

Piston Assembly
Aluminum piston with wear band increases service life and eliminates metal-to-metal contact. Anaerobic adhesive is used to permanently lock and seal the piston to the rod.

Piston Seals
Nitrile piston lipseals combine low friction with leak-free service and long service life. Optional bumper piston seals provide additional noise reduction and smooth end-of-stroke deceleration.

Ports
1/8" NPTF ports are standard.

Rod Seal
Inboard nitrile rod lipseal combines low friction with leak-free service and long service life.

Rod Bearing
This composite rod bearing is designed for side load. Wear resistance far exceeds commonly-used bronze rod bearings.

Rod Wiper
Outboard urethane rod wiper protects the cylinder by removing external debris and adherents from the piston rod during the entire stroke.

Magnetic Piston Ring
Included as a standard feature for use with a variety of sensors.

Cylinder Body
Extruded aluminum profile cylinder body offers integrated sensor grooves to minimize sensor installation time, maximize sensor protection and eliminate the need for brackets. Grooves readily accept Mini-Global Sensors. Anodized and bright-dipped for corrosion resistance, maximum seal life and lower friction. A few mounts require anodized aluminum tube and steel tie rod construction (tie rod brackets for sensors available).

Adjustable Cushion Spacers Available

Heads and Caps
Steel alloy heads and caps are black zinc-plated for corrosion resistance

Endcap Fasteners
Zinc-plated steel endcap fasteners (and tie rods for some mounts) for heavy-duty use. Stainless steel is available as an option.

Piston Rod
Hard chrome plated and polished carbon steel piston rod for reliable performance, long rod seal life and low friction. Grades of stainless steel are available as options.

B
3MA/4MA
3MAJ/4MAJ
ACVB Option
LPSO Option
4MNR
S
C

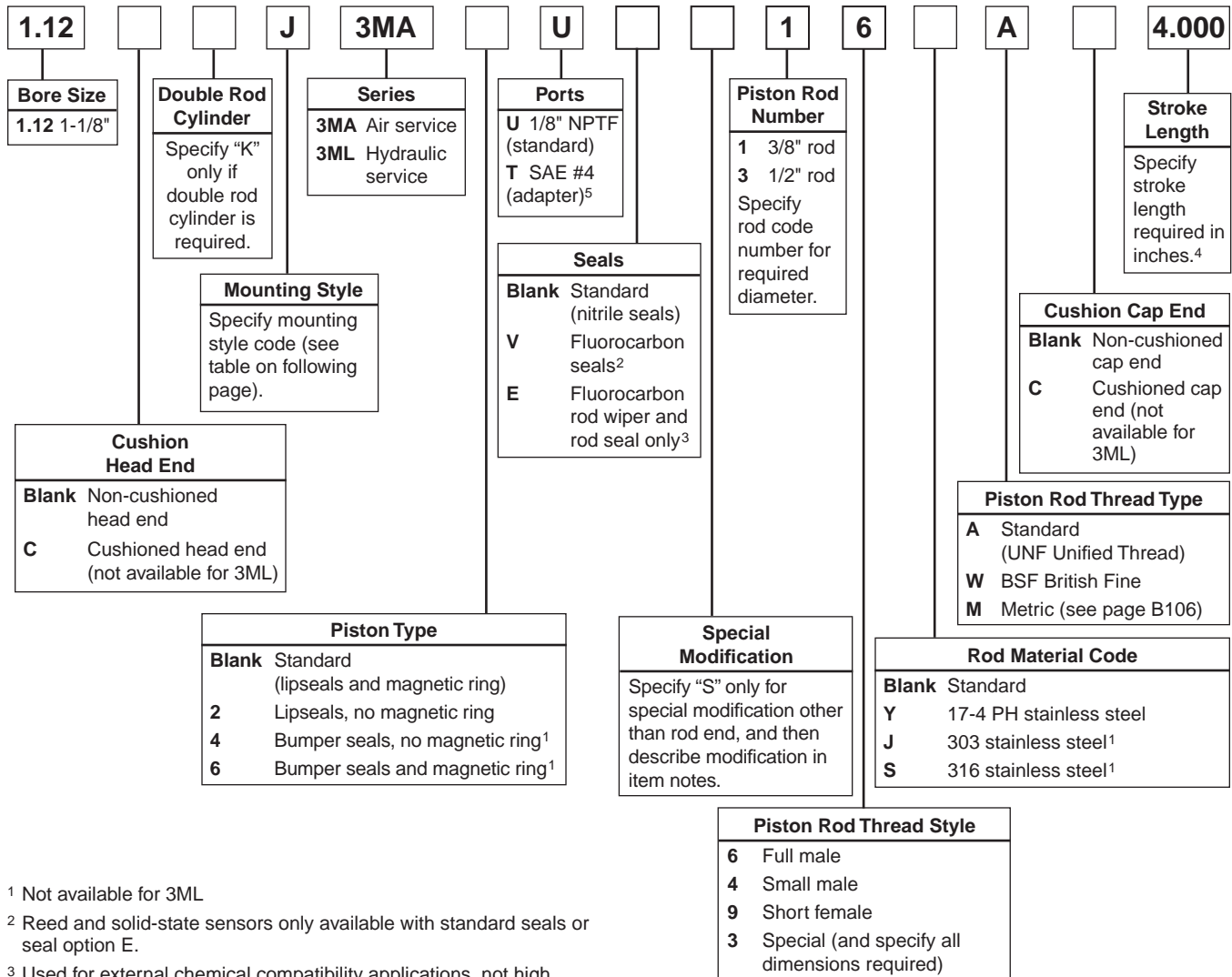
For a complete list of 3MA options, please see pages B48 and B52.



