTENSION (EE)

- EXTRA EXTENSION (EE)
- DXDE, (added to each end)

## OPTIONS continued:

PORTS ROTATED (K)\*  
(Rotates ports and cushion screw location 90° clockwise)  
MAGNETIC PISTON (prefix M)

MINI SWITCH TRACKS on all bore sizes  
Must specify track(s) for use with Bimba's miniature position sensing (T2, T3, T4 See page 1.9 for track location details. See Switch Products, page 9.3 for switch selection information.)

HIGH TEMPERATURE SEALS (V)

ROD WIPER (W) (Available on 3/4", 1-1/16" and 1-1/2" bores)

\*Consult local distributor for pricing.

- **Cylinders** are supplied with adjustable cushions on both ends. To order cushion on one end only, specify CF (front head cushion only), or CR (rear head cushion only), or CS (one end only) and deduct from base price as shown.  
(ex: 3/4" bore, cushion on front head only - CF-04□-D;  
3/4" bore, cushion on rear head only - CR-04□-D;  
3/4" DXDE model, cushion on one side only - CS-04□-DXDE).

Enter Stroke Length as 3rd Digit

## 3/4" Bore Air Cylinders with Adjustable Cushions

MODEL/PRICE

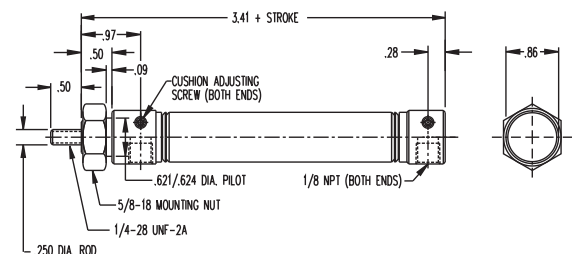
DESCRIPTION/WEIGHT (lbs.)

DIMENSIONS

C-04 □ -D



**Double Acting** – Air Return – Front Nose Mounting  
Standard Stroke Lengths:  
1", 1½", 2", 2½", 3", 4", 5", 6"  
Maximum Stroke – 12"  
Stainless Steel Rod Standard  
Optional Rod Wiper  
Optional Accessory:  
D-129 Mounting Bracket  
Base Weight: .24  
Adder Per Inch of Stroke: .03



\*U.S. Patent nos. 4,794,681 and 4,862,786

Standard Air Cylinders

Three-Position Cylinders

Cushion Cylinders

MRS® Cylinders

Non-Rotating Cylinders

PG Cylinders

All Stainless Non-Repairable

All Stainless Repairable

Z Line Air Cylinders


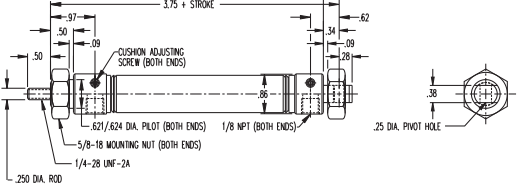

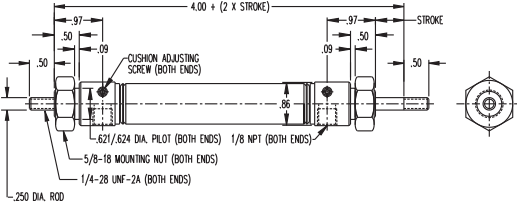
Rod Lock Cylinders

500 Hydraulic Cylinders


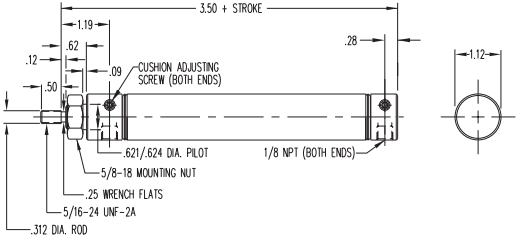
Repairable Hole Punch Cylinders

# Air Cylinders with Adjustable Cushions

## 3/4" Bore Air Cylinders with Adjustable Cushions (continued)


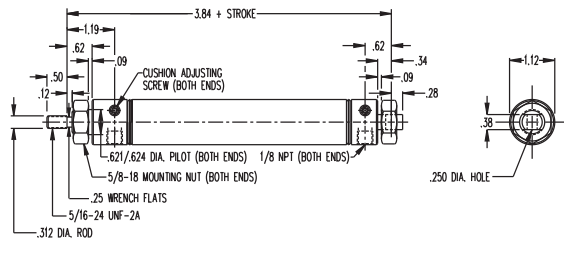

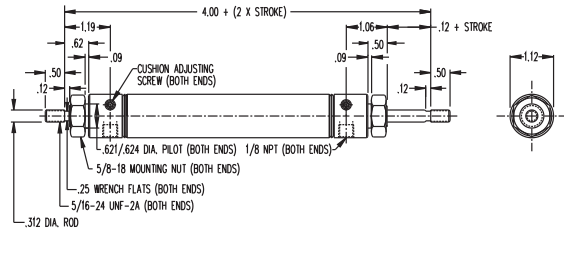
MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<b>C-04</b> <input type="checkbox"/> -DXP  <input type="checkbox"/> <input type="checkbox"/>	<b>Double Acting</b> – Double End or Rear Pivot Mounting – Air Return <b>Standard Stroke Lengths:</b> <b>1", 1½", 2", 2½", 3", 4", 5", 6", 7", 8", 9", 10", 11", 12"</b> Maximum Stroke – 32" Stainless Steel Rod Standard Optional Rod Wiper <b>Optional Accessories:</b> D-129 Mounting Bracket D-13498-A Pivot Bracket D-166-3 Piston Rod Clevis Base Weight: .29 Adder Per Inch of Stroke: .03	
<b>C-04</b> <input type="checkbox"/> -DXDE  <input type="checkbox"/>	<b>Double Acting</b> – Double End Rod – Air Return – Double End Mounting <b>Standard Stroke Lengths:</b> <b>1", 2", 3", 4", 5", 6"</b> Maximum Stroke – 12" Stainless Steel Rod Standard Optional Rod Wiper <b>Optional Accessory:</b> D-129 Mounting Bracket Base Weight: .30 Adder Per Inch of Stroke: .06	

## 1-1/16" Bore Air Cylinders with Adjustable Cushions

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<b>C-09</b> <input type="checkbox"/> -D  <input type="checkbox"/> <input type="checkbox"/>	<b>Double Acting</b> – Air Return – Front Nose Mounting <b>Standard Stroke Lengths:</b> <b>1", 1½", 2", 2½", 3", 4", 5", 6"</b> Maximum Stroke – 12" Stainless Steel Rod Standard Optional Rod Wiper <b>Optional Accessory:</b> D-129 Mounting Bracket Base Weight: .38 Adder Per Inch of Stroke: .04	


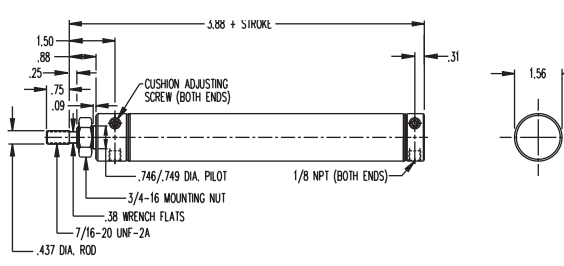
# Air Cylinders with Adjustable Cushions

## 1-1/16" Bore Air Cylinders with Adjustable Cushions (continued)

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<b>C-09</b> <input type="checkbox"/> -DXP  <input type="checkbox"/> <input type="checkbox"/>	<b>Double Acting</b> – Universal Mounting Pivot, or Double End Mounting – Air Return <b>Standard Stroke Lengths:</b> 1", 1½", 2", 2½", 3", 4", 5", 6", 7", 8", 9", 10", 11", 12" <b>Maximum Stroke – 32"</b> Stainless Steel Rod Standard Optional Rod Wiper <b>Optional Accessories:</b> D-13498-A Pivot Bracket D-129 Mounting Bracket D-166-1 Piston Rod Clevis <b>Base Weight: .44</b> <b>Adder Per Inch of Stroke: .04</b>	
<b>C-09</b> <input type="checkbox"/> -DXDE  <input type="checkbox"/>	<b>Double Acting</b> – Double End Rod – Air Return – Double End Mounting <b>Standard Stroke Lengths:</b> 1", 2", 3", 4", 5", 6" <b>Maximum Stroke – 12"</b> Stainless Steel Rod Standard Optional Rod Wiper <b>Optional Accessory:</b> D-129 Mounting Bracket <b>Base Weight: .46</b> <b>Adder Per Inch of Stroke: .08</b>	


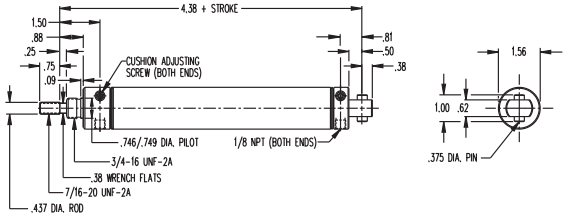

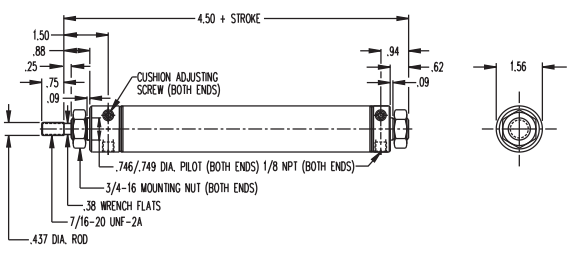

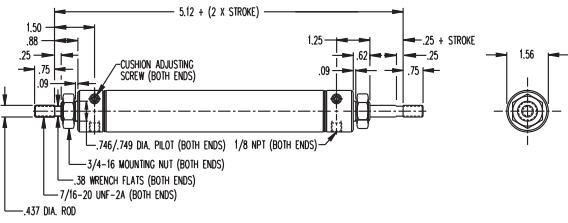
- Standard Air Cylinders
- Three-Position Cylinders
- Cushion Cylinders
- MRS® Cylinders
- Non-Rotating Cylinders
- PC Cylinders
- All Stainless Non-Repairable
- All Stainless Repairable
- 7 Line Air Cylinders
- Rod Lock Cylinders
- 500 Hydraulic Cylinders
- Repairable Hole Punch Cylinders

## 1-1/2" Bore Air Cylinders with Adjustable Cushions

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<b>C-17</b> <input type="checkbox"/> -D  <input type="checkbox"/> <input type="checkbox"/>	<b>Double Acting</b> – Air Return – Front Nose Mounting <b>Standard Stroke Lengths:</b> 1", 1½", 2", 2½", 3", 4", 5", 6" <b>Maximum Stroke – 12"</b> Stainless Steel Rod Standard Optional Rod Wiper <b>Optional Accessory:</b> D-241 Mounting Bracket <b>Base Weight: .76</b> <b>Adder Per Inch of Stroke: .09</b>	


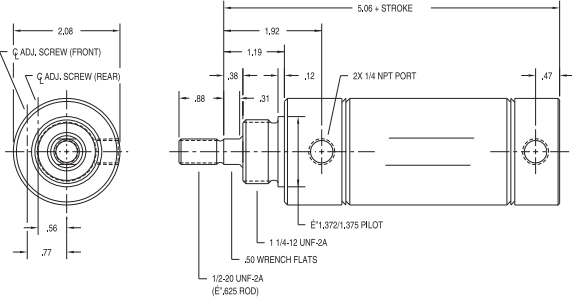

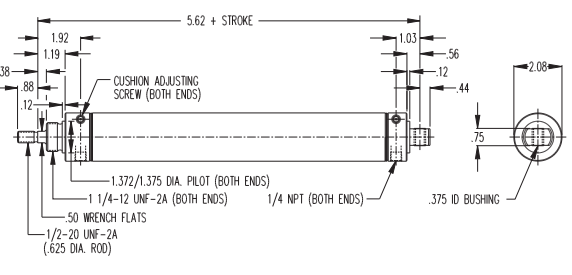

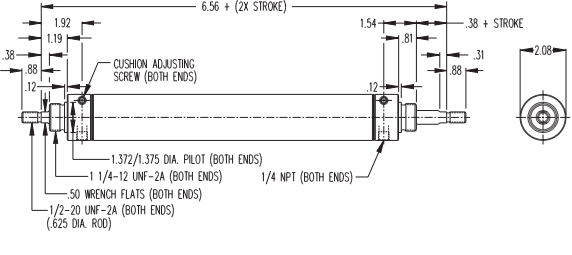
# Air Cylinders with Adjustable Cushions

## 1-1/2" Bore Air Cylinders with Adjustable Cushions (continued)

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<p><b>C-17</b> <input type="checkbox"/> -DP</p>  <p><input type="checkbox"/> <input type="checkbox"/></p>	<p><b>Double Acting – Pivot Type – Air Return – Rear Pivot Mounting</b>  <b>Standard Stroke Lengths:</b>            1", 1½", 2", 2½", 3", 4", 5", 6", 7", 8", 9", 10", 11", 12"  <b>Maximum Stroke – 32"</b>  <b>Stainless Steel Rod Standard</b>  <b>Optional Rod Wiper</b>  <b>Optional Accessories:</b>            D-231-1 Piston Rod Clevis            D-229 Pivot Brackets  <b>Base Weight: .77</b>  <b>Adder Per Inch of Stroke: .09</b></p>	
<p><b>C-17</b> <input type="checkbox"/> -DX</p>  <p><input type="checkbox"/> <input type="checkbox"/></p>	<p><b>Double Acting – Double End Mounting – Air Return</b>  <b>Standard Stroke Lengths:</b>            1", 1½", 2", 2½", 3", 4", 5", 6", 7", 8", 9", 10", 11", 12"  <b>Maximum Stroke – 32"</b>  <b>Stainless Steel Rod Standard</b>  <b>Optional Rod Wiper</b>  <b>Optional Accessory:</b>            D-241 Mounting Bracket  <b>Base Weight: .84</b>  <b>Adder Per Inch of Stroke: .09</b></p>	
<p><b>C-17</b> <input type="checkbox"/> -DXDE</p>  <p><input type="checkbox"/></p>	<p><b>Double Acting – Double End Rod – Air Return – Double End Mounting</b>  <b>Standard Stroke Lengths:</b>            1", 2", 3", 4", 5", 6", 7", 8", 9", 10", 11", 12"  <b>Maximum Stroke – 12"</b>  <b>Stainless Steel Rod Standard</b>  <b>Optional Rod Wiper</b>  <b>Optional Accessory:</b>            D-241 Mounting Bracket  <b>Base Weight: .90</b>  <b>Adder Per Inch of Stroke: .18</b></p>	

# Air Cylinders with Adjustable Cushions

## 2" Bore Air Cylinders with Adjustable Cushions

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<p><b>C-31</b> <input type="checkbox"/> -D</p>  <p><input type="checkbox"/> <input type="checkbox"/></p>	<p><b>Double Acting – Air Return – Front Nose Mounting</b>  <b>Standard Stroke Lengths:</b>                      1", 1½", 2", 2½", 3", 4", 5", 6"  <b>Maximum Stroke – 12"</b>                      Stainless Steel Rod Standard  <b>Optional Accessories:</b>                      D-615 Mounting Bracket                      D-508 Mounting Nut  <b>Base Weight: 1.64</b>  <b>Adder Per Inch of Stroke: .15</b></p>	
<p><b>C-31</b> <input type="checkbox"/> -DXP</p>  <p><input type="checkbox"/> <input type="checkbox"/></p>	<p><b>Double Acting – Double End or Rear Pivot Mounting – Air Return</b>  <b>Standard Stroke Lengths:</b>                      1", 1½", 2", 2½", 3", 4", 5", 6", 7", 8", 9", 10", 11", 12"  <b>Maximum Stroke – 32"</b>                      Stainless Steel Rod Standard  <b>Optional Accessories:</b>                      D-615 Mounting Bracket                      D-620 Pivot Bracket                      D-231-3 Piston Rod Clevis                      D-508 Mounting Nut  <b>Base Weight: 1.68</b>  <b>Adder Per Inch of Stroke: .15</b></p>	
<p><b>C-31</b> <input type="checkbox"/> -DXDE</p>  <p><input type="checkbox"/></p>	<p><b>Double Acting – Double End Rod – Air Return – Double End Mounting</b>  <b>Standard Stroke Lengths:</b>                      1", 2", 3", 4", 5", 6"  <b>Maximum Stroke – 12"</b>                      Stainless Steel Rod Standard  <b>Optional Accessories:</b>                      D-615 Mounting Bracket                      D-508 Mounting Nut  <b>Base Weight: 1.99</b>  <b>Adder Per Inch of Stroke: .24</b></p>	

Standard Air Cylinders

Three-Position Cylinders

Cushion Cylinders

MRS® Cylinders

Non-Rotating Cylinders

PC Cylinders

All Stainless Non-Repairable

All Stainless Repairable

Z Line Air Cylinders

Rod Lock Cylinders


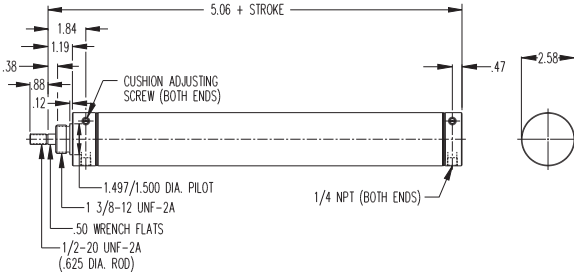

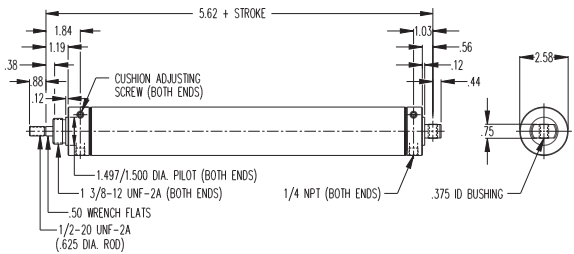

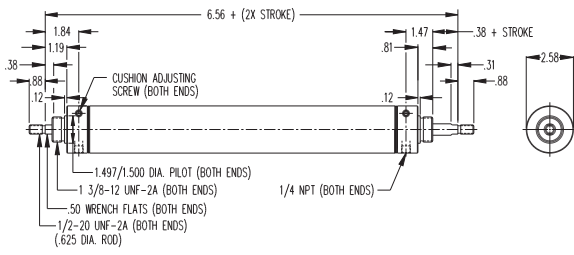
500 Hydraulic Cylinders

Repairable Hole Punch Cylinders

\*U.S. Patent nos. 4,794,681 and 4,862,786

# Air Cylinders with Adjustable Cushions


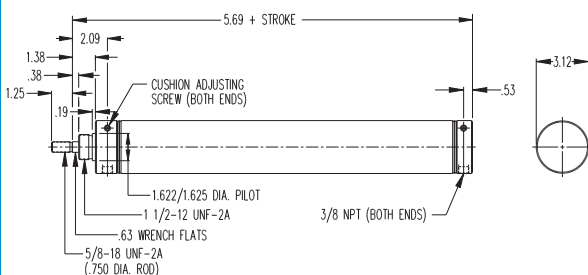

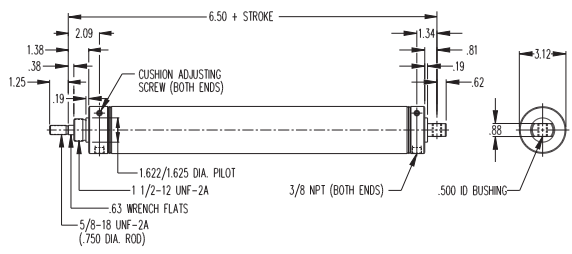

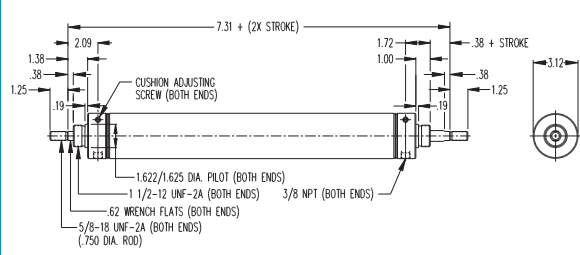
## 2-1/2" Bore Air Cylinders with Adjustable Cushions

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<p><b>C-50</b> <input type="checkbox"/> -D</p>  <p><input type="checkbox"/> <input type="checkbox"/></p>	<p><b>Double Acting – Air Return – Front Nose Mounting</b>  <b>Standard Stroke Lengths:</b>            1", 1½", 2", 2½", 3", 4", 5", 6"  <b>Maximum Stroke – 12"</b>  <b>Stainless Steel Rod Standard</b>  <b>Optional Accessories:</b>            D-615-1 Mounting Bracket            D-2540 Mounting Nut  <b>Base Weight: 2.21</b>  <b>Adder Per Inch of Stroke: .17</b></p>	
<p><b>C-50</b> <input type="checkbox"/> -DXP</p>  <p><input type="checkbox"/> <input type="checkbox"/></p>	<p><b>Double Acting – Universal Mounting Pivot, or Double End Mounting – Air Return</b>  <b>Standard Stroke Lengths:</b>            1", 1½", 2", 2½", 3", 4", 5", 6", 7", 8", 9", 10", 11", 12"  <b>Maximum Stroke – 32"</b>  <b>Stainless Steel Rod Standard</b>  <b>Optional Accessories:</b>            D-615-1 Mounting Bracket            D-620 Pivot Bracket            D-231-3 Piston Rod Clevis            D-2540 Mounting Nut  <b>Base Weight: 2.33</b>  <b>Adder Per Inch of Stroke: .17</b></p>	
<p><b>C-50</b> <input type="checkbox"/> -DXDE</p>  <p><input type="checkbox"/></p>	<p><b>Double Acting – Double End Rod – Air Return – Double End Mounting</b>  <b>Standard Stroke Lengths:</b>            1", 2", 3", 4", 5", 6"  <b>Maximum Stroke – 12"</b>  <b>Stainless Steel Rod Standard</b>  <b>Optional Accessories:</b>            D-615-1 Mounting Bracket            D-2540 Mounting Nut  <b>Base Weight: 2.38</b>  <b>Adder Per Inch of Stroke: .34</b></p>	



# Air Cylinders with Adjustable Cushions

## 3" Bore Air Cylinders with Adjustable Cushions

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<b>C-70</b> <input type="checkbox"/> -D 	<b>Double Acting – Air Return – Front Nose Mounting</b> <b>Standard Stroke Lengths:</b> 1", 1½", 2", 2½", 3", 4", 5", 6" <b>Maximum Stroke – 12"</b> <b>Stainless Steel Rod Standard</b> <b>Optional Accessories:</b> D-19127 Mounting Bracket D-5379 Mounting Nut <b>Base Weight: 3.81</b> <b>Adder Per Inch of Stroke: .26</b>	
<b>C-70</b> <input type="checkbox"/> -DXP 	<b>Double Acting – Pivot Type – Air Return – Rear Pivot Mounting</b> <b>Standard Stroke Lengths:</b> 1", 1½", 2", 2½", 3", 4", 5", 6", 7", 8", 9", 10", 11", 12" <b>Maximum Stroke – 32"</b> <b>Stainless Steel Rod Standard</b> <b>Optional Accessories:</b> D-8314-A Piston Rod Clevis D-13512-A Pivot Brackets D-5379 Mounting Nut <b>Base Weight: 3.97</b> <b>Adder Per Inch of Stroke: .26</b>	
<b>C-70</b> <input type="checkbox"/> -DXDE 	<b>Double Acting – Double End Rod – Air Return – Double End Mounting</b> <b>Standard Stroke Lengths:</b> 1", 2", 3", 4", 5", 6", 7", 8", 9", 10", 11", 12" <b>Maximum Stroke – 12"</b> <b>Stainless Steel Rod Standard</b> <b>Optional Accessories:</b> D-19127 Mounting Bracket D-5379 Mounting Nut <b>Base Weight: 4.15</b> <b>Adder Per Inch of Stroke: .52</b>	

• **Accessories** – For 3/4" bore, see page 1.28. For 1-1/16" bore, see page 1.40. For 1-1/2" bore, see page 1.53. For 2" bore, see page 1.60. For 2-1/2" bore, see page 1.62. For 3" bore, see page 1.64.

Standard Air Cylinders

Three-Position Cylinders

Cushion Cylinders

MRS® Cylinders

Non-Rotating Cylinders

PC Cylinders

All Stainless Non-Repairable

All Stainless Repairable

Z Line Air Cylinders

Rod Lock Cylinders

500 Hydraulic Cylinders

Repairable Hole Punch Cylinders

# Air Cylinders with Adjustable Cushions

## Cushion Energy Absorption

Cylinders with air cushions provide a possible solution to destructive energies. The air cushion traps a small amount of exhaust air at the end of stroke, providing an air pocket that decelerates the load. This reduces the potentially destructive energy being transmitted to the cylinder and other components. The following is a brief explanation on how to determine the energy level of your application and decide if an air cushion can provide adequate energy absorption. For a more detailed description, consult the factory at 1-800-44-BIMBA.

- Step 1. Determine the load to be stopped by the cylinder.
- Step 2. Determine the velocity at which the load impacts the cylinder endcap.
- Step 3. Calculate the energy the cylinder generates. Use the following equation:

$$\text{energy (e)} = \left(\frac{W}{64} \times v^2\right) + (p \times k)$$

w = weight of the load (lbs.)

V = velocity of the cylinder as the piston impacts the endcap (feet per second)

p = driving pressure (psi)

k = bore constant

Example: C-316-D at 80 psi with total load of 8 lbs.

driving pressure (p) = 80 psi

total load (w) = 8 lbs.

bore constant (k) = .24

maximum velocity (v) = 6 fps

$$= (8/64) \times (6^2) + (80 \times .24) = 23.7 \text{ ft. lbs.}$$

<b>Maximum Energy Calculation Data</b>		
<b>Bore</b>	<b>Max Energy (ft-lbs)</b>	<b>k</b>
04	4.47	0.03
09	10.40	0.05
17	18.80	0.11
31	27.60	0.24
50	40.11	0.37
70	77.72	0.58

<b>Cushion Lengths</b>
0.75"
0.75"
0.75"
0.90"
0.90"
0.99"

# MRS® Magnetic Reed Switch Air Cylinders

Specifically designed to operate Bimba position sensing switches to actuate programmable controllers, relays, solenoids, timers, or any other electrically operated equipment. MRS cylinders have an additional groove in the piston to accommodate a magnet. They differ from the M option because they combine features of the "Z" line with Original Line construction; check dimensional drawings for each size for more specific information. Type 303 stainless steel rods are standard.

**SWITCH TRACK for Miniature Switches (T2, T3, T4)**  
 • Must specify track(s) for use with miniature position

for switch selection information.

**SWITCH TRACK for Heavy Duty Track Mounted Switches**  
 • Must specify Z for one track, ZTT for 2 tracks. See page 1.87 for track information.  
 See Switch Products, page 9.3 for switch selection information.

**DOUBLE ACTING BUMPERS (B)**

Enter Stroke Length as 3rd Digit

## OPTIONS continued...

### EXTRA EXTENSION (EE)

- Double acting, per inch of extension:

### EXTRA EXTENSION (EE)

- DXDE, per inch of extension:  
 (added to both ends)

### FLUOROELASTOMER/HIGH TEMPERATURE SEAL (V)

- Double acting


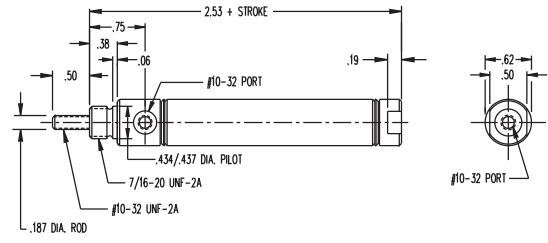

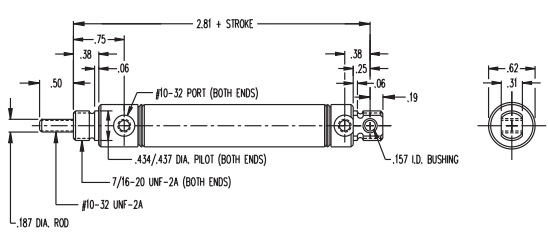
- DXDE

### PORTS ROTATED 90 (K)\*

### SIDE PORTED REAR HEAD (Q)\*

\*Consult local distributor for pricing.


