



Contents

Features	80	Cylinder Accessories	96-99
Specifications / Mountings	81	"Style 6" Piston Rod End.....	100-101
Mounting Information	82-93	How to Order.....	102-103
Double Rod Cylinders	94	Parts I.D. and Seal Kits.....	Sec. C, pgs. 40-41
Linear Alignment Couplers	95	Application Engineering Data	Sec. C, pgs. 49-85

B

PL-2

PH-2

PH-3

PHX

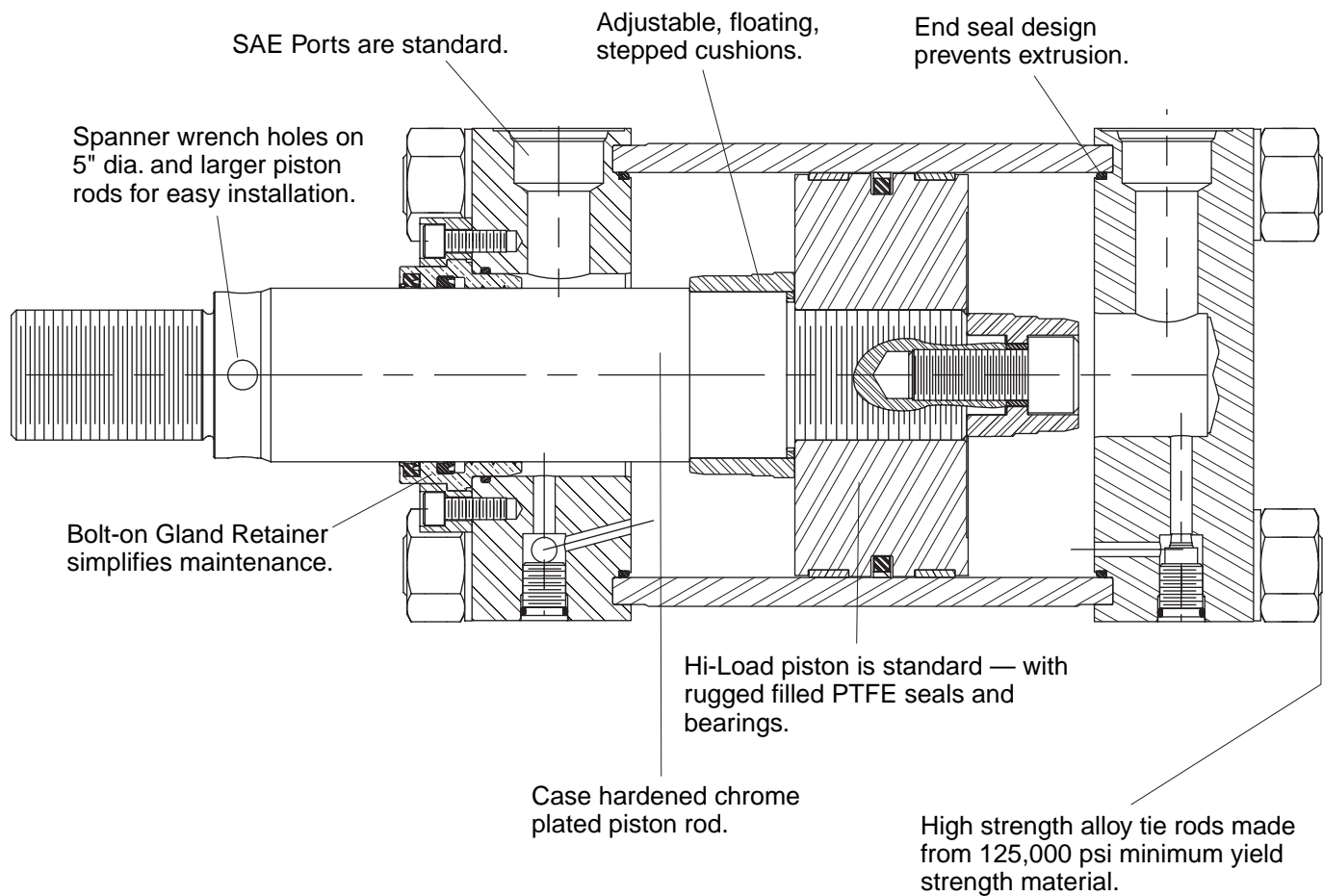
SHM

CHE/CHD

PH-3 Series 7" and 8" Bore Heavy Duty High Pressure Hydraulic Cylinders

- Bolt-on gland retainer for ease of maintenance.
- Hi-Load piston is standard.
- Cylinder body seal grooves and high-strength tie rods ensure trouble-free performance even in severe applications.
- Floating cushions with float-check action and positive metal-to-metal seal.

Every cylinder is *individually* tested before it leaves our plant. Schrader Bellows meets all of your heavy-duty hydraulic cylinder needs.



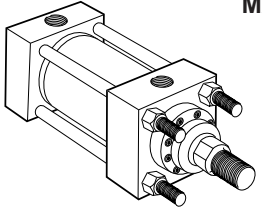
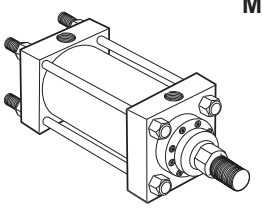
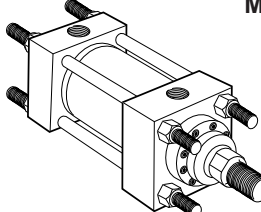
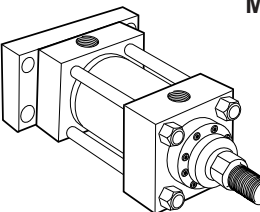
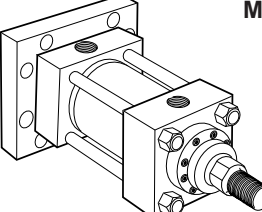
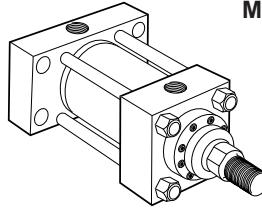
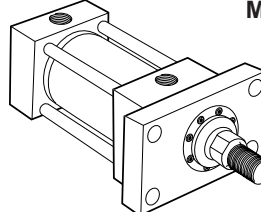
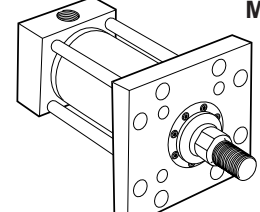
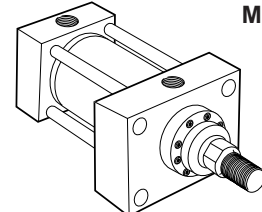
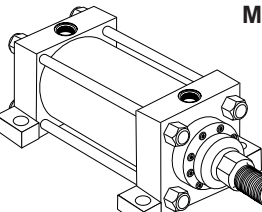
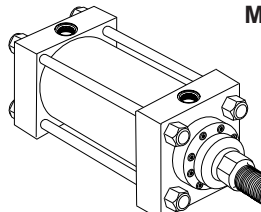
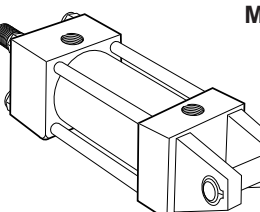
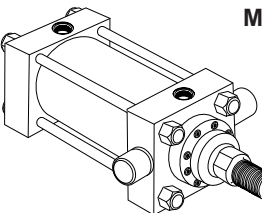
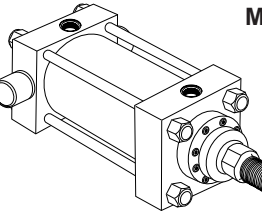
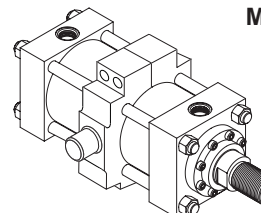
Standard Specifications

- Heavy Duty Service — ANSI/NFPA T.3.6.7R2-1996 specifications and mounting dimension standards
- Standard Construction — Square Head – Tie Rod Design
- Nominal Pressure — 3000 PSI*
- Standard Fluid — Hydraulic Oil
- Standard Temperature — -10° F. to +165° F.
- Piston Rod Diameter — 3" through 5 1/2"

- Mounting Styles — 15 standard styles at various application ratings
- Strokes — Available in any practical stroke length
- Cushions — Optional at either end or both ends of stroke
- Rod Ends — Three Standard Choices — specials to order

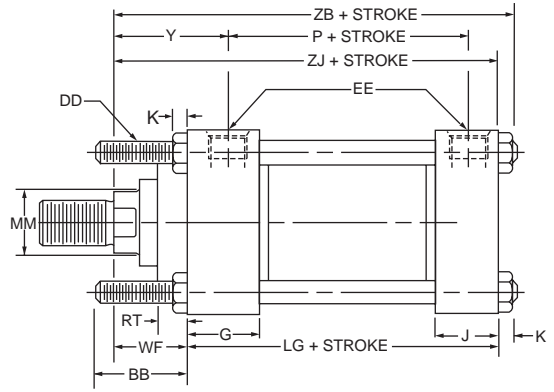
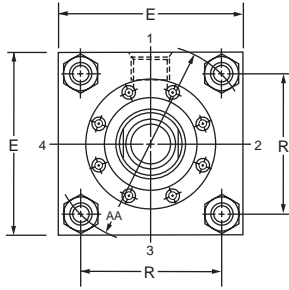
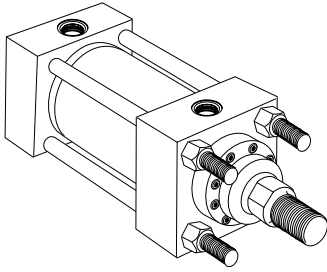
*If hydraulic operating pressure exceeds 3000 PSI, send application data for engineering evaluation and recommendation.
In line with our policy of continuing product improvement, specifications in this catalog are subject to change.

Available Mounting Styles

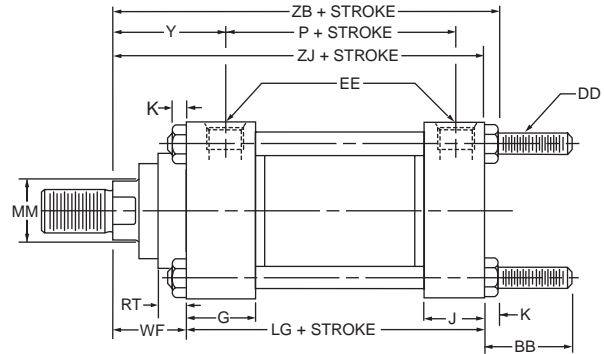
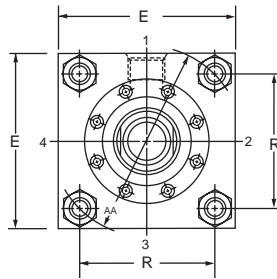
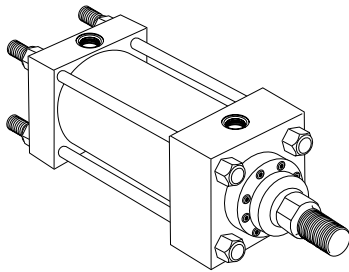
 <p>Model MX3 Tie Rods Extended Head End</p>	 <p>Model MX2 Tie Rods Extended Cap End</p>	 <p>Model MX1 Tie Rods Extended Both Ends</p>	 <p>Model MF2 Cap Rectangular Flange</p>
 <p>Model MF6 Cap Square Flange</p>	 <p>Model ME6 Cap Rectangular</p>	 <p>Model MF1 Head Rectangular Flange</p>	 <p>Model MF5 Head Square Flange</p>
 <p>Model ME5 Head Rectangular</p>	 <p>Model MS2 Side Lug</p>	 <p>Model MS4 Side Tap</p>	 <p>Model MP1 Cap Fixed Clevis</p>
 <p>Model MT1 Head Trunnion</p>	 <p>Model MT2 Cap Trunnion</p>	 <p>Model MT4 Intermediate Fixed Trunnion</p>	<p>Double Rod Cylinders Most of the above illustrated mounting styles are available in double rod cylinders. See double rod page.</p>

