

 **CIRCLE SEAL CONTROLS, INC.**  
A division of CIRCOR International, Inc.

## 400 SERIES 0 to 3,000 PSIG H400 SERIES 0 to 6,000 PSIG SHUTTLE VALVES

### Features

- Quick, Positive Operation
- Double Poppet
- Positive Sealing

### Benefits

- No breakaway friction & medium flow
- The shuttle actuates immediately on overriding pressure
- Zero leak

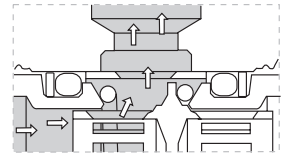
### Technical Data

|                              |                                                                                           |
|------------------------------|-------------------------------------------------------------------------------------------|
| Body Construction Materials: | • Aluminum, Brass or 303 Stainless Steel                                                  |
| O-ring Materials:            | • Buna N, Neoprene and Viton®                                                             |
| Operating Pressure:          | • 400 Series - 0 to 3,000 PSIG (207 BAR)<br>• H400 Series - 0 to 6,000 PSIG (414 BAR)     |
| Proof Pressures:             | • 400 Series - 4,500 PSI (310 BAR)<br>• H400 Series - 9,000 PSI (621 BAR)                 |
| Rated Burst Pressure:        | • 400 Series - 7,500 PSI min. (517 BAR)<br>• H400 Series - Over 15,000 PSI (1,034 BAR)    |
| Temperature Range:           | • -320° F to +400° F (-196° C to +204° C)<br>Based on o-ring material, see "How to Order" |
| Connection Sizes:            | • 1/8 inch to 1/2 inch                                                                    |

NOTE: Proper filtration is recommended to prevent damage to sealing surfaces.

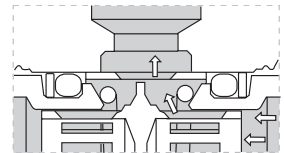
### How It Works

#### ONE INLET TO COMMON OUTLET



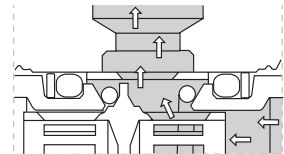
The flow passes easily through the shuttle ports to the common outlet. The o-ring is completely contained by the inner sleeve.

#### SHUTTLING



The shuttle actuates immediately on overriding pressure from the alternate inlet with no breakaway friction and minimum interflow.

#### ALTERNATE INLET TO COMMON OUTLET



The flow passes from the alternate port to the common outlet. The floating o-ring seals block the port and prevent leakage with pressure differential of less than 1 PSI to 3,000 PSI.

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# 400 SERIES 0 to 3,000 PSIG H400 SERIES 0 to 6,000 PSIG

## Leakage

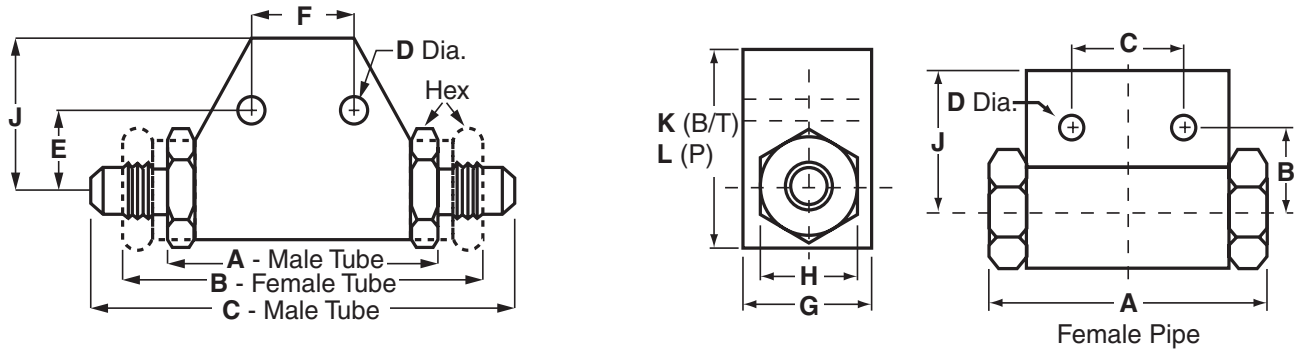
|                  |                |                                                                                       |
|------------------|----------------|---------------------------------------------------------------------------------------|
| Body Leakage     |                | zero                                                                                  |
| Internal Leakage | Model 459, 432 | zero @ 2 psi up                                                                       |
|                  | Model 433, 449 | zero @ 5 psi up                                                                       |
|                  | Model 420T     | zero @ 100 psi up<br>10 cc/min. max. @ 10 to 100 psi<br>20 cc/min. max. @ 1 to 10 psi |
|                  | Model 420A     | 1 cc/min. @ 100 psi up                                                                |

