Miller HV2 Series

Heavy Duty Industrial Hydraulic Cylinders

Catalog HY08-M1140-3/NA May, 2009

Heavy Duty Service – Tie Rod Construction

Nominal Pressure – 3000 PSI

Standard Bore Sizes – 1.50" through 20.00"

Piston Rod Diameters – 0.625" through 10.000"

Seventeen Standard Mounting Styles

Miller FLUID POWER

AV Series Cylinders

Up to 250 PSI Permanently Lubricated

AV Series air cylinders are available in bore sizes from 1.50" through 20.00" and up to 250 PSI operating pressure. Standard NFPA dimensions and proven Miller design features.

CHE/CHD Series Compact Hydraulic Cylinders

Up to 207 BAR

CHE/CHD Series compact hydraulic cylinders are available in bore sizes from 20mm through 100mm and up to 207 BAR operating pressure.

MHP Series Cylinders

Up to 210 BAR

MHP Series *metric* hydraulic cylinders are designed to meet the requirements of ISO 6020/2 (1991), 160 Bar Compact Series and may be used for working pressures up to 210 Bar. Bore sizes from 25mm through 200mm.

JV Series Cylinders

400-2300 PSI

(Pressures are bore size dependent.)

Our popularly-priced line of medium pressure hydraulic cylinders, with bore sizes from 1.00" to 8.00".

⚠ Warning

FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS AND/OR SYSTEMS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.

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The product described herein, including without limitation, product features, specifications, designs, availability and pricing, are subject to change by The Company and its subsidiaries at any time without notice.

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Miller Fluid Power HV2 Series Heavy-Duty Hydraulic Cylinder

When the application demands a heavy-duty cylinder with maximum performance, specify Miller Fluid Power HV2 Series. This cylinder has standard design features to maximize machine uptime. The standard bronze rod bushing (nodular iron is a no extra cost option), case-hardened piston rod, high strength piston rod stud and tie rod material combine to make HV2 the cylinder for demanding applications up to 3000 psi.

Thorough inspection and performance testing of each cylinder before shipment assure HV2 cylinder quality. See the following pages for the inside story on all the features that make HV2 series the high performance, long lasting choice for all your heavy-duty hydraulic applications.

Standard Specifications

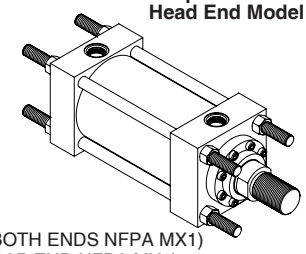
- Heavy Duty Service – ANSI/(NFPA) T3.6.7R2-1996 Mounting and Specification Dimensions
- Standard Construction – Square Head – Tie Rod Design
- Nominal Pressure – 3000 PSI[1]
- Standard Fluid – Hydraulic Oil
- Standard Temperature – -10° F to +165° F
- Bore Sizes – 1.50" through 6.00"
- Piston Rod Diameter – 0.625" through 4.000"
- Mounting Styles – 17 standard styles at various application ratings
- Standard – Externally removable bolted bushing assembly
- Strokes – Available in any practical stroke length
- Cushions – Optional at either end or both ends of stroke. "Float Check" at cap end.
- Rod Ends – Three Standard Choices – Specials to Order

[1] If hydraulic operating pressure exceeds 3000 PSI, send application data for engineering evaluation and recommendation. See cylinder pressure ratings page for actual design factors.

In line with our policy of continuing product improvement, specifications in this catalog are subject to change.

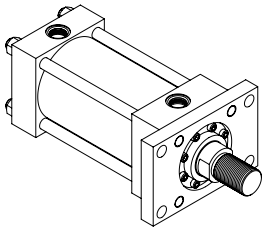
Mounting Styles

Tie Rods Extended
Both Ends Model 51
Cap End Model 52
Head End Model 53



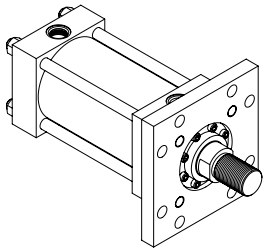
(BOTH ENDS NFPA MX1)
(CAP END NFPA MX2)
(HEAD END NFPA MX3)

Head Rectangular Flange
Model 61



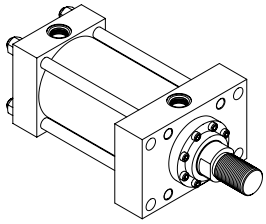
(NFPA MF1)

Head Square Flange
Model 65



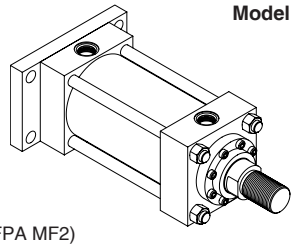
(NFPA MF5)

Head Rectangular
Model 67



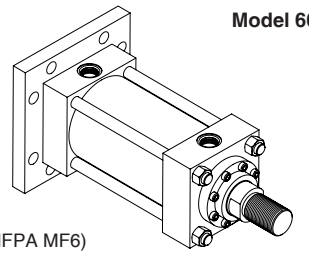
(NFPA ME5)

Cap Rectangular Flange
Model 62



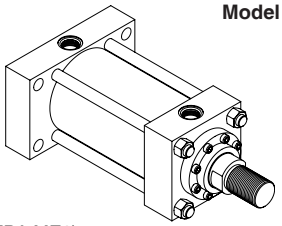
(NFPA MF2)

Cap Square Flange
Model 66



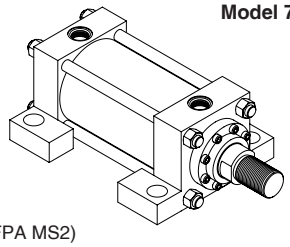
(NFPA MF6)

Cap Rectangular
Model 68



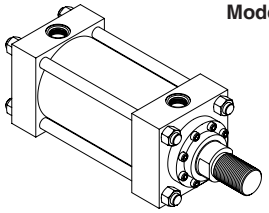
(NFPA ME6)

Side Lug
Model 72



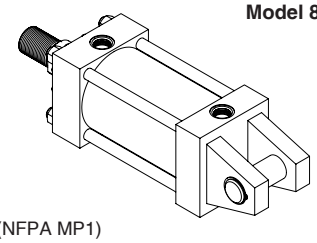
(NFPA MS2)

Side Tap
Model 74



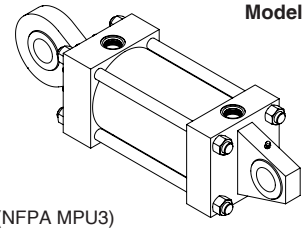
(NFPA MS4)

Cap Fixed Clevis
Model 84



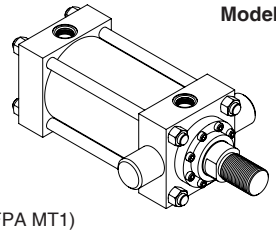
(NFPA MP1)

Cap Fixed Eye with Spherical Bearing
Model 94



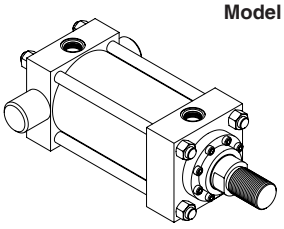
(NFPA MPU3)

Head Trunnion
Model 81



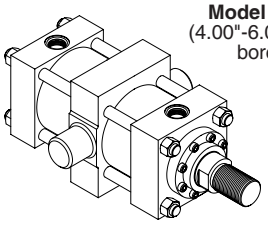
(NFPA MT1)

Cap Trunnion
Model 82



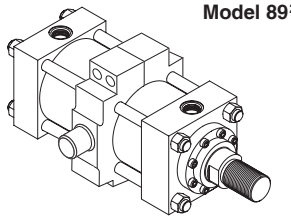
(NFPA MT2)

Intermediate Trunnion
Model 87
(4.00"-6.00" bores)



(NFPA MT4)

Intermediate Trunnion
Model 89[2]



(NFPA MT4)

[2] Reduced rating 3.25"-6.00" bores

Miller. . .
HV2 Series – your best choice in heavy duty hydraulic cylinders

Steel Head – Bored and grooved to provide concentricity for mating parts.

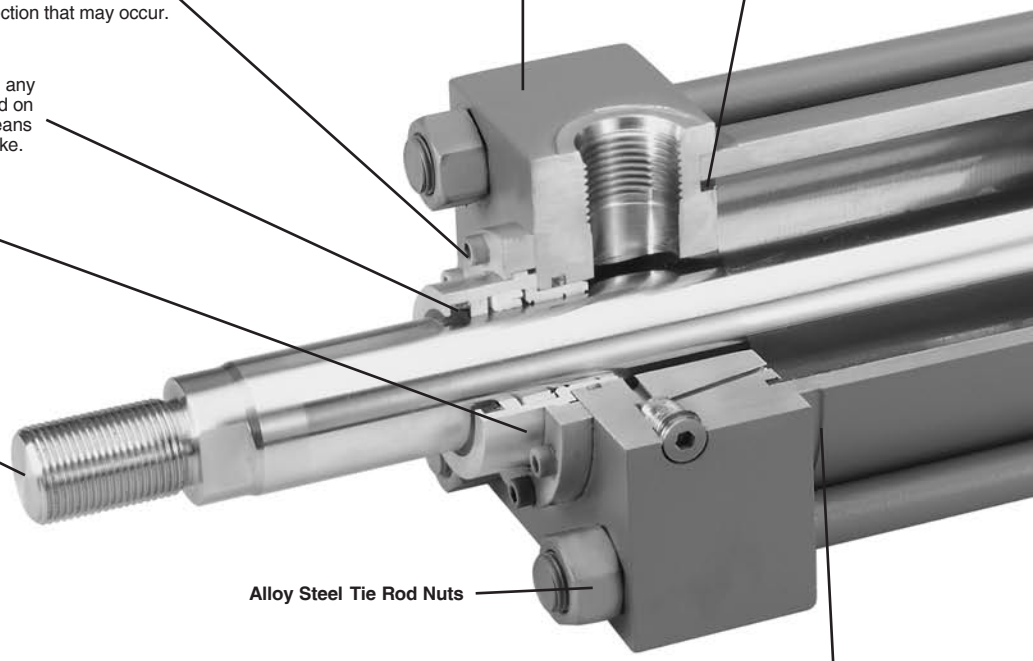
End Seal – Pressure-actuated cylinder tube-to-head and cap "O" rings.

Primary Seal – New "Tri-Lip" Rod Seal is a proven leak proof design – completely self-compensating and self-relieving to withstand variations and conform to mechanical deflection that may occur.

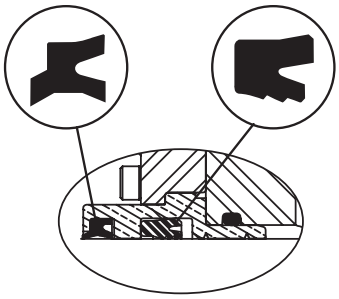
Secondary Seal – Rod Wiper – wipes clean any oil film adhering to the rod on the extend stroke and cleans the rod on the return stroke.

Rod Bushing Assembly – Standard bronze bushing is externally removable without cylinder disassembly. Long inboard bearing surface is ahead of the seals assuring lubrication by cylinder operating fluid. Optional Nodular Iron bushing material is available at no additional cost.

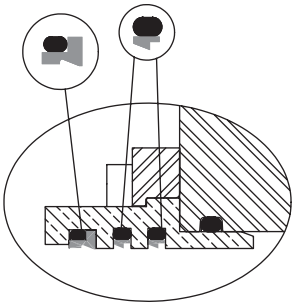
Piston Rod Stud – Furnished on 2.00" diameter rods and smaller when standard style #2 rod end threads are required. Studs have rolled threads and are made from high strength steel. Anaerobic adhesive is used to permanently lock the stud to the piston rod.



Alloy Steel Tie Rod Nuts



Bushing Assembly with "Tri-Lip" Rod Seal
Bushing Assembly externally removable without cylinder disassembly. An O-ring is used as a seal between the bushing and head. The "Tri-Lip" rod seal has multiple sealing edges to produce "dry rod" performance. It is molded from a special polyurethane material that is extremely resistant to abrasion and extrusion, resulting in exceptional service life. Wiperseal cleans rod of dirt, preventing it from entering the bushing and also acts as a secondary rod seal.



Optional High Temperature Bushing
Dual filled PTFE rod seals and filled PTFE wiper seal are energized with fluorocarbon o-rings to maintain consistent contact with the piston rod. Excellent sealing performance produce dry rod on extend stroke with rod scraping to clean rod on retract. Combine with Spring Loaded PTFE Piston Seals for cylinder heat resistance to 400° F. See class 8 seal specification on Operating Fluids and Temperature Range page.

Align-A-Groove – (Patent #3043639) – A 0.56" wide surface machined at each end of the cylinder body. Makes precise mounting quick and easy.

Miller's stepped floating cushions combine the best features of known cushion technology.

Deceleration devices or built-in "cushions" are optional and can be supplied at head end, cap end, or both ends without change in envelope or mounting dimensions. Miller cylinder cushions are a stepped design and combine the best features of known cushion technology.

Standard straight or tapered cushions have been used in industrial cylinders over a very broad range of applications, Miller research has found that both designs have their limitations.

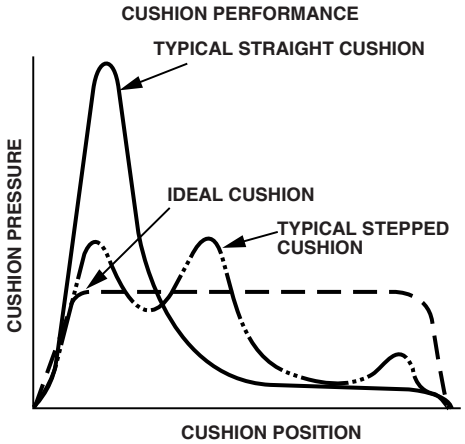
As a result, Miller has taken a new approach in cushioning of industrial hydraulic cylinders and for specific load and velocity conditions have been able to obtain deceleration curves that come very close to the ideal. The success lies in a stepped plunger concept where the steps are calculated to approximate theoretical orifice areas curves.

In the cushion performance chart, pressure traces show the results of typical orifice flow conditions. Tests of a three-step plunger show three pressure pulses coinciding with the steps. The deceleration curve shape comes very close to being theoretical, with the exception of the last ½ inch of travel.

This is a constant shape in order to have some flexibility in application. The stepped cushion design shows reduced pressure peaks for most load and speed conditions, with comparable reduction of objectionable stopping forces being transmitted to the load and the support structure.

All Miller HV2 cushions are adjustable.

The HV2 Series cylinder design incorporates the longest cushion plungers that can be provided in the standard envelope without decreasing the rod bearing and piston bearing lengths.



