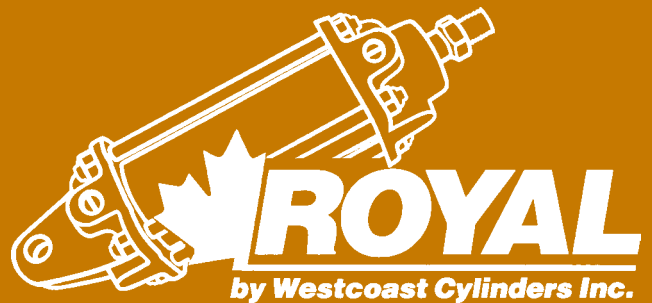
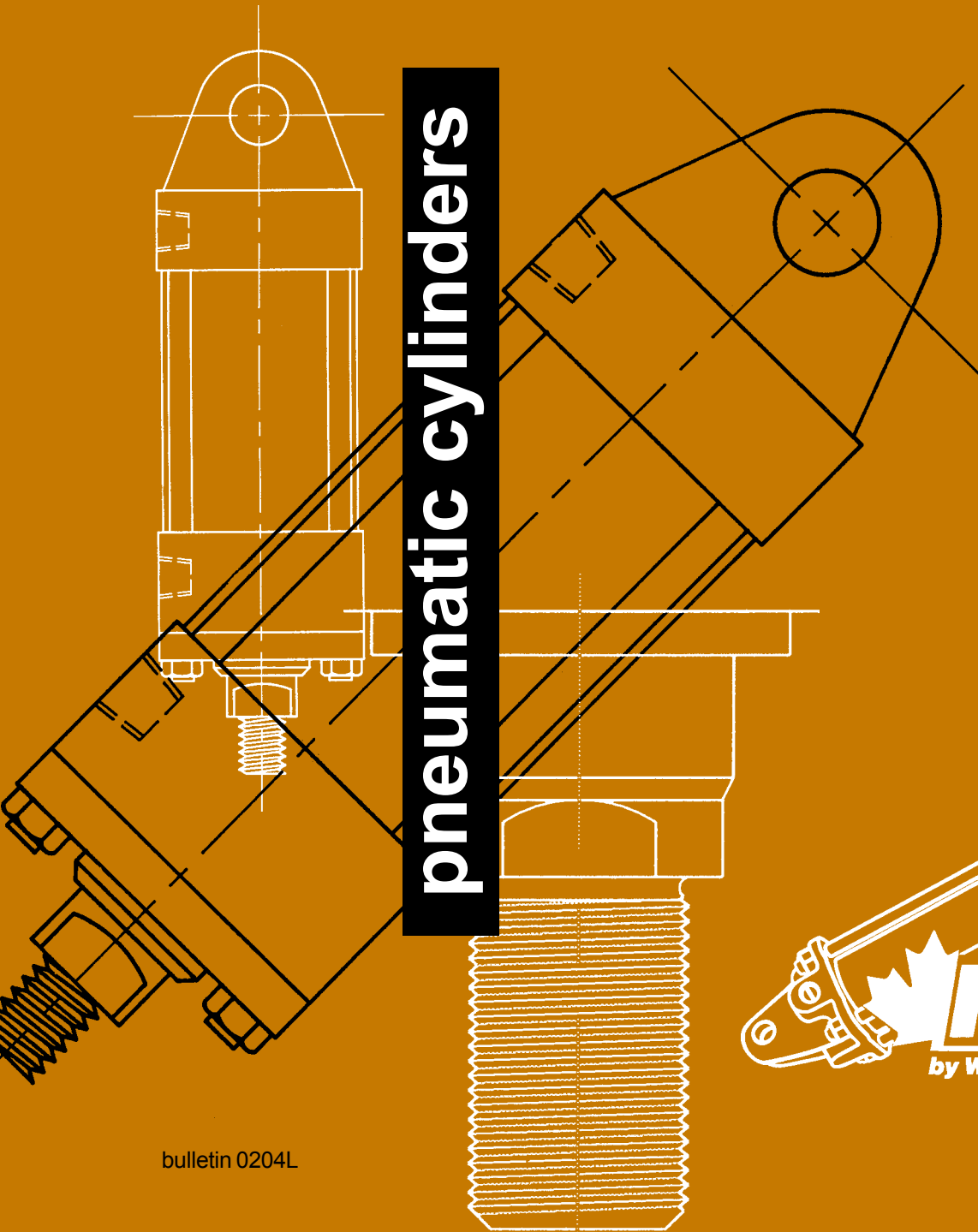


250 psi rating pneumatic

1500 psi rating hydraulic

series L

pneumatic cylinders



Page Description

1	Mounting Styles
2	Features Description
3	Features Drawing

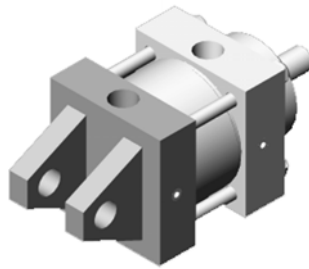
Mounting dimensions

4	C	Fixed Clevis (MP1)
4	E	Pivot Eye (MP3)
5	F	Foot Mount (MS2)
6	MP	Detachable Blind-end Clevis (MP-2)
6	W	Self-aligning Eye (MPU3)
7	NM	No Mount (MX0)
7	NA	Extended Tie-rods Both Ends (MX1)
8	NB	Extended Tie-rods Blind End (MX2)
8	NC	Extended Tie-rods Gland End (MX3)
9	R	Rod End Rectangular Flange (MF1)
9	RS	Rod End Square Flange (MF5)
10	B	Blind End Rectangular Flange (MF2)
10	BS	Blind End Square Flange (MF6)
11	TR	Rod End Trunnion (MT1)
11	TB	Blind End Trunnion (MT2)
12	D	Double Rod (MD)
12	T	Mid Trunnion (MT4)
13	CH	Common Head
13	CR	Common Rod
14	CHR	Common Head / Common Rod

15-17 Rod End Styles, Accessories

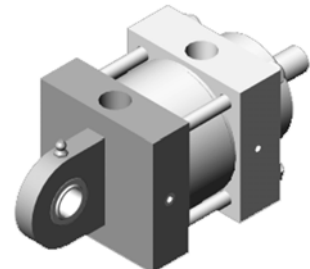
Parts

18	Parts List: 1.5 – 6" dia.
19	Parts Drawing
20	Parts List: 8 – 12" dia. Pressure Rating Table
21	Technical Data

Cylinder Nomenclature

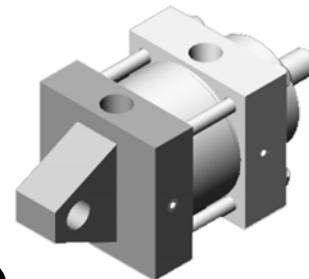
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Fixed Clevis



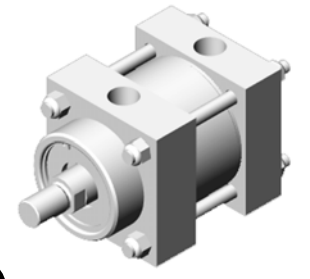
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Self-aligning Eye



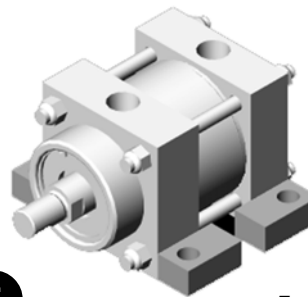
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Pivot Eye



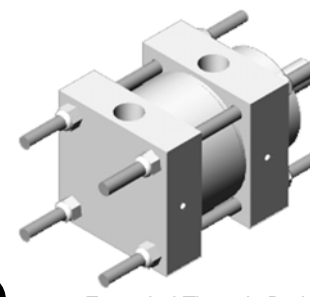
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No Mount



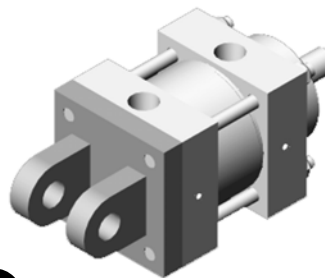
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Foot Mount



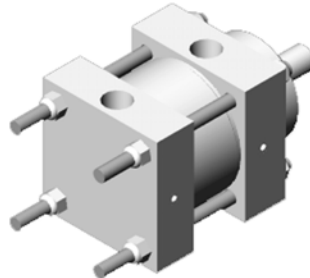
7

Extended Tie-rods Both Ends



6

Detachable Blind-end Clevis



8

Extended Tie-rods Blind End

**Westcoast Cylinders Inc.**

225 Edworthy Way
New Westminster BC
Canada V3L 5G4

Telephone: 604 527 1120

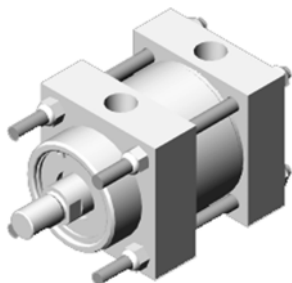
Facsimile: 604 527 1170

Phone Toll Free: 1 877 637 6925

Fax Toll Free: 1 866 527 1170

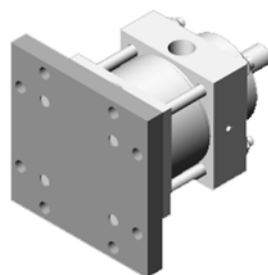
email: sales@royalcylinders.com

website: www.royalcylinders.com



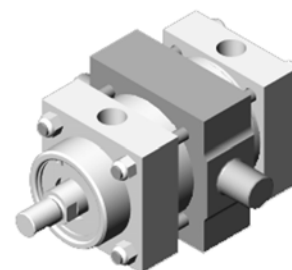
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Extended Tie-rods Gland End



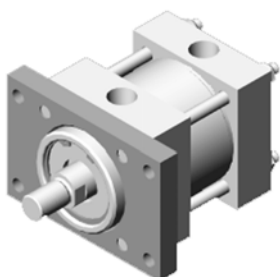
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Blind End Square Flange



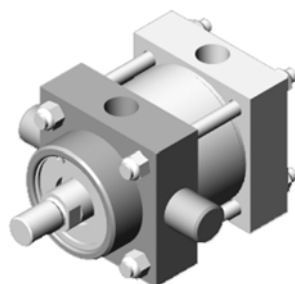
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Mid Trunnion



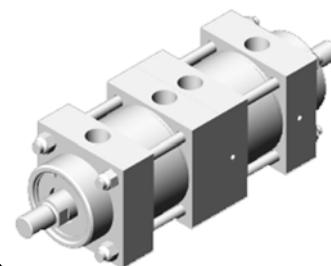
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Rod End Rectangular Flange



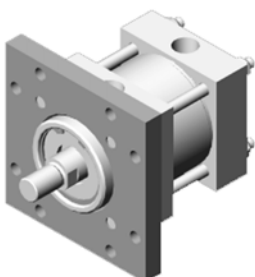
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Rod End Trunnion



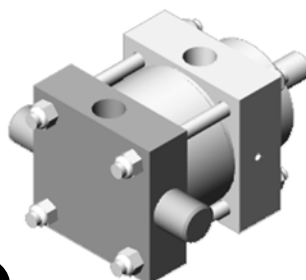
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Common Head



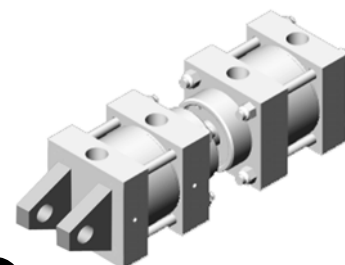
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Rod End Square Flange



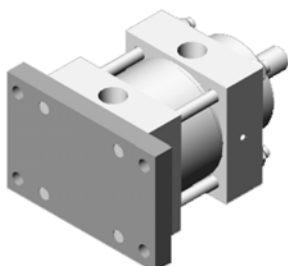
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Blind End Trunnion



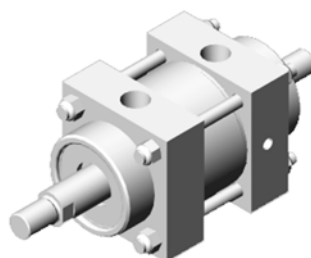
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Common Rod



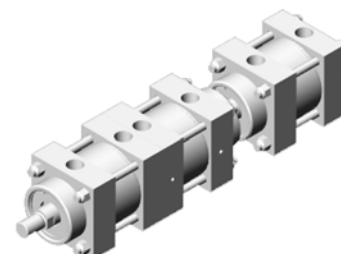
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Blind End Rectangular Flange



12

Double Rod



14

Common Head/Common Rod

Westcoast Cylinders Inc.:

The company has been manufacturing high quality, reliable ROYAL cylinders for over 40 years. Production started with a single cylinder design and expanded to a full range of multi-use, hydraulic, pneumatic cylinders and accessories.

Quality:

WCI is a leader in the design and manufacture of custom heavy duty cylinders. The materials, machinery and tools used to produce our products are continuously being updated. Our cylinders are built to the highest standards utilizing the latest technology and processes.

Delivery:

WCI maintains a large range of stock parts which gives us the flexibility to respond to your needs in emergency situations. Please contact our factory to expedite your special requirements.

NFPA STANDARD MOUNTS

All mountings are NFPA compliant and can be interchanged with other cylinders meeting NFPA standards.

NITROTEC TREATED MATERIALS

Nitrotec is a patented furnace treatment process which converts the steel surface into an extremely hard black iron nitride layer. It is superior to chrome plating in that the nitriding is diffused into the steel surface rendering the surface nonporous. There is no flaking or lifting as with overlying chrome on a softer material.

Nitrotec delivers an exceptional surface hardness of up to 71 Rc, improves corrosion resistance and minimizes friction loss for long seal and gland bushing life.

The **Nitrotec** process also gives an extremely hard dent-resistant finish to materials. Beneath the outer surface is a diffusion zone which gradually reduces in hardness to approximately 40 Rc at 0.015" depth. This diffusion zone acts as a **case-hardening** which is much superior to the relatively soft material underlying chrome plate.

Nitrotec Piston Rod

The piston rod is **Nitrotec** treated C1045 carbon steel. Other rod materials are available including chrome plated 316 stainless steel and chrome plated carbon steel. If you require a rod size that is not included in this catalog contact the factory for information regarding availability and dimensions.

Nitrotec Barrel

Nitrotec treated steel is the standard barrel material. Other barrel materials are available upon request including chromed I.D. steel, Brass and Amalgon.

TEFLON® / HYTHANE® SEALS

The piston seal is a double acting **Teflon**® impregnated compound to reduce friction yet enhance seal life. It has an exceptional temperature range of from -40 to 275°F. The **Hythane**®* rod seal is a high performance, high temperature seal compound having ultra low friction and long seal life. Its temperature range is from -40 to 230°F. The **Hythane**® rod wiper, with internal ribs for extra stability and prevention of pressure trapping, cleans the rod on the return stroke. The static external seal is Buna-N material.

ROTOCAST BRONZE GLAND BUSHING

The gland bushing is manufactured from Rotocast bronze for low friction and long bearing life. Other materials such as Zincoaloy are available upon request. A snap ring retainer allows for easy removal of the bushing for maintenance without dismantling the cylinder. Optional gland bushings with wear rings may be available, contact the factory.

COLD FINISHED HEADS

Heads are precision machined from high quality cold finished steel for perfect alignment of barrel and moving parts. For the 1½" bore and all bores 3¼" and larger, the heads are common for all rod sizes. This allows the end user to lower costs by stocking only one head for all rod sizes. The common head design also enables customers to increase or decrease rod sizes with little effort or expense. Due to space constraints on the 2" bore, the heads are

common between the 1" and 1¾" rod sizes only. On the 2½" bore the heads are common only on the 5/8" and 1" rod sizes.

IMPROVED CUSHIONING:

Floating Check Seals

Cushions are now standard in our pneumatic cylinders. They have been redesigned with a new floating check seal that provides quick and reliable breakaway performance. They are made from the same long wearing **Hythane**® material.

Lengthened Cushion Sleeves

Our cushion sleeves have been lengthened with a new profile to provide a more effective cushion. On some of the smaller sizes that cannot fit a floating check seal, the cushion sleeve itself is floating. This eliminates the possibility of metal "pick-up" and premature wear. In addition, this floating sleeve has a locational-memory feature which centers the sleeve after the first cylinder cycle and holds its position thereafter to eliminate wear from repeated radial displacement.

Flush Mount Needle Valves

Needle valves are now the flush mount style and allow a fine adjustment. The standard location is at position 4, but they can be specified elsewhere. Contact the factory for cushioning options on the gland end of the 1½" bore (both rod sizes), and the 2" bore (1" and 1¾" only rod sizes).

CONVERTING TO NON-CUSHIONED

All heads are manufactured with integral cushion features making a conversion from a cushioned to a non-cushioned cylinder a simple, inexpensive process. To convert to a non-cushioned cylinder simply remove the check seal. If no check seal exists, as on the rod end of some smaller bore sizes, remove the cushion sleeve.

ONE-PIECE ALUMINUM PISTON

The piston is a one-piece design, aluminum construction, incorporating a replaceable wear ring to prevent metal to metal contact and increase the life of the cylinder.

