

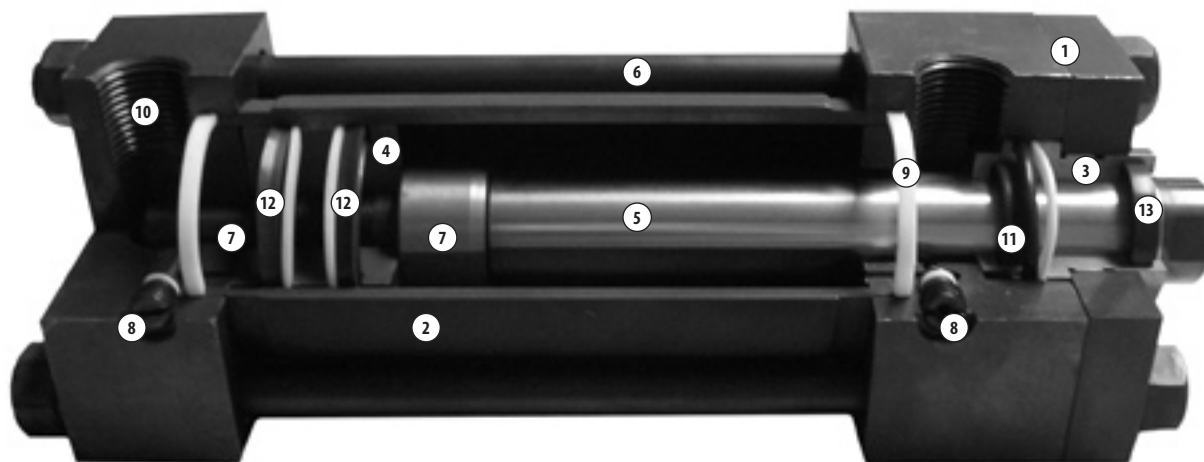
# HEAVY DUTY HYDRAULIC

## Series H6

3000 PSI RATED

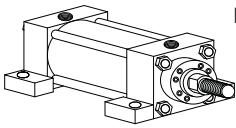
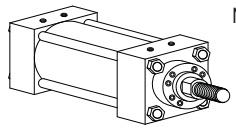
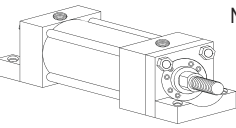
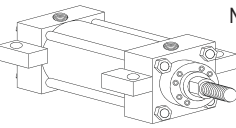


## H6 FEATURES

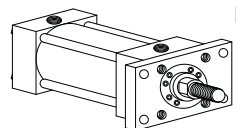
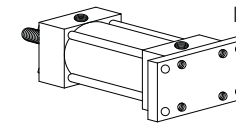
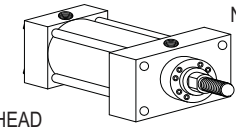
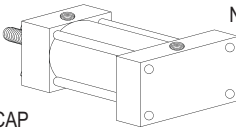
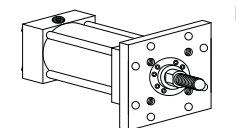
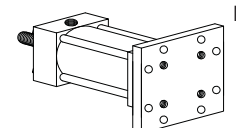
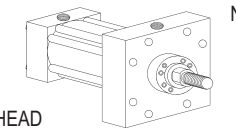
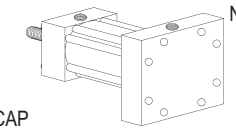
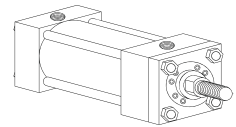
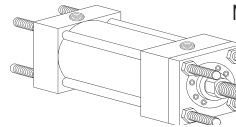
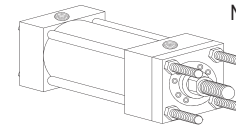
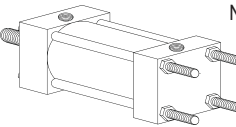


- 1. HEAD/CAP-** Precision machined steel head and cap provide close concentricity and accurate alignment between piston, tube, piston rod and rod bearing.
- 2. CYLINDER BARREL-** Damage resistant, heavy wall steel tubing, honed to an 8 to 16 micro finish for low frictional drag and maximum seal and piston bearing life.
- 3. ROD CARTRIDGE-** Extra long, high strength bronze gland provides maximum bearing support and wear resistance. With certain exceptions, a removable retainer allows for gland removal without cylinder disassembly.
- 4. PISTON-** One piece fine grained cast iron piston provides maximum strength and protection against shock loads. Anaerobic adhesive is used to permanently lock and seal the piston to the rod.
- 5. PISTON ROD-** High strength damage resistant piston rod provides 100,000 PSI minimum yield material in 5/8" through 4 1/2" diameters. Larger diameters vary between 50,000 and 75,000 PSI minimum yield material. All rods are case hardened to 50-55 RC and hard chrome plated to provide maximum wear life. Stainless steel is also available.
- 6. TIE RODS-** 100,000 to 125,000 PSI minimum yield steel, pre-stressed for fatigue resistance, and roll threaded for added strength.
- 7. CUSHIONS-** Head cushion sleeve and rear cushion spear are machined to close tolerances to provide a gradual deceleration and reduced shock at end of stroke.
- 8. CUSHION NEEDLE ADJUSTMENT AND BALL CHECK-** Flush mounted captive cushion adjustment allows for safe cushion adjustment under pressure. Special tip design and fine threads allow for precise adjustment over a broad range of operations. Cushion ball check allows for fast break-away under full power.
- 9. TUBE END SEALS-** Extrusion resistant Teflon<sup>®</sup> material is compatible with virtually all fluids and can operate in temperatures to 500°F.
- 10. PORTS-** NPT ports are standard and can be rotated to any 90 degree position in relation to each other and the mounting. SAE ports are optional at no extra charge.
- 11. ROD SEAL-** Twin lip urethane rod seal is pressure energized and wear compensating for long, leak-free service. Viton<sup>®</sup> seals are optional.
- 12. PISTON SEALS-** Pressure energized nitrile U-cups, with Teflon<sup>®</sup> back-up rings are standard. Step cut cast iron rings and Viton<sup>®</sup> seals are optional.
- 13. ROD WIPER-** Nitrile double lip rod wiper acts as a secondary seal while keeping dirt, dust and other contaminants out. Optional Viton<sup>®</sup> wiper is available for fluid compatibility or temperatures to 400°F. Metallic scrapers and low friction wipers are also available.

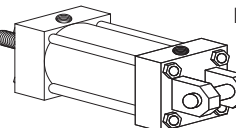
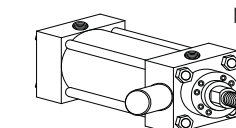
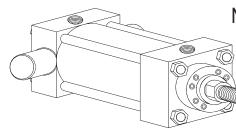
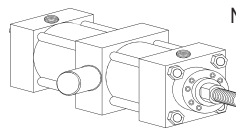
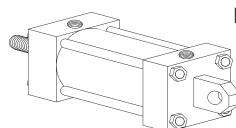
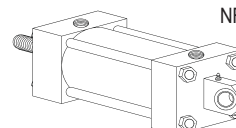
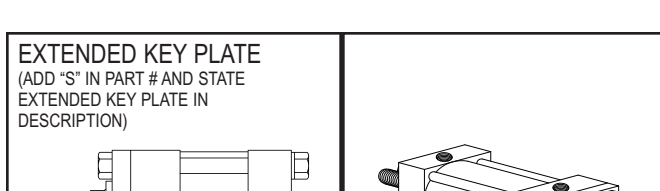
**SIDE MOUNTS**

|   |   |  |  |
|---|---|--|--|
| <p><b>STYLE A</b> PAGE <b>10-11</b><br/>NFPA-MS2</p>  <p>SIDE LUGS<br/>1 1/2-8" BORE</p> | <p><b>STYLE B</b> PAGE <b>10-11</b><br/>NFPA-MS4</p>  <p>SIDE TAPPED<br/>1 1/2-8" BORE</p> | <p><b>STYLE E</b> PAGE <b>12-13</b><br/>NFPA-MS7</p>  <p>SIDE END LUGS<br/>1 1/2-8" BORE</p> | <p><b>STYLE H</b> PAGE <b>10-11</b><br/>NFPA-MS3</p>  <p>CENTER-LINE LUGS<br/>1 1/2-8" BORE</p> |
|---|---|--|--|

**END MOUNTS**

|   |  |  |  |
|---|--|--|--|
| <p><b>STYLE F</b> PAGE <b>24-25</b><br/>NFPA-MF1</p>  <p>HEAD RECTANGULAR FLANGE<br/>1 1/2-8" BORE</p> | <p><b>STYLE R</b> PAGE <b>24-25</b><br/>NFPA-MF2</p>  <p>CAP RECTANGULAR FLANGE<br/>1 1/2-8" BORE</p>       | <p><b>STYLE G</b> PAGE <b>26-27</b><br/>NFPA-ME5</p>  <p>HEAD RECTANGULAR INTEGRAL FLANGE<br/>1 1/2-14" BORE</p> | <p><b>STYLE P</b> PAGE <b>26-27</b><br/>NFPA-ME6</p>  <p>CAP RECTANGULAR INTEGRAL FLANGE<br/>1 1/2-14" BORE</p> |
| <p><b>STYLE J</b> PAGE <b>24-25</b><br/>NFPA-MF5</p>  <p>HEAD SQUARE FLANGE<br/>1 1/2-8" BORE</p>      | <p><b>STYLE S</b> PAGE <b>24-25</b><br/>NFPA-MF6</p>  <p>CAP SQUARE FLANGE<br/>1 1/2-8" BORE</p>            | <p><b>STYLE X</b> PAGE <b>28-29</b><br/>NFPA-ME3</p>  <p>HEAD SQUARE INTEGRAL FLANGE<br/>10-20" BORE</p>         | <p><b>STYLE Z</b> PAGE <b>28-29</b><br/>NFPA-ME4</p>  <p>CAP SQUARE INTEGRAL FLANGE<br/>10-20" BORE</p>         |
| <p><b>STYLE K</b> PAGE <b>30-31</b></p>  <p>NO TIE RODS EXTENDED<br/>1 1/2-20" BORE</p>               | <p><b>STYLE L</b> PAGE <b>30-31</b><br/>NFPA-MX1</p>  <p>BOTH ENDS TIE RODS EXTENDED<br/>1 1/2-8" BORE</p> | <p><b>STYLE M</b> PAGE <b>30-31</b><br/>NFPA-MX3</p>  <p>HEAD TIE RODS EXTENDED<br/>1 1/2-8" BORE</p>           | <p><b>STYLE N</b> PAGE <b>30-31</b><br/>NFPA-MX2</p>  <p>CAP TIE RODS EXTENDED<br/>1 1/2-8" BORE</p>           |

**PIVOT MOUNTS – CLEVIS AND TRUNNION**

|  |  |   |   |
|--|--|---|---|
| <p><b>STYLE C</b> PAGE <b>16-19</b><br/>NFPA-MP1</p>  <p>FIXED CLEVIS<br/>1 1/2-20" BORE</p>  | <p><b>STYLE U</b> PAGE <b>20-23</b><br/>NFPA-MT1</p>  <p>HEAD TRUNNION<br/>1 1/2-20" BORE</p>     | <p><b>STYLE W</b> PAGE <b>20-23</b><br/>NFPA-MT2</p>  <p>CAP TRUNNION<br/>1 1/2-20" BORE</p>  | <p><b>STYLE T</b> PAGE <b>20-21</b><br/>NFPA-MT4</p>  <p>INTERMEDIATE FIXED TRUNNION<br/>1 1/2-8" BORE</p> |
| <p><b>STYLE V</b> PAGE <b>16-19</b><br/>NFPA-MP3</p>  <p>CAP FIXED EYE<br/>1 1/2-14" BORE</p> | <p><b>STYLE Q</b> PAGE <b>14-15</b><br/>NFPA-MPU3</p>  <p>SPHERICAL BEARING<br/>1 1/2-6" BORE</p> | <p><b>EXTENDED KEY PLATE</b><br/>(ADD "S" IN PART # AND STATE EXTENDED KEY PLATE IN DESCRIPTION)</p>  <p>1 1/2-8" BORE PAGE <b>32</b> PAGE <b>32-33</b></p> |   |

**YATES HEAVY DUTY HYDRAULIC CYLINDERS ARE DESIGNED TO ACCEPT YATES STANDARD MOUNTING ACCESSORIES. SEE PAGES 34-36**



# PRESSURE RATINGS

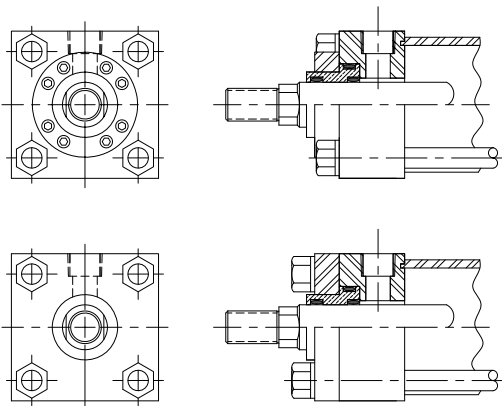
| CYLINDER BORE (INCHES) | PISTON ROD DIAMETER (INCHES) |                 |       | PRESSURE RATINGS (PSI) |                   |
|------------------------|------------------------------|-----------------|-------|------------------------|-------------------|
|                        | STANDARD                     | OVERSIZE        | 2:1   | HEAVY-DUTY SERVICE     | 4:1 SAFETY FACTOR |
| 1 1/2                  | 5/8                          |                 | 1     | 3000 *                 | 2000              |
| 2                      | 1                            |                 | 1 3/8 | 3000 *                 | 2000              |
| 2 1/2                  | 1                            | 1 3/8           | 1 3/4 | 3000 *                 | 1950              |
| 3 1/4                  | 1 3/8                        | 1 3/4           | 2     | 3000 *                 | 2100              |
| 4                      | 1 3/4                        | 2               | 2 1/2 | 3000 *                 | 1900              |
| 5                      | 2                            | 2 1/2, 3        | 3 1/2 | 3000 *                 | 1900              |
| 6                      | 2 1/2                        | 3, 3 1/2        | 4     | 3000 *                 | 2000              |
| 7                      | 3                            | 3 1/2, 4, 4 1/2 | 5     | 3000 *                 | 1850              |
| 8                      | 3 1/2                        | 4, 4 1/2, 5     | 5 1/2 | 3000 *                 | 1900              |
| 10                     | 4 1/2                        | 5, 5 1/2        | 7     | 3000 *                 |                   |
| 12                     | 5 1/2                        | 7               | 8     | 3000 *                 |                   |
| 14                     | 7                            | 8, 9            | 10    | 3000 *                 |                   |
| 16                     | 8                            | 9, 10           |       | 3000 *                 |                   |
| 18                     | 9                            | 10              |       | 3000 *                 |                   |
| 20                     | 10                           |                 |       | 3000 *                 |                   |

\* PRESSURE FOR "F" AND "R" MOUNTS (SEE PAGE 24) AND "Q" MOUNTS (SEE PAGE 14) IS LOWER

Φ 4:1 SAFETY FACTOR BASED ON FAILURE PRESSURES OF WEAKEST COMPONENT AND STANDARD ROD SIZE

**FOR HIGHER PRESSURES CONSULT FACTORY**

## H6 RETAINER INFORMATION



H6 cylinders with the following bore and rod combinations use circular retainers which permit removal of rod cartridge without disassembling cylinder.

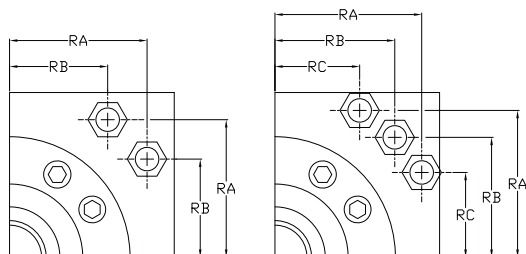
- 2 1/2" bore with 1" rod
- 3 1/4" bore with 1 3/8" rod
- 4" thru 20" bores with all rod diameters

H6 cylinders with the following bore and rod combinations use full plate retainer construction.

- 1 1/2" bore with 5/8" and 1" rods
- 2" bore with 1" and 1 3/8" rods
- 2 1/2" bore with 1 3/8" and 1 3/4" rods
- 3 1/4" bore with 1 3/4" and 2" rods

## LARGE BORE TIE ROD INFORMATION

On large bore cylinders, two or three tie rods are used at each corner of the 10, 12, 14, 16, 18 and 20 inch bore sizes. This reduces flexing of head and cap under pressure.



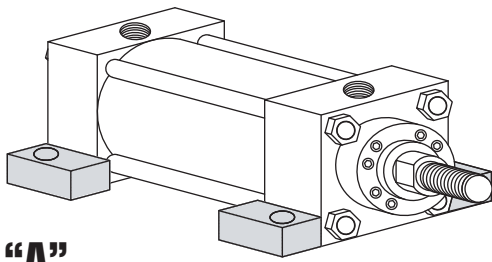
| BORE | RA     | RB    | RC    | TIE ROD  |
|------|--------|-------|-------|----------|
| 10   | 5.291  | 3.775 | NA    | 1 1/8-12 |
| 12   | 6.27   | 4.555 | NA    | 1 1/4-12 |
| 14   | 7.485  | 6.143 | 4.409 | 1 1/4-12 |
| 16   | 8.086  | 6.093 | NA    | 1 1/2-12 |
| 18   | 9.589  | 7.91  | 5.761 | 1 1/2-12 |
| 20   | 10.437 | 8.75  | 6.649 | 1 1/2-12 |

# HOW TO ORDER H6 CYLINDERS

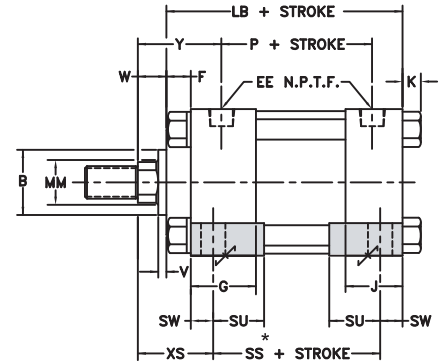
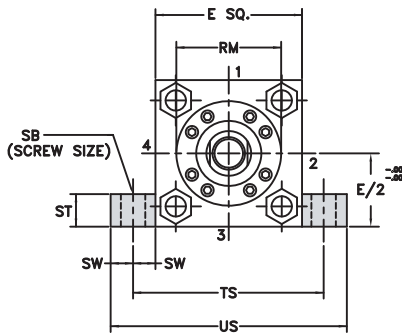
| Feature                           | Description                            | Page #           | Symbol | H | 6 | A | D | N | 3 | . | 2 | N | - | 4 | 8 | . | 2 | 5 | S | 1 | . | 3 | 8 | T | 2 | S | 1 | 1 |  |
|-----------------------------------|--|------------------|--------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--|
| <b>Series</b>                     | Heavy Duty Hydraulic                   | 8                | H6     | ← |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| <b>Mounting Style</b>             | Side lugs (MS2)                        | 7                | A      | ← |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
|                                   | Side tapped (MS4)                      |                  | B      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
|                                   | Side end lugs (MS7)                    |                  | E      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
|                                   | Center-line lugs (MS3)                 |                  | H      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
|                                   | Head rectangular flange (MF1)          |                  | F      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
|                                   | Cap rectangular flange (MF2)           |                  | R      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
|                                   | Head square flange (MF5)               |                  | J      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
|                                   | Cap square flange (MF6)                |                  | S      | ← |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
|                                   | Head rectangular integral flange (ME5) |                  | G      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
|                                   | Cap rectangular integral flange (ME6)  |                  | P      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
|                                   | Head square integral flange (ME3)      |                  | X      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
|                                   | Cap square integral flange (ME4)       |                  | Z      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
|                                   | No tie rods extended (MX0)             |                  | K      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
|                                   | Both ends tie rods extended (MX1)      |                  | L      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
|                                   | Head tie rods extended (MX3)           |                  | M      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
|                                   | Cap tie rods extended (MX2)            |                  | N      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
|                                   | Cap clevis (MP1)                       |                  | C      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
|                                   | Cap eye (MP3)                          |                  | V      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
|                                   | Spherical bearing (MPU3)               |                  | Q      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
|                                   | Head trunnion (MT1)                    |                  | U      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| Cap trunnion (MT2)                |  | W                |        |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| Intermediate fixed trunnion (MT4) |  | T                |        |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| <b>Double Rod</b>                 | Double rod design if needed            | 32-33            | D      | ← |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| <b>Cushions</b>                   | No cushions                            |                  | N      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
|                                   | Cushion head end only                  |                  | R      | ← |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
|                                   | Cushion cap end only                   |                  | C      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
|                                   | Cushioned both ends                    |                  | B      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| <b>Bore size</b>                  | Specify in inches                      | 106-107          |        | ← |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| <b>Piston seals</b>               | Nitrile U-cups                         | 120              | N      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
|                                   | Cast iron rings                        |                  | C      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
|                                   | Poly seals                             |                  | P      | ← |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
|                                   | Viton® seals                           |                  | V      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
|                                   | Fluorocarbon poly seals                |                  | F      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| Other (Specify)                   |  | X                |        |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| <b>Stroke</b>                     | Specify in inches with 2 place decimal | 106-107          |        | ← |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| <b>Ports</b>                      | NPTF                                   |                  | N      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
|                                   | SAE                                    |                  | S      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
|                                   | Welded coupler                         |                  | W      | ← |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
|                                   | Other (Specify)                        |                  | X      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| <b>Rod dia.</b>                   | Specify in inches                      | 106-107          |        | ← |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| <b>Rod Seals</b>                  | Twin lip hydraulic seal (standard)     | 120              | T      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
|                                   | Poly seals                             |                  | P      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
|                                   | Viton® seals                           |                  | V      | ← |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
|                                   | Fluorocarbon poly seals                |                  | F      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
|                                   | Other (Specify)                        |                  | X      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| <b>Rod End</b>                    | Standard male                          | 37               | 2      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
|                                   | Standard female                        |                  | 4      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
|                                   | Intermediate male                      |                  | 1      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
|                                   | Long female                            |                  | 3      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
|                                   | Extended standard male                 |                  | 5      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
|                                   | Extended intermediate male             |                  | 6      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
|                                   | Plain rod end                          |                  | 7      | ← |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
|                                   | Male full thread                       |                  | 8      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
|                                   | Male rod coupling                      |                  | 9      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
|                                   | Special male (specify)                 |                  | M      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
|                                   | Special female (specify)               |                  | F      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
|                                   | Special stud (specify)                 |                  | S      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
|                                   | Special other (specify)                |                  | X      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
|                                   | <b>Specials Specify</b>                | High load piston | 120    | S | ← |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
|                                   |  | Stop tube        |        |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
|                                   | Proximity switches                     |                  |        |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
|                                   | Non-standard mount                     |                  |        |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
|                                   | Stainless steel rod                    |                  |        |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
|                                   | Extra rod extension                    |                  |        |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
|                                   | Many more options available            |                  |        |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| <b>Head port</b>                  | specify location 1-4                   |                  | 1-4    | ← |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| <b>Cap port</b>                   | specify location 1-5                   |                  | 1-5    | ← |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |



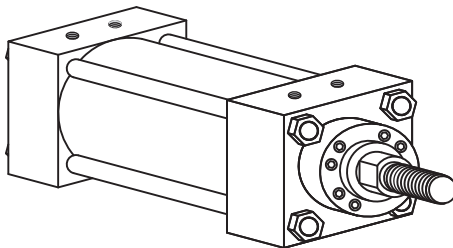
### SIDE LUGS MOUNT



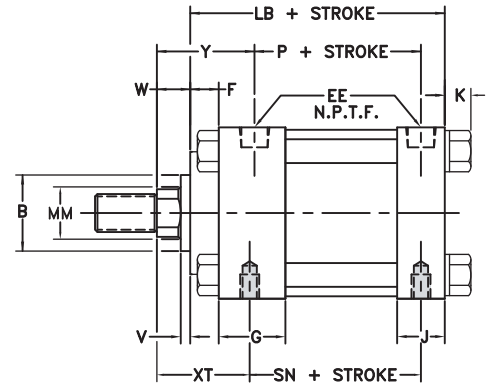
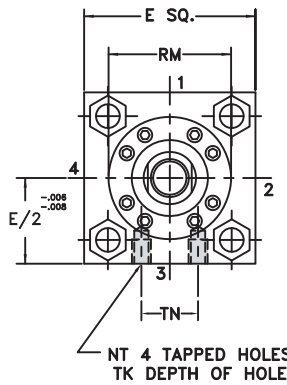
**“A”**  
YATES STYLE A  
NFPA-MS2



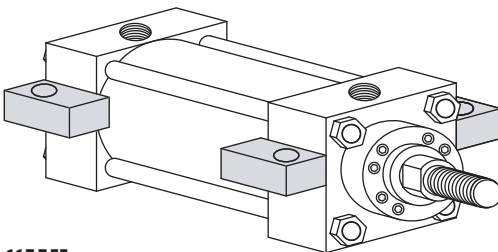
### SIDE TAPPED MOUNT



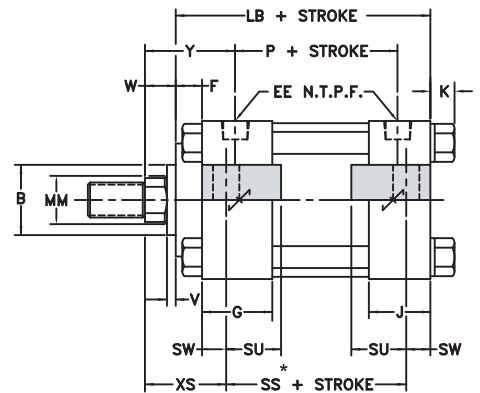
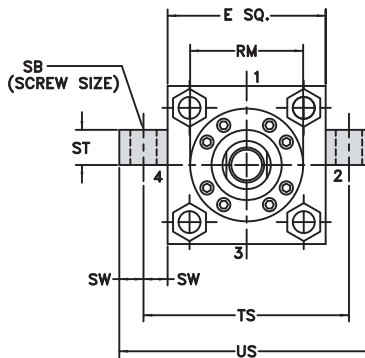
**“B”**  
YATES STYLE B  
NFPA-MS4



### CENTER-LINE LUGS MOUNT



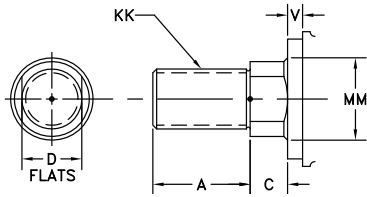
**“H”**  
YATES STYLE H  
NFPA-MS3



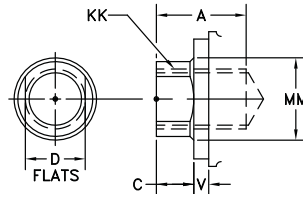
- † HEAD END PORTS SHALLOW TAPPED
- CONSULT FACTORY FOR AVAILABILITY OF SAE PORT OPTION
- Δ (4) SPANNER HOLES USED INSTEAD OF FLATS ON 4" DIA. AND LARGER RODS
- § THESE CYLINDERS HAVE FULL PLATE RETAINERS. USE "E" DIMENSION INSTEAD OF "RM" - SEE PAGE 8
- ‡ B DIMENSION TOLERANCE -.001 / -.003
- \* SS DIMENSION CHANGES ON DOUBLE ROD CYLINDERS - SEE PAGE 33 FOR DETAILS
- NOTE:** SUGGESTED THAT THESE MOUNTS BE KEYPED OR PINNED TO PREVENT SHIFTING - SEE PAGE 32
- ⊕ CONSULT FACTORY FOR DIMENSIONS.

