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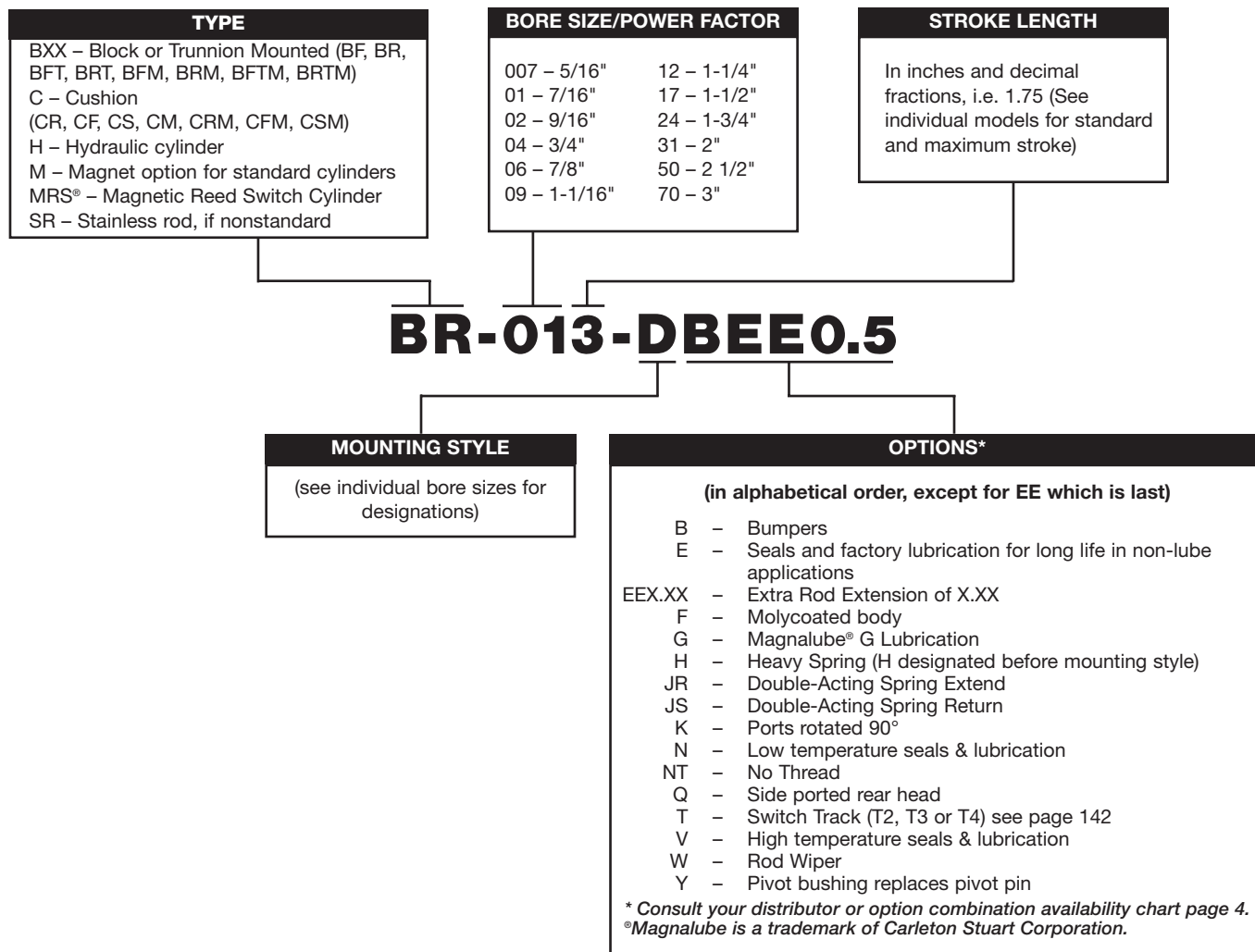
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How to Order

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

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



Approximate Power Factors

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

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

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

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

Bimba Original Line – Stainless Steel Body Air Cylinders

Options

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

Option Combination Availability Chart

Due to design or compatibility restrictions, the following options may **NOT** be ordered in combination. For example, option N (low temperature) and option M (magnet) are not available in combination.

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

options	W3 4	B2 5	V2 4	H	K	Y	N2	M1 4	Q	G	E
size	Wiper	Bumper	High Temperature	Heavy Spring	Ports Rotated 90°	Pivot Bushing	Low Temperature	Magnet	Side Ported Rear Head	Magnalube G	Special Lube & Seals
007	N/A	STD	N, E	N/A	Q	STD	V,G,E	N/A	K	N, E	N, G, V
01	N/A	N	N, E	N/A	Q	Q	B,V,G,E	N/A	K,Y	N, E	N, G, V
02	N/A	N	N, E	N/A	Q	STD	B,V,M,G,E	N	K	N, E	N, G, V
04, 09, 17	H,N	N	N, E	W	Q	Q	W,B,V,M,G,E	N	K,Y	N, E	N, G, V
06, 12, 24	N/A	STD	N, E	N/A	Q	Q	V,M,G,E	N	K,Y	N, E	N, G, V
31, 50	N/A	N	N, E	N/A	Q	STD	B,V,M,G,E	N	K	N, E	N, G, V
70	N/A	N	N, E	N/A	Q	STD	V,M,G,E	N	K	N, E	N, G, V

Notes:

- Option M is designated as a prefix, (ie M-041-DXP). When M is specified, the piston rod will be made of 303 stainless steel. Certain bore sizes and mounting styles offer the stainless rod standard.
- When bumpers are standard and high or low temperature option is specified, the bumpers are omitted and the overall length of the cylinder may decrease. When bumpers and high temperature are ordered as options on the same cylinder, the bumper material will be standard Buna N.
- Wipers are available in double acting models only. Wipers may not be available with certain mounting configurations. Consult the specific bore size in this catalog for detail.
- When high temperature and the magnetic options are combined, operating temperature remains at 200°F. This combination is recommended when Fluoroelastomer seals are specified for compatibility. When specifying the high temperature and wiper options together, a standard Buna N or Urethane wiper will be provided.
- Bumpers are available in only double acting models for the 17 and 31 bores.

Overall Length Reductions for Options N & V

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

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

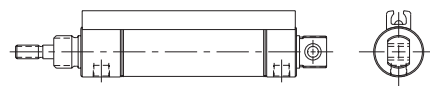
*0070 bumpers are high temperature option material and not removed when high temperature option is specified.

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

MRS- -DXP



MRS- -DXPZK



Bimba Original Line – Stainless Steel Body Air Cylinders

Accessories

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

Lubrication

All BIMBA cylinders are prelubricated with our special HT-99 lubrication and sealed at the factory for extensive maintenance-free life. Cylinder life can be lengthened by providing additional lubricant with an air line mist lubricator or direct introduction of oil to the cylinder every 500 hours of operation. Both Magnalube G and HT-99 can now be purchased from your Bimba distributor.

MAG-G-3CC \$5.50/bag
HT-99-7CC \$3.00/bag
(each bag contains six ampules)

Requirements will vary depending on the application. In general, one ampule will provide 500 hours of lubrication service for one 1-1/2" bore, 12" stroke double acting cylinder.

Other recommended oils for Buna N seals are medium to heavy inhibited, nondetergent hydraulic and general purpose oil. For cylinders with high temperature seals, use Dow Corning #710. For cylinders with low temperature seals, Dow Corning #55 grease is recommended.

Magnalube G can be ordered by specifying option G. Magnalube G's non-migratory properties provide benefits in applications where migration of lubricant can be problematic for cylinder performance or the application. Molycoating is available as standard option F. It is a dry, thin film of lubricant on the cylinder wall that can reduce piston seal wear. Bimba's new option E provides a proprietary combination of seal material and lubrication for extended life in non-lubricated environments. Other types of factory lubrication are available as required.

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

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

Temperature Range

Buna N seals with a temperature range of -20° F (-25° C) to 200° F (95° C) are standard in all BIMBA air cylinders. Fluoroelastomer seals rated for higher temperature applications (up to 400° F) are available. If cylinders are operated at temperatures below 0° F for extended time periods, our low temperature seal and lubrication option (N) is recommended. This option has a temperature range of -40° F to 200° F. If cylinders are operated below -20° F with low temperature seals for extended time periods, cylinder performance will be affected by the cold temperature.

Bimba Original Line – Stainless Steel Body Air Cylinders

Mounting

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

Free Test Cylinder

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

Special Cylinders

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

Delivery/Availability

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

Choosing the Right Cylinder

See Bimba handbook, “Tips for Maximizing Cylinder Performance,” for more information on choosing cylinder types, sizes, options and accessories.

Cylinder Life Expectancy

Bimba cylinders have been designed and tested for a rated life of 1400 miles of travel when properly applied and lubricated per recommendations. Bimba’s option E has been designed and tested for a rated life of 2,800 miles of travel when properly applied in an unlubricated environment.

Bimba Original Line – Stainless Steel Body Air Cylinders

Types of Cylinders

Bimba manufactures several different types of Original Line cylinders for your applications. These include the basic 5/16" to 3" bore cylinders described on pages 14-68. Weights published for each cylinder are approximate. Additional styles include:

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

Hole Punchers

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

Air Reservoirs

Available in 7 bore sizes, 3/4" to 3" for compressed air accumulation.

500 Hydraulic Cylinders

For hydraulic use, up to 500 psi.

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.

Original Line II

The Bimba Original Line II is a complete cylinder/flow control/fitting package that reduces component height. This cylinder offers the same design features, overall length and mounting thread sizes as our Original Line stainless body cylinder.

Three-Position Cylinders

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

Bimba Original Line – Stainless Steel Body Air Cylinders

Stroke Lengths

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

NOTE ON ROD MATERIAL: Bore sizes 3/4" to 1-3/4": rod lengths greater than 12" (stroke plus extra extension) require a stainless steel rod. Bore sizes 2" to 3": rod lengths greater than 6" require a stainless steel rod. Rod length equals stroke plus extension.

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

$$\begin{array}{rcl} 090 \text{ Base length} & = & 1.94" \\ \text{Plus } 1.56 \text{ per inch of stroke} & = & + 4.68" \\ 1.56 \times 3.0 \text{ (next longer} & & \\ \text{stroke increment)} & & \\ 093 \text{ length} & = & 6.62 \\ \text{Whole stroke increment} & = & 3.00" \\ \text{Minus desired stroke} & = & - 2.75 \\ \text{Stroke difference} & = & .25 \dots - 0.25 \\ 092.75 \text{ length} & = & 6.37" \end{array}$$

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

$$\begin{array}{rcl} 010\text{-RP Base length} & = & 2.38" \\ \text{Plus } 1.44 \text{ per each } 0.5" \text{ of stroke} & = & + 5.76" \\ 1.44 \times 4 \text{ (number of standard} & & \\ \text{increments required for the} & & \\ \text{next longer increment)} & & \\ 012\text{-RP length} & = & 8.14 \\ \text{Standard stroke increment} & = & 2.000" \\ \text{Minus desired stroke} & = & - 1.625 \\ \text{Stroke difference} & = & .375 \\ \text{Twice stroke difference} & = & .750 \dots - 0.75 \\ 011.625 \text{ length} & = & 7.39" \end{array}$$

Double Acting Cylinders

Add desired stroke length to base length of cylinder.

Example: 041.25-D

$$\begin{array}{rcl} 040\text{-D Base Length} & = & 2.97" \\ \text{Plus } 1.25" \text{ stroke} & = & + 1.25 \\ 041.25\text{-D length} & = & 4.22 \end{array}$$

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

Bimba Original Line – Stainless Steel Body Air Cylinders

Nose Mount Torque Values

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

Pressure Rating

Original Line, Cushioned Original Line, NR series, Z-line, MRS and hole punchers = 250 psi.
PC cylinder = 100 psi.
Bimba 500 Hydraulic = 500 psi hydraulic.
Reservoirs = 200 psi.

® Delrin is a registered trademark of DuPont.

Warranty

All Bimba products are warranted against defects in workmanship or material under normal conditions and usage for a period of three years from the date of shipment. Your exclusive remedy in the event of such a defect is to return the product to our factory for repair, replacement or refund, clearly identified by the Bimba Returned Goods Authorization Number. This Warranty does not cover products which have been subject to misuse, negligence, accidents, misapplication or tampering in a way so as to affect their normal performance. Bimba shall not be liable for special, indirect or consequential damages. BIMBA GIVES NO WARRANTY, EXPRESS OR IMPLIED, AS TO MERCHANTABILITY, FITNESS FOR PARTICULAR PURPOSE AS SOLD, DESCRIPTION, QUALITY OR ANY OTHER MATTER BEYOND THAT SPECIFIED ABOVE. BIMBA DOES NOT ASSUME, NOR AUTHORIZE ANYONE ELSE TO ASSUME FOR IT, ANY OTHER OBLIGATION OR LIABILITY IN CONNECTION WITH THE SALE OR USE OF ITS PRODUCTS.

Product enhancements resulting from our continuing quality improvement effort may necessitate changes in specifications without notice.

All prices are F.O.B. Monee, Illinois and are subject to change without notice.

CAD Drawings

CAD drawings of all Original Line Cylinder models are available on CD-ROM or on our Web site.
Contact your local stocking Bimba distributor to order CD-ROM or visit www.bimba.com.

For Technical Assistance:
800-44-BIMBA (800-442-4622)
(United States, Mexico & Canada)

Bimba Miniature Quik-Flo® Flow Controls- FQPS Series

Flow Controls

Alignment Couplers

Original Line II Cylinders

Original Line Cylinders

Cushion Cylinders

MRS Cylinders

Non-rotating Cylinders

PC Cylinders

Z Line Cylinders

500 Hydraulic Cylinders

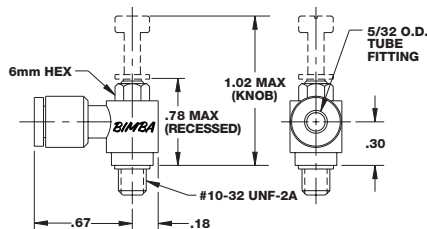
Hole Punchers Air Reservoirs

Position Sensing Switches

For 10-32 port,
5/32" OD tubing

FQPS1
\$10.60

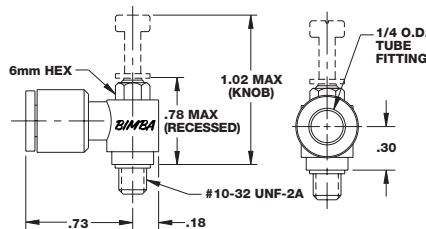
FQPS1K
\$10.60



For 10-32 port,
1/4" OD tubing

FQPS12
\$11.60

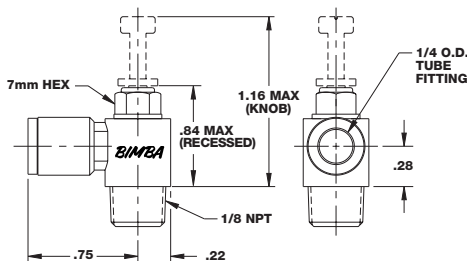
FQPS12K
\$11.60



For 1/8 port,
1/4" OD tubing

FQPS2
\$12.40

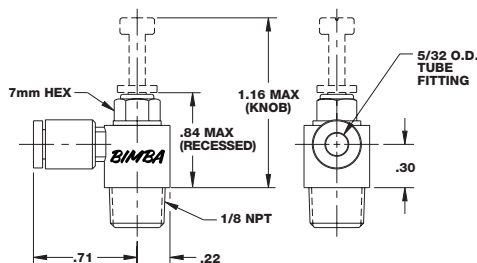
FQPS2K
\$12.40



For 1/8 port,
5/32" OD tubing

FQPS21
\$11.35

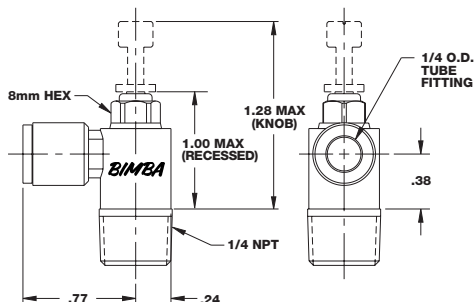
FQPS21K
\$11.35



For 1/4 port,
1/4" OD tubing

FQPS44
\$16.00

FQPS44K
\$16.00



Materials:

Adjusting knob and thread:
Nickel-plated brass

Body:
Glass-filled nylon

Tubing:
Nylon,
polyurethane and
polyethylene
tubing

Maximum Operating Pressure:
135 PSI Air Only

Operating Temperature Range:
30 degrees to
160 degrees F
(0°C to 70°C)

Bimba Flow Controls- FCP Series

FCP1
\$9.55



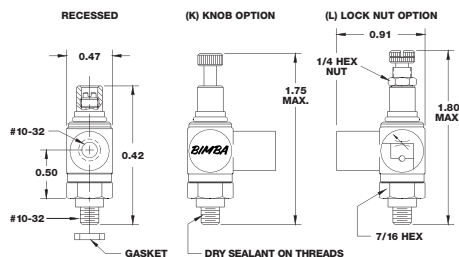
FCP1K
\$10.50



FCP1L
\$10.80



For 10-32 port



Materials:

Banjo Connector:
Chrome plated,
zinc die cast

Banjo Retaining
Ring:
Zinc plated steel

Stem:
High strength
anodized
aluminum alloy

Adjusting Needle:
Stainless steel

"O" Rings and
Lip Seal:
Buna N

**Maximum
Operating
Pressure:**
150 PSI Air Only

**Operating
Temperature
Range:**
-20 degrees
to +200 degrees F
(-25°C to +95°C)

FCP2
\$11.25



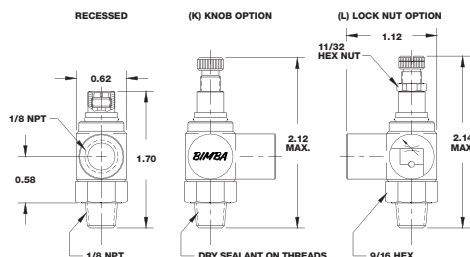
FCP2K
\$12.35



FCP2L
\$12.60



For 1/8 port



FCP4
\$14.40



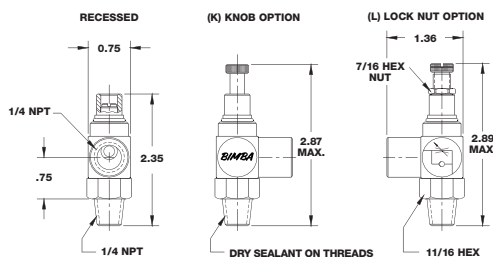
FCP4K
\$16.10



FCP4L
\$16.35



For 1/4 port



FCP6
\$17.95



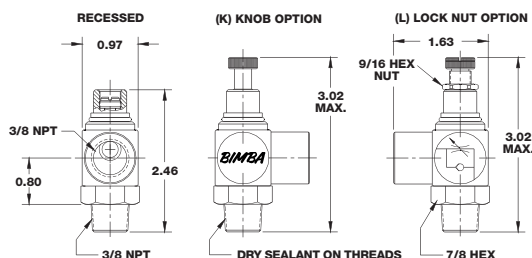
FCP6K
\$19.70



FCP6L
\$19.90



For 3/8 port



FCP8
\$23.75



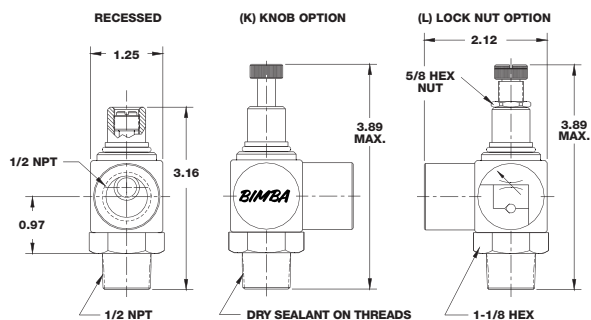
FCP8K
\$26.25



FCP8L
\$26.50



For 1/2 port

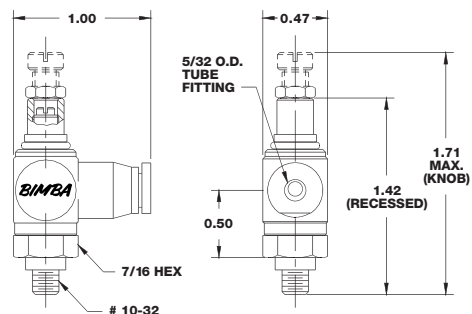


Bimba Quik-Flo® Flow Controls- FQP Series

For 10-32 port,
5/32" OD tubing

FQP1
\$10.45

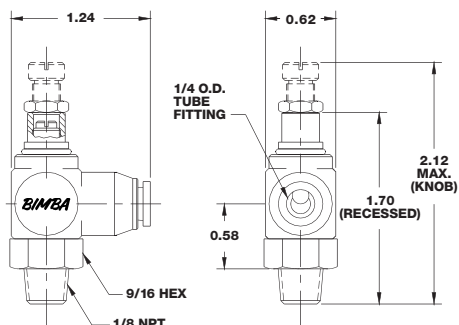
FQP1K
\$12.00



For 1/8 port,
1/4" OD tubing

FQP2
\$12.40

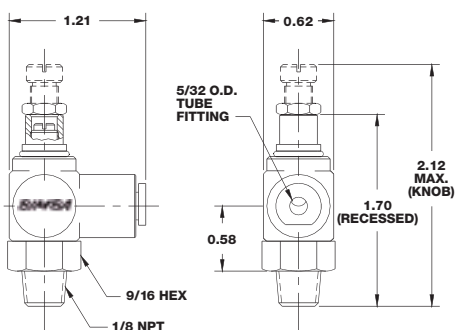
FQP2K
\$14.25



For 1/8 port,
5/32" OD tubing

FQP21
\$12.40

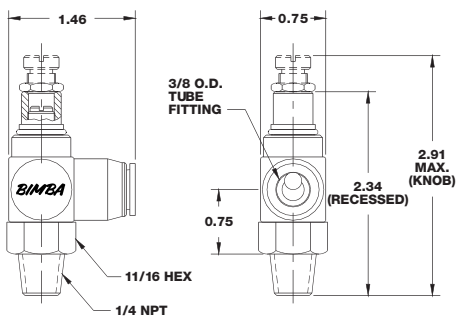
FQP21K
\$14.25



For 1/4 port,
3/8" OD tubing

FQP4
\$15.90

FQP4K
\$18.20



CV Factors for Bimba Flow Controls

The following estimated CV factors apply to Bimba Flow Controls in both the FCP and FQP Series.

Models	Free Flow	Controlled Flow
FCP1, FCP1K, FCP1L, FQP1, FQP1K	0.12	0.09
FCP2, FCP2K, FCP2L, FQP21L, FQP2, FQP2K, FQP21K	0.24	0.21
FCP4, FCP4K, FCP4L, FQP4, FQP4K, FQP44, FQP44K	0.50	0.44
FCP6, FCP6K, FCP6L, FQP6, FQP6K	0.91	0.73
FCP8, FCP8K, FCP8L, FQP8, FQP8K	1.33	1.19

Bimba Quik-Flo® Flow Controls- FQP Series

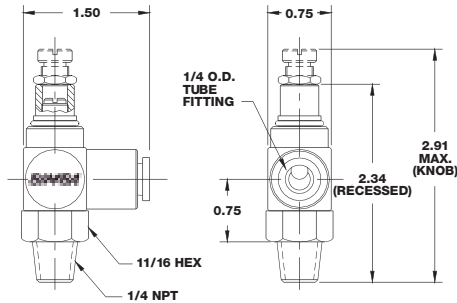
FQP44
\$15.90



FQP44K
\$18.20



For 1/4 port,
1/4" OD tubing



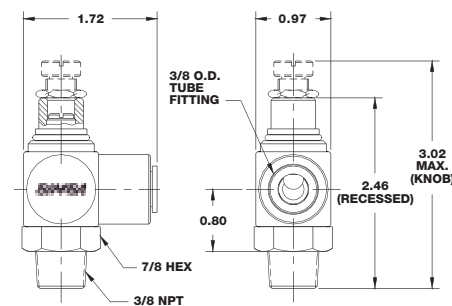
FQP6
\$19.70



FQP6K
\$22.40



For 3/8 port,
3/8" OD tubing



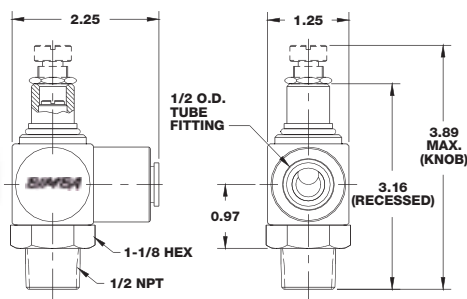
FQP8
\$25.70



FQP8K
\$28.70



For 1/2 port,
1/2" OD tubing



Materials:

Banjo Connector:
Chrome plated,
zinc die cast

Banjo Retaining Ring:
Zinc plated steel

Stem:
High strength anodized
aluminum alloy

Adjusting Needle:
Stainless steel

"O" Rings and Lip Seal:
Buna N

Collet:
Acetal copolymer

Gripping teeth:
Stainless steel

Collet Retainer
(if applicable):
Brass

Locknut:
Chrome-plated brass

Tube Types:
All plastic tubing,
including nylon and
polyethylene

**Maximum
Operating
Pressure:**
150 PSI Air Only

**Operating
Temperature
Range:**
14 degrees to
+167 degrees F
(-25° to +75°C)

Bimba Needle Valves

Bimba offers a range of Quik-Flo® Needle Valves, allowing for controlled flow of both the air intake and exhaust through the same valve. A needle valve can control a double acting cylinder's extension and retraction by controlling the volume of air entering the cylinder and the volume of air leaving the cylinder.

For additional dimensional information, reference Quik-Flo® Flow Controls on pages 12 and 13. For example, reference FQP1 for QNV1 dimensions.

Model	Price	Tube Size	Port Size	Cv
QNV1	\$10.30	5/32"	#10-32	.09
QNV1K	11.90	5/32"	#10-32	.09
QNV2	12.30	1/4"	1/8" NPT	.21
QNV2K	14.15	1/4"	1/8" NPT	.21
QNV44	15.70	1/4"	1/4" NPT	.44
QNV44K	18.00	1/4"	1/4" NPT	.44
QNV6	19.50	3/8"	3/8" NPT	.73
QNV6K	22.15	3/8"	3/8" NPT	.73

Bimba Alignment Couplers

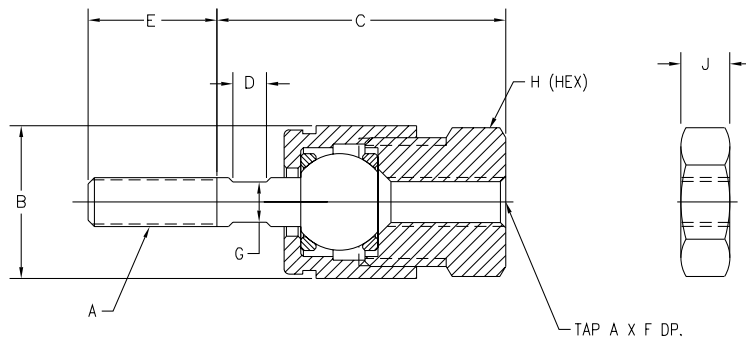
Features and Advantages

- Bimba's miniature coupler design allows excellent freedom of movement on the three new, miniature sizes; #5-40 through #10-32 sizes.
- The miniature couplers allow up to 20 degrees of spherical movement and 0.02" lateral allowance with only .002" of axial play and are manufactured from high tensile, hardened and blackened steel components.
- Larger sizes are available, from 1/4"-28 to 1"-14, with 1 degree of spherical movement and 1/16" of lateral allowance.
- The alignment allowances can eliminate the need for expensive precision machining in rigidly mounted applications.
- Alignment couplers help reduce binding and simplify field alignment problems, enhancing cylinder performance and reducing seal and bearing wear.
- An innovative design to resist vibrational loosening is available on sizes 5/16"-24 and larger. In the ACH style coupler, a slot is milled through the tapped mounting threads. Two socket head cap screws are strategically placed to allow the coupler to be clamped to the rod, offering a superior strength connection.



Dimensions

Models #5-40 through #10-32



Model*	A	B	C	D	E	F
AC8-32	#8-32	17/32"	31/32"	1/8"	3/8"	3/8"
AC8-32	#8-32	17/32"	31/32"	1/8"	3/8"	3/8"
AC10-32	#10-32	19/32"	1-1/8"	1/8"	1/2"	1/2"

Model*	G	H	J	Maximum Pull at Yield (lbs.)	Alignment Allowance		Weight (oz.)	List Price Standard	List Price Stainless Steel
					Lateral	Spherical			
AC5-40	1/8"	3/8"	1/8"	200	0.02	20°	0.3	\$12.00	\$24.00
AC8-32	1/8"	7/16"	1/8"	650	0.02	10°	0.5	14.50	30.00
AC10-32	5/32"	1/2"	1/8"	1200	0.02	10°	0.8	16.00	36.00

List price includes one jam nut

* Specify SS at the end of the part number for Stainless Steel.

Additional Jam Nuts

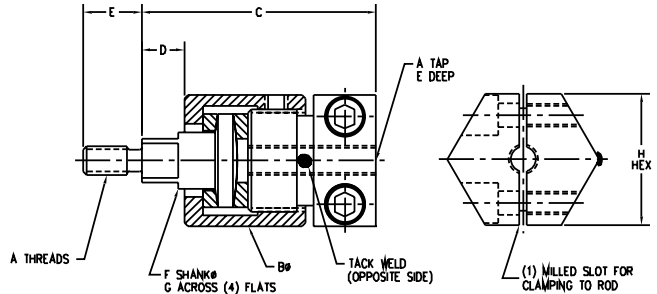
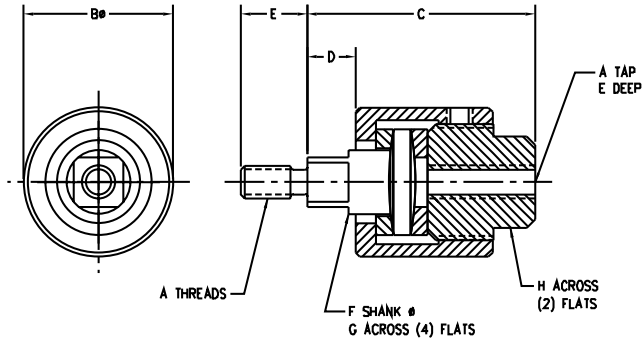
Size	Part Number	Price	Stainless Steel Part No.	Price
#5-40	D-3745	\$.25	D-3745-SS	\$.40
#8-32	D-D0737	.25	D-D0737-SS	.40
#10-32	D-5288	.25	D-5288-SS	.40

Bimba Alignment Couplers

Models 1/4"-28 through 1"-14

Standard Coupler
AC250-AC1000

ACH Coupler
ACH312-ACH1000



1/16" of lateral allowance
1° spherical movement

Part Number	A	B	C	C Hex	D	E	F	G	H	H Hex	Maximum Pull at Yield (lbs.)	List Prices Standard		List Price Stainless Steel
												AC	ACH	SS
AC250	1/4"-28	1-1/8"	1-3/4"	--	3/8"	1/2"	1/2"	3/8"	11/16"	--	6,000	\$22.70	--	\$48.00
AC312	5/16"-24	1-1/8"	1-3/4"	2"	3/8"	1/2"	1/2"	3/8"	11/16"	1-1/8"	8,300	27.00	\$54.15	57.25
AC375	3/8"-24	1-1/8"	1-3/4"	2"	3/8"	1/2"	1/2"	3/8"	11/16"	1-1/8"	8,300	27.00	54.15	57.25
AC437	7/16"-20	1-1/4"	2"	2-5/32"	7/16"	3/4"	5/8"	1/2"	13/16"	1-1/8"	10,000	34.75	58.45	75.00
AC500	1/2"-20	1-1/4"	2"	2-5/32"	7/16"	3/4"	5/8"	1/2"	13/16"	1-1/8"	14,000	34.75	58.45	75.00
AC625	5/8"-18	1-1/4"	2"	2-5/32"	7/16"	3/4"	5/8"	1/2"	13/16"	1-1/4"	19,000	37.00	58.45	79.90
AC750	3/4"-16	1-3/4"	2-5/16"	2-1/2"	7/16"	1-1/8"	31/32"	13/16"	1-1/8"	1-3/4"	34,000	45.20	81.85	98.75
AC875	7/8"-14	1-3/4"	2-5/16"	2-1/2"	7/16"	1-1/8"	31/32"	13/16"	1-1/8"	1-3/4"	39,000	45.20	81.85	98.75
AC1000	1"-14	2-1/2"	2-15/16"	2-15/16"	7/16"	1-5/8"	1-11/32"	1-5/32"	1-5/8"	2-1/2"	64,000	71.10	110.50	154.50

Please specify AC, ACH coupler when ordering AC-750 (Standard Coupler) ACH-750 (Hex Coupler)

Please specify – SS at the end of the part number for Stainless Steel.

Jam nut sold separately for 1/4"-28 through 1"-14 size

Jam Nuts

Size	Part Number Standard	Price	Stainless Steel Part No.	Price
1/4"-28	D-344	\$.25	D-344-SS	\$.75
5/16"-24	D-746	.25	D-746-SS	.75
3/8"-24	D-801	.25	D-801-SS	.75
7/16"-20	D-154	.25	D-154-SS	1.00
1/2"-20	D-98	.35	D-98-SS	1.00
5/8"-18	D-9	.35	D-9-SS	1.50
3/4"-16	D-3556	.45	D-3556-SS	2.25
7/8"-14	D-2545	.80	D-2545-SS	5.75
1"-14	D-1331	1.95	D-1331-SS	7.60

Bimba Original Line II – Stainless Steel Body Air Cylinders



The Bimba Original Line II is a complete cylinder/flow control/fitting package that reduces component height. The specially-designed flow control uses a patent pending "flow-gear" that gives very fine speed control, with over 15 turns of adjustment. The Bimba Original Line II offers the same design features, overall length and mounting thread sizes as our Original Line stainless steel body cylinder. Foot mounting holes are built into the front and rear cylinder heads.

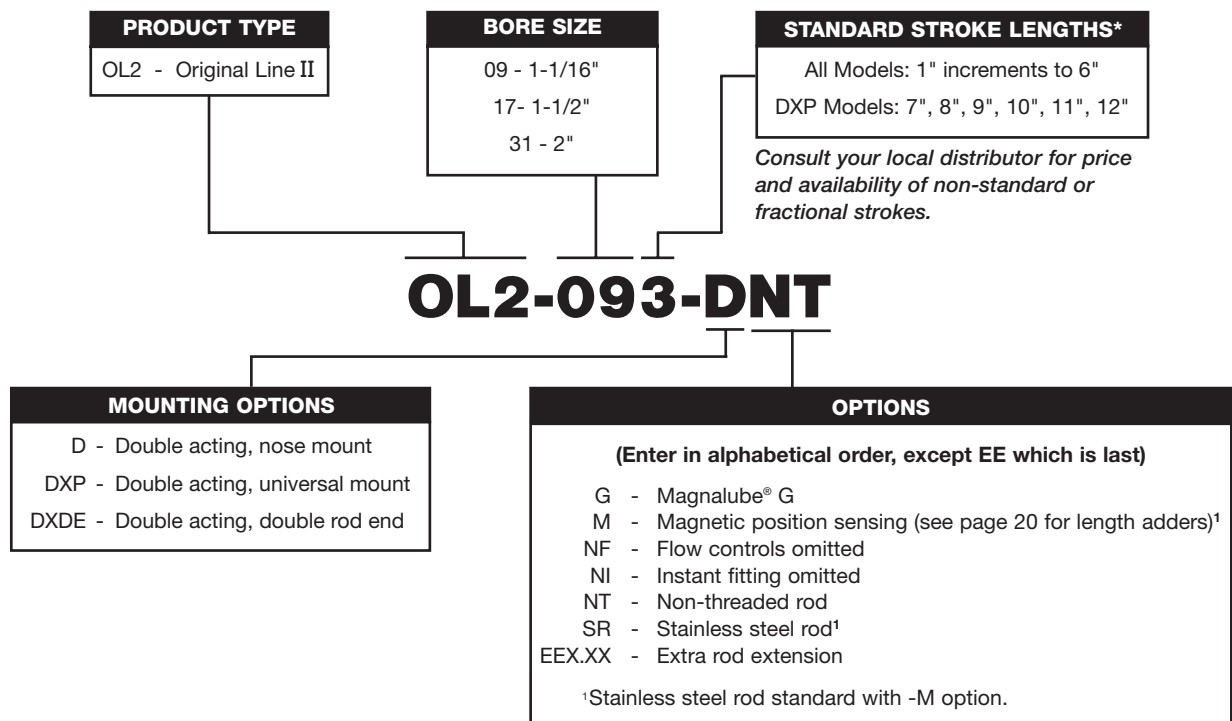
FEATURES AND ADVANTAGES

- Built-in, high precision flow controls.
- Unparalleled speed control with a special patent pending "flow gear" - over 15 turns of adjustment.
- Built-in, quick-connect fittings compatible with urethane, nylon and calibrated polyethylene tubing.
- Optional push-to-connect elbows and tees available for easy installation.
- Smaller profile than a standard cylinder/flow control/fitting combination - up to 1.5" shorter.
- Overall length and mounting threads equivalent to the Original Line.
- Built-in foot mounting holes on both front and rear heads.
- Leak-free, D-shaped quick-connect seal allows for tubing to bend at fitting connection.
- Improved metering control.
- **NEW! Flow control adjusting gear now has adjusting teeth around the entire gear, eliminating potential to over-torque the gear.**

How to Order

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

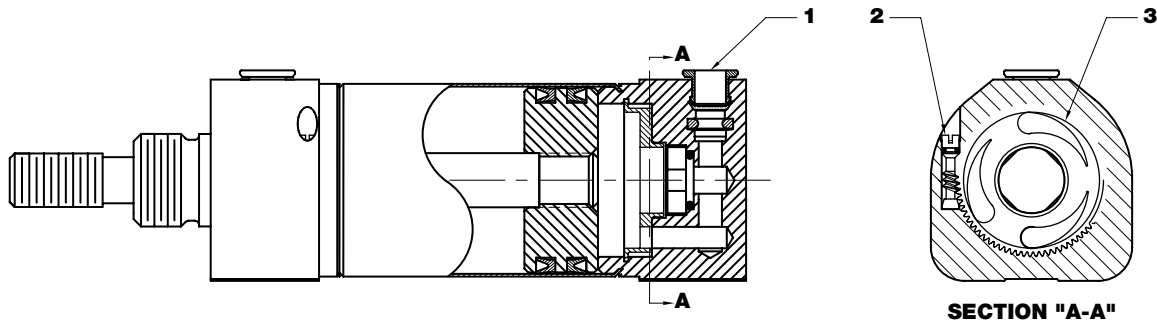
example of model number OL2-093-DNT. This is a 1-1/16" bore, 3" stroke double acting cylinder with a non-threaded rod.



®Magnalube is a trademark of the Carleton-Stuart Company

Bimba Original Line II – Stainless Steel Body Air Cylinders

How It Works



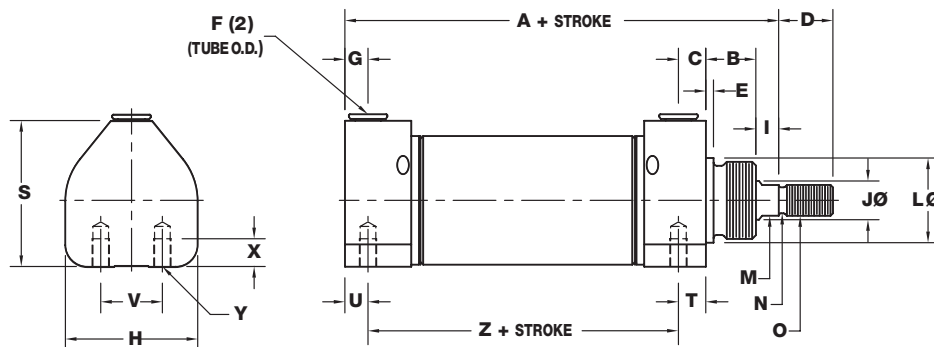
#1: Quick connect fitting is an integral part of the endcap. The unique D shaped seal provides superior leak resistance when the tubing is inserted.

#2: The stainless steel flow control adjusting screw is permanently contained within the endcap assembly using a unique screw shape and retention design.

#3: The flow control adjusting gear controls the orifice size of the exhaust path. Small adjusting teeth allow for fine orifice control.

Dimensions

D Mounting Style



Bore	A*	B	C	D	E	F	F (NI Option)	G	H	I	J
1-1/16" (09)	3.50	0.50	0.39	0.50	0.09	0.25	1/8 NPT	0.28	1.19	0.13	0.31
1-1/2" (17)	3.87	0.63	0.46	0.75	0.09	0.25	1/8 NPT	0.29	1.63	0.25	0.44
2" (31)	5.07	0.81	0.44	0.88	0.13	0.38	1/4 NPT	0.38	2.15	0.38	0.63

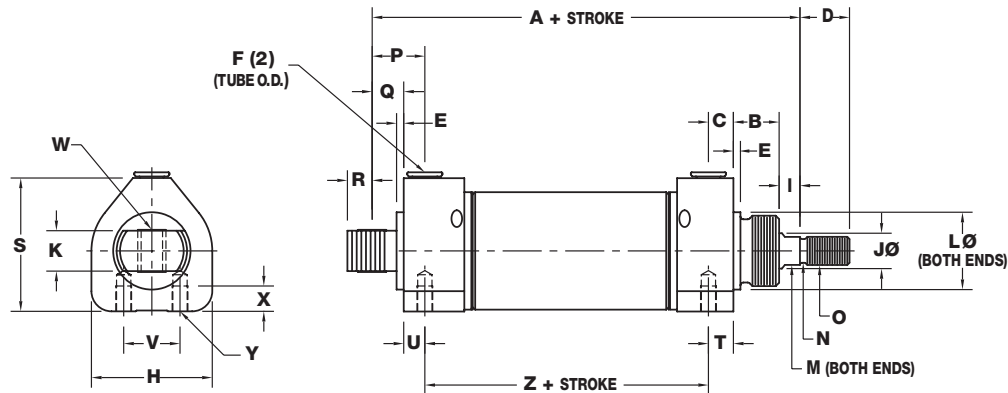
Bore	L	M	N	O	S	T	U	V	X	Y	Z
1-1/16" (09)	0.62	5/8-18	0.25	5/16-24	1.31	0.39	0.28	0.53	0.25	#10-24	2.205 ± .037 .022
1-1/2" (17)	0.75	3/4-16	0.38	7/16-20	1.63	0.46	0.29	0.75	0.38	1/4-20	2.253 ± .037 .022
2" (31)	1.37	1-1/4-12	0.50	1/2-20	2.37	0.44	0.38	1.00	0.45	5/16-18	3.057 ± .037 .022

*See page 20 for magnetic piston length adder.

Bimba Original Line II – Stainless Steel Body Air Cylinders

Dimensions

DXP Mounting Style

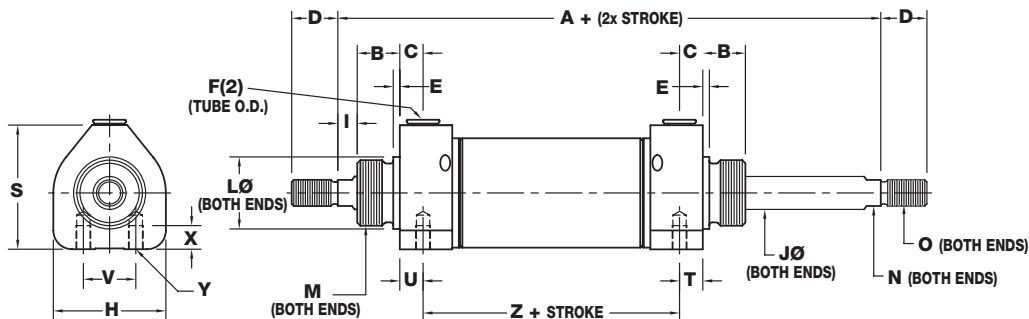


Bore	A*	B	C	D	E	F	F(NI Option)	H	I	J	K	L	M
1-1/16" (09)	3.85	0.50	0.39	0.50	0.09	0.25	1/8 NPT	1.19	0.13	0.31	0.38	0.62	5/8-18
1-1/2" (17)	4.38	0.63	0.46	0.75	0.09	0.25	1/8 NPT	1.63	0.25	0.44	0.62	0.75	3/4-16
2" (31)	5.63	0.81	0.44	0.88	0.13	0.38	1/4 NPT	2.15	0.38	0.63	0.72	1.37	1-1/4-12

Bore	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
1-1/16" (09)	0.25	5/16-24	0.62	0.34	0.28	1.31	0.39	0.28	0.53	0.25	0.25	#10-24	2.205 ± .037 .022
1-1/2" (17)	0.38	7/16-20	0.79	0.50	0.38	1.63	0.46	0.29	0.75	0.38	0.38	1/4-20	2.253 ± .037 .022
2" (31)	0.50	1/2-20	0.94	0.56	0.44	2.37	0.44	0.38	1.00	0.38	0.45	5/16-18	3.057 ± .037 .022

*See magnetic piston length adder (page 20).

DXDE Mounting Style



Bore	A	B	C	D	E	F	F (NI Option)	G	H	I	J	L
1-1/16" (09)	4.00	0.50	0.39	0.50	0.09	0.25	1/8 NPT	0.28	1.19	0.13	0.31	0.62
1-1/2" (17)	5.12	0.63	0.46	0.75	0.09	0.25	1/8 NPT	0.29	1.63	0.25	0.44	0.75
2" (31)	6.56	0.81	0.44	0.88	0.13	0.38	1/4 NPT	0.38	2.15	0.38	0.63	1.37

Bore	M	N	O	S	T	U	V	X	Y	Z
1-1/16" (09)	5/8-18	0.25	5/16-24	1.31	0.39	0.39	0.53	0.25	310-24	1.968 ± .037 .022
1-1/2" (17)	3/4-16	0.38	7/16-20	1.63	0.46	0.46	0.75	0.38	1/4-20	2.450 ± .037 .022
2" (31)	1-1/4-12	0.50	1/2-20	2.37	0.44	0.44	1.00	0.45	5/16-18	3.310 ± .037 .022

Bimba Original Line II – Stainless Steel Body Air Cylinders

Magnetic Piston Length Adder

Bore	D	DXP	DXDE
1-1/16" (09)	0.25	0.25	0.25
1-1/2" (17)	0.25	0.25	0.25
2" (31)	N/A	N/A	N/A

Price List

Bore	Model			Stroke Per Inch	
	D	DXP	DXDE	D & DXP	DXDE
1-1/16" (09)	\$57.95	\$63.05	\$65.90	\$1.35	\$1.80
1-1/2" (17)	71.45	76.15	80.65	2.10	3.35
2" (31)	91.45	101.95	110.25	2.40	3.45

Bore	Options					
	EE (Extra Extension per inch)	EE (DXDE Mount)	M (Magnetic Piston)	SR (Stainless Steel Rod)	NF (Flow Controls Omitted)	NI (Instant Fitting Omitted)
1-1/16" (09)	\$0.70	\$0.95	\$10.45	\$1.75	< \$21.80>	< \$2.00>
1-1/2" (17)	1.20	1.75	12.55	2.50	<21.80>	<2.00>
2" (31)	1.25	1.80	14.65	3.45	<27.90>	<3.00>

No Charge options – G, NT.

Accessories

Bore	Mounting Nut*			Plated Steel Rod End Clevis		SS Rod End Clevis	
	Model*	Plated Steel Price	SS Price	Model	Price	Model	Price
1-1/16" (09)	D-9	\$0.35	\$1.25	D-166-1	\$3.10	D-54564-SS	\$20.30
1-1/2" (17)	D-3556	0.45	1.90	D-231-1	5.05	D-54562-SS	24.95
2" (31)	D-508	2.90	4.50	D-231-3	5.05	D-54563-SS	29.50

*Add -SS to model number for stainless steel.

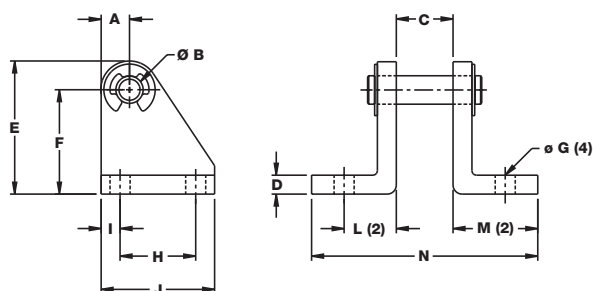
Bore	Plated Steel Pivot Bracket		SS U-Pivot Bracket		Plated Steel Foot Bracket*		
	Model	Price	Model	Price	Model*	Price	SS Price
1-1/16" (09)	D-13498-A	\$3.10	D-55203-SS	\$13.85	D-129	\$2.30	\$4.55
1-1/2" (17)	D-620	11.20	D-55204-SS	17.25	D-241	3.60	16.75
2" (31)	D-620	11.20	D-55205-SS	21.50	D-615	8.00	20.35

*Add -SS to model number for stainless steel.

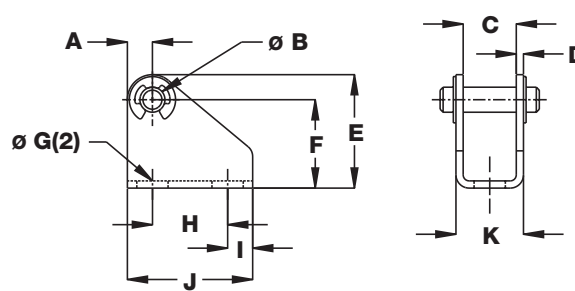
Bore	Glass Filled Nylon Plug-In Tee		Glass Filled Nylon Plug-In Elbow	
	Model	Price	Model	Price
1-1/16" (09)	D-70632-2	\$3.60	D-70631-2	\$2.20
1-1/2" (17)	D-70632-2	3.60	D-70631-2	2.20
2" (31)	N/A	N/A	D-70631-3	7.50

Accessories

Pivot Bracket



Stainless Steel U-Pivot Bracket



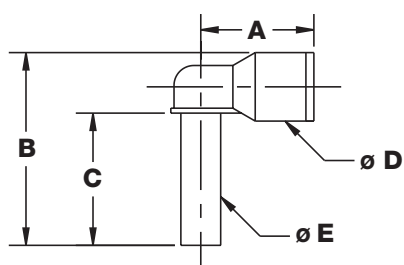
Pivot Bracket

Bore	Model	A	B	C	D	E	F	G	H	I	J	L	M	N
1-1/16" (09)	D-13498-A	0.31	0.25	0.38	0.12	1.19	0.88	0.26	0.75	0.19	1.12	0.44	1.62	2.00
1-1/2" (17)	D-620	0.38	0.37	0.75	0.25	1.75	1.38	0.26	1.00	0.25	1.50	0.69	1.13	3.00
2" (31)	D-620	0.38	0.37	0.75	0.25	1.75	1.38	0.26	1.00	0.25	1.50	0.69	1.13	3.00

Stainless Steel U-Pivot Bracket

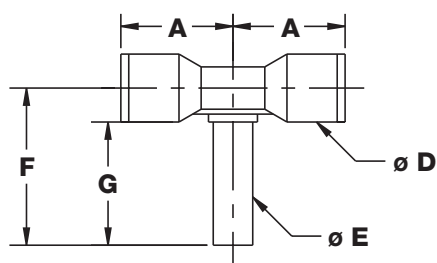
Bore	Model	A	B	C	D	E	F	G	H	I	J	K
1-1/16" (09)	D-55203-SS	0.31	0.25	0.38	0.12	1.19	0.88	0.22	0.75	0.19	1.13	0.63
1-1/2" (17)	D-55204-SS	0.38	0.38	0.63	0.13	1.75	1.38	0.28	1.00	0.25	1.50	0.91
2" (31)	D-55205-SS	0.38	0.38	0.75	0.25	1.75	1.38	0.28	1.00	0.25	1.50	1.25

Elbow



Bore	Model	A	B	C	D	E
1-1/16" (09)	D-70631-2	0.71	1.21	0.83	0.43	0.25
1-1/2" (17)	D-70631-2	0.71	1.21	0.83	0.43	0.25
2" (31)	D-70631-3	1.00	1.63	0.95	0.79	0.38

Tee

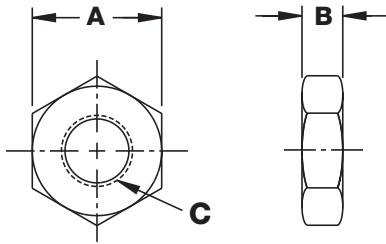


Bore	Model	A	D	E	F	G
1-1/16" (09)	D-70632-2	0.71	0.43	0.25	0.99	0.77
1-1/2" (17)	D-70632-2	0.71	0.43	0.25	0.99	0.77
2" (31)	N/A	N/A	N/A	N/A	N/A	N/A

Bimba Original Line II – Stainless Steel Body Air Cylinders

Accessories

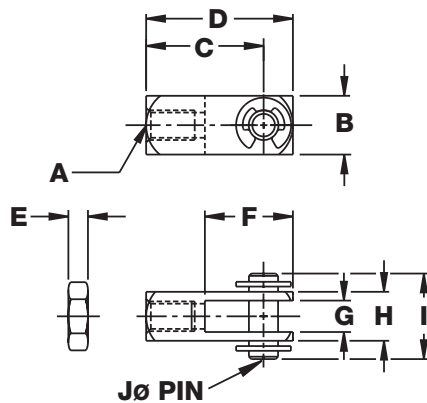
Mounting Nut



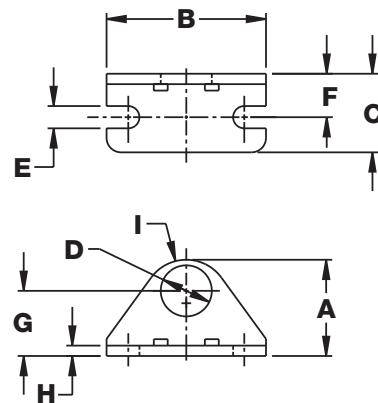
Bore	Model*	A	B	C
1-1/16" (09)	D-9	0.94	0.38	5/8-18
1-1/2" (17)	D-3556	1.12	0.42	3/4-16
2" (31)	D-508	1.88	0.50	1-1/4-12

*For Stainless Steel Mounting Nut add -SS to the model number.