NPTF / SAE PORTS

NPTF ports are standard at position 1 but can be specified in other positions. SAE straight thread O-ring ports are available at no additional cost.

REDUCED AIR PRESSURE REQUIREMENTS

The combination of seals and materials used within Royal air cylinders reduces internal friction thus reducing air pressure requirements. Reducing air pressure lowers consumption costs. Testimonials from customers show a reduction in pressure from 10 to 30%.

INTERNAL / EXTERNAL PISTON STOP

Standard external or optional internal piston stops are available to reduce stress on the piston rod for all cylinder sizes.

STROKE POSITION SENSORS

Proximity sensors or other switches can be fitted in most models. Contact the factory for details.

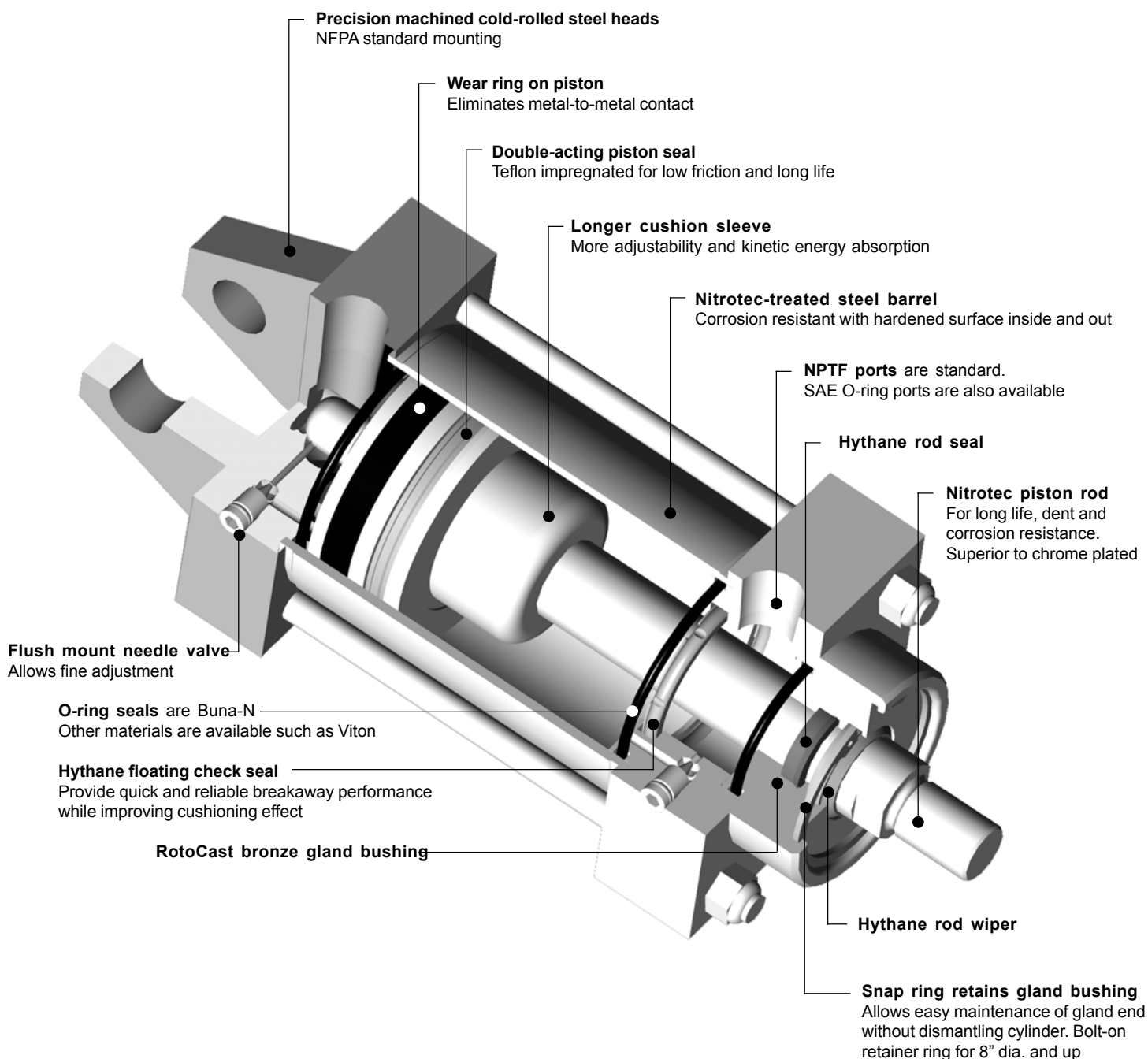
CUSTOM CYLINDERS

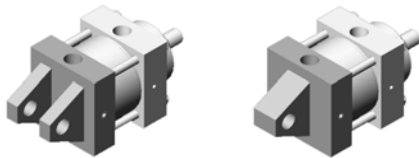
If our standard product does not meet your specifications, Westcoast Cylinders will manufacture custom cylinders to meet your requirements. Please contact the factory.

SPARE PARTS

Genuine Royal seal kits include all seal components, wear rings and needle valves. Please ensure to specify genuine Royal replacement parts to ensure you will receive all feature benefits.

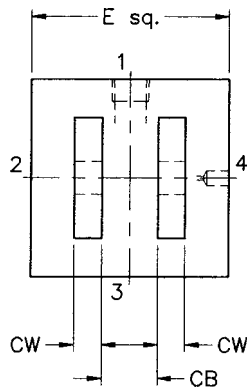
* *Hythane*® is a registered trademark of Hallite Seals International Ltd.



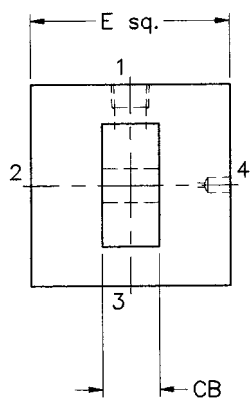
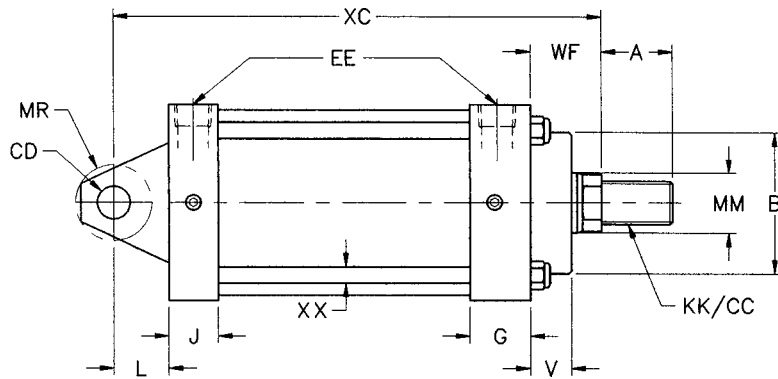


model LC, LE

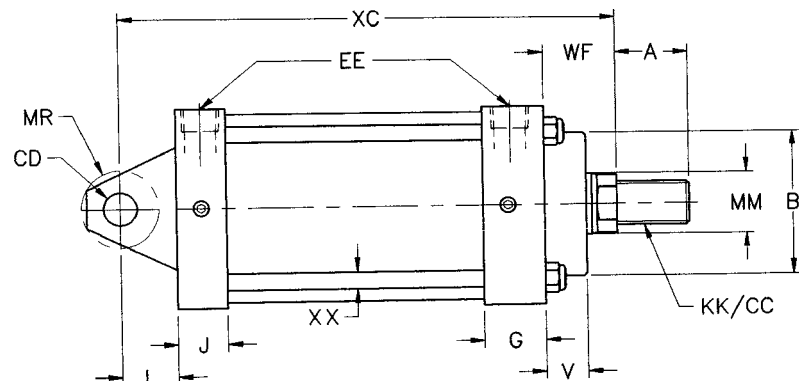
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BORE	ROD	MM	KK	CC	A	WF	V	B		XC	E	G	J	L	CB	CB	CD	CW	NPTF	SAE	MR	XX				
1 1/2	1	5/8	7/16-20	1/2-20	3/4	1	3/4	1	11/16	5 3/8	2	1	3/16	15/16	3/4	25/32	3/4	1/2	1/2	3/8	-	1/2	1/4			
	2	1	3/4-16	7/8-14	1 1/8	1	3/8			5 3/4																
2	1	5/8	7/16-20	1/2-20	3/4	1	3/4	2	7/32	5 3/8	2	1/2	1	3/16	15/16	3/4	25/32	3/4	1/2	1/2	3/8	-	1/2	5/16		
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2 1/2	1	5/8	7/16-20	1/2-20	3/4	1		13/16	2 5/16	5 1/2	3	1	1/4	1	3/4	25/32	3/4	1/2	1/2	3/8	-	1/2	5/16			
	2	1	3/4-16	7/8-14	1 1/8	1	3/8			5 7/8																
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3 1/4	1	1	3/4-16	7/8-14	1 1/8	1	3/8	15/16	2 7/8	6 7/8	3	3/4	1	11/32	1	7/32	1 1/4	1	9/32	1 1/4	3/4	5/8	1/2	-	3/4	3/8
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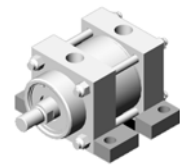


Model LC
NFFPA Style MP1

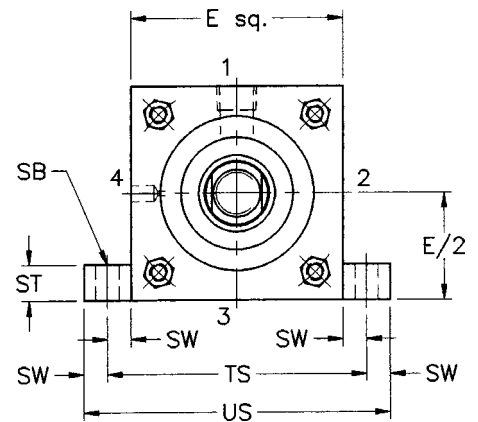
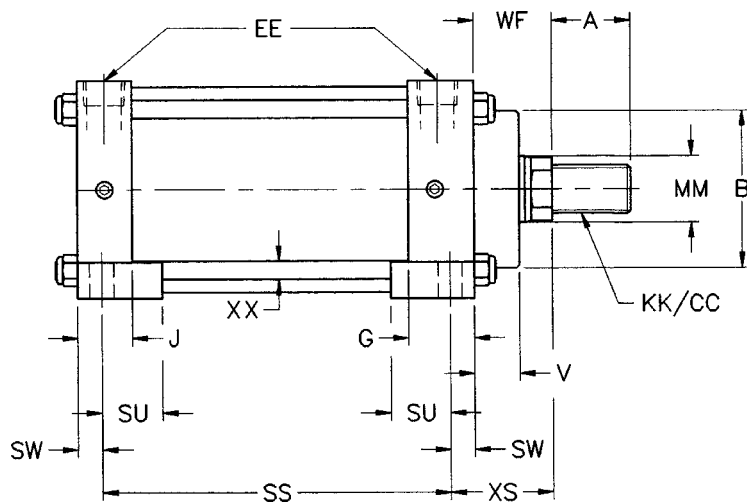


Model LE
NFFPA Style MP3



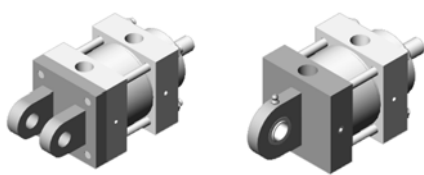


BORE	ROD	ROD DIA.									+ STR			EE		SB	ST	SU	SW	TS	US	XX	
		MM	KK	CC	A	WF	B	V	XS	SS	E	G	J	NPTF	SAE								
1 1/2	1	5/8	7/16-20	1/2-20	3/4	1	1 11/16	3/4	1 3/8	2 7/8	2	1	3/16	15/16	3/8	-	13/32	3/8	15/16	3/8	2 3/4	3 1/2	1/4
	2	1	3/4-16	7/8-14	1 1/8	1 3/8																	
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	2	2	1 1/2-12	1 3/4-12	2 1/4	2																	
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	2	2 1/2	1 7/8-12	2 1/4-12	3	2 1/4																	



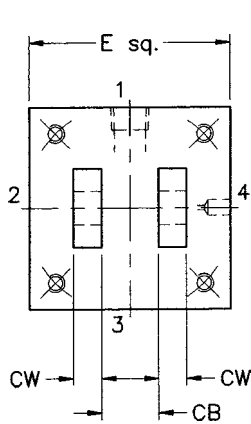
Model LF
NFA Style MS2

Note:
For 1 1/2" bore cushioned foot mount cylinder - due to the position of the needle valve, installer should pre-adjust before cylinder is mounted.

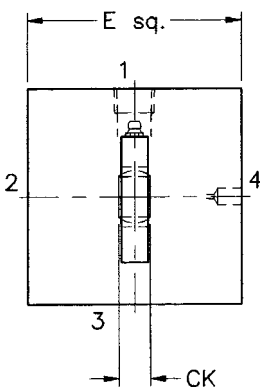
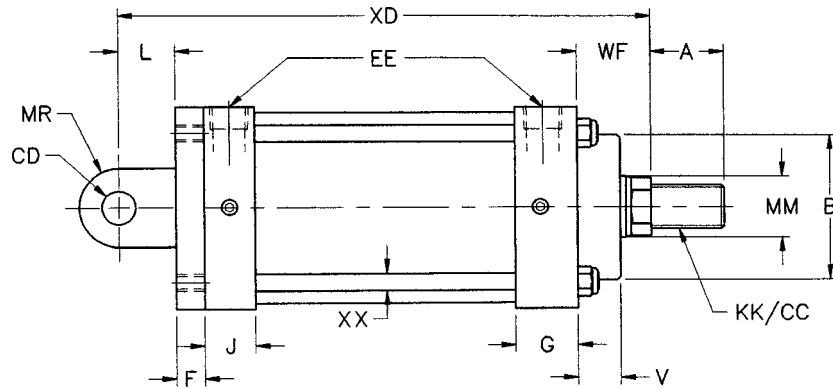


model **LMP, LW**

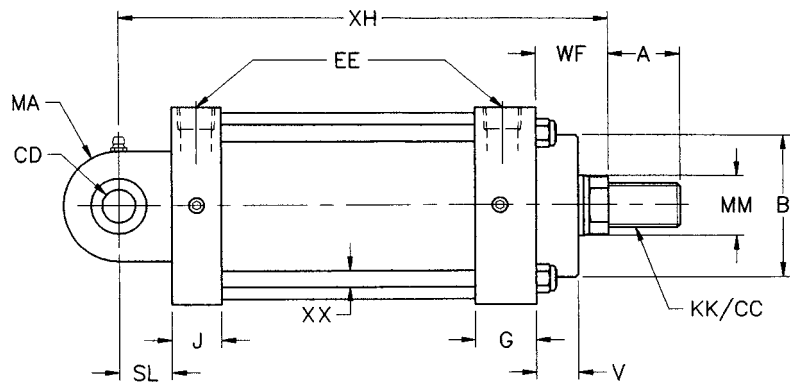
BORE	ROD	ROD DIA.		CC	A	WF	V	B	+ STR		E	F	G	J	L	CB	CK	CD	CW	EE		MA	MR	SL	XX
		MM	KK						XD	XH										NPTF	SAE				
1 1/2	1	5/8	7/16-20	1/2-20	3/4	1	3/4	1 1/16	5 3/4	5 7/16	2	3/8	1 3/16	15/16	3/4	0.76	7/16	1/2	1/2	3/8	-	3/4	5/8	13/16	1/4
	2	1	3/4-16	7/8-14	1 1/8	1 3/8			6 1/8	5 13/16															
2	1	5/8	7/16-20	1/2-20	3/4	1	3/4	2 7/32	5 3/4	5 7/16	2 1/2	3/8	1 3/16	15/16	3/4	0.76	7/16	1/2	1/2	3/8	-	3/4	5/8	13/16	5/16
	2	1	3/4-16	7/8-14	1 1/8	1 3/8			6 1/8	5 13/16															
2 1/2	3	1 3/8	1-14	1 1/4-12	1 5/8	1 5/8			6 3/8	6 1 1/8															
	1	5/8	7/16-20	1/2-20	3/4	1	13/16	2 5/16	5 7/8	5 9/16	3	3/8	1 1/4	1	3/4	0.76	7/16	1/2	1/2	3/8	-	3/4	5/8	13/16	5/16
3 1/4	2	1	3/4-16	7/8-14	1 1/8	1 3/8			6 1/4	5 15/16															
	1	1	3/4-16	7/8-14	1 1/8	1 3/8	15/16	2 7/8	7 1/2	6 13/16	3 3/4	5/8	1 1/32	1 7/32	1 1/4	126	2 1/32	3/4	5/8	1/2	-	1 1/4	7/8	1 3/16	3/8
4	2	1 3/8	1-14	1 1/4-12	1 5/8	1 5/8			7 3/4	7 1 1/8															
	1	1	3/4-16	7/8-14	1 1/8	1 3/8	15/16	3 1/4	7 1/2	6 13/16	4 1/2	5/8	1 3/8	1 1/8	1 1/4	126	2 1/32	3/4	5/8	1/2	-	1 1/4	7/8	1 3/16	3/8
5	3	1 3/4	1 1/4-12	1 1/2-12	2	1 7/8			8	7 5/16															
	1	1	3/4-16	7/8-14	1 1/8	1 3/8	15/16	3 3/4	7 3/4	7 1 1/8	5 1/2	5/8	1 3/8	1 1/4	1 1/4	126	2 1/32	3/4	5/8	1/2	-	1 1/4	7/8	1 3/16	1/2
6	2	1 3/8	1-14	1 1/4-12	1 5/8	1 5/8			8	7 5/16															
	1	1	3/4-16	7/8-14	1 1/8	1 3/8	15/16	3 3/4	7 3/4	7 1 1/8	6 1/2	3/4	1 5/8	1 3/8	1 1/2	151	7/8	1	3/4	3/4	-	1 1/2	1 1/8	1 9/16	1/2
6	3	1 3/4	1 1/4-12	1 1/2-12	2	1 7/8			8	7 5/16															
	2	1 3/4	1 1/4-12	1 1/2-12	2	1 7/8			9 1/8	8 7/16															
6	3	2	1 1/2-12	1 3/4-12	2 1/4	2			9 1/4	8 9/16															



