



Hydraulic Cylinders



**ADVANCED
CYLINDERS**

Catalog AC1003

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TR Tie Rod Cylinders



How to Order

20 06 TR - ORB/NPT

20 = Bore (inches)
 06 = Stroke (inches)
 TR = Tie Rod Cylinder
 ORB/NPT = SAE Port and NPT Port
 or
 AORB/NPT = ASAE, SAE Port and NPT Port
 or
 ORB = SAE Port

Specifications

Bore Sizes - 2" ~ 5"
 Strokes - 4 ~ 48"

Pressure - 2500 PSI
 Ports - SAE Port and NPT Port

Features

- GLAND - Ductile Iron with one SAE port and one NPT port on opposite sides
- TUBE - High tensile cold drawn tube, precision honed for extended seal life
- TIE ROD - High tensile alloy steel
- ROD - Chrome plated C1045 steel
- ROD Clevis - Ductile iron
- END CAP - Ductile iron with two SAE ports and two NPT ports on each side for greater flexibility of assembly
- PISTON - High grade ductile iron
- Use all Hallite type seals
 - PISTON SEAL - Hallite 775
 - ROD SEAL - Hallite 605
 - ROD WIPER - Hallite 520
 - TUBE SEAL - Hallite AS-568 o-ring with anti-extrusion backup ring
- PAINT COLOR - Gloss black, or other customized color

Available Model Numbers

MODEL NO	BORE	STROKE	ROD	RETRACTED	EXTENDED	MAX FORCE LB	PORT	PIN	WEIGHT LB
2008TR-AORB/NPT	2"	8"	1 1/8"	20 1/4"	28 1/4"	7850	SAE 8 / 3/8 NPT	1"	19
2508TR-AORB/NPT	2 1/2"	8"	1 1/8"	20 1/4"	28 1/4"	12270	SAE 8 / 3/8 NPT	1"	22
3008TR-AORB/NPT	3"	8"	1 1/4"	20 1/4"	28 1/4"	17670	SAE 8 / 1/2 NPT	1"	27
3016TR-AORB/NPT	3"	16"	1 1/4"	31 1/2"	47 1/2"	17670	SAE 8 / 1/2 NPT	1 1/4"	37
3508TR-AORB/NPT	3 1/2"	8"	1 1/4"	20 1/4"	28 1/4"	24050	SAE 8 / 1/2 NPT	1"	35
3516TR-AORB/NPT	3 1/2"	16"	1 1/2"	31 1/2"	47 1/2"	24050	SAE 8 / 1/2 NPT	1 1/4"	47
4008TR-AORB/NPT	4"	8"	1 1/4"	20 1/4"	28 1/4"	31410	SAE 8 / 1/2 NPT	1"	41

Available Model Numbers

MODEL NO	BORE	STROKE	ROD	RETRACTED	EXTENDED	MAX FORCE LB	PORT	PIN	WEIGHT LB
4016TR-AORB/NPT	4"	16"	2"	31 1/2"	47 1/2"	31410	SAE 8 / 1/2 NPT	1 1/4"	64
5008TR-AORB	5"	8"	1 1/2"	22 1/4"	30 1/4"	29450	SAE 8	1"	66
5016TR-AORB	5"	16"	2"	31 1/2"	47 1/2"	29450	SAE 8	1 1/4"	90
2004TR-ORB/NPT	2"	4"	1 1/8"	14 1/4"	18 1/4"	7850	SAE 8 / 3/8 NPT	1"	15
2006TR-ORB/NPT	2"	6"	1 1/8"	16 1/4"	22 1/4"	7850	SAE 8 / 3/8 NPT	1"	16
2008TR-ORB/NPT	2"	8"	1 1/8"	18 1/4"	26 1/4"	7850	SAE 8 / 3/8 NPT	1"	18
2010TR-ORB/NPT	2"	10"	1 1/8"	20 1/4"	30 1/4"	7850	SAE 8 / 3/8 NPT	1"	20
2012TR-ORB/NPT	2"	12"	1 1/8"	22 1/4"	34 1/4"	7850	SAE 8 / 3/8 NPT	1"	22
2014TR-ORB/NPT	2"	14"	1 1/8"	24 1/4"	38 1/4"	7850	SAE 8 / 3/8 NPT	1"	23
2016TR-ORB/NPT	2"	16"	1 1/8"	26 1/4"	42 1/4"	7850	SAE 8 / 3/8 NPT	1"	25
2018TR-ORB/NPT	2"	18"	1 1/8"	28 1/4"	46 1/4"	7850	SAE 8 / 3/8 NPT	1"	26
2020TR-ORB/NPT	2"	20"	1 1/8"	30 1/4"	50 1/4"	7850	SAE 8 / 3/8 NPT	1"	28
2024TR-ORB/NPT	2"	24"	1 1/8"	34 1/4"	58 1/4"	7850	SAE 8 / 3/8 NPT	1"	30
2030TR-ORB/NPT	2"	30"	1 1/8"	40 1/4"	70 1/4"	7850	SAE 8 / 3/8 NPT	1"	35
2036TR-ORB/NPT	2"	36"	1 1/8"	46 1/4"	82 1/4"	7850	SAE 8 / 3/8 NPT	1"	40
2040TR-ORB/NPT	2"	40"	1 1/8"	50 1/4"	90 1/4"	7850	SAE 8 / 3/8 NPT	1"	44
2048TR-ORB/NPT	2"	48"	1 1/8"	58 1/4"	106 1/4"	7850	SAE 8 / 3/8 NPT	1"	50
2504TR-ORB/NPT	2 1/2"	4"	1 1/8"	14 1/4"	18 1/4"	12270	SAE 8 / 3/8 NPT	1"	17
2506TR-ORB/NPT	2 1/2"	6"	1 1/8"	16 1/4"	22 1/4"	12270	SAE 8 / 3/8 NPT	1"	20
2508TR-ORB/NPT	2 1/2"	8"	1 1/8"	18 1/4"	26 1/4"	12270	SAE 8 / 3/8 NPT	1"	21
2510TR-ORB/NPT	2 1/2"	10"	1 1/8"	20 1/4"	30 1/4"	12270	SAE 8 / 3/8 NPT	1"	23
2512TR-ORB/NPT	2 1/2"	12"	1 1/8"	22 1/4"	34 1/4"	12270	SAE 8 / 3/8 NPT	1"	24
2514TR-ORB/NPT	2 1/2"	14"	1 1/8"	24 1/4"	38 1/4"	12270	SAE 8 / 3/8 NPT	1"	26
2516TR-ORB/NPT	2 1/2"	16"	1 1/8"	26 1/4"	42 1/4"	12270	SAE 8 / 3/8 NPT	1"	28
2518TR-ORB/NPT	2 1/2"	18"	1 1/8"	28 1/4"	46 1/4"	12270	SAE 8 / 3/8 NPT	1"	29
2520TR-ORB/NPT	2 1/2"	20"	1 1/8"	30 1/4"	50 1/4"	12270	SAE 8 / 3/8 NPT	1"	31
2524TR-ORB/NPT	2 1/2"	24"	1 1/8"	34 1/4"	58 1/4"	12270	SAE 8 / 3/8 NPT	1"	34
2530TR-ORB/NPT	2 1/2"	30"	1 1/4"	40 1/4"	70 1/4"	12270	SAE 8 / 3/8 NPT	1"	42
2536TR-ORB/NPT	2 1/2"	36"	1 1/4"	46 1/4"	82 1/4"	12270	SAE 8 / 3/8 NPT	1"	48
2540TR-ORB/NPT	2 1/2"	40"	1 1/4"	50 1/4"	90 1/4"	12270	SAE 8 / 3/8 NPT	1"	51
2548TR-ORB/NPT	2 1/2"	48"	1 1/4"	58 1/4"	106 1/4"	12270	SAE 8 / 3/8 NPT	1"	62
3004TR-ORB/NPT	3"	4"	1 1/4"	14 1/4"	18 1/4"	17670	SAE 8 / 1/2 NPT	1"	22
3006TR-ORB/NPT	3"	6"	1 1/4"	16 1/4"	22 1/4"	17670	SAE 8 / 1/2 NPT	1"	24
3008TR-ORB/NPT	3"	8"	1 1/4"	18 1/4"	26 1/4"	17670	SAE 8 / 1/2 NPT	1"	26
3010TR-ORB/NPT	3"	10"	1 1/4"	20 1/4"	30 1/4"	17670	SAE 8 / 1/2 NPT	1"	29
3012TR-ORB/NPT	3"	12"	1 1/4"	22 1/4"	34 1/4"	17670	SAE 8 / 1/2 NPT	1"	31
3014TR-ORB/NPT	3"	14"	1 1/4"	24 1/4"	38 1/4"	17670	SAE 8 / 1/2 NPT	1"	33
3016TR-ORB/NPT	3"	16"	1 1/4"	26 1/4"	42 1/4"	17670	SAE 8 / 1/2 NPT	1"	34
3016TR-ORB/NPT-150	3"	16"	1 1/2"	26 1/4"	42 1/4"	17670	SAE 8 / 1/2 NPT	1"	36
3018TR-ORB/NPT	3"	18"	1 1/4"	28 1/4"	46 1/4"	17670	SAE 8 / 1/2 NPT	1"	37
3020TR-ORB/NPT	3"	20"	1 1/4"	30 1/4"	50 1/4"	17670	SAE 8 / 1/2 NPT	1"	39
3024TR-ORB/NPT	3"	24"	1 1/2"	34 1/4"	58 1/4"	17670	SAE 8 / 1/2 NPT	1"	43
3030TR-ORB/NPT	3"	30"	1 1/2"	40 1/4"	70 1/4"	17670	SAE 8 / 1/2 NPT	1"	56

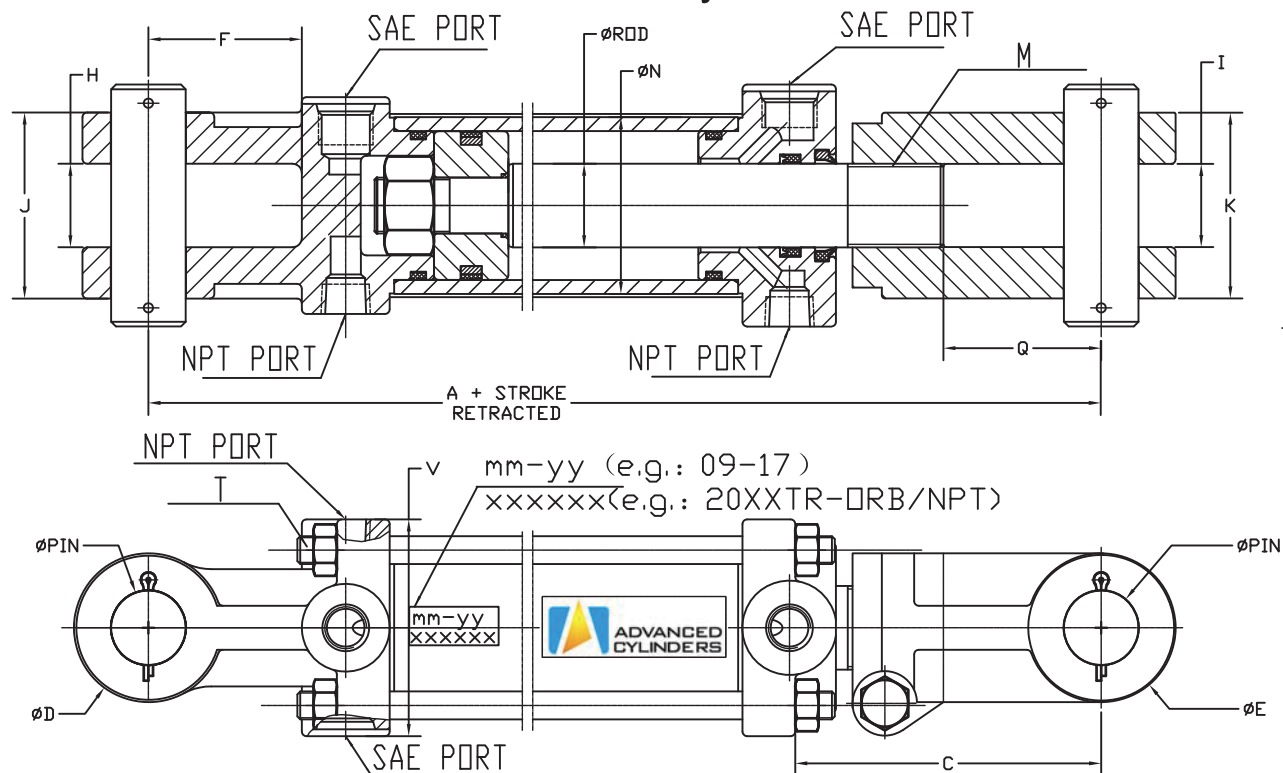
Available Model Numbers

MODEL NO	BORE	STROKE	ROD	RETRACTED	EXTENDED	MAX FORCE LB	PORT	PIN	WEIGHT LB
3036TR-ORB/NPT	3"	36"	1 1/2"	46 1/4"	82 1/4"	17670	SAE 8 / 1/2 NPT	1"	62
3040TR-ORB/NPT	3"	40"	1 1/2"	50 1/4"	90 1/4"	17670	SAE 8 / 1/2 NPT	1"	70
3048TR-ORB/NPT	3"	48"	1 1/2"	58 1/4"	106 1/4"	17670	SAE 8 / 1/2 NPT	1"	84
3504TR-ORB/NPT	3 1/2"	4"	1 1/4"	14 1/4"	18 1/4"	24050	SAE 8 / 1/2 NPT	1"	27
3506TR-ORB/NPT	3 1/2"	6"	1 1/4"	16 1/4"	22 1/4"	24050	SAE 8 / 1/2 NPT	1"	30
3508TR-ORB/NPT	3 1/2"	8"	1 1/4"	18 1/4"	26 1/4"	24050	SAE 8 / 1/2 NPT	1"	33
3510TR-ORB/NPT	3 1/2"	10"	1 1/4"	20 1/4"	30 1/4"	24050	SAE 8 / 1/2 NPT	1"	36
3512TR-ORB/NPT	3 1/2"	12"	1 1/4"	22 1/4"	34 1/4"	24050	SAE 8 / 1/2 NPT	1"	39
3514TR-ORB/NPT	3 1/2"	14"	1 1/4"	24 1/4"	38 1/4"	24050	SAE 8 / 1/2 NPT	1"	42
3516TR-ORB/NPT	3 1/2"	16"	1 1/4"	26 1/4"	42 1/4"	24050	SAE 8 / 1/2 NPT	1"	45
3518TR-ORB/NPT	3 1/2"	18"	1 1/4"	28 1/4"	46 1/4"	24050	SAE 8 / 1/2 NPT	1"	48
3520TR-ORB/NPT	3 1/2"	20"	1 1/4"	30 1/4"	50 1/4"	24050	SAE 8 / 1/2 NPT	1"	51
3524TR-ORB/NPT	3 1/2"	24"	1 1/2"	34 1/4"	58 1/4"	24050	SAE 8 / 1/2 NPT	1"	57
3530TR-ORB/NPT	3 1/2"	30"	1 1/2"	40 1/4"	70 1/4"	24050	SAE 8 / 1/2 NPT	1"	66
3536TR-ORB/NPT	3 1/2"	36"	1 1/2"	46 1/4"	82 1/4"	24050	SAE 8 / 1/2 NPT	1"	76
3540TR-ORB/NPT	3 1/2"	40"	1 1/2"	50 1/4"	90 1/4"	24050	SAE 8 / 1/2 NPT	1"	82
3548TR-ORB/NPT	3 1/2"	48"	1 1/2"	58 1/4"	106 1/4"	24050	SAE 8 / 1/2 NPT	1"	94
4004TR-ORB/NPT	4"	4"	1 1/4"	14 1/4"	18 1/4"	31410	SAE 8 / 1/2 NPT	1"	33
4006TR-ORB/NPT	4"	6"	1 1/4"	16 1/4"	22 1/4"	31410	SAE 8 / 1/2 NPT	1"	36
4008TR-ORB/NPT	4"	8"	1 1/4"	18 1/4"	26 1/4"	31410	SAE 8 / 1/2 NPT	1"	39
4010TR-ORB/NPT	4"	10"	1 1/4"	20 1/4"	30 1/4"	31410	SAE 8 / 1/2 NPT	1"	43
4012TR-ORB/NPT	4"	12"	1 1/4"	22 1/4"	34 1/4"	31410	SAE 8 / 1/2 NPT	1"	46
4014TR-ORB/NPT	4"	14"	1 1/4"	24 1/4"	38 1/4"	31410	SAE 8 / 1/2 NPT	1"	50
4016TR-ORB/NPT	4"	16"	1 1/4"	26 1/4"	42 1/4"	31410	SAE 8 / 1/2 NPT	1"	54
4018TR-ORB/NPT	4"	18"	1 1/2"	28 1/4"	46 1/4"	31410	SAE 8 / 1/2 NPT	1"	58
4020TR-ORB/NPT	4"	20"	1 1/2"	30 1/4"	50 1/4"	31410	SAE 8 / 1/2 NPT	1"	62
4024TR-ORB/NPT-150	4"	24"	1 1/2"	34 1/4"	58 1/4"	31410	SAE 8 / 1/2 NPT	1"	64
4024TR-ORB/NPT-175	4"	24"	1 3/4"	34 1/4"	58 1/4"	31410	SAE 8 / 1/2 NPT	1"	68
4024TR-ORB/NPT	4"	24"	2"	34 1/4"	58 1/4"	31410	SAE 8 / 1/2 NPT	1"	78
4030TR-ORB/NPT	4"	30"	2"	40 1/4"	70 1/4"	31410	SAE 8 / 1/2 NPT	1"	89
4036TR-ORB/NPT	4"	36"	2"	46 1/4"	82 1/4"	31410	SAE 8 / 1/2 NPT	1"	100
4040TR-ORB/NPT	4"	40"	2"	50 1/4"	90 1/4"	31410	SAE 8 / 1/2 NPT	1"	107
4048TR-ORB/NPT	4"	48"	2"	58 1/4"	106 1/4"	31410	SAE 8 / 1/2 NPT	1"	120
5004TR-ORB	5"	4"	1 1/2"	16 1/4"	20 1/4"	49080	SAE 8	1"	53
5006TR-ORB	5"	6"	1 1/2"	18 1/4"	24 1/4"	49080	SAE 8	1"	55
5008TR-ORB	5"	8"	1 1/2"	20 1/4"	28 1/4"	49080	SAE 8	1"	64
5010TR-ORB	5"	10"	1 1/2"	22 1/4"	32 1/4"	49080	SAE 8	1"	68
5012TR-ORB	5"	12"	2"	24 1/4"	36 1/4"	49080	SAE 8	1 1/4"	77
5014TR-ORB	5"	14"	2"	26 1/4"	40 1/4"	49080	SAE 8	1 1/4"	82
5016TR-ORB	5"	16"	2"	28 1/4"	44 1/4"	49080	SAE 8	1 1/4"	87
5018TR-ORB	5"	18"	2"	30 1/4"	48 1/4"	49080	SAE 8	1 1/4"	92
5020TR-ORB	5"	20"	2"	32 1/4"	52 1/4"	49080	SAE 8	1 1/4"	96
5024TR-ORB	5"	24"	2"	36 1/4"	60 1/4"	49080	SAE 8	1 1/4"	106

Available Model Numbers

MODEL NO	BORE	STROKE	ROD	RETRACTED	EXTENDED	MAX FORCE LB	PORT	PIN	WEIGHT LB
5030TR-ORB	5"	30"	2"	42 1/4"	72 1/4"	49080	SAE 8	1 1/4"	121
5036TR-ORB	5"	36"	2"	48 1/4"	84 1/4"	49080	SAE 8	1 1/4"	136
5040TR-ORB	5"	40"	2"	52 1/4"	92 1/4"	49080	SAE 8	1 1/4"	146
5048TR-ORB	5"	48"	2"	60 1/4"	108 1/4"	49080	SAE 8	1 1/4"	166

TR Tie Rod Cylinders



Dimension

BORE SIZE	2"	2 1/2"	3"	3 1/2"	4"	5"
A NON-ASAE // ASAE	10 1/4" // 12 1/4"	10 1/4" // 12 1/4"	10 1/4" // 12 1/4" (3016 ASAE 15 1/2")	10 1/4" // 12 1/4" (3516 ASAE 15 1/2")	10 1/4" // 12 1/4" (4016 ASAE 15 1/2")	10 1/4" // 14 1/4" (5016 ASAE 15 1/2")
C	4.11" // 6.11"	4.01" // 6.01"	3.96" // 5.96" (3016 ASAE 9.21")	3.96" // 5.96" (3516 ASAE 8.96")	3.78" // 5.78" (4016 ASAE 9.03")	3.89" // 5.89" (5016 ASAE 7.14")
D	2.00"	2.00"	2.00"	2.00"	2.00"	2.88"
E	2.00"	2.00"	2.00"	2.00"	2.00"	2.50"
F	2.06"	2.06"	2.06"	2.06"	2.06"	2.25"
H	1.12"	1.12"	1.12"	1.12"	1.12"	1.31"
I	1.12"	1.12"	1.12"	1.12"	1.12"	1.20"
J	2.50"	2.50"	2.50"	2.50"	2.62"	3.50"
K	2.50"	2.50"	2.64"	2.64"	2.64"	2.75"
M	1 1/8-12UNF	1 1/8-12UNF	1 1/4-12UNF	1 1/4-12UNF	1 1/4-12UNF	1 1/2-12UNF
N	2.37"	2.87"	3.37"	3.87"	4.37"	5.50"
Q	2.12"	2.12"	2.12"	2.12"	2.12"	2.13"
T	3/8-24UNF	3/8-24UNF	1/2-20UNF	M14x1.5	5/8-18UNF	3/4-16UNF
V	2.91"	3.31"	3.86"	4.25"	5.12"	6.00"

CW Weld Clevis Cylinders



How to Order

20 06 CW

20 = Bore (inches) ↑

06 = Stroke (inches) ↑

CW = Weld Clevis, SAE Port ↑

or _____

CW-NPT = Weld Clevis, NPT Port

Specifications

Bore Sizes - 1 1/2" ~ 5"
Strokes - 4 ~ 36"

Pressure - 3000 PSI
Ports - SAE Port or NPT Port

Features

- CONSTRUCTION - Heavy duty welded
- TUBE - High tensile cold drawn tube, precision honed for extended seal life
- ROD - Chrome plated C1045 steel
- PISTON - High grade ductile iron
- Use all Hallite type seals
 - PISTON SEAL - Hallite 775
 - ROD SEAL - Hallite 605
 - ROD WIPER - Hallite 520
 - TUBE SEAL - Hallite AS-568 o-ring with anti-extrusion backup ring
- PAINT COLOR - Gloss black, or other customized color

