

PowerMaster® NFPA Cylinders

PP Pneumatic 250 psi

PH Hydraulic 250 to 1500 psi

Catalog pages from SC-200

April 2003

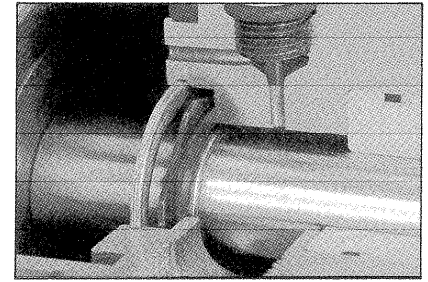
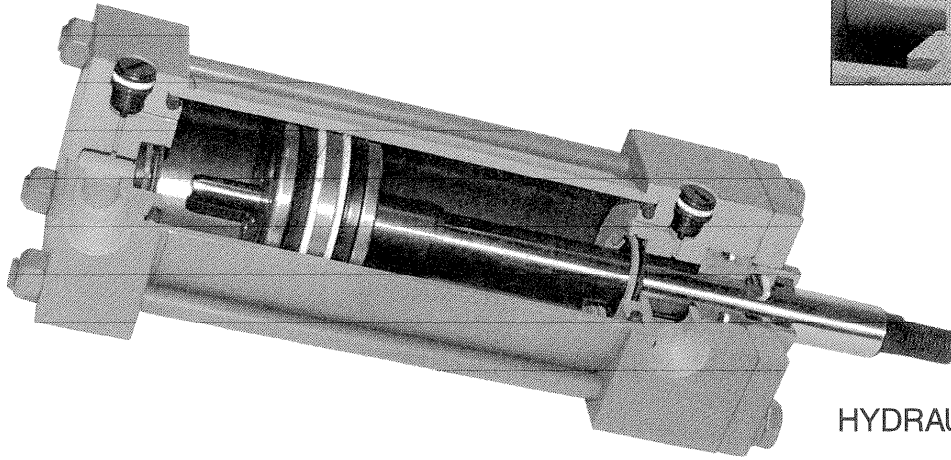
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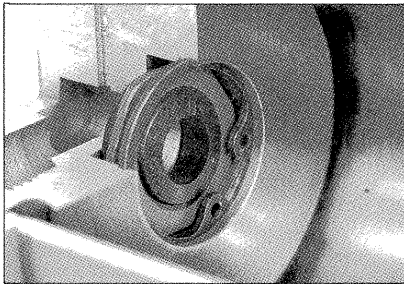
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POWERMASTER® PP PNEUMATIC & PH HYDRAULIC CYLINDERS

STANDARD CYLINDER SPECIFICATIONS



PNEUMATIC
CUSHION (HEAD)



PNEUMATIC
CUSHION (CAP)

HYDRAULIC

CYLINDER SPECIFICATIONS

PH HYDRAULIC OPERATING PRESSURES BY CYLINDER BORE SIZES

BORE SIZE	MAXIMUM PSI, MAXIMUM DUTY SEVERE SERVICE
1-1/2	1500 §
2	1500 §
2-1/2	1500* §
3-1/4	1500 §
4	1000
5	750
6	750
8	500
10	400
12	250
14	250

*With 5/8" rod, 1000 psi.

§ MF1 & MF2 Maximum Operating
Pressure is 1000 psi.

For Double rod end cylinder pressure
ratings, see page 68.

Consult factory for specific applications
at pressures higher than shown.

Duty—250 psi pneumatic PP, pre-lubricated
250 to 1500 psi hydraulic PH

Standards—Meets or exceeds all J.I.C. and NFPA
requirements.

Bore Sizes—1-1/2"–14" (standard), larger available.

Piston Rods—5/8"–5-1/2" (standard)

Mountings—21 standard NFPA mountings.

Temperature

Range—Standard Buna-N seals: -65°F to +200°F
Optional Viton® seals: -15°F to +400°F
(Consult factory for cylinder applications
at extreme temperatures.)

Ports—NPTF dryseal tapered threads. Optional SAE straight
thread ports available. (Flange ports available at
extra cost.)

Stroke—Standard strokes furnished to nearest 1/8". Normal
stroke tolerance +/- 1/16". Closer stroke tolerances
available; consult factory.

Rod End Threads—Standard KK1 male and female threads
plus KK2 oversize male thread. Other
rod end styles optional.

Cushions—Available for all bore sizes, at either or both
ends.

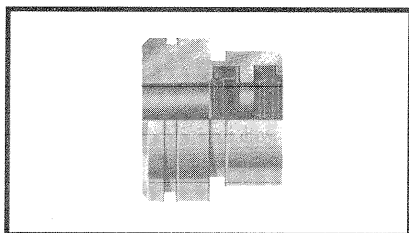
Piston Rods—Case hardened to 50-55 Rockwell "C"
chrome-plated and finished to 15
microinches or better. (5/8" not case
hardened)

Tie Rods—High tensile, 1144 stress proof steel

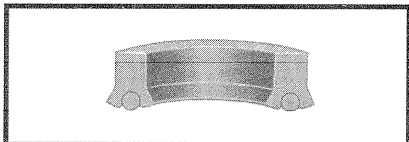
Cylinder Tube—Honed, steel tubing with chrome plated I.D.

Double End Rod—Available in many mounting styles to
meet special needs.

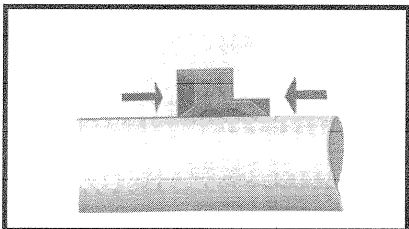
CYLINDER SPECIFICATIONS



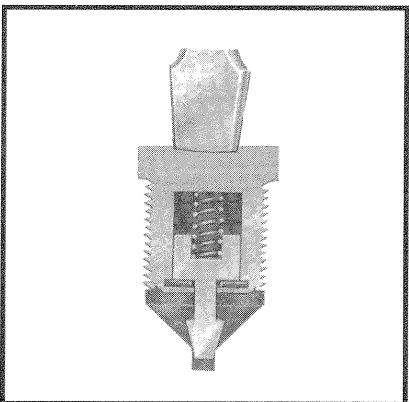
Extra-long rod bearing provides for maximum support against side-loads including external misalignment. Marine-grade 660 bronze material has superior non-scoring properties and dimensional stability. Bearing is pilot fitted into the head assuring true concentricity and long bearing and seal life. Cartridge can be quickly and easily changed without special tools. Ductile iron is used in large bores with certain rod diameters.



Pressure energized rod seal provides positive sealing with minimum friction drag. Self-adjusting seal in the Powermaster Pneumatic and U-cup/O-ring in the Powermaster Hydraulic coordinate operating pressures with sealing forces.

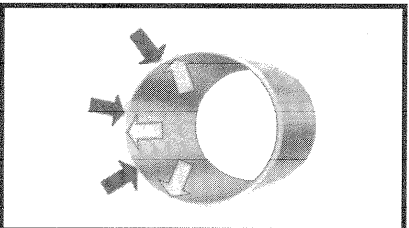


Double Duty Twin Lip rod wiper provides dirt protection for the rod bearing and rod seal. External lip prevents entry of contaminants into the bearing area on in-stroke, and internal lip wipes rod on outstroke and serves as a secondary seal. The standard materials are polyurethane, Buna-N and Viton®. A metallic wiper is offered as an option (5/8" — 3" rod).

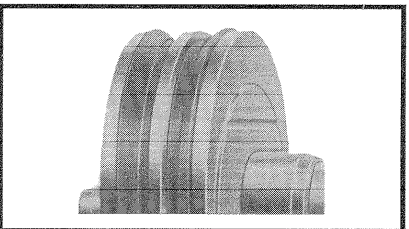


Powermaster's self-aligning cushion design provides a positive sealing, leakproof cushion with fast piston breakaway. The Powermaster Pneumatic cushioning consists of a "floating" cushion insert seal on both ends and the Powermaster Hydraulic has a floating cushion bushing on the rod end with a floating metal insert seal on the cap end. This design provides for a maximum cushion effect with faster breakaway response.

The REXROTH Exact-a-just™ combination needle and check valve eliminates the need for separate ball checks (thus leaving a quadrant free for other possible use).



Dent and corrosion resistant tubing. Steel tubing is honed to a 12 micro-inch, or better, finish, then chrome-plated for minimum friction and long seal life. (Chrome-plated I.D. tubing furnished for Powermaster Pneumatic).



Pressure energized U-cup piston seals provide positive sealing with minimum friction. Standard Buna-N has an operating range of -65°F to +200°F with Viton available for high temperatures -15°F to +400°F.

POWERMASTER® PP PNEUMATIC & PH HYDRAULIC CYLINDERS

CYLINDER OPTIONS

VITON SEALS

Available for high temperature air service in a temperature range of -15°F to 400°F, and with many special hydraulic fluids. (Special fluids should be checked for compatibility with Viton).

PISTON ROD OPTIONS

Non-standard rod ends are available including rod and thread extensions, special threads and rod end machining, and additional wrench flats. (Catalog dimensional changes must be specified).

Optional rod materials and plating are also available for specific applications and environmental conditions:

Stainless Steel — 303, 316, and 17 - 4 PH

Extra-thick Chrome Plating (.001-.003 thick)

Nickel Chrome Plating

METALLIC ROD WIPER

Metal scraper available for the removal of tough/hardened matter adhering to piston rod. (Rod boots for exterior rod protection might also be considered).

PORT OPTIONS

SAE straight thread ports are optional at no additional charge. Other standard size ports, oversize welded coupling ports and multiple ports are also available where design dimensions permit.

STOP TUBE

Internal stop tube is available for reducing excessive bearing loads and jackknifing conditions in long stroke push cylinders. (See page 113 for determining stop tube length required).

COMBINATION MOUNTING

Additional cylinder mountings are available where design space permits.

WATER SERVICE

Model PW is available for water service and includes: cadmium plated head, cap, piston, and cushion parts when applicable. Standard Powermaster tube provides chrome-plated I.D. at no additional charge. Stainless steel piston rod is also recommended.

EPOXY PAINT

Available for additional exterior cylinder protection in corrosive environments. Painting includes one coat of Red Metal Primer and one coat of Black Epoxy Enamel.

TAPPED RETAINER PLATE

Head retainer plate tapped for tie rods available when bolts or tie rod nuts are not permitted on head end. (Available for 1-1/2" — 6" bore sizes).

EXTRA CHECK VALVE

Available for faster breakaway response for cushioned cylinders.

CUSHIONS (Exact-a-just™)

Available for head, cap or both

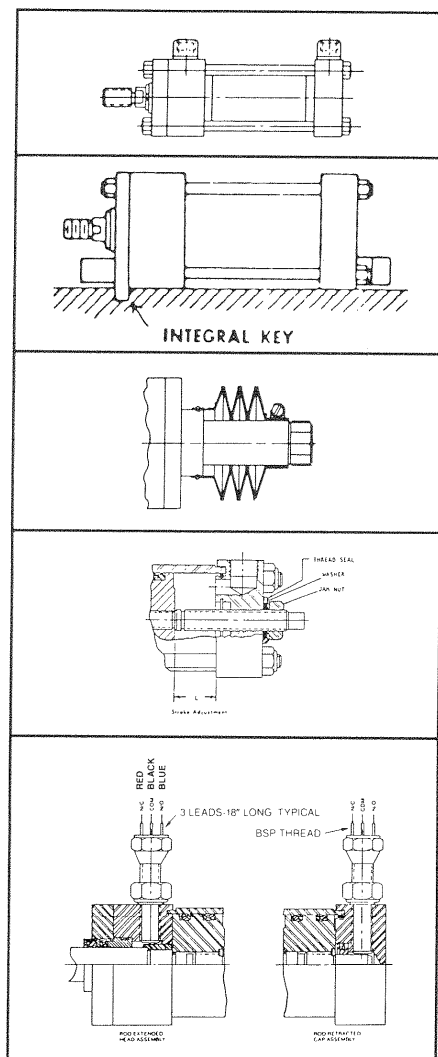
CONSULT FACTORY FOR OTHER OPTION REQUIREMENTS NOT SHOWN IN THIS CATALOG.

APPROXIMATE UNCRATED POWERMASTER WEIGHTS*

CYLINDER BORE	1-1/2	2	2-1/2	3-1/4	4	5	6	8	10	12	14
ZERO STROKE	5	7	12	20	30	45	70	100	200	300	490
ADD PER INCH OF STROKE	.3	.4	.6	.8	.9	1.0	1.5	2.0	2.5	4.0	4.5

*Weights based on standard (first) rod sizes.

CYLINDER OPTIONS



Oversize welded coupling ports are available where design and mounting dimensions permit. (Available on head end only in smaller bore sizes due to limited design space and mounting interference).

REXROTH offers a standard arrangement of thrust key mounting on the MS2, MS4 and MS7 Powermaster cylinders. This option eliminates the need for fitted bolts or external keys to carry the thrust load. The normal headplate is extended below the head surface of the cylinder and is fitted in a keyway milled into the mounting surface of the machine member. See drawings for details.

Rod boots are available for additional rod protection from environmental conditions. The oil resistant cover of neoprene-coated nylon fabric is suitable for operation in ambient temperature range of -45°F to 220°F. Consult factory for higher temperature boot requirements.

Stroke adjustment option is available for applications requiring a precise stroke or when infrequent stroke length adjustment is required in the retracted position. Maximum stroke adjustment varies by bore size and must be specified when ordering. Cushioning is not available on the cap end with this design.

POSITION INDICATOR

Proximity Position Indicator Switches are available for most mounting styles and rod sizes of Powermaster cylinders. These switches are mounted in the head and cap ends to confirm the extended or retracted position of the piston. The switches are actuated by the cushion bushing on the head end and the cushion spear on the cap end. (NOTE: If cap cushioning is required in the 1-1/2", 2" and 2-1/2" bore PP and PH Powermaster cylinders, proximity switches cannot be used on the cap end.) No linkage or external actuator is required. Switches can be assembled in the cylinder head, cap, or rear cap face. The switches are not sensitive to vibration and are suitable for most environments. Switch height is less than four inches; for critical dimensions, contact factory.

SENSING DISTANCE

End sensing of .090" (2.25mm) to .110" (2.76mm) when using a ferrous actuator approximately equal the area of the end. The differential (hysteresis) is approximately 1/2 of the sensing range. The GO® Switch is not a "reed switch".

CONTACT RATING

2 AMP at 240 VAC (CSA and UL approved)
50 mA at 24 VDC (CSA only)

CONTACT ARRANGEMENT

Available in Single Pole, Double Throw.

TEMPERATURE RANGE

Tested to -22°F to +250°F. Impervious to most environments. Recognized by UL at 104°F (40°C) maximum.

GO® is a trademark of General Equipment Manufacturing Company, Inc.

CAUTION

THESE UNITS ARE NOT
INTENDED TO BE USED AS
A FINAL SAFETY DEVICE.

POWERMASTER® PP PNEUMATIC AND PH HYDRAULIC CYLINDERS

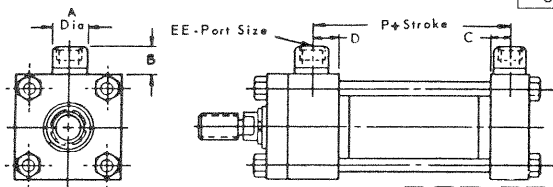
CYLINDER OPTIONS

OVERSIZE PORTS OFFERED IN WELDED BOSS — HEAD ONLY

REXROTH OFFERS OPTIONAL CYLINDER PORT CONNECTIONS TO MEET SPECIAL SERVICE AND/OR APPLICATION REQUIREMENTS.

1. SAE straight thread ports are offered as an option at no extra charge
2. Oversize ports are located in welded bosses as shown. These ports can be located in any position offered with standard ports. Large rods limit SAE port sizes.
3. Oversize ports do not necessarily mean increased flow capacity; consult factory.

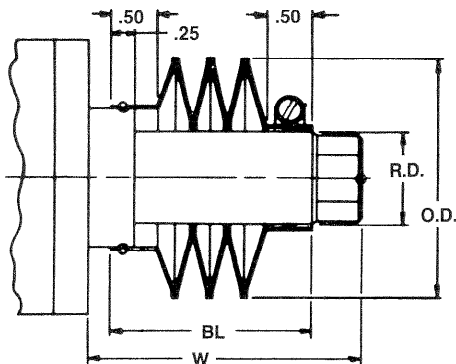
BORE	EE			A	B	C	D	P	OVERSIZE PORT		
	NPTF	SAE	DASH						NPTF	SAE	DASH
1.5	3/8	9/16-18	-6	1-1/8	15/16	9/16	1/2	2-1/4	1/2*	3/4-16*	-8
2	3/8	9/16-18	-6	1-1/8	15/16	9/16	1/2	2-1/4	1/2*	3/4-16*	-8
2.5	3/8	9/16-18	-6	1-1/8	15/16	9/16	1/2	2-3/8	1/2*	3/4-16*	-8
3.25	1/2	3/4-16	-8	1-3/8	1	11/16	5/8	2-5/8	3/4*	1-1/16-12*	-12
4	1/2	3/4-16	-8	1-3/8	1	11/16	5/8	2-5/8	3/4*	1-1/16-12*	-12
5	1/2	3/4-16	-8	1-3/8	1	11/16	5/8	2-7/8	3/4*	1-1/16-12*	-12
6	3/4	1-1/16-12	-12	1-3/4	1-3/16	15/16	3/4	3-1/8	1*	1-5/16-12*	-16
8	3/4	1-1/16-12	-12	1-3/4	1-3/16	15/16	3/4	3-1/4	1	1-5/16-12*	-16



* Available on head end only. No oversize ports offered on cap on standard cylinders, except 8" bore. When cap oversize ports are required, the catalog "LB" dimension becomes equal to the "LD" catalog dimension due to the required increase in cap thickness ("J" dimension).

ROD PROTECTIVE COVER

REXROTH offers a standard rod protective cover option on Powermaster cylinders. This option provides a dirt and oil resistant cover to extend piston rod and seal service life in applications where severe environmental conditions exist. The standard cover material is nylon fabric neoprene coated and is suitable for operation in ambient temperatures between -45° and +220°F. Rod covers are also available for larger rod sizes on special request.



PISTON ROD		COVER OD	LENGTH FACTOR LF
CODE	DIAMETER		
D	.63"	2.25	.13
F	1.00"	2.62	.13
G	1.38"	3.00	.13
H	1.75"	3.38	.13
J	2.00"	3.75	.13
K	2.50"	4.38	.13
L	3.00"	5.12	.10

Determine the extra piston rod extension (ERE) required to accommodate the rod cover.

ERE = (cylinder stroke x length factor LF) + .75"
(see table above for LF)

Adjust cylinder catalog dimension V, WF, etc. as required to insure correct installation dimensions.

