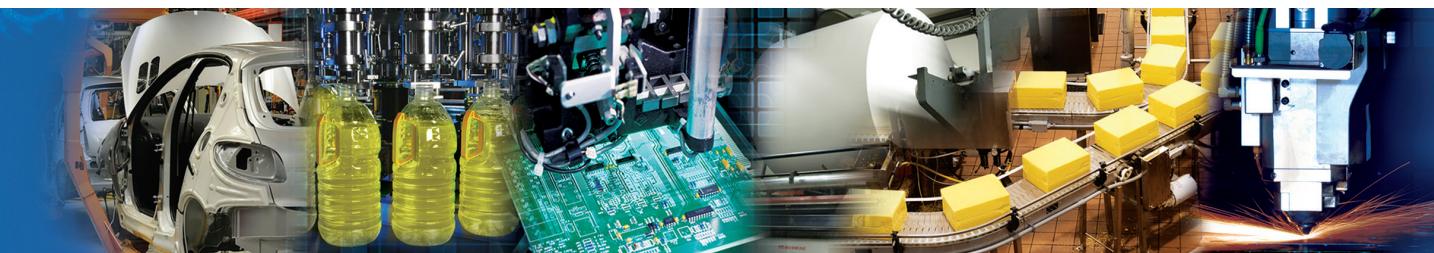


numatics®

C Series

Compact Cylinder Line



www.numatics.com


EMERSON™
Industrial Automation

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The **C Series** is a robust compact cylinder line that is designed to fit tight space requirements. The low profile design and variety of mounting options makes this cylinder line extremely popular. Furthermore, its unique style and diversity makes the C Series a one of a kind compact cylinder line.

Tube

The **tube** is hard coat anodized aluminum. The hard coating is an electro-chemical process, which produces a very dense surface of aluminum oxide. This surface has extreme hardness (60 RC), excellent wear and corrosion resistance, and a low coefficient of friction. Additionally, profile tubing is standard on 3/4" through 2-1/2" bore sizes (3" and 4" bores are the tie rod configuration). The profile tubing has a custom dovetail groove on all sides for trouble-free switch and accessory mounting.

End Caps

The **end caps** are accurately machined from solid aluminum bar stock. They are anodized for corrosion resistance. Additionally, a recess on the piston-mating surface (at both ends) enables the air to work on a larger piston area for effortless breakaway.

Rod Bushing

The C Series includes a sintered bronze **rod bushing** for maximum load bearing support.

Rod Seal

The quad ring **rod seal** ensures proper sealing even at low pressures.

Piston Rod

High strength steel (100,000 psi minimum yield) **piston rod** has a ground, polished, and chrome plated surface. This surface provides maximum life for both the rod bushing and the seals.

Piston Seal

The quad ring **piston seal** ensures proper sealing even at low pressures.

Piston

The solid aluminum alloy **piston** is strong and durable.

Tie Rods

The **tie rods** (3" and 4" only) are 100,000 psi minimum yield steel for maximum holding power. The threads are roll formed for superior strength and engagement.

Tube End Seal

The **tube end seals** are compression type and reusable.

Ports

Our enhanced **port** design enables the cylinder to work more efficiently. Through the use of precise machining depths and tool shape, we are able to smooth the flow path into and out of the cylinder.

Mounting Holes

The dual purpose **mounting holes** allow use of through bolts or threaded-in attachments.



Standard Specifications:

- Variety of mounts
- Bore sizes from 3/4" through 4"
- Piston rod diameters from 1/4" to 1"
- Maximum pressure rating is 250 psi air
- Standard temperature -10°F to 165°F (-23°C to 74°C)
- All aluminum construction
- NPTF ports
- Flexible port locating

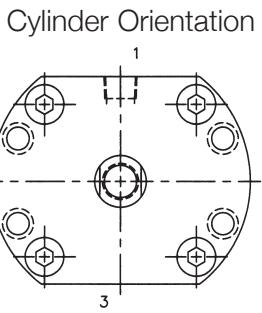
How to Order

Mount	P1	C	L - 04	A	1	B - A	AA	0	04	0	
Leave blank unless using MU or BK option.											
Mount	F1	= Front Flange									
	F2	= Rear Flange									
	P1	= Fixed Clevis									
	P2	= Detachable Clevis									
	P3	= Fixed Eye									
	P4	= Detachable Eye									
	R3	= Round Head and Cap									
	S2	= Foot Mount									
	*S4	= Bottom Tapped									
	X0	= Basic-No Mount									
*S4 mount is standard on 3/4" and 1 1/8" bore.											
Type	C	= Compact Cylinder Line									
Bore	C	= 3/4"									
	G	= 1-1/8"									
	K	= 1-1/2"									
	L	= 2"									
	M	= 2-1/2"									
	N	= 3"									
	R	= 4"									
Full Inches of Stroke											
	00	= 0" Stroke									
	01	= 1" Stroke									
	02	= 2" Stroke									
	03	= 3" Stroke									
	20	= 20" Stroke									
Fractional Inches of Stroke											
	A	= 0"	I	= 1/2"							
	B	= 1/16"	J	= 9/16"							
	C	= 1/8"	K	= 5/8"							
	D	= 3/16"	L	= 11/16"							
	E	= 1/4"	M	= 3/4"							
	F	= 5/16"	N	= 13/16"							
	G	= 3/8"	O	= 7/8"							
	H	= 7/16"	P	= 15/16"							
Rod End Code											
	1*	= #1 Standard Rod Diameter									
	2	= #2 Standard Rod Diameter									
	3	= #3 Standard Rod Diameter									
	4	= Special Standard Rod Diameter (must specify threads)									
	5	= Special Oversize Rod Diameter (must specify threads)									
	6	= #1 Oversize Rod Diameter									
	7	= #2 Oversize Rod Diameter									
	8	= #3 Oversize Rod Diameter									
Cushions											
	A	= No Cushions									
Ports											
	Position#		10-32	*1/8"	1/4"						
	1	A	B	C							
	2	G	H	I							
	3	M	N	O							
	4	S	T	U							

Rod End Styles, Diameters and Threads

Bore	Diameter	Style #1 Standard Male	Style #2 Optional Female	Style #3 Standard Female
3/4"	.250	#8-32	N/A	#8-32
1 1/8"	.500	1/4-28	5/16-24	1/4-28
1 1/2"	.625 .750	7/16-20 1/2-20	3/8-24 N/A	7/16-20 1/2-20
2"	.625 .750	7/16-20 1/2-20	N/A N/A	7/16-20 1/2-20
2 1/2"	.625 .750	7/16-20 1/2-20	N/A N/A	7/16-20 1/2-20
3"	1.000	3/4-16	5/8-18	3/4-16
4"	1.000	3/4-16	N/A	3/4-16

NOTE: 1/8" and 1/4" ports can affect OAL of cylinder.
See page 5 for details.



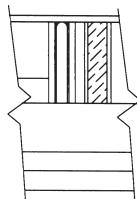
Ports Normally in Position 1

*NOTE: Style #1 Male rods are studded female rods

How to Order continued

Figure 1.

Wear Band Option



Side load and misalignment are major factors that can cause premature failure of the rod bushing and piston, the two load bearing points on a cylinder.

The Wear Band option separates the load bearing points by locating the wear band at the rear of the piston assembly, to give maximum column strength even at full extension (Fig. 1).

The wear band is a stable, lubricating strip placed far back on the piston. Its width and placement serve to locate piston load at the optimum point.

Order as "WA" Option or by putting a "2" in the magnetic piston code

Minimum Length detail for Switches

Bore	Min. Stroke "Sense One End"	Min. Stroke "Sense Both Ends"
3/4"	1/2"	1/2"
1 1/8"	1/2"	1/2"
1 1/2"	7/16"	7/16"
2"	7/16"	7/16"
2 1/2"	1/4"	3/8"
3"	1/4"	3/8"
4"	1/8"	5/16"

C Series Length Adders**Standard Adders**

Cylinders	Bore	WA Option	"2" Magnet Code	"BA" Option Bumpers (Both Ends)	1/8" NPT Ports
C-series	0.75"	*1.05"	*1.05"	0.125"	0.500"
C-series	1.125"	*0.925"	*0.925"	0.125"	0.500"
C-series	1.5"	*0.937"	*0.937"	0.125"	N/A
C-series	2"	*0.937"	*0.937"	0.125"	N/A
C-series	2.5"	*1"	*1"	0.125"	N/A
C-series	3"	*0.750"	*0.750"	0.125"	N/A
C-series	4"	*0.875"	*0.875"	0.125"	N/A

Special Notes:

* For cylinders that require a "2" (reed) magnet, a special piston will be used. This piston will incorporate the wearband, so when the "2" style magnet is ordered the cylinder will automatically have a wearband. For cylinders that require a "WA" option (wearband) this same special piston is used, but the magnet will not be placed into the groove unless ordered, therefore the adders will be equal for the "2" magnet and "WA" option. When ordering the combination of "2" (reed) magnet and "WA" (wearband) option you will only use the adder once.

Combo Adders

WA(wearband)+ 2(Reed Magnet)
*1.05"
*0.925"
*0.937"
*0.937"
*1"
*0.750"
*0.875"

Notes on Ordering:

Ports - Full flow 10-32 ports are standard on 3/4" and 1 1/8" bore Compact Series. If you want 1/8" NPTF ports, overall lengths will increase by 7/16" on double rods and 1/2" on single rods due to a thicker head and cap. Full flow 1/8" NPTF ports are standard and 1/4" NPTF ports are not available on 1 1/2" and 2" bore sizes. Full flow 1/4" NPTF ports are standard on 2 1/2" through 4" bore sizes. Smaller ports are available.

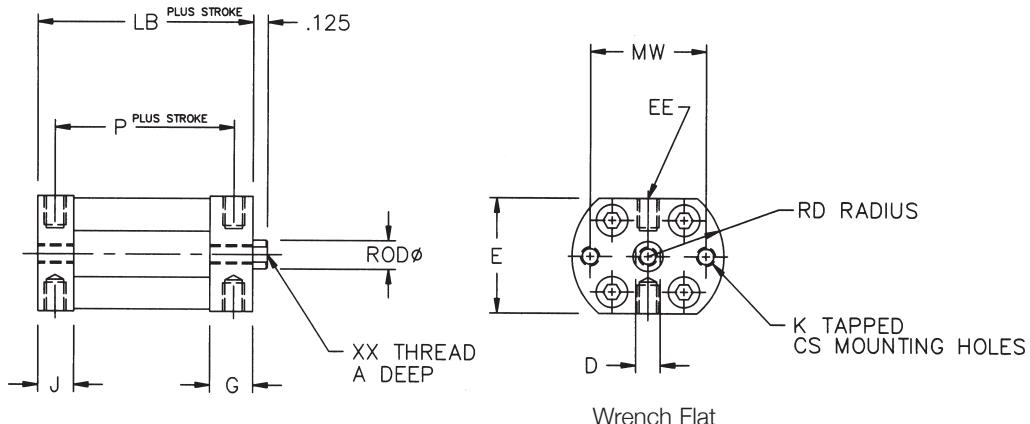
Specials - Various special configurations are available: consult factory. Metric rod threads and "G" ports are available by special order.

Multiple Options - For multiple options, please consult the factory for "combination" option codes.

Dimensions: Inches

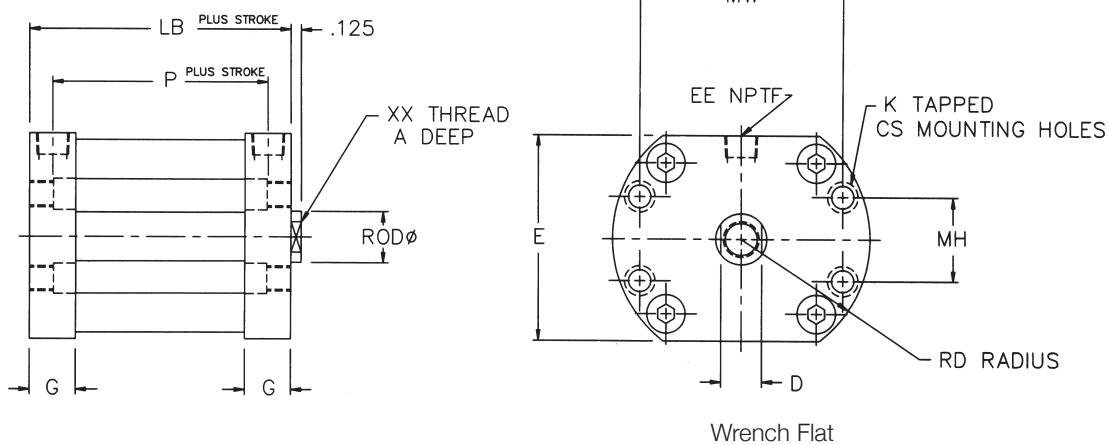
Basic Compact Series Cylinders

3/4" and 1 1/8" Bores



Mount Code S4 (Standard)