Miller Fluid Power
Des Plaines, IL
Milton, Ontario Canada

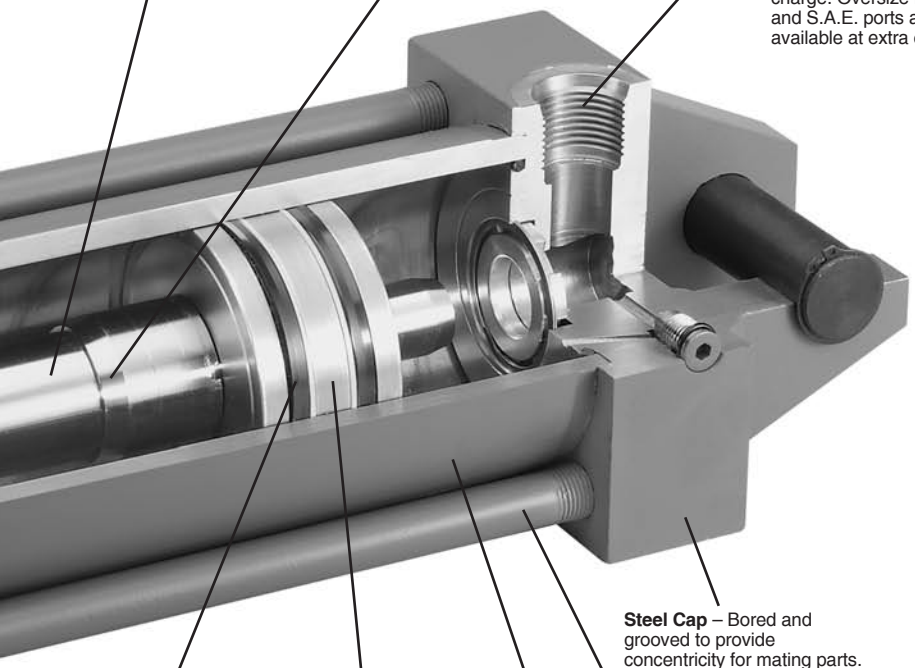
Piston Rod – Medium carbon steel, induction case-hardened, hard chrome-plated and polished to 10 RMS finish.

Adjustable Floating Stepped Cushions – For maximum performance – economical and flexible for even the most demanding applications – provides superior performance in reducing shock. Cushions are optional and can be supplied at head end, cap end, or both ends without change in envelope or mounting dimensions.

Ports – S.A. E. "O"-ring ports are standard

OPTIONAL PORTS

Ports – N.P.T.F. ports are optional at no extra charge. Oversize N.P.T.F. and S.A.E. ports are available at extra charge.



Steel Cap – Bored and grooved to provide concentricity for mating parts.

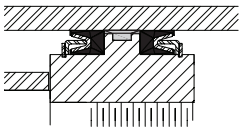
Lipseal® Piston – Zero leakage under static conditions for hydraulic pressures up to 3000 PSI. Seals are self-compensating to conform to variations in pressure, mechanical deflection, and wear. Back-up washer prevents extrusion.

High Strength Tie Rods – Made from 100,000 PSI minimum yield steel with rolled threads for added strength.

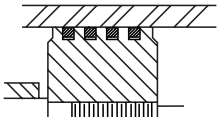
One-Piece Nodular Iron Piston – The wide piston surface contacting cylinder bore reduces bearing loads. Anaerobic adhesive is used to permanently lock and seal the piston to the rod.

The Cylinder Tube – Heavy-wall steel tubing, honed to a micro finish bore.

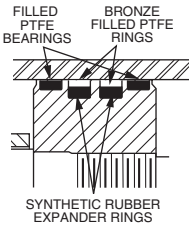
OPTIONAL PISTONS



Spring Loaded PTFE Piston Seals Optional filled PTFE piston Lipseals utilize an internal stainless steel spring to energize both the dynamic and static sealing lips to optimize seal performance throughout the operating temperature range. Non-metallic piston wear ring in 1.50"-6.00" bores (bronze in 7.00" & 8.00" bores) reduces possibility of damaging piston which can score expensive tubing. Combine with High Temperature Bushing for cylinder heat resistance to 400° F. See class 8 seal specification on Operating Fluids and Temperature Range page.



Step cut iron piston rings are optional.



Hi Load Piston – Optional at extra charge. Includes wear rings and bronze-filled PTFE seals. Two wear rings serve as bearings which deform radially under side-loading, enabling the load to be spread over a larger area and reduce unit loading. Bronze-filled PTFE seals are designed for extrusion-free, leak-proof service and longer cylinder life than the lipseal type piston. Not available with retainer nut.

(1) When a cushion is specified at the head end:

a. A self-centering stepped plunger is furnished on the piston rod assembly.

b. A needle valve is provided that is flush with the side of the head even when wide open. It may be identified by the fact that it is socket-keyed. It is located on side number 2, in all models except 67, 68, 81, 82, 87 and 89. In these models it is located on side number 3.

c. On 6.00" bore and larger cylinders, a springless check valve is provided that is also flush with the side of the head and is mounted adjacent to the needle valve except on model 72, where it is mounted opposite the needle valve. It may be identified by the fact that it is slotted.

d. On 1.50" - 5.00" bore cylinders a slotted sleeve design is used in place of the check valve.

e. 1.50" - 2.50" bore cylinders use cartridge style needle valve (see Figure A).

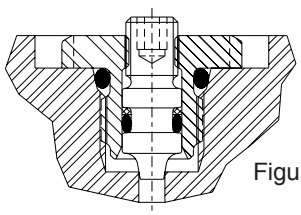


Figure A

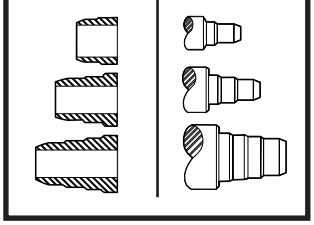
(2) When a cushion is specified at the cap end:

a. A stepped plunger is provided on the piston rod.

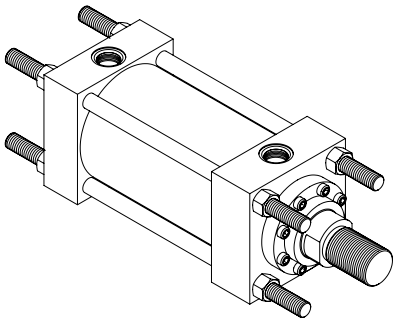
b. A "float check" self-centering bushing is provided which incorporates a large flow check valve for fast "out-stroke" action.

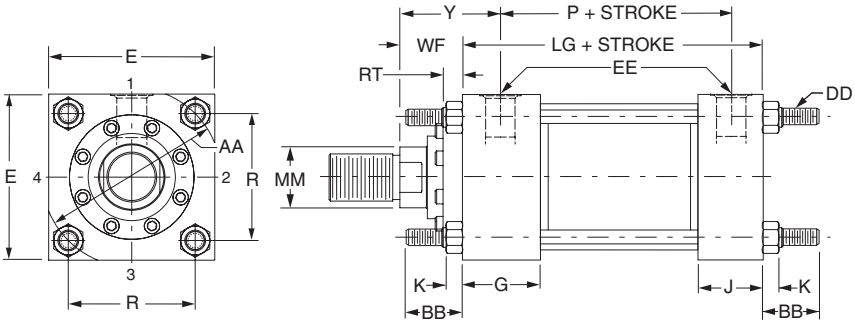
c. A socket-keyed needle valve is provided that is flush with the side of the cap when wide open. It is located on side number 2 in all models except 67, 68, 81, 82, 87 and 89. In these models it is located on side number 3.

STEPPED CUSHIONS

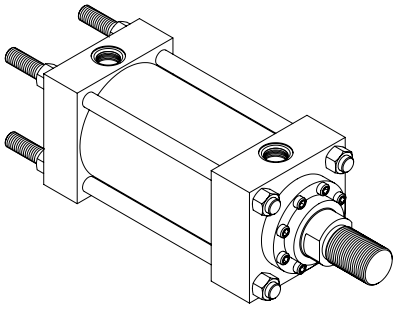


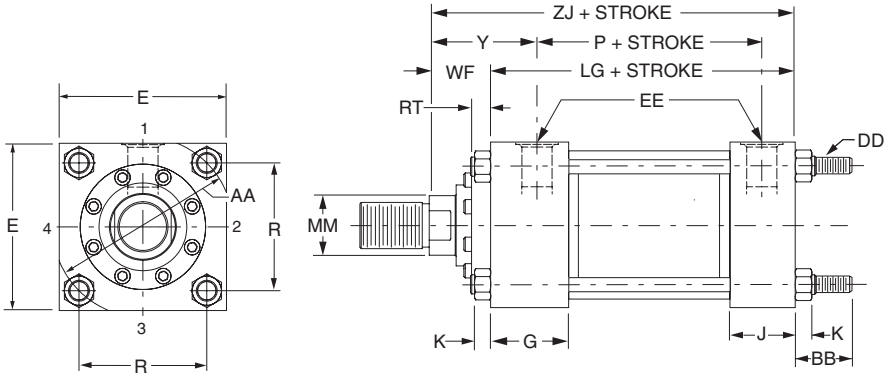
Tie Rods Extended Both Ends Mount
Model 51



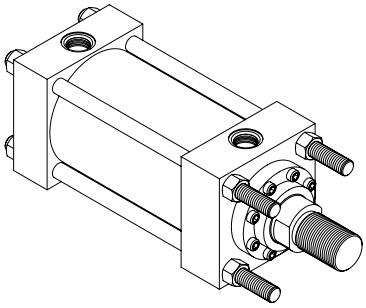


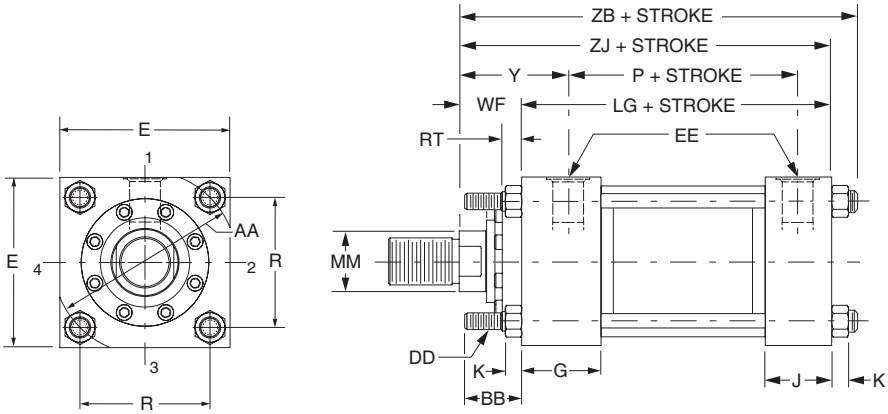
Tie Rods Extended Cap End Mount
Model 52





Tie Rods Extended Head End Mount
Model 53

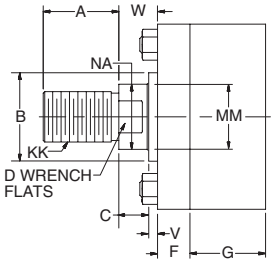




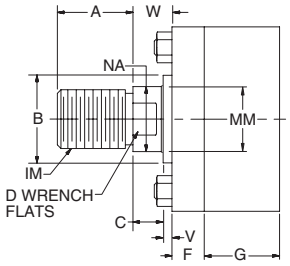
Rod End Dimensions (for Retainer Held Bushings) – See Table 2

See B&R Table to determine which bore, rod and mount combinations have this feature.

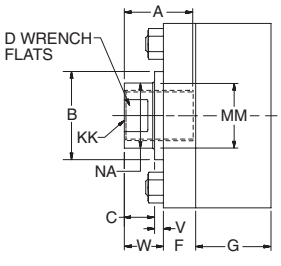
Thread Style 2
Small Male



Thread Style 5
Intermediate Male



Thread Style 4
Short Female



Style 4 stroke restrictions may apply. See Style 4 Minimum Stroke page for details.

"Special" Thread Style X

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

To order, specify "Style X" and give desired dimensions for KK, A and W. If otherwise special, furnish dimensioned sketch.

A high strength rod end stud is supplied on thread style 2 through 2.000" diameter rods. Larger sizes or special rod ends are cut threads. Style 2 rod ends are recommended where the workpiece is secured against the rod shoulder. When the workpiece is not shouldered, style 2 rod ends are recommended through 2.000" piston rod diameters and style 5 rod ends are recommended on larger diameters. Use style 4 for applications where female rod end threads are required. If rod end is not specified, style 2 will be supplied.

Table 1—Envelope and Mounting Dimensions

Bore	AA	BB	DD	E	EE NPTF[2]	EE SAE[1]	F	G	J	K	R	Add Stroke LG	Add Stroke P[1]
1.50	2.31	1.38[3]	3/8-24	2.50	1/2	8	0.38	1.75	1.50	0.38	1.63	4.63	2.88
2.00	2.90	1.81[3]	1/2-20	3.00	1/2	8	0.63	1.75	1.50	0.44	2.05	4.63	2.88
2.50	3.61	1.81	1/2-20	3.50	1/2	8	0.63	1.75	1.50	0.44	2.55	4.75	3.00
3.25	4.60	2.31	5/8-18	4.50	3/4	12	0.75	2.00	1.75	0.56	3.25	5.50	3.50
4.00	5.40	2.31	5/8-18	5.00	3/4	12	0.88	2.00	1.75	0.56	3.82	5.75	3.75
5.00	7.00	3.19	7/8-14	6.50	3/4	12	0.88	2.00	1.75	0.81	4.95	6.25	4.25
6.00	8.10	3.63	1-14	7.50	1	16	1.00	2.25	2.25	0.88	5.73	7.38	4.88

[1] SAE straight thread ports are standard and are indicated by port number. On 1.50", 2.00" and 2.50" bore sizes, when #10 SAE port is specified, reduce dimension "P" by 0.06" and increase dimension "Y" by 0.06". [2] NPTF ports are available at no extra charge.

[3] 1.50" and 2.00" bore Models 51 and 53 are only available with retainer held bushing construction (see B&R table). Head end 'BB' dimension for these bores is referenced from the front of full square retainer that is 'F' dimension thick.

