

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".

TYPE
BXX – Block or Trunnion Mounted (BF, BR, BFT, BRT, BFM, BRM, BFTM, BRTM)
C – Cushion (CR, CF, CS, CM, CRM, CFM, CSM)
H – Hydraulic cylinder
M – Magnet option for standard cylinders
MRS® – Magnetic Reed Switch Cylinder
SR – Stainless rod, if nonstandard

BORE SIZE/POWER FACTOR	
007 – 5/16"	12 – 1-1/4"
01 – 7/16"	17 – 1-1/2"
02 – 9/16"	24 – 1-3/4"
04 – 3/4"	31 – 2"
06 – 7/8"	50 – 2 1/2"
09 – 1-1/16"	70 – 3"

STROKE LENGTH
In inches and decimal fractions, i.e. 1.75 (See individual models for standard and maximum stroke)

BR-013-DBEE0.5

MOUNTING STYLE
(see individual bore sizes for designations)

OPTIONS*	
(in alphabetical order, except for EE which is last)	
B	– Bumpers
E	– Seals and factory lubrication for long life in non-lube applications
EEX.XX	– Extra Rod Extension of X.XX
F	– Molycoated body
G	– Magnalube® G Lubrication
H	– Heavy Spring (H designated before mounting style)
JR	– Double-Acting Spring Extend
JS	– Double-Acting Spring Return
K	– Ports rotated 90°
N	– Low temperature seals & lubrication
NT	– No Thread
Q	– Side ported rear head
T	– Switch Track (T2, T3 or T4) see page 142
V	– High temperature seals & lubrication
W	– Rod Wiper
Y	– Pivot bushing replaces pivot pin

* Consult your distributor or option combination availability chart page 5.
 ®Magnalube is a trademark of Carleton Stuart Corporation.

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

$$FORCE = \frac{Airline\ Pressure}{1716} \times Piston\ Area$$

$$PISTON\ AREA = \frac{Bimba\ Power\ Factor}{1716}$$

$$FORCE = \frac{Airline\ Pressure}{1716} \times Bimba\ Power\ Factor$$

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.

Options

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

Option Combination Availability Chart

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

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

options size	W3 4 Wiper	B2 5 Bumper	V2 4 High Temperature	H Heavy Spring	K Ports Rotated 90°	Y Pivot Bushing	N2 Low Temperature	Q Side Ported Rear Head	G Magnalube G	E Special Lube & Seals
007	N/A	STD	N, E	N/A	Q	STD	V,G,E	K	N, E	N, G, V
01	N/A	N	N, E	N/A	Q	Q	B,V,G,E	K,Y	N, E	N, G, V
02	N/A	N	N, E	N/A	Q	STD	B,V,G,E	K	N, E	N, G, V
04, 09, 17	H,N	N	N, E	W	Q	Q	W,B,V,G,E	K,Y	N, E	N, G, V
06, 12, 24	N/A	STD	N, E	N/A	Q	Q	V,G,E	K,Y	N, E	N, G, V
31, 50	N/A	N	N, E	N/A	Q	STD	B,V,G,E	K	N, E	N, G, V
70	N/A	N	N, E	N/A	Q	STD	V,G,E	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 and reverse single acting models only. Wipers may not be available with certain mounting configurations. Consult the specific bore size in this catalog for detail.
- When high temperature and the magnetic options are combined, operating temperature remains at 200°F. This combination is recommended when Fluoroelastomer seals are specified for compatibility. When specifying the high temperature and wiper options together, a standard Buna N or Urethane wiper will be provided.
- 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"

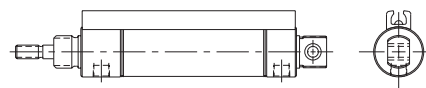
Single Acting	
0070-N	.04"
0070-XP	.04"
0070-RN	.04"
0070-RPN	.04"
060- (V or N)	.09"
060-NR (V or N)	.09"
060-RP (V or N)	.125"
060-R (V or N)	.125"
120- (V or N)	.125"
120-NR (V or N)	.125"
120-NRP (V or N)	.125"
120-P (V or N)	.125"
120-R (V or N)	.125"
120-RP (V or N)	.125"
240- (V or N)	.125"
240-NR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

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

MRS- -DXP



MRS- -DXPZK



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

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
HT-99-7CC
(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 (-29° 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.

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.

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 17-74. 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 acetal resin end caps. They are ideal for applications and environments that require exposure to moisture, lubricants and specific solvents. All dimensions except 1½" bore nose threads are interchangeable with the Original Line.

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.

Rod Lock Cylinders

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

Three-Position Cylinders

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

Air-to-Air Boosters

This 2:1 ratio air-to-air booster is small and self-contained and incorporates integral valve components to reciprocate.

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

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

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

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

Double Acting Cylinders

Add desired stroke length to base length of cylinder.

Example: 041.25-D

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

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

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 = 250 psi.

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.

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)