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Original Line Cylinders

Bimba's classic "Blue and Improved" Original Line® continues to set the standard for non-repairable air cylinders. This product line features an incredible variety of standard models, including three-position, MRS, non-rotating, and PC air cylinders. Design enhancements to this line, including permanent grease lubrication, have more than doubled the anticipated service life of this industry-leading, non-repairable family of air cylinders.



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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 15-53. 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 1-1/2" 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 repairability 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.

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 2-3 mils thick.

How to Specify

Specification Details

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.

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)

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.

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 can be ordered through your local Bimba distributor (part number HT-99-7CC).

Specification Details

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.

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.

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.

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.

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 non-shelving 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. Non-stocked standard models are manufactured within 5 working days.

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"	--

Specification Details

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 = +4.68"

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 -0.25"

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 = +5.76"

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 -0.75"

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 = +1.25”

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 (lbs)	Compressed (lbs)	Heavy Spring	
			Relaxed (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.

Specification Details

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)

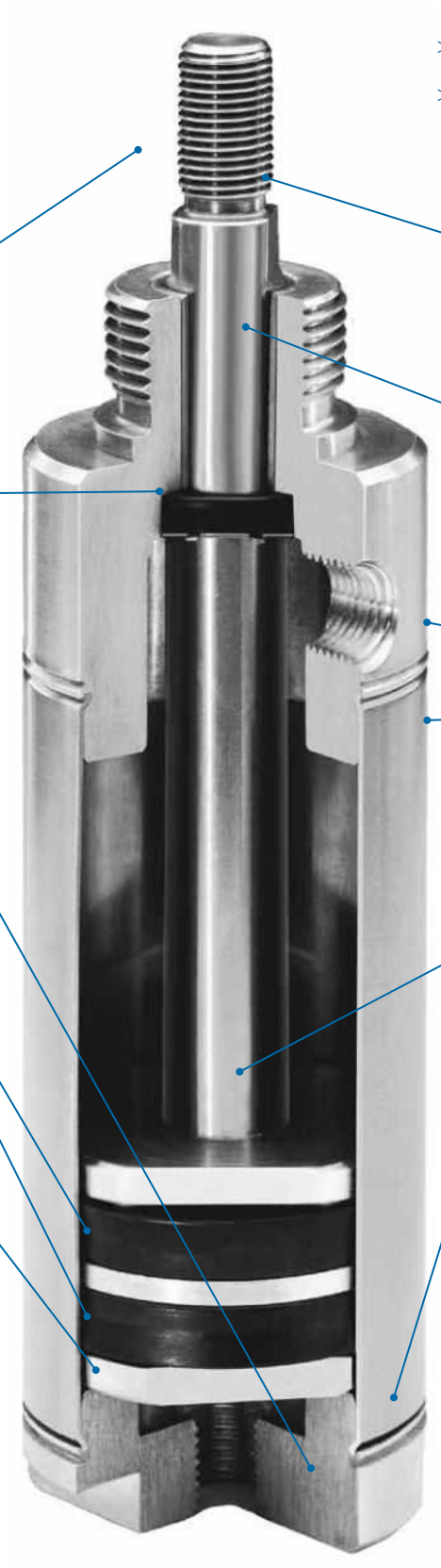
Pressure Rating

Original Line, Cushioned Original Line, NR series, Z-line, MRS and hole punchers:	250 psi
PC cylinder:	100 psi
Reservoirs:	250 psi

Product Features

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

Piston rod — high strength carbon or Type 303 stainless steel

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

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

High strength aluminum alloy porting ends

Double rolled-in construction

Type 304 stainless steel body

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

Piston rod threaded, sealed and riveted

High-strength aluminum alloy piston

Features and Benefits:

> 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
> 250 psi rating
> High strength aluminum alloy porting ends, machined for minimal breakaway during initial pressurization

5/16" Bore Air Cylinders

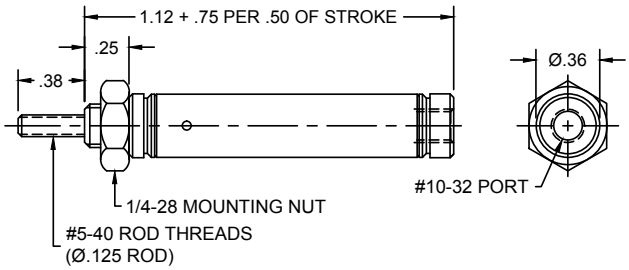
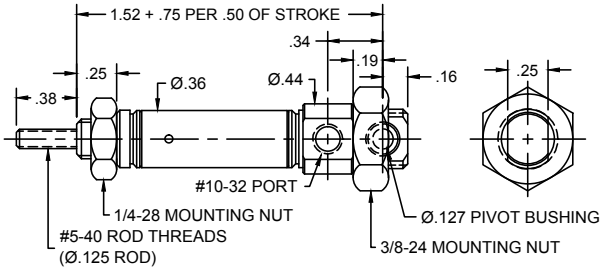
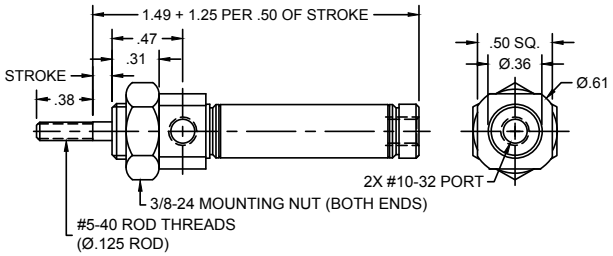
> Ground and Roller Burnished 303 Stainless Steel Piston Rod Standard
> Force Exerted Approximately 0.07 of Air Line Pressure
> Enclosed Spring Force: .5lb Relaxed — 1lb Compressed
> Cushion Quiet Bumpers Standard on All Models

Options:

See also: Option Combination Availability Chart (page 54)

> **Ports rotated (K)***
> **No thread (NT)**
  » *Rod guide port rotated 90° clockwise in BF model.
> **Side Ported Rear Head (Q)**
  » Add .20" to nose mount overall length
> **Extra Extension (EE)**
> **Double Acting Failsafe**
  » JS = Spring Return, JR = Spring Extend
  » See pages 55-56 for overall length adders
> **Low Temperature (N)**
  » Temperature Range: -40° to 200° F
> **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 57 for track location details. See Switch Products 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

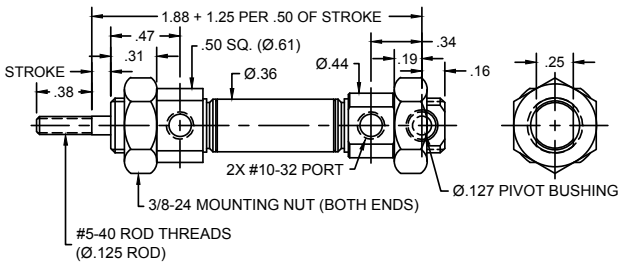
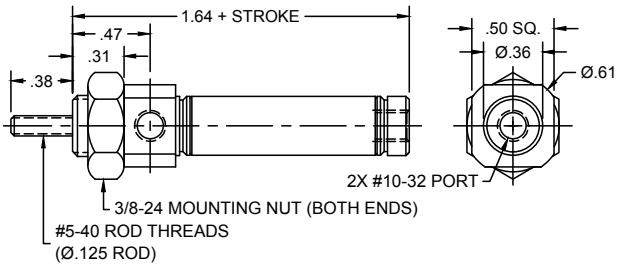
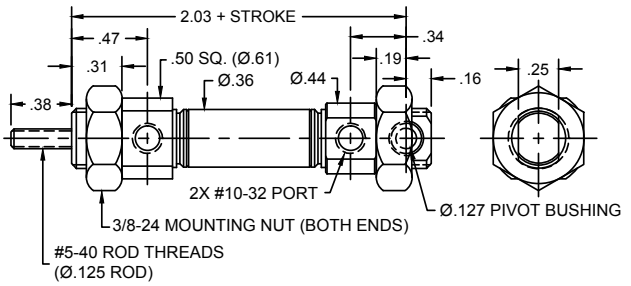
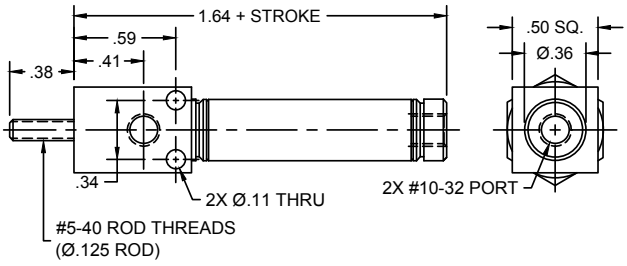
Model	Description/Weight (lbs)	Dimensions
007 ☐ 	Single Acting – Spring Return – Front Nose Mounting Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 2-1/2", 3", 4" Maximum Stroke – 4" Stainless Steel Rod Standard Optional Accessory: D-26731 Mounting Bracket Base Weight: .03 Adder Per Inch of Stroke: .02	 See page 12 for length calculation of fractional stroke for single acting cylinders.
007 ☐ -XP 	Single Acting – Spring Return – Double End or Rear Pivot Mounting Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 2-1/2", 3", 4" Maximum Stroke – 4" Stainless Steel Rod Standard Optional Accessories: D-26731 Mounting Bracket D-26689 Pivot Bracket D-26690 Piston Rod Clevis Base Weight: .04 Adder Per Inch of Stroke: .02	 See page 12 for length calculation of fractional stroke for single acting cylinders.
007 ☐ -R 	Reverse Single Acting – Pull Type – Rod Normally Extended – Spring Return — Front Nose Mounting Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 2-1/2", 3" Maximum Stroke – 4" Stainless Steel Rod Standard Optional Accessory: D-26765 Mounting Bracket Base Weight: .05 Adder Per Inch of Stroke: .03	 See page 12 for length calculation of fractional stroke for single acting cylinders.

How to Specify

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

☐ Enter Stroke Length as 4th Digit

Model	Description/Weight (lbs)	Dimensions
007 ☐ -RP 	Reverse Single Acting – Pivot and Pull Type – Rod Normally Extended – Spring Return – Rear Pivot Mounting Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 2-1/2", 3" Maximum Stroke – 4" Stainless Steel Rod Standard Optional Accessories: D-26765 Mounting Bracket D-26689 Pivot Bracket D-26690 Piston Rod Clevis Base Weight: .05 Adder Per Inch of Stroke: .03	 See page 12 for length calculation of fractional stroke for single acting cylinders.
007 ☐ -D 	Double Acting – Air Return – Front Nose Mounting Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 2-1/2", 3", 4" Maximum Stroke – 4" Stainless Steel Rod Standard Optional Accessory: D-26765 Mounting Bracket Base Weight: .05 Adder Per Inch of Stroke: .01	
007 ☐ -DXP 	Double Acting – Air Return – Double End or Rear Pivot Mounting Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 2-1/2", 3", 4" Maximum Stroke – 4" Stainless Steel Rod Standard Optional Accessories: D-26765 Mounting Bracket D-26689 Pivot Bracket D-26690 Piston Rod Clevis Base Weight: .06 Adder Per Inch of Stroke: .01	
BF-007 ☐ -D 	Double Acting – Front Block Mounting – Air Return Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 2-1/2", 3", 4" Maximum Stroke – 4" Stainless Steel Rod Standard Base Weight: .05 Adder Per Inch of Stroke: .01	

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: 1lb Relaxed — 2lbs Compressed

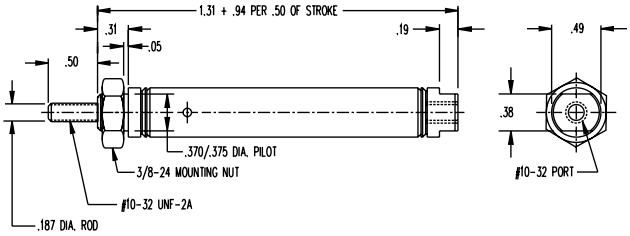
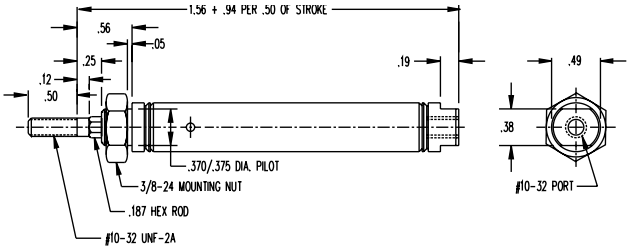
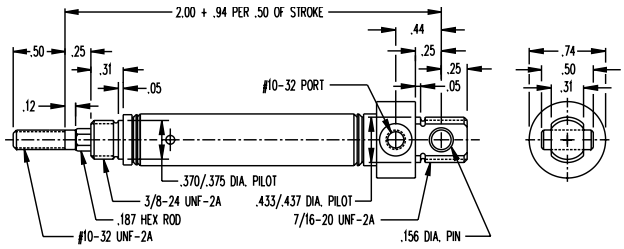
Options:

> **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)**
» Add .062 to overall length; Reverse acting, add .125
> **Double Acting Bumper (B)**
» Add .188 to overall length – DXDE; add .250
> **Extra Extension (EE)**
» Single, reverse and double acting
» DXDE, extension added to each end
> **Double Acting Failsafe**
» (JS = Spring Return, JR = Spring Extend)
» See pages 55-56 for overall length adders

> **Low Temperature (N)**
» Temperature Range: -40° to 200°F

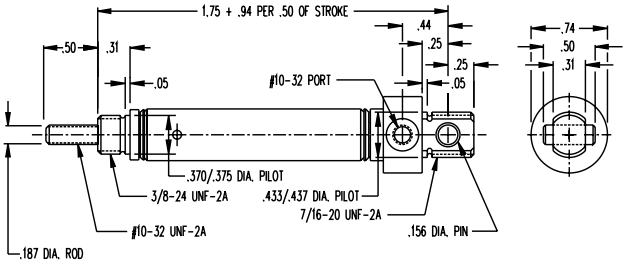
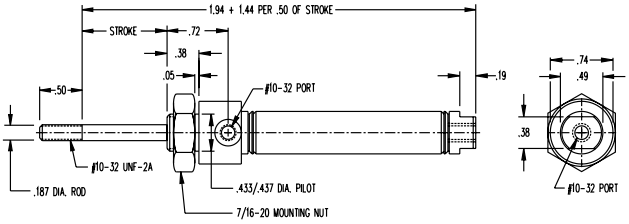
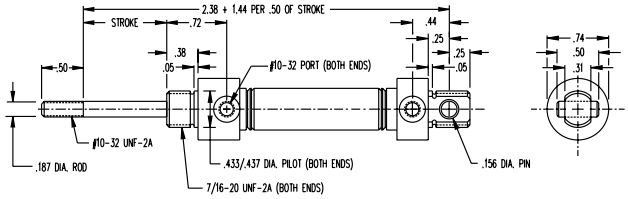
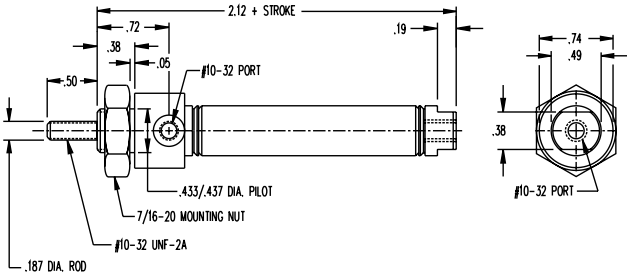
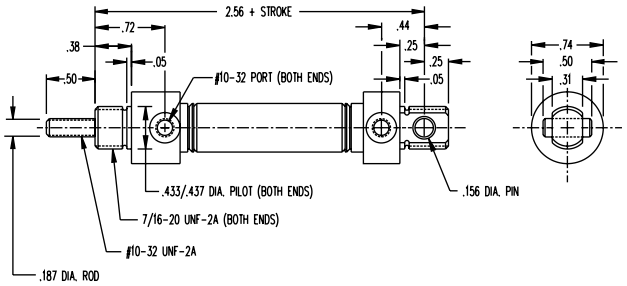
> **High Temperature "U" Cups (V)**
» Temperature Range: 0° to 400°F (-18° to 205°C)
> **Magnet (prefix M)**
» Add 0.25" to Double Acting overall length
» Add 0.20" to Single Acting overall length
» Must specify track(s) for use with miniature position sensing (T2, T3, T4). See page 57 for track location details. See Switch Products 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

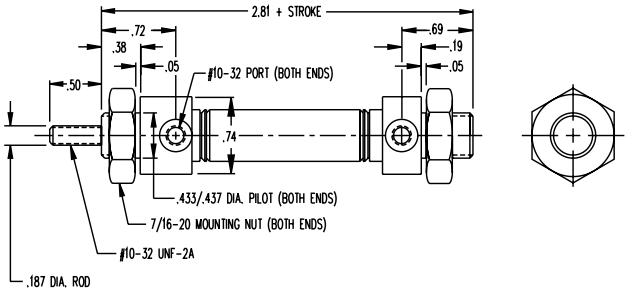
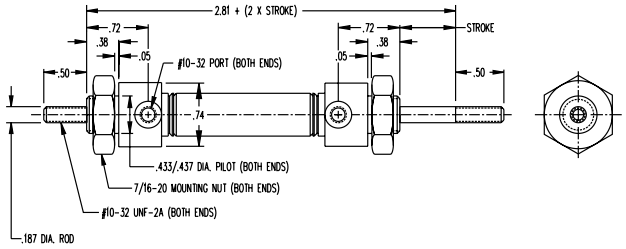
Model	Description/Weight (lbs)	Dimensions
01 ☐ 	Single Acting – Spring Return – Front Nose Mounting Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 2-1/2", 3", 4" Maximum Stroke – 6" Stainless Steel Rod Standard Optional Accessory: D-775 Mounting Bracket Base Weight: .04 Adder Per Inch of Stroke: .04	 See page 12 for length calculation of fractional stroke for single acting cylinders.
01 ☐ -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" Stainless Steel Rod Standard Optional Accessory: D-775 Mounting Bracket Base Weight: .04 Adder Per Inch of Stroke: .04	 See page 12 for length calculation of fractional stroke for single acting cylinders.
01 ☐ -NRP 	Single Acting – Non-rotating Hexagon Rod – Pivot Type – Spring Return – Rear Pivot Mounting Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 2-1/2", 3", 4" Maximum Stroke – 6" Stainless Steel Rod Standard Optional Accessories: D-850 Rod Clevis D-780 Pivot Brackets Base Weight: .04 Adder Per Inch of Stroke: .04	 See page 12 for length calculation of fractional stroke for single acting cylinders.

7/16” Bore Air Cylinders

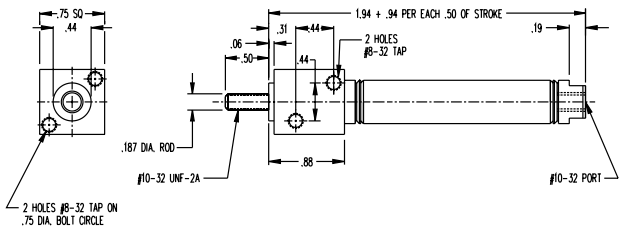
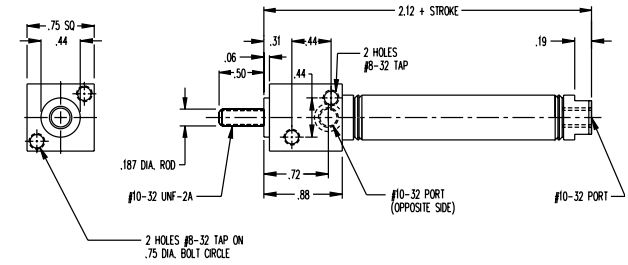
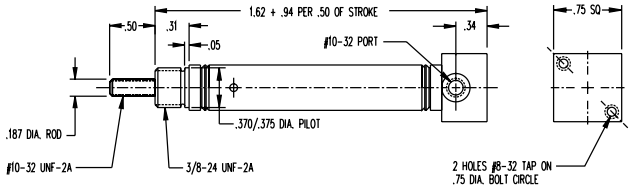
☐ Enter Stroke Length as 3rd Digit

Model	Description/Weight (lbs)	Dimensions
01☐-P 	Single Acting – Pivot Type – Spring Return – Rear Pivot Mounting Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 2-1/2", 3", 4" Maximum Stroke – 6" Stainless Steel Rod Standard Optional Accessories: D-780 Pivot Brackets D-850 Piston Rod Clevis Base Weight: .04 Adder Per Inch of Stroke: .04	 See page 12 for length calculation of fractional stroke for single acting cylinders.
01☐-R 	Reverse Single Acting – Pull Type– Rod Normally Extended – Spring Return – Front Nose Mounting Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 2-1/2", 3" Maximum Stroke – 6" Stainless Steel Rod Standard Optional Accessory: D-770 Mounting Bracket Base Weight: .08 Adder Per Inch of Stroke: .03	 See page 12 for length calculation of fractional stroke for single acting cylinders.
01☐-RP 	Reverse Single Acting – Pivot and Pull Type – Rod Normally Extended – Spring Return – Rear Pivot Mounting Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 2-1/2", 3" Maximum Stroke – 6" Stainless Steel Rod Standard Optional Accessories: D-780 Pivot Brackets D-850 Piston Rod Clevis Base Weight: .08 Adder Per Inch of Stroke: .03	 See page 12 for length calculation of fractional stroke for single acting cylinders.
01☐-D 	Double Acting – Air Return – Front Nose Mounting Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 2-1/2", 3", 4" Maximum Stroke – 12" Stainless Steel Rod Standard Optional Accessory: D-770 Mounting Bracket Base Weight: .07 Adder Per Inch of Stroke: .02	
01☐-DP 	Double Acting – Pivot Type – Air Return – Rear Pivot Mounting Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 2-1/2", 3", 4" Maximum Stroke – 12" Stainless Steel Rod Standard Optional Accessories: D-780 Pivot Brackets D-850 Piston Rod Clevis Base Weight: .08 Adder Per Inch of Stroke: .02	

7/16” Bore Air Cylinders

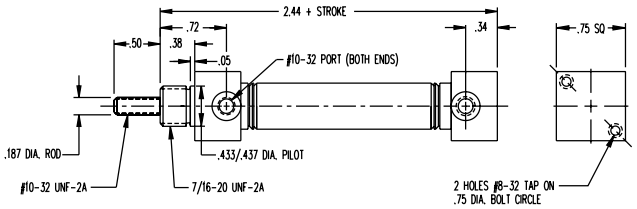
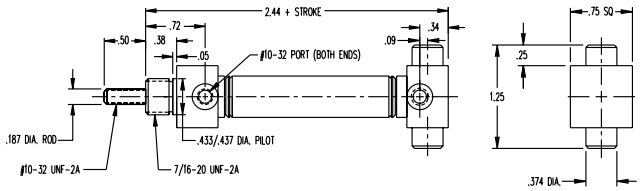
Model	Description/Weight (lbs)	Dimensions
01 ☐ -DX 	Double Acting – Double End Mount – Air Return Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 2-1/2", 3", 4" Maximum Stroke – 12" Stainless Steel Rod Standard Optional Accessory: D-770 Mounting Bracket Base Weight: .11 Adder Per Inch of Stroke: .02	
01 ☐ -DXDE 	Double Acting – Double End Rod – Air Return – Double End Mount Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 2-1/2", 3", 4" Maximum Stroke – 6" Stainless Steel Rod Standard Optional Accessory: D-770 Mounting Bracket Base Weight: .14 Adder Per Inch of Stroke: .03	

7/16" Bore Block Mounted Air Cylinders

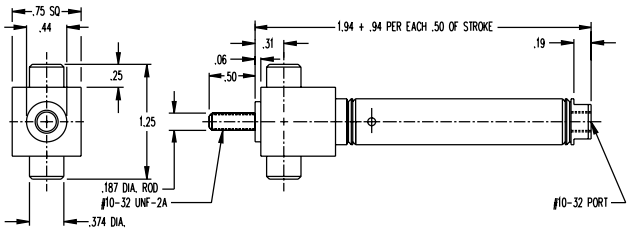
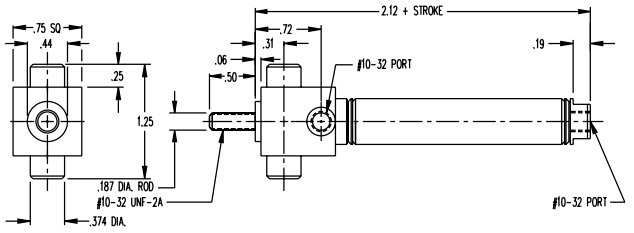
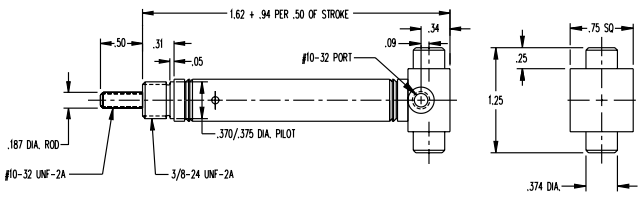
Model	Description/Weight (lbs)	Dimensions
BF-01 ☐ 	Single Acting – Front Block Mounting – Spring Return Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 2-1/2", 3", 4" Maximum Stroke – 6" Stainless Steel Rod Standard Base Weight: .07 Adder Per Inch of Stroke: .04	 See page 12 for length calculation of fractional stroke for single acting cylinders.
BF-01 ☐ -D 	Double Acting – Front Block 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 Base Weight: .07 Adder Per Inch of Stroke: .02	
BR-01 ☐ 	Single Acting – Rear Block Mounting for Vertical Positioning – 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: .05 Adder Per Inch of Stroke: .04	

How to Specify

7/16" Bore Block Mounted Air Cylinders

Model	Description/Weight (lbs)	Dimensions
BR-01 ☐ -D 	Double Acting – Rear Block Mounting for Vertical Positioning – Air Return Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 2-1/2", 3", 4" Maximum Stroke – 12" Stainless Steel Rod Standard Base Weight: .08 Adder Per Inch of Stroke: .02	
BRT-01 ☐ -D 	Double Acting – Rear 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-1 Trunnion Brackets D-850 Rod Clevis Base Weight: .10 Adder Per Inch of Stroke: .02	

7/16" Bore Trunnion Mounted Air Cylinders

Model	Description/Weight (lbs)	Dimensions
BFT-01 ☐ 	Single Acting – 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-1 Trunnion Brackets D-850 Rod Clevis Base Weight: .09 Adder Per Inch of Stroke: .04	 See page 12 for length calculation of fractional stroke for single acting cylinders.
BFT-01 ☐ -D 	Double Acting – 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-1 Trunnion Brackets D-850 Rod Clevis Base Weight: .09 Adder Per Inch of Stroke: .02	
BRT-01 ☐ 	Single Acting – 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-1 Trunnion Brackets D-850 Rod Clevis Base Weight: .07 Adder Per Inch of Stroke: .04	

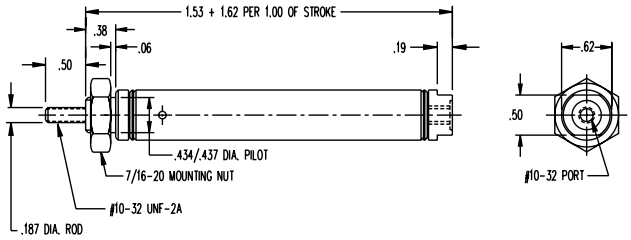
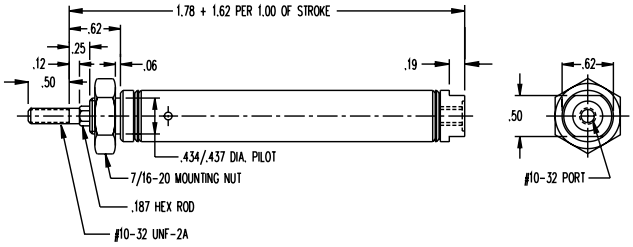
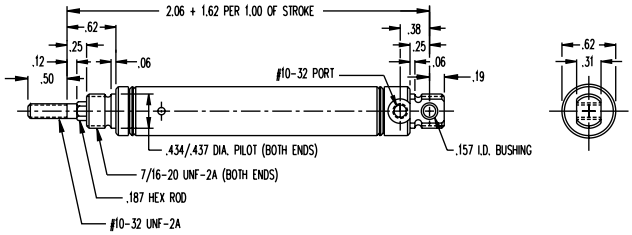
9/16" Bore Air Cylinders

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

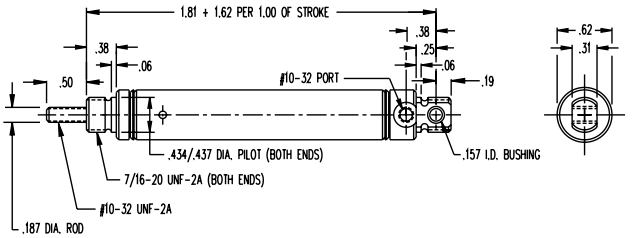
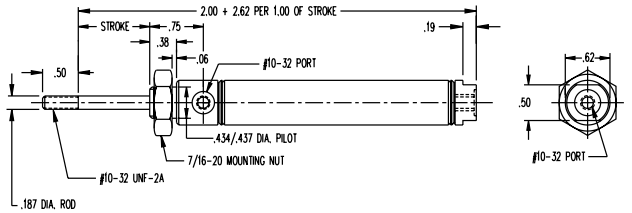
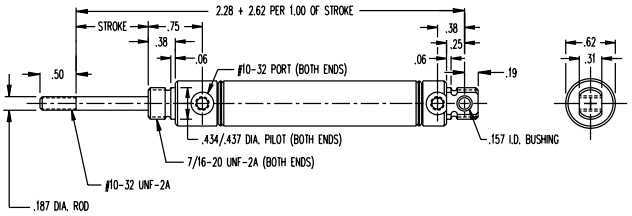
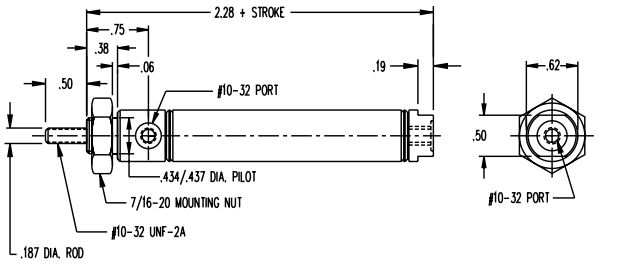
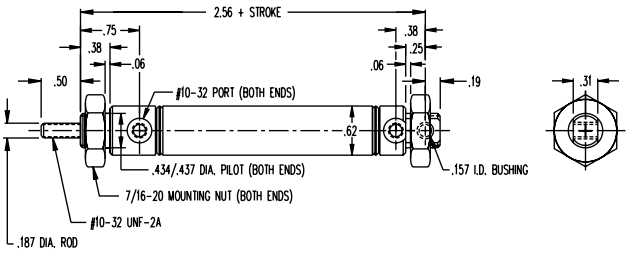
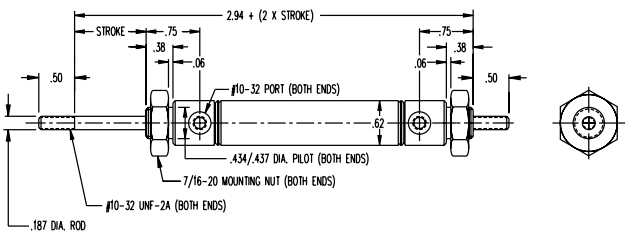
Options:

> **Ports Rotated (K) (Not available in block mount)**
> **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)**
> **Double Acting Failsafe**
» (JS = Spring Return, JR = Spring Extend)
» See pages 55-56 for overall length adders
> **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 57 for track location details. See the Switch Products chapter 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

☐ Enter Stroke Length as 3rd Digit

Model	Description/Weight (lbs)	Dimensions
02 ☐ 	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" Stainless Steel Rod Standard Optional Accessory: D-770 Mounting Bracket Base Weight: .06 Adder Per Inch of Stroke: .05	 See page 12 for length calculation of fractional stroke for single acting cylinders.
02 ☐ -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" Stainless Steel Rod Standard Optional Accessory: D-770 Mounting Bracket Base Weight: .06 Adder Per Inch of Stroke: .05	 See page 12 for length calculation of fractional stroke for single acting cylinders.
02 ☐ -NRP 	Single Acting – Non-rotating Hexagon Rod – Pivot Type – Spring Return – Rear Pivot Mounting Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 2-1/2", 3", 4" Maximum Stroke – 6" Stainless Steel Rod Standard Optional Accessories: D-850 Rod Clevis D-12321-A Pivot Bracket Base Weight: .06 Adder Per Inch of Stroke: .05	 See page 12 for length calculation of fractional stroke for single acting cylinders.

9/16" Bore Air Cylinders

Model	Description/Weight (lbs)	Dimensions
02 ☐ -P 	Single Acting – Pivot Type –Spring Return – Rear Pivot Mounting Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 2-1/2", 3", 4" Maximum Stroke – 6" Stainless Steel Rod Standard Optional Accessories: D-850 Rod Clevis D-12321-A Pivot Bracket Base Weight: .06 Adder Per Inch of Stroke: .05	 See page 12 for length calculation of fractional stroke for single acting cylinders.
02 ☐ -R 	Reverse Single Acting – Pull Type – Rod Normally Extended – Spring Return – Front Nose Mounting Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 2-1/2", 3" Maximum Stroke – 6" Stainless Steel Rod Standard Optional Accessory: D-770 Mounting Bracket Base Weight: .08 Adder Per Inch of Stroke: .04	 See page 12 for length calculation of fractional stroke for single acting cylinders.
02 ☐ -RP 	Reverse Single Acting – Pivot and Pull Type – Rod Normally Extended – Spring Return – Rear Pivot Mounting Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 2-1/2", 3" Maximum Stroke – 6" Stainless Steel Rod Standard Optional Accessories: D-850 Rod Clevis D-12321-A Pivot Bracket Base Weight: .08 Adder Per Inch of Stroke: .04	 See page 12 for length calculation of fractional stroke for single acting cylinders.
02 ☐ -D 	Double Acting – Air Return – Front Nose Mounting Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 2-1/2", 3", 4" Maximum Stroke – 12" Stainless Steel Rod Standard Optional Accessory: D-770 Mounting Bracket Base Weight: .09 Adder Per Inch of Stroke: .02	 See page 12 for length calculation of fractional stroke for single acting cylinders.
02 ☐ -DXP 	Double Acting – Double End or Rear Pivot 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: D-770 Mounting Bracket D-850 Rod Clevis D-12321-A Pivot Bracket Base Weight: .09 Adder Per Inch of Stroke: .02	
02 ☐ -DXDE 	Double Acting – Double End Rod – Air Return – Double End Mounting Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 2-1/2", 3", 4" Maximum Stroke – 6" Stainless Steel Rod Standard Optional Accessory: D-770 Mounting Bracket Base Weight: .16 Adder Per Inch of Stroke: .03	

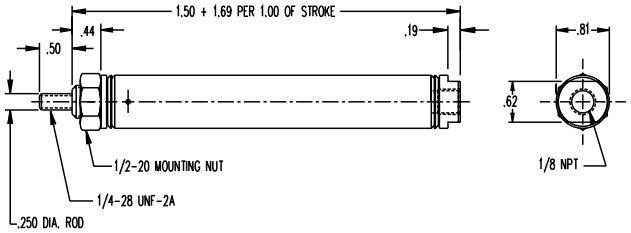
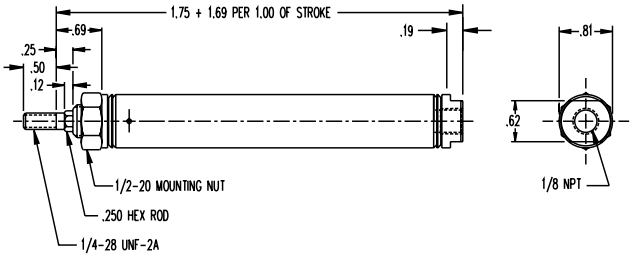
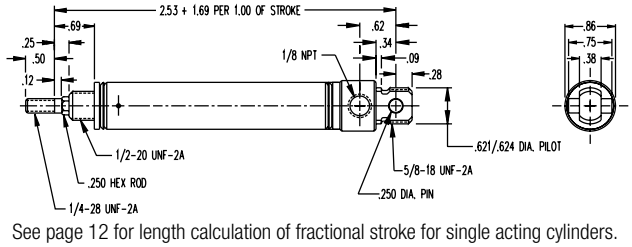
3/4" Bore Air Cylinders

> 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: 3lbs Relaxed — 6lbs Compressed
> Rod Wipers Available on D, DP, DXP and DXDE Models

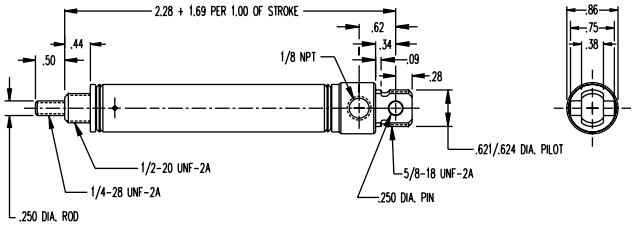
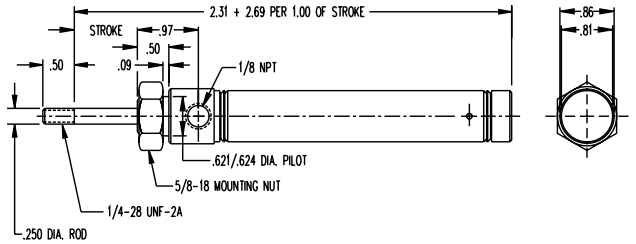
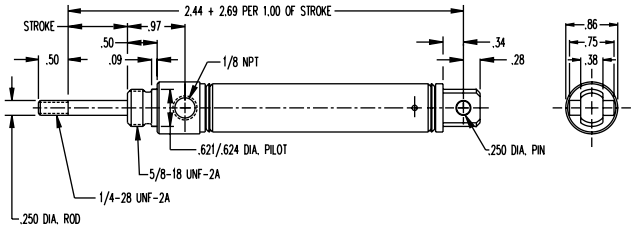
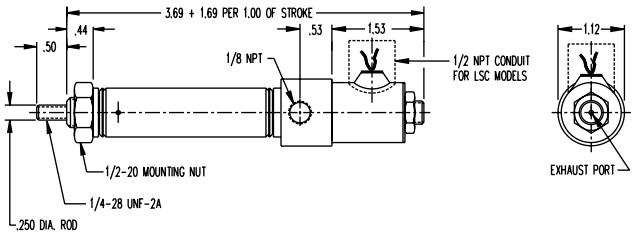
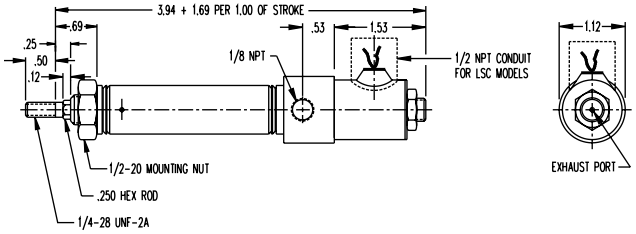
Options:

> **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)**
» DXDE, extension added to each end
> **Double Acting Failsafe**
» (JS = Spring Return, JR = Spring Extend)
» See pages 55-56 for overall length adders
> **Rod Wiper (W) (not available in standard single acting)**
» Now available in block mount
> **Heavy Spring (H) (available on single acting and reverse acting)**
» 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 57 for track location details. See the Switch Products chapter 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

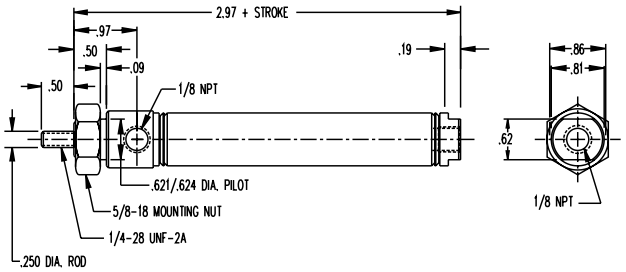
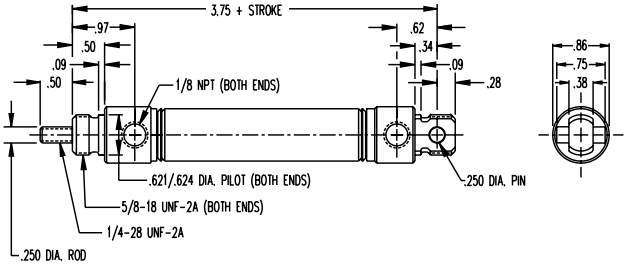
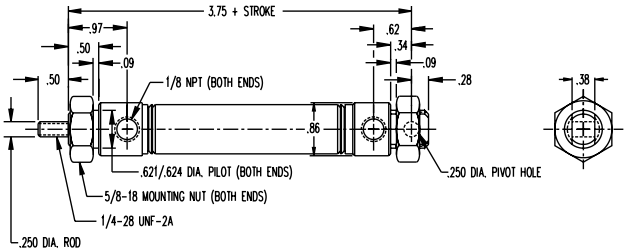
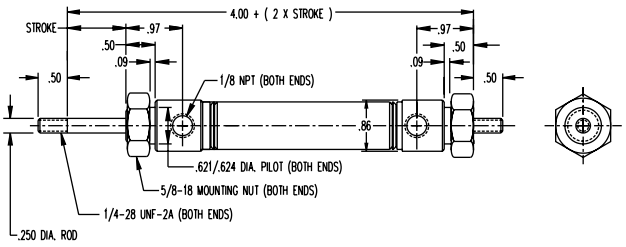
☐ Enter Stroke Length as 3rd Digit

Model	Description/Weight (lbs)	Dimensions
04☐ 	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-226 Mounting Bracket Base Weight: .10 Adder Per Inch of Stroke: .08	 See page 12 for length calculation of fractional stroke for single acting cylinders.
04☐-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-226 Mounting Bracket Base Weight: .10 Adder Per Inch of Stroke: .08	 See page 12 for length calculation of fractional stroke for single acting cylinders.
04☐-NRP 	Single Acting – Non-rotating Hexagon Rod – Pivot Type – Spring Return – Rear Pivot Mounting 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-166-3 Piston Rod Clevis D-167 Pivot Brackets Base Weight: .12 Adder Per Inch of Stroke: .08	 See page 12 for length calculation of fractional stroke for single acting cylinders.