How to Order 3MA Series Cylinders for 1-1/8" Bore

3MA cylinders can be specified by model number by using the table below.

B



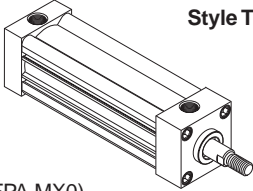
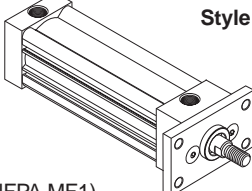
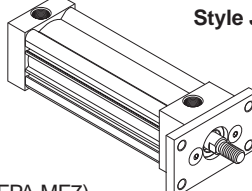
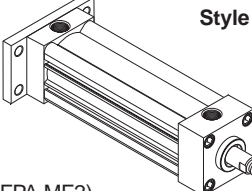
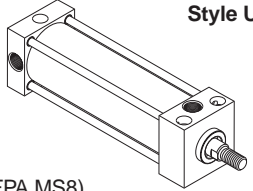
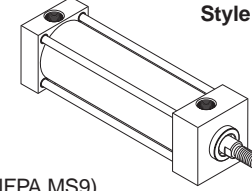
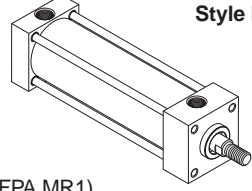
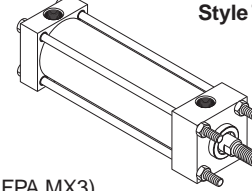
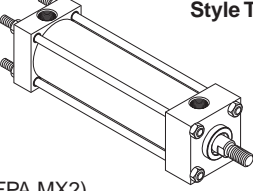
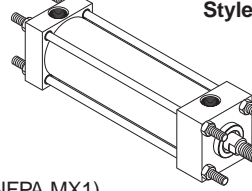
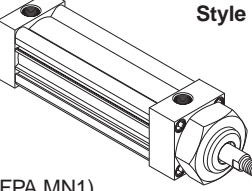
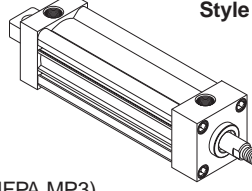
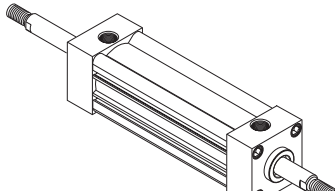
¹ Not available for 3ML
² Reed and solid-state sensors only available with standard seals or seal option E.
³ Used for external chemical compatibility applications, not high temperature.
⁴ If a stop tube is required, specify gross stroke (net stroke + stop tube) in the model number, then place an "S" for special in the Special Modification field and specify the stop tube length in the item notes.
⁵ Not available with US mount. Adapter height is approximately 0.83" when installed. Adapter body extends 0.15" from cap face. Use of mountings at cap end may be affected by this port type.

How to order 1-1/8" Bore 3MA/3ML Series cylinders with sensors:
 Sensors must be ordered separately and are not mounted to the cylinder prior to shipment.

1. Cylinder model number must have Piston Type (blank) or 6.
2. Please refer to pages M1-M9 for sensor part numbers and specifications. Mini-Global, NAMUR and Weld Immune Sensors will fit the 1-1/8" Bore 3MA/3ML Series (Global Sensors not available).
3. Tie rod bracket P8S-TMA0Z will be required for Mini-Global Sensors with Mounting Styles US, F, MR, TB, TC, TD or other tie rod versions.
Please refer to page M9 for more information.



3MA Series Mounting Styles for 1-1/8" Bore

<p>No Mount Basic Style T</p>  <p>(NFA MX0)</p>	<p>Head Rectangular Flange Style J</p>  <p>(NFA MF1)</p>	<p>Head Rect. Flange (no pilot) Style J7</p>  <p>(NFA MF7)</p>	<p>Cap Rectangular Flange Style H</p>  <p>(NFA MF2)</p>
<p>Side Thru Hole Style US</p>  <p>(NFA MS8)</p>	<p>Side Tap Style F</p>  <p>(NFA MS9)</p>	<p>Head Tap Style MR</p>  <p>(NFA MR1)</p>	<p>Tie Rods Ext. Head End Style TB</p>  <p>(NFA MX3)</p>
<p>Tie Rods Ext. Cap End Style TC</p>  <p>(NFA MX2)</p>	<p>Tie Rods Ext. Both Ends Style TD</p>  <p>(NFA MX1)</p>	<p>Threaded Nose Style NS</p>  <p>(NFA MN1)</p>	<p>Cap Pivot Eye Style BE</p>  <p>(NFA MP3)</p>
<p>Double Rod End Style KT</p>  <p>(NFA MDX0)</p>		<p>Double rod end cylinders can be ordered with head mountings, i.e. KJ (see page B53).</p>	

Note: Styles US, F, MR, TB, TC and TD are tie rod construction only, profile body not available. If Mini-Global sensors are required, please order one tie rod bracket (P8S-TMA0Z) for each sensor.

