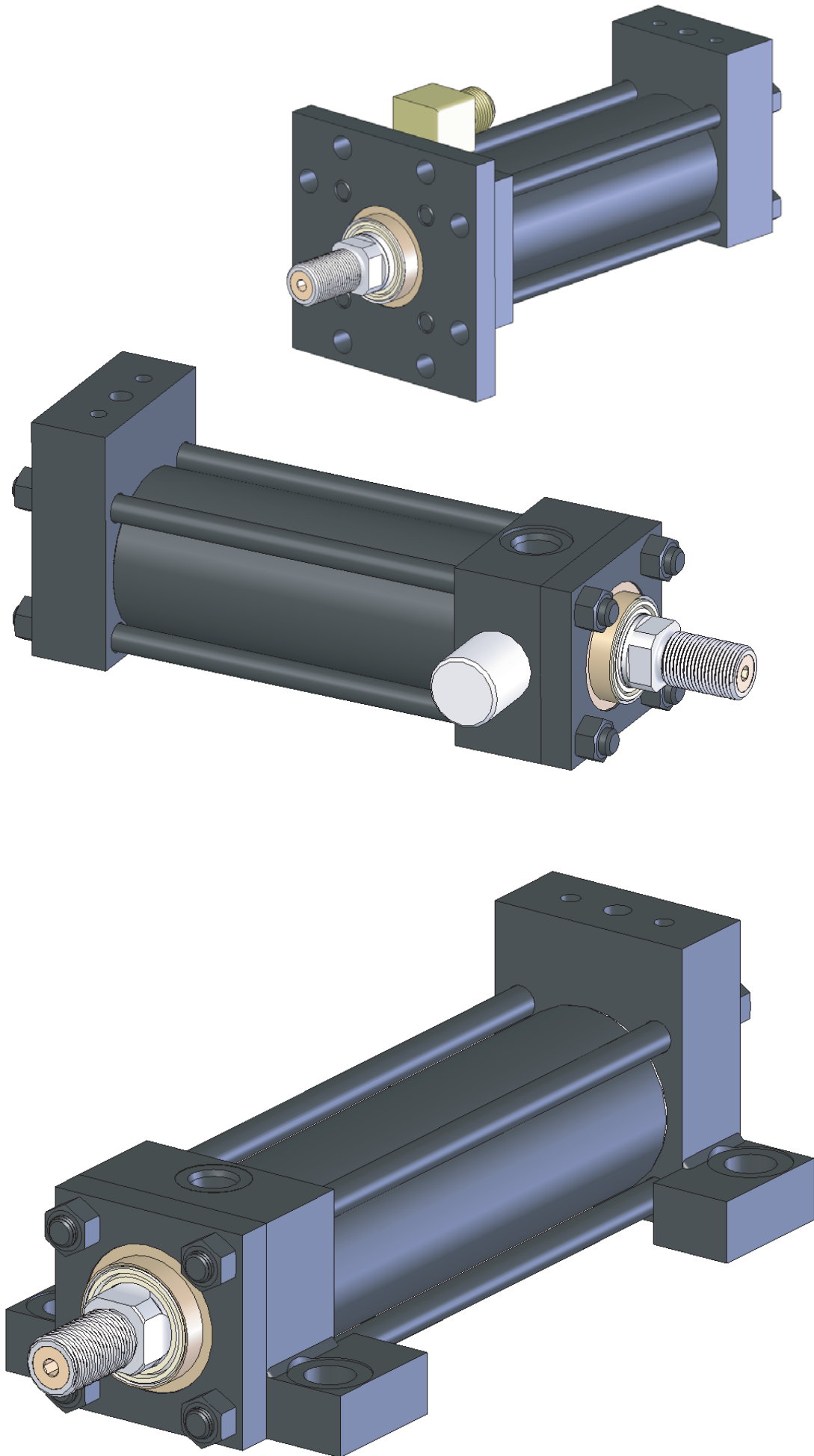


MCS-SERVO Inc.



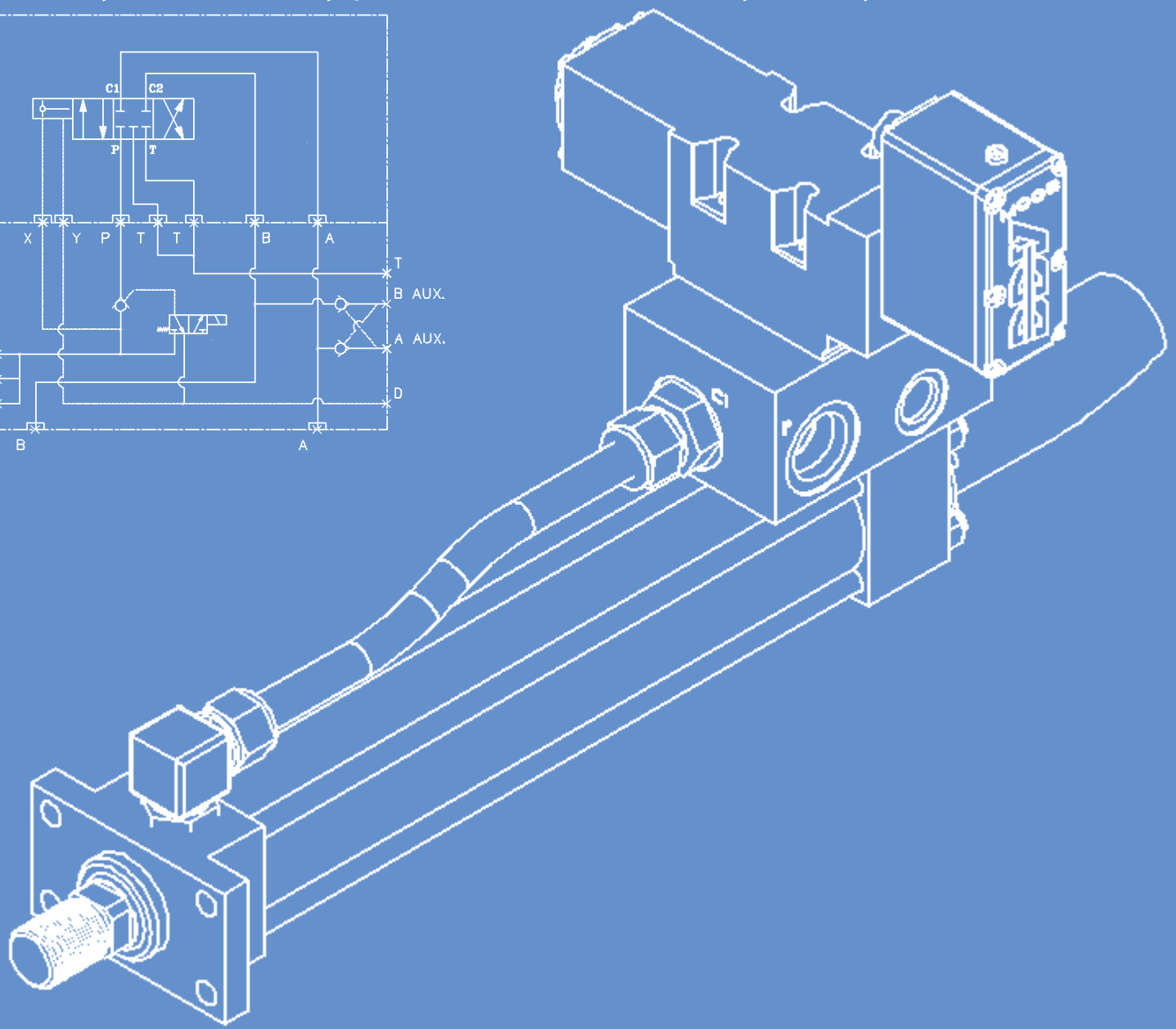
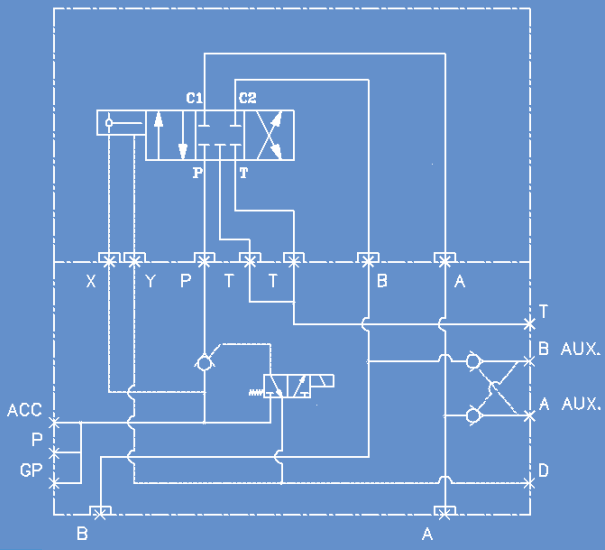
SV5K SERIES
HEAVY DUTY HYDRAULIC CYLINDERS 3000 PSI

WWW.MCS-SERVO.COM

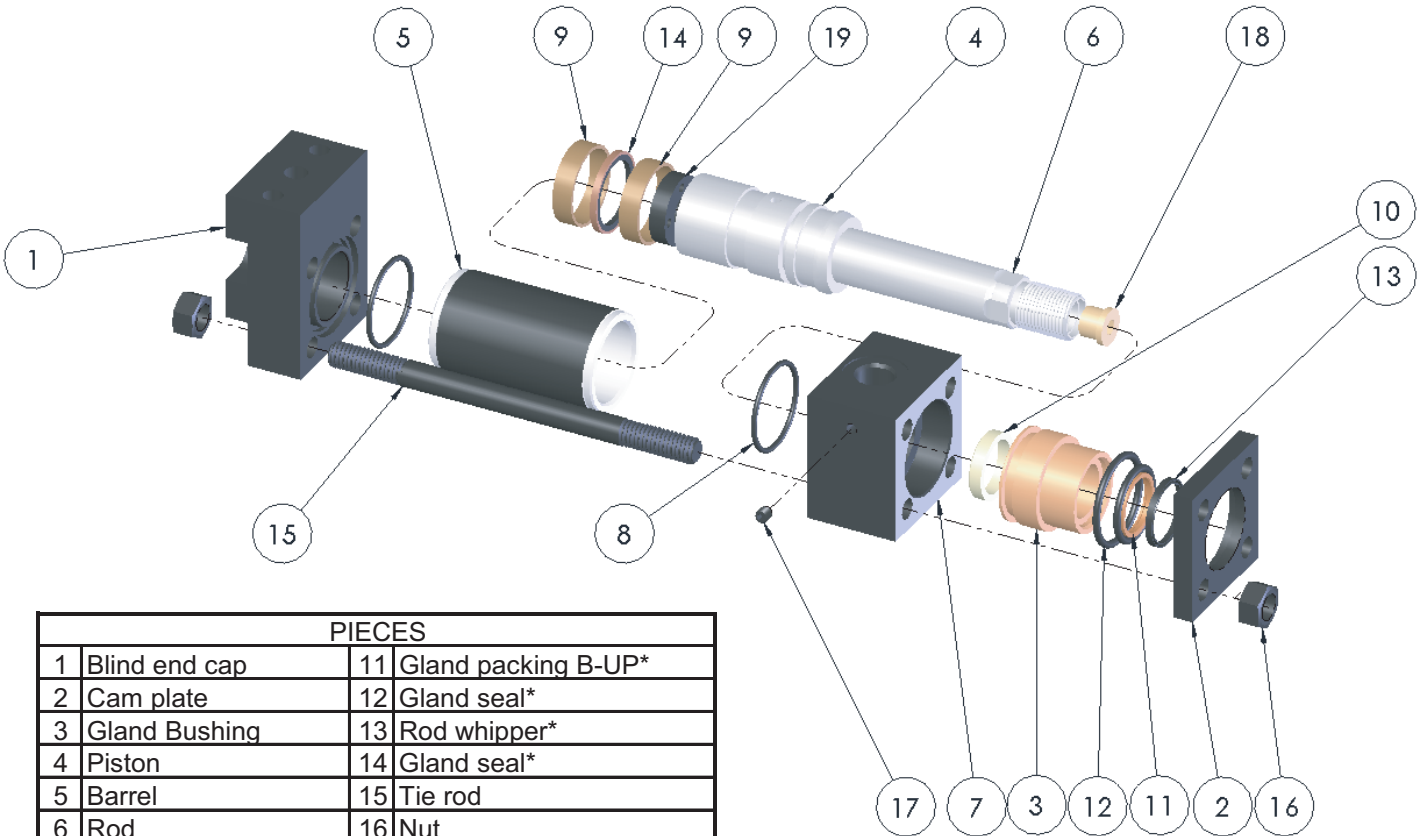
MCS-SERVO inc. specializes in Closed Loop Control Systems since 1986 for Motion control and Measurement Systems.

