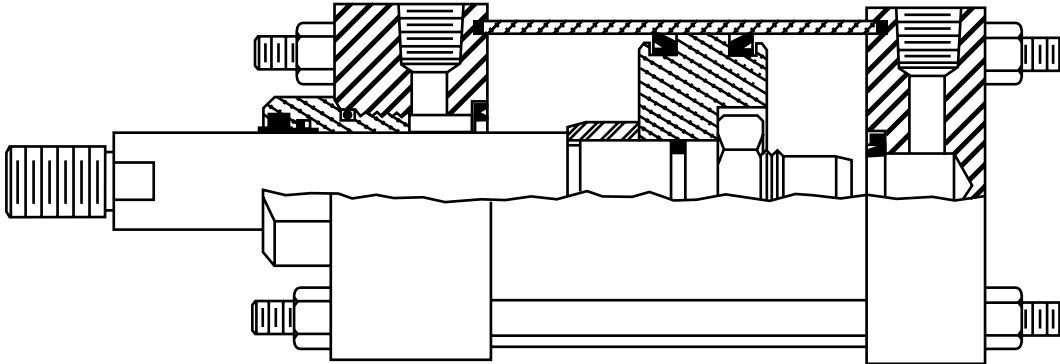


TIE-ROD CYLINDERS

**MEDIUM DUTY NFPA/JIC
DOUBLE ACTING
1-1/2 TO 6" BORE**

BE10 Series



RATINGS PSIG

Air — 250 PSI

Oil — 500 PSI (Non-shock)

FEATURES

INDUSTRY INTERCHANGEABLE — Meets NFPA/JIC dimensional standards.

FIXED (Non-adjustable) CUSHIONS supplied on head and cap end — standard.
Adjustable cushions available.

REMOVABLE ROD BEARING — Piloted by the head to provide positive alignment to the tube. It can be removed without disturbing the tie rods.

ROD WIPER and ROD SEAL CONTAINED IN ROD BEARING — For easy accessibility.

PISTON ROD — 100,000 psi minimum yield, steel hard chrome plated and polished smooth to extend the life of the seals and rod bearing.

TUBING IS HARD ANODIZED on I.D. and O.D. — Honed for minimum friction and long life.

HEAD and CAPS — Machined from precision steel blocks to insure concentricity of piston rod to tubing and to mounting surfaces.

PISTON — Aluminum

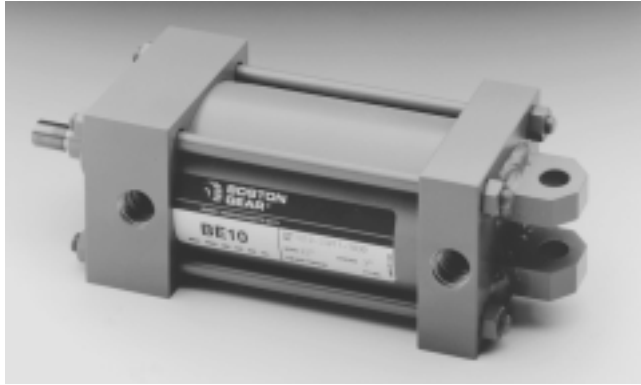
PISTON SEALS — U-cup seals made of Buna-N for minimum friction and positive sealing.

TIE RODS — 100,000 psi minimum yield material with rolled threads for added strength.

TIE-ROD CYLINDERS

DOUBLE ACTING

BE10 Series



HOW TO ORDER BE10 SERIES CYLINDERS

To develop a Cylinder Order Number, select only those Code Numbers that represent the cylinder required, and place in the sequence shown below:

EXAMPLE: Required Cylinder — Medium Duty Air Cylinder, 4" Bore, Detachable Clevis (NFPA Mounting—MP2), Standard Rod, Adjustable Cushion Head End, Standard Port location, 73" of Stroke, 1" Standard Rod Diameter, 1-14 Full Diameter Rod Threads.