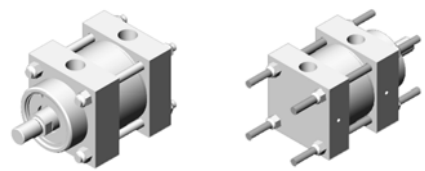
Model **LMP**
NFA Style MP-2



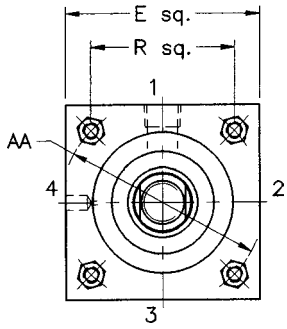
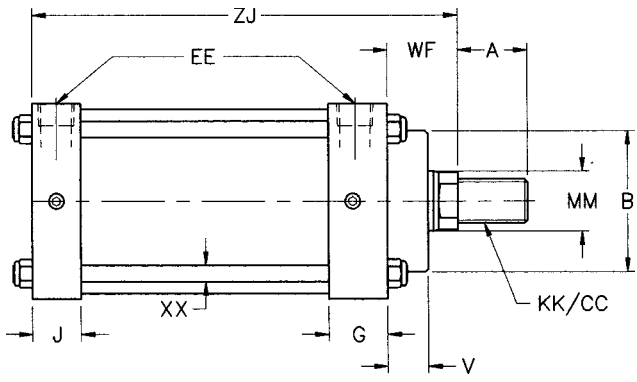
Model **LW**
NFA Style MPU3



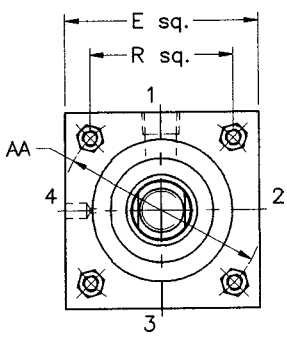
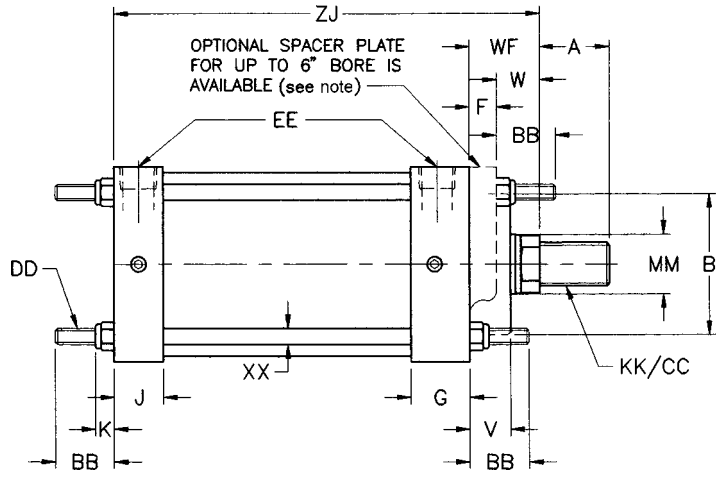
model LNM, LNA



ROD DIA.													+STR		EE							
BORE	ROD	MM	KK	CC	A	WF	W	V	B	AA	BB	DD	ZJ	E	F	G	J	K	R	NPTF	SAE	XX
1 1/2	1	5/8	7/16-20	1/2-20	3/4	1	5/8	3/4	1 11/16	2.02	1	1/4-28	4 5/8	2	3/8	1 3/16	15/16	5/16	1.43	3/8	-	1/4
	2	1	3/4-16	7/8-14	1 1/8	1 3/8	1						5									
2	1	5/8	7/16-20	1/2-20	3/4	1	5/8	3/4	2 7/32	2.60	1 1/8	5/16-24	4 5/8	2 1/2	3/8	1 3/16	15/16	3/8	1.84	3/8	-	5/16
	2	1	3/4-16	7/8-14	1 1/8	1 3/8	1						5									
2 1/2	1	5/8	7/16-20	1/2-20	3/4	1	5/8	13/16	2 5/16	3.10	1 1/8	5/16-24	4 3/4	3	3/8	1 1/4	1	3/8	2.19	3/8	-	5/16
	2	1	3/4-16	7/8-14	1 1/8	1 3/8	1						5 1/8									
3 1/4	1	1	3/4-16	7/8-14	1 1/8	1 3/8	3/4	15/16	2 7/8	3.90	1 3/8	3/8-24	5 3/8	3 3/4	5/8	1 11/32	1 7/32	7/16	2.76	1/2	-	3/8
	2	1 3/8	1-14	1 1/4-12	1 5/8	1 5/8	1						5 7/8									
4	1	1	3/4-16	7/8-14	1 1/8	1 3/8	3/4	15/16	3 1/4	4.70	1 3/8	3/8-24	5 5/8	4 1/2	5/8	1 3/8	1 1/8	7/16	3.32	1/2	-	3/8
	2	1 3/8	1-14	1 1/4-12	1 5/8	1 5/8	1						5 7/8									
5	1	1 3/8	1-14	1 1/4-12	1 5/8	1 5/8	7/8	1	4 1/2	6.90	1 13/16	1/2-20	6 5/8	5 1/2	5/8	1 3/8	1 1/4	5/8	4.10	1/2	-	1/2
	2	1 3/4	1 1/4-12	1 1/2-12	2	1 7/8	1 1/4						6 1/8									
6	1	1 3/8	1-14	1 1/4-12	1 5/8	1 5/8	7/8	1	4 1/2	6.90	1 13/16	1/2-20	6 5/8	6 1/2	3/4	1 5/8	1 3/8	5/8	4.88	3/4	-	1/2
	2	1 3/4	1 1/4-12	1 1/2-12	2	1 7/8	1 1/8						6 7/8									
8	1	1 3/8	1-14	1 1/4-12	1 5/8	1 5/8	-	5/8	5 3/4	9.10	2 5/16	5/8-18	6 3/4	8 1/2	-	1 5/8	1 3/8	3/4	6.44	3/4	-	5/8
	2	1 3/4	1 1/4-12	1 1/2-12	2	1 7/8	-						7									
10	1	1 3/4	1 1/4-12	1 1/2-12	2	1 7/8	-	7/8	6 3/8	11.20	2 11/16	3/4-16	8 1/4	10 5/8	-	2	1 3/4	7/8	7.92	1	-	3/4
	2	2	1 1/2-12	1 3/4-12	2 1/4	2	-						8 3/8									
12	1	2	1 1/2-12	1 3/4-12	2 1/4	2	-	7/8	6 3/4	13.30	2 11/16	3/4-16	8 7/8	12 3/4	-	2	1 5/8	7/8	9.40	1	-	3/4
	2	2 1/2	1 7/8-12	2 1/4-12	3	2 1/4	-						9 1/8									
	3	3	2 1/4-12	2 3/4-12	3 1/2	2 1/4	-						9 1/8									

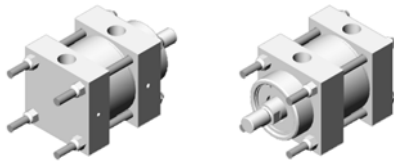


Model LNM
NFFA Style MX0



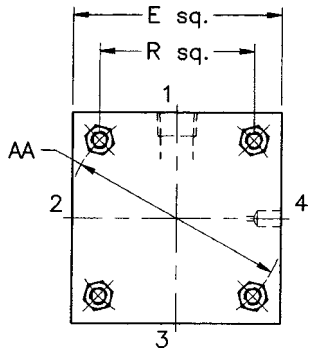
Model LNA
NFFA Style MX1

For models LNA and LNC up to 6" bore:
If the cylinder will be mounted directly onto the rod-end face and the standard NFFA "W" dimension is required, an optional spacer plate is available. For this option, choose letter "F" in the options section of the nomenclature page when creating the cylinder model number.

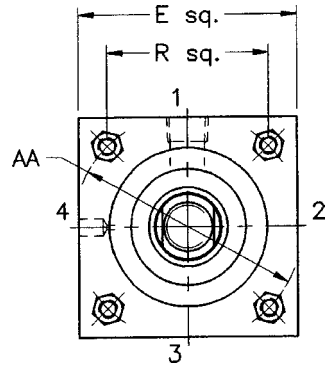
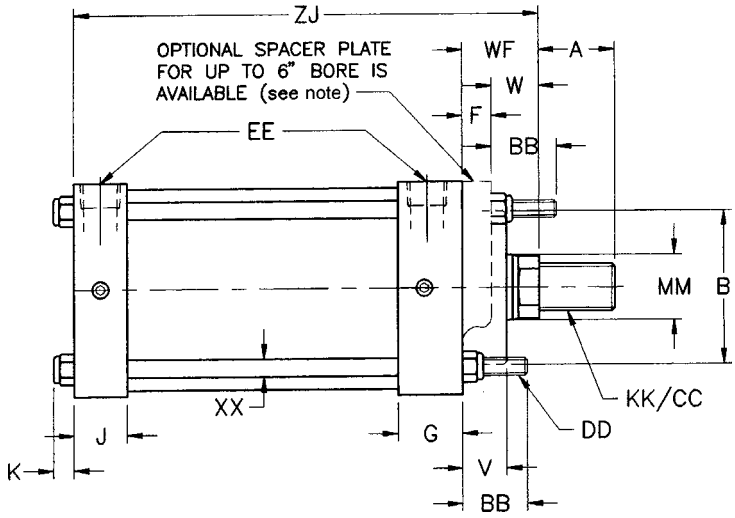
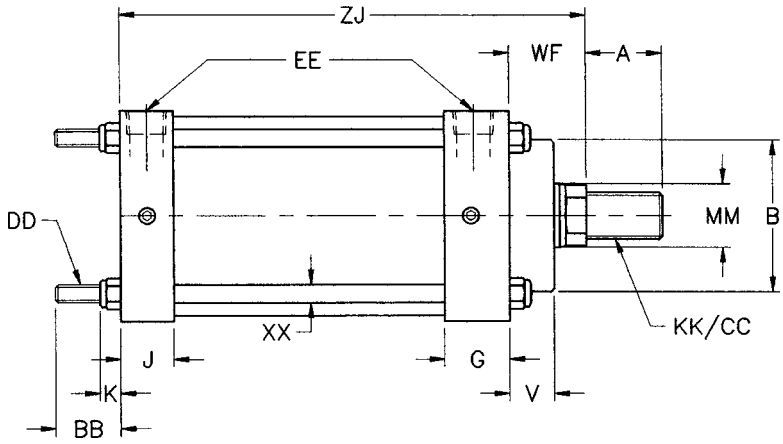


model LNB, LNC

ROD DIA.													+STR	EE								
BORE	ROD	MM	KK	CC	A	WF	W	V	B	AA	BB	DD	ZJ	E	F	G	J	K	R	NPTF	SAE	XX
1 1/2	1	5/8	7/16-20	1/2-20	3/4	1	5/8	3/4	1 11/16	2.02	1	1/4-28	4 5/8	2	3/8	1 3/16	15/16	5/16	1.43	3/8	-	1/4
	2	1	3/4-16	7/8-14	1 1/8	1 3/8	1						5									
2	1	5/8	7/16-20	1/2-20	3/4	1	5/8	3/4	2 7/32	2.60	1 1/8	5/16-24	4 5/8	2 1/2	3/8	1 3/16	15/16	3/8	1.84	3/8	-	5/16
	2	1	3/4-16	7/8-14	1 1/4	1 3/8	1						5									
	3	1 3/8	1-14	1 1/4-12	1 5/8	1 5/8	1 1/4						5 1/4									
2 1/2	1	5/8	7/16-20	1/2-20	3/4	1	5/8	13/16	2 5/16	3.10	1 1/8	5/16-24	4 3/4	3	3/8	1 1/4	1	3/8	2.19	3/8	-	5/16
	2	1	3/4-16	7/8-14	1 1/8	1 3/8	1						5 1/8									
	3	1 3/8	1-14	1 1/4-12	1 5/8	1 5/8	1 1/4						5 3/8									
3 1/4	1	1	3/4-16	7/8-14	1 1/8	1 3/8	3/4	15/16	3 1/4	4.70	1 3/8	3/8-24	5 5/8	3 3/4	5/8	1 11/32	1 7/32	7/16	2.76	1/2	-	3/8
	2	1 3/8	1-14	1 1/4-12	1 5/8	1 5/8	1						5 7/8									
	3	1 3/4	1 1/4-12	1 1/2-12	2	1 7/8	1 1/4						6 1/8									
4	1	1	3/4-16	7/8-14	1 1/8	1 3/8	3/4	15/16	3 1/4	5.80	1 13/16	1/2-20	5 5/8	4 1/2	5/8	1 3/8	1 1/8	7/16	3.32	1/2	-	3/8
	2	1 3/8	1-14	1 1/4-12	1 5/8	1 5/8	1						5 7/8									
	3	1 3/4	1 1/4-12	1 1/2-12	2	1 7/8	1 1/4						6 1/8									
5	1	1	3/4-16	7/8-14	1 1/8	1 3/8	3/4	15/16	3 3/4	6.90	1 13/16	1/2-20	5 7/8	5 1/2	5/8	1 3/8	1 1/4	5/8	4.10	1/2	-	1/2
	2	1 3/8	1-14	1 1/4-12	1 5/8	1 5/8	1						6 1/8									
	3	1 3/4	1 1/4-12	1 1/2-12	2	1 7/8	1 1/4						6 3/8									
6	1	1 3/8	1-14	1 1/4-12	1 5/8	1 5/8	7/8	1	4 1/2	6.90	1 13/16	1/2-20	6 5/8	6 1/2	3/4	1 5/8	1 3/8	5/8	4.88	3/4	-	1/2
	2	1 3/4	1 1/4-12	1 1/2-12	2	1 7/8	1 1/8						6 7/8									
	3	2	1 1/2-12	1 3/4-12	2 1/4	2	1 1/4						7									
8	1	1 3/8	1-14	1 1/4-12	1 5/8	1 5/8	-	5/8	5 3/4	9.10	2 5/16	5/8-18	6 3/4	8 1/2	-	1 5/8	1 3/8	3/4	6.44	3/4	-	5/8
	2	1 3/4	1 1/4-12	1 1/2-12	2	1 7/8	-						7									
	3	2	1 1/2-12	1 3/4-12	2 1/4	2	-						7 1/8									
10	1	1 3/4	1 1/4-12	1 1/2-12	2	1 7/8	-	7/8	6 3/8	11.20	2 11/16	3/4-16	8 1/4	10 5/8	-	2	1 3/4	7/8	7.92	1	-	3/4
	2	2	1 1/2-12	1 3/4-12	2 1/4	2	-						8 3/8									
	3	2 1/2	1 7/8-12	2 1/4-12	3	2 1/4	-						8 5/8									
12	1	2	1 1/2-12	1 3/4-12	2 1/4	2	-	7/8	6 3/4	13.30	2 11/16	3/4-16	8 7/8	12 3/4	-	2	1 5/8	7/8	9.40	1	-	3/4
	2	2 1/2	1 7/8-12	2 1/4-12	3	2 1/4	-						9 1/8									
	3	3	2 1/4-12	2 3/4-12	3 1/2	2 1/4	-						9 1/8									

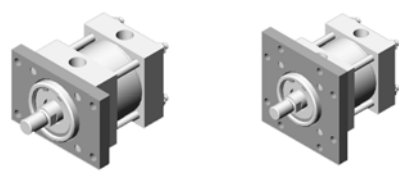


Model LNB
NPTA Style MX2

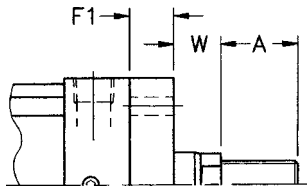


Model LNC
NPTA Style MX3

For models LNA and LNC up to 6" bore:
If the cylinder will be mounted directly onto the rod-end face and the standard NPTA "W" dimension is required, an optional spacer plate is available. For this option, choose letter "F" in the options section of the nomenclature page when creating the cylinder model number.