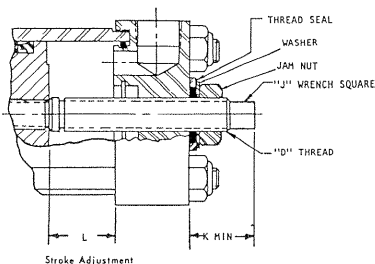
BL = ERE + .25

W = ERE + W (from dimension charts)

NOTE: these calculations are needed for cylinder application, but not for pricing.

STROKE ADJUSTMENT

REXROTH offers a standard arrangement to provide cylinder stroke adjustment. When an application requires a precise cylinder stroke or when infrequent stroke length adjustment is required, this retracted position stroke adjustment should be specified. The length of the stroke adjustment must be specified when ordered. Cushioning is not available on the cap end when this standard stroke adjuster is utilized. Where cushioning is required, other designs are available.



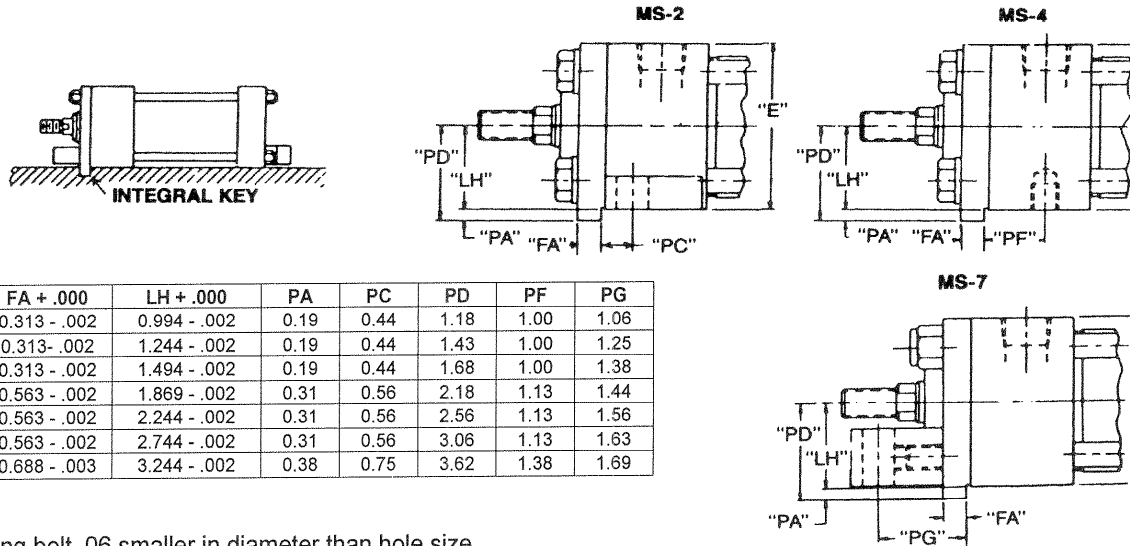
BORE SIZE	D	J	K	L MAX.
1.50"	1/2-20	.31	.94	5.00
2.00"	1/2-20	.31	.94	5.00
2.50"	3/4-16	.44	1.25	8.00
3.25"	3/4-16	.44	1.25	8.00
4.00"	3/4-16	.44	1.25	8.00
5.00"	1-14	.62	1.69	9.00
6.00"	1-14	.62	1.69	9.00
8.00"	1-1/2-12	.94	2.12	18.00

FOLDOUT

POWERMASTER® PP PNEUMATIC AND PH HYDRAULIC CYLINDERS

EXTENDED KEY PLATE

REXROTH offers a standard arrangement of thrust key mounting on the MS2, MS4 and MS7 Powermaster cylinders. This option eliminates the need for fitted bolts or external keys to carry the thrust load. The normal headplate is extended below the head surface of the cylinder and is fitted in a keyway milled into the mounting surface of the machine member. See drawings for details.



BORE	E	FA + .000	LH + .000	PA	PC	PD	PF	PG
1.500	2.00	0.313 - .002	0.994 - .002	0.19	0.44	1.18	1.00	1.06
2.000	2.50	0.313 - .002	1.244 - .002	0.19	0.44	1.43	1.00	1.25
2.500	3.00	0.313 - .002	1.494 - .002	0.19	0.44	1.68	1.00	1.38
3.250	3.75	0.563 - .002	1.869 - .002	0.31	0.56	2.18	1.13	1.44
4.000	4.50	0.563 - .002	2.244 - .002	0.31	0.56	2.56	1.13	1.56
5.000	5.50	0.563 - .002	2.744 - .002	0.31	0.56	3.06	1.13	1.63
6.000	6.50	0.688 - .003	3.244 - .002	0.38	0.75	3.62	1.38	1.69

NOTE:

1. Use mounting bolt .06 smaller in diameter than hole size.
2. Fitted bolts or dowel pins are not needed with the thrust key headplate.
3. All dimensions not shown are NFPA standard.

POWERMASTER® PH & HH HYDRAULIC CYLINDERS

AVAILABLE PORTS FOR "PH" SERIES CYLINDERS

Bore Size (inches)	SAE	NPTF PIPE THD	BSPP PARALLEL THD	BSPT TAPER THD	METRIC STRAIGHT THD	ISO 6149-1 METRIC THD
1	#4	1/4	1/4	1/4	M14 x 1.5	-
1.5	#6	3/8	3/8	3/8	M14 x 1.5	-
2	#6	3/8	3/8	3/8	M14 x 1.5	M14 x 1.5
2.5	#8	3/8	3/8	3/8	M14 x 1.5	M14 x 1.5
3.25	#8	1/2	3/8	3/8	M22 x 1.5	M22 x 1.5
4	#8	1/2	1/2	1/2	M22 x 1.5	M22 x 1.5
5	#8	1/2	1/2	1/2	M22 x 1.5	M22 x 1.5
6	#12	3/4	1/2	1/2	M26 x 1.5	M27 x 1.5

AVAILABLE PORTS FOR "HH" SERIES CYLINDERS

Bore Size (inches)	SAE	NPTF PIPE THD	BSPP PARALLEL THD	SAE 4-BOLT FLANGE NOM. SIZE	BSPT TAPER THD	METRIC STRAIGHT THD	ISO 6149-1 METRIC THD
1.5	#8	1/2	1/2	n/a	1/2	M22 x 1.5	M22 x 1.5
2	#8	1/2	1/2	* 1/2	1/2	M22 x 1.5	M22 x 1.5
2.5	#8	1/2	1/2	* 1/2	1/2	M22 x 1.5	M22 x 1.5
3.25	#12	3/4	3/4	** 1/2	3/4	M27 x 2	M27 x 2
4	#12	3/4	3/4	1/2	3/4	M27 x 2	M27 x 2
5	#12	3/4	3/4	*** 1/2	3/4	M27 x 2	M27 x 2
6	#16	1	1	§ 3/4	1	M33 x 2	M33 x 2
7	#20	1-1/4	1-1/4	§ 1	1-1/4	M42 x 2	M42 x 2
8	#24	1-1/2	1-1/2	§ 1-1/4	1-1/2	M48 x 2	M48 x 2

§ Size 1/2" on 6" bore (4" rod) and 7" bore (5" rod);

Size 1" on 8" bore (5-1/2" rod).

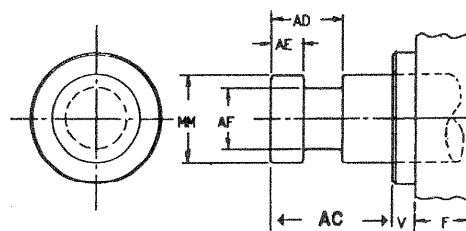
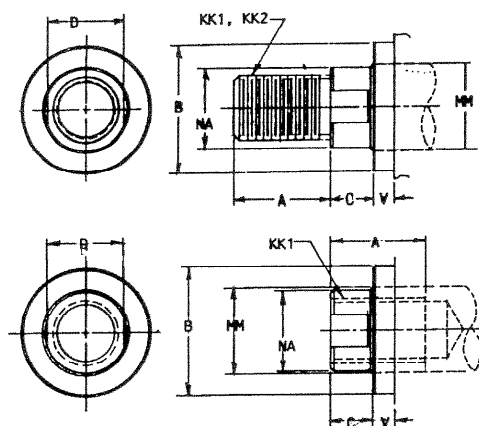
* Cap only.

** Not available on 3-1/4" bore (2" rod).

*** Not available on 5" bore (3-1/2" rod).

**POWERMASTER® PP PNEUMATIC AND PH HYDRAULIC CYLINDERS
and PRESSUREMASTER® HH HYDRAULIC CYLINDERS**

ROD END AND PORT DIMENSIONS



S.A.F.E. ROD END

ROD THREAD OPTIONS — Standard KK1 Male furnished when not specified.

Male thread available in KK1 and KK2 thread sizes.

KK1 studded male rod end available on request.

Female thread available in KK1 thread size only.

PISTON ROD END

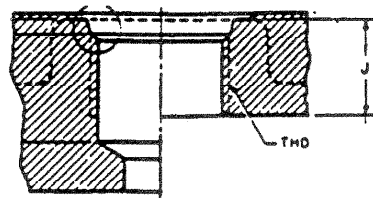
MM ROD DIA.	A	B +0.000 - 0.003	C	D	AC	AD	AE	AF	KK1	KK2	NA +0.002 - .002
0.625	0.750	1.124	0.38	0.50	1.13	0.63	0.250	0.375	7/16-20	1/2-20	0.563
1.000	1.125	1.499	0.50	0.88	1.63	0.94	0.375	0.688	3/4-16	7/8-14	0.938
1.375	1.625	1.999	0.63	1.13	1.75	1.06	0.375	0.875	1-14	1-1/4-12	1.313
1.750	2.000	2.374	0.75	1.50	2.00	1.31	0.500	1.125	1-1/4-12	1-1/2-12	1.688
2.000	2.250	2.624	0.88	1.69	2.63	1.69	0.630	1.380	1-1/2-12	1-3/4-12	1.940
2.500	3.00	3.124	1.00	2.06	3.25	1.94	0.750	1.750	1-7/8-12	2-1/4-12	2.438
3.000	3.500	3.749	1.00	2.63	3.63	2.44	0.875	2.250	2-1/4-12	2-3/4-12	2.938
3.500	3.500	4.249	1.00	3.00	4.38	2.69	1.000	2.500	2-1/2-12	3-12	3.438
4.000	4.000	4.749	1.00	3.38	4.50	2.69	1.000	3.000	3-12	3-1/2-12	3.938
4.500	4.500	5.249	1.00	SH 1	5.25	3.19	1.500	3.500	3-1/4-12	4-1/4-12	4.438
5.000	5.000	5.749	1.00	SH 1	5.38	3.19	1.500	3.875	3-1/2-12	4-3/4-12	4.938
5.500	5.500	6.249	1.00	SH 1	6.25	3.94	1.875	4.375	4-12	5-1/4-12	5.438
7.000	7.000	7.749	1.00	SH 2					5-1/2-12	6-12	6.938
8.000	8.000	8.749	1.00	SH 2					5-3/4-12	7-1/2-12	7.938
10.000	10.000	10.749	1.00	SH 2					7-1/4-12	9-1/2-12	9.875

Spanner Wrench Holes: SH 1 = .56" dia., SH 2 = .66" dia.

METRIC ROD THREADS AVAILABLE AS AN OPTION.

TO FIND AVAILABLE PORTING OPTIONS,
SEE PAGE 52

**SAE STRAIGHT THREAD
O-RING BOSS**

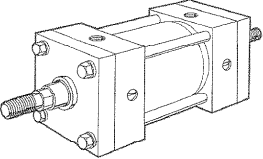
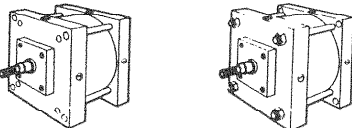
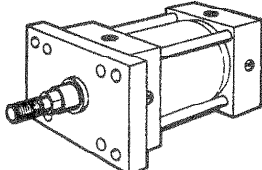
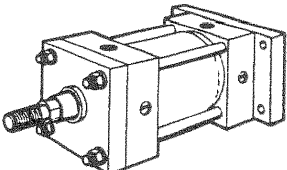
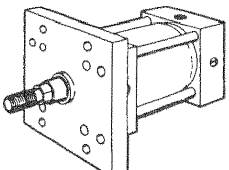
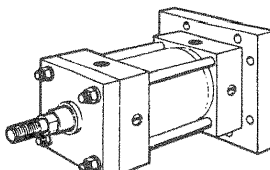
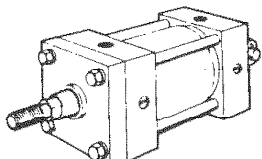
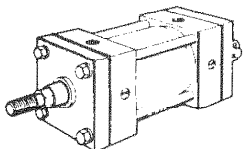
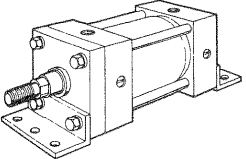
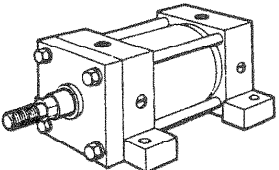
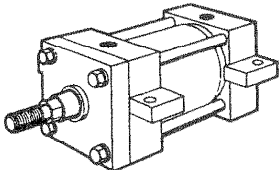
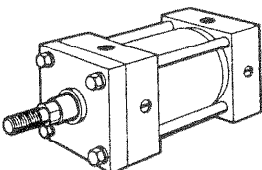
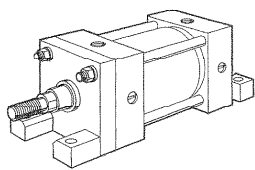
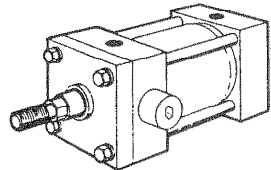
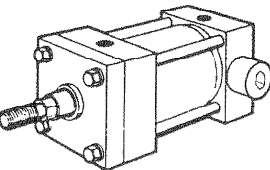
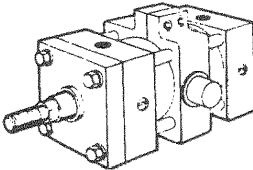
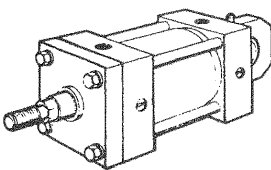
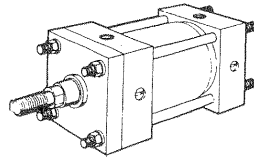


NPTF PIPE THREADS

NOM. SIZE	THDS PER IN.	PIPE OD	EFF. THD. DEPTH
3/8	18	0.68	0.41
1/2	14	0.84	0.54
3/4	14	1.05	0.55
1	11-1/2	1.32	0.68
1-1/4	11-1/2	1.66	0.71
1-1/2	11-1/2	1.90	0.72
2	11-1/2	2.38	0.76
2-1/2	8	2.88	1.14

EQUIV. NPTF	SAE THREAD SIZE	NOMINAL TUBING		THREAD DEPTH J
		SIZE	DASH	
3/8	9/16-18	3/8	-6	.50
1/2	3/4-16	1/2	-8	.56
1/2	7/8-14	5/8	-10	.65
3/4	1-1/16-12	3/4	-12	.75
3/4	1-3/16-12	7/8	-14	.75
1	1-5/16-12	1	-16	.75
1-1/4	1-5/8-12	1-1/4	-20	.75
1-1/2	1-7/8-12	1-1/2	-24	.75
2	2-1/2-12	2	-32	.75

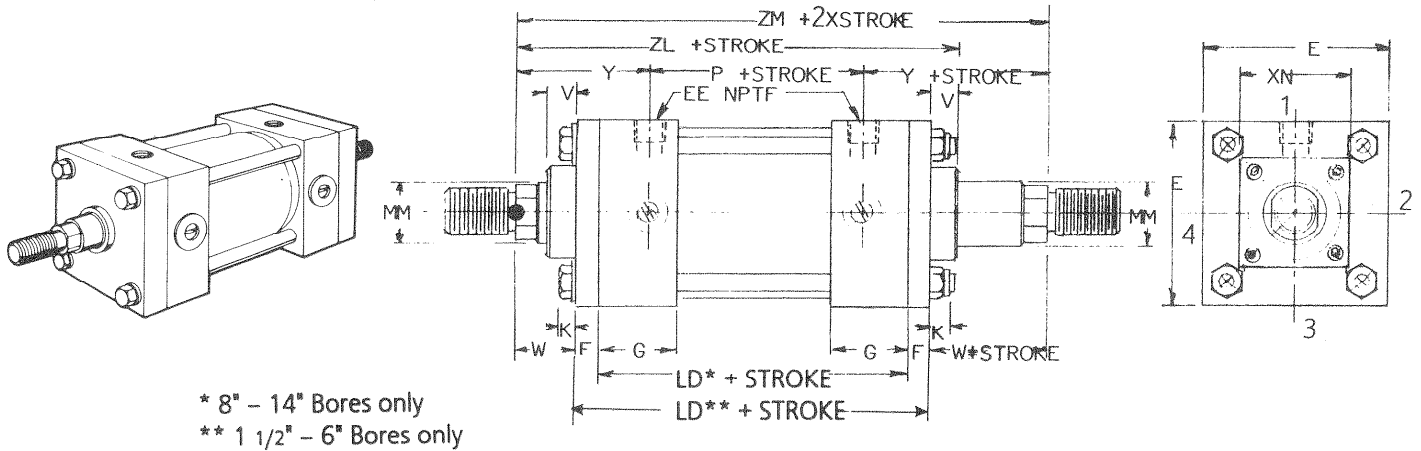
MOUNTING INDEX

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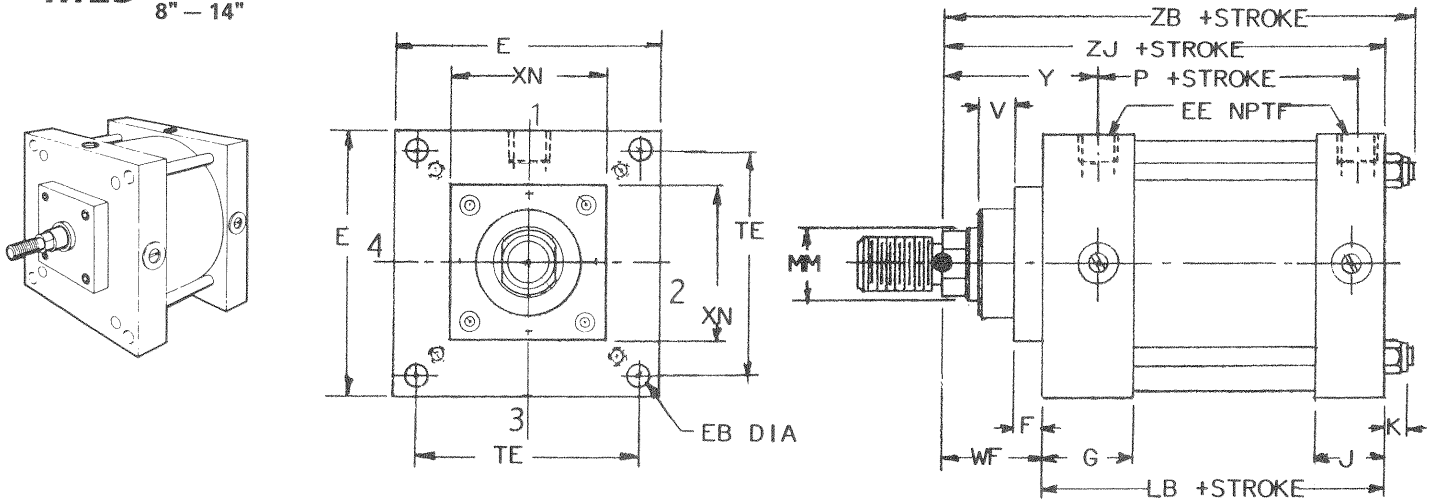
POWERMASTER® PP PNEUMATIC AND PH HYDRAULIC CYLINDERS

