

## Hydraulic Cylinder SERIES H - 8" Bore

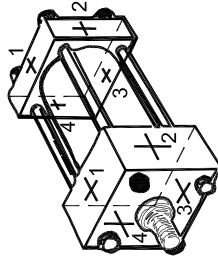
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Cylinder Ordering Guide

SERIES	MOUNT	BORE	ROD	STROKE	CUSHIONS	ROD END	PORTS	PORT LOCATION	OPTIONS
H	-	3.25	1.38	X	-	1	-	11	-
H	MF5	X	X	-	N	1	S	-	S
H	MX1	1.50	0.63		N (None)	1 (KK Male)	S (SAE)	CAP	S (STD)
H	MX2	2.00	1.00		H (Head End)	2 (KK Female)	N (NPTF)	END	X (MODIFIED) *
H	MX3	2.50	1.38		C (Cap End)	3 (CC Intermediate Male)			
H	ME5	3.25	1.75		B (Both Ends)			1	
H	ME6	4.00	2.00					2	
H	MF1	5.00	2.50					3	
H	MF2	6.00	3.00					4	
H	MF5	7.00	3.50						
H	MF6	8.00	4.00						
H	MS2		4.50						
H	MS3		5.00						
H	MS4		5.50						
H	MS7								
H	MT1								
H	MT2								
H	MT4								
H	MP1								



Note: \* All modification must be with either complete notes or drawings.

Standard Specifications

Nominal Pressure - 3000 PSI\*

Bore Sizes - 1 1/2" through 8"

Rod Sizes - 5/8" through 5 1/2"

Mounting Styles - 17 Standard styles\*\*\*

Strokes - Available in any practical stroke length

Cushions - Optional at either end or both ends

Standard - Externally removable bolted gland assembly

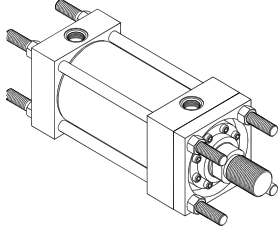
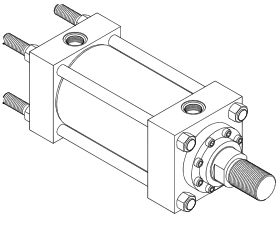
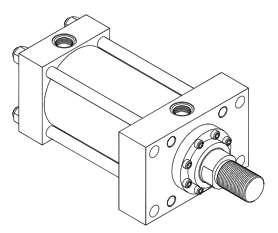
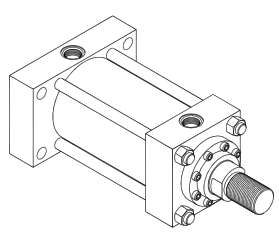
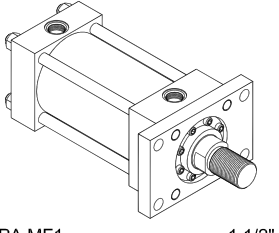
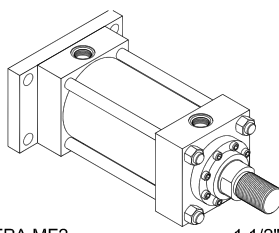
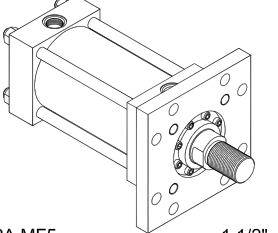
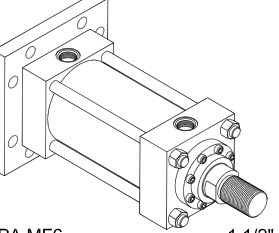
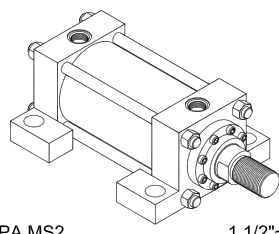
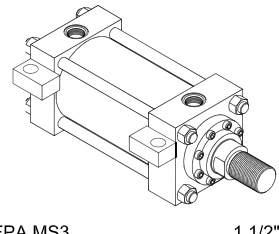
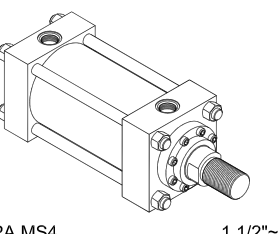
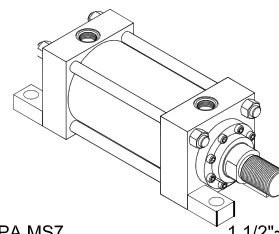
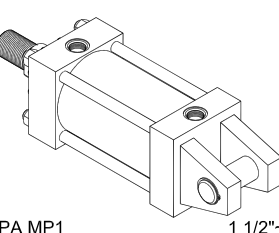
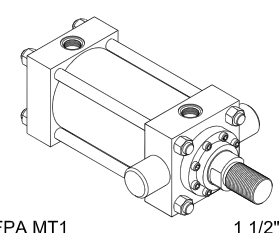
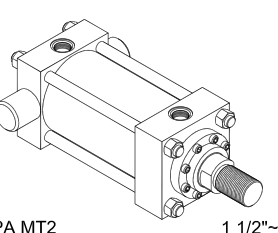
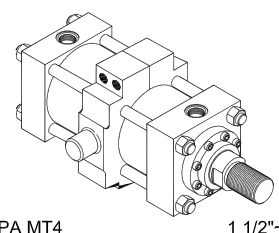
Standard Temperature - -10°F to +200°F\*\*

\* If pressure is from 3000 ~ 4000 PSI or higher, specify it during order

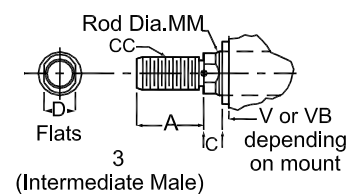
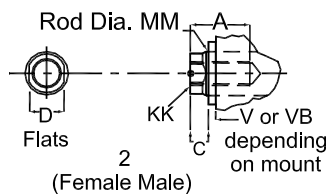
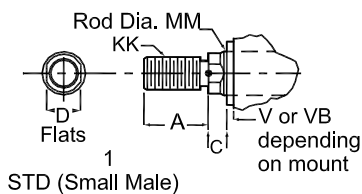
\*\* If temperature is from 200 ~ 400°F or higher, specify it during order

\*\*\* Supplied drawings with all other mounting styles and specials

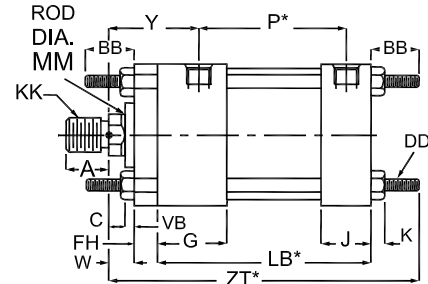
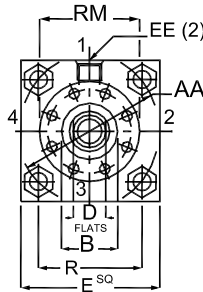
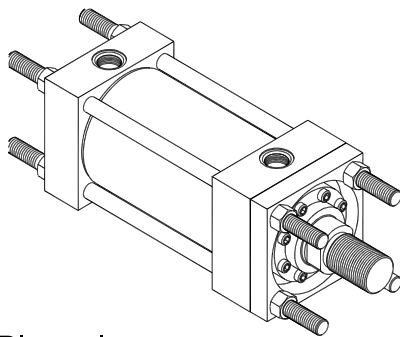
Mounting Styles

<p>Tie Rod Extended Both/Head End</p>  <p>NFPA MX1, MX3 1 1/2"-8"</p>	<p>Tie Rod Extended Cap End</p>  <p>NFPA MX2 1 1/2"-8"</p>	<p>Head Rectangular</p>  <p>NFPA ME5 1 1/2"-8"</p>	<p>Cap Rectangular</p>  <p>NFPA ME6 1 1/2"-8"</p>
<p>Head Rectangular Flange</p>  <p>NFPA MF1 1 1/2"-8"</p>	<p>Cap Rectangular Flange</p>  <p>NFPA MF2 1 1/2"-8"</p>	<p>Head Square Flange</p>  <p>NFPA MF5 1 1/2"-8"</p>	<p>Head Square Flange</p>  <p>NFPA MF6 1 1/2"-8"</p>
<p>Side Lugs</p>  <p>NFPA MS2 1 1/2"-8"</p>	<p>Center-Line Lugs</p>  <p>NFPA MS3 1 1/2"-8"</p>	<p>Side Tapped</p>  <p>NFPA MS4 1 1/2"-8"</p>	<p>End Lugs</p>  <p>NFPA MS7 1 1/2"-8"</p>
<p>Cap Fixed Clevis</p>  <p>NFPA MP1 1 1/2"-8"</p>	<p>Head Trunnion</p>  <p>NFPA MT1 1 1/2"-8"</p>	<p>Cap Trunnion</p>  <p>NFPA MT2 1 1/2"-8"</p>	<p>Intermediate Trunnion</p>  <p>NFPA MT4 1 1/2"-8"</p>

Rod End Styles



NFPA MX1 - Tie Rods Extended Both End  
 NFPA MX3 - Tie Rods Extended Head End



\* Add stroke to starred dimension

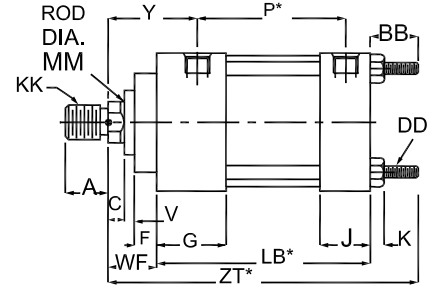
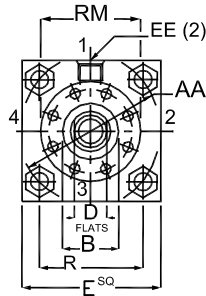
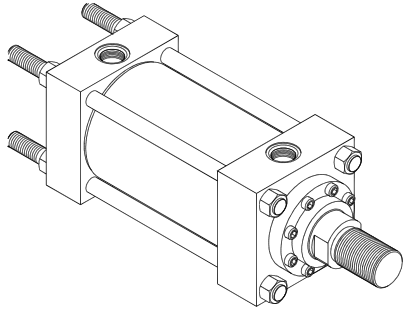
Body Dimensions

BORE	E	EE (SAE)	EE (NPTF)	G	J	K	LB*	P*	AA	BB	DD	FH	R
1 1/2	2 1/2	10	1/2	1 3/4	1 1/2	3/8	4 5/8	2 11/16	2.3	1 3/8	3/8-24	3/8	1.63
2	3	10	1/2	1 3/4	1 1/2	7/16	4 5/8	2 11/16	2.9	11 3/16	1/2-20	5/8	2.05
2 1/2	3 1/2	10	1/2	1 3/4	1 1/2	7/16	4 3/4	2 13/16	3.6	11 3/16	1/2-20	5/8	2.55
3 1/4	4 1/2	12	3/4	2	1 3/4	9/16	5 1/2	3 9/16	4.6	2 5/16	5/8-18	3/4	3.25
4	5	12	3/4	2	1 3/4	9/16	5 3/4	3 13/16	5.4	2 5/16	5/8-18	7/8	3.82
5	6 1/2	12	3/4	2	1 3/4	13/16	6 1/4	4 5/16	7.0	3 3/16	7/8-14	7/8	4.95
6	7 1/2	16	1	2 1/4	2 1/4	15/16	7 3/8	4 11/16	8.1	3 5/8	1-14	1	5.73
7	8 1/2	20	1 1/4	2 3/4	2 3/4	1	8 1/2	5 1/8	9.3	4 1/8	1 1/8-12	1	6.58
8	9 1/2	24	1 1/2	3	3	1 1/8	9 1/2	5 7/8	10.6	4 1/2	1 1/4-12	1	7.5

Rod End Dimensions

BORE	MM	KK	CC	A	B -.001/ -.003	C	D	RM	VB	W	Y	ZT*
1 1/2	5/8	7/16-20	1/2-20	3/4	1 1/8	3/8	1/2	1 15/16	1/4	5/8	2 15/32	7
	1	3/4-16	7/8-14	1 1/8	1 1/2	1/2	7/8	2 3/8	1/2	1	2 15/32	7 3/8
2	1	3/4-16	7/8-14	1 1/8	1 1/2	1/2	7/8	2 3/8	1/4	3/4	2 15/32	7 13/16
	1 3/8	1-14	1 1/4-12	1 5/8	2	5/8	1 1/8	2 7/8	3/8	1	2 23/32	8 1/16
2 1/2	1	3/4-16	7/8-14	1 1/8	1 1/2	1/2	7/8	2 3/8	1/4	3/4	2 15/32	7 15/16
	1 3/8	1-14	1 1/4-12	1 5/8	2	5/8	1 1/8	2 7/8	3/8	1	2 23/32	8 3/16
	1 3/4	1 1/4-12	1 1/2-12	2	2 3/8	3/4	1 1/2	3 15/32	1/2	1 1/4	2 31/32	8 7/16
3 1/4	1 3/8	1-14	1 1/4-12	1 5/8	2	5/8	1 1/8	2 7/8	1/4	7/8	2 23/32	9 7/16
	1 3/4	1 1/4-12	1 1/2-12	2	2 3/8	3/4	1 1/2	3 15/32	3/8	1 1/8	2 31/32	9 11/16
	2	1 1/2-12	1 3/4-12	2 1/4	2 5/8	7/8	1 11/16	3 23/32	3/8	1 1/4	3 3/32	9 13/16
4	1 3/4	1 1/4-12	1 1/2-12	2	2 3/8	3/4	1 1/2	3 15/32	1/4	1	2 31/32	9 15/16
	2	1 1/2-12	1 3/4-12	2 1/4	2 5/8	7/8	1 11/16	3 23/32	1/4	1 1/8	3 3/32	10 1/16
	2 1/2	1 7/8-12	2 1/4-12	3	3 1/8	1	2 1/16	4 1/4	3/8	1 3/8	3 11/32	10 5/16
5	2	1 1/2-12	1 3/4-12	2 1/4	2 5/8	7/8	1 11/16	3 23/32	1/4	1 1/8	3 3/32	11 7/16
	2 1/2	1 7/8-12	2 1/4-12	3	3 1/8	1	2 1/16	4 1/4	3/8	1 3/8	3 11/32	11 11/16
	3	2 1/4-12	2 3/4-12	3 1/2	3 3/4	1	2 5/8	5 7/16	3/8	1 3/8	3 11/32	11 11/16
	3 1/2	2 1/2-12	3 1/4-12	3 1/2	4 1/4	1	3	5 15/16	3/8	1 3/8	3 11/32	11 11/16
6	2 1/2	7/8-12	2 1/4-12	3	3 1/8	1	2 1/16	4 1/4	1/4	1 1/4	3 19/32	13 1/4
	3	2 1/4-12	2 3/4-12	3 1/2	3 3/4	1	2 5/8	5 7/16	1/4	1 1/4	3 19/32	13 1/4
	3 1/2	2 1/2-12	3 1/4-12	3 1/2	4 1/4	1	3	5 15/16	1/4	1 1/4	3 19/32	13 1/4
7	3	2 1/4-12	2 3/4-12	3 1/2	3 3/4	1	2 5/8	5 7/16	1/4	1 1/4	3 15/16	14 7/8
	3 1/2	2 1/2-12	3 1/4-12	3 1/2	4 1/4	1	3	5 15/16	1/4	1 1/4	3 15/16	14 7/8
	4	3-12	3 3/4-12	4	4 3/4	1	3 3/8	6 5/16	1/4	1 1/4	3 15/16	14 7/8
	4 1/2	3 1/4-12	4 1/4-12	4 1/2	5 1/4	1	3 7/8	6 15/16	1/4	1 1/4	3 15/16	14 7/8
8	5	3 1/2-12	4 3/4-12	5	5 3/4	1	4 1/4	7 7/16	1/4	1 1/4	3 15/16	14 7/8
	3 1/2	2 1/2-12	3 1/4-12	3 1/2	4 1/4	1	3	5 15/16	1/4	1 1/4	4 1/16	16 1/4
	4	3-12	3 3/4-12	4	4 3/4	1	3 3/8	6 5/16	1/4	1 1/4	4 1/16	16 1/4
8	4 1/2	3 1/4-12	4 1/4-12	4 1/2	5 1/4	1	3 7/8	6 15/16	1/4	1 1/4	4 1/16	16 1/4
	5	3 1/2-12	4 3/4-12	5	5 3/4	1	4 1/4	7 7/16	1/4	1 1/4	4 1/16	16 1/4
	5 1/2	4-12	5 1/4-12	5 1/2	6 1/4	1	4 5/8	7 15/16	1/4	1 1/4	4 1/16	16 1/4

NFPA MX2 - Tie Rods Extended Cap End



\* Add stroke to starred dimension

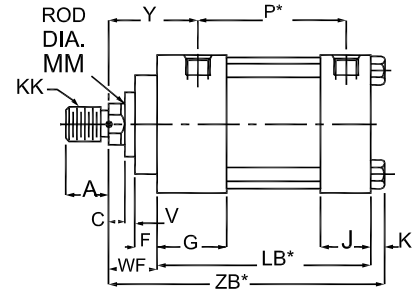
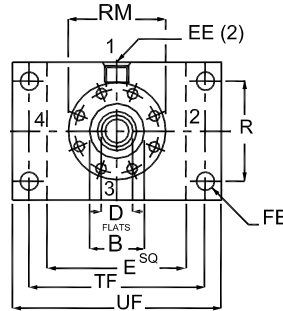
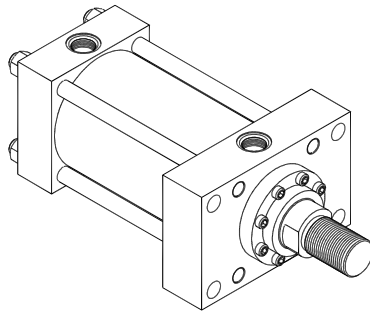
Body Dimensions

BORE	E	EE (SAE)	EE (NPTF)	G	J	K	LB*	P*	AA	BB	DD	R
1 1/2	2 1/2	10	1/2	1 3/4	1 1/2	3/8	4 5/8	2 11/16	2.3	1 3/8	3/8-24	1.63
2	3	10	1/2	1 3/4	1 1/2	7/16	4 5/8	2 11/16	2.9	11 3/16	1/2-20	2.05
2 1/2	3 1/2	10	1/2	1 3/4	1 1/2	7/16	4 3/4	2 13/16	3.6	11 3/16	1/2-20	2.55
3 1/4	4 1/2	12	3/4	2	1 3/4	9/16	5 1/2	3 9/16	4.6	2 5/16	5/8-18	3.25
4	5	12	3/4	2	1 3/4	9/16	5 3/4	3 13/16	5.4	2 5/16	5/8-18	3.82
5	6 1/2	12	3/4	2	1 3/4	13/16	6 1/4	4 5/16	7.0	3 3/16	7/8-14	4.95
6	7 1/2	16	1	2 1/4	2 1/4	15/16	7 3/8	4 11/16	8.1	3 5/8	1-14	5.73
7	8 1/2	20	1 1/4	2 3/4	2 3/4	1	8 1/2	5 1/8	9.3	4 1/8	1 1/8-12	6.58
8	9 1/2	24	1 1/2	3	3	1 1/8	9 1/2	5 7/8	10.6	4 1/2	1 1/4-12	7.5

