



a division of Magnum Integrated Technologies Inc.

Air Cylinders

SERIES

7K



How to Select and Specify Viceroy Fluid Power Cylinders

SERIES
7K

Follow these steps to find the information you will need to specify and order the correct style of cylinder for your application. You will need to specify these items:

1. Quantity.

2. Series.

Decide which Series of cylinders best suits your application and refer to the catalog for that series. The selection will depend upon whether you want air or hydraulic and the size and capacity you need.

3. Mounting Style.

A series of diagrams illustrating mounting styles is on the reverse of this cover page. It is not at all uncommon to furnish cylinders with mixed mounts. For example, a cylinder may have a flange mount on the head end and some form of foot mounting on the cap end.

4. Bore Size.

This will depend on the amount of force your application requires.

5. Stroke Length.

The distance of travel required by your application determines this.

6. Cushions.

Specify whether without cushions, cushioned head, cap or both ends. These are described in the Design and Construction Features on pages 6,7 and 30.

7. Rod Diameter.

The standard diameter for any given bore size is identified throughout this catalog. It will be furnished if not otherwise specified. For optional rod sizes, specify the desired piston rod diameter. Refer to the Piston Rod Selector Chart on page 4 to be sure you have selected the proper rod diameter for your application. Male rod ends Style 1 as shown on page 3 are furnished unless otherwise specified. Other styles shown are available at no additional cost, but must be specified by "Style" code letters. If special rod ends are required, specify clearly: (A) "KK" thread diameter and pitch, whether male or female. (B) "A" length or depth of thread. (C) "WF" dimension. Dimension "WF" can be increased without difficulty, but cannot be decreased if standard wrench flats are to be supplied. "WF" equals "C"

plus "VB" which is a fixed dimension. "C" is the minimum dimension that will permit standard wrench flats.

8. Rod End Thread. (See above)

9. Piston Type.

Flexible, lip type is furnished as standard.

10. Port Location.

Ports will be located at "Position 1", as shown, unless otherwise specified. If desired in a position other than "Position 1", please specify by position number, as shown on data sheets, for both head and cap end. NOTE: Change of port location on a cushioned cylinder requires that cushion adjusting needle position be specified.

11. Cushion Adjusting Needle Location.

Cushion adjusting needles and ball checks are furnished in the positions shown on the data sheets. If desired in other than standard position, please specify by position number. NOTE: Cushion adjusting needles and ball check valves are interchangeable.

12. Double Rod Cylinders.

See Tie Rod Mounting cylinder pages. If both ends are not to be the same, be sure to specify requirements in detail. If cylinder is to be cushioned at one end only, be sure to state clearly which end is to be cushioned (e.g. cushioned at end opposite flange end of cylinder).

13. Trunnion Location.

On styles "E" and "DE" customer must specify "XI" dimension.

14. Tie Rod Extensions. If other than standard see Tie Rod Mounting cylinder pages and specify "BB" dimension.

15. Stop Tube.

When application calls for a stop tube, as described in the Piston Rod Selector Chart, please specify: (A) Actual working stroke required. (B) Length of stop tube required ("Plus stroke" dimensions in Bulletin will be determined on basis of actual stroke plus length of stop tube).

16. Special Features.

For any special features such as special mounts, piston rods, materials, etc., please furnish sketches with detailed

information or specifications.

17. Special Operating Conditions.

The seals and packings furnished as standard in cylinders operate most satisfactorily within a temperature range of -40°F to +200°F. Baffles are recommended to shield cylinders from heat whenever practical. Consult local representative or factory when confronted with special problems such as unusually high or low temperatures, long strokes, corrosive atmosphere, especially dirty conditions, etc.

18. Accessories.

See the Accessories pages 31,32.

As product improvement is a continuous process, specifications are subject to change without notice.

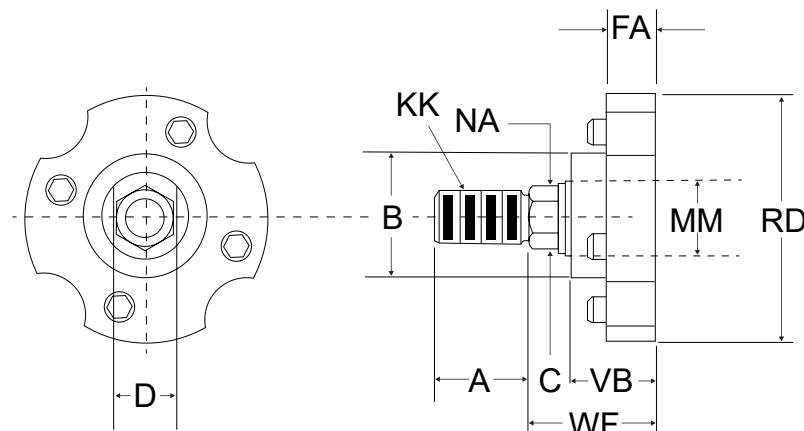
Styles of Mounting

Rod End Styles

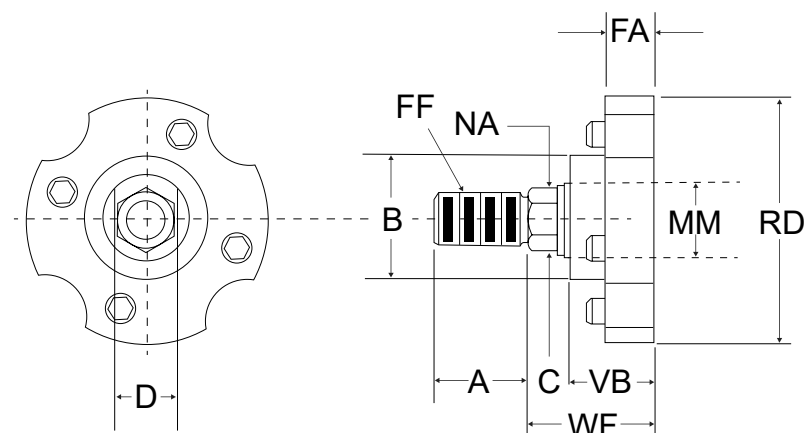
These diagrams illustrate the various styles of mounting cylinders and identifies the Industry Standard description and code letters along with corresponding Viceroy Fluid Power Style letter codes.

Mounting Description	NFPA Mounting Code	Viceroy Fluid Power Mounting Code
 Txt Rods Ext	MX1 MDX1 MX2 MX3	Style L Style DL Style N Style M
 Head Rectangular Flange	MF1	Style B
 Head Square Flange	MF5	Style BB
 Head Square	ME3	Style QQ
 Cap Rectangular Flange	MF2	Style A
 Cap Square Flange	MF6	Style AA
 Cap Square	ME4	Style PP
 Side Lugs	MS2	Style J
 Centerline Lugs	MS3	Style K
 Side End Lugs	MS7	Style CC
 Side Trapped	MS4	Style H
 Head Turnnion	MT1	Style ER
 Cap Turnnion	MT2	Style EB
 Intermediate Fixed Turnnion	MT4	Style E
 Cap Fixed Clevis	MP1	Style G
 Single Cap lug		Style GG
 Spherical Pivot		Style S

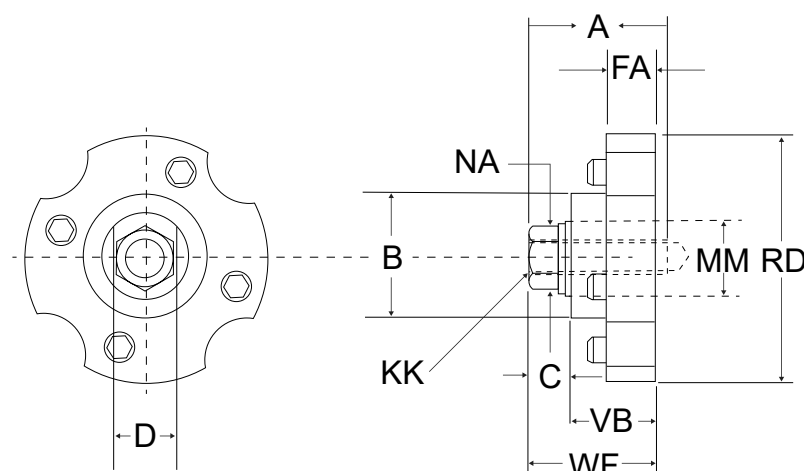
NFPA Style SM (VFP Style 1) Standard Male Rod End (Furnished unless otherwise specified)



NFPA Style IM (VFP Style 2) Optional Male Rod End



NFPA Style SF (VFP Style 3) Female Thread Rod End



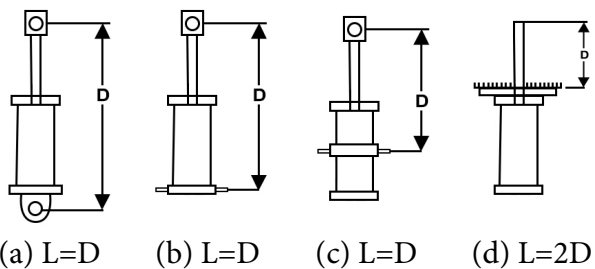
SPECIALS (VFP Style 4) Also available: Special Thread, Extension, etc. Give desired dimensions or furnish dimensional sketch.

*In 10" thru 20" bores dimension "FA" is identical to dimension "F" Socket screw heads do not protrude beyond dimension "FA".

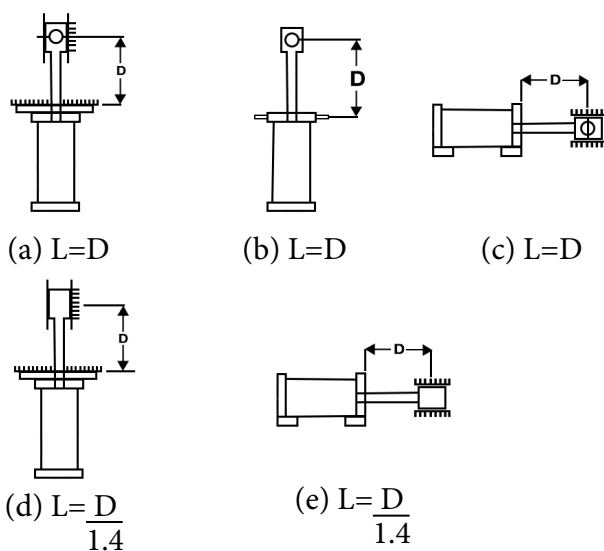
NOTE: Certain bore sizes and diameters will be furnished with round retainers (not scalloped) but dimensions are the same.

Piston Rod Selector Chart

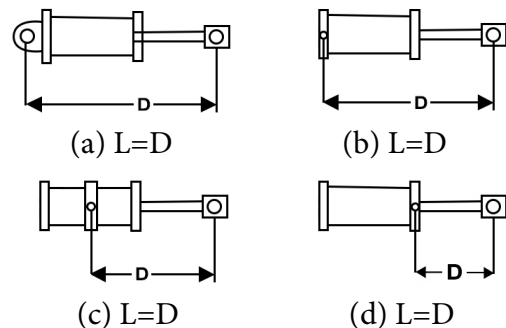
Case 1



Case 2



Case 3



The Piston Rod in a cylinder acts as a column and, as such, is subjected not only to compressive stresses, but also buckling stresses which are a function of the moment of inertia for a constant modulus of elasticity. The "column strength" of a piston rod cannot be increased by using higher tensile strength or heat treated materials. For this reason, it is sometimes necessary to use an oversize piston rod strictly for the purpose of achieving the necessary "column strength."

Data shown in chart form is based on Euler's equation for a vertical column with both ends rounded (see Case I illustration). The values of "L" shown in the chart are approximately one-half of the theoretical limit of "L" as determined by this equation. Factors such as vertical or horizontal mounting, shock or non-shock loading, frequency of operation, etc., should be taken into consideration in selecting a permissible value of "L".

The values of "L" shown in the shaded area of the table can be used when the

VALUE OF "L" IN INCHES PISTON ROD DIAMETERS												
Thrust load in Lbs	5/8	1	1 1/8	1 1/4	2	2 1/2	3	3 1/2	4	4 1/2	5	5 1/2
300	43											
350	40											
400	38											
450	36											
500	34											
600	31											
700	28	72										
800	27	68										
900	25	64										
1,000	24	61										
1,200	22	55	104									
1,400	20	51	97									
1,600	19	48	90									
1,800	18	45	85									
2,000	17	43	81	131								
2,200	16	41	77	125								
2,600	15	38	71	115	150							
3,000	14	35	66	107	139							
4,000	12	30	57	93	121	189						
5,000	11	27	50	83	108	169						
6,000		25	47	76	99	154	222					
7,000		23	43	70	91	143	205					
8,000		22	41	66	85	133	192	261				
9,000		20	38	62	81	126	181	246				
10,000		19	36	59	76	119	172	234	305			
12,500		17	32	52	68	107	154	209	273			
15,000			30	48	63	98	140	191	249	315		
17,500			27	44	58	90	130	177	231	292	360	
20,000			26	42	54	84	121	165	216	273	337	
25,000			23	37	48	76	109	148	193	244	302	365
30,000				34	44	69	99	136	176	223	275	333
40,000				29	38	60	86	117	153	193	238	289
50,000					34	54	77	105	137	173	213	258
60,000						49	70	96	125	158	195	236
80,000						42	61	83	108	137	169	204
100,000							55	74	97	122	151	182
120,000							50	68	88	112	138	167

attitude of the piston rod is horizontal or vertical. The values of "L" beyond the shaded area can be used with the piston rod in vertical position only.

Example:

Determine rod size required for a horizontal stroke of 130". Maximum cylinder force required in both push and pull directions is 8,000 lbs. The desired cylinder mounting in Case II (c), L=130.

Enter chart at thrust load 8,000 lbs. and move horizontally until "L" dimension over 130 is reached. This would be L=133, reading vertically up, shows that 2 1/2" diameter rod is required. However, the "L" dimension is outside the shaded area of the chart which means that this rod size stroke combination is suitable for vertical mounting only.

Go to the next rod size and observe that the highest "L" dimension in the coloured area is 140. Therefore, 3" diameter is a suitable rod and it will carry a load of

15,000 lbs. with approximately 2:1 factor of safety.

Stop Tubes. The function of a stop tube is to act as a spacer to increase the distance between the piston and piston rod bearing when the piston rod is in its fully extended position. This increase in spacing serves to reduce bearing loads and, at the same time, increases the structural rigidity of the assembly to prevent buckling and jack-knifing.

A Stop Tube is required for cylinders mounted as shown in Case I whenever "L" exceeds 40". Length of stop tube (Inches), = $\frac{L-40}{10}$ to the nearest full inch.

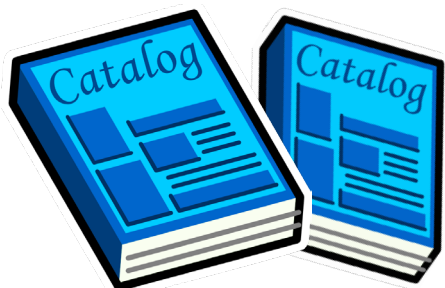
*Cylinder mountings shown in Case II do not need stop tubes.

*Cylinder mountings shown in Case III should be referred to factory stop tube requirements.

How to use This catalog Index

SERIES 7K

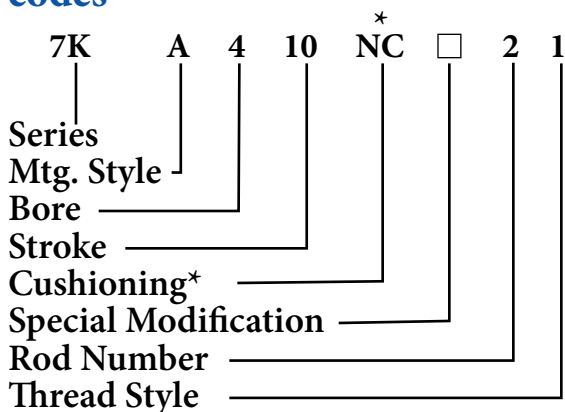
This catalog has been organized for maximum convenience in designing with and specifying Viceroy Fluid Power cylinders. Both the front and back covers fold out to display information common to all mounting styles and bore sizes of cylinders.



Inside the front cover you will find a guide to the different types of mounting and the rod end styles for all cylinder pages. The back cover contains information on accessories. Fold out the front and back cover. These pages will be available for reference alongside any of the dimension tables which follow.

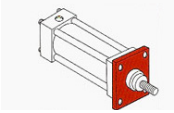
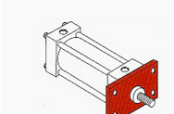
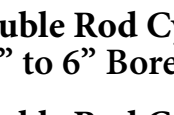
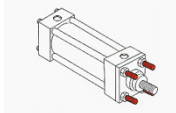
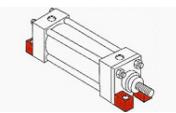
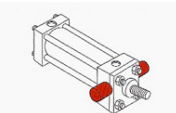
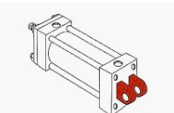
A review of the checklist of information headed "How To Select and Specify Viceroy Fluid Power Cylinders and the page opposite will help you in considering all essential details.

How to use Viceroy Fluid Power codes

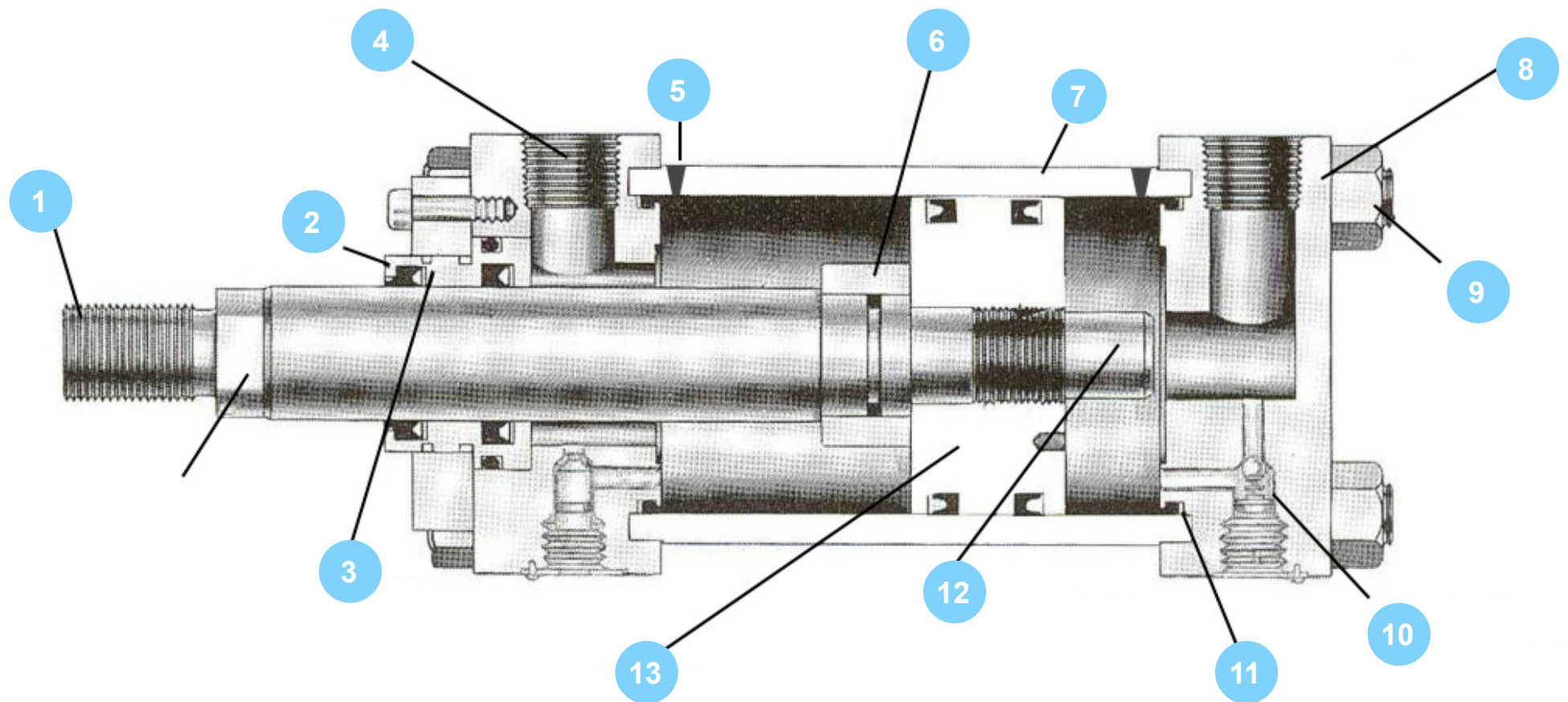


* NC - non-cushioned, CF - cushioned front end, CR - cushioned rear end, CC - cushioned both ends.

The diagram above illustrates the information given by a Viceroy Fluid Power cylinder code. The rod number references the rod diameter. The thread style refers to the rod end. (See Rod End Styles and matching code numbers, page 3.) When Viceroy Fluid Power Style 4 is specified, all rod and cylinder modifications must also be specified.

	Page	Page
How to Select and Specify Viceroy Fluid Power Cylinders.....	2	
Mounting Styles.....	3	
Rod End Styles.....	3	
Piston Rod Selector Chart.....	4	
How To Use This Catalog.....	5	
Design & Construction Features.....	6-8	
NFPA Cylinder Interchange Comparison.....	26-27	
Cylinder Information		
Cushion Data.....	30	
Cylinders for Special Service.....	2	
Special Cylinders.....	8	
Service Instructions.....	29-30	
Tie Rod Torque Chart.....	30	
Mounting Recommendations.....	30	
Time Saver Capacity Chart.....	35	
		
		Flange Mounted, 1½" to 6" Bore.....
		22
		
		Flange Mounted, 8" to 20" Bore.....
		24
		
		Double Rod Cylinder 1½" to 6" Bore.....
		9
		Double Rod Cylinder 8" to 14" Bore.....
		11
Optional Features		
High Temperature Service.....	8	
Non-lubricated Service.....	8	
Adverse Environmental Dust and Tandem Cylinders.....	8	
Adjustable Stroke Cylinders.....	8	
Limit Switches.....	8	
Accessories		
Base Pivot.....	32	
Base Clevis	32	
Rod Eye.....	32	
Rod Clevis.....	32	
Pins.....	32	
Linear Alignment Coupler.....	32	
Seal Kits.....	28	
		
		Tie Rod Mounted, 1½" to 6" Bores.....
		9
		Tie Rod Mounted, 8" to 20" Bores.....
		11
		
		Foot Mounted, 1½" to 6" Bore.....
		13
		Foot Mounted, 8" to 20" Bore.....
		15
		
		Trunnion and Clevis Pivot Mounted, 1½" to 6" Bore.....
		17
		
		Trunnion and Clevis Mounted, 8" to 20" Bore.....
		20

Quality Design and Construction Features



Cylinder Parts

1. Piston Rods
2. Rod Wiper
3. Bolted Rod Gland Cartridge
4. Ports
5. Tube Seals
6. Tube
7. Piston Seals
8. Piston
9. Tie Rods and Nuts
10. Heads and Caps
11. Needle valves and Check Valves
12. Cushions
13. Wrench Flats

Quality Design and Construction Features

1. Piston Rods -

Piston rods are 100,000 psi minimum yield, medium carbon steel. Sizes $\frac{5}{8}$ " thru $3\frac{1}{2}$ " diameter are induction case hardened to 54 Rockwell C. All piston rods are hard-chrome plated and highly polished.

2. Rod Wiper -

Polyurethane, double lip type wiper designed to protect the piston rod, bearing and rod seal, is standard for all rod sizes. Also, metallic scrapers and Viton wipers are available for all rod sizes.

3. Bolted Rod Gland Cartridge -

Heavy wall, ductile iron bearing is accurately piloted in head to assure perfect alignment, designed to accept a variety of seal styles. With certain exceptions, the cartridges can be removed without removing mounts or tie rod nuts. This eliminates the necessity of cylinder disassembly to replace the rod seals or rod bearing. Bearings are held in place with bolted steel retainer plates.

Bearings used for a given rod size are interchangeable into any cylinder bore with the same rod diameter (except for bearings used with $1\frac{1}{2}$ ", 2" and $2\frac{1}{2}$ " bores with maximum rod sizes).

a. Rod Seal - Synthetic rubber rod seal is wear compensating, flexible lip type, with heavy web section, essential to satisfactory performance and long life.

b. Rod Bearing - Ductile iron material insures low friction, high load capabilities and long life.

4. Ports -

Large unrestricted ports permit maximum flow with minimum pressure drop. Heads may be rotated independently at 90° intervals for convenient port location.

5. Tube Seals -

Positive sealing, synthetic rubber O-rings seal on tube I.D.

6. Tube -

Aluminum alloy with hard anodized bore in sizes from $1\frac{1}{2}$ " to 8". Filament wound fiberglass tubing in sizes from 10" to 18". Steel pipe bored, honed and hard chrome-plated in 20" size. Other tubing materials also available as options.

7. Piston Seals -

Flexible lip type nitrile buna-n piston seals provide positive sealing, low friction and long life.

8. Piston -

High grade alloy iron, $1\frac{1}{2}$ " thru 8" bores; steel piston for 10" thru 18" bore sizes. For 20" cylinders, a steel piston with bronzed outside diameter is used. Pistons are one piece, pilot fitted to piston rod and locked.

9. Tie Rods and Nuts -

Tie rods are 100,000 psi minimum yield, medium carbon steel, and are prestressed at assembly to minimize the possibility of tie rod elongation. Tie rod lock nuts are prevailing torque type.

10. Heads and Caps -

Rolled steel accurately machined to assure perfect alignment of piston rod bearing, piston rod, piston, and tube. Heads and caps pilot on tube O.D. to prevent "breathing" and provide additional insurance against leakage.

11. Needle Valves and Check Valves -

Flush type, self-locking needle valves and check valves are interchangeable. Large drilled passages provide maximum control of cushioning effect, and assure rapid, full-power start of return stroke. As an added safety feature, leakage will occur prior to thread disengagement, to eliminate the possibility of valve blow-out.

12. Cushions -

Self-aligning, synthetic rubber seals provide a positive, leak-proof cushion. This, together with adjustable cushion needle valve, offers an extremely accurate means of obtaining most efficient cushion characteristics for a variety of loads and speeds.

13. Wrench Flats -

Large wrench flats are chamfered to protect rod gland packing in installation. All standard piston rods through $5\frac{1}{2}$ " diameter are furnished with two wrench flats. Additional flats are available upon request.

Mounts -

All mounts are of steel plate or fabricated steel, accurately machined for precise mounting.

JIC - These cylinders are designed to conform to JIC standards. **NFPA** - The dimensioning and identification of the cylinders in this Bulletin are in accordance with the NFPA recommended dimension code for fluid power cylinders.

Cylinders for Special Operating Conditions

SERIES 7K

Additional Optional Features:

Other standard cylinders are offered incorporating special features to suit specific duty applications.

1. Air Cylinder for High Temperature

Series 7KT. Viton seals and other materials specially selected for continuous operation in environments where temperature ranges from -20°F to + 400°F.