B

3MA/4MA

3MAJ/4MAJ

ACVB Option

LPSO Option

4MNR

S

C

3MA General Specifications for 1-1/8" Bore



General Specifications

- NFPA interchangeable – NFPA/T3.6.11 R1-1998 (R2004)
- Strokes – available in any practical stroke length
- Rod diameters – 3/8" and 1/2"
- Rod end styles – 3 standard, specials available
- Single rod end or double rod ends
- Cushions – optional and adjustable at either end or both ends (n/a for 3ML Hydraulic Version)
- Operating pressure –
3MA = 250 PSIG (17 Bar) max. air service
3ML = 1,100 PSIG (76 Bar) max. hydraulic service

- Media – 3MA = dry, filtered air
3ML = filtered hydraulic oil
 - Temperature range –
-10°F to +165°F (-23°C to +74°C) with standard seals
-10°F to +250°F (-23°C to +121°C) with fluorocarbon seals option
-50°F to +150°F (-46°C to +66°C) with low temperature seals (consult factory)
 - Mounting styles – 13 standard styles
- For material options, including seals and piston rods, please see Material Specifications on next page.

Cylinder Weights – 1-1/8" Bore

3MA/3ML Cylinders

Bore (inch)	Rod (inch)	No Mount Single Rod 3MA	
		Base Wt. (lbs.)	Per Inch (lbs.)
1-1/8	3/8	1.26	0.10
	1/2		0.13

Standard Cushion Position

Mounting Code	Position
All mounts	2

Standard Port Size

Bore	NPTF
1-1/8	1/8

Recommended Maximum Extend Stroke Length

Rod (inch)	Pressure (PSIG)			
	100	200	500	1100
3/8	26"	18"	12"	9"
1/2	46"	32"	21"	15"

Please consult Actuator Division for longer stroke lengths.

Material Specifications – Standard Temperatures and Applications

Head and cap.....Black zinc plated steel alloy	O-rings.....Nitrile
Head and cap screws ...Zinc plated steel alloy	End sealsNitrile
Cylinder bodyClear anodized aluminum alloy	Cushion spacerBlack zinc plated steel alloy
Piston rodChrome plated carbon steel	Cushion seals.....Urethane
Rod sealNitrile	Cushion needle valves..Stainless steel
Rod wiperMolythane	Tie-rodsBlackened carbon steel (some mounts)
Rod bearing.....Composite	Tie-rod nuts Black oxidized steel alloy (some mounts)
PistonAluminum alloy	Cylinder accessories.... Black zinc plated steel alloy
Piston seals.....Nitrile	
Piston bearingMolyGard™	
Magnetic ring.....Plastic-bound magnetic material	
Piston fastenerPiston rod for aluminum piston	

3MA Options – Material and Part Changes

High temperatures (-10°F to +250°F)	All seals and wiper are fluorocarbon Aluminum piston only (without magnetic ring)	Low temperatures (-50°F to +150°F)	Rod seal, piston seals, o-rings and end seals are low temperature-rated nitrile (consult factory)
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3ML Hydraulic Version – Material and Part Changes

Hydraulic service (general)	Cushions and bumper piston seals not available	Hydraulic service (high temp)	All seals and wiper are fluorocarbon (for hydraulic use)
Hydraulic service (std temp)	Nitrile rod seal and piston seals (for hydraulic use)		

Other Standard Options – Material and Part Changes

Cylinder seal options	Fluorocarbon for high temperatures or chemical compatibility Other seal options available, please consult factory	Piston rod material options	Chrome plated carbon steel (standard) 17-4 PH stainless steel 303 stainless steel (n/a for 3ML) 316 stainless steel (n/a for 3ML) (for stainless steel with chrome plating, please consult factory) Case-hardened, chrome plated carbon steel
Bumper piston seal options (3MA only, n/a for 3ML)	Carboxylated nitrile (Nitroxile) for standard temperatures Fluorocarbon for high temperatures and chemical compatibility		