Available Model Numbers

MODEL NO	BORE	STROKE	ROD	RETRACTED	EXTENDED	MAX FORCE LB	PORT	PIN	WEIGHT LB
1504CW-NPT	1 1/2"	4"	1"	11 3/4"	15 3/4"	5300	3/8 NPT	1/2"	6
1506CW-NPT	1 1/2"	6"	1"	13 3/4"	19 3/4"	5300	3/8 NPT	1/2"	8
1508CW-NPT	1 1/2"	8"	1"	15 3/4"	23 3/4"	5300	3/8 NPT	1/2"	9
1510CW-NPT	1 1/2"	10"	1"	17 3/4"	27 3/4"	5300	3/8 NPT	1/2"	10
1512CW-NPT	1 1/2"	12"	1"	19 3/4"	31 3/4"	5300	3/8 NPT	1/2"	11
2004CW	2"	4"	1 1/4"	14 1/4"	18 1/4"	9420	SAE 6	1"	15
2006CW	2"	6"	1 1/4"	16 1/4"	22 1/4"	9420	SAE 6	1"	16
2008CW	2"	8"	1 1/4"	18 1/4"	26 1/4"	9420	SAE 6	1"	17
2010CW	2"	10"	1 1/4"	20 1/4"	30 1/4"	9420	SAE 6	1"	20
2012CW	2"	12"	1 1/4"	22 1/4"	34 1/2"	9420	SAE 6	1"	21
2014CW	2"	14"	1 1/4"	24 1/4"	38 1/4"	9420	SAE 6	1"	23

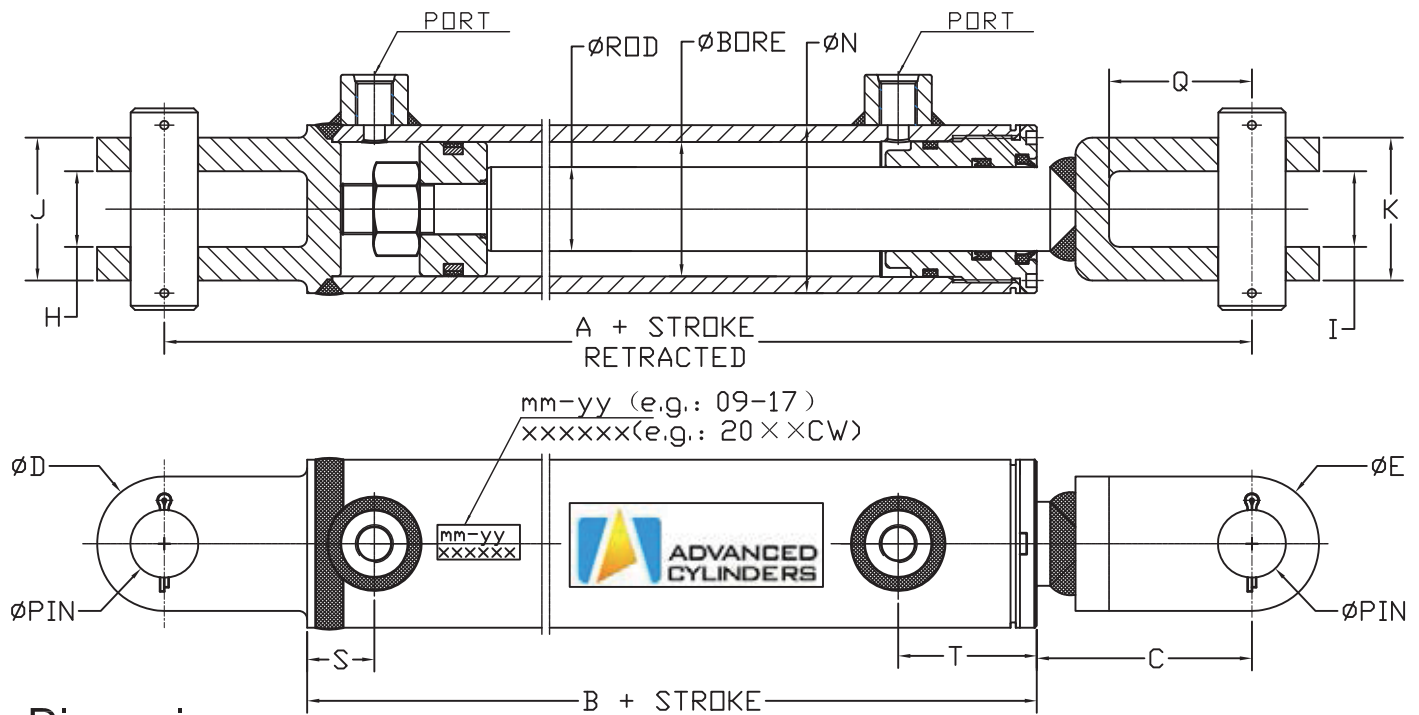
Available Model Numbers

MODEL NO	BORE	STROKE	ROD	RETRACTED	EXTENDED	MAX FORCE LB	PORT	PIN	WEIGHT LB
2016CW	2"	16"	1 1/4"	26 1/4"	42 1/4"	9420	SAE 6	1"	25
2018CW	2"	18"	1 1/4"	28 1/4"	46 1/4"	9420	SAE 6	1"	27
2020CW	2"	20"	1 1/4"	30 1/4"	50 1/4"	9420	SAE 6	1"	28
2024CW	2"	24"	1 1/4"	34 1/4"	58 1/4"	9420	SAE 6	1"	32
2028CW	2"	28"	1 1/4"	38 1/4"	66 1/4"	9420	SAE 6	1"	36
2030CW	2"	30"	1 1/4"	40 1/4"	70 1/4"	9420	SAE 6	1"	37
2032CW	2"	32"	1 1/4"	42 1/4"	74 1/4"	9420	SAE 6	1"	39
2034CW	2"	34"	1 1/4"	44 1/4"	78 1/4"	9420	SAE 6	1"	40
2036CW	2"	36"	1 1/4"	46 1/4"	82 1/4"	9420	SAE 6	1"	42
2504CW	2 1/2"	4"	1 1/2"	14 1/4"	18 1/4"	14720	SAE 8	1"	19
2506CW	2 1/2"	6"	1 1/2"	16 1/4"	22 1/4"	14720	SAE 8	1"	21
2508CW	2 1/2"	8"	1 1/2"	18 1/4"	26 1/4"	14720	SAE 8	1"	23
2510CW	2 1/2"	10"	1 1/2"	20 1/4"	30 1/4"	14720	SAE 8	1"	25
2512CW	2 1/2"	12"	1 1/2"	22 1/4"	34 1/4"	14720	SAE 8	1"	28
2514CW	2 1/2"	14"	1 1/2"	24 1/4"	38 1/4"	14720	SAE 8	1"	30
2516CW	2 1/2"	16"	1 1/2"	26 1/4"	42 1/4"	14720	SAE 8	1"	32
2518CW	2 1/2"	18"	1 1/2"	28 1/4"	46 1/4"	14720	SAE 8	1"	34
2520CW	2 1/2"	20"	1 1/2"	30 1/4"	50 1/4"	14720	SAE 8	1"	36
2524CW	2 1/2"	24"	1 1/2"	34 1/4"	58 1/4"	14720	SAE 8	1"	41
2528CW	2 1/2"	28"	1 1/2"	38 1/4"	66 1/4"	14720	SAE 8	1"	46
2530CW	2 1/2"	30"	1 1/2"	40 1/4"	70 1/4"	14720	SAE 8	1"	48
2532CW	2 1/2"	32"	1 1/2"	42 1/4"	74 1/4"	14720	SAE 8	1"	50
2534CW	2 1/2"	34"	1 1/2"	44 1/4"	78 1/4"	14720	SAE 8	1"	52
2536CW	2 1/2"	36"	1 1/2"	46 1/4"	82 1/4"	14720	SAE 8	1"	54
3004CW	3"	4"	1 1/2"	14 1/4"	18 1/4"	21200	SAE 8	1"	22
3006CW	3"	6"	1 1/2"	16 1/4"	22 1/4"	21200	SAE 8	1"	24
3008CW	3"	8"	1 1/2"	18 1/4"	26 1/4"	21200	SAE 8	1"	27
3010CW	3"	10"	1 1/2"	20 1/4"	30 1/4"	21200	SAE 8	1"	29
3012CW	3"	12"	1 1/2"	22 1/4"	34 1/4"	21200	SAE 8	1"	32
3014CW	3"	14"	1 1/2"	24 1/4"	38 1/4"	21200	SAE 8	1"	34
3016CW	3"	16"	1 1/2"	26 1/4"	42 1/4"	21200	SAE 8	1"	37
3018CW	3"	18"	1 1/2"	28 1/4"	46 1/4"	21200	SAE 8	1"	41
3020CW	3"	20"	1 1/2"	30 1/4"	50 1/4"	21200	SAE 8	1"	43
3024CW	3"	24"	1 1/2"	34 1/4"	58 1/4"	21200	SAE 8	1"	47
3028CW	3"	28"	1 1/2"	38 1/4"	66 1/4"	21200	SAE 8	1"	52
3030CW	3"	30"	1 1/2"	40 1/4"	70 1/4"	21200	SAE 8	1"	54
3032CW	3"	32"	1 1/2"	42 1/4"	74 1/4"	21200	SAE 8	1"	56
3034CW	3"	34"	1 1/2"	44 1/4"	78 1/4"	21200	SAE 8	1"	58
3036CW	3"	36"	1 1/2"	46 1/4"	82 1/4"	21200	SAE 8	1"	61
3504CW	3 1/2"	4"	1 3/4"	14 1/4"	18 1/4"	28860	SAE 8	1"	28
3506CW	3 1/2"	6"	1 3/4"	16 1/4"	22 1/4"	28860	SAE 8	1"	31
3508CW	3 1/2"	8"	1 3/4"	18 1/4"	26 1/4"	28860	SAE 8	1"	34
3510CW	3 1/2"	10"	1 3/4"	20 1/4"	30 1/4"	28860	SAE 8	1"	36

Available Model Numbers

MODEL NO	BORE	STROKE	ROD	RETRACTED	EXTENDED	MAX FORCE LB	PORT	PIN	WEIGHT LB
3512CW	3 1/2"	12"	1 3/4"	22 1/4"	34 1/4"	28860	SAE 8	1"	39
3514CW	3 1/2"	14"	1 3/4"	24 1/4"	38 1/4"	28860	SAE 8	1"	42
3516CW	3 1/2"	16"	1 3/4"	26 1/4"	42 1/4"	28860	SAE 8	1"	46
3518CW	3 1/2"	18"	1 3/4"	28 1/4"	48 1/4"	28860	SAE 8	1"	50
3520CW	3 1/2"	20"	1 3/4"	30 1/4"	50 1/4"	28860	SAE 8	1"	54
3524CW	3 1/2"	24"	1 3/4"	34 1/4"	58 1/4"	28860	SAE 8	1"	58
3528CW	3 1/2"	28"	1 3/4"	38 1/4"	66 1/4"	28860	SAE 8	1"	63
3530CW	3 1/2"	30"	1 3/4"	40 1/4"	70 1/4"	28860	SAE 8	1"	67
3532CW	3 1/2"	32"	1 3/4"	42 1/4"	74 1/4"	28860	SAE 8	1"	71
3534CW	3 1/2"	34"	1 3/4"	44 1/4"	78 1/4"	28860	SAE 8	1"	74
3536CW	3 1/2"	36"	1 3/4"	46 1/4"	82 1/4"	28860	SAE 8	1"	77
4004CW	4"	4"	2"	14 1/4"	18 1/4"	37700	SAE 8	1"	33
4006CW	4"	6"	2"	16 1/4"	20 1/4"	37700	SAE 8	1"	37
4008CW	4"	8"	2"	18 1/4"	26 1/4"	37700	SAE 8	1"	41
4010CW	4"	10"	2"	20 1/4"	30 1/4"	37700	SAE 8	1"	45
4012CW	4"	12"	2"	22 1/4"	34 1/4"	37700	SAE 8	1"	48
4014CW	4"	14"	2"	24 1/4"	38 1/4"	37700	SAE 8	1"	52
4016CW	4"	16"	2"	26 1/4"	42 1/4"	37700	SAE 8	1"	55
4018CW	4"	18"	2"	28 1/4"	46 1/4"	37700	SAE 8	1"	59
4020CW	4"	20"	2"	30 1/4"	50 1/4"	37700	SAE 8	1"	63
4024CW	4"	24"	2"	34 1/4"	58 1/4"	37700	SAE 8	1"	70
4028CW	4"	28"	2"	38 1/4"	66 1/4"	37700	SAE 8	1"	77
4030CW	4"	30"	2"	40 1/4"	70 1/4"	37700	SAE 8	1"	81
4032CW	4"	32"	2"	42 1/4"	74 1/4"	37700	SAE 8	1"	85
4034CW	4"	34"	2"	44 1/4"	78 1/4"	37700	SAE 8	1"	89
4036CW	4"	36"	2"	46 1/4"	82 1/4"	37700	SAE 8	1"	92
5004CW	5"	4"	2 1/2"	16 1/4"	20 1/4"	58900	SAE 8	1"	64
5006CW	5"	6"	2 1/2"	18 1/4"	24 1/4"	58900	SAE 8	1"	69
5008CW	5"	8"	2 1/2"	20 1/4"	28 1/4"	58900	SAE 8	1"	74
5010CW	5"	10"	2 1/2"	22 1/4"	32 1/4"	58900	SAE 8	1"	79
5012CW	5"	12"	2 1/2"	24 1/4"	36 1/4"	58900	SAE 8	1"	84
5014CW	5"	14"	2 1/2"	26 1/4"	40 1/4"	58900	SAE 8	1"	89
5016CW	5"	16"	2 1/2"	28 1/4"	44 1/4"	58900	SAE 8	1"	95
5018CW	5"	18"	2 1/2"	30 1/4"	48 1/4"	58900	SAE 8	1"	100
5020CW	5"	20"	2 1/2"	32 1/4"	52 1/4"	58900	SAE 8	1"	105
5024CW	5"	24"	2 1/2"	36 1/4"	60 1/4"	58900	SAE 8	1"	115
5028CW	5"	28"	2 1/2"	40 1/4"	68 1/4"	58900	SAE 8	1"	125
5030CW	5"	30"	2 1/2"	42 1/4"	72 1/4"	58900	SAE 8	1"	130
5032CW	5"	32"	2 1/2"	44 1/4"	76 1/4"	58900	SAE 8	1"	136
5034CW	5"	34"	2 1/2"	46 1/4"	80 1/4"	58900	SAE 8	1"	141
5036CW	5"	36"	2 1/2"	48 1/4"	84 1/4"	58900	SAE 8	1"	146

CW Weld Clevis Cylinders



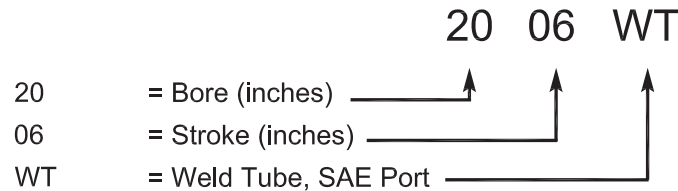
Dimension

BORE	1 1/2"	2"	2 1/2"	3"	3 1/2"	4"	5"
A	7.75"	10.25"	10.25"	10.25"	10.25"	10.25"	12.25"
B	4.28"	4.92"	4.92"	4.92"	5.05"	5.30"	6.19"
C	2.09"	3.20"	3.20"	3.20"	3.20"	3.20"	3.81"
D	1.50"	2.00"	2.00"	2.00"	2.00"	2.00"	3.00"
E	1.50"	2.00"	2.00"	2.00"	2.00"	2.00"	2.50"
H	0.87"	1.13"	1.13"	1.13"	1.13"	1.13"	1.63"
I	0.87"	1.13"	1.13"	1.13"	1.13"	1.13"	1.63"
J	1.63"	2.13"	2.13"	2.13"	2.37"	2.37"	3.13"
K	1.63"	2.13"	2.13"	2.13"	2.37"	2.37"	3.13"
N	2.00"	2.50"	3.00"	3.50"	4.00"	4.50"	5.50"
Q	1.38"	2.13"	2.13"	2.13"	2.13"	2.00"	2.25"
S	1.00"	1.00"	1.00"	1.00"	1.25"	1.13"	1.37"
T	1.88"	2.06"	2.19"	2.19"	2.19"	2.19"	2.75"

WT Weld Tube Cylinders



How to Order



Specifications

Bore Sizes - 1 1/2" ~ 5"
Strokes - 4 ~ 48"

Pressure - 3000 PSI
Ports - SAE Port

Features

- CONSTRUCTION - Heavy duty welded
- TUBE - High tensile cold drawn tube, precision honed for extended seal life
- ROD - Chrome plated C1045 steel
- PISTON - High grade ductile iron
- Use all Hallite type seals
 - PISTON SEAL - Hallite 775
 - ROD SEAL - Hallite 605
 - ROD WIPER - Hallite 520
 - TUBE SEAL - Hallite AS-568 o-ring with anti-extrusion backup ring
- PAINT COLOR - Gloss black, or other customized color

Available Model Numbers

MODEL NO	BORE	STROKE	ROD	RETRACTED	EXTENDED	MAX FORCE LB	PORT	PIN	WEIGHT LB
1504WT	1 1/2"	4"	1"	12"	16"	5300	SAE 4	3/4"	7
1506WT	1 1/2"	6"	1"	14"	20"	5300	SAE 4	3/4"	8
1508WT	1 1/2"	8"	1"	16"	24"	5300	SAE 4	3/4"	9
1510WT	1 1/2"	10"	1"	18"	28"	5300	SAE 4	3/4"	10
1512WT	1 1/2"	12"	1"	20"	32"	5300	SAE 4	3/4"	11
1514WT	1 1/2"	14"	1"	22"	36"	5300	SAE 4	3/4"	12
1516WT	1 1/2"	16"	1"	24"	40"	5300	SAE 4	3/4"	13
2004WT	2"	4"	1 1/4"	12"	16"	9420	SAE 6	1"	12
2006WT	2"	6"	1 1/4"	14"	20"	9420	SAE 6	1"	13
2008WT	2"	8"	1 1/4"	16"	24"	9420	SAE 6	1"	15
2010WT	2"	10"	1 1/4"	18"	28"	9420	SAE 6	1"	17

Available Model Numbers

MODEL NO	BORE	STROKE	ROD	RETRACTED	EXTENDED	MAX FORCE LB	PORT	PIN	WEIGHT LB
2012WT	2"	12"	1 1/4"	20"	32"	9420	SAE 6	1"	19
2014WT	2"	14"	1 1/4"	22"	36"	9420	SAE 6	1"	20
2016WT	2"	16"	1 1/4"	24"	40"	9420	SAE 6	1"	22
2018WT	2"	18"	1 1/4"	26"	44"	9420	SAE 6	1"	24
2020WT	2"	20"	1 1/4"	28"	48"	9420	SAE 6	1"	25
2024WT	2"	24"	1 1/4"	32"	56"	9420	SAE 6	1"	29
2028WT	2"	28"	1 1/4"	36"	64"	9420	SAE 6	1"	32
2030WT	2"	30"	1 1/4"	38"	68"	9420	SAE 6	1"	34
2032WT	2"	32"	1 1/4"	40"	72"	9420	SAE 6	1"	36
2036WT	2"	36"	1 1/4"	44"	80"	9420	SAE 6	1"	38
2040WT	2"	40"	1 1/4"	48"	88"	9420	SAE 6	1"	42
2048WT	2"	48"	1 1/4"	56"	104"	9420	SAE 6	1"	49
2504WT	2 1/2"	4"	1 1/2"	12"	16"	14720	SAE 8	1"	16
2506WT	2 1/2"	6"	1 1/2"	14"	20"	14720	SAE 8	1"	18
2508WT	2 1/2"	8"	1 1/2"	16"	24"	14720	SAE 8	1"	20
2510WT	2 1/2"	10"	1 1/2"	18"	28"	14720	SAE 8	1"	22
2512WT	2 1/2"	12"	1 1/2"	20"	32"	14720	SAE 8	1"	25
2514WT	2 1/2"	14"	1 1/2"	22"	36"	14720	SAE 8	1"	27
2516WT	2 1/2"	16"	1 1/2"	24"	40"	14720	SAE 8	1"	29
2518WT	2 1/2"	18"	1 1/2"	26"	44"	14720	SAE 8	1"	31
2520WT	2 1/2"	20"	1 1/2"	28"	48"	14720	SAE 8	1"	34
2524WT	2 1/2"	24"	1 1/2"	32"	56"	14720	SAE 8	1"	38
2528WT	2 1/2"	28"	1 1/2"	36"	64"	14720	SAE 8	1"	43
2530WT	2 1/2"	30"	1 1/2"	38"	68"	14720	SAE 8	1"	45
2532WT	2 1/2"	32"	1 1/2"	40"	72"	14720	SAE 8	1"	47
2534WT	2 1/2"	34"	1 1/2"	42"	76"	14720	SAE 8	1"	49
2536WT	2 1/2"	36"	1 1/2"	44"	80"	14720	SAE 8	1"	51
2540WT	2 1/2"	40"	1 1/2"	48"	88"	14720	SAE 8	1"	56
2548WT	2 1/2"	48"	1 1/2"	56"	104"	14720	SAE 8	1"	65
3004WT	3"	4"	1 1/2"	12"	16"	21200	SAE 8	1"	19
3006WT	3"	6"	1 1/2"	14"	20"	21200	SAE 8	1"	22
3008WT	3"	8"	1 1/2"	16"	24"	21200	SAE 8	1"	24
3010WT	3"	10"	1 1/2"	18"	28"	21200	SAE 8	1"	27
3012WT	3"	12"	1 1/2"	20"	32"	21200	SAE 8	1"	29
3014WT	3"	14"	1 1/2"	22"	36"	21200	SAE 8	1"	32
3016WT	3"	16"	1 1/2"	24"	40"	21200	SAE 8	1"	34
3018WT	3"	18"	1 1/2"	26"	44"	21200	SAE 8	1"	36
3020WT	3"	20"	1 1/2"	28"	48"	21200	SAE 8	1"	39
3024WT	3"	24"	1 1/2"	32"	56"	21200	SAE 8	1"	44
3028WT	3"	28"	1 1/2"	36"	64"	21200	SAE 8	1"	49
3030WT	3"	30"	1 1/2"	38"	68"	21200	SAE 8	1"	51
3032WT	3"	32"	1 1/2"	40"	72"	21200	SAE 8	1"	54
3034WT	3"	34"	1 1/2"	42"	76"	21200	SAE 8	1"	56