Rod End Dimensions

BORE	MM	KK	CC	A	B -.001/ -.003	C	D	RM	F	V	WF	Y	ZT*
1 1/2	5/8	7/16-20	1/2-20	3/4	1 1/8	3/8	1/2	1 15/16	3/8	1/4	1	2 15/32	7
	1	3/4-16	7/8-14	1 1/8	1 1/2	1/2	7/8	2 3/8	3/8	1/2	1 3/8	2 15/32	7 3/8
2	1	3/4-16	7/8-14	1 1/8	1 1/2	1/2	7/8	2 3/8	3/8	1/4	1 3/8	2 15/32	7 13/16
	1 3/8	1-14	1 1/4-12	1 5/8	2	5/8	1 1/8	2 7/8	3/8	3/8	1 5/8	2 23/32	8 1/16
2 1/2	1	3/4-16	7/8-14	1 1/8	1 1/2	1/2	7/8	2 3/8	3/8	3/8	1 3/8	2 15/32	7 15/16
	1 3/8	1-14	1 1/4-12	1 5/8	2	5/8	1 1/8	2 7/8	3/8	3/8	1 5/8	2 23/32	8 3/16
	1 3/4	1 1/4-12	1 1/2-12	2	2 3/8	3/4	1 1/2	3 15/32	5/8	1/2	1 7/8	2 31/32	8 7/16
3 1/4	1 3/8	1-14	1 1/4-12	1 5/8	2	5/8	1 1/8	2 7/8	3/8	13/32	1 5/8	2 23/32	9 7/16
	1 3/4	1 1/4-12	1 1/2-12	2	2 3/8	3/4	1 1/2	3 15/32	5/8	3/8	1 7/8	2 31/32	9 11/16
4	2	1 1/2-12	1 3/4-12	2 1/4	2 5/8	7/8	1 11/16	3 23/32	5/8	3/8	2	3 3/32	9 13/16
	1 3/4	1 1/4-12	1 1/2-12	2	2 3/8	3/4	1 1/2	3 15/32	5/8	17/32	1 7/8	2 31/32	9 15/16
	2	1 1/2-12	1 3/4-12	2 1/4	2 5/8	7/8	1 11/16	3 23/32	5/8	17/32	2	3 3/32	10 1/16
5	2 1/2	1 7/8-12	2 1/4-12	3	3 1/8	1	2 1/16	4 1/4	5/8	21/32	2 1/4	3 11/32	10 5/16
	2	1 1/2-12	1 3/4-12	2 1/4	2 5/8	7/8	1 11/16	3 23/32	5/8	17/32	2	3 3/32	11 7/16
	2 1/2	1 7/8-12	2 1/4-12	3	3 1/8	1	2 1/16	4 1/4	5/8	21/32	2 1/4	3 11/32	11 11/16
6	3	2 1/4-12	2 3/4-12	3 1/2	3 3/4	1	2 5/8	5 7/16	7/8	17/32	2 1/4	3 11/32	11 11/16
	3 1/2	2 1/2-12	3 1/4-12	3 1/2	4 1/4	1	3	5 15/16	15/16	17/32	2 1/4	3 19/32	13 1/4
	4	3-12	3 3/4-12	4	4 3/4	1	3 3/8	6 5/16	15/16	3/8	2 1/4	3 19/32	13 1/4
7	3	2 1/4-12	2 3/4-12	3 1/2	3 3/4	1	2 5/8	5 7/16	7/8	17/32	2 1/4	3 15/16	14 7/8
	3 1/2	2 1/2-12	3 1/4-12	3 1/2	4 1/4	1	3	5 15/16	15/16	17/32	2 1/4	3 15/16	14 7/8
	4	3-12	3 3/4-12	4	4 3/4	1	3 3/8	6 5/16	15/16	3/8	2 1/4	3 15/16	14 7/8
	4 1/2	3 1/4-12	4 1/4-12	4 1/2	5 1/4	1	3 7/8	6 15/16	15/16	3/8	2 1/4	3 15/16	14 7/8
8	5	3 1/2-12	4 3/4-12	5	5 3/4	1	4 1/4	7 7/16	15/16	3/8	2 1/4	3 15/16	14 7/8
	3 1/2	2 1/2-12	3 1/4-12	3 1/2	4 1/4	1	3	5 15/16	15/16	17/32	2 1/4	4 1/16	16 1/4
	4	3-12	3 3/4-12	4	4 3/4	1	3 3/8	6 5/16	15/16	3/8	2 1/4	4 1/16	16 1/4
	4 1/2	3 1/4-12	4 1/4-12	4 1/2	5 1/4	1	3 7/8	6 15/16	15/16	3/8	2 1/4	4 1/16	16 1/4
8	5	3 1/2-12	4 3/4-12	5	5 3/4	1	4 1/4	7 7/16	15/16	3/8	2 1/4	4 1/16	16 1/4
	5 1/2	4-12	5 1/4-12	5 1/2	6 1/4	1	4 5/8	7 15/16	15/16	3/8	2 1/4	4 1/16	16 1/4

NFPA ME5 - Head Rectangular



\* Add stroke to starred dimension

Body Dimensions

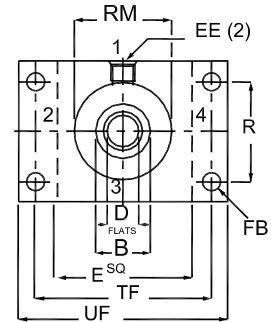
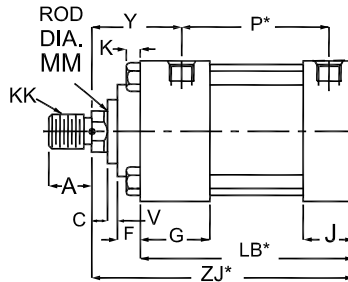
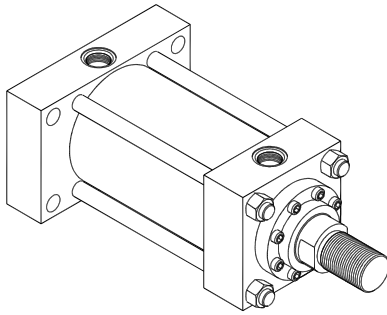
BORE	E	EE (SAE)	EE (NPTF)	G	J	K	LB*	P*	FB	R	TF	UF
1 1/2	2 1/2	10	1/2	1 3/4	1 1/2	3/8	4 5/8	2 11/16	7/16	1.63	3 7/16	4 1/4
2	3	10	1/2	1 3/4	1 1/2	7/16	4 5/8	2 11/16	9/16	2.05	4 1/8	5 1/8
2 1/2	3 1/2	10	1/2	1 3/4	1 1/2	7/16	4 3/4	2 13/16	9/16	2.55	4 5/8	5 5/8
3 1/4	4 1/2	12	3/4	2	1 3/4	9/16	5 1/2	3 9/16	11/16	3.25	5 7/8	7 1/8
4	5	12	3/4	2	1 3/4	9/16	5 3/4	3 13/16	11/16	3.82	6 3/8	7 5/8
5	6 1/2	12	3/4	2	1 3/4	13/16	6 1/4	4 5/16	15/16	4.95	8 3/16	9 3/4
6	7 1/2	16	1	2 1/4	2 1/4	15/16	7 3/8	4 11/16	1 1/16	5.73	9 7/16	11 1/4
7	8 1/2	20	1 1/4	2 3/4	2 3/4	1	8 1/2	5 1/8	1 3/16	6.58	10 5/8	12 5/8
8	9 1/2	24	1 1/2	3	3	1 1/8	9 1/2	5 7/8	1 5/16	7.5	11 13/16	14

Rod End Dimensions

BORE	MM	KK	CC	A	B -.001/ -.003	C	D	RM	F	V	WF	Y	ZB*
1 1/2	5/8	7/16-20	1/2-20	3/4	1 1/8	3/8	1/2	1 15/16	3/8	1/4	1	2 15/32	6
	1	3/4-16	7/8-14	1 1/8	1 1/2	1/2	7/8	2 3/8	3/8	1/2	1 3/8	2 15/32	6 3/8
2	1	3/4-16	7/8-14	1 1/8	1 1/2	1/2	7/8	2 3/8	3/8	1/4	1 3/8	2 15/32	6 7/16
	1 3/8	1-14	1 1/4-12	1 5/8	2	5/8	1 1/8	2 7/8	3/8	3/8	1 5/8	2 23/32	6 11/16
2 1/2	1	3/4-16	7/8-14	1 1/8	1 1/2	1/2	7/8	2 3/8	3/8	3/8	1 3/8	2 15/32	6 9/16
	1 3/8	1-14	1 1/4-12	1 5/8	2	5/8	1 1/8	2 7/8	3/8	3/8	1 5/8	2 23/32	6 13/16
	1 3/4	1 1/4-12	1 1/2-12	2	2 3/8	3/4	1 1/2	3 15/32	5/8	1/2	1 7/8	2 31/32	7 1/16
3 1/4	1 3/8	1-14	1 1/4-12	1 5/8	2	5/8	1 1/8	2 7/8	3/8	13/32	1 5/8	2 23/32	7 11/16
	1 3/4	1 1/4-12	1 1/2-12	2	2 3/8	3/4	1 1/2	3 15/32	5/8	3/8	1 7/8	2 31/32	7 15/16
	2	1 1/2-12	1 3/4-12	2 1/4	2 5/8	7/8	1 11/16	3 23/32	5/8	3/8	2	3 3/32	8 1/16
4	1 3/4	1 1/4-12	1 1/2-12	2	2 3/8	3/4	1 1/2	3 15/32	5/8	17/32	1 7/8	2 31/32	8 3/16
	2	1 1/2-12	1 3/4-12	2 1/4	2 5/8	7/8	1 11/16	3 23/32	5/8	17/32	2	3 3/32	8 5/16
	2 1/2	1 7/8-12	2 1/4-12	3	3 1/8	1	2 1/16	4 1/4	5/8	21/32	2 1/4	3 11/32	8 9/16
5	2	1 1/2-12	1 3/4-12	2 1/4	2 5/8	7/8	1 11/16	3 23/32	5/8	17/32	2	3 3/32	9 1/16
	2 1/2	1 7/8-12	2 1/4-12	3	3 1/8	1	2 1/16	4 1/4	5/8	21/32	2 1/4	3 11/32	9 5/16
	3	2 1/4-12	2 3/4-12	3 1/2	3 3/4	1	2 5/8	5 7/16	7/8	17/32	2 1/4	3 11/32	9 5/16
6	3 1/2	2 1/2-12	3 1/4-12	3 1/2	4 1/4	1	3	5 15/16	15/16	17/32	2 1/4	3 11/32	9 5/16
	2 1/2	7/8-12	2 1/4-12	3	3 1/8	1	2 1/16	4 1/4	5/8	21/32	2 1/4	3 19/32	10 9/16
	3	2 1/4-12	2 3/4-12	3 1/2	3 3/4	1	2 5/8	5 7/16	7/8	17/32	2 1/4	3 19/32	10 9/16
7	3 1/2	2 1/2-12	3 1/4-12	3 1/2	4 1/4	1	3	5 15/16	15/16	17/32	2 1/4	3 19/32	10 9/16
	4	3-12	3 3/4-12	4	4 3/4	1	3 3/8	6 5/16	15/16	3/8	2 1/4	3 19/32	10 9/16
	3	2 1/4-12	2 3/4-12	3 1/2	3 3/4	1	2 5/8	5 7/16	7/8	17/32	2 1/4	3 15/16	11 3/4
	3 1/2	2 1/2-12	3 1/4-12	3 1/2	4 1/4	1	3	5 15/16	15/16	17/32	2 1/4	3 15/16	11 3/4
8	4 1/2	3 1/4-12	4 1/4-12	4 1/2	5 1/4	1	3 7/8	6 15/16	15/16	3/8	2 1/4	3 15/16	11 3/4
	5	3 1/2-12	4 3/4-12	5	5 3/4	1	4 1/4	7 7/16	15/16	3/8	2 1/4	3 15/16	11 3/4
	3 1/2	2 1/2-12	3 1/4-12	3 1/2	4 1/4	1	3	5 15/16	15/16	17/32	2 1/4	4 1/16	12 7/8
8	4	3-12	3 3/4-12	4	4 3/4	1	3 3/8	6 5/16	15/16	3/8	2 1/4	4 1/16	12 7/8
	4 1/2	3 1/4-12	4 1/4-12	4 1/2	5 1/4	1	3 7/8	6 15/16	15/16	3/8	2 1/4	4 1/16	12 7/8
	5	3 1/2-12	4 3/4-12	5	5 3/4	1	4 1/4	7 7/16	15/16	3/8	2 1/4	4 1/16	12 7/8
8	5 1/2	4-12	5 1/4-12	5 1/2	6 1/4	1	4 5/8	7 15/16	15/16	3/8	2 1/4	4 1/16	12 7/8



NFPA ME6 - Cap Rectangular



\* Add stroke to starred dimension

Body Dimensions

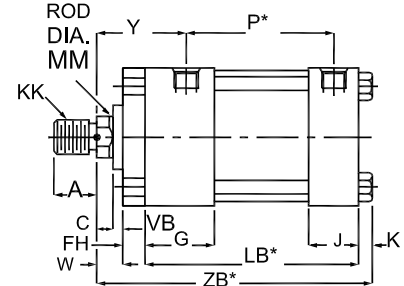
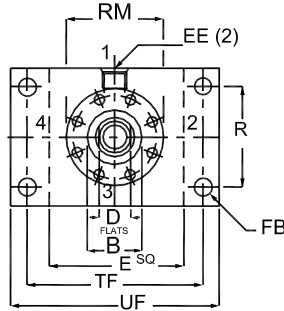
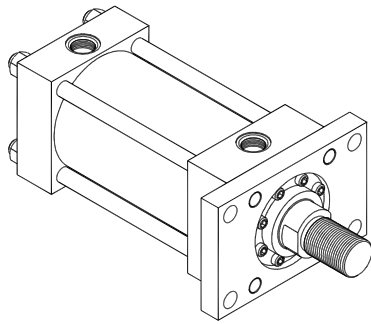
BORE	E	EE (SAE)	EE (NPTF)	G	J	K	LB*	P*	FB	R	TF	UF
1 1/2	2 1/2	10	1/2	1 3/4	1 1/2	3/8	4 5/8	2 11/16	7/16	1.63	3 7/16	4 1/4
2	3	10	1/2	1 3/4	1 1/2	7/16	4 5/8	2 11/16	9/16	2.05	4 1/8	5 1/8
2 1/2	3 1/2	10	1/2	1 3/4	1 1/2	7/16	4 3/4	2 13/16	9/16	2.55	4 5/8	5 5/8
3 1/4	4 1/2	12	3/4	2	1 3/4	9/16	5 1/2	3 9/16	11/16	3.25	5 7/8	7 1/8
4	5	12	3/4	2	1 3/4	9/16	5 3/4	3 13/16	11/16	3.82	6 3/8	7 5/8
5	6 1/2	12	3/4	2	1 3/4	13/16	6 1/4	4 5/16	15/16	4.95	8 3/16	9 3/4
6	7 1/2	16	1	2 1/4	2 1/4	15/16	7 3/8	4 11/16	1 1/16	5.73	9 7/16	11 1/4
7	8 1/2	20	1 1/4	2 3/4	2 3/4	1	8 1/2	5 1/8	1 3/16	6.58	10 5/8	12 5/8
8	9 1/2	24	1 1/2	3	3	1 1/8	9 1/2	5 7/8	1 5/16	7.5	11 13/16	14

Rod End Dimensions

BORE	MM	KK	CC	A	B -.001/ -.003	C	D	RM	F	V	Y	ZJ *
1 1/2	5/8	7/16-20	1/2-20	3/4	1 1/8	3/8	1/2	1 15/16	3/8	1/4	2 15/32	5 5/8
	1	3/4-16	7/8-14	1 1/8	1 1/2	1/2	7/8	2 3/8	3/8	1/2	2 15/32	6
2	1	3/4-16	7/8-14	1 1/8	1 1/2	1/2	7/8	2 3/8	3/8	1/4	2 15/32	6
	1 3/8	1-14	1 1/4-12	1 5/8	2	5/8	1 1/8	2 7/8	3/8	3/8	2 23/32	6 1/4
2 1/2	1	3/4-16	7/8-14	1 1/8	1 1/2	1/2	7/8	2 3/8	3/8	3/8	2 15/32	6 1/8
	1 3/8	1-14	1 1/4-12	1 5/8	2	5/8	1 1/8	2 7/8	3/8	3/8	2 23/32	6 3/8
	1 3/4	1 1/4-12	1 1/2-12	2	2 3/8	3/4	1 1/2	3 15/32	5/8	1/2	2 31/32	6 5/8
3 1/4	1 3/8	1-14	1 1/4-12	1 5/8	2	5/8	1 1/8	2 7/8	3/8	13/32	2 23/32	7 1/8
	1 3/4	1 1/4-12	1 1/2-12	2	2 3/8	3/4	1 1/2	3 15/32	5/8	3/8	2 31/32	7 3/8
	2	1 1/2-12	1 3/4-12	2 1/4	2 5/8	7/8	1 11/16	3 23/32	5/8	3/8	3 3/32	7 1/2
4	1 3/4	1 1/4-12	1 1/2-12	2	2 3/8	3/4	1 1/2	3 15/32	5/8	17/32	2 31/32	7 5/8
	2	1 1/2-12	1 3/4-12	2 1/4	2 5/8	7/8	1 11/16	3 23/32	5/8	17/32	3 3/32	7 3/4
	2 1/2	1 7/8-12	2 1/4-12	3	3 1/8	1	2 1/16	4 1/4	5/8	21/32	3 11/32	8
5	2	1 1/2-12	1 3/4-12	2 1/4	2 5/8	7/8	1 11/16	3 23/32	5/8	17/32	3 3/32	8 1/4
	2 1/2	1 7/8-12	2 1/4-12	3	3 1/8	1	2 1/16	4 1/4	5/8	21/32	3 11/32	8 1/2
	3	2 1/4-12	2 3/4-12	3 1/2	3 3/4	1	2 5/8	5 7/16	7/8	17/32	3 11/32	8 1/2
	3 1/2	2 1/2-12	3 1/4-12	3 1/2	4 1/4	1	3	5 15/16	15/16	17/32	3 11/32	8 1/2
6	2 1/2	7/8-12	2 1/4-12	3	3 1/8	1	2 1/16	4 1/4	5/8	21/32	3 19/32	9 5/8
	3	2 1/4-12	2 3/4-12	3 1/2	3 3/4	1	2 5/8	5 7/16	7/8	17/32	3 19/32	9 5/8
	3 1/2	2 1/2-12	3 1/4-12	3 1/2	4 1/4	1	3	5 15/16	15/16	17/32	3 19/32	9 5/8
	4	3-12	3 3/4-12	4	4 3/4	1	3 3/8	6 5/16	15/16	3/8	3 19/32	9 5/8
7	3	2 1/4-12	2 3/4-12	3 1/2	3 3/4	1	2 5/8	5 7/16	7/8	17/32	3 15/16	10 3/4
	3 1/2	2 1/2-12	3 1/4-12	3 1/2	4 1/4	1	3	5 15/16	15/16	17/32	3 15/16	10 3/4
	4	3-12	3 3/4-12	4	4 3/4	1	3 3/8	6 5/16	15/16	3/8	3 15/16	10 3/4
	4 1/2	3 1/4-12	4 1/4-12	4 1/2	5 1/4	1	3 7/8	6 15/16	15/16	3/8	3 15/16	10 3/4
8	5	3 1/2-12	4 3/4-12	5	5 3/4	1	4 1/4	7 7/16	15/16	3/8	3 15/16	10 3/4
	3 1/2	2 1/2-12	3 1/4-12	3 1/2	4 1/4	1	3	5 15/16	15/16	17/32	4 1/16	11 3/4
	4	3-12	3 3/4-12	4	4 3/4	1	3 3/8	6 5/16	15/16	3/8	4 1/16	11 3/4
	4 1/2	3 1/4-12	4 1/4-12	4 1/2	5 1/4	1	3 7/8	6 15/16	15/16	3/8	4 1/16	11 3/4
8	5	3 1/2-12	4 3/4-12	5	5 3/4	1	4 1/4	7 7/16	15/16	3/8	4 1/16	11 3/4
	5 1/2	4-12	5 1/4-12	5 1/2	6 1/4	1	4 5/8	7 15/16	15/16	3/8	4 1/16	11 3/4



