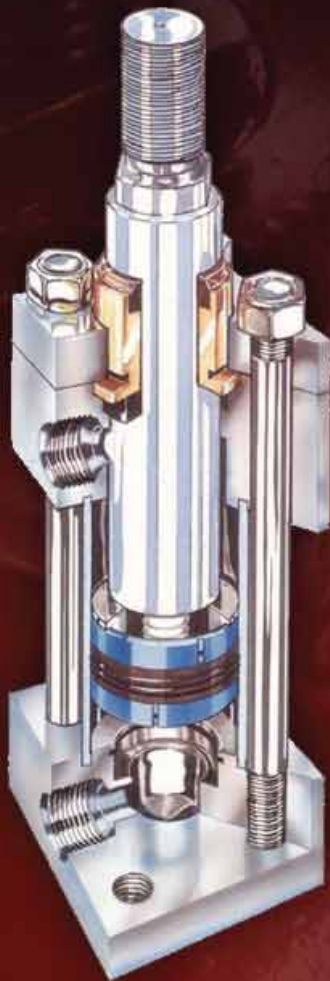


EMBO

PRECISION CYLINDERS

SERIES 3000, Heavy Duty Hydraulic Cylinder Catalogue.



- Mechanical (metal) Rod Wiper seals available in all piston rod sizes.
- Hard chromed high tensile piston rod
- Replaceable rod bush assembly
- Cushioned cylinders with self aligning cushion pieces
- Positive sealing five piece piston seals
- Cylinders of fully stainless steel construction available on request
- Cylinder tubes Spigotted to fully machined end caps to ensure linear alignment
- Fully honed bore, leak proof cylinder tubes

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Hydraulic Cylinder Force. NOTE: Cylinder thrust expressed in pounds.

Piston Dia	PSI	Push or Pull	Rod 5/8	Dia 1	1 3/8	1 3/4	2	2 1/2	3	3 1/2	4	4 1/2	5	5 1/2
1 1/2	1000	Push	1767	1767										
		Pull	1460	982										
	2000	Push	3534	3534										
		Pull	2920	1964										
	3000	Push	5301	5301										
		Pull	4380	2946										
2	1000	Push		3142	3142									
		Pull		2357	1657									
	2000	Push		6284	6284									
		Pull		4714	3314									
	3000	Push		9426	9426									
		Pull		7071	4971									
2 1/2	1000	Push		4909	4909	4909								
		Pull		4124	3424	2504								
	2000	Push		9818	9818	9818								
		Pull		8248	6848	5008								
	3000	Push		14730	14730	14730								
		Pull		12372	10277	7512								
3 1/4	1000	Push			8296	8296	8296							
		Pull			6811	5891	5154							
	2000	Push			16592	16592	16592							
		Pull			13622	11782	10308							
	3000	Push			24888	24888	24888							
		Pull			20433	17673	15462							
4	1000	Push				12570	12570	12570						
		Pull				10165	9428	7661						
	2000	Push				25140	25140	25140						
		Pull				20330	18856	15322						
	3000	Push				37710	37710	37710						
		Pull				30495	28284	22983						
5	1000	Push					19640	19640	19640	19640				
		Pull					16498	14731	12571	10019				
	2000	Push					39280	39280	39280	39280				
		Pull					32996	29462	25142	20038				
	3000	Push					58920	58920	58920	58920				
		Pull					49494	44193	37713	30057				
6	1000	Push						28270	28270	28270	28270			
		Pull						23360	21200	18650	15700			
	2000	Push							56540	56540	56540	56540		
		Pull							46270	42400	37300	31400		
	3000	Push							84810	84810	84810	84810		
		Pull							70080	63600	55950	47100		
7	1000	Push							38490	38490	38490	38490	38490	
		Pull							31420	28870	25920	22590	18850	
	2000	Push							76980	76980	76980	76980	76980	
		Pull							62840	57740	51840	45180	37700	
	3000	Push							115470	115470	115470	115470	115470	
		Pull							94260	86610	77760	67770	56550	
8	1000	Push								50270	50270	50270	50270	50270
		Pull								40650	37700	34370	30630	26510
	2000	Push									100540	100540	100540	100540
		Pull									81300	75400	68740	61260
	3000	Push									150810	150810	150810	150810
		Pull									121950	113100	103110	91890

Suggested minimum rod diameter for long stroke hydraulic cylinders.

Instructions:

Compare force expressed in tons against exposed rod length in inches to achieve minimum rod diameter.

If head cap is not securely mounted (eg NFPA MP1) exposed rod length should be doubled to achieve minimum suggested rod diameter.

In the case of large bore and long stroke cylinders, consideration should be given to the affect of the weight of the cylinder on the piston rod when fully extended, particularly when using mounting style MP1 or similar.

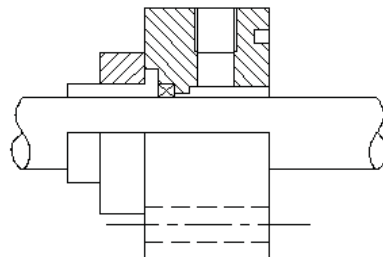
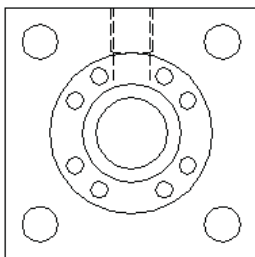
Load (tons)	Exposed length of piston rod (inches)							
	10	20	40	60	70	80	100	120
1/2			3/4	1				
3/4			1	1 3/8				
1		5/8	1	1 3/8	1 3/8	1 3/8		
1 1/2		1	1	1 3/8	1 3/8	1 3/4		
2		1	1	1 3/8	1 3/4	1 3/4	2	
3	1	1	1 3/8	1 3/8	1 3/4	1 3/4	2	
4	1	1	1 3/8	1 3/4	1 3/4	1 3/4	2	2 1/2
5	1	1 3/8	1 3/8	1 3/4	1 3/4	2	2 1/2	2 1/2
7 1/2	1 3/8	1 3/8	1 3/4	1 3/4	2	2	2 1/2	2 1/2
10	1 3/8	1 3/4	1 3/4	2	2	2 1/2	2 1/2	3
15	1 3/4	1 3/4	2	2 1/2	2 1/2	2 1/2	3	3
20	2	2	2 1/2	2 1/2	2 1/2	3	3	3 1/2
30	2 1/2	2 1/2	2 1/2	3	3	3	3 1/2	3 1/2
40	3	3	3	3	3	3 1/2	3 1/2	4
50	3	3 1/2	3 1/2	3 1/2	3 1/2	3 1/2	4	4

Hydraulic Cylinder pressure ratings

Cylinder bore	Piston rod diameters	Heavy duty	4:1 safety factor (yield)	Standard cushion length	
				Head cap	End cap
1 1/2	5/8, 1	3000	2200	1	1
2	1, 1 3/8	3000	2150	1	1
2 1/2	1, 1 3/8, 1 3/4	3000	1900	1	1
3 1/4	1 3/8, 1 3/4, 2	3000	2200	1	1
4	1 3/4, 2, 2 1/2	2700	1700	1	1
5	2, 2 1/2, 3, 3 1/2	3000	1900	1 1/8	1 1/8
6	2 1/2, 3, 3 1/2, 4	2700	1750	1 1/4	1 1/4
7	3, 3 1/2, 4, 4 1/2, 5	3000	1950	1 1/4	1 1/4
8	3 1/2, 4, 4 1/2, 5, 5 1/2	3000	1900	1 1/4	1 1/4

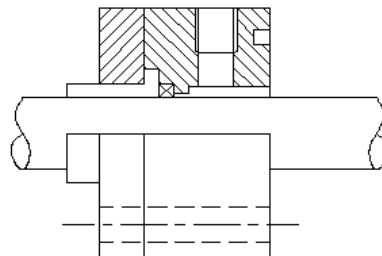
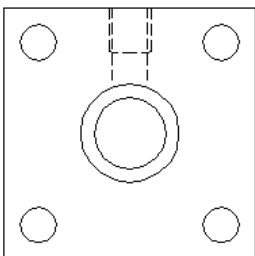
NOTE: 4:1 safety factor based on minimum yield point of weakest component and smallest rod size. All data expressed in imperial terms.

Piston rod bush retainers.



Cylinders with the following bore and rod combinations use circular retainers which permit removal of rod bush without disassembling cylinder.

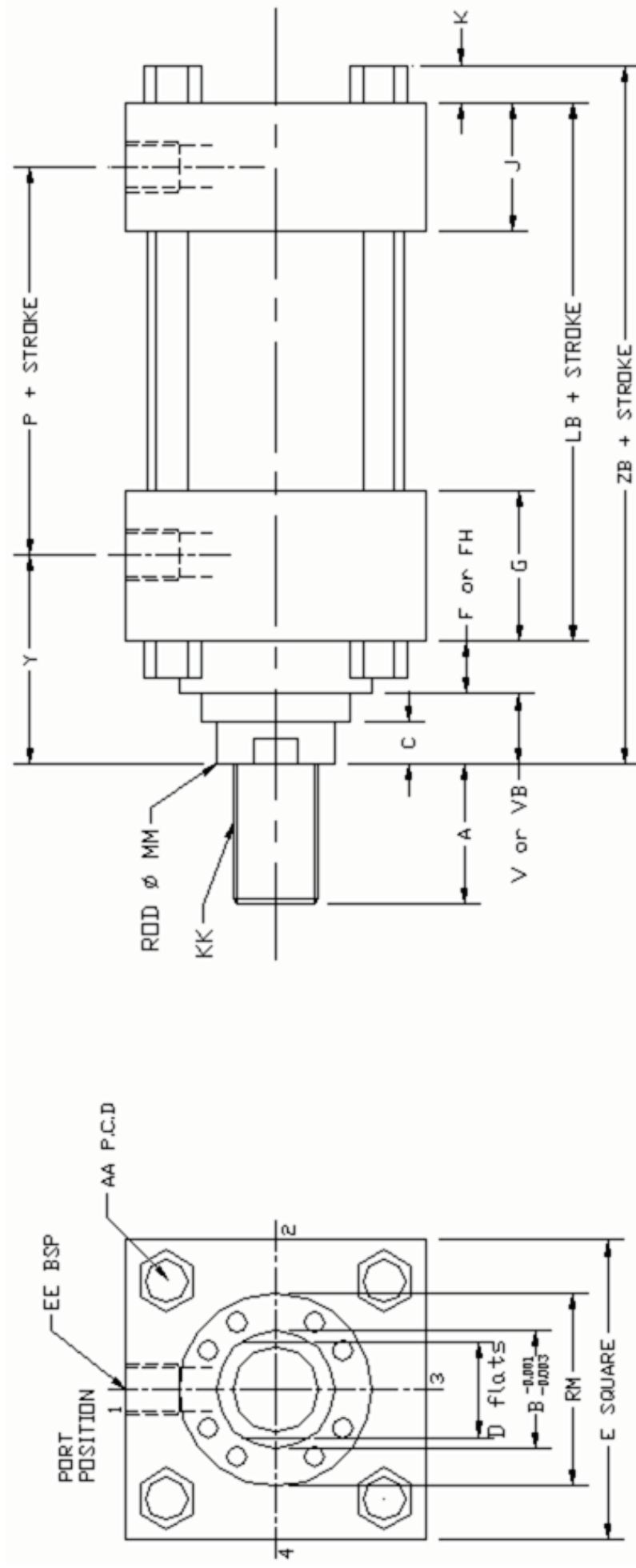
2 1/2" bore with 1" rod
 3 1/4" bore with 1 3/8" rod
 4" bore through 20" bore all rod diameters



Cylinders use this construction on the following bore and rod combinations except on NFPA MES mounting where the above method is used.

1 1/2" bore with 5/8 & 1" rods
 2" bore with 1 & 1 3/8" rods
 2 1/2 bore with 1 3/8 & 1 3/4" rods
 3 1/4" bore with 1 3/4 & 2" rods

Standard Cylinder Dimensions.

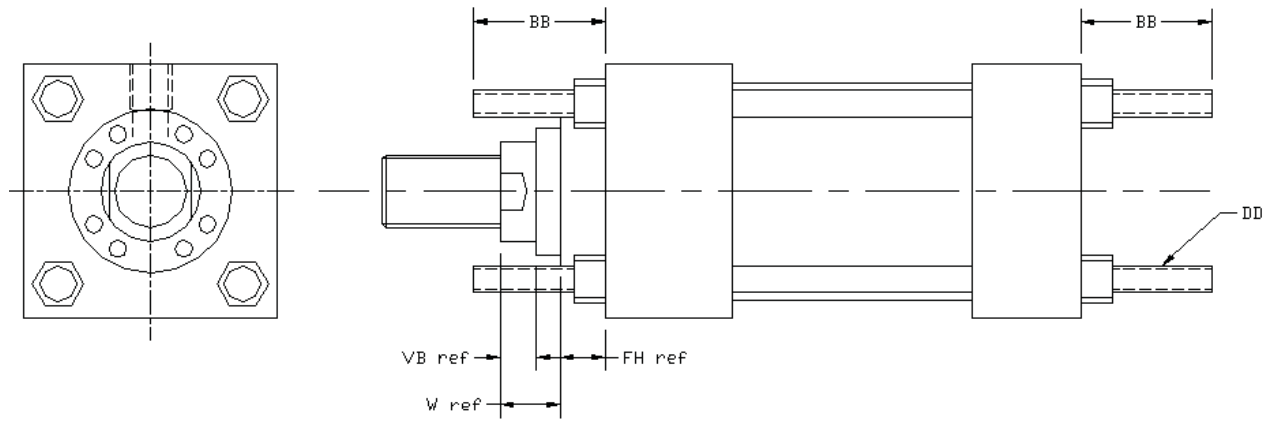


Note: Use FH dimension in place of F Dimension
 And VB dimension in place of V dimension if cylinder has a full square front plate.