1 1/2" Through 4" Bores



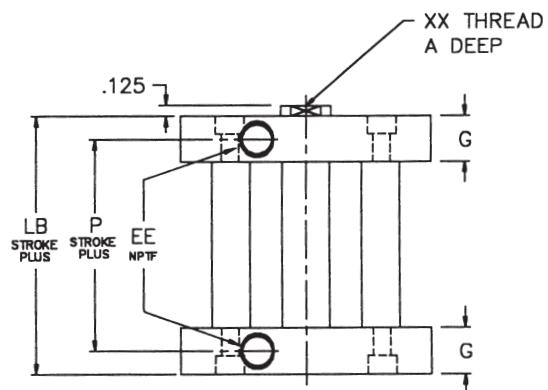
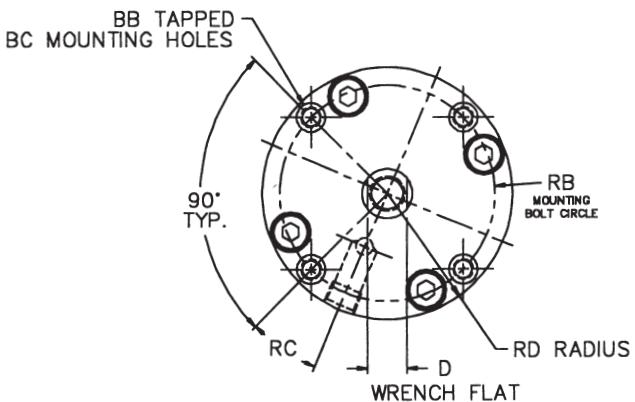
Mount Code XO

Bore	Rod	A	CS	D	E	EE+	G	J	K	*LB	MH	MW	P	RD	XX
3/4"	0.250	0.375	#5	0.212	1.250	#10-32	0.406	0.343	#8-32	1.000	N/A	1.375	0.638	0.844	#8-32
1-1/8"	0.500	0.375	#6	0.375	1.750	#10-32	0.406	0.343	#10-32	1.000	N/A	1.793	0.638	1.125	1/4-28
1-1/2"	0.625	0.500	#10	0.500	2.000	1/8	0.625	N/A	1/4-28	1.438	.770	2.114	0.875	1.313	7/16-20
1-1/2"	0.750	0.750	#10	0.625	2.000	1/8	0.625	N/A	1/4-28	1.438	.770	2.114	0.875	1.313	1/2-20
2"	0.625	0.500	1/4	0.500	2.500	1/8	0.625	N/A	5/16-24	1.438	1.029	2.483	0.875	1.575	7/16-20
2"	0.750	0.750	1/4	0.625	2.500	1/8	0.625	N/A	5/16-24	1.438	1.029	2.483	0.875	1.575	1/2-20
2-1/2"	0.625	0.500	1/4	0.500	3.000	1/4	0.750	N/A	5/16-24	1.750	1.363	2.922	1.063	1.875	7/16-20
2-1/2"	0.750	0.750	1/4	0.625	3.000	1/4	0.750	N/A	5/16-24	1.750	1.363	2.922	1.063	1.875	1/2-20
3"	1.000	0.875	1/4	0.875	3.500	1/4	0.750	N/A	5/16-24	1.875	1.585	3.399	1.188	2.125	3/4-16
4"	1.000	0.875	5/16	0.875	4.500	1/4	0.750	N/A	3/8-24	1.875	2.060	4.418	1.188	2.750	3/4-16

* Refer to pg. 5 for length adders

Dimensions: Inches

Round Head and Cap Mount



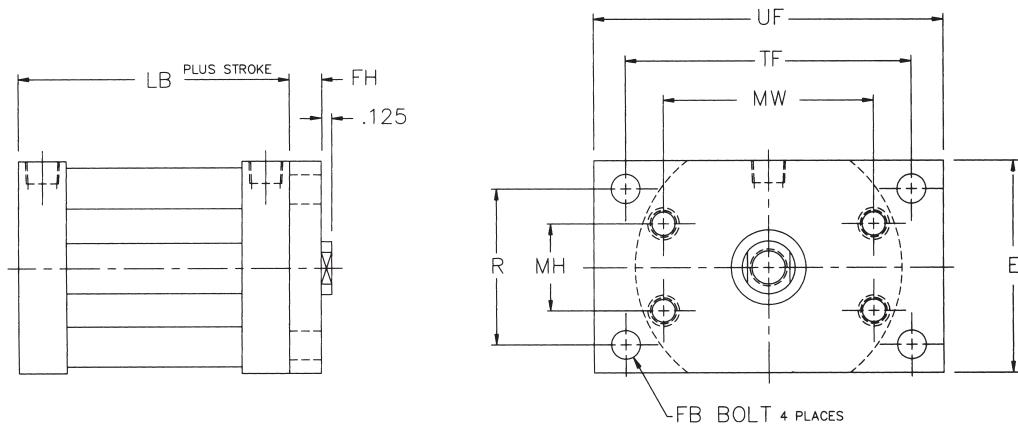
Mount Code R3

Bore	Rod	A	BB	BC	D	EE+	G	LB	P	RB	RC	RD	XX
3/4"	0.250	0.375	#10-32	#6	0.212	#10-32	0.406	1.013	0.638	1.219	35°	0.750	#8-32
1-1/8"	0.500	0.375	#10-32	#6	0.375	#10-32	0.406	1.013	0.638	1.688	20°	1.000	1/4-28
1-1/2"	0.625	0.500	1/4-28	#10	0.500	1/8	0.625	1.438	0.875	2.188	21°	1.313	7/16-20
1-1/2"	0.750	0.750	1/4-28	#10	0.625	1/8	0.625	1.438	0.875	2.188	21°	1.313	1/2-20
2"	0.625	0.500	1/4-28	#10	0.500	1/8	0.625	1.438	0.875	2.688	22°	1.563	7/16-20
2"	0.750	0.750	1/4-28	#10	0.625	1/8	0.625	1.438	0.875	2.688	22°	1.563	1/2-20
2-1/2"	0.625	0.500	5/16-24	1/4	0.500	1/4	0.750	1.750	1.063	3.250	25°	1.875	7/16-20
2-1/2"	0.750	0.750	5/16-24	1/4	0.625	1/4	0.750	1.750	1.063	3.250	25°	1.875	1/2-20
3"	1.000	0.875	5/16-24	1/4	0.875	1/4	0.750	1.875	1.188	3.781	21°	2.125	3/4-16
4"	1.000	0.875	3/8-24	5/16	0.875	1/4	0.750	1.875	1.188	4.938	21°	2.750	3/4-16

Dimensions: Inches

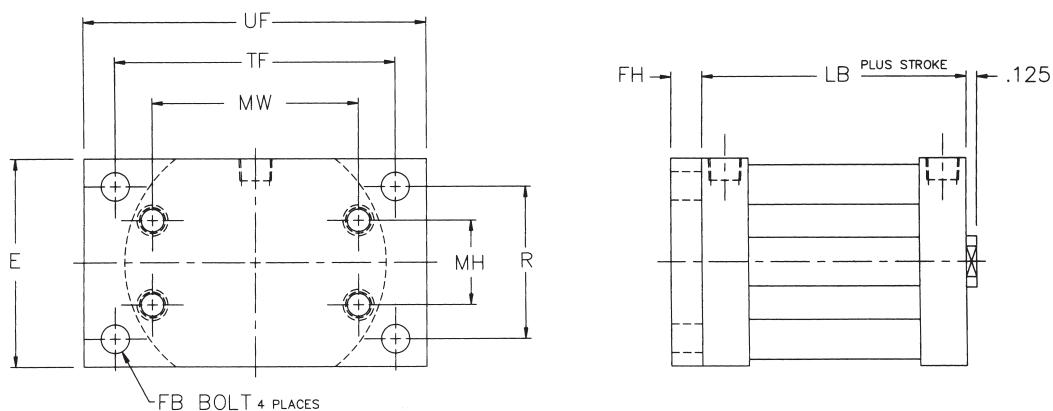
Flange Mounts

Front Flange



Mount Code F1

Rear Flange



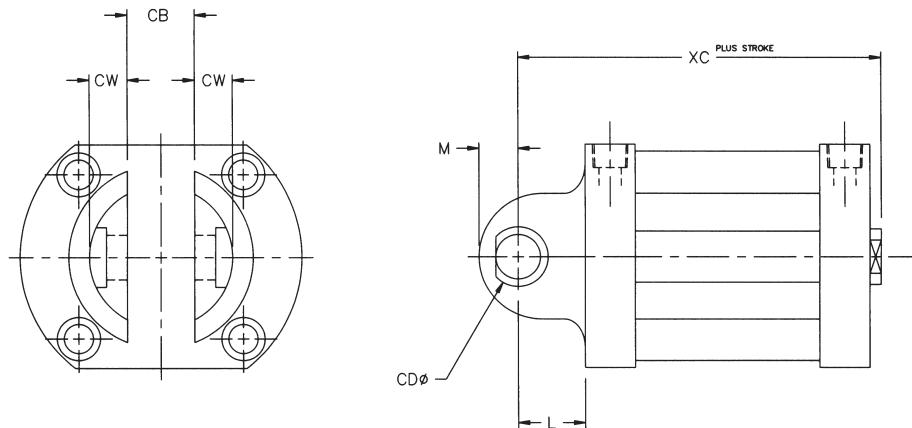
Mount Code F2

Bore	E	FB	FH	LB	MH	MW	R	TF	UF
3/4"	0.250	#8	.250	.950	N/A	1.375	.813	1.813	2.250
1-1/8"	0.750	#10	.250	.950	N/A	1.793	1.282	2.250	2.750
1-1/2"	2.000	5/16	.375	1.438	.770	2.114	1.430	2.750	3.375
2"	2.500	3/8	.375	1.438	1.029	2.483	1.840	3.375	4.125
2-1/2"	3.000	3/8	.375	1.750	1.363	2.922	2.190	3.875	4.625
3"	3.500	5/16	.438	1.875	1.585	3.399	2.625	4.375	5.000
4"	4.500	7/16	.625	1.875	2.060	4.418	3.320	5.438	6.250

Dimensions: Inches

Clevis Mounts

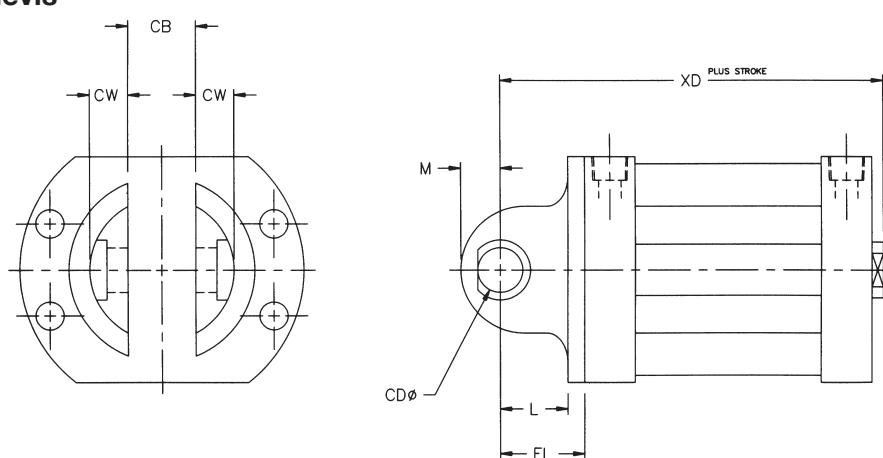
Fixed Clevis



Mount Code P1

NOTE: Includes clevis pin.

Detachable Clevis



Mount Code P2

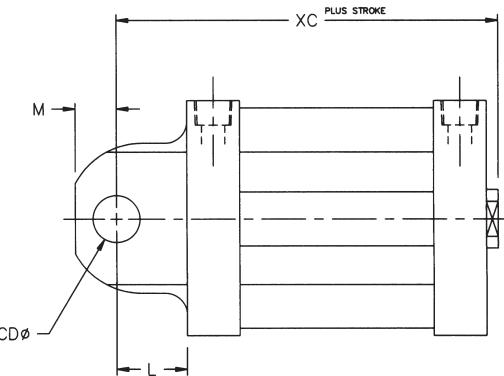
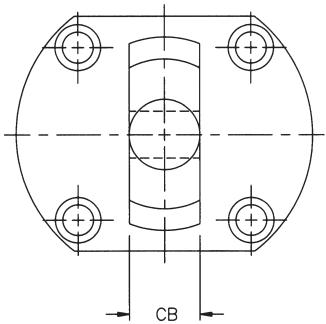
NOTE: Includes clevis pin.

Bore	CB	CD	CW	FL	L	M	XC	XD
3/4"	0.375	0.188	0.302	0.688	0.500	0.474	N/A	1.763
1-1/8"	0.375	0.188	0.302	0.688	0.500	0.474	N/A	1.763
1-1/2"	0.750	0.375	0.424	0.813	0.625	0.438	2.188	2.375
2"	0.750	0.375	0.424	0.938	0.750	0.438	2.313	2.500
2-1/2"	0.750	0.375	0.424	1.000	0.750	0.500	2.625	2.875
3"	1.000	0.625	0.553	1.313	1.063	0.625	3.063	3.313
4"	1.000	0.625	0.553	1.688	1.438	0.625	3.438	3.688

Dimensions: Inches

Eye Mounts

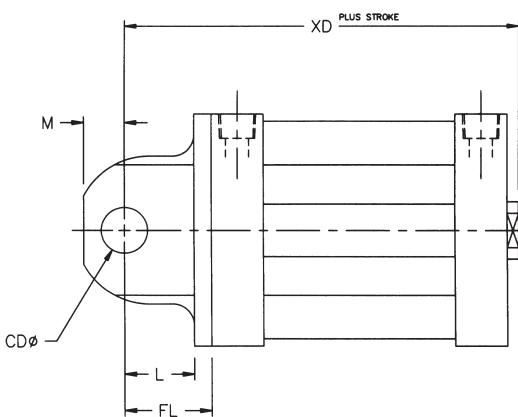
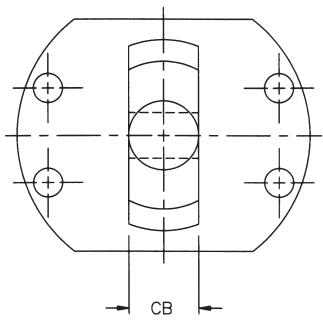
Fixed Eye



Mount Code P3

NOTE: Includes clevis pin.