Table 2—Rod Dimensions

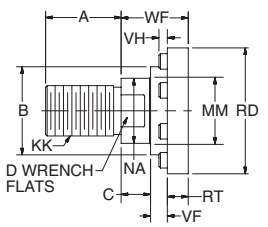
Bore	Rod Dia. MM	Thread Style 5 IM	Thread Style 2 & 4 KK	A	+.000 -.002 B	C	D	NA	RD (Max.)	RT	V	VF	VH	W	WF	Y[1]	Add Stroke ZB (Max.)	Add Stroke ZJ
1.50	0.625	1/2-20	7/16-20	0.75	1.124	0.38	0.50	0.56	1.94	0.38	0.25	0.25	0.19	0.63	1.00	2.00	6.25	5.63
	1.000	7/8-14	3/4-16	1.13	1.499	0.50	0.88	0.94	2.38	0.38	0.50	0.50	0.19	1.00	1.38	2.38	6.63	6.00
2.00	1.000	7/8-14	3/4-16	1.13	1.499	0.50	0.88	0.94	2.38	0.38	0.25	0.50	0.19	0.75	1.38	2.38	6.69	6.00
	1.375	1 1/4-12	1-14	1.63	1.999	0.63	1.13	1.31	2.88	0.38	0.38	0.63	0.19	1.00	1.63	2.63	6.94	6.25
2.50	1.000	7/8-14	3/4-16	1.13	1.499	0.50	0.88	0.94	2.38	0.38	0.25	0.50	0.19	-	1.38	2.38	6.81	6.13
	1.375	1 1/4-12	1-14	1.63	1.999	0.63	1.13	1.31	2.88	0.38	0.38	0.63	0.19	-	1.63	2.63	7.06	6.38
	1.750	1 1/2-12	1 1/4-12	2.00	2.374	0.75	1.50	1.69	3.47	0.63	0.50	0.50	0.19	-	1.88	2.88	7.31	6.63
3.25	1.375	1 1/4-12	1-14	1.63	1.999	0.63	1.13	1.31	2.88	0.38	0.25	0.63	0.19	-	1.63	2.75	7.94	7.13
	1.750	1 1/2-12	1 1/4-12	2.00	2.374	0.75	1.50	1.69	3.47	0.63	0.38	0.50	0.19	-	1.88	3.00	8.19	7.38
	2.000	1 3/4-12	1 1/2-12	2.25	2.624	0.88	1.69	1.94	3.72	0.63	0.38	0.50	0.25	-	2.00	3.13	8.31	7.50
4.00	1.750	1 1/2-12	1 1/4-12	2.00	2.374	0.75	1.50	1.69	3.47	0.63	0.25	0.50	0.19	-	1.88	3.00	8.50	7.63
	2.000	1 3/4-12	1 1/2-12	2.25	2.624	0.88	1.69	1.94	3.72	0.63	0.25	0.50	0.25	-	2.00	3.13	8.63	7.75
	2.500	2 1/4-12	1 7/8-12	3.00	3.124	1.00	2.06	2.38	4.25	0.63	0.38	0.63	0.25	-	2.25	3.38	8.88	8.00
5.00	2.000	1 3/4-12	1 1/2-12	2.25	2.624	0.88	1.69	1.94	3.72	0.63	0.25	0.50	0.25	-	2.00	3.13	9.38	8.25
	2.500	2 1/4-12	1 7/8-12	3.00	3.124	1.00	2.06	3.38	4.25	0.63	0.38	0.63	0.25	-	2.25	3.38	9.63	8.50
	3.000	2 3/4-12	2 1/4-12	3.50	3.749	1.00	2.63	2.88	5.44	0.88	0.38	0.31	-	-	2.25	3.38	9.63	8.50
	3.500	3 1/4-12	2 1/2-12	3.50	4.249	1.00	3.00	2.38	5.94	0.94	0.38	0.31	-	-	2.25	3.38	9.63	8.50
6.00	2.500	2 1/4-12	1 7/8-12	3.00	3.124	1.00	2.06	2.38	4.25	0.63	0.25	0.63	0.25	-	2.25	3.50	10.81	9.63
	3.000	2 3/4-12	2 1/4-12	3.50	3.749	1.00	2.63	2.88	5.44	0.88	0.25	0.31	-	-	2.25	3.50	10.81	9.63
	3.500	3 1/4-12	2 1/2-12	3.50	4.249	1.00	3.00	3.38	5.94	0.94	0.25	0.31	-	-	2.25	3.50	10.81	9.63
	4.000	3 3/4-12	3-12	4.00	4.749	1.00	3.38	3.88	6.31	0.94	0.25	0.31	-	-	2.25	3.50	10.81	9.63

Table 3 — Envelope and Mounting Dimensions

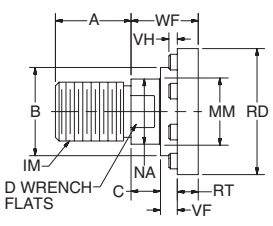
Rod End Dimensions (for Bolted Bushings) – See Table 2

See B&R Table to determine which bore, rod and mount combinations have this feature.

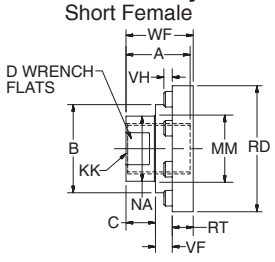
Thread Style 2
Small Male



Thread Style 5
Intermediate Male



Thread Style 4
Short Female



Style 4 stroke restrictions may apply. See Style 4 Minimum Stroke page for details.

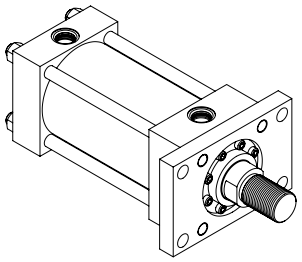
A high strength rod end stud is supplied on thread style 2 through 2.000" diameter rods. Larger sizes or special rod ends are cut threads. Style 2 rod ends are recommended where the workpiece is secured against the rod shoulder. When the workpiece is not shouldered, style 2 rod ends are recommended through 2.000" piston rod diameters and style 5 rod ends are recommended on larger diameters. Use style 4 for applications where female rod end threads are required. If rod end is not specified, style 2 will be supplied.

"Special" Thread Style X

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

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

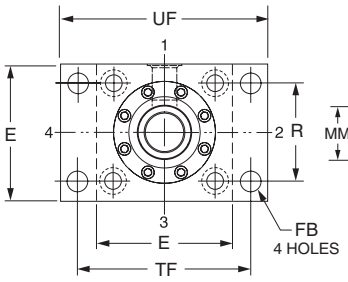
Head Rectangular Flange Mount Model 61

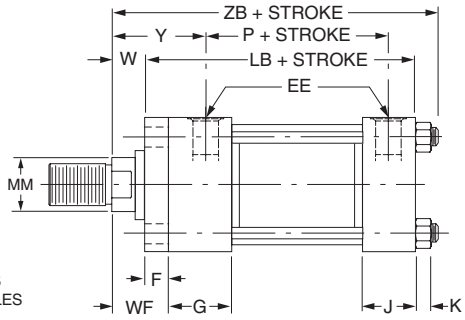


Maximum Pressure Rating - PSI
Push Application

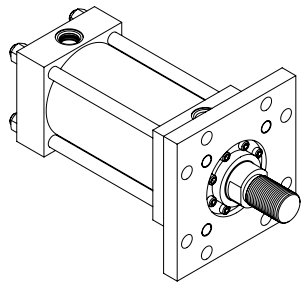
Bore	Rod Dia 0.625	1.000	1.375	1.750	2.000
1.50	1400	1000	–	–	–
2.00	–	2000	1200	–	–
2.50	–	700	700	1000	–
3.25	–	–	800	800	600
4.00	–	–	–	1000	1000
5.00	–	–	–	–	850

Bore	Rod Dia 2.500	3.000	3.500	4.000	5.000
4.00	700	–	–	–	–
5.00	850	450	800	–	–
6.00	650	650	400	400	–





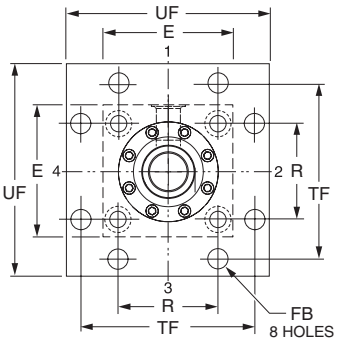
Head Square Flange Mount Model 65

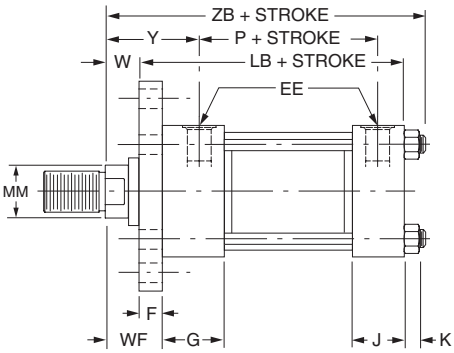


Maximum Pressure Rating - PSI
Push Application

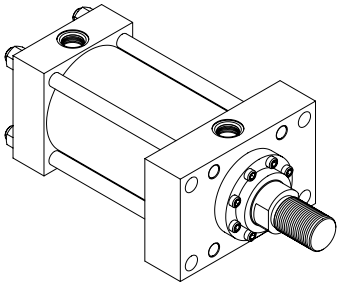
Bore	Rod Dia 0.625	1.000	1.375	1.750	2.000
1.50	3000	3000	–	–	–
2.00	–	3000	3000	–	–
2.50	–	3000	3000	3000	–
3.25	–	–	3000	3000	3000
4.00	–	–	–	3000	3000
5.00	–	–	–	–	2500

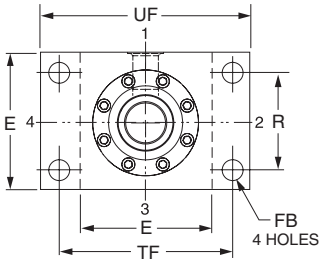
Bore	Rod Dia 2.500	3.000	3.500	4.000	5.000
4.00	3000	–	–	–	–
5.00	2500	1800	2300	–	–
6.00	2000	2000	1600	1600	–

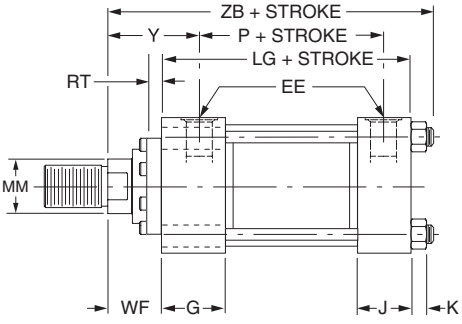




Head Rectangular Mount Model 67



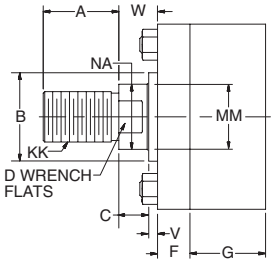




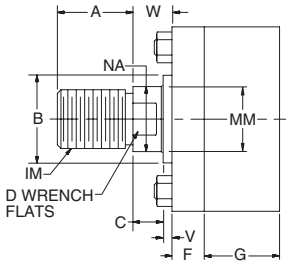
Rod End Dimensions (for Retainer Held Bushings) – See Table 2

See B&R Table to determine which bore, rod and mount combinations have this feature.

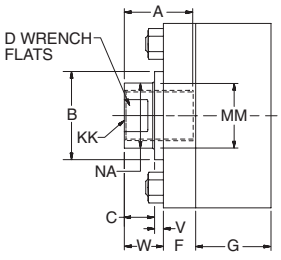
Thread Style 2
Small Male



Thread Style 5
Intermediate Male



Thread Style 4
Short Female



Style 4 stroke restrictions may apply. See Style 4 Minimum Stroke page for details.

"Special" Thread Style X

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

To order, specify "Style X" and give desired dimensions for KK, A and W. If otherwise special, furnish dimensioned sketch.

A high strength rod end stud is supplied on thread style 2 through 2.000" diameter rods. Larger sizes or special rod ends are cut threads. Style 2 rod ends are recommended where the workpiece is secured against the rod shoulder. When the workpiece is not shouldered, style 2 rod ends are recommended through 2.000" piston rod diameters and style 5 rod ends are recommended on larger diameters. Use style 4 for applications where female rod end threads are required. If rod end is not specified, style 2 will be supplied.

Table 1—Envelope and Mounting Dimensions

Bore	E	EE NPTF[2]	EE SAE[1]	F	(Bolt) FB[3]	G	J	K	R	TF	UF	Add Stroke LB	Add Stroke LG	Add Stroke P[1]
1.50	2.50	1/2	8	0.38	0.38	1.75	1.50	0.38	1.63	3.44	4.25	5.00	4.63	2.88
2.00	3.00	1/2	8	0.63	0.50	1.75	1.50	0.44	2.05	4.13	5.13	5.25	4.63	2.88
2.50	3.50	1/2	8	0.63	0.50	1.75	1.50	0.44	2.55	4.63	5.63	5.38	4.75	3.00
3.25	4.50	3/4	12	0.75	0.63	2.00	1.75	0.56	3.25	5.88	7.13	6.25	5.50	3.50
4.00	5.00	3/4	12	0.88	0.63	2.00	1.75	0.56	3.82	6.38	7.63	6.63	5.75	3.75
5.00	6.50	3/4	12	0.88	0.88	2.00	1.75	0.81	4.95	8.19	9.75	7.13	6.25	4.25
6.00	7.50	1	16	1.00	1.00	2.25	2.25	0.88	5.73	9.44	11.25	8.38	7.38	4.88

[1] SAE straight thread ports are standard and are indicated by port number. On 1.50", 2.00" and 2.50" bore sizes, when #10 SAE port is specified, reduce dimension "P" by 0.06" and increase dimension "Y" by 0.06".

[2] NPTF ports are available at no extra charge. [3] Mounting holes are 0.06" larger than bolt size listed.