# STANDARD ROD ENDS

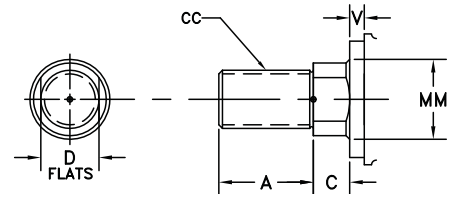
**#2 STD MALE**  
NFPA-SM



**#4 STD FEMALE**  
NFPA-SF



**#1 MALE**  
NFPA-IM

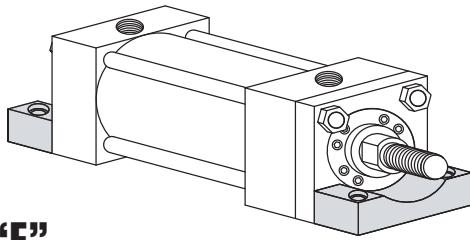


| BORE  | SAE   |       |      |     |       |       |        |         |       |       |        |       |         |        |       | ADD STROKE |       |       |       |
|-------|-------|-------|------|-----|-------|-------|--------|---------|-------|-------|--------|-------|---------|--------|-------|------------|-------|-------|-------|
|       | E     | EE    | OPT. | F   | G     | J     | K      | NT      | SB    | ST    | SU     | SW    | TN      | TS     | US    | LB         | P     | SN    | SS*   |
| 1 1/2 | 2 1/2 | 1/2   | 10   | 3/8 | 1 3/4 | 1 1/2 | 3/8    | 3/8-16  | 3/8   | 1/2   | 15/16  | 3/8   | 3/4     | 3 1/4  | 4     | 5          | 3     | 2 7/8 | 3 7/8 |
| 2     | 3     | 1/2   | 10   | 5/8 | 1 3/4 | 1 1/2 | 7/16   | 1/2-13  | 1/2   | 3/4   | 1 1/4  | 1/2   | 15/16   | 4      | 5     | 5 1/4      | 3     | 2 7/8 | 3 5/8 |
| 2 1/2 | 3 1/2 | 1/2   | 10   | 5/8 | 1 3/4 | 1 1/2 | 7/16   | 5/8-11  | 3/4   | 1     | 1 9/16 | 11/16 | 1 5/16  | 4 7/8  | 6 1/4 | 5 3/8      | 3 1/8 | 3     | 3 3/8 |
| 3 1/4 | 4 1/2 | 3/4   | 12   | 3/4 | 2     | 1 3/4 | 9/16   | 3/4-10  | 3/4   | 1     | 1 9/16 | 11/16 | 1 1/2   | 5 7/8  | 7 1/4 | 6 1/4      | 3 5/8 | 3 1/2 | 4 1/8 |
| 4     | 5     | 3/4   | 12   | 7/8 | 2     | 1 3/4 | 9/16   | 1-8     | 1     | 1 1/4 | 2      | 7/8   | 2 1/16  | 6 3/4  | 8 1/2 | 6 5/8      | 3 7/8 | 3 3/4 | 4     |
| 5     | 6 1/2 | 3/4   | 12   | 7/8 | 2     | 1 3/4 | 3/4    | 1-8     | 1     | 1 1/4 | 2      | 7/8   | 2 15/16 | 8 1/4  | 10    | 7 1/8      | 4 3/8 | 4 1/4 | 4 1/2 |
| 6     | 7 1/2 | 1     | 16   | 1   | 2 1/4 | 2 1/4 | 7/8    | 1 1/4-7 | 1 1/4 | 1 1/2 | 2 1/2  | 1 1/8 | 3 5/16  | 9 3/4  | 12    | 8 3/8      | 5     | 5 1/8 | 5 1/8 |
| 7     | 8 1/2 | 1 1/4 | 20   | 1   | 2 3/4 | 2 3/4 | 1      | 1 1/2-6 | 1 1/2 | 1 3/4 | 2 7/8  | 1 3/8 | 3 3/4   | 11 1/4 | 14    | 9 1/2      | 5 1/2 | 5 7/8 | 5 3/4 |
| 8     | 9 1/2 | 1 1/2 | 24   | 1   | 3     | 3     | 1 1/16 | 1 1/2-6 | 1 1/2 | 1 3/4 | 2 7/8  | 1 3/8 | 4 1/4   | 12 1/4 | 15    | 10 1/2     | 6 1/4 | 6 5/8 | 6 3/4 |

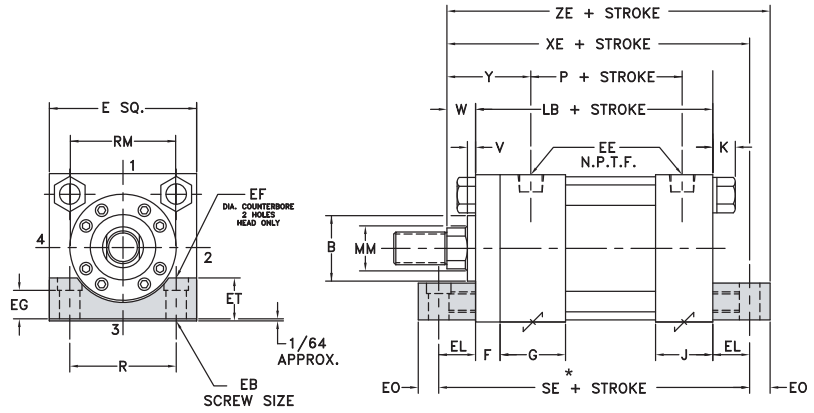
| BORE  | ROD DIA.<br>MM | THREAD   |          | ROD EXTENSIONS AND PILOT DIMENSIONS |       |       |       |       |       |        |        |         | ENVELOPE AND MOUNTING DIMENSIONS |         |       |
|-------|----------------|----------|----------|-------------------------------------|-------|-------|-------|-------|-------|--------|--------|---------|----------------------------------|---------|-------|
|       |                | KK       | CC       | A                                   | B ±   | C     | D     | V     | W     | TK     | RM     | XS      | XT                               | Y       |       |
| 1 1/2 | 5/8            | 7/16-20  | 1/2-20   | 3/4                                 | 1 1/8 | 3/8   | 1/2   | 1/4   | 5/8   | 9/16   | §      | 1 3/8   | 2                                | 1 15/16 |       |
|       | 1 †            | 3/4-16   | 7/8-14   | 1 1/8                               | 1 1/2 | 1/2   | 7/8   | 1/2   | 1     | Φ      | §      | 1 3/4   | Φ                                | 2 5/16  |       |
| 2     | 1              | 3/4-16   | 7/8-14   | 1 1/8                               | 1 1/2 | 1/2   | 7/8   | 1/4   | 3/4   | 1/2    | §      | 1 7/8   | 2 3/8                            | 2 5/16  |       |
|       | 1 3/8 †        | 1-14     | 1 1/4-12 | 1 5/8                               | 2     | 5/8   | 1 1/8 | 3/8   | 1     | Φ      | §      | 2 1/8   | Φ                                | 2 9/16  |       |
| 2 1/2 | 1              | 3/4-16   | 7/8-14   | 1 1/8                               | 1 1/2 | 1/2   | 7/8   | 1/4   | 3/4   | 13/16  | 2 1/2  | 2 1/16  | 2 3/8                            | 2 5/16  |       |
|       | 1 3/8 †        | 1-14     | 1 1/4-12 | 1 5/8                               | 2     | 5/8   | 1 1/8 | 3/8   | 1     | Φ      | §      | 2 5/16  | Φ                                | 2 9/16  |       |
|       | 1 3/4 †        | 1 1/4-12 | 1 1/2-12 | 2                                   | 2 3/8 | 3/4   | 1 1/2 | 1/2   | 1 1/4 | Φ      | §      | 2 9/16  | Φ                                | 2 13/16 |       |
| 3 1/4 | 1 3/8          | 1-14     | 1 1/4-12 | 1 5/8                               | 2     | 5/8   | 1 1/8 | 1/4   | 7/8   | 3/4    | 3 7/32 | 2 5/16  | 2 3/4                            | 2 11/16 |       |
|       | 1 3/4          | 1 1/4-12 | 1 1/2-12 | 2                                   | 2 3/8 | 3/4   | 1 1/2 | 3/8   | 1 1/8 | 3/4    | §      | 2 9/16  | 3                                | 2 15/16 |       |
|       | 2 †            | 1 1/2-12 | 1 3/4-12 | 2 1/4                               | 2 5/8 | 7/8   | 1 3/4 | 3/8   | 1 1/4 | Φ      | §      | 2 11/16 | Φ                                | 3 1/16  |       |
| 4     | 1 3/4          | 1 1/4-12 | 1 1/2-12 | 2                                   | 2 3/8 | 3/4   | 1 1/2 | 1/4   | 1     | 1      | 3 7/8  | 2 3/4   | 3                                | 2 15/16 |       |
|       | 2              | 1 1/2-12 | 1 3/4-12 | 2 1/4                               | 2 5/8 | 7/8   | 1 3/4 | 1/4   | 1 1/8 | Φ      | 4      | 2 7/8   | Φ                                | 3 1/16  |       |
|       | 2 1/2          | 1 7/8-12 | 2 1/4-12 | 3                                   | 3 1/8 | 1     | 2 1/8 | 3/8   | 1 3/8 | Φ      | 4 7/16 | 3 1/8   | Φ                                | 3 5/16  |       |
| 5     | 2              | 1 1/2-12 | 1 3/4-12 | 2 1/4                               | 2 5/8 | 7/8   | 1 3/4 | 1/4   | 1 1/8 | 1 1/8  | 4      | 2 7/8   | 3 1/8                            | 3 1/16  |       |
|       | 2 1/2          | 1 7/8-12 | 2 1/4-12 | 3                                   | 3 1/8 | 1     | 2 1/8 | 3/8   | 1 3/8 | 1 1/8  | 4 7/16 | 3 1/8   | 3 3/8                            | 3 5/16  |       |
|       | 3              | 2 1/4-12 | 2 3/4-12 | 3 1/2                               | 3 3/4 | 1     | 2 5/8 | 3/8   | 1 3/8 | 1 1/8  | 5 1/4  | 3 1/8   | 3 3/8                            | 3 5/16  |       |
|       | 3 1/2          | 2 1/2-12 | 3 1/4-12 | 3 1/2                               | 4 1/4 | 1     | 3     | 3/8   | 1 3/8 | Φ      | 5 5/8  | 3 1/8   | Φ                                | 3 5/16  |       |
| 6     | 2 1/2          | 1 7/8-12 | 2 1/4-12 | 3                                   | 3 1/8 | 1     | 2 1/8 | 1/4   | 1 1/4 | 1 5/16 | 4 7/16 | 3 3/8   | 3 1/2                            | 3 7/16  |       |
|       | 3              | 2 1/4-12 | 2 3/4-12 | 3 1/2                               | 3 3/4 | 1     | 2 5/8 | 1/4   | 1 1/4 | 1 5/16 | 5 1/4  | 3 3/8   | 3 1/2                            | 3 7/16  |       |
|       | 3 1/2          | 2 1/2-12 | 3 1/4-12 | 3 1/2                               | 4 1/4 | 1     | 3     | 1/4   | 1 1/4 | 1 5/16 | 5 5/8  | 3 3/8   | 3 1/2                            | 3 7/16  |       |
|       | 4              | 3-12     | 3 3/4-12 | 4                                   | 4 3/4 | 1     | Δ     | 1/4   | 1 1/4 | Φ      | 6 7/16 | 3 3/8   | Φ                                | 3 7/16  |       |
|       | 7              | 3        | 2 1/4-12 | 2 3/4-12                            | 3 1/2 | 3 3/4 | 1     | 2 5/8 | 1/4   | 1 1/4  | 1 1/8  | 5 1/4   | 3 5/8                            | 3 13/16 | 3 3/4 |
| 7     | 3 1/2          | 2 1/2-12 | 3 1/4-12 | 3 1/2                               | 4 1/4 | 1     | 3     | 1/4   | 1 1/4 | 1 1/8  | 5 5/8  | 3 5/8   | 3 13/16                          | 3 3/4   |       |
|       | 4              | 3-12     | 3 3/4-12 | 4                                   | 4 3/4 | 1     | Δ     | 1/4   | 1 1/4 | 1 1/8  | 6 7/16 | 3 5/8   | 3 13/16                          | 3 3/4   |       |
|       | 4 1/2          | 3 1/4-12 | 4 1/4-12 | 4 1/2                               | 5 1/4 | 1     | Δ     | 1/4   | 1 1/4 | Φ      | 7 1/8  | 3 5/8   | Φ                                | 3 3/4   |       |
|       | 5              | 3 1/2-12 | 4 3/4-12 | 5                                   | 5 3/4 | 1     | Δ     | 1/4   | 1 1/4 | Φ      | 7 5/8  | 3 5/8   | Φ                                | 3 3/4   |       |
|       | 8              | 3 1/2    | 2 1/2-12 | 3 1/4-12                            | 3 1/2 | 4 1/4 | 1     | 3     | 1/4   | 1 1/4  | 1 9/16 | 5 5/8   | 3 5/8                            | 3 15/16 | 3 7/8 |
| 8     | 4              | 3-12     | 3 3/4-12 | 4                                   | 4 3/4 | 1     | Δ     | 1/4   | 1 1/4 | 1 9/16 | 6 7/16 | 3 5/8   | 3 15/16                          | 3 7/8   |       |
|       | 4 1/2          | 3 1/4-12 | 4 1/4-12 | 4 1/2                               | 5 1/4 | 1     | Δ     | 1/4   | 1 1/4 | 1 9/16 | 7 1/8  | 3 5/8   | 3 15/16                          | 3 7/8   |       |
|       | 5              | 3 1/2-12 | 4 3/4-12 | 5                                   | 5 3/4 | 1     | Δ     | 1/4   | 1 1/4 | 1 9/16 | 7 5/8  | 3 5/8   | 3 15/16                          | 3 7/8   |       |
|       | 5 1/2          | 4-12     | 5 1/4-12 | 5 1/2                               | 6 1/4 | 1     | Δ     | 1/4   | 1 1/4 | Φ      | 8 3/8  | 3 5/8   | Φ                                | 3 7/8   |       |



# SIDE END LUGS MOUNT



**“E”**  
YATES STYLE E  
NFPA-MS7



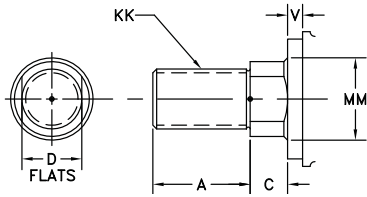
- † HEAD END PORTS SHALLOW TAPPED
- CONSULT FACTORY FOR AVAILABILITY OF SAE PORT OPTION
- Δ (4) SPANNER HOLES USED INSTEAD OF FLATS ON 4" DIA. AND LARGER RODS
- ‡ B DIMENSION TOLERANCE -.001/ -.003
- \* SE, XE & ZE DIMENSION CHANGES ON DOUBLE ROD CYLINDERS – SEE PAGE 33 FOR DETAILS.

**NOTE:** SUGGESTED THAT THESE MOUNTS BE KEYPED OR PINNED TO PREVENT SHIFTING - SEE PAGE 32  
**NOTE:** BOTTOMS OF HEAD AND CAP ARE MOUNTING SURFACES. LUGS HOLD CYLINDER AGAINST MOUNTING SURFACE.  
**NOTE:** CHECK FOR CLEARANCE BETWEEN FRONT MOUNTING LUG AND ROD END ATTACHMENT. SPECIFY LONGER THAN STANDARD "W" DIMENSION IF NECESSARY.

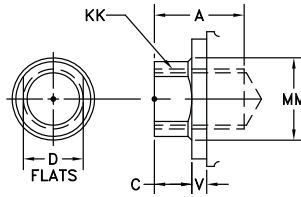


# STANDARD ROD ENDS

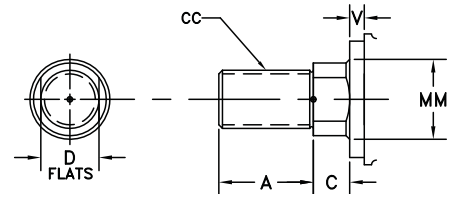
**#2 STD MALE**  
NFPA-SM



**#4 STD FEMALE**  
NFPA-SF



**#1 MALE**  
NFPA-IM

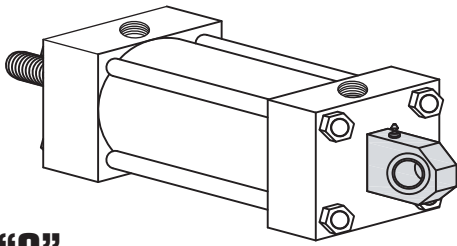


| BORE  | SAE   |       |      |     |       |       |        |       |        |        |         |       |       |      | ADD STROKE |       |        |
|-------|-------|-------|------|-----|-------|-------|--------|-------|--------|--------|---------|-------|-------|------|------------|-------|--------|
|       | E     | EE    | OPT. | F   | G     | J     | K      | EB    | EF     | EG     | EL      | EO    | ET    | R    | LB         | P     | SE *   |
| 1 1/2 | 2 1/2 | 1/2   | 10   | 3/8 | 1 3/4 | 1 1/2 | 3/8    | 3/8   | 5/8    | 11/16  | 7/8     | 3/8   | 7/8   | 1.63 | 5          | 3     | 6 3/4  |
| 2     | 3     | 1/2   | 10   | 5/8 | 1 3/4 | 1 1/2 | 7/16   | 1/2   | 13/16  | 3/4    | 15/16   | 1/2   | 15/16 | 2.05 | 5 1/4      | 3     | 7 1/8  |
| 2 1/2 | 3 1/2 | 1/2   | 10   | 5/8 | 1 3/4 | 1 1/2 | 7/16   | 1/2   | 13/16  | 3/4    | 15/16   | 1/2   | 15/16 | 2.55 | 5 3/8      | 3 1/8 | 7 1/4  |
| 3 1/4 | 4 1/2 | 3/4   | 12   | 3/4 | 2     | 1 3/4 | 9/16   | 5/8   | 1      | 1 1/16 | 1 1/8   | 5/8   | 1 1/4 | 3.25 | 6 1/4      | 3 5/8 | 8 1/2  |
| 4     | 5     | 3/4   | 12   | 7/8 | 2     | 1 3/4 | 9/16   | 5/8   | 1      | 15/16  | 1 1/8   | 5/8   | 1 1/4 | 3.82 | 6 5/8      | 3 7/8 | 8 7/8  |
| 5     | 6 1/2 | 3/4   | 12   | 7/8 | 2     | 1 3/4 | 3/4    | 7/8   | 1 3/8  | 1 1/4  | 1 1/2   | 3/4   | 1 1/2 | 4.95 | 7 1/8      | 4 3/8 | 10 1/8 |
| 6     | 7 1/2 | 1     | 16   | 1   | 2 1/4 | 2 1/4 | 7/8    | 1     | 1 5/8  | 1 1/2  | 1 11/16 | 7/8   | 1 3/4 | 5.73 | 8 3/8      | 5     | 11 3/4 |
| 7     | 8 1/2 | 1 1/4 | 20   | 1   | 2 3/4 | 2 3/4 | 1      | 1 1/8 | 1 5/8  | 1 9/16 | 1 13/16 | 1     | 2     | 6.58 | 9 1/2      | 5 1/2 | 13 1/8 |
| 8     | 9 1/2 | 1 1/2 | 24   | 1   | 3     | 3     | 1 1/16 | 1 1/4 | 2 3/32 | 1 3/4  | 2       | 1 1/8 | 2     | 7.50 | 10 1/2     | 6 1/4 | 14 1/2 |

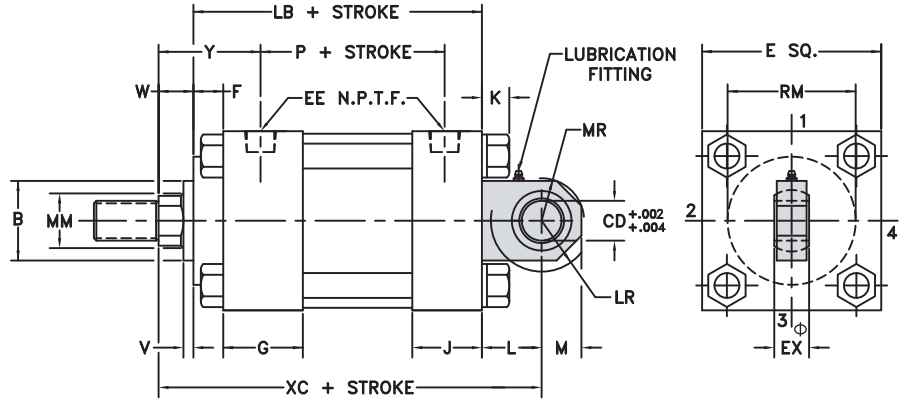
| BORE  | ROD DIA. | THREAD   |          | ROD EXTENSIONS AND PILOT DIMENSIONS |       |     |       |     |         |       |         | ADD STROKE |  |
|-------|----------|----------|----------|-------------------------------------|-------|-----|-------|-----|---------|-------|---------|------------|--|
|       | MM       | KK       | CC       | A                                   | B ‡   | C   | D     | V   | Y       | W     | XE*     | ZE*        |  |
| 1 1/2 | 5/8      | 7/16-20  | 1/2-20   | 3/4                                 | 1 1/8 | 3/8 | 1/2   | 1/4 | 1 15/16 | 5/8   | 6 1/2   | 6 7/8      |  |
|       | 1 †      | 3/4-16   | 7/8-14   | 1 1/8                               | 1 1/2 | 1/2 | 7/8   | 1/2 | 2 5/16  | 1     | 6 7/8   | 7 1/4      |  |
| 2     | 1        | 3/4-16   | 7/8-14   | 1 1/8                               | 1 1/2 | 1/2 | 7/8   | 1/4 | 2 5/16  | 3/4   | 6 15/16 | 7 7/16     |  |
|       | 1 3/8 †  | 1-14     | 1 1/4-12 | 1 5/8                               | 2     | 5/8 | 1 1/8 | 3/8 | 2 9/16  | 1     | 7 3/16  | 7 11/16    |  |
| 2 1/2 | 1        | 3/4-16   | 7/8-14   | 1 1/8                               | 1 1/2 | 1/2 | 7/8   | 1/4 | 2 5/16  | 3/4   | 7 1/16  | 7 9/16     |  |
|       | 1 3/8 †  | 1-14     | 1 1/4-12 | 1 5/8                               | 2     | 5/8 | 1 1/8 | 3/8 | 2 9/16  | 1     | 7 5/16  | 7 13/16    |  |
|       | 1 3/4 †  | 1 1/4-12 | 1 1/2-12 | 2                                   | 2 3/8 | 3/4 | 1 1/2 | 1/2 | 2 13/16 | 1 1/4 | 7 9/16  | 8 1/16     |  |
| 3 1/4 | 1 3/8    | 1-14     | 1 1/4-12 | 1 5/8                               | 2     | 5/8 | 1 1/8 | 1/4 | 2 11/16 | 7/8   | 8 1/4   | 8 7/8      |  |
|       | 1 3/4    | 1 1/4-12 | 1 1/2-12 | 2                                   | 2 3/8 | 3/4 | 1 1/2 | 3/8 | 2 15/16 | 1 1/8 | 8 1/2   | 9 1/8      |  |
|       | 2 †      | 1 1/2-12 | 1 3/4-12 | 2 1/4                               | 2 5/8 | 7/8 | 1 3/4 | 3/8 | 3 1/16  | 1 1/4 | 8 5/8   | 9 1/4      |  |
| 4     | 1 3/4    | 1 1/4-12 | 1 1/2-12 | 2                                   | 2 3/8 | 3/4 | 1 1/2 | 1/4 | 2 15/16 | 1     | 8 3/4   | 9 3/8      |  |
|       | 2        | 1 1/2-12 | 1 3/4-12 | 2 1/4                               | 2 5/8 | 7/8 | 1 3/4 | 1/4 | 3 1/16  | 1 1/8 | 8 7/8   | 9 1/2      |  |
|       | 2 1/2    | 1 7/8-12 | 2 1/4-12 | 3                                   | 3 1/8 | 1   | 2 1/8 | 3/8 | 3 5/16  | 1 3/8 | 9 1/8   | 9 3/4      |  |
| 5     | 2        | 1 1/2-12 | 1 3/4-12 | 2 1/4                               | 2 5/8 | 7/8 | 1 3/4 | 1/4 | 3 1/16  | 1 1/8 | 9 3/4   | 10 1/2     |  |
|       | 2 1/2    | 1 7/8-12 | 2 1/4-12 | 3                                   | 3 1/8 | 1   | 2 1/8 | 3/8 | 3 5/16  | 1 3/8 | 10      | 10 3/4     |  |
|       | 3        | 2 1/4-12 | 2 3/4-12 | 3 1/2                               | 3 3/4 | 1   | 2 5/8 | 3/8 | 3 5/16  | 1 3/8 | 10      | 10 3/4     |  |
| 6     | 3 1/2    | 2 1/2-12 | 3 1/4-12 | 3 1/2                               | 4 1/4 | 1   | 3     | 3/8 | 3 5/16  | 1 3/8 | 10      | 10 3/4     |  |
|       | 2 1/2    | 1 7/8-12 | 2 1/4-12 | 3                                   | 3 1/8 | 1   | 2 1/8 | 1/4 | 3 7/16  | 1 1/4 | 11 5/16 | 12 3/16    |  |
|       | 3        | 2 1/4-12 | 2 3/4-12 | 3 1/2                               | 3 3/4 | 1   | 2 5/8 | 1/4 | 3 7/16  | 1 1/4 | 11 5/16 | 12 3/16    |  |
| 7     | 3 1/2    | 2 1/2-12 | 3 1/4-12 | 3 1/2                               | 4 1/4 | 1   | 3     | 1/4 | 3 7/16  | 1 1/4 | 11 5/16 | 12 3/16    |  |
|       | 4        | 3-12     | 3 3/4-12 | 4                                   | 4 3/4 | 1   | Δ     | 1/4 | 3 7/16  | 1 1/4 | 11 5/16 | 12 3/16    |  |
|       | 3        | 2 1/4-12 | 2 3/4-12 | 3 1/2                               | 3 3/4 | 1   | 2 5/8 | 1/4 | 3 3/4   | 1 1/4 | 12 9/16 | 13 9/16    |  |
| 8     | 3 1/2    | 2 1/2-12 | 3 1/4-12 | 3 1/2                               | 4 1/4 | 1   | 3     | 1/4 | 3 3/4   | 1 1/4 | 12 9/16 | 13 9/16    |  |
|       | 4        | 3-12     | 3 3/4-12 | 4                                   | 4 3/4 | 1   | Δ     | 1/4 | 3 3/4   | 1 1/4 | 12 9/16 | 13 9/16    |  |
|       | 4 1/2    | 3 1/4-12 | 4 1/4-12 | 4 1/2                               | 5 1/4 | 1   | Δ     | 1/4 | 3 3/4   | 1 1/4 | 12 9/16 | 13 9/16    |  |
| 8     | 5        | 3 1/2-12 | 4 3/4-12 | 5                                   | 5 3/4 | 1   | Δ     | 1/4 | 3 3/4   | 1 1/4 | 12 9/16 | 13 9/16    |  |
|       | 3 1/2    | 2 1/2-12 | 3 1/4-12 | 3 1/2                               | 4 1/4 | 1   | 3     | 1/4 | 3 7/8   | 1 1/4 | 13 3/4  | 14 7/8     |  |
|       | 4        | 3-12     | 3 3/4-12 | 4                                   | 4 3/4 | 1   | Δ     | 1/4 | 3 7/8   | 1 1/4 | 13 3/4  | 14 7/8     |  |
| 8     | 4 1/2    | 3 1/4-12 | 4 1/4-12 | 4 1/2                               | 5 1/4 | 1   | Δ     | 1/4 | 3 7/8   | 1 1/4 | 13 3/4  | 14 7/8     |  |
|       | 5        | 3 1/2-12 | 4 3/4-12 | 5                                   | 5 3/4 | 1   | Δ     | 1/4 | 3 7/8   | 1 1/4 | 13 3/4  | 14 7/8     |  |
|       | 5 1/2    | 4-12     | 5 1/4-12 | 5 1/2                               | 6 1/4 | 1   | Δ     | 1/4 | 3 7/8   | 1 1/4 | 13 3/4  | 14 7/8     |  |



# SPHERICAL BEARING MOUNT



**“Q”**  
YATES STYLE Q  
NFPA-MPU3



- † HEAD END PORTS SHALLOW TAPPED
- CONSULT FACTORY FOR AVAILABILITY OF SAE PORT OPTION
- Δ (4) SPANNER HOLES USED INSTEAD OF FLATS ON 4" DIA. AND LARGER RODS
- § THESE CYLINDERS HAVE FULL PLATE RETAINERS. USE "E" DIMENSIONS INSTEAD OF "RM" - SEE PAGE 8
- ‡ B DIMENSION TOLERANCE  $-.001/-.003$

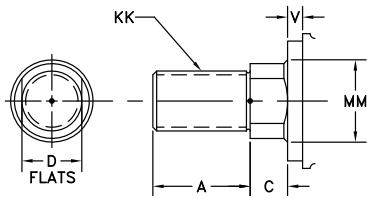
**NOTE:** Q MOUNT MAX OPERATING PSI BASED ON STANDARD COMMERCIAL BEARING RATINGS

Φ EYE DESIGNED TO FIT YATES STD SWIVEL CLEVIS BRACKET - SEE PAGE 36

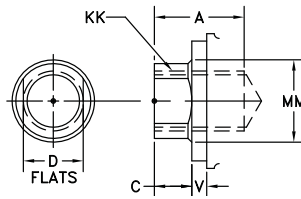
**NOTE:** MPU3 MOUNT DOES NOT INCLUDE PIVOT PIN

# STANDARD ROD ENDS

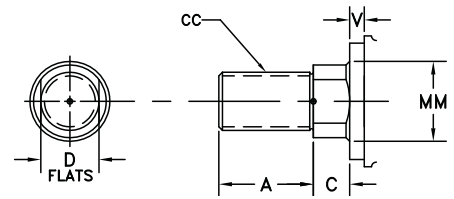
**#2 STD MALE**  
NFPA-SM



**#4 STD FEMALE**  
NFPA-SF



**#1 MALE**  
NFPA-IM

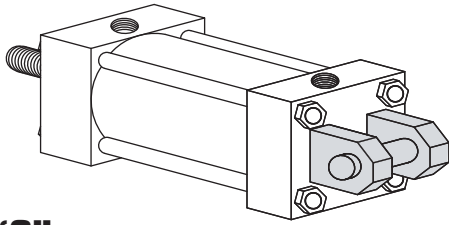


| BORE  | SAE   |         |       |     |      |     |       |       |       |        |       |        |      | ADD STROKE |       |
|-------|-------|---------|-------|-----|------|-----|-------|-------|-------|--------|-------|--------|------|------------|-------|
|       | CD    | EXΦ     | E     | EE  | OPT. | F   | G     | J     | L     | LR     | M     | MR     | K    | LB         | P     |
| 1 1/2 | 1/2   | 7/16    | 2 1/2 | 1/2 | 10   | 3/8 | 1 3/4 | 1 1/2 | 3/4   | 5/8    | 3/4   | 13/16  | 3/8  | 5          | 3     |
|       | 3/4   | 21/32   | 3     | 1/2 | 10   | 5/8 | 1 3/4 | 1 1/2 | 1 1/4 | 1      | 1     | 1 1/8  | 7/16 | 5 1/4      | 3     |
| 2 1/2 | 3/4   | 21/32   | 3 1/2 | 1/2 | 10   | 5/8 | 1 3/4 | 1 1/2 | 1 1/4 | 1      | 1     | 1 1/8  | 7/16 | 5 3/8      | 3 1/8 |
| 3 1/4 | 1     | 7/8     | 4 1/2 | 3/4 | 12   | 3/4 | 2     | 1 3/4 | 1 1/2 | 1 1/4  | 1 1/4 | 1 3/8  | 9/16 | 6 1/4      | 3 5/8 |
| 4     | 1 3/8 | 1 3/16  | 5     | 3/4 | 12   | 7/8 | 2     | 1 3/4 | 2 1/8 | 1 5/8  | 1 7/8 | 2 1/16 | 9/16 | 6 5/8      | 3 7/8 |
| 5     | 1 3/4 | 1 17/32 | 6 1/2 | 3/4 | 12   | 7/8 | 2     | 1 3/4 | 2 1/4 | 2 1/16 | 2 1/2 | 2 3/4  | 3/4  | 7 1/8      | 4 3/8 |
| 6     | 2     | 1 3/4   | 7 1/2 | 1   | 16   | 1   | 2 1/4 | 2 1/4 | 2 1/2 | 2 3/8  | 2 1/2 | 2 3/4  | 7/8  | 8 3/8      | 5     |