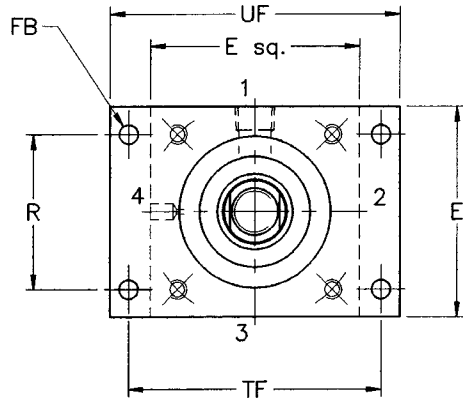
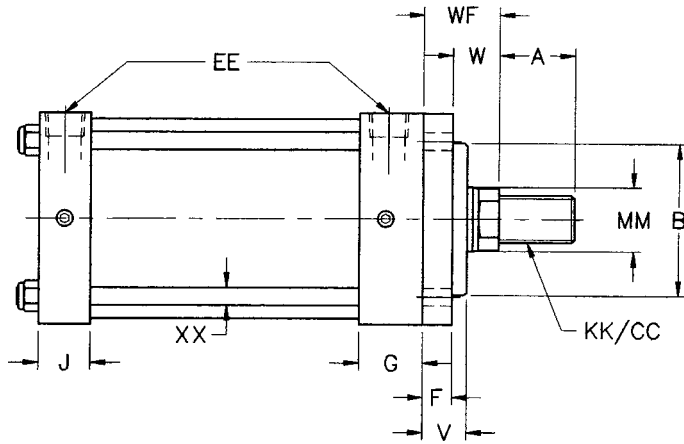
ROD DIA.																EE												
BORE	ROD	MM	KK	CC	A	WF	W	V	B	E	F	F1	G	J	NPTF	SAE	FB	R	TF	UF	XX							
1 1/2	1	5/8	7/16-20	1/2-20	3/4	1	5/8	3/4	1 11/16	2	3/8	13/16	1	3/16	15/16	3/8	-	9/32	1.43	2	3/4	3	3/8	1/4				
	2	1	3/4-16	7/8-14	1 1/8	1	3/8	1																				
2	1	5/8	7/16-20	1/2-20	3/4	1	5/8	3/4	2 7/32	2 1/2	3/8	13/16	1	3/16	15/16	3/8	-	11/32	1.84	3	3/8	4	1/8	5/16				
	2	1	3/4-16	7/8-14	1 1/8	1	3/8	1																				
2 1/2	1	5/8	7/16-20	1/2-20	3/4	1	5/8	13/16	2 5/16	3	3/8	7/8	1	1/4	1	3/8	-	11/32	2.19	3	7/8	4	5/8	5/16				
	2	1	3/4-16	7/8-14	1 1/8	1	3/8	1																				
3 1/4	1	3/8	1-14	1 1/4-12 1	5/8	1	5/8	1 1/4																				
	2	1 3/8	1-14	1 1/4-12 1	5/8	1	5/8	1 1/4																				
4	1	1	3/4-16	7/8-14	1 1/8	1	3/8	3/4	15/16	3	1/4	4 1/2	5/8	1	1	3/8	1	1/8	1/2	-	13/32	3.32	5	7/16	6	1/4	3/8	
	2	1 3/8	1-14	1 1/4-12 1	5/8	1	5/8	1																				
5	1	1	3/4-16	7/8-14	1 1/8	1	3/8	3/4	15/16	3	3/4	5 1/2	5/8	1	1	3/8	1	1/4	1/2	-	17/32	4.10	6	5/8	7	5/8	1/2	
	2	1 3/8	1-14	1 1/4-12 1	5/8	1	5/8	1																				
6	1	1 3/8	1-14	1 1/4-12 1	5/8	1	5/8	7/8	1	4	1/2	6 1/2	3/4	1	1/16	1	5/8	1	3/8	3/4	-	17/32	4.88	7	5/8	8	5/8	1/2
	2	1 3/4	1 1/4-12 1	1/2-12 2	1	7/8	1	1/4																				



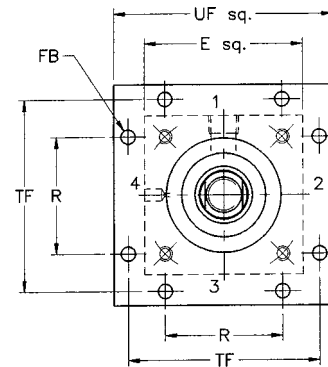
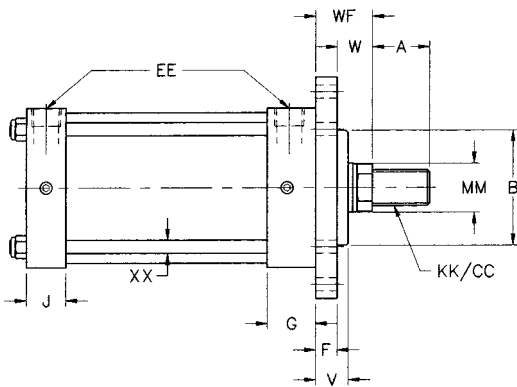
Detail of optional thicker mounting plate (F1).

Models LR and LRS with optional thicker mounting flange plate

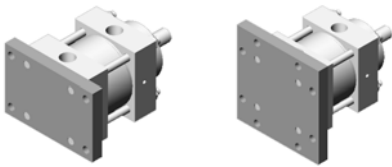
Note: For the LR and LRS models – if the protruding hub is to be used as a mounting spigot, use the table values for B and V to ensure proper fit. If B dia. is too large and existing equipment cannot be modified, a thicker mounting flange plate (F1) is available that will recess the hub. An equivalent rod extension will accompany the increase in plate thickness. For this option, choose letter “U” in the options section of the nomenclature page when creating the cylinder model number.



Model LR
NFFPA Style MF1

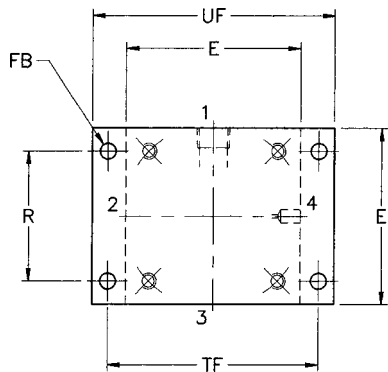


Model LRS
NFFPA Style MF5

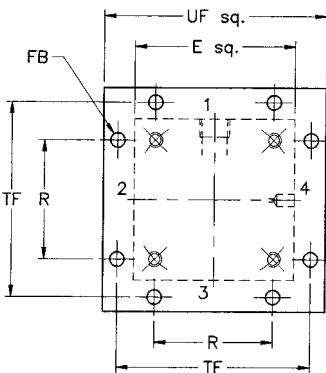
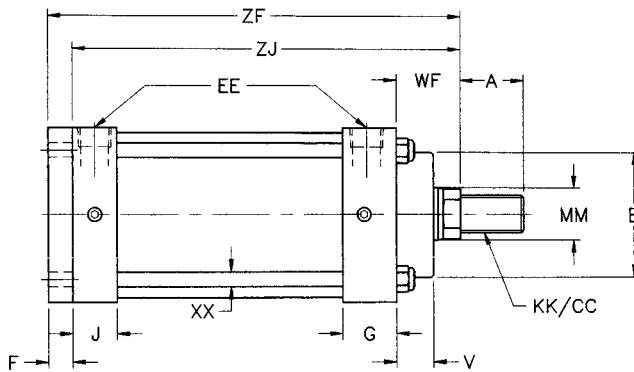


model LB, LBS

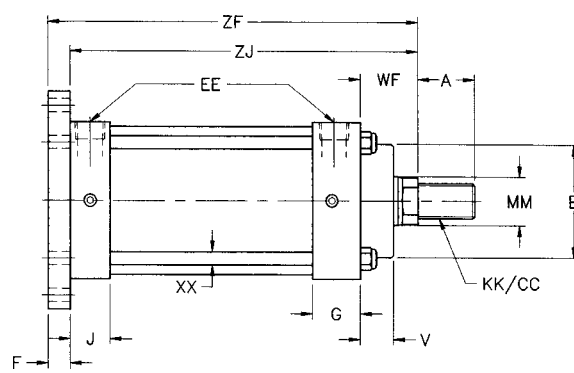
ROD DIA.									ADD STROKE						EE						
BORE	ROD	MM	KK	CC	A	WF	V	B	ZF	ZJ	E	F	G	J	NPTF	SAE	FB	R	TF	UF	XX
1 1/2	1	5/8	7/16-20	1/2-20	3/4	1	3/4	1 11/16	5	4 5/8	2	3/8	1 3/16	15/16	3/8	-	9/32	1.43	2 3/4	3 3/8	1/4
	2	1	3/4-16	7/8-14	1 1/8	1 3/8			5 3/8	5											
2	1	5/8	7/16-20	1/2-20	3/4	1	3/4	2 7/32	5	4 5/8	2 1/2	3/8	1 3/16	15/16	3/8	-	11/32	1.84	3 3/8	4 1/8	5/16
	2	1	3/4-16	7/8-14	1 1/8	1 3/8			5 3/8	5											
2 1/2	1	5/8	7/16-20	1/2-20	3/4	1	13/16	2 5/16	5 1/8	4 3/4	3	3/8	1 1/4	1	3/8	-	11/32	2.19	3 7/8	4 5/8	5/16
	2	1	3/4-16	7/8-14	1 1/8	1 3/8			5 1/2	5 1/8											
3 1/4	1	5/8	7/16-20	1/2-20	3/4	1	15/16	2 7/8	5 3/4	5 3/8	3 3/4	5/8	1 11/32	1 7/32	1/2	-	13/32	2.76	4 11/16	5 1/2	3/8
	2	1 3/8	1-14	1 1/4-12	1 5/8	1 5/8			6 1/4	5 5/8	4 1/2	5/8	1 3/8	1 1/8	1/2	-	13/32	3.32	5 7/16	6 1/4	3/8
4	1	1	3/4-16	7/8-14	1 1/8	1 3/8	15/16	3 1/4	6 1/4	5 5/8	5 1/2	5/8	1 3/8	1 1/4	1/2	-	17/32	4.10	6 5/8	7 5/8	1/2
	2	1 3/8	1-14	1 1/4-12	1 5/8	1 5/8			6 1/2	5 7/8	6 3/4	5/8	1 3/8	1 1/8							
5	1	1	3/4-16	7/8-14	1 1/8	1 3/8	15/16	3 3/4	6 1/2	5 7/8	6 3/4	5/8	1 3/8	1 1/4	1/2	-	17/32	4.88	7 5/8	8 5/8	1/2
	2	1 3/8	1-14	1 1/4-12	1 5/8	1 5/8			7	6 3/8	7 3/8	5/8	1 5/8	1 3/8	3/4	-	17/32	4.88	7 5/8	8 5/8	1/2
6	1	1 3/8	1-14	1 1/4-12	1 5/8	1 5/8	1	4 1/2	7 3/8	6 5/8	6 5/8	5/8	1 5/8	1 3/8	3/4	-	17/32	4.88	7 5/8	8 5/8	1/2
	2	1 3/4	1 1/4-12	1 1/2-12	2	1 7/8			7 5/8	6 7/8	7 3/4	5/8	1 5/8	1 3/8							
	3	2	1 1/2-12	1 3/4-12	2 1/4	2			7 3/4	7											

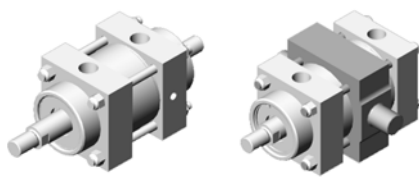


Model LB
NFA Style MF2



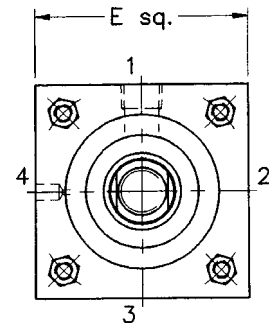
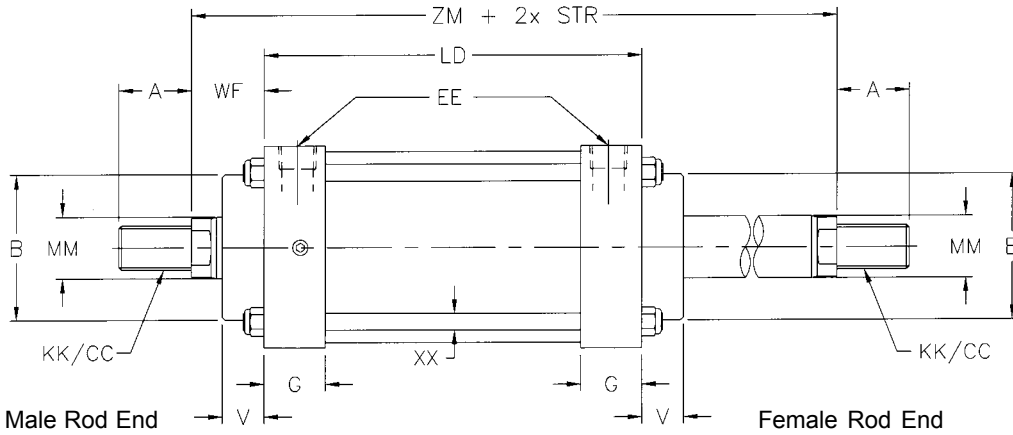
Model LBS
NFA Style MF6



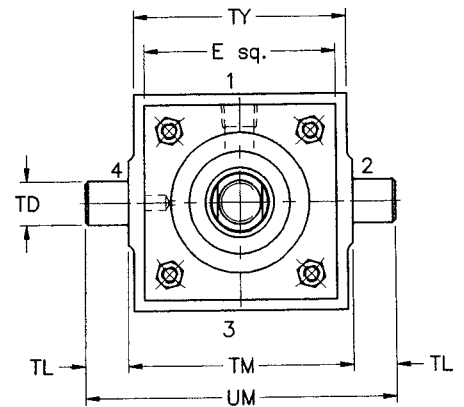
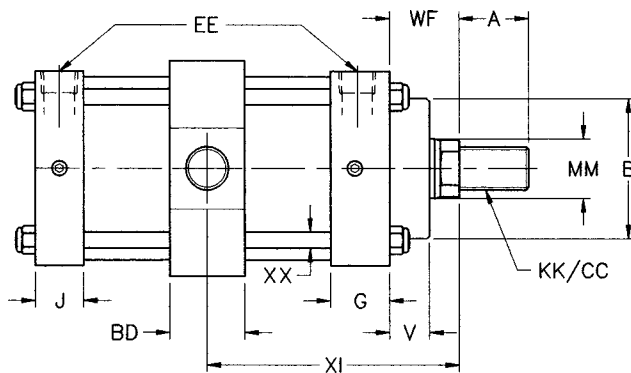


model LD, LT

ROD DIA.											+ STR		+2xSTR		EE								
BORE	ROD	MM	KK	CC	A	WF	B	V	XI (min)	BD	LD	ZM	E	G	J	NPTF	SAE	TD	TL	TM	TY	UM	XX
1 1/2	1	5/8	7/16-20	1/2-20	3/4	1	1 11/16	3/4	2 7/8	1 1/4	3 7/8	6 1/8	2	1 3/16	15/16	3/8	-	1	1	2 1/2	2 1/4	4 1/2	1/4
	2	1	3/4-16	7/8-14	1 1/8	1 3/8			3 1/4			6 7/8											
2	1	5/8	7/16-20	1/2-20	3/4	1	2 7/32	3/4	3	1 1/2	3 7/8	6 1/8	2 1/2	1 3/16	15/16	3/8	-	1	1	3	2 3/4	5	5/16
	2	1	3/4-16	7/8-14	1 1/8	1 3/8			3 3/8			6 7/8											
	3	1 3/8	1-14	1 1/4-12	1 5/8	1 5/8			3 5/8			7 3/8											
2 1/2	1	5/8	7/16-20	1/2-20	3/4	1	2 5/16	13/16	3 1/16	1 1/2	4	6 1/4	3	1 1/4	1	3/8	-	1	1	3 1/2	3 1/4	5 1/2	5/16
	2	1	3/4-16	7/8-14	1 1/8	1 3/8			3 7/16			7											
	3	1 3/8	1-14	1 1/4-12	1 5/8	1 5/8			3 11/16			7 1/2											
3 1/4	1	1	3/4-16	7/8-14	1 1/8	1 3/8	2 7/8	15/16	3 21/32	1 3/4	4 3/8	7 1/2	3 3/4	1 11/32	1 7/32	1/2	-	1	1	4 1/2	4 1/4	6 1/2	3/8
	2	1 3/8	1-14	1 1/4-12	1 5/8	1 5/8			3 29/32			8											
	3	1 3/4	1 1/4-12	1 1/2-12	2	1 7/8			4 5/32			8 1/2											
4	1	1	3/4-16	7/8-14	1 1/8	1 3/8	3 1/4	15/16	3 11/16	1 3/4	4 1/2	7 1/2	4 1/2	1 3/8	1 1/8	1/2	-	1	1	5 1/4	5	7 1/4	3/8
	2	1 3/8	1-14	1 1/4-12	1 5/8	1 5/8			3 15/16			8											
	3	1 3/4	1 1/4-12	1 1/2-12	2	1 7/8			4 3/16			8 1/2											
5	1	1	3/4-16	7/8-14	1 1/8	1 3/8	3 3/4	15/16	3 13/16	2	4 5/8	7 3/4	5 1/2	1 3/8	1 1/4	1/2	-	1	1	6 1/4	6	8 1/4	1/2
	2	1 3/8	1-14	1 1/4-12	1 5/8	1 5/8			4 1/16			8 1/4											
	3	1 3/4	1 1/4-12	1 1/2-12	2	1 7/8			4 5/16			8 3/4											
6	1	1 3/8	1-14	1 1/4-12	1 5/8	1 5/8	4 1/2	1	4 7/16	2 1/4	5 1/4	8 3/4	6 1/2	1 5/8	1 3/8	3/4	-	1 3/8	1 3/8	7 5/8	7 3/8	10 3/8	1/2
	2	1 3/4	1 1/4-12	1 1/2-12	2	1 7/8			4 11/16			9 1/4											
	3	2	1 1/2-12	1 3/4-12	2 1/4	2			4 13/16			9 1/2											
8	1	1 3/8	1-14	1 1/4-12	1 5/8	1 5/8	5 3/4	5/8	4 9/16	2 1/2	5 3/8	8 7/8	8 1/2	1 5/8	1 3/8	3/4	-	1 3/8	1 3/8	9 3/4	9 1/2	12 1/2	5/8
	2	1 3/4	1 1/4-12	1 1/2-12	2	1 7/8			4 13/16			9 3/8											
	3	2	1 1/2-12	1 3/4-12	2 1/4	2			4 15/16			9 5/8											
10	1	1 3/4	1 1/4-12	1 1/2-12	2	1 7/8	6 3/8	7/8	5 7/16	3	6 5/8	10 3/8	10 5/8	2	1 3/4	1	-	1 3/4	1 3/4	12	11 3/4	15 1/2	3/4
	2	2	1 1/2-12	1 3/4-12	2 1/4	2			5 9/16			10 5/8											
	3	2 1/2	1 7/8-12	2 1/4-12	3	2 1/4			5 13/16			11 1/8											
12	1	2	1 1/2-12	1 3/4-12	2 1/4	2	6 3/4	7/8	5 9/16	3	7 1/4	11 1/8	12 3/4	2	1 5/8	1	-	1 3/4	1 3/4	14	13 3/4	17 1/2	3/4
	2	2 1/2	1 7/8-12	2 1/4-12	3	2 1/4			5 13/16			11 5/8											
	3	3	2 1/4-12	2 3/4-12	3 1/2	2 1/4			5 13/16			11 5/8											