SPECIFY

BE10	40	P2	2	1	73	0	02
Series	Code No. Bore Dia.	Code No. Mounting NFPA Des.	Code Cushions and Rod	Code Port Positions**	Stroke in Code Whole No. Inches	Fractional Code Stroke No. Length	Code Modification No. Descriptions
BE10 Pneumatic	15 - 1-1/2	BX - None (Basic Cylinder) —	Standard Rod Diameter	1 - Standard Port Position	01 - 1 inch	0 - No fraction	- Style 1 Standard Thread (code not required — leave blank)
	20 - 2	DBX - Double Rod Basic —	1 - Non-Adjustable Cushions	2 - 90° Clockwise Port Position	05 - 5	1 - 1/8 inch	02 - Style 2 Rod End — Full diameter Male Th'd.
	25 - 2-1/2	F1 - Head Rectangular Flange MF1	2 - Cushioned Head End	3 - 180° Clockwise Port Position	12 - 12	2 - 1/4	
	32 - 3-1/4	F2 - Cap Rectangular Flange MF2	3 - Cushioned Cap End	4 - 270° Clockwise Port Position	25 - 25	3 - 3/8	03 - Style 3 Rod End — Female Th'd.
	40 - 4	F5 - Head Square Flange MF5	4 - Cushioned Both Ends		30 - 30	4 - 1/2	
	50 - 5	F6 - Cap Square Flange MF6	1st Oversize Rod Diameter		43 - 43	5 - 5/8	04 - Style 4 Rod End — Optional Shoulder, Male Th'd.
	60 - 6	P1 - Cap Fixed Clevis MP1	5 - Non-Adjustable Cushions		66 - 66	6 - 3/4	
		P2 - Cap Detachable Clevis MP2	6 - Cushioned Head End		etc.	7 - 7/8	XX - Special (Specify)
		P3 - Cap Fixed Eye MP3	7 - Cushioned Cap End			9 - For fractions not shown - Specify	
		S2 - Side Lugs MS2	8 - Cushioned Both Ends				
		S4 - Side Tapped MS4	9 - 2nd Oversize Rods and larger-Specify				
		S7 - Side End Lugs MS7					
		T1 - Head Trunnion MT1					
		T2 - Cap Trunnion MT2					
	T4 - Intermediate Trunnion MT4						
	X1 - Extended Tie Rods-Both Ends MX1						
	X2 - Extended Tie Rods-Cap End MX2						
	X3 - Extended Tie Rods-Head End MX3						

Add D to mounting for Double Rod ex. DS4

**View facing Rod End.

Rod Dia.	ROD DIAMETERS AVAILABLE						
	Bore Dia.						
	1-1/2	2	2-1/2	3-1/4	4	5	6
5/8	STD	STD	STD	—	—	—	—
1	1st OS†	1st OS	1st OS	STD	STD	STD	—
1-3/8	—	A	A	1st OS	1st OS	1st OS	STD
1-3/4	—	—	A	A	A	A	1st OS
2	—	—	—	A	A	A	A
2-1/2	—	—	—	—	A	A	A
3	—	—	—	—	—	A	A
3-1/2	—	—	—	—	—	A	A
4	—	—	—	—	—	—	A

STD — Standard Rod Diameter; 1st OS — First Oversized Rod Diameter

A — Available Rod Diameters, Consult Factory

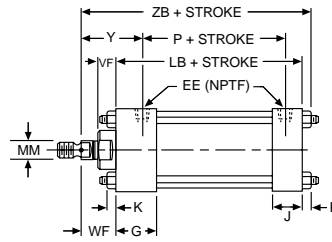
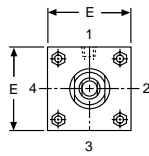
† — Adjustable cushion not available on head end, 1-1/2" bore with 1" rod diameter.

TIE-ROD CYLINDERS

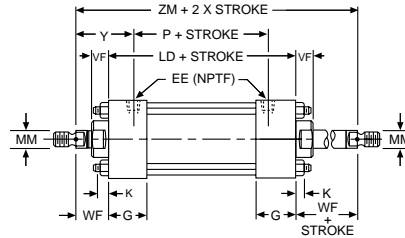
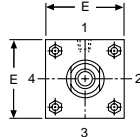
DOUBLE ACTING BASIC MOUNTING