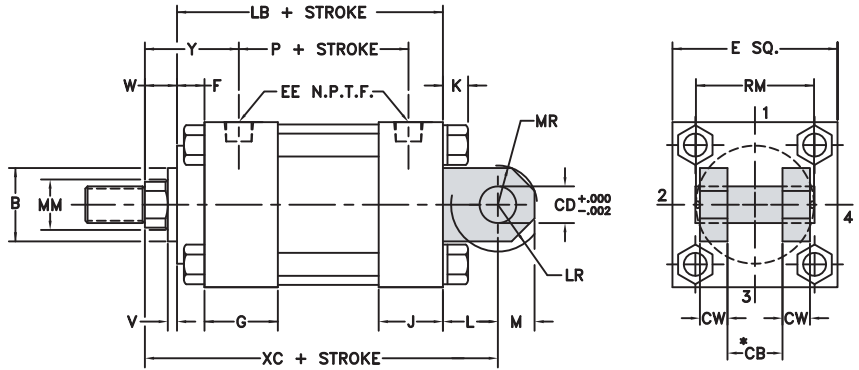
| BORE  | ROD DIA. | THREAD   |          | ROD EXTENSIONS AND PILOT DIMENSIONS |       |     |       |       |        |         |        | ADD STROKE | "Q" MOUNT MAX |
|-------|----------|----------|----------|-------------------------------------|-------|-----|-------|-------|--------|---------|--------|------------|---------------|
|       | MM       | KK       | CC       | A                                   | B ‡   | C   | D     | V     | W      | Y       | RM     | XC         | OPER. PSI     |
| 1 1/2 | 5/8      | 7/16-20  | 1/2-20   | 3/4                                 | 1 1/8 | 3/8 | 1/2   | 1/4   | 5/8    | 1 15/16 | §      | 6 3/8      | 1675          |
|       | 1 †      | 3/4-16   | 7/8-14   | 1 1/8                               | 1 1/2 | 1/2 | 7/8   | 1/2   | 1      | 2 5/16  | §      | 6 3/4      |               |
| 2     | 1        | 3/4-16   | 7/8-14   | 1 1/8                               | 1 1/2 | 1/2 | 7/8   | 1/4   | 3/4    | 2 5/16  | §      | 7 1/4      | 2185          |
|       | 1 3/8 †  | 1-14     | 1 1/4-12 | 1 5/8                               | 2     | 5/8 | 1 1/8 | 3/8   | 1      | 2 9/16  | §      | 7 1/2      |               |
| 2 1/2 | 1        | 3/4-16   | 7/8-14   | 1 1/8                               | 1 1/2 | 1/2 | 7/8   | 1/4   | 3/4    | 2 5/16  | 2 1/2  | 7 3/8      | 1410          |
|       | 1 3/8 †  | 1-14     | 1 1/4-12 | 1 5/8                               | 2     | 5/8 | 1 1/8 | 3/8   | 1      | 2 9/16  | §      | 7 5/8      |               |
| 3 1/4 | 1 3/4 †  | 1 1/4-12 | 1 1/2-12 | 2                                   | 2 3/8 | 3/4 | 1 1/2 | 1/2   | 1 1/4  | 2 13/16 | §      | 7 7/8      | 1490          |
|       | 1 3/8    | 1-14     | 1 1/4-12 | 1 5/8                               | 2     | 5/8 | 1 1/8 | 1/4   | 7/8    | 2 11/16 | 3 7/32 | 8 5/8      |               |
| 4     | 1 3/4    | 1 1/4-12 | 1 1/2-12 | 2                                   | 2 3/8 | 3/4 | 1 1/2 | 3/8   | 1 1/8  | 2 15/16 | §      | 8 7/8      | 1800          |
|       | 2 †      | 1 1/2-12 | 1 3/4-12 | 2 1/4                               | 2 5/8 | 7/8 | 1 3/4 | 3/8   | 1 1/4  | 3 1/16  | §      | 9          |               |
| 5     | 1 3/4    | 1 1/4-12 | 1 1/2-12 | 2                                   | 2 3/8 | 3/4 | 1 1/2 | 1/4   | 1      | 2 15/16 | 3 7/8  | 9 3/4      | 1925          |
|       | 2        | 1 1/2-12 | 1 3/4-12 | 2 1/4                               | 2 5/8 | 7/8 | 1 3/4 | 1/4   | 1 1/8  | 3 1/16  | 4      | 9 7/8      |               |
| 6     | 2 1/2    | 1 7/8-12 | 2 1/4-12 | 3                                   | 3 1/8 | 1   | 2 1/8 | 3/8   | 1 3/8  | 3 5/16  | 4 7/16 | 10 1/8     | 1765          |
|       | 2        | 1 1/2-12 | 1 3/4-12 | 2 1/4                               | 2 5/8 | 7/8 | 1 3/4 | 1/4   | 1 1/8  | 3 1/16  | 4      | 10 1/2     |               |
| 3 1/2 | 2 1/2    | 1 7/8-12 | 2 1/4-12 | 3                                   | 3 1/8 | 1   | 2 1/8 | 3/8   | 1 3/8  | 3 5/16  | 4 7/16 | 10 3/4     | 1765          |
|       | 3        | 2 1/4-12 | 2 3/4-12 | 3 1/2                               | 3 3/4 | 1   | 2 5/8 | 3/8   | 1 3/8  | 3 5/16  | 5 1/4  | 10 3/4     |               |
| 4     | 2 1/2    | 1 7/8-12 | 2 1/4-12 | 3                                   | 3 1/8 | 1   | 2 1/8 | 1/4   | 1 1/4  | 3 7/16  | 4 7/16 | 12 1/8     | 1765          |
|       | 3        | 2 1/4-12 | 2 3/4-12 | 3 1/2                               | 3 3/4 | 1   | 2 5/8 | 1/4   | 1 1/4  | 3 7/16  | 5 1/4  | 12 1/8     |               |
| 6     | 3 1/2    | 2 1/2-12 | 3 1/4-12 | 3 1/2                               | 4 1/4 | 1   | 3     | 3/8   | 1 3/8  | 3 5/16  | 5 5/8  | 10 3/4     | 1765          |
|       | 3 1/2    | 2 1/2-12 | 3 1/4-12 | 3 1/2                               | 4 1/4 | 1   | 3     | 1/4   | 1 1/4  | 3 7/16  | 5 5/8  | 12 1/8     |               |
| 4     | 3-12     | 3 3/4-12 | 4        | 4 3/4                               | 1     | Δ   | 1/4   | 1 1/4 | 3 7/16 | 6 7/16  | 12 1/8 | 12 1/8     |               |



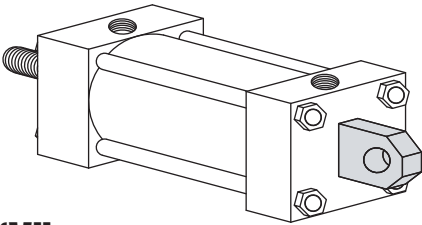
### CAP FIXED CLEVIS MOUNT



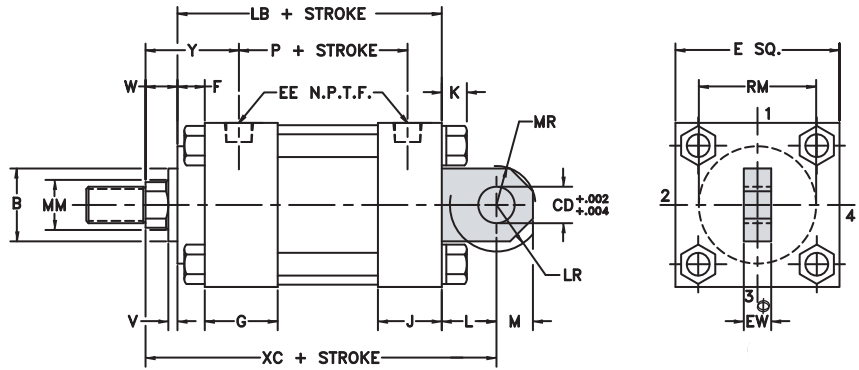
**“C”**  
YATES STYLE C  
NFPA-MP1



### CAP FIXED EYE MOUNT



**“V”**  
YATES STYLE V  
NFPA-MP3

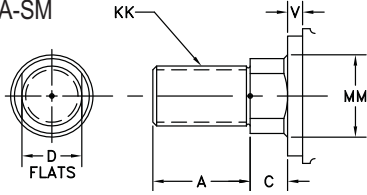


- † HEAD END PORTS SHALLOW TAPPED
  - CONSULT FACTORY FOR AVAILABILITY OF SAE PORT OPTION
  - Δ (4) SPANNER HOLES USED INSTEAD OF FLATS ON 4" DIA. AND LARGER RODS
  - § THESE CYLINDERS HAVE FULL PLATE RETAINERS. USE "E" DIMENSION INSTEAD OF "RM" - SEE PAGE 8
  - ‡ B DIMENSION TOLERANCE -.001/-.003
  - \* MAX WIDTH OF MATING PART
  - Φ "EW" DESIGNED TO FIT YATES STD CLEVIS BRACKET - SEE PAGE 34
- NOTE:** MP3 MOUNT DOES NOT INCLUDE PIVOT PIN

# STANDARD ROD ENDS

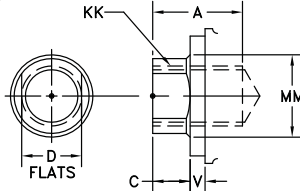
## #2 STD MALE

NFPA-SM



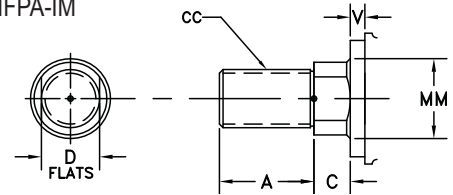
## #4 STD FEMALE

NFPA-SF



## #1 MALE

NFPA-IM

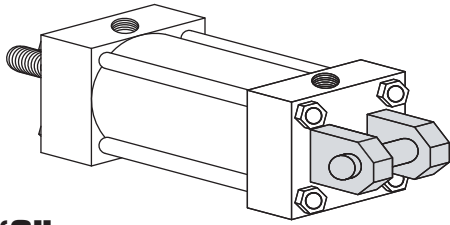


| BORE  |       |       |       |       |        |       |          |     |         |         |       |         |       |         |        |        | ADD STROKE |  |
|-------|-------|-------|-------|-------|--------|-------|----------|-----|---------|---------|-------|---------|-------|---------|--------|--------|------------|--|
|       | CB*   | CD    | CW    | EW*   | E      | EE    | SAE OPT. | F   | G       | J       | L     | LR      | M     | MR      | K      | LB     | P          |  |
| 1 1/2 | 3/4   | 1/2   | 1/2   | 3/4   | 2 1/2  | 1/2   | 10       | 3/8 | 1 3/4   | 1 1/2   | 3/4   | 9/16    | 1/2   | 9/16    | 3/8    | 5      | 3          |  |
| 2     | 1 1/4 | 3/4   | 5/8   | 1 1/4 | 3      | 1/2   | 10       | 5/8 | 1 3/4   | 1 1/2   | 1 1/4 | 1 1/16  | 3/4   | 7/8     | 7/16   | 5 1/4  | 3          |  |
| 2 1/2 | 1 1/4 | 3/4   | 5/8   | 1 1/4 | 3 1/2  | 1/2   | 10       | 5/8 | 1 3/4   | 1 1/2   | 1 1/4 | 1 1/16  | 3/4   | 7/8     | 7/16   | 5 3/8  | 3 1/8      |  |
| 3 1/4 | 1 1/2 | 1     | 3/4   | 1 1/2 | 4 1/2  | 3/4   | 12       | 3/4 | 2       | 1 3/4   | 1 1/2 | 1 1/4   | 1     | 1 1/8   | 9/16   | 6 1/4  | 3 5/8      |  |
| 4     | 2     | 1 3/8 | 1     | 2     | 5      | 3/4   | 12       | 7/8 | 2       | 1 3/4   | 2 1/8 | 1 7/8   | 1 3/8 | 1 1/2   | 9/16   | 6 5/8  | 3 7/8      |  |
| 5     | 2 1/2 | 1 3/4 | 1 1/4 | 2 1/2 | 6 1/2  | 3/4   | 12       | 7/8 | 2       | 1 3/4   | 2 1/4 | 1 15/16 | 1 3/4 | 1 7/8   | 3/4    | 7 1/8  | 4 3/8      |  |
| 6     | 2 1/2 | 2     | 1 1/4 | 2 1/2 | 7 1/2  | 1     | 16       | 1   | 2 1/4   | 2 1/4   | 2 1/2 | 2 1/16  | 2     | 2 3/16  | 7/8    | 8 3/8  | 5          |  |
| 7     | 3     | 2 1/2 | 1 1/2 | 3     | 8 1/2  | 1 1/4 | 20       | 1   | 2 3/4   | 2 3/4   | 3     | 2 9/16  | 2 1/2 | 2 3/4   | 1      | 9 1/2  | 5 1/2      |  |
| 8     | 3     | 3     | 1 1/2 | 3     | 9 1/2  | 1 1/2 | 24       | 1   | 3       | 3       | 3 1/4 | 3       | 2 3/4 | 3       | 1 1/16 | 10 1/2 | 6 1/4      |  |
| 10    | 4     | 3 1/2 | 2     | 4     | 12 5/8 | 2     | 32       | 7/8 | 3 11/16 | 3 11/16 | 4     | 3 1/2   | 3 1/2 | 3 13/16 | 1      | 13     | 8 1/8      |  |

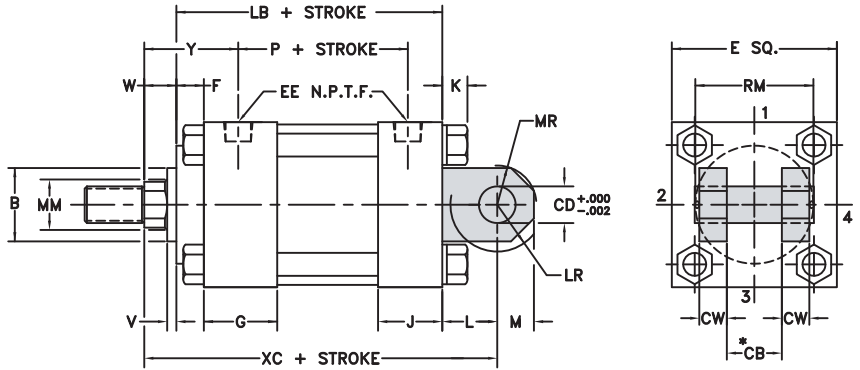
| BORE  | ROD DIA.<br>MM | THREAD   |          | ROD EXTENSIONS AND PILOT DIMENSIONS |       |     |       |        |        |         |        |         | ADD STROKE |  |
|-------|----------------|----------|----------|-------------------------------------|-------|-----|-------|--------|--------|---------|--------|---------|------------|--|
|       |                | KK       | CC       | A                                   | B±    | C   | D     | V      | W      | Y       | RM     | XC      |            |  |
| 1 1/2 | 5/8            | 7/16-20  | 1/2-20   | 3/4                                 | 1 1/8 | 3/8 | 1/2   | 1/4    | 5/8    | 1 15/16 | §      | 6 3/8   |            |  |
|       | 1†•            | 3/4-16   | 7/8-14   | 1 1/8                               | 1 1/2 | 1/2 | 7/8   | 1/2    | 1      | 2 5/16  | §      | 6 3/4   |            |  |
| 2     | 1              | 3/4-16   | 7/8-14   | 1 1/8                               | 1 1/2 | 1/2 | 7/8   | 1/4    | 3/4    | 2 5/16  | §      | 7 1/4   |            |  |
|       | 1 3/8†         | 1-14     | 1 1/4-12 | 1 5/8                               | 2     | 5/8 | 1 1/8 | 3/8    | 1      | 2 9/16  | §      | 7 1/2   |            |  |
| 2 1/2 | 1              | 3/4-16   | 7/8-14   | 1 1/8                               | 1 1/2 | 1/2 | 7/8   | 1/4    | 3/4    | 2 5/16  | 2 1/2  | 7 3/8   |            |  |
|       | 1 3/8†         | 1-14     | 1 1/4-12 | 1 5/8                               | 2     | 5/8 | 1 1/8 | 3/8    | 1      | 2 9/16  | §      | 7 5/8   |            |  |
|       | 1 3/4†•        | 1 1/4-12 | 1 1/2-12 | 2                                   | 2 3/8 | 3/4 | 1 1/2 | 1/2    | 1 1/4  | 2 13/16 | §      | 7 7/8   |            |  |
| 3 1/4 | 1 3/8          | 1-14     | 1 1/4-12 | 1 5/8                               | 2     | 5/8 | 1 1/8 | 1/4    | 7/8    | 2 11/16 | 3 7/32 | 8 5/8   |            |  |
|       | 1 3/4          | 1 1/4-12 | 1 1/2-12 | 2                                   | 2 3/8 | 3/4 | 1 1/2 | 3/8    | 1 1/8  | 2 15/16 | §      | 8 7/8   |            |  |
|       | 2              | 1 1/2-12 | 1 3/4-12 | 2 1/4                               | 2 5/8 | 7/8 | 1 3/4 | 3/8    | 1 1/4  | 3 1/16  | §      | 9       |            |  |
| 4     | 1 3/4          | 1 1/4-12 | 1 1/2-12 | 2                                   | 2 3/8 | 3/4 | 1 1/2 | 1/4    | 1      | 2 15/16 | 3 7/8  | 9 3/4   |            |  |
|       | 2              | 1 1/2-12 | 1 3/4-12 | 2 1/4                               | 2 5/8 | 7/8 | 1 3/4 | 1/4    | 1 1/8  | 3 1/16  | 4      | 9 7/8   |            |  |
|       | 2 1/2          | 1 7/8-12 | 2 1/4-12 | 3                                   | 3 1/8 | 1   | 2 1/8 | 3/8    | 1 3/8  | 3 5/16  | 4 7/16 | 10 1/8  |            |  |
|       | 2              | 1 1/2-12 | 1 3/4-12 | 2 1/4                               | 2 5/8 | 7/8 | 1 3/4 | 1/4    | 1 1/8  | 3 1/16  | 4      | 9 7/8   |            |  |
| 5     | 2              | 1 1/2-12 | 1 3/4-12 | 2 1/4                               | 2 5/8 | 7/8 | 1 3/4 | 1/4    | 1 1/8  | 3 1/16  | 4      | 10 1/2  |            |  |
|       | 2 1/2          | 1 7/8-12 | 2 1/4-12 | 3                                   | 3 1/8 | 1   | 2 1/8 | 3/8    | 1 3/8  | 3 5/16  | 4 7/16 | 10 3/4  |            |  |
|       | 3              | 2 1/4-12 | 2 3/4-12 | 3 1/2                               | 3 3/4 | 1   | 2 5/8 | 3/8    | 1 3/8  | 3 5/16  | 5 1/4  | 10 3/4  |            |  |
|       | 3 1/2          | 2 1/2-12 | 3 1/4-12 | 3 1/2                               | 4 1/4 | 1   | 3     | 3/8    | 1 3/8  | 3 5/16  | 5 5/8  | 10 3/4  |            |  |
|       | 2 1/2          | 1 7/8-12 | 2 1/4-12 | 3                                   | 3 1/8 | 1   | 2 1/8 | 1/4    | 1 1/4  | 3 7/16  | 4 7/16 | 12 1/8  |            |  |
| 6     | 3              | 2 1/4-12 | 2 3/4-12 | 3 1/2                               | 3 3/4 | 1   | 2 5/8 | 1/4    | 1 1/4  | 3 7/16  | 5 1/4  | 12 1/8  |            |  |
|       | 3 1/2          | 2 1/2-12 | 3 1/4-12 | 3 1/2                               | 4 1/4 | 1   | 3     | 1/4    | 1 1/4  | 3 7/16  | 5 5/8  | 12 1/8  |            |  |
|       | 4              | 3-12     | 3 3/4-12 | 4                                   | 4 3/4 | 1   | Δ     | 1/4    | 1 1/4  | 3 7/16  | 6 7/16 | 12 1/8  |            |  |
|       | 3              | 2 1/4-12 | 2 3/4-12 | 3 1/2                               | 3 3/4 | 1   | 2 5/8 | 1/4    | 1 1/4  | 3 7/16  | 5 1/4  | 12 1/8  |            |  |
| 7     | 3              | 2 1/4-12 | 2 3/4-12 | 3 1/2                               | 3 3/4 | 1   | 2 5/8 | 1/4    | 1 1/4  | 3 3/4   | 5 1/4  | 13 3/4  |            |  |
|       | 3 1/2          | 2 1/2-12 | 3 1/4-12 | 3 1/2                               | 4 1/4 | 1   | 3     | 1/4    | 1 1/4  | 3 3/4   | 5 5/8  | 13 3/4  |            |  |
|       | 4              | 3-12     | 3 3/4-12 | 4                                   | 4 3/4 | 1   | Δ     | 1/4    | 1 1/4  | 3 3/4   | 6 7/16 | 13 3/4  |            |  |
|       | 4 1/2          | 3 1/4-12 | 4 1/4-12 | 4 1/2                               | 5 1/4 | 1   | Δ     | 1/4    | 1 1/4  | 3 3/4   | 7 1/8  | 13 3/4  |            |  |
|       | 5              | 3 1/2-12 | 4 3/4-12 | 5                                   | 5 3/4 | 1   | Δ     | 1/4    | 1 1/4  | 3 3/4   | 7 5/8  | 13 3/4  |            |  |
| 8     | 3 1/2          | 2 1/2-12 | 3 1/4-12 | 3 1/2                               | 4 1/4 | 1   | 3     | 1/4    | 1 1/4  | 3 7/8   | 5 5/8  | 15      |            |  |
|       | 4              | 3-12     | 3 3/4-12 | 4                                   | 4 3/4 | 1   | Δ     | 1/4    | 1 1/4  | 3 7/8   | 6 7/16 | 15      |            |  |
|       | 4 1/2          | 3 1/4-12 | 4 1/4-12 | 4 1/2                               | 5 1/4 | 1   | Δ     | 1/4    | 1 1/4  | 3 7/8   | 7 1/8  | 15      |            |  |
|       | 5              | 3 1/2-12 | 4 3/4-12 | 5                                   | 5 3/4 | 1   | Δ     | 1/4    | 1 1/4  | 3 7/8   | 7 5/8  | 15      |            |  |
|       | 5 1/2          | 4-12     | 5 1/4-12 | 5 1/2                               | 6 1/4 | 1   | Δ     | 1/4    | 1 1/4  | 3 7/8   | 8 3/8  | 15      |            |  |
| 10    | 4 1/2          | 3 1/4-12 | 4 1/4-12 | 4 1/2                               | 5 1/4 | 1   | Δ     | 1 1/16 | 2 1/16 | 4 15/16 | 7 1/8  | 19 1/16 |            |  |
|       | 5              | 3 1/2-12 | 4 3/4-12 | 5                                   | 5 3/4 | 1   | Δ     | 1 5/16 | 2 5/16 | 5 3/16  | 7 5/8  | 19 5/16 |            |  |
|       | 5 1/2          | 4-12     | 5 1/4-12 | 5 1/2                               | 6 1/4 | 1   | Δ     | 1 5/16 | 2 5/16 | 5 3/16  | 8 3/8  | 19 5/16 |            |  |
|       | 7              | 5-12     | 6 1/2-12 | 7                                   | 8     | 1   | Δ     | 1 5/8  | 2 5/8  | 5 1/2   | 10 7/8 | 19 5/8  |            |  |



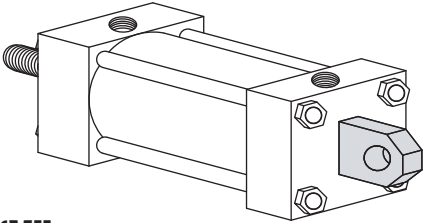
### CAP FIXED CLEVIS MOUNT



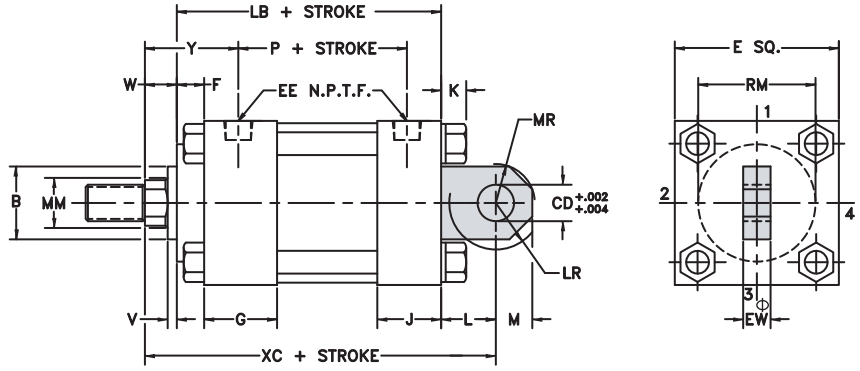
**“C”**  
YATES STYLE C  
NFPA-MP1



### CAP FIXED EYE MOUNT

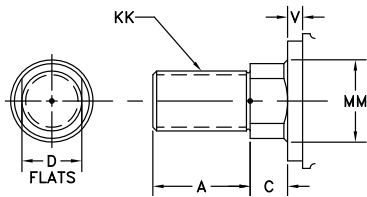


**“V”**  
YATES STYLE V  
NFPA-MP3

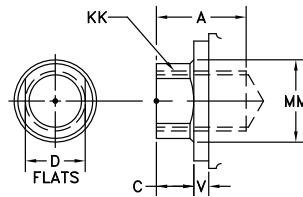


# STANDARD ROD ENDS

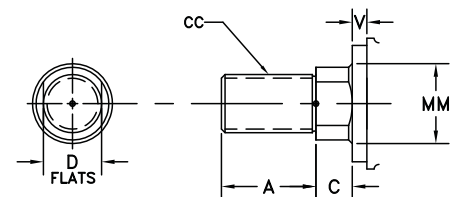
## #2 STD MALE NFPA-SM



## #4 STD FEMALE NFPA-SF



## #1 MALE NFPA-IM



| BORE | CB*   | CD    | CW    | EW*Φ  | E      | EE    | SAE OPT. | F       | G      | J      | L     | LR    | M     | MR     | K      | ADD STROKE |        |
|------|-------|-------|-------|-------|--------|-------|----------|---------|--------|--------|-------|-------|-------|--------|--------|------------|--------|
|      |       |       |       |       |        |       |          |         |        |        |       |       |       |        |        | LB         | P      |
| 12   | 4 1/2 | 4     | 2 1/4 | 4 1/2 | 14 7/8 | 2 1/2 | 32       | 1 3/8   | 4 7/16 | 4 7/16 | 4 1/2 | 4     | 4     | 4 3/8  | 1 1/16 | 15 7/8     | 9 1/2  |
| 14   | 6     | 5     | 3     | 6     | 17 1/8 | 2 1/2 | 32       | 1 5/8   | 4 7/8  | 4 7/8  | 5 3/4 | 5     | 5     | 5 7/16 | 1 1/16 | 17 1/4     | 9 7/8  |
| 16   | 7     | 6     | 3 1/2 | 7     | 19 1/4 | 3     | 32       | 1 7/8   | 5 7/8  | 5 7/8  | 7     | 6     | 6     | 6 1/2  | 1 9/32 | 20         | 11     |
| 18   | 8     | 6 1/2 | 4     | 8     | 22     | 3     | 32       | 2 3/16  | 6 7/8  | 6 7/8  | 7 5/8 | 6 1/2 | 6 1/2 | 7 1/16 | 1 9/32 | 23 5/16    | 12     |
| 20   | 9     | 7 1/2 | 4 1/2 | 9     | 23 5/8 | 3     | 32       | 2 11/16 | 7 7/8  | 7 7/8  | 8 3/4 | 7 1/2 | 7 1/2 | 8 1/8  | 1 9/32 | 26 5/16    | 12 1/2 |

| BORE | ROD DIA. | THREAD   |          | ROD EXTENSIONS AND PILOT DIMENSIONS |       |   |   |        |         |         |          | ADD STROKE |
|------|----------|----------|----------|-------------------------------------|-------|---|---|--------|---------|---------|----------|------------|
|      | MM       | KK       | CC       | A                                   | B‡    | C | D | V      | W       | Y       | RM       | XC         |
| 12   | 5 1/2    | 4-12     | 5 1/4-12 | 5 1/2                               | 6 1/4 | 1 | Δ | 13/16  | 1 13/16 | 5 11/16 | 8 3/8    | 22 3/16    |
|      | 7        | 5-12     | 6 1/2-12 | 7                                   | 8     | 1 | Δ | 1 1/8  | 2 1/8   | 6       | 10 13/16 | 22 1/2     |
|      | 8        | 5 3/4-12 | 7 1/2-12 | 8                                   | 9     | 1 | Δ | 1 5/8  | 2 5/8   | 6 1/2   | 12 3/8   | 23         |
| 14   | 7        | 5-12     | 6 1/2-12 | 7                                   | 8     | 1 | Δ | 7/8    | 1 7/8   | 6 3/8   | 10 13/16 | 24 7/8     |
|      | 8        | 5 3/4-12 | 7 1/2-12 | 8                                   | 9     | 1 | Δ | 1 3/8  | 2 3/8   | 6 7/8   | 12 3/8   | 25 3/8     |
|      | 9        | 6 1/2-12 | 8 1/2-12 | 9                                   | 10    | 1 | Δ | 1 5/8  | 2 5/8   | 7 1/8   | 13 1/8   | 25 5/8     |
| 16   | 10       | 7 1/4-12 | 9 1/2-12 | 10                                  | 11    | 1 | Δ | 1 7/8  | 2 7/8   | 7 3/8   | 14 5/8   | 25 7/8     |
|      | 8        | 5 3/4-12 | 7 1/2-12 | 8                                   | 9     | 1 | Δ | 1 1/8  | 2 1/8   | 7 9/16  | 12 3/8   | 29 1/8     |
|      | 9        | 6 1/2-12 | 8 1/2-12 | 9                                   | 10    | 1 | Δ | 1 3/8  | 2 3/8   | 7 13/16 | 13 1/8   | 29 3/8     |
| 18   | 10       | 7 1/4-12 | 9 1/2-12 | 10                                  | 11    | 1 | Δ | 1 5/8  | 2 5/8   | 8 1/16  | 14 5/8   | 29 5/8     |
|      | 9        | 6 1/2-12 | 8 1/2-12 | 9                                   | 10    | 1 | Δ | 1 1/16 | 2 1/16  | 8 13/16 | 13 1/8   | 33         |
|      | 10       | 7 1/4-12 | 9 1/2-12 | 10                                  | 11    | 1 | Δ | 1 5/16 | 2 5/16  | 9 1/16  | 14 5/8   | 33 1/4     |
| 20   | 10       | 7 1/4-12 | 9 1/2-12 | 10                                  | 11    | 1 | Δ | 13/16  | 1 13/16 | 10 1/16 | 14 5/8   | 36 7/8     |