Rod End Clevis (Includes nut)



Foot Bracket



Rod End Clevis (Includes nut)

Bore	Model	SS Model	A	B	C	D	E	F	G	H	I	J
1-1/16" (09)	D-166-1	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-231-1	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-231-3	D-54563-SS	1/2-20	0.75	1.31	1.69	0.31	0.94	0.38	0.75	1.03	0.38

Foot Bracket

Bore	Model*	A	B	C	D	E	F	G	H	I
1-1/16" (09)	D-129	1.38	1.88	1.00	0.62	0.27	0.56	0.81	0.12	0.56
1-1/2" (17)	D-241	1.75	2.50	1.50	0.75	0.28	0.75	1.00	0.12	0.75
2" (31)	D-615	2.50	3.12	1.62	1.38	0.34	1.00	1.50	0.25	1.00

*For Stainless Steel Foot Bracket add -SS to the model number.

Engineering Specifications

Operating Medium:	Air only
Maximum Operating Pressure:	250 psi (15 bar)
Temperature Range:	-20° to 200°F (-25° to 90°C)
Lubrication:	HT-99, Bimba's proprietary petroleum-based lubricant
Endcaps and Piston material:	Aluminum
Cylinder body:	Mirror finish 304 stainless steel
Piston and Rod seals:	Low friction Buna N "U" cup seals
Rod and Pivot bushing material:	Sintered bronze (pivot bushing omitted on 1-1/2" bore)
Piston/Rod connection:	Threaded, sealed and spin-riveted
Tubing Compatibility:	Urethane, nylon and calibrated polyethylene
Piston rod:	Hard chrome plated carbon steel (stainless steel optional)
Expected Service Life:	1400 Miles (2200 Kilometers) when lubricated approximately every 500 hours of usage.

Cylinder Weight						
Bore	Base Weight			Adder per 1" of stroke		
	D	DXP	DXDE	D	DXP	DXDE
1-1/16" (09)	.33	.33	.39	.05	.05	.10
1-1/2" (17)	.69	.73	.84	.08	.08	.16
2" (31)	1.40	1.62	1.79	.15	.15	.30

All prices are F.O.B. Monee, Illinois and subject to change without notice.

Product enhancements resulting from our continuing quality improvement effort may necessitate changes in specifications without notice.

5/16" Bore Air Cylinders

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

OPTIONS:

(also see Option Combination Availability Chart Page 4)

- **MAGNALUBE G (G)** - NO CHARGE
- **PORTS ROTATED (K)*** - NO CHARGE
- **NO THREAD (NT)** - NO CHARGE

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

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

EXTRA EXTENSION (EE)

- Add \$0.60 per inch of extension

DOUBLE ACTING FAILSAFE

(JS = Spring Return, JR = Spring Extend)

- Add \$4.00 to base price + \$0.35 to stroke adder
- See page 79 for overall length adders

OPTIONS continued...

LOW TEMPERATURE (N)

Temperature Range: -40° to 200°F

- Single acting add \$0.55
- Double acting add \$1.05
- Reverse acting add \$0.80

HIGH TEMPERATURE "U" CUPS (V)

(overall length does not change)

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

- Single acting add \$3.45
- Double acting add \$9.20
- Reverse acting add \$6.50

ROD WIPER (W)

(not available in standard single acting)

- Add \$2.50

MOLYCOATED BODY (F)

- Add \$2.30 per inch of stroke


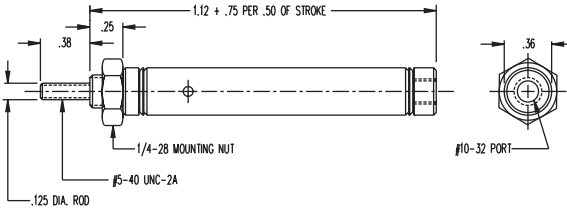

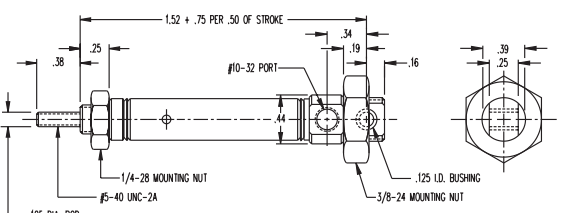

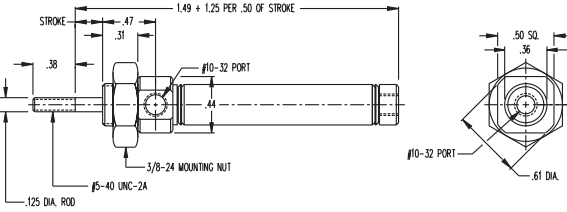
NON-LUBE SERVICE (E)

- Single acting add \$3.15
- Double acting add \$6.80


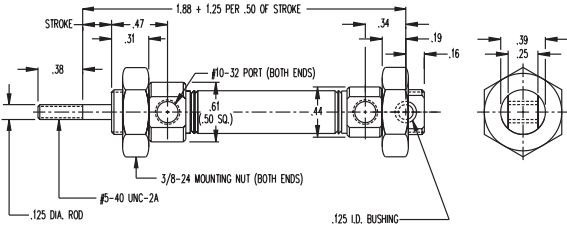

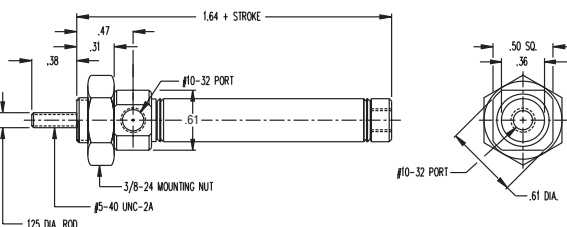

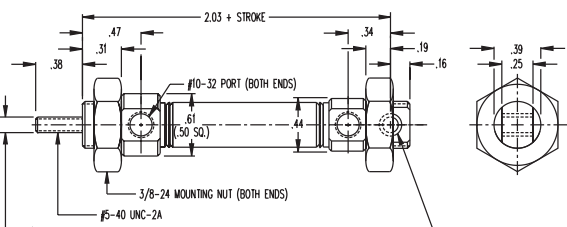

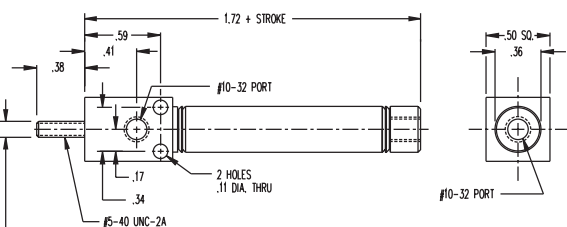
MAGNETIC POSITION SENSING (M)

- Add \$6.50
- Add .15" to overall length
- Must specify track(s) for use with Bimba's miniature position sensing (T2, T3, T4) – Add \$2.50 per track. See page 142 for details.

☐ Enter Stroke Length as 4th Digit

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
007 <input type="checkbox"/>  \$9.70 BASE PRICE Add \$1.70 per inch of stroke	Single Acting – Spring Return – Front Nose Mounting Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4" Maximum Stroke – 4" Stainless Steel Rod Standard Optional Accessory: D-26731 Mounting Bracket Base Weight: .03 Adder Per Inch of Stroke: .02	
007 <input type="checkbox"/> -XP  \$12.65 BASE PRICE Add \$1.70 per inch of stroke	Single Acting – Spring Return – Double End or Rear Pivot Mounting Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 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	
007 <input type="checkbox"/> -R  \$14.85 BASE PRICE Add \$1.70 per inch of stroke	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" Stainless Steel Rod Standard Optional Accessory: D-26765 Mounting Bracket Base Weight: .05 Adder Per Inch of Stroke: .03	

5/16" Bore Air Cylinders

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
007□-RP  \$18.80 BASE PRICE Add \$1.70 per inch of stroke	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" 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	
007□-D  \$13.55 BASE PRICE Add \$1.15 per inch of stroke	Double Acting – Air Return – Front Nose Mounting Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 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  \$16.75 BASE PRICE Add \$1.15 per inch of stroke	Double Acting – Air Return – Double End or Rear Pivot Mounting Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 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  \$20.55 BASE PRICE Add \$1.15 per inch of stroke	Double Acting – Front Block Mounting – Air Return Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4" Maximum Stroke – 4" Stainless Steel Rod Standard Base Weight: .05 Adder Per Inch of Stroke: .01	

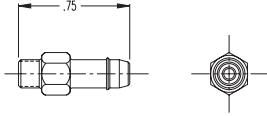
5/16" Bore Air Cylinders

5/16" Bore Accessories

D-3229-A

\$2.90

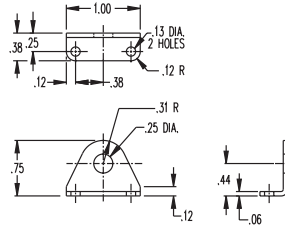
PACKAGE OF SIX



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

D-26731

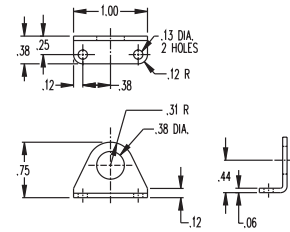
\$1.60



*Mounting Bracket
(for Single Acting Models)*

D-26765

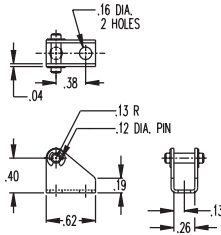
\$1.60



*Mounting Bracket
(for Double Acting Models)*

D-26689

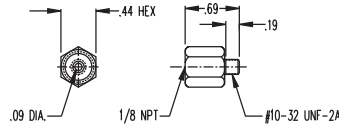
\$2.85



Pivot Bracket with Pin

D-855-A

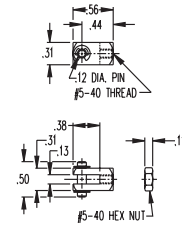
\$1.55



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

D-26690

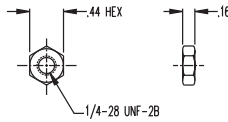
\$2.85



*Piston Rod Clevis
(with Pin)*

D-344

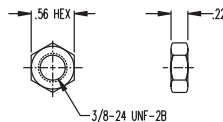
\$.25



Mounting Nut

D-801

\$.25



Mounting Nut

7/16" Bore Air Cylinders

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

OPTIONS:

NO CHARGE:

- **MAGNALUBE G (G)**
- **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)

- \$2.60 additional
- Add .062 to overall length; Reverse acting, add .125

DOUBLE ACTING BUMPER (B)

- \$3.65 additional
- Add .188 to overall length – DXDE; add .250

DOUBLE ACTING FAILSAFE

(JS = Spring Return, JR = Spring Extend)

- Add \$4.00 to base price + \$0.35 to stroke adder
- See page 79 for overall length adders

OPTIONS continued...

EXTRA EXTENSION (EE)

- Single, reverse and double acting, add \$0.70 per inch of extension
- DXDE, add \$0.90 per inch of extension; extension added to each end

LOW TEMPERATURE (N)

Temperature Range: -40° to 200°F

- Single acting add \$0.55
- Reverse acting add \$0.80
- Double acting add \$1.05
- DXDE add \$1.35

HIGH TEMPERATURE "U" CUPS (V)

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

- Single acting add \$3.65
- Double acting add \$9.50
- DXDE add \$12.55
- Reverse acting add \$6.60

MAGNET (prefix M)

- Add \$7.00
- 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) – add \$2.50 per track. See page 142 for details.

MOLYCOATED BODY (F)

- Add \$2.30 per inch of stroke

NON-LUBE SERVICE (E)

- Single acting add \$3.15
- Double acting add \$7.35
- DXDE add \$10.45

ROD WIPER (W)

(not available in standard single acting)

- Add \$2.50

☐ Enter Stroke Length as 3rd Digit

MODEL/PRICE

DESCRIPTION/WEIGHT (lbs.)

DIMENSIONS

01 ☐

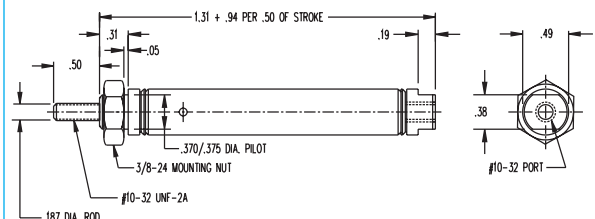


\$10.20

BASE PRICE

Add \$1.90 per inch of stroke

Single Acting – Spring Return – Front Nose Mounting
Standard Stroke Lengths:
 ½", 1", 1½", 2", 2½", 3", 4"
 Maximum Stroke – 6"
 Stainless Steel Rod Standard
Optional Accessory:
 D-775 Mounting Bracket
Base Weight: .04
Adder Per Inch of Stroke: .04



01 ☐ -NR

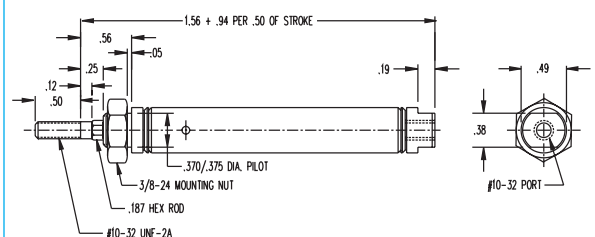


\$12.60


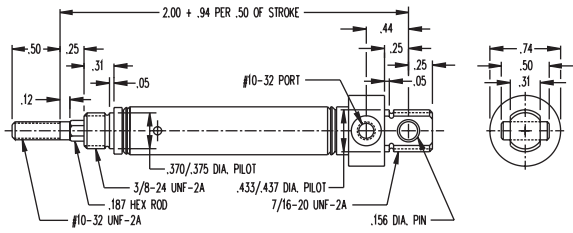

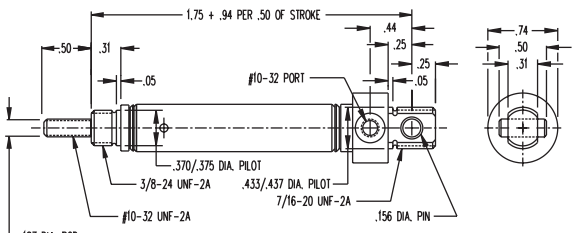

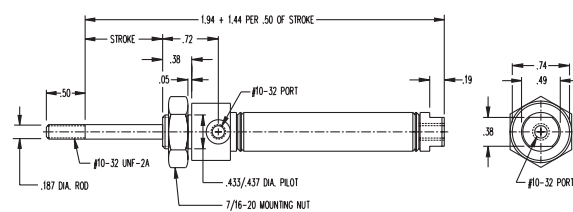

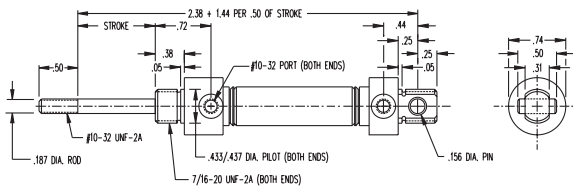

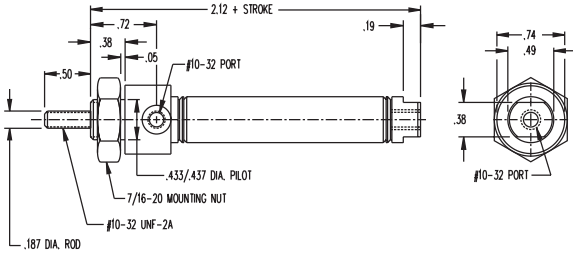
BASE PRICE

Add \$1.90 per inch of stroke


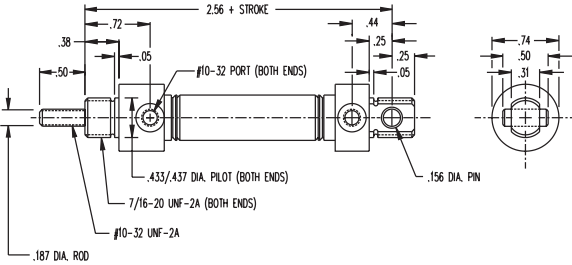

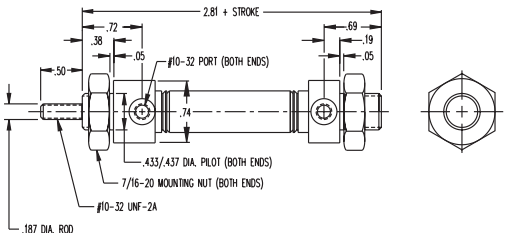

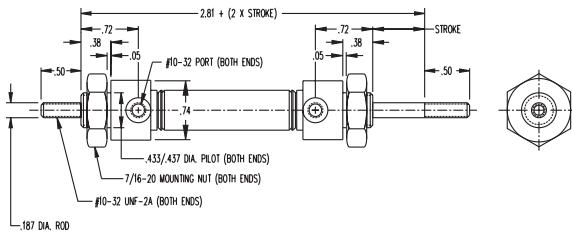
Single Acting – Non-rotating – Hexagon Rod – Spring Return – Front Nose Mounting
Standard Stroke Lengths:
 ½", 1", 1½", 2", 2½", 3", 4"
 Maximum Stroke – 6"
 Stainless Steel Rod Standard
Optional Accessory:
 D-775 Mounting Bracket
Base Weight: .04
Adder Per Inch of Stroke: .04




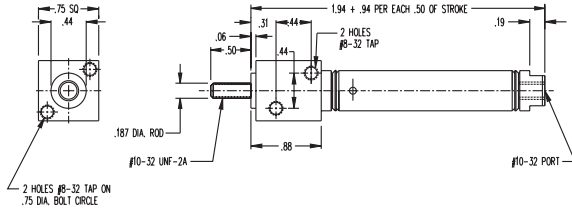

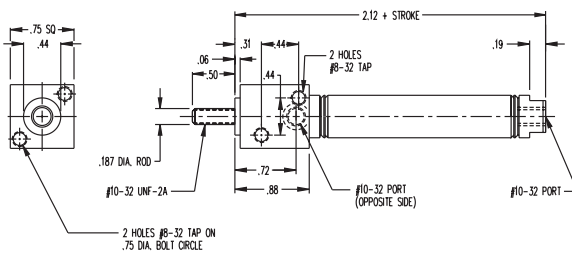
7/16" Bore Air Cylinders

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
01□-NRP  \$15.75 BASE PRICE Add \$1.90 per inch of stroke	Single Acting – Non-rotating Hexagon Rod – Pivot Type – Spring Return – Rear Pivot Mounting Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 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	
01□-P  \$13.45 BASE PRICE Add \$1.90 per inch of stroke	Single Acting – Pivot Type – Spring Return – Rear Pivot Mounting Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 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	
01□-R  \$15.50 BASE PRICE Add \$1.90 per inch of stroke	Reverse Single Acting – Pull Type – Rod Normally Extended – Spring Return – Front Nose Mounting Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3" Maximum Stroke – 6" Stainless Steel Rod Standard Optional Accessory: D-770 Mounting Bracket Base Weight: .08 Adder Per Inch of Stroke: .03	
01□-RP  \$19.40 BASE PRICE Add \$1.90 per inch of stroke	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 – 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	
01□-D  \$14.20 BASE PRICE Add \$1.35 per inch of stroke	Double Acting – Air Return – Front Nose Mounting Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4" Maximum Stroke – 12" Stainless Steel Rod Standard Optional Accessory: D-770 Mounting Bracket Base Weight: .07 Adder Per Inch of Stroke: .02	

7/16" Bore Air Cylinders


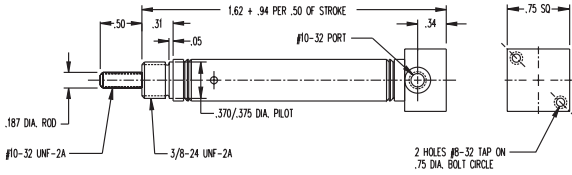

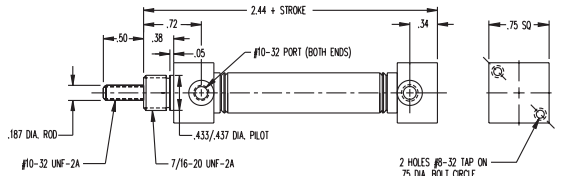
MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
01□-DP  \$17.20 BASE PRICE Add \$1.35 per inch of stroke	Double Acting – Pivot Type – Air Return – Rear Pivot Mounting Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4" Maximum Stroke – 12" Stainless Steel Rod Standard Optional Accessories: D-780 Pivot Brackets D-850 Piston Rod Clevis Base Weight: .08 Adder Per Inch of Stroke: .02	
01□-DX  \$17.55 BASE PRICE Add \$1.35 per inch of stroke	Double Acting – Double End Mount – Air Return Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 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  \$22.45 BASE PRICE Add \$1.80 per inch of stroke	Double Acting – Double End Rod – Air Return – Double End Mount Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4" Maximum Stroke – 6" Stainless Steel Rod Standard Optional Accessory: D-770 Mounting Bracket Base Weight: .14 Adder Per Inch of Stroke: .03	

7/16" Bore Block Mounted Air Cylinders


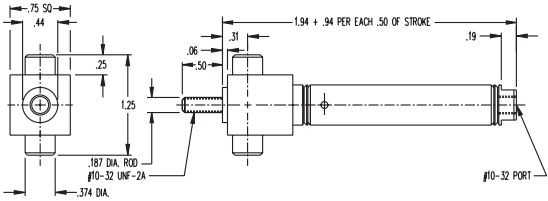

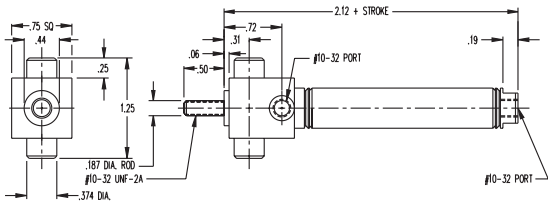

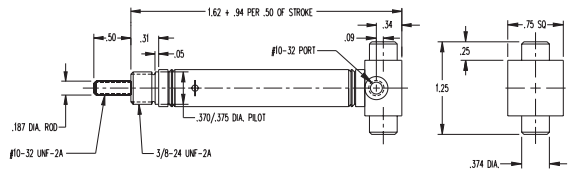
MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
BF-01□  \$18.25 BASE PRICE Add \$1.90 per inch of stroke	Single Acting – Front Block Mounting – Spring Return Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4" Maximum Stroke – 6" Stainless Steel Rod Standard Base Weight: .07 Adder Per Inch of Stroke: .04	
BF-01□-D  \$22.00 BASE PRICE Add \$1.35 per inch of stroke	Double Acting – Front Block Mounting – Air Return Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4" Maximum Stroke – 12" Stainless Steel Rod Standard Base Weight: .07 Adder Per Inch of Stroke: .02	

7/16" Bore Air Cylinders

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


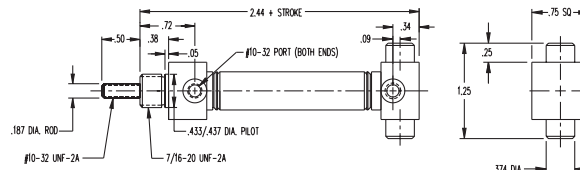
MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
BR-01  <p>\$17.70 BASE PRICE Add \$1.90 per inch of stroke</p>	Single Acting – Rear Block Mounting for Vertical Positioning – Spring Return Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4" Maximum Stroke – 6" Stainless Steel Rod Standard Base Weight: .05 Adder Per Inch of Stroke: .04	
BR-01  <p>\$21.70 BASE PRICE Add \$1.35 per inch of stroke</p>	Double Acting – Rear Block Mounting for Vertical Positioning – Air Return Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4" Maximum Stroke – 12" Stainless Steel Rod Standard Base Weight: .08 Adder Per Inch of Stroke: .02	

7/16" Bore Trunnion Mounted Air Cylinders

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
BFT-01  <p>\$24.95 BASE PRICE Add \$1.90 per inch of stroke</p>	Single Acting – Front Block Trunnion Mounting – Spring Return Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4" Maximum Stroke – 6" Stainless Steel Rod Standard Optional Accessories: TRB-1 Trunnion Brackets D-850 Rod Clevis Base Weight: .09 Adder Per Inch of Stroke: .04	
BFT-01  <p>\$28.75 BASE PRICE Add \$1.35 per inch of stroke</p>	Double Acting – Front Block Trunnion Mounting – Air Return Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4" Maximum Stroke – 12" Stainless Steel Rod Standard Optional Accessories: TRB-1 Trunnion Brackets D-850 Rod Clevis Base Weight: .09 Adder Per Inch of Stroke: .02	
BRT-01  <p>\$24.35 BASE PRICE Add \$1.90 per inch of stroke</p>	Single Acting – Rear Block Trunnion Mounting – Spring Return Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4" Maximum Stroke – 6" Stainless Steel Rod Standard Optional Accessories: TRB-1 Trunnion Brackets D-850 Rod Clevis Base Weight: .07 Adder Per Inch of Stroke: .04	

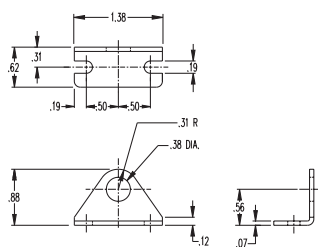
7/16" Bore Air Cylinders

7/16" Bore Trunnion Mounted Air Cylinders (continued)

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
BRT-01 <input type="checkbox"/> -D  \$28.20 BASE PRICE Add \$1.35 per inch of stroke	Double Acting – Rear Block Trunnion Mounting – Air Return Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4" Maximum Stroke – 12" Stainless Steel Rod Standard Optional Accessories: TRB-1 Trunnion Brackets D-850 Rod Clevis Base Weight: .10 Adder Per Inch of Stroke: .02	

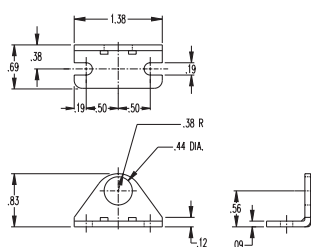
7/16" Bore Accessories

D-775
\$1.95



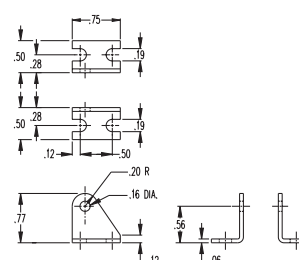
Mounting Bracket
(for Single Acting Models)

D-770
\$2.05



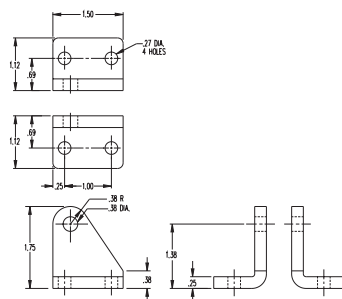
Mounting Bracket
(for Double Acting Models)

D-780
\$2.70



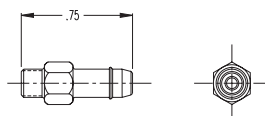
Pivot Brackets

TRB-1
\$7.85



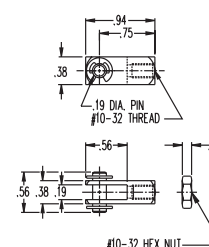
Trunnion Brackets

D-3229-A
\$2.90
PACKAGE OF SIX



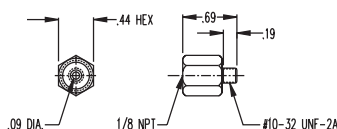
Anodized Aluminum Alloy Barbed Fitting. ¼" Hose (O.D.) Barbed Fitting Supplied with Gasket, No. 10-32 to ¼" O.D. Tubing.

D-850
\$2.90



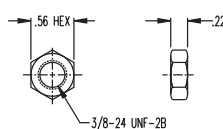
Piston Rod Clevis

D-855-A
\$1.55



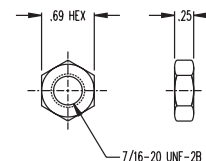
Adaptors (10-32 to ⅛ NPT Male)
Supplied with Gasket

D-801
\$.25



Mounting Nut

D-154
\$.25



Mounting Nut

9/16" Bore Air Cylinders

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

OPTIONS:

NO CHARGE:

- **MAGNALUBE G (G)**
- **PORTS ROTATED (K)**
- **NO THREAD (NT)**
- **SIDE PORTED REAR HEAD (Q)**
Add .03" to nose mount overall length

SINGLE AND REVERSE ACTING BUMPER (B)

- \$2.60 additional
- Add .062 to overall length

DOUBLE ACTING BUMPERS (B)

- \$3.65 additional
- Add .125 to overall length

EXTRA EXTENSION (EE)

- Single, reverse and double acting, add \$0.70 per inch of extension

DOUBLE ACTING FAILSAFE

- (JS = Spring Return, JR = Spring Extend)
- Add \$4.50 to base price + \$0.50 to stroke adder
- See page 79 for overall length adders

OPTIONS continued...

- **DXDE**, add \$0.90 per inch of extension; extension added to each end

MAGNET (prefix M) – Add \$8.40

- Single and reverse acting add .125" to overall length
- See page 131 for switch details & mounting selection
- Must specify track(s) for use with miniature position sensing (T2, T3, T4) – add \$2.50 per track. See page 142 for details.

LOW TEMPERATURE (N)

Temperature Range: -40° to 200°F

- Single acting add \$0.55
- Reverse acting add \$0.80
- Double acting add \$1.05
- DXDE add \$1.35

HIGH TEMPERATURE "U" CUPS (V)

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

- Single acting add \$3.65
- Double acting add \$9.50
- Double end rod add \$12.55
- Reverse acting add \$6.60

MOLYCOATED BODY (F)

- Add \$2.30 per inch of stroke

NON-LUBE SERVICE (E)


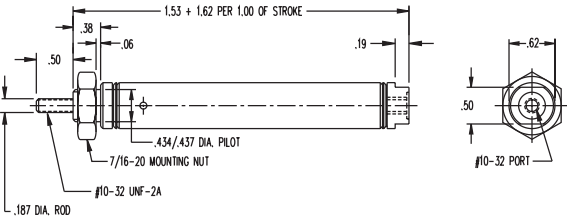

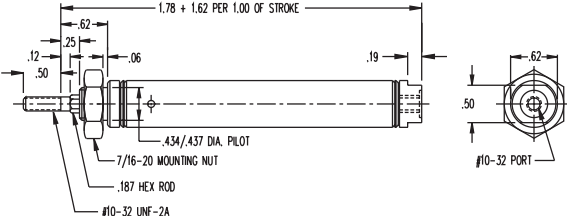
- Single acting add \$3.15
- Double acting add \$7.35
- DXDE add \$10.45

ROD WIPER (W)


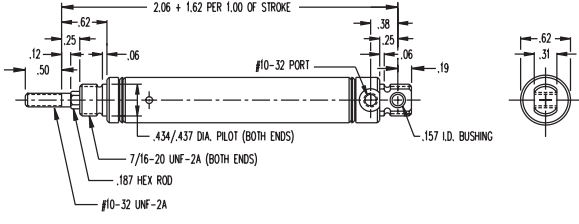

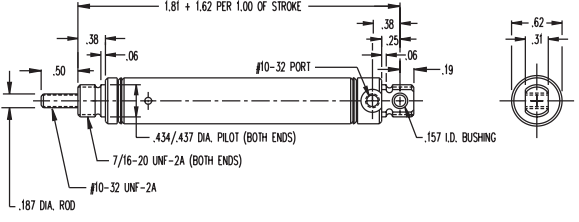

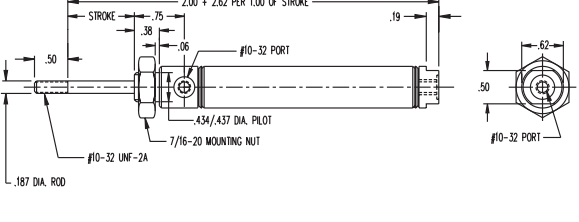

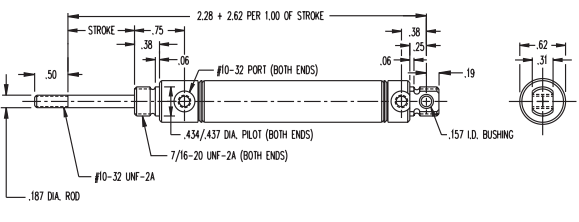

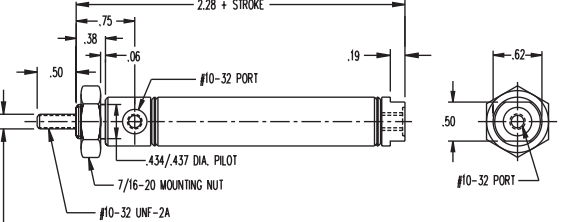
(not available in standard single acting)

- Add \$2.50


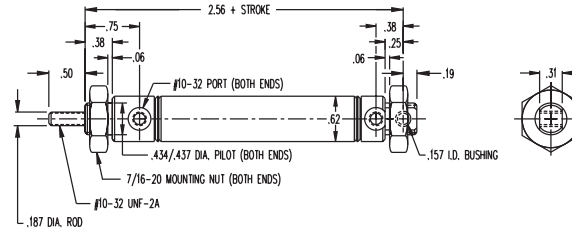

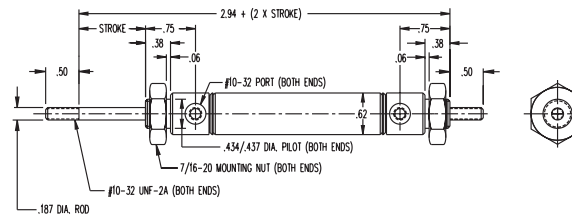
☐ Enter Stroke Length as 3rd Digit

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
02 <input type="checkbox"/>  \$10.90 BASE PRICE Add \$1.90 per inch of stroke	Single Acting – Spring Return – Front Nose Mounting Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4" Maximum Stroke – 6" Stainless Steel Rod Standard Optional Accessory: D-770 Mounting Bracket Base Weight: .06 Adder Per Inch of Stroke: .05	
02 <input type="checkbox"/> -NR  \$13.35 BASE PRICE Add \$1.90 per inch of stroke	Single Acting – Non-rotating Hexagon Rod – Spring Return – Front Nose Mounting Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4" Maximum Stroke – 6" Stainless Steel Rod Standard Optional Accessory: D-770 Mounting Bracket Base Weight: .06 Adder Per Inch of Stroke: .05	

9/16" Bore Air Cylinders

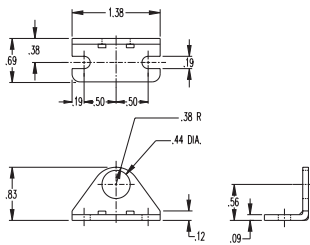
MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
02□-NRP  \$16.75 BASE PRICE Add \$1.90 per inch of stroke	Single Acting – Non-rotating Hexagon Rod – Pivot Type – Spring Return – Rear Pivot Mounting Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4" Maximum Stroke – 6" Stainless Steel Rod Standard Optional Accessories: D-850 Rod Clevis D-12321-A Pivot Bracket Base Weight: .06 Adder Per Inch of Stroke: .05	
02□-P  \$14.20 BASE PRICE Add \$1.90 per inch of stroke	Single Acting – Pivot Type – Spring Return – Rear Pivot Mounting Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 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	
02□-R  \$16.45 BASE PRICE Add \$1.90 per inch of stroke	Reverse Single Acting – Pull Type – Rod Normally Extended – Spring Return – Front Nose Mounting Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3" Maximum Stroke – 6" Stainless Steel Rod Standard Optional Accessory: D-770 Mounting Bracket Base Weight: .08 Adder Per Inch of Stroke: .04	
02□-RP  \$19.90 BASE PRICE Add \$1.90 per inch of stroke	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 – 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	
02□-D  \$14.50 BASE PRICE Add \$1.35 per inch of stroke	Double Acting – Air Return – Front Nose Mounting Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4" Maximum Stroke – 12" Stainless Steel Rod Standard Optional Accessory: D-770 Mounting Bracket Base Weight: .09 Adder Per Inch of Stroke: .02	

9/16" Bore Air Cylinders

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
02□-DXP  \$17.70 BASE PRICE Add \$1.35 per inch of stroke	Double Acting – Double End or Rear Pivot Mounting – Air Return Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 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  \$23.90 BASE PRICE Add \$1.80 per inch of stroke	Double Acting – Double End Rod – Air Return – Double End Mounting Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4" Maximum Stroke – 6" Stainless Steel Rod Standard Optional Accessory: D-770 Mounting Bracket Base Weight: .16 Adder Per Inch of Stroke: .03	

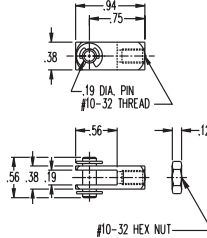
9/16" Bore Accessories

D-770
\$2.05



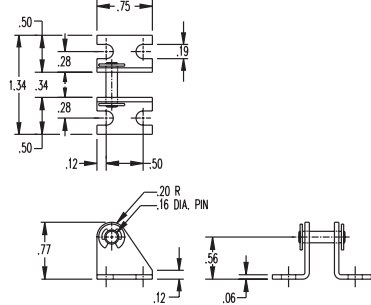
Mounting Bracket

D-850
\$2.90



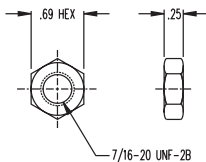
Piston Rod Clevis

D-12321-A
\$3.15



Pivot Bracket with Pin

D-154
\$.25



Mounting Nut

Note: For stainless steel accessories see page 113 and 116-117.

3/4" Bore Air Cylinders

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

OPTIONS:

NO CHARGE:

- **MAGNALUBE G (G)**
- **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)

- \$2.60 additional
- Add .125 to overall length

DOUBLE ACTING BUMPERS (B)

- \$3.65 additional
- No change in overall length

EXTRA EXTENSION (EE)

- Single, reverse and double acting, add \$0.70 per inch of extension
- DXDE, add \$0.90 per inch of extension; extension added to each end

DOUBLE ACTING FAILSAFE

- (JS = Spring Return, JR = Spring Extend)
- Add \$5.00 to base price + \$0.50 to stroke adder
- See page 79 for overall length adders

☐ Enter Stroke Length as 3rd Digit

OPTIONS continued...

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

- Double acting, add \$2.50
- DXDE, add \$5.00

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

- Add \$1.10
- Spring Force: 4 lbs. relaxed – 10 lbs. compressed

MAGNET (prefix M) – Add \$8.40

- 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) – add \$2.50 per track. See page 142 for details.

LOW TEMPERATURE (N)

Temperature Range: -40° to 200°F

- Single acting add \$0.55
- Reverse acting add \$0.80
- Double acting add \$1.05
- DXDE add \$1.35

HIGH TEMPERATURE "U" CUPS (V)

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

- Single acting add \$3.65
- Double acting add \$9.50
- Double end rod add \$12.55
- Reverse acting add \$6.60

MOLYCOATED BODY (F)

- Add \$2.30 per inch of stroke

NON-LUBE SERVICE (E)

- Single acting add \$3.40
- Double acting add \$7.60
- DXDE add \$10.75

STAINLESS STEEL ROD (prefix SR)

- Add \$1.75
- Standard on M option, block mount, DXP and DXDE models

MODEL/PRICE

DESCRIPTION/WEIGHT (lbs.)

DIMENSIONS

04 ☐

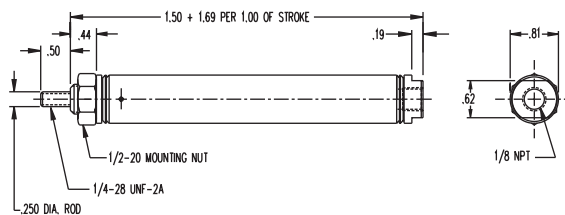


\$11.30

BASE PRICE

Add \$1.90 per inch of stroke

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



04 ☐ -NR

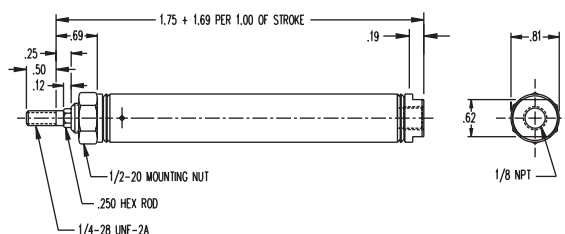


\$13.80


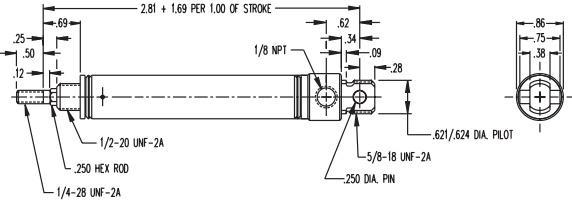

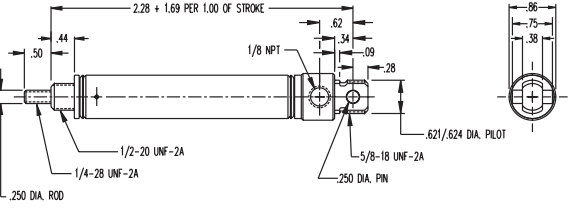

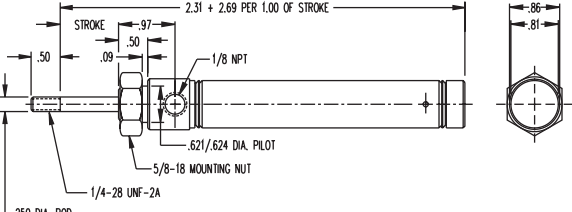

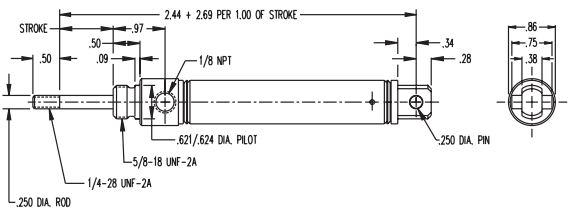

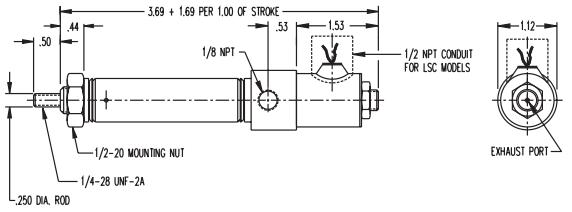
BASE PRICE

Add \$1.90 per inch of stroke


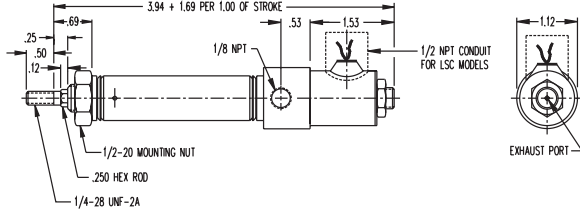

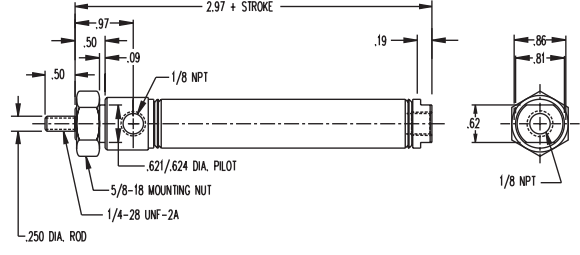

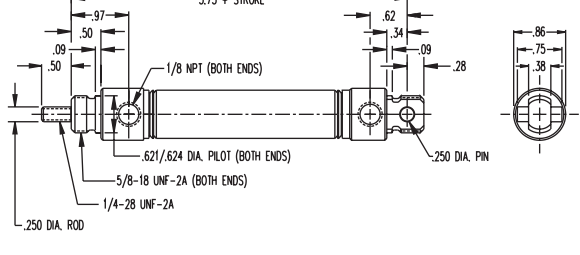

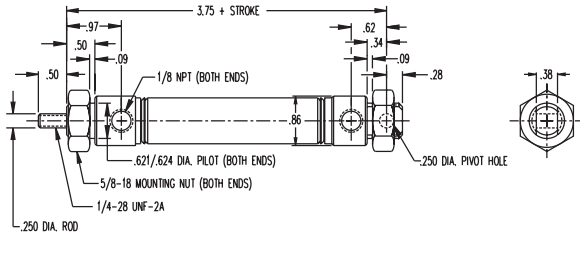
Single Acting – Non-rotating Hexagon Rod – Spring Return – Front Nose Mounting
Standard Stroke Lengths:
 ½", 1", 1½", 2", 2½", 3", 4"
 Maximum Stroke – 6"
 Optional Stainless Steel Rod
Optional Accessory:
 D-226 Mounting Bracket
Base Weight: .10
Adder Per Inch of Stroke: .08




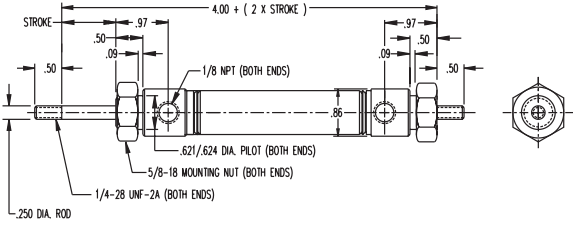
3/4" Bore Air Cylinders

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
04□-NRP  \$17.20 BASE PRICE Add \$1.90 per inch of stroke	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	
04□-P  \$14.50 BASE PRICE Add \$1.90 per inch of stroke	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	
04□-R  \$16.65 BASE PRICE Add \$1.90 per inch of stroke	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	
04□-RP  \$20.05 BASE PRICE Add \$1.90 per inch of stroke	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	
04□-LS or LSC Conduit Outlet*  \$62.60 BASE PRICE Add \$1.90 per inch of stroke *Add \$1.80 for Conduit Outlet	Single Acting – Built-in Midget 3-Way Solenoid Operated Valve – Spring Return – Front Nose Mounting – 150 PSI, 3/8" 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	


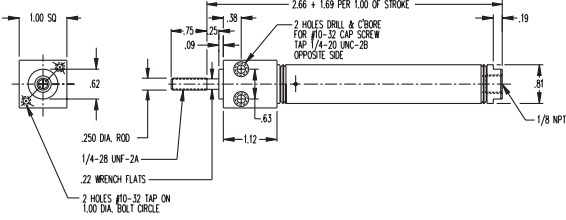

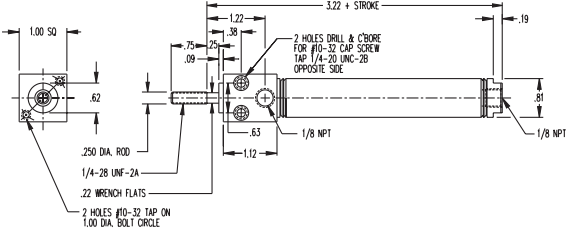

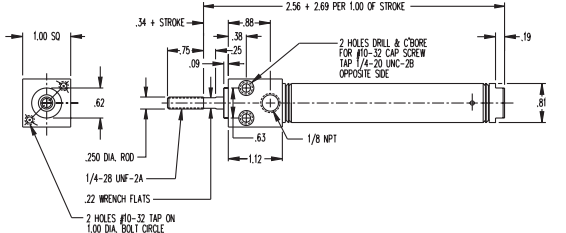
3/4" Bore Air Cylinders

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
04□-NRLS or NRLSC Conduit Outlet*  \$65.40 BASE PRICE Add \$1.90 per inch of stroke *Add \$1.80 for 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	
04□-D  \$14.60 BASE PRICE Add \$1.35 per inch of stroke	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	
04□-DP  \$17.60 BASE PRICE Add \$1.35 per inch of stroke	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	
04□-DXP  \$19.50 BASE PRICE Add \$1.35 per inch of stroke	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	

3/4" Bore Air Cylinders


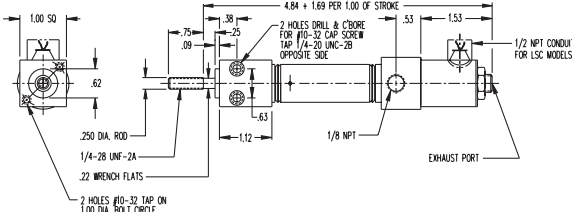

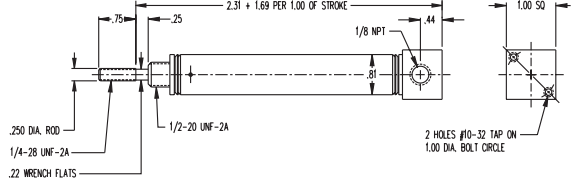

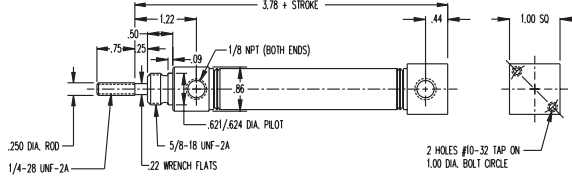

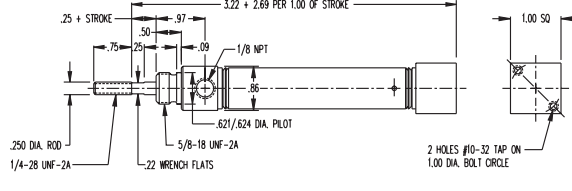
MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
04□-DXDE  \$27.30 BASE PRICE Add \$1.80 per inch of stroke	Double Acting – Double End Rod – Air Return – Double End Mounting Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4", 5", 6" Maximum Stroke – 12" Stainless Steel Rod Standard Optional Rod Wiper Optional Accessory: D-129 Mounting Bracket Base Weight: .37 Adder Per Inch of Stroke: .04	

3/4" Bore Block Mounted

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
BF-04□  \$19.65 BASE PRICE Add \$1.90 per inch of stroke	Single Acting – Front Block Mounting – Spring Return Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4" Maximum Stroke – 6" Stainless Steel Rod Standard Base Weight: .18 Adder Per Inch of Stroke: .08	
BF-04□-D  \$23.10 BASE PRICE Add \$1.35 per inch of stroke	Double Acting – Front Block Mounting – Air Return Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4", 5", 6" Maximum Stroke – 12" Stainless Steel Rod Standard Base Weight: .22 Adder Per Inch of Stroke: .03	
BF-04□-R  \$24.80 BASE PRICE Add \$1.90 per inch of stroke	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" Stainless Steel Rod Standard Base Weight: .19 Adder Per Inch of Stroke: .07	


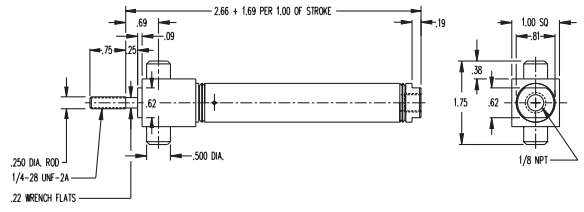

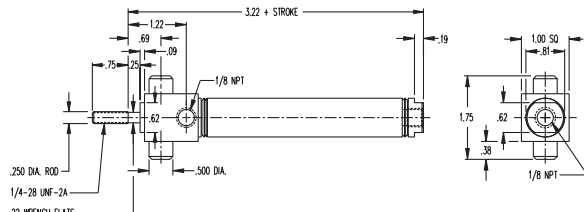

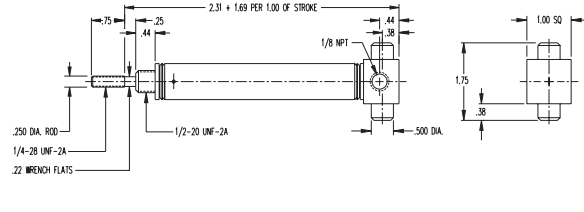

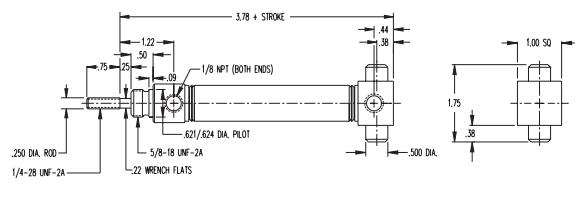
3/4" Bore Air Cylinders

3/4" Bore Block Mounted (continued)

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
BF-04□-LS or LSC*  \$71.35 BASE PRICE Add \$1.90 per inch of stroke *Add \$1.80 for Conduit Outlet	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	
BR-04□  \$19.65 BASE PRICE Add \$1.90 per inch of stroke	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	
BR-04□-D  \$22.65 BASE PRICE Add \$1.35 per inch of stroke	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	
BR-04□-R  \$24.80 BASE PRICE Add \$1.90 per inch of stroke	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	


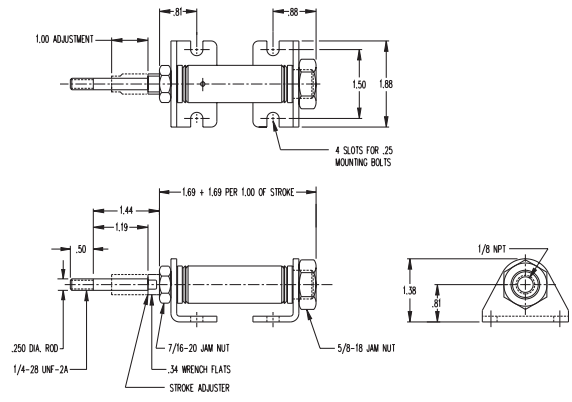

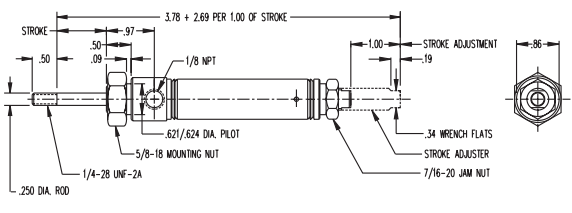

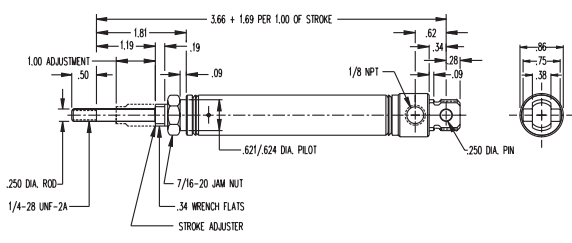
3/4" Bore Air Cylinders

3/4" Bore Trunnion Mounted

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
BFT-04  <p>\$27.15 BASE PRICE Add \$1.90 per inch of stroke</p>	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	
BFT-04  <p>\$30.55 BASE PRICE Add \$1.35 per inch of Stroke</p>	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	
BRT-04  <p>\$25.35 BASE PRICE Add \$1.90 per inch of stroke</p>	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	
BRT-04  <p>\$28.65 BASE PRICE Add \$1.35 per inch of stroke</p>	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 Air Cylinders

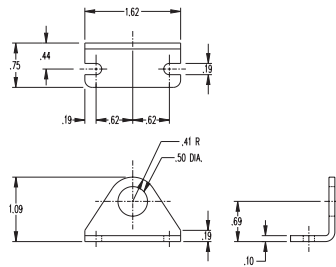
3/4" Bore Adjustable Stroke

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
04-A  \$22.80 BASE PRICE Add \$1.90 per inch of stroke	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	
04-RA  \$23.70 BASE PRICE Add \$1.90 per inch of Stroke	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	
04-AP  \$22.40 BASE PRICE Add \$1.90 per inch of stroke	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	

3/4" Bore Air Cylinders

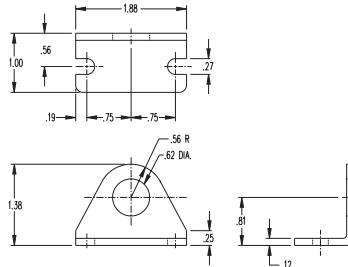
3/4" Bore Accessories

D-226
\$1.85



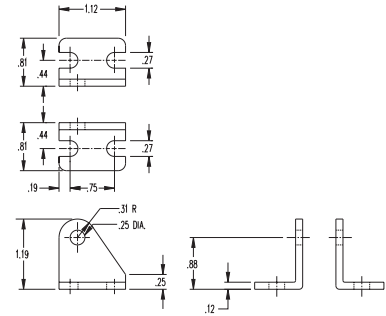
*Mounting Bracket
(for Single Acting Models)*

D-129
\$2.30



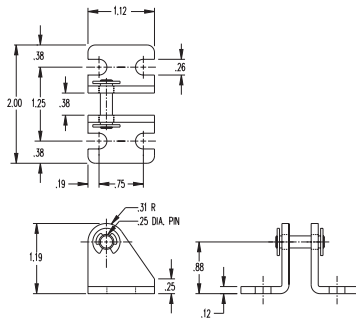
*Mounting Bracket
(for Double Acting Models)*

D-167
\$2.70



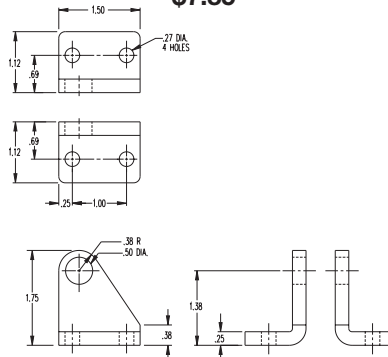
Pivot Brackets

D-13498-A
\$3.10



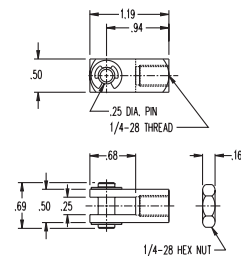
Pivot Bracket

TRB-2
\$7.85



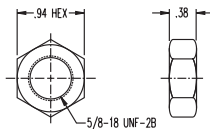
Trunnion Brackets

D-166-3
\$3.10



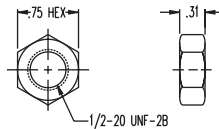
Piston Rod Clevis

D-9
\$.35



Mounting Nut

D-98
\$.35



Mounting Nut

Note: For stainless steel accessories see page 113 and 116-117.