DOUBLE ROD CYLINDER HEAD SQUARE FLANGE MOUNT CAP SQUARE FLANGE MOUNT

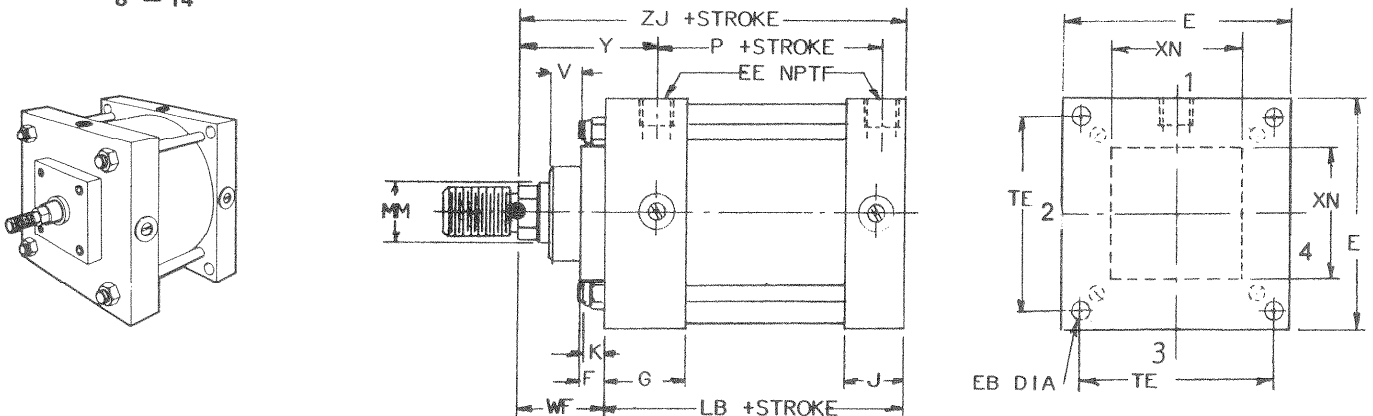
D DOUBLE ROD CYLINDER 1-1/2" – 14"



ME3 HEAD SQUARE FLANGE 8" – 14"



ME4 CAP SQUARE FLANGE 8" – 14"



POWERMASTER® PP PNEUMATIC AND PH HYDRAULIC CYLINDERS

TABLE 1 — Dimensions affected by rod diameter

BORE IN	MM ROD	V	W	WF	Y	XN	ZB	ZJ	ZL	ZM
1.500	0.625	0.25	0.63		1.94		4.85	4.63	5.73	6.13
	† 1.000	0.50	1.00		2.31		5.22	5.00	6.10	6.88
2.000	0.625	0.25	0.63		1.94		4.90	4.63	5.78	6.13
	1.000	0.50	1.00		2.31		5.27	5.00	6.15	6.88
	† 1.375	0.63	1.25		2.56		5.52	5.25	6.40	7.38
2.500	0.625	0.25	0.63		1.94		5.03	4.75	5.90	6.25
	1.000	0.50	1.00		2.31		5.40	5.13	6.27	7.00
	1.375	0.63	1.25		2.56		5.65	5.38	6.52	7.50
	† 1.750	0.75	1.50		2.81		5.90	5.63	6.77	8.00
3.250	1.000	0.25	0.75		2.44		5.97	5.63	7.09	7.50
	1.375	0.38	1.00		2.69		6.22	5.88	7.34	8.00
	1.750	0.50	1.25		2.94		6.47	6.13	7.59	8.50
	† 2.000	0.50	1.38		3.06		6.60	6.25	7.72	8.75
4.000	1.000	0.25	0.75		2.44		5.97	5.63	7.09	7.50
	1.375	0.38	1.00		2.69		6.22	5.88	7.34	8.00
	1.750	0.50	1.25		2.94		6.47	6.13	7.59	8.50
	2.000	0.50	1.38		3.06		6.60	6.25	7.72	8.75
	2.500	0.63	1.63		3.31		6.85	6.50	7.97	9.25
5.000	1.000	0.25	0.75		2.44		6.32	5.88	7.44	7.75
	1.375	0.38	1.00		2.69		6.57	6.13	7.69	8.25
	1.750	0.50	1.25		2.94		6.82	6.38	7.94	8.75
	2.000	0.50	1.38		3.06		6.95	6.50	8.07	9.00
	2.500	0.63	1.63		3.31		7.20	6.75	8.32	9.50
	3.000	0.63	1.63		3.31		7.20	6.75	8.32	9.50
6.000	1.375	0.25	0.88		2.81		7.07	6.63	8.32	8.75
	1.750	0.38	1.13		3.06		7.32	6.88	8.57	9.25
	2.000	0.38	1.25		3.19		7.44	7.00	8.69	9.50
	2.500	0.50	1.50		3.44		7.69	7.25	8.94	10.00
	3.000	0.50	1.50		3.44		7.69	7.25	8.94	10.00
	3.500	0.50	1.50		3.44		7.69	7.25	8.94	10.00
	4.000	0.50	1.50		3.44		7.69	7.25	8.94	10.00
8.000	1.375	0.25		1.63	2.81	4.00	7.32	6.75	7.82	8.88
	1.750	0.38		1.88	3.06	4.00	7.57	7.00	8.07	9.38
	2.000	0.38		2.00	3.19	4.00	7.69	7.13	8.19	9.63
	2.500	0.50		2.25	3.44	4.00	7.94	7.38	8.44	10.13
	3.000	0.50		2.25	3.44	5.50	7.94	7.38	8.44	10.13
	3.500	0.50		2.25	3.44	5.50	7.94	7.38	8.44	10.13
	4.000	0.50		2.25	3.44	5.50	7.94	7.38	8.44	10.13
	4.500	0.50		2.25	3.44	6.50	7.94	7.38	8.44	10.13
	5.000	0.50		2.25	3.44	6.50	7.94	7.38	8.44	10.13
	5.500	0.50		2.25	3.44	7.25	7.94	7.38	8.44	10.13
10.000	1.750	0.38		1.88	3.13	4.00	8.92	8.25	9.17	10.38
	2.000	0.38		2.00	3.25	4.00	9.04	8.38	9.29	10.63
	2.500	0.50		2.25	3.50	4.00	9.29	8.63	9.54	11.13
	3.000	0.50		2.25	3.50	5.50	9.29	8.63	9.54	11.13
	3.500	0.50		2.25	3.50	5.50	9.29	8.63	9.54	11.13
	4.000	0.50		2.25	3.50	5.50	9.29	8.63	9.54	11.13
	4.500	0.50		2.25	3.50	6.50	9.29	8.63	9.54	11.13
	5.000	0.50		2.25	3.50	6.50	9.29	8.63	9.54	11.13
	5.500	0.50		2.25	3.50	7.25	9.29	8.63	9.54	11.13
12.000	2.000	0.38		2.00	3.25	4.00	9.54	8.88	9.79	11.13
	2.500	0.50		2.25	3.50	4.00	9.79	9.13	10.04	11.63
	3.000	0.50		2.25	3.50	5.50	9.79	9.13	10.04	11.63
	3.500	0.50		2.25	3.50	5.50	9.79	9.13	10.04	11.63
	4.000	0.50		2.25	3.50	5.50	9.79	9.13	10.04	11.63
	4.500	0.50		2.25	3.50	6.50	9.79	9.13	10.04	11.63
	5.000	0.50		2.25	3.50	6.50	9.79	9.13	10.04	11.63
	5.500	0.50		2.25	3.50	7.25	9.79	9.13	10.04	11.63
14.000	2.500	0.50		2.25	3.81	4.00	11.16	10.38	11.66	13.13
	3.000	0.50		2.25	3.81	5.50	11.16	10.38	11.66	13.13
	3.500	0.50		2.25	3.81	5.50	11.16	10.38	11.66	13.13
	4.000	0.50		2.25	3.81	5.50	11.16	10.38	11.66	13.13
	4.500	0.50		2.25	3.81	6.50	11.16	10.38	11.66	13.13
	5.000	0.50		2.25	3.81	6.50	11.16	10.38	11.66	13.13
	5.500	0.50		2.25	3.81	7.25	11.16	10.38	11.66	13.13

DOUBLE ROD END CYLINDER HEAD SQUARE FLANGE MOUNT CAP SQUARE FLANGE MOUNT

Double rod end cylinders are available in every mounting style except clevis or pin type. For dimensions on specific mounting styles, consult the page showing the required mounting.

On cylinders where the rod ends are not the same, be sure to specify where each rod end is located in relation to the mounting requirement.

Note that bore sizes 1-1/2" — 6" have square retainers, and the same square size as the head on both ends. One of these retainers is held in place by the tie rod nuts and therefore cannot be removed without loosening the tie rods.

8" — 14" bore cylinders have retainers to the "XN" dimension.

Solid head and cap flange mounts are some of the strongest, most rigid methods of mounting cylinders. The head flange type is best in a tension application. The cap flange type is best in a thrust application.

† Double rod end cylinders are available with fixed non-adjustable cushion on both ends. Head and cap flange cylinders are available with fixed non-adjustable cushion on the head end and with Exact-a-just™ cushion on the cap or blind end.

Double Rod End Pressure Rating - see page 68.

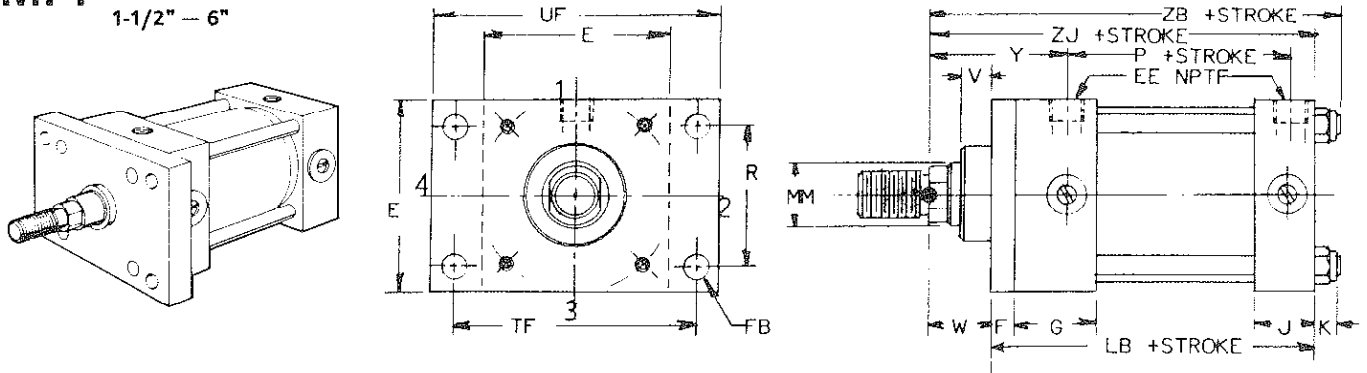
Rod end options are shown on page 52a.

TABLE 2 — Dimensions not affected by rod diameter

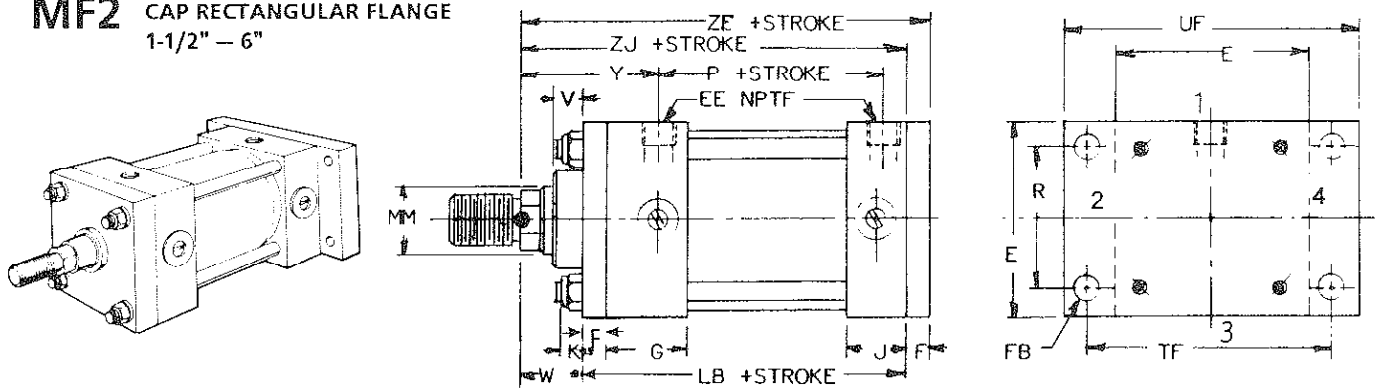
BORE IN	E	F	G	J	K	P	AA	DD THD	EB BOLT	EE NPTF	LB	LD	TE
1.500	2.00	0.38	1.50	1.00	0.22	2.25	2.02	0.25 -28		0.38		4.88	
2.000	2.50	0.38	1.50	1.00	0.27	2.25	2.60	0.31 -24		0.38		4.88	
2.500	3.00	0.38	1.50	1.00	0.27	2.38	3.10	0.31 -24		0.38		5.00	
3.250	3.75	0.63	1.75	1.25	0.34	2.63	3.90	0.38 -24		0.50		6.00	
4.000	4.50	0.63	1.75	1.25	0.34	2.63	4.70	0.38 -24		0.50		6.00	
5.000	5.50	0.63	1.75	1.25	0.44	2.88	5.80	0.50 -20		0.50		6.25	
6.000	6.50	0.75	2.00	1.50	0.44	3.13	6.90	0.50 -20		0.75		7.00	
8.000	8.50	0.75	2.00	1.50	0.56	3.25	9.10	0.63 -18	0.63	0.75	5.13	5.63	7.57
10.000	10.63	0.75	2.25	2.00	0.66	4.13	11.20	0.75 -16	0.75	1.00	6.38	6.63	9.40
12.000	12.75	0.75	2.25	2.00	0.66	4.63	13.30	0.75 -16	0.75	1.00	6.88	7.13	11.10
14.000	14.75	0.75	2.75	2.25	0.78	5.50	15.40	0.88 -14	0.88	1.25	8.13	8.63	12.87

POWERMASTER® PP PNEUMATIC AND PH HYDRAULIC CYLINDERS

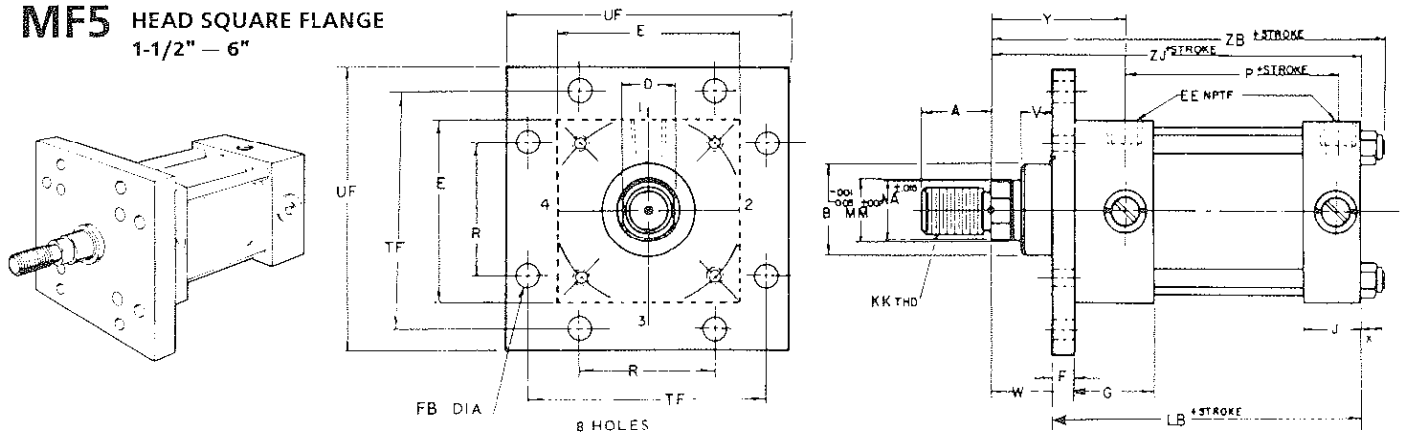
MF1 HEAD RECTANGULAR FLANGE 1-1/2" - 6"



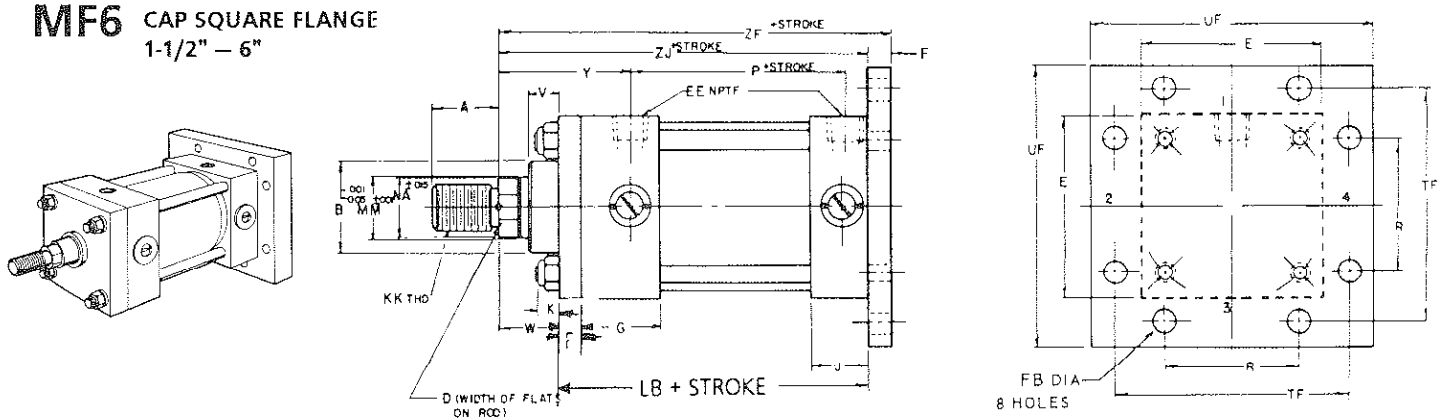
MF2 CAP RECTANGULAR FLANGE 1-1/2" - 6"



