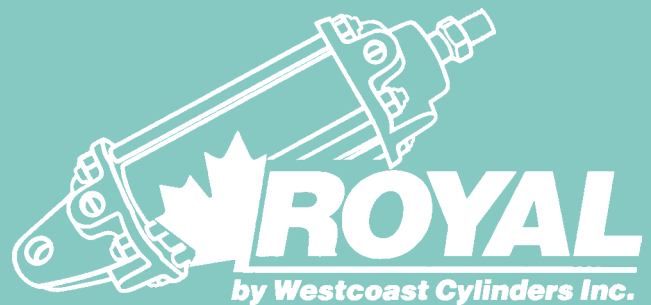
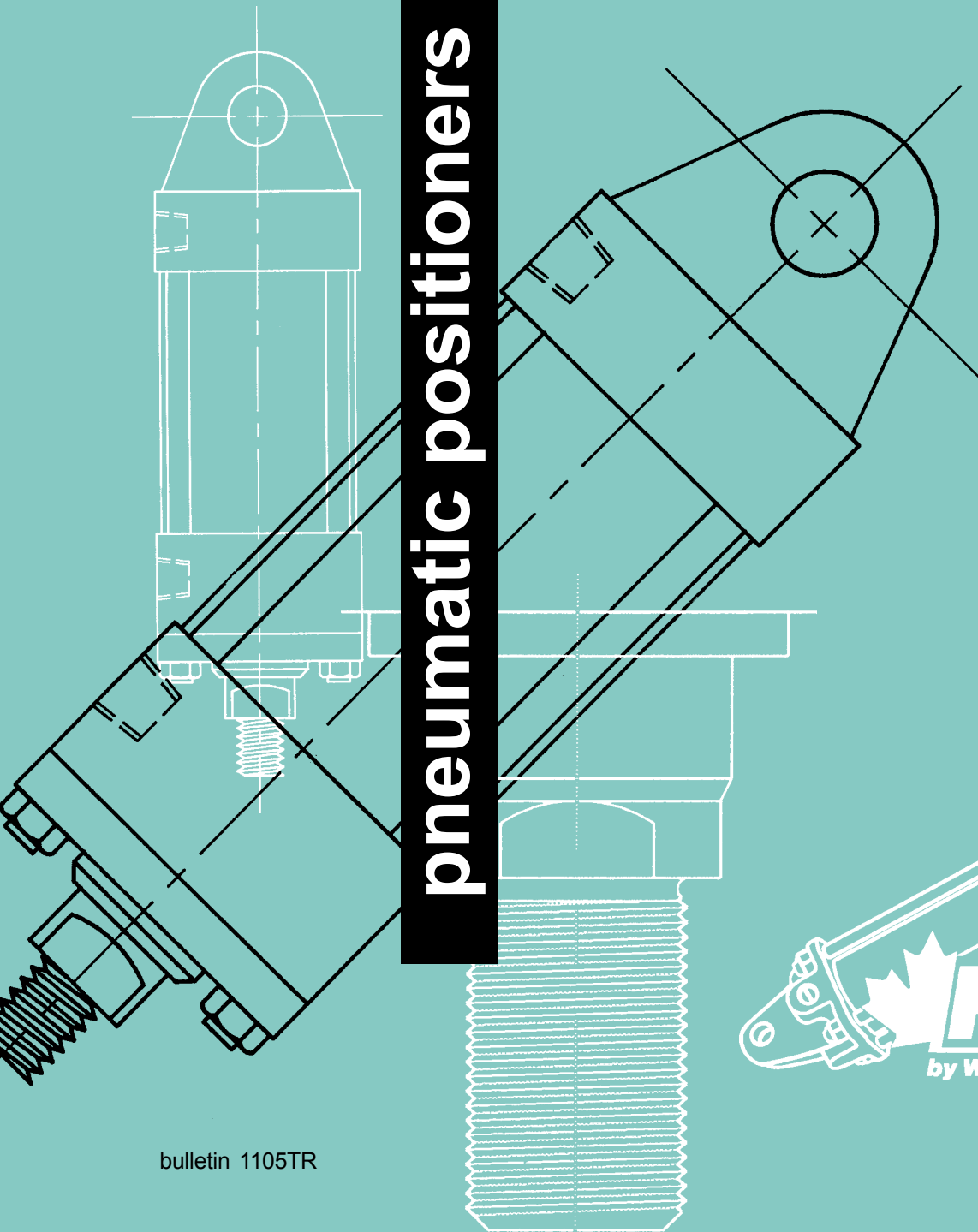


250  
psi rating

# series **TR**

**pneumatic positioners**



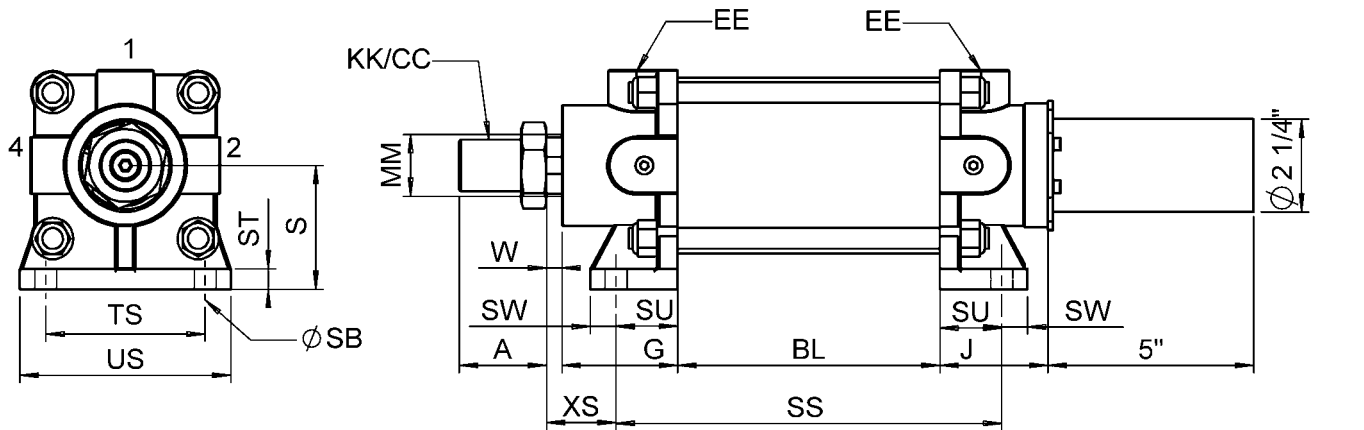


# model T1RF Foot Mount

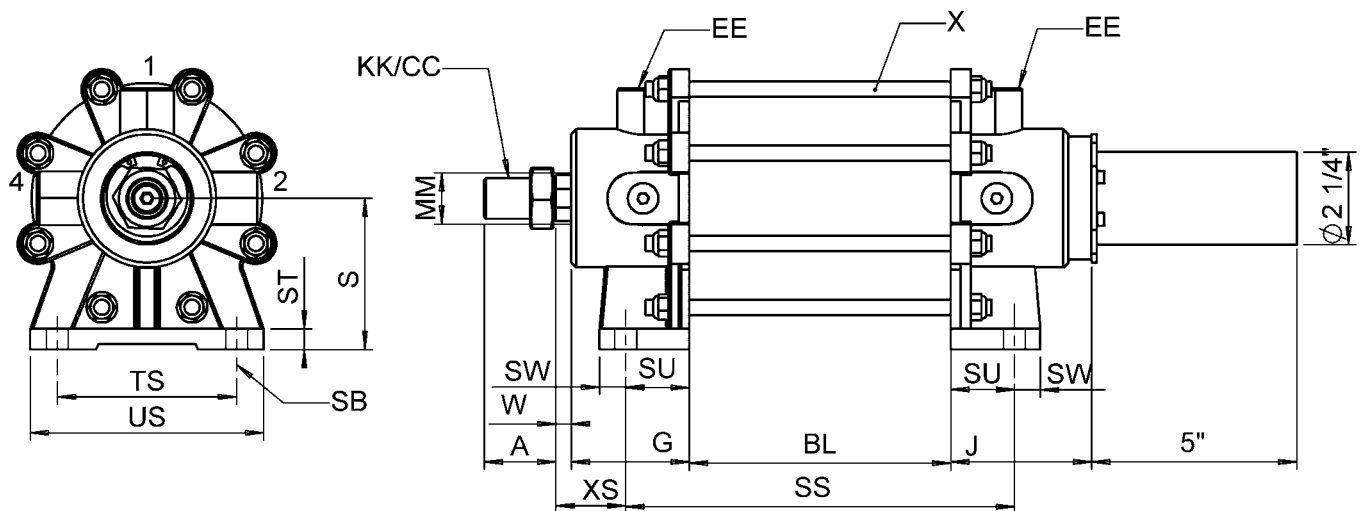
| BORE     | ROD | ROD DIA |     | KK       | CC       | A | W   | ADD STROKE |    |     |     |      |     |       |      |       |      |      |       |     |     |     |     |      |       |       |     |       |     |       |     |
|----------|-----|---------|-----|----------|----------|---|-----|------------|----|-----|-----|------|-----|-------|------|-------|------|------|-------|-----|-----|-----|-----|------|-------|-------|-----|-------|-----|-------|-----|
|          |     | MM      |     |          |          |   |     | BL         | SS | S   | SB  | ST   | SU  | SW    | TS   | US    | XS   | EE   | G     | J   | X   |     |     |      |       |       |     |       |     |       |     |
| <b>2</b> | 1   | 1       |     | 3/4-16   | 7/8-14   | 1 | 3/8 | 1/2        | 2  | 4   | 3/8 | 2    | 1/8 | 3/8   | 5/16 | 1     | 3/16 | 1/2  | 2     | 2   | 7/8 | 1   | 1/4 | 3/8  | 1     | 15/16 | 2   | 5/16  | 3/8 |       |     |
|          | 1   | 1       |     | 3/4-16   | 7/8-14   | 1 | 3/8 | 1/2        | 2  | 1/4 | 4   | 7/8  | 2   | 1/2   | 3/8  | 1     | 5/16 | 5/8  | 2     | 5/8 | 3   | 5/8 | 1   | 9/16 | 3/8   | 2     | 3/8 | 2     | 3/8 | 3/8   |     |
| <b>3</b> | 2   | 1       | 1/4 | 1-14     | N/A      | 1 | 3/4 | 7/16       |    |     |     |      |     |       |      |       |      |      |       |     |     |     |     |      |       |       |     |       |     |       |     |
|          | 1   | 1       | 1/4 | 1-14     | N/A      | 1 | 3/4 | 7/16       | 2  | 3/8 | 5   | 3/8  | 3   |       | 1/2  | 1/2   | 1    | 1/2  | 5/8   | 3   | 7/8 | 4   | 5/8 | 1    | 3/4   | 1/2   | 2   | 13/16 | 2   | 5/8   | 1/2 |
| <b>4</b> | 2   | 1       | 1/2 | 1 1/4-12 | N/A      | 2 | 1/8 | 3/8        |    |     |     |      |     |       |      |       |      |      |       |     |     |     |     |      |       |       |     |       |     |       |     |
|          | 1   | 1       | 1/4 | 1-14     | N/A      | 1 | 3/4 | 3/8        | 2  | 3/8 | 5   | 1/2  | 3   | 11/16 | 1/2  | 1/2   | 1    | 9/16 | 5/8   | 4   | 3/8 | 6   | 3/8 | 1    | 11/16 | 1/2   | 2   | 7/8   | 2   | 11/16 | 3/8 |
| <b>5</b> | 2   | 1       | 1/2 | 1 1/4-12 | N/A      | 2 | 1/8 | 5/16       |    |     |     |      |     |       |      |       |      |      |       |     |     |     |     |      |       |       |     |       |     |       |     |
|          | 1   | 1       | 1/2 | 1 1/4-12 | N/A      | 2 | 1/8 | 7/16       | 2  | 5/8 | 5   | 5/8  | 4   | 3/8   | 1/2  | 9/16  | 1    | 1/2  | 7/8   | 5   | 7/8 | 7   | 3/4 | 2    | 7/16  | 3/4   | 3   | 1/2   | 3   | 5/8   | 1/2 |
| <b>6</b> | 2   | 2       |     | 1 1/2-12 | 1 3/4-12 | 2 | 1/2 | 1/2        |    |     |     |      |     |       |      |       |      |      |       |     |     |     |     |      |       |       |     |       |     |       |     |
|          | 1   | 2       |     | 1 1/2-12 | 1 3/4-12 | 2 | 1/2 | 1/2        | 2  | 3/4 | 7   | 5/16 | 5   | 3/4   | 5/8  | 11/16 | 2    | 9/32 | 27/32 | 8   | 1/4 | 9   | 3/4 | 2    | 19/32 | 1     | 4   | 3/8   | 3   | 11/16 | 1/2 |
| <b>8</b> | 2   | 2       | 1/2 | 2-12     | 2 1/4-12 | 3 | 1/2 | 11/16      |    |     |     |      |     |       |      |       |      |      |       |     |     |     |     |      |       |       |     |       |     |       |     |
|          | 2   | 2       | 1/2 | 2-12     | 2 1/4-12 | 3 | 1/2 | 11/16      |    |     |     |      |     |       |      |       |      |      |       |     |     |     |     |      |       |       |     |       |     |       |     |