Δ (4) SPANNER HOLES USED INSTEAD OF FLATS ON 4" DIA. AND LARGER RODS

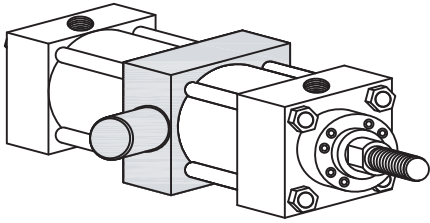
‡ B DIMENSION TOLERANCE -.001/-.003

Φ DESIGNED TO FIT YATES STD CLEVIS BRACKET - SEE PAGE 34

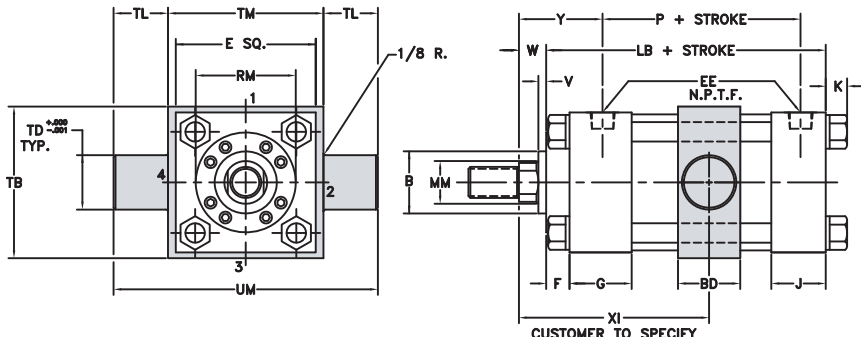
NOTE: MP3 MOUNT DOES NOT INCLUDE PIVOT PIN



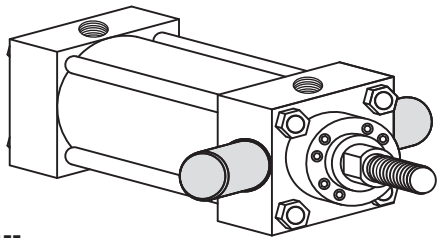
### INTERMEDIATE FIXED TRUNNION MOUNT



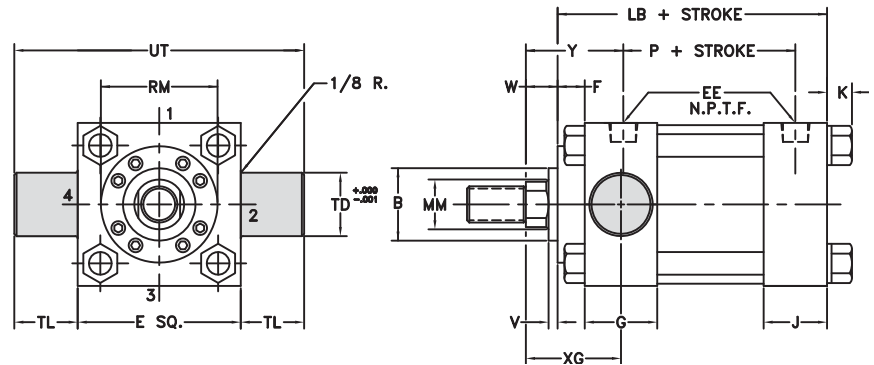
**"T"**  
YATES STYLE T  
NFPA-MT4



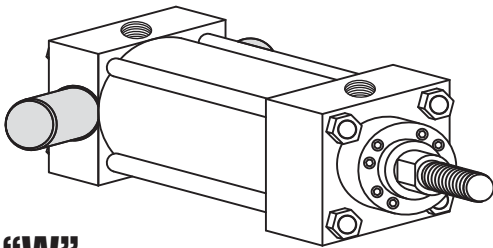
### HEAD TRUNNION MOUNT



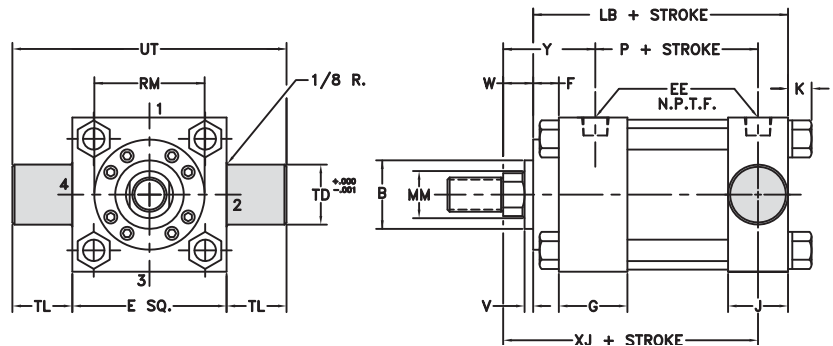
**"U"**  
YATES STYLE U  
NFPA-MT1



### CAP TRUNNION MOUNT

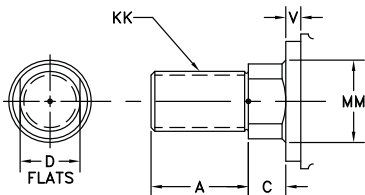


**"W"**  
YATES STYLE W  
NFPA-MT2

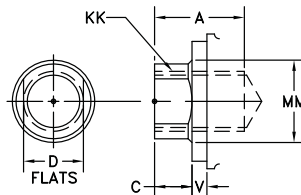


### STANDARD ROD ENDS

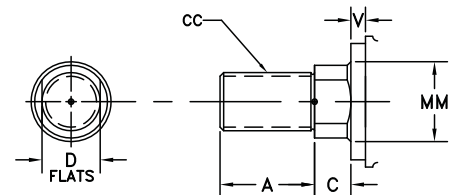
**#2** STD MALE  
NFPA-SM



**#4** STD FEMALE  
NFPA-SF



**#1** MALE  
NFPA-IM





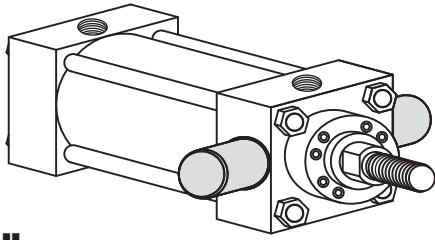
| BORE  | SAE    |       |      |     |         |         |        |       |       |       |       |        |        |       |                     | ADD STROKE |       |
|-------|--------|-------|------|-----|---------|---------|--------|-------|-------|-------|-------|--------|--------|-------|---------------------|------------|-------|
|       | E      | EE    | OPT. | F   | G       | J       | K      | TD    | TL    | TB    | TM    | UM     | UT     | BD    | XI                  | LB         | P     |
| 1 1/2 | 2 1/2  | 1/2   | 10   | 3/8 | 1 3/4   | 1 1/2   | 3/8    | 1     | 1     | 2 3/4 | 3     | 5      | 4 1/2  | 1 1/4 | CUSTOMER TO SPECIFY | 5          | 3     |
| 2     | 3      | 1/2   | 10   | 5/8 | 1 3/4   | 1 1/2   | 7/16   | 1 3/8 | 1 3/8 | 3 3/8 | 3 1/2 | 6 1/4  | 5 3/4  | 1 3/4 |                     | 5 1/4      | 3     |
| 2 1/2 | 3 1/2  | 1/2   | 10   | 5/8 | 1 3/4   | 1 1/2   | 7/16   | 1 3/8 | 1 3/8 | 3 7/8 | 4     | 6 3/4  | 6 1/4  | 2     |                     | 5 3/8      | 3 1/8 |
| 3 1/4 | 4 1/2  | 3/4   | 12   | 3/4 | 2       | 1 3/4   | 9/16   | 1 3/4 | 1 3/4 | 4 7/8 | 5     | 8 1/2  | 8      | 2 1/4 |                     | 6 1/4      | 3 5/8 |
| 4     | 5      | 3/4   | 12   | 7/8 | 2       | 1 3/4   | 9/16   | 1 3/4 | 1 3/4 | 5 1/2 | 5 1/2 | 9      | 8 1/2  | 2 1/4 |                     | 6 5/8      | 3 7/8 |
| 5     | 6 1/2  | 3/4   | 12   | 7/8 | 2       | 1 3/4   | 3/4    | 1 3/4 | 1 3/4 | 7 1/4 | 7     | 10 1/2 | 10     | 3     |                     | 7 1/8      | 4 3/8 |
| 6     | 7 1/2  | 1     | 16   | 1   | 2 1/4   | 2 1/4   | 7/8    | 2     | 2     | 8 1/2 | 8 1/2 | 12 1/2 | 11 1/2 | 3 1/2 |                     | 8 3/8      | 5     |
| 7     | 8 1/2  | 1 1/4 | 20   | 1   | 2 3/4   | 2 3/4   | 1      | 2 1/2 | 2 1/2 | 9 3/4 | 9 3/4 | 14 3/4 | 13 1/2 | 4     |                     | 9 1/2      | 5 1/2 |
| 8     | 9 1/2  | 1 1/2 | 24   | 1   | 3       | 3       | 1 1/16 | 3     | 3     | 11    | 11    | 17     | 15 1/2 | 4 1/4 |                     | 10 1/2     | 6 1/4 |
| 10    | 12 5/8 | 2     | 32   | 7/8 | 3 11/16 | 3 11/16 | 1      | 3 1/2 | 3 1/2 | N/A   | N/A   | N/A    | 19 5/8 | N/A   |                     | N/A        | 13    |

| BORE  | ROD DIA. | THREAD   |          | ROD EXTENSIONS AND PILOT DIMENSIONS |       |     |       |        |        |         |        |        |          | ADD STROKE |
|-------|----------|----------|----------|-------------------------------------|-------|-----|-------|--------|--------|---------|--------|--------|----------|------------|
|       |          | MM       | KK       | CC                                  | A     | B ‡ | C     | D      | V      | W       | Y      | RM     | XG       |            |
| 1 1/2 | 5/8      | 7/16-20  | 1/2-20   | 3/4                                 | 1 1/8 | 3/8 | 1/2   | 1/4    | 5/8    | 1 15/16 | §      | 1 7/8  | 4 7/8    |            |
|       | 1 †      | 3/4-16   | 7/8-14   | 1 1/8                               | 1 1/2 | 1/2 | 7/8   | 1/2    | 1      | 2 5/16  | §      | 2 1/4  | 5 1/4    |            |
| 2     | 1        | 3/4-16   | 7/8-14   | 1 1/8                               | 1 1/2 | 1/2 | 7/8   | 1/4    | 3/4    | 2 5/16  | §      | 2 1/4  | 5 1/4    |            |
|       | 1 3/8 †  | 1-14     | 1 1/4-12 | 1 5/8                               | 2     | 5/8 | 1 1/8 | 3/8    | 1      | 2 9/16  | §      | 2 1/2  | 5 1/2    |            |
| 2 1/2 | 1        | 3/4-16   | 7/8-14   | 1 1/8                               | 1 1/2 | 1/2 | 7/8   | 1/4    | 3/4    | 2 5/16  | 2 1/2  | 2 1/4  | 5 3/8    |            |
|       | 1 3/8 †  | 1-14     | 1 1/4-12 | 1 5/8                               | 2     | 5/8 | 1 1/8 | 3/8    | 1      | 2 9/16  | §      | 2 1/2  | 5 5/8    |            |
| 3 1/4 | 1 3/8    | 1-14     | 1 1/4-12 | 1 5/8                               | 2     | 5/8 | 1 1/8 | 1/4    | 7/8    | 2 11/16 | 3 7/32 | 2 5/8  | 6 1/4    |            |
|       | 1 3/4    | 1 1/4-12 | 1 1/2-12 | 2                                   | 2 3/8 | 3/4 | 1 1/2 | 3/8    | 1 1/8  | 2 15/16 | §      | 2 7/8  | 6 1/2    |            |
| 4     | 2 †      | 1 1/2-12 | 1 3/4-12 | 2 1/4                               | 2 5/8 | 7/8 | 1 3/4 | 3/8    | 1 1/4  | 3 1/16  | §      | 3      | 6 5/8    |            |
|       | 1 3/4    | 1 1/4-12 | 1 1/2-12 | 2                                   | 2 3/8 | 3/4 | 1 1/2 | 1/4    | 1      | 2 15/16 | 3 7/8  | 2 7/8  | 6 3/4    |            |
| 5     | 2        | 1 1/2-12 | 1 3/4-12 | 2 1/4                               | 2 5/8 | 7/8 | 1 3/4 | 1/4    | 1 1/8  | 3 1/16  | 4      | 3      | 7 3/8    |            |
|       | 2 1/2    | 1 7/8-12 | 2 1/4-12 | 3                                   | 3 1/8 | 1   | 2 1/8 | 3/8    | 1 3/8  | 3 5/16  | 4 7/16 | 3 1/4  | 7 5/8    |            |
| 6     | 3        | 2 1/4-12 | 2 3/4-12 | 3 1/2                               | 3 3/4 | 1   | 2 5/8 | 3/8    | 1 3/8  | 3 5/16  | 5 1/4  | 3 1/4  | 7 5/8    |            |
|       | 3 1/2    | 2 1/2-12 | 3 1/4-12 | 3 1/2                               | 4 1/4 | 1   | 3     | 3/8    | 1 3/8  | 3 5/16  | 5 5/8  | 3 1/4  | 7 5/8    |            |
| 7     | 2 1/2    | 1 7/8-12 | 2 1/4-12 | 3                                   | 3 1/8 | 1   | 2 1/8 | 1/4    | 1 1/4  | 3 7/16  | 4 7/16 | 3 3/8  | 8 3/8    |            |
|       | 3        | 2 1/4-12 | 2 3/4-12 | 3 1/2                               | 3 3/4 | 1   | 2 5/8 | 1/4    | 1 1/4  | 3 7/16  | 5 1/4  | 3 3/8  | 8 3/8    |            |
| 8     | 3 1/2    | 2 1/2-12 | 3 1/4-12 | 3 1/2                               | 4 1/4 | 1   | 3     | 1/4    | 1 1/4  | 3 7/16  | 5 5/8  | 3 3/8  | 8 3/8    |            |
|       | 4        | 3-12     | 3 3/4-12 | 4                                   | 4 3/4 | 1   | Δ     | 1/4    | 1 1/4  | 3 7/16  | 6 7/16 | 3 3/8  | 8 3/8    |            |
| 9     | 3        | 2 1/4-12 | 2 3/4-12 | 3 1/2                               | 3 3/4 | 1   | 2 5/8 | 1/4    | 1 1/4  | 3 3/4   | 5 1/4  | 3 5/8  | 9 3/8    |            |
|       | 3 1/2    | 2 1/2-12 | 3 1/4-12 | 3 1/2                               | 4 1/4 | 1   | 3     | 1/4    | 1 1/4  | 3 3/4   | 5 5/8  | 3 5/8  | 9 3/8    |            |
| 10    | 4        | 3-12     | 3 3/4-12 | 4                                   | 4 3/4 | 1   | Δ     | 1/4    | 1 1/4  | 3 3/4   | 6 7/16 | 3 5/8  | 9 3/8    |            |
|       | 4 1/2    | 3 1/4-12 | 4 1/4-12 | 4 1/2                               | 5 1/4 | 1   | Δ     | 1/4    | 1 1/4  | 3 3/4   | 7 1/8  | 3 5/8  | 9 3/8    |            |
| 11    | 5        | 3 1/2-12 | 4 3/4-12 | 5                                   | 5 3/4 | 1   | Δ     | 1/4    | 1 1/4  | 3 3/4   | 7 5/8  | 3 5/8  | 9 3/8    |            |
|       | 3 1/2    | 2 1/2-12 | 3 1/4-12 | 3 1/2                               | 4 1/4 | 1   | 3     | 1/4    | 1 1/4  | 3 7/8   | 5 5/8  | 3 3/4  | 10 1/4   |            |
| 12    | 4        | 3-12     | 3 3/4-12 | 4                                   | 4 3/4 | 1   | Δ     | 1/4    | 1 1/4  | 3 7/8   | 6 7/16 | 3 3/4  | 10 1/4   |            |
|       | 4 1/2    | 3 1/4-12 | 4 1/4-12 | 4 1/2                               | 5 1/4 | 1   | Δ     | 1/4    | 1 1/4  | 3 7/8   | 7 1/8  | 3 3/4  | 10 1/4   |            |
| 13    | 5        | 3 1/2-12 | 4 3/4-12 | 5                                   | 5 3/4 | 1   | Δ     | 1/4    | 1 1/4  | 3 7/8   | 7 5/8  | 3 3/4  | 10 1/4   |            |
|       | 5 1/2    | 4-12     | 5 1/4-12 | 5 1/2                               | 6 1/4 | 1   | Δ     | 1/4    | 1 1/4  | 3 7/8   | 8 3/8  | 3 3/4  | 10 1/4   |            |
| 14    | 4 1/2    | 3 1/4-12 | 4 1/4-12 | 4 1/2                               | 5 1/4 | 1   | Δ     | 1 1/16 | 2 1/16 | 4 15/16 | 7 1/8  | 4 3/4  | 13 1/4   |            |
|       | 5        | 3 1/2-12 | 4 3/4-12 | 5                                   | 5 3/4 | 1   | Δ     | 1 5/16 | 2 5/16 | 5 3/16  | 7 5/8  | 5      | 13 1/2   |            |
| 15    | 5 1/2    | 4-12     | 5 1/4-12 | 5 1/2                               | 6 1/4 | 1   | Δ     | 1 5/16 | 2 5/16 | 5 3/16  | 8 3/8  | 5      | 13 1/2   |            |
|       | 7        | 5-12     | 6 1/2-12 | 7                                   | 8     | 1   | Δ     | 1 5/8  | 2 5/8  | 5 1/2   | 10 7/8 | 5 5/16 | 13 13/16 |            |

† HEAD END PORTS SHALLOW TAPPED  
 \* CONSULT FACTORY FOR AVAILABILITY OF SAE PORT OPTION  
 Δ (4) SPANNER HOLES USED INSTEAD OF FLATS ON 4" DIA. AND LARGER RODS  
 § THESE CYLINDERS HAVE FULL PLATE RETAINERS. USE "E" DIMENSION INSTEAD OF "RM" - SEE PAGE 8  
 ‡ B DIMENSION TOLERANCE -.001/-.003

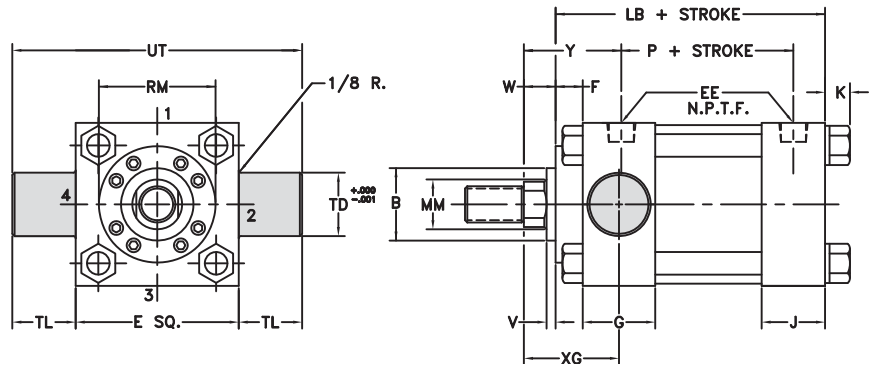


### HEAD TRUNNION MOUNT

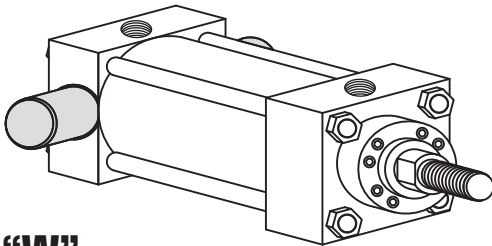


**“U”**

YATES STYLE **U**  
NFPA-MT1

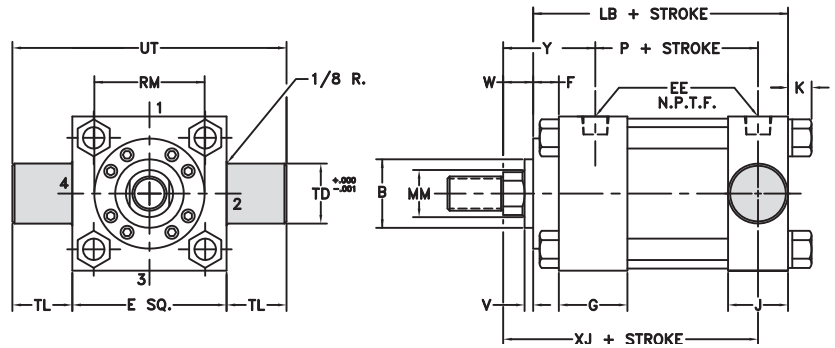


### CAP TRUNNION MOUNT



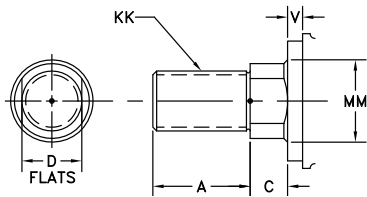
**“W”**

YATES STYLE **W**  
NFPA-MT2

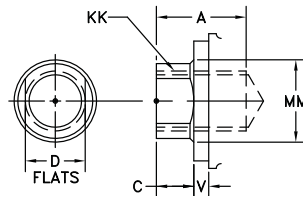


# STANDARD ROD ENDS

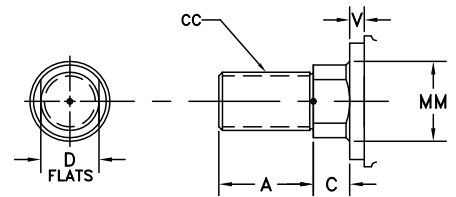
**#2 STD MALE**  
NFPA-SM



**#4 STD FEMALE**  
NFPA-SF



**#1 MALE**  
NFPA-IM



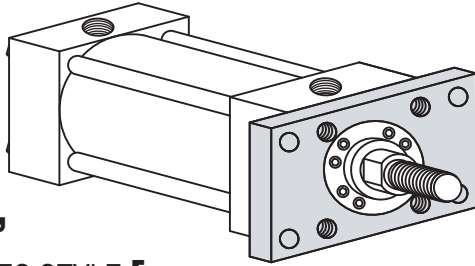
| BORE | SAE    |       |      |         |        |        |        |       |       |        | ADD STROKE |        |
|------|--------|-------|------|---------|--------|--------|--------|-------|-------|--------|------------|--------|
|      | E      | EE    | OPT. | F       | G      | J      | K      | TD    | TL    | UT     | LB         | P      |
| 12   | 14 7/8 | 2 1/2 | 32   | 1 3/8   | 4 7/16 | 4 7/16 | 1 1/16 | 4     | 4     | 22 7/8 | 15 7/8     | 9 1/2  |
| 14   | 17 1/8 | 2 1/2 | 32   | 1 5/8   | 4 7/8  | 4 7/8  | 1 1/16 | 4 1/2 | 4 1/2 | 26 1/8 | 17 1/4     | 9 7/8  |
| 16   | 19 1/4 | 3     | 32   | 1 7/8   | 5 7/8  | 5 7/8  | 1 9/32 | 5     | 5     | 29 1/4 | 20         | 11     |
| 18   | 22     | 3     | 32   | 2 3/16  | 6 7/8  | 6 7/8  | 1 9/32 | 5 3/4 | 5 3/4 | 33 1/2 | 23 5/16    | 12     |
| 20   | 23 5/8 | 3     | 32   | 2 11/16 | 7 7/8  | 7 7/8  | 1 9/32 | 6 1/4 | 6 1/4 | 36 1/8 | 26 5/16    | 12 1/2 |

| BORE | ROD DIA. | THREAD   |          | ROD EXTENSIONS AND PILOT DIMENSIONS |       |   |   |        |         |         |          |         | ADD STROKE |
|------|----------|----------|----------|-------------------------------------|-------|---|---|--------|---------|---------|----------|---------|------------|
|      | MM       | KK       | CC       | A                                   | B†    | C | D | V      | W       | Y       | RM       | XG      | XJ         |
| 12   | 5 1/2    | 4-12     | 5 1/4-12 | 5 1/2                               | 6 1/4 | 1 | Δ | 13/16  | 1 13/16 | 5 11/16 | 8 3/8    | 5 3/8   | 15 1/2     |
|      | 7        | 5-12     | 6 1/2-12 | 7                                   | 8     | 1 | Δ | 1 1/8  | 2 1/8   | 6       | 10 13/16 | 5 11/16 | 15 13/16   |
|      | 8        | 5 3/4-12 | 7 1/2-12 | 8                                   | 9     | 1 | Δ | 1 5/8  | 2 5/8   | 6 1/2   | 12 3/8   | 6 3/16  | 16 5/16    |
| 14   | 7        | 5-12     | 6 1/2-12 | 7                                   | 8     | 1 | Δ | 7/8    | 1 7/8   | 6 3/8   | 10 13/16 | 5 15/16 | 16 11/16   |
|      | 8        | 5 3/4-12 | 7 1/2-12 | 8                                   | 9     | 1 | Δ | 1 3/8  | 2 3/8   | 6 7/8   | 12 3/8   | 6 7/16  | 17 3/16    |
|      | 9        | 6 1/2-12 | 8 1/2-12 | 9                                   | 10    | 1 | Δ | 1 5/8  | 2 5/8   | 7 1/8   | 13 1/8   | 6 11/16 | 17 7/16    |
| 16   | 10       | 7 1/4-12 | 9 1/2-12 | 10                                  | 11    | 1 | Δ | 1 7/8  | 2 7/8   | 7 3/8   | 14 5/8   | 6 15/16 | 17 11/16   |
|      | 8        | 5 3/4-12 | 7 1/2-12 | 8                                   | 9     | 1 | Δ | 1 1/8  | 2 1/8   | 7 9/16  | 12 3/8   | 6 15/16 | 19 3/16    |
|      | 9        | 6 1/2-12 | 8 1/2-12 | 9                                   | 10    | 1 | Δ | 1 3/8  | 2 3/8   | 7 13/16 | 13 1/8   | 7 3/16  | 19 7/16    |
| 18   | 10       | 7 1/4-12 | 9 1/2-12 | 10                                  | 11    | 1 | Δ | 1 5/8  | 2 5/8   | 8 1/16  | 14 5/8   | 7 7/16  | 19 11/16   |
|      | 9        | 6 1/2-12 | 8 1/2-12 | 9                                   | 10    | 1 | Δ | 1 1/16 | 2 1/16  | 8 13/16 | 13 1/8   | 7 15/16 | 21 15/16   |
|      | 10       | 7 1/4-12 | 9 1/2-12 | 10                                  | 11    | 1 | Δ | 1 5/16 | 2 5/16  | 9 1/16  | 14 5/8   | 7 11/16 | 22 3/16    |
| 20   | 10       | 7 1/4-12 | 9 1/2-12 | 10                                  | 11    | 1 | Δ | 13/16  | 1 13/16 | 10 1/16 | 14 5/8   | 8 7/16  | 24 3/16    |

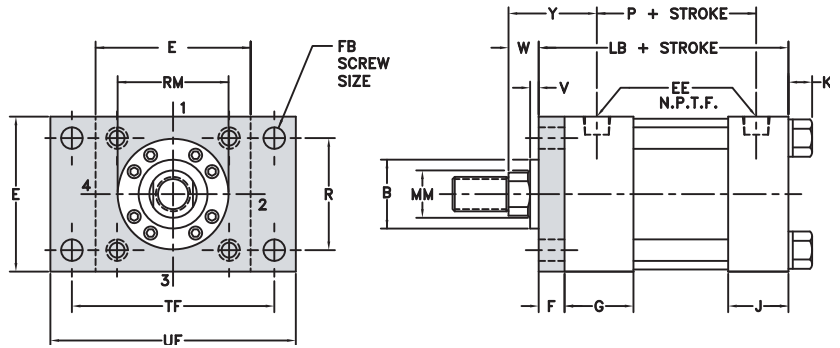
† HEAD END PORTS SHALLOW TAPPED  
 • CONSULT FACTORY FOR AVAILABILITY OF SAE PORT OPTION  
 Δ (4) SPANNER HOLES USED INSTEAD OF FLATS ON 4" DIA. AND LARGER RODS  
 § THESE CYLINDERS HAVE FULL PLATE RETAINERS. USE "E" DIMENSION INSTEAD OF "RM" - SEE PAGE 8  
 ‡ B DIMENSION TOLERANCE -.001 / -.003



