

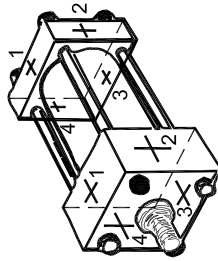
Hydraulic Cylinder SERIES H - 20" Bore

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Cylinder Ordering Guide

SERIES	MOUNT	BORE	ROD	STROKE	CUSHIONS	ROD END	PORTS	PORT LOCATION	OPTIONS
H	-	-	1.38	25.25	N	1	-	11	-
H	MF5	3.25	X	X	N (None)	1 (KK Male)	S (SAE)	CAP	S (STD)
	ME5	10.00	4.50		H (Head End)	2 (KK Female)	N (NPTF)	END	X (MODIFIED) *
	MF5	12.00	5.00		C (Cap End)	3 (CC Intermediate Male)			
	ME6	14.00	5.50		B (Both Ends)				
	MF6	16.00	7.00						
	MS2	18.00	8.00						
	MP1	20.00	9.00						
	MT1		10.00						
	MT2								
	MT4								



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

Standard Specifications

Nominal Pressure - 3000 PSI*

Bore Sizes - 10" through 20"

Rod Sizes - 4 1/2" through 10"

Mounting Styles - 9 Standard styles***

Strokes - Available in any practical stroke length

Cushions - Optional at either end or both ends

Standard - Externally removable bolted gland assembly

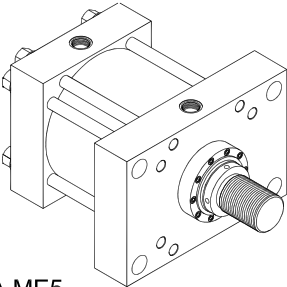
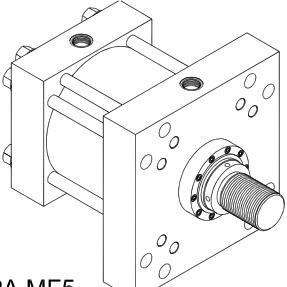
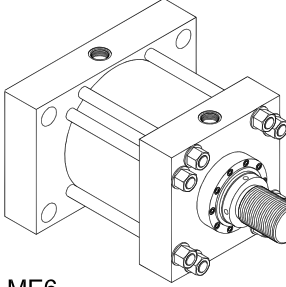
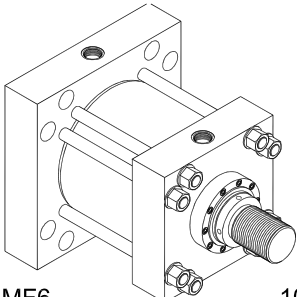
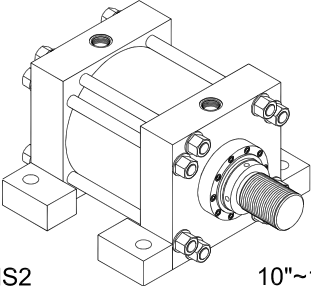
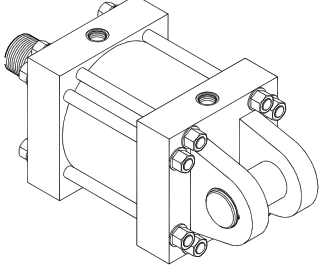
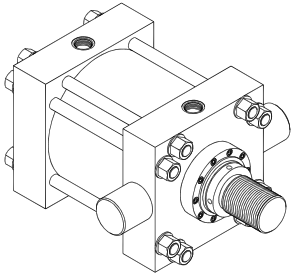
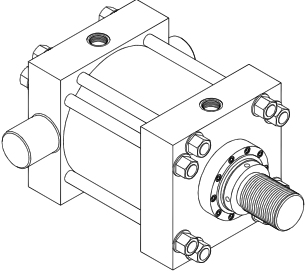
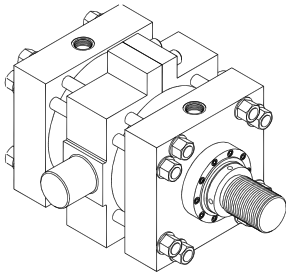
Standard Temperature - -10°F to +200°F**

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

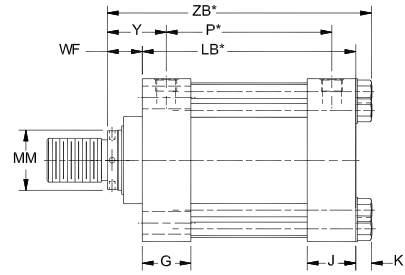
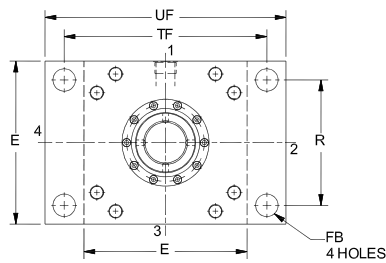
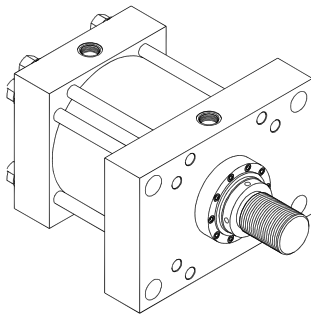
** If temperature is from 200 ~ 400°F or higher, specify it during order

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

Mounting Styles

<p>Head Rectangular</p>  <p>NFPA ME5 10"~14"</p>	<p>Head Square Flange</p>  <p>NFPA MF5 10"~20"</p>	<p>Cap Rectangular</p>  <p>NFPA ME6 10"~14"</p>
<p>Cap Square Flange</p>  <p>NFPA MF6 10"~20"</p>	<p>Side Lugs</p>  <p>NFPA MS2 10"~14"</p>	<p>Cap Fixed Clevis</p>  <p>NFPA MP1 10"~20"</p>
<p>Head Trunnion</p>  <p>NFPA MT1 10"~14"</p>	<p>Cap Trunnion</p>  <p>NFPA MT2 10"~14"</p>	<p>Intermediate Fixed Trunnion</p>  <p>NFPA MT4 10"~14"</p>

NFPA ME5 - Head Rectangular



* Add stroke to starred dimension

Body Dimensions

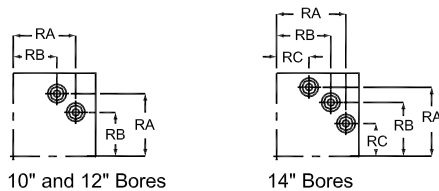
BORE	E	EE (SAE)	EE (NPTF)	G	J	K	LB*	P*	FB	R	TF	UF
10	12 5/8	24	2	3 11/16	3 11/16	1 9/32	12 1/8	8 1/2	1 13/16	9.62	15 7/8	19
12	14 7/8	24	2 1/2	4 7/16	4 7/16	1 13/32	14 1/2	10 1/8	2 1/16	11.45	18 1/2	22
14	17 1/8	24	2 1/2	4 7/8	4 7/8	1 13/32	15 5/8	10 7/8	2 5/16	13.26	21	25