Table 2—Rod Dimensions

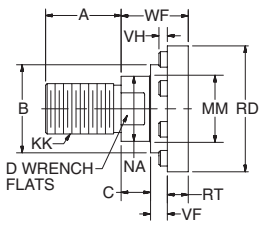
Bore	Rod Dia. MM	Thread Style 5 IM	Thread Style 2 & 4 KK	Rod Extensions and Bushing Dimensions A	+.000 -.002 B	C	D	NA	RD (Max.)	RT	V	VF	VH	W	WF	Y[1]	Add Stroke ZB (Max.)
1.50	0.625	1/2-20	7/16-20	0.75	1.124	0.38	0.50	0.56	1.94	0.38	0.25	0.25	0.19	0.63	1.00	2.00	6.25
	1.000	7/8-14	3/4-16	1.13	1.499	0.50	0.88	0.94	2.38	0.38	0.50	0.50	0.19	1.00	1.38	2.38	6.63
2.00	1.000	7/8-14	3/4-16	1.13	1.499	0.50	0.88	0.94	2.38	0.38	0.25	0.50	0.19	0.75	1.38	2.38	6.69
	1.375	1 1/4-12	1-14	1.63	1.999	0.63	1.13	1.31	2.88	0.38	0.38	0.63	0.19	1.00	1.63	2.63	6.94
2.50	1.000	7/8-14	3/4-16	1.13	1.499	0.50	0.88	0.94	2.38	0.38	0.25	0.50	0.19	0.75	1.38	2.38	6.81
	1.375	1 1/4-12	1-14	1.63	1.999	0.63	1.13	1.31	2.88	0.38	0.38	0.63	0.19	1.00	1.63	2.63	7.06
	1.750	1 1/2-12	1 1/4-12	2.00	2.374	0.75	1.50	1.69	3.47	0.63	0.50	0.50	0.19	1.25	1.88	2.88	7.31
3.25	1.375	1 1/4-12	1-14	1.63	1.999	0.63	1.13	1.31	2.88	0.38	0.25	0.63	0.19	0.88	1.63	2.75	7.94
	1.750	1 1/2-12	1 1/4-12	2.00	2.374	0.75	1.50	1.69	3.47	0.63	0.38	0.50	0.19	1.13	1.88	3.00	8.19
	2.000	1 3/4-12	1 1/2-12	2.25	2.624	0.88	1.69	1.94	3.72	0.63	0.38	0.50	0.25	1.25	2.00	3.13	8.31
4.00	1.750	1 1/2-12	1 1/4-12	2.00	2.374	0.75	1.50	1.69	3.47	0.63	0.25	0.50	0.19	1.00	1.88	3.00	8.50
	2.000	1 3/4-12	1 1/2-12	2.25	2.624	0.88	1.69	1.94	3.72	0.63	0.25	0.50	0.25	1.13	2.00	3.13	8.63
	2.500	2 1/4-12	1 7/8-12	3.00	3.124	1.00	2.06	2.38	4.25	0.63	0.38	0.63	0.25	1.38	2.25	3.38	8.88
5.00	2.000	1 3/4-12	1 1/2-12	2.25	2.624	0.88	1.69	1.94	3.72	0.63	0.25	0.50	0.25	1.13	2.00	3.13	9.38
	2.500	2 1/4-12	1 7/8-12	3.00	3.124	1.00	2.06	3.38	4.25	0.63	0.38	0.63	0.25	1.38	2.25	3.38	9.63
	3.000	2 3/4-12	2 1/4-12	3.50	3.749	1.00	2.63	2.88	5.44	0.88	0.38	0.31	-	1.38	2.25	3.38	9.63
	3.500	3 1/4-12	2 1/2-12	3.50	4.249	1.00	3.00	2.38	5.94	0.94	0.38	0.31	-	1.38	2.25	3.38	9.63
6.00	2.500	2 1/4-12	1 7/8-12	3.00	3.124	1.00	2.06	2.38	4.25	0.63	0.25	0.63	0.25	1.25	2.25	3.50	10.81
	3.000	2 3/4-12	2 1/4-12	3.50	3.749	1.00	2.63	2.88	5.44	0.88	0.25	0.31	-	1.25	2.25	3.50	10.81
	3.500	3 1/4-12	2 1/2-12	3.50	4.249	1.00	3.00	3.38	5.94	0.94	0.25	0.31	-	1.25	2.25	3.50	10.81
	4.000	3 3/4-12	3-12	4.00	4.749	1.00	3.38	3.88	6.31	0.94	0.25	0.31	-	1.25	2.25	3.50	10.81

Table 3 — Envelope and Mounting Dimensions

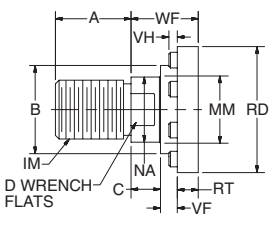
Rod End Dimensions (for Bolted Bushings) – See Table 2

See B&R Table to determine which bore, rod and mount combinations have this feature.

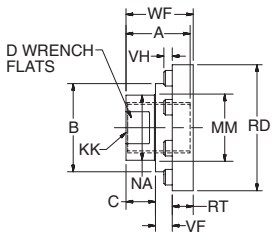
Thread Style 2
Small Male



Thread Style 5
Intermediate Male



Thread Style 4
Short Female



Style 4 stroke restrictions may apply. See Style 4 Minimum Stroke page for details.

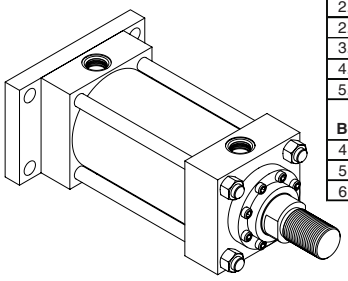
A high strength rod end stud is supplied on thread style 2 through 2.000" diameter rods. Larger sizes or special rod ends are cut threads. Style 2 rod ends are recommended where the workpiece is secured against the rod shoulder. When the workpiece is not shouldered, style 2 rod ends are recommended through 2.000" piston rod diameters and style 5 rod ends are recommended on larger diameters. Use style 4 for applications where female rod end threads are required. If rod end is not specified, style 2 will be supplied.

"Special" Thread Style X

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

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

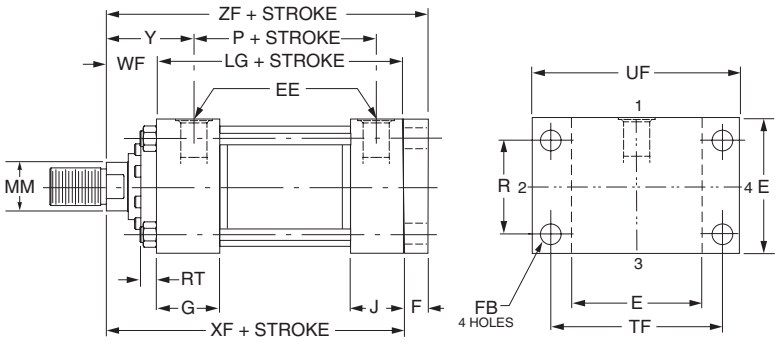
Cap Rectangular Flange Mount Model 62



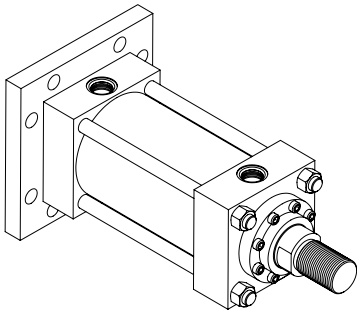
Maximum Pressure Rating - PSI
Pull Application

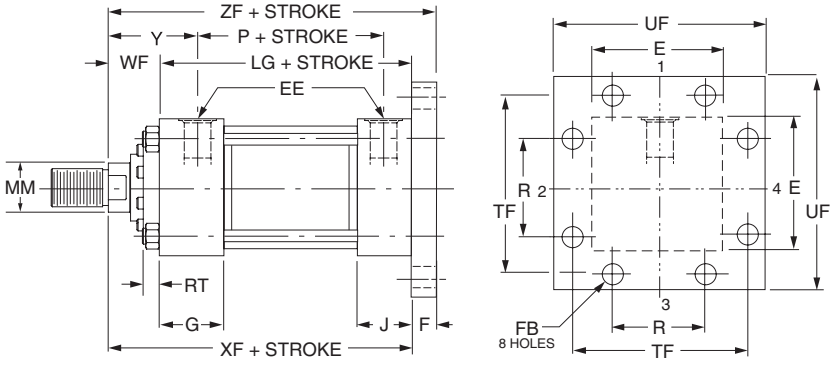
Bore	Rod Dia 0.625	1.000	1.375	1.750	2.000
1.50	2500	3000	–	–	–
2.00	–	3000	3000	–	–
2.50	–	3000	3000	3000	–
3.25	–	–	3000	3000	3000
4.00	–	–	–	3000	3000
5.00	–	–	–	–	2000

Bore	Rod Dia 2.500	3.000	3.500	4.000	5.000
4.00	3000	–	–	–	–
5.00	2000	2500	3000	–	–
6.00	1800	2000	2000	2500	–

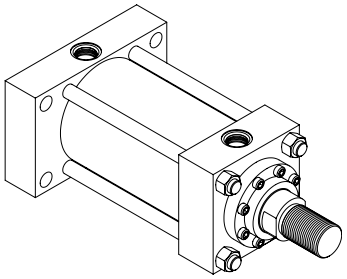


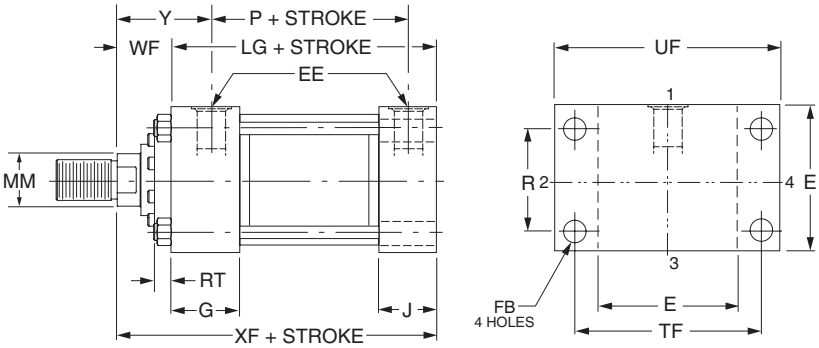
Cap Square Flange Mount Model 66





Cap Rectangular Mount Model 68

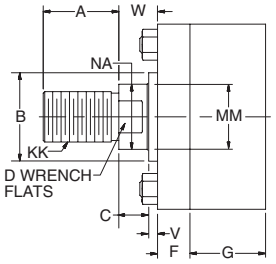




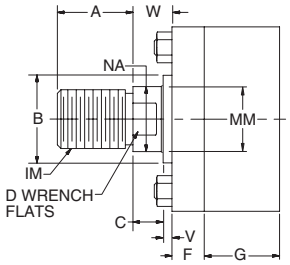
Rod End Dimensions (for Retainer Held Bushings) – See Table 2

See B&R Table to determine which bore, rod and mount combinations have this feature.

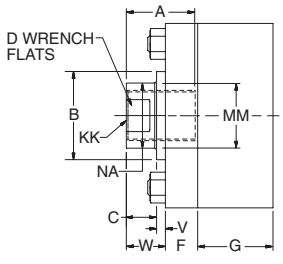
Thread Style 2
Small Male



Thread Style 5
Intermediate Male



Thread Style 4
Short Female



Style 4 stroke restrictions may apply. See Style 4 Minimum Stroke page for details.

"Special" Thread Style X

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

To order, specify "Style X" and give desired dimensions for KK, A and W. If otherwise special, furnish dimensioned sketch.

A high strength rod end stud is supplied on thread style 2 through 2.000" diameter rods. Larger sizes or special rod ends are cut threads. Style 2 rod ends are recommended where the workpiece is secured against the rod shoulder. When the workpiece is not shouldered, style 2 rod ends are recommended through 2.000" piston rod diameters and style 5 rod ends are recommended on larger diameters. Use style 4 for applications where female rod end threads are required. If rod end is not specified, style 2 will be supplied.

Table 1—Envelope and Mounting Dimensions

Bore	E	EE NPTF[2]	EE SAE[1]	F	(Bolt) FB[3]	G	J	K	R	TF	UF	Add Stroke LG	Add Stroke P[1]
1.50	2.50	1/2	8	0.38	0.38	1.75	1.50	0.38	1.63	3.44	4.25	4.63	2.88
2.00	3.00	1/2	8	0.63	0.50	1.75	1.50	0.44	2.05	4.13	5.13	4.63	2.88
2.50	3.50	1/2	8	0.63	0.50	1.75	1.50	0.44	2.55	4.63	5.63	4.75	3.00
3.25	4.50	3/4	12	0.75	0.63	2.00	1.75	0.56	3.25	5.88	7.13	5.50	3.50
4.00	5.00	3/4	12	0.88	0.63	2.00	1.75	0.56	3.82	6.38	7.63	5.75	3.75
5.00	6.50	3/4	12	0.88	0.88	2.00	1.75	0.81	4.95	8.19	9.75	6.25	4.25
6.00	7.50	1	16	1.00	1.00	2.25	2.25	0.88	5.73	9.44	11.25	7.38	4.88

[1] SAE straight thread ports are standard and are indicated by port number. On 1.50", 2.00" and 2.50" bore sizes, when #10 SAE port is specified, reduce dimension "P" by 0.06" and increase dimension "Y" by 0.06".

[2] NPTF ports are available at no extra charge. [3] Mounting holes are 0.06" larger than bolt size listed.

Table 2—Rod Dimensions

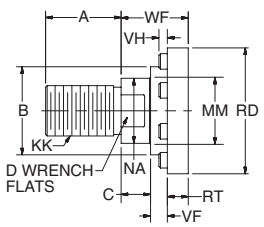
Bore	Rod Dia. MM	Thread Style 5 IM	Thread Style 2 & 4 KK	Rod Extensions and Bushing Dimensions A	+.000 -.002 B	C	D	NA	RD (Max.)	RT	V	VF	VH	W	WF	Y[1]	Add Stroke XF	Add Stroke ZF
1.50	0.625	1/2-20	7/16-20	0.75	1.124	0.38	0.50	0.56	1.94	0.38	0.25	0.25	0.19	-	1.00	2.00	5.63	6.00
	1.000	7/8-14	3/4-16	1.13	1.499	0.50	0.88	0.94	2.38	0.38	0.50	0.50	0.19	1.00	1.38	2.38	6.00	6.38
2.00	1.000	7/8-14	3/4-16	1.13	1.499	0.50	0.88	0.94	2.38	0.38	0.25	0.50	0.19	-	1.38	2.38	6.00	6.63
	1.375	1 1/4-12	1-14	1.63	1.999	0.63	1.13	1.31	2.88	0.38	0.38	0.63	0.19	1.00	1.63	2.63	6.25	6.88
2.50	1.000	7/8-14	3/4-16	1.13	1.499	0.50	0.88	0.94	2.38	0.38	0.25	0.50	0.19	-	1.38	2.38	6.13	6.75
	1.375	1 1/4-12	1-14	1.63	1.999	0.63	1.13	1.31	2.88	0.38	0.38	0.63	0.19	-	1.63	2.63	6.38	7.00
	1.750	1 1/2-12	1 1/4-12	2.00	2.374	0.75	1.50	1.69	3.47	0.63	0.50	0.50	0.19	-	1.88	2.88	6.63	7.25
3.25	1.375	1 1/4-12	1-14	1.63	1.999	0.63	1.13	1.31	2.88	0.38	0.25	0.63	0.19	-	1.63	2.75	7.13	7.88
	1.750	1 1/2-12	1 1/4-12	2.00	2.374	0.75	1.50	1.69	3.47	0.63	0.38	0.50	0.19	-	1.88	3.00	7.38	8.13
	2.000	1 3/4-12	1 1/2-12	2.25	2.624	0.88	1.69	1.94	3.72	0.63	0.38	0.50	0.25	-	2.00	3.13	7.50	8.25
4.00	1.750	1 1/2-12	1 1/4-12	2.00	2.374	0.75	1.50	1.69	3.47	0.63	0.25	0.50	0.19	-	1.88	3.00	7.63	8.50
	2.000	1 3/4-12	1 1/2-12	2.25	2.624	0.88	1.69	1.94	3.72	0.63	0.25	0.50	0.25	-	2.00	3.13	7.75	8.63
	2.500	2 1/4-12	1 7/8-12	3.00	3.124	1.00	2.06	2.38	4.25	0.63	0.38	0.63	0.25	-	2.25	3.38	8.00	8.88
5.00	2.000	1 3/4-12	1 1/2-12	2.25	2.624	0.88	1.69	1.94	3.72	0.63	0.25	0.50	0.25	-	2.00	3.13	8.25	9.13
	2.500	2 1/4-12	1 7/8-12	3.00	3.124	1.00	2.06	2.38	4.25	0.63	0.38	0.63	0.25	-	2.25	3.38	8.50	9.38
	3.000	2 3/4-12	2 1/4-12	3.50	3.749	1.00	2.63	2.88	5.44	0.88	0.38	0.31	-	-	2.25	3.38	8.50	9.38
	3.500	3 1/4-12	2 1/2-12	3.50	4.249	1.00	3.00	3.38	5.94	0.94	0.38	0.31	-	-	2.25	3.38	8.50	9.38
6.00	2.500	2 1/4-12	1 7/8-12	3.00	3.124	1.00	2.06	2.38	4.25	0.63	0.25	0.63	0.25	-	2.25	3.50	9.63	10.63
	3.000	2 3/4-12	2 1/4-12	3.50	3.749	1.00	2.63	2.88	5.44	0.88	0.25	0.31	-	-	2.25	3.50	9.63	10.63
	3.500	3 1/4-12	2 1/2-12	3.50	4.249	1.00	3.00	3.38	5.94	0.94	0.25	0.31	-	-	2.25	3.50	9.63	10.63
	4.000	3 3/4-12	3-12	4.00	4.749	1.00	3.38	3.88	6.31	0.94	0.25	0.31	-	-	2.25	3.50	9.63	10.63

