



# Heavy Duty Round Line Cylinders

Bimba offers a variety of heavy duty repairable round line cylinders as counterparts to our non-repairable Original Line offerings.

Double-Wall® cylinders convert into six NFPA mounting styles and utilize easy to assemble “bolt on” mounting kits. An epoxy coated aluminum tie-tube outer shell protects the inner 304 stainless steel body tube from harsh environments. This design allows these cylinders to withstand dents and dings that would normally cause single wall cylinders to fail.

Bimba’s repairable stainless steel cylinders offer a corrosion resistant design that is ideal for washdown applications and is designed specifically to reduce sharp edges and corners and provide a smooth transition from end cap to cylinder body. Tapped holes are provided to allow easy mounting of USDA approved secondary wiper retainers as an option.



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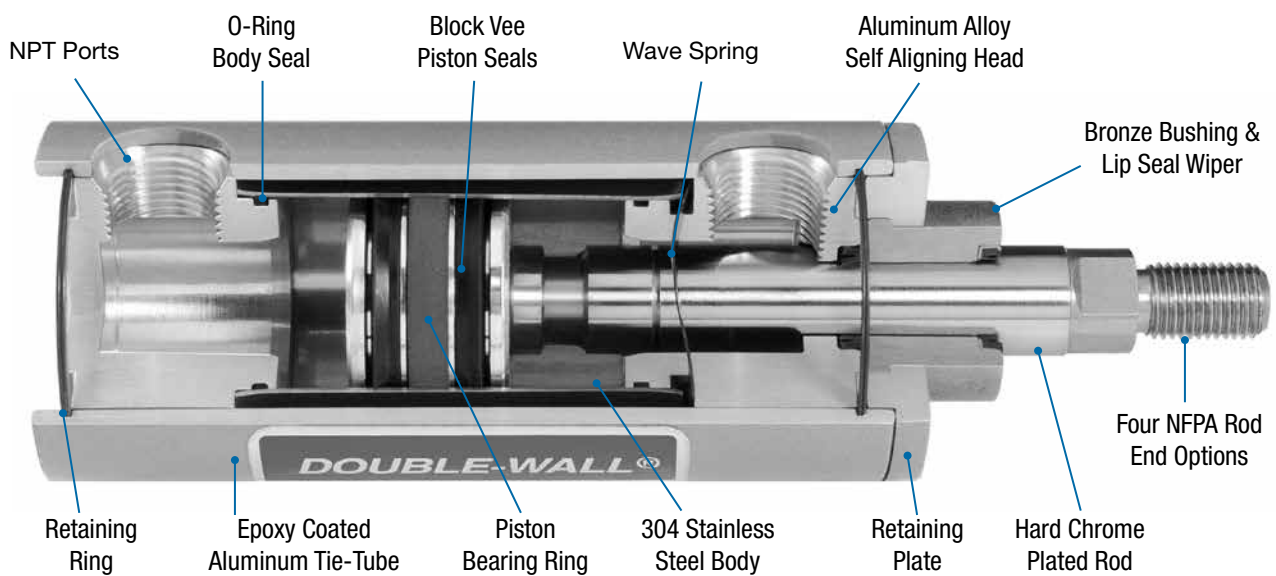
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## Double-Wall® Cylinders



# How it Works

## Piston Rod Diameter

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

## Material

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

## Rod End Options

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

## Cushions

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

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

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

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

## Mountings

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

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

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

## Delivery

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

## Specials

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

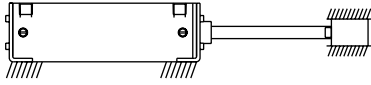
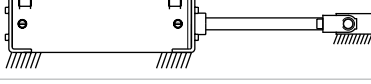
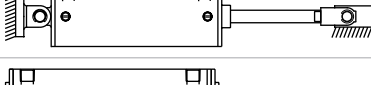
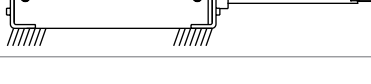
## Engineering Specifications

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

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

## Double-Wall® Long Stroke Cylinder Selection

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

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

### Dual Piston Stop Length Calculation

Select mounting class. Move over to the column showing a stroke length equal to or less than required.

Figure at top of column is required Dual Piston stop length. Examples: Class 2, 62" stroke length = 2" stop length. Class 3, 62" - 5" stop length. All lengths shown here are in inches.

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

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

### Column Strength Limitations

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

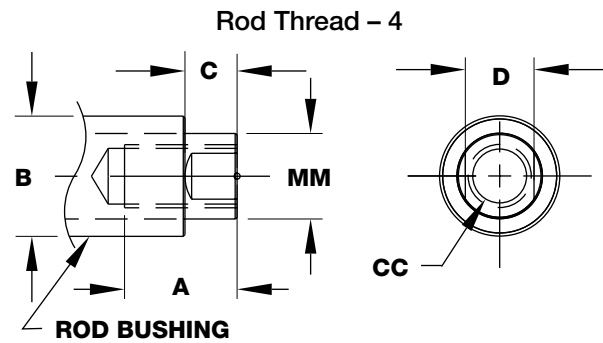
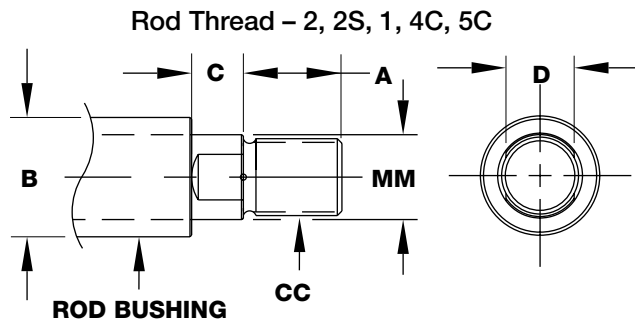
Rod Diameter/ Inches Stroke	Class 1		Class 2		Class 3		Class 4	
	5/8"	1"	5/8"	1"	5/8"	1"	5/8"	1"
10	-	-	-	-	-	-	820	-
15	-	-	-	-	820	-	360	2390
20	-	-	-	-	460	-	200	1340
25	-	-	-	-	290	1940	130	860
30	-	-	820	-	200	1340	90	600
40	820	--	460	-	110	750	50	330
50	540		290	1940	70	480	30	210
60	360	2390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

### Weights

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

# How to Specify

## Dimensions



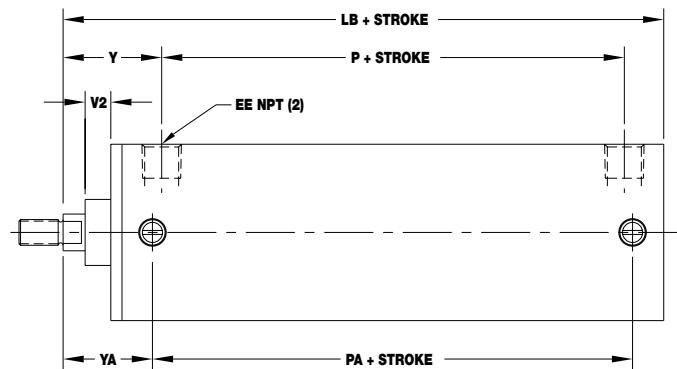
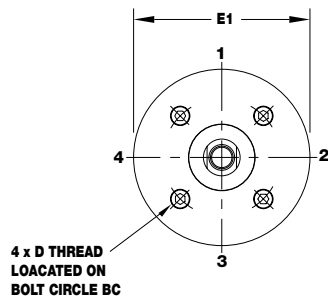
### Rod End (1-1/2", 2" and 2-1/2" Bores)

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

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

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

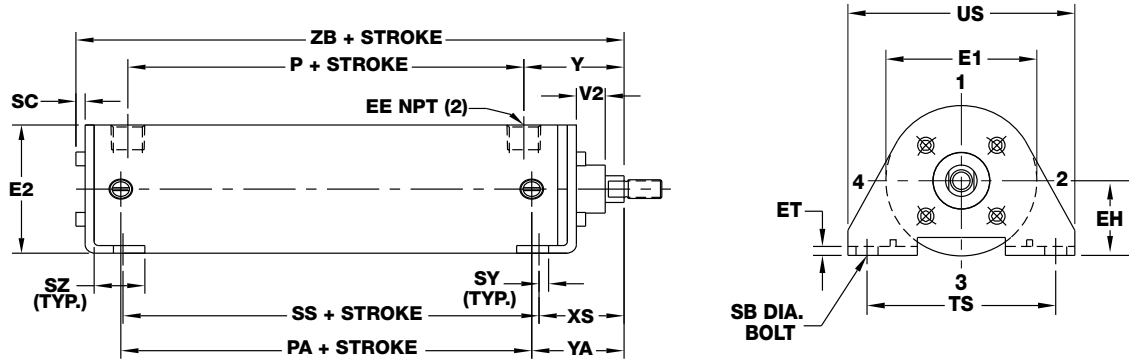
### Double-Wall (no mounting)