NFPA MF1 - Head Rectangular Flange



\* Add stroke to starred dimension

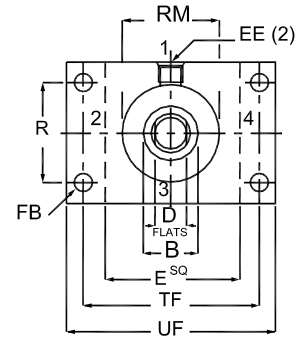
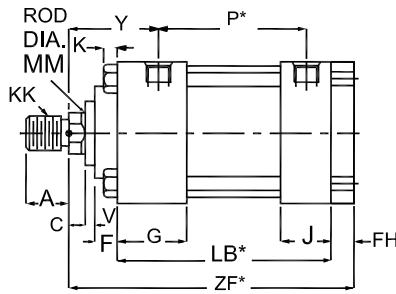
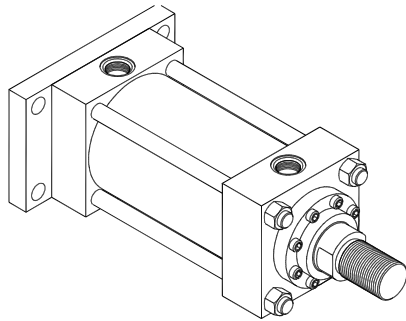
Body Dimensions

BORE	E	EE (SAE)	EE (NPTF)	G	J	K	LB*	P*	FB	FH	R	TF	UF
1 1/2	2 1/2	10	1/2	1 3/4	1 1/2	3/8	4 5/8	2 11/16	7/16	3/8	1.63	3 7/16	4 1/4
2	3	10	1/2	1 3/4	1 1/2	7/16	4 5/8	2 11/16	9/16	5/8	2.05	4 1/8	5 1/8
2 1/2	3 1/2	10	1/2	1 3/4	1 1/2	7/16	4 3/4	2 13/16	9/16	5/8	2.55	4 5/8	5 5/8
3 1/4	4 1/2	12	3/4	2	1 3/4	9/16	5 1/2	3 9/16	11/16	3/4	3.25	5 7/8	7 1/8
4	5	12	3/4	2	1 3/4	9/16	5 3/4	3 13/16	11/16	7/8	3.82	6 3/8	7 5/8
5	6 1/2	12	3/4	2	1 3/4	13/16	6 1/4	4 5/16	15/16	7/8	4.95	8 3/16	9 3/4
6	7 1/2	16	1	2 1/4	2 1/4	15/16	7 3/8	4 11/16	1 1/16	1	5.73	9 7/16	11 1/4
7	8 1/2	20	1 1/4	2 3/4	2 3/4	1	8 1/2	5 1/8	1 3/16	1	6.58	10 5/8	12 5/8
8	9 1/2	24	1 1/2	3	3	1 1/8	9 1/2	5 7/8	1 5/16	1	7.5	11 13/16	14

Rod End Dimensions

BORE	MM	KK	CC	A	B -.001/ -.003	C	D	RM	MAX PRESSURE PSI	VB	W	Y	ZB*
1 1/2	5/8	7/16-20	1/2-20	3/4	1 1/8	3/8	1/2	1 15/16	2500	1/4	5/8	2 15/32	6
	1	3/4-16	7/8-14	1 1/8	1 1/2	1/2	7/8	2 3/8	1500	1/2	1	2 15/32	6 3/8
2	1	3/4-16	7/8-14	1 1/8	1 1/2	1/2	7/8	2 3/8	2500	1/4	3/4	2 15/32	6 7/16
	1 3/8	1-14	1 1/4-12	1 5/8	2	5/8	1 1/8	2 7/8	1500	3/8	1	2 23/32	6 11/16
2 1/2	1	3/4-16	7/8-14	1 1/8	1 1/2	1/2	7/8	2 3/8	2500	1/4	3/4	2 15/32	6 9/16
	1 3/8	1-14	1 1/4-12	1 5/8	2	5/8	1 1/8	2 7/8	1900	3/8	1	2 23/32	6 13/16
	1 3/4	1 1/4-12	1 1/2-12	2	2 3/8	3/4	1 1/2	3 15/32	1500	1/2	1 1/4	2 31/32	7 1/16
3 1/4	1 3/8	1-14	1 1/4-12	1 5/8	2	5/8	1 1/8	2 7/8	2500	1/4	7/8	2 23/32	7 11/16
	1 3/4	1 1/4-12	1 1/2-12	2	2 3/8	3/4	1 1/2	3 15/32	2100	3/8	1 1/8	2 31/32	7 15/16
	2	1 1/2-12	1 3/4-12	2 1/4	2 5/8	7/8	1 11/16	3 23/32	1500	3/8	1 1/4	3 3/32	8 1/16
4	1 3/4	1 1/4-12	1 1/2-12	2	2 3/8	3/4	1 1/2	3 15/32	2500	1/4	1	2 31/32	8 3/16
	2	1 1/2-12	1 3/4-12	2 1/4	2 5/8	7/8	1 11/16	3 23/32	1800	1/4	1 1/8	3 3/32	8 5/16
	2 1/2	1 7/8-12	2 1/4-12	3	3 1/8	1	2 1/16	4 1/4	1500	3/8	1 3/8	3 11/32	8 9/16
5	2	1 1/2-12	1 3/4-12	2 1/4	2 5/8	7/8	1 11/16	3 23/32	2200	1/4	1 1/8	3 3/32	9 1/16
	2 1/2	1 7/8-12	2 1/4-12	3	3 1/8	1	2 1/16	4 1/4	1650	3/8	1 3/8	3 11/32	9 5/16
	3	2 1/4-12	2 3/4-12	3 1/2	3 3/4	1	2 5/8	5 7/16	1200	3/8	1 3/8	3 11/32	9 5/16
6	3 1/2	2 1/2-12	3 1/4-12	3 1/2	4 1/4	1	3	5 15/16	750	3/8	1 3/8	3 11/32	9 5/16
	2 1/2	7/8-12	2 1/4-12	3	3 1/8	1	2 1/16	4 1/4	1800	1/4	1 1/4	3 19/32	10 9/16
	3	2 1/4-12	2 3/4-12	3 1/2	3 3/4	1	2 5/8	5 7/16	1450	1/4	1 1/4	3 19/32	10 9/16
7	3 1/2	2 1/2-12	3 1/4-12	3 1/2	4 1/4	1	3	5 15/16	1100	1/4	1 1/4	3 19/32	10 9/16
	4	3-12	3 3/4-12	4	4 3/4	1	3 3/8	6 5/16	750	1/4	1 1/4	3 19/32	10 9/16
	3	2 1/4-12	2 3/4-12	3 1/2	3 3/4	1	2 5/8	5 7/16	1500	1/4	1 1/4	3 15/16	11 3/4
8	3 1/2	2 1/2-12	3 1/4-12	3 1/2	4 1/4	1	3	5 15/16	1250	1/4	1 1/4	3 15/16	11 3/4
	4	3-12	3 3/4-12	4	4 3/4	1	3 3/8	6 5/16	1000	1/4	1 1/4	3 15/16	11 3/4
	4 1/2	3 1/4-12	4 1/4-12	4 1/2	5 1/4	1	3 7/8	6 15/16	750	1/4	1 1/4	3 15/16	11 3/4
	5	3 1/2-12	4 3/4-12	5	5 3/4	1	4 1/4	7 7/16	750	1/4	1 1/4	3 15/16	11 3/4
8	3 1/2	2 1/2-12	3 1/4-12	3 1/2	4 1/4	1	3	5 15/16	900	1/4	1 1/4	4 1/16	12 7/8
	4	3-12	3 3/4-12	4	4 3/4	1	3 3/8	6 5/16	800	1/4	1 1/4	4 1/16	12 7/8
	4 1/2	3 1/4-12	4 1/4-12	4 1/2	5 1/4	1	3 7/8	6 15/16	700	1/4	1 1/4	4 1/16	12 7/8
	5	3 1/2-12	4 3/4-12	5	5 3/4	1	4 1/4	7 7/16	600	1/4	1 1/4	4 1/16	12 7/8
8	5 1/2	4-12	5 1/4-12	5 1/2	6 1/4	1	4 5/8	7 15/16	600	1/4	1 1/4	4 1/16	12 7/8

NFPA MF2 - Cap Rectangular Flange



\* Add stroke to starred dimension

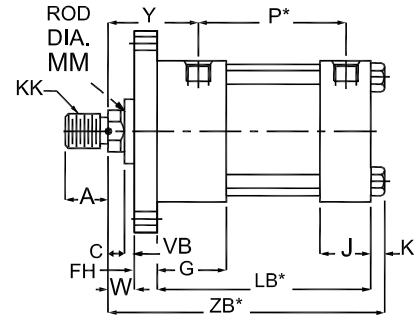
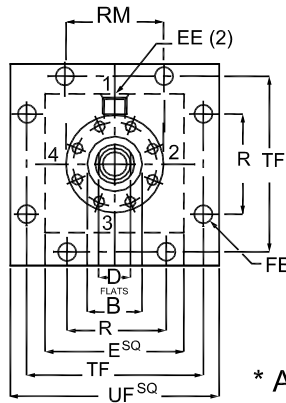
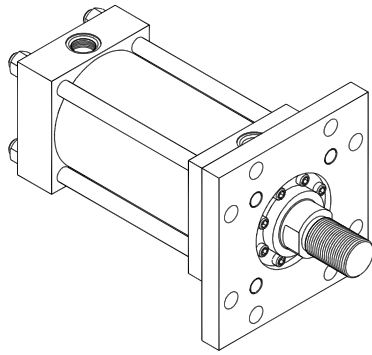
Body Dimensions

BORE	E	EE (SAE)	EE (NPTF)	G	J	K	LB*	P*	FB	FH	R	TF	UF
1 1/2	2 1/2	10	1/2	1 3/4	1 1/2	3/8	4 5/8	2 11/16	7/16	3/8	1.63	3 7/16	4 1/4
2	3	10	1/2	1 3/4	1 1/2	7/16	4 5/8	2 11/16	9/16	5/8	2.05	4 1/8	5 1/8
2 1/2	3 1/2	10	1/2	1 3/4	1 1/2	7/16	4 3/4	2 13/16	9/16	5/8	2.55	4 5/8	5 5/8
3 1/4	4 1/2	12	3/4	2	1 3/4	9/16	5 1/2	3 9/16	11/16	3/4	3.25	5 7/8	7 1/8
4	5	12	3/4	2	1 3/4	9/16	5 3/4	3 13/16	11/16	7/8	3.82	6 3/8	7 5/8
5	6 1/2	12	3/4	2	1 3/4	13/16	6 1/4	4 5/16	15/16	7/8	4.95	8 3/16	9 3/4
6	7 1/2	16	1	2 1/4	2 1/4	15/16	7 3/8	4 11/16	1 1/16	1	5.73	9 7/16	11 1/4
7	8 1/2	20	1 1/4	2 3/4	2 3/4	1	8 1/2	5 1/8	1 3/16	1	6.58	10 5/8	12 5/8
8	9 1/2	24	1 1/2	3	3	1 1/8	9 1/2	5 7/8	1 5/16	1	7.5	11 13/16	14

Rod End Dimensions

BORE	MM	KK	CC	A	B -.001/ -.003	C	D	RM	MAX PRESSURE PSI	F	VB	W	Y	ZF*
1 1/2	5/8	7/16-20	1/2-20	3/4	1 1/8	3/8	1/2	1 15/16	2500	3/8	1/4	5/8	2 15/32	6
	1	3/4-16	7/8-14	1 1/8	1 1/2	1/2	7/8	2 3/8	2500	3/8	1/2	1	2 15/32	6 3/8
2	1	3/4-16	7/8-14	1 1/8	1 1/2	1/2	7/8	2 3/8	2500	3/8	1/4	3/4	2 15/32	6 5/8
	1 3/8	1-14	1 1/4-12	1 5/8	2	5/8	1 1/8	2 7/8	2200	3/8	3/8	1	2 23/32	6 7/8
2 1/2	1	3/4-16	7/8-14	1 1/8	1 1/2	1/2	7/8	2 3/8	2500	3/8	1/4	3/4	2 15/32	6 3/4
	1 3/8	1-14	1 1/4-12	1 5/8	2	5/8	1 1/8	2 7/8	2500	3/8	3/8	1	2 23/32	7
	1 3/4	1 1/4-12	1 1/2-12	2	2 3/8	3/4	1 1/2	3 15/32	2200	5/8	1/2	1 1/4	2 31/32	7 1/4
3 1/4	1 3/8	1-14	1 1/4-12	1 5/8	2	5/8	1 1/8	2 7/8	2500	3/8	1/4	7/8	2 23/32	7 7/8
	1 3/4	1 1/4-12	1 1/2-12	2	2 3/8	3/4	1 1/2	3 15/32	2200	5/8	3/8	1 1/8	2 31/32	8 1/8
4	2	1 1/2-12	1 3/4-12	2 1/4	2 5/8	7/8	1 11/16	3 23/32	2000	5/8	3/8	1 1/4	3 3/32	8 1/4
	1 3/4	1 1/4-12	1 1/2-12	2	2 3/8	3/4	1 1/2	3 15/32	2000	5/8	1/4	1	2 31/32	8 1/2
	2	1 1/2-12	1 3/4-12	2 1/4	2 5/8	7/8	1 11/16	3 23/32	2000	5/8	1/4	1 1/8	3 3/32	8 5/8
5	2 1/2	1 7/8-12	2 1/4-12	3	3 1/8	1	2 1/16	4 1/4	1800	5/8	3/8	1 3/8	3 11/32	8 7/8
	2	1 1/2-12	1 3/4-12	2 1/4	2 5/8	7/8	1 11/16	3 23/32	2200	5/8	1/4	1 1/8	3 3/32	9 1/8
	2 1/2	1 7/8-12	2 1/4-12	3	3 1/8	1	2 1/16	4 1/4	2000	5/8	3/8	1 3/8	3 11/32	9 3/8
6	3	2 1/4-12	2 3/4-12	3 1/2	3 3/4	1	2 5/8	5 7/16	2000	7/8	3/8	1 3/8	3 11/32	9 3/8
	3 1/2	2 1/2-12	3 1/4-12	3 1/2	4 1/4	1	3	5 15/16	1800	15/16	3/8	1 3/8	3 11/32	9 3/8
	2 1/2	7/8-12	2 1/4-12	3	3 1/8	1	2 1/16	4 1/4	2200	5/8	1/4	1 1/4	3 19/32	10 5/8
	3	2 1/4-12	2 3/4-12	3 1/2	3 3/4	1	2 5/8	5 7/16	2000	7/8	1/4	1 1/4	3 19/32	10 5/8
7	3 1/2	2 1/2-12	3 1/4-12	3 1/2	4 1/4	1	3	5 15/16	2000	15/16	1/4	1 1/4	3 19/32	10 5/8
	4	3-12	3 3/4-12	4	4 3/4	1	3 3/8	6 5/16	2000	15/16	1/4	1 1/4	3 19/32	10 5/8
	3	2 1/4-12	2 3/4-12	3 1/2	3 3/4	1	2 5/8	5 7/16	1500	7/8	1/4	1 1/4	3 15/16	11 3/4
	3 1/2	2 1/2-12	3 1/4-12	3 1/2	4 1/4	1	3	5 15/16	1250	15/16	1/4	1 1/4	3 15/16	11 3/4
	4	3-12	3 3/4-12	4	4 3/4	1	3 3/8	6 5/16	1000	15/16	1/4	1 1/4	3 15/16	11 3/4
8	4 1/2	3 1/4-12	4 1/4-12	4 1/2	5 1/4	1	3 7/8	6 15/16	750	15/16	1/4	1 1/4	3 15/16	11 3/4
	5	3 1/2-12	4 3/4-12	5	5 3/4	1	4 1/4	7 7/16	750	15/16	1/4	1 1/4	3 15/16	11 3/4
	3 1/2	2 1/2-12	3 1/4-12	3 1/2	4 1/4	1	3	5 15/16	900	15/16	1/4	1 1/4	4 1/16	12 3/4
	4	3-12	3 3/4-12	4	4 3/4	1	3 3/8	6 5/16	800	15/16	1/4	1 1/4	4 1/16	12 3/4
	4 1/2	3 1/4-12	4 1/4-12	4 1/2	5 1/4	1	3 7/8	6 15/16	700	15/16	1/4	1 1/4	4 1/16	12 3/4