Table 3 — Envelope and Mounting Dimensions

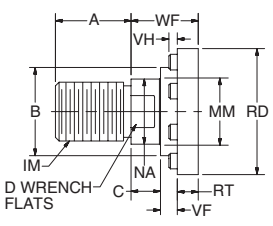
Rod End Dimensions (for Bolted Bushings) – See Table 2

See B&R Table to determine which bore, rod and mount combinations have this feature.

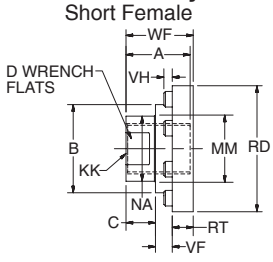
Thread Style 2
Small Male



Thread Style 5
Intermediate Male



Thread Style 4
Short Female



Style 4 stroke restrictions may apply. See Style 4 Minimum Stroke page for details.

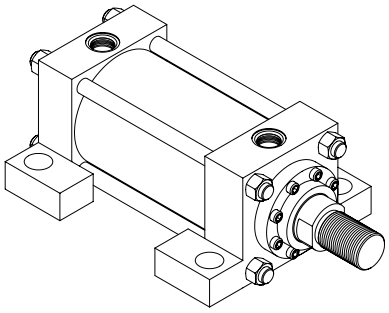
A high strength rod end stud is supplied on thread style 2 through 2.000" diameter rods. Larger sizes or special rod ends are cut threads. Style 2 rod ends are recommended where the workpiece is secured against the rod shoulder. When the workpiece is not shouldered, style 2 rod ends are recommended through 2.000" piston rod diameters and style 5 rod ends are recommended on larger diameters. Use style 4 for applications where female rod end threads are required. If rod end is not specified, style 2 will be supplied.

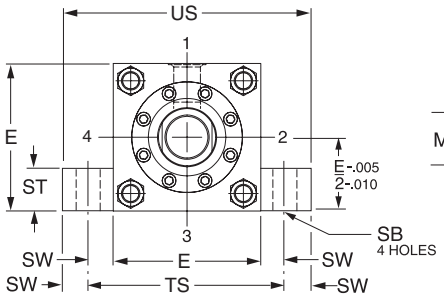
"Special" Thread Style X

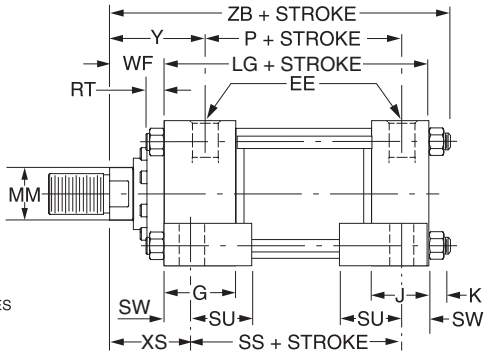
Special thread, extension, rod eye, blank, etc., are also available.

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

Side Lug Mount
Model 72

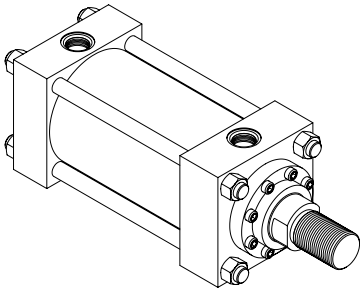


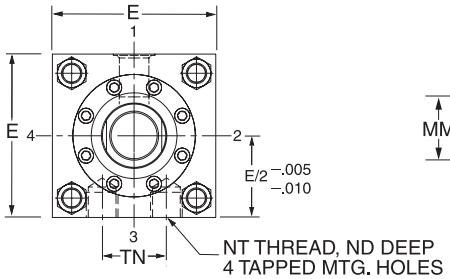


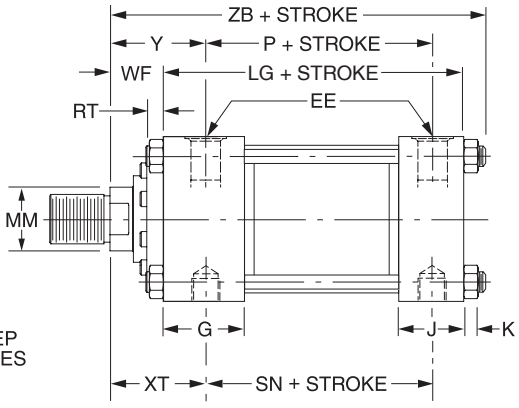


Model 72 cylinders have mounting lugs welded to the head and cap, and are considered to be a fixed mount that does not absorb force on its centerline. The plane of the mounting surface is not through the centerline of the cylinder, and for this reason Model 72 cylinders produce a turning moment as the cylinder applies force to the load. This turning moment tends to rotate the cylinder about its mounting bolts. If the cylinder is not well secured to the machine member on which it is mounted or the load is not well-guided, this turning moment results in side load applied to rod bushing and piston bearings. **To avoid this problem, Model 72 cylinders should be specified with a stroke length at least equal to the bore size.**

Side Tap Mount
Model 74





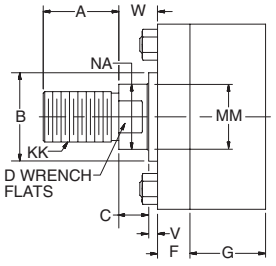


Model 74 cylinders have side tapped holes for flush mounting, and are considered to be a fixed mount that does not absorb force on its centerline. The plane of the mounting surface is not through the centerline of the cylinder, and for this reason Model 74 cylinders produce a turning moment as the cylinder applies force to the load. This turning moment tends to rotate the cylinder about its mounting bolts. If the cylinder is not well secured to the machine member on which it is mounted or the load is not well-guided, this turning moment results in side load applied to rod bushing and piston bearings. **To avoid this problem, Model 74 cylinders should be specified with a stroke length at least equal to the bore size.**

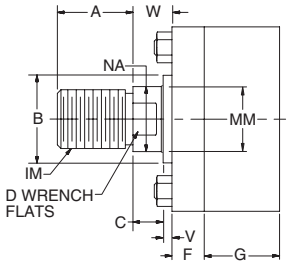
Rod End Dimensions (for Retainer Held Bushings) – See Table 2

See B&R Table to determine which bore, rod and mount combinations have this feature.

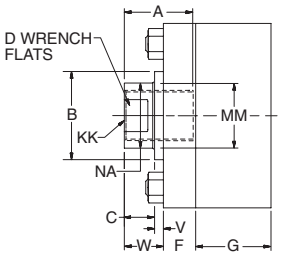
Thread Style 2
Small Male



Thread Style 5
Intermediate Male



Thread Style 4
Short Female



Style 4 stroke restrictions may apply. See Style 4 Minimum Stroke page for details.

"Special" Thread Style X

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

To order, specify "Style X" and give desired dimensions for KK, A and W. If otherwise special, furnish dimensioned sketch.

A high strength rod end stud is supplied on thread style 2 through 2.000" diameter rods. Larger sizes or special rod ends are cut threads. Style 2 rod ends are recommended where the workpiece is secured against the rod shoulder. When the workpiece is not shouldered, style 2 rod ends are recommended through 2.000" piston rod diameters and style 5 rod ends are recommended on larger diameters. Use style 4 for applications where female rod end threads are required. If rod end is not specified, style 2 will be supplied.

Table 1—Envelope and Mounting Dimensions

Bore	E	EE NPTF[2]	EE SAE[1]	F	G	J	K	NT	R	(Bolt) SB[3]	ST	SU	SW	TN	TS	US	Add Stroke LG	Add Stroke P[1]	Add Stroke SN	Add Stroke SS
1.50	2.50	1/2	8	0.38	1.75	1.50	0.38	3/8-16	1.63	0.38	0.50	0.94	0.38	0.75	3.25	4.00	4.63	2.88	2.88	3.88
2.00	3.00	1/2	8	0.63	1.75	1.50	0.44	1/2-13	2.05	0.50	0.75	1.25	0.50	0.94	4.00	5.00	4.63	2.88	2.88	3.63
2.50	3.50	1/2	8	0.63	1.75	1.50	0.44	5/8-11	2.55	0.75	1.00	1.56	0.69	1.31	4.88	6.25	4.75	3.00	3.00	3.38
3.25	4.50	3/4	12	0.75	2.00	1.75	0.56	3/4-10	3.25	0.75	1.00	1.56	0.69	1.50	5.88	7.25	5.50	3.50	3.50	4.13
4.00	5.00	3/4	12	0.88	2.00	1.75	0.56	1-8	3.82	1.00	1.25	2.00	0.88	2.06	6.75	8.50	5.75	3.75	3.75	4.00
5.00	6.50	3/4	12	0.88	2.00	1.75	0.81	1-8	4.95	1.00	1.25	2.00	0.88	2.94	8.25	10.00	6.25	4.25	4.25	4.50
6.00	7.50	1	16	1.00	2.25	2.25	0.88	1 1/4-7	5.73	1.25	1.50	2.50	1.13	3.31	9.75	12.00	7.38	4.88	5.13	5.13

[1] SAE straight thread ports are standard and are indicated by port number. On 1.50", 2.00" and 2.50" bore sizes, when #10 SAE port is specified, reduce dimension "P" by 0.06" and increase dimension "Y" by 0.06".

[2] NPTF ports are available at no extra charge. [3] Mounting holes are 0.06" larger than bolt size listed.

Table 2—Rod Dimensions

Bore	Rod Dia. MM	Thread Style 5 IM	Thread Style 2 & 4 KK	Rod Extensions and Bushing Dimensions A	+.000 -.002 B	C	D	NA	RD (Max.)	RT	V	VF	VH	W	WF	Add Stroke ZB (Max.)
1.50	0.625	1/2-20	7/16-20	0.75	1.124	0.38	0.50	0.56	1.94	0.38	0.25	0.25	0.19	-	1.00	6.25
	1.000	7/8-14	3/4-16	1.13	1.499	0.50	0.88	0.94	2.38	0.38	0.50	0.50	0.19	1.00	1.38	6.63
2.00	1.000	7/8-14	3/4-16	1.13	1.499	0.50	0.88	0.94	2.38	0.38	0.25	0.50	0.19	-	1.38	6.69
	1.375	1 1/4-12	1-14	1.63	1.999	0.63	1.13	1.31	2.88	0.38	0.38	0.63	0.19	1.00	1.63	6.94
2.50	1.000	7/8-14	3/4-16	1.13	1.499	0.50	0.88	0.94	2.38	0.38	0.25	0.50	0.19	-	1.38	6.81
	1.375	1 1/4-12	1-14	1.63	1.999	0.63	1.13	1.31	2.88	0.38	0.38	0.63	0.19	-	1.63	7.06
	1.750	1 1/2-12	1 1/4-12	2.00	2.374	0.75	1.50	1.69	3.47	0.63	0.50	0.50	0.19	-	1.88	7.31
3.25	1.375	1 1/4-12	1-14	1.63	1.999	0.63	1.13	1.31	2.88	0.38	0.25	0.63	0.19	-	1.63	7.94
	1.750	1 1/2-12	1 1/4-12	2.00	2.374	0.75	1.50	1.69	3.47	0.63	0.38	0.50	0.19	-	1.88	8.19
	2.000	1 3/4-12	1 1/2-12	2.25	2.624	0.88	1.69	1.94	3.72	0.63	0.38	0.50	0.25	-	2.00	8.31
4.00	1.750	1 1/2-12	1 1/4-12	2.00	2.374	0.75	1.50	1.69	3.47	0.63	0.25	0.50	0.19	-	1.88	8.50
	2.000	1 3/4-12	1 1/2-12	2.25	2.624	0.88	1.69	1.94	3.72	0.63	0.25	0.50	0.25	-	2.00	8.63
	2.500	2 1/4-12	1 7/8-12	3.00	3.124	1.00	2.06	2.38	4.25	0.63	0.38	0.63	0.25	-	2.25	8.88
5.00	2.000	1 3/4-12	1 1/2-12	2.25	2.624	0.88	1.69	1.94	3.72	0.63	0.25	0.50	0.25	-	2.00	9.38
	2.500	2 1/4-12	1 7/8-12	3.00	3.124	1.00	2.06	3.38	4.25	0.63	0.38	0.63	0.25	-	2.25	9.63
	3.000	2 3/4-12	2 1/4-12	3.50	3.749	1.00	2.63	2.88	5.44	0.88	0.38	0.31	-	-	2.25	9.63
	3.500	3 1/4-12	2 1/2-12	3.50	4.249	1.00	3.00	2.38	5.94	0.94	0.38	0.31	-	-	2.25	9.63
6.00	2.500	2 1/4-12	1 7/8-12	3.00	3.124	1.00	2.06	2.38	4.25	0.63	0.25	0.63	0.25	-	2.25	10.81
	3.000	2 3/4-12	2 1/4-12	3.50	3.749	1.00	2.63	2.88	5.44	0.88	0.25	0.31	-	-	2.25	10.81
	3.500	3 1/4-12	2 1/2-12	3.50	4.249	1.00	3.00	3.38	5.94	0.94	0.25	0.31	-	-	2.25	10.81
	4.000	3 3/4-12	3-12	4.00	4.749	1.00	3.38	3.88	6.31	0.94	0.25	0.31	-	-	2.25	10.81

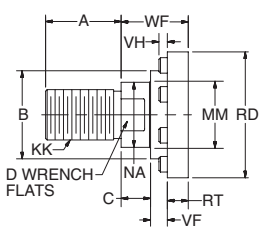
Table 3 — Envelope and Mounting Dimensions

Bore	ND	XS	XT	Y[1]
1.50	0.38	1.38	2.00	2.00
	0.38	1.75	2.38	2.38
2.00	0.44	1.88	2.38	2.38
	0.44	2.13	2.63	2.63
2.50	0.50	2.06	2.38	2.38
	0.50	2.31	2.63	2.63
	0.50	2.56	2.88	2.88
3.25	0.69	2.31	2.75	2.75
	0.69	2.56	3.00	3.00
	0.69	2.69	3.13	3.13
4.00	0.69	2.75	3.00	3.00
	0.69	2.88	3.13	3.13
	0.69	3.13	3.38	3.38
5.00	1.00	2.88	3.13	3.13
	1.00	3.13	3.38	3.38
	1.00	3.13	3.38	3.38
	1.00	3.13	3.38	3.38
6.00	1.25	3.38	3.50	3.50
	1.25	3.38	3.50	3.50
	1.25	3.38	3.50	3.50
	1.25	3.38	3.50	3.50

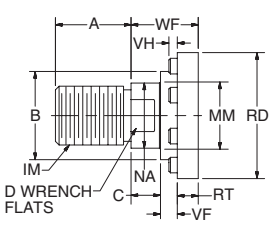
Rod End Dimensions (for Bolted Bushings) – See Table 2

See B&R Table to determine which bore, rod and mount combinations have this feature.

