



# **Pneumatic & Hydraulic Cylinders**

## **Manufactured to Ford Specifications**



## **HD-2**

***Ford Standard  
3000 PSI Rated High Pressure  
Hydraulic Cylinders***



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**27650 Groesbeck Highway \* Roseville, Michigan 48066-2759**  
**(586) 775-7211 \* (800) 526-7968 \* Fax: (586) 775-4545**

**[www.Peninsularcylinders.com](http://www.Peninsularcylinders.com) Email: [Sales@Peninsularcylinders.com](mailto:Sales@Peninsularcylinders.com)**



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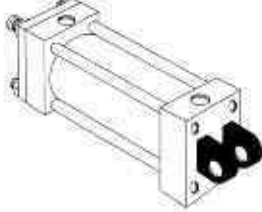
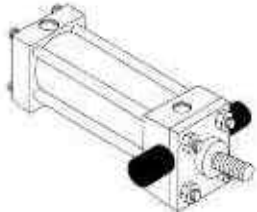
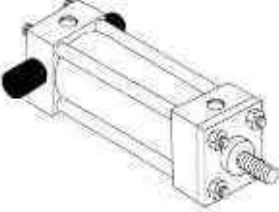
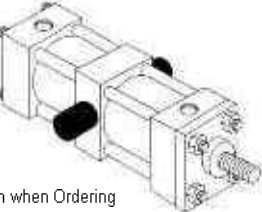
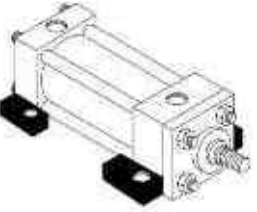
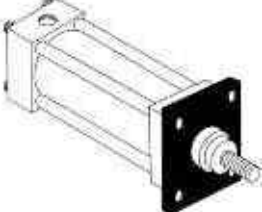
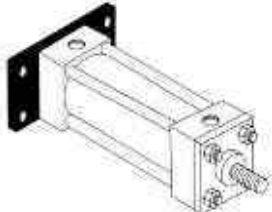
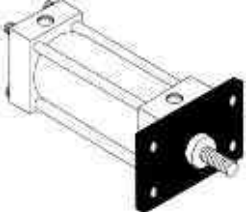
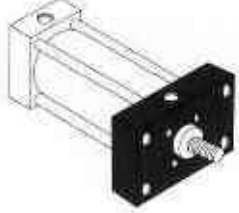
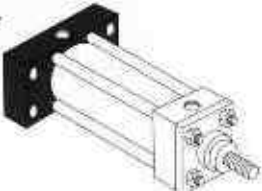
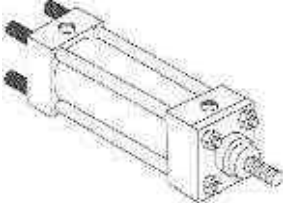
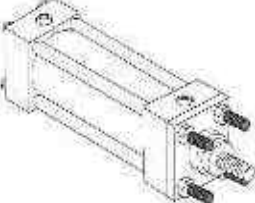
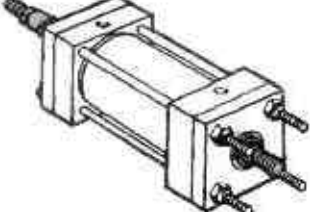
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# Mounting Styles

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<p>Cap Fixed Clevis (MP1)</p>  <p>Page 3</p>	<p>Head Trunnion (MT1)</p>  <p>Page 5</p>	<p>Cap Trunnion (MT2)</p>  <p>Page 5</p>
<p>Intermediate Trunnion (MT4)</p>  <p>Page 7</p> <p>* Note: Specify XI dimension when Ordering An Intermediate Trunnion (MT4) Cylinder.</p>	<p>Foot Side Lugs (MS2)</p>  <p>Page 9</p>	<p>Head Square Flange (MF5)</p>  <p>Page 11</p>
<p>Cap Rectangular Flange (MF2)</p>  <p>Page 13</p>	<p>Head Rectangular Flange (MF1)</p>  <p>Page 15</p>	<p>Head Rectangular (ME5)</p>  <p>Page 17</p>
<p>Cap Rectangular (ME6)</p>  <p>Page 19</p>	<p>Cap Tie Rod Extended (MX2)</p>  <p>Page 21</p>	<p>Head Tie Rod Extended (MX3)</p>  <p>Page 21</p>
<p>Double Rod Mount (MD**)</p>  <p>Pages 23</p>		



## ORDERING PROCEDURE

### WHEN ORDERING - SPECIFY :

- 1) Cushion - Head End (Use Only if Cushion is Required)
- 2) Cylinder Bore (Specify in Inches)
- 3) Specify "HD2" (Standard Group Code used in all HD2 Model Numbers)
- 4) Specify Piston Rod Diameter

Specify Piston Rod End Style  
 "SM" Style Shown. All Others Available

Bore Size	Rod Diameter
1 1/2"	5/8", 1"
2"	1", 1 3/8"
2 1/2"	1", 1 3/8"
3 1/4"	1 3/8", 1 3/4"
4"	1 3/4", 2"
5"	2", 2 1/2"
6"	2 1/2", 3 1/2"
8"	3 1/2", 4", 5 1/2"

Rod Diameter	"SM" Style Shown
5/8"	7/16 - 20
1"	3/4 - 16
1 3/8"	1 - 14
1 3/4"	1 1/4 - 12
2"	1 1/2 - 12
2 1/2"	1 7/8 - 12
3 1/2"	2 1/2 - 12
4"	3 - 12
5 1/2"	4 - 12



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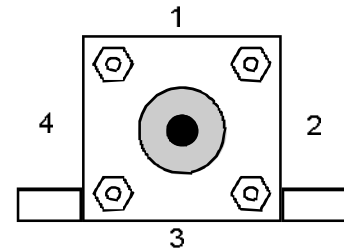
Note: Consult Factory if the  
 Cylinder needs to be  
Proximity Switch Ready

- |   |   |
|---|---|
| <ol style="list-style-type: none"> <li>5) <u>MODEL</u>      <u>DESCRIPTION</u></li> <li>MP1 - Cap Fixed Clevis</li> <li>MT1 - Head Trunnion</li> <li>MT2 - Cap Trunnion</li> <li>MT4 - Intermediate Fixed Trunnion</li> <li>MS2 - Side Lug Mount</li> <li>MF5 - Head Square Flange</li> </ol> | <ol style="list-style-type: none"> <li><u>MODEL</u>      <u>DESCRIPTION</u></li> <li>MF2 - Cap Rectangular Flange</li> <li>MF1 - Head Rectangular Flange</li> <li>ME5 - Head Rectangular</li> <li>ME6 - Cap Rectangular</li> <li>MX2 &amp; MX3 - Tie Rods Extended</li> <li>MD - Double Rod Cylinder</li> </ol> |
|---|---|

- 6) Cylinder Stroke (Specify in Inches)
- 7) Cushion - Cap End (Use Only if Cushion is Required)
- 8) Port Type

N Indicates NPTF Thread Ports  
 S Indicates SAE Thread Ports

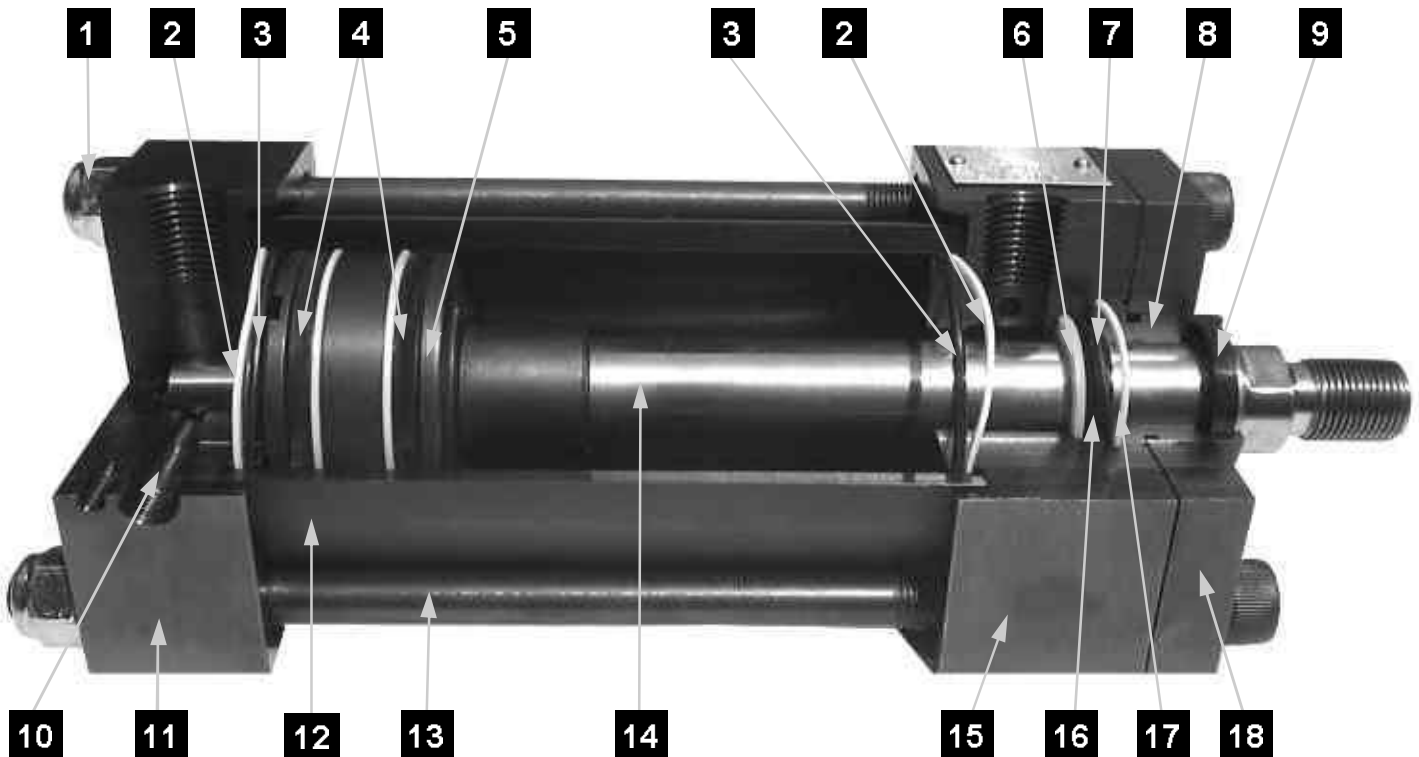
- 9) Seal Type
  - 1 Indicates Cast Iron Piston Rings / Buna N Rod Seals
  - 2 Indicates Buna N (Nitrile) throughout
  - 3 Indicates Viton throughout
  - 4 Cast Iron Piston Rings / Viton Rod Seals



**Example:** C - 1 1/2 - HD2 - 5/8SM - MS2 - 3 - C - S - 1

- CAST IRON PISTON RINGS
- SAE PORT THREADS (STD. POS. 1)
- CUSHIONED CAP END (STD. POS. 2)
- 3" STROKE CYLINDER
- CYLINDER MOUNTING STYLE (SIDE LUG)
- 5/8" PISTON ROD DIAMETER; SMALL MALE ROD-END STYLE
- "HD2" GROUP CODE
- 1 1/2" BORE CYLINDER
- CUSHIONED HEAD END (STD. POS. 2)

## HD2 Cylinder Parts List



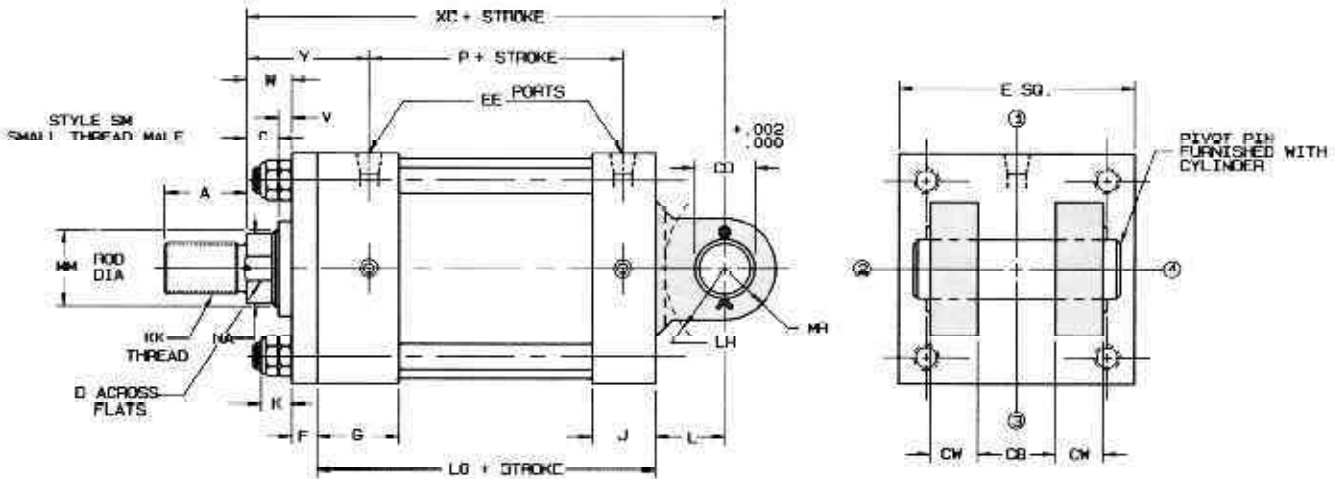
1. Tie Rod Nut
2. Teflon Backup Ring - Tube
3. Tube O-Ring
4. Piston U-Cups
5. Piston
6. Teflon Backup Ring - Z Seal
7. Rod Cartridge O-Ring
8. Rod Cartridge
9. Rod Wiper
10. Cushion Adjustment

11. Cap
12. Cylinder Tube
13. Tie Rod
14. Piston Rod; Specify Rod End Style & Diameter
15. Head
16. Z-Seal
17. Teflon Backup Ring for Rod Cartridge O-Ring
18. Rod Cartridge Retainer Plate

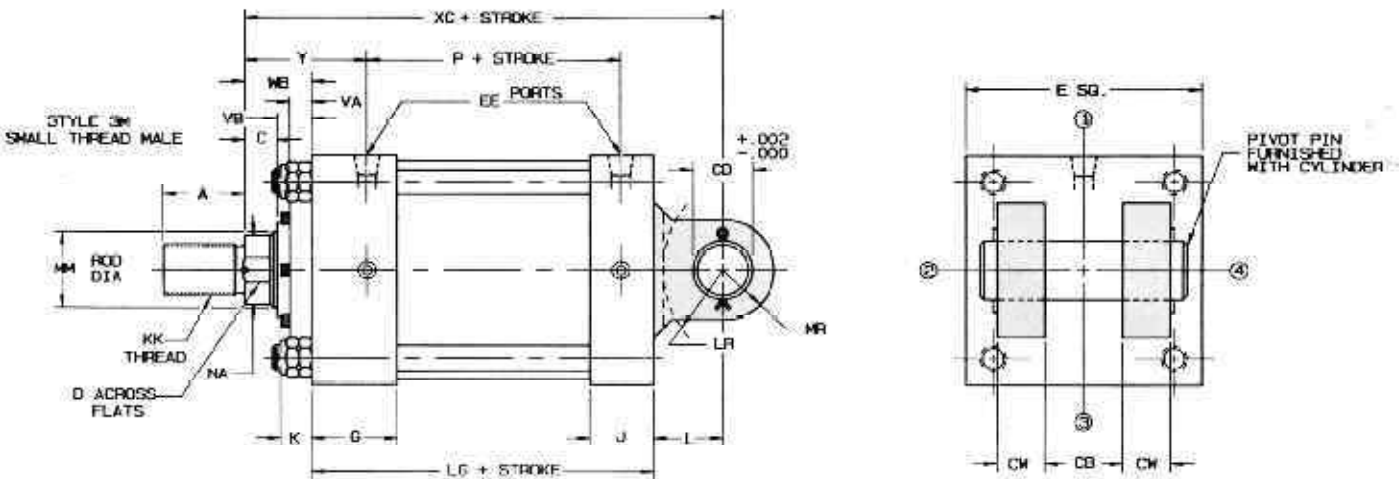
# CAP FIXED CLEVIS MOUNT

MP1

1 1/2" & 2" BORE WITH O/S RODS

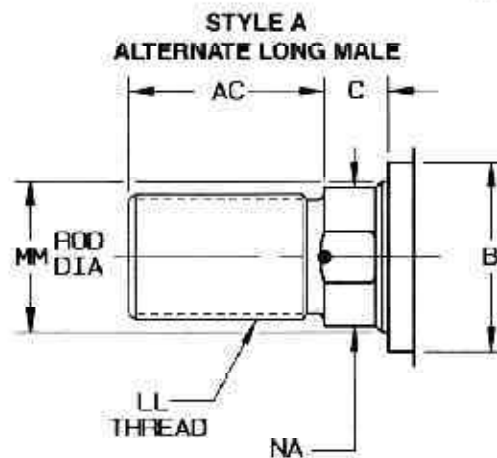
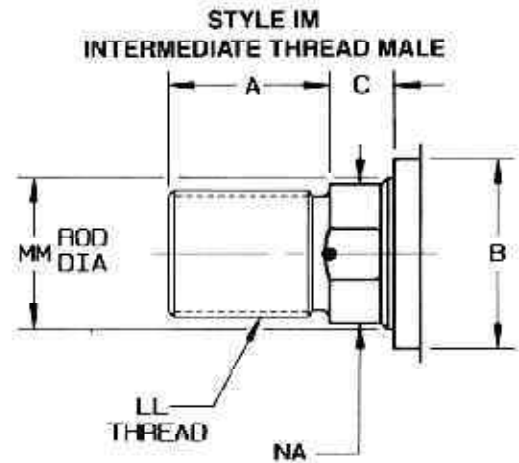
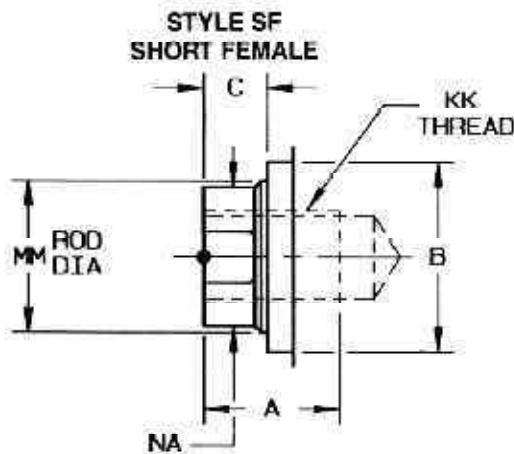