Rod End Dimensions

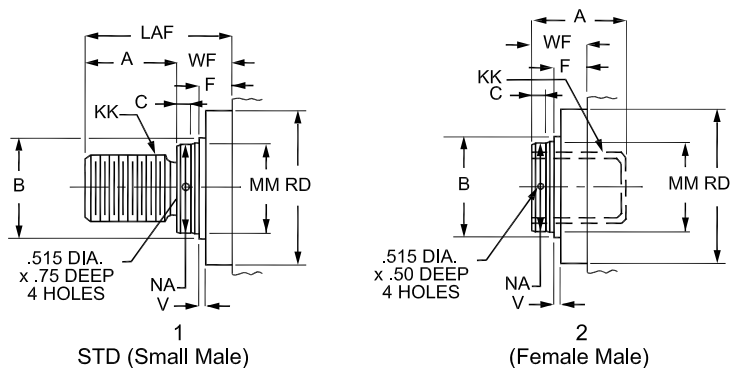
BORE	MM	KK	A	B -.001/ -.005	C	F	LAF	NA	RD	V	WF	Y	ZB*
10	4 1/2	3 1/4-12	4 1/2	5.249	1	1 15/16	7 7/16	4 3/8	8 1/4	1/4	2 15/16	4 3/4	16 11/32
	5	3 1/2-12	5	5.749	1	1 15/16	8 3/16	4 7/8	8 7/8	1/4	3 3/16	5	16 19/32
	5 1/2	4-12	5 1/2	6.249	1	1 15/16	8 11/16	5 3/8	9 3/8	1/4	3 3/16	5	16 19/32
	7	5-12	7	7.999	1	1 15/16	10 1/2	6 7/8	10 1/2	3/8	3 1/2	5 5/16	16 29/32
12	5 1/2	4-12	5 1/2	6.249	1	1 15/16	8 11/16	5 3/8	9 3/8	1/4	3 3/16	5 3/8	19 3/32
	7	5-12	7	7.999	1	1 15/16	10 1/2	6 7/8	10 1/2	3/8	3 1/2	5 11/16	19 13/32
	8	5 3/4-12	8	8.999	1	1 15/16	12	7 7/8	12 1/2	3/8	4	6 3/16	19 29/32
14	7	5-12	7	7.999	1	1 15/16	10 1/2	6 7/8	10 1/2	3/8	3 1/2	5 7/8	20 17/32
	8	5 3/4-12	8	8.999	1	1 15/16	12	7 7/8	12 1/2	3/8	4	6 3/8	21 1/32
	10	7 1/4-12	10	10.999	1	1 15/16	14 1/2	9 7/8	14 1/2	3/8	4 1/2	6 7/8	21 17/32

Tie Rod Dimensions

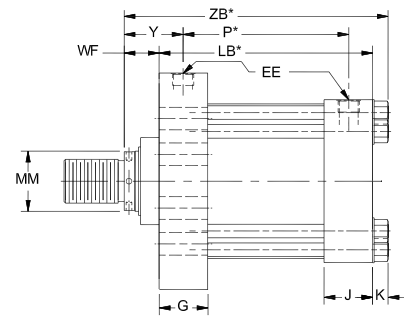
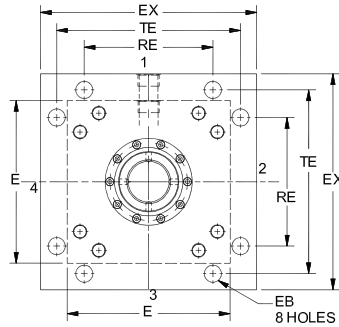
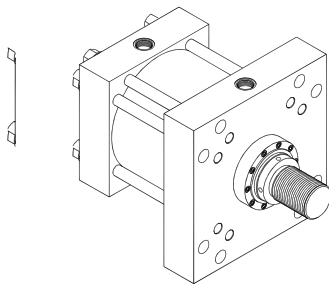
BORE	RA	RB	RC	TIE ROD THREAD
10	5.291	3.775	—	1 1/8-12
12	6.270	4.555	—	1 1/4-12
14	7.485	6.143	4.409	1 1/4-12



Rod End Styles



NFPA MF5 - Head Square Flange



Body Dimensions

* Add stroke to starred dimension

BORE	E	EE (SAE)	EE (NPTF)	G	J	K	LB*	P*	EB	EX	RE	TE
10	12 5/8	24	2	3 11/16	3 11/16	1 9/32	12 1/8	8 1/2	1 5/16	16 5/8	9.89	14.13
12	14 7/8	24	2 1/2	4 7/16	4 7/16	1 13/32	14 1/2	10 1/8	1 9/16	19 3/4	11.75	16.79
14	17 1/8	24	2 1/2	4 7/8	4 7/8	1 13/32	15 5/8	10 7/8	1 13/16	21 3/4	12.90	18.43
16	19	24	-	5 7/8	5 7/8	1 29/32	18 1/8	12 1/8	1 13/16	24 1/2	15.28	21.03
18	22	24	-	6 7/8	6 7/8	1 29/32	21 1/8	15 1/8	2 1/16	26 1/2	16.45	22.65
20	24	24	-	7 7/8	7 7/8	1 29/32	23 5/8	17 5/8	2 1/16	29	18.07	24.87

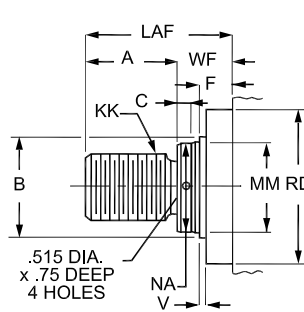
Rod End Dimensions

BORE	MM	KK	A	B -.001/ -.005	C	F	LAF	NA	RD	V	WF	Y	ZB*
10	4 1/2	3 1/4-12	4 1/2	5.249	1	1 15/16	7 7/16	4 3/8	8 1/4	1/4	2 15/16	4 3/4	16 11/32
	5	3 1/2-12	5	5.749	1	1 15/16	8 3/16	4 7/8	8 7/8	1/4	3 3/16	5	16 19/32
	5 1/2	4-12	5 1/2	6.249	1	1 15/16	8 11/16	5 3/8	9 3/8	1/4	3 3/16	5	16 19/32
	7	5-12	7	7.999	1	1 15/16	10 1/2	6 7/8	10 1/2	3/8	3 1/2	5 5/16	16 29/32
12	5 1/2	4-12	5 1/2	6.249	1	1 15/16	8 11/16	5 3/8	9 3/8	1/4	3 3/16	5 3/8	19 3/32
	7	5-12	7	7.999	1	1 15/16	10 1/2	6 7/8	10 1/2	3/8	3 1/2	5 11/16	19 13/32
	8	5 3/4-12	8	8.999	1	1 15/16	12	7 7/8	12 1/2	3/8	4	6 3/16	19 29/32
14	7	5-12	7	7.999	1	1 15/16	10 1/2	6 7/8	10 1/2	3/8	3 1/2	5 7/8	20 17/32
	8	5 3/4-12	8	8.999	1	1 15/16	12	7 7/8	12 1/2	3/8	4	6 3/8	21 1/32
	10	7 1/4-12	10	10.999	1	1 15/16	14 1/2	9 7/8	14 1/2	3/8	4 1/2	6 7/8	21 17/32
16	8	5 3/4-12	8	8.999	1	1 15/16	12	7 7/8	12 1/2	3/8	4	7	24 1/32
	9	6 1/2-12	9	9.999	1	1 15/16	13 1/4	8 7/8	13 1/2	3/8	4 1/4	7 1/4	24 9/32
	10	7 1/4-12	10	10.999	1	1 15/16	14 1/2	9 7/8	14 1/2	3/8	4 1/2	7 1/2	24 17/32
18	9	6 1/2-12	9	9.999	1	1 15/16	13 1/4	8 7/8	13 1/2	3/8	4 1/4	7 1/4	27 9/32
	10	7 1/4-12	10	10.999	1	1 15/16	14 1/2	9 7/8	14 1/2	3/8	4 1/2	7 1/2	27 17/32
20	10	7 1/4-12	10	10.999	1	1 15/16	14 1/2	9 7/8	14 1/2	3/8	4 1/2	7 1/2	30 1/32

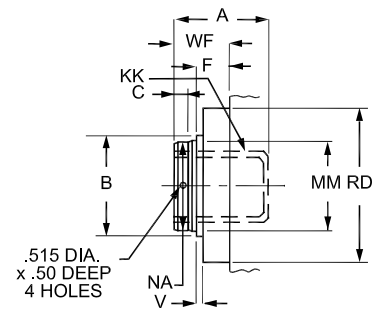
Tie Rod Dimensions

BORE	RA	RB	RC	TIE ROD THREAD
10	5.291	3.775	—	1 1/8-12
12	6.270	4.555	—	1 1/4-12
14	7.485	6.143	4.409	1 1/4-12
16	8.086	6.093	-	1 1/2-12
18	9.589	7.910	5.761	1 1/2-12
20	10.437	8.750	6.649	1 1/2-12

