



# Ball Valves



High quality products for  
industrial & construction

**DSG**  
VALVES & TUBE FITTINGS

## CONTENTS



One - piece Instrumentation Ball Valves  
**BO Series**

**04**



Hex Bar Stock Ball Valves  
**BH Series**

**10**



High Performance Ball Valves  
**BP Series**

**13**



Trunnion Ball Valves  
**BT and BTH Series**

**18**

# PART NUMBER AND DESCRIPTION

**S D BO MN 4 FN 4 5 A**

## MATERIAL

|            |                     |
|------------|---------------------|
| (S) 316    | (M) MONEL 400       |
| (S9) 904 L | (INC) INCONEL 625   |
| (S4) 304   | (HC) HASTELLOY C276 |
| (SI) 321   | (B) BRASS           |

## MANUFACTURER

(D) DSG

## SERIES

BO SERIES    BTH SERIES  
BH SERIES  
BP SERIES  
BT SERIES

## INLET OR OUTLET CONNECTION

|                      |                  |
|----------------------|------------------|
| (FN) FEMALE NPT      | (FB) FEMALE BSPT |
| (MN) MALE NPT        | (MB) MALE BSPT   |
| (FT) FRACTIONAL TUBE | (BW) BUTT WELD   |
| (MT) METRIC TUBE     | (SW) SOCKET WELD |

## SIZE

|                  |                   |
|------------------|-------------------|
| (2) 1/8"         | (8) 1/2" OR 8MM   |
| (3) 3/16" OR 3MM | (10) 5/8" OR 10MM |
| (4) 1/4"         | (12) 3/4 OR 12MM  |
| (5) 5/16"        | (16) 1" OR 16MM   |
| (6) 3/8 OR 6MM   |                   |

## ORIFICE CV

|           |             |           |
|-----------|-------------|-----------|
| (2) 2.4MM | (7) 7.1MM   | (16) 16MM |
| (3) 3.2MM | (9) 8.9MM   |           |
| (4) 4.2MM | (9h) 9.5MM  |           |
| (5) 4.8MM | (10) 10.3MM |           |

## FLOW PATTERN

|                 |                 |
|-----------------|-----------------|
| ( ) STRAIGHT    | (6L / 6C) 6-WAY |
| (A) ANGLE       | (7L) 7-WAY      |
| (3W) 3-WAY      |                 |
| (4L / 4C) 4-WAY |                 |
| (5L) 5-WAY      |                 |

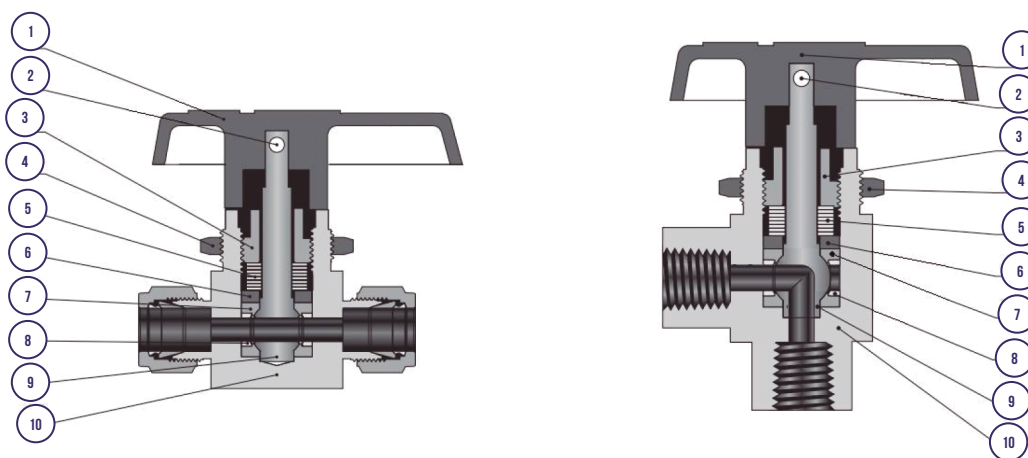
## BO SERIES

### FEATURES

- ° One-piece body and one-piece ball stem
- ° No dead zone, such as area between the ball and valve chamber
- ° Full operating pressure at any port
- ° Leak-tight performance testing for every valve at the maximum working pressure with nitrogen
- ° In-line inspection and repair after system relieved by top entry design
- ° Maximum working pressure: 3000 psig (207 bar)
- ° Working temperature: -65°F to 300°F (-54°C to 148°C)