We are renowned for our expertise and experience in Electrohydraulic Systems, Electromechanical Systems, Tests and also in Instrumentation and Control. We are an important supplier of international famous brands such as MOOG, MTS Sensors, Delta Computer, Hydraforce and many more.

You have a project, you need some answers, our engineers, technicians and technical representatives are specifically trained in High Technology fields, they will solve any problems or needs that you may have.



COMPONENTS IDENTIFICATION



PIECES			
1	Blind end cap	11	Gland packing B-UP*
2	Cam plate	12	Gland seal*
3	Gland Bushing	13	Rod whipper*
4	Piston	14	Gland seal*
5	Barrel	15	Tie rod
6	Rod	16	Nut
7	Head	17	Screw in compression
8	Barrel seals*	18	SAE plug
9	Wearing strip*	19	Magnet
10	Gland packing*		

*: These items are part of the seal kit (see the table below)

Notes: items 4, 6, 18 & 19 are shipped together. The assembly number will be supplied when ordering.

IDENTIFICATION OF SEAL KITS & GLAND BUSHING

BORE	ROD	SEAL KIT	GLAND BUSHING
	Ø MM		
1-1/2	1	1,5-SV3K-SK1	GB-15-10
2	1	2-SV3K-SK1	GB-20-10
	1-3/8	2-SV3K-SK2	GB-20-13
2-1/2	1	2,5-SV3K-SK1	GB-20-10
	1-3/8	2,5-SV3K-SK2	GB-25-13
	1-3/4	2,5-SV3K-SK3	GB-25-17
3-1/4	1-3/8	3,25-SV3K-SK1	GB-25-13
	1-3/4	3,25-SV3K-SK2	GB-25-17
	2	3,25-SV3K-SK3	GB-32-20
4	1-3/4	4-SV3K-SK1	GB-25-17
	2	4-SV3K-SK2	GB-32-20



To order any spare parts or an identical servocylinder that you own, take note of the model and serial number on the identification plate. All the necessary information is there.

HOW TO ORDER

Characteristics identification of a SV3K cylinder.

a b c d e f g h i j k l m
 2,5 - SV3K - T4 - 10 (/1) - 2 (/0,25) - 2 (/0,5) - S (/2) - M (/6)

Official number of assembly of SV3K cylinders assigned by MCS-Servo Inc.

n
 2,5-SV3K-T4-10-2-2-SBT-xxxxx

[a] Bore (Ø in inch)

- 1,5
- 2
- 2,5
- 3,25
- 4

[b] Series

Servocylinder 3000 PSI. Cylinder ready to receive linear transducer Temposonics.

[c] Assembly

- F1 head rectangular flange (MF1)
- F5 head square flange (MF5)
- T1 head end trunnions (MT1)
- T2 cap end trunnions*
- T2N cap end trunnions (MT2)
- T4 intermediate trunnions (MT4)
- S2 side lugs*
- S4 side tapped*
- X1 extended tie rods on both sides*
- X2 extended tie rods on cap end side*
- X3 extended tie rods on head side (MX3)
- P1 female clevis*
- P3 male clevis*

Special mounting available on request.

*: does not meet NFPA standards.

[d] Stroke

Specify necessary stroke (up to 60 inches by increments of 0,125 inch)

[e] Stop tube

Only if necessary.

Specify the length of the stop tube in inches. Refer to page 17 to make sure that a stop tube is required. (increments of 0,125 inch)

bore	Ø rod	[f] # rod	[h] thread number			
			#1	#2	#3	#4
1,5	1	1	3/4-16	7/8-14	3/4-16	n/a
	1 3/8	2	1-14	1 1/4-12	1-14	n/a
2,5	1	1	3/4-16	7/8-14	3/4-16	n/a
	1 3/8	2	1-14	1 1/4-12	1-14	n/a
	1 3/4	3	1 1/4-12	1 1/2-12	1 1/4-12	1 1/4-12
3,25	1 3/8	1	1-14	1 1/4-12	1-14	n/a
	1 3/4	2	1 1/4-12	1 1/2-12	1 1/4-12	1 1/4-12
	2	3	1 1/2-12	1 3/4-12	1 1/2-12	n/a
4	1 3/4	1	1 1/4-12	1 1/2-12	1 1/4-12	1 1/4-12
	2	2	1 1/2-12	1 3/4-12	1 1/2-12	n/a

See thread description at page 5.

[g] Rod extension

Only if necessary.

Indicate W dimension required. (increments of 0,125 inch)

See standard W dimension at page 5.

[i] Thread extension

Only if necessary.

Specify the extension of standard A dimension. Non-applicable for thread #3. See standard A dimensions at page 5.

[j] Port position on head

type	bore				
	1,5	2	2,5	3,25	4
S SAE standard	-8	-8	-8	-12	-12
OE oversize SAE	-12	-12	-12	-16	-16
X Described					

[k] Port position at the head

- Only if other than position #1 (standard)
- 2
- 3
- 4

See figure B at page 5.

[l] Port position on end cap

type	
M	manifold mounting, orifice 7/16 inch dia.
MO	manifold mounting, orifice 11/16 inch dia
S	SAE standard**
OE	SAE oversized**
X	Described

**: Refer to reference [j] for dimensions.

[m] Port position on end cap

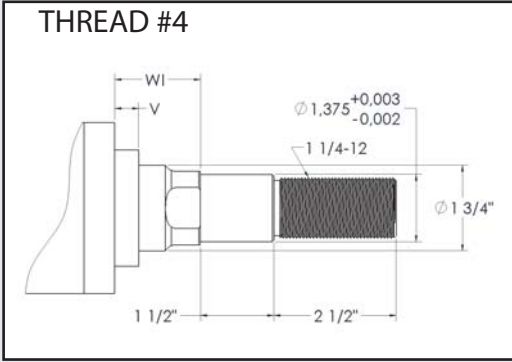
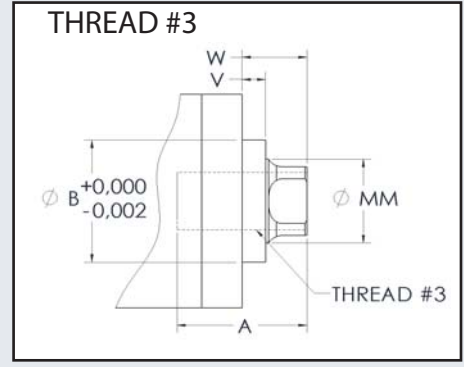
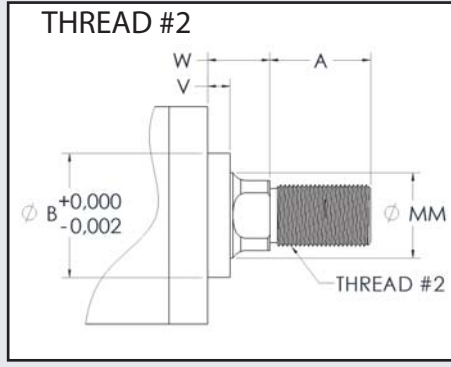
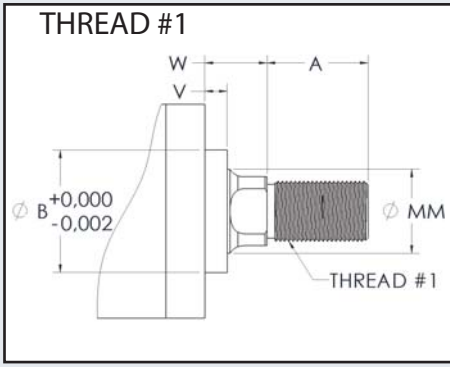
- Only if other than position #5 (standard)
- 6
- 7
- 8

See figure B at page 5.

[n] Drawing number

Drawing number assigned when ordering.

THREAD OPTION ON ROD



BORE	ROD		THREAD				A	B	V	W	WI
	ϕ MM	#	#1 & #3	#2	#4						
1-1/2	1	1	3/4-16	7/8-14	n/a	1-1/8	1,500	1/2	1	n/a	
2	1	1	3/4-16	7/8-14	n/a	1-1/8	1,500	1/4	3/4	n/a	
	1-3/8	2	1-14	1-1/4-12	n/a	1-5/8	2,000	3/8	1	n/a	
2-1/2	1	1	3/4-16	7/8-14	n/a	1-1/8	1,500	1/4	3/4	n/a	
	1-3/8	2	1-14	1-1/4-12	n/a	1-5/8	2,000	3/8	1	n/a	
3-1/4	1-3/8	1	1-14	1-1/4-12	n/a	1-5/8	2,000	1/4	7/8	1-1/4	
	1-3/4	2	1-1/4-12	1-1/2-12	1-1/4-12	2	2,375	3/8	1-1/8	1-1/4	
4	2	3	1-1/2-12	1-3/4-12	n/a	2-1/4	2,625	3/8	1-1/4	n/a	
	1-3/4	1	1-1/4-12	1-1/2-12	1-1/4-12	2	2,375	1/4	1	1-1/8	
	2	2	1-1/2-12	1-3/4-12	n/a	2-1/4	2,625	1/4	1-1/8	n/a	