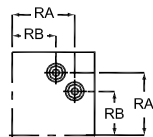
Rod End Styles



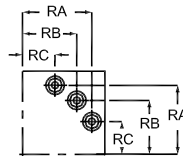
STD (Small Male)



(Female Male)

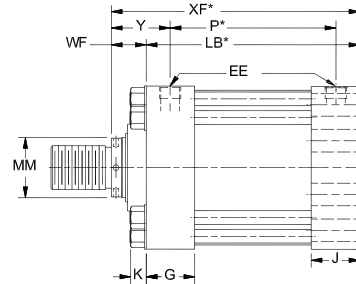
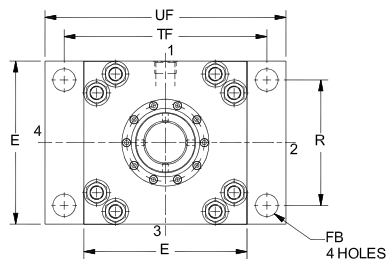
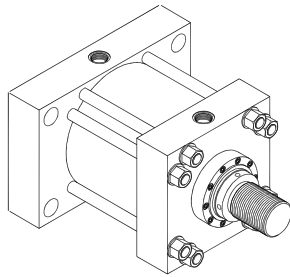


10", 12" and 16" Bores



14", 18" and 20" Bores

NFPA ME6 - Cap Rectangular



* Add stroke to starred dimension

Body Dimensions

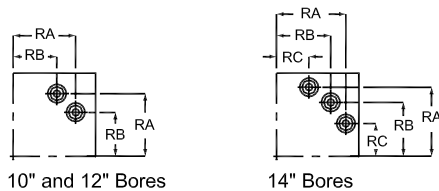
BORE	E	EE (SAE)	EE (NPTF)	G	J	K	LB*	P*	FB	R	TF	UF
10	12 5/8	24	2	3 11/16	3 11/16	1 9/32	12 1/8	8 1/2	1 13/16	9.62	15 7/8	19
12	14 7/8	24	2 1/2	4 7/16	4 7/16	1 13/32	14 1/2	10 1/8	2 1/16	11.45	18 1/2	22
14	17 1/8	24	2 1/2	4 7/8	4 7/8	1 13/32	15 5/8	10 7/8	2 5/16	13.26	21	25

Rod End Dimensions

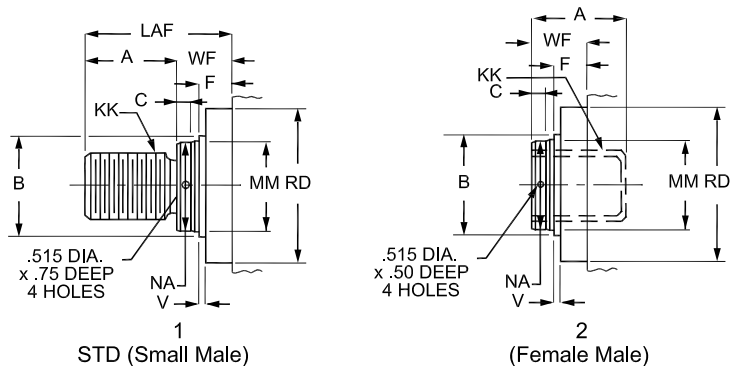
BORE	MM	KK	A	B -.001/ -.005	C	F	LAF	NA	RD	V	WF	Y	XF*
10	4 1/2	3 1/4-12	4 1/2	5.249	1	1 15/16	7 7/16	4 3/8	8 1/4	1/4	2 15/16	4 3/4	15 1/16
	5	3 1/2-12	5	5.749	1	1 15/16	8 3/16	4 7/8	8 7/8	1/4	3 3/16	5	15 5/16
	5 1/2	4-12	5 1/2	6.249	1	1 15/16	8 11/16	5 3/8	9 3/8	1/4	3 3/16	5	15 5/16
	7	5-12	7	7.999	1	1 15/16	10 1/2	6 7/8	10 1/2	3/8	3 1/2	5 5/16	15 5/8
12	5 1/2	4-12	5 1/2	6.249	1	1 15/16	8 11/16	5 3/8	9 3/8	1/4	3 3/16	5 3/8	17 11/16
	7	5-12	7	7.999	1	1 15/16	10 1/2	6 7/8	10 1/2	3/8	3 1/2	5 11/16	18
	8	5 3/4-12	8	8.999	1	1 15/16	12	7 7/8	12 1/2	3/8	4	6 3/16	18 1/2
14	7	5-12	7	7.999	1	1 15/16	10 1/2	6 7/8	10 1/2	3/8	3 1/2	5 7/8	19 1/8
	8	5 3/4-12	8	8.999	1	1 15/16	12	7 7/8	12 1/2	3/8	4	6 3/8	19 5/8
	10	7 1/4-12	10	10.999	1	1 15/16	14 1/2	9 7/8	14 1/2	3/8	4 1/2	6 7/8	20 1/8

Tie Rod Dimensions

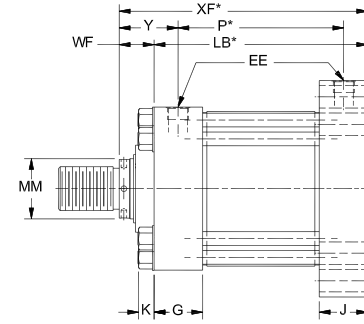
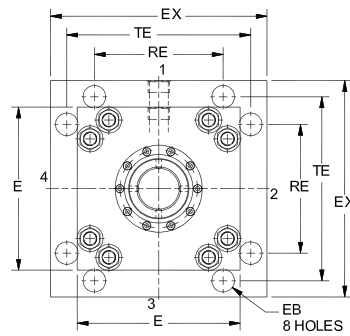
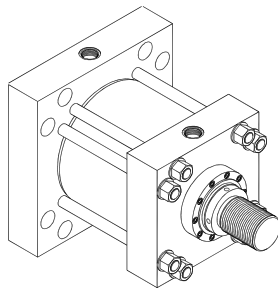
BORE	RA	RB	RC	TIE ROD THREAD
10	5.291	3.775	—	1 1/8-12
12	6.270	4.555	—	1 1/4-12
14	7.485	6.143	4.409	1 1/4-12



Rod End Styles



NFPA MF6 - Cap Square Flange



* Add stroke to starred dimension

Body Dimensions

BORE	E	EE (SAE)	EE (NPTF)	G	J	K	LB*	P*	EB	EX	RE	TE
10	12 5/8	24	2	3 11/16	3 11/16	1 9/32	12 1/8	8 1/2	1 5/16	16 5/8	9.89	14.13
12	14 7/8	24	2 1/2	4 7/16	4 7/16	1 13/32	14 1/2	10 1/8	1 9/16	19 3/4	11.75	16.79
14	17 1/8	24	2 1/2	4 7/8	4 7/8	1 13/32	15 5/8	10 7/8	1 13/16	21 3/4	12.90	18.43
16	19	24	-	5 7/8	5 7/8	1 29/32	18 1/8	12 1/8	1 13/16	24 1/2	15.28	21.03
18	22	24	-	6 7/8	6 7/8	1 29/32	21 1/8	15 1/8	2 1/16	26 1/2	16.45	22.65
20	24	24	-	7 7/8	7 7/8	1 29/32	23 5/8	17 5/8	2 1/16	29	18.07	24.87