Standard cylinder (NFPA style MX0)

Bore Size		Dimension																Rod Size			
MM		A	B	C	D	E	F	G	J	K	P	V	Y	AA	EE	FH	KK	LB	ZB	VB	RM
1 1/2	5/8	3/4	1 1/8	3/8	17/32	2 1/2		1 3/4	1 1/2	3/8	3		1 15/16	2.3	1/2	3/8	7/16, 20	4 5/8	6	1/4	
	1	1 1/8	1 1/2	1/2	7/8	2 1/2		1 3/4	1 1/2	3/8	3		2 5/16	2.3	1/2	3/8	3/4, 16	4 5/8	6 3/8	1/2	
2	1	1 1/8	1 1/2	1/2	7/8	3		1 3/4	1 1/2	7/16	3		2 5/16	2.9	1/2	5/8	3/4, 16	4 5/8	6 7/16	1/4	
	1 3/8	1 5/8	2	5/8	1 1/8	3		1 3/4	1 1/2	7/16	3		2 9/16	2.9	1/2	5/8	1, 14	4 5/8	6 11/16	3/8	
2 1/2	1	1 1/8	1 1/2	1/2	7/8	3 1/2	1/2	1 3/4	1 1/2	7/16	3 1/8	3/8	2 5/16	3.6	1/2	5/8	3/4, 16	4 3/4	6 9/16	1/4	2 5/8
	1 3/8	1 5/8	2	5/8	1 1/8	3 1/2		1 3/4	1 1/2	7/16	3 1/8		2 9/16	3.6	1/2	5/8	1, 14	4 3/4	6 13/16	3/8	
3 1/4	1 3/4	2	2 3/8	3/4	1 1/2	3 1/2		1 3/4	1 1/2	7/16	3 1/8		2 13/16	3.6	1/2	5/8	1 1/4, 12	4 3/4	7 1/16	1/2	
	1 3/8	1 5/8	2	5/8	1 1/8	4 1/2	19/32	2	1 3/4	9/16	3 5/8	13/32	2 11/16	4.6	3/4	3/4	1, 14	5 1/2	7 11/16	1/4	3 1/4
4	1 3/4	2	2 3/8	3/4	1 1/2	4 1/2		2	1 3/4	9/16	3 5/8		2 15/16	4.6	3/4	3/4	1 1/4, 12	5 1/2	7 15/16	3/8	
	2	2 1/4	2 5/8	7/8	1 3/4	4 1/2		2	1 3/4	9/16	3 5/8		3 1/16	4.6	3/4	3/4	1 1/2, 12	5 1/2	8 1/16	3/8	
5	1 3/4	2	2 3/8	3/4	1 1/2	5	19/32	2	1 3/4	9/16	3 7/8	17/32	2 15/16	5.4	3/4	7/8	1 1/4, 12	5 3/4	8 3/16	1/4	3 7/8
	2	2 1/4	2 5/8	7/8	1 3/4	5	19/32	2	1 3/4	9/16	3 7/8	17/32	3 1/16	5.4	3/4	7/8	1 1/2, 12	5 3/4	8 5/16	1/4	4
6	2 1/2	3	3 1/8	1	2 1/8	5	19/32	2	1 3/4	9/16	3 7/8	21/32	3 5/16	5.4	3/4	7/8	1 7/8, 12	5 3/4	8 9/16	3/8	4 7/16
	2	2 1/4	2 5/8	7/8	1 3/4	6 1/2	19/32	2	1 3/4	13/16	4 3/8	17/32	3 1/16	7.0	3/4	7/8	1 1/2, 12	6 1/4	9 1/16	1/4	4
7	2 1/2	3	3 1/8	1	2 1/8	6 1/2	19/32	2	1 3/4	13/16	4 3/8	17/32	3 5/16	7.0	3/4	7/8	1 7/8, 12	6 1/4	9 5/16	3/8	4 7/16
	3	3 1/2	3 3/4	1	2 5/8	7 1/2	23/32	2	1 3/4	13/16	4 3/8	17/32	3 5/16	7.0	3/4	7/8	2 1/4, 12	6 1/4	9 5/16	3/8	5 1/4
8	3 1/2	4	4 1/4	1	3	6 1/2	23/32	2	1 3/4	13/16	4 3/8	17/32	3 5/16	7.0	3/4	7/8	2 1/2, 12	6 1/4	9 5/16	3/8	5 5/8
	2 1/2	3	3 1/8	1	2 1/8	7 1/2	19/32	2 1/4	2 1/4	15/16	5	21/32	3 7/16	8.1	1	1	1 7/8, 12	7 3/8	10 9/16	1/4	4 7/16
9	3	3 1/2	3 3/4	1	2 5/8	7 1/2	23/32	2 1/4	2 1/4	15/16	5	17/32	3 7/16	8.1	1	1	2 1/4, 12	7 3/8	10 9/16	1/4	5 1/4
	3 1/2	4 1/4	4 1/4	1	3	7 1/2	23/32	2 1/4	2 1/4	15/16	5	17/32	3 7/16	8.1	1	1	2 1/2, 12	7 3/8	10 9/16	1/4	5 5/8
10	4	4	4 3/4	1		7 1/2	7/8	2 1/4	2 1/4	15/16	5	3/8	3 7/16	8.1	1	1	3, 12	7 3/8	10 9/16	1/4	6 7/16
	3	3 1/2	3 3/4	1	2 5/8	8 1/2	23/32	2 3/4	2 3/4	1	5 1/2	17/32	3 3/4	9.3	1 1/4	1	2 1/4, 12	8 1/2	11 3/4	1/4	5 1/4
11	3 1/2	4 1/4	4 1/4	1	3	8 1/2	23/32	2 3/4	2 3/4	1	5 1/2	17/32	3 3/4	9.3	1 1/4	1	2 1/2, 12	8 1/2	11 3/4	1/4	5 5/8
	4	4	4 3/4	1		8 1/2	7/8	2 3/4	2 3/4	1	5 1/2	3/8	3 3/4	9.3	1 1/4	1	3, 12	8 1/2	11 3/4	1/4	6 7/16
12	4 1/2	5 1/4	5 1/4	1		8 1/2	7/8	2 3/4	2 3/4	1	5 1/2	3/8	3 3/4	9.3	1 1/4	1	3 1/4, 12	8 1/2	11 3/4	1/4	7 1/8
	5	5	5 3/4	1		8 1/2	7/8	2 3/4	2 3/4	1	5 1/2	3/8	3 3/4	9.3	1 1/4	1	3 1/2, 12	8 1/2	11 3/4	1/4	7 9/16
13	3 1/2	4 1/4	4 1/4	1	3	9 1/2	23/32	3	3	1 1/8	6 1/4	17/32	3 7/8	10.6	1 1/2	1	2 1/2, 12	9 1/2	12 7/8	1/4	5 5/8
	4	4	4 3/4	1		9 1/2	7/8	3	3	1 1/8	6 1/4	3/8	3 7/8	10.6	1 1/2	1	3, 12	9 1/2	12 7/8	1/4	6 7/16
14	4 1/2	5 1/4	5 1/4	1		9 1/2	7/8	3	3	1 1/8	6 1/4	3/8	3 7/8	10.6	1 1/2	1	3 1/4, 12	9 1/2	12 7/8	1/4	7 1/8
	5	5	5 3/4	1		9 1/2	7/8	3	3	1 1/8	6 1/4	3/8	3 7/8	10.6	1 1/2	1	3 1/2, 12	9 1/2	12 7/8	1/4	7 9/16
15	5 1/2	6 1/4	6 1/4	1		9 1/2	7/8	3	3	1 1/8	6 1/4	3/8	3 7/8	10.6	1 1/2	1	4, 12	9 1/2	12 7/8	1/4	8 3/8

Tie rods extended mounting (NFPA styles MX1, MX2, MX3)

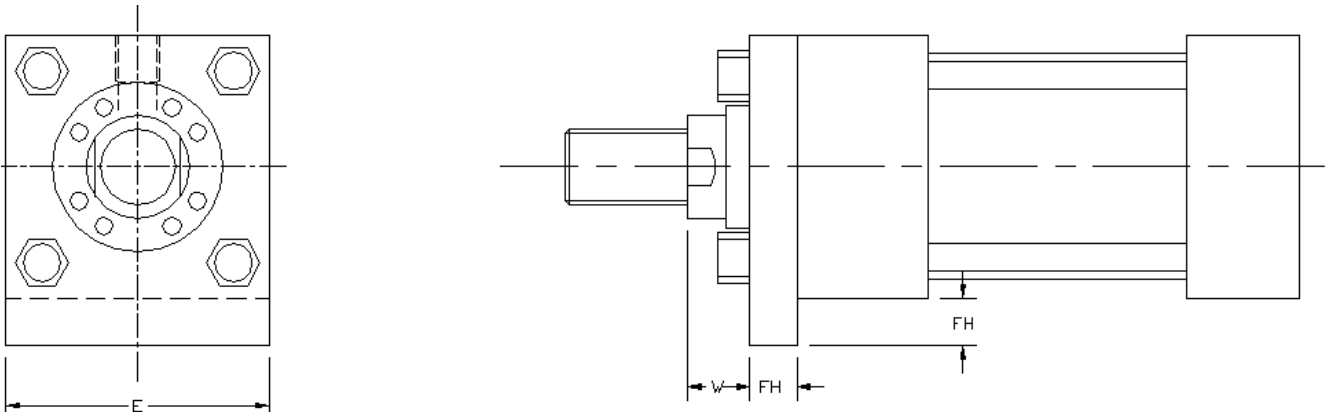


MX1: both tie rods extended
 MX2: end cap tie rods extended
 MX3 head cap tie rods extended

		Bore Size																
		1 1/2		2		2 1/2			3 1/4			4			5			
Rod size	Dim.	5/8	1	1	1 3/8	1	1 3/8	1 3/4	1 3/8	1 3/4	2	1 3/4	2	2 1/2	2	2 1/2	3	3 1/2
BB		1 3/8	1 3/8	1 13/16	1 13/16	1 13/16	1 13/16	1 13/16	2 5/16	2 5/16	2 5/16	2 5/16	2 5/16	2 5/16	3 3/16	3 3/16	3 3/16	3 3/16
DD		3/8, 24	3/8, 24	1/2, 20	1/2, 20	1/2, 20	1/2, 20	1/2, 20	5/8, 18	5/8, 18	5/8, 18	5/8, 18	5/8, 18	5/8, 18	7/8, 14	7/8, 14	7/8, 14	7/8, 14
VB		1/4	1/2	1/4	3/8	1/4	3/8	1/2	1/4	3/8	3/8	1/4	1/4	3/8	1/4	3/8	3/8	3/8
W		5/8	1	3/4	1	3/4	1	1 1/4	7/8	1 1/8	1 1/4	1	1 1/8	1 3/8	1 1/8	1 3/8	1 3/8	1 3/8
FH		3/8	3/8	5/8	5/8	5/8	5/8	5/8	3/4	3/4	3/4	7/8	7/8	7/8	7/8	7/8	7/8	7/8

		Bore Size													
		6				7					8				
Rod size	Dim.	2 1/2	3	3 1/2	4	3	3 1/2	4	4 1/2	5	3 1/2	4	4 1/2	5	5 1/2
BB		3 5/8	3 5/8	3 5/8	3 5/8	4 1/8	4 1/8	4 1/8	4 1/8	4 1/8	4 1/2	4 1/2	4 1/2	4 1/2	4 1/2
DD		1, 14	1, 14	1, 14	1, 14	1 1/8, 12	1 1/8, 12	1 1/8, 12	1 1/8, 12	1 1/8, 12	1 1/4, 12	1 1/4, 12	1 1/4, 12	1 1/4, 12	1 1/2, 12
VB		1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4
W		1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4
FH		1	1	1	1	1	1	1	1	1	1	1	1	1	1

Key Plate Mounting.

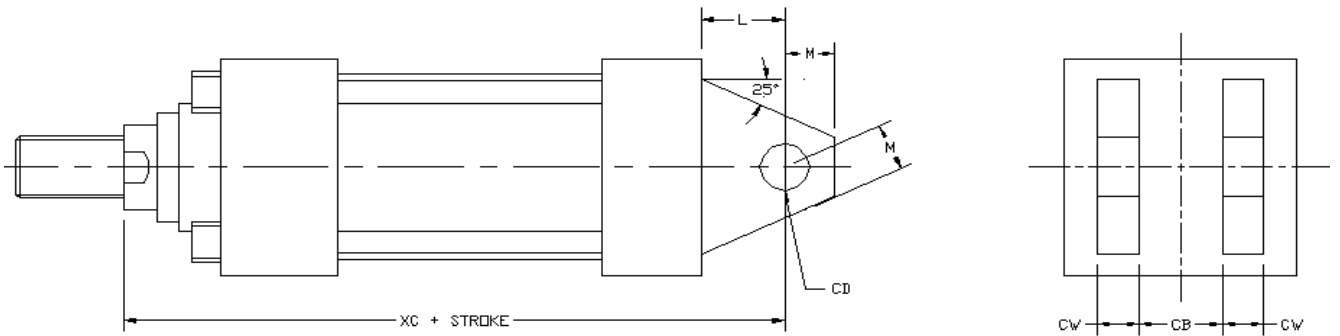


Extended key plate available on request.