1 1/2" THRU 8" CYLINDER BORE



ENVELOPE AND MOUNTING DIMENSIONS NOT AFFECTED BY ROD SIZE

CYL. BORE	CB	CD (hole)	CW	E	EE (NPTF)	F	G	J	K	L	LG	LR	MR	P
1 1/2	3/4	.500	1/2	2 1/2	1/2	3/8	1 3/4	1 1/2	15/32	3/4	4 5/8	9/16	1/2	2 7/8
2	1 1/4	.750	5/8	3	1/2	5/8	1 3/4	1 1/2	39/64	1 1/4	4 5/8	15/16	3/4	2 7/8
2 1/2	1 1/4	.750	5/8	3 1/2	1/2	5/8	1 3/4	1 1/2	39/64	1 1/4	4 3/4	15/16	3/4	3
3 1/4	1 1/2	1.000	3/4	4 1/2	3/4	3/4	2	1 3/4	49/64	1 1/2	5 1/2	1 3/16	1	3 1/2
4	2	1.375	1	5	3/4	7/8	2	1 3/4	49/64	2 1/8	5 3/4	1 3/4	1 3/8	3 3/4
5	2 1/2	1.750	1 1/4	6 1/2	3/4	7/8	2	1 3/4	63/64	2 1/4	6 1/4	1 13/16	1 3/4	4 1/4
6	2 1/2	2.000	1 1/4	7 1/2	1	1	2 1/4	2 1/4	1 1/32	2 1/2	7 3/8	2 1/8	2	4 7/8
8	3	3.000	1 1/2	9 1/2	1 1/2	1	3	3	1 3/8	3 1/4	9 1/2	2 7/8	2 3/4	6 1/8

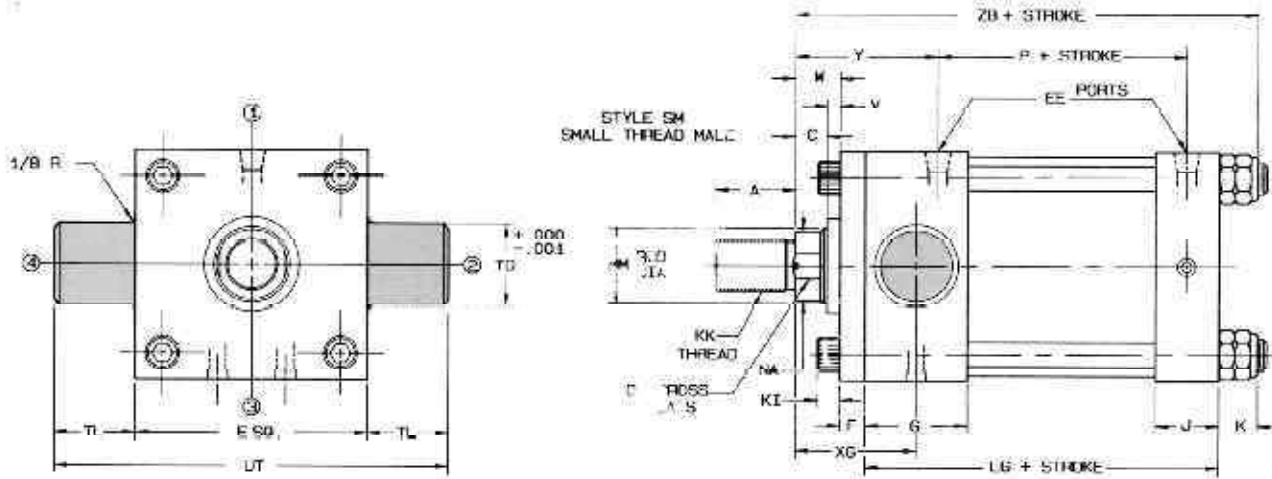


CYL BORE	ROD DIA. MM	THREAD		ROD END DIMENSIONS & MOUNTING DIMENSIONS AFFECTED BY ROD SIZE												
		KK	LL	A	AC	B <sup>+0.002</sup> <sub>-0.002</sub>	C	D	NA	V	VA	VB	W	WB	Y	XC
1 1/2	5/8	7/16-20	1/2-20	3/4	1 1/8	1.124	3/8	1/2	.593	-	1/4	5/8	-	1	2	6 3/8
	1	3/4-16	7/8-14	1 1/8	1 7/8	1.499	1/2	7/8	.968	1/2	-	-	1	-	2 3/8	8 3/4
2	1	3/4-16	7/8-14	1 1/8	1 7/8	1.499	1/2	7/8	.968	-	3/8	7/8	-	1 3/8	2 3/8	7 1/4
	1 3/8	1-14	1 1/4-12	1 5/8	2 1/2	1.999	5/8	1 1/8	1.343	3/8	-	-	1	-	2 5/8	7 1/2
2 1/2	1	3/4-16	7/8-14	1 1/8	1 7/8	1.499	1/2	7/8	.968	-	2/8	7/8	-	1 3/8	2 3/8	7 3/8
	1 3/8	1-14	1 1/4-12	1 5/8	2 1/2	1.999	5/8	1 1/8	1.343	-	3/8	1	-	1 5/8	2 5/8	7 5/8
3 1/4	1 3/8	1-14	1 1/4-12	1 5/8	2 1/2	1.999	5/8	1 1/8	1.343	-	3/8	1	-	1 5/8	2 3/4	8 5/8
	1 3/4	1 1/4-12	1 1/2-12	2	3	2.374	3/4	1 1/2	1.703	-	3/8	1 1/8	-	1 7/8	3	8 7/8
4	1 3/4	1 1/4-12	1 1/2-12	2	3	2.374	3/4	1 1/2	1.703	-	3/8	1 1/8	-	1 7/8	3	9 3/4
	2	1 1/2-12	1 3/4-12	2 1/4	3 1/2	2.624	7/8	1 11/16	1.953	-	3/8	1 1/8	-	2	3 1/8	9 7/8
5	2	1 1/2-12	1 3/4-12	2 1/4	3 1/2	2.624	7/8	1 11/16	1.953	-	3/8	1 1/8	-	2	3 1/8	10 1/2
	2 1/2	1 7/8-12	2 1/4-12	3	4 1/2	3.124	1	2 1/16	2.453	-	3/8	1 1/4	-	2 1/4	3 3/8	10 3/4
6	2 1/2	1 7/8-12	2 1/4-12	3	4 1/2	3.124	1	2 1/16	2.453	-	3/8	1 1/4	-	2 1/4	3 1/2	12 1/8
	3 1/2	2 1/2-12	3 1/4-12	3 1/2	6 1/2	4.249	1	3	3.437	-	3/8	1 1/4	-	2 1/4	3 1/2	12 1/8
8	3 1/2	2 1/2-12	3 1/4-12	3 1/2	6 1/2	4.249	1	3	3.437	-	3/8	1 1/4	-	2 1/4	3 15/16	15
	4	3-12	3 3/4-12	4	7 1/2	4.749	1	3 3/8	3.937	-	1/2	1 1/4	-	2 1/4	3 15/16	15
	5 1/2	4-12	5 1/4-12	5 1/2	10	6.249	1	4 5/8	5.421	-	1/2	1 1/4	-	2 1/4	3 15/16	15

# HEAD TRUNNION MOUNT

MT1

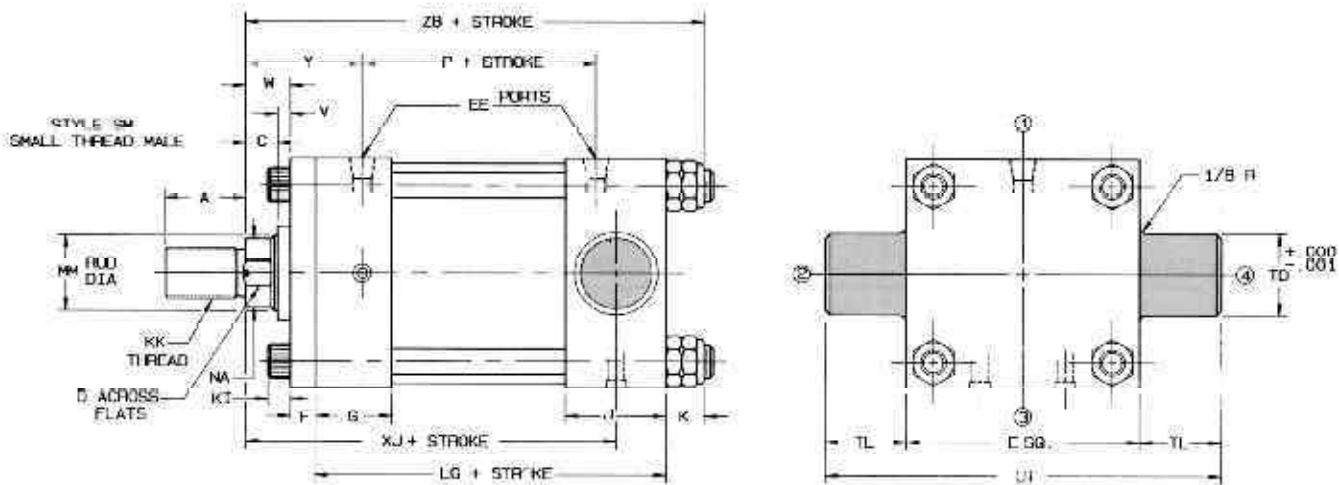
1 1/2" THRU 8" CYLINDER BORE



# CAP TRUNNION MOUNT

MT2

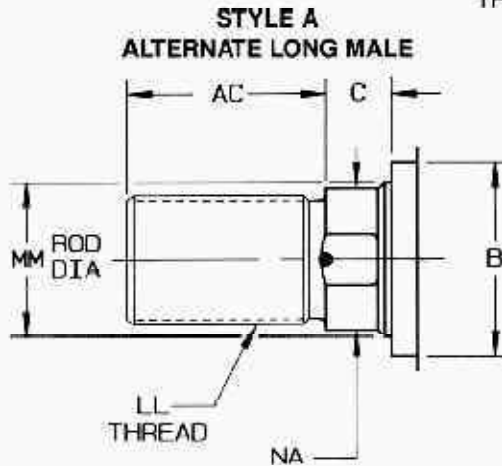
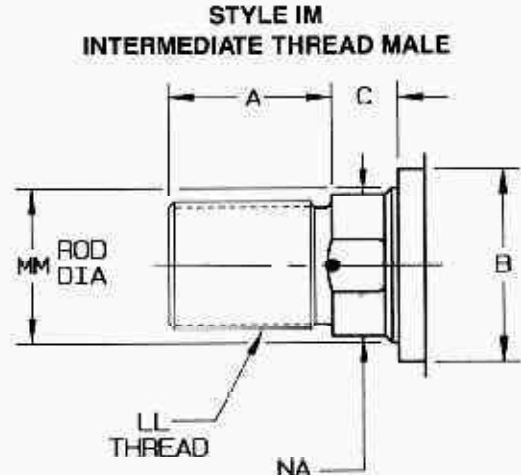
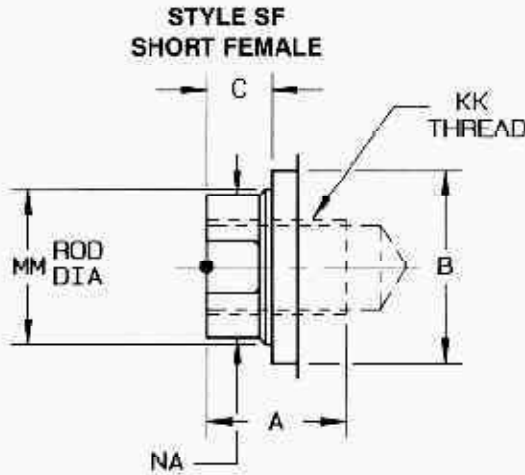
1 1/2" THRU 8" CYLINDER BORE



ENVELOPE AND MOUNTING DIMENSIONS NOT AFFECTED BY ROD SIZE

CYL. BORE	E	EE (NPTF)	F	G	J	K	Ki	LG	P	TD	TL	UT
1 1/2	2 1/2	1/2	3/8	1 3/4	1 1/2	15/32	3/8	4 5/8	2 7/8	1.000	1	4 1/2
2	3	1/2	5/8	1 3/4	1 1/2	39/64	1/2	4 5/8	2 7/8	1.375	1 3/8	5 3/4
2 1/2	3 1/2	1/2	5/8	1 3/4	1 1/2	39/64	1/2	4 3/4	3	1.375	1 3/8	6 1/4
3 1/4	4 1/2	3/4	3/4	2	1 3/4	49/64	5/8	5 1/2	3 1/2	1.750	1 3/4	8
4	5	3/4	7/8	2	1 3/4	49/64	5/8	5 3/4	3 3/4	1.750	1 3/4	8 1/2
5	6 1/2	3/4	7/8	2	1 3/4	63/64	7/8	6 1/4	4 1/4	1.750	1 3/4	10
6	7 1/2	1	1	2 1/4	2 1/4	1 1/32	1	7 3/8	4 7/8	2.000	2	11 1/2
8	9 1/2	1 1/2	1	3	3	1 3/8	1 1/4	9 1/2	6 1/8	3.000	3	15 1/2