B
 PL-2
 PH-2
 PH-3
 PHX
 SHM
 CHE/CHD

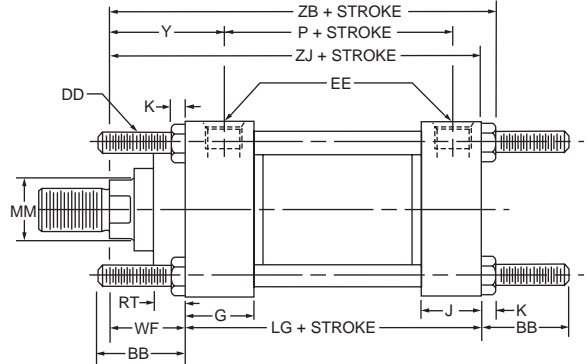
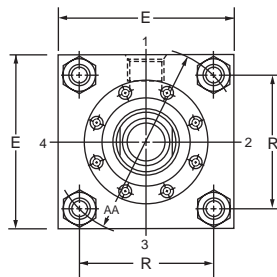
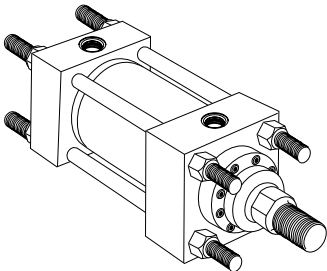
**Tie Rods Extended Head End Mount
NFPA Style MX3**



**Tie Rods Extended Cap End Mount
NFPA Style MX2**

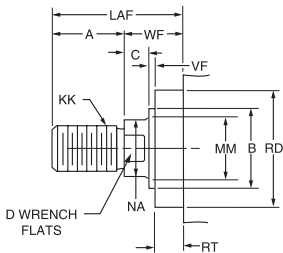


**Tie Rods Extended Both Ends Mount
NFPA Style MX1**

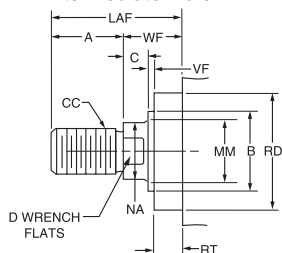


Rod End Dimensions — see Table 2

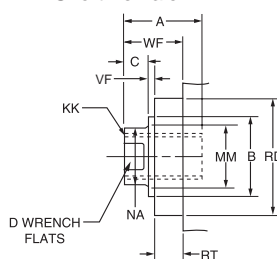
**Thread Style 2
Small Male**



**Thread Style 4
Intermediate Male**



**Thread Style 3
Short Female**



Style 3 stroke restrictions may apply. See Style 3 Minimum Stroke page for details.

“Special” Thread Style 0

Special thread, extension, rod eye, blank, etc., are also available.

To order, specify “Style 0” and give desired dimensions for KK, A and WF. If otherwise special, furnish dimensioned sketch.

Over 2" rod sizes or special rod ends are cut threads. Style 2 rod ends are recommended where the workpiece is secured against the rod shoulder. When the workpiece is not shouldered, style 4 rod ends are recommended over 2" piston rod diameters. Use

style 3 for applications where female rod end threads are required. If rod end is not specified, style 2 will be supplied. On 5" rods and above, (4) .515 dia. spanner wrench holes will be provided instead of wrench flats.

Table 1—Envelope and Mounting Dimensions

Bore	AA	BB	DD	E	EE		G	J	K	R	Add Stroke	
					NPTF [⊖]	SAE*					LG	P
7	9.3	4 ¹ / ₈	1 ¹ / ₈ -12	8 ¹ / ₂	1 ¹ / ₄	20	2 ³ / ₄	2 ³ / ₄	1 ¹ / ₄	6.58	8 ¹ / ₂	5 ¹ / ₂
8	10.6	4 ¹ / ₂	1 ¹ / ₄ -12	9 ¹ / ₂	1 ¹ / ₂	24	3	3	1 ¹ / ₂	7.50	9 ¹ / ₂	6 ¹ / ₄

* SAE straight thread ports are standard and are indicated by port number.

⊖ NPTF ports are available at no extra charge.

Table 2—Rod Dimensions

Bore	Rod Dia. MM	Thread		Rod Extensions and Pilot Dimensions										Add Stroke		
		Style 4 CC	Style 2 & 3 KK	A	+0.000 -.002 B	C	D	LAF	NA	RD (Max.)	RT	VF	WF	Y	ZB	ZJ
7	3	2 ³ / ₄ -12	2 ¹ / ₄ -12	3 ¹ / ₂	3.749	1	2 ⁵ / ₈	5 ³ / ₄	2 ⁷ / ₈	5 ⁷ / ₁₆	7 ⁷ / ₈	5 ⁷ / ₁₆	2 ¹ / ₄	3 ³ / ₄	12	10 ³ / ₄
	5	4 ³ / ₄ -12	3 ¹ / ₂ -12	5	5.749	1	—	7 ¹ / ₄	4 ⁷ / ₈	7 ⁷ / ₁₆	1 ⁵ / ₁₆	5 ⁵ / ₁₆	2 ¹ / ₄	3 ³ / ₄	12	10 ³ / ₄
	3 ¹ / ₂	3 ¹ / ₄ -12	2 ¹ / ₂ -12	3 ¹ / ₂	4.249	1	3	5 ³ / ₄	3 ³ / ₈	5 ¹⁵ / ₁₆	1 ¹⁵ / ₁₆	5 ⁵ / ₁₆	2 ¹ / ₄	3 ³ / ₄	12	10 ³ / ₄
	4	3 ³ / ₄ -12	3-12	4	4.749	1	3 ³ / ₈	6 ¹ / ₄	3 ⁷ / ₈	6 ⁵ / ₁₆	1 ¹⁵ / ₁₆	5 ⁵ / ₁₆	2 ¹ / ₄	3 ³ / ₄	12	10 ³ / ₄
8	3 ¹ / ₂	3 ¹ / ₄ -12	2 ¹ / ₂ -12	3 ¹ / ₂	4.249	1	3	5 ³ / ₄	3 ³ / ₈	5 ¹⁵ / ₁₆	1 ¹⁵ / ₁₆	5 ⁵ / ₁₆	2 ¹ / ₄	3 ⁷ / ₈	13 ¹ / ₄	11 ³ / ₄
	5 ¹ / ₂	5 ¹ / ₄ -12	4-12	5 ¹ / ₂	6.249	1	—	7 ³ / ₄	5 ³ / ₈	7 ¹⁵ / ₁₆	1 ¹⁵ / ₁₆	5 ⁵ / ₁₆	2 ¹ / ₄	3 ⁷ / ₈	13 ¹ / ₄	11 ³ / ₄
	4	3 ³ / ₄ -12	3-12	4	4.749	1	3 ³ / ₈	6 ¹ / ₄	3 ⁷ / ₈	6 ⁵ / ₁₆	1 ¹⁵ / ₁₆	5 ⁵ / ₁₆	2 ¹ / ₄	3 ⁷ / ₈	13 ¹ / ₄	11 ³ / ₄
	5	4 ³ / ₄ -12	3 ¹ / ₂ -12	5	5.749	1	—	7 ¹ / ₄	4 ⁷ / ₈	7 ⁷ / ₁₆	1 ¹⁵ / ₁₆	5 ⁵ / ₁₆	2 ¹ / ₄	3 ⁷ / ₈	13 ¹ / ₄	11 ³ / ₄

**Table 3 —
Envelope and
Mounting
Dimensions**

B

PL-2

PH-2

PH-3

PHX

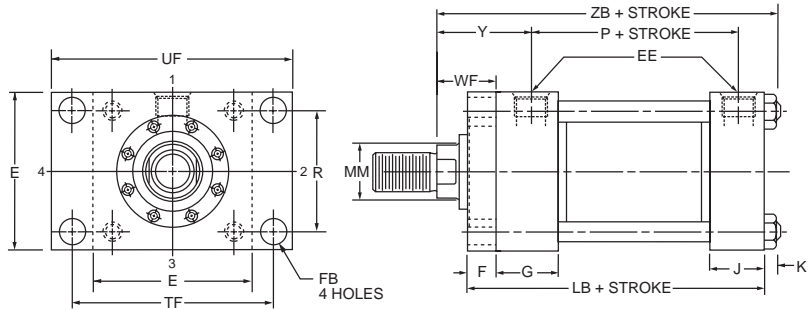
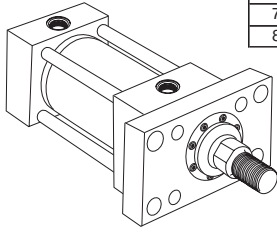
SHM

CHE/CHD

**Head Rectangular
Flange Mount
NFFPA Style MF1**

Maximum Pressure Rating - PSI
Push Application

Bore	Rod Dia				
	3	3 1/2	4	5	5 1/2
7	1000	800	400	400	—
8	—	800	700	400	400

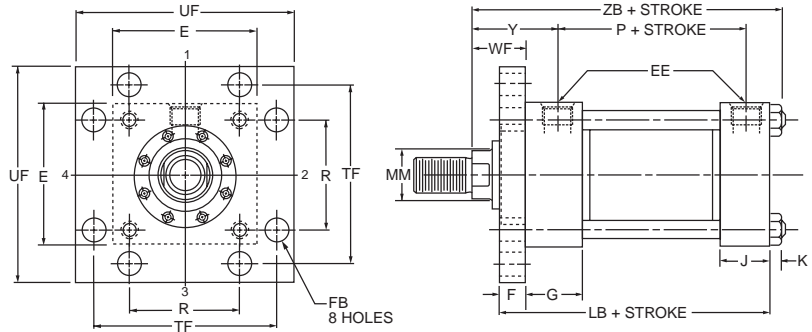
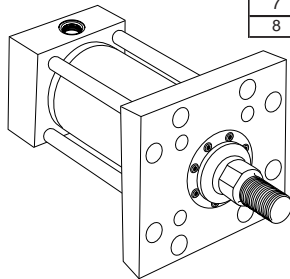


For pressures exceeding those shown use Style MF5 or Style ME5.

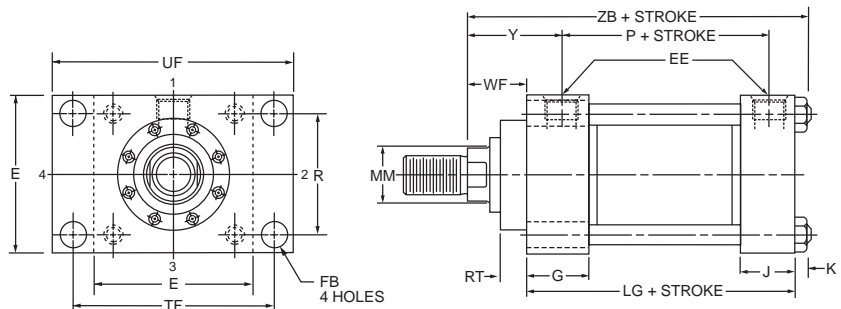
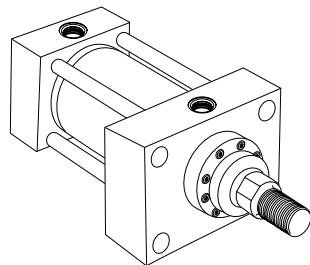
**Head Square Flange Mount
NFFPA Style MF5**

Maximum Pressure Rating - PSI
Push Application

Bore	Rod Dia				
	3	3 1/2	4	5	5 1/2
7	2500	2200	1500	1500	—
8	—	2000	2000	1400	1400

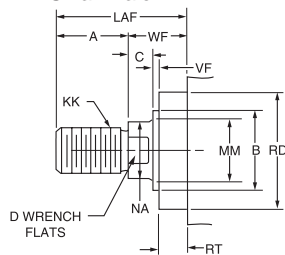


**Head Rectangular Mount
NFFPA Style ME5**

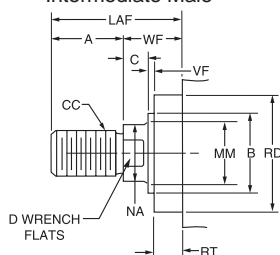


Rod End Dimensions — see Table 2

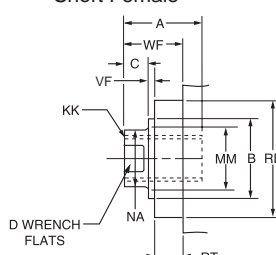
**Thread Style 2
Small Male**



**Thread Style 4
Intermediate Male**



**Thread Style 3
Short Female**



**“Special” Thread
Style 0**

Special thread, extension, rod eye, blank, etc., are also available.

To order, specify “Style 0” and give desired dimensions for KK, A and WF. If otherwise special, furnish dimensioned sketch.

Style 3 stroke restrictions may apply. See Style 3 Minimum Stroke page for details.