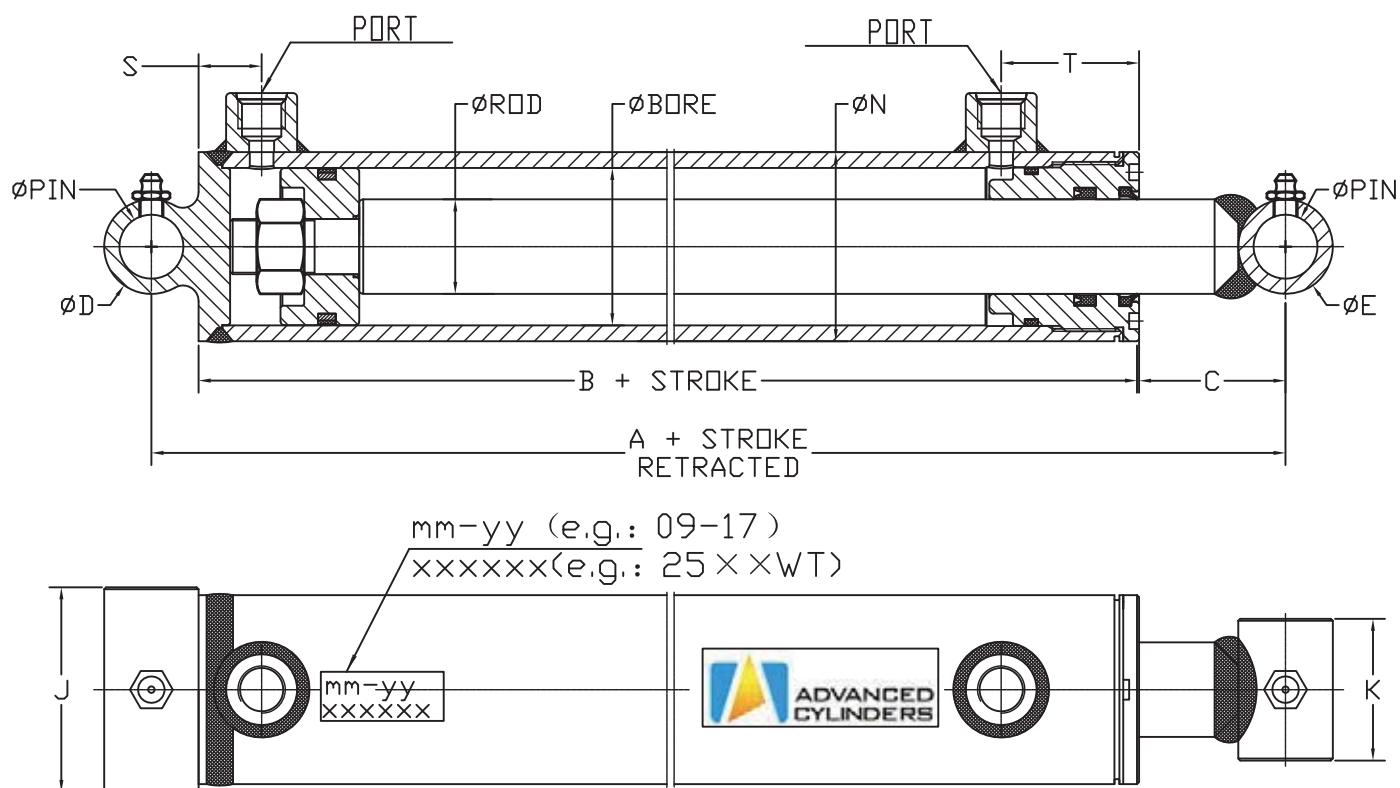
Available Model Numbers

MODEL NO	BORE	STROKE	ROD	RETRACTED	EXTENDED	MAX FORCE LB	PORT	PIN	WEIGHT LB
3036WT	3"	36"	1 1/2"	44"	80"	21200	SAE 8	1"	58
3040WT	3"	40"	1 1/2"	48"	88"	21200	SAE 8	1"	63
3048WT	3"	48"	1 1/2"	56"	104"	21200	SAE 8	1"	73
3504WT	3 1/2"	4"	1 3/4"	14"	18"	28860	SAE 8	1 1/4"	28
3506WT	3 1/2"	6"	1 3/4"	16"	22"	28860	SAE 8	1 1/4"	31
3508WT	3 1/2"	8"	1 3/4"	18"	26"	28860	SAE 8	1 1/4"	34
3510WT	3 1/2"	10"	1 3/4"	20"	30"	28860	SAE 8	1 1/4"	37
3512WT	3 1/2"	12"	1 3/4"	22"	34"	28860	SAE 8	1 1/4"	40
3514WT	3 1/2"	14"	1 3/4"	24"	38"	28860	SAE 8	1 1/4"	43
3516WT	3 1/2"	16"	1 3/4"	26"	42"	28860	SAE 8	1 1/4"	46
3518WT	3 1/2"	18"	1 3/4"	28"	46"	28860	SAE 8	1 1/4"	49
3520WT	3 1/2"	20"	1 3/4"	30"	50"	28860	SAE 8	1 1/4"	52
3524WT	3 1/2"	24"	1 3/4"	34"	58"	28860	SAE 8	1 1/4"	58
3528WT	3 1/2"	28"	1 3/4"	38"	66"	28860	SAE 8	1 1/4"	64
3530WT	3 1/2"	30"	1 3/4"	40"	70"	28860	SAE 8	1 1/4"	67
3532WT	3 1/2"	32"	1 3/4"	42"	74"	28860	SAE 8	1 1/4"	70
3536WT	3 1/2"	36"	1 3/4"	46"	82"	28860	SAE 8	1 1/4"	76
3540WT	3 1/2"	40"	1 3/4"	50"	90"	28860	SAE 8	1 1/4"	82
3548WT	3 1/2"	48"	1 3/4"	58"	106"	28860	SAE 8	1 1/4"	94
4004WT	4"	4"	2"	14"	18"	37700	SAE 8	1 1/2"	34
4006WT	4"	6"	2"	16"	22"	37700	SAE 8	1 1/2"	38
4008WT	4"	8"	2"	18"	26"	37700	SAE 8	1 1/2"	41
4010WT	4"	10"	2"	20"	30"	37700	SAE 8	1 1/2"	45
4012WT	4"	12"	2"	22"	34"	37700	SAE 8	1 1/2"	49
4014WT	4"	14"	2"	24"	38"	37700	SAE 8	1 1/2"	53
4016WT	4"	16"	2"	26"	42"	37700	SAE 8	1 1/2"	57
4018WT	4"	18"	2"	28"	46"	37700	SAE 8	1 1/2"	60
4020WT	4"	20"	2"	30"	50"	37700	SAE 8	1 1/2"	63
4024WT	4"	24"	2"	34"	58"	37700	SAE 8	1 1/2"	71
4028WT	4"	28"	2"	38"	66"	37700	SAE 8	1 1/2"	78
4030WT	4"	30"	2"	40"	70"	37700	SAE 8	1 1/2"	82
4032WT	4"	32"	2"	42"	74"	37700	SAE 8	1 1/2"	85
4036WT	4"	36"	2"	46"	82"	37700	SAE 8	1 1/2"	92
4040WT	4"	40"	2"	50"	90"	37700	SAE 8	1 1/2"	99
4048WT	4"	48"	2"	58"	106"	37700	SAE 8	1 1/2"	115
5004WT	5"	4"	2 1/2"	16"	30"	58900	SAE 8	1 3/4"	65
5006WT	5"	6"	2 1/2"	18"	24"	58900	SAE 8	1 3/4"	70
5008WT	5"	8"	2 1/2"	20"	28"	58900	SAE 8	1 3/4"	75
5010WT	5"	10"	2 1/2"	22"	32"	58900	SAE 8	1 3/4"	80
5012WT	5"	12"	2 1/2"	24"	36"	58900	SAE 8	1 3/4"	85
5014WT	5"	14"	2 1/2"	26"	40"	58900	SAE 8	1 3/4"	90
5016WT	5"	16"	2 1/2"	28"	44"	58900	SAE 8	1 3/4"	96
5018WT	5"	18"	2 1/2"	30"	48"	58900	SAE 8	1 3/4"	101

Available Model Numbers

MODEL NO	BORE	STROKE	ROD	RETRACTED	EXTENDED	MAX FORCE LB	PORT	PIN	WEIGHT LB
5020WT	5"	20"	2 1/2"	32"	52"	58900	SAE 8	1 3/4"	106
5024WT	5"	24"	2 1/2"	36"	60"	58900	SAE 8	1 3/4"	116
5028WT	5"	28"	2 1/2"	40"	68"	58900	SAE 8	1 3/4"	126
5030WT	5"	30"	2 1/2"	42"	72"	58900	SAE 8	1 3/4"	131
5032WT	5"	32"	2 1/2"	44"	76"	58900	SAE 8	1 3/4"	137
5036WT	5"	36"	2 1/2"	48"	84"	58900	SAE 8	1 3/4"	147
5040WT	5"	40"	2 1/2"	52"	92"	58900	SAE 8	1 3/4"	157
5048WT	5"	48"	2 1/2"	60"	108"	58900	SAE 8	1 3/4"	178

WT Weld Tube Cylinders



Dimension

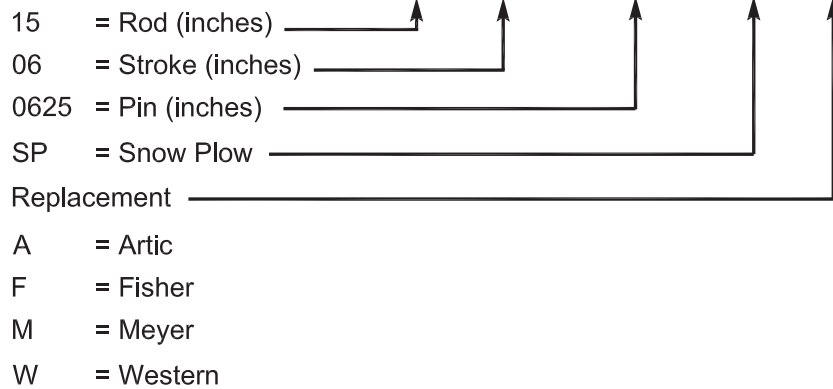
BORE	1 1/2"	2"	2 1/2"	3"	3 1/2"	4"	5"
A	8"	8"	8"	8"	10"	10"	12"
B	4.49"	4.92"	4.92"	4.92"	4.92"	5.04"	6.06"
C	2.88"	2.33"	2.33"	2.33"	4.08"	3.83"	4.44"
D	1.25"	1.50"	1.50"	1.50"	2.00"	2.25"	3.00"
E	1.25"	1.50"	1.50"	1.50"	2.00"	2.25"	3.00"
J	2.25"	2.75"	3.25"	3.75"	4.25"	4.75"	5.75"
K	2.00"	2.25"	2.25"	2.25"	2.25"	2.50"	3.25"
N	2.00"	2.50"	3.00"	3.50"	4.00"	4.50"	5.50"
S	1.00"	1.00"	1.00"	1.00"	1.00"	0.88"	1.37"
T	1.88"	2.06"	2.19"	2.19"	2.19"	2.19"	2.75"

SP Snow Plow Cylinders



How to Order

15 06 - 0625 SP - M



Specifications

Bore Sizes - 1 3/4" ~ 2 1/4"

Rod Sizes - 1 1/2" ~ 2"

Strokes - 6" ~ 16"

Pressure - 2500 PSI

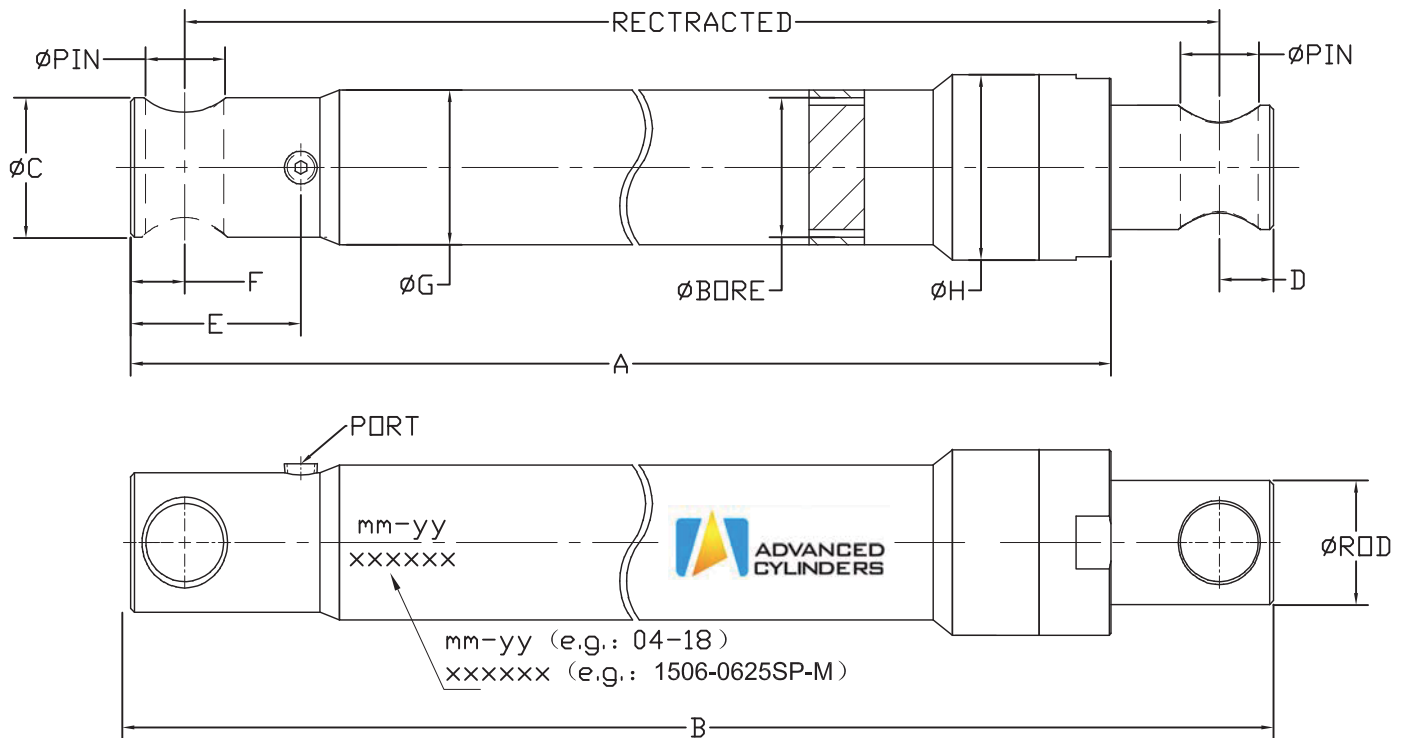
Ports - NPT Port

Paint - Gloss Black

Available Model Numbers

MODEL NO	BORE SIZE	STROKE	ROD	RETRACTED	EXTENDED	MAX FORCE LB	PORT	PIN	WEIGHT LB
1510-0750SP-A	1 3/4"	10"	1 1/2"	17"	27"	6010	1/4" NPT	3/4"	12
1512-0750SP-A	1 3/4"	12"	1 1/2"	19"	31"	6010	1/4" NPT	3/4"	13
1510-1000SP-F	1 3/4"	10"	1 1/2"	17 1/4"	27 1/4"	6010	1/4" NPT	1"	13
1512-1000SP-F	1 3/4"	12"	1 1/2"	19 1/4"	31 1/4"	6010	1/4" NPT	1"	14
2016-1250SP-F	2 1/4"	16"	2"	23 1/4"	39 1/4"	9940	1/4" NPT	1 1/4"	28
1506-0625SP-M	1 3/4"	6"	1 1/2"	12 3/8"	18 3/8"	6010	1/4" NPT	5/8"	10
1510-0625SP-M	1 3/4"	10"	1 1/2"	16 3/16"	26 3/16"	6010	1/4" NPT	5/8"	13
1512-0625SP-M	1 3/4"	12"	1 1/2"	18"	30"	6010	1/4" NPT	5/8"	14
2012-0625SP-M	2 1/4"	12"	2"	18"	30"	9940	1/4" NPT	5/8"	23
1506-0750SP-W	1 3/4"	6"	1 1/2"	13"	19"	6010	1/4" NPT	3/4"	10
1508-0750SP-W	1 3/4"	8"	1 1/2"	15 1/4"	23 1/4"	6010	1/4" NPT	3/4"	12
1510-0750SP-W	1 3/4"	10"	1 1/2"	17 1/4"	27 1/4"	6010	1/4" NPT	3/4"	14
1510-1000SP-W	1 3/4"	10"	1 1/2"	17"	27"	6010	1/4" NPT	1"	14
2006-0750SP-W	2 1/4"	6"	2"	13 3/16"	19 3/16"	9940	1/4" NPT	3/4"	18
2010-1000SP-W	2 1/4"	10"	2"	17 1/4"	27 1/4"	9940	1/4" NPT	1"	23
2016-1000SP-W	2 1/4"	16"	2"	23 5/16"	39 5/16"	9940	1/4" NPT	1"	29

SP Snow Plow Cylinders



Dimension

MODEL NO	REPLACEMENT	A	B	C	D, F	E	G	H
1510-0750SP-A	ARTIC	16.07"	18.50"	1.75"	0.75"	2.75"	2.00"	2.37"
1512-0750SP-A	ARTIC	18.07"	20.50"	1.75"	0.75"	2.75"	2.00"	2.37"
1510-1000SP-F	FISCHER	16.32"	18.75"	1.75"	0.75"	2.75"	2.00"	2.37"
1512-1000SP-F	FISCHER	18.07"	20.75"	1.75"	0.75"	2.75"	2.00"	2.37"
2016-1250SP-F	FISCHER	24.13"	26.75"	2.25"	1.75"	2.75"	2.50"	3.00"
1506-0625SP-M	MEYER	11.57"	13.87"	1.62"	0.75"	2.12"	2.00"	2.37"
1510-0625SP-M	MEYER	15.32"	17.69"	1.62"	0.75"	2.12"	2.00"	2.37"
1512-0625SP-M	MEYER	17.32"	19.50"	1.62"	0.75"	2.12"	2.00"	2.37"
2012-0625SP-M	MEYER	18.00"	19.50"	1.62"	0.75"	2.25"	2.50"	3.00"
1506-0750SP-W	WESTERN	12.31"	14.37"	1.75"	0.68"	2.75"	2.00"	2.37"
1508-0750SP-W	WESTERN	14.31"	16.62"	1.75"	0.68"	2.75"	2.00"	2.37"
1510-0750SP-W	WESTERN	16.31"	18.62"	1.75"	0.68"	2.75"	2.00"	2.37"
1510-1000SP-W	WESTERN	16.32"	18.50"	1.75"	0.75"	2.75"	2.00"	2.37"
2006-0750SP-W	WESTERN	12.38"	14.69"	2.25"	0.75"	2.75"	2.50"	3.00"
2010-1000SP-W	WESTERN	16.38"	18.75"	2.25"	0.75"	2.75"	2.50"	3.00"
2016-1000SP-W	WESTERN	22.38"	24.81"	2.25"	0.75"	2.56"	2.50"	3.00"

TH Tie Rod Cylinders



How to Order

20 06 TH - ORB/NPT

20 = Bore (inches)
 06 = Stroke (inches)
 TH = Tie Rod Cylinder, 3000 PSI
 ORB/NPT = SAE Port and NPT Port
 or
 AORB/NPT = ASAE, SAE Port and NPT Port
 or
 ORB = SAE Port

Specifications

Bore Sizes - 2" ~ 5"

Strokes - 4 ~ 48"

Pressure - 3000 PSI

Ports - SAE Port and NPT Port

Features

- GLAND - Ductile Iron with one SAE port and one NPT port on opposite sides
- TUBE - High tensile cold drawn tube, precision honed for extended seal life
- TIE ROD - High tensile alloy steel
- ROD - Chrome plated C1045 steel
- ROD Clevis - Ductile iron
- END CAP - Ductile iron with two SAE ports and two NPT ports on each side for greater flexibility of assembly
- PISTON - High grade ductile iron
- Use all Hallite type seals
 - PISTON SEAL - Hallite 775
 - ROD SEAL - Hallite 605
 - ROD WIPER - Hallite 520
 - TUBE SEAL - Hallite AS-568 O-ring with anti-extrusion backup ring
- PAINT COLOR - Gloss black, or other customized color

Available Model Numbers

MODEL NO	BORE	STROKE	ROD	RETRACTED	EXTENDED	MAX FORCE LB	PORT	PIN	WEIGHT LB
2008TH-AORB/NPT	2"	8"	1 1/8"	20 1/4"	28 1/4"	9420	SAE 8 / 3/8 NPT	1"	20
2508TH-AORB/NPT	2 1/2"	8"	1 1/4"	20 1/4"	28 1/4"	14720	SAE 8 / 3/8 NPT	1"	25
3008TH-AORB/NPT	3"	8"	1 1/4"	20 1/4"	28 1/4"	21200	SAE 8 / 1/2 NPT	1"	32
3016TH-AORB/NPT	3"	16"	1 1/2"	31 1/2"	47 1/2"	21200	SAE 8 / 1/2 NPT	1 1/4"	39
3508TH-AORB/NPT	3 1/2"	8"	1 1/4"	20 1/4"	28 1/4"	28860	SAE 8 / 1/2 NPT	1"	36
3516TH-AORB/NPT	3 1/2"	16"	1 1/2"	31 1/2"	47 1/2"	28860	SAE 8 / 1/2 NPT	1 1/4"	46
4008TH-AORB/NPT	4"	8"	1 1/2"	20 1/4"	28 1/4"	37700	SAE 8 / 1/2 NPT	1"	50