7/8" Bore Air Cylinders

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

OPTIONS:

NO CHARGE:

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

EXTRA EXTENSION (EE)

- Single, reverse and double acting, add \$0.70 per inch of extension
- DXDE, add \$0.90 per inch of extension; extension added to each end

DOUBLE ACTING FAILSAFE

- (JS = Spring Return, JR = Spring Extend)
- Add \$5.00 to base price + \$0.50 to stroke adder
- See page 79 for overall length adders

OPTIONS continued...

MAGNET (prefix M) – Add \$8.40

- 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) – add \$2.50 per track. See page 142 for details.

LOW TEMPERATURE (N)

Temperature Range: -40° to 200°F

- Single acting add \$0.55
- Reverse acting add \$0.80
- Double acting add \$1.05
- DXDE add \$1.35

HIGH TEMPERATURE "U" CUP SEALS (V)

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

- Single acting add \$4.10
- Double acting add \$10.60
- DXDE add \$13.45
- Reverse acting add \$7.05

MOLYCOATED BODY (F)

- Add \$2.30 per inch of stroke

NON-LUBE SERVICE (E)

- Single acting add \$3.40
- Double acting add \$7.85
- DXDE add \$11.25

ROD WIPER (W)


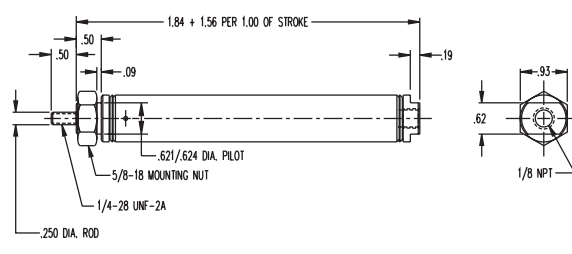

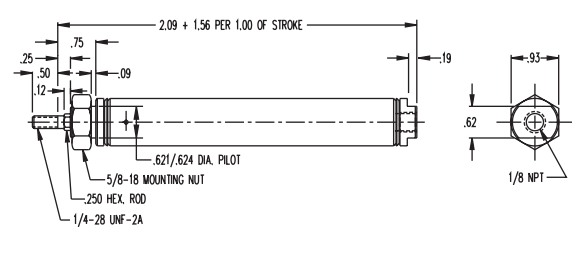
(not available in standard single acting)

- Add \$2.50


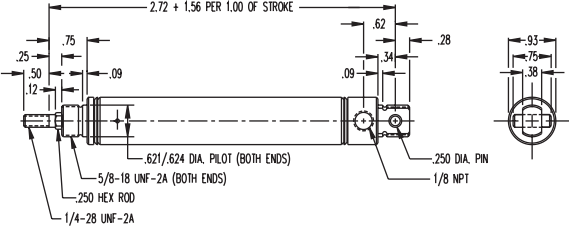

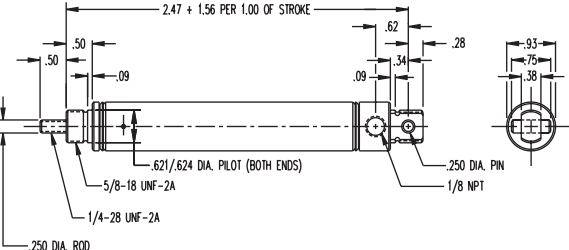

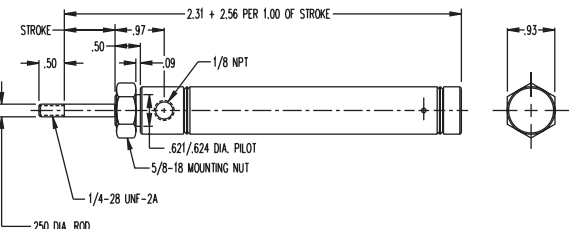

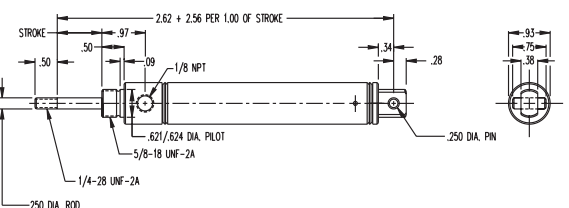

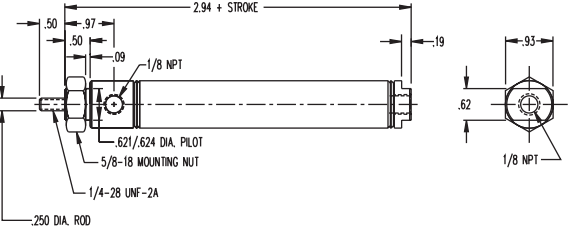
STAINLESS STEEL ROD (prefix SR)

- Add \$1.75
- Standard on DXP, DXDE, and M option


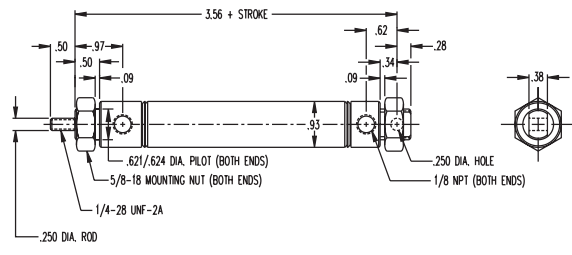

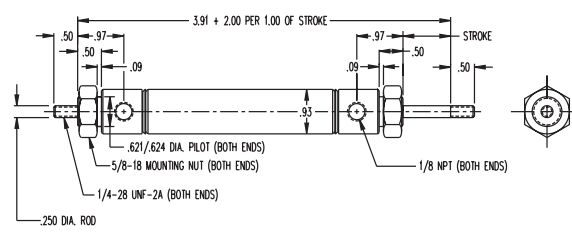
☐ Enter Stroke Length as 3rd Digit

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
06 <input type="checkbox"/>  \$12.10 BASE PRICE Add \$2.10 per inch of stroke	Single Acting – Spring Return – Front Nose Mounting Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4" Maximum Stroke – 6" Optional Stainless Steel Rod Optional Accessory: D-129 Mounting Bracket Base Weight: .17 Adder Per Inch of Stroke: .09	
06 <input type="checkbox"/> -NR  \$14.30 BASE PRICE Add \$2.10 per inch of stroke	Single Acting – Non-rotating Hexagon Rod – Spring Return – Front Nose Mounting Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4" Maximum Stroke – 6" Optional Stainless Steel Rod Optional Accessory: D-129 Mounting Bracket Base Weight: .17 Adder Per Inch of Stroke: .09	

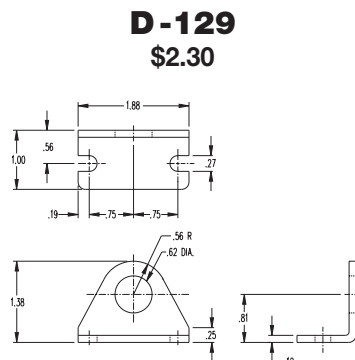
7/8" Bore Air Cylinders

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
06□-NRP  \$17.90 BASE PRICE Add \$2.10 per inch of stroke	Single Acting – Non-rotating Hexagon Rod – Pivot Type – Spring Return – Rear Pivot Mounting Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 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	
06□-P  \$15.40 BASE PRICE Add \$2.10 per inch of stroke	Single Acting – Pivot Type – Spring Return – Rear Pivot Mounting Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 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	
06□-R  \$17.85 BASE PRICE Add \$2.10 per inch of stroke	Reverse Single Acting – Pull Type – Rod Normally Extended – Front Nose Mounting Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4" Maximum Stroke – 6" Optional Stainless Steel Rod Optional Accessory: D-129 Mounting Bracket Base Weight: .20 Adder Per Inch of Stroke: .09	
06□-RP  \$21.15 BASE PRICE Add \$2.10 per inch of stroke	Reverse Single Acting – Pivot and Pull Type – Rod Normally Extended – Spring Return – Rear Pivot Mounting Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 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	
06□-D  \$16.05 BASE PRICE Add \$1.35 per inch of stroke	Double Acting – Air Return – Front Nose Mounting Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 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	

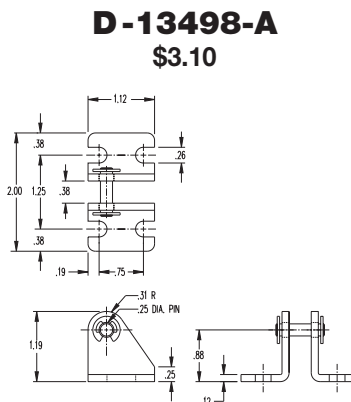
7/8" Bore Air Cylinders

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
06□-DXP  \$21.20 BASE PRICE Add \$1.35 per inch of stroke	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 – 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  \$28.70 BASE PRICE Add \$1.80 per inch of stroke	Double Acting – Double End Rod – Air Return – Double End Mounting Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 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	

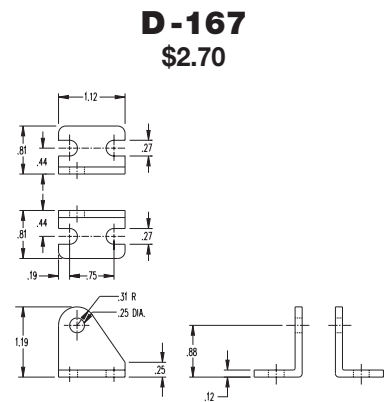
7/8" Bore Accessories



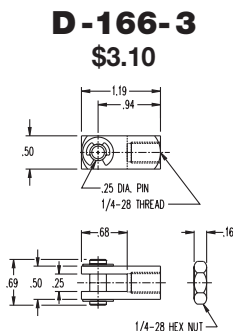
Mounting Bracket



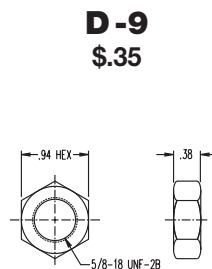
Pivot Bracket



Pivot Brackets



Rod Clevis



Mounting Nut

1-1/16" Bore Air Cylinders

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

OPTIONS:

NO CHARGE:

- MAGNALUBE G (G)
- 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)

- \$2.60 additional
- Add .125 to overall length

DOUBLE ACTING BUMPERS (B)

- \$3.65 additional
- Add .125 to overall length
- Models DXDE and DXDEH add .500

EXTRA EXTENSION (EE)

- Single, reverse and double acting, add \$0.70 per inch of extension
- DXDE, add \$0.90 per inch of extension; extension added to each end
- DXDE hollow rod, add \$1.30 per inch of extension; extension added to each end

DOUBLE ACTING FAILSAFE

(JS = Spring Return, JR = Spring Extend)

- Add \$7.00 to base price + \$0.90 to stroke adder
- See page 79 for overall length adders

OPTIONS continued...

HEAVY SPRINGS (H) are standard on all single acting block front and block rear mount, and all reverse acting. For all other single acting, add \$1.70

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

MAGNET (prefix M) – Add \$10.45

- 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) – add \$2.50 per track. See page 142 for details.

LOW TEMPERATURE (N)

Temperature Range: -40° to 200°F

- Single acting add \$0.80
- Reverse acting add \$1.05
- Double acting add \$1.60
- DXDE add \$2.10

HIGH TEMPERATURE "U" CUPS (V)

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

- Single acting add \$4.75
- Double acting add \$11.40
- DXDE add \$14.45
- Reverse acting add \$7.40

ROD WIPER (W)

(not available in standard single acting)

(now available in block mount)

- Double acting, add \$2.50
- DXDE, add \$5.00

MOLYCOATED BODY (F)

- Add \$2.30 per inch of stroke

NON-LUBE SERVICE (E)

- Single acting add \$3.40
- Double acting add \$8.40
- DXDE add \$11.80

STAINLESS STEEL ROD (prefix SR)

- Add \$1.75
- Standard on DX, DXDE, DXDEH, All block mountings and M option

☐ Enter Stroke Length as 3rd Digit

MODEL/PRICE

DESCRIPTION/WEIGHT (lbs.)

DIMENSIONS

09 ☐

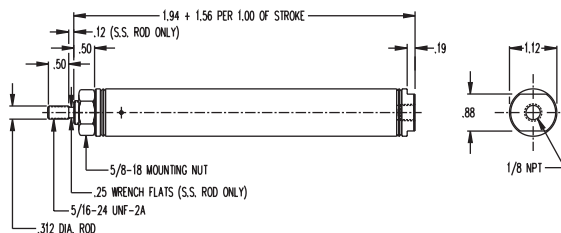


\$12.65

BASE PRICE

Add \$2.30 per inch of stroke

Single Acting – Spring Return – Front Nose Mounting
Standard Stroke Lengths:
½", 1", 1½", 2", 2½", 3", 4"
Maximum Stroke – 6"
Optional Stainless Steel Rod
Optional Accessory:
D-129 Mounting Bracket
Base Weight: .23
Adder Per Inch of Stroke: .11



09 ☐-NR

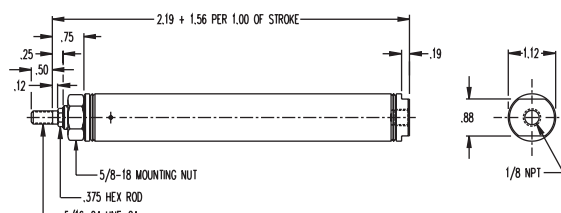


\$14.95


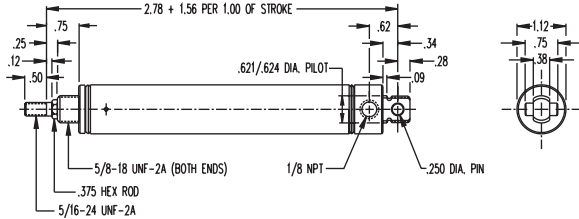

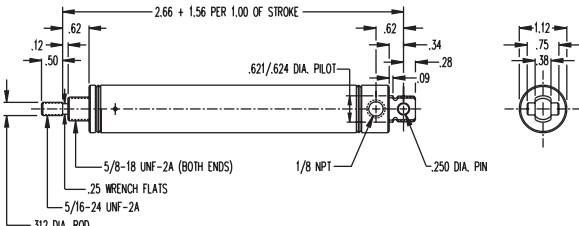

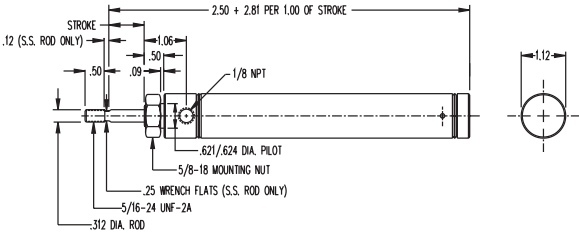

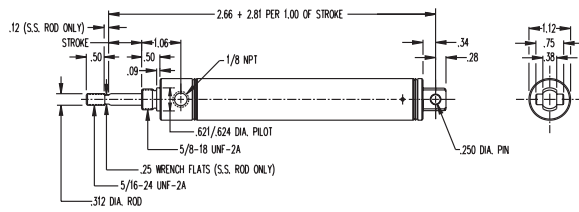
BASE PRICE

Add \$2.30 per inch of stroke


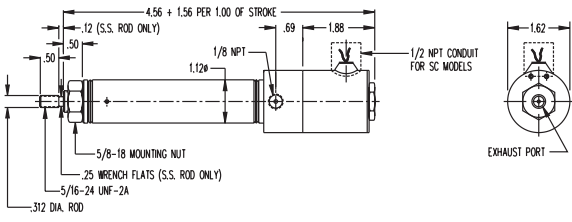

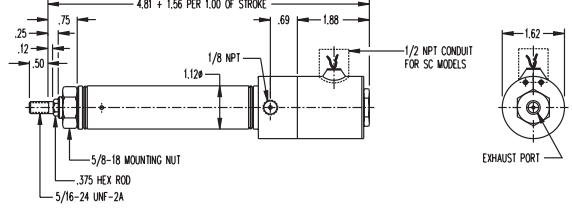

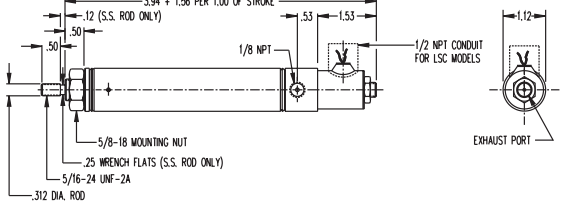
Single Acting – Non-rotating Hexagon Rod – Spring Return – Front Nose Mounting
Standard Stroke Lengths:
½", 1", 1½", 2", 2½", 3", 4"
Maximum Stroke – 6"
Optional Stainless Steel Rod
Optional Accessory:
D-129 Mounting Bracket
Base Weight: .25
Adder Per Inch of Stroke: .12




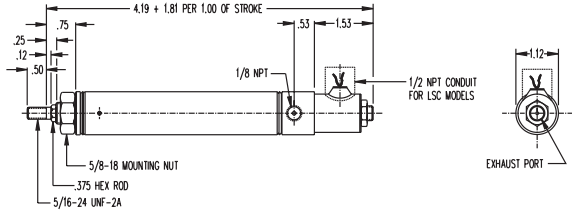

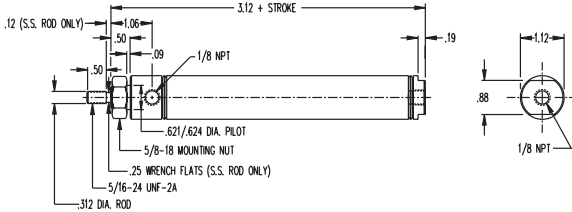

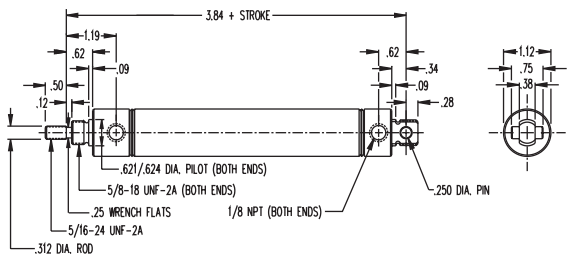

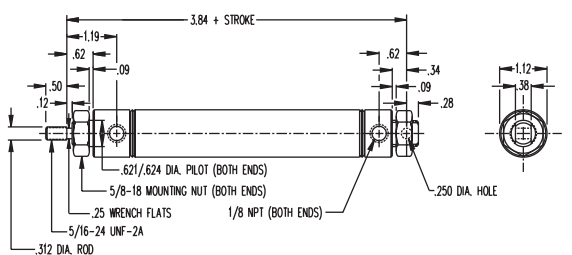
1-1/16" Bore Air Cylinders

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
09□-NRP  \$18.40 BASE PRICE Add \$2.30 per inch of stroke	Single Acting – Non-rotating Hexagon Rod – Pivot Type – Spring Return – Rear Pivot Mounting Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 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	
09□-P  \$15.85 BASE PRICE Add \$2.30 per inch of stroke	Single Acting – Pivot Type – Spring Return – Rear Pivot Mounting Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 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	
09□-R  \$18.50 BASE PRICE Add \$2.30 per inch of stroke	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 Stainless Steel Rod Optional Accessory: D-129 Mounting Bracket Base Weight: .24 Adder Per Inch of Stroke: .16	
09□-RP  \$22.00 BASE PRICE Add \$2.30 per inch of stroke	Reverse Single Acting – Pivot and Pull Type – Rod Normally Extended – Spring Return – Rear Pivot Mounting Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 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	


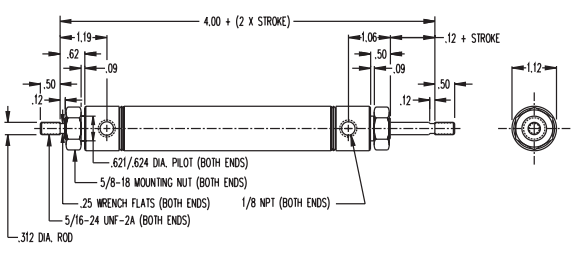

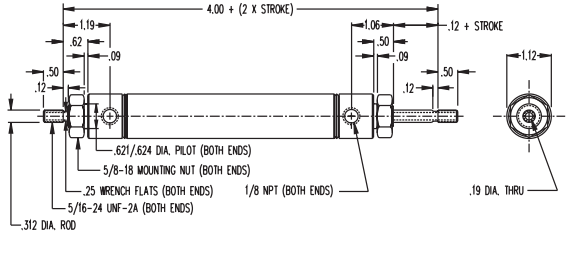
1-1/16" Bore Air Cylinders

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
09□-S or SC*  \$61.80 BASE PRICE Add \$2.30 per inch of stroke *Add \$2.30 for Conduit Outlet	Single Acting – Built-in 3-Way Solenoid Operated Valve – Spring Return – Front Nose Mounting – 100 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	
09□-NRS or NRSC*  \$64.45 BASE PRICE Add \$2.30 per inch of stroke *Add \$2.30 for Conduit Outlet	Single Acting – Built-in 3-Way Solenoid Operated Valve – Non-rotating Hexagon Piston Rod – Spring Return – Front Nose Mounting – 100 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	
09□-LS or LSC*  \$64.55 BASE PRICE Add \$2.20 per inch of stroke *Add \$1.80 for 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-129 Mounting Bracket Base Weight: 1.20 Adder Per Inch of Stroke: .11	


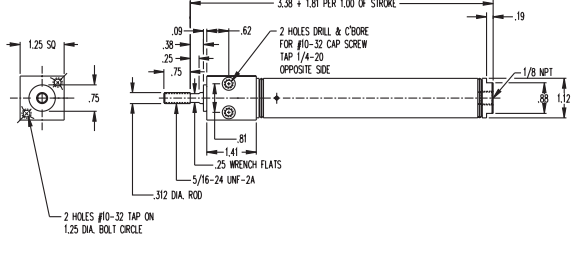

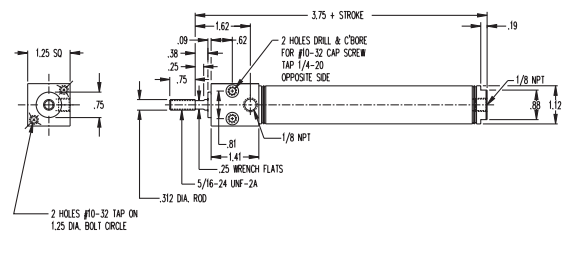
1-1/16" Bore Air Cylinders

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
09□-NRLS or NRLSC*  <p>\$66.80 BASE PRICE Add \$2.30 per inch of stroke *Add \$1.80 for Conduit Outlet</p>	Single Acting – Non-rotating Hexagon Piston Rod – Built-in Midget 3-Way Solenoid Operated Valve – Spring Return – Front Nose Mounting – 150 PSI, 3/4" 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	
09□-D  <p>\$17.05 BASE PRICE Add \$1.35 per inch of stroke</p>	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  <p>\$20.40 BASE PRICE Add \$1.35 per inch of stroke</p>	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	
09□-DX  <p>\$22.35 BASE PRICE Add \$1.35 per inch of stroke</p>	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	

1-1/16" Bore Air Cylinders


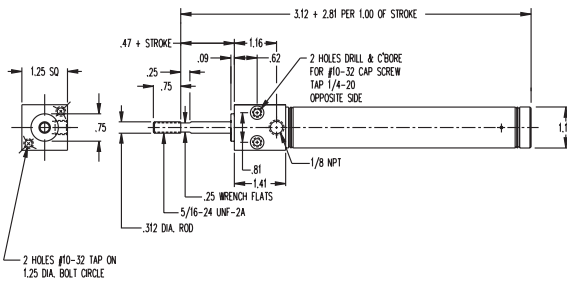

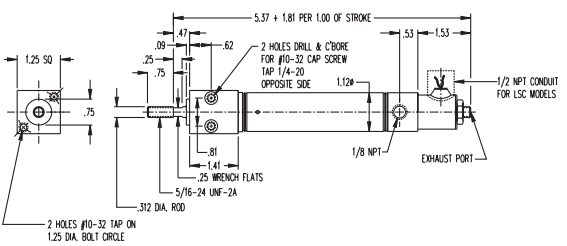

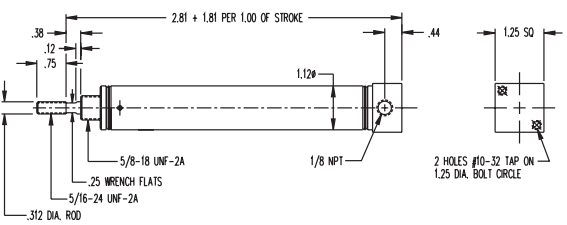

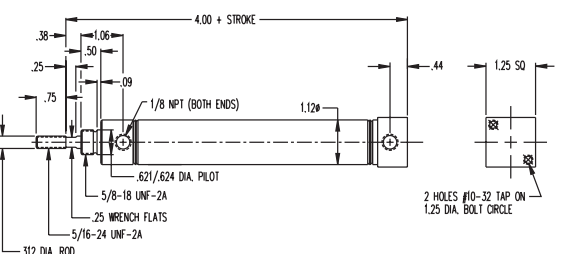

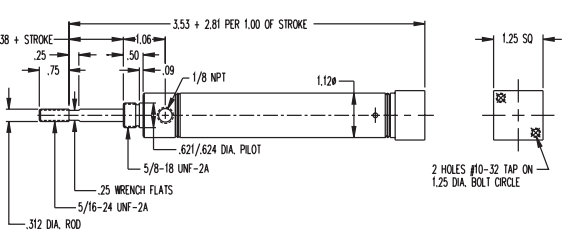
MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
09□-DXDE  \$29.80 BASE PRICE Add \$1.80 per inch of stroke	Double Acting – Double End Rod – Air Return – Double End Mounting Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4", 5", 6" Maximum Stroke – 12" Stainless Steel Rod Standard Optional Rod Wiper Optional Accessory: D-129 Mounting Bracket Base Weight: .48 Adder Per Inch of Stroke: .07	
09□-DXDEH  \$37.85 BASE PRICE Add \$2.60 per inch of stroke	Double Acting – Double End Hollow Rod – Air Return – Double End Mounting Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4", 5", 6" Maximum Stroke – 12" Stainless Steel Rod Standard Optional Rod Wiper Optional Accessory: D-129 Mounting Bracket Base Weight: .47 Adder Per Inch of Stroke: .07	

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

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
BF-09□  \$24.80 BASE PRICE Add \$2.30 per inch of stroke	Single Acting – Front Block Mounting – Spring Return Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4" Maximum Stroke – 6" Stainless Steel Rod Standard Base Weight: .43 Adder Per Inch of Stroke: .11	
BF-09□-D  \$26.60 BASE PRICE Add \$1.35 per inch of stroke	Double Acting – Front Block Mounting – Air Return Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4", 5", 6" Maximum Stroke – 12" Stainless Steel Rod Standard Base Weight: .49 Adder Per Inch of Stroke: .05	


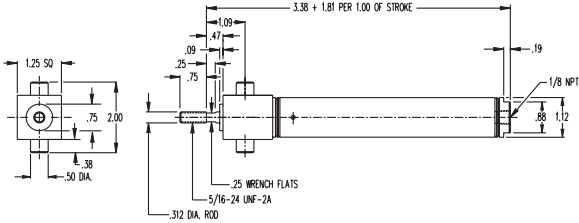

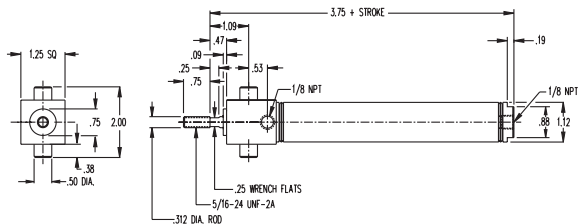

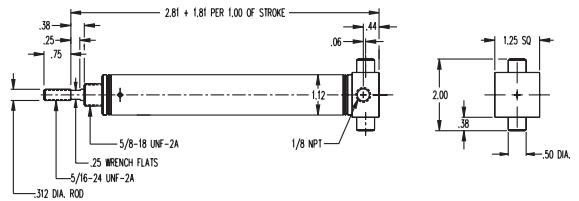

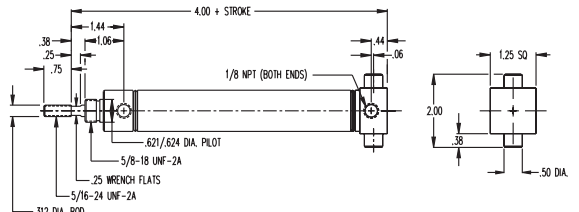
1-1/16" Bore Air Cylinders

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

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
BF-09  \$29.25 BASE PRICE Add \$2.30 per inch of stroke	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" Stainless Steel Rod Standard Base Weight: .36 Adder Per Inch of Stroke: .16	
BF-09  \$77.30 BASE PRICE Add \$2.30 per inch of stroke *Add \$1.80 for Conduit Outlet	Built-in Midget 3-Way Solenoid Operated Valve – Single Acting – Spring Return – Front Block Mounting – 150 PSI, 3/64" Orifice Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4" Maximum Stroke – 6" Stainless Steel Rod Standard Standard Voltage – 115/60 Optional Voltages: 24, 230 A.C. or 6, 12, 24 D.C. Base Weight: 1.31 Adder Per Inch of Stroke: .11	
BR-09  \$21.30 BASE PRICE Add \$2.30 per inch of stroke	Single Acting – Rear Block Mounting for Vertical Positioning – Spring Return Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4" Maximum Stroke – 6" Stainless Steel Rod Standard Base Weight: .36 Adder Per Inch of Stroke: .16	
BR-09  \$26.05 BASE PRICE Add \$1.35 per inch of stroke	Double Acting – Rear Block Mounting for Vertical Positioning – Air Return Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4" Maximum Stroke – 12" Stainless Steel Rod Standard Base Weight: .39 Adder Per Inch of Stroke: .05	
BR-09  \$25.70 BASE PRICE Add \$2.30 per inch of stroke	Pull Type – Rear Block Mounting for Vertical Positioning – Rod Normally Extended – Reverse Single Acting – Spring Return Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4" Maximum Stroke – 6" Stainless Steel Rod Standard Base Weight: .32 Adder Per Inch of Stroke: .16	


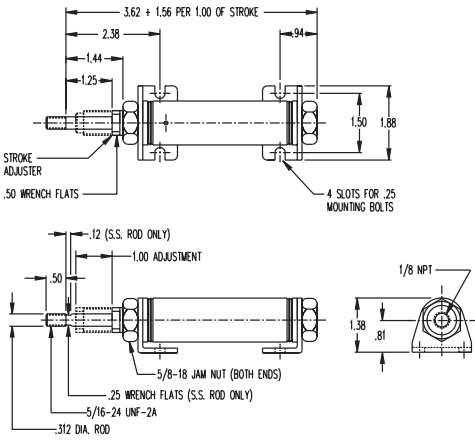

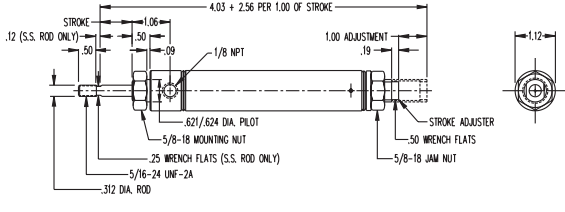

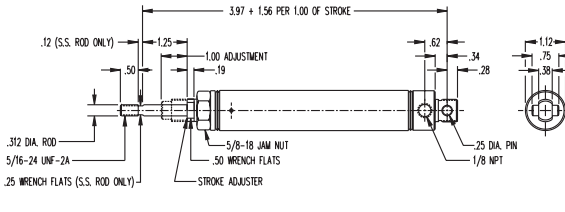
1-1/16" Bore Air Cylinders

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


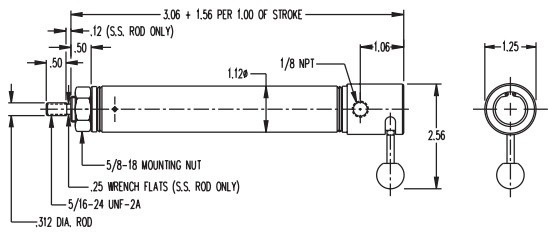
MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
BFT-09  <p>\$32.45 BASE PRICE Add \$2.30 per inch of stroke</p>	Single Acting – Front Block Trunnion Mounting – Spring Return Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4" Maximum Stroke – 6" Stainless Steel Rod Standard Optional Accessories: TRB-2 Trunnion Brackets D-166-1 Rod Clevis Base Weight: .45 Adder Per Inch of Stroke: .11	
BFT-09-D  <p>\$34.55 BASE PRICE Add \$1.35 per inch of stroke</p>	Double Acting – Front Block Trunnion Mounting – Air Return Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 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  <p>\$28.90 BASE PRICE Add \$2.30 per inch of stroke</p>	Single Acting – Rear Block Trunnion Mounting – Spring Return Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 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	
BRT-09-D  <p>\$33.50 BASE PRICE Add \$1.35 per inch of stroke</p>	Double Acting – Rear Block Trunnion Mounting – Air Return Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 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 Air Cylinders

1-1/16" Bore Adjustable Stroke


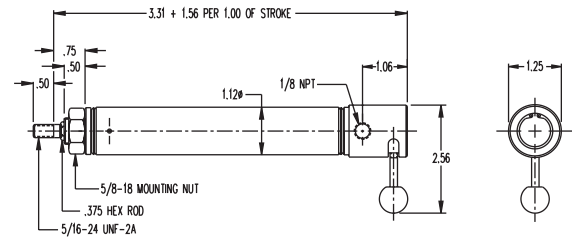
MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
09□-A  \$25.70 BASE PRICE Add \$2.30 per inch of stroke	Single Acting – Spring Return – Adjustable Stroke – Double End Mounting – Brass Piston Rod Bearing and Stroke Adjustment in 1", 2", 3". 1" Stroke Adjusts 0" – 1", 2" Stroke 1" – 2", and 3" Stroke 2" – 3". Mounting brackets are included. Maximum Stroke – 6" Optional Stainless Steel Rod Base Weight: .58 Adder Per Inch of Stroke: .11	
09□-RA  \$26.85 BASE PRICE Add \$2.30 per inch of stroke	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	
09□-AP  \$25.25 BASE PRICE Add \$2.30 per inch of stroke	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	

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

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
09□-M  \$45.50 BASE PRICE Add \$2.30 per inch of stroke	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	

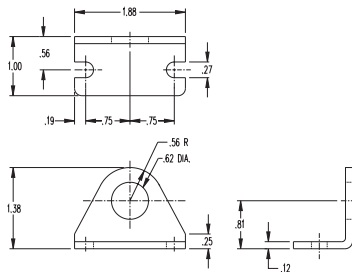
1-1/16" Bore Air Cylinders

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

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
09□-NRM  \$47.80 BASE PRICE Add \$2.30 per inch of stroke	Single Acting – Built-in 3-Way Manual Valve – Non-rotating Hexagon Rod – Spring Return Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4" Maximum Stroke – 6" Optional Stainless Steel Rod Optional Accessory: D-129 Mounting Bracket Base Weight: .47 Adder Per Inch of Stroke: .12	

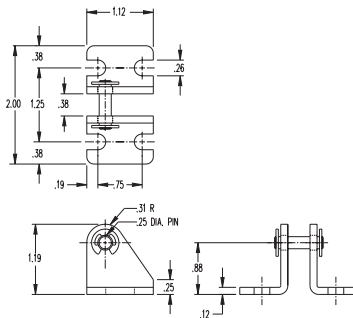
1-1/16" Bore Accessories

D-129
\$2.30



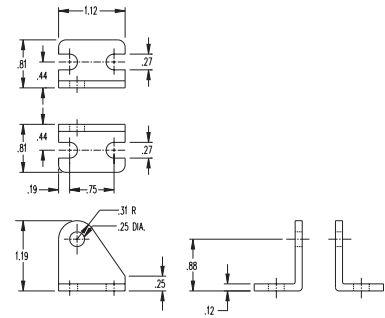
*Mounting Bracket
(for Single & Double Acting Models)*

D-13498-A
\$3.10



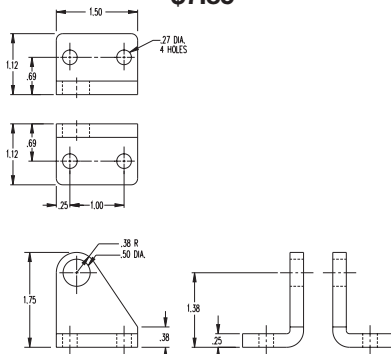
Pivot Bracket

D-167
\$2.70



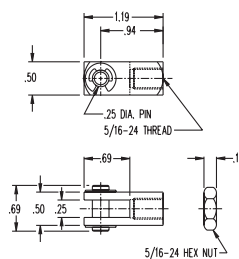
Pivot Brackets

TRB-2
\$7.85



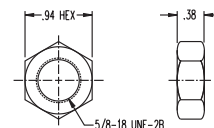
Trunnion Brackets

D-166-1
\$3.10



Piston Rod Clevis

D-9
\$0.35



Mounting Nut

Note: For stainless steel accessories see pages 113 and 116-117.

1 - 1/4" Bore Air Cylinders

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

OPTIONS:

NO CHARGE:

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

EXTRA EXTENSION (EE)

- Single, reverse and double acting, add \$0.90 per inch of extension
- DXDE, add \$1.30 per inch of extension; extension added to each end
- DXDE hollow rod, add \$1.40 per inch of extension; extension added to each end

DOUBLE ACTING FAILSAFE

- (JS = Spring Return, JR = Spring Extend)
- Add \$7.00 to base price + \$0.90 to stroke adder
- See page 79 for overall length adders

OPTIONS continued...

MAGNET (prefix M) – Add \$10.45

- 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) – add \$2.50 per track. See page 142 for details.

LOW TEMPERATURE (N)

Temperature Range: -40° to 200°F

- Single acting add \$0.80
- Reverse acting add \$1.05
- Double acting add \$1.60
- DXDE add \$2.10

HIGH TEMPERATURE "U" CUPS (V)

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

- Single acting add \$5.00
- Double acting add \$12.55
- DXDE add \$16.10
- Reverse acting add \$8.65

MOLYCOATED BODY

- Add \$2.30 per inch of stroke

NON-LUBE SERVICE (E)

- Single acting add \$3.40
- Double acting add \$8.40
- DXDE add \$11.80

STAINLESS STEEL ROD (prefix SR)

- Add \$2.50
- Standard on DXDE, DXDEH and M option

ROD WIPER (W)

- (not available in standard single acting)
- Add \$2.50

☐ Enter Stroke Length as 3rd Digit

MODEL/PRICE

DESCRIPTION/WEIGHT (lbs.)

DIMENSIONS

12 ☐

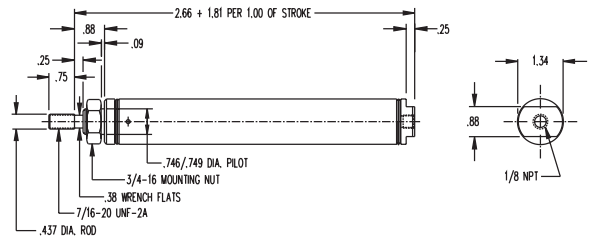


\$20.55

BASE PRICE

Add \$3.00 per inch of stroke

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



12 ☐ -NR

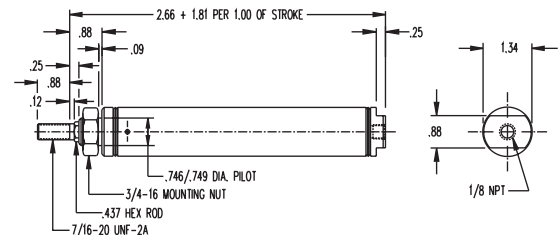


\$23.05


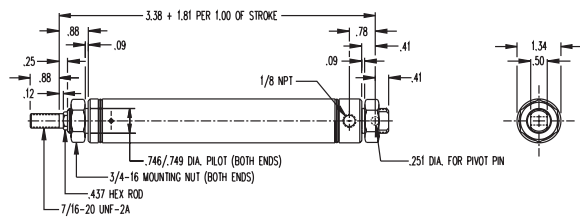

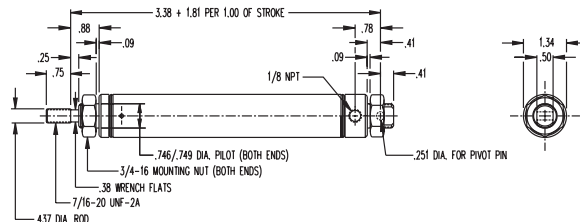

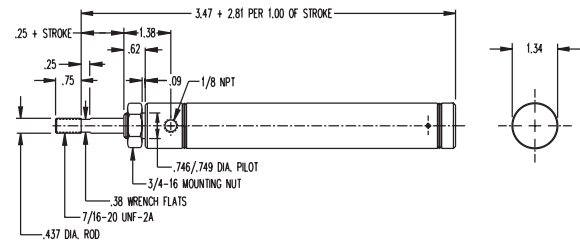

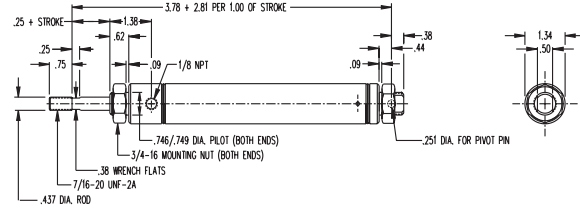
BASE PRICE

Add \$3.00 per inch of stroke


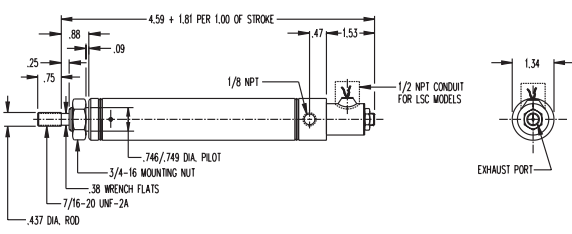

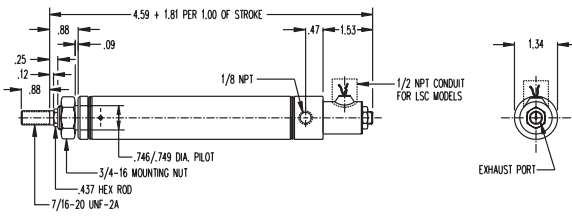

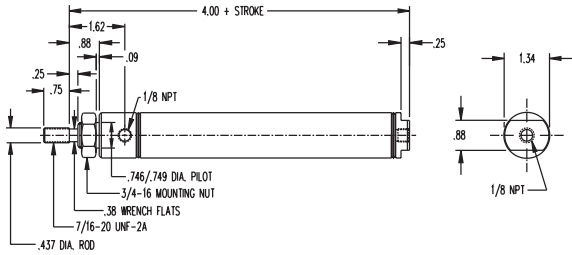

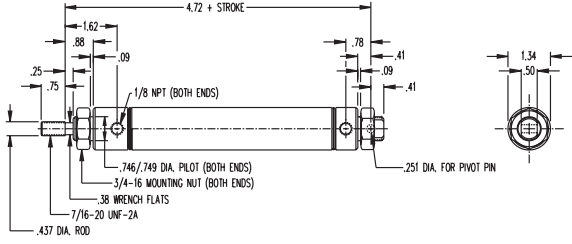
Single Acting – Non-rotating Hexagon Rod – Spring Return – Front Nose Mounting
Standard Stroke Lengths:
1/2", 1", 1 1/2", 2", 2 1/2", 3", 4"
Maximum Stroke – 6"
Optional Stainless Steel Rod
Optional Accessory:
D-241 Mounting Bracket
Base Weight: .41
Adder Per Inch of Stroke: .20




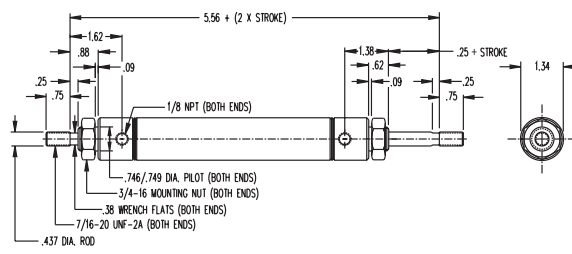

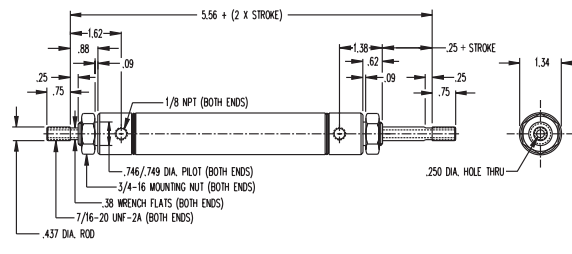
1 - 1/4" Bore Air Cylinders

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
12□-NRP  \$28.00 BASE PRICE Add \$3.00 per inch of stroke	Single Acting – Non-rotating Hexagon Rod – Pivot Type – Spring Return – Rear Pivot or Double End Mounting Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 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	
12□-P  \$25.35 BASE PRICE Add \$3.00 per inch of stroke	Single Acting – Pivot Type – Spring Return – Rear Pivot or Double End Mounting Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 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	
12□-R  \$26.85 BASE PRICE Add \$3.00 per inch of stroke	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 Stainless Steel Rod Optional Accessory: D-241 Mounting Bracket Base Weight: .50 Adder Per Inch of Stroke: .21	
12□-RP  \$28.80 BASE PRICE Add \$3.00 per inch of stroke	Reverse Single Acting – Pivot and Pull Type – Rod Normally Extended – Spring Return – Rear Pivot Mounting Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 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	

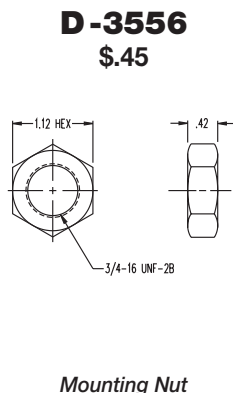
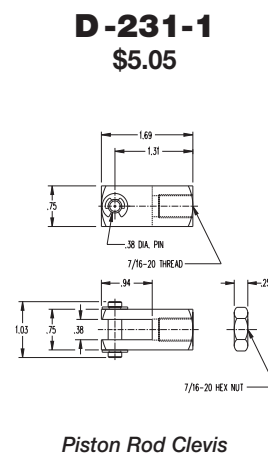
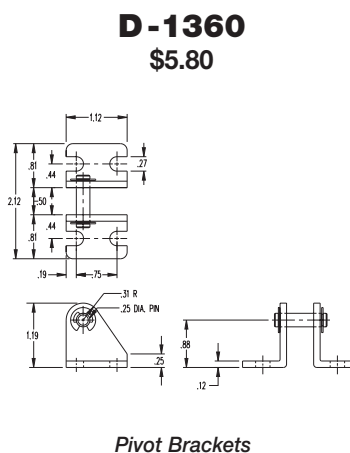
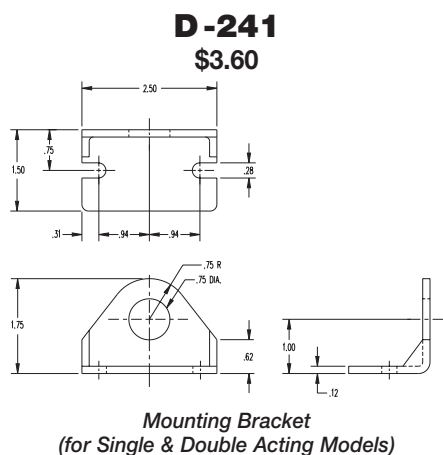
1-1/4" Bore Air Cylinders

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
12□-LS or LSC*  <p>\$71.90 BASE PRICE Add \$3.00 per inch of stroke *Add \$1.80 for Conduit Outlet</p>	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	
12□-NRLS or NRLSC*  <p>\$74.75 BASE PRICE Add \$3.00 per inch of stroke *Add \$1.80 for Conduit Outlet</p>	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	
12□-D  <p>\$26.25 BASE PRICE Add \$1.80 per inch of stroke</p>	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	
12□-DP  <p>\$31.20 BASE PRICE Add \$1.80 per inch of stroke</p>	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	

1-1/4" Bore Air Cylinders

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
12□-DXDE  \$44.40 BASE PRICE Add \$2.60 per inch of stroke	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  \$49.20 BASE PRICE Add \$2.80 per inch of stroke	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	

1-1/4" Bore Accessories



1-1/2" Bore Air Cylinders

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

OPTIONS:

NO CHARGE:

- **MAGNALUBE G (G)**
- **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)

- \$2.80 additional
- Add .125" to overall length

DOUBLE ACTING BUMPERS (B)

- \$4.40 additional
- Add .125" to overall length

* Front port rotated at 90° on BF model.