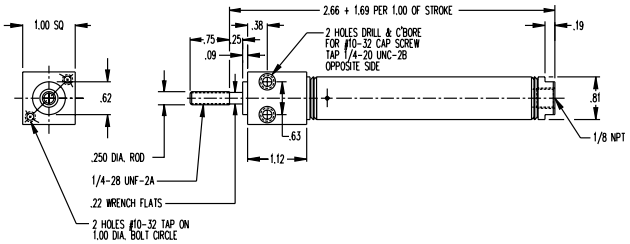
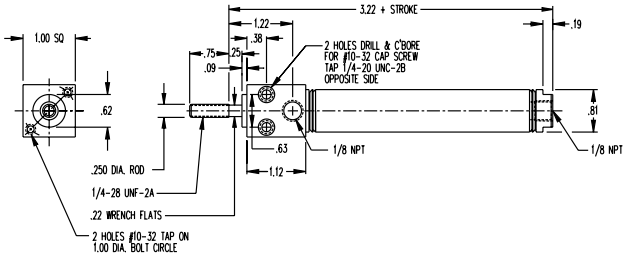
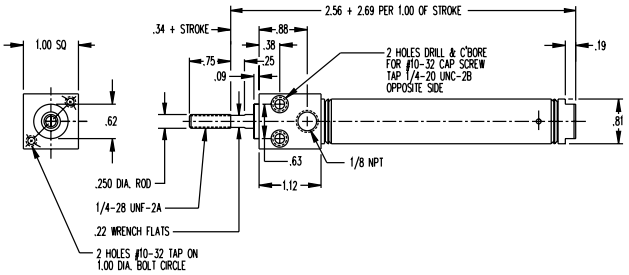
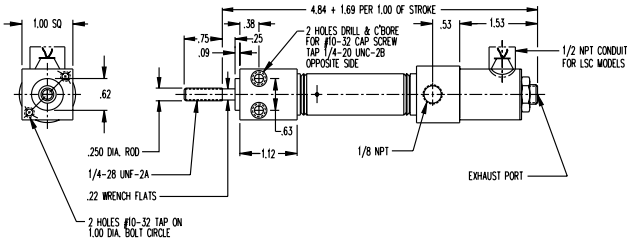
3/4" Bore Air Cylinders

Model	Description/Weight (lbs)	Dimensions
04 ☐ -P 	Single Acting – Pivot Type – Spring Return – Rear Pivot Mounting 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-166-3 Piston Rod Clevis D-167 Pivot Brackets Base Weight: .13 Adder Per Inch of Stroke: .08	 See page 12 for length calculation of fractional stroke for single acting cylinders.
04 ☐ -R 	Reverse Single Acting – Pull Type – Rod Normally Extended – 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: .18 Adder Per Inch of Stroke: .07	 See page 12 for length calculation of fractional stroke for single acting cylinders.
04 ☐ -RP 	Reverse Single Acting – Pivot and Pull Type – Rod Normally Extended – Spring Return – Rear Pivot Mounting 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-166-3 Piston Rod Clevis D-167 Pivot Brackets Base Weight: .18 Adder Per Inch of Stroke: .07	 See page 12 for length calculation of fractional stroke for single acting cylinders.
04 ☐ -LS or LSC (Conduit Outlet) 	Single Acting – Built-in Midget 3- Way Solenoid Operated Valve – Spring Return – Front Nose Mounting – 150 psi, 3/64" Orifice Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 2-1/2", 3", 4" Maximum Stroke – 6" Optional Stainless Steel Rod Standard Voltage – 115/60 Optional Voltages: 24, 230 A.C. or 6, 12, 24 D.C. Optional Accessory: D-226 Mounting Bracket Base Weight: .38 Adder Per Inch of Stroke: .08	 See page 12 for length calculation of fractional stroke for single acting cylinders.
04 ☐ -NRLS or NRLSC (Conduit Outlet) 	Single Acting – Non-rotating Hexagon Piston Rod – Built-in Midget 3-Way Solenoid Operated Valve – Spring Return – Front Nose Mounting – 150 psi, 3/64" Orifice Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 2-1/2", 3", 4" Maximum Stroke – 6" Optional Stainless Steel Rod Standard Voltage – 115/60 Optional Voltages: 24, 230 A.C. or 6, 12, 24 D.C. Optional Accessory: D-226 Mounting Bracket Base Weight: .46 Adder Per Inch of Stroke: .08	 See page 12 for length calculation of fractional stroke for single acting cylinders.

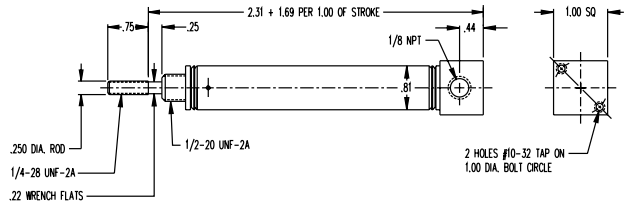
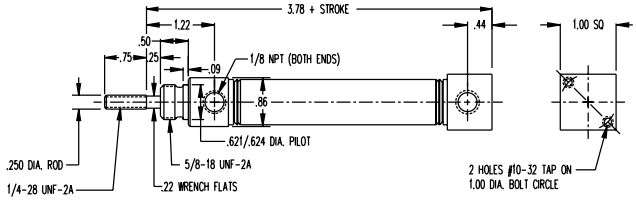
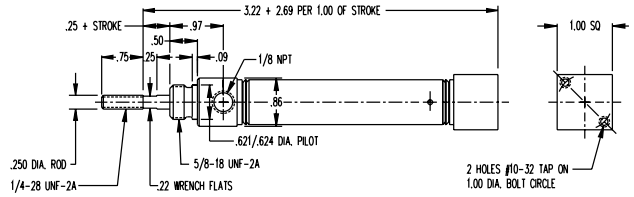
3/4" Bore Air Cylinders

Model	Description/Weight (lbs)	Dimensions
04 ☐ -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 Rod Wiper Optional Accessory: D-129 Mounting Bracket Base Weight: .21 Adder Per Inch of Stroke: .03	 See page 12 for length calculation of fractional stroke for single acting cylinders.
04 ☐ -DP 	Double Acting – Pivot Type – Air Return – Rear Pivot Mounting 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 Stainless Steel Rod Optional Rod Wiper Optional Accessories: D-166-3 Piston Rod Clevis D-167 Pivot Brackets Base Weight: .21 Adder Per Inch of Stroke: .03	 See page 12 for length calculation of fractional stroke for single acting cylinders.
04 ☐ -DXP 	Double Acting – Double End or Rear Pivot Mounting – Air Return 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 Accessories: D-129 Mounting Bracket D-13498-A Pivot Bracket D-166-3 Piston Rod Clevis Base Weight: .29 Adder Per Inch of Stroke: .03	
04 ☐ -DXDE 	Double Acting – Double End Rod – Air Return – Double End Mounting 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-129 Mounting Bracket Base Weight: .37 Adder Per Inch of Stroke: .04	

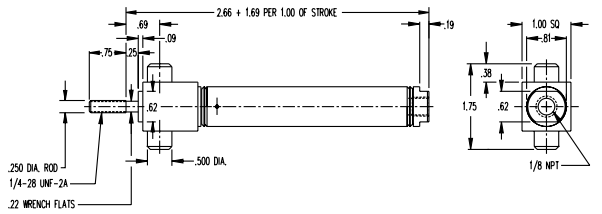
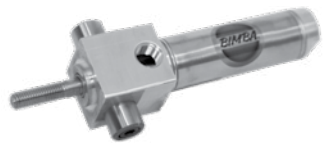
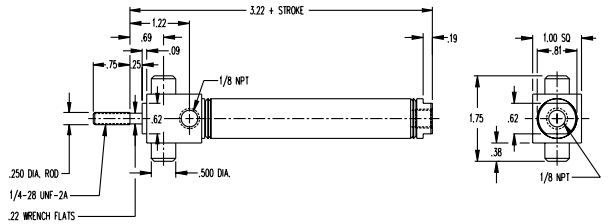
3/4" Bore Block Mounted Air Cylinders

Model	Description/Weight (lbs)	Dimensions
BF-04 ☐ 	Single Acting – Front Block 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 Base Weight: .18 Adder Per Inch of Stroke: .08	 See page 12 for length calculation of fractional stroke for single acting cylinders.
BF-04 ☐ -D 	Double Acting – Front Block Mounting – 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: .22 Adder Per Inch of Stroke: .03	
BF-04 ☐ -R 	Pull Type – Front Block Mounting – 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: .19 Adder Per Inch of Stroke: .07	 See page 12 for length calculation of fractional stroke for single acting cylinders.
BF-04 ☐ -LS or LSC 	Built-in Midget 3-Way Solenoid Operated Valve – Single Acting – Spring Return – Front Block Mounting – 150 psi, 3/64" Orifice Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 2-1/2", 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: .38 Adder Per Inch of Stroke: .08	 See page 12 for length calculation of fractional stroke for single acting cylinders.

3/4" Bore Block Mounted Air Cylinders

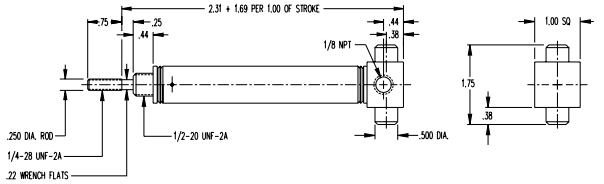
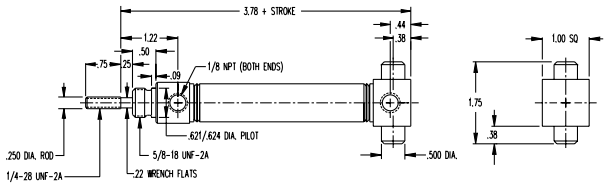
Model	Description/Weight (lbs)	Dimensions
BR-04 ☐ 	Single Acting – Rear Block – Mounting for Vertical Positioning – Spring Return Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 2-1/2", 3", 4" Maximum Stroke – 6" Stainless Steel Rod Standard Base Weight: .15 Adder Per Inch of Stroke: .08	 See page 12 for length calculation of fractional stroke for single acting cylinders.
BR-04 ☐ -D 	Double Acting – 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: .26 Adder Per Inch of Stroke: .08	 See page 12 for length calculation of fractional stroke for single acting cylinders.
BR-04 ☐ -R 	Pull Type – 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: .15 Adder Per Inch of Stroke: .08	 See page 12 for length calculation of fractional stroke for single acting cylinders.

3/4" Bore Trunnion Mounted Air Cylinders

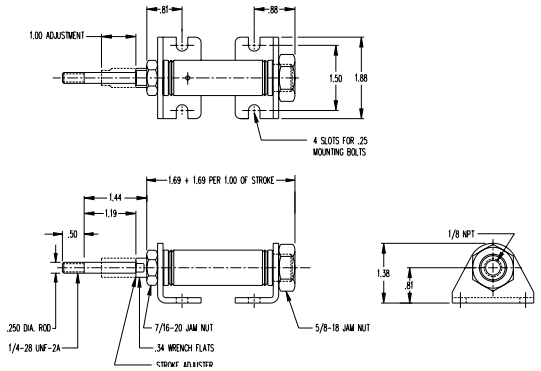
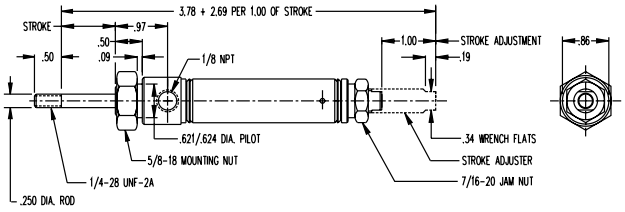
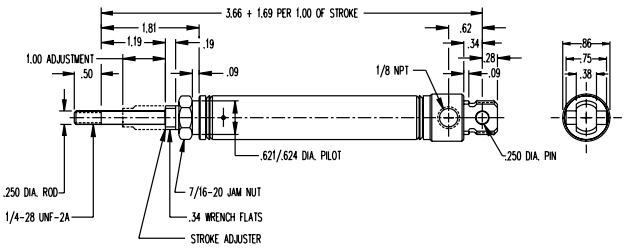
Model	Description/Weight (lbs)	Dimensions
BFT-04 ☐ 	Single Acting – Front Block Trunnion Mounting – Spring Return Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 2-1/2", 3", 4" Maximum Stroke – 6" Stainless Steel Rod Standard Optional Accessories: TRB-2 Trunnion Brackets D-166-3 Rod Clevis Base Weight: .24 Adder Per Inch of Stroke: .08	 See page 12 for length calculation of fractional stroke for single acting cylinders.
BFT-04 ☐ -D 	Double Acting – 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-166-3 Rod Clevis Base Weight: .29 Adder Per Inch of Stroke: .03	

How to Specify

3/4" Bore Trunnion Mounted Air Cylinders

Model	Description/Weight (lbs)	Dimensions
BRT-04 ☐ 	Single Acting – 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-166-3 Rod Clevis Base Weight: .19 Adder Per Inch of Stroke: .08	 See page 12 for length calculation of fractional stroke for single acting cylinders.
BRT-04 ☐ -D 	Double Acting – Rear 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-166-3 Rod Clevis Base Weight: .28 Adder Per Inch of Stroke: .03	

3/4" Bore Adjustable Stroke Air Cylinders

Model	Description/Weight (lbs)	Dimensions
04 ☐ -A 	Single Acting – Spring Return – Adjustable Stroke – Double End Mounting – Brass Piston Rod Bearing and Stroke Adjustment in 1", 2", 3". Mounting Brackets are included. 1" Stroke Adjusts 0" – 1", 2" Stroke 1" – 2", and 3" Stroke 2" – 3" Maximum Stroke – 6" Optional Stainless Steel Rod Base Weight: .40 Adder Per Inch of Stroke: .07	 See page 12 for length calculation of fractional stroke for single acting cylinders.
04 ☐ -RA 	Reverse Single Acting – Pull Type – Rod Normally Extended – Nose Mounting – Stroke Adjustment in 1", 2", 3". 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 Bracket Base Weight: .23 Adder Per Inch of Stroke: .07	 See page 12 for length calculation of fractional stroke for single acting cylinders.
04 ☐ -AP 	Single Acting – Pivot Type – Rear Pivot Mounting – Stroke Adjustment in 1", 2", 3". 1" Stroke Adjusts 0" – 1", 2" Stroke 1" – 2", and 3" Stroke 2" – 3" Maximum Stroke – 6" Optional Stainless Steel Rod Optional Accessories: D-166-3 Piston Rod Clevis D-167 Pivot Brackets Base Weight: .23 Adder Per Inch of Stroke: .07	 See page 12 for length calculation of fractional stroke for single acting cylinders.

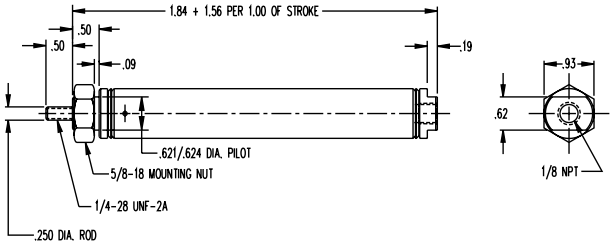
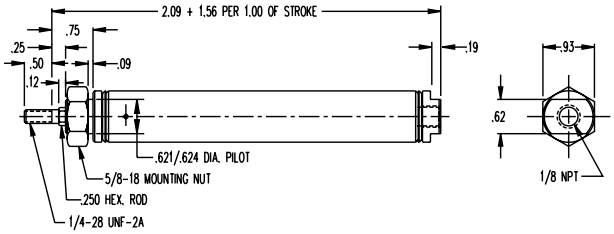
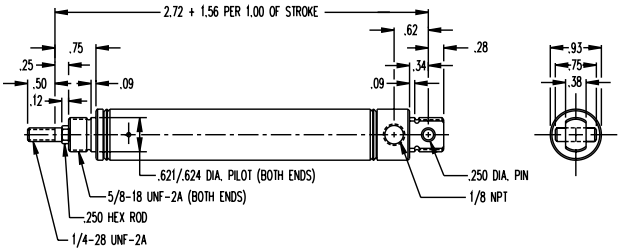
7/8" Bore Air Cylinders

> 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: 3lbs Relaxed — 6lbs Compressed
> Cushion Quiet Bumpers Standard on All Models

Options:

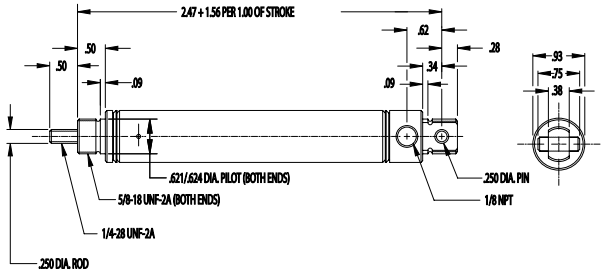
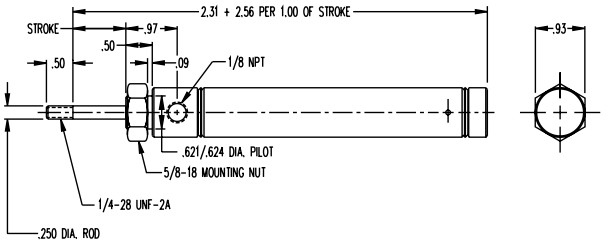
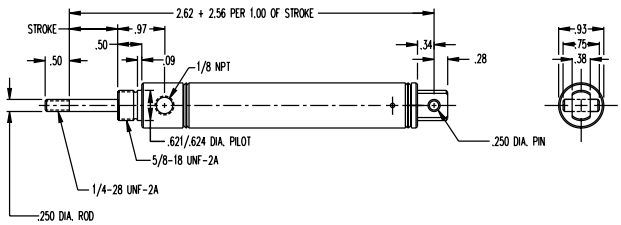
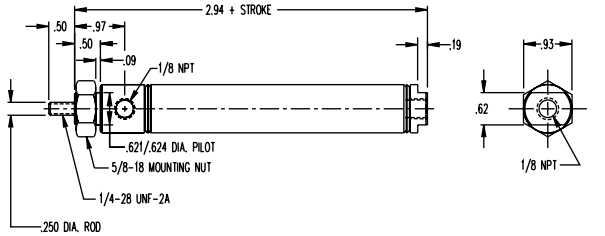
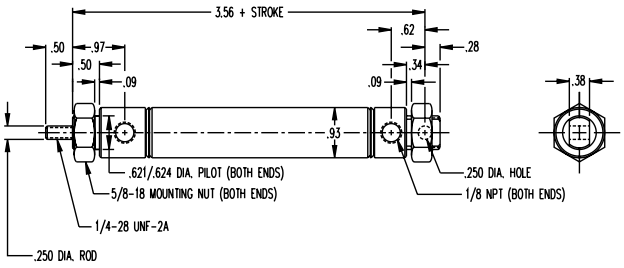
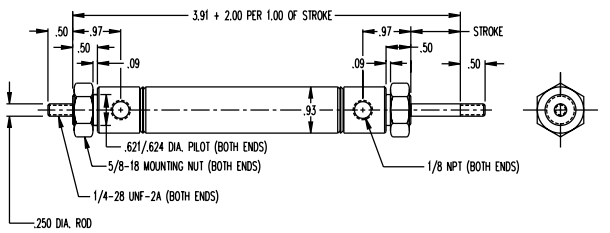
> **Ports Rotated (K)**
> **No Thread (NT)**
> **Side Ported Rear Head (Q)**
» Add .28" to nose mount overall length
> **Pivot Bushing (Y)**
» .250" ID
> **Extra Extension (EE)**
» DXDE, extension added to each end
> **Double Acting Failsafe**
» (JS = Spring Return, JR = Spring Extend)
» See pages 55-56 for overall length adders
> **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 57 for track location details. See Switch Products 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

☐ Enter Stroke Length as 3rd Digit

Model	Description/Weight (lbs)	Dimensions
06☐ 	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: .17 Adder Per Inch of Stroke: .09	 See page 12 for length calculation of fractional stroke for single acting cylinders.
06☐-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: .17 Adder Per Inch of Stroke: .09	 See page 12 for length calculation of fractional stroke for single acting cylinders.
06☐-NRP 	Single Acting – Non-rotating Hexagon Rod – Pivot Type – Spring Return – Rear Pivot Mounting 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-166-3 Piston Rod Clevis D-167 Pivot Brackets Base Weight: .17 Adder Per Inch of Stroke: .09	 See page 12 for length calculation of fractional stroke for single acting cylinders.

How to Specify

7/8" Bore Air Cylinders

Model	Description/Weight (lbs)	Dimensions
06 ☐ -P 	Single Acting – Pivot Type – Spring Return – Rear Pivot Mounting 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-166-3 Piston Rod Clevis D-167 Pivot Brackets Base Weight: .17 Adder Per Inch of Stroke: .09	 See page 12 for length calculation of fractional stroke for single acting cylinders.
06 ☐ -R 	Reverse Single Acting – Pull Type –Rod Normally Extended – 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: .20 Adder Per Inch of Stroke: .09	 See page 12 for length calculation of fractional stroke for single acting cylinders.
06 ☐ -RP 	Reverse Single Acting – Pivot and Pull Type – Rod Normally Extended – Spring Return – Rear Pivot Mounting 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-166-3 Piston Rod Clevis D-167 Pivot Brackets Base Weight: .20 Adder Per Inch of Stroke: .09	 See page 12 for length calculation of fractional stroke for single acting cylinders.
06 ☐ -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 Accessory: D-129 Mounting Bracket Base Weight: .25 Adder Per Inch of Stroke: .03	
06 ☐ -DXP 	Double Acting – Double End or Rear Pivot Mounting – Air Return 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 Accessories: D-166-3 Piston Rod Clevis D-129 Mounting Bracket D-13498-A Pivot Bracket Base Weight: .32 Adder Per Inch of Stroke: .03	
06 ☐ -DXDE 	Double Acting – Double End Rod – Air Return – Double End Mounting 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-129 Mounting Bracket Base Weight: .39 Adder Per Inch of Stroke: .06	

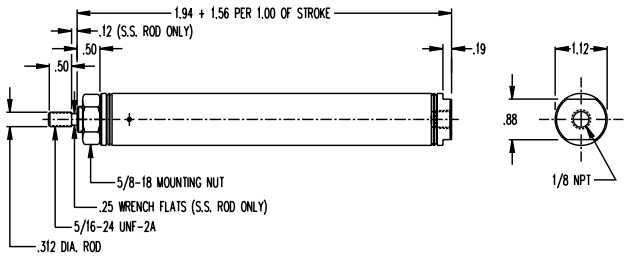
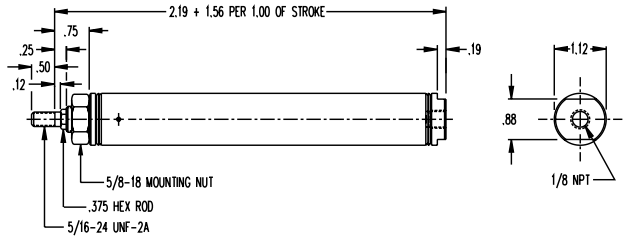
1-1/16" Bore Air Cylinders

> 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: 3lbs Relaxed — 6lbs Compressed
> Rod Wipers Available on D, DP, DX and DXDE Models

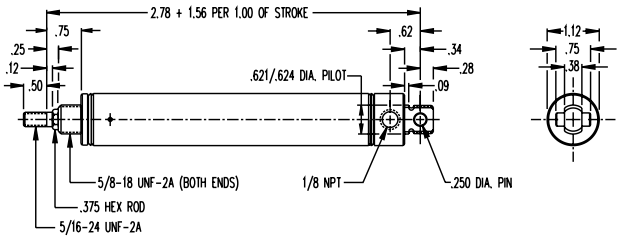
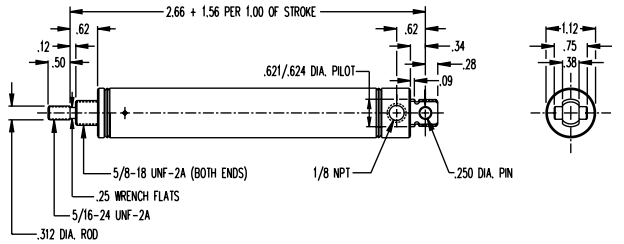
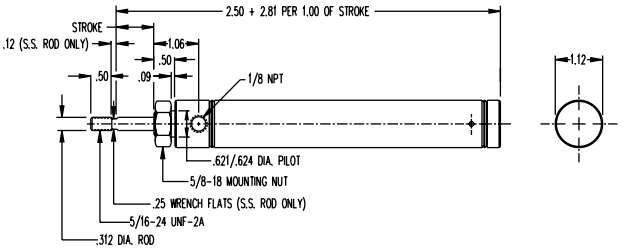
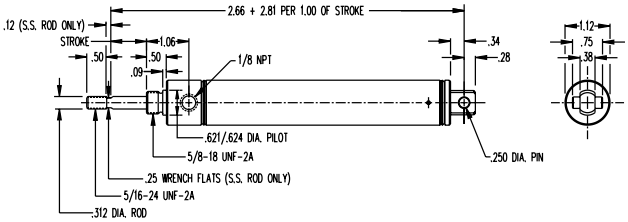
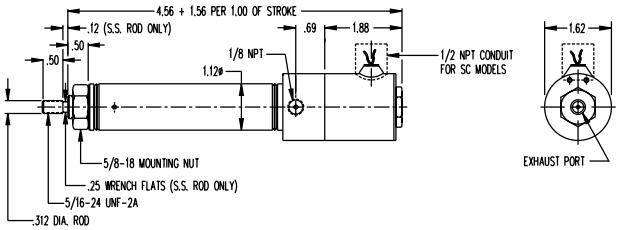
Options:

> **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)**
» DXDE, extension added to each end
» DXDE hollow rod, extension added to each end
> **Double Acting Failsafe**
» (JS = Spring Return, JR = Spring Extend)
» See pages 55-56 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
> **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 57 for track location details. See Switch Products, 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, All block mountings and M option

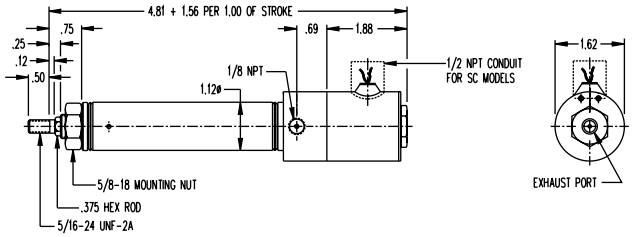
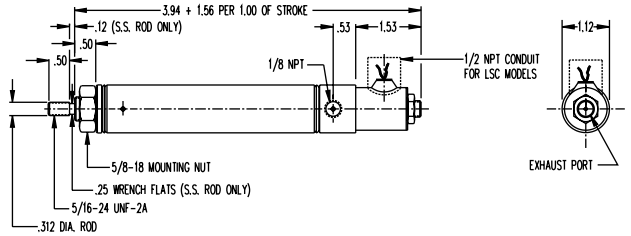
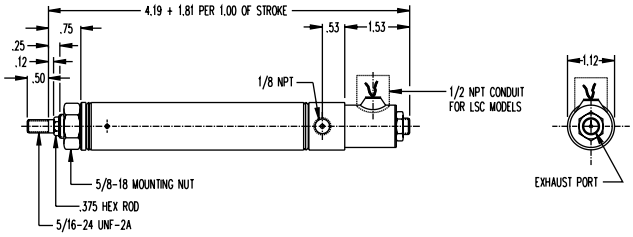
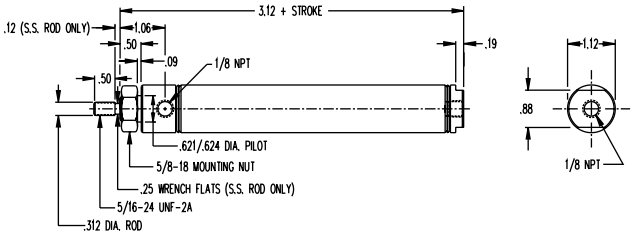
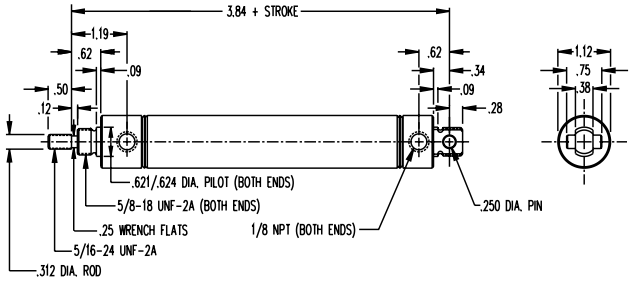
☐ Enter Stroke Length as 3rd Digit

Model	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 12 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 12 for length calculation of fractional stroke for single acting cylinders.

1-1/16" Bore Air Cylinders

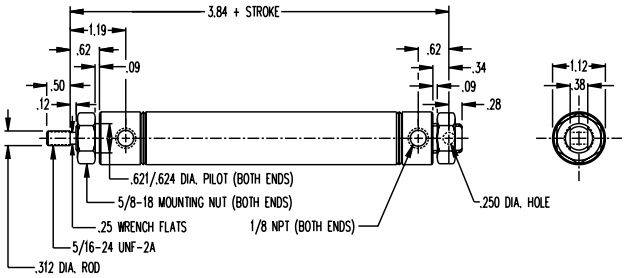
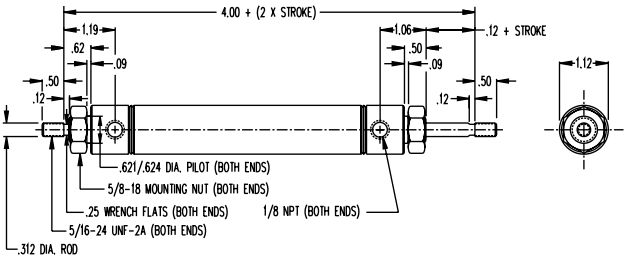
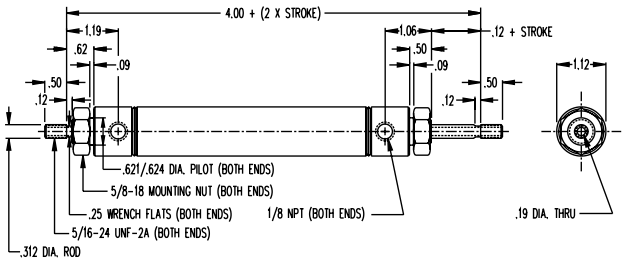
Model	Description/Weight (lbs)	Dimensions
09☐-NRP 	Single Acting – Non-Rotating Hexagon Rod – Pivot Type – Spring Return – Rear Pivot Mounting Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 2-1/2", 3", 4" Maximum Stroke – 6" Optional Stainless Steel Rod Optional Accessories: D-166-1 Piston Rod Clevis D-167 Pivot Brackets Base Weight: .25 Adder Per Inch of Stroke: .12	 See page 12 for length calculation of fractional stroke for single acting cylinders.
09☐-P 	Single Acting – Pivot Type – Spring Return – Rear Pivot Mounting 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-166-1 Piston Rod Clevis D-167 Pivot Brackets Base Weight: .24 Adder Per Inch of Stroke: .11	 See page 12 for length calculation of fractional stroke for single acting cylinders.
09☐-R 	Reverse Single Acting – Pull Type – Rod Normally Extended – 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: .24 Adder Per Inch of Stroke: .16	 See page 12 for length calculation of fractional stroke for single acting cylinders.
09☐-RP 	Reverse Single Acting – Pivot and Pull Type – Rod Normally Extended – Spring Return – Rear Pivot Mounting 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-166-1 Piston Rod Clevis D-167 Pivot Brackets Base Weight: .22 Adder Per Inch of Stroke: .16	 See page 12 for length calculation of fractional stroke for single acting cylinders.
09☐-S or SC 	Single Acting – Built-in 3-Way Solenoid Operated Valve – Spring Return – Front Nose Mounting – 150 psi, 1/16" Orifice Standard – 150 psi, 3/64" Orifice Optional Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 2-1/2", 3", 4" Maximum Stroke – 6" Optional Stainless Steel Rod Standard Voltage – 115/60 Optional Voltages: 24, 230 A.C. or 6, 12, 24 D.C. Optional Accessory: D-129 Mounting Bracket Base Weight: 1.11 Adder Per Inch of Stroke: .11	 See page 12 for length calculation of fractional stroke for single acting cylinders.

1-1/16" Bore Air Cylinders

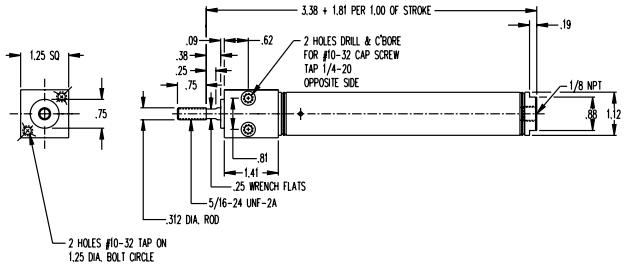
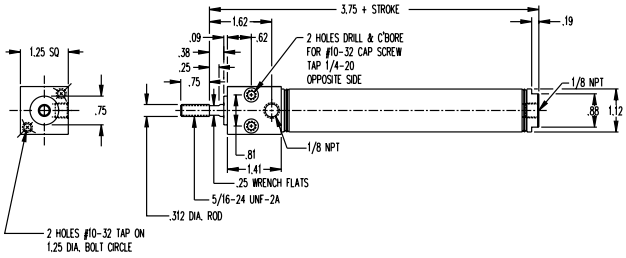
Model	Description/Weight (lbs)	Dimensions
09 ☐ -NRS or NRSC 	Single Acting – Built-in 3-Way Solenoid Operated Valve – Non-rotating Hexagon Piston Rod – Spring Return – Front Nose Mounting – 150 psi, 1/16" Orifice Standard – 150 psi, 3/64" Orifice Optional Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 2-1/2", 3", 4" Maximum Stroke – 6" Optional Stainless Steel Rod Standard Voltage – 115/60 Optional Voltages: 24, 230 A.C. or 6, 12, 24 D.C. Optional Accessory: D-129 Mounting Bracket Base Weight: 1.13 Adder Per Inch of Stroke: .12	 See page 12 for length calculation of fractional stroke for single acting cylinders.
09 ☐ -LS or LSC 	Single Acting – Built-in Midget 3-Way Solenoid Operated Valve – Spring Return – Front Nose Mounting – 150 psi, 3/64" Orifice Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 2-1/2", 3", 4" Maximum Stroke – 6" Optional Stainless Steel Rod Standard Voltage – 115/60 Optional Voltages: 24, 230 A.C. or 6, 12, 24 D.C. Optional Accessory: D-129 Mounting Bracket Base Weight: 1.20 Adder Per Inch of Stroke: .11	 See page 12 for length calculation of fractional stroke for single acting cylinders.
09 ☐ -NRLS or NRLSC 	Single Acting – Non-rotating Hexagon Piston Rod – Built-in Midget 3-Way Solenoid Operated Valve – Spring Return – Front Nose Mounting – 150 psi, 3/64" Orifice Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 2-1/2", 3", 4" Maximum Stroke – 6" Optional Stainless Steel Rod Standard Voltage – 115/60 Optional Voltages: 24, 230 A.C. or 6, 12, 24 D.C. Optional Accessory: D-129 Mounting Bracket Base Weight: 1.20 Adder Per Inch of Stroke: .11	 See page 12 for length calculation of fractional stroke for single acting cylinders.
09 ☐ -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 Rod Wiper Optional Accessory: D-129 Mounting Bracket Base Weight: .33 Adder Per Inch of Stroke: .05	
09 ☐ -DP 	Double Acting – Pivot Type – Air Return – Rear Pivot Mounting 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 Stainless Steel Rod Optional Rod Wiper Optional Accessories: D-166-1 Piston Rod Clevis D-167 Pivot Bracket Base Weight: .33 Adder Per Inch of Stroke: .05	

How to Specify

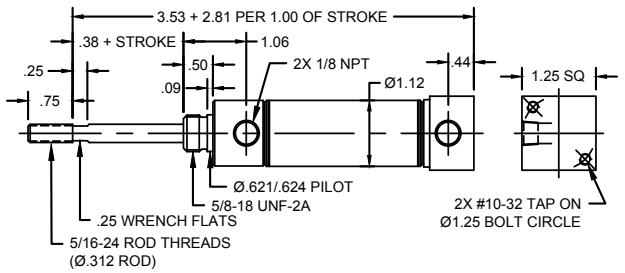
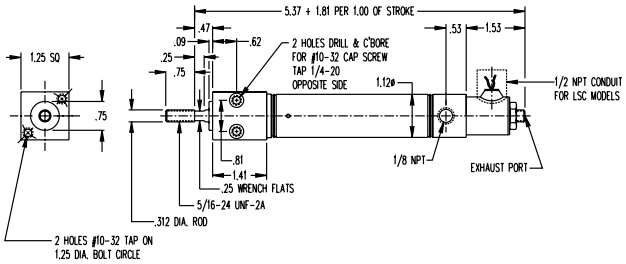
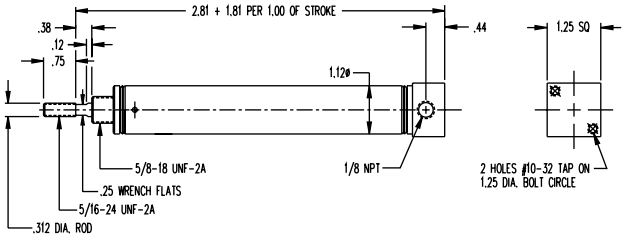
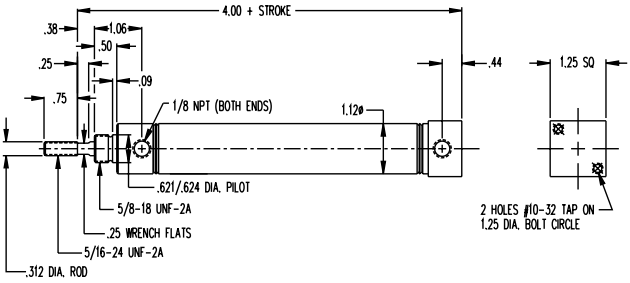
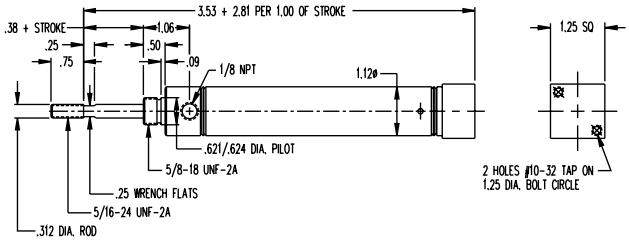
1-1/16" Bore Air Cylinders

Model	Description/Weight (lbs)	Dimensions
09 ☐ -DX 	Double Acting – Universal Mounting Pivot, or Double End Mounting – Air Return 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 Accessories: D-13498-A Pivot Bracket D-129 Mounting Bracket D-166-1 Piston Rod Clevis Base Weight: .33 Adder Per Inch of Stroke: .05	
09 ☐ -DXDE 	Double Acting – Double End Rod – Air Return – Double End Mounting 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-129 Mounting Bracket Base Weight: .48 Adder Per Inch of Stroke: .07	
09 ☐ -DXDEH 	Double Acting – Double End Hollow Rod – Air Return – Double End Mounting 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-129 Mounting Bracket Base Weight: .47 Adder Per Inch of Stroke: .07	

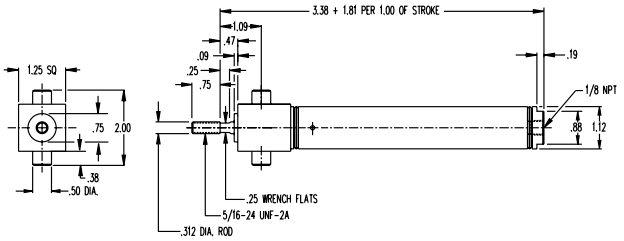
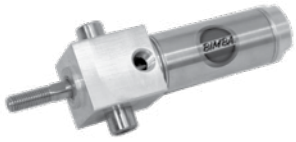
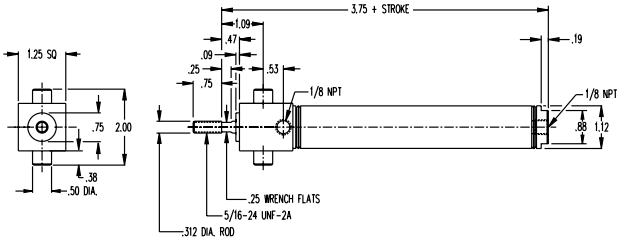
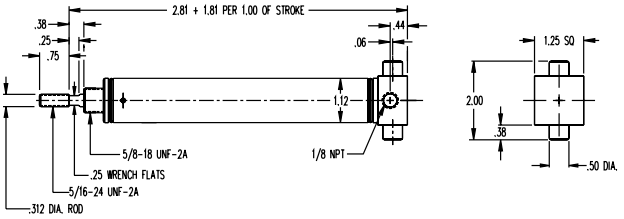
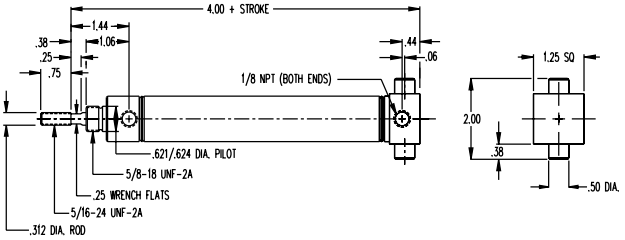
1-1/16" Bore Block Mounted (Spring Force: 6lbs Retracted, 12lbs Extended)

Model	Description/Weight (lbs)	Dimensions
BF-09 ☐ 	Single Acting – Front Block 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 Base Weight: .43 Adder Per Inch of Stroke: .11	 See page 12 for length calculation of fractional stroke for single acting cylinders.
BF-09 ☐ -D 	Double Acting – Front Block Mounting – 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: .49 Adder Per Inch of Stroke: .05	

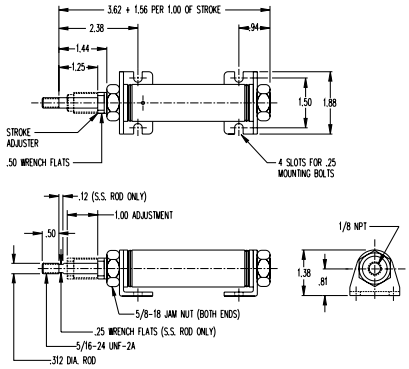
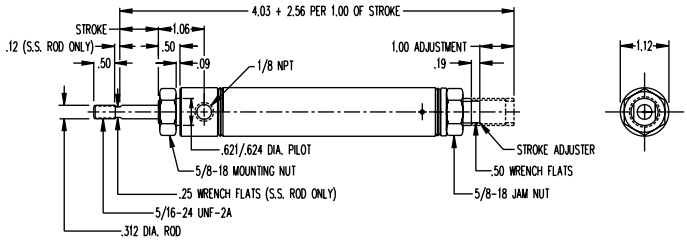
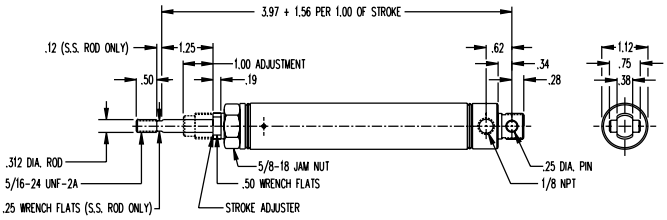
1-1/16” Bore Block Mounted (Spring Force: 6lbs Retracted, 12lbs Extended)

Model	Description/Weight (lbs)	Dimensions
BF-09 ☐ -R 	Pull Type – Front Block Mounting – 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: .36 Adder Per Inch of Stroke: .16	 See page 12 for length calculation of fractional stroke for single acting cylinders.
BF-09 ☐ -LS or LSC 	Built-in Midget 3-Way Solenoid Operated Valve – Single Acting – Spring Return – Front Block Mounting – 150 psi, 3/64" Orifice Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 2-1/2", 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	 See page 12 for length calculation of fractional stroke for single acting cylinders.
BR-09 ☐ 	Single Acting – Rear Block Mounting for Vertical Positioning – 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: .36 Adder Per Inch of Stroke: .16	 See page 12 for length calculation of fractional stroke for single acting cylinders.
BR-09 ☐ -D 	Double Acting – Rear Block Mounting for Vertical Positioning – Air Return Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 2-1/2", 3", 4" Maximum Stroke – 12" Stainless Steel Rod Standard Base Weight: .39 Adder Per Inch of Stroke: .05	 See page 12 for length calculation of fractional stroke for single acting cylinders.
BR-09 ☐ -R 	Pull Type – 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: .32 Adder Per Inch of Stroke: .16	 See page 12 for length calculation of fractional stroke for single acting cylinders.