2. Air Cylinder for Non-lubricated Service

Series 7KF piston and rod seals are flexible lip nitrile buna-n type providing low friction. Cylinder is designed for use where operating medium contains little or no lubricant.

3. Air Cylinder for Adverse Environmental Duty

Series 7KR contains additional features which reduce the effect of shock, vibrations, side loading, and environmental conditions, on the cylinder performance and its life.

4. Tandem Cylinders

Can be used as force multipliers in locations where space limitation prevents use of larger bore cylinders.

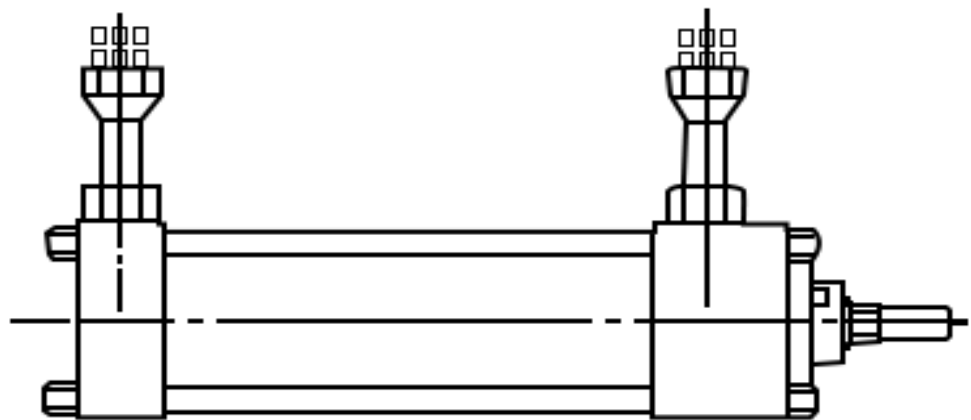
5. Adjustable Stroke Cylinders

Ideal for use in applications requiring operation at easily adjustable stroke lengths.

6. Cylinders with Limit Switch

Proximity type switch, port mounted, requiring no mechanical contact for actuation. It provides electrical signals at the end of the cylinder stroke for any secondary operations or actuations. The switch is insensitive to transients.

It is hermetically sealed and explosion proof.



Ordering Information: In addition to the cylinder specifications, specify the Limit Switch by following coding:

LS	H	1
	C	2
		3
		4

Where:

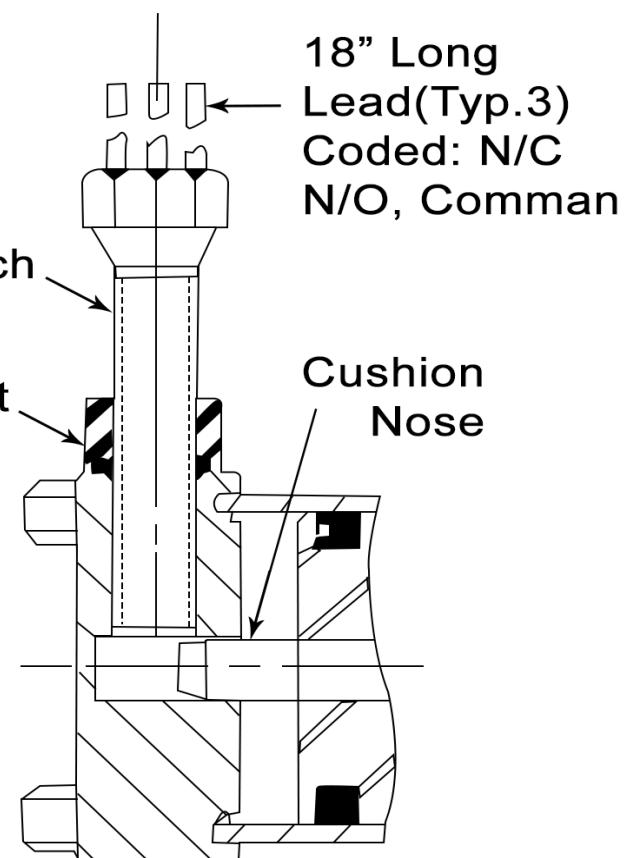
LS = Limit Switch
 H = Switch at Head End
 C = Switch at Cap End
 1,2,3,4 = Switch Position

Enclosure NEMA

Specifications	
1	
2	7
3	9
3R	12
3S	13
4	
4X	

Switch electrical specifications

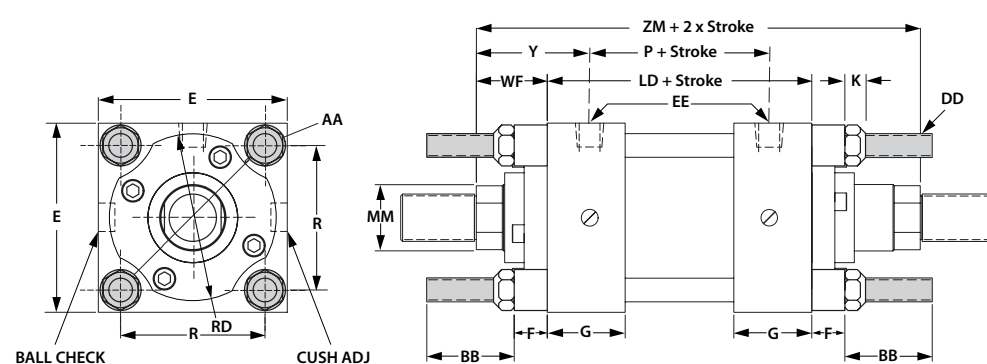
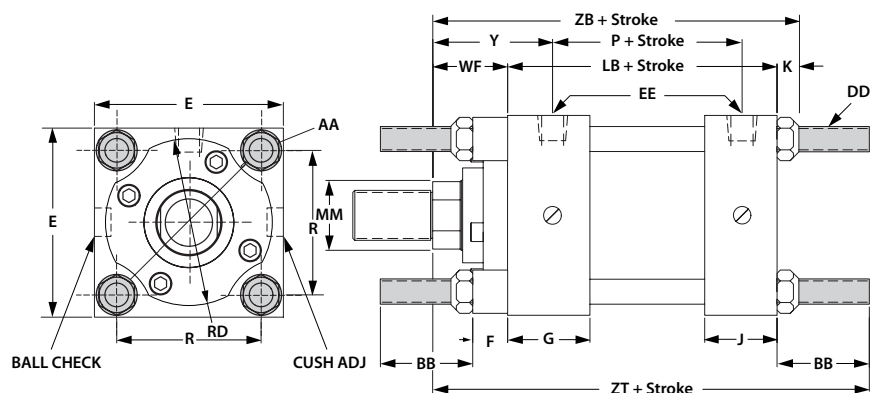
Single pole, double throw. Form "C"
 2 amps-120/240 VAC-resistive load
 ½ amp-50 VAC-inductive load
 50 MA-24 VDC
 (Greater capacities possible with proper arc quenching circuitry-DC volts only.) 0.003 second-max response time.
 Housing is 300 series stainless steel.



For additional information contact your nearest distributor or the factory sales department.

Tie Rod Mounted Cylinders

1½" to 6" Bores



STYLE L

(NFPA Mounting Style MX1)

Double rod cylinders are available in all styles* except A, AA, EB, and G. Dimensions for other styles are the same as above with mounting added.

Add prefix D to style when ordering. Example: DB HYD. CYL.

BB is standard tie rod extension on Styles L, M, N, DL and DM, but will be increased or decreased when specified. To do this, specify BB to be (so many) inches. Extra nuts are available for tie rod ends.

*Consult factory on availability of Style DCC cylinder.

STYLE DL

(NFPA Mounting Style MDX1)

VFP Mounting style	NFPA Mounting style	Description
L	MX1	Tie rods extended both ends(above left)
M	MX3	Tie rods extended head end(rod end)
N	MX2	Tie rods extended cap end(blind end)
DL	MDX1	Tie rods extended both ends(above right)
DM	MDX3	Tie rods extended one end

Envelope and Mounting Dimensions

Bore	AA	BB	DD	E	EE NPTF	F	G	J	K	R	ADD STROKE		
											LB	LD	P
1½	2.02	1	¼-28	2	⅜	⅜	1½	1	¼	1.43	3⅝	4⅛	2¼
2	2.6	1⅝	⅝ ₁₆ -24	2½	⅜	⅜	1½	1	⅝ ₁₆	1.84	3⅝	4⅛	2¼
2½	3.1	1⅝	⅝ ₁₆ -24	3	⅜	⅜	1½	1	⅝ ₁₆	2.19	3¾	4¼	2⅝
3¼	3.9	1⅝	⅝ ₈ -24	3¾	½	⅝ ₈	1¾	1¼	⅝ ₈	2.76	4¼	4¾	2⅝
4	4.7	1⅝	⅝ ₈ -24	4½	½	⅝ ₈	1¾	1¼	⅝ ₈	3.32	4¼	4¾	2⅝
5	5.8	1⅝ ₁₆	½-20	5½	½	⅝ ₈	1¾	1¼	⅞ ₁₆	4.10	4½	5	2⅞
6	6.9	1⅝ ₁₆	½-20	6½	¾	¾	2	1½	⅞ ₁₆	4.88	5	5½	3⅝

On 1½, 2" and 2½" bore cylinders with maximum size rods, the head end NPTF ports are tapped shallow and the head end cushions are non-adjustable.

Viceroy 7K Series Cylinders anticipate the ever increasing demands of industry for cylinders with higher pressure ratings, longer service life and reduced maintenance. For greater dependability, rely on the fluid power specialists..

SERIES
7K

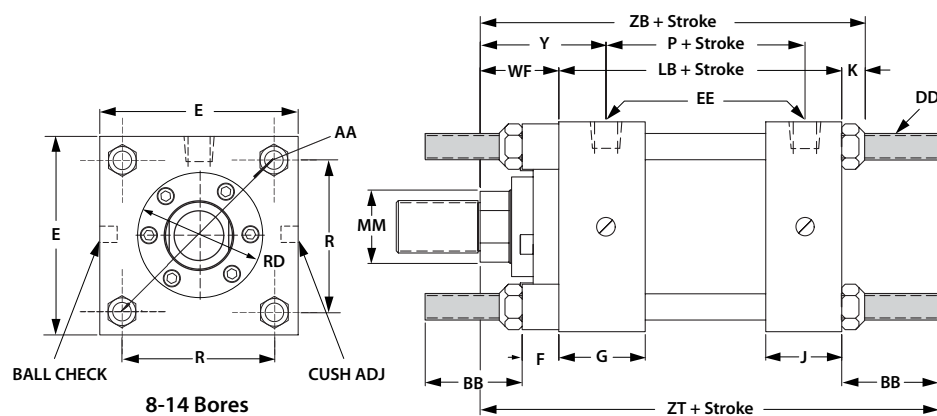
Rod and Dimensions

Envelope and Mounting Dimensions

BORE	Rod No	Rod Dia. MM	Thread Size		Rod Extensions and Pilot Dimensions								WF	Y	ADD STROKE		ADD 2X Stk. ZM
			KK	FF	A	+000 -002 B	C	D	NA	FA	RD	VB			ZB	ZT	
1½	1(Std)	⅝	7/16-20	½-20	¾	1.124	⅜	½	9/16	⅜	2	⅝	1	1 ¹⁵ / ₁₆	4 ⁷ / ₈	5 ⁵ / ₈	6 ¹ / ₈
	2	1	¾-16	7/8-14	1⅛	1.499	½	7/8	15/16	⅜	-	7/8	1⅜	2 ⁵ / ₁₆	5¼	6	6 ⁷ / ₈
2	1(Std)	⅝	7/16-20	½-20	¾	1.124	⅜	½	9/16	⅜	2	⅝	1	1 ¹⁵ / ₁₆	4 ¹⁵ / ₁₆	5¾	6 ¹ / ₈
	2	1	¾-16	7/8-14	1⅛	1.499	½	7/8	15/16	⅜	-	7/8	1⅜	2 ⁵ / ₁₆	5 ⁵ / ₁₆	6 ¹ / ₈	6 ⁷ / ₈
	3	1⅜	1-14	1¼-12	1⅝	1.999	⅝	1⅛	15/16	⅜	-	1	1⅝	2 ⁹ / ₁₆	5 ⁹ / ₁₆	6 ³ / ₈	7 ³ / ₈
2½	1(Std)	⅝	7/16-20	½-20	¾	1.124	⅜	½	9/16	⅜	2	⅝	1	1 ¹⁵ / ₁₆	5 ¹ / ₁₆	5 ⁷ / ₈	6¼
	2	1	¾-16	7/8-14	1⅛	1.499	½	7/8	15/16	⅜	2¾	7/8	1⅜	2 ⁵ / ₁₆	5 ⁷ / ₁₆	6¼	7
	3	1⅜	1-14	1¼-12	1⅝	1.999	½	1⅛	15/16	⅜	-	1	1⅝	2 ⁹ / ₁₆	5 ¹¹ / ₁₆	6½	7½
	4	1¾	1¼-12	1½-12	2	2.374	¾	1½	1 ¹¹ / ₁₆	⅜	-	1⅛	1⅞	2 ¹³ / ₁₆	5 ¹⁵ / ₁₆	6¾	8
3¼	2(Std)	1	¾-16	7/8-14	1⅛	1.499	½	7/8	15/16	⅜	2¾	7/8	1⅜	2 ⁷ / ₁₆	6	7	7½
	3	1⅜	1-14	1¼-12	1⅝	1.999	½	1⅛	15/16	⅝	3¼	1	1⅝	2 ¹¹ / ₁₆	6¼	7¼	8
	4	1¾	1¼-12	1½-12	2	2.374	¾	1½	1 ¹¹ / ₁₆	⅝	3¾	1⅛	1⅞	2 ¹⁵ / ₁₆	6½	7½	8½
	5	2	1½-12	1¾-12	2¼	2.624	7/8	1 ¹¹ / ₁₆	1 ¹⁵ / ₁₆	⅝	-	1⅛	2	3 ¹ / ₁₆	6 ⁵ / ₈	7 ⁵ / ₈	8¾
4	2(Std)	1	¾-16	7/8-14	1⅛	1.499	½	7/8	15/16	⅜	2¾	7/8	1⅜	2 ⁷ / ₁₆	6	7	7½
	3	1⅜	1-14	1¼-12	1⅝	1.999	½	1⅛	15/16	⅝	3¼	1	1⅝	2 ¹¹ / ₁₆	6¼	7¼	8
	4	1¾	1¼-12	1½-12	2	2.374	¾	1½	1 ¹¹ / ₁₆	⅝	3¾	1⅛	1⅞	2 ¹⁵ / ₁₆	6½	7½	8½
	5	2	1½-12	1¾-12	2¼	2.624	7/8	1 ¹¹ / ₁₆	1 ¹⁵ / ₁₆	⅝	4⅞	1⅛	2	3 ¹ / ₁₆	6 ⁵ / ₈	7 ⁵ / ₈	8¾
	6	2½	1⅞-12	2¼-12	3	3.124	1	2 ¹ / ₁₆	2 ³ / ₈	⅝	4½	1¼	2¼	3 ⁵ / ₁₆	6 ⁷ / ₈	7 ⁷ / ₈	9¼
5	2(Std)	1	¾-16	7/8-14	1⅛	1.499	½	7/8	15/16	⅜	2¾	7/8	1⅜	2 ⁷ / ₁₆	6 ⁵ / ₁₆	7 ¹¹ / ₁₆	7¾
	3	1⅜	1-14	1¼-12	1⅝	1.999	½	1⅛	15/16	⅝	3¼	1	1⅝	2 ¹¹ / ₁₆	6 ⁹ / ₁₆	7 ¹⁵ / ₁₆	8¼
	4	1¾	1¼-12	1½-12	2	2.374	¾	1½	1 ¹¹ / ₁₆	⅝	3¾	1⅛	1⅞	2 ¹⁵ / ₁₆	6 ¹³ / ₁₆	8 ³ / ₁₆	8¾
	5	2	1½-12	1¾-12	2¼	2.624	7/8	1 ¹¹ / ₁₆	1 ¹⁵ / ₁₆	⅝	4⅞	1⅛	2	3 ¹ / ₁₆	6 ¹⁵ / ₁₆	8 ⁵ / ₁₆	9
	6	2½	1⅞-12	2¼-12	3	3.124	1	2 ¹ / ₁₆	2 ³ / ₈	⅝	4½	1¼	2¼	3 ⁵ / ₁₆	7 ³ / ₁₆	8 ⁹ / ₁₆	9½
	7	3	2¼-12	2¾-12	3½	3.749	1	2 ⁵ / ₈	2 ⁷ / ₈	⅝	5¼	1¼	2¼	3 ⁵ / ₁₆	7 ³ / ₁₆	8 ⁹ / ₁₆	9½
	8	3½	2½-12	3¼-12	3½	4.249	1	3	3 ³ / ₈	⅝	5½	1¼	2¼	3 ⁵ / ₁₆	7 ³ / ₁₆	8 ⁹ / ₁₆	9½
6	3(Std)	1⅜	1-14	1¼-12	1⅝	1.999	½	1⅛	15/16	⅝	3¼	1	1⅝	2 ¹³ / ₁₆	7 ¹ / ₁₆	8 ⁷ / ₁₆	8¾
	4	1¾	1¼-12	1½-12	2	2.374	¾	1½	1 ¹¹ / ₁₆	⅝	3¾	1⅛	1⅞	3 ¹ / ₁₆	7 ⁵ / ₁₆	8 ¹¹ / ₁₆	9¼
	5	2	1½-12	1¾-12	2¼	2.624	7/8	1 ¹¹ / ₁₆	1 ¹⁵ / ₁₆	⅝	4⅞	1⅛	2	3 ³ / ₁₆	7 ⁷ / ₁₆	8 ¹³ / ₁₆	9½
	6	2½	1⅞-12	2¼-12	3	3.124	1	2 ¹ / ₁₆	2 ³ / ₈	⅝	4½	1¼	2¼	3 ⁷ / ₁₆	7 ¹¹ / ₁₆	9 ¹ / ₁₆	10
	7	3	2¼-12	2¾-12	3½	3.749	1	2 ⁵ / ₈	2 ⁷ / ₈	⅝	5¼	1¼	2¼	3 ⁷ / ₁₆	7 ¹¹ / ₁₆	9 ¹ / ₁₆	10
	8	3½	2½-12	3¼-12	3½	4.249	1	3	3 ³ / ₈	⅝	5½	1¼	2¼	3 ⁷ / ₁₆	7 ¹¹ / ₁₆	9 ¹ / ₁₆	10
9	4	3-12	3¾-12	4	4.749	1	3 ³ / ₈	3 ⁷ / ₈	¾	6	1¼	2¼	3 ⁷ / ₁₆	7 ¹¹ / ₁₆	9 ¹ / ₁₆	10	

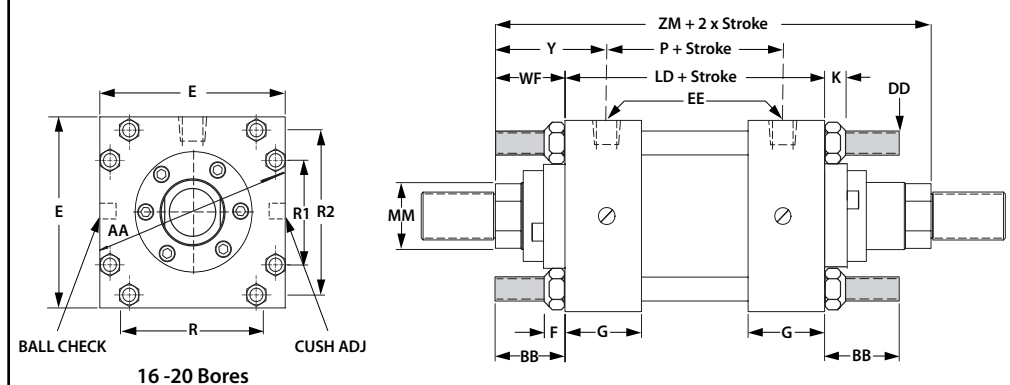
Tie Rod Mounted Cylinders 8" to 20" Bores

SERIES 7K



STYLE L

(NFPA Mounting Style MX1)



STYLE DL

(NFPA Mounting Style MDX1)

VFP Mounting style	NFPA Mounting style	Description
L	MX1	Tie rods extended both ends(above left)
M	MX3	Tie rods extended head end(rod end)
N	MX2	Tie rods extended cap end(blind end)
DL	MDX1	Tie rods extended both ends(above right)
DM	MDX3	Tie rods extended one end

Bore	No Tie Rods	AA	DD	R ₁	R ₂
16	8	18.19	1-14	10.25	15.02
18	8	20.19	1-14	11.50	16.59
20	8	22.31	1½-12	12.62	18.40

Style DCC is not available in 16", 18" and 20" bores.

Double rod cylinders are available in all styles* except A, AA, EB, and G. Dimensions for other styles are the same as above with mounting added.

Add prefix D to style when ordering. Example: DB HYD. CYL.

BB is standard tie rod extension on Styles L, M, N, DL and DM, but will be increased or decreased when specified. To do this, specify BB to be (so many) inches. Extra nuts are available for tie rod ends.

*Consult factory on availability of Style DCC cylinder.

Envelope and Mounting Dimensions

Bore	AA	BB	DD	E	EE NPTF	G	J	K	R	Add Stroke		
										LB	LD	P
8	9.1	2 ⁵ / ₁₆	5/8-18	8½	¾	2	11/2	9/16	6.44	5½	5½	3¼
10	11.2	2 ¹¹ / ₁₆	¾-16	10 ⁵ / ₈	1	2¼	2	11/16	7.92	6¾	6 ⁵ / ₈	4½
12	13.3	2 ¹¹ / ₁₆	¾-16	12¾	1	2¼	2	11/16	9.40	6 ⁷ / ₈	7 ¹ / ₈	4 ⁵ / ₈
14	15.4	3 ³ / ₁₆	7/8-14	14¾	1¼	2¾	2¼	13/16	10.90	8 ¹ / ₈	8 ⁵ / ₈	5½
16	18.19	3 ⁵ / ₈	1-14	17½	1¼	2¾	2¾	15/16	-	8 ⁷ / ₈	8 ⁷ / ₈	5¾
18	20.19	4 ¹ / ₁₆	1-14	19½	1½	3¼	3¼	15/16	-	9 ⁷ / ₈	9 ⁷ / ₈	6 ³ / ₈
20	22.31	4 ³ / ₈	1½-12	21½	2	3¾	3¾	1	-	11 ³ / ₈	11 ³ / ₈	7 ³ / ₈

NPTF ports furnished unless otherwise specified.

The exclusive Viceroy Cartridge is standard on every 7K cylinder to help eliminate most causes of cylinder failure. This Cartridge provides the ultimate in sealing plus greater bearing area and resistance to side load stress. For better bearings, rely on the fluid power specialists.