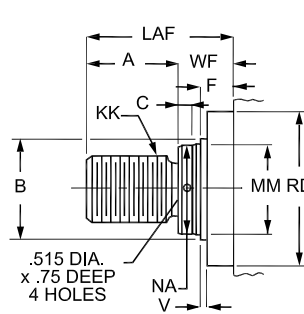
Rod End Dimensions

BORE	MM	KK	A	B -.001/ -.005	C	F	LAF	NA	RD	V	WF	Y	XF*
10	4 1/2	3 1/4-12	4 1/2	5.249	1	1 15/16	7 7/16	4 3/8	8 1/4	1/4	2 15/16	4 3/4	15 1/16
	5	3 1/2-12	5	5.749	1	1 15/16	8 3/16	4 7/8	8 7/8	1/4	3 3/16	5	15 5/16
	5 1/2	4-12	5 1/2	6.249	1	1 15/16	8 11/16	5 3/8	9 3/8	1/4	3 3/16	5	15 5/16
	7	5-12	7	7.999	1	1 15/16	10 1/2	6 7/8	10 1/2	3/8	3 1/2	5 5/16	15 5/8
12	5 1/2	4-12	5 1/2	6.249	1	1 15/16	8 11/16	5 3/8	9 3/8	1/4	3 3/16	5 3/8	17 11/16
	7	5-12	7	7.999	1	1 15/16	10 1/2	6 7/8	10 1/2	3/8	3 1/2	5 11/16	18
	8	5 3/4-12	8	8.999	1	1 15/16	12	7 7/8	12 1/2	3/8	4	6 3/16	18 1/2
14	7	5-12	7	7.999	1	1 15/16	10 1/2	6 7/8	10 1/2	3/8	3 1/2	5 7/8	19 1/8
	8	5 3/4-12	8	8.999	1	1 15/16	12	7 7/8	12 1/2	3/8	4	6 3/8	19 5/8
	10	7 1/4-12	10	10.999	1	1 15/16	14 1/2	9 7/8	14 1/2	3/8	4 1/2	6 7/8	20 1/8
16	8	5 3/4-12	8	8.999	1	1 15/16	12	7 7/8	12 1/2	3/8	4	7	22 1/8
	9	6 1/2-12	9	9.999	1	1 15/16	13 1/4	8 7/8	13 1/2	3/8	4 1/4	7 1/4	22 3/8
	10	7 1/4-12	10	10.999	1	1 15/16	14 1/2	9 7/8	14 1/2	3/8	4 1/2	7 1/2	22 5/8
18	9	6 1/2-12	9	9.999	1	1 15/16	13 1/4	8 7/8	13 1/2	3/8	4 1/4	7 1/4	25 3/8
	10	7 1/4-12	10	10.999	1	1 15/16	14 1/2	9 7/8	14 1/2	3/8	4 1/2	7 1/2	25 5/8
20	10	7 1/4-12	10	10.999	1	1 15/16	14 1/2	9 7/8	14 1/2	3/8	4 1/2	7 1/2	28 1/8

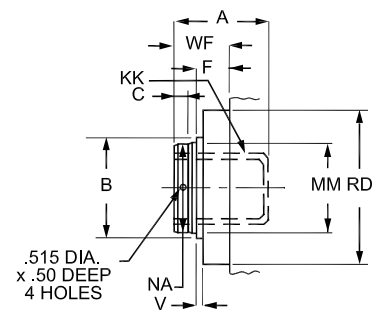
Tie Rod Dimensions

BORE	RA	RB	RC	TIE ROD THREAD
10	5.291	3.775	—	1 1/8-12
12	6.270	4.555	—	1 1/4-12
14	7.485	6.143	4.409	1 1/4-12
16	8.086	6.093	-	1 1/2-12
18	9.589	7.910	5.761	1 1/2-12
20	10.437	8.750	6.649	1 1/2-12

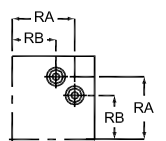
Rod End Styles



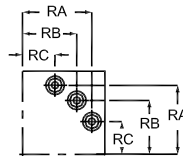
STD (Small Male)



(Female Male)

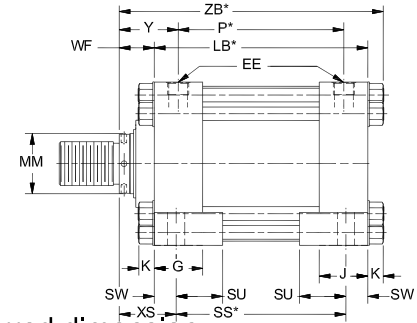
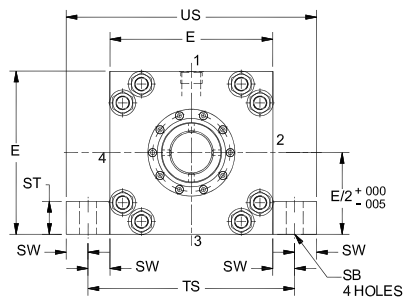
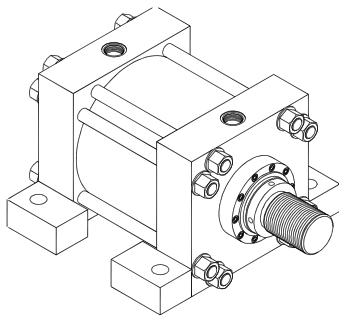


10", 12" and 16" Bores



14", 18" and 20" Bores

NFPA MS2 - Side Lugs



* Add stroke to starred dimension

Body Dimensions

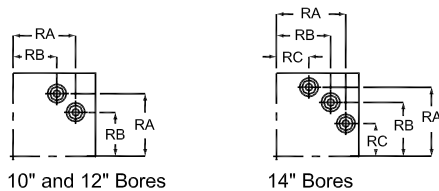
BORE	E	EE (SAE)	EE (NPTF)	G	J	K	LB*	P*	SB	SS*	ST	SU	SW	TS	US
10	12 5/8	24	2	3 11/16	3 11/16	1 9/32	12 1/8	8 1/2	1 9/16	8 7/8	2 1/4	3 1/2	1 5/8	15 7/8	19 1/8
12	14 7/8	24	2 1/2	4 7/16	4 7/16	1 13/32	14 1/2	10 1/8	1 9/16	10 1/2	3	4 1/4	2	18 7/8	22 7/8
14	17 1/8	24	2 1/2	4 7/8	4 7/8	1 13/32	15 5/8	10 7/8	2 5/16	11 1/8	4	4 3/4	2 1/4	21 5/8	26 1/8

Rod End Dimensions

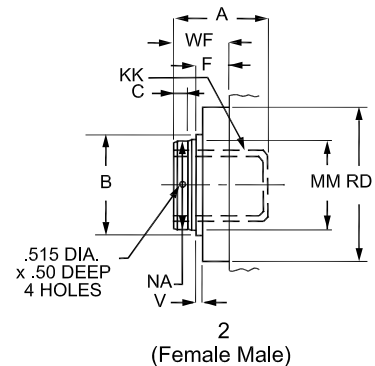
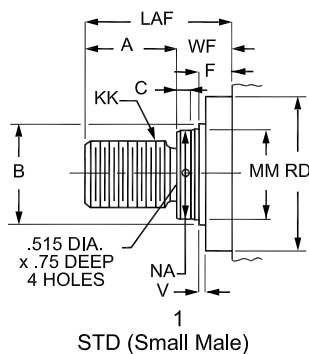
BORE	MM	KK	A	B -.001/ -.005	C	F	LAF	NA	RD	V	WF	Y	XS	ZB*
10	4 1/2	3 1/4-12	4 1/2	5.249	1	1 15/16	7 7/16	4 3/8	8 1/4	1/4	2 15/16	4 3/4	4 9/16	16 11/32
	5	3 1/2-12	5	5.749	1	1 15/16	8 3/16	4 7/8	8 7/8	1/4	3 3/16	5	4 13/16	16 19/32
	5 1/2	4-12	5 1/2	6.249	1	1 15/16	8 11/16	5 3/8	9 3/8	1/4	3 3/16	5	4 13/16	16 19/32
	7	5-12	7	7.999	1	1 15/16	10 1/2	6 7/8	10 1/2	3/8	3 1/2	5 5/16	5 1/8	16 29/32
12	5 1/2	4-12	5 1/2	6.249	1	1 15/16	8 11/16	5 3/8	9 3/8	1/4	3 3/16	5 3/8	5 3/16	19 3/32
	7	5-12	7	7.999	1	1 15/16	10 1/2	6 7/8	10 1/2	3/8	3 1/2	5 11/16	5 1/2	19 13/32
	8	5 3/4-12	8	8.999	1	1 15/16	12	7 7/8	12 1/2	3/8	4	6 3/16	6	19 29/32
14	7	5-12	7	7.999	1	1 15/16	10 1/2	6 7/8	10 1/2	3/8	3 1/2	5 7/8	5 3/4	20 17/32
	8	5 3/4-12	8	8.999	1	1 15/16	12	7 7/8	12 1/2	3/8	4	6 3/8	6 1/4	21 1/32
	10	7 1/4-12	10	10.999	1	1 15/16	14 1/2	9 7/8	14 1/2	3/8	4 1/2	6 7/8	6 3/4	21 17/32