PORTS OPTIONS

HEAD

OPTION OE

BORE	C	D	H
1-1/2	12	7/8	1-1/2
2	12	7/8	1-1/2
2-1/2	12	7/8	1-1/2
3-1/4	16	1	2
4	16	1	2

Port position at the head

voir note **Figure A**

END CAP

OPTION OE

BORE	OPTION	C	D	E/2	ET	H
1-1/2	M	-	-	1-1/4	3-3/8	-
	MO	-	-	1-1/4	3-3/8	-
	S	-8	-	1-1/4	2-1/2	-
	OE	-12	7/8	1-1/4	3-3/8	1-1/2
2	M	-	-	1-1/2	4	-
	MO	-	-	1-1/2	4	-
	S	-8	-	1-1/2	3	-
	OE	-12	7/8	1-1/2	4	1-1/2
2-1/2	M	-	-	1-3/4	4-9/16	-
	MO	-	-	1-3/4	4-9/16	-
	S	-8	-	1-3/4	3-1/2	-
	OE	-12	7/8	1-3/4	4-9/16	1-1/2
3-1/4	M	-	-	2-1/4	4-1/2	-
	MO	-	-	2-1/4	4-1/2	-
	S	-12	-	2-1/4	4-1/2	-
	OE	-16	1	2-1/4	4-1/2	2
4	M	-	-	2-1/2	5	-
	MO	-	-	2-1/2	5	-
	S	-12	-	2-1/2	5	-
	OE	-16	1	2-1/2	5	2

Port position on end cap

see note **Figure B**

OPTION M $\phi 7/16''$

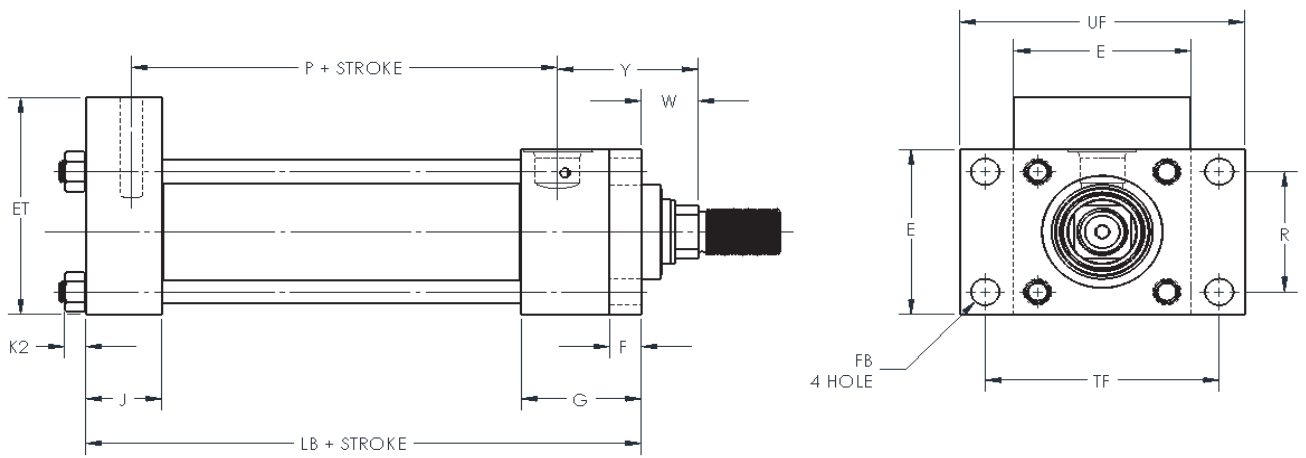
OPTION MO $\phi 11/16''$

OPTION S SAE-C

NOTE: ALL THE CYLINDERS SHOWN AT THE FOLLOING PAGES ARE AT POSITIONS #1 & #5

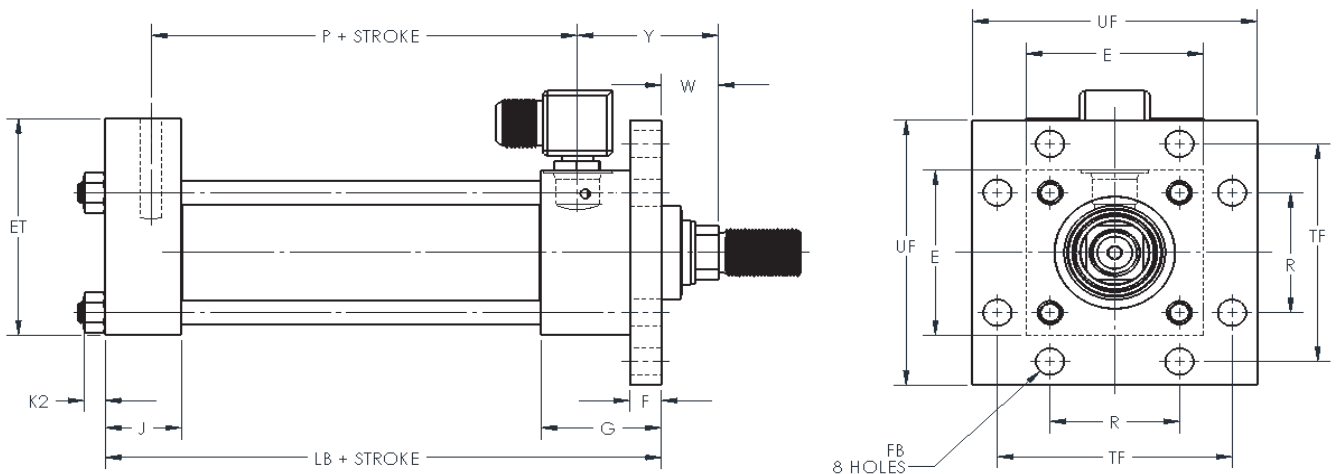
SV3K SERIES

HEAD RECTANGULAR FLANGE (NFPA: MF1)



Note: An SAE/JIC 37° adapter will be installed if the assembly is in a vertical position

HEAD SQUARE FLANGE (NFPA: MF5)

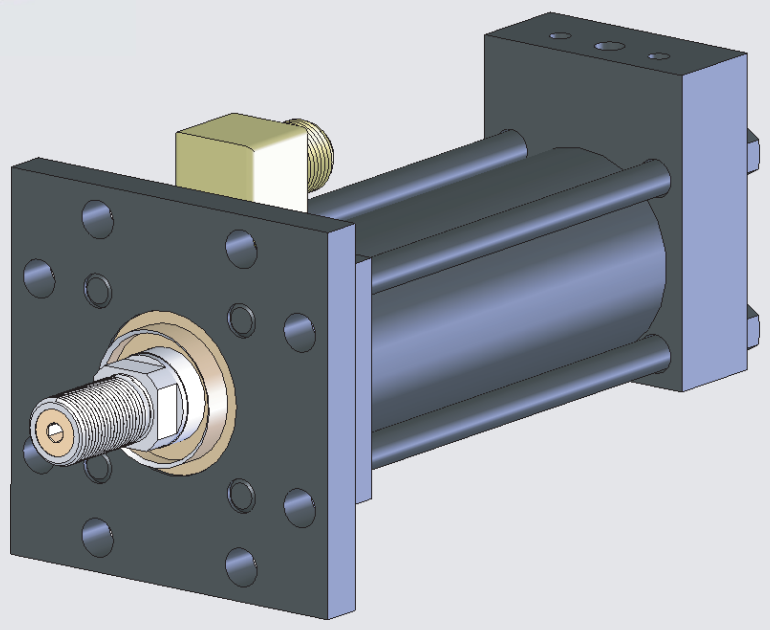
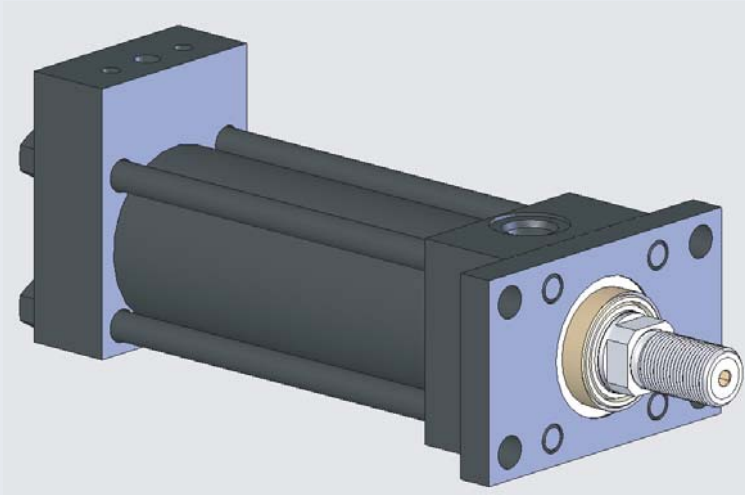


Note: An SAE/JIC 37° adapter will be installed at the assembly

BORE	E	F	FB	G	J	K2	R	TF	UF	+ STROKE	
										LB	P
1-1/2	2-1/2	3/8	7/16	2-1/8	1-1/2	-	1,63	3-7/16	4-1/4	6-5/8	4-7/16
2	3	5/8	9/16	2-3/8	1-1/2	-	2,05	4-1/8	5-1/8	6-7/8	4-7/16
2-1/2	3-1/2	5/8	9/16	2-3/8	1-1/2	7/16	2,55	4-5/8	5-5/8	6-7/8	4-7/16
3-1/4	4-1/2	3/4	11/16	2-3/4	1-3/4	9/16	3,25	5-7/8	7-1/8	7-1/2	4-3/4
4	5	7/8	11/16	2-7/8	1-3/4	9/16	3,82	6-3/8	7-5/8	7-5/8	4-3/4

BORE	ROD	W	Y
1-1/2	1	1	2-7/16
2	1	3/4	2-7/16
	1-3/8	1	2-11/16
2-1/2	1	3/4	2-7/16
	1-3/8	1	2-11/16
	1-3/4	1-1/4	2-15/16
3-1/4	1-3/8	7/8	2-3/4
	1-3/4	1-1/8	3
	2	1-1/4	3-1/8
4	1-3/4	1	3
	2	1-1/8	3-1/8