Over 2" rod sizes or special rod ends are cut threads. Style 2 rod ends are recommended where the workpiece is secured against the rod shoulder. When the workpiece is not shouldered, style 4 rod ends are recommended over 2" piston rod diameters. Use

style 3 for applications where female rod end threads are required. If rod end is not specified, style 2 will be supplied. On 5" rods and above, (4) .515 dia. spanner wrench holes will be provided instead of wrench flats.

Table 1—Envelope and Mounting Dimensions

Bore	E	EE		F	FB	G	J	K	R	TF	UF	Add Stroke		
		NPTF [Ⓣ]	SAE*									LB	LG	P
7	8½	1¼	20	1	1⅜	2¾	2¾	1¼	6.58	10⅝	12⅝	9½	8½	5½
8	9½	1½	24	1	1⅝	3	3	1½	7.50	11⅜	14	10½	9½	6¼

* SAE straight thread ports are standard and are indicated by port number.

Ⓣ NPTF ports are available at no extra charge.

Table 2—Rod Dimensions

Bore	Rod Dia. MM	Thread		Rod Extensions and Pilot Dimensions										Add Stroke		
		Style 4 CC	Style 2 & 3 KK	A	+0.000 -0.002 B	C	D	LAF	NA	RD (Max.)	RT	VF	WF	Y	ZB	
7	3	2¾-12	2¼-12	3½	3.749	1	2⅝	5¾	2⅞	5⅞	7⅞	7⅞	5⅞	2¼	3¾	12
	5	4¾-12	3½-12	5	5.749	1	—	7¼	4⅞	7⅞	15⅞	5⅞	2¼	3¾	12	
	3½	3¼-12	2½-12	3½	4.249	1	3	5¾	3⅞	5⅞	15⅞	5⅞	2¼	3¾	12	
	4	3¾-12	3-12	4	4.749	1	3⅞	6¼	3⅞	6⅞	15⅞	5⅞	2¼	3¾	12	
8	3½	3¼-12	2½-12	3½	4.249	1	3	5¾	3⅞	5⅞	15⅞	5⅞	2¼	3⅞	13¼	
	5½	5¼-12	4-12	5½	6.249	1	—	7¾	5⅞	7⅞	15⅞	5⅞	2¼	3⅞	13¼	
	4	3¾-12	3-12	4	4.749	1	3⅞	6¼	3⅞	6⅞	15⅞	5⅞	2¼	3⅞	13¼	
	5	4¾-12	3½-12	5	5.749	1	—	7¼	4⅞	7⅞	15⅞	5⅞	2¼	3⅞	13¼	

**Table 3 —
Envelope and
Mounting
Dimensions**

B

PL-2

PH-2

PH-3

PHX

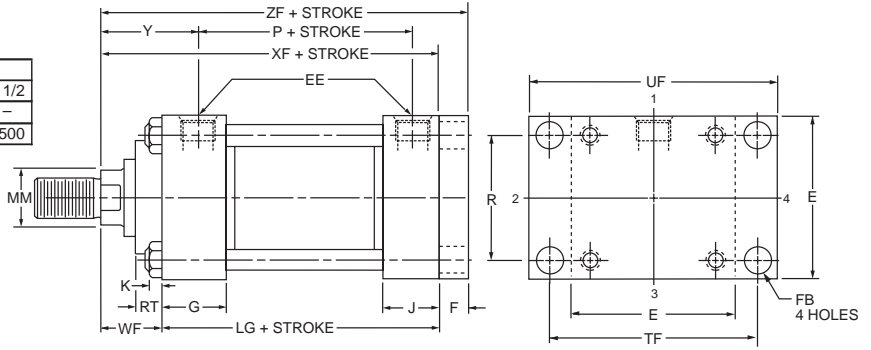
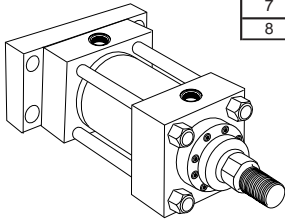
SHM

CHE/CHD

Cap Rectangular
Flange Mount
NFFPA Style MF2

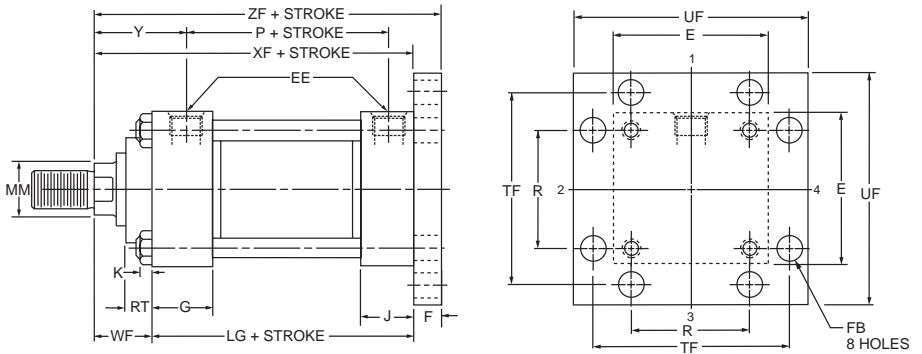
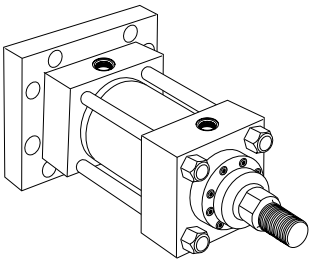
Maximum Pressure Rating - PSI
Pull Application

Bore	Rod Dia				
	3	3 1/2	4	5	5 1/2
7	2000	2000	2500	3000	-
8	-	1700	1700	2200	2500

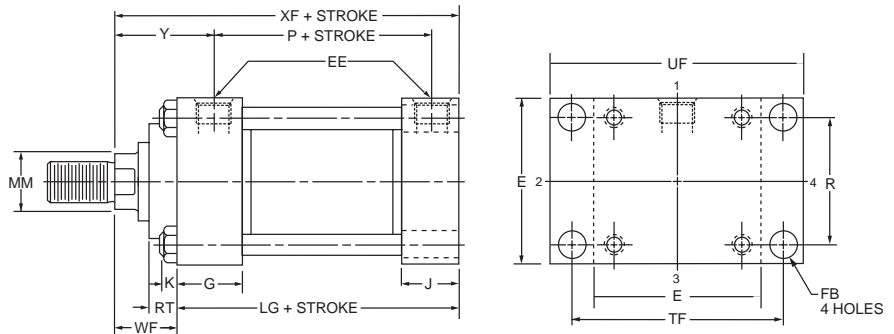
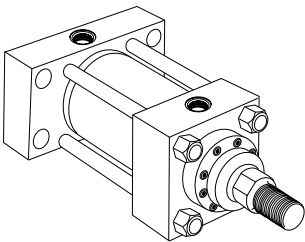


For pressures exceeding those shown use Style MF6 or Style ME6.

Cap Square Flange Mount
NFFPA Style MF6

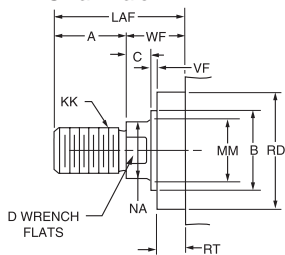


Cap Rectangular Mount
NFFPA Style ME6

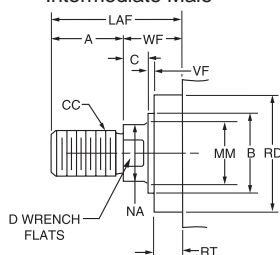


Rod End Dimensions — see Table 2

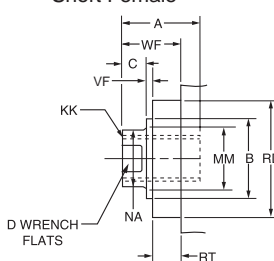
Thread Style 2
Small Male



Thread Style 4
Intermediate Male



Thread Style 3
Short Female



Style 3 stroke restrictions may apply. See Style 3 Minimum Stroke page for details.

“Special” Thread
Style 0

Special thread, extension, rod eye, blank, etc., are also available.

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Table 1—Envelope and Mounting Dimensions

Bore	E	EE		F	FB	G	J	K	R	TF	UF	Add Stroke	
		NPTF [⊖]	SAE*									LG	P
7	8½	1¼	20	1	1³/₁₆	2¾	2¾	1¼	6.58	10⁵/₈	12⁵/₈	8½	5½
8	9½	1½	24	1	1⁵/₁₆	3	3	1½	7.50	11¹³/₁₆	14	9½	6¼

* SAE straight thread ports are standard and are indicated by port number.

⊖ NPTF ports are available at no extra charge.

Table 2—Rod Dimensions

Bore	Rod Dia. MM	Thread		Rod Extensions and Pilot Dimensions										Add Stroke		
		Style 4 CC	Style 2 & 3 KK	A	+0.000 -0.002 B	C	D	LAF	NA	RD (Max.)	RT	VF	WF	Y	XF	ZF
7	3	2¾-12	2¼-12	3½	3.749	1	2⁵/₈	5¾	2⁷/₈	5⁷/₁₆	⁷/₈	⁵/₁₆	2¼	3¾	10³/₄	11³/₄
	5	4¾-12	3½-12	5	5.749	1	—	7¼	4⁷/₈	7⁷/₁₆	¹⁵/₁₆	⁵/₁₆	2¼	3¾	10³/₄	11³/₄
	3½	3¼-12	2½-12	3½	4.249	1	3	5¾	3³/₈	5¹⁵/₁₆	¹⁵/₁₆	⁵/₁₆	2¼	3¾	10³/₄	11³/₄
	4	3¾-12	3-12	4	4.749	1	3³/₈	6¼	3⁷/₈	6⁵/₁₆	¹⁵/₁₆	⁵/₁₆	2¼	3¾	10³/₄	11³/₄
8	3½	3¼-12	2½-12	3½	4.249	1	3	5¾	3³/₈	5¹⁵/₁₆	¹⁵/₁₆	⁵/₁₆	2¼	3⁷/₈	11³/₄	12³/₄
	5½	5¼-12	4-12	5½	6.249	1	—	7¾	5³/₈	7¹⁵/₁₆	¹⁵/₁₆	⁵/₁₆	2¼	3⁷/₈	11³/₄	12³/₄
	4	3¾-12	3-12	4	4.749	1	3³/₈	6¼	3⁷/₈	6⁵/₁₆	¹⁵/₁₆	⁵/₁₆	2¼	3⁷/₈	11³/₄	12³/₄
	5	4¾-12	3½-12	5	5.749	1	—	7¼	4⁷/₈	7⁷/₁₆	¹⁵/₁₆	⁵/₁₆	2¼	3⁷/₈	11³/₄	12³/₄

**Table 3 —
Envelope and
Mounting
Dimensions**

B

PL-2

PH-2

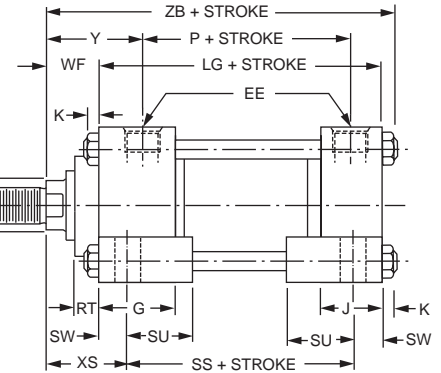
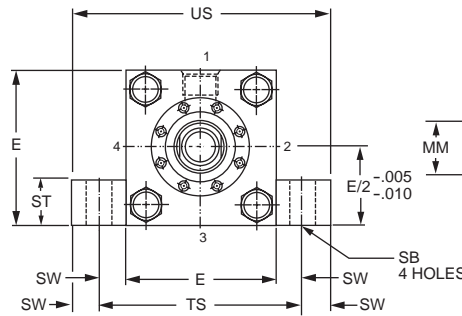
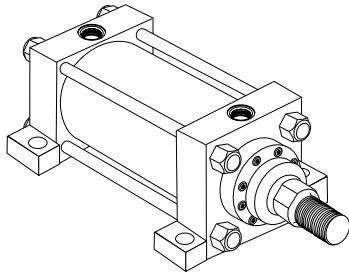
PH-3