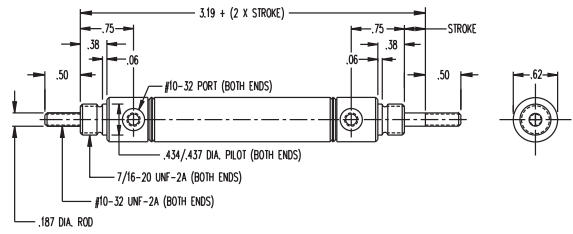
## 9/16" Bore MRS Air Cylinders

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<b>MRS-02</b> <input type="checkbox"/> -D 	<b>Nose Mount</b> Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4", 5", 6" Maximum Stroke – 12" Optional Accessory: D-770 Mounting Bracket Base Weight: .10 Adder Per Inch of Stroke: .01	
<b>MRS-02</b> <input type="checkbox"/> -DXP 	<b>Double End or Rear Pivot Mounting</b> Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4", 5", 6", 7", 8", 9", 10", 11", 12" Maximum Stroke – 12" Optional Accessories: D-12321-A Pivot Bracket D-770 Mounting Bracket D-850 Rod Clevis Base Weight: .10 Adder Per Inch of Stroke: .01	


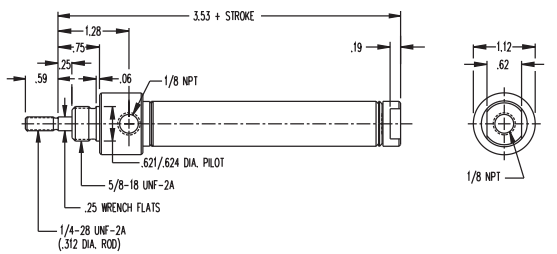

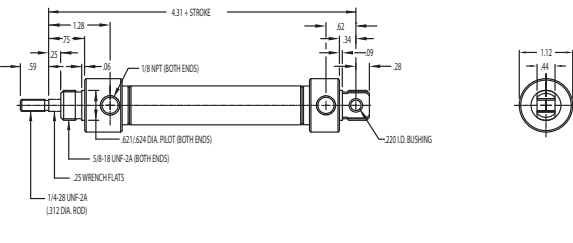

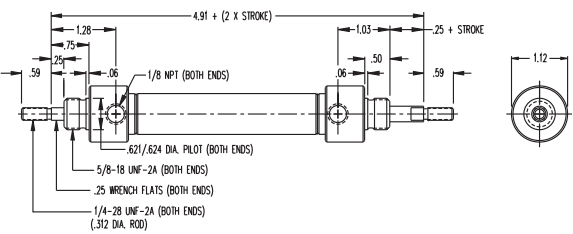
- Standard Air Cylinders
- Three-Position Cylinders
- Cushion Cylinders
- MRS® Cylinders
- Non-Rotating Cylinders
- PC Cylinders
- All Stainless Non-Repairable
- All Stainless Repairable
- Z Line Air Cylinders
- Rod Lock Cylinders
- 500 Hydraulic Cylinders
- Repairable Hole Punch Cylinders

# MRS® Magnetic Reed Switch Air Cylinders

## 9/16" Bore MRS Air Cylinders (continued)


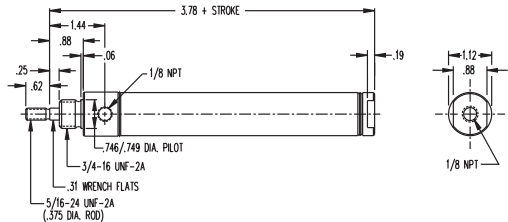

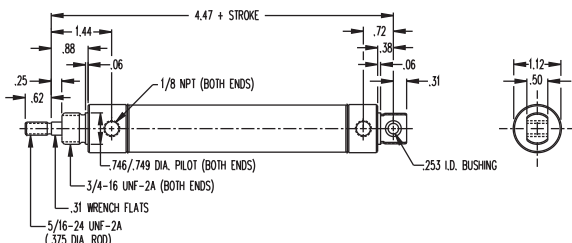

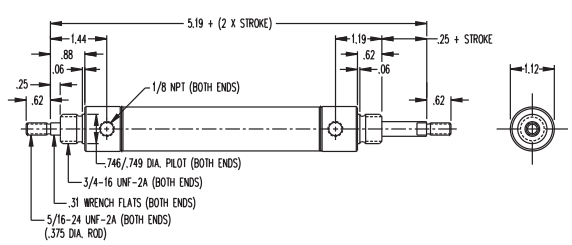
MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<b>MRS-02</b> <input type="checkbox"/> -DXDE 	<b>Double End Rod – Double End Mounting</b> <b>Standard Stroke Lengths:</b> ½", 1", 1½", 2", 2½", 3", 4", 5", 6" <b>Maximum Stroke – 12"</b> <b>Optional Accessory:</b> D-770 Mounting Bracket <b>Base Weight: .14</b> <b>Adder Per Inch of Stroke: .02</b>	

## 3/4" Bore MRS Air Cylinders


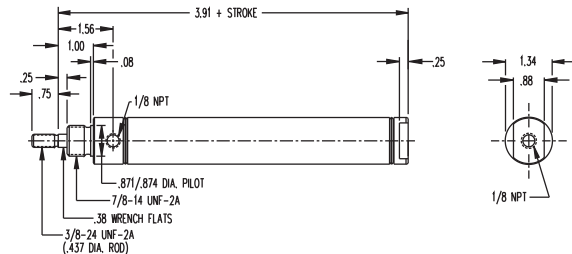
MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<b>MRS-04</b> <input type="checkbox"/> -D 	<b>Nose Mount</b> <b>Standard Stroke Lengths:</b> ½", 1", 1½", 2", 2½", 3", 4", 5", 6" <b>Maximum Stroke – 12"</b> <b>Optional Accessory:</b> D-129 Mounting Bracket <b>Base Weight: .24</b> <b>Adder Per Inch of Stroke: .04</b>	
<b>MRS-04</b> <input type="checkbox"/> -DXP 	<b>Double End or Rear Pivot Mounting</b> <b>Standard Stroke Lengths:</b> ½", 1", 1½", 2", 2½", 3", 4", 5", 6", 7", 8", 9", 10", 11", 12" <b>Maximum Stroke – 32"</b> <b>Optional Accessories:</b> D-10131-A Pivot Bracket D-129 Mounting Bracket D-10139-A Rod Clevis <b>Base Weight: .30</b> <b>Adder Per Inch of Stroke: .06</b>	
<b>MRS-04</b> <input type="checkbox"/> -DXDE 	<b>Double End Rod – Double End Mounting</b> <b>Standard Stroke Lengths:</b> ½", 1", 1½", 2", 2½", 3", 4", 5", 6" <b>Maximum Stroke – 12"</b> <b>Optional Accessory:</b> D-129 Mounting Bracket <b>Base Weight: .41</b> <b>Adder Per Inch of Stroke: .06</b>	

# MRS® Magnetic Reed Switch Air Cylinders

## 1-1/16" Bore MRS Air Cylinders

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<b>MRS-09</b> <input type="checkbox"/> -D 	<b>Nose Mount</b> <b>Standard Stroke Lengths:</b> ½", 1", 1½", 2", 2½", 3", 4", 5", 6" <b>Maximum Stroke – 12"</b> <b>Optional Accessory:</b> D-8315 Mounting Bracket <b>Base Weight: .37</b> <b>Adder Per Inch of Stroke: .05</b>	
<b>MRS-09</b> <input type="checkbox"/> -DXP 	<b>Double End or Rear Pivot Mounting</b> <b>Standard Stroke Lengths:</b> ½", 1", 1½", 2", 2½", 3", 4", 5", 6", 7", 8", 9", 10", 11", 12" <b>Maximum Stroke – 32"</b> <b>Optional Accessories:</b> D-8321-A Pivot Bracket D-8315 Mounting Bracket D-8309-A Rod Clevis <b>Base Weight: .42</b> <b>Adder Per Inch of Stroke: .05</b>	
<b>MRS-09</b> <input type="checkbox"/> -DXDE 	<b>Double End Rod – Double End Mounting</b> <b>Standard Stroke Lengths:</b> ½", 1", 1½", 2", 2½", 3", 4", 5", 6" <b>Maximum Stroke – 12"</b> <b>Optional Accessory:</b> D-8315 Mounting Bracket <b>Base Weight: .60</b> <b>Adder Per Inch of Stroke: .08</b>	

## 1-1/4" Bore MRS Air Cylinders

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<b>MRS-12</b> <input type="checkbox"/> -D 	<b>Nose Mount</b> <b>Standard Stroke Lengths:</b> ½", 1", 1½", 2", 2½", 3", 4", 5", 6" <b>Maximum Stroke – 12"</b> <b>Optional Accessory:</b> D-8316 Mounting Bracket <b>Base Weight: .51</b> <b>Adder Per Inch of Stroke: .07</b>	

Standard Air Cylinders

Three-Position Cylinders

Cushion Cylinders

MRS® Cylinders

Non-Rotating Cylinders

PC Cylinders

All Stainless Non-Repairable

All Stainless Repairable

7 Line Air Cylinders


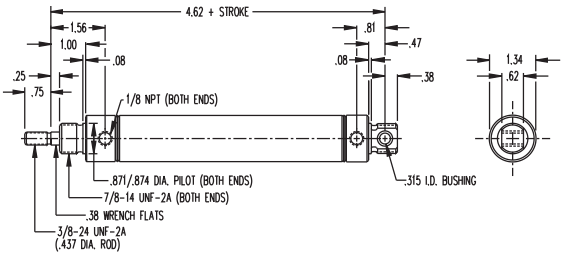

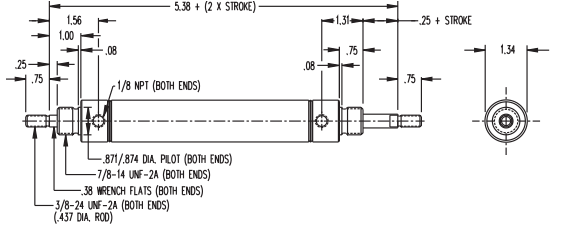
Rod Lock Cylinders

500 Hydraulic Cylinders


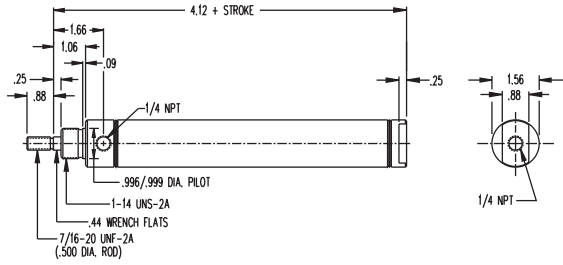

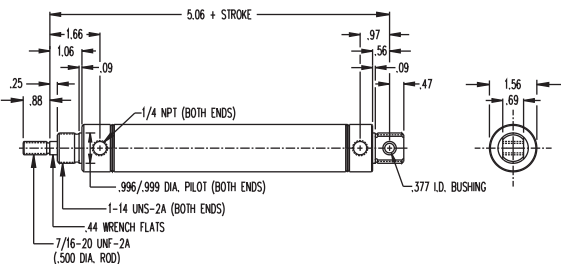
Repairable Hole Punch Cylinders

# MRS® Magnetic Reed Switch Air Cylinders

## 1-1/4" Bore MRS Air Cylinders (continued)

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<b>MRS-12</b> <input type="checkbox"/> -DXP 	<b>Double End or Rear Pivot Mounting</b> <b>Standard Stroke Lengths:</b> 1/2", 1", 1 1/2", 2", 2 1/2", 3", 4", 5", 6", 7", 8", 9", 10", 11", 12" <b>Maximum Stroke – 32"</b> <b>Optional Accessories:</b> D-8322-A Pivot Bracket D-8316 Mounting Bracket D-8310-A Rod Clevis <b>Base Weight: .61</b> <b>Adder Per Inch of Stroke: .05</b>	
<b>MRS-12</b> <input type="checkbox"/> -DXDE 	<b>Double End Rod – Double End Mounting</b> <b>Standard Stroke Lengths:</b> 1/2", 1", 1 1/2", 2", 2 1/2", 3", 4", 5", 6" <b>Maximum Stroke – 12"</b> <b>Optional Accessory:</b> D-8316 Mounting Bracket <b>Base Weight: .70</b> <b>Adder Per Inch of Stroke: .14</b>	


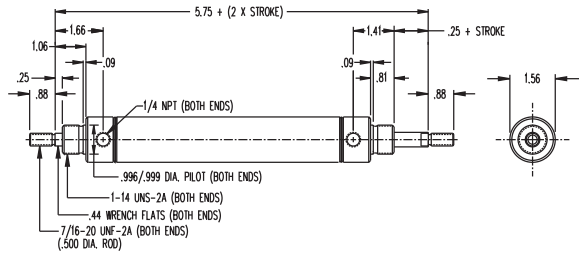
## 1-1/2" Bore MRS Air Cylinders

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<b>MRS-17</b> <input type="checkbox"/> -D 	<b>Nose Mount</b> <b>Standard Stroke Lengths:</b> 1/2", 1", 1 1/2", 2", 2 1/2", 3", 4", 5", 6" <b>Maximum Stroke – 12"</b> <b>Optional Accessory:</b> D-8317 Mounting Bracket <b>Base Weight: .74</b> <b>Adder Per Inch of Stroke: .10</b>	
<b>MRS-17</b> <input type="checkbox"/> -DXP 	<b>Double End or Rear Pivot Mounting</b> <b>Standard Stroke Lengths:</b> 1/2", 1", 1 1/2", 2", 2 1/2", 3", 4", 5", 6", 7", 8", 9", 10", 11", 12" <b>Maximum Stroke – 32"</b> <b>Optional Accessories:</b> D-8323-A Pivot Bracket D-8317 Mounting Bracket D-8311-A Rod Clevis <b>Base Weight: .87</b> <b>Adder Per Inch of Stroke: .10</b>	




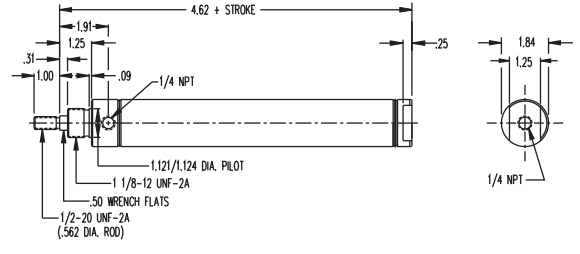

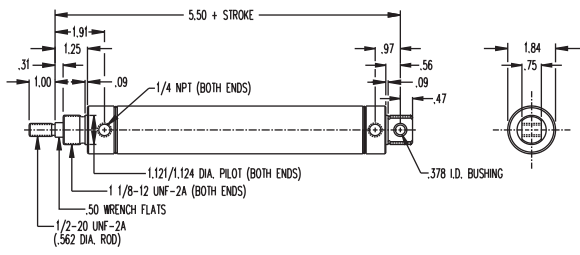

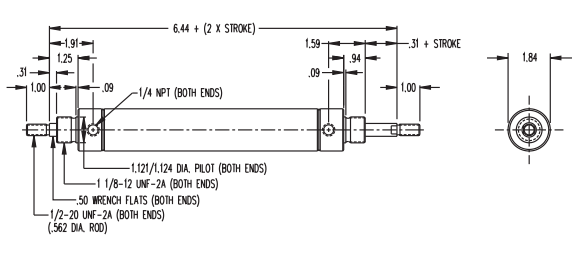
# MRS® Magnetic Reed Switch Air Cylinders

## 1-1/2" Bore MRS Air Cylinders (continued)

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<b>MRS-17</b>  <b>-DXDE</b>	<b>Double End Rod – Double End Mounting</b> Standard Stroke Lengths: 1/2", 1", 1 1/2", 2", 2 1/2", 3", 4", 5", 6" Maximum Stroke – 12" Optional Accessory: D-8317 Mounting Bracket Base Weight: .94 Adder Per Inch of Stroke: .20	

Standard Air Cylinders  
Three-Position Cylinders  
Cushion Cylinders


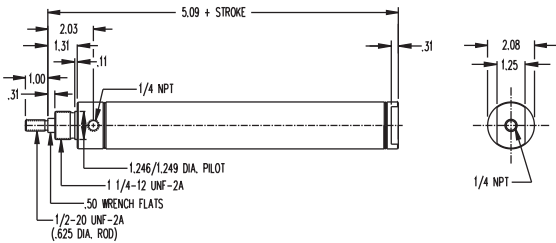

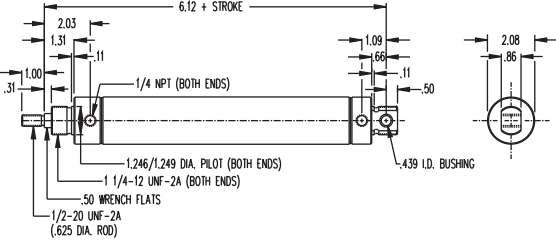

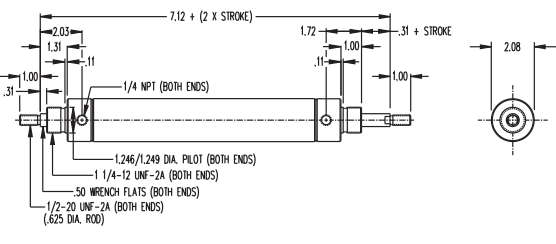
## 1-3/4" Bore MRS Air Cylinders

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<b>MRS-24</b>  <b>-D</b>	<b>Nose Mount</b> Standard Stroke Lengths: 1/2", 1", 1 1/2", 2", 2 1/2", 3", 4", 5", 6" Maximum Stroke – 12" Optional Accessory: D-8318 Mounting Bracket Base Weight: 1.14 Adder Per Inch of Stroke: .13	
<b>MRS-24</b>  <b>-DXP</b>	<b>Double End or Rear Pivot Mounting</b> Standard Stroke Lengths: 1/2", 1", 1 1/2", 2", 2 1/2", 3", 4", 5", 6", 7", 8", 9", 10", 11", 12" Maximum Stroke – 32" Optional Accessories: D-8324-A Pivot Bracket D-8318 Mounting Bracket D-8312-A Rod Clevis Base Weight: 1.30 Adder Per Inch of Stroke: .13	
<b>MRS-24</b>  <b>-DXDE</b>	<b>Double End Rod – Double End Mounting</b> Standard Stroke Lengths: 1/2", 1", 1 1/2", 2", 2 1/2", 3", 4", 5", 6" Maximum Stroke – 12" Optional Accessory: D-8318 Mounting Bracket Base Weight: 1.40 Adder Per Inch of Stroke: .26	


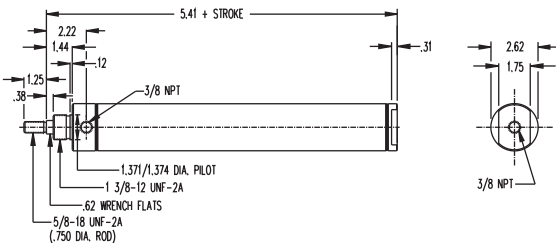
MRS® Cylinders  
Non-Rotating Cylinders  
PC Cylinders  
All Stainless Non-Repairable  
All Stainless Repairable  
7 Line Air Cylinders  
Rod Lock Cylinders  
500 Hydraulic Cylinders  
Repairable Hole Punch Cylinders

# MRS® Magnetic Reed Switch Air Cylinders

## 2" Bore MRS Air Cylinders


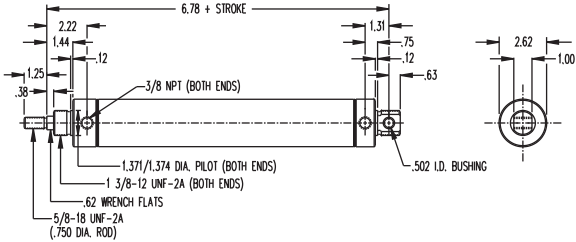

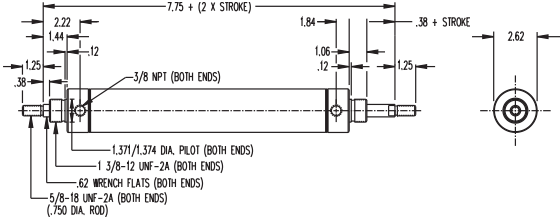
MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<b>MRS-31</b> <input type="checkbox"/> -D 	<b>Nose Mount</b> <b>Standard Stroke Lengths:</b> ½", 1", 1½", 2", 2½", 3", 4", 5", 6" <b>Maximum Stroke – 12"</b> <b>Optional Accessory:</b> D-8319 Mounting Bracket <b>Base Weight: 1.55</b> <b>Adder Per Inch of Stroke: .15</b>	
<b>MRS-31</b> <input type="checkbox"/> -DXP 	<b>Double End or Rear Pivot Mounting</b> <b>Standard Stroke Lengths:</b> ½", 1", 1½", 2", 2½", 3", 4", 5", 6", 7", 8", 9", 10", 11", 12" <b>Maximum Stroke – 32"</b> <b>Optional Accessories:</b> D-8325-A Pivot Bracket D-8319 Mounting Bracket D-8313-A Rod Clevis <b>Base Weight: 1.80</b> <b>Adder Per Inch of Stroke: .15</b>	
<b>MRS-31</b> <input type="checkbox"/> -DXDE 	<b>Double End Rod – Double End Mounting</b> <b>Standard Stroke Lengths:</b> ½", 1", 1½", 2", 2½", 3", 4", 5", 6" <b>Maximum Stroke – 12"</b> <b>Optional Accessory:</b> D-8319 Mounting Bracket <b>Base Weight: 1.90</b> <b>Adder Per Inch of Stroke: .30</b>	

## 2-1/2" Bore MRS Air Cylinders

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<b>MRS-50</b> <input type="checkbox"/> -D 	<b>Nose Mount</b> <b>Standard Stroke Lengths:</b> ½", 1", 1½", 2", 2½", 3", 4", 5", 6" <b>Maximum Stroke – 12"</b> <b>Optional Accessory:</b> D-8320 Mounting Bracket <b>Base Weight: 2.48</b> <b>Adder Per Inch of Stroke: .20</b>	

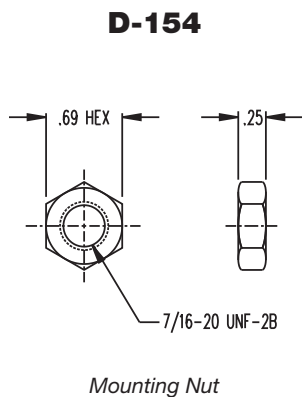
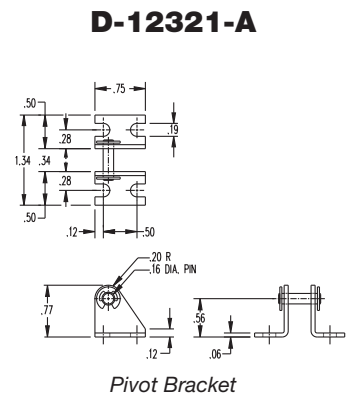
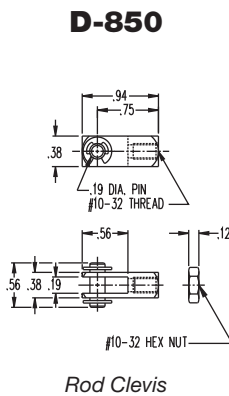
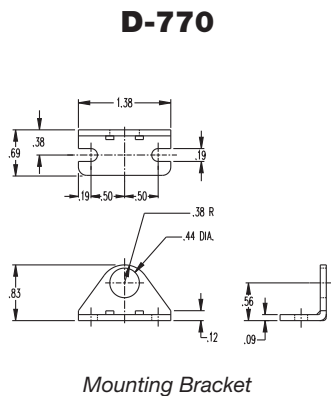
# MRS® Magnetic Reed Switch Air Cylinders

## 2-1/2" Bore MRS Air Cylinders (continued)

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<b>MRS-50</b> <input type="checkbox"/> -DXP 	<b>Double End or Rear Pivot Mounting</b> <b>Standard Stroke Lengths:</b> 1/2", 1", 1 1/2", 2", 2 1/2", 3", 4", 5", 6", 7", 8", 9", 10", 11", 12" <b>Maximum Stroke – 32"</b> <b>Optional Accessories:</b> D-8326-A Pivot Bracket D-8320 Mounting Bracket D-8314-A Rod Clevis <b>Base Weight: 2.90</b> <b>Adder Per Inch of Stroke: .20</b>	
<b>MRS-50</b> <input type="checkbox"/> -DXDE 	<b>Double End Rod – Double End Mounting</b> <b>Standard Stroke Lengths:</b> 1/2", 1", 1 1/2", 2", 2 1/2", 3", 4", 5", 6" <b>Maximum Stroke – 12"</b> <b>Optional Accessory:</b> D-8320 Mounting Bracket <b>Base Weight: 3.15</b> <b>Adder Per Inch of Stroke: .40</b>	