		Bore Size																
		1 1/2		2		2 1/2			3 1/4			4			5			
Rod Size	Dim.	5/8	1	1	1 3/8	1	1 3/8	1 3/4	1 3/8	1 3/4	2	1 3/4	2	2 1/2	2	2 1/2	3	3 1/2
E		2 1/2	2 1/2	3	3	3 1/2	3 1/2	3 1/2	4 1/2	4 1/2	4 1/2	5	5	5	6 1/2	6 1/2	6 1/2	6 1/2
W		5/8	1	3/4	1	3/4	1	1 1/4	7/8	1 1/8	1 1/4	1	1 1/8	1 3/8	1 1/8	1 3/8	1 3/8	1 3/8
FH		3/8	3/8	5/8	5/8	5/8	5/8	5/8	3/4	3/4	3/4	7/8	7/8	7/8	7/8	7/8	7/8	7/8

		Bore Size													
		6				7					8				
Rod Size	Dimension	2 1/2	3	3 1/2	4	3	3 1/2	4	4 1/2	5	3 1/2	4	4 1/2	5	5 1/2
E		7 1/2	7 1/2	7 1/2	7 1/2	8 1/2	8 1/2	8 1/2	8 1/2	8 1/2	9 1/2	9 1/2	9 1/2	9 1/2	9 1/2
W		1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4
FH		1	1	1	1	1	1	1	1	1	1	1	1	1	1

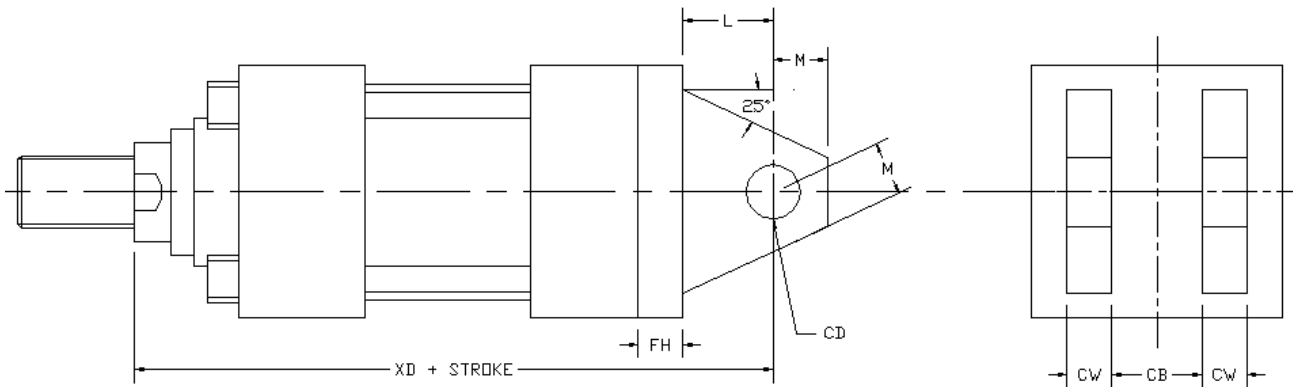
Cap fixed clevis mount (NFPA style MP1)



		Bore Size																
		1 1/2		2		2 1/2		3 1/4			4		5					
Rod Size	Dim	5/8	1	1	1 3/8	1	1 3/8	1 3/4	1 3/8	1 3/4	2	1 3/4	2	2 1/2	2	2 1/2	3	3 1/2
XC		6 3/8	6 3/4	7 1/4	7 1/2	7 3/8	7 5/8	7 7/8	8 5/8	8 7/8	9	9 3/4	9 7/8	10 1/8	10 1/2	10 3/4	10 3/4	10 3/4
L		3/4	3/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/2	1 1/2	1 1/2	2 1/8	2 1/8	2 1/8	2 1/4	2 1/4	2 1/4	2 1/4
M		1/2	1/2	3/4	3/4	3/4	3/4	3/4	1	1	1	1 3/8	1 3/8	1 3/8	1 3/4	1 3/4	1 3/4	1 3/4
CD		1/2	1/2	3/4	3/4	3/4	3/4	3/4	1	1	1	1 3/8	1 3/8	1 3/8	1 3/4	1 3/4	1 3/4	1 3/4
CW		1/2	1/2	5/8	5/8	5/8	5/8	5/8	3/4	3/4	3/4	1	1	1	1 1/4	1 1/4	1 1/4	1 1/4
CB		3/4	3/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/2	1 1/2	1 1/2	2	2	2	2 1/2	2 1/2	2 1/2	2 1/2

		Bore Size													
		6				7					8				
Rod Size	Dim	2 1/2	3	3 1/2	4	3	3 1/2	4	4 1/2	5	3 1/2	4	4 1/2	5	5 1/2
XC		12 1/8	12 1/8	12 1/8	12 1/8	13 3/4	13 3/4	13 3/4	13 3/4	13 3/4	15	15	15	15	15
L		2 1/2	2 1/2	2 1/2	2 1/2	3	3	3	3	3	3 1/4	3 1/4	3 1/4	3 1/4	3 1/4
M		2	2	2	2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 3/4	2 3/4	2 3/4	2 3/4	2 3/4
CD		2	2	2	2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	3	3	3	3	3
CW		1 1/4	1 1/4	1 1/4	1 1/4	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2
CB		2 1/2	2 1/2	2 1/2	2 1/2	3	3	3	3	3	3	3	3	3	3

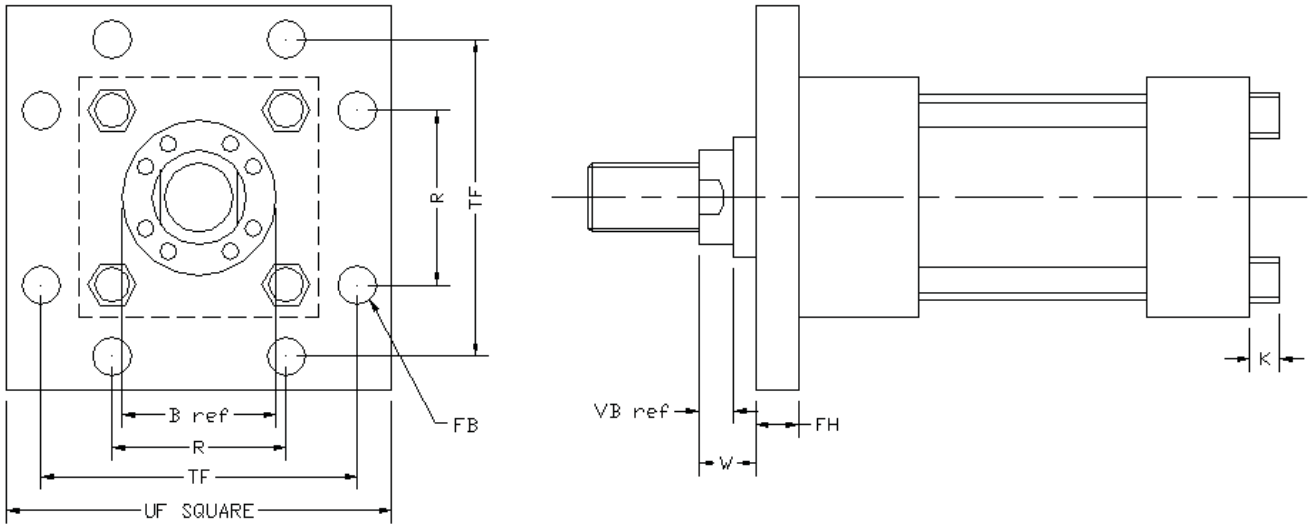
Cap Detachable Clevis Mount. (NFPA style MP2)



		Bore Size																
		1 1/2		2		2 1/2			3 1/4			4			5			
Rod Size	Dim	5/8	1	1	1 3/8	1	1 3/8	1 3/4	1 3/8	1 3/4	2	1 3/4	2	2 1/2	2	2 1/2	3	3 1/2
XD		6 3/4	7 1/8	7 7/8	8 1/8	8	8 1/4	8 1/2	9 3/8	9 5/8	9 3/4	10 5/8	10 3/4	11	11 3/8	11 5/8	11 5/8	11 5/8
FH		3/8	3/8	5/8	5/8	5/8	5/8	5/8	3/4	3/4	3/4	7/8	7/8	7/8	7/8	7/8	7/8	7/8
L		3/4	3/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/2	1 1/2	1 1/2	2 1/8	2 1/8	2 1/8	2 1/4	2 1/4	2 1/4	2 1/4
M		1/2	1/2	3/4	3/4	3/4	3/4	3/4	1	1	1	1 3/8	1 3/8	1 3/8	1 3/4	1 3/4	1 3/4	1 3/4
CD		1/2	1/2	3/4	3/4	3/4	3/4	3/4	1	1	1	1 3/8	1 3/8	1 3/8	1 3/4	1 3/4	1 3/4	1 3/4
CW		1/2	1/2	5/8	5/8	5/8	5/8	5/8	3/4	3/4	3/4	1	1	1	1 1/4	1 1/4	1 1/4	1 1/4
CB		3/4	3/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/2	1 1/2	1 1/2	2	2	2	2 1/2	2 1/2	2 1/2	2 1/2

		Bore Size													
		6				7					8				
Rod Size	Dim	2 1/2	3	3 1/2	4	3	3 1/2	4	4 1/2	5	3 1/2	4	4 1/2	5	5 1/2
XD		13 1/8	13 1/8	13 1/8	13 1/8	14 3/4	14 3/4	14 3/4	14 3/4	14 3/4	16	16	16	16	16
FH		1	1	1	1	1	1	1	1	1	1	1	1	1	1
L		2 1/2	2 1/2	2 1/2	2 1/2	3	3	3	3	3	3 1/4	3 1/3	3 1/4	3 1/4	3 1/4
M		2	2	2	2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 3/4	2 3/4	2 3/4	2 3/4	2 3/4
CD		2	2	2	2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	3	3	3	3	3
CW		1 1/4	1 1/4	1 1/4	1 1/4	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2
CB		2 1/2	2 1/2	2 1/2	2 1/2	3	3	3	3	3	3	3	3	3	3

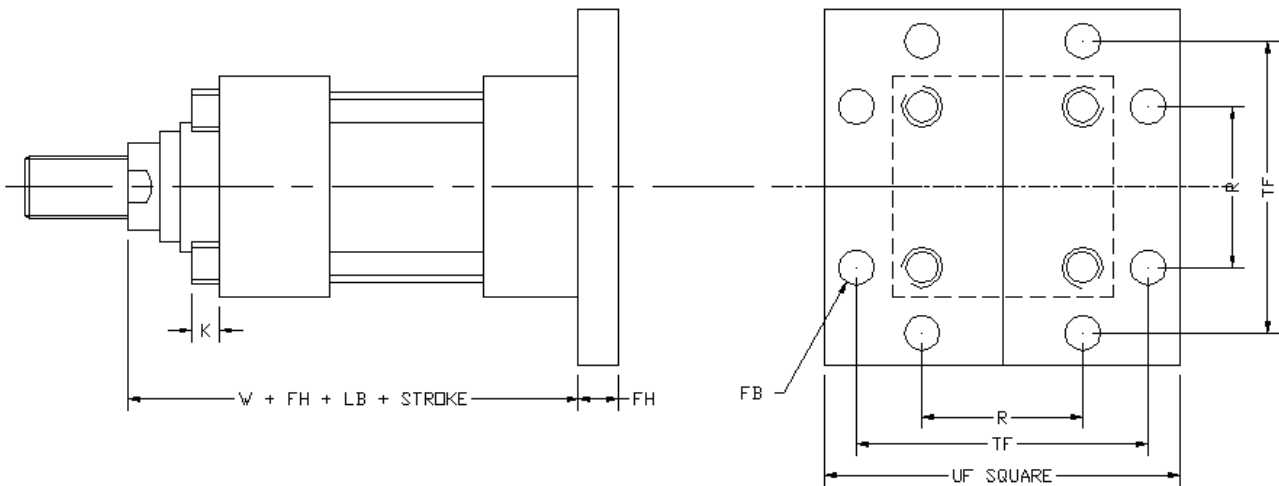
Head Cap Square Flange Mount. (NFPA style MF5)



		Bore Size																
		1 1/2		2		2 1/2			3 1/4			4			5			
Rod Size	Dim.	5/8	1	1	1 3/8	1	1 3/8	1 3/4	1 3/8	1 3/4	2	1 3/4	2	2 1/2	2	2 1/2	3	3 1/2
B		1 1/8	1 1/2	1 1/2	2	1 1/2	2	2 3/8	2	2 3/8	2 5/8	2 3/8	2 5/8	3 1/8	2 5/8	3 1/8	3 3/4	4 1/4
R		1.63	1.63	2.05	2.05	2.55	2.55	2.55	3.25	3.25	3.25	3.82	3.82	3.82	4.95	4.95	4.95	4.95
TF		3 7/16	3 7/16	4 1/8	4 1/8	4 5/8	4 5/8	4 5/8	5 7/8	5 7/8	5 7/8	6 3/8	6 3/8	6 3/8	8 3/16	8 3/16	8 3/16	8 3/16
UF		4 1/4	4 1/4	5 1/8	5 1/8	5 5/8	5 5/8	5 5/8	7 1/8	7 1/8	7 1/8	7 5/8	7 5/8	7 5/8	9 3/4	9 3/4	9 3/4	9 3/4
FB		7/16	7 1/6	9/16	9/16	9/16	9/16	9/16	11/16	11/16	11/16	11/16	11/16	11/16	15/16	15/16	15/16	15/16
VB		1/4	1/2	1/4	3/8	1/4	3/8	1/2	1/4	3/8	3/8	1/4	1/4	3/8	1/4	3/8	3/8	3/8
W		5/8	1	3/4	1	3/4	1	1 1/4	7/8	1 1/8	1 1/4	1	1 1/8	1 3/8	1 1/8	1 3/8	1 3/8	1 3/8
FH		3/8	3/8	5/8	5/8	5/8	5/8	5/8	3/4	3/4	3/4	7/8	7/8	7/8	7/8	7/8	7/8	7/8
K		3/8	3/8	7/16	7/16	7/16	7/16	7/16	9/16	9/16	9/16	9/16	9/16	9/16	13/16	13/16	13/16	13/16