MF5 HEAD SQUARE FLANGE 1-1/2" - 6"



MF6 CAP SQUARE FLANGE 1-1/2" - 6"



POWERMASTER® PP PNEUMATIC AND PH HYDRAULIC CYLINDERS

TABLE 1 — Dimensions affected by rod diameter

BORE IN	MM ROD	V	W	Y	ZB	ZF	ZJ
1.500	0.625	0.25	0.63	1.94	4.85	5.00	4.63
	†1.000	0.50	1.00	2.31	5.22	5.38	5.00
2.000	0.625	0.25	0.63	1.94	4.90	5.00	4.63
	1.000	0.50	1.00	2.31	5.27	5.38	5.00
	†1.375	0.63	1.25	2.56	5.52	5.62	5.25
2.500	0.625	0.25	0.63	1.94	5.02	5.13	4.75
	1.000	0.50	1.00	2.31	5.40	5.50	5.13
	1.375	0.63	1.25	2.56	5.65	5.75	5.38
	†1.750	0.75	1.50	2.81	5.90	6.00	5.63
3.250	1.000	0.25	0.75	2.44	5.98	6.25	5.63
	1.375	0.38	1.00	2.69	6.23	6.50	5.88
	1.750	0.50	1.25	2.94	6.48	6.75	6.13
	†2.000	0.50	1.38	3.06	6.61	6.88	6.25
4.000	1.000	0.25	0.75	2.44	5.98	6.25	5.63
	1.375	0.38	1.00	2.69	6.23	6.50	5.88
	1.750	0.50	1.25	2.94	6.48	6.75	6.13
	2.000	0.50	1.38	3.06	6.61	6.88	6.25
	2.500	0.63	1.63	3.31	6.86	7.13	6.50
5.000	1.000	0.25	0.75	2.44	6.32	6.50	5.88
	1.375	0.38	1.00	2.69	6.57	6.75	6.13
	1.750	0.50	1.25	2.94	6.82	7.00	6.25
	2.000	0.50	1.38	3.06	6.94	7.13	6.50
	2.500	0.63	1.63	3.31	7.19	7.38	6.75
	3.000	0.63	1.63	3.31	7.19	7.38	6.75
6.000	3.500	0.63	1.63	3.31	7.19	7.38	6.75
	1.375	0.25	0.88	2.81	7.07	7.38	6.63
	1.750	0.38	1.13	3.06	7.32	7.63	6.88
	2.000	0.38	1.25	3.19	7.44	7.75	7.00
	2.500	0.50	1.50	3.44	7.69	8.00	7.25
	3.000	0.50	1.50	3.44	7.69	8.00	7.25
	3.500	0.50	1.50	3.44	7.69	8.00	7.25

NOTE:

† Available with fixed cushioning on the rod end and Exact-a-just™ cushioning on the blind end.

Removable bearing retainer is not available in the 1-1/2" — 6" bore cylinders. The bearing retainer plate is the same as the "E" dimension for 1-1/2" — 6" bore sizes.

Rod end options are shown on page 52a.

FLANGE MOUNTS

Flange mounts are one of the strongest, most rigid methods of mounting. With this type of mount, there is little allowance for misalignment, so when long strokes are required, the free end opposite the mounting should be supported to prevent sagging and possible binding of the cylinder. Blind or cap end mounts are best for thrust load applications, and rod or head end mounts are best in tension applications. If an application exceeds the rectangular flange rating, a solid head or cap flange mount (ME3) or (ME4) is available. (Refer to page 54).

When a less rigid mount can be used and the cylinder can be attached to a panel or bulkhead, an extended tie rod mount could be considered.

Note: The maximum hydraulic pressure rating for MF1 and MF2 mounts is 1000 psi.

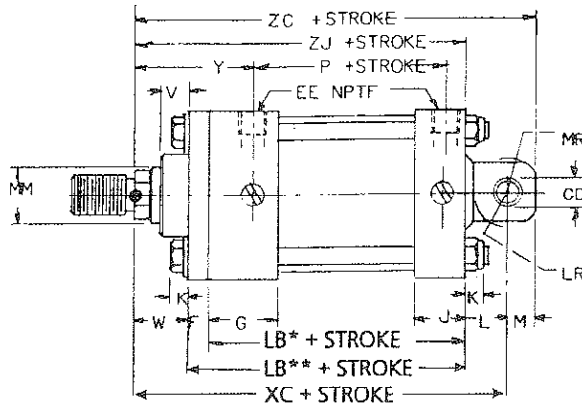
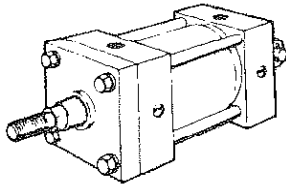
TABLE 2
Dimensions not affected by rod diameter

BORE IN	E	F	G	J	K	P	R	EE NPTF	FB BOLT	LB	TF	UF
1.500	2.00	0.38	1.50	1.00	0.22	2.25	1.43	0.38	0.25	4.00	2.75	3.38
2.000	2.50	0.38	1.50	1.00	0.27	2.25	1.84	0.38	0.31	4.00	3.38	4.13
2.500	3.00	0.38	1.50	1.00	0.27	2.38	2.19	0.38	0.31	4.13	3.88	4.63
3.250	3.75	0.63	1.75	1.25	0.34	2.63	2.76	0.50	0.38	4.88	4.69	5.50
4.000	4.50	0.63	1.75	1.25	0.34	2.63	3.32	0.50	0.38	4.88	5.44	6.25
5.000	5.50	0.63	1.75	1.25	0.44	2.88	4.10	0.50	0.50	5.13	6.63	7.63
6.000	6.50	0.75	2.00	1.50	0.44	3.13	4.88	0.75	0.50	5.75	7.63	8.63

**FIXED & DETACHABLE CLEVIS MOUNTS
AND UNIVERSAL CLEVIS MOUNT**

MP1 CAP FIXED CLEVIS
1-1/2" — 14"

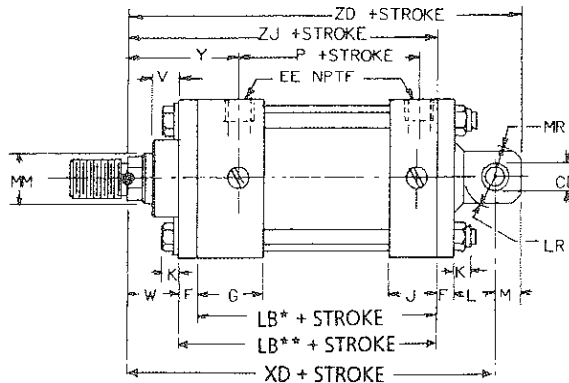
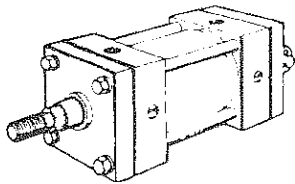
MP3 CAP FIXED EYE
1-1/2" — 8"



*8" - 14" Bores only
**1-1/2" - 6" Bores only

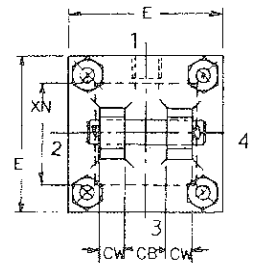
MP2 CAP DETACHABLE CLEVIS
1-1/2" — 8"

MP4 CAP DETACHABLE EYE
1-1/2" — 8"

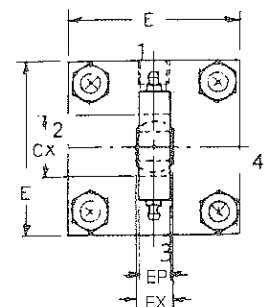
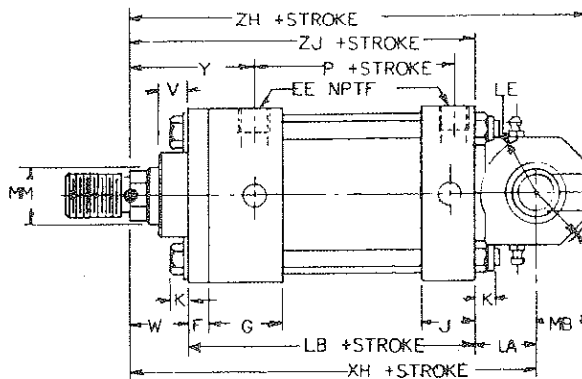
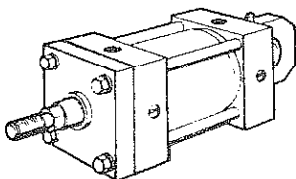


*8" Bore only
**1-1/2" - 6" Bores only

MP3, MP4 Cap



MU3 UNIVERSAL CLEVIS
1-1/2" — 6"



POWERMASTER® PP PNEUMATIC AND PH HYDRAULIC CYLINDERS

TABLE 1 — Dimensions affected by rod diameter

BORE IN	MM ROD	V	W	WF	Y	XC	XD	XH	XN	ZC	ZD	ZH	ZJ
1.500	0.625	0.25	0.63		1.94	5.38	5.75	5.50		5.88	6.25	6.25	4.63
	† 1.000	0.50	1.00		2.31	5.75	6.13	5.88		6.25	6.63	6.63	5.00
2.000	0.625	0.25	0.63		1.94	5.38	5.75	5.50		5.88	6.25	6.25	4.63
	1.000	0.50	1.00		2.31	5.75	6.13	5.88		6.25	6.63	6.63	5.00
2.500	† 1.375	0.63	1.25		2.56	6.00	6.38	6.13		6.50	6.88	6.88	5.25
	0.625	0.25	0.63		1.94	5.50	5.88	5.63		6.00	6.38	6.38	4.75
3.250	1.000	0.50	1.00		2.31	5.88	6.25	6.00		6.38	6.75	6.75	5.13
	1.375	0.63	1.25		2.56	6.13	6.50	6.25		6.63	7.00	7.00	5.38
4.000	† 1.750	0.75	1.50		2.81	6.38	6.75	6.50		6.88	7.25	7.25	5.63
	1.000	0.25	0.75		2.44	6.88	7.50	6.88		7.63	8.25	8.13	5.63
5.000	1.375	0.38	1.00		2.69	7.13	7.75	7.13		7.88	8.50	8.38	5.88
	1.750	0.50	1.25		2.94	7.38	8.00	7.38		8.13	8.75	8.63	6.13
6.000	† 2.000	0.50	1.38		3.06	7.50	8.13	7.50		8.25	8.88	8.75	6.25
	1.000	0.25	0.75		2.44	6.88	7.50	6.88		7.63	8.25	8.13	5.63
8.000	1.375	0.38	1.00		2.69	7.13	7.75	7.13		7.88	8.50	8.38	5.88
	1.750	0.50	1.25		2.94	7.38	8.00	7.38		8.13	8.75	8.63	6.13
10.000	2.000	0.50	1.38		3.06	7.50	8.13	7.50		8.25	8.88	8.75	6.25
	2.500	0.63	1.63		3.31	7.75	8.38	7.75		8.50	9.13	9.00	6.50
12.000	1.000	0.25	0.75		2.44	7.13	7.75	7.13		7.88	8.50	8.38	5.88
	1.375	0.38	1.00		2.69	7.38	8.00	7.38		8.13	8.75	8.63	6.13
14.000	1.750	0.50	1.25		2.94	7.63	8.25	7.63		8.38	9.00	8.88	6.83
	2.000	0.50	1.38		3.06	7.75	8.38	7.75		8.50	9.13	9.00	6.50
16.000	2.500	0.63	1.63		3.31	8.00	8.63	8.00		8.75	9.38	9.25	6.75
	3.000	0.63	1.63		3.31	8.00	8.63	8.00		8.75	9.38	9.25	6.75
18.000	3.500	0.63	1.63		3.31	8.00	8.63	8.00		8.75	9.38	9.25	6.75
	1.375	0.25	0.88		2.81	8.13	8.88	8.25		9.13	9.88	9.75	6.63
20.000	1.750	0.38	1.13		3.06	8.38	9.13	8.50		9.38	10.13	10.00	6.88
	2.000	0.38	1.25		3.19	8.50	9.25	8.63		9.50	10.25	10.13	7.00
22.000	2.500	0.50	1.50		3.44	8.75	9.50	8.88		9.75	10.50	10.38	7.25
	3.000	0.50	1.50		3.44	8.75	9.50	8.88		9.75	10.50	10.38	7.25
24.000	3.500	0.50	1.50		3.44	8.75	9.50	8.88		9.75	10.50	10.38	7.25
	4.000	0.50	1.50		3.44	8.75	9.50	8.88		9.75	10.50	10.38	7.25
26.000	1.375	0.25		1.63	2.81	8.25	9.25		4.00	9.25	10.25		6.75
	1.750	0.38		1.88	3.06	8.50	9.50		4.00	9.50	10.50		7.00
28.000	2.000	0.38		2.00	3.19	8.63	9.63		4.00	9.63	10.63		7.13
	2.500	0.50		2.25	3.44	8.88	9.88		4.00	9.88	10.88		7.38
30.000	3.000	0.50		2.25	3.44	8.88	9.88		5.50	9.88	10.88		7.38
	3.500	0.50		2.25	3.44	8.88	9.88		5.50	9.88	10.88		7.38
32.000	4.000	0.50		2.25	3.44	8.88	9.88		5.50	9.88	10.88		7.38
	4.500	0.50		2.25	3.44	8.88	9.88		6.50	9.88	10.88		7.38
34.000	5.000	0.50		2.25	3.44	8.88	9.88		6.50	9.88	10.88		7.38
	5.500	0.50		2.25	3.44	8.88	9.88		7.25	9.88	10.88		7.38
36.000	1.750	0.38		1.88	3.13	10.38			4.00	11.75			8.25
	2.000	0.38		2.00	3.25	10.50			4.00	11.88			8.38
38.000	2.500	0.50		2.25	3.50	10.75			4.00	12.13			8.63
	3.000	0.50		2.25	3.50	10.75			5.50	12.13			8.63
40.000	3.500	0.50		2.25	3.50	10.75			5.50	12.13			8.63
	4.000	0.50		2.25	3.50	10.75			5.50	12.13			8.63
42.000	4.500	0.50		2.25	3.50	10.75			6.50	12.13			8.63
	5.000	0.50		2.25	3.50	10.75			6.50	12.13			8.63
44.000	5.500	0.50		2.25	3.50	10.75			7.25	12.13			8.63
	2.000	0.38		2.00	3.25	11.13			4.00	12.88			8.88
46.000	2.500	0.50		2.25	3.50	11.38			4.00	13.13			9.13
	3.000	0.50		2.25	3.50	11.38			5.50	13.13			9.13
48.000	3.500	0.50		2.25	3.50	11.38			5.50	13.13			9.13
	4.000	0.50		2.25	3.50	11.38			5.50	13.13			9.13
50.000	4.500	0.50		2.25	3.50	11.38			6.50	13.13			9.13
	5.000	0.50		2.25	3.50	11.38			6.50	13.13			9.13
52.000	5.500	0.50		2.25	3.50	11.38			7.25	13.13			9.13
	2.500	0.50		2.25	3.81	12.88			4.00	14.88			10.38
54.000	3.000	0.50		2.25	3.81	12.88			5.50	14.88			10.38
	3.500	0.50		2.25	3.81	12.88			5.50	14.88			10.38
56.000	4.000	0.50		2.25	3.81	12.88			5.50	14.88			10.38
	4.500	0.50		2.25	3.81	12.88			6.50	14.88			10.38
58.000	5.000	0.50		2.25	3.81	12.88			6.50	14.88			10.38
	5.500	0.50		2.25	3.81	12.88			7.25	14.88			10.38

FIXED & DETACHABLE CLEVIS MOUNT & UNIVERSAL CLEVIS MOUNT

The Clevis or Pin mounted cylinder is probably the most widely used of all mounts. For short strokes, medium or small cylinder applications, the clevis mounts are recommended. If this mount is applied where stroke requirements cause the overall length to be excessive, the Cap Trunnion mount can be used. Pivot mounts must always be used with a pivot type rod end attachment.

NOTES:

† Available with fixed, non-adjustable cushion on the rod end and Exact-a-just™ cushioning on the blind or cap end only.

The bearing retainer plate is the same as the "E" dimension for 1-1/2" — 6" bore sizes and the "XN" dimension for the 8" — 14" bore sizes.

Rod end options are shown on page 52a. MP1 and MP2 mounts include pivot pin. MU3 does not include pivot pin.