## MRS Accessories

### 9/16" Bore Accessories



Standard Air Cylinders

Three-Position Cylinders

Cushion Cylinders

MRS® Cylinders

Non-Rotating Cylinders

PC Cylinders

All Stainless Non-Repairable

All Stainless Repairable

7 Line Air Cylinders

Rod Lock Cylinders

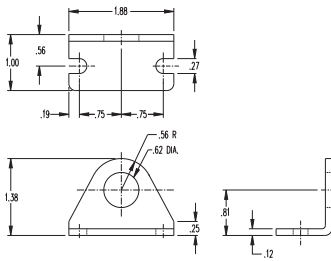
500 Hydraulic Cylinders

Repairable Hole Punch Cylinders

# MRS Accessories continued

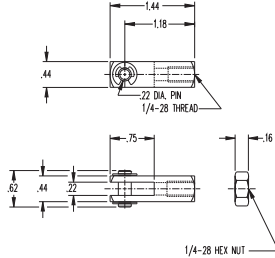
## 3/4" Bore Accessories

**D-129**



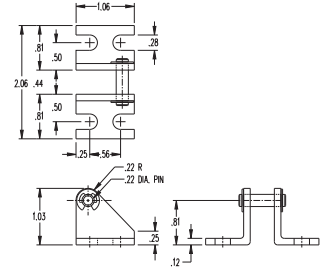
Mounting Bracket

**D-10139-A**



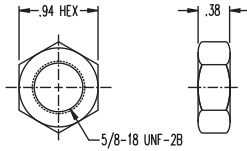
Rod Clevis

**D-10131-A**



Pivot Bracket

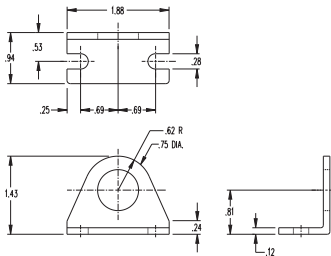
**D-9**



Mounting Nut

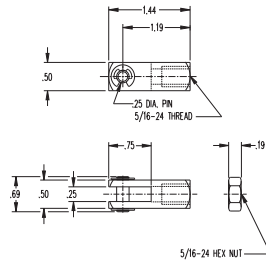
## 1-1/16" Bore Accessories

**D-8315**



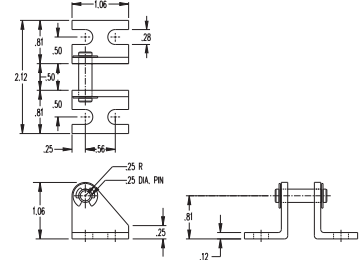
Mounting Bracket

**D-8309-A**



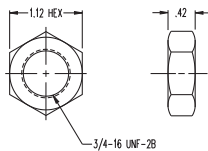
Rod Clevis

**D-8321-A**



Pivot Bracket

**D-3556**

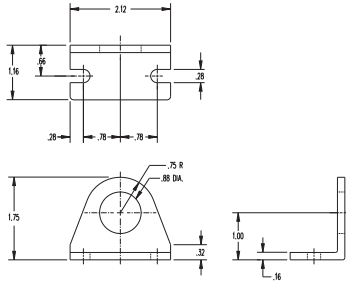


Mounting Nut

# MRS Accessories continued

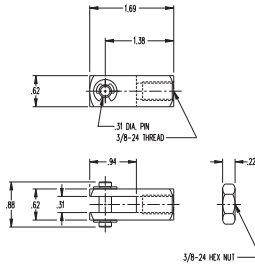
## 1-1/4" Bore Accessories

**D-8316**



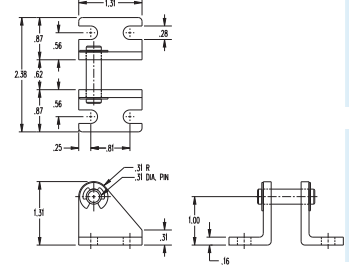
Mounting Bracket

**D-8310-A**



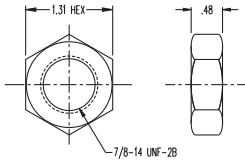
Rod Clevis

**D-8322-A**



Pivot Bracket

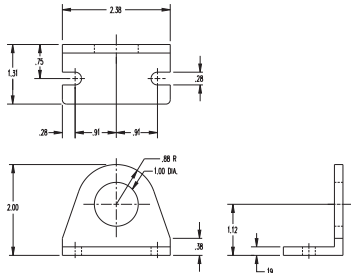
**D-2545**



Mounting Nut

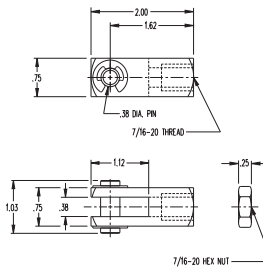
## 1-1/2" Bore Accessories

**D-8317**



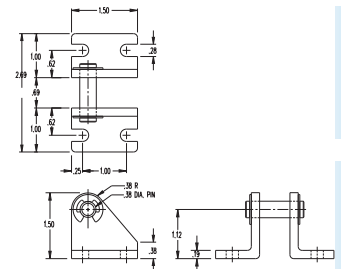
Mounting Bracket

**D-8311-A**



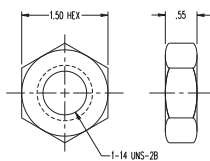
Rod Clevis

**D-8323-A**



Pivot Bracket

**D-1331**



Mounting Nut

Standard Air  
Cylinders

Three-Position  
Cylinders

Cushion  
Cylinders

MRS®  
Cylinders

Non-Rotating  
Cylinders

PC  
Cylinders

All Stainless  
Non-Repairable

All Stainless  
Repairable

7 Line Air  
Cylinders

Rod Lock  
Cylinders

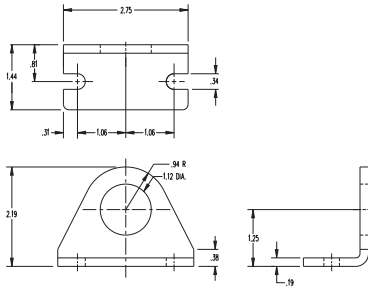
500 Hydraulic  
Cylinders

Repairable  
Hole Punch  
Cylinders

# MRS Accessories continued

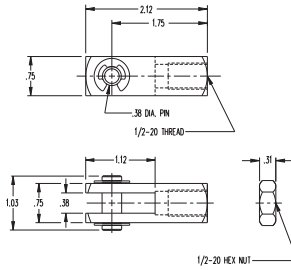
## 1-3/4" Bore Accessories

**D-8318**



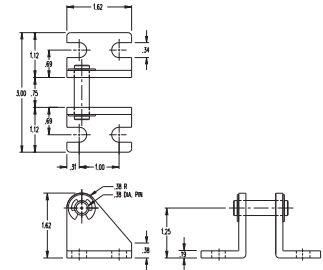
Mounting Bracket

**D-8312-A**



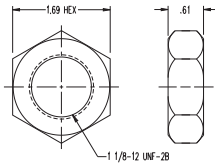
Rod Clevis

**D-8324-A**



Pivot Bracket

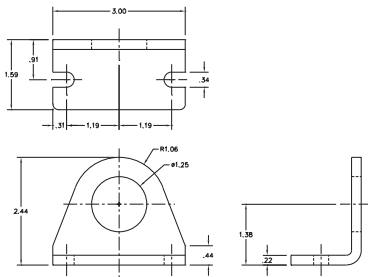
**D-8484**



Mounting Nut

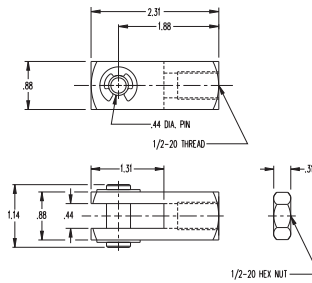
## 2" Bore Accessories

**D-8319**



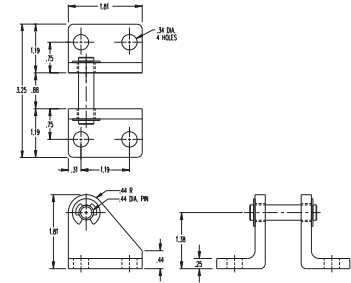
Mounting Bracket

**D-8313-A**



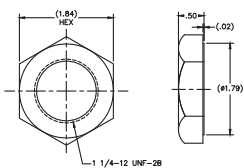
Rod Clevis

**D-8325-A**



Pivot Bracket

**D-508**



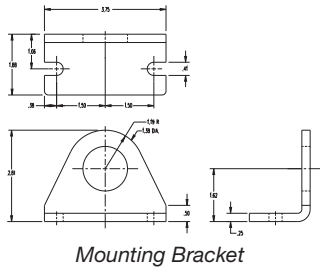
Mounting Nut



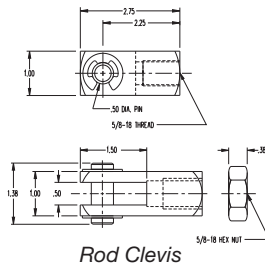
# MRS Accessories continued

## 2-1/2" Bore Accessories

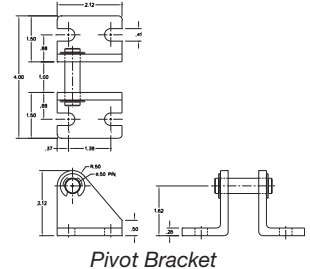
**D-8320**



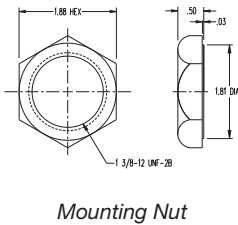
**D-8314-A**



**D-8326-A**

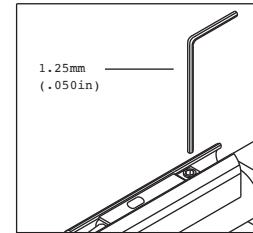
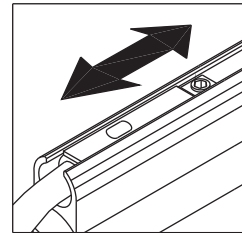
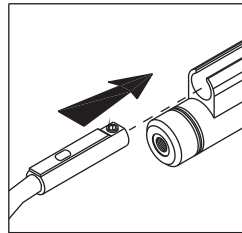
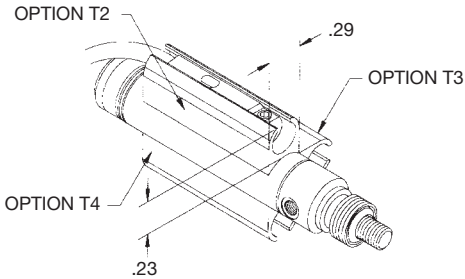


**D-2540**



## Switch Track Options

For Original Line cylinders, including MRS cylinders, with -T2, T3, and T4 options



## Switch Track for use with Bimba MR, MS, MSC, and MSK Switches

Miniature Position Sensing track lengths can now be purchased separately for field mounting of custom track locations. Simply specify the length of track desired after the part number.

Mounting recommendations:

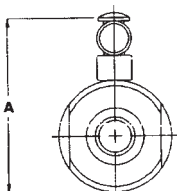
- Clean body with acetone. Remove all oil from body surface.
- Avoid mounting track over rolled construction. Locate edge of track 0.175" from rolled construction.
- Use a solid continuous bead of glue for the entire length of track used. Bead should fill center channel of track.
- Adhere to recommended cure times as specified by the glue manufacturer.

Bores	Part Number	List Price
007 - 04	D-74168-A-length	\$3.45
06 - 31	D-78527-A-length	3.45
50 - 70	D-78528-A-length	3.45

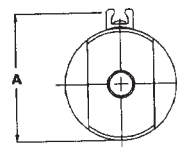
Loctite U-05FL or similar adhesive is recommended (not included).

## For MRS cylinders with -Z or -ZTT options

For 9/16" and 3/4" Bore



For 1-1/16" and 2-1/2" Bore



Bore Designator	Bore	A
02	9/16"	1.00
04	3/4"	1.38
09	1-1/16"	1.50
12	1-1/4"	1.68
17	1-1/2"	1.91
24	1-3/4"	2.20
31	2"	2.43
50	2-1/2"	2.98

Standard Air Cylinders

Three-Position Cylinders

Cushion Cylinders

MRS® Cylinders

Non-Rotating Cylinders

PC Cylinders

All Stainless Non-Repairable

All Stainless Repairable

Z Line Air Cylinders

Rod Lock Cylinders

500 Hydraulic Cylinders

Repairable Hole Punch Cylinders

# Non-Rotating Original Line Air Cylinders

Bimba's new Non-Rotating Original Line stainless steel body air cylinder design consists of a unique square piston rod with rounded corners. The square rod prevents rotation better than other rod configurations, and the rounded corners provide longer seal life than conventional hexagon rods. The unusual geometry of the square rod also provides superior rotation control. All bore sizes have a rotational control of less than or equal to  $\pm 3$  degrees. The special high strength aluminum alloy rod guide provides high load carrying capability and abrasion resistance. The urethane-based rod seal provides excellent seal life and leak-free service. The Non-Rotating Original Line cylinder is dimensionally interchangeable with the standard Original Line stainless steel cylinder.

## 9/16" Bore Non-Rotating Air Cylinders

- New! Stainless Steel Piston Rod Standard.
- Unique Square Piston Rod with Rounded Corners.
- High Strength Aluminum Alloy Rod Guide.
- Urethane-based Rod Seal.
- Buna N "U" Cup Piston Seal.
- Pressure Rating – 250 PSI Maximum (Air only)
- Available in Double Acting and Reverse Acting Models.
- Enclosed Spring Force: 2 lbs. Relaxed - 4 lbs. Compressed.
- Standard Buna N Seals Temperature Range of -20°F (-25°C) to 200°F (95°C)

Enter Stroke Length as 3rd Digit

### OPTIONS:

#### NO CHARGE:

- SIDE PORTED REAR HEAD (Q)
- PORTS ROTATED (K)

#### REVERSE ACTING BUMPERS (B)

- Add .062 to overall length

#### DOUBLE ACTING BUMPERS (B)

- Add .125 to overall length

#### EXTRA EXTENSION (EE)

#### MAGNET (prefix M)

- Reverse acting add .125" to overall length
- Must specify track(s) for use with miniature position sensing (T2, T3, T4) See page 1.9 for track location details. See Switch Products, page 9.3 for switch selection information.

#### LOW TEMPERATURE (N)

Temperature Range : -40° to 200°F

#### HIGH TEMPERATURE SEALS (V)

Temperature Range : 0° to 400°F (-18° to 205°C)

### MODEL/PRICE

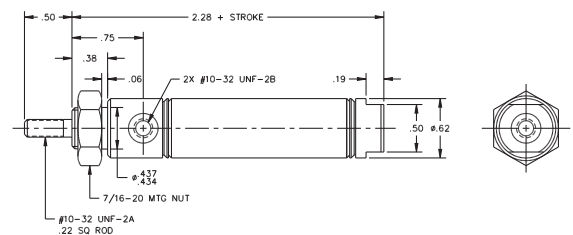
**NR-02**  -D



### DESCRIPTION/WEIGHT (lbs.)

**Double Acting – Air Return – Front Nose Mounting**  
**Standard Stroke Lengths:**  
 ½", 1", 1½", 2", 2½", 3", 4"  
**Maximum Stroke – 10"**  
**Optional Accessory:**  
 D-770 Mounting Bracket  
**Base Weight: .09**  
**Adder Per Inch of Stroke: .02**


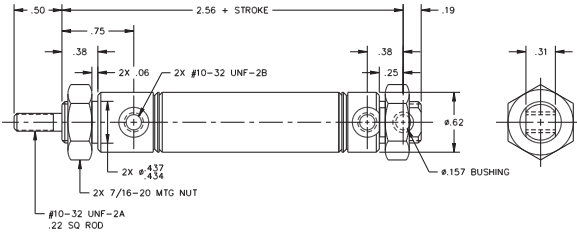

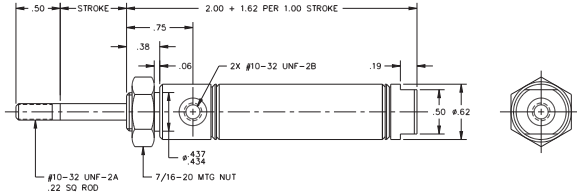

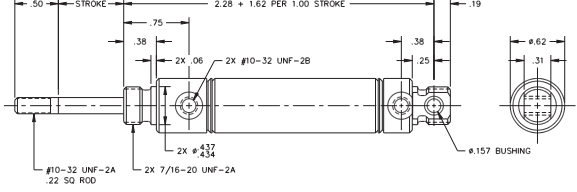
### DIMENSIONS



®Magnalube is a registered trademark of the Carleton-Stuart Corporation.

# 9/16" Bore Non-Rotating Air Cylinders

## 9/16" Bore Non-Rotating Air Cylinders (continued)

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<b>NR-02</b> <input type="checkbox"/> -DXP 	<b>Double Acting – Double End or Rear Pivot Mounting – Air Return</b> <b>Standard Stroke Lengths:</b> ½", 1", 1½", 2", 2½", 3", 4" <b>Maximum Stroke – 10"</b> <b>Optional Accessories:</b> D-770 Mounting Nut D-850 Rod Clevis D-12321-A Pivot Bracket <b>Base Weight: .09</b> <b>Adder Per Inch of Stroke: .02</b>	
<b>NR-02</b> <input type="checkbox"/> -R 	<b>Reverse Single Acting – Pull Type – Rod Normally Extended – Spring Return – Front Nose Mounting</b> <b>Standard Stroke Lengths:</b> ½", 1", 1½", 2", 2½", 3" <b>Maximum Stroke – 4"</b> <b>Optional Accessory:</b> D-770 Mounting Bracket <b>Base Weight: .08</b> <b>Adder Per Inch of Stroke: .04</b>	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>
<b>NR-02</b> <input type="checkbox"/> -RP 	<b>Reverse Single Acting – Pivot and Pull Type – Rod Normally Extended – Spring Return – Rear Pivot Mounting</b> <b>Standard Stroke Lengths:</b> ½", 1", 1½", 2", 2½", 3" <b>Maximum Stroke – 4"</b> <b>Optional Accessories:</b> D-850 Rod Clevis D-12321-A Pivot Bracket <b>Base Weight: .08</b> <b>Adder Per Inch of Stroke: .04</b>	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>

Standard Air Cylinders

Three-Position Cylinders

Cushion Cylinders

MRS® Cylinders

Non-Rotating Cylinders

PG Cylinders

All Stainless Non-Repairable

All Stainless Repairable

Z Line Air Cylinders

Rod Lock Cylinders

500 Hydraulic Cylinders

Repairable Hole Punch Cylinders

# 3/4" Bore Non-Rotating Air Cylinders

- New! Stainless Steel Piston Rod Standard.
- Unique Square Piston Rod with Rounded Corners.
- High Strength Aluminum Alloy Rod Guide.
- Urethane-based Rod Seal.
- Buna N "U" Cup Piston Seal.
- Pressure Rating – 250 PSI Maximum (Air only)
- Available in Double Acting and Reverse Acting Models.
- Enclosed Spring Force: 3 lbs. Relaxed - 6 lbs. Compressed.
- Standard Buna N Seals Temperature Range of -20°F (-25°C) to 200°F (95°C)

Enter Stroke Length as 3rd Digit

## OPTIONS:

- PORTS ROTATED (K)
- SIDE PORTED REAR HEAD (Q)
- PIVOT BUSHING (Y)

REVERSE ACTING BUMPERS (B)  
• Add .062 to overall length

DOUBLE ACTING BUMPERS (B)  
• Add .125 to overall length


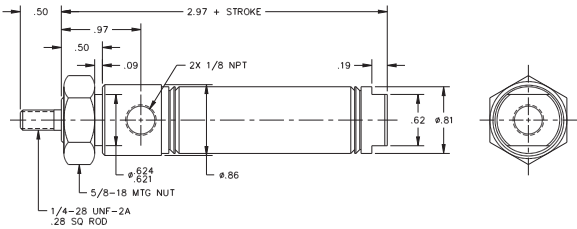

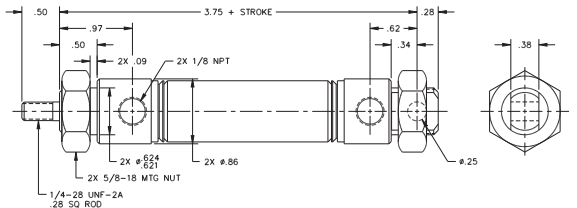
EXTRA EXTENSION (EE)

MAGNET (prefix M)

- Reverse acting add .125" to overall length
- Must specify track(s) for use with miniature position sensing (T2, T3, T4) See page 1.9 for track location details. See Switch Products, page 9.3 for switch selection information.


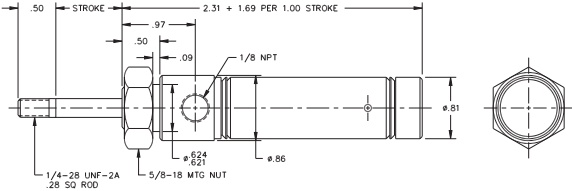

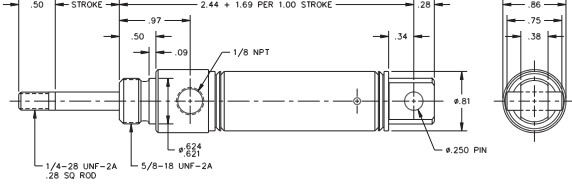

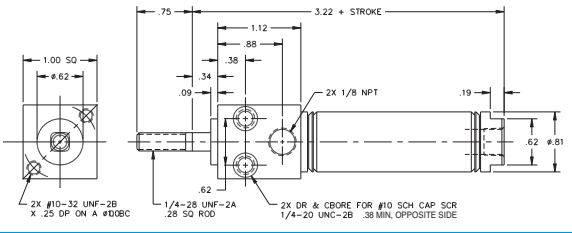

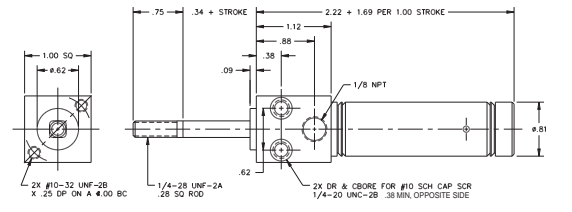

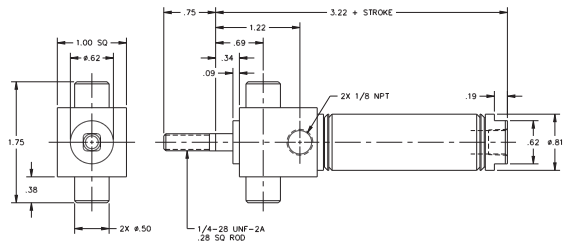
LOW TEMPERATURE (N)  
Temperature Range : -40° to 200°F

HIGH TEMPERATURE SEALS (V)  
Temperature Range : 0° to 400°F (-18° to 205°C)

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<b>NR-04</b> <input type="checkbox"/> -D 	<b>Double Acting – Air Return – Front Nose Mounting</b> <b>Standard Stroke Lengths:</b> ½", 1", 1½", 2", 2½", 3", 4", 5", 6" <b>Maximum Stroke – 12"</b> <b>Optional Accessory:</b> D-129 Mounting Bracket <b>Base Weight: .21</b> <b>Adder Per Inch of Stroke: .03</b>	
<b>NR-04</b> <input type="checkbox"/> -DXP 	<b>Double Acting – Double End or Rear Pivot Mounting – Air Return</b> <b>Standard Stroke Lengths:</b> ½", 1", 1½", 2", 2½", 3", 4", 5", 6", 7", 8", 9", 10", 11", 12" <b>Maximum Stroke – 24"</b> <b>Optional Accessories:</b> D-129 Mounting Bracket D-166-3 Rod Clevis D-13498-A Pivot Bracket <b>Base Weight: .29</b> <b>Adder Per Inch of Stroke: .03</b>	

# 3/4" Bore Non-Rotating Air Cylinders

## 3/4" Bore Non-Rotating Air Cylinders (continued)

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<b>NR-04</b> <input type="checkbox"/> -R 	<b>Reverse Single Acting – Pull Type – Rod Normally Extended – Spring Return – Front Nose Mounting</b> Standard Stroke Lengths: 1/2", 1", 1 1/2", 2", 2 1/2", 3", 4" Maximum Stroke – 6" Optional Accessory: D-129 Mounting Bracket Base Weight: .18 Adder Per Inch of Stroke: .07	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>
<b>NR-04</b> <input type="checkbox"/> -RP 	<b>Reverse Single Acting – Pull Type – Rod Normally Extended – Spring Return – Rear Pivot Mounting</b> Standard Stroke Lengths: 1/2", 1", 1 1/2", 2", 2 1/2", 3", 4" Maximum Stroke – 6" Optional Accessories: D-167 Mounting Brackets, D-166-3 Piston Rod Clevis Base Weight: .18 Adder Per Inch of Stroke: .07	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>
<b>BFNR-04</b> <input type="checkbox"/> -D 	<b>Double Acting – Front Block Mounting – Air Return</b> Standard Stroke Lengths: 1/2", 1", 1 1/2", 2", 2 1/2", 3", 4", 5", 6" Maximum Stroke – 12" Base Weight: .22 Adder Per Inch of Stroke: .03	
<b>BFNR-04</b> <input type="checkbox"/> -R 	<b>Pull Type – Front Block Mounting Rod Normally Extended – Reverse Single Acting – Spring Return</b> Standard Stroke Lengths: 1/2", 1", 1 1/2", 2", 2 1/2", 3", 4" Maximum Stroke – 6" Base Weight: .19 Adder Per Inch of Stroke: .07	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>
<b>BFTNR-04</b> <input type="checkbox"/> -D 	<b>Double Acting – Front Block Trunnion Mounting – Air Return</b> Standard Stroke Lengths: 1/2", 1", 1 1/2", 2", 2 1/2", 3", 4" Maximum Stroke – 12" Optional Accessories: TRB-2 Trunnion Brackets, D-166-3 Rod Clevis Base Weight: .29 Adder Per Inch of Stroke: .03	

- Standard Air Cylinders
- Three-Position Cylinders
- Cushion Cylinders
- MRS® Cylinders
- Non-Rotating Cylinders
- PC Cylinders
- All Stainless Non-Repairable
- All Stainless Repairable
- Z Line Air Cylinders
- Rod Lock Cylinders
- 500 Hydraulic Cylinders
- Repairable Hole Punch Cylinders

# 1-1/16" Bore Non-Rotating Air Cylinders

- Stainless Steel Piston Rod Standard.
- Unique Square Piston Rod with Rounded Corners.
- High Strength Aluminum Alloy Rod Guide.
- Urethane-based Rod Seal.
- Buna N "U" Cup Piston Seal.
- Pressure Rating – 250 PSI Maximum (Air only)
- Available in Double Acting and Reverse Acting Models.
- Enclosed Spring Force: 6 lbs. Relaxed - 12 lbs. Compressed.
- Standard Buna N Seals Temperature Range of -20°F (-25°C) to 200°F (95°C)

Enter Stroke Length as 3rd Digit

## OPTIONS:

- PORTS ROTATED (K)
  - SIDE PORTED REAR HEAD (Q)
  - PIVOT BUSHING (Y)
- REVERSE ACTING BUMPERS (B)
- Add .062 to overall length

- DOUBLE ACTING BUMPERS (B)
- Add .125 to overall length

### EXTRA EXTENSION (EE)

### MAGNET (prefix M)


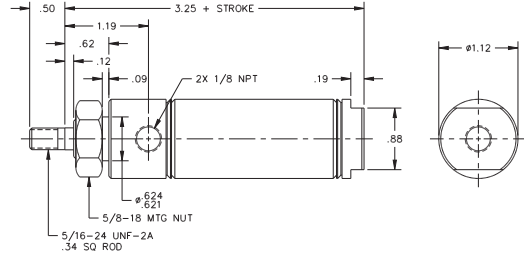

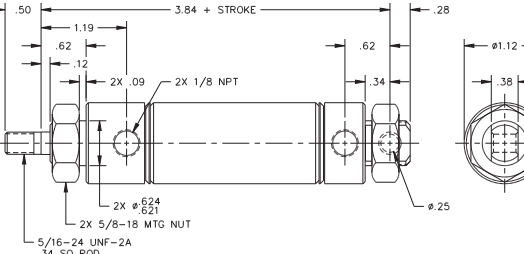

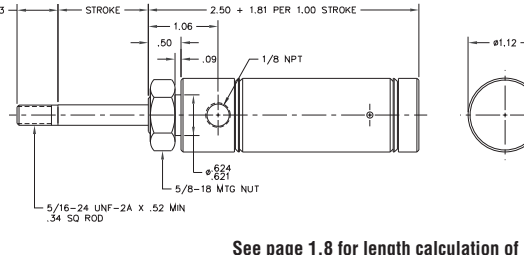
- Reverse acting add .125" to overall length
- Must specify track(s) for use with miniature position sensing (T2, T3, T4) See page 1.9 for track location details. See Switch Products, page 9.3 for switch selection information.

### LOW TEMPERATURE (N)

Temperature Range : -40° to 200°F

### HIGH TEMPERATURE SEALS (V)

Temperature Range : 0° to 400°F (-18° to 205°C)


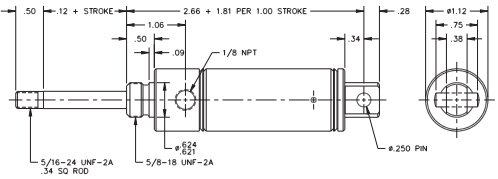

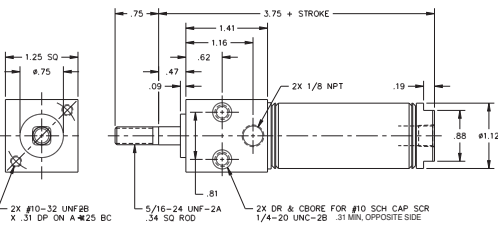

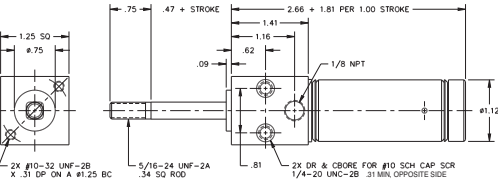

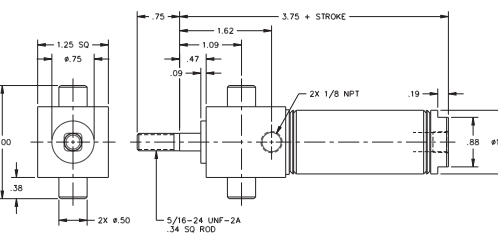
MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<b>NR-09</b> <input type="checkbox"/> -D 	<b>Double Acting – Air Return – Front Nose Mounting</b> <b>Standard Stroke Lengths:</b> ½", 1", 1½", 2", 2½", 3", 4", 5", 6" <b>Maximum Stroke – 12"</b> <b>Optional Accessory:</b> D-129 Mounting Bracket <b>Base Weight: .33</b> <b>Adder Per Inch of Stroke: .05</b>	
<b>NR-09</b> <input type="checkbox"/> -DXP 	<b>Double Acting – Double End or Rear Pivot Mounting – Air Return</b> <b>Standard Stroke Lengths:</b> ½", 1", 1½", 2", 2½", 3", 4", 5", 6", 7", 8", 9", 10", 11", 12" <b>Maximum Stroke – 24"</b> <b>Optional Accessories:</b> D-129 Mounting Bracket D-166-1 Rod Clevis D-13498-A Pivot Bracket <b>Base Weight: .33</b> <b>Adder Per Inch of Stroke: .05</b>	
<b>NR-09</b> <input type="checkbox"/> -R 	<b>Reverse Single Acting – Pull Type – Rod Normally Extended – Spring Return – Front Nose Mounting</b> <b>Standard Stroke Lengths:</b> ½", 1", 1½", 2", 2½", 3", 4" <b>Maximum Stroke – 6"</b> <b>Optional Accessory:</b> D-129 Mounting Bracket <b>Base Weight: .24</b> <b>Adder Per Inch of Stroke: .16</b>	

See page 1.8 for length calculation of fractional stroke for single acting cylinders.