BE10 Series
1-1/2" to 6" Bore

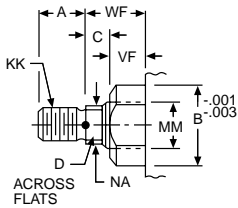
BX — Basic Mounting



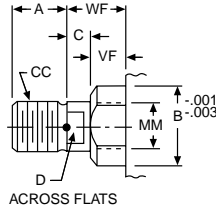
DBX — Double Rod Basic Mounting



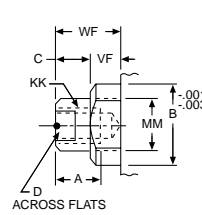
Style 1 Standard Unless Otherwise Specified



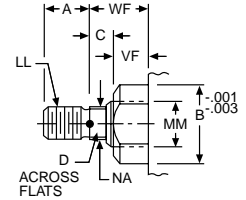
Style 2 Full Diameter Male Thread



Style 3 Female Thread



Style 4 Optional Shouldered Male Thread



ALL DIMENSIONS IN INCHES

Bore	E	EE (NPTF)	G	J	K	LB	LD	P
1-1/2	2	3/8-18	1-1/2	1	1/4	3-5/8	4-1/8	2-1/4
2	2-1/2	3/8-18	1-1/2	1	5/16	3-5/8	4-1/8	2-1/4
2-1/2	3	3/8-18	1-1/2	1	5/16	3-3/4	4-1/4	2-3/8
3-1/4	3-3/4	1/2-14	1-3/4	1-1/4	3/8	4-1/4	4-3/4	2-5/8
4	4-1/2	1/2-14	1-3/4	1-1/4	3/8	4-1/4	4-3/4	2-5/8
5	5-1/2	1/2-14	1-3/4	1-1/4	7/16	4-1/2	5	2-7/8
6	6-1/2	3/4-14	2	1-1/2	7/16	5	5-1/2	3-1/8

Bore	Rod Dia. (MM)	Thread			A	B	C	D	NA	VF	WF	Y	ZB	ZM
		CC	KK*	LL										
1-1/2	5/8	5/8-18	7/16-20	1/2-20	3/4	1-1/8	3/8	1/2	19/32	5/8	1	1-15/16	4-7/8	6-1/8
	1	1-14	3/4-16	7/8-14	1-1/8	1-1/2	1/2	7/8	31/32	7/8	1-3/8	2-5/16	5-1/4	6-3/8
2	5/8	5/8-18	7/16-20	1/2-20	3/4	1-1/8	3/8	1/2	19/32	5/8	1	1-15/16	4-15/16	6-1/8
	1	1-14	3/4-16	7/8-14	1-1/8	1-1/2	1/2	7/8	31/32	7/8	1-3/8	2-5/16	5-5/16	6-7/8
2-1/2	5/8	5/8-18	7/16-20	1/2-20	3/4	1-1/8	3/8	1/2	19/32	5/8	1	1-15/16	5-1/16	6-1/4
	1	1-14	3/4-16	7/8-14	1-1/8	1-1/2	1/2	7/8	31/32	7/8	1-3/8	2-5/16	5-7/16	7
3-1/4	1	1-14	3/4-16	7/8-14	1-1/8	1-1/2	1/2	7/8	31/32	7/8	1-3/8	2-7/16	6	7-1/2
	1-3/8	1-3/8-12	1-14	1-1/4-12	1-5/8	2	5/8	1-1/8	1-11/32	1	1-5/8	2-11/16	6-1/4	8
4	1	1-14	3/4-16	7/8-14	1-1/8	1-1/2	1/2	7/8	31/32	7/8	1-3/8	2-7/16	6	7-1/2
	1-3/8	1-3/8-12	1-14	1-1/4-12	1-5/8	2	5/8	1-1/8	1-11/32	1	1-5/8	2-11/16	6-1/4	8
5	1	1-14	3/4-16	7/8-14	1-1/8	1-1/2	1/2	7/8	31/32	7/8	1-3/8	2-7/16	6-5/16	7-3/4
	1-3/8	1-3/8-12	1-14	1-1/4-12	1-5/8	2	5/8	1-1/8	1-11/32	1	1-5/8	2-11/16	6-9/16	8-1/4
6	1-3/8	1-3/8-12	1-14	1-1/4-12	1-5/8	2	5/8	1-1/8	1-11/32	1	1-5/8	2-13/16	7-1/16	8-3/4
	1-3/4	1-3/4-12	1-1/4-12	1-1/2-12	2	2-3/8	3/4	1-1/2	1-23/32	1-1/8	1-7/8	3-1/16	7-5/16	9-1/4

*Standard thread — other threads available.