## Flow Rate

| Flow Rates   |      |     |      |      |
|--------------|------|-----|------|------|
| Valve Size   | Tube | 4BB | 6BB  | 8BB  |
|              | Pipe | —   | 1PP  | 2PP  |
| Cv (maximum) |      | .46 | 1.34 | 2.26 |

## Dimensions (Inches)

| Female Tube / Male Tube |      |            |            |           |            |            |            |      |      |            |
|-------------------------|------|------------|------------|-----------|------------|------------|------------|------|------|------------|
| Dash No.                | Size | A<br>±.050 | B<br>±.050 | C<br>Ref. | D<br>±.005 | E<br>±.015 | F<br>±.005 | G/J  | H    | K<br>(B&T) |
| 4BBB/4TTB               | 1/4" | 2.02       | 2.02       | 3.12      | .193       | .56        | .875       | 1.00 | .75  | 1.50       |
| 6BBB/6TTB               | 3/8" | 2.02       | 2.94       | 3.13      | .193       | .56        | .875       | 1.00 | .81  | 1.50       |
| 8BBB/8TTB               | 1/2" | 2.38       | 3.53       | 3.70      | .193       | .81        | 1.125      | 1.25 | 1.00 | 1.87       |



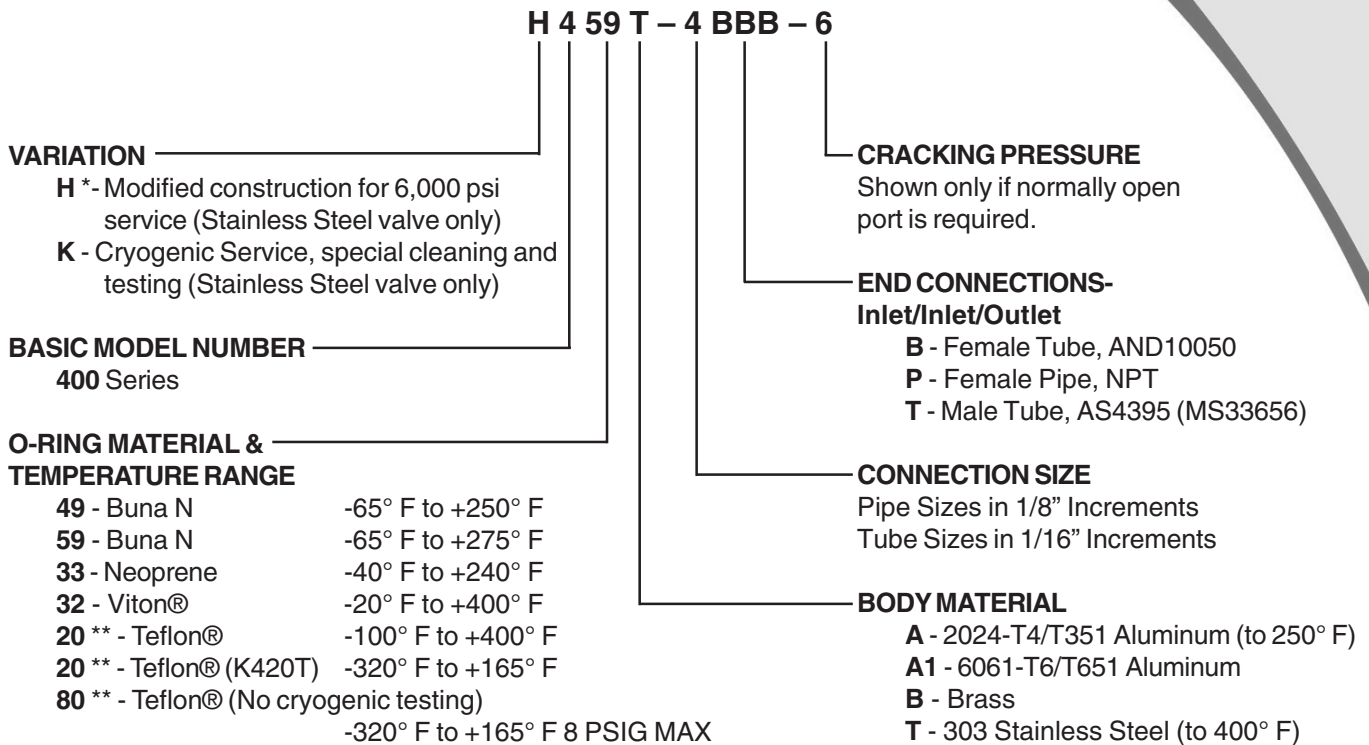
| Female Pipe |      |            |            |            |            |      |      |      |      |
|-------------|------|------------|------------|------------|------------|------|------|------|------|
| Dash No.    | Size | A<br>±.050 | B<br>±.015 | C<br>±.005 | D<br>±.005 | G    | H    | J    | L(P) |
| 1PPP        | 1/8" | 2.02       | .53        | .875       | .193       | 1.00 | .81  | .75  | 1.25 |
| 2PPP        | 1/4" | 2.39       | .66        | 1.125      | .193       | 1.25 | 1.00 | .91  | 1.50 |
| 3PPP        | 3/8" | 2.66       | .79        | 1.375      | .193       | 1.25 | 1.12 | 1.10 | 1.75 |
| 4PPP        | 1/2" | 3.20       | 1.02       | 1.625      | .193       | 1.75 | 1.50 | 1.37 | 2.25 |