PHX

SHM

CHE/CHD

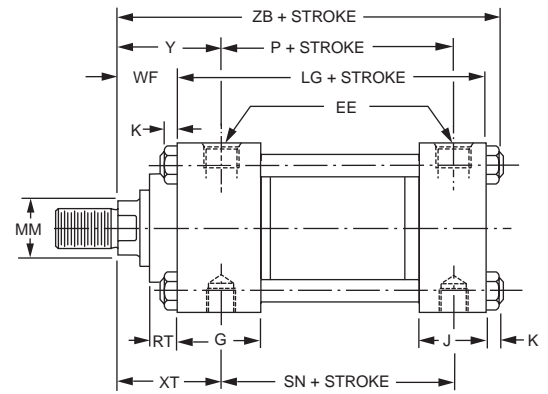
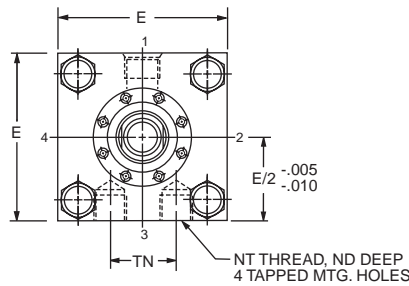
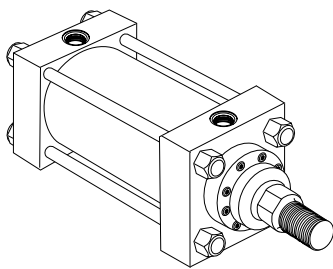
**Side Lug Mount
NFPA Style MS2**



Style MS2 cylinders have mounting lugs welded to the head and cap, and are considered to be a fixed mount that does not absorb force on its centerline. The plane of the mounting surface is not through the centerline of the cylinder, and for this reason Style MS2 cylinders produce a turning moment as the cylinder applies force to the load. This turning moment tends to rotate the

cylinder about its mounting bolts. If the cylinder is not well secured to the machine member on which it is mounted or the load is not well-guided, this turning moment results in side load applied to rod gland and piston bearings. **To avoid this problem, Style MS2 cylinders should be specified with a stroke length at least equal to the bore size.**

**Side Tap Mount
NFPA Style MS4**

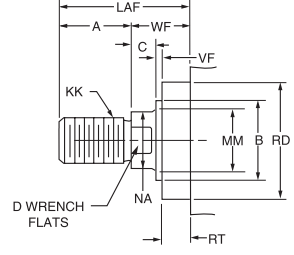


Style MS4 cylinders have side tapped holes for flush mounting, and are considered to be a fixed mount that does not absorb force on its centerline. The plane of the mounting surface is not through the centerline of the cylinder, and for this reason Style MS4 cylinders produce a turning moment as the cylinder applies force to the load. This turning moment tends to rotate the cylinder

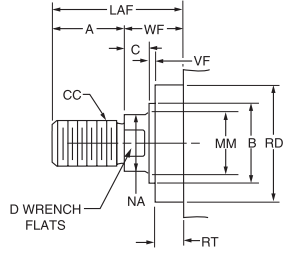
about its mounting bolts. If the cylinder is not well secured to the machine member on which it is mounted or the load is not well-guided, this turning moment results in side load applied to rod gland and piston bearings. **To avoid this problem, Style MS4 cylinders should be specified with a stroke length at least equal to the bore size.**

Rod End Dimensions — see Table 2

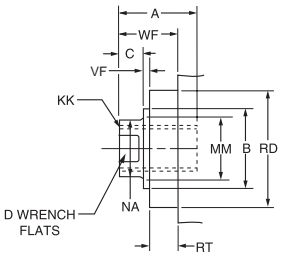
**Thread Style 2
Small Male**



**Thread Style 4
Intermediate Male**



**Thread Style 3
Short Female**



Over 2" rod sizes or special rod ends are cut threads. Style 2 rod ends are recommended where the workpiece is secured against the rod shoulder. When the workpiece is not shouldered, style 4 rod ends are recommended over 2" piston rod diameters. Use

style 3 for applications where female rod end threads are required. If rod end is not specified, style 2 will be supplied. On 5" rods and above, (4) .515 dia. spanner wrench holes will be provided instead of wrench flats.

Style 3 stroke restrictions may apply. See Style 3 Minimum Stroke page for details.

"Special" Thread Style 0

Special thread, extension, rod eye, blank, etc., are also available. To order, specify "Style 0" and give desired dimensions for KK, A and WF. If otherwise special, furnish dimensioned sketch.

Table 1—Envelope and Mounting Dimensions

Bore	E	EE		G	J	K	NT	SB	ST	SU	SW	TN	TS	US	Add Stroke			
		NPTF [⊖]	SAE*												LG	P	SN	SS
7	8 1/2	1 1/4	20	2 3/4	2 3/4	1 1/4	1 1/2-6	1 9/16	1 3/4	2 7/8	1 3/8	3 3/4	11 1/4	14	8 1/2	5 1/2	5 7/8	5 3/4
8	9 1/2	1 1/2	24	3	3	1 1/2	1 1/2-6	1 9/16	1 3/4	2 7/8	1 3/8	4 1/4	12 1/4	15	9 1/2	6 1/4	6 5/8	6 3/4

* SAE straight thread ports are standard and are indicated by port number.

⊖ NPTF ports are available at no extra charge.

**Table 3 —
Envelope and
Mounting
Dimensions**

Table 2—Rod Dimensions

Bore	Rod Dia. MM	Thread		Rod Extensions and Pilot Dimensions										ND	XS	XT	Y	ZB	Add Stroke
		Style 4 CC	Style 2 & 3 KK	A	+0.000 -0.002 B	C	D	LAF	NA	RD (Max.)	RT	VF	WF						
7	3	2 3/4-12	2 1/4-12	3 1/2	3.749	1	2 5/8	5 3/4	2 7/8	5 7/16	7/8	5/16	2 1/4	1 1/8	3 5/8	3 13/16	3 3/4	12	
	5	4 3/4-12	3 1/2-12	5	5.749	1	—	7 1/4	4 7/8	7 7/16	15/16	5/16	2 1/4	1 1/8	3 5/8	3 13/16	3 3/4	12	
	3 1/2	3 1/4-12	2 1/2-12	3 1/2	4.249	1	3	5 3/4	3 3/8	5 15/16	15/16	5/16	2 1/4	1 1/8	3 5/8	3 13/16	3 3/4	12	
	4	3 3/4-12	3-12	4	4.749	1	3 3/8	6 1/4	3 7/8	6 5/16	15/16	5/16	2 1/4	1 1/8	3 5/8	3 13/16	3 3/4	12	
8	3 1/2	3 1/4-12	2 1/2-12	3 1/2	4.249	1	3	5 3/4	3 3/8	5 15/16	15/16	5/16	2 1/4	1 1/2	3 5/8	3 15/16	3 7/8	13 1/4	
	5 1/2	5 1/4-12	4-12	5 1/2	6.249	1	—	7 3/4	5 3/8	7 15/16	15/16	5/16	2 1/4	1 5/16	3 5/8	3 15/16	3 7/8	13 1/4	
	4	3 3/4-12	3-12	4	4.749	1	3 3/8	6 1/4	3 7/8	6 5/16	15/16	5/16	2 1/4	1 1/2	3 5/8	3 15/16	3 7/8	13 1/4	
	5	4 3/4-12	3 1/2-12	5	5.749	1	—	7 1/4	4 7/8	7 7/16	15/16	5/16	2 1/4	1 1/2	3 5/8	3 15/16	3 7/8	13 1/4	

B

PL-2

PH-2

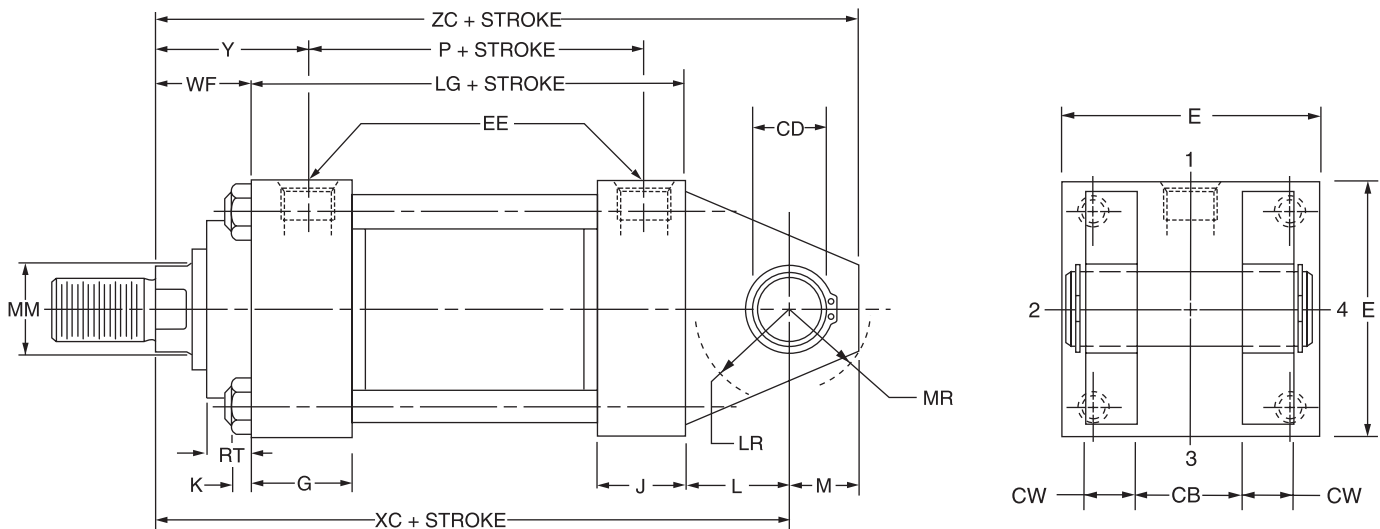
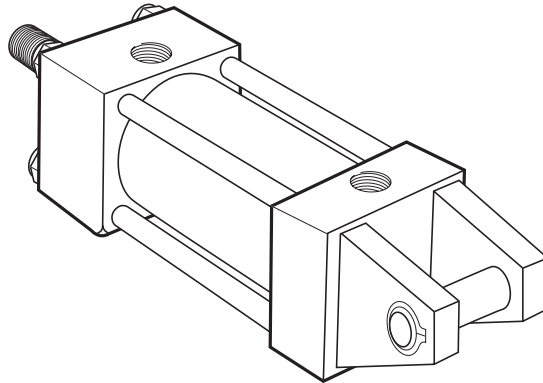
PH-3

PHX

SHM

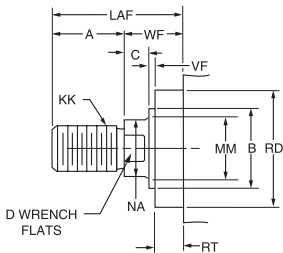
CHE/CHD

Cap Fixed Clevis Mount
NFA Style MP1

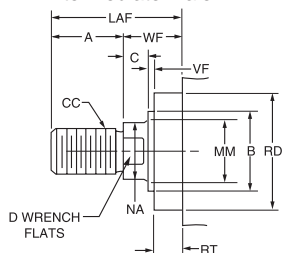


Rod End Dimensions — see Table 2

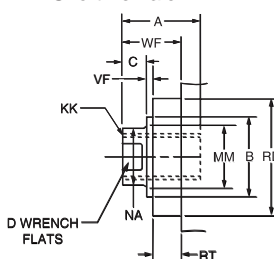
Thread Style 2
Small Male



Thread Style 4
Intermediate Male



Thread Style 3
Short Female



Style 3 stroke restrictions may apply. See Style 3 Minimum Stroke page for details.

“Special” Thread Style 0

Special thread, extension, rod eye, blank, etc., are also available.

To order, specify “Style 0” and give desired dimensions for KK , A and WF . If otherwise special, furnish dimensioned sketch.

Over 2" rod sizes or special rod ends are cut threads. Style 2 rod ends are recommended where the workpiece is secured against the rod shoulder. When the workpiece is not shouldered, style 4 rod ends are recommended over 2" piston rod diameters. Use

style 3 for applications where female rod end threads are required. If rod end is not specified, style 2 will be supplied. On 5" rods and above, (4) .515 dia. spanner wrench holes will be provided instead of wrench flats.

Table 1—Envelope and Mounting Dimensions

Bore	CB	+.000 -.002 CD†	CW	E	EE		G	J	K	L	LR	M	MR	R	Add Stroke	
					NPTF⊖	SAE*									LG	P
7	3	2.501	1½	8½	1¼	20	2¾	2¾	1¼	3	2¾	2½	2⅞	6.58	8½	5½
8	3	3.001	1½	9½	1½	24	3	3	1½	3¼	3¼	2¾	3⅞	7.50	9½	6¼

* SAE straight thread ports are standard and are indicated by port number.

⊖ NPTF ports are available at no extra charge.

† Dimension CD is pin diameter.