TABLE 2 — Dimensions not affected by rod diameter

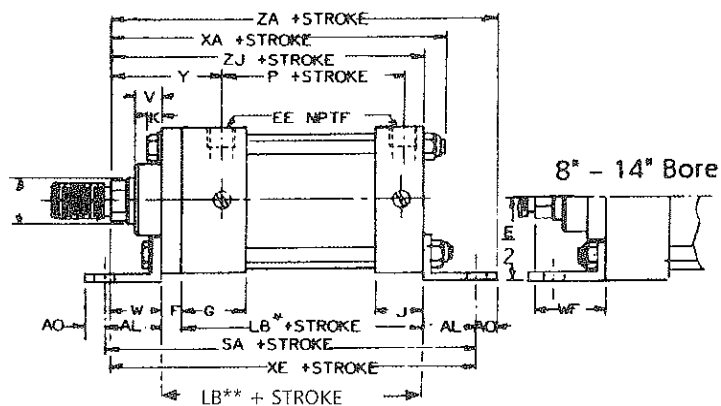
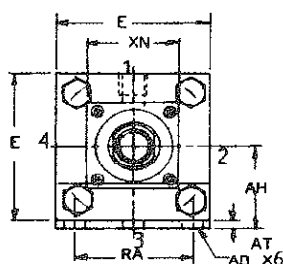
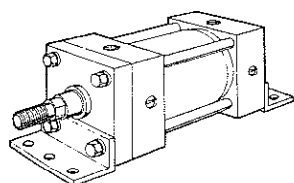
BORE IN	E	F	G	J	K	L	M	P	EW /CB	CD	CW	CX	EE NPTF	EX	EP	LA	LB	LE	LR	MA	MB	MR
1.500	2.00	0.38	1.50	1.00	0.22	0.75	0.50	2.25	0.75	0.500	0.50	0.87	0.38	0.437	0.38	0.88	4.00	0.63	0.59	0.88	0.75	0.69
2.000	2.50	0.38	1.50	1.00	0.27	0.75	0.50	2.25	0.75	0.500	0.50	0.87	0.38	0.437	0.38	0.88	4.00	0.63	0.59	0.88	0.75	0.69
2.500	3.00	0.38	1.50	1.00	0.27	0.75	0.50	2.38	0.75	0.500	0.50	0.87	0.38	0.437	0.38	0.88	4.13	0.63	0.59	0.88	0.75	0.69
3.250	3.75	0.63	1.75	1.25	0.34	1.25	0.75	2.63	1.25	0.750	0.63	1.25	0.50	0.656	0.56	1.25	4.88	0.94	0.88	1.38	1.25	1.00
4.000	4.50	0.63	1.75	1.25	0.34	1.25	0.75	2.63	1.25	0.750	0.63	1.25	0.50	0.656	0.56	1.25	4.88	0.94	0.88	1.38	1.25	1.00
5.000	5.50	0.63	1.75	1.25	0.44	1.25	0.75	2.88	1.25	0.750	0.63	1.25	0.50	0.656	0.56	1.25	5.13	0.94	0.88	1.38	1.25	1.00
6.000	6.50	0.75	2.00	1.50	0.44	1.50	1.00	3.13	1.50	1.000	0.75	1.63	0.75	0.875	0.75	1.63	5.75	1.13	1.19	1.63	1.50	1.38
8.000	8.50	0.75	2.00	1.50	0.56	1.50	1.00	3.25	1.50	1.000	0.75		0.75				5.13		1.19			1.38
10.000	10.63	0.75	2.25	2.00	0.66	2.13	1.38	4.13	2.00	1.375	1.00		1.00				6.38		1.63			2.00
12.000	12.75	0.75	2.25	2.00	0.66	2.25	1.75	4.63	2.50	1.750	1.25		1.00				6.88		2.06			2.25
14.000	14.75	0.75	2.75	2.25	0.78	2.50	2.00	5.60	2.50	2.000	1.25		1.25				8.13		2.38			2.50

§ For MP2, MP4 at 8" bore, F = 1.00 at rear flange only.

POWERMASTER® PP PNEUMATIC AND PH HYDRAULIC CYLINDERS

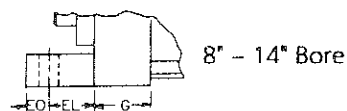
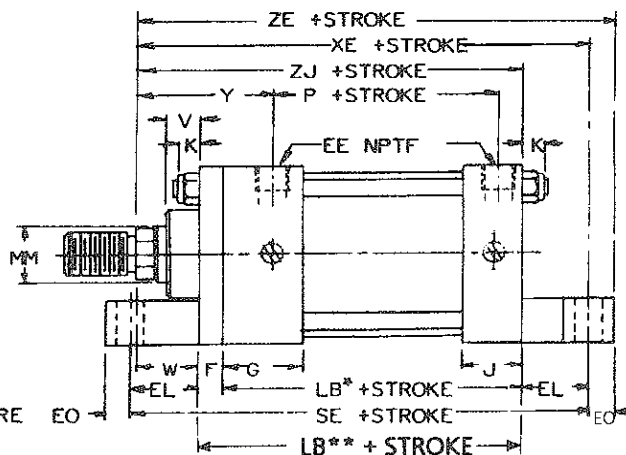
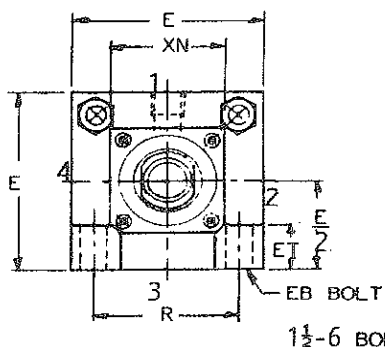
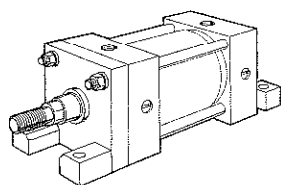
SIDE END LUG & SIDE END ANGLE MOUNT

MS1 SIDE END 1-1/2" — 14"



*8" - 14" Bores only
**1-1/2" - 6" Bores only

MS7 SIDE END LUGS 1-1/2" — 14"



*8" - 14" Bores only
**1-1/2" - 6" Bores only

POWERMASTER® PP PNEUMATIC AND PH HYDRAULIC CYLINDERS

TABLE 1 — Dimensions affected by rod diameter

BORE IN	MM ROD	V	W	WF	Y	XA	XE*	XN	ZA	ZB	ZE	ZJ
1.500	0.625	0.25	0.63		1.94	5.63	5.38		6.00	4.85	5.63	4.63
	1.000	0.50	1.00		2.31	6.00	5.75		6.38	5.22	6.00	5.00
2.000	0.625	0.25	0.63		1.94	5.63	5.56		6.00	4.90	5.88	4.63
	1.000	0.50	1.00		2.31	6.00	5.94		6.38	5.27	6.25	5.00
2.500	1.375	0.63	1.25		2.56	6.25	6.19		6.63	5.52	6.50	5.25
	0.625	0.25	0.63		1.94	5.75	5.81		6.13	5.02	6.13	4.75
	1.000	0.50	1.00		2.31	6.13	6.19		6.50	5.40	6.50	5.13
	1.375	0.63	1.25		2.56	6.38	6.44		6.75	5.65	6.75	5.38
3.250	1.750	0.75	1.50		2.81	6.63	6.69		7.00	5.90	7.00	5.63
	1.000	0.25	0.75		2.44	6.88	6.50		7.38	5.98	6.88	5.63
	1.375	0.38	1.00		2.69	7.13	6.75		7.63	6.23	7.13	5.88
	1.750	0.50	1.25		2.94	7.38	7.00		7.88	6.48	7.38	6.13
4.000	2.000	0.50	1.38		3.06	7.50	7.13		8.00	6.61	7.50	6.25
	1.000	0.25	0.75		2.44	6.88	6.63		7.38	5.98	7.00	5.63
	1.375	0.38	1.00		2.69	7.13	6.88		7.63	6.23	7.25	5.88
	1.750	0.50	1.25		2.94	7.38	7.13		7.88	6.48	7.50	6.13
5.000	2.000	0.50	1.38		3.06	7.50	7.25		8.00	6.61	7.63	6.25
	2.500	0.63	1.63		3.31	7.75	7.50		8.25	6.86	7.88	6.50
	1.000	0.25	0.75		2.44	7.25	6.94		7.88	6.32	7.44	5.88
	1.375	0.38	1.00		2.69	7.50	7.19		8.13	6.57	7.69	6.13
6.000	1.750	0.50	1.25		2.94	7.75	7.44		8.38	6.82	7.94	6.83
	2.000	0.50	1.38		3.06	7.88	7.56		8.50	6.94	8.06	6.50
	2.500	0.63	1.63		3.31	8.13	7.81		8.75	7.19	8.31	6.75
	3.000	0.63	1.63		3.31	8.13	7.81		8.75	7.19	8.31	6.75
8.000	3.500	0.63	1.63		3.31	8.13	7.81		8.75	7.19	8.31	6.75
	1.375	0.25	0.88		2.81	8.00	7.63		8.63	7.07	8.13	6.63
	1.750	0.38	1.13		3.06	8.25	7.88		8.88	7.32	8.38	6.88
	2.000	0.38	1.25		3.19	8.38	8.00		9.00	7.44	8.50	7.00
10.000	2.500	0.50	1.50		3.44	8.63	8.25		9.25	7.69	8.75	7.25
	3.000	0.50	1.50		3.44	8.63	8.25		9.25	7.69	8.75	7.25
	3.500	0.50	1.50		3.44	8.63	8.25		9.25	7.69	8.75	7.25
	4.000	0.50	1.50		3.44	8.63	8.25		9.25	7.69	8.75	7.25
12.000	1.375	0.25		1.63	2.81	8.56	7.88	4.00	9.25	7.31	8.50	6.75
	1.750	0.38		1.88	3.06	8.81	8.13	4.00	9.50	7.56	8.75	7.00
	2.000	0.38		2.00	3.19	8.94	8.25	4.00	9.63	7.69	8.88	7.13
	2.500	0.50		2.25	3.44	9.19	9.25	4.00	9.88	7.94	9.88	7.38
14.000	3.000	0.50		2.25	3.44	9.19	9.25	5.50	9.88	7.94	9.88	7.38
	3.500	0.50		2.25	3.44	9.19	9.25	5.50	9.88	7.94	9.88	7.38
	4.000	0.50		2.25	3.44	9.19	9.25	5.50	9.88	7.94	9.88	7.38
	4.500	0.50		2.25	3.44	9.19	9.25	5.50	9.88	7.94	9.88	7.38
16.000	5.000	0.50		2.25	3.44	9.19	9.25	7.25	9.88	7.94	9.88	7.38
	1.750	0.38		1.88	3.13	10.38	9.56	4.00	11.25	8.91	10.19	8.25
	2.000	0.38		2.00	3.25	10.50	9.69	4.00	11.38	9.03	10.31	8.38
	2.500	0.50		2.25	3.50	10.75	9.94	4.00	11.63	9.28	10.56	8.63
18.000	3.000	0.50		2.25	3.50	10.75	9.94	5.50	11.63	9.28	10.56	8.63
	3.500	0.50		2.25	3.50	10.75	9.94	5.50	11.63	9.28	10.56	8.63
	4.000	0.50		2.25	3.50	10.75	9.94	5.50	11.63	9.28	10.56	8.63
	4.500	0.50		2.25	3.50	10.75	9.94	5.50	11.63	9.28	10.56	8.63
20.000	5.000	0.50		2.25	3.50	10.75	9.94	6.50	11.63	9.28	10.56	8.63
	5.500	0.50		2.25	3.50	10.75	9.94	7.25	11.63	9.28	10.56	8.63
	6.000	0.50		2.25	3.50	10.75	9.94	7.25	11.63	9.28	10.56	8.63
	6.500	0.50		2.25	3.50	10.75	9.94	7.25	11.63	9.28	10.56	8.63
22.000	2.000	0.38		2.00	3.25	11.00	10.19	4.00	11.88	9.53	10.81	8.88
	2.500	0.50		2.25	3.50	11.25	10.44	4.00	12.13	9.78	11.06	9.13
	3.000	0.50		2.25	3.50	11.25	10.44	5.50	12.13	9.78	11.06	9.13
	3.500	0.50		2.25	3.50	11.25	10.44	5.50	12.13	9.78	11.06	9.13
24.000	4.000	0.50		2.25	3.50	11.25	10.44	5.50	12.13	9.78	11.06	9.13
	4.500	0.50		2.25	3.50	11.25	10.44	6.50	12.13	9.78	11.06	9.13
	5.000	0.50		2.25	3.50	11.25	10.44	6.50	12.13	9.78	11.06	9.13
	5.500	0.50		2.25	3.50	11.25	10.44	7.25	12.13	9.78	11.06	9.13
26.000	2.500	0.50		2.25	3.81	12.81	11.88	4.00	13.88	11.16	12.63	10.38
	3.000	0.50		2.25	3.81	12.81	11.88	5.50	13.88	11.16	12.63	10.38
	3.500	0.50		2.25	3.81	12.81	11.88	5.50	13.88	11.16	12.63	10.38
	4.000	0.50		2.25	3.81	12.81	11.88	5.50	13.88	11.16	12.63	10.38
28.000	4.500	0.50		2.25	3.81	12.81	11.88	6.50	13.88	11.16	12.63	10.38
	5.000	0.50		2.25	3.81	12.81	11.88	6.50	13.88	11.16	12.63	10.38
	5.500	0.50		2.25	3.81	12.81	11.88	7.25	13.88	11.16	12.63	10.38
	5.500	0.50		2.25	3.81	12.81	11.88	7.25	13.88	11.16	12.63	10.38

SIDE END LUG AND ANGLE MOUNTS

The side end mounts lend themselves to easy mounting and replacement. They also permit side by side mounting in confined areas. As with the side lug mounts, proper use will place the bolts in simple shear or tension without any compound stresses. The alignment is critical to maximum service life.

When specifying these mounts, carefully check the distance between the rod and lug or angle to determine if there is sufficient clearance for the rod end attachment. It may be necessary to add a plain rod extension to move the threaded rod end out beyond the lug.

These mounts require the loosening of the tie rods to remove the rod gland for bore sizes 1-1/2" — 6".

NOTES:

† Available with fixed non-adjustable cushion on the rod end and standard Exact-a-just™ cushion on the cap end only.

The bearing retainer plate is the same as the "E" dimension for the 1-1/2" — 6" bore sizes and the "XN" dimension for the 8" — 14" bore sizes.

Rod end options are shown on page 52a.

• For double rod cylinders 1-1/2" thru 8" bore, add 1/2"; for 10 & 12" bore, add 1/4"; for 14" bore add 1/2".

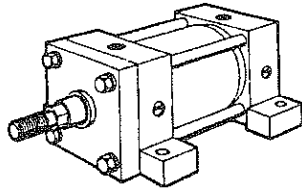
TABLE 2 — Dimensions not affected by rod diameter

BORE IN	E	F	G	J	K	P	R	AA	AB BOLT	AH	AL	AO	AT	EB BOLT	EE NPTF	EL	EO	ET	LB	RA	SA	SE •
1.500	2.00	0.38	1.50	1.00	0.22	2.25	1.43	2.02	0.38	1.19	1.00	0.38	0.13	0.25	0.38	0.75	0.25	0.56	4.00	1.25	6.00	5.50
2.000	2.50	0.38	1.50	1.00	0.27	2.25	1.84	2.60	0.38	1.44	1.00	0.38	0.13	0.31	0.38	0.94	0.31	0.69	4.00	1.75	6.00	5.88
2.500	3.00	0.38	1.50	1.00	0.27	2.38	2.19	3.10	0.38	1.63	1.00	0.38	0.13	0.31	0.38	1.06	0.31	0.81	4.13	2.25	6.13	6.25
3.250	3.75	0.63	1.75	1.25	0.34	2.63	2.76	3.90	0.50	1.94	1.25	0.50	0.13	0.38	0.50	0.88	0.38	1.00	4.88	2.75	7.38	6.83
4.000	4.50	0.63	1.75	1.25	0.34	2.63	3.32	4.70	0.50	2.25	1.25	0.50	0.13	0.38	0.50	1.00	0.38	1.19	4.88	3.50	7.38	6.88
5.000	5.50	0.63	1.75	1.25	0.44	2.88	4.10	5.80	0.63	2.75	1.38	0.63	0.19	0.50	0.50	1.06	0.50	1.38	5.13	4.25	7.88	7.25
6.000	6.50	0.75	2.00	1.50	0.44	3.13	4.88	6.90	0.75	3.25	1.38	0.63	0.19	0.50	0.75	1.00	0.50	1.63	5.75	5.25	8.50	7.75
8.000	8.50	0.75	2.00	1.50	0.56	3.25	6.44	9.10	0.75	4.25	1.81	0.69	0.25	0.63	0.75	1.13	0.63	2.06	5.13	7.13	8.75	7.38
10.000	10.63	0.75	2.25	2.00	0.66	4.13	7.92	11.20	1.00	5.31	2.13	0.88	0.25	0.75	1.00	1.31	0.63	2.69	6.38	8.88	10.63	9.00
12.000	12.75	0.75	2.25	2.00	0.66	4.63	9.40	13.30	1.00	6.38	2.13	0.88	0.38	0.75	1.00	1.31	0.63	3.31	6.88	11.00	11.13	9.50
14.000	14.75	0.75	2.75	2.25	0.78	5.50	10.90	15.40	1.25	7.38	2.44	1.06	0.38	0.88	1.25	1.50	0.75	3.81	8.13	12.63	13.00	11.13

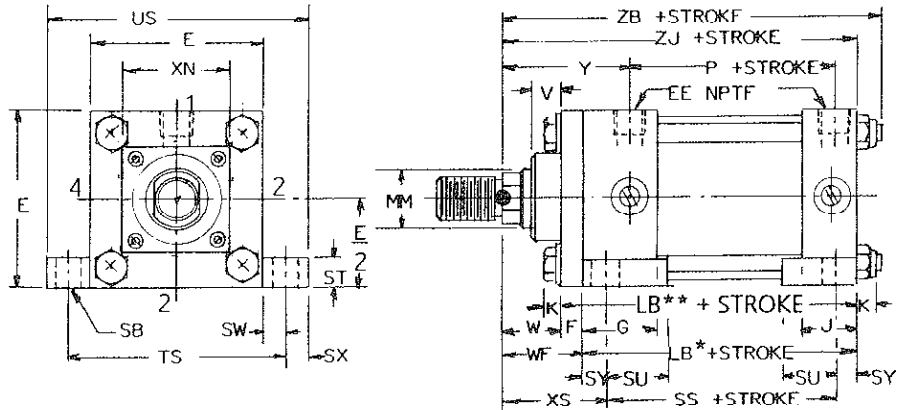
POWERMASTER® PP PNEUMATIC AND PH HYDRAULIC CYLINDERS

SIDE & CENTERLINE LUG MOUNTS AND SIDE MOUNTS

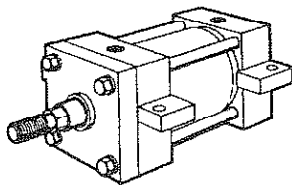
MS2 SIDE LUGS 1-1/2" — 14"



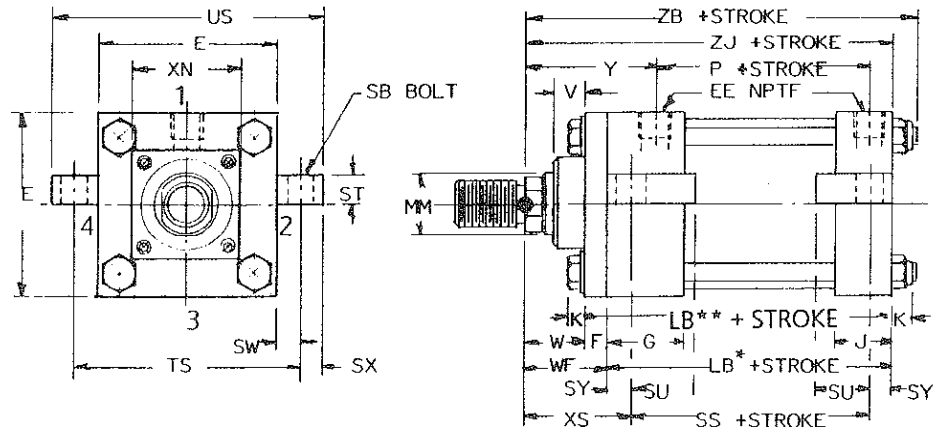
*8" - 14" Bores only
**1-1/2" - 6" Bores only



MS3 CENTERLINE LUGS 1-1/2" — 14"



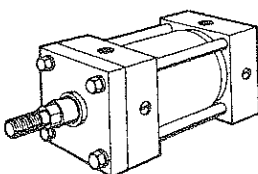
*8" - 14" Bores only
**1-1/2" - 6" Bores only