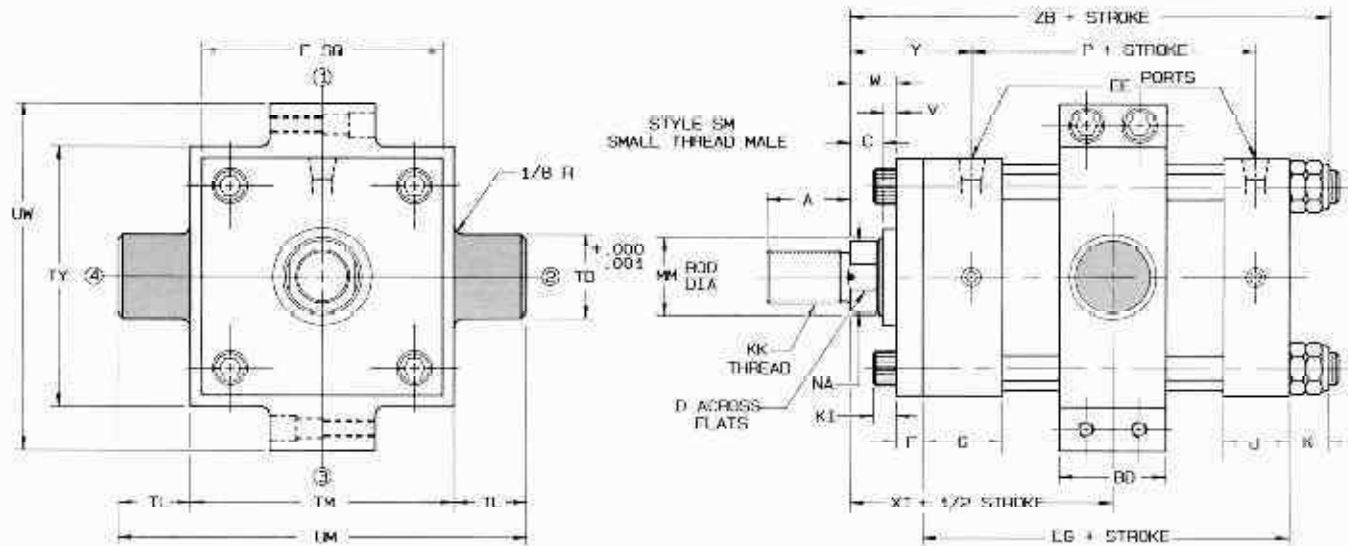


CYL. BORE	ROD DIA.	THREAD		ROD END DIMENSIONS AND MOUNTING DIMENSIONS AFFECTED BY ROD SIZE											
	MM	KK	LL	A	AC	B - .008 -.002	C	D	NA	V	W	XG	XJ	Y	ZB
1 1/2	5/8	7/16-20	1/2-20	3/4	1 1/8	1.124	3/8	1/2	.693	1/4	5/8	1 7/8	4 7/8	2	0 3/32
	1	3/4-16	7/8-14	1 1/8	1 7/8	1.499	1/2	7/8	.968	1/2	1	2 1/4	5 1/4	2 3/8	6 15/32
2	1	3/4-16	7/8-14	1 1/8	1 7/8	1.499	1/2	7/8	.968	1/4	3/4	2 1/4	5 1/4	2 3/8	6 39/64
	1 3/8	1-14	1 1/4-12	1 5/8	2 1/2	1.999	5/8	1 1/8	1.343	3/8	1	2 1/2	5 1/2	2 5/8	6 55/64
2 1/2	1	3/4-16	7/8-14	1 1/8	1 7/8	1.499	1/2	7/8	.968	1/4	3/4	2 1/4	5 3/8	2 3/8	6 47/64
	1 3/8	1-14	1 1/4-12	1 5/8	2 1/2	1.999	5/8	1 1/8	1.343	3/8	1	2 1/2	5 5/8	2 5/8	6 63/64
3 1/4	1 3/8	1-14	1 1/4-12	1 5/8	2 1/2	1.999	5/8	1 1/8	1.343	1/4	7/8	2 5/8	6 1/4	2 3/4	7 57/64
	1 3/4	1 1/4-12	1 1/2-12	2	3	2.374	3/4	1 1/2	1.703	3/8	1 1/8	2 7/8	6 1/2	3	8 9/64
4	1 3/4	1 1/4-12	1 1/2-12	2	3	2.374	3/4	1 1/2	1.703	1/4	1	2 7/8	6 3/4	3	8 25/64
	2	1 1/2-12	1 3/4-12	2 1/4	3 1/2	2.624	7/8	1 11/16	1.953	1/4	1 1/8	3	6 7/8	3 1/8	8 33/64
5	2	1 1/2-12	1 3/4-12	2 1/4	3 1/2	2.624	7/8	1 11/16	1.953	1/4	1 1/8	3	7 3/8	3 1/8	9 15/64
	2 1/2	1 7/8-12	2 1/4-12	3	4 1/2	3.124	1	2 1/16	2.453	3/8	1 3/8	3 1/4	7 5/8	3 3/8	9 31/64
6	2 1/2	1 7/8-12	2 1/4-12	3	4 1/2	3.124	1	2 1/16	2.453	1/4	1 1/4	3 3/8	8 1/2	3 1/2	10 21/32
	3 1/2	2 1/2-12	3 1/4-12	3 1/2	6 1/2	4.249	1	3	3.437	1/4	1 1/4	3 3/8	8 1/2	3 1/2	10 21/32
8	3 1/2	2 1/2-12	3 1/4-12	3 1/2	6 1/2	4.249	1	3	3.437	1/4	1 1/4	3 3/4	10 1/4	3 15/16	13 1/8
	4	3-12	3 3/4-12	4	7 1/2	4.749	1	3 3/8	3.937	1/4	1 1/4	3 3/4	10 1/4	3 15/16	13 1/8
	5 1/2	4-12	5 1/4-12	5 1/2	10	6.249	1	4 5/8	5.421	1/4	1 1/4	3 3/4	10 1/4	3 15/16	13 1/8

# INTER. TRUNNION MOUNT

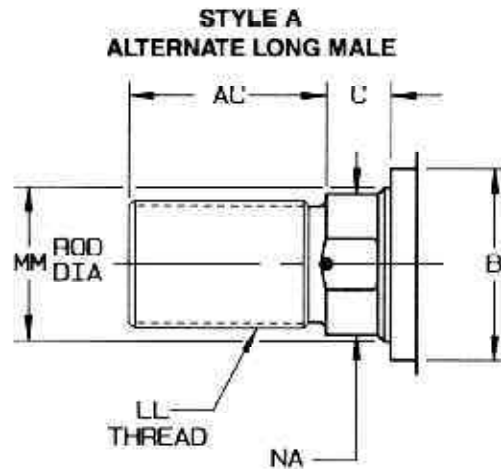
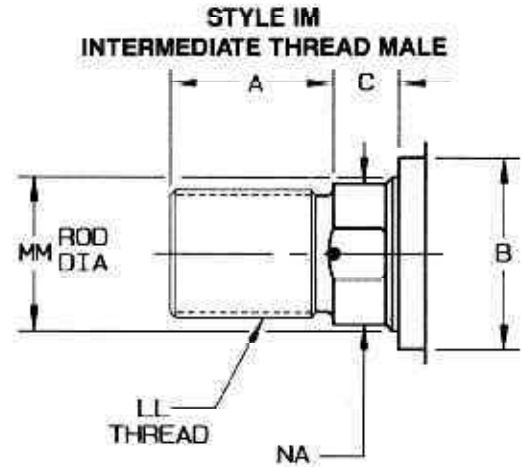
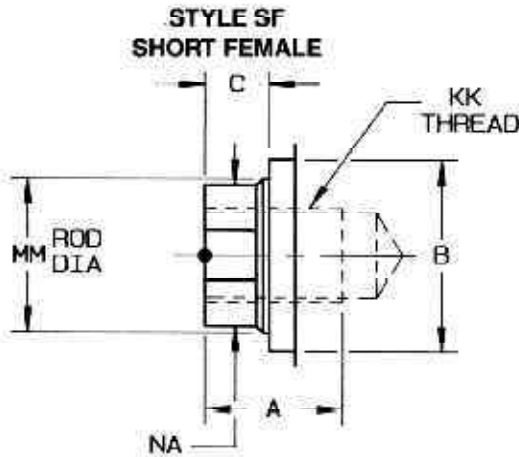
MT4

1 1/2" THRU 8" CYLINDER BORE



ENVELOPE AND MOUNTING DIMENSIONS NOT AFFECTED BY ROD SIZE

GYL. BORE	BD	E	EE (NPTF)	F	G	J	K	Ki	LG	P	TD	TL	TM	TY	UM	UW
1 1/2	1 3/16	2 1/2	1/2	3/8	1 3/4	1 1/2	15/32	3/8	4 5/8	2 7/8	1.000	1	3	2 3/4	5	4
2	1 7/16	3	1/2	5/8	1 3/4	1 1/2	39/64	1/2	4 5/8	2 7/8	1.375	1 3/8	3 1/2	3 1/4	6 1/4	4 3/4
2 1/2	1 7/16	3 1/2	1/2	5/8	1 3/4	1 1/2	39/64	1/2	4 3/4	3	1.375	1 3/8	4	3 3/4	6 3/4	5 1/4
3 1/4	1 15/16	4 1/2	3/4	3/4	2	1 3/4	49/64	5/8	5 1/2	3 1/2	1.750	1 3/4	5	4 3/4	8 1/2	6 3/4
4	1 15/16	5	3/4	7/8	2	1 3/4	49/64	5/8	5 3/4	3 3/4	1.750	1 3/4	5 1/2	5 1/4	9	7 1/4
5	1 15/16	6 1/2	3/4	7/8	2	1 3/4	63/64	7/8	6 1/4	4 1/4	1.750	1 3/4	7	6 3/4	10 1/2	9
6	2 15/16	7 1/2	1	1	2 1/4	2 1/4	1 1/32	1	7 3/8	4 7/8	2.000	2	8 1/2	7 3/4	12 1/2	10 1/4
8	3 7/16	9 1/2	1 1/2	1	3	3	1 3/8	1 1/4	9 1/2	6 1/8	3.000	3	11	9 3/4	17	12 3/4

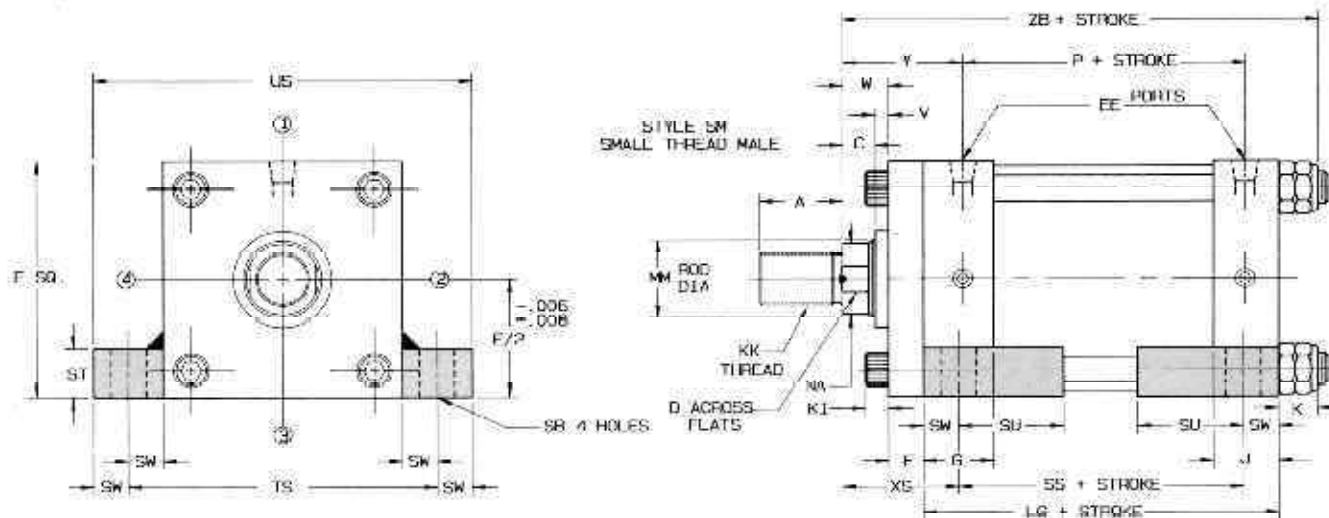


CYL. BORE	ROD DIA	THREAD		ROD END DIMENSIONS & MOUNT DIMENSIONS AFFECTED BY ROD SIZE										
	MM	KK	LL	A	AC	B $\pm \frac{.000}{-.002}$	C	D	NA	V	W	XI (min)	Y	ZB
1 1/2	5/8	7/16-20	1/2-20	3/4	1 1/8	1.124	3/8	1/2	.593	1/4	5/8	3.44	2	6 3/32
	1	3/4-16	7/8-14	1 1/8	1 7/8	1.499	1/2	7/8	.968	1/2	1	3.82	2 3/8	6 15/32
2	1	3/4-16	7/8-14	1 1/8	1 7/8	1.499	1/2	7/8	.968	1/4	3/4	3.82	2 3/8	6 39/64
	1 3/8	1-14	1 1/4-12	1 5/8	2 1/2	1.999	5/8	1 1/8	1.343	3/8	1	4.08	2 5/8	6 55/64
2 1/2	1	3/4-16	7/8-14	1 1/8	1 7/8	1.499	1/2	7/8	.968	1/4	3/4	3.88	2 3/8	6 47/64
	1 3/8	1-14	1 1/4-12	1 5/8	2 1/2	1.999	5/8	1 1/8	1.343	3/8	1	4.12	2 5/8	6 63/64
3 1/4	1 3/8	1-14	1 1/4-12	1 5/8	2 1/2	1.999	5/8	1 1/8	1.343	1/4	7/8	4.50	2 3/4	7 57/64
	1 3/4	1 1/4-12	1 1/2-12	2	3	2.374	3/4	1 1/2	1.703	3/8	1 1/8	4.76	3	8 9/64
4	1 3/4	1 1/4-12	1 1/2-12	2	3	2.374	3/4	1 1/2	1.703	1/4	1	4.88	3	8 25/64
	2	1 1/2-12	1 3/4-12	2 1/4	3 1/2	2.624	7/8	1 11/16	1.953	1/4	1 1/8	5.00	3 1/8	8 93/64
5	2	1 1/2-12	1 3/4-12	2 1/4	3 1/2	2.624	7/8	1 11/16	1.953	1/4	1 1/8	5.26	3 1/8	9 15/64
	2 1/2	1 7/8-12	2 1/4-12	3	4 1/2	3.124	1	2 1/16	2.453	3/8	1 3/8	5.50	3 3/8	9 31/64
6	2 1/2	1 7/8-12	2 1/4-12	3	4 1/2	3.124	1	2 1/16	2.453	1/4	1 1/4	5.94	3 1/2	10 21/32
	3 1/2	2 1/2-12	3 1/4-12	3 1/2	6 1/2	4.249	1	3	3.437	1/4	1 1/4	5.94	3 1/2	10 21/32
8	3 1/2	2 1/2-12	3 1/4-12	3 1/2	6 1/2	4.249	1	3	3.437	1/4	1 1/4	7.00	3 15/16	13 1/8
	4	3-12	3 3/4-12	4	7 1/2	4.749	1	3 3/8	3.937	1/4	1 1/4	7.00	3 15/16	13 1/8
	5 1/2	4-12	5 1/4-12	5 1/2	10	6.249	1	4 5/8	5.421	1/4	1 1/4	7.00	3 15/16	13 1/8

# SIDE LUG MOUNT

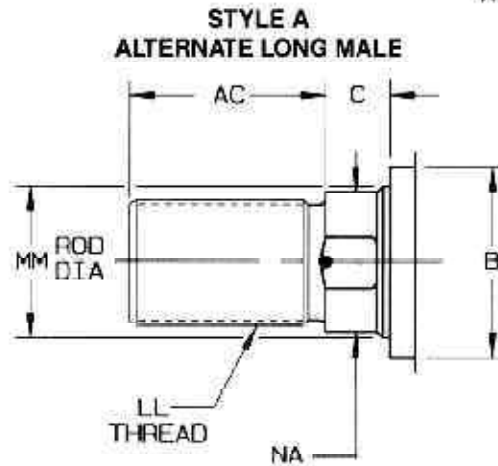
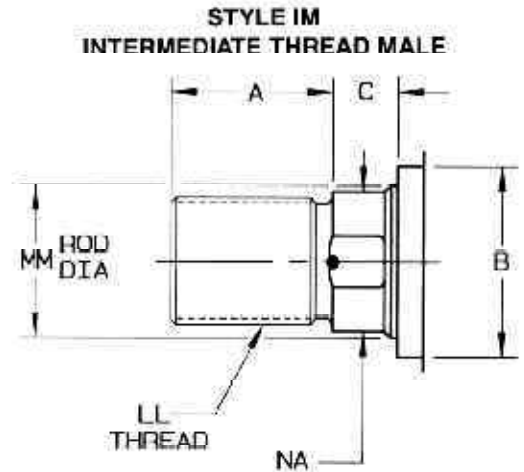
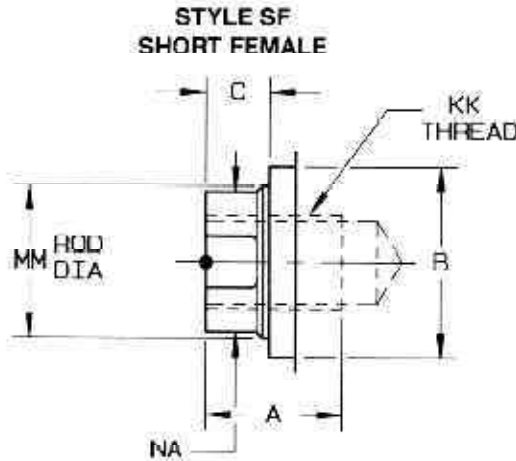
MS2

