FABCO-AIR
A member of Festo Group

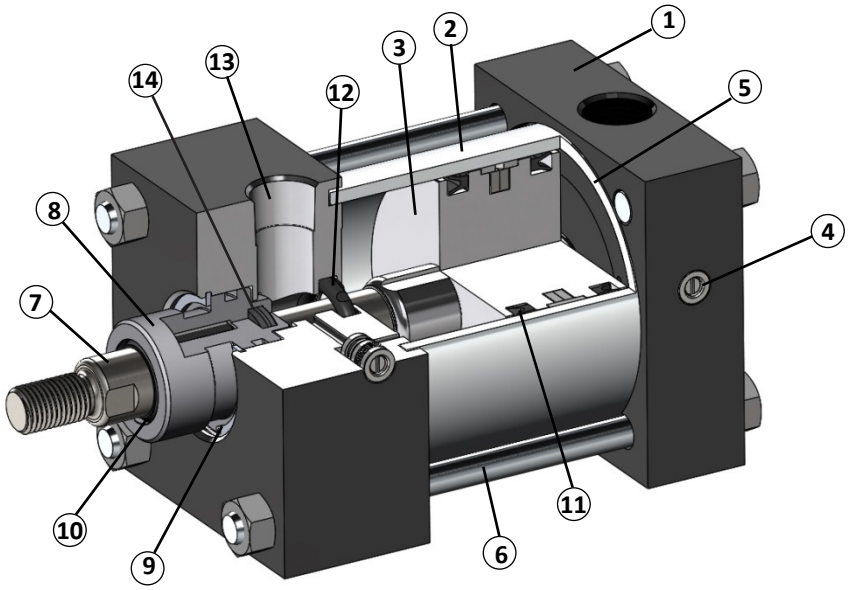
NFPA Air Cylinders

Now Includes 8" Bore

FABCO-AIR NFPA Cylinders

Cylinder Construction

The dimensional interchange to NFPA Standards

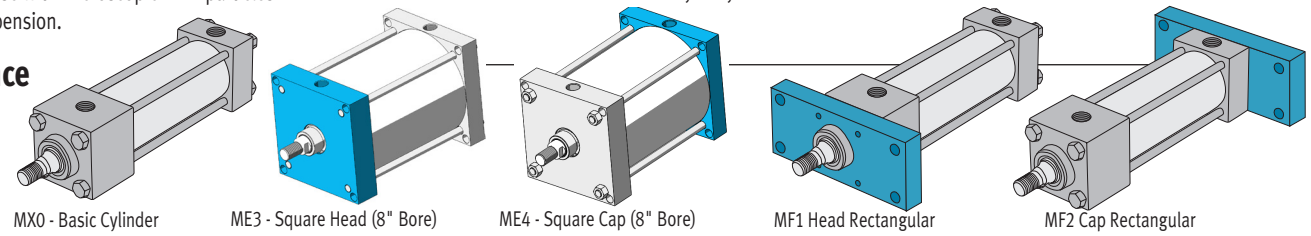


Pressure rating: 250 psi max.
Temperature limits: –10°F to +165°F.

1. Head and cap are machined from solid aluminum bar stock and black anodized for corrosion resistance.
2. Hard (60 Rc) coated I.D. high strength aluminum alloy tube.
3. Solid aluminum alloy piston is strong, light weight and carries a wide graphite filled PTFE wear band to support maximum load conditions.
4. Cushion has a flush, retained adjustment needle.

   Lubrication is a high performance synthetic grease with microscopic PTFE particles in suspension.
5. Fiber Gasket
6. Tie rods are 416 stainless steel for maximum holding power. Threads are rolled for durability.
7. Ground and polished high strength steel piston rod has hard chrome plated surface to provide maximum cycle life for bushing and seals.
8. Aluminum bushing with internal duralon rod bearing provides maximum load bearing support and superb wear resistance for high cycle life.
9. Bearing retainer ring allows bearing cartridge to be removed without disassembly of cylinder.
10. Polyurethane rod wiper has excellent abrasion resistance.
11. Buna-N Nitrile Piston Seals standard.
12. Floating cushion seal design allows quick full flow to entire piston surface for instant stroke reversal.
13. Port design allows full flow for optimum cylinder operation.
14. Polyurethane rod seal standard.

Quick Reference to Mounting Styles



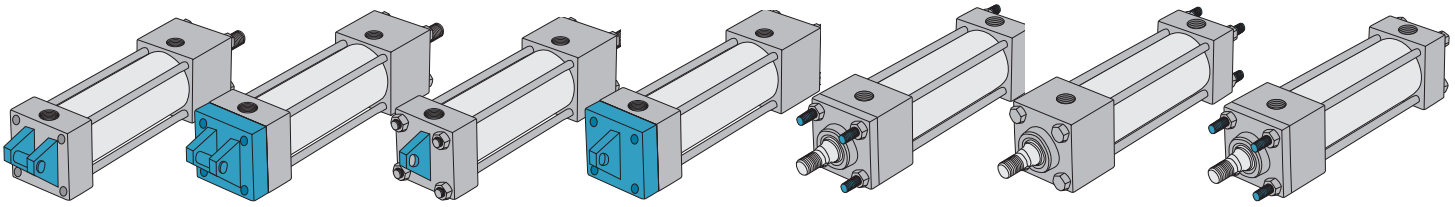
MX0 - Basic Cylinder
Order Code X0

ME3 - Square Head (8" Bore)
Order Code E3

ME4 - Square Cap (8" Bore)
Order Code E4

MF1 Head Rectangular
Flange - Order Code F1

MF2 Cap Rectangular
Flange - Order Code F2



MP1 Fixed Clevis
Order Code P1

MP2 Detachable Clevis
Order Code P2

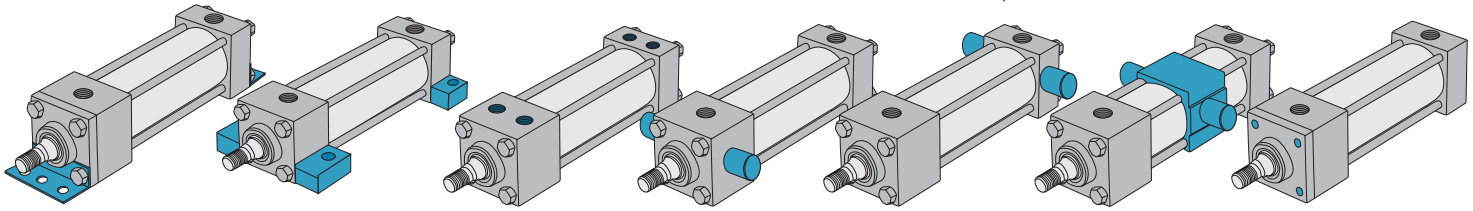
MP3 Fixed Eye
Order Code P3

MP4 Detachable Eye
Order Code P4

MX1 Extended Tie Rods
Both Ends - Order Code X1

MX2 Extended Tie Rods
Cap End - Order Code X2

MX3 Extended Tie Rods
Head End - Order Code X3



MS1 Angle Mount
Order Code S1

MS2 Side Lug Mount
Order Code S2

MS4 Bottom Tapped
Order Code S4

MT1 Head Trunnion
Order Code T6

MT2 Cap Trunnion
Order Code T7

MT4 Mid Trunnion
Order Code T8

Sleeve Nut Mount
Order Code SN

How to Order

Note: The fields in the model number below this line must be filled.

This field can be blank. (or up to 8 characters max.)

Model Number 32 X0 – 06 A 1 E C – CT E – AD01A

Cylinder Bore
15 = 1-1/2
20 = 2
25 = 2-1/2
32 = 3-1/4
40 = 4
50 = 5
60 = 6
80 = 8

Order Code / NFPA Mounting
X0..... MX0 = Basic cylinder - no mount
F1..... MF1 = [2] Head rectangular flange
F2..... MF2 = [2] Cap rectangular flange
P1..... MP1 = Fixed clevis
P2..... MP2 = Detachable clevis
P3..... MP3 = Fixed eye
P4..... MP4 = Detachable eye
T6..... MT1 = [1] Head trunnion
T7..... MT2 = [1] Cap trunnion
T8..... MT4 = [2] Mid trunnion
X1..... MX1 = Extended tie rods both ends
X2..... MX2 = Cap end tie rods
X3..... MX3 = Head end tie rods
S1..... MS1 = Angle mount
S2..... MS2 = Side lug
S4..... MS4 = Bottom tapped, flush mount
E3..... ME3 = Head square mount
E4..... ME4 = Cap square mount
SN.. = [2] Sleeve nut
SE.. = [2] Sleeve nut & bottom tapped mount
SF.. = [2] Sleeve nut & bottom tapped mount without spacer plate

[1] Trunnion pins are removable.
[2] Not available in 8" bore size

Full inches of stroke
00 = 0"
01 = 1"
02 = 2"
03 = 3"
48 = 48"
99 = 99" (Maximum)

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

Rod End Thread Code
1 = Style #1 Standard male
2 = Style #2 Optional male
3 = Style #3 Optional female
6 = Style #6 O.S. rod, Std. male
7 = Style #7 O.S. rod, Opt. male
8 = Style #8 O.S. rod, Opt. female

Port Size & Position Code

Position	1	2	3	4
1/8 NPT	B	H	N	T
1/4 NPT	C	I	O	U
3/8 NPT	D	J	P	V
1/2 NPT	E	K	Q	W
3/4 NPT	F	L	R	X

Adjustable Air cushions (Std position Head and Cap = C)

Position	1	2	3	4	Fixed
No Cushions	A	A	A	A	A
Head & Cap	B	C	D	E	Y
Head only	F	G	H	J	W
Cap only	K	L	M	N	V

Standard port and air cushion adjustment positions
Ports are in position #1 both ends; cushion adjustments are in position #2 both ends.
Optional position Air cushion adjustment can be located on same surface as standard size port on 2" bore and larger. For 1-1/2" bore or for larger ports, consult factory.
For Trunnion mounting style, ports or air cushions can be located at Position 1 or 3 only.