SERIES
7K

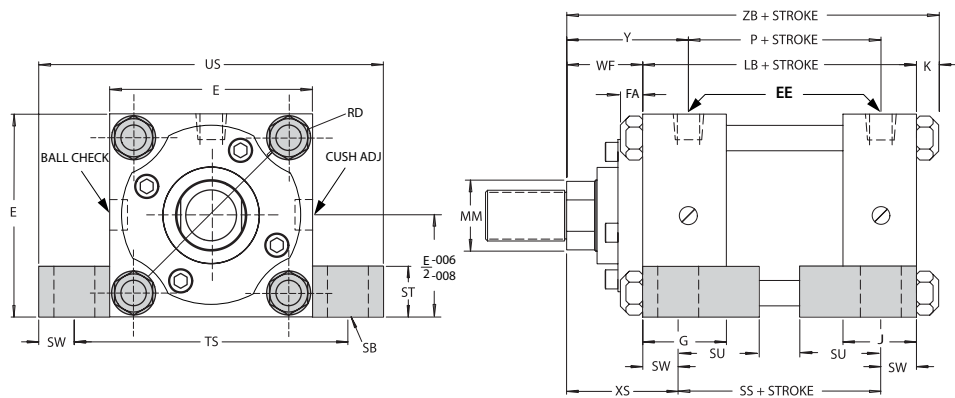
Rod and Dimensions

Envelope and Mounting Dimensions

Bore	Rod Code No	Rod. Dia. MM	Thread Size		Rod Extensions and Pilot Dimensions										Add Stroke		Add 2x Stk.	
			KK	FF	A	+002 -002 B	C	D	NA	FA	RD	VB	WF	Y	ZB	ZT	ZM	
8	3 (Std)	1 3/8	1-14	1 1/4-12	1 5/8	1.999	5/8	1 1/8	1 5/16	5/8	3 1/4	1	1 5/8	2 13/16	7 5/16	9 1/16	8 7/8	
	4	1 3/4	1 1/4-12	1 1/2-12	2	2.374	3/4	1 1/2	1 11/16	5/8	3 3/4	1 1/8	1 7/8	3 1/16	7 9/16	9 5/16	9 3/8	
	5	2	1 1/2-12	1 3/4-12	2 1/4	2.624	7/8	1 11/16	1 15/16	5/8	4 1/8	1 1/8	2	3 3/16	7 11/16	9 7/16	9 5/8	
	6	2 1/2	1 7/8-12	2 1/4-12	3	3.124	1	2 1/16	2 3/8	5/8	4 1/2	1 1/4	2 1/4	3 7/16	7 15/16	9 11/16	10 1/8	
	7	3	2 1/4-12	2 3/4-12	3 1/2	3.749	1	2 5/8	2 7/8	5/8	5 1/4	1 1/4	2 1/4	3 7/16	7 15/16	9 11/16	10 3/8	
	8	3 1/2	2 1/2-12	3 1/4-12	3 1/2	4.249	1	3	3 3/8	5/8	5 1/2	1 1/4	2 1/4	3 7/16	7 15/16	9 11/16	10 3/8	
	9	4	3-12	3 3/4-12	4	4.749	1	3 3/8	3 7/8	3/4	6	1 1/4	2 1/4	3 7/16	7 15/16	9 11/16	10 3/8	
	10	4 1/2	3 1/4-12	4 1/4-12	4 1/2	5.249	1	3 7/8	4 3/8	3/4	6 7/8	1 1/4	2 1/4	3 7/16	7 15/16	9 11/16	10 3/8	
	11	5	3 1/2-12	4 3/4-12	5	5.749	1	4 1/4	4 7/8	3/4	7 1/4	1 1/4	2 1/4	3 7/16	7 15/16	9 11/16	10 3/8	
	12	5 1/2	4-12	5 1/4-12	5 1/2	6.249	1	4 5/8	5 3/8	3/4	8	1 1/4	2 1/4	3 7/16	7 15/16	9 11/16	10 3/8	
	10	4 (Std)	1 3/4	1 1/4-12	1 1/2-12	2	2.374	3/4	1 1/2	1 11/16	5/8	3 3/4	1 1/8	1 7/8	3 3/8	8 15/16	10 15/16	10 3/8
		5	2	1 1/2-12	1 3/4-12	2 1/4	2.624	7/8	1 11/16	1 15/16	5/8	4 1/6	1 1/8	2	3 1/4	9 1/16	11 1/16	10 5/8
6		2 1/2	1 7/8-12	2 1/4-12	3	3.124	1	2 1/16	2 3/8	5/8	4 1/2	1 1/4	2 1/4	3 1/2	9 5/16	11 5/16	11 1/8	
7		3	2 1/4-12	2 3/4-12	3 1/2	3.749	1	2 5/8	2 7/8	5/8	5 1/4	1 1/4	2 1/4	3 1/2	9 5/16	11 5/16	11 1/8	
8		3 1/2	2 1/2-12	3 1/4-12	3 1/2	4.249	1	3	3 3/8	5/8	5 1/2	1 1/4	2 1/4	3 1/2	9 5/16	11 5/16	11 1/8	
9		4	3-12	3 3/4-12	4	4.749	1	3 3/8	3 7/8	3/4	6	1 1/4	2 1/4	3 1/2	9 5/16	11 5/16	11 1/8	
10		4 1/2	3 1/4-12	4 1/4-12	4 1/2	5.249	1	3 7/8	4 3/8	3/4	6 7/8	1 1/4	2 1/4	3 1/2	9 5/16	11 5/16	11 1/8	
11		5	3 1/2-12	4 3/4-12	5	5.749	1	4 1/4	4 7/8	3/4	7 1/4	1 1/4	2 1/4	3 1/2	9 5/16	11 5/16	11 1/8	
12		5 1/2	4-12	5 1/4-12	5 1/2	6.249	1	4 5/8	5 3/8	3/4	8	1 1/4	2 1/4	3 1/2	9 5/16	11 5/16	11 1/8	
12		5 (Std)	2	1 1/2-12	1 3/4-12	2 1/4	2.624	7/8	1 11/16	1 15/16	5/8	4 1/8	1 1/8	2	3 1/4	9 9/16	11 9/16	11 1/8
		6	2 1/2	1 7/8-12	2 1/4-12	3	3.124	1	2 1/16	2 3/8	5/8	4 1/2	1 1/4	2 1/4	3 1/2	9 13/16	11 13/16	11 5/8
		7	3	2 1/4-12	2 3/4-12	3 1/2	3.749	1	2 5/8	2 7/8	5/8	5 1/4	1 1/4	2 1/4	3 1/2	9 13/16	11 13/16	11 5/8
	8	3 1/2	2 1/2-12	3 1/4-12	3 1/2	4.249	1	3	3 3/8	5/8	5 1/2	1 1/4	2 1/4	3 1/2	9 13/16	11 13/16	11 5/8	
	9	4	3-12	3 3/4-12	4	4.749	1	3 3/8	3 7/8	3/4	6	1 1/4	2 1/4	3 1/2	9 13/16	11 13/16	11 5/8	
	10	4 1/2	3 1/4-12	4 1/4-12	4 1/2	5.249	1	3 7/8	4 3/8	3/4	6 7/8	1 1/4	2 1/4	3 1/2	9 13/16	11 13/16	11 5/8	
	11	5	3 1/2-12	4 3/4-12	5	5.749	1	4 1/4	4 7/8	3/4	7 1/4	1 1/4	2 1/4	3 1/2	9 13/16	11 13/16	11 5/8	
	12	5 1/2	4-12	5 1/4-12	5 1/2	6.249	1	4 5/8	5 3/8	3/4	8	1 1/4	2 1/4	3 1/2	9 13/16	11 13/16	11 5/8	
	14	6 (Std)	2 1/2	1 7/8-12	2 1/4-12	3	3.124	1	2 1/16	2 3/8	5/8	4 1/2	1 1/4	2 1/4	3 13/16	11 3/16	13 9/16	13 3/8
		7	3	2 1/4-12	2 3/4-12	3 1/2	3.749	1	2 5/8	2 7/8	5/8	5 1/4	1 1/4	2 1/4	3 13/16	11 3/16	13 9/16	13 3/8
		8	3 1/2	2 1/2-12	3 1/4-12	3 1/2	4.249	1	3	3 3/8	5/8	5 1/2	1 1/4	2 1/4	3 13/16	11 3/16	13 9/16	13 3/8
		9	4	3-12	3 3/4-12	4	4.749	1	3 3/8	3 7/8	3/4	6	1 1/4	2 1/4	3 13/16	11 3/16	13 9/16	13 3/8
10		4 1/2	3 1/4-12	4 1/4-12	4 1/2	5.249	1	3 7/8	4 3/8	3/4	6 7/8	1 1/4	2 1/4	3 13/16	11 3/16	13 9/16	13 3/8	
11		5	3 1/2-12	4 3/4-12	5	5.749	1	4 1/4	4 7/8	3/4	7 1/4	1 1/4	2 1/4	3 13/16	11 3/16	13 9/16	13 3/8	
12		5 1/2	4-12	5 1/4-12	5 1/2	6.249	1	4 5/8	5 3/8	3/4	8	1 1/4	2 1/4	3 13/16	11 3/16	13 9/16	13 3/8	
16		7 (Std)	3	2 1/4-12	2 3/4-12	3 1/2	3.749	1	2 5/8	2 7/8	5/8	5 1/4	1 1/4	2 1/4	3 13/16	12 1/16	14 3/4	13 3/8
		8	3 1/2	2 1/2-12	3 1/4-12	3 1/2	4.249	1	3	3 3/8	5/8	5 1/2	1 1/4	2 1/4	3 13/16	12 1/16	14 3/4	13 3/8
		9	4	3-12	3 3/4-12	4	4.749	1	3 3/8	3 7/8	3/4	6	1 1/4	2 1/4	3 13/16	12 1/16	14 3/4	13 3/8
		10	4 1/2	3 1/4-12	4 1/4-12	4 1/2	5.249	1	3 7/8	4 3/8	3/4	6 7/8	1 1/4	2 1/4	3 13/16	12 1/16	14 3/4	13 3/8
		11	5	3 1/2-12	4 3/4-12	5	5.749	1	4 1/4	4 7/8	3/4	7 1/4	1 1/4	2 1/4	3 13/16	12 1/16	14 3/4	13 3/8
	12	5 1/2	4-12	5 1/4-12	5 1/2	6.249	1	4 5/8	5 3/8	3/4	8	1 1/4	2 1/4	3 13/16	12 1/16	14 3/4	13 3/8	
	18	8 (Std)	3 1/2	2 1/2-12	3 1/4-12	3 1/2	4.249	1	3	3 3/8	5/8	5 1/2	1 1/4	2 1/4	4	13 1/16	16 3/16	14 3/8
		9	4	3-12	3 3/4-12	4	4.749	1	3 3/8	3 7/8	3/4	6	1 1/4	2 1/4	4	13 1/16	16 3/16	14 3/8
		10	4 1/2	3 1/4-12	4 1/4-12	4 1/2	5.249	1	3 7/8	4 3/8	3/4	6 7/8	1 1/4	2 1/4	4	13 1/16	16 3/16	14 3/8
		11	5	3 1/2-12	4 3/4-12	5	5.749	1	4 1/4	4 7/8	3/4	7 1/4	1 1/4	2 1/4	4	13 1/16	16 3/16	14 3/8
		12	5 1/2	4-12	5 1/4-12	5 1/2	6.249	1	4 5/8	5 3/8	3/4	8	1 1/4	2 1/4	4	13 1/16	16 3/16	14 3/8
		20	8 (Std)	3 1/2	2 1/2-12	3 1/4-12	3 1/2	4.249	1	3	3 3/8	5/8	5 1/2	1 1/4	2 1/4	4 1/4	14 5/8	18
9			4	3-12	3 3/4-12	4	4.749	1	3 3/8	3 7/8	3/4	6	1 1/4	2 1/4	4 1/4	14 5/8	18	15 7/8
10			4 1/2	3 1/4-12	4 1/4-12	4 1/2	5.249	1	3 7/8	4 3/8	3/4	6 7/8	1 1/4	2 1/4	4 1/4	14 5/8	18	15 7/8
11			5	3 1/2-12	4 3/4-12	5	5.749	1	4 1/4	4 7/8	3/4	7 1/4	1 1/4	2 1/4	4 1/4	14 5/8	18	15 7/8
12			5 1/2	4-12	5 1/4-12	5 1/2	6.249	1	4 5/8	5 3/8	3/4	8	1 1/4	2 1/4	4 1/4	14 5/8	18	15 7/8

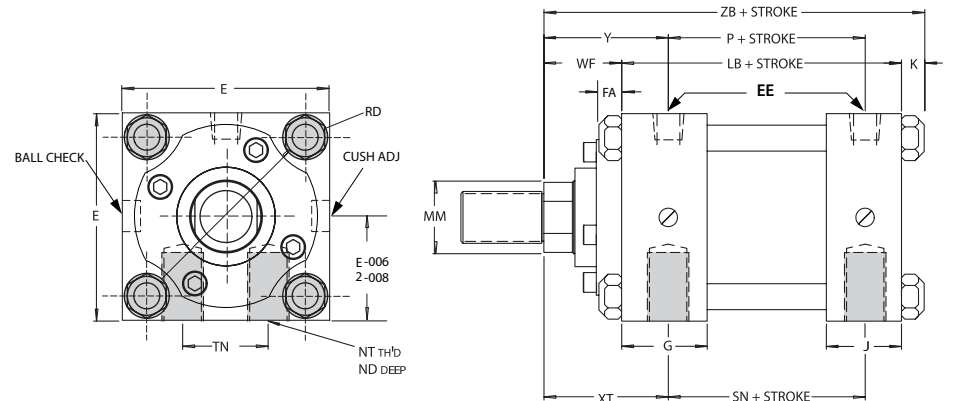
Foot Mounted Cylinders

1½" to 6" Bores

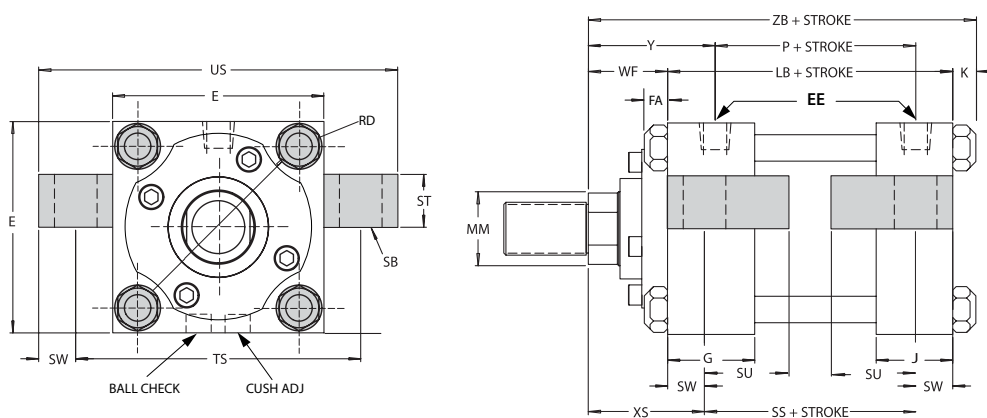


STYLE J - Side Lug Mount
(NFPA Mounting Style MS2)

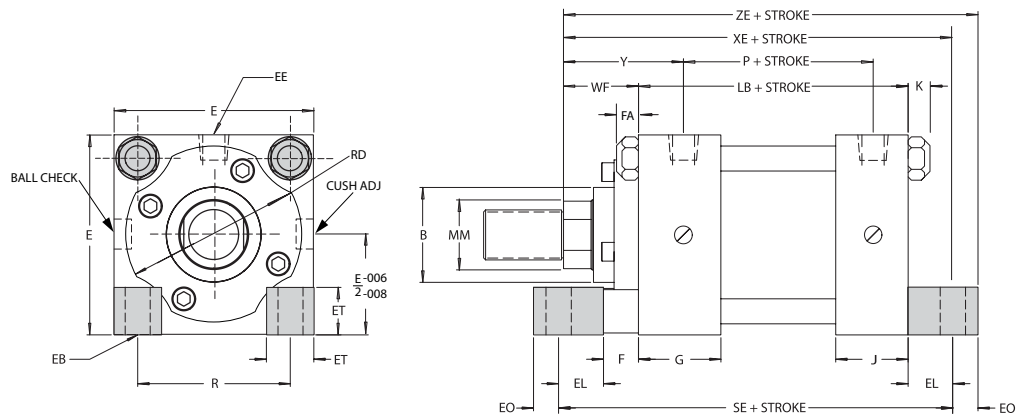
NOTE : Do not specify ports in #2 or #4 position without checking clearance between pipe fitting and mounting bolt head.



STYLE H - Side Flush Mount
(NFPA Mounting Style MS4)



STYLE K - Center Line Mount
(NFPA Mounting Style MS3)



STYLE CC - Foot Mount
(NFPA Mounting Style MS7)

**Foot lugs may interfere with cartridge removal on sizes indicated with *on opposite page.*

Envelope and Mounting Dimensions

Bore	E	EB*	EE NPTF	EL	EO	ET	F	G	J	K	NT	R	SB*	ST	SU	SW	TN	TS	US	Add Stroke				
																				LB	P	SE	SN	SS
1½	2	¼	¾	¾	¼	⅞	¾	1½	1	¼	¼-20	1.43	¾	½	15/16	¾	⅝	2¾	3½	3⅝	2¼	5½	2¼	2⅞
2	2½	5/16	¾	15/16	5/16	11/16	¾	1½	1	5/16	5/16-18	1.84	¾	½	15/16	¾	7/8	3¼	4	3⅝	2¼	5⅞	2¼	2⅞
2½	3	5/16	¾	11/16	5/16	13/16	¾	1½	1	5/16	¾-16	2.19	¾	½	15/16	¾	1¼	3¾	4½	3¾	2⅞	6¼	2⅞	3
3¼	3¾	¾	½	7/8	¾	1	⅝	1¾	1¼	¾	½-13	2.76	½	¾	1¼	½	1½	4¾	5¾	4¼	2⅞	6⅝	2⅞	3¼
4	4½	¾	½	1	¾	13/16	⅝	1¾	1¼	¾	½-13	3.32	½	¾	1¼	½	21/16	5½	6½	4¼	2⅞	6⅞	2⅞	3¼
5	5½	½	½	11/16	½	1⅜	⅝	1¾	1¼	7/16	⅝-11	4.10	¾	1	19/16	1½	211/16	6⅞	8¼	4½	2⅞	7¼	2⅞	3⅞
6	6½	½	¾	1	½	1⅝	¾	2	1½	7/16	¾-10	4.88	¾	1	19/16	11/16	3¼	7⅞	9¼	5	3⅞	7¾	3⅞	3⅝

On 1½", 2", 2½" bore cylinders with maximum size rods, the head end NPTF Ports are tapped shallow and the head end cushions are non-adjustable.

*Styles J, H, K and CC should be pinned or keyed at one end to prevent shifting. *Mounting holes are 1/16 larger than screw size shown.*

The Viceroy cartridge features include the most advanced rod seal and wiper configurations in the industry. And, this cartridge's one-piece construction with bolted retainer permits fast removal without disassembly of the cylinder. For reduced downtime rely on the fluid power specialists.

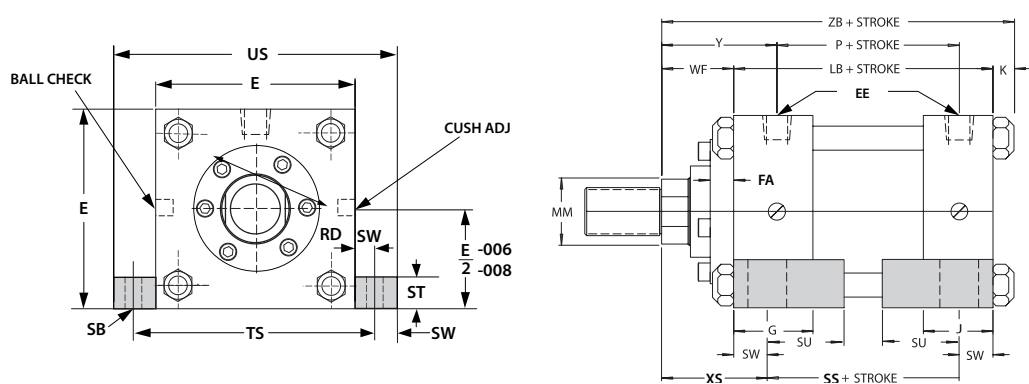
SERIES
7K

Rod and Dimensions

Envelope and Mounting Dimensions

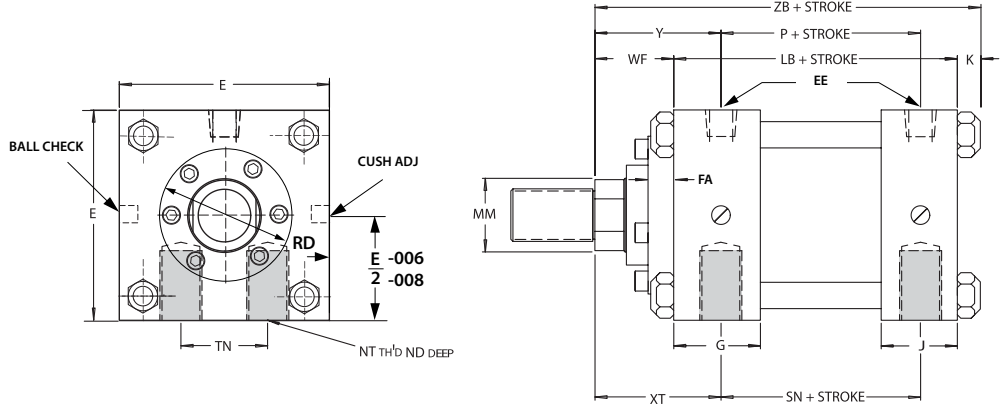
Bore	Rod Code No	Rod. Dia. MM	Thread Size		Rod Extensions and Pilot Dimensions								Add Stroke							
			KK	FF	A	+002 -002 B	C	D	NA	FA	RD	VB	WF	Y	ND	XS	XT	XE	ZB	ZE
1½	1(Std)	⅝	7/16-20	½-20	¾	1.124	⅜	½	9/16	⅜	2	⅝	1	1 ¹⁵ / ₁₆	⅜	1 ³ / ₈	1 ¹⁵ / ₁₆	5 ³ / ₈	4 ⁷ / ₈	5 ⁵ / ₈
	2	1	¾-16	7/8-14	1 ¹ / ₈	1.499	½	7/8	1 ⁵ / ₁₆	⅜	-	7/8	1 ³ / ₈	2 ⁵ / ₁₆	¼	1 ³ / ₄	2 ⁵ / ₁₆	5 ³ / ₄	5 ¹ / ₄	6
2	1(Std)	⅝	7/16-20	½-20	¾	1.124	⅜	½	9/16	⅜	2	⅝	1	1 ¹⁵ / ₁₆	½	1 ³ / ₈	1 ¹⁵ / ₁₆	5 ⁹ / ₁₆	4 ¹⁵ / ₁₆	5 ⁷ / ₈
	2	1	¾-16	7/8-14	1 ¹ / ₈	1.499	½	7/8	1 ⁵ / ₁₆	⅜	-	7/8	1 ³ / ₈	2 ⁵ / ₁₆	7/16	1 ³ / ₄	2 ⁵ / ₁₆	5 ¹⁵ / ₁₆	5 ⁵ / ₁₆	6 ¹ / ₄
	3	1 ³ / ₈	1-14	1 ¹ / ₄ -12	1 ⁵ / ₈	1.999	⅝	1 ¹ / ₈	1 ⁵ / ₁₆	⅜	-	1	1 ⁵ / ₈	2 ⁹ / ₁₆	5/16	2	2 ⁹ / ₁₆	6 ³ / ₁₆	5 ⁹ / ₁₆	6 ¹ / ₂
2½	1(Std)	⅝	7/16-20	½-20	¾	1.124	⅜	½	9/16	⅜	2	⅝	1	1 ¹⁵ / ₁₆	9/16	1 ³ / ₈	1 ¹⁵ / ₁₆	5 ¹³ / ₁₆	5 ¹ / ₁₆	6 ¹ / ₈
	2	1	¾-16	7/8-14	1 ¹ / ₈	1.499	½	7/8	1 ⁵ / ₁₆	⅜	2 ³ / ₄	7/8	1 ³ / ₈	2 ⁵ / ₁₆	9/16	1 ³ / ₄	2 ⁵ / ₁₆	6 ³ / ₁₆	5 ⁷ / ₁₆	6 ¹ / ₂
	3	1 ³ / ₈	1-14	1 ¹ / ₄ -12	1 ⁵ / ₈	1.999	½	1 ¹ / ₈	1 ⁵ / ₁₆	⅜	-	1	1 ⁵ / ₈	2 ⁹ / ₁₆	⅜	2 ¹ / ₄	2 ⁹ / ₁₆	6 ¹¹ / ₁₆	5 ¹⁵ / ₁₆	6 ³ / ₄
	4	1 ³ / ₄	1 ¹ / ₄ -12	1 ¹ / ₂ -12	2	2.374	¾	1 ¹ / ₂	1 ¹¹ / ₁₆	⅜	-	1 ¹ / ₈	1 ⁷ / ₈	2 ¹³ / ₁₆	9/16	2	2 ¹³ / ₁₆	6 ⁷ / ₁₆	5 ¹¹ / ₁₆	7
3¼	2(Std)	1	¾-16	7/8-14	1 ¹ / ₈	1.499	½	7/8	1 ⁵ / ₁₆	⅜	2 ³ / ₄	7/8	1 ³ / ₈	2 ⁷ / ₁₆	¾	1 ⁷ / ₈	2 ⁷ / ₁₆	6 ¹ / ₂	6	6 ⁷ / ₈
	3	1 ³ / ₈	1-14	1 ¹ / ₄ -12	1 ⁵ / ₈	1.999	½	1 ¹ / ₈	1 ⁵ / ₁₆	⅝	3 ¹ / ₄	1	1 ⁵ / ₈	2 ¹¹ / ₁₆	¾	2 ¹ / ₈	2 ¹¹ / ₁₆	6 ³ / ₄	6 ¹ / ₄	7 ¹ / ₈
	4	1 ³ / ₄	1 ¹ / ₄ -12	1 ¹ / ₂ -12	2	2.374	¾	1 ¹ / ₂	1 ¹¹ / ₁₆	⅝	3 ³ / ₄	1 ¹ / ₈	1 ⁷ / ₈	2 ¹⁵ / ₁₆	¾	2 ³ / ₈	2 ¹⁵ / ₁₆	7	6 ¹ / ₂	7 ³ / ₈
	5	2	1 ¹ / ₂ -12	1 ³ / ₄ -12	2 ¹ / ₄	2.624	7/8	1 ¹¹ / ₁₆	1 ¹⁵ / ₁₆	⅝	-	1 ¹ / ₈	2	3 ¹ / ₁₆	½	2 ¹ / ₂	3 ¹ / ₁₆	7 ¹ / ₈	6 ⁵ / ₈	7 ¹ / ₂
4	2(Std)	1	¾-16	7/8-14	1 ¹ / ₈	1.499	½	7/8	1 ⁵ / ₁₆	⅜	2 ³ / ₄	7/8	1 ³ / ₈	2 ⁷ / ₁₆	¾	1 ⁷ / ₈	2 ⁷ / ₁₆	6 ⁵ / ₈	6	7
	3	1 ³ / ₈	1-14	1 ¹ / ₄ -12	1 ⁵ / ₈	1.999	½	1 ¹ / ₈	1 ⁵ / ₁₆	⅝	3 ¹ / ₄	1	1 ⁵ / ₈	2 ¹¹ / ₁₆	¾	2 ¹ / ₈	2 ¹¹ / ₁₆	6 ⁷ / ₈	6 ¹ / ₄	7 ¹ / ₄
	4	1 ³ / ₄	1 ¹ / ₄ -12	1 ¹ / ₂ -12	2	2.374	¾	1 ¹ / ₂	1 ¹¹ / ₁₆	⅝	3 ³ / ₄	1 ¹ / ₈	1 ⁷ / ₈	2 ¹⁵ / ₁₆	¾	2 ³ / ₈	2 ¹⁵ / ₁₆	7 ¹ / ₈	6 ¹ / ₂	7 ¹ / ₂
	5	2	1 ¹ / ₂ -12	1 ³ / ₄ -12	2 ¹ / ₄	2.624	7/8	1 ¹¹ / ₁₆	1 ¹⁵ / ₁₆	⅝	4 ¹ / ₈	1 ¹ / ₈	2	3 ¹ / ₁₆	¾	2 ¹ / ₂	3 ¹ / ₁₆	7 ¹ / ₄	6 ⁵ / ₈	7 ⁵ / ₈
	6	2 ¹ / ₂	1 ⁷ / ₈ -12	2 ¹ / ₄ -12	3	3.124	1	2 ¹ / ₁₆	2 ³ / ₈	⅝	4 ¹ / ₂	1 ¹ / ₄	2 ¹ / ₄	3 ⁵ / ₁₆	⅝	2 ³ / ₄	3 ⁵ / ₁₆	7 ¹ / ₂	6 ⁷ / ₈	7 ⁷ / ₈
	7	3	2 ¹ / ₄ -12	2 ³ / ₄ -12	3 ¹ / ₂	3.749	1	2 ⁵ / ₈	2 ⁷ / ₈	⅝	5 ¹ / ₄	1 ¹ / ₄	2 ¹ / ₄	3 ⁵ / ₁₆	1 ⁵ / ₁₆	2 ¹⁵ / ₁₆	3 ⁵ / ₁₆	7 ¹³ / ₁₆	7 ³ / ₁₆	8 ⁵ / ₁₆
5	2(Std)	1	¾-16	7/8-14	1 ¹ / ₈	1.499	½	7/8	1 ⁵ / ₁₆	⅜	2 ³ / ₄	7/8	1 ³ / ₈	2 ¹⁵ / ₁₆	1 ⁵ / ₁₆	2 ¹ / ₁₆	2 ⁷ / ₁₆	6 ¹⁵ / ₁₆	6 ⁵ / ₁₆	7 ⁷ / ₁₆
	3	1 ³ / ₈	1-14	1 ¹ / ₄ -12	1 ⁵ / ₈	1.999	½	1 ¹ / ₈	1 ⁵ / ₁₆	⅝	3 ¹ / ₄	1	1 ⁵ / ₈	2 ¹¹ / ₁₆	1 ⁵ / ₁₆	2 ⁵ / ₁₆	2 ¹¹ / ₁₆	7 ³ / ₁₆	6 ⁹ / ₁₆	7 ¹¹ / ₁₆
	4	1 ³ / ₄	1 ¹ / ₄ -12	1 ¹ / ₂ -12	2	2.374	¾	1 ¹ / ₂	1 ¹¹ / ₁₆	⅝	3 ³ / ₄	1 ¹ / ₈	1 ⁷ / ₈	2 ¹⁵ / ₁₆	1 ⁵ / ₁₆	2 ⁹ / ₁₆	2 ¹⁵ / ₁₆	7 ⁷ / ₁₆	6 ¹³ / ₁₆	7 ¹⁵ / ₁₆
	5	2	1 ¹ / ₂ -12	1 ³ / ₄ -12	2 ¹ / ₄	2.624	7/8	1 ¹¹ / ₁₆	1 ¹⁵ / ₁₆	⅝	4 ¹ / ₈	1 ¹ / ₈	2	3 ¹ / ₁₆	1 ⁵ / ₁₆	2 ¹¹ / ₁₆	3 ¹ / ₁₆	7 ⁹ / ₁₆	6 ¹⁵ / ₁₆	8 ¹ / ₁₆
	6	2 ¹ / ₂	1 ⁷ / ₈ -12	2 ¹ / ₄ -12	3	3.124	1	2 ¹ / ₁₆	2 ³ / ₈	⅝	4 ¹ / ₂	1 ¹ / ₄	2 ¹ / ₄	3 ⁵ / ₁₆	1 ⁵ / ₁₆	2 ¹⁵ / ₁₆	3 ⁵ / ₁₆	7 ¹³ / ₁₆	7 ³ / ₁₆	8 ⁵ / ₁₆
	7	3	2 ¹ / ₄ -12	2 ³ / ₄ -12	3 ¹ / ₂	3.749	1	2 ⁵ / ₈	2 ⁷ / ₈	⅝	5 ¹ / ₄	1 ¹ / ₄	2 ¹ / ₄	3 ⁵ / ₁₆	1 ⁵ / ₁₆	2 ¹⁵ / ₁₆	3 ⁵ / ₁₆	7 ¹³ / ₁₆	7 ³ / ₁₆	8 ⁵ / ₁₆
	8	3 ¹ / ₂	2 ¹ / ₂ -12	3 ¹ / ₄ -12	3 ¹ / ₂	4.249	1	3	3 ³ / ₈	⅝	5 ¹ / ₂	1 ¹ / ₄	2 ¹ / ₄	3 ⁵ / ₁₆	¾	2 ¹⁵ / ₁₆	3 ⁵ / ₁₆	7 ¹³ / ₁₆	7 ³ / ₁₆	8 ⁵ / ₁₆
	9	4	3-12	3 ³ / ₄ -12	4	4.749	1	3 ³ / ₈	3 ⁷ / ₈	¾	6	1 ¹ / ₄	2 ¹ / ₄	3 ⁷ / ₁₆	1	2 ¹⁵ / ₁₆	3 ⁷ / ₁₆	8 ¹ / ₄	7 ¹¹ / ₁₆	8 ³ / ₄
6	3(Std)	1 ³ / ₈	1-14	1 ¹ / ₄ -12	1 ⁵ / ₈	1.999	½	1 ¹ / ₈	1 ⁵ / ₁₆	⅝	3 ¹ / ₄	1	1 ⁵ / ₈	2 ¹³ / ₁₆	1 ¹ / ₈	2 ⁵ / ₁₆	2 ¹³ / ₁₆	7 ⁵ / ₈	7 ¹ / ₁₆	8 ³ / ₈
	4	1 ³ / ₄	1 ¹ / ₄ -12	1 ¹ / ₂ -12	2	2.374	¾	1 ¹ / ₂	1 ¹¹ / ₁₆	⅝	3 ³ / ₄	1 ¹ / ₈	1 ⁷ / ₈	3 ¹ / ₁₆	1 ¹ / ₈	2 ⁹ / ₁₆	3 ¹ / ₁₆	7 ⁷ / ₈	7 ⁵ / ₁₆	8 ³ / ₈
	5	2	1 ¹ / ₂ -12	1 ³ / ₄ -12	2 ¹ / ₄	2.624	7/8	1 ¹¹ / ₁₆	1 ¹⁵ / ₁₆	⅝	4 ¹ / ₈	1 ¹ / ₈	2	3 ³ / ₁₆	1 ¹ / ₈	2 ¹¹ / ₁₆	3 ³ / ₁₆	8	7 ⁷ / ₁₆	8 ¹ / ₂
	6	2 ¹ / ₂	1 ⁷ / ₈ -12	2 ¹ / ₄ -12	3	3.124	1	2 ¹ / ₁₆	2 ³ / ₈	⅝	4 ¹ / ₂	1 ¹ / ₄	2 ¹ / ₄	3 ⁷ / ₁₆	1 ¹ / ₈	2 ¹⁵ / ₁₆	3 ⁷ / ₁₆	8 ¹ / ₄	7 ¹¹ / ₁₆	8 ³ / ₄
	7	3	2 ¹ / ₄ -12	2 ³ / ₄ -12	3 ¹ / ₂	3.749	1	2 ⁵ / ₈	2 ⁷ / ₈	⅝	5 ¹ / ₄	1 ¹ / ₄	2 ¹ / ₄	3 ⁷ / ₁₆	1 ¹ / ₈	2 ¹⁵ / ₁₆	3 ⁷ / ₁₆	8 ¹ / ₄	7 ¹¹ / ₁₆	8 ³ / ₄
	8	3 ¹ / ₂	2 ¹ / ₂ -12	3 ¹ / ₄ -12	3 ¹ / ₂	4.249	1	3	3 ³ / ₈	⅝	5 ¹ / ₂	1 ¹ / ₄	2 ¹ / ₄	3 ⁷ / ₁₆	1 ¹ / ₈	2 ¹⁵ / ₁₆	3 ⁷ / ₁₆	8 ¹ / ₄	7 ¹¹ / ₁₆	8 ³ / ₄
9	4	3-12	3 ³ / ₄ -12	4	4.749	1	3 ³ / ₈	3 ⁷ / ₈	¾	6	1 ¹ / ₄	2 ¹ / ₄	3 ⁷ / ₁₆	1	2 ¹⁵ / ₁₆	3 ⁷ / ₁₆	8 ¹ / ₄	7 ¹¹ / ₁₆	8 ³ / ₄	