Tie Rod Dimensions

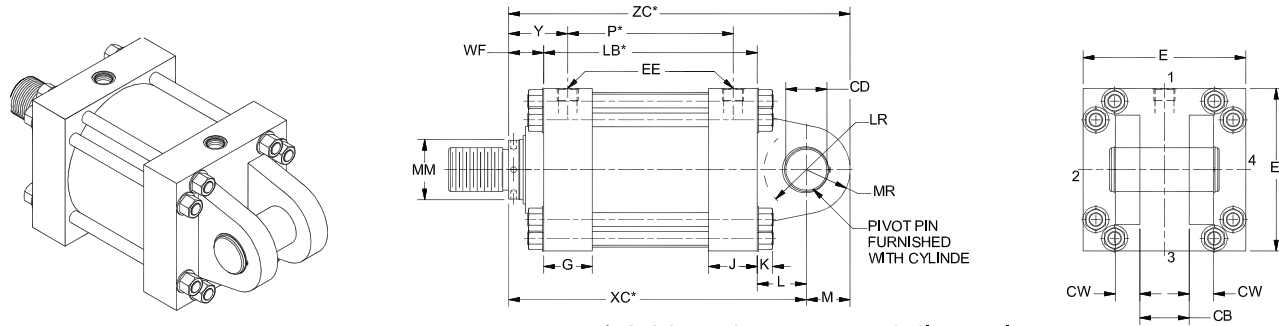
BORE	RA	RB	RC	TIE ROD THREAD
10	5.291	3.775	—	1 1/8-12
12	6.270	4.555	—	1 1/4-12
14	7.485	6.143	4.409	1 1/4-12



Rod End Styles



NFPA MP1 - Cap Fixed Clevis



Body Dimensions

* Add stroke to starred dimension

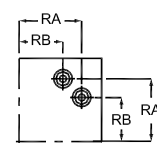
BORE	E	EE (SAE)	EE (NPTF)	G	J	K	LB*	P*	CB	CD +.001/-0.003	CW	L	LR	M	MR
10	12 5/8	24	2	3 11/16	3 11/16	1 9/32	12 1/8	8 1/2	4	3.500	2	4	3 3/8	3 1/2	3 1/2
12	14 7/8	24	2 1/2	4 7/16	4 7/16	1 13/32	14 1/2	10 1/8	4 1/2	4.000	2 1/4	4 1/2	3 7/8	4	4
14	17 1/8	24	2 1/2	4 7/8	4 7/8	1 13/32	15 5/8	10 7/8	6	5.000	3	5 3/4	4 3/16	5	5
16	19	24	-	5 7/8	5 7/8	1 29/32	18 1/8	12 1/8	7	6.000	3 1/2	7	6 1/4	6	6
18	22	24	-	6 7/8	6 7/8	1 29/32	21 1/8	15 1/8	8	6.500	4	7 5/8	6 3/4	6 1/2	6 1/2
20	24	24	-	7 7/8	7 7/8	1 29/32	23 5/8	17 5/8	9	7.500	4 1/2	8 3/4	7 3/4	7 1/2	7 1/2

Rod End Dimensions

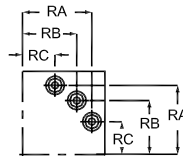
BORE	MM	KK	A	B -.001/-0.005	C	F	LAF	NA	RD	V	WF	Y	XC*	ZC*
10	4 1/2	3 1/4-12	4 1/2	5.249	1	1 15/16	7 7/16	4 3/8	8 1/4	1/4	2 15/16	4 3/4	19 1/16	22 9/16
	5	3 1/2-12	5	5.749	1	1 15/16	8 3/16	4 7/8	8 7/8	1/4	3 3/16	5	19 5/16	22 13/16
	5 1/2	4-12	5 1/2	6.249	1	1 15/16	8 11/16	5 3/8	9 3/8	1/4	3 3/16	5	19 5/16	22 13/16
	7	5-12	7	7.999	1	1 15/16	10 1/2	6 7/8	10 1/2	3/8	3 1/2	5 5/16	19 5/8	23 1/8
12	5 1/2	4-12	5 1/2	6.249	1	1 15/16	8 11/16	5 3/8	9 3/8	1/4	3 3/16	5 3/8	22 3/16	26 3/16
	7	5-12	7	7.999	1	1 15/16	10 1/2	6 7/8	10 1/2	3/8	3 1/2	5 11/16	22 1/2	26 1/2
	8	5 3/4-12	8	8.999	1	1 15/16	12	7 7/8	12 1/2	3/8	4	6 3/16	23	27
14	7	5-12	7	7.999	1	1 15/16	10 1/2	6 7/8	10 1/2	3/8	3 1/2	5 7/8	24 7/8	29 7/8
	8	5 3/4-12	8	8.999	1	1 15/16	12	7 7/8	12 1/2	3/8	4	6 3/8	25 3/8	30 3/8
	10	7 1/4-12	10	10.999	1	1 15/16	14 1/2	9 7/8	14 1/2	3/8	4 1/2	6 7/8	25 7/8	30 7/8
16	8	5 3/4-12	8	8.999	1	1 15/16	12	7 7/8	12 1/2	3/8	4	7	29 1/8	35 1/8
	9	6 1/2-12	9	9.999	1	1 15/16	13 1/4	8 7/8	13 1/2	3/8	4 1/4	7 1/4	29 3/8	35 3/8
	10	7 1/4-12	10	10.999	1	1 15/16	14 1/2	9 7/8	14 1/2	3/8	4 1/2	7 1/2	29 5/8	35 5/8
18	9	6 1/2-12	9	9.999	1	1 15/16	13 1/4	8 7/8	13 1/2	3/8	4 1/4	7 1/4	33	39 1/2
	10	7 1/4-12	10	10.999	1	1 15/16	14 1/2	9 7/8	14 1/2	3/8	4 1/2	7 1/2	33 1/4	39 3/4
20	10	7 1/4-12	10	10.999	1	1 15/16	14 1/2	9 7/8	14 1/2	3/8	4 1/2	7 1/2	36 7/8	44 3/8

Tie Rod Dimensions

BORE	RA	RB	RC	TIE ROD THREAD
10	5.291	3.775	—	1 1/8-12
12	6.270	4.555	—	1 1/4-12
14	7.485	6.143	4.409	1 1/4-12
16	8.086	6.093	-	1 1/2-12
18	9.589	7.910	5.761	1 1/2-12
20	10.437	8.750	6.649	1 1/2-12

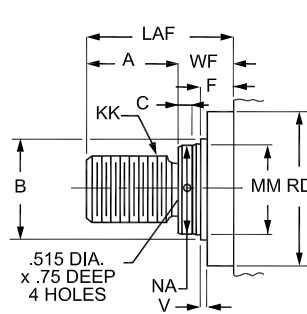


10", 12" and 16" Bores

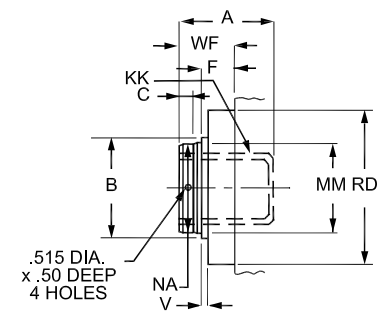


14", 18" and 20" Bores

Rod End Styles

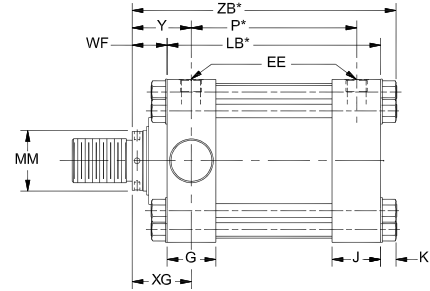
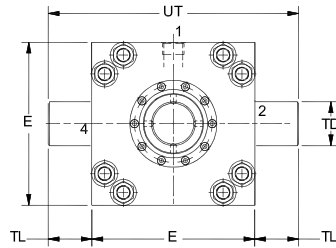
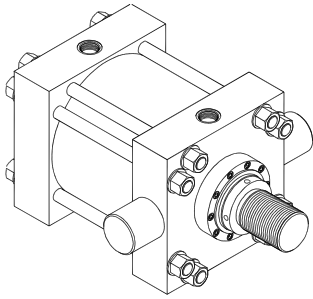