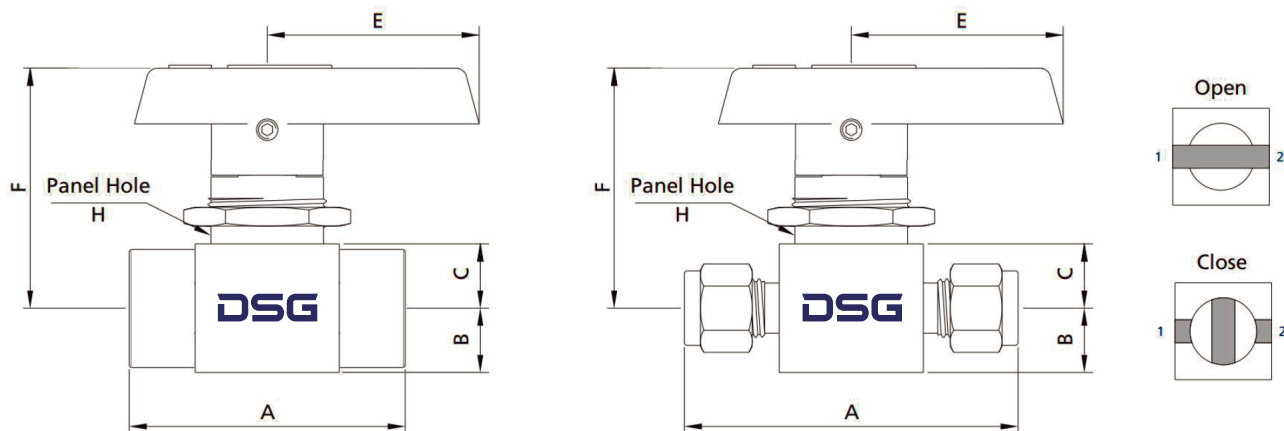


### STANDARD MATERIALS OF CONSTRUCTION



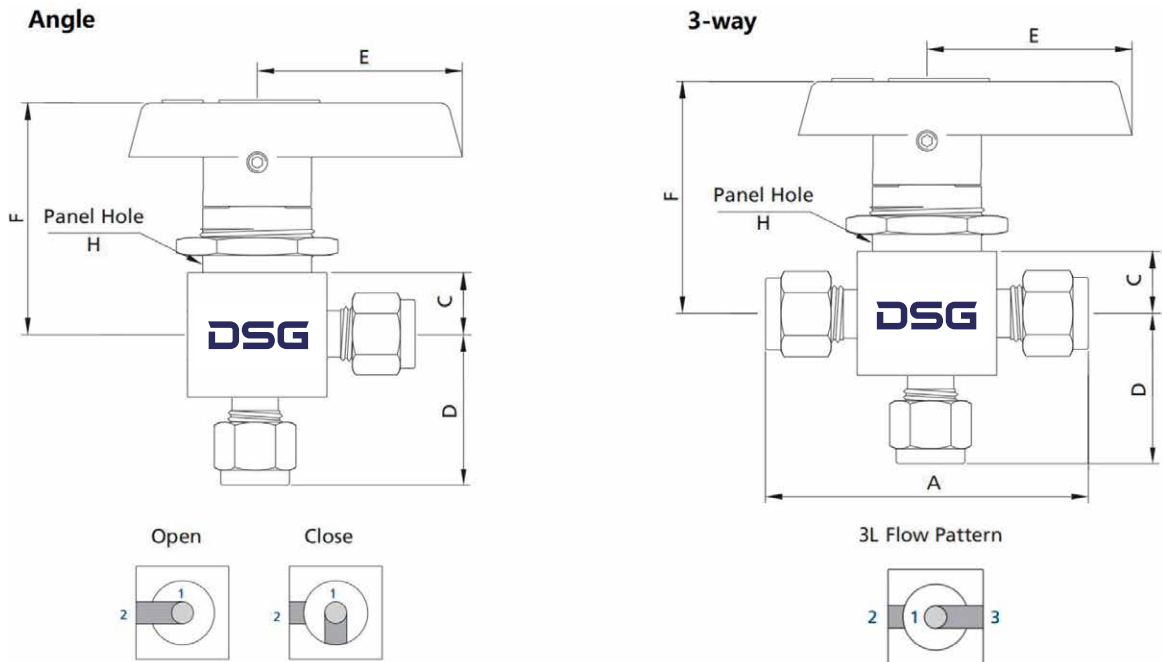
| Item | Component      | Valve Body Material                                    |                     |                  |
|------|----------------|--------------------------------------------------------|---------------------|------------------|
|      |                | Stainless Steel                                        | Brass               | Alloy 400        |
|      |                | Material Grade / ASTM Specification                    |                     |                  |
| 1    | Handle         | Nylon or Aluminium                                     |                     |                  |
| 2    | Set Screw      |                                                        | S17400 SS/A564      |                  |
| 3    | Packing Bolt   | Powdered metal 300 series SS or 316 SS/A276, A479      | Brass CDA 36000/B16 | Alloy R-405/B164 |
| 4    | Panel Nut      | Powdered metal 300 series SS/B738 or 316 SS/A276, A479 | Brass CDA 36000/B16 | Alloy R-405/B164 |
| 5    | Dishing Spring | S17700/A693                                            |                     |                  |
| 6    | Gland          | Powdered metal 300 series SS/B738 or 316 SS/A276       | Brass CDA 36000/B16 | Alloy 400/B164   |
| 7    |                | PTFE/D1710 or UHMWPE/D4020                             |                     |                  |
| 8    | Support Ring   | 316 SS/A276                                            | Brass CDA 36000/B16 | Alloy 400/B164   |
| 9    | Ball Stem      | 316 SS/A276                                            | Brass CDA 36000/B16 | Alloy 400/B164   |
| 10   | Body           | 316 SS/A276                                            | Brass CDA 37700/B16 | Alloy 400/B164   |