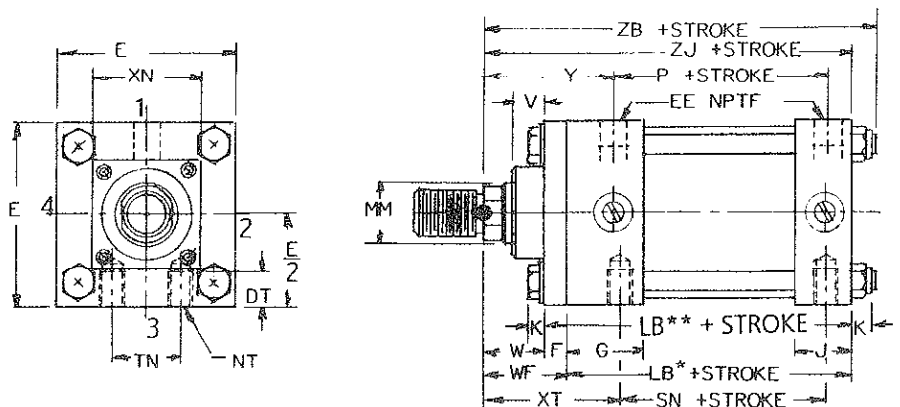
MS4 SIDE TAPPED 1-1/2" — 14"

MX0 NO MOUNTINGS 1-1/2" — 14"

§ Same as MS4 less mounting holes



*8" - 14" Bores only
**1-1/2" - 6" Bores only



POWERMASTER® PP PNEUMATIC AND PH HYDRAULIC CYLINDERS

TABLE 1 — Dimensions affected by rod diameter

BORE IN	MM ROD	V	W	WF	Y	XN	XS	XT	ZB	ZJ
1.500	0.625	0.25	0.63		1.94		1.38	1.94	4.85	4.63
	† 1.000	0.50	1.00		2.31		1.75	2.31	5.22	5.00
2.000	0.625	0.25	0.63		1.94		1.38	1.94	4.90	4.63
	1.000	0.50	1.00		2.31		1.75	2.31	5.27	5.00
	† 1.375	0.63	1.25		2.56		2.00	2.56	5.52	5.25
2.500	0.625	0.25	0.63		1.94		1.38	1.94	5.02	4.75
	1.000	0.50	1.00		2.31		1.75	2.31	5.40	5.13
	1.375	0.63	1.25		2.56		2.00	2.56	5.65	5.38
	† 1.750	0.75	1.50		2.81		2.25	2.81	5.90	5.63
3.250	1.000	0.25	0.75		2.44		1.88	2.44	5.98	5.63
	1.375	0.38	1.00		2.69		2.13	2.69	6.23	5.88
	1.750	0.50	1.25		2.94		2.38	2.94	6.48	6.13
	† 2.000	0.50	1.38		3.06		2.50	3.06	6.61	6.25
4.000	1.000	0.25	0.75		2.44		1.88	2.44	5.98	5.63
	1.375	0.38	1.00		2.69		2.13	2.69	6.23	5.88
	1.750	0.50	1.25		2.94		2.38	2.94	6.48	6.13
	2.000	0.50	1.38		3.06		2.50	3.06	6.61	6.25
	2.500	0.63	1.63		3.31		2.75	3.31	6.86	6.50
5.000	1.000	0.25	0.75		2.44		2.06	2.44	6.32	5.88
	1.375	0.38	1.00		2.69		2.31	2.69	6.57	6.13
	1.750	0.50	1.25		2.94		2.56	2.94	6.82	6.83
	2.000	0.50	1.38		3.06		2.69	3.06	6.94	6.83
	2.500	0.63	1.63		3.31		2.94	3.31	7.19	6.75
	3.000	0.63	1.63		3.31		2.94	3.31	7.19	6.75
	3.500	0.63	1.63		3.31		2.94	3.31	7.19	6.75
6.000	1.375	0.25	0.88		2.81		2.31	2.81	7.07	6.63
	1.750	0.38	1.13		3.06		2.56	3.06	7.32	6.88
	2.000	0.38	1.25		3.19		2.69	3.19	7.44	7.00
	2.500	0.50	1.50		3.44		2.94	3.44	7.69	7.25
	3.000	0.50	1.50		3.44		2.94	3.44	7.69	7.25
	3.500	0.50	1.50		3.44		2.94	3.44	7.69	7.25
	4.000	0.50	1.50		3.44		2.94	3.44	7.69	7.25
8.000	1.375	0.25		1.63	2.81	4.00	2.31	2.81	7.31	6.75
	1.750	0.38		1.88	3.06	4.00	2.56	3.06	7.56	7.00
	2.000	0.38		2.00	3.19	4.00	2.69	3.19	7.69	7.13
	2.500	0.50		2.25	3.44	4.00	2.94	3.44	7.94	7.38
	3.000	0.50		2.25	3.44	5.50	2.94	3.44	7.94	7.38
	3.500	0.50		2.25	3.44	5.50	2.94	3.44	7.94	7.38
	4.000	0.50		2.25	3.44	5.50	2.94	3.44	7.94	7.38
	4.500	0.50		2.25	3.44	6.50	2.94	3.44	7.94	7.38
	5.000	0.50		2.25	3.44	6.50	2.94	3.44	7.94	7.38
	5.500	0.50		2.25	3.44	7.25	2.94	3.44	7.94	7.38
10.000	1.750	0.38		1.88	3.13	4.00	2.75	3.13	8.91	8.25
	2.000	0.38		2.00	3.25	4.00	2.88	3.25	9.03	8.38
	2.500	0.50		2.25	3.50	4.00	3.13	3.50	9.28	8.63
	3.000	0.50		2.25	3.50	5.50	3.13	3.50	9.28	8.63
	3.500	0.50		2.25	3.50	5.50	3.13	3.50	9.28	8.63
	4.000	0.50		2.25	3.50	5.50	3.13	3.50	9.28	8.63
	4.500	0.50		2.25	3.50	6.50	3.13	3.50	9.28	8.63
	5.000	0.50		2.25	3.50	6.50	3.13	3.50	9.28	8.63
	5.500	0.50		2.25	3.50	7.25	3.13	3.50	9.28	8.63
12.000	2.000	0.38		2.00	3.25	4.00	2.88	3.25	9.53	8.88
	2.500	0.50		2.25	3.50	4.00	3.13	3.50	9.78	9.13
	3.000	0.50		2.25	3.50	5.50	3.13	3.50	9.78	9.13
	3.500	0.50		2.25	3.50	5.50	3.13	3.50	9.78	9.13
	4.000	0.50		2.25	3.50	5.50	3.13	3.50	9.78	9.13
	4.500	0.50		2.25	3.50	6.50	3.13	3.50	9.78	9.13
	5.000	0.50		2.25	3.50	6.50	3.13	3.50	9.78	9.13
	5.500	0.50		2.25	3.50	7.25	3.13	3.50	9.78	9.13
14.000	2.500	0.50		2.25	3.81	4.00	3.38	3.81	11.16	10.38
	3.000	0.50		2.25	3.81	5.50	3.38	3.81	11.16	10.38
	3.500	0.50		2.25	3.81	5.50	3.38	3.81	11.16	10.38
	4.000	0.50		2.25	3.81	5.50	3.38	3.81	11.16	10.38
	4.500	0.50		2.25	3.81	6.50	3.38	3.81	11.16	10.38
	5.000	0.50		2.25	3.81	6.50	3.38	3.81	11.16	10.38
	5.500	0.50		2.25	3.81	7.25	3.38	3.81	11.16	10.38

SIDE AND CENTERLINE LUG MOUNTS

The side or lug mounted cylinder provides a fairly rigid mount. These type mounts can tolerate a slight amount of misalignment when the cylinder is at full stroke, but as the piston moves toward the blind end, the tolerance for misalignment decreases. It is important to note that if the cylinder is used properly the mounting bolts are either in simple shear or tension without any compound stresses.

NOTES:

When specifying an MS2 mount with ports in the 2or 4 quadrant, be sure there is sufficient clearance between the port fitting and the lug to insert a bolt or cap screw into the lug.

† Available with fixed non-adjustable cushioning on the rod end and Exact-a-just™ cushioning on the blind end.

The bearing retainer plate is the same as the "E" dimension for 1-1/2" — 6" bore sizes and the "XN" dimension for the 8" — 14" bore sizes.

Rod end options are shown on page 52a.

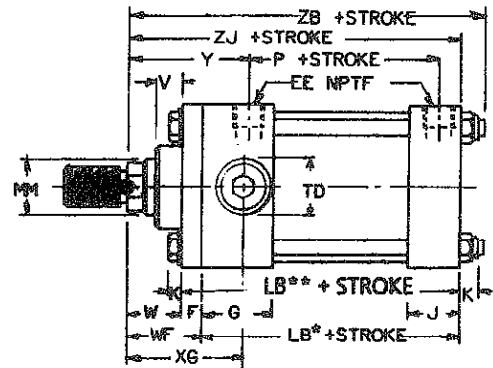
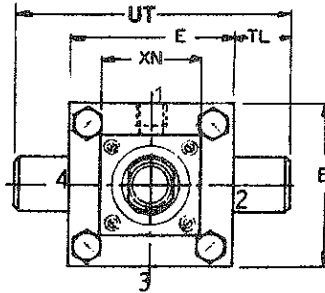
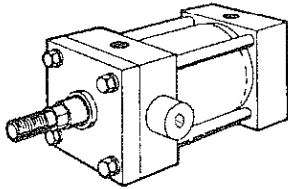
• For double rod cylinders 1-1/2" thru 8" bore, add 1/2"; for 10 & 12" bore, add 1/4"; for 14" bore add 1/2".

TABLE 2 — Dimensions not affected by rod diameter

BORE IN	E	F	G	J	K	P	DT	EE NPTF	LB	NT -THD	SB BOLT	SN	SS •	ST	SU	SW	SX	SY	TN	TS	US
1.500	2.00	0.38	1.50	1.00	0.22	2.25	0.38	0.38	4.00	0.25 -20	0.38	2.25	2.88	0.50	0.94	0.38	0.38	0.38	0.63	2.75	3.50
2.000	2.50	0.38	1.50	1.00	0.27	2.25	0.50	0.38	4.00	0.31 -18	0.38	2.25	2.88	0.50	0.94	0.38	0.38	0.38	0.88	3.25	4.00
2.500	3.00	0.38	1.50	1.00	0.27	2.38	0.75	0.38	4.13	0.38 -16	0.38	2.38	3.00	0.50	0.94	0.38	0.38	0.38	1.25	3.75	4.50
3.250	3.75	0.63	1.75	1.25	0.34	2.63	0.88	0.50	4.88	0.50 -13	0.50	2.63	3.25	0.75	1.25	0.50	0.50	0.50	1.50	4.75	5.75
4.000	4.50	0.63	1.75	1.25	0.34	2.63	0.88	0.50	4.88	0.50 -13	0.50	2.63	3.25	0.75	1.25	0.50	0.50	0.50	2.06	5.50	6.50
5.000	5.50	0.63	1.75	1.25	0.44	2.88	1.25	0.50	5.13	0.63 -11	0.75	2.88	3.13	1.00	1.56	0.69	0.69	0.69	2.69	6.88	8.25
6.000	6.50	0.75	2.00	1.50	0.44	3.13	1.50	0.75	5.75	0.75 -10	0.75	3.06	3.63	1.00	1.56	0.69	0.69	0.69	3.25	7.88	9.25
8.000	8.50	0.75	2.00	1.50	0.56	3.25	1.50	0.75	5.13	0.75 -10	0.75	3.25	3.75	1.00	1.56	0.69	0.69	0.69	4.50	9.88	11.25
10.000	10.63	0.75	2.25	2.00	0.66	4.13	2.00	1.00	6.38	1.00 - 8	1.00	4.13	4.63	1.25	2.00	0.88	0.88	0.88	5.50	12.38	14.13
12.000	12.75	0.75	2.25	2.00	0.66	4.63	2.00	1.00	6.88	1.00 - 8	1.00	4.63	5.13	1.25	2.00	0.88	0.88	0.88	7.25	14.50	16.25
14.000	14.75	0.75	2.75	2.25	0.78	5.50	2.50	1.25	8.13	1.25 - 7	1.25	5.50	5.88	1.50	2.50	1.13	1.13	1.13	8.38	17.00	19.25

TRUNNION MOUNTS

MT1 HEAD TRUNNION
1-1/2" — 14"

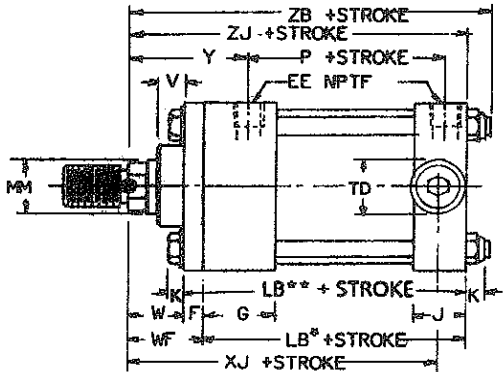
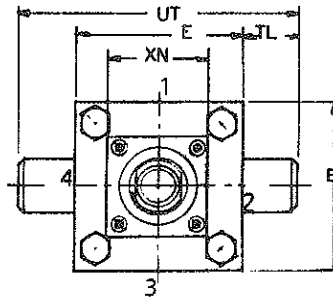
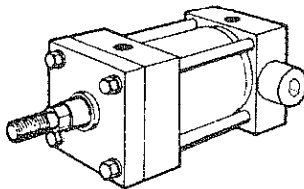


*8" - 14" Bores only

**1-1/2" - 6" Bores only

The "XG" and "XJ" dimensions for MT1 and MT2 mounts are longer than NFPA standard.

MT2 CAP TRUNNION
1-1/2" — 14"

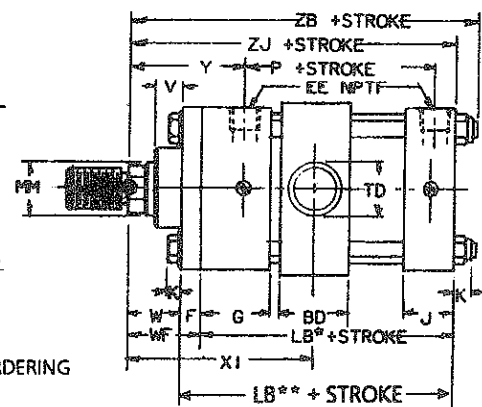
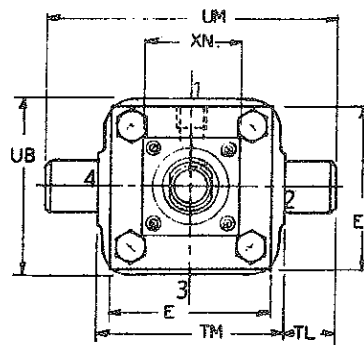
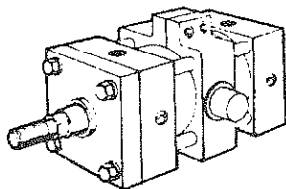


*8" - 14" Bores only

**1-1/2" - 6" Bores only

The "XG" and "XJ" dimensions for MT1 and MT2 mounts are longer than NFPA standard.

MT4 INTERMEDIATE FIXED TRUNNION
1-1/2" — 14"