To order, see "How to Order" page 42

BOSTON GEAR®

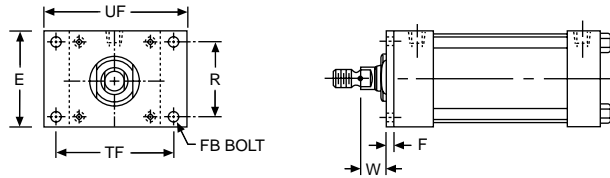
Fluid Power Catalog

TIE-ROD CYLINDERS

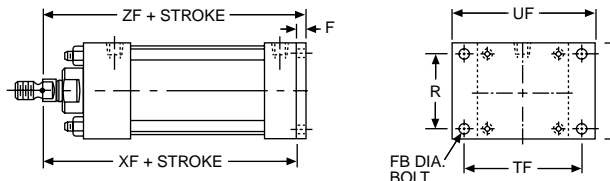
DOUBLE ACTING
FLANGE MOUNTING

BE10 Series
1-1/2" to 6" Bore

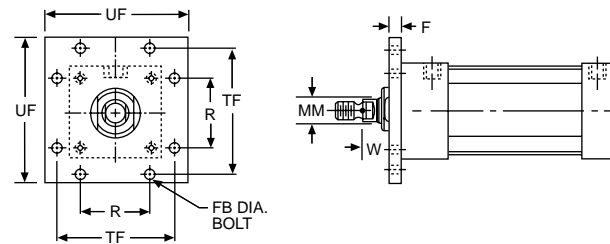
**F1 — Head Rectangular
Flange Mounting
NFA — MF1**



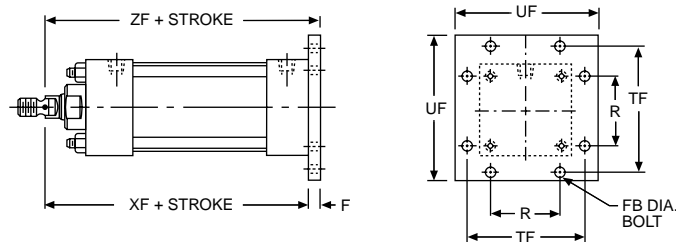
**F2 — Cap Rectangular
Flange Mounting
NFA — MF2**



**F5 — Head Square
Flange Mounting
NFA — MF5**



**F6 — Cap Square
Flange Mounting
NFA — MF6**



ALL DIMENSIONS IN INCHES

Bore	Rod Dia.	E	F	R	W	FB†	TF	UF	XF	ZF
1-1/2	5/8	2	3/8	1.43	5/8	1/4	2-3/4	3-3/8	4-5/8	5
	1				1				5	5-3/8
2	5/8	2-1/2	3/8	1.84	5/8	5/16	3-3/8	4-1/8	4-5/8	5
	1				1				5	5-3/8
2-1/2	5/8	3	3/8	2.19	5/8	5/16	3-7/8	4-5/8	4-3/4	5-1/8
	1				1				5-1/8	5-1/2
3-1/4	1	3-3/4	5/8	2.76	3/4	3/8	4-11/16	5-1/2	5-5/8	6-1/4
	1-3/8				1				5-7/8	6-1/2
4	1	4-1/2	5/8	3.32	3/4	3/8	5-7/16	6-1/4	5-5/8	6-1/4
	1-3/8				1				5-7/8	6-1/2
5	1	5-1/2	5/8	4.10	3/4	1/2	6-5/8	7-5/8	5-7/8	6-1/2
	1-3/8				1				6-1/8	6-3/4
6	1-3/8	6-1/2	3/4	4.88	7/8	1/2	7-5/8	8-5/8	6-5/8	7-3/8
	1-3/4				1-1/8				6-7/8	7-5/8

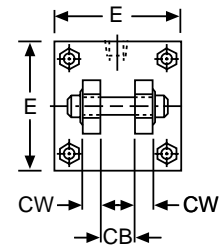
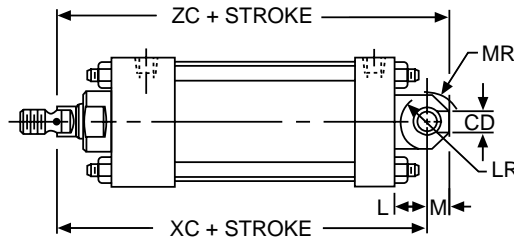
†Bolt diameter, holes are 1/16" over bolt diameter.