BORE	ADAPTER SAE/JIC 37°
1-1/2	SAE-8/JIC-8
2	SAE-8/JIC-12
2-1/2	SAE-8/JIC-12
3-1/4	SAE-12/JIC-16
4	SAE-12/JIC-16

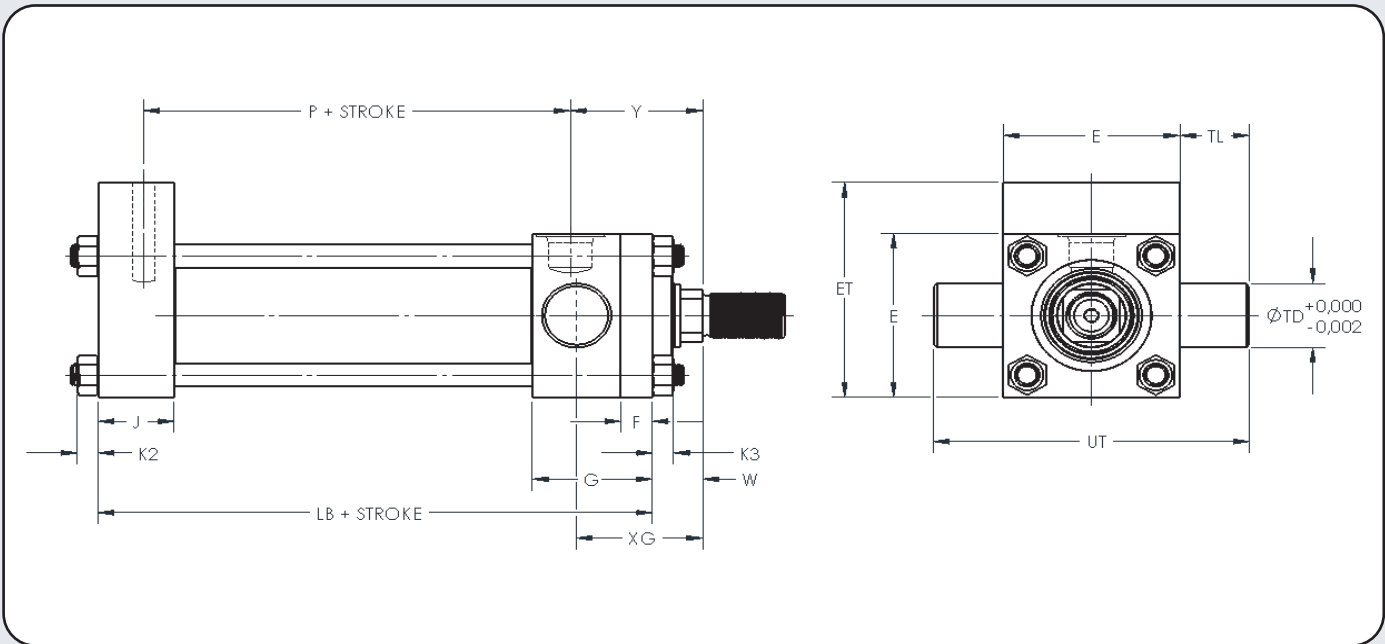


MAXIMUM WORKING PRESSURE
DEPENDENT ON BORE AND ASSEMBLY

BORE	MF1 (PSI)	MF5 (PSI)
1-1/2	3000	3000
2	2500	3000
2-1/2	2000	2500
3-1/4	1500	2200
4	1500	2100

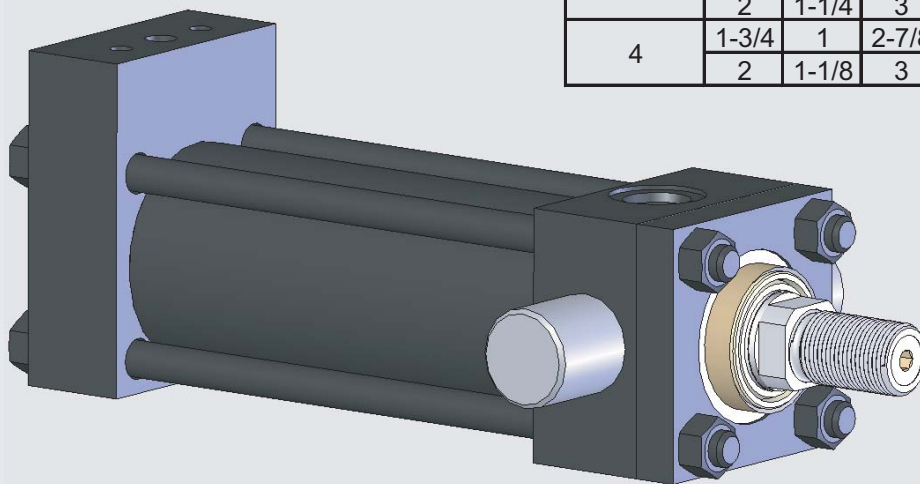
SV3K SERIES

HEAD END TRUNNION (NFPA : MT1)



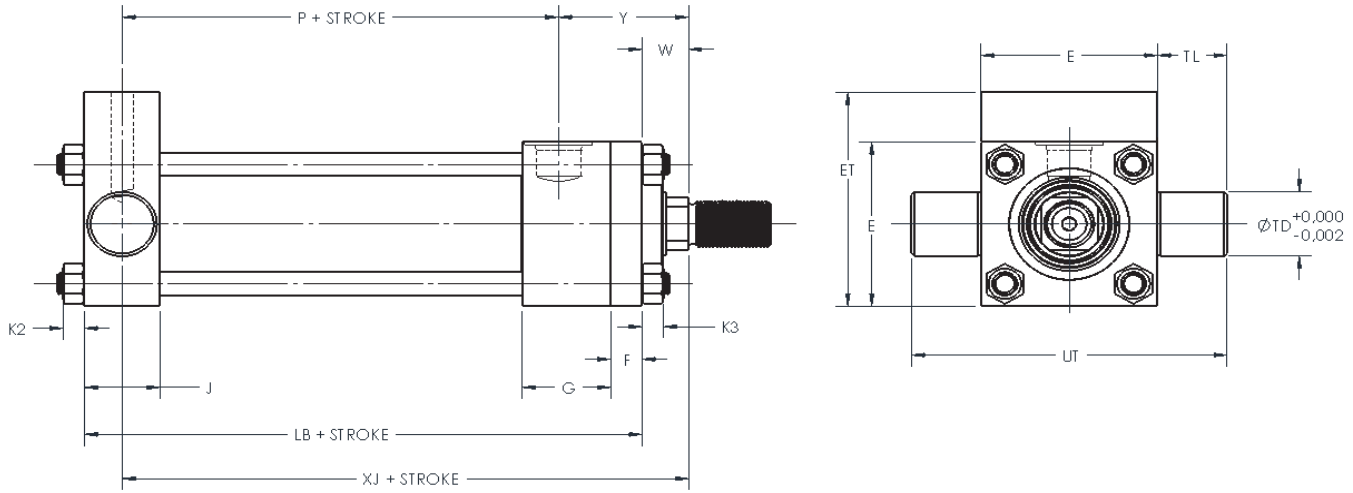
BORE	E	F	G	J	J2	K2	K3	TD	TL	UT
1-1/2	2-1/2	3/8	2-1/8	1-1/2	-	-	11/32	1,000	1	4-1/2
2	3	5/8	2-3/8	1-1/2	3	-	7/16	1,375	1-3/8	5-3/4
2-1/2	3-1/2	5/8	2-3/8	1-1/2	3	7/16	7/16	1,375	1-3/8	6-1/4
3-1/4	4-1/2	3/4	2-3/4	1-3/4	-	9/16	9/16	1,750	1-3/4	8
4	5	7/8	2-7/8	1-3/4	-	9/16	9/16	1,750	1-3/4	8-1/2

BORE	ROD	W	XG	Y	+ STROKE			
					LB	P	XJ	XJ2
1-1/2	1	1	2-1/4	2-7/16	6-5/8	4-7/16	6-7/8	-
2	1	3/4	2-1/4	2-7/16	6-7/8	4-7/16	6-7/8	5-1/4
	1-3/8	1	2-1/2	2-11/16	6-7/8	4-7/16	7-1/8	5-1/2
2-1/2	1	3/4	2-1/4	2-7/16	6-7/8	4-7/16	6-7/8	5-3/8
	1-3/8	1	2-1/2	2-11/16	6-7/8	4-7/16	7-1/8	5-5/8
	1-3/4	1-1/4	2-3/4	2-15/16	6-7/8	4-7/16	7-3/8	5-7/8
3-1/4	1-3/8	7/8	2-5/8	2-3/4	7-1/2	4-3/4	7-1/8	-
	1-3/4	1-1/8	2-7/8	3	7-1/2	4-3/4	7-3/8	-
	2	1-1/4	3	3-1/8	7-1/2	4-3/4	7-1/2	-
4	1-3/4	1	2-7/8	3	7-5/8	4-3/4	7-3/4	-
	2	1-1/8	3	3-1/8	7-5/8	4-3/4	7-7/8	-

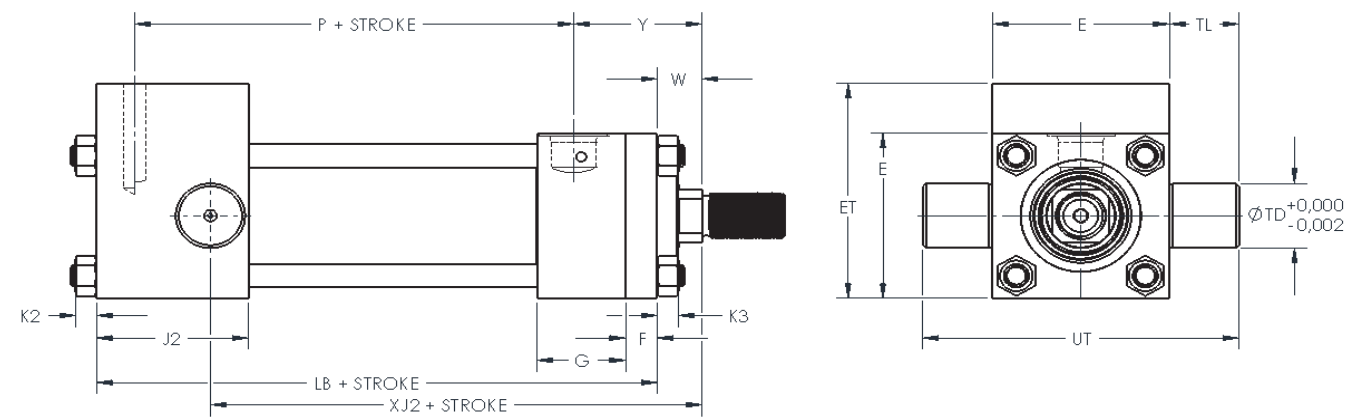


SV3K SERIES

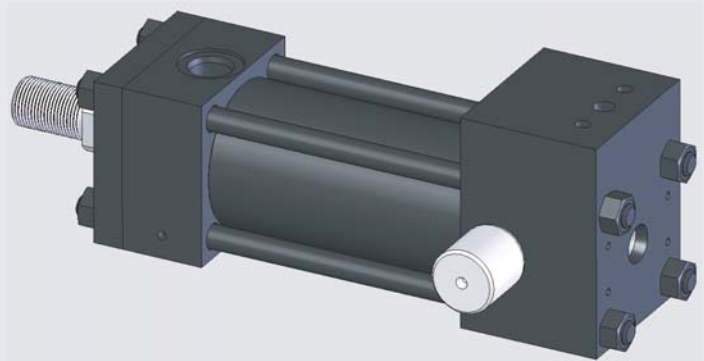
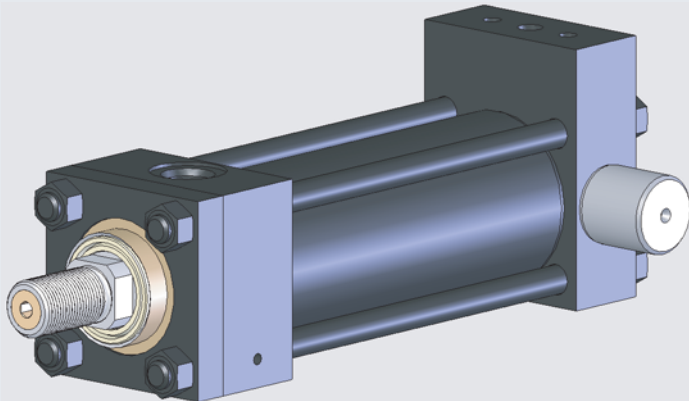
CAP END TRUNNION (T2)