Detachable Eye



Mount Code P4

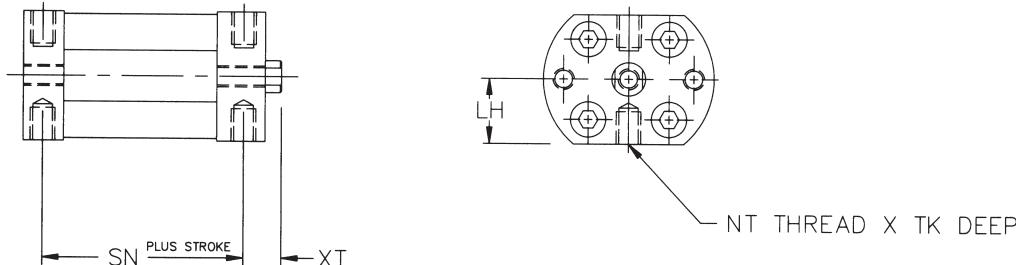
NOTE: Includes clevis pin.

Bore	CB	CD	FL	L	M	XC	XD
3/4"	0.375	0.188	0.688	0.500	0.490	N/A	1.763
1-1/8"	0.375	0.188	0.688	0.500	0.490	N/A	1.763
1-1/2"	0.750	0.375	0.813	0.625	0.438	2.188	2.375
2"	0.750	0.375	0.938	0.750	0.438	2.313	2.500
2-1/2"	0.750	0.375	1.000	0.750	0.500	2.625	2.875
3"	1.000	0.625	1.313	1.063	0.625	3.063	3.313
4"	1.000	0.625	1.688	1.438	0.625	3.438	3.688

Dimensions: Inches

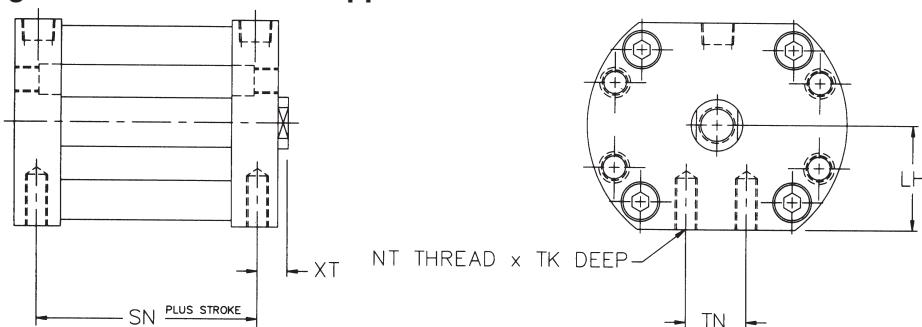
Bottom Mounts

3/4" And 1 1/8" Bores - Bottom Tapped (Standard)



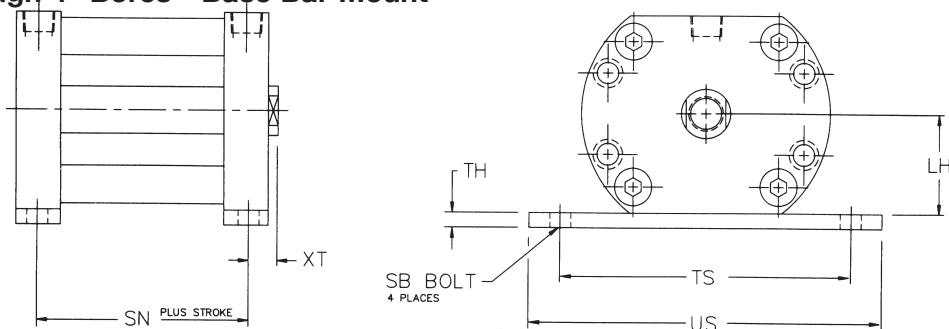
Mount Code S4 (Standard)

1 1/2" Through 4" Bores - Bottom Tapped



Mount Code S4

1 1/2" Through 4" Bores - Base Bar Mount



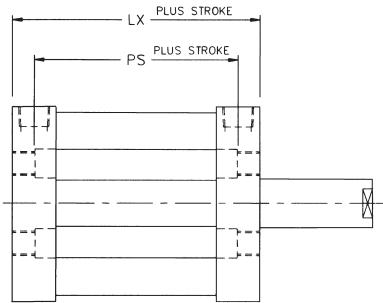
Mount Code S2

Bore	LH	NT	SB	SN	TH	TK	TN	TS	US	XT
3/4"	0.625	#10-32	N//A	0.638	N/A	0.250	N/A	N/A	N/A	0.293
1-1/8"	0.875	#10-32	N//A	0.638	N/A	0.250	N/A	N/A	N/A	0.293
1-1/2"	1.000	1/4-28	1/4	0.813	0.250	0.375	0.625	2.875	3.375	0.438
2"	1.250	1/4-28	1/4	0.813	0.250	0.375	0.750	3.375	3.875	0.438
2-1/2"	1.500	5/16-24	5/16	1.000	0.250	0.500	1.125	4.000	4.375	0.500
3"	1.750	5/16-24	5/16	1.125	0.375	0.500	1.625	4.500	4.875	0.500
4"	2.250	3/8-24	3/8	1.125	0.375	0.750	1.625	5.750	6.250	0.500

Dimensions: Inches

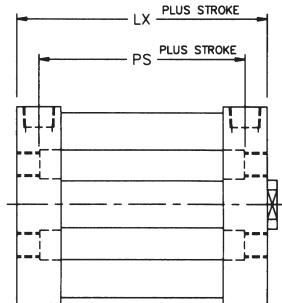
Single Acting Cylinders

Spring Extend



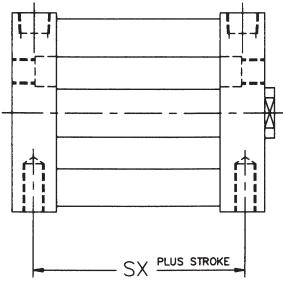
Order as "SE" option

Spring Return



Order as "SR" option

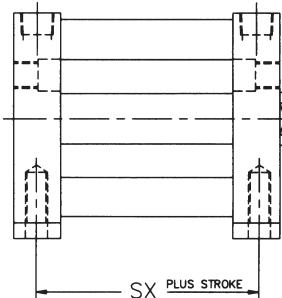
Bottom Tapped with SE or SR option



Mount Code S4

(Consult factory for strokes greater than 2")

Base Bar Mount with SE or SR option



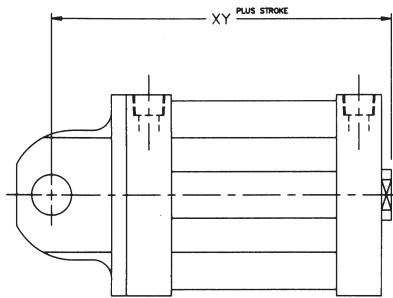
Mount Code S2

Bore	Strokes up to 1"					Strokes over 1" up to 2"				
	LX	PS	SX	XV	XY	LX	PS	SX	XV	XY
3/4"	1.950	1.638	1.638	N/A	2.763	2.950	2.638	2.638	N/A	3.763
1-1/8"	1.950	1.638	1.638	N/A	2.763	2.950	2.638	2.638	N/A	3.763
1-1/2"	2.688	2.125	2.063	3.438	3.625	3.938	3.375	3.313	4.688	4.875
2"	2.813	2.250	2.188	3.688	3.875	4.188	3.625	3.563	5.063	5.250
2-1/2"	3.125	2.438	2.375	4.000	4.250	4.500	3.813	3.750	5.375	5.625
3"	3.375	2.688	2.625	4.563	4.813	4.875	4.188	4.125	6.063	6.313
4"	3.375	2.688	2.625	4.938	5.188	4.875	4.188	4.125	6.438	6.688

Dimensions: Inches

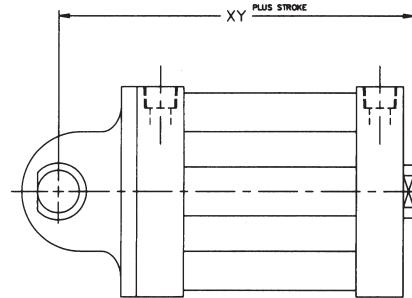
Single Acting Cylinders Cylinders

Detachable Eye with SE or SR option



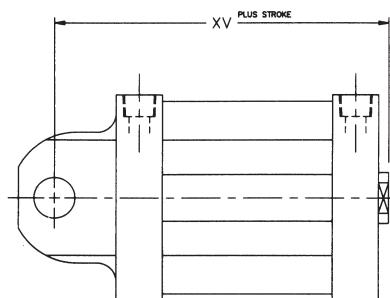
Mount Code P4

Detachable Clevis with SE or SR option



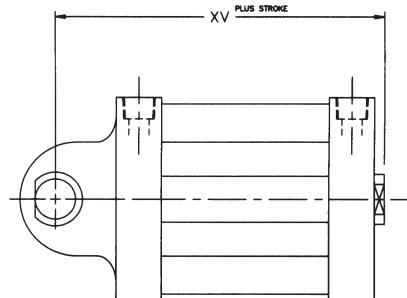
Mount Code P2

Fixed Eye with SE or SR option



Mount Code P3

Fixed Clevis with SE or SR option



Mount Code P1

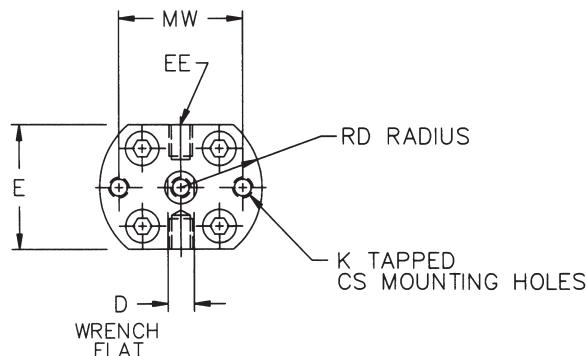
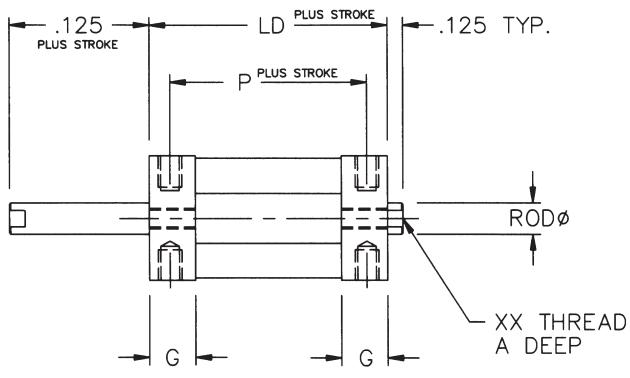
(Consult factory for strokes greater than 2")

Bore	Strokes up to 1"					Strokes over 1" up to 2"				
	LX	PS	SX	XV	XY	LX	PS	SX	XV	XY
3/4"	1.950	1.638	1.638	N/A	2.763	2.950	2.638	2.638	N/A	3.763
1-1/8"	1.950	1.638	1.638	N/A	2.763	2.950	2.638	2.638	N/A	3.763
1-1/2"	2.688	2.125	2.063	3.438	3.625	3.938	3.375	3.313	4.688	4.875
2"	2.813	2.250	2.188	3.688	3.875	4.188	3.625	3.563	5.063	5.250
2-1/2"	3.125	2.438	2.375	4.000	4.250	4.500	3.813	3.750	5.375	5.625
3"	3.375	2.688	2.625	4.563	4.813	4.875	4.188	4.125	6.063	6.313
4"	3.375	2.688	2.625	4.938	5.188	4.875	4.188	4.125	6.438	6.688

Dimensions: Inches

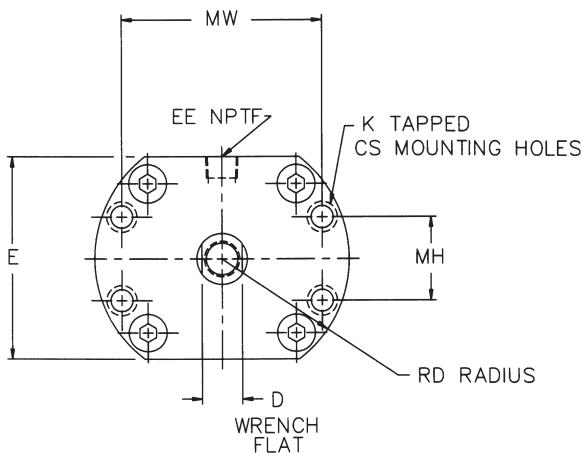
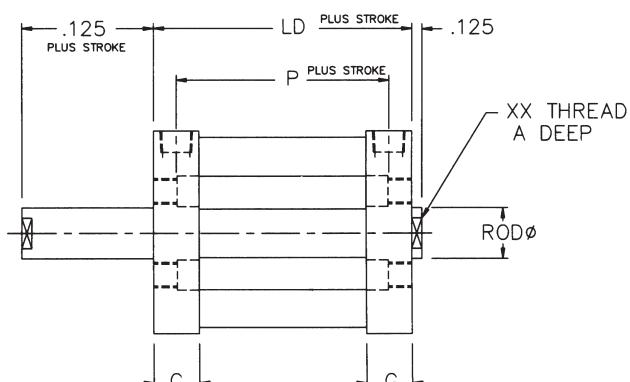
Double Rod Cylinders