STD (Small Male)



(Female Male)

NFPA MT1 - Head Trunnion



* Add stroke to starred dimension

Body Dimensions

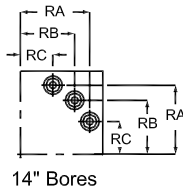
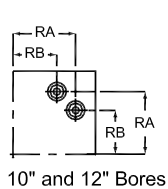
BORE	E	EE (SAE)	EE (NPTF)	G	J	K	LB*	P*	MAX PRESSURE PSI	TD -.000/-.001	TL	UT
10	12 5/8	24	2	3 11/16	3 11/16	1 9/32	12 1/8	8 1/2	1600	3.500	3 1/2	19 5/8
12	14 7/8	24	2 1/2	4 7/16	4 7/16	1 13/32	14 1/2	10 1/8	1500	4.000	4	22 7/8
14	17 1/8	24	2 1/2	4 7/8	4 7/8	1 13/32	15 5/8	10 7/8	1400	4.500	4 1/2	26 1/8

Rod End Dimensions

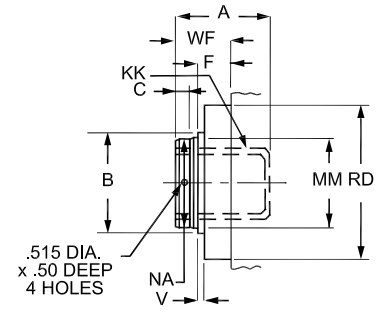
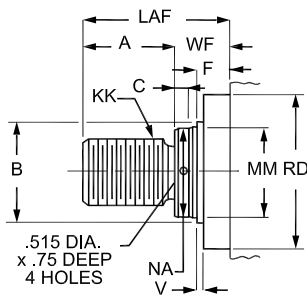
BORE	MM	KK	A	B -.001/-.005	C	F	LAF	NA	RD	V	WF	Y	XG	ZB*
10	4 1/2	3 1/4-12	4 1/2	5.249	1	1 15/16	7 7/16	4 3/8	8 1/4	1/4	2 15/16	4 3/4	4 3/4	16 11/32
	5	3 1/2-12	5	5.749	1	1 15/16	8 3/16	4 7/8	8 7/8	1/4	3 3/16	5	5	16 19/32
	5 1/2	4-12	5 1/2	6.249	1	1 15/16	8 11/16	5 3/8	9 3/8	1/4	3 3/16	5	5	16 19/32
	7	5-12	7	7.999	1	1 15/16	10 1/2	6 7/8	10 1/2	3/8	3 1/2	5 5/16	5 5/16	16 29/32
12	5 1/2	4-12	5 1/2	6.249	1	1 15/16	8 11/16	5 3/8	9 3/8	1/4	3 3/16	5 3/8	5 3/8	19 3/32
	7	5-12	7	7.999	1	1 15/16	10 1/2	6 7/8	10 1/2	3/8	3 1/2	5 11/16	5 11/16	19 13/32
	8	5 3/4-12	8	8.999	1	1 15/16	12	7 7/8	12 1/2	3/8	4	6 3/16	6 3/16	19 29/32
14	7	5-12	7	7.999	1	1 15/16	10 1/2	6 7/8	10 1/2	3/8	3 1/2	5 7/8	5 15/16	20 17/32
	8	5 3/4-12	8	8.999	1	1 15/16	12	7 7/8	12 1/2	3/8	4	6 3/8	6 7/16	21 1/32
	10	7 1/4-12	10	10.999	1	1 15/16	14 1/2	9 7/8	14 1/2	3/8	4 1/2	6 7/8	6 15/16	21 17/32

Tie Rod Dimensions

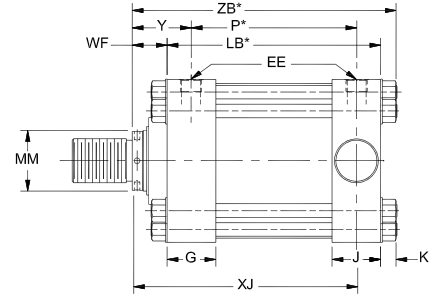
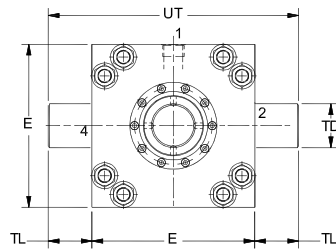
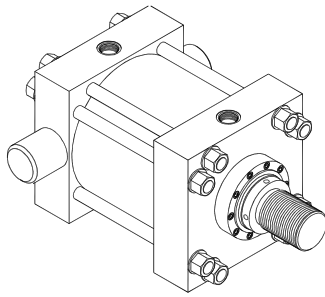
BORE	RA	RB	RC	TIE ROD THREAD
10	5.291	3.775	—	1 1/8-12
12	6.270	4.555	—	1 1/4-12
14	7.485	6.143	4.409	1 1/4-12



Rod End Styles



NFPA MT2 - Cap Trunnion



* Add stroke to starred dimension

Body Dimensions

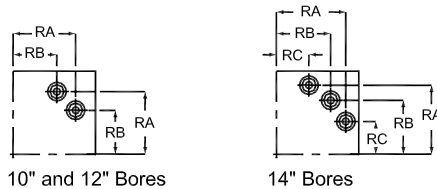
BORE	E	EE (SAE)	EE (NPTF)	G	J	K	LB*	P*	MAX PRESSURE PSI	TD -.000/-.001	TL	UT
10	12 5/8	24	2	3 11/16	3 11/16	1 9/32	12 1/8	8 1/2	1600	3.500	3 1/2	19 5/8
12	14 7/8	24	2 1/2	4 7/16	4 7/16	1 13/32	14 1/2	10 1/8	1500	4.000	4	22 7/8
14	17 1/8	24	2 1/2	4 7/8	4 7/8	1 13/32	15 5/8	10 7/8	1400	4.500	4 1/2	26 1/8