# 1-1/16" Bore Non-Rotating Air Cylinders

## 1-1/16" Bore Non-Rotating Air Cylinders (continued)

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<b>NR-09</b> <input type="checkbox"/> -RP 	<b>Reverse Single Acting – Pivot or Pull Type – Rod Normally Extended Spring Return – Rear Pivot Mounting</b> Standard Stroke Lengths: 1/2", 1", 1 1/2", 2", 2 1/2", 3", 4" Maximum Stroke – 6" Optional Accessories: D-166-1 Piston Rod Clevis D-167 Mounting Bracket Base Weight: .22 Adder Per Inch of Stroke: .16	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>
<b>BFNR-09</b> <input type="checkbox"/> -D 	<b>Double Acting – Front Block Mounting – Air Return</b> Standard Stroke Lengths: 1/2", 1", 1 1/2", 2", 2 1/2", 3", 4", 5", 6" Maximum Stroke – 12" Base Weight: .49 Adder Per Inch of Stroke: .05	
<b>BFNR-09</b> <input type="checkbox"/> -R 	<b>Reverse Single Acting – Front Block Mounting – Rod Normally Extended – Reverse Single Acting – Spring Return</b> Standard Stroke Lengths: 1/2", 1", 1 1/2", 2", 2 1/2", 3", 4" Maximum Stroke – 6" Base Weight: .36 Adder Per Inch of Stroke: .16	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>
<b>BFTNR-09</b> <input type="checkbox"/> -D 	<b>Double Acting – Front Block Trunnion Mounting – Air Return</b> Standard Stroke Lengths: 1/2", 1", 1 1/2", 2", 2 1/2", 3", 4" Maximum Stroke – 12" Optional Accessories: TRB-2 Trunnion Brackets D-166-1 Rod Clevis Base Weight: .49 Adder Per Inch of Stroke: .05	

Standard Air Cylinders

Three-Position Cylinders

Cushion Cylinders

MRS® Cylinders

Non-Rotating Cylinders

PC Cylinders

All Stainless Non-Repairable

All Stainless Repairable

Z Line Air Cylinders

Rod Lock Cylinders

500 Hydraulic Cylinders

Repairable Hole Punch Cylinders

# 1-1/2" Bore Non-Rotating Air Cylinders

- New! Stainless Steel Piston Rod Standard.
- Unique Square Piston Rod with Rounded Corners.
- High Strength Aluminum Alloy Rod Guide.
- Urethane-based Rod Seal.
- Buna N "U" Cup Piston Seal.
- Pressure Rating – 250 PSI Maximum (Air only)
- Available in Double Acting and Reverse Acting Models.
- Enclosed Spring Force: 8.5 lbs. Relaxed - 17 lbs. Compressed.
- Standard Buna N Seals Temperature Range of -20°F (-25°C) to 200°F (95°C)

Enter Stroke Length as 3rd Digit

## OPTIONS:

- PORTS ROTATED (K)
- SIDE PORTED REAR HEAD (Q)
- PIVOT BUSHING (Y)

REVERSE ACTING BUMPERS (B)  
• Add .062 to overall length

DOUBLE ACTING BUMPERS (B)  
• Add .125 to overall length

EXTRA EXTENSION (EE)

MAGNET (prefix M) –


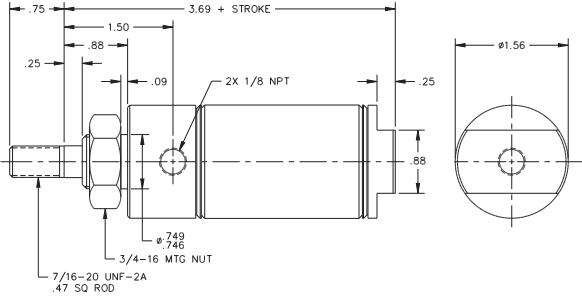

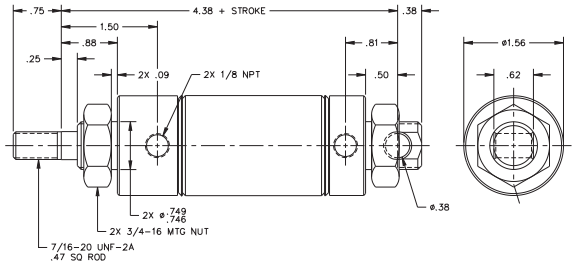
- Reverse acting add .125" to overall length
- Must specify track(s) for use with miniature position sensing (T2, T3, T4) See page 1.9 for track location details. See Switch Products, page 9.3 for switch selection information.

LOW TEMPERATURE (N)

Temperature Range : -40° to 200°F


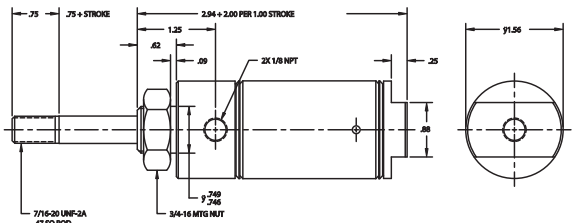

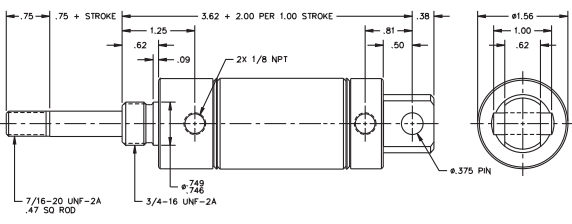

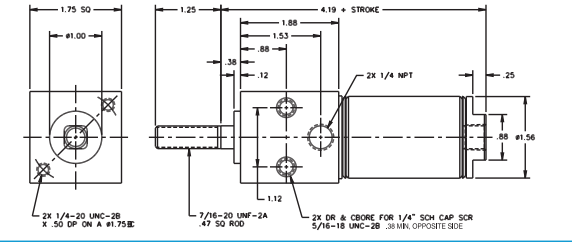

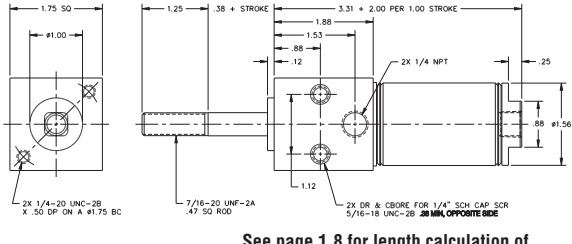

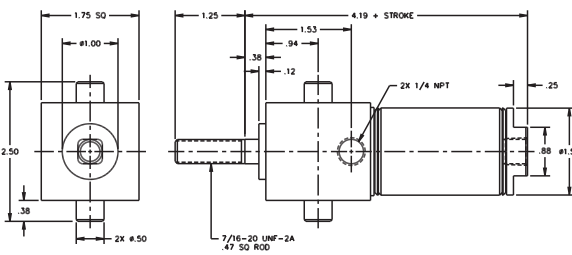
HIGH TEMPERATURE SEALS (V)

Temperature Range : 0° to 400°F (-18° to 205°C)

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<b>NR-17 <input type="checkbox"/> -D</b> 	<b>Double Acting – Air Return – Front Nose Mounting</b> <b>Standard Stroke Lengths:</b> ½", 1", 1½", 2", 2½", 3", 4", 5", 6" <b>Maximum Stroke – 12"</b> <b>Optional Accessory:</b> D-241 Mounting Bracket <b>Base Weight: .69</b> <b>Adder Per Inch of Stroke: .08</b>	
<b>NR-17 <input type="checkbox"/> -DXP</b> 	<b>Double Acting – Double End or Rear Pivot Mounting – Air Return</b> <b>Standard Stroke Lengths:</b> ½", 1", 1½", 2", 2½", 3", 4", 5", 6", 7", 8", 9", 10", 11", 12" <b>Maximum Stroke – 24"</b> <b>Optional Accessories:</b> D-241 Mounting Bracket D-231-1 Rod Clevis D-8323-A Pivot Bracket <b>Base Weight: .82</b> <b>Adder Per Inch of Stroke: .08</b>	

# 1-1/2" Bore Non-Rotating Air Cylinders

## 1-1/2" Bore Non-Rotating Air Cylinders (continued)

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<b>NR-17</b> <input type="checkbox"/> -R 	<b>Reverse Single Acting – Pull Type – Rod Normally Extended</b> Spring Return – Spring force 8.5 lbs. relaxed, 17 lbs. compressed – Front Nose Mounting Standard Stroke Lengths: 1/2", 1", 1 1/2", 2", 2 1/2", 3", 4" Maximum Stroke – 6" Optional Accessory: D-241 Mounting Bracket Base Weight: .44 Adder Per Inch of Stroke: .22	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>
<b>NR-17</b> <input type="checkbox"/> -RP 	<b>Reverse Single Acting – Pivot and Pull Type – Rod Normally Extended – Spring Return – Spring Force 8.5 lbs. relaxed, 17 lbs. compressed – Rear Pivot Mounting</b> Standard Stroke Lengths: 1/2", 1", 1 1/2", 2", 2 1/2", 3", 4" Maximum Stroke – 6" Optional Accessories: D-231-1 Piston Rod Clevis D-229 Mounting Bracket Base Weight: .45 Adder Per Inch of Stroke: .22	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>
<b>BFNR-17</b> <input type="checkbox"/> -D 	<b>Double Acting – Front Block Mounting – Air Return</b> Standard Stroke Lengths: 1/2", 1", 1 1/2", 2", 2 1/2", 3", 4", 5", 6" Maximum Stroke – 12" Base Weight: .99 Adder Per Inch of Stroke: .08	
<b>BFNR-17</b> <input type="checkbox"/> -R 	<b>Pull Type – Front Block Mounting – Rod Normally Extended – Reverse Single Acting – Spring Return</b> Standard Stroke Lengths: 1/2", 1", 1 1/2", 2", 2 1/2", 3", 4" Maximum Stroke – 6" Base Weight: .96 Adder Per Inch of Stroke: .22	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>
<b>BFTNR-17</b> <input type="checkbox"/> -D 	<b>Double Acting – Front Block Trunnion Mounting – Spring Return</b> Standard Stroke Lengths: 1/2", 1", 1 1/2", 2", 2 1/2", 3", 4" Maximum Stroke – 12" Optional Accessories: TRB-2 Trunnion Brackets D-231-1 Rod Clevis Base Weight: 1.06 Adder Per Inch of Stroke: .08	

- Standard Air Cylinders
- Three-Position Cylinders
- Cushion Cylinders
- MRS® Cylinders
- Non-Rotating Cylinders
- PC Cylinders
- All Stainless Non-Repairable
- All Stainless Repairable
- 7 Line Air Cylinders
- Rod Lock Cylinders
- 500 Hydraulic Cylinders
- Repairable Hole Punch Cylinders

# 2" Bore Non-Rotating Air Cylinders

- New! Stainless Steel Piston Rod Standard.
- Unique Square Piston Rod with Rounded Corners.
- High Strength Aluminum Alloy Rod Guide.
- Urethane-based Rod Seal.
- Buna N "U" Cup Piston Seal.
- Pressure Rating – 250 PSI Maximum (Air only)
- Available in Double Acting and Reverse Acting Models.
- Enclosed Spring Force: 15 lbs. Relaxed - 30 lbs. Compressed.
- Standard Buna N Seals Temperature Range of -20°F (-25°C) to 200°F (95°C)

Enter Stroke Length as 3rd Digit

## OPTIONS:

- PORTS ROTATED (K)
  - SIDE PORTED REAR HEAD (Q)
- REVERSE ACTING BUMPERS (B)
- Add .062 to overall length

- DOUBLE ACTING BUMPERS (B)
- Add .125 to overall length

### EXTRA EXTENSION (EE)

### MAGNET (prefix M)

- Reverse acting add .125" to overall length
- Must specify track(s) for use with miniature position sensing (T2, T3, T4) See page 1.9 for track location details. See Switch Products, page 9.3 for switch selection information.

### LOW TEMPERATURE (N)

Temperature Range : -40° to 200°F

### HIGH TEMPERATURE SEALS (V)

Temperature Range : 0° to 400°F (-18° to 205°C)

•

## MODEL/PRICE

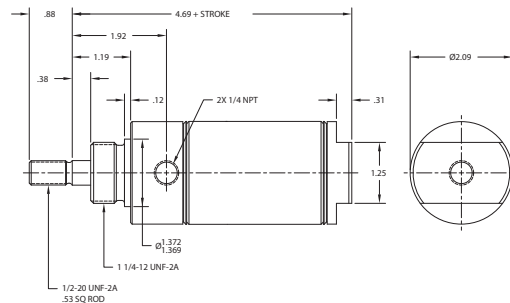
## DESCRIPTION/WEIGHT (lbs.)

## DIMENSIONS

### NR-31 -D



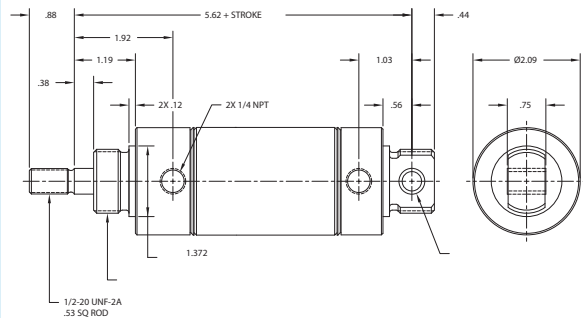
**Double Acting – Air Return – Front Nose Mounting**  
**Standard Stroke Lengths:**  
 ½", 1", 1½", 2", 2½", 3", 4", 5", 6"  
**Maximum Stroke – 12"**  
**Optional Accessories:**  
 D-615 Mounting Bracket  
 D-508 Mounting Nut  
**Base Weight: 1.40**  
**Adder Per Inch of Stroke: .15**



### NR-31 -DXP


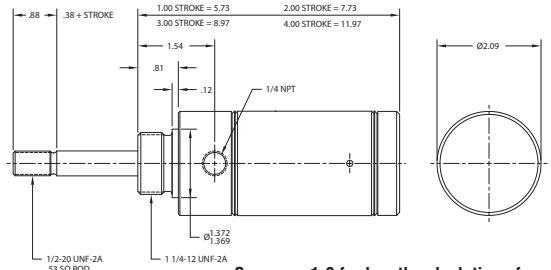

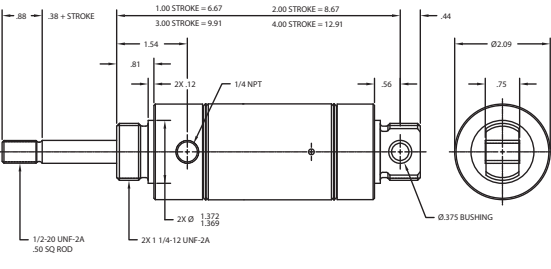


**Double Acting – Universal Mounting Type – Pivot or Double End – Air Return**  
**Standard Stroke Lengths:**  
 ½", 1", 1½", 2", 2½", 3", 4", 5", 6", 7", 8", 9", 10", 11", 12"  
**Maximum Stroke – 24"**  
**Optional Accessories:**  
 D-615 Mounting Bracket  
 D-231-3 Rod Clevis  
 D-620 Pivot Bracket  
 D-508 Mounting Nut  
**Base Weight: 1.62**  
**Adder Per Inch of Stroke: .15**



# 2" Bore Non-Rotating Air Cylinders

## 2" Bore Non-Rotating Air Cylinders (continued)

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<b>NR-31</b> <input type="checkbox"/> -R 	<b>Reverse Single Acting – Pull Type – Rod Normally Extended – Spring Return – Front Nose Mounting</b> Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4" Maximum Stroke – 4" Optional Accessories: D-129 Mounting Bracket D-508 Mounting Nut Base Weight: 1.24 Adder Per Inch of Stroke: .43	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>
<b>NR-31</b> <input type="checkbox"/> -RP 	<b>Reverse Single Acting – Pivot or Pull Type – Rod Normally Extended Spring Return – Rear Pivot Mounting</b> Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4" Maximum Stroke – 4" Optional Accessories: D-231-3 Piston Rod Clevis D-620 Pivot Bracket D-508 Mounting Nut D-615 Mounting Bracket Base Weight: 1.46 Adder Per Inch of Stroke: .43	 <p>See page 1.8 for length calculation of fractional stroke for single acting cylinders.</p>

Standard Air Cylinders

Three-Position Cylinders

Cushion Cylinders

MRS® Cylinders

Non-Rotating Cylinders

PG Cylinders

All Stainless Non-Repairable

All Stainless Repairable

Z Line Air Cylinders

Rod Lock Cylinders

500 Hydraulic Cylinders

Repairable Hole Punch Cylinders

# 2-1/2" Bore Non-Rotating Air Cylinders

- New! Stainless Steel Piston Rod Standard.
- Unique Square Piston Rod with Rounded Corners.
- High Strength Aluminum Alloy Rod Guide.
- Urethane-based Rod Seal.
- Buna N "U" Cup Piston Seal.
- Pressure Rating – 250 PSI Maximum (Air only)
- Available in Double Acting.
- Standard Buna N Seals Temperature Range of -20°F (-25°C) to 200°F (95°C)

Enter Stroke Length as 3rd Digit

## OPTIONS:

- PORTS ROTATED (K)
  - SIDE PORTED REAR HEAD (Q)
- DOUBLE ACTING BUMPERS (B)
- Add .125 to overall length

## EXTRA EXTENSION (EE)

## MAGNET (prefix M)

- Must specify track(s) for use with miniature position sensing (T2, T3, T4). See page 1.9 for track location details. See Switch Products, page 9.3 for switch selection information.

## LOW TEMPERATURE (N)


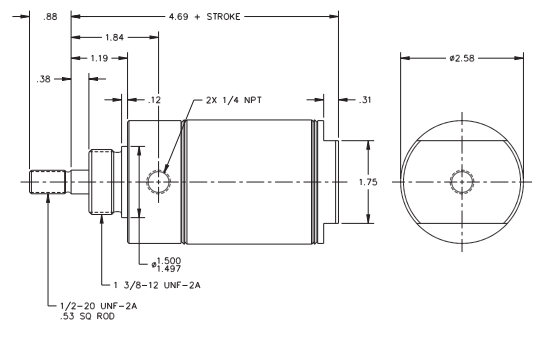

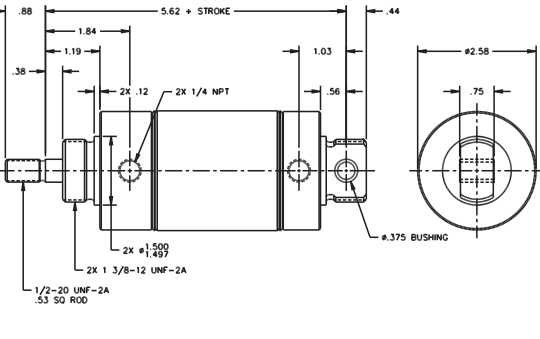
Temperature Range: -40°F to 200°F

•

## HIGH TEMPERATURE SEALS (V)

Temperature Range: 0° to 400°F (-18° to 205°C)

•

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<b>NR-50 <input type="checkbox"/> -D</b> 	<p><b>Double Acting – Air Return – Front Nose Mounting</b>  <b>Standard Stroke Lengths:</b>                      1/2", 1", 1 1/2", 2", 2 1/2", 3", 4", 5", 6"  <b>Maximum Stroke – 12"</b>  <b>Optional Accessories:</b>                      D-615-1 Mounting Bracket                      D-2540 Mounting Nut  <b>Base Weight: 1.98</b>  <b>Adder Per Inch of Stroke: .17</b></p>	
<b>NR-50 <input type="checkbox"/> -DXP</b> 	<p><b>Double Acting – Universal Mounting Type – Pivot or Double End – Air Return</b>  <b>Standard Stroke Lengths:</b>                      1/2", 1", 1 1/2", 2", 2 1/2", 3", 4", 5", 6", 7", 8", 9", 10", 11", 12"  <b>Maximum Stroke – 24"</b>  <b>Optional Accessories:</b>                      D-615-1 Mounting Bracket                      D-231-3 Rod Clevis                      D-620 Pivot Bracket                      D-2540 Mounting Nut  <b>Base Weight: 2.27</b>  <b>Adder Per Inch of Stroke: .17</b></p>	

## • Accessories –

- For 9/16" bore, see page 1.20.
- For 3/4" bore, see page 1.28.
- For 1-1/16" bore, see page 1.40.
- For 1-1/2" bore, see page 1.53.
- For 2" bore, see page 1.60
- For 2-1/2" bore, see page 1.62.



# PC Cylinders

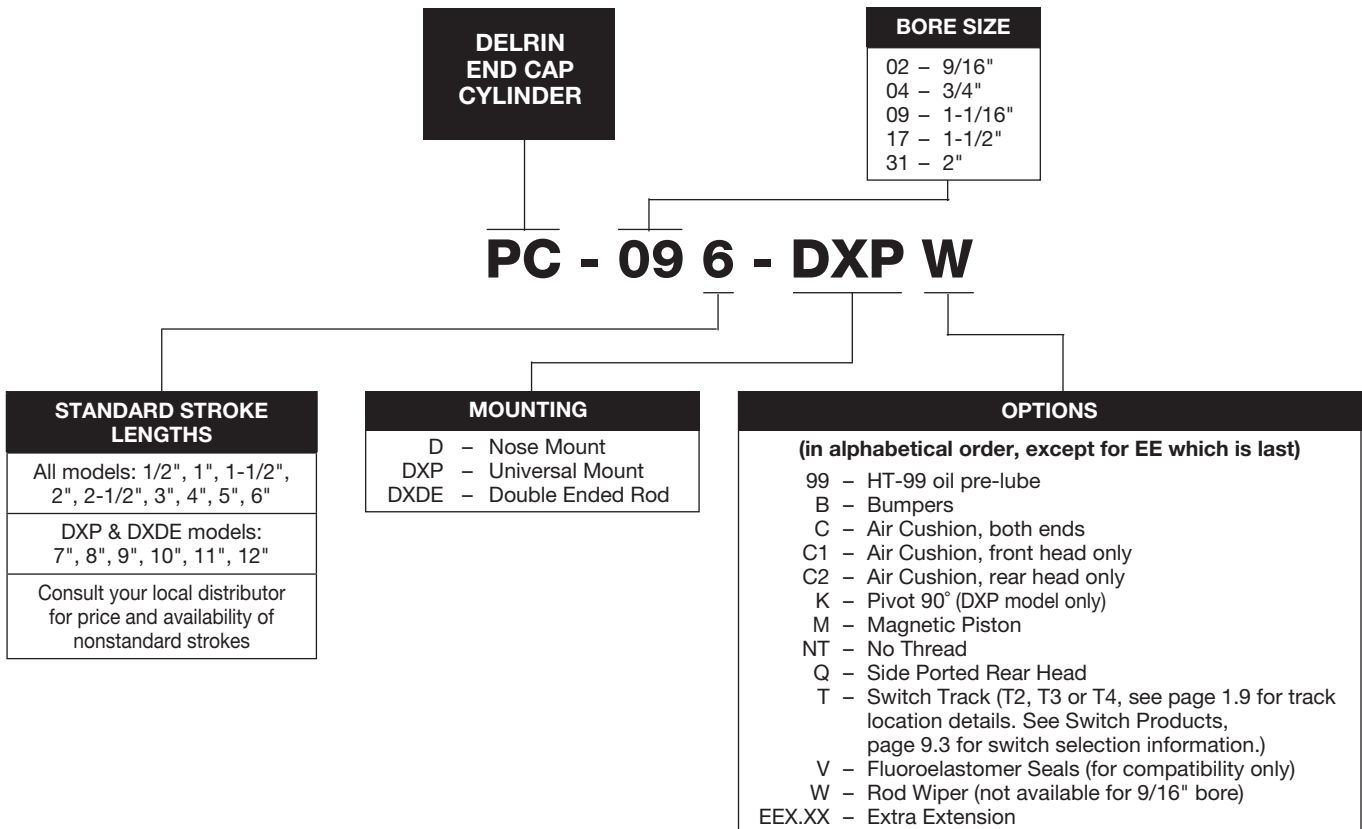


The Bimba PC Cylinder has a stainless steel body, stainless steel rod and acetal resin end caps. It is ideal for applications and environments that require exposure to moisture, lubricants and specific solvents.

## How to Order

The model number of all PC Cylinders consists of three alphanumeric clusters. These designate product type, bore size and stroke length, and options. Please refer

to the charts below for an example of model number **PC-096-DXPW**. This is an 1-1/16" bore, 6" stroke PC cylinder with a universal mount and rod wiper.



### Approximate Power Factors

9/16"	=	0.2	For example, a PC-096-DXPW will exert a force of 0.9 times the air line pressure; a PC-173-D will exert a force of 1.7 times the air pressure, etc.
3/4"	=	0.4	
1-1/16"	=	0.9	
1-1/2"	=	1.7	
2"	=	3.1	

Standard Air Cylinders

Three-Position Cylinders

Cushion Cylinders

MRS® Cylinders

Non-Rotating Cylinders

PC Cylinders

All Stainless Non-Repairable

All Stainless Repairable

Z Line Air Cylinders

Rod Lock Cylinders

500 Hydraulic Cylinders

Repairable Hole Punch Cylinders

# PC Cylinders

Bore	Mounting		Stroke Adder*	Options										
	D	DXP		B Bumpers	C	C1 or C2	C with V D & DXP	C1V or C2V** D & DXP	EE Extra Extension per inch	K Pivot 90° (DXP only)	M Magnetic Piston	T Switch Track (T2,T3,T4)	V Fluoro-elastomer Seals	W Rod Wiper
9/16" (02)														
3/4" (04)														
1-1/16" (09)														
1-1/2" (17)														
2" (31)														

Bore	Mounting		Stroke Adder*	Options								
	DXDE			B Bumpers	C	C with V**	C1V	EE Extra Extension per inch	M Magnetic Piston	T Switch Track (T2,T3,T4)	V Fluoro-elastomer Seals	W Rod Wiper
9/16" (02)												
3/4" (04)												
1-1/16" (09)												
1-1/2" (17)												
2" (31)												

\*Nonstandard fractional strokes are priced to the next full inch increment.

\*\*Price adder includes the cushion and the fluoroelastomer seals.