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

## Dimensions

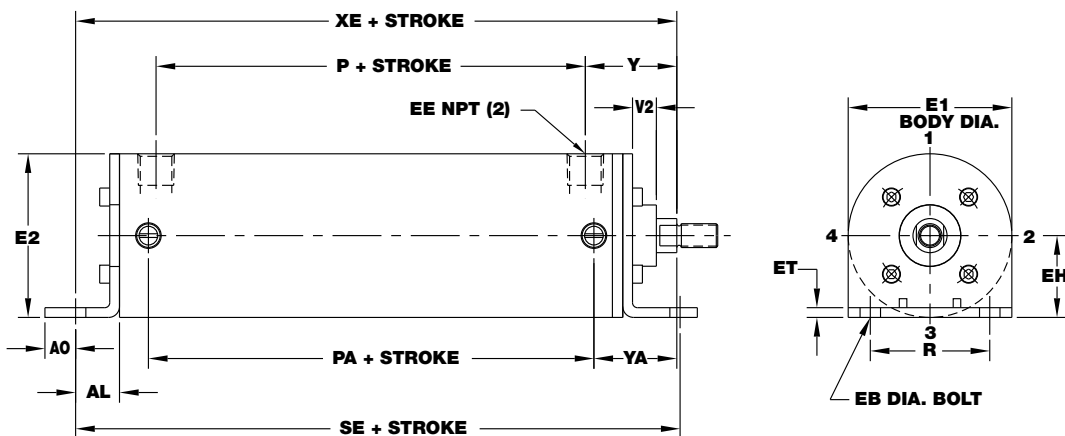
Side Lug Mount (NFPA MS-2) (in)



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

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

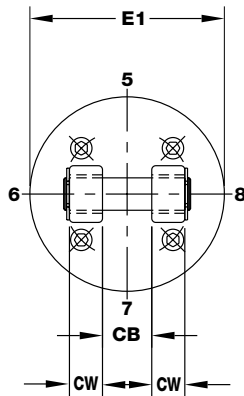
End Lug Mount (NFPA MS-7) (in)



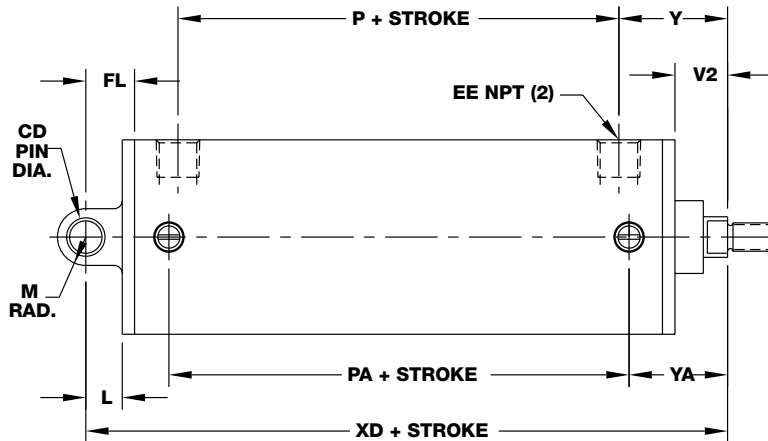
Bore	Kit	XE	P	PA	SE	V2	Y	EE	YA	A0	AL	E2	E1	EH	ET	EB	R
1-1/2"	MEL-17	5.38	2.28	2.58	5.12	.31	1.67	3/8 NPT	1.52	.26	.75	2.00	2.00	1.00	.13	.25	1.43
2"	MEL-31	5.56	2.28	2.58	5.50	.31	1.67	3/8 NPT	1.52	.32	.94	2.34	2.34	1.25	.13	.31	1.84
2-1/2"	MEL-50	5.81	2.41	2.70	5.88	.26	1.67	3/8 NPT	1.52	.30	1.07	3.00	2.94	1.49	.18	.31	2.19
3-1/4"	MEL-83	6.50	2.62	3.00	6.00	.49	2.19	1/2 NPT	2.00	.38	1.18	3.75	3.69	1.87	.25	.38	2.76
4"	MEL-125	6.63	2.62	3.00	6.25	.43	2.19	1/2 NPT	2.00	.37	1.32	4.50	4.44	2.24	.31	.38	3.32

# How to Specify

## Dimensions

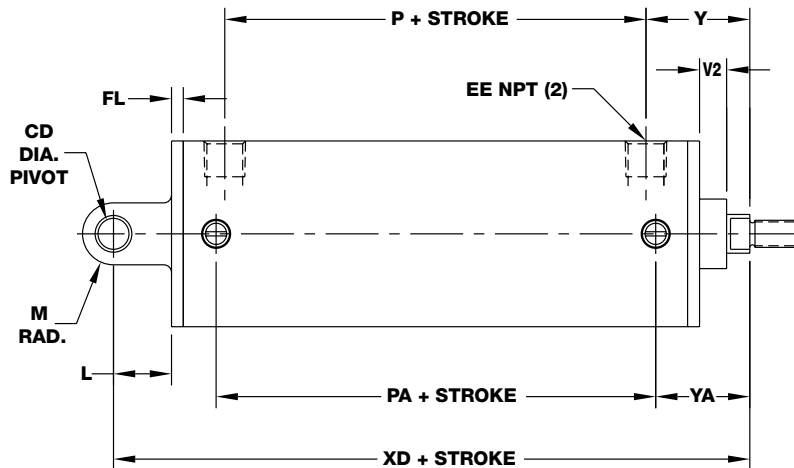
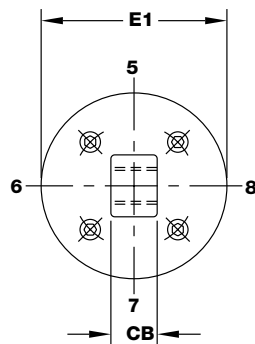


Clevis Mount (NFPA MP-1) (in)



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

Pivot Mount (NFPA MP-4) (in)

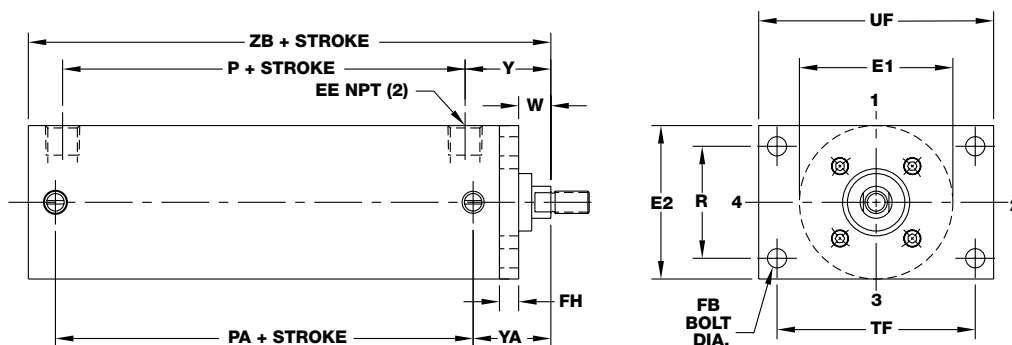


Bore	Kit	P	PA	XD	Y	V2	EE	YA	FL	CD	M	L	E1	CB
1-1/2"	MP-17	2.28	2.58	5.75	1.67	.44	3/8 NPT	1.52	.19	.50	.50	.93	2.00	.75
2"	MP-31	2.28	2.58	5.75	1.67	.44	3/8 NPT	1.52	.19	.50	.50	.93	2.34	.75
2-1/2"	MP-50	2.41	2.70	5.87	1.67	.44	3/8 NPT	1.52	.19	.50	.50	.93	2.94	.75
3-1/4"	MP-83	2.62	3.00	7.50	2.19	.74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



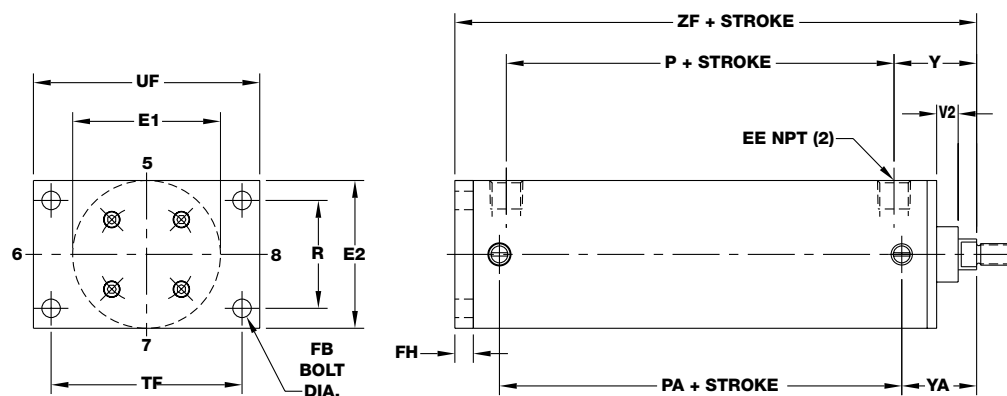
## Dimensions

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



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

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



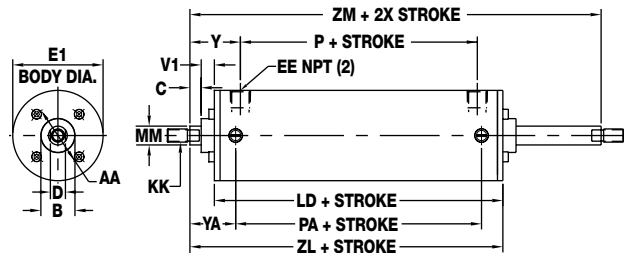
Bore	Kit	ZF	P	PA	Y	V2	EE	YA	FH	UF	E1	E2	R	TF	FB
1-1/2"	MFRA-17 MFRS-17	5.00	2.28	2.58	1.67	.44	3/8 NPT	1.52	.38	3.38	2.00	2.00	1.43	2.75	.25
2"	MFRA-31 MFRS-31	5.00	2.28	2.58	1.67	.44	3/8 NPT	1.52	.38	4.12	2.34	2.50	1.84	3.38	.31
2-1/2"	MFRA-50 MFRS-50	5.12	2.41	2.70	1.67	.44	3/8 NPT	1.52	.38	4.62	2.94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