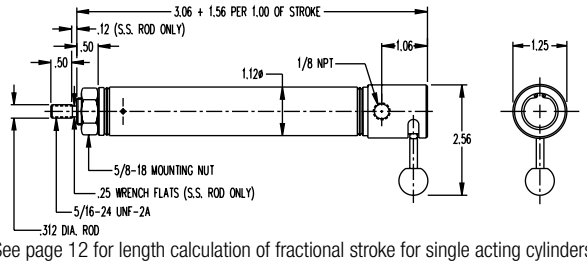
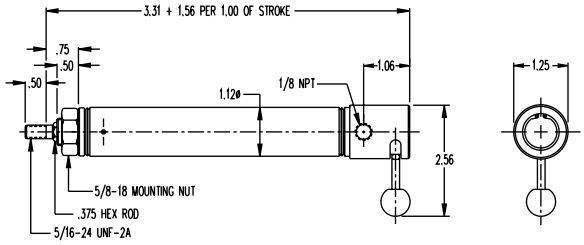
1-1/16" Bore Trunnion Mounted (Spring Force: 6lbs Retracted, 13lbs Extended)

Model	Description/weight (lbs)	Dimensions
BFT-09 ☐ 	Single Acting – 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-166-1 Rod Clevis Base Weight: .45 Adder Per Inch of Stroke: .11	 See page 12 for length calculation of fractional stroke for single acting cylinders.
BFT-09 ☐ -D 	Double Acting – 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-166-1 Rod Clevis Base Weight: .49 Adder Per Inch of Stroke: .05	
BRT-09 ☐ 	Single Acting – 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-166-1 Rod Clevis Base Weight: .37 Adder Per Inch of Stroke: .11	 See page 12 for length calculation of fractional stroke for single acting cylinders.
BRT-09 ☐ -D 	Double Acting – Rear 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-166-1 Rod Clevis Base Weight: .43 Adder Per Inch of Stroke: .05	

1-1/16” Bore Block Mounted (Spring Force: 6lbs Retracted, 12lbs Extended)

Model	Description/Weight (lbs)	Dimensions
09☐-A 	Single Acting – Spring Return – Adjustable Stroke – Double End Mounting – Brass Piston Rod Bearing and Stroke Adjustment in 1", 2", 3" 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	 See page 12 for length calculation of fractional stroke for single acting cylinders.
09☐-RA 	Reverse Single Acting – Pull Type – Rod Normally Extended – Spring Force: 6 lbs. Retracted, 3 lbs. Extended – Nose Mounting – Stroke Adjustment in 1", 2", 3". 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	 See page 12 for length calculation of fractional stroke for single acting cylinders.
09☐-AP 	Single Acting – Pivot Type – Rear Pivot Mounting – Stroke Adjustment in 1", 2", 3" 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	 See page 12 for length calculation of fractional stroke for single acting cylinders.

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

Model	Description/Weight (lbs)	Dimensions
09☐-M 	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" Maximum Stroke – 6" Optional Stainless Steel Rod Optional Accessory: D-129 Mounting Bracket Base Weight: .45 Adder Per Inch of Stroke: .11	 See page 12 for length calculation of fractional stroke for single acting cylinders.
09☐-NRM 	Single Acting – Built-in 3-Way Manual Valve – Non-rotating Hexagon Rod – Spring Return 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: .47 Adder Per Inch of Stroke: .12	 See page 12 for length calculation of fractional stroke for single acting cylinders.

How to Specify

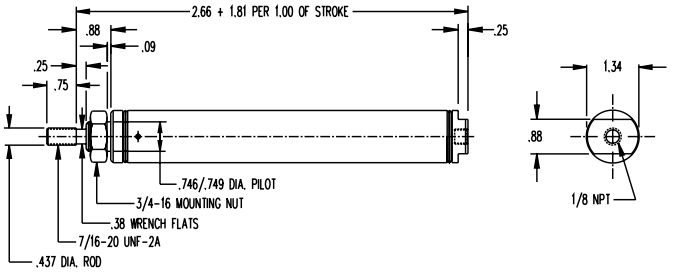
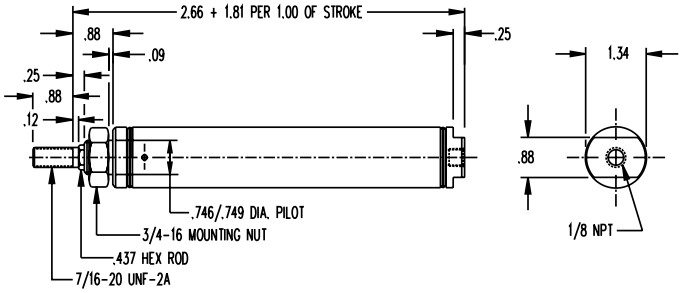
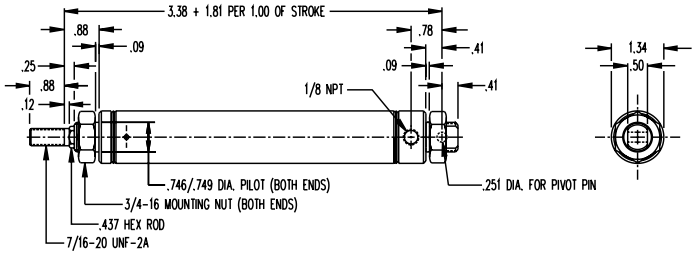
1-1/4" Bore Air Cylinders

> 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: 7.5lbs Relaxed — 15lbs Compressed
> Cushion Quiet Bumpers Standard

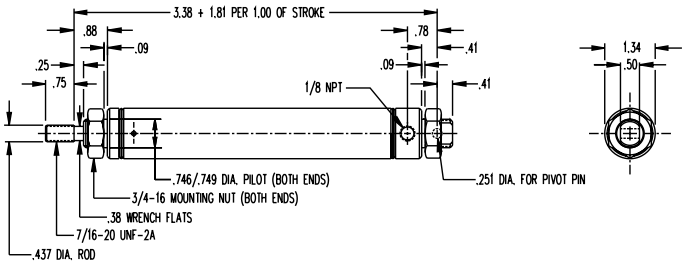
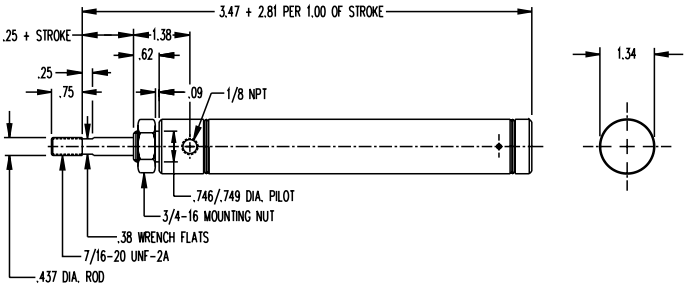
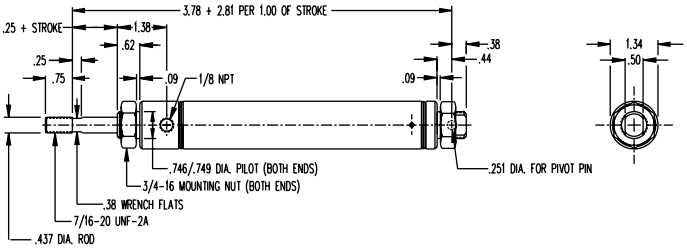
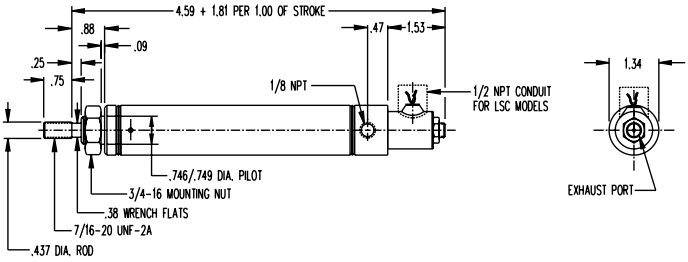
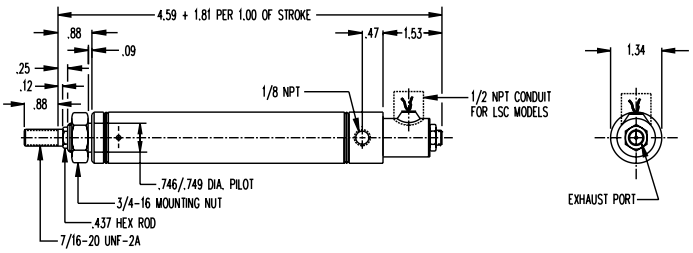
Options:

> **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)**
» DXDE, extension added to each end
» DXDE hollow rod, extension added to each end
> **Double Acting Failsafe**
» (JS = Spring Return, JR = Spring Extend)
» See pages 55-56 for overall length adders
> **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 57 for track location details. See Switch Products 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

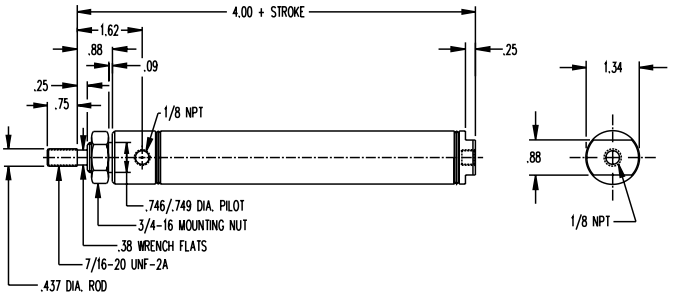
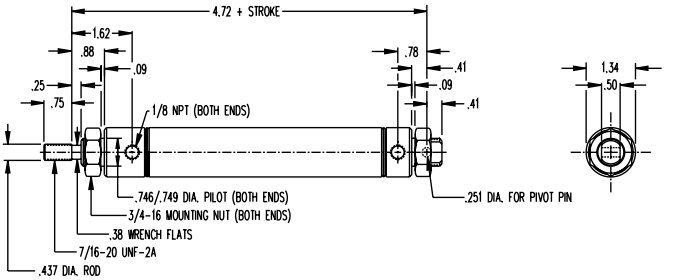
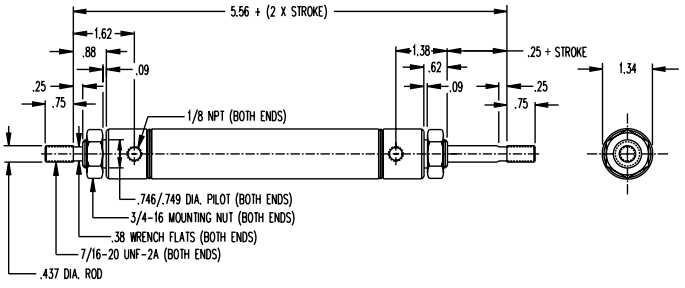
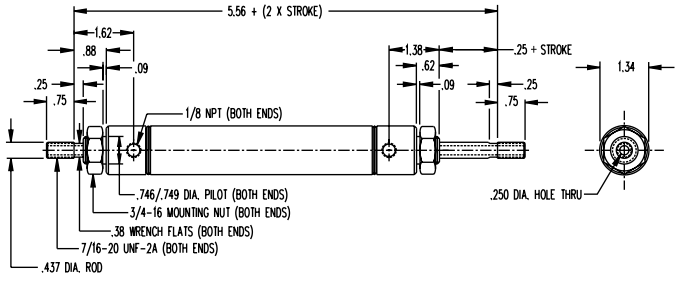
☐ Enter Stroke Length as 3rd Digit

Model	Description/Weight (lbs)	Dimensions
12☐ 	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: .39 Adder Per Inch of Stroke: .21	 See page 12 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: 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: .41 Adder Per Inch of Stroke: .20	 See page 12 for length calculation of fractional stroke for single acting cylinders.
12☐-NRP 	Single Acting – Non-rotating Hexagon Rod – Pivot Type – Spring Return – Rear Pivot or Double End Mounting 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-1360 Pivot Brackets Base Weight: .41 Adder Per Inch of Stroke: .20	 See page 12 for length calculation of fractional stroke for single acting cylinders.

1-1/4" Bore Air Cylinders

Model	Description/Weight (lbs)	Dimensions
12☐-P 	Single Acting – Pivot Type – Spring Return – Rear Pivot or Double End Mounting 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-1360 Pivot Brackets Base Weight: .53 Adder Per Inch of Stroke: .21	 See page 12 for length calculation of fractional stroke for single acting cylinders.
12☐-R 	Reverse Single Acting – Pull Type – Rod Normally Extended – 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: .50 Adder Per Inch of Stroke: .21	 See page 12 for length calculation of fractional stroke for single acting cylinders.
12☐-RP 	Reverse Single Acting – Pivot and Pull Type – Rod Normally Extended – Spring Return – Rear Pivot Mounting 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-1360 Pivot Bracket Base Weight: .57 Adder Per Inch of Stroke: .21	 See page 12 for length calculation of fractional stroke for single acting cylinders.
12☐-LS or LSC 	Single Acting – Built-in Midget 3-Way Solenoid Operated Valve – Spring Return – Front Nose Mounting – 150 psi, 3/64" Orifice Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 2-1/2", 3", 4" Maximum Stroke – 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 Base Weight: 1.30 Adder Per Inch of Stroke: .21	 See page 12 for length calculation of fractional stroke for single acting cylinders.
12☐-NRLS or NRLSC 	Single Acting – Non-rotating Hexagon Piston Rod – Built-in Midget 3-Way Solenoid Operated Valve – Spring Return – Front Nose Mounting – 150 psi, 3/64" Orifice Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 2-1/2", 3", 4" Maximum Stroke – 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 Base Weight: 1.30 Adder Per Inch of Stroke: .21	 See page 12 for length calculation of fractional stroke for single acting cylinders.

1-1/4" Bore Air Cylinders

Model	Description/Weight (lbs)	Dimensions
12☐-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 Accessory: D-241 Mounting Bracket Base Weight: .58 Adder Per Inch of Stroke: .08	 See page 12 for length calculation of fractional stroke for single acting cylinders.
12☐-DP 	Double Acting – Pivot Type – Air Return – Rear Pivot or Double End Mounting 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 Stainless Steel Rod Optional Accessories: D-231-1 Piston Rod Clevis D-1360 Pivot Brackets D-241 Mounting Bracket Base Weight: .71 Adder Per Inch of Stroke: .08	 See page 12 for length calculation of fractional stroke for single acting cylinders.
12☐-DXDE 	Double Acting – Double End Rod – Air Return – Double End Mounting 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 – 12" Stainless Steel Rod Standard Optional Accessory: D-241 Mounting Bracket Base Weight: .98 Adder Per Inch of Stroke: .12	
12☐-DXDEH 	Double Acting – Double End Hollow Rod – Air Return – Double End Mounting 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-241 Mounting Bracket Base Weight: .97 Adder Per Inch of Stroke: .12	

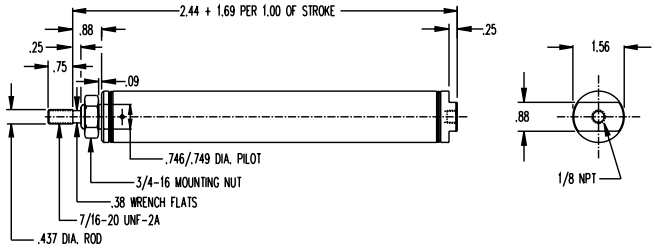
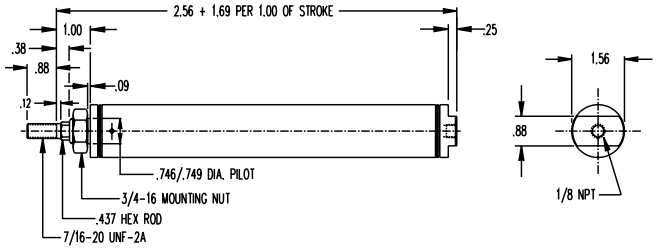
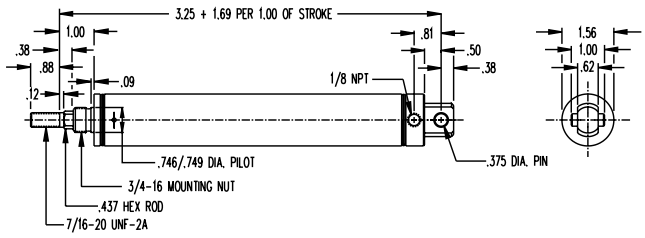
1-1/2" Bore Air Cylinders

> 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: 7lbs Relaxed — 14lbs Compressed
> Rod Wipers Available on D, DP, DX, DXDE, and DXDEH Models

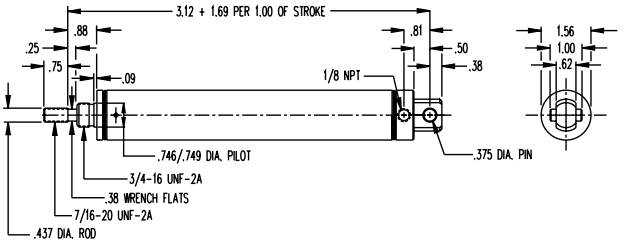
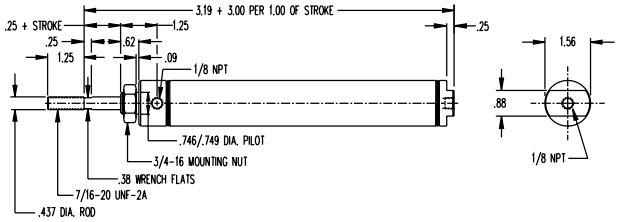
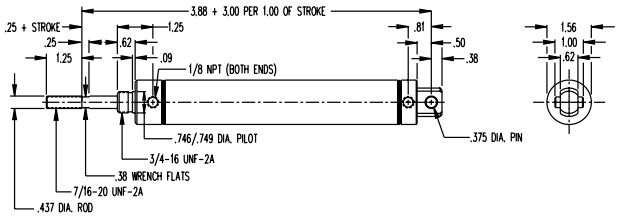
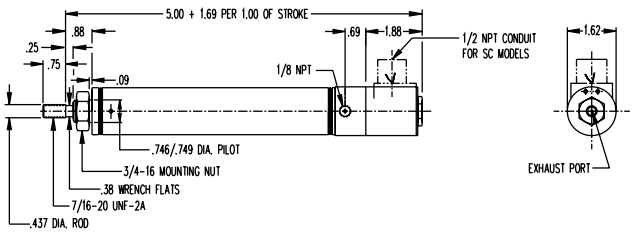
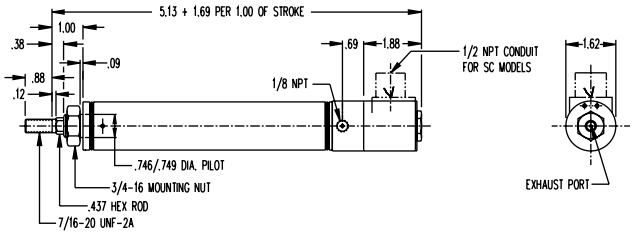
Options:

> **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)**
» DXDE, extension added to each end
» DXDE hollow rod, extension added to each end
> **Double Acting Failsafe**
» (JS = Spring Return, JR = Spring Extend)
» See pages 55-56 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
> **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 57 for track location details. See Switch Products 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

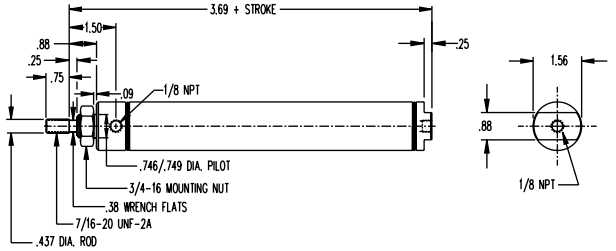
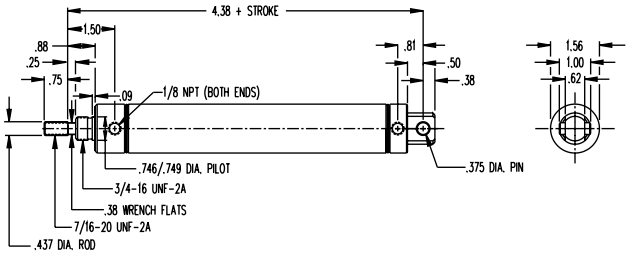
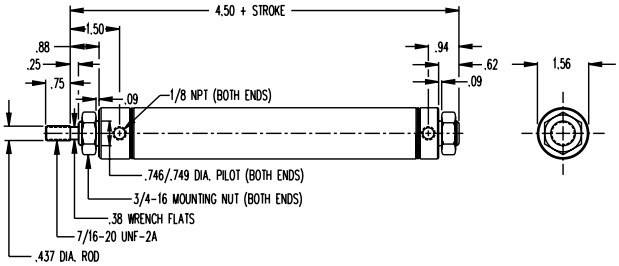
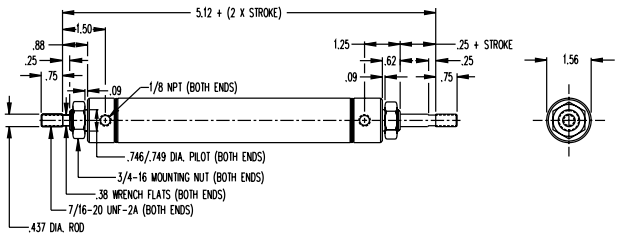
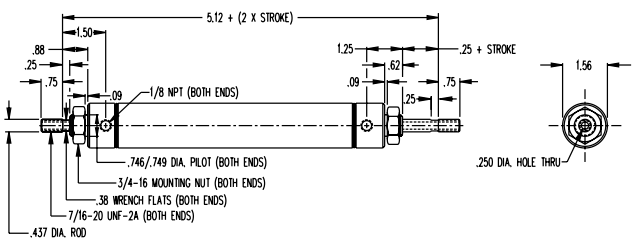
☐ Enter Stroke Length as 3rd Digit

Model	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 12 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 12 for length calculation of fractional stroke for single acting cylinders.
17☐-NRP 	Single Acting – Non-rotating Hexagon Rod – Spring Return – Rear Pivot Mounting 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	 See page 12 for length calculation of fractional stroke for single acting cylinders.

1-1/2" Bore Air Cylinders

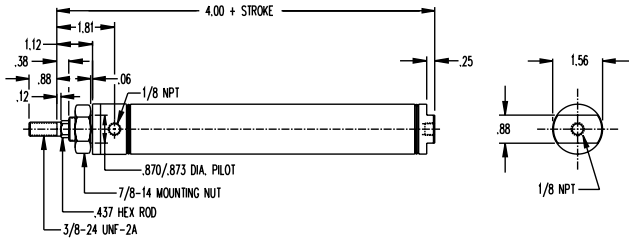
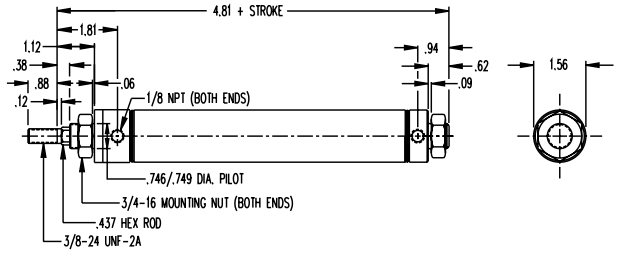
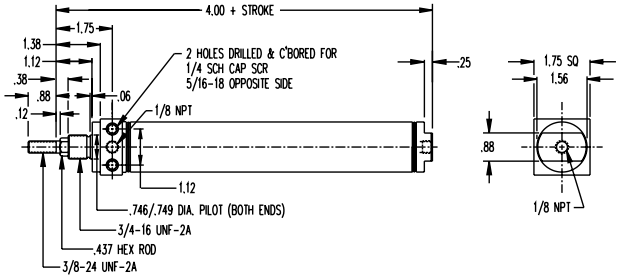
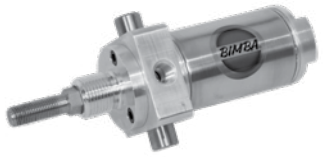
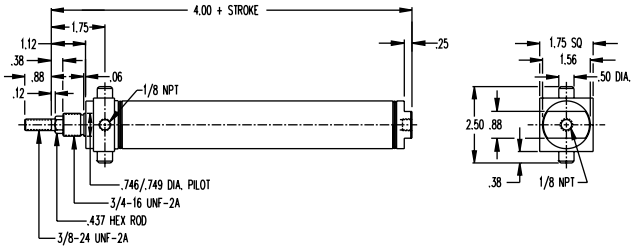
Model	Description/Weight (lbs)	Dimensions
17 ☐ -P 	Single Acting – Pivot Type – Spring Return – Rear Pivot Mounting Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 2-1/2", 3", 4" Maximum Stroke – 6" Optional Stainless Steel Rod Optional Accessories: D-231-1 Piston Rod Clevis D-229 Pivot Brackets Base Weight: .45 Adder Per Inch of Stroke: .22	 See page 12 for length calculation of fractional stroke for single acting cylinders.
17 ☐ -R 	Reverse Single Acting – Pull Type – Rod Normally Extended – Spring Return – Spring Force 8.5 lbs. Extended, 17 lbs. Retracted – 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 12 for length calculation of fractional stroke for single acting cylinders.
17 ☐ -RP 	Reverse Single Acting – Pivot and Pull Type – Rod Normally Extended – Spring Return – Spring Force 8.5 lbs. Extended, 17 lbs. Retracted – Rear Pivot Mounting 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	 See page 12 for length calculation of fractional stroke for single acting cylinders.
17 ☐ -S or SC 	Single Acting – Built-in 3-Way Solenoid Operated Valve – Spring Return – Front Nose Mounting – 150 psi, 1/16" Orifice Standard – 150 psi, 3/64" Orifice Optional Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 2-1/2", 3", 4" Maximum Stroke – 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 Base Weight: 1.38 Adder Per Inch of Stroke: .22	 See page 12 for length calculation of fractional stroke for single acting cylinders.
17 ☐ -NRS or NRSC 	Single Acting – 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 Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 2-1/2", 3", 4" Maximum Stroke – 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 Base Weight: 1.38 Adder Per Inch of Stroke: .22	 See page 12 for length calculation of fractional stroke for single acting cylinders.

1-1/2" Bore Air Cylinders

Model	Description/Weight (lbs)	Dimensions
17☐-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 Rod Wiper Optional Accessory: D-241 Mounting Bracket Base Weight: .69 Adder Per Inch of Stroke: .08	
17☐-DP 	Double Acting – Pivot Type – Air Return – Rear Pivot Mounting 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 Stainless Steel Rod Optional Rod Wiper Optional Accessories: D-231-1 Piston Rod Clevis D-229 Pivot Brackets Base Weight: .73 Adder Per Inch of Stroke: .08	
17☐-DX 	Double Acting – Double End Mounting – Air Return 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	
17☐-DXDE 	Double Acting – Double End Rod – Air Return – Double End Mounting 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	
17☐-DXDEH 	Double Acting – Double End Hollow Rod – Air Return – Double End Mounting 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	

How to Specify

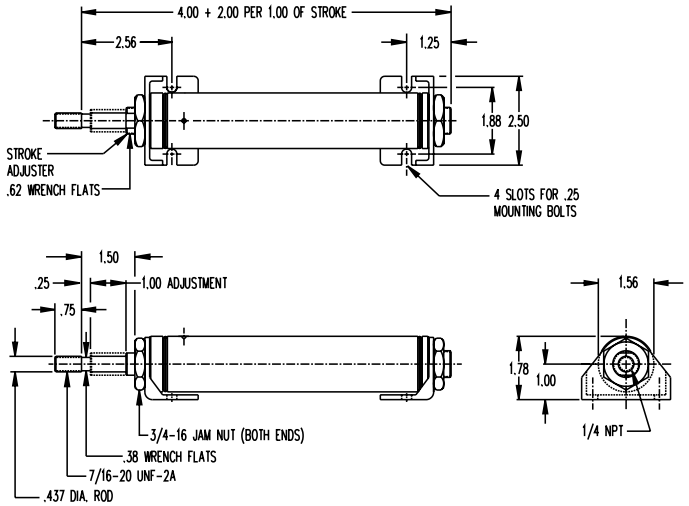
1-1/2" Bore Air Cylinders

Model	Description/Weight (lbs)	Dimensions
17 ☐ -DNR 	Double Acting – Non-rotating Hexagon Rod – Front Nose Mounting – 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 Optional Accessory: D-2669 Mounting Bracket Base Weight: .77 Adder Per Inch of Stroke: .09	
17 ☐ -DXNR 	Double Acting – Non-rotating Hexagon Rod – Double End Mounting – 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 Optional Accessories: D-241 Mounting Bracket D-8310-A Rod Clevis Base Weight: .87 Adder Per Inch of Stroke: .08	
BF-17 ☐ -DNR 	Double Acting – Non-rotating Hexagon Rod – Front Block Mounting – 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 Optional Accessory: D-8310-A Rod Clevis Base Weight: .71 Adder Per Inch of Stroke: .09	
BFT-17 ☐ -DNR 	Double Acting – Non-rotating Hexagon Rod – Front Trunnion Mounting – 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 Optional Accessories: TRB-2 Trunnion Brackets D-8310-A Rod Clevis Base Weight: .78 Adder Per Inch of Stroke: .09	

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

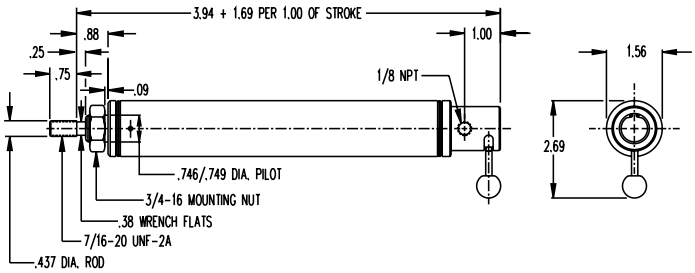
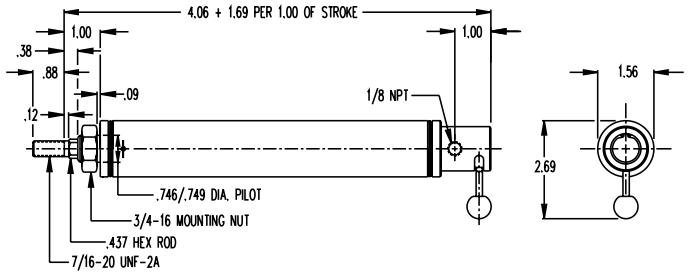
Part	Part Number
Rod Seal	D-2500
Rod Bearing	D-2501
DXNR Rod Guide	D-1117
DNR Rod Guide (7/8-14 mounting threads)	D-2509

1-1/2" Bore Adjustable Stroke Air Cylinders

Model	Description/Weight (lbs)	Dimensions
17☐-A	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. 1" Stroke Adjusts 0" to 1", 2" Stroke 1" to 2", 3" Stroke 2" to 3" Maximum Stroke – 6" Optional Stainless Steel Rod Base Weight: .75 Adder Per Inch of Stroke: .25	 See page 12 for length calculation of fractional stroke for single acting cylinders.



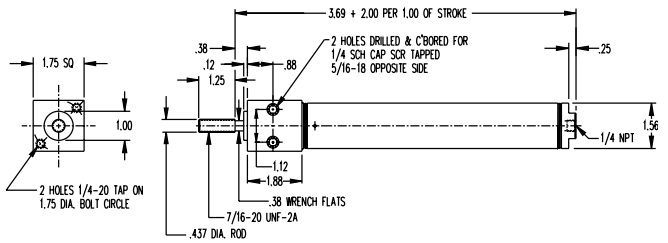
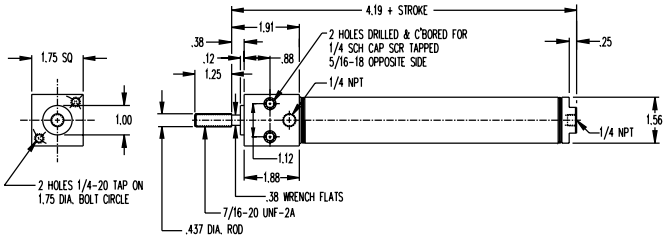
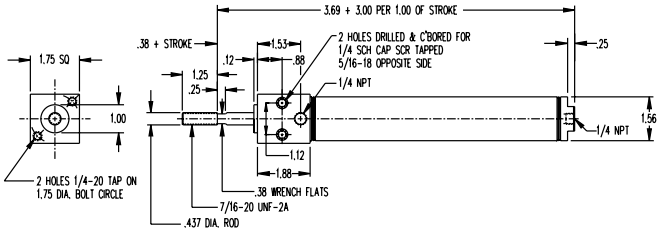
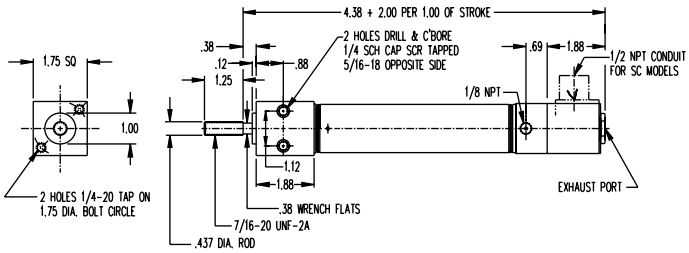
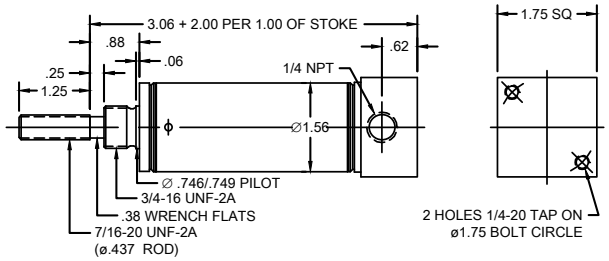
1-1/2" Bore Built-In Manual Valve Air Cylinders

Model	Description/Weight (lbs)	Dimensions
17☐-M	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" Maximum Stroke – 6" Optional Stainless Steel Rod Optional Accessory: D-241 Mounting Bracket Base Weight: .75 Adder Per Inch of Stroke: .22	 See page 12 for length calculation of fractional stroke for single acting cylinders.
17☐-NRM	Single Acting – Built-in 3-Way Manual Valve – Non-rotating Hexagon Rod – Spring Return 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	 See page 12 for length calculation of fractional stroke for single acting cylinders.

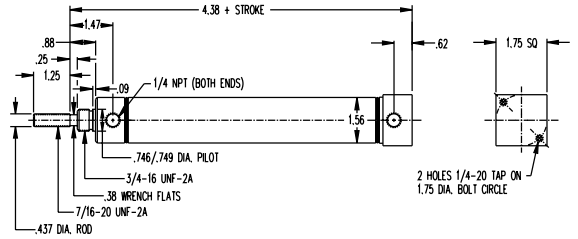
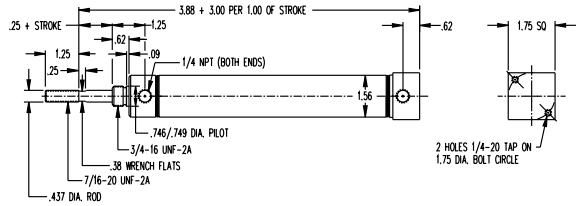




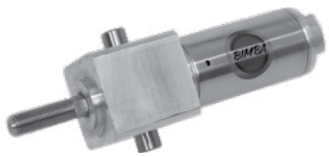
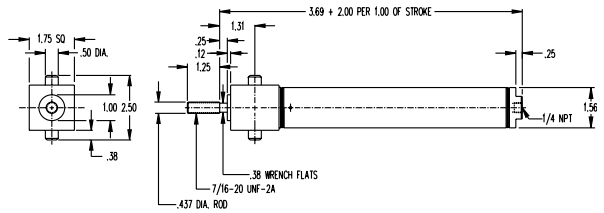
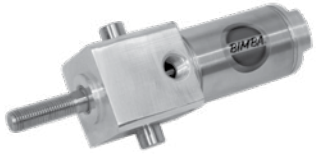
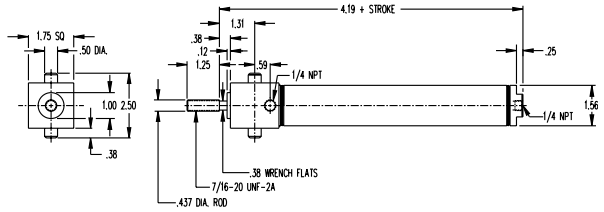
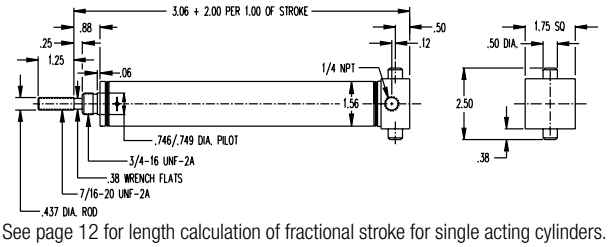
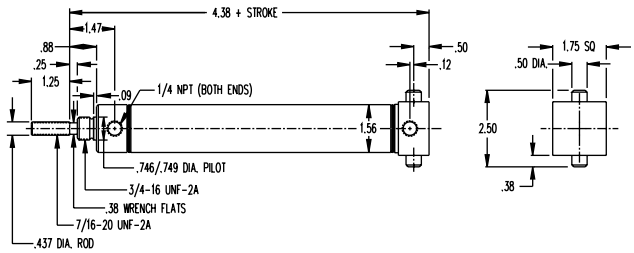
1-1/2" Bore Block Mounted (Spring Force: 8.5lbs Retracted, 17lbs Extended)

Model	Description/Weight (lbs)	Dimensions
BF-17 ☐ 	Single Acting – Front Block 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 Base Weight: .99 Adder Per Inch of Stroke: .22	 See page 12 for length calculation of fractional stroke for single acting cylinders.
BF-17 ☐ -D 	Double Acting – Front Block Mounting – 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: .99 Adder Per Inch of Stroke: .08	
BF-17 ☐ -R 	Pull Type – Front Block Mounting – 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: .96 Adder Per Inch of Stroke: .22	 See page 12 for length calculation of fractional stroke for single acting cylinders.
BF-17 ☐ -S or SC 	Built-in Midget 3-Way Solenoid Operated Valve – Single Acting – Spring Return – Front Block Mounting – 150 psi, 1/16" Orifice Mounting – 150 psi, 3/64" Orifice Optional Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 2-1/2", 3", 4" Maximum Stroke – 6" Stainless Steel Rod Standard Standard Voltage – 115/60 Optional Voltages: 24, 230 AC or 6, 12, 24 DC Base Weight: 1.90 Adder Per Inch of Stroke: .22	 See page 12 for length calculation of fractional stroke for single acting cylinders.
BR-17 ☐ 	Single Acting – Rear Block Mounting for Vertical Positioning – 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: .87 Adder Per Inch of Stroke: .08	 See page 12 for length calculation of fractional stroke for single acting cylinders.

1-1/2” Bore Block Mounted (Spring Force: 8.5lbs Retracted, 17lbs Extended)

Model	Description/Weight (lbs)	Dimensions
BR-17☐-D 	Double Acting – 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	
BR-17☐-R 	Pull Type – 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	 See page 12 for length calculation of fractional stroke for single acting cylinders.