Length Extensions (Leave blank if not required)
AD = Rod thread on Head End total "A" Dim (Must specify)
Example = AD01A (Full & fractional length)
CD = Shaft on Head End total "C" Dim (Must specify)
Example = CD02A (Full & fractional length)
AC = Head End total "A" & "C" Dims combined (Must specify)
Specify "A" Dim first, then "C" Dim
Example = AC01A02A (Full & fractional length)
RA = Rod Thread on Cap End Double Rod total "A" Dim (Must specify) Example = RA01A (Full & fractional length)
RC = Shaft on Cap End Double Rod total "C" Dim (Must specify) Example = RC02A (Full & fractional length)
RR = Cap End Double Rod total "A & C" Dims combined (Must specify) Specify "A" Dim first, then "C" Dim
Example = RR01A02A (Full & fractional length)
AR = Rod Thread on Head End total "A" & Rod Thread on Cap End total "A" Dims combined (Must specify)
Specify Head End "A" Dim first, then Cap End "A" Dim
Example = AR01A02A (Full & fractional length)
CR = Shaft on Head End total "C" & Shaft on Cap End total "C" Dims combined (Must specify)
Specify Head End "C" Dim first, then Cap End "C" Dim
Example = CR01A02A (Full & fractional length)

Magnet
N = No magnet
E = Magnet sensing

Options
XX = No options
BF = Bumper, head end only[1] (pg. 10)
BR = Bumper, cap end only[1] (pg. 10)
(Also allows use of adjustable air cushions.)
CT = Composite cylinder tube
DR = Double rod (pg. 4)
LB = Low Breakaway
MR = Male rod stud with "KK" thread (pg. 10)
Available only for Style #3 Rod End
SB = Silent seal bumpers (allows use of adjustable air cushions - pg. 10)
Note: 150 psi max., 200°F max.
SR = Stainless steel piston rod
ST = Stainless steel tie rods and fasteners
VS = Viton® seals (385°F max.)
WS = Metallic rod scraper

Combination Options
BB = Bumpers, head and cap[1].
CR = Composite tubing and stainless rod.
CS = Composite tubing and stainless tie rods.
CU = Composite tubing, stainless rod and tie rods.
CD = Double rod and bumper (cap end only).
DB = Double rod and bumper (head & cap end).
DF = Double rod and bumper (head end only).
DM = Double rod and male rod stud (head end only).
DN = Double rod & male rod stud (cap end only).
DO = Double rod & male rod stud (head & cap end).
DS = Double rod and stainless rod.
DT = Double rod and stainless tie rods.
DU = Double rod, stainless rod and stainless tie rods.
SS = Stainless steel rod, tie rods and fasteners.
WD = Composite tubing, stainless rod, stainless tie rods, and metallic scraper.
WE = Composite tubing, stainless rod, stainless tie rods, metallic scraper and Viton seals.
WV = Metallic rod scraper and Viton seals.

Consult factory for additional combination options.

[1] OAL increases 0.062 per end. Piston travel is minimum of specified stroke.

Standard Ports, Diameters, and Rod Threads

Code	Bore	NPT	St'd Port Position Code	Rod	Style #1 St'd Male Thread	Style #2 Opt. Male Thread	Style #3 Opt. Female thread
15	1-1/2	3/8	D	.625	7/16-20	1/2-20	7/16-20
20	2	3/8	D	.625	7/16-20	1/2-20	7/16-20
25	2-1/2	3/8	D	.625	7/16-20	1/2-20	7/16-20
32	3-1/4	1/2	E	1.000	3/4-16	7/8-14	3/4-16
40	4	1/2	E	1.000	3/4-16	7/8-14	3/4-16
50	5	1/2	E	1.000	3/4-16	7/8-14	3/4-16
60	6	3/4	F	1.375	1-14	1 1/4-12	1-14
80	8	3/4	F	1.375	1-14	1 1/4-12	1-14

Sizing Guide – Extend Force (pounds)

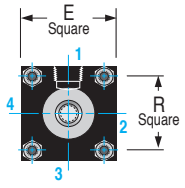
Bore	Piston Area	Pressure 40	50	60	70	80	90	100	125	150	175	200	250
1 1/2"	1.77	71	88	106	124	141	159	177	221	265	309	353	443
2"	3.14	126	157	188	220	251	283	314	393	471	550	628	785
2 1/2"	4.91	196	245	295	343	393	442	491	614	736	859	982	1228
3 1/4"	8.30	332	415	498	581	664	747	830	1037	1244	1452	1659	2075
4"	12.57	503	628	754	880	1005	1131	1257	1571	1885	2199	2513	3143
5"	19.63	785	982	1178	1374	1571	1767	1963	2454	2945	3436	3927	4908
6"	28.27	1131	1414	1696	1979	2262	2545	2827	3534	4241	4948	5655	7067
8"	50.27	2011	2513	3016	3519	4021	4524	5027	6283	7540	8796	10053	12566

Sizing Guide – Retract Force Deduction (pounds)

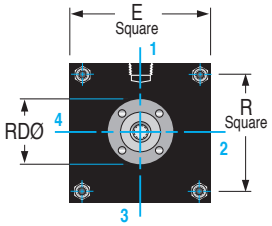
Rod	Rod Area	Pressure 40	50	60	70	80	90	100	125	150	175	200	250
0.625	0.307	12	15	18	21	25	28	31	38	46	54	61	76
1.000	0.785	31	39	47	55	63	71	79	98	118	137	157	196
1.375	1.485	59	74	89	104	119	134	148	186	223	260	297	371
1.750	2.404	96	120	144	168	192	216	240	301	361	421	481	601

(Viton® is a registered trademark of DuPont Corp.)

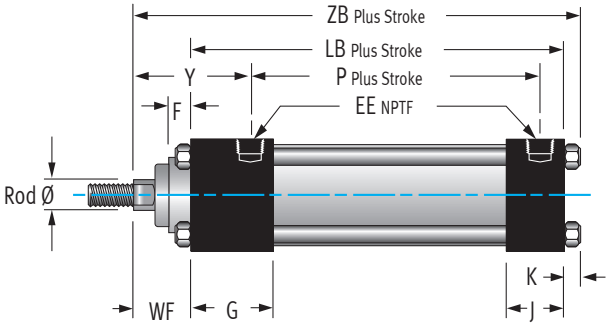
MX0 - No mount Order Code X0



Head End View
1-1/2" thru 8" Bores

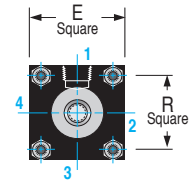


Head End View
for 6" & 8" Bore
Oversize Rod

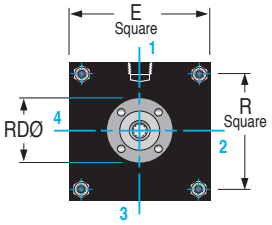


Double Rod Cylinder - No mount

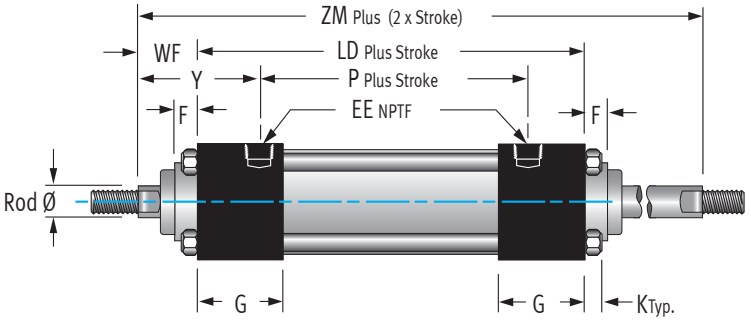
Use option code "DR" for double rod cylinder available with the following NFPA mounts:
MX0, MF1, MT1, MT4, MX1, MX3, MS1, MS2, MS4, ME3, ME4 or non-NFPA SN, SE, SF mount.