# BO SERIES



| Basic Ordering Number | Connection Type and Size | Orifice in.(mm) | Cv       |       | Dimension, in. (mm) |             |             |             |             |             |
|-----------------------|--------------------------|-----------------|----------|-------|---------------------|-------------|-------------|-------------|-------------|-------------|
|                       |                          |                 | Straight | Angle | A                   | B           | C           | E           | F           | H           |
| _D-BO-FN2-3           | 1/8 FEMALE NPT           | 0.13 (3.2)      | 0.50     | 0.30  | 1.63 (41.4)         | 0.28 (7.1)  | 0.34 (8.6)  | 1.10 (28.0) | 1.43 (36.2) | 0.59 (15.0) |
| _D-BO-FN2-5           |                          | 0.19 (4.8)      | 0.90     | 0.70  | 2.00 (50.8)         | 0.38 (9.7)  | 0.44 (11.2) | 1.57 (39.9) | 1.64 (41.7) | 0.78 (19.8) |
| _D-BO-FN4-5           | 1/4 FEMALE NPT           | 0.19 (4.8)      | 0.90     | 0.75  | 2.06 (52.3)         | 0.38 (9.7)  | 0.44 (11.2) | 1.57 (39.9) | 1.64 (41.7) | 0.78 (19.8) |
| _D-BO-FN4-7           |                          | 0.28 (7.1)      | 2.60     | 1.70  | 2.50 (63.5)         | 0.56 (14.2) | 0.56 (14.2) | 2.05 (52)   | 2.19 (55.5) | 1.13 (29.6) |
| _D-BO-FN6-5           | 3/8 FEMALE NPT           | 0.28 (7.1)      | 2.60     | 1.50  | 2.50 (63.5)         | 0.56 (14.2) | 0.56 (14.2) | 2.05 (52)   | 2.19 (55.5) | 1.13 (29.6) |
| _D-BO-FN8-10          | 1/2 FEMALE NPT           | 0.41 (10.3)     | 6.30     | 3.50  | 3.12 (79.2)         | 0.69 (17.5) | 0.69 (17.5) | 3.13 (79.6) | 2.67 (67.7) | 1.50 (38.1) |
|                       |                          |                 |          |       |                     |             |             |             |             |             |
| _D-BO-MN2-3           | 1/8 MALE NPT             | 0.13 (3.2)      | 0.50     | 0.30  | 1.63 (41.4)         | 0.28 (7.1)  | 0.34 (8.6)  | 1.10 (28.0) | 1.43 (36.2) | 0.59 (15.0) |
| _D-BO-MN4-5           | 1/4 MALE NPT             | 0.19 (4.8)      | 0.90     | 0.75  | 2.00 (50.8)         | 0.38 (9.7)  | 0.44 (11.2) | 1.57 (39.9) | 1.64 (41.7) | 0.78 (19.8) |
| _D-BO-MN6-5           | 3/8 MALE NPT             | 0.28 (7.1)      | 2.60     | 1.50  | 2.50 (63.5)         | 0.56 (14.2) | 0.56 (14.2) | 2.05 (52)   | 2.19 (55.5) | 1.13 (29.6) |
| _D-BO-MN8-10          | 1/2 MALE NPT             | 0.41 (10.3)     | 6.30     | 3.50  | 3.12 (79.2)         | 0.69 (17.5) | 0.69 (17.5) | 3.13 (79.6) | 2.67 (67.7) | 1.50 (38.1) |
|                       |                          |                 |          |       |                     |             |             |             |             |             |
| _D-BO-FT2-2           | 1/8" TUBE                | 0.09 (2.4)      | 0.20     | 0.15  | 2.01 (51.0)         | 0.28 (7.1)  | 0.34 (8.6)  | 1.10 (28.0) | 1.43 (36.2) | 0.59 (15.0) |