CAP END TRUNNION (NFPA : MT2)

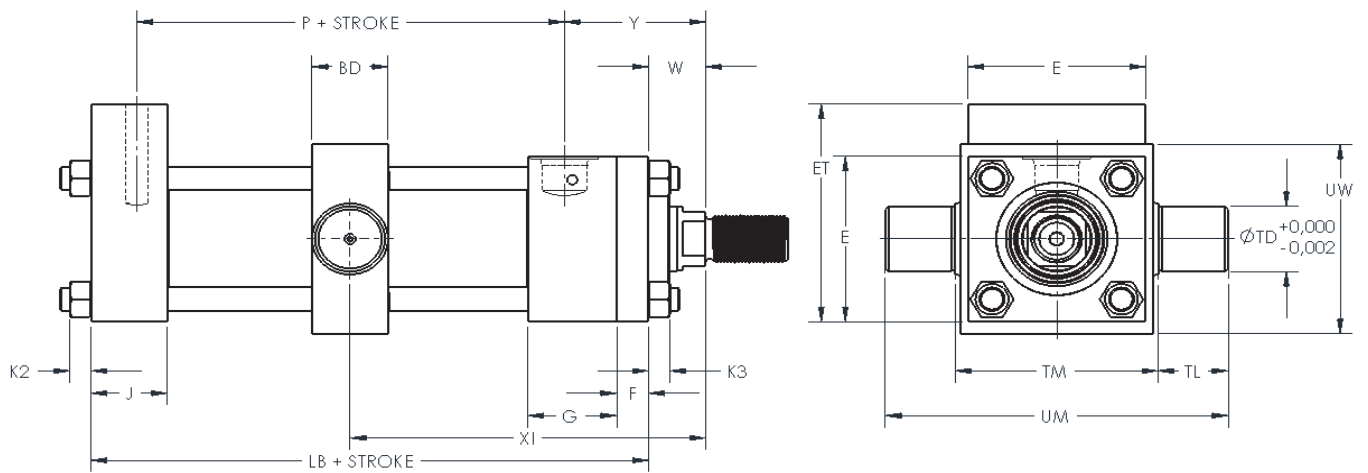


AVAILABLE FOR $\varnothing 2''$ & $\varnothing 2 \frac{1}{2}''$
 ON REQUEST: $\varnothing 1 \frac{1}{2}''$, $\varnothing 3 \frac{1}{4}''$ & $\varnothing 4''$



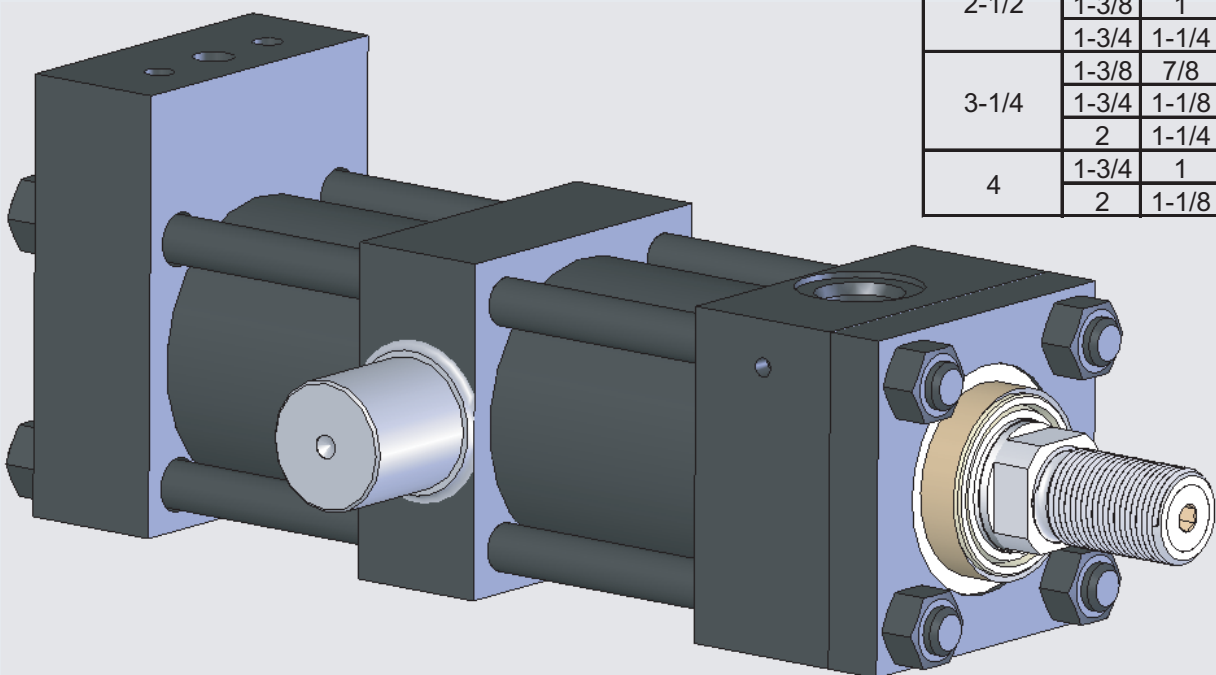
SV3K SERIES

INTERMEDIATE TRUNNION (NFPA : MT4)



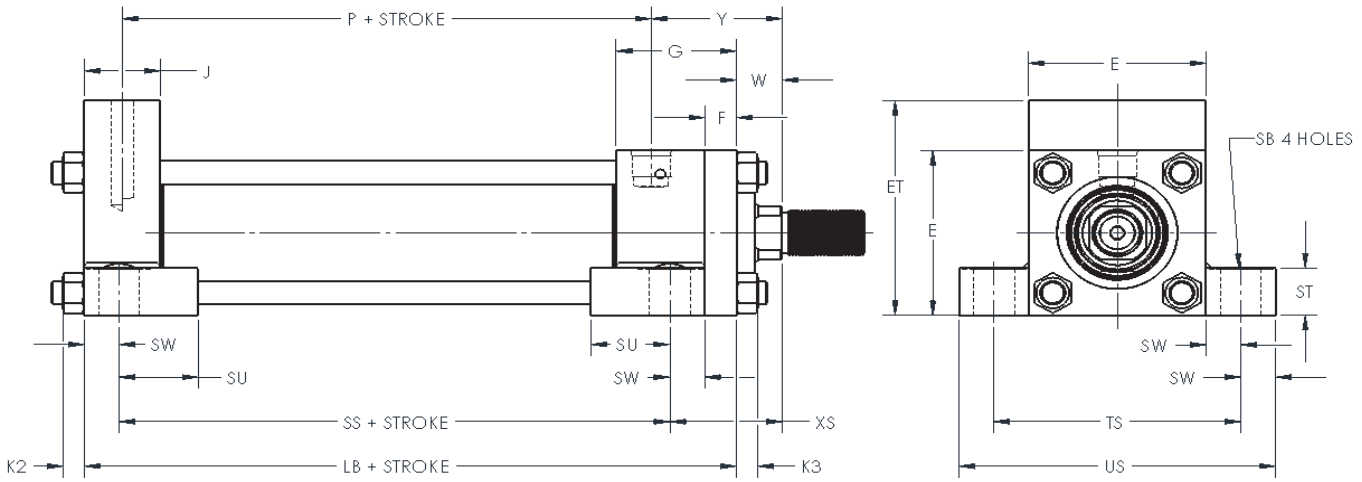
BORE	BD	E	F	G	J	K2	K3	TD	TL	TM	UM	UW	+ STROKE	
													LB	P
1-1/2	1-1/4	2-1/2	3/8	2-1/8	1-1/2	-	11/32	1,000	1	3	5	3	6-5/8	4-7/16
2	1-1/2	3	5/8	2-3/8	1-1/2	-	7/16	1,375	1-3/8	3-1/2	6-1/4	3-1/2	6-7/8	4-7/16
2-1/2	1-1/2	3-1/2	5/8	2-3/8	1-1/2	7/16	7/16	1,375	1-3/8	4	6-3/4	4	6-7/8	4-7/16
3-1/4	2	4-1/2	3/4	2-3/4	1-3/4	9/16	9/16	1,750	1-3/4	5	8-1/2	5	7-1/2	4-3/4
4	2	5	7/8	2-7/8	1-3/4	9/16	9/16	1,750	1-3/4	5-1/2	9	5-1/2	7-5/8	4-3/4

BORE	ROD	W	XI	Y
1-1/2	1	1	SPECIFIED BY CUSTOMER	2-7/16
2	1	3/4		2-7/16
	1-3/8	1		2-11/16
2-1/2	1	3/4		2-7/16
	1-3/8	1		2-11/16
	1-3/4	1-1/4		2-15/16
3-1/4	1-3/8	7/8		2-3/4
	1-3/4	1-1/8		3
	2	1-1/4		3-1/8
4	1-3/4	1		3
	2	1-1/8	3-1/8	



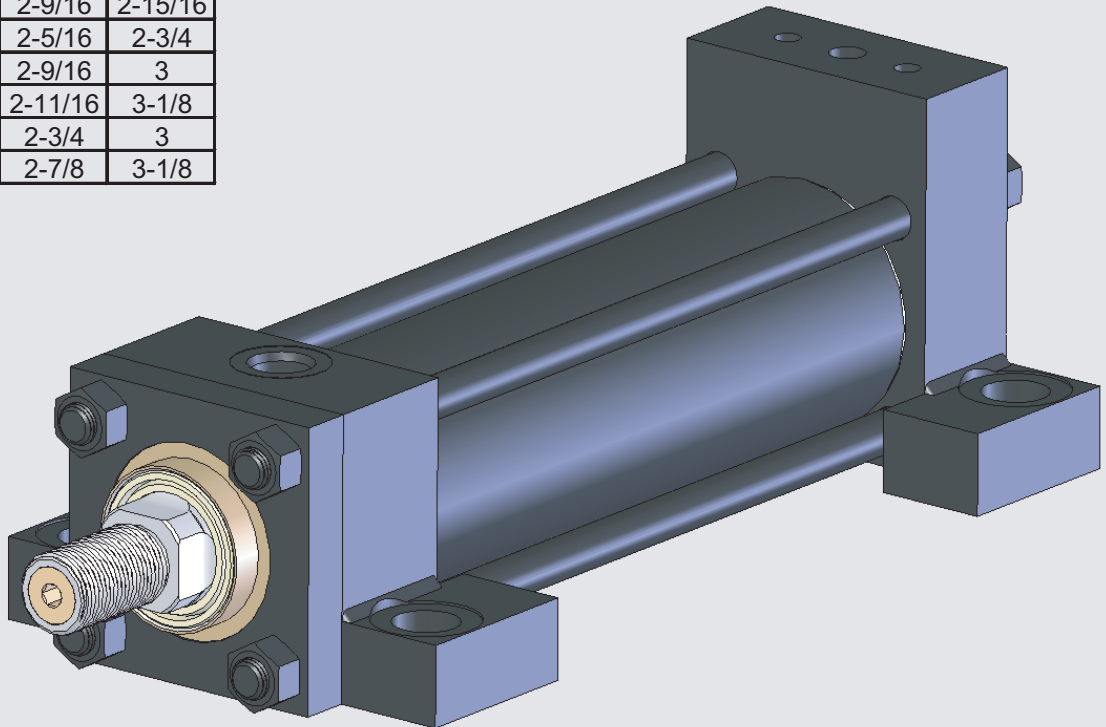
SV3K SERIES

SIDE LUGS (S2)