		Bore Size													
		6				7					8				
Rod Size	Dimension	2.5	3	3.5	4	3	3.5	4	4.5	5	3.5	4	4.5	5	5.5
B		3 1/8	3 3/4	4 1/4	4 3/4	3 3/4	4 1/4	4 3/4	5 1/4	5 3/4	4 1/4	4 3/4	5 1/4	5 3/4	6 1/4
R		5.73	5.73	5.73	5.73	6.58	6.58	6.58	6.58	6.58	7.5	7.5	7.5	7.5	7.5
TF		9 7/16	9 7/16	9 7/16	9 7/16	10 5/8	10 5/8	10 5/8	10 5/8	10 5/8	11 13/16	11 13/16	11 13/16	11 13/16	11 13/16
UF		11 1/4	11 1/4	11 1/4	11 1/4	12 5/8	12 5/8	12 5/8	12 5/8	12 5/8	14	14	14	14	14
FB		1 1/16	1 1/16	1 1/16	1 1/16	1 3/16	1 3/16	1 3/16	1 3/16	1 3/16	1 5/16	1 5/16	1 5/16	1 5/16	1 5/16
VB		1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4
W		1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4
FH		1	1	1	1	1	1	1	1	1	1	1	1	1	1
K		15/16	15/16	15/16	15/16	1	1	1	1	1	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8

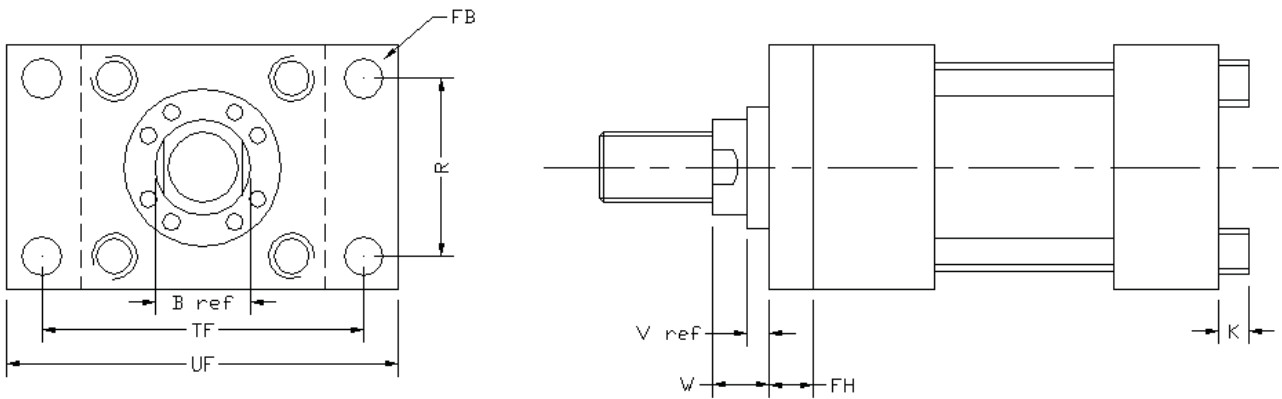
End Cap Square Flange Mount, (NFPA style MF6)



		Bore Size																
		1 1/2		2		2 1/2			3 1/4			4			5			
Rod Size	Dim.	5/8	1	1	1 3/8	1	1 3/8	1 3/4	1 3/8	1 3/4	2	1 3/4	2	2 1/2	2	2 1/2	3	3 1/2
R		1.63	1.63	2.05	2.05	2.55	2.55	2.55	3.25	3.25	3.25	3.82	3.82	3.82	4.95	4.95	4.95	4.95
TF		3 7/16	3 7/16	4 1/8	4 1/8	4 5/8	4 5/8	4 5/8	5 7/8	5 7/8	5 7/8	6 3/8	6 3/8	6 3/8	8 3/16	8 3/16	8 3/16	8 3/16
UF		4 1/4	4 1/4	5 1/8	5 1/8	5 5/8	5 5/8	5 5/8	7 1/8	7 1/8	7 1/8	7 5/8	7 5/8	7 5/8	9 3/4	9 3/4	9 3/4	9 3/4
FB		7/16	7/16	9/16	9/16	9/16	9/16	9/16	11/16	11/16	11/16	11/16	11/16	11/16	15/16	15/16	15/16	15/16
W		5/8	1	3/4	1	3/4	1	1 1/4	7/8	1 1/8	1 1/4	1	1 1/8	1 3/8	1 1/8	1 3/8	1 3/8	1 3/8
FH		3/8	3/8	5/8	5/8	5/8	5/8	5/8	3/4	3/4	3/4	7/8	7/8	7/8	7/8	7/8	7/8	7/8
K		3/8	3/8	7/16	7/16	7/16	7/16	7/16	9/16	9/16	9/16	9/16	9/16	9/16	13/16	13/16	13/16	13/16
LB		4 5/8	4 5/8	4 5/8	4 5/8	4 3/4	4 3/4	4 3/4	5 1/2	5 1/2	5 1/2	5 3/4	5 3/4	5 3/4	6 1/4	6 1/4	6 1/4	6 1/4

		Bore Size														
		6				7					8					
Rod Size	Dimension	2.5	3	3.5	4	3	3.5	4	4.5	5	3.5	4	4.5	5	5.5	
R		5.73	5.73	5.73	5.73	6.58	6.58	6.58	6.58	6.58	7.5	7.5	7.5	7.5	7.5	
TF		9 7/16	9 7/16	9 7/16	9 7/16	10 5/8	10 5/8	10 5/8	10 5/8	10 5/8	11 13/16	11 13/16	11 13/16	11 13/16	11 13/16	
UF		11 1/4	11 1/4	11 1/4	11 1/4	12 5/8	12 5/8	12 5/8	12 5/8	12 5/8	14	14	14	14	14	
FB		1 1/16	1 1/16	1 1/16	1 1/16	1 3/16	1 3/16	1 3/16	1 3/16	1 3/16	1 5/16	1 5/16	1 5/16	1 5/16	1 5/16	
W		1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	
FH		1	1	1	1	1	1	1	1	1	1	1	1	1	1	
K		15/16	15/16	15/16	15/16	1	1	1	1	1	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8	
LB		7 3/8	7 3/8	7 3/8	7 3/8	8 1/2	8 1/2	8 1/2	8 1/2	8 1/2	9 1/2	9 1/2	9 1/2	9 1/2	9 1/2	

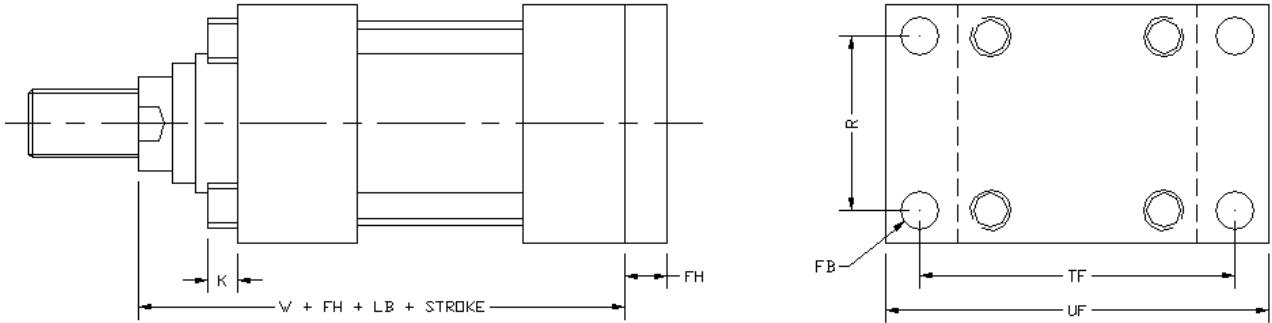
Head Cap Rectangular Flange Mount, (NFFA style MF1)



		Bore Size																
		1 1/2		2		2 1/2			3 1/4			4			5			
Rod Size	Dim.	5/8	1	1	1 3/8	1	1 3/8	1 3/4	1 3/8	1 3/4	2	1 3/4	2	2 1/2	2	2 1/2	3	3 1/2
B		1 1/8	1 1/2	1 1/2	2	1 1/2	2	2 3/8	2	2 3/8	2 5/8	2 3/8	2 5/8	3 1/8	2 5/8	3 1/8	3 3/4	4 1/4
TF		3 7/16	3 7/16	4 1/8	4 1/8	4 5/8	4 5/8	4 5/8	5 7/8	5 7/8	5 7/8	6 3/8	6 3/8	6 3/8	8 3/16	8 3/16	8 3/16	8 3/16
UF		4 1/4	4 1/4	5 1/8	5 1/8	5 5/8	5 5/8	5 5/8	7 1/8	7 1/8	7 1/8	7 5/8	7 5/8	7 5/8	9 3/4	9 3/4	9 3/4	9 3/4
W		5/8	1	3/4	1	3/4	1	1 1/4	7/8	1 1/8	1 1/4	1	1 1/8	1 3/8	1 1/8	1 3/8	1 3/8	1 3/8
FH		3/8	3/8	5/8	5/8	5/8	5/8	5/8	3/4	3/4	3/4	7/8	7/8	7/8	7/8	7/8	7/8	7/8
K		3/8	3/8	7/16	7/16	7/16	7/16	7/16	9/16	9/16	9/16	9/16	9/16	9/16	13/16	13/16	13/16	13/16
R		1.63	1.63	2.05	2.05	2.55	2.55	2.55	3.25	3.25	3.25	3.82	3.82	3.82	4.95	4.95	4.95	4.95
FB		7/16	7/16	9/16	9/16	9/16	9/16	9/16	11/16	11/16	11/16	11/16	11/16	11/16	15/16	15/16	15/16	15/16
V						3/8			13/32			17/32	17/32	21/32	17/32	21/32	17/32	17/32

		Bore Size													
		6				7					8				
Rod Size	Dimension	2.5	3	3.5	4	3	3.5	4	4.5	5	3.5	4	4.5	5	5.5
B		3 1/8	3 3/4	4 1/4	4 3/4	3 3/4	4 1/4	4 3/4	5 1/4	5 3/4	4 1/4	4 3/4	5 1/4	5 3/4	6 1/4
TF		9 7/16	9 7/16	9 7/16	9 7/16	10 5/8	10 5/8	10 5/8	10 5/8	10 5/8	11 13/16	11 13/16	11 13/16	11 13/16	11 13/16
UF		11 1/4	11 1/4	11 1/4	11 1/4	12 5/8	12 5/8	12 5/8	12 5/8	12 5/8	14	14	14	14	14
W		1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	
FH		1	1	1	1	1	1	1	1	1	1	1	1	1	
K		15/16	15/16	15/16	15/16	1	1	1	1	1	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8
R		5.73	5.73	5.73	5.73	6.58	6.58	6.58	6.58	6.58	7.50	7.50	7.50	7.50	7.50
FB		1 1/16	1 1/16	1 1/16	1 1/16	1 3/16	1 3/16	1 3/16	1 3/16	1 3/16	1 5/16	1 5/16	1 5/16	1 5/16	1 5/16
V		21/32	17/32	17/32	3/8	17/32	17/32	3/8	3/8	3/8	17/32	3/8	3/8	3/8	3/8

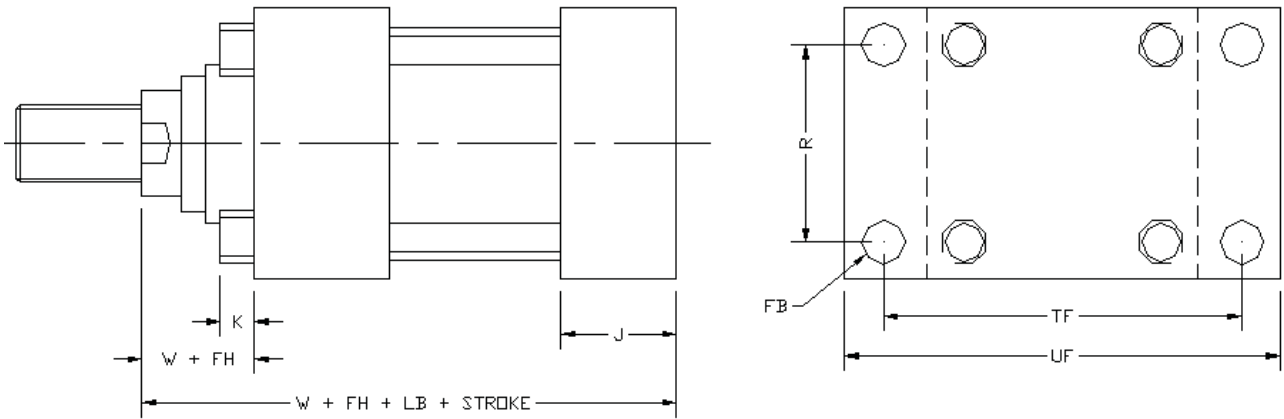
End Cap Rectangular Flange Mount. (NFPA style MF2)