Rod End Dimensions

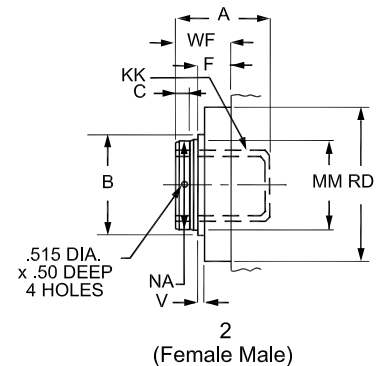
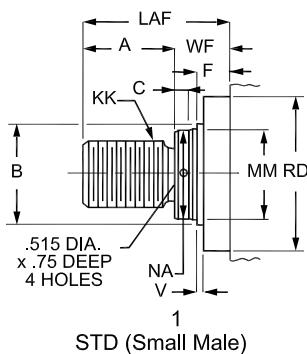
BORE	MM	KK	A	B -.001/-.005	C	F	LAF	NA	RD	V	WF	Y	XJ	ZB*
10	4 1/2	3 1/4-12	4 1/2	5.249	1	1 15/16	7 7/16	4 3/8	8 1/4	1/4	2 15/16	4 3/4	13 3/8	16 11/32
	5	3 1/2-12	5	5.749	1	1 15/16	8 3/16	4 7/8	8 7/8	1/4	3 3/16	5	13 15/16	16 19/32
	5 1/2	4-12	5 1/2	6.249	1	1 15/16	8 11/16	5 3/8	9 3/8	1/4	3 3/16	5	13 5/8	16 19/32
	7	5-12	7	7.999	1	1 15/16	10 1/2	6 7/8	10 1/2	3/8	3 1/2	5 5/16	13 5/8	16 29/32
12	5 1/2	4-12	5 1/2	6.249	1	1 15/16	8 11/16	5 3/8	9 3/8	1/4	3 3/16	5 3/8	15 1/2	19 3/32
	7	5-12	7	7.999	1	1 15/16	10 1/2	6 7/8	10 1/2	3/8	3 1/2	5 11/16	16 5/16	19 13/32
	8	5 3/4-12	8	8.999	1	1 15/16	12	7 7/8	12 1/2	3/8	4	6 3/16	15 13/16	19 29/32
14	7	5-12	7	7.999	1	1 15/16	10 1/2	6 7/8	10 1/2	3/8	3 1/2	5 7/8	16 11/16	20 17/32
	8	5 3/4-12	8	8.999	1	1 15/16	12	7 7/8	12 1/2	3/8	4	6 3/8	17 11/16	21 1/32
	10	7 1/4-12	10	10.999	1	1 15/16	14 1/2	9 7/8	14 1/2	3/8	4 1/2	6 7/8	17 3/16	21 17/32

Tie Rod Dimensions

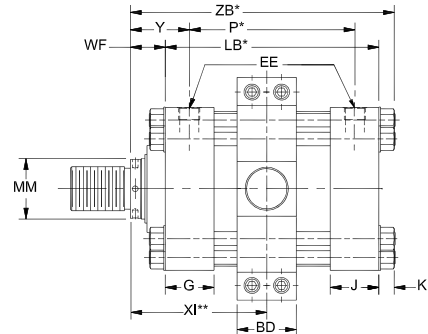
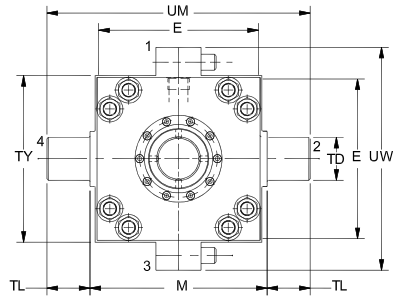
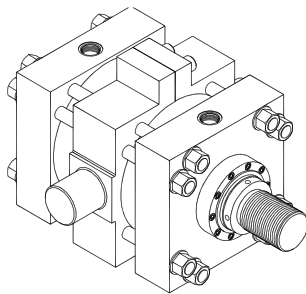
BORE	RA	RB	RC	TIE ROD THREAD
10	5.291	3.775	—	1 1/8-12
12	6.270	4.555	—	1 1/4-12
14	7.485	6.143	4.409	1 1/4-12



Rod End Styles



NFPA MT4 - Intermediate Fixed Trunnion



* Add stroke to starred dimension

** Dimension XI to be specified by customer

Body Dimensions

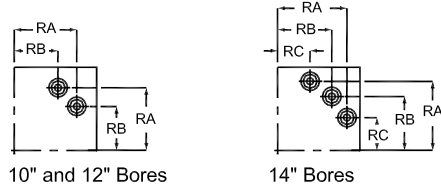
BORE	E	EE (SAE)	EE (NPTF)	G	J	K	LB*	P*	MAX PRESSURE PSI	TD -.000/-.001	TL	TM	TY	UM	UW
10	12 5/8	24	2	3 11/16	3 11/16	1 9/32	12 1/8	8 1/2	1600	3.500	3 1/2	14	13	21	17 1/2
12	14 7/8	24	2 1/2	4 7/16	4 7/16	1 13/32	14 1/2	10 1/8	1500	4.000	4	16 1/2	15 1/2	24 1/2	20 3/4
14	17 1/8	24	2 1/2	4 7/8	4 7/8	1 13/32	15 5/8	10 7/8	1400	4.500	4 1/2	19 1/2	19 1/4	28 1/2	24 3/4

Rod End Dimensions

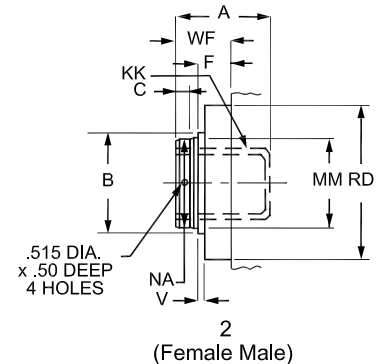
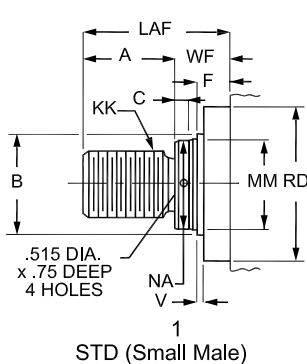
BORE	MM	KK	A	B -.001/-.005	C	F	LAF	NA	RD	V	WF	Y	ZB*
10	4 1/2	3 1/4-12	4 1/2	5.249	1	1 15/16	7 7/16	4 3/8	8 1/4	1/4	2 15/16	4 3/4	16 11/32
	5	3 1/2-12	5	5.749	1	1 15/16	8 3/16	4 7/8	8 7/8	1/4	3 3/16	5	16 19/32
	5 1/2	4-12	5 1/2	6.249	1	1 15/16	8 11/16	5 3/8	9 3/8	1/4	3 3/16	5	16 19/32
	7	5-12	7	7.999	1	1 15/16	10 1/2	6 7/8	10 1/2	3/8	3 1/2	5 5/16	16 29/32
12	5 1/2	4-12	5 1/2	6.249	1	1 15/16	8 11/16	5 3/8	9 3/8	1/4	3 3/16	5 3/8	19 3/32
	7	5-12	7	7.999	1	1 15/16	10 1/2	6 7/8	10 1/2	3/8	3 1/2	5 11/16	19 13/32
	8	5 3/4-12	8	8.999	1	1 15/16	12	7 7/8	12 1/2	3/8	4	6 3/16	19 29/32
14	7	5-12	7	7.999	1	1 15/16	10 1/2	6 7/8	10 1/2	3/8	3 1/2	5 7/8	20 17/32
	8	5 3/4-12	8	8.999	1	1 15/16	12	7 7/8	12 1/2	3/8	4	6 3/8	21 1/32
	10	7 1/4-12	10	10.999	1	1 15/16	14 1/2	9 7/8	14 1/2	3/8	4 1/2	6 7/8	21 17/32