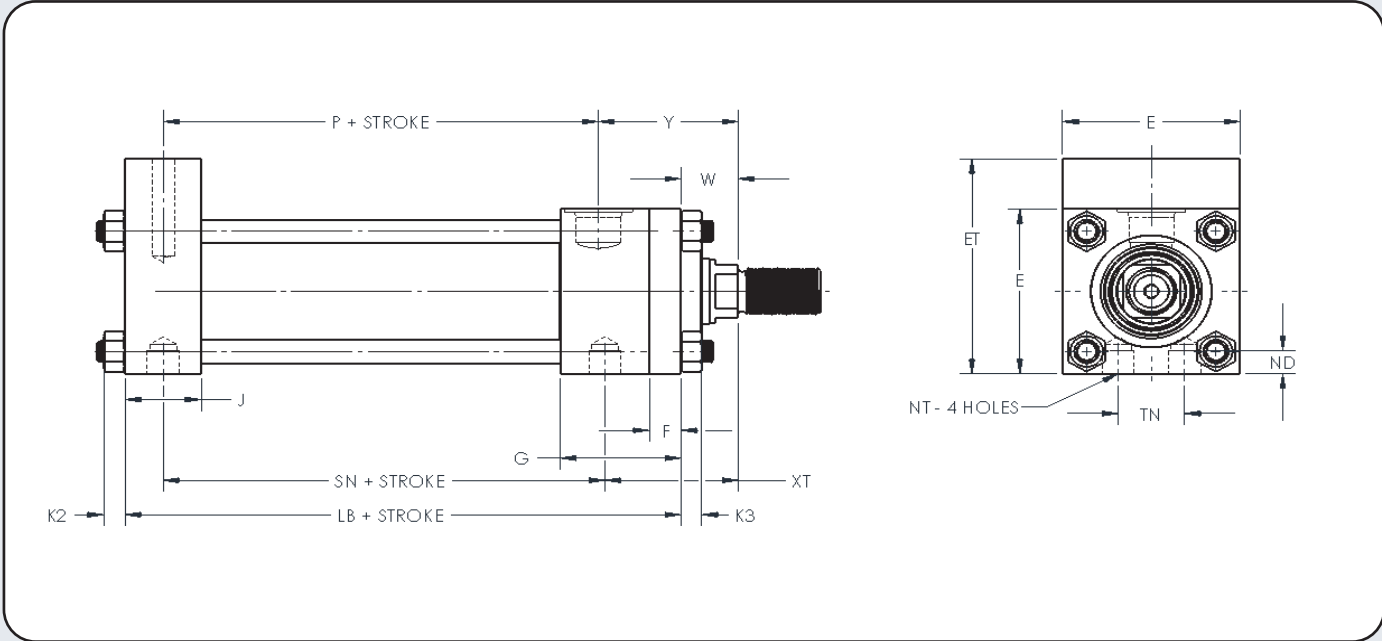
BORE	E	F	G	J	K2	K3	SB	ST	SU	SW	TS	US	+ STROKE		
													LB	P	SS
1-1/2	2-1/2	3/8	2-1/8	1-1/2	-	11/32	7/16	1/2	15/16	3/8	3-1/4	4	6-5/8	4-7/16	5-1/2
2	3	5/8	2-3/8	1-1/2	-	7/16	9/16	3/4	1-1/4	1/2	4	5	6-7/8	4-7/16	5-1/4
2-1/2	3-1/2	5/8	2-3/8	1-1/2	7/16	7/16	13/16	1	1-9/16	11/16	4-7/8	6-1/4	6-7/8	4-7/16	4-7/8
3-1/4	4-1/2	3/4	2-3/4	1-3/4	9/16	9/16	13/16	1	1-9/16	11/16	5-7/8	7-1/4	7-1/2	4-3/4	5-3/8
4	5	7/8	2-7/8	1-3/4	9/16	9/16	1-1/16	1-1/4	2	7/8	6-3/4	8-1/2	7-5/8	4-3/4	5

BORE	ROD	W	XS	Y
1-1/2	1	1	1-3/4	2-7/16
2	1	3/4	1-7/8	2-7/16
	1-3/8	1	2-1/8	2-11/16
2-1/2	1	3/4	2-1/16	2-7/16
	1-3/8	1	2-5/16	2-11/16
	1-3/4	1-1/4	2-9/16	2-15/16
3-1/4	1-3/8	7/8	2-5/16	2-3/4
	1-3/4	1-1/8	2-9/16	3
	2	1-1/4	2-11/16	3-1/8
4	1-3/4	1	2-3/4	3
	2	1-1/8	2-7/8	3-1/8



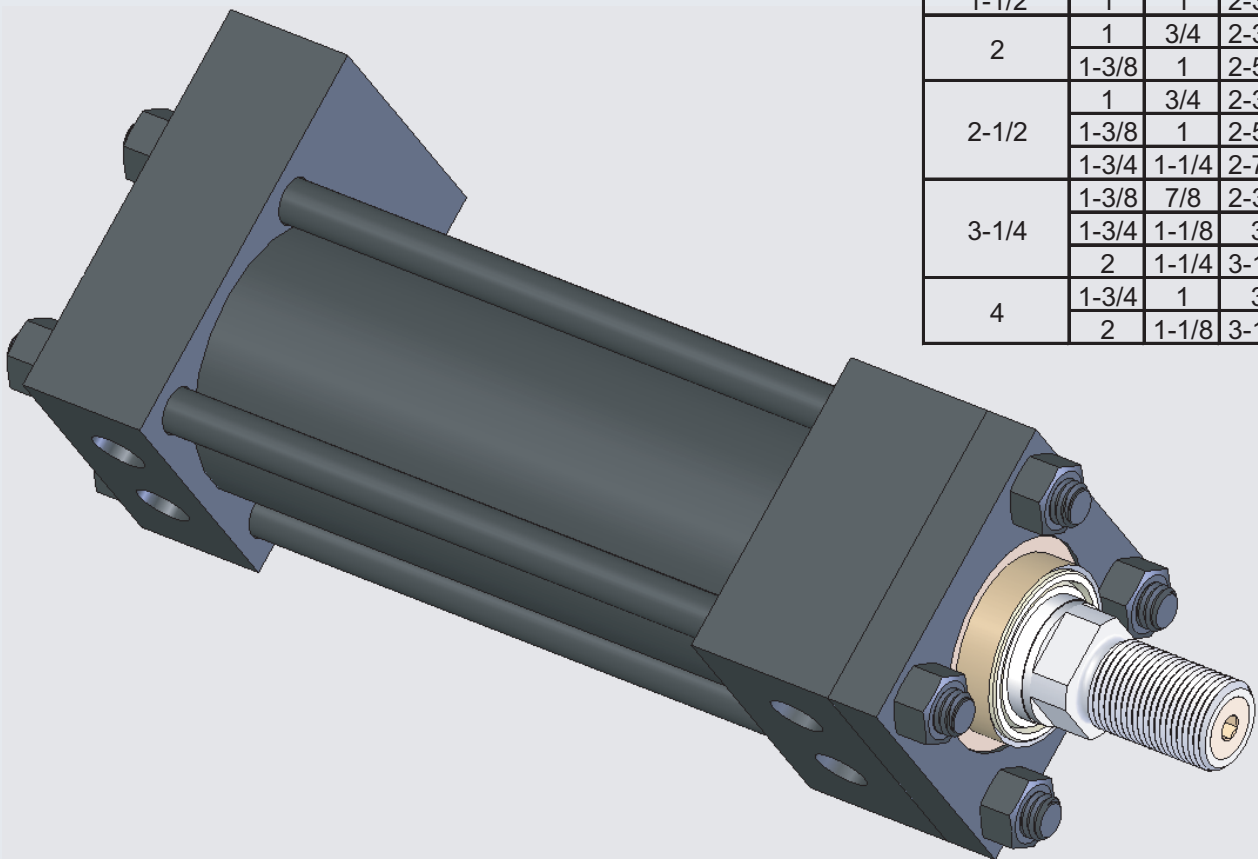
SV3K SERIES

SIDED TAPPED (S4)



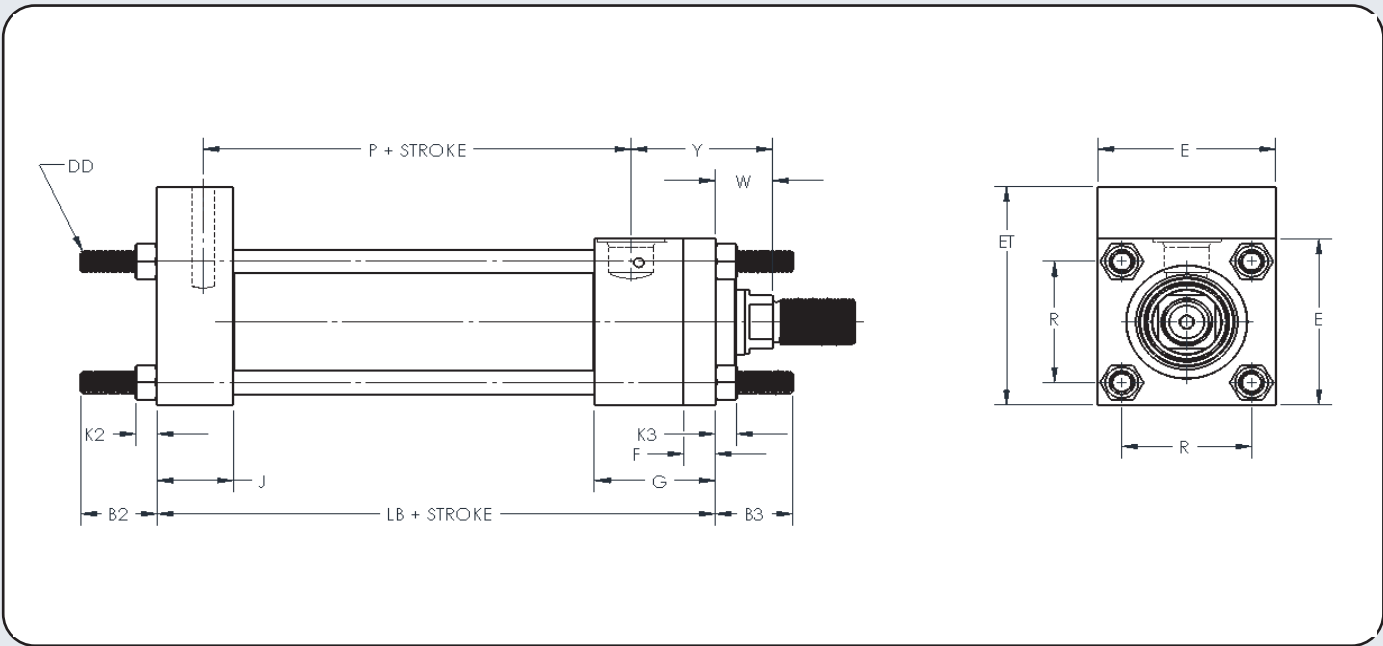
BORE	E	F	G	J	K2	K3	ND	NT	TN	+ STROKE		
										LB	P	SN
1-1/2	2-1/2	3/8	2-1/8	1-1/2	-	11/32	3/8	3/8-16	3/4	6-5/8	4-7/16	4-1/2
2	3	5/8	2-3/8	1-1/2	-	7/16	7/16	1/2-13	15/16	6-7/8	4-7/16	4-1/2
2-1/2	3-1/2	5/8	2-3/8	1-1/2	7/16	7/16	1/2	5/8-11	1-5/16	6-7/8	4-7/16	4-1/2
3-1/4	4-1/2	3/4	2-3/4	1-3/4	9/16	9/16	11/16	3/4-10	1-1/2	7-1/2	4-3/4	4-3/4
4	5	7/8	2-7/8	1-3/4	9/16	9/16	11/16	1-8	2-1/16	7-5/8	4-3/4	4-3/4