3/4" and 1 1/8" Bores



Order as "DA" Option

1 1/2" Through 4" Bores



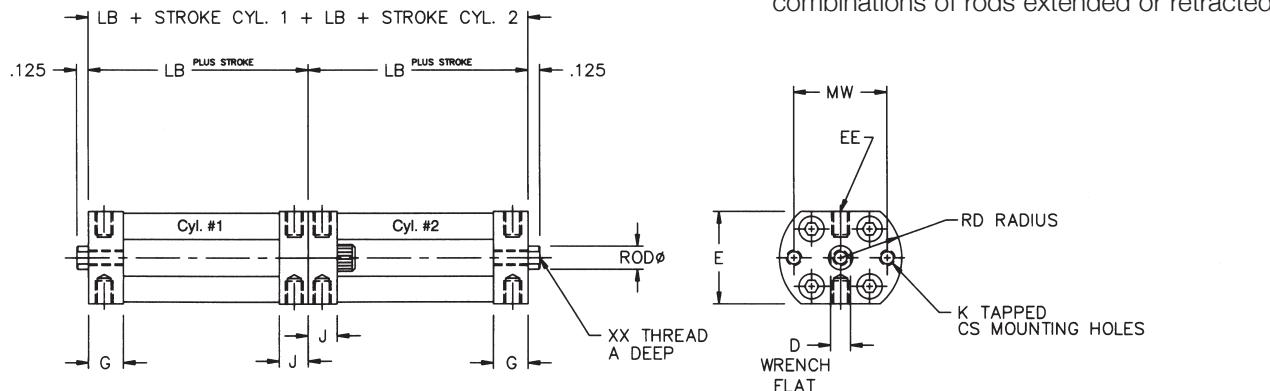
Order as "DA" Option

Bore	Rod	A	CS	D	E	EE+	G	K	LD	MH	MW	P	RD	XX
3/4"	0.250	0.375	#5	0.212	1.250	#10-32	0.406	#8-32	1.000	N/A	1.375	0.678	0.844	#8-32
1-1/8"	0.500	0.375	#6	0.375	1.750	#10-32	0.406	#10-32	1.000	N/A	1.793	0.678	1.125	1/4-28
1-1/2"	0.625	0.500	#10	0.500	2.000	1/8	0.625	1/4-28	1.438	0.770	2.114	0.875	1.313	7/16-20
1-1/2"	0.750	0.750	#10	0.625	2.000	1/8	0.625	1/4-28	1.438	0.770	2.114	0.875	1.313	1/2-20
2"	0.625	0.500	1/4	0.500	2.500	1/8	0.625	5/16-24	1.438	1.029	2.483	0.875	1.575	7/16-20
2"	0.750	0.750	1/4	0.625	2.500	1/8	0.625	5/16-24	1.438	1.029	2.483	0.875	1.575	1/2-20
2-1/2"	0.625	0.500	1/4	0.500	3.000	1/4	0.750	5/16-24	1.750	1.363	2.922	1.063	1.875	7/16-20
2-1/2"	0.750	0.750	1/4	0.625	3.000	1/4	0.750	5/16-24	1.750	1.363	2.922	1.063	1.875	1/2-20
3"	1.000	0.875	1/4	0.875	3.500	1/4	0.750	5/16-24	1.875	1.585	3.399	1.188	2.125	3/4-16
4"	1.000	0.875	5/16	0.875	4.500	1/4	0.750	3/8-24	1.875	2.060	4.418	1.188	2.750	3/4-16

Dimensions: Inches

Back to Back Cylinders

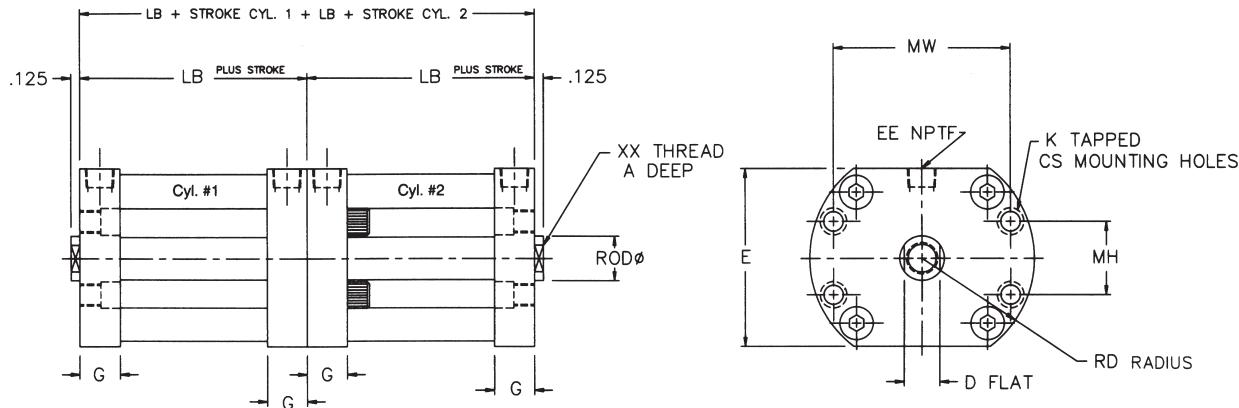
3/4" and 1 1/8" Bores



This configuration is two cylinders mounted back to back. Each cylinder can be operated independently. The cylinders can have the same stroke or different strokes. This configuration enables you to have four combinations of rods extended or retracted.

Consult factory for ordering.

1 1/2" Through 4" Bores

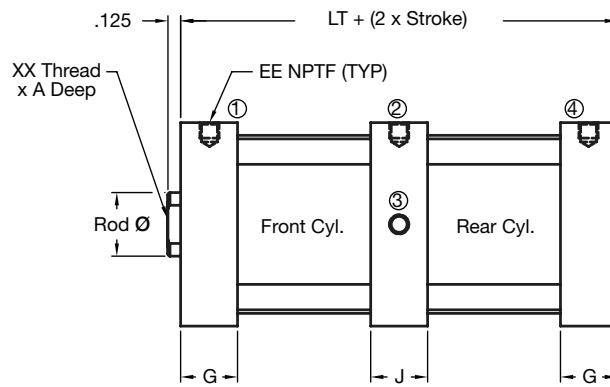
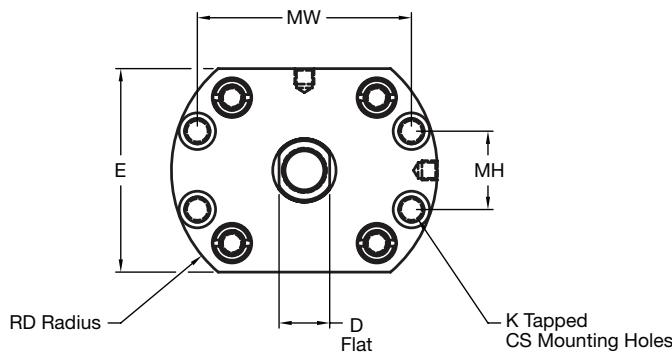


Bore	Rod	A	CS	D	E	EE	G	J	K	LB	MH	MW	RD	XX
1-1/8"	0.500	0.375	#6	0.375	1.750	#10-32	0.406	0.343	#10-32	0.950	N/A	1.793	1.125	1/4-28
1-1/2"	0.625	0.500	#10	0.500	2.000	1/8	0.625	N/A	1/4-28	1.438	0.770	2.114	1.313	7/16-20
1-1/2"	0.750	0.750	#10	0.625	2.000	1/8	0.625	N/A	1/4-28	1.438	0.770	2.114	1.313	1/2-20
2"	0.625	0.500	1/4	0.500	2.500	1/8	0.625	N/A	5/16-24	1.438	1.029	2.483	1.575	7/16-20
2"	0.750	0.750	1/4	0.625	2.500	1/8	0.625	N/A	5/16-24	1.438	1.029	2.483	1.575	1/2-20
2-1/2"	0.625	0.500	1/4	0.500	3.000	1/4	0.750	N/A	5/16-24	1.750	1.363	2.922	1.875	7/16-20
2-1/2"	0.750	0.750	1/4	0.625	3.000	1/4	0.750	N/A	5/16-24	1.750	1.363	2.922	1.875	1/2-20
3"	1.000	0.875	1/4	0.875	3.500	1/4	0.750	N/A	5/16-24	1.875	1.585	3.399	2.125	3/4-16
4"	1.000	0.875	5/16	0.875	4.500	1/4	0.750	N/A	3/8-24	1.875	2.060	4.418	2.750	3/4-16

Dimensions: Inches

Tandem Cylinders

This configuration provides nearly twice the force of an equivalent basic double acting cylinder. Two pistons are attached to a common piston rod. Ports 2 and 4 are pressurized to nearly double the extend force. Ports 1 and 3 are pressurized to double the retract force.

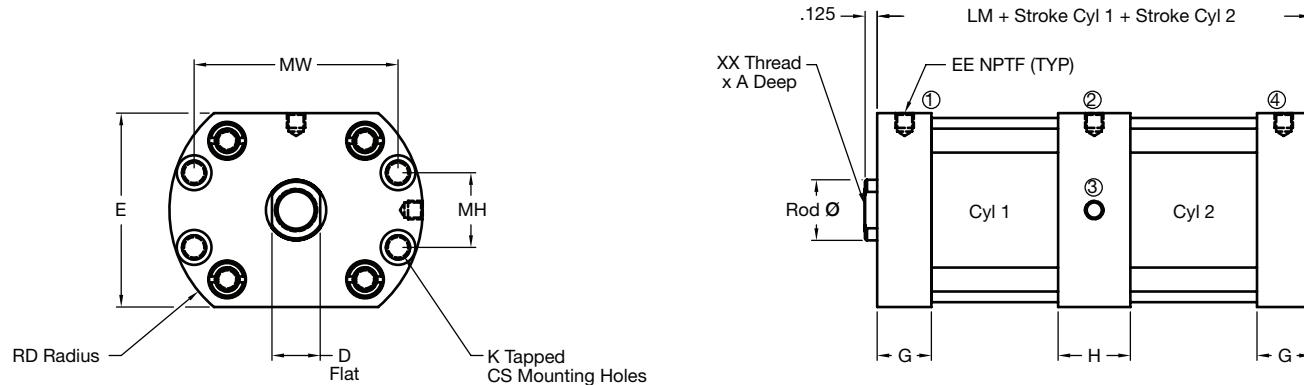


Bore	Rod	A	CS	D	E	EE	G	J	K	LT	MH	MW	RD	XX
1-1/2"	0.625	0.500	#10	0.500	2.000	1/8	0.625	0.688	1/4-28	2.313	0.770	2.114	1.313	7/16-20
1-1/2"	0.750	0.750	#10	0.625	2.000	1/8	0.625	0.688	1/4-28	2.313	0.770	2.114	1.313	1/2-20
2"	0.625	0.500	1/4	0.500	2.500	1/8	0.625	0.688	5/16-24	2.313	1.029	2.483	1.575	7/16-20
2"	0.750	0.750	1/4	0.625	2.500	1/8	0.625	0.688	5/16-24	2.313	1.029	2.483	1.575	1/2-20
2-1/2"	0.625	0.500	1/4	0.500	3.000	1/4	0.750	0.813	5/16-24	2.313	1.363	2.922	1.875	7/16-20
2-1/2"	0.750	0.750	1/4	0.625	3.000	1/4	0.750	0.813	5/16-24	2.313	1.363	2.922	1.875	1/2-20
3"	1.000	0.875	1/4	0.875	3.500	1/4	0.750	0.813	5/16-24	3.063	1.585	3.399	2.125	3/4-16
4"	1.000	0.875	5/16	0.875	4.500	1/4	0.750	0.813	3/8-24	3.063	2.060	4.418	2.750	3/4-16

Dimensions: Inches

Multi-Position Cylinders

Multi-position cylinders look similar to tandem cylinders. However, in this cylinder the rear and front piston rods are separate. The stroke from full retract to the intermediate extend point is set by the stroke of cylinder #2. The total stroke for full retract to full extend is set by the stroke of cylinder #1. Full extend or retract is achieved by pressurizing ports 1 and 2 respectively with ports 3 and 4 vented. An intermediate position is achieved by pressurizing port 4 with the other ports vented or by pressurizing both ports 1 and 4. With 1 and 4 pressurized, the rod is more positively held in the intermediate position.

