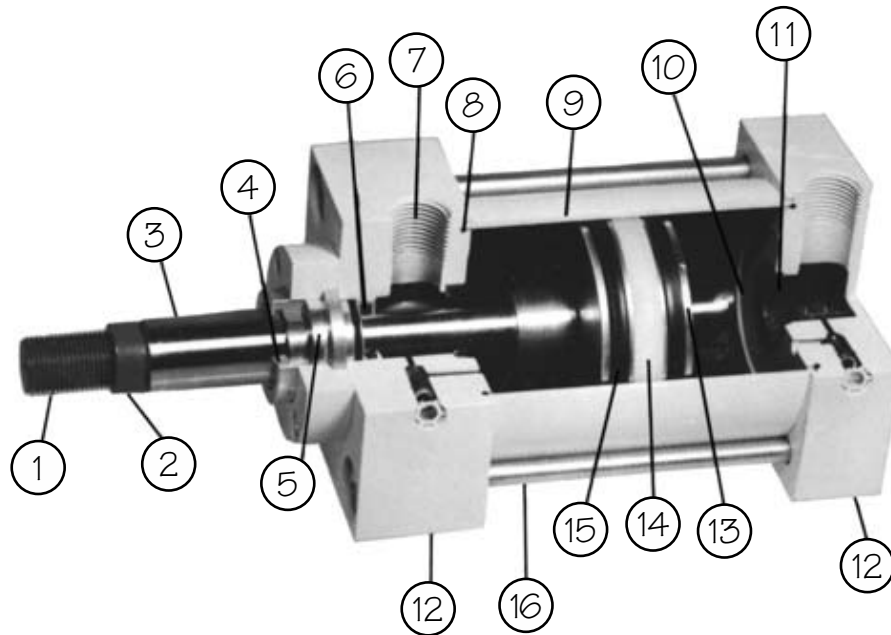


SERIES - A

250 PSI NFPA INTERCHANGEABLE CYLINDERS.

COMPARE CHICAGO CYLINDERS TO THE MOST EXPENSIVE IN THE INDUSTRY.



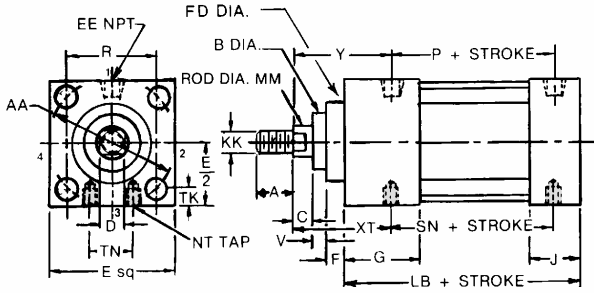
- 1. Studded Rod End** — Roll threaded rod end eliminates stress points. The studded rod end is standard on the 'SM' style rod end for all cylinders thru 6" bore.
- 2. Wrench Flats** — Four wrench flats are provided on the 'SM' style rod end for field installation convenience.
- 3. Piston Rod** — High strength steel combined with a ground and hard chrome plated surface provides a scratch resistant piston rod that reduces friction and increases rod seal life.
- 4. Rod Wiper** — Polyurethane, lip type rod wiper, designed to protect the piston rod, bearing, rod packing and interior of the cylinder is standard.
- 5. Removable Rod Gland Cartridge** — The cartridge is held by the retainer plate and is easily removed without disturbing the tie rods.
- 6. Seal** — Buna N flexible lip type rod seal is wear compensating and has long life.
- 7. Ports** — Large, unrestricted ports permit maximum flow with minimum pressure drop. Heads may be rotated independently at 90° intervals for convenient port location.
- 8. Tube Seals** — Positive sealing *synthetic "O" rings* (not gaskets).
- 9. Tube** — Hard coated bore, extruded aluminum for light weight, high strength, with excellent corrosion-resisting characteristics.
- 10. Generous Breakaway Groove** — Assures rapid starts.
- 11. Cushions** — Synthetic rubber type seals provide a positive, leakproof 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.
- 12. Heads and Caps** — Anodized Aluminum Alloy accurately machined to assure perfect alignment of piston rod bearing, piston rod, piston and tube.
- 13. Piston** — Aluminum alloy piston is pilot fitted to piston rod and positively locked.
- 14. Piston Bearing** — A low friction nylon band provides an excellent bearing surface with long life and score resistant characteristics.
- 15. Piston Seals** — Flexible lip type piston seals provide positive sealing, low friction and long life.
- 16. Tie Rods** — Four high tensile strength tie rods. Bright zinc plated for environmental protection. Thread lengths are closely controlled to eliminate unsightly dirt collecting exposed threads.

In addition to the above, all steel parts are bright zinc plated. All aluminum parts are anodized to offer protection against hostile environments. For severely corrosive environments, an additional protection may be had by ordering a minimal cost polyurethane coating.

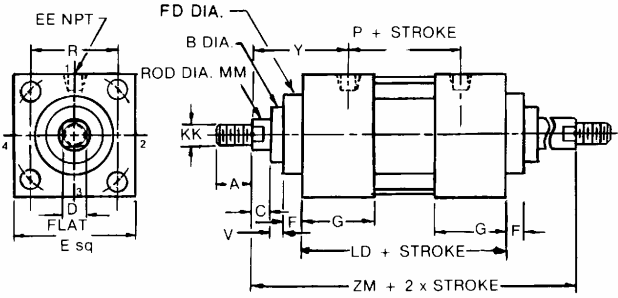
CHICAGO CONTROLS CORPORATION cylinders are designed to conform to JIG-NFPA standards. The dimensioning and identification of the cylinders in this Bulletin are in accordance with the NFPA recommended dimension code for fluid power cylinders. CCC reserves change rights without notice.

TEMPERATURE RANGE: -30°F TO 220°F. For a higher temperature range, VITON seals are available.

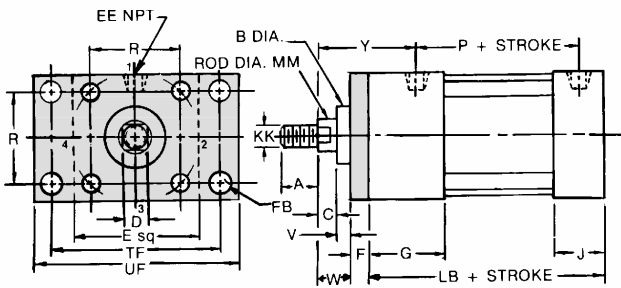
NFPA MOUNTING STYLES



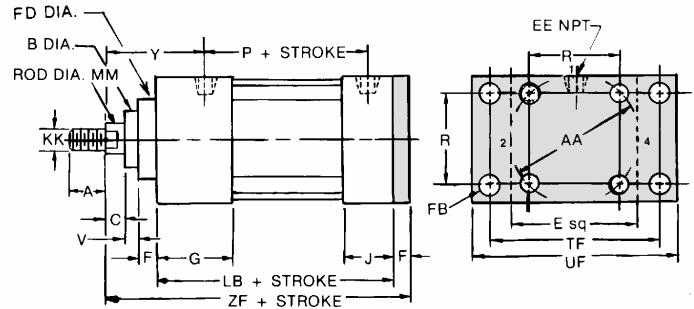
Basic Cylinder
Head Male Rabbet Mount (NFPA Style MR1)
Side Flush Mount (NFPA Style MS4)



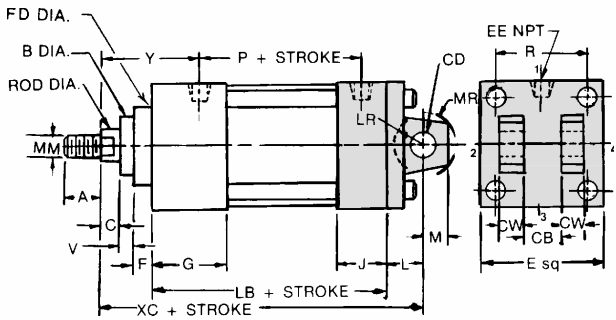
Double Rod End (NFPA Style MD**)



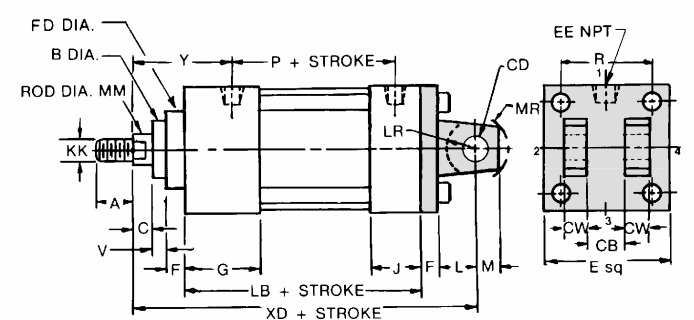
Front Rectangular (NFPA Style MF1)



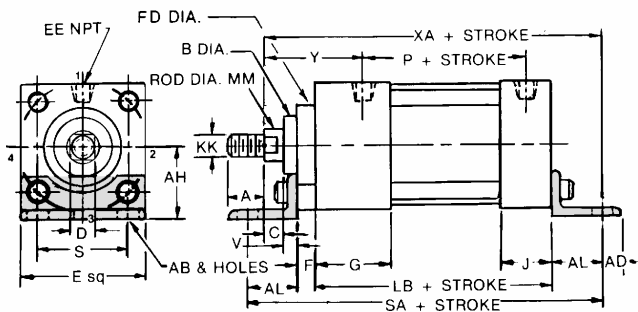
Rear Rectangular Flange (NFPA Style MF2)