1 1/2" THRU 8" CYLINDER BORE



ENVELOPE AND MOUNTING DIMENSIONS NOT AFFECTED BY ROD SIZE

CYL. BORE	E	EE(NPTF)	F	G	J	K	KI	LG	P	SB(hole)	SS	ST	SU	SW	TS	US
1 1/2	2 1/2	1/2	3/8	1 3/4	1 1/2	15/32	3/8	4 5/8	2 7/8	7/16	3 7/8	1/2	15/16	3/8	3 1/4	4
2	3	1/2	5/8	1 3/4	1 1/2	39/64	1/2	4 5/8	2 7/8	9/16	3 5/8	3/4	1 1/4	1/2	4	5
2 1/2	3 1/2	1/2	5/8	1 3/4	1 1/2	38/64	1/2	4 3/4	3	13/16	3 3/8	1	1 9/16	11/16	4 7/8	6 1/4
3 1/4	4 1/2	3/4	3/4	2	1 3/4	49/64	5/8	5 1/2	3 1/2	13/16	4 1/8	1	1 9/16	11/16	5 7/8	7 1/4
4	5	3/4	7/8	2	1 3/4	49/64	5/8	5 3/4	3 3/4	1 1/16	4	1 1/4	2	7/8	6 3/4	8 1/2
5	6 1/2	3/4	7/8	2	1 3/4	63/64	7/8	6 1/4	4 1/4	1 1/16	4 1/2	1 1/4	2	7/8	6 1/4	10
6	7 1/2	1	1	2 1/4	2 1/4	1 1/32	1	7 3/8	4 7/8	1 5/16	5 1/8	1 1/2	2 1/2	1 1/8	9 3/4	12
8	9 1/2	1 1/2	1	3	3	1 3/8	1 1/4	9 1/2	6 1/8	1 9/16	6 3/4	1 3/4	2 7/8	1 3/8	12 1/4	15

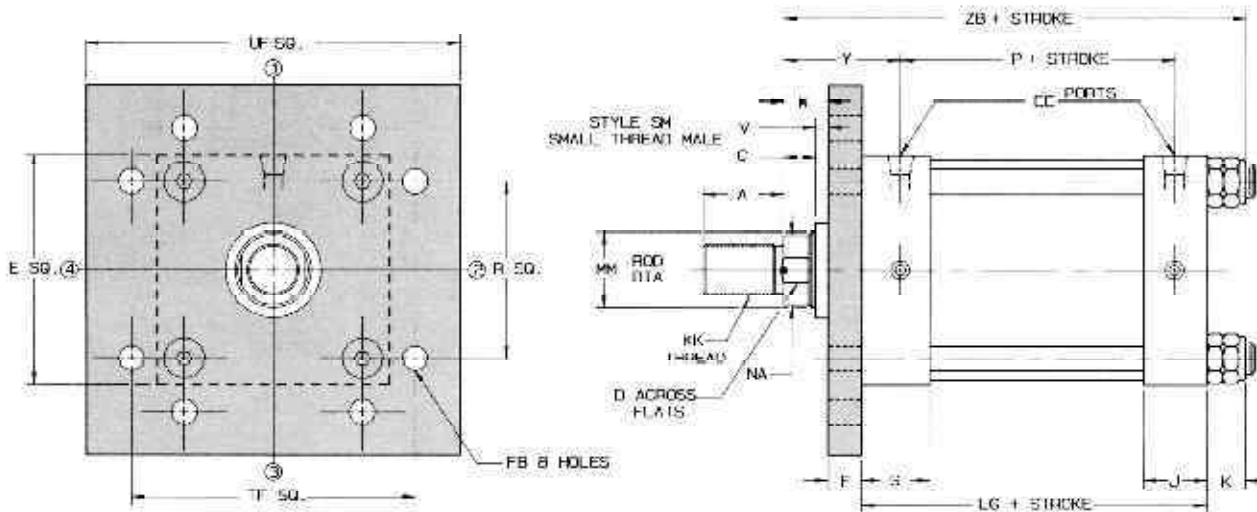


GYL. BORE	ROD DIA	THREAD		ROD END DIMENSIONS & MOUNT DIMENSIONS AFFECTED BY ROD SIZE										
	MM	KK	LL	A	AC	B - .0005	C	D	NA	V	W	XS	Y	ZB
1 1/2	5/8	7/16-20	1/2-20	3/4	1 1/8	1.124	3/8	1/2	.593	1/4	5/8	1 3/8	2	6 3/32
	1	3/4-16	7/8-14	1 1/8	1 7/8	1.499	1/2	7/8	.968	1/2	1	1 3/4	2 3/8	6 15/32
2	1	3/4-16	7/8-14	1 1/8	1 7/8	1.499	1/2	7/8	.968	1/4	3/4	1 7/8	2 3/8	6 39/64
	1 3/8	1-14	1 1/4-12	1 5/8	2 1/2	1.999	5/8	1 1/8	1.343	3/8	1	2 1/8	2 5/8	6 55/64
2 1/2	1	3/4-16	7/8-14	1 1/8	1 7/8	1.499	1/2	7/8	.968	1/4	3/4	2 1/16	2 3/8	6 47/64
	1 3/8	1-14	1 1/4-12	1 5/8	2 1/2	1.999	5/8	1 1/8	1.343	3/8	1	2 5/16	2 5/8	6 63/64
3 1/4	1 3/8	1-14	1 1/4-12	1 5/8	2 1/2	1.999	5/8	1 1/8	1.343	1/4	7/8	2 5/16	2 3/4	7 57/64
	1 3/4	1 1/4-12	1 1/2-12	2	3	2.374	3/4	1 1/2	1.703	3/8	1 1/8	2 9/16	3	8 9/64
4	1 3/4	1 1/4-12	1 1/2-12	2	3	2.374	3/4	1 1/2	1.703	1/4	1	2 3/4	3	8 25/64
	2	1 1/2-12	1 3/4-12	2 1/4	3 1/2	2.624	7/8	1 11/16	1.953	1/4	1 1/8	2 7/8	3 1/8	8 33/64
5	2	1 1/2-12	1 3/4-12	2 1/4	3 1/2	2.624	7/8	1 11/16	1.953	1/4	1 1/8	2 7/8	3 1/8	9 15/64
	2 1/2	1 7/8-12	2 1/4-12	3	4 1/2	3.124	1	2 1/16	2.453	3/8	1 3/8	3 1/8	3 3/8	9 31/64
6	2 1/2	1 7/8-12	2 1/4-12	3	4 1/2	3.124	1	2 1/16	2.453	1/4	1 1/4	3 3/8	3 1/2	10 21/32
	3 1/2	2 1/2-12	3 1/4-12	3 1/2	6 1/2	4.249	1	3	3.437	1/4	1 1/4	3 5/8	3 1/2	10 21/32
8	3 1/2	2 1/2-12	3 1/4-12	3 1/2	6 1/2	4.249	1	3	3.437	1/4	1 1/4	3 5/8	3 15/16	13 1/8
	4	3-12	3 3/4-12	4	7 1/2	4.749	1	3 3/8	3.937	1/4	1 1/4	3 5/8	3 15/16	13 1/8
	5 1/2	4-12	5 1/4-12	5 1/2	10	6.249	1	4 5/8	5.421	1/4	1 1/4	3 5/8	3 15/16	13 1/8

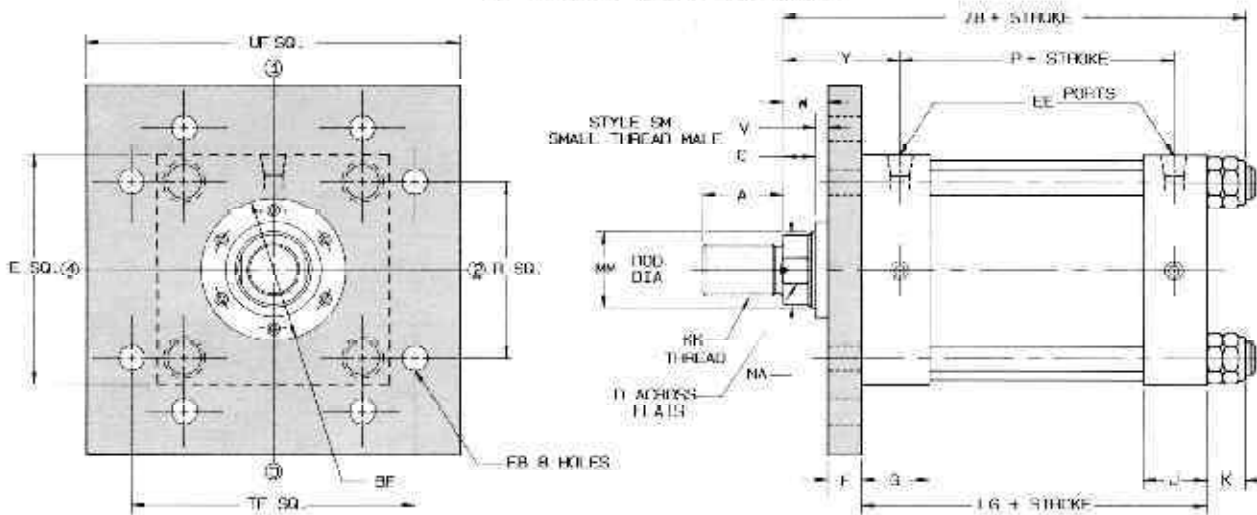
# HEAD SQ. FLANGE MOUNT

MF5

1 1/2" THRU 4" CYLINDER BORE

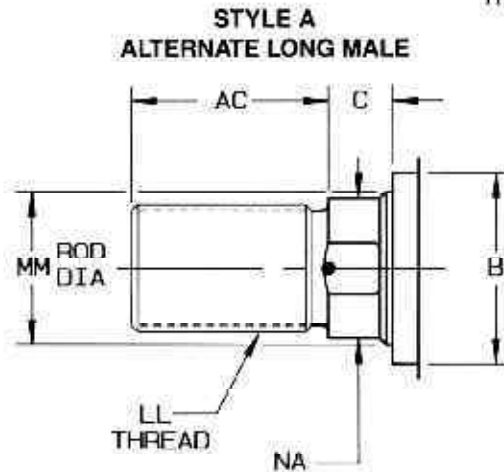
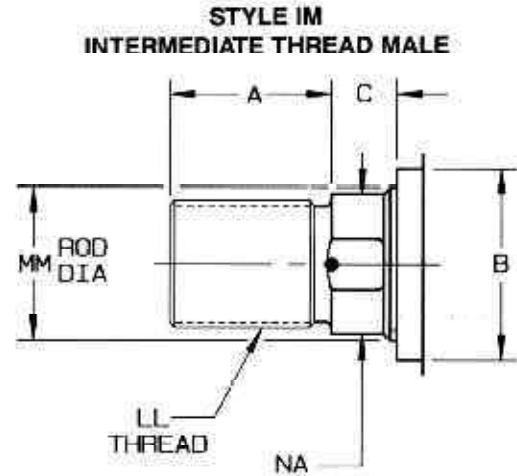
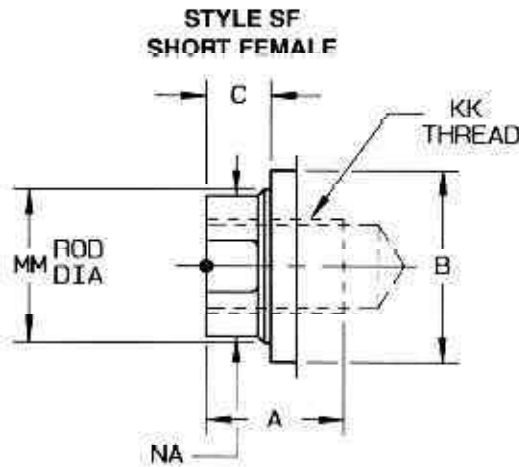


5" THRU 8" CYLINDER BORE



ENVELOPE AND MOUNTING DIMENSIONS NOT AFFECTED BY ROD SIZE

CYL. BORE	E	EE (NPTF)	F	FB (hole)	G	J	K	LG	P	R	TF	UF
1 1/2	2 1/2	1/2	3/8	7/16	1 3/4	1 1/2	15/32	4 5/8	2 7/8	1.63	3 7/16	4 1/4
2	3	1/2	5/8	9/16	1 3/4	1 1/2	39/64	4 5/8	2 7/8	2.05	4 1/8	5 1/8
2 1/2	3 1/2	1/2	5/8	9/16	1 3/4	1 1/2	39/64	4 3/4	3	2.55	4 5/8	5 5/8
3 1/4	4 1/2	3/4	3/4	11/16	2	1 3/4	49/64	5 1/2	3 1/2	3.25	5 7/8	7 1/8
4	5	3/4	7/8	11/16	2	1 3/4	49/64	5 3/4	3 3/4	3.82	6 3/8	7 5/8
5	6 1/2	3/4	7/8	15/16	2	1 3/4	63/64	6 1/4	4 1/4	4.95	8 3/16	9 3/4
6	7 1/2	1	1	1 1/16	2 1/4	2 1/4	1 1/32	7 3/8	4 7/8	5.73	9 7/16	11 1/4
8	9 1/2	1 1/2	1	1 5/16	3	3	1 3/8	9 1/2	6 1/8	7.50	11 13/16	14

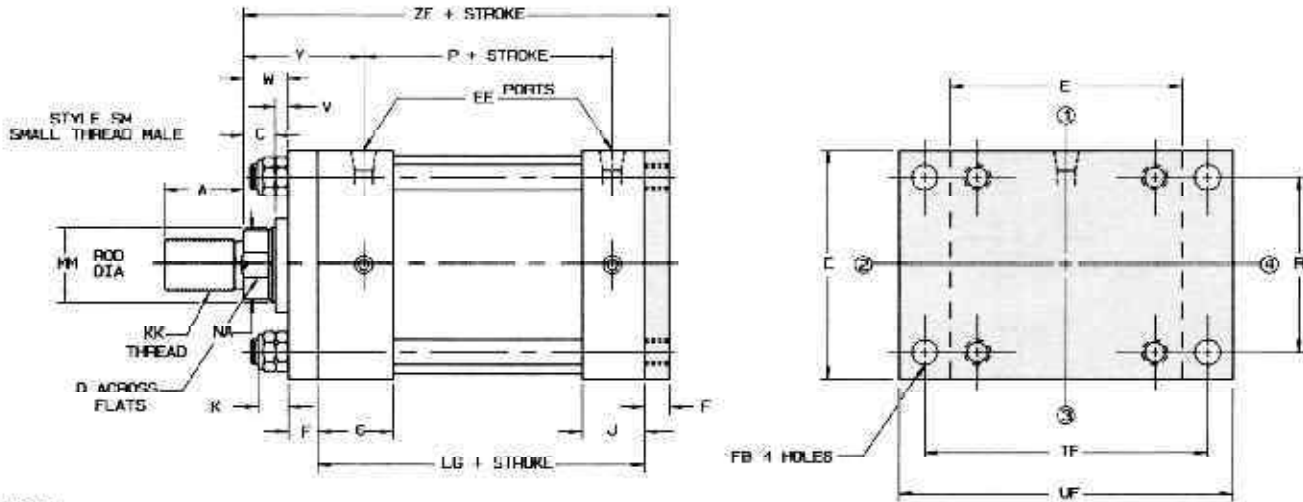


CYL. BORE	ROD DIA	THREAD		ROD END DIMENSIONS & MOUNT DIMENSIONS AFFECTED BY ROD SIZE										
	MM	KK	LL	A	AC	B $\pm .000$ $-.002$	BF	C	D	NA	V	W	Y	ZB
1 1/2	5/8	7/16-20	1/2-20	3/4	1 1/8	1.124	-	3/8	1/2	.593	1/4	5/8	2	6 3/32
	1	3/4-16	7/8-14	1 1/8	1 7/8	1.499	-	1/2	7/8	.968	1/2	1	2 3/8	6 15/32
2	1	3/4-16	7/8-14	1 1/8	1 7/8	1.499	-	1/2	7/8	.968	1/4	3/4	2 3/8	6 39/64
	1 3/8	1-14	1 1/4-12	1 5/8	2 1/2	1.999	-	5/8	1 1/8	1.343	3/8	1	2 5/8	6 55/64
2 1/2	1	3/4-16	7/8-14	1 1/8	1 7/8	1.400	-	1/2	7/8	.968	1/4	3/4	2 3/8	6 17/64
	1 3/8	1-14	1 1/4-12	1 5/8	2 1/2	1.999	-	5/8	1 1/8	1.343	3/8	1	2 5/8	6 63/64
3 1/4	1 3/8	1-14	1 1/4-12	1 5/8	2 1/2	1.999	-	5/8	1 1/8	1.343	1/4	7/8	2 3/4	7 57/64
	1 3/4	1 1/4-12	1 1/2-12	2	3	2.374	-	3/4	1 1/2	1.700	3/8	1 1/8	3	8 9/64
4	1 3/4	1 1/4-12	1 1/2-12	2	3	2.374	-	3/4	1 1/2	1.703	1/4	1	3	8 25/64
	2	1 1/2-12	1 3/4-12	2 1/4	3 1/2	2.624	-	7/8	1 11/16	1.953	1/4	1 1/8	3 1/8	8 33/64
5	2	1 1/2-12	1 3/4-12	2 1/4	3 1/2	2.624	4.28	7/8	1 11/16	1.953	1/4	1 1/8	3 1/8	9 15/64
	2 1/2	1 7/8-12	2 1/4-12	3	4 1/2	3.124	4.62	1	2 1/16	2.453	3/8	1 3/8	3 3/8	9 31/64
6	2 1/2	1 7/8-12	2 1/4-12	3	4 1/2	3.124	4.62	1	2 1/16	2.453	1/4	1 1/4	3 1/2	10 21/32
	3 1/2	2 1/2-12	3 1/4-12	3 1/2	6 1/2	4.249	5.56	1	3	3.437	1/4	1 1/4	3 1/2	10 21/32
8	3 1/2	2 1/2-12	3 1/4-12	3 1/2	6 1/2	4.249	5.56	1	3	3.437	1/4	1 1/4	3 15/16	13 1/8
	4	3-12	3 3/4-12	4	7 1/2	4.749	6.50	1	3 3/8	3.937	1/4	1 1/4	3 15/16	13 1/8
	5 1/2	4-12	5 1/4-12	5 1/2	10	8.249	8.25	1	4 5/8	5.421	1/4	1 1/4	3 15/16	13 1/8