### For Your Safety

*It is the sole responsibility of the system designer and user to select products suitable for their specific application requirements and to ensure proper installation, operation and maintenance of these products. Material compatibility product ratings and application details should be considered in the selection. Improper selection or use of products described herein can cause personal injury or property damage.*

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## How to Order



\* Up to and including 1/2" tube and 1/4" pipe.

\*\* For Teflon® specify stainless steel body material. The stainless steel valve design provides a Teflon® static seal for use in systems with low or high temperatures or with liquids or gases which would cause excessive swell or shrinkage of elastomeric compounds.

Please consult Circle Seal Controls or your local distributor for information on special connections, materials, larger sizes, o-rings, operating pressures and temperature ranges.

*Viton® is a registered trademark of DuPont Dow Elastomers. Teflon® is a registered trademark of the DuPont Company.*

### Notes

The common port is Female Tube or Female Pipe. Inlet ports may be Female or Male Tube or a combination of the two or Female Pipe.

The 400 Series Shuttle Valves are manufactured with three-piece bodies, which are sealed with two synthetic o-rings or Teflon® gaskets to prevent external leakage.

Where a normally open port is required, the shuttle is spring loaded (except with female pipe and tube connections). The cracking pressure is the nominal pressure (tolerance  $\pm 15\%$ ) against which the shuttle will start to move to allow flow from the normally open port. Shuttling pressure, to close normally open port, is 2 to 5 times this pressure.

### Repair Kits

In normal service the only part(s) which may require replacement is(are) the seals. A repair kit may be ordered by placing a K/ in front of the complete part number (i.e. K/H459T-4BBB-6).