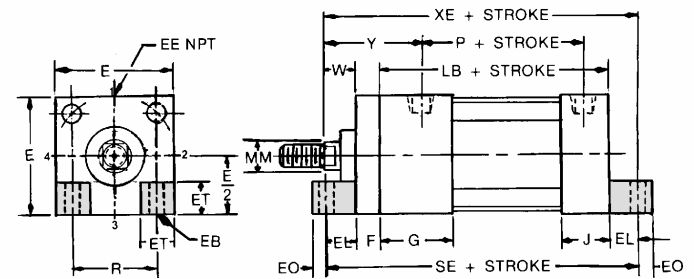
Fixed Rear Clevis (Detachable) (NFPA Style MP1)



Rear Clevis Detachable (NFPA Style MP2)

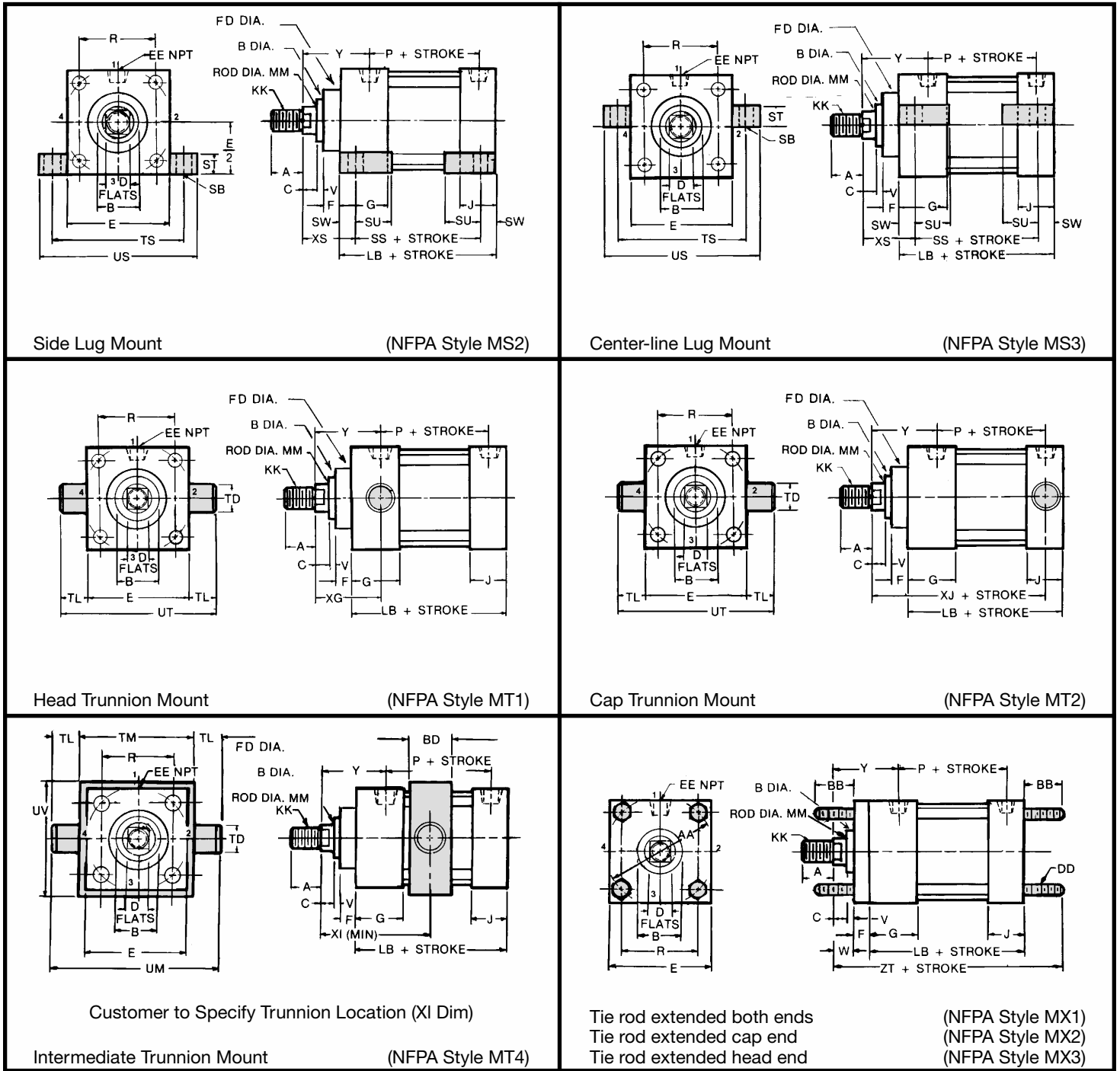


Side End Angle Mount (NFPA Style MS1)

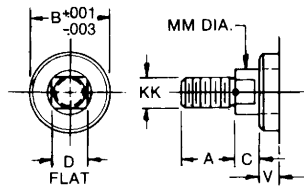


Lug Mount (NFPA Style MS7)

NFPA MOUNTING STYLES

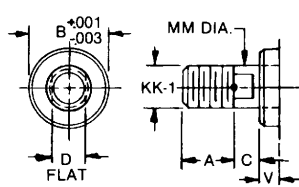


ROD END STYLES

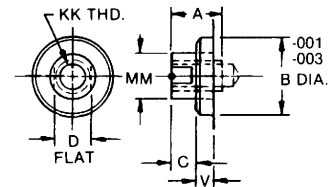


**STYLE SM- (STANDARD)
STUDED ROD END**

(Four wrench flats standard on this model only)