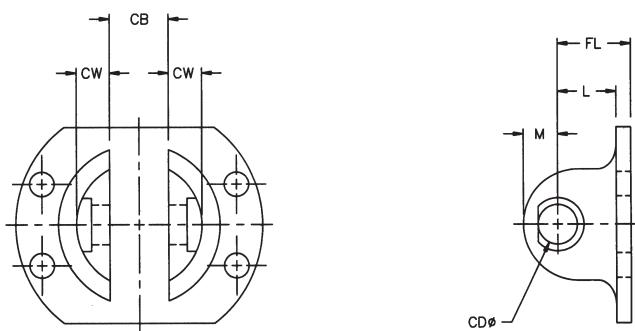


Bore	Rod	A	CS	D	E	EE	G	H	K	LM	MH	MW	RD	XX
1-1/2"	0.625	0.500	#10	0.500	2,000	1/8	0.625	0.688	1/4-28	2,500	0.770	2,114	1.313	7/16-20
1-1/2"	0.750	0.750	#10	0.625	2,000	1/8	0.625	0.688	1/4-28	2,500	0.770	2,114	1.313	1/2-20
2"	0.625	0.500	1/4	0.500	2,500	1/8	0.625	0.688	5/16-24	2,500	1,029	2,483	1.575	7/16-20
2"	0.750	0.750	1/4	0.625	2,500	1/8	0.625	0.688	5/16-24	2,500	1,029	2,483	1.575	1/2-20
2-1/2"	0.625	0.500	1/4	0.500	3,000	1/4	0.750	0.813	5/16-24	3,000	1,363	2,922	1.875	7/16-20
2-1/2"	0.750	0.750	1/4	0.625	3,000	1/4	0.750	0.813	5/16-24	3,000	1,363	2,922	1.875	1/2-20
3"	1.000	0.875	1/4	0.875	3,500	1/4	0.750	0.813	5/16-24	3,375	1,585	3,399	2.125	3/4-16
4"	1.000	0.875	5/16	0.875	4,500	1/4	0.750	0.813	3/8-24	3,375	2,060	4,418	2.750	3/4-16

Dimensions: Inches

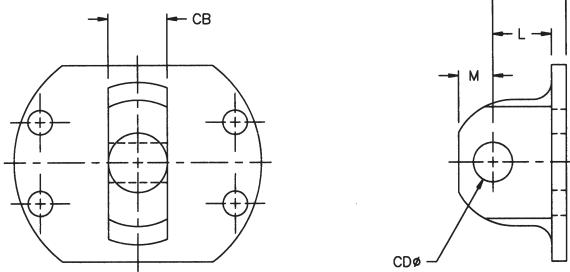
Accessories

Clevis Bracket

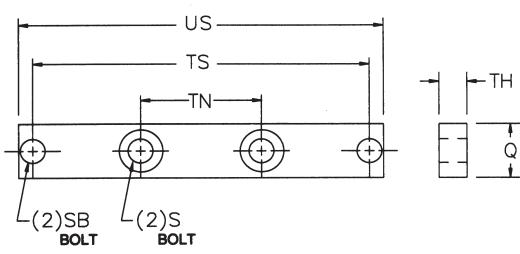


Note: Only two mounting holes on the 3/4" and 1-1/8" bore sizes.

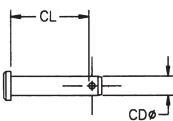
Eye Bracket



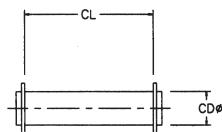
Base Bar



Clevis Pins - 3/4" and 1 1/8" Bores *



Clevis Pins - 1 1/2" Through 4" Bores *



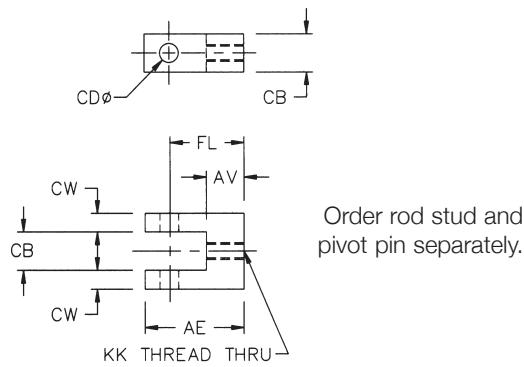
* Included with P1, P2, P3 and P4 mounts

Bore	Clevis Kit	Eye Kit	Pivot PIN	CB	CD	CL	CW	FL	L	M Clevis	M Eye	Q	S	SB	TH	TN	TS	US
3/4"	C600-C05	C600-C06	N131-1014	0.375	0.188	1.100	0.302	0.688	0.500	0.474	0.490	N/A	N/A	N/A	N/A	N/A	N/A	
1-1/8"	C600-G05	C600-G06	N131-1014	0.375	0.188	1.100	0.302	0.688	0.500	0.474	0.490	N/A	N/A	N/A	N/A	N/A	N/A	
1-1/2"	C600-K05	C600-K06	N131-1000	0.750	0.375	1.500	0.424	0.813	0.625	0.438	0.438	0.625	1/4	1/4	0.250	0.625	2.875	3.375
2"	C600-L05	C600-L06	N131-1000	0.750	0.375	1.500	0.424	0.938	0.750	0.438	0.438	0.625	1/4	1/4	0.250	0.750	3.375	3.875
2-1/2"	C600-M05	C600-M06	N131-1000	0.750	0.375	1.500	0.424	1.000	0.750	0.500	0.500	0.750	5/16	5/16	0.250	1.125	4.000	4.375
3"	C600-N05	C600-N06	N131-1001	1.000	0.625	2.125	0.553	1.313	1.063	0.625	0.625	0.750	5/16	5/16	0.375	1.625	4.500	4.875
4"	C600-R05	C600-R06	N131-1001	1.000	0.625	2.125	0.553	1.688	1.438	0.625	0.625	0.750	3/8	3/8	0.375	1.625	5.750	6.250

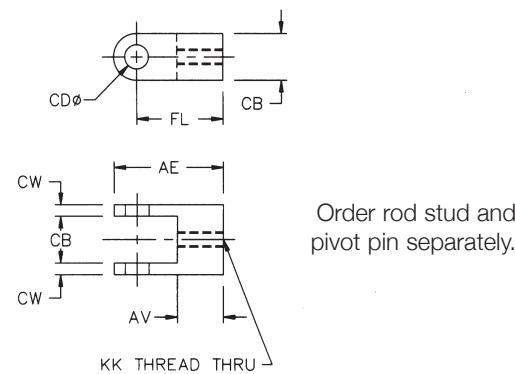
Dimensions: Inches

Accessories Continued

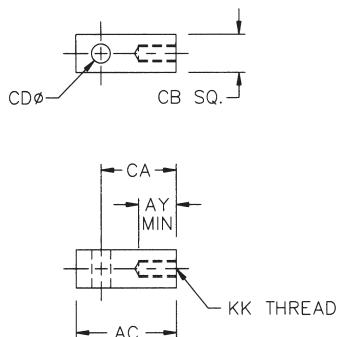
Rod Clevis - 3/4" and 1 1/8" Bores



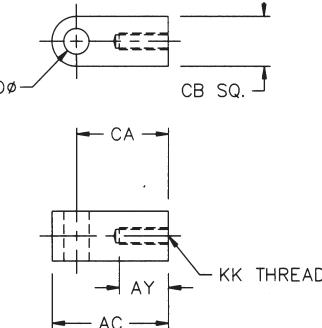
Rod Clevis - 1 1/2" Through 4" Bores



Rod Eye - 3/4" and 1 1/8" Bores



Rod Eye - 1 1/2" Through 4" Bores

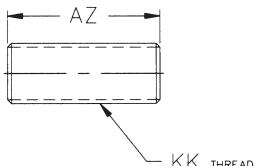


Bore	Eye	Clevis	AC	AE	AV	AY	AZ	CA	CB	CD	CL	CW	FL	KK
3/4"	C500-706	C500-606	0.938	0.938	0.375	0.375	0.750	0.750	0.375	0.188	0.750	0.188	0.750	#8-32
1-1/8"	C500-708	C500-608	0.938	0.938	0.375	0.375	0.750	0.750	0.375	0.188	0.750	0.188	0.750	1/4-28
1-1/2"	C500-701	C500-601	1.093	1.375	0.600	0.375	0.875	0.718	0.750	0.375	1.125	0.188	1.000	7/16-20
1-1/2"	C500-702	C500-602	1.093	1.375	0.600	0.375	1.125	0.718	0.750	0.375	1.125	0.188	1.000	1/2-20
2"	C500-701	C500-601	1.093	1.375	0.600	0.375	0.875	0.718	0.750	0.375	1.125	0.188	1.000	7/16-20
2"	C500-702	C500-602	1.093	1.375	0.600	0.375	1.125	0.718	0.750	0.375	1.125	0.188	1.000	1/2-20
2-1/2"	C500-701	C500-601	1.093	1.375	0.600	0.375	0.875	0.718	0.750	0.375	1.125	0.188	1.000	7/16-20
2-1/2"	C500-702	C500-602	1.093	1.375	0.600	0.375	1.125	0.718	0.750	0.375	1.125	0.188	1.000	1/2-20
3"	C500-703	C500-603	1.500	2.188	0.750	0.500	1.375	1.000	1.000	0.625	1.500	0.250	1.688	3/4-16
4"	C500-703	C500-603	1.500	2.188	0.750	0.500	1.375	1.000	1.000	0.625	1.500	0.250	1.688	3/4-16

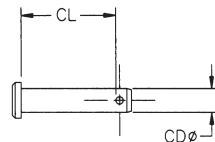
Dimensions: Inches

Accessories (continued)

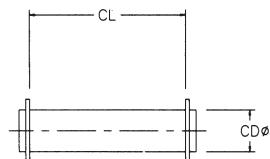
Rod Stud



Clevis Pins - 3/4" and 1 1/8" Bores



Clevis Pins - 1 1/2" Through 4" Bores

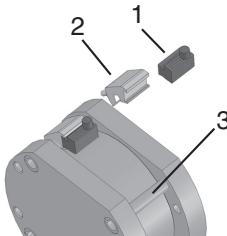


Bore	Rod Stud	Pivot Pin	AC	AE	AV	AY	AZ	CA	CB	CD	CL	CW	FL	KK
3/4"	C500-506	C500-406	0.938	0.938	0.375	0.375	0.750	0.750	0.375	0.188	0.750	0.188	0.750	#8-32
1-1/8"	C500-508	C500-406	0.938	0.938	0.375	0.375	0.750	0.750	0.375	0.188	0.750	0.188	0.750	1/4-28
1-1/2"	C500-502	C500-403	1.093	1.375	0.600	0.375	0.875	0.718	0.750	0.375	1.125	0.188	1.000	7/16-20
1-1/2"	C500-503	C500-403	1.093	1.375	0.600	0.375	1.125	0.718	0.750	0.375	1.125	0.188	1.000	1/2-20
2"	C500-502	C500-403	1.093	1.375	0.600	0.375	0.875	0.718	0.750	0.375	1.125	0.188	1.000	7/16-20
2"	C500-503	C500-403	1.093	1.375	0.600	0.375	1.125	0.718	0.750	0.375	1.125	0.188	1.000	1/2-20
2-1/2"	C500-502	C500-403	1.093	1.375	0.600	0.375	0.875	0.718	0.750	0.375	1.125	0.188	1.000	7/16-20
2-1/2"	C500-503	C500-403	1.093	1.375	0.600	0.375	1.125	0.718	0.750	0.375	1.125	0.188	1.000	1/2-20
3"	C500-505	C500-404	1.500	2.188	0.750	0.500	1.375	1.000	1.000	0.625	1.500	0.250	1.688	3/4-16
4"	C500-505	C500-404	1.500	2.188	0.750	0.500	1.375	1.000	1.000	0.625	1.500	0.250	1.688	3/4-16

C series World application Detail

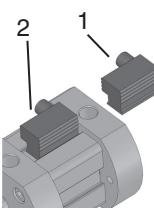
Round Tube and Tie Rod Detail

1. World Switch
2. Tie Rod Bracket
3. Cylinder Tie Rod



Profile Tube Detail

1. World Switch
2. Dove Tail extrusion



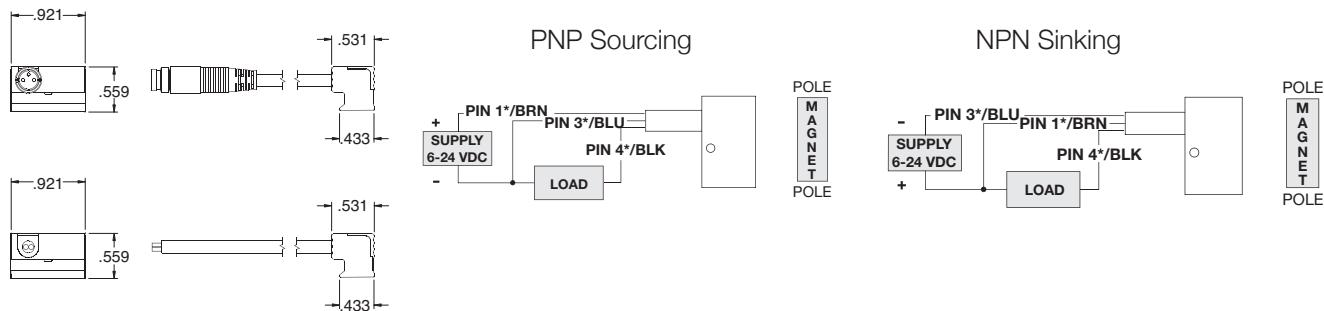
C series World Switch Bracket

Cylinders	Bore	Part Number
C series Profile	3/4"-2 1/2"	Direct Fit
C series Tie Rod	3" Bore	SB6-L01
C series Tie Rod	4" Bore	SB6-P01