Head End View
1-1/2" thru 8" Bores



Head End View
for 6" & 8" Bore Oversize Rod



Approximate Cylinder Weights (pounds)

Bore	Xo Base	Per Inch Stroke by Tube Material			Adders for O.S. Rod		Adders for Double Rod (DR) Models		Adders for DR – O.S. Rod Models	
		Aluminum	Steel	Composite	Base	Per Inch Stroke	Additional Base	Additional Per Inch Stroke	Additional Base	Additional Per Inch Stroke
1 1/2"	2.10	0.24	0.36	0.23	0.8	0.16	0.64	0.16	0.96	0.16
2"	2.70	0.30	0.45	0.28	0.8	0.16	0.80	0.20	1.12	0.16
2 1/2"	3.60	0.30	0.49	0.28	0.8	0.16	1.02	0.26	1.34	0.16
3 1/4"	7.10	0.50	0.74	0.47	1.7	0.20	2.15	0.44	2.76	0.20
4"	9.30	0.60	0.99	0.56	1.7	0.20	2.46	0.44	3.07	0.20
5"	13.00	0.60	0.99	0.56	1.7	0.20	3.00	0.68	3.61	0.20
6"	22.00	0.90	1.33	0.83	2.0	0.24	5.32	0.85	6.24	0.24

Basic Dimensions for Single or Double Rod Cylinders (inches)

Bore	Rod	E	EE	F	G	J	K	LB	LD	P	R	RD	WF	Y	ZB	ZM
1 1/2"	0.625 Standard	2.000	3/8	N/A	1.500	1.000	0.250	3.625	4.125	2.250	1.428	N/A	1.000	1.938	4.875	6.125
	1.000 Oversize	2.000	1/4	0.375	1.500	1.000	0.250	3.625	4.125	2.103	1.428	See Note 1	1.375	2.460	5.250	6.875
2"	0.625 Standard	2.500	3/8	N/A	1.500	1.000	0.313	3.625	4.125	2.250	1.838	N/A	1.000	1.938	4.938	6.125
	1.000 Oversize	2.500	3/8	N/A	1.500	1.000	0.313	3.625	4.125	2.250	1.838	N/A	1.375	2.313	5.313	6.875
2 1/2"	0.625 Standard	3.000	3/8	N/A	1.500	1.000	0.313	3.750	4.250	2.375	2.192	N/A	1.000	1.938	5.062	6.250
	1.000 Oversize	3.000	3/8	N/A	1.500	1.000	0.313	3.750	4.250	2.375	2.192	N/A	1.375	2.313	5.438	7.000
3 1/4"	1.000 Standard	3.750	1/2	N/A	1.750	1.250	0.375	4.250	4.750	2.625	2.758	N/A	1.375	2.438	6.000	7.500
	1.375 Oversize	3.750	1/2	N/A	1.750	1.250	0.375	4.250	4.750	2.625	2.758	N/A	1.625	2.688	6.250	8.000
4"	1.000 Standard	4.500	1/2	N/A	1.750	1.250	0.375	4.250	4.750	2.625	3.323	N/A	1.375	2.438	6.000	7.500
	1.375 Oversize	4.500	1/2	N/A	1.750	1.250	0.375	4.250	4.750	2.625	3.323	N/A	1.625	2.688	6.250	8.000
5"	1.000 Standard	5.500	1/2	N/A	1.750	1.250	0.500	4.500	5.000	2.875	4.101	N/A	1.375	2.438	6.375	7.750
	1.375 Oversize	5.500	1/2	N/A	1.750	1.250	0.500	4.500	5.000	2.875	4.101	N/A	1.625	2.688	6.625	8.250
6"	1.375 Standard	6.500	3/4	N/A	2.000	1.500	0.500	5.000	5.500	3.125	4.879	N/A	1.625	2.813	7.125	8.750
	1.750 Oversize	6.500	3/4	0.750	2.000	1.500	0.500	5.000	5.500	3.125	4.879	3.788	1.875	3.063	7.375	9.250
8"	1.375 Standard	8.500	3/4	N/A	2.000	1.500	0.625	5.125	5.625	3.250	6.440	N/A	1.625	2.810	7.375	8.875
	1.750 Oversize	8.500	3/4	0.750	2.000	1.500	0.625	5.125	5.625	3.250	6.440	3.788	1.875	3.060	7.625	9.375

Note1: Bearing retainer is 2.00 Square x 0.375 Thk. "F" dimension

STONote: P = 1.955 for double rod

Standard Rod Diameter

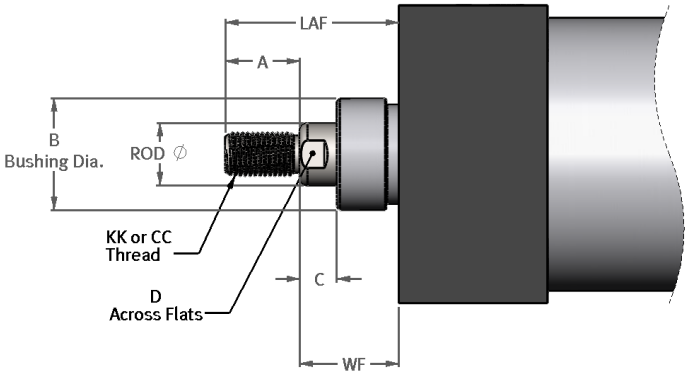
Rod End Style #1
(Standard Male – KK Thread)

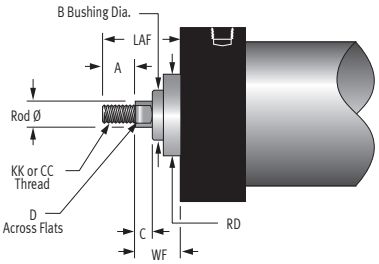
Rod End Style #2
(Optional Male – CC Thread)

Oversize Rod Diameter

Rod End Style #6
(Standard Male – KK Thread)

Rod End Style #7
(Optional Male – CC Thread)





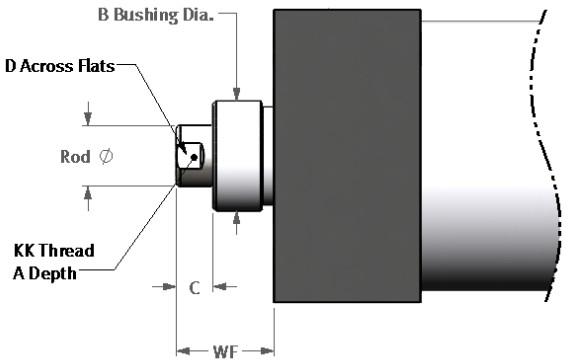
6" & 8" Bore Oversized Rod

Standard Rod Diameter

Rod End Style #3
(Optional Female)

Oversize Rod Diameter

Rod End Style #8
(Optional Female)

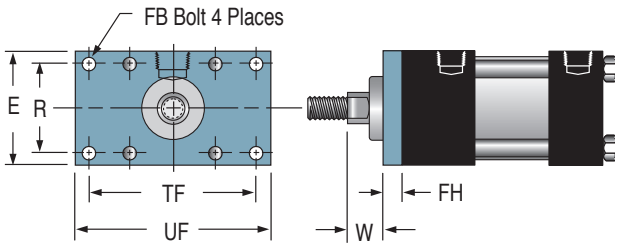


Rod End Dimensions (inches)

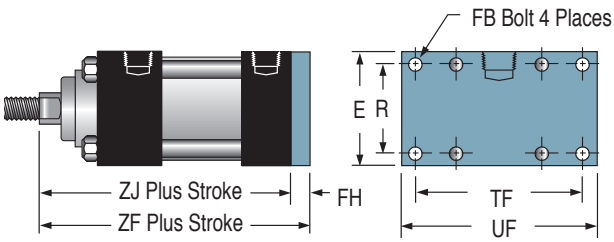
Bore	Rod	KK	CC	A	B	C	D	LAF	RD	WF
1 1/2"	0.625 Standard	7/16-20	1/2-20	0.750	1.125	0.375	0.562	1.750	N/A	1.000
	1.000 Oversize	3/4-16	7/8-14	1.125	1.500	0.500	0.875	2.500	See Note 1	1.375
2"	0.625 Standard	7/16-20	1/2-20	0.750	1.125	0.375	0.562	1.750	N/A	1.000
	1.000 Oversize	3/4-16	7/8-14	1.125	1.500	0.500	0.875	2.500	N/A	1.375
2 1/2"	0.625 Standard	7/16-20	1/2-20	0.750	1.125	0.375	0.562	1.750	N/A	1.000
	1.000 Oversize	3/4-16	7/8-14	1.125	1.500	0.500	0.875	2.500	N/A	1.375
3 1/4"	1.000 Standard	3/4-16	7/8-14	1.125	1.500	0.500	0.875	2.500	N/A	1.375
	1.375 Oversize	1-14	1 1/4-12	1.625	2.000	0.625	1.125	3.250	N/A	1.625
4"	1.000 Standard	3/4-16	7/8-14	1.125	1.500	0.500	0.875	2.500	N/A	1.375
	1.375 Oversize	1-14	1 1/4-12	1.625	2.000	0.625	1.125	3.250	N/A	1.625
5"	1.000 Standard	3/4-16	7/8-14	1.125	1.500	0.500	0.875	2.500	N/A	1.375
	1.375 Oversize	1-14	1 1/4-12	1.625	2.000	0.625	1.125	3.250	N/A	1.625
6"	1.375 Standard	1-14	1 1/4-12	1.625	2.000	0.625	1.125	3.250	N/A	1.625
	1.750 Oversize	1 1/4-12	1 1/2-12	2.000	2.375	0.750	1.500	3.875	3.788	1.875
8"	1.375 Standard	1-14	1 1/4-12	1.625	2.000	0.625	1.125	3.250	N/A	1.625
	1.750 Oversize	1 1/4-12	1 1/2-12	2.000	2.375	0.750	1.500	3.875	3.788	1.875

Note 1: Bearing retainer is 2.00 Square x 0.375 Thk. "F" dimension.