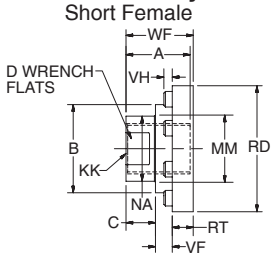
Thread Style 2
Small Male



Thread Style 5
Intermediate Male



Thread Style 4
Short Female



Style 4 stroke restrictions may apply. See Style 4 Minimum Stroke page for details.

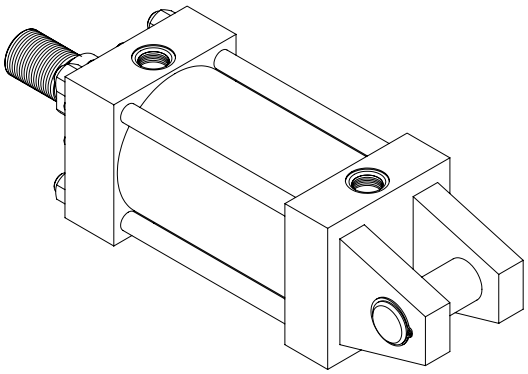
A high strength rod end stud is supplied on thread style 2 through 2.000" diameter rods. Larger sizes or special rod ends are cut threads. Style 2 rod ends are recommended where the workpiece is secured against the rod shoulder. When the workpiece is not shouldered, style 2 rod ends are recommended through 2.000" piston rod diameters and style 5 rod ends are recommended on larger diameters. Use style 4 for applications where female rod end threads are required. If rod end is not specified, style 2 will be supplied.

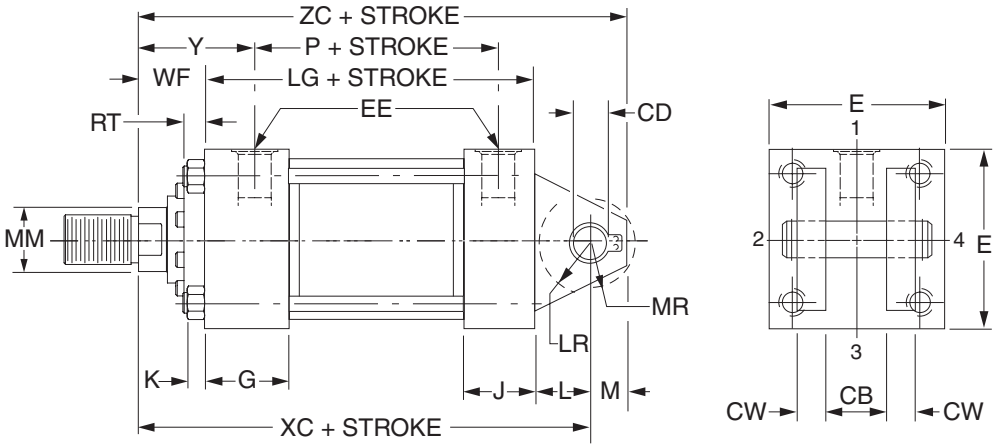
"Special" Thread Style X

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

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

Cap Fixed Clevis Mount
Model 84

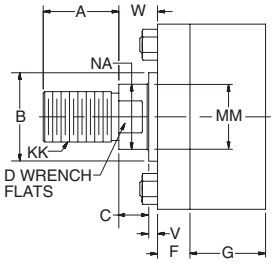




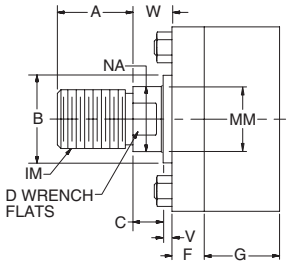
Rod End Dimensions (for Retainer Held Bushings) – See Table 2

See B&R Table to determine which bore, rod and mount combinations have this feature.

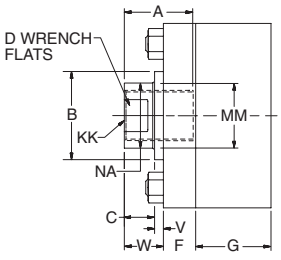
Thread Style 2
Small Male



Thread Style 5
Intermediate Male



Thread Style 4
Short Female



Style 4 stroke restrictions may apply. See Style 4 Minimum Stroke page for details.

A high strength rod end stud is supplied on thread style 2 through 2.000" diameter rods. Larger sizes or special rod ends are cut threads. Style 2 rod ends are recommended where the workpiece is secured against the rod shoulder. When the workpiece is not shouldered, style 2 rod ends are recommended through 2.000" piston rod diameters and style 5 rod ends are recommended on larger diameters. Use style 4 for applications where female rod end threads are required. If rod end is not specified, style 2 will be supplied.

"Special" Thread Style X

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

To order, specify "Style X" and give desired dimensions for KK, A and W. If otherwise special, furnish dimensioned sketch.

Table 1—Envelope and Mounting Dimensions

Bore	CB	+.000 -.002 CD[3]	CW	E	EE NPTF[2]	EE SAE[1]	F	G	J	K	L	LR	M	MR	Add Stroke LG	Add Stroke P[1]
1.50	0.75	0.501	0.50	2.50	1/2	8	0.38	1.75	1.50	0.38	0.75	0.56	0.50	0.63	4.63	2.88
2.00	1.25	0.751	0.63	3.00	1/2	8	0.63	1.75	1.50	0.44	1.25	1.00	0.75	0.94	4.63	2.88
2.50	1.25	0.751	0.63	3.50	1/2	8	0.63	1.75	1.50	0.44	1.25	0.94	0.75	0.94	4.75	3.00
3.25	1.50	1.001	0.75	4.50	3/4	12	0.75	2.00	1.75	0.56	1.50	1.25	1.00	1.19	5.50	3.50
4.00	2.00	1.376	1.00	5.00	3/4	12	0.88	2.00	1.75	0.56	2.13	1.75	1.38	1.63	5.75	3.75
5.00	2.50	1.751	1.25	6.50	3/4	12	0.88	2.00	1.75	0.81	2.25	2.06	1.75	2.13	6.25	4.25
6.00	2.50	2.001	1.25	7.50	1	16	1.00	2.25	2.25	0.88	2.50	2.31	2.00	2.38	7.38	4.88

[1] SAE straight thread ports are standard and are indicated by port number. On 1.50", 2.00" and 2.50" bore sizes, when #10 SAE port is specified, reduce dimension "P" by 0.06" and increase dimension "Y" by 0.06".

[2] NPTF ports are available at no extra charge. [3] Mounting holes are 0.06" larger than bolt size listed.

Table 2—Rod Dimensions

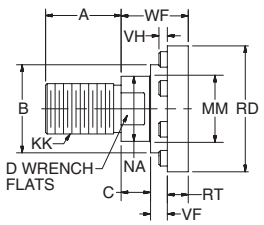
Bore	Rod Dia. MM	Thread Style 5 IM	Thread Style 2 & 4 KK	A	+.000 -.002 B	C	D	NA	RD (Max.)	RT	V	VF	VH	W	WF	Y[1]	Add Stroke XC	Add Stroke ZC
1.50	0.625	1/2-20	7/16-20	0.75	1.124	0.38	0.50	0.56	1.94	0.38	0.25	0.25	0.19	-	1.00	2.00	6.38	6.88
	1.000	7/8-14	3/4-16	1.13	1.499	0.50	0.88	0.94	2.38	0.38	0.50	0.50	0.19	1.00	1.38	2.38	6.75	7.25
2.00	1.000	7/8-14	3/4-16	1.13	1.499	0.50	0.88	0.94	2.38	0.38	0.25	0.50	0.19	-	1.38	2.38	7.25	8.00
	1.375	1 1/4-12	1-14	1.63	1.999	0.63	1.13	1.31	2.88	0.38	0.38	0.63	0.19	1.00	1.63	2.63	7.50	8.25
2.50	1.000	7/8-14	3/4-16	1.13	1.499	0.50	0.88	0.94	2.38	0.38	0.25	0.50	0.19	-	1.38	2.38	7.38	8.13
	1.375	1 1/4-12	1-14	1.63	1.999	0.63	1.13	1.31	2.88	0.38	0.38	0.63	0.19	-	1.63	2.63	7.63	8.38
	1.750	1 1/2-12	1 1/4-12	2.00	2.374	0.75	1.50	1.69	3.47	0.63	0.50	0.50	0.19	-	1.88	2.88	7.88	8.63
3.25	1.375	1 1/4-12	1-14	1.63	1.999	0.63	1.13	1.31	2.88	0.38	0.25	0.63	0.19	-	1.63	2.75	8.63	9.63
	1.750	1 1/2-12	1 1/4-12	2.00	2.374	0.75	1.50	1.69	3.47	0.63	0.38	0.50	0.19	-	1.88	3.00	8.88	9.88
	2.000	1 3/4-12	1 1/2-12	2.25	2.624	0.88	1.69	1.94	3.72	0.63	0.38	0.50	0.25	-	2.00	3.13	9.00	10.00
4.00	1.750	1 1/2-12	1 1/4-12	2.00	2.374	0.75	1.50	1.69	3.47	0.63	0.25	0.50	0.19	-	1.88	3.00	9.75	11.13
	2.000	1 3/4-12	1 1/2-12	2.25	2.624	0.88	1.69	1.94	3.72	0.63	0.25	0.50	0.25	-	2.00	3.13	9.88	11.25
	2.500	2 1/4-12	1 7/8-12	3.00	3.124	1.00	2.06	2.38	4.25	0.63	0.38	0.63	0.25	-	2.25	3.38	10.13	11.50
5.00	2.000	1 3/4-12	1 1/2-12	2.25	2.624	0.88	1.69	1.94	3.72	0.63	0.25	0.50	0.25	-	2.00	3.13	10.50	12.25
	2.500	2 1/4-12	1 7/8-12	3.00	3.124	1.00	2.06	3.38	4.25	0.63	0.38	0.63	0.25	-	2.25	3.38	10.75	12.50
	3.000	2 3/4-12	2 1/4-12	3.50	3.749	1.00	2.63	2.88	5.44	0.88	0.38	0.31	-	-	2.25	3.38	10.75	12.50
	3.500	3 1/4-12	2 1/2-12	3.50	4.249	1.00	3.00	2.38	5.94	0.94	0.38	0.31	-	-	2.25	3.38	10.75	12.50
6.00	2.500	2 1/4-12	1 7/8-12	3.00	3.124	1.00	2.06	2.38	4.25	0.63	0.25	0.63	0.25	-	2.25	3.50	12.13	14.13
	3.000	2 3/4-12	2 1/4-12	3.50	3.749	1.00	2.63	2.88	5.44	0.88	0.25	0.31	-	-	2.25	3.50	12.13	14.13
	3.500	3 1/4-12	2 1/2-12	3.50	4.249	1.00	3.00	3.38	5.94	0.94	0.25	0.31	-	-	2.25	3.50	12.13	14.13
	4.000	3 3/4-12	3-12	4.00	4.749	1.00	3.38	3.88	6.31	0.94	0.25	0.31	-	-	2.25	3.50	12.13	14.13

Table 3 — Envelope and Mounting Dimensions

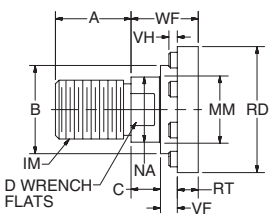
Rod End Dimensions (for Bolted Bushings) – See Table 2

See B&R Table to determine which bore, rod and mount combinations have this feature.

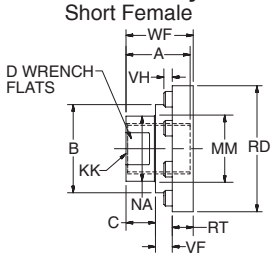
Thread Style 2
Small Male



Thread Style 5
Intermediate Male



Thread Style 4
Short Female



Style 4 stroke restrictions may apply. See Style 4 Minimum Stroke page for details.

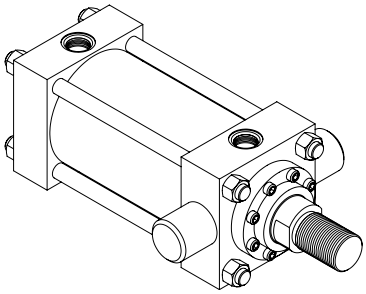
A high strength rod end stud is supplied on thread style 2 through 2.000" diameter rods. Larger sizes or special rod ends are cut threads. Style 2 rod ends are recommended where the workpiece is secured against the rod shoulder. When the workpiece is not shouldered, style 2 rod ends are recommended through 2.000" piston rod diameters and style 5 rod ends are recommended on larger diameters. Use style 4 for applications where female rod end threads are required. If rod end is not specified, style 2 will be supplied.