# CAP RECT. FLANGE MOUNT

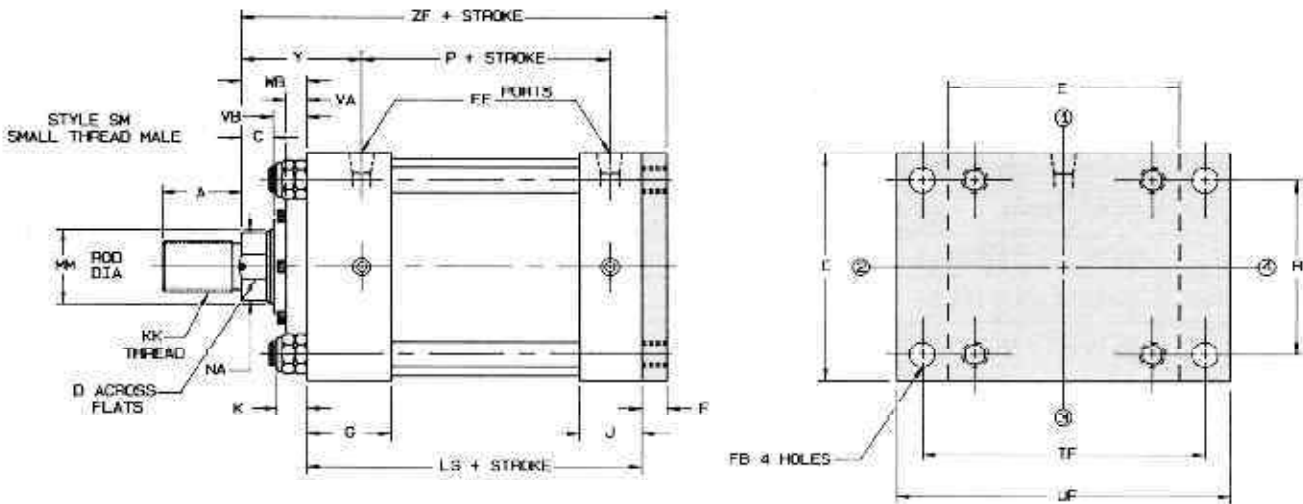
MF2

1 1/2" & 2" BORE WITH O/S RODS



**NOTE:**  
This mounting limited to 1000psi operation.

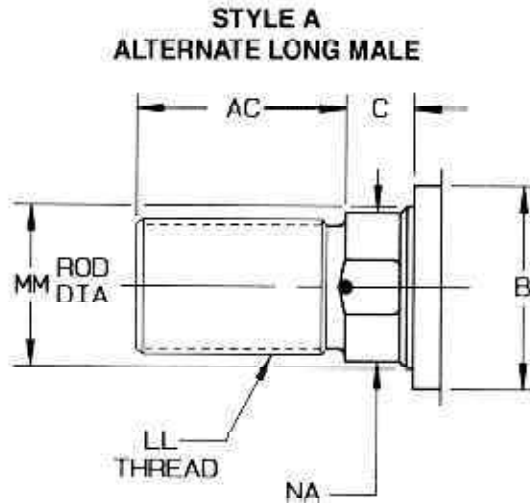
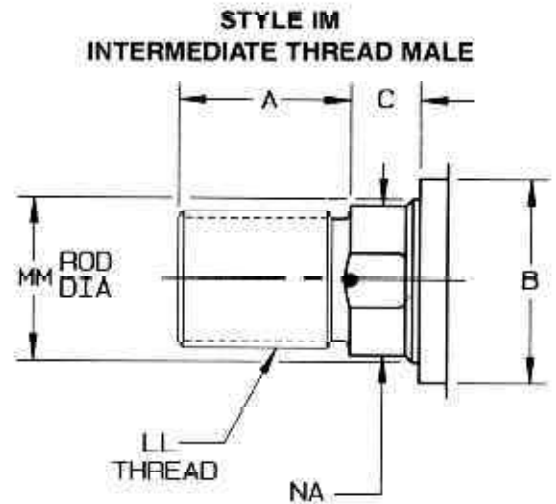
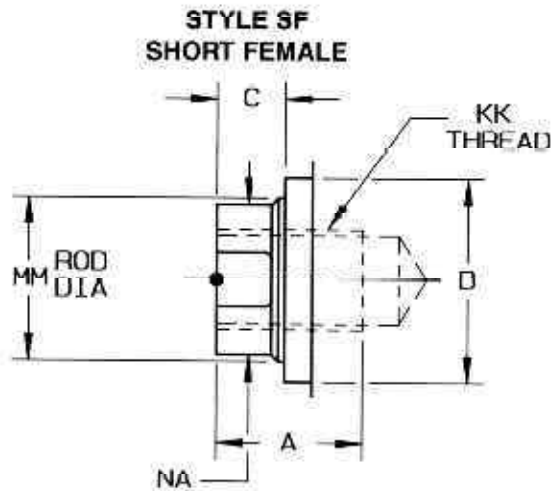
1 1/2" THRU 3 1/4" CYLINDER BORE



ENVELOPE AND MOUNTING DIMENSIONS NOT AFFECTED BY ROD SIZE

CYL. BORE	E	EE (NPTF)	F	FB (hole)	G	J	K	LG	P	R	TF	UF
1 1/2	2 1/2	1/2	3/8	7/16	1 3/4	1 1/2	15/32	4 5/8	2 7/8	1.63	3 7/16	4 1/4
2	3	1/2	5/8	9/16	1 3/4	1 1/2	39/64	4 5/8	2 7/8	2.05	4 1/8	5 1/8
2 1/2	3 1/2	1/2	5/8	9/16	1 3/4	1 1/2	39/64	4 3/4	3	2.55	4 5/8	5 5/8
3 1/4	4 1/2	3/4	3/4	11/16	2	1 3/4	49/64	5 1/2	3 1/2	3.25	5 7/8	7 1/8



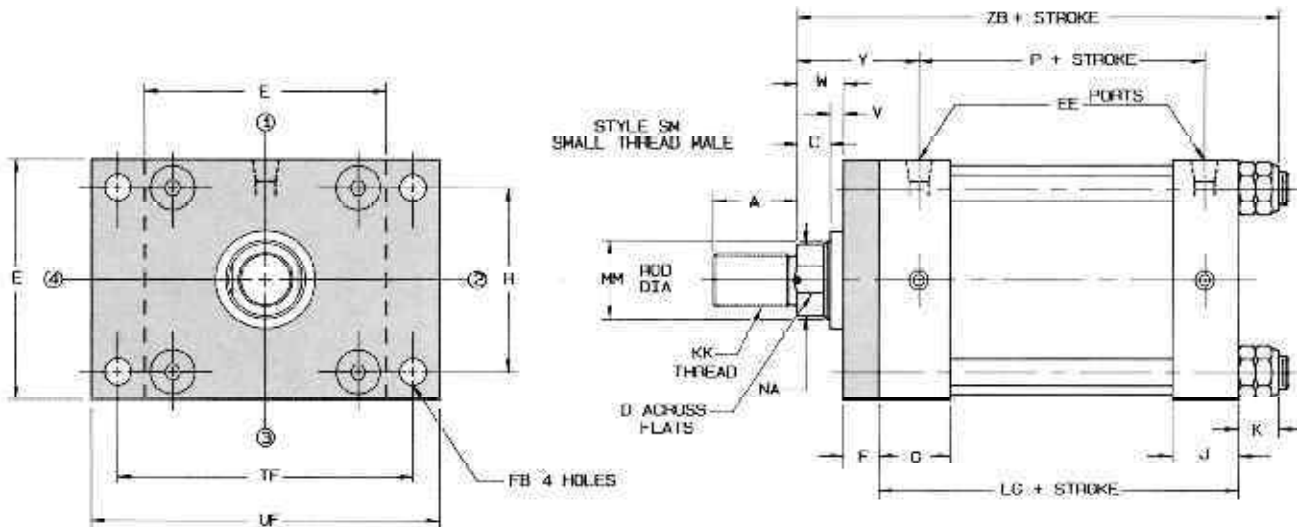


CYL. BORE	ROD DIA.	THREAD		ROD END DIMENSIONS & MOUNT DIMENSIONS AFFECTED BY ROD SIZE												
	MM	KK	LL	A	AC	B $\pm \begin{smallmatrix} .000 \\ -.002 \end{smallmatrix}$	C	D	NA	V	VA	VB	W	WB	Y	ZF
1 1/2	5/8	7/16-20	1/2-20	3/4	1 1/8	1.124	3/8	1/2	.593	-	1/4	5/8	-	1	2	6
	1	3/4-16	7/8-14	1 1/8	1 7/8	1.499	1/2	7/8	.968	1/2	-	-	1	-	2 3/8	6 3/8
2	1	3/4-16	7/8-14	1 1/8	1 7/8	1.499	1/2	7/8	.968	-	3/8	7/8	-	1 3/8	2 3/8	6 5/8
	1 3/8	1-14	1 1/4-12	1 5/8	2 1/2	1.999	5/8	1 1/8	1.343	3/8	-	-	1	-	2 5/8	6 7/8
2 1/2	1	3/4-16	7/8-14	1 1/8	1 7/8	1.499	1/2	7/8	.968	-	3/8	7/8	-	1 3/8	2 3/8	6 3/4
	1 3/8	1-14	1 1/4-12	1 5/8	2 1/2	1.999	5/8	1 1/8	1.343	-	3/8	1	-	1 5/8	2 5/8	7
3 1/4	1 3/8	1-14	1 1/4-12	1 5/8	2 1/2	1.999	5/8	1 1/8	1.343	-	3/8	1	-	1 5/8	2 3/4	7 7/8
	1 3/4	1 1/4-12	1 1/2-12	2	3	2.374	3/4	1 1/2	1.703	-	3/8	1 1/8	-	1 7/8	3	8 1/8

# HEAD RECT. FLANGE MOUNT

MF1

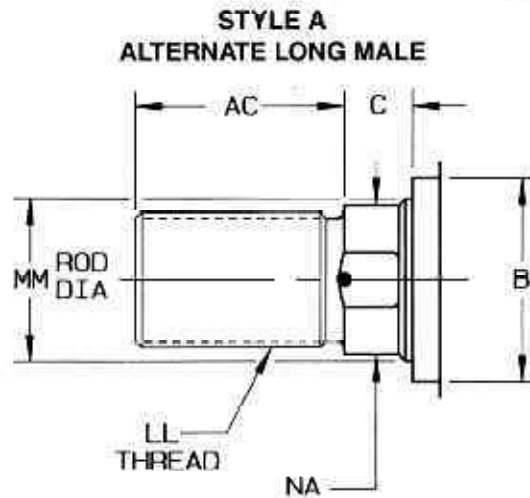
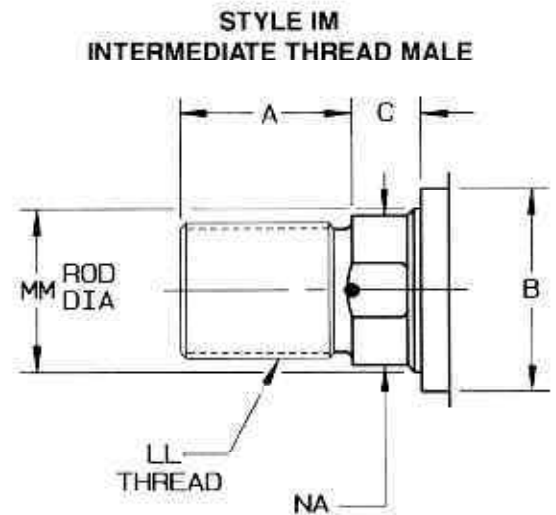
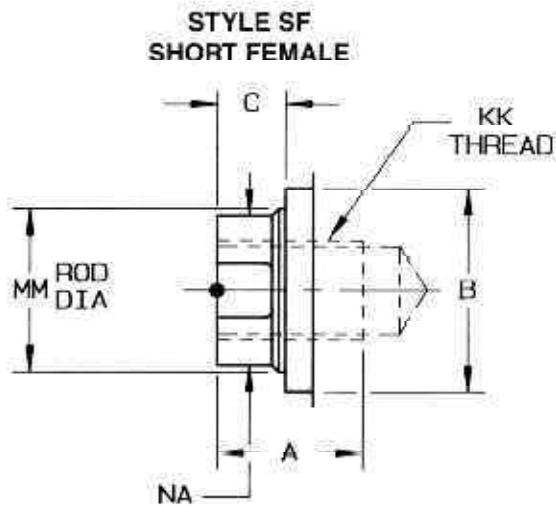
1 1/2" THRU 3 1/4" CYLINDER BORE



**NOTE:**  
This mounting limited to  
1000psi operation.

ENVELOPE AND MOUNTING DIMENSIONS NOT AFFECTED BY ROD SIZE

CYL. BORE	E	EE(NPTF)	F	FB (hole)	G	J	K	LG	P	R	TF	UF
1 1/2	2 1/2	1/2	3/8	7/16	1 3/4	1 1/2	15/32	4 5/8	2 7/8	1.63	3 7/16	4 1/4
2	3	1/2	5/8	9/16	1 3/4	1 1/2	39/64	4 5/8	2 7/8	2.05	4 1/8	5 1/8
2 1/2	3 1/2	1/2	5/8	9/16	1 3/4	1 1/2	39/64	4 3/4	3	2.55	4 5/8	5 5/8
3 1/4	4 1/2	3/4	3/4	11/16	2	1 3/4	49/64	5 1/2	3 1/2	3.25	5 7/8	7 1/8

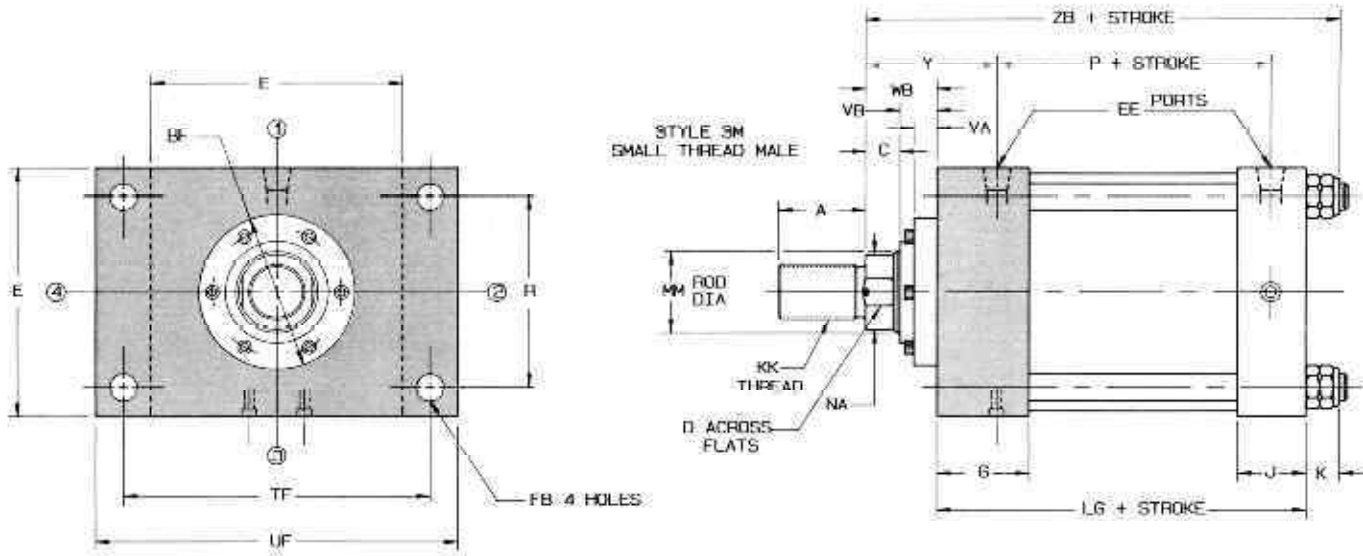


CYL. BORE	ROD DIA	THREAD		ROD END DIMENSIONS & MOUNT DIMENSIONS AFFECTED BY ROD SIZE									
	MM	KK	LL	A	AC	B <sup>+0.000</sup> / <sub>-.002</sub>	C	D	NA	V	W	Y	ZB
1 1/2	5/8	7/16-20	1/2-20	3/4	1 1/8	1.124	3/8	1/2	.503	1/4	5/8	2	6 3/32
	1	3/4-16	7/8-14	1 1/8	1 7/8	1.499	1/2	7/8	.968	1/2	1	2 3/8	6 15/32
2	1	3/4-16	7/8-14	1 1/8	1 7/8	1.499	1/2	7/8	.968	1/4	3/4	2 3/8	6 39/64
	1 3/8	1-14	1 1/4-12	1 5/8	2 1/2	1.999	5/8	1 1/8	1.343	3/8	1	2 5/8	6 55/64
2 1/2	1	3/4-16	7/8-14	1 1/8	1 7/8	1.499	1/2	7/8	.968	1/4	3/4	2 3/8	6 47/64
	1 3/8	1-14	1 1/4-12	1 5/8	2 1/2	1.999	5/8	1 1/8	1.343	3/8	1	2 5/8	6 63/64
3 1/4	1 3/8	1-14	1 1/4-12	1 5/8	2 1/2	1.999	5/8	1 1/8	1.343	1/4	7/8	2 3/4	7 57/64
	1 3/4	1 1/4-12	1 1/2-12	2	3	2.074	3/4	1 1/2	1.700	3/8	1 1/8	3	8 9/64