MF1 – Head Rectangular Flange Order Code F1



MF2 – Cap Rectangular Flange Order Code F2

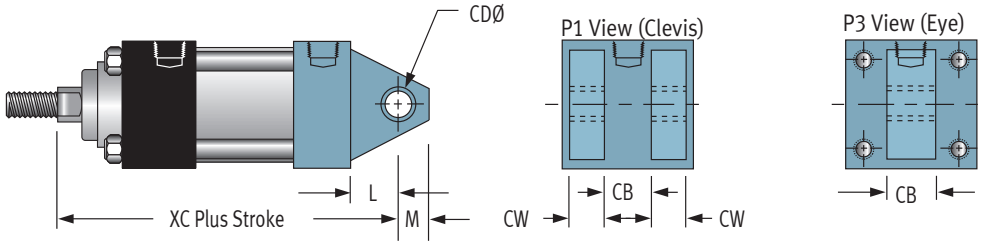


Rectangular Flange Mount Dimensions (inches)

							Standard Rod			Oversize Rod		
Bore	E	FB	FH	R	TF	UF	W	ZF	ZJ	W	ZF	ZJ
1 1/2"	2.000	1/4	.375	1.428	2.750	3.375	.625	5.000	4.625	1.000	5.375	5.000
2"	2.500	5/16	.375	1.838	3.375	4.125	.625	5.000	4.625	1.000	5.375	5.000
2 1/2"	3.000	5/16	.375	2.192	3.875	4.625	.625	5.125	4.750	1.000	5.500	5.125
3 1/4"	3.750	3/8	.625	2.758	4.688	5.500	.750	6.250	5.625	1.000	6.500	5.875
4"	4.500	3/8	.625	3.323	5.438	6.250	.750	6.250	5.625	1.000	6.500	5.875
5"	5.500	1/2	.625	4.101	6.625	7.625	.750	6.500	5.875	1.000	6.750	6.125
6"	6.500	1/2	.750	4.879	7.625	8.625	.875	7.375	6.625	1.125	7.625	6.875

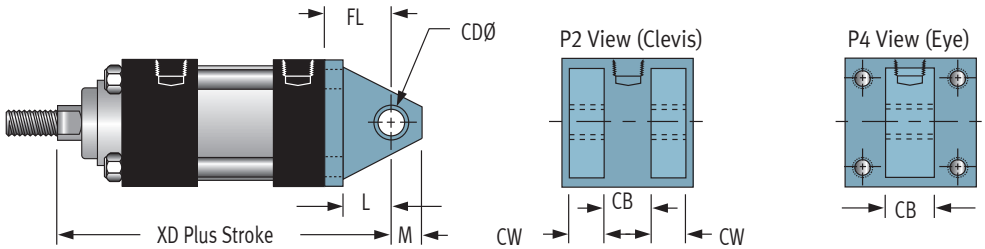
MP1 & MP3 Fixed Clevis and Eye Mounts Order Codes P1 & P3

Pivot pins and retaining rings included (MP1 only)



MP2 & MP4 Detachable Clevis and Eye Mounts Order Codes P2 & P4

Pivot pins and retaining rings included (MP2 only)



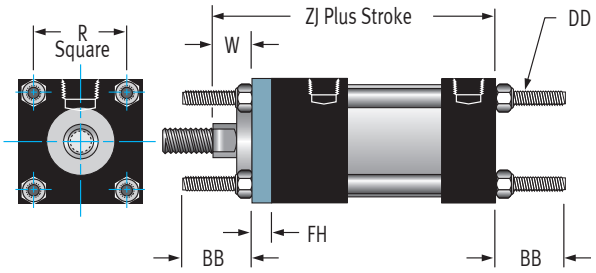
Clevis & Eye Mount Dimensions (inches)

							Standard Rod		Oversize Rod	
Bore	CB	CD	CW	FL	L	M	XC	XD	XC	XD
1 1/2"	0.750	0.500	.500	1.125	0.750	0.625	5.375	5.750	5.750	6.125
2"	0.750	0.500	.500	1.125	0.750	0.625	5.375	5.750	5.750	6.125
2 1/2"	0.750	0.500	.500	1.125	0.750	0.625	5.500	5.875	5.875	6.250
3 1/4"	1.250	0.750	.625	1.875	1.250	0.938	6.875	7.500	7.125	7.750
4"	1.250	0.750	.625	1.875	1.250	0.938	6.875	7.500	7.125	7.750
5"	1.250	0.750	.625	1.875	1.250	0.938	7.125	7.750	7.375	8.000
6"	1.500	1.000	.750	2.250	1.500	1.188	8.125	8.875	8.375	9.125
8"	1.500	1.000	.750	2.250	1.500	1.188	8.250	9.000	8.500	9.250

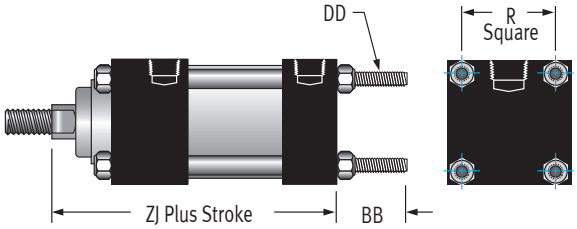
Approximate Cylinder Weights (pounds)

Bore	F1 F2	P2 P4	P1 P3	Per Inch Stroke by Tube Material			O.S. Rod Adder	
				Aluminum	Steel	Composite	Base	Per Inch Stroke
1 1/2"	2.70	3.20	2.30	0.24	0.36	0.23	0.8	0.16
2"	3.70	4.10	2.80	0.30	0.45	0.28	0.8	0.16
2 1/2"	5.00	5.50	3.70	0.30	0.49	0.28	0.8	0.16
3 1/4"	10.30	11.50	7.50	0.50	0.74	0.47	1.7	0.20
4"	14.00	15.50	9.90	0.60	0.99	0.56	1.7	0.20
5"	20.00	20.10	13.30	0.60	0.99	0.56	1.7	0.20
6"	32.00	35.00	23.00	0.90	1.33	0.83	2.0	0.24

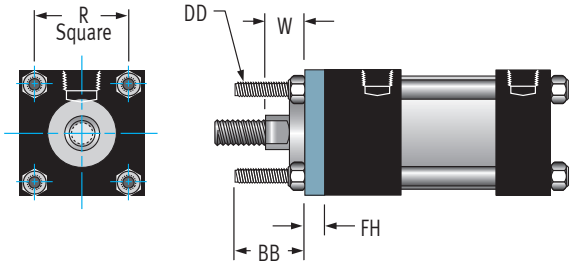
MX1 – Extended Tie Rods Order Code X1



MX2 – Cap Extended Tie Rods Order Code X2



MX3 – Head Extended Tie Rods Order Code X3

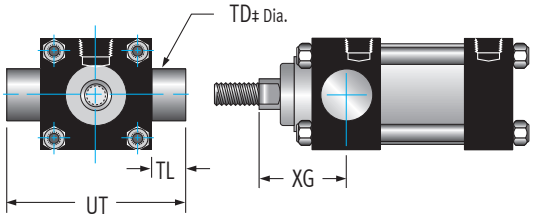


Extended Tie Rod Mount Dimensions (inches)

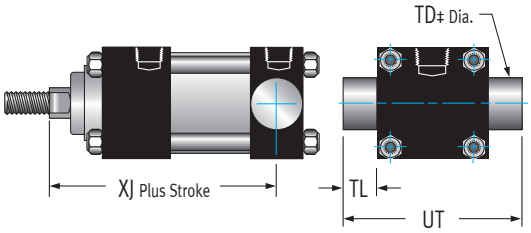
					Std. Rod		O.S. Rod	
Bore	BB	DD	FH	R	W	ZJ	W	ZJ
1 1/2"	1.000	1/4-28	.375	1.428	.625	4.625	1.000	5.000
2"	1.125	5/16-24	.375	1.838	.625	4.625	1.000	5.000
2 1/2"	1.125	5/16-24	.375	2.192	.625	4.750	1.000	5.125
3 1/4"	1.375	3/8-24	.625	2.758	.750	5.625	1.000	5.875
4"	1.375	3/8-24	.625	3.323	.750	5.625	1.000	5.875
5"	1.813	1/2-20	.625	4.101	.750	5.875	1.000	6.125
6"	1.813	1/2-20	.750	4.879	.875	6.625	1.125	6.875
8"	2.313	5/8-18	N/A	6.440	1.625	6.750	1.875	7.000

* Note: Trunnion pins are removeable. User should apply thread locking adhesive on fastener at installation.