**STYLE IM
OPTIONAL MALE ROD END**



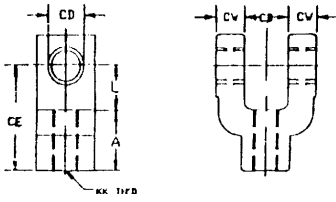
**STYLE SF
SHORT FEMALE ROD END**

CYLINDER DIMENSIONS

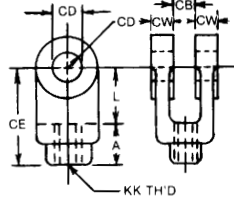
| BORE ROD DIA. | 1½ | | 2 | | 2½ | | 3¼ | | 4 | | 5 | | 6 | | 8 | | |
|---------------------|---------|---------|---------|---------|---------|----------|----------|--------|----------|----------|----------|----------|----------|----------|----------|----------|---|
| | 5/8 | 3/4 | 1 | 1 1/8 | 1 1/4 | 1 1/2 | 1 3/4 | 2 | 2 1/4 | 2 1/2 | 3 | 3 1/2 | 4 | 4 1/2 | 5 | 6 | |
| A | 3/4 | 3/4 | 1 1/8 | 3/4 | 1 1/8 | 1 1/8 | 1 1/8 | 1 1/8 | 1 1/8 | 1 1/8 | 1 1/8 | 1 1/8 | 1 1/8 | 1 1/8 | 2 | 1 1/8 | 2 |
| AA | 2.02 | 2.6 | 2.6 | 3.1 | 3.1 | 3.9 | 3.9 | 4.7 | 4.7 | 5.8 | 5.8 | 6.9 | 6.9 | 9.1 | 9.1 | 9.1 | |
| AB* | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 1/2 | 1/2 | 1/2 | 1/2 | 5/8 | 5/8 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | |
| AH | 1 1/16 | 1 1/16 | 1 1/16 | 1 5/8 | 1 5/8 | 1 15/16 | 1 15/16 | 2 1/4 | 2 1/4 | 2 3/4 | 2 3/4 | 3 1/4 | 3 1/4 | 4 1/4 | 4 1/4 | 4 1/4 | |
| AL | 1 | 1 | 1 | 1 | 1 | 1 1/4 | 1 1/4 | 1 1/4 | 1 1/4 | 1 3/8 | 1 3/8 | 1 3/8 | 1 3/8 | 1 3/8 | 1 13/16 | 1 13/16 | |
| AD | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 1/2 | 1/2 | 1/2 | 1/2 | 5/8 | 5/8 | 5/8 | 5/8 | 5/8 | 1 1/16 | 1 1/16 | |
| B | 1.125 | 1.125 | 1.500 | 1.125 | 1.500 | 1.500 | 2.000 | 1.500 | 2.000 | 1.500 | 2.000 | 2.000 | 2.000 | 2.375 | 2.000 | 2.375 | |
| BB | 1 | 1 1/8 | 1 1/8 | 1 1/8 | 1 1/8 | 1 3/8 | 1 3/8 | 1 3/8 | 1 3/8 | 1 13/16 | 1 13/16 | 1 13/16 | 1 13/16 | 2 5/16 | 2 5/16 | 2 5/16 | |
| BD | 1 1/4 | 1 1/2 | 1 1/2 | 1 1/2 | 1 1/2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 1/2 | 2 1/2 | 2 1/2 | 2 1/2 | 2 1/2 | |
| C | 3/8 | 3/8 | 1/2 | 3/8 | 1/2 | 1/2 | 5/8 | 1/2 | 5/8 | 1/2 | 5/8 | 1/2 | 5/8 | 3/4 | 5/8 | 3/4 | |
| CB | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 1 1/4 | 1 1/4 | 1 1/4 | 1 1/4 | 1 1/4 | 1 1/4 | 1 1/2 | 1 1/2 | 1 1/2 | 1 1/2 | 1 1/2 | |
| CD | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 1 | 1 | 1 | 1 | 1 | |
| CW | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 5/8 | 5/8 | 5/8 | 5/8 | 5/8 | 5/8 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | |
| D | 1/2 | 1/2 | 7/8 | 1/2 | 7/8 | 7/8 | 1 1/8 | 7/8 | 1 1/8 | 7/8 | 1 1/8 | 1 1/8 | 1 1/2 | 1 1/8 | 1 1/2 | 1 1/2 | |
| DD | 1/4-28 | 5/16-24 | 5/16-24 | 5/16-24 | 5/16-24 | 3/8-24 | 3/8-24 | 3/8-24 | 3/8-24 | 1/2-20 | 1/2-20 | 1/2-20 | 1/2-20 | 5/8-18 | 5/8-18 | 5/8-18 | |
| E | 2 | 2 1/2 | 2 1/2 | 3 | 3 | 3 3/4 | 3 3/4 | 4 1/2 | 4 1/2 | 5 1/2 | 5 1/2 | 6 1/2 | 6 1/2 | 8 1/2 | 8 1/2 | 8 1/2 | |
| EB* | 1/4 | 5/16 | 5/16 | 5/16 | 5/16 | 3/8 | 3/8 | 3/8 | 3/8 | 1/2 | 1/2 | 1/2 | 1/2 | 5/8 | 5/8 | 5/8 | |
| EE | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | |
| EL | 3/4 | 15/16 | 15/16 | 1 1/16 | 1 1/16 | 7/8 | 7/8 | 1 | 1 | 1 1/16 | 1 1/16 | 1 | 1 | 1 1/8 | 1 1/8 | 1 1/8 | |
| EO | 1/4 | 5/16 | 5/16 | 5/16 | 5/16 | 3/8 | 3/8 | 3/8 | 3/8 | 1/2 | 1/2 | 1/2 | 1/2 | 5/8 | 5/8 | 5/8 | |
| ET | 9/16 | 1 1/16 | 1 1/16 | 1 3/16 | 1 3/16 | 1 | 1 | 1 1/16 | 1 1/16 | 1 3/8 | 1 3/8 | 1 3/8 | 1 3/8 | 1 5/8 | 2 1/16 | 2 1/16 | |
| F | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 5/8 | 5/8 | 5/8 | 5/8 | 5/8 | 5/8 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | |
| FB* | 1/4 | 5/16 | 5/16 | 5/16 | 5/16 | 3/8 | 3/8 | 3/8 | 3/8 | 1/2 | 1/2 | 1/2 | 1/2 | — | — | — | |
| FD | — | 1.75 | 2.62 | 1.75 | 2.62 | 2.62 | 3.25 | 2.62 | 3.25 | 2.62 | 3.25 | 3.25 | 3.25 | 3.76 | 3.25 | 3.76 | |
| G | 1 1/2 | 1 1/2 | 1 1/2 | 1 1/2 | 1 1/2 | 1 3/4 | 1 3/4 | 1 3/4 | 1 3/4 | 1 3/4 | 1 3/4 | 2 | 2 | 2 | 2 | 2 | |
| J | 1 | 1 | 1 | 1 | 1 | 1 1/4 | 1 1/4 | 1 1/4 | 1 1/4 | 1 1/4 | 1 1/4 | 1 1/2 | 1 1/2 | 1 1/2 | 1 1/2 | 1 1/2 | |
| KK | 7/16-20 | 7/16-20 | 3/4-16 | 7/16-20 | 3/4-16 | 3/4-16 | 1-14 | 3/4-16 | 1-14 | 3/4-16 | 1-14 | 1-14 | 1-14 | 1 1/4-12 | 1-14 | 1 1/4-12 | |
| KK-1 | 1/2-20 | 1/2-20 | 7/8-14 | 1/2-20 | 7/8-14 | 7/8-14 | 1 1/4-12 | 7/8-14 | 1 1/4-12 | 7/8-14 | 1 1/4-12 | 1 1/4-12 | 1 1/4-12 | 1 1/2-12 | 1 1/4-12 | 1 1/2-12 | |
| L | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 1 1/4 | 1 1/4 | 1 1/4 | 1 1/4 | 1 1/4 | 1 1/4 | 1 1/2 | 1 1/2 | 1 1/2 | 1 1/2 | 1 1/2 | |
| LB* | 3 3/8 | 3 3/8 | 3 3/8 | 3 3/4 | 3 3/4 | 4 1/4 | 4 1/4 | 4 1/4 | 4 1/4 | 4 1/2 | 4 1/2 | 5 | 5 | 5 1/8 | 5 1/8 | 5 1/8 | |
| LD | 4 1/8 | 4 1/8 | 4 1/8 | 4 1/4 | 4 1/4 | 4 3/4 | 4 3/4 | 4 3/4 | 4 3/4 | 5 | 5 | 5 1/2 | 5 1/2 | 5 5/8 | 5 5/8 | 5 5/8 | |
| M | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 1 | 1 | 1 | 1 | 1 | |
| MM | 5/8 | 5/8 | 1 | 5/8 | 1 | 1 1/8 | 1 | 1 1/8 | 1 | 1 1/8 | 1 | 1 1/8 | 1 1/8 | 1 3/4 | 1 1/8 | 1 3/4 | |
| MR | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 1 1/8 | 1 1/8 | 1 1/8 | 1 1/8 | 1 1/8 | |
| NT | 1/4-20 | 5/16-18 | 5/16-18 | 3/8-16 | 3/8-16 | 1/2-13 | 1/2-13 | 1/2-13 | 1/2-13 | 5/8-11 | 5/8-11 | 3/4-10 | 3/4-10 | 3/4-10 | 3/4-10 | 3/4-10 | |
| P | 2 1/4 | 2 1/4 | 2 1/4 | 2 5/8 | 2 5/8 | 2 5/8 | 2 5/8 | 2 5/8 | 2 5/8 | 2 5/8 | 2 5/8 | 3 1/8 | 3 1/8 | 3 1/4 | 3 1/4 | 3 1/4 | |
| R | 1.43 | 1.84 | 1.84 | 2.19 | 2.19 | 2.76 | 2.76 | 3.32 | 3.32 | 4.10 | 4.10 | 4.88 | 4.88 | 6.44 | 6.44 | 6.44 | |
| S | 1 1/4 | 1 3/4 | 1 3/4 | 2 1/4 | 2 1/4 | 2 3/4 | 2 3/4 | 3 1/2 | 3 1/2 | 4 1/4 | 4 1/4 | 5 1/4 | 5 1/4 | 7 1/8 | 7 1/8 | 7 1/8 | |
| SA | 6 | 6 | 6 | 6 1/8 | 6 1/8 | 7 3/8 | 7 3/8 | 7 3/8 | 7 3/8 | 7 3/8 | 7 3/8 | 8 1/2 | 8 1/2 | 8 3/4 | 8 3/4 | 8 3/4 | |
| SB* | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 1/2 | 1/2 | 1/2 | 1/2 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | |
| SE | 5 1/2 | 5 1/8 | 5 1/8 | 6 1/4 | 6 1/4 | 6 5/8 | 6 5/8 | 6 5/8 | 6 5/8 | 7 1/4 | 7 1/4 | 7 3/4 | 7 3/4 | 7 3/8 | 7 3/8 | 7 3/8 | |
| SN | 2 1/4 | 2 1/4 | 2 1/4 | 2 3/8 | 2 3/8 | 2 5/8 | 2 5/8 | 2 5/8 | 2 5/8 | 2 5/8 | 2 5/8 | 3 1/8 | 3 1/8 | 3 1/4 | 3 1/4 | 3 1/4 | |
| SS | 2 7/8 | 2 7/8 | 2 7/8 | 3 | 3 | 3 1/4 | 3 1/4 | 3 1/4 | 3 1/4 | 3 1/8 | 3 1/8 | 3 5/8 | 3 5/8 | 3 3/4 | 3 3/4 | 3 3/4 | |
| ST | 1/2 | 1/2 | 1/2 | 1/2 | 1/2 | 3/4 | 3/4 | 3/4 | 3/4 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |
| SU | 1 5/16 | 1 5/16 | 1 5/16 | 1 5/16 | 1 5/16 | 1 1/4 | 1 1/4 | 1 1/4 | 1 1/4 | 1 1/4 | 1 1/4 | 1 1/4 | 1 1/4 | 1 1/4 | 1 1/4 | 1 1/4 | |
| SW | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 1/2 | 1/2 | 1/2 | 1/2 | 1 1/16 | 1 1/16 | 1 1/16 | 1 1/16 | 1 1/16 | 1 1/16 | 1 1/16 | |
| TD | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 3/8 | 1 3/8 | 1 3/8 | 1 3/8 | 1 3/8 | |
| TF | 2 3/4 | 3 3/8 | 3 3/8 | 3 7/8 | 3 7/8 | 4 1 1/16 | 4 1 1/16 | 5 7/16 | 5 7/16 | 6 5/8 | 6 5/8 | 7 5/8 | 7 5/8 | — | — | — | |
| TK | 3/8 | 1/2 | 3/8 | 5/8 | 5/8 | 3/4 | 3/4 | 3/4 | 3/4 | 1 5/16 | 1 5/16 | 1 1/8 | 1 1/8 | 1 1/8 | 1 1/8 | 1 1/8 | |
| TL | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 3/8 | 1 3/8 | 1 3/8 | 1 3/8 | 1 3/8 | |
| TM | 2 1/2 | 3 | 3 | 3 1/2 | 3 1/2 | 4 1/2 | 4 1/2 | 5 1/4 | 5 1/4 | 6 1/4 | 6 1/4 | 7 5/8 | 7 5/8 | 9 3/4 | 9 3/4 | 9 3/4 | |
| TN | 5/8 | 7/8 | 7/8 | 1 1/4 | 1 1/4 | 1 1/2 | 1 1/2 | 2 1/16 | 2 1/16 | 2 1 1/16 | 2 1 1/16 | 3 1/4 | 3 1/4 | 4 1/2 | 4 1/2 | 4 1/2 | |
| TS | 2 3/4 | 3 1/4 | 3 1/4 | 3 3/4 | 3 3/4 | 4 3/4 | 4 3/4 | 5 1/2 | 5 1/2 | 6 7/8 | 6 7/8 | 7 7/8 | 7 7/8 | 9 7/8 | 9 7/8 | 9 7/8 | |
| UF | 3 3/8 | 4 1/8 | 4 1/8 | 4 5/8 | 4 5/8 | 5 1/2 | 5 1/2 | 6 1/4 | 6 1/4 | 7 5/8 | 7 5/8 | 8 5/8 | 8 5/8 | — | — | — | |
| UM | 4 1/2 | 5 | 5 | 5 1/2 | 5 1/2 | 6 1/2 | 6 1/2 | 7 1/4 | 7 1/4 | 8 1/4 | 8 1/4 | 10 3/8 | 10 3/8 | 12 1/2 | 12 1/2 | 12 1/2 | |
| US | 3 1/2 | 4 | 4 | 4 1/2 | 4 1/2 | 5 3/4 | 5 3/4 | 6 1/2 | 6 1/2 | 8 1/4 | 8 1/4 | 9 1/4 | 9 1/4 | 11 1/4 | 11 1/4 | 11 1/4 | |
| UT | 4 | 4 1/2 | 4 1/2 | 5 | 5 | 5 3/4 | 5 3/4 | 6 1/2 | 6 1/2 | 7 1/2 | 7 1/2 | 9 1/4 | 9 1/4 | 11 1/4 | 11 1/4 | 11 1/4 | |
| UV | 2 1/2 | 3 | 3 | 3 1/2 | 3 1/2 | 4 1/4 | 4 1/4 | 5 | 5 | 6 | 6 | 7 | 7 | — | — | — | |
| V | 1/4 | 1/4 | 1/2 | 1/4 | 1/2 | 1/4 | 3/8 | 1/4 | 3/8 | 1/4 | 3/8 | 1/4 | 3/8 | 1/4 | 3/8 | 1/4 | |
| W | 5/8 | 5/8 | 1 | 5/8 | 1 | 3/4 | 1 | 3/4 | 1 | 3/4 | 1 | 7/8 | 1 1/8 | 7/8 | 1 1/8 | 1 1/8 | |
| XA | 5 3/8 | 5 3/8 | 6 | 5 3/4 | 6 1/8 | 6 7/8 | 7 1/8 | 6 7/8 | 7 1/8 | 7 1/4 | 7 1/2 | 8 | 8 1/4 | 8 3/16 | 8 3/16 | 8 3/16 | |
| XC | 5 3/8 | 5 3/8 | 5 3/4 | 5 1/2 | 5 7/8 | 6 7/8 | 7 1/8 | 6 7/8 | 7 1/8 | 7 1/8 | 7 3/8 | 8 1/8 | 8 3/8 | 8 1/4 | 8 1/2 | 8 1/2 | |
| XD | 5 3/4 | 5 3/4 | 6 1/8 | 5 7/8 | 6 1/4 | 7 1/2 | 7 3/4 | 7 1/2 | 7 3/4 | 7 3/4 | 8 | 8 7/8 | 9 1/8 | — | — | — | |
| XE | 5 3/8 | 5 9/16 | 5 15/16 | 5 13/16 | 6 3/16 | 6 1/2 | 6 3/4 | 6 5/8 | 6 7/8 | 6 15/16 | 7 3/16 | 7 5/8 | 7 7/8 | 7 7/8 | 8 1/8 | 8 1/8 | |
| XG | 1 3/4 | 1 3/4 | 2 1/8 | 1 3/4 | 2 1/8 | 2 1/4 | 2 1/2 | 2 1/4 | 2 1/2 | 2 1/2 | 2 1/2 | 2 5/8 | 2 5/8 | 2 5/8 | 2 5/8 | 2 5/8 | |
| XI | 3 1/8 | 3 1/4 | 3 5/8 | 3 1/4 | 3 5/8 | 4 1/8 | 4 3/8 | 4 1/8 | 4 3/8 | 4 1/8 | 4 3/8 | 4 7/8 | 5 1/8 | 4 7/8 | 5 1/8 | 5 1/8 | |
| XJ | 4 1/8 | 4 1/8 | 4 1/2 | 4 1/4 | 4 5/8 | 5 | 5 1/4 | 5 | 5 1/4 | 5 1/4 | 5 1/2 | 5 7/8 | 6 1/8 | 6 | 6 1/4 | 6 1/4 | |
| XS | 1 3/8 | 1 3/8 | 1 3/4 | 1 3/8 | 1 3/4 | 1 7/8 | 2 1/8 | 1 7/8 | 2 1/8 | 2 1/8 | 2 1/8 | 2 5/16 | 2 5/16 | 2 5/16 | 2 5/16 | 2 5/16 | |
| XT | 1 15/16 | 1 15/16 | 2 5/16 | 1 15/16 | 2 5/16 | 2 1/16 | 2 1 1/16 | 2 1/16 | 2 1 1/16 | 2 1 1/16 | 2 1 1/16 | 2 1 1/16 | 2 1 1/16 | 2 1 1/16 | 2 1 1/16 | 2 1 1/16 | |
| Y | 1 15/16 | 1 15/16 | 2 5/16 | 1 15/16 | 2 5/16 | 2 1/16 | 2 1 1/16 | 2 1/16 | 2 1 1/16 | 2 1 1/16 | 2 1 1/16 | 2 1 1/16 | 2 1 1/16 | 2 1 1/16 | 2 1 1/16 | 2 1 1/16 | |
| ZF | 5 | 5 | 5 3/8 | 5 1/8 | 5 1/2 | 6 1/4 | 6 1/2 | 6 1/4 | 6 1/2 | 6 1/2 | 6 3/4 | 7 5/8 | 7 5/8 | — | — | — | |
| ZM | 6 1/8 | 6 1/8 | 6 7/8 | 6 1/4 | 7 | 7 1/2 | 8 | 7 1/2 | 8 | 7 3/4 | 8 1/4 | 8 3/4 | 9 1/4 | 8 7/8 | 9 3/8 | 9 3/8 | |
| ZT | 5 3/8 | 5 3/4 | 6 1/8 | 5 5/8 | 6 1/4 | 7 | 7 1/4 | 7 | 7 1/4 | 7 1 1/16 | 7 1 1/16 | 8 1/16 | 8 1 1/16 | 9 1/16 | 9 1/16 | 9 1/16 | |