Table 2—Rod Dimensions

Bore	Rod Dia. MM	Thread		Rod Extensions and Pilot Dimensions										Add Stroke		
		Style 4 CC	Style 2 & 3 KK	A	+.000 -.002 B	C	D	LAF	NA	RD (Max.)	RT	VF	WF	Y	XC	ZC
7	3	2¾-12	2¼-12	3½	3.749	1	2⅝	5¾	2⅞	5⅞	7/8	5/16	2¼	3¾	13¾	16¼
	5	4¾-12	3½-12	5	5.749	1	—	7¼	4⅞	7⅞	15/16	5/16	2¼	3¾	13¾	16¼
	3½	3¼-12	2½-12	3½	4.249	1	3	5¾	3¾	5½	15/16	5/16	2¼	3¾	13¾	16¼
	4	3¾-12	3-12	4	4.749	1	3⅝	6¼	3⅞	6½	15/16	5/16	2¼	3¾	13¾	16¼
8	3½	3¼-12	2½-12	3½	4.249	1	3	5¾	3¾	5½	15/16	5/16	2¼	3⅞	15	17¾
	5½	5¼-12	4-12	5½	6.249	1	—	7¾	5¾	7½	15/16	5/16	2¼	3⅞	15	17¾
	4	3¾-12	3-12	4	4.749	1	3⅝	6¼	3⅞	6½	15/16	5/16	2¼	3⅞	15	17¾
	5	4¾-12	3½-12	5	5.749	1	—	7¼	4⅞	7⅞	15/16	5/16	2¼	3⅞	15	17¾

**Table 3 —
Envelope and
Mounting
Dimensions**

B

PL-2

PH-2

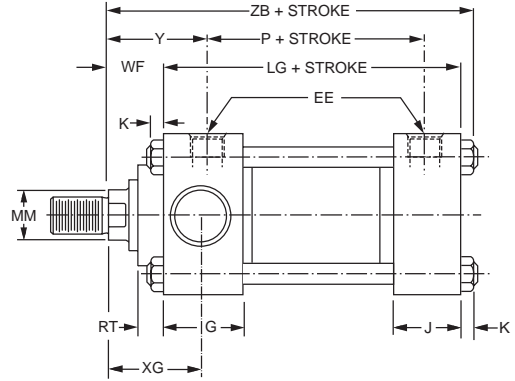
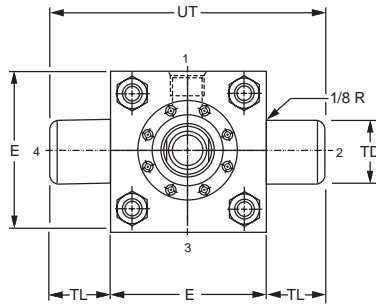
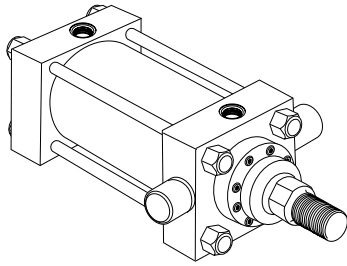
PH-3

PHX

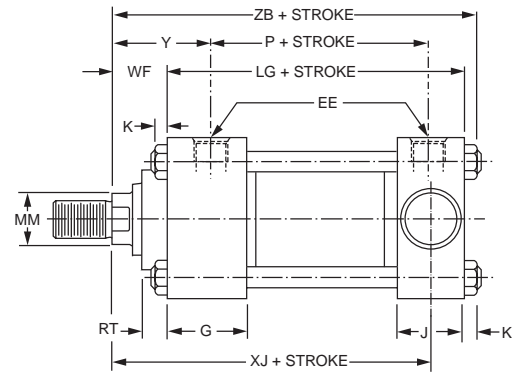
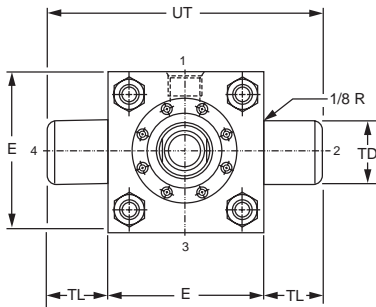
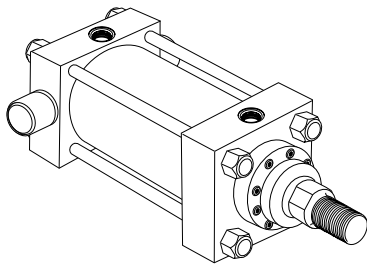
SHM

CHE/CHD

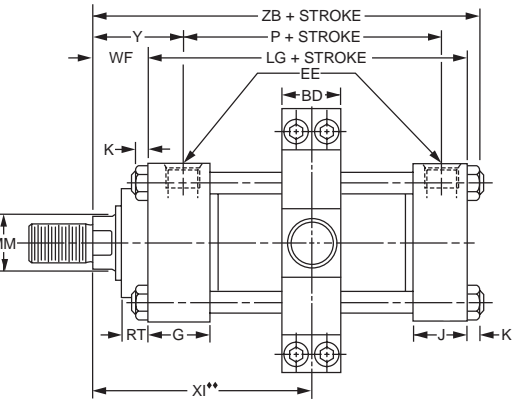
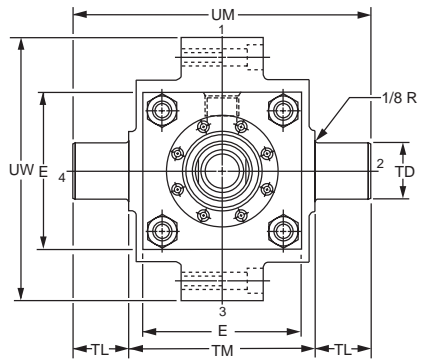
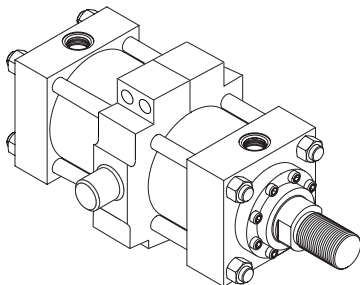
**Head Trunnion Mount
NFFPA Style MT1**



**Cap Trunnion Mount
NFFPA Style MT2**



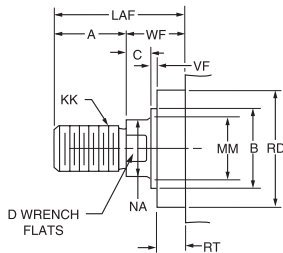
**Intermediate Trunnion Mount
NFFPA Style MT4**



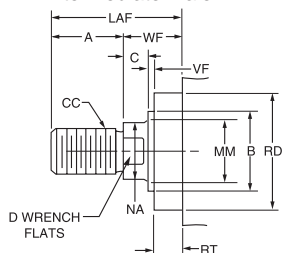
◆◆ Dimension XI to be specified by customer.

Rod End Dimensions — see Table 2

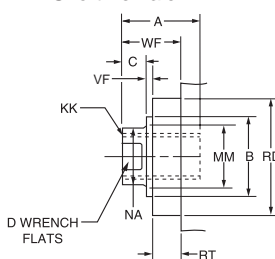
**Thread Style 2
Small Male**



**Thread Style 4
Intermediate Male**



**Thread Style 3
Short Female**



**“Special” Thread
Style 0**

Special thread, extension, rod eye, blank, etc., are also available.

To order, specify “Style 0” and give desired dimensions for KK, A and WF. If otherwise special, furnish dimensioned sketch.

Style 3 stroke restrictions may apply. See Style 3 Minimum Stroke page for details.

Over 2" rod sizes or special rod ends are cut threads. Style 2 rod ends are recommended where the workpiece is secured against the rod shoulder. When the workpiece is not shouldered, style 4 rod ends are recommended over 2" piston rod diameters. Use

style 3 for applications where female rod end threads are required. If rod end is not specified, style 2 will be supplied. On 5" rods and above, (4) .515 dia. spanner wrench holes will be provided instead of wrench flats.

Table 1—Envelope and Mounting Dimensions

Bore	BD	E	EE		G	J	K	+.000 -.002 TD	TL	TM	UM	UT	UW	Add Stroke	
			NPTF [Ⓣ]	SAE*										LG	P
7	3	8 1/2	1 1/4	20	2 3/4	2 3/4	1 1/4	2.500	2 1/2	9 3/4	14 3/4	13 1/2	11 1/2	8 1/2	5 1/2
8	3 1/2	9 1/2	1 1/2	24	3	3	1 1/2	3.000	3	11	17	15 1/2	13 3/8	9 1/2	6 1/4

* SAE straight thread ports are standard and are indicated by port number.

Ⓣ NPTF ports are available at no extra charge.

Table 3 —
Envelope and
Mounting Dimensions

Table 2—Rod Dimensions

Bore	Rod Dia. MM	Thread		Rod Extensions and Pilot Dimensions										Add Stroke				
		Style 4 CC	Style 2 & 3 KK	A	+.000 -.002 B	C	D	LAF	NA	RD (Max.)	RT	VF	WF	XG	Min. XI**	Y	XJ	ZB
7	3	2 3/4-12	2 1/4-12	3 1/2	3.749	1	2 5/8	5 3/4	2 7/8	5 7/16	7/8	5/16	2 1/4	3 5/8	6 9/16	3 3/4	9 3/8	12
	5	4 3/4-12	3 1/2-12	5	5.749	1	—	7 1/4	4 7/8	7 7/16	1 5/16	5/16	2 1/4	3 5/8	6 9/16	3 3/4	9 3/8	12
	3 1/2	3 1/4-12	2 1/2-12	3 1/2	4.249	1	3	5 3/4	3 3/8	5 15/16	1 5/16	5/16	2 1/4	3 5/8	6 9/16	3 3/4	9 3/8	12
	4	3 3/4-12	3-12	4	4.749	1	3 3/8	6 1/4	3 7/8	6 5/16	1 5/16	5/16	2 1/4	3 5/8	6 9/16	3 3/4	9 3/8	12
8	3 1/2	3 1/4-12	2 1/2-12	3 1/2	4.249	1	3	5 3/4	3 3/8	5 15/16	1 5/16	5/16	2 1/4	3 3/4	7 1/16	3 7/8	10 1/4	13 1/4
	5 1/2	5 1/4-12	4-12	5 1/2	6.249	1	—	7 3/4	5 3/8	7 15/16	1 5/16	5/16	2 1/4	3 3/4	7 1/16	3 7/8	10 1/4	13 1/4
	4	3 3/4-12	3-12	4	4.749	1	3 3/8	6 1/4	3 7/8	6 5/16	1 5/16	5/16	2 1/4	3 3/4	7 1/16	3 7/8	10 1/4	13 1/4
	5	4 3/4-12	3 1/2-12	5	5.749	1	—	7 1/4	4 7/8	7 7/16	1 5/16	5/16	2 1/4	3 3/4	7 1/16	3 7/8	10 1/4	13 1/4

**Dimension XI to be specified by customer.

B

PL-2

PH-2

PH-3

PHX

SHM

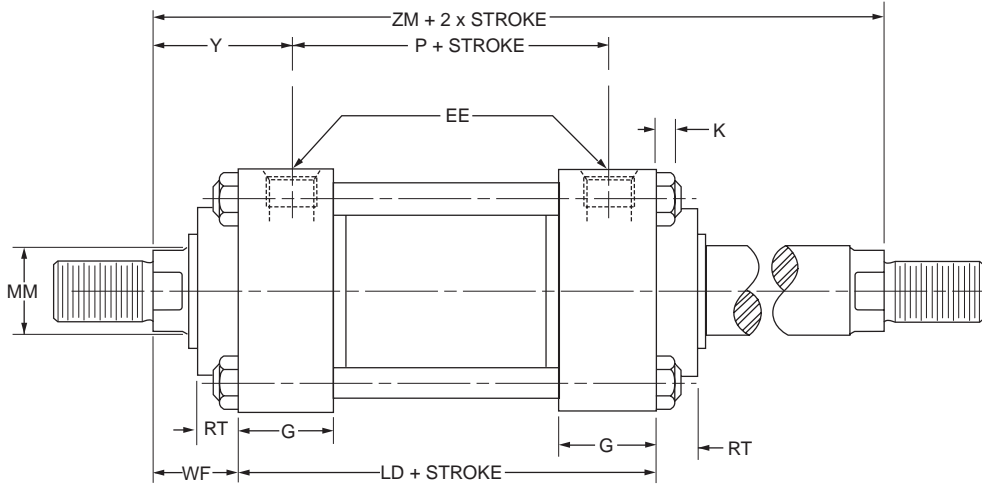
CHE/CHD

How to Use Double Rod Cylinder Dimension Drawings

To determine dimensions for a double rod cylinder, first refer to the desired single rod mounting style cylinder shown on preceding pages of this catalog. After selecting necessary dimensions from that drawing return to this page, supplement the single rod dimensions with those shown on drawing and dimension table below. Note that double rod cylinders have a head (Dim. G) at both ends and that dimension LD replaces LG. The double rod dimensions differ from, or are in addition to, those for single rod cylinders shown on preceding pages and provide the information needed to completely dimension a double rod cylinder.