C Series World Switch Hall Effect Part Numbers

P/N	Switch Style	Electrical Design	Output	Operating Voltage	Current Rating	Switching Power	Voltage Drop	NEMA IP Rating	Temperature Rating
SH6-031	Flying Lead	PNP	Normally Open	6 -24 VDC	0.3 Amps Max.	7.2 Watts Max.	0.5 Volts	NEMA 6	-25° to +75° C
SH6-032	Flying Lead	NPN	Normally Open	6 -24 VDC	0.3 Amps Max.	7.2 Watts Max.	0.5 Volts	NEMA 6	-25° to +75° C
SH6-021	M8 Connector	PNP	Normally Open	6 -24 VDC	0.3 Amps Max.	7.2 Watts Max.	0.5 Volts	NEMA 6	-25° to +75° C
SH6-022	M8 Connector	NPN	Normally Open	6 -24 VDC	0.3 Amps Max.	7.2 Watts Max.	0.5 Volts	NEMA 6	-25° to +75° C

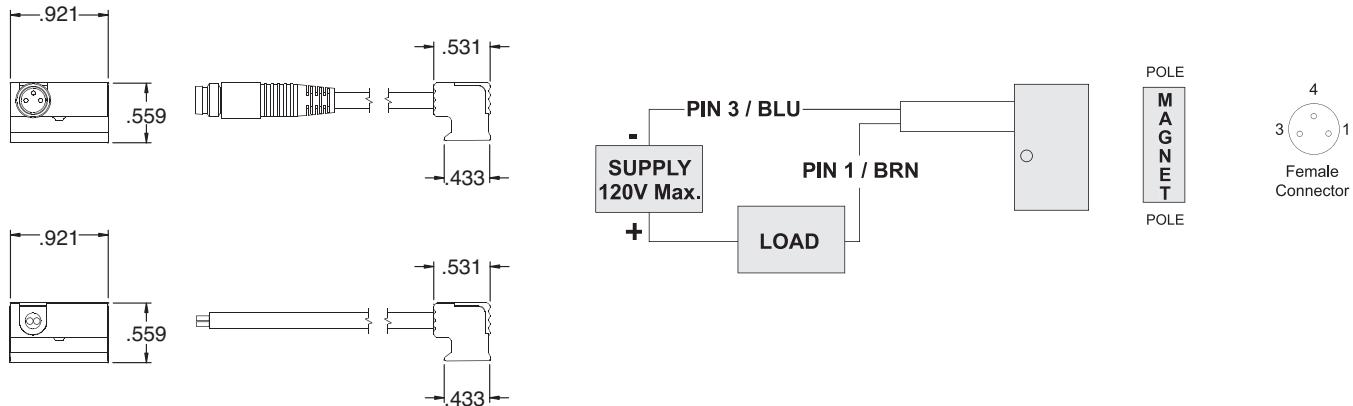
Hall Effect Switch



C Series World Switch Reed Switch Part Numbers

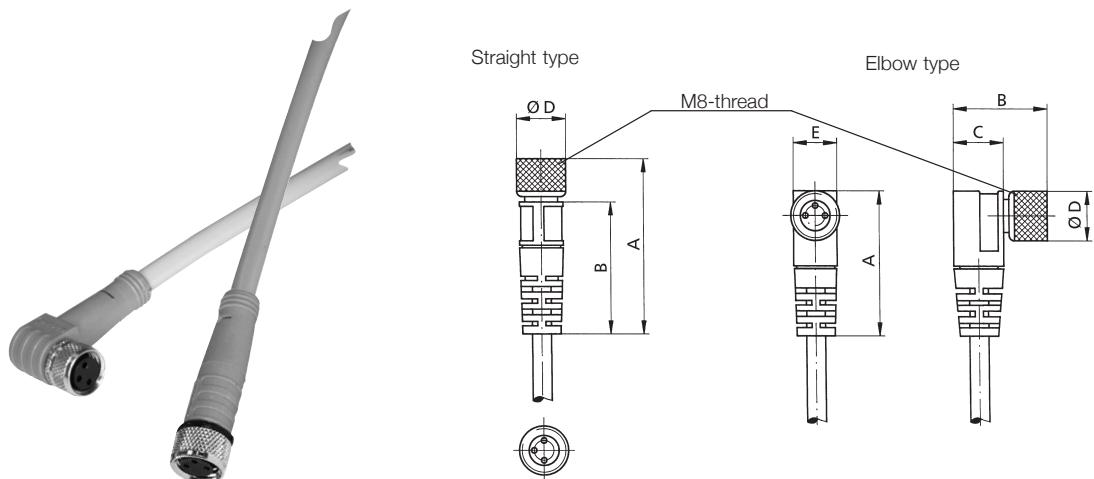
P/N	Switch Style	Electrical Design	Output	Operating Voltage	Current Rating	Switching Power	Voltage Drop	NEMA IP Rating	Temperature Rating
SR6-002	Flying Lead	AC/DC REED	Normally Open	5-120 VAC/DC	0.025 Amps Max. 0.001 Amps Min.	3 Watts Max.	3.5 Volts	NEMA 6	-25° to +75° C
SR6-004	Flying Lead	AC/DC REED	Normally Open	5-120 VAC/DC	0.5 Amps Max. 0.005 Amps Min.	10 Watts Max.	3.0 Volts	NEMA 6	-25° to +75° C
SR6-022	M8 Connector	AC/DC REED	Normally Open	5-50 VAC 5-60 VDC	0.025 Amps Max. 0.001 Amps Min.	12 Watts Max.	.5 Volts	NEMA 6	-25° to +75° C
SR6-024	M8 Connector	AC/DC REED	Normally Open	5-50 VAC 5-60 VDC	0.5 Amps Max. 0.005 Amps Min.	10 Watts Max.	3.0 Volts	NEMA 6	-25° to +75° C

Reed Switch - Normally Open Type SR6



Dimensions: Inches (mm)

Cords M8-thread for Switches and Sensors with Connector

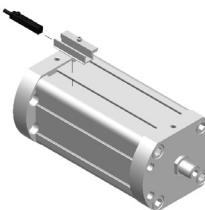


Type	A	B	C	D	E	Weight (approx. kg)	Order Code
Straight with 5m-cable	(3x0.25 mm ²)	32.3	24.4	—	9.0	—	0.143
Elbow with 5m-cable	(3x0.25 mm ²)	26.3	17.1	9.2	9.0	8.0	0.145

Compact Cylinders

C Series (Profile Tube) 2 in magnet code

Bore	Bracket P/N
3/4"	N99-1185
1 1/8"	N99-1185
1 1/2"	N99-1185
2"	N99-1185
2 1/2"	N99-1185



Sensor Description	Standard Cord Set	Quick Disconnect
Reed Switch	REED-FL2-00	REED-QDS-M8U
Hall PNP	PNP-FL2-00-U	PNP-QDS-M8-U
Hall NPN	NPN-FL2-00-U	NPN-QDS-M8-U

See page 24, 25, & 26 for sensor specifications

C Series (Tie Rod) 2 in magnet code

Bore	Bracket P/N
3"	N99-1182
4"	N99-1183

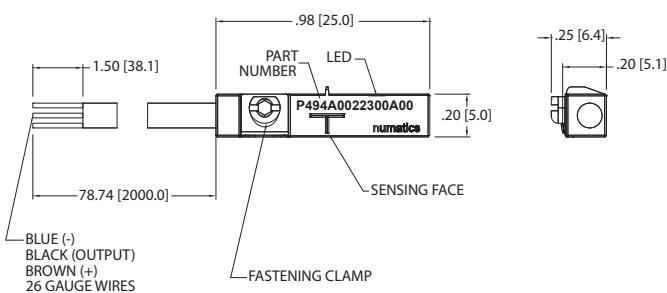


Sensor Description	Standard Cord Set	Quick Disconnect
Reed Switch	REED-FL2-00	REED-QDS-M8U
Hall PNP	PNP-FL2-00-U	PNP-QDS-M8-U
Hall NPN	NPN-FL2-00-U	NPN-QDS-M8-U

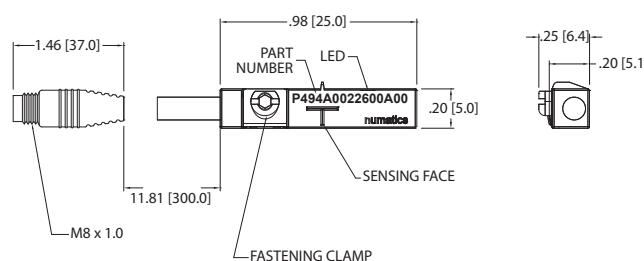
See page 24, 25, & 26 for sensor specifications

Sensing Part Numbers

PNP-FL2-00-U



PNP-QDS-M8-U



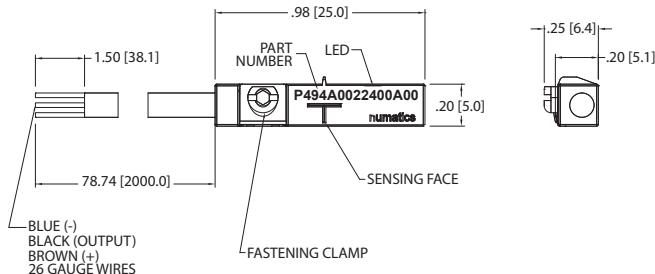
ELECTRICAL DESIGN	DC PNP
OUTPUT	Normally Open
OPERATING VOLTAGE	10-30 VDC
CURRENT RATING	100 mA
SHORT-CIRCUIT PROTECTION	Yes
OVERLOAD PROTECTION	Yes
REVERSE POLARITY PROTECTION	Yes
VOLTAGE DROP	< 2.5 V
CURRENT CONSUMPTION	< 12 mA
REPEATABILITY	< .2mm
POWER-ON DELAY TIME	< 30 ms
SWITCH FREQUENCY	> 3000 Hz
AMBIENT TEMPERATURE	-25°C to 85°C
PROTECTION	IP 67, III
HYSTERESIS	1.0mm
MAGNETIC SENSITIVITY	2.0 mT
TRAVEL SPEED	> 10 m/s
HOUSING MATERIAL	PA (Polyamide) Black; Fastening Clamp: Stainless Steel
FUNCTION DISPLAY SWITCHING STATUS	Yellow LED
CONNECTION	Flying Leads, Pur Cable (2m Long, 3 x26 Gauge Wire)
REMARKS	Clamping Screw with Combined Slot/Hexagon Socket Head AF 1.5 cULus - Class 2 Source Required
ACCESSORIES	Rubber Placeholder, Cable Clip, and Cut Sheet To Be Provided with Every Switch
AGENCY APPROVALS	

ELECTRICAL DESIGN	DC PNP
OUTPUT	Normally Open
OPERATING VOLTAGE	10-30 VDC
CURRENT RATING	100 mA
SHORT-CIRCUIT PROTECTION	Yes
OVERLOAD PROTECTION	Yes
REVERSE POLARITY PROTECTION	Yes
VOLTAGE DROP	< 2.5 V
CURRENT CONSUMPTION	< 12 mA
REPEATABILITY	< .2mm
POWER-ON DELAY TIME	< 30 ms
SWITCH FREQUENCY	> 3000 Hz
AMBIENT TEMPERATURE	-25°C to 85°C
PROTECTION	IP 67, III
HYSTERESIS	1.0mm
MAGNETIC SENSITIVITY	2.0 mT
TRAVEL SPEED	> 10 m/s
HOUSING MATERIAL	PA (Polyamide) Black; Fastening Clamp: Stainless Steel
FUNCTION DISPLAY SWITCHING STATUS	Yellow LED
CONNECTION	M8 Connector (Snap Fit) , Pur Cable (.3 m)
REMARKS	Clamping Screw with Combined Slot/Hexagon Socket Head AF 1.5 cULus - Class 2 Source Required
ACCESSORIES	Rubber Placeholder, Cable Clip, and Cut Sheet To Be Provided with Every Switch
AGENCY APPROVALS	

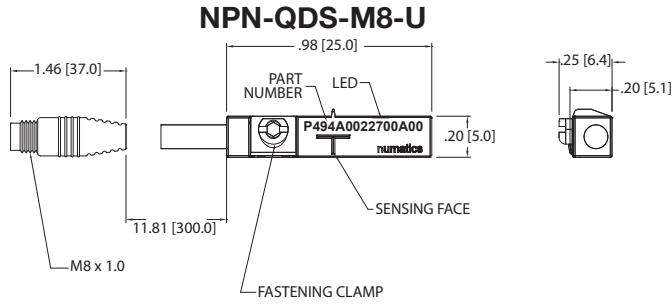
*Switches are not designed for wet environments. Please see your distributor for additional information.