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

Model	Description/Weight (lbs)	Dimensions
BFT-17☐ 	Single Acting – 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	 See page 12 for length calculation of fractional stroke for single acting cylinders.
BFT-17☐-D 	Double Acting – 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	
BRT-17☐ 	Single Acting – 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	 See page 12 for length calculation of fractional stroke for single acting cylinders.
BRT-17☐-D 	Double Acting – Rear 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: .91 Adder Per Inch of Stroke: .08	

How to Specify

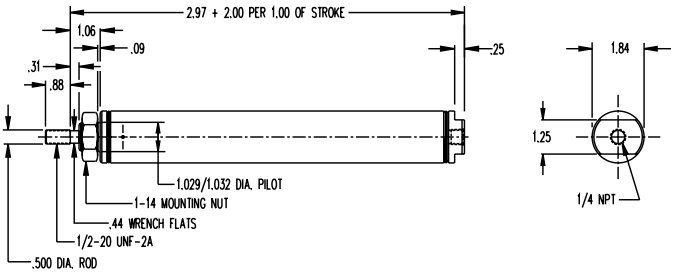
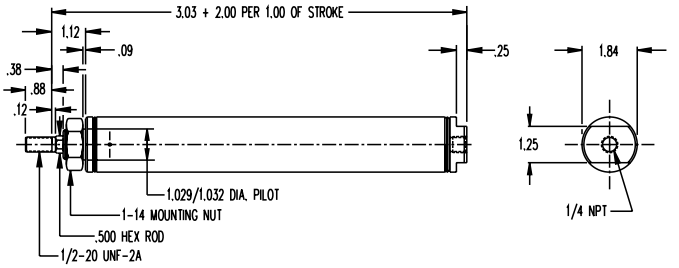
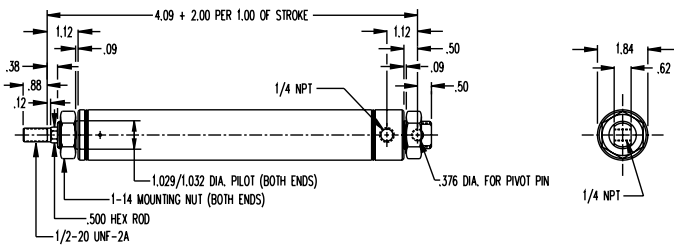
1-3/4" Bore Air Cylinders

> 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: 11lbs Relaxed — 24lbs Compressed
> Cushion Quiet Bumpers Standard

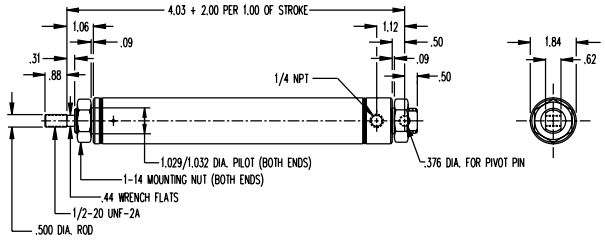
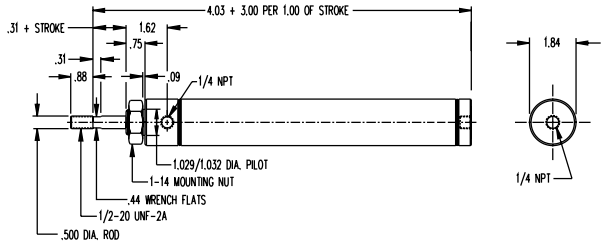
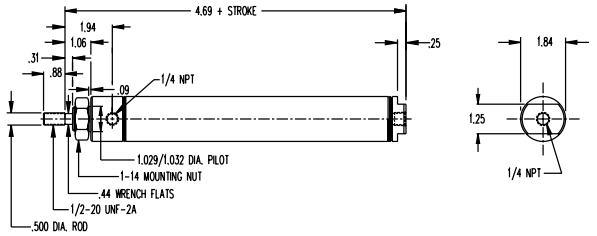
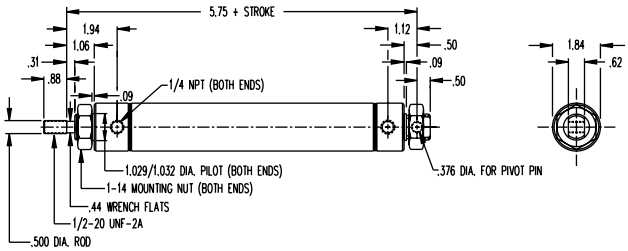
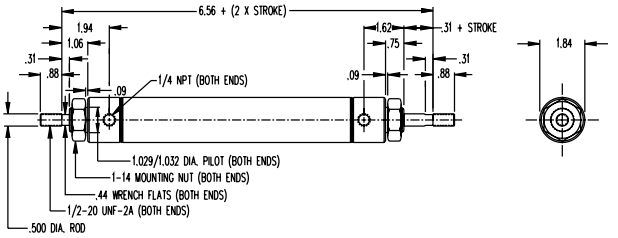
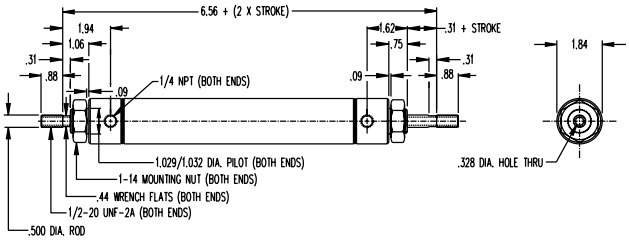
Options:

> **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)**
» DXDE, extension added to each end
» DXDE hollow rod, extension added to each end
> **Double Acting Failsafe**
» (JS = Spring Return, JR = Spring Extend)
» See pages 55-56 for overall length adders
> **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 57 for track location details. See Switch Products 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

☐ Enter Stroke Length as 3rd Digit

Model	Description/Weight (lbs)	Dimensions
24☐ 	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: C-1337 Mounting Bracket Base Weight: .85 Adder Per Inch of Stroke: .36	 See page 12 for length calculation of fractional stroke for single acting cylinders.
24☐-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: C-1337 Mounting Bracket Base Weight: .86 Adder Per Inch of Stroke: .36	 See page 12 for length calculation of fractional stroke for single acting cylinders.
24☐-NRP 	Single Acting – Non-rotating Hexagon Rod – Pivot Type – Spring Return – Rear Pivot or Double End Mounting 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-231-3 Piston Rod Clevis D-620-1 Pivot Brackets C-1337 Mounting Bracket Base Weight: .86 Adder Per Inch of Stroke: .36	 See page 12 for length calculation of fractional stroke for single acting cylinders.

1-3/4" Bore Air Cylinders

Model	Description/Weight (lbs)	Dimensions
24☐-P 	Single Acting – Pivot Type – Spring Return – Rear Pivot or Double End Mounting 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-231-3 Piston Rod Clevis D-620-1 Pivot Brackets C-1337 Mounting Bracket Base Weight: .86 Adder Per Inch of Stroke: .36	 See page 12 for length calculation of fractional stroke for single acting cylinders.
24☐-R 	Reverse Single Acting – Pull Type – Rod Normally Extended – 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: C-1337 Mounting Bracket Base Weight: 1.17 Adder Per Inch of Stroke: .31	 See page 12 for length calculation of fractional stroke for single acting cylinders.
24☐-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 Accessory: C-1337 Mounting Bracket Base Weight: 1.29 Adder Per Inch of Stroke: .11	
24☐-DP 	Double Acting – Pivot Type – Air Return – Rear Pivot or Double End Mounting 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 Stainless Steel Rod Optional Accessories: D-231-3 Piston Rod Clevis D-620-1 Pivot Brackets C-1337 Mounting Bracket Base Weight: 1.64 Adder Per Inch of Stroke: .11	
24☐-DXDE 	Double Acting – Double End Rod – Air Return – Double End Mounting 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 – 12" Stainless Steel Rod Standard Optional Accessory: C-1337 Mounting Bracket Base Weight: 1.87 Adder Per Inch of Stroke: .18	
24☐-DXDEH 	Double Acting – Double End Hollow Rod – Air Return – Double End Mounting 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: C-1337 Mounting Bracket Base Weight: 1.80 Adder Per Inch of Stroke: .16	

How to Specify

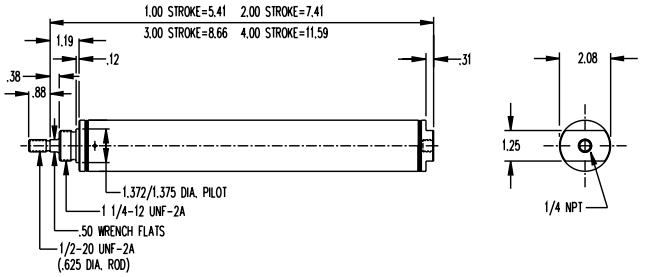
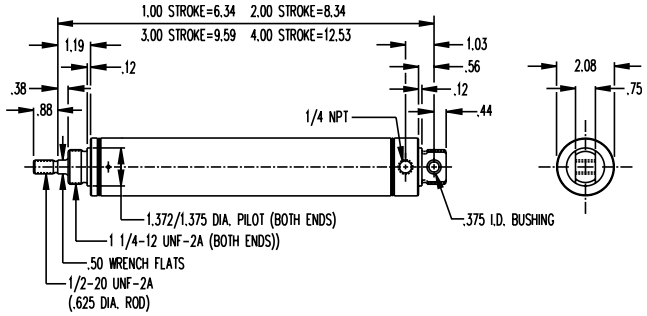
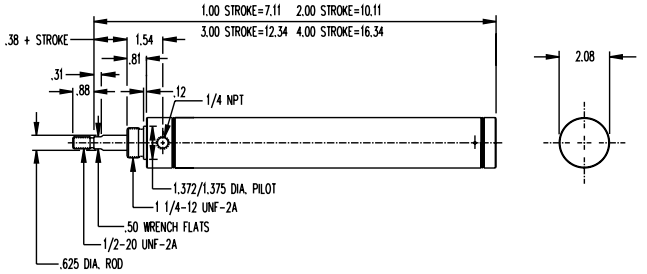
2" Bore Air Cylinders

> 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: 15lbs Relaxed — 30lbs Compressed
> Mounting Nuts Not Included

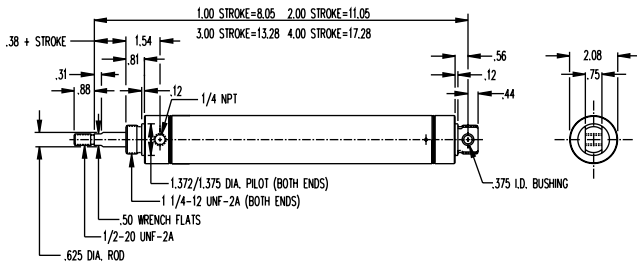
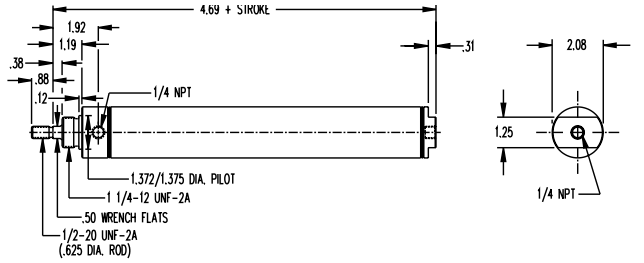
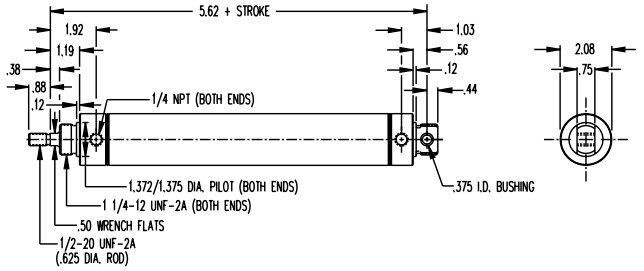
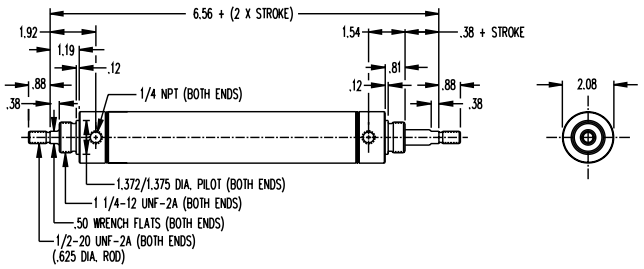
Options:

> **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)**
» DXDE, extension added to each end
> **Double Acting Failsafe**
» (JS = Spring Return, JR = Spring Extend)
» See pages 55-56 for overall length adders
> **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 57 for track location details. See Switch Products 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

☐ Enter Stroke Length as 3rd Digit

Model	Description/weight (lbs)	Dimensions
31 ☐ 	Single Acting – Spring Return – Front Nose Mounting Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 2-1/2", 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 12 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: 1/2", 1", 1-1/2", 2", 2-1/2", 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 12 for length calculation of fractional stroke for single acting cylinders.
31 ☐ -R 	Reverse Single Acting – Pull Type – Rod Normally Extended – Spring Return – Front Nose Mounting Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 2-1/2", 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	 See page 12 for length calculation of fractional stroke for single acting cylinders.

2" Bore Air Cylinders

Model	Description/Weight (lbs)	Dimensions
31 ☐ -RP 	Reverse Single Acting – Pivot and Pull Type – Rod Normally Extended – Spring Return – Rear Pivot Mounting Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 2-1/2", 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	 See page 12 for length calculation of fractional stroke for single acting cylinders.
31 ☐ -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-508 Mounting Nut D-615 Mounting Bracket Base Weight: 1.40 Adder Per Inch of Stroke: .15	 See page 12 for length calculation of fractional stroke for single acting cylinders.
31 ☐ -DXP 	Double Acting – Universal Mounting Type – Pivot or Double End – Air Return – 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 Mounting Bracket D-620 Pivot Brackets D-508 Mounting Nut Base Weight: 1.62 Adder Per Inch of Stroke: .15	 See page 12 for length calculation of fractional stroke for single acting cylinders.
31 ☐ -DXDE 	Double Acting – Double End Rod – Air Return – Double End Mounting 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 – 12" Stainless Steel Rod Standard Optional Accessories: D-615 Mounting Bracket D-508 Mounting Nut Base Weight: 1.97 Adder Per Inch of Stroke: .24	 See page 12 for length calculation of fractional stroke for single acting cylinders.

How to Specify

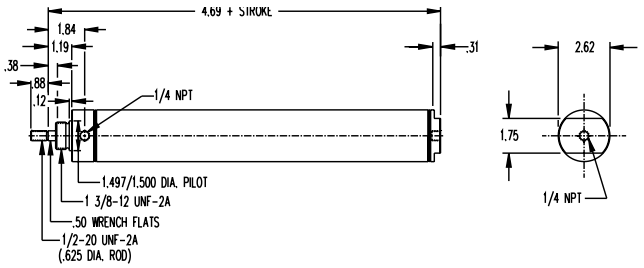
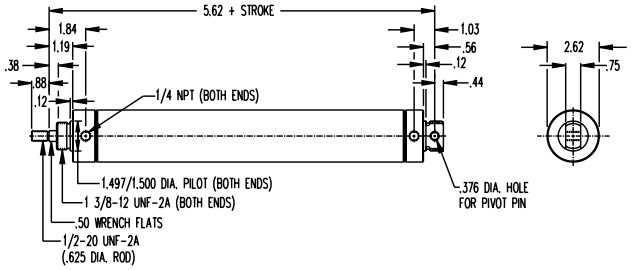
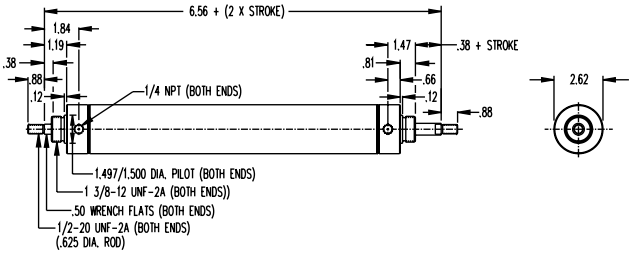
2-1/2" Bore Air Cylinders

> 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)**
» DXDE, extension added to each end
> **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 57 for track location details. See Switch Products 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

☐ Enter Stroke Length as 3rd Digit

Model	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	
50 ☐ -DXDE 	Double Acting – Double End Rod – Air Return – Double End Mounting 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 – 12" Stainless Steel Rod Standard Optional Accessories: D-615-1 Mounting Bracket D-2540 Mounting Nut Base Weight: 2.32 Adder Per Inch of Stroke: .34	

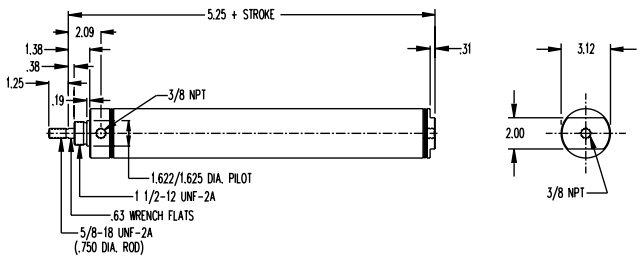
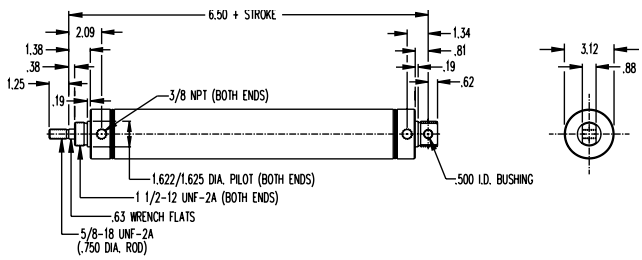
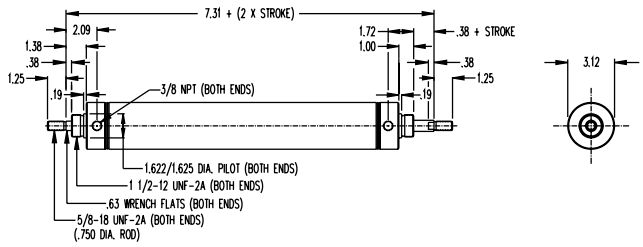
3" Bore Air Cylinders

> 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)**
» DXDE, extension added to each end
> **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 57 for track location details. See Switch Products 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

☐ Enter Stroke Length as 3rd Digit

Model	Description/weight (lbs)	Dimensions
70☐-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" 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	
70☐-DXP 	Double Acting – Universal Mount Pivot or Double End Mounting 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-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	
70☐-DXDE 	Double Acting – Double End Rod – Double End Mounting 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 – 12" Stainless Steel Rod Standard Optional Accessories: D-19127 Mounting Bracket D-5379 Mounting Nut Base Weight: 4.05 Adder Per Inch of Stroke: .52	

How to Specify

Original Line Stainless Steel Body 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								
Size	**W[3 4] (Wiper)**	**B[2] (Bumper)**	**V[2 4] (High Temperature)**	**H (Heavy Spring)**	**K (Ports Rotated 90°)**	**Y (Pivot Bushing)**	**N[2] (Low Temperature)**	**Q (Side Ported Rear Head)**	**HL[5] (Low Pressure Hydraulic)**
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:
[1] 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.
[2] 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.
[3] 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.
[4] 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.
[5] 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

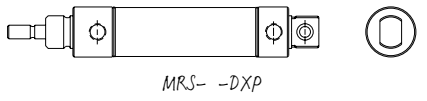
Double Acting	
0070-DV	N/A
0070-DXPN	.08"
BF-0070-DN	.08"
060-D (V or N)	.22"
060-DXP (V or N)	.22"
060-DXDE (V or N)	.25"
120-D (V or N)	.19"
120-DP (V or N)	.19"
120-DXDE (V or N)	.25"
120-DXDEH (V or N)	.25"
240-D (V or N)	.25"
240-DP (V or N)	.25"
240-DXDE (V or N)	.25"

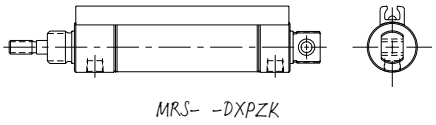
* 0070 bumpers are high temperature option material and not removed when high temperature option is specified.

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"

Switch Track and Port Orientation

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





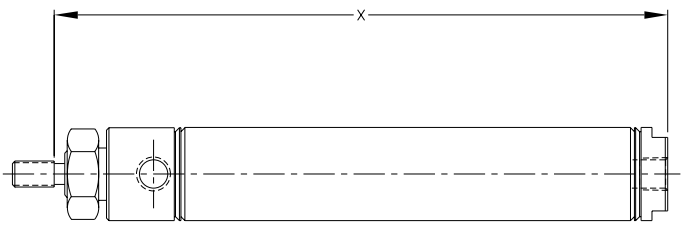
Fail Safe Length Adders (Option JS)

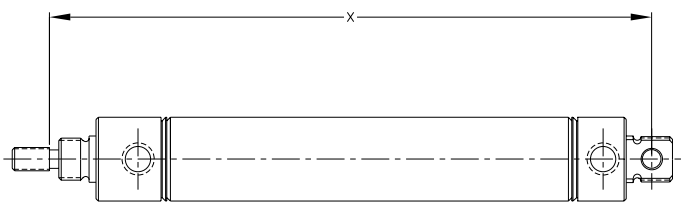
Spring Return Length Adder		
Bore	**Type**	**Overall Length Adder for -JS Option**
5/16"	0070-D	1.65 + 0.75 per 0.50" of stroke
	0070-DXP	2.04 + 0.75 per 0.50" of stroke
	BF-0070-D	1.71 + 0.75 per 0.50" of stroke
7/16"	010-D, BF-010-D, BF-010-D & BFT-010-D	2.17 + 0.94 per 0.50" of stroke
	010-DP & 0010-DX	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.





JS OPTION

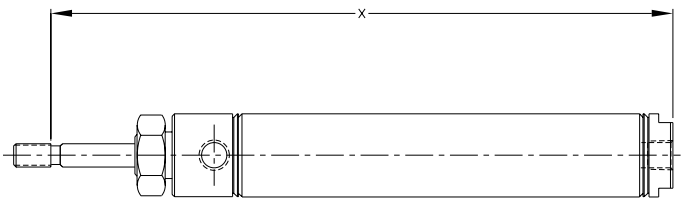
Fail Safe Length Adders (Option JR)

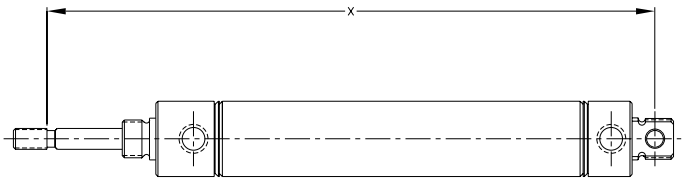
Spring Extend Length Adder		
Bore	**Type**	**Overall Length Adder for -JR Option**
5/16"	0070-D	1.65 + 1.25 per 0.50" of stroke
	0070-DXP	2.04 + 1.25 per 0.50" of stroke
	BF-0070-D	1.71 + 1.25 per 0.50" of stroke
7/16"	010-D, BF-010-D & BFT-010-D	2.17 + 1.44 per 0.50" of stroke
	010-DP & 0010-DX	2.61 + 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.

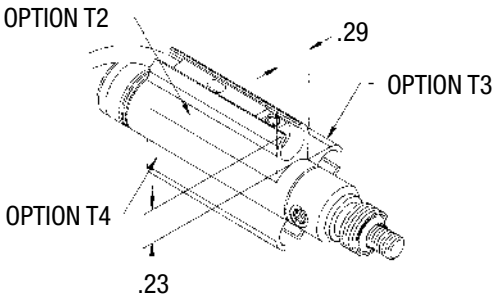


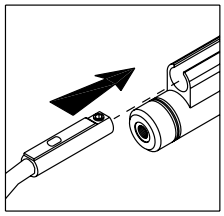


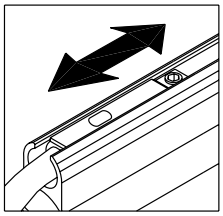
JR OPTION

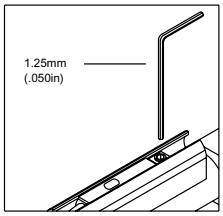
Switch Track Kit Options

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:

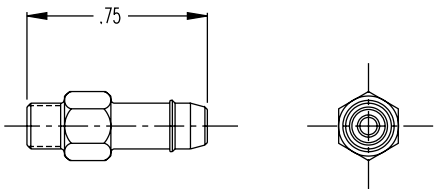
> Clean body with acetone. Remove all oil from body surface.
> Avoid mounting track over rolled construction. Locate edge of track 0.175" from rolled construction.
> Use a solid continuous bead of glue for the entire length of track used. Bead should fill center channel of track.
> Adhere to recommended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

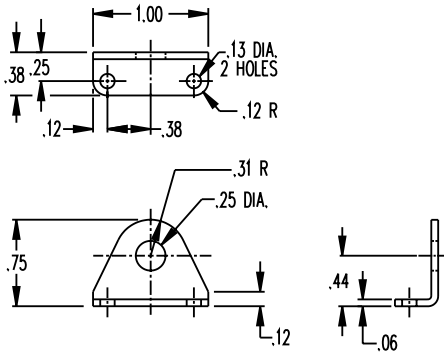
5/16" Bore Accessories

D-3229-A



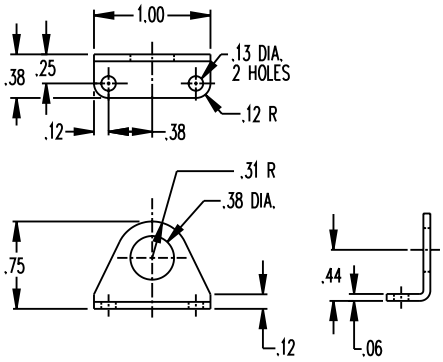
Aluminum Alloy Barbed Fitting
1/4" Hose (O.D.) Barbed Fitting Supplied with
Gasket, No. 10-32 to 1/4" O.D. Tubing.

D-26731



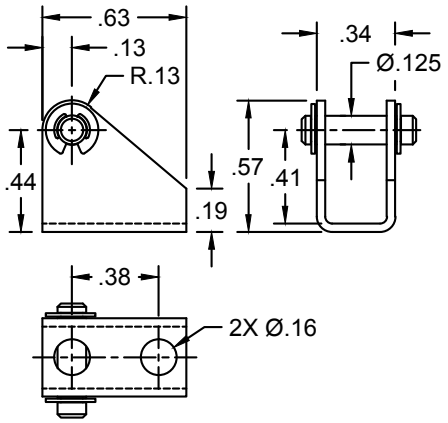
Mounting Bracket (for Single Acting Models)

D-26765



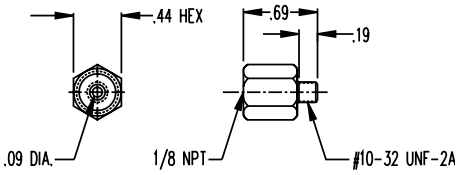
Mounting Bracket (for Double Acting Models)

D-26689



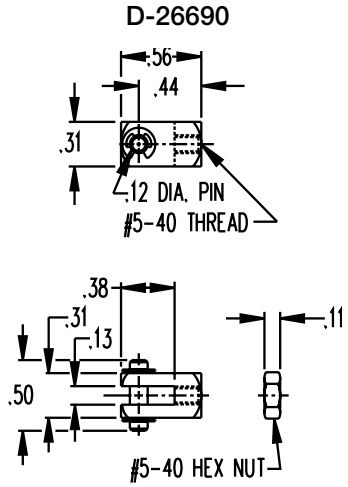
Pivot Bracket with Pin

D-855-A



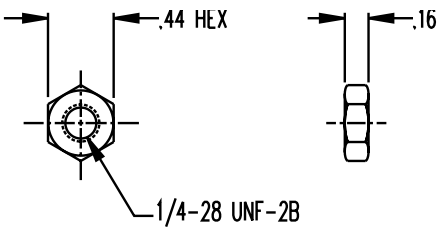
Adaptors (10-32 to 1/8 NPT Female)
Supplied with Gasket

D-26690



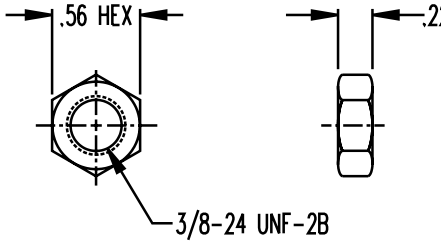
Piston Rod Clevis (with Pin)

D-344



Mounting Nut

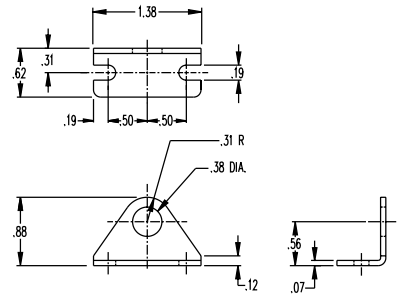
D-801



Mounting Nut

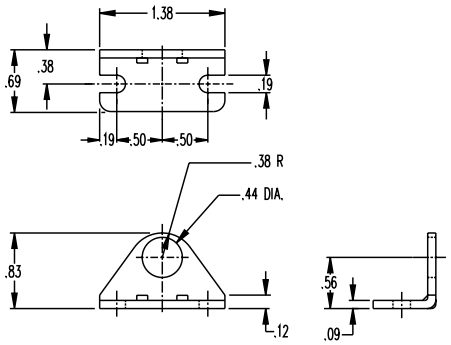
7/16" Bore Accessories

D-775



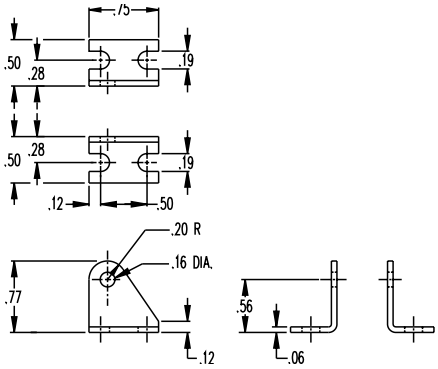
Mounting Bracket (for Single Acting Models)

D-770



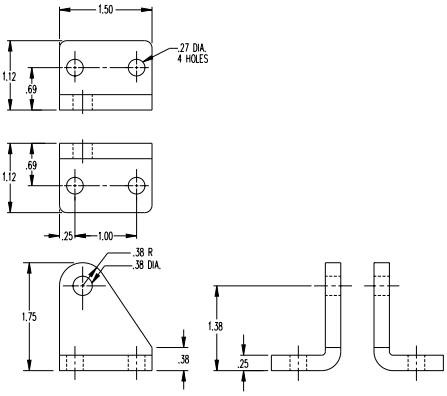
Mounting Bracket (for Double Acting Models)

D-780



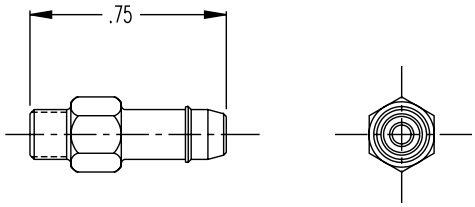
Pivot Brackets

TRB-1



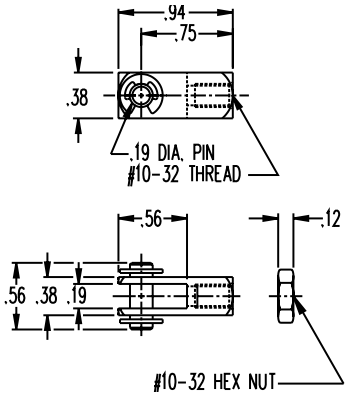
Trunnion Brackets

D-3229-A



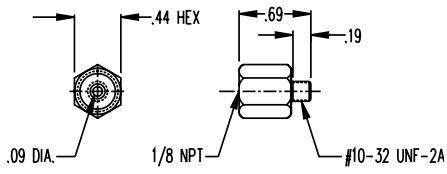
Aluminum Alloy Barbed Fitting. 1/4" Hose (O.D.) Barbed Fitting Supplied with Gasket, No. 10-32 to 1/4" O.D. Tubing

D-850



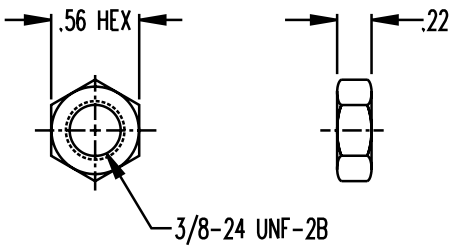
Piston Rod Clevis

D-855-A



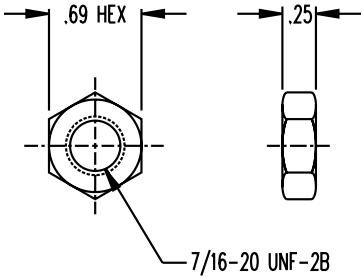
Adaptors (10-32 to 1/8 NPT Female) Supplied with Gasket

D-801



Mounting Nut

D-154

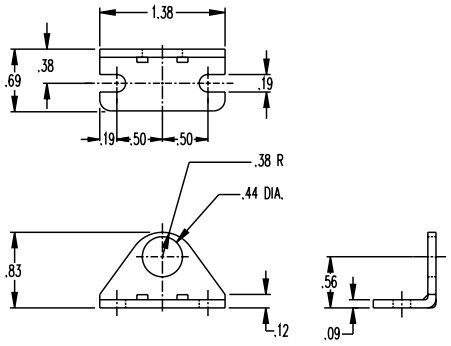


Mounting Nut

How to Accessorize

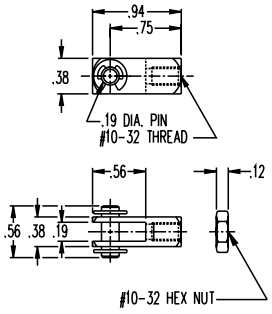
9/16" Bore Accessories

D-770



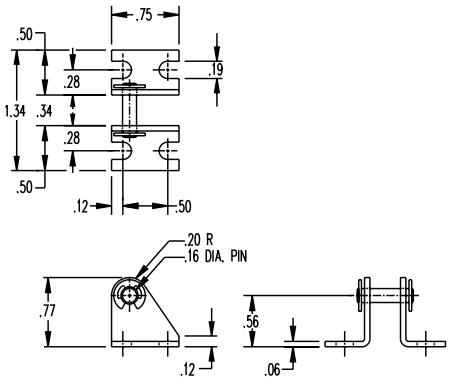
Mounting Bracket

D-850



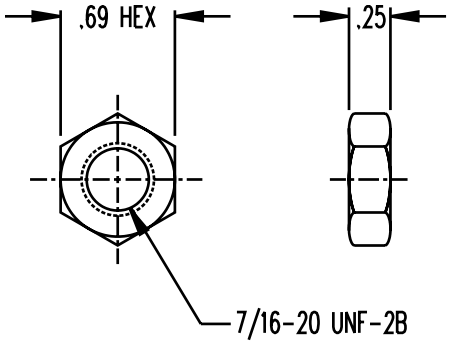
Piston Rod Clevis

D-12321-A



Pivot Bracket with Pin

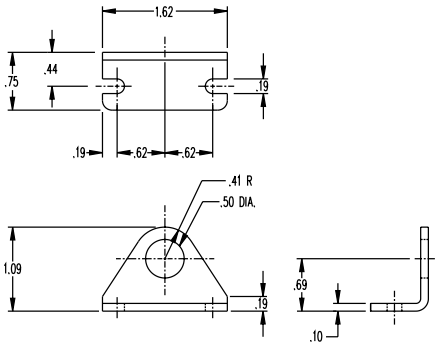
D-154



Mounting Nut

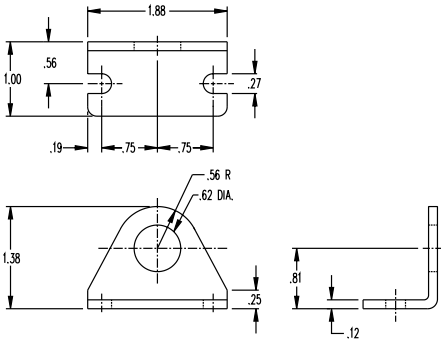
3/4" Bore Accessories

D-226



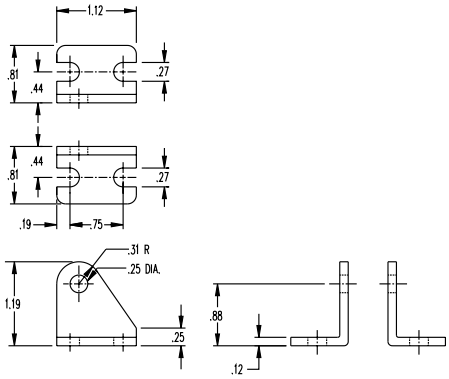
Mounting Bracket (for Single Acting Models)

D-129



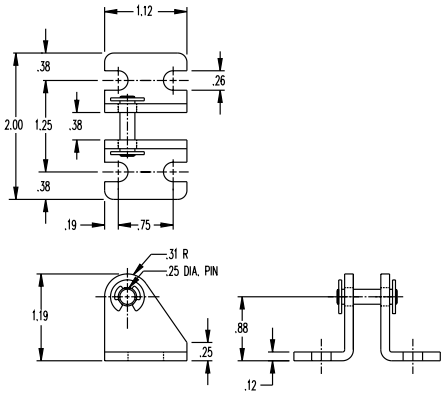
Mounting Bracket (for Double Acting Models)

D-167



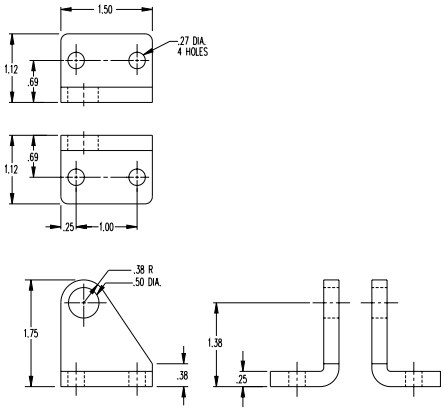
Pivot Brackets

D-13498-A



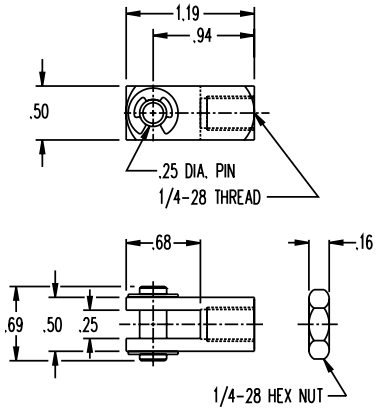
Pivot Bracket

TRB-2



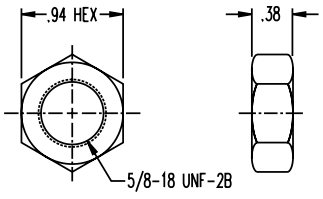
Trunnion Brackets

D-166-3



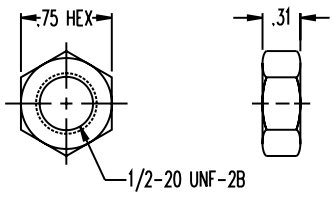
Piston Rod Clevis

D-9



Mounting Nut

D-98

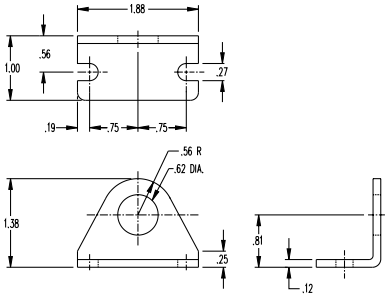


Mounting Nut

How to Accessorize

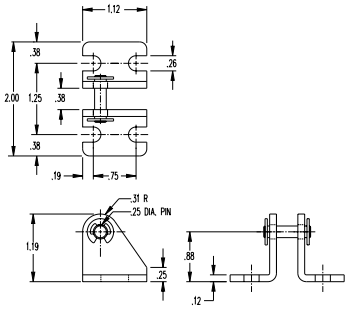
7/8" Bore Accessories

D-129



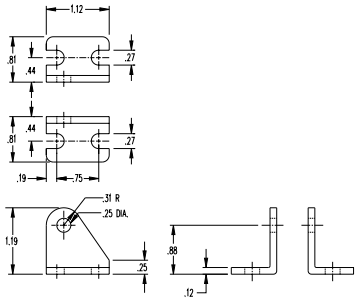
Mounting Bracket

D-13498-A



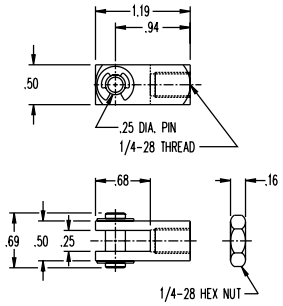
Pivot Bracket

D-167



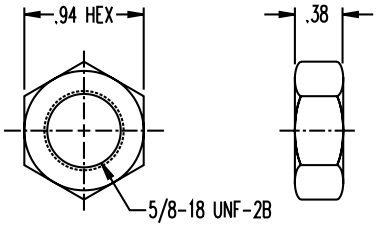
Pivot Brackets

D-166-3



Rod Clevis

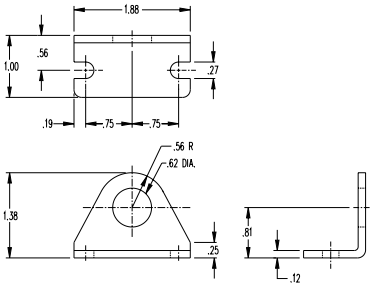
D-9



Mounting Nut

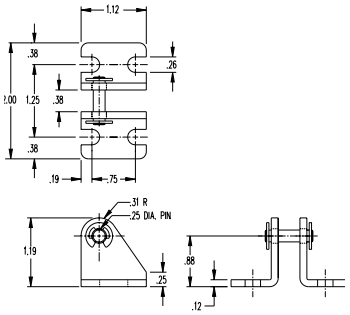
1-1/16" Bore Accessories

D-129



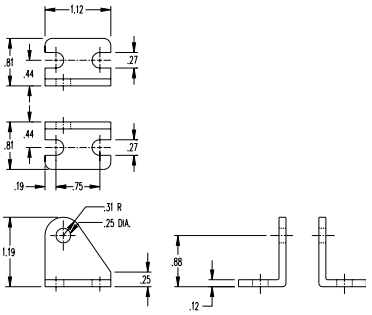
Mounting Bracket (for Single & Double Acting Models)