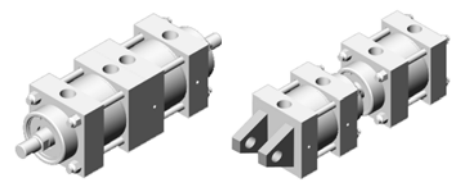


Model LD

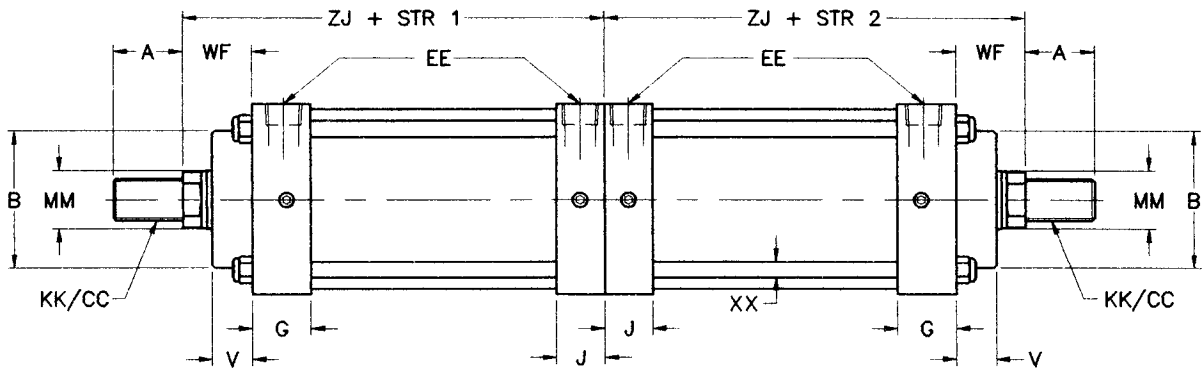


Model LT

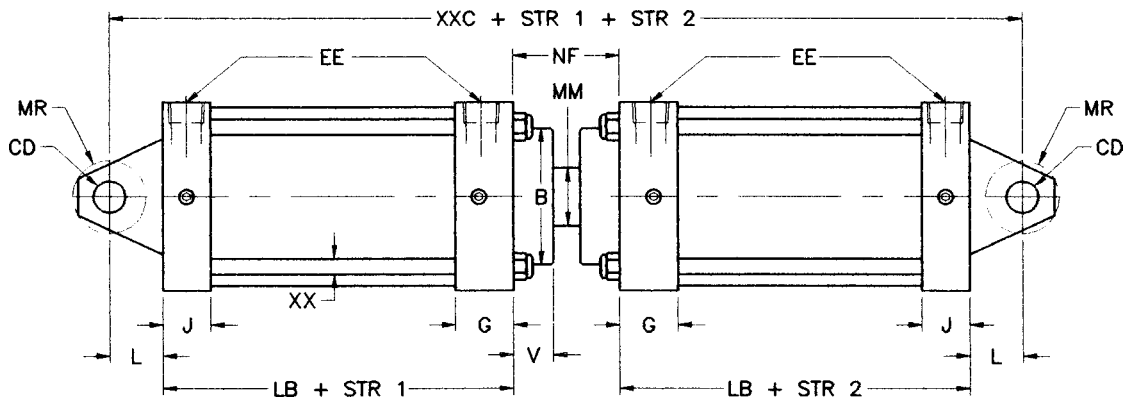
Warning: Trunnion mounted cylinders swivel in one direction and are designed to carry shear loads only. Pins must be held rigidly and in accurate alignment. Improper mounting may result in failure of mount.



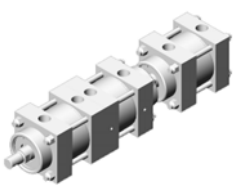
BORE	ROD	ROD DIA.								ADD STROKE		ADD STR 1&2					EE		MR	NF	XX
		MM	KK	CC	A	WF	V	B	ZJ	LB	XXC	CD	G	J	L	NPTF	SAE				
1 1/2	1	5/8	7/16-20	1/2-20	3/4	1	3/4	1 11/16	4	5/8	3 5/8	10 3/8	1/2	1 3/16	15/16	3/4	3/8	-	1/2	1 5/8	1/4
	2	1	3/4-16	7/8-14	1 1/8	1 3/8			5												
2	1	5/8	7/16-20	1/2-20	3/4	1	3/4	2 7/32	4	5/8	3 5/8	10 1/2	1/2	1 3/16	15/16	3/4	3/8	-	1/2	1 3/4	5/16
	2	1	3/4-16	7/8-14	1 1/8	1 3/8			5												
	3	1 3/8	1-14	1 1/4-12	1 5/8	1 5/8			5 1/4												
2 1/2	1	5/8	7/16-20	1/2-20	3/4	1	13/16	2 5/16	4	3/4	3 3/4	10 3/4	1/2	1 1/4	1	3/4	3/8	-	1/2	1 3/4	5/16
	2	1	3/4-16	7/8-14	1 1/8	1 3/8			5 1/8												
	3	1 3/8	1-14	1 1/4-12	1 5/8	1 5/8			5 3/8												
3 1/4	1	1	3/4-16	7/8-14	1 1/8	1 3/8	15/16	2 7/8	5	5/8	4 1/4	13 1/2	3/4	1 11/32	1 7/32	1 1/4	1/2	-	3/4	2 1/2	3/8
	2	1 3/8	1-14	1 1/4-12	1 5/8	1 5/8			5 7/8												
	3	1 3/4	1 1/4-12	1 1/2-12	2	1 7/8			6 1/8												
4	1	1	3/4-16	7/8-14	1 1/8	1 3/8	15/16	3 1/4	5	5/8	4 1/4	13 1/2	3/4	1 3/8	1 1/8	1 1/4	1/2	-	3/4	2 1/2	3/8
	2	1 3/8	1-14	1 1/4-12	1 5/8	1 5/8			5 7/8												
	3	1 3/4	1 1/4-12	1 1/2-12	2	1 7/8			6 1/8												
5	1	1	3/4-16	7/8-14	1 1/8	1 3/8	15/16	3 3/4	5	7/8	4 1/2	14 1/4	3/4	1 3/8	1 1/4	1 1/4	1/2	-	3/4	2 3/4	1/2
	2	1 3/8	1-14	1 1/4-12	1 5/8	1 5/8			6 1/8												
	3	1 3/4	1 1/4-12	1 1/2-12	2	1 7/8			6 3/8												
6	1	1 3/8	1-14	1 1/4-12	1 5/8	1 5/8	1	4 1/2	6	5/8	5	16	1	1 5/8	1 3/8	1 1/2	3/4	-	1	3	1/2
	2	1 3/4	1 1/4-12	1 1/2-12	2	1 7/8			6 7/8												
	3	2	1 1/2-12	1 3/4-12	2 1/4	2			7												
8	1	1 3/8	1-14	1 1/4-12	1 5/8	1 5/8	5/8	5 3/4	6	3/4	5 1/8	16 15/16	1	1 5/8	1 3/8	1 1/2	3/4	-	1	3 11/16	5/8
	2	1 3/4	1 1/4-12	1 1/2-12	2	1 7/8			7												
	3	2	1 1/2-12	1 3/4-12	2 1/4	2			7 1/8												
10	1	1 3/4	1 1/4-12	1 1/2-12	2	1 7/8	7/8	6 3/8	8	1/4	6 3/8	20 11/16	1 3/8	2	1 3/4	2 1/8	1	-	1 3/8	3 11/16	3/4
	2	2	1 1/2-12	1 3/4-12	2 1/4	2			8 3/8												
	3	2 1/2	1 7/8-12	2 1/4-12	3	2 1/4			8 5/8												
12	1	2	1 1/2-12	1 3/4-12	2 1/4	2	7/8	6 3/4	8	7/8	6 7/8	21 15/16	1 3/4	2	1 5/8	2 1/4	1	-	1 3/4	3 11/16	3/4
	2	2 1/2	1 7/8-12	2 1/4-12	3	2 1/4			9 1/8												
	3	3	2 1/4-12	2 3/4-12	3 1/2	2 1/4			9 1/8												



Model LCH

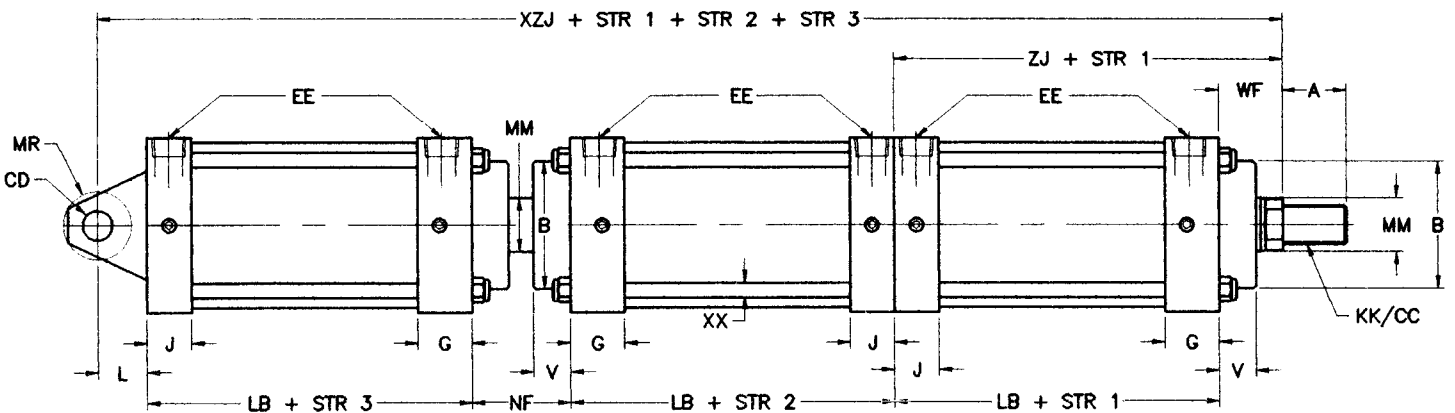


Model LCR



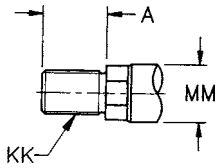
model LCHR

ROD DIA.		ADD STROKE		ADD STR 1,2&3			EE													
BORE	ROD	MM	KK	CC	A	WF	V	B	ZJ	LB	XZJ	CD	G	J	L	NPTF	SAE	MR	NF	XX
1 1/2	1	5/8	7/16-20	1/2-20	3/4	1	3/4	1 11/16	4 5/8	3 5/8	14 1/4	1/2	1 3/16	15/16	3/4	3/8	-	1/2	1 5/8	1/4
	2	1	3/4-16	7/8-14	1 1/8	1 3/8			5		14 5/8									
2	1	5/8	7/16-20	1/2-20	3/4	1	3/4	2 7/32	4 5/8	3 5/8	14 3/8	1/2	1 3/16	15/16	3/4	3/8	-	1/2	1 3/4	5/16
	2	1	3/4-16	7/8-14	1 1/8	1 3/8			5		14 3/4									
	3	1 3/8	1-14	1 1/4-12	1 5/8	1 5/8			5 1/4		15									
2 1/2	1	5/8	7/16-20	1/2-20	3/4	1	13/16	2 5/16	4 3/4	3 3/4	14 3/4	1/2	1 1/4	1	3/4	3/8	-	1/2	1 3/4	5/16
	2	1	3/4-16	7/8-14	1 1/8	1 3/8			5 1/8		15 1/8									
3 1/4	1	3/8	1-14	1 1/4-12	1 5/8	1 5/8	15/16	2 7/8	5 3/8		15 3/8									
	2	1 3/8	1-14	1 1/4-12	1 5/8	1 5/8			5 5/8	4 1/4	17 7/8	3/4	1 11/32	2 7/32	1 1/4	1/2	-	3/4	2 1/2	3/8
	3	1 3/4	1 1/4-12	1 1/2-12	2	1 7/8			5 7/8		18 1/8									
4	1	1	3/4-16	7/8-14	1 1/8	1 3/8	15/16	3 1/4	5 5/8	4 1/4	17 7/8	3/4	1 3/8	1 1/8	1 1/4	1/2	-	3/4	2 1/2	3/8
	2	1 3/8	1-14	1 1/4-12	1 5/8	1 5/8			5 7/8		18 1/8									
	3	1 3/4	1 1/4-12	1 1/2-12	2	1 7/8			6 1/8		18 3/8									
	1	1	3/4-16	7/8-14	1 1/8	1 3/8	15/16	3 3/4	5 7/8	4 1/2	18 7/8	3/4	1 3/8	1 1/4	1 1/4	1/2	-	3/4	2 3/4	1/2
5	2	1 3/8	1-14	1 1/4-12	1 5/8	1 5/8			6 1/8		19 1/8									
	3	1 3/4	1 1/4-12	1 1/2-12	2	1 7/8			6 3/8		19 3/8									
	1	1 3/8	1-14	1 1/4-12	1 5/8	1 5/8	1	4 1/2	6 5/8	5	21 1/8	1	1 5/8	1 3/8	1 1/2	3/4	-	1	3	1/2
6	2	1 3/4	1 1/4-12	1 1/2-12	2	1 7/8			6 7/8		21 3/8									
	3	2	1 1/2-12	1 3/4-12	2 1/4	2			7		21 1/2									
	1	1 3/8	1-14	1 1/4-12	1 5/8	1 5/8	5/8	5 3/4	6 3/4	5 1/8	22 3/16	1	1 5/8	1 3/8	1 1/2	3/4	-	1	3 11/16	5/8
8	2	1 3/4	1 1/4-12	1 1/2-12	2	1 7/8			7		22 7/16									
	3	2	1 1/2-12	1 3/4-12	2 1/4	2			7 1/8		22 9/16									
	1	1 3/4	1 1/4-12	1 1/2-12	2 1/4	1 7/8	7/8	6 3/8	8 1/4	6 3/8	26 13/16	1 3/8	2	1 3/4	2 1/8	1	-	1 3/8	3 11/16	3/4
10	2	2	1 1/2-12	1 3/4-12	2 1/4	2			8 3/8		26 15/16									
	3	2 1/2	1 7/8-12	2 1/4-12	3	2 1/4			8 5/8		27 3/16									
	1	2	1 1/2-12	1 3/4-12	2 1/4	2	7/8	6 3/4	8 7/8	6 7/8	28 9/16	1 3/4	2	1 5/8	2 1/4	1	-	1 3/4	3 11/16	3/4
12	2	2 1/2	1 7/8-12	2 1/4-12	3	2 1/4			9 1/8		28 13/16									
	3	3	2 1/4-12	2 3/4-12	3 1/2	2 1/4			9 1/8		28 13/16									