		Bore Size																
		1 1/2		2		2 1/2			3 1/4			4			5			
Rod Size	Dim.	5/8	1	1	1 3/8	1	1 3/8	1 3/4	1 3/8	1 3/4	2	1 3/4	2	2 1/2	2	2 1/2	3	3 1/2
R		1.63	1.63	2.05	2.05	2.55	2.55	2.55	3.25	3.25	3.25	3.82	3.82	3.82	4.95	4.95	4.95	4.95
TF		3 7/16	3 7/16	4 1/8	4 1/8	4 5/8	4 5/8	4 5/8	5 7/8	5 7/8	5 7/8	6 3/8	6 3/8	6 3/8	8 3/16	8 3/16	8 3/16	8 3/16
UF		4 1/4	4 1/4	5 1/8	5 1/8	5 5/8	5 5/8	5 5/8	7 1/8	7 1/8	7 1/8	7 5/8	7 5/8	7 5/8	9 3/4	9 3/4	9 3/4	9 3/4
FB		7/16	7 1/6	9/16	9/16	9/16	9/16	9/16	11/16	11/16	11/16	11/16	11/16	11/16	15/16	15/16	15/16	15/16
W		5/8	1	3/4	1	3/4	1	1 1/4	7/8	1 1/8	1 1/4	1	1 1/8	1 3/8	1 1/8	1 3/8	1 3/8	1 3/8
FH		3/8	3/8	5/8	5/8	5/8	5/8	5/8	3/4	3/4	3/4	7/8	7/8	7/8	7/8	7/8	7/8	7/8
K		3/8	3/8	7/16	7/16	7/16	7/16	7/16	9/16	9/16	9/16	9/16	9/16	9/16	13/16	13/16	13/16	13/16
LB		4 5/8	4 5/8	4 5/8	4 5/8	4 3/4	4 3/4	4 3/4	5 1/2	5 1/2	5 1/2	5 3/4	5 3/4	5 3/4	6 1/4	6 1/4	6 1/4	6 1/4

		Bore Size														
		6				7					8					
Rod Size	Dimension	2.5	3	3.5	4	3	3.5	4	4.5	5	3.5	4	4.5	5	5.5	
R		5.73	5.73	5.73	5.73	6.58	6.58	6.58	6.58	6.58	7.5	7.5	7.5	7.5	7.5	
TF		9 7/16	9 7/16	9 7/16	9 7/16	10 5/8	10 5/8	10 5/8	10 5/8	10 5/8	11 13/16	11 13/16	11 13/16	11 13/16	11 13/16	
UF		11 1/4	11 1/4	11 1/4	11 1/4	12 5/8	12 5/8	12 5/8	12 5/8	12 5/8	14	14	14	14	14	
FB		1 1/16	1 1/16	1 1/16	1 1/16	1 3/16	1 3/16	1 3/16	1 3/16	1 3/16	1 5/16	1 5/16	1 5/16	1 5/16	1 5/16	
W		1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	
FH		1	1	1	1	1	1	1	1	1	1	1	1	1	1	
K		15/16	15/16	15/16	15/16	1	1	1	1	1	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8	
LB		7 3/8	7 3/8	7 3/8	7 3/8	8 1/2	8 1/2	8 1/2	8 1/2	8 1/2	9 1/2	9 1/2	9 1/2	9 1/2	9 1/2	

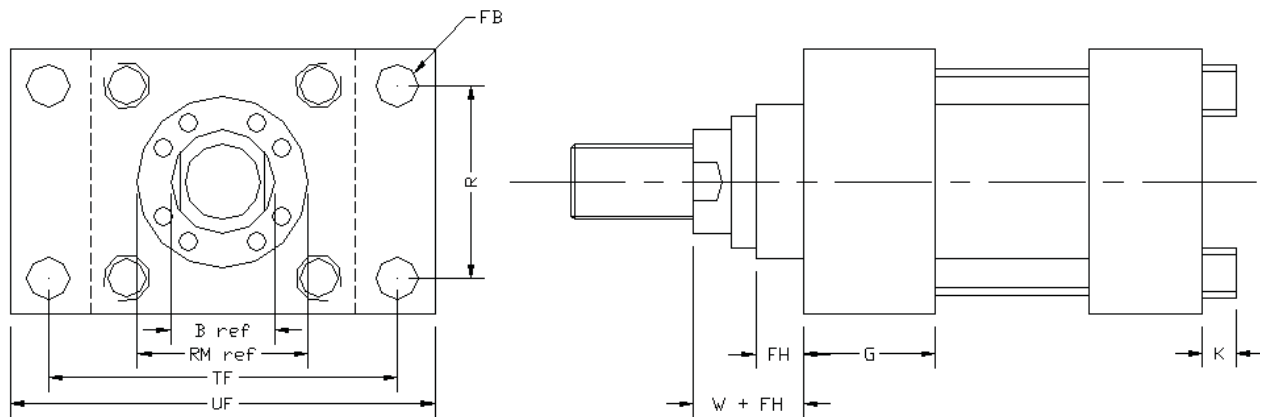
End Cap Rectangular Mount. (NFPA style ME6)



		Bore Size																
		1 1/2		2		2 1/2			3 1/4			4			5			
Rod Size	Dim.	5/8	1	1	1 3/8	1	1 3/8	1 3/4	1 3/8	1 3/4	2	1 3/4	2	2 1/2	2	2 1/2	3	3 1/2
R		1.63	1.63	2.05	2.05	2.55	2.55	2.55	3.25	3.25	3.25	3.82	3.82	3.82	4.95	4.95	4.95	4.95
TF		3 7/16	3 7/16	4 1/8	4 1/8	4 5/8	4 5/8	4 5/8	5 7/8	5 7/8	5 7/8	6 3/8	6 3/8	6 3/8	8 3/16	8 3/16	8 3/16	8 3/16
UF		4 1/4	4 1/4	5 1/8	5 1/8	5 5/8	5 5/8	5 5/8	7 1/8	7 1/8	7 1/8	7 5/8	7 5/8	7 5/8	9 3/4	9 3/4	9 3/4	9 3/4
FB		7/16	7 1/6	9/16	9/16	9/16	9/16	9/16	11/16	11/16	11/16	11/16	11/16	11/16	15/16	15/16	15/16	15/16
W		5/8	1	3/4	1	3/4	1	1 1/4	7/8	1 1/8	1 1/4	1	1 1/8	1 3/8	1 1/8	1 3/8	1 3/8	1 3/8
FH		3/8	3/8	5/8	5/8	5/8	5/8	5/8	3/4	3/4	3/4	7/8	7/8	7/8	7/8	7/8	7/8	7/8
J		1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 3/4	1 3/4	1 3/4	1 3/4	1 3/4	1 3/4	1 3/4	1 3/4	1 3/4	1 3/4
K		3/8	3/8	7/16	7/16	7/16	7/16	7/16	9/16	9/16	9/16	9/16	9/16	9/16	13/16	13/16	13/16	13/16
LB		4 5/8	4 5/8	4 5/8	4 5/8	4 3/4	4 3/4	4 3/4	5 1/2	5 1/2	5 1/2	5 3/4	5 3/4	5 3/4	6 1/4	6 1/4	6 1/4	6 1/4

		Bore Size													
		6				7					8				
Rod Size	Dimension	2.5	3	3.5	4	3	3.5	4	4.5	5	3.5	4	4.5	5	5.5
R		5.73	5.73	5.73	5.73	6.58	6.58	6.58	6.58	6.58	7.5	7.5	7.5	7.5	7.5
TF		9 7/16	9 7/16	9 7/16	9 7/16	10 5/8	10 5/8	10 5/8	10 5/8	10 5/8	11 13/16	11 13/16	11 13/16	11 13/16	11 13/16
UF		11 1/4	11 1/4	11 1/4	11 1/4	12 5/8	12 5/8	12 5/8	12 5/8	12 5/8	14	14	14	14	14
FB		1 1/16	1 1/16	1 1/16	1 1/16	1 3/16	1 3/16	1 3/16	1 3/16	1 3/16	1 5/16	1 5/16	1 5/16	1 5/16	1 5/16
W		1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4
FH		1	1	1	1	1	1	1	1	1	1	1	1	1	1
J		2 1/4	2 1/4	2 1/4	2 1/4	2 3/4	2 3/4	2 3/4	2 3/4	2 3/4	3	3	3	3	3
K		15/16	15/16	15/16	15/16	1	1	1	1	1	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8
LB		7 3/8	7 3/8	7 3/8	7 3/8	8 1/2	8 1/2	8 1/2	8 1/2	8 1/2	9 1/2	9 1/2	9 1/2	9 1/2	9 1/2

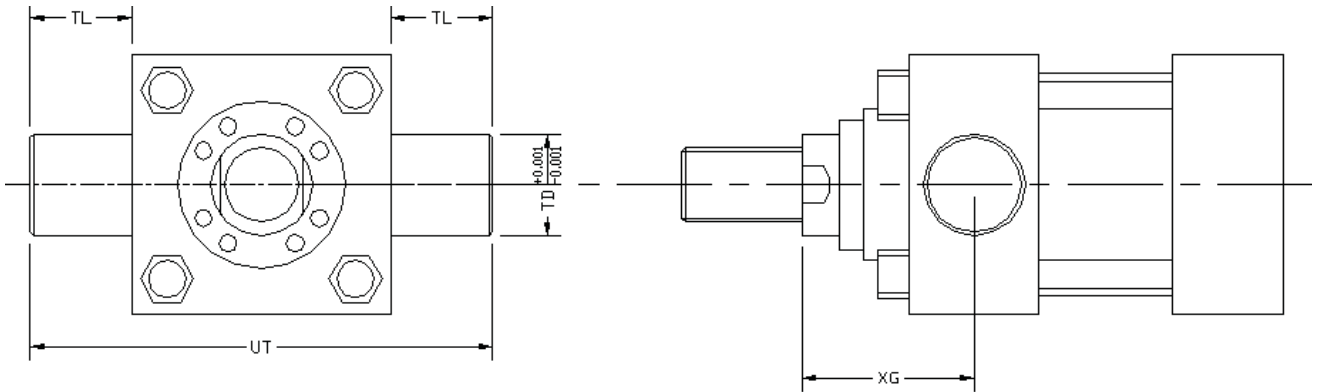
Head Cap Rectangular Mount. (NFPA style ME5)



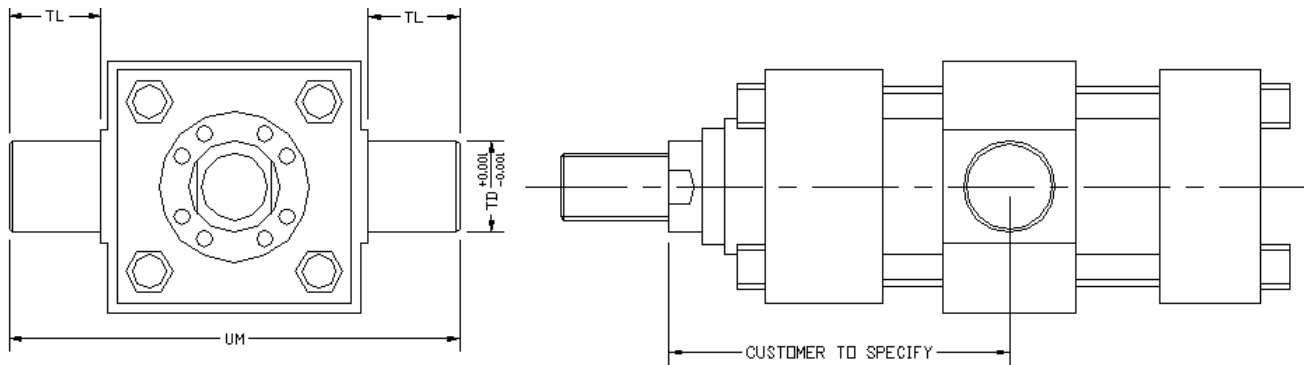
		Bore Size																
		1 1/2		2		2 1/2			3 1/4			4			5			
Rod Size	Dim.	5/8	1	1	1 3/8	1	1 3/8	1 3/4	1 3/8	1 3/4	2	1 3/4	2	2 1/2	2	2 1/2	3	3 1/2
B		1 1/8	1 1/2	1 1/2	2	1 1/2	2	2 3/8	2	2 3/8	2 5/8	2 3/8	2 5/8	3 1/8	2 5/8	3 1/8	3 3/4	4 1/4
TF		3 7/16	3 7/16	4 1/8	4 1/8	4 5/8	4 5/8	4 5/8	5 7/8	5 7/8	5 7/8	6 3/8	6 3/8	6 3/8	8 3/16	8 3/16	8 3/16	8 3/16
UF		4 1/4	4 1/4	5 1/8	5 1/8	5 5/8	5 5/8	5 5/8	7 1/8	7 1/8	7 1/8	7 5/8	7 5/8	7 5/8	9 3/4	9 3/4	9 3/4	9 3/4
W		5/8	1	3/4	1	3/4	1	1 1/4	7/8	1 1/8	1 1/4	1	1 1/8	1 3/8	1 1/8	1 3/8	1 3/8	1 3/8
FH		3/8	3/8	5/8	5/8	5/8	5/8	5/8	3/4	3/4	3/4	7/8	7/8	7/8	7/8	7/8	7/8	7/8
K		3/8	3/8	7/16	7/16	7/16	7/16	7/16	9/16	9/16	9/16	9/16	9/16	9/16	13/16	13/16	13/16	13/16
FB		7/16	7/16	9/16	9/16	9/16	9/16	9/16	11/16	11/16	11/16	11/16	11/16	11/16	15/16	15/16	15/16	15/16
RM						2 5/8			3 1/4			3 7/8	4	4 7/16	4	4 7/16	5 1/4	5 5/8
G		1 3/4	1 3/4	1 3/4	1 3/4	1 3/4	1 3/4	1 3/4	2	2	2	2	2	2	2	2	2	2