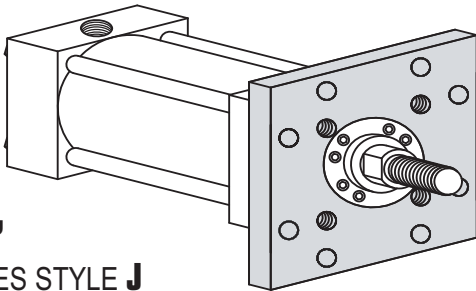
### HEAD RECTANGULAR FLANGE MOUNT



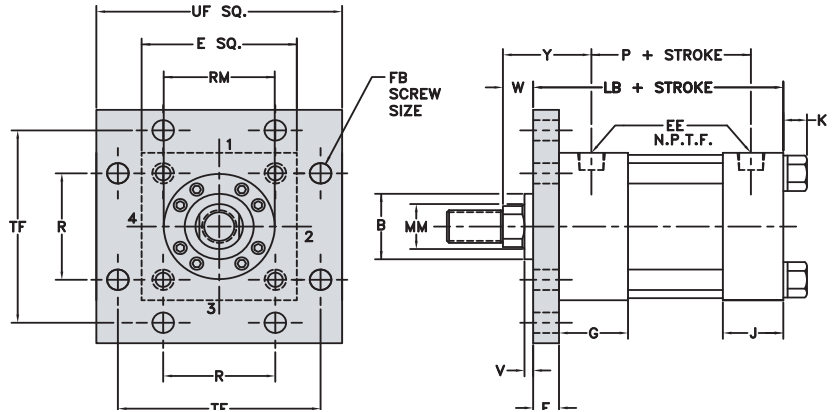
**"F"**  
YATES STYLE F  
NFPA-MF1



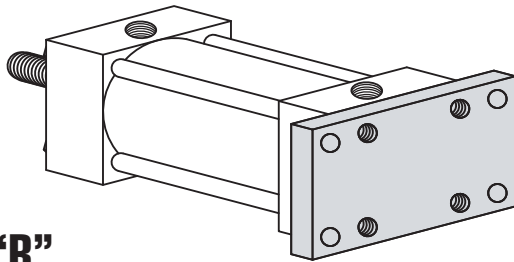
### HEAD SQUARE FLANGE MOUNT



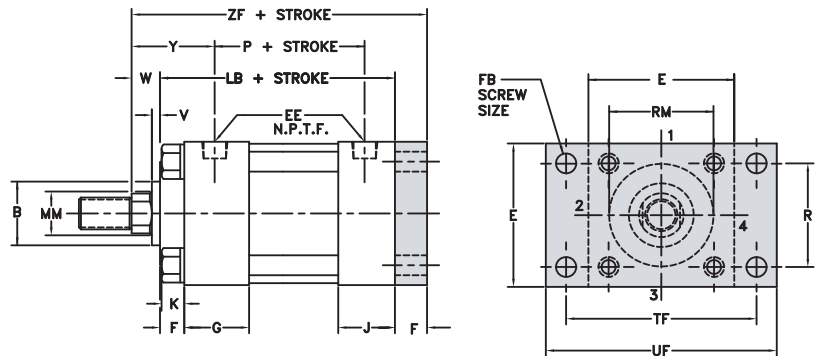
**"J"**  
YATES STYLE J  
NFPA-MF5



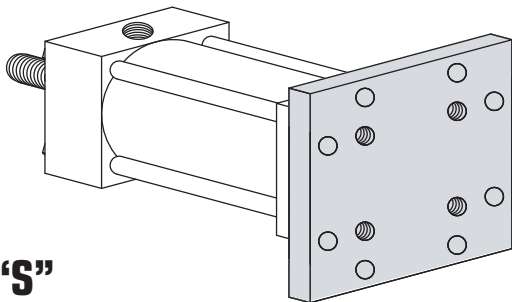
### CAP RECTANGULAR FLANGE MOUNT



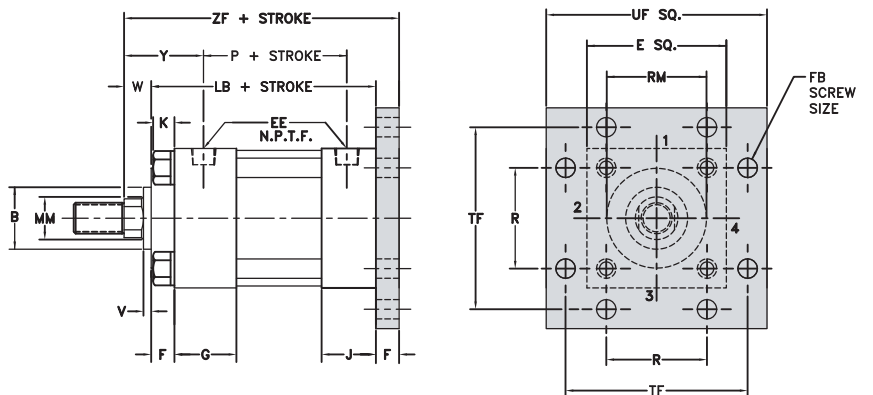
**"R"**  
YATES STYLE R  
NFPA-MF2



### CAP SQUARE FLANGE MOUNT

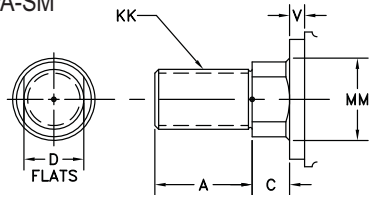


**"S"**  
YATES STYLE S  
NFPA-MF6

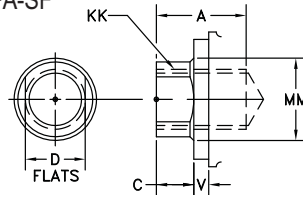


# STANDARD ROD ENDS

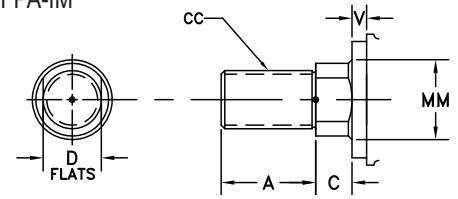
**#2 STD MALE**  
NFPA-SM



**#4 STD FEMALE**  
NFPA-SF



**#1 MALE**  
NFPA-IM



| BORE  | SAE   |       |      |     |       |       |       |        |      |          |        | ADD STROKE |       |
|-------|-------|-------|------|-----|-------|-------|-------|--------|------|----------|--------|------------|-------|
|       | E     | EE    | OPT. | F   | FB    | G     | J     | K      | R    | TF       | UF     | LB         | P     |
| 1 1/2 | 2 1/2 | 1/2   | 10   | 3/8 | 3/8   | 1 3/4 | 1 1/2 | 3/8    | 1.63 | 3 7/16   | 4 1/4  | 5          | 3     |
| 2     | 3     | 1/2   | 10   | 5/8 | 1/2   | 1 3/4 | 1 1/2 | 7/16   | 2.05 | 4 1/8    | 5 1/8  | 5 1/4      | 3     |
| 2 1/2 | 3 1/2 | 1/2   | 10   | 5/8 | 1/2   | 1 3/4 | 1 1/2 | 7/16   | 2.55 | 4 5/8    | 5 5/8  | 5 3/8      | 3 1/8 |
| 3 1/4 | 4 1/2 | 3/4   | 12   | 3/4 | 5/8   | 2     | 1 3/4 | 9/16   | 3.25 | 5 7/8    | 7 1/8  | 6 1/4      | 3 5/8 |
| 4     | 5     | 3/4   | 12   | 7/8 | 5/8   | 2     | 1 3/4 | 9/16   | 3.82 | 6 3/8    | 7 5/8  | 6 5/8      | 3 7/8 |
| 5     | 6 1/2 | 3/4   | 12   | 7/8 | 7/8   | 2     | 1 3/4 | 3/4    | 4.95 | 8 3/16   | 9 3/4  | 7 1/8      | 4 3/8 |
| 6     | 7 1/2 | 1     | 16   | 1   | 1     | 2 1/4 | 2 1/4 | 7/8    | 5.73 | 9 7/16   | 11 1/4 | 8 3/8      | 5     |
| 7     | 8 1/2 | 1 1/4 | 20   | 1   | 1 1/8 | 2 3/4 | 2 3/4 | 1      | 6.58 | 10 5/8   | 12 5/8 | 9 1/2      | 5 1/2 |
| 8     | 9 1/2 | 1 1/2 | 24   | 1   | 1 1/4 | 3     | 3     | 1 1/16 | 7.50 | 11 13/16 | 14     | 10 1/2     | 6 1/4 |

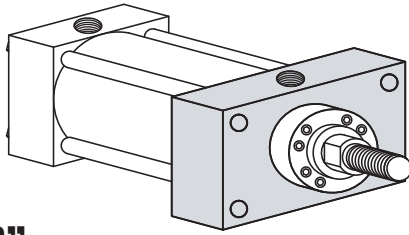
| BORE  | ROD DIA. | THREAD   |          | ROD EXTENSIONS AND PILOT DIMENSIONS |       |       |       |       |       |        |         | ADD STROKE | "F" MOUNT<br>MAX PSI PUSH | "R" MOUNT<br>MAX PSI PULL |      |
|-------|----------|----------|----------|-------------------------------------|-------|-------|-------|-------|-------|--------|---------|------------|---------------------------|---------------------------|------|
|       |          | KK       | CC       | A                                   | B     | C     | D     | V     | W     | RM     | Y       |            |                           |                           | ZF   |
| 1 1/2 | 5/8      | 7/16-20  | 1/2-20   | 3/4                                 | 1 1/8 | 3/8   | 1/2   | 1/4   | 5/8   | §      | 1 15/16 | 6          | 2500                      | 3000                      |      |
|       | 1 †      | 3/4-16   | 7/8-14   | 1 1/8                               | 1 1/2 | 1/2   | 7/8   | 1/2   | 1     | §      | 2 5/16  | 6 3/8      | 1500                      | 3000                      |      |
| 2     | 1        | 3/4-16   | 7/8-14   | 1 1/8                               | 1 1/2 | 1/2   | 7/8   | 1/4   | 3/4   | §      | 2 5/16  | 6 5/8      | 2500                      | 3000                      |      |
|       | 1 3/8 †  | 1-14     | 1 1/4-12 | 1 5/8                               | 2     | 5/8   | 1 1/8 | 3/8   | 1     | §      | 2 9/16  | 6 7/8      | 1500                      | 3000                      |      |
| 2 1/2 | 1        | 3/4-16   | 7/8-14   | 1 1/8                               | 1 1/2 | 1/2   | 7/8   | 1/4   | 3/4   | 2 1/2  | 2 5/16  | 6 3/4      | 2500                      | 3000                      |      |
|       | 1 3/8 †  | 1-14     | 1 1/4-12 | 1 5/8                               | 2     | 5/8   | 1 1/8 | 3/8   | 1     | §      | 2 9/16  | 7          | 1900                      | 3000                      |      |
|       | 1 3/4 †  | 1 1/4-12 | 1 1/2-12 | 2                                   | 2 3/8 | 3/4   | 1 1/2 | 1/2   | 1 1/4 | §      | 2 13/16 | 7 1/4      | 1500                      | 3000                      |      |
| 3 1/4 | 1 3/8    | 1-14     | 1 1/4-12 | 1 5/8                               | 2     | 5/8   | 1 1/8 | 1/4   | 7/8   | 3 7/32 | 2 11/16 | 7 7/8      | 2500                      | 3000                      |      |
|       | 1 3/4    | 1 1/4-12 | 1 1/2-12 | 2                                   | 2 3/8 | 3/4   | 1 1/2 | 3/8   | 1 1/8 | §      | 2 15/16 | 8 1/8      | 2100                      | 3000                      |      |
|       | 2 †      | 1 1/2-12 | 1 3/4-12 | 2 1/4                               | 2 5/8 | 7/8   | 1 3/4 | 3/8   | 1 1/4 | §      | 3 1/16  | 8 1/4      | 1500                      | 3000                      |      |
| 4     | 1 3/4    | 1 1/4-12 | 1 1/2-12 | 2                                   | 2 3/8 | 3/4   | 1 1/2 | 1/4   | 1     | 3 7/8  | 2 15/16 | 8 1/2      | 2500                      | 3000                      |      |
|       | 2        | 1 1/2-12 | 1 3/4-12 | 2 1/4                               | 2 5/8 | 7/8   | 1 3/4 | 1/4   | 1 1/8 | 4      | 3 1/16  | 8 5/8      | 1800                      | 3000                      |      |
|       | 2 1/2    | 1 7/8-12 | 2 1/4-12 | 3                                   | 3 1/8 | 1     | 2 1/8 | 3/8   | 1 3/8 | 4 7/16 | 3 5/16  | 8 7/8      | 1500                      | 3000                      |      |
|       | 5        | 2        | 1 1/2-12 | 1 3/4-12                            | 2 1/4 | 2 5/8 | 7/8   | 1 3/4 | 1/4   | 1 1/8  | 4       | 3 1/16     | 9 1/8                     | 2200                      | 2000 |
| 5     | 2 1/2    | 1 7/8-12 | 2 1/4-12 | 3                                   | 3 1/8 | 1     | 2 1/8 | 3/8   | 1 3/8 | 4 7/16 | 3 5/16  | 9 3/8      | 1650                      | 2500                      |      |
|       | 3        | 2 1/4-12 | 2 3/4-12 | 3 1/2                               | 3 3/4 | 1     | 2 5/8 | 3/8   | 1 3/8 | 5 1/4  | 3 5/16  | 9 3/8      | 1200                      | 2800                      |      |
|       | 3 1/2    | 2 1/2-12 | 3 1/4-12 | 3 1/2                               | 4 1/4 | 1     | 3     | 3/8   | 1 3/8 | 5 5/8  | 3 5/16  | 9 3/8      | 750                       | 3000                      |      |
|       | 6        | 2 1/2    | 1 7/8-12 | 2 1/4-12                            | 3     | 3 1/8 | 1     | 2 1/8 | 1/4   | 1 1/4  | 4 7/16  | 3 7/16     | 10 5/8                    | 1800                      | 2000 |
|       | 3        | 2 1/4-12 | 2 3/4-12 | 3 1/2                               | 3 3/4 | 1     | 2 5/8 | 1/4   | 1 1/4 | 5 1/4  | 3 7/16  | 10 5/8     | 1450                      | 2500                      |      |
| 6     | 3 1/2    | 2 1/2-12 | 3 1/4-12 | 3 1/2                               | 4 1/4 | 1     | 3     | 1/4   | 1 1/4 | 5 5/8  | 3 7/16  | 10 5/8     | 1100                      | 2800                      |      |
|       | 4        | 3-12     | 3 3/4-12 | 4                                   | 4 3/4 | 1     | Δ     | 1/4   | 1 1/4 | 6 7/16 | 3 7/16  | 10 5/8     | 750                       | 3000                      |      |
|       | 7        | 3        | 2 1/4-12 | 2 3/4-12                            | 3 1/2 | 3 3/4 | 1     | 2 5/8 | 1/4   | 1 1/4  | 5 1/4   | 3 3/4      | 11 3/4                    | 740                       | 1500 |
|       | 3 1/2    | 2 1/2-12 | 3 1/4-12 | 3 1/2                               | 4 1/4 | 1     | 3     | 1/4   | 1 1/4 | 5 5/8  | 3 3/4   | 11 3/4     | 650                       | 1700                      |      |
|       | 4        | 3-12     | 3 3/4-12 | 4                                   | 4 3/4 | 1     | Δ     | 1/4   | 1 1/4 | 6 7/16 | 3 3/4   | 11 3/4     | 450                       | 1800                      |      |
|       | 4 1/2    | 3 1/4-12 | 4 1/4-12 | 4 1/2                               | 5 1/4 | 1     | Δ     | 1/4   | 1 1/4 | 7 1/8  | 3 3/4   | 11 3/4     | 360                       | 1900                      |      |
| 8     | 5        | 3 1/2-12 | 4 3/4-12 | 5                                   | 5 3/4 | 1     | Δ     | 1/4   | 1 1/4 | 7 5/8  | 3 3/4   | 11 3/4     | 270                       | 2000                      |      |
|       | 3 1/2    | 2 1/2-12 | 3 1/4-12 | 3 1/2                               | 4 1/4 | 1     | 3     | 1/4   | 1 1/4 | 5 5/8  | 3 7/8   | 12 3/4     | 620                       | 1500                      |      |
|       | 4        | 3-12     | 3 3/4-12 | 4                                   | 4 3/4 | 1     | Δ     | 1/4   | 1 1/4 | 6 7/16 | 3 7/8   | 12 3/4     | 470                       | 1700                      |      |
|       | 4 1/2    | 3 1/4-12 | 4 1/4-12 | 4 1/2                               | 5 1/4 | 1     | Δ     | 1/4   | 1 1/4 | 7 1/8  | 3 7/8   | 12 3/4     | 410                       | 1800                      |      |
|       | 5        | 3 1/2-12 | 4 3/4-12 | 5                                   | 5 3/4 | 1     | Δ     | 1/4   | 1 1/4 | 7 5/8  | 3 7/8   | 12 3/4     | 340                       | 1900                      |      |
| 5 1/2 | 4-12     | 5 1/4-12 | 5 1/2    | 6 1/4                               | 1     | Δ     | 1/4   | 1 1/4 | 8 3/8 | 3 7/8  | 12 3/4  | 280        | 2000                      |                           |      |

† HEAD END PORTS SHALLOW TAPPED  
 • CONSULT FACTORY FOR AVAILABILITY OF SAE PORT OPTION  
 Δ (4) SPANNER HOLES USED INSTEAD OF FLATS ON 4" DIA. AND LARGER RODS

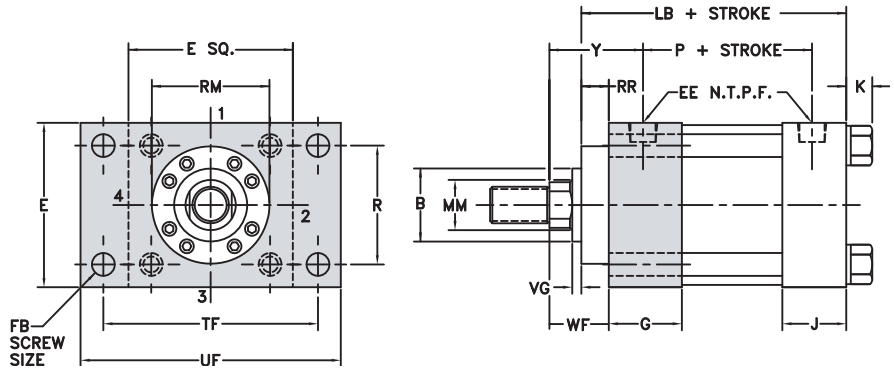
§ THESE CYLINDERS HAVE FULL PLATE RETAINERS. USE "E" DIMENSION INSTEAD OF "RM" - SEE PAGE 8  
 ‡ B DIMENSION TOLERANCE -.001/-.003  
**NOTE:** "F" AND "R" MOUNTS HAVE DERATED PRESSURE RATINGS, FOR HIGHER PRESSURE USE "G" AND "P" MOUNTS



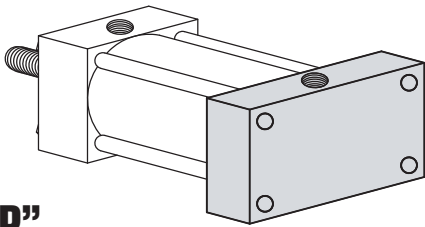
## HEAD RECTANGULAR INTEGRAL FLANGE MOUNT



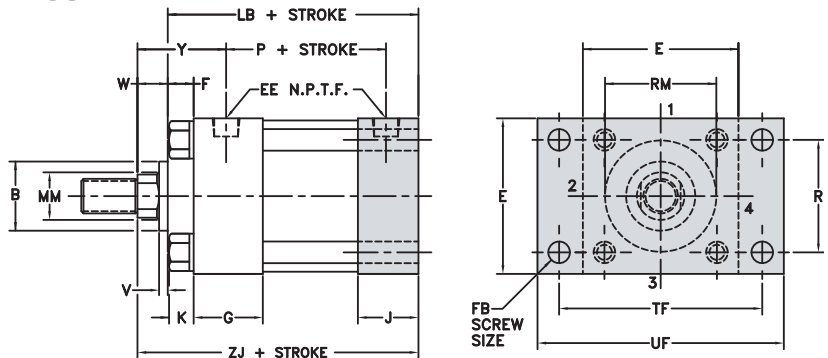
**"G"**  
YATES STYLE **G**  
NFPA-ME5



## CAP RECTANGULAR INTEGRAL FLANGE MOUNT

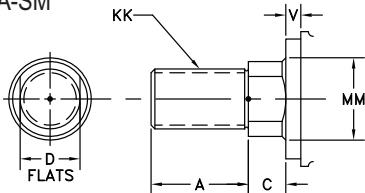


**"P"**  
YATES STYLE **P**  
NFPA-ME6

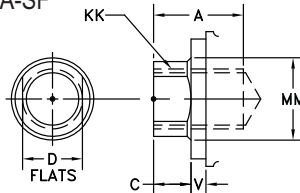


## STANDARD ROD ENDS

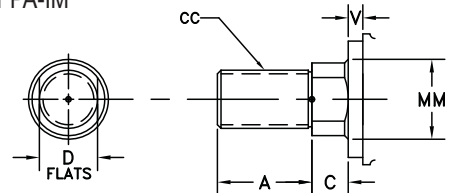
**#2** STD MALE  
NFPA-SM



**#4** STD FEMALE  
NFPA-SF



**#1** MALE  
NFPA-IM



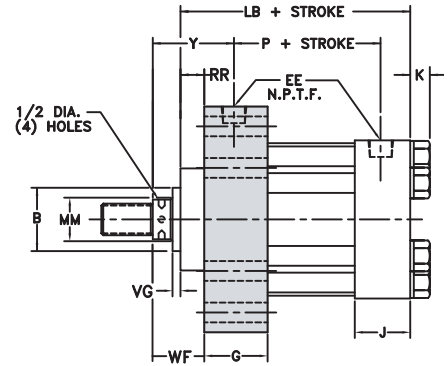
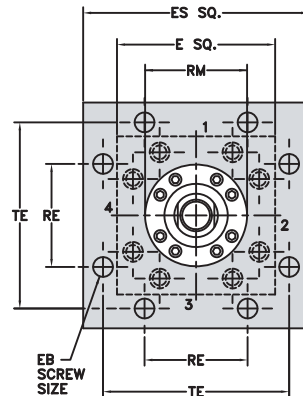
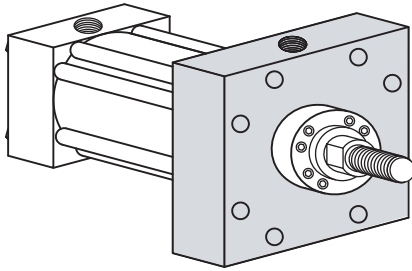
- † HEAD END PORTS SHALLOW TAPPED
- CONSULT FACTORY FOR AVAILABILITY OF SAE PORT OPTION
- Δ (4) SPANNER HOLES USED INSTEAD OF FLATS ON 4" DIA. AND LARGER RODS
- § P-MOUNT CYLINDERS HAVE FULL PLATE RETAINERS. USE "E" DIMENSION INSTEAD OF "RM" - SEE PAGE 8
- ‡ B DIMENSION TOLERANCE -.001/-.003

| BORE  | SAE    |       |     |       |       |         |         |        |       |          |        | ADD STROKE |       |
|-------|--------|-------|-----|-------|-------|---------|---------|--------|-------|----------|--------|------------|-------|
|       | E      | EE    | OPT | F     | FB    | G       | J       | K      | R     | TF       | UF     | LB         | P     |
| 1 1/2 | 2 1/2  | 1/2   | 10  | 3/8   | 3/8   | 1 3/4   | 1 1/2   | 3/8    | 1.63  | 3 7/16   | 4 1/4  | 5          | 3     |
| 2     | 3      | 1/2   | 10  | 5/8   | 1/2   | 1 3/4   | 1 1/2   | 7/16   | 2.05  | 4 1/8    | 5 1/8  | 5 1/4      | 3     |
| 2 1/2 | 3 1/2  | 1/2   | 10  | 5/8   | 1/2   | 1 3/4   | 1 1/2   | 7/16   | 2.55  | 4 5/8    | 5 5/8  | 5 3/8      | 3 1/8 |
| 3 1/4 | 4 1/2  | 3/4   | 12  | 3/4   | 5/8   | 2       | 1 3/4   | 9/16   | 3.25  | 5 7/8    | 7 1/8  | 6 1/4      | 3 5/8 |
| 4     | 5      | 3/4   | 12  | 7/8   | 5/8   | 2       | 1 3/4   | 9/16   | 3.82  | 6 3/8    | 7 5/8  | 6 5/8      | 3 7/8 |
| 5     | 6 1/2  | 3/4   | 12  | 7/8   | 7/8   | 2       | 1 3/4   | 3/4    | 4.95  | 8 3/16   | 9 3/4  | 7 1/8      | 4 3/8 |
| 6     | 7 1/2  | 1     | 16  | 1     | 1     | 2 1/4   | 2 1/4   | 7/8    | 5.73  | 9 7/16   | 11 1/4 | 8 3/8      | 5     |
| 7     | 8 1/2  | 1 1/4 | 20  | 1     | 1 1/8 | 2 3/4   | 2 3/4   | 1      | 6.58  | 10 5/8   | 12 5/8 | 9 1/2      | 5 1/2 |
| 8     | 9 1/2  | 1 1/2 | 24  | 1     | 1 1/4 | 3       | 3       | 1 1/16 | 7.50  | 11 13/16 | 14     | 10 1/2     | 6 1/4 |
| 10    | 12 5/8 | 2     | 32  | 7/8   | 1 3/4 | 3 11/16 | 3 11/16 | 1      | 9.62  | 15 7/8   | 19     | 13         | 8 1/8 |
| 12    | 14 7/8 | 2 1/2 | 32  | 1 3/8 | 2     | 4 7/16  | 4 7/16  | 1 1/8  | 11.45 | 18 1/2   | 22     | 15 7/8     | 9 1/2 |
| 14    | 17 1/8 | 2 1/2 | 32  | 1 5/8 | 2 1/4 | 4 7/8   | 4 7/8   | 1 1/8  | 13.26 | 21       | 25     | 17 1/4     | 9 7/8 |