Available Model Numbers

MODEL NO	BORE	STROKE	ROD	RETRACTED	EXTENDED	MAX FORCE LB	PORT	PIN	WEIGHT LB
4016TH-AORB/NPT	4"	16"	2"	31 1/2"	47 1/2"	37700	SAE 8 / 1/2 NPT	1 1/4"	68
5008TH-AORB	5"	8"	2"	22 1/4"	30 1/4"	58900	SAE 8	1 1/4"	71
5016TH-AORB	5"	16"	2"	31 1/2"	47 1/2"	58900	SAE 8	1 1/4"	90
2004TH-ORB/NPT	2"	4"	1 1/8"	14 1/4"	18 1/4"	9420	SAE 8 / 3/8 NPT	1"	18
2006TH-ORB/NPT	2"	6"	1 1/8"	16 1/4"	22 1/4"	9420	SAE 8 / 3/8 NPT	1"	19
2008TH-ORB/NPT	2"	8"	1 1/8"	18 1/4"	26 1/4"	9420	SAE 8 / 3/8 NPT	1"	20
2010TH-ORB/NPT	2"	10"	1 1/8"	20 1/4"	30 1/4"	9420	SAE 8 / 3/8 NPT	1"	21
2012TH-ORB/NPT	2"	12"	1 1/8"	22 1/4"	34 1/4"	9420	SAE 8 / 3/8 NPT	1"	25
2014TH-ORB/NPT	2"	14"	1 1/8"	24 1/4"	38 1/4"	9420	SAE 8 / 3/8 NPT	1"	26
2016TH-ORB/NPT	2"	16"	1 1/8"	26 1/4"	42 1/4"	9420	SAE 8 / 3/8 NPT	1"	28
2018TH-ORB/NPT	2"	18"	1 1/8"	28 1/4"	46 1/4"	9420	SAE 8 / 3/8 NPT	1"	29
2020TH-ORB/NPT	2"	20"	1 1/8"	30 1/4"	50 1/4"	9420	SAE 8 / 3/8 NPT	1"	31
2024TH-ORB/NPT	2"	24"	1 1/8"	34 1/4"	58 1/4"	9420	SAE 8 / 3/8 NPT	1"	35
2030TH-ORB/NPT	2"	30"	1 1/8"	40 1/4"	70 1/4"	9420	SAE 8 / 3/8 NPT	1"	39
2036TH-ORB/NPT	2"	36"	1 1/8"	46 1/4"	82 1/4"	9420	SAE 8 / 3/8 NPT	1"	41
2040TH-ORB/NPT	2"	40"	1 1/8"	50 1/4"	90 1/4"	9420	SAE 8 / 3/8 NPT	1"	45
2048TH-ORB/NPT	2"	48"	1 1/8"	58 1/4"	106 1/4"	9420	SAE 8 / 3/8 NPT	1"	50
2504TH-ORB/NPT	2 1/2"	4"	1 1/4"	14 1/4"	18 1/4"	14720	SAE 8 / 3/8 NPT	1"	17
2506TH-ORB/NPT	2 1/2"	6"	1 1/4"	16 1/4"	22 1/4"	14720	SAE 8 / 3/8 NPT	1"	22
2508TH-ORB/NPT	2 1/2"	8"	1 1/4"	18 1/4"	26 1/4"	14720	SAE 8 / 3/8 NPT	1"	24
2510TH-ORB/NPT	2 1/2"	10"	1 1/4"	20 1/4"	30 1/4"	14720	SAE 8 / 3/8 NPT	1"	26
2512TH-ORB/NPT	2 1/2"	12"	1 1/4"	22 1/4"	34 1/4"	14720	SAE 8 / 3/8 NPT	1"	27
2514TH-ORB/NPT	2 1/2"	14"	1 1/4"	24 1/4"	38 1/4"	14720	SAE 8 / 3/8 NPT	1"	29
2516TH-ORB/NPT	2 1/2"	16"	1 1/4"	26 1/4"	42 1/4"	14720	SAE 8 / 3/8 NPT	1"	31
2518TH-ORB/NPT	2 1/2"	18"	1 1/4"	28 1/4"	46 1/4"	14720	SAE 8 / 3/8 NPT	1"	34
2520TH-ORB/NPT	2 1/2"	20"	1 1/4"	30 1/4"	50 1/4"	14720	SAE 8 / 3/8 NPT	1"	36
2524TH-ORB/NPT	2 1/2"	24"	1 1/4"	34 1/4"	58 1/4"	14720	SAE 8 / 3/8 NPT	1"	39
2530TH-ORB/NPT	2 1/2"	30"	1 1/4"	40 1/4"	70 1/4"	14720	SAE 8 / 3/8 NPT	1"	46
2536TH-ORB/NPT	2 1/2"	36"	1 1/4"	46 1/4"	82 1/4"	14720	SAE 8 / 3/8 NPT	1"	51
2540TH-ORB/NPT	2 1/2"	40"	1 1/4"	50 1/4"	90 1/4"	14720	SAE 8 / 3/8 NPT	1"	55
2548TH-ORB/NPT	2 1/2"	48"	1 1/4"	58 1/4"	106 1/4"	14720	SAE 8 / 3/8 NPT	1"	62
3004TH-ORB/NPT	3"	4"	1 1/4"	14 1/4"	18 1/4"	21200	SAE 8 / 1/2 NPT	1"	23
3006TH-ORB/NPT	3"	6"	1 1/4"	16 1/4"	22 1/4"	21200	SAE 8 / 1/2 NPT	1"	24
3008TH-ORB/NPT	3"	8"	1 1/4"	18 1/4"	26 1/4"	21200	SAE 8 / 1/2 NPT	1"	27
3010TH-ORB/NPT	3"	10"	1 1/4"	20 1/4"	30 1/4"	21200	SAE 8 / 1/2 NPT	1"	33
3012TH-ORB/NPT	3"	12"	1 1/4"	22 1/4"	34 1/4"	21200	SAE 8 / 1/2 NPT	1"	33
3014TH-ORB/NPT	3"	14"	1 1/4"	24 1/4"	38 1/4"	21200	SAE 8 / 1/2 NPT	1"	35
3016TH-ORB/NPT	3"	16"	1 1/2"	26 1/4"	42 1/4"	21200	SAE 8 / 1/2 NPT	1"	39
3018TH-ORB/NPT	3"	18"	1 1/2"	28 1/4"	46 1/4"	21200	SAE 8 / 1/2 NPT	1"	42
3020TH-ORB/NPT	3"	20"	1 1/2"	30 1/4"	50 1/4"	21200	SAE 8 / 1/2 NPT	1"	45
3024TH-ORB/NPT	3"	24"	1 1/2"	34 1/4"	58 1/4"	21200	SAE 8 / 1/2 NPT	1"	49
3030TH-ORB/NPT	3"	30"	1 1/2"	40 1/4"	70 1/4"	21200	SAE 8 / 1/2 NPT	1"	58
3036TH-ORB/NPT	3"	36"	1 1/2"	46 1/4"	82 1/4"	21200	SAE 8 / 1/2 NPT	1"	68

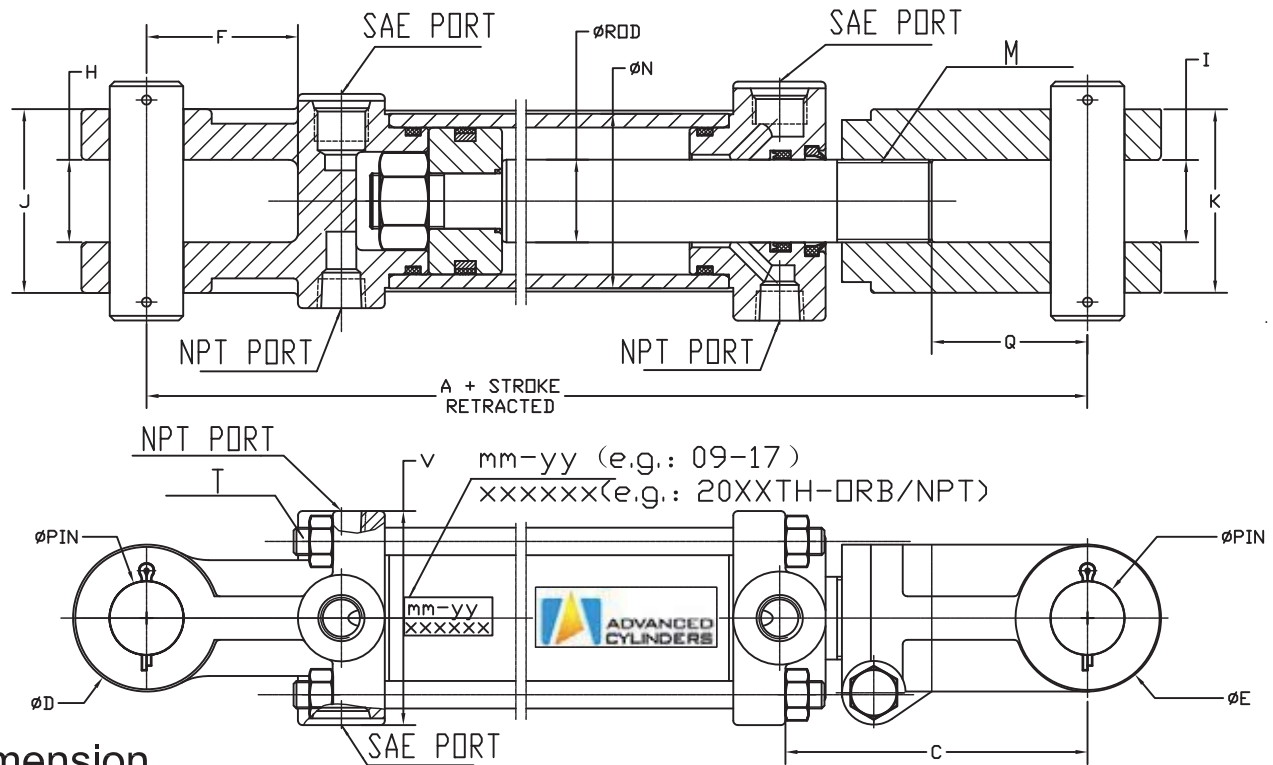
Available Model Numbers

MODEL NO	BORE	STROKE	ROD	RETRACTED	EXTENDED	MAX FORCE LB	PORT	PIN	WEIGHT LB
3040TH-ORB/NPT	3"	40"	1 1/2"	50 1/4"	90 1/4"	21200	SAE 8 / 1/2 NPT	1"	73
3048TH-ORB/NPT	3"	48"	1 1/2"	58 1/4"	106 1/4"	21200	SAE 8 / 1/2 NPT	1"	82
3504TH-ORB/NPT	3 1/2"	4"	1 1/4"	14 1/4"	18 1/4"	28860	SAE 8 / 1/2 NPT	1"	30
3506TH-ORB/NPT	3 1/2"	6"	1 1/4"	16 1/4"	22 1/4"	28860	SAE 8 / 1/2 NPT	1"	33
3508TH-ORB/NPT	3 1/2"	8"	1 1/4"	18 1/4"	26 1/4"	28860	SAE 8 / 1/2 NPT	1"	35
3510TH-ORB/NPT	3 1/2"	10"	1 1/4"	20 1/4"	30 1/4"	28860	SAE 8 / 1/2 NPT	1"	37
3512TH-ORB/NPT	3 1/2"	12"	1 1/4"	22 1/4"	34 1/4"	28860	SAE 8 / 1/2 NPT	1"	39
3514TH-ORB/NPT	3 1/2"	14"	1 1/4"	24 1/4"	38 1/4"	28860	SAE 8 / 1/2 NPT	1"	42
3516TH-ORB/NPT	3 1/2"	16"	1 1/2"	26 1/4"	42 1/4"	28860	SAE 8 / 1/2 NPT	1"	46
3518TH-ORB/NPT	3 1/2"	18"	1 1/2"	28 1/4"	46 1/4"	28860	SAE 8 / 1/2 NPT	1"	47
3520TH-ORB/NPT	3 1/2"	20"	1 1/2"	30 1/4"	50 1/4"	28860	SAE 8 / 1/2 NPT	1"	49
3524TH-ORB/NPT	3 1/2"	24"	1 1/2"	34 1/4"	58 1/4"	28860	SAE 8 / 1/2 NPT	1"	55
3530TH-ORB/NPT	3 1/2"	30"	1 1/2"	40 1/4"	70 1/4"	28860	SAE 8 / 1/2 NPT	1"	63
3536TH-ORB/NPT	3 1/2"	36"	1 1/2"	46 1/4"	82 1/4"	28860	SAE 8 / 1/2 NPT	1"	72
3540TH-ORB/NPT	3 1/2"	40"	1 1/2"	50 1/4"	90 1/4"	28860	SAE 8 / 1/2 NPT	1"	81
3548TH-ORB/NPT	3 1/2"	48"	1 1/2"	58 1/4"	106 1/4"	28860	SAE 8 / 1/2 NPT	1"	99
4004TH-ORB/NPT	4"	4"	1 1/2"	14 1/4"	18 1/4"	37700	SAE 8 / 1/2 NPT	1"	41
4006TH-ORB/NPT	4"	6"	1 1/2"	16 1/4"	22 1/4"	37700	SAE 8 / 1/2 NPT	1"	45
4008TH-ORB/NPT	4"	8"	1 1/2"	18 1/4"	26 1/4"	37700	SAE 8 / 1/2 NPT	1"	49
4010TH-ORB/NPT	4"	10"	1 1/2"	20 1/4"	30 1/4"	37700	SAE 8 / 1/2 NPT	1"	52
4012TH-ORB/NPT	4"	12"	1 1/2"	22 1/4"	34 1/4"	37700	SAE 8 / 1/2 NPT	1"	56
4014TH-ORB/NPT	4"	14"	1 1/2"	24 1/4"	38 1/4"	37700	SAE 8 / 1/2 NPT	1"	60
4016TH-ORB/NPT	4"	16"	1 3/4"	26 1/4"	42 1/4"	37700	SAE 8 / 1/2 NPT	1"	64
4018TH-ORB/NPT	4"	18"	1 3/4"	28 1/4"	46 1/4"	37700	SAE 8 / 1/2 NPT	1"	68
4020TH-ORB/NPT	4"	20"	1 3/4"	30 1/4"	50 1/4"	37700	SAE 8 / 1/2 NPT	1"	72
4024TH-ORB/NPT	4"	24"	1 3/4"	34 1/4"	58 1/4"	37700	SAE 8 / 1/2 NPT	1"	80
4030TH-ORB/NPT	4"	30"	2"	40 1/4"	70 1/4"	37700	SAE 8 / 1/2 NPT	1"	92
4036TH-ORB/NPT	4"	36"	2"	46 1/4"	82 1/4"	37700	SAE 8 / 1/2 NPT	1"	104
4040TH-ORB/NPT	4"	40"	2"	50 1/4"	90 1/4"	37700	SAE 8 / 1/2 NPT	1"	116
4048TH-ORB/NPT	4"	48"	2"	58 1/4"	106 1/4"	37700	SAE 8 / 1/2 NPT	1"	140
5004TH-ORB	5"	4"	2"	16 1/4"	20 1/4"	58900	SAE 8	1 1/4"	60
5006TH-ORB	5"	6"	2"	18 1/4"	24 1/4"	58900	SAE 8	1 1/4"	63
5008TH-ORB	5"	8"	2"	20 1/4"	28 1/4"	58900	SAE 8	1 1/4"	67
5010TH-ORB	5"	10"	2"	22 1/4"	32 1/4"	58900	SAE 8	1 1/4"	71
5012TH-ORB	5"	12"	2"	24 1/4"	36 1/4"	58900	SAE 8	1 1/4"	75
5014TH-ORB	5"	14"	2"	26 1/4"	40 1/4"	58900	SAE 8	1 1/4"	80
5016TH-ORB	5"	16"	2"	28 1/4"	44 1/4"	58900	SAE 8	1 1/4"	82
5018TH-ORB	5"	18"	2"	30 1/4"	48 1/4"	58900	SAE 8	1 1/4"	90
5020TH-ORB	5"	20"	2"	32 1/4"	52 1/4"	58900	SAE 8	1 1/4"	95
5024TH-ORB	5"	24"	2"	36 1/4"	60 1/4"	58900	SAE 8	1 1/4"	100
5030TH-ORB	5"	30"	2"	42 1/4"	72 1/4"	58900	SAE 8	1 1/4"	108
5036TH-ORB	5"	36"	2"	48 1/4"	84 1/4"	58900	SAE 8	1 1/4"	118
5040TH-ORB	5"	40"	2"	52 1/4"	92 1/4"	58900	SAE 8	1 1/4"	140

Available Model Numbers

MODEL NO	BORE SIZE	STROKE	ROD	RETRACTED	EXTENDED	MAX FORCE LB	PORT	PIN	WEIGHT LB
5048TH-ORB	5"	48"	2"	60 1/4"	108 1/4"	58900	SAE 8	1 1/4"	161

TH Tie Rod Cylinders



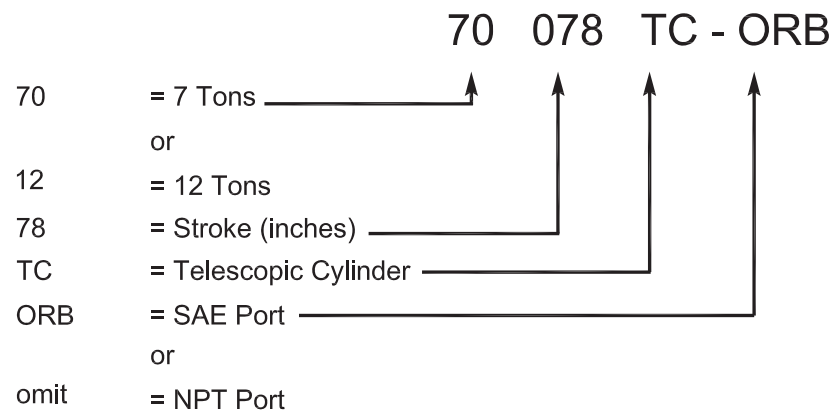
Dimension

BORE SIZE	2"	2 1/2"	3"	3 1/2"	4"	5"
A NON-ASAE // ASAE	10 1/4" // 12 1/4"	10 1/4" // 12 1/4"	10 1/4" // 12 1/4" (3016 ASAE 15 1/2")	10 1/4" // 12 1/4" (3516 ASAE 15 1/2")	10 1/4" // 12 1/4" (4016 ASAE 15 1/2")	10 1/4" // 14 1/4" (5016 ASAE 15 1/2")
C	4.11" // 6.11"	4.01" // 6.01"	3.96" // 5.96" (3016 ASAE 9.21")	3.96" // 5.96" (3516 ASAE 8.96")	3.78" // 5.78" (4016 ASAE 9.03")	3.89" // 5.89" (5016 ASAE 7.14")
D	2.00"	2.00"	2.00"	2.00"	2.00"	2.88"
E	2.00"	2.00"	2.00"	2.00"	2.00"	2.50"
F	2.06"	2.06"	2.06"	2.06"	2.06"	2.25"
H	1.12"	1.12"	1.12"	1.12"	1.12"	1.31"
I	1.12"	1.12"	1.12"	1.12"	1.12"	1.20"
J	2.50"	2.50"	2.50"	2.50"	2.62"	3.50"
K	2.50"	2.50"	2.64"	2.64"	2.64"	2.75"
M	1 1/8-12UNF	1 1/8-12UNF	1 1/4-12UNF	1 1/4-12UNF	1 1/4-12UNF	1 1/2-12UNF
N	2.50"	3.00"	3.50"	4.00"	4.50"	5.50"
Q	2.12"	2.12"	2.12"	2.12"	2.12"	2.13"
T	3/8-24UNF	3/8-24UNF	1/2-20UNF	M14x1.5	5/8-18UNF	3/4-16UNF
V	2.91"	3.31"	3.86"	4.25"	5.12"	6.00"

Telescopic Cylinders



How to Order



Specifications

Tons Inverse - 7 Tons and 12 Tons
Strokes - 78" ~ 144"

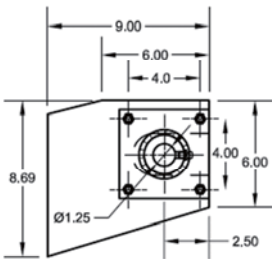
Pressure - 2500 PSI
Ports - SAE Port

Available Model Numbers

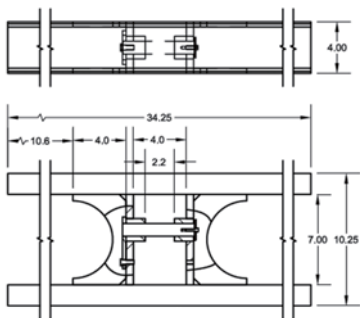
MODEL NO	OUTSIDE BORE	STROKE	ROD	RETRACTED	EXTENDED	CAPACITY TON	PORT	PIN	WEIGHT LB
70078TC-ORB	3.75"	78"	2"	35 1/2"	113 1/2"	7	SAE 8	1"	68
70090TC-ORB	3.75"	90"	2"	39 1/2"	129 1/2"	7	SAE 8	1"	75
70108TC-ORB	3.75"	108"	2"	45"	153"	7	SAE 8	1"	101
12078TC-ORB	4.5"	78"	2"	34 3/4"	112 3/4"	12	SAE 8	1"	106
12090TC-ORB	4.5"	90"	2"	38 3/4"	128 3/4"	12	SAE 8	1"	107
12108TC-ORB	4.5"	108"	2"	44 3/4"	152 3/4"	12	SAE 8	1"	132
12120TC-ORB	4.5"	120"	2"	48 3/4"	168 3/4"	12	SAE 8	1"	143
12144TC-ORB	4.5"	144"	2"	58"	202"	12	SAE 8	1"	173

Mounting Accessories

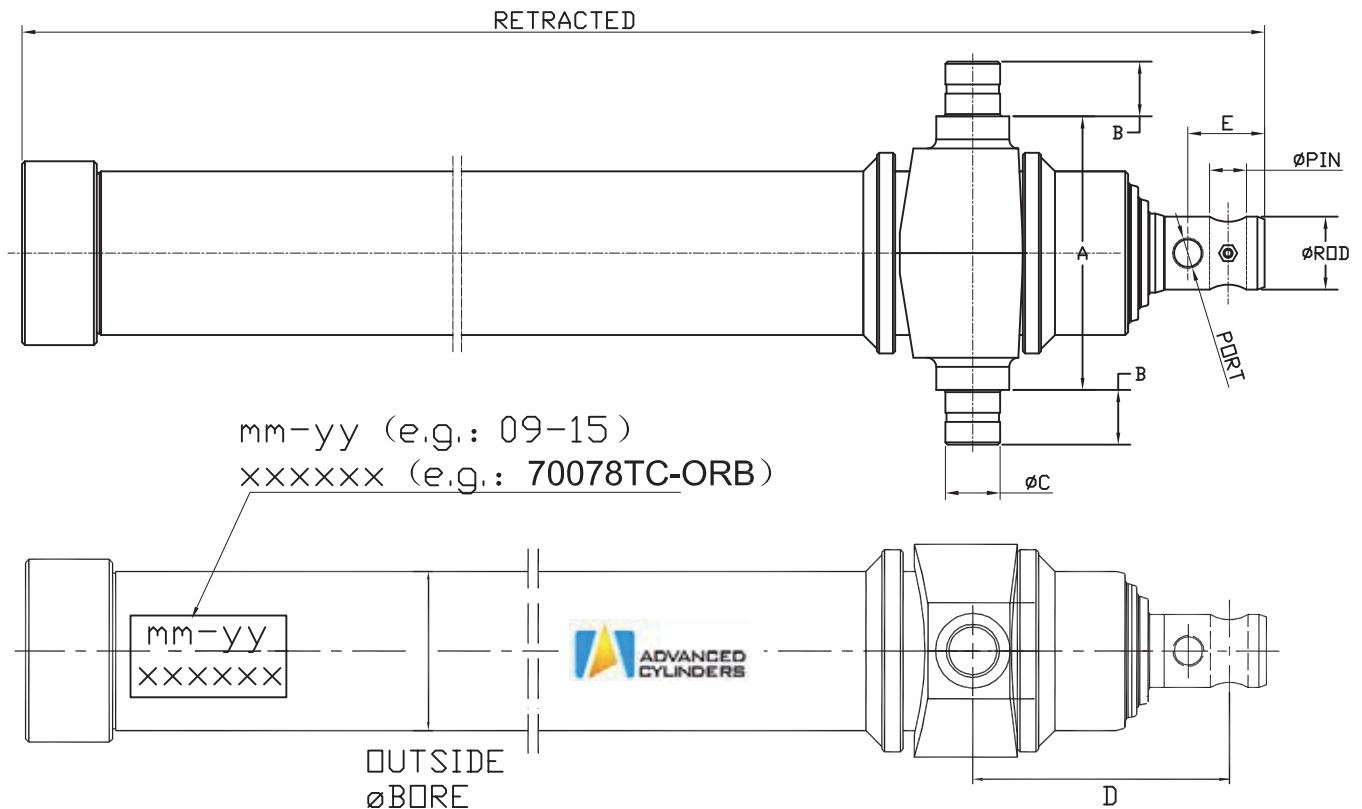
MB07 - 7 Tons Bracket Kit
MB12 - 12 Tons Bracket Kit



SB0712 - 7 and 12 Tons Support



TC Telescopic Cylinders



Dimension

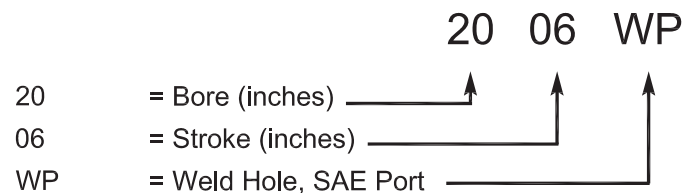
MODEL NO	STROKE 1 *	STROKE 2 *	STROKE 3 *	A	B	C	D	E
70078TC-ORB	25.30"	26.35"	26.35"	6.5"	1.25"	1.25"	7"	2.25"
70090TC-ORB	29.30"	30.35"	30.35"	6.5"	1.25"	1.25"	7"	2.25"
70108TC-ORB	35.30"	36.35"	36.35"	6.5"	1.25"	1.25"	7"	2.25"
12078TC-ORB	24.70"	26.65"	26.65"	7.5"	1.5"	1.5"	7"	2.25"
12090TC-ORB	28.70"	30.65"	30.65"	7.5"	1.5"	1.5"	7"	2.25"
12108TC-ORB	34.70"	36.65"	36.65"	7.5"	1.5"	1.5"	7"	2.25"
12120TC-ORB	38.70"	40.65"	40.65"	7.5"	1.5"	1.5"	7"	2.25"
12144TC-ORB	46.70"	48.65"	48.65"	7.5"	1.5"	1.5"	7"	2.25"

* STROKE 1, STROKE 2, AND STROKE 3 ARE ONLY USED AS REFERENCE.