Foot Mounted Cylinders 8" to 20" Bores

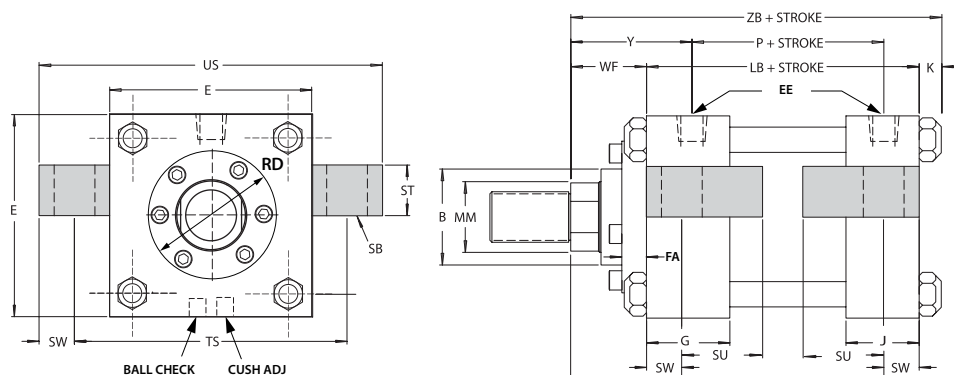


STYLE J - Side Lug Mount
(NFPA Mounting Style MS2)

NOTE : Do not specify ports in #2 or #4 position without checking clearance between pipe fitting and mounting bolt head.

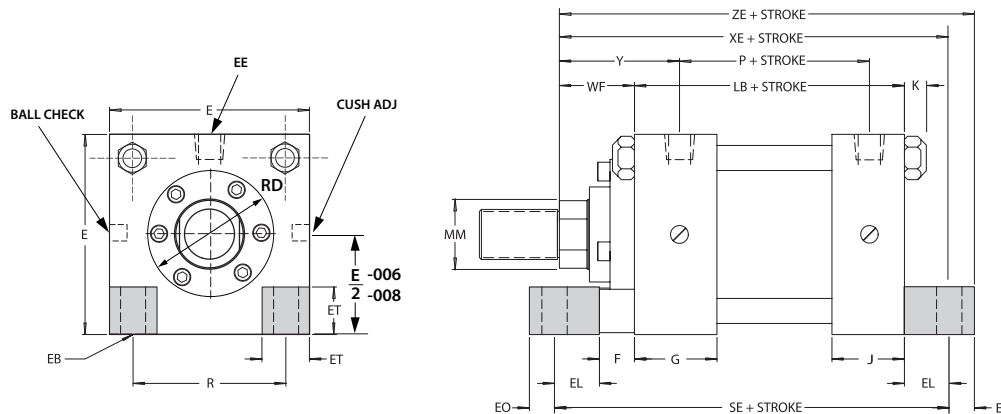


STYLE H - Side Flush Mount
(NFPA Mounting Style MS4)



STYLE K - Center Line Mount
(NFPA Mounting Style MS3)

For tie rod size and location see page 11



STYLE CC - Foot Mount
(NFPA Mounting Style MS7)

Style CC is not available in 16", 18" and 20" bores.

Envelope and Mounting Dimensions

Bore	E	EB*	EE NPTF	EL	EO	ET	G	J	K	ND	NT	R	SB*	ST	SU	SW	TN	TS	US	Add Stroke				
																				LB	P	SE	SN	SS
8	8½	⅝	¾	1⅛	⅝	2⅛	2	1½	⅞	1⅛	¾-10	6.44	¼	1	1⅞	1⅛	4½	9⅞	11¼	5⅞	3¼	7⅞	3¼	3¼
10	10⅝	¾	1	1⅝	⅝	2⅛	2¼	2	1⅞	1½	1-8	7.92	1	1¼	2	⅞	5½	12⅞	14⅞	6⅞	4⅞	9	4⅞	4⅞
12	12¾	¾	1	1⅝	⅝	3⅞	2¼	2	1⅞	1½	1-8	9.40	1	1¼	2	⅞	7¼	14½	16¼	6⅞	4⅞	9½	4⅞	5⅞
14	14¾	⅞	1¼	1½	¾	3⅞	2¼	2¼	1⅞	1⅞	1¼-7	10.90	1¼	1½	2½	1⅞	8¼	17	19¼	8⅞	5½	11⅞	5½	5⅞
16	17½	-	1¼	-	-	-	2¾	2¾	1⅞	3	1¼-12	-	1¾	2	3½	1¾	7	21	24¼	8⅞	5¾	-	6⅞	5⅞
18	17½	-	1½	-	-	-	3¼	3¼	1⅞	3¼	2-12	-	2	2½	3½	2	8	23½	27½	9⅞	6⅞	-	6⅞	5⅞
20	21½	-	2	-	-	-	3¼	3¼	1	3¼	2¼-12	-	2¼	3	3⅞	2⅞	8½	26¼	31	11⅞	7⅞	-	7⅞	6⅞

NPTF ports furnished unless otherwise specified. Styles J, H, K and CC should be pinned or keyed at one end to prevent shifting.

**Mounting holes are ⅛ larger than screw size shown.*

Viceroy Fluid Power uses only precision machined and ground, rolled steel heads and caps to assure squareness. This, plus Viceroy's unique sealing system assure a leak-free cylinder. For trouble-free cylinders, rely on the fluid power specialists.

SERIES
7K

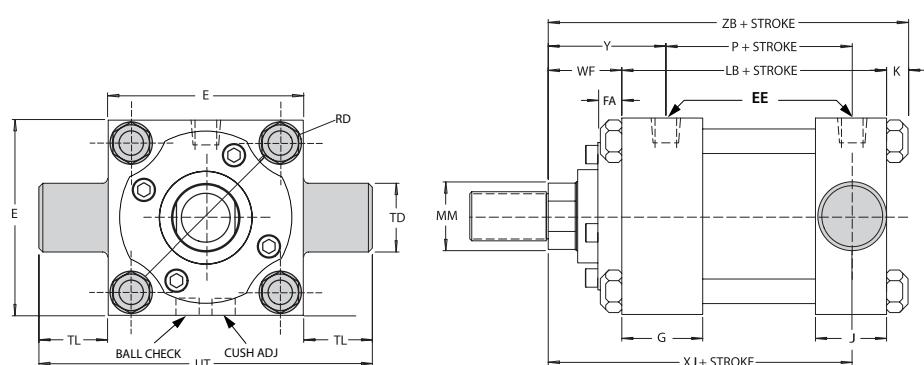
Rod and Dimensions

Envelope and Mounting Dimensions

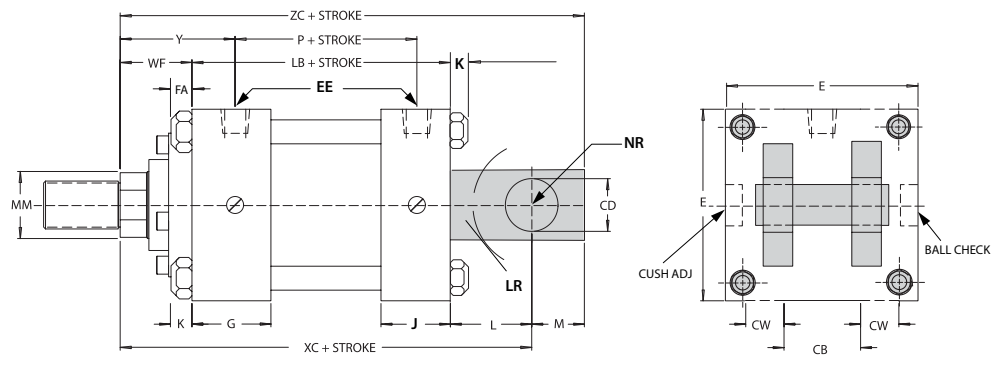
Bore	Rod Code No	Rod. Dia. MM	Thread Size		Rod Extensions and Pilot Dimensions								WF	Y	XS	XT	Add Stroke			
			KK	FF	A	+002 -002 B	C	D	NA	FA	RD	VB					XE	ZB	ZE	
8	3 (Std)	1 3/8	1-14	1 1/4-12	1 3/8	1.999	5/8	1 1/8	1 5/16	5/8	3 1/4	1	1 3/8	2 13/16	2 5/16	2 13/16	7 7/8	7 5/16	8 1/2	
	4	1 3/4	1 1/4-12	1 1/2-12	2	2.374	3/4	1 1/2	1 11/16	5/8	3 3/4	1 1/8	1 7/8	3 1/16	2 9/16	3 1/16	8 1/8	7 9/16	8 3/4	
	5	2	1 1/2-12	1 3/4-12	2 1/4	2.624	7/8	1 11/16	1 15/16	5/8	4 1/8	1 1/8	2	3 3/16	2 11/16	3 3/16	8 1/4	7 11/16	8 7/8	
	6	2 1/2	1 7/8-12	2 1/4-12	3	3.124	1	2 1/16	2 3/8	5/8	4 1/2	1 1/4	2 1/4	3 7/16	2 15/18	3 7/16	8 1/2	7 15/16	9 1/8	
	7	3	2 1/4-12	2 3/4-12	3 1/2	3.749	1	2 5/8	2 7/8	5/8	5 1/4	1 1/4	2 1/4	3 7/16	2 15/16	3 7/16	8 1/2	7 15/16	9 1/8	
	8	3 1/2	2 1/2-12	3 1/4-12	3 1/2	4.249	1	3	3 3/8	5/8	5 1/2	1 1/4	2 1/4	3 7/16	2 15/16	3 7/16	8 1/2	7 15/16	9 1/8	
	9	4	3-12	3 3/4-12	4	4.749	1	3 3/8	3 7/8	3/4	6	1 1/4	2 1/4	3 7/16	2 15/16	3 7/16	8 1/2	7 15/16	9 1/8	
	10	4 1/2	3 3/4-12	4 1/4-12	4 1/2	5.249	1	3 7/8	4 3/8	3/4	6 7/8	1 1/4	2 1/4	3 7/16	2 15/16	3 7/16	8 1/2	7 15/16	9 1/8	
	11	5	3 1/2-12	4 3/4-12	5	5.749	1	4 1/4	4 7/8	3/4	7 1/4	1 1/4	2 1/4	3 7/16	2 15/16	3 7/16	8 1/2	7 15/16	9 1/8	
	12	5 1/2	4-12	5 1/4-12	5 1/2	6.249	1	4 5/8	5 3/8	3/4	8	1 1/4	2 1/4	3 7/16	2 15/16	3 7/16	8 1/2	7 15/16	9 1/8	
	10	4 (Std)	1 3/4	1 1/4-12	1 1/2-12	2	2.374	3/4	1 1/2	1 11/16	5/8	3 3/4	1 1/8	1 7/8	3 3/8	2 3/4	3 3/8	9 9/16	8 15/16	10 3/16
		5	2	1 1/2-12	1 3/4-12	2 1/4	2.624	7/8	1 11/16	1 15/16	5/8	4 1/8	1 1/8	2	3 1/4	2 7/8	3 1/4	9 11/16	9 1/16	10 5/16
6		2 1/2	1 7/8-12	2 1/4-12	3	3.124	1	2 1/16	2 3/8	5/8	4 1/2	1 1/4	2 1/4	3 1/2	3 3/8	3 1/2	9 15/16	9 5/16	10 9/16	
7		3	2 1/4-12	2 3/4-12	3 1/2	3.749	1	2 5/8	2 7/8	5/8	5 1/4	1 1/4	2 1/4	3 1/2	3 3/8	3 1/2	9 15/16	9 5/16	10 9/16	
8		3 1/2	2 1/2-12	3 1/4-12	3 1/2	4.249	1	3	3 3/8	5/8	5 1/2	1 1/4	2 1/4	3 1/2	3 3/8	3 1/2	9 15/16	9 5/16	10 9/16	
9		4	3-12	3 3/4-12	4	4.749	1	3 3/8	3 7/8	3/4	6	1 1/4	2 1/4	3 1/2	3 3/8	3 1/2	9 15/16	9 5/16	10 9/16	
10		4 1/2	3 3/4-12	4 1/4-12	4 1/2	5.249	1	3 7/8	4 3/8	3/4	6 7/8	1 1/4	2 1/4	3 1/2	3 3/8	3 1/2	9 15/16	9 5/16	10 9/16	
11		5	3 1/2-12	4 3/4-12	5	5.749	1	4 1/4	4 7/8	3/4	7 1/4	1 1/4	2 1/4	3 1/2	3 3/8	3 1/2	9 15/16	9 5/16	10 9/16	
12		5 1/2	4-12	5 1/4-12	5 1/2	6.249	1	4 5/8	5 3/8	3/4	8	1 1/4	2 1/4	3 1/2	3 3/8	3 1/2	9 15/16	9 5/16	10 9/16	
12		5 (Std)	2	1 1/2-12	1 3/4-12	2 1/4	2.624	7/8	1 11/16	1 15/16	5/8	4 1/8	1 1/8	2	3 1/4	2 7/8	3 1/4	10 3/16	9 5/16	10 13/16
		6	2 1/2	1 7/8-12	2 1/4-12	3	3.124	1	2 1/16	2 3/8	5/8	4 1/2	1 1/4	2 1/4	3 1/2	3 3/8	3 1/2	10 7/16	9 13/16	11 1/16
		7	3	2 1/4-12	2 3/4-12	3 1/2	3.749	1	2 5/8	2 7/8	5/8	5 1/4	1 1/4	2 1/4	3 1/2	3 3/8	3 1/2	10 7/16	9 13/16	11 1/16
	8	3 1/2	2 1/2-12	3 1/4-12	3 1/2	4.249	1	3	3 3/8	5/8	5 1/2	1 1/4	2 1/4	3 1/2	3 3/8	3 1/2	10 7/16	9 13/16	11 1/16	
	9	4	3-12	3 3/4-12	4	4.749	1	3 3/8	3 7/8	3/4	6	1 1/4	2 1/4	3 1/2	3 3/8	3 1/2	10 7/16	9 13/16	11 1/16	
	10	4 1/2	3 3/4-12	4 1/4-12	4 1/2	5.249	1	3 7/8	4 3/8	3/4	6 7/8	1 1/4	2 1/4	3 1/2	3 3/8	3 1/2	10 7/16	9 13/16	11 1/16	
	11	5	3 1/2-12	4 3/4-12	5	5.749	1	4 1/4	4 7/8	3/4	7 1/4	1 1/4	2 1/4	3 1/2	3 3/8	3 1/2	10 7/16	9 13/16	11 1/16	
	12	5 1/2	4-12	5 1/4-12	5 1/2	6.249	1	4 5/8	5 3/8	3/4	8	1 1/4	2 1/4	3 1/2	3 3/8	3 1/2	10 7/16	9 13/16	11 1/16	
	14	6 (Std)	2 1/2	1 7/8-12	2 1/4-12	3	3.124	1	2 1/16	2 3/8	5/8	4 1/2	1 1/4	2 1/4	3 13/16	3 3/8	3 13/16	11 7/8	11 3/16	12 3/8
		7	3	2 1/4-12	2 3/4-12	3 1/2	3.749	1	2 5/8	2 7/8	5/8	5 1/4	1 1/4	2 1/4	3 13/16	3 3/8	3 13/16	11 7/8	11 3/16	12 3/8
		8	3 1/2	2 1/2-12	3 1/4-12	3 1/2	4.249	1	3	2 3/8	5/8	5 1/2	1 1/4	2 1/4	3 13/16	3 3/8	3 13/16	11 7/8	11 3/16	12 3/8
		9	4	3-12	3 3/4-12	4	4.749	1	3 3/8	2 7/8	3/4	6	1 1/4	2 1/4	3 13/16	3 3/8	3 13/16	11 7/8	11 3/16	12 3/8
10		4 1/2	3 3/4-12	4 1/4-12	4 1/2	5.249	1	3 7/8	4 3/8	3/4	6 7/8	1 1/4	2 1/4	3 13/16	3 3/8	3 13/16	11 7/8	11 3/16	12 3/8	
11		5	3 1/2-12	4 3/4-12	5	5.749	1	4 1/4	4 7/8	3/4	7 1/4	1 1/4	2 1/4	3 13/16	3 3/8	3 13/16	11 7/8	11 3/16	12 3/8	
12		5 1/2	4-12	5 1/4-12	5 1/2	6.249	1	4 5/8	5 3/8	3/4	8	1 1/4	2 1/4	3 13/16	3 3/8	3 13/16	11 7/8	11 3/16	12 3/8	
16		7 (Std)	3	2 1/4-12	2 3/4-12	3 1/2	3.749	1	2 5/8	2 7/8	5/8	5 1/4	1 1/4	2 1/4	3 13/16	4	3 3/8	-	12 1/16	-
		8	3 1/2	2 1/2-12	3 1/4-12	3 1/2	4.249	1	3	3 3/8	5/8	5 1/2	1 1/4	2 1/4	3 13/16	4	3 3/8	-	12 1/16	-
		9	4	3-12	3 3/4-12	4	4.749	1	3 3/8	3 7/8	3/4	6	1 1/4	2 1/4	3 13/16	4	3 3/8	-	12 1/16	-
		10	4 1/2	3 3/4-12	4 1/4-12	4 1/2	5.249	1	3 7/8	4 3/8	3/4	6 7/8	1 1/4	2 1/4	3 13/16	4	3 3/8	-	12 1/16	-
		11	5	3 1/2-12	4 3/4-12	5	5.749	1	4 1/4	4 7/8	3/4	7 1/4	1 1/4	2 1/4	3 13/16	4	3 3/8	-	12 1/16	-
	12	5 1/2	4-12	5 1/4-12	5 1/2	6.249	1	4 5/8	5 3/8	3/4	8	1 1/4	2 1/4	3 13/16	4	3 3/8	-	12 1/16	-	
	18	8 (Std)	3 1/2	2 1/2-12	3 1/4-12	3 1/2	4.249	1	3	3 3/8	5/8	5 1/2	1 1/4	2 1/4	4	4 1/4	3 7/8	-	13 1/16	-
		9	4	3-12	3 3/4-12	4	4.749	1	3 3/8	3 7/8	3/4	6	1 1/4	2 1/4	4	4 1/4	3 7/8	-	13 1/16	-
		10	4 1/2	3 3/4-12	4 1/4-12	4 1/2	5.249	1	3 7/8	4 3/8	3/4	6 7/8	1 1/4	2 1/4	4	4 1/4	3 7/8	-	13 1/16	-
		11	5	3 1/2-12	4 3/4-12	5	5.749	1	4 1/4	4 7/8	3/4	7 1/4	1 1/4	2 1/4	4	4 1/4	3 7/8	-	13 1/16	-
		12	5 1/2	4-12	5 1/4-12	5 1/2	6.249	1	4 5/8	5 3/8	3/4	8	1 1/4	2 1/4	4	4 1/4	3 7/8	-	13 1/16	-
		20	8 (Std)	3 1/2	2 1/2-12	3 1/4-12	3 1/2	4.249	1	3	3 3/8	5/8	5 1/2	1 1/4	2 1/4	4 1/4	4 5/8	4 1/4	-	14 3/8
9			4	3-12	3 3/4-12	4	4.749	1	3 3/8	3 7/8	3/4	6	1 1/4	2 1/4	4 1/4	4 5/8	4 1/4	-	14 3/8	-
10			4 1/2	3 3/4-12	4 1/4-12	4 1/2	5.249	1	3 7/8	4 3/8	3/4	6 7/8	1 1/4	2 1/4	4 1/4	4 5/8	4 1/4	-	14 3/8	-
11			5	3 1/2-12	4 3/4-12	5	5.749	1	4 1/4	4 7/8	3/4	7 1/4	1 1/4	2 1/4	4 1/4	4 5/8	4 1/4	-	14 3/8	-
12			5 1/2	4-12	5 1/4-12	5 1/2	6.249	1	4 5/8	5 3/8	3/4	8	1 1/4	2 1/4	4 1/4	4 5/8	4 1/4	-	14 3/8	-

* Not available in Style CC

Trunnion, Clevis and Pivot Mounted Cylinders 1½" to 6" Bores

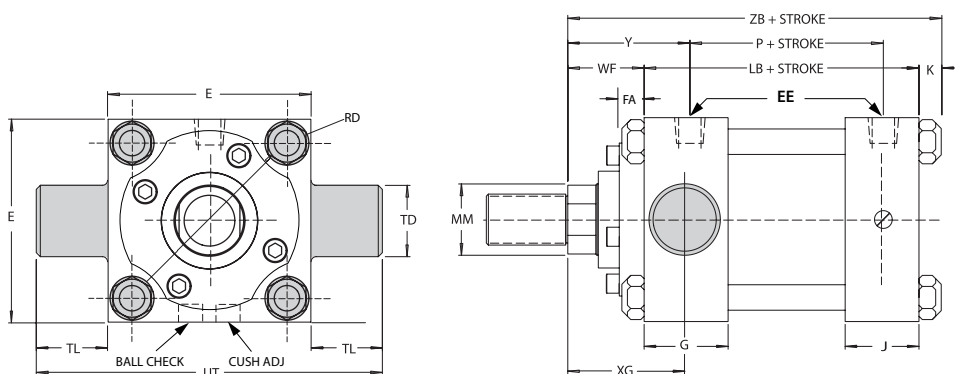


STYLE EB - Trunnion Mount Cap End
(NFPA Mounting Style MT2)

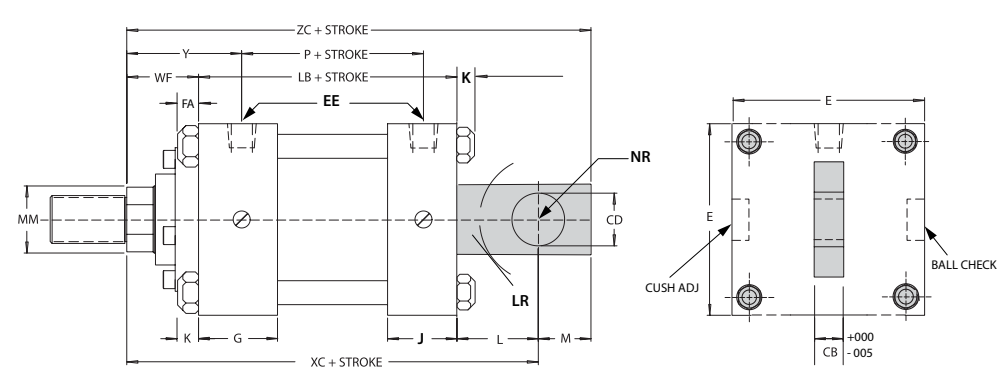


STYLE G - Clevis Mount
(NFPA Mounting Style MP1)

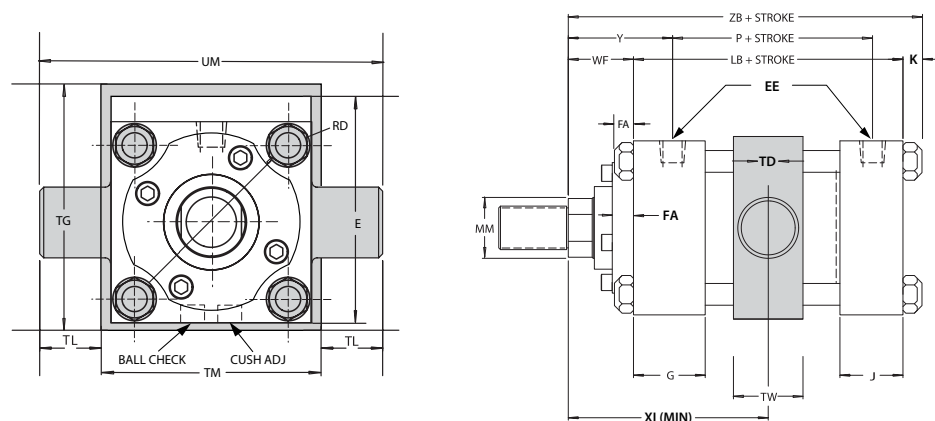
Chrome-plated Clevis Pin Assembly (with Snap Rings) is furnished with all Style G Cylinders.