NFPA MF5 - Head Square Flange



\* Add stroke to starred dimension

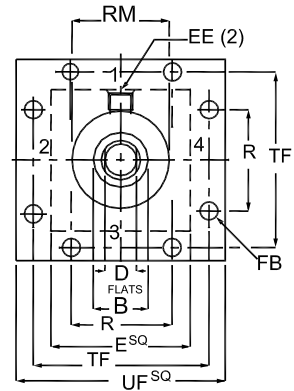
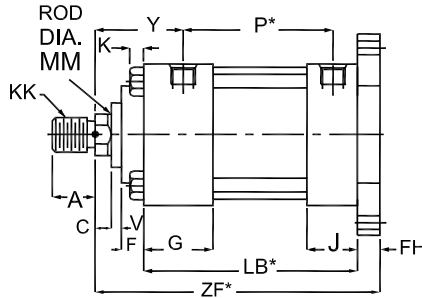
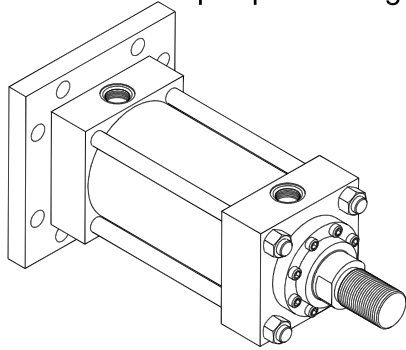
Body Dimensions

BORE	E	EE (SAE)	EE (NPTF)	G	J	K	LB*	P*	FB	FH	R	TF	UF
1 1/2	2 1/2	10	1/2	1 3/4	1 1/2	3/8	4 5/8	2 11/16	7/16	3/8	2	3 7/16	4 1/4
2	3	10	1/2	1 3/4	1 1/2	7/16	4 5/8	2 11/16	9/16	5/8	2	4 1/8	5 1/8
2 1/2	3 1/2	10	1/2	1 3/4	1 1/2	7/16	4 3/4	2 13/16	9/16	5/8	3	4 5/8	5 5/8
3 1/4	4 1/2	12	3/4	2	1 3/4	9/16	5 1/2	3 9/16	11/16	3/4	3	5 7/8	7 1/8
4	5	12	3/4	2	1 3/4	9/16	5 3/4	3 13/16	11/16	7/8	4	6 3/8	7 5/8
5	6 1/2	12	3/4	2	1 3/4	13/16	6 1/4	4 5/16	15/16	7/8	5	8 3/16	9 3/4
6	7 1/2	16	1	2 1/4	2 1/4	15/16	7 3/8	4 11/16	1 1/16	1	6	9 7/16	11 1/4
7	8 1/2	20	1 1/4	2 3/4	2 3/4	1	8 1/2	5 1/8	1 3/16	1	7	10 5/8	12 5/8
8	9 1/2	24	1 1/2	3	3	1 1/8	9 1/2	5 7/8	1 5/16	1	8	11 13/16	14

Rod End Dimensions

BORE	MM	KK	CC	A	B -.001/ -.003	C	D	RM	VB	W	Y	ZB*
1 1/2	5/8	7/16-20	1/2-20	3/4	1 1/8	3/8	1/2	1 15/16	1/4	5/8	2 15/32	6
	1	3/4-16	7/8-14	1 1/8	1 1/2	1/2	7/8	2 3/8	1/2	1	2 15/32	6 3/8
2	1	3/4-16	7/8-14	1 1/8	1 1/2	1/2	7/8	2 3/8	1/4	3/4	2 15/32	6 7/16
	1 3/8	1-14	1 1/4-12	1 5/8	2	5/8	1 1/8	2 7/8	3/8	1	2 23/32	6 11/16
2 1/2	1	3/4-16	7/8-14	1 1/8	1 1/2	1/2	7/8	2 3/8	1/4	3/4	2 15/32	6 9/16
	1 3/8	1-14	1 1/4-12	1 5/8	2	5/8	1 1/8	2 7/8	3/8	1	2 23/32	6 13/16
3 1/4	1 3/4	1 1/4-12	1 1/2-12	2	2 3/8	3/4	1 1/2	3 15/32	1/2	1 1/4	2 31/32	7 1/16
	1 3/8	1-14	1 1/4-12	1 5/8	2	5/8	1 1/8	2 7/8	1/4	7/8	2 23/32	7 11/16
4	1 3/4	1 1/4-12	1 1/2-12	2	2 3/8	3/4	1 1/2	3 15/32	3/8	1 1/8	2 31/32	7 15/16
	2	1 1/2-12	1 3/4-12	2 1/4	2 5/8	7/8	1 11/16	3 23/32	3/8	1 1/4	3 3/32	8 1/16
5	1 3/4	1 1/4-12	1 1/2-12	2	2 3/8	3/4	1 1/2	3 15/32	1/4	1	2 31/32	8 3/16
	2	1 1/2-12	1 3/4-12	2 1/4	2 5/8	7/8	1 11/16	3 23/32	1/4	1 1/8	3 3/32	8 5/16
6	2 1/2	1 7/8-12	2 1/4-12	3	3 1/8	1	2 1/16	4 1/4	3/8	1 3/8	3 11/32	8 9/16
	2	1 1/2-12	1 3/4-12	2 1/4	2 5/8	7/8	1 11/16	3 23/32	1/4	1 1/8	3 3/32	9 1/16
7	2 1/2	1 7/8-12	2 1/4-12	3	3 1/8	1	2 1/16	4 1/4	3/8	1 3/8	3 11/32	9 5/16
	3	2 1/4-12	2 3/4-12	3 1/2	3 3/4	1	2 5/8	5 7/16	3/8	1 3/8	3 11/32	9 5/16
8	3 1/2	2 1/2-12	3 1/4-12	3 1/2	4 1/4	1	3	5 15/16	3/8	1 3/8	3 11/32	9 5/16
	2 1/2	7/8-12	2 1/4-12	3	3 1/8	1	2 1/16	4 1/4	1/4	1 1/4	3 19/32	10 9/16
9	3	2 1/4-12	2 3/4-12	3 1/2	3 3/4	1	2 5/8	5 7/16	1/4	1 1/4	3 19/32	10 9/16
	3 1/2	2 1/2-12	3 1/4-12	3 1/2	4 1/4	1	3	5 15/16	1/4	1 1/4	3 19/32	10 9/16
10	4	3-12	3 3/4-12	4	4 3/4	1	3 3/8	6 5/16	1/4	1 1/4	3 19/32	10 9/16
	3	2 1/4-12	2 3/4-12	3 1/2	3 3/4	1	2 5/8	5 7/16	1/4	1 1/4	3 15/16	11 3/4
11	3 1/2	2 1/2-12	3 1/4-12	3 1/2	4 1/4	1	3	5 15/16	1/4	1 1/4	3 15/16	11 3/4
	4	3-12	3 3/4-12	4	4 3/4	1	3 3/8	6 5/16	1/4	1 1/4	3 15/16	11 3/4
12	4 1/2	3 1/4-12	4 1/4-12	4 1/2	5 1/4	1	3 7/8	6 15/16	1/4	1 1/4	3 15/16	11 3/4
	5	3 1/2-12	4 3/4-12	5	5 3/4	1	4 1/4	7 7/16	1/4	1 1/4	3 15/16	11 3/4
13	3 1/2	2 1/2-12	3 1/4-12	3 1/2	4 1/4	1	3	5 15/16	1/4	1 1/4	4 1/16	12 7/8
	4	3-12	3 3/4-12	4	4 3/4	1	3 3/8	6 5/16	1/4	1 1/4	4 1/16	12 7/8
14	4 1/2	3 1/4-12	4 1/4-12	4 1/2	5 1/4	1	3 7/8	6 15/16	1/4	1 1/4	4 1/16	12 7/8
	5	3 1/2-12	4 3/4-12	5	5 3/4	1	4 1/4	7 7/16	1/4	1 1/4	4 1/16	12 7/8
15	5 1/2	4-12	5 1/4-12	5 1/2	6 1/4	1	4 5/8	7 15/16	1/4	1 1/4	4 1/16	12 7/8

NFPA MF6 - Cap Square Flange



\* Add stroke to starred dimension

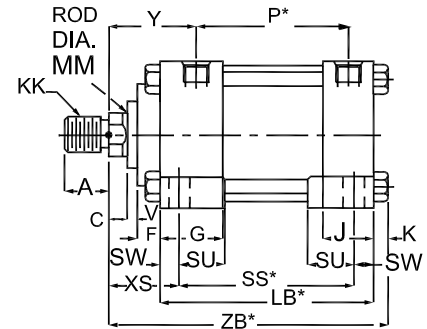
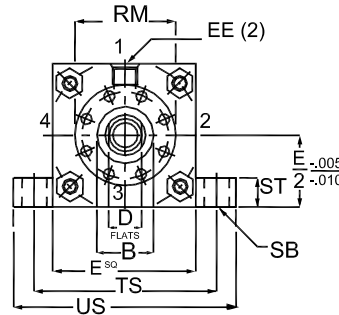
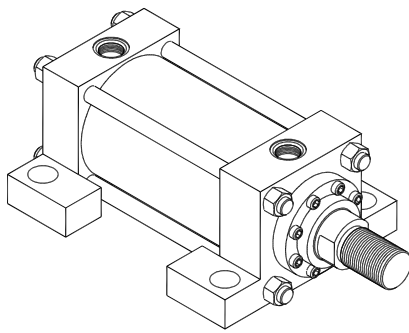
Body Dimensions

BORE	E	EE (SAE)	EE (NPTF)	G	J	K	LB*	P*	FB	FH	R	TF	UF
1 1/2	2 1/2	10	1/2	1 3/4	1 1/2	3/8	4 5/8	2 11/16	7/16	3/8	2	3 7/16	4 1/4
2	3	10	1/2	1 3/4	1 1/2	7/16	4 5/8	2 11/16	9/16	5/8	2	4 1/8	5 1/8
2 1/2	3 1/2	10	1/2	1 3/4	1 1/2	7/16	4 3/4	2 13/16	9/16	5/8	3	4 5/8	5 5/8
3 1/4	4 1/2	12	3/4	2	1 3/4	9/16	5 1/2	3 9/16	11/16	3/4	3	5 7/8	7 1/8
4	5	12	3/4	2	1 3/4	9/16	5 3/4	3 13/16	11/16	7/8	4	6 3/8	7 5/8
5	6 1/2	12	3/4	2	1 3/4	13/16	6 1/4	4 5/16	15/16	7/8	5	8 3/16	9 3/4
6	7 1/2	16	1	2 1/4	2 1/4	15/16	7 3/8	4 11/16	1 1/16	1	6	9 7/16	11 1/4
7	8 1/2	20	1 1/4	2 3/4	2 3/4	1	8 1/2	5 1/8	1 3/16	1	7	10 5/8	12 5/8
8	9 1/2	24	1 1/2	3	3	1 1/8	9 1/2	5 7/8	1 5/16	1	8	11 13/16	14

Rod End Dimensions

BORE	MM	KK	CC	A	B -.001/ -.003	C	D	RM	F	VB	W	Y	ZF*
1 1/2	5/8	7/16-20	1/2-20	3/4	1 1/8	3/8	1/2	1 15/16	3/8	1/4	5/8	2 15/32	6
	1	3/4-16	7/8-14	1 1/8	1 1/2	1/2	7/8	2 3/8	3/8	1/2	1	2 15/32	6 3/8
2	1	3/4-16	7/8-14	1 1/8	1 1/2	1/2	7/8	2 3/8	3/8	1/4	3/4	2 15/32	6 5/8
	1 3/8	1-14	1 1/4-12	1 5/8	2	5/8	1 1/8	2 7/8	3/8	3/8	1	2 23/32	6 7/8
2 1/2	1	3/4-16	7/8-14	1 1/8	1 1/2	1/2	7/8	2 3/8	3/8	1/4	3/4	2 15/32	6 3/4
	1 3/8	1-14	1 1/4-12	1 5/8	2	5/8	1 1/8	2 7/8	3/8	3/8	1	2 23/32	7
3 1/4	1 3/4	1-14	1 1/4-12	1 5/8	2	5/8	1 1/8	2 7/8	3/8	1/4	7/8	2 23/32	7 7/8
	1 3/4	1 1/4-12	1 1/2-12	2	2 3/8	3/4	1 1/2	3 15/32	5/8	3/8	1 1/8	2 31/32	8 1/8
4	2	1 1/2-12	1 3/4-12	2 1/4	2 5/8	7/8	1 11/16	3 23/32	5/8	3/8	1 1/4	3 3/32	8 1/4
	1 3/4	1 1/4-12	1 1/2-12	2	2 3/8	3/4	1 1/2	3 15/32	5/8	1/4	1	2 31/32	8 1/2
5	2	1 1/2-12	1 3/4-12	2 1/4	2 5/8	7/8	1 11/16	3 23/32	5/8	1/4	1 1/8	3 3/32	8 5/8
	2 1/2	1 7/8-12	2 1/4-12	3	3 1/8	1	2 1/16	4 1/4	5/8	3/8	1 3/8	3 11/32	8 7/8
	2	1 1/2-12	1 3/4-12	2 1/4	2 5/8	7/8	1 11/16	3 23/32	5/8	1/4	1 1/8	3 3/32	9 1/8
6	2 1/2	1 7/8-12	2 1/4-12	3	3 1/8	1	2 1/16	4 1/4	5/8	3/8	1 3/8	3 11/32	9 3/8
	3	2 1/4-12	2 3/4-12	3 1/2	3 3/4	1	2 5/8	5 7/16	7/8	1/4	1 1/4	3 19/32	9 3/8
	2 1/2	1 7/8-12	2 1/4-12	3	3 1/8	1	2 1/16	4 1/4	5/8	1/4	1 1/4	3 19/32	10 5/8
7	3 1/2	2 1/2-12	3 1/4-12	3 1/2	4 1/4	1	3	5 15/16	15/16	1/4	1 1/4	3 19/32	10 5/8
	4	3-12	3 3/4-12	4	4 3/4	1	3 3/8	6 5/16	15/16	1/4	1 1/4	3 19/32	10 5/8
	3	2 1/4-12	2 3/4-12	3 1/2	3 3/4	1	2 5/8	5 7/16	7/8	1/4	1 1/4	3 15/16	11 3/4
8	3 1/2	2 1/2-12	3 1/4-12	3 1/2	4 1/4	1	3	5 15/16	15/16	1/4	1 1/4	3 15/16	11 3/4
	4	3-12	3 3/4-12	4	4 3/4	1	3 3/8	6 5/16	15/16	1/4	1 1/4	3 15/16	11 3/4
	4 1/2	3 1/4-12	4 1/4-12	4 1/2	5 1/4	1	3 7/8	6 15/16	15/16	1/4	1 1/4	3 15/16	11 3/4
8	5	3 1/2-12	4 3/4-12	5	5 3/4	1	4 1/4	7 7/16	15/16	1/4	1 1/4	3 15/16	11 3/4
	3 1/2	2 1/2-12	3 1/4-12	3 1/2	4 1/4	1	3	5 15/16	15/16	1/4	1 1/4	4 1/16	12 3/4
	4	3-12	3 3/4-12	4	4 3/4	1	3 3/8	6 5/16	15/16	1/4	1 1/4	4 1/16	12 3/4
8	4 1/2	3 1/4-12	4 1/4-12	4 1/2	5 1/4	1	3 7/8	6 15/16	15/16	1/4	1 1/4	4 1/16	12 3/4
	5	3 1/2-12	4 3/4-12	5	5 3/4	1	4 1/4	7 7/16	15/16	1/4	1 1/4	4 1/16	12 3/4
8	5 1/2	4-12	5 1/4-12	5 1/2	6 1/4	1	4 5/8	7 15/16	15/16	1/4	1 1/4	4 1/16	12 3/4

NFPA MS2 - Side Lugs



\* Add stroke to starred dimension

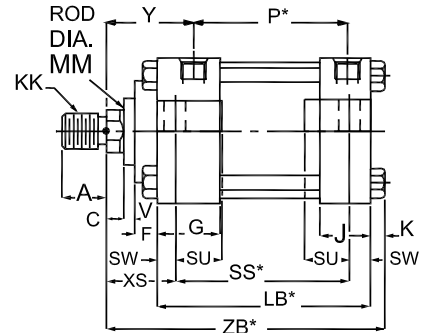
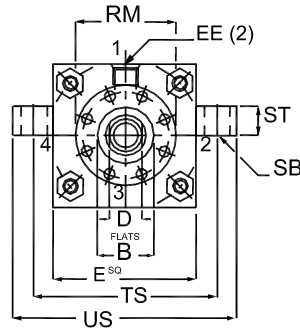
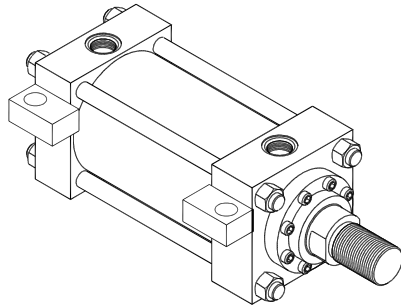
Body Dimensions

BORE	E	EE (SAE)	EE (NPTF)	G	J	K	LB*	P*	SB	SS*	ST	SU	SW	TS	US
1 1/2	2 1/2	10	1/2	1 3/4	1 1/2	3/8	4 5/8	2 11/16	7/16	3 7/8	1/2	15/16	3/8	3 1/4	4
2	3	10	1/2	1 3/4	1 1/2	7/16	4 5/8	2 11/16	9/16	3 5/8	3/4	1 1/4	1/2	4	5
2 1/2	3 1/2	10	1/2	1 3/4	1 1/2	7/16	4 3/4	2 13/16	13/16	3 3/8	1	1 9/16	11/16	4 7/8	6 1/4
3 1/4	4 1/2	12	3/4	2	1 3/4	9/16	5 1/2	3 9/16	13/16	4 1/8	1	1 9/16	11/16	5 7/8	7 1/4
4	5	12	3/4	2	1 3/4	9/16	5 3/4	3 13/16	1 1/16	4	1 1/4	2	7/8	6 3/4	8 1/2
5	6 1/2	12	3/4	2	1 3/4	13/16	6 1/4	4 5/16	1 1/16	4 1/2	1 1/4	2	7/8	8 1/4	10
6	7 1/2	16	1	2 1/4	2 1/4	15/16	7 3/8	4 11/16	1 5/16	5 1/8	1 1/2	2 1/2	1 1/8	9 3/4	12
7	8 1/2	20	1 1/4	2 3/4	2 3/4	1	8 1/2	5 1/8	1 9/16	5 3/4	1 3/4	2 7/8	1 3/8	11 1/4	14
8	9 1/2	24	1 1/2	3	3	1 1/8	9 1/2	5 7/8	1 9/16	6 3/4	1 3/4	2 7/8	1 3/8	12 1/4	15

