

**FIGURE 451 & 551, 150 LBS GATE**

| VALVE SIZE (INCH) | STEM DIA (INCH) | TPI   | PITCH (INCH) | START (LEAD) | THRUST (LBS) | TORQUE (LBS-FT) | LIFT (INCH) | TURNS |
|-------------------|-----------------|-------|--------------|--------------|--------------|-----------------|-------------|-------|
| 2                 | 3/4             | 5ACME | 0.2          | 1            | 854          | 10.69           | 2.36        | 13    |
| 2-1/2             | 3/4             | 5ACME | 0.2          | 1            | 944          | 12.02           | 3.27        | 16    |
| 3                 | 7/8             | 5ACME | 0.2          | 1            | 1,214        | 15.19           | 3.35        | 18    |
| 4                 | 1               | 5ACME | 0.2          | 1            | 1,731        | 21.98           | 4.57        | 22    |
| 6                 | 1-1/8           | 5ACME | 0.2          | 1            | 3,732        | 47.2            | 6.54        | 36    |
| 8                 | 1-1/4           | 4ACME | 0.25         | 1            | 6,047        | 76.41           | 8.58        | 37    |
| 10                | 1-3/8           | 4ACME | 0.25         | 1            | 9,352        | 118             | 10.75       | 43    |
| 12                | 1-1/2           | 4ACME | 0.25         | 1            | 13,533       | 171             | 13.15       | 53    |
| 14                | 1-5/8           | 3ACME | 0.335        | 1            | 19,491       | 246             | 14.25       | 43    |
| 16                | 1-3/4           | 3ACME | 0.335        | 1            | 26,303       | 332             | 17.68       | 53    |
| 18                | 1-7/8           | 3ACME | 0.335        | 1            | 38,105       | 481             | 18.86       | 57    |
| 20                | 2               | 3ACME | 0.335        | 1            | 53,302       | 673             | 20.94       | 62    |
| 22                | 2-3/16          | 3ACME | 0.335        | 1            | 60,923       | 783             | 22.64       | 68    |
| 24                | 2-1/4           | 3ACME | 0.335        | 1            | 73,468       | 927             | 24.53       | 74    |
| 26                | 2-1/2           | 3ACME | 0.335        | 1            | 99,186       | 1,252           | 27.09       | 81    |
| 28                | 2-5/8           | 3ACME | 0.335        | 1            | 110,359      | 1,393           | 28.43       | 85    |
| 30                | 2-3/4           | 3ACME | 0.335        | 1            | 126,612      | 1,598           | 29.45       | 88    |
| 32                | 2-7/8           | 3ACME | 0.335        | 1            | 151,903      | 1,917           | 35.24       | 105   |
| 36                | 3               | ACME  | 0.25         | 2            | 177,824      | 2,389           | 36.61       | 74    |

**FIGURE 452 & 552, 300 LBS GATE**

| VALVE SIZE (INCH) | STEM DIA (INCH) | TPI   | PITCH (INCH) | START (LEAD) | THRUST (LBS) | TORQUE (LBS-FT) | LIFT (INCH) | TURNS |
|-------------------|-----------------|-------|--------------|--------------|--------------|-----------------|-------------|-------|
| 2                 | 3/4             | 5ACME | 0.200        | 1            | 1,124        | 14.31           | 2.60        | 13    |
| 2-1/2             | 3/4             | 5ACME | 0.200        | 1            | 1,394        | 17.63           | 3.15        | 16    |
| 3                 | 7/8             | 5ACME | 0.200        | 1            | 1,933        | 24.34           | 3.58        | 19    |
| 4                 | 1               | 5ACME | 0.200        | 1            | 3,192        | 40.20           | 4.49        | 24    |
| 6                 | 1-1/4           | 4ACME | 0.250        | 1            | 8,161        | 103             | 6.61        | 36    |
| 8                 | 1-3/8           | 4ACME | 0.250        | 1            | 14,905       | 188             | 8.70        | 27    |
| 10                | 1-1/2           | 4ACME | 0.250        | 1            | 22,975       | 290             | 11.18       | 45    |
| 12                | 1-5/8           | 3ACME | 0.335        | 1            | 37,566       | 474             | 15.59       | 47    |
| 14                | 1-3/4           | 3ACME | 0.335        | 1            | 47,997       | 606             | 14.72       | 44    |
| 16                | 1-7/8           | 3ACME | 0.335        | 1            | 66,116       | 834             | 16.57       | 50    |
| 18                | 2               | 3ACME | 0.335        | 1            | 77,739       | 981             | 18.15       | 54    |
| 20                | 2-1/8           | 3ACME | 0.335        | 1            | 100,894      | 1,273           | 20.00       | 60    |
| 22                | 2-3/8           | 3ACME | 0.335        | 1            | 108,358      | 1,494           | 22.76       | 68    |
| 24                | 2-1/2           | 3ACME | 0.335        | 1            | 129,063      | 1,629           | 25.12       | 75    |
| 28                | 2-7/8           | 3ACME | 0.335        | 1            | 211,298      | 2,666           | 28.11       | 84    |
| 30                | 3               | 3ACME | 0.335        | 1            | 247,065      | 3,118           | 33.03       | 98    |