D-13498-A



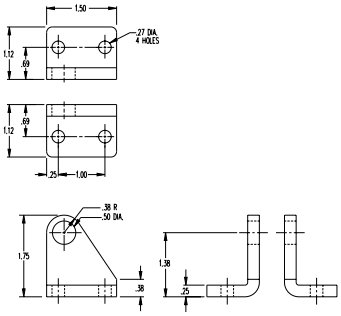
Pivot Bracket

D-167



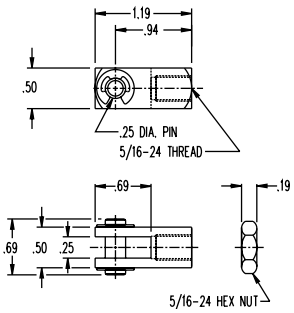
Pivot Brackets

TRB-2



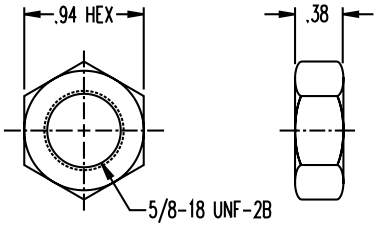
Trunnion Brackets

D-166-1



Piston Rod Clevis

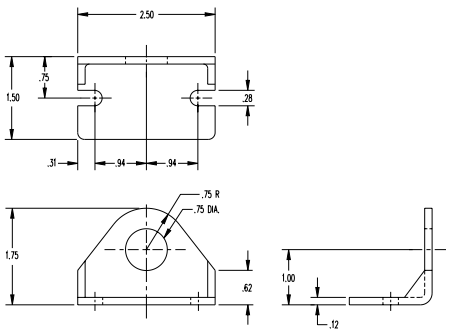
D-9



Mounting Nut

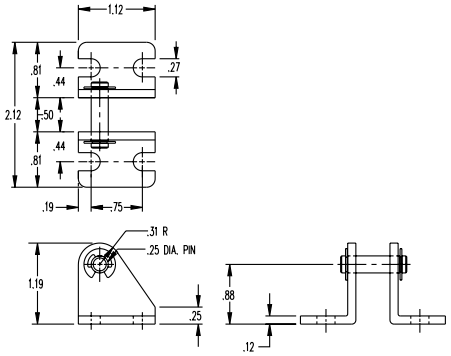
1-1/4" Bore Accessories

D-241



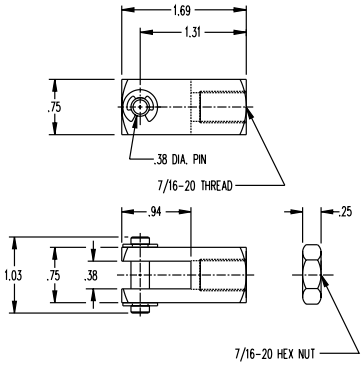
Mounting Bracket (for Single & Double Acting Models)

D-1360



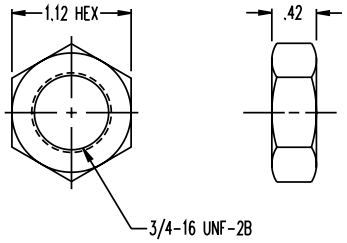
Pivot Brackets

D-231-1



Piston Rod Clevis

D-3556

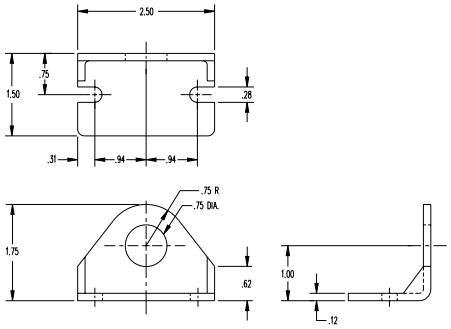


Mounting Nut

How to Accessorize

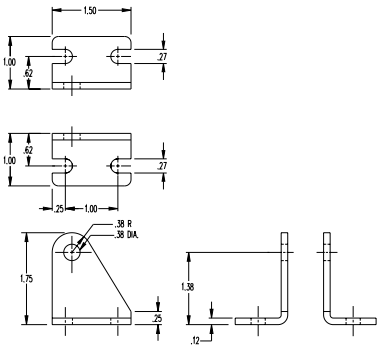
1-1/2" Bore Accessories

D-241



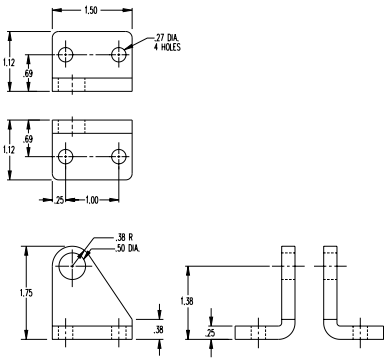
Mounting Bracket

D-229



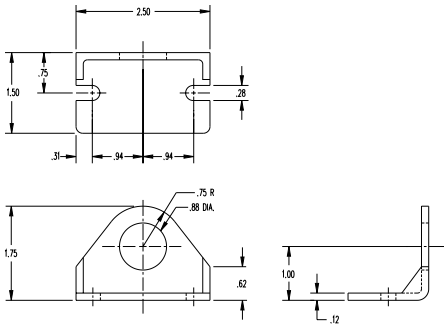
Pivot Bracket

TRB-2



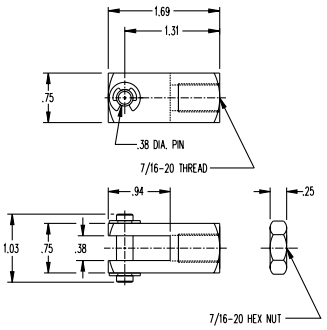
Trunnion Brackets

D-2669



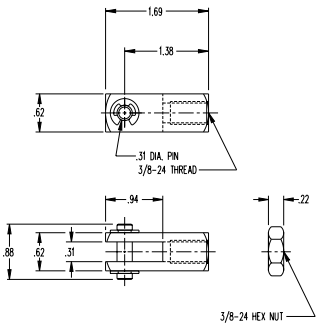
Mounting Bracket

D-231-1



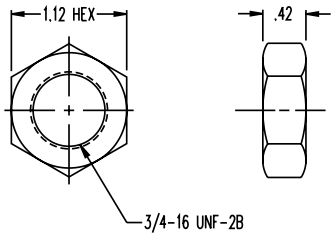
Piston Rod Clevis

D-8310-A



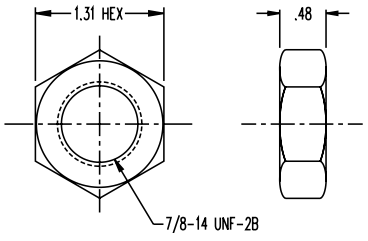
Rod Clevis

D-3556



Mounting Nut

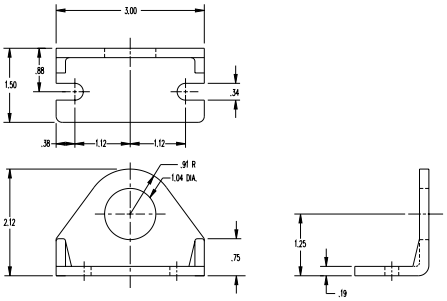
D-2545



Mounting Nut

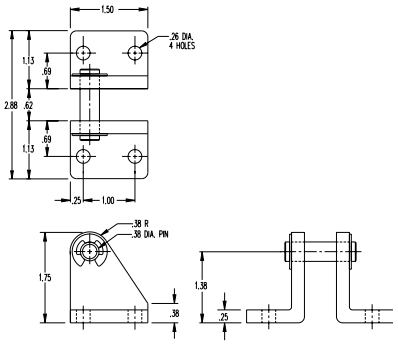
1-3/4" Bore Accessories

C-1337



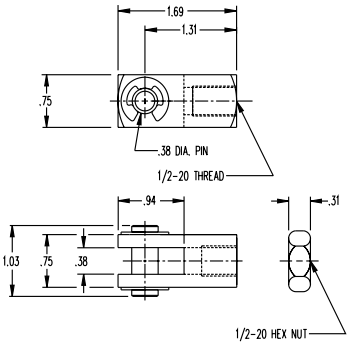
Mounting Bracket

D-620-1



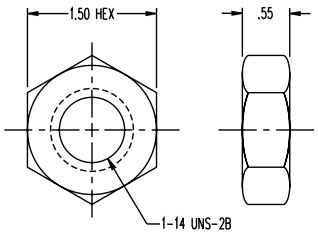
Pivot Brackets

D-231-3



Piston Rod Clevis

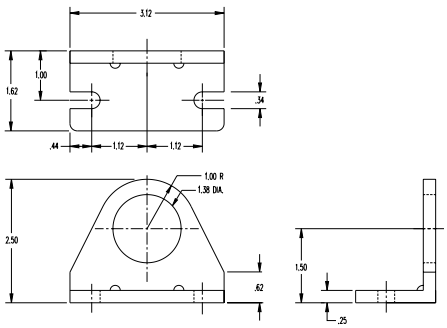
D-1331



Mounting Nut

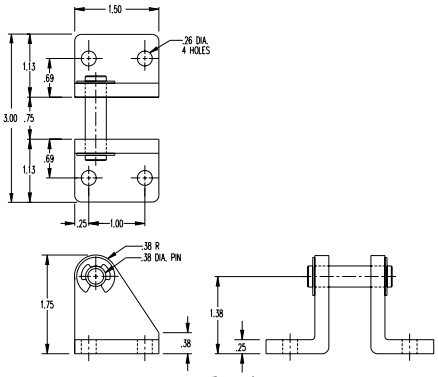
2" Bore Accessories

D-615



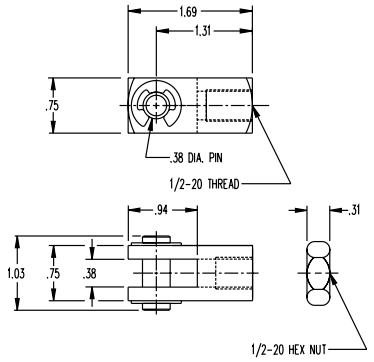
Mounting Bracket

D-620



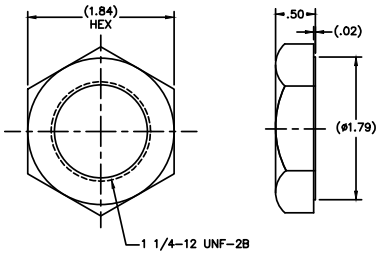
Pivot Brackets

D-231-3



Piston Rod Clevis

D-508

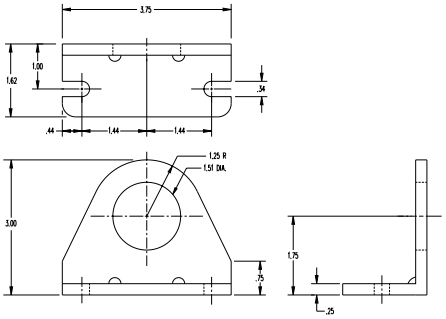


Mounting Nut

How to Accessorize

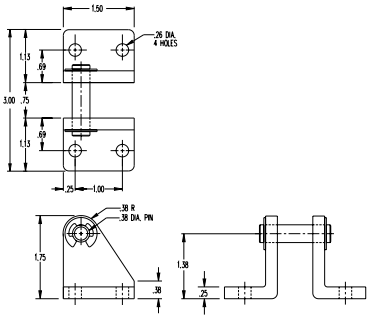
2-1/2" Bore Accessories

D-615-1



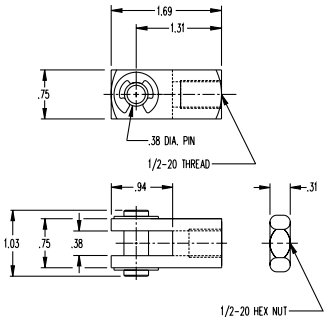
Mounting Bracket

D-620



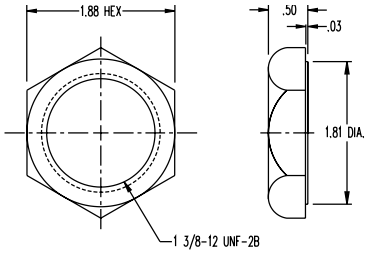
Pivot Brackets

D-231-3



Piston Rod Clevis

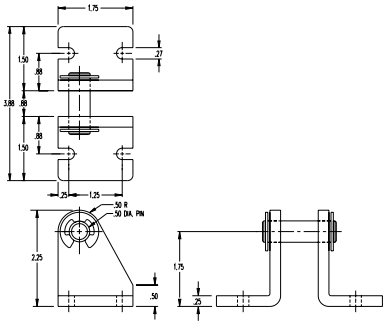
D-2540



Mounting Nut

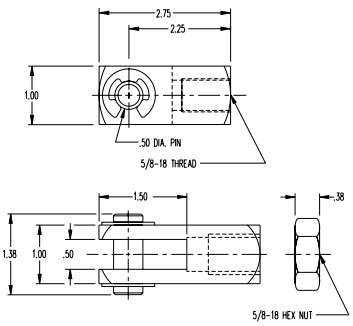
3" Bore Accessories

D-13512-A



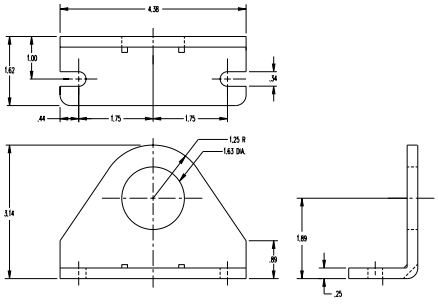
Pivot Bracket

D-8314-A



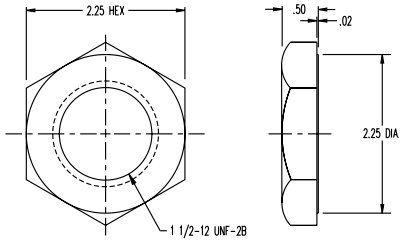
Rod Clevis

D-19127



Mounting Bracket

D-5379



Mounting Nut

How to Order

The model number of all Original Line pneumatic actuators consists of an alphanumeric cluster designating product type, bore size, stroke length, mounting styles, and other optional components that together make up the complete part number to use in ordering. Use the ordering information below to build a valid part number.

An example of a basic double-acting Original Line unit with a rear block, 7/16" bore, 3" stroke, and additional options is shown below.

Stroke Length
XX (in)

Acting	
blank	Single acting
D	Double acting
R	Reverse single acting

BR - 01 3 - D BEE0.5

Model	
blank	Standard Original Line
BF/BR/BFT/ BRT/BFM/BRM/ BFTM/BRTM	Block or trunnion-mounted
M	Magnet option for standard cylinders
SR	Stainless rod, if nonstandard

Bore Size/Power Factor	
007	5/16"
01	7/16"
02	9/16"
04	3/4"
06	7/8"
09	1-1/16"
12	1-1/4"
17	1-1/2"
24	1-3/4"
31	2"
50	2-1/2"
70	3"

Options*	
99	HT-99 oil pre-lube
B	Bumpers
H	Heavy spring (H designated before mounting style)
JR	Double-acting spring extend (stainless steel rod standard)
JS	Double-acting spring return (stainless steel rod standard)
K	Ports rotated 90°
N	Low temperature seals and lubrication
NT	No thread
Q	Side ported rear head
V	High temperature seals and lubrication
W	Rod wiper
Y	Pivot bushing replaces pivot pin
EEX.XX	Extra rod extension of X.XX

Approximate Power Factors		
5/16"	=	0.07
7/16"	=	0.15
9/16"	=	0.25
3/4"	=	0.40
7/8"	=	0.60
1-1/16"	=	0.90
1-1/4"	=	1.20
1-1/2"	=	1.7
1-3/4"	=	2.40
2"	=	3.10
2-1/2"	=	5.00
3"	=	7.00

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.

FORCE = Airline Pressure x Piston Area

PISTON AREA = Bimba Power Factor

FORCE = Airline Pressure x Bimba Power Factor

How to Customize

Common Customization Options

Bimba provides a wide variety of common customization options for Original Line cylinders, including:

- Custom labeling
- Pre-assembled flow controls in cylinder ports
- New end cap mounting geometries
- Special component materials
- Unique testing requirements
- Manifold-based consolidated circuits
- Rate controls

Beyond the common customization options, Bimba offers our full support in developing a custom solution that's perfectly tailored to the needs of your application. We bring over 60 years of experience to the customization process, backing your group up with our expert team of engineers, machinists, and salespeople from concept to creation.

Contact your local Bimba distributor or the factory directly to learn more.



Adjustable Cushion Air Cylinders

- 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

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)

Options:

- **No Thread (NT)**
  - Available on 3/4”, 1-1/16” and 1-1/2” bores
- **Pivot Bushing (Y)**
  - .250” ID
- **Extra Extension (EE)**
- **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 57 for track location details. See Switch Products for switch selection information.
- **High Temperature Seals (V)**
- **Rod Wiper (W) (Available on 3/4", 1-1/16" and 1-1/2" bores)**

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.

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

energy (e) = ([w/64] x v^2) + (p x 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 8lbs

driving pressure (p) = 80 psi
total load (w) = 8lbs
bore constant (k) = .24
maximum velocity (v) = 6 fps

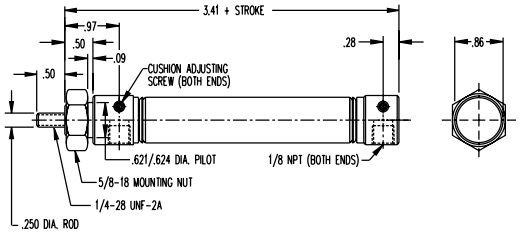
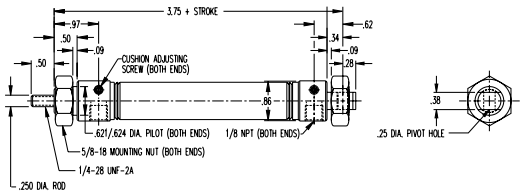
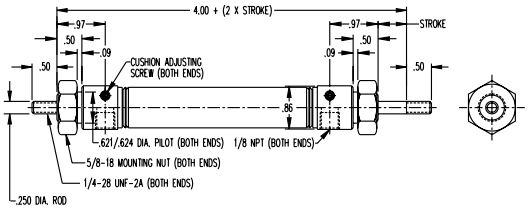
= (8/64) x (6^2) + (80 x .24) = 23.7 ft-lbs

Maximum Energy Calculation Data		
Bore	**Max Energy (ft-lbs)**	**k**
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

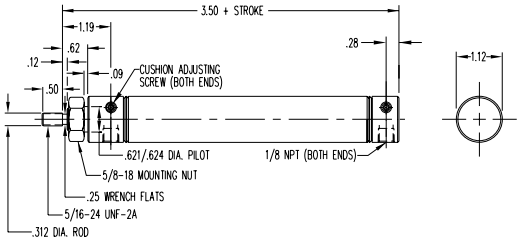
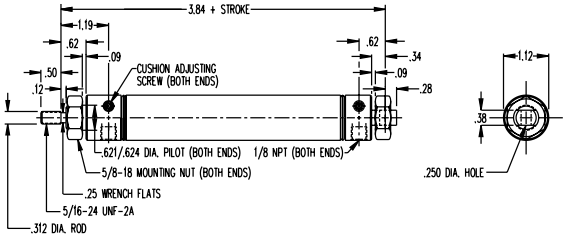
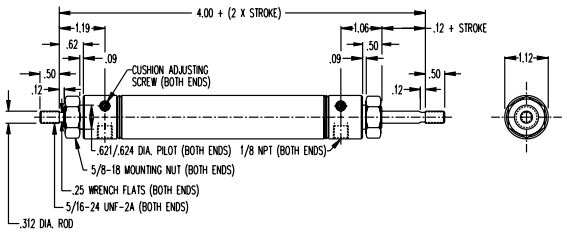
Cushion Lengths
0.75"
0.75”
0.75”
0.90”
0.90”
0.99”

3/4" Bore Air Cylinders with Adjustable Cushions

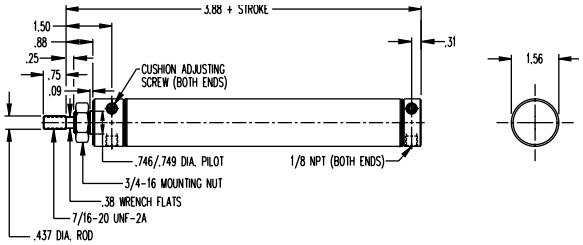
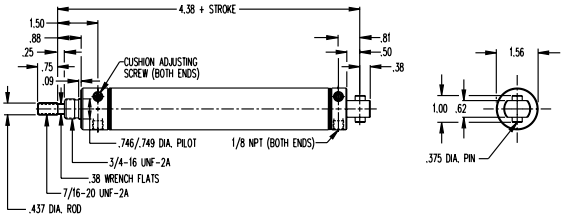
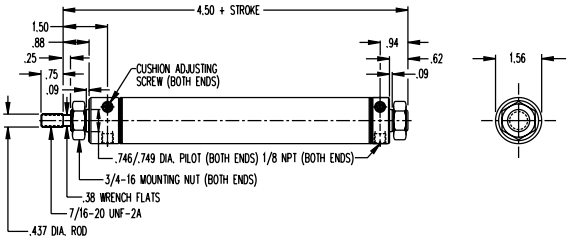
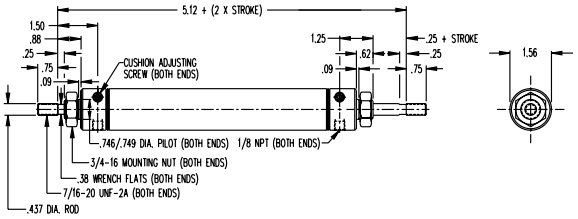
☐ Enter Stroke Length as 3rd Digit

Model	Description/Weight (lbs)	Dimensions
C-04☐-D 	Double Acting – Air Return – Front Nose Mounting Standard Stroke Lengths: 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-129 Mounting Bracket Base Weight: .24 Adder Per Inch of Stroke: .03	 *U.S. Patent nos. 4,794,681 and 4,862,786
C-04☐-DXP 	Double Acting – Double End or Rear Pivot Mounting – Air Return Standard Stroke Lengths: 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 Accessories: D-129 Mounting Bracket D-13498-A Pivot Bracket D-166-3 Piston Rod Clevis Base Weight: .29 Adder Per Inch of Stroke: .03	
C-04☐-DXDE 	Double Acting – Double End Rod – Air Return – Double End Mounting Standard Stroke Lengths: 1", 2", 3", 4", 5", 6" Maximum Stroke – 12" Stainless Steel Rod Standard Optional Rod Wiper Optional Accessory: D-129 Mounting Bracket Base Weight: .30 Adder Per Inch of Stroke: .06	

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

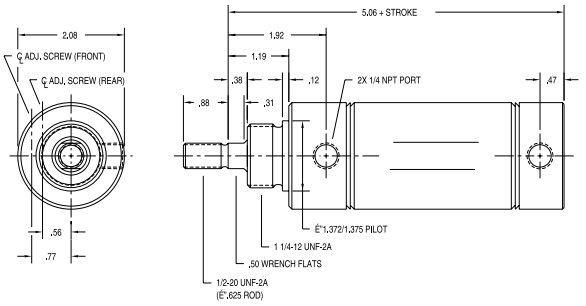
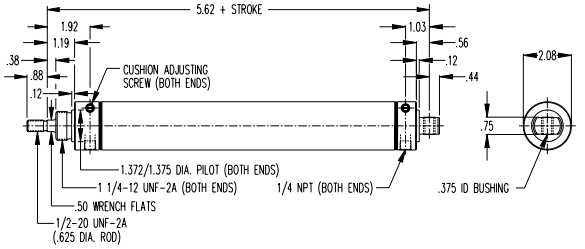
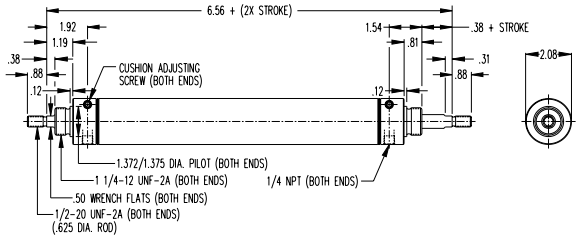
Model	Description/Weight (lbs)	Dimensions
C-09☐-D 	Double Acting – Air Return – Front Nose Mounting Standard Stroke Lengths: 1", 1-1/2", 2", 2-1/2", 3", 4", 5", 6" Maximum Stroke – 12" Stainless Steel Rod Standard Optional Rod Wiper Optional Accessory: D-129 Mounting Bracket Base Weight: .38 Adder Per Inch of Stroke: .04	
C-09☐-DXP 	Double Acting – Universal Mounting Pivot, or Double End Mounting – Air Return Standard Stroke Lengths: 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 Accessories: D-13498-A Pivot Bracket D-129 Mounting Bracket D-166-1 Piston Rod Clevis Base Weight: .44 Adder Per Inch of Stroke: .04	
C-09☐-DXDE 	Double Acting – Double End Rod – Air Return – Double End Mounting Standard Stroke Lengths: 1", 2", 3", 4", 5", 6" Maximum Stroke – 12" Stainless Steel Rod Standard Optional Rod Wiper Optional Accessory: D-129 Mounting Bracket Base Weight: .46 Adder Per Inch of Stroke: .08	

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

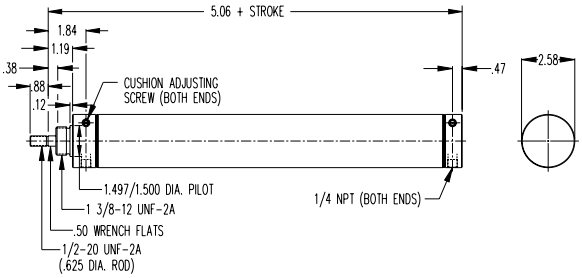
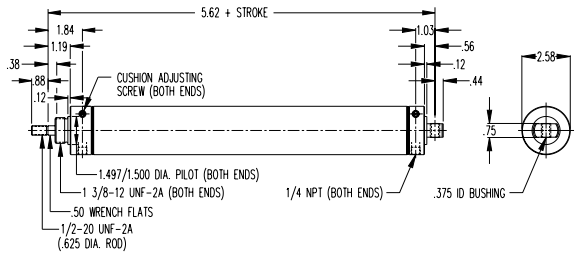
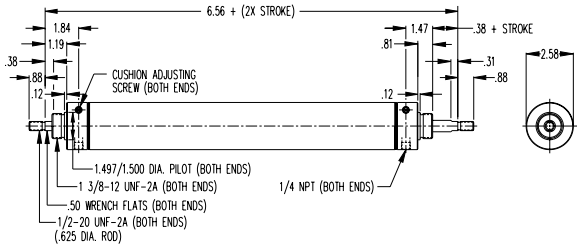
Model	Description/Weight (lbs)	Dimensions
C-17 ☐ -D 	Double Acting – Air Return – Front Nose Mounting Standard Stroke Lengths: 1", 1-1/2", 2", 2-1/2", 3", 4", 5", 6" Maximum Stroke – 12" Stainless Steel Rod Standard Optional Rod Wiper Optional Accessory: D-241 Mounting Bracket Base Weight: .76 Adder Per Inch of Stroke: .09	
C-17 ☐ -DP 	Double Acting – Pivot Type – Air Return – Rear Pivot Mounting Standard Stroke Lengths: 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 Accessories: D-231-1 Piston Rod Clevis D-229 Pivot Brackets Base Weight: .77 Adder Per Inch of Stroke: .09	
C-17 ☐ -DXP 	Double Acting – Double End Mounting – Air Return Standard Stroke Lengths: 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: .84 Adder Per Inch of Stroke: .09	
C-17 ☐ -DXDE 	Double Acting – Double End Rod – Air Return – Double End Mounting Standard Stroke Lengths: 1", 2", 3", 4", 5", 6", 7", 8", 9", 10", 11", 12" Maximum Stroke – 12" Stainless Steel Rod Standard Optional Rod Wiper Optional Accessory: D-241 Mounting Bracket Base Weight: .90 Adder Per Inch of Stroke: .18	

How to Specify

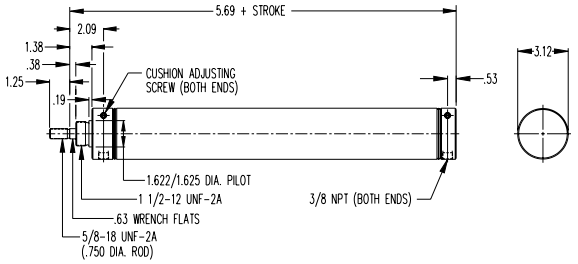
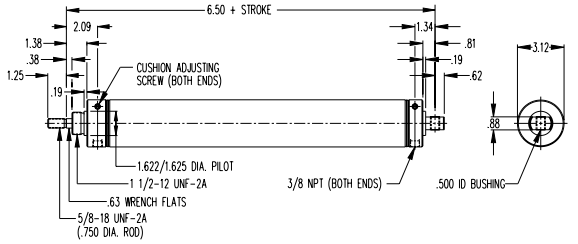
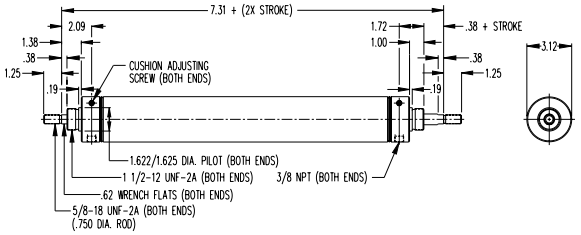
2" Bore Air Cylinders with Adjustable Cushions

Model	Description/Weight (lbs)	Dimensions
C-31 ☐ -D 	Double Acting – Air Return – Front Nose Mounting Standard Stroke Lengths: 1", 1-1/2", 2", 2-1/2", 3", 4", 5", 6" Maximum Stroke – 12" Stainless Steel Rod Standard Optional Accessories: D-615 Mounting Bracket D-508 Mounting Nut Base Weight: 1.64 Adder Per Inch of Stroke: .15	
C-31 ☐ -DXP 	Double Acting – Double End or Rear Pivot Mounting – Air Return Standard Stroke Lengths: 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 Accessories: D-615 Mounting Bracket D-620 Pivot Bracket D-231-3 Piston Rod Clevis D-508 Mounting Nut Base Weight: 1.68 Adder Per Inch of Stroke: .15	
C-31 ☐ -DXDE 	Double Acting – Double End Rod – Air Return – Double End Mounting Standard Stroke Lengths: 1", 2", 3", 4", 5", 6" Maximum Stroke – 12" Stainless Steel Rod Standard Optional Accessories: D-615 Mounting Bracket D-508 Mounting Nut Base Weight: 1.99 Adder Per Inch of Stroke: .24	

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

Model	Description/Weight (lbs)	Dimensions
C-50 ☐ -D 	Double Acting – Air Return – Front Nose Mounting Standard Stroke Lengths: 1", 1-1/2", 2", 2-1/2", 3", 4", 5", 6" Maximum Stroke – 12" Stainless Steel Rod Standard Optional Accessories: D-615-1 Mounting Bracket D-2540 Mounting Nut Base Weight: 2.21 Adder Per Inch of Stroke: .17	
C-50 ☐ -DXP 	Double Acting – Universal Mounting Pivot, or Double End Mounting – Air Return Standard Stroke Lengths: 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 Accessories: D-615-1 Mounting Bracket D-620 Pivot Bracket D-231-3 Piston Rod Clevis D-2540 Mounting Nut Base Weight: 2.33 Adder Per Inch of Stroke: .17	
C-50 ☐ -DXDE 	Double Acting – Double End Rod – Air Return – Double End Mounting Standard Stroke Lengths: 1", 2", 3", 4", 5", 6" Maximum Stroke – 12" Stainless Steel Rod Standard Optional Accessories: D-615-1 Mounting Bracket D-2540 Mounting Nut Base Weight: 2.38 Adder Per Inch of Stroke: .34	

3" Bore Air Cylinders with Adjustable Cushions

Model	Description/Weight (lbs)	Dimensions
C-70 ☐ -D 	Double Acting – Air Return – Front Nose Mounting Standard Stroke Lengths: 1", 1-1/2", 2", 2-1/2", 3", 4", 5", 6" Maximum Stroke – 12" Stainless Steel Rod Standard Optional Accessories: D-19127 Mounting Bracket D-5379 Mounting Nut Base Weight: 3.81 Adder Per Inch of Stroke: .26	
C-70 ☐ -DXP 	Double Acting – Pivot Type – Air Return – Rear Pivot Mounting Standard Stroke Lengths: 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 Accessories: D-8314-A Piston Rod Clevis D-13512-A Pivot Brackets D-5379 Mounting Nut Base Weight: 3.97 Adder Per Inch of Stroke: .26	
C-70 ☐ -DXDE 	Double Acting – Double End Rod – Air Return – Double End Mounting Standard Stroke Lengths: 1", 2", 3", 4", 5", 6", 7", 8", 9", 10", 11", 12" Maximum Stroke – 12" Stainless Steel Rod Standard Optional Accessories: D-19127 Mounting Bracket D-5379 Mounting Nut Base Weight: 4.15 Adder Per Inch of Stroke: .52	

Accessories

For accessories, see the standard air cylinder accessories section, pages 58-66.

How to Order

The model number of all Adjustable Cushion Original Line pneumatic actuators consists of an alphanumeric cluster designating model, bore size, stroke length, mounting styles, and other optional components that together make up the complete part number to use in ordering. Use the ordering information below to build a valid part number.

An example of a basic Adjustable Cushion Original Line unit with front head cushions, 3/4" bore, 1" stroke, front nose mounting, and additional options is shown below.

Mounting Style	
D	Front nose
DXP	Universal double end or rear pivot
DXDE	Double end with double end rod

Stroke Length
XX (in)

CF - 04 1 - D NT

Model	
C	Cushion, both ends
CF	Cushion, front head only
CR	Cushion, rear head only
CM	Cushion, both ends, with magnetic piston
CRM	Cushion, rear head only, with magnetic piston
CFM	Cushion, fron head only, with magnetic piston
CS	DXDE mounting - cushions one end only
CSM	DXDE mounting - cushions one end only with magnetic piston

Bore Size	
04	3/4"
09	1-1/16"
17	1-1/2"
31	2"
50	2-1/2"
70	3"

Options*	
99	HT-99 oil pre-lube
NT	Solid/non-threaded
V	High temperature seals and lubrication
W	Rod wiper
EEX.XX	Extra rod extension of X.XX

*When configuring options, arrange options in alphabetical order except for EE; place option EE at the end of the configured part number.

Approximate Power Factors		
5/16"	=	0.07
7/16"	=	0.15
9/16"	=	0.25
3/4"	=	0.40
7/8"	=	0.60
1-1/16"	=	0.90
1-1/4"	=	1.20
1-1/2"	=	1.7
1-3/4"	=	2.40
2"	=	3.10
2-1/2"	=	5.00
3"	=	7.00

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.

FORCE = Airline Pressure x Piston Area

PISTON AREA = Bimba Power Factor

FORCE = Airline Pressure x Bimba Power Factor

Product Features



MRS® Magnetic Reed Switch Air Cylinders

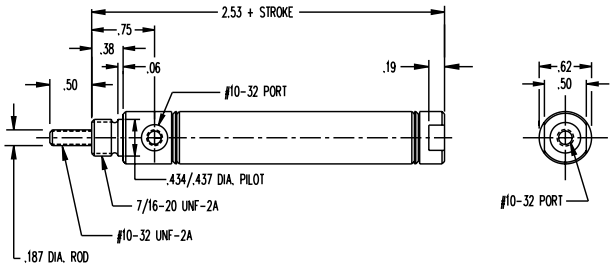
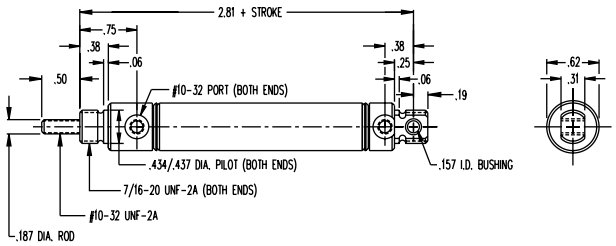
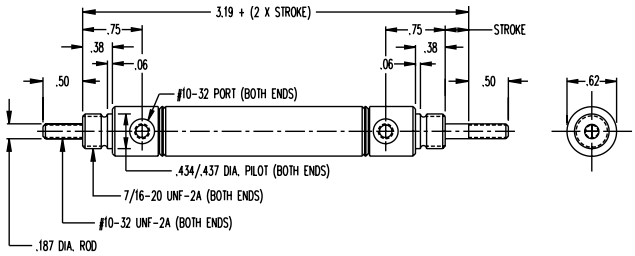
Specifically designed to operate Bimba position sensing switches to actuate programmable controllers, relays, solenoids, timers, or any other electrically operated equipment. MRS cylinders have an additional groove in the piston to accommodate a magnet. They differ from the M option because they combine 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.