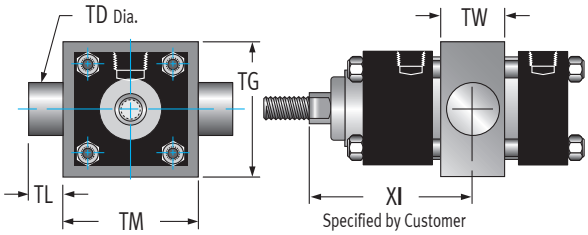
MT1 – Head Trunnion Order Code T6



MT2 – Cap Trunnion Order Code T7



MT4 – Mid Trunnion Order Code T8



Bore	Minimum Stroke	Standard Rod		Oversize Rod	
		XI Min.	XI Max.	XI Min.	XI Max.
1 1/2"	0	3.063	3.063 + Stroke	3.438	3.438 + Stroke
2"	1/4	3.188	2.938 + Stroke	3.563	3.313 + Stroke
2 1/2"	1/8	3.188	3.063 + Stroke	3.563	3.438 + Stroke
3 1/4"	9/16	4.031	3.469 + Stroke	4.281	3.719 + Stroke
4"	9/16	4.031	3.469 + Stroke	4.281	3.719 + Stroke
5"	5/16	4.031	3.719 + Stroke	4.281	3.969 + Stroke
6"	13/16	4.781	3.969 + Stroke	5.031	4.219 + Stroke

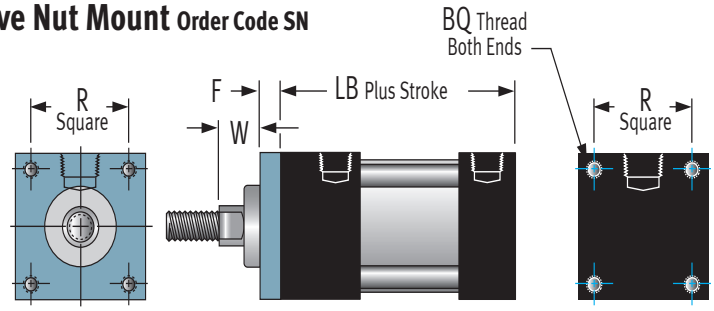
Trunnion Mount Dimensions (inches)

							Standard Rod		Oversize Rod	
Bore	TD	TG	TL	TM	TW	UT	XG	XJ	XG	XJ
1 1/2"	1.000	2.280	1.000	2.500	1.040	4.000	1.750	4.125	2.125	4.500
2"	1.000	2.260	1.000	3.000	1.040	4.500	1.750	4.125	2.125	4.500
2 1/2"	1.000	3.230	1.000	3.500	1.100	5.000	1.750	4.250	2.125	4.625
3 1/4"	1.000	4.170	1.000	4.500	1.180	5.750	2.250	5.000	2.500	5.250
4"	1.000	4.960	1.000	5.250	1.220	6.500	2.250	5.000	2.500	5.250
5"	1.000	6.000	1.000	6.250	2.000	7.500	2.250	5.250	2.500	5.500
6"	1.375	7.000	1.375	7.625	2.000	9.250	2.625	5.875	2.875	6.125
8"	1.375	N/A	1.375	N/A	N/A	11.250	2.625	6.000	2.875	6.250

Approximate Cylinder Weights (pounds)

Bore	T6 T7 T8	X1 X2 X3	Per Inch Stroke by Tube Material			O.S. Rod Adder	
			Aluminum	Steel	Composite	Base	Per Inch Stroke
1 1/2"	2.60	2.30	0.24	0.36	0.23	0.8	0.16
2"	3.10	2.80	0.30	0.45	0.28	0.8	0.16
2 1/2"	4.00	3.70	0.30	0.49	0.28	0.8	0.16
3 1/4"	7.50	7.50	0.50	0.74	0.47	1.7	0.20
4"	9.90	9.90	0.60	0.99	0.56	1.7	0.20
5"	13.70	13.30	0.60	0.99	0.56	1.7	0.20
6"	23.00	23.00	0.90	1.33	0.83	2.0	0.24

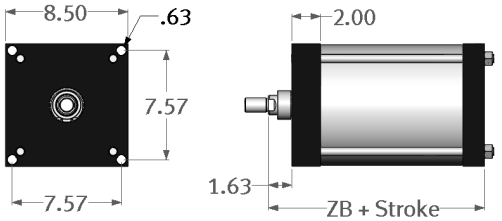
Sleeve Nut Mount Order Code SN



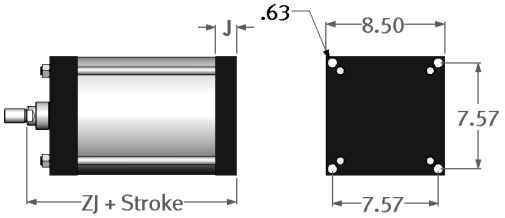
SN - Sleeve Nut Mount Dimensions (inches)

Bore	BQ	LB	R	Std. Rod F	Std. Rod W	O.S. Rod F	O.S. Rod W
1 1/2"	1/4-28	3.625	1.428	.375	.625	.375	1.000
2"	5/16-24	3.625	1.838	.375	.625	.375	1.000
2 1/2"	5/16-24	3.750	2.192	.375	.625	.375	1.000
3 1/4"	3/8-24	4.250	2.758	.625	.750	.625	1.000
4"	3/8-24	4.250	3.323	.625	.750	.625	1.000
5"	1/2-20	4.500	4.101	.625	.750	.625	1.000
6"	1/2-20	5.000	4.879	.750	.875	.750	1.125

ME3 – Head Retangular Flange Order Code E3



ME4– Cap Retangular Flange Order Code E4



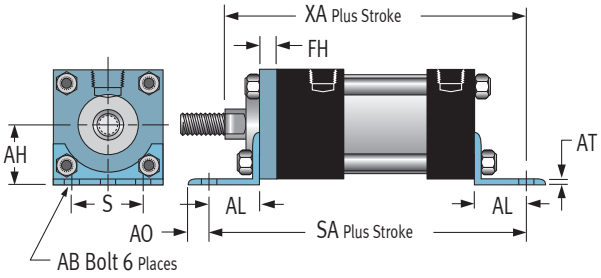
E3 & E4 Dimensions (inches)

Bore	Std. Rod ZB	Std. Rod ZJ	O.S. Rod ZB	O.S. Rod ZJ
8"	7.56	6.75	7.81	7.00

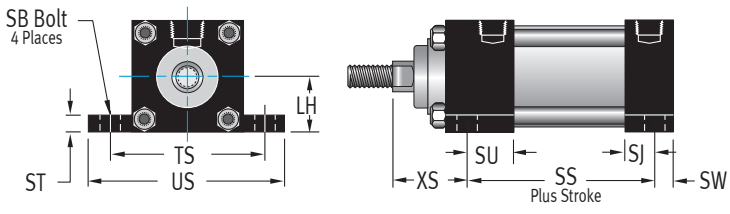
Approximate Cylinder Weights (pounds)

Bore	S4 SN	S1	S2	Per Inch Stroke by Tube Material: Aluminum	Steel	Composite	O.S. Rod Adder: Base	Per Inch Stroke
1 1/2"	2.10	2.30	2.70	0.24	0.36	0.23	0.8	0.16
2"	2.70	2.80	3.70	0.30	0.45	0.28	0.8	0.16
2 1/2"	3.60	3.70	5.00	0.30	0.49	0.28	0.8	0.16
3 1/4"	7.10	7.50	10.30	0.50	0.74	0.47	1.7	0.20
4"	9.30	9.90	14.00	0.60	0.99	0.56	1.7	0.20
5"	13.00	13.30	20.00	0.60	0.99	0.56	1.7	0.20
6"	22.00	23.00	32.00	0.90	1.33	0.83	2.0	0.24

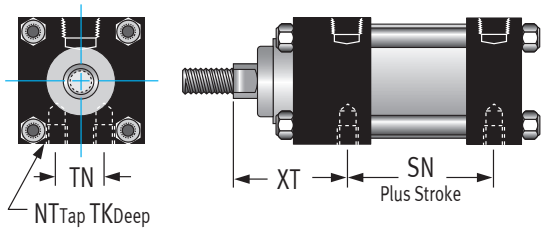
MS1 – Angle Mount Order Code S1



MS2 – Side Lug Order Code S2



MS4 – Bottom Tap Order Code S4



Mounting Dimensions (inches)