No charge Option - NT, Q

## Stainless Steel Accessory Prices

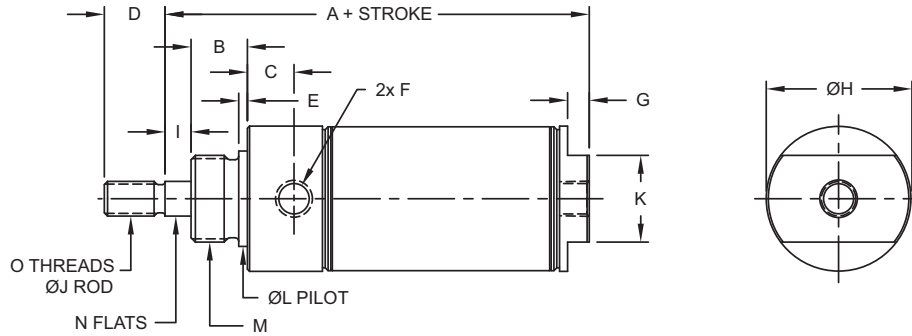
Bore	Rod End Clevis		Mounting Nut	
	Model		Model	
9/16" (02)	D-850-SS		D-154-SS	
3/4" (04)	D-54565-SS		D-9-SS	
1-1/16" (09)	D-54564-SS		D-9-SS	
1-1/2" (17)	D-54562-SS		D-1331-SS	
2" (31)	D-54563-SS		D-508-SS	

Bore	Foot Bracket		Pivot Bracket	
	Model		Model	
9/16" (02)	D-770-SS		D-55202-SS	
3/4" (04)	D-129-SS		D-55203-SS	
1-1/16" (09)	D-129-SS		D-55203-SS	
1-1/2" (17)	D-61288-SS		D-55204-SS	
2" (31)	D-615-SS		D-55205-SS	

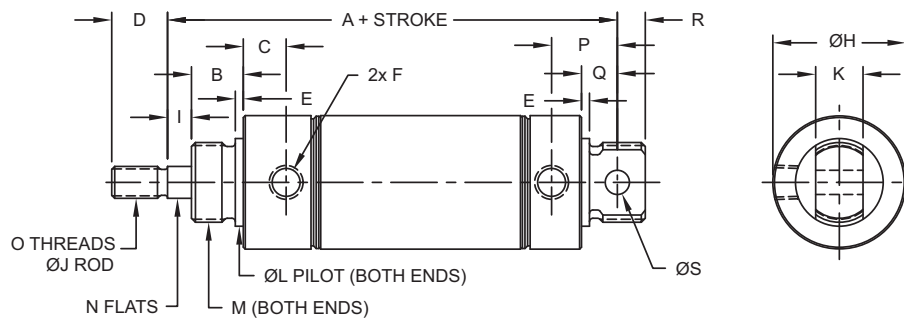
# PC Cylinders

## Dimensions

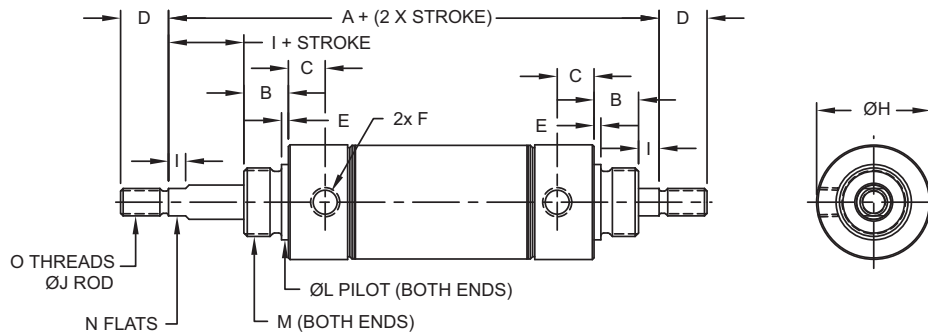
### D Mounting Style



### DXP Mounting Style



### DXDE Mounting



Standard Air  
Cylinders

Three-Position  
Cylinders

Cushion  
Cylinders

MRS®  
Cylinders

Non-Rotating  
Cylinders

PG  
Cylinders

All Stainless  
Non-Repairable

All Stainless  
Repairable

Z Line Air  
Cylinders

Rod Lock  
Cylinders

500 Hydraulic  
Cylinders

Repairable  
Hole Punch  
Cylinders

# PC Cylinders

## Dimensions

### D Mounting Style

Bore	A	A (cushion or Q option)	B	C	D	E	F	G	H	H (cushion option)	I	J	K	L	M	N	O
9/16" (02)	2.28	--	0.38	0.38	0.50	0.06	#10-32	0.19	0.61	--	--	0.19	0.50	.434/437	7/16-20	--	#10-32
3/4" (04)	2.97	3.44	0.50	0.47	0.50	0.09	1/8 NPT	0.19	0.81	0.96	--	0.25	0.63	.621/.624	5/8-18	--	1/4-28
1-1/16" (09)	3.25	3.50	0.50	0.56	0.50	0.09	1/8 NPT	0.19	1.13	1.13	0.13	0.31	0.88	.621/.624	5/8-18	0.25	5/16-24
1-1/2" (17)	3.69	3.88	0.63	0.63	0.75	0.09	1/8 NPT	0.25	1.56	1.56	0.25	0.44	0.88	.996/.999	1-14	0.38	7/16-20
2" (31)	4.69	5.27	0.81	0.72	0.88	0.13	1/4 NPT	0.31	2.08	2.08	0.38	0.63	1.25	1.372/1.375	1-1/4-12	0.50	1/2-20

Magnetic Piston Length Adder: 0.125" for 1-1/16" and 1-1/2", all other sizes 0.250"

### DXP Mounting Style

Bore	A	B	C	D	E	F	H	H (cushion option)	I	J
9/16" (02)	2.56	0.38	0.38	0.50	0.06	#10-32	0.61	--	--	0.19
3/4" (04)	3.75	0.50	0.47	0.50	0.09	1/8 NPT	0.86	0.96	--	0.25
1-1/16" (09)	3.84	0.50	0.56	0.50	0.09	1/8 NPT	1.13	1.13	0.13	0.31
1-1/2" (17)	4.38	0.63	0.63	0.75	0.09	1/8 NPT	1.56	1.56	0.25	0.44
2" (31)	5.63	0.81	0.73	0.88	0.13	1/4 NPT	2.08	2.08	0.38	0.63

Bore	K	L	M	N	O	P	Q	R	S
9/16" (02)	0.31	.434/.437	7/16-20	--	#10-32	0.38	0.25	0.19	0.16
3/4" (04)	0.38	.621/.624	5/8-18	--	1/4-28	0.63	0.34	0.28	0.25
1-1/16" (09)	0.38	.621/.624	5/8-18	0.25	5/16-24	0.63	0.34	0.28	0.25
1-1/2" (17)	0.63	.996/.999	1-14	0.38	7/16-20	0.81	0.50	0.38	0.38
2" (31)	0.74	1.372/1.375	1-1/4-12	0.50	1/2-20	1.03	0.56	0.44	0.38

Magnetic Piston Length Adder: 0.125" for 1-1/16" and 1-1/2", all other sizes 0.250"

### DXDE Mounting

Bore	A	B	C	D	E	F	H	H (cushion option)	I	J	L	M	N	O
9/16" (02)	2.94	0.38	0.38	0.50	0.06	#10-32	0.61	--	--	0.19	.434/.437	7/16-20	--	#10-32
3/4" (04)	4.00	0.50	0.47	0.50	0.09	1/8 NPT	0.86	0.96	--	0.25	.621/.624	5/8-18	--	1/4-28
1-1/16" (09)	4.00	0.50	0.56	0.50	0.09	1/8 NPT	1.13	1.13	0.13	0.31	.621/.624	5/8-18	0.25	5/16-24
1-1/2" (17)	5.13	0.63	0.63	0.75	0.09	1/8 NPT	1.56	1.56	0.25	0.44	.996/.999	1-14	0.38	7/16-20
2" (31)	6.56	0.81	0.73	0.88	0.13	1/4 NPT	2.08	2.08	0.38	0.63	1.372/1.375	1-1/4-12	0.50	1/2-20

Magnetic Piston Length Adder: 0.250"

### Bumper Length Adder

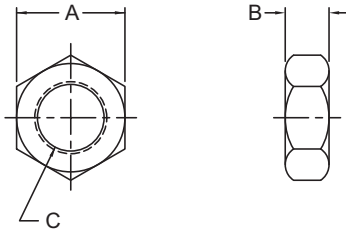
9/16" (02)	3/4" (04)	1-1/16" (09)	1-1/2" (17)	2" (31)
0.125	0	0.125*	0.125	0.250

\*For DXDE model, add 0.500"

# PC Cylinders

## Dimensions

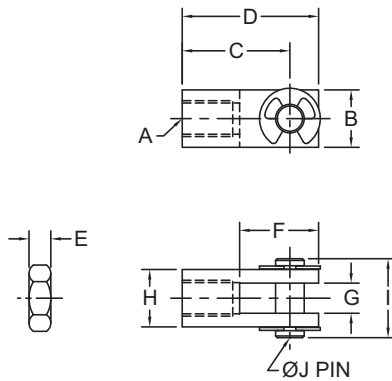
### Stainless Steel Mounting Nut\*



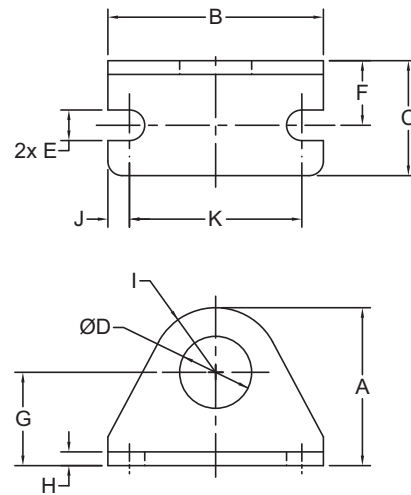
*Bore	Model	A	B	C
9/16" (02)	D-154-SS	0.69	0.25	7/16-20
3/4" (04)	D-9-SS	0.94	0.38	5/8-18
1-1/16" (09)	D-9-SS	0.94	0.38	5/8-18
1-1/2" (17)	D-1331-SS	1.50	0.55	1-14
2" (31)	D-508-SS	1.88	0.50	1-1/4-12

\*See page 1.104 for torque specifications

### Stainless Steel Rod End Clevis (includes nut)



### Stainless Steel Foot Bracket



### Stainless Steel Rod End Clevis (includes nut)

Bore	Model	A	B	C	D	E	F	G	H	I	J
9/16" (02)	D-850-SS	#10-32	0.38	0.75	0.94	0.13	0.56	0.19	0.38	0.56	0.19
3/4" (04)	D-54565-SS	1/4-28	0.50	0.94	1.19	0.16	0.69	0.25	0.50	0.69	0.25
1-1/16" (09)	D-54564-SS	5/16-24	0.50	0.94	1.19	0.19	0.69	0.25	0.50	0.69	0.25
1-1/2" (17)	D-54562-SS	7/16-20	0.75	1.31	1.69	0.25	0.94	0.38	0.75	1.03	0.38
2" (31)	D-54563-SS	1/2-20	0.75	1.31	1.69	0.31	0.94	0.38	0.75	1.03	0.38

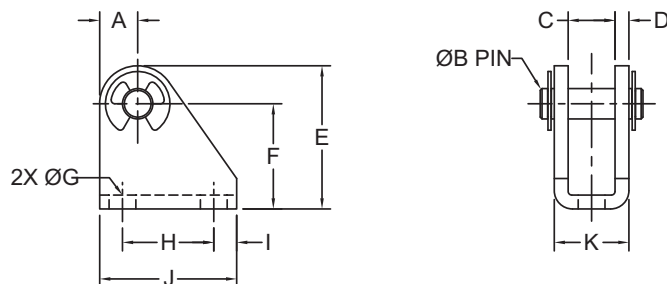
### Stainless Steel Foot Bracket

Bore	Model	A	B	C	D	E	F	G	H	I	J	K
9/16" (02)	D-770-SS	0.84	1.38	0.69	0.44	0.19	0.38	0.56	0.09	0.38	0.19	1.00
3/4" (04)	D-129-SS	1.38	1.88	1.00	0.63	0.27	0.56	0.81	0.12	0.56	0.19	1.50
1-1/16" (09)	D-129-SS	1.38	1.88	1.00	0.63	0.27	0.56	0.81	0.12	0.56	0.19	1.50
1-1/2" (17)	D-61288-SS	1.75	2.50	1.50	1.03	0.28	0.75	1.00	0.12	0.75	0.31	1.88
2" (31)	D-615-SS	2.50	3.13	1.63	1.38	0.34	1.00	1.50	0.25	1.00	0.44	2.25

# PC Cylinders

## Dimensions

### Stainless Steel Pivot Bracket



Bore	Model	A	B	C	D	E	F	G	H	I	J	K
9/16" (02)	D-55202-SS	0.20	0.16	0.31	0.06	0.76	0.56	0.20	0.50	0.13	0.75	0.44
3/4" (04)	D-55203-SS	0.31	0.25	0.38	0.12	1.19	0.88	0.22	0.75	0.19	1.13	0.63
1-1/16" (09)	D-55203-SS	0.31	0.25	0.38	0.12	1.19	0.88	0.22	0.75	0.19	1.13	0.63
1-1/2" (17)	D-55204-SS	0.38	0.38	0.63	0.13	1.75	1.38	0.28	1.00	0.25	1.50	0.91
2" (31)	D-55205-SS	0.38	0.38	0.75	0.25	1.75	1.38	0.28	1.00	0.25	1.50	1.25

## Specifications

**Pressure Rating:** 100 psi (Air)

**Temperature Range:** 32°F to 160°F (0°C to 72°C)

Delrin End Caps

304 Stainless Steel Body

303 Stainless Steel Rod

Anodized Aluminum Alloy Piston

**Options:** Buna N Bumpers

Polyurethane Wiper

Fluoroelastomer Seals (for compatibility only,  
not high temperature)

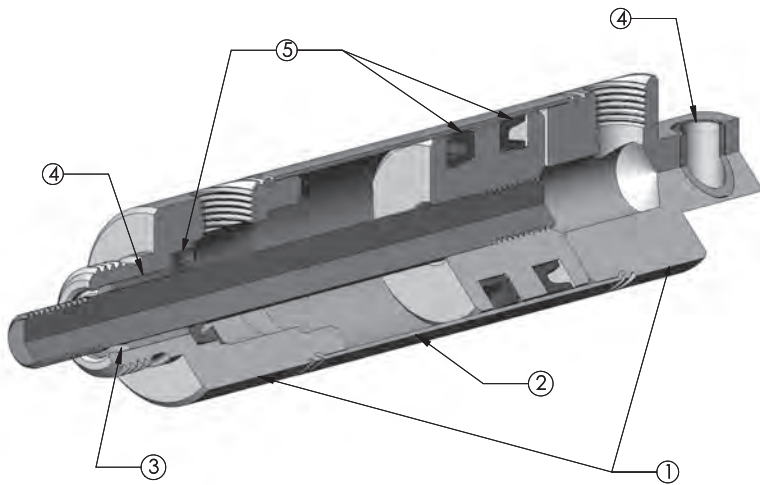
Bore	CYLINDER WEIGHT (lbs.)				
	Base Weight			Adder per 1"	
	D	DXP	DXDE	D & DXP	DXDE
9/16" (02)	0.05	0.06	0.07	0.02	0.03
3/4" (04)	0.13	0.15	0.18	0.03	0.05
1-1/16" (09)	0.21	0.25	0.3	0.05	0.07
1-1/2" (17)	0.46	0.48	0.6	0.08	0.13
2" (31)	1.08	1.17	1.48	0.15	0.24

MOUNTING NUT Torque Specifications		
Bore Size	Thread Size	Max Torque (in- lbs.)
9/16" (02)	7/16-20	4.0
3/4" (04) 1-1/16" (09)	5/8-18	12.0
1-1/2" (17)	1-14	30.0
2" (31)	1 1/4-12	45.0



# All Stainless Steel Non-Repairable Original Line Cylinders

## Component Description



1. Corrosion resistant 303 Stainless Steel end caps
2. 304 SS body with mirror finish ID for long, reliable seal life.
3. Urethane rod wiper designed to withstand exposure to harsh chemical solutions while limiting ingress of the solutions and application matter into the cylinder.
4. PTFE-based rod and pivot bushings selected for their resistance to many commonly used cleaning solutions.
5. Nitrile seals are standard with optional high temperature or other materials available.

## Operating Specifications

### Pressure Rating

250 psi air maximum

### Temperature Rating

-20°F to 200°F. Note that if the magnetic piston is used, maximum temperature is derated to 185°F. Fluoroelastomer seals rated for higher temperatures (up to 400°F) are available. Fluoroelastomer seals (option "V") should be ordered for chemical compatibility only. The temperature rating of the standard Urethane rod wiper is 200 degrees F. If a cylinder temperature rating of higher than 200 degrees F is required please contact your local distributor to request a quote for a custom design to meet your application requirements.

If cylinders are operated at temperatures below 0°F for extended time periods, our low temperature option (N) is recommended. This option has a temperature range of -40°F to 200°F. If cylinders are operated below -20°F with low temperature seals for extended time periods, cylinder performance will be affected by the cold temperature.

**Lubrication** Food grade synthetic grease

Standard Air Cylinders

Three-Position Cylinders

Cushion Cylinders

MRS® Cylinders

Non-Rotating Cylinders

PG Cylinders

All Stainless Non-Repairable Cylinders

All Stainless Repairable Cylinders

Z Line Air Cylinders

Rod Lock Cylinders

500 Hydraulic Cylinders

Repairable Hole Punch Cylinders

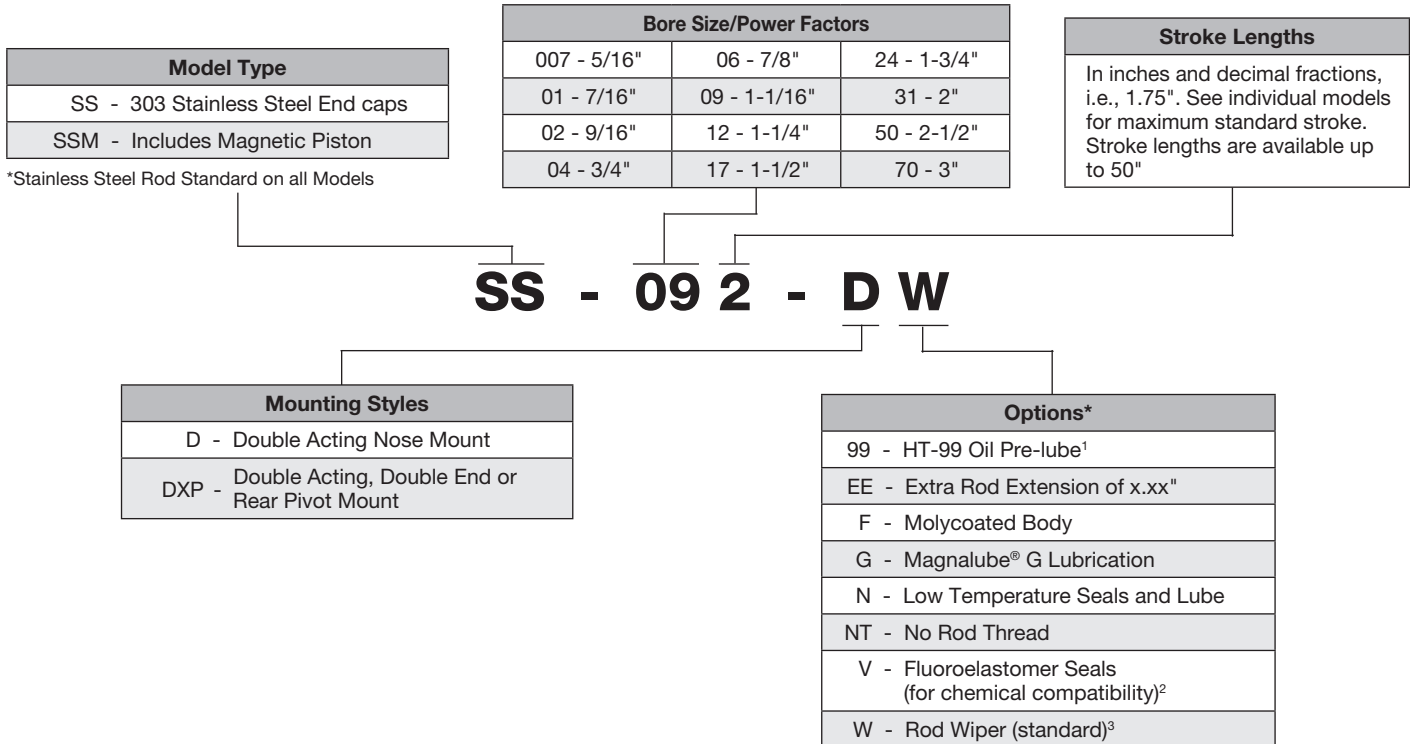
# All Stainless Steel Non-Repairable Original Line Cylinders



## How to Order

The model number of all Original Line Cylinders consists of three alphanumeric clusters. These designate product type, bores size and stroke length, and mounting styles and options.

Please refer to the charts below for an example of model number SS-092-DW. This is a 303 Stainless Steel End cap Cylinder, 1-1/16" bore, Double Acting Nose Mount, Rod Wiper (standard).



\* Consult the option combination availability chart on page 1.4.

<sup>1</sup> HT-99 pre-lube is NOT a food grade lubricant.

<sup>2</sup> Specify for chemical compatibility only. For cylinders rated over 200°F, see the note under Operating Specifications on previous page.

<sup>3</sup> Rod Wiper is standard; "W" option must be included in part number.

# All Stainless Steel Non-Repairable Original Line Cylinders

Bore	Mounting		Stroke Adder	Options			
	D	DXP		EE (per inch)	N	M	V
5/16" (007)							
7/16" (01)							
9/16" (02)							
3/4" (04)							
7/8" (06)							
1-1/16" (09)							
1-1/4" (12)							
1-1/2" (17)							
1-3/4" (24)							
2" (31)							
2-1/2" (50)							
3" (70)							

\*No Charge Options: NT

Note: Pricing for fractional and non-standard stroke lengths follow the same pricing rules as our standard Original Line cylinders.

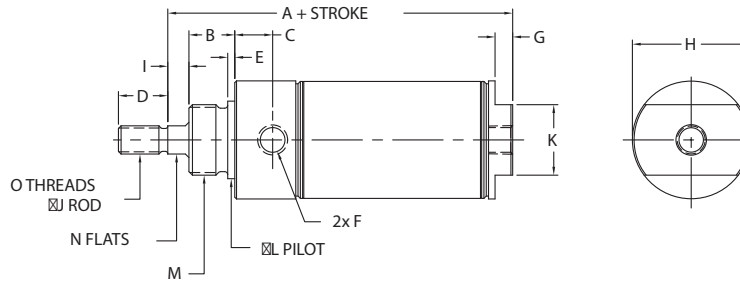
## Stainless Steel Accessory Prices

Bore	Rod End Clevis		Mounting Nut		Foot Bracket		Pivot Bracket (1 pc.)		Pivot Bracket (2 pc.)	
	Model		Model		Model		Model		Model	
5/16" (007)	D-26690-SS		D-801-SS		D-26765-SS		D-26689-SS		D-113373-SS	
7/16" (01)	D-850-SS		D-801-SS		D-770-SS		D-55202-SS		D-12321-SS	
9/16" (02)	D-850-SS		D-154-SS		D-770-SS		D-55202-SS		D-12321-SS	
3/4" (04)	D-54565-SS		D-9-SS		D-129-SS		D-55203-SS		D-13498-SS	
7/8" (06)	D-54565-SS		D-9-SS		D-129-SS		D-55203-SS		D-13498-SS	
1-1/16" (09)	D-54564-SS		D-9-SS		D-129-SS		D-55203-SS		D-13498-SS	
1-1/4" (12)	D-54562-SS		D-3556-SS		D-241-SS		D-111614-SS		D-1360-SS	
1-1/2" (17)	D-54562-SS		D-3556-SS		D-241-SS		D-55204-SS		D-229-SS	
1-3/4" (24)	D-54563-SS		D-1331-SS		D-1337-SS		D-55204-SS		D-620-1-SS	
2" (31)	D-54563-SS		D-508-SS		D-615-SS		D-55205-SS		D-620-SS	
2-1/2" (50)	D-54563-SS		D-2540-SS		D-615-1-SS		D-55205-SS		D-620-SS	
3" (70)	D-8314-SS		D-5379-SS		D-19127-SS		D-111613-SS		D-13512-SS	

# All Stainless Steel Non-Repairable Original Line Cylinders

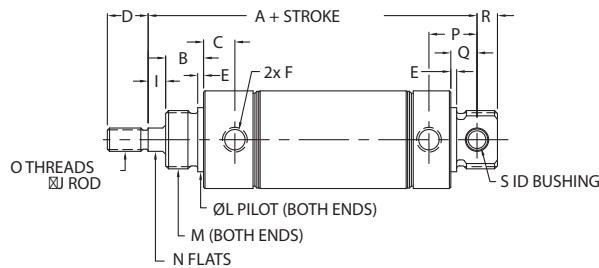
## Dimensions

### D Mounting Style



Bore	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
5/16" (007)	1.55	0.31	0.16	0.38	N/A	#10-32	N/A	0.61	N/A	0.125	N/A	N/A	3/8-24	N/A	#5-40
7/16" (01)	2.13	0.38	0.35	0.50	0.05	#10-32	0.19	0.74	N/A	0.188	0.38	0.433/0.437	7/16-20	N/A	#10.32
9/16" (02)	2.28	0.38	0.38	0.50	0.06	#10-32	0.19	0.62	N/A	0.188	0.50	0.434/0.437	7/16-20	N/A	#10-32
3/4" (04)	2.97	0.50	0.47	0.50	0.09	1/8 NPT	0.19	0.86	N/A	0.250	0.62	0.621/0.624	5/8-18	N/A	1/4-28
7/8" (06)	2.71	0.50	0.47	0.50	0.09	1/8 NPT	0.19	0.93	N/A	0.250	0.62	0.621/0.624	5/8-18	N/A	1/4-28
1-1/16" (09)	3.25	0.50	0.57	0.50	0.09	1/8 NPT	0.19	1.11	0.12	0.312	0.88	0.621/0.624	5/8-18	0.25	5/16-24
1-1/4" (12)	3.81	0.63	0.75	0.75	0.09	1/8 NPT	0.25	1.33	0.25	0.438	0.88	0.746/0.749	3/4-16	0.38	7/16-20
1-1/2" (17)	3.69	0.66	0.63	0.75	0.09	1/8 NPT	0.25	1.56	0.25	0.438	0.88	0.746/0.749	3/4-16	0.38	7/16-20
1-3/4" (24)	4.44	0.75	0.88	0.88	0.09	1/4 NPT	0.25	1.85	0.31	0.500	1.25	1.029/1.032	1-14	0.44	1/2-20
2" (31)	4.69	0.81	0.75	0.88	0.13	1/4 NPT	0.31	2.09	0.38	0.625	1.25	1.372/1.375	1-1/4-12	0.50	1/2-20
2-1/2" (50)	4.69	0.81	0.66	0.88	0.13	1/4 NPT	0.31	2.58	0.38	0.625	1.75	1.497/1.500	1-3/8-12	0.50	1/2-20
3" (70)	5.25	1.00	0.72	1.25	0.19	3/8 NPT	0.31	3.13	0.38	0.750	2.00	1.622/1.625	1-1/2-12	0.63	5/8-18

### DXP Mounting Style

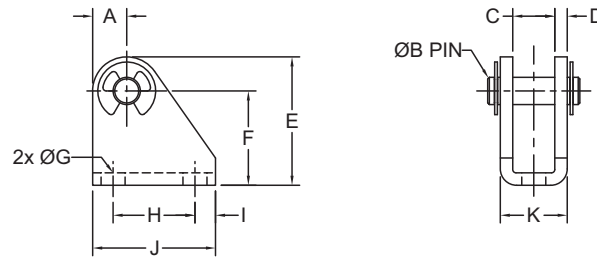


Bore	A	B	C	D	E	F	H	I	J	K	L	M	N	O	P	Q	R	S
5/16" (007)	1.94	0.31	0.16	0.38	N/A	#10-32	0.50 SQ	N/A	0.125	0.25	N/A	3/8-24	N/A	#5-40	0.34	0.19	0.16	0.13
7/16" (01)	2.56	0.38	0.35	0.50	0.05	#10-32	Ø.74	N/A	0.188	0.31	0.433/0.437	7/16-20	N/A	#10-32	0.44	0.25	0.25	0.16
9/16" (02)	2.56	0.38	0.38	0.50	0.06	#10-32	Ø.62	N/A	0.188	0.31	0.434/0.437	7/16-20	N/A	#10-32	0.38	0.25	0.19	0.16
3/4" (04)	3.75	0.50	0.47	0.50	0.09	1/8 NPT	Ø.86	N/A	0.250	0.38	0.621/0.624	5/8-18	N/A	1/4-28	0.63	0.34	0.28	0.25
7/8" (06)	3.34	0.50	0.47	0.50	0.09	1/8 NPT	Ø.93	N/A	0.250	0.38	0.621/0.624	5/8-18	N/A	1/4-28	0.63	0.34	0.28	0.25
1-1/16" (09)	3.84	0.50	0.57	0.50	0.09	1/8 NPT	Ø1.11	0.12	0.312	0.38	0.621/0.624	5/8-18	0.25	5/16-24	0.63	0.34	0.28	0.25
1-1/4" (12)	4.53	0.63	0.75	0.75	0.09	1/8 NPT	Ø1.33	0.25	0.438	0.50	0.746/0.749	3/4-16	0.38	7/16-20	0.78	0.40	0.41	0.25
1-1/2" (17)	4.38	0.66	0.63	0.75	0.09	1/8 NPT	Ø1.56	0.25	0.438	0.63	0.746/0.749	3/4-16	0.38	7/16-20	0.81	0.50	0.38	0.38
1-3/4" (24)	5.50	0.75	0.88	0.88	0.09	1/4 NPT	Ø1.85	0.31	0.500	0.63	1.029/1.032	1-14	0.44	1/2-20	1.13	0.50	0.50	0.38
2" (31)	5.63	0.81	0.75	0.88	0.13	1/4 NPT	Ø2.09	0.38	0.625	0.75	1.372/1.375	1-1/4-12	0.50	1/2-20	1.03	0.56	0.44	0.38
2-1/2" (50)	5.63	0.81	0.66	0.88	0.13	1/4 NPT	Ø2.58	0.38	0.625	0.75	1.497/1.500	1-3/8-12	0.50	1/2-20	1.03	0.56	0.44	0.38
3" (70)	6.50	1.00	0.72	1.25	0.19	3/8 NPT	Ø3.13	0.38	0.750	0.88	1.622/1.625	1-1/2-12	0.63	5/8-18	1.34	0.81	0.63	0.50