Rod End Dimensions

BORE	M M	KK	CC	A	B -.001/ -.003	C	D	F	RM	V	XT	Y	ZB*
1 1/2	5/8	7/16-20	1/2-20	3/4	1 1/8	3/8	1/2	3/8	1 15/16	1/4	2	2 15/32	6
	1	3/4-16	7/8-14	1 1/8	1 1/2	1/2	7/8	3/8	2 3/8	1/2	2 3/8	2 15/32	6 3/8
2	1	3/4-16	7/8-14	1 1/8	1 1/2	1/2	7/8	3/8	2 3/8	1/4	2 3/8	2 15/32	6 7/16
	1 3/8	1-14	1 1/4-12	1 5/8	2	5/8	1 1/8	3/8	2 7/8	3/8	2 5/8	2 23/32	6 11/16
2 1/2	1	3/4-16	7/8-14	1 1/8	1 1/2	1/2	7/8	3/8	2 3/8	3/8	2 3/8	2 15/32	6 9/16
	1 3/8	1-14	1 1/4-12	1 5/8	2	5/8	1 1/8	3/8	2 7/8	3/8	2 5/8	2 23/32	6 13/16
	1 3/4	1 1/4-12	1 1/2-12	2	2 3/8	3/4	1 1/2	5/8	3 15/32	1/2	2 7/8	2 31/32	7 1/16
3 1/4	1 3/8	1-14	1 1/4-12	1 5/8	2	5/8	1 1/8	3/8	2 7/8	13/32	2 3/4	2 23/32	7 11/16
	1 3/4	1 1/4-12	1 1/2-12	2	2 3/8	3/4	1 1/2	5/8	3 15/32	3/8	3	2 31/32	7 15/16
	2	1 1/2-12	1 3/4-12	2 1/4	2 5/8	7/8	1 11/16	5/8	3 23/32	3/8	3 1/8	3 3/32	8 1/16
4	1 3/4	1 1/4-12	1 1/2-12	2	2 3/8	3/4	1 1/2	5/8	3 15/32	17/32	3	2 31/32	8 3/16
	2	1 1/2-12	1 3/4-12	2 1/4	2 5/8	7/8	1 11/16	5/8	3 23/32	17/32	3 1/8	3 3/32	8 5/16
	2 1/2	1 7/8-12	2 1/4-12	3	3 1/8	1	2 1/16	5/8	4 1/4	21/32	3 3/8	3 11/32	8 9/16
5	2	1 1/2-12	1 3/4-12	2 1/4	2 5/8	7/8	1 11/16	5/8	3 23/32	17/32	3 1/8	3 3/32	9 1/16
	2 1/2	1 7/8-12	2 1/4-12	3	3 1/8	1	2 1/16	5/8	4 1/4	21/32	3 3/8	3 11/32	9 5/16
	3	2 1/4-12	2 3/4-12	3 1/2	3 3/4	1	2 5/8	7/8	5 7/16	17/32	3 3/8	3 11/32	9 5/16
6	3 1/2	2 1/2-12	3 1/4-12	3 1/2	4 1/4	1	3	15/16	5 15/16	17/32	3 3/8	3 11/32	9 5/16
	2 1/2	7/8-12	2 1/4-12	3	3 1/8	1	2 1/16	5/8	4 1/4	21/32	3 1/2	3 19/32	10 9/16
	3	2 1/4-12	2 3/4-12	3 1/2	3 3/4	1	2 5/8	7/8	5 7/16	17/32	3 1/2	3 19/32	10 9/16
	3 1/2	2 1/2-12	3 1/4-12	3 1/2	4 1/4	1	3	15/16	5 15/16	17/32	3 1/2	3 19/32	10 9/16
7	4	3-12	3 3/4-12	4	4 3/4	1	3 3/8	15/16	6 5/16	3/8	3 1/2	3 19/32	10 9/16
	3	2 1/4-12	2 3/4-12	3 1/2	3 3/4	1	2 5/8	7/8	5 7/16	17/32	3 13/16	3 15/16	11 3/4
	3 1/2	2 1/2-12	3 1/4-12	3 1/2	4 1/4	1	3	15/16	5 15/16	17/32	3 13/16	3 15/16	11 3/4
	4	3-12	3 3/4-12	4	4 3/4	1	3 3/8	15/16	6 5/16	3/8	3 13/16	3 15/16	11 3/4
	4 1/2	3 1/4-12	4 1/4-12	4 1/2	5 1/4	1	3 7/8	15/16	6 15/16	3/8	3 13/16	3 15/16	11 3/4
8	5	3 1/2-12	4 3/4-12	5	5 3/4	1	4 1/4	15/16	7 7/16	3/8	3 13/16	3 15/16	11 3/4
	3 1/2	2 1/2-12	3 1/4-12	3 1/2	4 1/4	1	3	15/16	5 15/16	17/32	3 15/16	4 1/16	12 7/8
	4	3-12	3 3/4-12	4	4 3/4	1	3 3/8	15/16	6 5/16	3/8	3 15/16	4 1/16	12 7/8
	4 1/2	3 1/4-12	4 1/4-12	4 1/2	5 1/4	1	3 7/8	15/16	6 15/16	3/8	3 15/16	4 1/16	12 7/8
	5 1/2	4-12	5 1/4-12	5 1/2	6 1/4	1	4 5/8	15/16	7 15/16	3/8	3 15/16	4 1/16	12 7/8

NFPA MS3 - Center-Line Lugs



\* Add stroke to starred dimension

Body Dimensions

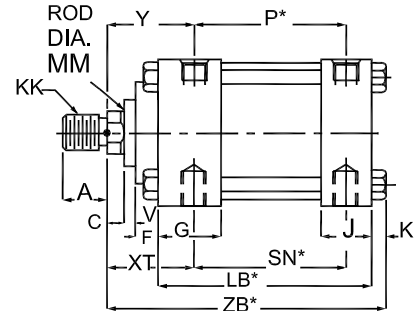
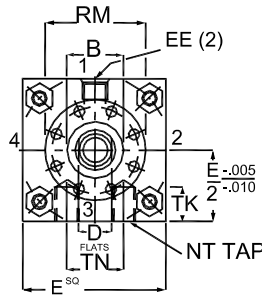
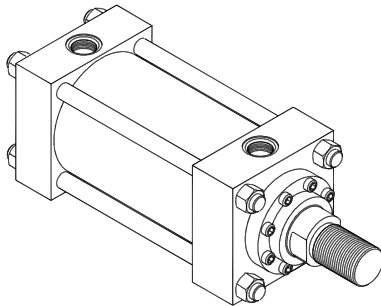
BORE	E	EE (SAE)	EE (NPTF)	G	J	K	LB*	P*	SB	SS*	ST	SU	SW	TS	US
1 1/2	2 1/2	10	1/2	1 3/4	1 1/2	3/8	4 5/8	2 11/16	7/16	3 7/8	1/2	15/16	3/8	3 1/4	4
2	3	10	1/2	1 3/4	1 1/2	7/16	4 5/8	2 11/16	9/16	3 5/8	3/4	1 1/4	1/2	4	5
2 1/2	3 1/2	10	1/2	1 3/4	1 1/2	7/16	4 3/4	2 13/16	13/16	3 3/8	1	1 9/16	11/16	4 7/8	6 1/4
3 1/4	4 1/2	12	3/4	2	1 3/4	9/16	5 1/2	3 9/16	13/16	4 1/8	1	1 9/16	11/16	5 7/8	7 1/4
4	5	12	3/4	2	1 3/4	9/16	5 3/4	3 13/16	1 1/16	4	1 1/4	2	7/8	6 3/4	8 1/2
5	6 1/2	12	3/4	2	1 3/4	13/16	6 1/4	4 5/16	1 1/16	4 1/2	1 1/4	2	7/8	8 1/4	10
6	7 1/2	16	1	2 1/4	2 1/4	15/16	7 3/8	4 11/16	1 5/16	5 1/8	1 1/2	2 1/2	1 1/8	9 3/4	12
7	8 1/2	20	1 1/4	2 3/4	2 3/4	1	8 1/2	5 1/8	1 9/16	5 3/4	1 3/4	2 7/8	1 3/8	11 1/4	14
8	9 1/2	24	1 1/2	3	3	1 1/8	9 1/2	5 7/8	1 9/16	6 3/4	1 3/4	2 7/8	1 3/8	12 1/4	15

Rod End Dimensions

BORE	M M	KK	CC	A	B -.001/ -.003	C	D	F	RM	V	XT	Y	ZB*
1 1/2	5/8	7/16-20	1/2-20	3/4	1 1/8	3/8	1/2	3/8	1 15/16	1/4	2	2 15/32	6
	1	3/4-16	7/8-14	1 1/8	1 1/2	1/2	7/8	3/8	2 3/8	1/2	2 3/8	2 15/32	6 3/8
2	1	3/4-16	7/8-14	1 1/8	1 1/2	1/2	7/8	3/8	2 3/8	1/4	2 3/8	2 15/32	6 7/16
	1 3/8	1-14	1 1/4-12	1 5/8	2	5/8	1 1/8	3/8	2 7/8	3/8	2 5/8	2 23/32	6 11/16
2 1/2	1	3/4-16	7/8-14	1 1/8	1 1/2	1/2	7/8	3/8	2 3/8	3/8	2 3/8	2 15/32	6 9/16
	1 3/8	1-14	1 1/4-12	1 5/8	2	5/8	1 1/8	3/8	2 7/8	3/8	2 5/8	2 23/32	6 13/16
	1 3/4	1 1/4-12	1 1/2-12	2	2 3/8	3/4	1 1/2	5/8	3 15/32	1/2	2 7/8	2 31/32	7 1/16
3 1/4	1 3/8	1-14	1 1/4-12	1 5/8	2	5/8	1 1/8	3/8	2 7/8	13/32	2 3/4	2 23/32	7 11/16
	1 3/4	1 1/4-12	1 1/2-12	2	2 3/8	3/4	1 1/2	5/8	3 15/32	3/8	3	2 31/32	7 15/16
	2	1 1/2-12	1 3/4-12	2 1/4	2 5/8	7/8	1 11/16	5/8	3 23/32	3/8	3 1/8	3 3/32	8 1/16
4	1 3/4	1 1/4-12	1 1/2-12	2	2 3/8	3/4	1 1/2	5/8	3 15/32	17/32	3	2 31/32	8 3/16
	2	1 1/2-12	1 3/4-12	2 1/4	2 5/8	7/8	1 11/16	5/8	3 23/32	17/32	3 1/8	3 3/32	8 5/16
	2 1/2	1 7/8-12	2 1/4-12	3	3 1/8	1	2 1/16	5/8	4 1/4	21/32	3 3/8	3 11/32	8 9/16
5	2	1 1/2-12	1 3/4-12	2 1/4	2 5/8	7/8	1 11/16	5/8	3 23/32	17/32	3 1/8	3 3/32	9 1/16
	2 1/2	1 7/8-12	2 1/4-12	3	3 1/8	1	2 1/16	5/8	4 1/4	21/32	3 3/8	3 11/32	9 5/16
	3	2 1/4-12	2 3/4-12	3 1/2	3 3/4	1	2 5/8	7/8	5 7/16	17/32	3 3/8	3 11/32	9 5/16
	3 1/2	2 1/2-12	3 1/4-12	3 1/2	4 1/4	1	3	15/16	5 15/16	17/32	3 3/8	3 11/32	9 5/16
6	2 1/2	7/8-12	2 1/4-12	3	3 1/8	1	2 1/16	5/8	4 1/4	21/32	3 1/2	3 19/32	10 9/16
	3	2 1/4-12	2 3/4-12	3 1/2	3 3/4	1	2 5/8	7/8	5 7/16	17/32	3 1/2	3 19/32	10 9/16
	3 1/2	2 1/2-12	3 1/4-12	3 1/2	4 1/4	1	3	15/16	5 15/16	17/32	3 1/2	3 19/32	10 9/16
	4	3-12	3 3/4-12	4	4 3/4	1	3 3/8	15/16	6 5/16	3/8	3 1/2	3 19/32	10 9/16
7	3	2 1/4-12	2 3/4-12	3 1/2	3 3/4	1	2 5/8	7/8	5 7/16	17/32	3 13/16	3 15/16	11 3/4
	3 1/2	2 1/2-12	3 1/4-12	3 1/2	4 1/4	1	3	15/16	5 15/16	17/32	3 13/16	3 15/16	11 3/4
	4	3-12	3 3/4-12	4	4 3/4	1	3 3/8	15/16	6 5/16	3/8	3 13/16	3 15/16	11 3/4
	4 1/2	3 1/4-12	4 1/4-12	4 1/2	5 1/4	1	3 7/8	15/16	6 15/16	3/8	3 13/16	3 15/16	11 3/4
	5	3 1/2-12	4 3/4-12	5	5 3/4	1	4 1/4	15/16	7 7/16	3/8	3 13/16	3 15/16	11 3/4
8	3 1/2	2 1/2-12	3 1/4-12	3 1/2	4 1/4	1	3	15/16	5 15/16	17/32	3 15/16	4 1/16	12 7/8
	4	3-12	3 3/4-12	4	4 3/4	1	3 3/8	15/16	6 5/16	3/8	3 15/16	4 1/16	12 7/8
	4 1/2	3 1/4-12	4 1/4-12	4 1/2	5 1/4	1	3 7/8	15/16	6 15/16	3/8	3 15/16	4 1/16	12 7/8
	5	3 1/2-12	4 3/4-12	5	5 3/4	1	4 1/4	15/16	7 7/16	3/8	3 15/16	4 1/16	12 7/8
	5 1/2	4-12	5 1/4-12	5 1/2	6 1/4	1	4 5/8	15/16	7 15/16	3/8	3 15/16	4 1/16	12 7/8



NFPA MS4 - Side Tapped



\* Add stroke to starred dimension

Body Dimensions

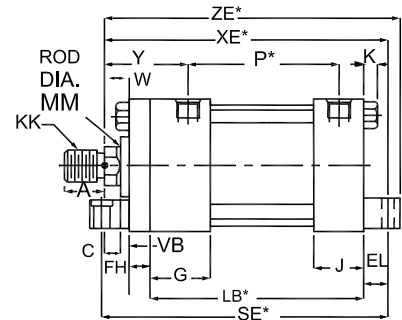
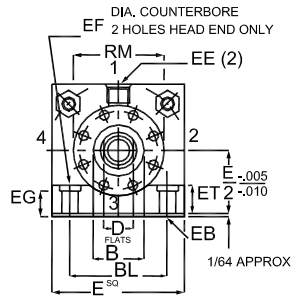
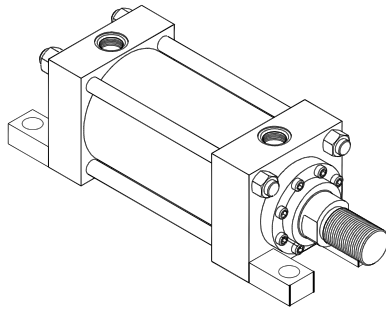
BORE	E	EE (SAE)	EE (NPTF)	G	J	K	LB*	NT	P*	SN*	TK	TN
1 1/2	2 1/2	10	1/2	1 3/4	1 1/2	3/8	4 5/8	3/8-16	2 11/16	2 7/8	9/16	3/4
2	3	10	1/2	1 3/4	1 1/2	7/16	4 5/8	1/2-13	2 11/16	2 7/8	1/2	15/16
2 1/2	3 1/2	10	1/2	1 3/4	1 1/2	7/16	4 3/4	5/8-11	2 13/16	3	13/16	1 5/16
3 1/4	4 1/2	12	3/4	2	1 3/4	9/16	5 1/2	3/4-10	3 9/16	3 1/2	3/4	1 1/2
4	5	12	3/4	2	1 3/4	9/16	5 3/4	1-8	3 13/16	3 3/4	1	2 1/16
5	6 1/2	12	3/4	2	1 3/4	13/16	6 1/4	1-8	4 5/16	4 1/4	1 1/8	2 15/16
6	7 1/2	16	1	2 1/4	2 1/4	15/16	7 3/8	1 1/4-7	4 11/16	5 1/8	1 5/16	3 5/16
7	8 1/2	20	1 1/4	2 3/4	2 3/4	1	8 1/2	1 1/2-6	5 1/8	5 7/8	2 1/8	3 3/4
8	9 1/2	24	1 1/2	3	3	1 1/8	9 1/2	1 1/2-6	5 7/8	6 5/8	1 9/16	4 1/4