STYLE ER - Trunnion Mount Head End
(NFPA Mounting Style MT1)

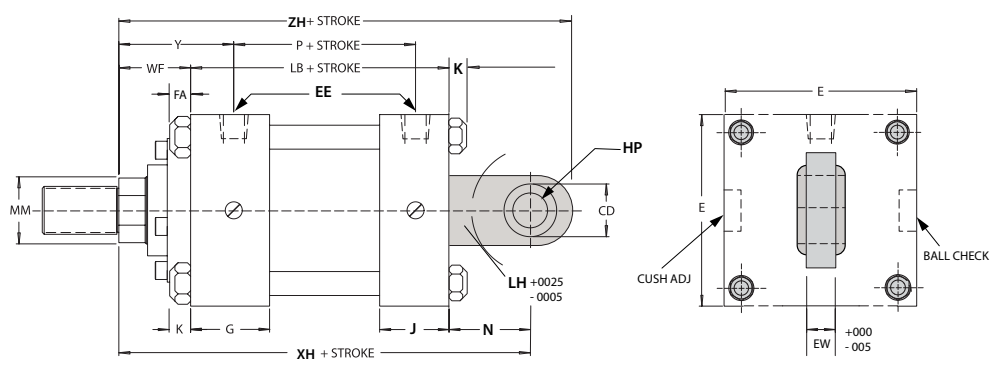


STYLE GG - Cap Single Lug Mount



STYLE E - Intermediate Trunnion Mount
(NFPA Mounting Style MT4)

Customer to Specify Trunnion Location (XI Dim)



STYLE S - Spherical Pivot Mount
(NFPA Mounting Style MP1)

Cylinders Ordered with Rod Eye Listed Under "Accessories" will be Supplied with Rod End Style No.3, and Thread Size KK = 7/16-20 for Bores 1½" thru 2½" 3/4-16 for Bores 3¼" thru 5" 1-14 for 6" Bore

Pintles on trunnion mounted cylinders are designed to withstand shear loads, but not high bending loads. Pillo blocks must be rigidly mounted to provide full support with minimum clearances.

Envelope and Mounting Dimensions

Bore	CB	CD	CW	E	EW	EE NPTF	G	HP	J	K	L	LH	LR	M	N	NR	+001 -001 TD	TL	TG	TM	TW	UM	UT	Add Stroke	
																								LB	P
1½	¾	½	½	2	⅝	⅜	1½	¾	1	¼	¾	⅝	⅝	½	⅞	⅑/16	1	1	2½	2½	1¼	4½	4	3⅝	2½
2	¾	½	½	2½	⅝	⅜	1½	¾	1	5/16	¾	⅝	⅝	½	⅞	⅑/16	1	1	3	3	1½	5	4½	3⅝	2¼
2½	¾	½	½	3	⅝	⅜	1½	¾	1	5/16	¾	⅝	⅝	½	⅞	⅑/16	1	1	3½	3½	1½	5½	5	3¼	2⅜
3¼	1¼	¾	⅝	3¾	⅞	½	1¾	1¼	1¼	⅜	1¼	1	15/16	¾	1¼	27/32	1	1	4¼	4½	2	6½	5¾	4¼	2⅝
4	1¼	¾	⅝	4½	⅞	½	1¾	1¼	1¼	⅜	1¼	1	15/16	¾	1¼	27/32	1	1	5	5¼	2	7¼	6½	4¼	2⅝
5	1¼	¾	⅝	5½	⅞	½	1¾	1¼	1¼	7/16	1¼	1	15/16	¾	1¼	27/32	1	1	6	6¼	2	8¼	7½	4½	2⅞
6	1½	1	¾	6½	1⅜	¾	2	1¾	1½	7/16	1½	1¼	15/16	1	1⅝	1⅛	1⅜	1⅜	7	7⅝	2½	10⅜	9¼	5	3⅛

On 1½", 2", 2½" bore cylinders with maximum size rods, the head end NPTF Ports are tapped shallow and the head end cushions are non-adjustable.

***Trunnion Mounts** - The trunnion pintles on Styles ER and EB are not removable. For information on the availability of removable trunnion pintles, please consult our sales department.

7K Piston Rods have threaded studs for maximum strength and service life. Studs are piloted for true alignment and concentricity; and held securely with LOCTITE. For high strength piston rods, rely on the fluid power specialists.

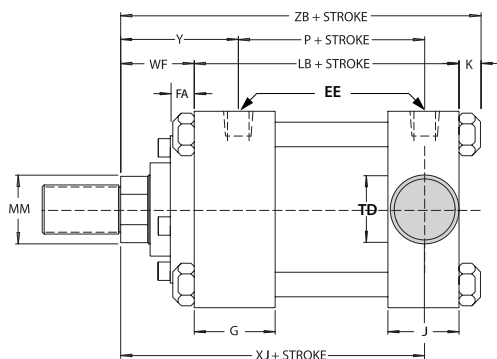
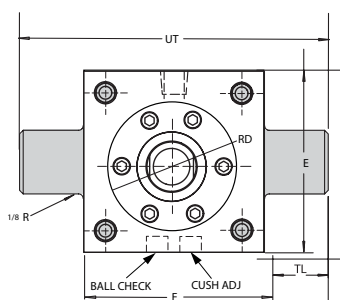
SERIES
7K

Rod and Dimensions

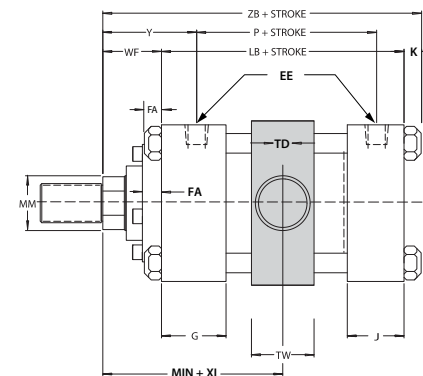
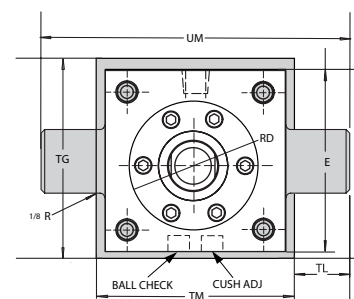
Envelope and Mounting Dimensions

Bore	Rod No.	Rod Dia. MM	Thread Size		Rod Extensions and Pilot Dimensions								Add Stroke									
			KK	FF	A	+000 -002 B	C	D	NA	FA	RD	VB	WF	Y	XG	MIN XI	XC	XH	XJ	ZB	ZC	ZH
1½	1(Std)	⅝	7/16-20	½-20	¾	1.124	⅜	½	9/16	⅜	2	⅝	1	1 ¹⁵ / ₁₆	1¾	3⅜	5⅜	5½	4⅞	4⅞	5⅞	6¼
	2	1	¾-16	⅞-14	1⅞	1.499	½	⅞	15/16	⅜	-	⅞	1⅜	2 ⁵ / ₁₆	2⅞	3½	5¾	5⅞	4½	5¼	6¼	6⅝
2	1(Std)	⅝	7/16-20	½-20	¾	1.124	⅜	½	9/16	⅜	2	⅝	1	1 ¹⁵ / ₁₆	1¾	3¼	5⅜	5½	4⅞	4 ¹⁵ / ₁₆	5⅞	6¼
	2	1	¾-16	⅞-14	1⅞	1.499	½	⅞	15/16	⅜	-	⅞	1⅜	2 ⁵ / ₁₆	2⅞	3⅝	5¾	5⅞	4½	5 ⁵ / ₁₆	6¼	6⅝
	3	1⅜	1-14	1¼-12	1⅞	1.999	⅝	1⅞	15/16	⅜	-	1	1⅝	2 ⁹ / ₁₆	2⅜	3⅞	6	6⅞	4¾	5 ⁵ / ₁₆	6½	6⅞
2½	1(Std)	⅝	7/16-20	½-20	¾	1.124	⅜	½	9/16	⅜	2	⅝	1	1 ¹⁵ / ₁₆	1¾	3¼	5½	5⅞	4¼	5 ¹ / ₁₆	6	6⅞
	2	1	¾-16	⅞-14	1⅞	1.499	½	⅞	15/16	⅜	2¾	⅞	1⅜	2 ⁵ / ₁₆	2⅞	3⅝	5⅞	6	4⅞	5 ⁷ / ₁₆	6⅞	6¾
	3	1⅜	1-14	1¼-12	1⅞	1.999	½	1⅞	15/16	⅜	-	1	1⅝	2 ⁹ / ₁₆	2⅜	3⅞	6⅞	6¼	4⅞	5 ¹⁵ / ₁₆	6⅝	7
	4	1¾	1¼-12	1½-12	2	2.374	¾	1½	1 ¹¹ / ₁₆	⅜	-	1⅞	1⅞	2 ¹³ / ₁₆	2⅝	4⅞	6⅞	6½	5⅞	5 ¹¹ / ₁₆	6⅞	7¼
¾	2(Std)	1	¾-16	⅞-14	1⅞	1.499	½	⅞	15/16	⅜	2¾	⅞	1⅜	2 ⁷ / ₁₆	2¼	4⅞	6⅞	6⅞	5	6	7⅞	8⅞
	3	1⅜	1-14	1¼-12	1⅞	1.999	½	1⅞	15/16	⅝	3¼	1	1⅝	2 ¹¹ / ₁₆	2½	4⅜	7⅞	7⅞	5¼	6¼	7⅞	8⅜
	4	1¾	1¼-12	1½-12	2	2.374	¾	1½	1 ¹¹ / ₁₆	⅝	3¾	1⅞	1⅞	2 ¹⁵ / ₁₆	2¾	4⅝	7⅞	7⅞	5½	6½	8⅞	8⅝
	5	2	1½-12	1¾-12	2¼	2.624	⅞	1 ¹¹ / ₁₆	1 ¹⁵ / ₁₆	⅝	-	1⅞	2	3 ¹ / ₁₆	2⅞	4¾	7½	7½	5⅞	6⅝	8¼	8¾
4	2(Std)	1	¾-16	⅞-14	1⅞	1.499	½	⅞	15/16	⅜	2¾	⅞	1⅜	2 ⁷ / ₁₆	2¼	4⅞	6⅞	6⅞	5	6	7⅞	8⅞
	3	1⅜	1-14	1¼-12	1⅞	1.999	½	1⅞	15/16	⅝	3¼	1	1⅝	2 ¹¹ / ₁₆	2½	4⅜	7⅞	7⅞	5¼	6¼	7⅞	8⅜
	4	1¾	1¼-12	1½-12	2	2.374	¾	1½	1 ¹¹ / ₁₆	⅝	3¾	1⅞	1⅞	2 ¹⁵ / ₁₆	2¾	4⅝	7⅞	7⅞	5½	6½	8⅞	8⅝
	5	2	1½-12	1¾-12	2¼	2.624	⅞	1 ¹¹ / ₁₆	1 ¹⁵ / ₁₆	⅝	4⅞	1⅞	2	3 ¹ / ₁₆	2⅞	4¾	7½	7½	5⅞	6⅝	8¼	8¾
	6	2½	1⅞-12	2¼-12	3	3.124	1	2 ¹ / ₁₆	2⅜	⅝	4½	1¼	2¼	3 ⁵ / ₁₆	3⅞	5	7¾	7¾	5⅞	6⅞	8½	9
	7	3	2¼-12	2¾-12	3½	3.749	1	2⅝	2⅞	⅝	5¼	1¼	2¼	3 ⁵ / ₁₆	3⅞	5	8	8	6⅞	7 ³ / ₁₆	8¾	9¼
5	2(Std)	1	¾-16	⅞-14	1⅞	1.499	½	⅞	15/16	⅜	2¾	⅞	1⅜	2 ¹⁵ / ₁₆	2¼	4⅞	7⅞	7⅞	5¼	6 ⁵ / ₁₆	7⅞	8⅜
	3	1⅜	1-14	1¼-12	1⅞	1.999	½	1⅞	15/16	⅝	3¼	1	1⅝	2 ¹¹ / ₁₆	2½	4⅜	7⅞	7⅞	5½	6 ⁹ / ₁₆	8⅞	8⅝
	4	1¾	1¼-12	1½-12	2	2.374	¾	1½	1 ¹¹ / ₁₆	⅝	3¾	1⅞	1⅞	2 ¹⁵ / ₁₆	2¾	4⅝	7⅞	7⅞	5¾	6 ¹³ / ₁₆	8⅜	8¾
	5	2	1½-12	1¾-12	2¼	2.624	⅞	1 ¹¹ / ₁₆	1 ¹⁵ / ₁₆	⅝	4⅞	1⅞	2	3 ¹ / ₁₆	2⅞	4¾	7¾	7¾	5⅞	6 ¹⁵ / ₁₆	8½	9
	6	2½	1⅞-12	2¼-12	3	3.124	1	2 ¹ / ₁₆	2⅜	⅝	4½	1¼	2¼	3 ⁵ / ₁₆	3⅞	5	8	8	6⅞	7 ³ / ₁₆	8¾	9¼
	7	3	2¼-12	2¾-12	3½	3.749	1	2⅝	2⅞	⅝	5¼	1¼	2¼	3 ⁵ / ₁₆	3⅞	5	8	8	6⅞	7 ³ / ₁₆	8¾	9¼
	8	3½	2½-12	3¼-12	3½	4.249	1	3	3⅜	⅝	5½	1¼	2¼	3 ⁵ / ₁₆	3⅞	5	8	8	6⅞	7 ³ / ₁₆	8¾	9¼
	9	4	3-12	3¾-12	4	4.749	1	3⅜	3⅞	¾	6	1¼	2¼	3 ⁷ / ₁₆	3¼	5½	8¾	9	6½	7 ¹¹ / ₁₆	9¾	10¾
6	3(Std)	1⅜	1-14	1¼-12	1⅞	1.999	½	1⅞	15/16	⅝	3¼	1	1⅝	2 ¹³ / ₁₆	2⅝	4⅞	8⅞	8⅞	5⅞	7 ¹ / ₁₆	9⅞	10⅞
	4	1¾	1¼-12	1½-12	2	2.374	¾	1½	1 ¹¹ / ₁₆	⅝	3¾	1⅞	1⅞	3 ¹ / ₁₆	2⅞	5⅞	8⅞	8½	6⅞	7 ⁵ / ₁₆	9⅞	10¼
	5	2	1½-12	1¾-12	2¼	2.624	⅞	1 ¹¹ / ₁₆	1 ¹⁵ / ₁₆	⅝	4⅞	1⅞	2	3 ³ / ₁₆	3	5¼	8½	8¾	6¼	7 ⁷ / ₁₆	9½	10½
	6	2½	1⅞-12	2¼-12	3	3.124	1	2 ¹ / ₁₆	2⅜	⅝	4½	1¼	2¼	3 ⁷ / ₁₆	3¼	5½	8¾	9	6½	7 ¹¹ / ₁₆	9¾	10¾
	7	3	2¼-12	2¾-12	3½	3.749	1	2⅝	2⅞	⅝	5¼	1¼	2¼	3 ⁷ / ₁₆	3¼	5½	8¾	9	6½	7 ¹¹ / ₁₆	9¾	10¾
	8	3½	2½-12	3¼-12	3½	4.249	1	3	3⅜	⅝	5½	1¼	2¼	3 ⁷ / ₁₆	3¼	5½	8¾	9	6½	7 ¹¹ / ₁₆	9¾	10¾
9	4	3-12	3¾-12	4	4.749	1	3⅜	3⅞	¾	6	1¼	2¼	3 ⁷ / ₁₆	3¼	5½	8¾	9	6½	7 ¹¹ / ₁₆	9¾	10¾	

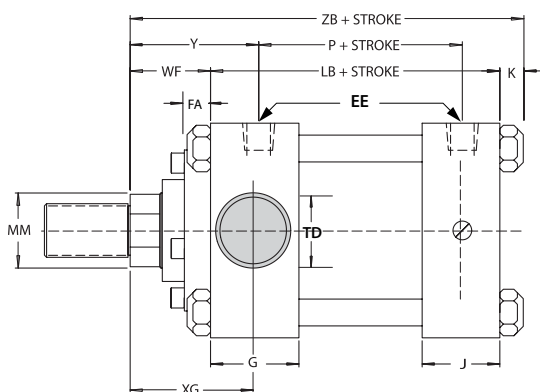
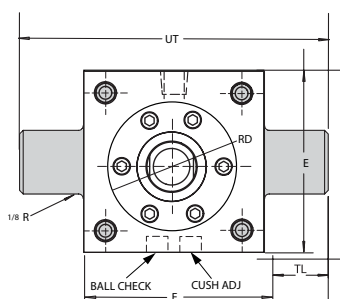
Trunnion and Clevis Mounted Cylinders 8" to 20" Bores



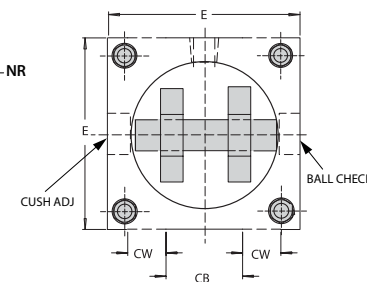
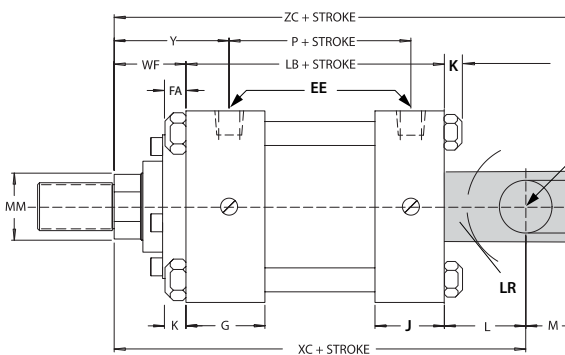
STYLE EB - Trunnion Mount Cap End
(NFPA Mounting Style MT2)



STYLE E - Intermediate Trunnion Mount
(NFPA Mounting Style MT4)
Customer to Specify Trunnion Location (XI Dim.)
Style E is not available in 16", 18" and 20" bores.



STYLE ER - Trunnion Mount Head End
(NFPA Mounting Style MT1)



STYLE G - Clevis Mount
(NFPA Mounting Style MP1)

Chrome-plated Clevis Pin Assembly (with Snap Rings) is furnished with all Style G Cylinders.
For tie rod size and location see page 11

Envelope and Mounting Dimensions

Bore	CB	±001 CD	CW	E	EE NPTF	G	J	K	L	LR	M	NR	+001 -001 TD	TL	TG	TM	TW	UM	UT	Add Stroke	
																				LB	P
8	1½	1	¾	8½	¾	2	1½	9/16	1½	15/16	1	1⅞	1⅜	1⅜	9½	9¾	2½	12½	11¼	5⅞	3¼
10	2	1⅜	1	10⅝	1	2¼	2	11/16	2⅞	1¾	1⅜	1½	1¾	1¾	11¾	12	3	15½	14⅞	6⅜	4½
12	2½	1¾	1¼	12¾	1	2¼	2	11/16	2¼	2	1¾	115/16	1¾	1¾	13¾	14	3	17½	16¼	6⅞	4⅝
14	2½	2	1¼	14¾	1¼	2¾	2¼	13/16	2½	2¼	2	23/16	2	2	16	16¼	3½	20¼	18¾	8½	5½
16	3	2½	1½	17½	1¼	2¾	2¾	15/16	3	2¾	2½	2⅝	2½	2½	-	-	-	-	22½	8⅞	5¾
18	3	3	1½	19½	1½	3¼	3¼	15/16	3¼	31/16	2¾	2⅞	3	3	-	-	-	-	25½	9⅞	6⅜
20	3	3	1½	21½	2	3¾	3¾	1	3¼	31/16	2¾	2⅞	3½	3½	-	-	-	-	28½	11⅞	7⅞

NPTF ports furnished unless otherwise specified.
Pintles on trunnion mounted cylinders are designed to withstand shear loads, but not high bending loads. Pillow blocks must be rigidly mounted to provide full support with minimum clearances.

***Trunnion Mounts** - *The trunnion pintles on the Styles ER and EB are not removable. For information on the availability of removable trunnion pintles, please consult our sales department.*

Viceroy offers a wide range of piston designs and seal compounds to meet your requirements. Choose from standard block-vee pistons with Buna-n or Polyurethane, Teflon, Viton or other compounds. For maximum flexibility, rely on the fluid power specialists.