B

3MA/4MA

3MAJ/4MAJ

ACVB Option

LPSO Option

4MNR

S

C

B

How to Select a 1-1/8" Bore 3MA Cylinder

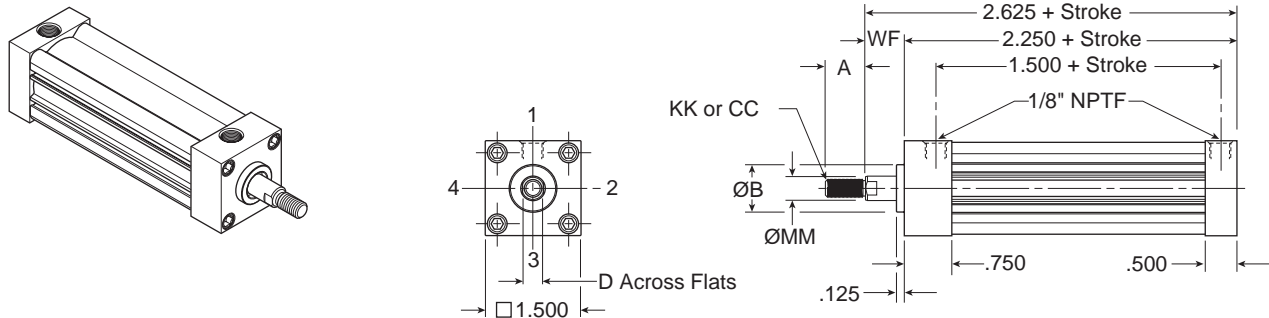
Parker cylinders are available based on air or hydraulic operating pressure. The many styles, sizes and optional features available assure that your application requirements are precisely met. To select a cylinder, follow these simple steps:

- Step 1 - **Verify that the 1-1/8" bore size** is appropriate to achieve required force using the available operating pressure.
- Step 2 - **Determine the series cylinder to use**, based on operating pressure.
- Step 3 - **Turn to the appropriate cylinder selection section**. Select the mounting style that fits your installation needs.
 - Choose a rod end style and the desired rod end accessories.
 - Size the cylinder to meet your application requirements.
- Step 4 - **Consider the following conditions** which may require further modifications to the cylinder you have selected.

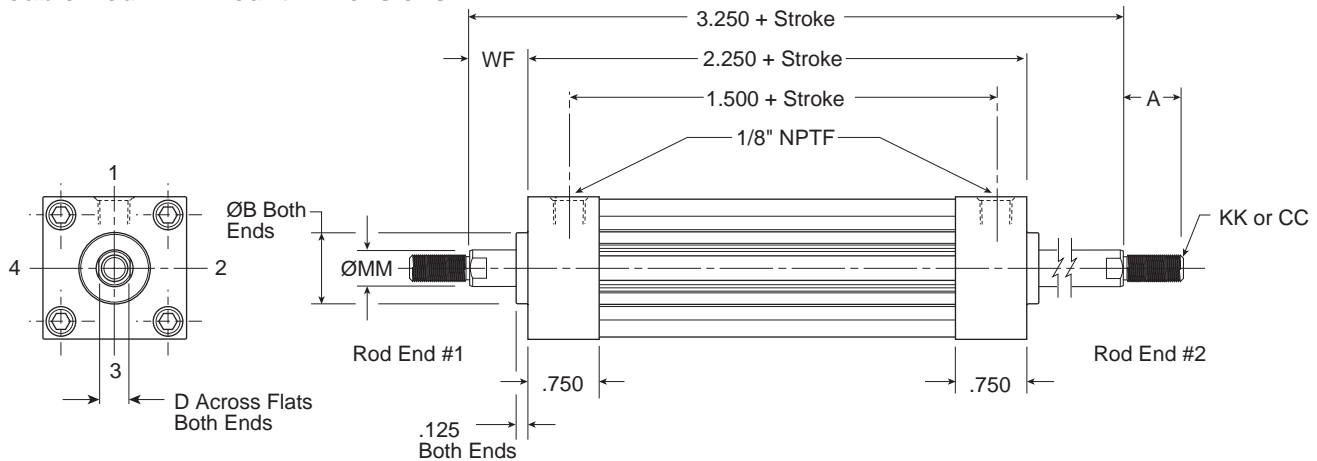
Application Condition	Check the Following
Quick Starts or Stops	Confirm that determined thrust is sufficient to accelerate or decelerate cylinder and load within prescribed distance. Optional cushions should be used to reduce shock during deceleration, check that peak pressures will be within tolerable limits.
Long Push Stroke	Check whether stop tube is required to prevent excessive bearing loads and wear.
High-column Loading Long Push Stroke	Determine if standard size piston rod is strong enough to accommodate intended load. See Application Engineering section for recommendations.
Long Horizontal Stroke	Determine if standard size piston rod is strong enough to accommodate intended load.
High Operating Temperatures	For temperatures between 165°F and 250°F use 3MA or 3ML cylinder with high temperature seals.
General Options and Modifications: <ul style="list-style-type: none"> • Adjustable Cushions (Cushion Spacers) • Non-Magnetic Piston (magnetic ring standard) • Piston Bumper Seals • Port and Adjustable Cushion Relocation • Port Thread Styles • Multiple Ports • Special Heads, Caps, Pistons and Mounts • Double Rod End • Oversize Rod Diameters • Rod End Modifications • Rod Materials (grades of stainless steel) <ul style="list-style-type: none"> • Fluorocarbon Rod Wiper and Rod Seal only • Fluorocarbon Seals (all cylinder seals) • Stop Tube • Mixed Mountings • Round Tube and Tie Rod Construction • Stainless Steel Fasteners/Tie Rods • Shock Absorber on Cap End • LECTROFLUOR® Coating • Adjustable Point Sensors (order separately) • High Temperature Service (to +250°F) • Hydraulic Service (3ML) (1,100 PSIG) 	