Options:

- **No Thread (NT)**
- **Switch Track for Miniature Switches (T2, T3, T4)**
  - Must specify track(s) for use with miniature position sensing (T2, T3, T4). See page 57 for track location details. See Switch Products for switch selection information.
- **Switch Track for Heavy Duty Track Mounted Switches**
  - Must specify Z for one track, ZTT for 2 tracks. See Switch Products for switch selection information.
- **Double Acting Bumpers (B)**
  - 9/16", add .125" to length
  - 3/4" and 11/16" add .250" to length
  - 1-1/4" and 1-1/2" add .250" to length
  - 1-3/4", 2" and 2-1/2" add .250" to length
- **Extra Extension (EE)**
- **Fluoroelastomer/High Temperature Seal (V)**
- **Ports Rotated 90 (K)**
- **Side Ported Rear Head (Q)**

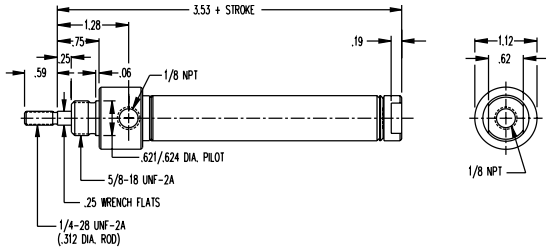
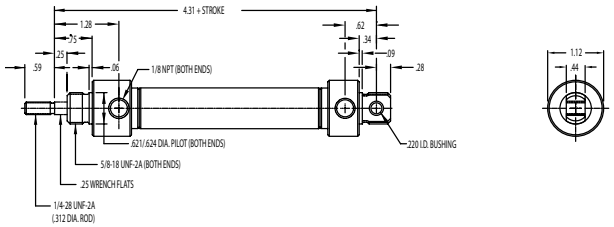
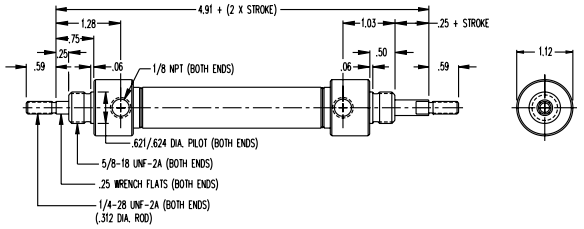
9/16" Bore MRS® Magnetic Reed Switch Air Cylinders

☐ Enter Stroke Length as 3rd Digit

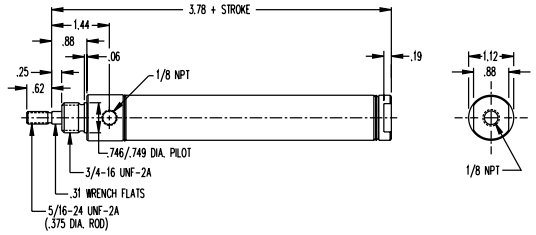
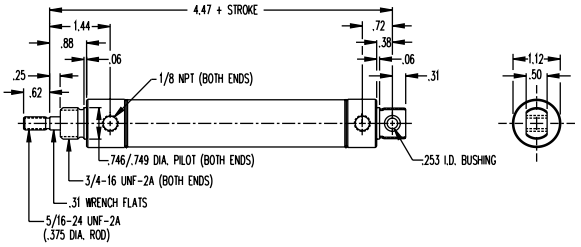
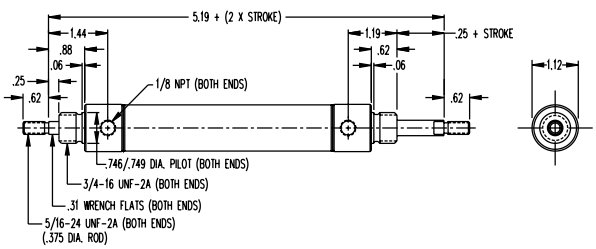
Model	Description/Weight (lbs)	Dimensions
MRS-02 ☐ -D 	Nose Mount Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 2-1/2", 3", 4", 5", 6" Maximum Stroke – 12" Optional Accessory: D-770 Mounting Bracket Base Weight: .10 Adder Per Inch of Stroke: .01	
MRS-02 ☐ -DXP 	Double End or Rear Pivot Mounting Standard Stroke Lengths: 1/2", 1", 1-1/2", 2", 2-1/2", 3", 4", 5", 6", 7", 8", 9", 10", 11", 12" Maximum Stroke – 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	
MRS-02 ☐ -DXDE 	Double End Rod – Double End Mounting Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4", 5", 6" Maximum Stroke – 12" Optional Accessory: D-770 Mounting Bracket Base Weight: .14 Adder Per Inch of Stroke: .02	

How to Specify

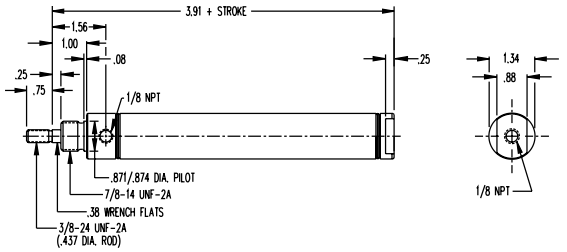
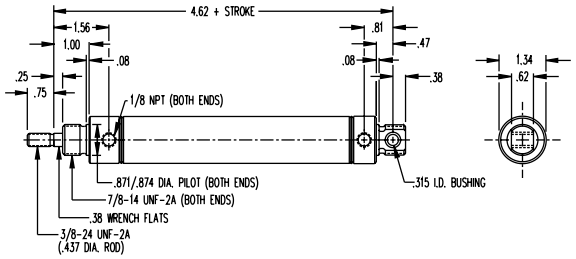
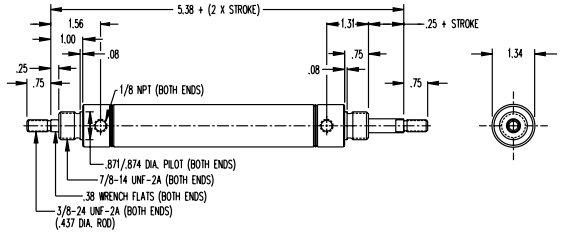
3/4" Bore MRS® Magnetic Reed Switch Air Cylinders

Model	Description/Weight (lbs)	Dimensions
MRS-04 ☐ -D 	Nose Mount Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4", 5", 6" Maximum Stroke – 12" Optional Accessory: D-129 Mounting Bracket Base Weight: .24 Adder Per Inch of Stroke: .04	
MRS-04 ☐ -DXP 	Double End or Rear Pivot Mounting Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4", 5", 6", 7", 8", 9", 10", 11", 12" Maximum Stroke – 32" Optional Accessories: D-10131-A Pivot Bracket D-129 Mounting Bracket D-10139-A Rod Clevis Base Weight: .30 Adder Per Inch of Stroke: .06	
MRS-04 ☐ -DXDE 	Double End Rod – Double End Mounting Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4", 5", 6" Maximum Stroke – 12" Optional Accessory: D-129 Mounting Bracket Base Weight: .41 Adder Per Inch of Stroke: .06	

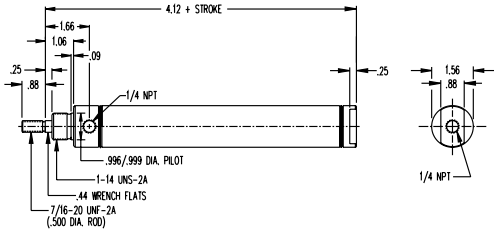
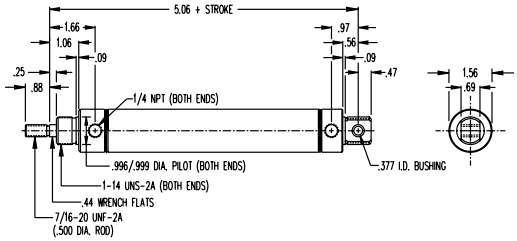
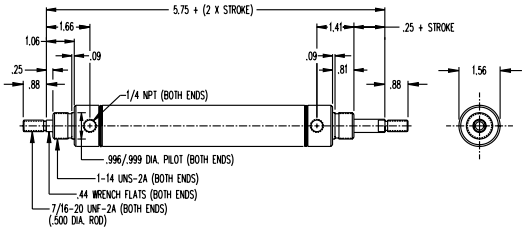
1-1/16" Bore MRS® Magnetic Reed Switch Air Cylinders

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

1-1/4" Bore MRS® Magnetic Reed Switch Air Cylinders

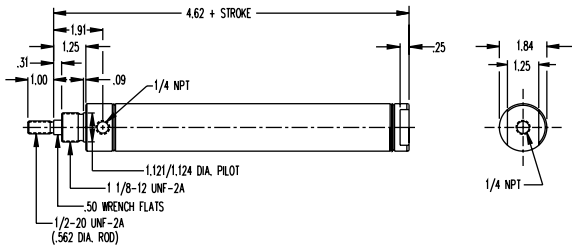
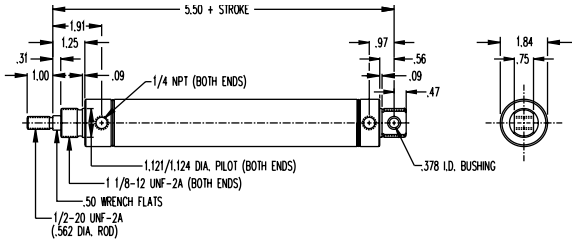
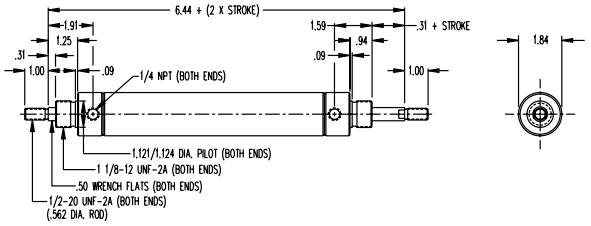
Model	Description/Weight (lbs)	Dimensions
MRS-12 ☐ -D 	Nose Mount Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4", 5", 6" Maximum Stroke – 12" Optional Accessory: D-8316 Mounting Bracket Base Weight: .51 Adder Per Inch of Stroke: .07	
MRS-12 ☐ -DXP 	Double End or Rear Pivot Mounting Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4", 5", 6", 7", 8", 9", 10", 11", 12" Maximum Stroke – 32" Optional Accessories: D-8322-A Pivot Bracket D-8316 Mounting Bracket D-8310-A Rod Clevis Base Weight: .61 Adder Per Inch of Stroke: .05	
MRS-12 ☐ -DXDE 	Double End Rod – Double End Mounting Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4", 5", 6" Maximum Stroke – 12" Optional Accessory: D-8316 Mounting Bracket Base Weight: .70 Adder Per Inch of Stroke: .14	

1-1/2" Bore MRS® Magnetic Reed Switch Air Cylinders

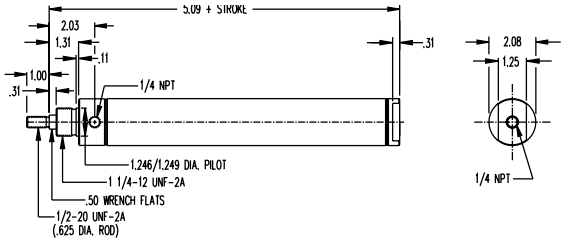
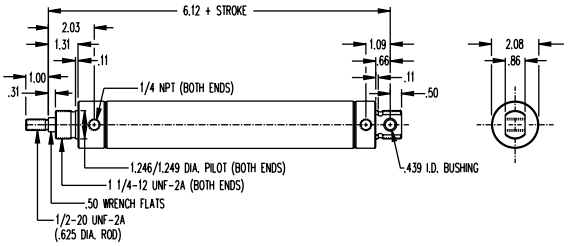
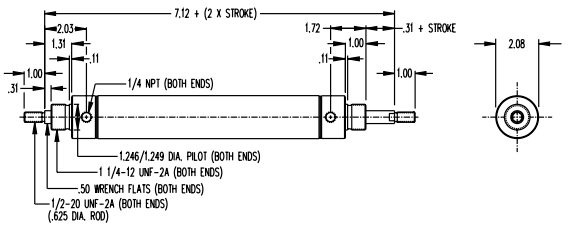
Model	Description/Weight (lbs)	Dimensions
MRS-17 ☐ -D 	Nose Mount Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4", 5", 6" Maximum Stroke – 12" Optional Accessory: D-8317 Mounting Bracket Base Weight: .74 Adder Per Inch of Stroke: .10	
MRS-17 ☐ -DXP 	Double End or Rear Pivot Mounting Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4", 5", 6", 7", 8", 9", 10", 11", 12" Maximum Stroke – 32" Optional Accessories: D-8323-A Pivot Bracket D-8317 Mounting Bracket D-8311-A Rod Clevis Base Weight: .87 Adder Per Inch of Stroke: .10	
MRS-17 ☐ -DXDE 	Double End Rod – Double End Mounting Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4", 5", 6" Maximum Stroke – 12" Optional Accessory: D-8317 Mounting Bracket Base Weight: .94 Adder Per Inch of Stroke: .20	

How to Specify

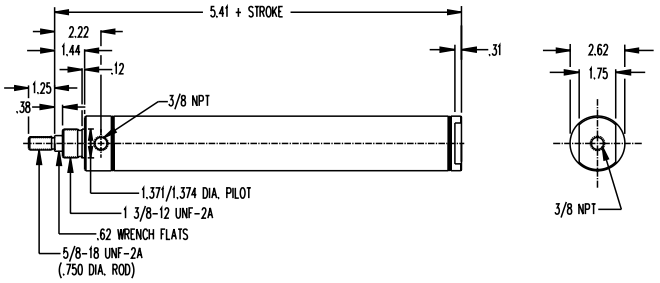
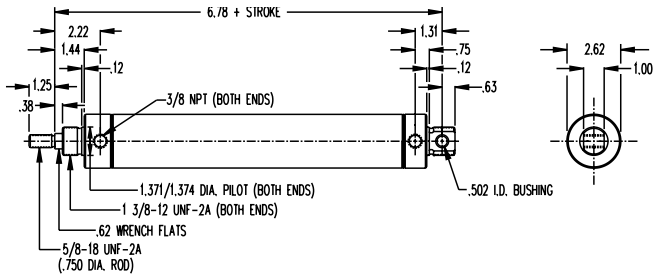
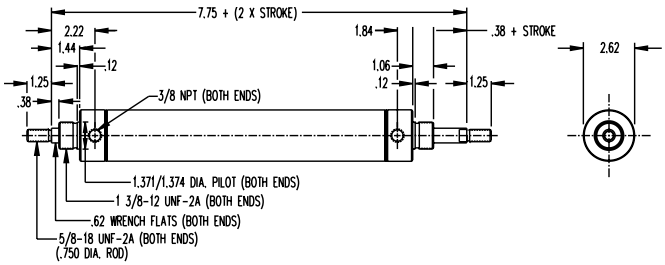
1-3/4" Bore MRS® Magnetic Reed Switch Air Cylinders

Model	Description/Weight (lbs)	Dimensions
MRS-24 ☐ -D 	Nose Mount Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4", 5", 6" Maximum Stroke – 12" Optional Accessory: D-8318 Mounting Bracket Base Weight: 1.14 Adder Per Inch of Stroke: .13	
MRS-24 ☐ -DXP 	Double End or Rear Pivot Mounting Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 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	
MRS-24 ☐ -DXDE 	Double End Rod – Double End Mounting Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4", 5", 6" Maximum Stroke – 12" Optional Accessory: D-8318 Mounting Bracket Base Weight: 1.40 Adder Per Inch of Stroke: .26	

2" Bore MRS® Magnetic Reed Switch Air Cylinders

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

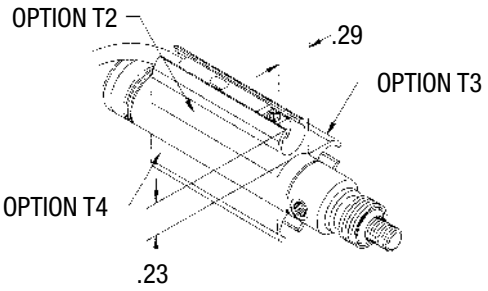
2-1/2" Bore MRS® Magnetic Reed Switch Air Cylinders

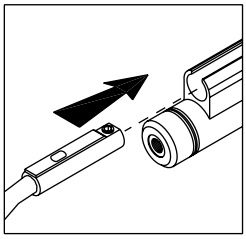
Model	Description/Weight (lbs)	Dimensions
MRS-50 ☐ -D 	Nose Mount Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4", 5", 6" Maximum Stroke – 12" Optional Accessory: D-8320 Mounting Bracket Base Weight: 2.48 Adder Per Inch of Stroke: .20	
MRS-50 ☐ -DXP 	Double End or Rear Pivot Mounting Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4", 5", 6", 7", 8", 9", 10", 11", 12" Maximum Stroke – 32" Optional Accessories: D-8326-A Pivot Bracket D-8320 Mounting Bracket D-8314-A Rod Clevis Base Weight: 2.90 Adder Per Inch of Stroke: .20	
MRS-50 ☐ -DXDE 	Double End Rod – Double End Mounting Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4", 5", 6" Maximum Stroke – 12" Optional Accessory: D-8320 Mounting Bracket Base Weight: 3.15 Adder Per Inch of Stroke: .40	

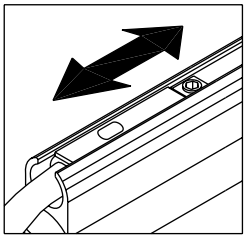
How to Specify

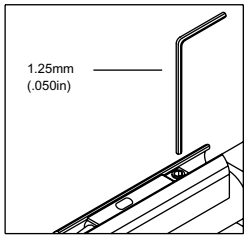
Switch Track Options

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:

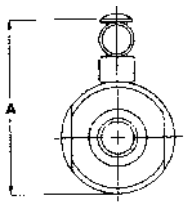
- Clean body with acetone. Remove all oil from body surface.
- Avoid mounting track over rolled construction. Locate edge of track 0.175" from rolled construction.
- Use a solid continuous bead of glue for the entire length of track used. Bead should fill center channel of track.
- Adhere to recommended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

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

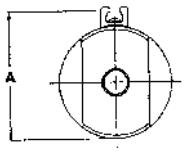
Loctite U-05FL or similar adhesive is recommended (not included).

For MRS cylinders with –Z or –ZTT options

For 9/16" and 3/4" Bore



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

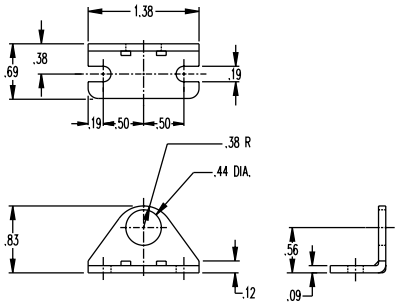


Bore Designator	Bore	A
02	9/16"	1.00
04	3/4"	1.38
09	1-1/16"	1.50
12	1-1/4"	1.68
17	1-1/2"	1.91
24	1-3/4"	2.20
31	2"	2.43
50	2-1/2"	2.98

MRS® Accessories

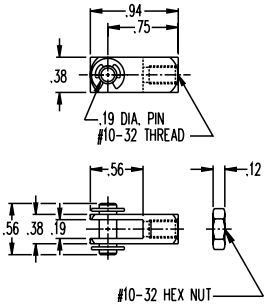
9/16" Bore Accessories

D-770



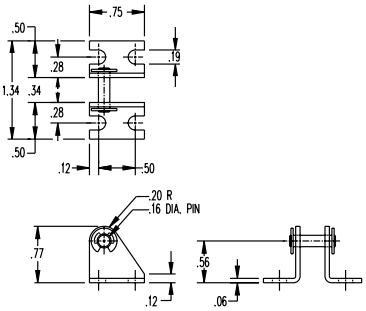
Mounting Bracket

D-850



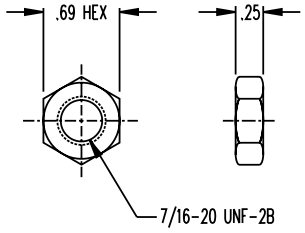
Rod Clevis

D-12321-A



Pivot Bracket

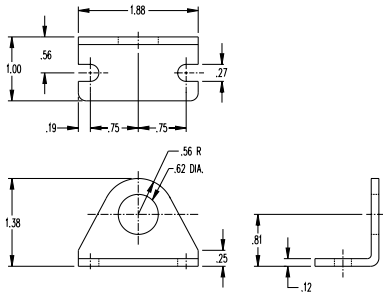
D-154



Mounting Nut

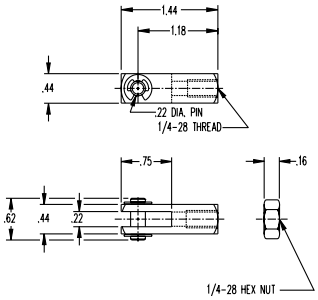
3/4" Bore Accessories

D-129



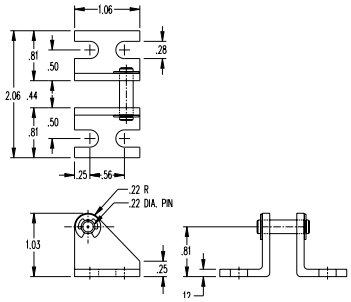
Mounting Bracket

D-10139-A



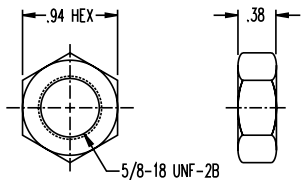
Rod Clevis

D-10131-A



Pivot Bracket

D-9



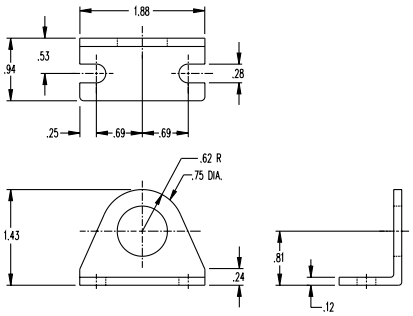
Mounting Nut

How to Accessorize

MRS® Accessories

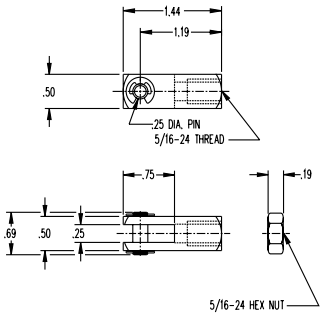
1-1/16" Bore Accessories

D-8315



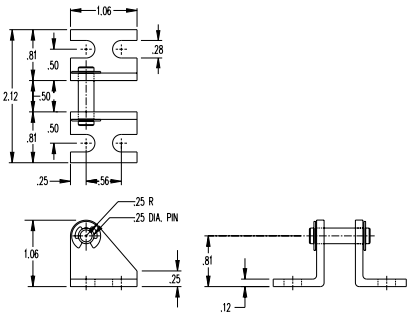
Mounting Bracket

D-8309-A



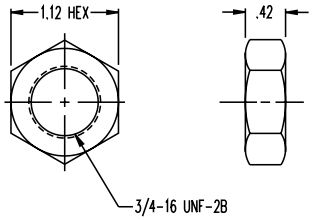
Rod Clevis

D-8321-A



Pivot Bracket

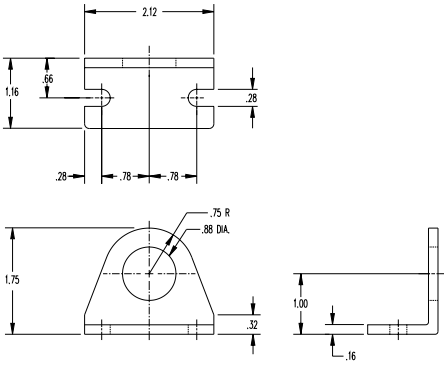
D-3556



Mounting Nut

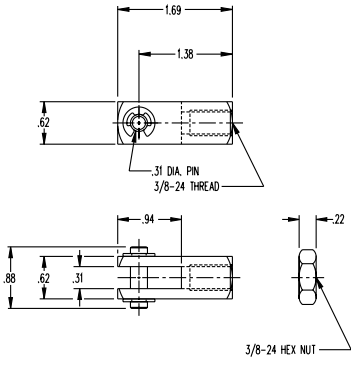
1-1/4" Bore Accessories

D-8316



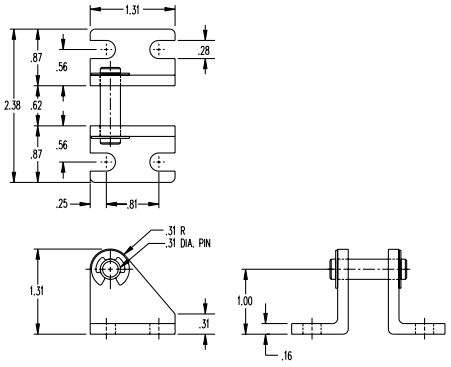
Mounting Bracket

D-8310-A



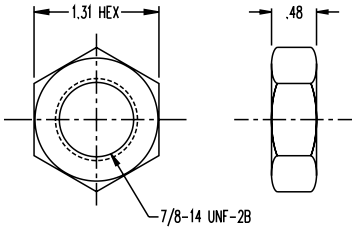
Rod Clevis

D-8322-A



Pivot Bracket

D-2545

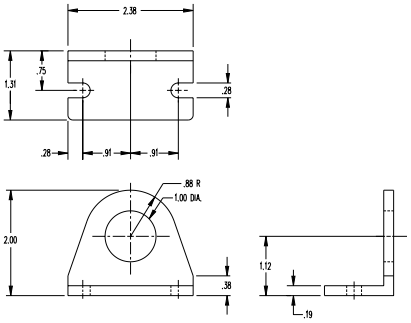


Mounting Nut

MRS® Accessories

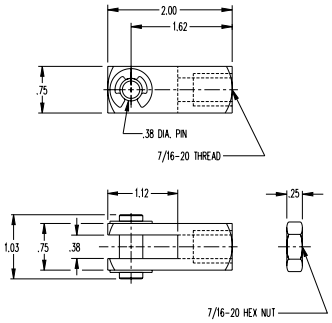
1-1/2" Bore Accessories

D-8317



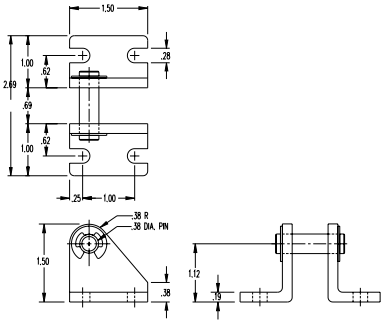
Mounting Bracket

D-8311-A



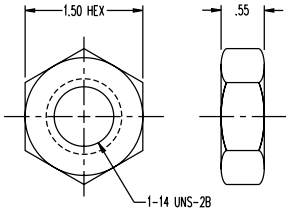
Rod Clevis

D-8323-A



Pivot Bracket

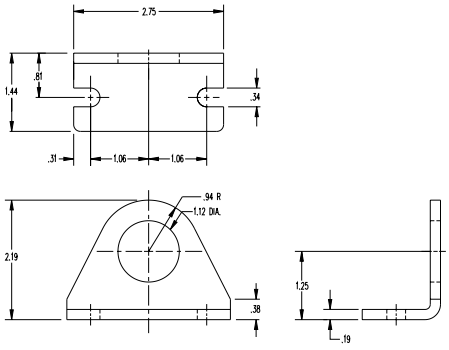
D-1331



Mounting Nut

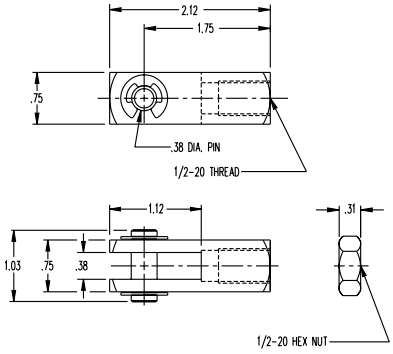
1-3/4" Bore Accessories

D-8318



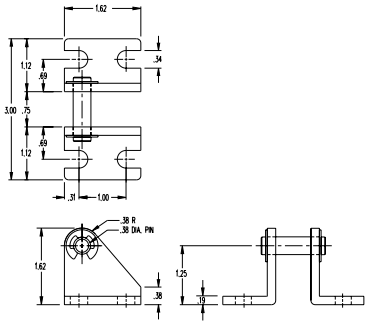
Mounting Bracket

D-8312-A



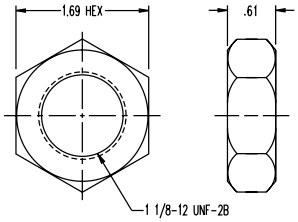
Rod Clevis

D-8324-A



Pivot Bracket

D-8484



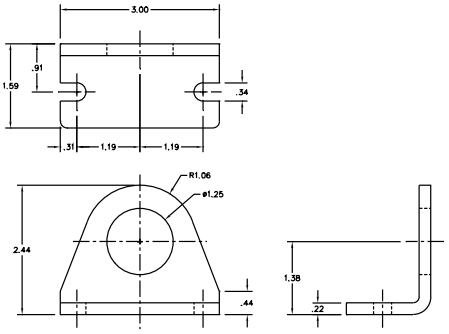
Mounting Nut

How to Accessorize

MRS® Accessories

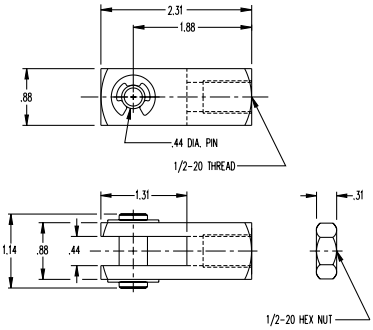
2" Bore Accessories

D-8319



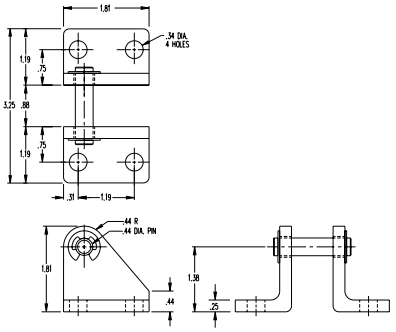
Mounting Bracket

D-8313-A



Rod Clevis

D-8325-A



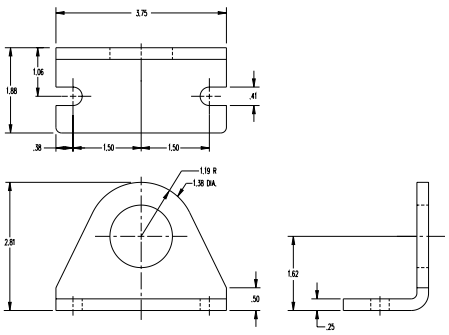
Pivot Bracket

D-508

Mounting Nut

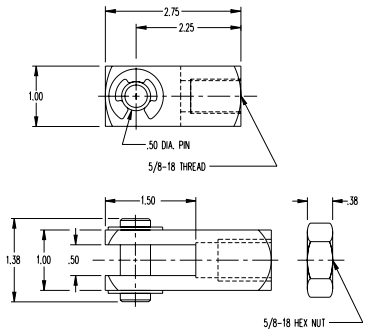
2-1/2" Bore Accessories

D-8320



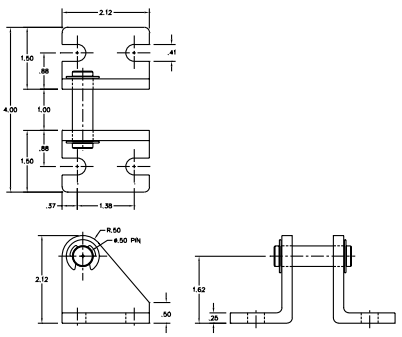
Mounting Bracket

D-8314-A



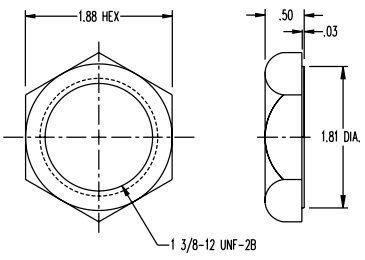
Rod Clevis

D-8326-A



Pivot Bracket

D-2540



Mounting Nut

How to Order

The model number of all Magnetic Reed Switch Original Line pneumatic actuators consists of an alphanumeric cluster designating model, bore size, stroke length, mounting styles, and other optional components that together make up the complete part number to use in ordering. Use the ordering information below to build a valid part number.

An example of a basic Magnetic Reed Switch Original Line unit with 2-1/2" bore, 3" stroke, front nose mounting, and additional options is shown below.

MRS - 50 3 - D NT

Stroke Length
XX (in)

Mounting Style	
D	Front nose
XP	Universal double end or rear pivot
DXDE	Double end with double end rod

Model	
MRS	Magnetic Reed Switch cylinder

Bore Size	
02	9/16"
04	3/4"
09	1-1/16"
12	1-1/4"
17	1-1/2"
24	1-3/4"
31	2"
50	2-1/2"

Options*	
99	HT-99 oil pre-lube
B	Bumpers
NT	No thread
Q	Side ported rear head
T	Switch track (T1, T2, T3, or T4) (see Switch Products for switch selection information)
V	High temperature seals and lubrication
Z	Heavy duty switch track
EEX.XX	Extra rod extension of X.XX

Approximate Power Factors		
5/16"	=	0.07
7/16"	=	0.15
9/16"	=	0.25
3/4"	=	0.40
7/8"	=	0.60
1-1/16"	=	0.90
1-1/4"	=	1.20
1-1/2"	=	1.7
1-3/4"	=	2.40
2"	=	3.10
2-1/2"	=	5.00
3"	=	7.00

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.

FORCE = Airline Pressure x Piston Area

PISTON AREA = Bimba Power Factor

FORCE = Airline Pressure x Bimba Power Factor

Product Features



Non-Rotating Original Line Air Cylinders

Bimba's 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 hexagonal 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 ±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.

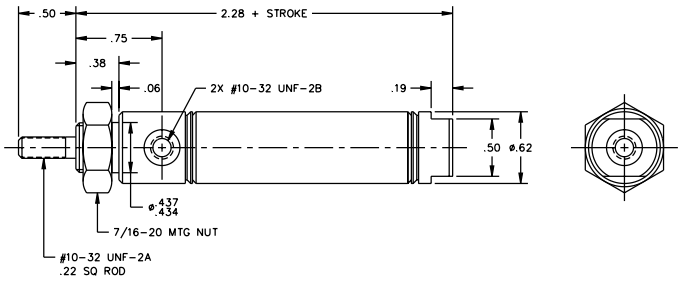
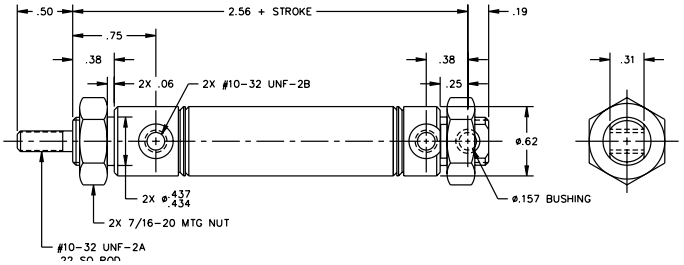
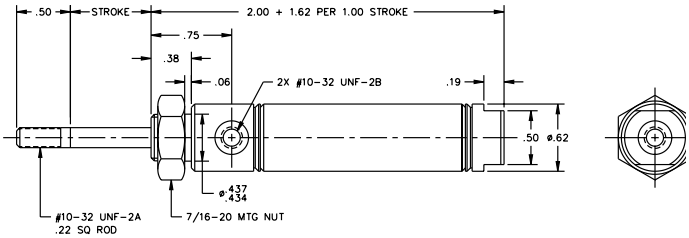
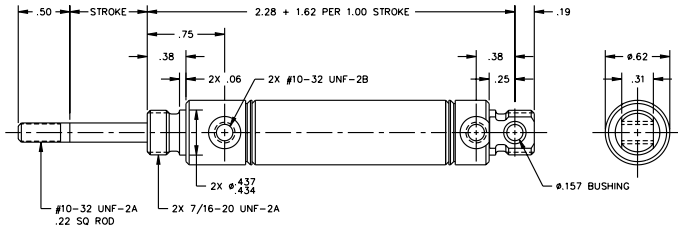
9/16" Bore Non-Rotating Air Cylinders

> 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: 2lbs relaxed - 4lbs compressed
> Standard Buna N seals temperature range: -20˚ F (-25˚ C) to 200˚ F (95˚ C)

Options:

> **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 57 for track location details. See the Switch Products chapter 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)

☐ Enter Stroke Length as 3rd Digit

Model	Description/Weight (lbs)	Dimensions
NR-02 ☐ -D 	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	
NR-02 ☐ -DXP 	Double Acting – Double End or Rear Pivot Mounting – Air Return Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4" Maximum Stroke – 10" Optional Accessories: D-770 Mounting Nut D-850 Rod Clevis D-12321-A Pivot Bracket Base Weight: .09 Adder Per Inch of Stroke: .02	
NR-02 ☐ -R 	Reverse Single Acting – Pull Type – Rod Normally Extended – Spring Return – Front Nose Mounting Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3" Maximum Stroke – 4" Optional Accessory: D-770 Mounting Bracket Base Weight: .08 Adder Per Inch of Stroke: .04	 See page 12 for length calculation of fractional stroke for single acting cylinders.
NR-02 ☐ -RP 	Reverse Single Acting – Pivot and Pull Type – Rod Normally Extended – Spring Return – Rear Pivot Mounting Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3" Maximum Stroke – 4" Optional Accessories: D-850 Rod Clevis D-12321-A Pivot Bracket Base Weight: .08 Adder Per Inch of Stroke: .04	 See page 12 for length calculation of fractional stroke for single acting cylinders.

How to Specify

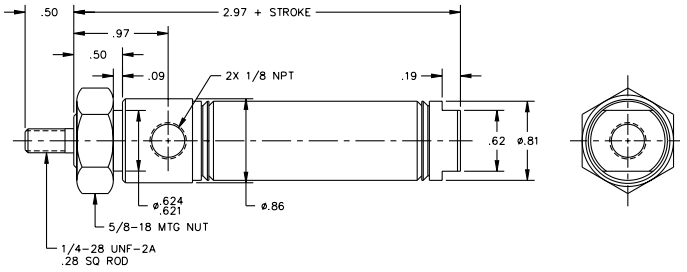
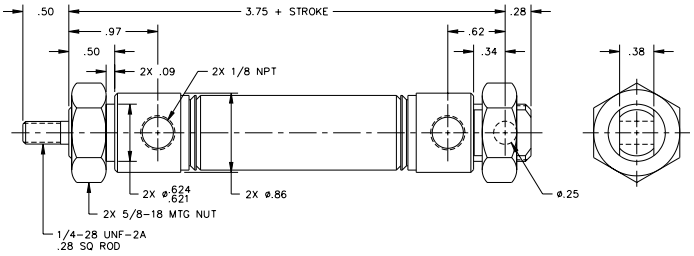
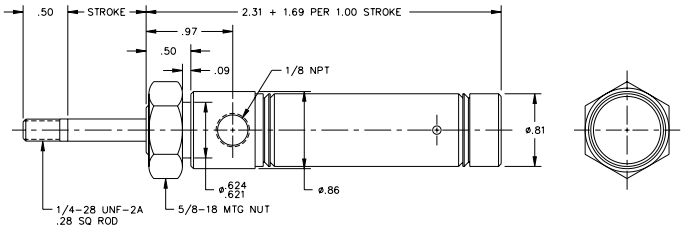
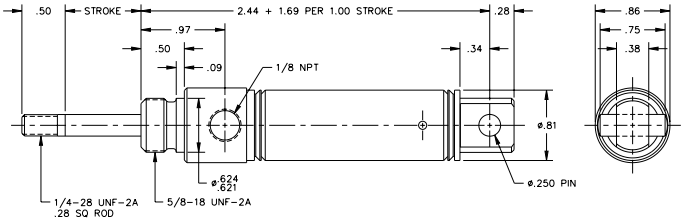
3/4" Bore Non-Rotating Air Cylinders

- 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: 3lbs relaxed - 6lbs compressed
- Standard Buna N seals temperature range: 20˚ F (-25˚ C) to 200˚ F (95˚ C)

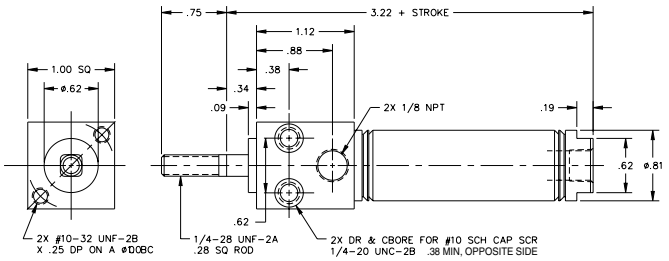
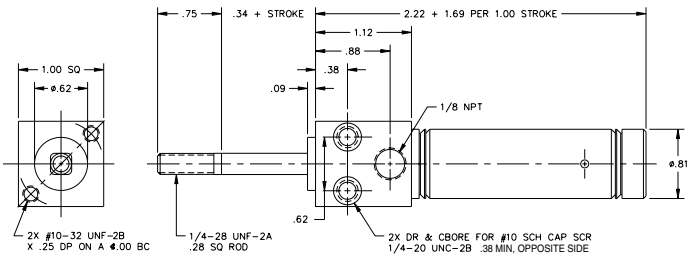
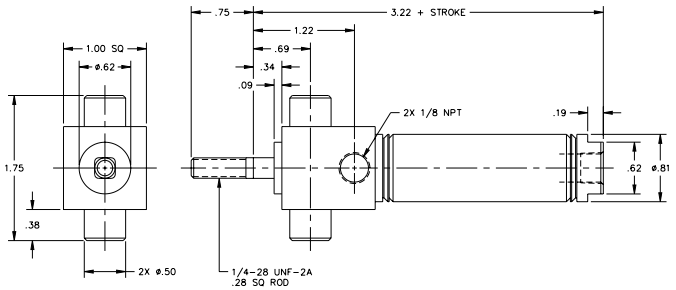
Options:

- **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 57 for track location details. See the Switch Products chapter 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)

☐ Enter Stroke Length as 3rd Digit

Model	Description/Weight (lbs)	Dimensions
NR-04 ☐ -D 	Double Acting – Air Return – Front Nose Mounting Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4", 5", 6" Maximum Stroke – 12" Optional Accessory: D-129 Mounting Bracket Base Weight: .21 Adder Per Inch of Stroke: .03	
NR-04 ☐ -DXP 	Double Acting – Double End or Rear Pivot Mounting – 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-129 Mounting Bracket D-166-3 Rod Clevis D-13498-A Pivot Bracket Base Weight: .29 Adder Per Inch of Stroke: .03	
NR-04 ☐ -R 	Reverse Single Acting – Pull Type – Rod Normally Extended – Spring Return – Front Nose Mounting Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4" Maximum Stroke – 6" Optional Accessory: D-129 Mounting Bracket Base Weight: .18 Adder Per Inch of Stroke: .07	 See page 12 for length calculation of fractional stroke for single acting cylinders.
NR-04 ☐ -RP 	Reverse Single Acting – Pull Type – Rod Normally Extended – Spring Return — Rear Pivot Mounting Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 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	 See page 12 for length calculation of fractional stroke for single acting cylinders.

3/4" Bore Non-Rotating Air Cylinders

Model	Description/Weight (lbs)	Dimensions
BFNR-04 ☐ -D 	Double Acting – Front Block Mounting – Air Return Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4", 5", 6" Maximum Stroke – 12" Base Weight: .22 Adder Per Inch of Stroke: .03	
BFNR-04 ☐ -R 	Pull Type – Front Block Mounting Rod Normally Extended – Reverse Single Acting – Spring Return Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4" Maximum Stroke – 6" Base Weight: .19 Adder Per Inch of Stroke: .07	 See page 12 for length calculation of fractional stroke for single acting cylinders.
BFTNR-04 ☐ -D 	Double Acting – Front Block Trunnion Mounting – Air Return Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 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	

How to Specify

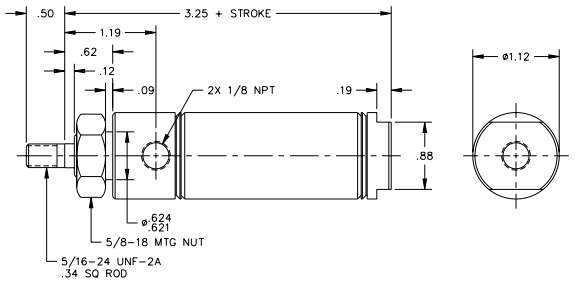
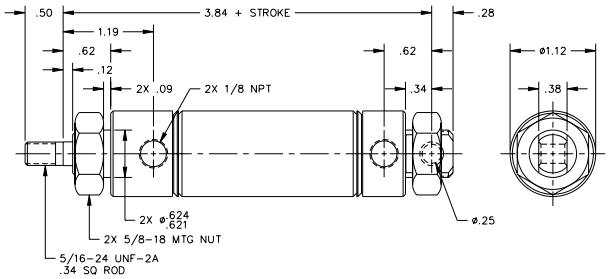
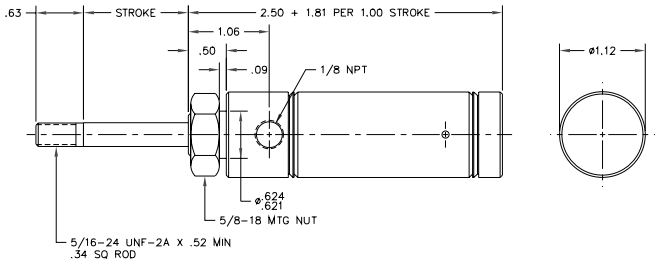
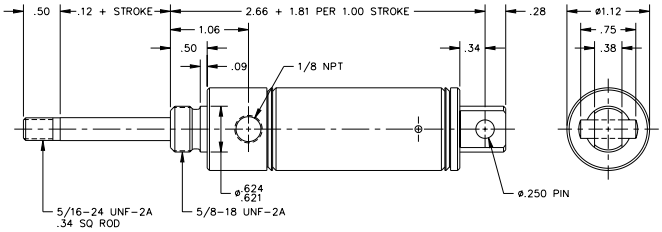
1-1/16" Bore Non-Rotating Air Cylinders

> 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: 6lbs relaxed - 12lbs compressed.
> Standard Buna N seals temperature range:-20˚ F (-25˚ C) to 200˚ F (95˚ C)

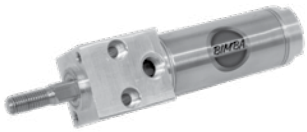
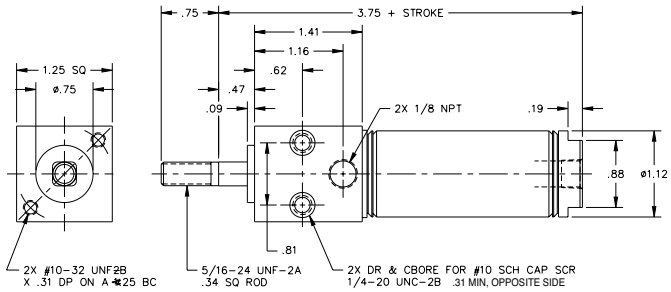
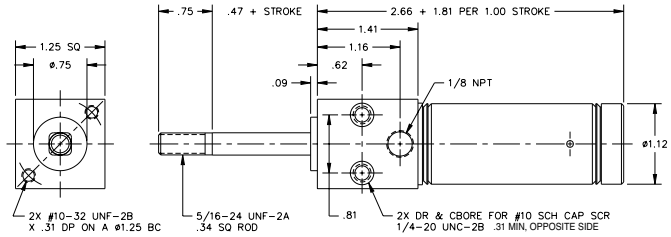
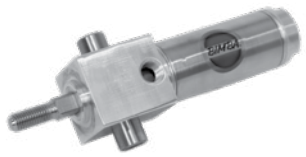
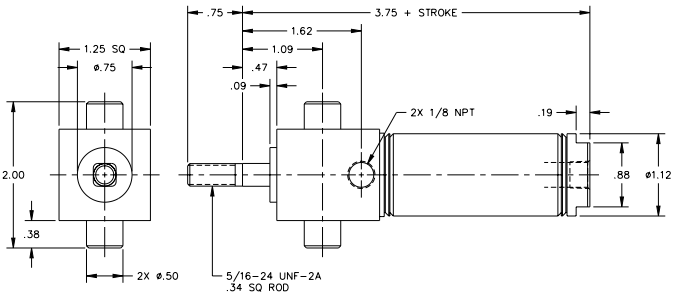
Options:

> **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 57 for track location details. See Switch Products 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)

☐ Enter Stroke Length as 3rd Digit

Model	Description/Weight (lbs)	Dimensions
NR-09 ☐ -D 	Double Acting – Air Return – Front Nose Mounting Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4", 5", 6" Maximum Stroke – 12" Optional Accessory: D-129 Mounting Bracket Base Weight: .33 Adder Per Inch of Stroke: .05	
NR-09 ☐ -DXP 	Double Acting – Double End or Rear Pivot Mounting – 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-129 Mounting Bracket D-166-1 Rod Clevis D-13498-A Pivot Bracket Base Weight: .33 Adder Per Inch of Stroke: .05	
NR-09 ☐ -R 	Reverse Single Acting – Pull Type – Rod Normally Extended – Spring Return – Front Nose Mounting Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4" Maximum Stroke – 6" Optional Accessory: D-129 Mounting Bracket Base Weight: .24 Adder Per Inch of Stroke: .16	 See page 12 for length calculation of fractional stroke for single acting cylinders.
NR-09 ☐ -RP 	Reverse Single Acting – Pivot or Pull Type – Rod Normally Extended Spring Return – Rear Pivot Mounting Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 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	 See page 12 for length calculation of fractional stroke for single acting cylinders.