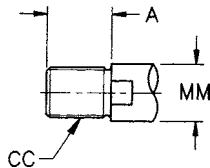


Model LCHR

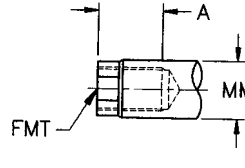
Rod End Styles



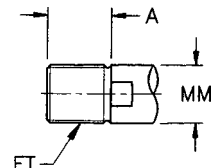
Standard Male Thread
NFPA Style SM



Oversize Male Thread
NFPA Style IM



Female Thread
NFPA Style SF



Full Thread
NFPA Style FM

Accessories for Rod End

BORE	ROD DIA. MM	THREAD SIZE	ROD CLEVIS	LUG		ROD EYE	CLEVIS MOUNTING BRACKET	ROD EYE	SELF ALIGNING			
				MOUNTING BRACKET	PIVOT PIN				MOUNTING BRACKET	PIVOT PIN		
1 1/2	3 1/4	2	5/8	7/16-20	HC15	HM15	P3	HE15	HCM15	HWE15	HWM15	HWP15
			1	3/4-16	HC15C	HM15	P3	HE15C	HCM15	N/A	N/A	N/A
6	5	2 1/2	1	7/8-14	HC2C	HM25	P4	HE2	HCM2	HWE2	HWM2	HWP2
			1	1-14	HC2C	HM32	P6	HE2C	HCM32	N/A	N/A	N/A
			1 3/8	1 1/4-12	HC32	HM32	P6	HE32	HCM32	HWE32	HWM32	HWP32
			1 3/8	1 1/4-12	HC4	HM4	HP4	HE4	HCM4	HWE4	HWM4	HWP4
			1 3/4	1 1/4-12	HC4	HM4	HP4	HE4	HCM4	HWE4	HWM4	HWP4
			2	1 1/2-12	HC5	HM5	P12	HE5	HCM5	HWE5	HWM5	HWP5
2	1 1/2-12	HC5	HM5	P12	HE5	HCM5	HWE5	HWM5	HWP5			
			2	1 3/4-12	HC5C	HM6	HP6	HE5C	HCM6	N/A	N/A	N/A

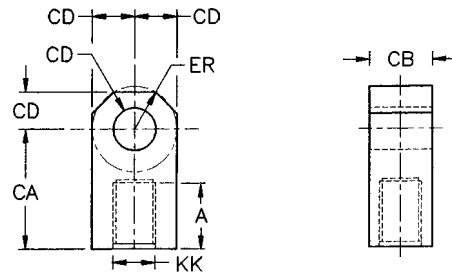
Accessories for Blind End

BORE	MOUNTING BRACKET		PIVOT PIN	SELF ALIGNING					
	model LC	model LE		MOUNTING BRACKET	PIVOT PIN				
1 1/2	2	2 1/2	HM15	HCM15	P3	HWM15	HWP15		
3 1/4	4	5	HM25	HCM2	P4	HWM2	HWP2		
			6	8	HM32	HCM32	P6	HWM32	HWP32
			10	12	HM4	HCM4	HP4	HWM4	HWP4
					HM5	HCM5	P12	HWM5	HWP5

Rod Eye

Adapts to HCM clevis-type mounting bracket

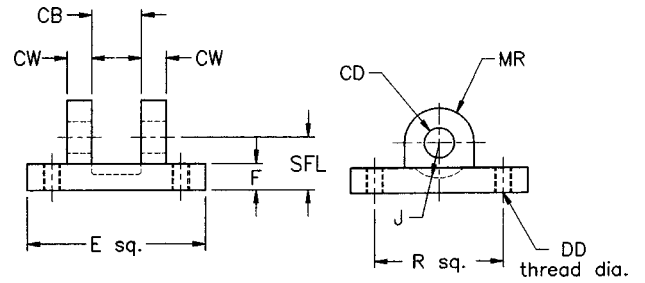
PART	HE15	HE15C	HE2	HE2C	HE32	HE4	HE5	HE5C	HE6	HE7	HE7C	HE8
A	3/4	3/4	1 1/8	1 1/8	1 5/8	2	2 1/4	2 1/4	3	3 1/2	3 5/8	3 1/2
CA	1/2	1/2	2 1/16	2 3/8	2 13/16	3 7/16	4	4 3/8	5	5 13/16	6 1/2	6 1/8
CB	3/4	3/4	1 1/4	1 1/2	1 1/2	2	2 1/2	2 1/2	2 1/2	3	3 1/2	3
CD	1/2	1/2	3/4	1	1	1 3/8	1 3/4	2	2	2 1/2	3	3
ER	5/8	5/8	7/8	1 1/8	1 3/16	1 9/16	2	2 7/8	2 1/2	2 13/16	3 1/4	3 1/4
KK	7/16-20	1/2-20	3/4-16	7/8-14	1-14	1 1/4-12	1 1/2-12	1 3/4-12	1 7/8-12	2 1/4-12	2 3/4-12	2 1/2-12



Detachable Clevis - MP-1 Mount (NFPA)

Mounts on cylinder and adapts to HM eye-type mounting bracket

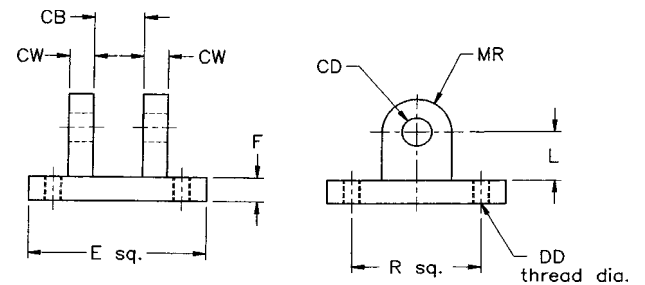
PART	LMP1-15	LMP1-2	LMP1-25	LMP1-32	LMP1-4	LMP1-5	LMP1-6
CB	0.76	0.76	0.76	1.26	1.26	1.26	1.51
CD	1/2	1/2	1/2	3/4	3/4	3/4	1
CW	1/2	1/2	1/2	5/8	5/8	5/8	3/4
DD	1/4-28	5/16-24	5/16-24	3/8-24	3/8-24	1/2-20	1/2-20
E	2	2 1/2	3	3 3/4	4 1/2	5 1/2	6 1/2
F	3/8	3/8	3/8	5/8	5/8	5/8	3/4
J	5/8	5/8	5/8	7/8	7/8	7/8	1 1/8
SFL	3/4	3/4	3/4	1 1/4	1 1/4	1 1/4	1 1/2
MR	5/8	5/8	5/8	7/8	7/8	7/8	1 1/8
R	1.43	1.84	2.19	2.76	3.32	4.10	4.88



Detachable Clevis - MP-2 Mount (NFPA)

Mounts on cylinder and adapts to HM eye-type mounting bracket

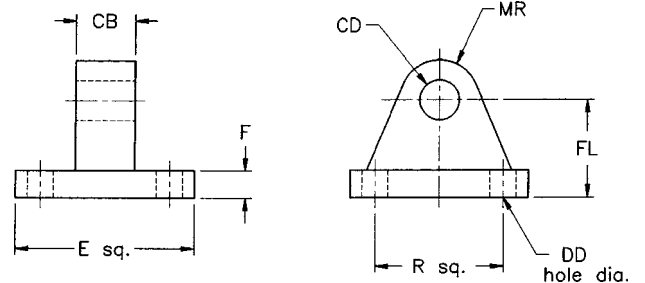
PART	LMP2-15	LMP2-2	LMP2-25	LMP2-32	LMP2-4	LMP2-5	LMP2-6
CB	0.76	0.76	0.76	1.26	1.26	1.26	1.51
CD	1/2	1/2	1/2	3/4	3/4	3/4	1
CW	1/2	1/2	1/2	5/8	5/8	5/8	3/4
DD	1/4-28	5/16-24	5/16-24	3/8-24	3/8-24	1/2-20	1/2-20
E	2	2 1/2	3	3 3/4	4 1/2	5 1/2	6 1/2
F	3/8	3/8	3/8	5/8	5/8	5/8	3/4
L	3/4	3/4	3/4	1 1/4	1 1/4	1 1/4	1 1/2
MR	5/8	5/8	5/8	7/8	7/8	7/8	1 1/8
R	1.43	1.84	2.19	2.76	3.32	4.10	4.88



Eye Type Mounting Bracket

Adapts to LC mount cylinder or HC rod clevis

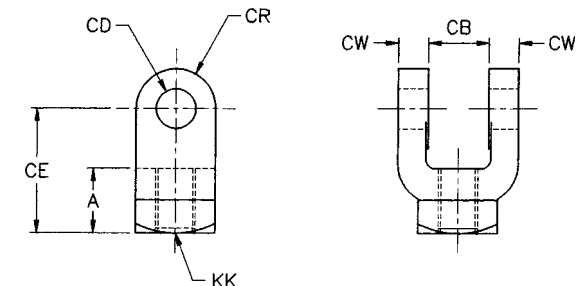
PART	HM15	HM25	HM32	HM4	HM5	HM6
CB	3/4	1 1/4	1 1/2	2	2 1/2	2 1/2
CD	1/2	3/4	1	1 3/8	1 3/4	2
DD	13/32	17/32	21/32	21/32	29/32	1 1/16
E	2 1/2	3 1/2	4 1/2	5	6 1/2	7 1/2
F	3/8	5/8	3/4	7/8	7/8	1
FL	1 1/8	1 7/8	2 1/4	3	3 1/8	3 1/2
MR	1/2	3/4	1	1 3/8	1 3/4	2
R	1.63	2.56	3.25	3.81	4.95	5.75



Rod Clevis

Adapts to male thread on piston rod

PART	HC15	HC15C	HC2	HC2C	HC32	HC4	HC5	HC5C
A	3/4	3/4	1 1/8	1 5/8	1 5/8	2	2 1/4	3
CB	0.765	0.765	1.265	1.515	1.515	2.032	2.531	2.531
CD	1/2	1/2	3/4	1	1	1 3/8	1 3/4	2
CE	1 1/2	1 1/2	2 3/8	3 1/8	3 1/8	4 1/8	4 1/2	5 1/2
CW	1/2	1/2	5/8	3/4	3/4	1	1 1/4	1 1/4
CR	1/2	1/2	3/4	1	1	1 3/8	1 3/4	2
KK	7/16-20	1/2-20	3/4-16	7/8-14	1-14	1 1/4-12	1 1/2-12	1 3/4-12

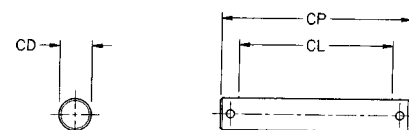


Pivot Pin

Comes complete with cotter pins

Adapts to HC rod clevis or HCM clevis-type mounting bracket

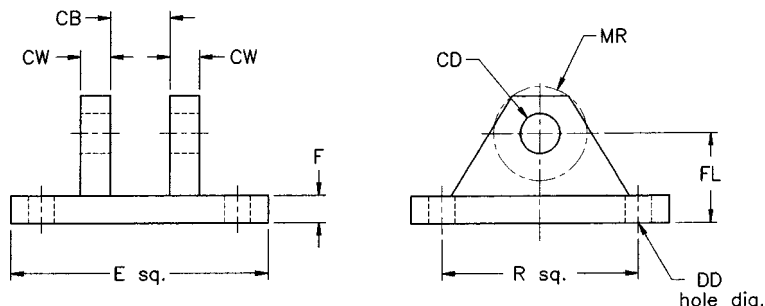
PART	P3	P4	P6	HP4	P12	HP6
CD	1/2	3/4	1	1 3/8	1 3/4	2
CL	1 3/4	2 1/2	3	4	4 7/8	5 1/8
CP	2 5/16	3 1/8	3 3/4	4 13/16	6 1/8	6



Clevis Type Mounting Bracket

Adapts to LE mount cylinder or HE rod eye

PART	HCM15	HCM2	HCM32	HCM4	HCM5	HCM6
CB	25/32	1 9/32	1 17/32	2 1/32	2 9/16	2 9/16
CD	1/2	3/4	1	1 3/8	1 3/4	2
CW	1/2	5/8	3/4	1	1 1/4	1 1/4
DD	13/32	17/32	21/32	21/32	15/16	1 1/16
E	3 1/2	5	6 1/2	7 1/2	9 1/2	12 3/4
F	1/2	5/8	3/4	7/8	7/8	1
FL	1 1/2	1 7/8	2 1/4	3	3 5/8	4 1/4
MR	1/2	3/4	1	1 3/8	1 3/4	2
R	2.55	3.82	4.95	5.73	7.50	9.40



Pivot Pin for Self-Aligning Rod Eye

Comes complete with cotter pins

Adapts to HWM mounting bracket

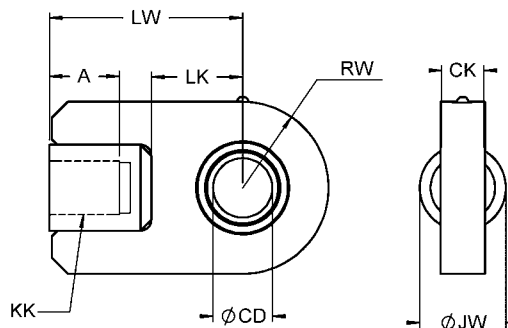
PART	HWP15	HWP2	HWP32	HWP4	HWP5
CD	1/2	3/4	1	1 3/8	1 3/4
CL	1 5/16	2	2 17/32	3 3/32	3 7/16
CP	1 7/8	2 9/16	3 3/16	3 3/4	4 3/16



Self-Aligning Rod Eye - Female

Adapts to male thread on piston rod

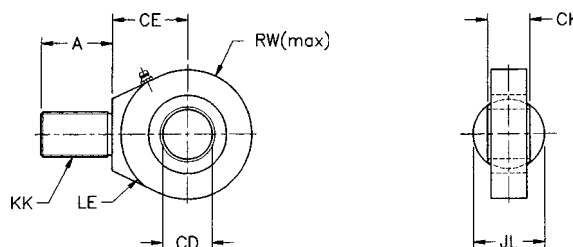
PART	HWE15	HWE2	HWE32	HWE4	HWE5
A	3/4	1 1/8	1 5/8	2	2 1/4
CD	1/2	3/4	1	1 3/8	1 3/4
CK	7/16	21/32	7/8	1 3/16	1 17/32
JW	3/4	1 3/8	1 1/2	2	2 1/2
KK	7/16-20	3/4-16	1-14	1 1/4-12	1 1/2-12
LW	1 3/4	2 3/4	3 5/8	4 1/2	5 5/8
RW	7/8	1 1/4	1 1/2	2	2 3/4
LK	5/8	1 1/4	1 5/8	2 1/8	2 5/8



Self-Aligning Rod Eye - Male

Adapts to female thread on piston rod

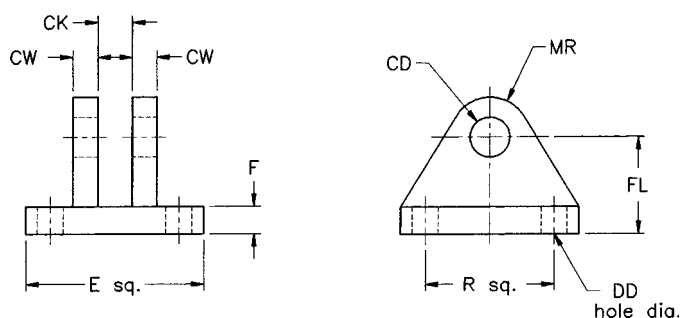
PART	HRES-1	HRES-2	HRES-3	HRES-4	HRES-5	HRES-6
A	11/16	1	1 1/2	2	2 1/8	2 7/8
CD	1/2	3/4	1	1 3/8	1 3/4	2
CE	7/8	1 1/4	1 7/8	2 1/8	2 1/2	2 3/4
CK	7/16	21/32	7/8	1 3/16	1 17/32	1 3/4
JL	7/8	1 5/16	1 1/2	2	2 1/4	2 3/4
KK	7/16-20	3/4-16	1-14	1 1/4-12	1 1/2-12	1 7/8-12
LE	3/4	1 1/16	1 7/16	1 7/8	2 1/8	2 1/2
RW	7/8	1 1/4	1 3/8	1 13/16	2 3/16	2 5/8



Mounting Bracket for Self-Aligning Rod Eye

Adapts to LW mount cylinder, HWE and HRES rod eye

PART	HWM15	HWM2	HWM32	HWM4	HWM5	HWM6
CD	1/2	3/4	1	1 3/8	1 3/4	2
CK	7/16	21/32	7/8	1 3/16	1 17/32	1 3/4
CW	5/16	1/2	5/8	3/4	3/4	7/8
DD	13/32	17/32	21/32	21/32	15/16	1 1/16
E	2 1/2	3 1/2	4 1/2	5	6 1/2	7 1/2
F	3/8	9/16	11/16	13/16	15/16	15/16
FL	1 1/2	2 1/16	2 7/16	3 1/16	3 15/16	4 3/16
MR	1/2	3/4	1	1 3/8	1 3/4	2
R	1.63	2.55	3.25	3.82	4.95	5.73