On a double rod cylinder where the two rod ends are different, be sure to clearly state which rod end is to be assembled at which end. Port position 1 is standard. If other than standard, specify pos. 2, 3 or 4 when viewed from one end only.

All dimensions are in inches and apply to smallest rod sizes only. For alternate rod sizes, determine all envelope dimensions (within LD dim.) as described above and then use appropriate rod end dimensions for proper rod size from single rod cylinder.



Bore	Rod Dia. MM	Add Stroke			Add 2X Stroke
		LD	Model MDS4 SN	Model MDS2 SS	ZM
7	3	8½	5¾	5¾	13
8	3½	9½	6⅛	6¾	14

Linear Alignment Couplers are available in 12 standard thread sizes...

Cost Saving Features and Benefits Include:

- Maximum reliability for trouble-free operation, long life and lower operating costs
- Increased cylinder life by reducing wear on piston and rod bearings
- Simplified cylinder installation and reduced assembly costs
- Increased rod bearing and rod seal life for lower maintenance costs

Alignment Coupler

See Table 1 for Part Numbers and Dimensions

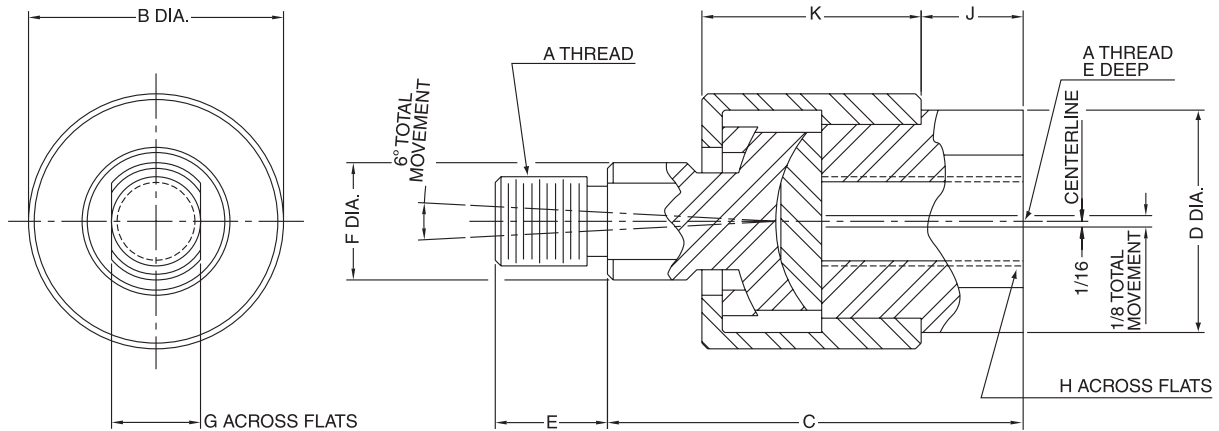


Table 1 — Part Numbers and Dimensions

Part No.	A	B	C	D	E	F	G	H	J	K	Max. Pull Load (lbs.)	Approx. Weight (lbs.)
1347570031	5/16-24	1 1/8	1 3/4	15/16	1/2	1/2	3/8	3/4	3/8	15/16	1200	.35
1347570038	3/8-24	1 1/8	1 3/4	15/16	1/2	1/2	3/8	3/4	3/8	15/16	2425	.35
1347570044	7/16-20	1 3/8	2	1 1/8	3/4	5/8	1/2	7/8	3/8	1 3/32	3250	.55
1347570050	1/2-20	1 3/8	2	1 1/8	3/4	5/8	1/2	7/8	3/8	1 3/32	4450	.55
1347570063	5/8-18	1 3/8	2	1 1/8	3/4	5/8	1/2	7/8	3/8	1 3/32	6800	.55
1347570075	3/4-16	2	2 5/16	1 5/8	1 1/8	15/16	3/4	1 5/16	7/16	1 9/32	9050	1.4
1347570088	7/8-14	2	2 5/16	1 5/8	1 1/8	15/16	3/4	1 5/16	7/16	1 9/32	14450	1.4
1347570100	1-14	3 1/8	3	2 3/8	1 5/8	1 7/16	1 1/4	1 7/8	3/4	1 25/32	19425	4.8
1347570125	1 1/4-12	3 1/8	3	2 3/8	1 5/8	1 7/16	1 1/4	1 7/8	3/4	1 25/32	30500	4.8
1337390125	1 1/4-12	3 1/2	4	2	2	1 1/2	1 1/4	1 11/16	3/4	2 1/2	30500	6.9
1337390150	1 1/2-12	4	4 3/8	2 1/4	2 1/4	1 3/4	1 1/2	1 15/16	7/8	2 3/4	45750	9.8
1337390175	1 3/4-12	4	4 3/8	2 1/4	2 1/4	1 3/4	1 1/2	1 15/16	7/8	2 3/4	58350	9.8
1337390188	1 7/8-12	5	5 5/8	3	3	2 1/4	1 15/16	2 5/8	1 3/8	3 3/8	67550	19.8

How to Order Linear Alignment Couplers — When ordering a cylinder with a threaded male rod end, specify the coupler of equal thread size by part number as listed in Table 1, i.e.; Piston Rod "KK" dimension is 3/4" - 16", specify coupler part number 1347570075.

Cylinder Accessories

Schrader Bellows offers a complete range of cylinder accessories to assure you of the greatest versatility in present and future cylinder applications.

Rod End Accessories

Accessories offered for the rod end of the cylinder include Rod Clevis, Eye Bracket, Knuckle, Clevis Bracket, and Pivot Pin. To select the proper part number for any desired accessory, refer to the table below or on the opposite page and look in the row to the right of the rod thread in the first column. For economical accessory selection, it is recommended that rod end style 2 be specified on your cylinder order.

Accessory Load Capacity

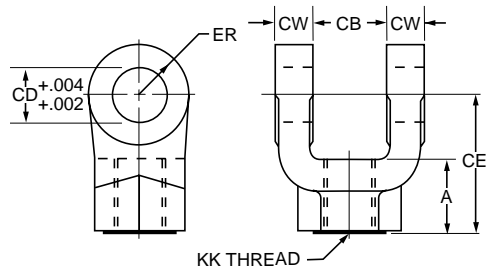
The various accessories have been load rated for your convenience. The Load Capacity in lbs. is the recommended maximum load for that accessory based on a 4:1 design factor in tension. (Pivot Pin is rated in shear.) Before specifying, compare the actual load or the tension (pull) force at maximum operating pressure of the cylinder with the load capacity of the accessory you plan to use. If load or pull force of cylinder exceeds load capacity of accessory, consult factory.

Thread Size	Rod Clevis		Mounting Plate or Eye Bracket		Pivot Pin	
	Part Number	Load Capacity (Lbs.)	Part Number	Load Capacity (Lbs.)	Part Number	Shear Capacity (Lbs.)
5/16-24	0512210000†	2600	0740770000	1700	—	—
7/16-20	0509400000	4250	0691950000	4100	0683680000	8600
1/2-20	0509410000	4900	0691950000	4100	0683680000	8600
3/4-16	0509420000	11200	0691960000	10500	0683690000	19300
3/4-16	1332840000	11200	0691960000	10500	0683690000	19300
7/8-14	0509430000	18800	*0853610000	20400	0683700000	34300
1-14	0509440000	19500	*0853610000	20400	0683700000	34300
1-14	1332850000	19500	*0853610000	20400	0683700000	34300
1 1/4-12	0509450000	33500	0691980000	21200	0683710000	65000
1 1/4-12	1332860000	33500	0691980000	21200	0683710000	65000
1 1/2-12	0509460000	45600	*0853620000	49480	0683720000	105200
1 3/4-12	0509470000	65600	*0853630000	70000	0683730000	137400
1 7/8-12	0509480000	65600	*0853630000	70000	0683730000	137400
2 1/4-12	0509490000	98200	*0853640000	94200	0683740000	214700
2 1/2-12	0509500000	98200	*0853650000	121900	0683750000	309200
2 3/4-12	0509510000	98200	*0853650000	121900	0683750000	309200
3 1/4-12	0509520000	156700	0735380000	57400	0735450000	420900
3 1/2-12	0509530000	193200	0735390000	75000	0735470000	565800
4-12	0509540000	221200	0735390000	75000	0735470000	565800

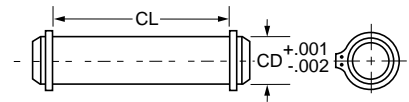
† Includes pivot pin.

* Cylinder accessory dimensions conform to NFPA recommended standard NFPA/T3.6.8 R1-1984, NFPA recommended standard fluid power systems – cylinder – dimensions for accessories for cataloged square head industrial cylinders.

Rod Clevis Dimensions



Pivot Pin Dimensions



Part Number	A	CB	CD	CE	CW	ER	KK
0512210000†	13/16	11/32	5/16	2 1/4	13/64	19/64	5/16-24
0509400000	3/4	3/4	1/2	1 1/2	1/2	1/2	7/16-20
0509410000	3/4	3/4	1/2	1 1/2	1/2	1/2	1/2-20
0509420000	1 1/8	1 1/4	3/4	2 1/8	5/8	3/4	3/4-16
1332840000	1 1/8	1 1/4	3/4	2 3/8	5/8	3/4	3/4-16
0509430000	1 5/8	1 1/2	1	2 15/16	3/4	1	7/8-14
0509440000	1 5/8	1 1/2	1	2 15/16	3/4	1	1-14
1332850000	1 5/8	1 1/2	1	3 1/8	3/4	1	1-14
0509450000	1 7/8	2	1 3/8	3 3/4	1	1 3/8	1 1/4-12
1332860000	2	2	1 3/8	4 1/8	1	1 3/8	1 1/4-12
0509460000	2 1/4	2 1/2	1 3/4	4 1/2	1 1/4	1 3/4	1 1/2-12
0509470000	3	2 1/2	2	5 1/2	1 1/4	2	1 3/4-12
0509480000	3	2 1/2	2	5 1/2	1 1/4	2	1 7/8-12
0509490000	3 1/2	3	2 1/2	6 1/2	1 1/2	2 1/2	2 1/4-12
0509500000	3 1/2	3	3	6 3/4	1 1/2	2 3/4	2 1/2-12
0509510000	3 1/2	3	3	6 3/4	1 1/2	2 3/4	2 3/4-12
0509520000	3 1/2‡	4	3 1/2	7 3/4	2	3 1/2	3 1/4-12
0509530000	4‡	4 1/2	4	8 13/16	2 1/4	4	3 1/2-12
0509540000	4‡	4 1/2	4	8 13/16	2 1/4	4	4-12

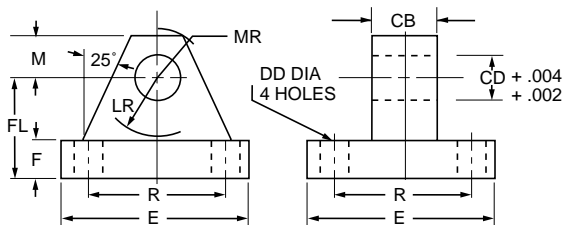
Part Number	CD	CL
0683680000	1/2	1 7/8
0683690000	3/4	2 5/8
0683700000	1	3 1/8
0683710000	1 3/8	4 1/8
0683720000	1 3/4	5 3/16
0683730000	2	5 3/16
0683740000	2 1/2	6 3/16
0683750000	3	6 1/4
0735450000	3 1/2	8 1/4
0735470000	4	9

† Includes Pivot Pin

‡ Consult appropriate cylinder rod end dimensions for compatibility.

1. Pivot Pins are furnished with Clevis Mounted Cylinders as standard.
2. Pivot Pins are furnished with (2) Retainer Rings.
3. Pivot Pins must be ordered as a separate item if to be used with Knuckles, Rod Clevises, or Clevis Brackets.

Mounting Plate or Eye Bracket Dimensions



1. When used to mate with the Rod Clevis, select by thread size in table on opposite page.
2. When used to mount the Style PB1 Cylinders, select by bore size below.