# How to Specify

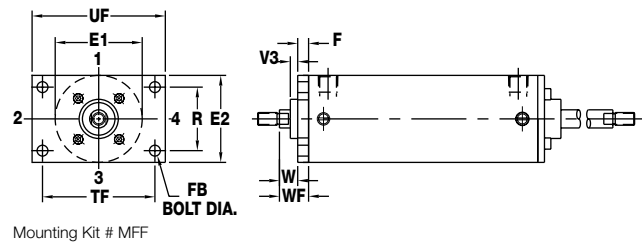
## Dimensions (Double End Rod Models)



Basic Double-End Rod Cylinder

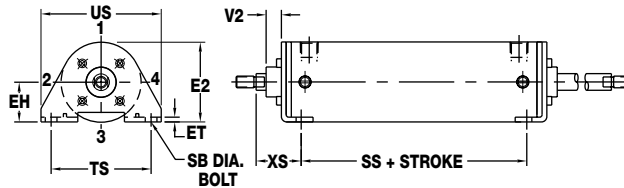


Flange Mount (NFPA MF-1)



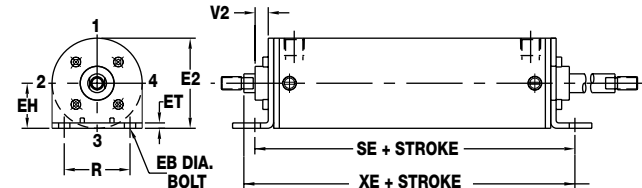
Mounting Kit # MFF

Side Lug Mount (NFPA MS-2)



Mounting Kit # MSL

End Lug Mounts (NFPA MS-7)



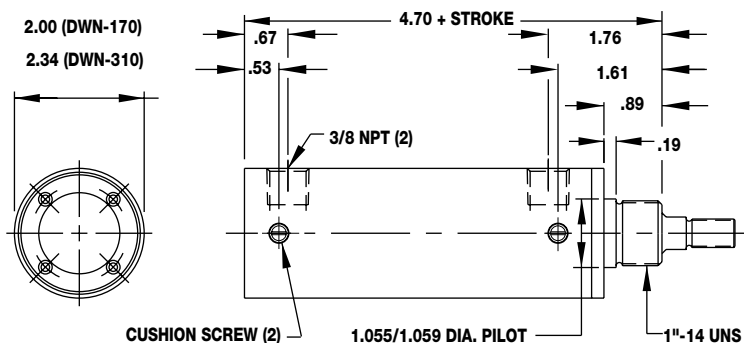
Mounting Kit # MEL

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

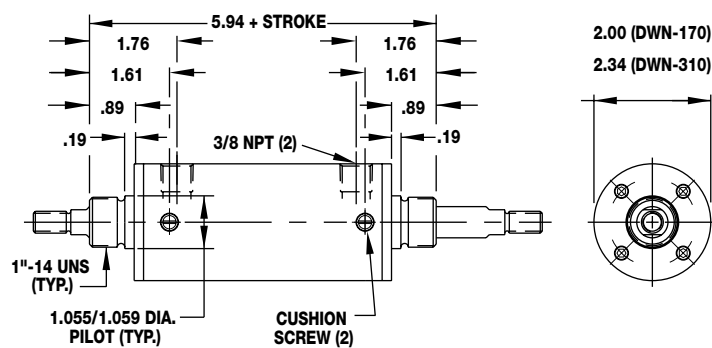
NOTE: When ordering "Cushions Both Ends," specify DWDC - One End DWDS. EE will provide extra extension on both ends.

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

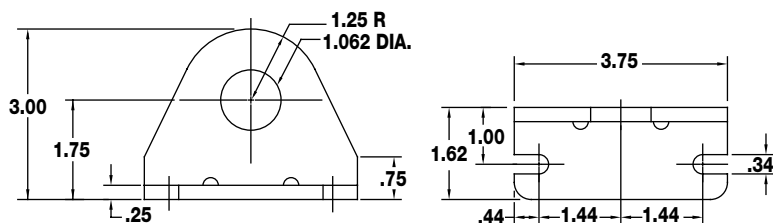
### Single End Rod



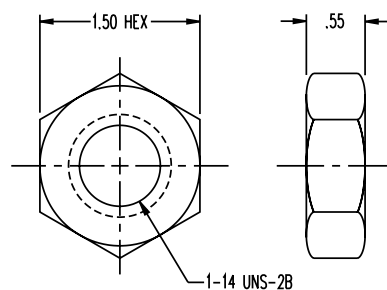
### Double End Rod



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



### Mounting Nut (D-1331)



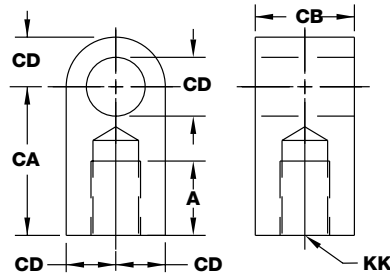
# How to Accessorize

## Accessories

### Rod Eye

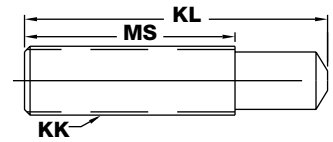
Bore	Part #
1-1/2 - 2-1/2	ARE-1
3-1/4 - 4	ARE-2

(For -2 Rod End style only)



### Rod Stud (Rolled Threads)

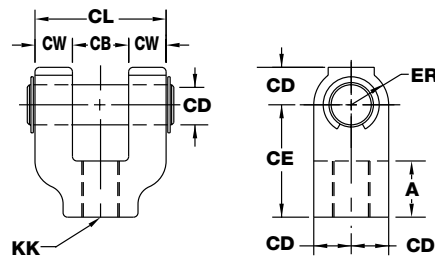
Bore	Part #
1-1/2 - 2-1/2	ARS-1
3-1/4 - 4	ARS-2



### Rod Clevis

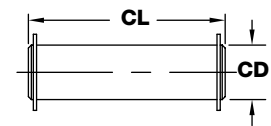
Bore	Part #
1-1/2 - 2-1/2	ARC-1
3-1/4 - 4	ARC-2

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



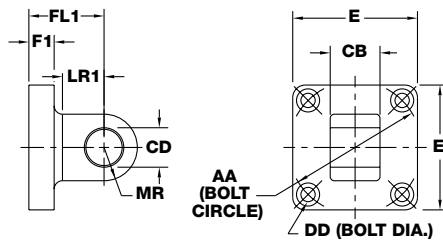
### Case Hardened Pivot Pin with Rings

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



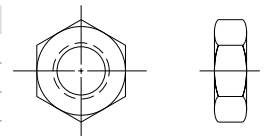
### Pivot Bracket

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



### Hex Nut (in)

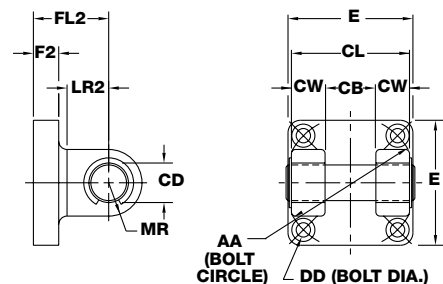
Part	Hex	THD	THK
D-154	0.69	7/16"-20	0.25
D-98	0.75	1/2"-20	0.31
D-3556	1.12	3/4"-16	0.42
D-2545	1.31	7/8"-14	0.48



### Clevis Bracket

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

(Includes Case Hardened Pin)



### Accessories Dimensions (in)

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

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

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

Bore Size		Rod End Style*	
17	1-1/2"	1	Large male, one piece
31	2"	2	Small male, one piece
50	2-1/2"	2S	Small male stud (rolled threads)
83	3-1/4"	4	Female threads
125	4"	4C	Small male, one piece, coarse thread (1-1/2", 2", and 2-1/2" bores only)
		5C	Large male, one piece coarse thread (1-1/2", 2", and 2-1/2" bores only)
		NT	No threads

\* See page 436 for dimensions.

DWC

-

17

-

10

-

2

V

Model		Stroke Length		Options	
DW	Double acting	0.5	1/2"	99	HT-99 oil pre-lube
DWC	Double acting, cushions on both ends	1	1"	DPX.XX	Dual piston <sup>1</sup>
DWF	Double acting, front head cushion	2	2"	V	High temperature seals (300° F maximum)
DWR	Double acting, rear cushion	2.5	2-1/2"	EEX.XX	Extra rod extension <sup>2</sup>
DWD	Double acting, double rod end	etc.		AXX	Alternate cushion screw locations <sup>3</sup>
DWDC	Double acting, double rod end, cushions both ends			SR	Stainless steel rod
DWDS	Double acting, double rod end, cushion one end				
DWM (C, F, R)	Double acting, magnetic position sensing (cushion optional)				
DWDM (C, F, R)	Double rod end, magnetic position sensing (cushion optional)				
DW(M)N (C, F, R)	Nose mount, 1-1/2" and 2" bores only (cushion and magnet optional)				
DWD(M)N (C, F, R)	Nose mount, double rod end, 1-1/2" and 2" bores only (cushion and magnet optional)				

<sup>1</sup> See page 435 for details.