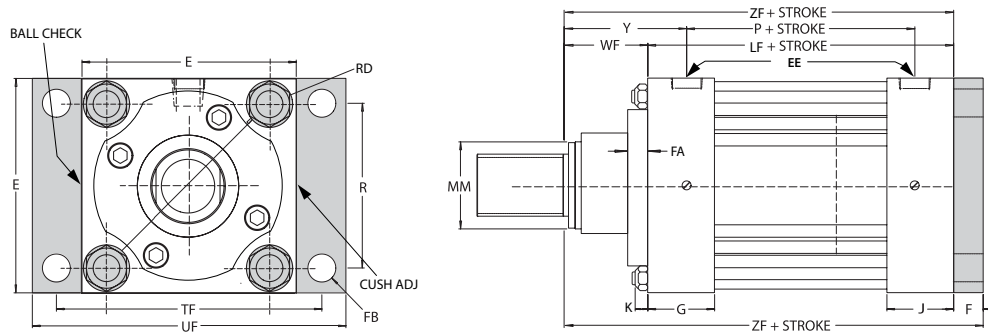
SERIES
7K

Rod and Dimensions

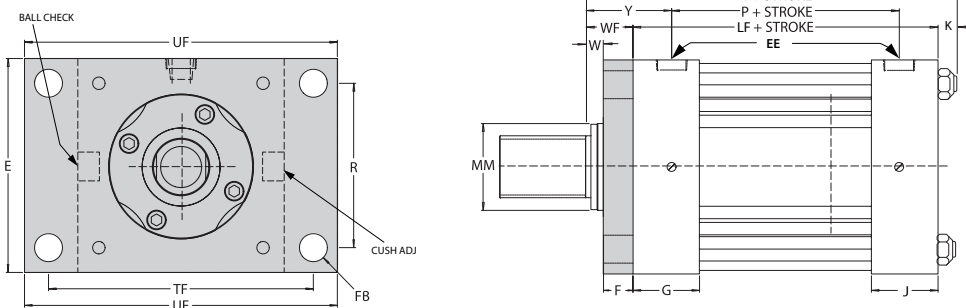
Envelope and Mounting Dimensions

Bore	Rod Code No	Rod Dia. MM	Thread Size		Rod Extensions and Pilot Dimensions								WF	Y	XG	MIN.XI	Add Stroke			
			KK	FF	A	+002 -002 B	C	D	NA	FA	RD	VB					XC	XJ	ZB	ZC
8	3 (Std)	1 3/8	1-14	1 1/4-12	1 5/8	1.999	5/8	1 1/8	1 5/16	5/8	3 1/4	1	1 5/8	2 13/16	2 5/8	4 7/8	8 3/4	6	7 5/16	9 1/4
	4	1 3/4	1 1/4-12	1 1/2-12	2	2.374	3/4	1 1/2	1 11/16	5/8	3 3/4	1 1/8	1 7/8	3 1/16	2 7/8	5 1/8	8 1/2	6 1/4	7 9/16	9 1/2
	5	2	1 1/2-12	1 3/4-12	2 1/4	2.624	7/8	1 11/16	1 15/16	5/8	4 1/8	1 1/8	2	3 3/16	3	5 1/4	8 5/8	6 3/8	7 11/16	9 5/8
	6	2 1/2	1 7/8-12	2 1/4-12	3	3.124	1	2 1/16	2 3/8	5/8	4 1/2	1 1/4	2 1/4	3 7/16	3 1/4	5 1/2	8 7/8	6 5/8	7 15/16	9 7/8
	7	3	2 1/4-12	2 3/4-12	3 1/2	3.749	1	2 5/8	2 7/8	5/8	5 1/4	1 1/4	2 1/4	3 7/16	3 1/4	5 1/2	8 7/8	6 5/8	7 15/16	9 7/8
	8	3 1/2	2 1/2-12	3 1/4-12	3 1/2	4.249	1	3	3 3/8	5/8	5 1/2	1 1/4	2 1/4	3 7/16	3 1/4	5 1/2	8 7/8	6 5/8	7 15/16	9 7/8
	9	4	3-12	3 3/4-12	4	4.749	1	3 3/8	3 3/8	3/4	6	1 1/4	2 1/4	3 7/16	3 1/4	5 1/2	8 7/8	6 5/8	7 15/16	9 7/8
	10	4 1/2	3 3/4-12	4 1/4-12	4 1/2	5.249	1	3 7/8	4 3/8	3/4	6 7/8	1 1/4	2 1/4	3 7/16	3 1/4	5 1/2	8 7/8	6 5/8	7 15/16	9 7/8
	11	5	3 1/2-12	4 3/4-12	5	5.749	1	4 1/4	4 7/8	3/4	7 1/4	1 1/4	2 1/4	3 7/16	3 1/4	5 1/2	8 7/8	6 5/8	7 15/16	9 7/8
	12	5 1/2	4-12	5 1/4-12	5 1/2	6.249	1	4 5/8	5 3/8	3/4	8	1 1/4	2 1/4	3 7/16	3 1/4	5 1/2	8 7/8	6 5/8	7 15/16	9 7/8
10	4 (Std)	1 3/4	1 1/4-12	1 1/2-12	2	2.374	3/4	1 1/2	1 11/16	5/8	3 3/4	1 1/8	1 7/8	3 1/8	3	5 5/8	10 3/8	7 1/4	8 15/16	11 3/4
	5	2	1 1/2-12	1 3/4-12	2 1/4	2.624	7/8	1 11/16	1 15/16	5/8	4 1/6	1 1/8	2	3 1/4	3 3/8	5 3/4	10 1/2	7 3/8	9 1/16	11 7/8
	6	2 1/2	1 7/8-12	2 1/4-12	3	3.124	1	2 1/16	2 3/8	5/8	4 1/2	1 1/4	2 1/4	3 1/2	3 3/8	6	10 3/4	7 5/8	9 5/16	12 1/8
	7	3	2 1/4-12	2 3/4-12	3 1/2	3.749	1	2 5/8	2 7/8	5/8	5 1/4	1 1/4	2 1/4	3 1/2	3 3/8	6	10 3/4	7 5/8	9 5/16	12 1/8
	8	3 1/2	2 1/2-12	3 1/4-12	3 1/2	4.249	1	3	3 3/8	5/8	5 1/2	1 1/4	2 1/4	3 1/2	3 3/8	6	10 3/4	7 5/8	9 5/16	12 1/8
	9	4	3-12	3 3/4-12	4	4.749	1	3 3/8	3 3/8	3/4	6	1 1/4	2 1/4	3 1/2	3 3/8	6	10 3/4	7 5/8	9 5/16	12 1/8
	10	4 1/2	3 3/4-12	4 1/4-12	4 1/2	5.249	1	3 7/8	4 3/8	3/4	6 7/8	1 1/4	2 1/4	3 1/2	3 3/8	6	10 3/4	7 5/8	9 5/16	12 1/8
	11	5	3 1/2-12	4 3/4-12	5	5.749	1	4 1/4	4 7/8	3/4	7 1/4	1 1/4	2 1/4	3 1/2	3 3/8	6	10 3/4	7 5/8	9 5/16	12 1/8
	12	5 1/2	4-12	5 1/4-12	5 1/2	6.249	1	4 5/8	5 3/8	3/4	8	1 1/4	2 1/4	3 1/2	3 3/8	6	10 3/4	7 5/8	9 5/16	12 1/8
12	5 (Std)	2	1 1/2-12	1 3/4-12	2 1/4	2.624	7/8	1 11/16	1 15/16	5/8	4 1/8	1 1/8	2	3 1/4	3 3/8	5 3/4	11 1/8	7 7/8	9 5/16	12 7/8
	6	2 1/2	1 7/8-12	2 1/4-12	3	3.124	1	2 1/16	2 3/8	5/8	4 1/2	1 1/4	2 1/4	3 1/2	3 3/8	6	11 3/8	8 1/8	9 13/16	13 3/8
	7	3	2 1/4-12	2 3/4-12	3 1/2	3.749	1	2 5/8	2 7/8	5/8	5 1/4	1 1/4	2 1/4	3 1/2	3 3/8	6	11 3/8	8 1/8	9 13/16	13 3/8
	8	3 1/2	2 1/2-12	3 1/4-12	3 1/2	4.249	1	3	3 3/8	5/8	5 1/2	1 1/4	2 1/4	3 1/2	3 3/8	6	11 3/8	8 1/8	9 13/16	13 3/8
	9	4	3-12	3 3/4-12	4	4.749	1	3 3/8	3 3/8	3/4	6	1 1/4	2 1/4	3 1/2	3 3/8	6	11 3/8	8 1/8	9 13/16	13 3/8
	10	4 1/2	3 3/4-12	4 1/4-12	4 1/2	5.249	1	3 7/8	4 3/8	3/4	6 7/8	1 1/4	2 1/4	3 1/2	3 3/8	6	11 3/8	8 1/8	9 13/16	13 3/8
	11	5	3 1/2-12	4 3/4-12	5	5.749	1	4 1/4	4 7/8	3/4	7 1/4	1 1/4	2 1/4	3 1/2	3 3/8	6	11 3/8	8 1/8	9 13/16	13 3/8
	12	5 1/2	4-12	5 1/4-12	5 1/2	6.249	1	4 5/8	5 3/8	3/4	8	1 1/4	2 1/4	3 1/2	3 3/8	6	11 3/8	8 1/8	9 13/16	13 3/8
14	6 (Std)	2 1/2	1 7/8-12	2 1/4-12	3	3.124	1	2 1/16	2 3/8	5/8	4 1/2	1 1/4	2 1/4	3 13/16	3 5/8	6 3/4	12 7/8	9 1/4	11 3/16	14 7/8
	7	3	2 1/4-12	2 3/4-12	3 1/2	3.749	1	2 5/8	2 7/8	5/8	5 1/4	1 1/4	2 1/4	3 13/16	3 5/8	6 3/4	12 7/8	9 1/4	11 3/16	14 7/8
	8	3 1/2	2 1/2-12	3 1/4-12	3 1/2	4.249	1	3	2 3/8	5/8	5 1/2	1 1/4	2 1/4	3 13/16	3 5/8	6 3/4	12 7/8	9 1/4	11 3/16	14 7/8
	9	4	3-12	3 3/4-12	4	4.749	1	3 3/8	2 7/8	3/4	6	1 1/4	2 1/4	3 13/16	3 5/8	6 3/4	12 7/8	9 1/4	11 3/16	14 7/8
	10	4 1/2	3 3/4-12	4 1/4-12	4 1/2	5.249	1	3 7/8	4 3/8	3/4	6 7/8	1 1/4	2 1/4	3 13/16	3 5/8	6 3/4	12 7/8	9 1/4	11 3/16	14 7/8
	11	5	3 1/2-12	4 3/4-12	5	5.749	1	4 1/4	4 7/8	3/4	7 1/4	1 1/4	2 1/4	3 13/16	3 5/8	6 3/4	12 7/8	9 1/4	11 3/16	14 7/8
	12	5 1/2	4-12	5 1/4-12	5 1/2	6.249	1	4 5/8	5 3/8	3/4	8	1 1/4	2 1/4	3 13/16	3 5/8	6 3/4	12 7/8	9 1/4	11 3/16	14 7/8
16	7 (Std)	3	2 1/4-12	2 3/4-12	3 1/2	3.749	1	2 5/8	2 7/8	5/8	5 1/4	1 1/4	2 1/4	3 13/16	3 5/8	-	14 1/8	9 3/4	12 1/16	16 5/8
	8	3 1/2	2 1/2-12	3 1/4-12	3 1/2	4.249	1	3	3 3/8	5/8	5 1/2	1 1/4	2 1/4	3 13/16	3 5/8	-	14 1/8	9 3/4	12 1/16	16 5/8
	9	4	3-12	3 3/4-12	4	4.749	1	3 3/8	3 3/8	3/4	6	1 1/4	2 1/4	3 13/16	3 5/8	-	14 1/8	9 3/4	12 1/16	16 5/8
	10	4 1/2	3 3/4-12	4 1/4-12	4 1/2	5.249	1	3 7/8	4 3/8	3/4	6 7/8	1 1/4	2 1/4	3 13/16	3 5/8	-	14 1/8	9 3/4	12 1/16	16 5/8
	11	5	3 1/2-12	4 3/4-12	5	5.749	1	4 1/4	4 7/8	3/4	7 1/4	1 1/4	2 1/4	3 13/16	3 5/8	-	14 1/8	9 3/4	12 1/16	16 5/8
	12	5 1/2	4-12	5 1/4-12	5 1/2	6.249	1	4 5/8	5 3/8	3/4	8	1 1/4	2 1/4	3 13/16	3 5/8	-	14 1/8	9 3/4	12 1/16	16 5/8
18	8 (Std)	3 1/2	2 1/2-12	3 1/4-12	3 1/2	4.249	1	3	3 3/8	5/8	5 1/2	1 1/4	2 1/4	4	3 7/8	-	15 3/8	10 1/2	13 1/16	18 3/8
	9	4	3-12	3 3/4-12	4	4.749	1	3 3/8	3 3/8	3/4	6	1 1/4	2 1/4	4	3 7/8	-	15 3/8	10 1/2	13 1/16	18 3/8
	10	4 1/2	3 3/4-12	4 1/4-12	4 1/2	5.249	1	3 7/8	4 3/8	3/4	6 7/8	1 1/4	2 1/4	4	3 7/8	-	15 3/8	10 1/2	13 1/16	18 3/8
	11	5	3 1/2-12	4 3/4-12	5	5.749	1	4 1/4	4 7/8	3/4	7 1/4	1 1/4	2 1/4	4	3 7/8	-	15 3/8	10 1/2	13 1/16	18 3/8
	12	5 1/2	4-12	5 1/4-12	5 1/2	6.249	1	4 5/8	5 3/8	3/4	8	1 1/4	2 1/4	4	3 7/8	-	15 3/8	10 1/2	13 1/16	18 3/8
20	8 (Std)	3 1/2	2 1/2-12	3 1/4-12	3 1/2	4.249	1	3	3 3/8	5/8	5 1/2	1 1/4	2 1/4	4 1/4	4 1/8	-	16 7/8	11 3/4	14 5/8	19 5/8
	9	4	3-12	3 3/4-12	4	4.749	1	3 3/8	3 3/8	3/4	6	1 1/4	2 1/4	4 1/4	4 1/8	-	16 7/8	11 3/4	14 5/8	19 5/8
	10	4 1/2	3 3/4-12	4 1/4-12	4 1/2	5.249	1	3 7/8	4 3/8	3/4	6 7/8	1 1/4	2 1/4	4 1/4	4 1/8	-	16 7/8	11 3/4	14 5/8	19 5/8
	11	5	3 1/2-12	4 3/4-12	5	5.749	1	4 1/4	4 7/8	3/4	7 1/4	1 1/4	2 1/4	4 1/4	4 1/8	-	16 7/8	11 3/4	14 5/8	19 5/8
	12	5 1/2	4-12	5 1/4-12	5 1/2	6.249	1	4 5/8	5 3/8	3/4	8	1 1/4	2 1/4	4 1/4	4 1/8	-	16 7/8	11 3/4	14 5/8	19 5/8

Flange Mounted Cylinders 1½" to 6" Bores

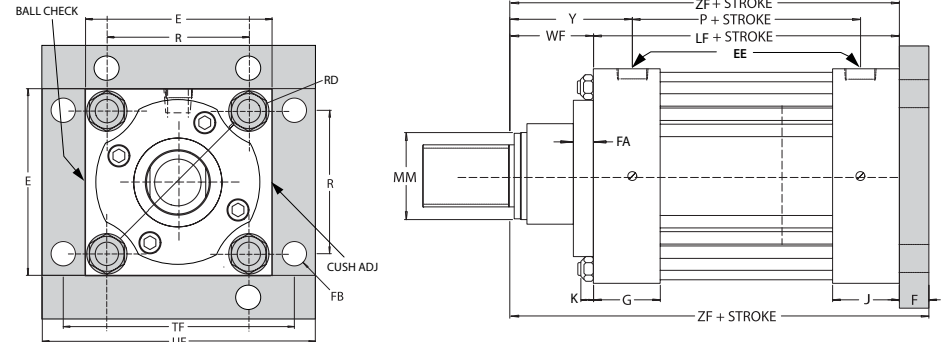


STYLE A - Rectangular Flange Mount Cap End
(NFPA Mounting Style MF2)

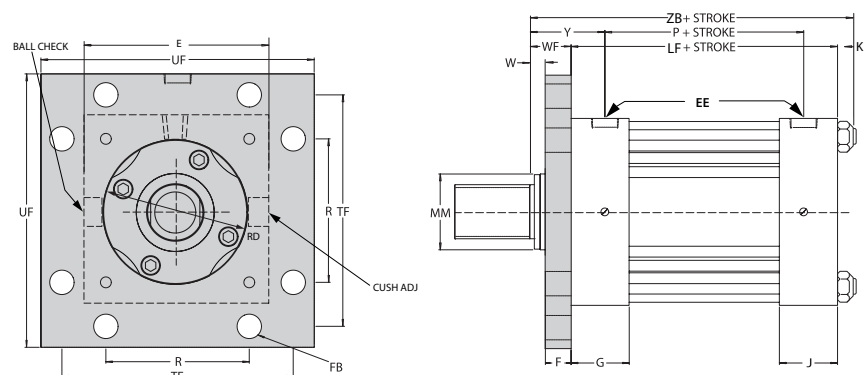


STYLE B - Rectangular Flange Mount Head End
(NFPA Mounting Style MF1)

Styles "AA" or "BB" are recommended for maximum pressures and shock loads.



STYLE AA - Square Flange Mount Cap End
(NFPA Mounting Style MF6)



STYLE BB - Square Flange Mount Head End
(NFPA Mounting Style MF5)

We recommend the use of high tensile mounting bolts on all flange mounted cylinders subjected to maximum pressures and shock loads.

Envelope and Mounting Dimensions

Bore	E	EE NPTF	F	FB	G	J	K	R	TF	UF	Add Stroke	
											LF	P
1½	2	⅜	⅜	¼	1½	1	¼	1.43	2¾	3⅜	4	2¼
2	2½	⅜	⅜	5/16	1½	1	5/16	1.84	3⅜	4⅞	4	2¼
2½	3	⅜	⅜	5/16	1½	1	5/16	2.19	3⅞	4⅞	4⅞	2⅜
3¼	3¾	½	5/8	3/8	1¾	1¼	3/8	2.76	4 ¹¹ / ₁₆	5½	4⅞	2⅝
4	4½	½	5/8	3/8	1¾	1¼	3/8	3.32	5 ⁷ / ₁₆	6¼	4⅞	2⅝
5	5½	½	5/8	½	1¾	1¼	7/16	4.10	6⅝	7⅝	5⅝	2⅞
6	6½	¾	¾	½	2	1½	7/16	4.88	7⅝	8⅝	5¾	3⅝

On 1½", 2" and 2½" bore cylinders with maximum size rods, the head end NPTF Ports are tapped shallow and the head end cushions are non-adjustable.

*Mounting holes are 1/16 larger than screw size shown.

Viceroy uses only 100,000 psi minimum yield, high carbon steel for tie rods. Rods are prestressed at assembly with self-locking nuts to assure cylinder integrity. For a stronger cylinder design, rely on the fluid power specialists.

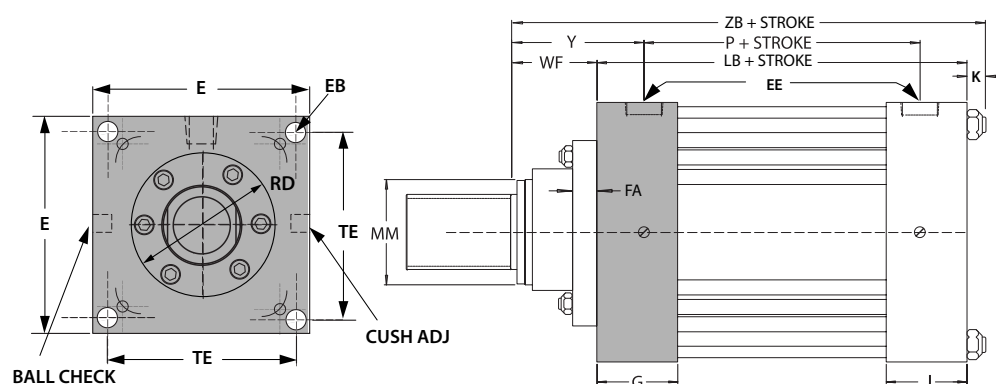
SERIES
7K

Rod and Dimensions

Envelope and Mounting Dimensions

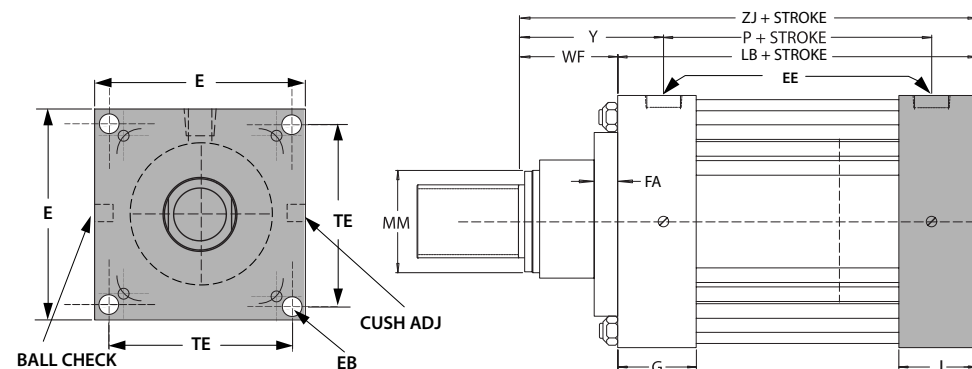
Bore	Rod No.	Rod Dia.	Rod Extensions and Pilot Dimensions										WF	Y	W	Add Stroke		
		MM	KK	FF	A	+000 -002 B	C	D	NA	FA	RD	VB				ZJ	ZB	ZF
1½	1(Std)	⅝	7/16-20	½-20	¾	1.124	⅜	½	9/16	⅜	2	⅝	1	1 ¹⁵ / ₁₆	⅝	4 ⁵ / ₈	4 ⁷ / ₈	5
	2	1	¾-16	7/8-14	1⅝	1.499	½	7/8	1 ⁵ / ₁₆	⅜	-	7/8	1⅜	2 ⁵ / ₁₆	1	5	5¼	5⅜
2	1(Std)	⅝	7/16-20	½-20	¾	1.124	⅜	½	9/16	⅜	2	⅝	1	1 ¹⁵ / ₁₆	⅝	4 ⁵ / ₈	4 ¹⁵ / ₁₆	5
	2	1	¾-16	7/8-14	1⅝	1.499	½	7/8	1 ⁵ / ₁₆	⅜	-	7/8	1⅜	2 ⁵ / ₁₆	1	5	5 ⁵ / ₁₆	5⅜
	3	1⅜	1-14	1¼-12	1⅝	1.999	⅝	1⅝	1 ⁵ / ₁₆	⅜	-	1	1⅝	2 ⁹ / ₁₆	1¼	5¼	5 ⁹ / ₁₆	5 ⁵ / ₈
2½	1(Std)	⅝	7/16-20	½-20	¾	1.124	⅜	½	9/16	⅜	2	⅝	1	1 ¹⁵ / ₁₆	⅝	4¾	5 ¹ / ₁₆	5 ¹ / ₈
	2	1	¾-16	7/8-14	1⅝	1.499	½	7/8	1 ⁵ / ₁₆	⅜	2¾	7/8	1⅜	2 ⁵ / ₁₆	1	5 ¹ / ₈	5 ⁷ / ₁₆	5½
	3	1⅜	1-14	1¼-12	1⅝	1.999	½	1⅝	1 ⁵ / ₁₆	⅜	-	1	1⅝	2 ⁹ / ₁₆	1¼	5⅜	5 ¹⁵ / ₁₆	5¾
	4	1¾	1¼-12	1½-12	2	2.374	¾	1½	1 ¹¹ / ₁₆	⅜	-	1⅝	1⅞	2 ¹³ / ₁₆	1½	5 ⁵ / ₈	5 ¹¹ / ₁₆	6
¾	2(Std)	1	¾-16	7/8-14	1⅝	1.499	½	7/8	1 ⁵ / ₁₆	⅜	2¾	7/8	1⅜	2 ⁷ / ₁₆	¾	5 ⁵ / ₈	6	6¼
	3	1⅜	1-14	1¼-12	1⅝	1.999	½	1⅝	1 ⁵ / ₁₆	⅝	3¼	1	1⅝	2 ¹¹ / ₁₆	1	5 ⁷ / ₈	6¼	6½
	4	1¾	1¼-12	1½-12	2	2.374	¾	1½	1 ¹¹ / ₁₆	⅝	3¾	1⅝	1⅞	2 ¹⁵ / ₁₆	1¼	6 ¹ / ₈	6½	6¾
	5	2	1½-12	1¾-12	2¼	2.624	⅞	1 ¹¹ / ₁₆	1 ¹⁵ / ₁₆	⅝	-	1⅝	2	3 ¹ / ₁₆	1⅜	6¼	6 ⁵ / ₈	6 ⁷ / ₈
4	2(Std)	1	¾-16	7/8-14	1⅝	1.499	½	7/8	1 ⁵ / ₁₆	⅜	2¾	7/8	1⅜	2 ⁷ / ₁₆	¾	5 ⁵ / ₈	6	6¼
	3	1⅜	1-14	1¼-12	1⅝	1.999	½	1⅝	1 ⁵ / ₁₆	⅝	3¼	1	1⅝	2 ¹¹ / ₁₆	1	5 ⁷ / ₈	6¼	6½
	4	1¾	1¼-12	1½-12	2	2.374	¾	1½	1 ¹¹ / ₁₆	⅝	3¾	1⅝	1⅞	2 ¹⁵ / ₁₆	1¼	6 ¹ / ₈	6½	6¾
	5	2	1½-12	1¾-12	2¼	2.624	⅞	1 ¹¹ / ₁₆	1 ¹⁵ / ₁₆	⅝	4 ¹ / ₈	1⅝	2	3 ¹ / ₁₆	1⅜	6¼	6 ⁵ / ₈	6 ⁷ / ₈
	6	2½	1⅞-12	2¼-12	3	3.124	1	2 ¹ / ₁₆	2 ³ / ₈	⅝	4½	1¼	2¼	3 ⁵ / ₁₆	1⅝	6½	6 ⁷ / ₈	7 ¹ / ₈
	7	3	2¼-12	2¾-12	3½	3.749	1	2 ⁵ / ₈	2 ⁷ / ₈	⅝	5¼	1¼	2¼	3 ⁵ / ₁₆	1⅝	6¾	7 ³ / ₁₆	7 ³ / ₈
5	2(Std)	1	¾-16	7/8-14	1⅝	1.499	½	7/8	1 ⁵ / ₁₆	⅜	2¾	7/8	1⅜	2 ¹⁵ / ₁₆	¾	5 ⁷ / ₈	6 ⁵ / ₁₆	6½
	3	1⅜	1-14	1¼-12	1⅝	1.999	½	1⅝	1 ⁵ / ₁₆	⅝	3¼	1	1⅝	2 ¹¹ / ₁₆	1	6 ¹ / ₈	6 ⁹ / ₁₆	6¾
	4	1¾	1¼-12	1½-12	2	2.374	¾	1½	1 ¹¹ / ₁₆	⅝	3¾	1⅝	1⅞	2 ¹⁵ / ₁₆	1¼	6 ³ / ₈	6 ¹³ / ₁₆	7
	5	2	1½-12	1¾-12	2¼	2.624	⅞	1 ¹¹ / ₁₆	1 ¹⁵ / ₁₆	⅝	4 ¹ / ₈	1⅝	2	3 ¹ / ₁₆	1⅜	6½	6 ¹⁵ / ₁₆	7 ¹ / ₈
	6	2½	1⅞-12	2¼-12	3	3.124	1	2 ¹ / ₁₆	2 ³ / ₈	⅝	4½	1¼	2¼	3 ⁵ / ₁₆	1⅝	6¾	7 ³ / ₁₆	7 ³ / ₈
	7	3	2¼-12	2¾-12	3½	3.749	1	2 ⁵ / ₈	2 ⁷ / ₈	⅝	5¼	1¼	2¼	3 ⁵ / ₁₆	1⅝	6¾	7 ³ / ₁₆	7 ³ / ₈
	8	3½	2½-12	3¼-12	3½	4.249	1	3	3 ³ / ₈	⅝	5½	1¼	2¼	3 ⁵ / ₁₆	1⅝	6¾	7 ³ / ₁₆	7 ³ / ₈
	8	3½	2½-12	3¼-12	3½	4.249	1	3	3 ³ / ₈	⅝	5½	1¼	2¼	3 ⁵ / ₁₆	1⅝	6¾	7 ³ / ₁₆	7 ³ / ₈
6	3(Std)	1⅜	1-14	1¼-12	1⅝	1.999	½	1⅝	1 ⁵ / ₁₆	⅝	3¼	1	1⅝	2 ¹³ / ₁₆	⅞	6 ⁵ / ₈	7 ¹ / ₁₆	7 ³ / ₈
	4	1¾	1¼-12	1½-12	2	2.374	¾	1½	1 ¹¹ / ₁₆	⅝	3¾	1⅝	1⅞	3 ¹ / ₁₆	1⅝	6 ⁷ / ₈	7 ⁵ / ₁₆	7 ⁵ / ₈
	5	2	1½-12	1¾-12	2¼	2.624	⅞	1 ¹¹ / ₁₆	1 ¹⁵ / ₁₆	⅝	4 ¹ / ₈	1⅝	2	3 ³ / ₁₆	1¼	7	7 ⁷ / ₁₆	7¾
	6	2½	1⅞-12	2¼-12	3	3.124	1	2 ¹ / ₁₆	2 ³ / ₈	⅝	4½	1¼	2¼	3 ⁷ / ₁₆	1½	7¼	7 ¹¹ / ₁₆	8
	7	3	2¼-12	2¾-12	3½	3.749	1	2 ⁵ / ₈	2 ⁷ / ₈	⅝	5¼	1¼	2¼	3 ⁷ / ₁₆	1½	7¼	7 ¹¹ / ₁₆	8
	8	3½	2½-12	3¼-12	3½	4.249	1	3	3 ³ / ₈	⅝	5½	1¼	2¼	3 ⁷ / ₁₆	1½	7¼	7 ¹¹ / ₁₆	8
	9	4	3-12	3¾-12	4	4.749	1	3 ³ / ₈	3 ⁷ / ₈	¾	6	1¼	2¼	3 ⁷ / ₁₆	1½	7¼	7 ¹¹ / ₁₆	8

Flange Mounted Cylinders 8" to 20" Bores



STYLE QQ - Head Square Mount (NFPA Mounting Style ME3)

NOTE: Use socket head cap screws for mounting Styles "QQ" and "P" 8" bore cylinders, because of tie rod interference with hex bolt heads. We recommend the use of high tensile mounting bolts on all flange mounted cylinders subjected to maximum pressures and shock loads.



STYLE PP - Cap Square Mount (NFPA Mounting Style ME4)

For tie rod size and location see page 11

Envelope and Mounting Dimensions

Bore	E	EE NPTF	EB*	G	J	K	TE	Add Stroke	
								LB	P
8	8½	¾	⅝	2	1½	⅑/16	7.57	5⅝	3¼
10	10⅝	1	¾	2¼	2	11/16	9.40	6⅜	4⅝
12	12¾	1	¾	2¼	2	11/16	11.10	6⅞	4⅝
14	14¾	1¼	⅞	2¾	2¼	13/16	12.87	8⅞	5½
16	17½	1¼	1¼	2¾	2¾	15/16	14.75	8⅞	5¾
18	19½	1½	1½	3¼	3¼	15/16	16.50	9⅞	6⅜
20	21½	2	1¾	3¾	3¾	1	18.25	11⅜	7⅞

NPTF ports furnished as standard unless otherwise specified.