WP Weld Hole Cylinders



How to Order



Specifications

Bore Sizes - 1 1/2" ~ 4"
Strokes - 4 ~ 72"

Pressure - 3000 PSI
Ports - SAE Port

Features

- CONSTRUCTION - Heavy duty welded
- TUBE - High tensile cold drawn tube, precision honed for extended seal life
- ROD - Chrome plated C1045 steel
- PISTON - High grade ductile iron
- Use all Hallite type seals
 - PISTON SEAL - Hallite 755
 - ROD SEAL - Hallite 605
 - ROD WIPER - Hallite 520
 - TUBE SEAL - Hallite AS-568 O-ring with anti-extrusion backup ring
- PAINT COLOR - Gloss black, or other customized color

Available Model Numbers

MODEL NO	BORE	STROKE	ROD	RETRACTED	EXTENDED	MAX FORCE LB	PORT	PIN	WEIGHT LB
1504WP	1 1/2"	4"	1"	11"	15"	5300	SAE 6	5/8"	7
1506WP	1 1/2"	6"	1"	13"	19"	5300	SAE 6	5/8"	8
1508WP	1 1/2"	8"	1"	15"	23"	5300	SAE 6	5/8"	9
1510WP	1 1/2"	10"	1"	17"	27"	5300	SAE 6	5/8"	11
1512WP	1 1/2"	12"	1"	19"	31"	5300	SAE 6	5/8"	12
1514WP	1 1/2"	14"	1"	21"	35"	5300	SAE 6	5/8"	13
1516WP	1 1/2"	16"	1"	23"	40"	5300	SAE 6	5/8"	14
2004WP	2"	4"	1 1/4"	12"	16"	9420	SAE 8	3/4"	10
2006WP	2"	6"	1 1/4"	14"	20"	9420	SAE 8	3/4"	12
2008WP	2"	8"	1 1/4"	16"	24"	9420	SAE 8	3/4"	14
2010WP	2"	10"	1 1/4"	18"	28"	9420	SAE 8	3/4"	16

Available Model Numbers

MODEL NO	BORE	STROKE	ROD	RETRACTED	EXTENDED	MAX FORCE LB	PORT	PIN	WEIGHT LB
2012WP	2"	12"	1 1/4"	20"	32"	9420	SAE 8	3/4"	17
2014WP	2"	14"	1 1/4"	22"	36"	9420	SAE 8	3/4"	19
2016WP	2"	16"	1 1/4"	24"	40"	9420	SAE 8	3/4"	21
2018WP	2"	18"	1 1/4"	26"	44"	9420	SAE 8	3/4"	22
2020WP	2"	20"	1 1/4"	28"	48"	9420	SAE 8	3/4"	24
2024WP	2"	24"	1 1/4"	32"	56"	9420	SAE 8	3/4"	27
2028WP	2"	28"	1 1/4"	36"	64"	9420	SAE 8	3/4"	31
2030WP	2"	30"	1 1/4"	38"	68"	9420	SAE 8	3/4"	33
2032WP	2"	32"	1 1/4"	40"	72"	9420	SAE 8	3/4"	34
2036WP	2"	36"	1 1/4"	44"	80"	9420	SAE 8	3/4"	38
2040WP	2"	40"	1 1/4"	48"	88"	9420	SAE 8	3/4"	41
2042WP	2"	48"	1 1/4"	50"	92"	9420	SAE 8	3/4"	43
2048WP	2"	48"	1 1/4"	56"	104"	9420	SAE 8	3/4"	48
2060WP	2"	60"	1 1/4"	68"	128"	9420	SAE 8	3/4"	58
2072WP	2"	72"	1 1/4"	80"	152"	9420	SAE 8	3/4"	68
2504WP	2 1/2"	4"	1 3/8"	12"	16"	14720	SAE 8	3/4"	14
2506WP	2 1/2"	6"	1 3/8"	14"	20"	14720	SAE 8	3/4"	16
2508WP	2 1/2"	8"	1 3/8"	16"	24"	14720	SAE 8	3/4"	18
2510WP	2 1/2"	10"	1 3/8"	18"	28"	14720	SAE 8	3/4"	20
2512WP	2 1/2"	12"	1 3/8"	20"	32"	14720	SAE 8	3/4"	22
2514WP	2 1/2"	14"	1 3/8"	22"	36"	14720	SAE 8	3/4"	24
2516WP	2 1/2"	16"	1 3/8"	24"	40"	14720	SAE 8	3/4"	26
2518WP	2 1/2"	18"	1 3/8"	26"	44"	14720	SAE 8	3/4"	28
2520WP	2 1/2"	20"	1 3/8"	28"	48"	14720	SAE 8	3/4"	30
2524WP	2 1/2"	24"	1 3/8"	32"	56"	14720	SAE 8	3/4"	35
2528WP	2 1/2"	28"	1 3/8"	36"	64"	14720	SAE 8	3/4"	39
2530WP	2 1/2"	30"	1 3/8"	38"	68"	14720	SAE 8	3/4"	41
2532WP	2 1/2"	32"	1 3/8"	40"	72"	14720	SAE 8	3/4"	43
2536WP	2 1/2"	36"	1 3/8"	44"	80"	14720	SAE 8	3/4"	47
2540WP	2 1/2"	40"	1 3/8"	48"	88"	14720	SAE 8	3/4"	51
2542WP	2 1/2"	42"	1 3/8"	50"	92"	14720	SAE 8	3/4"	53
2548WP	2 1/2"	48"	1 3/8"	56"	104"	14720	SAE 8	3/4"	59
2560WP	2 1/2"	60"	1 3/8"	68"	128"	14720	SAE 8	3/4"	72
3004WP	3"	4"	1 1/2"	12"	16"	21200	SAE 8	1"	19
3006WP	3"	6"	1 1/2"	14"	20"	21200	SAE 8	1"	21
3008WP	3"	8"	1 1/2"	16"	24"	21200	SAE 8	1"	24
3010WP	3"	10"	1 1/2"	18"	28"	21200	SAE 8	1"	26
3012WP	3"	12"	1 1/2"	20"	32"	21200	SAE 8	1"	28
3014WP	3"	14"	1 1/2"	22"	36"	21200	SAE 8	1"	31
3016WP	3"	16"	1 1/2"	24"	40"	21200	SAE 8	1"	33
3018WP	3"	18"	1 1/2"	26"	44"	21200	SAE 8	1"	36
3020WP	3"	20"	1 1/2"	28"	48"	21200	SAE 8	1"	38
3024WP	3"	24"	1 1/2"	32"	56"	21200	SAE 8	1"	43

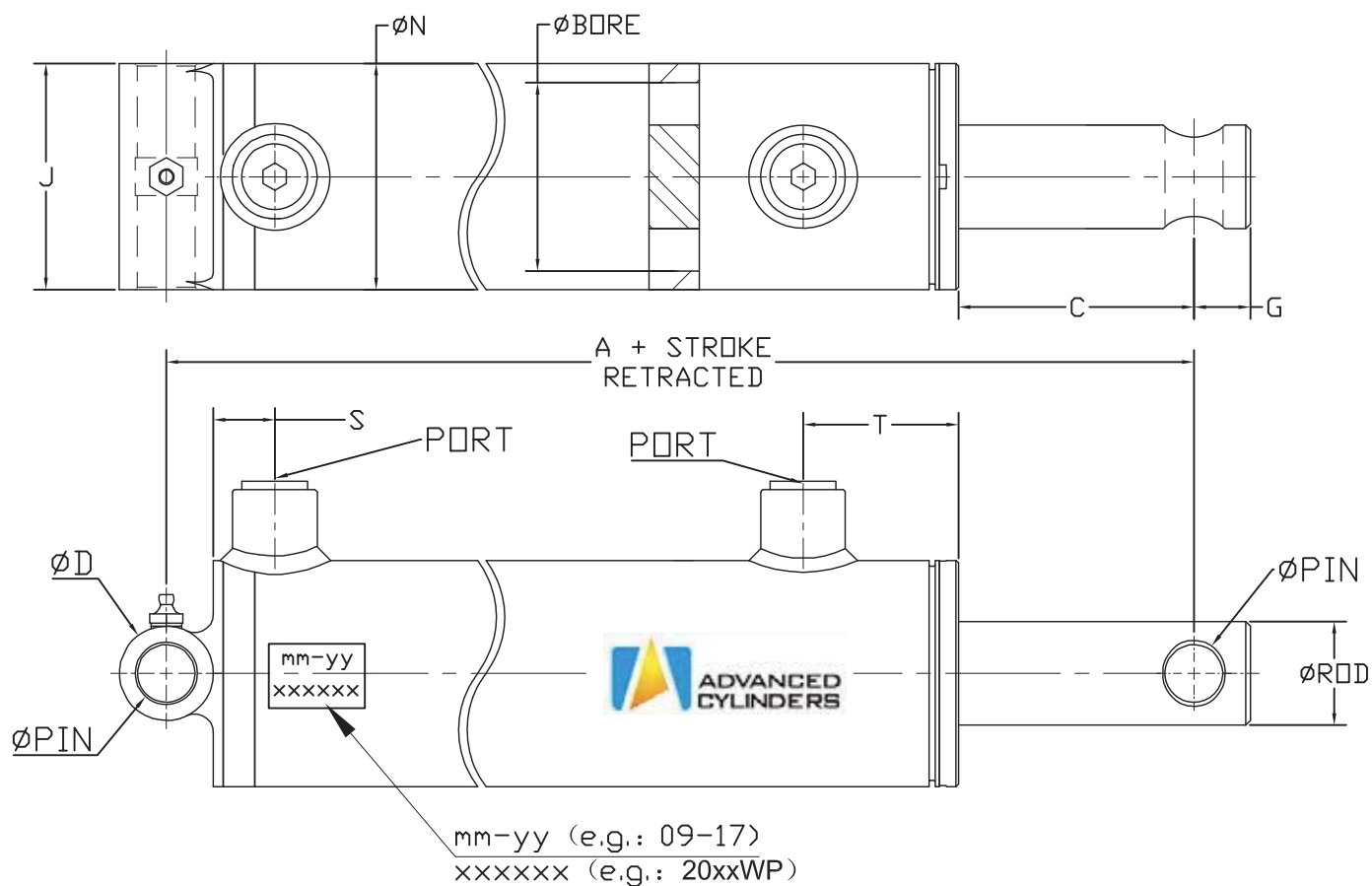
Available Model Numbers

MODEL NO	BORE	STROKE	ROD	RETRACTED	EXTENDED	MAX FORCE LB	PORT	PIN	WEIGHT LB
3028WP	3"	28"	1 1/2"	36"	64"	21200	SAE 8	1"	48
3030WP	3"	30"	1 1/2"	38"	68"	21200	SAE 8	1"	51
3032WP	3"	32"	1 1/2"	40"	72"	21200	SAE 8	1"	53
3036WP	3"	36"	1 1/2"	44"	80"	21200	SAE 8	1"	58
3040WP	3"	40"	1 1/2"	48"	88"	21200	SAE 8	1"	63
3042WP	3"	42"	1 1/2"	50"	92"	21200	SAE 8	1"	65
3048WP	3"	48"	1 1/2"	56"	104"	21200	SAE 8	1"	73
3060WP	3"	60"	1 1/2"	68"	128"	21200	SAE 8	1"	87
3504WP	3 1/2"	4"	1 3/4"	12"	16"	28860	SAE 8	1"	24
3506WP	3 1/2"	6"	1 3/4"	14"	20"	28860	SAE 8	1"	27
3508WP	3 1/2"	8"	1 3/4"	16"	24"	28860	SAE 8	1"	30
3510WP	3 1/2"	10"	1 3/4"	18"	28"	28860	SAE 8	1"	33
3512WP	3 1/2"	12"	1 3/4"	20"	32"	28860	SAE 8	1"	36
3514WP	3 1/2"	14"	1 3/4"	22"	36"	28860	SAE 8	1"	39
3516WP	3 1/2"	16"	1 3/4"	24"	40"	28860	SAE 8	1"	42
3518WP	3 1/2"	18"	1 3/4"	26"	44"	28860	SAE 8	1"	45
3520WP	3 1/2"	20"	1 3/4"	28"	48"	28860	SAE 8	1"	48
3524WP	3 1/2"	24"	1 3/4"	32"	56"	28860	SAE 8	1"	54
3528WP	3 1/2"	28"	1 3/4"	36"	64"	28860	SAE 8	1"	60
3530WP	3 1/2"	30"	1 3/4"	38"	68"	28860	SAE 8	1"	63
3532WP	3 1/2"	32"	1 3/4"	40"	72"	28860	SAE 8	1"	66
3536WP	3 1/2"	36"	1 3/4"	44"	80"	28860	SAE 8	1"	72
3540WP	3 1/2"	40"	1 3/4"	48"	88"	28860	SAE 8	1"	79
3542WP	3 1/2"	42"	1 3/4"	50"	92"	28860	SAE 8	1"	82
3548WP	3 1/2"	48"	1 3/4"	56"	104"	28860	SAE 8	1"	91
3560WP	3 1/2"	60"	1 3/4"	68"	128"	28860	SAE 8	1"	109
4004WP	4"	4"	2"	13"	17"	37700	SAE 8	1 1/4"	33
4006WP	4"	6"	2"	15"	21"	37700	SAE 8	1 1/4"	36
4008WP	4"	8"	2"	17"	25"	37700	SAE 8	1 1/4"	40
4010WP	4"	10"	2"	19"	29"	37700	SAE 8	1 1/4"	44
4012WP	4"	12"	2"	21"	33"	37700	SAE 8	1 1/4"	47
4014WP	4"	14"	2"	23"	37"	37700	SAE 8	1 1/4"	51
4016WP	4"	16"	2"	25"	41"	37700	SAE 8	1 1/4"	55
4018WP	4"	18"	2"	27"	45"	37700	SAE 8	1 1/4"	58
4020WP	4"	20"	2"	29"	49"	37700	SAE 8	1 1/4"	62
4024WP	4"	24"	2"	33"	57"	37700	SAE 8	1 1/4"	70
4028WP	4"	28"	2"	37"	65"	37700	SAE 8	1 1/4"	77
4030WP	4"	30"	2"	39"	69"	37700	SAE 8	1 1/4"	81
4032WP	4"	32"	2"	41"	73"	37700	SAE 8	1 1/4"	84
4036WP	4"	36"	2"	45"	81"	37700	SAE 8	1 1/4"	92
4040WP	4"	40"	2"	49"	89"	37700	SAE 8	1 1/4"	99
4042WP	4"	42"	2"	51"	93"	37700	SAE 8	1 1/4"	103
4048WP	4"	48"	2"	57"	105"	37700	SAE 8	1 1/4"	114

Available Model Numbers

MODEL NO	BORE	STROKE	ROD	RETRACTED	EXTENDED	MAX FORCE LB	PORT	PIN	WEIGHT LB
4060WP	4"	60"	2"	69"	129"	37700	SAE 8	1 1/4"	136

WP Weld Hole Cylinders



Dimension

BORE	1 1/2"	2"	2 1/2"	3"	3 1/2"	4"
A	7"	8"	8"	8"	8"	9"
C	2.43"	3.37"	3.12"	2.56"	2.43"	2.43"
D	1.25"	1.25"	1.25"	1.50"	1.50"	2.00"
G	0.62"	0.75"	0.75"	1.00"	1.00"	1.25"
J	2.00"	2.50"	3.00"	3.50"	4.00"	4.50"
N	2.00"	2.50"	3.00"	3.50"	4.00"	4.50"
S	0.81"	0.81"	0.81"	0.81"	0.81"	0.81"
T	1.87"	1.87"	2.06"	2.18"	2.18"	2.18"

H	MF5	-	MOUNT	BORE	X	1.38	X	25.25	-	N	-	1	ROD END	-	S	-	11	-	S
SERIES						ROD		STROKE		CUSHIONS		ROD END		PORTS		PORT LOCATION		OPTIONS	
H			MX1	1.50		0.63				N (None)		1 (KK Male)		S (SAE)		HEAD		S (STD)	
			MX2	2.00		1.00				H (Head End)		2 (KK Female)		N (NPTF)		END		X (MODIFIED) *	
			MX3	2.50		1.38				C (Cap End)		3 (CC Intermediate Male)				1			
			ME5	3.25		1.75				B (Both Ends)						2			
			ME6	4.00		2.00										3			
			MF1	5.00		2.50										4			
			MF2	6.00		3.00													
			MF5	7.00		3.50													
			MF6	8.00		4.00													
			MS2	10.00		4.50													
			MS3	12.00		5.00													
			MS4	14.00		5.50													
			MS7	16.00		7.00													
			MT1	18.00		8.00													
			MT2	20.00		9.00													
			MT4			10.00													
			MP1																

Standard Specifications

Nominal Pressure - 3000 PSI*

Bore Sizes - 1 1/2" through 8"

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

Mounting Styles - 17 Standard styles***

Strokes - Available in any practical stroke length

Cushions - Optional at either end or both ends

Standard - Externally removable bolted gland assembly

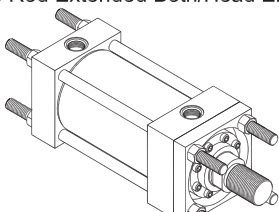
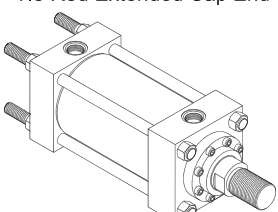
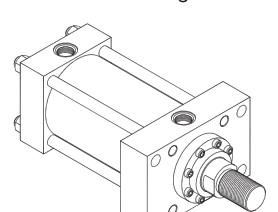
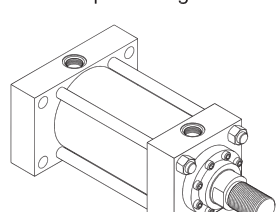
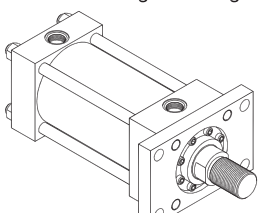
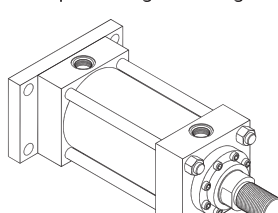
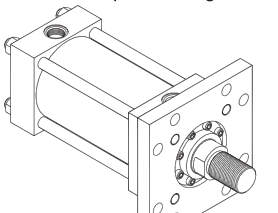
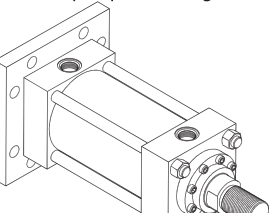
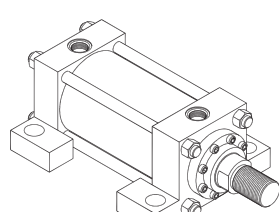
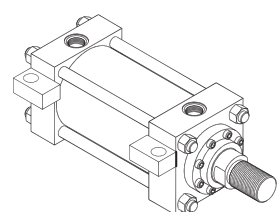
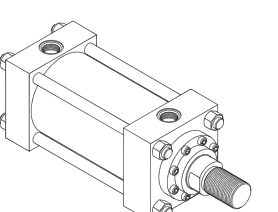
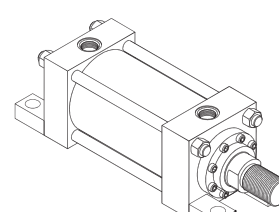
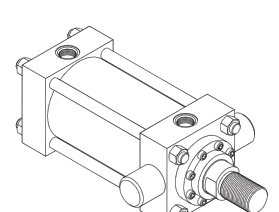
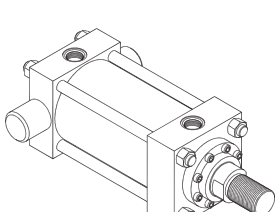
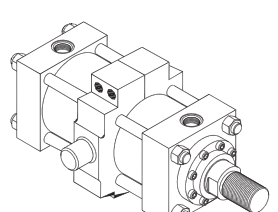
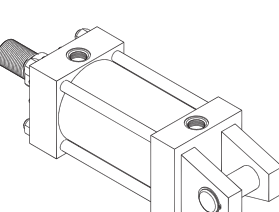
Standard Temperature - -10°F to +200°F**

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

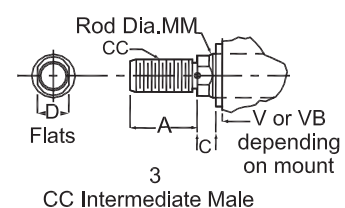
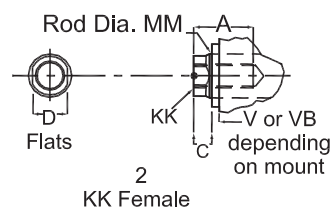
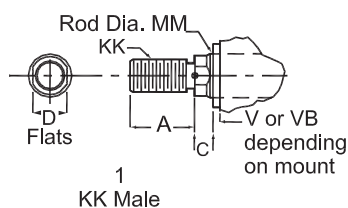
** If temperature is from 200 ~ 400°F or higher, specify it during order

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

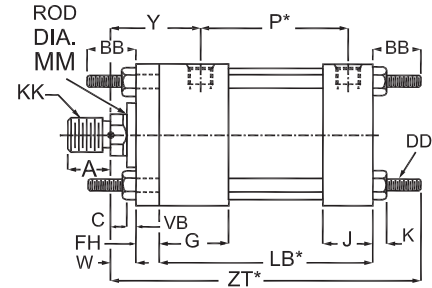
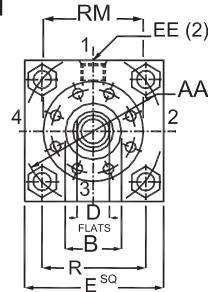
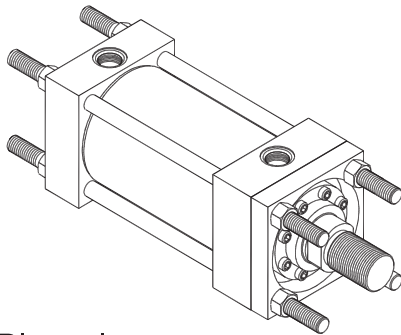
Mounting Styles

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

Rod End Styles



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



* Add stroke to starred dimension

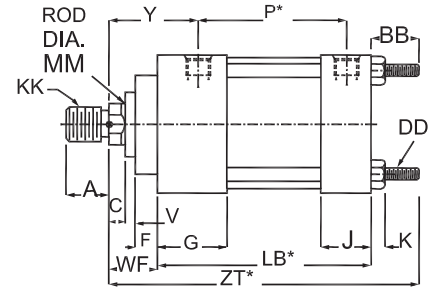
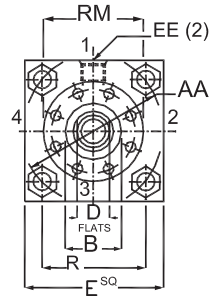
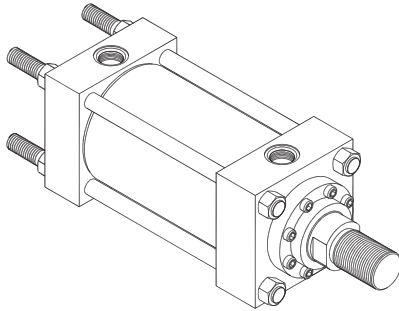
Body Dimensions