		Bore Size													
		6				7					8				
Rod Size	Dimension	2.5	3	3.5	4	3	3.5	4	4.5	5	3.5	4	4.5	5	5.5
B		3 1/8	3 3/4	4 1/4	4 3/4	3 3/4	4 1/4	4 3/4	5 1/4	5 3/4	4 1/4	4 3/4	5 1/4	5 3/4	6 1/4
TF		9 7/16	9 7/16	9 7/16	9 7/16	10 5/8	10 5/8	10 5/8	10 5/8	10 5/8	11 13/16	11 13/16	11 13/16	11 13/16	11 13/16
UF		11 1/4	11 1/4	11 1/4	11 1/4	12 5/8	12 5/8	12 5/8	12 5/8	12 5/8	14	14	14	14	14
W		1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	
FH		1	1	1	1	1	1	1	1	1	1	1	1	1	
K		15/16	15/16	15/16	15/16	1	1	1	1	1	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8
FB		1 1/16	1 1/16	1 1/16	1 1/16	1 3/16	1 3/16	1 3/16	1 3/16	1 3/16	1 5/16	1 5/16	1 5/16	1 5/16	1 5/16
RM		4 7/16	5 1/4	5 5/8	6 7/16	5 1/4	5 5/8	6 7/16	7 1/8	7 9/16	5 5/8	6 7/16	7 1/8	7 9/16	8 3/8
G		2 1/4	2 1/4	2 1/4	2 1/4	2 3/4	2 3/4	2 3/4	2 3/4	2 3/4	3	3	3	3	3

Head Cap Trunnion Mount. (NFPA style MT1)



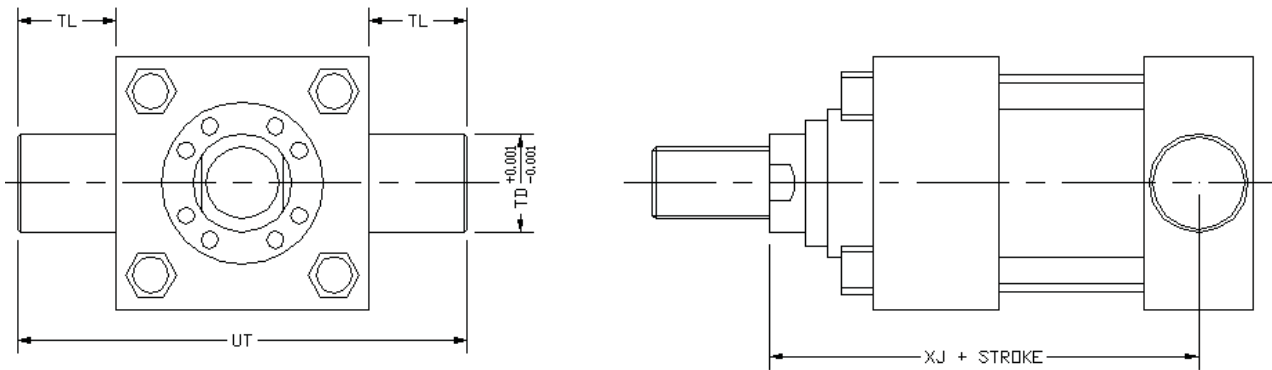
Intermediate Trunnion Mount. (NFPA style MT4)



		Bore Size																	
		1 1/2		2		2 1/2			3 1/4			4			5				
Rod Size	Dim.	5/8	1	1	1 3/8	1	1 3/8	1 3/4	1 3/8	1 3/4	2	1 3/4	2	2 1/2	2	2 1/2	3	3 1/2	
TL		1	1	1 3/8	1 3/8	1 3/8	1 3/8	1 3/8	1 3/4	1 3/4	1 3/4	1 3/4	1 3/4	1 3/4	1 3/4	1 3/4	1 3/4	1 3/4	1 3/4
UT		4 1/2	4 1/2	5 3/4	5 3/4	6 1/4	6 1/4	6 1/4	8	8	8	8 1/2	8 1/2	8 1/2	10	10	10	10	10
UM		5	5	6 1/4	6 1/4	6 3/4	6 3/4	6 3/4	8 1/2	8 1/2	8 1/2	9	9	9	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2
TD		1	1	1 3/8	1 3/8	1 3/8	1 3/8	1 3/8	1 3/4	1 3/4	1 3/4	1 3/4	1 3/4	1 3/4	1 3/4	1 3/4	1 3/4	1 3/4	1 3/4
XG		1 7/8	2 1/4	2 1/4	2 1/2	2 1/4	2 1/2	2 3/4	2 5/8	2 7/8	3	2 7/8	3	3 1/4	3	3 1/4	3 1/4	3 1/4	3 1/4

		Bore Size													
		6				7					8				
Rod Size	Dimension	2.5	3	3.5	4	3	3.5	4	4.5	5	3.5	4	4.5	5	5.5
TL		2	2	2	2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	3	3	3	3	3
UT		11 1/2	11 1/2	11 1/2	11 1/2	13 1/2	13 1/2	13 1/2	13 1/2	13 1/2	15 1/2	15 1/2	15 1/2	15 1/2	15 1/2
UM		12 1/2	12 1/2	12 1/2	12 1/2	14 3/4	14 3/4	14 3/4	14 3/4	14 3/4	17	17	17	17	17
TD		2	2	2	2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	3	3	3	3	3
XG		3 3/8	3 3/8	3 3/8	3 3/8	3 5/8	3 5/8	3 5/8	3 5/8	3 5/8	3 3/4	3 3/4	3 3/4	3 3/4	3 3/4

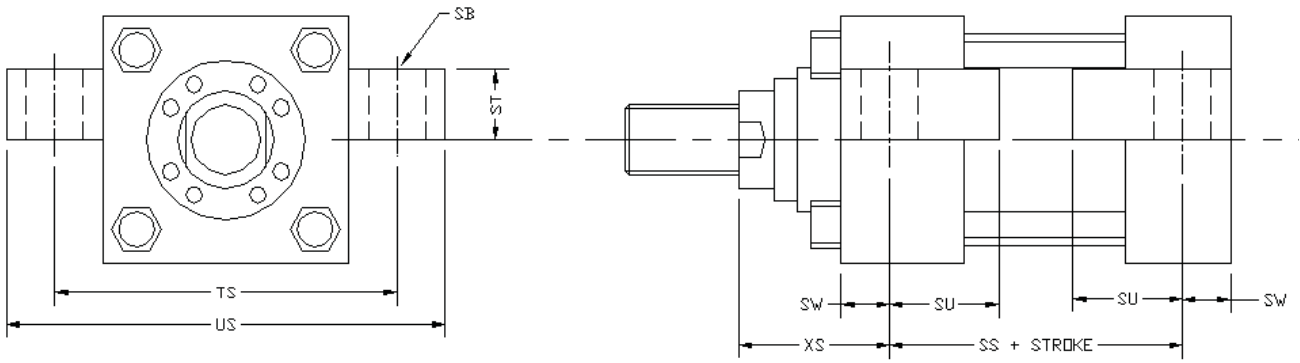
End Cap Trunnion Mount. (NFPA style MT2)



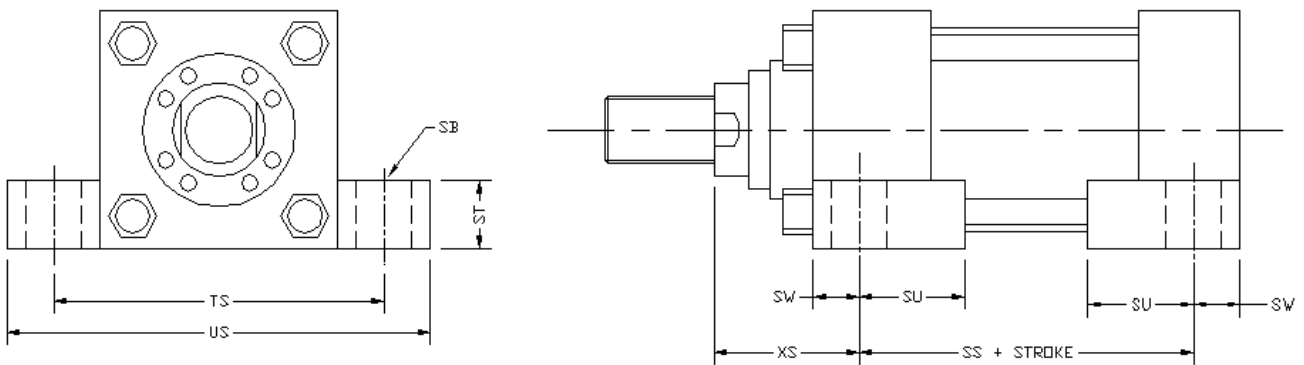
		Bore Size																	
		1 1/2		2		2 1/2			3 1/4			4			5				
Rod Size	Dim.	5/8	1	1	1 3/8	1	1 3/8	1 3/4	1 3/8	1 3/4	2	1 3/4	2	2 1/2	2	2 1/2	3	3 1/2	
TL		1	1	1 3/8	1 3/8	1 3/8	1 3/8	1 3/8	1 3/4	1 3/4	1 3/4	1 3/4	1 3/4	1 3/4	1 3/4	1 3/4	1 3/4	1 3/4	1 3/4
UT		4 1/2	4 1/2	5 3/4	5 3/4	6 1/4	6 1/4	6 1/4	8	8	8	8 1/2	8 1/2	8 1/2	10	10	10	10	10
TD		1	1	1 3/8	1 3/8	1 3/8	1 3/8	1 3/8	1 3/4	1 3/4	1 3/4	1 3/4	1 3/4	1 3/4	1 3/4	1 3/4	1 3/4	1 3/4	1 3/4
XJ		4 7/8	5 1/4	5 1/4	5 1/2	5 3/8	5 5/8	5 7/8	6 1/4	6 1/2	6 5/8	6 3/4	6 7/8	7 1/8	7 3/8	7 5/8	7 5/8	7 5/8	7 5/8

		Bore Size													
		6				7					8				
Rod Size	Dimension	2.5	3	3.5	4	3	3.5	4	4.5	5	3.5	4	4.5	5	5.5
TL		2	2	2	2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	3	3	3	3	3
UT		11 1/2	11 1/2	11 1/2	11 1/2	13 1/2	13 1/2	13 1/2	13 1/2	13 1/2	15 1/2	15 1/2	15 1/2	15 1/2	15 1/2
TD		2	2	2	2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	3	3	3	3	3
XJ		8 3/8	8 3/8	8 3/8	8 3/8	9 3/8	9 3/8	9 3/8	9 3/8	9 3/8	10 1/4	10 1/4	10 1/4	10 1/4	10 1/4

Centre Line Lugs Mount. (NFPA style MS3)



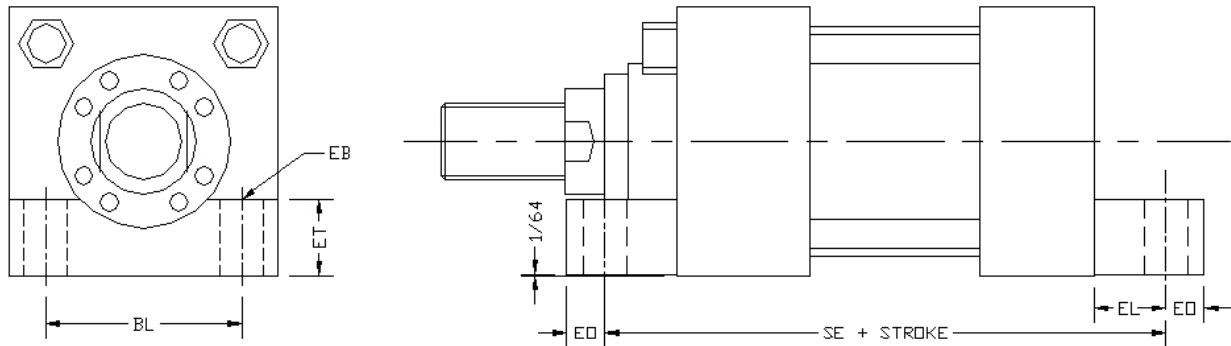
Side Lugs Mount. (NFPA style MS2)



		Bore Size																
		1 1/2		2		2 1/2			3 1/4			4			5			
Rod Size	Dim.	5/8	1	1	1 3/8	1	1 3/8	1 3/4	1 3/8	1 3/4	2	1 3/4	2	2 1/2	2	2 1/2	3	3 1/2
TS		3 1/4	3 1/4	4	4	4 7/8	4 7/8	4 7/8	5 7/8	5 7/8	5 7/8	6 3/4	6 3/4	6 3/4	8 1/4	8 1/4	8 1/4	8 1/4
US		4	4	5	5	6 1/4	6 1/4	6 1/4	7 1/4	7 1/4	7 1/4	8 1/2	8 1/2	8 1/2	10	10	10	10
SB		7/16	7/16	9/16	9/16	13/16	13/16	13/16	13/16	13/16	13/16	1 1/16	1 1/16	1 1/16	1 1/16	1 1/16	1 1/16	1 1/16
ST		1/2	1/2	3/4	3/4	1	1	1	1	1	1	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4
XS		1 3/8	1 3/4	1 7/8	2 1/8	2 1/16	2 5/16	2 9/16	2 5/16	2 9/16	2 11/16	2 3/4	2 7/8	3 1/8	2 7/8	3 1/8	3 1/8	3 1/8
SW		3/8	3/8	1/2	1/2	11/16	11/16	11/16	11/16	11/16	11/16	7/8	7/8	7/8	7/8	7/8	7/8	7/8
SU		15/16	15/16	1 1/4	1 1/4	1 9/16	1 9/16	1 9/16	1 9/16	1 9/16	1 9/16	2	2	2	2	2	2	2
SS		3 7/8	3 7/8	3 5/8	3 5/8	3 3/8	3 3/8	3 3/8	4 1/8	4 1/8	4 1/8	4	4	4	4 1/2	4 1/2	4 1/2	4 1/2