# HEAD RECTANGULAR MOUNT

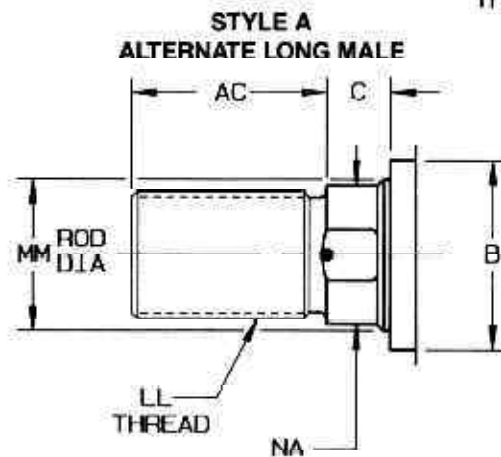
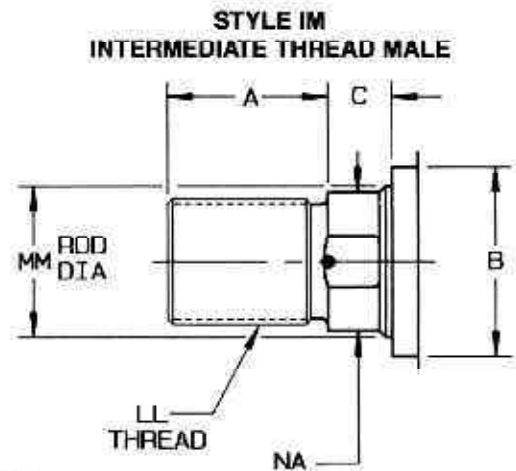
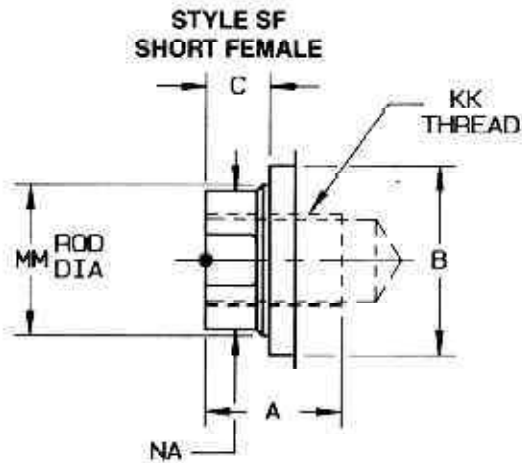
ME5

1 1/2" THRU 8" CYLINDER BORE



ENVELOPE AND MOUNTING DIMENSIONS NOT AFFECTED BY ROD SIZE

CYL. BORE	E	EE (NPTF)	FB (hole)	G	J	K	LG	P	R	TF	UF
1 1/2	2 1/2	1/2	7/16	1 3/4	1 1/2	15/32	4 5/8	2 7/8	1.63	3 7/16	4 1/4
2	3	1/2	9/16	1 3/4	1 1/2	39/64	4 5/8	2 7/8	2.05	4 1/8	5 1/8
2 1/2	3 1/2	1/2	9/16	1 3/4	1 1/2	39/64	4 3/4	3	2.55	4 5/8	5 5/8
3 1/4	4 1/2	3/4	11/16	2	1 3/4	49/64	5 1/2	3 1/2	3.25	5 7/8	7 1/8
4	5	3/4	11/16	2	1 3/4	49/64	5 3/4	3 3/4	3.82	6 3/8	7 5/8
5	6 1/2	3/4	15/16	2	1 3/4	63/64	6 1/4	4 1/4	4.95	8 3/16	9 3/4
6	7 1/2	1	1 1/16	2 1/4	2 1/4	1 1/32	7 3/8	4 7/8	5.73	9 7/16	11 1/4
8	9 1/2	1 1/2	1 5/16	3	3	1 3/8	9 1/2	6 1/8	7.50	11 13/16	14

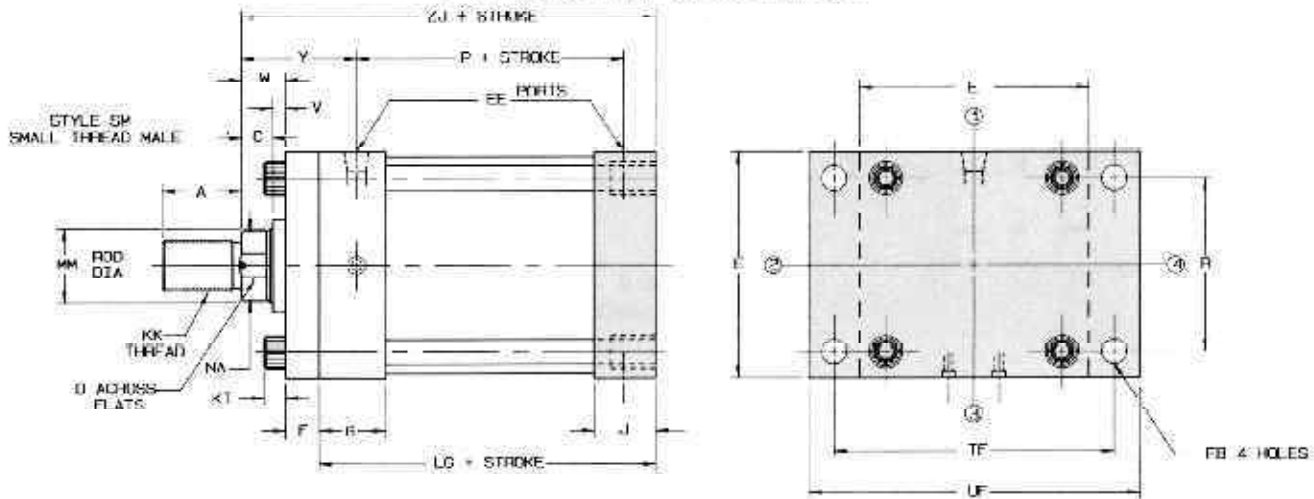


CYL. BORE	ROD DIA.	THREAD		ROD END DIMENSIONS & MOUNT DIMENSIONS AFFECTED BY ROD SIZE											
	MM	KK	LL	A	AC	B $\pm_{-.002}^{+.000}$	BF	C	D	NA	VA	VB	WB	Y	ZB
1 1/2	5/8	7/16-20	1/2-20	3/4	1 1/8	1.124	2.12	3/8	1/2	.593	1/4	5/8	1	2	6 3/32
	1	3/4-16	7/8-14	1 1/8	1 7/8	1.499	2.66	1/2	7/8	.968	1/4	7/8	1 3/8	2 3/8	6 15/32
2	1	3/4-16	7/8-14	1 1/8	1 7/8	1.499	2.66	1/2	7/8	.968	3/8	7/8	1 3/8	2 3/8	6 39/64
	1 3/8	1-14	1 1/4-12	1 5/8	2 1/2	1.999	3.00	5/8	1 1/8	1.343	1/4	1	1 5/8	2 5/8	6 55/64
2 1/2	1	3/4-16	7/8-14	1 1/8	1 7/8	1.499	2.66	1/2	7/8	.968	3/8	7/8	1 3/8	2 3/8	6 47/64
	1 3/8	1-14	1 1/4-12	1 5/8	2 1/2	1.999	3.32	5/8	1 1/8	1.343	3/8	1	1 5/8	2 5/8	6 63/64
3 1/4	1 3/8	1-14	1 1/4-12	1 5/8	2 1/2	1.999	3.32	5/8	1 1/8	1.343	3/8	1	1 5/8	2 3/4	7 57/64
	1 3/4	1 1/4-12	1 1/2-12	2	3	2.374	3.76	3/4	1 1/2	1.703	3/8	1 1/8	1 7/8	3	8 9/64
4	1 3/4	1 1/4-12	1 1/2-12	2	3	2.374	3.76	3/4	1 1/2	1.703	3/8	1 1/8	1 7/8	3	8 25/64
	2	1 1/2-12	1 3/4-12	2 1/4	3 1/2	2.624	4.26	7/8	1 11/16	1.953	3/8	1 1/8	2	3 1/8	8 33/64
5	2	1 1/2-12	1 3/4-12	2 1/4	3 1/2	2.624	4.26	7/8	1 11/16	1.953	3/8	1 1/8	2	3 1/8	9 15/64
	2 1/2	1 7/8-12	2 1/4-12	3	4 1/2	3.124	4.62	1	2 1/16	2.453	3/8	1 1/4	2 1/4	3 3/8	9 31/64
6	2 1/2	1 7/8-12	2 1/4-12	3	4 1/2	3.124	4.62	1	2 1/16	2.453	3/8	1 1/4	2 1/4	3 1/2	10 21/32
	3 1/2	2 1/2-12	3 1/4-12	3 1/2	6 1/2	4.249	5.56	1	3	3.437	3/8	1 1/4	2 1/4	3 1/2	10 21/32
8	3 1/2	2 1/2-12	3 1/4-12	3 1/2	6 1/2	4.249	5.56	1	3	3.437	3/8	1 1/4	2 1/4	3 15/16	13 1/8
	4	3-12	3 3/4-12	4	7 1/2	4.749	6.50	1	3 3/8	3.937	1/2	1 1/4	2 1/4	3 15/16	13 1/8
	5 1/2	4-12	5 1/4-12	5 1/2	10	6.249	8.26	1	4 5/8	5.421	1/2	1 1/4	2 1/4	3 15/16	13 1/8

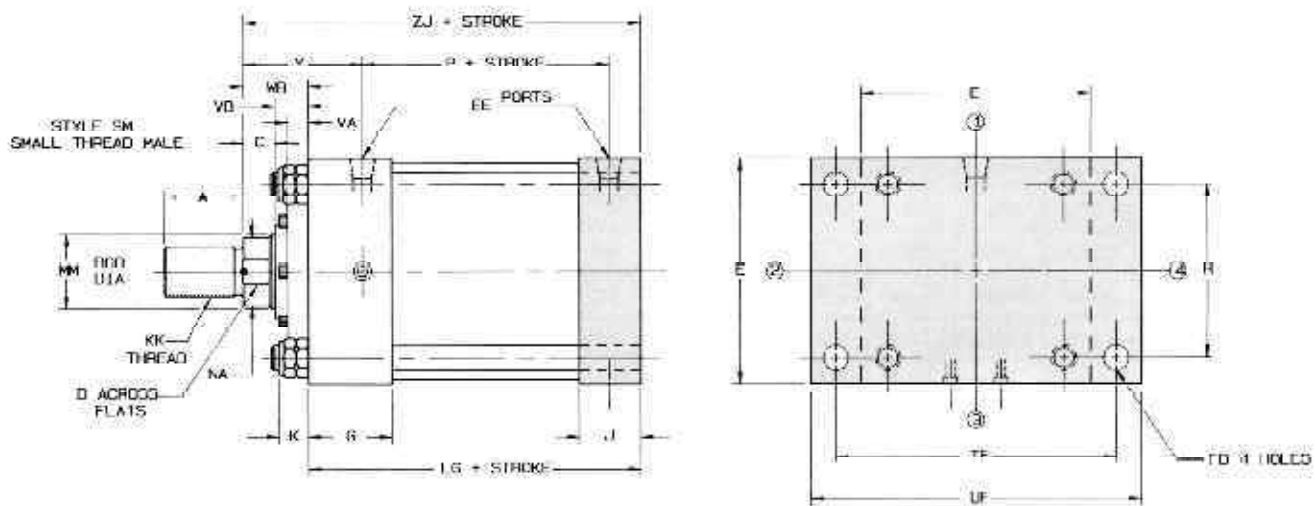
# CAP RECTANGULAR MOUNT

ME6

1 1/2" THRU 2 1/2" CYLINDER BORE

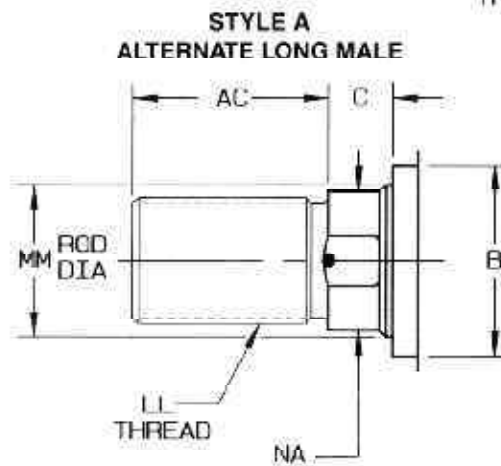
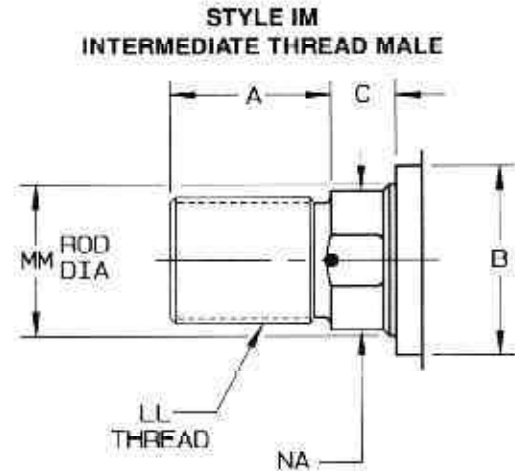
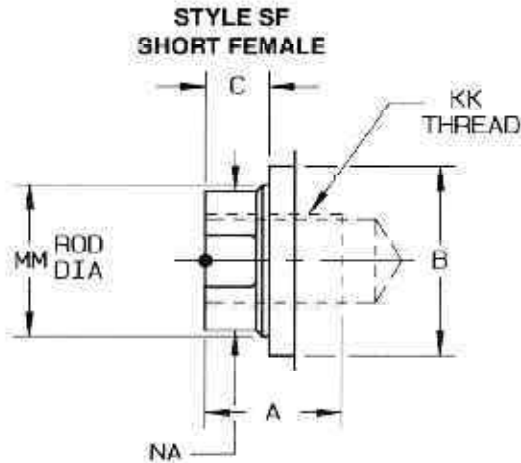