*MOUNTING HOLES ARE 1/16 LARGER THAN SCREW SIZE SHOWN

MOUNTING ACCESSORIES

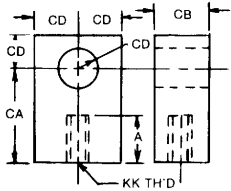


LOW COST EXTRUDED ALUMINUM ROD CLEVIS



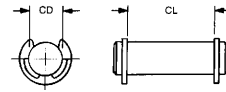
ROD CLEVIS

| PART NO. | A | L | CB | CD | CE | CW | KK | ROD DIA. |
|----------|-------|-------|-------|-------|-------|-----|----------|----------|
| A23-0708 | 3/4 | 3/4 | 3/4 | 1/2 | 1 1/2 | 1/2 | 7/16-20 | 5/8 |
| A23-1212 | 1 1/8 | 1 3/8 | 1 1/4 | 3/4 | 2 3/8 | 5/8 | 3/4-16 | 1 |
| A23-1616 | 1 5/8 | 1 1/2 | 1 1/2 | 1 | 3 1/8 | 3/4 | 1-14 | 1 1/8 |
| A23-2020 | 2 | 2 1/8 | 2 | 1 3/8 | 4 1/8 | 1 | 1 1/4-12 | 1 3/4 |



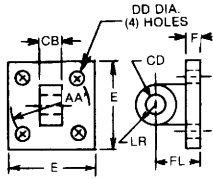
ROD EYE

| PART NO. | A | CA | CB | CD | KK | ROD DIA. |
|----------|-------|---------|-------|-------|----------|----------|
| A24-0708 | 3/4 | 1 1/2 | 3/4 | 1/2 | 7/16-20 | 5/8 |
| A24-1212 | 1 1/8 | 2 1/16 | 1 1/4 | 3/4 | 3/4-16 | 1 |
| A24-1616 | 1 5/8 | 2 13/16 | 1 1/2 | 1 | 1-14 | 1 3/8 |
| A24-2020 | 2 | 3 7/16 | 2 | 1 3/8 | 1 1/4-12 | 1 3/4 |