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

Model	Description/Weight (lbs)	Dimensions
BFNR-09 ☐ -D 	Double Acting – Front Block Mounting – Air Return Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4", 5", 6" Maximum Stroke – 12" Base Weight: .49 Adder Per Inch of Stroke: .05	
BFNR-09 ☐ -R 	Reverse Single Acting – Front Block Mounting – Rod Normally Extended – Reverse Single Acting – Spring Return Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4" Maximum Stroke – 6" Base Weight: .36 Adder Per Inch of Stroke: .16	 See page 12 for length calculation of fractional stroke for single acting cylinders.
BFTNR-09 ☐ -D 	Double Acting – Front Block Trunnion Mounting – Air Return Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 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	

How to Specify

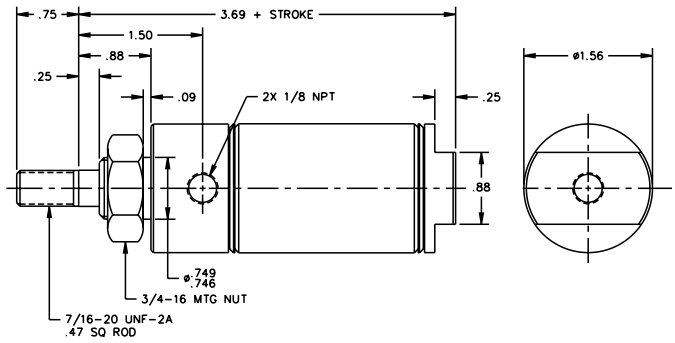
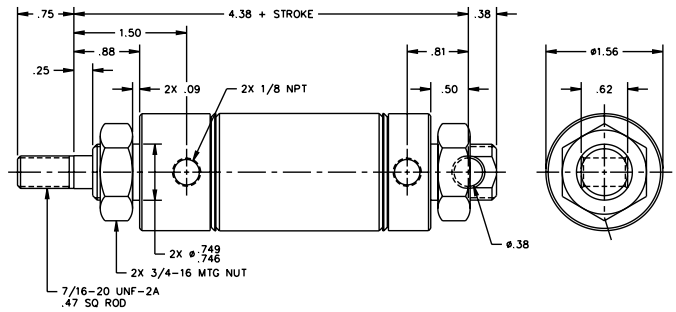
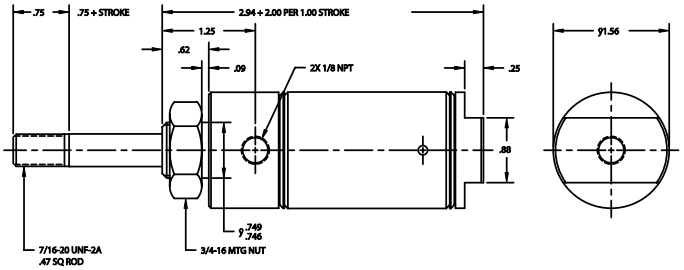
1-1/2" Bore Non-Rotating Air Cylinders

> 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: 8.5lbs relaxed - 17lbs compressed
> Standard Buna N seals temperature range: -20˚ F (-25˚ C) to 200˚ F (95˚ C)

Options:

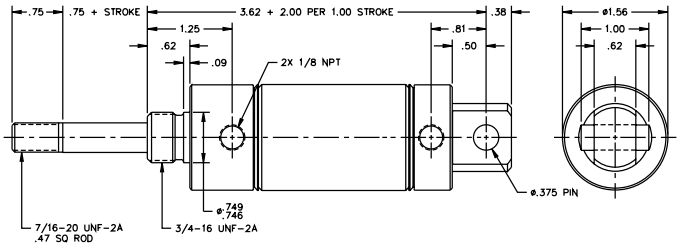
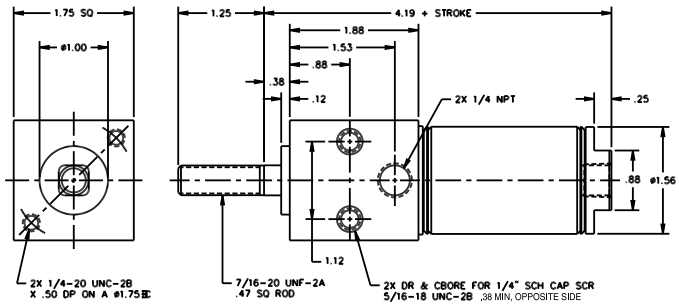
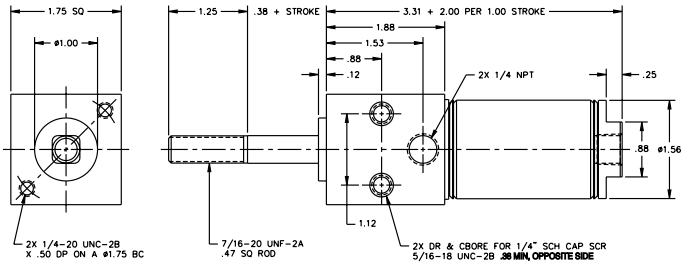
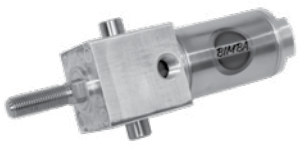
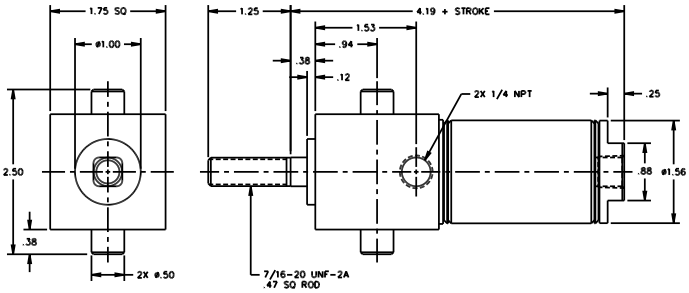
> **Ports Rotated (K)**
> **Side Ported Rear Head (Q)**
> **Pivot Bushing (Y)**
> **Reverse Acting Bumpers (B)**
» Add .062 to overall length
> **Double Acting Bumpers (B)**
» Add .125 to overall length
> **Extra Extension (EE)**
> **Magnet (prefix M)**
» Reverse acting add .125" to overall length
» Must specify track(s) for use with miniature position sensing (T2, T3, T4). See page 57 for track location details. See Switch Products 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)

☐ Enter Stroke Length as 3rd Digit

Model	Description/Weight (lbs)	Dimensions
NR-17☐-D 	Double Acting – Air Return – Front Nose Mounting Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4", 5", 6" Maximum Stroke – 12" Optional Accessory: D-241 Mounting Bracket Base Weight: .69 Adder Per Inch of Stroke: .08	
NR-17☐-DXP 	Double Acting – Double End or Rear Pivot Mounting – 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-241 Mounting Bracket D-231-1 Rod Clevis D-8323-A Pivot Bracket Base Weight: .82 Adder Per Inch of Stroke: .08	
NR-17☐-R 	Reverse Single Acting – Pull Type – Rod Normally Extended Spring Return – Spring force 8.5lbs relaxed, 17lbs compressed – Front Nose Mounting Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4" Maximum Stroke – 6" Optional Accessory: D-241 Mounting Bracket Base Weight: .44 Adder Per Inch of Stroke: .22	

See page 12 for length calculation of fractional stroke for single acting cylinders.

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

Model	Description/Weight (lbs)	Dimensions
NR-17 ☐ -RP 	Reverse Single Acting – Pivot and Pull Type – Rod Normally Extended – Spring Return – Spring Force 8.5lbs relaxed, 17lbs compressed – Rear Pivot Mounting Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 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	 See page 12 for length calculation of fractional stroke for single acting cylinders.
BFNR-17 ☐ -D 	Double Acting – Front Block Mounting – Air Return Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4", 5", 6" Maximum Stroke – 12" Base Weight: .99 Adder Per Inch of Stroke: .08	
BFNR-17 ☐ -R 	Pull Type – Front Block Mounting – Rod Normally Extended – Reverse Single Acting – Spring Return Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4" Maximum Stroke – 6" Base Weight: .96 Adder Per Inch of Stroke: .22	 See page 12 for length calculation of fractional stroke for single acting cylinders.
BFTNR-17 ☐ -D 	Double Acting – Front Block Trunnion Mounting – Spring Return Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 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	

How to Specify

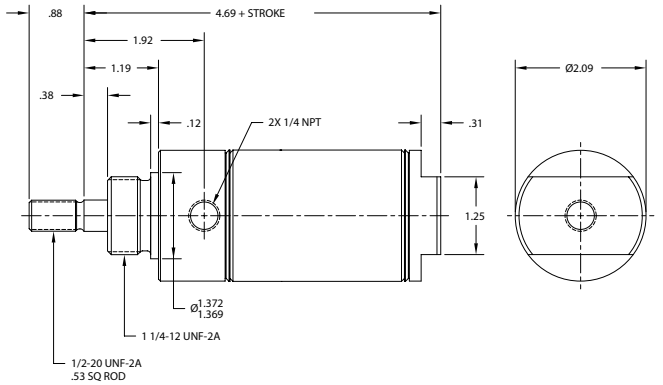
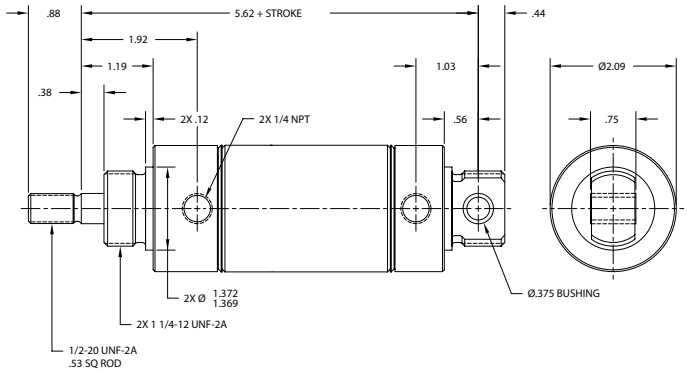
2" Bore Non-Rotating Air Cylinders

> 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: 15lbs relaxed - 30lbs compressed.
> Standard Buna N seals temperature range: -20˚ F (-25˚ C) to 200˚ F (95˚ C)

Options:

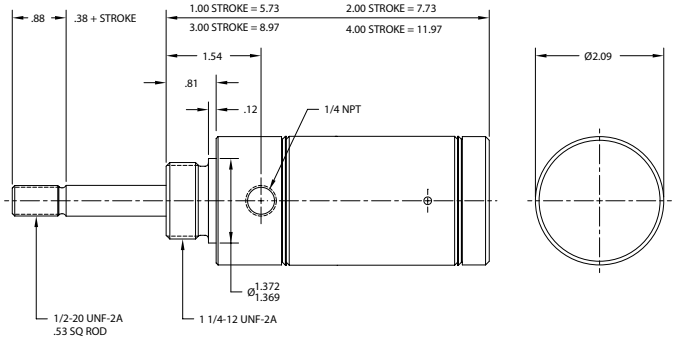
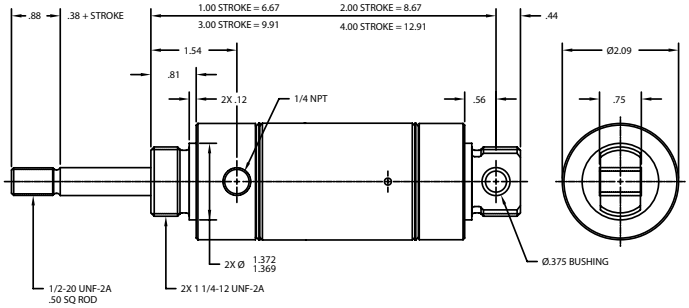
> **Ports Rotated (K)**
> **Side Ported Rear Head (Q)**
> **Reverse Acting Bumpers (B)**
» Add .062 to overall length
> **Double Acting Bumpers (B)**
» Add .125 to overall length
> **Extra Extension (EE)**
> **Magnet (prefix M)**
» Reverse acting add .125" to overall length
» Must specify track(s) for use with miniature position sensing (T2, T3, T4). See page 57 for track location details. See Switch Products 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)

☐ Enter Stroke Length as 3rd Digit

Model	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

☐ Enter Stroke Length as 3rd Digit

Model	Description/Weight (lbs)	Dimensions
NR-31 ☐ -R 	Reverse Single Acting — Pull Type – Rod Normally Extended – Spring Return – Front Nose Mounting 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	 See page 12 for length calculation of fractional stroke for single acting cylinders.
NR-31 ☐ -RP 	Reverse Single Acting — Pivot or Pull Type – Rod Normally Extended Spring Return – Rear Pivot Mounting 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	 See page 12 for length calculation of fractional stroke for single acting cylinders.

How to Specify

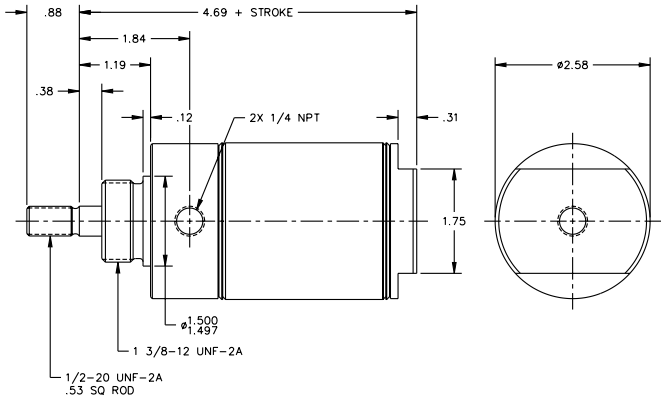
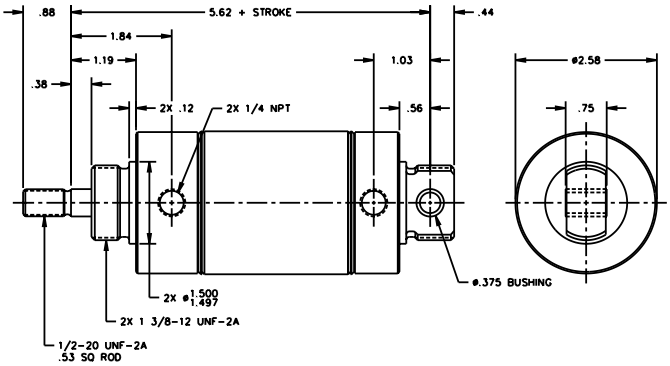
2-1/2" Bore Non-Rotating Air Cylinders

> 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
> Standard Buna N seals temperature range: -20˚ F (-25˚ C) to 200˚ F (95˚ C)

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 57 for track location details. See Switch Products 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)

☐ Enter Stroke Length as 3rd Digit

Model	Description/Weight (lbs)	Dimensions
NR-50 ☐ -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-615-1 Mounting Bracket D-2540 Mounting Nut Base Weight: 1.98 Adder Per Inch of Stroke: .17	
NR-50 ☐ -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-615-1 Mounting Bracket D-231-3 Rod Clevis D-620 Pivot Bracket D-2540 Mounting Nut Base Weight: 2.27 Adder Per Inch of Stroke: .17	

Accessories

Non-Rotating Original Line cylinders utilize the same accessories as standard Original Line cylinders. For more information on accessories, please refer to the Original Line accessories section, pages 58-66.

The model number of all Original Line pneumatic actuators consists of an alphanumeric cluster designating product type, bore size, stroke length, mounting styles, and other optional components that together make up the complete part number to use in ordering. Use the ordering information below to build a valid part number.

An example of a basic double-acting Original Line unit with a rear block, 7/16" bore, 3" stroke, and additional options is shown below.

Stroke Length
XX (in)

Acting	
D	Double acting
R	Reverse acting
DXDE	Double end with double end rod

NR - 04 5 - R P BEE0.5

Model	
NR	Non-rotating
BFNR	Non-rotating, front block mounting
BFTNR	Non-rotating, front block trunnion

Bore Size	
02	9/16"
04	3/4"
09	1-1/16"
17	1-1/2"
31	2"
50	2-1/2"

Mounting Style	
D	Front nose
P	Rear pivot
DXP	Universal double end or rear pivot

Options*	
99	HT-99 oil pre-lube
B	Bumpers
K	Ports rotated 90°
N	Low temperature seals and lubrication
NT	No thread
Q	Side ported rear head
V	High temperature seals and lubrication
Y	Pivot bushing replaces pivot pin
EEX.XX	Extra rod extension of X.XX

Approximate Power Factors		
5/16"	=	0.07
7/16"	=	0.15
9/16"	=	0.25
3/4"	=	0.40
7/8"	=	0.60
1-1/16"	=	0.90
1-1/4"	=	1.20
1-1/2"	=	1.7
1-3/4"	=	2.40
2"	=	3.10
2-1/2"	=	5.00
3"	=	7.00

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.

FORCE = Airline Pressure x Piston Area

PISTON AREA = Bimba Power Factor

FORCE = Airline Pressure x Bimba Power Factor

Product Features



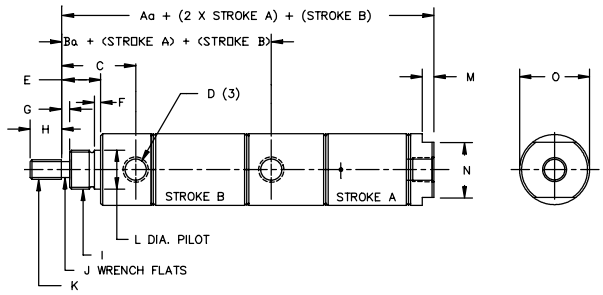
Three Position Original Line Cylinders

The "Blue and Improved" 3-Position Original Line® cylinder features permanent grease lubrication. Design enhancements have more than doubled the anticipated service life of this non-repairable stainless steel body cylinder offering three distinct stopping points in its travel. This double acting cylinder is an example of our industry leading product breadth in non-repairable cylinders.

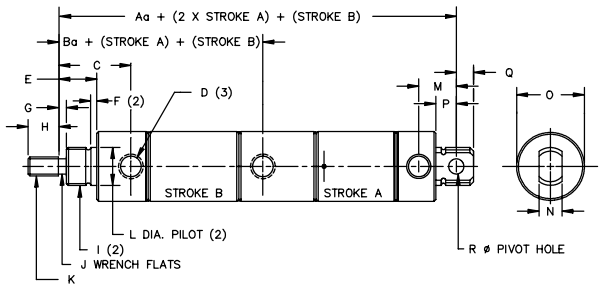
- Bore sizes: 9/16", 3/4", 1-1/16", 1-1/2", 2"
- Three model options: standard, magnetic piston for end of stroke sensing, and non-rotating rod
- Standard options: bumpers, alternate port location, rod wiper, switch track, and more
- Low and high temperature lubrication and seals
- Blue and /improved design doubles previous cylinder life
- Permanent grease lubricant requires no additional lubrication during service

Dimensions (Three Position Original Line Cylinders)

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										
Bore	**Aa**	**Ba**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**
9/16" (02)	4.41	2.25	0.75	#10-32	0.38	0.06	N/A	0.50	7/16-20	N/A
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
1-1/16" (09)	6.56	3.25	1.19	1/8 NPT	0.62	0.09	0.12	0.50	5/8-18	0.25
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
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

DXP Model									Bumper Option	
Bore	**K**	**L**	**M**	**N**	**O**	**P**	**Q**	**R**	**Aa**	**Ba**
9/16" (02)	#10-32	.434/.437	0.38	0.31	0.62	0.25	0.19	0.157	4.59	2.31
3/4" (04)	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)	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)	7/16-20	.746/.749	0.81	0.62	1.56	0.50	0.38	0.375	7.31	3.69
2" (31)	1/2-20	1.375/1.372	1.03	0.75	2.08	0.56	0.44	0.500	9.56	4.91

How to Order

The model number of all Three-Position Original Line pneumatic actuators consists of an alphanumeric cluster designating product type, bore size, stroke length, and other optional components that together make up the complete part number to use in ordering. Use the ordering information below to build a valid part number.

An example of a basic double-acting Three-Position Original Line unit with a 3/4" bore; strokes at positions 0", 3", and 7.5"; double acting nose mounts; and additional options is shown below.

Stroke A	Stroke B
XX (in)	XX (in)

M - 04 3 / 4.5 - D W

Model	
Blank	Three-Position Original Line
M	Magnet option for cylinders
NR	Non-rotating rod option

Bore Size	
02	9/16"
04	3/4"
09	1-1/16"
17	1-1/2"
31	2"

Mounting Options	
D	Double acting, nose mount
DXP	Double acting, universal mount

Options*	
99	HT-99 oil pre-lube
B	Bumpers
K	Ports rotated 90°
N	Low temperature seals and lubrication
NT	Non-threaded rod
Q	Side ported rear head (see Original Line information for applicable length adders by bore size)
T	Switch track (T1, T2, T3, or T4) (see Switch Products for switch selection information)
V	High temperature seals and lubrication
W	Rod wiper
EEX.XX	Extra rod extension of X.XX

NOTE: Consult page 54 for option combination compatibility.
*When configuring options, arrange options in alphabetical order except for EE; place option EE at the end of the configured part number.

Specifications

Description	Specification
Expected life:	3,000 miles without additional lubrication when properly applied
Total stroke tolerance:	
9/16" - 1-1/2"	+.075/-.040
2"	+.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

For accessories, see the standard air cylinder accessories section, pages 58-66.

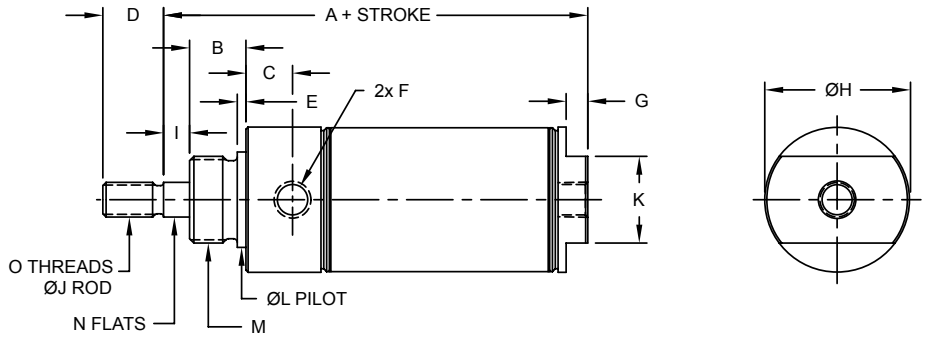


Original Line Cylinders with Plastic End Caps

The "Blue and Improved" Original Line® cylinder features permanent grease lubrication. Design enhancements have more than doubled the anticipated service life. This cylinder features acetal resin end caps, stainless steel rods and stainless steel bodies. They're ideal for applications in environments requiring exposure to moisture, lubricants and specific solvents.

Dimensions (PC Cylinders)

D Mounting Style



Bore	A	A (cushion or Q option)	B	C	D	E	F	G	H
9/16" (02)	2.28	--	0.38	0.38	0.50	0.06	#10-32	0.19	0.61
3/4" (04)	2.97	3.44	0.50	0.47	0.50	0.09	1/8 NPT	0.19	0.81
1-1/16" (09)	3.25	3.50	0.50	0.56	0.50	0.09	1/8 NPT	0.19	1.13
1-1/2" (17)	3.69	3.88	0.63	0.63	0.75	0.09	1/8 NPT	0.25	1.56
2" (31)	4.69	5.27	0.81	0.72	0.88	0.13	1/4 NPT	0.31	2.08

Bore	H (cushion option)	I	J	K	L	M	N	O
9/16" (02)	--	--	0.19	0.50	.434 / .437	7/16-20	--	#10-32
3/4" (04)	0.96	--	0.25	0.63	.621 / .624	5/8-18	--	1/4-28
1-1/16" (09)	1.13	0.13	0.31	0.88	.621 / .624	5/8-18	0.25	5/16-24
1-1/2" (17)	1.56	0.25	0.44	0.88	.996 / .999	1-14	0.38	7/16-20
2" (31)	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"

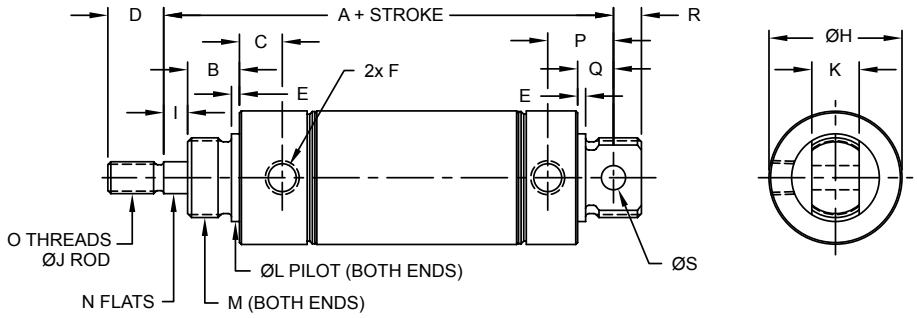
Bumper Length Adder

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"

Dimensions (PC Cylinders)

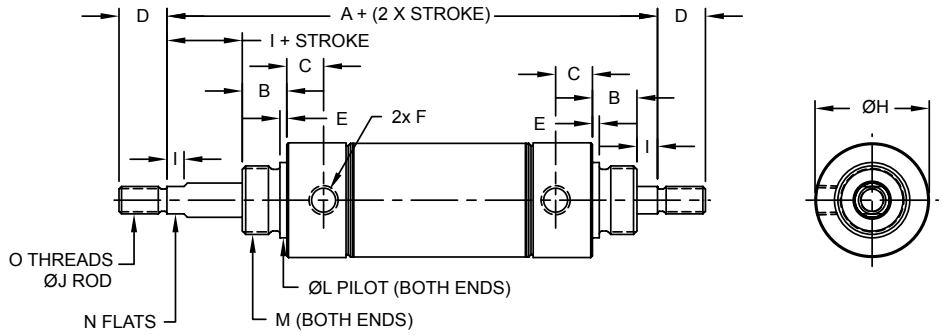
DXP Mounting Style



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

DXDE Mounting

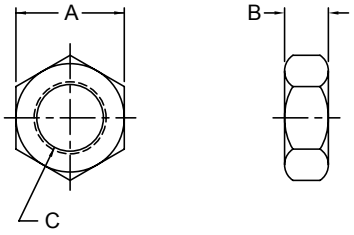


Bore	A	B	C	D	E	F	H	H (cushion option)	I	J	L	M	N	O
9/16" (02)	2.94	0.38	0.38	0.50	0.06	#10-32	0.61	--	--	0.19	.434 / .437	7/16-20	--	#10-32
3/4" (04)	4.00	0.50	0.47	0.50	0.09	1/8 NPT	0.86	0.96	--	0.25	.621 / .624	5/8-18	--	1/4-28
1-1/16" (09)	4.00	0.50	0.56	0.50	0.09	1/8 NPT	1.13	1.13	0.13	0.31	.621 / .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"

Dimensions (PC Cylinders)

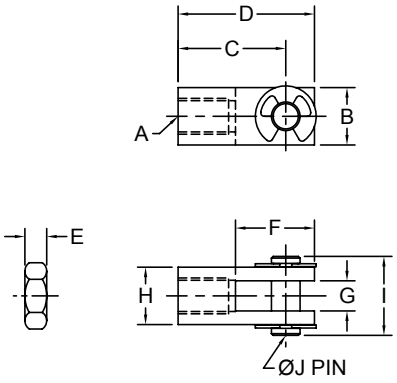
Stainless Steel Mounting Nut*



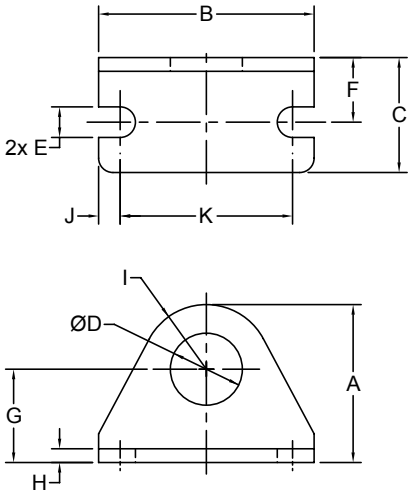
Bore*	Model	A	B	C
9/16" (02)	D-154-SS	0.69	0.25	7/16-20
3/4" (04)	D-9-SS	0.94	0.38	5/8-18
1-1/16" (09)	D-9-SS	0.94	0.38	5/8-18
1-1/2" (17)	D-1331-SS	1.50	0.55	1-14
2" (31)	D-508-SS	1.88	0.50	1-1/4-12

*See page 13 for torque specifications

Stainless Steel Rod End Clevis (includes nut)



Stainless Steel Foot Bracket



Stainless Steel Rod End Clevis (includes nut)

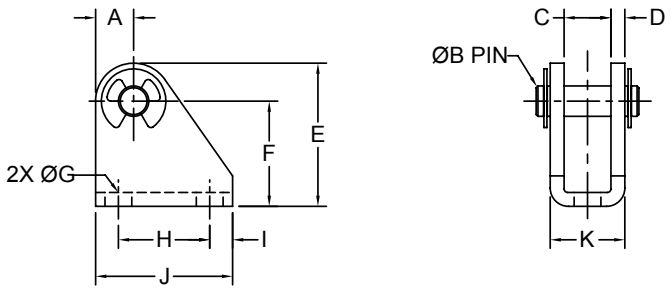
Bore	Model	A	B	C	D	E	F	G	H	I	J
9/16" (02)	D-850-SS	#10-32	0.38	0.75	0.94	0.13	0.56	0.19	0.38	0.56	0.19
3/4" (04)	D-54565-SS	1/4-28	0.50	0.94	1.19	0.16	0.69	0.25	0.50	0.69	0.25
1-1/16" (09)	D-54564-SS	5/16-24	0.50	0.94	1.19	0.19	0.69	0.25	0.50	0.69	0.25
1-1/2" (17)	D-54562-SS	7/16-20	0.75	1.31	1.69	0.25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

Dimensions (PC Cylinders)

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)

CYLINDER WEIGHT (lbs)					
Bore	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

How to Order

The model number of all PC pneumatic actuators consists of an alphanumeric cluster designating product type, bore size, stroke length, and other optional components that together make up the complete part number to use in ordering. Use the ordering information below to build a valid part number.

An example of a basic PC unit with 1-1/16" bore, 6" stroke, and additional options is shown below.

Delrin End Cap Cylinder

Standard stroke lengths*	
All models	1/2", 1", 1-1/2", 2", 2-1/2", 3", 4", 5", 6"
DXP / DXDE models	7", 8", 9", 10", 11", 12"

PC - 09 6 - DXP W

Bore Size	
02	9/16"
04	3/4"
09	1-1/16"
17	1-1/2"
31	2"

Mounting	
D	Nose mount
DXP	Universal mount
DXDE	Double-ended rod

* Consult your local distributor for price and availability of non-standard strokes.

Options*	
99	HT-99 oil pre-lube
B	Bumpers
C	Air cushion, both ends
C1	Air cushion, front head only
C2	Air cushion, rear head only
K	Pivot 90° (DXP models only)
M	Magnetic piston
NT	No thread
Q	Side ported rear head
T	Switch track (T1, T2, T3, or T4) (see Switch Products for switch selection information)
V	Fluoroelastomer seals (for compatibility only)
W	Rod wiper (not available for 9/16" bore)
EEX.XX	Extra rod extension of X.XX

*When configuring options, arrange options in alphabetical order except for EE; place option EE at the end of the configured part number.

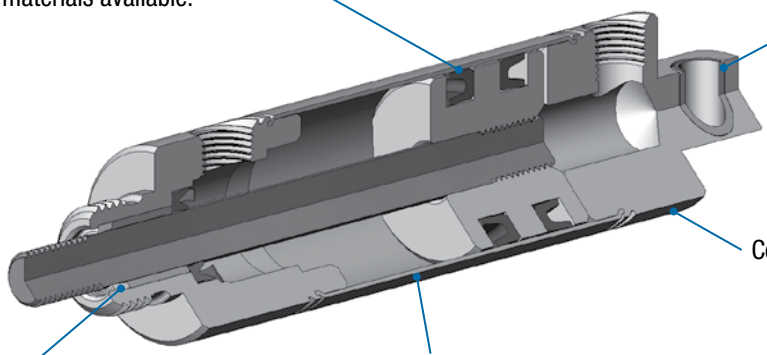
Approximate Power Factors		
9/16"	=	0.25
3/4"	=	0.40
1-1/16"	=	0.90
1-1/2"	=	1.7
2"	=	3.10

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.

FORCE = Airline Pressure x Piston Area

PISTON AREA = Bimba Power Factor

FORCE = Airline Pressure x Bimba Power Factor



The "Blue and Improved" all stainless steel Original Line® cylinder utilizes permanent FDA approved grease lubrication. Design enhancements have more than doubled the anticipated service life of these cylinders, which are perfect solutions for applications in food processing, packaging, medical, pharmaceutical, or marine industries where wash down solutions and corrosives are present.

All Stainless Steel Non-Repairable Original Line Cylinders

- Bore sizes: 5/16", 7/16", 9/16", 3/4", 7/8", 1-1/16", 1-1/4", 1-1/2", 1-3/4", 2", 2-1/2", 3"
- Corrosion resistant stainless steel end caps
- Urethane rod wiper limits ingress of application matter/chemical solutions into cylinder
- PTFE based rod and pivot bushings
- Blue and Improved design doubles previous cylinder life
- Permanent grease lubricant requires no additional lubrication during service

Technical Data

Operating Specifications

Pressure Rating
250 psi air maximum

Temperature Rating
-20º F to 200º F

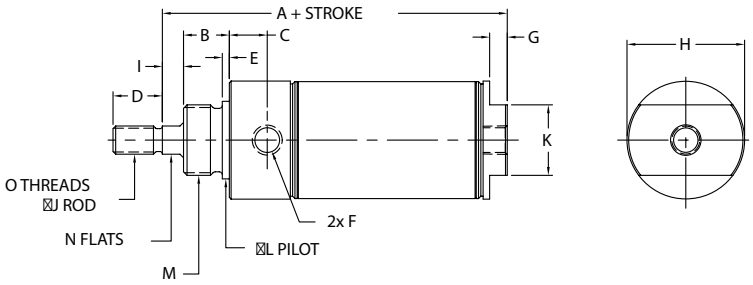
Note that if the magnetic piston is used, maximum temperature is derated to 185º F. Fluoroelastomer seals rated for higher temperatures (up to 400º F) are available. Fluoroelastomer seals (option "V") should be ordered for chemical compatibility only. The temperature rating of the standard Urethane rod wiper is 200° F. If a cylinder temperature rating of higher than 200° 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 0º F for extended time periods, our low temperature option (N) is recommended. This option has a temperature range of -40º F to 200º F. If cylinders are operated below -20º F with low temperature seals for extended time periods, cylinder performance will be affected by the cold temperature.

Lubrication
Food grade synthetic grease

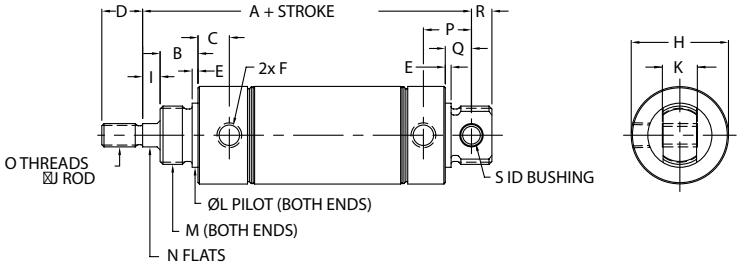
Dimensions (All Stainless Steel Non-Repairable Original Line Cylinders)

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

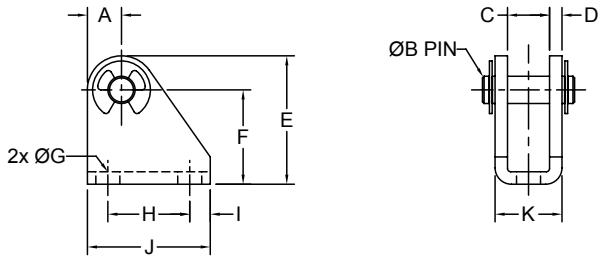
DXP Mounting Style



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

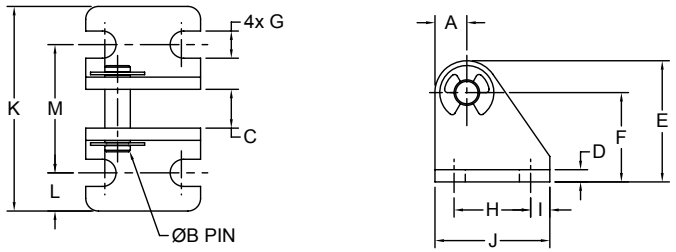
Dimensions (All Stainless Steel Non-Repairable Original Line Cylinders)

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

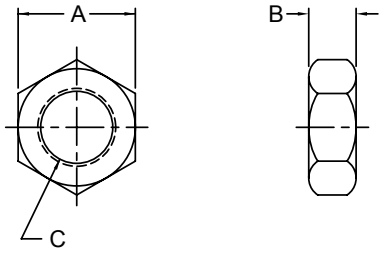
Stainless Steel Two Piece Pivot Bracket



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

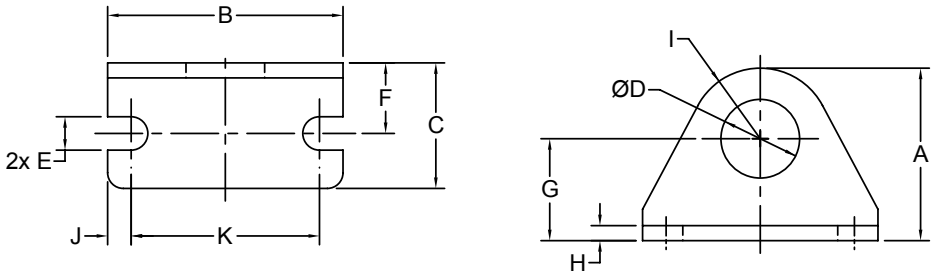
Dimensions (All Stainless Steel Non-Repairable Original Line Cylinders)

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

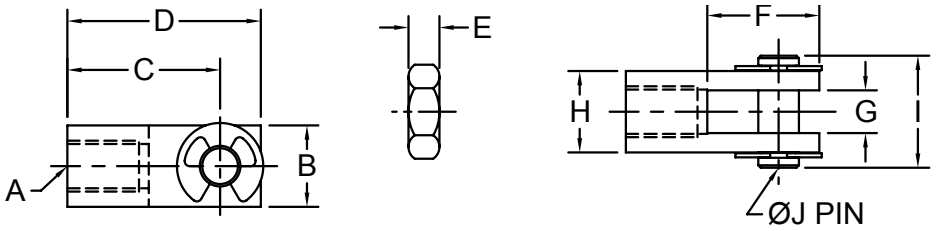
Stainless Steel Foot Bracket



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	1.63	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

Dimensions (All Stainless Steel Non-Repairable Original Line Cylinders)

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

How to Order

The model number of all All Stainless Steel Non-Repairable Original Line pneumatic actuators consists of an alphanumeric cluster designating product type, bore size, stroke length, and other optional components that together make up the complete part number to use in ordering. Use the ordering information below to build a valid part number.

An example of a basic All Stainless Steel Non-Repairable Original Line unit with 303 Stainless Steel end cap, 1-1/16" bore, 2" stroke, and additional options is shown below.

Model	
SS	303 Stainless Steel end caps
SSM	Includes magnetic piston

Stroke Lengths

In inches and decimal fractions (ex. 1.75"). See individual models for maximum standard stroke. Stroke lengths are available up to 50".

SS - 09 2 - D W

Bore Size	
007	5/16"
01	7/16"
02	9/16"
04	3/4"
06	7/8"
09	1-1/16"
12	1-1/4"
17	1-1/2"
24	1-3/4"
31	2"
50	2-1/2"
70	3"

Mounting Options	
D	Double acting, nose mount
DXP	Double acting, double end or rear pivot mount

Options* †	
99	HT-99 oil pre-lube[1]
F	Molycoated body
G	Magnalube® G lubrication
N	Low temperature seals and lubrication
NT	Non-threaded rod
V	Fluoroelastomer seals (for chemical compatibility)[2]
W	Rod wiper (standard)[3]
EEX.XX	Extra rod extension of X.XX

* Consult the option combination availability chart on page 54.
† When configuring options, arrange options in alphabetical order except for EE; place option EE at the end of the configured part number.
[1] HT-99 pre-lube is NOT a food-grade lubricant.
[2] Specify for chemical compatibility only. For cylinders rated over 200° F, see the note under Operating Specifications.
[3] Rod wiper is standard; "W" option must be included in part number.



The new "Blue and Improved" Original Line® All Stainless Steel Repairable cylinder is ideal for food processing, chemical, medical, pharmaceutical, offshore or marine equipment, energy production, or waste management applications. A bell ring design offers the benefit of full repairability without using hand tools by securing the body to the rod guide with a knurled, threaded nut.