TIE-ROD CYLINDERS

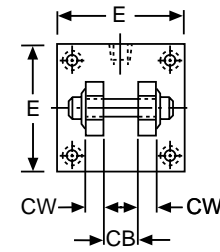
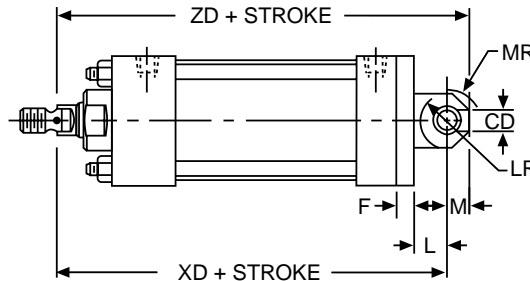
**DOUBLE ACTING
CLEVIS MOUNTING**

**BE10 Series
1-1/2" to 6" Bore**

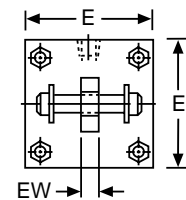
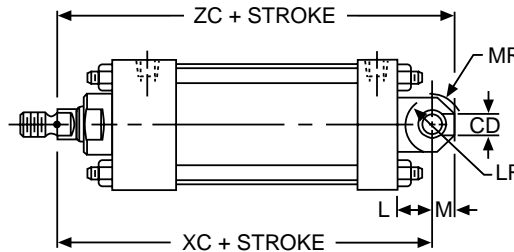
**P1 — Cap Fixed
Clevis Mounting
NFPA — MP1**



**P2 — Cap Detachable
Clevis Mounting
NFPA — MP2**



**P3 — Cap Fixed
Eye Mounting
NFPA — MP3**



ALL DIMENSIONS IN INCHES

Bore	Rod Dia.	E	F	L	M	CB	CD	CW	EW	LR	MR	XC	XD	ZC	ZD
1-1/2	5/8	2	3/8	3/4	1/2	3/4	1/2	1/2	3/4	5/8	19/32	5-3/8	5-3/4	5-7/8	6-1/4
	1											5-3/4	6-1/8	6-1/4	6-5/8
2	5/8	2-1/2	3/8	3/4	1/2	3/4	1/2	1/2	3/4	5/8	19/32	5-3/8	5-3/4	5-7/8	6-1/4
	1											5-3/4	6-1/8	6-1/4	6-5/8
2-1/2	5/8	3	3/8	3/4	1/2	3/4	1/2	1/2	3/4	5/8	19/32	5-1/2	5-7/8	6	6-3/8
	1											5-7/8	6-1/4	6-3/8	6-3/4
3-1/4	1	3-3/4	5/8	1-1/4	3/4	1-1/4	3/4	5/8	1-1/4	1	7/8	6-7/8	7-1/2	7-5/8	8-1/4
	1-3/8											7-1/8	7-3/4	7-7/8	8-1/2
4	1	4-1/2	5/8	1-1/4	3/4	1-1/4	3/4	5/8	1-1/4	1	7/8	6-7/8	7-1/2	7-5/8	8-1/4
	1-3/8											7-1/8	7-3/4	7-7/8	8-1/2
5	1	5-1/2	5/8	1-1/4	3/4	1-1/4	3/4	5/8	1-1/4	1	7/8	7-1/8	7-3/4	7-7/8	8-1/2
	1-3/8											7-3/8	8	8-1/8	8-3/4
6	1-3/8	6-1/2	3/4	1-1/2	1	1-1/2	1	3/4	1-1/2	1-1/4	1-7/32	8-1/8	8-7/8	9-1/8	9-7/8
	1-3/4											8-3/8	9-1/8	9-3/8	10-1/8

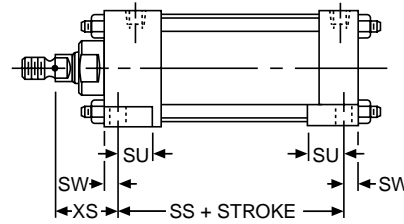
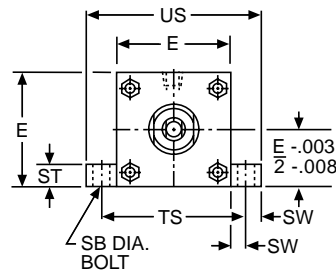
To order, see "How to Order" page 42