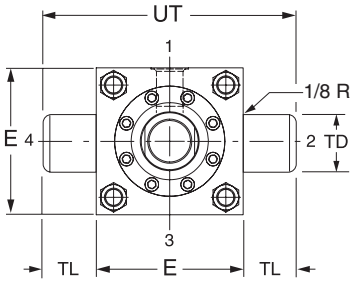
"Special" Thread Style X

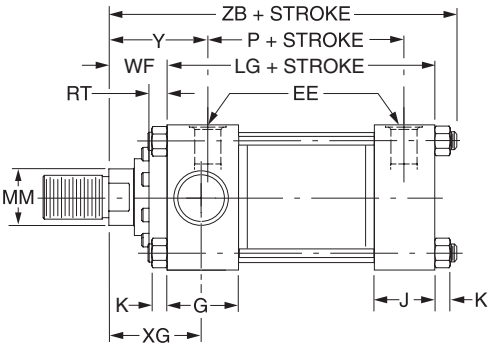
Special thread, extension, rod eye, blank, etc., are also available.

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

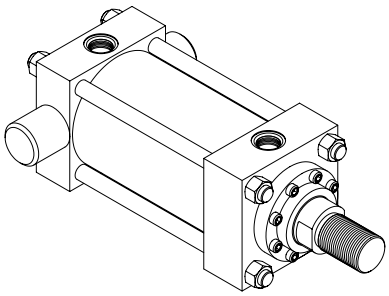
Head Trunnion Mount
Model 81

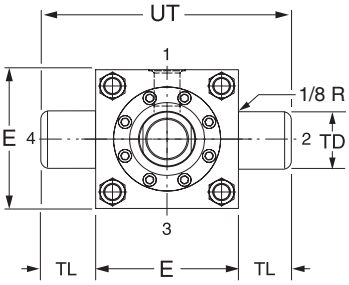


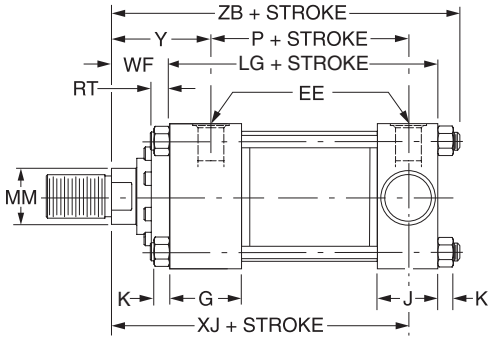




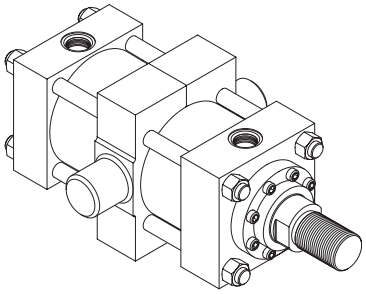
Cap Trunnion Mount
Model 82

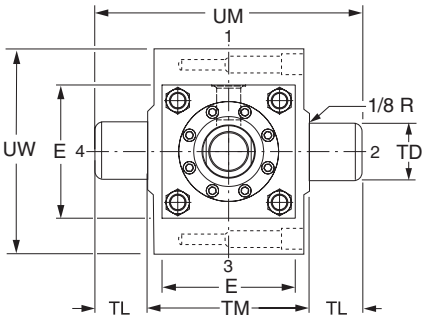


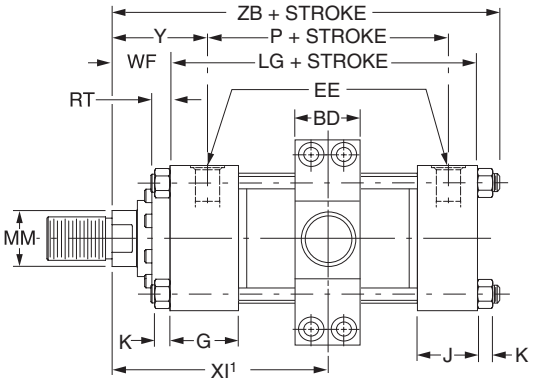




Intermediate Trunnion Mount
Model 89





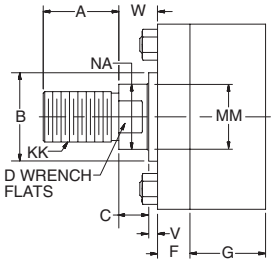


[1]Dimension XI to be specified by customer.

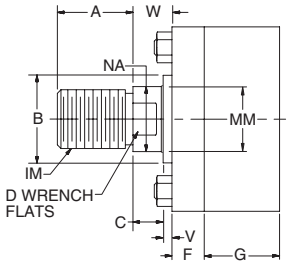
Rod End Dimensions (for Retainer Held Bushings) – See Table 2

See B&R Table to determine which bore, rod and mount combinations have this feature.

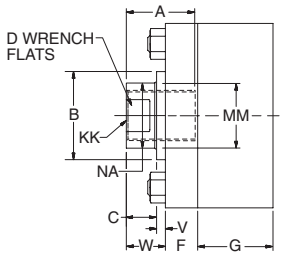
Thread Style 2
Small Male



Thread Style 5
Intermediate Male



Thread Style 4
Short Female



Style 4 stroke restrictions may apply. See Style 4 Minimum Stroke page for details.

"Special" Thread Style X

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

To order, specify "Style X" and give desired dimensions for KK, A and W. If otherwise special, furnish dimensioned sketch.

A high strength rod end stud is supplied on thread style 2 through 2.000" diameter rods. Larger sizes or special rod ends are cut threads. Style 2 rod ends are recommended where the workpiece is secured against the rod shoulder. When the workpiece is not shouldered, style 2 rod ends are recommended through 2.000" piston rod diameters and style 5 rod ends are recommended on larger diameters. Use style 4 for applications where female rod end threads are required. If rod end is not specified, style 2 will be supplied.

Table 1—Envelope and Mounting Dimensions

Bore	BD	E	EE NPTF[2]	EE SAE[1]	F	G	J	K	+.000 -.001 TD	TL	TM	UM	UT	UW	Add Stroke LG	Add Stroke P[1]	Model 89 Minimum Stroke
1.50	1.25	2.50	1/2	8	0.38	1.75	1.50	0.38	1.000	1.00	3.00	5.00	4.50	3.38	4.63	2.88	0.00
2.00	1.50	3.00	1/2	8	0.63	1.75	1.50	0.44	1.375	1.38	3.50	6.25	5.75	4.13	4.63	2.88	0.25
2.50	1.50	3.50	1/2	8	0.63	1.75	1.50	0.44	1.375	1.38	4.00	6.75	6.25	4.63	4.75	3.00	0.13
3.25	2.00	4.50	3/4	12	0.75	2.00	1.75	0.56	1.750	1.75	5.00	8.50	8.00	5.81	5.50	3.50	0.38
4.00	2.00	5.00	3/4	12	0.88	2.00	1.75	0.56	1.750	1.75	5.50	9.00	8.50	6.38	5.75	3.75	0.13
5.00	2.00	6.50	3/4	12	0.88	2.00	1.75	0.81	1.750	1.75	7.00	10.50	10.00	7.75	6.25	4.25	0.00
6.00	3.00	7.50	1	16	1.00	2.25	2.25	0.88	2.000	2.00	8.50	12.50	11.50	10.38	7.38	4.88	0.25

[1] SAE straight thread ports are standard and are indicated by port number. On 1.50", 2.00" and 2.50" bore sizes, when #10 SAE port is specified, reduce dimension "P" by 0.06" and increase dimension "Y" by 0.06".
[2] NPTF ports are available at no extra charge.

Table 2—Rod Dimensions

Bore	Rod Dia. MM	Thread Style 5 IM	Thread Style 2 & 4 KK	A	+.000 -.002 B	C	D	NA	RD (Max.)	RT	V	VF	VH	W	WF
1.50	0.625	1/2-20	7/16-20	0.75	1.124	0.38	0.50	0.56	1.94	0.38	0.25	0.25	0.19	-	1.00
	1.000	7/8-14	3/4-16	1.13	1.499	0.50	0.88	0.94	2.38	0.38	0.50	0.50	0.19	1.00	1.38
2.00	1.000	7/8-14	3/4-16	1.13	1.499	0.50	0.88	0.94	2.38	0.38	0.25	0.50	0.19	-	1.38
	1.375	1 1/4-12	1-14	1.63	1.999	0.63	1.13	1.31	2.88	0.38	0.38	0.63	0.19	1.00	1.63
2.50	1.000	7/8-14	3/4-16	1.13	1.499	0.50	0.88	0.94	2.38	0.38	0.25	0.50	0.19	-	1.38
	1.375	1 1/4-12	1-14	1.63	1.999	0.63	1.13	1.31	2.88	0.38	0.38	0.63	0.19	-	1.63
	1.750	1 1/2-12	1 1/4-12	2.00	2.374	0.75	1.50	1.69	3.47	0.63	0.50	0.50	0.19	-	1.88
3.25	1.375	1 1/4-12	1-14	1.63	1.999	0.63	1.13	1.31	2.88	0.38	0.25	0.63	0.19	-	1.63
	1.750	1 1/2-12	1 1/4-12	2.00	2.374	0.75	1.50	1.69	3.47	0.63	0.38	0.50	0.19	-	1.88
	2.000	1 3/4-12	1 1/2-12	2.25	2.624	0.88	1.69	1.94	3.72	0.63	0.38	0.50	0.25	-	2.00
4.00	1.750	1 1/2-12	1 1/4-12	2.00	2.374	0.75	1.50	1.69	3.47	0.63	0.25	0.50	0.19	-	1.88
	2.000	1 3/4-12	1 1/2-12	2.25	2.624	0.88	1.69	1.94	3.72	0.63	0.25	0.50	0.25	-	2.00
	2.500	2 1/4-12	1 7/8-12	3.00	3.124	1.00	2.06	2.38	4.25	0.63	0.38	0.63	0.25	-	2.25
5.00	2.000	1 3/4-12	1 1/2-12	2.25	2.624	0.88	1.69	1.94	3.72	0.63	0.25	0.50	0.25	-	2.00
	2.500	2 1/4-12	1 7/8-12	3.00	3.124	1.00	2.06	2.38	4.25	0.63	0.38	0.63	0.25	-	2.25
	3.000	2 3/4-12	2 1/4-12	3.50	3.749	1.00	2.63	2.88	5.44	0.88	0.38	0.31	-	-	2.25
	3.500	3 1/4-12	2 1/2-12	3.50	4.249	1.00	3.00	3.38	5.94	0.94	0.38	0.31	-	-	2.25
6.00	2.500	2 1/4-12	1 7/8-12	3.00	3.124	1.00	2.06	2.38	4.25	0.63	0.25	0.63	0.25	-	2.25
	3.000	2 3/4-12	2 1/4-12	3.50	3.749	1.00	2.63	2.88	5.44	0.88	0.25	0.31	-	-	2.25
	3.500	3 1/4-12	2 1/2-12	3.50	4.249	1.00	3.00	3.38	5.94	0.94	0.25	0.31	-	-	2.25
	4.000	3 3/4-12	3-12	4.00	4.749	1.00	3.38	3.88	6.31	0.94	0.25	0.31	-	-	2.25

Table 3 — Envelope and Mounting Dimensions

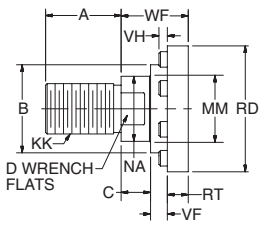
Bore	XG	Min. XI[3]	Y[1]	Add Stroke Max. XI[4]	Add Stroke XJ	Add Stroke ZB (Max.)
1.50	1.88	3.44	2.00	3.44	4.88	6.25
	2.25	3.81	2.38	3.81	5.25	6.63
2.00	2.25	3.94	2.38	3.69	5.25	6.69
	2.50	4.19	2.63	3.94	5.50	6.94
2.50	2.25	3.94	2.38	3.81	5.38	6.81
	2.50	4.19	2.63	4.31	5.63	7.06
	2.75	4.44	2.88	4.06	5.88	7.31
3.25	2.63	4.69	2.75	4.31	6.25	7.94
	2.88	4.94	3.00	4.69	6.50	8.19
	3.00	5.06	3.13	4.56	5.63	8.31
4.00	2.88	4.94	3.00	4.81	6.75	8.50
	3.00	5.06	3.13	5.19	6.88	8.63
	3.25	5.31	3.38	4.94	7.13	8.88
5.00	3.00	5.06	3.13	5.44	7.38	9.38
	3.25	5.31	3.38	5.69	7.63	9.63
	3.25	5.31	3.38	5.69	7.63	9.63
	3.25	5.31	3.38	5.69	7.63	9.63
6.00	3.38	6.06	3.50	5.81	8.38	10.81
	3.38	6.06	3.50	5.81	8.38	10.81
	3.38	6.06	3.50	5.81	8.38	10.81
	3.38	6.06	3.50	5.81	8.38	10.81

[3] Dimension XI to be specified by customer. [4] Dimensions shown are valid for standard WF dimension.

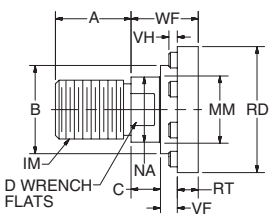
Rod End Dimensions (for Bolted Bushings) – See Table 2

See B&R Table to determine which bore, rod and mount combinations have this feature.

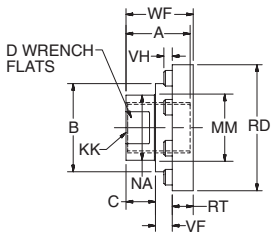
Thread Style 2
Small Male



Thread Style 5
Intermediate Male



Thread Style 4
Short Female



Style 4 stroke restrictions may apply. See Style 4 Minimum Stroke page for details.

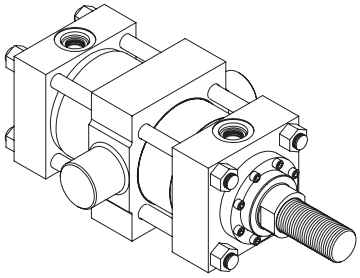
A high strength rod end stud is supplied on thread style 2 through 2.000" diameter rods. Larger sizes or special rod ends are cut threads. Style 2 rod ends are recommended where the workpiece is secured against the rod shoulder. When the workpiece is not shouldered, style 2 rod ends are recommended through 2.000" piston rod diameters and style 5 rod ends are recommended on larger diameters. Use style 4 for applications where female rod end threads are required. If rod end is not specified, style 2 will be supplied.