EXTRA EXTENSION (EE)

- Single, reverse and double acting, add \$1.05 per inch of extension
- DXDE, add \$1.70 per inch of extension; extension added to each end
- DXDE hollow rod, add \$1.80 per inch of extension; extension added to each end

DOUBLE ACTING FAILSAFE

(JS = Spring Return, JR = Spring Extend)

- Add \$10.00 to base price + \$1.30 to stroke adder
- See page 79 for overall length adders

OPTIONS continued...

HEAVY SPRINGS (H) are standard on all single acting block front and block rear mount, and all reverse acting. For all other single acting, add \$1.95

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

MAGNET (prefix M) – Add \$12.55

- 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) – add \$2.50 per track. See page 142 for details.

LOW TEMPERATURE (N)

Temperature Range: -40° to 200°F

- Single acting add \$1.05
- Reverse acting add \$1.35
- Double acting add \$2.10
- DXDE add \$2.65

HIGH TEMPERATURE "U" CUPS (V)

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

- Single acting add \$5.00
- Double acting add \$12.55
- DXDE add \$16.10
- Reverse acting add \$8.65

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

- Double acting, add \$2.50
- DXDE, add \$5.00

MOLYCOATED BODY (F)

- Add \$2.30 per inch of stroke


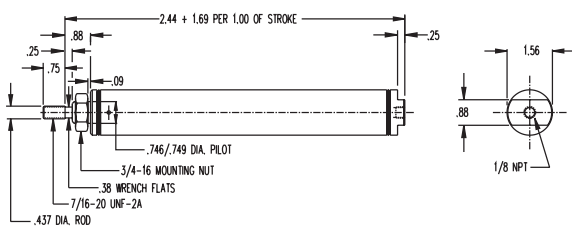

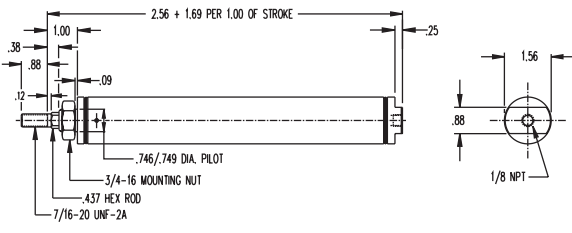
NON-LUBE SERVICE (E)

- Single acting add \$3.95
- Double acting add \$8.90
- DXDE add \$12.30


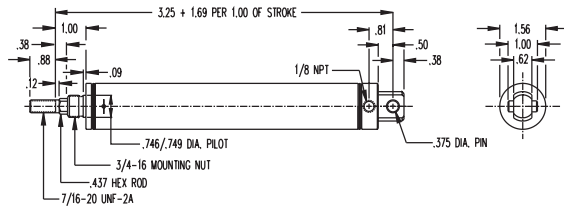

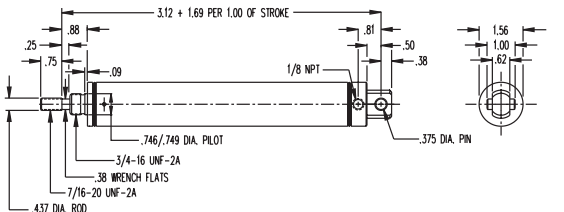

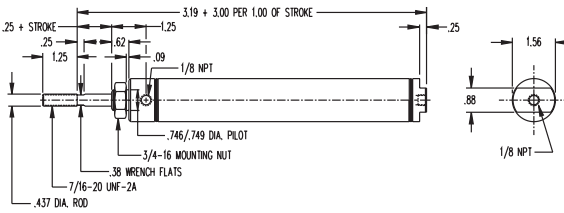

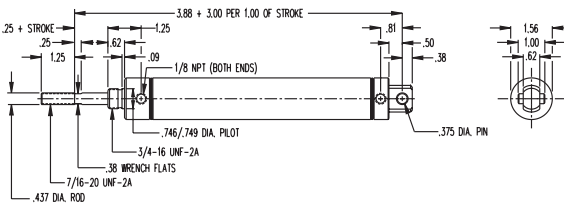
STAINLESS STEEL ROD (prefix SR)

- Add \$2.50
- Standard on DX, DXDE, DXDEH, DNR, DXNR, All block mounts, and M option


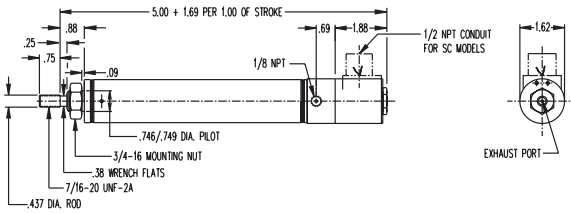

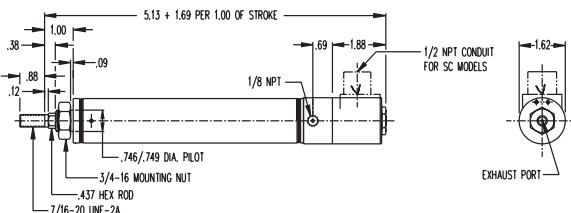

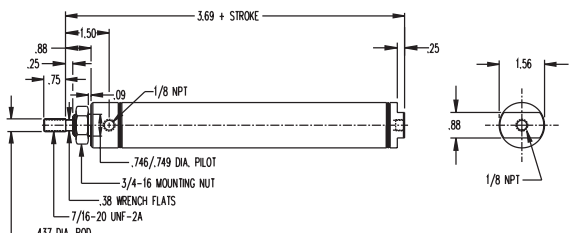

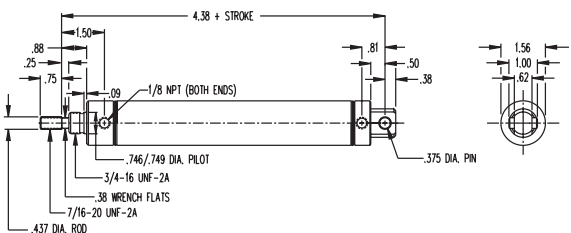
☐ Enter Stroke Length as 3rd Digit

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
17 <input type="checkbox"/>  \$23.00 BASE PRICE Add \$3.45 per inch of stroke	Single Acting – Spring Return – Front Nose Mounting Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4" Maximum Stroke – 6" Optional Stainless Steel Rod Optional Accessory: D-241 Mounting Bracket Base Weight: .44 Adder Per Inch of Stroke: .22	
17 <input type="checkbox"/> -NR  \$25.30 BASE PRICE Add \$3.45 per inch of stroke	Single Acting – Non-rotating Hexagon Rod – Spring Return – Front Nose Mounting Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4" Maximum Stroke – 6" Optional Stainless Steel Rod Optional Accessory: D-241 Mounting Bracket Base Weight: .45 Adder Per Inch of Stroke: .22	


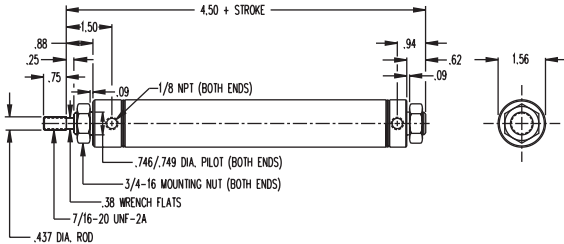

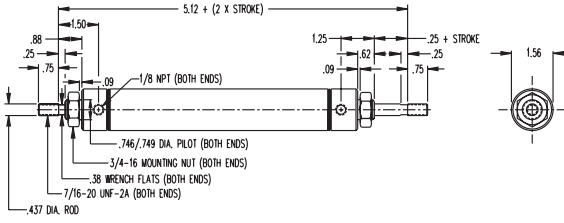

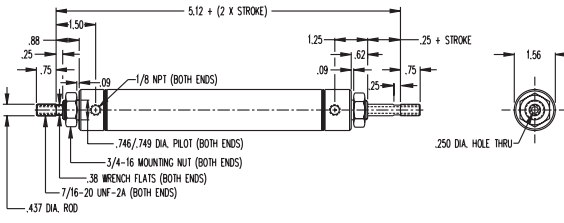
1-1/2" Bore Air Cylinders

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
17□-NRP  \$29.20 BASE PRICE Add \$3.45 per inch of stroke	Single Acting – Non-rotating Hexagon Rod – Spring Return – Rear Pivot Mounting Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 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	
17□-P  \$27.05 BASE PRICE Add \$3.45 per inch of stroke	Single Acting – Pivot Type – Spring Return – Rear Pivot Mounting Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 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	
17□-R  \$28.50 BASE PRICE Add \$3.45 per inch of stroke	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: ½", 1", 1½", 2", 2½", 3", 4" Maximum Stroke – 6" Optional Stainless Steel Rod Optional Accessory: D-241 Mounting Bracket Base Weight: .44 Adder Per Inch of Stroke: .22	
17□-RP  \$32.40 BASE PRICE Add \$3.45 per inch of stroke	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: ½", 1", 1½", 2", 2½", 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	

1-1/2" Bore Air Cylinders


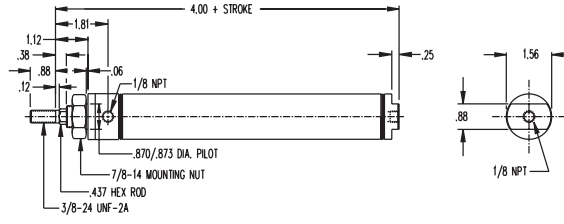
MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
17□-S or SC*  <p>\$75.00 BASE PRICE Add \$3.45 per inch of stroke *Add \$2.30 for Conduit Outlet</p>	Single Acting – Built-in 3-Way Solenoid Operated Valve – Spring Return – Front Nose Mounting – 100 PSI, 1/16" Orifice Standard – 150 PSI, 3/64" Orifice 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	
17□-NRS or NRSC*  <p>\$77.65 BASE PRICE Add \$3.45 per inch of stroke *Add \$2.30 for Conduit Outlet</p>	Single Acting – Non-rotating Piston Rod – Built-in 3-Way Solenoid Operated Valve – Spring Return – Front Nose Mounting – 100 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	
17□-D  <p>\$28.00 BASE PRICE Add \$2.10 per inch of stroke</p>	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  <p>\$32.05 BASE PRICE Add \$2.10 per inch of stroke</p>	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	

1-1/2" Bore Air Cylinders

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
17□-DX  \$34.10 BASE PRICE Add \$2.10 per inch of stroke	Double Acting – Double End Mounting – Air Return Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 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  \$45.10 BASE PRICE Add \$3.35 per inch of stroke	Double Acting – Double End Rod – Air Return – Double End Mounting Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 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  \$52.00 BASE PRICE Add \$3.55 per inch of stroke	Double Acting – Double End Hollow Rod – Air Return – Double End Mounting Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4", 5", 6" Maximum Stroke – 12" Stainless Steel Rod Standard Optional Rod Wiper Optional Accessory: D-241 Mounting Bracket Base Weight: 1.16 Adder Per Inch of Stroke: .13	


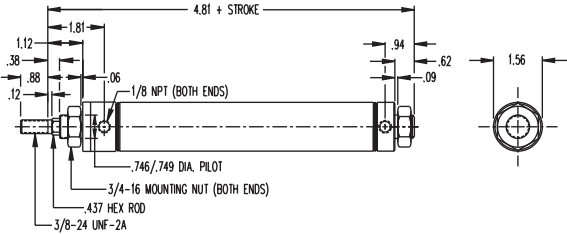

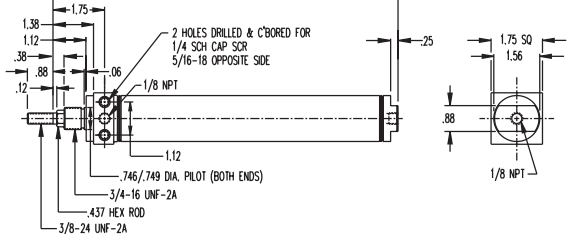

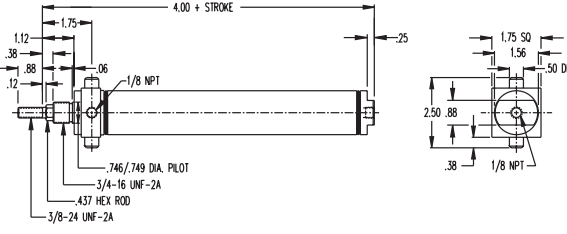
1-1/2" Bore Double Acting, Non-Rotating Rod Repair Parts

Rod Seal	Rod Bearing	DXNR Rod Guide	DNR Rod Guide 7/8-14 mounting threads
D-2500 \$1.60	D-2501 \$1.25	D-1117 \$7.15	D-2509 \$6.70


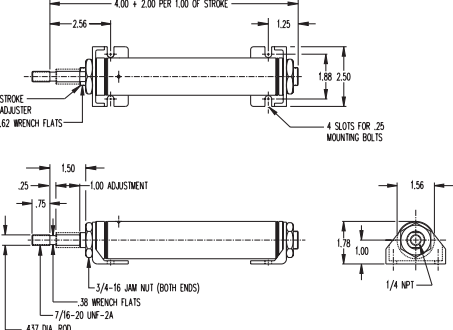
MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
17□-DNR  \$52.75 BASE PRICE Add \$2.50 per inch of stroke	Double Acting – Non-rotating Hexagon Rod – Front Nose Mounting – Air Return Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4", 5", 6" Maximum Stroke – 12" Stainless Steel Rod Standard Optional Accessory: D-2669 Mounting Bracket Base Weight: .77 Adder Per Inch of Stroke: .09	

1-1/2" Bore Air Cylinders

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


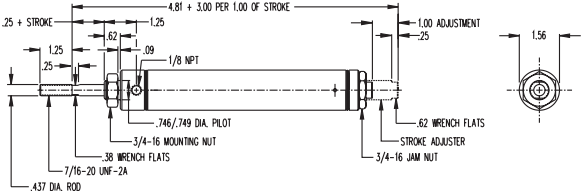

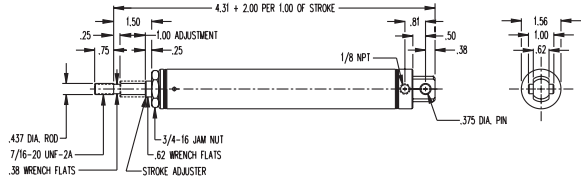
MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
17□-DXNR  \$58.55 BASE PRICE Add \$2.50 per inch of stroke	Double Acting – Non-rotating Hexagon Rod – Double End Mounting – Air Return Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4", 5", 6" Maximum Stroke – 12" Stainless Steel Rod Standard Optional Accessories: D-241 Mounting Bracket D-8310-A Rod Clevis Base Weight: .87 Adder Per Inch of Stroke: .08	
BF-17□-DNR  \$59.70 BASE PRICE Add \$2.50 per inch of stroke	Double Acting – Non-rotating Hexagon Rod – Front Block Mounting – Air Return Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 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  \$67.25 BASE PRICE Add \$2.50 per inch of stroke	Double Acting – Non-rotating Hexagon Rod – Front Trunnion Mounting – Air Return Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 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 Adjustable Stroke


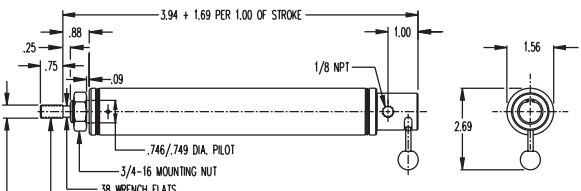

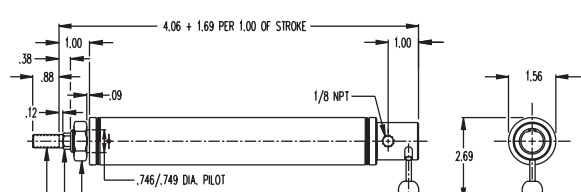
MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
17□-A  \$43.95 BASE PRICE Add \$3.45 per inch of stroke	Single Acting – Spring Return – Adjustable Stroke – Double End Mounting – Brass Piston Rod Bearing and Stroke Adjustment in 1" increments to 3". Mounting Brackets are included. 1" Stroke Adjusts 0" 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	

1-1/2" Bore Air Cylinders

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


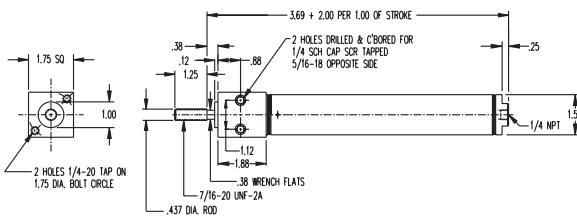

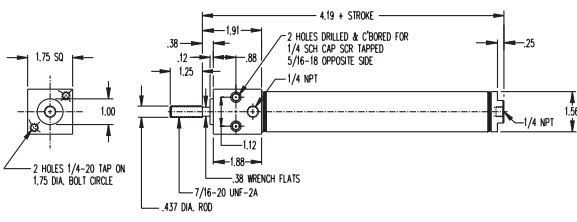

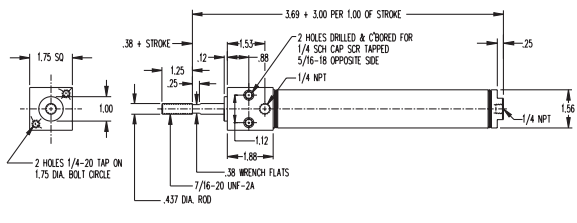

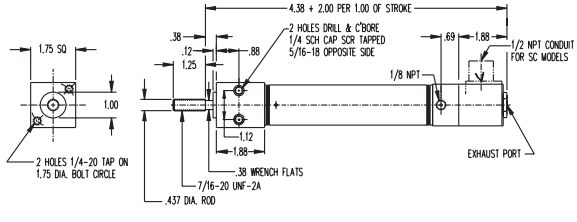

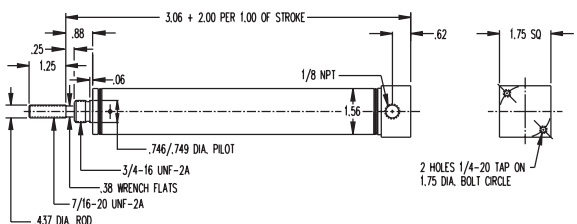
MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
17□-RA  \$44.75 BASE PRICE Add \$3.45 per inch of stroke	Reverse Single Acting – Pull Type – Rod Normally Extended – Nose Mounting – Stroke Adjustment in 1" increments to 3". 1" Stroke Adjusts 0" to 1", 2" Stroke 1" to 2", 3" Stroke 2" to 3" Maximum Stroke – 6" Optional Stainless Steel Rod Optional Accessory: D-241 Mounting Bracket Base Weight: .50 Adder Per Inch of Stroke: .25	
17□-AP  \$42.70 BASE PRICE Add \$3.45 per inch of stroke	Single Acting – Pivot Type – Rear Pivot Mounting – Stroke Adjustment in 1" increments to 3". 1" Stroke Adjusts 0" to 1", 2" Stroke 1" to 2", 3" Stroke 2" to 3" Maximum Stroke – 6" Optional Stainless Steel Rod Optional Accessories: D-231-1 Piston Rod Clevis D-229 Pivot Brackets Base Weight: .50 Adder Per Inch of Stroke: .25	

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

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
17□-M  \$57.30 BASE PRICE Add \$3.45 per inch of stroke	Single Acting – Built-in 3-Way Manual Valve – Spring Return – Front Nose Mounting Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4" Maximum Stroke – 6" Optional Stainless Steel Rod Optional Accessory: D-241 Mounting Bracket Base Weight: .75 Adder Per Inch of Stroke: .22	
17□-NRM  \$59.65 BASE PRICE Add \$3.45 per inch of stroke	Single Acting – Built-in 3-Way Manual Valve – Non-rotating Hexagon Rod – Spring Return Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4" Maximum Stroke – 6" Optional Stainless Steel Rod Optional Accessory: D-241 Mounting Bracket Base Weight: .75 Adder Per Inch of Stroke: .22	


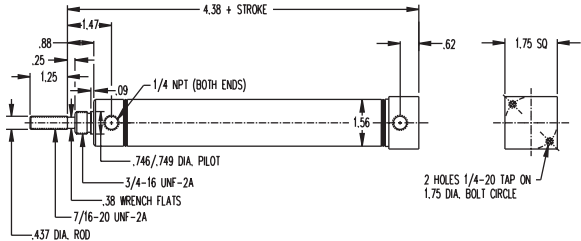

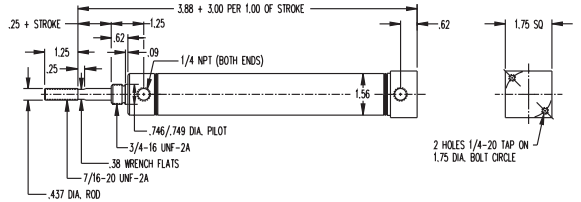
1-1/2" Bore Air Cylinders

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


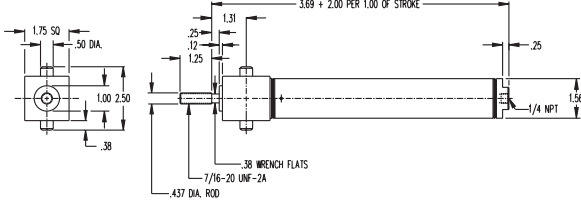

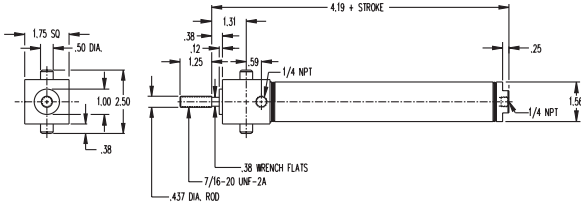

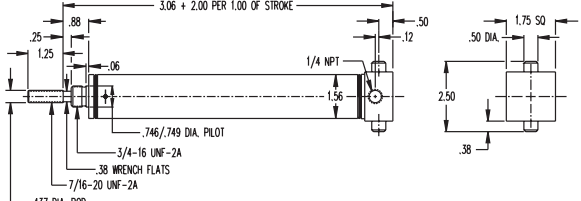
MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
BF-17  <p>\$38.90 BASE PRICE Add \$3.55 per inch of stroke</p>	Single Acting – Front Block Mounting – Spring Return Standard Stroke Lengths: 1/2", 1", 1 1/2", 2", 2 1/2", 3", 4" Maximum Stroke – 6" Stainless Steel Rod Standard Base Weight: .99 Adder Per Inch of Stroke: .22	
BF-17  -D <p>\$43.80 BASE PRICE Add \$2.10 per inch of stroke</p>	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 <p>\$43.85 BASE PRICE Add \$3.55 per inch of stroke</p>	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	
BF-17  -S or SC* <p>\$90.60 BASE PRICE Add \$3.55 per inch of stroke *Add \$2.30 for conduit outlet</p>	Built-in 3-Way Solenoid Operated Valve – Single Acting – Spring Return – Front Block Mounting – 100 PSI, 1/16" Orifice Standard – 150 PSI, 3/4" 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 A.C. or 6, 12, 24 D.C. Base Weight: 1.90 Adder Per Inch of Stroke: .22	
BR-17  <p>\$33.10 BASE PRICE Add \$3.55 per inch of stroke</p>	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	

1-1/2" Bore Air Cylinders

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


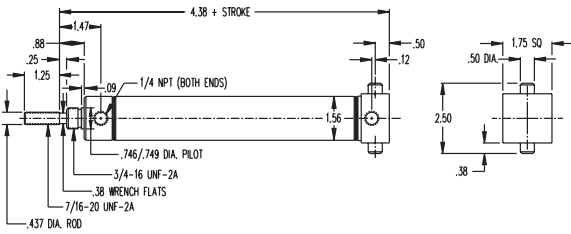
MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
BR-17  \$38.55 BASE PRICE Add \$2.10 per inch of stroke	Double Acting – Rear Block Mounting for Vertical Positioning – Air Return Standard Stroke Lengths: 1/2", 1", 1 1/2", 2", 2 1/2", 3", 4", 5", 6" Maximum Stroke – 12" Stainless Steel Rod Standard Base Weight: .87 Adder Per Inch of Stroke: .08	
BR-17  \$39.10 BASE PRICE Add \$3.55 per inch of stroke	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	

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

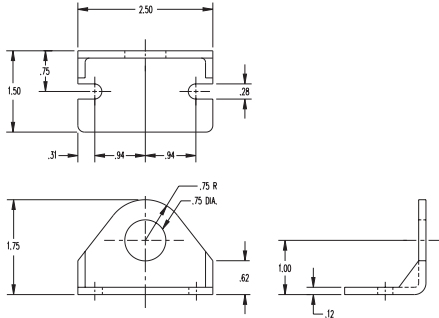
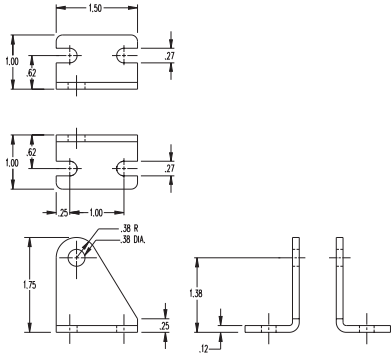
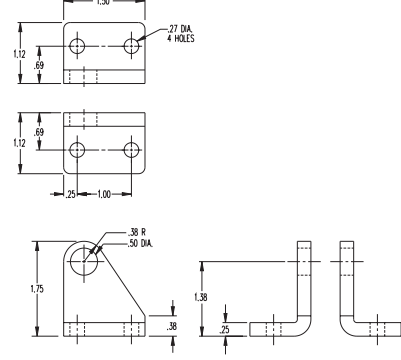
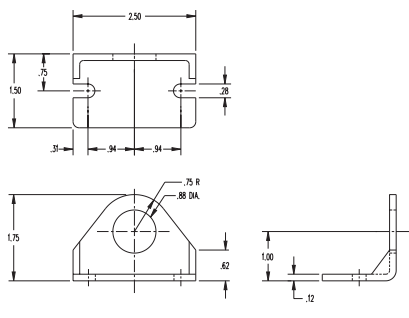
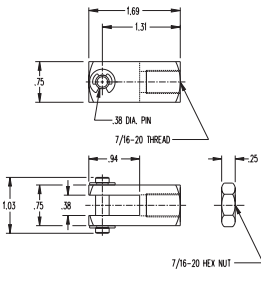
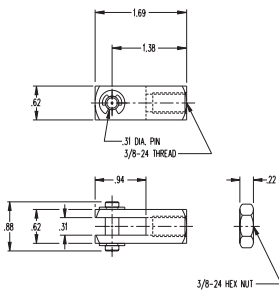
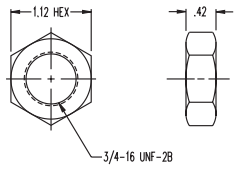
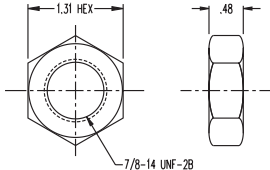
MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
BFT-17  \$46.80 BASE PRICE Add \$3.55 per inch of stroke	Single Acting – Front Block Trunnion Mounting – Spring Return Standard Stroke Lengths: 1/2", 1", 1 1/2", 2", 2 1/2", 3", 4" Maximum Stroke – 6" Stainless Steel Rod Standard Optional Accessories: TRB-2 Trunnion Brackets D-231-1 Rod Clevis Base Weight: 1.20 Adder Per Inch of Stroke: .22	
BFT-17  \$52.05 BASE PRICE Add \$2.10 per inch of Stroke	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  \$40.55 BASE PRICE Add \$3.55 per inch of stroke	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	

1-1/2" Bore Air Cylinders

1-1/2" Bore Trunnion Mounted (continued)

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
BRT-17  \$46.60 BASE PRICE Add \$2.10 per inch of stroke	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	

1-1/2" Bore Accessories

D-241 \$3.60  Mounting Bracket	D-229 \$4.60  Pivot Bracket	TRB-2 \$7.85  Trunnion Brackets
D-2669 \$3.60  Mounting Bracket	D-231-1 \$5.05  Piston Rod Clevis	D-8310-A \$5.65  Rod Clevis
D-3556 \$.45  Mounting Nut	D-2545 \$.80  Mounting Nut	

Note: For stainless steel accessories see page 112 and 115-116.
 Mounting bracket not available in stainless steel.

1-3/4" Bore Air Cylinders

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

OPTIONS:

NO CHARGE:

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

EXTRA EXTENSION (EE)

- Single, reverse and double acting, add \$1.05 per inch of extension
- DXDE, add \$1.60 per inch of extension; extension added to each end
- DXDE hollow rod, add \$1.70 per inch of extension; extension added to each end

DOUBLE ACTING FAILSAFE

- (JS = Spring Return, JR = Spring Extend)
- Add \$15.00 to base price + \$2.00 to stroke adder
- See page 79 for overall length adders

☐ Enter Stroke Length as 3rd Digit

OPTIONS continued...

MAGNET (prefix M) – Add \$12.55

- 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) – add \$2.50 per track. See page 142 for details.

LOW TEMPERATURE (N)

Temperature Range: -40° to 200°F

- Single acting add \$1.05
- Reverse acting add \$1.35
- Double acting add \$2.10
- DXDE add \$2.65

HIGH TEMPERATURE "U" CUPS (V)

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

- Single acting add \$6.60
- Double acting add \$16.10
- DXDE add \$21.30
- Reverse acting add \$12.00

MOLYCOATED BODY (F)

- Add \$2.30 per inch of stroke

NON-LUBE SERVICE (E)

- Single acting add \$3.95
- Double acting add \$8.90
- DXDE add \$12.30

ROD WIPER (W)

(not available in standard single acting)

- Add \$2.50

STAINLESS STEEL ROD (prefix SR)

- Add \$3.40
- Standard on DXDE, DXDEH

MODEL/PRICE

DESCRIPTION/WEIGHT (lbs.)

DIMENSIONS

24 ☐

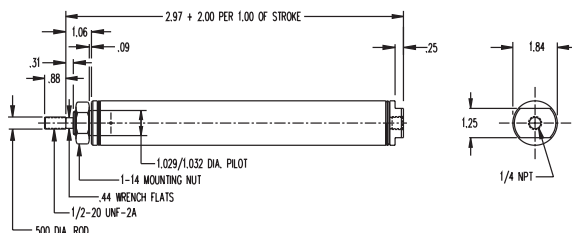


\$35.80

BASE PRICE

Add \$4.35 per inch of stroke

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



24 ☐-NR

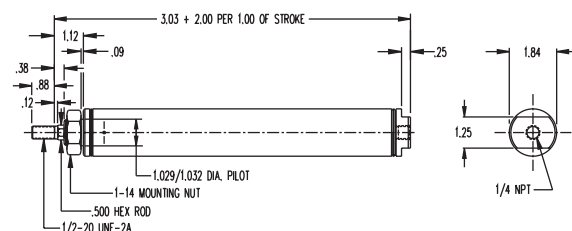


\$38.80


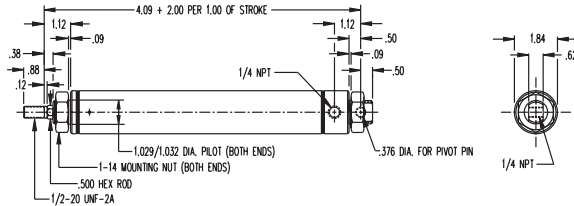

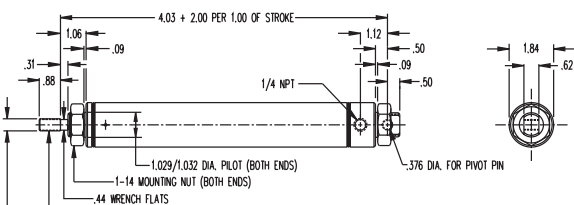

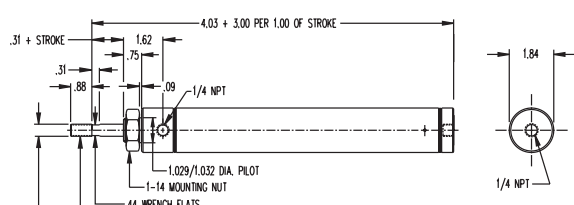

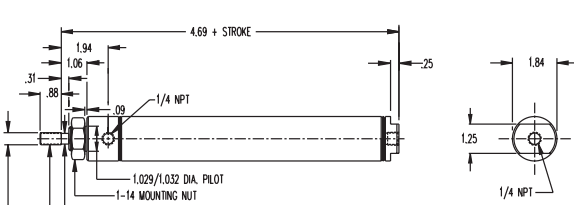
BASE PRICE

Add \$4.30 per inch of stroke


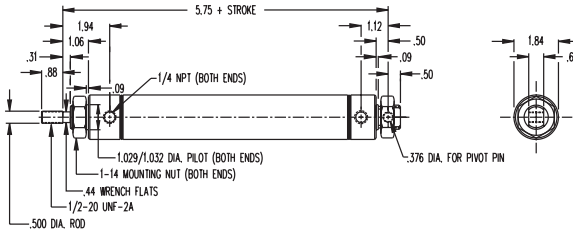

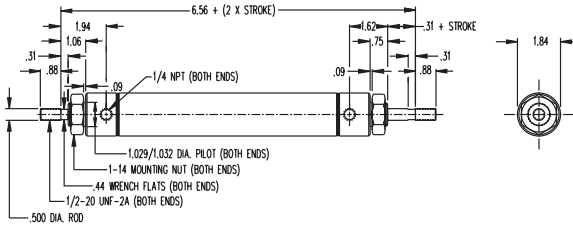

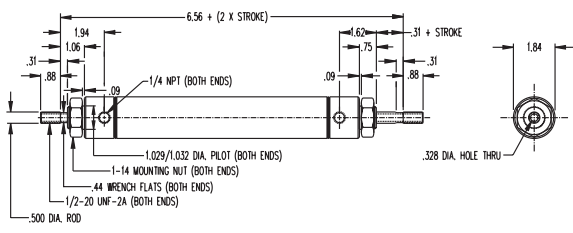
Single Acting – Non-rotating Hexagon Rod – Spring Return – Front Nose Mounting
Standard Stroke Lengths:
1/2", 1", 1 1/2", 2", 2 1/2", 3", 4"
Maximum Stroke – 6"
Optional Stainless Steel Rod
Optional Accessory:
C-1337 Mounting Bracket
Base Weight: .86
Adder Per Inch of Stroke: .36



1-3/4" Bore Air Cylinders

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
24□-NRP  \$44.00 BASE PRICE Add \$4.35 per inch of stroke	Single Acting – Non-rotating Hexagon Rod – Pivot Type – Spring Return – Rear Pivot or Double End Mounting Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 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	
24□-P  \$41.00 BASE PRICE Add \$4.35 per inch of stroke	Single Acting – Pivot Type – Spring Return – Rear Pivot or Double End Mounting Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 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	
24□-R  \$43.25 BASE PRICE Add \$4.35 per inch of stroke	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 Stainless Steel Rod Optional Accessory: C-1337 Mounting Bracket Base Weight: 1.17 Adder Per Inch of Stroke: .31	
24□-D  \$43.40 BASE PRICE Add \$2.10 per inch of stroke	Double Acting – Air Return – Front Nose Mounting Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 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	

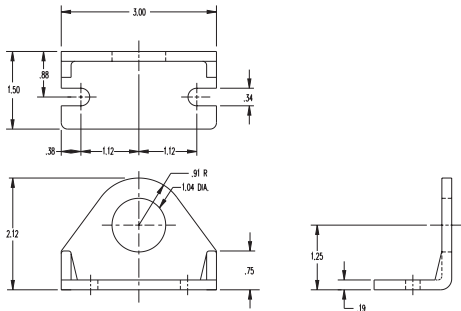
1-3/4" Bore Air Cylinders

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
24□-DP  \$48.85 BASE PRICE Add \$2.10 per inch of stroke	Double Acting – Pivot Type – Air Return – Rear Pivot or Double End Mounting Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 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  \$63.30 BASE PRICE Add \$3.15 per inch of stroke	Double Acting – Double End Rod – Air Return – Double End Mounting Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 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  \$76.30 BASE PRICE Add \$3.35 per inch of stroke	Double Acting – Double End Hollow Rod – Air Return – Double End Mounting Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 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	

1-3/4" Bore Air Cylinders

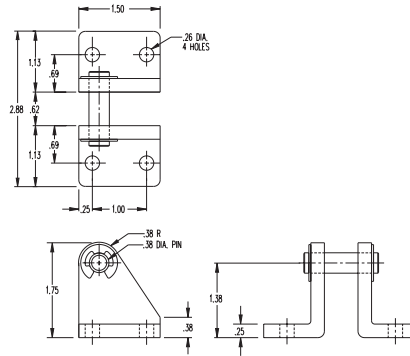
1-3/4" Bore Accessories

C-1337
\$5.75



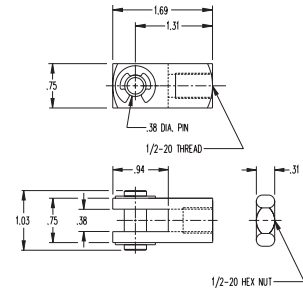
Mounting Bracket

D-620-1
\$11.20



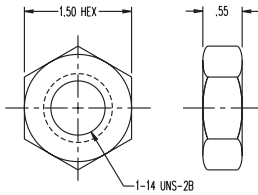
Pivot Brackets

D-231-3
\$5.05



Piston Rod Clevis

D-1331
\$1.95



Mounting Nut

2" Bore Air Cylinders

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

OPTIONS:

NO CHARGE:

- **MAGNALUBE G (G)**
- **PORTS ROTATED (K)**
- **NO THREAD (NT)**
- **SIDE PORTED REAR HEAD (Q)**
Add .38" to nose mount overall length.

SINGLE AND REVERSE ACTING BUMPERS (B)

- \$3.35 additional
- Add .125" to overall length

DOUBLE ACTING BUMPERS (B)

- \$5.65 additional
- Add .250 to overall length

EXTRA EXTENSION (EE)

- Single, reverse and double acting, add \$1.15 per inch of extension

DOUBLE ACTING FAILSAFE

- (JS = Spring Return, JR = Spring Extend)
- Add \$20.00 to base price + \$2.40 to stroke adder
- See page 79 for overall length adders

OPTIONS continued...

- **DXDE**, add \$1.75 per inch of extension; extension added to each end

MAGNET (prefix M) – Add \$14.65

- 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) – add \$2.50 per track. See page 143 for details.

LOW TEMPERATURE (N)

Temperature Range: -40° to 200°F

- Single acting add \$1.35
- Reverse acting add \$1.60
- Double acting add \$2.65
- DXDE add \$2.90

HIGH TEMPERATURE "U" CUPS (V)

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

- Single acting add \$6.60
- Double acting add \$16.10
- DXDE add \$21.30
- Reverse acting add \$12.00

MOLYCOATED BODY (F)

- Add \$2.30 per inch of stroke

NON-LUBE SERVICE (E)

- Single acting add \$5.25
- Double acting add \$13.20
- DXDE add \$15.90

ROD WIPER (W)

(not available in standard single acting)

- Add \$5.00

STAINLESS STEEL ROD (prefix SR)

- Add \$3.45
- Standard on DXP, DXDE, XP, M option

☐ Enter Stroke Length as 3rd Digit

MODEL/PRICE

DESCRIPTION/WEIGHT (lbs.)

DIMENSIONS

31 ☐

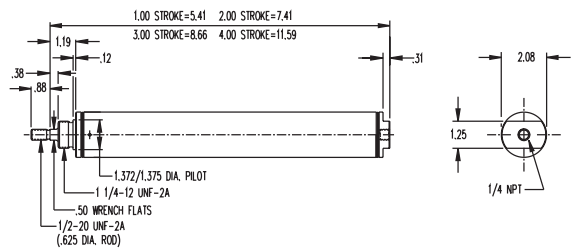


\$46.85

BASE PRICE

Add \$4.80 per inch of stroke

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



31 ☐ **-XP**

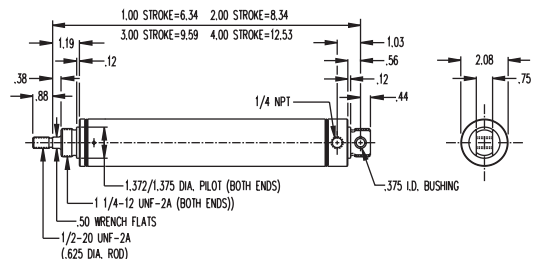


\$57.20


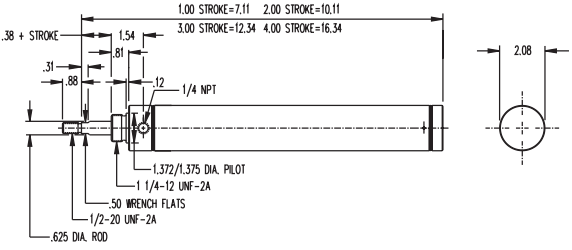

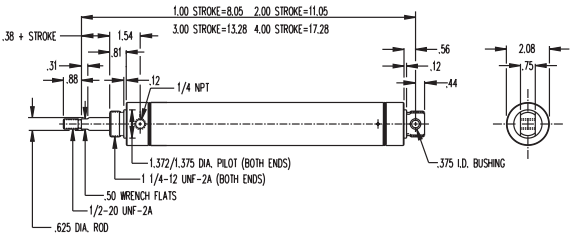

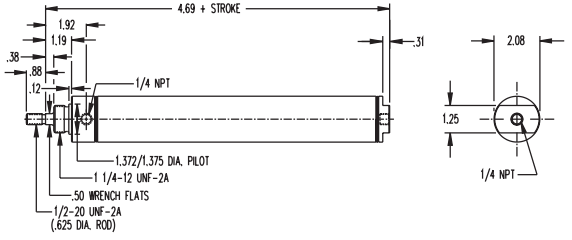

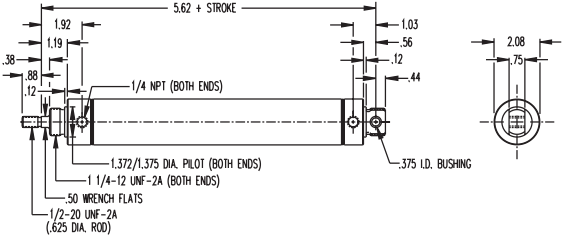
BASE PRICE

Add \$5.00 per inch of stroke


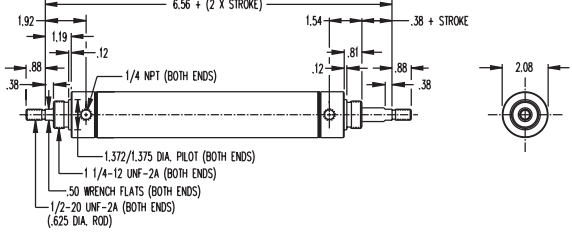
Single Acting – Universal Mounting Type – Nose, Pivot or Double End – Spring Return – Bronze Rod Bushing and Bronze Pivot Bushing
Standard Stroke Lengths:
½", 1", 1½", 2", 2½", 3", 4"
Maximum Stroke – 4"
Stainless Steel Rod Standard
Optional Accessories:
D-231-3 Piston Rod Clevis
D-615 Mounting Bracket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



2" Bore Air Cylinders

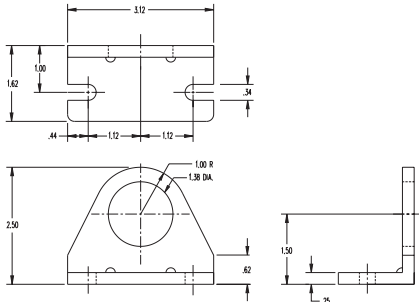
MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
31□-R  \$54.25 BASE PRICE Add \$4.80 per inch of stroke	Reverse Single Acting – Pull Type – Rod Normally Extended – Spring Return – Front Nose Mounting Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4" Maximum Stroke – 4" Optional Stainless Steel Rod Optional Accessories: D-615 Mounting Bracket D-508 Mounting Nut Base Weight: 1.24 Adder Per Inch of Stroke: .43	
31□-RP  \$59.35 BASE PRICE Add \$4.80 per inch of stroke	Reverse Single Acting – Pivot and Pull Type – Rod Normally Extended – Spring Return – Rear Pivot Mounting Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4" Maximum Stroke – 4" Optional Stainless Steel Rod Optional Accessories: D-231-3 Piston Rod Clevis D-620 Pivot Bracket D-508 Mounting Nut D-615 Mounting Bracket Base Weight: 1.46 Adder Per Inch of Stroke: .43	
31□-D  \$45.15 BASE PRICE Add \$2.30 per inch of stroke	Double Acting – Air Return – Front Nose Mounting Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4", 5", 6" Maximum Stroke – 12" Optional Stainless Steel Rod Optional Accessories: D-508 Mounting Nut D-615 Mounting Bracket Base Weight: 1.40 Adder Per Inch of Stroke: .15	
31□-DXP  \$54.20 BASE PRICE Add \$2.40 per inch of stroke	Double Acting – Universal Mounting Type – Pivot or Double End – Air Return – Bronze Pivot Bushing Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4", 5", 6", 7", 8", 9", 10", 11", 12", 13", 14", 15", 16", 17", 18", 19", 20", 21", 22", 23", 24" Maximum Stroke – 32" Stainless Steel Rod Standard Optional Accessories: D-231-3 Piston Rod Clevis D-615 Mounting Bracket D-620 Pivot Brackets D-508 Mounting Nut Base Weight: 1.62 Adder Per Inch of Stroke: .15	

2" Bore Air Cylinders

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
31□-DXDE  \$66.85 BASE PRICE Add \$3.45 per inch of stroke	Double Acting – Double End Rod – Air Return – Double End Mounting Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 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	

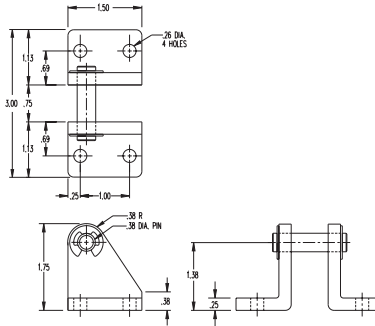
2" Bore Accessories

D-615
\$8.00



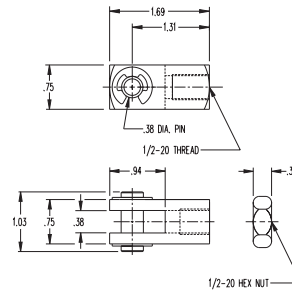
Mounting Bracket

D-620
\$11.20



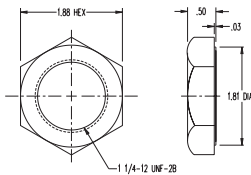
Pivot Brackets

D-231-3
\$5.05



Piston Rod Clevis

D-508
\$2.90



Mounting Nut

Note: For stainless steel accessories see page 113 and 116-117.

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:

NO CHARGE:

- **MAGNALUBE G (G)**
- **PORTS ROTATED (K)**
- **NO THREAD (NT)**
- **SIDE PORTED REAR HEAD (Q)**
Add .38" to nose mount overall length.

DOUBLE ACTING BUMPERS (B)

- \$5.65 additional
- Add .250 to overall length

☐ Enter Stroke Length as 3rd Digit

OPTIONS continued...

EXTRA EXTENSION (EE)

- Double acting, add \$1.25 per inch of extension
- DXDE, add \$2.05 per inch of extension; extension added to each end

MAGNET (prefix M) – Add \$14.65

- Stainless steel rod becomes standard with this option
- Must specify track(s) for use with miniature position sensing (T2, T3, T4) – add \$2.50 per track. See page 142 for details.

LOW TEMPERATURE (N)

Temperature Range: -40° to 200°F

- Double acting add \$3.15
- DXDE add \$4.20

HIGH TEMPERATURE "U" CUPS (V)

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

- Double acting add \$16.10
- DXDE add \$21.30

MOLYCOATED BODY (F)

- Add \$2.30 per inch of stroke

NON-LUBE SERVICE (E)

- Double acting add \$15.30
- DXDE add \$18.00

ROD WIPER (W)

(not available in standard single acting)

- Add \$5.00

STAINLESS STEEL ROD (prefix SR)

- Add \$3.45
- Standard on M option, DXP, DXDE

MODEL/PRICE

DESCRIPTION/WEIGHT (lbs.)

DIMENSIONS

50-D

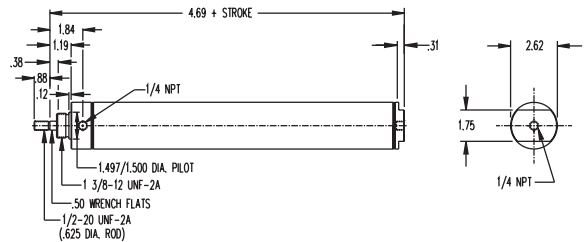


\$64.70

BASE PRICE

Add \$2.50 per inch of stroke

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

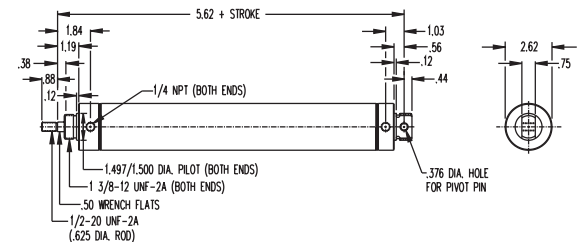


\$76.00


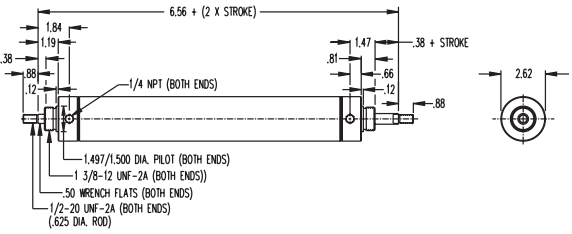
BASE PRICE

Add \$2.60 per inch of stroke

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

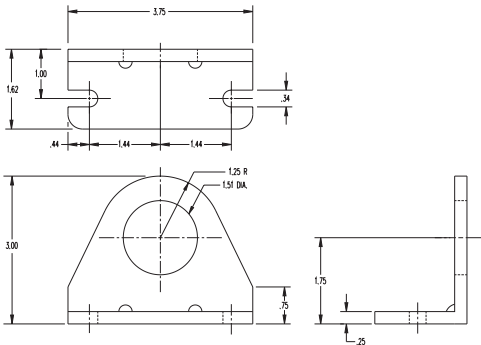


2-1/2" Bore Air Cylinders

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
50□-DXDE  \$88.65 BASE PRICE Add \$4.05 per inch of stroke	Double Acting – Double End Rod – Air Return – Double End Mounting Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 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	

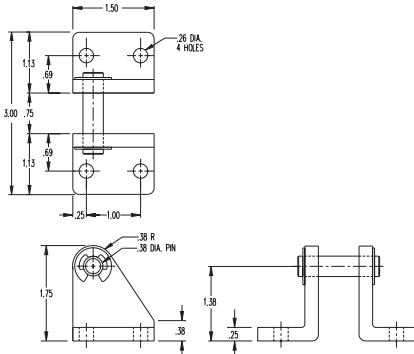
2-1/2" Bore Accessories

D-615-1
\$8.45



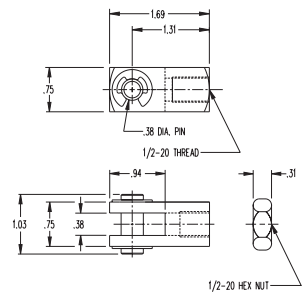
Mounting Bracket

D-620
\$11.20



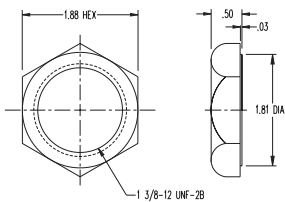
Pivot Brackets

D-231-3
\$5.05



Piston Rod Clevis

D-2540
\$3.70



Mounting Nut

3" Bore Air Cylinders

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

OPTIONS:

NO CHARGE:

- **MAGNALUBE G (G)**
- **PORTS ROTATED (K)**
- **NO THREAD (NT)**
- **SIDE PORTED REAR HEAD (Q)**
Add .44" to nose mount overall length.