# All Stainless Steel Non-Repairable Original Line Cylinders

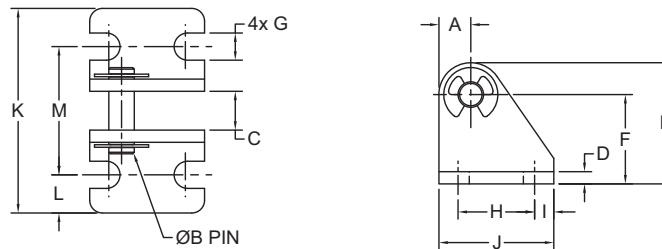
## Dimensions

### Stainless Steel One Piece Pivot Bracket



Bore	Model	A	B	C	D	E	F	G	H	I	J	K
5/16" (007)	D-26689-SS	0.13	0.13	0.27	0.04	0.57	0.44	0.16	0.38	0.13	0.63	0.34
7/16" (01)	D-55202-SS	0.20	0.16	0.32	0.06	0.76	0.56	0.20	0.50	0.13	0.75	0.44
9/16" (02)	D-55202-SS	0.20	0.16	0.32	0.06	0.76	0.56	0.20	0.50	0.13	0.75	0.44
3/4" (04)	D-55203-SS	0.31	0.25	0.39	0.11	1.18	0.86	0.22	0.75	0.19	1.13	0.61
7/8" (06)	D-55203-SS	0.31	0.25	0.39	0.11	1.18	0.86	0.22	0.75	0.19	1.13	0.61
1-1/16" (09)	D-55203-SS	0.31	0.25	0.39	0.11	1.18	0.86	0.22	0.75	0.19	1.13	0.61
1-1/4" (12)	D-111614-SS	0.31	0.25	0.52	0.11	1.18	0.86	0.22	0.75	0.19	1.13	0.74
1-1/2" (17)	D-55204-SS	0.38	0.37	0.64	0.14	1.77	1.39	0.28	1.00	0.25	1.50	0.92
1-3/4" (24)	D-55204-SS	0.38	0.37	0.64	0.14	1.77	1.39	0.28	1.00	0.25	1.50	0.92
2" (31)	D-55205-SS	0.38	0.37	0.76	0.25	1.77	1.38	0.28	1.00	0.25	1.50	1.26
2-1/2" (50)	D-55205-SS	0.38	0.37	0.76	0.25	1.75	1.38	0.28	1.00	0.25	1.50	1.26
3" (70)	D-111613-SS	0.50	0.50	0.89	0.25	2.25	1.75	0.42	1.38	0.38	2.13	1.39

### Stainless Steel Two Piece Pivot Bracket



Bore	Model	A	B	C	D	E	F	G	H	I	J	K	L	M
5/16" (007)	D-113373-SS	0.13	0.13	0.28	0.04	0.54	0.40	0.13	0.38	0.12	0.63	1.03	0.13	0.78
7/16" (01)	D-12321-SS	0.20	0.16	0.34	0.06	0.77	0.57	0.19	0.50	0.13	0.75	1.36	0.23	0.91
9/16" (02)	D-12321-SS	0.20	0.16	0.34	0.06	0.77	0.57	0.19	0.50	0.13	0.75	1.36	0.23	0.91
3/4" (04)	D-13498-SS	0.31	0.25	0.38	0.12	1.19	0.88	0.27	0.75	0.19	1.13	2.00	0.38	1.26
7/8" (06)	D-13498-SS	0.31	0.25	0.38	0.12	1.19	0.88	0.27	0.75	0.19	1.13	2.00	0.38	1.26
1-1/16" (09)	D-13498-SS	0.31	0.25	0.38	0.12	1.19	0.88	0.27	0.75	0.19	1.13	2.00	0.38	1.26
1-1/4" (12)	D-1360-SS	0.31	0.25	0.50	0.12	1.19	0.88	0.27	0.75	0.19	1.13	2.13	0.38	1.39
1-1/2" (17)	D-229-SS	0.38	0.38	0.63	0.13	1.75	1.38	0.27	1.00	0.25	1.50	2.63	0.38	1.88
1-3/4" (24)	D-620-1-SS	0.38	0.38	0.63	0.25	1.75	1.38	0.27	1.00	0.25	1.50	2.87	0.43	2.00
2" (31)	D-620-SS	0.38	0.38	0.76	0.25	1.75	1.38	0.27	1.00	0.25	1.50	3.01	0.44	2.14
2-1/2" (50)	D-620-SS	0.38	0.38	0.76	0.25	1.75	1.38	0.27	1.00	0.25	1.50	3.01	0.44	2.14
3" (70)	D-13512-SS	0.50	0.50	0.88	0.25	2.25	1.75	0.27	1.25	0.25	1.75	3.88	0.63	2.63

Standard Air Cylinders

Three-Position Cylinders

Cushion Cylinders

MRS® Cylinders

Non-Rotating Cylinders

PG Cylinders

All Stainless Non-Repairable

All Stainless Repairable

Z Line Air Cylinders

Rod Lock Cylinders

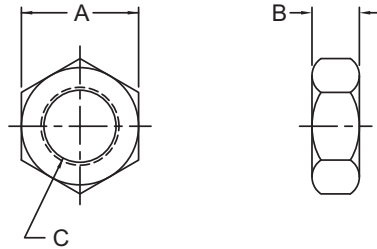
500 Hydraulic Cylinders

Repairable Hole Punch Cylinders

# All Stainless Steel Non-Repairable Original Line Cylinders

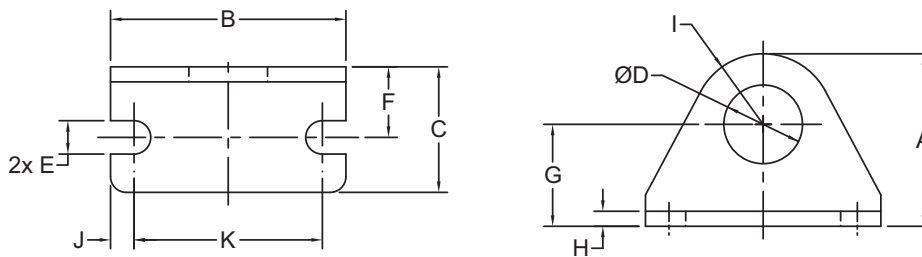
## Dimensions

### Stainless Steel Mounting Nut



Bore	Model	A	B	C
5/16" (007)	D-801-SS	0.56	0.22	3/8-24
7/16" (01)	D-154-SS	0.69	0.25	7/16-20
9/16" (02)	D-154-SS	0.69	0.25	7/16-20
3/4" (04)	D-9-SS	0.94	0.38	5/8-18
7/8" (06)	D-9-SS	0.94	0.38	5/8-18
1-1/16" (09)	D-9-SS	0.94	0.38	5/8-18
1-1/4" (12)	D-3556-SS	1.12	0.42	3/4-16
1-1/2" (17)	D-3556-SS	1.12	0.42	3/4-16
1-3/4" (24)	D-1331-SS	1.50	0.55	1-14
2" (31)	D-508-SS	1.88	0.50	1-1/4-12
2-1/2" (50)	D-2540-SS	1.85	0.50	1-3/8-12
3" (70)	D-5379-SS	2.25	0.50	1-1/2-12

### Stainless Steel Foot Bracket



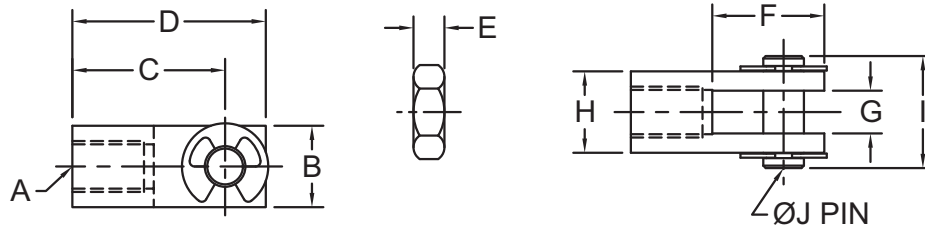
Bore	Model	A	B	C	D	E	F	G	H	I	J	K
5/16" (007)	D-26765-SS	0.75	1.00	0.38	0.38	0.13	0.25	0.44	0.06	0.31	0.13	0.75
7/16" (01)	D-770-SS	0.83	1.38	0.69	0.44	0.19	0.38	0.56	0.09	0.38	0.19	1.00
9/16" (02)	D-770-SS	0.83	1.38	0.69	0.44	0.19	0.38	0.56	0.09	0.38	0.19	1.00
3/4" (04)	D-129-SS	1.38	1.88	1.00	0.63	0.27	0.56	0.81	0.12	0.56	0.19	1.50
7/8" (06)	D-129-SS	1.38	1.88	1.00	0.63	0.27	0.56	0.81	0.12	0.56	0.19	1.50
1-1/16" (09)	D-129-SS	1.38	1.88	1.00	0.63	0.27	0.56	0.81	0.12	0.56	0.19	1.50
1-1/4" (12)	D-241-SS	1.75	2.50	1.50	0.76	0.28	0.75	1.00	0.12	0.75	0.31	1.88
1-1/2" (17)	D-241-SS	1.75	2.50	1.50	0.76	0.28	0.75	1.00	0.12	0.75	0.31	1.88
1-3/4" (24)	D-1337-SS	2.12	3.00	1.50	1.04	0.34	0.88	1.25	0.18	0.91	0.38	2.25
2" (31)	D-615-SS	2.50	3.13	1.65	1.39	0.34	1.00	1.50	0.27	1.00	0.44	2.25
2-1/2" (50)	D-615-1-SS	3.00	3.75	1.63	1.50	0.34	1.00	1.75	0.26	1.25	0.44	2.88
3" (70)	D-19127-SS	3.14	4.38	1.63	1.63	0.34	1.00	1.89	0.25	1.25	0.44	3.50



# All Stainless Steel Non-Repairable Original Line Cylinders

## Dimensions

### Stainless Steel Rod End Clevis (includes nut)



Bore	Model	A	B	C	D	E	F	G	H	I	J
5/16" (007)	D-26690-SS	#5-40	0.31	0.44	0.56	0.11	0.37	0.14	0.31	0.50	0.13
7/16" (01)	D-850-SS	#10-32	0.38	0.75	0.94	0.12	0.56	0.20	0.38	0.55	0.19
9/16" (02)	D-850-SS	#10-32	0.38	0.75	0.94	0.12	0.56	0.20	0.38	0.55	0.19
3/4" (04)	D-54565-SS	1/4-28	0.50	0.94	1.19	0.16	0.69	0.26	0.50	0.69	0.25
7/8" (06)	D-54565-SS	1/4-28	0.50	0.94	1.19	0.16	0.69	0.26	0.50	0.69	0.25
1-1/16" (09)	D-54564-SS	5/16-24	0.50	0.94	1.19	0.19	0.69	0.26	0.50	0.69	0.25
1-1/4" (12)	D-54562-SS	7/16-20	0.75	1.31	1.69	0.25	0.94	0.39	0.75	1.03	0.37
1-1/2" (17)	D-54562-SS	7/16-20	0.75	1.31	1.69	0.25	0.94	0.39	0.75	1.03	0.37
1-3/4" (24)	D-54563-SS	1/2-20	0.75	1.31	1.69	0.31	0.94	0.39	0.75	1.03	0.37
2" (31)	D-54563-SS	1/2-20	0.75	1.31	1.69	0.31	0.94	0.39	0.75	1.03	0.37
2-1/2" (50)	D-54563-SS	1/2-20	0.75	1.31	1.69	0.31	0.94	0.39	0.75	1.03	0.37
3" (70)	D-8314-SS	5/8-18	1.00	2.25	2.75	0.38	1.50	0.50	1.00	1.38	0.50

Standard Air  
Cylinders

Three-Position  
Cylinders

Cushion  
Cylinders

MRS®  
Cylinders

Non-Rotating  
Cylinders

PG  
Cylinders

All Stainless  
Non-Repairable

All Stainless  
Repairable

Z Line Air  
Cylinders

Rod Lock  
Cylinders

500 Hydraulic  
Cylinders

Repairable  
Hole Punch  
Cylinders

# All Stainless Steel Non-Repairable Original Line Cylinders

## Protection Rating: IP67 R10, RAC, MSS, and R10P Switches

### R10 X

Switch Model
R10 - AC/DC Reed
RAC - High Power AC Reed
MSS - Solid State
R10P - AC/DC Reed with Circuit Protection

Switch Lead Options
(leave blank) - 24" Plain Cable
X - 120" Plain Cable
Q - 8mm Quick Connect (not available on RAC or R10P)

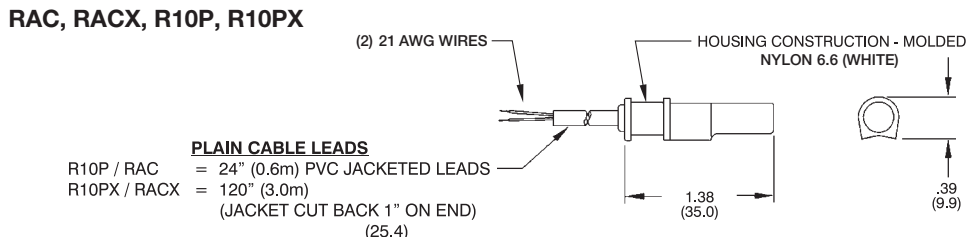
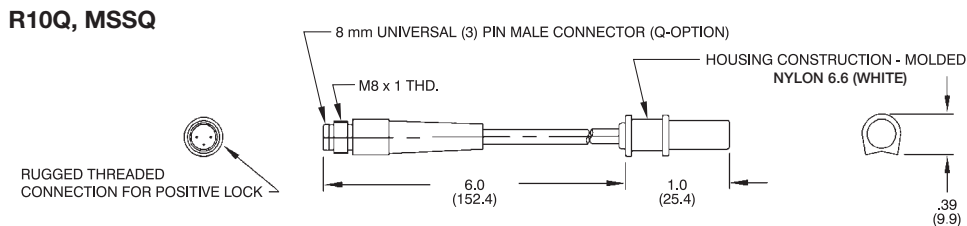
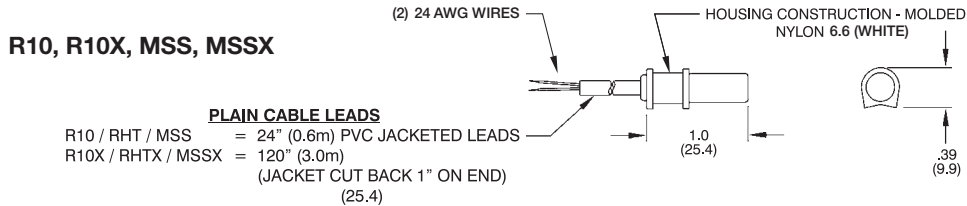
Switch Only		
Model	Description	List Each
R10	AC/DC Reed Switch with 24" Plain Cable Lead	
R10X	AC/DC Reed Switch with 120" Plain Cable Lead	
R10P	AC/DC Reed Switch with Circuit Protection, 24" Plain Cable Lead	
R10PX	AC/DC Reed Switch with Circuit Protection, 120" Plain Cable Lead	
R10Q	AC/DC Reed Switch with 8mm Quick Connect	
RAC	High Power AC Reed Switch with 24" Plain Cable Lead	
RACX	High Power AC Reed Switch with 120" Plain Cable Lead	
MSS	Solid State Switch with 24" Plain Cable Lead	
MSSX	Solid State Switch with 120" Plain Cable Lead	
MSSQ	Solid State Switch with 8mm Quick Connect	

Switch Bands (ordered separately)		
Model	Description	List Each
USB25	Use with bores 5/16" through 2"	
USB50	Use with bores 2-1/2" and 3"	

See Position Sensing Solutions, page 9.4 to order Cable Connectors separately.

## Dimensions

### R10, RAC, MSS, and R10P Switches



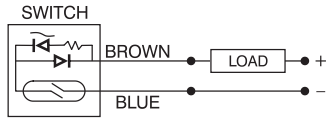
# All Stainless Steel Non-Repairable Original Line Cylinders

## Electrical Circuit Diagrams

### R10, RAC, MSS, and R10P Switches

#### R10 / R10X

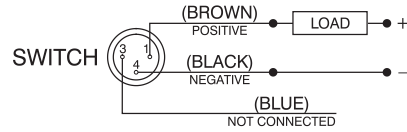
Miniature Reed Switch, Cable Type,  
(2 Wire Switch)



**Input Voltage** 110 Volts Max. DC, 120 Volts Max. AC  
**Maximum Load Current** 400 mA Max. (Resistive) @ 25°C (77°F)  
150 mA Max. (Resistive) @ 70°C (158°F)

#### R10Q

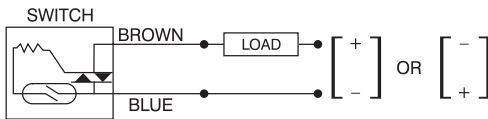
Miniature Reed Switch, 8mm Male Quick Connect,  
(2 Wire Switch)



**Input Voltage** 60 Volts Max. AC or DC  
**Maximum Load Current** 400 mA Max. (Resistive) @ 25°C (77°F)  
150 mA Max. (Resistive) @ 70°C (158°F)

#### RAC / RACX

High Power AC Reed Switch, Cable Type,  
(2 Wire Switch)



**Contact Rating** 200 Watts Max.  
**Input Voltage** 12 to 240 Volts (AC only)  
**Minimum Load Current** 80 mA  
**Maximum Load Current** 800 mA

#### MSS / MSSX

Miniature Solid State Switch, Cable Type,  
(2 Wire Switch)



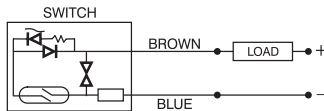
Typical Current Sourcing (PNP) Configuration



Typical Current Sinking (NPN) Configuration

#### R10P / R10PX

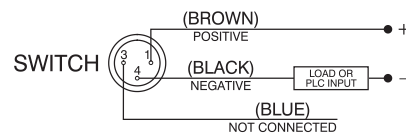
Miniature Reed Switch, Cable Type,  
Circuit Protected (2 Wire Switch)



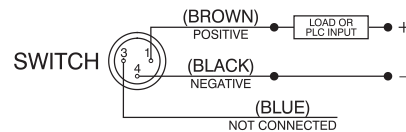
**Input Voltage** 120 Volts Max. AC, 110 Volts Max. DC  
**Maximum Load Current** 150 mA Max. (Resistive)  
**Circuit Protection**  
**Varistor** 138 Volts  
**Choke** 680 μH

#### MSSQ

Miniature Solid State Switch, 8mm Male Quick Connect,  
(2 Wire Switch)



Typical Current Sourcing (PNP) Configuration



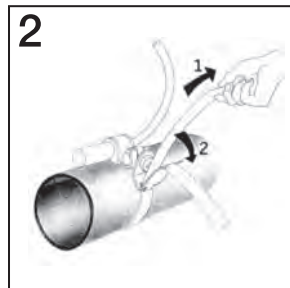
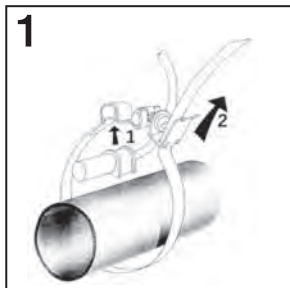
Typical Current Sinking (NPN) Configuration

## Mounting

### R10, RAC, MSS, and R10P Switches

## Universal Switch Band

### (Mounting Illustrations)



# All Stainless Steel Repairable (Bell Ring Style) Original Line Cylinders



The all stainless repairable Original Line cylinders are ideal for food processing, chemical, medical, pharmaceutical, offshore or marine equipment, and energy production or waste management applications. The bell ring design also offers the added benefit of full repairability without the need for hand tools by securing the body to the rod guide with a knurled, threaded nut.

## 3/4" Bore

MODEL/PRICE	DESCRIPTION/ACCESSORIES	DIMENSIONS (inch)
<b>D-4161-A-</b> <input type="checkbox"/>  (12" max. stroke)	<b>Double-Acting</b> - Air Return - Front Nose Mounting <b>Optional Stainless Steel Accessories:</b> D-129-SS Foot Bracket D-9-SS Mounting Nut D-54565-SS Rod Clevis	
<b>D-4231-A-</b> <input type="checkbox"/>  (24" max. stroke)	<b>Double-Acting</b> - Universal Mounting - Pivot, or Double End Mounting - Air Return <b>Optional Stainless Steel Accessories:</b> D-129-SS Foot Bracket D-55203-SS Pivot Bracket D-9-SS Mounting Nut D-54565-SS Rod Clevis	

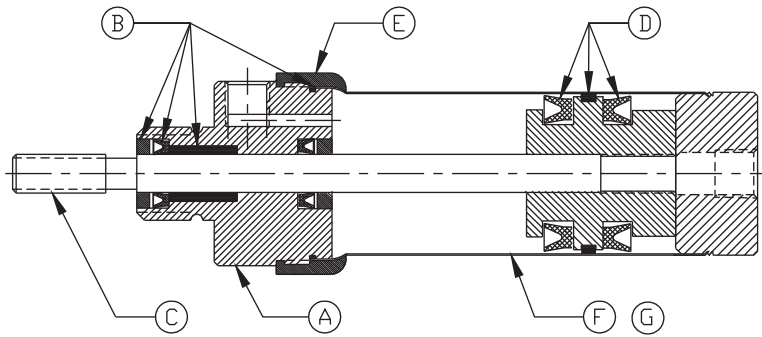
## 1-1/16" Bore

MODEL/PRICE	DESCRIPTION/ACCESSORIES	DIMENSIONS (inch)
<b>D-4173-A-</b> <input type="checkbox"/>  (12" max. stroke)	<b>Double-Acting</b> - Air Return - Front Nose Mounting <b>Optional Stainless Steel Accessories:</b> D-241-SS Foot Bracket D-3556-SS Mounting Nut D-54564-SS Rod Clevis	
<b>D-4232-A-</b> <input type="checkbox"/>  (24" max. stroke)	<b>Double-Acting</b> - Universal Mounting - Pivot, or Double End Mounting - Air Return <b>Optional Stainless Steel Accessories:</b> D-241-SS Foot Bracket D-55203-SS Pivot Bracket D-3556-SS Mounting Nut D-54564-SS Rod Clevis	

Enter Stroke Length

# All Stainless Steel Repairable (Bell Ring Style) Original Line Cylinders

## Cylinder Assemblies and Component List



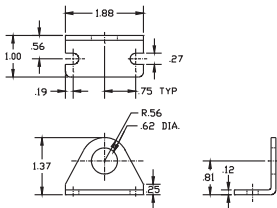
**3/4" Bore**

**1-1/16" Bore**

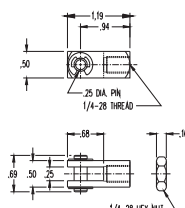
ITEM PART NO.	DESCRIPTION	ITEM PART NO.	DESCRIPTION
A D-4485-A	ROD GUIDE ASSEMBLY (Includes Rod Guide and D-4530 Kit)	A D-4489-A	ROD GUIDE ASSEMBLY (Includes Rod Guide and D-4533 Kit)
B D-4530-A	ROD SEAL KIT (Includes Seals, Bushing, Seal Retainer and Body Seal)	B D-4533-A	ROD SEAL KIT (Includes Seals, Bushing, Seal Retainer and Body Seal)
C D-4486-A-□	PISTON ROD ASSEMBLY (Includes Rod, Piston and D-4531 Kit)	C D-4490-A-□	PISTON ROD ASSEMBLY (Includes Rod, Piston and D-4534 Kit)
D D-4531	PISTON SEAL KIT (Includes Piston Seals and Piston Guide Ring)	D D-4534-A	PISTON SEAL KIT (Includes Piston Seals and Piston Guide Ring)
E D-3961-SS	BELL RING	E D-1778-SS	BELL RING
F D-4487-A-□	REAR HEAD AND BODY ASSEMBLY (Nose Mount)	F D-4491-A-□	REAR HEAD AND BODY ASSEMBLY (Nose Mount)
G D-4488-A-□	REAR HEAD AND BODY ASSEMBLY (Universal Mount)	G D-4492-A-□	REAR HEAD AND BODY ASSEMBLY (Universal Mount)

### SOLID STAINLESS ACCESSORIES (in.)

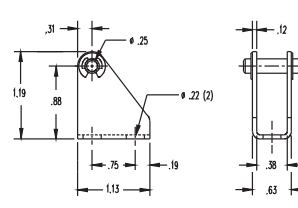
#### 3/4" Bore



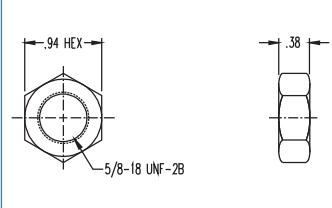
**D-129-SS**  
Foot Bracket



**D-54565-SS**  
Rod Clevis

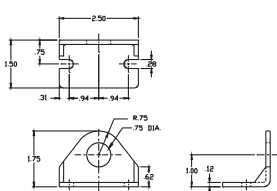


**D-55203-SS**  
Pivot Bracket

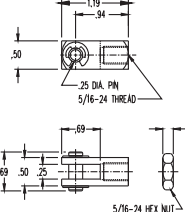


**D-9-SS**  
Mounting Nut

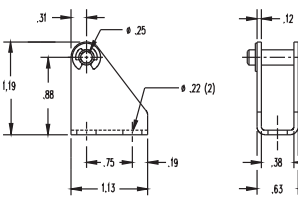
#### 1-1/16" Bore



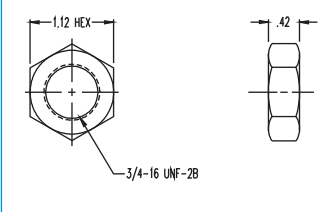
**D-241-SS**  
Foot Bracket



**D-54564-SS**  
Rod Clevis



**D-55203-SS**  
Pivot Bracket



**D-3556-SS**  
Mounting Nut

## Engineering Specifications

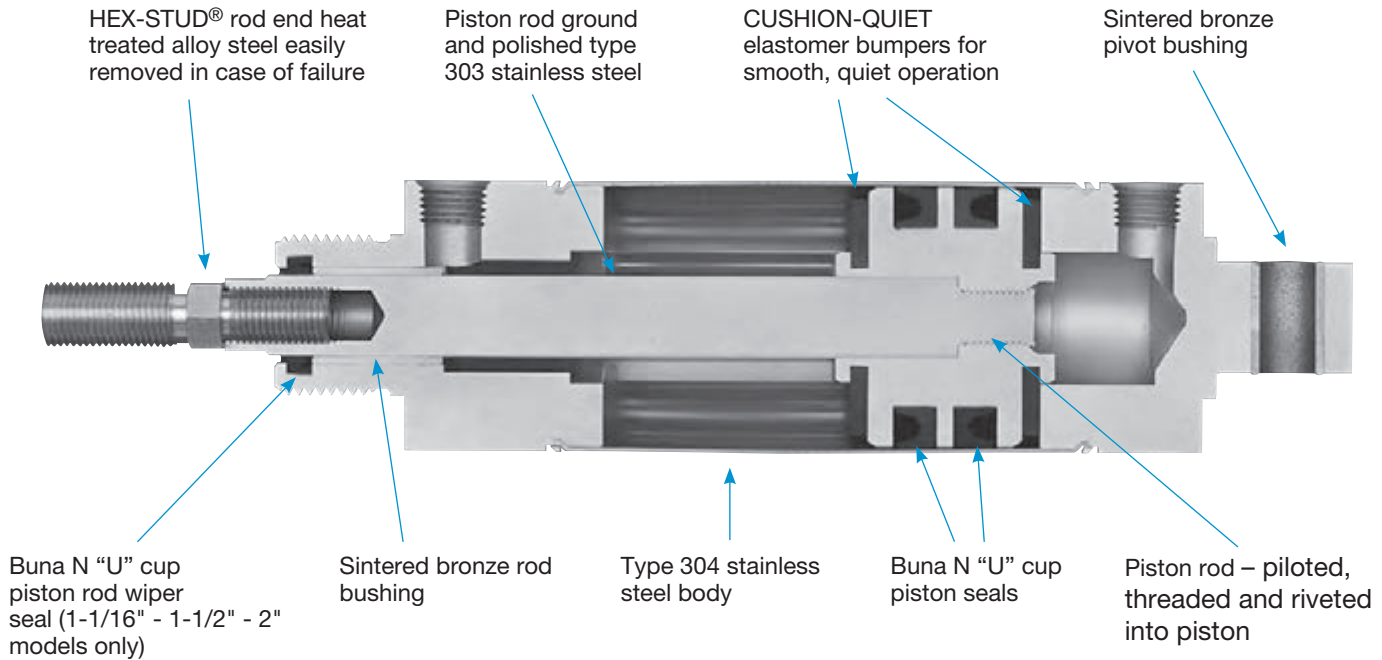
- 304 Stainless steel body
- Low friction Buna N "U" Cup seals and rod wiper
- 303 Stainless steel endcaps, piston rod, and bell ring nut

- Pressure Rating: 250 psi (air)
- Composite FDA approved rod bearing and FDA approved lubricant

Standard Air Cylinders  
 Three-Position Cylinders  
 Cushion Cylinders  
 MRS® Cylinders  
 Non-Rotating Cylinders  
 PG Cylinders  
 All Stainless Non-Repairable  
 All Stainless Repairable  
 7 Line Air Cylinders  
 Rod Lock Cylinders  
 500 Hydraulic Cylinders  
 Repairable Hole Punch Cylinders

# Z Line Air Cylinders

**for extremely tough applications**



The Z-Line air cylinder has the rolled-in construction of the Original Line but features the following:

- Larger diameter, two-piece 303 stainless steel piston rod
- HEX-STUD rod end thread of heat treated alloy steel – easily removed in case of failure due to overload
- CUSHION QUIET elastomer bumpers

## OPTIONS:

- MAGNALUBE® G (G)  
EXTRA EXTENSION (EE), PER INCH OF EXTENSION:

MOLYCOATED BODY (F)

MAGNET (prefix M)

Must specify track(s) for use with miniature position sensing (T2, T3, T4)

See page 1.9 for track location details. See Switch Products, page 9.3 for switch selection information.