SPECIFY "X1" DIMENSION WHEN ORDERING

*8" - 14" Bores only

**1-1/2" - 6" Bores only

POWERMASTER® PP PNEUMATIC AND PH HYDRAULIC CYLINDERS

TABLE 1 — Dimensions affected by rod diameter

BORE IN	MM ROD	V	W	WF	Y	XG	ZB	XI MIN	XJ	XN	ZJ
1.500	0.625	0.25	0.63		1.94	1.94	4.85	3.13	4.19		4.63
	1.000	0.50	1.00		2.31	2.31	5.22	3.50	4.56		5.00
2.000	0.625	0.25	0.63		1.94	1.94	4.90	3.25	4.19		4.63
	1.000	0.50	1.00		2.31	2.31	5.27	3.63	4.56		5.00
2.500	1.375	0.63	1.25		2.56	2.56	5.52	3.88	4.81		5.25
	0.625	0.25	0.63		1.94	1.94	5.02	3.25	4.31		4.75
	1.000	0.50	1.00		2.31	2.31	5.40	3.63	4.69		5.13
	1.375	0.63	1.25		2.56	2.56	5.65	3.88	4.94		5.38
3.250	1.750	0.75	1.50		2.81	2.81	5.90	4.13	5.19		5.63
	1.000	0.25	0.75		2.44	2.44	5.98	4.13	5.06		5.63
	1.375	0.38	1.00		2.69	2.69	6.23	4.38	5.31		5.88
	1.750	0.50	1.25		2.94	2.94	6.48	4.63	5.56		6.13
4.000	2.000	0.50	1.38		3.06	3.06	6.61	4.75	5.69		6.25
	1.000	0.25	0.75		2.44	2.44	5.98	4.13	5.06		5.63
	1.375	0.38	1.00		2.69	2.69	6.23	4.38	5.31		5.88
	1.750	0.50	1.25		2.94	2.94	6.48	4.63	5.56		6.13
5.000	2.000	0.50	1.38		3.06	3.06	6.61	4.75	5.69		6.25
	2.500	0.63	1.63		3.31	3.31	6.86	5.00	5.94		6.50
	1.000	0.25	0.75		2.44	2.44	6.32	4.13	5.31		5.88
	1.375	0.38	1.00		2.69	2.69	6.57	4.38	5.56		6.13
6.000	1.750	0.50	1.25		2.94	2.94	6.82	4.63	5.81		6.38
	2.000	0.50	1.38		3.06	3.06	6.94	4.75	5.94		6.50
	2.500	0.63	1.63		3.31	3.31	7.19	5.00	6.19		6.75
	3.000	0.63	1.63		3.31	3.31	7.19	5.00	6.19		6.75
8.000	3.500	0.63	1.63		3.31	3.31	7.19	5.00	6.19		6.75
	1.375	0.25	0.88		2.81	2.81	7.07	4.88	5.94		6.63
	1.750	0.38	1.13		3.06	3.06	7.32	5.13	6.19		6.88
	2.000	0.38	1.25		3.19	3.19	7.44	5.25	6.31		7.00
10.000	2.500	0.50	1.50		3.44	3.44	7.69	5.50	6.56		7.25
	3.000	0.50	1.50		3.44	3.44	7.69	5.50	6.56		7.25
	3.500	0.50	1.50		3.44	3.44	7.69	5.50	6.56		7.25
	4.000	0.50	1.50		3.44	3.44	7.69	5.50	6.56		7.25
12.000	1.375	0.25		1.63	2.81	2.81	7.31	4.88	6.06	4.00	6.75
	1.750	0.38		1.88	3.06	3.06	7.56	5.13	6.44	4.00	7.00
	2.000	0.38		2.00	3.19	3.19	7.69	5.25	6.56	4.00	7.13
	2.500	0.50		2.25	3.44	3.44	7.94	5.50	6.69	4.00	7.38
14.000	3.000	0.50		2.25	3.44	3.44	7.94	5.50	6.69	5.50	7.38
	3.500	0.50		2.25	3.44	3.44	7.94	5.50	6.69	5.50	7.38
	4.000	0.50		2.25	3.44	3.44	7.94	5.50	6.69	5.50	7.38
	4.500	0.50		2.25	3.44	3.44	7.94	5.50	6.69	5.50	7.38
16.000	5.000	0.50		2.25	3.44	3.44	7.94	5.50	6.69	6.50	7.38
	5.500	0.50		2.25	3.44	3.44	7.94	5.50	6.69	7.25	7.38
	1.750	0.38		1.88	3.13	3.13	8.91	5.63	7.25	4.00	8.25
	2.000	0.38		2.00	3.25	3.25	9.03	5.75	7.38	4.00	8.38
18.000	2.500	0.50		2.25	3.50	3.50	9.28	6.00	7.63	4.00	8.63
	3.000	0.50		2.25	3.50	3.50	9.28	6.00	7.63	5.50	8.63
	3.500	0.50		2.25	3.50	3.50	9.28	6.00	7.63	5.50	8.63
	4.000	0.50		2.25	3.50	3.50	9.28	6.00	7.63	5.50	8.63
20.000	4.500	0.50		2.25	3.50	3.50	9.28	6.00	7.63	6.50	8.63
	5.000	0.50		2.25	3.50	3.50	9.28	6.00	7.63	6.50	8.63
	5.500	0.50		2.25	3.50	3.50	9.28	6.00	7.63	7.25	8.63
	2.000	0.38		2.00	3.25	3.25	9.53	5.75	7.88	4.00	8.88
22.000	2.500	0.50		2.25	3.50	3.50	9.78	6.00	8.13	4.00	9.13
	3.000	0.50		2.25	3.50	3.50	9.78	6.00	8.13	5.50	9.13
	3.500	0.50		2.25	3.50	3.50	9.78	6.00	8.13	5.50	9.13
	4.000	0.50		2.25	3.50	3.50	9.78	6.00	8.13	5.50	9.13
24.000	4.500	0.50		2.25	3.50	3.50	9.78	6.00	8.13	6.50	9.13
	5.000	0.50		2.25	3.50	3.50	9.78	6.00	8.13	6.50	9.13
	5.500	0.50		2.25	3.50	3.50	9.78	6.00	8.13	7.25	9.13
	2.500	0.50		2.25	3.81	3.81	11.16	6.75	9.31	4.00	10.38
26.000	3.000	0.50		2.25	3.81	3.81	11.16	6.75	9.31	5.50	10.38
	3.500	0.50		2.25	3.81	3.81	11.16	6.75	9.31	5.50	10.38
	4.000	0.50		2.25	3.81	3.81	11.16	6.75	9.31	5.50	10.38
	4.500	0.50		2.25	3.81	3.81	11.16	6.75	9.31	6.50	10.38
28.000	5.000	0.50		2.25	3.81	3.81	11.16	6.75	9.31	6.50	10.38
	5.500	0.50		2.25	3.81	3.81	11.16	6.75	9.31	7.25	10.38

TRUNNION MOUNTS

All trunnion mounted cylinders need a provision on both ends for pivoting. These types of cylinders are designed to carry shear loads and the trunnion and pivot pins should be carried by bearings that are rigidly held and closely fit for the entire length of the pin. Head or rod end trunnions should be carefully applied to either short strokes or to applications where the weight of the cylinder falls vertically below the pin.

NOTES:

† Available with fixed non-adjustable cushion on the rod end and standard Exact-a-just™ cushion on the cap end only.

Specify the "XI" dimension when ordering MT4 Intermediate Fixed Trunnion mounts. If not specified, the trunnion will be located at the center of the tube.

The "XG" and "XJ" dimensions for MT1 and MT2 mounts are not NFPA Standard.

The bearing retainer plate is the same as the "E" dimension for bore sizes 1-1/2" — 6" and the "XN" dimension for the 8" — 14" bore sizes.

For rod end options see page 52a.

TABLE 2 — Dimensions not affected by rod diameter

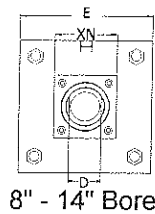
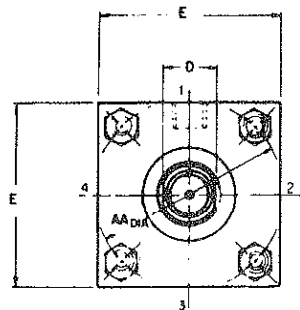
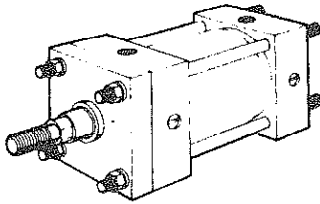
BORE IN	E	F	G	J	K	P	BD	EE NPTF	LB	*TD +.000 -.001	TL	TM	UB	UM	UT
1.500	2.00	0.38	1.50	1.00	0.22	2.25	1.25	0.38	4.00	1.000	1.00	2.50	2.25	4.50	4.00
2.000	2.50	0.38	1.50	1.00	0.27	2.25	1.50	0.38	4.00	1.000	1.00	3.00	2.75	5.00	4.50
2.500	3.00	0.38	1.50	1.00	0.27	2.38	1.50	0.38	4.13	1.000	1.00	3.50	3.25	5.50	5.00
3.250	3.75	0.63	1.75	1.25	0.34	2.63	2.00	0.50	4.88	1.000	1.00	4.50	4.25	6.50	5.75
4.000	4.50	0.63	1.75	1.25	0.34	2.63	2.00	0.50	4.88	1.000	1.00	5.25	5.00	7.25	6.50
5.000	5.50	0.63	1.75	1.25	0.44	2.88	2.00	0.50	5.13	1.000	1.00	6.25	6.00	8.25	7.50
6.000	6.50	0.75	2.00	1.50	0.44	3.13	2.50	0.75	5.75	1.375	1.38	7.63	7.38	10.38	9.25
8.000	8.50	0.75	2.00	1.50	0.56	3.25	2.50	0.75	5.13	1.375	1.38	9.75	9.50	12.50	11.25
10.000	10.63	0.75	2.25	2.00	0.66	4.13	3.00	1.00	6.38	1.750	1.75	12.00	11.75	15.50	14.13
12.000	12.75	0.75	2.25	2.00	0.66	4.63	3.00	1.00	6.88	1.750	1.75	14.00	13.75	17.50	16.25
14.000	14.75	0.75	2.75	2.25	0.78	5.50	3.50	1.25	8.13	2.000	2.00	16.25	16.00	20.25	18.75

* TD tolerance - bolt-on pins: +.001"/-.003".

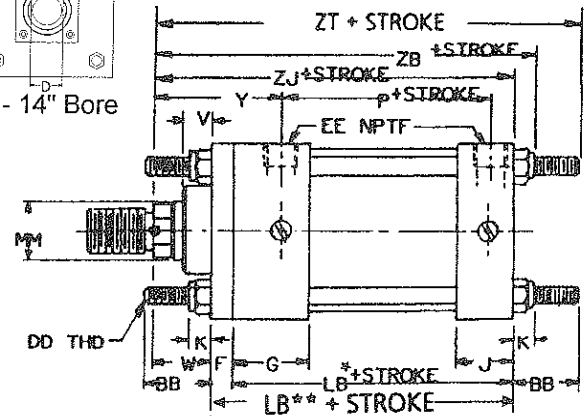
Air PP
Oil PH

POWERMASTER® PP PNEUMATIC AND PH HYDRAULIC CYLINDERS

MX1 TIE RODS EXTENDED BOTH ENDS 1-1/2" — 14"



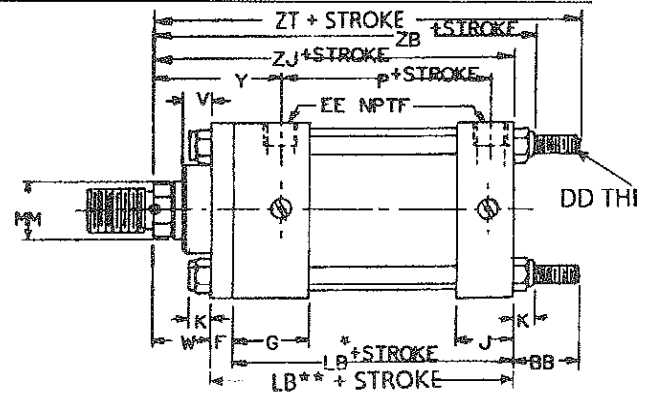
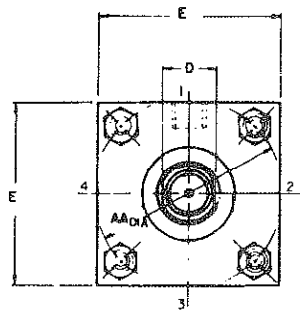
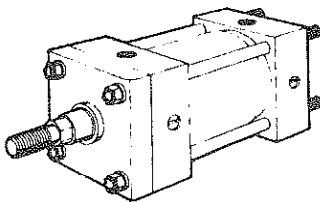
8" - 14" Bore



*8" - 14" Bores only (XN see above)

**1-1/2" - 6" Bores only

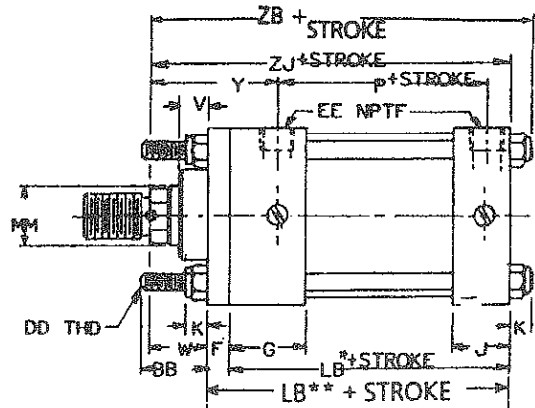
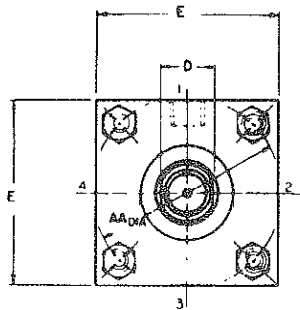
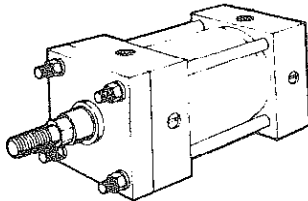
MX2 TIE RODS EXTENDED CAP END ONLY 1-1/2" — 14"



*8" - 14" Bores only (XN see above)

**1-1/2" - 6" Bores only

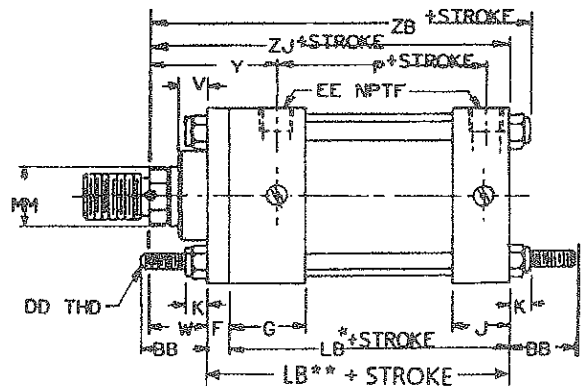
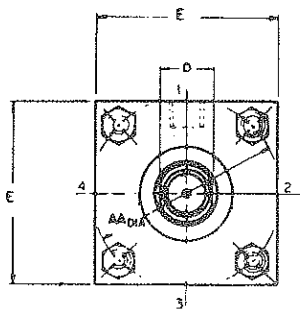
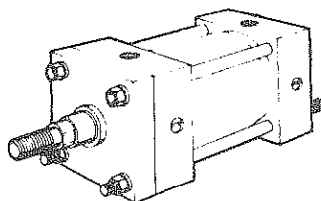
MX3 TIE RODS EXTENDED HEAD END ONLY 1-1/2" — 14"



*8" - 14" Bores only (XN see above)

**1-1/2" - 6" Bores only

MX4 TIE RODS EXTENDED TWO EACH END 1-1/2" — 14"



*8" - 14" Bores only (XN see above)

**1-1/2" - 6" Bores only

POWERMASTER® PP PNEUMATIC AND PH HYDRAULIC CYLINDERS

TABLE 1 — Dimensions affected by rod diameter

BORE IN	MM ROD	V	W	WF	Y	XN	ZB	ZJ	ZT
1.500	0.625	0.25	0.63		1.94		4.85	4.63	5.63
	† 1.000	0.50	1.00		2.31		5.22	5.00	6.00
2.000	0.625	0.25	0.63		1.94		4.90	4.63	5.75
	1.000	0.50	1.00		2.31		5.27	5.00	6.13
2.500	† 1.375	0.63	1.25		2.56		5.52	5.25	6.38
	0.625	0.25	0.63		1.94		5.02	4.75	5.88
3.250	1.000	0.50	1.00		2.31		5.40	5.13	6.25
	1.375	0.63	1.25		2.56		5.65	5.38	6.50
4.000	† 1.750	0.75	1.50		2.81		5.90	5.63	6.75
	1.000	0.25	0.75		2.44		5.98	5.63	7.00
5.000	1.375	0.38	1.00		2.69		6.23	5.88	7.25
	1.750	0.50	1.25		2.94		6.48	6.13	7.50
6.000	2.000	0.50	1.38		3.06		6.61	6.25	7.63
	2.500	0.63	1.63		3.31		6.86	6.50	7.88
8.000	1.000	0.25	0.75		2.44		6.32	5.88	7.69
	1.375	0.38	1.00		2.69		6.57	6.13	7.94
10.000	1.750	0.50	1.25		2.94		6.82	6.38	8.06
	2.000	0.50	1.38		3.06		6.94	6.50	8.31
12.000	2.500	0.63	1.63		3.31		7.19	6.75	8.56
	3.000	0.63	1.63		3.31		7.19	6.75	8.56
14.000	3.500	0.63	1.63		3.31		7.19	6.75	8.56
	1.375	0.25	0.88		2.81		7.07	6.63	8.44
16.000	1.750	0.38	1.13		3.06		7.32	6.88	8.69
	2.000	0.38	1.25		3.19		7.44	7.00	8.81
18.000	2.500	0.50	1.50		3.44		7.69	7.25	9.06
	3.000	0.50	1.50		3.44		7.69	7.25	9.06
20.000	3.500	0.50	1.50		3.44		7.69	7.25	9.06
	4.000	0.50	1.50		3.44		7.69	7.25	9.06
22.000	1.375	0.25		1.63	2.81	4.00	7.31	6.75	9.06
	1.750	0.38		1.88	3.06	4.00	7.56	7.00	9.31
24.000	2.000	0.38		2.00	3.19	4.00	7.69	7.13	9.44
	2.500	0.50		2.25	3.44	4.00	7.94	7.38	9.69
26.000	*3.000	0.50		2.25	3.44	5.50	7.94	7.38	9.69
	3.500	0.50		2.25	3.44	5.50	7.94	7.38	9.69
28.000	4.000	0.50		2.25	3.44	5.50	7.94	7.38	9.69
	4.500	0.50		2.25	3.44	6.50	7.94	7.38	9.69
30.000	5.000	0.50		2.25	3.44	6.50	7.94	7.38	9.69
	5.500	0.50		2.25	3.44	7.25	7.94	7.38	9.69
32.000	1.750	0.38		1.88	3.13	4.00	8.91	8.25	10.94
	2.000	0.38		2.00	3.25	4.00	9.03	8.38	11.06
34.000	2.500	0.50		2.25	3.50	4.00	9.28	8.63	11.31
	3.000	0.50		2.25	3.50	5.50	9.28	8.63	11.31
36.000	3.500	0.50		2.25	3.50	5.50	9.28	8.63	11.31
	4.000	0.50		2.25	3.50	5.50	9.28	8.63	11.31
38.000	*4.500	0.50		2.25	3.50	6.50	9.28	8.63	11.31
	5.000	0.50		2.25	3.50	6.50	9.28	8.63	11.31
40.000	5.500	0.50		2.25	3.50	7.25	9.28	8.63	11.31
	2.000	0.38		2.00	3.25	4.00	9.53	8.88	11.56
42.000	2.500	0.50		2.25	3.50	4.00	9.78	9.13	11.81
	3.000	0.50		2.25	3.50	5.50	9.78	9.13	11.81
44.000	3.500	0.50		2.25	3.50	5.50	9.78	9.13	11.81
	4.000	0.50		2.25	3.50	5.50	9.78	9.13	11.81
46.000	4.500	0.50		2.25	3.50	6.50	9.78	9.13	11.81
	5.000	0.50		2.25	3.50	6.50	9.78	9.13	11.81
48.000	5.500	0.50		2.25	3.50	7.25	9.78	9.13	11.81
	2.500	0.50		2.25	3.81	4.00	11.16	10.38	13.56
50.000	3.000	0.50		2.25	3.81	5.50	11.16	10.38	13.56
	3.500	0.50		2.25	3.81	5.50	11.16	10.38	13.56
52.000	4.000	0.50		2.25	3.81	5.50	11.16	10.38	13.56
	4.500	0.50		2.25	3.81	6.50	11.16	10.38	13.56
54.000	5.000	0.50		2.25	3.81	6.50	11.16	10.38	13.56
	5.500	0.50		2.25	3.81	7.25	11.16	10.38	13.56

* For these or larger size rods on 8" and 10" bores, consult factory before ordering.

EXTENDED TIE ROD MOUNTS

Tie rod and flange mounts are basically the same except that the tie rods are extended and used to mount the cylinder. To prevent misalignment, sagging or binding of the cylinder when long strokes are required, the free end of the cylinder should be supported. For thrust load applications, blind or cap end tie rod extensions are best. For tension load applications, rod or head end extensions are best. Tie rod mounts are suited for many applications however, it should be noted that they are not as rigid as the flange mount.

NOTES:

† Available with fixed non-adjustable cushion on the rod end and standard Exact-a-just™ cushion on the cap end only.

The bearing retainer plate is the same as the "E" dimension for 1-1/2" — 6" bore sizes and the "XN" dimension for the 8" — 14" bore sizes.

For rod end options see page 52a.