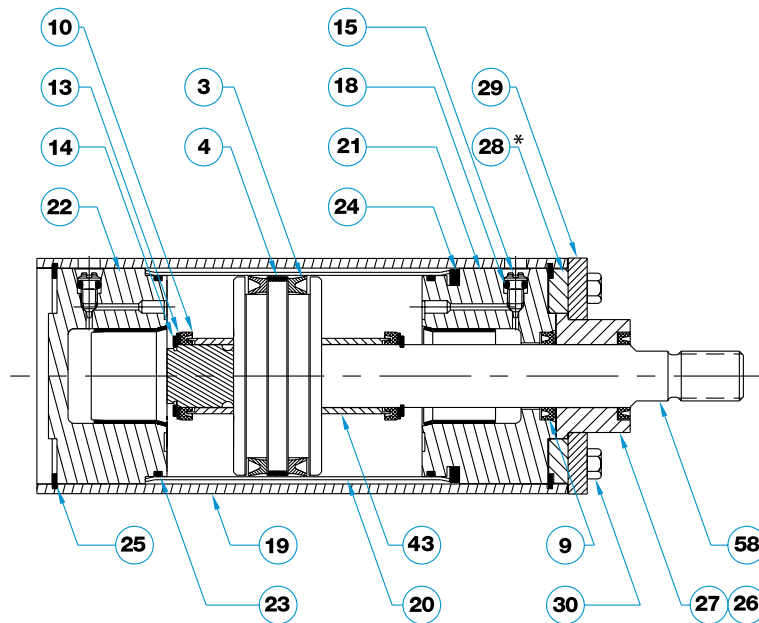
<sup>2</sup> Add to end of model number.

<sup>3</sup> Locations available: 2 and 3 for head end, 6 and 7 for cap end. See dimensional drawing of cylinder for port locations.

# How to Repair

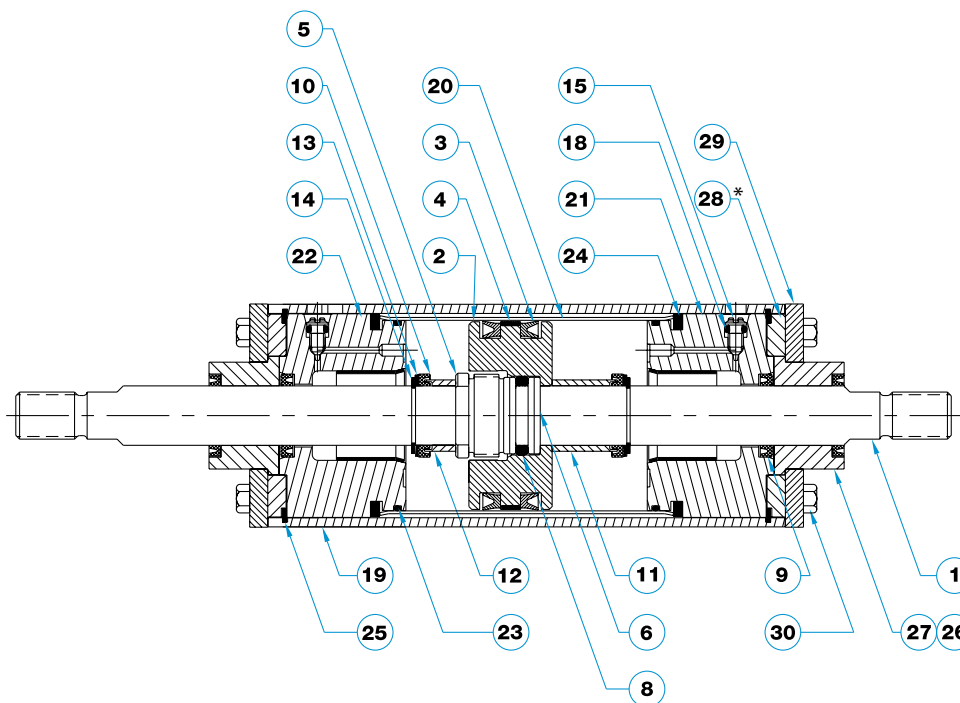
## Repair Instructions

### Basic DW Series



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

### Basic DWD Series



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

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

## Repair Parts

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

## Repair Kits

Basic Repair Kit (K-B- ) Includes:**			Cushion Repair Kit (K-C- ) Includes:*		
P-25	Retaining Ring (Tie-Tube)	2	P-10	Cushion Seal	1
P-23	O-ring	2	P-13	Cushion B/U Washer	1
P-24	Wave Spring	1	P-14	Cushion Retaining Ring	1
P-3	Piston Seal	2	P-15	Cushion Adjusting Screw	1
P-4	Piston Bearing Ring	1	P-18	O-Ring (Cushion Screws)	1
DWD Basic Repair Kit (K-D- ) Includes: **			Rod Seal Repair Kit (K-A- ) Includes: *		
P-25	Retaining Ring (Tie-Tube)	2	P-27	Rod Wiper Bushing Assembly	1
P-23	O-ring	2	P-9	Rod Seal	1
P-24	Wave Spring	2	MRS Piston Repair Kit (K-P-M- ) Includes:**		
P-3	Piston Seal	2	P-33	Piston Seal Assembly	1
P-4	Piston Bearing Ring	1	P-34	Magnet	1
			P-4	Piston Bearing Ring	1

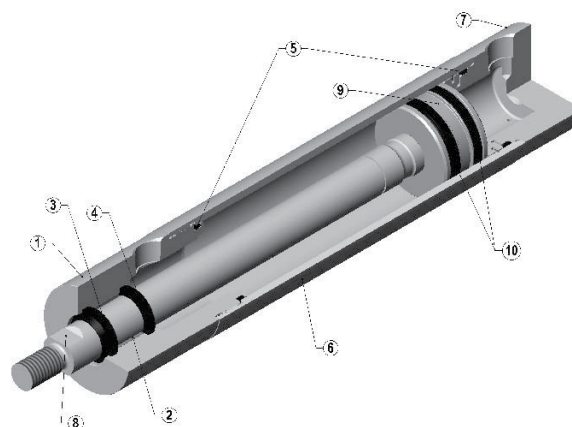
\* Parts and kits that are common to multiple bore sizes, which are available in two sizes: 1-1/2", 2", 2-1/2" bores are designated as -S, 3-1/4", 4" bores are designated as -L.

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

# Product Features

## Repairable Stainless Steel Cylinders

1. Rod Guide: Corrosion resistant 303 stainless steel is ideal for washdown applications. Designed specifically to reduce sharp edges and corners and provide a smooth transition to the cylinder body eliminating catch points for contamination and to allow ease in cleaning. Tapped holes are provided to allow easy mounting of USDA approved secondary wiper retainer as an option.
2. Rod Bushing: Material is PTFE (Polytetrafluoroethylene) for extended life, larger bores (5", 6", 8") utilize an acetal bushing.
3. Rod Wiper: A Urethane rod wiper is standard (high temperature material is optional) and offers resistance to a wide variety of washdown chemicals. Larger bores offer a PTFE rod wiper as standard.
4. Rod Seal: Nitrile rod seal (high temperature material is optional) is pressure activated and wear compensating for long life.
5. Body Seal: Nitrile material is standard (high temperature material is optional).
6. Body: Thick walled 316 stainless steel offers superior corrosion resistance and is designed to minimize gaps with the mating end caps where contamination can build up.
7. Rear Head: Corrosion resistant 303 stainless steel is ideal for washdown applications. Designed specifically to reduce sharp edges and corners and provide a smooth transition to the cylinder body eliminating catch points for contamination and to allow ease in cleaning. Optional tapped holes allow for easy mounting of NFPA rear pivot or rear clevis mounting brackets.



8. Piston Rod: Ground and roller burnished 303 stainless steel for maximum corrosion resistance.
9. Piston: Precision machined from aluminum (optional bearing strip) may also be ordered in stainless steel for internal corrosion resistance when required.
10. Piston Seals: Nitrile material is standard, high temperature material is optional. Seals are pressure activated and wear compensating.
11. Lubricant: Food Grade (H1) Grease.

## Operating Specifications

<b>Temperature:</b>	-20° to 200° F standard; 0° to 400° F with V option
<b>Stroke Maximum:</b>	24" (strokes beyond 24" require an application review)
<b>Operating Pressure:</b>	200 PSI maximum

### USDA Accepted (Option U, see pages 450 and 451)

EQUIPMENT ACCEPTANCE CERTIFICATE

The issuance of this form is based on U.S. Department of Agriculture, Dairy Grading Branch, Equipment Design Review Section, evaluation of the equipment listed above for compliance with:

USDA Dairy Equipment Guidelines



## Materials of Construction

<b>Tie Tube:</b>	Epoxy coated aluminum
<b>Cylinder Body:</b>	Smooth 304 stainless steel
<b>Piston Rod:</b>	Hard Chrome Plated standard; 303 stainless optional
<b>Seals:</b>	Buna N standard; high temperature fluoroelastomer optional
<b>Lubrication:</b>	Factory pre-lubed for non-lube service

## Engineering Specifications

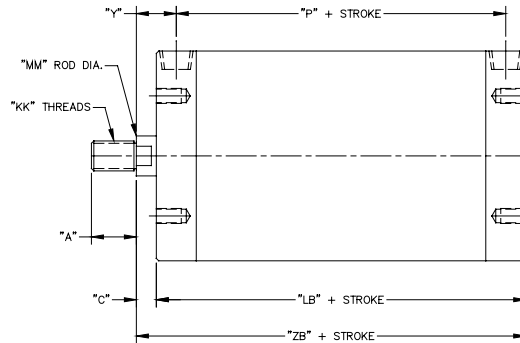
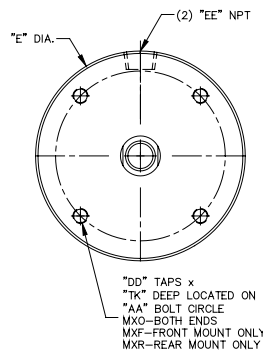
<b>Temperature:</b>	-20° to 200° F standard; 0° to 300° F with high temperature option
<b>Pressure Rating:</b>	200 PSI; 150 PSI with high temperature option
<b>Life:</b>	1400 miles of travel when lubricated (lubrication every 500 miles recommended)
<b>Stroke Maximum:</b>	72" (strokes beyond 72" require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