DOUBLE ACTING BUMPERS (B)

- \$7.35 additional
- Add .250 to the length

☐ Enter Stroke Length as 3rd Digit

OPTIONS continued...

EXTRA EXTENSION (EE)

- Double acting, add \$1.50 per inch of extension
- DXDE, add \$2.15 per inch of extension; extension added to each end

MAGNET (prefix M) – Add \$26.15

- Stainless steel rod becomes standard with this option
- Must specify track(s) for use with miniature position sensing (T2, T3, T4) – add \$2.50 per track. See page 142 for details.

LOW TEMPERATURE (N)

Temperature Range: -40° to 200°F

- Double acting add \$3.15
- DXDE add \$4.20

HIGH TEMPERATURE "U" CUPS (V)

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

- Double acting add \$16.95
- DXDE add \$22.45

MOLYCOATED BODY (F)

- Add \$2.30 per inch of stroke

NON-LUBE SERVICE (E)

- Double acting add \$18.10
- DXDE add \$20.80

ROD WIPER (W)

(not available in standard single acting)

- Add \$5.00

STAINLESS STEEL ROD (prefix SR)

- Add \$4.20
- Standard on DXP, DXDE, and M option

MODEL/PRICE

DESCRIPTION/WEIGHT (lbs.)

DIMENSIONS

70□-D

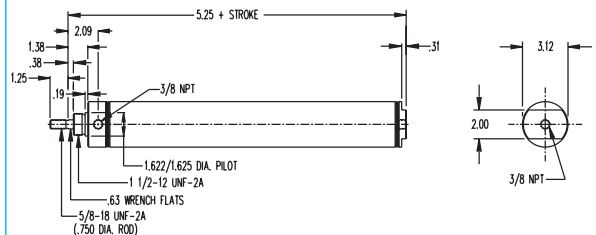


\$92.05

BASE PRICE

Add \$3.00 per inch of stroke

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



70□-DXP

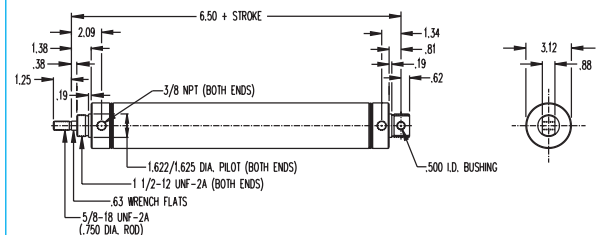


\$103.65


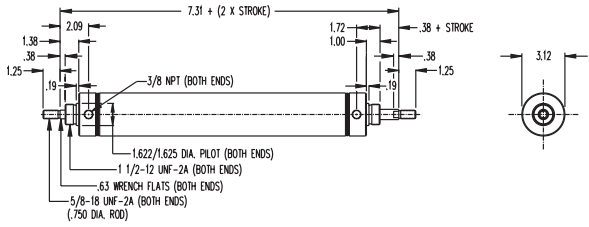
BASE PRICE

Add \$3.15 per inch of stroke

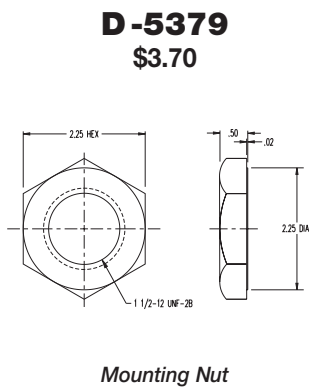
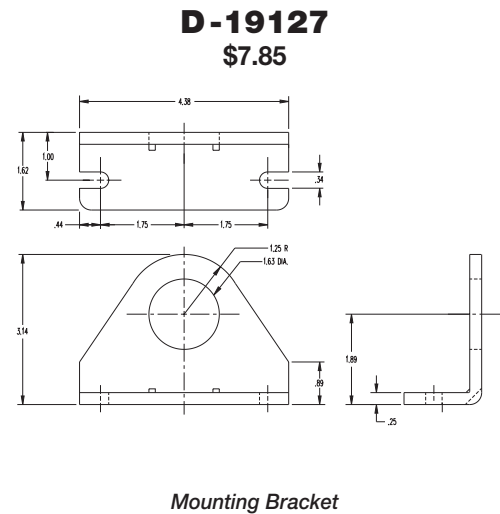
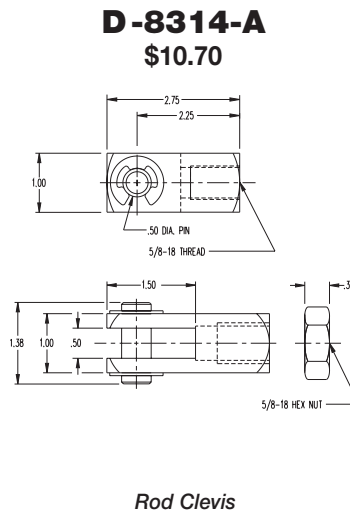
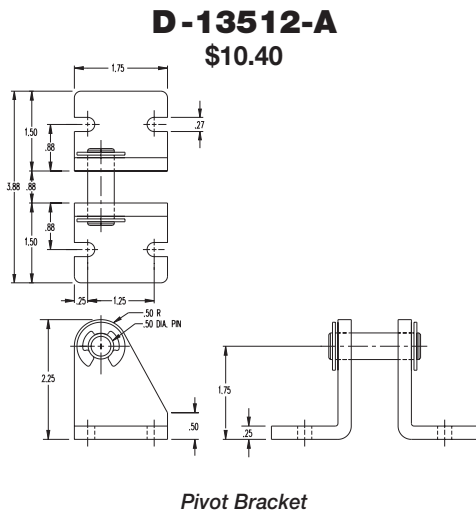
Double Acting – Universal Mount Pivot or Double End Mounting
Standard Stroke Lengths:
 ½", 1", 1½", 2", 2½", 3", 4", 5", 6", 7", 8", 9", 10", 11", 12", 13", 14", 15", 16", 17", 18", 19", 20", 21", 22", 23", 24"
 Maximum Stroke – 32"
 Stainless Steel Rod Standard
Optional Accessories:
 D-13512-A Pivot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



3" Bore Air Cylinders

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
70□-DXDE  \$114.65 BASE PRICE Add \$4.25 per inch of stroke	Double Acting – Double End Rod – Double End Mounting Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 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	

3" Bore Accessories



Options

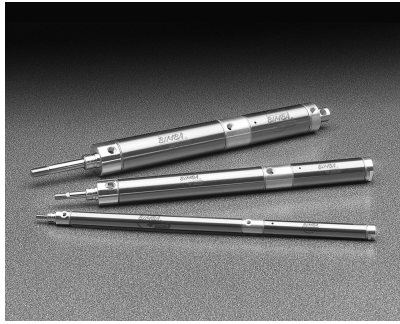
Spring Extend Length Adder		
Bore	Type	Overall Length Adder for -JR Option
5/16"	0070-D	1.65 + 1.25 per 0.50" of stroke
	0070-DXP	2.19 + 1.25 per 0.50" of stroke
	BF-0070-D	1.71 + 1.25 per 0.50" of stroke
7/16"	010-D, BF-010-D & BFT-010-D	2.17 + 1.44 per 0.50" of stroke
	010-DP & 010-DX	2.86 + 1.44 per 0.50" of stroke
	BR-010-D & BRT-010-D	3.36 + 1.44 per 0.50" of stroke
9/16"	020-D	2.34 + 2.63 per 1" of stroke
	020-DXP	2.81 + 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 (3.60 High Temp.) + 2.56 per 1" of stroke
	060-DXP	4.10 (4.50 High Temp.) + 2.56 per 1" of stroke
1-1/16"	090-D	3.38 (3.5) + 2.56 per 1" of stroke
	090-DP, 090-DX	4.38 + 2.56 per 1" of stroke
	BF-090-D, BFT-090-D	4.25 + 2.56 per 1" of stroke
	BR-090-D, BRT-090-D	4.50 + 2.56 per 1" of stroke
1-1/4"	120-D	4.38 (4.25) + 2.81 per 1" of stroke
	120-DP	5.50 (5.44) + 2.81 per 1" of stroke
1-1/2"	170-D	3.75 + 2.69 per 1" of stroke
	170-DP	4.81 + 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	5.12 (4.99 High Temp.) = 3" per 1" of stroke
	240-DP	6.68 (6.56 High Temp.) = 3" per 1" of stroke

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	2.19 + 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 & BFT-010-D	2.17 + 0.94 per 0.50" of stroke
	010-DP & 010-DX	2.86 + 0.94 per 0.50" of stroke
	BR-010-D & BRT-010-D	3.36 + 1.44 per 0.50" of stroke
9/16"	010-DXDE	2.86 + 1.44 per 0.50" of stroke
	020-D	2.34 + 1.63 per 1" of stroke
	020-DXP	2.84 + 1.63 per 1" of stroke
3/4"	020-DXDE	3.00 + 2.63 per 1" of stroke
	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
7/8"	040-DXDE	4.06 + 2.69 per 1" of stroke
	060-D	3.19 (3.60 High Temp.) + 1.56 per 1" of stroke
	060-DXP	4.10 (4.50 High Temp.) + 1.56 per 1" of stroke
1-1/16"	060-DXDE	4.16 (5.03 High Temp.) + 2.56 per 1" of stroke
	090-D	3.38 (3.50) + 1.56 per 1" of stroke
	090-DP, 090-DX	4.38 + 1.56 per 1" of stroke
	BF-090-D, BFT-090-D	4.25 + 1.56 per 1" of stroke
	BR-090-D, BRT-090-D	4.50 + 1.56 per 1" of stroke
1-1/4"	090-DXDE	4.25 + 2.56 per 1" of stroke
	120-D	4.38 (4.25 High Temp.) + 1.81 per 1" of stroke
	120-DP	5.50 (5.44 High Temp.) + 1.81 per 1" of stroke
1-1/2"	120-DXDE	5.94 (5.81 High Temp.) + 2.81 per 1" of stroke
	170-D	3.75 + 1.69 per 1" of stroke
	170-DP	4.81 + 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
1-3/4"	170-DXDE	4.19 + 2.69 per 1" of stroke
	240-D	5.12 (4.99 High Temp.) = 2" per 1" of stroke
	240-DP	6.68 (6.56 High Temp.) = 2" per 1" of stroke
	240-DXDE	7.25 (6.86 High Temp.) = 3" per 1" of stroke

Spring Return Length Adder for 2" Bore					
Bore	Type	Stroke			
		1"	2"	3"	4"
2"	310-D, 310-DP	5.94 + stroke	6.94 + stroke	7.19 + stroke	9.13 + stroke
	310-DXP	7.32 + stroke	8.32 + stroke	8.57 + stroke	10.51 + stroke
	310-DXDE	7.81 + 2 x stroke	8.81 + 2 x stroke	9.06 + 2 x stroke	11.00 + 2 x stroke

Spring Extend Length Adder for 2" Bore					
Bore	Type	Stroke			
		1"	2"	3"	4"
2"	310-D, 310-DP	5.94 + 2 x stroke	6.94 + 2 x stroke	7.19 + 2 x stroke	9.13 + 2 x stroke
	310-DXP	7.32 + 2 x stroke	8.32 + 2 x stroke	8.57 + 2 x stroke	10.51 + 2 x stroke

Three-Position Original Line Cylinders



New Product Bulletin

Bimba Three-Position Original Line Cylinders

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

How to Order

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

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

Product Type	Bore Sizes	Stroke A	Stroke B	Standard Stroke Lengths and Stroke Maximums
Blank – Three-position Original Line M – Magnet option for cylinders* NR – Non-rotating rod option	02 – 9/16" 04 – 3/4" 09 – 1-1/16" 17 – 1-1/2" 31 – 2"	0.5 = 1/2" 1 = 1" 1.5 = 2-1/2" 3.75 = 3-3/4" etc.	0.5 = 1/2" 1 = 1" 2.5 = 2-1/2" 3.75 = 3-3/4" etc.	Nose Mount 1" increments to 12" 2 x Stroke A + Stroke B Maximum = 12" Universal Mount 1" increments to 24" 2 x Stroke A + Stroke B Maximum = 32"

*Magnet located on stroke B piston only.

M - 043 / 4.5 - D W

Mounting Options	Options
D – Double acting, nose mount DXP – Double acting, universal mount	(Enter in alphabetical order, except EE which is last) B – Bumpers E – Non-lube seals and lubrication F – Molycoated body G – Magnalube® G K – Ports rotated 90 degrees N – Low temperature seals & lubrication NT – Non-threaded rod T – Switch Track (T2, T3 or T4) see page 142 V – High temperature seals & lubrication W – Rod wiper (not available on 9/16" and 2") EEX.XX – Extra rod extension

Note: Consult OL catalog page 4 for option combination compatibility.

Specifications

Expected life:	1400 miles when lubricated
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:	HT-99
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

Three-Position Original Line Cylinders

List Prices

Bore	Mounting		Total
	Mounting-D List Price	-DXP List Price	combined stroke adder, per inch**
02 - 9/16"	\$28.85	\$31.90	\$1.35
04 - 3/4"	\$31.45	\$36.15	\$1.35
09 - 1-1/16"	\$36.30	\$41.35	\$1.35
17 - 1-1/2"	\$49.25	\$55.10	\$2.10
31 - 2"	\$68.20	\$76.85	\$2.40

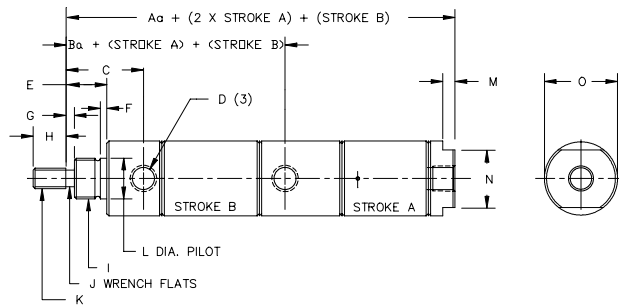
**Total combined stroke = (2 X stroke A) + Stroke B

Bore	Options								
	M (Prefix) Magnetic Position Sensing	B Bumpers	E Non-lube Seals and Lubrication	F Molycoated Body per inch	N Low Temperature Seals	V High Temperature Seals and lubrication	W Rod Wiper	EE Extra Rod Extension per inch	NR Prefix Non-rotating rod
9/16" (02)	\$8.40	\$7.25	\$14.65	\$2.30	\$2.10	\$18.95	N/A	\$0.70	\$15.00
3/4" (04)	\$8.40	\$7.25	\$15.20	\$2.30	\$2.10	\$18.95	\$2.50	\$0.70	\$15.00
1-1/16" (09)	\$10.45	\$7.25	\$16.75	\$2.30	\$3.15	\$22.80	\$2.50	\$0.70	\$20.00
1-1/2" (17)	\$12.55	\$8.80	\$17.80	\$2.30	\$4.20	\$25.10	\$2.50	\$1.05	\$20.00
2" (31)	\$14.65	\$11.30	\$26.35	\$2.30	\$5.25	\$32.20	N/A	\$1.15	\$25.00

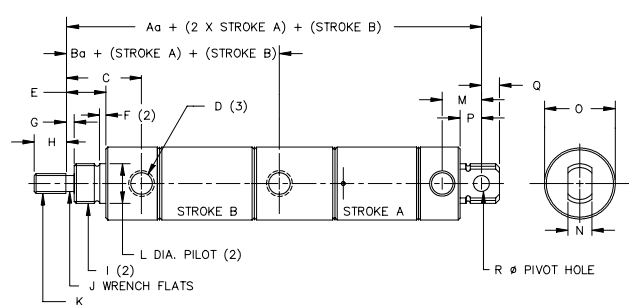
No Charge Options: G, K, NT

Dimensions

D Mounting Style (in.)



DXP Mounting Style (in.)



D Model																Bumper Option	
Bore	Aa	Ba	C	D	E	F	G	H	I	J	K	L	M	N	O	Aa	Ba
9/16" (02)	4.12	2.25	0.75	#10-32	0.38	0.06	N/A	0.50	7/16-20	N/A	#10-32	.434/.437	0.19	0.50	0.62	4.31	2.31
3/4" (04)	5.47	3.12	0.97	1/8 NPT	0.50	0.09	N/A	0.50	5/8-18	N/A	1/4-28	.621/.624	0.19	0.62	0.81	5.47	3.12
1-1/16" (09)	5.97	3.25	1.19	1/8 NPT	0.62	0.09	0.12	0.50	5/8-18	0.25	5/16-24	.621/.624	0.49	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

D Model																			Bumper Option	
Bore	Aa	Ba	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	Aa	Ba
9/16" (02)	4.41	2.25	0.75	#10-32	0.38	0.06	N/A	0.50	7/16-20	N/A	#10-32	.434/.437	0.38	0.31	0.62	0.25	0.19	0.157	4.66	2.31
3/4" (04)	6.25	3.12	0.97	1/8 NPT	0.50	0.09	N/A	0.50	5/8-18	N/A	1/4-28	.621/.624	0.62	0.38	0.86	0.34	0.28	0.250	6.25	3.12
1-1/16" (09)	6.56	3.25	1.19	1/8 NPT	0.62	0.09	0.12	0.50	5/8-18	0.25	5/16-24	.621/.624	0.62	0.38	1.12	0.34	0.28	0.250	6.68	3.25
1-1/2" (17)	7.18	3.69	1.50	1/8 NPT	0.63	0.09	0.25	0.75	3/4-16	0.38	7/16-20	.746/.749	0.81	0.62	1.56	0.50	0.38	0.375	7.31	3.69
2" (31)	9.19	4.78	1.92	1/4 NPT	1.19	0.12	0.38	0.88	1-1/4-12	0.50	1/2-20	1.375/1.372	1.03	0.75	2.08	0.56	0.44	0.375	9.56	4.91

Air Cylinders with Adjustable Cushions*

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

OPTIONS FOR EACH BORE SIZE:

NO CHARGE:

- **MAGNALUBE G (G)**
- **NO THREAD (NT)**
(Available on 3/4", 1 1/8" and 1 1/2" bores)

EXTRA EXTENSION (EE)

- Double acting, per inch of extension:
3/4" Bore, add \$0.70
1 1/8" Bore, add \$0.70
1 1/2" Bore, add \$0.90
2" Bore, add \$1.15
2 1/2" Bore, add \$1.25
3" Bore, add \$1.50

HIGH TEMPERATURE SEALS (V)

	Double Acting	DXDE
04 Bore	\$15.55	\$18.55
09 Bore	\$17.90	\$20.90
17 Bore	\$19.00	\$24.40
31 Bore	\$27.90	\$32.85

- **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-D).

☐ Enter Stroke Length as 3rd Digit

OPTIONS FOR EACH BORE SIZE: continued...

50 Bore	\$30.35	\$35.35
70 Bore	\$33.00	\$38.80

EXTRA EXTENSION (EE)

- DXDE, per inch of extension:
(added to each end)
3/4" Bore, add \$0.90
1 1/8" Bore, add \$0.90
1 1/2" Bore, add \$1.70
2" Bore, add \$1.75
2 1/2" Bore, add \$2.05
3" Bore, add \$2.15

PORTS ROTATED (K)*

(Rotates ports and cushion screw location 90° clockwise)

MAGNETIC PISTON (prefix M)

- 3/4" Bore, add \$8.40
- 1 1/8" Bore, add \$10.45
- 1 1/2" Bore, add \$12.55
- 2" Bore, add \$14.65
- 2 1/2" Bore, add \$14.65
- 3" Bore, add \$26.15

MINI SWITCH TRACKS on all bore sizes

Must specify track(s) for use with Bimba's miniature position sensing (T2, T3, T4 – Add \$2.50 per track. See page 142 for details.

ROD WIPER (W) (Available on 3/4", 1 1/8" and 1 1/2" bores)

- Double acting, add \$2.50
- DXDE, add \$5.00

PIVOT BUSHING (Y)*

MOLYCOATED BODY (F)

- Add \$2.30 per inch of stroke

NON-LUBE SERVICE (E)

See corresponding standard Original Line bore size catalog page for pricing.

*Consult local distributor for pricing.

3/4" Bore Air Cylinders with Adjustable Cushions

MODEL/PRICE

DESCRIPTION/WEIGHT (lbs.)

DIMENSIONS

C-04□-D

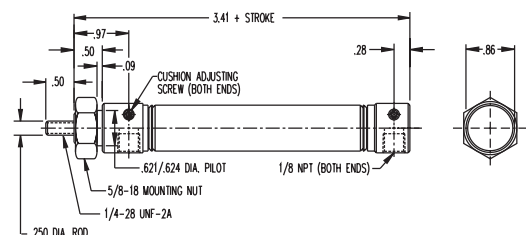


\$28.30

BASE PRICE

Add \$1.35 per inch of stroke
Cushion one end only,
deduct \$5.75 from base price.
CF-04□-D (Front only)
CR-04□-D (Rear only)


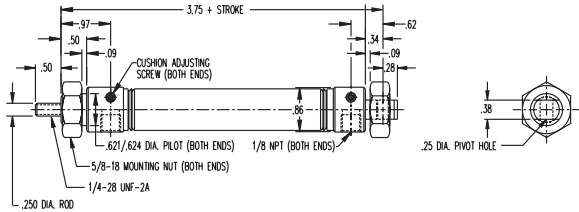

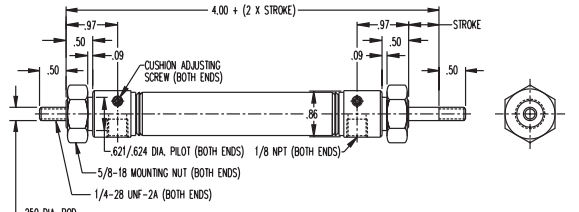
Double Acting – Air Return – Front Nose Mounting
Standard Stroke Lengths:
1", 1 1/2", 2", 2 1/2", 3", 4", 5", 6"
Maximum Stroke – 12"
Stainless Steel Rod Standard
Optional Rod Wiper
Optional Accessory:
D-129 Mounting Bracket
Base Weight: .24
Adder Per Inch of Stroke: .03




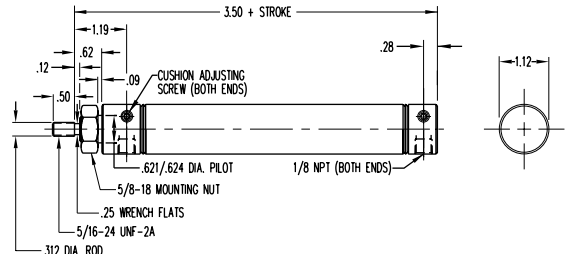
*U.S. Patent nos. 4,794,681 and 4,862,786

Air Cylinders with Adjustable Cushions

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


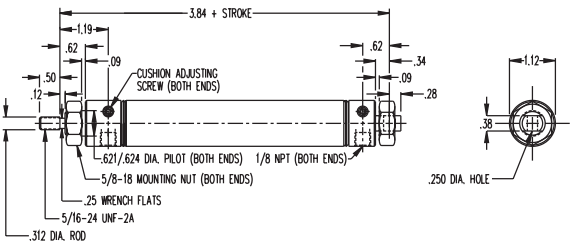

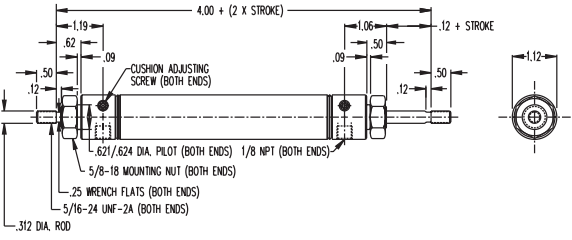
MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
C-04□-DXP  \$33.90 BASE PRICE Add \$1.35 per inch of stroke Cushion one end only, deduct \$5.75 from base price. CF-04□-DXP (Front only) CR-04□-DXP (Rear only)	Double Acting – Double End or Rear Pivot Mounting – Air Return Standard Stroke Lengths: 1", 1½", 2", 2½", 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  \$41.55 BASE PRICE Add \$1.80 per inch of stroke Cushion one end only, deduct \$5.75 from base price. CS-04□-DXDE (One end only)	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


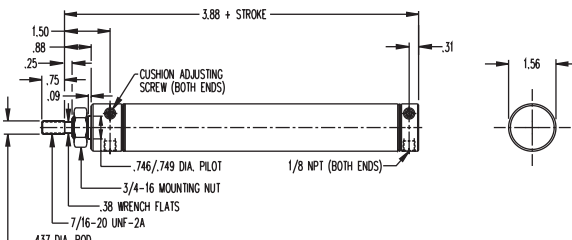
MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
C-09□-D  \$32.35 BASE PRICE Add \$1.35 per inch of stroke Cushion one end only, deduct \$6.30 from base price. CF-09□-D (Front only) CR-09□-D (Rear only)	Double Acting – Air Return – Front Nose Mounting Standard Stroke Lengths: 1", 1½", 2", 2½", 3", 4", 5", 6" Maximum Stroke – 12" Stainless Steel Rod Standard Optional Rod Wiper Optional Accessory: D-129 Mounting Bracket Base Weight: .38 Adder Per Inch of Stroke: .04	

Air Cylinders with Adjustable Cushions

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


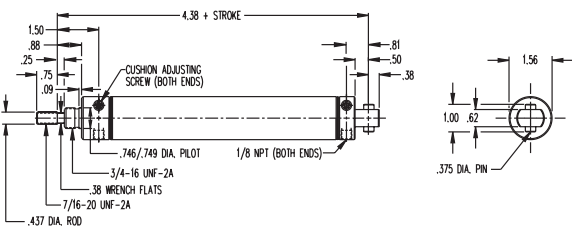

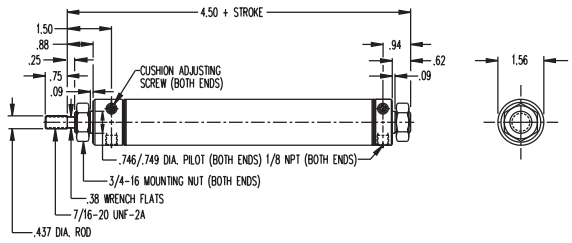

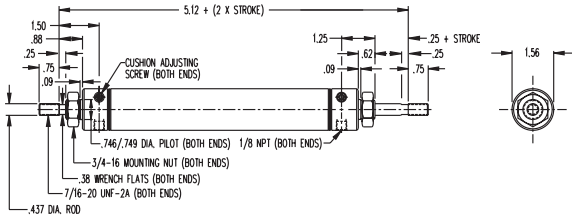
MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
C-09□-DXP  \$38.15 BASE PRICE Add \$1.35 per inch of stroke Cushion one end only, deduct \$6.30 from base price. CF-09□-DXP (Front only) CR-09□-DXP (Rear only)	Double Acting – Universal Mounting Pivot, or Double End Mounting – Air Return Standard Stroke Lengths: 1", 1½", 2", 2½", 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  \$45.85 BASE PRICE Add \$1.80 per inch of stroke Cushion one end only, deduct \$6.30 from base price. CS-09□-DXDE (One end only)	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/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
C-17□-D  \$48.15 BASE PRICE Add \$2.10 per inch of stroke Cushion one end only, deduct \$7.35 from base price. CF-17□-D (Front only) CR-17□-D (Rear only)	Double Acting – Air Return – Front Nose Mounting Standard Stroke Lengths: 1", 1½", 2", 2½", 3", 4", 5", 6" Maximum Stroke – 12" Stainless Steel Rod Standard Optional Rod Wiper Optional Accessory: D-241 Mounting Bracket Base Weight: .76 Adder Per Inch of Stroke: .09	


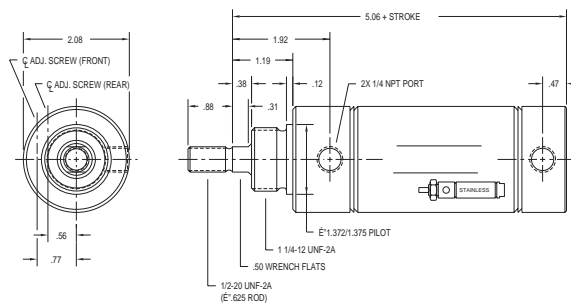

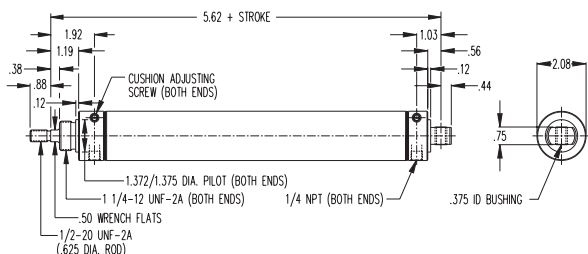

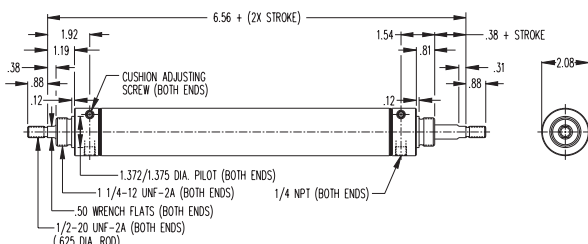
Air Cylinders with Adjustable Cushions

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

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
C-17□-DP  \$52.70 BASE PRICE Add \$2.10 per inch of stroke Cushion one end only, deduct \$7.35 from base price. CF-17□-DP (Front only) CR-17□-DP (Rear only)	Double Acting – Pivot Type – Air Return – Rear Pivot Mounting Standard Stroke Lengths: 1", 1½", 2", 2½", 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□-DX  \$55.60 BASE PRICE Add \$2.10 per inch of stroke Cushion one end only, deduct \$7.35 from base price. CF-17□-DX (Front only) CR-17□-DX (Rear only)	Double Acting – Double End Mounting – Air Return Standard Stroke Lengths: 1", 1½", 2", 2½", 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  \$70.70 BASE PRICE Add \$3.35 per inch of stroke Cushion one end only, deduct \$7.35 from base price. CS-17□-DXDE (One end only)	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	

Air Cylinders with Adjustable Cushions


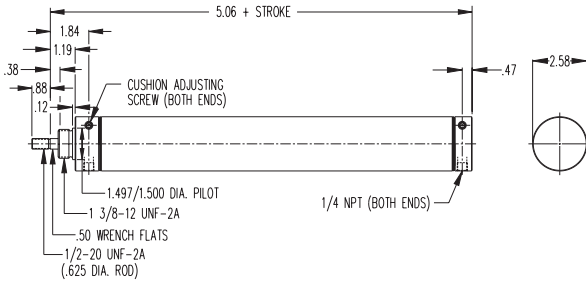

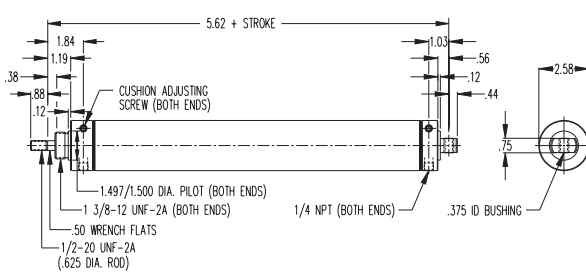

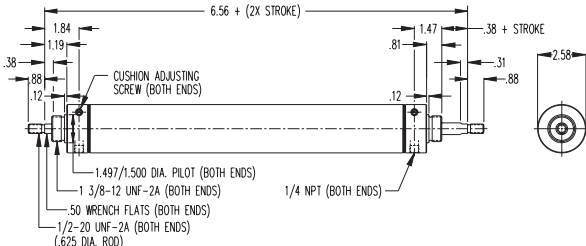
2" Bore Air Cylinders with Adjustable Cushions

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
C-31□-D  \$81.45 BASE PRICE Add \$2.40 per inch of stroke Cushion one end only, deduct \$12.00 from base price. CF-31□-D (Front only) CR-31□-D (Rear only)	Double Acting – Air Return – Front Nose Mounting Standard Stroke Lengths: 1", 1½", 2", 2½", 3", 4", 5", 6" Maximum Stroke – 12" Stainless Steel Rod Standard Optional Accessories: D-615 Mounting Bracket D-508 Mounting Nut Base Weight: 1.64 Adder Per Inch of Stroke: .15	
C-31□-DXP  \$99.10 BASE PRICE Add \$2.40 per inch of stroke Cushion one end only, deduct \$12.00 from base price. CF-31□-DXP (Front only) CR-31□-DXP (Rear only)	Double Acting – Double End or Rear Pivot Mounting – Air Return Standard Stroke Lengths: 1", 1½", 2", 2½", 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  \$123.40 BASE PRICE Add \$3.45 per inch of stroke Cushion one end only, deduct \$12.00 from base price. CS-31□-DXDE (One end only)	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	

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

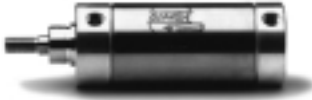
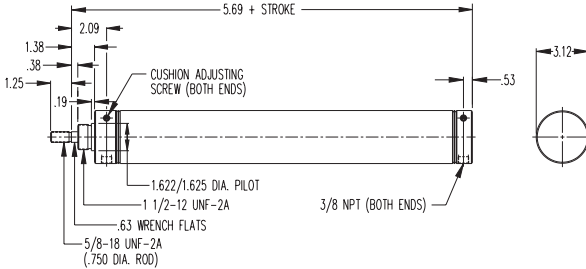

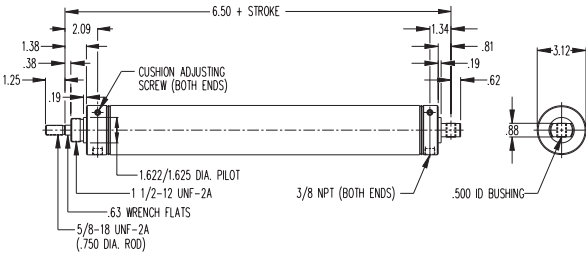

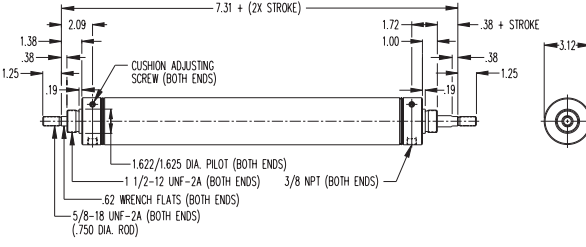
Air Cylinders with Adjustable Cushions

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

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
C-50□-D  \$100.75 BASE PRICE Add \$2.60 per inch of stroke Cushion one end only, deduct \$15.00 from base price. CF-50□-D (Front only) CR-50□-D (Rear only)	Double Acting – Air Return – Front Nose Mounting Standard Stroke Lengths: 1", 1½", 2", 2½", 3", 4", 5", 6" Maximum Stroke – 12" Stainless Steel Rod Standard Optional Accessories: D-615-1 Mounting Bracket D-2540 Mounting Nut Base Weight: 2.21 Adder Per Inch of Stroke: .17	
C-50□-DXP  \$114.55 BASE PRICE Add \$2.60 per inch of stroke Cushion one end only, deduct \$15.00 from base price. CF-50□-DXP (Front only) CR-50□-DXP (Rear only)	Double Acting – Universal Mounting Pivot, or Double End Mounting – Air Return Standard Stroke Lengths: 1", 1½", 2", 2½", 3", 4", 5", 6", 7", 8", 9", 10", 11", 12" Maximum Stroke – 32" Stainless Steel Rod Standard Optional Accessories: D-615-1 Pivot Bracket D-620 Mounting Bracket D-231-3 Piston Rod Clevis D-2540 Mounting Nut Base Weight: 2.33 Adder Per Inch of Stroke: .17	
C-50□-DXDE  \$151.60 BASE PRICE Add \$4.05 per inch of stroke Cushion one end only, deduct \$15.00 from base price. CS-50□-DXDE (One end only)	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	

Air Cylinders with Adjustable Cushions

3" Bore Air Cylinders with Adjustable Cushions

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
C-70□-D  \$132.35 BASE PRICE Add \$3.15 per inch of stroke Cushion one end only, deduct \$17.00 from base price. CF-70□-D (Front only) CR-70□-D (Rear only)	Double Acting – Air Return – Front Nose Mounting Standard Stroke Lengths: 1", 1½", 2", 2½", 3", 4", 5", 6" Maximum Stroke – 12" Stainless Steel Rod Standard Optional Accessories: D-19127 Mounting Bracket D-5379 Mounting Nut Base Weight: 3.81 Adder Per Inch of Stroke: .26	
C-70□-DXP  \$148.80 BASE PRICE Add \$3.15 per inch of stroke Cushion one end only, deduct \$17.00 from base price. CF-70□-DXP (Front only) CR-70□-DXP (Rear only)	Double Acting – Pivot Type – Air Return – Rear Pivot Mounting Standard Stroke Lengths: 1", 1½", 2", 2½", 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  \$165.10 BASE PRICE Add \$4.25 per inch of stroke Cushion one end only, deduct \$17.00 from base price. CS-70□-DXDE (One end only)	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 ¾" bore, see page 42. For 1⅞" bore, see page 54. For 1½" bore, see page 67. For 2" bore, see page 74. For 2½" bore, see page 76. For 3" bore, see page 78.

Cushion Energy Absorption

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

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

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

w = weight of the load (lbs.)

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

p = driving pressure (psi)

k = bore constant

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

driving pressure (p) = 80 psi

total load (w) = 8 lbs.

bore constant (k) = .24

maximum velocity (v) = 6 fps

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

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"

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 Moption 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.

See page 132 for information on Bimba position sensing switches.

OPTIONS:

NO CHARGE:

- **MAGNALUBE G (G)**
- **NO THREAD (NT)**

SWITCH TRACK for Standard Reed Switches

- Must specify Z for one track, ZTT for 2 tracks – add \$2.50 per track. See page 142 for details.

☐ Enter Stroke Length as 3rd Digit

OPTIONS continued...

DOUBLE ACTING BUMPERS (B)

- $\frac{9}{16}$ " add \$3.65 and .125" to length
- $\frac{3}{4}$ " and $1\frac{1}{16}$ " add \$3.65 and .250" to length
- $1\frac{1}{4}$ " and $1\frac{1}{2}$ " add \$4.40 and .250" to length
- $1\frac{3}{4}$ ", 2" and $2\frac{1}{2}$ " add \$5.65 and .250" to length

MOLYCOATED BODY (F)

- Add \$2.30 per inch of stroke

EXTRA EXTENSION (EE)

- Double acting, per inch of extension:

$\frac{9}{16}$ " Bore, add \$0.70

$1\frac{1}{4}$ " Bore, add \$0.90

$1\frac{1}{2}$ " and $1\frac{3}{4}$ " Bore, add \$1.05

2" Bore, add \$1.20

$2\frac{1}{2}$ " Bore, add \$1.30

- DXDE, per inch of extension:

(added to both ends)

$\frac{9}{16}$ ", $\frac{3}{4}$ " and $1\frac{1}{16}$ " Bore, add \$0.90

$1\frac{1}{4}$ " Bore, add \$1.30

$1\frac{1}{2}$ " and $1\frac{3}{4}$ " Bore, add \$1.70

2" Bore, add \$1.75

$2\frac{1}{2}$ " Bore, add \$2.05

PORTS ROTATED 90° (K)*

SIDE PORTED REAR HEAD (Q)*

NON-LUBE SERVICE (E)

FLUOROELASTOMER/HIGH TEMPERATURE SEAL (V)


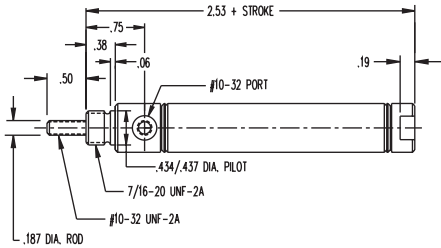

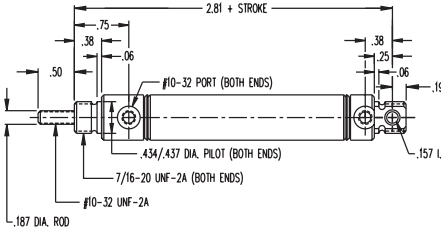
See corresponding standard Original Line bore size catalog page for pricing of options E and V.

*Consult local distributor for pricing.

SWITCH TRACK for Miniature Switches (T2, T3, T4)


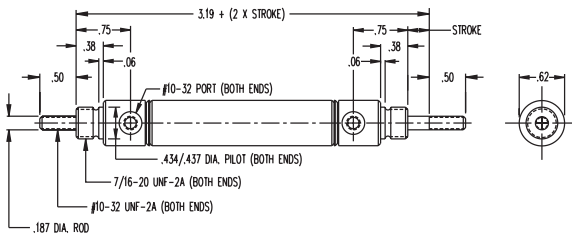
- Must specify track(s) for use with miniature position sensing (T2, T3, T4) – add \$2.50 per track. See page 142 for details.

9/16" Bore MRS Air Cylinders


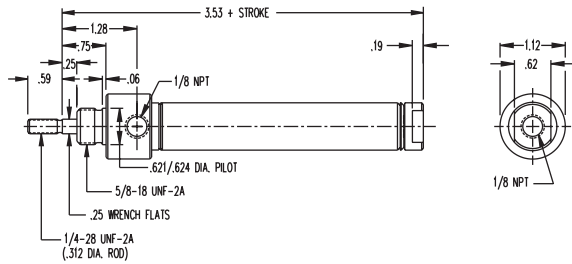

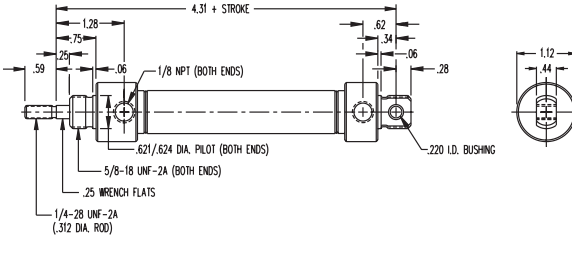

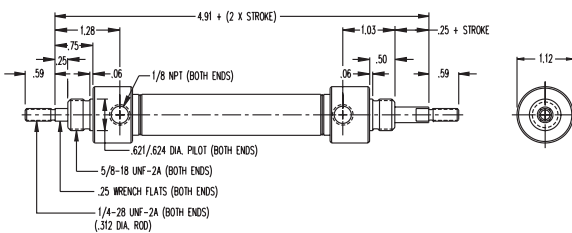
MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
MRS-02□-D  \$22.65 BASE PRICE Add \$1.35 per inch of stroke	Nose Mount Standard Stroke Lengths: $\frac{1}{2}$ ", 1", $1\frac{1}{2}$ ", 2", $2\frac{1}{2}$ ", 3", 4", 5", 6" Maximum Stroke – 12" Optional Accessory: D-770 Mounting Bracket Base Weight: .10 Adder Per Inch of Stroke: .01	
MRS-02□-DXP  \$25.70 BASE PRICE Add \$1.35 per inch of stroke	Double End or Rear Pivot Mounting Standard Stroke Lengths: $\frac{1}{2}$ ", 1", $1\frac{1}{2}$ ", 2", $2\frac{1}{2}$ ", 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® Magnetic Reed Switch Air Cylinders

9/16" Bore MRS Air Cylinders (continued)


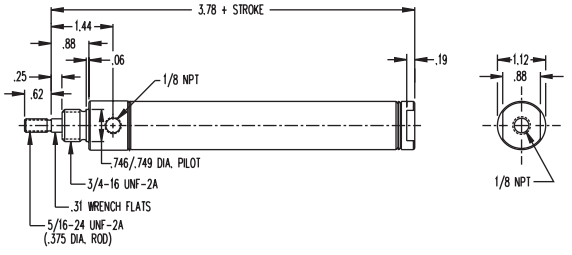

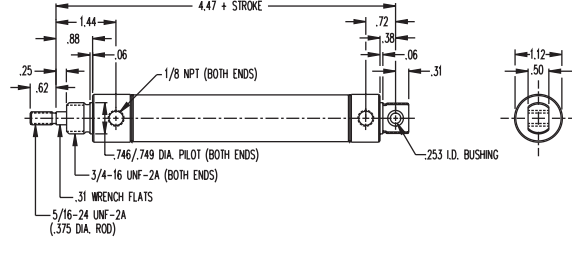

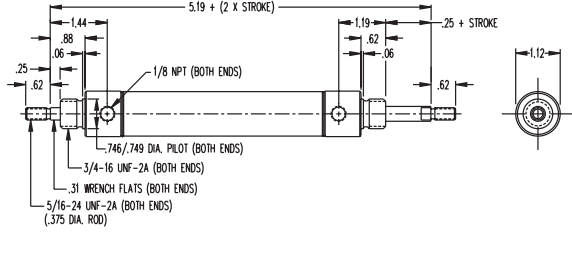
MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
MRS-02  DXDE \$32.00 BASE PRICE Add \$1.80 per inch of stroke	Double End Rod – Double End Mounting Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4", 5", 6" Maximum Stroke – 12" Optional Accessory: D-770 Mounting Bracket Base Weight: .14 Adder Per Inch of Stroke: .02	

3/4" Bore MRS Air Cylinders


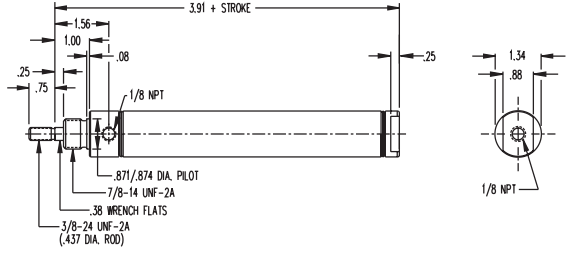
MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
MRS-04  -D \$23.60 BASE PRICE Add \$1.35 per inch of stroke	Nose Mount Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4", 5", 6" Maximum Stroke – 12" Optional Accessory: D-129 Mounting Bracket Base Weight: .24 Adder Per Inch of Stroke: .04	
MRS-04  -DXP \$26.25 BASE PRICE Add \$1.35 per inch of stroke	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 \$35.00 BASE PRICE Add \$1.80 per inch of stroke	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	

MRS® Magnetic Reed Switch Air Cylinders

1-1/16" Bore MRS Air Cylinders


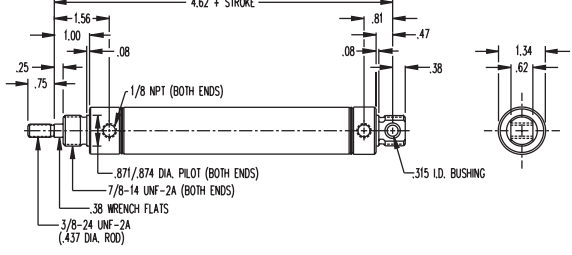

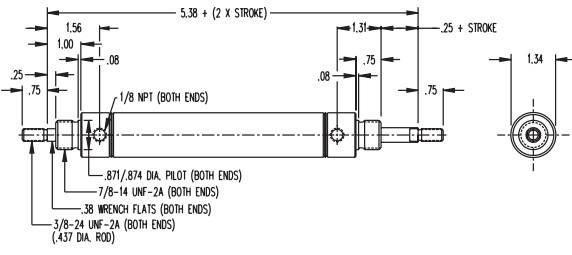
MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
MRS-09□-D  \$28.40 BASE PRICE Add \$1.35 per inch of stroke	Nose Mount Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4", 5", 6" Maximum Stroke – 12" Optional Accessory: D-8315 Mounting Bracket Base Weight: .37 Adder Per Inch of Stroke: .05	
MRS-09□-DXP  \$31.45 BASE PRICE Add \$1.35 per inch of stroke	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  \$37.55 BASE PRICE Add \$1.80 per inch of stroke	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 Air Cylinders


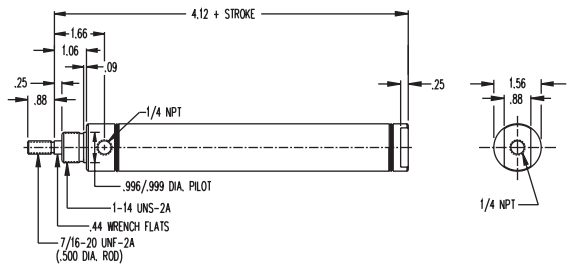

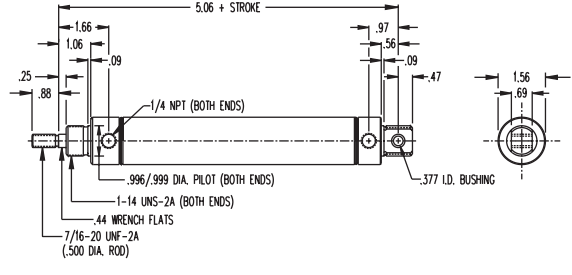
MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
MRS-12□-D  \$35.40 BASE PRICE Add \$1.80 per inch of stroke	Nose Mount Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4", 5", 6" Maximum Stroke – 12" Optional Accessory: D-8316 Mounting Bracket Base Weight: .51 Adder Per Inch of Stroke: .07	

MRS® Magnetic Reed Switch Air Cylinders

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


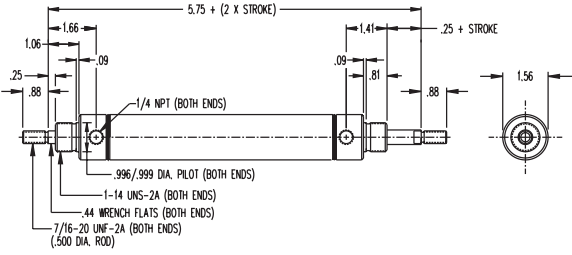
MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
MRS-12□-DXP  \$39.35 BASE PRICE Add \$1.80 per inch of stroke	Double End or Rear Pivot Mounting Standard Stroke Lengths: 1/2", 1", 1 1/2", 2", 2 1/2", 3", 4", 5", 6", 7", 8", 9", 10", 11", 12" Maximum Stroke – 32" Optional Accessories: D-8322-A Pivot Bracket D-8316 Mounting Bracket D-8310-A Rod Clevis Base Weight: .61 Adder Per Inch of Stroke: .05	
MRS-12□DXDE  \$49.75 BASE PRICE Add \$2.60 per inch of stroke	Double End Rod – Double End Mounting Standard Stroke Lengths: 1/2", 1", 1 1/2", 2", 2 1/2", 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 Air Cylinders