Part Number	CB	CD	DD	E	F	FL	LR	M	MR	R	Bore
0740770000	5/16	5/16	17/64	2 1/4	3/8	1	5/8	3/8	1/2	1.75	-
0691950000	3/4	1/2	13/32	2 1/2	3/8	1 1/8	3/4	1/2	9/16	1.63	-
0691960000	1 1/4	3/4	17/32	3 1/2	5/8	1 7/8	1 1/4	3/4	7/8	2.55	-
*0853610000	1 1/2	1	21/32	4 1/2	7/8	2 3/8	1 1/2	1	1 1/4	3.25	-
0691980000	2	1 3/8	21/32	5	7/8	3	2 1/8	1 3/8	1 5/8	3.82	-
*0853620000	2 1/2	1 3/4	29/32	6 1/2	1 1/8	3 3/8	2 1/4	1 3/4	2 1/8	4.95	-
*0853630000	2 1/2	2	1 1/16	7 1/2	1 1/2	4	2 1/2	2	2 7/16	5.73	-
*0853640000	3	2 1/2	1 3/16	8 1/2	1 3/4	4 3/4	3	2 1/2	3	6.58	7"
*0853650000	3	3	1 5/16	9 1/2	2	5 1/4	3 1/4	2 3/4	3 1/4	7.50	8"
0735380000	4	3 1/2	1 13/16	12 5/8	1 11/16	5 11/16	4	3 1/2	4 1/8	9.62	-
0735390000	4 1/2	4	2 1/16	14 7/8	1 15/16	6 7/16	4 1/2	4	5 1/4	11.45	-

* Cylinder accessory dimensions conform to NFPA recommended standard NFPA/T3.6.8 R1-1984, NFPA recommended standard fluid power systems - cylinder - dimensions for accessories for cataloged square head industrial cylinders.

Rod End Accessories

Accessories offered for the rod end of the cylinder include Rod Clevis, Eye Bracket, Knuckle, Clevis Bracket, and Pivot Pin. To select the proper part number for any desired accessory, refer to the table below or on the opposite page and look in the row to the right of the rod thread in the first column. For economical accessory selection, it is recommended that rod end style 2 be specified on your cylinder order.

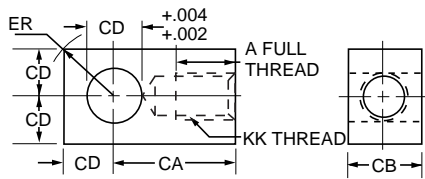
Accessory Load Capacity

The various accessories have been load rated for your convenience. The Load Capacity in lbs. is the recommended maximum load for that accessory based on a 4:1 design factor in tension. (Pivot Pin is rated in shear.) Before specifying, compare the actual load or the tension (pull) force at the maximum operating pressure of the cylinder with the load capacity of the accessory you plan to use. If load or pull force of cylinder exceeds load capacity of accessory, consult factory.

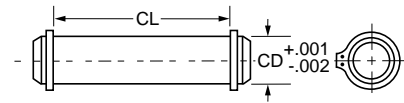
Thread Size	Knuckle		Clevis Bracket		Pivot Pin	
	Part Number	Load Capacity (Lbs.)	Part Number	Load Capacity (Lbs.)	Part Number	Shear Capacity (Lbs.)
5/16-24	0740750000	3300	0740760000	3600	0740780000	6600
7/16-20	0690890000	5000	0692050000	7300	0683680000	8600
1/2-20	0690900000	5700	0692050000	7300	0683680000	8600
3/4-16	0690910000	12100	0692060000	14000	0683690000	19300
7/8-14	0690920000	13000	0692070000	19200	0683700000	34300
1-14	0690930000	21700	0692070000	19200	0683700000	34300
1 1/4-12	0690940000	33500	0692080000	36900	0683710000	65000
1 1/2-12	0690950000	45000	0692090000	34000	0683720000	105200
1 3/4-12	0690960000	53500	0692100000	33000	0692150000	137400
1 7/8-12	0690970000	75000	0692100000	33000	0692150000	137400
2 1/4-12	0690980000	98700	0692110000	34900	0683740000	214700
2 1/2-12	0690990000	110000	0692120000	33800	0683750000	309200
2 3/4-12	0691000000	123300	0692130000	36900	0692160000	309200
3 1/4-12	0735360000	161300	0735420000	83500	0735450000	420900
3 1/2-12	0734370000	217300	0735420000	83500	0735450000	420900
4-12	0734380000	273800	0735430000	102600	0821810000	565800
4 1/2-12	0734390000	308500	0735440000	108400	0735470000•	565800

• This size supplied with cotter pins.

Knuckle Dimensions



Pivot Pin Dimensions

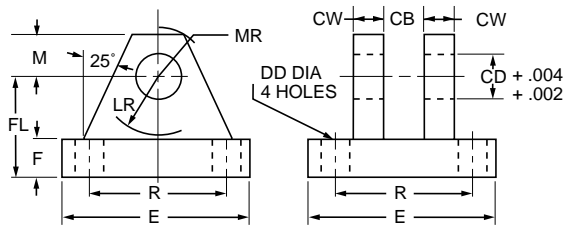


Part Number	A	CA	CB	CD	ER	KK
0740750000	3/4	1 1/2	7/16	7/16	19/32	5/16-24
0690890000	3/4	1 1/2	3/4	1/2	23/32	7/16-20
0690900000	3/4	1 1/2	3/4	1/2	23/32	1/2-20
0690910000	1 1/8	2 1/16	1 1/4	3/4	1 1/16	3/4-16
0690920000	1 1/8	2 3/8	1 1/2	1	1 7/16	7/8-14
0690930000	1 5/8	2 13/16	1 1/2	1	1 7/16	1-14
0690940000	2	3 7/16	2	1 3/8	1 31/32	1 1/4-12
0690950000	2 1/4	4	2 1/2	1 3/4	2 1/2	1 1/2-12
0690960000	2 1/4	4 3/8	2 1/2	2	2 27/32	1 3/4-12
0690970000	3	5	2 1/2	2	2 27/32	1 7/8-12
0690980000	3 1/2	5 13/16	3	2 1/2	3 9/16	2 1/4-12
0690990000	3 1/2	6 1/8	3	3	4 1/4	2 1/2-12
0691000000	3 5/8	6 1/2	3 1/2	3	4 1/4	2 3/4-12
0735360000	4 1/2	7 5/8	4	3 1/2	4 31/32	3 1/4-12
0734370000	5	7 5/8	4	3 1/2	4 31/32	3 1/2-12
0734380000	5 1/2	9 1/8	4 1/2	4	5 11/16	4-12
0734390000	5 1/2	9 1/8	5	4	5 11/16	4 1/2-12

Part Number	CD	CL
0740780000	7/16	1 5/16
0683680000	1/2	1 7/8
0683690000	3/4	2 5/8
0683700000	1	3 1/8
0683710000	1 3/8	4 1/8
0683720000	1 3/4	5 3/16
0692150000	2	5 11/16
0683740000	2 1/2	6 3/16
0683750000	3	6 1/4
0692160000	3	6 3/4
0735450000	3 1/2	8 1/4
0821810000	4	8 5/8
0735470000*	4	9

- * This size supplied with cotter pins.
- 1. Pivot Pins are furnished with Clevis Mounted Cylinders as standard.
- 2. Pivot Pins are furnished with (2) Retainer Rings.
- 3. Pivot Pins must be ordered as a separate item if to be used with Knuckles, Rod Clevises, or Clevis Brackets.

Clevis Bracket Dimensions



Part Number	CB	CD	CW	DD	E	F	FL	LR	M	MR	R
0740760000	15/32	7/16	3/8	17/64	2 1/4	3/8	1	5/8	3/8	1/2	1.75
0692050000	3/4	1/2	1/2	13/32	3 1/2	1/2	1 1/2	3/4	1/2	5/8	2.55
0692060000	1 1/4	3/4	5/8	17/32	5	5/8	1 7/8	1 3/16	3/4	29/32	3.82
0692070000	1 1/2	1	3/4	21/32	6 1/2	3/4	2 1/4	1 1/2	1	1 1/4	4.95
0692080000	2	1 3/8	1	21/32	7 1/2	7/8	3	2	1 3/8	1 21/32	5.73
0692090000	2 1/2	1 3/4	1 1/4	29/32	9 1/2	7/8	3 5/8	2 3/4	1 3/4	2 7/32	7.50
0692100000	2 1/2	2	1 1/2	1 1/16	12 3/4	1	4 1/4	3 3/16	2 1/4	2 25/32	9.40
0692110000	3	2 1/2	1 1/2	1 3/16	12 3/4	1	4 1/2	3 1/2	2 1/2	3 1/8	9.40
0692120000	3	3	1 1/2	1 5/16	12 3/4	1	6	4 1/4	3	3 19/32	9.40
0692130000	3 1/2	3	1 1/2	1 5/16	12 3/4	1	6	4 1/4	3	3 19/32	9.40
0735420000	4	3 1/2	2	1 13/16	15 1/2	1 11/16	6 11/16	5	3 1/2	4 1/8	12.00
0735430000	4 1/2	4	2	2 1/16	17 1/2	1 15/16	7 11/16	5 3/4	4	4 7/8	13.75
0735440000	5	4	2	2 1/16	17 1/2	1 15/16	7 11/16	5 3/4	4	4 7/8	13.75

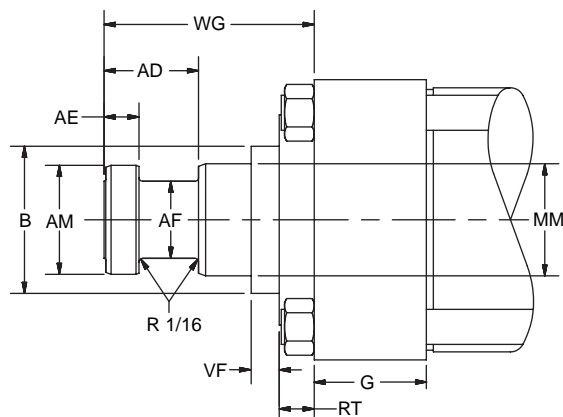
Cylinder accessory dimensions conform to NFPA recommended standard NFPT/T3.6.8 R1-1984, NFPA recommended standard fluid power systems - cylinder - dimensions for accessories for cataloged square head industrial cylinders.

Schrader Bellows “Style 6” Piston Rod End

Rod end flange coupling for Schrader Bellows PH-3 Series Hydraulic Cylinders

- Simplifies alignment
- Reduces assembly time
- Allows full rated hydraulic pressure in push and pull directions

Style 6 Rod End



Dimensions Style 6 Rod End

MM Rod Dia.	AD	AE	AF	AM	WG
3	2 ⁷ / ₁₆	7/8	2 ¹ / ₄	2.95	4 ⁷ / ₈
3 ¹ / ₂	2 ¹¹ / ₁₆	1	2 ¹ / ₂	3.45	5 ⁵ / ₈
4	2 ¹¹ / ₁₆	1	3	3.95	5 ³ / ₄
4 ¹ / ₂	3 ³ / ₁₆	1 ¹ / ₂	3 ¹ / ₂	4.45	6 ¹ / ₂
5	3 ³ / ₁₆	1 ¹ / ₂	3 ⁷ / ₈	4.95	6 ⁵ / ₈
5 ¹ / ₂	3 ¹⁵ / ₁₆	1 ⁷ / ₈	4 ³ / ₈	5.45	7 ¹ / ₂

See Cylinder Catalog for B, G, RT and VF per bore and rod diameter.