**Notes:**

1. All dimensions in inches.
2. EE dimension specifies NPTF port.  
Contact Factory if SAE or Alternate port size is required.



Model T1R2F to T1R4F  
Foot Mount



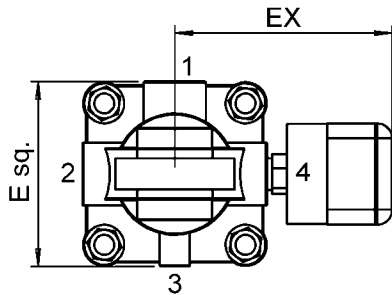
Model T1R5F to T1R8F  
Foot Mount



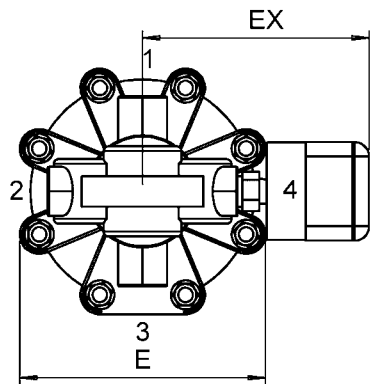
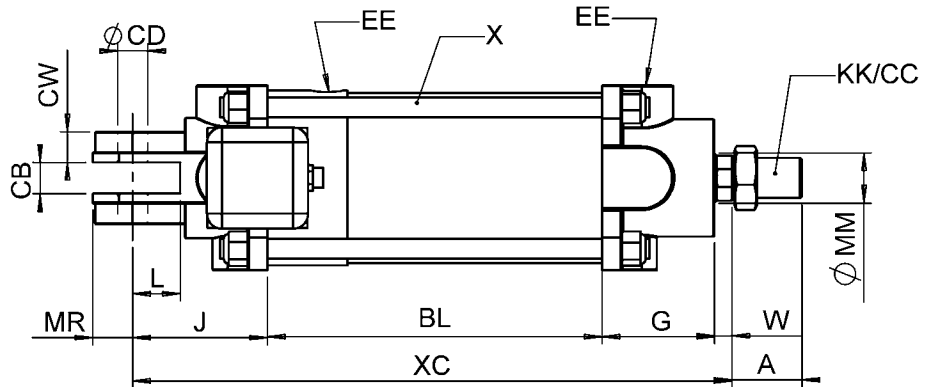
| BORE      | ROD DIA |       | ADD STROKE |          |       |       |       |          |        |       |        |        |       |         |        |       |       |     |     |
|-----------|---------|-------|------------|----------|-------|-------|-------|----------|--------|-------|--------|--------|-------|---------|--------|-------|-------|-----|-----|
|           | ROD     | MM    | KK         | CC       | A     | W     | BL    | XC       | CB     | CD    | CW     | E      | EE    | G       | J      | L     | MR    | X   |     |
| <b>3</b>  | 1       | 1     | 3/4-16     | 7/8-14   | 1     | 3/8   | 1/2   | 4 1/4    | 10 1/4 | 25/32 | 3/4    | 13/16  | 3 5/8 | 3/8     | 2 3/8  | 3 1/8 | 1 1/4 | 1   | 3/8 |
|           | 2       | 1 1/4 | 1-14       | N/A      | 1 3/4 | 7/16  |       | 10 3/16  |        |       |        |        |       |         |        |       |       |     |     |
| <b>4</b>  | 1       | 1 1/4 | 1-14       | N/A      | 1 3/4 | 7/16  | 4 3/8 | 11 11/16 | 1 1/32 | 1     | 15/16  | 4 5/8  | 1/2   | 2 13/16 | 4 1/16 | 1 7/8 | 1 1/8 | 1/2 |     |
|           | 2       | 1 1/2 | 1 1/4-12   | N/A      | 2 1/8 | 3/8   |       | 11 5/8   |        |       |        |        |       |         |        |       |       |     |     |
| <b>5</b>  | 1       | 1 1/4 | 1-14       | N/A      | 1 3/4 | 3/8   | 4 3/8 | 11 11/16 | 1 1/32 | 1     | 15/16  | 6 3/8  | 1/2   | 2 7/8   | 4 1/16 | 1 7/8 | 1 1/8 | 3/8 |     |
|           | 2       | 1 1/2 | 1 1/4-12   | N/A      | 2 1/8 | 5/16  |       | 11 5/8   |        |       |        |        |       |         |        |       |       |     |     |
| <b>6</b>  | 1       | 1 1/2 | 1 1/4-12   | N/A      | 2 1/8 | 7/16  | 4 5/8 | 13 7/16  | 1 5/16 | 1 1/4 | 1 7/32 | 7 3/4  | 3/4   | 3 1/2   | 4 7/8  | 1 3/4 | 1 1/2 | 1/2 |     |
|           | 2       | 2     | 1 1/2-12   | 1 3/4-12 | 2 1/2 | 1/2   |       | 13 1/2   |        |       |        |        |       |         |        |       |       |     |     |
| <b>8</b>  | 1       | 2     | 1 1/2-12   | 1 3/4-12 | 2 1/2 | 1/2   | 4 3/4 | 15 1/4   | 1 9/16 | 1 1/2 | 1 7/16 | 9 3/4  | 1     | 4 3/8   | 5 5/8  | 2 1/4 | 1 7/8 | 1/2 |     |
|           | 2       | 2 1/2 | 2-12       | 2 1/4-12 | 3 1/2 | 11/16 |       | 15 7/16  |        |       |        |        |       |         |        |       |       |     |     |
| <b>10</b> | 1       | 2 1/2 | 2-12       | 2 1/4-12 | 3 1/2 | 3/4   | 5 3/4 | 17 1/2   | 1 9/16 | 1 1/2 | 1 7/16 | 11 3/4 | 1 1/4 | 5 1/8   | 5 7/8  | 2     | 1 3/4 | 5/8 |     |
|           | 2       | 3     | 2 1/2-12   | 2 3/4-12 | 4 1/2 | 1     |       | 17 3/4   |        |       |        |        |       |         |        |       |       |     |     |

Notes:

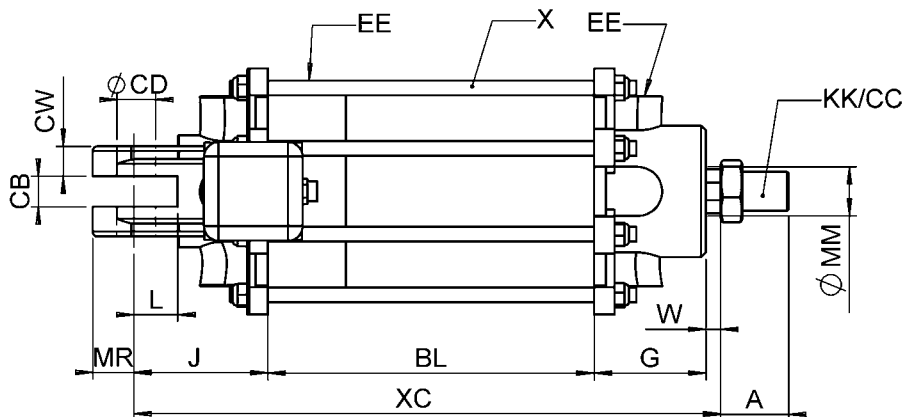
1. All dimensions in inches.
2. EE dimension specifies NPTF port.  
Contact Factory if SAE or Alternate port size is required.