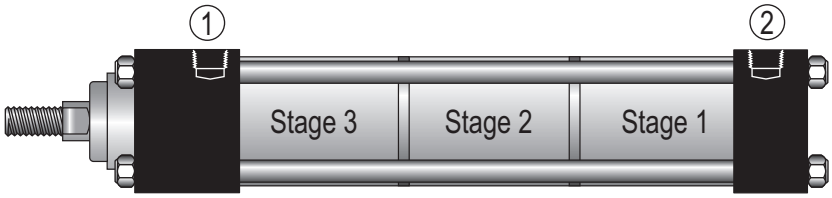
Bore	AB	AH	AL	AO	AT	FH	S	SA	XA Std	XA O.S.	LH	SB	SJ	SS	ST	SU	SW	TS	US	XS Std	XS O.S.	NT	SN	TN	TK Std	TK O.S.	XT Std	XT O.S.
1 1/2"	3/8	1.188	1.000	.438	.125	.375	1.250	6.000	5.625	6.000	1.000	3/8	.625	2.875	.500	1.125	.375	2.750	3.500	1.375	1.750	1/4-20	2.250	0.625	0.375	0.313	1.938	2.313
2"	3/8	1.438	1.000	.563	.125	.375	1.750	6.000	5.625	6.000	1.250	3/8	.625	2.875	.500	1.125	.375	3.250	4.000	1.375	1.750	5/16-18	2.250	0.875	0.500	0.500	1.938	2.313
2 1/2"	3/8	1.625	1.000	.563	.125	.375	2.250	6.125	5.750	6.125	1.500	3/8	.625	3.000	.500	1.125	.375	3.750	4.500	1.375	1.750	3/8-16	2.375	1.250	0.625	0.625	1.938	2.313
3 1/4"	1/2	1.938	1.250	.750	.177	.625	2.750	7.375	6.875	7.125	1.875	1/2	.750	3.250	.750	1.250	.500	4.750	5.750	1.875	2.125	1/2-13	2.625	1.500	0.750	0.750	2.438	2.688
4"	1/2	2.250	1.250	.750	.236	.625	3.500	7.375	6.875	7.125	2.250	1/2	.750	3.250	.750	1.250	.500	5.500	6.500	1.875	2.125	1/2-13	2.625	2.063	0.750	0.750	2.438	2.688
5"	5/8	2.750	1.375	.625	.188	.625	4.250	7.875	7.250	7.500	2.750	3/4	.562	3.125	1.000	1.062	.688	6.875	8.250	2.063	2.313	5/8-11	2.875	2.688	1.000	1.000	2.438	2.688
6"	3/4	3.250	1.375	.625	.188	.750	5.250	8.500	8.000	8.250	3.250	3/4	.813	3.625	1.000	1.312	.688	7.875	9.250	2.313	2.563	3/4-10	3.125	3.250	1.125	1.125	2.813	3.063
8"	3/4	4.250	1.813	.688	.250	N/A	7.125	8.750	8.563	8.813	4.250	3/4	.813	3.750	1.000	1.312	.688	9.875	11.250	2.313	2.563	3/4-10	3.250	4.500	1.125	1.125	2.813	3.063

What do you need? Tell us. We'll go to work for you!

- Strokes in decimal increments or longer than 48" (99" maximum)
- Stop Tubes for longer strokes
- Hard Chrome Plated I.D. Steel Cyl. Tube
- Custom Rod End Features
- Additional Ports

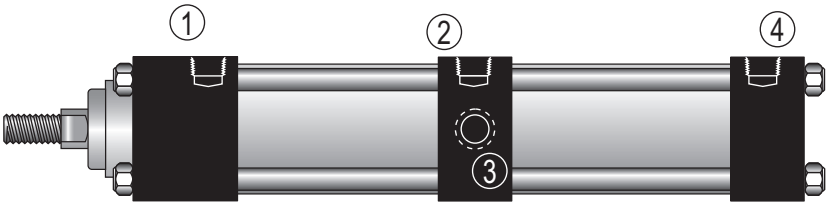
• Multi-Power® Cylinders (150 psi max)

Fabco-Air attaches multiple pistons to a common shaft and provides internal air passages through the shaft to all pistons.
Internal baffles divide the cylinder body into separate sections or stages. When air pressure is applied to port #2 of the cylinder illustrated at the right, all three pistons are pressurized simultaneously nearly tripling the thrust. Cylinders can be built with up to four stages enabling thrusts of over 16,000 pounds to be reached!



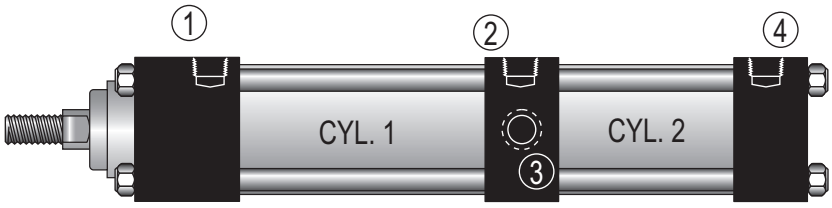
• Tandem Cylinders

Tandem cylinders provide nearly twice the force on an equivalent double acting cylinder. Two pistons are attached to a common piston rod. Ports 2 and 4 are pressurized simultaneously to nearly double the extend force. Ports 1 and 3 are pressurized to double the retract force.



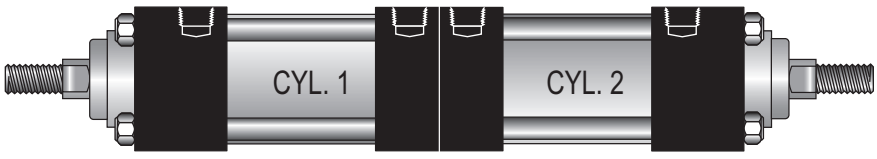
• 3-Position Cylinders

3-Position cylinders are generally used when three distinct rod positions are required from a single cylinder body. Two cylinders are assembled tip-to-tail with a common center head. Using cylinders with two different strokes (the shorter located on the rear cylinder), enables the front rod to be extended from “home” to a positive mid-position or to full extension.

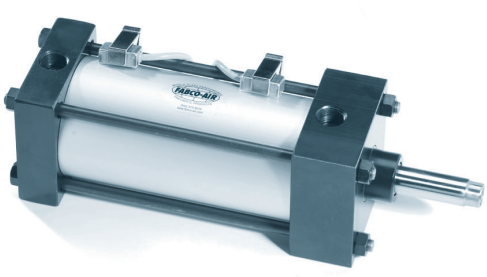


• Back-to-Back Cylinders

Here two cylinders are mounted back-to-back. They can have the same or different strokes and can be operated independently.
This assembly enables you to have four combinations of rods extended or retracted.



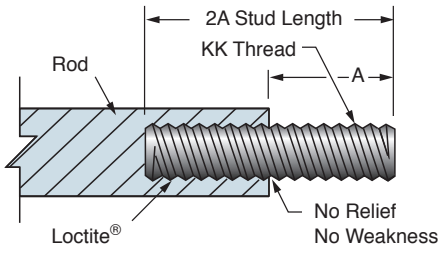
Magnetic Piston: Option -E



- Option -E consists of a magnet bonded into the piston head. When the piston magnet moves past an external sensor, the magnetic field activates the sensor without physical contact.
- Reliability – The annular piston magnet is permanently bonded into a groove in the piston. It is a polarized permanent magnet of rubber bonded barium ferrite that is very stable and is not affected by shock. Under normal usage it will remain magnetized indefinitely.
- Warning – External magnetic fields and/or ferrous objects may affect the strength of the piston magnet therefore affecting sensor actuation and piston position indication. Labels noting this are affixed to the cylinder.
- Mounting – The sensor is attached to a 2-part clamp that attaches rigidly to a tie rod and can be positioned anywhere along the length of the cylinder for very precise signaling.
- Two sensor styles are used – (a) the 9-2A197 Series for 1-1/2" thru 4" bores requires a tie rod clamp, and (b) the 749 Series which accommodates the larger diameter tie rods of the 5", 6" and 8" bores with an integral clamp.

Order Sensors, Sensor Clamps and Cables Separately. See page 13 for details.

Male Rod Thread Stud: Option -MR



A high strength stud is threaded into the female rod end and retained with thread locking adhesive. This method eliminates the small diameter thread relief normally required when machining male threads. It provides a much stronger rod end which can be repaired, rather than replacing the complete rod, should the stud become damaged.

Also available separately for individual installation.

Available only with Style #3 or #8 Rod End.

Part No.	KK	A	2A
NMR - 7/16-20	7/16-20	0.75	1.50
NMR - 3/4-16	3/4-16	1.13	2.25
NMR - 1-14	1-14	1.63	3.25
NMR - 1-1/4-12	1 1/4-12	2.00	4.00

Rubber Bumpers Options: Head -BF‡, Cap -BR, Head & Cap -BB

A donut or pad of rubber is bonded in place to act as the piston stop and absorb the impact of the piston. This reduces noise and absorbs energy.

Cylinder length will increase .062" per bumper so that the piston will travel a minimum of specified stroke.

- Operating Temperature: –20° to 220°F.

*Note: –BF not available 1-1/2" bore with oversize rod.
–BF not available 1-1/2" bore with adjustable air cushion.
–BF not available 2" bore with adjustable air cushion & oversize rod.

Silent Seal Bumpers: Option -SB

Attached to the piston, these bumpers reduce the noise caused by the impact of the piston against the end cap.
Standard adjustable air cushions may be used in conjunction with these silent seal bumpers to further reduce end of stroke noise and impact while giving deceleration benefits.

- Available 1-1/2" thru 8" bores.*
- Operating Temperature: –20° to 200°F.
- Operating Pressure to 150 psi.

*Note: –SB not available 1-1/2" bore with oversize rod.