## FIGURE 461 & 561, 150 LBS GLOBE

| CLASS | VALVE SIZE (INCH) | STEM DIA (INCH) | TPI   | PITCH (INCH) | START (LEAD) | THRUST (LBS) | TORQUE (LBS-FT) | LIFT (INCH) | TURNS |
|-------|-------------------|-----------------|-------|--------------|--------------|--------------|-----------------|-------------|-------|
| 150LB | 2                 | 3/4             | 6ACME | 0.167        | 1            | 1,708        | 10.85           | 1.3         | 8     |
|       | 2.5               | 7/8             | 6ACME | 0.167        | 1            | 1,848        | 13.02           | 1.22        | 8     |
|       | 3                 | 1               | 5ACME | 0.200        | 1            | 2,722        | 22.42           | 1.22        | 7     |
|       | 4                 | 1-1/8           | 5ACME | 0.200        | 1            | 3,671        | 32.55           | 1.57        | 8     |
|       | 5                 | 1-1/8           | 5ACME | 0.200        | 1            | 4,890        | 43.40           | 1.77        | 9     |
|       | 6                 | 1-1/4           | 5ACME | 0.200        | 1            | 6,381        | 61.48           | 2.01        | 11    |
|       | 8                 | 1-3/8           | 4ACME | 0.250        | 1            | 10,179       | 112             | 2.36        | 10    |
|       | 10                | 1-3/4           | 4ACME | 0.250        | 1            | 15,059       | 199             | 4.06        | 17    |
|       | 12                | 1-7/8           | 4ACME | 0.250        | 1            | 21,025       | 294             | 4.45        | 18    |
|       | 14                | 2               | 4ACME | 0.250        | 1            | 28,075       | 412             | 5.08        | 21    |
| 16    | 2-1/8             | 3ACME           | 0.335 | 1            | 37,211       | 610          | 6.06            | 19          |       |

## FIGURE 462 & 562, 300 LBS GLOBE

| CLASS | VALVE SIZE (INCH) | STEM DIA (INCH) | TPI   | PITCH (INCH) | START (LEAD) | THRUST (LBS) | TORQUE (LBS-FT) | LIFT (INCH) | TURNS |
|-------|-------------------|-----------------|-------|--------------|--------------|--------------|-----------------|-------------|-------|
| 300LB | 2                 | 3/4             | 6ACME | 0.167        | 1            | 2,415        | 15.19           | 1.3         | 8     |
|       | 2.5               | 7/8             | 6ACME | 0.167        | 1            | 2,696        | 18.81           | 1.22        | 8     |
|       | 3                 | 1               | 5ACME | 0.200        | 1            | 3,932        | 32.55           | 1.22        | 7     |
|       | 4                 | 1-1/8           | 5ACME | 0.200        | 1            | 5,841        | 52.08           | 1.53        | 8     |
|       | 6                 | 1-3/8           | 4ACME | 0.250        | 1            | 11,262       | 124             | 2.13        | 9     |
|       | 8                 | 1-3/4           | 4ACME | 0.250        | 1            | 18,857       | 249             | 2.83        | 12    |
|       | 10                | 2               | 4ACME | 0.250        | 1            | 28,618       | 420             | 3.62        | 15    |
|       | 12                | 2               | 4ACME | 0.250        | 1            | 40,550       | 595             | 4.57        | 19    |

## ABOUT STEM DATA & ACTUATION

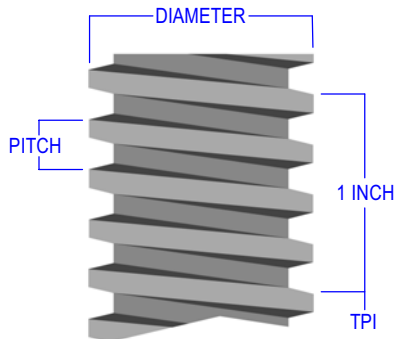


Diagram A

**DIAMETER:** Cross section width of the stem from the outer edges of the thread

**PITCH:** The distance from a point on the stem thread to the corresponding point of the next thread

**TPI:** The number of threads crossed per inch of stem

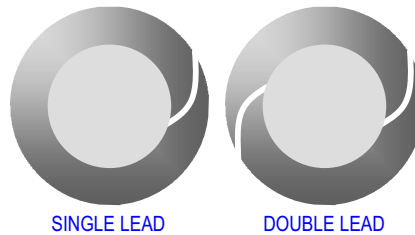


Diagram B

**LEAD:** Lead can be expressed in two ways:

1. The number of starts as seen from the top of the stem as seen in this diagram (or the number of independent interwoven threads running down the stem)
2. Also expressed in inches, lead is the distance the stem travel linearly with one complete turn of the stem nut (i.e. - a single lead is the same as the pitch, a 2 lead stem is twice the pitch, etc.)

**THRUST:** The amount of linear force needed to move the stem up or down assuming the valve stem nut is removed

**TORQUE:** The amount of rotary force needed at the stem to open and close the valve (rotary force is converted to linear force by the mechanics of the stem and stem nut)

**LIFT:** The overall travel of the stem between the valve's open and close position

**Turns:** The overall number of turns needed at the hand wheel to fully open or close the valve (our values are rounded to the nearest whole number)

Note on actuation: When sizing actuators for valves, always include an engineering safety factor that is appropriate to the application. The values provided here are from factory testing in ideal situations. Contact FNW if you require assistance.