Model T2R2C to T2R4C  
Blind End Clevis



Model T2R5C to T2R10C  
Blind End Clevis



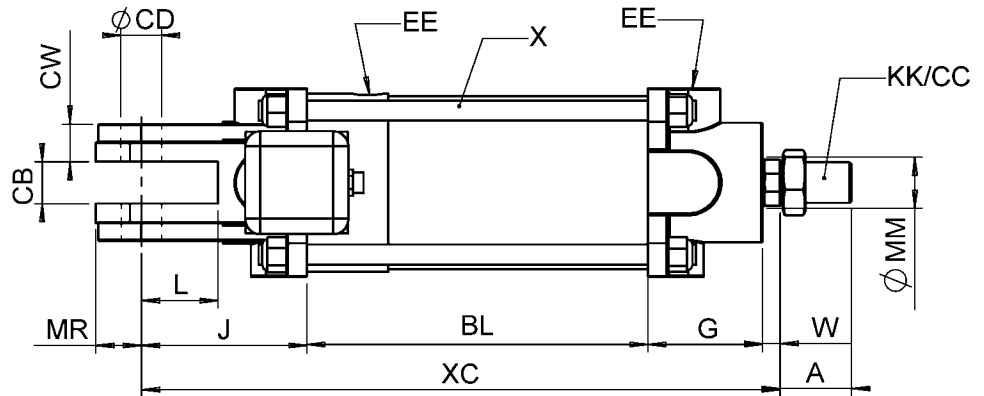
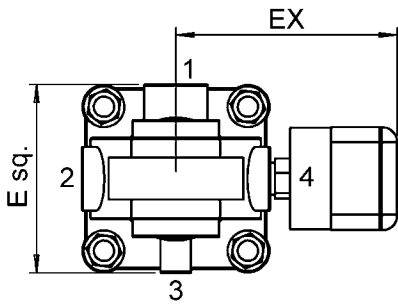


model **T2RHC** Heavy Blind Clevis

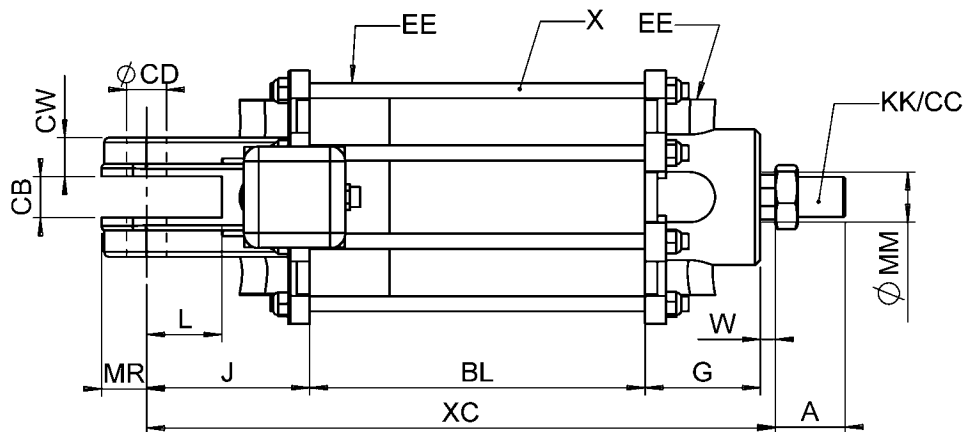
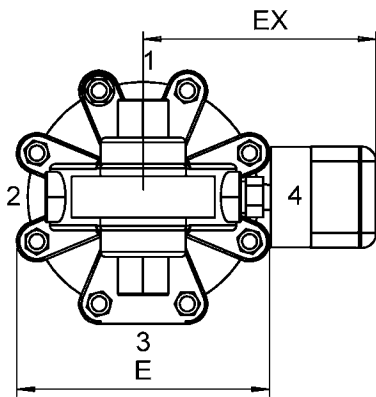
| BORE     | ROD DIA |       | ADD STROKE |          |       |       |       |          |        |       |        |       |       |         |        |       |       |     |     |
|----------|---------|-------|------------|----------|-------|-------|-------|----------|--------|-------|--------|-------|-------|---------|--------|-------|-------|-----|-----|
|          | ROD     | MM    | KK         | CC       | A     | W     | BL    | XC       | CB     | CD    | CW     | E     | EE    | G       | J      | L     | MR    | X   |     |
| <b>3</b> | 1       | 1     | 3/4-16     | 7/8-14   | 1     | 3/8   | 1/2   | 4 1/4    | 10 1/4 | 25/32 | 3/4    | 13/16 | 3 5/8 | 3/8     | 2 3/8  | 3 1/8 | 1 1/4 | 1   | 3/8 |
|          | 2       | 1 1/4 | 1-14       | N/A      | 1 3/4 | 7/16  |       | 10 3/16  |        |       |        |       |       |         |        |       |       |     |     |
| <b>4</b> | 1       | 1 1/4 | 1-14       | N/A      | 1 3/4 | 7/16  | 4 3/8 | 11 11/16 | 1 1/32 | 1     | 15/16  | 4 5/8 | 1/2   | 2 13/16 | 4 1/16 | 1 7/8 | 1 1/8 | 1/2 |     |
|          | 2       | 1 1/2 | 1 1/4-12   | N/A      | 2 1/8 | 3/8   |       | 11 5/8   |        |       |        |       |       |         |        |       |       |     |     |
| <b>5</b> | 1       | 1 1/4 | 1-14       | N/A      | 1 3/4 | 3/8   | 4 3/8 | 11 11/16 | 1 1/32 | 1     | 15/16  | 6 3/8 | 1/2   | 2 7/8   | 4 1/16 | 1 7/8 | 1 1/8 | 3/8 |     |
|          | 2       | 1 1/2 | 1 1/4-12   | N/A      | 2 1/8 | 5/16  |       | 11 5/8   |        |       |        |       |       |         |        |       |       |     |     |
| <b>6</b> | 1       | 1 1/2 | 1 1/4-12   | N/A      | 2 1/8 | 7/16  | 4 5/8 | 13 7/16  | 1 5/16 | 1 1/4 | 1 7/32 | 7 3/4 | 3/4   | 3 1/2   | 4 7/8  | 1 3/4 | 1 1/2 | 1/2 |     |
|          | 2       | 2     | 1 1/2-12   | 1 3/4-12 | 2 1/2 | 1/2   |       | 13 1/2   |        |       |        |       |       |         |        |       |       |     |     |
| <b>8</b> | 1       | 2     | 1 1/2-12   | 1 3/4-12 | 2 1/2 | 1/2   | 4 3/4 | 15 1/4   | 1 9/16 | 1 1/2 | 1 7/16 | 9 3/4 | 1     | 4 3/8   | 5 5/8  | 2 1/4 | 1 7/8 | 1/2 |     |
|          | 2       | 2 1/2 | 2-12       | 2 1/4-12 | 3 1/2 | 11/16 |       | 15 7/16  |        |       |        |       |       |         |        |       |       |     |     |

Notes:

1. All dimensions in inches.
2. EE dimension specifies NPTF port. Contact Factory if SAE or Alternate port size is required.



Model **T2R3HC** and **T2R4HC**  
Heavy Blind Clevis



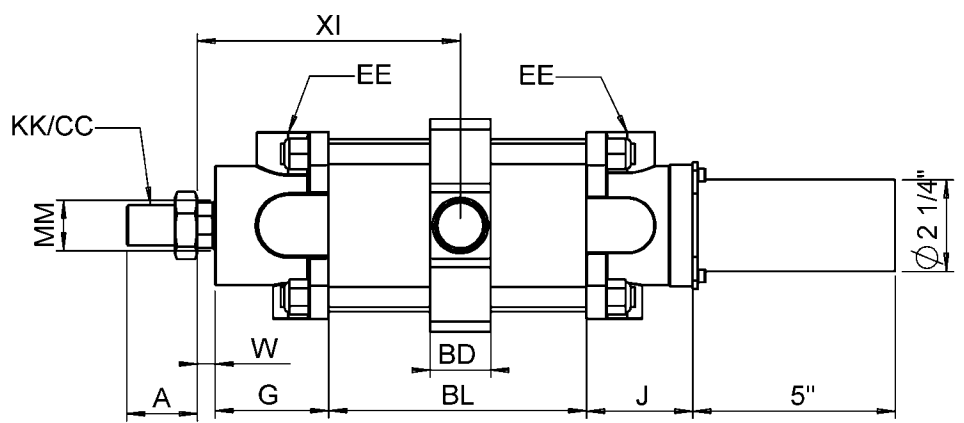
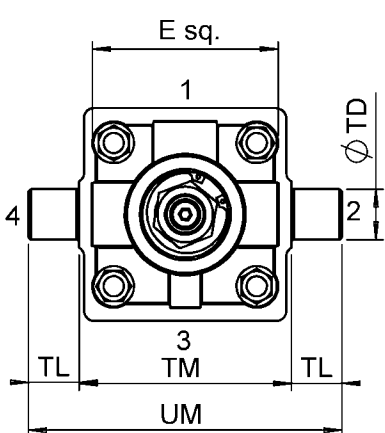
Model **T2R5HC** to **T2R8HC**  
Heavy Blind Clevis