**Mounting holes are 1/16" larger than screw size shown.*

Viceroy offers a wide variety of mounting styles. In particular heavy duty Flanges Styles PP and QQ provide excellent rigidity and strength for most rugged applications. For the greatest strength and operational dependability, rely on the fluid power specialists.

SERIES
7K

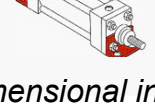
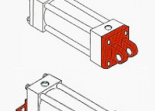
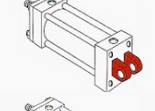
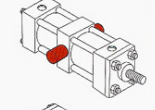
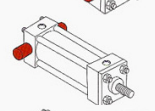
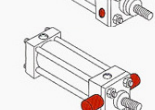
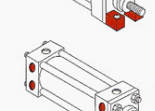
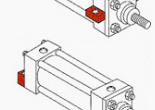
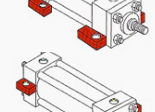
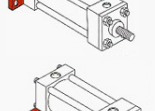
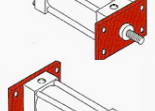
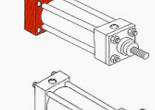
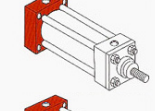
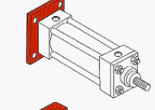
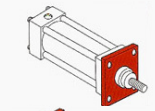
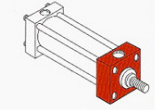
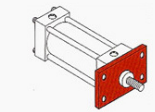
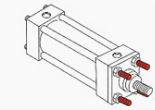
Rod and Dimensions

Envelope and Mounting Dimensions

Bore	Rod No.	RodOD Dia MM	Thread Size		Rod Extension and Pilot Dimensions								Add Stroke				
			KK	FF	A	+000 -002 B	C	D	NA	FA	RD	VB	WF	Y	ZB	ZJ	
8	3 (Std)	1 3/8	1-14	1 1/4-12	1 3/8	1.999	5/8	1 3/8	1 5/16	5/8	3 1/4	1	1 3/8	2 13/16	7 5/16	6 3/4	
	4	1 3/4	1 1/4-12	1 1/2-12	2	2.374	3/4	1 1/2	1 11/16	5/8	3 3/4	1 3/8	1 3/8	3 1/8	7 9/16	7	
	5	2	1 1/2-12	1 3/4-12	2 1/4	2.624	7/8	1 11/16	1 15/16	5/8	4 1/8	1 3/8	2	3 3/16	7 11/16	7 1/2	
	6	2 1/2	1 3/8-12	2 1/4-12	3	3.124	1	2 1/16	2 3/8	5/8	4 1/2	1 1/4	2 1/4	3 7/16	7 15/16	7 3/4	
	7	3	2 1/4-12	2 3/4-12	3 1/2	3.749	1	2 5/8	2 7/8	5/8	5 1/4	1 1/4	2 1/4	3 7/16	7 15/16	7 3/4	
	8	3 1/2	2 1/2-12	3 1/4-12	3 1/2	4.249	1	3	3 3/8	5/8	5 1/2	1 1/4	2 1/4	3 7/16	7 15/16	7 3/4	
	9	4	3-12	3 3/4-12	4	4.749	1	3 3/8	3 7/8	3/4	6	1 1/4	2 1/4	3 7/16	7 15/16	7 3/4	
	10	4 1/2	3 1/4-12	4 1/4-12	4 1/2	5.249	1	3 3/8	4 3/8	3/4	6 7/8	1 1/4	2 1/4	3 7/16	7 15/16	7 3/4	
	11	5	3 1/2-12	4 3/4-12	5	5.749	1	4 1/4	4 7/8	3/4	7 1/4	1 1/4	2 1/4	3 7/16	7 15/16	7 3/4	
	12	5 1/2	4-12	5 1/4-12	5 1/2	6.249	1	4 5/8	5 3/8	3/4	8	1 1/4	2 1/4	3 7/16	7 15/16	7 3/4	
10	4 (Std)	1 3/4	1 1/4-12	1 1/2-12	2	2.374	3/4	1 1/2	1 11/16	5/8	3 3/4	1 3/8	1 3/8	3 3/8	8 5/16	8 1/4	
	5	2	1 1/2-12	1 3/4-12	2 1/4	2.624	7/8	1 11/16	1 15/16	5/8	4 1/8	1 3/8	2	3 1/4	9 1/16	8 3/8	
	6	2 1/2	1 3/8-12	2 1/4-12	3	3.124	1	2 1/16	2 3/8	5/8	4 1/2	1 1/4	2 1/4	3 1/2	9 5/16	8 5/8	
	7	3	2 1/4-12	2 3/4-12	3 1/2	3.749	1	2 5/8	2 7/8	5/8	5 1/4	1 1/4	2 1/4	3 1/2	9 5/16	8 5/8	
	8	3 1/2	2 1/2-12	3 1/4-12	3 1/2	4.249	1	3	3 3/8	5/8	5 1/2	1 1/4	2 1/4	3 1/2	9 5/16	8 5/8	
	9	4	3-12	3 3/4-12	4	4.749	1	3 3/8	3 7/8	3/4	6	1 1/4	2 1/4	3 1/2	9 5/16	8 5/8	
	10	4 1/2	3 1/4-12	4 1/4-12	4 1/2	5.249	1	3 3/8	4 3/8	3/4	6 7/8	1 1/4	2 1/4	3 1/2	9 5/16	8 5/8	
	11	5	3 1/2-12	4 3/4-12	5	5.749	1	4 1/4	4 7/8	3/4	7 1/4	1 1/4	2 1/4	3 1/2	9 5/16	8 5/8	
	12	5 1/2	4-12	5 1/4-12	5 1/2	6.249	1	4 5/8	5 3/8	3/4	8	1 1/4	2 1/4	3 1/2	9 5/16	8 5/8	
	12	5 (Std)	2	1 1/2-12	1 3/4-12	2 1/4	2.624	7/8	1 11/16	1 15/16	5/8	4 1/8	1 3/8	2	3 1/4	9 1/16	8 7/8
6		2 1/2	1 3/8-12	2 1/4-12	3	3.124	1	2 1/16	2 3/8	5/8	4 1/2	1 1/4	2 1/4	3 1/2	9 13/16	9 1/8	
7		3	2 1/4-12	2 3/4-12	3 1/2	3.749	1	2 5/8	2 7/8	5/8	5 1/4	1 1/4	2 1/4	3 1/2	9 13/16	9 1/8	
8		3 1/2	2 1/2-12	3 1/4-12	3 1/2	4.249	1	3	3 3/8	5/8	5 1/2	1 1/4	2 1/4	3 1/2	9 13/16	9 1/8	
9		4	3-12	3 3/4-12	4	4.749	1	3 3/8	3 7/8	3/4	6	1 1/4	2 1/4	3 1/2	9 13/16	9 1/8	
10		4 1/2	3 1/4-12	4 1/4-12	4 1/2	5.249	1	3 3/8	4 3/8	3/4	6 7/8	1 1/4	2 1/4	3 1/2	9 13/16	9 1/8	
11		5	3 1/2-12	4 3/4-12	5	5.749	1	4 1/4	4 7/8	3/4	7 1/4	1 1/4	2 1/4	3 1/2	9 13/16	9 1/8	
12		5 1/2	4-12	5 1/4-12	5 1/2	6.249	1	4 5/8	5 3/8	3/4	8	1 1/4	2 1/4	3 1/2	9 13/16	9 1/8	
14		6 (Std)	2 1/2	1 3/8-12	2 1/4-12	3	3.124	1	2 1/16	2 3/8	5/8	4 1/2	1 1/4	2 1/4	3 13/16	11 3/16	10 3/8
		7	3	2 1/4-12	2 3/4-12	3 1/2	3.749	1	2 5/8	2 7/8	5/8	5 1/4	1 1/4	2 1/4	3 13/16	11 3/16	10 3/8
	8	3 1/2	2 1/2-12	3 1/4-12	3 1/2	4.249	1	3	3 3/8	5/8	5 1/2	1 1/4	2 1/4	3 13/16	11 3/16	10 3/8	
	9	4	3-12	3 3/4-12	4	4.749	1	3 3/8	3 7/8	3/4	6	1 1/4	2 1/4	3 13/16	11 3/16	10 3/8	
	10	4 1/2	3 1/4-12	4 1/4-12	4 1/2	5.249	1	3 3/8	4 3/8	3/4	6 7/8	1 1/4	2 1/4	3 13/16	11 3/16	10 3/8	
	11	5	3 1/2-12	4 3/4-12	5	5.749	1	4 1/4	4 7/8	3/4	7 1/4	1 1/4	2 1/4	3 13/16	11 3/16	10 3/8	
	12	5 1/2	4-12	5 1/4-12	5 1/2	6.249	1	4 5/8	5 3/8	3/4	8	1 1/4	2 1/4	3 13/16	11 3/16	10 3/8	
	16	7 (Std)	3	2 1/4-12	2 3/4-12	3 1/2	3.749	1	2 5/8	2 7/8	5/8	5 1/4	1 1/4	2 1/4	3 13/16	12 1/16	11 1/2
		8	3 1/2	2 1/2-12	3 1/4-12	3 1/2	4.249	1	3	3 3/8	5/8	5 1/2	1 1/4	2 1/4	3 13/16	12 1/16	11 1/2
		9	4	3-12	3 3/4-12	4	4.749	1	3 3/8	3 7/8	3/4	6	1 1/4	2 1/4	3 13/16	12 1/16	11 1/2
10		4 1/2	3 1/4-12	4 1/4-12	4 1/2	5.249	1	3 3/8	4 3/8	3/4	6 7/8	1 1/4	2 1/4	3 13/16	12 1/16	11 1/2	
11		5	3 1/2-12	4 3/4-12	5	5.749	1	4 1/4	4 7/8	3/4	7 1/4	1 1/4	2 1/4	3 13/16	12 1/16	11 1/2	
12		5 1/2	4-12	5 1/4-12	5 1/2	6.249	1	4 5/8	5 3/8	3/4	8	1 1/4	2 1/4	3 13/16	12 1/16	11 1/2	
18		8 (Std)	3 1/2	2 1/2-12	3 1/4-12	3 1/2	4.249	1	3	3 3/8	5/8	5 1/2	1 1/4	2 1/4	4	13 1/16	12 1/2
		9	4	3-12	3 3/4-12	4	4.749	1	3 3/8	3 7/8	3/4	6	1 1/4	2 1/4	4	13 1/16	12 1/2
		10	4 1/2	3 1/4-12	4 1/4-12	4 1/2	5.249	1	3 3/8	4 3/8	3/4	6 7/8	1 1/4	2 1/4	4	13 1/16	12 1/2
		11	5	3 1/2-12	4 3/4-12	5	5.749	1	4 1/4	4 7/8	3/4	7 1/4	1 1/4	2 1/4	4	13 1/16	12 1/2
	12	5 1/2	4-12	5 1/4-12	5 1/2	6.249	1	4 5/8	5 3/8	3/4	8	1 1/4	2 1/4	4	13 1/16	12 1/2	
	20	8 (Std)	3 1/2	2 1/2-12	3 1/4-12	3 1/2	4.249	1	3	3 3/8	5/8	5 1/2	1 1/4	2 1/4	4 1/4	14 3/8	13 3/8
		9	4	3-12	3 3/4-12	4	4.749	1	3 3/8	3 7/8	3/4	6	1 1/4	2 1/4	4 1/4	14 3/8	13 3/8
		10	4 1/2	3 1/4-12	4 1/4-12	4 1/2	5.249	1	3 3/8	4 3/8	3/4	6 7/8	1 1/4	2 1/4	4 1/4	14 3/8	13 3/8
		11	5	3 1/2-12	4 3/4-12	5	5.749	1	4 1/4	4 7/8	3/4	7 1/4	1 1/4	2 1/4	4 1/4	14 3/8	13 3/8
		12	5 1/2	4-12	5 1/4-12	5 1/2	6.249	1	4 5/8	5 3/8	3/4	8	1 1/4	2 1/4	4 1/4	14 3/8	13 3/8

NFPA Cylinder Interchange Comparison

These diagrams illustrate the various styles of cylinder mounting as they interchange with other cylinder manufacturers.



Mounting Description	NFPA Mounting Code	Viceroy Fluid Power	Parker Hannifin	Miller Fluid Power	Hydro-line
		Series 7K AIR.	Series 2A AIR	Model A AIR	Series R2 AIR
Tie Rods Ext.	MX1 MDX1 MX2 MX3	Style L Style DL Style N Style M	Style TD Style KTD Style TC Style TB	Model A51 Model DA51 Model A52 Model A53	L LD N M
Head Rectangular Flange	MF1	Style B	Style J	Model A61	F
Head Square Flange	MF5	Style BB	Style JB	Model A65	J
Head Square	ME3*	Style QQ	Style JB	Model A63	G
Cap Rectangular Flange	MF2	Style A	Style H	Model A62	R
Cap Square Flange	MF6	Style AA	Style HB	Model A66	S
Cap Square	ME4*	Style PP	Style HB	Model A64	P
Head Rectangular	ME5*	-	-	Model A67	-
Cap Rectangular	ME6*	-	-	Model A68	-
Side Lugs	MS2	Style J	Style C	Model A72	A
Centerline Lugs	MS3	Style K	Style E	Model A73	H
Side End Lugs	MS7	Style CC	Style G	Model A77	E
Side Tapped	MS4	Style H	Style F	Model A74	B
Head Trunnion	MT1*	Style ER	Style D	Model A81	U
Cap Trunnion	MT2*	Style EB	Style DB	Model A82	W
Intermediate Fixed Trunnion	MT4*	Style E	Style DD	Model A83	TT
Cap Fixed Clevis	MP1	Style G	Style BB	Model A84	C
Cap Detachable Clevis	MP2	-	Style BC	Model A86	DC
End Angles	MS1	-	Style CB	-	-

* Check dimensional interchangeability before ordering.

SERIES 7K

Milwaukee Cylinder	Sheffer Corp	Aeroquip (T-J)	Hanna	S-P Corp.	Carter Controls	Galland Henning No Pak
Series A Air.	Series A Air	Series S Air.	Series A Air	Series A3 Air.	Series AA Air.	Class P6 Air.
Model A10 Model A10D Model A13 Model A12	Style BX Style DBX Style RX Style FX	Model S-9BE Model S-9DBE Model S-9B Model S-9R	MX1 MDX1 MX2 MX3	Model A3R Model DA3R Model A3S Model A3T	Model T Model TDER Model Y Model Z	Model T Model XT Model TB Model TR
Model A31	Style FF	Model S-2	MF1	Model A3E	Model B	Model D
Model A21	Style FFX	Model S-2B	MF5	Model A3C	Model W	Model DD
Model A21	Style FH	Model S-2	ME3	Model A3C	Model B	Model D
Model A32	Style RF	Model S-4	MF2	Model A3D	Model A	Model C
Model A22	Style RFX	Model S-4B	MF6	Model A-3A	Model V	Model CC
Model A22	Style RH	Model S-4	ME4	Model A3D	Model A	Model C
-	-	-	-	-	-	-
-	-	-	-	-	-	-
Model A42	Style SL	Model S-1	MS2	Model A3B	Model C	Model A
Model A51	Style CL	Model S-7	MS3	Model A3P	Model K	Model B
Model A43	-	-	MS7	-	Model N	-
Model A41	Style SF	Model S-1A	MS4	Model A3J	Model F	Model S
Model A71	Style TF	Model S-5R	MT1	Model A3M	Model E	Model FR
Model A72	Style TR	Model S-5B	MT2	Model A3N	Model D	Model FB
Model A73	Style T	Model S-5	MT4	-	Model M	-
Model A61	Style C	Model S-3	MP1	Model A3G	Model G	Model E
-	-	-	MP2	-	-	Model HE
-	Style FB	-	-	Model A3L	Model L	Model AP

Seal Kits

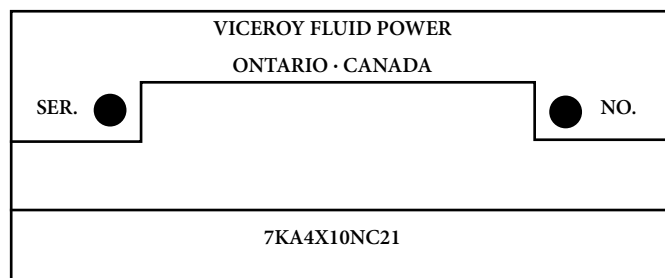
Seal Kits for Viceroy cylinders are designed and packaged to provide the necessary software parts for the normal cylinder repair.

Ease of maintenance is provided through the kits shown, in that each type permits a specific cylinder repair.

A combination of these kits will give sufficient cylinder seals to permit a complete cylinder seal repair.

NOTE: If there is any doubt, please refer to serial number located on the cylinder Identification tag located on the head of cylinder.

Cylinder Identification Tag



Ordering Information

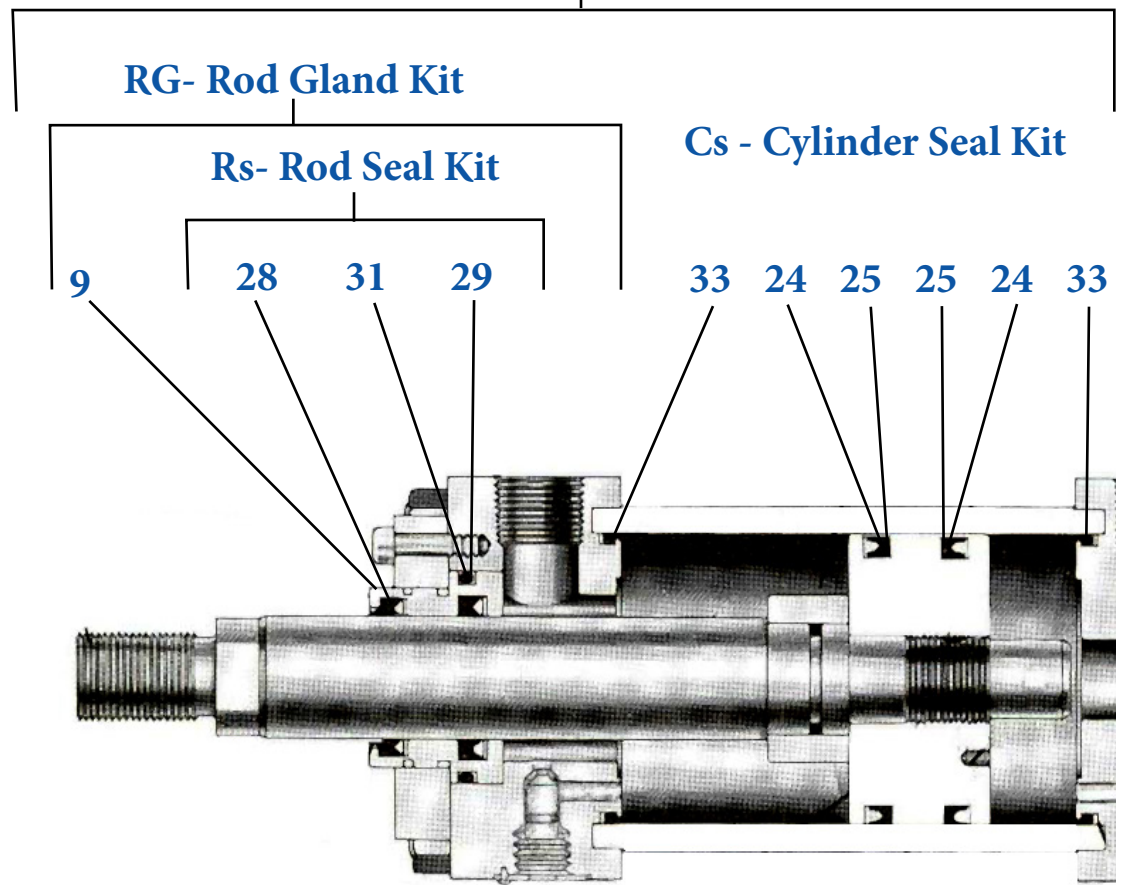
1. Order standard Seal Kits by appropriate number listed in the table, adding bore size.
2. When ordering Viton Seal Kits, specify Viton.
3. Specify rod diameter for all kits.

ROD CODE CHART	
Rod Dia.	Rod No.
5/8	.010
1	.020
1 3/8	.030
1 3/4	.040
2	.050
2 1/2	.060
3	.070
3 1/2	.080
4	.090
4 1/2	.100
5	.110
5 1/2	.120

Cyl. Bore	CR kit	CS Kit
1 1/2	602-7564_ _ _	602-7574_ _ _
2	603-7564_ _ _	603-7574_ _ _
2 1/2	604-7564_ _ _	604-7579_ _ _
3 1/4	606-7564_ _ _	606-7574_ _ _
4	608-7564_ _ _	608-7574_ _ _
5	609-7564_ _ _	609-7574_ _ _
6	610-7564_ _ _	610-7574_ _ _
8	612-7564_ _ _	612-7574_ _ _

NOTE - Indicate bore size in _ _ _ above.

Cr - Cylinder Repair Kit



Item Numbers:

- 9-Rod Bearing
- 24-Piston Seal (Block Vee)
- 25-Piston Seal non-extrusion ring
- 28-Rod Wiper (polyurethane)
- 28-Rod Seal (polyurethane)
- 31-Cartridge "O" Ring
- 33-Tube "O" Ring

For complete part identification see Bulletin:
7K-Installation, Service Instructions are General Parts Breakdown.

Cyl. Bore	RG kit	RS Kit
1 1/2	602-7530_ _ _	602-7570_ _ _
2	603-7530_ _ _	603-7570_ _ _
2 1/2	604-7530_ _ _	604-7570_ _ _
3 1/4	606-7530_ _ _	606-7570_ _ _
4	608-7530_ _ _	608-7570_ _ _
5	609-7530_ _ _	609-7570_ _ _
6	610-7530_ _ _	610-7570_ _ _
8	612-7530_ _ _	612-7570_ _ _

NOTE - Indicate bore size in _ _ _ above.

1. General: The parts drawing on page 36 shows a listing of parts and is applicable to all standard Series 7K air cylinders. (1/2 thru 8.00 Bores only.) For kits not listed, contact your nearest Distributor. This parts drawing, when used in conjunction with the listed kits, should facilitate the ordering of kits.

2. Installation of Cylinder: The seals and packings furnished as standard in air cylinders operate most satisfactorily within the temperature range of -40°F to 200°F. Baffles are recommended to shield cylinders from heat, whenever practical. For unusually high or low temperatures, different seal materials may have been used. (Contact your nearest Distributor.) (Reference Series 7KT.)

For the cylinder to perform well, it must be properly installed. Alignment of the cylinder with load is most important. Forcing rod, clevis pins or mounting bolts into position indicates that the cylinder is not properly aligned, and permanent damage may result from such installation.

3. Procedure for Replacement of Rod Seals and Cartridge:

A. Disconnect air lines from head and cap ports of cylinder.

B. In cases of circular cartridge retainer, remove socket head screws. In cases of square retainer remove tie rod nuts.

C. Remove circular or square retainer.

D. Remove rod bearing cartridge from head. To facilitate removal, a screwdriver can be used to pry in the external groove.

E. Remove rod wiper, rod seal and rod cartridge O-ring.

F. Reassemble the cartridge with corresponding replacement parts, cleaning all parts thoroughly. Swelling, shrinking, wear, nicks, cuts, and indentations are all signs of defective seals. Such seals should be replaced.

G. Prior to installation, all rubber parts must be well coated with lubricant. Place the cartridge with new replacement parts on the rod end, and use a twisting motion in starting it onto the rod.

H. Guide the cartridge over the rod and carefully insert it into the head end cover, replace cartridge retainer plate and screws. Tighten the screws with a hexagon key. In tightening the socket head screws for circular retainers, use the following torque:

Screw Size No.	10-32	.25-28	.31-24
Torque (Ft.-lbs.)	6	15	30

I. Square retainer (re-installation), see tie rod torque, Page 38.

4. Procedure for Repacking Cylinders:

A. Disconnect air lines from head and cap ports of cylinder

B. Remove the tie rod nuts and tie rods.

C. Remove cap end and then head end. The rod bearing cartridge and cartridge retainer plate will come off with the head end.

D. Remove piston and rod assembly from tube.

E. Remove cartridge retainer plate screws and rod bearing cartridge from head end.

Note: The piston and rod assembly should not require disassembly unless replacement of pistons or the piston rod or head end cushion nose is required

5. Cleaning: Clean all parts thoroughly. The packings and seals in this cylinder are compatible with hydraulic oils, air and neutral fluids. The cleaning agent must also be compatible to avoid damage to packings and seals. Whenever a particular lubricant is specified for an installation, do not deviate from this specification without checking for compatibility.

6. Inspection:

A. Inspect all packings and seals for swelling, shrinking, wear, nicks, cuts, and indentations. Discard all damaged packings and seals.

B. Check and inspect bore of tube for scratches, excessive wear, and any other defect that might damage piston packing or cause piston bypass.

C. Inspect piston rod for signs of wear, nicks, dents, scratches, or anything that may damage rod packing or rod bearing. Excessive wear on one side of piston rod or rod bearing usually indicates misalignment in installation and should be corrected.

D. Inspect all remaining items for evidence of damage or wear. In most cases, a little polishing of the various parts will restore them to like-new condition.

E. Replace all damaged packings, seals, rod wipers.

7. Reassembly: The procedure for reassembly is essentially the reverse of disassembly. However, the following exceptions and considerations should be noted:

A. All O-rings should be well coated with

lubricant after they are installed in their respective grooves and prior to reassembly with the mating part. Care must be taken when assembling O-rings and packings that they are not damaged, as this will cause leakage.

B. Tie rod threads and nut bearing faces should be well lubricated to allow tightening the nuts evenly for proper prestressing. To avoid twisting of the tie rods during tightening hold with vise grip or clamp. To assure equal prestressing of the tie rods, first turn on nuts even and snug to align assembly; then the nuts are to be tightened alternately. For proper tie rod prestressing, they should be torqued as recommended: (See tie rod torque chart Page 38.)

8. Testing:

A. After the cylinder has been completely reassembled, it should be tested, either on a test bench or in the regular installation, Watch for the following as the cylinder is cycled at operating pressure.

- Rod gland leakage.
- Leakage at end cover "O" rings.
- Leakage at cushion adjusting needle.
- Leakage at ball check plug.

Caution

CYLINDERS WITH THE FOLLOWING BORE/ROD COMBINATIONS HAVE NON-BOLTED SQUARE RETAINERS. CARTRIDGE REMOVAL REQUIRES REMOVAL OF TIE ROD NUTS/TIE RODS:

A. All mounts:

- 1.50" bore with 1.00" rod
- 2.00" bore with 1.00" and 1.38" rods
- 2.50" bore with 1.38" and 1.75" rods
- 3.25" bore with 2.00" rod

B. Additional bore/rod combinations in "B" and "BB" mounting styles only

- 1.50" and 2.00" bores with .62" rod
- 2.50" bore with 1.00" rod
- 3.25" bore with 1.38" and 1.75" rods
- 4.00" bore with 1.75", 2.00", and 2.50" rods
- 5.00" bore with 2.50", 3.00", and 3.50" rods
- 6.00" bore with 4.00" rod

Removability of Rod Cartridge in Style CC - Foot Mount.