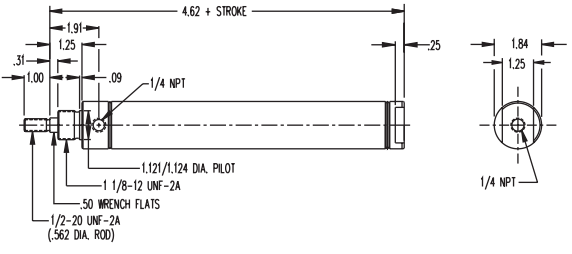

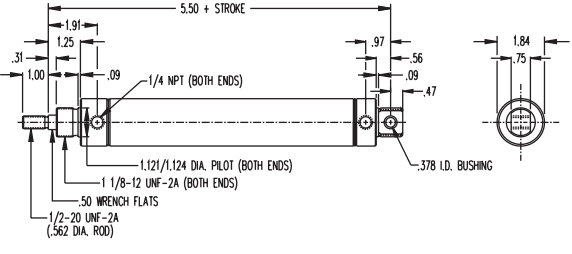

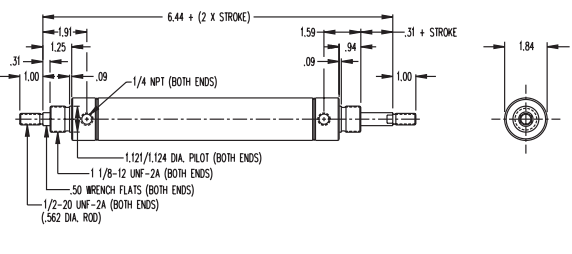
MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
MRS-17□-D  \$42.15 BASE PRICE Add \$2.10 per inch of stroke	Nose Mount Standard Stroke Lengths: 1/2", 1", 1 1/2", 2", 2 1/2", 3", 4", 5", 6" Maximum Stroke – 12" Optional Accessory: D-8317 Mounting Bracket Base Weight: .74 Adder Per Inch of Stroke: .10	
MRS-17□-DXP  \$46.00 BASE PRICE Add \$2.10 per inch of stroke	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 – 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® Magnetic Reed Switch Air Cylinders

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


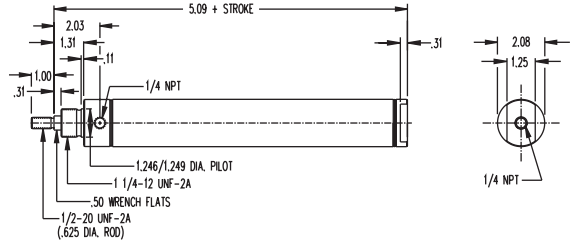

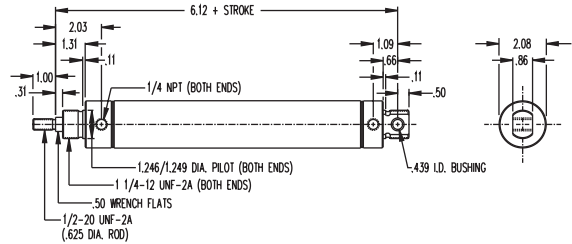

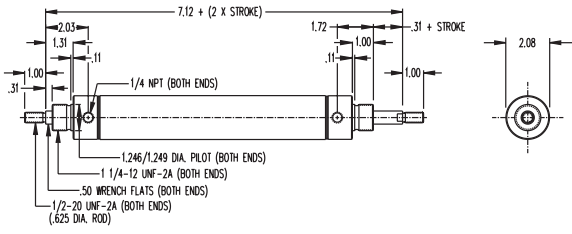
MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
MRS-17□-DXDE  \$53.05 BASE PRICE Add \$3.35 per inch of stroke	Double End Rod – Double End Mounting Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4", 5", 6" Maximum Stroke – 12" Optional Accessory: D-8317 Mounting Bracket Base Weight: .94 Adder Per Inch of Stroke: .20	

1-3/4" Bore MRS Air Cylinders


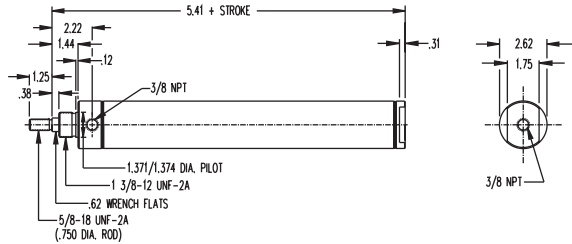
MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
MRS-24□-D  \$48.55 BASE PRICE Add \$2.10 per inch of stroke	Nose Mount Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4", 5", 6" Maximum Stroke – 12" Optional Accessory: D-8318 Mounting Bracket Base Weight: 1.14 Adder Per Inch of Stroke: .13	
MRS-24□-DXP  \$53.40 BASE PRICE Add \$2.10 per inch of stroke	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  \$66.85 BASE PRICE Add \$3.35 per inch of stroke	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	

MRS® Magnetic Reed Switch Air Cylinders

2" Bore MRS Air Cylinders


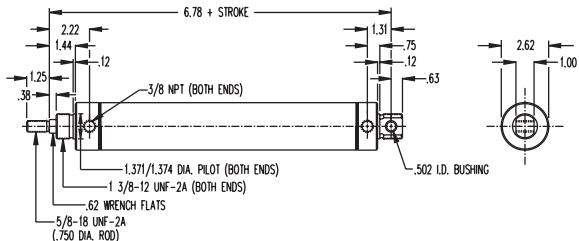

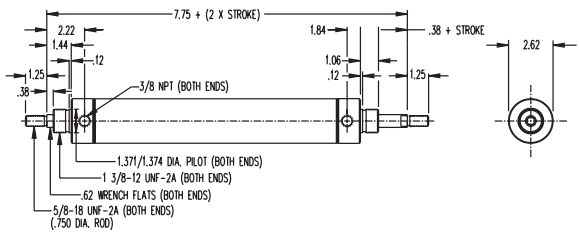
MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
MRS-31□-D  \$54.85 BASE PRICE Add \$2.40 per inch of stroke	Nose Mount Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4", 5", 6" Maximum Stroke – 12" Optional Accessory: D-8319 Mounting Bracket Base Weight: 1.55 Adder Per Inch of Stroke: .15	
MRS-31□-DXP  \$60.25 BASE PRICE Add \$2.40 per inch of stroke	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  \$71.75 BASE PRICE Add \$3.45 per inch of stroke	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 Air Cylinders

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
MRS-50□-D  \$69.65 BASE PRICE Add \$2.60 per inch of stroke	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® Magnetic Reed Switch Air Cylinders

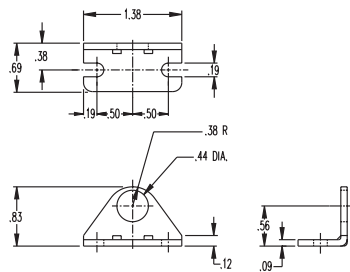
2-1/2" Bore MRS Air Cylinders (continued)

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
MRS-50□-DXP  \$77.60 BASE PRICE Add \$2.60 per inch of stroke	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 – 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  \$91.20 BASE PRICE Add \$4.05 per inch of stroke	Double End Rod – Double End Mounting Standard Stroke Lengths: 1/2", 1", 1 1/2", 2", 2 1/2", 3", 4", 5", 6" Maximum Stroke – 12" Optional Accessory: D-8320 Mounting Bracket Base Weight: 3.15 Adder Per Inch of Stroke: .40	

MRS Accessories

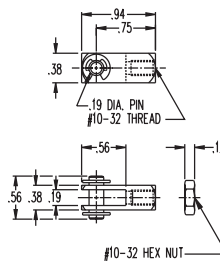
9/16" Bore Accessories

D-770
\$2.05



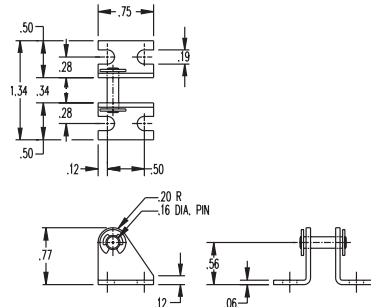
Mounting Bracket

D-850
\$2.90



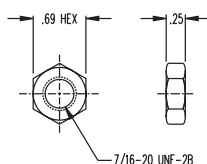
Rod Clevis

D-12321-A
\$3.15



Pivot Bracket

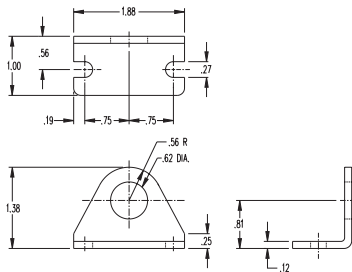
D-154
\$2.25



Mounting Nut

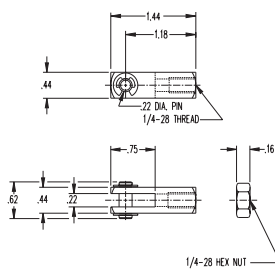
3/4" Bore Accessories

D-129
\$2.30



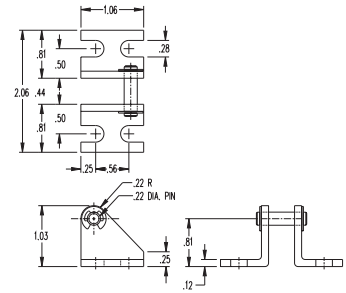
Mounting Bracket

D-10139-A
\$5.30



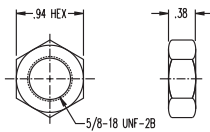
Rod Clevis

D-10131-A
\$3.15



Pivot Bracket

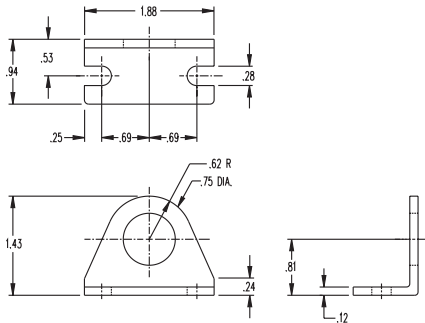
D-9
\$.35



Mounting Nut

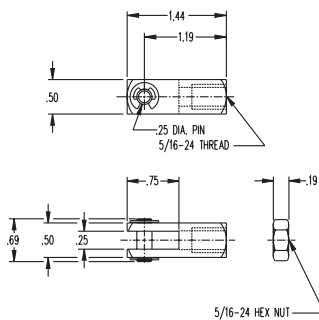
1-1/16" Bore Accessories

D-8315
\$2.70



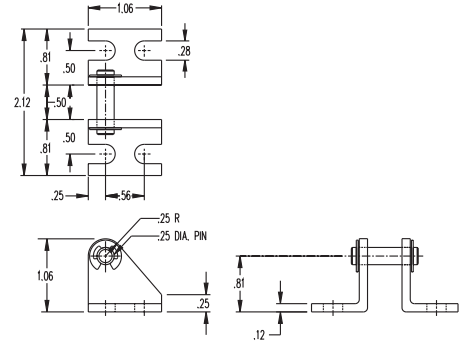
Mounting Bracket

D-8309-A
\$5.40



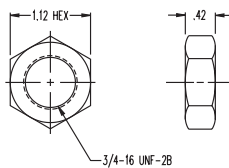
Rod Clevis

D-8321-A
\$3.45



Pivot Bracket

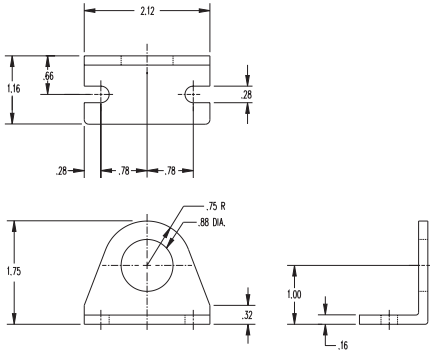
D-3556
\$.45



Mounting Nut

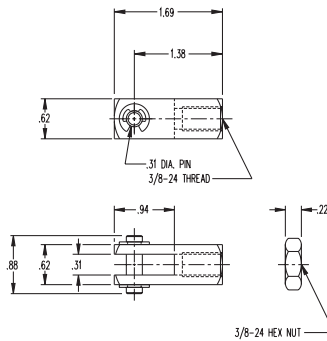
1-1/4" Bore Accessories

D-8316
\$3.65



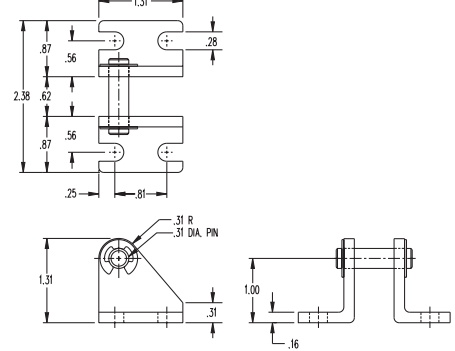
Mounting Bracket

D-8310-A
\$5.65



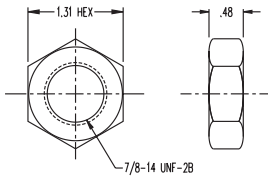
Rod Clevis

D-8322-A
\$4.90



Pivot Bracket

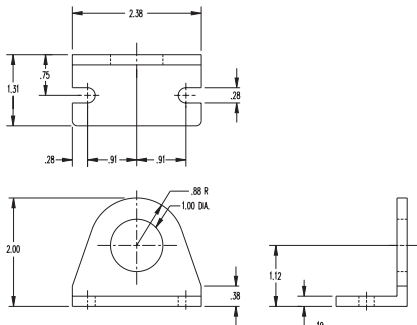
D-2545
\$.80



Mounting Nut

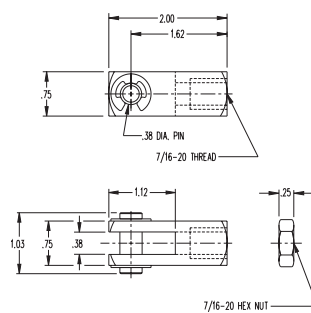
1-1/2" Bore Accessories

D-8317
\$4.95



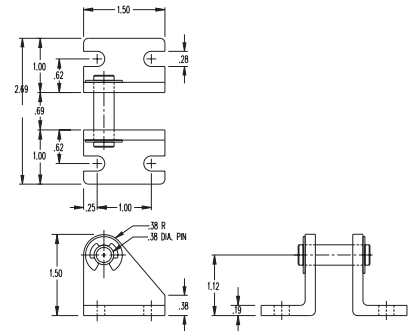
Mounting Bracket

D-8311-A
\$6.30



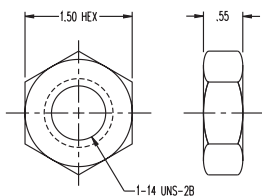
Rod Clevis

D-8323-A
\$6.15



Pivot Bracket

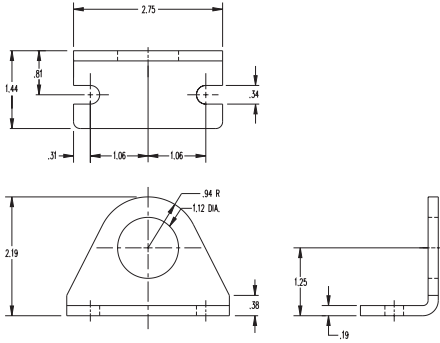
D-1331
\$1.95



Mounting Nut

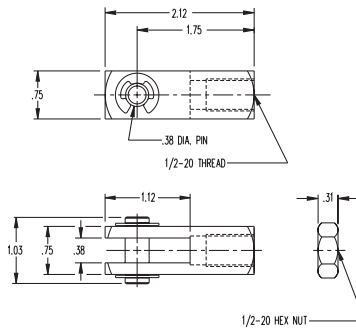
1-3/4" Bore Accessories

D-8318
\$5.60



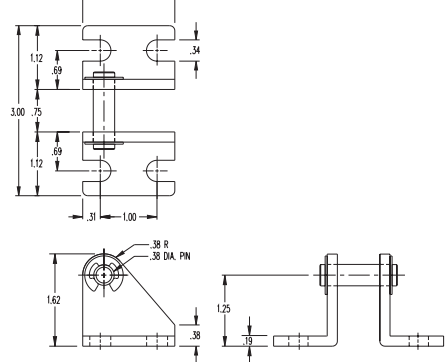
Mounting Bracket

D-8312-A
\$7.20



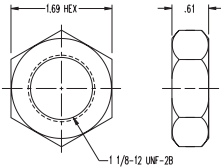
Rod Clevis

D-8324-A
\$7.40



Pivot Bracket

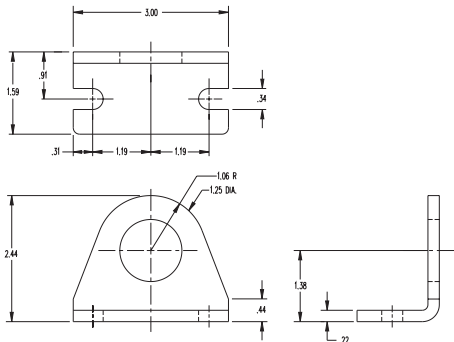
D-8484
\$2.90



Mounting Nut

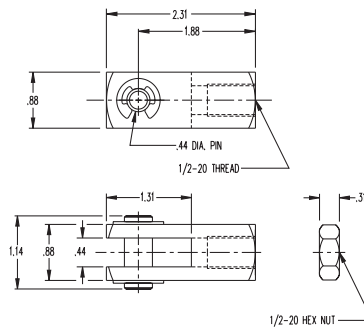
2" Bore Accessories

D-8319
\$6.15



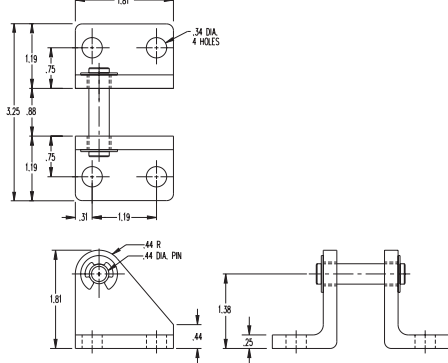
Mounting Bracket

D-8313-A
\$9.05



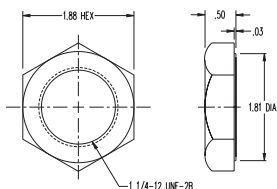
Rod Clevis

D-8325-A
\$8.65



Pivot Bracket

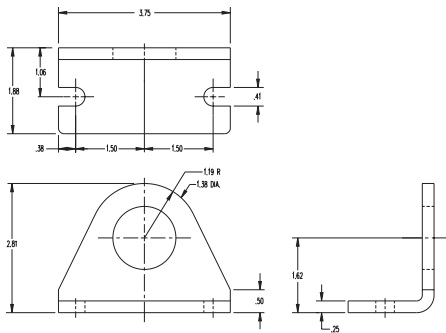
D-508
\$2.90



Mounting Nut

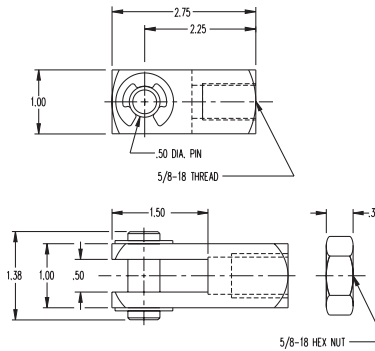
2-1/2" Bore Accessories

D-8320
\$6.80



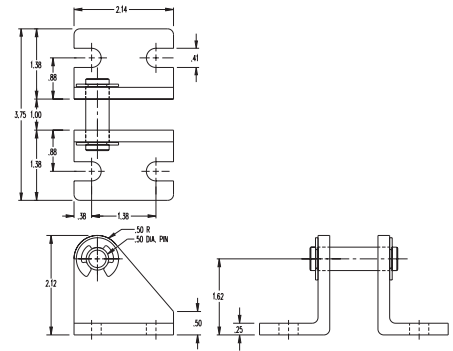
Mounting Bracket

D-8314-A
\$10.70



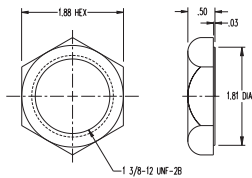
Rod Clevis

D-8326-A
\$9.70



Pivot Bracket

D-2540
\$3.70



Mounting Nut

Non-rotating Original Line Air Cylinder

Bimba's new Non-rotating Original Line stainless steel body air cylinder design consists of a unique square piston rod with rounded corners. The square rod prevents rotation better than other rod configurations, and the rounded corners provide longer seal life than conventional hexagon rods. The unusual geometry of the square rod also provides superior rotation control. All bore sizes have a rotation control of less than or equal to 2½ 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 Original Line non-rotating cylinder is dimensionally interchangeable with the standard Original Line stainless steel cylinder.

9/16" Bore Non-rotating Air Cylinders

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

☐ Enter Stroke Length as 3rd Digit

OPTIONS

NO CHARGE:

- MAGNALUBE® G (G)
- SIDE PORTED REAR HEAD (Q)
- PORTS ROTATED (K)

REVERSE ACTING BUMPERS (B)

- \$2.60 additional
- Add .062 to overall length

DOUBLE ACTING BUMPERS (B)

- \$3.65 additional
- Add .125 to overall length

MOLYCOATED BODY (F)

- Add \$2.30 per inch of stroke

EXTRA EXTENSION (EE)

- Add \$0.75 per inch of extension

MAGNET (prefix M) - Add \$8.40

- Reverse acting add .125" to overall length
- Must specify track(s) for use with miniature position sensing (T2, T3, T4) – add \$2.50 per track. See page 142 for details.

HIGH TEMPERATURE SEALS (V)

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

- Double acting, add \$9.50
- Reverse acting, add \$6.60

MODEL/PRICE

NR-02 ☐ -D



\$21.00

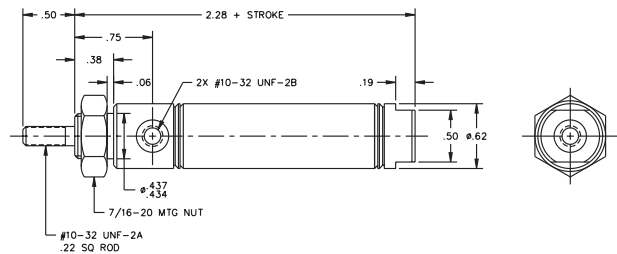
BASE PRICE

Add \$1.50 per inch of stroke

DESCRIPTION/WEIGHT (lbs.)

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


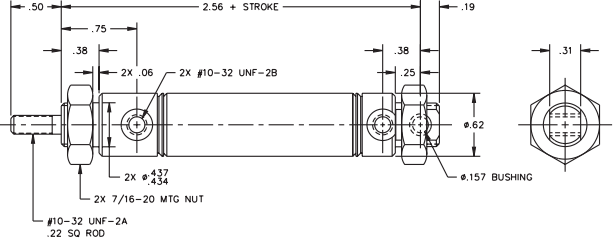

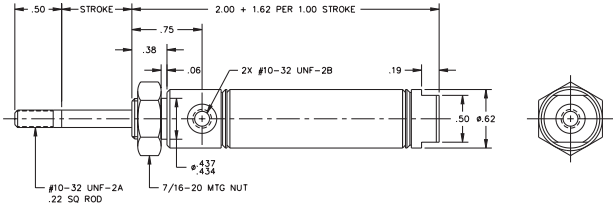

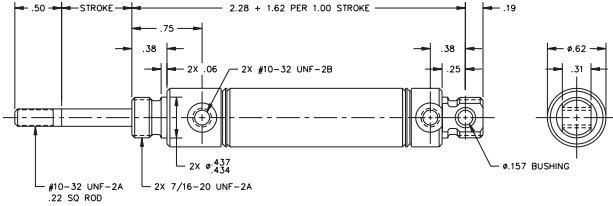
DIMENSIONS



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

9/16" Bore Non-Rotating Air Cylinders

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

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
NR-02□-DXP  \$27.80 BASE PRICE Add \$1.50 per inch of stroke	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  \$24.05 BASE PRICE Add \$2.05 per inch of stroke	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	
NR-02□-RP  \$30.70 BASE PRICE Add \$2.05 per inch of stroke	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	

3/4" Bore Non-rotating Air Cylinders

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

☐ Enter Stroke Length as 3rd Digit

OPTIONS

NO CHARGE:

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

REVERSE ACTING BUMPERS (B)

- \$2.60 additional
- Add .062 to overall length

DOUBLE ACTING BUMPERS (B)

- \$3.65 additional
- Add .125 to overall length

MOLYCOATED BODY (F)

- Add \$2.30 per inch of stroke

EXTRA EXTENSION (EE)

- Add \$0.80 per inch of extension

MAGNET (prefix M) - Add \$8.40

- Reverse acting add .125" to overall length
- Must specify track(s) for use with miniature position sensing (T2, T3, T4) – add \$2.50 per track. See page 142 for details.

HIGH TEMPERATURE SEALS (V)

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

- Reverse acting, add \$6.60
- Double acting, add \$9.50

MODEL/PRICE

DESCRIPTION/WEIGHT (lbs.)

DIMENSIONS

NR-04-D

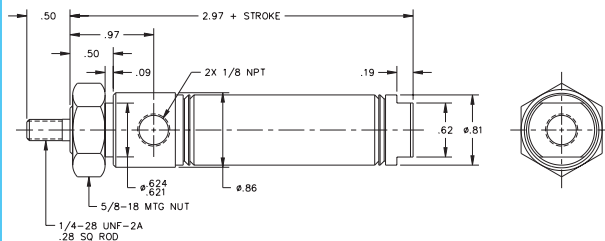


\$22.05

BASE PRICE

Add \$1.55 per inch of stroke

Double Acting – Air Return – Front Nose Mounting
Standard Stroke Lengths:
 ½", 1", 1½", 2", 2½", 3", 4", 5", 6"
 Maximum Stroke 12"
Option Accessory:
 D-129 Mounting Bracket
Base Weight : .21
Adder Per Inch of Stroke: .03



NR-04-DXP

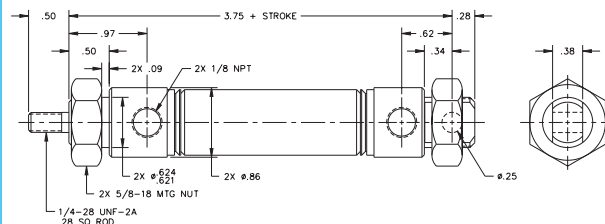


\$28.60

BASE PRICE


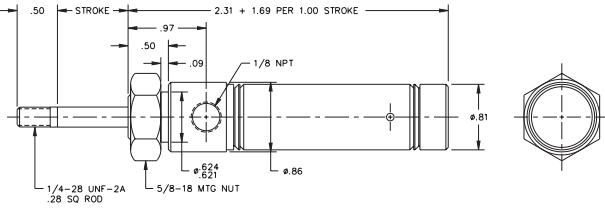

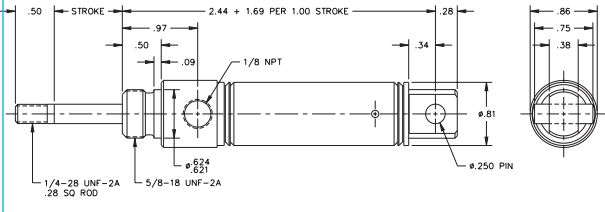

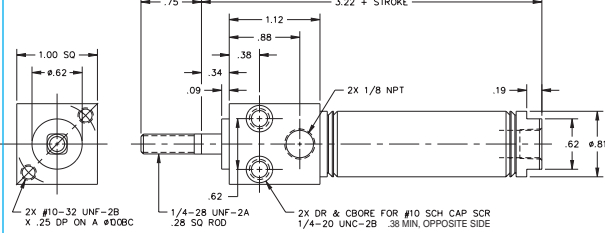

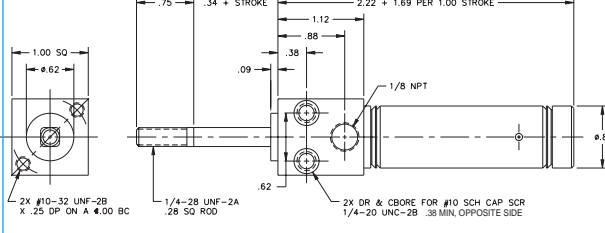

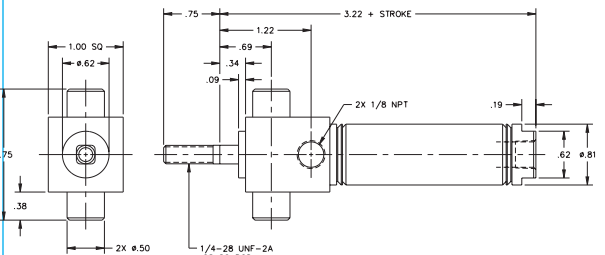
Add \$1.55 per inch of stroke

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



3/4" Bore Non-rotating Air Cylinders

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

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
NR-04  -R \$24.30 BASE PRICE Add \$2.05 per inch of stroke	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	
NR-04  -RP \$31.40 BASE PRICE Add \$2.05 per inch of stroke	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	
BFNR-04  -D \$36.35 BASE PRICE Add \$1.55 per inch of stroke	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 \$39.15 BASE PRICE Add \$2.05 per inch of stroke	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	
BFTNR-04  -D \$47.95 BASE PRICE Add \$1.55 per inch of stroke	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	

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

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

☐ Enter Stroke Length as 3rd Digit

OPTIONS

NO CHARGE:

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

REVERSE ACTING BUMPERS (B)

- \$2.60 additional
- Add .062 to overall length

DOUBLE ACTING BUMPERS (B)

- \$3.65 additional
- Add .125 to overall length

MOLYCOATED BODY (F)

- Add \$2.30 per inch of stroke

EXTRA EXTENSION (EE)

- Add \$0.80 per inch of extension


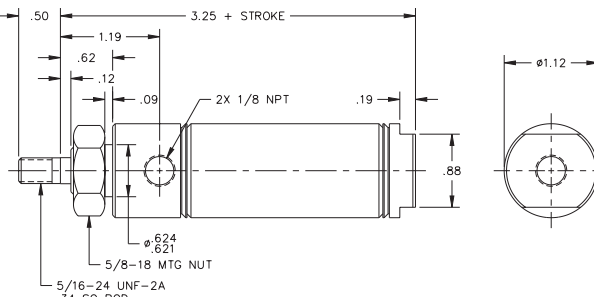

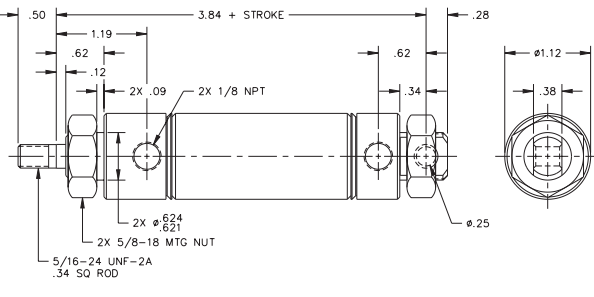

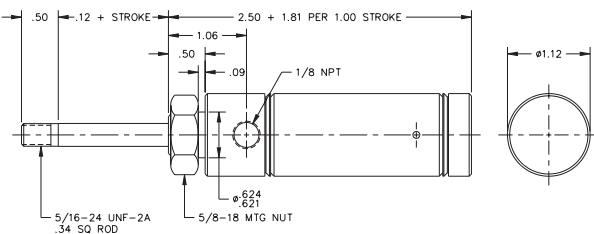
MAGNET (prefix M) - Add \$10.45

- Reverse acting add .125" to overall length
- Must specify track(s) for use with miniature position sensing (T2, T3, T4) – add \$2.50 per track. See page 142 for details.

HIGH TEMPERATURE SEALS (V)


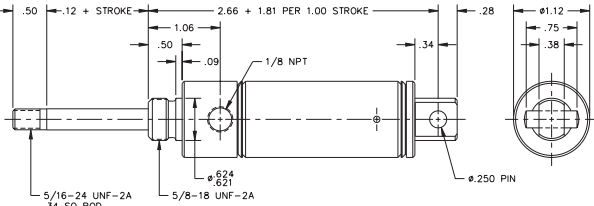

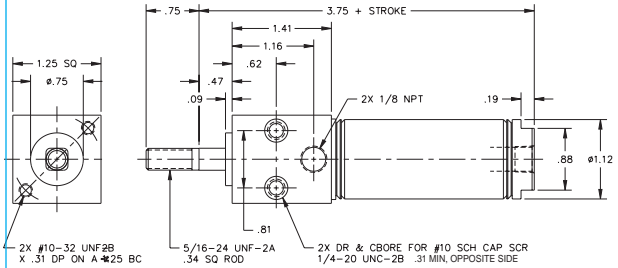

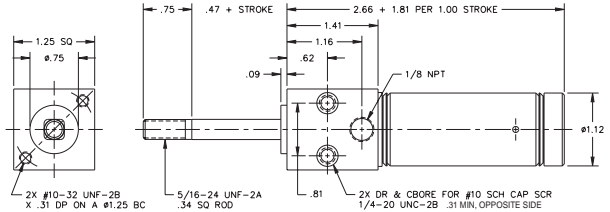

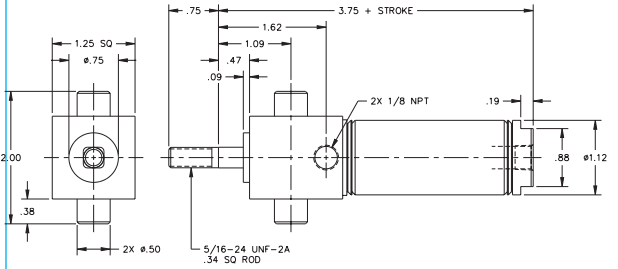
Temperature Range : 0° to 400°F (-18° to 205°C)

- Reverse acting, add \$7.40
- Double acting, add \$11.40

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
NR-09□-D  \$25.00 BASE PRICE Add \$1.55 per inch of stroke	Double Acting – Air Return – Front Nose Mounting Standard Stroke Lengths: ½", 1", 1½", 2", 2½", 3", 4", 5", 6" Maximum Stroke 12" Option Accessory: D-129 Mounting Bracket Base Weight : .33 Adder Per Inch of Stroke: .05	
NR-09□-DXP  \$33.95 BASE PRICE Add \$1.55 per inch of stroke	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  \$27.15 BASE PRICE Add \$2.55 per inch of stroke	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	

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

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

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
NR-09  \$32.25 BASE PRICE Add \$2.55 per inch of stroke	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	
BFNR-09  \$40.50 BASE PRICE Add \$1.55 per inch of stroke	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  \$44.35 BASE PRICE Add \$2.55 per inch of stroke	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	
BFTNR-09  \$49.30 BASE PRICE Add \$1.55 per inch of stroke	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	

Flow Controls	Alignment Couplers	Original Line II Cylinders	Original Line Cylinders	Cushion Cylinders	MRS Cylinders	Non-rotating Cylinders	PC Cylinders	Z Line Cylinders	500 Hydraulic Cylinders	Hole Punchers Air Reservoirs	Position Sensing Switches
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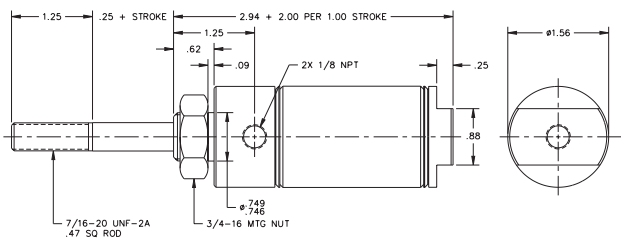

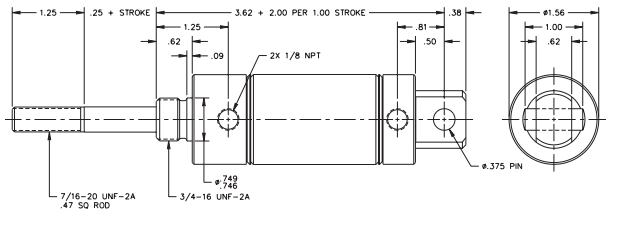

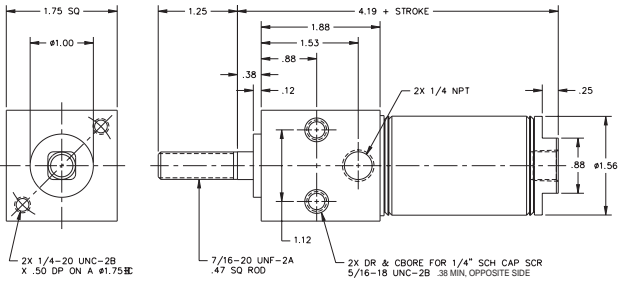

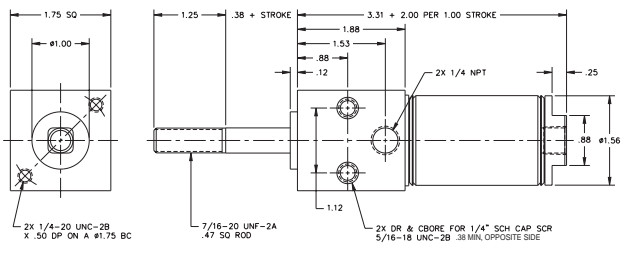

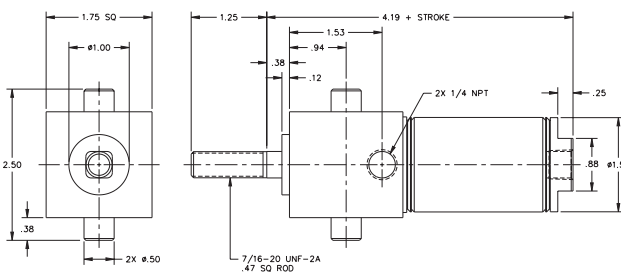
- ☐
- Enter Stroke Length as 3rd Digit

- *Reverse acting, add \$8.65*
- *Double acting, add \$12.55*

All prices are F.O.B. Monee, Illinois and are subject to change without notice

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

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

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
NR-17  \$44.70 BASE PRICE Add \$3.65 per inch of stroke	Reverse Single Acting – Pull Type – Rod Normally Extended Spring Return – Spring force 8.5 lbs. relaxed, 17 lbs. 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	
NR-17  \$50.95 BASE PRICE Add \$3.65 per inch of stroke	Reverse Single Acting – Pivot and Pull Type – Rod Normally Extended – Spring Return – Spring Force 8.5 lbs. relaxed, 17 lbs. 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	
BFNR-17  \$64.10 BASE PRICE Add \$2.35 per inch of stroke	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  \$66.55 BASE PRICE Add \$3.65 per inch of stroke	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	
BFTNR-17  \$73.80 BASE PRICE Add \$2.35 per inch of stroke	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	

2" Bore Non-rotating Air Cylinders

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

☐ Enter Stroke Length as 3rd Digit

OPTIONS

NO CHARGE:

- MAGNALUBE® G (G)
- PORTS ROTATED (K)
- SIDE PORTED REAR HEAD (Q)

REVERSE ACTING BUMPERS (B)

- \$3.35 additional
- Add .062 to overall length

DOUBLE ACTING BUMPERS (B)

- \$5.65 additional
- Add .125 to overall length

MOLYCOATED BODY (F)

- Add \$2.30 per inch of stroke

EXTRA EXTENSION (EE)

- Add \$1.35 per inch of extension

MAGNET (prefix M) – Add \$14.65

- Reverse acting add .125" to overall length
- Must specify track(s) for use with miniature position sensing (T2, T3, T4) – add \$2.50 per track. See page 142 for details.

HIGH TEMPERATURE SEALS (V)

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

- Reverse acting, add \$12.15
- Double acting, add \$16.35

MODEL/PRICE

DESCRIPTION/WEIGHT (lbs.)

DIMENSIONS

NR-31-D

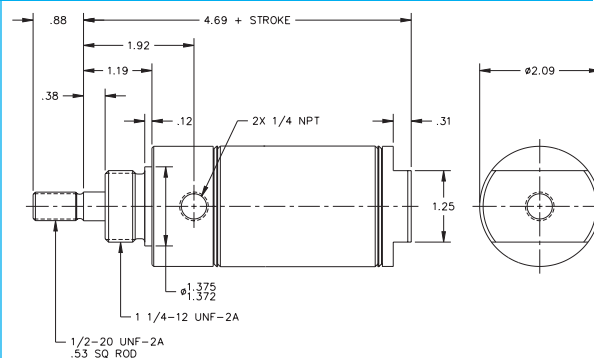


\$66.05

BASE PRICE

Add \$2.70 per inch of stroke

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

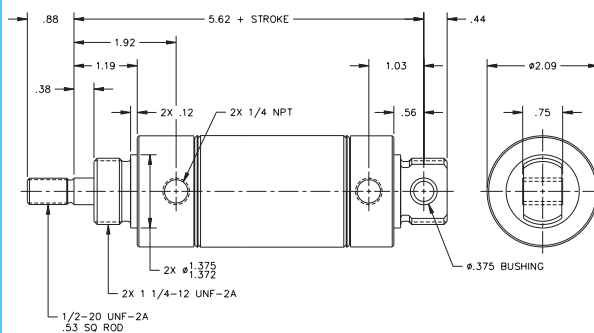


\$79.20

BASE PRICE


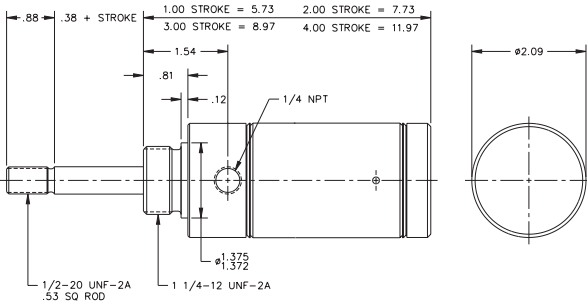

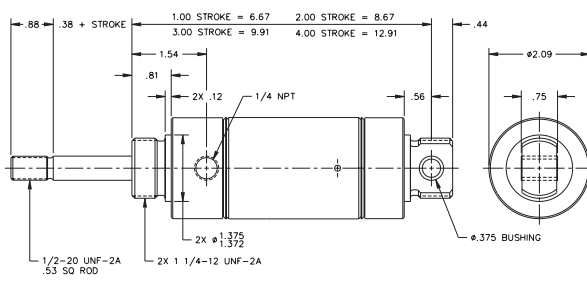
Add \$2.70 per inch of stroke

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



2" Bore Non-rotating Air Cylinders

2" Bore Non-rotating Air Cylinders (continued)

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
NR-31□-R  \$79.35 BASE PRICE Add \$5.05 per inch of stroke	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	 <p>Technical drawing of the NR-31□-R cylinder. The side view shows a front nose mounting. Dimensions include: .88" (total length), .38" + STROKE (rod extension), 1.54" (mounting bracket length), .81" (rod diameter), .12" (rod end distance), 1/4 NPT (thread), 1.375" (rod diameter), 1.372" (rod diameter), 1/2-20 UNF-2A .53 SQ ROD (rod thread), 1 1/4-12 UNF-2A (mounting nut thread). The end view shows a 2.09" diameter.</p>
NR-31□-RP  \$86.85 BASE PRICE Add \$5.05 per inch of stroke	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	 <p>Technical drawing of the NR-31□-RP cylinder. The side view shows a rear pivot mounting. Dimensions include: .88" (total length), .38" + STROKE (rod extension), 1.54" (mounting bracket length), .81" (rod diameter), .12" (rod end distance), 1/4 NPT (thread), 1.375" (rod diameter), 1.372" (rod diameter), 1/2-20 UNF-2A .53 SQ ROD (rod thread), 2X 1 1/4-12 UNF-2A (mounting nut thread), .56" (pivot bracket length), .44" (pivot bracket length), .75" (pivot bracket length), 2X #1.375 (pivot bracket length), #.375 BUSHING (pivot bracket bushing). The end view shows a 2.09" diameter.</p>

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

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

☐ Enter Stroke Length as 3rd Digit

OPTIONS

NO CHARGE:

- MAGNALUBE® G (G)
- PORTS ROTATED (K)
- SIDE PORTED REAR HEAD (Q)

DOUBLE ACTING BUMPERS (B)

- \$5.65 additional
- Add .125 to overall length

MOLYCOATED BODY (F)

- Add \$2.30 per inch of stroke

EXTRA EXTENSION (EE)


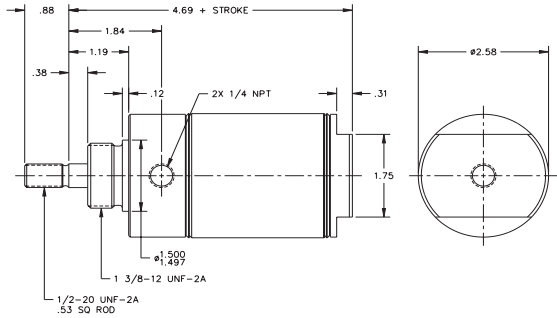

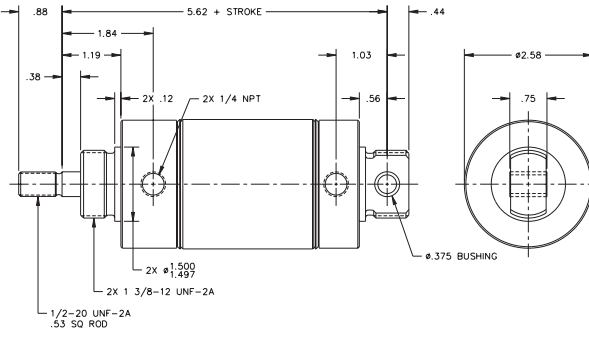
- Add \$1.50 per inch of extension

MAGNET (prefix M) – Add \$14.65

- Must specify track(s) for use with miniature position sensing (T2, T3, T4) – add \$2.50 per track. See page 142 for details.

HIGH TEMPERATURE SEALS (V)

- Temperature Range : 0° to 400°F (-18° to 205°C)
- Double acting, add \$16.35

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
NR-50-D  \$94.80 BASE PRICE Add \$3.00 per inch of stroke	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  \$105.55 BASE PRICE Add \$3.00 per inch of stroke	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 –

- For 9/16" bore, see page 34.
- For 3/4" bore, see page 42.
- For 1-1/16" bore, see page 54.
- For 1-1/2" bore, see page 67.
- For 2" bore, see page 74.
- For 2-1/2" bore, see page 76.

PC Cylinder



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

How to Order

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

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

PC - 09 6 - DXP W

Delrin End Cap Cylinder	Bore Size		Standard Stroke Lengths		Mounting		Options																					
	02	9/16"	All models: 1/2", 1", 1-1/2", 2", 2-1/2", 3", 4", 5", 6"		D	Nose Mount	B	Bumpers																				
	04	3/4"	DXP & DXDE models: 7", 8", 9", 10", 11", 12"		DXP	Universal Mount	C	Air Cushions, both ends																				
	09	1-1/16"			DXDE	Double Ended Rod	C1	Air Cushion, front end only																				
	17	1-1/2"	Consult your local distributor for price and availability of nonstandard strokes				C2	Air Cushion, rear head only																				
31	2"					E	Non-Lube Service																					
<div> <div>Approximate Power Factors</div> <table> <tr> <td>9/16"</td> <td>=</td> <td>0.2</td> <td rowspan="5">For example, a PC-096-DXPW will exert a force of 0.9 times the air line pressure; a PC-173-D will exert a force of 1.7 times the air pressure, etc.</td> </tr> <tr> <td>3/4"</td> <td>=</td> <td>0.4</td> </tr> <tr> <td>1-1/16"</td> <td>=</td> <td>0.9</td> </tr> <tr> <td>1-1/2"</td> <td>=</td> <td>1.7</td> </tr> <tr> <td>2"</td> <td>=</td> <td>3.1</td> </tr> </table> </div>									9/16"	=	0.2	For example, a PC-096-DXPW will exert a force of 0.9 times the air line pressure; a PC-173-D will exert a force of 1.7 times the air pressure, etc.	3/4"	=	0.4	1-1/16"	=	0.9	1-1/2"	=	1.7	2"	=	3.1				
9/16"	=	0.2	For example, a PC-096-DXPW will exert a force of 0.9 times the air line pressure; a PC-173-D will exert a force of 1.7 times the air pressure, etc.																									
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1-1/2"	=	1.7																										
2"	=	3.1																										
<div> <div>Delrin is a registered trademark of DuPont.</div> <div>* For detailed information regarding properties of Delrin, call Du Pont (800) 441-0575.</div> </div>																												
<div> <div>Options</div> <table> <tr> <td>EEEX.XX</td> <td>Extra Extension</td> </tr> <tr> <td>F</td> <td>Molycoated Body</td> </tr> <tr> <td>G</td> <td>Magnalube® G</td> </tr> <tr> <td>K</td> <td>Pivot 90° (DXP model only)</td> </tr> <tr> <td>M</td> <td>Magnetic Piston</td> </tr> <tr> <td>NT</td> <td>No Thread</td> </tr> <tr> <td>Q</td> <td>Side Ported Rear Head</td> </tr> <tr> <td>T</td> <td>Switch Track (T2,T3 or T4, see pg 142)</td> </tr> <tr> <td>V</td> <td>Fluoroelastomer Seals (for compatibility only)</td> </tr> <tr> <td>W</td> <td>Rod Wiper (not available for 9/16" bore)</td> </tr> </table> </div>									EEEX.XX	Extra Extension	F	Molycoated Body	G	Magnalube® G	K	Pivot 90° (DXP model only)	M	Magnetic Piston	NT	No Thread	Q	Side Ported Rear Head	T	Switch Track (T2,T3 or T4, see pg 142)	V	Fluoroelastomer Seals (for compatibility only)	W	Rod Wiper (not available for 9/16" bore)
EEEX.XX	Extra Extension																											
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V	Fluoroelastomer Seals (for compatibility only)																											
W	Rod Wiper (not available for 9/16" bore)																											

All prices are F.O.B. Monee, Illinois and are subject to change without notice.

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Delrin is a registered trademark of DuPont.

* For detailed information regarding properties of Delrin, call Du Pont (800) 441-0575.

List Prices

Bore	Mounting		Stroke Adder*	Options											
	D	DXP		B Bumpers	C	C1 or C2	C with V D & DXP	C1V or C2V** D & DXP	EE Extra Extension per inch	F Molycoated Body per inch	K Pivot 90° (DXP only)	M Magnetic Piston	T Switch Track (T2,T3,T4)	V Fluoro-elastomer Seals	W Rod Wiper
9/16" (02)	\$27.15	\$28.95	\$1.35	\$3.65	N/A	N/A	N/A	N/A	\$.70	\$2.30	N/C	\$8.40	\$2.50 per Track	\$9.50	N/A
3/4" (04)	\$28.85	\$30.95	\$1.35	\$3.65	\$13.80	\$6.90	\$29.35	\$22.45	\$.70	\$2.30		\$8.40		\$9.50	\$2.50
1-1/16" (09)	\$30.35	\$32.85	\$1.35	\$3.65	\$15.20	\$7.60	\$33.10	\$25.50	\$.70	\$2.30		\$10.45		\$11.40	\$2.50
1-1/2" (17)	\$38.80	\$42.50	\$2.10	\$4.40	\$17.70	\$8.85	\$36.70	\$27.85	\$1.05	\$2.30		\$12.55		\$12.55	\$2.50
2" (31)	\$60.85	\$65.80	\$2.30	\$5.65	\$28.80	\$14.40	\$56.70	\$42.30	\$1.15	\$2.30		\$14.65		\$16.10	\$2.50

Bore	Mounting	Stroke Adder*	Options										
	DXDE		B Bumpers	C	C with V**	C1V	EE Extra Extension per inch	F Molycoated Body per inch	M Magnetic Piston	T Switch Track (T2,T3,T4)	V Fluoro-elastomer Seals	W Rod Wiper	
9/16" (02)	\$37.95	\$1.80	\$3.65	N/A	N/A	N/A	\$.90	\$2.30	\$8.40	\$2.50 per Track	\$12.55	N/A	
3/4" (04)	\$42.45	\$1.80	\$3.65	\$13.80	\$32.65	\$25.45	\$.90	\$2.30	\$8.40		\$12.55	\$5.00	
1-1/16" (09)	\$44.80	\$1.80	\$3.65	\$15.20	\$36.00	\$28.40	\$.90	\$2.30	\$10.45		\$14.45	\$5.00	
1-1/2" (17)	\$58.65	\$3.35	\$4.40	\$17.70	\$42.10	\$33.25	\$1.70	\$2.30	\$12.55		\$16.10	\$5.00	
2" (31)	\$85.35	\$3.45	\$5.65	\$28.80	\$61.65	\$47.25	\$1.75	\$2.30	\$14.65		\$21.30	\$5.00	

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

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

No charge Option - G, NT, Q

NOTE: See Original Line portion of the catalog for option E pricing.