3 1/4" THRU 8" CYLINDER BORE



ENVELOPE AND MOUNTING DIMENSIONS NOT AFFECTED BY ROD SIZE

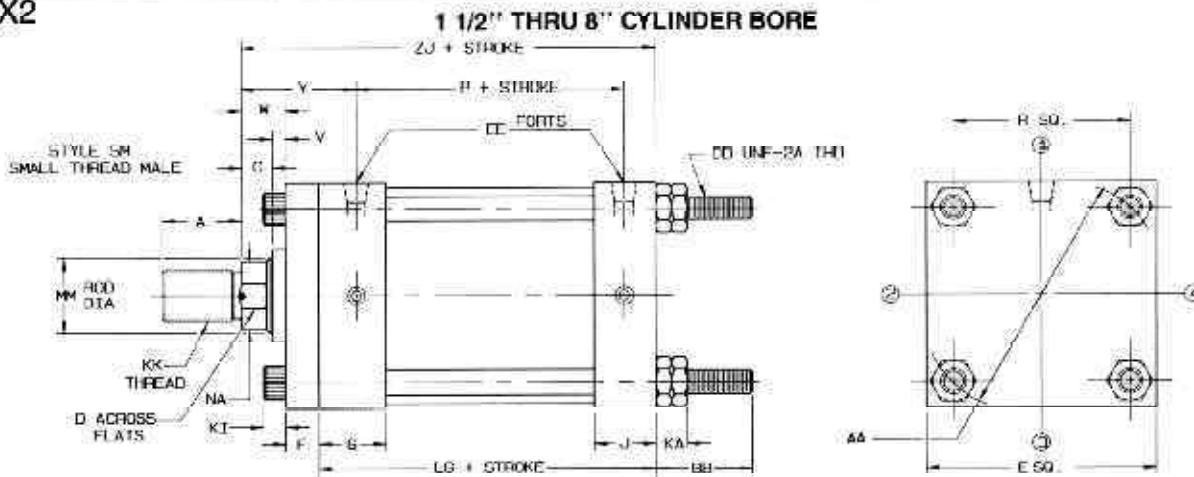
CYL. BORE	E	EE (NPTF)	F	FB (hole)	G	J	K	KI	LG	P	R	TF	UF
1 1/2	2 1/2	1/2	3/8	7/16	1 3/4	1 1/2	15/32	3/8	4 5/8	2 7/8	1.03	3 7/16	4 1/4
2	3	1/2	5/8	9/16	1 3/4	1 1/2	39/64	1/2	4 5/8	2 7/8	2.05	4 1/8	5 1/8
2 1/2	3 1/2	1/2	5/8	9/16	1 3/4	1 1/2	39/64	1/2	4 3/4	3	2.55	4 5/8	5 5/8
3 1/4	4 1/2	3/4	3/4	11/16	2	1 3/4	49/64	5/8	5 1/2	3 1/2	3.25	5 7/8	7 1/8
4	5	3/4	7/8	11/16	2	1 3/4	49/64	5/8	5 3/4	3 3/4	3.82	6 3/8	7 5/8
5	6 1/2	3/4	7/8	15/16	2	1 3/4	63/64	7/8	6 1/4	4 1/4	4.95	8 3/16	9 3/4
6	7 1/2	1	1	1 1/16	2 1/4	2 1/4	1 1/32	1	7 3/8	4 7/8	5.73	9 7/16	11 1/4
8	9 1/2	1 1/2	1	1 5/16	3	3	1 3/8	1 1/4	9 1/2	6 1/8	7.50	11 13/16	14



CYL. BORE	ROD DIA MM	THREAD		ROD END DIMENSIONS & MOUNT DIMENSIONS AFFECTED BY ROD SIZE												
		KK	LL	A	AC	B $\frac{1.000}{302}$	C	D	NA	V	VA	VB	W	WB	Y	ZJ
1-1/2	5/8	7/16-20	1/2-20	3/4	1 1/8	1.124	3/8	1/2	.593	1/4	-	-	5/8	-	2	5 5/8
	1	3/4-16	7/8-14	1 1/8	1 7/8	1.190	1/2	7/8	.868	1/2	-	-	1	-	2 3/8	8
2	1	3/4-16	7/8-14	1 1/8	1 7/8	1.499	1/2	7/8	.968	1/4	-	-	3/4	-	2 3/8	8
	1 3/8	1-14	1 1/4-12	1 5/8	2 1/2	1.999	5/8	1 1/8	1.343	3/8	-	-	1	-	2 5/8	6 1/4
2 1/2	1	3/4-16	7/8-14	1 1/8	1 7/8	1.400	1/2	7/8	.968	1/4	-	-	3/4	-	2 3/8	6 1/8
	1 3/8	1-14	1 1/4-12	1 5/8	2 1/2	1.999	5/8	1 1/8	1.343	3/8	-	-	1	-	2 5/8	6 3/8
3 1/4	1 3/8	1-14	1 1/4-12	1 5/8	2 1/2	1.999	5/8	1 1/8	1.343	-	3/8	1	-	1 5/8	2 3/4	7 1/8
	1 3/4	1 1/4-12	1 1/2-12	2	3	2.074	3/4	1 1/2	1.703	-	3/8	1 1/8	-	1 7/8	3	7 3/8
4	1 3/4	1 1/4-12	1 1/2-12	2	3	2.374	3/4	1 1/2	1.703	-	3/8	1 1/8	-	1 7/8	3	7 5/8
	2	1 1/2-12	1 3/4-12	2 1/4	3 1/2	2.624	7/8	1 11/16	1.953	-	3/8	1 1/8	-	2	3 1/8	7 3/4
5	2	1 1/2-12	1 3/4-12	2 1/4	3 1/2	2.624	7/8	1 11/16	1.953	-	3/8	1 1/8	-	2	3 1/8	8 1/4
	2 1/2	1 7/8-12	2 1/4-12	3	4 1/2	3.124	1	2 1/16	2.453	-	3/8	1 1/4	-	2 1/4	3 3/8	8 1/2
6	2 1/2	1 7/8-12	2 1/4-12	3	4 1/2	3.124	1	2 1/16	2.453	-	3/8	1 1/4	-	2 1/4	3 1/2	9 5/8
	3 1/2	2 1/2-12	3 1/4-12	3 1/2	5 1/2	4.249	1	3	3.437	-	3/8	1 1/4	-	2 1/4	3 1/2	9 5/8
8	3 1/2	2 1/2-12	3 1/4-12	3 1/2	5 1/2	4.249	1	3	3.437	-	3/8	1 1/4	-	2 1/4	3 15/16	11 3/4
	4	3-12	3 3/4-12	4	7 1/2	4.749	1	3 3/8	3.937	-	1/2	1 1/4	-	2 1/4	3 15/16	11 3/4
	5 1/2	4-12	5 1/4-12	5 1/2	10	6.249	1	4 5/8	5.421	-	1/2	1 1/4	-	2 1/4	3 15/16	11 3/4

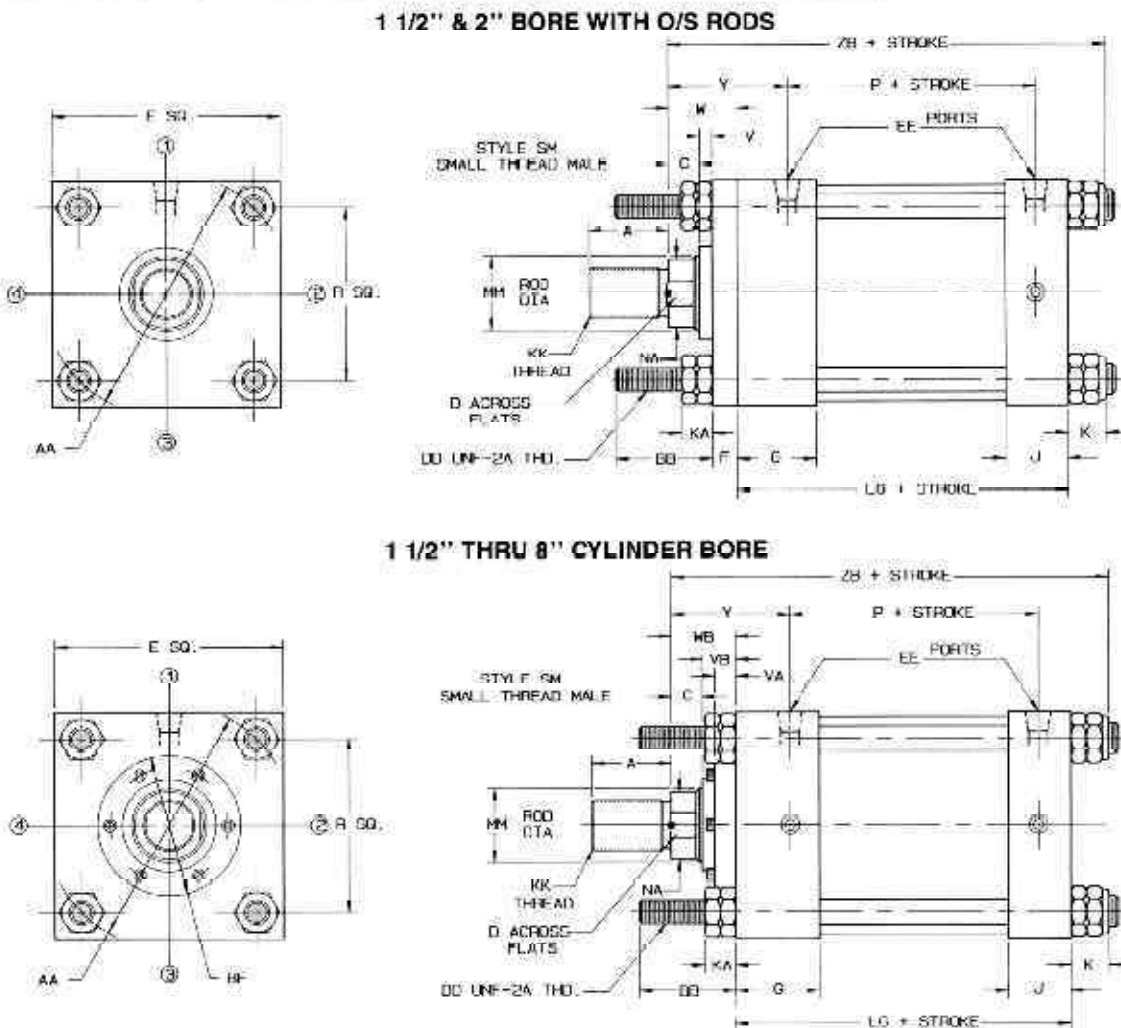
# CAP EXT. TIE ROD MOUNT

MX2

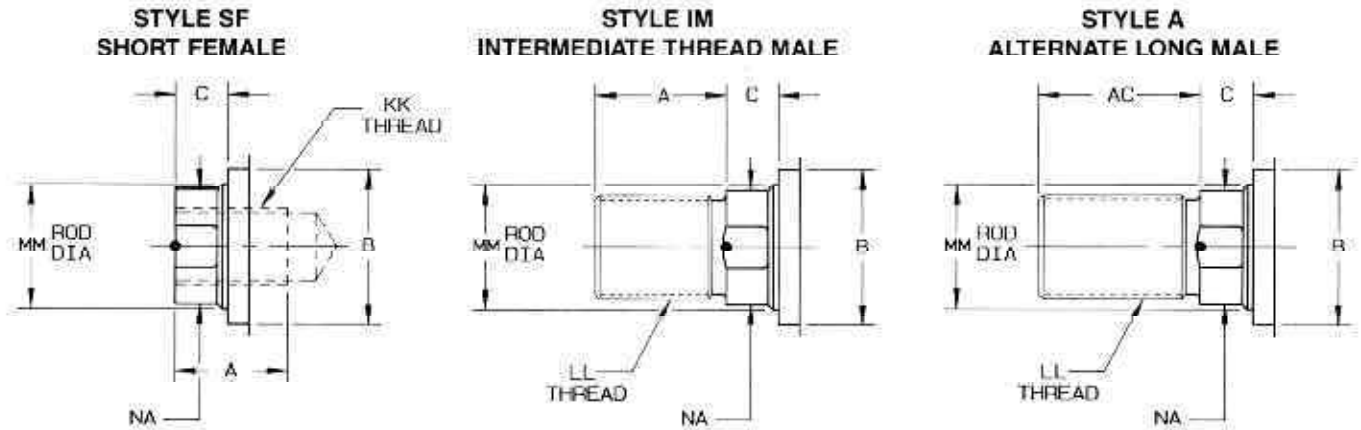


# HEAD EXT. TIE ROD MOUNT

MX3







ENVELOPE AND MOUNTING DIMENSIONS NOT AFFECTED BY ROD SIZE

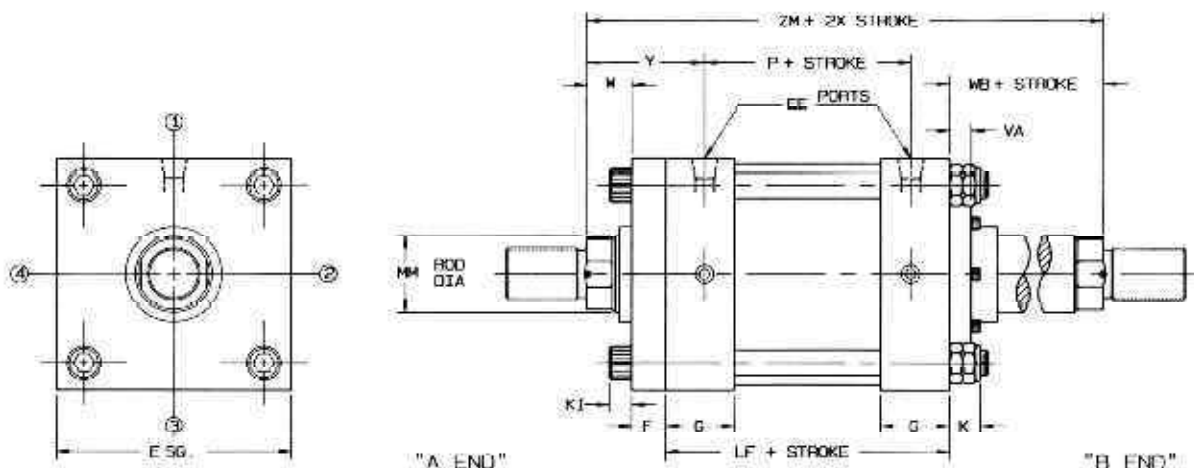
CYL. BORE	AA	BB	DD	E	EE(NPTF)	F	G	J	K	KA	KI	LG	P	R
1 1/2	2.3	1 3/8	3/8-24	2 1/2	1/2	3/8	1 3/4	1 1/2	15/32	21/64	3/8	4 5/8	2 7/8	1.63
2	2.9	1 13/16	1/2-20	3	1/2	5/8	1 3/4	1 1/2	39/64	7/16	1/2	4 5/8	2 7/8	2.05
2 1/2	3.6	1 13/16	1/2-20	3 1/2	1/2	5/8	1 3/4	1 1/2	39/64	7/16	1/2	4 3/4	3	2.55
3 1/4	4.6	2 5/16	5/8-18	4 1/2	3/4	3/4	2	1 3/4	49/64	35/64	5/8	5 1/2	3 1/2	3.25
4	5.4	2 5/16	5/8-18	5	3/4	7/8	2	1 3/4	49/64	35/64	5/8	5 3/4	3 3/4	3.82
5	7.0	3 3/16	7/8-14	6 1/2	3/4	7/8	2	1 3/4	63/64	3/4	7/8	6 1/4	4 1/4	4.95
6	8.1	3 5/8	1-11	7 1/2	1	1	2 1/4	2 1/4	1 1/32	55/64	1	7 3/8	4 7/8	5.73
8	10.6	4 1/2	1 1/4-12	9 1/2	1 1/2	1	3	3	1 3/8	1 1/16	1 1/4	9 1/2	6 1/8	7.50