| BORE  | ROD DIA. | THREAD   |          | ROD EXTENSIONS AND PILOT DIMENSIONS |       |     |       |       |        |        |         |         |          |         | ADD STROKE |
|-------|----------|----------|----------|-------------------------------------|-------|-----|-------|-------|--------|--------|---------|---------|----------|---------|------------|
|       | MM       | KK       | CC       | A                                   | B ‡   | C   | D     | RR    | V      | VG     | W       | WF      | RM       | Y       | ZJ         |
| 1 1/2 | 5/8      | 7/16-20  | 1/2-20   | 3/4                                 | 1 1/8 | 3/8 | 1/2   | 3/8   | 1/4    | 1/4    | 5/8     | 1       | 2 3/8 §  | 1 15/16 | 5 5/8      |
|       | 1 †      | 3/4-16   | 7/8-14   | 1 1/8                               | 1 1/2 | 1/2 | 7/8   | 5/8   | 1/4    | 1/4    | 1       | 1 3/8   | 2 1/2 §  | 2 5/16  | 6          |
| 2     | 1        | 3/4-16   | 7/8-14   | 1 1/8                               | 1 1/2 | 1/2 | 7/8   | 5/8   | 1/4    | 1/4    | 3/4     | 1 3/8   | 2 1/2 §  | 2 5/16  | 6          |
|       | 1 3/8 †  | 1-14     | 1 1/4-12 | 1 5/8                               | 2     | 5/8 | 1 1/8 | 5/8   | 3/8    | 3/8    | 1       | 1 5/8   | 3 7/32 § | 2 9/16  | 6 1/4      |
| 2 1/2 | 1        | 3/4-16   | 7/8-14   | 1 1/8                               | 1 1/2 | 1/2 | 7/8   | 5/8   | 1/4    | 1/4    | 3/4     | 1 3/8   | 2 1/2    | 2 5/16  | 6 1/8      |
|       | 1 3/8 †  | 1-14     | 1 1/4-12 | 1 5/8                               | 2     | 5/8 | 1 1/8 | 5/8   | 3/8    | 3/8    | 1       | 1 5/8   | 3 7/32 § | 2 9/16  | 6 3/8      |
| 3 1/4 | 1 3/4 †  | 1 1/4-12 | 1 1/2-12 | 2                                   | 2 3/8 | 3/4 | 1 1/2 | 5/8   | 1/2    | 1/2    | 1 1/4   | 1 7/8   | 3 7/8 §  | 2 13/16 | 6 5/8      |
|       | 1 3/8    | 1-14     | 1 1/4-12 | 1 5/8                               | 2     | 5/8 | 1 1/8 | 5/8   | 1/4    | 3/8    | 7/8     | 1 5/8   | 3 7/32   | 2 11/16 | 7 1/8      |
| 4     | 1 3/4    | 1 1/4-12 | 1 1/2-12 | 2                                   | 2 3/8 | 3/4 | 1 1/2 | 5/8   | 3/8    | 1/2    | 1 1/8   | 1 7/8   | 3 7/8 §  | 2 15/16 | 7 3/8      |
|       | 2 †      | 1 1/2-12 | 1 3/4-12 | 2 1/4                               | 2 5/8 | 7/8 | 1 3/4 | 5/8   | 3/8    | 1/2    | 1 1/4   | 2       | 4 §      | 3 1/16  | 7 1/2      |
| 5     | 1 3/4    | 1 1/4-12 | 1 1/2-12 | 2                                   | 2 3/8 | 3/4 | 1 1/2 | 5/8   | 1/4    | 1/2    | 1 1/8   | 2       | 4        | 3 1/16  | 7 5/8      |
|       | 2        | 1 1/2-12 | 1 3/4-12 | 2 1/4                               | 2 5/8 | 7/8 | 1 3/4 | 5/8   | 1/4    | 1/2    | 1 1/8   | 2       | 4        | 3 1/16  | 7 3/4      |
| 6     | 2 1/2    | 1 7/8-12 | 2 1/4-12 | 3                                   | 3 1/8 | 1   | 2 1/8 | 5/8   | 3/8    | 5/8    | 1 3/8   | 2 1/4   | 4 7/16   | 3 5/16  | 8          |
|       | 2        | 1 1/2-12 | 1 3/4-12 | 2 1/4                               | 2 5/8 | 7/8 | 1 3/4 | 5/8   | 1/4    | 1/2    | 1 1/8   | 2       | 4        | 3 1/16  | 8 1/4      |
| 7     | 2 1/2    | 1 7/8-12 | 2 1/4-12 | 3                                   | 3 1/8 | 1   | 2 1/8 | 5/8   | 3/8    | 5/8    | 1 3/8   | 2 1/4   | 4 7/16   | 3 5/16  | 8 1/2      |
|       | 3        | 2 1/4-12 | 2 3/4-12 | 3 1/2                               | 3 3/4 | 1   | 2 5/8 | 3/4   | 3/8    | 1/2    | 1 3/8   | 2 1/4   | 5 1/4    | 3 5/16  | 8 1/2      |
| 8     | 3 1/2    | 2 1/2-12 | 3 1/4-12 | 3 1/2                               | 4 1/4 | 1   | 3     | 3/4   | 1/2    | 1/2    | 1 1/2   | 2 1/4   | 5 5/8    | 3 5/16  | 8 1/2      |
|       | 2 1/2    | 1 7/8-12 | 2 1/4-12 | 3                                   | 3 1/8 | 1   | 2 1/8 | 5/8   | 1/4    | 5/8    | 1 1/4   | 2 1/4   | 4 7/16   | 3 7/16  | 9 5/8      |
| 9     | 3        | 2 1/4-12 | 2 3/4-12 | 3 1/2                               | 3 3/4 | 1   | 2 5/8 | 3/4   | 1/4    | 1/2    | 1 1/4   | 2 1/4   | 5 1/4    | 3 7/16  | 9 5/8      |
|       | 3 1/2    | 2 1/2-12 | 3 1/4-12 | 3 1/2                               | 4 1/4 | 1   | 3     | 3/4   | 1/4    | 1/2    | 1 1/4   | 2 1/4   | 5 5/8    | 3 7/16  | 9 5/8      |
| 10    | 4        | 3-12     | 3 3/4-12 | 4                                   | 4 3/4 | 1   | Δ     | 7/8   | 1/4    | 3/8    | 1 1/4   | 2 1/4   | 6 7/16   | 3 7/16  | 9 5/8      |
|       | 3        | 2 1/4-12 | 2 3/4-12 | 3 1/2                               | 3 3/4 | 1   | 2 5/8 | 3/4   | 1/4    | 1/2    | 1 1/4   | 2 1/4   | 5 1/4    | 3 3/4   | 10 3/4     |
| 11    | 3 1/2    | 2 1/2-12 | 3 1/4-12 | 3 1/2                               | 4 1/4 | 1   | 3     | 3/4   | 1/4    | 1/2    | 1 1/4   | 2 1/4   | 5 5/8    | 3 3/4   | 10 3/4     |
|       | 4        | 3-12     | 3 3/4-12 | 4                                   | 4 3/4 | 1   | Δ     | 7/8   | 1/4    | 3/8    | 1 1/4   | 2 1/4   | 6 7/16   | 3 3/4   | 10 3/4     |
| 12    | 4 1/2    | 3 1/4-12 | 4 1/4-12 | 4 1/2                               | 5 1/4 | 1   | Δ     | 7/8   | 1/4    | 3/8    | 1 1/4   | 2 1/4   | 7 1/8    | 3 3/4   | 10 3/4     |
|       | 5        | 3 1/2-12 | 4 3/4-12 | 5                                   | 5 3/4 | 1   | Δ     | 7/8   | 1/4    | 3/8    | 1 1/4   | 2 1/4   | 7 5/8    | 3 3/4   | 10 3/4     |
| 13    | 3 1/2    | 2 1/2-12 | 3 1/4-12 | 3 1/2                               | 4 1/4 | 1   | 3     | 3/4   | 1/4    | 1/2    | 1 1/4   | 2 1/4   | 5 5/8    | 3 7/8   | 11 3/4     |
|       | 4        | 3-12     | 3 3/4-12 | 4                                   | 4 3/4 | 1   | Δ     | 7/8   | 1/4    | 3/8    | 1 1/4   | 2 1/4   | 6 7/16   | 3 7/8   | 11 3/4     |
| 14    | 4 1/2    | 3 1/4-12 | 4 1/4-12 | 4 1/2                               | 5 1/4 | 1   | Δ     | 7/8   | 1/4    | 3/8    | 1 1/4   | 2 1/4   | 7 1/8    | 3 7/8   | 11 3/4     |
|       | 5 1/2    | 4-12     | 5 1/4-12 | 5 1/2                               | 6 1/4 | 1   | Δ     | 7/8   | 1/4    | 3/8    | 1 1/4   | 2 1/4   | 8 3/8    | 3 7/8   | 11 3/4     |
| 15    | 4 1/2    | 3 1/4-12 | 4 1/4-12 | 4 1/2                               | 5 1/4 | 1   | Δ     | 7/8   | 1 1/16 | 1 1/16 | 2 1/16  | 2 15/16 | 7 1/8    | 4 15/16 | 15 1/16    |
|       | 5        | 3 1/2-12 | 4 3/4-12 | 5                                   | 5 3/4 | 1   | Δ     | 7/8   | 1 5/16 | 1 5/16 | 2 5/16  | 3 3/16  | 7 5/8    | 5 3/16  | 15 5/16    |
| 16    | 5 1/2    | 4-12     | 5 1/4-12 | 5 1/2                               | 6 1/4 | 1   | Δ     | 7/8   | 1 5/16 | 1 5/16 | 2 5/16  | 3 3/16  | 8 3/8    | 5 3/16  | 15 5/16    |
|       | 7        | 5-12     | 6 1/2-12 | 7                                   | 8     | 1   | Δ     | 7/8   | 1 5/8  | 1 5/8  | 2 5/8   | 3 1/2   | 10 13/16 | 5 1/2   | 15 5/8     |
| 17    | 5 1/2    | 4-12     | 5 1/4-12 | 5 1/2                               | 6 1/4 | 1   | Δ     | 1 3/8 | 13/16  | 13/16  | 1 13/16 | 3 3/16  | 8 3/8    | 5 11/16 | 17 11/16   |
|       | 7        | 5-12     | 6 1/2-12 | 7                                   | 8     | 1   | Δ     | 1 3/8 | 1 1/8  | 1 1/8  | 2 1/8   | 3 1/2   | 10 13/16 | 6       | 18         |
| 18    | 8        | 5 3/4-12 | 7 1/2-12 | 8                                   | 9     | 1   | Δ     | 1 3/8 | 1 5/8  | 1 5/8  | 2 5/8   | 4       | 12 3/8   | 6 1/2   | 18 1/2     |
|       | 7        | 5-12     | 6 1/2-12 | 7                                   | 8     | 1   | Δ     | 1 5/8 | 7/8    | 7/8    | 1 7/8   | 3 1/2   | 10 13/16 | 6 3/8   | 19 1/8     |
| 19    | 8        | 5 3/4-12 | 7 1/2-12 | 8                                   | 9     | 1   | Δ     | 1 5/8 | 1 3/8  | 1 3/8  | 2 3/8   | 4       | 12 3/8   | 6 7/8   | 19 5/8     |
|       | 9        | 6 1/2-12 | 8 1/2-12 | 9                                   | 10    | 1   | Δ     | 1 5/8 | 1 5/8  | 1 5/8  | 2 5/8   | 4 1/4   | 13 1/8   | 7 1/8   | 19 7/8     |
| 20    | 10       | 7 1/4-12 | 9 1/2-12 | 10                                  | 11    | 1   | Δ     | 1 5/8 | 1 7/8  | 1 7/8  | 2 7/8   | 4 1/2   | 14 5/8   | 7 3/8   | 20 1/8     |

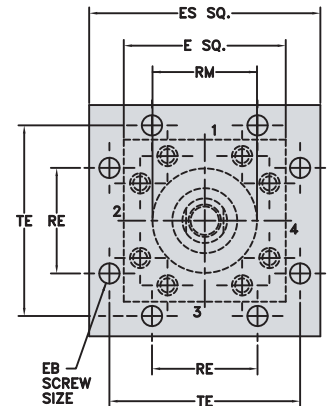
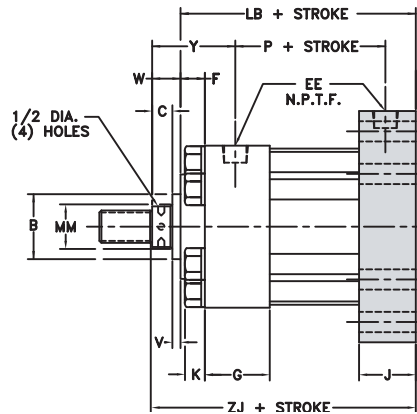
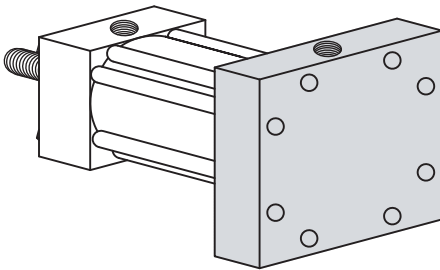


### HEAD SQUARE INTEGRAL FLANGE MOUNT



**“X”**  
YATES STYLE X  
NFPA-ME3

### CAP SQUARE INTEGRAL FLANGE MOUNT

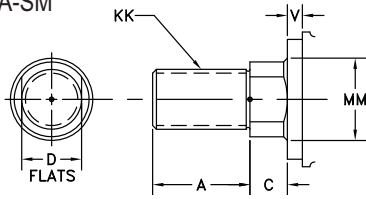


**“Z”**  
YATES STYLE Z  
NFPA-ME4

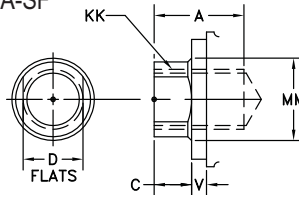


# STANDARD ROD ENDS

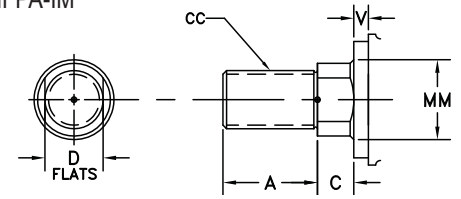
**#2 STD MALE**  
NFPA-SM



**#4 STD FEMALE**  
NFPA-SF



**#1 MALE**  
NFPA-IM



| BORE | SAE    |       |       |     |         |        |         |         |        |          |         | ADD STROKE |        |
|------|--------|-------|-------|-----|---------|--------|---------|---------|--------|----------|---------|------------|--------|
|      | E      | EB    | EE    | OPT | F       | ES     | G       | J       | K      | RE       | TE      | LB         | P      |
| 10   | 12 5/8 | 1 1/4 | 2     | 32  | 7/8     | 16 5/8 | 3 11/16 | 3 11/16 | 1      | 9 7/8    | 14 1/8  | 13         | 8 1/8  |
| 12   | 14 7/8 | 1 1/2 | 2 1/2 | 32  | 1 3/8   | 19 3/4 | 4 7/16  | 4 7/16  | 1 1/16 | 11 3/4   | 16 3/4  | 15 7/8     | 9 1/2  |
| 14   | 17 1/8 | 1 3/4 | 2 1/2 | 32  | 1 5/8   | 21 3/4 | 4 7/8   | 4 7/8   | 1 1/16 | 12 15/16 | 18 7/16 | 17 1/4     | 9 7/8  |
| 16   | 19 1/4 | 1 3/4 | 3     | 32  | 1 7/8   | 24 1/2 | 5 7/8   | 5 7/8   | 1 9/32 | 15 1/4   | 21 1/16 | 20         | 11     |
| 18   | 22     | 2     | 3     | 32  | 2 3/16  | 26 1/2 | 6 7/8   | 6 7/8   | 1 9/32 | 16 7/16  | 22 5/8  | 23 5/16    | 12     |
| 20   | 23 5/8 | 2     | 3     | 32  | 2 11/16 | 29     | 7 7/8   | 7 7/8   | 1 9/32 | 18 1/16  | 24 7/8  | 26 5/16    | 12 1/2 |

| BORE | ROD DIA. | THREAD   |          | ROD EXTENSIONS AND PILOT DIMENSIONS |       |   |   |        |        |         |         |          |         |         | ADD STROKE |
|------|----------|----------|----------|-------------------------------------|-------|---|---|--------|--------|---------|---------|----------|---------|---------|------------|
|      | MM       | KK       | CC       | A                                   | B ‡   | C | D | V      | VG     | W       | WF      | RM       | RR      | Y       | ZJ         |
| 10   | 4 1/2    | 3 1/4-12 | 4 1/4-12 | 4 1/2                               | 5 1/4 | 1 | Δ | 1 1/16 | 1 1/16 | 2 1/16  | 2 15/16 | 7 1/8    | 7/8     | 4 15/16 | 15 1/16    |
|      | 5        | 3 1/2-12 | 4 3/4-12 | 5                                   | 5 3/4 | 1 | Δ | 1 5/16 | 1 5/16 | 2 5/16  | 3 3/16  | 7 5/8    | 7/8     | 5 3/16  | 15 5/16    |
|      | 5 1/2    | 4-12     | 5 1/4-12 | 5 1/2                               | 6 1/4 | 1 | Δ | 1 5/16 | 1 5/16 | 2 5/16  | 3 3/16  | 8 3/8    | 7/8     | 5 3/16  | 15 5/16    |
|      | 7        | 5-12     | 6 1/2-12 | 7                                   | 8     | 1 | Δ | 1 5/8  | 1 5/8  | 2 5/8   | 3 1/2   | 10 13/16 | 7/8     | 5 1/2   | 15 5/8     |
| 12   | 5 1/2    | 4-12     | 5 1/4-12 | 5 1/2                               | 6 1/4 | 1 | Δ | 13/16  | 13/16  | 1 13/16 | 3 3/16  | 8 3/8    | 1 3/8   | 5 11/16 | 17 11/16   |
|      | 7        | 5-12     | 6 1/2-12 | 7                                   | 8     | 1 | Δ | 1 1/8  | 1 1/8  | 2 1/8   | 3 1/2   | 10 13/16 | 1 3/8   | 6       | 18         |
|      | 8        | 5 3/4-12 | 7 1/2-12 | 8                                   | 9     | 1 | Δ | 1 5/8  | 1 5/8  | 2 5/8   | 4       | 12 3/8   | 1 3/8   | 6 1/2   | 18 1/2     |
| 14   | 7        | 5-12     | 6 1/2-12 | 7                                   | 8     | 1 | Δ | 7/8    | 7/8    | 1 7/8   | 3 1/2   | 10 13/16 | 1 5/8   | 6 3/8   | 19 1/8     |
|      | 8        | 5 3/4-12 | 7 1/2-12 | 8                                   | 9     | 1 | Δ | 1 3/8  | 1 3/8  | 2 3/8   | 4       | 12 3/8   | 1 5/8   | 6 7/8   | 19 5/8     |
|      | 9        | 6 1/2-12 | 8 1/2-12 | 9                                   | 10    | 1 | Δ | 1 5/8  | 1 5/8  | 2 5/8   | 4 1/4   | 13 1/8   | 1 5/8   | 7 1/8   | 19 7/8     |
|      | 10       | 7 1/4-12 | 9 1/2-12 | 10                                  | 11    | 1 | Δ | 1 7/8  | 1 7/8  | 2 7/8   | 4 1/2   | 14 5/8   | 1 5/8   | 7 3/8   | 20 1/8     |
| 16   | 8        | 5 3/4-12 | 7 1/2-12 | 8                                   | 9     | 1 | Δ | 1 1/8  | 1 1/8  | 2 1/8   | 4       | 12 3/8   | 1 7/8   | 7 9/16  | 22 1/8     |
|      | 9        | 6 1/2-12 | 8 1/2-12 | 9                                   | 10    | 1 | Δ | 1 3/8  | 1 3/8  | 2 3/8   | 4 1/4   | 13 1/8   | 1 7/8   | 7 13/16 | 22 3/8     |
|      | 10       | 7 1/4-12 | 9 1/2-12 | 10                                  | 11    | 1 | Δ | 1 5/8  | 1 5/8  | 2 5/8   | 4 1/2   | 14 5/8   | 1 7/8   | 8 1/16  | 22 5/8     |
| 18   | 9        | 6 1/2-12 | 8 1/2-12 | 9                                   | 10    | 1 | Δ | 1 1/16 | 1 1/16 | 2 1/16  | 4 1/4   | 13 1/8   | 2 3/16  | 8 13/16 | 25 3/8     |
|      | 10       | 7 1/4-12 | 9 1/2-12 | 10                                  | 11    | 1 | Δ | 1 5/16 | 1 5/16 | 2 5/16  | 4 1/2   | 14 5/8   | 2 3/16  | 9 1/16  | 25 5/8     |
| 20   | 10       | 7 1/4-12 | 9 1/2-12 | 10                                  | 11    | 1 | Δ | 13/16  | 13/16  | 1 13/16 | 4 1/2   | 14 5/8   | 2 11/16 | 10 1/16 | 28 1/8     |

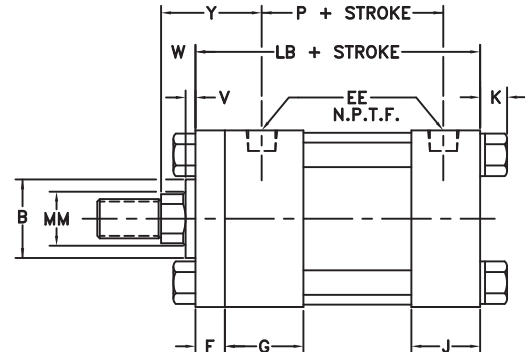
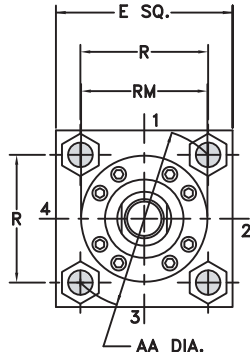
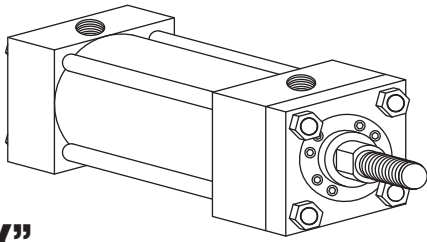
Δ (4) SPANNER HOLES USED INSTEAD OF FLATS ON 4" DIA. AND LARGER RODS

‡ B DIMENSION TOLERANCE -.001/-.003

NOTE: SEE PAGE 8 FOR TIE ROD INFORMATION ON 10" THRU 20" BORES

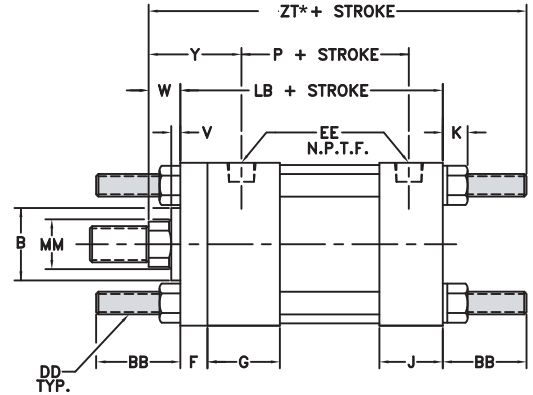
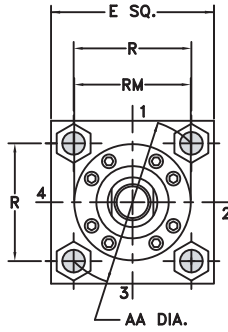
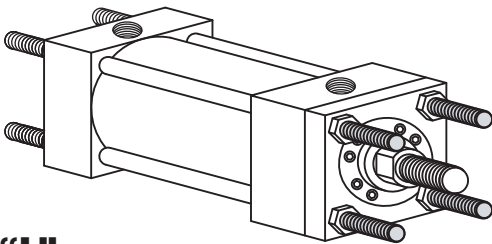


### NO TIE RODS EXTENDED MOUNT



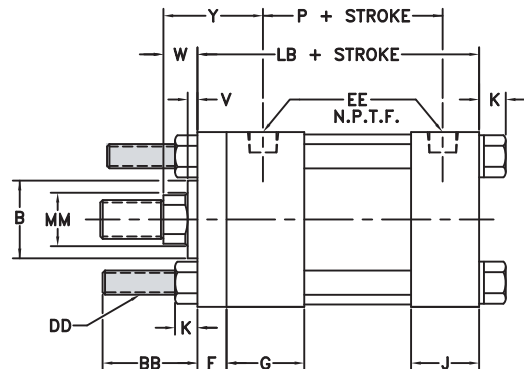
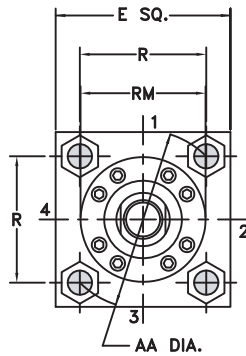
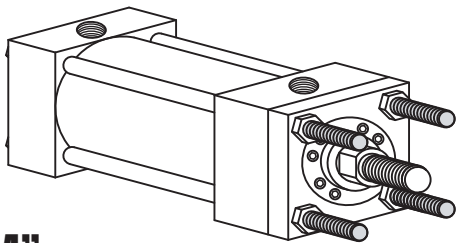
**“K”**  
YATES STYLE K  
NFPA-MX0

### BOTH ENDS TIE RODS EXTENDED MOUNT



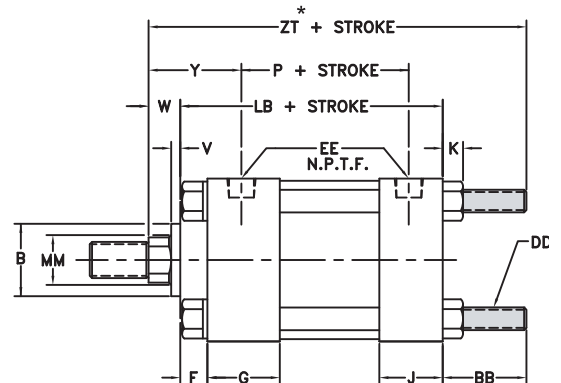
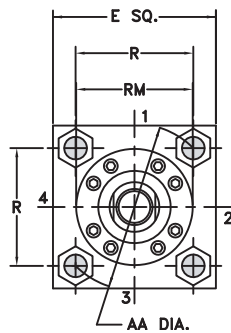
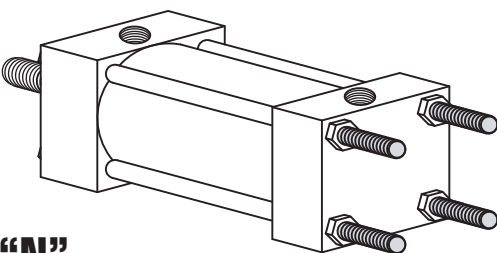
**“L”**  
YATES STYLE L  
NFPA-MX1

### HEAD TIE RODS EXTENDED MOUNT



**“M”**  
YATES STYLE M  
NFPA-MX3

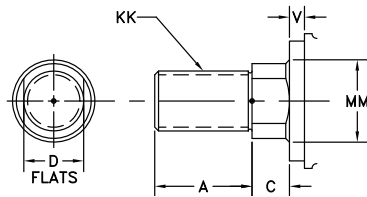
### CAP TIE RODS EXTENDED MOUNT



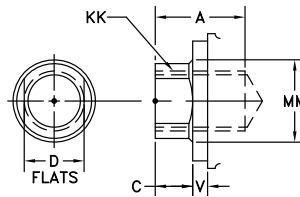
**“N”**  
YATES STYLE N  
NFPA-MX2

# STANDARD ROD ENDS

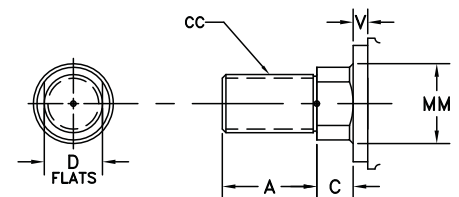
## #2 STD MALE NFPA-SM



## #4 STD FEMALE NFPA-SF



## #1 MALE NFPA-IM



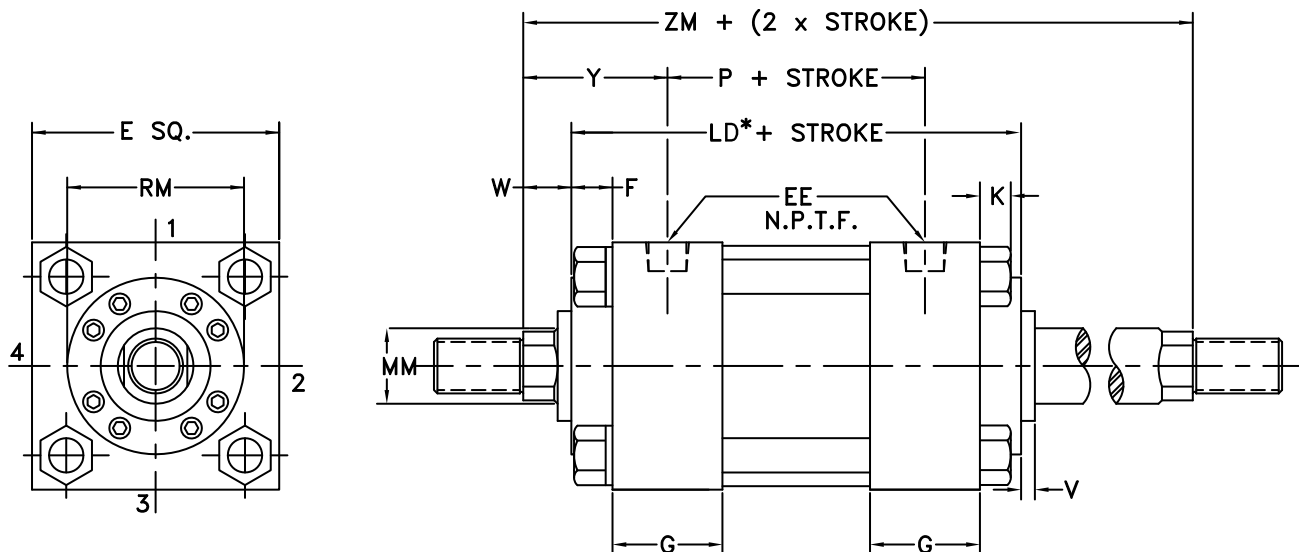
| BORE  | SAE  |         |          |       |       |      |     |       |       |        |      | ADD STROKE |       |
|-------|------|---------|----------|-------|-------|------|-----|-------|-------|--------|------|------------|-------|
|       | AA   | BB      | DD       | E     | EE    | OPT. | F   | G     | J     | K      | R    | LB         | P     |
| 1 1/2 | 2.3  | 1 3/8   | 3/8-24   | 2 1/2 | 1/2   | 10   | 3/8 | 1 3/4 | 1 1/2 | 3/8    | 1.63 | 5          | 3     |
| 2     | 2.9  | 1 13/16 | 1/2-20   | 3     | 1/2   | 10   | 5/8 | 1 3/4 | 1 1/2 | 7/16   | 2.05 | 5 1/4      | 3     |
| 2 1/2 | 3.6  | 1 13/16 | 1/2-20   | 3 1/2 | 1/2   | 10   | 5/8 | 1 3/4 | 1 1/2 | 7/16   | 2.55 | 5 3/8      | 3 1/8 |
| 3 1/4 | 4.6  | 2 5/16  | 5/8-18   | 4 1/2 | 3/4   | 12   | 3/4 | 2     | 1 3/4 | 9/16   | 3.25 | 6 1/4      | 3 5/8 |
| 4     | 5.4  | 2 5/16  | 5/8-18   | 5     | 3/4   | 12   | 7/8 | 2     | 1 3/4 | 9/16   | 3.82 | 6 5/8      | 3 7/8 |
| 5     | 7.0  | 3 3/16  | 7/8-14   | 6 1/2 | 3/4   | 12   | 7/8 | 2     | 1 3/4 | 3/4    | 4.95 | 7 1/8      | 4 3/8 |
| 6     | 8.1  | 3 5/8   | 1-14     | 7 1/2 | 1     | 16   | 1   | 2 1/4 | 2 1/4 | 7/8    | 5.73 | 8 3/8      | 5     |
| 7     | 9.3  | 4 1/8   | 1 1/8-12 | 8 1/2 | 1 1/4 | 20   | 1   | 2 3/4 | 2 3/4 | 1      | 6.58 | 9 1/2      | 5 1/2 |
| 8     | 10.6 | 4 1/2   | 1 1/4-12 | 9 1/2 | 1 1/2 | 24   | 1   | 3     | 3     | 1 1/16 | 7.50 | 10 1/2     | 6 1/4 |