TABLE 2 — Dimensions not affected by rod diameter

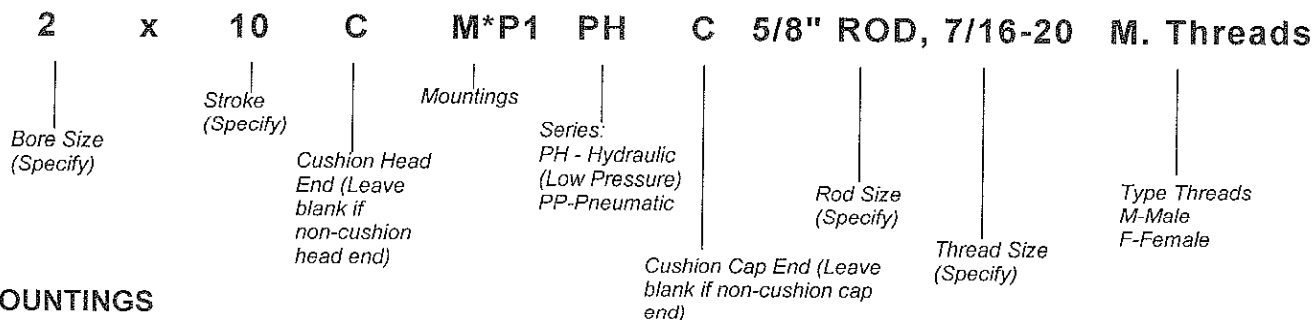
BORE IN	E	F	G	J	K	P	AA	BB	DD THD	EE NPTF	LB
1.500	2.00	0.38	1.50	1.00	0.22	2.25	2.02	1.00	0.25 -28	0.38	4.00
2.000	2.50	0.38	1.50	1.00	0.27	2.25	2.60	1.13	0.31 -24	0.38	4.00
2.500	3.00	0.38	1.50	1.00	0.27	2.38	3.10	1.13	0.31 -24	0.38	4.13
3.250	3.75	0.63	1.75	1.25	0.34	2.63	3.90	1.38	0.38 -24	0.50	4.88
4.000	4.50	0.63	1.75	1.25	0.34	2.63	4.70	1.38	0.38 -24	0.50	4.88
5.000	5.50	0.63	1.75	1.25	0.44	2.88	5.80	1.81	0.50 -20	0.50	5.13
6.000	6.50	0.75	2.00	1.50	0.44	3.13	6.90	1.81	0.50 -20	0.75	5.75
8.000	8.50	0.75	2.00	1.50	0.56	3.25	9.10	2.31	0.63 -18	0.75	5.13
10.000	10.63	0.75	2.25	2.00	0.66	4.13	11.20	2.69	0.75 -16	1.00	6.38
12.000	12.75	0.75	2.25	2.00	0.66	4.63	13.30	2.69	0.75 -16	1.00	6.88
14.000	14.75	0.75	2.75	2.25	0.78	5.50	15.40	3.19	0.88 -14	1.25	8.13

POWERMASTER® PP PNEUMATIC AND PH HYDRAULIC CYLINDERS

HOW TO ORDER

EXAMPLES (A) 2 x 10 C-MP1-PH-C;
5/8" Rod, 7/16" - 20 M. Threads

(B) 4 x 36 Effective Stroke, C-MP1-PH-C 1-3/8" rod, 1" - 14 Male
Threads, 4" Stop Tube "A" = STD + 1", "W" = STD + 1/2", Epoxy
Paint Proximity Switch @ Location #4 Head and Cap



MOUNTINGS

Head Square (8" — 14")	ME3
Cap Screws (8" — 14")	ME4
Head Rectangular Flange (1-1/2" — 6")	MF1
Cap Rectangular Flange (1-1/2" — 6")	MF2
Head Square Flange (1-1/2" — 6")	MF5
Cap Square Flange (1-1/2" — 6")	MF6
Cap Fixed Clevis	MP1
Cap Detachable Clevis	MP2
Side End Angles	MS1
Side Lug	MS2
Center Line Lug	MS3
Side Tap	MS4
Side End Lug	MS7
Head End Trunnion	MT1
Cap End Trunnion	MT2
Intermediate Fixed Trunnion (Specify XI)	MT4
Universal Clevis	MU3
Tie Rod Mounting	MX0, 1, 2, 3, 4

* Double Rod End (Example MDE3)
(Specify only when required, available
in most mountings. 1-1/2, 2, 2-1/2 bore
cylinders with the maximum oversize
rod and head cushion have no head
cushion adjustment or check valve
bypass. These models are not
recommended for double
end application.)

OPTIONS (Specify)

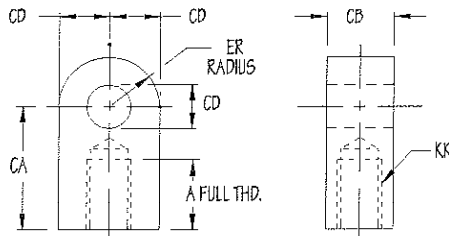
Seals — Standard, Viton, other
Piston Rod Stud
Rod Extension ("W" Dimension)
Thread Extension ("A" Dimension)
Stop Tube (Specify Effective Stroke) + inches of stop tube
Piston Rod Material (Stainless Steel)
Port Location if other than standard #1 location
Cushion Location if other than standard #2 location
Water Service
Mixed Mountings
Epoxy Paint
Additional Ports
SAE O-ring Straight Thread Ports
Additional Cushion Adjustment Screws
Oversized Ports
Stroke Adjuster in Cap
Moveable Center Trunnion (MT4)
Special Items as Required

* PRESSURE RATINGS FOR DOUBLE ROD END POWERMASTER CYLINDERS

BORE SIZE	ROD SIZE	CUSHION ROD END OR NON- CUSHION	CUSHION BOTH ENDS OR EXT.
1.50	.625	1,000 PSI	750 PSI
	1.00	1,000 PSI	1,000 PSI
2.00	.625	800 PSI	450 PSI
	1.00	1,000 PSI	500 PSI
	1.38	1,000 PSI	1,000 PSI
2.50	.625	500 PSI	250 PSI
	1.00	1,000 PSI	500 PSI
	1.38	1,000 PSI	1,000 PSI
3.25	1.00	500 PSI	Not Available
	1.38	1,000 PSI	1,000 PSI
	1.75	1,000 PSI	1,000 PSI
	2.00	1,000 PSI	1,000 PSI
	2.50	1,000 PSI	1,000 PSI
4.00	1.00	400 PSI	Not Available
	1.38	1,000 PSI	1,000 PSI
	1.75	1,000 PSI	1,000 PSI
	2.00	1,000 PSI	1,000 PSI
	2.50	1,000 PSI	1,000 PSI
5.00	1.00	250 PSI	Not Available
	1.38	750 PSI	750 PSI
	1.75	750 PSI	750 PSI
	2.00	750 PSI	750 PSI
	2.50	750 PSI	750 PSI
	3.00	750 PSI	750 PSI
	3.50	750 PSI	750 PSI
6.00	1.38	250 PSI	Not Available
	1.75	750 PSI	750 PSI
	2.00	750 PSI	750 PSI
	2.50	675 PSI	675 PSI
	3.00	750 PSI	750 PSI
	3.50	750 PSI	750 PSI
	4.00	750 PSI	750 PSI

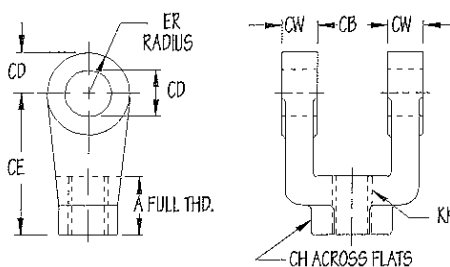
REXROTH ACCESSORIES

ROD EYE — Select by 'KK' to Match Rod Thread



PART NUMBER	DIMENSIONS (Inches)						WEIGHT
	A	CA	CB	CD	ER	KK	
J800007	0.75	1.50	0.75	0.500	0.56	7/16 -20	0 lb. 5 oz.
J800008	0.75	1.50	0.75	0.500	0.56	1/2 -20	0 lb. 5 oz.
J800009	1.13	2.06	1.25	0.750	0.81	3/4 -16	1 lb. 0 oz.
J800010	1.13	2.38	1.50	1.000	1.13	7/8 -14	2 lb. 4 oz.
J800011	1.63	2.81	1.50	1.000	1.13	1 -14	2 lb. 4 oz.
J800012	2.00	3.44	2.00	1.375	1.69	1-1/4 -12	5 lb. 8 oz.
J800013	2.25	4.00	2.50	1.750	2.06	1-1/2 -12	10 lb. 8 oz.
J800014	2.25	4.38	2.50	2.000	2.38	1-3/4 -12	11 lb. 4 oz.
J800015	3.00	5.00	2.50	2.000	2.38	1-7/8 -12	11 lb. 8 oz.
J800016	3.50	5.81	3.00	2.500	2.81	2-1/4 -12	20 lb. 8 oz.
J800041	3.50	6.13	3.00	3.000	3.25	2-1/2 -12	30 lb. 0 oz.

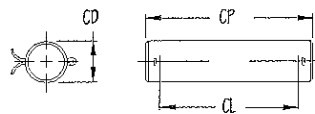
ROD CLEVIS — Select by 'KK' to Match Rod Thread



PART NUMBER	STD. ROD DIA.	DIMENSIONS (Inches)								WEIGHT
		A	CB	CD	CE	CH	CW	ER	KK	
J800001	0.625	0.75	0.75	0.500	1.50	0.78	0.50	0.50	7/16 -20	0 lb. 8 oz.
J800002	1.000	1.13	1.25	0.750	2.38	1.25	0.63	0.75	3/4 -16	1 lb. 4 oz.
J800137	1.000	1.13	1.25	0.750	2.38	1.25	0.63	0.75	7/8 -14	1 lb. 4 oz.
J800003	1.375	1.63	1.50	1.000	3.13	1.63	0.75	1.00	1 -14	2 lb. 8 oz.
J800004	1.750	2.00	2.00	1.375	4.13	2.00	1.00	1.38	1-1/4 -12	6 lb. 6 oz.
J800005	2.000	2.25	2.50	1.750	4.50	2.38	1.25	1.75	1-1/2 -12	11 lb. 8 oz.
J800138	2.000	2.25	2.50	1.750	4.50	2.38	1.25	1.75	1-3/4 -12	11 lb. 8 oz.
J800006	2.500	3.00	2.50	2.000	5.50	2.94	1.25	2.00	1-7/8 -12	14 lb. 12 oz.
*J800073	3.000	3.50	3.00	2.500	6.50	3.50	1.50	2.50	2-1/4 -12	36 lb. 0 oz.
*J800074	3.500	3.50	3.00	3.000	6.75	3.88	1.50	3.00	2-1/2 -12	49 lb. 0 oz.

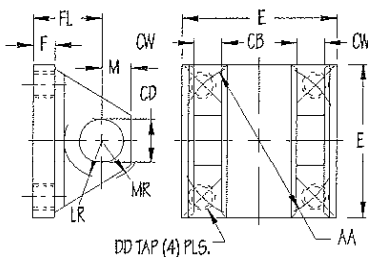
* Includes Pivot Pin with Cotter Pins.

PIVOT PIN — Select by 'CD'



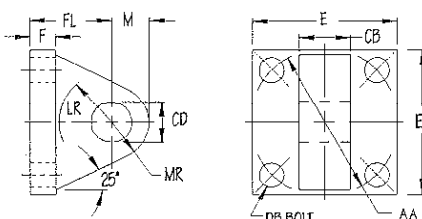
PART NUMBER	DIMENSIONS (Inches)			WEIGHT
	CD	CL	CP	
J800017-K0000	0.500	1.75	2.25	0 lb. 4 oz.
J800018-K0000	0.750	2.50	3.00	0 lb. 8 oz.
J800019-K0000	1.000	3.00	3.63	0 lb. 13 oz.
J800020-K0000	1.375	4.00	4.63	2 lb. 0 oz.
J800021-K0000	1.750	5.00	5.63	3 lb. 14 oz.
J800022-K0000	2.000	5.00	5.75	5 lb. 2 oz.
J800043-00000	2.500	5.00	5.78	8 lb. 0 oz.
J800044-K0000	3.000	6.00	6.81	16 lb. 8 oz.
J800045-K0000	3.500	8.13	9.96	38 lb. 0 oz.

CLEVIS BRACKET — Select by 'CD' to Match Pin



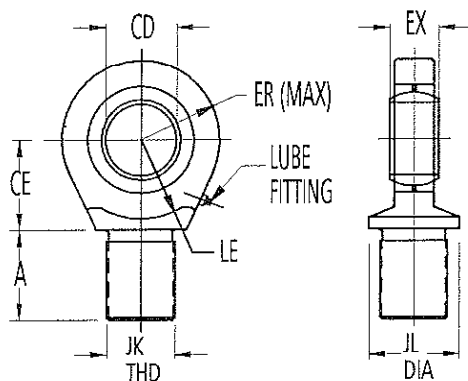
PART NUMBER	DIMENSIONS (Inches)											WEIGHT
	AA	CB	CD	CW	DD	E	F	FL	LR	M	MR	
J800023	2.30	0.75	0.500	0.50	3/8 -24	2.50	0.38	1.13	0.63	0.50	0.56	1 lb. 0 oz.
J800024	2.90	1.25	0.750	0.63	1/2 -20	3.00	0.63	1.88	0.88	0.75	0.88	3 lb. 4 oz.
J800025	3.60	1.25	0.750	0.63	1/2 -20	3.50	0.63	1.88	0.88	0.75	1.00	3 lb. 4 oz.
J800026	4.60	1.50	1.000	0.75	5/8 -18	4.50	0.75	2.25	1.19	1.00	1.25	6 lb. 2 oz.
J800027	5.40	2.00	1.375	1.00	5/8 -18	5.00	0.88	3.00	1.75	1.38	1.63	11 lb. 8 oz.
J800028	7.00	2.50	1.750	1.25	7/8 -14	6.50	0.88	3.13	2.13	1.75	2.12	20 lb. 0 oz.
J800029	8.10	2.50	2.000	1.25	1 -14	7.50	1.00	3.50	2.44	2.00	2.38	27 lb. 8 oz.
J800070	10.00	2.50	2.500	1.25	1-1/4 -12	9.25	1.75	4.75	2.75	2.50	2.50	
J800071	11.70	3.00	3.000	1.50	1-1/2 -12	11.00	1.75	5.25	3.25	3.00	3.00	

EYE BRACKET — Select by 'CD' to Match Pin



PART NUMBER	DIMENSIONS (Inches)										WEIGHT
	AA	CB	CD	DB	E	F	FL	LR	M	MR	
J800030	2.30	0.75	0.500	0.38	2.50	0.38	1.13	0.69	0.50	0.56	1 lb. 0 oz.
J800031	2.90	1.25	0.750	0.50	3.00	0.63	1.88	1.00	0.75	0.88	3 lb. 0 oz.
J800032	3.60	1.25	0.750	0.50	3.50	0.63	1.88	1.00	0.75	0.88	3 lb. 0 oz.
J800033	4.60	1.50	1.000	0.63	4.50	0.75	2.25	1.38	1.00	1.25	6 lb. 4 oz.
J800034	5.40	2.00	1.375	0.63	5.00	0.88	3.00	2.00	1.38	1.62	10 lb. 4 oz.
J800035	7.00	2.50	1.750	0.88	6.50	0.88	3.13	2.25	1.75	2.12	16 lb. 12 oz.
J800036	8.10	2.50	2.000	1.00	7.50	1.00	3.50	2.50	2.00	2.36	25 lb. 4 oz.
P110348	9.32	2.50	2.500	1.25	8.50	1.00	4.00	3.00	2.50	3.00	
P169316	10.60	3.00	3.000	1.25	9.50	2.00	5.25	3.25	3.00	3.25	

REXROTH ACCESSORIES

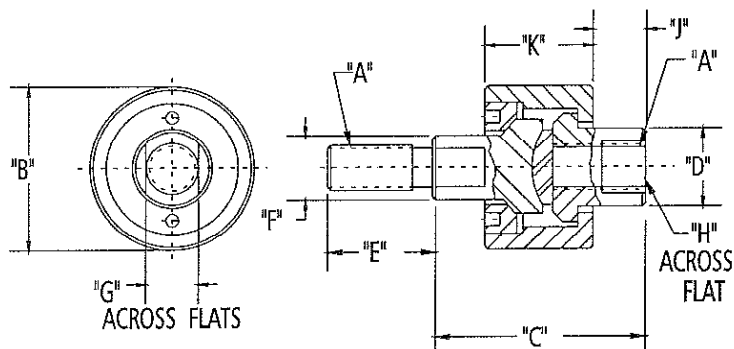


NOTES:

- Accessories furnished without pivot pin, unless otherwise noted.
- When ordering, please specify REXROTH part number and description.
- Should your application require accessories not listed, please consult factory.

SPHERICAL ROD EYE

PART NUMBER	DIMENSIONS (Inches)								LOAD RATING (LBS)	WEIGHT
	A	CD	CE	ER	EX	JK	JL	LE		
P48490-3	0.69	.5000 + .0000 - .0005	0.88	0.88	0.44	7/16-20	0.88	0.75	2600	0 lb. 4 oz.
P48490	1.00	.7500 + .0000 - .0005	1.25	1.25	0.66	3/4-16	1.31	1.06	9400	0 lb. 13 oz.
P48490-1	1.50	1.0000 + .0000 - .0005	1.88	1.38	0.88	1-14	1.50	1.44	16800	1 lb. 12 oz.
P48490-4	2.00	1.3750 + .0000 - .0005	2.13	1.81	1.19	1-1/4-12	2.00	1.88	28600	3 lb. 4 oz.
P48490-5	2.13	1.7500 + .0000 - .0005	2.50	2.19	1.53	1-1/2-12	2.25	2.13	43000	6 lb. 0 oz.
P48490-2	2.88	2.0000 + .0000 - .0005	2.75	2.63	1.75	1-7/8-12	2.75	2.50	70000	10 lb. 0 oz.



SELF-ALIGNING ROD END COUPLER

PART NUMBER	DIMENSIONS (Inches)										MAX. PULL LOAD (LBS)*	WEIGHT
	A THD.	B	C	D	E	F	G	H	J	K		
P115498	7/16 -20	1.56	2.00	.75	.75	.62	.50	.62	.50	1.03	3250	8 oz.
P115498-1	3/4 -16	2.12	2.31	1.25	1.12	1.00	.87	1.12	.53	1.32	9050	1 lb. 4 oz.
P115498-2	1 -14	2.75	3.06	1.50	1.62	1.25	1.12	1.25	.56	2.00	19425	3 lb. 4 oz.
P115498-3	1-1/4 -12	3.50	4.00	2.00	2.00	1.50	1.25	1.69	.75	2.50	30825	3 lb. 6 oz.
P115498-4	1-1/2 -12	4.00	4.38	2.25	2.25	1.75	1.50	1.94	.87	2.75	45750	8 lb. 4 oz.
P115498-5	1-7/8 -12	5.00	4.38	3.00	3.00	2.25	1.94	2.62	1.37	3.37	67550	14 lb. 0 oz.

*Load rating has a 4 to 1 safety factor based on yield.

FOLDOUT