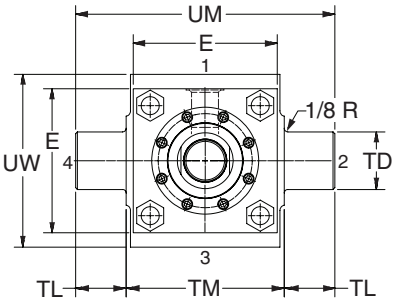
"Special" Thread Style X

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

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

Intermediate Trunnion Mount
Model 87





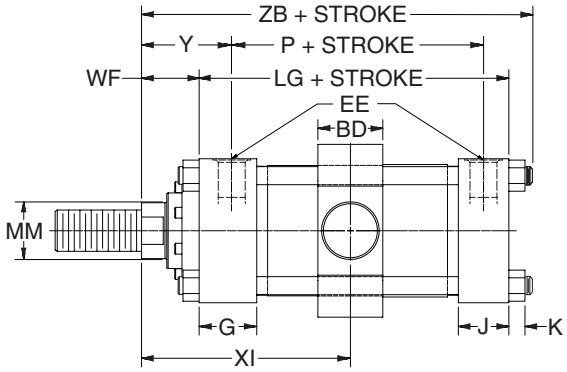


Table 1—Envelope and Mounting Dimensions

Bore	BD	E	EE		G	J	K	+.000 -.001 TD	TL	TM	UM	UW	Add Stroke		Model 87 Minimum Stroke
			NPTF[1]	SAE[2]									LB	P[1]	
4.00	2.25	5.00	3/4	12	2.00	1.75	0.56	2.00	1.75	5.50	9.00	6.00	6.63	3.75	0.125
5.00	2.75	6.50	3/4	12	2.00	1.75	0.81	2.50	1.75	7.00	10.50	7.50	7.13	4.25	0.000
6.00	3.25	7.50	1	16	2.25	2.25	0.88	3.00	2.00	8.50	12.50	9.50	8.38	4.88	0.250

[1] SAE straight thread ports are standard and are indicated by port number. On 1.50", 2.00" and 2.50" bore sizes, when #10 SAE port is specified, reduce dimension “P” by 0.06" and increase dimension “Y” by 0.06".

[2] NPTF ports are available at no extra charge.

Table 2—Rod Dimensions

Bore	Rod Dia. MM	Thread		Rod Extensions and Bushing Dimensions										Min. XI[3]	Y[1]	Add Stroke	
		Style 5 IM	Style 2 & 4 KK	A	+.000 -.002 B	C	D	NA	RD (Max.)	RT	VF	VH	WF			Max. XI[4]	ZB (Max.)
4.00	1.750	1 1/2-12	1 1/4-12	2.00	2.374	0.75	1.50	1.69	3.47	0.63	0.50	0.19	1.88	5.06	3.00	4.69	8.50
	2.000	1 3/4-12	1 1/2-12	2.25	2.624	0.88	1.69	1.94	3.72	0.63	0.50	0.25	2.00	5.19	3.13	4.81	8.63
	2.500	2 1/4-12	1 7/8-12	3.00	3.124	1.00	2.06	2.38	4.25	0.63	0.63	0.25	2.25	5.44	3.38	5.06	8.88
5.00	2.000	1 3/4-12	1 1/2-12	2.25	2.624	0.88	1.69	1.94	3.72	0.63	0.50	0.25	2.00	5.44	3.13	5.06	9.38
	2.500	2 1/4-12	1 7/8-12	3.00	3.124	1.00	2.06	2.38	4.25	0.63	0.63	0.25	2.25	5.69	3.38	5.06	9.63
	3.000	2 3/4-12	2 1/4-12	3.50	3.749	1.00	2.63	2.88	5.44	0.88	0.31	-	2.25	5.69	3.38	5.31	9.63
	3.500	3 1/4-12	2 1/2-12	3.50	4.249	1.00	3.00	3.38	5.94	0.94	0.31	-	2.25	5.69	3.38	5.31	9.63
6.00	2.500	2 1/4-12	1 7/8-12	3.00	3.124	1.00	2.06	2.38	4.25	0.63	0.63	0.25	2.25	6.19	3.50	5.69	10.81
	3.000	2 3/4-12	2 1/4-12	3.50	3.749	1.00	2.63	2.88	5.44	0.88	0.31	-	2.25	6.19	3.50	5.69	10.81
	3.500	3 1/4-12	2 1/2-12	3.50	4.249	1.00	3.00	3.38	5.94	0.94	0.31	-	2.25	6.19	3.50	5.69	10.81
	4.000	3 3/4-12	3-12	4.00	4.749	1.00	3.38	3.88	6.31	0.94	0.31	-	2.25	6.19	3.50	5.69	10.81

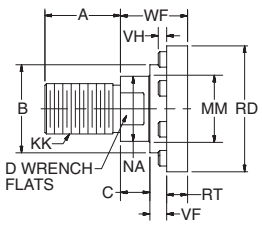
[3] Dimension XI to be specified by customer. [4] Dimensions shown are valid for standard WF dimension.

Table 3 — Envelope and Mounting Dimensions

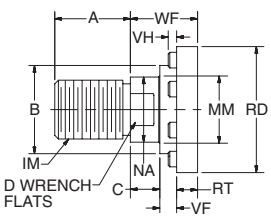
Rod End Dimensions (for Bolted Bushings) – See Table 2

See B&R Table to determine which bore, rod and mount combinations have this feature.

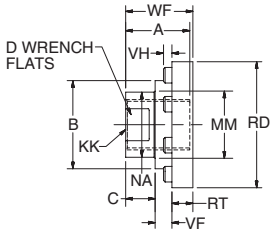
Thread Style 2
Small Male



Thread Style 5
Intermediate Male



Thread Style 4
Short Female



Style 4 stroke restrictions may apply. See Style 4 Minimum Stroke page for details.

A high strength rod end stud is supplied on thread style 2 through 2.000" diameter rods. Larger sizes or special rod ends are cut threads. Style 2 rod ends are recommended where the workpiece is secured against the rod shoulder. When the workpiece is not shouldered, style 2 rod ends are recommended through 2.000" piston rod diameters and style 5 rod ends are recommended on larger diameters. Use style 4 for applications where female rod end threads are required. If rod end is not specified, style 2 will be supplied.

“Special” Thread Style X

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

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

Cap Fixed Eye Mount with Spherical Bearing Model 94

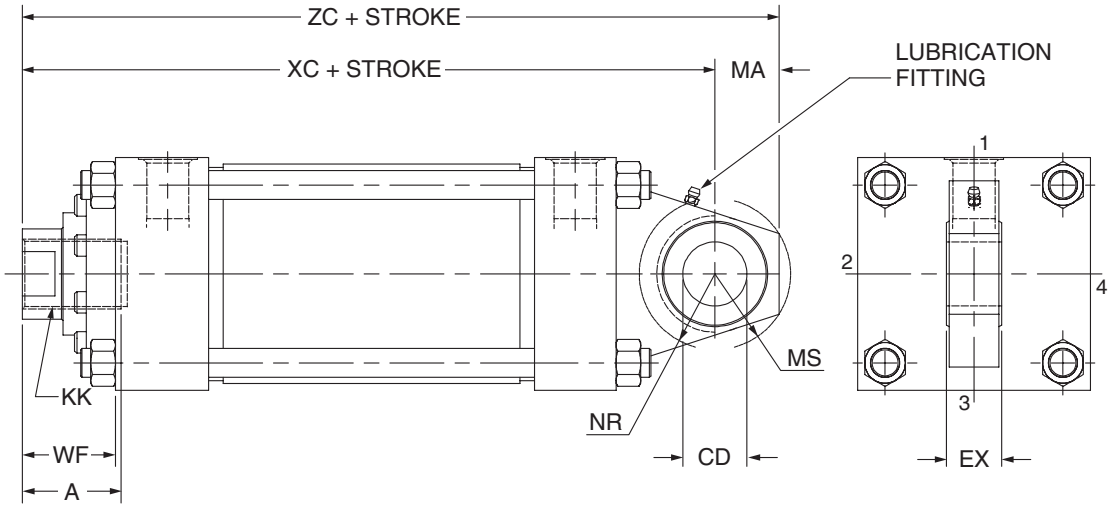


Table 1 — Dimensions

Bore	Rod Dia. MM	Thread[3] Style 4 KK	A	WF	Add Stroke XC	Add Stroke ZC	CD[2]	EX	MA	MS	NR	Max. Oper. PSI[1]
1.50	0.625	7/16-20	0.75	1.00	6.38	7.13	.5000 -.0005	0.44	0.75	0.94	0.63	1500
	1.000	3/4-16	1.13	1.38	6.75	7.50						
2.00	1.000	3/4-16	1.13	1.38	7.25	8.25	.7500 -.0005	0.66	1.00	1.38	1.00	2200
	1.375	1-14	1.63	1.63	7.50	8.50						
2.50	1.000	3/4-16	1.13	1.38	7.38	8.38	.7500 -.0005	0.66	1.00	1.38	1.00	1450
	1.750	1 1/4-12	2.00	1.88	7.88	8.88						
	1.375	1-14	1.63	1.63	7.63	8.63						
3.25	1.375	1-14	1.63	1.63	8.63	9.88	1.0000 -.0005	0.88	1.25	1.69	1.25	1500
	2.000	1 1/2-12	2.25	2.00	9.00	10.25						
	1.750	1 1/4-12	2.00	1.88	8.88	10.13						
4.00	1.750	1 1/4-12	2.00	1.88	9.75	11.63	1.3750 -.0005	1.19	1.88	2.44	1.63	1850
	2.500	1 7/8-12	3.00	2.25	10.13	12.00						
	2.000	1 1/2-12	2.25	2.00	9.88	11.75						
5.00	2.000	1 1/2-12	2.25	2.00	10.50	13.00	1.7500 -.0005	1.53	2.50	2.88	2.06	2000
	3.500	2 1/2-12	3.50	2.25	10.75	13.25						
	2.500	1 7/8-12	3.00	2.25	10.75	13.25						
	3.000	2 1/4-12	3.50	2.25	10.75	13.25						
6.00	2.500	1 7/8-12	3.00	2.25	12.13	14.63	2.0000 -.0005	1.75	2.50	3.31	2.38	1800
	4.000	3-12	4.00	2.25	12.13	14.63						
	3.000	2 1/4-12	3.50	2.25	12.13	14.63						
	3.500	2 1/2-12	3.50	2.25	12.13	14.63						

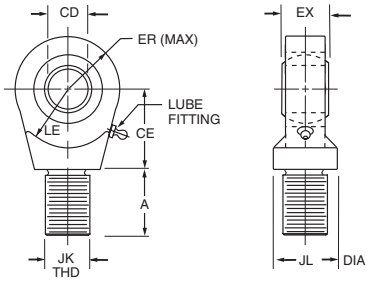
[1] Maximum operating pressure at 4:1 design factor is based on tensile strength of material. Pressure ratings are based on standard commercial bearing ratings.

[2] Dimension “CD” is hole diameter.

[3] To match pin diameter in rod eye and cap, when an oversize rod is required, specify rod end style ‘X’, ‘KK’ thread and ‘A’ thread length for the standard rod diameter (first rod listed for the bore), and ‘W’ for the oversize rod. Order the rod eye and clevis bracket for the required bore size from the tables on the spherical bearings accessory page.

Miller offers a complete range of Cylinder Accessories to assure you of the greatest versatility in present or future cylinder applications. Accessories offered for the respective cylinder include the Rod Eye, Pivot Pin and Clevis Bracket. To select the proper part number for any desired accessory refer to the charts below.

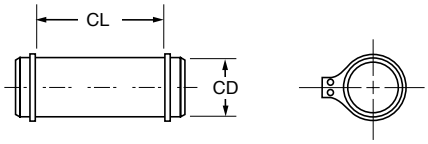
Spherical Rod Eye



Order to fit Piston Rod Thread Size.

Bore Sizes	1.50	2.00 & 2.50	3.25	4.00	5.00	6.00
Part No.	1322900000	1322910000	1322920000	1322930000	1322940000	1322950000
CD	.5000$^{-.0005}$	.7500$^{-.0005}$	1.0000$^{-.0005}$	1.3750$^{-.0005}$	1.7500$^{-.0005}$	2.0000$^{-.0005}$
A	0.69	1.00	1.50	2.00	2.13	2.88
CE	0.88	1.25	1.88	2.13	2.50	2.75
EX	0.44	0.66	7/8	1.19	1.53	1.75
ER	0.88	1.25	1.38	1.81	2.19	2.63
LE	0.75	1.06	1.44	1.88	2.13	2.50
JK	7/16-20	3/4-16	1-14	1 1/4-12	1 1/2-12	1 7/8-12
JL	0.88	1.31	1.50	2.00	2.25	2.75
LOAD CAPACITY LBS.	2644	9441	16860	28562	43005	70193

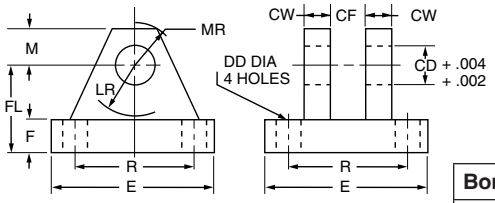
Pivot Pin



Bore Sizes	1.50	2.00 & 2.50	3.25	4.00	5.00	6.00
Part No.	0839620000	0839630000	0839640000	0839650000	0839660000	0839670000
CD	.4997$^{-.0004}$	.7497$^{-.0005}$	.9997$^{-.0005}$	1.3746$^{-.0006}$	1.7496$^{-.0006}$	1.9996$^{-.0007}$
CL	1.56	2.03	2.50	3.31	4.22	4.94
SHEAR CAPACITY LBS.	8600	19300	34300	65000	105200	137400

Pivot Pins are furnished with (2) Retainer Rings.

Clevis Bracket



Order to fit Cap or Rod Eye.

Bore Sizes	1.50	2.00 & 2.50	3.25	4.00	5.00	6.00
Part No.	0839470000	0839480000	0839490000	0839500000	0839510000	0839520000
CD	0.500	0.750	1.000	1.375	1.750	2.000
CF	0.44	0.66	0.88	1.19	1.53	1.75
CW	0.50	0.63	0.75	1.00	1.25	1.50
DD	0.41	0.53	0.53	0.66	0.91	0.91
E	3.00	3.75	5.50	6.50	8.50	10.63
F	0.50	0.63	0.75	0.88	1.25	1.50
FL	1.50	2.00	2.50	3.50	4.50	5.00
LR	0.94	1.38	1.69	2.44	2.88	3.31
M	0.50	0.88	1.00	1.38	1.75	2.00
MR	0.63	1.00	1.19	1.63	2.06	2.38
R	2.05	2.76	4.10	4.95	6.58	7.92
LOAD CAPACITY LBS.	5770	9450	14300	20322	37800	50375