| BORE  | ROD DIA. | THREAD   |          | ROD EXTENSIONS AND PILOT DIMENSION |       |       |       |       |       |        |         | ADD STROKE |        |
|-------|----------|----------|----------|------------------------------------|-------|-------|-------|-------|-------|--------|---------|------------|--------|
|       | MM       | KK       | CC       | A                                  | B     | C     | D     | V     | W     | RM     | Y       | ZT*        |        |
| 1 1/2 | 5/8      | 7/16-20  | 1/2-20   | 3/4                                | 1 1/8 | 3/8   | 1/2   | 1/4   | 5/8   | §      | 1 15/16 | 7          |        |
|       | 1 †      | 3/4-16   | 7/8-14   | 1 1/8                              | 1 1/2 | 1/2   | 7/8   | 1/2   | 1     | §      | 2 5/16  | 7 3/8      |        |
| 2     | 1        | 3/4-16   | 7/8-14   | 1 1/8                              | 1 1/2 | 1/2   | 7/8   | 1/4   | 3/4   | §      | 2 5/16  | 7 13/16    |        |
|       | 1 3/8 †  | 1-14     | 1 1/4-12 | 1 5/8                              | 2     | 5/8   | 1 1/8 | 3/8   | 1     | §      | 2 9/16  | 8 1/16     |        |
| 2 1/2 | 1        | 3/4-16   | 7/8-14   | 1 1/8                              | 1 1/2 | 1/2   | 7/8   | 1/4   | 3/4   | 2 1/2  | 2 5/16  | 7 15/16    |        |
|       | 1 3/8 †  | 1-14     | 1 1/4-12 | 1 5/8                              | 2     | 5/8   | 1 1/8 | 3/8   | 1     | §      | 2 9/16  | 8 3/16     |        |
|       | 1 3/4 †  | 1 1/4-12 | 1 1/2-12 | 2                                  | 2 3/8 | 3/4   | 1 1/2 | 1/2   | 1 1/4 | §      | 2 13/16 | 8 7/16     |        |
| 3 1/4 | 1 3/8    | 1-14     | 1 1/4-12 | 1 5/8                              | 2     | 5/8   | 1 1/8 | 1/4   | 7/8   | 3 7/32 | 2 11/16 | 9 7/16     |        |
|       | 1 3/4    | 1 1/4-12 | 1 1/2-12 | 2                                  | 2 3/8 | 3/4   | 1 1/2 | 3/8   | 1 1/8 | §      | 2 15/16 | 9 11/16    |        |
|       | 2 †      | 1 1/2-12 | 1 3/4-12 | 2 1/4                              | 2 5/8 | 7/8   | 1 3/4 | 3/8   | 1 1/4 | §      | 3 1/16  | 9 13/16    |        |
| 4     | 1 3/4    | 1 1/4-12 | 1 1/2-12 | 2                                  | 2 3/8 | 3/4   | 1 1/2 | 1/4   | 1     | 3 7/8  | 2 15/16 | 9 15/16    |        |
|       | 2        | 1 1/2-12 | 1 3/4-12 | 2 1/4                              | 2 5/8 | 7/8   | 1 3/4 | 1/4   | 1 1/8 | 4      | 3 1/16  | 10 1/16    |        |
|       | 2 1/2    | 1 7/8-12 | 2 1/4-12 | 3                                  | 3 1/8 | 1     | 2 1/8 | 3/8   | 1 3/8 | 4 7/16 | 3 5/16  | 10 5/16    |        |
| 5     | 2        | 1 1/2-12 | 1 3/4-12 | 2 1/4                              | 2 5/8 | 7/8   | 1 3/4 | 1/4   | 1 1/8 | 4      | 3 1/16  | 11 7/16    |        |
|       | 2 1/2    | 1 7/8-12 | 2 1/4-12 | 3                                  | 3 1/8 | 1     | 2 1/8 | 3/8   | 1 3/8 | 4 7/16 | 3 5/16  | 11 11/16   |        |
|       | 3        | 2 1/4-12 | 2 3/4-12 | 3 1/2                              | 3 3/4 | 1     | 2 5/8 | 3/8   | 1 3/8 | 5 1/4  | 3 5/16  | 11 11/16   |        |
| 6     | 3 1/2    | 2 1/2-12 | 3 1/4-12 | 3 1/2                              | 4 1/4 | 1     | 3     | 3/8   | 1 3/8 | 5 5/8  | 3 5/16  | 11 11/16   |        |
|       | 2 1/2    | 1 7/8-12 | 2 1/4-12 | 3                                  | 3 1/8 | 1     | 2 1/8 | 1/4   | 1 1/4 | 4 7/16 | 3 7/16  | 13 1/4     |        |
|       | 3        | 2 1/4-12 | 2 3/4-12 | 3 1/2                              | 3 3/4 | 1     | 2 5/8 | 1/4   | 1 1/4 | 5 1/4  | 3 7/16  | 13 1/4     |        |
| 3 1/2 | 2 1/2-12 | 3 1/4-12 | 3 1/2    | 4 1/4                              | 1     | 3     | 1/4   | 1 1/4 | 5 5/8 | 3 7/16 | 3 7/16  | 13 1/4     |        |
|       | 4        | 3-12     | 3 3/4-12 | 4                                  | 4 3/4 | 1     | Δ     | 1/4   | 1 1/4 | 6 7/16 | 3 7/16  | 13 1/4     |        |
|       | 7        | 3        | 2 1/4-12 | 2 3/4-12                           | 3 1/2 | 3 3/4 | 1     | 2 5/8 | 1/4   | 1 1/4  | 5 1/4   | 3 3/4      | 14 7/8 |
| 4     | 3 1/2    | 2 1/2-12 | 3 1/4-12 | 3 1/2                              | 4 1/4 | 1     | 3     | 1/4   | 1 1/4 | 5 5/8  | 3 3/4   | 14 7/8     |        |
|       | 4        | 3-12     | 3 3/4-12 | 4                                  | 4 3/4 | 1     | Δ     | 1/4   | 1 1/4 | 6 7/16 | 3 3/4   | 14 7/8     |        |
|       | 4 1/2    | 3 1/4-12 | 4 1/4-12 | 4 1/2                              | 5 1/4 | 1     | Δ     | 1/4   | 1 1/4 | 7 1/8  | 3 3/4   | 14 7/8     |        |
|       | 5        | 3 1/2-12 | 4 3/4-12 | 5                                  | 5 3/4 | 1     | Δ     | 1/4   | 1 1/4 | 7 5/8  | 3 3/4   | 14 7/8     |        |
|       | 8        | 3 1/2    | 2 1/2-12 | 3 1/4-12                           | 3 1/2 | 4 1/4 | 1     | 3     | 1/4   | 1 1/4  | 5 5/8   | 3 7/8      | 16 1/4 |
| 4     | 4        | 3-12     | 3 3/4-12 | 4                                  | 4 3/4 | 1     | Δ     | 1/4   | 1 1/4 | 6 7/16 | 3 7/8   | 16 1/4     |        |
|       | 4 1/2    | 3 1/4-12 | 4 1/4-12 | 4 1/2                              | 5 1/4 | 1     | Δ     | 1/4   | 1 1/4 | 7 1/8  | 3 7/8   | 16 1/4     |        |
|       | 5        | 3 1/2-12 | 4 3/4-12 | 5                                  | 5 3/4 | 1     | Δ     | 1/4   | 1 1/4 | 7 5/8  | 3 7/8   | 16 1/4     |        |
|       | 8        | 3 1/2    | 2 1/2-12 | 3 1/4-12                           | 3 1/2 | 4 1/4 | 1     | 3     | 1/4   | 1 1/4  | 5 5/8   | 3 7/8      | 16 1/4 |
|       | 4        | 3-12     | 3 3/4-12 | 4                                  | 4 3/4 | 1     | Δ     | 1/4   | 1 1/4 | 6 7/16 | 3 7/8   | 16 1/4     |        |
| 4 1/2 | 3 1/4-12 | 4 1/4-12 | 4 1/2    | 5 1/4                              | 1     | Δ     | 1/4   | 1 1/4 | 7 1/8 | 3 7/8  | 16 1/4  |            |        |
|       | 5        | 3 1/2-12 | 4 3/4-12 | 5                                  | 5 3/4 | 1     | Δ     | 1/4   | 1 1/4 | 7 5/8  | 3 7/8   | 16 1/4     |        |
|       | 8        | 3 1/2    | 2 1/2-12 | 3 1/4-12                           | 3 1/2 | 4 1/4 | 1     | 3     | 1/4   | 1 1/4  | 5 5/8   | 3 7/8      | 16 1/4 |
| 4     | 4        | 3-12     | 3 3/4-12 | 4                                  | 4 3/4 | 1     | Δ     | 1/4   | 1 1/4 | 6 7/16 | 3 7/8   | 16 1/4     |        |
|       | 4 1/2    | 3 1/4-12 | 4 1/4-12 | 4 1/2                              | 5 1/4 | 1     | Δ     | 1/4   | 1 1/4 | 7 1/8  | 3 7/8   | 16 1/4     |        |
|       | 5        | 3 1/2-12 | 4 3/4-12 | 5                                  | 5 3/4 | 1     | Δ     | 1/4   | 1 1/4 | 7 5/8  | 3 7/8   | 16 1/4     |        |
| 5 1/2 | 4-12     | 5 1/4-12 | 5 1/2    | 6 1/4                              | 1     | Δ     | 1/4   | 1 1/4 | 8 3/8 | 3 7/8  | 16 1/4  |            |        |

† HEAD END PORTS SHALLOW TAPPED  
 • CONSULT FACTORY FOR AVAILABILITY OF SAE PORT OPTION  
 Δ (4) SPANNER HOLES USED INSTEAD OF FLATS ON 4" DIA. AND LARGER RODS  
 ‡ B DIMENSION TOLERANCE -.001/- .003  
 § THESE CYLINDERS HAVE FULL PLATE RETAINERS. USE "E" DIMENSION INSTEAD OF "RM" - SEE PAGE 8  
 \* ZT DIMENSION CHANGES ON DOUBLE ROD CYLINDERS - SEE PAGE 33 FOR DETAILS  
**NOTE:** 1 1/2" AND 2" BORE CYLINDERS ON K AND N MOUNTS AND 1 1/2" THRU 8" BORE CYLINDERS ON L AND M MOUNTS HAVE FULL PLATE RETAINERS. USE "E" SQ. DIMENSION INSTEAD OF RM



# DOUBLE ROD CYLINDERS



AVAILABLE IN MOUNTING STYLES A, B, E, F, G, H, J, K, L, M, T, U, AND X

FOR ORDERING DOUBLE ROD END CYLINDERS ADD "D" AFTER STYLE

Example: Style "A" side lug mount with double rod end is style "H6AD"

Where the two rod ends will be different, state which rod end is to go at which end of cylinder.

If only one end of double rod cylinder is to be cushioned, specify clearly which end.

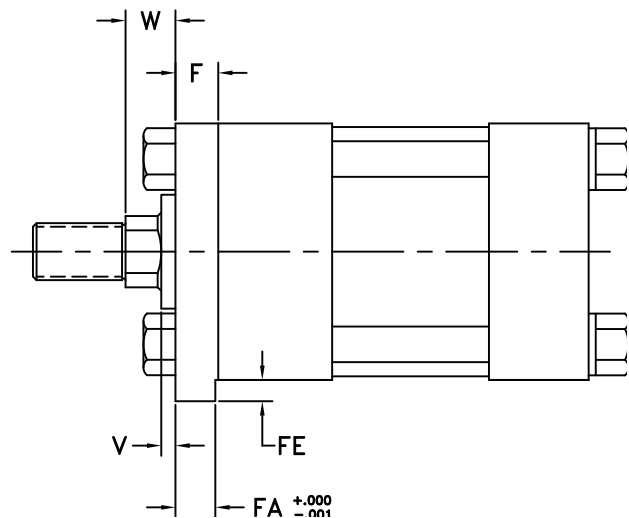
\*LD = Replaces "LB" Dimension on all styles with double rod ends

## EXTENDED KEY PLATE MOUNTINGS

| BORE  | FA   | FE   |
|-------|------|------|
| 1 1/2 | .362 | 3/16 |
| 2     | .612 | 5/16 |
| 2 1/2 | .612 | 5/16 |
| 3 1/4 | .737 | 3/8  |
| 4     | .862 | 7/16 |
| 5     | .862 | 7/16 |
| 6     | .987 | 1/2  |
| 7     | .987 | 1/2  |
| 8     | .987 | 1/2  |

FOR ORDERING EXTENDED KEY PLATE add "S" in part # & state extended key plate in description.

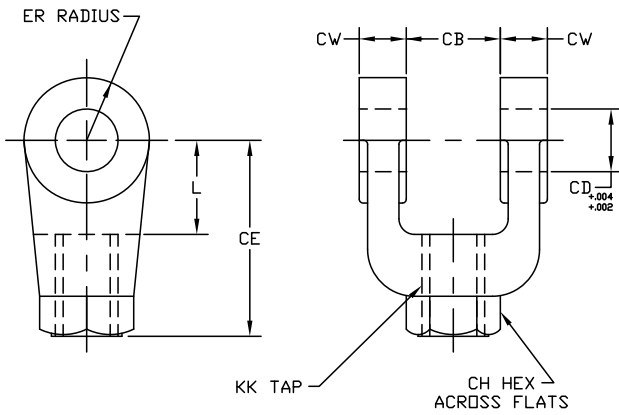
AVAILABLE IN MOUNTING STYLES "A", "B", AND "E"



**DOUBLE ROD CYLINDERS**

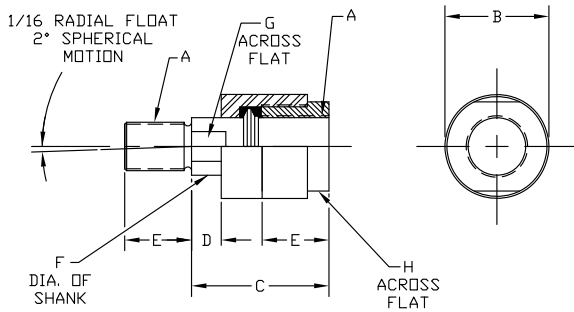
| BORE  | ROD DIA. | ADD STROKE |        |       |         |         |          | ADD 2X STROKE |
|-------|----------|------------|--------|-------|---------|---------|----------|---------------|
|       | MM       | LD*        | SE     | SS    | XE      | ZE      | ZT       | ZM            |
| 1 1/2 | 5/8      | 5 5/8      | 7 3/8  | 4 1/8 | 7 1/8   | 7 1/2   | 7 5/8    | 6 7/8         |
|       | 1        | 5 5/8      | 7 3/8  | 4 1/8 | 7 1/2   | 7 7/8   | 8        | 7 5/8         |
| 2     | 1        | 6 1/8      | 8      | 3 7/8 | 7 13/16 | 8 5/16  | 8 11/16  | 7 5/8         |
|       | 1 3/8    | 6 1/8      | 8      | 3 7/8 | 8 1/16  | 8 9/16  | 8 15/16  | 8 1/8         |
| 2 1/2 | 1        | 6 1/4      | 8 1/8  | 3 5/8 | 8 15/16 | 8 7/16  | 8 13/16  | 7 3/4         |
|       | 1 3/8    | 6 1/4      | 8 1/8  | 3 5/8 | 8 3/16  | 8 11/16 | 9 1/16   | 8 1/4         |
|       | 1 3/4    | 6 1/4      | 8 1/8  | 3 5/8 | 8 7/16  | 8 15/16 | 9 5/16   | 8 3/4         |
| 3 1/4 | 1 3/8    | 7 1/4      | 9 1/2  | 4 3/8 | 9 1/4   | 9 7/8   | 10 7/16  | 9             |
|       | 1 3/4    | 7 1/4      | 9 1/2  | 4 3/8 | 9 1/2   | 10 1/8  | 10 11/16 | 9 1/2         |
|       | 2 †      | 7 1/4      | 9 1/2  | 4 3/8 | 9 5/8   | 10 1/4  | 10 13/16 | 9 3/4         |
| 4     | 1 3/4    | 7 3/4      | 10     | 4 1/4 | 9 7/8   | 10 1/2  | 11 1/16  | 9 3/4         |
|       | 2        | 7 3/4      | 10     | 4 1/4 | 10      | 10 5/8  | 11 3/16  | 10            |
|       | 2 1/2    | 7 3/4      | 10     | 4 1/4 | 10 1/4  | 10 7/8  | 11 7/16  | 10 1/2        |
|       | 2        | 8 1/4      | 11 1/4 | 4 3/4 | 10 7/8  | 11 5/16 | 12 9/16  | 10 1/2        |
| 5     | 2 1/2    | 8 1/4      | 11 1/4 | 4 3/4 | 11 1/8  | 11 7/8  | 12 13/16 | 11            |
|       | 3        | 8 1/4      | 11 1/4 | 4 3/4 | 11 1/8  | 11 7/8  | 12 13/16 | 11            |
|       | 3 1/2    | 8 1/4      | 11 1/4 | 4 3/4 | 11 1/8  | 11 7/8  | 12 13/16 | 11            |
|       | 2 1/2    | 9 3/8      | 12 3/4 | 5 1/8 | 12 5/16 | 13 3/16 | 14 1/4   | 11 7/8        |
| 6     | 3        | 9 3/8      | 12 3/4 | 5 1/8 | 12 5/16 | 13 3/16 | 14 1/4   | 11 7/8        |
|       | 3 1/2    | 9 3/8      | 12 3/4 | 5 1/8 | 12 5/16 | 13 3/16 | 14 1/4   | 11 7/8        |
|       | 4        | 9 3/8      | 12 3/4 | 5 1/8 | 12 5/16 | 13 3/16 | 14 1/4   | 11 7/8        |
|       | 3        | 10 1/2     | 14 1/8 | 5 3/4 | 13 9/16 | 14 9/16 | 15 7/8   | 13            |
| 7     | 3 1/2    | 10 1/2     | 14 1/8 | 5 3/4 | 13 9/16 | 14 9/16 | 15 7/8   | 13            |
|       | 4        | 10 1/2     | 14 1/8 | 5 3/4 | 13 9/16 | 14 9/16 | 15 7/8   | 13            |
|       | 4 1/2    | 10 1/2     | 14 1/8 | 5 3/4 | 13 9/16 | 14 9/16 | 15 7/8   | 13            |
|       | 5        | 10 1/2     | 14 1/8 | 5 3/4 | 13 9/16 | 14 9/16 | 15 7/8   | 13            |
|       | 3 1/2    | 11 1/2     | 15 1/2 | 6 3/4 | 14 3/4  | 15 7/8  | 17 1/4   | 14            |
| 8     | 4        | 11 1/2     | 15 1/2 | 6 3/4 | 14 3/4  | 15 7/8  | 17 1/4   | 14            |
|       | 4 1/2    | 11 1/2     | 15 1/2 | 6 3/4 | 14 3/4  | 15 3/8  | 17 1/4   | 14            |
|       | 5        | 11 1/2     | 15 1/2 | 6 3/4 | 14 3/4  | 15 7/8  | 17 1/4   | 14            |
|       | 5 1/2    | 11 1/2     | 15 1/2 | 6 3/4 | 14 3/4  | 15 7/8  | 17 1/4   | 14            |
|       | 4 1/5    | 14         | NA     | NA    | NA      | NA      | NA       | 15 15/16      |
| 10    | 5        | 14         | NA     | NA    | NA      | NA      | NA       | 16 7/16       |
|       | 5 1/2    | 14         | NA     | NA    | NA      | NA      | NA       | 16 7/16       |
|       | 7        | 14         | NA     | NA    | NA      | NA      | NA       | 17 1/16       |
|       | 5 1/2    | 17 1/4     | NA     | NA    | NA      | NA      | NA       | 19 1/16       |
| 12    | 7        | 17 1/4     | NA     | NA    | NA      | NA      | NA       | 19 11/16      |
|       | 8        | 17 1/4     | NA     | NA    | NA      | NA      | NA       | 20 11/16      |
|       | 7        | 18 7/8     | NA     | NA    | NA      | NA      | NA       | 20 3/4        |
| 14    | 8        | 18 7/8     | NA     | NA    | NA      | NA      | NA       | 21 3/4        |
|       | 9        | 18 7/8     | NA     | NA    | NA      | NA      | NA       | 22 1/4        |
|       | 10       | 18 7/8     | NA     | NA    | NA      | NA      | NA       | 22 3/4        |
|       | 8        | 21 7/8     | NA     | NA    | NA      | NA      | NA       | 24            |
| 16    | 9        | 21 7/8     | NA     | NA    | NA      | NA      | NA       | 24 1/4        |
|       | 10       | 21 7/8     | NA     | NA    | NA      | NA      | NA       | 25            |
|       | 9        | 25 1/2     | NA     | NA    | NA      | NA      | NA       | 27 9/16       |
| 18    | 10       | 25 1/2     | NA     | NA    | NA      | NA      | NA       | 28 1/16       |
|       | 10       | 29         | NA     | NA    | NA      | NA      | NA       | 30 13/16      |

# FEMALE CLEVIS



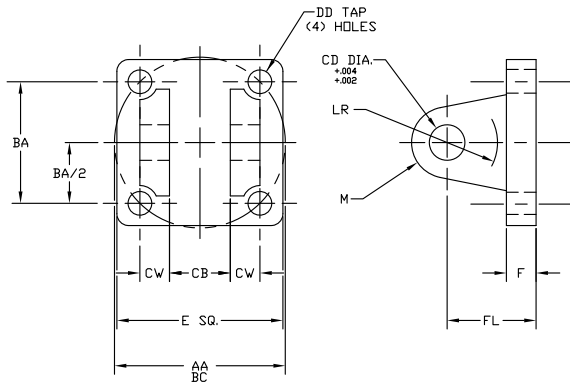
| PART NO.        | CB    | CD    | CE      | CH      | CW    | ER    | KK       | L      |
|-----------------|-------|-------|---------|---------|-------|-------|----------|--------|
| 10-YFC-134-05-A | 3/4   | 1/2   | 1 1/2   | 1       | 1/2   | 1/2   | 7/16-20  | 3/4    |
| 10-YFC-134-08-A | 1 1/4 | 3/4   | 2 3/8   | 1 1/4   | 5/8   | 3/4   | 3/4-16   | 1 1/4  |
| 10-YFC-134-08-M | 1 1/4 | 3/4   | 2 1/8   | 1 3/8   | 5/8   | 3/4   | 3/4-16   | 1      |
| 10-YFC-134-11-A | 1 1/2 | 1     | 3 1/8   | 1 1/2   | 3/4   | 1     | 1-14     | 1 1/2  |
| 10-YFC-134-11-M | 1 1/2 | 1     | 2 15/16 | 1 1/2   | 3/4   | 1     | 1-14     | 1 5/16 |
| 10-YFC-134-14-A | 2     | 1 3/8 | 4 1/8   | 2       | 1     | 1 3/8 | 1 1/4-12 | 2 1/8  |
| 10-YFC-134-14-M | 2     | 1 3/8 | 3 3/4   | 2       | 1     | 1 3/8 | 1 1/4-12 | 1 3/4  |
| 10-YFC-134-16-A | 2 1/2 | 1 3/4 | 4 1/2   | 2 3/8   | 1 1/4 | 1 3/4 | 1 1/2-12 | 2 1/4  |
| 10-YFC-134-20-A | 2 1/2 | 2     | 5 1/2   | 2 15/16 | 1 1/4 | 2     | 1 7/8-12 | 2 1/2  |
| 10-YFC-134-24-A | 3     | 2 1/2 | 6 1/2   | 3 1/2   | 1 1/2 | 2 1/2 | 2 1/4-12 | 3      |
| 10-YFC-134-28-A | 3     | 3     | 6 3/4   | 3 7/8   | 1 1/2 | 2 3/4 | 2 1/2-12 | 3 1/4  |
| 10-YFC-134-28-M | 3     | 3     | 6 3/4   | 3 7/8   | 1 1/2 | 3     | 2 1/2-12 | 3 1/4  |
| 10-YFC-134-36-A | 4     | 3 1/2 | 8 1/2   | 5       | 2     | 3 1/2 | 3 1/4-12 | 4      |
| 10-YFC-134-36-M | 4     | 3 1/2 | 7 3/4   | 5       | 2     | 3 1/2 | 3 1/4-12 | 4 1/4  |
| 10-YFC-134-44-A | 4 1/2 | 4     | 10      | 6 1/8   | 2 1/4 | 4     | 4-12     | 4 1/2  |

# ROD COUPLERS



| PART NUMBER | ROD DIA. | A        | B      | C       | D     | E     | F     | G      | H     | MAX PULL  |
|-------------|----------|----------|--------|---------|-------|-------|-------|--------|-------|-----------|
| 11-YAC-2-05 | 5/8      | 7/16-20  | 1 1/4  | 2       | 1/2   | 3/4   | 5/8   | 1/2    | 1     | 10,000    |
| 11-YAC-2-06 | 5/8      | 1/2-20   | 1 1/4  | 2       | 1/2   | 3/4   | 5/8   | 1/2    | 1     | 14,000    |
| 11-YAC-2-07 | 5/8      | 5/8-18   | 1 1/4  | 2       | 1/2   | 3/4   | 5/8   | 1/2    | 1     | 19,000    |
| 11-YAC-2-08 | 1        | 3/4-16   | 1 3/4  | 2 5/16  | 1/2   | 1 1/8 | 31/32 | 13/16  | 1 1/2 | 34,000    |
| 11-YAC-2-09 | 1        | 7/8-14   | 1 3/4  | 2 5/16  | 1/2   | 1 1/8 | 31/32 | 13/16  | 1 1/2 | 39,000    |
| 11-YAC-2-11 | 1 3/8    | 1-14     | 2 1/2  | 2 15/16 | 1/2   | 1 5/8 | 1 3/8 | 1 5/32 | 2 1/4 | 64,000    |
| 11-YAC-2-14 | 1 3/8    | 1 1/4-12 | 2 1/2  | 2 15/16 | 1/2   | 1 5/8 | 1 3/8 | 1 5/32 | 2 1/4 | 78,000    |
| 11-YAC-2-15 | 1 3/8    | 1 3/8-12 | 2 1/2  | 2 15/16 | 1/2   | 1 5/8 | 1 3/8 | 1 5/32 | 2 1/4 | 78,000    |
| 11-YAC-2-16 | 2        | 1 1/2-12 | 3 1/4  | 4 3/8   | 13/16 | 2 1/4 | 1 3/4 | 1 1/2  | 3     | 134,000   |
| 11-YAC-2-17 | 2        | 1 3/4-12 | 3 1/4  | 4 3/8   | 13/16 | 2 1/4 | 1 3/4 | 1 1/2  | 3     | 134,000   |
| 11-YAC-2-20 | 2 1/2    | 1 7/8-12 | 3 3/4  | 5 7/16  | 7/8   | 3     | 2     | 1 7/8  | 3 1/2 | 240,000   |
| 11-YAC-2-21 | 2 1/2    | 2-12     | 3 3/4  | 5 7/16  | 7/8   | 3     | 2     | 1 7/8  | 3 1/2 | 240,000   |
| 11-YAC-2-24 | 3        | 2 1/4-12 | 6 3/4  | 6 3/8   | 1     | 3 1/2 | 2 3/4 | 2 3/8  | 4 1/2 | 397,000   |
| 11-YAC-2-28 | 3 1/2    | 2 1/2-12 | 7      | 6 1/2   | 1     | 3 1/2 | 3 1/4 | 2 7/8  | 3 3/8 | 495,000   |
| 11-YAC-2-29 | 3 1/2    | 2 3/4-12 | 7      | 6 1/2   | 1     | 3 1/2 | 3 1/4 | 2 7/8  | 3 3/8 | 603,000   |
| 11-YAC-2-36 | 4 1/2    | 3 1/4-12 | 9 1/4  | 8 1/2   | 1     | 4 1/2 | 4     | 3 3/8  | 4 1/2 | 853,800   |
| 11-YAC-2-37 | 4 1/2    | 4 1/4-12 | 12 7/8 | 11 1/4  | 1     | 4 1/2 | 5 1/2 | 4 7/8  | 7     | 1,483,400 |

# CLEVIS BRACKET

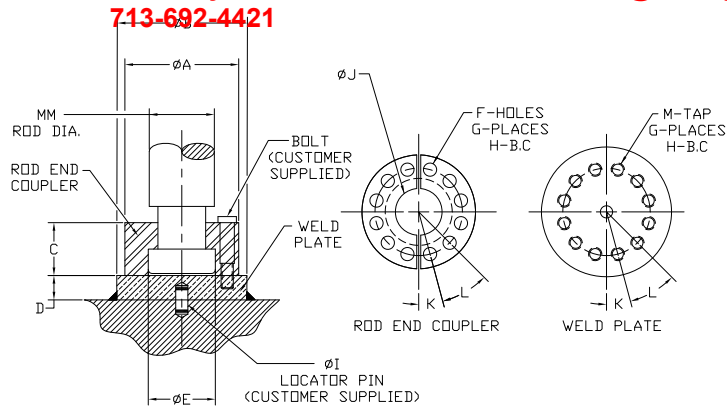


| PART NUMBER   | AA   | BA      | CB      | CD    | CW    | DD       | E      | F       | FL      | LR     | M     |
|---------------|------|---------|---------|-------|-------|----------|--------|---------|---------|--------|-------|
| 14-YCB-133-03 | 2.3  | 1 5/8   | 25/32   | 1/2   | 1/2   | 5/8-24   | 2 1/2  | 3/8     | 1 1/8   | 1/2    | 1/2   |
| 14-YCB-133-04 | 2.9  | 2 1/16  | 1 9/32  | 3/4   | 5/8   | 1/2-20   | 3      | 5/8     | 1 7/8   | 1      | 3/4   |
| 14-YCB-133-05 | 3.6  | 2 9/16  | 1 9/32  | 3/4   | 5/8   | 1/2-20   | 3 1/2  | 5/8     | 1 7/8   | 1 1/16 | 3/4   |
| 14-YCB-133-06 | 4.6  | 3 1/4   | 1 17/32 | 1     | 3/4   | 5/8-18   | 4 1/2  | 3/4     | 2 1/4   | 1 1/4  | 1     |
| 14-YCB-133-08 | 5.4  | 3 13/16 | 2 1/32  | 1 3/8 | 1     | 5/8-18   | 5      | 7/8     | 3       | 1 7/8  | 1 3/8 |
| 14-YCB-133-10 | 7.0  | 4 15/16 | 2 17/32 | 1 3/4 | 1 1/4 | 7/8-14   | 6 1/2  | 7/8     | 3 1/8   | 2      | 1 3/4 |
| 14-YCB-133-12 | 8.1  | 5 3/4   | 2 17/32 | 2     | 1 1/4 | 1-14     | 7 1/2  | 1       | 3 1/2   | 2 1/8  | 2     |
| 14-YCB-133-14 | 9.3  | 6 19/32 | 3 1/32  | 2 1/2 | 1 1/2 | 1 1/8-12 | 8 1/2  | 1       | 4       | 2 5/8  | 2 1/2 |
| 14-YCB-133-16 | 10.6 | 7 1/2   | 3 1/32  | 3     | 1 1/2 | 1 1/4-12 | 9 1/2  | 1       | 4 1/4   | 2 7/8  | 2 3/4 |
| 14-YCB-133-20 | 13.6 | 9 5/8   | 4 1/16  | 3 1/2 | 2     | 1 3/4-12 | 12 5/8 | 1 11/16 | 5 11/16 | 3 5/8  | 3 1/2 |
| 14-YCB-133-24 | 16.2 | 11 1/2  | 4 9/16  | 4     | 2 1/4 | 2-12     | 14 7/8 | 1 15/16 | 6 7/16  | 4      | 4     |