Single Rod, Double Rod and Cushioned Cylinder Dimensions

Single Rod – T Mount Dimensions

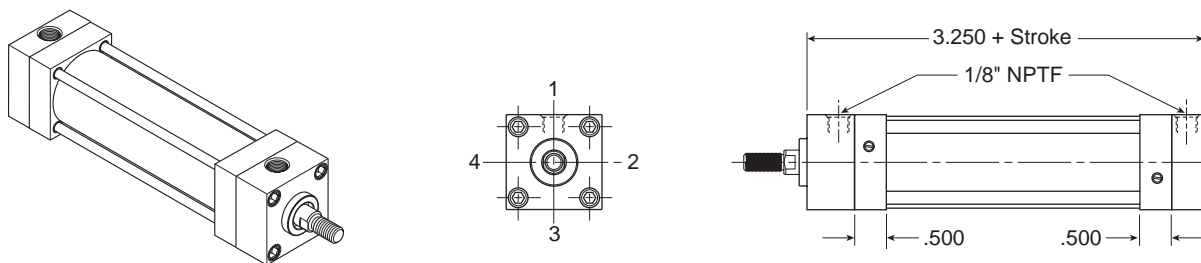


Double Rod – KT Mount Dimensions



Single rod end mounts T, J, J7, TB, TD and NS can become double rod end mounts KT, KJ, KJ7, KTB, KTD and KNS. Please use the appropriate dimensions from head face of the single rod end mount drawings with KT drawing above for double rod end cylinder dimensions.

Cushioned Cylinder Dimensions



Rod End Dimensions

Bore Size	Rod No.	Rod Dia. MM	Thread			A	-0.001 -0.003 B	D	LAF	WF
			Style 6 CC	Style 4 KK	Style 9 KK					
1-1/8	1	3/8	3/8-24	5/16-24	1/4-28	0.625	0.750	5/16	1.000	0.375
	3	1/2	1/2-20	7/16-20	3/8-24	0.750	0.750	7/16	1.125	0.375

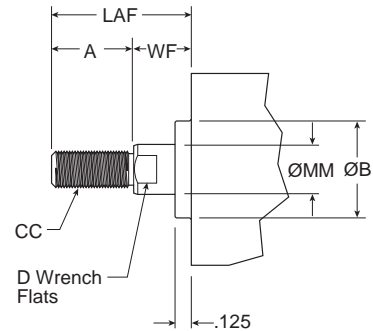
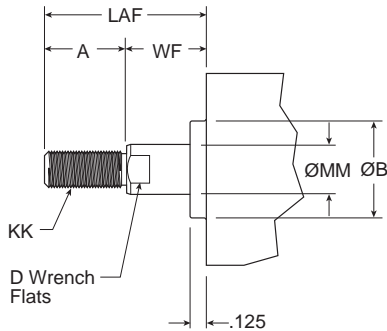
Note: Adjustable cushions will add 0.50" to each end. Cushions at both ends will add a total of 1.00" to the base cylinder length. Single rod configuration shown above. Available with single rod and double rod cylinders.

3MA Series Rod End Dimensions – 1-1/8" Bore

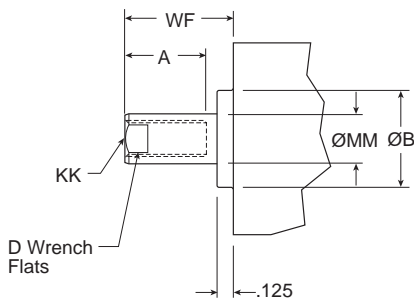
**Thread Style 4
Small Male**

**Thread Style 6
Full Male**

B



**Thread Style 9
Short Female**



Rod End Dimensions

Bore Size	Rod No.	Rod Dia. MM	Thread			A	-0.001 -0.003 B	D	LAF	WF
			Style 6 CC	Style 4 KK	Style 9 KK					
1-1/8	1	3/8	3/8-24	5/16-24	1/4-28	0.625	0.750	5/16	1.000	0.375
	3	1/2	1/2-20	7/16-20	3/8-24	0.750	0.750	7/16	1.125	0.375

Thread Style 3 - "Special Thread"

Special threads, rod extensions, rod eyes, blanks, etc. are also available.