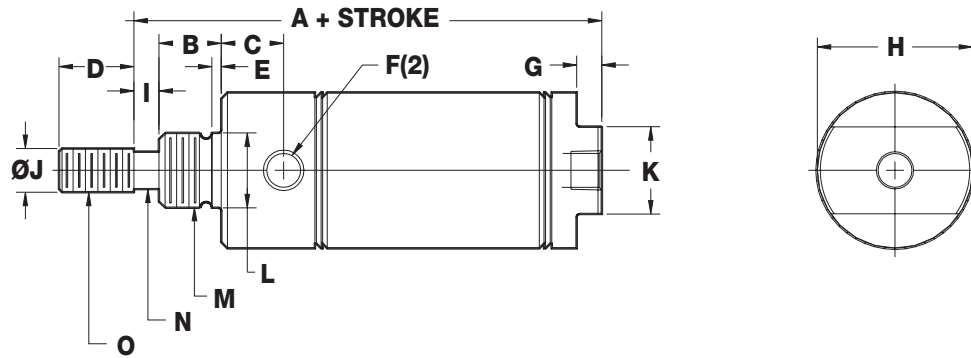
Stainless Steel Accessory Prices

Bore	Rod End Clevis		Mounting Nut	
	Model	Price	Model	Price
9/16" (02)	D-850-SS	\$16.20	D-154-SS	\$.85
3/4" (04)	D-54565-SS	\$17.90	D-9-SS	\$1.25
1-1/16" (09)	D-54564-SS	\$20.30	D-9-SS	\$1.25
1-1/2" (17)	D-54562-SS	\$24.95	D-1331-SS	\$2.10
2" (31)	D-54563-SS	\$29.50	D-508-SS	\$4.50

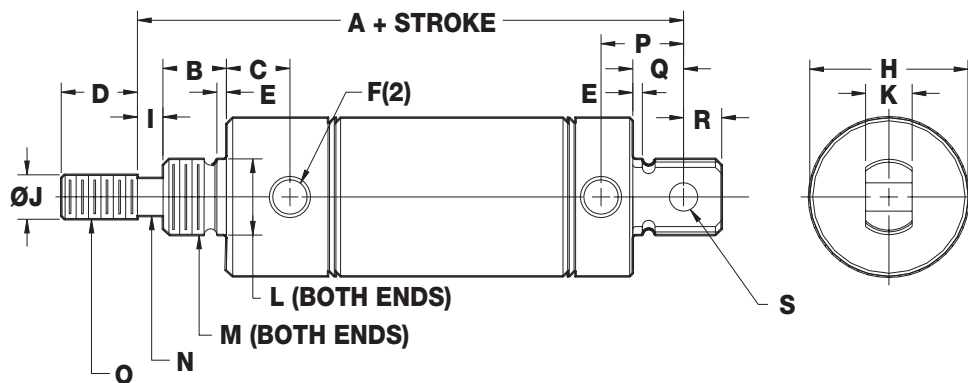
Bore	Foot Bracket		Pivot Bracket	
	Model	Price	Model	Price
9/16" (02)	D-770-SS	\$4.15	D-55202-SS	\$11.40
3/4" (04)	D-129-SS	\$4.55	D-55203-SS	\$13.85
1-1/16" (09)	D-129-SS	\$4.55	D-55203-SS	\$13.85
1-1/2" (17)	D-61288-SS	\$9.50	D-55204-SS	\$17.25
2" (31)	D-615-SS	\$20.35	D-55205-SS	\$21.50

Dimensions

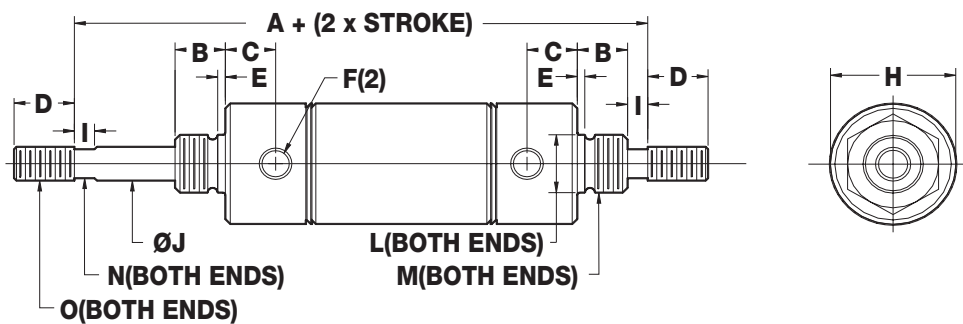
D Mounting Style



DXP Mounting Style



DXDE Mounting



Dimensions

D Mounting Style

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

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

DXP Mounting Style

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

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

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

DXDE Mounting

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

Magnetic Piston Length Adder: 0.250"

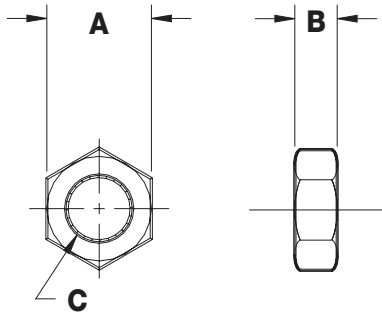
Bumper Length Adder

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

***For DXDE model, add 0.500"**

Dimensions

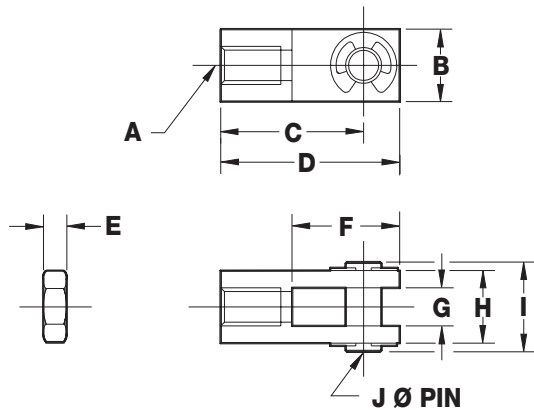
Stainless Steel Mounting Nut*



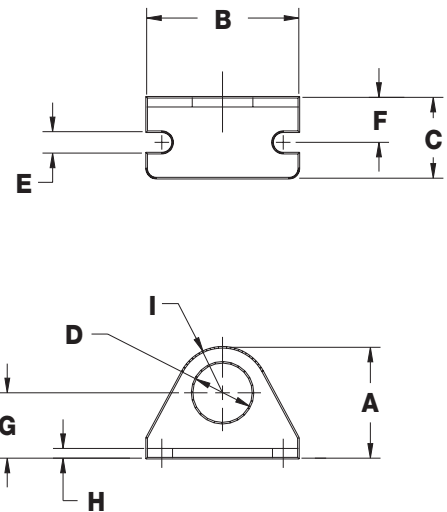
Bore	Model	A	B	C
9/16" (02)	D-154-SS	0.69	0.25	7/16-20
3/4" (04)	D-9-SS	0.94	0.38	5/8-18
1-1/16" (09)	D-9-SS	0.94	0.38	5/8-18
1-1/2" (17)	D-1331-SS	1.50	0.55	1-14
2" (31)	D-508-SS	1.88	0.50	1-1/4-12

*See page 117 for torque specifications

Stainless Steel Rod End Clevis (includes nut)



Stainless Steel Foot Bracket



Stainless Steel Rod End Clevis (includes nut)

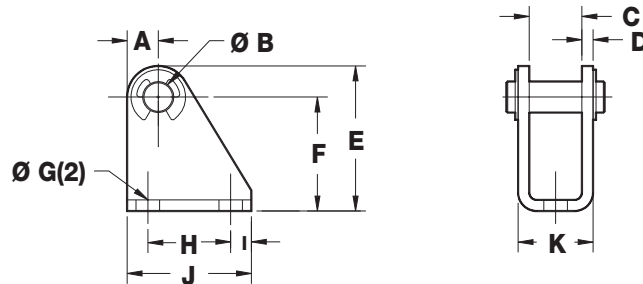
Bore	Model	A	B	C	D	E	F	G	H	I	J
9/16" (02)	D-850-SS	#10-32	0.38	0.75	0.94	0.13	0.56	0.19	0.38	0.56	0.19
3/4" (04)	D-54565-SS	1/4-28	0.50	0.94	1.19	0.16	0.69	0.25	0.50	0.69	0.25
1-1/16" (09)	D-54564-SS	5/16-24	0.50	0.94	1.19	0.19	0.69	0.25	0.50	0.69	0.25
1-1/2" (17)	D-54562-SS	7/16-20	0.75	1.31	1.69	0.25	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
9/16" (02)	D-770-SS	0.84	1.38	0.69	0.44	0.19	0.38	0.56	0.09	0.38
3/4" (04)	D-129-SS	0.14	1.88	1.00	0.63	0.27	0.56	0.81	0.12	0.56
1-1/16" (09)	D-129-SS	0.14	1.88	1.00	0.63	0.27	0.56	0.81	0.12	0.56
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
2" (31)	D-615-SS	2.50	3.13	1.63	1.38	0.34	1.00	1.50	0.25	1.00

Dimensions

Stainless Steel Pivot Bracket



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

Specifications

Pressure Rating: 100 psi (Air)

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

Delrin End Caps

304 Stainless Steel Body

303 Stainless Steel Rod

Anodized Aluminum Alloy Piston

Options: Buna N Bumpers

Polyurethane Wiper

Fluoroelastomer Seals (for compatibility only,
not high temperature)

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

Sintered bronze
pivot bushing


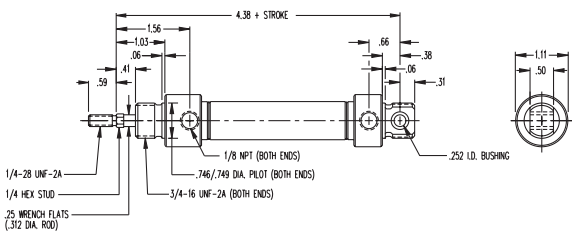

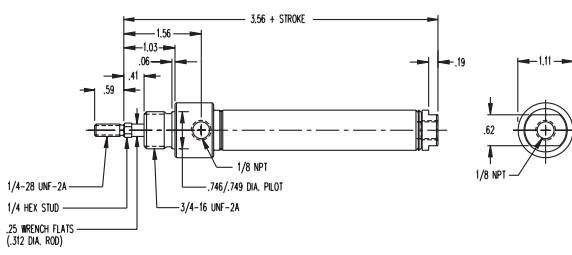


118

Z Line Air Cylinders


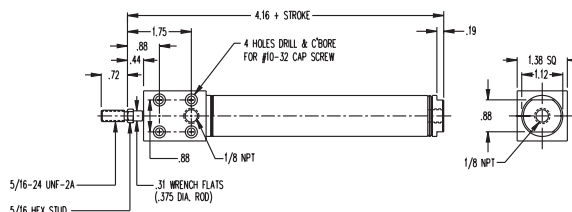

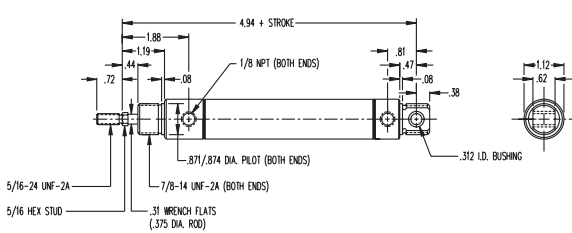
3/4" Bore Z Line Air Cylinders (continued)

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

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
04□-DUZ  \$31.80 BASE PRICE Add \$1.45 per inch of stroke	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  \$28.50 BASE PRICE Add \$1.45 per inch of stroke	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	

1-1/16" Bore Z Line Air Cylinders


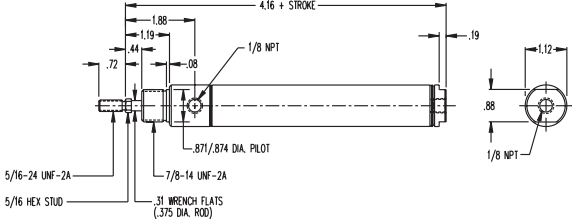
Push Force = .886 x psi • Pull Force = .776 x psi

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
09□-DBZ  \$49.15 BASE PRICE Add \$1.90 per inch of stroke	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  \$37.75 BASE PRICE Add \$1.90 per inch of stroke	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	

Z Line Air Cylinders


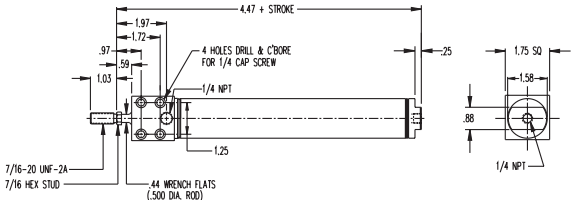

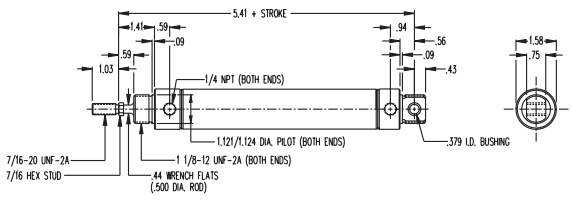

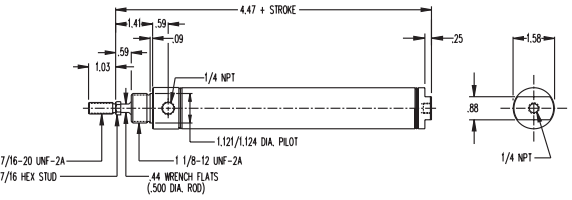
1-1/16" Bore Z Line Air Cylinders (continued)

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

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
09□-DZ  \$33.45 BASE PRICE Add \$1.90 per inch of stroke	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


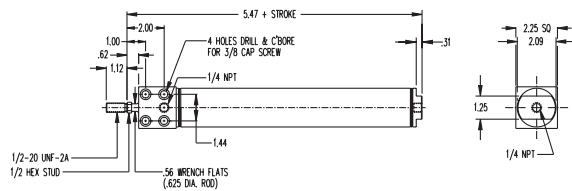

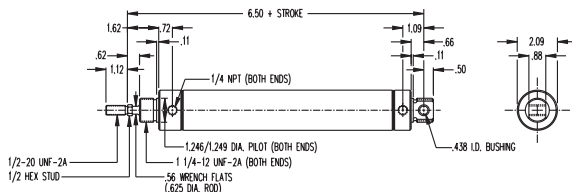

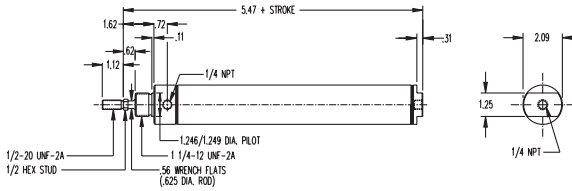
Push Force = 1.77 x psi • Pull Force = 1.57 x psi

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
17□-DBZ  \$67.95 BASE PRICE Add \$2.20 per inch of stroke	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  \$57.45 BASE PRICE Add \$2.20 per inch of stroke	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  \$52.50 BASE PRICE Add \$2.20 per inch of stroke	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	

Z Line Air Cylinders

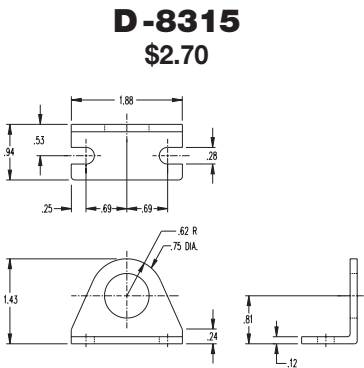
2" Bore Z Line Air Cylinders

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

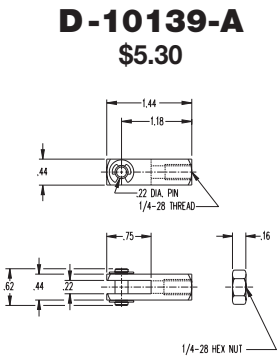
MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
31□-DBZ  \$89.50 BASE PRICE Add \$2.45 per inch of stroke	Block Mount – Double Acting – Four bolt holes are provided for positive mounting to a base. Standard Stroke Lengths: 1", 2", 3", 4", 5", 6" Maximum Stroke – 12" Base Weight: 2.03 Adder Per Inch of Stroke: .15	
31□-DUZ  \$75.20 BASE PRICE Add \$2.45 per inch of stroke	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  \$68.90 BASE PRICE Add \$2.45 per inch of stroke	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	

Z Line Accessories

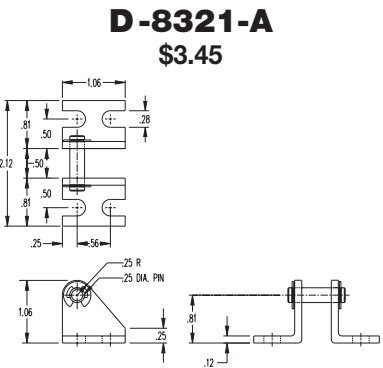
3/4" Bore Accessories



Mounting Bracket



Rod Clevis



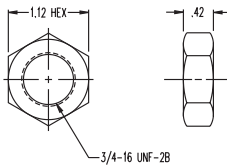
Pivot Bracket

Z Line Accessories *continued*

3/4" Bore Accessories (continued)

D-3556

\$.45

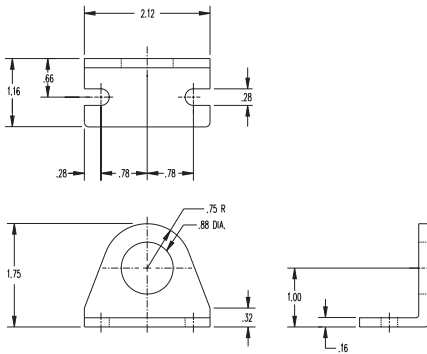


Mounting Nut

1-1/16" Bore Accessories

D-8316

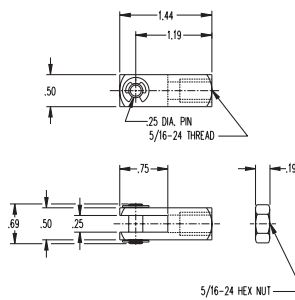
\$3.65



Mounting Bracket

D-8309-A

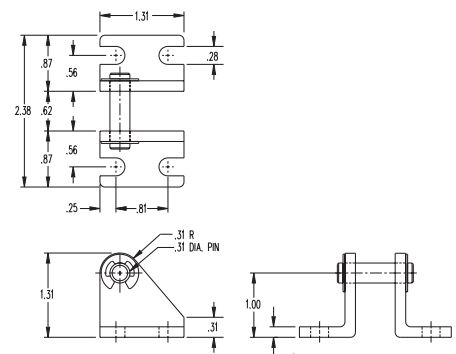
\$5.40



Rod Clevis

D-8322-A

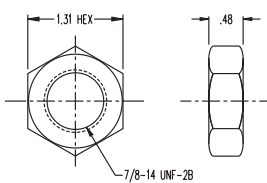
\$4.90



Pivot Bracket

D-2545

\$.80

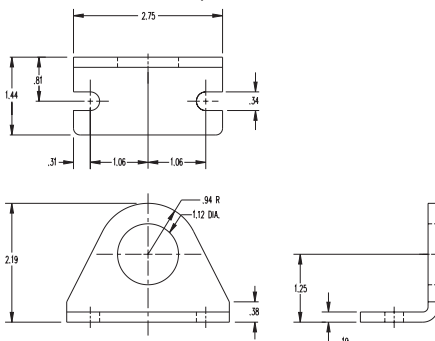


Mounting Nut

1-1/2" Bore Accessories

D-8318

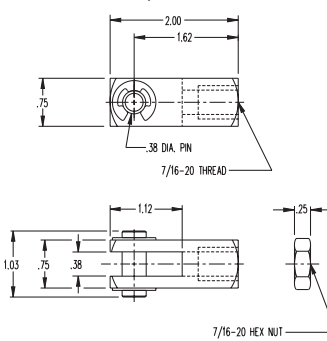
\$5.60



Mounting Bracket

D-8311-A

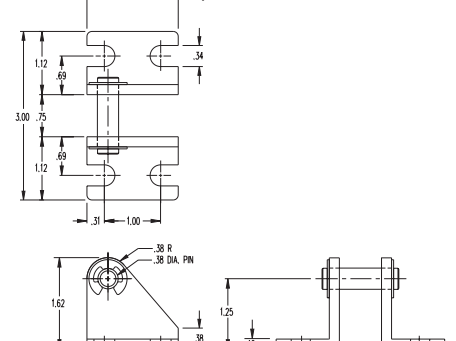
\$6.30



Rod Clevis

D-8324-A

\$7.40

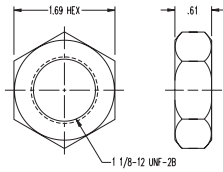


Pivot Bracket

Z Line Accessories continued

1-1/2" Bore Accessories (continued)

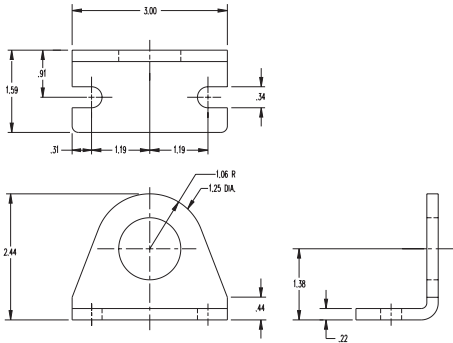
D-8484 \$2.90



Mounting Nut

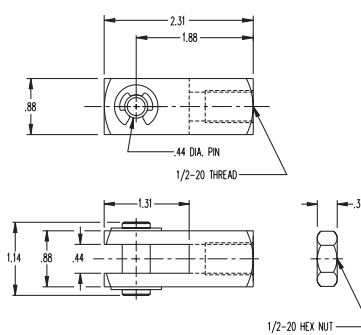
2" Bore Accessories

D-8319 \$6.15



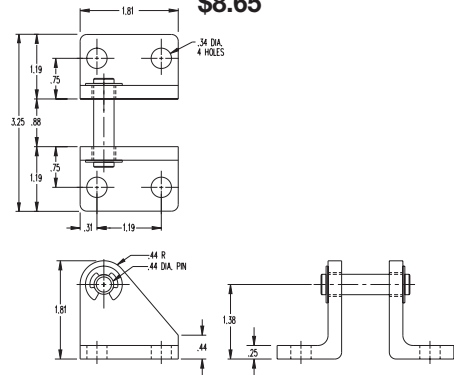
Mounting Bracket

D-8313-A \$9.05



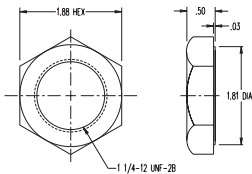
Rod Clevis

D-8325-A \$8.65



Pivot Bracket

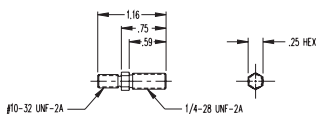
D-508 \$2.90



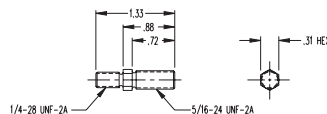
Mounting Nut

Hex-Stud

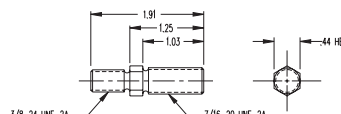
3/4" BORE D-9868 \$3.10



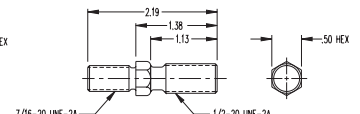
1 1/16" BORE D-6583 \$3.45



1 1/2" BORE D-6636 \$5.40

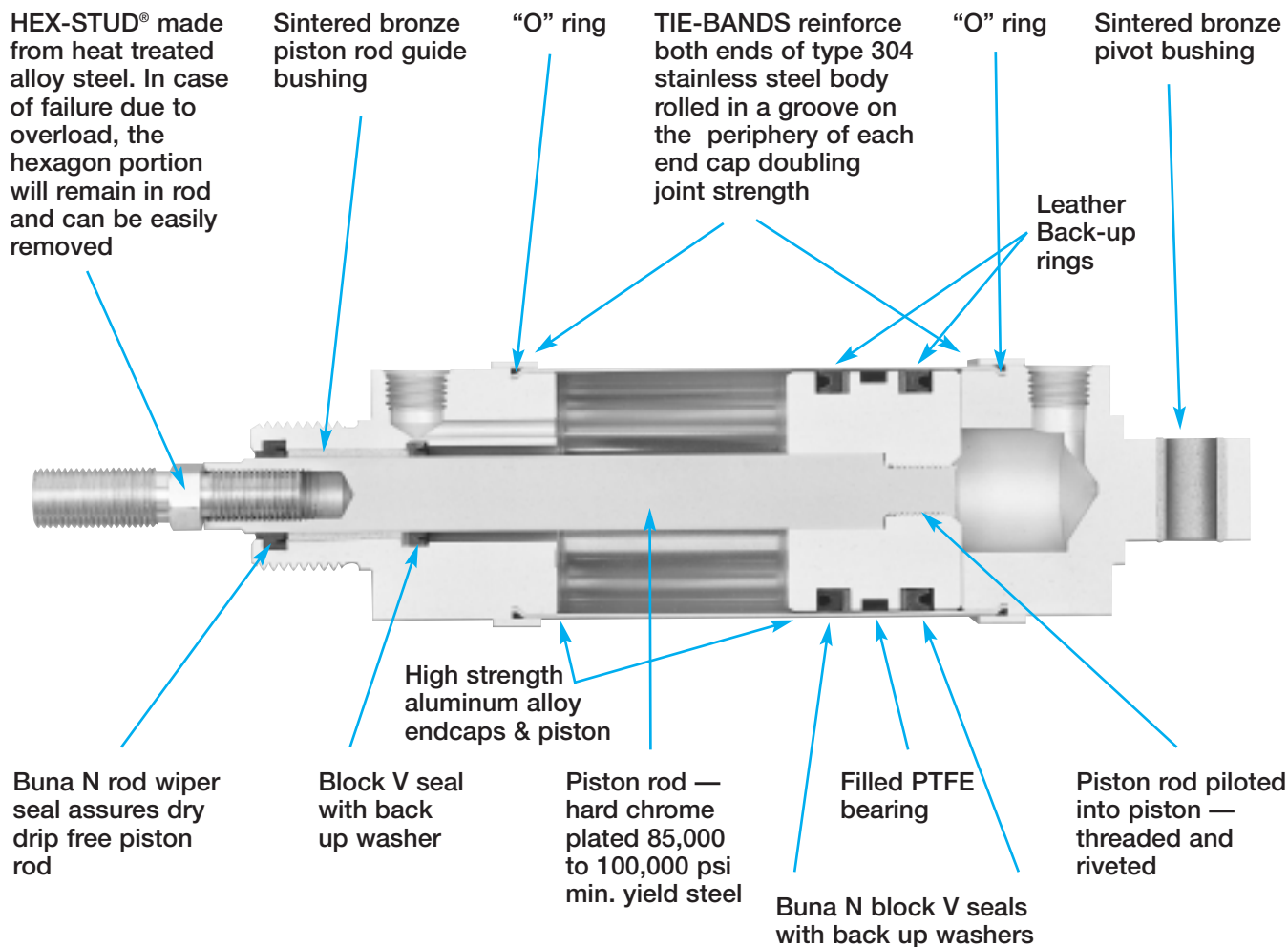


2" BORE D-6637 \$6.70





Hydraulic Cylinders



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

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

OPTIONS:

EXTRA EXTENSION (EE), PER INCH OF EXTENSION:

- 1 $\frac{1}{16}$ " Bore, add \$0.90 per inch
- 1 $\frac{1}{2}$ " Bore, add \$1.15 per inch
- 2" Bore, add \$1.35 per inch

☐ Enter Stroke Length as 3rd Digit

OPTIONS continued...

MAGNET (prefix M)

Example: HM-096-DZ

- 4" stroke or greater required
- Overall length increases by 0.25"
- 1 $\frac{1}{16}$ " Bore, add \$10.45
- 1 $\frac{1}{2}$ " Bore, add \$12.55
- 2" Bore, add \$14.65


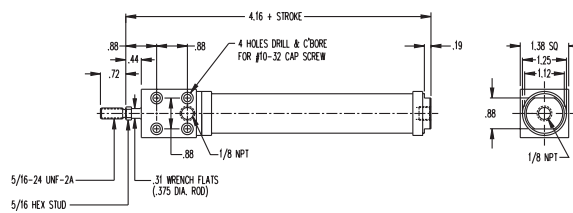

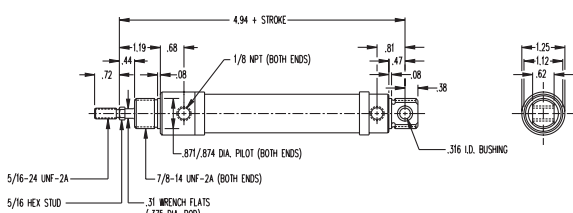

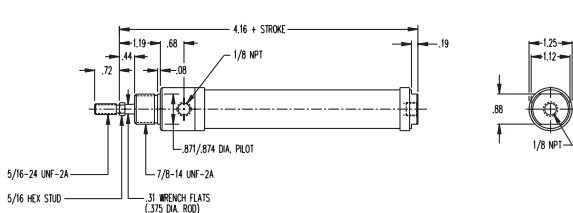
FLUOROELASTOMER SEALS (V)

- Specify for compatibility
- 1 $\frac{1}{16}$ " Bore, add \$20.00
- 1 $\frac{1}{2}$ " Bore, add \$25.00
- 2" Bore, add \$30.00

"500" Hydraulic Cylinders


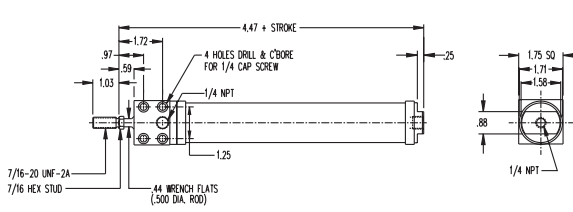
1-1/16" Bore "500" Hydraulic Cylinders

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

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
H-09□-DBZ  \$54.05 BASE PRICE Add \$1.80 per inch of stroke	Front Block Mount Standard Stroke Lengths: 1", 2", 3", 4", 5", 6" Maximum Stroke – 12" Base Weight: .57 Adder Per Inch of Stroke: .06	
H-09□-DUZ  \$48.35 BASE PRICE Add \$1.80 per inch of stroke	Universal Mount – Double End or Rear Pivot Standard Stroke Lengths: 1", 2", 3", 4", 5", 6", 7", 8", 9", 10", 11", 12" Maximum Stroke – 32" Optional Accessories: D-8316 Mounting Bracket D-8322-A Pivot Bracket D-8309-A Clevis Base Weight: .50 Adder Per Inch of Stroke: .06	
H-09□-DZ  \$44.30 BASE PRICE Add \$1.80 per inch of stroke	Nose Mount Standard Stroke Lengths: 1", 2", 3", 4", 5", 6", 7" Maximum Stroke – 12" Optional Accessory: D-8316 Mounting Bracket Base Weight: .43 Adder Per Inch of Stroke: .06	

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


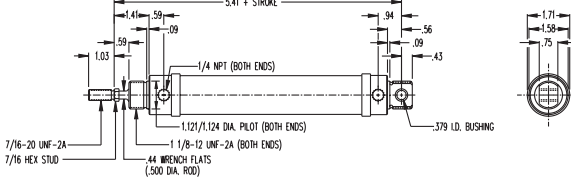

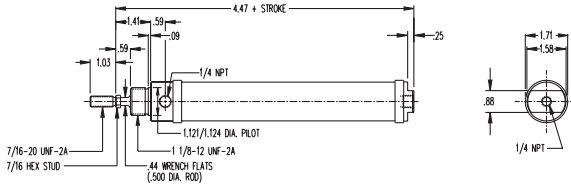
Push Force = 1.77 x psi • Pull Force = 1.57 x psi

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
H-17□-DBZ  \$78.30 BASE PRICE Add \$2.30 per inch of stroke	Front Block Mount Standard Stroke Lengths: 1", 2", 3", 4", 5", 6" Maximum Stroke – 12" Base Weight: 1.00 Adder Per Inch of Stroke: .10	

"500" Hydraulic Cylinders


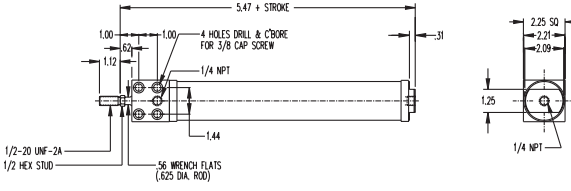

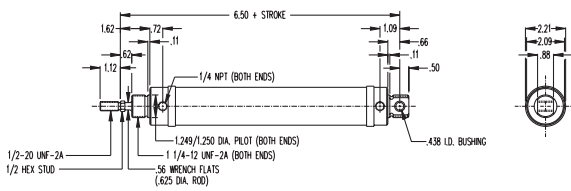
1-1/2" Bore "500" Hydraulic Cylinders (continued)

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

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
H-17□-DUZ  \$72.20 BASE PRICE Add \$2.30 per inch of stroke	Universal Mount – Double End or Rear Pivot Standard Stroke Lengths: 1", 2", 3", 4", 5", 6", 7", 8", 9", 10", 11", 12" Maximum Stroke – 32" Optional Accessories: D-8318 Mounting Bracket D-8324-A Pivot Bracket D-8311-A Clevis Base Weight: .95 Adder Per Inch of Stroke: .10	
H-17□-DZ  \$67.60 BASE PRICE Add \$2.30 per inch of stroke	Nose Mount Standard Stroke Lengths: 1", 2", 3", 4", 5", 6", 7", 8", 9", 10", 11", 12" Maximum Stroke – 12" Optional Accessory: D-8318 Mounting Bracket Base Weight: .84 Adder Per Inch of Stroke: .10	

2" Bore "500" Hydraulic Cylinders


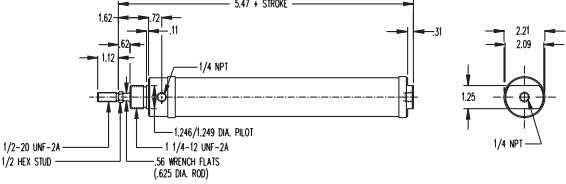
Push Force = 3.14 x psi • Pull Force = 2.83 x psi

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
H-31□-DBZ  \$102.25 BASE PRICE Add \$2.65 per inch of stroke	Front Block Mount Standard Stroke Lengths: 1", 2", 3", 4", 5", 6" Maximum Stroke – 12" Base Weight: 1.90 Adder Per Inch of Stroke: .24	
H-31□-DUZ  \$95.70 BASE PRICE Add \$2.65 per inch of stroke	Universal Mount – Double End or Rear Pivot Standard Stroke Lengths: 1", 2", 3", 4", 5", 6", 7", 8", 9", 10", 11", 12" Maximum Stroke – 32" Optional Accessories: D-8319 Mounting Bracket D-8325-A Pivot Bracket D-8313-A Clevis Base Weight: 1.75 Adder Per Inch of Stroke: .24	

"500" Hydraulic Cylinders

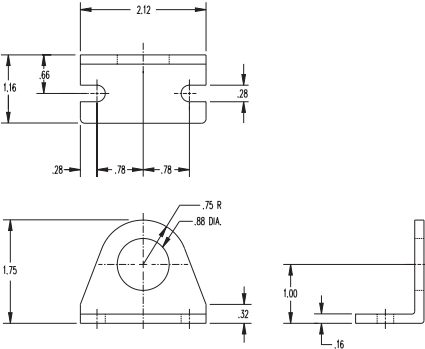
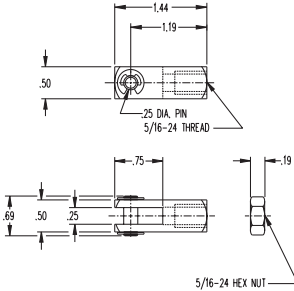
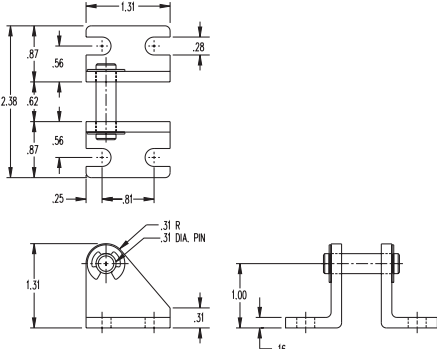
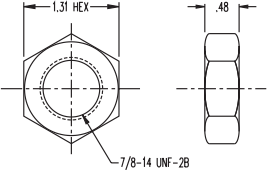
2" Bore "500" Hydraulic Cylinders (continued)

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

MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
H-31□-DZ  \$89.40 BASE PRICE Add \$2.65 per inch of stroke	Nose Mount Standard Stroke Lengths: 1", 2", 3", 4", 5", 6" Maximum Stroke – 12" Optional Accessory: D-8319 Mounting Bracket Base Weight: 1.63 Adder Per Inch of Stroke: .24	

"500" Hydraulic Cylinder Accessories

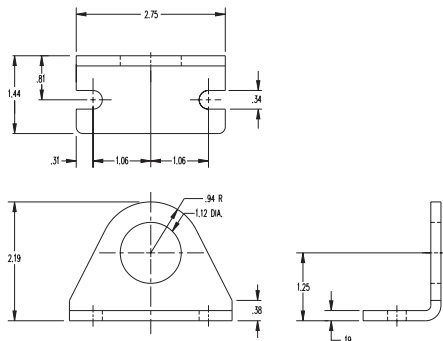
1-1/16" Bore Accessories

D-8316 \$3.65  Mounting Bracket	D-8309-A \$5.40  Rod Clevis	D-8322-A \$4.90  Pivot Bracket
D-2545 \$.80  Mounting Nut		

“500” Hydraulic Cylinder Accessories continued

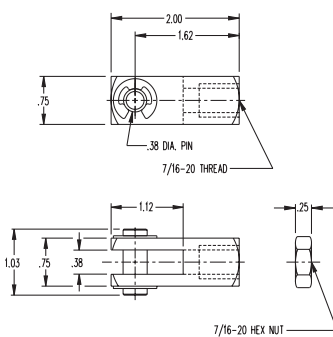
1-1/2" Bore Accessories

D-8318
\$5.60



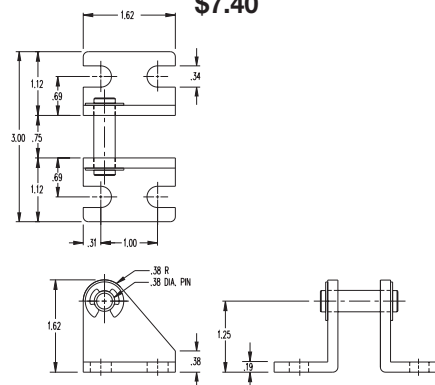
Mounting Bracket

D-8311-A
\$6.30



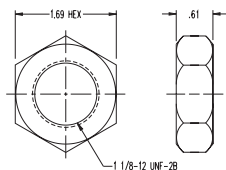
Rod Clevis

D-8324-A
\$7.40



Pivot Bracket

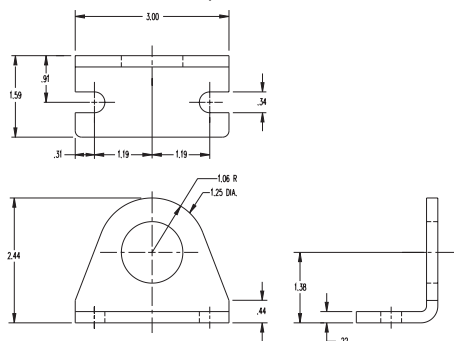
D-8484
\$2.90



Mounting Nut

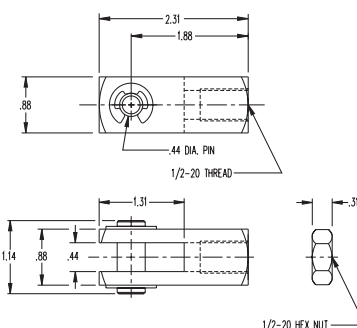
2" Bore Accessories

D-8319
\$6.15



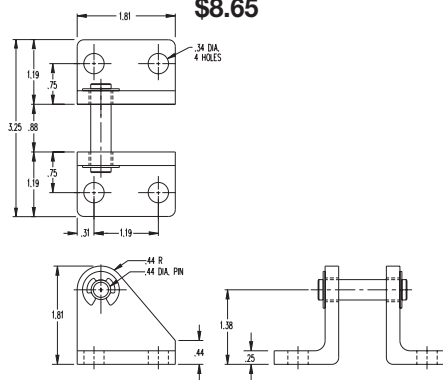
Mounting Bracket

D-8313-A
\$9.05



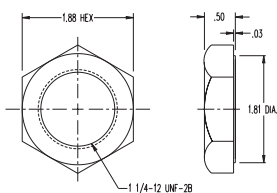
Rod Clevis

D-8325-A
\$8.65



Pivot Bracket

D-508
\$2.90

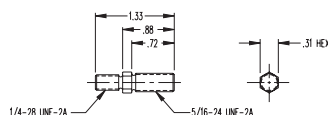


Mounting Nut

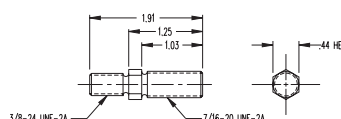
“500” Hydraulic Cylinder Accessories continued

Hex-Stud

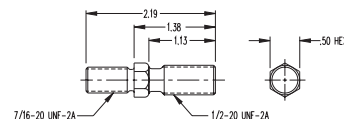
1 1/16" BORE
D-6583
\$3.45




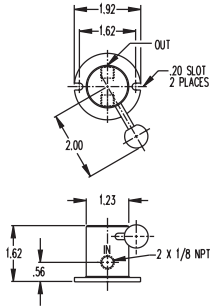

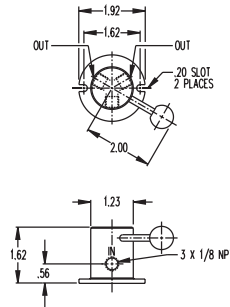
1 1/2" BORE
D-6636
\$5.40



2" BORE
D-6637
\$6.70



3 & 4 Way Disc Air Valves

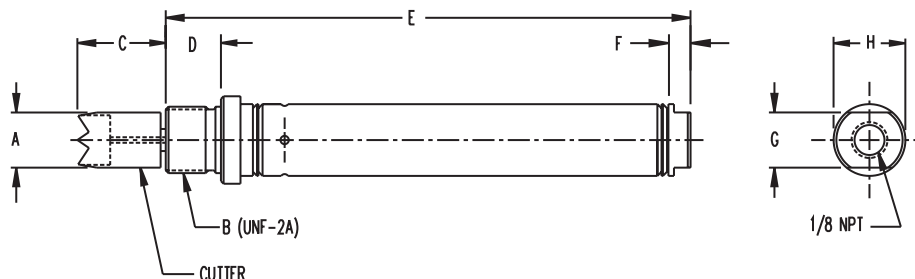
MODEL/PRICE	DESCRIPTION/WEIGHT (lbs.)	DIMENSIONS
MODEL 3MV8  \$32.30 BASE PRICE	3 Way Disc Air Valve – Operates single acting cylinders. Full 1/8" orifice – 1/8" NPT inlet and outlet ports. To operate, a precision lapped disc is rotated through 60° by means of a ball handle which will hold set position. To repair, remove handle and retaining ring. Weight: .22	
MODEL 4MV8  \$39.55 BASE PRICE	4 Way Disc Air Valve – Operates double acting cylinders. Ball handle will rotate through 120° and will hold set position – 1/8" NPT ports are located 120° apart – orifice 1/8" diameter. To repair, remove handle and retaining ring. Weight: .22	

Pneumatic Hole Puncher

Designed to punch millions of holes in plastic or other thin sheet materials 2 to 3 mils thick, the long-life BIMBA Pneumatic Hole Puncher will give you more cycles per penny. The hardened steel cutter with ground razor sharp edges is an integral part of the

cylinder. A small air jet ejects the slugs from the cutter preventing slug build up, and Elastomer Bumpers insure Cushion Quiet operation. Less than 1" in diameter, several cylinders can be closely mounted. Available in seven hole cutter sizes from 1/4" to 5/8".

This stainless steel body, single acting spring return cylinder has a 3/4" bore and 1" stroke. A nickel plated steel rod guide is threaded for easy nose mounting, and a 1/8" NPT air inlet is conveniently located in the rear head. Prelubricated with HT-99, the cylinder can be operated with ordinary shop air at pressures up to 250 psi.



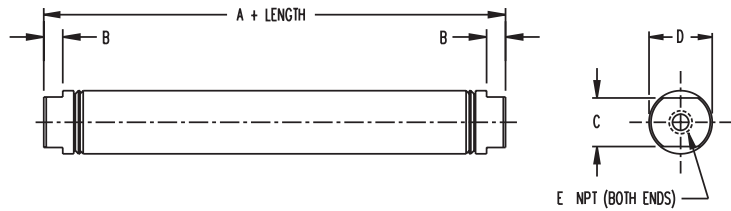
MODEL NO.	HOLE SIZE	A	B	C	D	E	F	G	H	PRICE
D-11840-A Base Weight: .18	1/4"	.250"	1/2-20	.50	.44	3.44	.19	.62	.81	\$30.00
D-9846-A* Base Weight: .19	N/A	N/A	1/2-20	.50	.44	3.44	.19	.62	.81	\$28.55
D-11811-A Base Weight: .20	5/16"	.312"	1/2-20	1.00	.44	3.44	.19	.62	.81	\$37.50
D-11618-A Base Weight: .21	3/8"	.375"	1/2-20	1.00	.44	3.44	.19	.62	.81	\$37.50
D-11998-A Base Weight: .23	7/16"	.438"	5/8-18	1.00	.50	3.50	.19	.62	.81	\$43.10
D-11999-A Base Weight: .24	1/2"	.500"	5/8-18	1.00	.50	3.50	.19	.62	.81	\$43.10
D-12107-A Base Weight: .29	9/16"	.562"	3/4-16	1.00	.63	3.63	.19	.62	.99	\$46.70
D-12108-A Base Weight: .29	5/8"	.625"	3/4-16	1.00	.63	3.63	.19	.62	.99	\$46.70

* 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.

Air Reservoirs

- Type 304 Stainless Steel Body
- Rated 200 PSI
- Aluminum Alloy Porting Ends

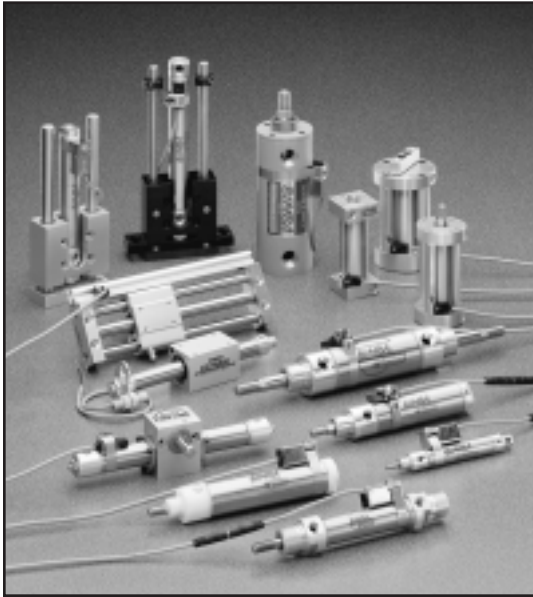
☐ Enter Stroke Length as 3rd Digit



BORE	MODEL NO.	VOL. (CU. IN.)	A	B	C	D	E	PRICE
3/4"	D-1022-A- <input type="checkbox"/> <i>Standard Lengths:</i> 1", 2", 3", 4" Maximum Length – 32" <i>Base Weight:</i> .10 <i>Adder Per Inch of Stroke:</i> .015	.39 cu. in. plus .44 per inch of length	1.938	.187	.625	.813	1/8" NPT	\$6.45 <i>BASE PRICE</i> <i>Add \$.70 per</i> <i>inch of stroke</i>
1-1/16"	D-1500-A- <input type="checkbox"/> <i>Standard Lengths:</i> 1", 2", 3", 4", 5", 6" Maximum Length – 32" <i>Base Weight:</i> .13 <i>Adder Per Inch of Stroke:</i> .025	.99 cu. in. plus .89 per inch of length	2.375	.187	.875	1.125	1/8" NPT	\$7.15 <i>BASE PRICE</i> <i>Add \$.90 per</i> <i>inch of stroke</i>
1-1/4"	D-27715-A- <input type="checkbox"/> <i>Standard Lengths:</i> 1", 2", 3", 4", 5", 6", 7", 8", 9", 10", 11", 12", 13", 14", 15", 16" Maximum Length – 32" <i>Base Weight:</i> .20 <i>Adder Per Inch of Stroke:</i> .04	.38 cu. in. plus 1.22 per inch of length	1.38	.250	.875	1.333	1/8" NPT	\$13.70 <i>BASE PRICE</i> <i>Add \$1.00 per</i> <i>inch of stroke</i>
1-1/2"	D-5096-A- <input type="checkbox"/> <i>Standard Lengths:</i> 1", 2", 3", 4", 5", 6", 7", 8", 9", 10", 11", 12", 13", 14", 15", 16" Maximum Length – 32" <i>Base Weight:</i> .30 <i>Adder Per Inch of Stroke:</i> .04	1.91 cu. in. plus 1.77 per inch of length	2.250	.250	.875	1.562	1/8" NPT	\$16.15 <i>BASE PRICE</i> <i>Add \$1.35 per</i> <i>inch of stroke</i>
2"	D-2485-A- <input type="checkbox"/> <i>Standard Lengths:</i> 1", 2", 3", 4", 5", 6", 7", 8", 9", 10", 11", 12", 13", 14", 15", 16" Maximum Length – 32" <i>Base Weight:</i> .60 <i>Adder Per Inch of Stroke:</i> .075	4.22 cu. in. plus 3.14 per inch of length	2.875	.312	1.250	2.080	1/4" NPT	\$21.05 <i>BASE PRICE</i> <i>Add \$1.60 per</i> <i>inch of stroke</i>
2-1/2"	D-11846-A- <input type="checkbox"/> <i>Standard Lengths:</i> 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 Length – 32" <i>Base Weight:</i> .90 <i>Adder Per Inch of Stroke:</i> .09	7.04 cu. in. plus 4.91 per inch of length	2.875	.312	1.750	2.610	1/4" NPT	\$33.95 <i>BASE PRICE</i> <i>Add \$2.10 per</i> <i>inch of stroke</i>
3"	D-17469-A- <input type="checkbox"/> <i>Standard Lengths:</i> 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 Length – 32" <i>Base Weight:</i> 1.7 <i>Adder Per Inch of Stroke:</i> .13	9.90 cu. in. plus 7.07 per inch of length	3.19	.312	2.00	3.125	3/8" NPT	\$44.70 <i>BASE PRICE</i> <i>Add \$2.70 per</i> <i>inch of stroke</i>

Bimba Position Sensing Switches

Switches



Bimba offers Solid State, Magnetic Reed and Magnetic Reed/Triac-type switches to meet a wide variety of customer needs. Bimba actuators and switches provide a reliable, cost-effective interface between the pneumatically-powered functions of applications and the electrical controls. They eliminate costly, time-consuming design and fabrication of independent electrical limit switch arrangements, and provide an aesthetically pleasing installation.

The switches perform the same function as conventional limit switches. They can be used as position indicators, cycle counters, or to confirm operation. They may also be used as safety devices by allowing for operation of secondary devices only when the actuator is properly positioned.

The Switch Application Selection Guide provides information on which type of switch is suitable for a particular application.

All Bimba switches are designed to sense the magnet that is used in the MRS cylinder and in other Bimba actuators that are ordered with the -M option. All are normally open switches that close when sensing the magnet. We also offer a variety of lead lengths and optional quick connect models.

Benefits of the Magnetic Reed Switch

- Compact
- Lower cost
- Easy to mount on a variety of Bimba actuators
- Able to mount several switches on one actuator
- LED available in many models for ease of positioning and troubleshooting
- Many models:
 - Low, medium and high current models, AC or DC, and triac-type switches for inductive kickback or inrush current.
 - Track- and band-mounted models
 - Choice of pigtail leads in 2 lengths or quick connect with two cable length options.

Benefits of the Solid State Switch

- Compact
- Solid state reliability — no moving parts means longer life, no contact bounce
- Easy to mount on a variety of Bimba actuators
- Able to mount several switches on one actuator
- LED for ease of positioning and troubleshooting
- Reverse polarity and overvoltage protection
- Available with pigtail leads (in 2 lengths) or quick connect (with two cable length options)
- Faster signal speeds

Switch Application Selection Guide

	Programmable Controllers	Relays	Solenoids	Indicator Lights		Motors	Time Counters
				Bulbs	Solid State		
Reed Switch	Yes	<5VA*	<5VA*	<5VA*	Yes	<5VA*	<5VA*
Triac Reed Switch**	No	Yes	Yes	Yes	No	Yes	Yes
Hall Effect Switch	Yes	<300mA	No	<300mA	Yes	No	<300mA

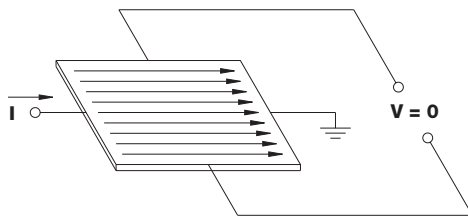
* Use resistor-capacitor protection **Minimum current = 100mA

Bimba Solid State Switch

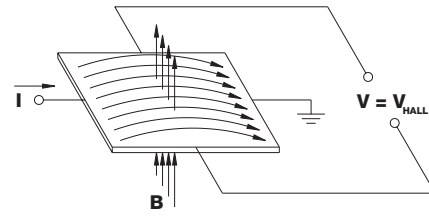
This is a three-wire, solid state device recommended for low current DC loads such as interfacing with a programmable controller. It provides compact, reliable sensing for virtually infinite life. An LED indicator light illuminates when switching occurs. Models are available in current sinking (NPN) and current sourcing (PNP) models. Either can be used for loads such as counters and solid state relays. Selection of sinking or sourcing models depends on the requirements of the programmable controller.