## Weights of Cylinders

Approximate Weights (lbs.)		
Bore	Base Weight	Adder per inch of stroke
1-1/2"	2.82	0.27
2"	5.25	0.33
2-1/2"	8.92	0.39
3-1/4"	20.63	0.61
4"	30.20	0.70
5"	24.10	0.84
6"	36.45	1.12
8"	69.80	1.80

# How to Specify

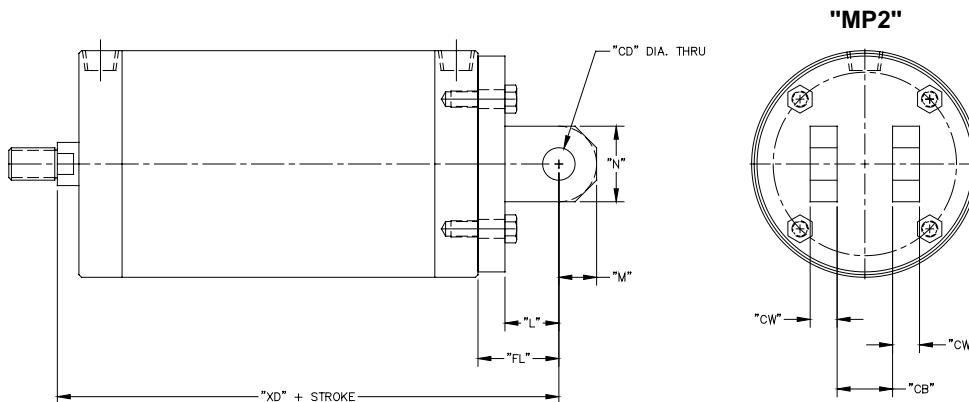
## Dimensions (MXO, MXR, MXR) (in)



Bore	Rod Diameter	A	AA	C	DD	E Dia.	EE NPT	KK	LB	MM	TK	Y	P	ZB
1-1/2"	5/8"	3/4	1.45	.56	10-24	1.75	3/8	7/16-20	5.21	5/8	.33	1.99	3.16	5.77
2"	5/8"	3/4	1.85	.56	10-24	2.25	3/8	7/16-20	5.45	5/8	.38	1.94	3.15	6.01
2-1/2"	5/8"	3/4	2.15	.56	1/4-20	2.75	3/8	7/16-20	5.95	5/8	1/2	1.93	3.39	6.51
3-1/4"	1"	1-1/8"	2.62	.64	5/16-18	3.50	1/2	3/4-16	7.43	1	5/8	2.64	3.83	8.07
4"	1"	1-1/8"	3.25	.64	3/8-16	4.25	1/2	3/4-16	7.43	1	3/4	2.52	3.93	8.07
5"	1"	1-1/8"	4.25	.50	3/8-16	5.25	1/2	3/4-16	5.75	1	5/8	1.00	4.75	6.25
6"	1-3/8"	1-5/8"	5.00	.63	1/2-13	6.25	1/2	1-14	5.75	1-3/8	7/8	1.13	4.75	6.38
8"	1-3/8"	1-5/8"	6.50	.63	5/8-11	8.38	1/2	1-14	5.88	1-3/8	1	1.13	4.88	6.50

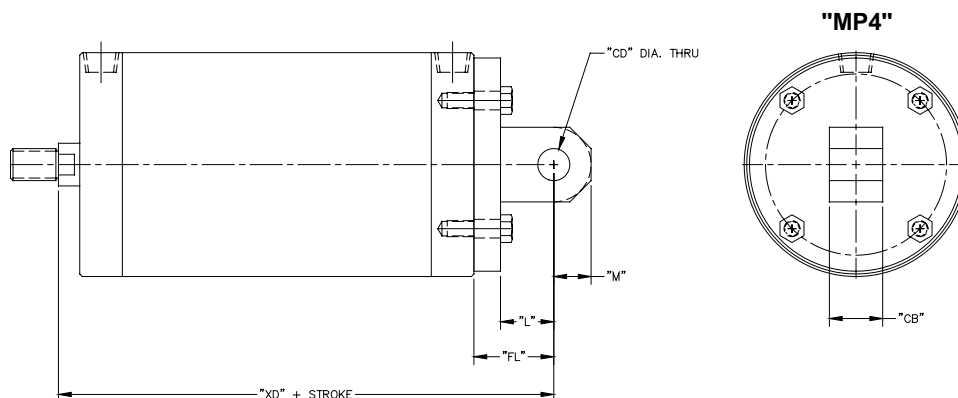
NOTE: Oversized rods are available in 5", 6", and 8" bore in each mounting style. Please contact distributor.

## Dimensions (MP2) (in)



Bore	Rod Diameter	CB	CD	CW	FL	L	M	N	XD
1-1/2"	.63	.75	.50	.49	1.13	.75	.35	.70	6.90
2"	.63	.75	.50	.50	1.13	.75	.40	.80	7.14
2-1/2"	.63	.75	.50	.50	1.13	.75	.40	.80	7.64
3-1/4"	1.00	1.25	.75	.63	1.88	1.25	.60	1.00	9.94
4"	1.00	1.25	.75	.63	1.88	1.25	.75	1.40	9.94
5"	1.00	1.25	.75	.63	1.88	1.25	.88	1.75	8.13
6"	1.38	1.50	1.00	.75	2.25	1.50	1.00	2.00	8.63
8"	1.38	1.50	1.00	.75	2.25	1.50	1.00	3.50	8.75

## Dimensions (MP4) (in)



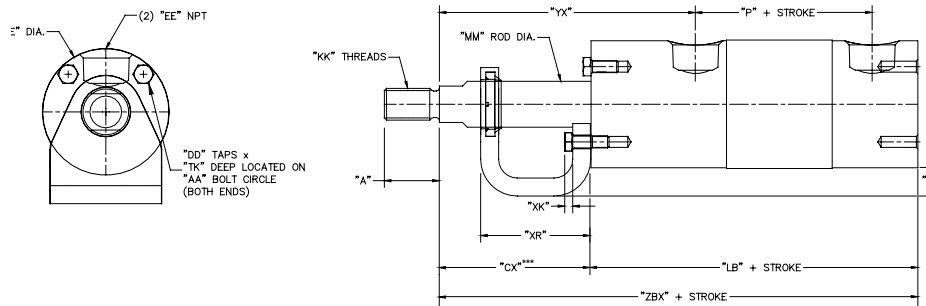
Bore	Rod Diameter	CB	CD	FL	L	M	N	XD
1-1/2"	.63	.75	.50	1.13	.75	.35	.70	6.90
2"	.63	.75	.50	1.13	.75	.40	.80	7.14
2-1/2"	.63	.75	.50	1.13	.75	.40	.80	7.64
3-1/4"	1.00	1.25	.75	1.88	1.25	.60	1.00	9.94
4"	1.00	1.25	.75	1.88	1.25	.75	1.40	9.94
5"	1.00	1.25	.75	1.88	1.25	.88	1.75	8.13
6"	1.38	1.50	1.00	2.25	1.50	1.00	2.00	8.63
8"	1.38	1.50	1.00	2.25	1.50	1.00	3.50	8.75

Note: Oversized rods are available in 5", 6", and 8" bore in each mounting style. Please contact distributor.

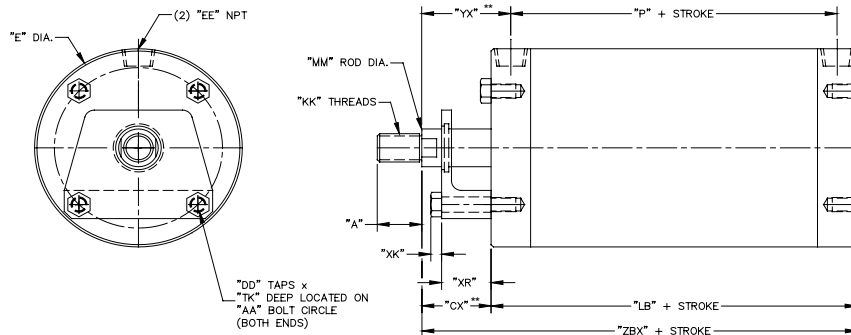
# How to Specify

## Dimensions (Option "U") (in)

### 1-1/2" to 4" Bores



### 5", 6", and 8" Bores



### External Wiper (Option U) Dimensions

Bore	Rod Diameter	A	AA	CX	DD	E Dia.	EE NPT	KK	LB
1-1/2"	.63	3/4	1.45	2.06	8-32	1-3/4	3/8	7/16-20	5.21
2"	.63	3/4	1.85	2.06	10-24	2-1/4	3/8	7/16-20	5.45
2-1/2"	.63	3/4	2.15	2.06	1/4-20	2-3/4	3/8	7/16-20	5.95
3-1/4"	1.00	1-1/8	2.62	2.14	5/16-18	3-1/2	1/2	3/4-16	7.43
4"	1.00	1-1/8	3.25	2.14	3/8-16	4-1/4	1/2	3/4-16	7.43
5"	1.00	1-1/8	4.25	1.75	3/8-16	5-1/4	1/2	3/4-16	5.75
6"	1.38	1-5/8	5.00	1.88	1/2-13	6-1/4	1/2	1-14	5.75
8"	1.38	1-5/8	6.50	1.88	5/8-11	8-3/8	1/2	1-14	5.88

Bore	Rod Diameter	MM	TK	YX	P	XR	XK	ZBX	X
1-1/2"	.63	5/8	.33	3.49	3.16	1.50	.10	7.27	.38
2"	.63	5/8	.38	3.44	3.15	1.50	.12	7.51	.50
2-1/2"	.63	5/8	1/2	3.43	3.39	1.50	.17	8.01	.26
3-1/4"	1.00	1	5/8	4.14	3.83	1.50	.24	9.57	.25
4"	1.00	1	3/4	4.02	3.93	1.50	.27	9.57	.25
5"	1.00	1	5/8	2.25	4.75	1.25	.27	7.50	N/A
6"	1.38	1-3/8	7/8	2.38	4.75	1.25	.36	7.63	N/A
8"	1.38	1-3/8	1	2.38	4.88	1.25	.44	7.75	N/A