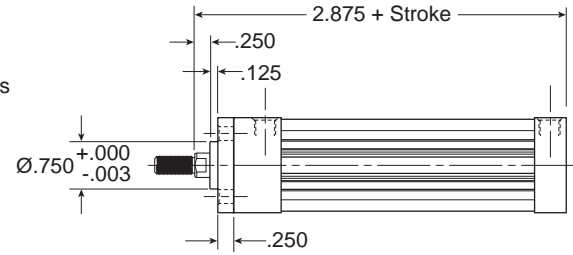
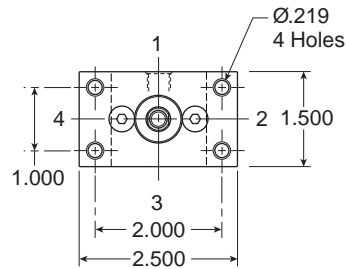
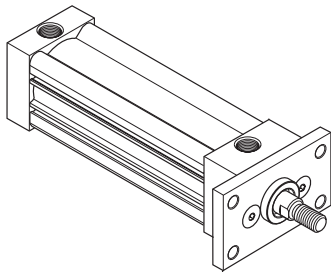
To order, specify "Style 3" and give desired dimensions for KK or CC, A and W or WF.

If otherwise special, please supply dimensioned sketch.



Head Rectangular Flange

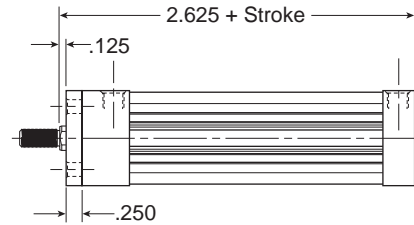
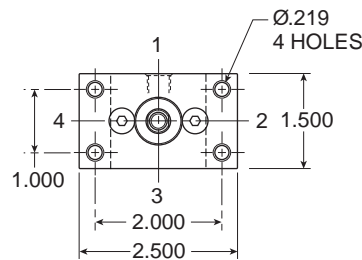
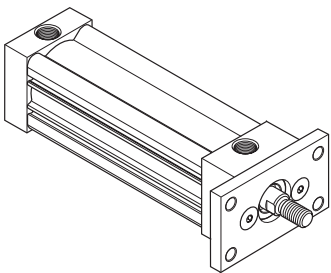
Style J
 (NFPA MF1)



W dimension = .375

Head Rectangular Flange (no pilot)

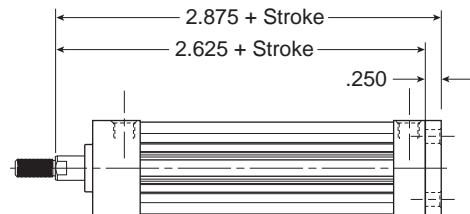
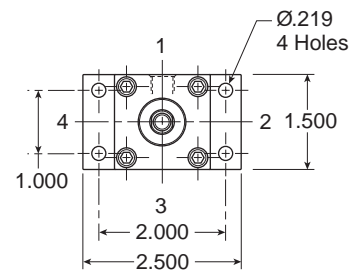
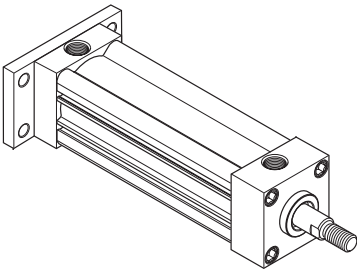
Style J7
 (NFPA MF7)



W dimension = .125

Cap Rectangular Flange

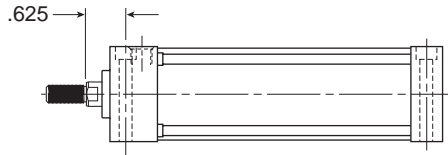
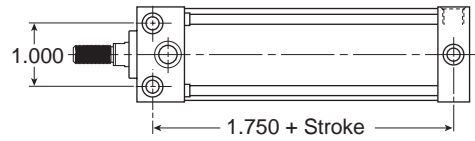
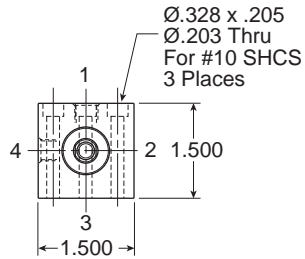
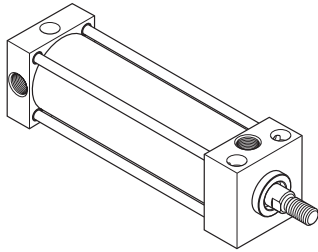
Style H
 (NFPA MF2)



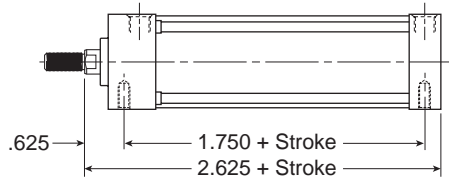
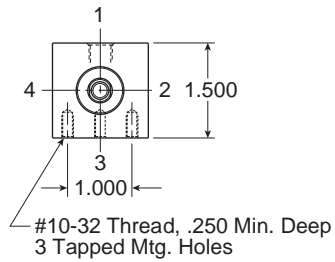
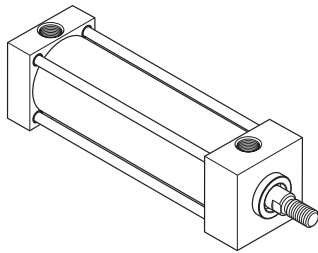
B
3MA/4MA
3MAJ/4MAJ
ACVB Option
LPSO Option
4MNR
S
C