How it works:

In operation, a constant current is passed through the Hall sensor. When the magnet is not directly below the sensor, the current (flow of electrons) is evenly distributed across the chip. With an equal number of electrons at the chip edges, no potential difference exists at the output. ($V=0$, Fig. 1) When the magnet is directly below the sensor, the electron flow is distributed by the magnetic field to one side of the chip causing an imbalance in the electron concentration at the edges. This creates a potential difference, the Hall voltage, at the output. ($V=V_{HALL}$, Fig. 2) This Hall voltage is detected and amplified to control a switching output transistor.



PRINCIPLE OF HALL EFFECT (NO MAGNETIC FIELD)



PRINCIPLE OF HALL EFFECT (MAGNETIC FIELD PRESENT)

Sinking vs. Sourcing

Bimba offers both sinking and sourcing Solid State Switch models.

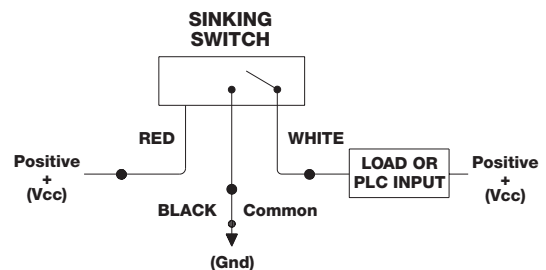
Sinking switches are applied to the **negative** side of a load. When the switch is activated, the negative (ground) is connected, completing the circuit.

Sourcing switches are applied to the **positive** side of a load. When the switch is activated, power is connected, completing the circuit.

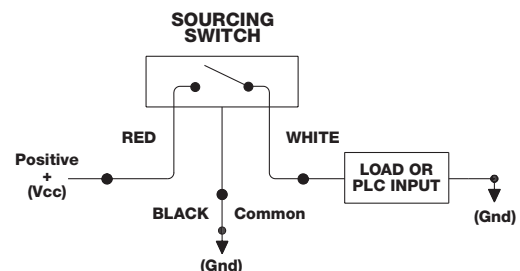
The model needed will be determined by a number of factors, including:

- Company standards.
- PLC input cards. (You may have sinking input cards available or your PLC only has a sinking type. Be aware that for some PLC manufacturers, sourcing input cards require a sinking switch or sinking input cards require a sourcing switch; check the specifications to clarify.)
- Type of circuit. PLC manufacturers typically filter input modules that use sourcing field devices and use unfiltered input modules with sinking field devices.

Typical Solid State Sinking Configuration (NPN)

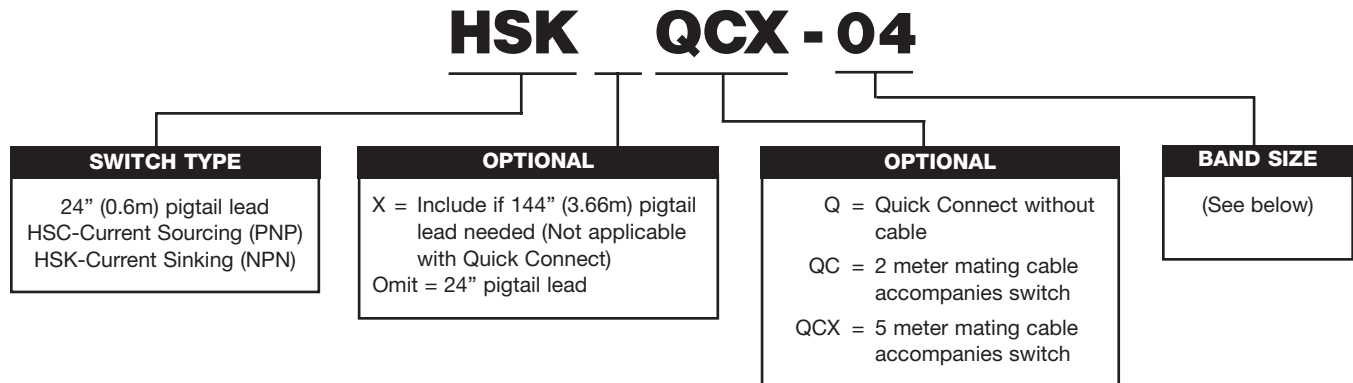


Typical Solid State Sourcing Configuration (PNP)



Bimba Solid State Switches

How to Order/List Prices



To Order Cable Connectors Separately

Base Model	Description	List Price
C4	2m - straight	\$20.00
C4X	5m - straight	30.00

Base Model	Base Model 24" (0.6m) pigtail lead*	OPTIONS			
		X 144" (3.66m) pigtail lead	Quick Connect		
			Q (no cable)	QC (2m cable)	QCX (5m cable)
HSC - <input type="checkbox"/>	\$22.45	\$29.85	\$44.10	\$65.10	\$75.60
HSK - <input type="checkbox"/>					

* Bands are included in the price.

Specifying Band Size

Many of the Bimba Solid State switches are band-mounted to the actuator. For all band-style switches, a pre-sized band is ordered by adding a bore size designation as the last two or three digits of the basic switch model number. For example, the current sourcing Solid State Switch model for a 1-1/16" bore MRS cylinder would be HSC-09.

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

Electrical Specifications

Solid State Switches (3 wire switches)

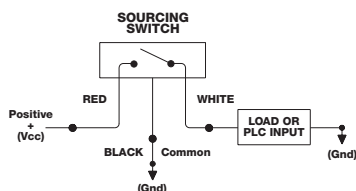
Input Voltage:	4.5 to 30 VDC	Operational Temperature Range: . . .	-20°F to +185°F, minimum
Load Current:	150 mA, maximum	Insulation Resistance:	100 megohms, lead to case with a 500 volt AC and or DC source
Sensor Element:	Solid-State	Flammability Rating:	UL 94 VO
Off-State Leakage:	10 microamperes, maximum	Packaging:	IEC 529-1989, Category IP 67 Tests
Reverse Battery:	40 VDC, minimum	Vibration:	Mil-Std-810E, Method 514.1, Category 10
Transient Protection:	500 Watts of peak power, minimum	Welding Field Immunity: . . .	Immune to welding fields to 4000 amperes, minimum at a minimum distance of 0.25"
Overvoltage Protection:	37 VDC maximum with up to 12 amperes	CE Mark:	CE Compliance per engineering evaluation to certified circuits
Sensor Operation Indicator:	Red LED for Sinking, Yellow LED for Sourcing	Cable:	3 conductor, 24 to 26 AWG, Gray polyurethane outer jacket
Turn-on Time:	1 microsecond, maximum	Repeatability:	+/- .005"
Turn-off Time:	1 microsecond, maximum		
"On" Voltage Drop:	0.4 VDC, maximum, for a Sinking Circuit 1.5 VDC, maximum for a Sourcing Circuit		

See page 137 for signal repeatability and hysteresis

Electrical Circuit Diagrams

HSC

Typical Solid State Sourcing Configuration for HSC Models (PNP)

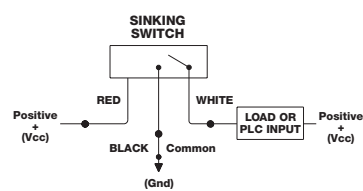


Basic Circuit Layout for Programmable Logic Controllers (PLC) and Normally Off Relays and Solenoids

CAUTION: Shorting white wire to ground will damage switch

HSK

Typical Solid State Sinking Configuration for HSK Models (NPN)

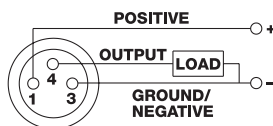


Basic Circuit Layout for Programmable Logic Controllers (PLC) and Normally Off Relays and Solenoids

CAUTION: Shorting white wire to supply voltage will damage switch

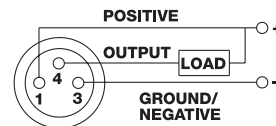
HSCQ

8mm Male Connector Sourcing Solid State Switch



HSKQ

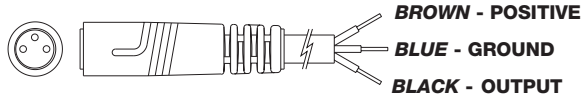
8mm Male Connector Sinking Solid State Switch



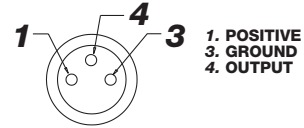
Bimba Solid State Switches

Pin and Wire Assignments for Quick Connect

8mm Female Connector



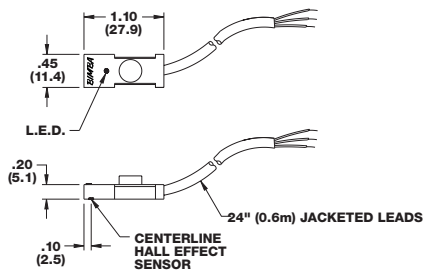
Face View of Male Connector



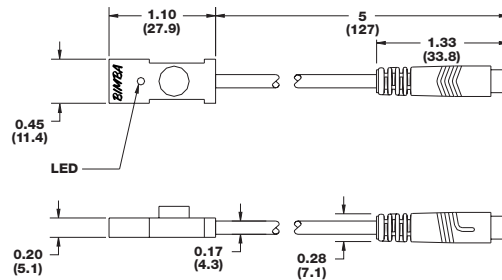
Dimensions

HSC, HSK Solid State Switches

(inches shown, mm in parentheses)



HSC,
HSK

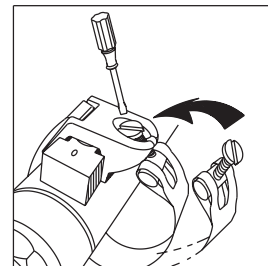
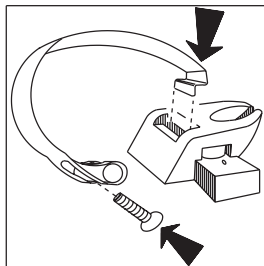
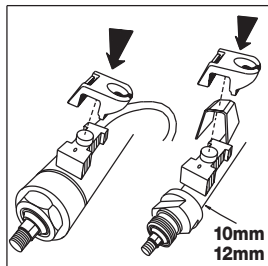


HSCQ,
HSKQ

Mounting

HSC, HSCQ, HSK, HSKQ

The switch can be mounted anywhere along the length and circumference of the actuator body. Mounting hardware includes the switch, a presized stainless steel band, a chrome-plated zinc die cast housing and a ball head screw. 2-3 in.- lbs. of torque recommended for mounting.



Note: Mount with LED face up.

Hysteresis and Operating Windows

Hysteresis

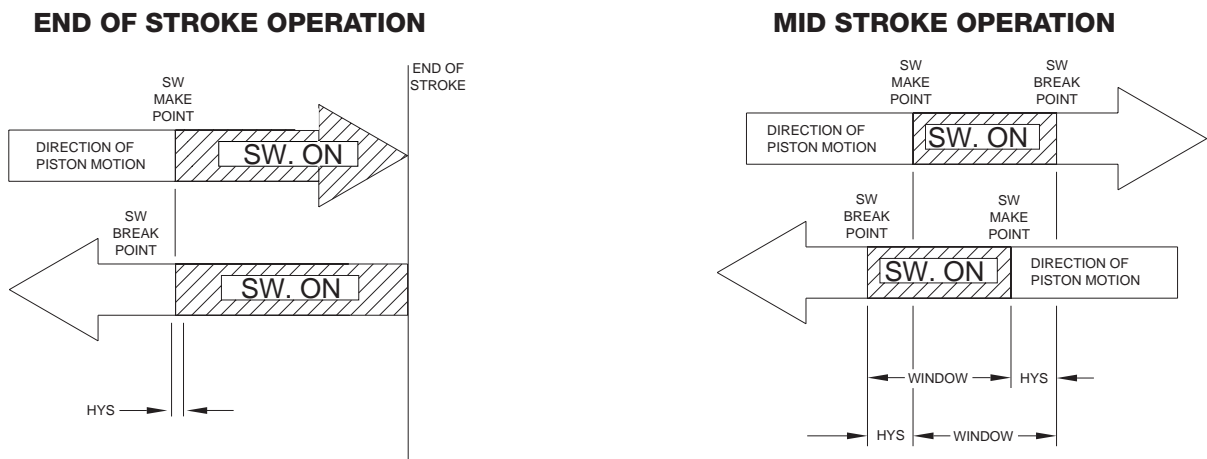
Bimba Solid State switches are subject to hysteresis. Hysteresis is the difference in magnetic field strength needed to initiate switch operation versus the field strength needed to sustain switch operation. The effect is that the switch break point will be different from the switch make point in the piston travel.

Operating Window

The operating window is the distance the piston travels while the switch is in the "ON" state, and includes the hysteresis action. For the Solid State Switch, hysteresis is greater on one side of the operating window because this switch is sensitive to only one side of the magnet.

For high speed equipment, the time duration of the switch signal may be critical. The time duration is a function of the operating window length and the speed of operation of the actuator. It is calculated by dividing the minimum travel in the operating window by the piston speed, taking into account the hysteresis effect. The illustrations and chart below show the operating windows for the Solid State Switch.

Operating Windows and Hysteresis



Bore	Original Line - Banded-Mounted Solid State Switches	
	Operating Window	Maximum Hysteresis
9/16"	.290"	.040"
3/4"	.310"	.040"
7/8"	.320"	.040"
1-1/16"	.330"	.040"
1-1/4"	.340"	.040"
1-1/2"	.350"	.040"
1-3/4"	.350"	.040"
2"	.360"	.040"
2-1/2"	.370"	.040"
3"	.380"	.040"
4"	n/a	n/a

Bimba Magnetic Reed Switches

Bimba Magnetic Reed Switch

This is a two-wire device with wires directly connected to a reed switch. Specifications are valid for purely resistive loads only. Choosing a switch is governed by our published load current derating curves. These are derived from the switch contact rating, expressed in wattage. Bimba offers magnetic reed switches that can handle the current requirements of a wide variety of applications. In addition, models are available for track- or band-mounting, and many include an LED indicator light to show when switching occurs.

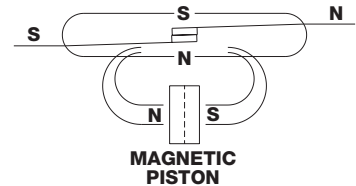
A third wire is added for switches with LED indicator lights to power the LED.

Magnetic Reed/Triac-type Switch

This is a two-wire device recommended for high current AC loads. The reed switch senses the magnet and triggers the solid state triac that performs the actual current switching. The switch can handle up to 25A one-cycle surge to accommodate inductive kickback (current surge when an electrical device such as a solenoid coil is turned off) and inrush (current surge when a device is first turned on). Its operation is unreliable below 100mA load current. Maximum current is subject to ambient temperature. Models are available for track or band mounting.

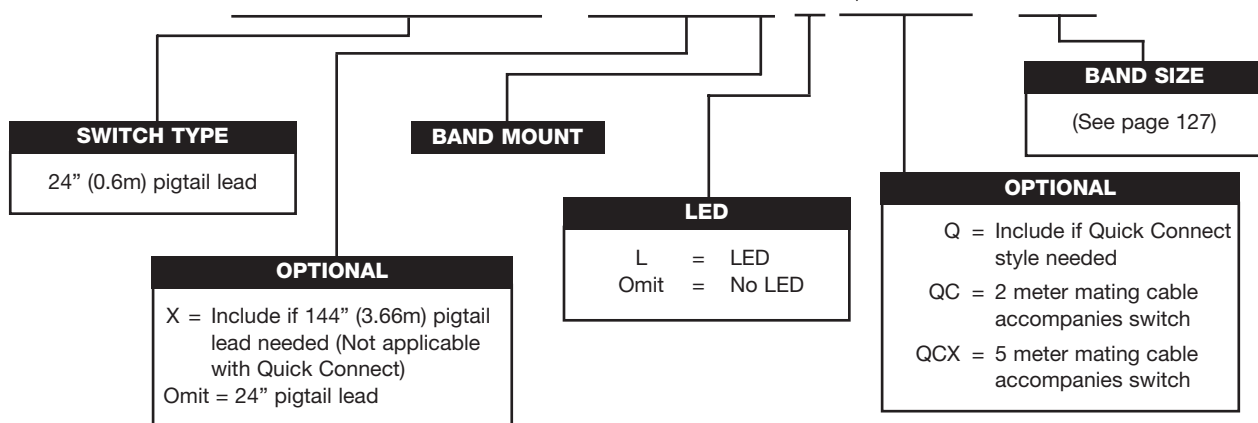
How it works:

Reed switches contain hermetically-sealed reeds, or contacts. When the magnet on the piston moves close to the switch, the reeds become magnetized and the normally open contacts will close or pull in. The resulting signal can be used to signal or control other operations in the system. When the magnet moves away from the piston, the contacts will open or drop out.



How to Order/List Prices

MRS - .087 -P ☐ B L QCX - 04



To Order Cable Connectors Separately

Base Model	Description	List Price
C4	2m - straight	\$20.00
C4X	5m - straight	30.00

Bimba Magnetic Reed Switches

Base Model	Base Model 24" (0.6m) pigtail lead	OPTIONS			
		X 144" (3.66m) pigtail lead	Quick Connect		
			Q (no cable)	QC (2m cable)	QCX (5m cable)
MRS-.027 ¹	\$12.25	N/A	N/A	N/A	N/A
MRS-.087 ¹	12.25	N/A	N/A	N/A	N/A
MRS-.087-B- <input type="checkbox"/> ²	17.85	23.55	33.70	54.70	65.20
MRS-.087-BL- <input type="checkbox"/> ²	21.50	28.35	40.25	61.25	71.75
MRS-.087-PBL- <input type="checkbox"/> ²	21.50	28.35	40.25	61.25	71.75
MRS-1.5 ¹	22.50	N/A	N/A	N/A	N/A
MRS-1.5-S ¹	22.50	N/A	N/A	N/A	N/A
MRS-1.5-B- <input type="checkbox"/> ²	25.10	30.60	N/A	N/A	N/A

¹ Track mount switches – Must specify -Z in cylinder part number for track mounting; valid for MRS cylinders only. Switches come with 24" pigtail leads. Consult distributor for longer leads.

² Bands are included in the price.

Specifying Band Size

Many of the Bimba Magnetic Reed switches are band-mounted to the actuator. For all band-style switches, a pre-sized band is ordered by adding a bore size designation as the last two digits of the basic switch model number. For example, the Magnetic Reed Switch model MRS-.087-B for a 2" would be MRS-.087-B-31.

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

Electrical Specifications for Magnetic Reed Switches

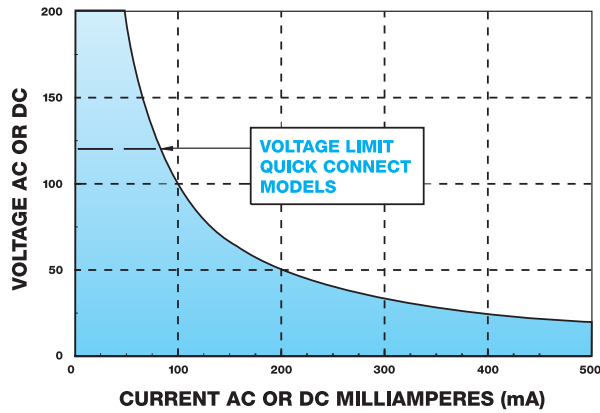
	MRS-.027 ² 3/4" & 9/16" Track Mount	MRS-.087-BL MRS-.087-BLQ	MRS-.087-PBL MRS-.087-PBLQ	MRS-.087-BQ MRS-.087-Q	MRS-1.5 ¹ MRS-1.5-S ² MRS-1.5-B	MRS-.087 ¹ MRS-.087-B
	2 wire switch	3 wire switch	2 wire switch	2 wire switch	2 wire switch	2 wire switch
Contacts*	SPST Form A	SPST Form A	SPST Form A	SPST Form A	SPST Form A	SPST Form A
Contact Rating	3 Watts max.	9 Watts max.	2.5 Watts max.	10 Watts max.	—	10 Watts max.
Switch Voltage	28 max. AC or DC	6 to 24 AC or DC	3 to 120 AC or DC	120 AC or DC	12 to 230 AC only	200 max. AC or DC
Maximum Current	250 mA (Resistive)	500 mA (Resistive)	20 mA (Resistive)	500 mA (Resistive)	1.5 amps @ 50°F (10°C) 0.5 amps @ 200°F (93°C)	500 mA (Resistive)
Minimum Current	—	—	10 mA AC or DC	—	0.1 amps	—
Initial Contact Resistance	0.10 ohms max.	0.10 ohms max.	0.10 ohms max.	0.10 ohms max.	—	0.10 ohms max.
Actuating Time Average	1.0 millisecond	1.0 millisecond	1.0 millisecond	1.0 millisecond	2.0 millisecond	1.0 millisecond
LED Indicator	No	Yes	Yes	No	No	No
Applications	Reed-9/16" & 3/4" bore low wattage	Reed-24 VDC 3-wires w/LED	Reed-24 VDC or 120 VAC, 2-wires bi-polar, low current, good for PLC	Reed-24 VDC or 120 VAC, 2-wires No LED, quick connect	Triac Reed-AC only, up to 230 VAC, Inductive Inrush OK, 100mA min.	Reed-24 VDC or 200 VAC, 2-wires No LED, quick connect

* (Normally Open) ¹ (1-1/16" to 2-1/2") ² (9/16" to 3/4")

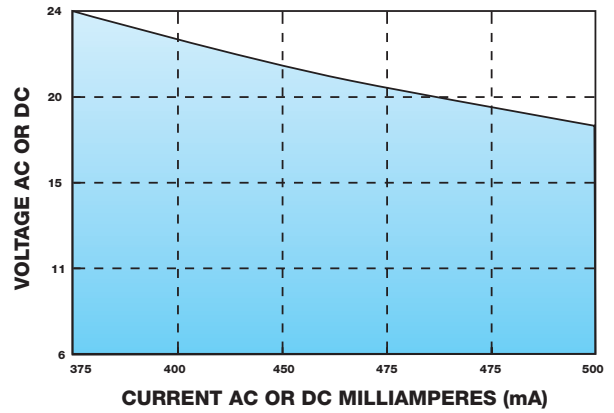
Bimba Magnetic Reed Switches

Load Current Derating Curves

MRS-.087 MRS-.087-B MRS-.087-BQ

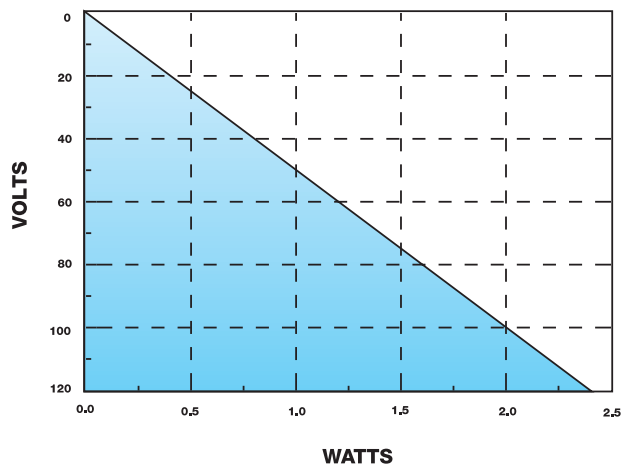


MRS-.087-BL MRS-.087-BLQ

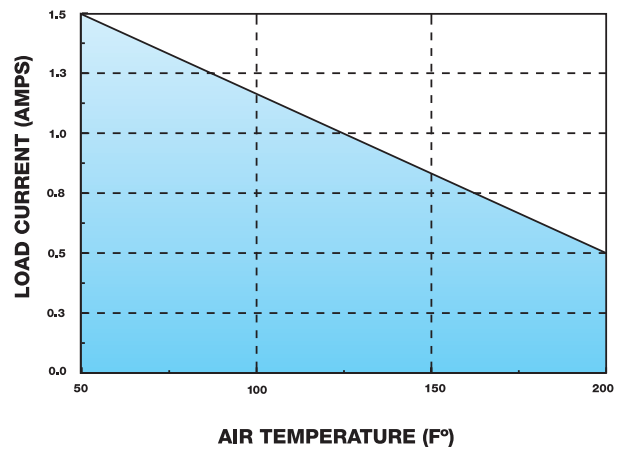


MRS-.087-PBL MRS-.087-PBLQ

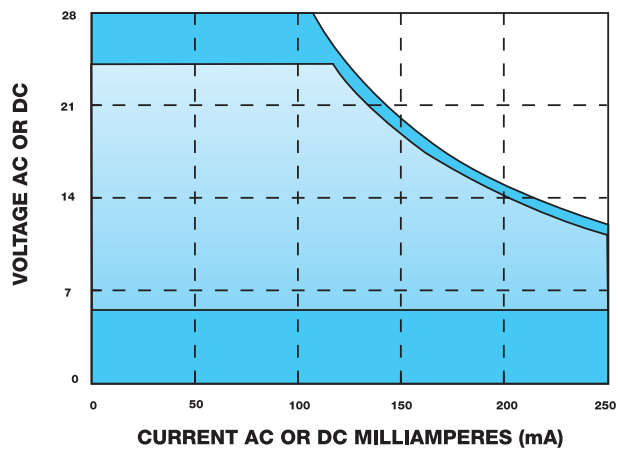
VOLTS vs WATTS @ MAX. CURRENT (20mA)



MRS-1.5 MRS-1.5-B MRS-1.5-S



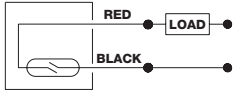
MRS-.027



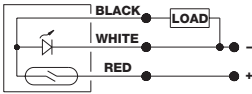
Bimba Magnetic Reed Switches

Electrical Circuit Diagrams

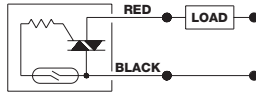
**MRS-.027
MRS-.087
MRS-.087-B**



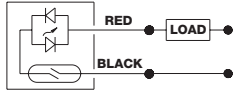
MRS-.087-BL



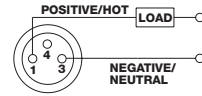
**MRS-1.5
MRS-1.5-S
MRS-1.5-B**



MRS-.087-PBL

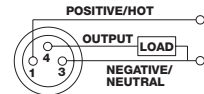


**MRS-.087-BQ
MRS-.087-PBLQ**



8mm Male Connector

MRS-.087-BLQ



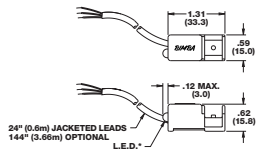
8mm Male Connector

See page 124 for Pin and Wire Assignments for Quick Connect

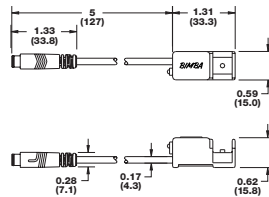
Dimensions

(inches shown, mm in parentheses)

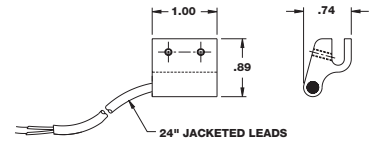
**MRS-.087-B
MRS-.087-BL
MRS-.087-PBL
MRS-1.5-B**



**MRS-.087-BQ
MRS-.087-BLQ
MRS-.087-PBLQ**

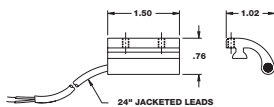


MRS-.027



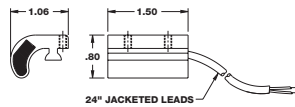
To order longer leads, specify D-12660-A-lead length in inches. Consult BIMBA distributor or factory for prices.

MRS-.087



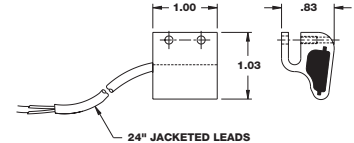
To order longer leads, specify D-7000-A-lead length in inches. Consult BIMBA distributor or factory for prices.

MRS-1.5



To order longer leads, specify D-7001-A-lead length in inches. Consult BIMBA distributor or factory for prices.

MRS-1.5-S



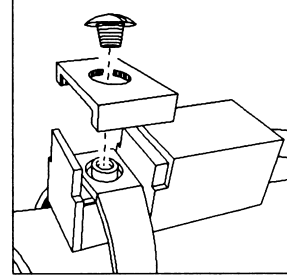
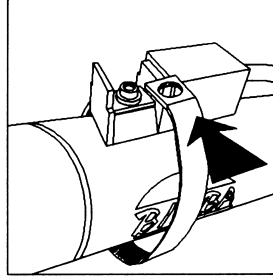
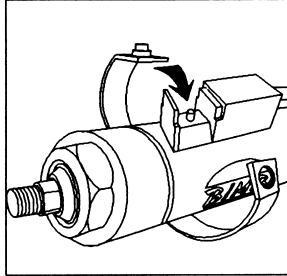
To order longer leads, specify D-16312-A-lead length in inches. Consult BIMBA distributor or factory for prices.

Bimba Magnetic Reed Switches

Mounting

Band-style

The switch can be mounted anywhere along the length and circumference of the actuator body. Mounting hardware includes the switch, a band, a U-shaped bracket and a screw (included). 2-3 in.- lbs. of torque recommended for mounting



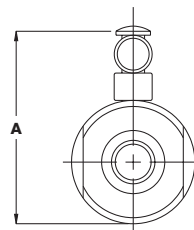
Track-style

For Original Line MRS Cylinders With -Z Option

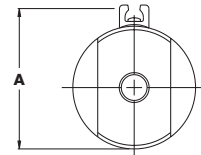
Actuator models ordered for position sensing include a special switch track. The switch slides into the track and is tightened with a screw (included). For track-mounted switches on MRS cylinders with -Z option, the following dimensions apply:

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

For 9/16" and 3/4" Bore



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



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

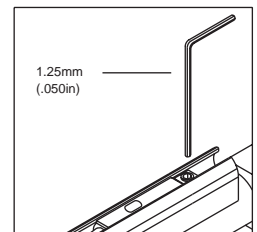
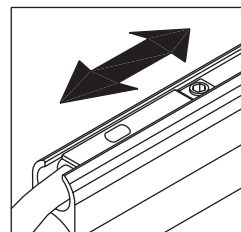
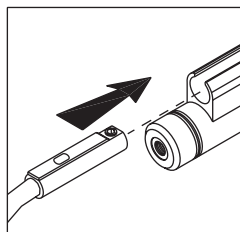
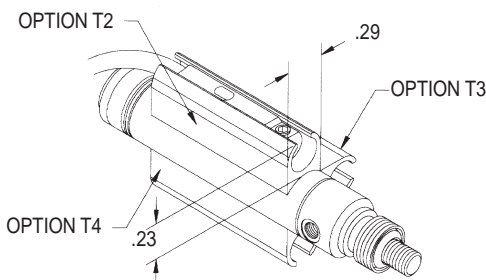
Mounting recommendations:

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

Bores	Part Number	List Price	Adder per Inch
007 - 04	D-74168-A-length	\$2.50	\$0.90
06 - 31	D-78527-A-length	\$2.50	\$1.00
50 - 70	D-78528-A-length	\$2.50	\$1.10

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

For all Original Line Cylinders with M option, including MRS cylinders



Bimba Magnetic Reed Switches

Hysteresis and Operating Windows

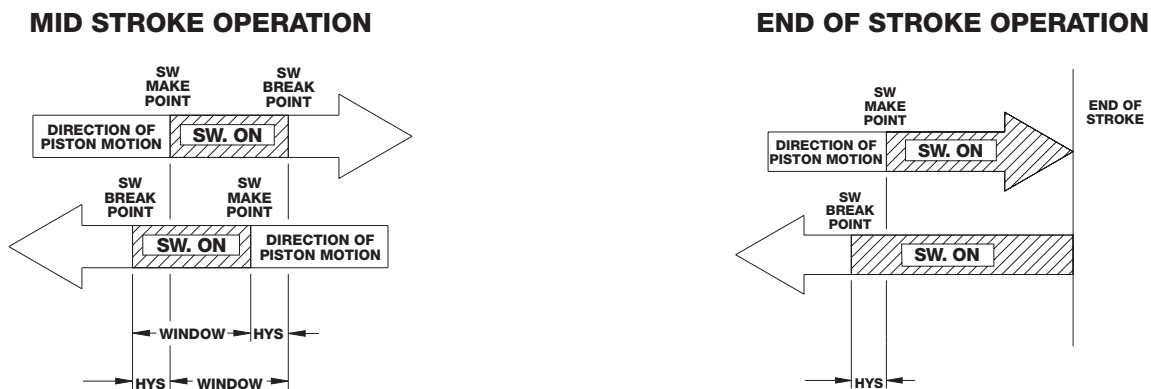
Hysteresis

Bimba Magnetic Reed switches are subject to hysteresis. Hysteresis is the difference in magnetic field strength needed to initiate switch operation versus the field strength needed to sustain switch operation. The effect is that the switch break point will be different from the switch make point in the piston travel.

Operating Window

The operating window is the distance the piston travels while the switch is in the "ON" state, and includes the hysteresis action. For the Magnetic Reed Switch, hysteresis is equal on both sides of the operating window.

For high speed equipment, the time duration of the switch signal may be critical. The time duration is a function of the operating window length and the speed of operation of the actuator. It is calculated by dividing the minimum travel in the operating window by the piston speed, taking into account the hysteresis effect. The illustrations and charts below show the operating windows for the Magnetic Reed Switches.



All band mount, MRS-.087 and MRS-1.5 for Original Line

Cylinder			Operating Window	Hysteresis Maximum	Repeatability
Type	Bore Designator	Bore			
Original Line	02, 04, 09	9/16", 3/4", 1-1/16"	0.350	0.040	± .015"
	12, 17, 24, 31, 50	1-1/4", 1-1/2", 1-3/4", 2", 2-1/2"	0.440	0.040	± .015"

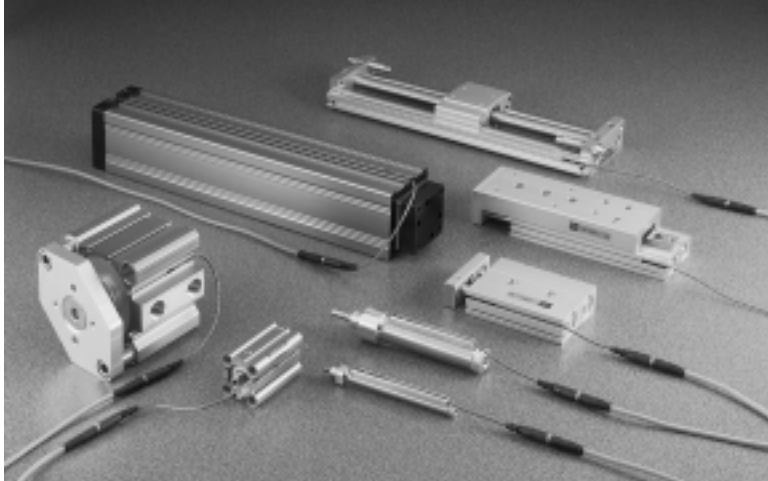
MRS-.027 and MRS-1.5-S for Original Line

Cylinder			Operating Window	Hysteresis Maximum	Repeatability
Type	Bore Designator	Bore			
Original Line	02, 04	9/16", 3/4"	0.345	0.015	± 0.015"

Bimba Low Profile Switch

Bimba Low Profile Switch

Bimba's new low profile switches offer the latest giant magnetoresistive technology, and offers more features and functionality in the smallest package of any actuator position sensing switch. The switch fits in a track located on the cylinder's body and leaves it flush with the cylinder body. It has fast response, symmetrical hysteresis, and infinite life.



Bimba offers 4 different low profile switches:

- Magnetic Reed Switch
- GMR Auto-configure
- GMR source (PNP) output
- GMR Sink (NPN) output

Features/Advantages

- Extremely small – the Bimba GMR Switches are the lowest profile switch currently available.
 - The Auto-Configure GMR Switch automatically determines whether the switch has been connected to a current sinking or sourcing load.
 - Solid state reliability – no moving parts means longer life, no contact bounce.
 - Fast response rate – 1 microsecond maximum.
- Low, symmetrical hysteresis eases set-up and provides more accurate sensing.
 - Built-in fault protection including reverse polarity, overvoltage and transient protection.
 - LED verifies switching and eases set-up.
 - Several switches can be mounted on one actuator.
 - Pigtail leads in two lengths, with Quick Connect option for easy set-up.
 - For use with Bimba EF1, Twin Bore, and Original Line cylinders, and PneuMoment® actuators.

How it Works

The Bimba GMR Switch is based on giant magnetoresistive (GMR) technology, which was first developed in 1988. It includes 4 GMR resistors (2 active, 2 shielded), each of which has many thin layers of magnetoresistive material. In each layer, the electrons are oriented opposite the adjacent layer, providing a great deal of resistance to electrical flow. The presence of a magnetic field overcomes the magnetic coupling between the adjacent layers, causing parallel alignment of magnetic moments between layers, and resistance drops significantly. By connecting the 4 resistors in a classic Wheatstone bridge configuration, the voltage across a single resistor is doubled, providing a linear output. This voltage is then amplified, and sent to a comparator that switches the sensor output when it detects that a minimum magnetic field strength is present. High voltage transistors provide TTL-compatible output rated at 25 milliamps. The switch includes reverse polarity, overvoltage and transient protection.

Switch Application Selection Guide

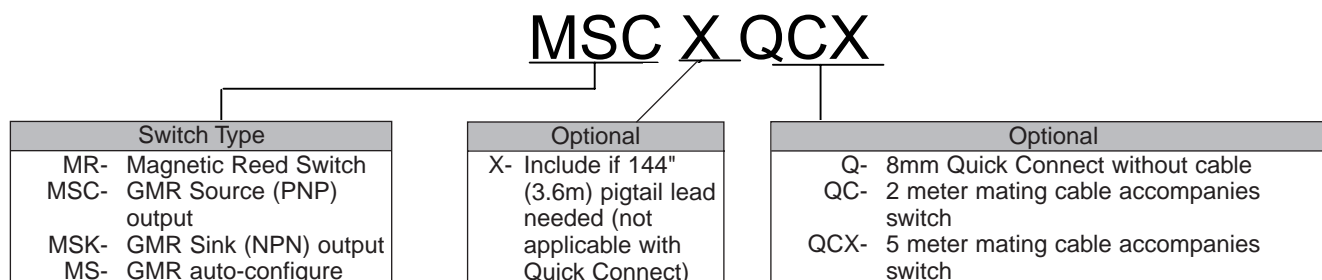
Switch Application Guideline							
Switch	Programmable Controllers	Solid State Relays Only	Solenoids	Indicator Lights		Motors	Time Counters
				Bulb	LED		
Magnetic Reed	Yes	<5VA*	<5VA*	<5VA*	Yes	<5VA*	<5VA*
GMR Auto-configure Switch	Yes	Yes	No	No	Yes	No	Yes
GMR Source or Sink Output	Yes	<50mA	No	<50mA	Yes	No	<50mA

*Use resistor-capacitor protection

Bimba Low Profile Switch

How to Order

The Model Number for all extruded track mount switches consists of three alphanumeric clusters. These designate switch type and lead length. Please refer to the chart below for an example of Model Number MSCQCX. This is a Solid State switch with PNP output including a Quick Connect cable attachment and a 5meter mating cable.



List Prices

Base Model	Base Model with Options			
MR (Magnetic Reed)	MRX (3.6m leads)	MRQ (Quick Connect)	MRQC (2m mating cable)	MRQCX (5m mating cable)
\$17.50	\$28.50	\$33.50	\$53.50	\$63.50
MSC (GMR Source output)	MSCX (3.6 leads)	MSCQ (Quick Connect)	MSCQC (2m mating cable)	MSQCX (5m mating cable)
\$28.80	\$39.80	\$44.80	\$64.80	\$74.80
MSK (GMR Sink output)	MSKX (3.6m leads)	MSKQ (Quick Connect)	MSKQC (2m mating cable)	MSKQCX (5m mating cable)
\$28.80	\$39.80	\$44.80	\$64.80	\$74.80
MS (Auto-configure)	MSX (3.6m leads)	MSXQ (Quick Connect)	MSQC (2m mating cable)	MSQCX (5m mating cable)
\$35.75	\$45.00	\$48.35	\$68.35	\$78.35

To Order Cable Connectors Separately

Base Model	Description	List Price
C4	2 meter – straight	\$20.00
C4X	5 meter – straight	30.00

Mounting

To Install:

Slide the switch into the cylinder's switch track. Extend and retract the cylinder while positioning the switch until the switch's operating window is correct. Secure the switch in the cylinder track by turning the set screw with a hex driver. Cycle the cylinder (both extending and retracting) a number of times to confirm correct operation and adjust as required.

Note: Maximum torque on set screw is .170 N-m (1.5 in.-lbs.). Do not overtighten.

All prices are F.O.B. Monee, Illinois and are subject to change without notice.

Bimba Low Profile Switch

Electrical Specifications

Reed Switch (Models: MR, MRX, MRQ)

Circuit	2 Wire, Normally Open, Sinking (NPN) or Sourcing (PNP)
Input Voltage	3 to 120 VAC / 3 to 24 VDC
Current Rating	25mA max.
Contact Rating	3 Watts
Voltage Drop	2.3 V
Shock	10-2000 Hz, 10g
Vibration	11ms, 1/2 Sine Wave, 150g
Turn ON/OFF Time	1.0 millisecond
Operating Temperature	-25° to 85°C (-13° to 185°F)
Enclosure	IEC IP 67
Flammability	94VO
LED Indicator	Red

GMR Switch (Models: MSC, MSCX, MSCQ)

Circuit	3 Wire, Normally Open, Sourcing (PNP)
Input Voltage	5 to 24 VDC
Current Rating	50mA max.
Voltage Drop	1.5 V
Off State Leakage	10µA max.
Quiescent Current	5mA max.
Turn ON/OFF Time	0.10 millisecond
Operating Temperature	-20° to 85°C (-4° to 185°F)
Enclosure	IEC IP 67
Flammability	94VO
LED Indicator	Yellow
Over Voltage, Reverse Polarity and Transient Protected	

GMR Switch (Models: MSK, MSKX, MSKQ)

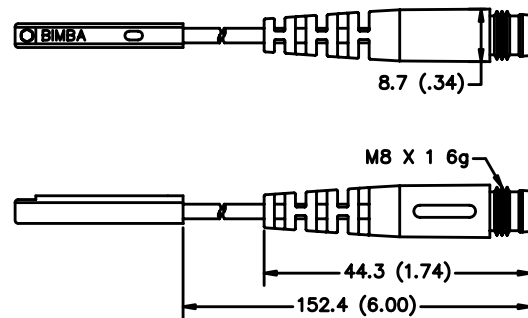
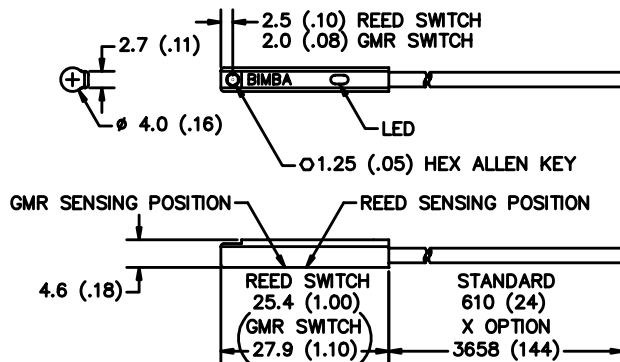
Circuit	3 Wire, Normally Open, Sinking (NPN) Or Sourcing (PNP)
Input Voltage	5 to 24 VDC
Current Rating	50mA max.
Voltage Drop	0.5 V
Off State Leakage	10µA max.
Quiescent Current	5mA max.
Turn ON/OFF Time	0.10 millisecond
Operating Temperature	-20° to 85°C (-4° to 185°F)
Enclosure	IEC IP 67
Flammability	94VO
LED Indicator	Red
Over Voltage, Reverse Polarity and Transient Protected	

GMR Switch (Models: MS, MSC, MSQ)

Circuit	3 Wire, Normally Open, Sinking (NPN) Or Sourcing (PNP)
Input Voltage	5 to 24 VDC
Input Current	25mA max.
"ON" Voltage Drop	
Sinking	0.4 Volts max.
Sourcing	1.5 Volts max.
Output Current	25µA max.
Power Dissipation	300 mW max.
Turn ON/OFF Time	0.10 millisecond
Operating Temperature	-20° to 85°C (-20° to 185°F)
Off State Leakage	10 microamp max.
Signal	± 0.4mm (.015")
Repeatability	
LED Indicator	Red
Reverse Polarity Protection	
Transient Protection	500 Watts of Peak Power
Over Voltage Protection	27 VDC max. 16A max.

Dimensions

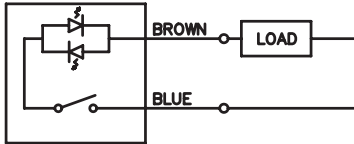
MR, MRX, MRQ, MS, MSX, MSQ, MSC, MSCX, MSCQ, MSK, MSKX, MSKQ mm (in.)



Bimba Low Profile Switch

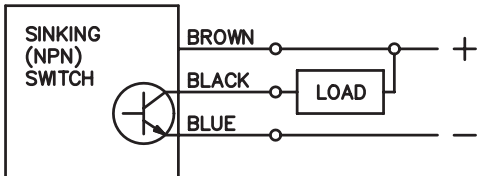
Electrical Circuit Diagrams

MR, MRX, MRQ (Reed Switch)

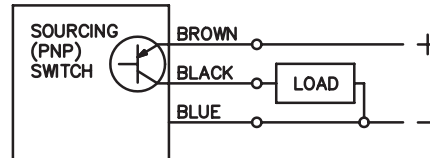


Note: On Quick Connect reed switch models, connect only the Blue and Brown wires on the mating cable and cut back the Black wire. **Do Not** connect switch to a mating cable that has been previously wired for a 3 wire solid state switch, as it will short the MRQ switch.

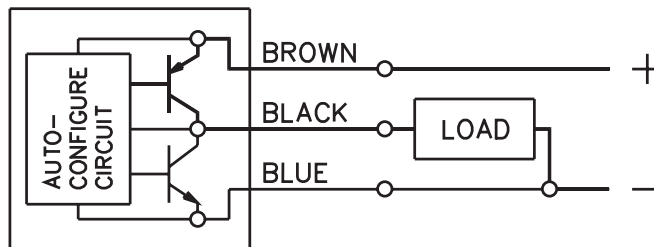
MSK, MSKX, MSKQ (Sinking, Solid State)



MSC, MSCX, MSCQ (Sourcing, Solid State)



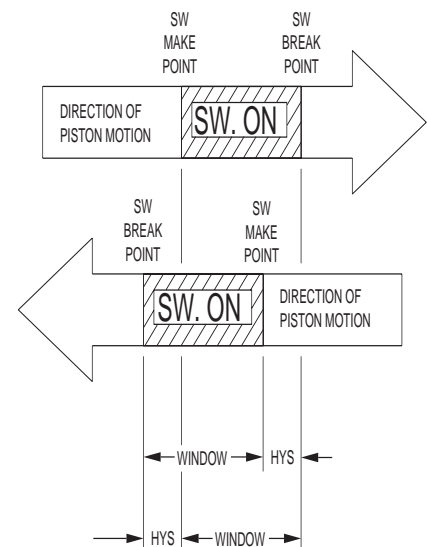
MS, MSX, MSQ



Color Codes	
Brown	(+) Positive
Black	Output
Blue	(-) Negative

Hysteresis and Operating Window

Original Line Cylinder Window Switch Comparisons for Mini GMR and Mini Reed Switches					
Bore		Window		Maximum Hysteresis	Repeatability
		Mini GMR	Mini Reed		
007	5/16"	.250"	.350"	.040"	±.010"
01	7/16"	.275"	.375"	.040"	±.010"
02	9/16"	.350"	.450"	.040"	±.010"
04	3/4"	.375"	.475"	.045"	±.010"
06	7/8"	.375"	.500"	.045"	±.010"
09	1-1/16"	.425"	.550"	.045"	±.010"
12	1-1/4"	.450"	.575"	.050"	±.010"
17	1-1/2"	.450"	.575"	.050"	±.010"
24	1-3/4"	.450"	.575"	.050"	±.010"
31	2"	.450"	.575"	.050"	±.010"
50	2-1/2"	.450"	.575"	.050"	±.010"
70	3"	.500"	.650"	.050"	±.010"



Helpful Hints

- Be sure your actuator has a magnet option.
- Be sure to match your Solid State Switches to the proper circuits, i.e., sinking switches for sinking circuits and sourcing switches for sourcing circuits.
- Be sure to choose the correct input voltage for the switch ratings.
- Don't try to use a switch with a low current output to drive a high power circuit.
- If you have a high speed application, be sure your load circuitry doesn't have a high signal delay (some circuits have filters which cause signal delays).

Bimba has technical bulletins that describe the following situations:

1. Contact Protection (transient suppression for Reed Switches) for inductive or capacitive load switching.
2. "Or" logic operation for Solid State Switches connected in Parallel.
3. "And" logic operation for Solid State Switches connected in Series.

Call 1-800-44-BIMBA to speak to our Technical Assistance Center and request a copy at no charge.

Glossary

Actuating Time Average	Average time to close contacts on a reed switch.	Operating Window	See charts. The active window that the sensor will be in the "on" state.
Solid State	Solid State switching device activated by magnetic field.	R-C Network	A filter network that combines a resistor and capacitor in series across a reed switch, that filters the switch from inductive kickback or transients.
Hysteresis	The difference (in distance) between the spot where the switch turns "on" when the piston moves in one direction, and when the switch turns "off" when the piston moves in the opposite direction. This difference occurs because it takes more magnetic force to turn the switch "on" than it does to <u>keep</u> it on.	Response	Same as turn on/off time or actuating time average.
Inductive Load	The characteristic of an electrical load or device that enables it to store energy while operating and to return that energy to the circuit, as electricity, when the current is turned off, i.e., solenoids.	Reverse Polarity Protection	Protects switch damage caused by switching the positive and negative leads.
Input Current	The amount of current needed to power switch.	Self-Commutation	A condition inherent in triac switching devices. Self-commutation occurs when transients cause the triac to momentarily turn on, even though a magnetic field is not present.
Inrush Current	Initial current draw from inductive loads. May be two or three times the rated holding current for such devices.	Signal Repeatability	Range at which switch will turn on or off, given the same physical switching point.
Kickback, Inductive	Occurs when inductive loads are switched off. This may cause transients that can damage reed switches.	Sinking	Term used for device that switches a load to ground (NPN).
MRS	Magnetic Reed Switch is a mechanical switch activated by magnetic field.	Sourcing	Term used for device that switches power supply to load (PNP).
Off-state Leakage	Amount of current flow to output in the off state.	Triac	A solid state device used to switch inductive AC loads.
		Turn On/Off Time	The amount of time it takes to turn on or off a Solid State device.

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02□-RP	9/16 Bore	.33
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D-5379	Mtg. Nut	78
D-6583	Hex Stud	123
D-6636	Hex Stud	123
D-6637	Hex Stud	123
D-8309-A	Rod Clevis	97
D-8310-A	Rod Clevis	67
D-8311-A	Rod Clevis	98
D-8312-A	Rod Clevis	99
D-8313-A	Rod Clevis	99
D-8314-A	Rod Clevis	78
D-8315	Mtg. Bkt.	97
D-8316	Mtg. Bkt.	98
D-8317	Mtg. Bkt.	98
D-8318	Mtg. Bkt.	99
D-8319	Mtg. Bkt.	99
D-8320	Mtg. Bkt.	100
D-8321-A	Pvt. Bkt.	97
D-8322-A	Pvt. Bkt.	98
D-8323-A	Pvt. Bkt.	98
D-8324-A	Pvt. Bkt.	99
D-8325-A	Pvt. Bkt.	99
D-8326-A	Pvt. Bkt.	100
D-8484	Mtg. Nut	99
D-9868	Hex Stud	123
D-10131-A	Pvt. Bkt.	97
D-10139-A	Rod Clevis	97
D-12321-A	Pvt. Bkt.	34
D-13498-A	Pvt. Bkt.	42
D-13512-A	Pvt. Bkt.	78
D-19127	Mtg. Bkt.	78
D-26689	Pvt. Bkt.	26
D-26690	Rod Clevis	26
D-26731	Mtg. Bkt.	26
D-26765	Mtg. Bkt.	26
TRB-1	Trun. Bkt.	31
TRB-2	Trun. Bkt.	42

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