Foot lugs interfere with cartridge removal in the following sizes:

- 1.5" bore with .62" and 1.00" rods
- 2.0" bore with 1.00" and 1.38" rods
- 2.5" bore with 1.38" and 1.75" rods

3.25" bore with 1.38", 1.75" and 2.00" rods

4.00" bore with 1.75", 2.00", and 2.50" rods

5.00" bore with 2.50", 3.00" and 3.50" rods

6.00" bore with 3.00", 3.50" and 4.00" rods

The following bore-rod combinations are not available in Style CC Mount:

8" bore with 4.50", 5.00" and 5.50" rods

10" bore with 5.50" rod

Cushion Adjustment Valve (Identified with

C.A. on End Covers)

Cushion adjustment valve is provided for controlling cushioning effect of the cylinder.

It contains a safety feature in that during the backing off of the screws, leakage will occur prior to thread disengagement, thus preventing the possibility of valve blow-out.

Do not continue unscrewing the valve if leakage occurs. Ball Check Screw is non-adjustable.

"Neither seller nor manufacturer shall be liable for any injury, loss or damage, direct

or consequential, arising out of the misuse or improper use of or the inability to use the product. Before using, user should determine the suitability of the product for his intended use and assumes all responsibility for such determination. The foregoing may not be altered except in writing signed by an authorized representative of seller and manufacturer."

NOTE: For complete installation and service instructions request Bulletin: 7K Installation, Service Instructions, and General Parts Breakdown.

Mounting Recommendations

In addition to the standard mountings, the following information covers other mountings and mounting ideas that may prove helpful in your applications. When needed, special end covers, flanges or other mountings can be provided. Sketches, together with specifications relative to the application, and forces involved should be submitted.

Mounting Bolts -High tensile socket head screws are recommended for all mounting styles. Use 1/16" smaller than hole size.

Tie Rod Mountings-Styles L, M, & N- Cylinders with tie rod mountings are recommended for applications where

mounting space is limited. The standard tie rod extension is shown as BB in the tables. Longer or shorter extensions are also available.

Flange Mountings-Styles B, BB, Q, & QQ- Cylinders can be located by measuring from the cylinder mounting surface reference the "W" or "WF" dimension. The flanges can be drilled for pins or dowels to prevent shifting after proper alignment.

Lug and Side Tapped Mounting-Styles H, J, & K- Cylinders should be fixed at one end using fitted bolts, pins, in the mounting lugs or shear keys located

to resist the major load, whether push or pull.

Trunnion Mounting-Styles E, EB, & ER-Cylinders require lubricated pillow blocks with minimum bearing clearances. Pillow blocks should be carefully aligned and mounted so the trunnions are not subjected to bending moments. The rod end connection should also be pivoted, with the pivot in the piston rod eye or clevis parallel to the trunnions.

Clevis Mounting-Style G- Cylinders should be pivoted at both ends, with the pivot pin in the piston rod eye or clevis parallel to the pivot pin..

Cushion Information

Cylinder Bore	Piston Rod Dia.	Cushion Length		Cushion Cross Sectional Area	
		Head End	Cap End	Head End	Cap End
1½-2-2½	⅝	1½/16	¾	.518	.110
3¼-4-5	1	¾	⅞	1.108	.307
6-8	1⅜	¾	1	2.074	.601
10	1¾	¾	1½/16	3.547	.785
12	2	1½/16	1½/16	4.430	.785
14	2½	1½/16	1⅝	6.492	1.485
16	3	1½/16	2	9.621	3.142
18	3½	1⅞/16	2½	12.566	3.142
20	3½	1⅞/16	2½	12.566	3.142

Cap end cushions are constant for given bore size, Head end cushions (lengths and areas) are constant for given rod diameter regardless of cylinder bore size.

Recommended Torque for Tie Rod Nuts

16	Cyl. Tube Material	Cylinder Bore											
		11/2	2-21/2	31/4-4	5-6	8	10	12	14	16	18	20	
Torque	Steel	-	-	-	-	-	-	-	-	-	-	-	.300
	Aluminum	11	16	29	60	120	-

* These cylinders use fiberglass tubes and the tie rod prestressing procedure should be as follows:

(a) Assemble cylinder without tie rods.

(b) Measure distance between head and cap in inches and multiply this measurement by .003. This is the required precompression on the cylinder tube.

(c) Insert tie rod and tighten tie rod nuts evenly until the distance between the head and cap is reduced by the precompression determined in (b) above. Measure at all four corners of the cylinder and ensure that the measurements are equal.

Air Cylinder Design Considerations

Specifying the air cylinder for a particular application requires that the design engineer consider several important points while determining the cylinder operating parameters. Several of these considerations are noted below:

1. Side Loading: Alignment of the cylinder in the application to prevent any side loading which can greatly effect the life of the cylinder

2. Friction: External mechanical friction, or internal seal friction (if cylinder

operating pressure is below 50 PSI) can effect cylinder performance. If internal seal friction is of concern, consider specifying the Series 7KF (Viceroy Fluid Power "Low Friction") cylinder for lower breakaway pressures.

3. Cylinder Sizing: Air cylinders are generally sized so that at the system operating pressure, the developed force is approximately 100% more than what is required to balance the load.

4. Cylinder Operating Velocity:

Example: Based on the following calculations and a cylinder operating at a speed of 30 cycles per minute with an 18 inch stroke.

$$V (\text{Velocity}) = 30 \text{ cycles/minute} \times \frac{36 \text{ in.}}{\text{cycle}} \times \frac{1 \text{ ft.}}{12 \text{ in.}} = 90 \text{ ft./min.}$$

However, if the cylinder dwell time is equal to the cylinder stroke time, the equivalent cycle rate is 60 cycles/minute or an average velocity of 180 ft./min.

Accessories

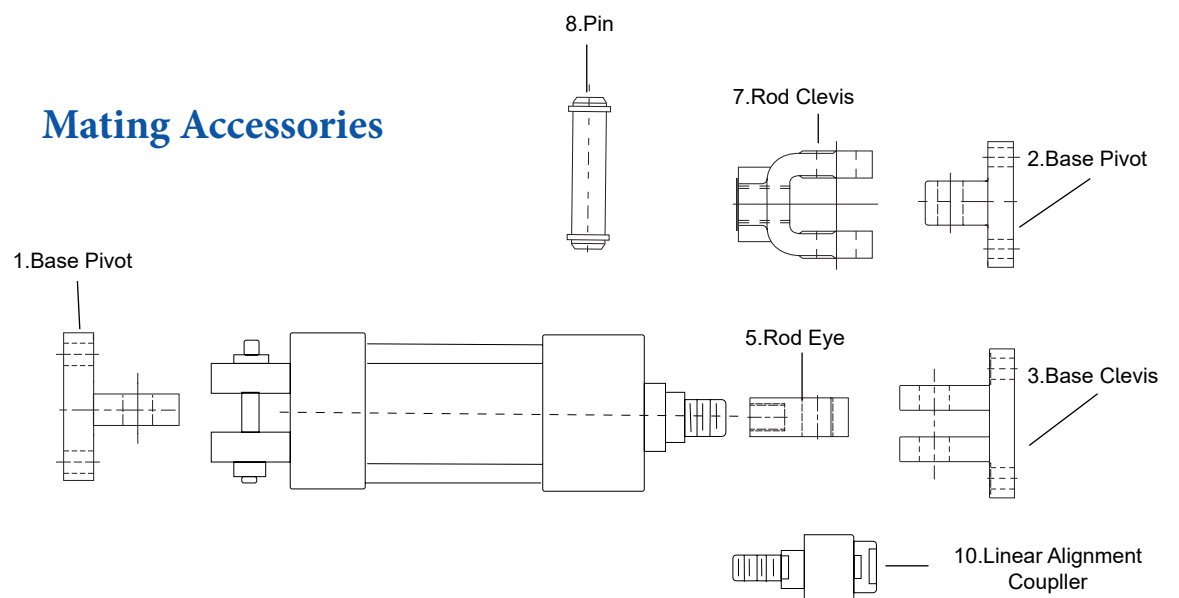
How to specify accessories

Rod end accessories are selected by the thread diameter on the end of the rod. To specify a rod end accessory locate the thread diameter (KK) in the dimension tables for the mounting style and rod end style of the cylinder you are using. Locate the part number for the proper accessory by referring to the Parts Mating diagram and Table A for standard rod end cylinders.

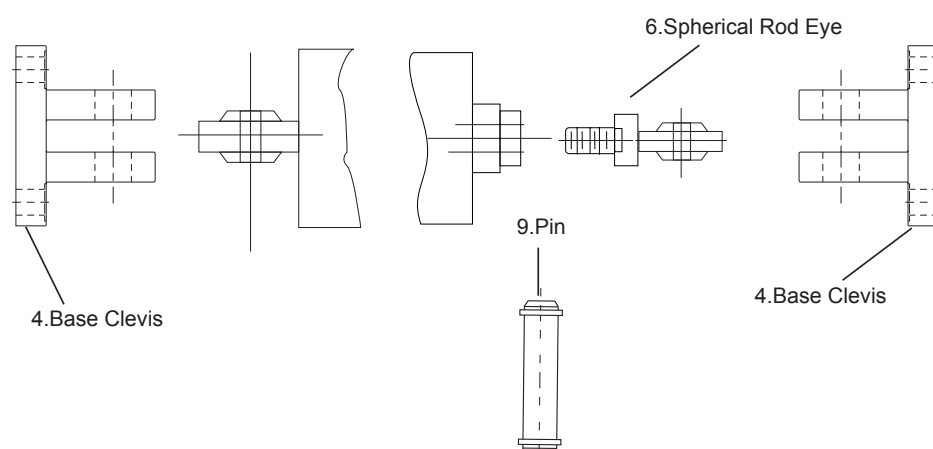
Mounting accessories for the cap end of the cylinder are selected by bore size. Refer to Tale B for the part number of the proper base pivot and pin for the bore size of the cylinder you are using.

For spherical pivot mount cylinders, Style S, rod end parts and base clevis for both ends are selected by bore size and can be found in Table C.

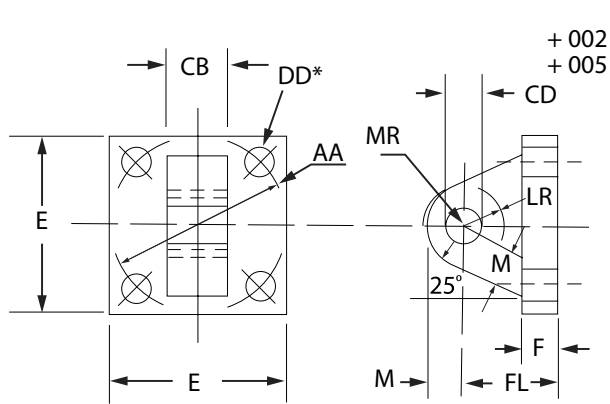
Mating Accessories



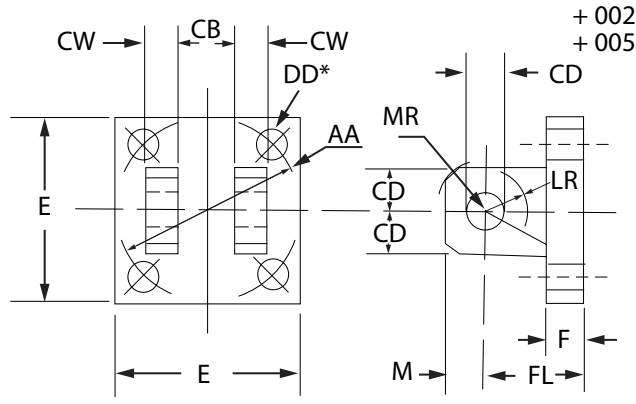
Mating Accessories for Spherical Bearing Mounting Cylinders



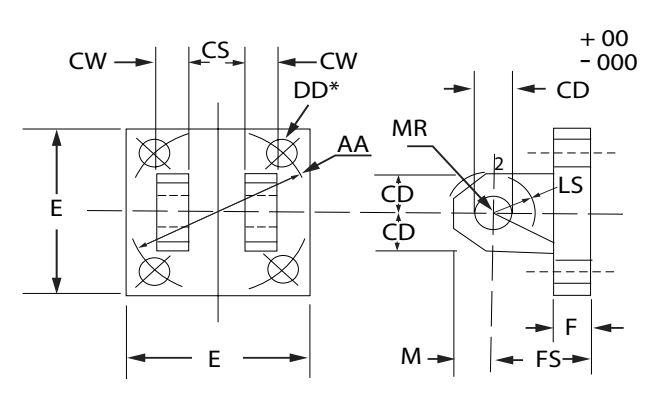
Base Pivot & Base Clevis Accessories



Base Pivot (1) (2)
*Mounting Screw Size

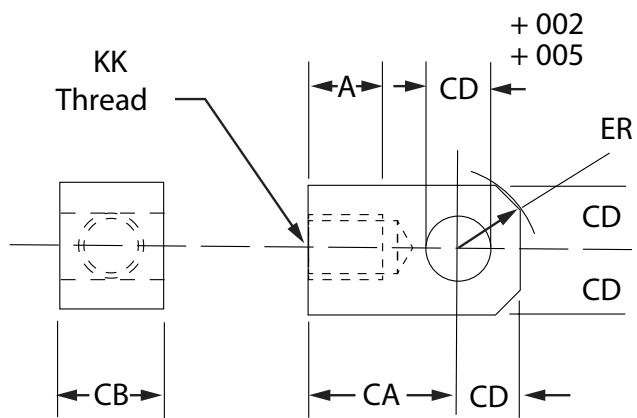


Base Clevis ** (3)
*Mounting Screw Size
(Use socket head cap screws)
**Complete with pin (not shown)

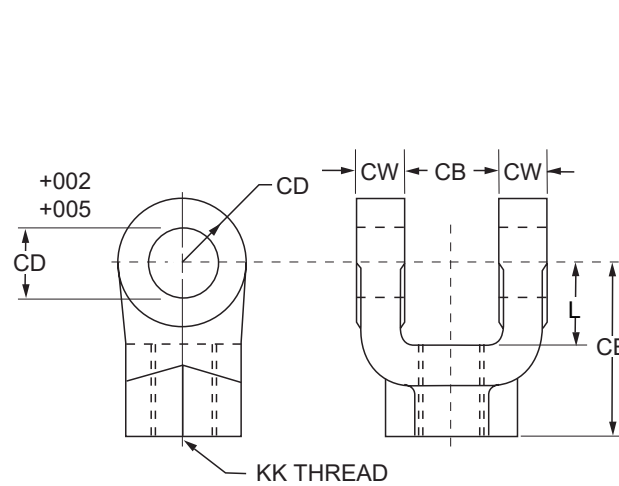


Base Clevis (Spherical Bearing) (4)
*Mounting Screw Size

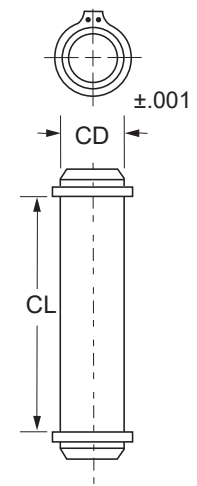
Rod End Accessories



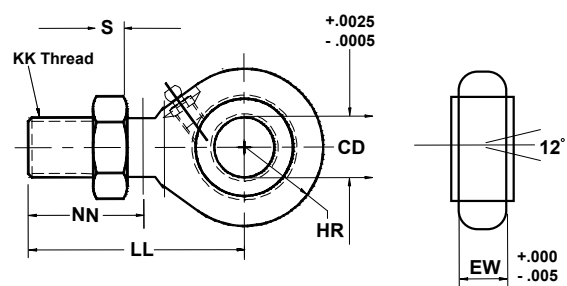
Rod Eye (standard) (5)



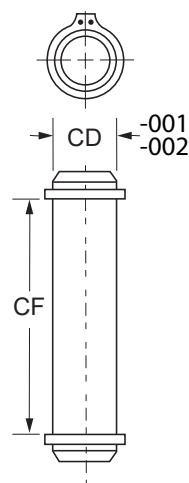
Rod Clevis (7)



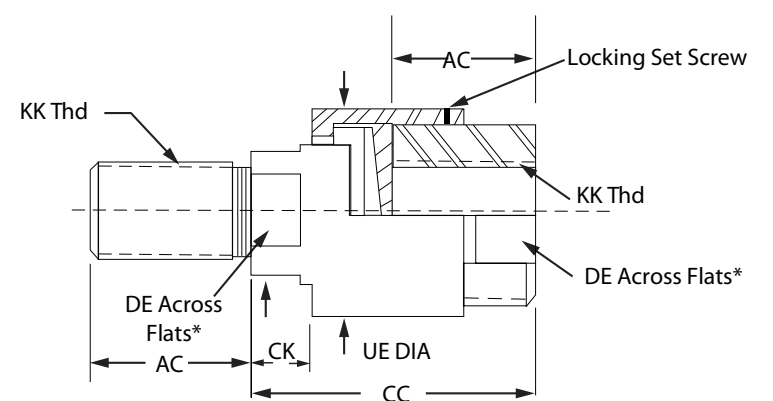
Pin (standard) (8)



Spherical Rod Eye (6)



Pin (For spherical bearing) (8)



Linear Alignment Coupler (10)
*Spanner holes on 526301 and larger

Table A

Mating Base Pivot to Cap Clevis Standard Rod End Cylinders		
Bore	Base Pivot (1)	Pin (8)
1½-2-2½	8430	8658-1
3¼-4-5	8431	8658-2
6-8	8432	8658-3
10	8433	8658-4
12	8434	8658-5
14	8435	8658-6
16	8436	8658-17
18	8437	8658-18
20	8437	8658-18

Table B

Mating Rod End Accessories with Base Mounts-Part Nos. Standard Rod End Cylinders						
Thread Size KK	Rod Eyes (5)	Base Clevis (3)	Rod Clevis (7)	Base Pivot (2)	Pin (8)	Coupler (10)
7/16-20	8422	75940	82262	8430	8658-1	526301-07
¾-16	8423	75941	82263	8431	8658-2	526301-12
1-14	8424	75942	82264	8432	8658-3	526301-16
1¼-12	8425	75943	82265	8433	8658-4	526301-20
1½-12	8426	75944	82266	8434	8658-5	526301-24
1⅞-12	8427	75945	82267	8435	8658-6	526301-30
2¼-12	8428	86170	82268	8436	8658-17	526301-36
2½-12	8429	86171	82269	8437	8658-18	526301-40
3¼-12	8564	86172			9658-19	526301-52
4-12	8565	86173			8658-20	526301-64

Table C

Rod End Torque (All Rods Within a Bore Size)	
Bore	Torque (ft. - lbs.)
1.50	15
2.00	25
2.50	40
3.25	100
4.00	115
5.00	125
6.00	180
8.00	220
10.00	440
12.00	675
14.00	1125

Mating Spherical Rod Eye and Base Style S			
Bore	Sph. Rod Eye (6)	Base Clevis (Each End) (4)	Pin (9)
1½-2-2½	72468	72471	72474
3¼-4-5	72483	72472	72475
6	72470	72472	72476

Base Pivot and Base Clevis Dimensions

Part No.																
Base Pivot(1)	Base Clevis(3)	Base Clevis for Sph.Bearing(4)	AA	CB	CS	CD	CW	DD	E	F	FL	FS	LR	M	MR	NR
8430	75940	71471	2.31	3/4	3/4	1/2	1/2	3/8	2 1/2	3/8	1 1/8	1 3/8	5/8	1/2	1 9/32	9/16
8431	75941	72472	3.61	1 1/4	1	3/4	5/8	1/2	3 1/2	5/8	1 7/8	2 3/8	1 5/16	3/4	2 9/32	2 7/32
8432	75942	72473	4.60	1 1/2	1 1/2	1	3/4	5/8	4 1/2	3/4	2 1/4	3	1 5/16	1	1 3/16	1 1/8
8433	75943		5.40	2		1 3/8	1	5/8	5	7/8	3		1 3/4	1 3/8	1 2 1/32	1 1/2
8434	75944		7.00	2 1/2		1 3/4	1 1/4	7/8	6 1/2	7/8	3 3/8		2	1 3/4	1 24/32	1 15/16
8435	75945		8.10	2 1/2		2	1 1/4	1	7 1/2	1	3 1/2		2 1/4	2	2 3/16	2 3/16
8436	86170		9.30	3		2 1/2	1 1/2	1 1/8	8 1/2	1	4		2 3/4	2 1/2	2 5/8	2 1 1/16
8437	86171		10.60	3		3	1 1/2	1 1/4	9 1/2	1	4 1/4		3 1/16	2 3/4	2 7/8	3
	86172		13.60	4		3 1/2	2	1 3/4	12 5/8	1 1 1/16	5 1 1/16		3 5/8	3 1/2	3 1/2	3 1/2
	86173		16.20	4 1/2		4	2 1/4	2	14 7/8	1 15/16	6 7/16		4 1/8	4	4	4

Rod End Accessory Dimensions

Thread kk	A	AC	CA	CB	CC	CD	CE	CK	CL	CF	CW	DC	DE	ER	EW	HR	L	LL	NN	S	UC	UE
7/16-20	3/4	3/4	1 1/2	3/4	2	1/2	1 1/2	1/2	1 3/4	1 3/4	1/2	1/2	1 3/16	9/16	5/8	1 1/16	3/4	2 7/16	1 15/32	1/4	5/8	1 1/4
3/4-16	1 1/8	1 1/8	2 1/16	1 1/4	2 5/16	3/4	2 1/8	1/2	2 1/2	2 1/4	5/8	1 3/16	1 1/8	2 7/32	7/8	2 9/32	1	2 7/8	1 23/32	7/16	3 1/32	1 3/4
1-14	1 5/8	1 5/8	2 13/16	1 1/2	2 15/16	1	2 15/16	1 7/32	3	3	3/4	1 5/32	1 5/8	1 1/8	1 3/8	1 13/22	1 5/16	4 1/8	2 3/22	9/16	1 1 1/32	2 1/2
1 1/4-12	2	2	3 7/16	2	2 15/16	1 3/4	3 3/4	1 7/32	4		1 5/32	1 5/32	1 5/8	1 1/2			1 3/4				1 1 1/32	2 1/2
1 1/2-12	2 1/4	2 1/4	4	2 1/2	4 3/8	1 3/4	4 1/2	7/8	5		1 1/4	1 3/4	2 3/8	1 15/16			2 1/4				1 3 1/32	3 1/4
1 7/8-12	3	3	5	2 1/2	5 5/8	2	5 1/2	1	5		1 1/4			2 3/16			2 1/2				2 15/32	3 3/4
2 1/4-12	3 1/2	3 1/2	5 13/16	3	6 3/8	2 1/2	6 1/2	1	6		1 1/2			2 1 1/16			3				2 3 1/32	4 1/2
2 1/2-12	3 1/2	3 1/2	6 1/8	3	6 9/16	3	6 3/4	1	6		1 1/2			3			3 1/4				3 15/32	5
3 1/4-12	4 1/2	4 1/2	7 5/8	4	8 1/2	3 1/2		1	8					3 1/2							4 15/32	6 1/4
4-12	5 1/2	5 1/2	9 1/8	4 1/2	9 1/2	4		1	9					4							5 15/32	7 1/2

Rod end accessories are located by thread size on the rod end. Determine this dimension(kk) by referring to the dimension tables for the cylinder you are using. If you are trying to locate dimensions for an accessory for which you have a part number, locate the thread size for that part in Table B above.

Viceroy Fluid Power "Time-Saver" Capacity Chart

Push Stroke Force and Displacement

Bore	Piston Area Sq. In.	Push Force in LBS. Obtained at Following Pressures						Cu.Ft.FreeAir @80PSIReq'd to Move Max Load 1 Inch	Cu. Ft Dis- played Per Inch of Stroke
		60 PSI	80 PSI	100 PSI	150 PSI	200 PSI	250 PSI		
1½	1.767	106	141	177	265	353	442	.0066	.001022
2	3.142	188	251	314	471	628	785	.0117	.00182
2½	4.909	295	393	491	736	982	1227	.0183	.00284
3¼	8.296	498	664	830	1244	1659	2074	.0309	.00480
4	12.566	754	1005	1257	1885	2513	3,142	.0468	.00727
5	19.635	1178	1571	1964	2945	3927	4909	.0732	.01136
6	28.274	1696	2262	2827	4241	5655	7069	.1054	.01636
8	50.265	3016	4021	5027	7540	10053	12566	.1874	.02909
10	78.540	4712	6283	7854	11781	15708	19635	.2928	.04545
12	113.097	6786	9048	11310	16965	22620	28275	.4220	.0655
14	153.938	9236	12315	15394	23091	30788	38485	.5740	.0891
16	201.06	12064	16085	20106	30159	40212	50265	.7496	.1164
18	254.47	15268	20358	25447	38170	50894	63618	.9487	.1473
20	314.16	18850	25133	31416	47124	62832	78540	1.1712	.1818

Piston Rod Dia.	Piston Rod Area Sq. In.	For Pull Stroke Deduct from the Push Force, the Force Corresponding to Rod Size and Pressure						Cu. Ft. Free Air @ 80 PSI	Cu. Ft. Displaced Per Inch of Stroke
		60 PSI	80 PSI	100 PSI	150 PSI	200 PSI	250 PSI		
5/8	.307	18	25	31	46	61	77	.0012	.00018
1	.785	47	63	79	118	157	196	.0029	.00045
1 3/8	1.485	89	119	148	223	297	371	.0055	.00086
1 3/4	2.405	144	192	241	361	481	601	.0090	.00139
2	3.142	188	251	314	471	628	785	.0117	.00182
2 1/2	4.909	295	393	491	736	982	1227	.0183	.00284
3	7.069	424	565	707	1060	1414	1767	.0263	.00409
3 1/2	9.621	577	770	962	1443	1924	2405	.0359	.00557
4	12.566	754	1005	1257	1885	2513	3142	.0468	.00727
4 1/2	15.904	954	1272	1590	2386	3181	3976	.0593	.00920
5	19.635	1178	1571	1964	2945	3927	4909	.0732	.01136
5 1/2	23.758	1425	1907	2376	3564	4752	5940	.0886	.01375

To determine the freeair consumption per inch of stroke use to equation: $\frac{1}{2} = \frac{(P_2 + 14.7)V_1}{14.7}$

WHERE V_2 = Free Air Consumption per in. of stroke(cubic feet)

V_1 = Cubic Feet displaced per in. of stroke

P_2 = Gauge Pressure required to move Maximum Load.

To determine the free air consumption in cubic ft. per minute: CFM = $V_2 \times$ Piston Speed in inches per minute.

Our Long History of Excellence is Your Guarantee of Success



Viceroy Fluid Power

a division of Magnum Integrated Technologies Inc.
200 First Gulf Blvd, Brampton, ON, Canada, L6W4T5
Tel: 905-455-0402 Fax: 905-455-0422,
www.viceroyfluidpower.com