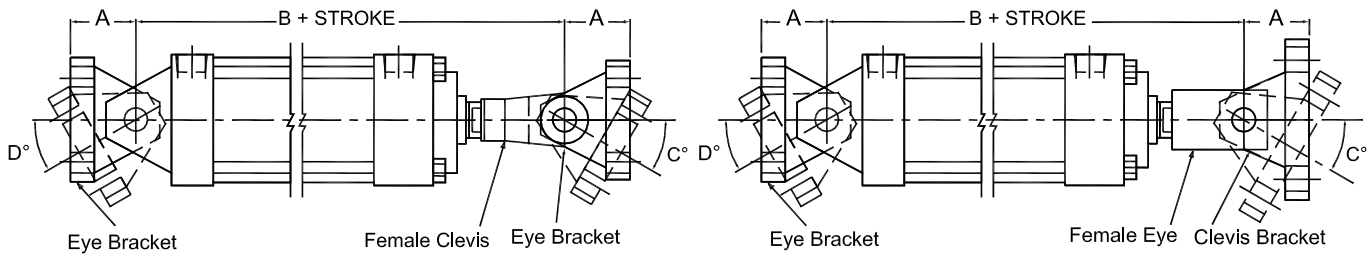
Tie Rod Dimensions

BORE	RA	RB	RC	TIE ROD THREAD
10	5.291	3.775	—	1 1/8-12
12	6.270	4.555	—	1 1/4-12
14	7.485	6.143	4.409	1 1/4-12



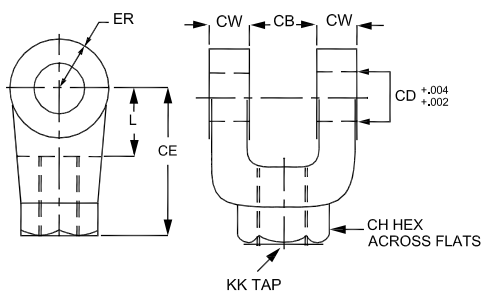
Rod End Styles





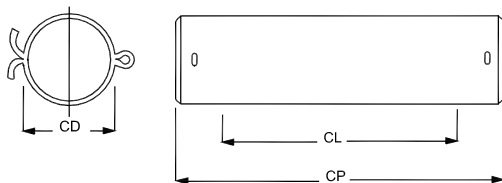
BORE	A	B	Eye Bracket	Female Clevis	Clevis Bracket	Female Eye	Pivot Pin	C°	D°
1 1/2	1 1/8	7 7/8	EB -1003	FC -1005	CB -1003	FE -1003	PP -1003	90°	60°
2	1 7/8	9 5/8	EB -1004	FC -1008	CB -1004	FE -1004	PP -1004	90°	65°
2 1/2	1 7/8	9 3/4	EB -1004	FC -1008	CB -1005	FE -1004	PP -1004	90°	65°
3 1/4	2 3/8	11 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)



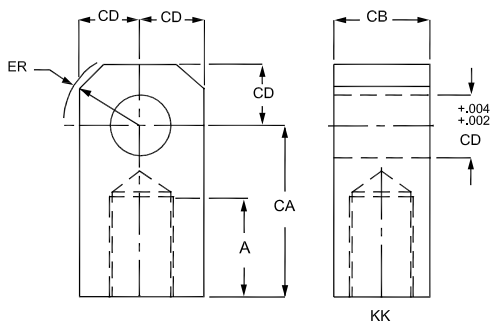
Part No.	CB	CD	CE	CH	CW	ER	KK	L
FC -1005	3/4	1/2	1 1/2	7/8	1/2	1/2	7/16-20	3/4
FC -1008	1 1/4	3/4	2 3/8	1 3/8	5/8	3/4	3/4-16	1 1/4
FC -1011	1 1/2	1	3 1/8	1 5/8	3/4	1	1-14	1 1/2
FC -1014	2	1 3/8	4 1/8	2	1	1 3/8	1 1/4-12	2 1/8
FC -1016	2 1/2	1 3/4	4 1/2	2 3/8	1 1/4	1 3/4	1 1/2-12	2 1/4
FC -1020	2 1/2	2	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)



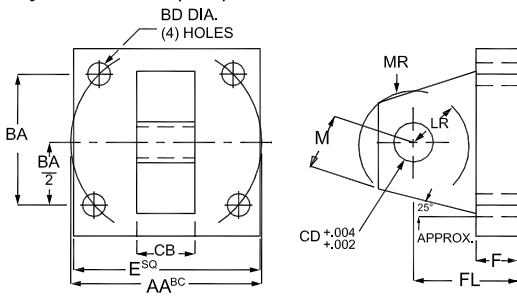
Part No.	CD	CL	CP
PP -1003	1/2	1 3/4	2 3/8
PP -1004	3/4	2 1/2	3 1/8
PP -1006	1	3	3 3/4
PP -1008	1 3/8	4	4 3/4
PP -1010	1 3/4	5	6 1/32
PP -1012	2	5	6 1/32
PP -1014	2 1/2	6	7 1/32
PP -1016	3	6	7 1/8
PP -1020	3 1/2	8	9 5/8
PP -1024	4	9	10 5/8

Female Eye (FE)

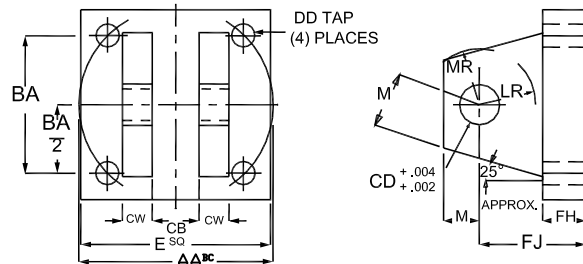


Part No.	A	CA	CB	CD	ER	KK
FE-1002	3/4	1 1/2	7/16	7/16	19/32	5/16-24
FE-1003	3/4	1 1/2	3/4	1/2	5/8	7/16-20
FE-1004	1 1/8	2 1/16	1 1/4	3/4	7/8	3/4-16
FE-1006	1 5/8	2 13/16	1 1/2	1	1 3/16	1-14
FE-1008	2	3 7/16	2	1 3/8	1 9/16	1 1/4-12
FE-1010	2 1/4	4	2 1/2	1 3/4	2	1 1/2-12
FE-1012	3	5	2 1/2	2	2 1/4	1 7/8-12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

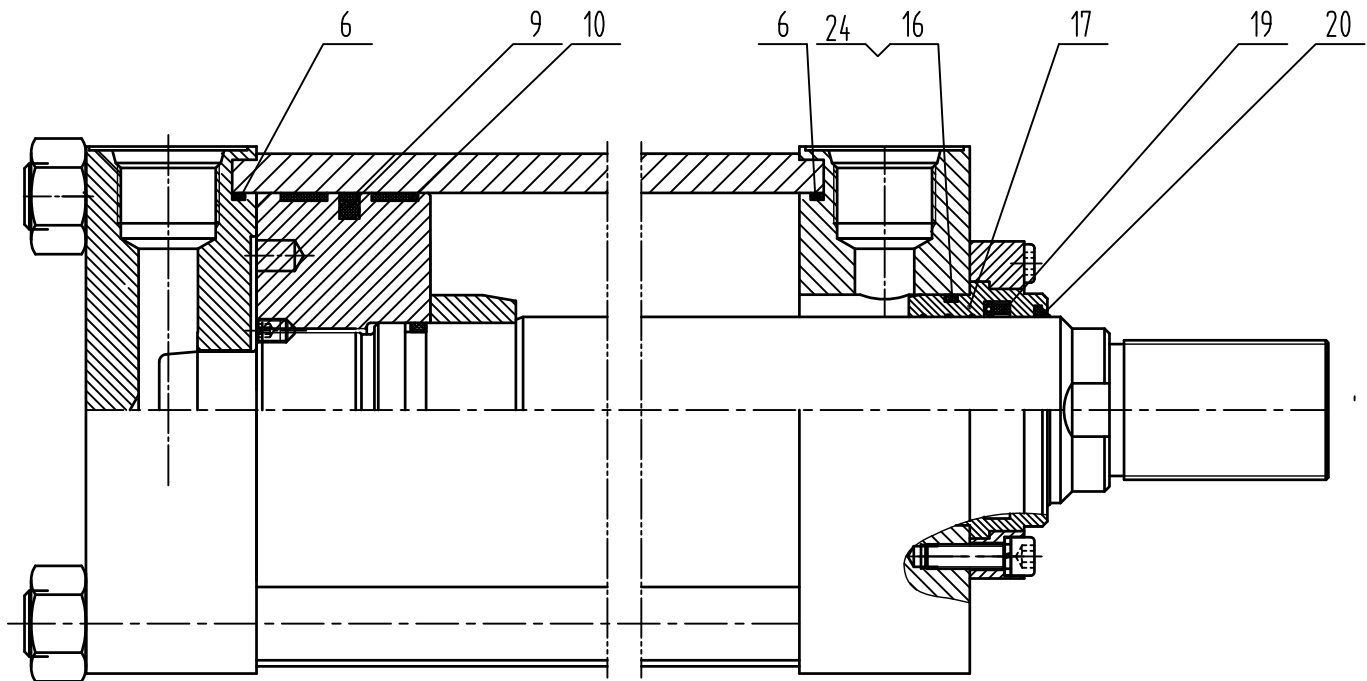


Clevis Bracket (CB)



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