BORE	ROD	W	XT	Y
1-1/2	1	1	2-3/8	2-7/16
2	1	3/4	2-3/8	2-7/16
	1-3/8	1	2-5/8	2-11/16
2-1/2	1	3/4	2-3/8	2-7/16
	1-3/8	1	2-5/8	2-11/16
	1-3/4	1-1/4	2-7/8	2-15/16
3-1/4	1-3/8	7/8	2-3/4	2-3/4
	1-3/4	1-1/8	3	3
	2	1-1/4	3-1/8	3-1/8
4	1-3/4	1	3	3
	2	1-1/8	3-1/8	3-1/8



SV3K SERIES

EXTENDED TIE RODS (X1, X2, MX3)



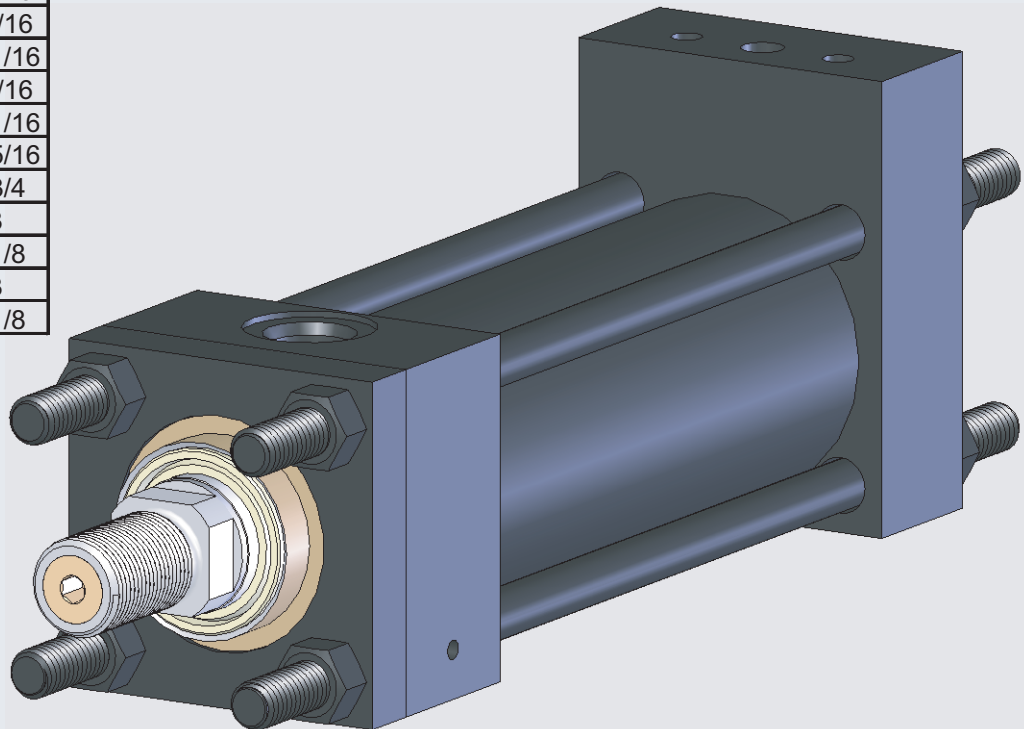
X1 : EXTENDED TIE RODS ON BOTH SIDES (BORE Ø 2 1/2", 3 1/4" & 4")

X2 : EXTENDED TIE RODS ON CAP END SIDE (BORE Ø 2 1/2", 3 1/4" & 4")

X3 : EXTENDED TIE RODS ON HEAD SIDE (NFPA)

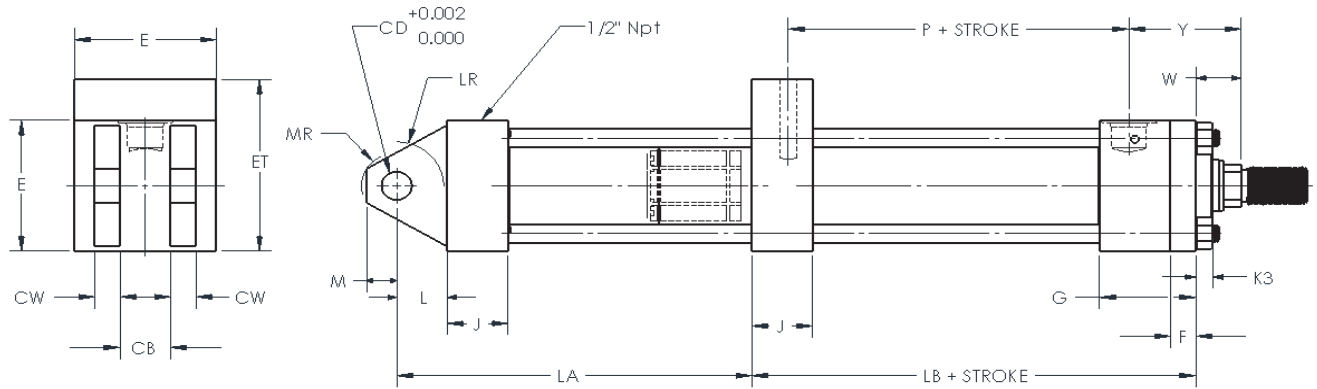
BORE	B2	B3	DD	E	F	G	J	K2	K3	R	+ STROKE	
											LB	P
1-1/2	-	1-3/8	3/8-24	2-1/2	3/8	2-1/8	1-1/2	-	11/32	1,63	6-5/8	4-7/16
2	-	1-13/16	1/2-20	3	5/8	2-3/8	1-1/2	-	7/16	2,05	6-7/8	4-7/16
2-1/2	1-13/16	1-13/16	1/2-20	3-1/2	5/8	2-3/8	1-1/2	7/16	7/16	2,55	6-7/8	4-7/16
3-1/4	2-5/16	2-5/16	5/8-18	4-1/2	3/4	2-3/4	1-3/4	9/16	9/16	3,25	7-1/2	4-3/4
4	2-5/16	2-5/16	5/8-18	5	7/8	2-7/8	1-3/4	9/16	9/16	3,82	7-5/8	4-3/4

BORE	ROD	W	Y
1-1/2	1	1	2-7/16
2	1	3/4	2-7/16
	1-3/8	1	2-11/16
2-1/2	1	3/4	2-7/16
	1-3/8	1	2-11/16
	1-3/4	1-1/4	2-15/16
3-1/4	1-3/8	7/8	2-3/4
	1-3/4	1-1/8	3
	2	1-1/4	3-1/8
4	1-3/4	1	3
	2	1-1/8	3-1/8



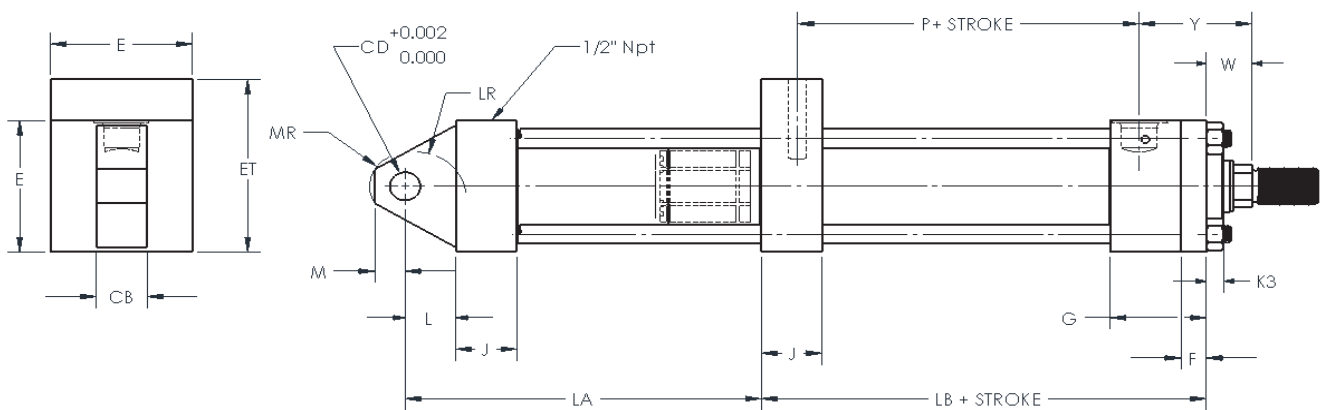
SV3K SERIES

FEMALE CLEVIS (P1)