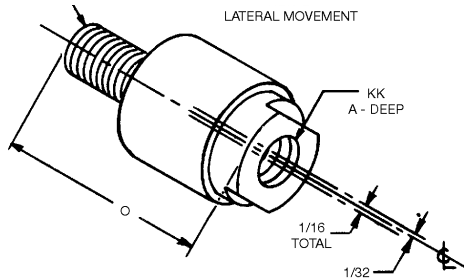
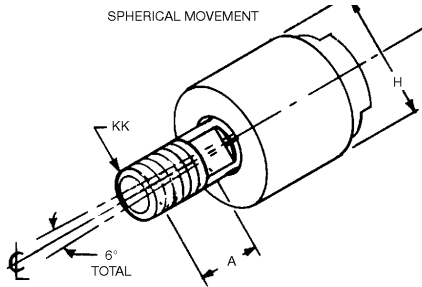
PIVOT PIN (E-RING)

| PART NO. | CD | CL |
|----------|-------|-------|
| A-1808 | 1/2 | 1 3/4 |
| A-1812 | 3/4 | 2 1/2 |
| A-1816 | 1 | 3 |
| A-1820 | 1 1/8 | 4 |



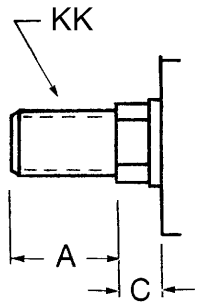
EYE MOUNT

| PART NO. | BORE | E | F | AA | CB | CD | DD | FL | LR |
|----------|-----------------|-------|-----|------|-------|-----|-----|-------|--------|
| A-1708 | 1 1/2, 2, 2 1/2 | 2 1/2 | 3/8 | 2.31 | 3/4 | 1/2 | 3/8 | 1 1/8 | 1/2 |
| A-1712 | 3 3/4, 4, 5 | 3 1/2 | 5/8 | 3.61 | 1 1/4 | 3/4 | 1/2 | 1 7/8 | 15/16 |
| A-1716 | 6-8 | 4 1/2 | 3/4 | 4.60 | 1 1/2 | 1 | 5/8 | 2 1/4 | 1 5/16 |

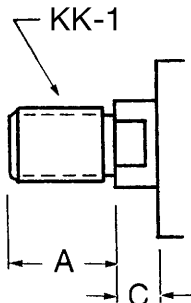


ROD END COUPLING

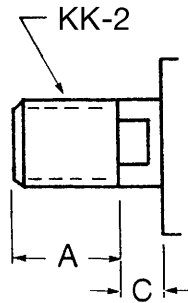
| PART NO. | TH'D (KK) | A | H | O |
|----------|-----------|-------|-------|--------|
| A25-0708 | 7/16-20 | 3/4 | 1 1/4 | 2 3/4 |
| A25-1212 | 3/4-16 | 1 1/8 | 1 3/4 | 3 7/16 |
| A25-1616 | 1-14 | 1 5/8 | 2 1/2 | 4 9/16 |
| A25-2020 | 1 1/4-12 | 1 5/8 | 2 1/2 | 4 9/16 |



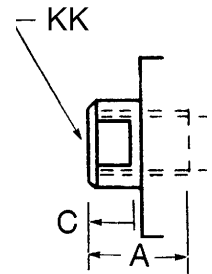
SM



IM



FM



SF

| BORE SIZE | 1 1/2 | 2 | 2 1/2 | 3 1/4 | 4 | 5 | 6 | 8 |
|--------------|---------|---------|--------|---------|--------|--------|----------|--------|
| ROD SIZE | 5/8 | 5/8 | 1 | 5/8 | 1 | 1 | 1 3/8 | 1 3/8 |
| A | 3/4 | 3/4 | 1 1/8 | 3/4 | 1 1/8 | 1 1/8 | 1 5/8 | 1 5/8 |
| C | 3/8 | 3/8 | 1/2 | 3/8 | 1/2 | 1/2 | 5/8 | 5/8 |
| ACROSS FLATS | 1/2 | 1/2 | 7/8 | 1/2 | 7/8 | 7/8 | 1 1/8 | 1 1/8 |
| KK | 7/16-20 | 7/16-20 | 3/4-16 | 7/16-20 | 3/4-16 | 3/4-16 | 1-14 | 1-14 |
| KK-1 | 1/2-20 | 1/2-20 | 7/8-14 | 1/2-20 | 7/8-14 | 7/8-14 | 1 1/4-12 | 7/8-14 |
| KK-2 | 5/8-18 | 5/8-18 | 1-14 | 5/8-18 | 1-14 | 1-14 | 1 3/8-12 | 1-14 |

HOW TO SELECT PISTON ROD DIAMETER

TO DETERMINE THE PROPER PISTON ROD DIAMETER FOR YOUR APPLICATION, PROCEED AS FOLLOWS:

1. Determine the maximum thrust required in your application.
2. Compare your installation with one illustrated in Case I or II.
3. Determine the recommended stop tube length, if required (below).
4. Determine the value of "L" for your installation with the piston rod fully extended.
5. Select thrust figure that equals or exceeds your requirements (see chart).
6. Scan to the right on your chart until the value of "L" equals or exceeds the "L" dimension of your cylinder.

Values of "L" in inches

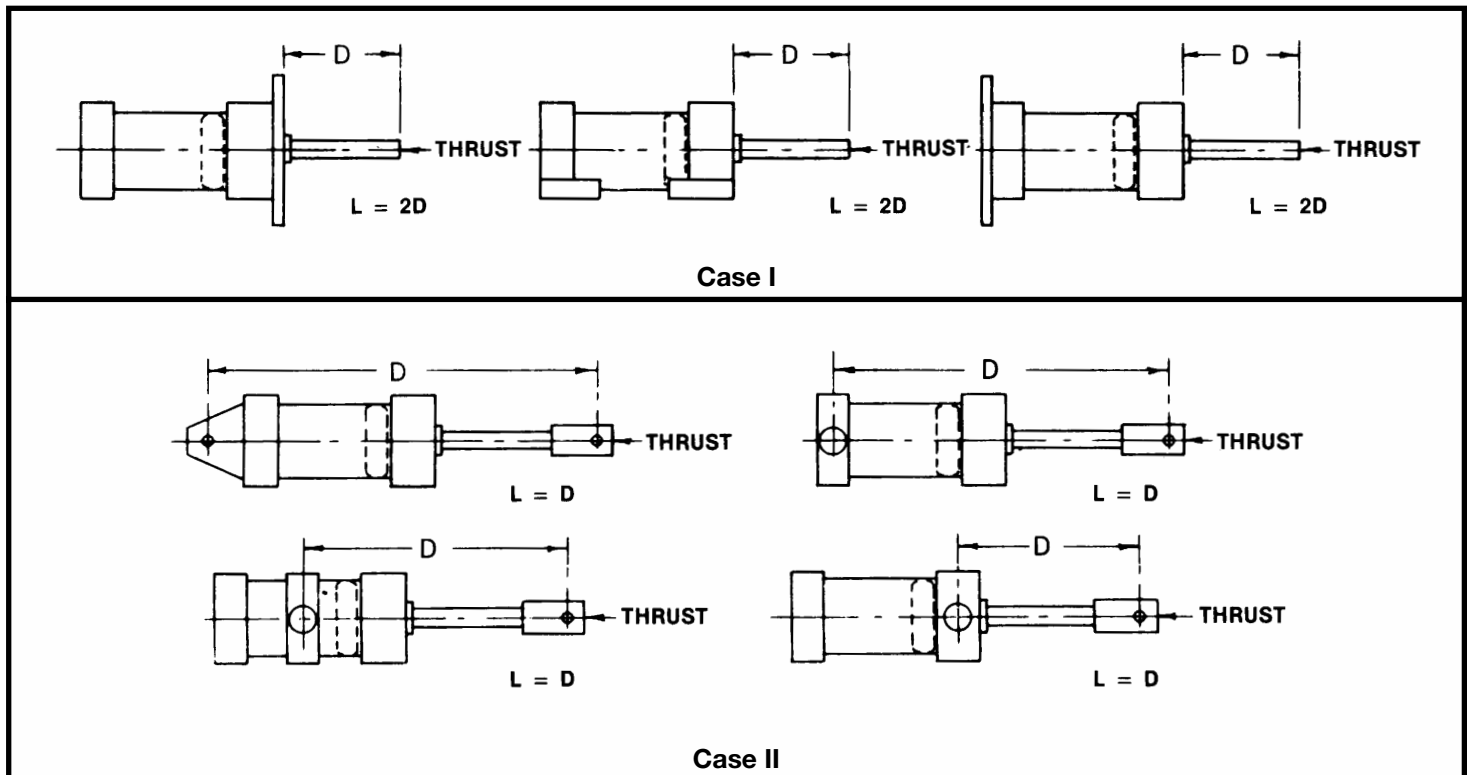
| PISTON ROD DIAMETERS | | | | | |
|----------------------|-----|-----|-------|-------|-----|
| Thrust Load In Lbs. | 5/8 | 1 | 1 1/8 | 1 3/4 | 2 |
| 100 | 75 | 191 | | | |
| 150 | 61 | 156 | | | |
| 200 | 53 | 135 | 255 | | |
| 250 | 47 | 121 | 228 | | |
| 300 | 43 | 110 | 208 | 334 | |
| 350 | 40 | 102 | 193 | 312 | |
| 400 | 38 | 96 | 180 | 292 | |
| 450 | 35 | 90 | 170 | 275 | |
| 500 | 34 | 86 | 161 | 261 | 341 |
| 600 | 31 | 79 | 147 | 239 | 312 |
| 700 | 28 | 72 | 137 | 221 | 288 |
| 800 | 27 | 68 | 128 | 207 | 270 |
| 900 | 25 | 64 | 120 | 195 | 254 |
| 1000 | 24 | 61 | 114 | 187 | 241 |
| 1200 | 22 | 55 | 104 | 169 | 220 |
| 1400 | 20 | 51 | 97 | 156 | 204 |
| 1600 | 19 | 48 | 90 | 146 | 191 |
| 1800 | 18 | 45 | 85 | 138 | 180 |
| 2000 | 17 | 43 | 81 | 131 | 171 |
| 2200 | 16 | 41 | 77 | 125 | 163 |
| 2600 | 15 | 38 | 71 | 115 | 150 |
| 3000 | 14 | 35 | 66 | 107 | 139 |
| 3500 | 13 | 32 | 61 | 99 | 129 |
| 4000 | 12 | 30 | 57 | 93 | 121 |
| 5000 | 11 | 27 | 50 | 83 | 108 |
| 6000 | 10 | 25 | 47 | 76 | 99 |
| 7000 | 9 | 23 | 43 | 70 | 91 |
| 8000 | 8 | 22 | 41 | 66 | 85 |
| 9000 | — | 20 | 38 | 62 | 81 |
| 10000 | — | 19 | 36 | 59 | 76 |
| 12500 | — | 17 | 32 | 52 | 68 |