TIE-ROD CYLINDERS

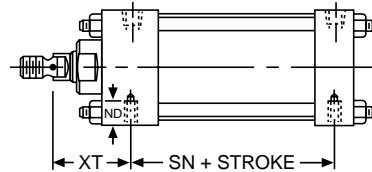
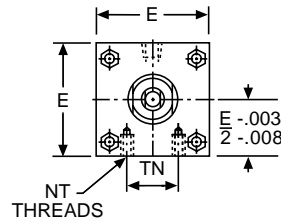
DOUBLE ACTING
SIDE/END MOUNTING

BE10 Series
1-1/2" to 6" Bore

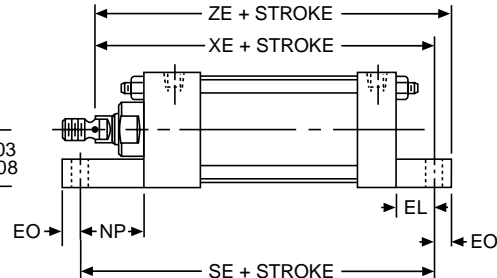
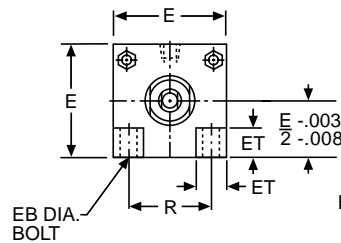
S2 — Side Lugs Mounting
NFFA — MS2



S4 — Side Tapped Mounting
NFFA — MS4



S7 — End Lugs Mounting
NFFA — MS7



ALL DIMENSIONS IN INCHES

Bore	R	SB†	SE	SN	SS	ST	SU	SW	TN	TS	US
1-1/2	1.43	3/8	5-1/2	2-1/4	2-7/8	1/2	15/16	3/8	5/8	2-3/4	3-1/2
2	1.84	3/8	5-7/8	2-1/4	2-7/8	1/2	15/16	3/8	7/8	3-1/4	4
2-1/2	2.19	3/8	6-1/4	2-3/8	3	1/2	15/16	3/8	1-1/4	3-3/4	4-1/2
3-1/4	2.76	1/2	6-5/8	2-5/8	3-1/4	3/4	1-1/4	1/2	1-1/2	4-3/4	5-3/4
4	3.32	1/2	6-7/8	2-5/8	3-1/4	3/4	1-1/4	1/2	2-1/16	5-1/2	6-1/2
5	4.10	3/4	7-1/4	2-7/8	3-1/8	1	1-9/16	11/16	2-11/16	6-7/8	8-1/4
6	4.88	3/4	7-3/4	3-1/8	3-5/8	1	1-9/16	11/16	3-1/4	7-7/8	9-1/4

ALL DIMENSIONS IN INCHES

Bore	Rod Dia.	E	EB†	EL	EO	ET	ND	NP	NT	XE	XS	XT	ZE
1-1/2	5/8	2	1/4	3/4	1/4	9/16	3/8	1-1/8	1/4-20	5-3/8	1-3/8	1-15/16	5-5/8
	1						5-3/4			1-3/4	2-5/16	6	
2	5/8	2-1/2	5/16	15/16	5/16	11/16	9/16	1-5/16	5/16-18	5-9/16	1-3/8	1-15/16	5-7/8
	1						5-15/16			1-3/4	2-5/16	6-1/4	
2-1/2	5/8	3	5/16	1-1/16	5/16	13/16	5/8	1-7/16	3/8-16	5-13/16	1-3/8	1-15/16	6-1/8
	1									6-3/16	1-3/4	2-5/16	6-1/2
3-1/4	1	3-3/4	3/8	7/8	3/8	1	3/4	1-1/2	1/2-13	6-1/2	1-7/8	2-7/16	6-7/8
	1-3/8									6-3/4	2-1/8	2-11/16	7-1/8
4	1	4-1/2	3/8	1	3/8	1-3/16	1	1-5/8	1/2-13	6-5/8	1-7/8	2-7/16	7
	1-3/8									6-7/8	2-1/8	2-11/16	7-1/4
5	1	5-1/2	1/2	1-1/16	1/2	1-3/8	1	1-11/16	5/8-11	6-15/16	2-1/16	2-7/16	7-7/16
	1-3/8									7-3/16	2-5/16	2-11/16	7-11/16
6	1-3/8	6-1/2	1/2	1	1/2	1-5/8	1-1/8	1-3/4	3/4-10	7-5/8	2-5/16	2-13/16	8-1/8
	1-3/4									7-7/8	2-9/16	3-1/16	8-3/8