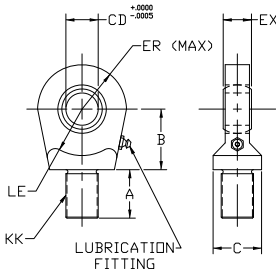


# ROD END COUPLER AND WELD PLATE



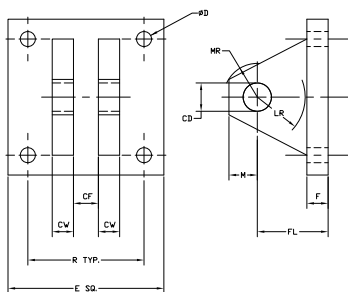
| ROD END COUPLER PART# | WELD PLATE PART# | WELD PLATE MATERIAL | MM    | A      | B      | C     | D     | E     | F     | G  | H     | I    | J     | K     | L   | M       |
|-----------------------|------------------|---------------------|-------|--------|--------|-------|-------|-------|-------|----|-------|------|-------|-------|-----|---------|
| 18-FEC-062            | 18-FEC-062-WP    | CD 1018             | 5/8   | 1.500  | 2.000  | .562  | .500  | .656  | .218  | 4  | 1.125 | .250 | .406  | 45°   | 90° | 10-24   |
| 18-FEC-100            | 18-FEC-100-WP    | CD 1018             | 1     | 2.000  | 2.500  | .875  | .500  | 1.063 | .281  | 6  | 1.500 | .250 | .750  | 30°   | 60° | 1/4-20  |
| 18-FEC-137            | 18-FEC-137-WP    | CD 1018             | 1 3/8 | 2.500  | 3.000  | 1.000 | .625  | 1.438 | .343  | 6  | 2.000 | .250 | .938  | 30°   | 60° | 5/16-18 |
| 18-FEC-175            | 18-FEC-175-WP    | CD 1018             | 1 3/4 | 3.000  | 4.000  | 1.250 | .625  | 1.813 | .343  | 8  | 2.375 | .250 | 1.187 | 22.5° | 45° | 5/16-18 |
| 18-FEC-200            | 18-FEC-200-WP    | CD 1018             | 2     | 3.500  | 4.000  | 1.625 | .750  | 2.063 | .406  | 12 | 2.688 | .375 | 1.438 | 15°   | 30° | 3/8-16  |
| 18-FEC-250            | 18-FEC-250-WP    | CD 1018             | 2 1/2 | 4.000  | 4.500  | 1.875 | .750  | 2.625 | .406  | 12 | 3.188 | .375 | 1.875 | 15°   | 30° | 3/8-16  |
| 18-FEC-300            | 18-FEC-300-WP    | CD 1018             | 3     | 5.000  | 5.500  | 2.375 | 1.000 | 3.125 | .531  | 12 | 4.000 | .375 | 2.375 | 15°   | 30° | 1/2-13  |
| 18-FEC-350            | 18-FEC-350-WP    | A 36 HRS            | 3 1/2 | 5.875  | 7.000  | 2.625 | 1.000 | 3.625 | .656  | 12 | 4.688 | .375 | 2.625 | 15°   | 30° | 5/8-11  |
| 18-FEC-400            | 18-FEC-400-WP    | A 36 HRS            | 4     | 6.375  | 7.000  | 2.625 | 1.000 | 4.125 | .656  | 12 | 5.188 | .375 | 3.125 | 15°   | 30° | 5/8-11  |
| 18-FEC-450            | 18-FEC-450-WP    | A 36 HRS            | 4 1/2 | 6.875  | 8.000  | 3.125 | 1.000 | 4.625 | .656  | 12 | 5.688 | .375 | 4.625 | 15°   | 30° | 5/8-11  |
| 18-FEC-500            | 18-FEC-500-WP    | A 36 HRS            | 5     | 7.375  | 8.000  | 3.125 | 1.000 | 5.125 | .656  | 12 | 6.188 | .375 | 4.000 | 15°   | 30° | 5/8-11  |
| 18-FEC-550            | 18-FEC-550-WP    | A 36 HRS            | 5 1/2 | 8.250  | 9.000  | 3.875 | 1.250 | 5.625 | .781  | 12 | 6.875 | .375 | 4.500 | 15°   | 30° | 3/4-10  |
| 18-FEC-700            | 18-FEC-700-WP    | A 36 HRS            | 7     | 10.375 | 11.000 | 4.000 | 1.750 | 7.125 | 1.031 | 12 | 8.750 | .375 | 5.938 | 15°   | 30° | 1"-8    |

## MALE SPHERICAL ROD EYE



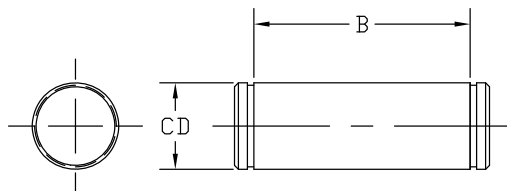
| PART NUMBER  | CD     | KK       | A     | B     | C      | ER      | EX      | LE     | MAX LOAD |
|--------------|--------|----------|-------|-------|--------|---------|---------|--------|----------|
| 13-MSRE-0500 | .5000  | 7/16-20  | 11/16 | 7/8   | 7/8    | 7/8     | 7/16    | 3/4    | 2,600    |
| 13-MSRE-0750 | .7500  | 3/4-16   | 1     | 1 1/4 | 1 5/16 | 1 1/4   | 21/32   | 1 1/16 | 7,080    |
| 13-MSRE-1000 | 1.000  | 1-14     | 1 1/2 | 1 7/8 | 1 1/2  | 1 3/8   | 7/8     | 1 7/16 | 12,590   |
| 13-MSRE-1375 | 1.3750 | 1 1/4-12 | 2     | 2 1/8 | 2      | 1 13/16 | 1 3/16  | 1 7/8  | 22,930   |
| 13-MSRE-1750 | 1.7500 | 1 1/2-12 | 2 1/8 | 2 1/2 | 2 1/4  | 2 3/16  | 1 17/32 | 2 1/8  | 38,220   |
| 13-MSRE-2000 | 2.000  | 1 7/8-12 | 2 7/8 | 2 3/4 | 2 5/8  | 2 5/8   | 1 3/4   | 2 1/2  | 50,360   |

## SPHERICAL CLEVIS BRACKET



| PART NUMBER       | CD    | CF   | CW   | D   | E     | F    | FL   | M    | MR   | LR   | R    |
|-------------------|-------|------|------|-----|-------|------|------|------|------|------|------|
| 14-YCB-133-03-CBS | .500  | .44  | .50  | .41 | .300  | .50  | .150 | .50  | .62  | .94  | .205 |
| 14-YCB-133-05-CBS | .750  | .66  | .62  | .53 | .375  | .62  | .200 | .88  | 1.00 | 1.38 | .276 |
| 14-YCB-133-06-CBS | 1.000 | .88  | .75  | .53 | .550  | .75  | .250 | 1.00 | 1.19 | 1.69 | .410 |
| 14-YCB-133-08-CBS | 1.375 | 1.19 | 1.00 | .66 | .650  | .88  | .350 | 1.38 | 1.62 | 2.44 | .495 |
| 14-YCB-133-10-CBS | 1.750 | 1.53 | 1.25 | .91 | .850  | 1.25 | .450 | 1.75 | 2.06 | 2.88 | .658 |
| 14-YCB-133-12-CBS | 2.000 | 1.75 | 1.50 | .91 | 1.062 | 1.50 | .500 | 2.00 | 2.38 | 3.31 | .792 |

## SPHERICAL PINS

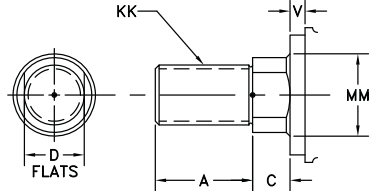
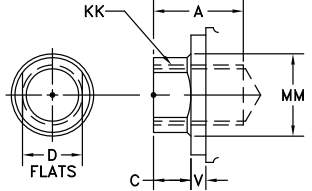
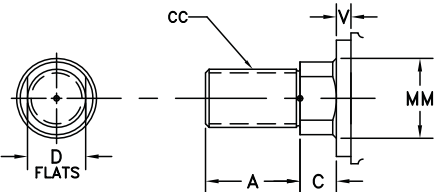


| PART NUMBER        | CD     |                  | B       |
|--------------------|--------|------------------|---------|
| 12-YP-9003-3-G-CBS | .4997  | +0.000<br>-.0004 | 1 9/16  |
| 12-YP-9004-3-G-CBS | .7497  | +0.000<br>-.0005 | 2 1/32  |
| 12-YP-9006-3-G-CBS | .9997  | +0.000<br>-.0005 | 2 1/2   |
| 12-YP-9008-3-G-CBS | 1.3746 | +0.000<br>-.0006 | 3 5/16  |
| 12-YP-9010-3-G-CBS | 1.7496 | +0.000<br>-.0006 | 4 7/32  |
| 12-YP-9012-3-G-CBS | 1.9996 | +0.000<br>-.0007 | 4 15/16 |

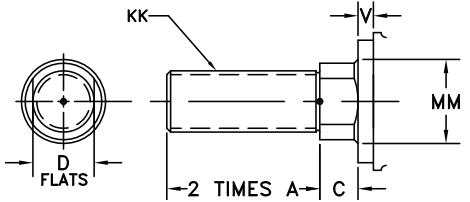
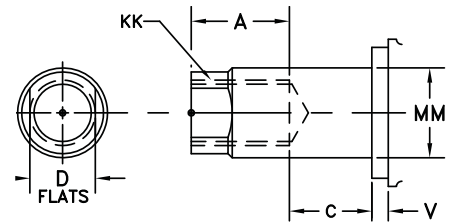
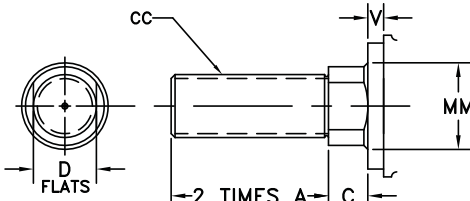
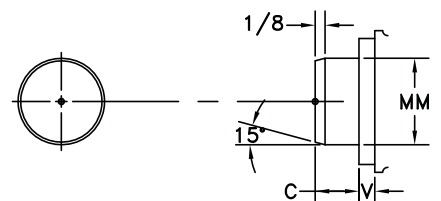
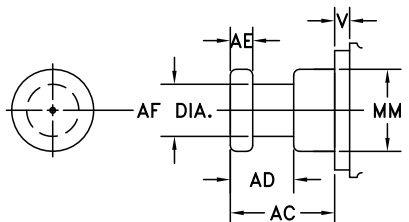
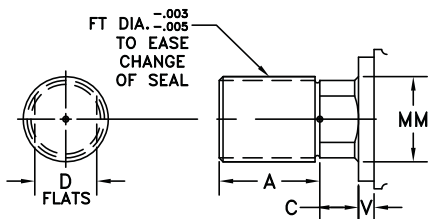




# STANDARD ROD END STYLES

| ROD END STYLE #                           | DIMENSIONS  | ROD END STYLE #   | DIMENSIONS  |                       |          |  |  |  |  |           |         |  |  |  |         |             |             |                    |             |    |     |       |     |     |     |        |   |       |       |     |       |      |       |       |        |     |     |          |       |   |        |     |       |          |   |       |         |     |       |      |       |       |         |     |       |          |   |       |        |     |       |      |       |       |         |   |       |          |   |       |         |   |   |      |       |       |        |       |       |          |   |       |        |       |       |      |       |       |         |       |       |          |   |       |        |   |       |      |   |       |        |   |       |      |   |       |       |       |       |      |    |       |       |       |   |       |
|---|---|---|---|-----------------------|----------|--|--|--|--|-----------|---------|--|--|--|---------|-------------|-------------|--------------------|-------------|----|-----|-------|-----|-----|-----|--------|---|-------|-------|-----|-------|------|-------|-------|--------|-----|-----|----------|-------|---|--------|-----|-------|----------|---|-------|---------|-----|-------|------|-------|-------|---------|-----|-------|----------|---|-------|--------|-----|-------|------|-------|-------|---------|---|-------|----------|---|-------|---------|---|---|------|-------|-------|--------|-------|-------|----------|---|-------|--------|-------|-------|------|-------|-------|---------|-------|-------|----------|---|-------|--------|---|-------|------|---|-------|--------|---|-------|------|---|-------|-------|-------|-------|------|----|-------|-------|-------|---|-------|
| <b>#2**</b><br>STANDARD MALE<br>(NFPA-SM) |  | <b>#4</b><br>STANDARD FEMALE<br>(NFPA-SF)   |  |                       |          |  |  |  |  |           |         |  |  |  |         |             |             |                    |             |    |     |       |     |     |     |        |   |       |       |     |       |      |       |       |        |     |     |          |       |   |        |     |       |          |   |       |         |     |       |      |       |       |         |     |       |          |   |       |        |     |       |      |       |       |         |   |       |          |   |       |         |   |   |      |       |       |        |       |       |          |   |       |        |       |       |      |       |       |         |       |       |          |   |       |        |   |       |      |   |       |        |   |       |      |   |       |       |       |       |      |    |       |       |       |   |       |
| <b>#1</b><br>STANDARD MALE<br>(NFPA-IM)   |  | <table border="1"> <thead> <tr> <th colspan="6">ADDITIONAL DIMENSIONS</th> </tr> <tr> <th rowspan="2">ROD<br/>MM</th> <th colspan="4">STYLE 9</th> <th>STYLE 8</th> </tr> <tr> <th>AC +/- .030</th> <th>AD +/- .010</th> <th>AE +/- .000/- .010</th> <th>AF +/- .010</th> <th>FT</th> </tr> </thead> <tbody> <tr><td>5/8</td><td>1 1/8</td><td>5/8</td><td>1/4</td><td>3/8</td><td>5/8-18</td></tr> <tr><td>1</td><td>1 1/2</td><td>15/16</td><td>3/8</td><td>11/16</td><td>1-14</td></tr> <tr><td>1 3/8</td><td>1 3/4</td><td>1 1/16</td><td>3/8</td><td>7/8</td><td>1 3/8-12</td></tr> <tr><td>1 3/4</td><td>2</td><td>1 5/16</td><td>1/2</td><td>1 1/8</td><td>1 3/4-12</td></tr> <tr><td>2</td><td>2 5/8</td><td>1 11/16</td><td>5/8</td><td>1 3/8</td><td>2-12</td></tr> <tr><td>2 1/2</td><td>3 1/4</td><td>1 15/16</td><td>3/4</td><td>1 3/4</td><td>2 1/2-12</td></tr> <tr><td>3</td><td>3 5/8</td><td>2 7/16</td><td>7/8</td><td>2 1/4</td><td>3-12</td></tr> <tr><td>3 1/2</td><td>4 3/8</td><td>2 11/16</td><td>1</td><td>2 1/2</td><td>3 1/2-12</td></tr> <tr><td>4</td><td>4 1/2</td><td>2 11/16</td><td>1</td><td>3</td><td>4-12</td></tr> <tr><td>4 1/2</td><td>5 1/4</td><td>3 3/16</td><td>1 1/2</td><td>3 1/2</td><td>4 1/2-12</td></tr> <tr><td>5</td><td>5 3/8</td><td>3 3/16</td><td>1 1/2</td><td>3 7/8</td><td>5-12</td></tr> <tr><td>5 1/2</td><td>6 1/4</td><td>3 15/16</td><td>1 7/8</td><td>4 3/8</td><td>5 1/2-12</td></tr> <tr><td>7</td><td>6 1/2</td><td>4 1/16</td><td>2</td><td>5 3/4</td><td>7-12</td></tr> <tr><td>8</td><td>6 1/2</td><td>4 1/16</td><td>2</td><td>6 1/2</td><td>8-12</td></tr> <tr><td>9</td><td>6 3/4</td><td>4 1/8</td><td>2 3/8</td><td>7 1/4</td><td>9-12</td></tr> <tr><td>10</td><td>7 1/4</td><td>4 5/8</td><td>2 3/8</td><td>8</td><td>10-12</td></tr> </tbody> </table> |   | ADDITIONAL DIMENSIONS |          |  |  |  |  | ROD<br>MM | STYLE 9 |  |  |  | STYLE 8 | AC +/- .030 | AD +/- .010 | AE +/- .000/- .010 | AF +/- .010 | FT | 5/8 | 1 1/8 | 5/8 | 1/4 | 3/8 | 5/8-18 | 1 | 1 1/2 | 15/16 | 3/8 | 11/16 | 1-14 | 1 3/8 | 1 3/4 | 1 1/16 | 3/8 | 7/8 | 1 3/8-12 | 1 3/4 | 2 | 1 5/16 | 1/2 | 1 1/8 | 1 3/4-12 | 2 | 2 5/8 | 1 11/16 | 5/8 | 1 3/8 | 2-12 | 2 1/2 | 3 1/4 | 1 15/16 | 3/4 | 1 3/4 | 2 1/2-12 | 3 | 3 5/8 | 2 7/16 | 7/8 | 2 1/4 | 3-12 | 3 1/2 | 4 3/8 | 2 11/16 | 1 | 2 1/2 | 3 1/2-12 | 4 | 4 1/2 | 2 11/16 | 1 | 3 | 4-12 | 4 1/2 | 5 1/4 | 3 3/16 | 1 1/2 | 3 1/2 | 4 1/2-12 | 5 | 5 3/8 | 3 3/16 | 1 1/2 | 3 7/8 | 5-12 | 5 1/2 | 6 1/4 | 3 15/16 | 1 7/8 | 4 3/8 | 5 1/2-12 | 7 | 6 1/2 | 4 1/16 | 2 | 5 3/4 | 7-12 | 8 | 6 1/2 | 4 1/16 | 2 | 6 1/2 | 8-12 | 9 | 6 3/4 | 4 1/8 | 2 3/8 | 7 1/4 | 9-12 | 10 | 7 1/4 | 4 5/8 | 2 3/8 | 8 | 10-12 |
| ADDITIONAL DIMENSIONS                     |   |   |   |                       |          |  |  |  |  |           |         |  |  |  |         |             |             |                    |             |    |     |       |     |     |     |        |   |       |       |     |       |      |       |       |        |     |     |          |       |   |        |     |       |          |   |       |         |     |       |      |       |       |         |     |       |          |   |       |        |     |       |      |       |       |         |   |       |          |   |       |         |   |   |      |       |       |        |       |       |          |   |       |        |       |       |      |       |       |         |       |       |          |   |       |        |   |       |      |   |       |        |   |       |      |   |       |       |       |       |      |    |       |       |       |   |       |
| ROD<br>MM                                 | STYLE 9   |   |   |                       | STYLE 8  |  |  |  |  |           |         |  |  |  |         |             |             |                    |             |    |     |       |     |     |     |        |   |       |       |     |       |      |       |       |        |     |     |          |       |   |        |     |       |          |   |       |         |     |       |      |       |       |         |     |       |          |   |       |        |     |       |      |       |       |         |   |       |          |   |       |         |   |   |      |       |       |        |       |       |          |   |       |        |       |       |      |       |       |         |       |       |          |   |       |        |   |       |      |   |       |        |   |       |      |   |       |       |       |       |      |    |       |       |       |   |       |
|   | AC +/- .030   | AD +/- .010   | AE +/- .000/- .010  | AF +/- .010           | FT       |  |  |  |  |           |         |  |  |  |         |             |             |                    |             |    |     |       |     |     |     |        |   |       |       |     |       |      |       |       |        |     |     |          |       |   |        |     |       |          |   |       |         |     |       |      |       |       |         |     |       |          |   |       |        |     |       |      |       |       |         |   |       |          |   |       |         |   |   |      |       |       |        |       |       |          |   |       |        |       |       |      |       |       |         |       |       |          |   |       |        |   |       |      |   |       |        |   |       |      |   |       |       |       |       |      |    |       |       |       |   |       |
| 5/8                                       | 1 1/8   | 5/8   | 1/4   | 3/8                   | 5/8-18   |  |  |  |  |           |         |  |  |  |         |             |             |                    |             |    |     |       |     |     |     |        |   |       |       |     |       |      |       |       |        |     |     |          |       |   |        |     |       |          |   |       |         |     |       |      |       |       |         |     |       |          |   |       |        |     |       |      |       |       |         |   |       |          |   |       |         |   |   |      |       |       |        |       |       |          |   |       |        |       |       |      |       |       |         |       |       |          |   |       |        |   |       |      |   |       |        |   |       |      |   |       |       |       |       |      |    |       |       |       |   |       |
| 1   | 1 1/2   | 15/16   | 3/8   | 11/16                 | 1-14     |  |  |  |  |           |         |  |  |  |         |             |             |                    |             |    |     |       |     |     |     |        |   |       |       |     |       |      |       |       |        |     |     |          |       |   |        |     |       |          |   |       |         |     |       |      |       |       |         |     |       |          |   |       |        |     |       |      |       |       |         |   |       |          |   |       |         |   |   |      |       |       |        |       |       |          |   |       |        |       |       |      |       |       |         |       |       |          |   |       |        |   |       |      |   |       |        |   |       |      |   |       |       |       |       |      |    |       |       |       |   |       |
| 1 3/8                                     | 1 3/4   | 1 1/16  | 3/8   | 7/8                   | 1 3/8-12 |  |  |  |  |           |         |  |  |  |         |             |             |                    |             |    |     |       |     |     |     |        |   |       |       |     |       |      |       |       |        |     |     |          |       |   |        |     |       |          |   |       |         |     |       |      |       |       |         |     |       |          |   |       |        |     |       |      |       |       |         |   |       |          |   |       |         |   |   |      |       |       |        |       |       |          |   |       |        |       |       |      |       |       |         |       |       |          |   |       |        |   |       |      |   |       |        |   |       |      |   |       |       |       |       |      |    |       |       |       |   |       |
| 1 3/4                                     | 2   | 1 5/16  | 1/2   | 1 1/8                 | 1 3/4-12 |  |  |  |  |           |         |  |  |  |         |             |             |                    |             |    |     |       |     |     |     |        |   |       |       |     |       |      |       |       |        |     |     |          |       |   |        |     |       |          |   |       |         |     |       |      |       |       |         |     |       |          |   |       |        |     |       |      |       |       |         |   |       |          |   |       |         |   |   |      |       |       |        |       |       |          |   |       |        |       |       |      |       |       |         |       |       |          |   |       |        |   |       |      |   |       |        |   |       |      |   |       |       |       |       |      |    |       |       |       |   |       |
| 2   | 2 5/8   | 1 11/16   | 5/8   | 1 3/8                 | 2-12     |  |  |  |  |           |         |  |  |  |         |             |             |                    |             |    |     |       |     |     |     |        |   |       |       |     |       |      |       |       |        |     |     |          |       |   |        |     |       |          |   |       |         |     |       |      |       |       |         |     |       |          |   |       |        |     |       |      |       |       |         |   |       |          |   |       |         |   |   |      |       |       |        |       |       |          |   |       |        |       |       |      |       |       |         |       |       |          |   |       |        |   |       |      |   |       |        |   |       |      |   |       |       |       |       |      |    |       |       |       |   |       |
| 2 1/2                                     | 3 1/4   | 1 15/16   | 3/4   | 1 3/4                 | 2 1/2-12 |  |  |  |  |           |         |  |  |  |         |             |             |                    |             |    |     |       |     |     |     |        |   |       |       |     |       |      |       |       |        |     |     |          |       |   |        |     |       |          |   |       |         |     |       |      |       |       |         |     |       |          |   |       |        |     |       |      |       |       |         |   |       |          |   |       |         |   |   |      |       |       |        |       |       |          |   |       |        |       |       |      |       |       |         |       |       |          |   |       |        |   |       |      |   |       |        |   |       |      |   |       |       |       |       |      |    |       |       |       |   |       |
| 3   | 3 5/8   | 2 7/16  | 7/8   | 2 1/4                 | 3-12     |  |  |  |  |           |         |  |  |  |         |             |             |                    |             |    |     |       |     |     |     |        |   |       |       |     |       |      |       |       |        |     |     |          |       |   |        |     |       |          |   |       |         |     |       |      |       |       |         |     |       |          |   |       |        |     |       |      |       |       |         |   |       |          |   |       |         |   |   |      |       |       |        |       |       |          |   |       |        |       |       |      |       |       |         |       |       |          |   |       |        |   |       |      |   |       |        |   |       |      |   |       |       |       |       |      |    |       |       |       |   |       |
| 3 1/2                                     | 4 3/8   | 2 11/16   | 1   | 2 1/2                 | 3 1/2-12 |  |  |  |  |           |         |  |  |  |         |             |             |                    |             |    |     |       |     |     |     |        |   |       |       |     |       |      |       |       |        |     |     |          |       |   |        |     |       |          |   |       |         |     |       |      |       |       |         |     |       |          |   |       |        |     |       |      |       |       |         |   |       |          |   |       |         |   |   |      |       |       |        |       |       |          |   |       |        |       |       |      |       |       |         |       |       |          |   |       |        |   |       |      |   |       |        |   |       |      |   |       |       |       |       |      |    |       |       |       |   |       |
| 4   | 4 1/2   | 2 11/16   | 1   | 3                     | 4-12     |  |  |  |  |           |         |  |  |  |         |             |             |                    |             |    |     |       |     |     |     |        |   |       |       |     |       |      |       |       |        |     |     |          |       |   |        |     |       |          |   |       |         |     |       |      |       |       |         |     |       |          |   |       |        |     |       |      |       |       |         |   |       |          |   |       |         |   |   |      |       |       |        |       |       |          |   |       |        |       |       |      |       |       |         |       |       |          |   |       |        |   |       |      |   |       |        |   |       |      |   |       |       |       |       |      |    |       |       |       |   |       |
| 4 1/2                                     | 5 1/4   | 3 3/16  | 1 1/2   | 3 1/2                 | 4 1/2-12 |  |  |  |  |           |         |  |  |  |         |             |             |                    |             |    |     |       |     |     |     |        |   |       |       |     |       |      |       |       |        |     |     |          |       |   |        |     |       |          |   |       |         |     |       |      |       |       |         |     |       |          |   |       |        |     |       |      |       |       |         |   |       |          |   |       |         |   |   |      |       |       |        |       |       |          |   |       |        |       |       |      |       |       |         |       |       |          |   |       |        |   |       |      |   |       |        |   |       |      |   |       |       |       |       |      |    |       |       |       |   |       |
| 5   | 5 3/8   | 3 3/16  | 1 1/2   | 3 7/8                 | 5-12     |  |  |  |  |           |         |  |  |  |         |             |             |                    |             |    |     |       |     |     |     |        |   |       |       |     |       |      |       |       |        |     |     |          |       |   |        |     |       |          |   |       |         |     |       |      |       |       |         |     |       |          |   |       |        |     |       |      |       |       |         |   |       |          |   |       |         |   |   |      |       |       |        |       |       |          |   |       |        |       |       |      |       |       |         |       |       |          |   |       |        |   |       |      |   |       |        |   |       |      |   |       |       |       |       |      |    |       |       |       |   |       |
| 5 1/2                                     | 6 1/4   | 3 15/16   | 1 7/8   | 4 3/8                 | 5 1/2-12 |  |  |  |  |           |         |  |  |  |         |             |             |                    |             |    |     |       |     |     |     |        |   |       |       |     |       |      |       |       |        |     |     |          |       |   |        |     |       |          |   |       |         |     |       |      |       |       |         |     |       |          |   |       |        |     |       |      |       |       |         |   |       |          |   |       |         |   |   |      |       |       |        |       |       |          |   |       |        |       |       |      |       |       |         |       |       |          |   |       |        |   |       |      |   |       |        |   |       |      |   |       |       |       |       |      |    |       |       |       |   |       |
| 7   | 6 1/2   | 4 1/16  | 2   | 5 3/4                 | 7-12     |  |  |  |  |           |         |  |  |  |         |             |             |                    |             |    |     |       |     |     |     |        |   |       |       |     |       |      |       |       |        |     |     |          |       |   |        |     |       |          |   |       |         |     |       |      |       |       |         |     |       |          |   |       |        |     |       |      |       |       |         |   |       |          |   |       |         |   |   |      |       |       |        |       |       |          |   |       |        |       |       |      |       |       |         |       |       |          |   |       |        |   |       |      |   |       |        |   |       |      |   |       |       |       |       |      |    |       |       |       |   |       |
| 8   | 6 1/2   | 4 1/16  | 2   | 6 1/2                 | 8-12     |  |  |  |  |           |         |  |  |  |         |             |             |                    |             |    |     |       |     |     |     |        |   |       |       |     |       |      |       |       |        |     |     |          |       |   |        |     |       |          |   |       |         |     |       |      |       |       |         |     |       |          |   |       |        |     |       |      |       |       |         |   |       |          |   |       |         |   |   |      |       |       |        |       |       |          |   |       |        |       |       |      |       |       |         |       |       |          |   |       |        |   |       |      |   |       |        |   |       |      |   |       |       |       |       |      |    |       |       |       |   |       |
| 9   | 6 3/4   | 4 1/8   | 2 3/8   | 7 1/4                 | 9-12     |  |  |  |  |           |         |  |  |  |         |             |             |                    |             |    |     |       |     |     |     |        |   |       |       |     |       |      |       |       |        |     |     |          |       |   |        |     |       |          |   |       |         |     |       |      |       |       |         |     |       |          |   |       |        |     |       |      |       |       |         |   |       |          |   |       |         |   |   |      |       |       |        |       |       |          |   |       |        |       |       |      |       |       |         |       |       |          |   |       |        |   |       |      |   |       |        |   |       |      |   |       |       |       |       |      |    |       |       |       |   |       |
| 10  | 7 1/4   | 4 5/8   | 2 3/8   | 8                     | 10-12    |  |  |  |  |           |         |  |  |  |         |             |             |                    |             |    |     |       |     |     |     |        |   |       |       |     |       |      |       |       |        |     |     |          |       |   |        |     |       |          |   |       |         |     |       |      |       |       |         |     |       |          |   |       |        |     |       |      |       |       |         |   |       |          |   |       |         |   |   |      |       |       |        |       |       |          |   |       |        |       |       |      |       |       |         |       |       |          |   |       |        |   |       |      |   |       |        |   |       |      |   |       |       |       |       |      |    |       |       |       |   |       |

# OPTIONAL ROD END STYLES

| ROD END STYLE # | DIMENSIONS  | ROD END STYLE #        | DIMENSIONS  |
|-----------------|---|------------------------|---|
| <b>#5</b>       |  | <b>#3</b><br>(NFPA-LF) |  |
| <b>#6</b>       |  | <b>#7</b><br>(NFPA-PL) |  |
| <b>#9</b>       |  | <b>#8</b><br>(NFPA-FM) |  |

\*\* MALE ROD END STYLE #2 WILL BE FURNISHED UNLESS OTHERWISE SPECIFIED

(4) SPANNER HOLES USED INSTEAD OF FLATS ON 4" DIA. AND LARGER.

NOTE: CONSULT FACTORY FOR ROD END CONFIGURATIONS OTHER THAN THOSE SHOWN.

NOTE: ALL YATES MOUNTING ACCESSORIES ARE DESIGNED TO FIT #2 ROD END STYLES