L-SERIES PARTS LIST

No.	DESCRIPTION	BORE >		1 1/2		2		2 1/2		3 1/4		4		5		6		
		ROD SIZE	QTY	5/8	1	1 3/8	5/8	1	1 3/8	1	1 3/4	1	1 3/8	1 3/4	1	1 3/8	1 3/4	2
1	PISTON																	
3	CUSHION SLEEVE			1L15														
4	ROD - MALE			N/A	3L20	N/A	1L20											
26	ROD - FEMALE			4L1506- 26L1510- 44L1515-	4L2006- 26L2010- 44L2006-	4L2013- 26L2013- 44L2013-	4L2013- 26L2013- 44L2013-	4L2513- 26L2513- 44L2513-	4L2513- 26L2513- 44L2513-	4L3217- 26L3217- 44L3217-	4L3217- 26L3217- 44L3217-	4L4017- 26L4017- 44L4017-	4L5017- 26L5017- 44L5017-	4L6017- 26L6017- 44L6017-	4L6017- 26L6017- 44L6017-	4L6020- 26L6020- 44L6020-	4L6020- 26L6020- 44L6020-	
5	BARREL (COMMON STEEL)			5LN15-	5LN25-	5LN25-	5LN25-	5LN25-	5LN25-	5LN32-	5LN40-	5LN40-	5LN40-	5LN50-	5LN60-	5LN60-		
5	BARREL (CHROMED STEEL)			5LSB15-	5LSB25-	5LSB25-	5LSB25-	5LSB25-	5LSB25-	5LSB32-	5LSB40-	5LSB40-	5LSB40-	5LSB50-	5LSB60-	5LSB60-		
5	BARREL (ALUMINUM)			5LAW15-	5LAW20-	5LAW20-	5LAW20-	5LAW25-	5LAW25-	5LAW32-	5LAW40-	5LAW40-	5LAW40-	5LAW50-	5LAW60-	5LAW60-		
6	BARREL (WALFUNG)			6L1562	6L2010	6L2013	6L2013	6L2013	6L2013	6L3213	6L3213	6L3213	6L3213	6L3213	6L3213	6L3213		
**7	GLAND BUSHING			*7L344	*7L344	*7L344	*7L344	*7L344	*7L344	*7L344	*7L344	*7L344	*7L344	*7L344	*7L344	*7L344		
8	THE ROD			8L154-	8L205-	8L205-	8L205-	8L255-	8L255-	8L326-	8L406-	8L406-	8L406-	8L508-	8L608-	8L608-		
8	TIE ROD, MODEL LT ONLY ***			8LTA154- 8LTA154-	8LTA205- 8LTA205-	8LTA205- 8LTA205-	8LTA255- 8LTA255-	8LTA326- 8LTA326-	8LTA326- 8LTA326-	8LTA406- 8LTA406-	8LTA508- 8LTA508-	8LTA608- 8LTA608-	8LTA608- 8LTA608-	8LTA608- 8LTA608-	8LTA608- 8LTA608-	8LTA608- 8LTA608-		
9	PISTON SEAL INTERNAL			9A111	9A111	9A111	9A111	9A111	9A111	9A210	9A211	9A211	9A211	9A211	9A211	9A211		
**9	CUSHION SEAL INTERNAL			N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
**10	PISTON SEAL			10A755-15	10A755-2	10A755-2	10A755-2	10A755-25	10A755-25	10A755-325	10A755-4	10A755-4	10A755-4	10A755-5	10A755-6	10A755-6		
**11	CHECK SEAL-GLAND END(CB or CBE)			11J110	11J122	11J110	11J110	11J132	11J132	11J150	11J116	11J116	11J116	11J150	11J160	11J160		
**12	GLAND BUSHING SEAL			9A123	9A223	9A223	9A223	9A223	9A223	9A227	9A227	9A227	9A227	9A227	9A227	9A227		
**13	ROD SEAL			13A06H 13J10H	13A06H 13A13H	13A13H 13A13H	13A13H 13A13H	13A13H 13A13H	13A13H 13A13H	13A13H 13A13H	13A17H 14H10	13A17H 14H10	13A17H 14H10	13A17H 14H10	13A17H 14H10	13A17H 14H10		
**14	ROD WIPER			14H62	14H10	14H13	14H13	14H82	14H10	14H13	14H17	14H17	14H17	14H17	14H17	14H20		
15	GLAND BUSHING RETAINER			15A137	15A187	15A187	15A187	15A237	15A237	15A237	15A237	15A237	15A237	15A237	15A237	15A237		
**16	NEEDLE VALVE SEAL			9A009	9A009	9A009	9A009	9A009	9A009	9A006	9A006	9A006	9A006	9A006	9A006	9A006		
17	LOCK NUT - TIE ROD (BLIND END)			19A004	19A005	19A005	19A005	19A005	19A005	19A006	19A006	19A006	19A006	19A006	19A006	19A006		
17	LOCK NUT - TIE ROD (GLAND END)			19D004	19D005	19D005	19D005	19D005	19D005	19A006	19A006	19A006	19A006	19A006	19A006	19A006		
19	PISTON LOCKNUT (CB or CBE)			19L007	19L007	19L007	19L007	19L007	19L007	19L012	19L012	19L012	19L012	19L012	19L012	19L012		
20	JAM NUT (OPTIONAL)			20R007	20R012	20R012	20R012	20R012	20R012	20R012	20R012	20R012	20R012	20R012	20R012	20R012		
**21	BARREL SEAL			9A125	9A224	9A224	9A224	9A224	9A224	9A234	9A234	9A234	9A234	9A234	9A234	9A234		
22	HEAD BLIND END			L15BC	L26C	L26C	L26C	L26C	L26C	L32BC	L4BC	L4BC	L4BC	L5BC	L6BC	L6BC		
23	HEAD GLAND END			L156	L26C	L26C	L26C	L26C	L26C	L32GC	L4GC	L4GC	L4GC	L5GC	L6GC	L6GC		
24	TRUNNION INTERMEDIATE			L175	L175	L175	L175	L175	L175	L175	L175	L175	L175	L175	L175	L175		
**33	CHECK BALL			N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
**35	CHECK PLUG			N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
38	FRONT PLATE-RECTANGULAR			FP15R	FP20R	FP20R	FP20R	FP25R	FP25R	FP32R	FP32R	FP32R	FP32R	FP32R	FP32R	FP32R		
38	FRONT PLATE-SQUARE			FP15S	FP20S	FP20S	FP20S	FP25S	FP25S	FP32S	FP32S	FP32S	FP32S	FP32S	FP32S	FP32S		
38	FRONT PLATE-THICK (RECT.)			FP15RU	FP20RU	FP20RU	FP20RU	FP25RU	FP25RU	FP32RU	FP32RU	FP32RU	FP32RU	FP32RU	FP32RU	FP32RU		
38	FRONT PLATE-THICK (SQUARE)			FP15SU	FP20SU	FP20SU	FP20SU	FP25SU	FP25SU	FP32SU	FP32SU	FP32SU	FP32SU	FP32SU	FP32SU	FP32SU		
38	SPACER PLATE (model option "P")			FP15F	FP20F	FP20F	FP20F	FP25F	FP25F	FP32F	FP32F	FP32F	FP32F	FP32F	FP32F	FP32F		
38	BACK PLATE-RECTANGULAR			BP15R	BP20R	BP20R	BP20R	BP25R	BP25R	BP32R	BP32R	BP32R	BP32R	BP32R	BP32R	BP32R		
38	BACK PLATE-SQUARE			BP15S	BP20S	BP20S	BP20S	BP25S	BP25S	BP32S	BP32S	BP32S	BP32S	BP32S	BP32S	BP32S		
**40	PISTON WEAR RING			40H1525	40H2037	40H2037	40H2037	40H2537	40H2537	40H3237	40H3237	40H3237	40H3237	40H3237	40H3237	40H3237		
42	DETACHABLE CLEVIS - MP1			LMP1-15	LMP1-2	LMP1-2	LMP1-2	LMP1-25	LMP1-25	LMP1-32	LMP1-32	LMP1-32	LMP1-32	LMP1-32	LMP1-32	LMP1-32		
43	DETACHABLE CLEVIS - MP2			LMP2-15	LMP2-2	LMP2-2	LMP2-2	LMP2-25	LMP2-25	LMP2-32	LMP2-32	LMP2-32	LMP2-32	LMP2-32	LMP2-32	LMP2-32		
SEAL KIT (PNEUMATIC)				KL1562A	KL1510A	KL2019A	KL2019A	KL2562A	KL2562A	KL3210A	KL3210A	KL3210A	KL3210A	KL3210A	KL3210A	KL3210A		
				KL1510A	KL2019A	KL2019A	KL2519A	KL3210A	KL3210A	KL3210A	KL4017A	KL4017A	KL4017A	KL4017A	KL5010A	KL5010A	KL6017A	

SEE PAGE BEHIND PARTS DRAWING FOR 8" BORE THROUGH 12" BORE PARTS

NOTES:
 Cushioning is supplied as standard on all cylinders unless ordered otherwise.
 A part no. having an underscore indicates a model letter code is required. See tables below.
 Parts for a non-cushioned cylinder are the same as for cushioned except the check seals are not installed. For the 2 1/2" bore, 1 3/8" rod cylinder on the blind end, remove the cushion sleeve and cushion sleeve seal.
 Part numbers terminating in a dash must have the stroke value added immediately afterward.
 * Contact the factory for cushioning options on the gland end of the 1 1/2" bore (both rod sizes), and the 2" bore (1" and 1 3/8" only rod sizes). For these cylinders, the quantity of needle valves and needle valve seals must be halved.
 ** These parts are in the seal kit.
 *** Tie-rod part numbers for model LT only have a stroke value suffix followed by a dash and then the required "X" value (see explanation following).
 **** If cylinder is specified as non cushioned then supply 19J007 for piston lock nut.

HEAD PART NOS. ARE MADE AS FOLLOWS:

- SERIES - "L"
 - Use table (to right) to select head mounting style.
 - BORE eg 3-1/4" bore use 32, 4" bore use 40
 - LOCATION; B=Blind G=Gland or Rod end.
 - CUSHIONED = "C"
- (All heads are manufactured as cushioned.)

CYLINDER MODEL	GLAND HEAD	BLIND HEAD	C	E	R	W
LC	C	C	C	C	C	C
LE	C	C	C	C	C	C
LD	C	C	mg	C	C	C
LB	C	C	R	C	C	C
LR	C	C	R	C	C	C
LRS	C	C	R	C	C	C
LNB/LNC	C	C	R	C	C	C
LTR	T	T	R	C	C	C
LTB	C	T	R	C	C	C
LF	F	F	F	C	C	C
LF	RSH	RSH	RSH	C	C	C
LH	C	B	B	C	C	C
LW	C	C	C	C	C	C
LMP	C	C	C	C	C	C

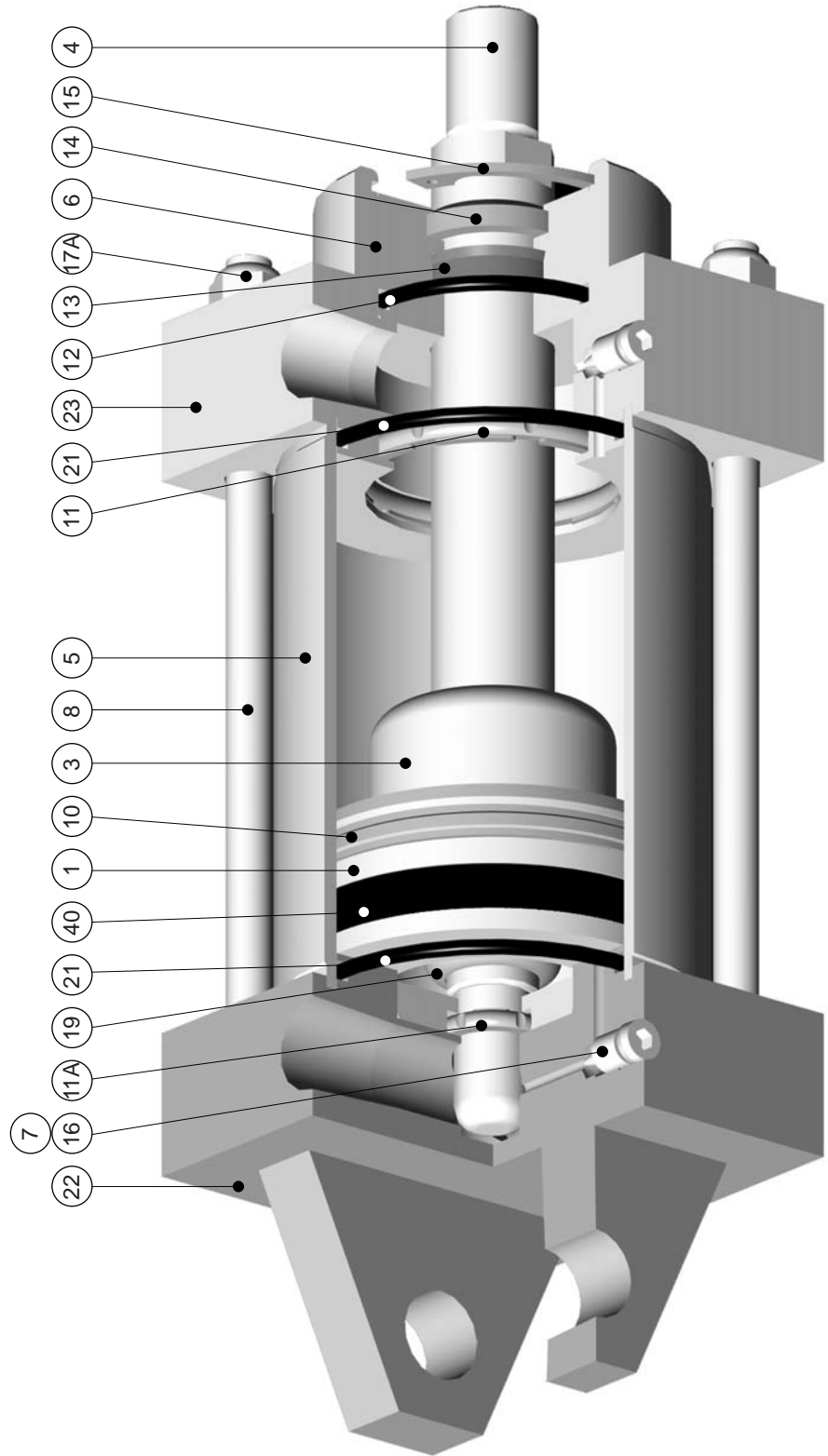
eg. Cyl. Model "LRS"; 3-1/4" Bore, Cushioned Gland end head "LC32GC"
 Blind end head "LR32BC"

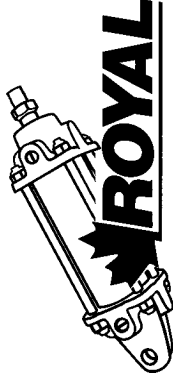
eg. 3-1/4" bore 1-3/8" rod, 8" stroke; "4L3213-8"
 eg. 4" bore 1" rod, CC thread, 8" stroke; "4L4010CC-8"
 Note: all piston rods are made cushioned.

eg. 4" bore, model LTB; 12" stroke; 8LFA06-12
 eg. 2 1/2" bore, model LT; 1 3/8" rod (R3); 8" stroke, X1=5"; 8LTC255-8.5
 Note: for LT models the two-piece tie-rods are sold as a unit (one half may be a capscrew, depending on trunnion position).
 Note: if there is a Piston Rod Extension, the X1 value in the Tie-Rod Part Number is reduced equally. For the above example with a 1" Rod Extn, 8LTC255-8.5 would become 8LTC255-8.4