Side Thru Hole
 Style US
 (NFPA MS8)

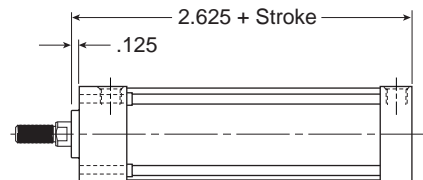
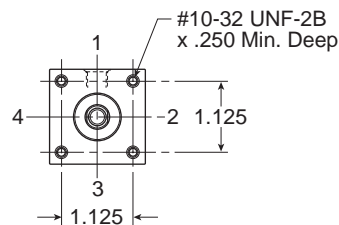
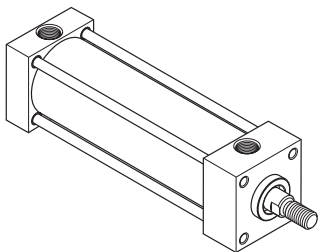
B



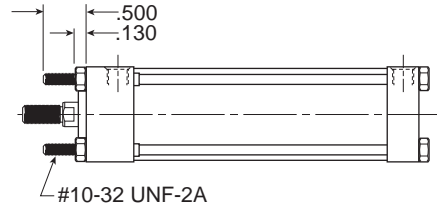
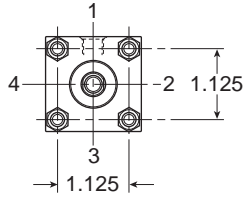
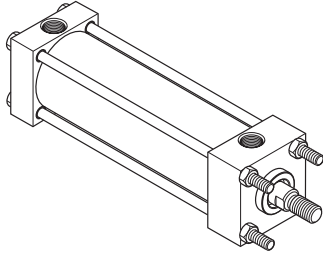
Side Tap
 Style F
 (NFPA MS9)



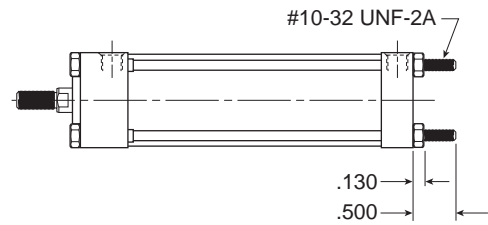
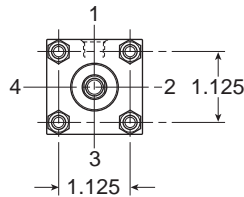
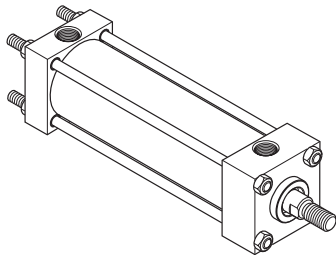
Head Tap
 Style MR
 (NFPA MR1)



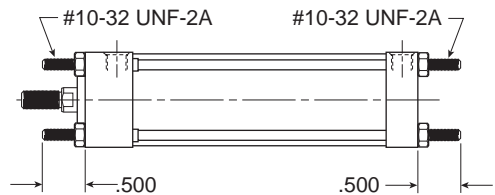
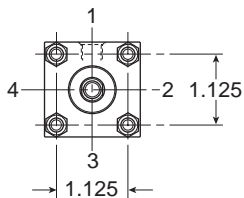
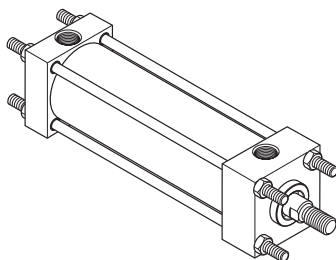
Tie Rods Ext. Head End
 Style TB
 (NFPA MX3)



Tie Rods Ext. Cap End
 Style TC
 (NFPA MX2)



Tie Rods Ext. Both Ends
 Style TD
 (NFPA MX1)



B

3MA/4MA

3MAJ/4MAJ

ACVB
Option

LPSO
Option

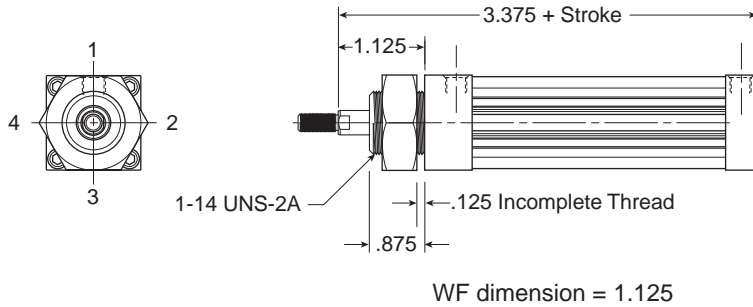
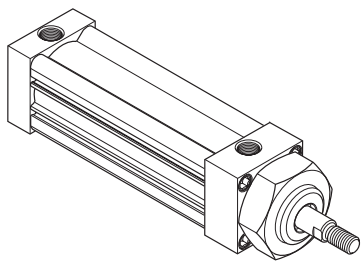
4MNR