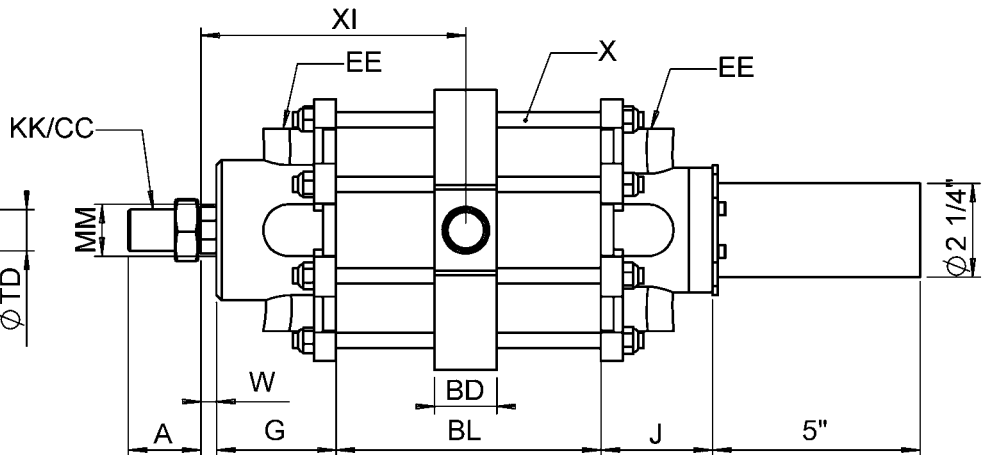
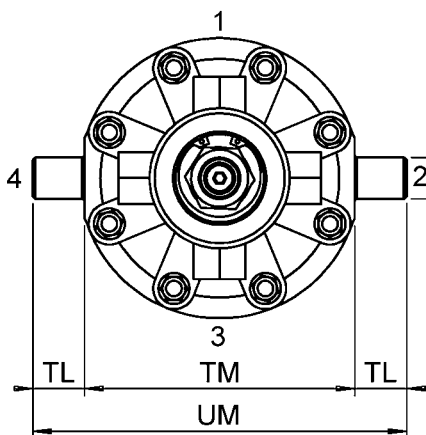
| BORE | ROD DIA |       |          |          |       |       |         | Model T Dimensions |       |       |       |       |       |       |        |        |       |         |         |     |
|------|---------|-------|----------|----------|-------|-------|---------|--------------------|-------|-------|-------|-------|-------|-------|--------|--------|-------|---------|---------|-----|
|      | ROD     | MM    | KK       | CC       | A     | W     | XI min  | ADD STROKE         |       |       | BD    | TD    | TL    | TM    | UM     | E      | EE    | G       | J       | X   |
| 2    | 1       | 1     | 3/4/16   | 7/8/14   | 1 3/8 | 1/2   | 3       | 3                  | 7/8   | 2     | 1     | 3/4   | 1     | 3     | 5      | 2 7/8  | 3/8   | 1 15/16 | 2 5/16  | 3/8 |
|      | 1       | 1     | 3/4/16   | 7/8-14   | 1 3/8 | 1/2   | 3 9/16  | 4                  | 7/16  | 2 1/4 | 1 1/4 | 3/4   | 1     | 4     | 6      | 3 5/8  | 3/8   | 2 3/8   | 2 3/8   | 3/8 |
| 3    | 1       | 1 1/4 | 1-14     | N/A      | 1 3/4 | 7/16  | 3 1/2   | 4                  | 3/8   |       |       |       |       |       |        |        |       |         |         |     |
|      | 1       | 1 1/4 | 1-14     | N/A      | 1 3/4 | 7/16  | 4 1/16  | 4                  | 13/16 | 2 3/8 | 1 1/2 | 1     | 1 1/4 | 5 1/4 | 7 3/4  | 4 5/8  | 1/2   | 2 13/16 | 2 5/8   | 1/2 |
| 4    | 2       | 1 1/2 | 1 1/4-12 | N/A      | 2 1/8 | 3/8   | 4       | 4                  | 3/4   |       |       |       |       |       |        |        |       |         |         |     |
|      | 1       | 1 1/4 | 1-14     | N/A      | 1 3/4 | 3/8   | 4 1/16  | 4                  | 13/16 | 2 3/8 | 1 1/2 | 1     | 1 1/4 | 6 1/2 | 9      | 6 3/8  | 1/2   | 2 7/8   | 2 11/16 | 3/8 |
| 5    | 2       | 1 1/2 | 1 1/4-12 | N/A      | 2 1/8 | 5/16  | 4       | 4                  | 3/4   |       |       |       |       |       |        |        |       |         |         |     |
|      | 1       | 1 1/2 | 1 1/4-12 | N/A      | 2 1/8 | 7/16  | 4 7/8   | 5                  | 5/8   | 2 5/8 | 1 3/4 | 1 1/4 | 1 1/2 | 8     | 11     | 7 3/4  | 3/4   | 3 1/2   | 3 5/8   | 1/2 |
| 6    | 2       | 2     | 1 1/2-12 | 1 3/4-12 | 2 1/2 | 1/2   | 4 15/16 | 5                  | 11/16 |       |       |       |       |       |        |        |       |         |         |     |
|      | 1       | 2     | 1 1/2-12 | 1 3/4-12 | 2 1/2 | 1/2   | 6 3/16  | 6                  | 5/16  | 2 3/4 | 2 1/2 | 1 3/4 | 2     | 10    | 14     | 9 3/4  | 1     | 4 3/8   | 3 11/16 | 1/2 |
| 8    | 2       | 2 1/2 | 2-12     | 2 1/4-12 | 3 1/2 | 11/16 | 6 3/8   | 6                  | 1/2   |       |       |       |       |       |        |        |       |         |         |     |
|      | 1       | 2 1/2 | 2-12     | 2 1/4-12 | 3 1/2 | 3/4   | 7 9/16  | 7                  | 11/16 | 3 1/2 | 3 1/4 | 2     | 2 3/8 | 13    | 17 3/4 | 11 3/4 | 1 1/4 | 5 1/8   | 4 5/16  | 5/8 |
| 10   | 2       | 3     | 2 1/2-12 | 2 3/4-12 | 4 1/2 | 1     | 7 13/16 | 7                  | 15/16 |       |       |       |       |       |        |        |       |         |         |     |

Notes:

1. All dimensions in inches.
2. EE dimension specifies NPTF port. Contact Factory if SAE or Alternate port size is required.



Model T1R2T to T1R4T Mid Trunnion



Model T1R5T to T1R10T Mid Trunnion

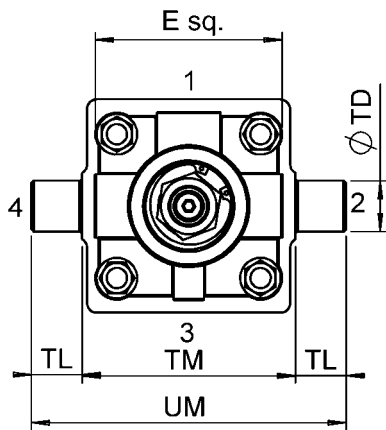


## model T1RHT Heavy Duty Mid Trunnion

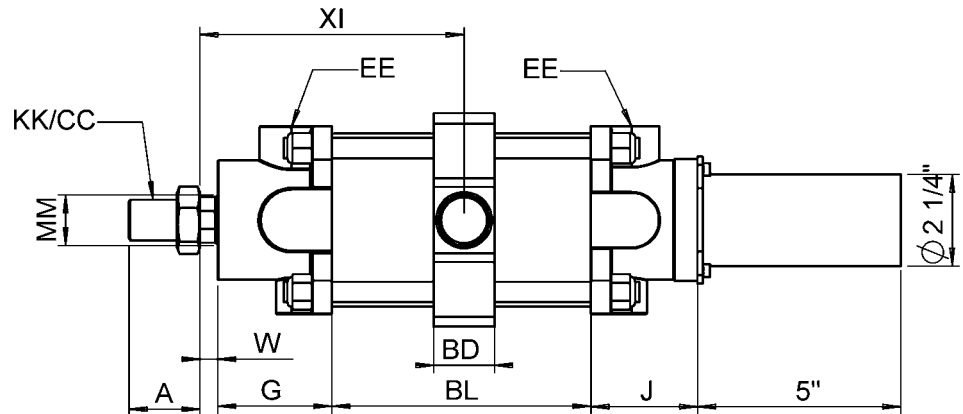
| BORE | ROD | ROD DIA |          | A        | W     | XI min | XI max  | BL      | Model HT Dimensions |       |       |       |       | E     | EE     | G     | J       | X       |     |
|------|-----|---------|----------|----------|-------|--------|---------|---------|---------------------|-------|-------|-------|-------|-------|--------|-------|---------|---------|-----|
|      |     | MM      | KK       |          |       |        |         |         | CC                  | BD    | TD    | TL    | TM    |       |        |       |         |         | UM  |
| 3    | 1   | 1       | 3/4-16   | 7/8-14   | 1 3/8 | 1/2    | 3 9/16  | 4 7/16  | 2 1/4               | 1 1/4 | 1     | 3/4   | 4     | 5 1/2 | 3 5/8  | 3/8   | 2 3/8   | 2 3/8   | 3/8 |
|      | 2   | 1 1/4   | 1-14     | N/A      | 1 3/4 | 7/16   | 3 1/2   | 4 3/8   |                     |       |       |       |       |       |        |       |         |         |     |
| 4    | 1   | 1 1/4   | 1-14     | N/A      | 1 3/4 | 7/16   | 4 1/16  | 4 13/16 | 2 3/8               | 1 1/2 | 1 1/4 | 1 1/4 | 5 1/4 | 7 3/4 | 4 5/8  | 1/2   | 2 13/16 | 2 5/8   | 1/2 |
|      | 2   | 1 1/2   | 1 1/4-12 | N/A      | 2 1/8 | 3/8    | 4       | 4 3/4   |                     |       |       |       |       |       |        |       |         |         |     |
| 5    | 1   | 1 1/4   | 1-14     | N/A      | 1 3/4 | 3/8    | 4 1/16  | 4 13/16 | 2 3/8               | 1 1/2 | 1 3/8 | 1 3/8 | 6 1/2 | 9 1/4 | 6 3/8  | 1/2   | 2 7/8   | 2 11/16 | 3/8 |
|      | 2   | 1 1/2   | 1 1/4-12 | N/A      | 2 1/8 | 5/16   | 4       | 4 3/4   |                     |       |       |       |       |       |        |       |         |         |     |
| 6    | 1   | 1 1/2   | 1 1/4-12 | N/A      | 2 1/8 | 7/16   | 4 7/8   | 5 5/8   | 2 5/8               | 1 3/4 | 1 1/2 | 1 1/2 | 8     | 11    | 7 3/4  | 3/4   | 3 1/2   | 3 5/8   | 1/2 |
|      | 2   | 2       | 1 1/2-12 | 1 3/4-12 | 2 1/2 | 1/2    | 4 15/16 | 5 11/16 |                     |       |       |       |       |       |        |       |         |         |     |
| 8    | 1   | 2       | 1 1/2-12 | 1 3/4-12 | 2 1/2 | 1/2    | 6 3/16  | 6 5/16  | 2 3/4               | 2 1/2 | 2     | 2     | 10    | 14    | 9 3/4  | 1     | 4 3/8   | 3 11/16 | 1/2 |
|      | 2   | 2 1/2   | 2-12     | 2 1/4-12 | 3 1/2 | 11/16  | 6 3/8   | 6 1/2   |                     |       |       |       |       |       |        |       |         |         |     |
| 10   | 1   | 2 1/2   | 2-12     | 2 1/4-12 | 3 1/2 | 3/4    | 7 9/16  | 7 11/16 | 3 1/2               | 3 1/4 | 2 1/2 | 2 1/2 | 13    | 18    | 11 3/4 | 1 1/4 | 5 1/8   | 4 5/16  | 5/8 |
|      | 2   | 3       | 2 1/2-12 | 2 3/4-12 | 4 1/2 | 1      | 7 13/16 | 7 15/16 |                     |       |       |       |       |       |        |       |         |         |     |