BORE Ø1 1/2" NON-AVAILABLE

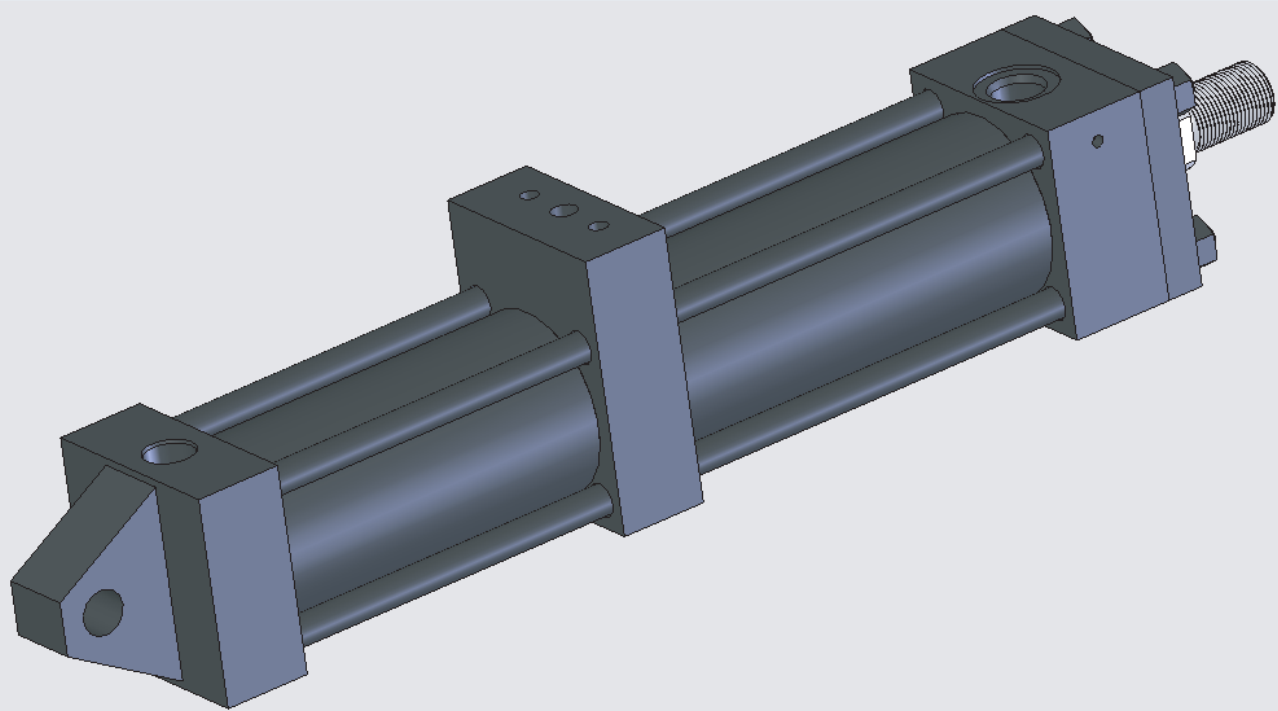
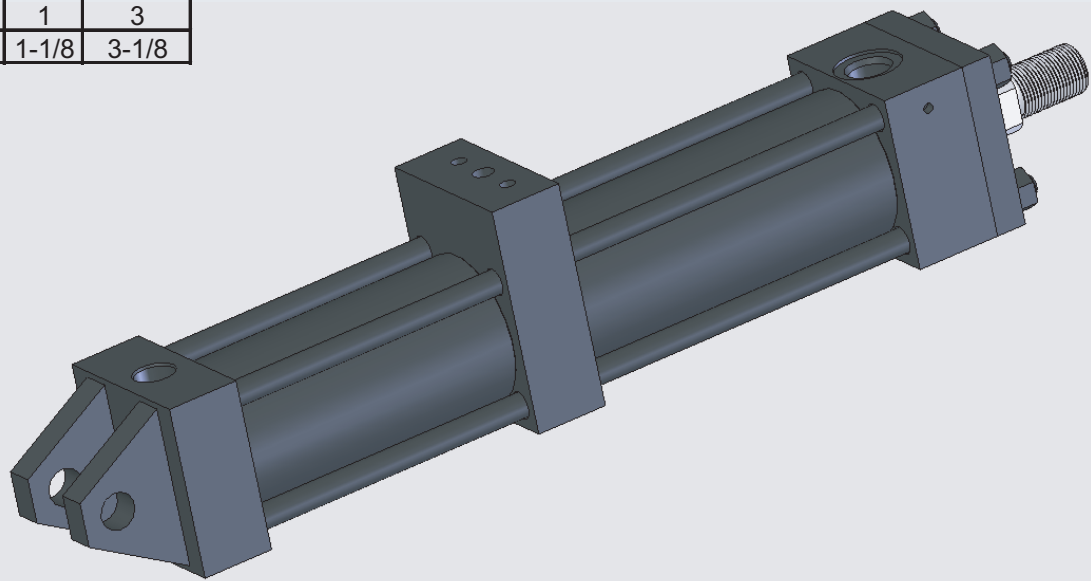
MALE CLEVIS (P3)



BORE Ø1 1/2" NON-AVAILABLE

BORE	CB	CD	CW	E	F	G	J	K3	L	LA	LR	M	MR	+ STROKE	
														LB	P
2	1-1/4	0.751	5/8	3	5/8	2-3/8	1-1/2	7/16	1-1/4	8-3/4	1-1/16	3/4	7/8	6-7/8	4-7/16
2-1/2	1-1/4	0.751	5/8	3-1/2	5/8	2-3/8	1-1/2	7/16	1-1/4	8-3/4	1-1/16	3/4	7/8	6-7/8	4-7/16
3-1/4	1-1/2	1.001	3/4	4-1/2	3/4	2-3/4	1-3/4	9/16	1-1/2	9-1/4	1-1/4	1	1-3/16	7-5/8	4-3/4
4	2	1.376	1	5	7/8	2-7/8	1-3/4	9/16	2-1/8	9-7/8	1-7/8	1-3/8	1-5/8	7-5/8	4-3/4

BORE	ROD	W	Y
2	1	3/4	2-7/16
	1-3/8	1	2-11/16
2-1/2	1	3/4	2-7/16
	1-3/8	1	2-11/16
	1-3/4	1-1/4	2-15/16
3-1/4	1-3/8	7/8	2-3/4
	1-3/4	1-1/8	3
	2	1-1/4	3-1/8
4	1-3/4	1	3
	2	1-1/8	3-1/8



SV3K SERIES

TIE RODS TIGHTENING TORQUE

BORE	Ø TIE ROD	COUPLE (LB-FT)
1-1/2	3/8	18
2	1/2	45
2-1/2	1/2	45
3-1/4	5/8	120
4	5/8	120

Note: tightening must be done when surface is dry (no lubricant)

CYLINDER DEVELOPED FORCE

BORE	Ø ROD	(po ²) AREA	DEVELOPED FORCE (lb) @ DIFFERENTIAL PRESSURE										
			500	750	1000	1250	1500	1750	2000	2250	2500	2750	3000
1-1/2	-	1,7672	884	1325	1767	2209	2651	3093	3534	3976	4418	4860	5302
	1	0.9818	491	736	982	1227	1473	1718	1964	2209	2455	2700	2945
2	-	3.1416	1571	2356	3142	3927	4712	5498	6283	7069	7854	8639	9425
	1	2.3562	1178	1767	2356	2945	3534	4123	4712	5301	5891	6480	7069
	1-3/8	1.6567	828	1243	1657	2071	2485	2899	3313	3728	4142	4556	4970
2-1/2	-	4.9087	2454	3682	4909	6136	7363	8590	9817	11045	12272	13499	14726
	1	4.1233	2062	3092	4123	5154	6185	7216	8247	9277	10308	11339	12370
	1-3/8	3.4238	1712	2568	3424	4280	5136	5992	6848	7704	8560	9415	10271
	1-3/4	2.5034	1252	1878	2503	3129	3755	4381	5007	5633	6259	6884	7510
3-1/4	-	8.2958	4148	6222	8296	10370	12444	14518	16592	18666	20740	22813	24887
	1-3/8	6.8109	3405	5108	6811	8514	10216	11919	13622	15325	17027	18730	20433
	1-3/4	5.8905	2945	4418	5891	7363	8836	10308	11781	13254	14726	16199	17672
	2	5.1542	2577	3866	5154	6443	7731	9020	10308	11597	12886	14174	15463
4	-	12.567	6284	9425	12567	15709	18851	21992	25134	28276	31418	34559	37701
	1-3/4	10.162	5081	7622	10162	12703	15243	17784	20324	22865	25405	27946	30486
	2	9.4254	4713	7069	9425	11782	14138	16494	18851	21207	23564	25920	28276

CYLINDER SIZING :

- A cylinder must generate sufficient force to accelerate a load and overcome friction losses.
- System pressure losses must also be considered.
- The cylinder developed force table does not take into account friction, pressure losses or acceleration force.

EFFECTIVE LENGTH L_e / STOP TUBE

AXIAL FORCE (Lbs)	PISTON ROD MAX LENGTH L_e (in.)			
	ROD DIAMETER (in.)			
	1	1 3/8	1 3/4	2
100	165	310		
200	115	220		
300	95	180	300	
400	82	160	260	
600	67	130	210	280
800	58	110	180	240
1000	52	100	160	210
1200	48	90	148	195
1400	44	84	137	180
1600	41	78	128	170
1800	39	74	120	160
2000	37	70	115	150
2500	33	63	102	135
3000	30	58	92	120
4000	26	50	80	105
5000	23	44	72	96
6000	21	40	66	88
8000	17	35	56	76
10000	12	31	51	68
12000		29	46	62
16000		22	40	54
20000		13	35	46
24000			31	43
30000			20	37
34000			10	32
40000				23
50000				

ROD SIZE SELECTION

To ensure adequate column strength of the piston rod, the rod diameter should be selected as follows:

1) Using the mounting style table below, find the length L and the effective length factor K by referencing the appropriate mounting style and rod end connection ;

2) Calculate the rod effective length L_e where : $L_e = L \times K$

If L_e is greater than 40 inches, refer to the piston stop selection below.

3) From the Cylinder Developed Force Table, determine the maximum force available at system operating pressure ;

4) Using the Rod Size Table, find the axial force value which is equal to or greater than the cylinder developed force. Read horizontally across the table to the piston rod maximum length L_e . Read the rod diameter from the indicated column. If the rod size is not available for the cylinder bore size, always choose the next larger size

STOP TUBE

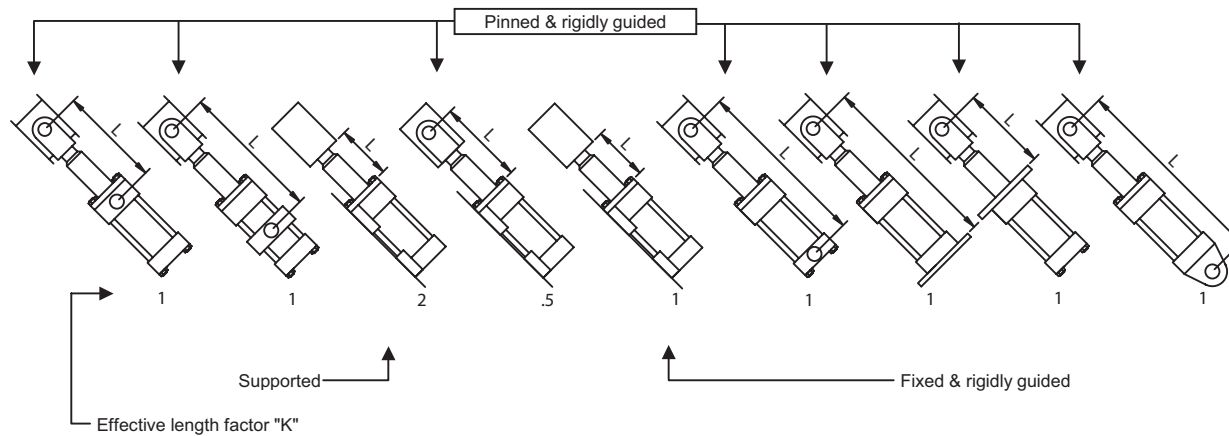
A stop tube may be required on long push stroke cylinders in order to prevent the following:

- excessive wear on the gland bushing ;
- piston rod buckling ;
- cylinder jack-knifing.

If the effective length L_e exceeds 40 inches, then add 1 inch of stop tube for every 10 inches of strokes in excess of 40 inches.

NOTE: When adding a stop tube the effective stroke is reduced by the piston stop length. If stroke length must be maintained increase the stroke as required.

MOUNTING STYLE (shown with rod extended)





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