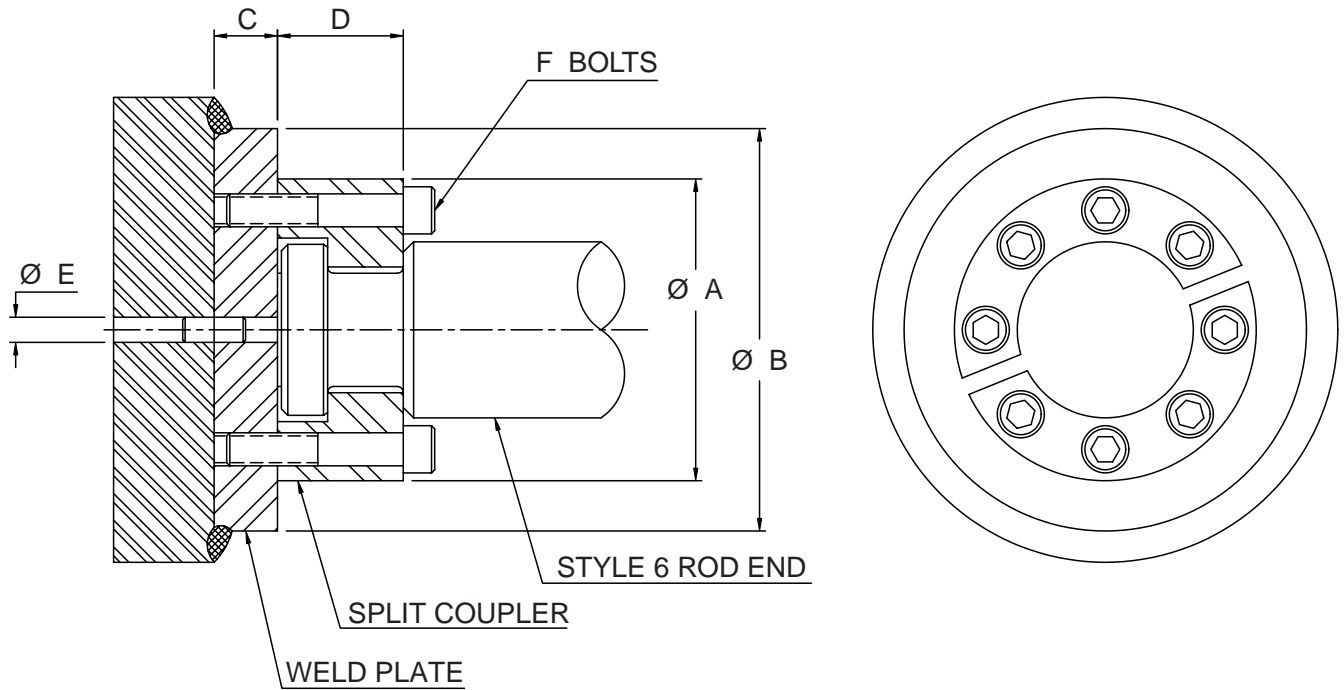
Consult Factory for availability of mounting accessories and Hardware.

How To Order

Complete Model Number and place a “6” in the Piston Rod End designator position.

Example: PHJA73561x12.00

Schrader Bellows “Style 6” Piston Rod End Split Couplers and Weld Plates



⚠ WARNING: Piston rod separation from the machine member can result in severe personal injury or even death to nearby personnel. The cylinder user must make sure the weld holding the weld plate to the machine is of sufficient quality and size to hold the intended load. The cylinder user must also make sure the bolts holding split coupler to the weld plate are of sufficient strength to hold the intended load and installed in such a way that they will not become loose during the machine's operation.

Table 1 — Part Numbers and Dimensions

Rod Dia	A	B	C	D	E	F	Bolt Size	Bolt Circle	Split Coupler Part No.	Weld Plate Part No.
3	5.00	5.50	1.00	2.38	.375	12	.500-13 x 3.25 LG	4.000	1472340300	1481740300
3½	5.88	7.00	1.00	2.63	.375	12	.625-11 x 3.50 LG	4.687	1472340350	1481740350
4	6.38	7.00	1.00	2.63	.375	12	.625-11 x 3.50 LG	5.187	1472340400	1481740400
4½	6.88	8.00	1.00	3.13	.375	12	.625-11 x 4.00 LG	5.687	1472340450	1481740450
5	7.38	8.00	1.00	3.13	.375	12	.625-11 x 4.00 LG	6.187	1472340500	1481740500
5½	8.25	9.00	1.25	3.88	.375	12	.750-10 x 5.00 LG	6.875	1472340550	1481740550

Note: Screws are not included with split coupler or weld plate.

How to Order PH-3 Series Cylinders

When ordering PH-3 Series cylinders, please review the following:

Note: Duplicate cylinders can be ordered by giving the SERIAL NUMBER from the nameplate of the original cylinder. Factory records supply a quick positive identification.

Piston Rods: Specify model number code based on bore and rod diameter. Give thread style number for a standard thread or specify dimensions. See "Style 0 Rod End" below.

Cushions: If cushions are required specify according to the model number on the next page. If the cylinder is to have a double rod and only one cushion is required, be sure to specify clearly which end of the cylinder is to be cushioned.

Special Modifications: Additional information is required on orders for cylinders with special modifications. This is best handled with descriptive notes. For further information, consult factory.

Lipseal™ Piston (if desired): Schrader Bellows Lipseal™ pistons are offered as an option at no extra cost in the Series PH-3 cylinders. With this feature, zero leakage under static holding conditions is attained. Call out "with Lipseal piston" if this type of piston is desired.

Fluid Medium: Series PH-3 hydraulic cylinders are equipped with seals for use with hydraulic oil. If other than hydraulic oil will be used, specify class of fluid (See Catalog section C.)

See Section C for pressure ratings relating to bore and rod sizes.

Water Service Modifications

When requested, Schrader Bellows can supply PH-3 Series cylinders with standard modifications that make the cylinders suitable for use with water as the fluid medium. The modifications include chrome-plated cylinder bore; electroless nickel-plated, non-wearing internal surfaces; Lipseal style piston, Buna N Seals and chrome-plated, precipitation hardened stainless steel piston rod.

Warranty – Schrader Bellows will warrant Series PH-3 cylinders modified for water or high water content fluid service to be free of defects in materials or workmanship, but cannot accept responsibility for premature failure due to excessive wear resulting from lack of lubricity, where failure is caused by corrosion, electrolysis or mineral deposits within the cylinder.

Class 1 Seals

Class 1 seals are the seals provided as standard in a cylinder assembly unless otherwise specified. For further information on fluid compatibility or operating limitations of all components, see section C.

For the PH-3 series cylinders the following make-up Class 1 Seals:

Primary Piston Rod Seal – Enhanced Polyurethane
Piston Rod Wiper – Nitrile
Piston Seals – Filled PTFE seals with nitrile expander
Option – Cast iron rings
O-Rings – Nitrile (nitrile back-up washer when used)

Style 0 Rod End

A style 0 rod end indicates a special rod end configuration. All special piston rod dimensions must have **all three:** KK; A; W/WF or LA/LAF specified with the rod fully retracted. A sketch or drawing should be submitted for rod ends requiring special machining such as snap ring grooves, keyways, tapers, multiple diameters, etc. It is good design practice to have this machining done on a diameter at least 0.065 inches smaller than the piston rod diameter. This allows the piston rod to have a chamfer preventing rod seal damage during assembly or maintenance.

Standard style 6 rod ends with an extended WG dimension should call out a style 0 rod end and the note: **same as 6 except WG=_____**. A drawing should be submitted for special 6 rod ends that have specific tolerances or special radii. Special rod ends that have smaller than standard male threads, larger than standard female threads, or style 6 rod ends with smaller than standard AF or AE dimensions are to be reviewed by Engineering for proper strength at operating pressure.

Service Policy

On cylinders returned to the factory for repairs, it is standard policy for the Industrial Cylinder Division to make such part replacements as will put the cylinder in as good as new condition. Should the condition of the returned cylinder be such that expenses for repair would exceed the costs of a new one, you will be notified.

Address all correspondence and make shipments to, Service Department at your nearest regional plant listed in the pages of this catalog.

Certified Dimensions

Schrader Bellows Industrial Cylinder Division guarantees that all cylinders ordered from this catalog will be built to dimensions shown. All dimensions are certified to be correct, and thus it is not necessary to request certified drawings.

How to Order By Model Number

7" and 8" PH-3 Hydraulic Cylinders can be specified by model number by using the tables shown at right.

1. TYPE

Select the Model Number Code which identifies the single or double rod end and port specification.

2. BORE & ROD DIAMETER

Select the Model Number Code which identifies the desired bore size and rod diameter combination.

3. MOUNTING & CUSHIONING

Select the Model Number Code which identifies the desired mounting style and cushioning option.

4. ROD END STYLE

Select the Model Number Code which identifies the desired rod end thread style.

5. SEAL TYPE

Complete the model number by selecting the type of seals desired. Hi-Load piston seals are standard.

6. STROKE LENGTH

It is necessary to specify the stroke length desired following the Model Number. For example: PHJA70825 with 6" stroke.

THE EXAMPLE WOULD IDENTIFY:

A single rod end hydraulic cylinder with S.A.E. ports, 8" bore size, 3-1/2" diameter piston rod, side lug mounting, cushioned both ends, with a small male rod end thread, high load piston with Buna-N seals and a 6" stroke.

SPECIFYING THE DESIRED TRUNNION LOCATION: (Style MT4 Mounting)

For cylinders with intermediate trunnion mounting, specify the distance between the piston rod reference point and the centerline of the trunnion pin. (Dimension "X1")

OPTIONAL MOUNTING ACCESSORIES

Specify separately by part number the desired optional mounting or rod end accessories.

SPECIAL MODIFICATIONS

For special modifications other than piston rod end, use "S" in the 10th position of the model number and describe the special feature required.

Example: PHJA70825S 6" Stroke

Ports to be in position # 2.

1	Model Number
Type	PH-3 Series Hydraulic
Single End with SAE Straight Thread Ports	PH
Double End with SAE Straight Thread Ports	PJ
Single End with NPTF Ports	PF
Double End with NPTF Ports	PK
Single End with SAE Flange Ports	PX
Double End with SAE Flange Ports	PY

2	Model Number Code	
Bore Size	Rod Dia.	Code
7"	3"	HA6
	3-1/2"	HA7
	4"	HA8
	5"	HD1
8"	3-1/2"	JA7
	4"	JA8
	5"	JD1
	5-1/2"	JD2

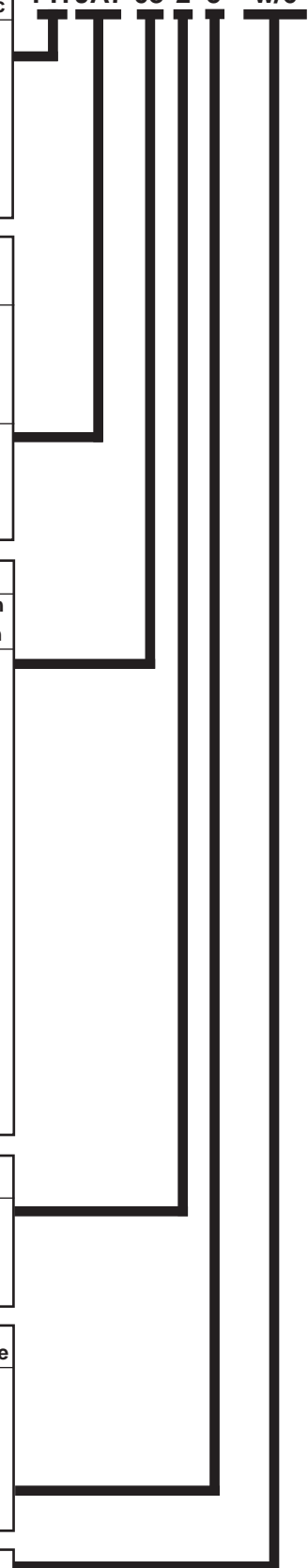
3	Mounting Style	Model Number Code				
		NFPA Style	Non-Cush.	Cush. Head	Cush. Cap	Cush. Both
	Side Lug	MS2	05	06	07	08
	Side Tap	MS4	13	14	15	16
	Head Rectangular Flange	MF1	21	22	23	24
	Cap Rectangular Flange	MF2	25	26	27	28
	Head Square Flange	MF5	29	30	31	32
	Cap Square Flange	MF6	33	34	35	36
	Head Rectangular	ME5	45	46	47	48
	Cap Rectangular	ME6	49	50	51	52
	Tie Rods Extended Both Ends	MX1	53	54	55	56
	Cap Tie Rods Extended	MX2	57	58	59	60
	Head Tie Rods Extended	MX3	61	62	63	64
	Head Trunnion	MT1	69	70	71	72
	Cap Trunnion	MT2	73	74	75	76
	Intermediate Fixed Trunnion	MT4	77	78	79	80
	Cap Fixed Clevis	MP1	81	82	83	84

4	Rod End Style	Model Number Code
	Small Male	2
	Short Female	3
	Intermediate Male	4
	Special – Specify	0

5	Seal Type	Model Number Code
	Buna N Seals w/Lipseal Piston	1
	Fluorocarbon Seals w/Lipseal Piston	2
	Buna N Seals w/Piston Rings	3
	Fluorocarbon Seals w/Piston Rings	4
	Buna N Seals w/Hi-Load Piston	5
	Fluorocarbon Seals w/Hi-Load Piston	6

6	Specify Stroke Length	6"
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Model Number Example:
PH JA7 08 2 5 w/6"



B

PL-2

PH-2

PH-3

PHX

SHM

CHE/CHD

NOTES