Sensing Part Numbers

NPN-FL2-00-U



NPN-QDS-M8-U



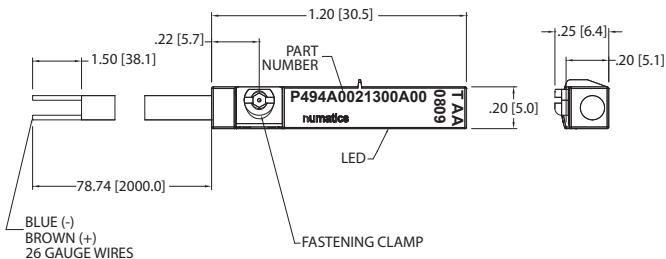
ELECTRICAL DESIGN	DC NPN
OUTPUT	Normally Open
OPERATING VOLTAGE	10-30 VDC
CURRENT RATING	100 mA
SHORT-CIRCUIT PROTECTION	Yes
OVERLOAD PROTECTION	Yes
REVERSE POLARITY PROTECTION	Yes
VOLTAGE DROP	< 2.5 V
CURRENT CONSUMPTION	< 12 mA
REPEATABILITY	< .2mm
POWER-ON DELAY TIME	< 30 ms
SWITCH FREQUENCY	> 3000 Hz
AMBIENT TEMPERATURE	-25°C to 85°C
PROTECTION	IP 67, III
HYSTERESIS	1.0mm
MAGNETIC SENSITIVITY	2.0 mT
TRAVEL SPEED	> 10 m/s
HOUSING MATERIAL	PA (Polyamide) Black; Fastening Clamp: Stainless Steel
FUNCTION DISPLAY SWITCHING STATUS	Yellow LED
CONNECTION	Flying Leads, Pur Cable (2m Long, 3 x26 Gauge Wire)
REMARKS	Clamping Screw with Combined Slot/Hexagon Socket Head AF 1.5 cULus - Class 2 Source Required
ACCESSORIES	Rubber Placeholder, Cable Clip, and Cut Sheet To Be Provided with Every Switch
AGENCY APPROVALS	

ELECTRICAL DESIGN	DC NPN
OUTPUT	Normally Open
OPERATING VOLTAGE	10-30 VDC
CURRENT RATING	100 mA
SHORT-CIRCUIT PROTECTION	Yes
OVERLOAD PROTECTION	Yes
REVERSE POLARITY PROTECTION	Yes
VOLTAGE DROP	< 2.5 V
CURRENT CONSUMPTION	< 12 mA
REPEATABILITY	< .2mm
POWER-ON DELAY TIME	< 30 ms
SWITCH FREQUENCY	> 3000 Hz
AMBIENT TEMPERATURE	-25°C to 85°C
PROTECTION	IP 67, III
HYSTERESIS	1.0mm
MAGNETIC SENSITIVITY	2.0 mT
TRAVEL SPEED	> 10 m/s
HOUSING MATERIAL	PA (Polyamide) Black; Fastening Clamp: Stainless Steel
FUNCTION DISPLAY SWITCHING STATUS	Yellow LED
CONNECTION	M8 Connector (Snap Fit) , Pur Cable (.3 m)
REMARKS	Clamping Screw with Combined Slot/Hexagon Socket Head AF 1.5 cULus - Class 2 Source Required
ACCESSORIES	Rubber Placeholder, Cable Clip, and Cut Sheet To Be Provided with Every Switch
AGENCY APPROVALS	

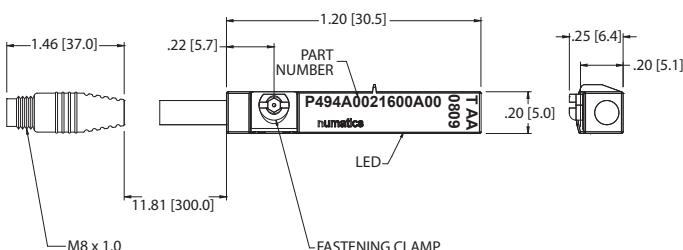
*Switches are not designed for wet environments. Please see your distributor for additional information.

Sensing Part Numbers

REED-FL2-00



REED-QDS-M8U

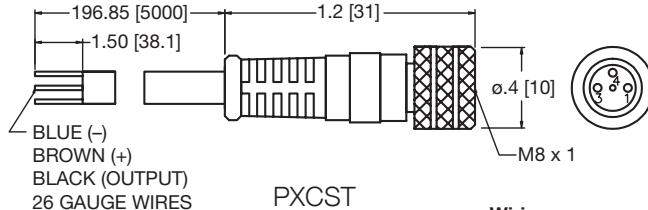


ELECTRICAL DESIGN	AC/DC REED
OUTPUT	Normally Open
OPERATING VOLTAGE	5-120 VAC/DC
CURRENT RATING	100 mA*
SHORT-CIRCUIT PROTECTION	No
OVERLOAD PROTECTION	No
REVERSE POLARITY PROTECTION	Yes
VOLTAGE DROP	< 5 V
REPEATABILITY	± .2mm
MAKETIME INCLUDING BOUNCE	< .6 ms
BREAKTIME	< .1 ms
SWITCHING POWER (MAX)	5 W
SWITCH FREQUENCY	1000 Hz
AMBIENT TEMPERATURE	-25°C to 70°C
PROTECTION	IP 67, II
HYSTERESIS	.9mm
HOUSING MATERIAL	PA (Polyamide) Black; Fastening Clamp: Stainless Steel
FUNCTION DISPLAY SWITCHING STATUS	Yellow LED
CONNECTION	Flying Leads, Pur Cable (2m Long, 2 x26 Gauge Wire)
REMARKS	<p>*External Protective Circuit for Inductive Load (Valve, Contactor, Etc..) Necessary. Conforms to 2008 NEC Section 725 III, Class 2 Circuits</p> <p>Clamping Screw with Combined Slot/Hexagon Socket Head AF 1.5. No LED Function in case of Polarity in DC Operation</p>
ACCESSORIES	Rubber Placeholder, Cable Clip, and Cut Sheet To Be Provided with Every Switch
AGENCY APPROVALS	 

ELECTRICAL DESIGN	AC/DC REED
OUTPUT	Normally Open
OPERATING VOLTAGE	*5-60 VDC / 5-50 VAC
CURRENT RATING	100 mA
SHORT-CIRCUIT PROTECTION	No
OVERLOAD PROTECTION	No
REVERSE POLARITY PROTECTION	Yes
VOLTAGE DROP	< 5 V
REPEATABILITY	± .2mm
MAKETIME INCLUDING BOUNCE	< .6 ms
BREAKTIME	< .1 ms
SWITCHING POWER (MAX)	5 W
SWITCH FREQUENCY	1000 Hz
AMBIENT TEMPERATURE	-25°C to 70°C
PROTECTION	IP 67, II
HYSTERESIS	.9mm
HOUSING MATERIAL	PA (Polyamide) Black; Fastening Clamp: Stainless Steel
FUNCTION DISPLAY SWITCHING STATUS	Yellow LED
CONNECTION	M8 Connector (Snap Fit), Pur Cable (.3m)
REMARKS	<p>*External Protective Circuit for Inductive Load (Valve, Contactor, Etc..) Necessary. Conforms to 2008 NEC Section 725 III, Class 2 Circuits</p> <p>M8 Connector voltage limited to 5-60 vdc / 5-50 vac to conform with 2008 IEC 61076-2-104</p> <p>Clamping Screw with Combined Slot/Hexagon Socket Head AF 1.5. No LED Function in case of Polarity in DC Operation</p>
ACCESSORIES	Rubber Placeholder, Cable Clip, and Cut Sheet To Be Provided with Every Switch
AGENCY APPROVALS	 

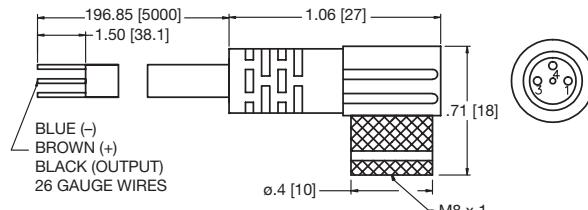
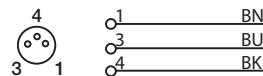
*Switches are not designed for wet environments. Please see your distributor for additional information.

Quick Disconnect Cables



PXCST

Wiring
Core colors
BK black
BN brown
BU blue



PXC90

Order Code	Type	Operating Voltage	Current Rating	Cable Material	Protection	Connector
PXCST	Straight 5 m Cable (3 x 26 Gauge wire)	60 AC/75 DC	3 A	PUR	IP 68, III	M8
PXC90	90° 5 m Cable (3 x 26 Gauge wire)	60 AC/75 DC	3 A	PUR	IP 68, III	M8

How to Order - C Series Piston Rod Assembly

C92 - K		3	1	A	0 - 01	A - AA	Options
Type	C92						AA = No Options BC = Bumpered Cap End BH = Bumpered Head End DA = Double Rod NA = Nickel Plated SA = Stainless Rod VA = FKM Seals WA = Wearband *1A = Rod Extension *1B = Rear Rod Extension *2A = Thread Extension *2B = Rear Thread Extension 3A = Rod Stud 3B = Rear Rod Stud *4A = Stop Tube * Must specify length
Bore	C = 3/4" G = 1-1/8" K = 1-1/2" L = 2" M = 2-1/2" N = 3" R = 4"						
Rod Code	1 = #1 Standard Rod Diameter 2 = #2 Standard Rod Diameter 3 = #3 Standard Rod Diameter *4 = Special Rod End Standard Rod Diameter (must specify threads) *5 = Special Rod End Oversize Rod Diameter (must specify threads) 6 = Style #1 Oversize Rod Diameter 8 = Style #3 Oversize Rod Diameter						
Mount	1 = All Mounts Except F1 & R1 2 = F1 Mount 3 = R1 Mount						
Port	A = All Port Sizes Other Than 1/8" B = 1/8" Ports						
Magnet	0 = No Magnet 2 = Reed Magnet and Wear Band						

Note: Options listed are ones that apply to a piston rod assembly only.

Model number is set up to use option code supplied with original cylinder or with any above.

Fractional Inches of Stroke

A = 0"	I = 1/2"
B = 1/16"	J = 9/16"
C = 1/8"	K = 5/8"
D = 3/16"	L = 11/16"
E = 1/4"	M = 3/4"
F = 5/16"	N = 13/16"
G = 3/8"	O = 7/8"
H = 7/16"	P = 15/16"

Note: 1/8" minimum stroke.

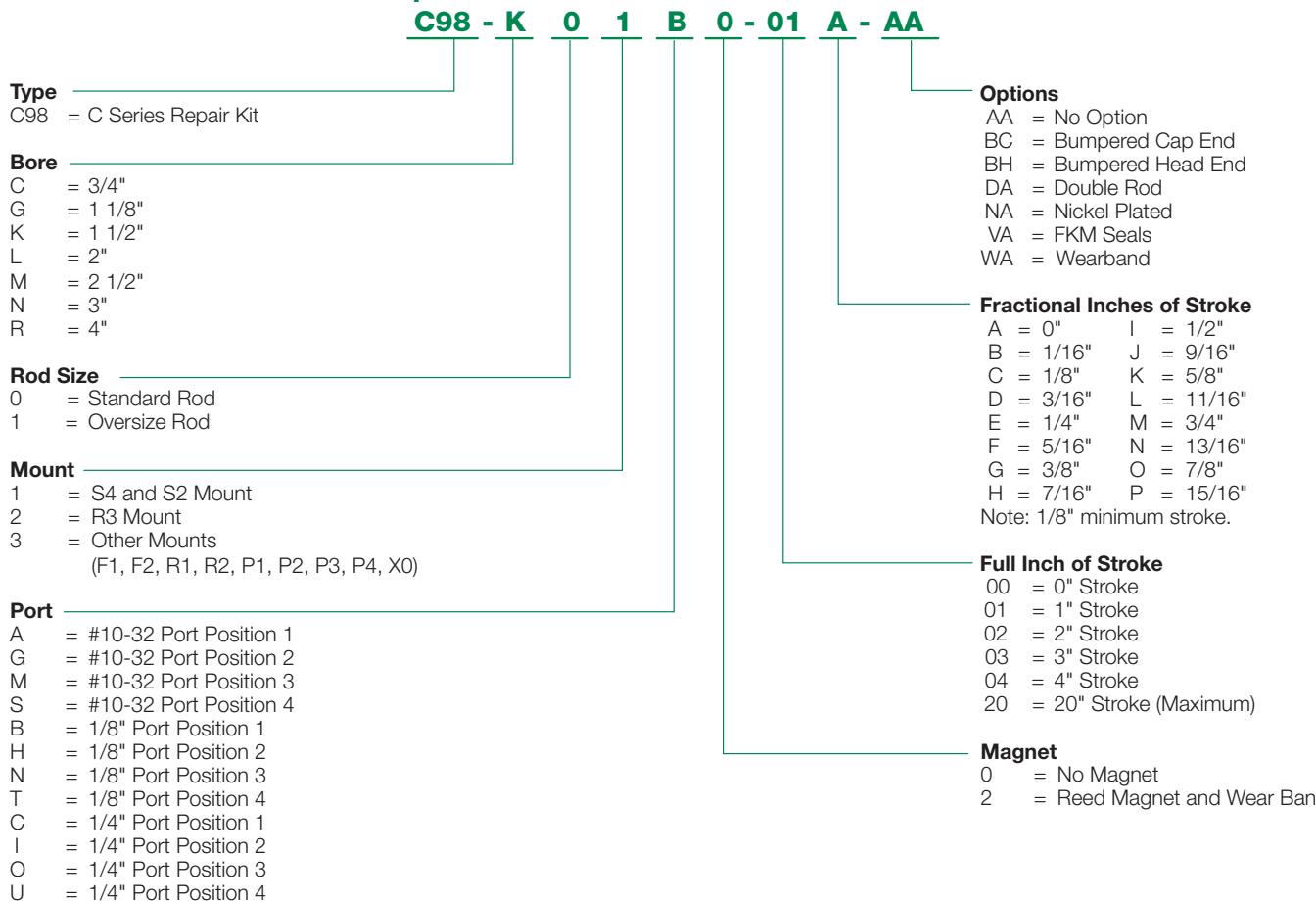
Full Inch of Stroke

00	= 0" Stroke
01	= 1" Stroke
02	= 2" Stroke
03	= 3" Stroke
04	= 4" Stroke
20	= 20" Stroke (Maximum)

Rod End Styles, Diameters and Threads

Type	Diameter	Style #1 Optional Male	Style #2 Optional Female	Style #3 Standard Female
3/4"	0.250	#8-32	N/A	#8-32
1 1/8"	0.500	1/4-28	5/16-24	1/4-28
1 1/2"	0.625 0.750	7/16-20 1/2-20	3/8-24 N/A	7/16-20 1/2-20
2"	0.625 0.750	7/16-20 1/2-20	N/A N/A	7/16-20 1/2-20
2 1/2"	0.625 0.750	7/16-20 1/2-20	N/A N/A	7/16-20 1/2-20
3"	1.000	3/4-16	5/8-18	3/4-16
4"	1.000	3/4-16	N/A	3/4-16

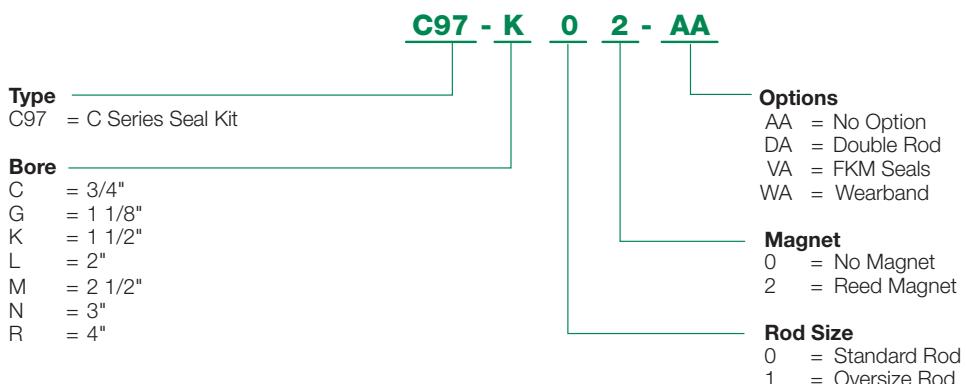
How to Order - C Series Repair Kit



Note: Options listed are ones that apply to repair kit only.