### Notes:

- All dimensions in inches.
- EE dimension specifies NPTF port. Contact Factory if SAE or Alternate port size is required.



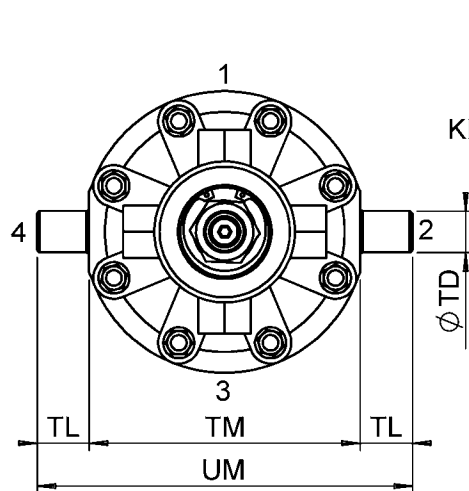
Model T1R3HT and T1R4HT  
Heavy Duty Mid Trunnion



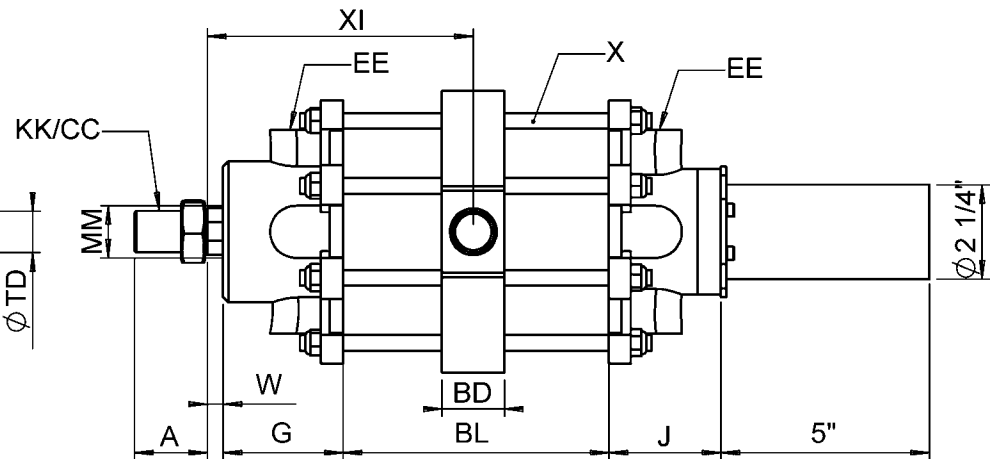
### Warning

Trunnion Mounted Cylinders swivel in one direction only and are designed to carry shear loads. Pins must be held rigidly and in accurate alignment. Improper mounting may result in premature failure.

Note: Specify XI value when ordering Mid Trunnion Mounted Cylinders.



Model T1R5HT to T1R10HT  
Heavy Duty Mid Trunnion

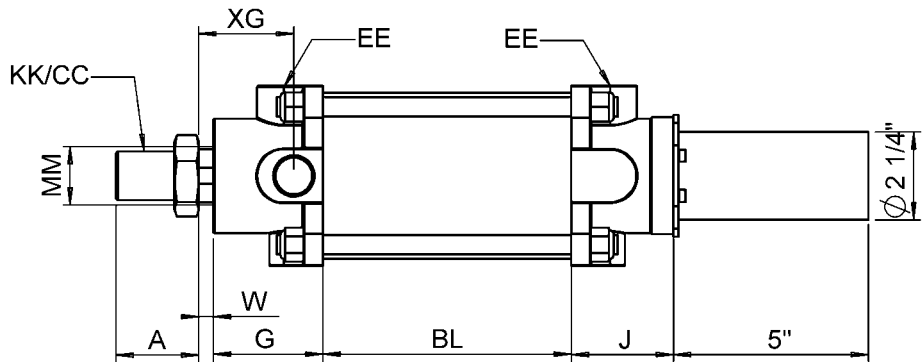
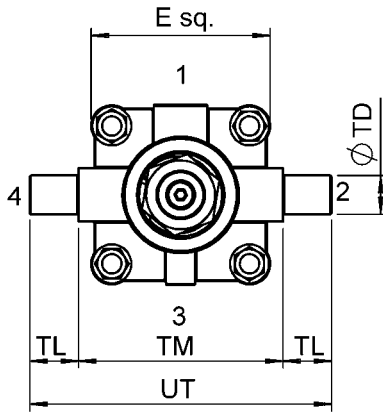




| BORE | ROD DIA |       | Model TR Dimensions |          |       |       |         |            |     |       |       |       |       |       |     |         |         |     |
|------|---------|-------|---------------------|----------|-------|-------|---------|------------|-----|-------|-------|-------|-------|-------|-----|---------|---------|-----|
|      | ROD     | MM    | KK                  | CC       | A     | W     | XG      | ADD STROKE | BL  | TD    | TL    | TM    | UT    | E     | EE  | G       | J       | XX  |
| 2    | 1       | 1     | 3/4-16              | 7/8-14   | 1 3/8 | 1/2   | 1 15/16 | 2          | 2   | 3/4   | 1     | 3     | 5     | 2 7/8 | 3/8 | 1 15/16 | 2 5/16  | 3/8 |
|      | 2       | 1 1/4 | 1-14                | N/A      | 1 3/4 | 7/16  | 2 1/8   | 2 1/4      | 2   | 3/4   | 1     | 4     | 6     | 3 5/8 | 3/8 | 2 3/8   | 2 3/8   | 3/8 |
| 3    | 1       | 1 1/4 | 1-14                | N/A      | 1 3/4 | 7/16  | 2 1/2   | 2          | 3/8 | 1     | 1 1/4 | 5 1/4 | 7 3/4 | 4 5/8 | 1/2 | 2 13/16 | 2 5/8   | 1/2 |
|      | 2       | 1 1/2 | 1 1/4-12            | N/A      | 2 1/8 | 3/8   | 2 7/16  | 2          | 3/8 | 1     | 1 1/4 | 6 1/2 | 9     | 6 3/8 | 1/2 | 2 7/8   | 2 11/16 | 3/8 |
| 4    | 1       | 1 1/4 | 1-14                | N/A      | 1 3/4 | 3/8   | 2 9/16  | 2          | 3/8 | 1     | 1 1/4 | 6 1/2 | 9     | 6 3/8 | 1/2 | 2 7/8   | 2 11/16 | 3/8 |
|      | 2       | 1 1/2 | 1 1/4-12            | N/A      | 2 1/8 | 5/16  | 2 1/2   | 2          | 3/8 | 1     | 1 1/4 | 6 1/2 | 9     | 6 3/8 | 1/2 | 2 7/8   | 2 11/16 | 3/8 |
| 5    | 1       | 1 1/2 | 1 1/4-12            | N/A      | 2 1/8 | 7/16  | 3       | 2          | 5/8 | 1 1/8 | 1 1/2 | 8     | 11    | 7 3/4 | 3/4 | 3 1/2   | 3 5/8   | 1/2 |
|      | 2       | 2     | 1 1/2-12            | 1 3/4-12 | 2 1/2 | 1/2   | 3 1/8   | 2          | 5/8 | 1 1/8 | 1 1/2 | 8     | 11    | 7 3/4 | 3/4 | 3 1/2   | 3 5/8   | 1/2 |
| 6    | 1       | 2     | 1 1/2-12            | 1 3/4-12 | 2 1/2 | 1/2   | 3 1/8   | 2          | 3/4 | 1 3/4 | 2     | 10    | 14    | 9 3/4 | 1   | 4 3/8   | 3 11/16 | 1/2 |
|      | 2       | 2 1/2 | 2-12                | 2 1/4-12 | 3 1/2 | 11/16 | 4 1/8   | 2          | 3/4 | 1 3/4 | 2     | 10    | 14    | 9 3/4 | 1   | 4 3/8   | 3 11/16 | 1/2 |

Notes:

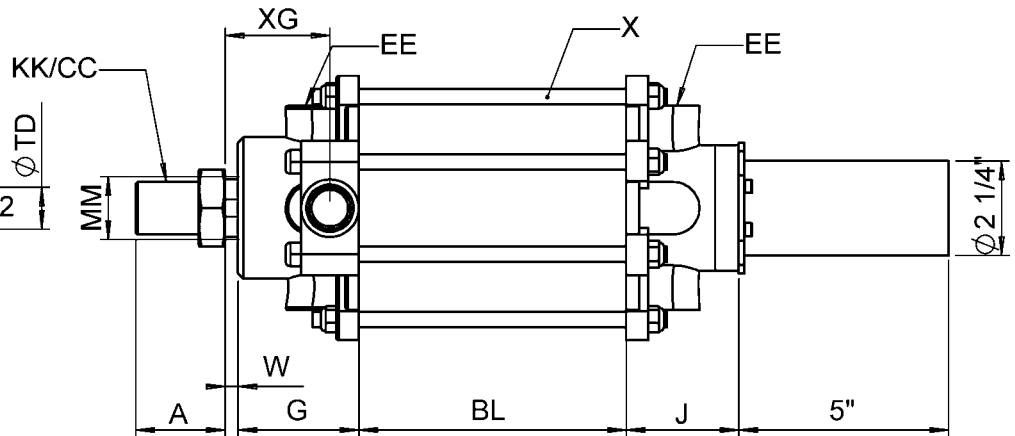
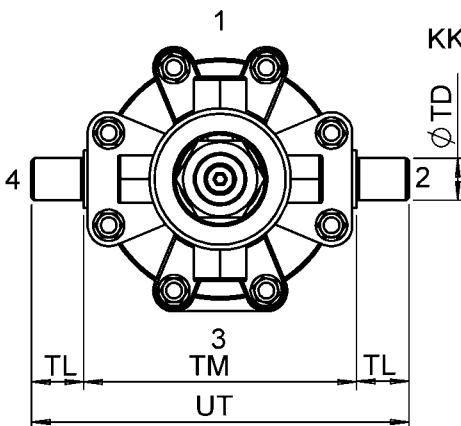
1. All dimensions in inches.
2. EE dimension specifies NPTF port. Contact Factory if SAE or Alternate port size is required.



Model T1R2TR to T1R4TR  
Rod End Trunnion

Warning

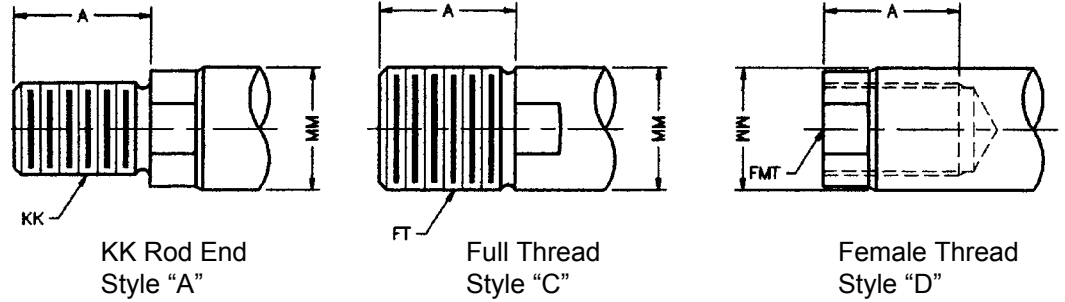
Trunnion Mounted Cylinders swivel in one direction only and are designed to carry shear loads. Pins must be held rigidly and in accurate alignment. Improper mounting may result in premature failure.



Model T1R5TR to T1R8TR  
Rod End Trunnion

Available Rod End Styles

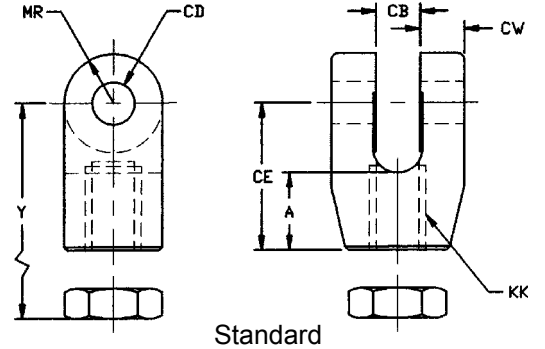
See Model Dimension Tables for Dimensions



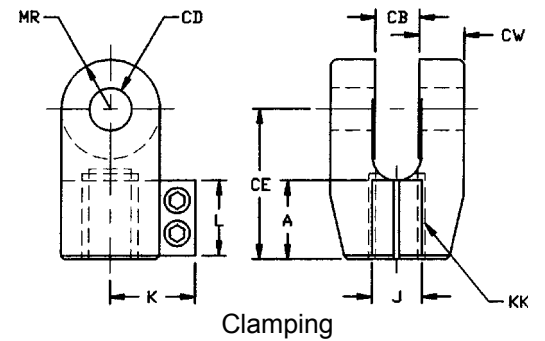
Mill Duty Clevis

Note - "C" denotes Clamping Style

| PART | C2     | C3     | C4     | C6       | C8       | C10    | C12      | C8-C     | C10-C  | C12-C    |
|------|--------|--------|--------|----------|----------|--------|----------|----------|--------|----------|
| A    | 1      | 1      | 1 3/8  | 1 3/4    | 2        | 2 1/2  | 3        | 2        | 2 1/2  | 3        |
| CB   | 1/2    | 1/2    | 3/4    | 1        | 1 1/4    | 1 1/2  | 2        | 1 1/4    | 1 1/2  | 2        |
| CD   | 1/2    | 1/2    | 3/4    | 1        | 1 1/4    | 1 1/2  | 1 3/4    | 1 1/4    | 1 1/2  | 1 3/4    |
| CE   | 2      | 2      | 2 5/8  | 3 1/4    | 3 3/4    | 4 3/4  | 5 7/8    | 3 3/4    | 4 3/4  | 5 7/8    |
| CW   | 9/16   | 9/16   | 13/16  | 15/16    | 1 1/4    | 1 7/16 | 1 5/8    | 1 1/4    | 1 7/16 | 1 5/8    |
| J    | N/A    | N/A    | N/A    | N/A      | N/A      | N/A    | N/A      | 1 1/4    | 1 1/2  | 1 3/4    |
| K    | N/A    | N/A    | N/A    | N/A      | N/A      | N/A    | N/A      | 2 3/8    | 2 3/4  | 3 3/16   |
| KK   | 5/8-18 | 3/4-16 | 1-14   | 1 1/4-12 | 1 1/2-12 | 2-12   | 2 1/2-12 | 1 1/2-12 | 2-12   | 2 1/2-12 |
| L    | N/A    | N/A    | N/A    | N/A      | N/A      | N/A    | N/A      | 2        | 2 1/2  | 3        |
| MR   | 5/8    | 5/8    | 7/8    | 1 1/8    | 1 3/8    | 1 3/4  | 2        | 1 3/8    | 1 3/4  | 2        |
| Y    | 2 3/8  | 2 7/16 | 3 3/16 | 3 7/8    | 4 9/16   | 5 7/8  | 7 3/8    | 4 9/16   | 5 7/8  | 7 3/8    |



Standard



Clamping

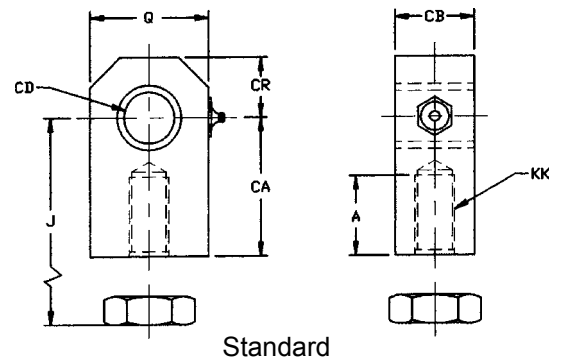
Clamping Style Accessories

If using a clamping Style Rod Eye or Clamping Style Clevis, a jam nut is not required. In this case it is recommended to order a piston rod thread length that matches that of the accessory.

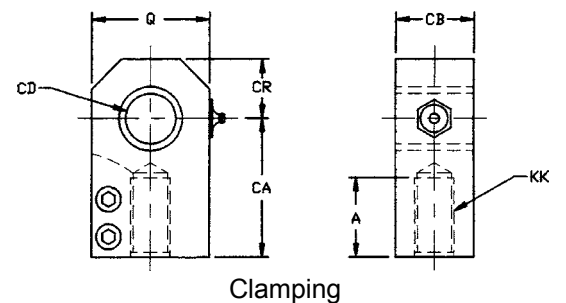
Urethane-bushed Mill Duty Rod Eye

Note - "C" denotes Clamping Style

| PART | RE3     | E3     | RE4-C | E4     | RE6-C    | E6       | RE8-C    | E8       | E10-C | E12-C    | E14-C |
|------|---------|--------|-------|--------|----------|----------|----------|----------|-------|----------|-------|
| A    | 1 1/2   | 1 3/4  | 1 1/2 | 2      | 2        | 2 3/8    | 2 1/4    | 2 3/4    | 3     | 3        | 3     |
| CA   | 2 1/2   | 3 1/8  | 2 7/8 | 3 1/2  | 3 11/16  | 4        | 4 1/4    | 5        | 5 1/4 | 5 1/4    | 5 3/4 |
| CB   | 1 3/4   | 2      | 1 3/4 | 2      | 2        | 2 1/4    | 2 1/4    | 3 1/2    | 3 1/2 | 3 1/2    | 4     |
| CD   | 1       | 1      | 1 1/4 | 1 1/4  | 1 1/2    | 1 1/2    | 2        | 2        | 2     | 2 1/2    | 2 1/2 |
| CR   | 1       | 1 3/8  | 1 1/8 | 1 1/2  | 1 5/8    | 1 3/4    | 1 3/4    | 2 1/4    | 2 1/4 | 2 3/4    | 2 3/4 |
| J    | 2 15/16 | 3 9/16 |       | 4 1/16 |          | 4 5/8    |          | 5 13/16  |       |          |       |
| KK   | 3/4-16  | 3/4-16 | 1-14  | 1-14   | 1 1/4-12 | 1 1/4-12 | 1 1/2-12 | 1 1/2-12 | 2-12  | 2 1/2-12 | 3-12  |
| Q    | 2       | 2 3/4  | 2 1/4 | 3      | 3        | 3 1/2    | 3 1/2    | 4 1/2    | 4 1/2 | 5 1/2    | 5 1/2 |