		Bore Size													
		6				7					8				
Rod Size	Dimension	2.5	3	3.5	4	3	3.5	4	4.5	5	3.5	4	4.5	5	5.5
TS		9 3/4	9 3/4	9 3/4	9 3/4	11 1/4	11 1/4	11 1/4	11 1/4	11 1/4	12 1/4	12 1/4	12 1/4	12 1/4	12 1/4
US		12	12	12	12	14	14	14	14	14	15	15	15	15	15
SB		1 5/16	1 5/16	1 5/16	1 5/16	1 9/16	1 9/16	1 9/16	1 9/16	1 9/16	1 9/16	1 9/16	1 9/16	1 9/16	1 9/16
ST		1 1/2	1 1/2	1 1/2	1 1/2	1 3/4	1 3/4	1 3/4	1 3/4	1 3/4	1 3/4	1 3/4	1 3/4	1 3/4	1 3/4
XS		3 3/8	3 3/8	3 3/8	3 3/8	3 5/8	3 5/8	3 5/8	3 5/8	3 5/8	3 5/8	3 5/8	3 5/8	3 5/8	3 5/8
SW		1 1/8	1 1/8	1 1/8	1 1/8	1 3/8	1 3/8	1 3/8	1 3/8	1 3/8	1 3/8	1 3/8	1 3/8	1 3/8	1 3/8
SU		2 1/2	2 1/2	2 1/2	2 1/2	2 7/8	2 7/8	2 7/8	2 7/8	2 7/8	2 7/8	2 7/8	2 7/8	2 7/8	2 7/8
SS		5 1/8	5 1/8	5 1/8	5 1/8	5 3/4	5 3/4	5 3/4	5 3/4	5 3/4	6 3/4	6 3/4	6 3/4	6 3/4	6 3/4

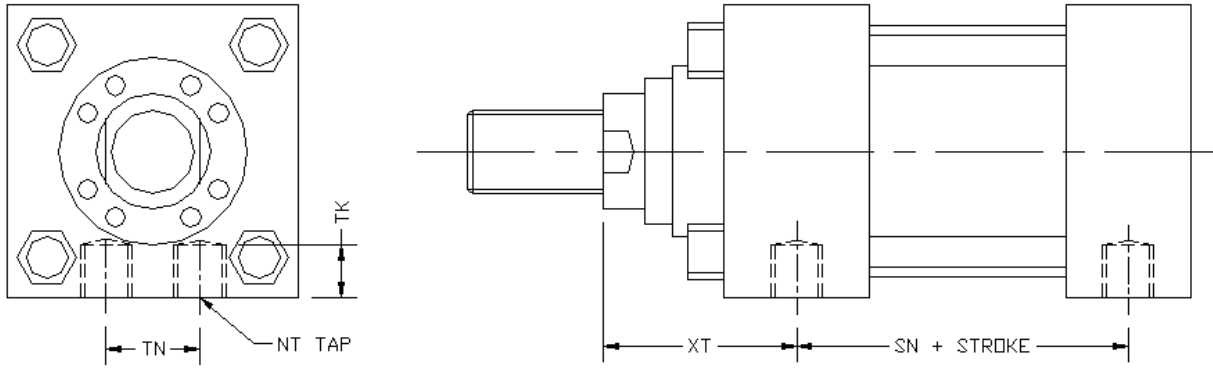
Side End Lugs Mount. (NFA style MS7)



		Bore Size																
		1 1/2		2		2 1/2			3 1/4			4			5			
Rod Size	Dim.	5/8	1	1	1 3/8	1	1 3/8	1 3/4	1 3/8	1 3/4	2	1 3/4	2	2 1/2	2	2 1/2	3	3 1/2
EB		7/16	7/16	9/16	9/16	9/16	9/16	9/16	11/16	11/16	11/16	11/16	11/16	11/16	15/16	15/16	15/16	15/16
ET		7/8	7/8	1	1	1	1	1	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/2	1 1/2	1 1/2	1 1/2
BL		1.63	1.63	2.07	2.07	2.56	2.56	2.56	3.27	3.27	3.27	3.84	3.84	3.84	4.95	4.95	4.95	4.95
EO		3/8	3/8	1/2	1/2	1/2	1/2	1/2	5/8	5/8	5/8	5/8	5/8	5/8	3/4	3/4	3/4	3/4
EL		7/8	7/8	15/16	15/16	15/16	15/16	15/16	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8	1 1/2	1 1/2	1 1/2	1 1/2
SE		6 3/4	6 3/4	7 1/8	7 1/8	7 1/4	7 1/4	7 1/4	8 1/2	8 1/2	8 1/2	8 7/8	8 7/8	8 7/8	10 1/8	10 1/8	10 1/8	10 1/8

		Bore Size													
		6				7					8				
Rod Size	Dimension	2.5	3	3.5	4	3	3.5	4	4.5	5	3.5	4	4.5	5	5.5
EB		1 1/16	1 1/16	1 1/16	1 1/16	1 3/16	1 3/16	1 3/16	1 3/16	1 3/16	1 5/16	1 5/16	1 5/16	1 5/16	1 5/16
ET		1 3/4	1 3/4	1 3/4	1 3/4	2	2	2	2	2	2	2	2	2	2
BL		5.74	5.74	5.74	5.74	6.58	6.58	6.58	6.58	6.58	7.51	7.51	7.51	7.51	7.51
EO		7/8	7/8	7/8	7/8	1	1	1	1	1	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8
EL		1 11/16	1 11/16	1 11/16	1 11/16	1 13/16	1 13/16	1 13/16	1 13/16	1 13/16	2	2	2	2	2
SE		11 3/4	11 3/4	11 3/4	11 3/4	13 1/8	13 1/8	13 1/8	13 1/8	13 1/8	14 1/2	14 1/2	14 1/2	14 1/2	14 1/2

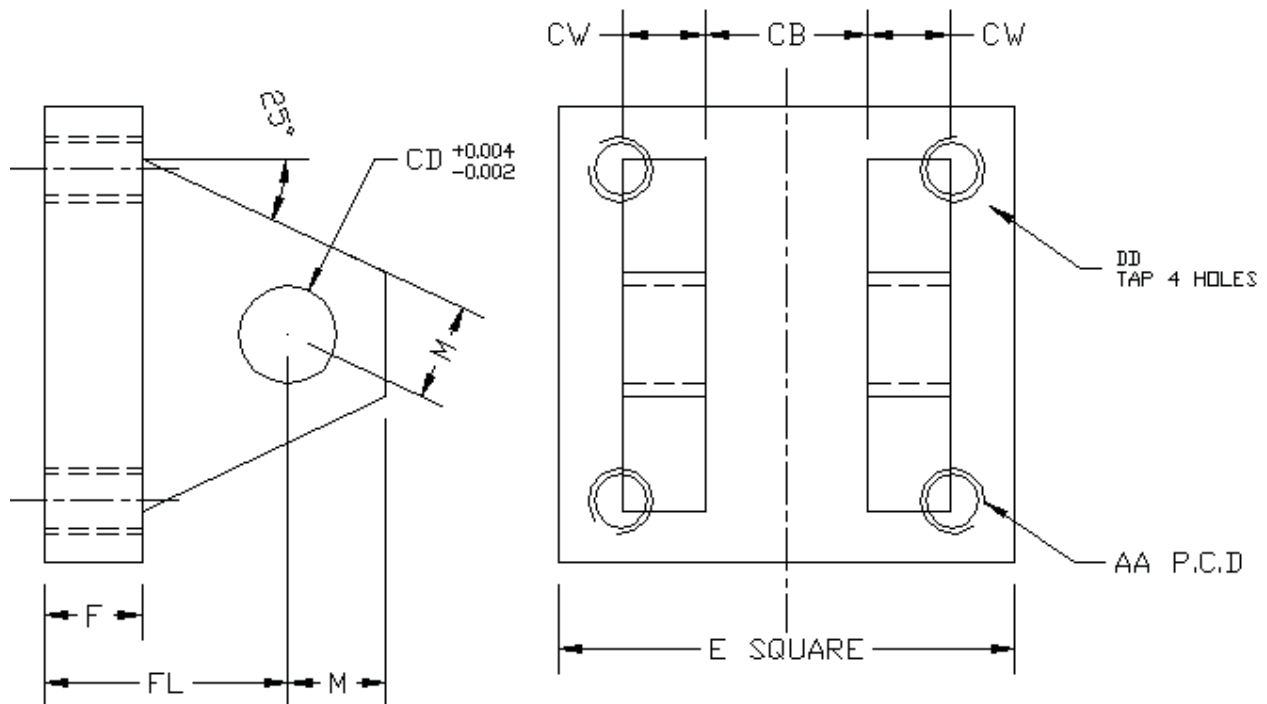
Side Tapped Mount. (NFPA style MS4)



		Bore Size																
		1 1/2		2		2 1/2			3 1/4			4			5			
Rod Size	Dim.	5/8	1	1	1 3/8	1	1 3/8	1 3/4	1 3/8	1 3/4	2	1 3/4	2	2 1/2	2	2 1/2	3	3 1/2
TN		3/4	3/4	15/16	15/16	1 5/16	1 5/16	1 5/16	1 1/2	1 1/2	1 1/2	2 1/16	2 1/16	2 1/16	2 15/16	2 15/16	2 15/16	2 15/16
TK		9/16	1/2	1/2	1/2	13/16	5/8	13/16	3/4	3/4	1/2	1	3/4	11/16	1 1/8	1 1/8	1 1/8	3/4
NT		3/8 - 16	3/8 - 16	1/2 - 13	1/2 - 13	5/8 - 11	5/8 - 11	5/8 - 11	3/4 - 10	3/4 - 10	3/4 - 10	1 - 8	1 - 8	1 - 8	1 - 8	1 - 8	1 - 8	1 - 8
XT		2	2 3/8	2 3/8	2 5/8	2 3/8	2 5/8	2 7/8	2 3/4	3	3 1/8	3	3 1/8	3 3/8	3 1/8	3 3/8	3 3/8	3 3/8
SN		2 7/8	2 7/8	2 7/8	2 7/8	3	3	3	3 1/2	3 1/2	3 1/2	3 3/4	3 3/4	3 3/4	4 1/4	4 1/4	4 1/4	4 1/4

		Bore Size													
		6				7					8				
Rod Size	Dimension	2.5	3	3.5	4	3	3.5	4	4.5	5	3.5	4	4.5	5	5.5
TN		3 5/16	3 5/16	3 5/16	3 5/16	3 3/4	3 3/4	3 3/4	3 3/4	3 3/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4
TK		1 5/16	1 5/16	1 5/16	7/8	2 1/4	2 1/4	2 1/4	7/8	7/8	1 9/16	1 9/16	1 9/16	1 9/16	1 3/8
NT		1 1/4 - 7	1 1/4 - 7	1 1/4 - 7	1 1/4 - 7	1 1/2 - 6	1 1/2 - 6	1 1/2 - 6	1 1/2 - 6	1 1/2 - 6	1 1/2 - 6	1 1/2 - 6	1 1/2 - 6	1 1/2 - 6	1 1/2 - 6
XT		3 1/2	3 1/2	3 1/2	3 1/2	3 13/16	3 13/16	3 13/16	3 13/16	3 13/16	3 15/16	3 15/16	3 15/16	3 15/16	3 15/16
SN		5 1/8	5 1/8	5 1/8	5 1/8	5 7/8	5 7/8	5 7/8	5 7/8	5 7/8	6 5/8	6 5/8	6 5/8	6 5/8	6 5/8

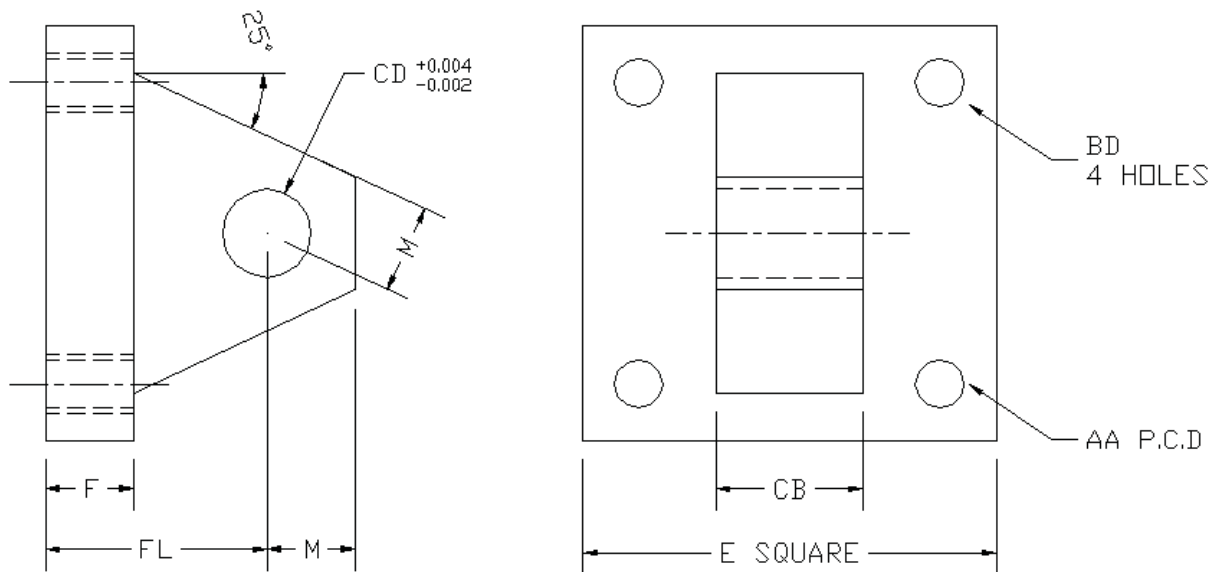
Clevis Bracket Detachable. (NFPA style MP2)



NOTE: When mating eye bracket or clevis with female clevis or eye, match CD dimension.