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

Rod End Dimensions

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

NFPA MX2 - Tie Rods Extended Cap End



* Add stroke to starred dimension

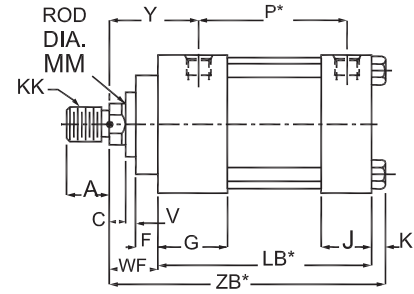
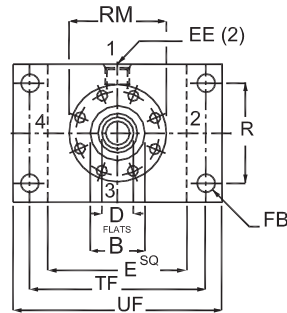
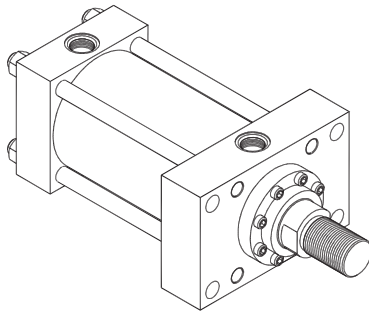
Body Dimensions

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

Rod End Dimensions

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

NFPA ME5 - Head Rectangular



* Add stroke to starred dimension

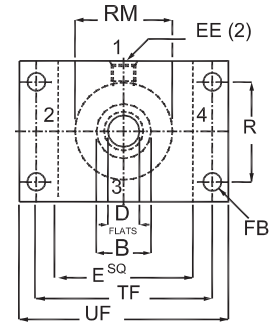
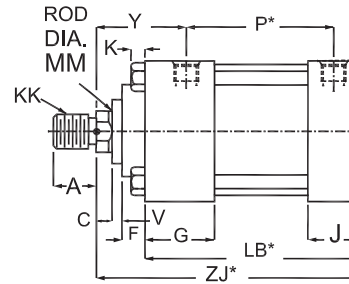
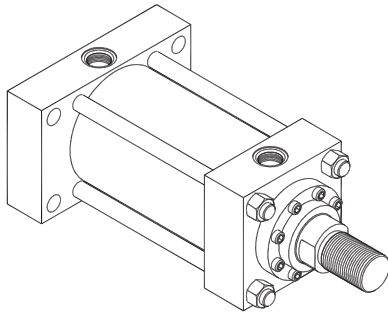
Body Dimensions

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

Rod End Dimensions

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

NFPA ME6 - Cap Rectangular



* Add stroke to starred dimension

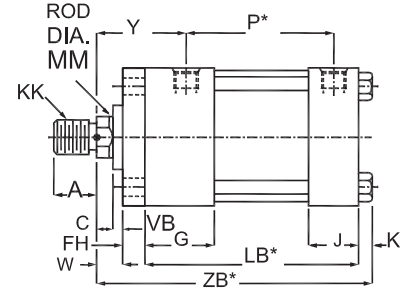
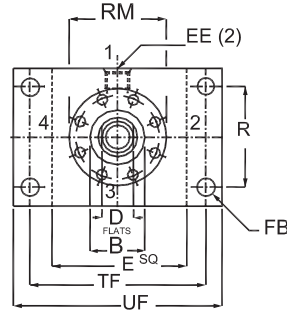
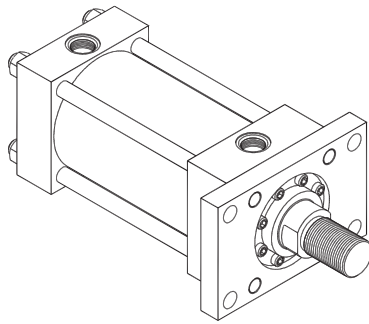
Body Dimensions

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

Rod End Dimensions

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

NFPA MF1 - Head Rectangular Flange



* Add stroke to starred dimension

Body Dimensions

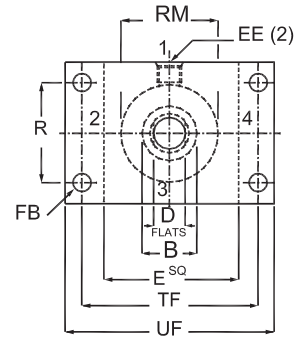
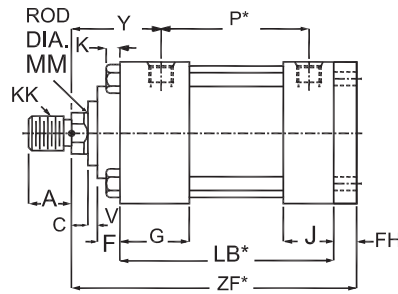
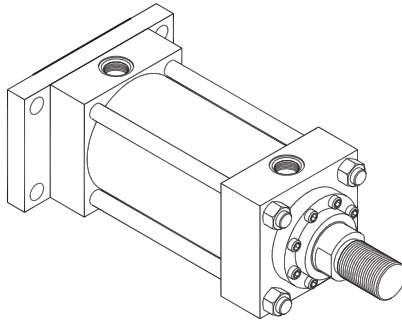
BORE	E	EE (SAE)	EE (NPTF)	G	J	K	LB*	P*	FB	FH	R	TF	UF
1 1/2	2 1/2	10	1/2	1 3/4	1 1/2	3/8	4 5/8	2 11/16	7/16	3/8	1.63	3 7/16	4 1/4
2	3	10	1/2	1 3/4	1 1/2	7/16	4 5/8	2 11/16	9/16	5/8	2.05	4 1/8	5 1/8
2 1/2	3 1/2	10	1/2	1 3/4	1 1/2	7/16	4 3/4	2 13/16	9/16	5/8	2.55	4 5/8	5 5/8
3 1/4	4 1/2	12	3/4	2	1 3/4	9/16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

Rod End Dimensions

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

** Use front mounting plates to retain bushings not circular retainers which have lower max pressure ratings.

NFPA MF2 - Cap Rectangular Flange



* Add stroke to starred dimension

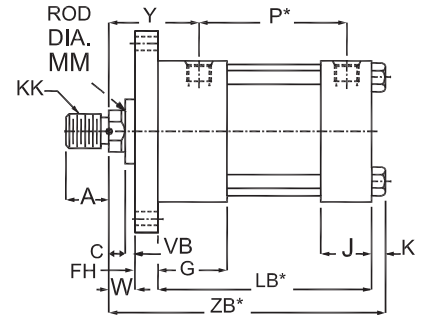
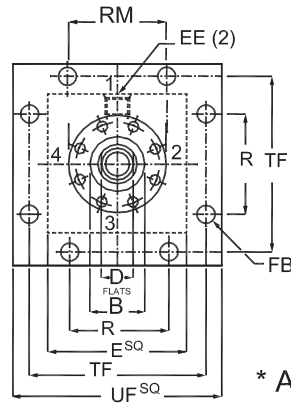
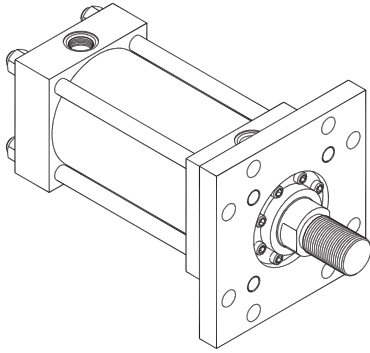
Body Dimensions

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

Rod End Dimensions

BORE	MM	KK	CC	A	B -.001/ -.003	C	D	RM	MAX PRESSURE PSI	F	VB	W	Y	ZF*
1 1/2	5/8	7/16-20	1/2-20	3/4	1 1/8	3/8	1/2	1 15/16	2500	3/8	1/4	5/8	2 15/32	6
	1	3/4-16	7/8-14	1 1/8	1 1/2	1/2	7/8	2 3/8	2500	3/8	1/2	1	2 15/32	6 3/8
2	1	3/4-16	7/8-14	1 1/8	1 1/2	1/2	7/8	2 3/8	2500	3/8	1/4	3/4	2 15/32	6 5/8
	1 3/8	1-14	1 1/4-12	1 5/8	2	5/8	1 1/8	2 7/8	2200	3/8	3/8	1	2 23/32	6 7/8
2 1/2	1	3/4-16	7/8-14	1 1/8	1 1/2	1/2	7/8	2 3/8	2500	3/8	1/4	3/4	2 15/32	6 3/4
	1 3/8	1-14	1 1/4-12	1 5/8	2	5/8	1 1/8	2 7/8	2500	3/8	3/8	1	2 23/32	7
	1 3/4	1 1/4-12	1 1/2-12	2	2 3/8	3/4	1 1/2	3 15/32	2200	5/8	1/2	1 1/4	2 31/32	7 1/4
3 1/4	1 3/8	1-14	1 1/4-12	1 5/8	2	5/8	1 1/8	2 7/8	2500	3/8	1/4	7/8	2 23/32	7 7/8
	1 3/4	1 1/4-12	1 1/2-12	2	2 3/8	3/4	1 1/2	3 15/32	2200	5/8	3/8	1 1/8	2 31/32	8 1/8
	2	1 1/2-12	1 3/4-12	2 1/4	2 5/8	7/8	1 11/16	3 23/32	2000	5/8	3/8	1 1/4	3 3/32	8 1/4
4	1 3/4	1 1/4-12	1 1/2-12	2	2 3/8	3/4	1 1/2	3 15/32	2000	5/8	1/4	1	2 31/32	8 1/2
	2	1 1/2-12	1 3/4-12	2 1/4	2 5/8	7/8	1 11/16	3 23/32	2000	5/8	1/4	1 1/8	3 3/32	8 5/8
	2 1/2	1 7/8-12	2 1/4-12	3	3 1/8	1	2 1/16	4 1/4	1800	5/8	3/8	1 3/8	3 11/32	8 7/8
5	2	1 1/2-12	1 3/4-12	2 1/4	2 5/8	7/8	1 11/16	3 23/32	2200	5/8	1/4	1 1/8	3 3/32	9 1/8
	2 1/2	1 7/8-12	2 1/4-12	3	3 1/8	1	2 1/16	4 1/4	2000	5/8	3/8	1 3/8	3 11/32	9 3/8
	3	2 1/4-12	2 3/4-12	3 1/2	3 3/4	1	2 5/8	5 7/16	2000	7/8	3/8	1 3/8	3 11/32	9 3/8
	3 1/2	2 1/2-12	3 1/4-12	3 1/2	4 1/4	1	3	5 15/16	1800	15/16	3/8	1 3/8	3 11/32	9 3/8
6	2 1/2	7/8-12	2 1/4-12	3	3 1/8	1	2 1/16	4 1/4	2200	5/8	1/4	1 1/4	3 19/32	10 5/8
	3	2 1/4-12	2 3/4-12	3 1/2	3 3/4	1	2 5/8	5 7/16	2000	7/8	1/4	1 1/4	3 19/32	10 5/8
	3 1/2	2 1/2-12	3 1/4-12	3 1/2	4 1/4	1	3	5 15/16	2000	15/16	1/4	1 1/4	3 19/32	10 5/8
	4	3-12	3 3/4-12	4	4 3/4	1	3 3/8	6 5/16	2000	15/16	1/4	1 1/4	3 19/32	10 5/8
7	3	2 1/4-12	2 3/4-12	3 1/2	3 3/4	1	2 5/8	5 7/16	1500	7/8	1/4	1 1/4	3 15/16	11 3/4
	3 1/2	2 1/2-12	3 1/4-12	3 1/2	4 1/4	1	3	5 15/16	1250	15/16	1/4	1 1/4	3 15/16	11 3/4
	4	3-12	3 3/4-12	4	4 3/4	1	3 3/8	6 5/16	1000	15/16	1/4	1 1/4	3 15/16	11 3/4
	4 1/2	3 1/4-12	4 1/4-12	4 1/2	5 1/4	1	3 7/8	6 15/16	750	15/16	1/4	1 1/4	3 15/16	11 3/4
	5	3 1/2-12	4 3/4-12	5	5 3/4	1	4 1/4	7 7/16	750	15/16	1/4	1 1/4	3 15/16	11 3/4
8	3 1/2	2 1/2-12	3 1/4-12	3 1/2	4 1/4	1	3	5 15/16	900	15/16	1/4	1 1/4	4 1/16	12 3/4
	4	3-12	3 3/4-12	4	4 3/4	1	3 3/8	6 5/16	800	15/16	1/4	1 1/4	4 1/16	12 3/4
	4 1/2	3 1/4-12	4 1/4-12	4 1/2	5 1/4	1	3 7/8	6 15/16	700	15/16	1/4	1 1/4	4 1/16	12 3/4
	5	3 1/2-12	4 3/4-12	5	5 3/4	1	4 1/4	7 7/16	600	15/16	1/4	1 1/4	4 1/16	12 3/4
	5 1/2	4-12	5 1/4-12	5 1/2	6 1/4	1	4 5/8	7 15/16	600	15/16	1/4	1 1/4	4 1/16	12 3/4

NFPA MF5 - Head Square Flange



* Add stroke to starred dimension

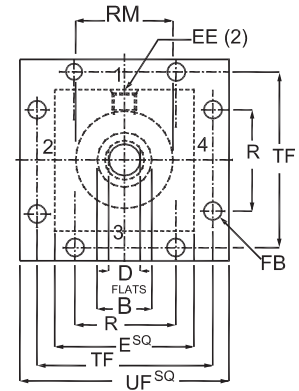
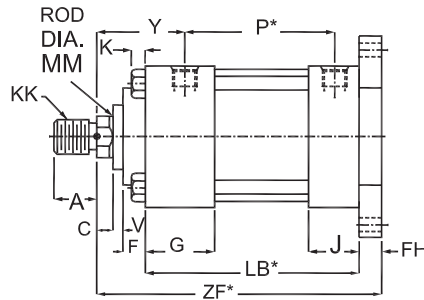
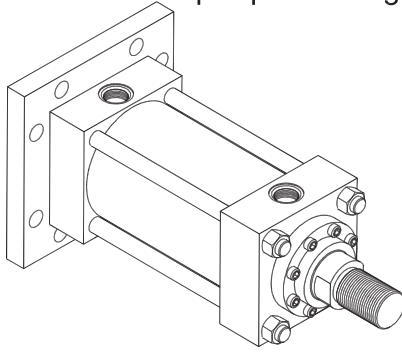
Body Dimensions

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

Rod End Dimensions

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

NFPA MF6 - Cap Square Flange



* Add stroke to starred dimension

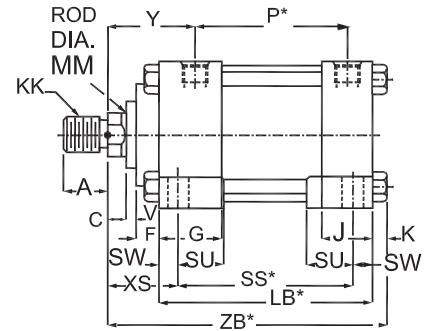
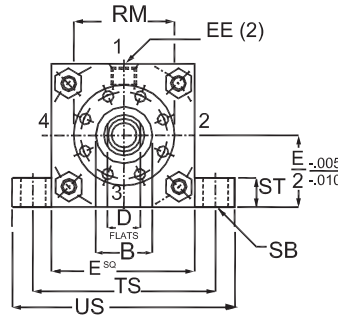
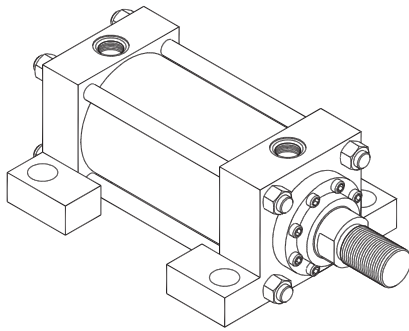
Body Dimensions

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

Rod End Dimensions

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

NFPA MS2 - Side Lugs



* Add stroke to starred dimension

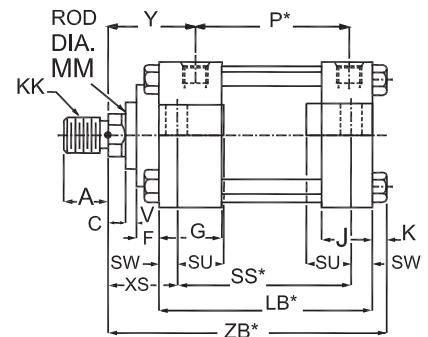
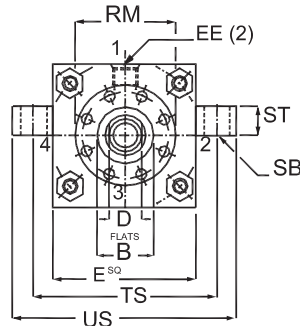
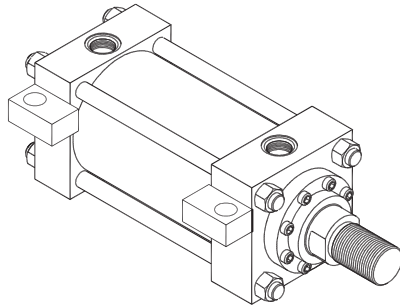
Body Dimensions

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

Rod End Dimensions

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

NFPA MS3 - Center-Line Lugs



* Add stroke to starred dimension

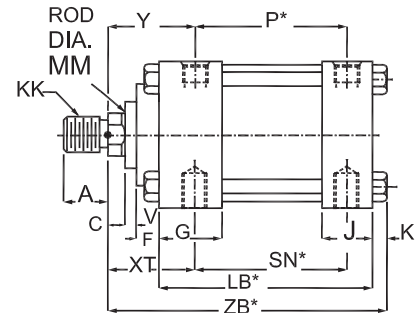
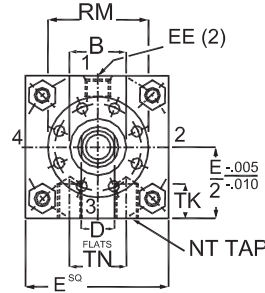
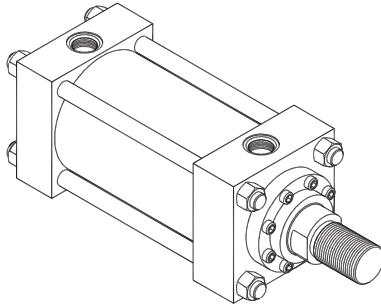
Body Dimensions

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

Rod End Dimensions

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

NFPA MS4 - Side Tapped



* Add stroke to starred dimension

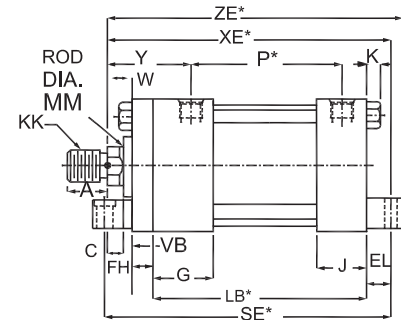
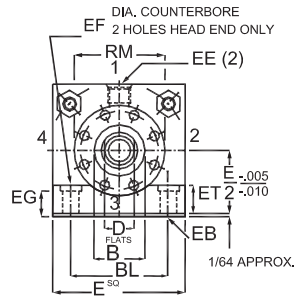
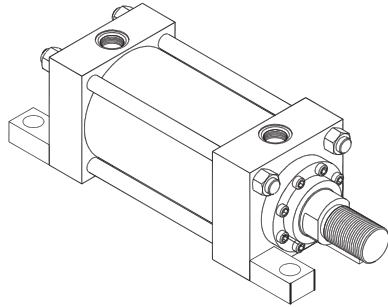
Body Dimensions

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

Rod End Dimensions

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

NFPA MS7 - End Lugs



* Add stroke to starred dimension

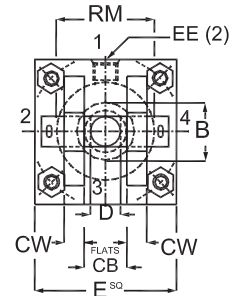
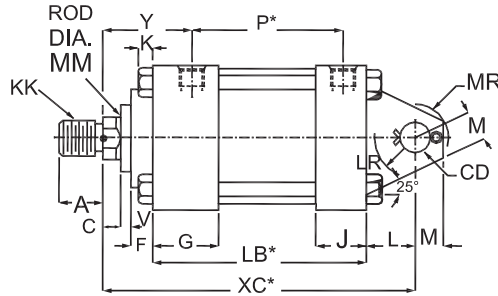
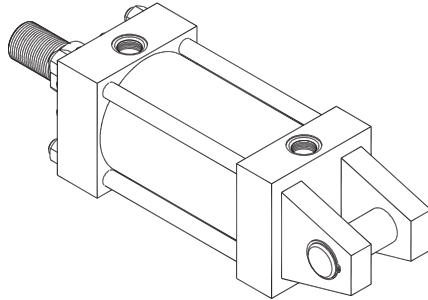
Body Dimensions

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

Rod End Dimensions

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

NFPA MP1 - Cap Fixed Clevis



* Add stroke to starred dimension

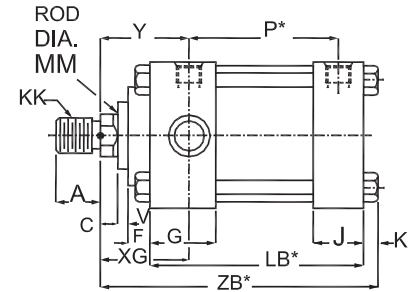
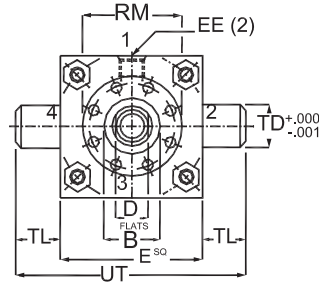
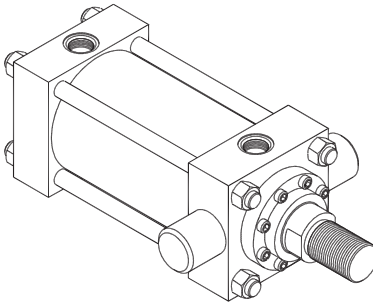
Body Dimensions

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

Rod End Dimensions

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

NFPA MT1 - Head Trunnion



* Add stroke to starred dimension

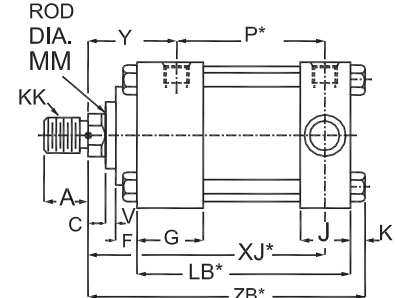
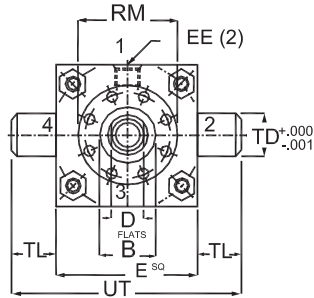
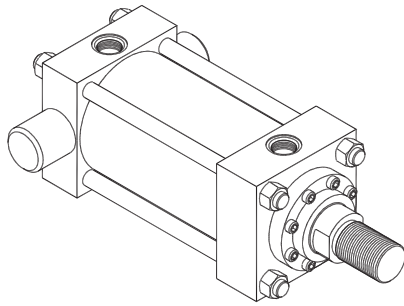
Body Dimensions