Rod End Dimensions

BORE	M M	KK	CC	A	B -.001/ -.003	C	D	F	RM	V	XT	Y	ZB*
1 1/2	5/8	7/16-20	1/2-20	3/4	1 1/8	3/8	1/2	3/8	1 15/16	1/4	2	2 15/32	6
	1	3/4-16	7/8-14	1 1/8	1 1/2	1/2	7/8	3/8	2 3/8	1/2	2 3/8	2 15/32	6 3/8
2	1	3/4-16	7/8-14	1 1/8	1 1/2	1/2	7/8	3/8	2 3/8	1/4	2 3/8	2 15/32	6 7/16
	1 3/8	1-14	1 1/4-12	1 5/8	2	5/8	1 1/8	3/8	2 7/8	3/8	2 5/8	2 23/32	6 11/16
2 1/2	1	3/4-16	7/8-14	1 1/8	1 1/2	1/2	7/8	3/8	2 3/8	3/8	2 3/8	2 15/32	6 9/16
	1 3/8	1-14	1 1/4-12	1 5/8	2	5/8	1 1/8	3/8	2 7/8	3/8	2 5/8	2 23/32	6 13/16
3 1/4	1 3/4	1 1/4-12	1 1/2-12	2	2 3/8	3/4	1 1/2	5/8	3 15/32	1/2	2 7/8	2 31/32	7 1/16
	1 3/8	1-14	1 1/4-12	1 5/8	2	5/8	1 1/8	3/8	2 7/8	13/32	2 3/4	2 23/32	7 11/16
4	1 3/4	1 1/4-12	1 1/2-12	2	2 3/8	3/4	1 1/2	5/8	3 15/32	3/8	3	2 31/32	7 15/16
	2	1 1/2-12	1 3/4-12	2 1/4	2 5/8	7/8	1 11/16	5/8	3 23/32	3/8	3 1/8	3 3/32	8 1/16
5	1 3/4	1 1/4-12	1 1/2-12	2	2 3/8	3/4	1 1/2	5/8	3 15/32	17/32	3	2 31/32	8 3/16
	2	1 1/2-12	1 3/4-12	2 1/4	2 5/8	7/8	1 11/16	5/8	3 23/32	17/32	3 1/8	3 3/32	8 5/16
6	2 1/2	1 7/8-12	2 1/4-12	3	3 1/8	1	2 1/16	5/8	4 1/4	21/32	3 3/8	3 11/32	8 9/16
	2	1 1/2-12	1 3/4-12	2 1/4	2 5/8	7/8	1 11/16	5/8	3 23/32	17/32	3 1/8	3 3/32	9 1/16
7	2 1/2	1 7/8-12	2 1/4-12	3	3 1/8	1	2 1/16	5/8	4 1/4	21/32	3 3/8	3 11/32	9 5/16
	3	2 1/4-12	2 3/4-12	3 1/2	3 3/4	1	2 5/8	7/8	5 7/16	17/32	3 3/8	3 11/32	9 5/16
8	3 1/2	2 1/2-12	3 1/4-12	3 1/2	3 3/4	1	2 5/8	7/8	5 7/16	17/32	3 3/8	3 11/32	9 5/16
	2 1/2	7/8-12	2 1/4-12	3	3 1/8	1	2 1/16	5/8	4 1/4	21/32	3 1/2	3 19/32	10 9/16
9	3	2 1/4-12	2 3/4-12	3 1/2	3 3/4	1	2 5/8	7/8	5 7/16	17/32	3 1/2	3 19/32	10 9/16
	3 1/2	2 1/2-12	3 1/4-12	3 1/2	3 3/4	1	2 5/8	7/8	5 7/16	17/32	3 1/2	3 19/32	10 9/16
10	4	3-12	3 3/4-12	4	4 3/4	1	3 3/8	15/16	6 5/16	3/8	3 1/2	3 19/32	10 9/16
	3	2 1/4-12	2 3/4-12	3 1/2	3 3/4	1	2 5/8	7/8	5 7/16	17/32	3 13/16	3 15/16	11 3/4
11	3 1/2	2 1/2-12	3 1/4-12	3 1/2	3 3/4	1	2 5/8	7/8	5 7/16	17/32	3 13/16	3 15/16	11 3/4
	4	3-12	3 3/4-12	4	4 3/4	1	3 3/8	15/16	6 5/16	3/8	3 13/16	3 15/16	11 3/4
12	4 1/2	3 1/4-12	4 1/4-12	4 1/2	5 1/4	1	3 7/8	15/16	6 15/16	3/8	3 13/16	3 15/16	11 3/4
	5	3 1/2-12	4 3/4-12	5	5 3/4	1	4 1/4	15/16	7 7/16	3/8	3 13/16	3 15/16	11 3/4
13	3 1/2	2 1/2-12	3 1/4-12	3 1/2	4 1/4	1	3	15/16	5 15/16	17/32	3 15/16	4 1/16	12 7/8
	4	3-12	3 3/4-12	4	4 3/4	1	3 3/8	15/16	6 5/16	3/8	3 15/16	4 1/16	12 7/8
14	4 1/2	3 1/4-12	4 1/4-12	4 1/2	5 1/4	1	3 7/8	15/16	6 15/16	3/8	3 15/16	4 1/16	12 7/8
	5	3 1/2-12	4 3/4-12	5	5 3/4	1	4 1/4	15/16	7 7/16	3/8	3 15/16	4 1/16	12 7/8
15	5 1/2	4-12	5 1/4-12	5 1/2	6 1/4	1	4 5/8	15/16	7 15/16	3/8	3 15/16	4 1/16	12 7/8



NFPA MS7 - End Lugs



\* Add stroke to starred dimension

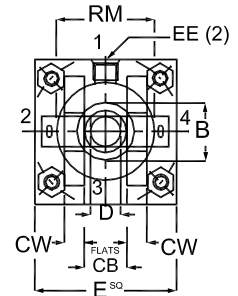
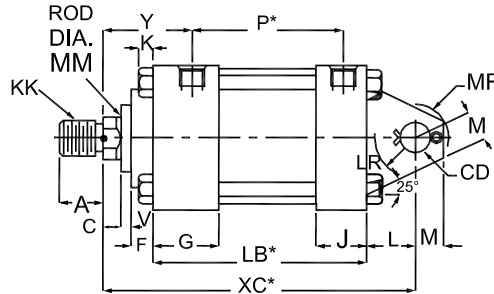
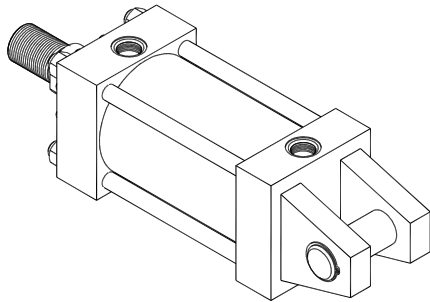
Body Dimensions

BORE	E	EE (SAE)	EE (NPTF)	G	J	K	LB*	P*	BL	EB	EF	EG	EL	ET	FH	SE*
1 1/2	2 1/2	10	1/2	1 3/4	1 1/2	3/8	4 5/8	2 11/16	1.63	7/16	5/8	11/16	7/8	7/8	3/8	6 3/4
2	3	10	1/2	1 3/4	1 1/2	7/16	4 5/8	2 11/16	2.07	9/16	13/16	3/4	15/16	1	5/8	7 1/8
2 1/2	3 1/2	10	1/2	1 3/4	1 1/2	7/16	4 3/4	2 13/16	2.56	9/16	13/16	3/4	15/16	1	5/8	7 1/4
3 1/4	4 1/2	12	3/4	2	1 3/4	9/16	5 1/2	3 9/16	3.27	11/16	1	11/16	1 1/8	1 1/4	3/4	8 1/2
4	5	12	3/4	2	1 3/4	9/16	5 3/4	3 13/16	3.84	11/16	1	7/8	1 1/8	1 1/4	7/8	8 7/8
5	6 1/2	12	3/4	2	1 3/4	13/16	6 1/4	4 5/16	4.95	15/16	1 3/8	1 1/4	1 1/2	1 1/2	7/8	10 1/8
6	7 1/2	16	1	2 1/4	2 1/4	15/16	7 3/8	4 11/16	5.74	1 1/16	1 5/8	1 1/2	1 11/16	1 3/4	1	11 3/4
7	8 1/2	20	1 1/4	2 3/4	2 3/4	1	8 1/2	5 1/8	6.58	1 3/16	1 5/8	1 1/2	1 13/16	2	1	13 1/8
8	9 1/2	24	1 1/2	3	3	1 1/8	9 1/2	5 7/8	7.51	1 5/16	2 3/32	1 3/4	2	2	1	14 1/2

Rod End Dimensions

BORE	M M	KK	CC	A	B -.001/ -.003	C	D	F	RM	VB	W	XE*	Y	ZB*	ZE*
1 1/2	5/8	7/16-20	1/2-20	3/4	1 1/8	3/8	1/2	3/8	1 15/16	1/4	5/8	6 1/2	2 15/32	6	6 7/8
	1	3/4-16	7/8-14	1 1/8	1 1/2	1/2	7/8	3/8	2 3/8	1/2	1	6 7/8	2 15/32	6 3/8	7 1/4
2	1	3/4-16	7/8-14	1 1/8	1 1/2	1/2	7/8	3/8	2 3/8	1/4	3/4	6 15/16	2 15/32	6 7/16	7 7/16
	1 3/8	1-14	1 1/4-12	1 5/8	2	5/8	1 1/8	3/8	2 7/8	3/8	1	7 3/16	2 23/32	6 11/16	7 11/16
2 1/2	1	3/4-16	7/8-14	1 1/8	1 1/2	1/2	7/8	3/8	2 3/8	1/4	3/4	7 1/16	2 15/32	6 9/16	7 9/16
	1 3/8	1-14	1 1/4-12	1 5/8	2	5/8	1 1/8	3/8	2 7/8	3/8	1	7 5/16	2 23/32	6 13/16	7 13/16
3 1/4	1 3/4	1 1/4-12	1 1/2-12	2	2 3/8	3/4	1 1/2	5/8	3 15/32	1/2	1 1/4	7 9/16	2 31/32	7 1/16	8 1/16
	1 3/8	1-14	1 1/4-12	1 5/8	2	5/8	1 1/8	3/8	2 7/8	1/4	7/8	8 1/4	2 23/32	7 11/16	8 7/8
4	1 3/4	1 1/4-12	1 1/2-12	2	2 3/8	3/4	1 1/2	5/8	3 15/32	3/8	1 1/8	8 1/2	2 31/32	7 15/16	9 1/8
	2	1 1/2-12	1 3/4-12	2 1/4	2 5/8	7/8	1 11/16	5/8	3 23/32	3/8	1 1/4	8 5/8	3 3/32	8 1/16	9 1/4
5	1 3/4	1 1/4-12	1 1/2-12	2	2 3/8	3/4	1 1/2	5/8	3 15/32	1/4	1	8 3/4	2 31/32	8 3/16	9 3/8
	2 1/2	1 7/8-12	2 1/4-12	3	3 1/8	1	2 1/16	5/8	4 1/4	3/8	1 3/8	9 1/8	3 11/32	8 9/16	9 3/4
6	2	1 1/2-12	1 3/4-12	2 1/4	2 5/8	7/8	1 11/16	5/8	3 23/32	1/4	1 1/8	9 3/4	3 3/32	9 1/16	10 1/2
	2 1/2	1 7/8-12	2 1/4-12	3	3 1/8	1	2 1/16	5/8	4 1/4	3/8	1 3/8	10	3 11/32	9 5/16	10 3/4
7	3	2 1/4-12	2 3/4-12	3 1/2	3 3/4	1	2 5/8	7/8	5 7/16	3/8	1 3/8	10	3 11/32	9 5/16	10 3/4
	3 1/2	2 1/2-12	3 1/4-12	3 1/2	4 1/4	1	3	15/16	5 15/16	3/8	1 3/8	10	3 11/32	9 5/16	10 3/4
8	2 1/2	7/8-12	2 1/4-12	3	3 1/8	1	2 1/16	5/8	4 1/4	1/4	1 1/4	11 5/16	3 19/32	10 9/16	12 3/16
	3	2 1/4-12	2 3/4-12	3 1/2	3 3/4	1	2 5/8	7/8	5 7/16	1/4	1 1/4	11 5/16	3 19/32	10 9/16	12 3/16
9	3 1/2	2 1/2-12	3 1/4-12	3 1/2	4 1/4	1	3	15/16	5 15/16	1/4	1 1/4	11 5/16	3 19/32	10 9/16	12 3/16
	4	3-12	3 3/4-12	4	4 3/4	1	3 3/8	15/16	6 5/16	1/4	1 1/4	11 5/16	3 19/32	10 9/16	12 3/16
10	3	2 1/4-12	2 3/4-12	3 1/2	3 3/4	1	2 5/8	7/8	5 7/16	1/4	1 1/4	12 9/16	3 15/16	11 3/4	13 9/16
	3 1/2	2 1/2-12	3 1/4-12	3 1/2	4 1/4	1	3	15/16	5 15/16	1/4	1 1/4	12 9/16	3 15/16	11 3/4	13 9/16
11	4 1/2	3 1/4-12	4 1/4-12	4 1/2	5 1/4	1	3 7/8	15/16	6 15/16	1/4	1 1/4	12 9/16	3 15/16	11 3/4	13 9/16
	5	3 1/2-12	4 3/4-12	5	5 3/4	1	4 1/4	15/16	7 7/16	1/4	1 1/4	12 9/16	3 15/16	11 3/4	13 9/16
12	3 1/2	2 1/2-12	3 1/4-12	3 1/2	4 1/4	1	3	15/16	5 15/16	1/4	1 1/4	13 3/4	4 1/16	12 7/8	14 7/8
	4	3-12	3 3/4-12	4	4 3/4	1	3 3/8	15/16	6 5/16	1/4	1 1/4	13 3/4	4 1/16	12 7/8	14 7/8
13	4 1/2	3 1/4-12	4 1/4-12	4 1/2	5 1/4	1	3 7/8	15/16	6 15/16	1/4	1 1/4	13 3/4	4 1/16	12 7/8	14 7/8
	5	3 1/2-12	4 3/4-12	5	5 3/4	1	4 1/4	15/16	7 7/16	1/4	1 1/4	13 3/4	4 1/16	12 7/8	14 7/8
14	5 1/2	4-12	5 1/4-12	5 1/2	6 1/4	1	4 5/8	15/16	7 15/16	1/4	1 1/4	13 3/4	4 1/16	12 7/8	14 7/8

NFPA MP1 - Cap Fixed Clevis



\* Add stroke to starred dimension

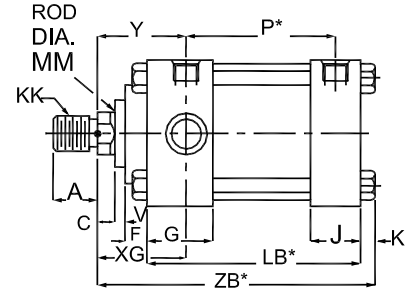
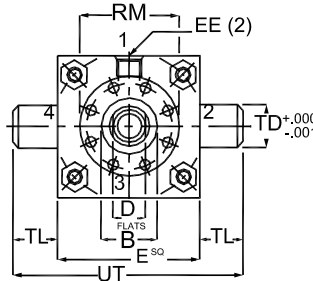
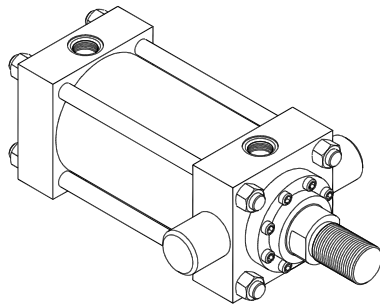
Body Dimensions

BORE	E	EE (SAE)	EE (NPTF)	G	J	K	LB*	P*	CB	CD	CW	L	LR	M	MR
1 1/2	2 1/2	10	1/2	1 3/4	1 1/2	3/8	4 5/8	2 11/16	3/4	1/2	1/2	3/4	9/16	1 1/2	9/16
2	3	10	1/2	1 3/4	1 1/2	7/16	4 5/8	2 11/16	1 1/4	3/4	5/8	1 1/4	1 1/16	3/4	1 1/16
2 1/2	3 1/2	10	1/2	1 3/4	1 1/2	7/16	4 3/4	2 13/16	1 1/4	3/4	5/8	1 1/4	1 1/16	3/4	1 1/16
3 1/4	4 1/2	12	3/4	2	1 3/4	9/16	5 1/2	3 9/16	1 1/2	1	3/4	1 1/2	1 1/4	1	1 1/8
4	5	12	3/4	2	1 3/4	9/16	5 3/4	3 13/16	2	1 3/8	1	2 1/8	1 7/8	1 3/8	1 3/4
5	6 1/2	12	3/4	2	1 3/4	13/16	6 1/4	4 5/16	2 1/2	1 3/4	1 1/4	2 1/4	1 15/16	1 3/4	1 7/8
6	7 1/2	16	1	2 1/4	2 1/4	15/16	7 3/8	4 11/16	2 1/2	2	1 1/4	2 1/2	2 1/16	2	2 1/8
7	8 1/2	20	1 1/4	2 3/4	2 3/4	1	8 1/2	5 1/8	3	2 1/2	1 1/2	3	2 9/16	2 1/2	2 1/2
8	9 1/2	24	1 1/2	3	3	1 1/8	9 1/2	5 7/8	3	3	1 1/2	3 1/4	2 11/16	2 3/4	2 3/4

Rod End Dimensions

BORE	M M	KK	CC	A	B -.001/ -.003	C	D	F	RM	V	Y	XC*
1 1/2	5/8	7/16-20	1/2-20	3/4	1 1/8	3/8	1/2	3/8	1 15/16	1 1/4	2 15/32	6 3/8
	1	3/4-16	7/8-14	1 1/8	1 1/2	1/2	7/8	3/8	2 3/8	1/2	2 15/32	6 3/4
2	1	3/4-16	7/8-14	1 1/8	1 1/2	1/2	7/8	3/8	2 3/8	1 1/4	2 15/32	7 1/4
	1 3/8	1-14	1 1/4-12	1 5/8	2	5/8	1 1/8	3/8	2 7/8	3/8	2 23/32	7 1/2
2 1/2	1	3/4-16	7/8-14	1 1/8	1 1/2	1/2	7/8	3/8	2 3/8	3/8	2 15/32	7 3/8
	1 3/8	1-14	1 1/4-12	1 5/8	2	5/8	1 1/8	3/8	2 7/8	3/8	2 23/32	7 5/8
3 1/4	1 3/4	1 1/4-12	1 1/2-12	2	2 3/8	3/4	1 1/2	5/8	3 15/32	1/2	2 31/32	7 7/8
	1 3/8	1-14	1 1/4-12	1 5/8	2	5/8	1 1/8	3/8	2 7/8	13/32	2 23/32	8 5/8
4	1 3/4	1 1/4-12	1 1/2-12	2	2 3/8	3/4	1 1/2	5/8	3 15/32	3/8	2 31/32	8 7/8
	2	1 1/2-12	1 3/4-12	2 1/4	2 5/8	7/8	1 11/16	5/8	3 23/32	17/32	2 31/32	9 3/4
5	2 1/2	1 7/8-12	2 1/4-12	3	3 1/8	1	2 1/16	5/8	4 1/4	21/32	3 11/32	10 1/8
	2	1 1/2-12	1 3/4-12	2 1/4	2 5/8	7/8	1 11/16	5/8	3 23/32	17/32	3 3/32	10 1/2
6	2 1/2	7/8-12	2 1/4-12	3	3 1/8	1	2 1/16	5/8	4 1/4	21/32	3 19/32	12 1/8
	2 1/2	1 7/8-12	2 1/4-12	3	3 1/8	1	2 1/16	5/8	4 1/4	21/32	3 11/32	10 3/4
7	3	2 1/4-12	2 3/4-12	3 1/2	3 3/4	1	2 5/8	7/8	5 7/16	17/32	3 11/32	10 3/4
	3 1/2	2 1/2-12	3 1/4-12	3 1/2	4 1/4	1	3	15/16	5 15/16	17/32	3 11/32	10 3/4
8	2 1/2	7/8-12	2 1/4-12	3	3 1/8	1	2 1/16	5/8	4 1/4	21/32	3 19/32	12 1/8
	3	2 1/4-12	2 3/4-12	3 1/2	3 3/4	1	2 5/8	7/8	5 7/16	17/32	3 19/32	12 1/8
9	3 1/2	2 1/2-12	3 1/4-12	3 1/2	4 1/4	1	3	15/16	5 15/16	17/32	3 15/16	13 3/4
	4	3-12	3 3/4-12	4	4 3/4	1	3 3/8	15/16	6 5/16	3/8	3 15/16	13 3/4
10	4 1/2	3 1/4-12	4 1/4-12	4 1/2	5 1/4	1	3 7/8	15/16	6 15/16	3/8	3 15/16	13 3/4
	5	3 1/2-12	4 3/4-12	5	5 3/4	1	4 1/4	15/16	7 7/16	3/8	3 15/16	13 3/4
11	3 1/2	2 1/2-12	3 1/4-12	3 1/2	4 1/4	1	3	15/16	5 15/16	17/32	4 1/16	15
	4	3-12	3 3/4-12	4	4 3/4	1	3 3/8	15/16	6 5/16	3/8	4 1/16	15
12	4 1/2	3 1/4-12	4 1/4-12	4 1/2	5 1/4	1	3 7/8	15/16	6 15/16	3/8	4 1/16	15
	5	3 1/2-12	4 3/4-12	5	5 3/4	1	4 1/4	15/16	7 7/16	3/8	4 1/16	15
13	5 1/2	4-12	5 1/4-12	5 1/2	6 1/4	1	4 5/8	15/16	7 15/16	3/8	4 1/16	15