Part Number.	Dimension								
	AA	CB	CD	CW	DD	E	F	FL	M
QH-CBD-0230	2.3	3/4	1/2	1/2	3/8 - 24	2 1/2	3/8	1 1/8	1/2
QH-CBD-0290	2.9	1 1/4	3/4	5/8	1/2 - 20	3	5/8	1 7/8	3/4
QH-CBD-0360	3.6	1 1/4	3/4	5/8	1/2 - 20	3 1/2	5/8	1 7/8	3/4
QH-CBD-0460	4.6	1 1/2	1	3/4	5/8 - 18	4 1/2	3/4	2 1/4	1
QH-CBD-0540	5.4	2	1 3/8	1	5/8 - 18	5	7/8	3	1 3/8
QH-CBD-0700	7	2 1/2	1 3/4	1 1/4	7/8 - 14	6 1/2	7/8	3 1/8	1 3/4
QH-CBD-0810	8.1	2 1/2	2	1 1/4	1 - 14	7 1/2	1	3 1/2	2
QH-CBD-0930	9.3	3	2 1/2	1 1/2	1 1/8 - 12	8 1/2	1	4	2 1/2
QH-CBD-1060	10.6	3	3	1 1/2	1 1/4 - 12	9 1/2	1	4 1/2	2 1/2
QH-CBD-1360	13.6	4	3 1/2	2	1 3/4 - 12	12 5/8	1 11/16	5 11/16	3 1/2
QH-CBD-1620	16.2	4 1/2	4	2 1/4	2 - 12	14 7/8	1 15/16	6 7/16	4

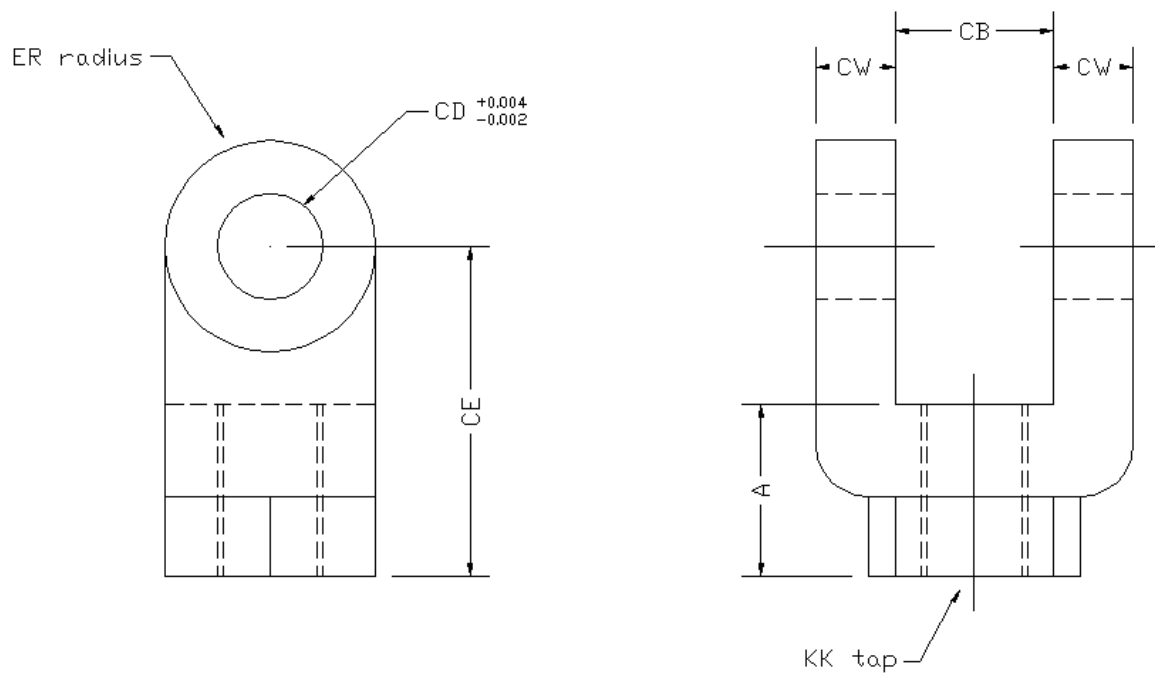
Eye Bracket



Note: When mating eye bracket or clevis bracket, with female clevis or eye, match CD dimension.

Part Number	Dimension							
	AA	BD	CB	CD	E	F	FL	M
QH-EB-0230	2.3	13/32	3/4	1/2	2 1/2	3/8	1 1/8	1/2
QH-EB-0290	2.9	17/32	1 1/4	3/4	3	5/8	1 7/8	3/4
QH-EB-0360	3.6	17/32	1 1/4	3/4	3 1/2	5/8	1 7/8	3/4
QH-EB-0460	4.6	21/32	1 1/2	1	4 1/2	3/4	2 1/4	1
QH-EB-0540	5.4	21/32	2	1 3/8	5	7/8	3	1 3/8
QH-EB-0700	7	29/32	2 1/2	1 3/4	6 1/2	7/8	3 1/8	1 3/4
QH-EB-0810	8.1	1 1/32	2 1/2	2	7 1/2	1	3 1/2	2
QH-EB-0930	9.3	1 5/32	3	2 1/2	8 1/2	1	4	2 1/2
QH-EB-1060	10.6	1 9/32	3	3	9 1/2	1	4 1/2	2 3/4
QH-EB-1360	13.6	1 25/32	4	3 1/2	12 5/8	1 11/16	5 11/16	3 1/2
QH-EB-1620	16.2	2 1/32	4 1/2	4	14 7/8	1 15/16	6 7/16	4

Female Clevis

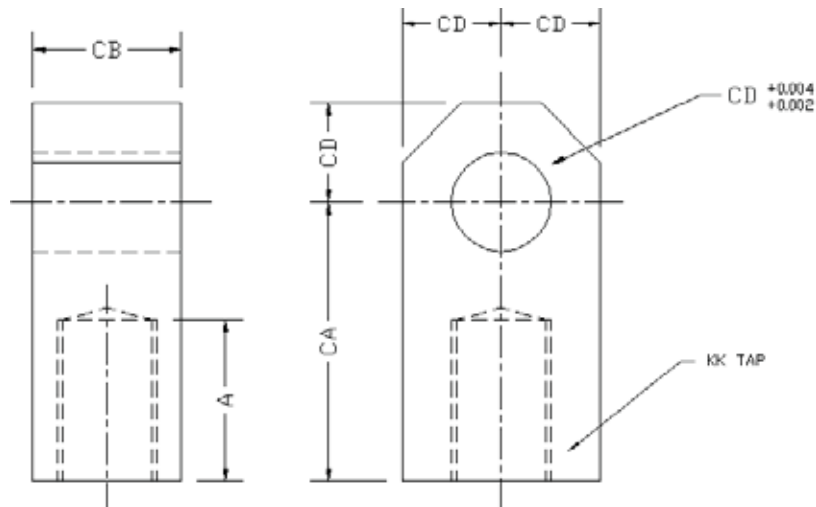


Note: When mating rod end accessories with piston rod match KK thread dimensions

Part Number	Dimension						
	KK	A	CB	CD	CE	CW	ER
QH-FC-0437	7/16 - 20	3/4	3/4	1/2	1 1/2	1/2	1/2
QH-FC-0750	3/4 - 16	1 1/8	1 1/4	3/4	2 3/8	5/8	3/4
QH-FC-1000	1 - 14	1 5/8	1 1/2	1	3 1/8	3/4	1
QH-FC-1250	1 1/4 - 12	2	2	1 3/8	4 1/8	1	1 3/8
QH-FC-1500	1 1/2 - 12	2 1/4	2 1/2	1 3/4	4 1/2	1 1/4	1 3/4
QH-FC-1875	1 7/8 - 12	3	2 1/2	2	5 1/2	1 1/4	2
QH-FC-2250	2 1/4 - 12	3 1/2	3	2 1/2	6 1/2	1 1/2	2 1/2
QH-FC-2500	2 1/2 - 12	3 1/2	3	3	6 3/4	1 1/2	2 3/4
QH-FC-3250	3 1/4 - 12	4 1/2	4	3 1/2	8 1/2	2	3 1/2
QH-FC-4000	4 - 12	5 1/2	4 1/2	4	10	2 1/4	4

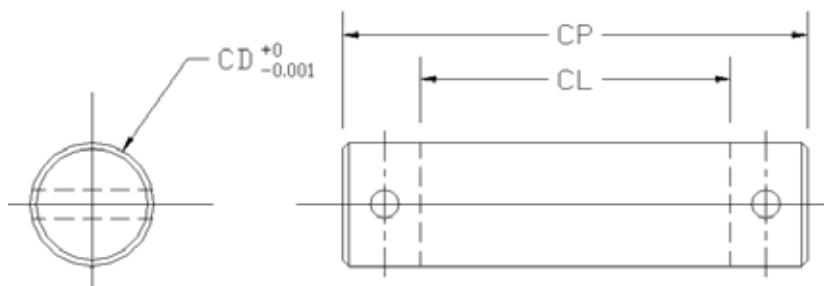
Female EYE

Note: When mating rod end accessories with piston rod match KK thread dimension.



Part Number	Dimension				
	KK	A	CA	CB	CD
QH-FE-0437	7/16 - 20	3/4	1 1/2	3/4	1/2
QH-FE-0750	3/4 - 16	1 1/8	2 1/16	1 1/4	3/4
QH-FE-1000	1 - 14	1 5/8	2 13/16	1 1/2	1
QH-FE-1250	1 1/4 - 12	2	3 7/16	2	1 3/8
QH-FE-1500	1 1/2 - 12	2 1/4	4	2 1/2	1 3/4
QH-FE-1875	1 7/8 - 12	3	5	2 1/2	2
QH-FE-2250	2 1/4 - 12	3 1/2	5 13/16	3	2 1/2
QH-FE-2500	2 1/2 - 12	3 1/2	6 1/8	3	3
QH-FE-3250	3 1/4 - 12	4 1/2	7 5/8	4	3 1/2
QH-FE-4000	4 - 12	5 1/2	9 1/8	4 1/2	4

Pivot Pin.



Part Number	Dimension		
	CD	CL	CP
QH-PP-0500	1/2	1 3/4	2 3/8
QH-PP-0750	3/4	2 1/2	3 1/8
QH-PP-1000	1	3	3 3/4
QH-PP-1375	1 3/8	4	4 3/4
QH-PP-1750	1 3/4	5	6 1/32
QH-PP-2000	2	5	6 1/32
QH-PP-2500	2 1/2	6	7 1/32
QH-PP-3000	3	6	7 1/8
QH-PP-3500	3 1/2	8	9 1/8
QH-PP-4000	4	9	10 1/8

HOW TO ORDER,

SERIES 3000 HEAVY DUTY HYDRAULIC CYLINDERS.

Example part number:

QH3000 – 3 ¼ - 1 ¾ - 12 – MF2 – HCCC – 1

QH3000 = CYLINDER SERIES DESIGN NUMBER

3 ¼ = CYLINDER BORE SIZE

1 ¾ = CYLINDER PISTON ROD DIAMETER

12 = CYLINDER STROKE LENGTH

(TO BE SPECIFIED BY CUSTOMER, IF CYLINDER FORCE AND MOUNTING DIMENSIONS EXCEEDS VALUES IN CHART ON PAGE 2
PLEASE REFER TO QUEENSLAND HYDRAULICS FOR STOP TUBE RECOMMENDATIONS)

MF2 = CYLINDER MOUNTING STYLE

HCCC = CYLINDER CUSHIONING REQUIREMENTS

STANDARD CYLINDER SUPPLIED NON-CUSHIONED

HC = HEAD CAP CUSHIONED

CC = CAP END CUSHIONED

HCCC = CUSHION BOTH ENDS

1 = Cylinder Port location.

All cylinders supplied with BSP threads in position Number 1 unless specified otherwise.

Cylinder accessories to be ordered by part number. Special cylinders such as fully stainless steel construction and double rod end available on request.

NOTE: Series 3000 hydraulic cylinders are manufactured to National Fluid Power Association (N.F.P.A) dimensions, which are expressed in imperial values.

For your convenience a metric conversion table is supplied below.

Conversion Table.

To convert Metric	Into Imperial	multiply by	To convert Imperial	Into Metric	Multiply by
mm	in	0.039	in	mm	25.4
cm ²	in ²	0.155	in ²	cm ²	6.452
cm ³	in ³	0.061	in ³	cm ³	16.387
litre	in ³	61.024	in ³	litre	0.0164
litre	gall (US)	0.264	gall (US)	litre	4.546
litre	gall (Imp)	0.22	gall (Imp)	litre	3.785
bar	psi	14.5	psi	bar	0.069
kPa	psi	0.145	psi	kPa	6.895
mPa	psi	145.033	psi	mPa	0.0069
Nm	lb. Ft.	0.738	lb. Ft.	Nm	1.356
N	lb. (force)	0.225	lb. (force)	N	4.448
tonne	ton (US)	1.102	ton (US)	tonne	0.907
tonne	ton (Imp)	0.984	ton (Imp)	tonne	1.016
kg	lb	2.204	lb	kg	0.454
kW	HP	1.341	HP	kW	0.746
J	Btu	0.00095	Btu	J	1055
dm ³ /s	scfm	2.118	scfm	dm ³ /s	0.472

For any special requirements or further information please contact Oilpath Hydraulics Pty Ltd.
Email us on sales@oilpathhydraulics.com.au or visit our website www.oilpathhydraulics.com.au

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