Static Stroke Length Reduction (inches)

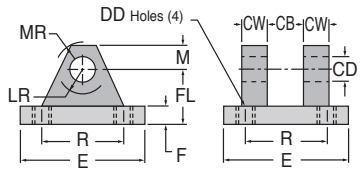
Bore	0 psi	20 psi	40 psi	60 psi	80 psi	100 psi
1 1/2"	.106	.056	.028	.018	0	0
2"	.090	.070	.046	.037	.018	0
2 1/2"	.201	.166	.122	.071	.008	0
3 1/4"	.160	.102	.082	.048	.038	0
4"	.150	.085	.065	.031	.005	0
5"	.219	.158	.099	.053	.015	0
6"						
8"						

Accessories Guide to Part Numbers

Rod Thread	Rod Clevis	Eye Bracket	Pivot Pin	Rod Eye	Clevis Bracket
7/16-20	NRC-7/16-20	NEM-1-1/2	NPP-0.500	NRE-7/16-20	NPM-1-1/2
1/2-20	NRC-1/2-20	NEM-1-1/2	NPP-0.500	NRE-1/2-20	NPM-1-1/2
3/4-16	NRC-3/4-16	NEM-3-1/4	NPP-0.750	NRE-3/4-16	NPM-3-1/4
7/8-14	NRC-7/8-14	NEM-6	NPP-1.000	–	–
1-14	NRC-1-14	NEM-6	NPP-1.000	NRE-1-14	NPM-6
1 1/4-12	NRC-1-1/4-12	NEM-10	NPP-1.375	NRE-1-1/4-12	NPM-10
1 1/2-12	NRC-1-1/2-12	NEM-12	NPP-1.750	NRE-1-1/2-12	NPM-12

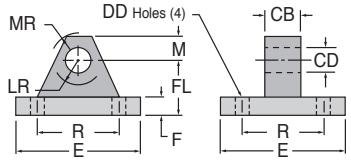
Bore	Mount	Eye Bracket	Pivot Pin	Mount	Clevis Bracket
1 1/2, 2, 2 1/2	MP1 & MP2 Clevis	NEM-1-1/2	NPP-0.500	MP3 & MP4 Eye	NPM-1-1/2
3 1/4, 4, 5	MP1 & MP2 Clevis	NEM-3 1/4	NPP-0.750	MP3 & MP4 Eye	NPM-3-1/4
6, 8	MP1 & MP2 Clevis	NEM-6	NPP-1.000	MP3 & MP4 Eye	NPM-6

Clevis Bracket – Pivot pin NOT included



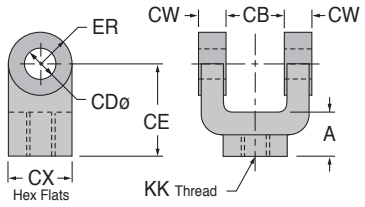
Part No.	CB	CD	CW	DD	E	F	FL	LR	M	MR	R
NPM-1-1/2	0.750	0.500	0.500	3/8-24	2.500	.375	1.125	0.500	0.500	0.563	1.625
NPM-3-1/4	1.250	0.750	0.625	1/2-20	3.500	.625	1.875	1.063	.750	1.063	2.563
NPM-6	1.500	1.000	0.750	5/8-18	4.500	.750	2.250	1.250	1.000	1.125	3.250
NPM-10	2.000	1.375	1.000	5/8-18	5.000	.875	3.000	1.875	1.375	1.750	3.810
NPM-12	2.500	1.750	1.250	7/8-14	6.500	.875	3.125	2.000	1.750	1.875	4.950

Eye Bracket



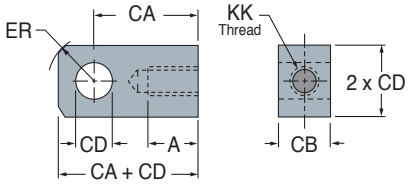
Part No.	CB	CD	DD	E	F	FL	LR	M	MR	R
NEM-1-1/2	0.750	0.500	.406	2.500	.375	1.125	0.750	0.500	0.563	1.625
NEM-3-1/4	1.250	0.750	.531	3.500	.625	1.875	1.250	0.750	0.875	2.563
NEM-6	1.500	1.000	.656	4.500	.750	2.250	1.500	1.000	1.250	3.250
NEM-10	2.000	1.375	.656	5.000	.875	3.000	2.125	1.375	1.625	3.810
NEM-12	2.500	1.750	.906	6.500	.875	3.125	2.250	1.750	2.125	4.950

Rod Clevis – Pivot pin NOT included



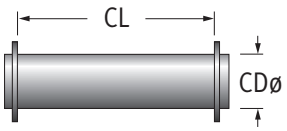
Part No.	KK	A	CB	CD	CE	CW	CX	ER
NRC-7/16-20	7/16-20	0.750	0.750	0.500	1.500	0.500	1.000	0.500
NRC-1/2-20	1/2-20	0.750	0.750	0.500	1.500	0.500	1.000	0.500
NRC-3/4-16	3/4-16	1.125	1.250	0.750	2.375	0.625	1.250	0.750
NRC-7/8-14	7/8-14	1.625	1.500	1.000	3.125	0.750	1.500	1.000
NRC-1-14	1-14	1.625	1.500	1.000	3.125	0.750	1.500	1.000
NRC-1-1/4-12	1 1/4-12	2.000	2.000	1.375	4.125	1.000	2.000	1.375
NRC-1-1/2-12	1 1/2-12	2.250	2.500	1.750	4.500	1.250	2.375	1.750

Rod Eye



Part No.	KK	A	CA	CB	CD	ER
NRE-7/16-20	7/16-20	0.750	1.500	0.750	0.500	0.625
NRE-1/2-20	1/2-20	0.750	1.500	0.750	0.500	0.625
NRE-3/4-16	3/4-16	1.125	2.063	1.250	0.750	0.875
NRE-1-14	1-14	1.625	2.813	1.500	1.000	1.188
NRE-1-1/4-12	1 1/4-12	2.000	3.438	2.000	1.375	1.563
NRE-1-1/2-12	1 1/2-12	2.250	4.000	2.500	1.750	2.000

Pivot Pin
(Includes retaining rings)

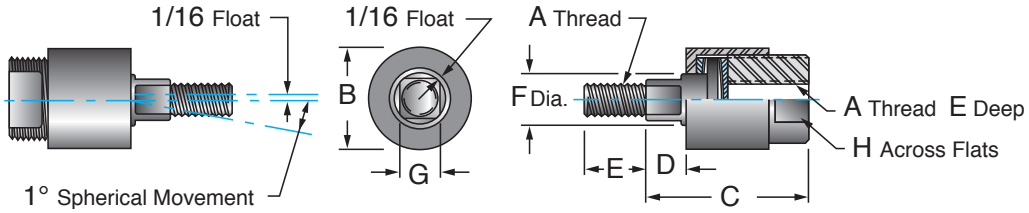


Part No.	CD	CL
NPP-0.500	0.500	1.875
NPP-0.750	0.750	2.625
NPP-1.000	1.000	3.125
NPP-1.375	1.375	4.125
NPP-1.750	1.750	5.125

Alignment Couplers

Alignment couplers can be used in both push or pull applications. Linear couplers can prevent binding caused by misalignment and allow a greater tolerance between the cylinder centerline and the mating part.

Cylinder rod thread extension must be standard length for use with these couplers.



Part Number	A	B	C	D	E	F	G	H	Max. Pull Load lbs.
NCP-7/16-20	7/16-20	1 1/4	2	1/2	3/4	5/8	1/2	1	2,535
NCP-1/2-20	1/2-20	1 1/4	2	1/2	3/4	5/8	1/2	1	3,500
NCP-3/4-16	3/4-16	1 3/4	2 5/16	1/2	1 1/8	31/32	13/16	1 1/2	8,750
NCP-7/8-14	7/8-14	1 3/4	2 5/16	1/2	1 1/8	31/32	13/16	1 1/2	9,750
NCP-1-14	1-14	2 1/2	2 15/16	1/2	1 5/8	1 3/8	1 5/32	2 1/4	16,125
NCP-1-1/4-12	1 1/4-12	2 1/2	2 15/16	1/2	1 5/8	1 3/8	1 5/32	2 1/4	19,600
NCP-1-1/2-12	1 1/2-12	3 1/4	4 3/8	13/16	2 1/4	1 3/4	1 1/2	3	34,000

Seal Kits

Bore	Part No.
1 1/2"	FN-1-1/2-HC-□-SK-OS
2"	FN-2-HC-□-SK-OS
2 1/2"	FN-2-1/2-HC-□-SK-OS
3 1/4"	FN-3-1/4-HC-□-SK-OS
4"	FN-4-HC-□-SK-OS
5"	FN-5-HC-□-SK-OS
6"	FN-6-HC-□-SK-OS
8"	FN-8-HC-□-SK-OS

- Insert "HC" for Air Cushions. Leave blank if none.
- Insert a 2 digit option code at □ for options that affect the seals within the cylinder. Leave Blank if none. Consult Fabco-Air for option codes.
- Insert -OS for over-sized rod diameter. Leave blank if none.

Example 1:
FN-2-1/2-SK
2-1/2" bore standard seal kit

Example 2:
FN-6-HC-DV-SK-OS
6" bore, Air Cushions, Double Rod and Viton options with Oversized Rod Diameter

Rod Bushings

(Includes standard seals for the bushing only.)