STOP TUBE

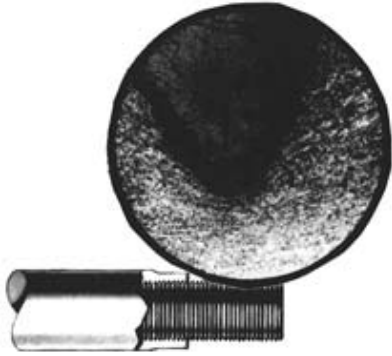
The function of a stop tube is to act as a spacer to increase the distance between the piston and piston rod bearing, when the piston rod is fully extended. This increase in spacing reduces bearing loads and, at the same time, increases the rigidity of the assembly to prevent buckling and jack-knifing. A stop tube is recommended for cylinders mounted as shown in cases I and II whenever "L" exceeds 40". Use 1" of stop tube for every 10" over the basic 40" value of "L". In case of fractions, always go to the next full inch.

EX: "L" = 70"

The stop tube length would be 3".



ROLLED THREADS

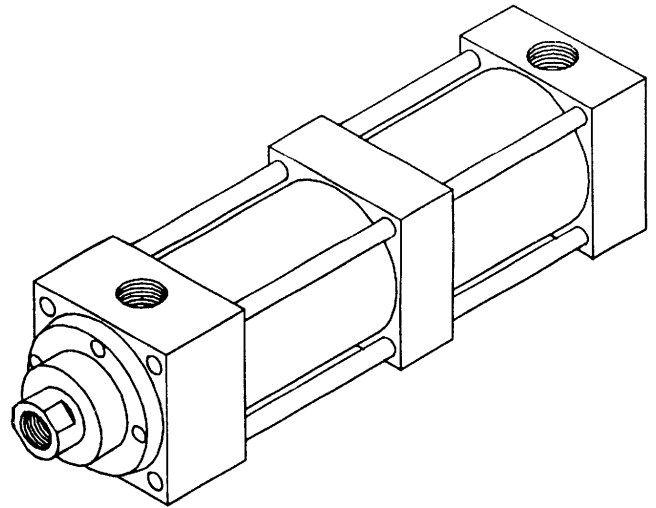


ROLLED THREADS FOR MAXIMUM ROD STRENGTH — Fatigue resisting rolled threads are used on piston rod studs. This thread producing method is superior to the “chased” or “cut” process because the cold working action displaces rather than removes metal. This displacement produces smooth, uniform threads and unbroken flow lines that greatly increase shear, tensile and fatigue properties.

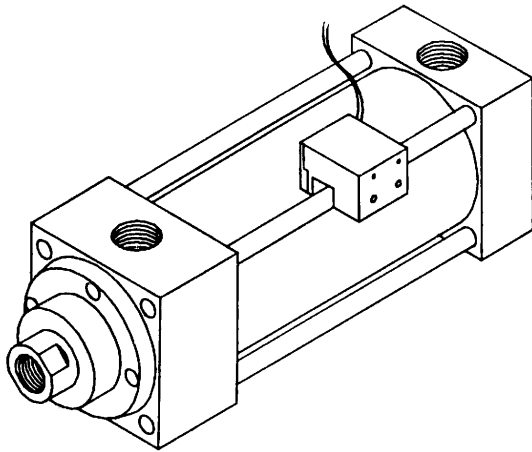
TIE ROD SUPPORTS

The pre-stressed tie rod connection of **CHICAGO CONTROLS** cylinders has advantages in rigidity within the limits of the cylinder tube to resist buckling. For long stroke cylinders, within practical limits, **CHICAGO CONTROLS** provides an intermediate **TIE ROD SUPPORT** (see table below). Standard **TIE ROD SUPPORTS** are kept within the envelope dimensions of the head and cap ends and generally do not interfere with the mounting of a long cylinder.

| NUMBER OF SUPPORTS REQUIRED | STROKE, INCHES | | | | | | | | | | | | | |
|-----------------------------|----------------|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|
| | BORE | 60 | 66 | 72 | 78 | 84 | 90 | 96 | 102 | 108 | 114 | 120 | 126 | 132 |
| 1½ | 1 | 1 | 1 | 2 | 2 | 2 | 3 | 3 | 3 | 4 | 4 | 4 | 4 | 4 |
| 2 | — | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 3 |
| 2½ | — | — | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 |
| 3¼ | — | — | — | — | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 4 | — | — | — | — | — | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 5 | — | — | — | — | — | — | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 6 | — | — | — | — | — | — | — | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 8 | — | — | — | — | — | — | — | 1 | 1 | 1 | 1 | 1 | 1 | 1 |



MAGNETIC PISTONS AND REED SWITCHES



CHICAGO CONTROLS has developed an air cylinder which incorporates a permanent magnet in the piston for activating magnetically operated reed switches. The reed switches are mounted to brackets which are affixed to the tie rods. These brackets can be positioned to give a signal (by operating the reed switch) anywhere in the stroke of the cylinder. The duration of the signal depends upon the velocity of the piston rod. The magnetic piston can be incorporated with any standard **CHICAGO CONTROLS** cylinder.

| CONTACT TYPE | CONTACT FORM | CONTACT RATINGS | | | | | |
|--------------|--------------|-----------------|----|-----|-----|------|-----------|
| | | MAXIMUM | | | | | |
| | | WATTS | VA | VDC | VAC | AMPS | TYPE |
| NO | A | 10 | 12 | 200 | 240 | .5 | RESISTIVE |
| NC | C | 3 | 5 | 28 | 120 | .25 | RESISTIVE |

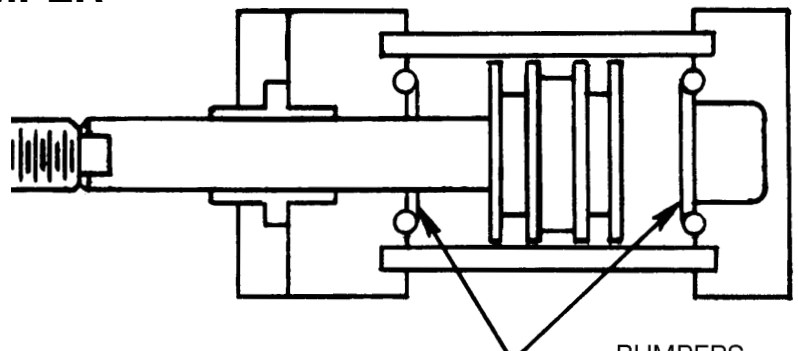
NOTE: When a magnetic cylinder is ordered, the letter “M” will follow the mounting style in the chicago controls identification code.

EX: MP1M-A- 4 X 6 — 1-SM-CBE

“O” RING BUMPER*

The purpose of the elastomeric bumper is for sound control. “Rubber” is an elastomeric spring, and springs are energy storage devices. To control the destructive forces of the kinetic energy, one must use a cushion which converts the energy to high pressure, high temperature air and dissipates it into the atmosphere.

*NOTE: — ADD .045 INCHES TO EACH END OF CYLINDER.