Enter Stroke Length as 3rd Digit

## 3/4" Bore Z line Air Cylinders

Push Force = .441 x psi • Pull Force = .365 x psi


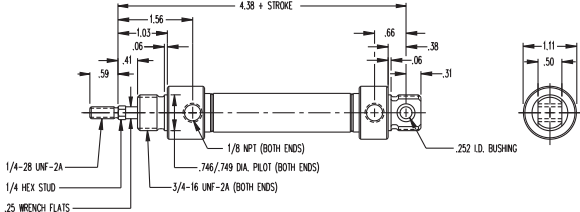

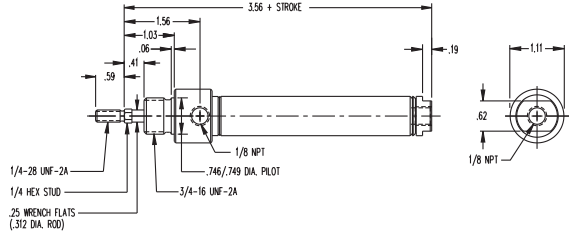
MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
04 <input type="checkbox"/> -DBZ	<p><b>Block Mount – Double Acting –</b> Two bolt holes are provided for positive mounting to a base. Standard Stroke Lengths: 1", 2", 3", 4", 5", 6" Maximum Stroke – 12" Base Weight: .30 Adder Per Inch of Stroke: .04</p>	<p>1.56 3.56 + STROKE 1.12 SQ 2 HOLES DRILL &amp; CORE FOR #10-32 CAP SCREW 1/8 NP1 1/8 NP1 1/4-28 UNF-2A 1/4 HEX STUD .25 WRENCH FLATS (.312 DIA. ROD) .59 .41 .19 .75 .62 1.12 SQ 1/8 NP1</p>



# Z Line Air Cylinders


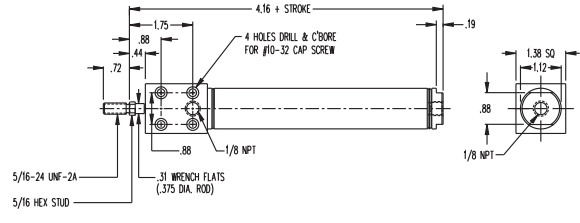

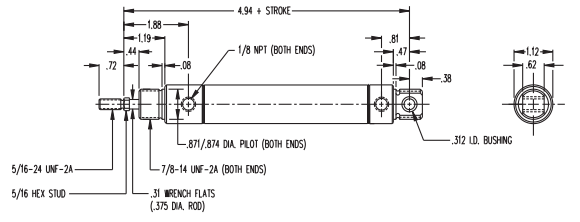
## 3/4" Bore Z Line Air Cylinders (continued)

Push Force = .441 x psi • Pull Force = .365 x psi

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<b>04 □ -DUZ</b> 	<b>Universal Mount – Double Acting –</b> For double end mounting use D-8315 mounting bracket. For rear pivot mounting use D-8321-A pivot bracket. Use D-10139-A rod clevis. Standard Stroke Lengths: 1", 2", 3", 4", 5", 6", 7", 8", 9", 10", 11", 12" Maximum Stroke – 32" Base Weight: .30 Adder Per Inch of Stroke: .04	 <p>1/4-28 UNF-2A 1/4 HEX STUD .25 WRENCH FLATS (.312 DIA. ROD) 1.56 1.03 .06 .41 .59 4.38 + STROKE 1/8 NPT (BOTH ENDS) .746/.749 DIA. PILOT (BOTH ENDS) 3/4-16 UNF-2A (BOTH ENDS) .66 .38 .06 .31 1.11 .50 .252 I.D. BUSHING</p>
<b>04 □ -DZ</b> 	<b>Nose Mount – Double Acting –</b> Use D-8315 mounting bracket. Standard Stroke Lengths: 1", 2", 3", 4", 5", 6" Maximum Stroke – 12" Base Weight: .27 Adder Per Inch of Stroke: .04	 <p>1/4-28 UNF-2A 1/4 HEX STUD .25 WRENCH FLATS (.312 DIA. ROD) 1.56 1.03 .06 .41 .59 3.56 + STROKE 1/8 NPT .746/.749 DIA. PILOT 3/4-16 UNF-2A .19 1.11 .62 1/8 NPT</p>

## 1-1/16" Bore Z Line Air Cylinders

Push Force = .886 x psi • Pull Force = .776 x psi


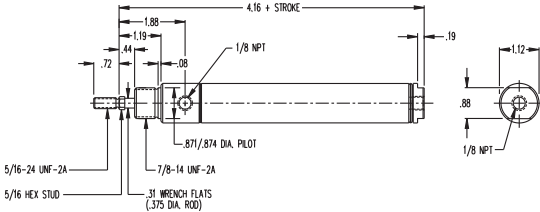
MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<b>09 □ -DBZ</b> 	<b>Block Mount – Double Acting –</b> Four bolt holes are provided for positive mounting to a base. Standard Stroke Lengths: 1", 2", 3", 4", 5", 6" Maximum Stroke – 12" Base Weight: .55 Adder Per Inch of Stroke: .06	 <p>5/16-24 UNF-2A 5/16 HEX STUD .72 .88 .44 4.16 + STROKE 1.75 4 HOLES DRILL &amp; C'BORE FOR #10-32 CAP SCREW 1/8 NPT .88 .31 WRENCH FLATS (.375 DIA. ROD) .19 1.38 SQ 1.12 1/8 NPT</p>
<b>09 □ -DUZ</b> 	<b>Universal Mount – Double Acting –</b> For double end mounting use D-8316 mounting bracket. For rear pivot mounting use D-8322-A pivot bracket. Use D-8309-A rod clevis. Standard Stroke Lengths: 1", 2", 3", 4", 5", 6", 7", 8", 9", 10", 11", 12" Maximum Stroke – 32" Base Weight: .45 Adder Per Inch of Stroke: .06	 <p>5/16-24 UNF-2A 5/16 HEX STUD .72 .44 .119 .88 4.94 + STROKE 1.88 1/8 NPT (BOTH ENDS) .871/.874 DIA. PILOT (BOTH ENDS) 7/8-14 UNF-2A (BOTH ENDS) .31 WRENCH FLATS (.375 DIA. ROD) .81 .47 .08 .38 1.12 .62 .312 I.D. BUSHING</p>

Standard Air Cylinders  
 Three-Position Cylinders  
 Cushion Cylinders  
 MRS® Cylinders  
 Non-Rotating Cylinders  
 PG Cylinders  
 All Stainless  
 Non-Repairable  
 All Stainless Repairable  
 Z Line Air Cylinders  
 Rod Lock Cylinders  
 500 Hydraulic Cylinders  
 Repairable Hole Punch Cylinders

# Z Line Air Cylinders


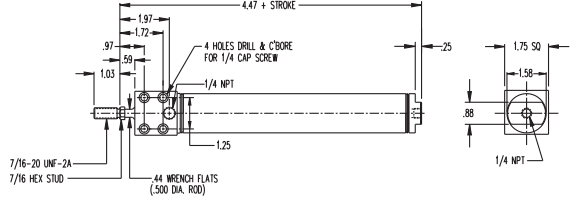

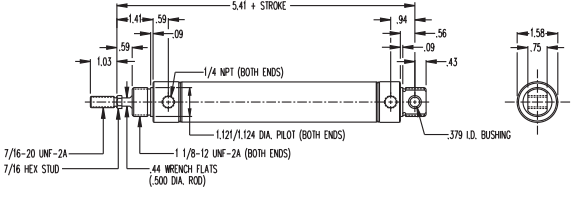

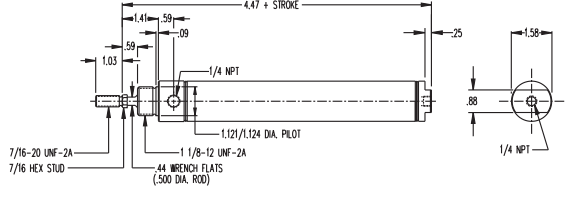
## 1-1/16" Bore Z Line Air Cylinders (continued)

Push Force = .886 x psi · Pull Force = .776 x psi

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<b>09</b>  <b>-DZ</b>	<b>Nose Mount – Double Acting –</b> Use D-8316 mounting bracket. Standard Stroke Lengths: 1", 2", 3", 4", 5", 6" Maximum Stroke – 12" Base Weight: .38 Adder Per Inch of Stroke: .06	

## 1-1/2" Bore Z Line Air Cylinders


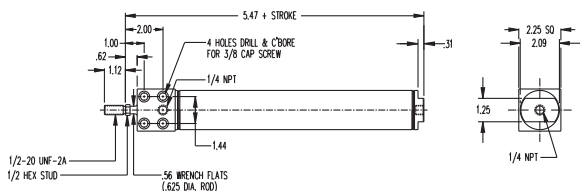

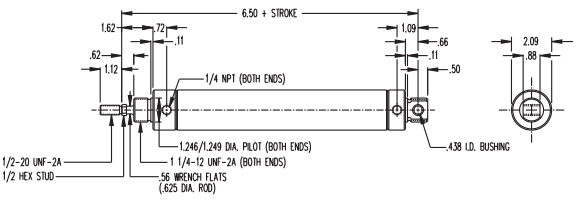

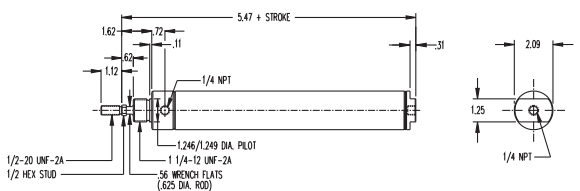
Push Force = 1.77 x psi · Pull Force = 1.57 x psi

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<b>17</b>  <b>-DBZ</b>	<b>Block Mount – Double Acting –</b> Four bolt holes are provided for positive mounting to a base. Standard Stroke Lengths: 1", 2", 3", 4", 5", 6" Maximum Stroke – 12" Base Weight: 1.00 Adder Per Inch of Stroke: .10	
<b>17</b>  <b>-DUZ</b>	<b>Universal Mount – Double Acting –</b> For double end mounting use D-8318 mounting bracket. For rear pivot mounting use D-8324-A pivot bracket. Use D-8311-A rod clevis. Standard Stroke Lengths: 1", 2", 3", 4", 5", 6", 7", 8", 9", 10", 11", 12" Maximum Stroke – 32" Base Weight: .92 Adder Per Inch of Stroke: .10	
<b>17</b>  <b>-DZ</b>	<b>Nose Mount – Double Acting –</b> Use D-8318 mounting bracket. Standard Stroke Lengths: 1", 2", 3", 4", 5", 6" Maximum Stroke – 12" Base Weight: .78 Adder Per Inch of Stroke: .10	

# Z Line Air Cylinders

## 2" Bore Z Line Air Cylinders

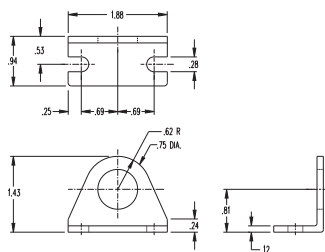
Push Force = 3.14 x psi · Pull Force = 2.83 x psi

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<b>31 □ -DBZ</b> 	<b>Block Mount – Double Acting –</b> Four bolt holes are provided for positive mounting to a base. Standard Stroke Lengths: 1", 2", 3", 4", 5", 6" Maximum Stroke – 12" Base Weight: 2.03 Adder Per Inch of Stroke: .15	
<b>31 □ -DUZ</b> 	<b>Universal Mount – Double Acting –</b> For double end mounting use D-8319 mounting bracket. For rear pivot mounting use D-8325-A pivot bracket. Use D-8313-A rod clevis. Standard Stroke Lengths: 1", 2", 3", 4", 5", 6", 7", 8", 9", 10", 11", 12" Maximum Stroke – 32" Base Weight: 2.15 Adder Per Inch of Stroke: .15	
<b>31 □ -DZ</b> 	<b>Nose Mount – Double Acting –</b> Use D-8319 mounting bracket. Standard Stroke Lengths: 1", 2", 3", 4", 5", 6" Maximum Stroke – 12" Base Weight: 1.91 Adder Per Inch of Stroke: .15	

## Z Line Accessories

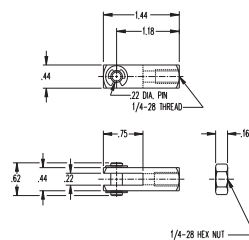
### 3/4" Bore Accessories

D-8315



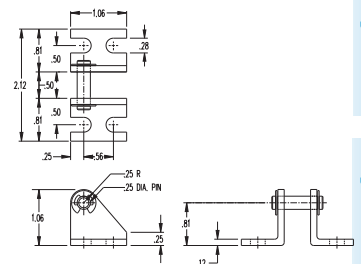
Mounting Bracket

D-10139-A



Rod Clevis

D-8321-A



Pivot Bracket

Standard Air Cylinders

Three-Position Cylinders

Cushion Cylinders

MRS® Cylinders

Non-Rotating Cylinders

PC Cylinders

All Stainless Non-Repairable

All Stainless Repairable

Z Line Air Cylinders

Rod Lock Cylinders

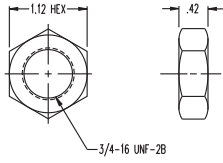
500 Hydraulic Cylinders

Repairable Hole Punch Cylinders

# Z Line Accessories continued

## 3/4" Bore Accessories (continued)

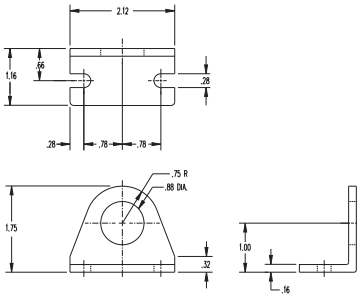
### D-3556



Mounting Nut

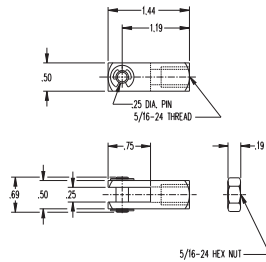
## 1-1/16" Bore Accessories

### D-8316



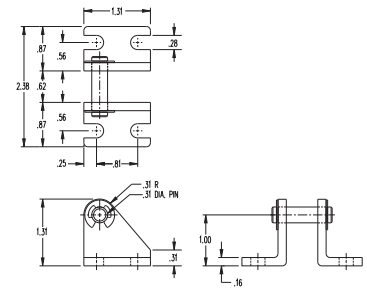
Mounting Bracket

### D-8309-A



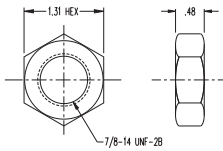
Rod Clevis

### D-8322-A



Pivot Bracket

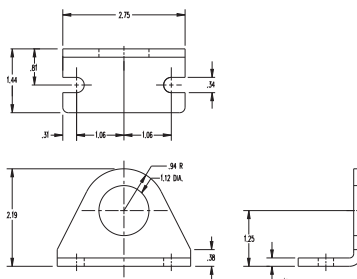
### D-2545



Mounting Nut

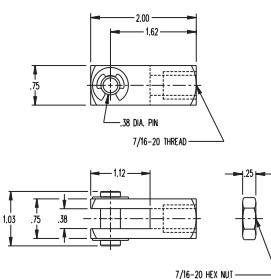
## 1-1/2" Bore Accessories

### D-8318



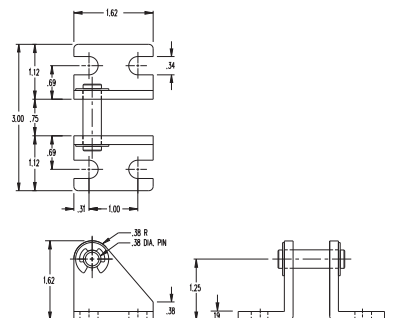
Mounting Bracket

### D-8311-A



Rod Clevis

### D-8324-A

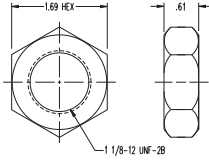


Pivot Bracket

# Z Line Accessories continued

## 1-1/2" Bore Accessories (continued)

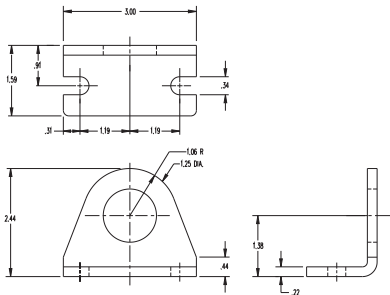
### D-8484



Mounting Nut

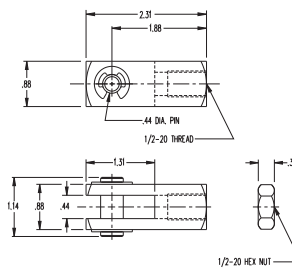
## 2" Bore Accessories

### D-8319



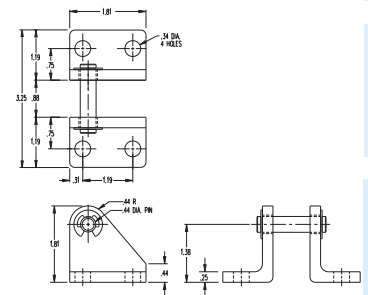
Mounting Bracket

### D-8313-A



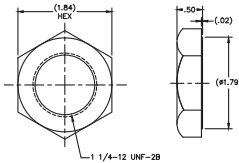
Rod Clevis

### D-8325-A



Pivot Bracket

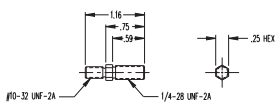
### D-508



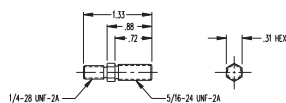
Mounting Nut

## Hex-Stud

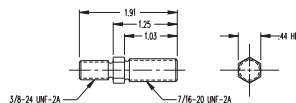
### 3/4" BORE D-9868



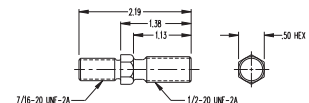
### 1-1/16" BORE D-6583



### 1-1/2" BORE D-6636



### 2" BORE D-6637



Standard Air  
Cylinders

Three-Position  
Cylinders

Cushion  
Cylinders

MRS®  
Cylinders

Non-Rotating  
Cylinders

PG  
Cylinders

All Stainless  
Non-Repairable

All Stainless  
Repairable

Z Line Air  
Cylinders

Rod Lock  
Cylinders

500 Hydraulic  
Cylinders

Repairable  
Hole Punch  
Cylinders

# Rod Lock Cylinders

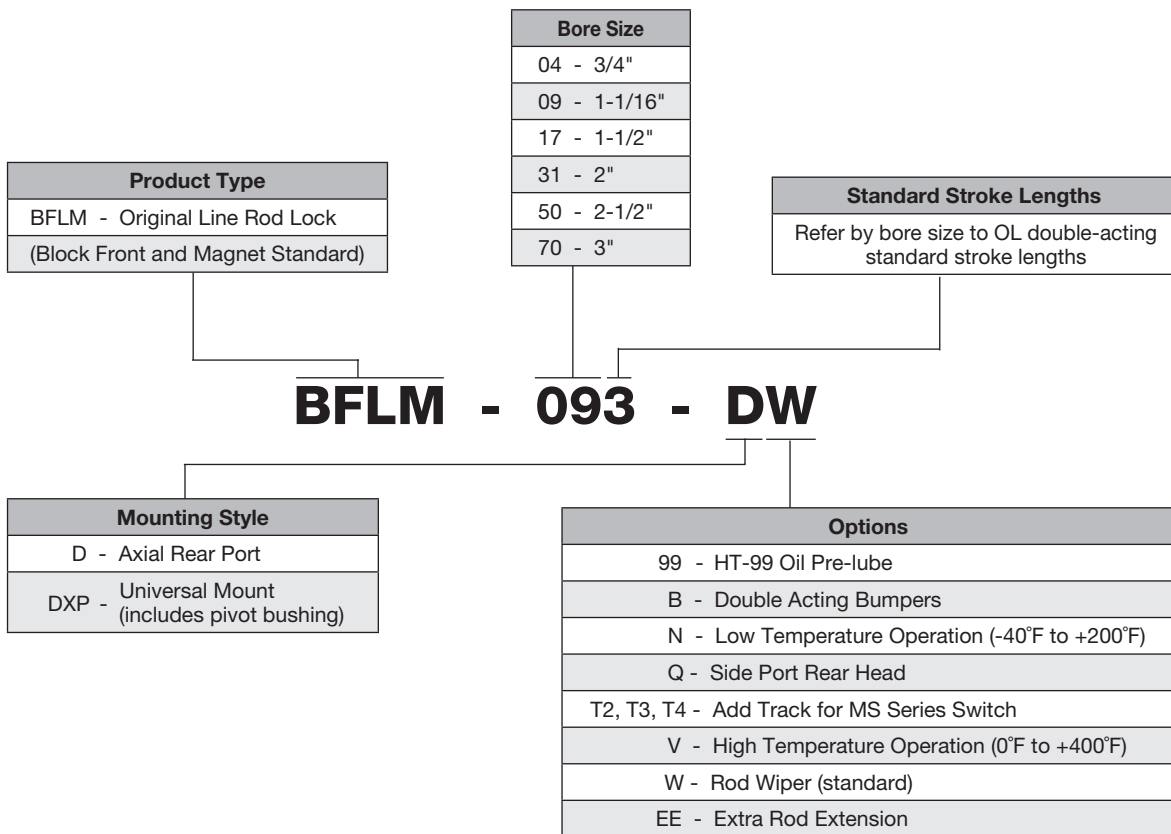


The Bimba Original Line Rod Lock Cylinder is a normally clamped unit that holds the piston rod in position when air pressure is not present. It is ideal for preventing drift at machine shut down.

## How to Order

The model number for all Original Line Rod Lock cylinders consists of three alphanumeric clusters. These designate product type, bore size and stroke length, and options.

Please note the following features are standard, and are included in all model numbers: **BFLM** (Block Front with Magnet) and **W** (Rod Wiper).

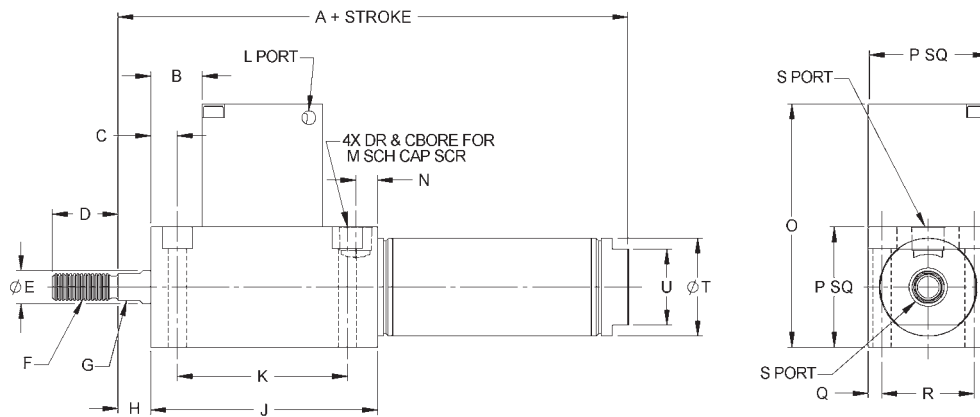




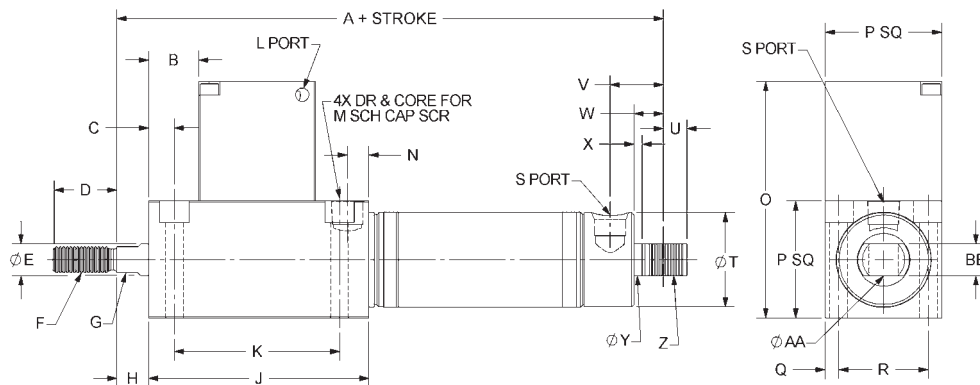
# Rod Lock Cylinders

Bore	Mounting Style		Add per 1" Stroke	Bumpers	Low Temp	Switch Track	High Temp	Extra Extension
	D	DXP		B	N	T2, T3, T4 (per track)	V	EE (per inch)
3/4" (04)								
1-1/16" (09)								
1-1/2" (17)								
2" (31)								
2-1/2" (50)								
3" (70)								

## Dimensions D Mounting Style



## DXP Mounting Style



# Rod Lock Cylinders

## Dimensions (in.)

### D Model

Bore	A	B	C	D	E	F	G	H	J	K	L
3/4" (04)	4.48	0.72	0.37	0.75	0.31	1/4-28 UNF-2A	0.25	0.25	2.48	1.83	#10-32 UNF-2B
1-1/16" (09)	4.84	0.61	0.31	0.75	0.38	5/16-24 UNF-2A	0.31	0.38	2.6	1.95	#10-32 UNF-2B
1-1/2" (17)	5.75	0.82	0.32	1.25	0.5	7/16-20 UNF-2A	0.43	0.38	3.37	2.75	1/8 NPT
2" (31)	6.84	0.88	0.44	1.25	0.62	1/2-20 UNF-2A	0.56	0.38	3.97	3.13	1/8 NPT
2-1/2" (50)	7.48	0.87	0.43	1.25	0.75	1/2-20 UNF-2A	0.62	0.38	4.61	3.62	1/4 NPT
3" (70)	8.22	0.92	0.46	1.25	0.75	5/8-18 UNF-2A	0.62	0.38	5.15	4.17	1/4 NPT

Bore	M	N	O	P	Q	R	S	T	U
3/4" (04)	#10	0.25	2.32	1.12	0.16	0.81	1/8 NPT	0.80	0.62
1-1/16" (09)	#10	0.25	2.78	1.38	0.16	1.06	1/8 NPT	1.12	0.87
1-1/2" (17)	1/4	0.32	3.38	1.75	0.25	1.25	1/4 NPT	1.56	0.88
2" (31)	3/8	0.39	4.45	2.25	0.31	1.62	1/4 NPT	2.08	1.24
2-1/2" (50)	7/16	0.42	5.67	2.75	0.44	1.88	1/4 NPT	2.58	1.74
3" (70)	1/2	0.42	6.28	3.25	0.5	2.25	3/8 NPT	3.13	1.99

### DXP Model

Bore	A	U	V	W	X	Y	Z	AA	BB
3/4" (04)	5.26	0.28	0.62	0.35	0.09	0.62	5/8-18 UNF-2A	0.25	0.37
1-1/16" (09)	5.44	0.28	0.62	0.34	0.09	0.62	5/8-18 UNF-2A	0.25	0.37
1-1/2" (17)	6.68	0.47	0.97	0.56	0.09	1.00	1-14 UNF-2A	0.38	0.68
2" (31)	7.78	0.44	1.03	0.56	0.13	1.37	1-1/4-12 UNF-2A	0.38	0.72
2-1/2" (50)	8.42	0.44	1.03	0.56	0.12	1.50	1-3/8-12 UNF-2A	0.38	0.72
3" (70)	9.47	0.63	1.34	0.81	0.19	1.62	1-1/2-12 UNF-2A	0.50	0.85

## Options

### Dimensional Deviations from Standard

Option	Dimensional Deviation
Q - Side Port Rear Head	Use DXP model, omit rear pivot tang
B - Bumpers	04 - no adder 09 - .13" 17 - .13" 31 - .25" 50 - .25" 70 - .25"
Add to Overall Length by Bore Size:	

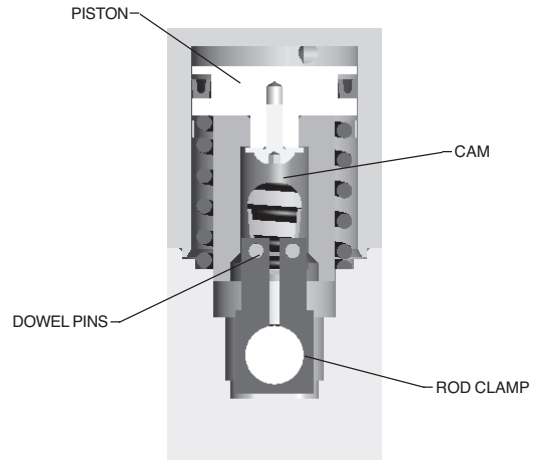
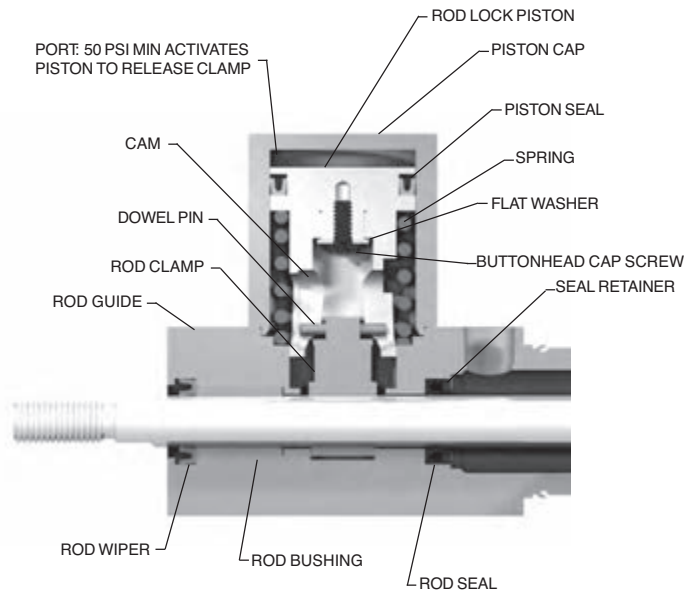
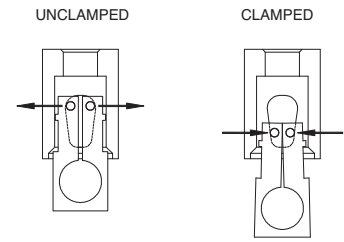
## Weights (lbs.)