Rod Dia.	Part No.
5/8"	N-0.625-BK
1"	N-1.000-BK
1 3/8"	N-1.375-BK
1 3/4"	N-1.750-BK

Temperature Range:

–20° to + 80°C (–4° to + 176°F)

Warning!

Do not exceed sensor ratings. Permanent damage to sensor may occur. Power supply polarity MUST be observed for proper operation of sensors. See wiring diagrams included with each sensor.

Sensors for 1-1/2" to 4" Bores

9-2A197 Series Sensor & Clamp for 1-1/2" to 4" Bores. Order clamps separately.

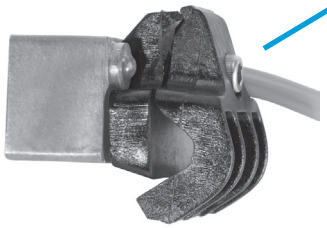
Quick Disconnect Sensor Shown in Clamp

Quick Disconnect Sensor

9 Foot Prewired Sensor

LED Lighted Magnetic Piston Position Sensors: Bores 1-1/2" – 4"			
Product	9 ft. Prewired P/N	Quick Discon. P/N	Electrical Characteristics
Reed Switch	9-2A197-1004	9-2A197-1304	5-120 VDC/VAC, 0.5 Amp Max., 10 Watt Max., SPST N.O., 3.5 Voltage Drop
Electronic	9-2A197-1033	9-2A197-1333	Sourcing, PNP, 6-24 VDC, 0.5Amp Max., 1.0 Voltage Drop
Electronic	9-2A197-1034	9-2A197-1334	Sinking, NPN, 6-24VDC, 0.5Amp Max., 1.0 Voltage Drop
9-2A197 Series Sensor Mounting Clamps – Part Number 800-200-000			

Sensors for 5", 6" and 8" Bores



749 Series Sensor with Integral Clamp (shown prewired)

LED Lighted Magnetic Piston Position Sensors: Bores 5" – 8"			
Product	9 ft. Prewired P/N	Quick Discon. P/N	Electrical Characteristics
Reed Switch	749-000-004	749-000-504	5-240 VDC/VAC, 1 Amp Max., 30 Watt Max., SPST N.O., 3.0 Voltage Drop
Electronic	749-000-031	749-000-531	Sourcing, PNP, 6-24 VDC, 1.0 Amp Max., 0.5 Voltage Drop
Electronic	749-000-032	749-000-532	Sinking, NPN, 6-24 VDC, 1.0 Amp Max., 0.5 Voltage Drop

Female Cordsets

Female Cordsets available in 1, 2, & 5 meter lengths

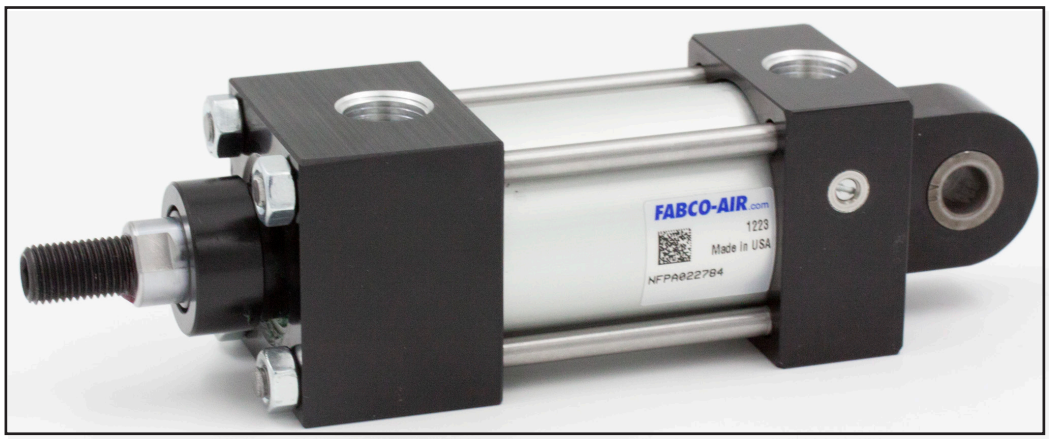
Female Cordsets for 9-2A197 Series Quick Disconnect Sensors			
Length	1 Meter	2 Meter	5 Meter
Part No.	CFC-1M	CFC-2M	CFC-5M

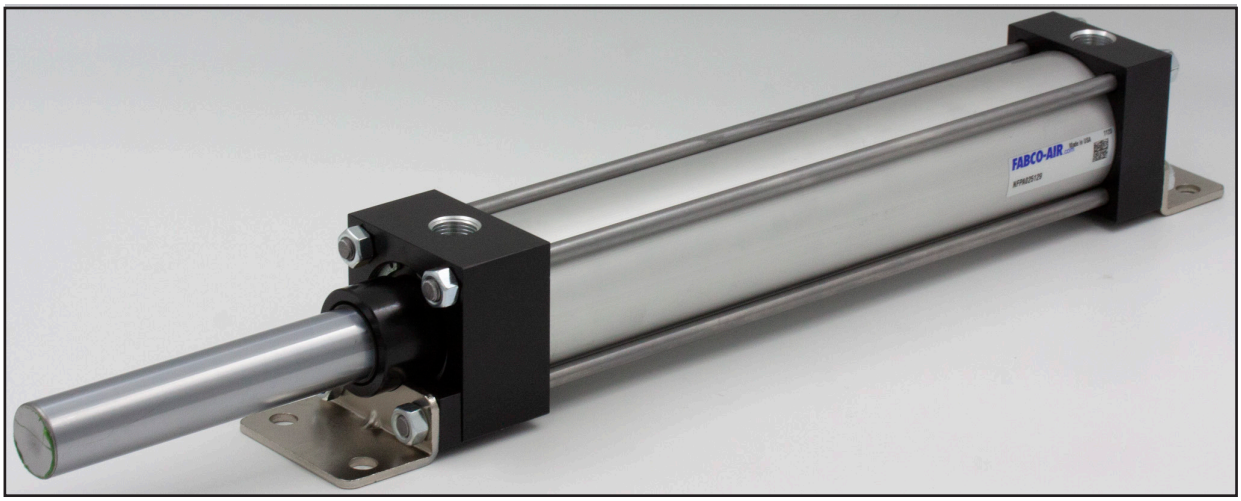
Female Cordsets for 749 Series Quick Disconnect Sensors		
Length	2 Meter	5 Meter
Part No.	CFC-2M-12	CFC-5M-12

Custom Solutions

Modified or special products to meet your necessary and specific requirements.

Fabco-Air has the willingness, years of experience, manpower and equipment available to design, adapt, modify and produce in any quantity, existing or new products to meet your job requirements more effectively. Please contact your local distributor with details of your requirements so that we may assist you.





1 Year Limited Warranty for Catalog #NF-6 Products

Subject to the following conditions, FABCO-AIR, Inc., warrants to its immediate purchaser (Purchaser) that at the time of shipment this product is free and clear of all liens and encumbrances, is free from defects in material and workmanship and will conform to samples if the order is based on samples, or to FABCO-AIR's applicable product specifications, or to Purchaser's written specifications to the extent they have been accepted in writing by FABCO-AIR. All products are subject to FABCO-AIR's normal manufacturing and commercial variations and practices. THE FOREGOING WARRANTY IS IN LIEU OF AND EXCLUDES ALL OTHER WARRANTIES NOT EXPRESSLY SET FORTH HEREIN, WHETHER EXPRESSED OR IMPLIED BY OPERATION OF LAW OR OTHERWISE, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR PURPOSE. Purchaser's exclusive remedy, and FABCO-AIR's sole liability under this warranty is expressly limited to the correction, replacement or refund of purchase price, at FABCO-AIR's option, of products which are returned freight prepaid, accompanied by proof of purchase and written claim of defect, and upon which inspection by FABCO-AIR and in FABCO-AIR's sole judgement do not comply with this warranty.

All warranties made by FABCO-AIR or imposed on FABCO-AIR by law shall expire one (1) year from date of shipment by FABCO-AIR.

This warranty does not cover and no warranty is made with respect to: (A) failures not reported to FABCO-AIR within the period specified above; (B) failure or damage due to misapplication, misuse, abuse, improper storage or handling, abnormal conditions of temperature, water, dirt, corrosive substances, or other contaminants; (C) products which have been repaired with parts or materials not furnished or approved by FABCO-AIR or by anyone other than FABCO-AIR or its authorized representative or products which have been in any way tampered with or altered; and (D) products damaged in shipment or storage or otherwise without fault of FABCO-AIR.

Limitations on Liability

FABCO-AIR's total responsibility for any claims, damages, losses or liabilities related to the product covered hereunder shall not exceed the purchase price of such product. In no event shall FABCO-AIR be liable for any special, indirect, incidental or consequential damages of any character, including, but not limited to, loss of use of productive facilities or equipment, lost profits, property damage, transportation, installation or removal or lost production whether suffered by Purchaser or any third party. FABCO-AIR disclaims all liability for any and all costs, claims, demands, charges, expenses or other damages, either direct or indirect, incident to all property damage arising out of any cause of action based on strict liability. This warranty gives you specific legal rights and you may have other rights from state to state.