CYL. BORE	ROD DIA. MM	THREAD		ROD END DIMENSIONS & MOUNT DIMENSIONS AFFECTED BY ROD SIZE															
		KK	LL	A	AC	B $\pm .000$ -.002	BF	C	D	NA	V	VA	VB	W	WB	Y	ZB	ZJ	
1 1/2	5/8	7/16-20	1/2-20	3/4	1 1/8	1.124	2.12	3/8	1/2	.593	1/4	1/4	5/8	5/8	1	2	6 3/32	5 5/8	
	1	3/4-16	7/8-14	1 1/8	1 7/8	1.499	-	1/2	7/8	.968	1/2	-	-	1	-	2 3/8	6 15/32	6	
2	1	3/4-16	7/8-14	1 1/8	1 7/8	1.499	2.66	1/2	7/8	.968	1/4	3/8	7/8	3/4	1 3/8	2 3/8	6 39/64	6	
	1 3/8	1-14	1 1/4-12	1 5/8	2 1/2	1.999	-	5/8	1 1/8	1.343	3/8	-	-	1	-	2 5/8	6 55/64	6 1/4	
2 1/2	1	3/4-16	7/8-14	1 1/8	1 7/8	1.499	2.66	1/2	7/8	.968	1/4	3/8	7/8	3/4	1 3/8	2 3/8	6 47/64	6 1/8	
	1 3/8	1-14	1 1/4-12	1 5/8	2 1/2	1.999	3.32	5/8	1 1/8	1.343	3/8	3/8	1	1	1 5/8	2 5/8	6 63/64	6 3/8	
3 1/4	1 3/8	1-14	1 1/4-12	1 5/8	2 1/2	1.999	3.32	5/8	1 1/8	1.343	1/4	3/8	1	7/8	1 5/8	2 3/4	7 57/64	7 1/8	
	1 3/4	1 1/4-12	1 1/2-12	2	3	2.374	3.76	3/4	1 1/2	1.703	3/8	3/8	1 1/8	1 1/8	1 7/8	3	8 9/64	7 3/8	
4	1 3/4	1 1/4-12	1 1/2-12	2	3	2.374	3.76	3/4	1 1/2	1.703	1/4	3/8	1 1/8	1	1 7/8	3	8 25/64	7 5/8	
	2	1 1/2-12	1 3/4-12	2 1/4	3 1/2	2.624	4.26	7/8	1 11/16	1.953	1/4	3/8	1 1/8	1 1/8	2	3 1/8	8 33/64	7 3/4	
5	2	1 1/2-12	1 3/4-12	2 1/4	3 1/2	2.624	4.26	7/8	1 11/16	1.953	1/4	3/8	1 1/8	1 1/8	2	3 1/8	9 15/64	6 1/4	
	2 1/2	1 7/8-12	2 1/4-12	3	4 1/2	3.124	4.62	1	2 1/16	2.453	3/8	3/8	1 1/4	1 3/8	2 1/4	3 3/8	9 31/64	6 1/2	
6	2 1/2	1 7/8-12	2 1/4-12	3	4 1/2	3.124	4.62	1	2 1/16	2.453	1/4	3/8	1 1/4	1 1/4	2 1/4	3 1/2	10 21/32	9 5/8	
	3 1/2	2 1/2-12	3 1/4-12	3 1/2	6 1/2	4.249	5.56	1	3	3.437	1/4	3/8	1 1/4	1 1/4	2 1/4	3 1/2	10 21/32	9 5/8	
8	3 1/2	2 1/2-12	3 1/4-12	3 1/2	6 1/2	4.249	5.56	1	3	3.437	1/4	3/8	1 1/4	1 1/4	2 1/4	3 15/16	13 1/8	11 3/4	
	4	3-12	3 3/4-12	4	7 1/2	4.749	6.50	1	3 3/8	3.937	1/4	1/2	1 1/4	1 1/4	2 1/4	3 15/16	13 1/8	11 3/4	
	5 1/2	4-12	5 1/4-12	5 1/2	10	6.249	8.26	1	4 5/8	5.421	1/4	1/2	1 1/4	1 1/4	2 1/4	3 15/16	13 1/8	11 3/4	

# DOUBLE ROD CYLINDER

MD\*\*

1 1/2" THRU 8" CYLINDER BORE



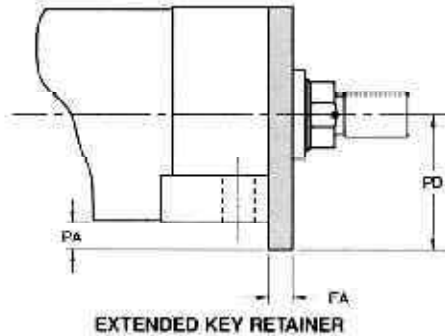
Basic dimensions for double rod cylinders with standard rods are shown on this page. For specific mounting dimensions refer to single rod cylinder pages. Exception is MDS2 "SS" dimension which increases by the difference of "G - J".

ENVELOPE AND MOUNTING DIMENSIONS

CYL. BORE	MM ROD DIA	E	EE (NPTF)	F	G	K	Ki	LF	P	VA	W	WB	Y	ZM
1 1/2	5/8	2 1/2	1/2	3/8	1 3/4	15/32	3/8	4 7/8	2 7/8	1/4	5/8	1	2	6 7/8
2	1	3	1/2	5/8	1 3/4	39/64	1/2	4 7/8	2 7/8	3/8	3/4	1 3/8	2 3/8	7 5/8
2 1/2	1	3 1/2	1/2	5/8	1 3/4	39/64	1/2	5	3	3/8	3/4	1 3/8	2 3/8	7 3/4
3 1/4	1 3/8	4 1/2	3/4	3/4	2	49/64	5/8	5 3/4	3 1/2	3/8	7/8	1 5/8	2 3/4	9
4	1 3/4	5	3/4	7/8	2	49/64	5/8	6	3 3/4	3/8	1	1 7/8	3	9 3/4
5	2	6 1/2	3/4	7/8	2	63/64	7/8	6 1/2	4 1/4	3/8	1 1/8	2	3 1/8	10 1/2
6	2 1/2	7 1/2	1	1	2 1/4	1 1/32	1	7 3/8	4 7/8	3/8	1 1/4	2 1/4	3 1/2	11 7/8
8	3 1/2	9 1/2	1 1/2	1	3	1 3/8	1 1/4	9 1/2	6 1/8	3/8	1 1/4	2 1/4	3 15/16	14

# ENGINEERING INFORMATION

## HD2 EXTENDED KEY RETAINER DIMENSIONS



BORE	FA +.000/-.001	PA	PD
1 1/2	.361	3/16	1 7/16
2	.511	5/16	1 13/16
2 1/2	.611	5/10	2 1/10
3 1/4	.736	3/8	2 5/8
4	.861	7/16	2 15/16
5	.961	7/10	3 11/10
6	.986	1/2	4 1/4
8	.986	1/2	5 1/4

## HD2 OPTIONAL SAE PORTS

BORE	SAE #	TUBE O.D.	THREAD
1 1/2	-8	1/2	3/4-16*
2	-8	1/2	3/4-16*
2 1/2	-8	1/2	3/4-16
3 1/4	-12	3/4	1 1/16-12

BORE	SAE #	TUBE O.D.	THREAD
4	-12	3/4	1 1/16-12
5	-12	3/4	1 1/16-12
6	-16	1	1 5/16-12
8	-24	1 1/2	1 7/8-12

\*The 1 1/2" and 2" bore cylinders with overize rods are supplied with only a -8 (9/16-18 UNF-2B) port in the heads.

### TORQUING INSTRUCTIONS:

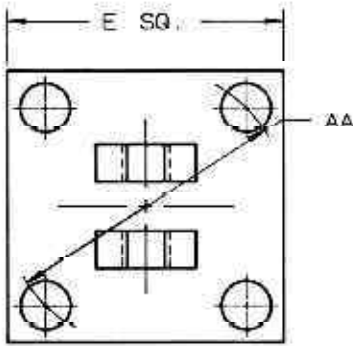
Tighten tie rod nuts & retainer bolts to the torque specified for the thread size, making sure to use MoS2 grease or equal on both the threads and the bearing surface.

Should lubricant not be available torque should be increased by 50%.

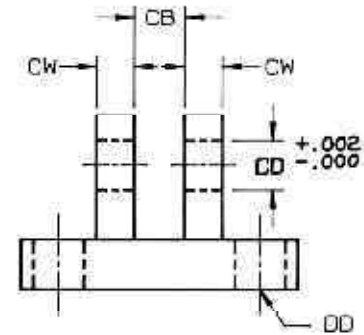
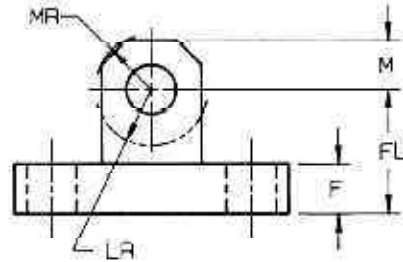
## TIE ROD & SHCS THREAD TORQUE TABLE

THREAD SIZE: UNF	TORQUE (FT.LBS.)
10-36	2.5
1/4-28	6.5
5/16-24	12
3/8-24	22
7/16-20	35
1/2-20	55
5/8-18	110
3/4-16	185
7/8-14	300
1-14 UNS	450
1 1/8-12	600
1 1/4-12	780

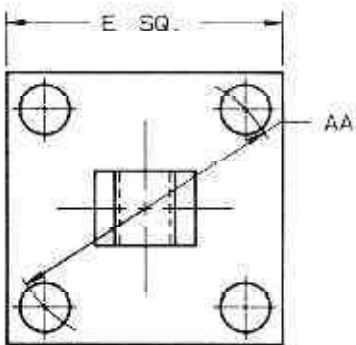
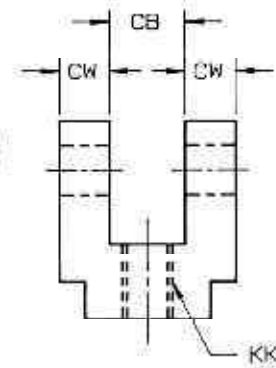
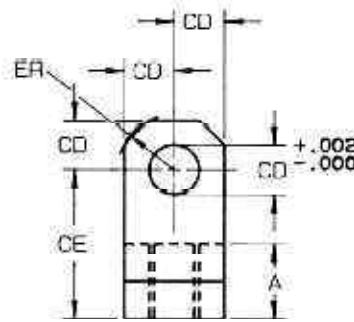
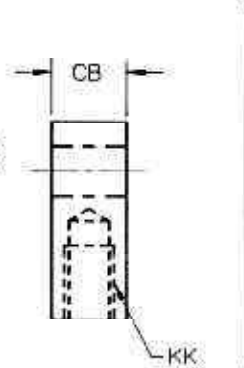
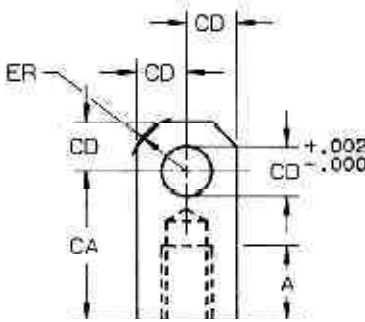
# MOUNTING ACCESSORIES



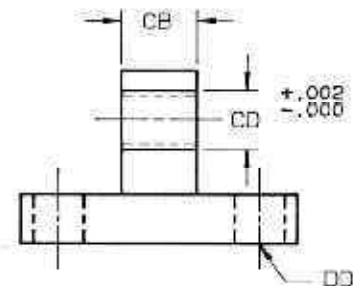
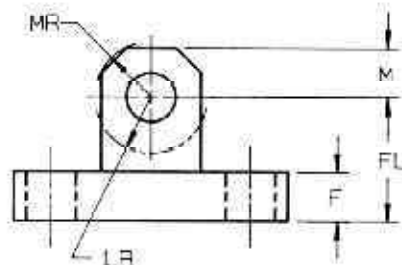
**CLEVIS BRACKET**



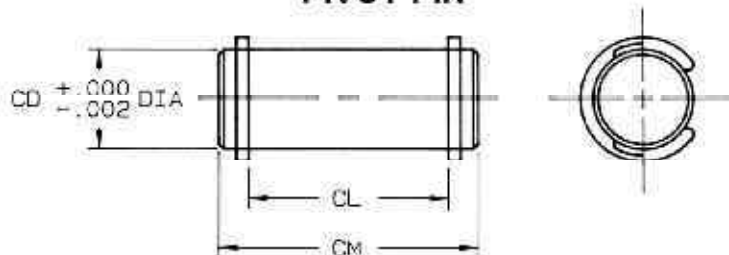
**ROD EYE/ROD CLEVIS**



**PIVOT (EYE) BRACKET**



**PIVOT PIN**





**CLEVIS BRACKET**

Part No.	E	F	M	AA	CB	CD	CW	DD	FL	LR	MR
<b>C1150-78</b>	3	3/8	1/2	2.9	3/4	1/2	1/2	13/32	1 1/8	5/8	9/16
<b>C1200-78</b>	4 1/2	5/8	3/4	4.6	1 1/4	3/4	5/8	17/32	1 7/8	7/8	13/16
<b>C1400-78</b>	5	3/4	1	5.4	1 1/2	1	3/4	21/32	2 1/4	1 3/16	1 3/32
<b>C1600-78</b>	7 1/2	7/8	1 3/8	8.13	2	1 3/8	1	21/32	3	2	1 1/2
<b>C1800-78</b>	9 1/2	8	1 3/4	10.61	2 1/2	1 3/4	1 1/4	15/16	3 5/8	2 5/8	1 7/8
*	12 3/4	1	2	13.34	2 1/2	2	1 1/4	1 1/16	4 1/2	3 1/4	2 5/32
<b>C2000-78</b>	12 3/4	1	2 1/2	13.34	3	2 1/2	1 1/2	1 3/16	4 1/2	3 1/4	2 23/32
*	12 3/4	1	3	13.34		3	1 1/2	1 5/16	6	4 1/2	3 1/4
<b>C3500-78</b>	15 1/2	1 11/16	3 1/2	16.97		3 1/2	2	1 13/16	6 11/16	4 1/2	3 25/32
*	17 1/2	1 15/16	4	19.45	4 1/2	4	2 1/4	2 1/16	7 11/16	5 1/4	4 11/32

**FEMALE EYE**

ROD EYE	A	CA	CB	CD	CE	CW	ER	KK	ROD CLEVIS
<b>C1150-65G</b>	3/4	1 1/2	3/4	1/2	1 1/2	1/2	1/2	7/16-20	<b>C1150-86</b>
<b>C1150-65</b>	3/4	1 1/2	3/4	1/2	1 1/2	1/2	1/2	1/2-20	<b>C1150-86G</b>
<b>C1200-65</b>	1 1/8	2 1/16	1 1/4	3/4	2 3/8	5/8	3/4	3/4-16	<b>C1200-86</b>
<b>C1200-65I</b>	1 1/8	2 1/16	1 1/4	3/4	2 3/8	5/8	3/4	7/8-14	<b>C1200-86G</b>
<b>C1400-65</b>	1 5/8	2 13/16	1 1/2	1	3 1/8	3/4	1	1-14	<b>C1400-86</b>
*	1 5/8	2 13/16	1 1/2	1	3 1/8	3/4	1	1 1/4-12	<b>C1400-86G</b>
<b>C1600-65</b>	2	3 7/16	2	1 3/8	4 1/8	1	1 3/8	1 1/4-12	<b>C1600-86</b>
<b>C1600-65I</b>	2	3 7/16	2	1 3/8	4 1/8	1	1 3/8	1 1/2-12	<b>C1600-86G</b>
<b>C1800-65</b>	2 1/4	4	2 1/2	1 3/4	4 1/2	1 1/4	1 3/4	1 1/2-12	<b>C1800-86</b>
*	2 1/4	4	2 1/2	1 3/4	4 1/2	1 1/4	1 3/4	1 3/4-12	<b>C1800-86G</b>
*	3	5	2 1/2	2	5 1/2	1 1/4	2 5/32	1 7/8-12	*
*	3	5	2 1/2	2	5 1/2	1 1/4	2 5/32	2 1/4-12	*
*	3 1/2	5 13/16	3	2 1/2	6 1/2	1 1/2	2 23/32	2 1/4-12	*
*	3 1/2	6 1/8	3	3	6 3/4	1 1/2	3 1/4	2 1/2-12	*
*	4 1/2	7 5/8	4	3 1/2	6 3/4	2	3 25/32	3 1/4-12	*
*	5 1/2	9 1/8	4 1/2	4	10 5/16	2 1/4	4 11/32	4-12	*

**FEMALE CLEVIS**

**PIVOT (EYE) BRACKET**

**PIVOT PIN  
SNAP RING TYPE**

PART NO.	E	F	M	AA	CB	CD	DD	FL	LR	MR	PART NO.	CD	CL	CM
<b>C1150-76</b>	2 1/2	3/8	1/2	2.30	3/4	1/2	7/16	1 1/8	9/16	9/16	<b>C1150-66G</b>	1/2	1 29/32	2.16
<b>C1200-76</b>	3 1/2	5/8	3/4	3.62	1 1/4	3/4	9/16	1 7/8	1	13/16	<b>C1200-66G</b>	3/4	2 23/32	3.00
<b>C1400-76</b>	4 1/2	3/4	1	4.60	1 1/2	1	11/16	2 1/4	1 1/4	1 3/32	<b>C1400-66G</b>	1	3 1/32	3.31
<b>C1600-76</b>	5	7/8	1 3/8	5.39	2	1 3/8	11/16	3	1 7/8	1 1/2	<b>C1600-66G</b>	1 3/8	4	4.41
<b>C1800-76</b>	6 1/2	7/8	1 3/4	6.98	2 1/2	1 3/4	15/16	3 1/8	2	1 7/8	<b>C1800-66G</b>	1 3/4	5	5.63
<b>C1900-76</b>	7 1/2	1	2	8.31	2 1/2	2	1 1/16	3 1/2	2 1/4	2 5/32	*	2	5	5.63
*	8 1/2	1	2 1/2	9.28	3	2 1/2	1 3/16	4	2 3/4	2 23/32	*	2 1/2	6	6.75
*	9 1/2	1	3	10.61	3	3	1 5/16	4 1/4	3 1/8	3 1/4	*	3	6	6.75
*	12 5/8	1 11/16	3 1/2	13.63	4	3 1/2	1 13/16	5 11/16	3 7/8	3 25/32	*	3 1/2	8	9.13
*	14 7/8	1 15/16	4	16.25	4 1/2	4	2 1/16	6 7/16	4 7/16	4 11/32	*	4	9	10.13