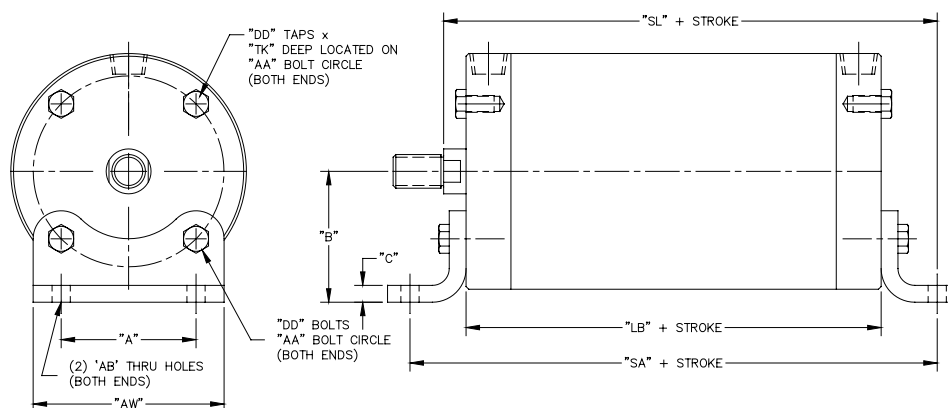
NOTE: The USDA-approved option "U" includes an external wiper as required by the USDA. Cylinder rod length is increased as shown. Oversized rods are available in 5", 6", and 8" bore in each mounting style. Please contact distributor.

## Dimensions

### Examples of "U" Option Mounting Bracket



## Dimensions (Foot Bracket) (in)



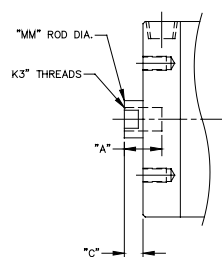
### RS Series Foot Mounting Brackets

Bore	Foot Bracket Kit	A	AB	AW	B	C	DD	AA	LB	TK	SA	SL
1-1/2"	RS-FB150	1.03	3/16	1.52	1.25	1/4	8-32	1.45	5.21	.38	6.62	6.46
2"	RS-FB200	1.31	7/32	1.81	1.62	1/4	10-24	1.85	5.45	.38	7.58	7.07
2-1/2"	RS-FB250	1.55	9/32	2.30	1.64	1/4	1/4-20	2.15	5.95	1/2	7.90	7.48
3-1/4"	RS-FB325	1.86	11/32	2.86	2.00	1/4	5/16-18	2.62	7.43	5/8	9.74	9.23
4"	RS-FB400	2.30	13/32	3.50	2.38	1/4	3/8-16	3.25	7.43	3/4	10.05	9.39
5"	RS-FB500	3.00	11/16	4.50	2.88	3/16	3/8-16	4.25	5.75	5/8	8.50	7.63
6"	RS-FB600	4.00	13/16	5.50	3.38	3/16	1/2-13	5.00	5.75	7/8	8.50	7.75
8"	RS-FB800	5.00	13/16	7.00	4.44	1/4	5/8-11	6.50	5.88	1	9.50	8.31

NOTES: Foot bracket mounting kits include two brackets and eight stainless steel screws. Can only be applied to MXO mounting styles.

## Dimensions (Option KK3) (in)

Bore	MM Rod Diameter	KK3	A (Thread Depth)	C
1-1/2", 2", 2-1/2"	5/8" Standard	7/16-20	3/4	.56
3-1/4", 4"	1" Standard	3/4-16	1-1/8	.64
5"	1" Standard	3/4-16	1-1/8	.50
6", 8"	1-3/8" Standard	1-14	1-5/8	.63



# How to Accessorize

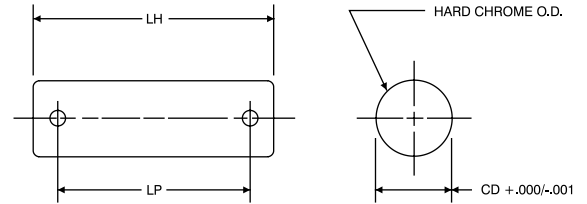
## Dimensions (Stainless Steel Accessories) (in)

### Clevis Pin

Part No.	CD (+.000/--.001)	LH	LP
RS-CP500	1/2	2-1/4	1-15/16
RS-CP750	3/4	3	2-23/32
RS-CP1000	1	3-1/2	3-7/32
RS-CP1375	1-3/8	5	4-1/4

Clevis Pin sold with (2) S.S. Cotter Pins.

CLEVIS PIN (INCLUDES COTTER PINS)



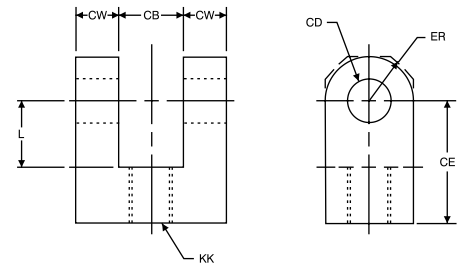
(Clevis Pins sold with (2) S.S. Cotter Pins)

### Rod Clevis

Part No.	CB	CD	CE	CW	ER	KK	L
RS-RC437						7/16-20	
RS-RC500	3/4	1/2	1-1/2	1/2	1/2	1/2-20	3/4
RS-RC750	1-1/4	3/4	2-3/8	5/8	3/4	3/4-16	1-1/4
RS-RC1000	1-1/2	1	3-1/8	3/4	1	1-14	1-1/2

Clevis Pins sold separately.

ROD CLEVIS



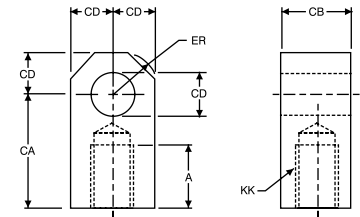
(Clevis Pins sold separately from Rod Clevis)

### Rod Eye

Part No.	A	CA	CB	CD	ER	KK
RS-RE437						7/16-20
RS-RE500	3/4	1-1/2	3/4	1/2	5/8	1/2-20
RS-RE750	1-1/8	2-1/16	1-1/4	3/4	7/8	3/4-16
RS-RE1000	1-5/8	2-13/16	1-1/2	1	1-13/16	1-14

Clevis Pins sold separately.

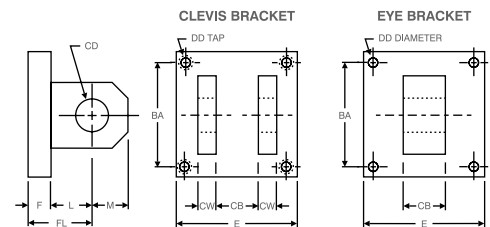
ROD EYE



(Clevis Pins sold separately from Rod Eyes)

### Clevis Brackets and Eye Brackets

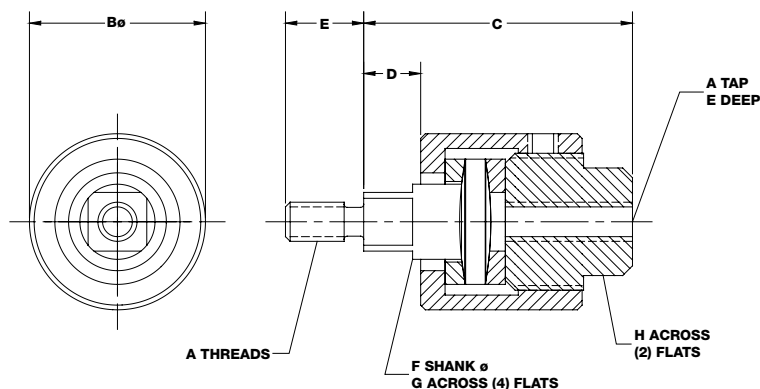
Part No.	BA	CB	CD	CW	DD	E	F	FL	L	M
<b>Clevis Brackets</b>										
RS-CB500	1-5/8	3/4	1/2	1/2	3/8-24	2-1/2	3/8	1-1/8	3/4	5/8
RS-CB750	2-9/16	1-1/4	3/4	5/8	1/2-20	3-1/2	5/8	1-7/8	1-1/4	3/4
RS-CB1000	3-1/4	1-1/2	1	3/4	5/8-18	4-1/2	3/4	2-1/4	1-1/2	1
RS-CB1375	3-13/16	2	1-3/8	1	5/8-18	5	7/8	3	2-1/8	1-3/8
<b>Eye Brackets</b>										
RS-EB500	1-5/8	3/4	1/2		13/32	2-1/2	3/8	1-1/8	3/4	1/2
RS-EB750	2-9/16	1-1/4	3/4		17/32	3-1/2	5/8	1-7/8	1-1/4	3/4
RS-EB1000	3-1/4	1-1/2	1		21/32	4-1/2	3/4	2-1/4	1-1/2	1
RS-EB1375	3-13/16	2	1-3/8		21/32	5	7/8	3	2-1/8	1-3/8



(Clevis Pins sold separately from Clevis & Eye Brackets)