DIIMDEDC

REPAIR KITS

| BORE | ROD DIA. | PART NO. | PART NO. | PART NO. | PART NO. |
|--------------|----------|----------|----------|----------|----------|
| 1 1/2 | 5/8 | CA-10 | CS-10 | PS-06 | RG-10 |
| | — | — | — | — | — |
| 2 | 5/8 | CA-10 | CS-10 | PS-08 | RG-10 |
| | 1 | CA-16 | CS-16 | PS-08 | RG-16 |
| 2 1/2 | 5/8 | CA-10 | CS-10 | PS-10 | RG-10 |
| | 1 | CA-16 | CS-16 | PS-10 | RG-16 |
| 3 1/4 | 1 | CA-16 | CS-16 | PS-13 | RG-16 |
| | 1 3/8 | CA-22 | CS-22 | PS-13 | RG-22 |
| 4 | 1 | CA-16 | CS-16 | PS-16 | RG-16 |
| | 1 3/8 | CA-22 | CS-22 | PS-16 | RG-22 |
| 5 | 1 | CA-16 | CS-16 | PS-20 | RG-16 |
| | 1 3/8 | CA-22 | CS-22 | PS-20 | RG-22 |
| 6 | 1 3/8 | CA-22 | CS-22 | PS-24 | RG-22 |
| | 1 3/4 | CA-28 | CS-28 | PS-24 | RG-28 |
| 8 | 1 3/8 | CA-22 | CS-22 | PS-32 | RG-22 |
| | 1 3/4 | CA-28 | CS-28 | PS-32 | RG-28 |

Prefix Repair Kits with "E" for ECA
Prefix "PS" Repair Kits with "M" for Magnetic

Piston Seal (PS) Kit

Piston Bearing
Piston Seal (2) pcs.
Tube Seal (2) pcs.

Cushion Seal (CS) Kit

Cushion Seal (2) pcs.
Cushion Adjustment
Needles (2) pcs.

Rod Gland (RG) Kit

Rod Wiper
Rod Bearing
Rod Seal
"O" Ring

ERGA Kit

Wiper
"O" Ring, 2 pc.

Cartridge assembly (CA) may be ordered separately. The cartridge assembly is shipped assembled with all parts and bearings.

When replacing cushion seals it is recommended that Piston Seal (PS) Kit also be ordered.

HIGH ENERGY RATE CUSHIONS

THRU - 3 1/4 BORE Chicago has developed a high energy rate 2 stage cushion that oftentimes eliminates the need for shock absorbers - overall length of cylinder is increased by "J" dim. on each HER cushion end.

ACCESSORIES

EYE MOUNT

| PART NO. | BORE SIZE | PIN DIA. |
|----------|-----------------|----------|
| A17-08 | 1 1/2, 2, 2 1/2 | 1/2 |
| A17-12 | 3 1/4, 4, 5 | 3/4 |
| A17-16 | 6, 8 | 1" |

ROD END COUPLER

| PART NO. | ROD DIA. | THREAD SIZE |
|----------|----------|-------------|
| A25-0708 | 5/8 | 7/16-20 |
| A25-1212 | 1 | 3/4-16 |
| A25-1616 | 1 3/8 | 1-14 |
| A25-2020 | 1 3/4 | 1 1/4-12 |

ROD EYE

| PART NO. | ROD DIA. | THREAD SIZE |
|----------|----------|-------------|
| A24-0708 | 5/8 | 7/16-20 |
| A24-1212 | 1 | 3/4-16 |
| A24-1616 | 1 3/8 | 1-14 |
| A24-2020 | 1 3/4 | 1 1/4-12 |

ROD CLEVIS

| PART NO. | ROD DIA. | THREAD SIZE |
|----------|----------|-------------|
| A23-0708 | 5/8 | 7/16-20 |
| A23-1212 | 1 | 3/4-16 |
| A23-1616 | 1 3/8 | 1-14 |
| A23-2020 | 1 3/4 | 1 1/4-12 |

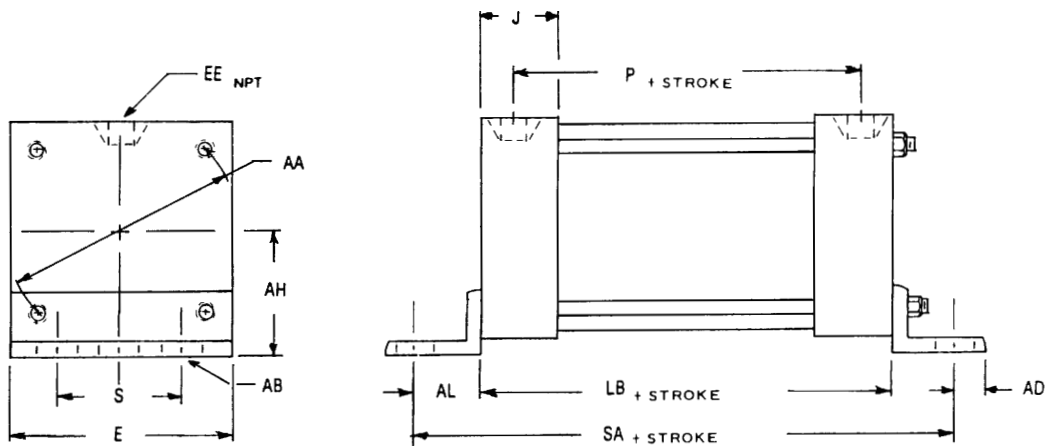
PIVOT PIN

| PART NO. | BORE SIZE | PIN DIA. |
|----------|-----------------|----------|
| A18-08 | 1 1/2, 2, 2 1/2 | 1/2 |
| A18-12 | 3 1/4, 4, 5 | 3/4 |
| A18-16 | 6, 8 | 1" |

Rod Clevis Supplied W/Pivot Pin & "E" Clips

VOLUME CHAMBERS

Area of Bore x Length of Cylinder in Inches = Volume of Cylinder in Cubic Inches.



| BORE | 1½ | 2 | 2½ | 3¼ | 4 | 5 | 6 | 8 |
|--------------|------|------|------|------|-------|-------|-------|-------|
| AA | 2.02 | 2.6 | 3.1 | 3.9 | 4.7 | 5.8 | 6.9 | 9.1 |
| AB | ¾ | ¾ | ¾ | ½ | ½ | ⅝ | ¾ | ¾ |
| AH | 1⅜ | 1⅞ | 1⅝ | 1⅝ | 2¼ | 2¾ | 3¼ | 4¼ |
| AL | 1 | 1 | 1 | 1¼ | 1¼ | 1⅝ | 1⅝ | 1⅜ |
| AD | ¾ | ¾ | ¾ | ½ | ½ | ⅝ | ¾ | 11/16 |
| E | 2 | 2½ | 3 | 3¾ | 4½ | 5½ | 6½ | 8½ |
| EE | ¾ | ¾ | ¾ | ½ | ½ | ½ | ¾ | ¾ |
| J | 1 | 1 | 1 | 1¼ | 1¼ | 1¼ | 1½ | 1½ |
| LB | 2 | 2 | 2 | 2½ | 2½ | 2½ | 3 | 3 |
| P | 2¼ | 2¼ | 2⅝ | 2⅝ | 2⅝ | 2⅝ | 3⅝ | 3¼ |
| S | 1¼ | 1¾ | 2¼ | 2¾ | 3½ | 4¼ | 5¼ | 7⅞ |
| SA | 4 | 4 | 4 | 5 | 5 | 5¼ | 5¾ | 6⅝ |
| AREA OF BORE | 1.76 | 3.14 | 4.90 | 8.30 | 12.55 | 19.63 | 28.27 | 50.26 |

MSI Mounting Style shown other Mounting Styles Available
 Aluminum Tube for Volume Chamber –Air Only– Fiberglass Tube for Air & Oil Tank
 Steel Tube Available for Hydraulic Use
 Fill Port & Baffles Available for Air-Oil Use

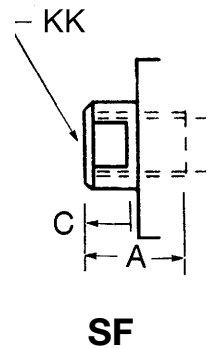
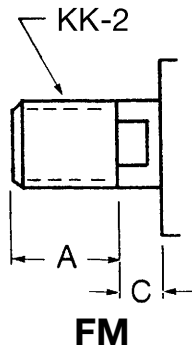
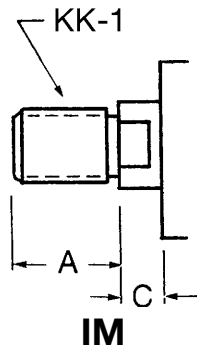
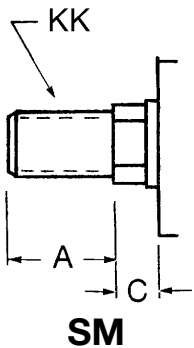
MANIFOLD

Volume Chambers can be multiple ported to customer specification for manifold type applications. Ports can be placed on end view locations as well as standard port locations.