Standard



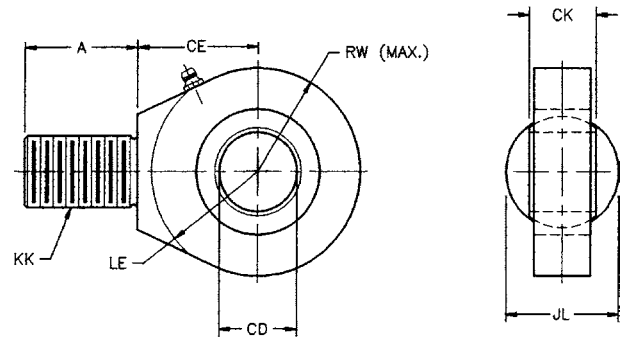
Clamping



### Self-Aligning Rod Eye - Male

Adapts to female thread on piston rod

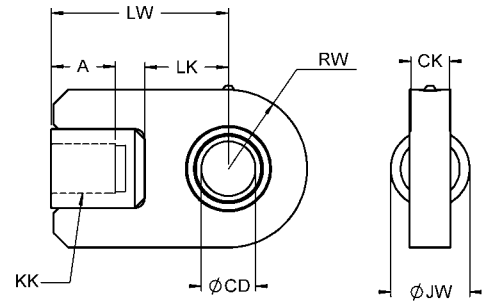
| PART | HRES-1  | HRES-2 | HRES-3 | HRES-4   | HRES-5   | HRES-6   |
|------|---------|--------|--------|----------|----------|----------|
| A    | 11/16   | 1      | 1 1/2  | 2        | 2 1/8    | 2 7/8    |
| CD   | 1/2     | 3/4    | 1      | 1 3/8    | 1 3/4    | 2        |
| CE   | 7/8     | 1 1/4  | 1 7/8  | 2 1/8    | 2 1/2    | 2 3/4    |
| CK   | 7/16    | 21/32  | 7/8    | 1 3/16   | 1 17/32  | 1 3/4    |
| JL   | 7/8     | 1 5/16 | 1 1/2  | 2        | 2 1/4    | 2 3/4    |
| KK   | 7/16-20 | 3/4-16 | 1-14   | 1 1/4-12 | 1 1/2-12 | 1 7/8-12 |
| LE   | 3/4     | 1 1/16 | 1 7/16 | 1 7/8    | 2 1/8    | 2 1/2    |
| RW   | 7/8     | 1 1/4  | 1 3/8  | 1 13/16  | 2 3/16   | 2 5/8    |



### Self-Aligning Rod Eye - Female

Adapts to male thread on piston rod

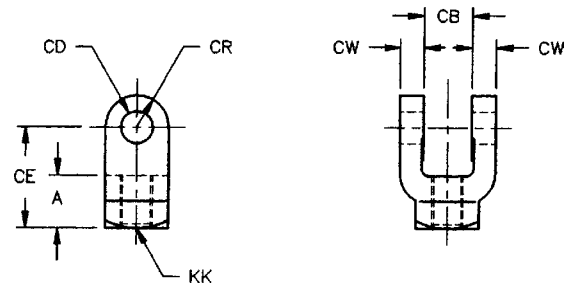
| PART | HWE15   | HWE2   | HWE32 | HWE4     | HWE5     | HWE6     | HWE7     | HWE8     |
|------|---------|--------|-------|----------|----------|----------|----------|----------|
| A    | 3/4     | 1 1/8  | 1 5/8 | 2        | 2 1/4    | 3        | 3 1/2    | 3 1/2    |
| CD   | 1/2     | 3/4    | 1     | 1 3/8    | 1 3/4    | 2        | 2 1/2    | 3        |
| CK   | 7/16    | 21/32  | 7/8   | 1 3/16   | 1 17/32  | 1 3/4    | 2 3/16   | 2 5/8    |
| JW   | 3/4     | 1 3/8  | 1 3/4 | 2        | 2 1/2    | 3        | 3 1/2    | 4        |
| KK   | 7/16-20 | 3/4-16 | 1-14  | 1 1/4-12 | 1 1/2-12 | 1 7/8-12 | 2 1/4-12 | 2 1/2-12 |
| LW   | 1 3/4   | 2 3/4  | 3 5/8 | 4 1/2    | 5 5/8    | 6 3/4    | 7        | 7 1/8    |
| RW   | 7/8     | 1 1/4  | 1 1/2 | 2        | 2 3/4    | 3        | 3 1/8    | 4        |
| LK   | 5/8     | 1 1/4  | 1 5/8 | 2 1/8    | 2 5/8    | 3 1/2    | 3 1/8    | 3 1/4    |



### Rod Clevis

Adapts to male thread on piston rod

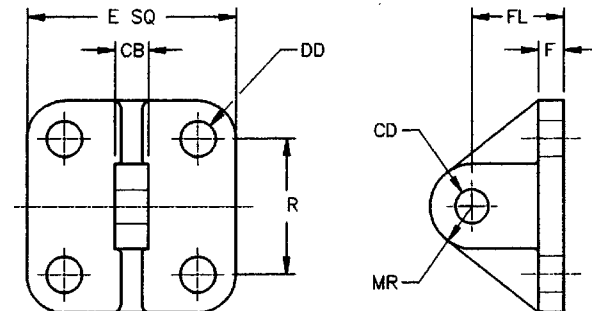
| PART | HC15    | HC15C  | HC2    | HC2C   | HC32  | HC4      | HC5      | HC5C     |
|------|---------|--------|--------|--------|-------|----------|----------|----------|
| A    | 3/4     | 3/4    | 1 1/8  | 1 5/8  | 1 5/8 | 2        | 2 1/4    | 3        |
| CB   | 0.765   | 0.765  | 1.265  | 1.515  | 1.515 | 2.032    | 2.531    | 2.531    |
| CD   | 1/2     | 1/2    | 3/4    | 1      | 1     | 1 3/8    | 1 3/4    | 2        |
| CE   | 1 1/2   | 1 1/2  | 2 3/8  | 3 1/8  | 3 1/8 | 4 1/8    | 4 1/2    | 5 1/2    |
| CW   | 1/2     | 1/2    | 5/8    | 3/4    | 3/4   | 1        | 1 1/4    | 1 1/4    |
| CR   | 1/2     | 1/2    | 3/4    | 1      | 1     | 1 3/8    | 1 3/4    | 2        |
| KK   | 7/16-20 | 1/2-20 | 3/4-16 | 7/8-14 | 1-14  | 1 1/4-12 | 1 1/2-12 | 1 3/4-12 |



### Eye Type Mounting Bracket

Adapts to clevis mount cylinder or Rod clevis

| PART | M15   | M3    | M4    | M6     | M8    | M10   | M12   |
|------|-------|-------|-------|--------|-------|-------|-------|
| CB   | 3/8   | 1/2   | 3/4   | 1      | 1 1/4 | 1 1/2 | 2     |
| CD   | 3/8   | 1/2   | 3/4   | 1      | 1 1/4 | 1 1/2 | 1 3/4 |
| DD   | 5/16  | 1/2   | 1/2   | 5/8    | 5/8   | 7/8   | 1     |
| E    | 2 3/4 | 3 1/8 | 4 3/8 | 5 1/2  | 6 1/2 | 7 3/4 | 9     |
| F    | 3/8   | 7/16  | 9/16  | 5/8    | 3/4   | 1 1/4 | 1 3/8 |
| FL   | 1 1/8 | 1 3/8 | 1 3/4 | 2      | 2 1/2 | 3 1/4 | 3 3/4 |
| MR   | 1/2   | 5/8   | 7/8   | 1 1/16 | 1 1/4 | 1 5/8 | 2 1/8 |
| R    | 1 3/4 | 2     | 3 1/4 | 4 1/4  | 5     | 6     | 6 3/4 |

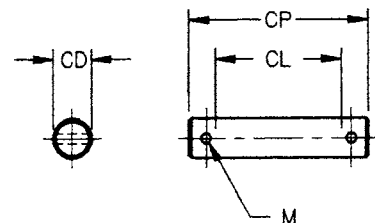


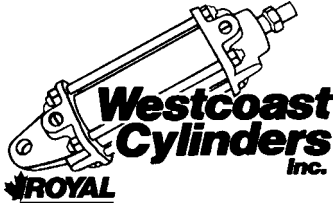
### Pivot Pin

Comes complete with cotter pins

Adapts to clevis mount cylinder or Rod clevis

| PART | P3     | P4    | P6    | P8    | P10   | P12   | P14   | HP4     | HP6   | HP7   |
|------|--------|-------|-------|-------|-------|-------|-------|---------|-------|-------|
| CD   | 1/2    | 3/4   | 1     | 1 1/4 | 1 1/2 | 1 3/4 | 1 3/4 | 1 3/8   | 2     | 2 1/2 |
| CL   | 1 3/4  | 2 1/2 | 3     | 4     | 4 5/8 | 5 3/8 | 6 1/4 | 4       | 5 1/8 | 6 1/4 |
| CP   | 2 5/16 | 3 1/8 | 3 3/4 | 4 7/8 | 5 1/2 | 6 1/8 | 7     | 4 13/16 | 6     | 7 1/8 |





### Published Design Data

Westcoast Cylinders Inc reserves the right to change specifications and other information included in this catalogue without notice. All information, data and dimension tables in this catalogue have been carefully compiled and thoroughly checked. However, no responsibility for possible errors or omissions can be assumed.

Westcoast Cylinders Inc. warranties the material and workmanship of our cylinders for one full year when used under normal conditions, subject to factory inspection. WCI will repair or replace, at no cost for defective parts or cylinders. WCI will not incur expenses incurred in the field, pertaining to such repairs or replacements except upon written authority. For a complete statement of terms and warranty contact Westcoast Cylinders Inc.

### Warning

These products are intended for industrial use only. Do not use these products in applications where the pressure and temperature exceeds the values listed below.

Through misuse, age or malfunction, components used in fluid power systems can fail. A designer utilizing these products must consider all modes of failure when designing machines and provide safeguards or warn the end user of possible modes of failure.

### Cylinder Pressure and Temperature Ratings

TR-Series cylinders are rated to 250 psig pneumatic pressure.