NFPA MT1 - Head Trunnion



\* Add stroke to starred dimension

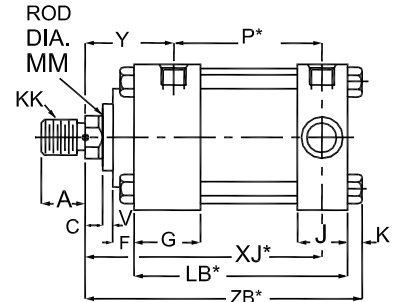
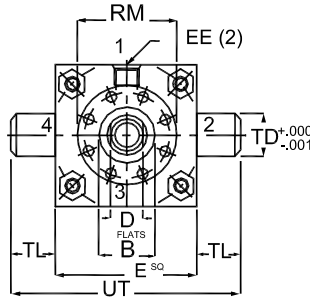
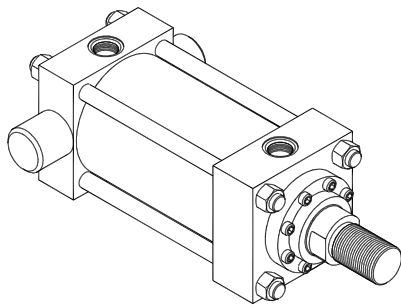
Body Dimensions

BORE	E	EE (SAE)	EE (NPTF)	G	J	K	LB*	P*	TD	TL	UT
1 1/2	2 1/2	10	1/2	1 3/4	1 1/2	3/8	4 5/8	2 11/16	1	1	4 1/2
2	3	10	1/2	1 3/4	1 1/2	7/16	4 5/8	2 11/16	1 3/8	1 3/8	5 3/4
2 1/2	3 1/2	10	1/2	1 3/4	1 1/2	7/16	4 3/4	2 13/16	1 3/8	1 3/8	6 1/4
3 1/4	4 1/2	12	3/4	2	1 3/4	9/16	5 1/2	3 9/16	1 3/4	1 3/4	8
4	5	12	3/4	2	1 3/4	9/16	5 3/4	3 13/16	1 3/4	1 3/4	8 1/2
5	6 1/2	12	3/4	2	1 3/4	13/16	6 1/4	4 5/16	1 3/4	1 3/4	10
6	7 1/2	16	1	2 1/4	2 1/4	15/16	7 3/8	4 11/16	2	2	11 1/2
7	8 1/2	20	1 1/4	2 3/4	2 3/4	1	8 1/2	5 1/8	2 1/2	2 1/2	13 1/2
8	9 1/2	24	1 1/2	3	3	1 1/8	9 1/2	5 7/8	3	3	15 1/2

Rod End Dimensions

BORE	M M	KK	CC	A	B -.001/ -.003	C	D	F	RM	V	XG	Y	ZB*
1 1/2	5/8	7/16-20	1/2-20	3/4	1 1/8	3/8	1/2	3/8	1 15/16	1/4	1 7/8	2 15/32	6
	1	3/4-16	7/8-14	1 1/8	1 1/2	1/2	7/8	3/8	2 3/8	1/2	2 1/4	2 15/32	6 3/8
2	1	3/4-16	7/8-14	1 1/8	1 1/2	1/2	7/8	3/8	2 3/8	1/4	2 1/4	2 15/32	6 7/16
	1 3/8	1-14	1 1/4-12	1 5/8	2	5/8	1 1/8	3/8	2 7/8	3/8	2 1/2	2 23/32	6 11/16
2 1/2	1	3/4-16	7/8-14	1 1/8	1 1/2	1/2	7/8	3/8	2 3/8	3/8	2 1/4	2 15/32	6 9/16
	1 3/8	1-14	1 1/4-12	1 5/8	2	5/8	1 1/8	3/8	2 7/8	3/8	2 1/2	2 23/32	6 13/16
3 1/4	1 3/4	1 1/4-12	1 1/2-12	2	2 3/8	3/4	1 1/2	5/8	3 15/32	1/2	2 3/4	2 31/32	7 1/16
	1 3/8	1-14	1 1/4-12	1 5/8	2	5/8	1 1/8	3/8	2 7/8	13/32	2 5/8	2 23/32	7 11/16
4	1 3/4	1 1/4-12	1 1/2-12	2	2 3/8	3/4	1 1/2	5/8	3 15/32	3/8	2 7/8	2 31/32	7 15/16
	2	1 1/2-12	1 3/4-12	2 1/4	2 5/8	7/8	1 11/16	5/8	3 23/32	17/32	3	3 3/32	8 1/16
5	1 3/4	1 1/4-12	1 1/2-12	2	2 3/8	3/4	1 1/2	5/8	3 15/32	17/32	2 7/8	2 31/32	8 3/16
	2 1/2	1 7/8-12	2 1/4-12	3	3 1/8	1	2 1/16	5/8	4 1/4	21/32	3 1/4	3 11/32	8 9/16
6	2	1 1/2-12	1 3/4-12	2 1/4	2 5/8	7/8	1 11/16	5/8	3 23/32	17/32	3	3 3/32	9 1/16
	2 1/2	1 7/8-12	2 1/4-12	3	3 1/8	1	2 1/16	5/8	4 1/4	21/32	3 1/4	3 11/32	9 5/16
7	3	2 1/4-12	2 3/4-12	3 1/2	3 3/4	1	2 5/8	7/8	5 7/16	17/32	3 1/4	3 11/32	9 5/16
	3 1/2	2 1/2-12	3 1/4-12	3 1/2	4 1/4	1	3	15/16	5 15/16	17/32	3 1/4	3 11/32	9 5/16
8	2 1/2	7/8-12	2 1/4-12	3	3 1/8	1	2 1/16	5/8	4 1/4	21/32	3 3/8	3 19/32	10 9/16
	3	2 1/4-12	2 3/4-12	3 1/2	3 3/4	1	2 5/8	7/8	5 7/16	17/32	3 3/8	3 19/32	10 9/16
9	3 1/2	2 1/2-12	3 1/4-12	3 1/2	4 1/4	1	3	15/16	5 15/16	17/32	3 3/8	3 19/32	10 9/16
	4	3-12	3 3/4-12	4	4 3/4	1	3 3/8	15/16	6 5/16	3/8	3 3/8	3 19/32	10 9/16
10	3	2 1/4-12	2 3/4-12	3 1/2	3 3/4	1	2 5/8	7/8	5 7/16	17/32	3 5/8	3 15/32	11 3/4
	3 1/2	2 1/2-12	3 1/4-12	3 1/2	4 1/4	1	3	15/16	5 15/16	17/32	3 5/8	3 15/16	11 3/4
11	4	3-12	3 3/4-12	4	4 3/4	1	3 3/8	15/16	6 5/16	3/8	3 5/8	3 15/16	11 3/4
	4 1/2	3 1/4-12	4 1/4-12	4 1/2	5 1/4	1	3 7/8	15/16	6 15/16	3/8	3 5/8	3 15/16	11 3/4
12	5	3 1/2-12	4 3/4-12	5	5 3/4	1	4 1/4	15/16	7 7/16	3/8	3 5/8	3 15/16	11 3/4
	3 1/2	2 1/2-12	3 1/4-12	3 1/2	4 1/4	1	3	15/16	5 15/16	17/32	3 3/4	4 1/16	12 7/8
13	4	3-12	3 3/4-12	4	4 3/4	1	3 3/8	15/16	6 5/16	3/8	3 3/4	4 1/16	12 7/8
	4 1/2	3 1/4-12	4 1/4-12	4 1/2	5 1/4	1	3 7/8	15/16	6 15/16	3/8	3 3/4	4 1/16	12 7/8
14	5	3 1/2-12	4 3/4-12	5	5 3/4	1	4 1/4	15/16	7 7/16	3/8	3 3/4	4 1/16	12 7/8
	5 1/2	4-12	5 1/4-12	5 1/2	6 1/4	1	4 5/8	15/16	7 15/16	3/8	3 3/4	4 1/16	12 7/8

NFPA MT2 - Cap Trunnion



\* Add stroke to starred dimension

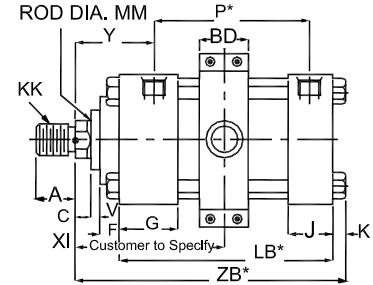
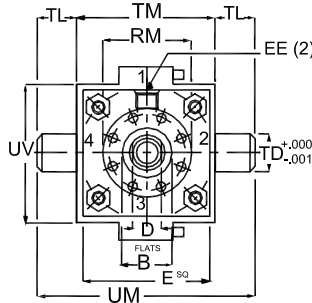
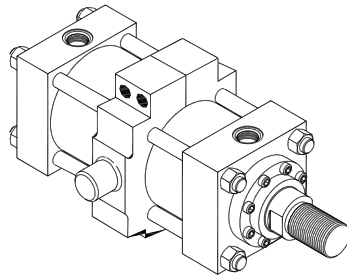
Body Dimensions

BORE	E	EE (SAE)	EE (NPTF)	G	J	K	LB*	P*	TD	TL	UT
1 1/2	2 1/2	10	1/2	1 3/4	1 1/2	3/8	4 5/8	2 11/16	1	1	4 1/2
2	3	10	1/2	1 3/4	1 1/2	7/16	4 5/8	2 11/16	1 3/8	1 3/8	5 3/4
2 1/2	3 1/2	10	1/2	1 3/4	1 1/2	7/16	4 3/4	2 13/16	1 3/8	1 3/8	6 1/4
3 1/4	4 1/2	12	3/4	2	1 3/4	9/16	5 1/2	3 9/16	1 3/4	1 3/4	8
4	5	12	3/4	2	1 3/4	9/16	5 3/4	3 13/16	1 3/4	1 3/4	8 1/2
5	6 1/2	12	3/4	2	1 3/4	13/16	6 1/4	4 5/16	1 3/4	1 3/4	10
6	7 1/2	16	1	2 1/4	2 1/4	15/16	7 3/8	4 11/16	2	2	11 1/2
7	8 1/2	20	1 1/4	2 3/4	2 3/4	1	8 1/2	5 1/8	2 1/2	2 1/2	13 1/2
8	9 1/2	24	1 1/2	3	3	1 1/8	9 1/2	5 7/8	3	3	15 1/2

Rod End Dimensions

BORE	M M	KK	CC	A	B -.001/ -.003	C	D	F	RM	V	XJ*	Y	ZB*
1 1/2	5/8	7/16-20	1/2-20	3/4	1 1/8	3/8	1/2	3/8	1 15/16	1/4	4 7/8	2 15/32	6
	1	3/4-16	7/8-14	1 1/8	1 1/2	1/2	7/8	3/8	2 3/8	1/2	5 1/4	2 15/32	6 3/8
2	1	3/4-16	7/8-14	1 1/8	1 1/2	1/2	7/8	3/8	2 3/8	1/4	5 1/4	2 15/32	6 7/16
	1 3/8	1-14	1 1/4-12	1 5/8	2	5/8	1 1/8	3/8	2 7/8	3/8	5 1/2	2 23/32	6 11/16
2 1/2	1	3/4-16	7/8-14	1 1/8	1 1/2	1/2	7/8	3/8	2 3/8	3/8	5 3/8	2 15/32	6 9/16
	1 3/8	1-14	1 1/4-12	1 5/8	2	5/8	1 1/8	3/8	2 7/8	3/8	5 5/8	2 23/32	6 13/16
3 1/4	1 3/4	1-14	1 1/4-12	1 5/8	2	5/8	1 1/8	3/8	2 7/8	13/32	6 1/4	2 23/32	7 11/16
	1 3/4	1 1/4-12	1 1/2-12	2	2 3/8	3/4	1 1/2	5/8	3 15/32	1/2	5 7/8	2 31/32	7 1/16
4	2	1 1/2-12	1 3/4-12	2 1/4	2 5/8	7/8	1 11/16	5/8	3 23/32	3/8	6 5/8	3 3/32	8 1/16
	2 1/2	1 7/8-12	2 1/4-12	3	3 1/8	1	2 1/16	5/8	4 1/4	21/32	7 1/8	3 11/32	8 9/16
5	2	1 1/2-12	1 3/4-12	2 1/4	2 5/8	7/8	1 11/16	5/8	3 23/32	17/32	7 3/8	3 3/32	9 1/16
	2 1/2	1 7/8-12	2 1/4-12	3	3 1/8	1	2 1/16	5/8	4 1/4	21/32	7 5/8	3 11/32	9 5/16
6	3	2 1/4-12	2 3/4-12	3 1/2	3 3/4	1	2 5/8	7/8	5 7/16	17/32	7 5/8	3 11/32	9 5/16
	3 1/2	2 1/2-12	3 1/4-12	3 1/2	4 1/4	1	3	15/16	5 15/16	17/32	7 5/8	3 11/32	9 5/16
7	2 1/2	7/8-12	2 1/4-12	3	3 1/8	1	2 1/16	5/8	4 1/4	21/32	8 3/8	3 19/32	10 9/16
	3	2 1/4-12	2 3/4-12	3 1/2	3 3/4	1	2 5/8	7/8	5 7/16	17/32	8 3/8	3 19/32	10 9/16
8	3 1/2	2 1/2-12	3 1/4-12	3 1/2	4 1/4	1	3	15/16	5 15/16	17/32	8 3/8	3 19/32	10 9/16
	4	3-12	3 3/4-12	4	4 3/4	1	3 3/8	15/16	6 5/16	3/8	8 3/8	3 19/32	10 9/16
7	3	2 1/4-12	2 3/4-12	3 1/2	3 3/4	1	2 5/8	7/8	5 7/16	17/32	9 3/8	3 15/32	11 3/4
	3 1/2	2 1/2-12	3 1/4-12	3 1/2	4 1/4	1	3	15/16	5 15/16	17/32	9 3/8	3 15/16	11 3/4
8	4	3-12	3 3/4-12	4	4 3/4	1	3 3/8	15/16	6 5/16	3/8	9 3/8	3 15/16	11 3/4
	4 1/2	3 1/4-12	4 1/4-12	4 1/2	5 1/4	1	4 1/4	15/16	7 7/16	3/8	9 3/8	3 15/16	11 3/4
8	3 1/2	2 1/2-12	3 1/4-12	3 1/2	4 1/4	1	3	15/16	5 15/16	17/32	10 1/4	4 1/16	12 7/8
	4	3-12	3 3/4-12	4	4 3/4	1	3 3/8	15/16	6 5/16	3/8	10 1/4	4 1/16	12 7/8
8	4 1/2	3 1/4-12	4 1/4-12	4 1/2	5 1/4	1	3 7/8	15/16	6 15/16	3/8	10 1/4	4 1/16	12 7/8
	5	3 1/2-12	4 3/4-12	5	5 3/4	1	4 1/4	15/16	7 7/16	3/8	10 1/4	4 1/16	12 7/8
8	5 1/2	4-12	5 1/4-12	5 1/2	6 1/4	1	4 5/8	15/16	7 15/16	3/8	10 1/4	4 1/16	12 7/8

NFPA MT4 - Intermediate Trunnion



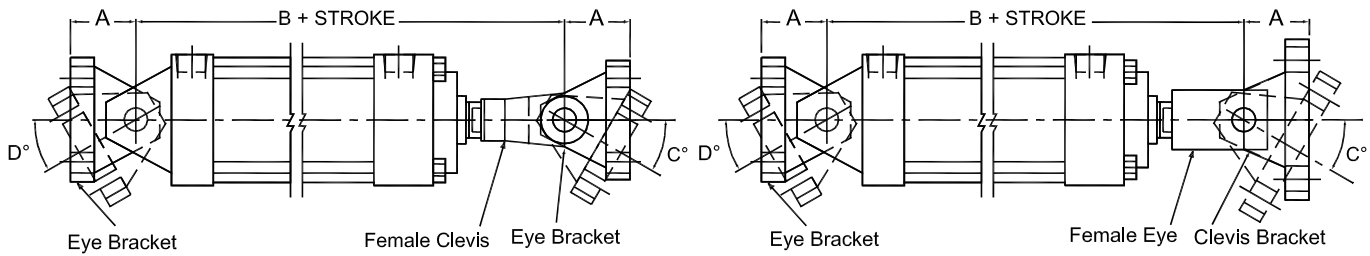
\* Add stroke to starred dimension

Body Dimensions

BORE	E	EE (SAE)	EE (NPTF)	G	J	K	LB*	P*	BD	TD	TM
1 1/2	2 1/2	10	1/2	1 3/4	1 1/2	3/8	4 5/8	2 11/16	1 1/2	1	3
2	3	10	1/2	1 3/4	1 1/2	7/16	4 5/8	2 11/16	1 1/2	1 3/8	3 1/2
2 1/2	3 1/2	10	1/2	1 3/4	1 1/2	7/16	4 3/4	2 13/16	1 1/2	1 3/8	4
3 1/4	4 1/2	12	3/4	2	1 3/4	9/16	5 1/2	3 9/16	2	1 3/4	5
4	5	12	3/4	2	1 3/4	9/16	5 3/4	3 13/16	2	1 3/4	5 1/2
5	6 1/2	12	3/4	2	1 3/4	13/16	6 1/4	4 5/16	2 1/2	1 3/4	7
6	7 1/2	16	1	2 1/4	2 1/4	15/16	7 3/8	4 11/16	3	2	8 1/2
7	8 1/2	20	1 1/4	2 3/4	2 3/4	1	8 1/2	5 1/8	3	2 1/2	9 3/4
8	9 1/2	24	1 1/2	3	3	1 1/8	9 1/2	5 7/8	3 1/2	3	11