Bore	Base Weight	Adder per inch of Stroke
3/4" (04)	0.46	0.03
1-1/16" (09)	1.03	0.05
1-1/2" (17)	1.97	0.08
2" (31)	4.08	0.15
2-1/2" (50)	7.13	0.17
3" (70)	10.55	0.26

# Rod Lock Cylinders

## How It Works

- Dowel pins ride in the cam groove.
- When air pressure is present, piston actuates and dowel pins follow cam to open position, allowing piston rod to travel freely through clamp.
- In absence of pressure, the spring actuates piston and dowels follow to closed position, activating the rod clamp.



## Engineering Specifications

- Operating Medium: Air
- Operating Pressure: 50 psi minimum (to actuate lock piston)  
125 psi maximum
- Temperature Range: -20 to +200° F
- Lubrication: Semi-synthetic grease
- Cylinder Body: 304 stainless steel
- Rod Guide, Rear Head: Aluminum
- Cap: Anodized aluminum
- Piston & Rod Seal: Buna-N
- Rod & Pivot Bushing: Sintered bronze
- Piston Rod: Hard chrome plated stainless steel
- Expected Service Life: 3,000 miles  
1 million lock actuations

### Rod Lock Holding Forces

Bore	Holding Force (Pounds)
3/4" (04)	40
1-1/16" (09)	90
1-1/2" (17)	170
2" (31)	310
2-1/2" (50)	500
3" (70)	700

### Operating Guidelines/Product Precautions

- The Rod Lock is not a safety device.
- Do not use for intermediate stopping; the cylinder is designed to prevent drift from a stationary position.
- Load weight must not exceed the stated holding force for the cylinder.

Standard Air Cylinders

Three-Position Air Cylinders

Cushion Cylinders

MRS® Cylinders

Non-Rotating Cylinders

PG Cylinders

All Stainless Non-Repairable

All Stainless Repairable

Z Line Air Cylinders

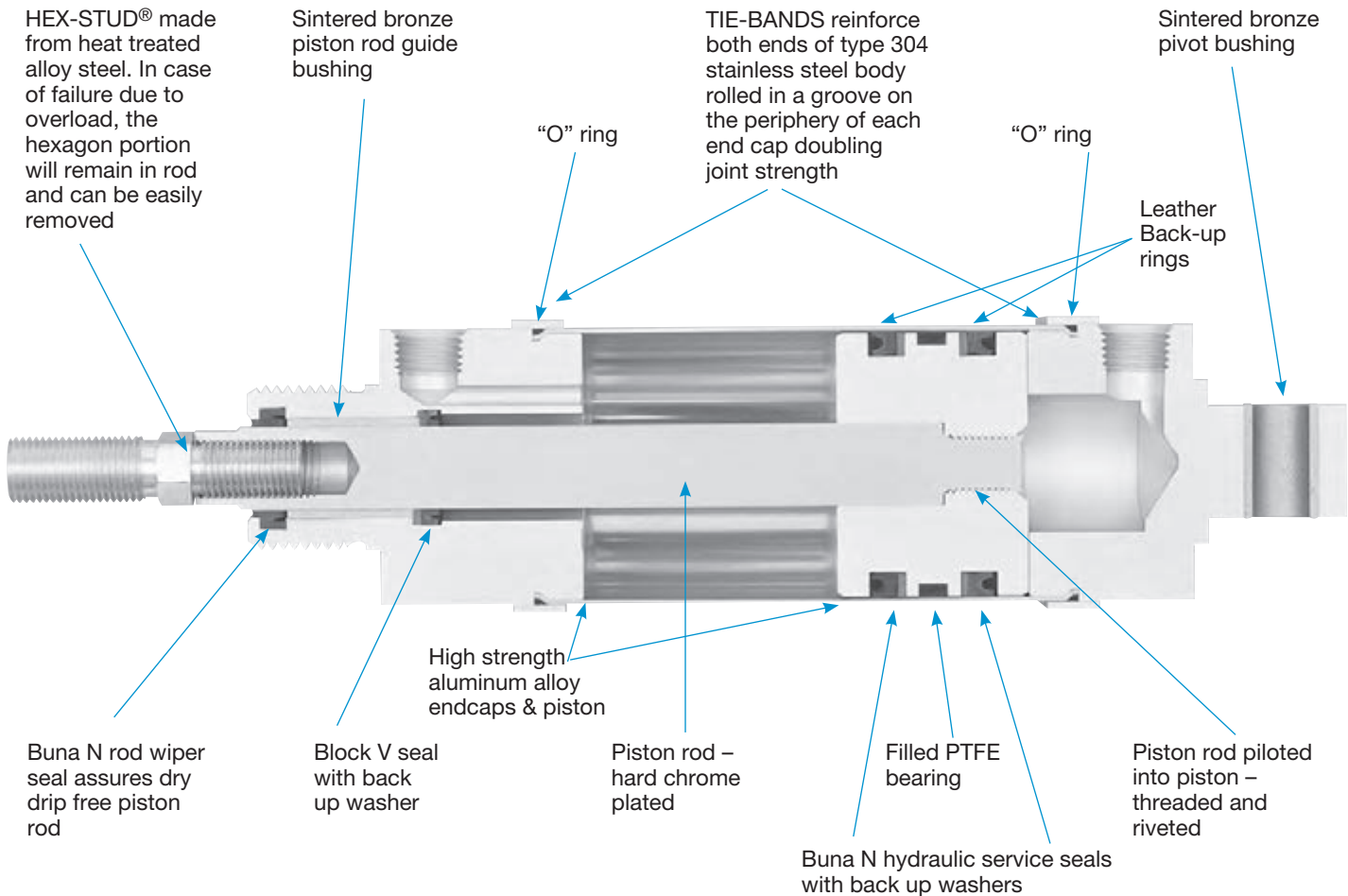
Rod Lock Cylinders

500 Hydraulic Cylinders

Repairable Hole Punch Cylinders



## Hydraulic Cylinders



The Bimba "500" is a precision built, compact, lightweight hydraulic cylinder designed specifically for hydraulic use only, at pressures up to 500 psi.

- Rated 500 PSI Hydraulic (non-shock), Double Acting

### OPTIONS:

EXTRA EXTENSION (EE)

PORTS ROTATED 90 DEGREES (K) (no charge)

Enter Stroke Length as 3rd Digit

### OPTIONS continued...

#### MAGNET (prefix M)

Example: HM-096-DZ

- 4" stroke or greater required
- Overall length increases by 0.25"


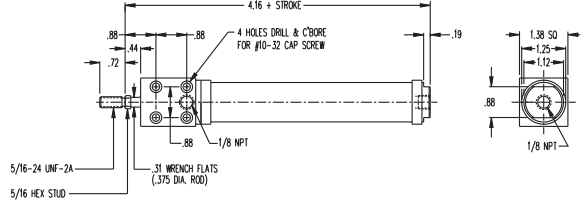

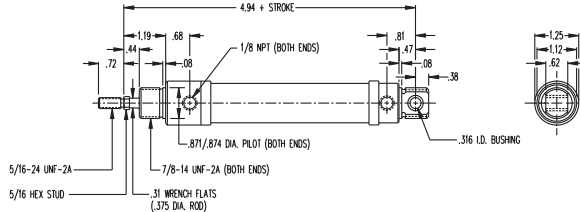

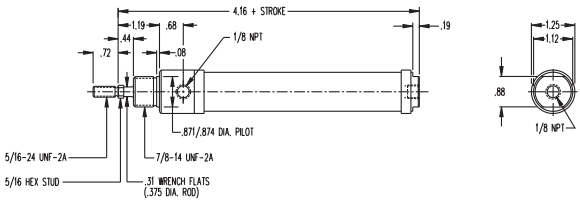
#### FLUOROELASTOMER SEALS (V)

- Specify for compatibility

# "500" Hydraulic Cylinders


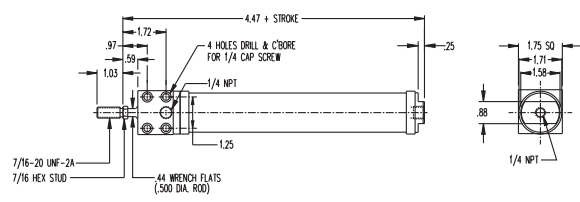
## 1-1/16" Bore "500" Hydraulic Cylinders

Push Force = .886 x psi · Pull Force = .776 x psi

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<b>H-09</b> <input type="checkbox"/> -DBZ 	<b>Front Block Mount</b> Standard Stroke Lengths: 1", 2", 3", 4", 5", 6" Maximum Stroke – 12" Base Weight: .57 Adder Per Inch of Stroke: .06	
<b>H-09</b> <input type="checkbox"/> -DUZ 	<b>Universal Mount – Double End or Rear Pivot</b> Standard Stroke Lengths: 1", 2", 3", 4", 5", 6", 7", 8", 9", 10", 11", 12" Maximum Stroke – 32" Optional Accessories: D-8316 Mounting Bracket D-8322-A Pivot Bracket D-8309-A Clevis Base Weight: .50 Adder Per Inch of Stroke: .06	
<b>H-09</b> <input type="checkbox"/> -DZ 	<b>Nose Mount</b> Standard Stroke Lengths: 1", 2", 3", 4", 5", 6", 7" Maximum Stroke – 12" Optional Accessory: D-8316 Mounting Bracket Base Weight: .43 Adder Per Inch of Stroke: .06	

## 1-1/2" Bore "500" Hydraulic Cylinders

Push Force = 1.77 x psi · Pull Force = 1.57 x psi

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<b>H-17</b> <input type="checkbox"/> -DBZ 	<b>Front Block Mount</b> Standard Stroke Lengths: 1", 2", 3", 4", 5", 6" Maximum Stroke – 12" Base Weight: 1.00 Adder Per Inch of Stroke: .10	

Standard Air Cylinders

Three-Position Cylinders

Cushion Cylinders

MRS® Cylinders

Non-Rotating Cylinders

PC Cylinders

All Stainless Non-Repairable

All Stainless Repairable

2 Line Air Cylinders

Rod Lock Cylinders


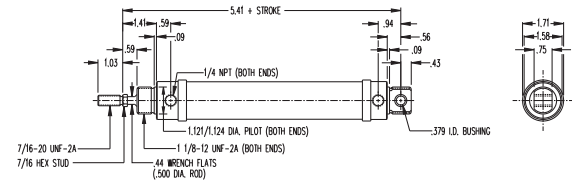

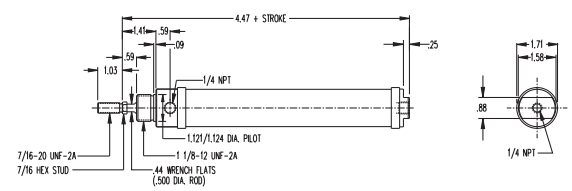
500 Hydraulic Cylinders

Repairable Hole Punch Cylinders

# "500" Hydraulic Cylinders


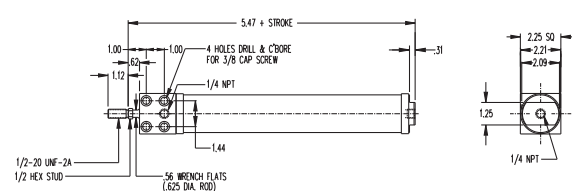

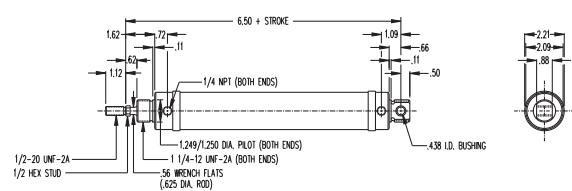
## 1-1/2" Bore "500" Hydraulic Cylinders (continued)

Push Force = 1.77 x psi · Pull Force = 1.57 x psi

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<b>H-17</b> <input type="checkbox"/> -DUZ 	<b>Universal Mount – Double End or Rear Pivot</b> Standard Stroke Lengths: 1", 2", 3", 4", 5", 6", 7", 8", 9", 10", 11", 12" Maximum Stroke – 32" Optional Accessories: D-8318 Mounting Bracket D-8324-A Pivot Bracket D-8311-A Clevis Base Weight: .95 Adder Per Inch of Stroke: .10	
<b>H-17</b> <input type="checkbox"/> -DZ 	<b>Nose Mount</b> Standard Stroke Lengths: 1", 2", 3", 4", 5", 6", 7", 8", 9", 10", 11", 12" Maximum Stroke – 12" Optional Accessory: D-8318 Mounting Bracket Base Weight: .84 Adder Per Inch of Stroke: .10	

## 2" Bore "500" Hydraulic Cylinders

Push Force = 3.14 x psi · Pull Force = 2.83 x psi

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
<b>H-31</b> <input type="checkbox"/> -DBZ 	<b>Front Block Mount</b> Standard Stroke Lengths: 1", 2", 3", 4", 5", 6" Maximum Stroke – 12" Base Weight: 1.90 Adder Per Inch of Stroke: .24	
<b>H-31</b> <input type="checkbox"/> -DUZ 	<b>Universal Mount – Double End or Rear Pivot</b> Standard Stroke Lengths: 1", 2", 3", 4", 5", 6", 7", 8", 9", 10", 11", 12" Maximum Stroke – 32" Optional Accessories: D-8319 Mounting Bracket D-8325-A Pivot Bracket D-8313-A Clevis Base Weight: 1.75 Adder Per Inch of Stroke: .24	



# "500" Hydraulic Cylinders

## Bore "500" Hydraulic Cylinders (continued)

Push Force = 3.14 x psi • Pull Force = 2.83 x psi

### MODEL/PRICE

### DESCRIPTION/WEIGHT (lbs.)

### DIMENSIONS

#### H-31 -DZ



#### Nose Mount

Standard Stroke Lengths:

1", 2", 3", 4", 5", 6"

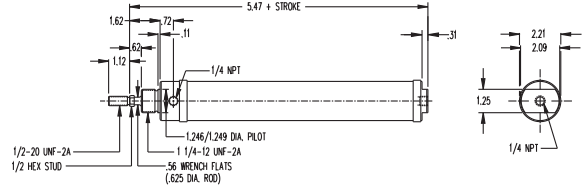
Maximum Stroke – 12"

Optional Accessory:

D-8319 Mounting Bracket

Base Weight: 1.63

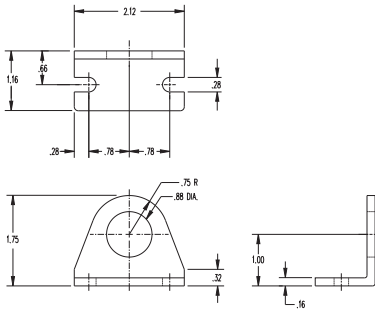
Adder Per Inch of Stroke: .24



## "500" Hydraulic Cylinder Accessories

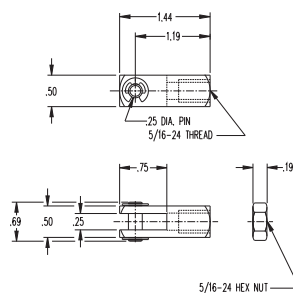
### 1-1/16" Bore Accessories

#### D-8316



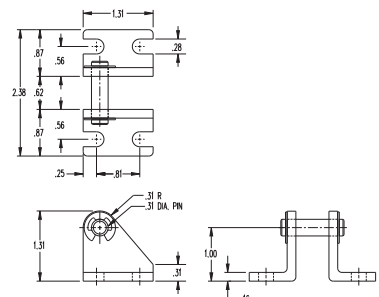
Mounting Bracket

#### D-8309-A



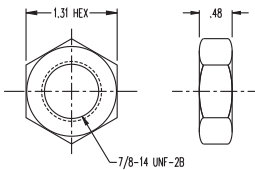
Rod Clevis

#### D-8322-A



Pivot Bracket

#### D-2545

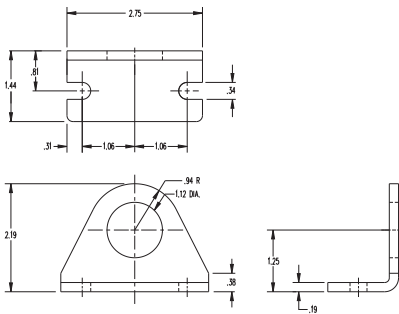


Mounting Nut

# "500" Hydraulic Cylinder Accessories continued

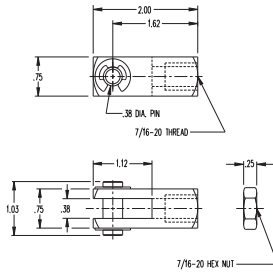
## 1-1/2" Bore Accessories

**D-8318**



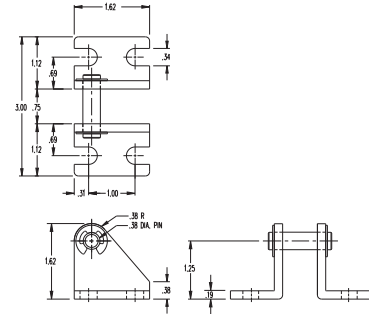
Mounting Bracket

**D-8311-A**



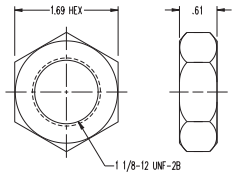
Rod Clevis

**D-8324-A**



Pivot Bracket

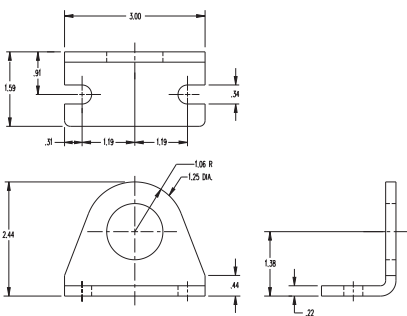
**D-8484**



Mounting Nut

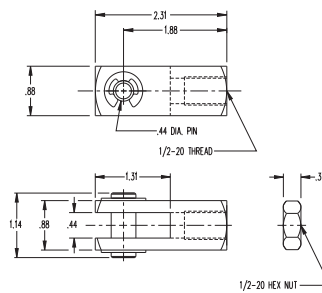
## 2" Bore Accessories

**D-8319**



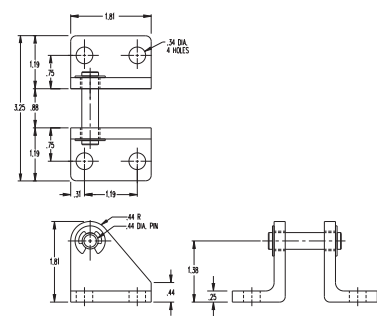
Mounting Bracket

**D-8313-A**



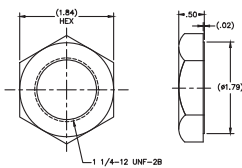
Rod Clevis

**D-8325-A**



Pivot Bracket

**D-508**

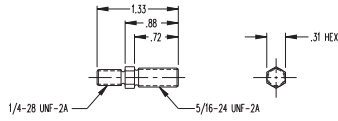


Mounting Nut

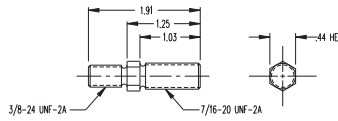
# "500" Hydraulic Cylinder Accessories continued

## Hex-Stud

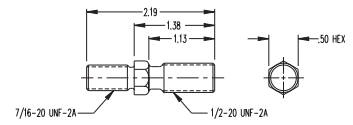
**1-1/16" Bore  
D-6583**



**1-1/2" Bore  
D-6636**



**2" Bore  
D-6637**



Standard Air  
Cylinders

Three-Position  
Cylinders

Cushion  
Cylinders

MRS®  
Cylinders

Non-Rotating  
Cylinders

PC  
Cylinders

All Stainless  
Non-Repairable

All Stainless  
Repairable

2 Line Air  
Cylinders

Rod Lock  
Cylinders

500 Hydraulic  
Cylinders

Repairable  
Hole Punch  
Cylinders

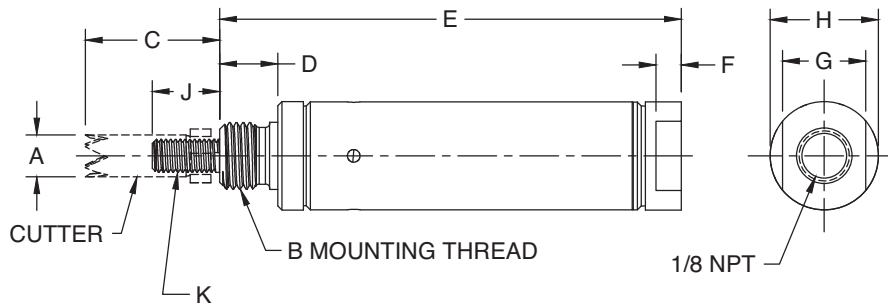


# Repairable Hole Punch Cylinders



Our rugged hole punch cylinder has been redesigned with a removable cutter to allow customers to replace the cutter as needed without having to replace the entire cylinder. The razor sharp cutting teeth are designed to punch millions of holes in thin plastic film.

- High strength carbon steel rod is hollow with an ID of .07" to provide an air jet to eject cutter slugs from the cutting head.
- An oil soaked felt washer beside the rod seal provides a continuous source of lubrication to the rod on every stroke.
- (8) models with (7) different cutter diameters for a wide range of applications.
- Available with no cutter for customers that choose to mount their own.
- Single acting, spring return 3/4" bore, 1" stroke cylinder is prelubricated for maximum life.
- Nickel plated steel rod guide offers improved fatigue resistance over competitors aluminum end caps which is critical in high speed/high cycle applications.
- Bumpers are present for both extend and retract strokes to minimize sound levels.
- Special cutter shapes and different stroke lengths are available on request.



Model No.	Hole Size	A	B	C	D	E	F	G	H	J	K	
D-11840-A Base Weight: .18	1/4"	.250"	1/2-20	.50	.44	3.44	.19	.62	.81	.25	#10-32 <sup>2</sup>	
D-9846-A <sup>1</sup> Base Weight: .19	N/A	N/A	1/2-20	.50	.44	3.44	.19	.62	.81	.50	1/4-28	
D-11811-A Base Weight: .20	5/16"	.312"	1/2-20	1.00	.44	3.44	.19	.62	.81	.50	1/4-28 <sup>2</sup>	
D-11618-A Base Weight: .21	3/8"	.375"	1/2-20	1.00	.44	3.44	.19	.62	.81	.50	1/4-28 <sup>2</sup>	
D-11998-A Base Weight: .23	7/16"	.438"	5/8-18	1.00	.50	3.50	.19	.62	.81	.50	3/8-40 <sup>3</sup>	
D-11999-A Base Weight: .24	1/2"	.500"	5/8-18	1.00	.50	3.50	.19	.62	.81	.50	3/8-40 <sup>3</sup>	
D-12107-A Base Weight: .29	9/16"	.562"	3/4-16	1.00	.63	3.63	.19	.62	.99	.50	3/8-40 <sup>3</sup>	
D-12108-A Base Weight: .29	5/8"	.625"	3/4-16	1.00	.63	3.63	.19	.62	.99	.50	3/8-40 <sup>3</sup>	

<sup>1</sup>The Pneumatic Hole Puncher Cylinder may be ordered without the cutter under model number D-9846-A. This cylinder has the same features and dimensions as the Hole Puncher except 1/4-28 UNF-2A by 0.50 long rod threads are provided so you may attach your own cutter.

<sup>2</sup>Cutter to rod mating threads

<sup>3</sup>Cutter to rod end adapter mating threads

# Repairable Hole Punch Cylinders

## Engineering Specifications

Maximum Pressure: 250 psi (air)  
 Temperature Range: -20° F to 200° F  
 Body: 304 Stainless Steel  
 Rod: Ground and Polished Carbon Steel  
 Front End Cap: Nickel Plated Steel  
 Rear End Cap: Aluminum  
 Lubrication: Permanent Grease Lubrication for Piston Seals  
 Oil Soaked Felt Washer for Rod Seal

## Repair Kits

Each box of (5) cutters includes (5) O-rings and repair instructions



Model No.	
Repunch - 1/4	
Repunch - 5/16	
Repunch - 3/8	
Repunch - 7/16	
Repunch - 1/2	
Repunch - 9/16	
Repunch - 5/8	

## Cutter Styles and Sizes

1/4" diameter	
5/16" diameter	
3/8" diameter	
7/16" diameter	

1/2" diameter	
9/16" diameter	
5/8" diameter	

Standard Air  
Cylinders

Three-Position  
Cylinders

Cushion  
Cylinders

MRS®  
Cylinders

Non-Rotating  
Cylinders

PG  
Cylinders

All Stainless  
Non-Repairable

All Stainless  
Repairable

Z Line Air  
Cylinders

Rod Lock  
Cylinders

500 Hydraulic  
Cylinders

Repairable  
Hole Punch  
Cylinders