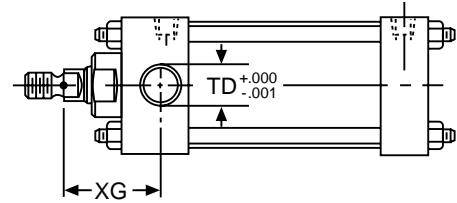
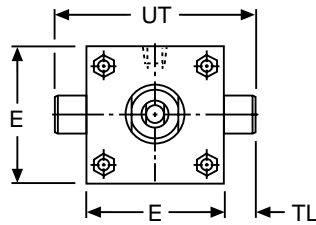
†Bolt diameter — Holes are 1/16" over bolt diameter.

TIE-ROD CYLINDERS

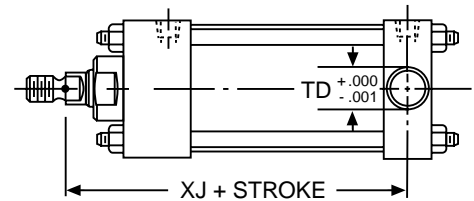
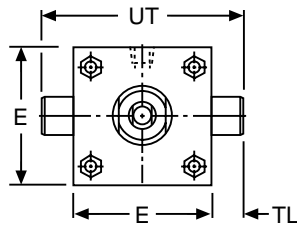
**DOUBLE ACTING
TRUNNION MOUNTING**

**BE10 Series
1-1/2" to 6" Bore**

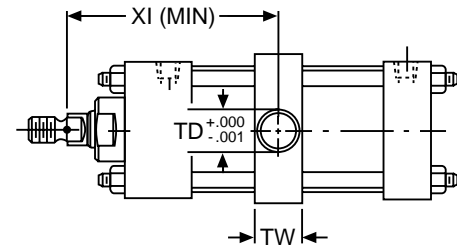
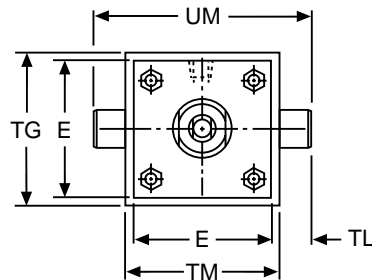
**T1 — Head Trunnion
Mounting
NFPA — MT1**



**T2 — Cap Trunnion
Mounting
NFPA — MT2**



**T4 — Intermediate
Trunnion
Mounting
NFPA — MT4**



CUSTOMER TO SPECIFY
TRUNNION LOCATION (X1 DIM)

ALL DIMENSIONS IN INCHES

Bore	Rod Dia.	E	TD	TG	TL	TM	TW	UM	UT	XG	XI (MIN)	XJ
1-1/2	5/8	2	1	2-1/2	1	2-1/2	1-1/4	4-1/2	4	1-3/4	3-1/8	4-1/8
	1									2-1/8	3-1/2	4-1/2
2	5/8	2-1/2	1	3	1	3	1-1/2	5	4-1/2	1-3/4	3-1/4	4-1/8
	1									2-1/8	3-5/8	4-1/2
2-1/2	5/8	3	1	3-1/2	1	3-1/2	1-1/2	5-1/2	5	1-3/4	3-1/4	4-1/4
	1									2-1/8	3-5/8	4-5/8
3-1/4	1	3-3/4	1	4-1/4	1	4-1/2	2	6-1/2	5-3/4	2-1/4	4-1/8	5
	1-3/8									2-1/2	4-3/8	5-1/4
4	1	4-1/2	1	5	1	5-1/4	2	7-1/4	6-1/2	2-1/4	4-1/8	5
	1-3/8									2-1/2	4-3/8	5-1/4
5	1	5-1/2	1	6	1	6-1/4	2	8-1/4	7-1/2	2-1/4	4-1/8	5-1/4
	1-3/8									2-1/2	4-3/8	5-1/2
6	1-3/8	6-1/2	1-3/8	7	1-3/8	7-5/8	2-1/2	10-3/8	9-1/4	2-5/8	4-7/8	5-7/8
	1-3/4									2-7/8	5-1/8	6-1/8