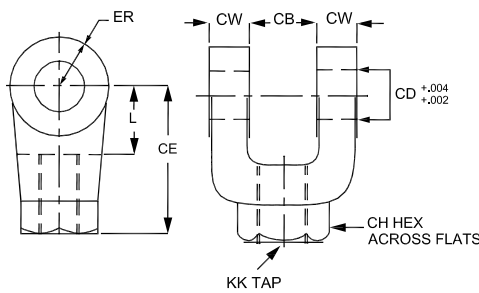
Rod End Dimensions

BORE	M M	KK	CC	A	B -.001/ -.003	C	D	F	RM	V	Y	ZB*
1 1/2	5/8	7/16-20	1/2-20	3/4	1 1/8	3/8	1/2	3/8	1 15/16	1/4	2 15/32	6
	1	3/4-16	7/8-14	1 1/8	1 1/2	1/2	7/8	3/8	2 3/8	1/2	2 15/32	6 3/8
2	1	3/4-16	7/8-14	1 1/8	1 1/2	1/2	7/8	3/8	2 3/8	1/4	2 15/32	6 7/16
	1 3/8	1-14	1 1/4-12	1 5/8	2	5/8	1 1/8	3/8	2 7/8	3/8	2 23/32	6 11/16
2 1/2	1	3/4-16	7/8-14	1 1/8	1 1/2	1/2	7/8	3/8	2 3/8	3/8	2 15/32	6 9/16
	1 3/8	1-14	1 1/4-12	1 5/8	2	5/8	1 1/8	3/8	2 7/8	3/8	2 23/32	6 13/16
	1 3/4	1 1/4-12	1 1/2-12	2	2 3/8	3/4	1 1/2	5/8	3 15/32	1/2	2 31/32	7 1/16
3 1/4	1 3/8	1-14	1 1/4-12	1 5/8	2	5/8	1 1/8	3/8	2 7/8	13/32	2 23/32	7 11/16
	1 3/4	1 1/4-12	1 1/2-12	2	2 3/8	3/4	1 1/2	5/8	3 15/32	3/8	2 31/32	7 15/16
	2	1 1/2-12	1 3/4-12	2 1/4	2 5/8	7/8	1 11/16	5/8	3 23/32	3/8	3 3/32	8 1/16
4	1 3/4	1 1/4-12	1 1/2-12	2	2 3/8	3/4	1 1/2	5/8	3 15/32	17/32	2 31/32	8 3/16
	2	1 1/2-12	1 3/4-12	2 1/4	2 5/8	7/8	1 11/16	5/8	3 23/32	17/32	3 3/32	8 5/16
	2 1/2	1 7/8-12	2 1/4-12	3	3 1/8	1	2 1/16	5/8	4 1/4	21/32	3 11/32	8 9/16
5	2	1 1/2-12	1 3/4-12	2 1/4	2 5/8	7/8	1 11/16	5/8	3 23/32	17/32	3 3/32	9 1/16
	2 1/2	1 7/8-12	2 1/4-12	3	3 1/8	1	2 1/16	5/8	4 1/4	21/32	3 11/32	9 5/16
	3	2 1/4-12	2 3/4-12	3 1/2	3 3/4	1	2 5/8	7/8	5 7/16	17/32	3 11/32	9 5/16
6	3 1/2	2 1/2-12	3 1/4-12	3 1/2	4 1/4	1	3	15/16	5 15/16	17/32	3 11/32	9 5/16
	2 1/2	7/8-12	2 1/4-12	3	3 1/8	1	2 1/16	5/8	4 1/4	21/32	3 19/32	10 9/16
	3	2 1/4-12	2 3/4-12	3 1/2	3 3/4	1	2 5/8	7/8	5 7/16	17/32	3 19/32	10 9/16
7	3 1/2	2 1/2-12	3 1/4-12	3 1/2	4 1/4	1	3	15/16	5 15/16	17/32	3 19/32	10 9/16
	4	3-12	3 3/4-12	4	4 3/4	1	3 3/8	15/16	6 5/16	3/8	3 19/32	10 9/16
	3	2 1/4-12	2 3/4-12	3 1/2	3 3/4	1	2 5/8	7/8	5 7/16	17/32	3 15/32	11 3/4
	3 1/2	2 1/2-12	3 1/4-12	3 1/2	4 1/4	1	3	15/16	5 15/16	17/32	3 15/16	11 3/4
8	4 1/2	3 1/4-12	4 1/4-12	4 1/2	5 1/4	1	3 7/8	15/16	6 15/16	3/8	3 15/16	11 3/4
	5	3 1/2-12	4 3/4-12	5	5 3/4	1	4 1/4	15/16	7 7/16	3/8	3 15/16	11 3/4
	3 1/2	2 1/2-12	3 1/4-12	3 1/2	4 1/4	1	3	15/16	5 15/16	17/32	4 1/16	12 7/8
8	4	3-12	3 3/4-12	4	4 3/4	1	3 3/8	15/16	6 5/16	3/8	4 1/16	12 7/8
	4 1/2	3 1/4-12	4 1/4-12	4 1/2	5 1/4	1	3 7/8	15/16	6 15/16	3/8	4 1/16	12 7/8
	5	3 1/2-12	4 3/4-12	5	5 3/4	1	4 1/4	15/16	7 7/16	3/8	4 1/16	12 7/8
8	5 1/2	4-12	5 1/4-12	5 1/2	6 1/4	1	4 5/8	15/16	7 15/16	3/8	4 1/16	12 7/8



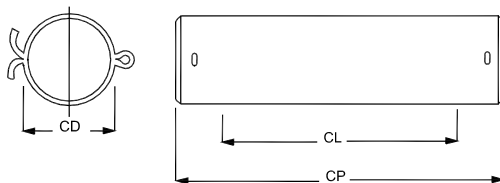
BORE	A	B	Eye Bracket	Female Clevis	Clevis Bracket	Female Eye	Pivot Pin	C°	D°
1 1/2	1 1/8	7 7/8	EB -1003	FC -1005	CB -1003	FE -1003	PP -1003	90°	60°
2	1 7/8	9 5/8	EB -1004	FC -1008	CB -1004	FE -1004	PP -1004	90°	65°
2 1/2	1 7/8	9 3/4	EB -1004	FC -1008	CB -1005	FE -1004	PP -1004	90°	65°
3 1/4	2 3/8	11 3/4	EB -1006	FC -1011	CB -1006	FE -1006	PP -1065	80°	65°
4	3	13 7/8	EB -1008	FC -1014	CB -1008	FE -1008	PP -1008	90°	70°
5	3 3/8	15	EB -1010	FC -1016	CB -1010	FE -1010	PP -1010	75°	65°
6	4	17 5/8	EB -1012	FC -1020	CB -1012	FE -1012	PP -1012	75°	65°
7	4	20 1/4	EB -1014	FC -1024	CB -1014	FE -1014	PP -1014	70°	65°
8	4 1/4	21 3/4	EB -1016	FC -1028	CB -1016	FE -1016	PP -1016	70°	65°
10	5 11/16	27 9/16	EB -1020	FC -1036	CB -1020	FE -1020	PP -1020	70°	60°
12	6 7/16	32 3/16	EB -1024	FC -1044	CB -1024	FE -1024	PP -1024	65°	60°

Female Clevis (FC)



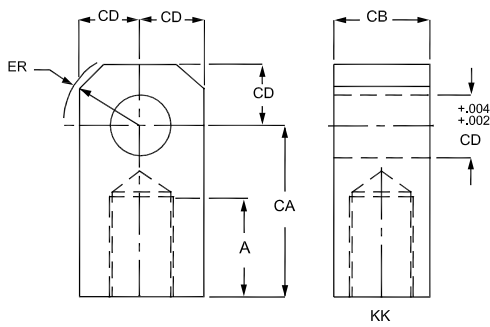
Part No.	CB	CD	CE	CH	CW	ER	KK	L
FC -1005	3/4	1/2	1 1/2	7/8	1/2	1/2	7/16-20	3/4
FC -1008	1 1/4	3/4	2 3/8	1 3/8	5/8	3/4	3/4-16	1 1/4
FC -1011	1 1/2	1	3 1/8	1 5/8	3/4	1	1-14	1 1/2
FC -1014	2	1 3/8	4 1/8	2	1	1 3/8	1 1/4-12	2 1/8
FC -1016	2 1/2	1 3/4	4 1/2	2 3/8	1 1/4	1 3/4	1 1/2-12	2 1/4
FC -1020	2 1/2	2	5 1/2	2 15/16	1 1/4	2	1 7/8-12	2 1/2
FC -1024	3	2 1/2	6 1/2	3 1/2	1 1/2	2 1/2	2 1/4-12	3
FC -1028	3	3	6 3/4	3 7/8	1 1/2	2 3/4	2 1/2-12	3 1/4
FC -1036	4	3 1/2	8 1/2	5	2	3 1/2	3 1/4-12	4
FC -1044	4 1/2	4	10	6 1/8	2 1/4	4	4-12	4 1/2

Pivot Pin (PP)



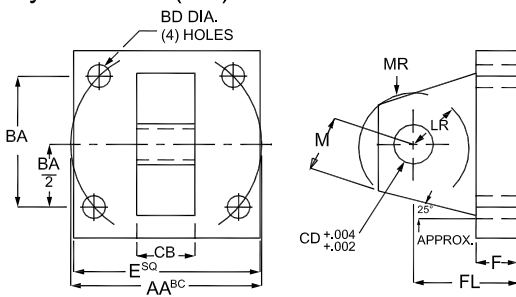
Part No.	CD	CL	CP
PP -1003	1/2	1 3/4	2 3/8
PP -1004	3/4	2 1/2	3 1/8
PP -1006	1	3	3 3/4
PP -1008	1 3/8	4	4 3/4
PP -1010	1 3/4	5	6 1/32
PP -1012	2	5	6 1/32
PP -1014	2 1/2	6	7 1/32
PP -1016	3	6	7 1/8
PP -1020	3 1/2	8	9 5/8
PP -1024	4	9	10 5/8

Female Eye (FE)

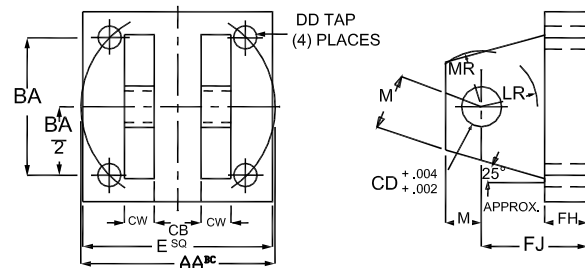


Part No.	A	CA	CB	CD	ER	KK
FE-1002	3/4	1 1/2	7/16	7/16	19/32	5/16-24
FE-1003	3/4	1 1/2	3/4	1/2	5/8	7/16-20
FE-1004	1 1/8	2 1/16	1 1/4	3/4	7/8	3/4-16
FE-1006	1 5/8	2 13/16	1 1/2	1	1 3/16	1-14
FE-1008	2	3 7/16	2	1 3/8	1 9/16	1 1/4-12
FE-1010	2 1/4	4	2 1/2	1 3/4	2	1 1/2-12
FE-1012	3	5	2 1/2	2	2 1/4	1 7/8-12
FE-1014	3 1/2	5 13/16	3	2 1/2	2 13/16	2 1/4-12
FE-1016	3 1/2	6 1/8	3	3	3 1/4	2 1/2-12
FE-1020	4 1/2	7 5/8	4	3 1/2	3 7/8	3 1/4-12
FE-1024	5 1/2	9 1/8	4 1/2	4	4 7/16	4-12

Eye Bracket (EB)



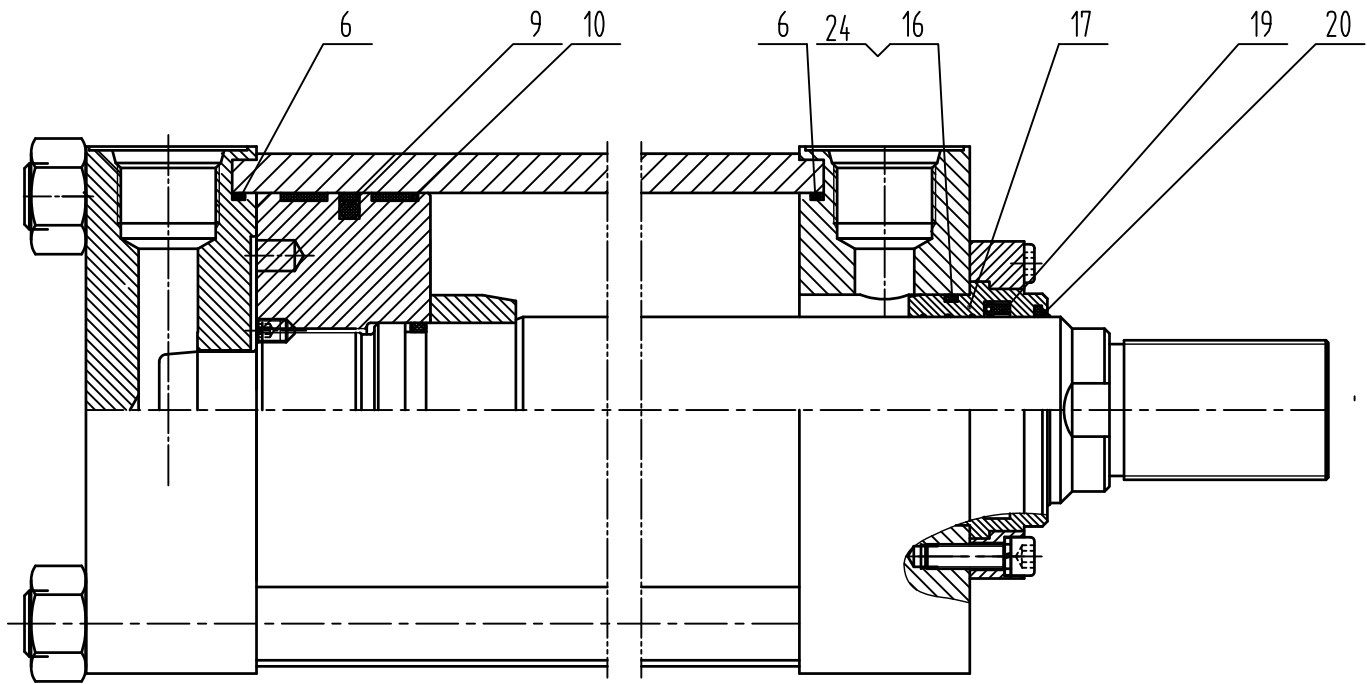
Clevis Bracket (CB)



Part No.	AA	BA	BD	CB	CD	E	F	FL	LR	M	MR
EB -1003	2.3	1 5/8	13/32	3/4	1/2	2 1/2	3/8	1 1/8	1/2	1/2	9/16
EB -1004	3.6	2 9/16	17/32	1 1/4	3/4	3 1/2	5/8	1 7/8	1	3/4	1 1/16
EB -1006	4.6	3 1/4	21/32	1 1/2	1	4 1/2	7/8	2 3/8	1	1	1 1/8
EB -1008	5.4	3 13/16	21/32	2	1 3/8	5	7/8	3	1 1/8	1 3/8	1 3/4
EB -1010	7.0	4 15/16	29/32	2 1/2	1 3/4	6 1/2	1 1/8	3 3/8	1 3/4	1 3/4	1 7/8
EB -1012	8.1	5 3/4	1 1/32	2 1/2	2	7 1/2	1 1/2	4	2	2	2 1/8
EB -1014	9.3	6 19/32	1 5/32	3	2 1/2	8 1/2	13/4	4 3/4	2 1/2	2 1/2	2 1/2
EB -1016	10.6	7 1/2	1 9/32	3	3	9 1/2	2	5 1/4	2 3/4	2 3/4	2 3/4
EB -1020	13.6	9 5/8	1 25/32	4	3 1/2	12 5/8	1 11/16	5 11/16	3 1/2	3 1/2	3 1/2
EB -1024	16.2	11 1/2	2 1/32	4 1/2	4	14 7/8	1 15/16	6 7/16	3 7/8	4	4

Part No.	AA	BA	CB	CD	CW	DD	E	FH	FJ	LR	M	MR
CB -1003	2.3	1 5/8	25/32	1/2	1/2	3/8-24	2 1/2	3/8	1 1/8	1/2	1/2	9/16
CB -1004	2.9	2 1/16	1 9/32	3/4	5/8	1/2-20	3	5/8	1 7/8	1	3/4	1 1/16
CB -1005	3.6	2 9/16	1 9/32	3/4	5/8	1/2-20	3 1/2	5/8	1 7/8	1 1/16	3/4	1 1/16
CB -1006	4.6	3 1/4	1 17/32	1	3/4	5/8-18	4 1/2	3/4	2 1/4	1 1/4	1	1 1/8
CB -1008	5.4	3 13/16	2 1/32	1 3/8	1	5/8-18	5	7/8	3	1 7/8	1 3/8	1 3/4
CB -1010	7.0	4 15/16	2 17/32	1 3/4	1 1/4	7/8-14	6 1/2	7/8	3 1/8	2	1 3/4	1 7/8
CB -1012	8.1	5 3/4	2 17/32	2	1 1/4	1-14	7 1/2	1	3 1/2	2 1/8	2	2 1/8
CB -1014	9.3	6 19/32	3 1/32	2 1/2	1 1/2	1 1/8-12	8 1/2	1	4	2 5/8	2 1/2	2 1/2
CB -1016	10.6	7 1/2	3 1/32	3	1 1/2	1 1/4-12	9 1/2	1	4 1/4	2 7/8	2 3/4	2 3/4
CB -1020	13.6	9 5/8	4 1/16	3 1/2	2	1 3/4-12	12 5/8	1 11/16	5 11/16	3 5/8	3 1/2	3 1/2
CB -1024	16.2	11 1/2	4 9/16	4	2 1/4	2-12	14 7/8	1 15/16	6 7/16	4	4	4





Seal Parts Identification

Part No.	Description	Parker Seal Type
17	Rod Bronze Bushing	-
20	Rod Wiper	SH959
19	Rod Seal	BPP - B PolyPak
16	Rod Bushing O-Ring	568 N0674-70
6	End Seal O-Ring (2)	568 N0674-70
9	Piston Seal	OE
10	Wear Ring *	0401 PDT
24	Rod Bushing Back Up Ring	Parbak 8-Series

\* Part #10 QTY is depend on Bore Dia

Bore Dia	QTY
1 1/2 - 3 1/4	1
4 - 10	2
12 - 20	4

Rod Seal Kits

Rod Dia	Rod Seal Kit Part #19, 20, 16, 24
5/8	BRA-000625
1	BRA-001000
1 3/8	BRA-001375
1 3/4	BRA-001750
2	BRA-002000
2 1/2	BRA-002500
3	BRA-003000
3 1/2	BRA-003500
4	BRA-004000
4 1/2	BRA-004500
5	BRA-005000
5 1/2	BRA-005500
7	BRA-007000
8	BRA-008000
9	BRA-009000
10	BRA-010000

Bore Seal Kits

Bore Dia	Bore Seal Kit Part #9, 10, 6
1 1/2	BBA-001500
2	BBA-002000
2 1/2	BBA-002500
3 1/4	BBA-003250
4	BBA-004000
5	BBA-005000
6	BBA-006000
7	BBA-007000
8	BBA-008000
9	BBA-009000
10	BBA-010000
12	BBA-012000
14	BBA-014000
16	BBA-016000
18	BBA-018000
20	BBA-020000