## Dimensions (Stainless Steel Accessories)

### Stainless Steel Alignment Couplers (in)



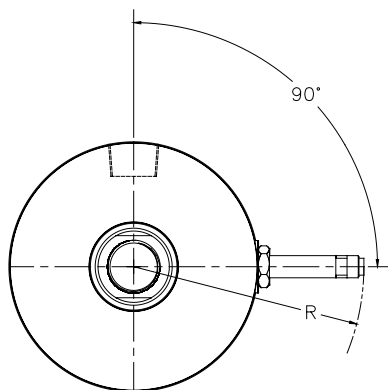
Part Number	A	B	C	D	E	F	G	H	Maximum Pull at Yield (lbs.)
AC250-SS	1/4-28	1-1/8	1-3/4	3/8	1/2	1/2	3/8	11/16	225
AC312-SS	5/16-24	1-1/8	1-3/4	3/8	1/2	1/2	3/8	11/16	375
AC375-SS	3/8-24	1-1/8	1-3/4	3/8	1/2	1/2	3/8	11/16	575
AC437-SS	7/16-20	1-1/4	2	7/16	3/4	5/8	1/2	13/16	800
AC500-SS	1/2-20	1-1/4	2	7/16	3/4	5/8	1/2	13/16	1100
AC625-SS	5/8-18	1-1/4	2	7/16	3/4	5/8	1/2	13/16	1750
AC750-SS	3/4-16	1-3/4	2-5/16	7/16	1-1/8	31/32	13/16	1-1/8	2600
AC875-SS	7/8-14	1-3/4	2-5/16	7/16	1-1/8	31/32	13/16	1-1/8	3550
AC1000-SS	1-14	2-1/2	2-15/16	7/16	1-5/8	1-11/32	1-5/32	1-5/8	4800
AC1250-SS	1-1/4-12	2-1/2	2-15/16	7/16	1-5/8	1-11/32	1-5/32	1-5/8	7600

### Examples of Specials Capability

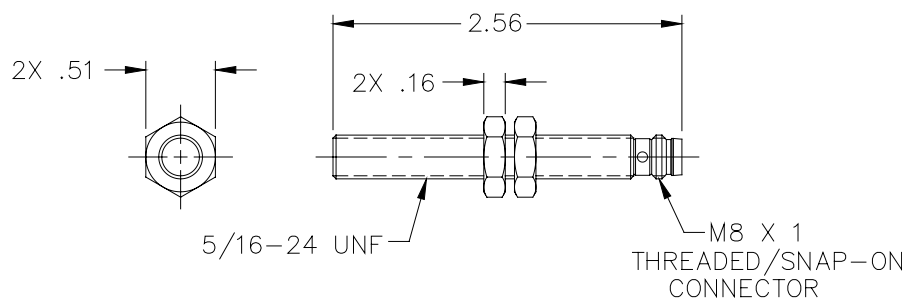


# How to Accessorize

## Dimensions (Proximity Switch [Option P])



Bore Size	Dimension R
1-1/2"	3.04"
2"	3.04"
2-1/2"	3.04"
3-1/4"	3.19"
4"	3.19"
5"	N/A
6"	N/A
8"	N/A



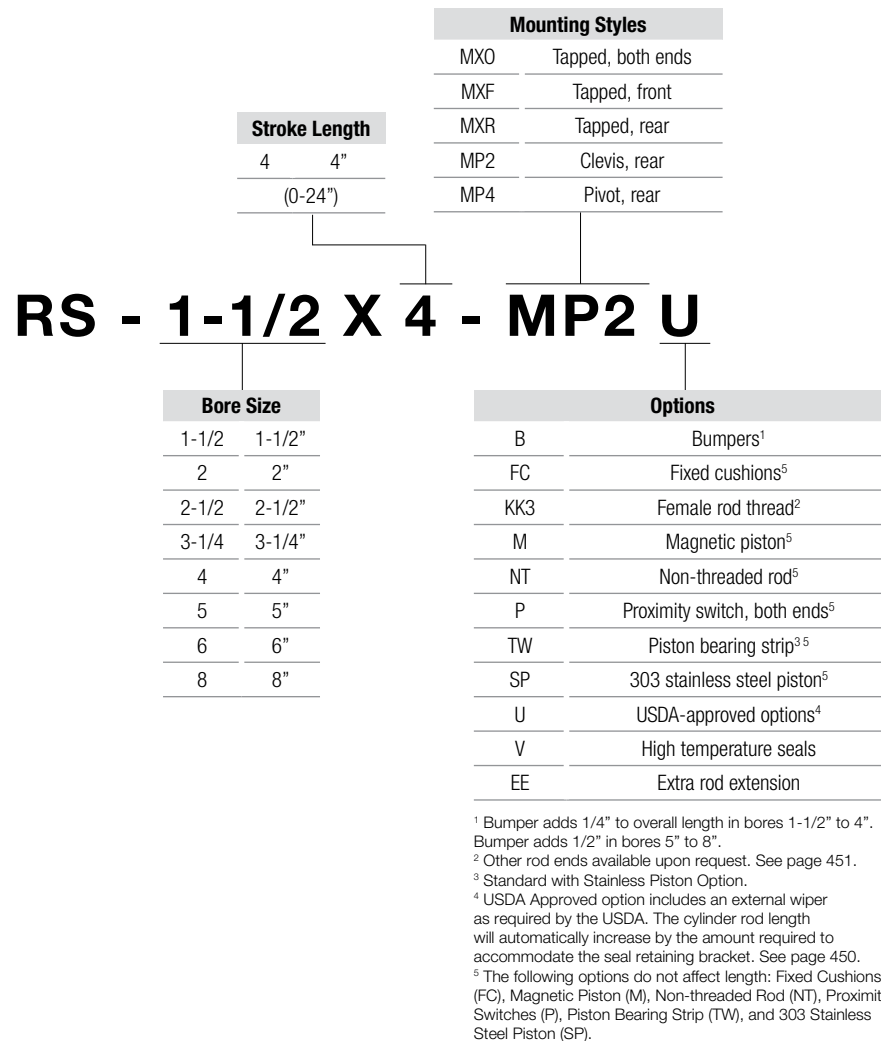
### Specifications

<b>Output:</b>	PNP Sourcing Output, normally open
<b>Load Current:</b>	100mA max.
<b>Leakage Current:</b>	10uA max.
<b>Voltage Drop:</b>	2 VDC
<b>Short Circuit and Overload Protection:</b>	yes
<b>Reverse Polarity Protection:</b>	yes
<b>Supply voltage:</b>	10-30 VDC
<b>LED:</b>	yes
<b>Current Consumption:</b>	15mA
<b>Repeatability:</b>	0.010° (.25mm)
<b>Hysteresis:</b>	5%
<b>Response Time:</b>	330uS
<b>Electromagnetic Compatibility Compliance:</b>	NEMA ICS5-1996
<b>Protection Class:</b>	IP67
<b>Ambient Temperature:</b>	-14°F to 158°F (-25°C to 70°C)
<b>Housing Material:</b>	Stainless steel
<b>Sensing Face:</b>	Crastin
<b>Approvals:</b>	UL-General Purpose CSA-General Purpose FM-Non-incendive



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

An example of a basic Repairable Stainless unit with 1-1/2" bore, 4" stroke, rear clevis mounting, and additional options is shown below.



- > Option (B) Bumpers and Option (FC) Cushions are not a valid combination.
- > Option (B) Bumpers and Option (P) Proximity Switches are not a valid combination.
- > If Option (B) and Option (V) are ordered in combination, the standard Bumper material will be used in bore sizes 5, 6, and 8".
- > Option (M) Magnetic Piston and Option (V) High Temperature Seals should be specified for chemical compatibility requirements only. The piston magnet is nitrile based, hence the temperature rating remains at 200 degrees F.
- > No Charge: (KK3) Female Rod Threads, (NT) Non-threaded Rod

# Product Features

## Centaur Repairable Cylinders

### Low Cost Mounting

The flush bottom cylinder mounts directly onto a base plate with only two bolts... no need for mounting brackets or other hardware. The pivot bracket is built-in for easy pivoting at the inlet axis. The bracket pivots within the cylinder length to save space and to eliminate one entire bracket that would be needed to mount other cylinders.

Because Centaur's trunnions serve both as mounts and as assembly elements, they cost less than any other trunnion mount on the market.

### Economical & Repairable

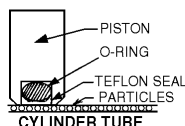
Bimba Centaur cylinders are built to match tie-rod performance, but are up to 45% less expensive and offer lubrication-free service. Centaur cylinders are not permanently crimped like most other round cylinders, so they can be disassembled for maintenance.

### Teflon Seals Create Smooth Breakaway

Centaur's unique Teflon® piston seal eliminates the forward lurch that occurs when rubber seals breakaway from the cylinder tube surface. Rod motion remains smooth throughout the stroke.

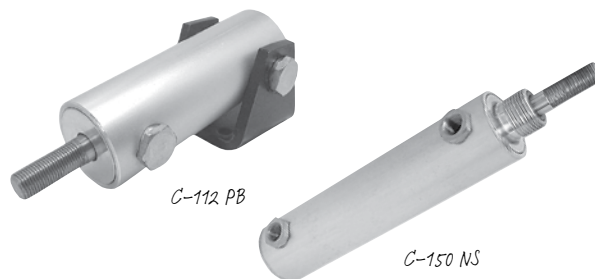
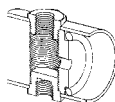
### Non-Lube

During the cylinder break-in period, molecules from the unique graphite-filled Teflon® piston seal became embedded in the pores of the hard coated aluminum cylinder tube. This forms a long-lasting, super-smooth, self-lubricated surface.



### Built-In Bumpers Absorb Impact

Rubber bumpers are built into each cylinder head to eliminate the metallic "clank" that occurs at stroke completion.



### Self Aligning Rod Couplers

Rod couplers simplify cylinder alignment problems by compensating for 2° angular error and 1/16" lateral misalignment on both extension and retraction strokes.