To order, see "How to Order" page 42

BOSTON GEAR®

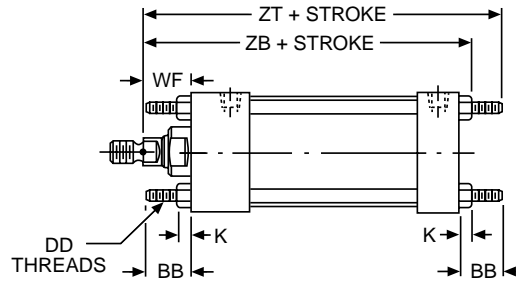
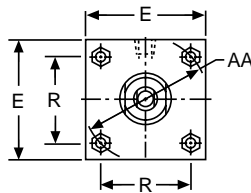
Fluid Power Catalog

TIE-ROD CYLINDERS

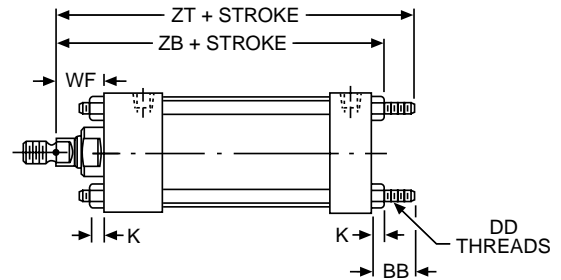
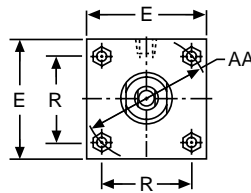
DOUBLE ACTING
TIE ROD MOUNTING

BE10 Series
1-1/2" to 6" Bore

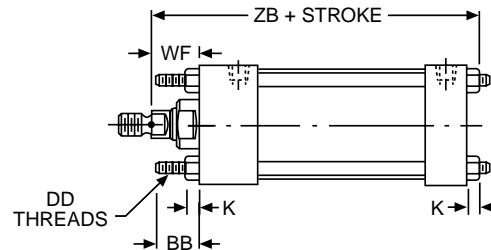
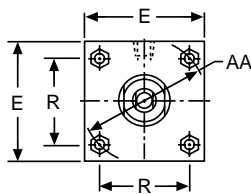
**X1 — Extended Tie Rods
Both Ends
NFFPA — MX1**



**X2 — Extended Tie Rods
Cap End
NFFPA — MX2**



**X3 — Extended Tie Rods
Head End
NFFPA — MX3**



ALL DIMENSIONS IN INCHES

Bore	Rod Dia.	E	K	R	AA	BB	DD	WF	ZB	ZT
1-1/2	5/8	2	1/4	1.43	2.02	1	1/4-28	1	4-7/8	5-5/8
	1							5-1/4	6	
2	5/8	2-1/2	5/16	1.84	2.60	1-1/8	5/16-24	1	4-15/16	5-3/4
	1							5-5/16	6-1/8	
2-1/2	5/8	3	5/16	2.19	3.10	1-1/8	5/16-24	1	5-1/16	5-7/8
	1							5-7/16	6-1/4	
3-1/4	1	3-3/4	3/8	2.76	3.90	1-3/8	3/8-24	1-3/8	6	7
	1-3/8							6-1/4	7-1/4	
4	1	4-1/2	3/8	3.32	4.70	1-3/8	3/8-24	1-3/8	6	7
	1-3/8							6-1/4	7-1/4	
5	1	5-1/2	7/16	4.10	5.80	1-13/16	1-2-20	1-3/8	6-5/16	7-11/16
	1-3/8							6-9/16	7-15/16	
6	1-3/8	6-1/2	7/16	4.88	6.90	1-13/16	1/2-20	1-5/8	7-1/16	8-7/16
	1-3/4							7-5/16	8-11/16	

To order, see "How to Order" page 42