How To Order

To develop a model number for Series A and MA Cylinders, simply follow the sequences indicated below. Consult your local C.C.C. dealer if assistance is required.

| FEATURE | | EXAMPLE | | | | | | |
|----------------------|--|---------|---|--------|---|----|----|---|
| Double Rod End | INSERT "D" AFTER FIRST LETTER OF MOUNTING STYLE | MSI | A | 3¼ x 4 | 1 | SM | NC | S |
| | MS4 Side Tapped | ↑ | ↑ | ↑ | ↑ | ↑ | ↑ | ↑ |
| | MF1 Rectangular Head Flange 1½" - 6" Bores | | | | | | | |
| | MF2 Rectangular Cap Flange 1½" - 6" Bores | | | | | | | |
| | ME3 Head Flange 8" Bore Only | | | | | | | |
| | ME4 Cap Flange 8" Bore Only | | | | | | | |
| | MR1 Standard (No Mounting) | | | | | | | |
| | MX1 Tie Rods Extended Both Ends | | | | | | | |
| | MX2 Cap Tie Rods Extended | | | | | | | |
| | MX3 Head Tie Rods Extended | | | | | | | |
| | MT1 Head Trunnion | | | | | | | |
| | MT2 Cap Trunnion | | | | | | | |
| | MS2 Side Lugs | | | | | | | |
| Type of Mounting | MT4 Intermediate Fixed Trunnion | | | | | | | |
| | MS1 Side End Angle | | | | | | | |
| | MP1 Rear Clevis | | | | | | | |
| | MP2 Rear Clevis | | | | | | | |
| | MS3 Center Lugs | | | | | | | |
| | MS7 Side End Lugs | | | | | | | |
| Series | A Standard NFPA | | | | | | | |
| | MA Magnetic Piston | | | | | | | |
| | ECA Economy NFPA 1½" - 5" Bores, 1" Rod Max | | | | | | | |
| | MH Hydraulic Services 1½" - 4" Bores, 1" Rod Max | | | | | | | |
| Bore and Stroke | Write out completely as shown on example | | | | | | | |
| Piston Rod Diameters | See Drawing Below | | | | | | | |
| Piston Rod Threads | See Drawing Below | | | | | | | |
| Cushion | NC No Cushion | | | | | | | |
| | CHE Cushion Head End | | | | | | | |
| | CCE Cushion Cap End | | | | | | | |
| | CBE Cushion Both Ends | | | | | | | |
| Options | S Stainless Rod | | | | | | | |
| | SS Stainless Tie Rod | | | | | | | |
| | V Viton Seals | | | | | | | |
| | QO Bumpers | | | | | | | |
| | PC Poly Coat | | | | | | | |

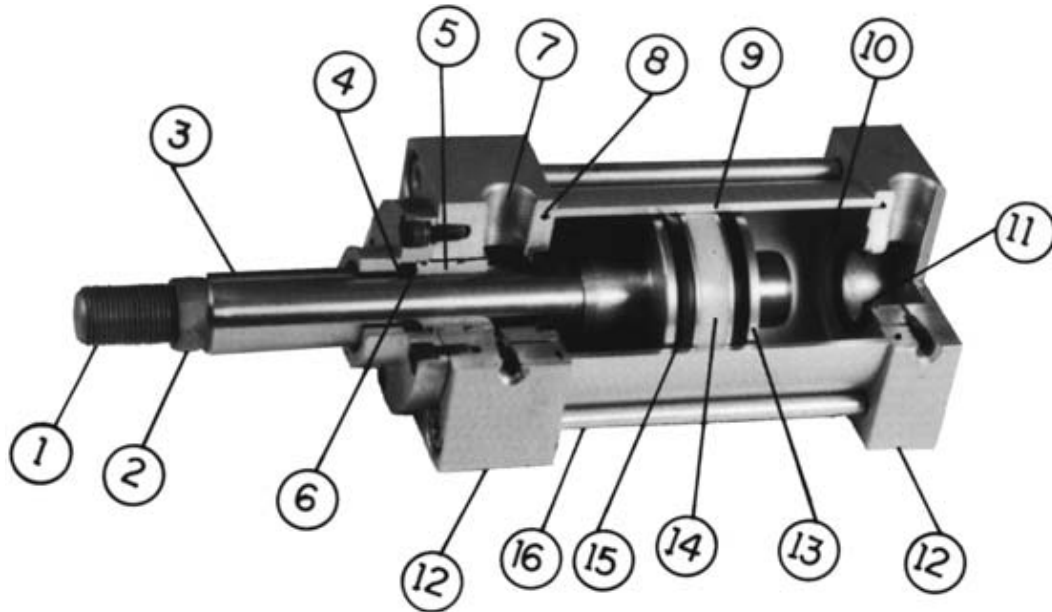


| BORE SIZE | 1½ | 2 | 2½ | | 3¼ | | 4 | | 5 | | 6 | | 8 | | |
|--------------|---------|---------|--------|---------|--------|--------|----------|--------|----------|--------|----------|----------|----------|----------|----------|
| ROD SIZE | 5/8 | 5/8 | 1 | 5/8 | 1 | 1 | 1 1/8 | 1 | 1 1/8 | 1 | 1 1/8 | 1 1/8 | 1 1/4 | 1 1/8 | 1 1/4 |
| A | 3/4 | 3/4 | 1 1/8 | 3/4 | 1 1/8 | 1 1/8 | 1 1/8 | 1 1/8 | 1 1/8 | 1 1/8 | 1 1/8 | 1 1/8 | 2 | 1 1/8 | 2 |
| C | 3/8 | 3/8 | 1/2 | 3/8 | 1/2 | 1/2 | 5/8 | 1/2 | 5/8 | 1/2 | 5/8 | 5/8 | 3/4 | 5/8 | 3/4 |
| ACROSS FLATS | 1/2 | 1/2 | 7/8 | 1/2 | 7/8 | 7/8 | 1 1/8 | 7/8 | 1 1/8 | 7/8 | 1 1/8 | 1 1/8 | 1 1/2 | 1 1/8 | 1 1/2 |
| KK | 7/16-20 | 7/16-20 | 3/4-16 | 7/16-20 | 3/4-16 | 3/4-16 | 1-14 | 3/4-16 | 1-14 | 3/4-16 | 1-14 | 1-14 | 1 1/4-12 | 1-14 | 1 1/4-12 |
| KK-1 | 1/2-20 | 1/2-20 | 7/8-14 | 1/2-20 | 7/8-14 | 7/8-14 | 1 1/4-12 | 7/8-14 | 1 1/4-12 | 7/8-14 | 1 1/4-12 | 1 1/4-12 | 1 1/2-12 | 1 1/4-12 | 1 1/2-12 |
| KK-2 | 5/8-18 | 5/8-18 | 1-14 | 5/8-18 | 1-14 | 1-14 | 1 3/8-12 | 1-14 | 1 3/8-12 | 1-14 | 1 3/8-12 | 1 3/8-12 | 1 3/4-12 | 1 3/8-12 | 1 3/4-12 |

ECA SERIES

250 PSI NFPA INTERCHANGEABLE CYLINDERS.

MACHINE TOOL QUALITY CYLINDER MADE TO COMPETE WITH DIECAST CYLINDERS.
SAME ORDERING PROCEDURE AS "A" USE "ECA" SERIES COLUMN.



1. **Studded Rod End** — Roll threaded rod end eliminates stress points. The studded rod end is standard on the 'SM' style rod end for all cylinders thru 5" bore.
2. **Wrench Flats** — Four wrench flats are provided on the 'SM' style rod end for field installation convenience.
3. **Piston Rod** — High strength steel combined with a ground and hard chrome plated surface provides a scratch resistant piston rod that reduces friction and increases rod seal life.
4. **Rod Wiper** — Polyurethane, lip type rod wiper, designed to protect the piston rod, bearing, rod packing and interior of the cylinder is standard.
5. **Removable Rod Bearing*** — Bronze rod bearing provides maximum support and long life – removable without disturbing tie rods.
6. **Rod Seal** — Polyurethane flexible lip type rod seal is wear compensating and has long life.
7. **Ports** — Large, unrestricted ports permit maximum flow with minimum pressure drop. Heads may be rotated independently at 90° intervals for convenient port location.
8. **Tube Seals** — Positive sealing *synthetic "O" rings* (not gaskets).
9. **Tube** — Hard coated bore, extruded aluminum for light weight, high strength, with excellent corrosion-resisting characteristics.
10. **Generous Breakaway Groove** — Assures rapid starts.
11. **Cushions** — Synthetic rubber type seals provide a positive, leakproof cushion. This, together with an adjustable cushion needle valve, offers an extremely accurate means of obtaining the most efficient cushion characteristics for a variety of loads and speeds. Cushion noses are teflon coated to insure maximum seal life.
12. **Heads and Caps** — Anodized aluminum alloy accurately machined to assure perfect alignment of piston rod bearing, piston rod, piston and tube.
13. **Piston** — Aluminum alloy piston is pilot fitted to piston rod and positively locked – see cut away.
14. **Piston Bearing** — A low friction nylon band provides an excellent bearing surface with long life and score resistant characteristics.
15. **Piston Seals** — Flexible lip type piston seals provide positive sealing, low friction and long life.
16. **Tie Rods** — Four high tensile strength tie rods. Bright zinc plated for environmental protection. Thread lengths are closely controlled to eliminate unsightly dirt collecting in exposed threads.

ECA Series available up to and including 5" bore
1" dia rod max
Maximum stroke 120"

*The standard rod bearing is bronze.

In addition to the above, all steel parts are bright zinc plated. All aluminum parts are anodized to offer protection against hostile environments. For severely corrosive environments, an additional protection may be had by ordering a minimal cost polyurethane coating.

CHICAGO CONTROLS CORPORATION cylinders are designed to conform to JIC-NFPA standards. The dimensioning and identification of the cylinders in this Bulletin are in accordance with the NFPA recommended dimension code for fluid power cylinders. CCC reserves change rights without notice.

TEMPERATURE RANGE: -30°F TO 220°F. For a higher temperature range, VITON seals are available.