Model number is set up to use option code supplied with original cylinder or with any above.

How to Order - C Series Seal Kit



Note: Options listed are ones that apply to seal kit only.

Model number is set up to use option code supplied with original cylinder or with any above.

Note:

Tie Rod and Sleeve Nuts are Standard on 3" and 4" bore sizes.

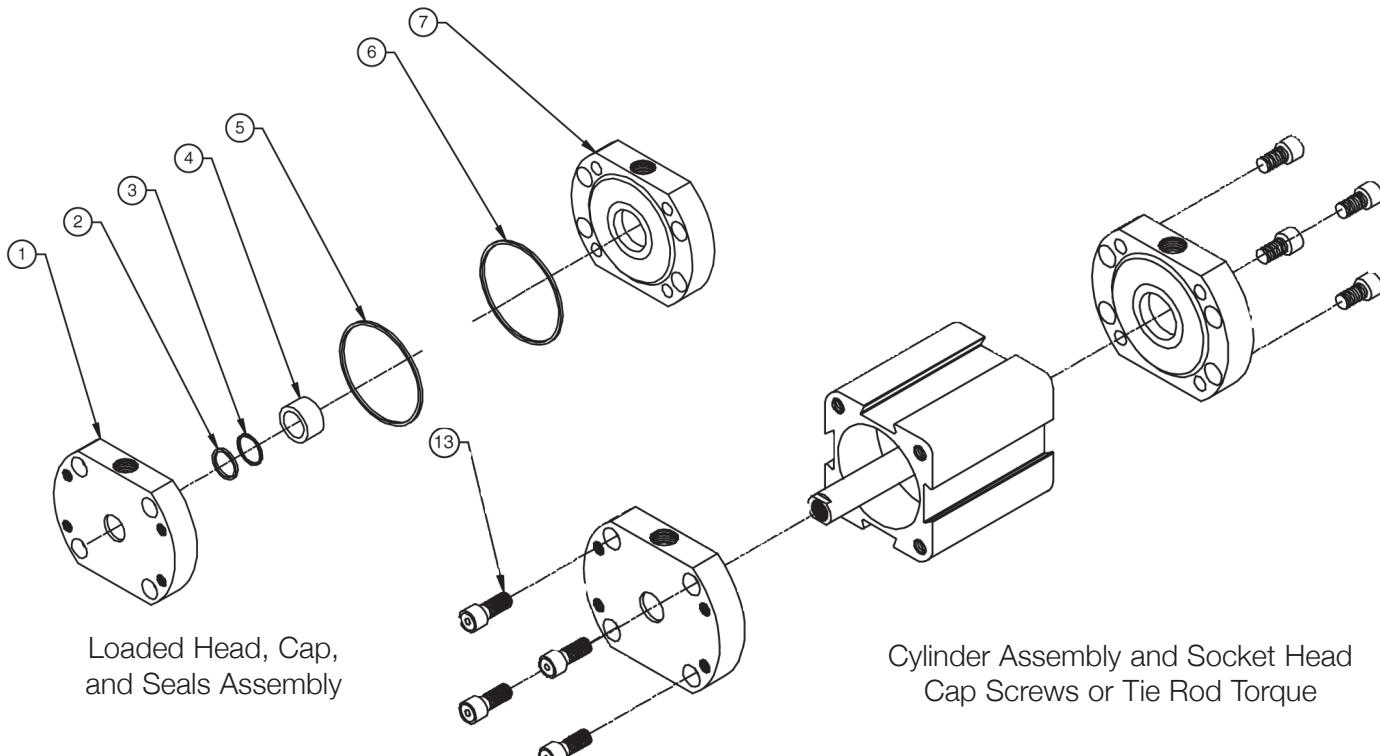
Piston Rod Assembly Kit Removal/Installation Instructions

1. Loosen 4 Socket Head Cap Screws or 4 Sleeve Nuts (Part #13) to remove Head (Part #1) or Cap (Part #7).
2. Remove Head and Cap to access Piston/Rod Assembly (Part #8 & #9)
3. Carefully remove seal. (Part #10) Any damage to the seal grooves may result in leakage.
4. Lubricate piston seal with supplied Numatics' Lube. Examine seals before installing for any contamination. Contamination may cause leakage.
5. Install Quad Piston Seal (Part #10). Make sure the piston seal is not twisted inside groove.
6. Sink piston/rod assembly into sinker tube.
7. Apply lube inside the cylinder tube (Part #11).
8. Sink piston/rod assembly into cylinder tube.
9. Press piston/rod assembly flush with the cylinder tube. Wipe off any lube from the face of the piston.
10. Examine all seals before reassembling cylinder for any contamination. Contamination may cause leakage.
11. Lightly grease Rod Seal (Part #3). This will ease the installation of the loaded head over the rod.
12. Reassemble cylinder. Loosely torque 4 Socket Head Cap Screws or 4 Sleeve Nuts to allow head and cap to rotate slightly.
13. Before final torque, place cylinder on level surface. This will ensure that the cylinder head and cap are square. Torque Socket Head Cap Screws or Sleeve Nuts in a crisscross pattern. Use the following charts for torque tolerances for Socket Head Cap Screws or Sleeve Nuts.
14. Stroke cylinder by hand. This will enable detection of any binding. If binding does occur, repeat steps 12-14.

See Seal Installation Guide on page 33 for additional (visual) instructions.

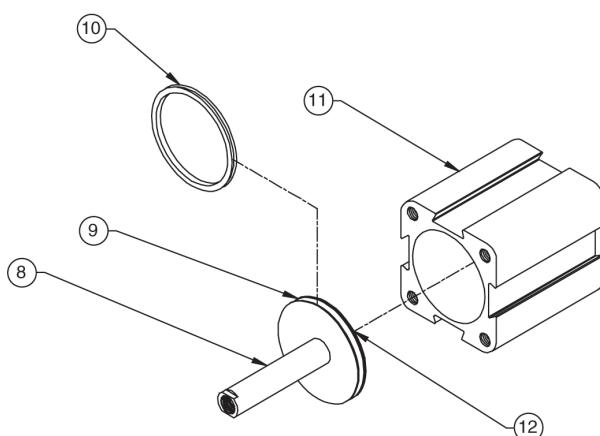
Diagrams

Pneumatic Service Temperatures:
 Nitrile Seals: -10°F (-23°C) to 165°F (74°C)
 FKM Seals: 0°F (-17°C) to 400°F (204°C)



C Series

Part #	Description	Parts included in:		
		Seal Kit	Repair Kit	Piston/Rod Assembly
1	Head		X	
2	Back-up Ring	X	X	
3	Rod Seal	X	X	
4	Bushing		X	
5	Head Tube End Seal	X	X	
6	Cap Tube End Seal	X	X	
7	Cap			
8	Rod			X
9	Piston			X
10	Piston Seal	X	X	
11	Tube			
12	Piston/Rod Assembly Locking Nut			X
13	Socket Head Cap Screws (SHCS)			



Piston/Rod Assembly

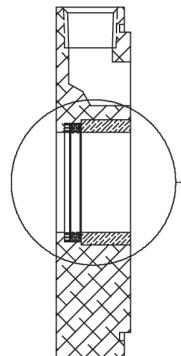
Repair Kit Installation Instructions

1. Loosen 4 Socket Head Cap Screws or 4 Sleeve Nuts (Part #13) to remove Head (Part #1) or Cap (Part #7).
2. Remove Head and Cap to access Piston/Rod Assembly (Part #8 & #9)
3. Carefully remove seals. (Part #5, #6, and #10) Any damage to the seal grooves may result in leakage.
4. Lubricate all seals with supplied Numatics' Lube. Examine seals before installing for any contamination. Contamination may cause leakage.
5. Install Quad Piston Seal (Part #10). Make sure the piston seal is not twisted inside groove.
6. Sink piston/rod assembly into sinker tube.
7. Apply lube inside the cylinder tube (Part #11).
8. Sink piston/rod assembly into cylinder tube.
9. Press piston/rod assembly flush with the cylinder tube. Wipe off any lube from the face of the piston.
10. Place Tube End Seals (Part #6) into head and cap seal grooves. Examine seals after installing for any contamination. Contamination may cause leakage.
11. Lightly grease Rod Seal (Part #3) in supplied loaded head assembly. This will ease the installation of the loaded head over the rod.
12. Reassemble cylinder. Loosely torque 4 Socket Head Cap Screws or 4 Sleeve Nuts to allow head and cap to rotate slightly.
13. Before final torque, place cylinder on level surface. This will ensure that the cylinder head and cap are square. Torque Socket Head Cap Screws or Sleeve Nuts in a crisscross pattern. Use the following charts for torque tolerances for Socket Head Cap Screws or Sleeve Nuts.
14. Stroke cylinder by hand. This will enable detection of any binding. If binding does occur, repeat steps 12-14.
See Seal Installation Guide on page 33 for additional (visual) instructions.

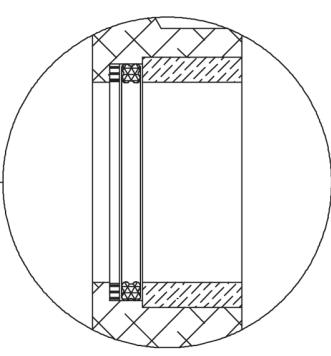
Seal Kit Installation Instructions

1. Loosen 4 Socket Head Cap Screws or 4 Sleeve Nuts (Part #13) to remove Head (Part #1) or Cap (Part #7).
2. Remove Head and Cap to access Piston/Rod Assembly (Part #8 & #9)
3. Carefully remove seals. (Part #2, #3, #5, #6, and #10) Any damage to the seal grooves may result in leakage.
4. Lubricate all seals with supplied Numatics' Lube. Examine seals before installing for any contamination. Contamination may cause leakage.
5. Install Quad Piston Seal (Part #10). Make sure the piston seal is not twisted inside groove.
6. Sink piston/rod assembly into sinker tube.
7. Apply lube inside the cylinder tube (Part #11).
8. Sink piston/rod assembly into cylinder tube.
9. Press piston/rod assembly flush with the cylinder tube. Wipe off any lube from the face of the piston.
10. Place Tube End Seals (Part #6) into head and cap seal grooves. Examine seals after installing for any contamination. Contamination may cause leakage.
11. Install Backup Ring (Part #2) and Rod Seal (Part #3) into head. After installation, lightly grease Rod Seal. This will ease the installation of the loaded head over the rod.
12. Reassemble cylinder. Loosely torque 4 Socket Head Cap Screws or 4 Sleeve Nuts to allow head and cap to rotate slightly.
13. Before final torque, place cylinder on level surface. This will ensure that the cylinder head and cap are square. Torque Socket Head Cap Screws or Sleeve Nuts in a crisscross pattern. Use the following charts for torque tolerances for Socket Head Cap Screws or Sleeve Nuts.
14. Stroke cylinder by hand. This will enable detection of any binding. If binding does occur, repeat steps 12-14.
See Seal Installation Guide on page 33 for additional (visual) instructions.

Seal Installation Guide



Loaded Head



Piston

**Screw/Sleeve Nut Torque
Tolerances (lbs-ft) Part #13**

Bore	Min.	Max.
3/4"	1	1.5
1-1/8"	5	6
1-1/2"	15	20
2"	15	20
2-1/2"	15	20
3"	25	30
4"	45	50

**Sinker Tube Part
Numbers**

Bore	Part #
3/4"	C06-C91
1-1/8"	C06-G91
1-1/2"	A06-K91
2"	A06-L91
2-1/2"	A06-M91
3"	C06-N91
4"	A06-R91

Note: Sinker Tubes are not included in kits. They can be ordered using the part numbers from the provided chart.



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