Model	C-112	C-150	C-200	C-250	C-300
Rod Coupler	DMA-312	DMA-500	DMA-625	DMA-750	DMA-1000

### Proximity Switches

Solid State and Reed switches can sense rod position anywhere within the stroke. A stainless steel clamp facilitates mounting at any location along the cylinder tube. Switches may be used singly or in multiples and positioned at any point around the cylinder tube. The cylinder must have a magnetic piston. For technical information, see the Switch chapter.



Model	C-112	C-150	C-200	C-250	C-300
Sinking	N/A	CS-6100N-150	CS-6100N-200	CS-6100N-250	CS-6100N-300
Sourcing	N/A	CS-6100P-150	CS-6100P-200	CS-6100P-250	CS-6100P-300
Reed	N/A	CS-6100R-150	CS-6100R-200	CS-6100R-250	CS-6100R-300

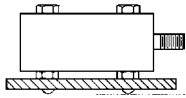
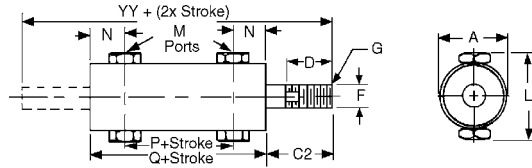
## Technical Data

### Operating Parameters

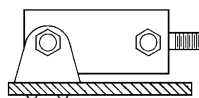
Technical Specifications	
Pressure:	150 PSI Air
Bore Sizes:	1-1/8", 1-1/2", 2", 2-1/2" and 3"
Body:	Hard Coated Aluminum
Rod Bearing:	Oil Impregnated Porous Bronze
Temperature Range:	-40° F to 250° F (-40° C to 121° C) (to 400° F [204° C] on request)

## Product Information

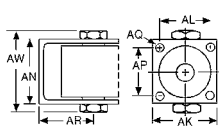
### Dimensions



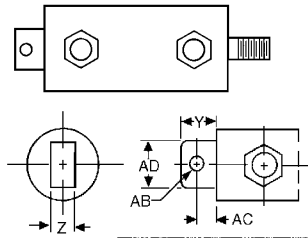
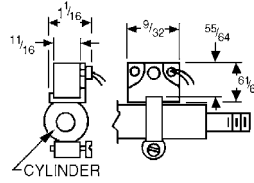
Flush Bottom (FB)



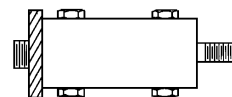
Pivot Bracket (PB)



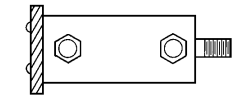
### Hall Effect



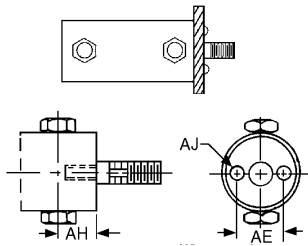
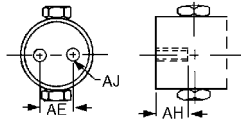
Pivot Extended (PE)  
1-1/8", 1-1/2" & 2" bores only



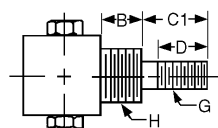
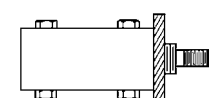
Flush Rear (FR)  
1-1/8" bore only



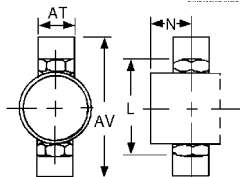
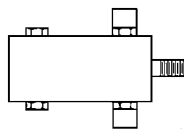
Flush Rear (FR)  
1-1/2", 2", 2-1/2" & 3" bores only



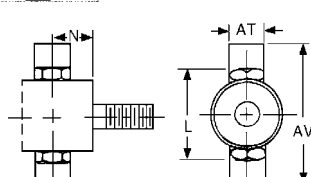
Flush Front (FF)  
1-1/2", 2", 2-1/2" & 3" bores only



Threaded Nose (NS)  
Std. on all 1 1/8" bore mounts  
1-1/8", 1-1/2" & 2" bores only



Trunnion Rear (TR)



Trunnion Front (TF)

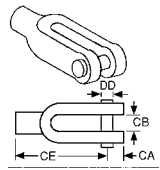
	Bore Sizes				
	1-1/8"	1-1/2"	2"	2-1/2"	3"
<b>A</b>	1-3/8	1-3/4	2-1/4	2-3/4	3-1/4
<b>B</b>	5/8	13/16	13/16	-	-
<b>C1</b>	5/8	1-5/8	1-7/8	-	-
<b>C2</b>	-	1-7/16	1-11/16	1-3/4	2-1/16
<b>D</b>	1/2	1-1/4	1-1/2	1-1/2	1-3/4
<b>F</b>	5/16	1/2	5/8	3/4	1
<b>G</b>	5/16-24	1/2-20	5/8-18	3/4-16	1-14
<b>H</b>	3/4-16	1-14	1 1/4-12	-	-
<b>L</b>	2-3/32	2-1/8	2-5/8	3-1/8	3-5/8
<b>M</b>	1/8 NPT*	1/4 NPSF	1/4 NPSF	1/4 NPSF	1/4 NPSF
<b>N</b>	7/16	51/64	51/64	51/64	51/64
<b>P+Stroke</b>	1-21/64	1-27/32	1-59/64	2-3/64	2-11/64
<b>Q+Stroke</b>	2-13/64	3-7/16	3-1/2	3-5/8	3-3/4
<b>R</b>	10-32	3/8-24	3/8-24	3/8-24	3/8-24
<b>Y</b>	5/8	15/16	1-1/8	-	-
<b>Z</b>	3/8	11/16	3/4	-	-
<b>AB</b>	1/4	3/8	1/2	-	-
<b>AC</b>	3/8	9/16	5/8	-	-
<b>AD</b>	5/8	1	1-1/4	-	-
<b>AE</b>	-	1-1/8	1-1/2	1-3/4	2
<b>AH</b>	-	1/2	5/8	3/4	7/8
<b>AJ</b>	-	1/4-28	5/16-24	3/8-24	1/2-20
<b>AK</b>	1-5/8	2-1/4	2-1/4	2-7/8	3-1/8
<b>AL</b>	1-1/4	1-5/8	1-5/8	2-1/8	2-3/8
<b>AN</b>	1-3/4	2-13/32	2-29/32	3-13/32	3-29/32
<b>AP</b>	1	1-1/8	1-5/8	2-1/8	2-5/8
<b>AQ</b>	13/64	9/32	9/32	9/32	9/32
<b>AR</b>	31/32	1-9/16	1-13/16	1-15/16	2-5/16
<b>AT</b>	.418	.731	.731	.731	.731
<b>AV</b>	2-5/32	3-5/8	4-1/8	4-5/8	5-1/8
<b>AW</b>	2-17/64	2-13/16	3-5/16	3-13/16	4-5/16
<b>YY + (2 X STK)</b>	4-23/32	6-5/16	6-7/8	7-1/8	7-1/8

\* 1-1/8 bore model with trunnion mounts has 1/4-28 ports.

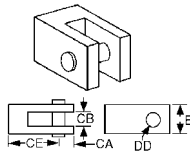
# How to Order

## How To Accessorize

Rod Clevis w/Pin (CEC)



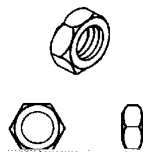
1-1/8" & 1-1/2" bores



2" & 3" bores

Nose Nuts (CN)

1-1/8", 1-1/2" & 2" bores  
only



## Rod Clevis Accessory Dimensions

Bore	E	CA	CB	CE	DD
1-1/8"	-	19/64	11/32	13/16	5/16
1-1/2"	-	15/32	9/16	1-13/16	1/2
2"	1-1/4	7/16	5/8	2-1/16	1/2
2-1/2"	1-1/2	3/4	1-1/4	2-3/8	3/4
3"	1-1/4	7/16	5/8	2-1/16	1/2

## Model Numbers

Bore Sizes Accessory	1-1/8"	1-1/2"	2"	2-1/2"	3"
Rod Clevis, Pin	CEC-112	CEC-150	CEC-200	DMC-4	CEC-300
Nose Nut	CN-112	CN-150	CN-200	-	-

## How To Order

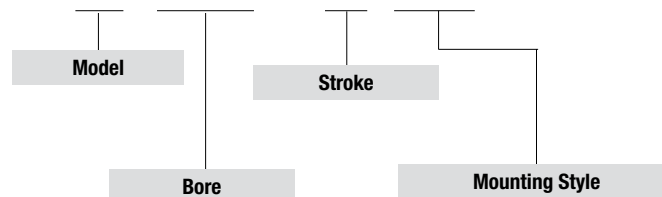
### Air Reservoirs

Two Centaur rear heads and a tube form an economical air tank. Consult factory for more information. Simply add AR to model.

### Ordering Information

When ordering Centaur cylinders, list the model number, stroke length and mounting option(s) required. Please consult the factory for stainless steel rods, air reservoirs or any special cylinder need.

## C-112 x 4-NS



Bore	1-1/8"	1-1/2"	2"	2-1/2"	3"
Model	C-112	C-150	C-200	C-250	C-300
Nose Mount (NS)	•	•	•	NA	NA
Flush Bottom (FB)	•	•	•	•	•
Flush Front (FF)	NA	•	•	•	•
Flush Rear (FR)	•	•	•	•	•
Pivot Bracket (PB)	•	•	•	•	•
Pivot Extended (PE)	•	•	•	NA	NA
Trunnion Front (TF)	•	•	•	•	•
Trunnion Rear (TR)	•	•	•	•	•
Other Options:	•	•	•	•	•
Double Rod (DR)	**	•	•	•	•
Dupont Viton Seals (VI)	•	•	•	•	•
Magnetic Piston (MP)	NA	•	•	•	•
Air Reservoir (AR)	•	•	•	•	•

Δ Nose (NS) mounts standard on both ends of 1 1/8" bore model with double rod.