Temperature ratings for cylinders are limited to the maximum published temperature range of the least resistant seal component. In most cases that would be the standard Buna-N O-ring seals. For higher temperatures specify a "V" in the Options box of the Cylinder Nomenclature.

Buna-N temperature ratings: -30°F to 200°F (-34°C to 93°C).

## Cylinder Developed Force

| BORE<br>in | ROD DIA<br>in | Work<br>Major Area<br>(in <sup>2</sup> ) | Work<br>Minor Area<br>(in <sup>2</sup> ) | Developed Force (lb)<br>@ Differential Pressure |      |      |      |       |       |       |       |       |       |       |       |
|------------|---------------|--|--|---|------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|
|            |               |  |  | 60  |      | 80   |      | 100   |       | 150   |       | 200   |       | 250   |       |
|            |               |  |  | push  | pull | push | pull | push  | pull  | push  | pull  | push  | pull  | push  | pull  |
| <b>2</b>   | 3/4           | 3.14                                     | 2.70                                     | 188   | 162  | 251  | 216  | 314   | 270   | 471   | 405   | 628   | 540   | 785   | 675   |
|            | 1             | 3.14                                     | 2.36                                     | 188   | 141  | 251  | 188  | 314   | 236   | 471   | 353   | 628   | 471   | 785   | 589   |
| <b>3</b>   | 1             | 7.07                                     | 6.28                                     | 424   | 377  | 565  | 503  | 707   | 628   | 1060  | 942   | 1414  | 1257  | 1767  | 1571  |
|            | 1 1/4         | 7.07                                     | 5.84                                     | 424   | 350  | 565  | 467  | 707   | 584   | 1060  | 876   | 1414  | 1168  | 1767  | 1460  |
| <b>4</b>   | 1 1/4         | 12.57                                    | 11.34                                    | 754   | 680  | 1005 | 907  | 1257  | 1134  | 1885  | 1701  | 2513  | 2268  | 3142  | 2835  |
|            | 1 1/2         | 12.57                                    | 10.80                                    | 754   | 648  | 1005 | 864  | 1257  | 1080  | 1885  | 1620  | 2513  | 2160  | 3142  | 2700  |
| <b>5</b>   | 1 1/4         | 19.63                                    | 18.41                                    | 1178  | 1104 | 1571 | 1473 | 1963  | 1841  | 2945  | 2761  | 3927  | 3682  | 4909  | 4602  |
|            | 1 1/2         | 19.63                                    | 17.87                                    | 1178  | 1072 | 1571 | 1429 | 1963  | 1787  | 2945  | 2680  | 3927  | 3574  | 4909  | 4467  |
| <b>6</b>   | 1 1/2         | 28.27                                    | 26.51                                    | 1696  | 1590 | 2262 | 2121 | 2827  | 2651  | 4241  | 3976  | 5655  | 5301  | 7069  | 6627  |
|            | 2             | 28.27                                    | 25.13                                    | 1696  | 1508 | 2262 | 2011 | 2827  | 2513  | 4241  | 3770  | 5655  | 5027  | 7069  | 6283  |
| <b>8</b>   | 2             | 50.27                                    | 47.12                                    | 3016  | 2827 | 4021 | 3770 | 5027  | 4712  | 7540  | 7069  | 10053 | 9425  | 12566 | 11781 |
|            | 2 1/2         | 50.27                                    | 45.36                                    | 3016  | 2721 | 4021 | 3629 | 5027  | 4536  | 7540  | 6804  | 10053 | 9071  | 12566 | 11339 |
| <b>10</b>  | 2 1/2         | 78.54                                    | 73.63                                    | 4712  | 4418 | 6283 | 5890 | 7854  | 7363  | 11781 | 11045 | 15708 | 14726 | 19635 | 18408 |
|            | 3             | 78.54                                    | 71.47                                    | 4712  | 4288 | 6283 | 5718 | 7854  | 7147  | 11781 | 10721 | 15708 | 14294 | 19635 | 17868 |
| <b>12</b>  | 3             | 113.10                                   | 106.03                                   | 6786  | 6362 | 9048 | 8482 | 11310 | 10603 | 16965 | 15904 | 22619 | 21206 | 28274 | 26507 |
|            | 3 1/2         | 113.10                                   | 103.48                                   | 6786  | 6209 | 9048 | 8278 | 11310 | 10348 | 16965 | 15521 | 22619 | 20695 | 28274 | 25869 |

## Cylinder Sizing

An air cylinder must generate sufficient force to move a load and overcome friction losses. System pressure losses must also be considered. The cylinder developed force table does not take into account friction or pressure losses. In addition, an air cylinder must be overpowered due to the compressibility of air. Therefore, the following general guideline applies for sizing an air cylinder when using theoretical cylinder developed force values:

|  |                                |
|--|--------------------------------|
| <b>Application</b>   | <b>Minimum force available</b> |
|  | <b>Total load factor</b>       |
| Normal Speed   | 1.25                           |
| Intermediate Speed   | 1.5                            |
| High Speed   | 2                              |
| Multiply your total load by one of the load factors above.           |                                |
| <b>Load * Factor = Minimum load for cylinder at system pressure.</b> |                                |

Typical pneumatic cylinder applications require flow controls to limit cylinder speeds. Flow control installation is typically done as metered out controlling the flow of air as it exits the cylinder. This is done to ensure accurate cylinder speeds under all loads. The flow controls however do affect cylinder performance by maintaining back pressure on the piston. As a general rule, allow 20 psi pressure loss through flow control for good speed regulation.

Please note the above issues if cylinder performance are critical and increase your load factor accordingly.

## Cylinder Side Load

Mounting style and mounting position are very important considerations as well.

Side loads on the gland bushing should be avoided where possible to obtain maximum life from a cylinder. Cylinders can not support side load, they are designed for push-pull applications where the load is guided to ensure proper alignment.

## Break-away Pressures

Cylinder break-away pressure varies between 5 and 10 psi depending on the bore size and mounting attitude. The following values were compiled using a new non-loaded cylinder mounted horizontally.

|         |                                   |
|---------|-----------------------------------|
| 3" bore | Retract = 5.5 psi Extend = 3 psi. |
| 4" bore | Retract = 8 psi Extend = 6 psi.   |

If low pressure break-away is required please contact the factory for more detailed information.

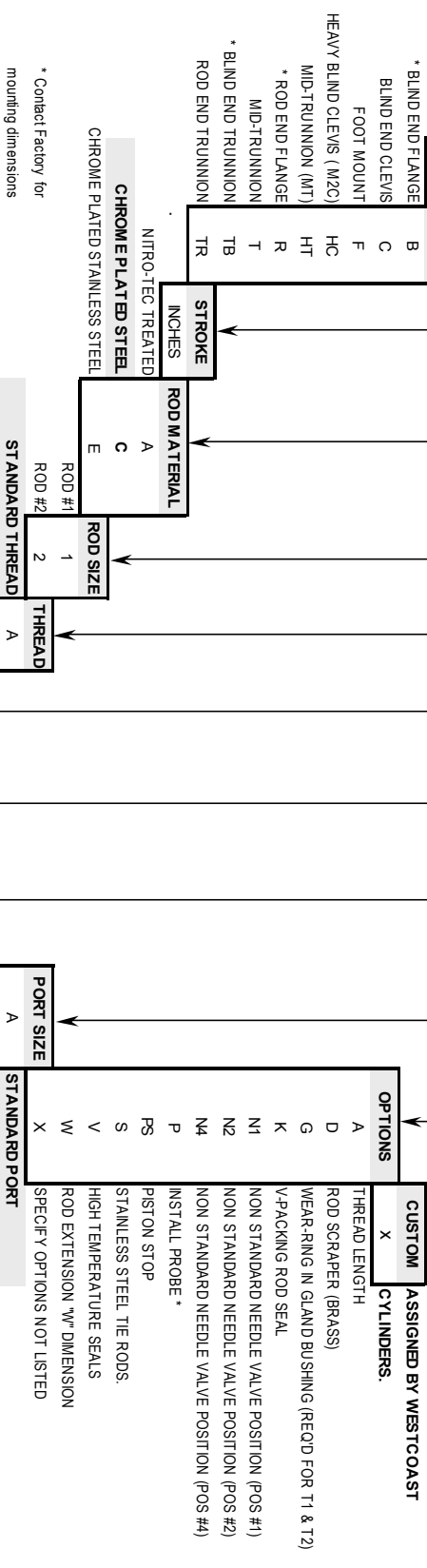
**SPECIFYING AN "X" IN ANY FIELD REQUIRES AN EXPLANATION IN THE SPECIAL NOTES FIELD.**

| T1R    |      | EXAMPLE |        | STD PROBE    |          | MTS LD |          |        |            |           |         |        |
|--------|------|---------|--------|--------------|----------|--------|----------|--------|------------|-----------|---------|--------|
| SERIES | BORE | STYLE   | STROKE | ROD MATERIAL | ROD SIZE | THREAD | CUSHIONS | BARREL | PORT LOC'N | PORT SIZE | OPTIONS | CUSTOM |
| T1     | 3    | C       | 12.188 | C            | 1        | A      | 2        | A      | 1          | A         | G       | X      |
| T2     | 3    | C       | 12.188 | C            | 1        | A      | 2        | A      | 1          | A         | G       | X      |

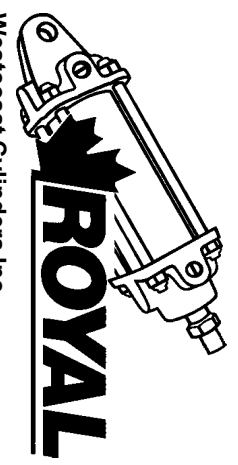
SPECIFICATION NOTES:

e.g.  
 XI =  
 NON STANDARD THREAD, =  
 CATALOG DIMENSION CHANGE, =  
 PISTON STOP LENGTH, =  
 ROD EXTENSION =

**ASSIGNED BY WESTCOAST CYLINDERS.**



\* Contact Factory for mounting dimensions



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\* Option 'P' - Customer to supply Probe and WCI to install. (Recommended for T2R Style)