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

Rod End Dimensions

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

NFPA MT2 - Cap Trunnion



* Add stroke to starred dimension

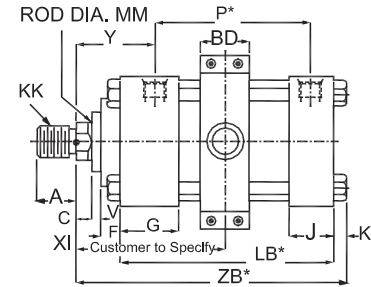
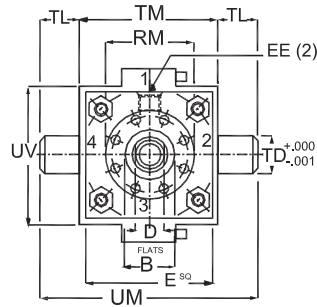
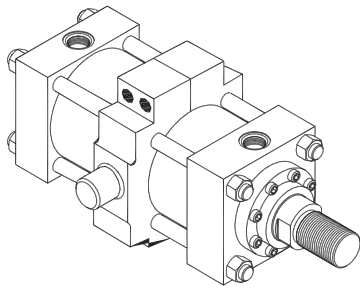
Body Dimensions

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

Rod End Dimensions

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

NFPA MT4 - Intermediate Trunnion



* Add stroke to starred dimension

Body Dimensions

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

Rod End Dimensions

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

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

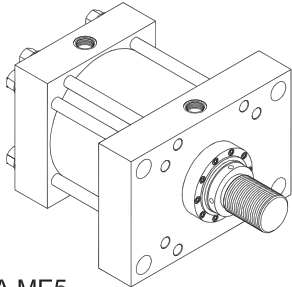
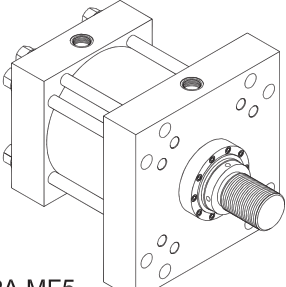
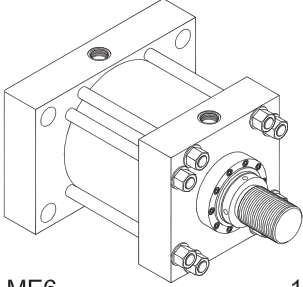
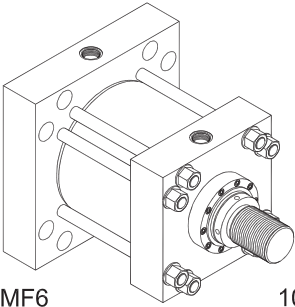
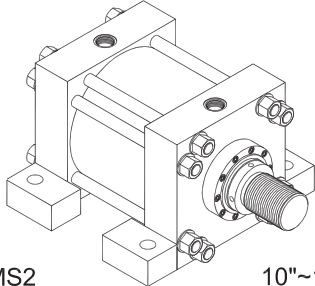
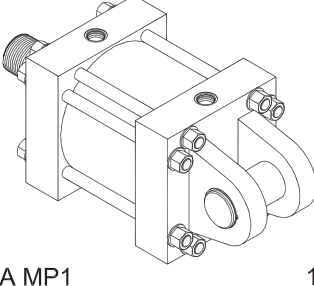
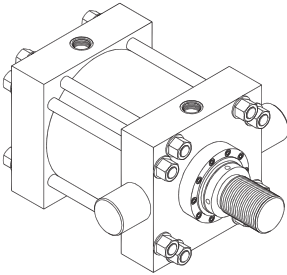
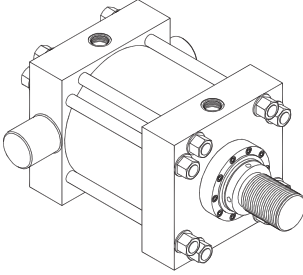
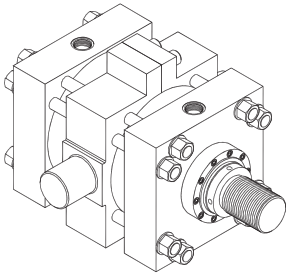
Standard Temperature - -10°F to +200°F**

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

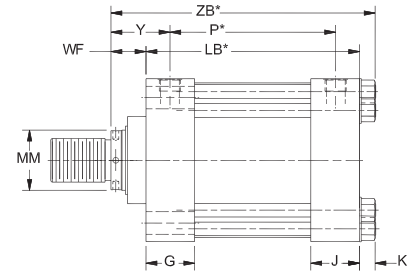
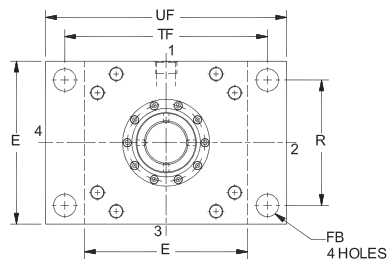
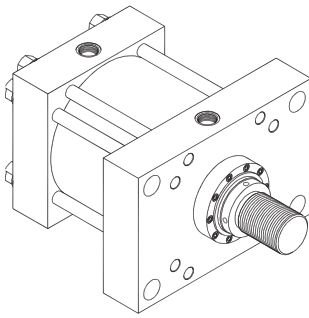
** If temperature is from 200 ~ 400°F or higher, specify it during order

*** 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

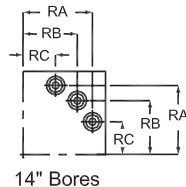
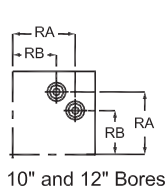
BORE	E	EE (SAE)	EE (NPTF)	G	J	K	LB*	P*	FB	R	TF	UF
10	12 5/8	24	2	3 11/16	3 11/16	1 9/32	12 1/8	8 1/2	1 13/16	9.62	15 7/8	19
12	14 7/8	24	2 1/2	4 7/16	4 7/16	1 13/32	14 1/2	10 1/8	2 1/16	11.45	18 1/2	22
14	17 1/8	24	2 1/2	4 7/8	4 7/8	1 13/32	15 5/8	10 7/8	2 5/16	13.26	21	25

Rod End Dimensions

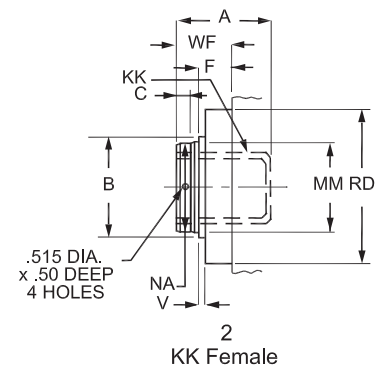
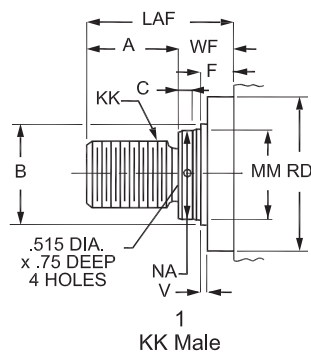
BORE	MM	KK	A	B -.001/ -.005	C	F	LAF	NA	RD	V	WF	Y	ZB*
10	4 1/2	3 1/4-12	4 1/2	5.249	1	1 15/16	7 7/16	4 3/8	8 1/4	1/4	2 15/16	4 3/4	16 11/32
	5	3 1/2-12	5	5.749	1	1 15/16	8 3/16	4 7/8	8 7/8	1/4	3 3/16	5	16 19/32
	5 1/2	4-12	5 1/2	6.249	1	1 15/16	8 11/16	5 3/8	9 3/8	1/4	3 3/16	5	16 19/32
	7	5-12	7	7.999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

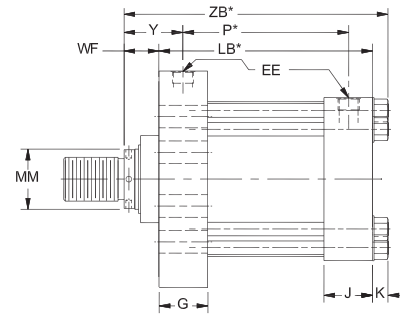
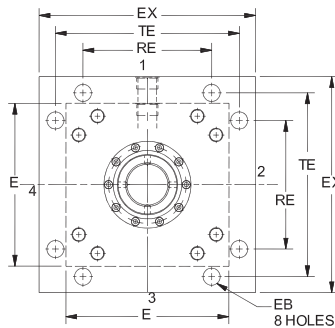
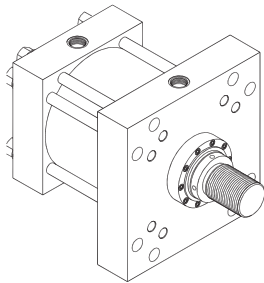
BORE	RA	RB	RC	TIE ROD THREAD
10	5.291	3.775	—	1 1/8-12
12	6.270	4.555	—	1 1/4-12
14	7.485	6.143	4.409	1 1/4-12



Rod End Styles



NFPA MF5 - Head Square Flange



Body Dimensions

* Add stroke to starred dimension

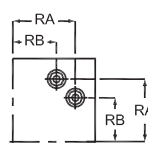
BORE	E	EE (SAE)	EE (NPTF)	G	J	K	LB*	P*	EB	EX	RE	TE
10	12 5/8	24	2	3 11/16	3 11/16	1 9/32	12 1/8	8 1/2	1 5/16	16 5/8	9.89	14.13
12	14 7/8	24	2 1/2	4 7/16	4 7/16	1 13/32	14 1/2	10 1/8	1 9/16	19 3/4	11.75	16.79
14	17 1/8	24	2 1/2	4 7/8	4 7/8	1 13/32	15 5/8	10 7/8	1 13/16	21 3/4	12.90	18.43
16	19	24	-	5 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

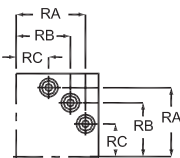
BORE	MM	KK	A	B -.001/ -.005	C	F	LAF	NA	RD	V	WF	Y	ZB*
10	4 1/2	3 1/4-12	4 1/2	5.249	1	1 15/16	7 7/16	4 3/8	8 1/4	1/4	2 15/16	4 3/4	16 11/32
	5	3 1/2-12	5	5.749	1	1 15/16	8 3/16	4 7/8	8 7/8	1/4	3 3/16	5	16 19/32
	5 1/2	4-12	5 1/2	6.249	1	1 15/16	8 11/16	5 3/8	9 3/8	1/4	3 3/16	5	16 19/32
	7	5-12	7	7.999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

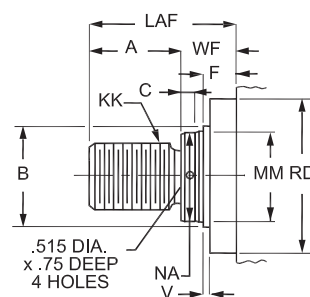
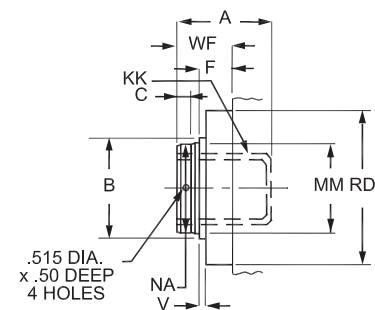


10", 12" and 16" Bores

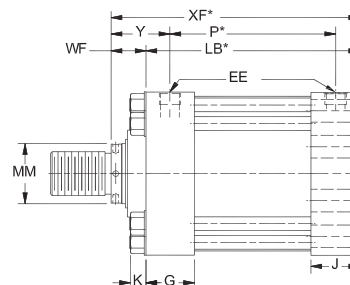
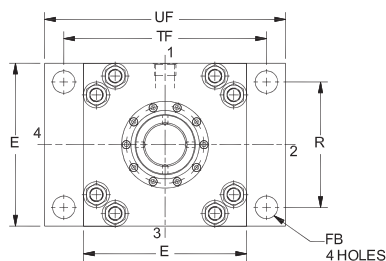
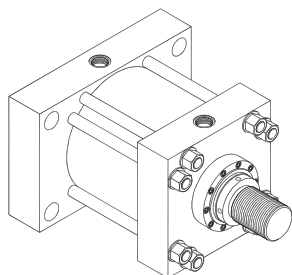


14", 18" and 20" Bores

Rod End Styles

1
KK Male2
KK Female

NFPA ME6 - Cap Rectangular



* Add stroke to starred dimension

Body Dimensions

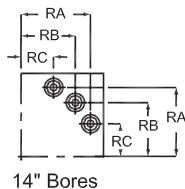
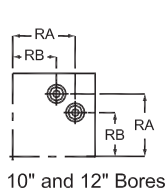
BORE	E	EE (SAE)	EE (NPTF)	G	J	K	LB*	P*	FB	R	TF	UF
10	12 5/8	24	2	3 11/16	3 11/16	1 9/32	12 1/8	8 1/2	1 13/16	9.62	15 7/8	19
12	14 7/8	24	2 1/2	4 7/16	4 7/16	1 13/32	14 1/2	10 1/8	2 1/16	11.45	18 1/2	22
14	17 1/8	24	2 1/2	4 7/8	4 7/8	1 13/32	15 5/8	10 7/8	2 5/16	13.26	21	25

Rod End Dimensions

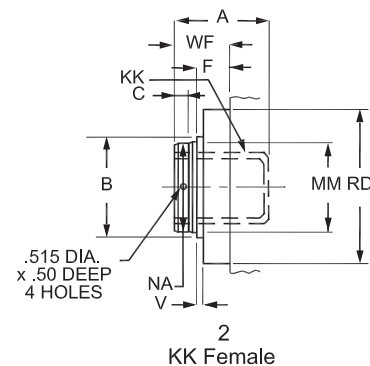
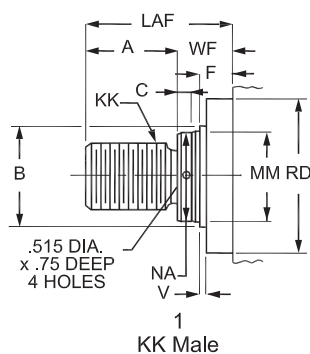
BORE	MM	KK	A	B -.001/ -.005	C	F	LAF	NA	RD	V	WF	Y	XF*
10	4 1/2	3 1/4-12	4 1/2	5.249	1	1 15/16	7 7/16	4 3/8	8 1/4	1/4	2 15/16	4 3/4	15 1/16
	5	3 1/2-12	5	5.749	1	1 15/16	8 3/16	4 7/8	8 7/8	1/4	3 3/16	5	15 5/16
	5 1/2	4-12	5 1/2	6.249	1	1 15/16	8 11/16	5 3/8	9 3/8	1/4	3 3/16	5	15 5/16
	7	5-12	7	7.999	1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

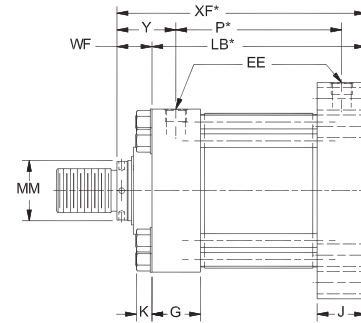
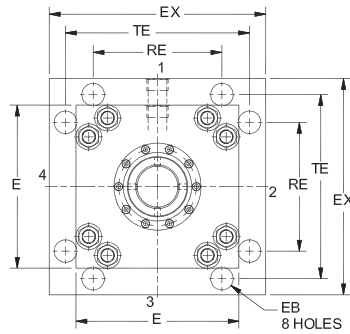
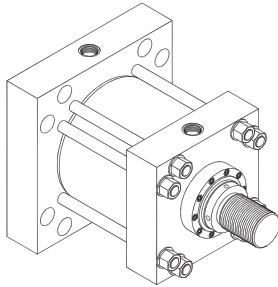
BORE	RA	RB	RC	TIE ROD THREAD
10	5.291	3.775	—	1 1/8-12
12	6.270	4.555	—	1 1/4-12
14	7.485	6.143	4.409	1 1/4-12



Rod End Styles



NFPA MF6 - Cap Square Flange



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

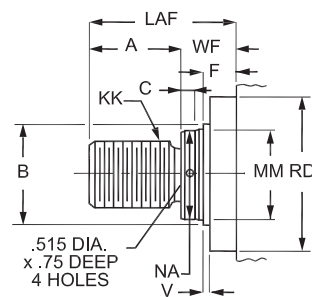
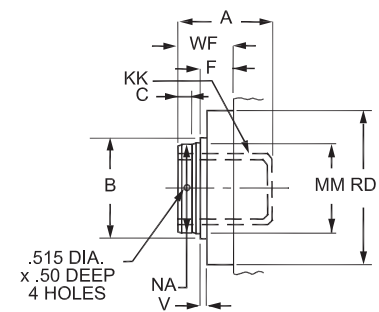
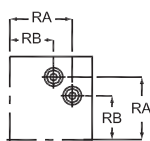
Rod End Dimensions

BORE	MM	KK	A	B -.001/ -.005	C	F	LAF	NA	RD	V	WF	Y	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

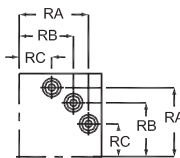
Tie Rod Dimensions

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

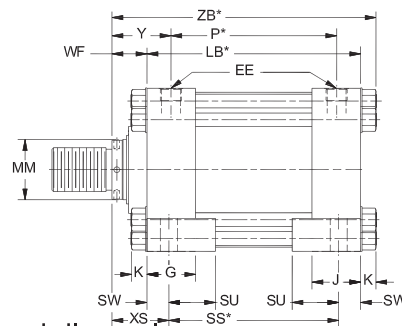
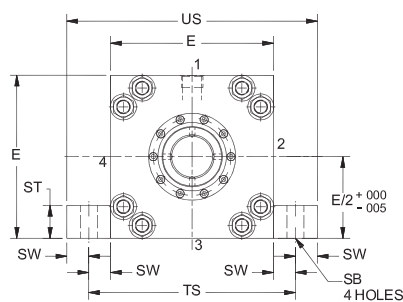
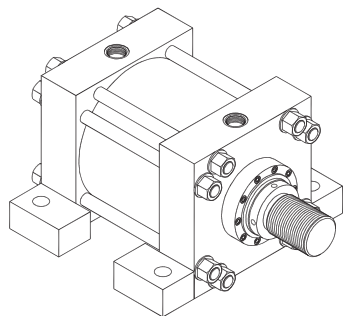
1
KK Male2
KK Female

10", 12" and 16" Bores



14", 18" and 20" Bores

NFPA MS2 - Side Lugs



* Add stroke to starred dimension

Body Dimensions

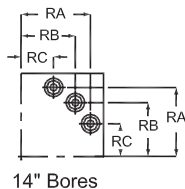
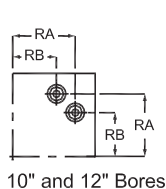
BORE	E	EE (SAE)	EE (NPTF)	G	J	K	LB*	P*	SB	SS*	ST	SU	SW	TS	US
10	12 5/8	24	2	3 11/16	3 11/16	1 9/32	12 1/8	8 1/2	1 9/16	8 7/8	2 1/4	3 1/2	1 5/8	15 7/8	19 1/8
12	14 7/8	24	2 1/2	4 7/16	4 7/16	1 13/32	14 1/2	10 1/8	1 9/16	10 1/2	3	4 1/4	2	18 7/8	22 7/8
14	17 1/8	24	2 1/2	4 7/8	4 7/8	1 13/32	15 5/8	10 7/8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

Rod End Dimensions

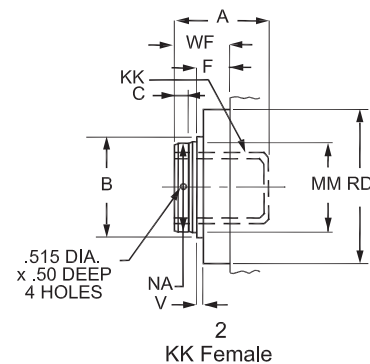
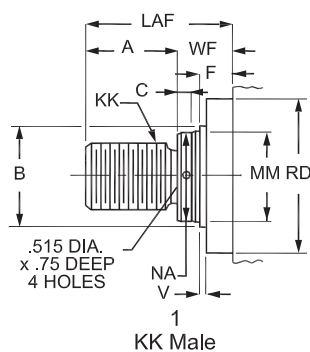
BORE	MM	KK	A	B -.001/ -.005	C	F	LAF	NA	RD	V	WF	Y	XS	ZB*
10	4 1/2	3 1/4-12	4 1/2	5.249	1	1 15/16	7 7/16	4 3/8	8 1/4	1/4	2 15/16	4 3/4	4 9/16	16 11/32
	5	3 1/2-12	5	5.749	1	1 15/16	8 3/16	4 7/8	8 7/8	1/4	3 3/16	5	4 13/16	16 19/32
	5 1/2	4-12	5 1/2	6.249	1	1 15/16	8 11/16	5 3/8	9 3/8	1/4	3 3/16	5	4 13/16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

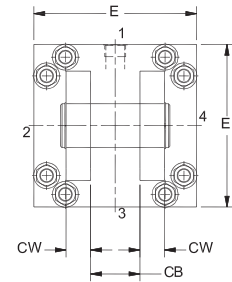
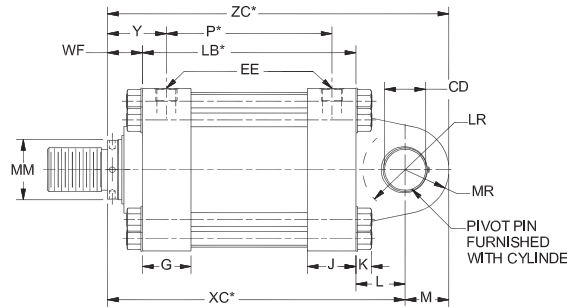
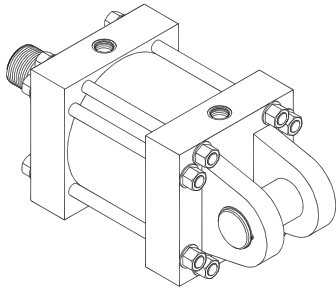
BORE	RA	RB	RC	TIE ROD THREAD
10	5.291	3.775	—	1 1/8-12
12	6.270	4.555	—	1 1/4-12
14	7.485	6.143	4.409	1 1/4-12



Rod End Styles



NFPA MP1 - Cap Fixed Clevis



Body Dimensions

* Add stroke to starred dimension

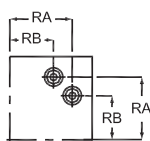
BORE	E	EE (SAE)	EE (NPTF)	G	J	K	LB*	P*	CB	CD +.001/ -.003	CW	L	LR	M	MR
10	12 5/8	24	2	3 11/16	3 11/16	1 9/32	12 1/8	8 1/2	4	3.500	2	4	3 3/8	3 1/2	3 1/2
12	14 7/8	24	2 1/2	4 7/16	4 7/16	1 13/32	14 1/2	10 1/8	4 1/2	4.000	2 1/4	4 1/2	3 7/8	4	4
14	17 1/8	24	2 1/2	4 7/8	4 7/8	1 13/32	15 5/8	10 7/8	6	5.000	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