CYLINDER MODEL	LETTER CODE
LNA	A
LNB/LNC	B
LC/LD/LW	C
LE	D
LF, LTR, LTB, LNB	F
LCH	H
LR, LRS	R
LT	T

L-Series Parts Drawing





L-SERIES PARTS LIST										
No.	DESCRIPTION	BORE >		8		10		12		
		ROD SIZE >	QTY	1 3/8	1 3/4	2	1 3/4	2	2 1/2	3
1	PISTON		1	1L80		1L100		1L120		
3	CUSHION SLEEVE		1	3L80		3L100		3L120		
4	ROD - MALE		1	4L8013-4L8017-4L8020-		4L10020-4L10025-		4L12020-4L12025-		4L12030-
26	ROD - FEMALE		1	26L8013-26L8020-		26L10017-26L10020-		26L12020-26L12025-		26L12030-
44	ROD - COMMON		1	44L8013-44L8017-44L8020-		44L10017-44L10020-		44L12020-44L12025-		44L12030-
5	BARREL (NITROTEC STEEL)		1	5LN80-		5LN100-		5LN120-		
5	BARREL (CHROMED STEEL)		1	5LSB80-		5LSB100-		5LSB120-		
5	BARREL (ALUMINUM)		1	5LAL80-		5LAL100-		5LAL120-		
5	BARREL (AMALGON)		1	5LAM80-		5LAM100-		5LAM120-		
6	GLAND BUSHING		1	6L8013	6L8017	6L8020	6L10017	6L10020	6L10025	6L12030
**7	NEEDLE VALVE		2	7A912		7A916		7A916		
8	TIE ROD		4	8L 8010-		8L 10012-		8L 12012-		
8	TIE-ROD, MODEL LT ONLY ***		4	8LTA8010-8LTA8010-	8LTC8010-	8LTA10012-8LTA10012-	8LTC10012-	8LTA12012-8LTA12012-	8LTC12012-	
9	PISTON SEAL, INTERNAL		1	9A216		9A220		9A223		
**10	PISTON SEAL		2	10A980H		10A9100H		10A9120H		
**11	CHECK SEAL-GLAND END(CG or CBE)		1	11J170		11J1100		11J1100		
**11A	CHECK SEAL-GLAND END(CB or CBE)		1	11J122		11J128		11J132		
**12	GLAND BUSHING SEAL		1	9A236		9A242		9A245		
**13	ROD SEAL		1	13A13H	13A17H	13J20H	13A17H	13J20H	13J25H	13J30H
**14	ROD WIPER		1	14HT3	14H17	14H20	14H17	14H20	14H25	14H30
**16	NEEDLE VALVE SEAL		2	9A113		9A210		9A210		
17	LOCK NUT - TIE ROD		8	19A010		19A012		19A012		
19	PISTON LOCKNUT		1	19J016		19J020		19J024		
20	JAM NUT (OPTIONAL)		1	20R016	20R020	20R024	20R020	20R024	20R030	20R036
**21	BARREL SEAL		2	9A265		9A273		9A452		
22	HEAD BLIND END		1	L 8BC		L 10BC		L 12BC		
23	HEAD GLAND END		1	L 8GC		L 10GC		L 12GC		
24	TRUNNION-INTERMEDIATE		1	L T80		LT100		LT120		
25	CAPSCREW (GLAND BUSH, RETAINER)		4	25A1007		25A1008		25A1008		
27	LOCKWASHER (GL. BUSH, RETAINER)		4	9972		9972		9972		
38	GLAND BUSHING RETAINER		1	38L10		38L10		38L12		
**40	PISTON WEAR RING		1	40H8037		40H107		40H127		
	SEAL KIT (PNEUMATIC)		1	KL8013A	KL8017A	KL8020A	KL10017A	KL10020A	KL10025A	KL1230A

NOTES:

- Cushioning is supplied as standard on all cylinders unless ordered otherwise.
- A part no. having an underscore indicates a model letter code is required. See tables below.
- Parts for a non-cushioned cylinder are the same as for cushioned except the check seals are not installed. For the 2 1/2" bore, 1 3/8" rod cylinder on the blind end, remove the cushion sleeve.
- Part numbers terminating in a dash must have the stroke value added immediately afterward.
- * Contact the factory for cushioning options on the gland end of the 1 1/2" bore (both rod sizes), and the 2" bore (1" and 1 3/8" only rod sizes). For these cylinders, the quantity of needle valves and needle valve seals must be halved.
- ** These parts are in the seal kit.
- *** Tie-rod part numbers for model LT only have a stroke value suffix followed by a dash and then the required "X" value (see explanation following).

HEAD PART NUMBER STRUCTURE:

- SERIES - "L"
 - Use table (to right) to select head mounting style.
 - BORE eg 3-1/4" bore use 32, 4" bore use 4.
 - LOCATION: B=Blind G=Gland or Rod end.
 - CUSHIONED = "C"
- (All heads are manufactured as cushioned.)

eg. Cyl. Model "LRS"; 3-1/4" Bore, Cushioned Gland end head "LC32GC"
Blind end head "LR32BC"

CYLINDER MODEL	GLAND HEAD	BLIND HEAD
LC	C	C
LE	C	E
LD	C	R
LB	C	R
LBS	C	R
LR	C	R
LRS	C	R
LMA/ABC	C	R
LMT	C	R
LT	C	R
LF	F	R
LG	RSH	R
LH	BSH	R
LW	C	W
LMP	C	R

ROD PART NUMBER STRUCTURE:

- COMPONENT No. - "4"
- SERIES - "L"
- THE CYLINDER BORE eg 3-1/4" bore use 32, 4" bore use 40
- ROD SIZE: 2 digits long as follows:
eg. 1-3/4" rod = 17, 1" rod = 10, 5/8" rod = 06
- OPTIONS: "CC"=CC thread, "F"=Female thread, "U"=Rod Extension for thicker W/g. Flange Plate(LR and LRS only)
- STROKE VALUE, (to be preceded by a dash -)
eg. 7" stroke - 7

eg. 3-1/4" bore 1-3/8" rod, 8" stroke: "4L3213-8"
eg. 4" bore 1" rod, CC thread, 8" stroke: "4L4010CC-8"
Note: all piston rods are made cushioned.

TIE-ROD PART NUMBER STRUCTURE:

- COMPONENT No. - "8"
- SERIES - "L"
- CYL. MODEL - use table (to right) to select letter code
- Note, some cyl. models use a common code.
ROD SIZE - FOR LT MODEL ONLY: "A", "B" or "C"
A = R1 Rod size, B = R2, and C = Rod 3.
- CYLINDER BORE (2 digits) ie. 20 = 2" bore
- TIE-ROD DIA. in 16ths of an inch
ie. 5 = 5/16" 12 = 3/4"
- STROKE VALUE, preceded by a dash
- XI DIMENSION, preceded by a dash. For Models LT only.
eg. 4" bore, model LT, 1, 3/8" rod (R3), 8" stroke: 8L F406-12

eg. 2 1/2" bore, model LT, 1, 3/8" rod (R3), 8" stroke, XI = 5"; 8LTC255-8, 5
Note: for LT models the two-piece tie-rods are sold as a unit (one half may be a cap screw, depending on trunion position).
Note: if there is a Piston Rod Extension, the XI value in the Tie-Rod Part Number is reduced equally. For the above example with a 1" Rod Extn, 8LTC255-8, 5 would become 8LTC255-8, 4

CYLINDER MODELS	LETTER
LNA	A
LNB/LNC	B
LC,LE,LW	C
LD	D
LF,LTR,LTB,LNM	F
LCH	H
LMP,LB,LBS	P
LR,LRS	R
LT	T

CYLINDER PRESSURE TABLE

BORE	AIR	HYDRAULIC	
		ALL EXCEPT LB,LR	HYDRAULIC MODELS LB,LR
1 1/2	250	500	750
2	250	500	500
2 1/2	250	1000	300
3 1/4	250	1000	400
4	250	900	350
5	250	700	350
6	250	600	250
8	250	600	-
10	250	600	-
12	250	500	-

Cylinder Developed Force

BORE	ROD DIA.	DEVELOPED FORCE (lbs)											
		@ DIFFERENTIAL PRESSURE (psi)											
		60		80		100		150		200		250	
		PUSH	PULL	PUSH	PULL	PUSH	PULL	PUSH	PULL	PUSH	PULL	PUSH	PULL
1 ½	5/8	106	88	141	117	177	146	265	219	353	292	442	365
	1	106	59	141	79	177	98	265	147	353	196	442	245
2	5/8	188	170	251	227	314	283	471	425	628	567	785	709
	1	188	141	251	188	314	236	471	353	628	471	785	589
	1 3/8	188	99	251	133	314	166	471	249	628	331	785	414
2 ½	5/8	295	276	393	368	491	460	736	690	982	920	1227	1150
	1	295	247	393	330	491	412	736	619	982	825	1227	1031
3 ¼	1 3/8	295	205	393	274	491	342	736	514	982	685	1227	856
	1	498	479	664	639	830	799	1244	1198	1659	1598	2074	1997
	1 3/8	498	451	664	601	830	751	1244	1127	1659	1502	2074	1878
4	1 3/4	498	409	664	545	830	681	1244	1022	1659	1362	2074	1703
	1	754	707	1005	942	1257	1178	1885	1767	2513	2356	3142	2945
	1 3/8	754	665	1005	887	1257	1108	1885	1662	2513	2216	3142	2770
5	1 3/4	754	610	1005	813	1257	1016	1885	1524	2513	2032	3142	2540
	1	1178	1131	1571	1508	1963	1885	2945	2827	3927	3770	4909	4712
	1 3/8	1178	1089	1571	1452	1963	1815	2945	2723	3927	3630	4909	4538
6	1 3/4	1178	1034	1571	1378	1963	1723	2945	2584	3927	3446	4909	4307
	1 3/8	1696	1607	2262	2143	2827	2679	4241	4018	5655	5358	7069	6697
	1 3/4	1696	1552	2262	2070	2827	2587	4241	3880	5655	5174	7069	6467
8	2	1696	1508	2262	2011	2827	2513	4241	3770	5655	5027	7069	6283
	1 3/8	3016	2927	4021	3902	5027	4878	7540	7317	10053	9756	12566	12195
	1 3/4	3016	2872	4021	3829	5027	4786	7540	7179	10053	9572	12566	11965
10	2	3016	2827	4021	3770	5027	4712	7540	7069	10053	9425	12566	11781
	1 3/4	4712	4568	6283	6091	7854	7613	11781	11420	15708	15227	19635	19034
	2	4712	4524	6283	6032	7854	7540	11781	11310	15708	15080	19635	18850
12	2 1/2	4712	4418	6283	5890	7854	7363	11781	11045	15708	14726	19635	18408
	2	6786	6597	9048	8796	11310	10996	16965	16493	22619	21991	28274	27489
	2 1/2	6786	6491	9048	8655	11310	10819	16965	16228	22619	21638	28274	27047
	3	6786	6362	9048	8482	11310	10603	16965	15904	22619	21206	28274	26507

Published Design Data

Westcoast Cylinders Inc. reserves the right to change specifications and other information included in this catalogue without notice. All information, data and dimension tables in this catalogue have been carefully compiled and thoroughly checked. However, no responsibility for possible errors or omissions can be assumed.

Westcoast Cylinders Inc. warrants the material and workmanship of our cylinders for one full year when used under normal conditions, subject to factory inspection. WCI will repair or replace, at no cost for defective parts or cylinders. WCI will not incur expenses incurred in the field, pertaining to such repairs or replacements except upon written authority. For a complete statement of terms and warranty contact Westcoast Cylinders Inc.

Warning

These products are intended for industrial use only. Do not use these products in applications where the pressure and temperature exceeds the values listed below.

Through misuse, age or malfunction, components used in fluid power systems can fail. A designer utilizing these products must consider all modes of failure when designing machines and provide safeguards or warn the end user of possible modes of failure.

Cylinder Pressure and Temperature Ratings

L-Series cylinders are rated to 250 psig pneumatic pressure.

Temperature ratings for cylinders are limited to the maximum published temperature range of the least resistant seal component. In most cases that would be the standard buna-n o-ring seals. For higher temperatures specify a high temperature seal such as Viton. Buna-N temperature ratings: -30°F to 200°F (-34°C to 93°C).

Bearing Load

Side loads on piston rods should be kept to a minimum to obtain maximum life from the cylinder gland bushing. To accomplish this, cylinders should not be used as an equipment support when mounted horizontally.

Breakaway Pressure

Cylinder breakaway pressures vary between 5 and 10 psi depending on the bore size and mounting angle. Breakway pressures will reduce after a break-in period.

Cylinder Sizing

An air cylinder must generate sufficient force to move a load and overcome friction losses. System pressure losses must also be considered. The Cylinder Developed Force Table does not take into account friction or pressure losses. In addition, an air cylinder must be overpowered due to the compressibility of air. Therefore, the following general guidelines apply for sizing an air cylinder when using theoretical cylinder developed force values:

Multiply your load by one of the load factors below to get effective load.

Application	Load factor
Normal Speed	1.25
Intermediate Speed	1.5
High Speed	2

Load x Load factor = Effective load

Typically, pneumatic cylinder applications require flow controls to limit cylinder speeds. Flow control is done by controlling the flow of air as it exits the cylinder. This is done to ensure accurate cylinder speeds under all loads. The flow controls however do affect cylinder performance by maintaining back pressure on the piston. As a general rule, allow 20 psi pressure loss through flow control for good speed regulation.

System pressure – 20 psi = Effective pressure

SPECIFYING AN "X" IN ANY FIELD REQUIRES AN EXPLANATION IN THE SPECIAL NOTES FIELD.

SERIES	SERVICE	BORE	STYLE	STROKE	ROD MATERIAL	ROD SIZE	THREAD	CUSHIONS	BARREL	PORT LOC'N	PORT SIZE	OPTIONS	CUSTOM
EXAMPLE L	4	C	12.188	A	1	A	1	A	1	A	A		

HYDRAULIC SERVICE ->
 OMT "H" FOR PNEUMATIC
 SEE PAGE 20
 FOR PRESSURE RATING

- 1 1/2" 15
 - 2" 2
 - 2 1/2" 25
 - 3 1/4" 32
 - 4" 4
 - 5" 5
 - 6" 6
 - 8" 8
 - 10" 10
 - 12" 12
- STYLE
- A END ANGLES (MS1)
 - B BLIND END RECT. FLANGE (MF2)
 - BS BLIND END SQUARE FLANGE (MF6)
 - C FIXED CLEVIS (MP1)
 - CH COMMON HEAD
 - CHR COMMON HEAD/COMMON ROD
 - CR COMMON ROD
 - D DOUBLE ROD (MD)
 - E PIVOT EYE (MP3)
 - F FOOT MOUNT (MS2)
 - FA END LUG FOOT MOUNT (MS7)
 - G END LUG END SQUARE MOUNTING (ME3)
 - H *BLIND END SQUARE MOUNTING (ME4)
 - MB DELTA GRA. BLE. BIE. CLEVIS (MP-1)
 - MP DELTA GRA. BLE. BIE. CLEVIS (MP-2)
 - MA EXTENDED THE RODS BOTH ENDS (MK1)
 - NB EXTENDED THE RODS BLIND END (MK2)
 - NC EXTENDED THE RODS GLAND END (MK3)
 - NM NO MOUNT (MK0)
 - R ROD END RECTANGULAR FLANGE (MF1)
 - RS ROD END SQUARE FLANGE (MF5)
 - S *SIDE TAPPED (MS4)
 - T MD-TRUNNION (MT4)
 - TB BLIND END TRUNNION (MT2)
 - TR ROD END TRUNNION (MT1)
 - W SELF ALIGNING EYE (MPU3)

- STROKE inches
- A NITROTEC TREATED
 - C CHROME PLATED STEEL
 - E CHROME PLATED STAINLESS STEEL
 - X OTHER-SPECIFY

- ROD MATERIAL
- A ROD #1
 - C ROD #2
 - E ROD #3
 - X OTHER-SPECIFY

- ROD SIZE
- 1
 - 2
 - 3
 - X

- THREAD
- A STANDARD THREAD, KK
 - B OVERSIZE THREAD, CC
 - C FULL THREAD
 - D FEMALE THREAD
 - E NO THREAD
 - F ROD END COUPLER
 - G ROD STUD (KK ONLY)
 - X NON STANDARD MALE THREAD
 - Y NON STANDARD FEMALE THREAD
 - S SPECIAL-SPECIFY

- CUSHIONS
- 1 BOTH ENDS
 - 2 NON CUSHIONED (STANDARD)
 - 3 BLIND END ONLY
 - 4 ROD END ONLY
 - X OTHER-SPECIFY

- BARREL
- A NITROTEC TREATED (STANDARD)
 - C CHROME I.D. STEEL
 - D BRASS
 - E STAINLESS STEEL
 - F AMALGON
 - H MICRO-HONED STEEL
 - X OTHER-SPECIFY

- PORT LOC'N
- 1 POS #1 (STANDARD)
 - 2 POS #2
 - 3 POS #3
 - 4 POS #4
 - X OTHER-SPECIFY

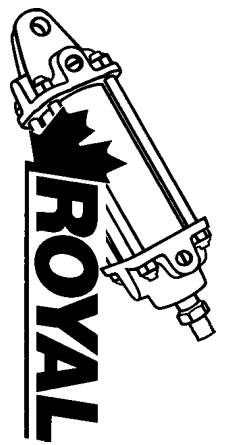
- PORT SIZE
- A NPTF PIPE (STANDARD)
 - B OVERSIZE PORT
 - C SAE PORT
 - D TRANSITION MANIFOLD PORT
 - X OTHER-SPECIFY

- OPTIONS
- A THREAD LENGTH
 - D BRASS ROD SCRAPPER
 - F SPA CER PLATE (Models LNA and LNC only)
 - G WEAR RING IN GLAND BUSHING
 - L LOW FRICTION OPTION
 - M MA GNET IN PISTON
 - N1 NEEDLE VALVE @ POS #1
 - N2 NEEDLE VALVE @ POS #2
 - N3 NEEDLE VALVE @ POS #3
 - PS PISTON STOP
 - S STAINLESS STEEL THE RODS AND LOCK NUTS
 - U THICKER MOUNTING FLANGE PLATE (Models LR and LRS only)
 - V HIGH TEMPERATURE SEALS
 - W ROD EXTENSION
 - X OTHER OPTIONS-SPECIFY
 - Z ZINCALOY GLAND BUSHING

- CUSTOM
- X

SPECIAL NOTES:
 * - ASSIGNED BY WESTCOAST CYLINDERS

EXAMPLE "L4C12.188A1A1A1A"
 *Contact Factory for mounting dimensions
 An "X" in any field requires an explanation in special notes.
 Consult factory for options not shown.



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