S

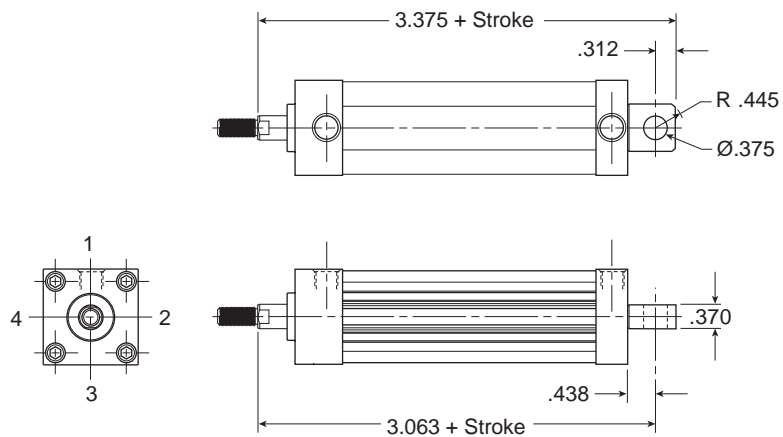
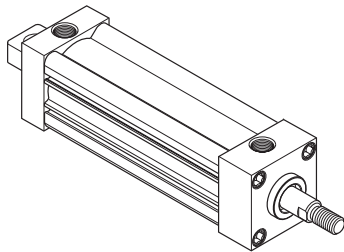
C

Threaded Nose
 Style NS
 (NFPA MN1)

B



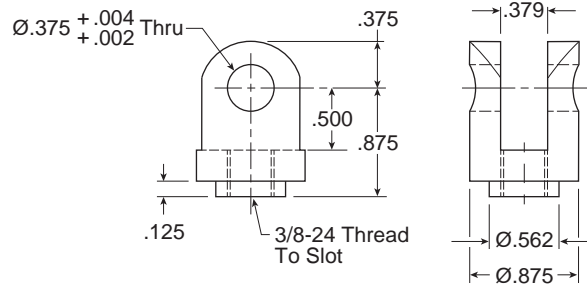
Cap Pivot Eye
 Style BE
 (NFPA MP3)



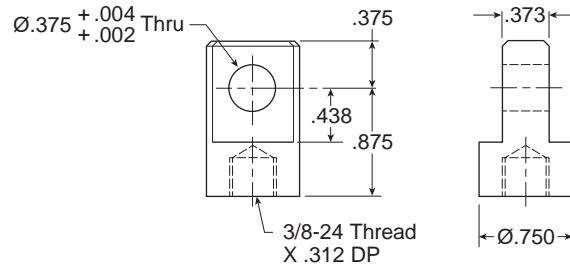
Cylinder Accessories

Note: Pivot Pin Assembly must be ordered separately

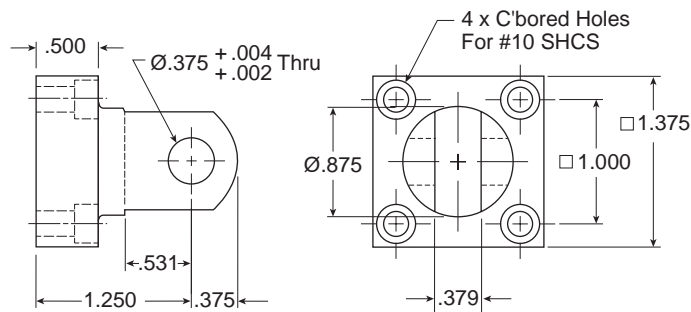
Rod Clevis P/N 1458030038



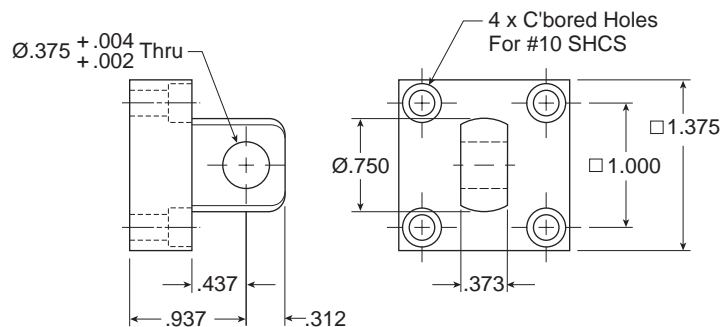
Rod Eye P/N 1458040038



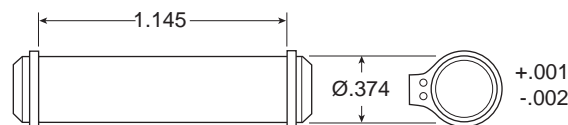
Clevis Bracket P/N 1458050038



Eye Bracket P/N 1458060038



Pivot Pin Assembly P/N 0856640038



B

3MA/4MA

3MAJ/4MAJ

ACVB Option

LPSO Option

4MNR

S

C