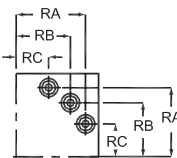
BORE	MM	KK	A	B -.001/ -.005	C	F	LAF	NA	RD	V	WF	Y	XC*	ZC*
10	4 1/2	3 1/4-12	4 1/2	5.249	1	1 15/16	7 7/16	4 3/8	8 1/4	1/4	2 15/16	4 3/4	19 1/16	22 9/16
	5	3 1/2-12	5	5.749	1	1 15/16	8 3/16	4 7/8	8 7/8	1/4	3 3/16	5	19 5/16	22 13/16
	5 1/2	4-12	5 1/2	6.249	1	1 15/16	8 11/16	5 3/8	9 3/8	1/4	3 3/16	5	19 5/16	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

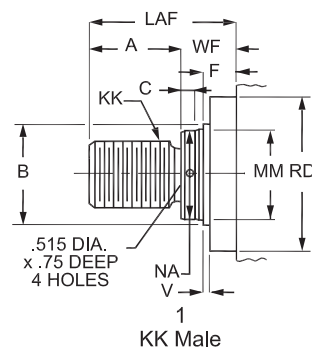


10", 12" and 16" Bores

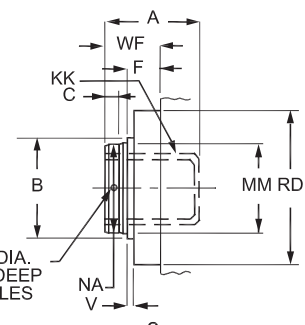


14", 18" and 20" Bores

Rod End Styles

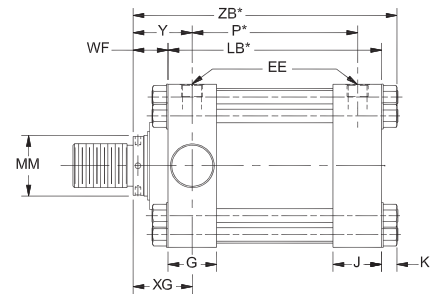
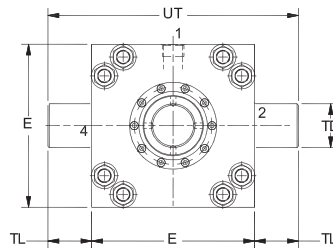
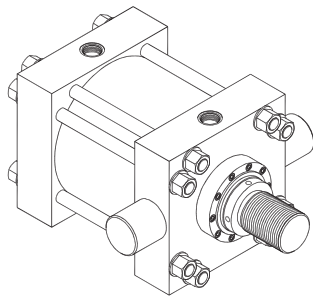


KK Male



KK Female

NFPA MT1 - Head Trunnion



* Add stroke to starred dimension

Body Dimensions

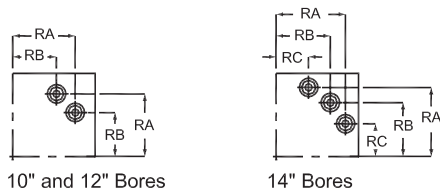
BORE	E	EE (SAE)	EE (NPTF)	G	J	K	LB*	P*	MAX PRESSURE PSI	TD -.000/ -.001	TL	UT
10	12 5/8	24	2	3 11/16	3 11/16	1 9/32	12 1/8	8 1/2	1600	3.500	3 1/2	19 5/8
12	14 7/8	24	2 1/2	4 7/16	4 7/16	1 13/32	14 1/2	10 1/8	1500	4.000	4	22 7/8
14	17 1/8	24	2 1/2	4 7/8	4 7/8	1 13/32	15 5/8	10 7/8	1400	4.500	4 1/2	26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

Rod End Dimensions

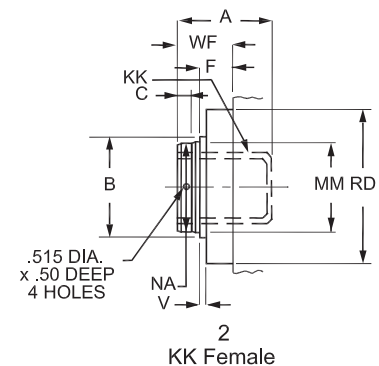
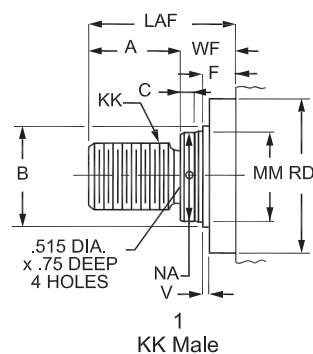
BORE	MM	KK	A	B -.001/ -.005	C	F	LAF	NA	RD	V	WF	Y	XG	ZB*
10	4 1/2	3 1/4-12	4 1/2	5.249	1	1 15/16	7 7/16	4 3/8	8 1/4	1/4	2 15/16	4 3/4	4 3/4	16 11/32
	5	3 1/2-12	5	5.749	1	1 15/16	8 3/16	4 7/8	8 7/8	1/4	3 3/16	5	5	16 19/32
	5 1/2	4-12	5 1/2	6.249	1	1 15/16	8 11/16	5 3/8	9 3/8	1/4	3 3/16	5	5	16 19/32
	7	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

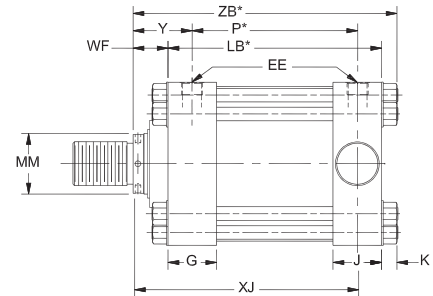
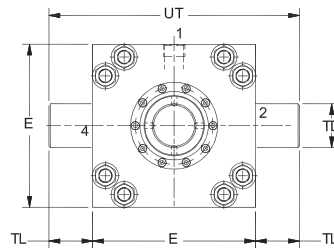
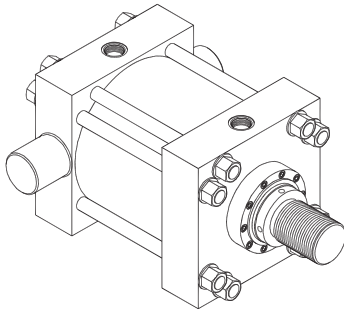
BORE	RA	RB	RC	TIE ROD THREAD
10	5.291	3.775	—	1 1/8-12
12	6.270	4.555	—	1 1/4-12
14	7.485	6.143	4.409	1 1/4-12



Rod End Styles



NFPA MT2 - Cap Trunnion



* Add stroke to starred dimension

Body Dimensions

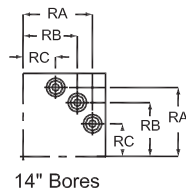
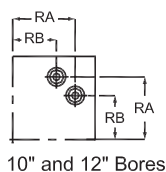
BORE	E	EE (SAE)	EE (NPTF)	G	J	K	LB*	P*	MAX PRESSURE PSI	TD -.000/ -.001	TL	UT
10	12 5/8	24	2	3 11/16	3 11/16	1 9/32	12 1/8	8 1/2	1600	3.500	3 1/2	19 5/8
12	14 7/8	24	2 1/2	4 7/16	4 7/16	1 13/32	14 1/2	10 1/8	1500	4.000	4	22 7/8
14	17 1/8	24	2 1/2	4 7/8	4 7/8	1 13/32	15 5/8	10 7/8	1400	4.500	4 1/2	26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

Rod End Dimensions

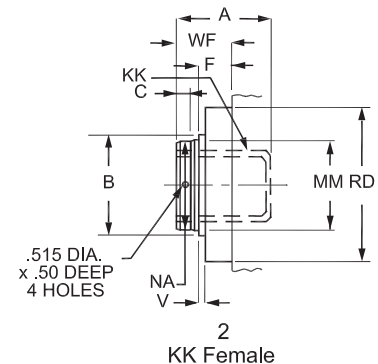
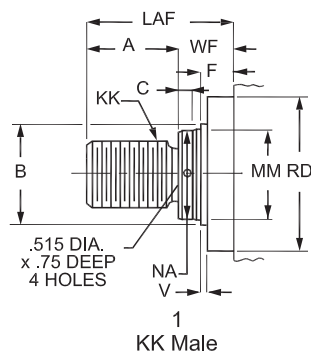
BORE	MM	KK	A	B -.001/ -.005	C	F	LAF	NA	RD	V	WF	Y	XJ	ZB*
10	4 1/2	3 1/4-12	4 1/2	5.249	1	1 15/16	7 7/16	4 3/8	8 1/4	1/4	2 15/16	4 3/4	13 3/8	16 11/32
	5	3 1/2-12	5	5.749	1	1 15/16	8 3/16	4 7/8	8 7/8	1/4	3 3/16	5	13 15/16	16 19/32
	5 1/2	4-12	5 1/2	6.249	1	1 15/16	8 11/16	5 3/8	9 3/8	1/4	3 3/16	5	13 5/8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

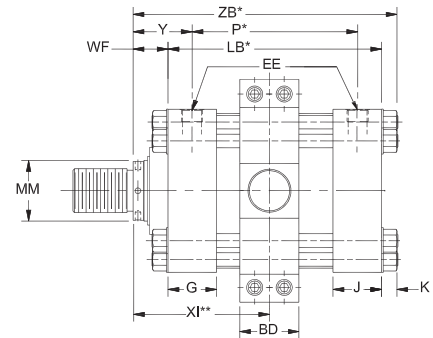
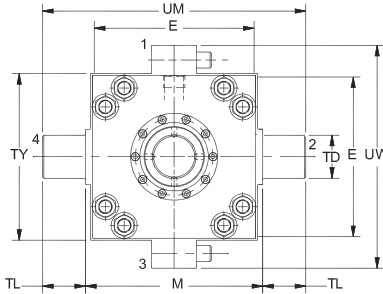
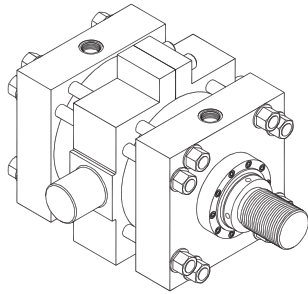
BORE	RA	RB	RC	TIE ROD THREAD
10	5.291	3.775	—	1 1/8-12
12	6.270	4.555	—	1 1/4-12
14	7.485	6.143	4.409	1 1/4-12



Rod End Styles



NFPA MT4 - Intermediate Fixed Trunnion



* Add stroke to starred dimension

** Dimension XI to be specified by customer

Body Dimensions

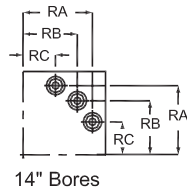
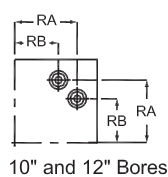
BORE	E	EE (SAE)	EE (NPTF)	G	J	K	LB*	P*	MAX PRESSURE PSI	TD -.000/-.001	TL	TM	TY	UM	UW
10	12 5/8	24	2	3 11/16	3 11/16	1 9/32	12 1/8	8 1/2	1600	3.500	3 1/2	14	13	21	17 1/2
12	14 7/8	24	2 1/2	4 7/16	4 7/16	1 13/32	14 1/2	10 1/8	1500	4.000	4	16 1/2	15 1/2	24 1/2	20 3/4
14	17 1/8	24	2 1/2	4 7/8	4 7/8	1 13/32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

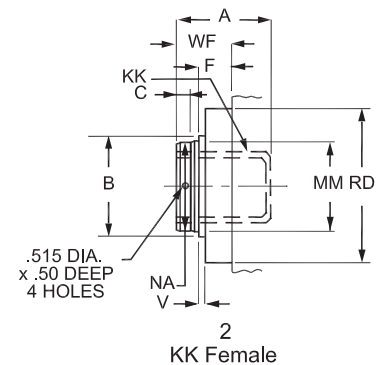
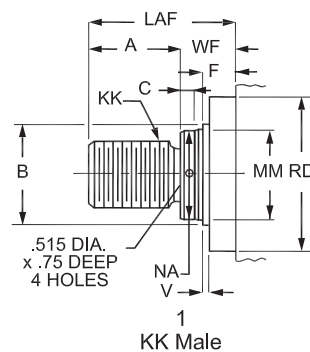
BORE	MM	KK	A	B -.001/-.005	C	F	LAF	NA	RD	V	WF	Y	ZB*
10	4 1/2	3 1/4-12	4 1/2	5.249	1	1 15/16	7 7/16	4 3/8	8 1/4	1/4	2 15/16	4 3/4	16 11/32
	5	3 1/2-12	5	5.749	1	1 15/16	8 3/16	4 7/8	8 7/8	1/4	3 3/16	5	16 19/32
	5 1/2	4-12	5 1/2	6.249	1	1 15/16	8 11/16	5 3/8	9 3/8	1/4	3 3/16	5	16 19/32
	7	5-12	7	7.999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

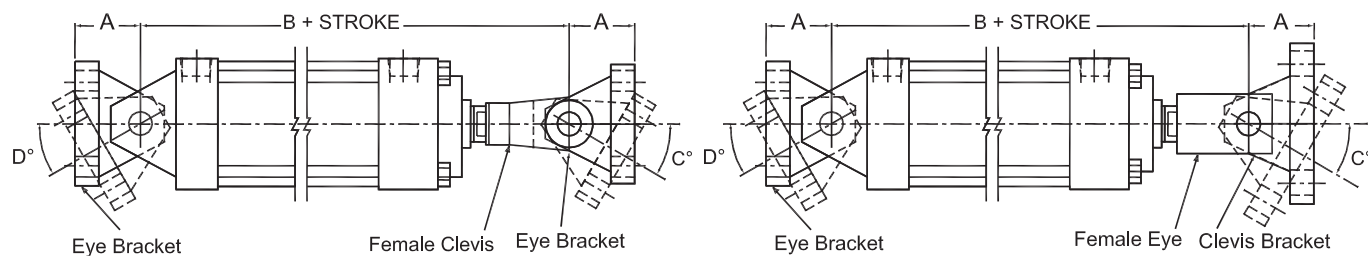
Tie Rod Dimensions

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



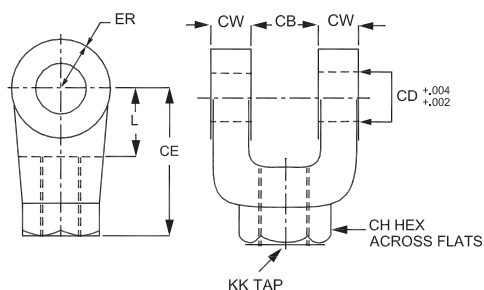
Rod End Styles





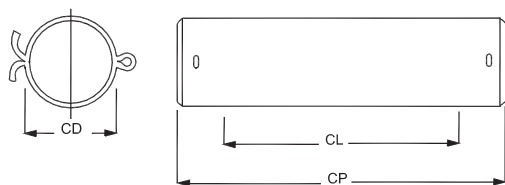
BORE	A	B	Eye Bracket	Female Clevis	Clevis Bracket	Female Eye	Pivot Pin	C°	D°
1 1/2	1 1/8	7 7/8	EB -1003	FC -1005	CB -1003	FE -1003	PP -1003	90°	60°
2	1 7/8	9 5/8	EB -1004	FC -1008	CB -1004	FE -1004	PP -1004	90°	65°
2 1/2	1 7/8	9 3/4	EB -1004	FC -1008	CB -1005	FE -1004	PP -1004	90°	65°
3 1/4	2 3/8	11 3/4	EB -1006	FC -1011	CB -1006	FE -1006	PP -1006	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)



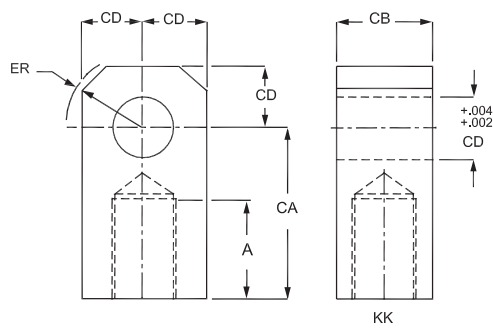
Part No.	CB	CD	CE	CH	CW	ER	KK	L
FC -1005	3/4	1/2	1 1/2	7/8	1/2	1/2	7/16-20	3/4
FC -1008	1 1/4	3/4	2 3/8	1 3/8	5/8	3/4	3/4-16	1 1/4
FC -1011	1 1/2	1	3 1/8	1 5/8	3/4	1	1-14	1 1/2
FC -1014	2	1 3/8	4 1/8	2	1	1 3/8	1 1/4-12	2 1/8
FC -1016	2 1/2	1 3/4	4 1/2	2 3/8	1 1/4	1 3/4	1 1/2-12	2 1/4
FC -1020	2 1/2	2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



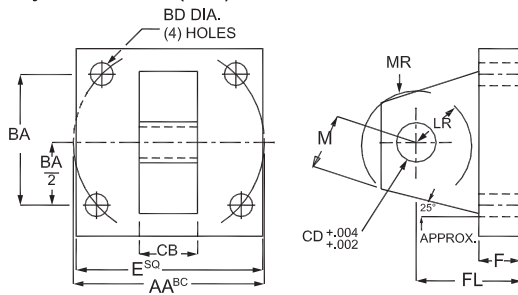
Part No.	CD	CL	CP
PP -1003	1/2	1 3/4	2 3/8
PP -1004	3/4	2 1/2	3 1/8
PP -1006	1	3	3 3/4
PP -1008	1 3/8	4	4 3/4
PP -1010	1 3/4	5	6 1/32
PP -1012	2	5	6 1/32
PP -1014	2 1/2	6	7 1/32
PP -1016	3	6	7 1/8
PP -1020	3 1/2	8	9 5/8
PP -1024	4	9	10 5/8

Female Eye (FE)

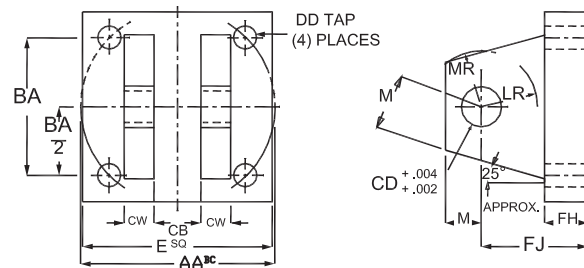


Part No.	A	CA	CB	CD	ER	KK
FE-1002	3/4	1 1/2	7/16	7/16	19/32	5/16-24
FE-1003	3/4	1 1/2	3/4	1/2	5/8	7/16-20
FE-1004	1 1/8	2 1/16	1 1/4	3/4	7/8	3/4-16
FE-1006	1 5/8	2 13/16	1 1/2	1	1 3/16	1-14
FE-1008	2	3 7/16	2	1 3/8	1 9/16	1 1/4-12
FE-1010	2 1/4	4	2 1/2	1 3/4	2	1 1/2-12
FE-1012	3	5	2 1/2	2	2 1/4	1 7/8-12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

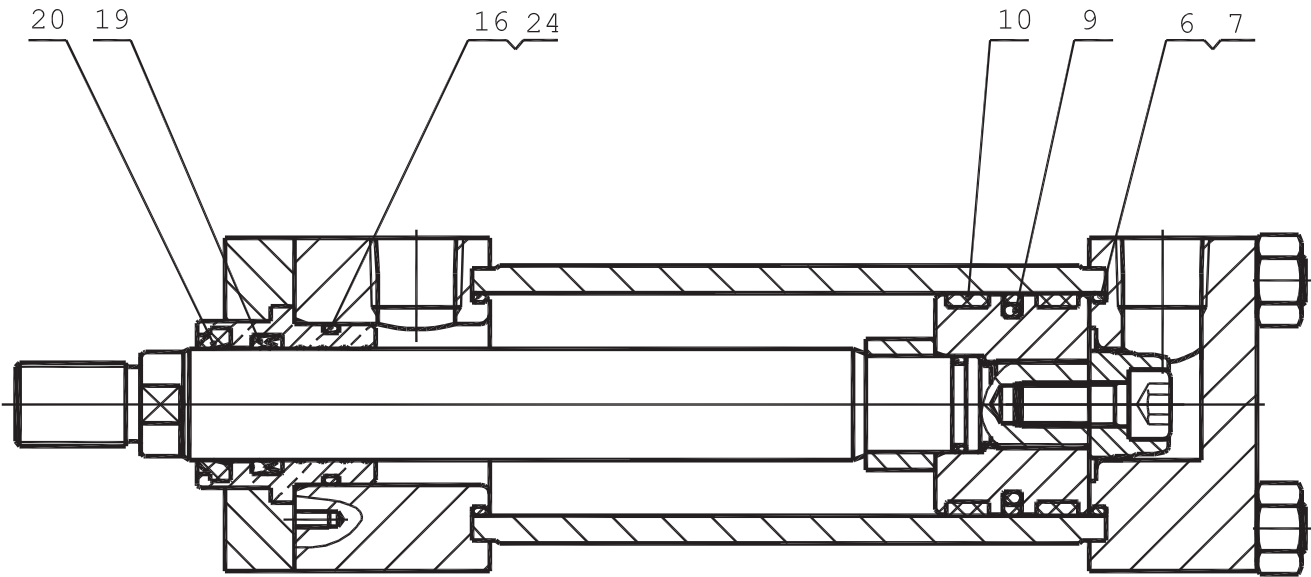


Clevis Bracket (CB)



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
20	Rod Wiper	SHD
19	Rod Seal	BPP - B PolyPak
7	End Seal Back Up Ring (2)	Parbak 8-Series
16	Rod Bushing O-Ring	4300 568
6	End Seal O-Ring (2)	4300 568
9	Piston Seal	OE
10	Wear Ring *	0401 PDT
24	Rod Bushing Back Up Ring	Parbak 8-Series

* Part #10 QTY is depent 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, 7
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

ADVANCED CYLINDERS WARRANTY

Advanced Cylinders Products are warranted for a period of one year from date of shipment to be free from defects in workmanship and material under correct use, normal operating conditions and proper applications. This warranty does not extend to goods damaged, or subjected to accident, abuse, or misuse after shipment, nor to goods altered or repaired by anyone other than authorized Advanced Cylinders representatives. This one year limited warranty is the only warranty extended by Advanced Cylinders in connection with any sale by Advanced Cylinders.

Advanced Cylinders' obligation upon breach of warranty shall be limited to replacing or repairing at our option, free of charge, but not including installation, dismantling, reassembling or any other charge, the particular product or part which inspection discloses to have been defective at time of shipment. Inspection may be at the place of installation and use, or at our company if returned to us at our expense including lowest transportation cost, is requested. Written notice of such defect shall be given by customer to Advanced Cylinders within 30 days after such defect(s) appear. Written permission for any warranty claim return must be first obtained from authorized Advanced Cylinders representatives. **All returns must be accompanied with a complete written explanation of claimed defects and the circumstances of operational failure.** Replacement of cylinders or parts thereof repaired under this warranty shall be warranted under the terms of this warranty for the remainder of the term of the original warranty or for a period of six months after such repair or replacement, whichever is longer. Upon expiration of the warranty, all of Advanced Cylinders' obligations hereunder shall terminate.

IN NO EVENT SHALL ADVANCED CYLINDERS HAVE ANY LIABILITY FOR PAYMENT OF ANY CONSEQUENTIAL, INCIDENTAL, INDIRECT, SPECIAL OR TORT DAMAGES OF ANY KIND INCLUDING, BUT NOT LIMITED TO, ANY LOSS OF PROFITS, TO THE EXTENT EXCLUSION IS PERMITTED BY LAW.

This warranty states our entire and exclusive liability and buyer's exclusive remedy for any claim of damages in connection with the sale or furnishing of Advanced Cylinders' products or parts, their design, suitability for use, installations or operation, or for any claimed defects therein.

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