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

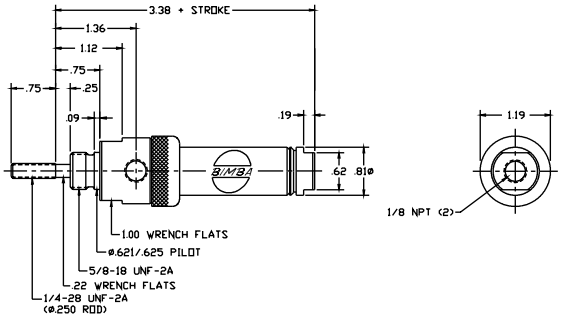
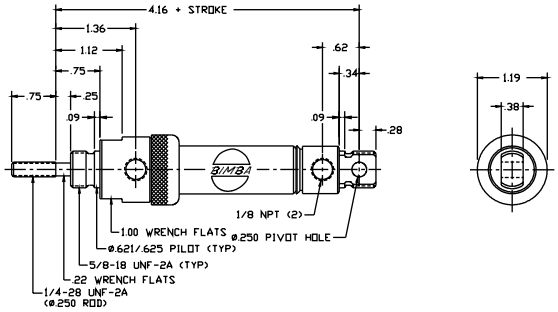
- > Bore sizes: 3/4", 1-1/16"
- > Maximum pressure rating: 250 psi
- > Maximum stroke: 12"
- > Composite FDA approved rod bearing and FDA approved lubricant
- > 304 stainless steel body
- > 303 stainless steel end caps, piston rod, and bell ring nut
- > Low friction Buna N "U" cup seals and rod wiper

How to Specify

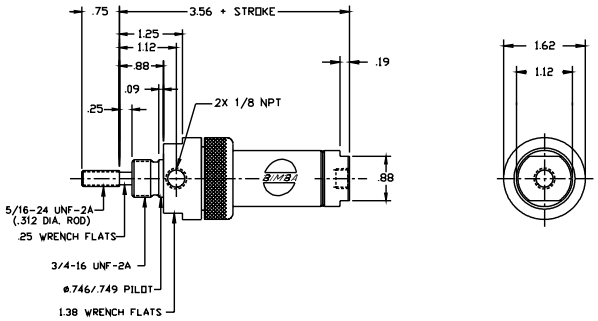
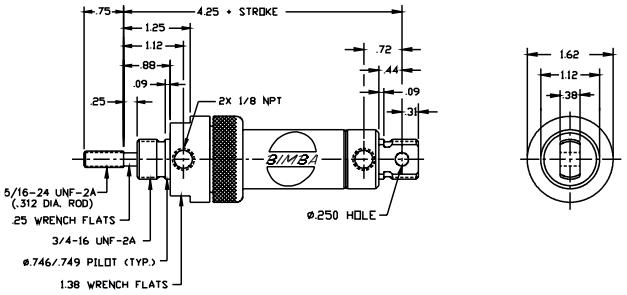
All Stainless Steel Repairable (Bell Ring Style) Original Line Cylinders

☐ Enter Stroke Length as 3rd Digit

3/4" Bore

Model	Description/Weight (lbs)	Dimensions
D-4161-A-☐	Double-Acting - Air Return - Front Nose Mounting Optional Stainless Steel Accessories: D-129-SS Foot Bracket D-9-SS Mounting Nut D-54565-SS Rod Clevis	
D-4231-A-☐	Double-Acting - Universal Mounting - Pivot, or Double End Mounting - Air Return Optional Stainless Steel Accessories: 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	Description/Weight (lbs)	Dimensions
D-4173-A-☐	Double-Acting - Air Return - Front Nose Mounting Optional Stainless Steel Accessories: D-241-SS Foot Bracket D-3556-SS Mounting Nut D-54564-SS Rod Clevis	
D-4232-A-☐	Double-Acting - Universal Mounting - Pivot, or Double End Mounting - Air Return Optional Stainless Steel Accessories: D-241-SS Foot Bracket D-55203-SS Pivot Bracket D-3556-SS Mounting Nut D-54564-SS Rod Clevis	

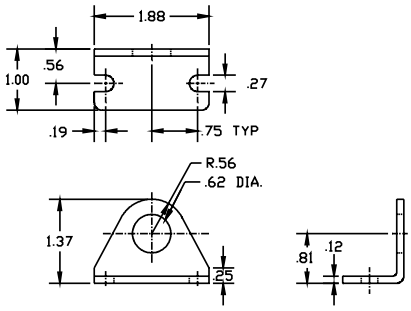
Engineering Specifications

> 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

All Stainless Steel Repairable (Bell Ring Style) Accessories

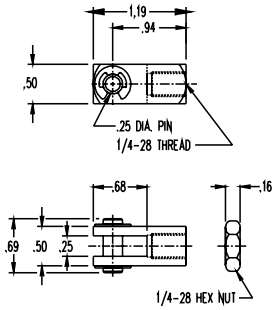
3/4" Bore

D-129-SS



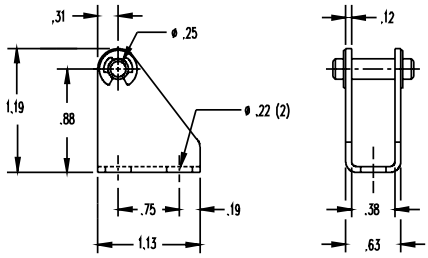
Foot Bracket

D-54565-SS



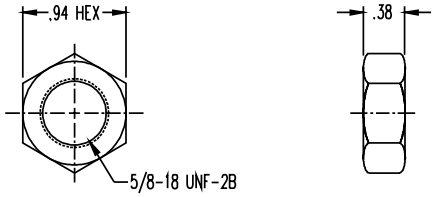
Rod Clevis

D-55203-SS



Pivot Bracket

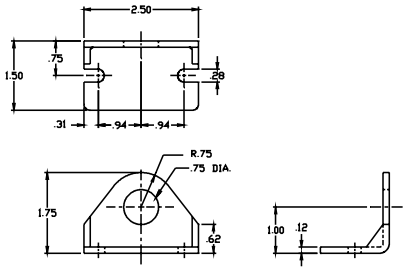
D-9-SS



Mounting Nut

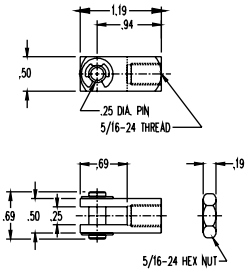
1-1/16" Bore

D-241-SS



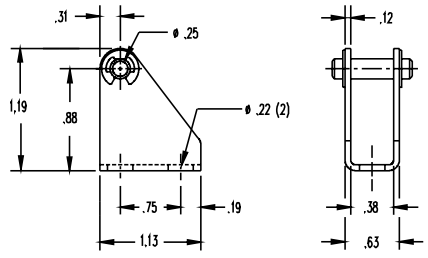
Foot Bracket

D-54564-SS



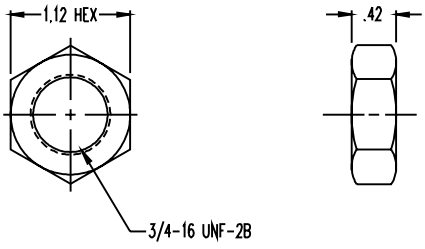
Rod Clevis

D-55203-SS



Pivot Bracket

D-3556-SS



Mounting Nut

How to Order

The model number of all All Stainless Steel Repairable (Bell Ring) Original Line pneumatic actuators consists of an alphanumeric cluster designating bore size, mounting style, and stroke length that together make up the complete part number to use in ordering. Use the ordering information below to build a valid part number.

An example of a basic All Stainless Steel Repairable (Bell Ring) Original Line unit with 3/4" bore, 5" stroke, and universal double end or pivot mounts is shown below.

Stroke Lengths

In inches and decimal fractions (ex. 1.75"). See individual models for maximum standard stroke. Stroke lengths are available up to 24".

D-4231-A - 5

Mounting Options		Bore Size
D-4161-A	Front nose	3/4" (04)
D-4231-A	Universal double end or pivot	3/4" (04)
D-4173-A	Front nose	1-1/16" (09)
D-4232-A	Universal double end or pivot	1-1/16" (09)

Bimba All Stainless Steel Repairable (Bell Ring Style) Original Line Cylinders are repairable. A list of the individual components is given below that together make up the All Stainless Steel Repairable (Bell Ring Style) Original Line Cylinder.

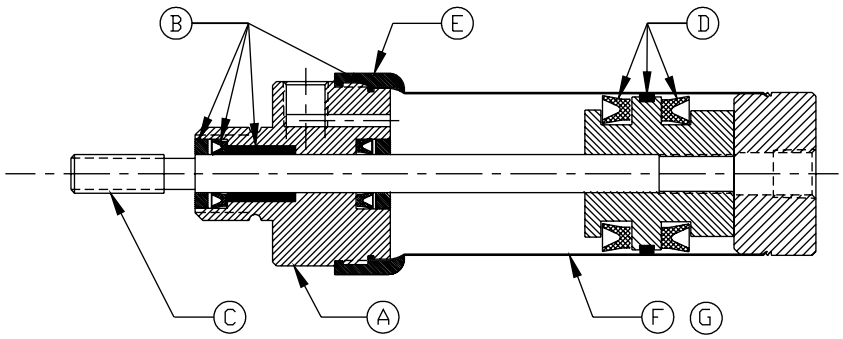
Please use the original purchase order number (if available) for all inquiries. Describe the part required along with part number below. Contact Bimba Customer Service at 800-442-4622 (800-44-BIMBA) or e-mail cs@bimba.com.

Repair Parts (3/4" bore)

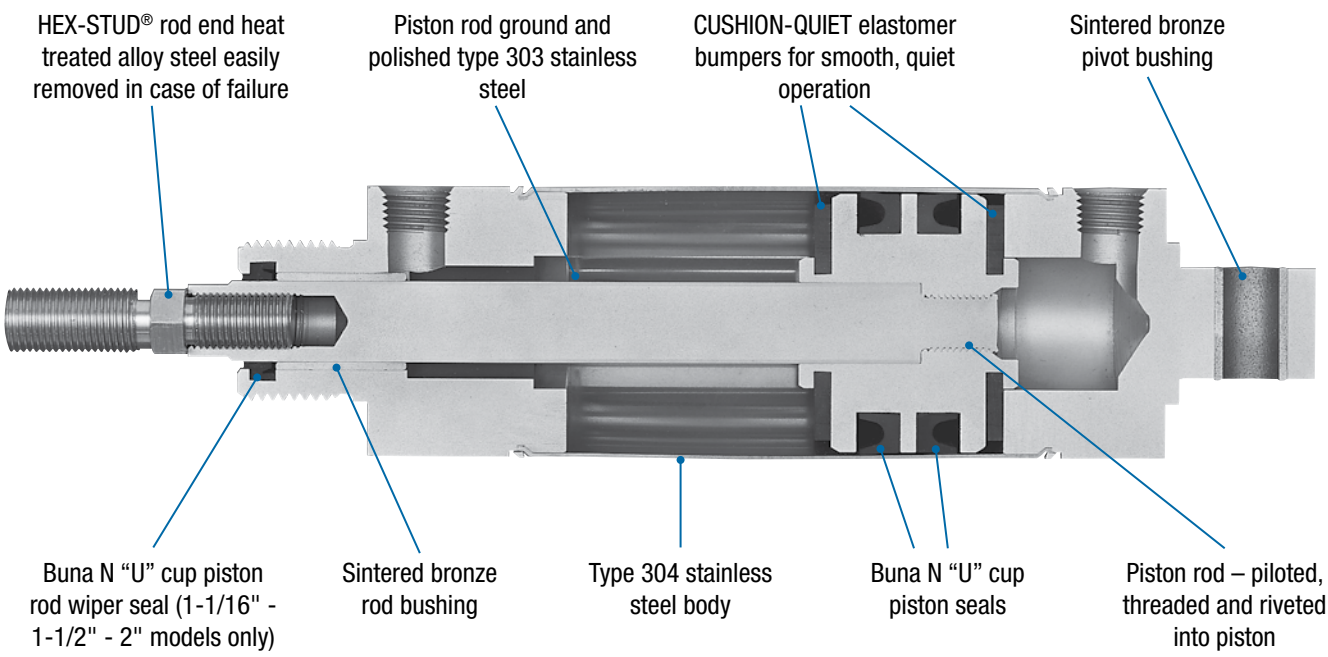
Item	Part No.	Part Description
A	D-4485-A	Rod guide assembly (includes rod guide and D-4530 kit)
B	D-4530-A	Rod seal kit (includes seals, bushing, seal retainer, and body seal)
C	D-4486-A-☐	Piston rod assembly (includes rod, piston and D-4531 kit)
D	D-4531	Piston seal kit (includes piston seals and piston guide ring)
E	D-3961-SS	Bell ring
F	D-4487-A-☐	Rear head and body assembly (nose mount)
G	D-4488-A-☐	Rear head and body assembly (universal mount)

Repair Parts (1-1/16" bore)

Item	Part No.	Part Description
A	D-4489-A	Rod guide assembly (includes rod guide and D-4533 kit)
B	D-4533-A	Rod seal kit (includes seals, bushing, seal retainer and body seal)
C	D-4490-A-	Piston rod assembly (includes rod, piston and D-4534 kit)
D	D-4534-A	Piston seal kit (includes piston seals and piston guide ring)
E	D-1778-SS	Bell ring
F	D-4491-A-	Rear head and body assembly (nose mount)
G	D-4492-A-	Rear head and body assembly (universal mount)



Product Features



Z Line Air Cylinders

> 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

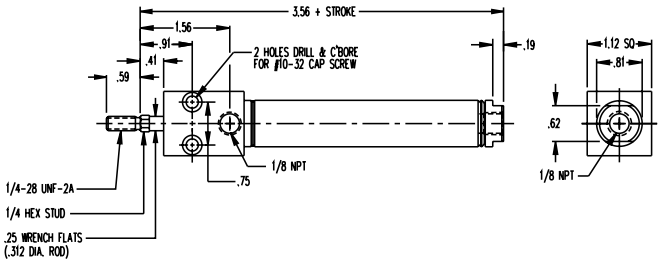
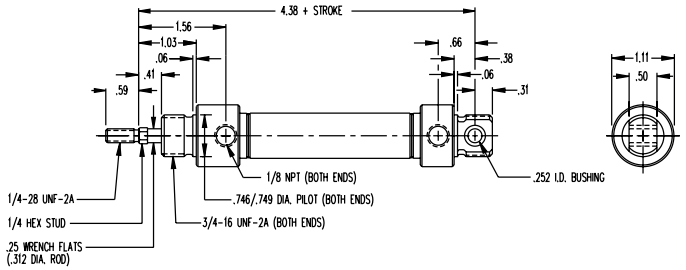
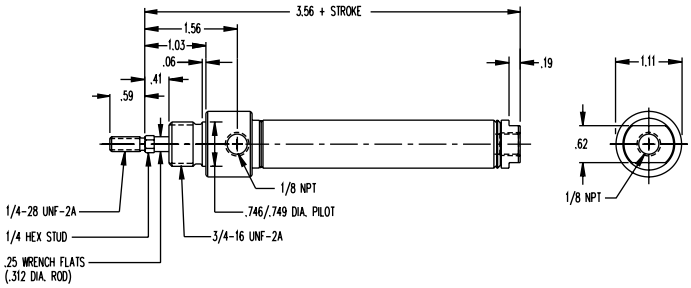
Options (for all Z Line models):

> **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 57 for track location details. See Switch Products for switch selection information.

3/4" Bore Z Line Air Cylinders

☐ Enter Stroke Length as 3rd Digit

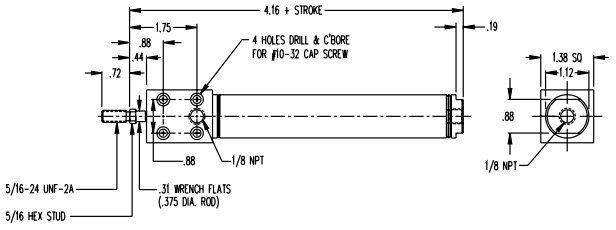
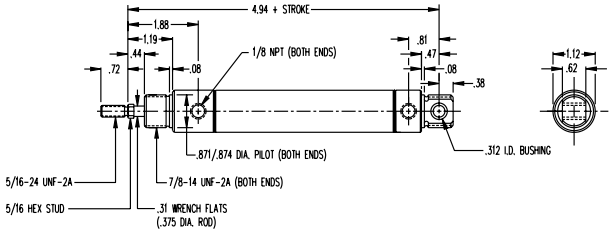
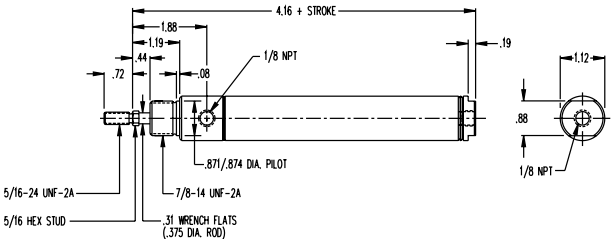
Push Force = .441 x psi · Pull Force = .365 x psi

Model	Description/Weight (lbs)	Dimensions
04☐-DBZ 	Block Mount – Double Acting – 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	
04☐-DUZ 	Universal Mount – Double Acting – 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	
04☐-DZ 	Nose Mount – Double Acting – 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	

How to Specify

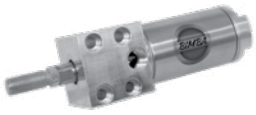
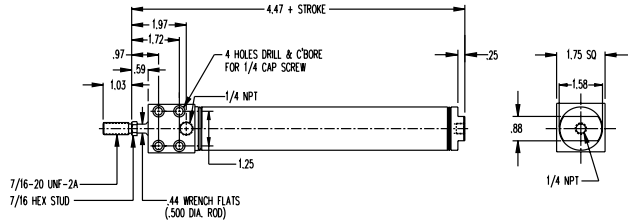
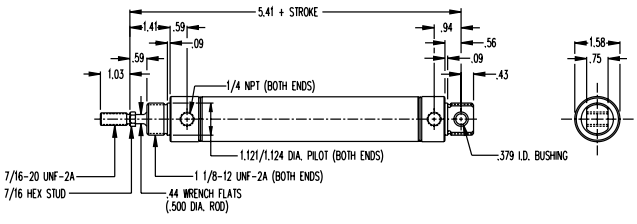
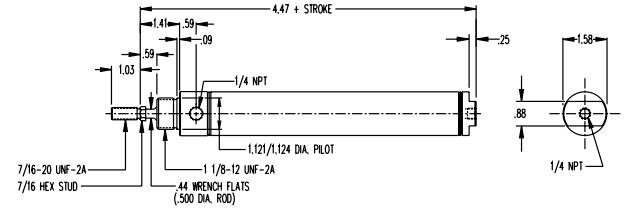
1-1/16" Bore Z Line Air Cylinders

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

Model	Description/Weight (lbs)	Dimensions
09 ☐ -DBZ 	Block Mount – Double Acting – 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	
09 ☐ -DUZ 	Universal Mount – Double Acting – 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	
09 ☐ -DZ 	Nose Mount – Double Acting – 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	

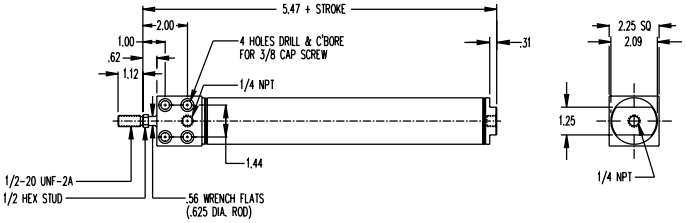
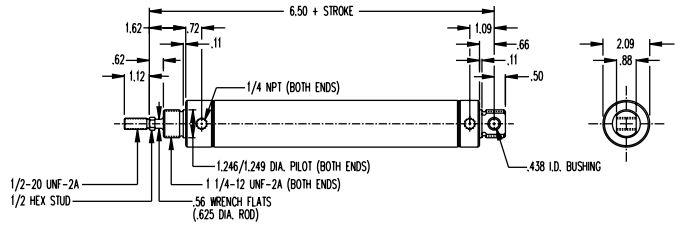
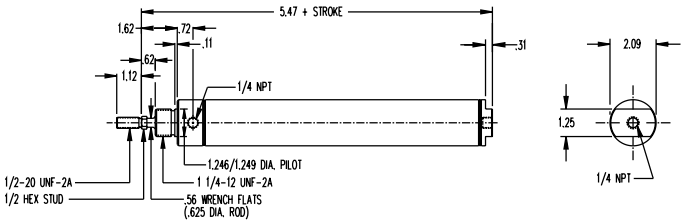
1-1/2" Bore Z Line Air Cylinders

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

Model	Description/Weight (lbs)	Dimensions
17 ☐ -DBZ 	Block Mount – Double Acting – 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	
17 ☐ -DUZ 	Universal Mount – Double Acting – 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	
17 ☐ -DZ 	Nose Mount – Double Acting – 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	

2" Bore Z Line Air Cylinders

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

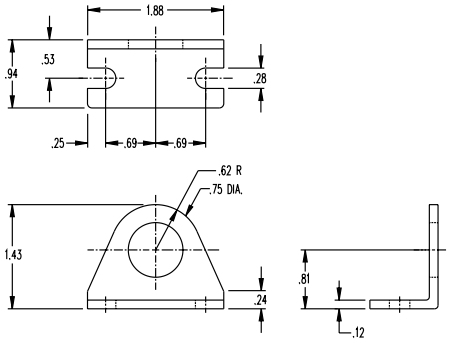
Model	Description/Weight (lbs)	Dimensions
31 ☐ -DBZ 	Block Mount – Double Acting – Four bolt holes are provided for positive mounting to a base. Standard Stroke Lengths: 1", 2", 3", 4", 5", 6" Maximum Stroke – 12" Base Weight: 2.03 Adder Per Inch of Stroke: .15	
31 ☐ -DUZ 	Universal Mount – Double Acting – 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	
31 ☐ -DZ 	Nose Mount – Double Acting – 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	

How to Accessorize

Z Line Accessories

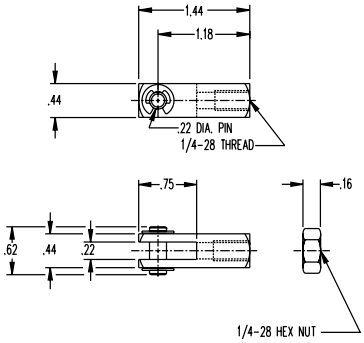
3/4" Bore Accessories

D-8315



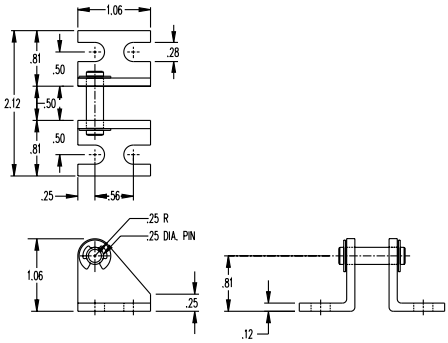
Mounting Bracket

D-10139-A



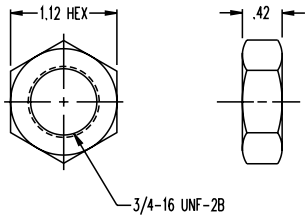
Rod Clevis

D-8321-A



Pivot Bracket

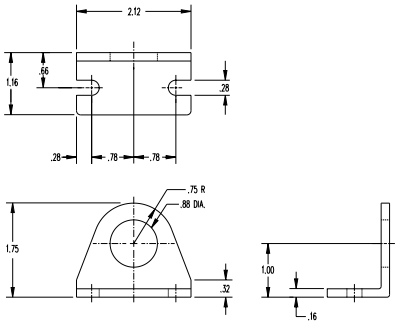
D-3556



Mounting Nut

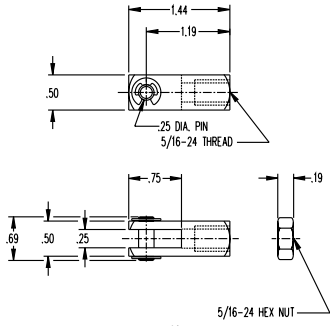
1-1/16" Bore Accessories

D-8316



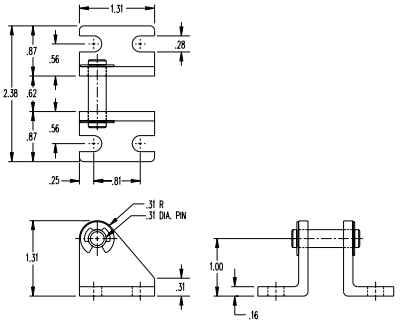
Mounting Bracket

D-8309-A



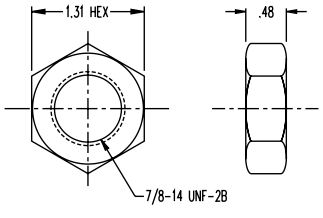
Rod Clevis

D-8322-A



Pivot Bracket

D-2545

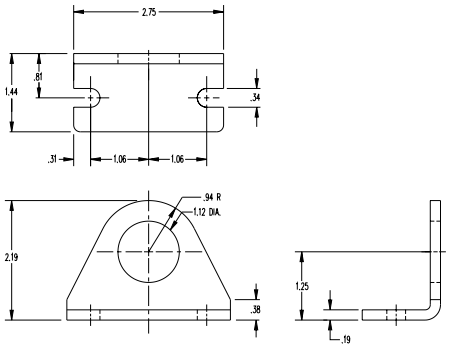


Mounting Nut

Z Line Accessories

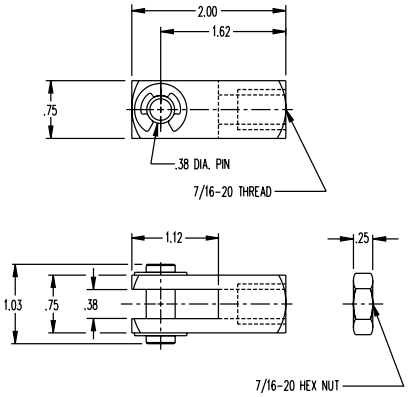
1-1/2" Bore Accessories

D-8318



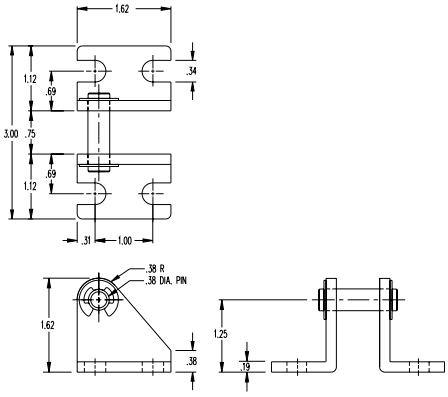
Mounting Bracket

D-8311-A



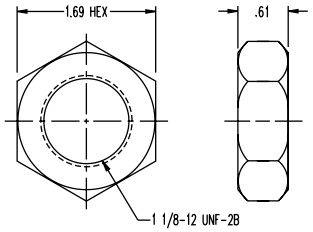
Rod Clevis

D-8324-A



Pivot Bracket

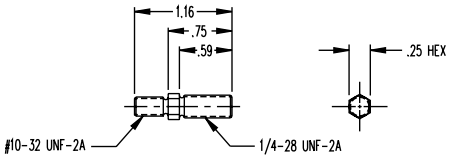
D-8484



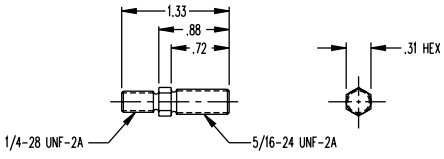
Mounting Nut

Hex-Stud

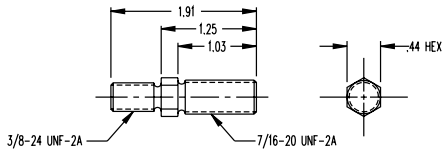
3/4" Bore
D-9868



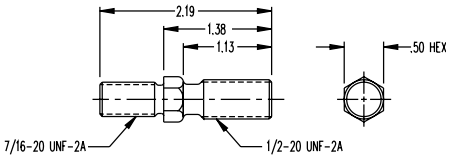
1-1/16" Bore
D-6583



1-1/2" Bore
D-6636



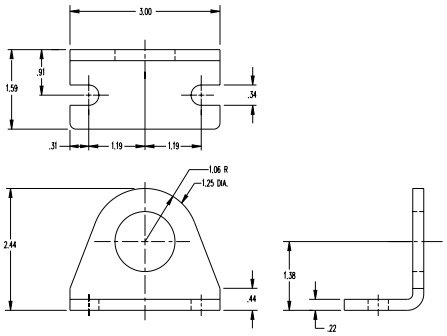
2" Bore
D-6637



Z Line Accessories

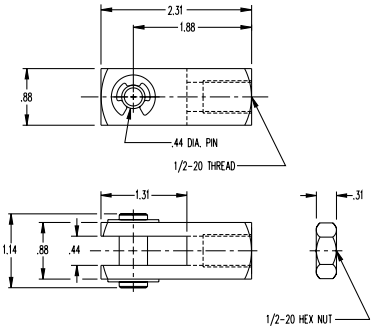
2" Bore Accessories

D-8319



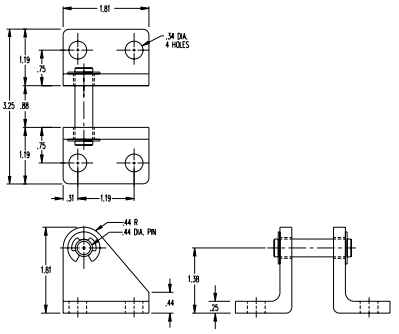
Mounting Bracket

D-8313-A



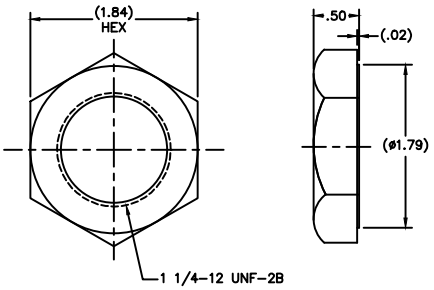
Rod Clevis

D-8325-A



Pivot Bracket

D-508



Mounting Nut

The model number of all Z-Line Non-Repairable Original Line pneumatic actuators consists of an alphanumeric cluster designating bore size, stroke length, mounting options, and other optional components that together make up the complete part number to use in ordering. Use the ordering information below to build a valid part number.

An example of a basic Z-Line Non-Repairable Original Line unit with 3/4" bore, 1" stroke, front block mounting, and additional options is shown below.

Stroke Lengths

In inches and decimal fractions (ex. 1.75"). See individual models for maximum standard stroke. Stroke lengths are available up to 50".

04 1 - DBZ NT

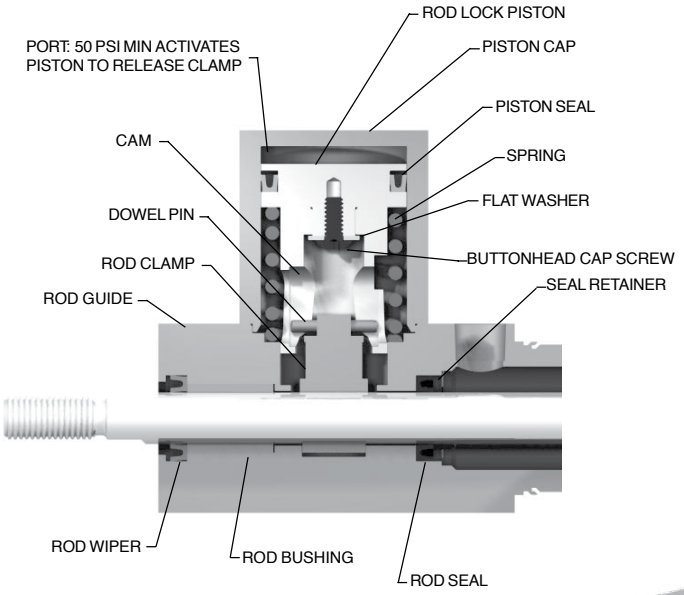
Bore Size	
04	3/4"
09	1-1/16"
17	1-1/2"
31	2"

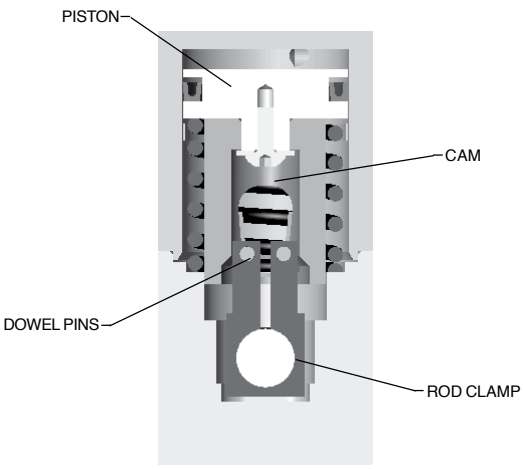
Mounting Options	
DZ	Front nose
DUZ	Universal double end or rear pivot
DBZ	Front block

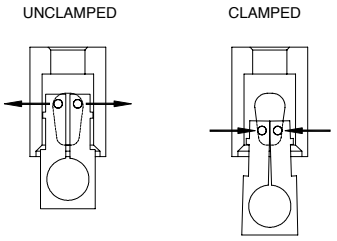
Options* †	
99	HT-99 oil pre-lube[1]
B	Bumpers
NT	Non-threaded rod
Q	Side port
EEX.XX	Extra rod extension of X.XX

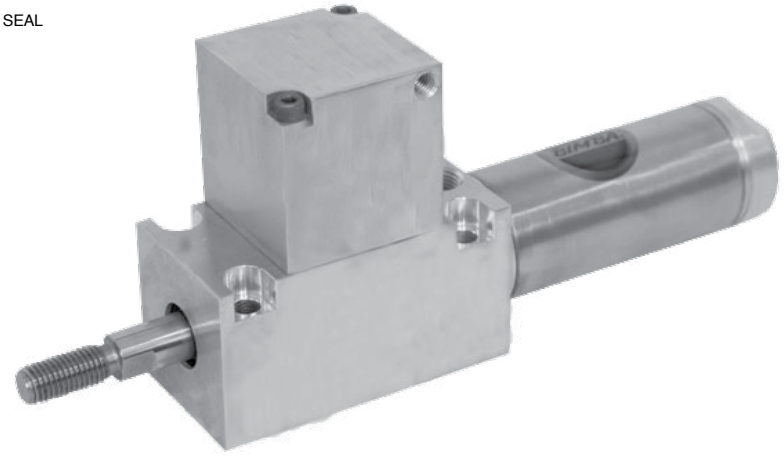
* Consult the option combination availability chart on page 54.
† When configuring options, arrange options in alphabetical order except for EE; place option EE at the end of the configured part number.
[1] HT-99 pre-lube is NOT a food-grade lubricant.

Product Features







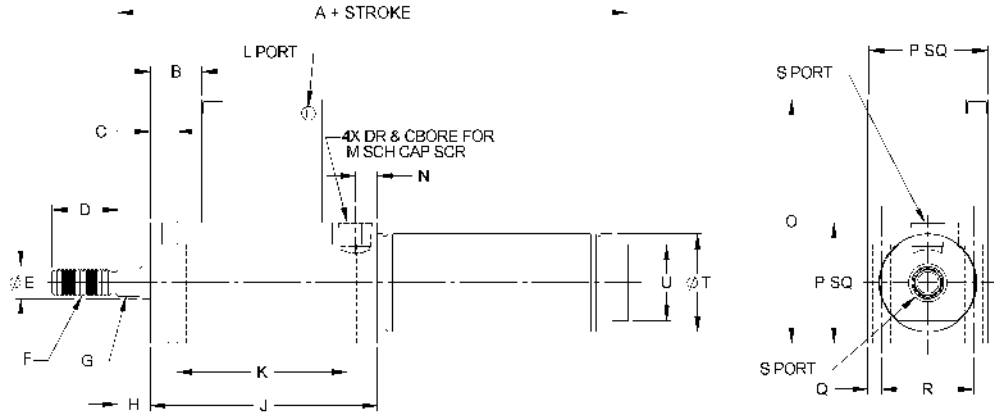


Original Line Rod Lock Cylinders

> 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.

Dimensions (Original Line Rod Lock Cylinders) (in)

D Mounting Style



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

Options

Dimensional Deviations from Standard

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

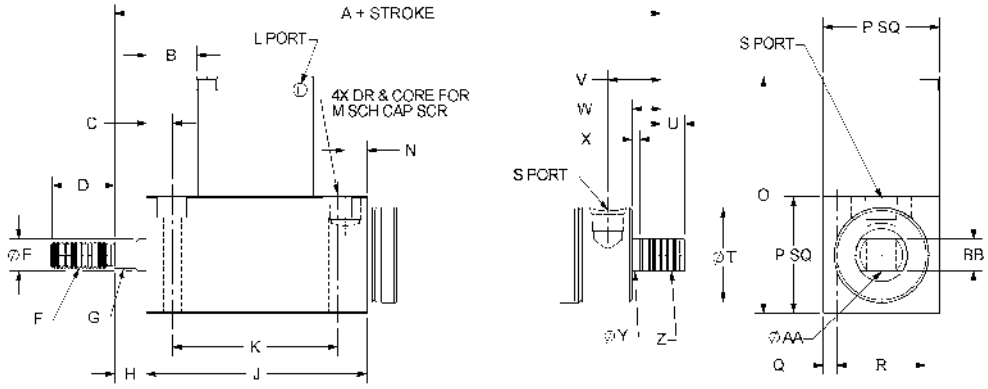
Weights (lbs)

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

How to Specify

Dimensions (Original Line Rod Lock Cylinders) (in)

DXP Mounting Style



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

Engineering Specifications (Original Line Rod Lock Cylinders)

Operating Medium:	Air
Operating Pressure:	50 psi minimum (to actuate lock piston)
	125 psi maximum
Temperature Range:	-20° F 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 (lbs)
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.

The model number of all Original Line Rod Lock pneumatic actuators consists of an alphanumeric cluster designating product type, bore size, stroke length, and other optional components that together make up the complete part number to use in ordering. Use the ordering information below to build a valid part number.

An example of a basic Rod Lock unit with 1-1/16" bore, 3" stroke, and additional options is shown below.

Model	
BFLM	Original Line Rod Lock (block front and magnet standard)

Standard stroke lengths
Refer by bore size to Original Line double-acting standard stroke lengths.

BFLM - 09 3 - D W

Bore Size	
04	3/4"
09	1-1/16"
17	1-1/2"
31	2"
50	2-1/2"
70	3"

Mounting	
D	Axial rear port
DXP	Universal mount (includes pivot bushing)

Options*	
99	HT-99 oil pre-lube
B	Double-acting bumpers
N	Low temperature option (-40° F to 200° F)
Q	Side ported rear head
T	Add track for MS Series switch
V	High temperature option (0° F to 400° F)
W	Rod wiper (standard)
EE	Extra rod extension

* When configuring options, arrange options in alphabetical order except for EE; place option EE at the end of the configured part number.

Product Features

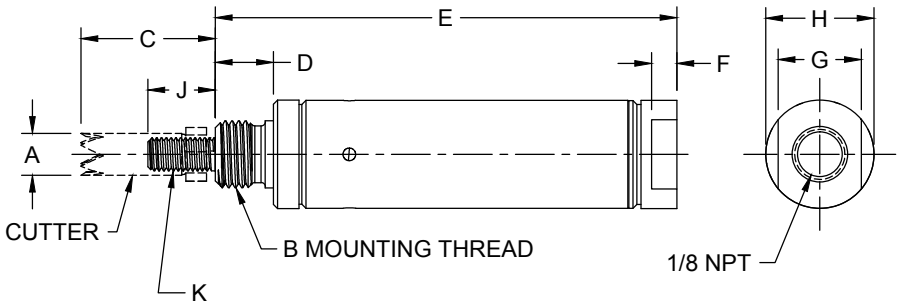


Our rugged hole punch cylinder has been redesigned with a removable cutter to allow customers to replace the cutter as needed without having to replace the entire cylinder. The razor sharp cutting teeth are designed to punch millions of holes in thin plastic film.

Original Line Hole Punch Cylinders

- 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.
- Eight (8) models with seven (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 pre-lubricated 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.

Dimensions (Repairable Hole Punch Cylinders) (in)



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	#10-322
D-9846-A1 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	1/4-282
D-11618-A Base Weight: .21	3/8"	.375"	1/2-20	1.00	.44	3.44	.19	.62	.81	.50	1/4-282
D-11998-A Base Weight: .23	7/16"	.438"	5/8-18	1.00	.50	3.50	.19	.62	.81	.50	3/8-403
D-11999-A Base Weight: .24	1/2"	.500"	5/8-18	1.00	.50	3.50	.19	.62	.81	.50	3/8-403
D-12107-A Base Weight: .29	9/16"	.562"	3/4-16	1.00	.63	3.63	.19	.62	.99	.50	3/8-403
D-12108-A Base Weight: .29	5/8"	.625"	3/4-16	1.00	.63	3.63	.19	.62	.99	.50	3/8-403

1 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.
2 Cutter to rod mating threads
3 Cutter to rod end adapter mating threads

Engineering Specifications (Repairable Hole Punch Cylinders)

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

How to Repair

Bimba Repairable Hole Punch Cylinders are repairable. A list of the individual components is given below that together make up the Repairable Hole Punch Cylinder. Each box of five (5) cutters includes five (5) O-rings and repair instructions.

Please use the original purchase order number (if available) for all inquiries. Describe the part required along with part number below. Contact Bimba Customer Service at 800-442-4622 (800-44-BIMBA) or e-mail cs@bimba.com.

Repair Parts

Part No.	Part Description
Repunch - 1/4	1/4" Replacement Cutter Kit
Repunch - 5/16	5/16" Replacement Cutter Kit
Repunch - 3/8	3/8" Replacement Cutter Kit
Repunch - 7/16	7/16" Replacement Cutter Kit
Repunch - 1/2	1/2" Replacement Cutter Kit
Repunch - 9/16	9/16" Replacement Cutter Kit
Repunch - 5/8	5/8" Replacement Cutter Kit

Notes

Notes

Artisan Technology Group is an independent supplier of quality pre-owned equipment

Gold-standard solutions

Extend the life of your critical industrial, commercial, and military systems with our superior service and support.

We buy equipment

Planning to upgrade your current equipment? Have surplus equipment taking up shelf space? We'll give it a new home.

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