| _D-BO-FT4-5           | 1/4" TUBE                | 0.19 (4.8)      | 1.40     | 0.90  | 2.39 (60.7)         | 0.38 (9.7)  | 0.44 (11.2) | 1.57 (39.9) | 1.64 (41.7) | 0.78 (19.8) |
| _D-BO-FT6-7           | 3/8" TUBE                | 0.28 (7.1)      | 6.00     | 2.0   | 3.05 (77.5)         | 0.56 (14.2) | 0.56 (14.2) | 2.05 (52)   | 2.19 (55.5) | 1.13 (29.6) |
| _D-BO-FT8-10          | 1/2" TUBE                | 0.41 (10.3)     | 6.40     | 3.80  | 3.92 (99.6)         | 0.69 (17.5) | 0.69 (17.5) | 3.13 (79.6) | 2.67 (67.7) | 1.50 (38.1) |
| _D-BO-FT12-10         | 3/4" TUBE                | 0.41 (10.3)     | 12.0     | 4.60  | 3.92 (99.6)         | 0.69 (17.5) | 0.69 (17.5) | 3.13 (79.6) | 2.67 (67.7) | 1.50 (38.1) |
|                       |                          |                 |          |       |                     |             |             |             |             |             |
| _D-BO-MT3-2           | 3MM TUBE                 | 0.09 (2.4)      | 0.20     | 0.15  | 2.01 (51.0)         | 0.28 (7.1)  | 0.34 (8.6)  | 1.10 (28.0) | 1.43 (36.2) | 0.59 (15.0) |
| _D-BO-MT6-5           | 6MM TUBE                 | 0.19 (4.8)      | 1.40     | 0.90  | 2.39 (60.7)         | 0.38 (9.7)  | 0.44 (11.2) | 1.57 (39.9) | 1.64 (41.7) | 0.78 (19.8) |
| _D-BO-MT8-5           | 8MM TUBE                 | 0.19 (4.8)      | 1.40     | 0.90  | 2.46 (62.5)         | 0.38 (9.7)  | 0.44 (11.2) | 1.64 (41.7) | 1.64 (41.7) | 0.78 (19.8) |
| _D-BO-MT10-7          | 10MM TUBE                | 0.28 (7.1)      | 6.00     | 2.0   | 3.05 (77.5)         | 0.56 (14.2) | 0.56 (14.2) | 2.05 (52)   | 2.19 (55.5) | 1.13 (28.6) |
| _D-BO-MT12-10         | 12MM TUBE                | 0.41 (10.3)     | 6.40     | 3.80  | 3.92 (99.6)         | 0.69 (17.5) | 0.69 (17.5) | 3.13 (79.6) | 2.67 (67.7) | 1.50 (38.1) |
| _D-BO-MT14-10         | 14MM TUBE                | 0.41 (10.3)     | 6.40     | 3.80  | 3.92 (99.6)         | 0.69 (17.5) | 0.69 (17.5) | 3.13 (79.6) | 2.67 (67.7) | 1.50 (38.1) |
| _D-BO-MT18-10         | 18MM TUBE                | 0.41 (10.3)     | 12.0     | 4.60  | 3.92 (99.6)         | 0.69 (17.5) | 0.69 (17.5) | 3.13 (79.6) | 2.67 (67.7) | 1.50 (38.1) |

# BO SERIES



| Basic Ordering Number | Connection Type and Size | Orifice in.(mm) | Cv       |       | Dimension, in. (mm) |             |             |             |             |             |
|-----------------------|--------------------------|-----------------|----------|-------|---------------------|-------------|-------------|-------------|-------------|-------------|
|                       |                          |                 | Straight | Angle | A                   | C           | D           | E           | F           | H           |
| _D-BO-FN2-3-A         | 1/8 FEMALE NPT           | 0.13 (3.2)      | 0.50     | 0.30  | 1.63 (41.4)         | 0.34 (8.6)  | 0.34 (8.6)  | 1.10 (28.0) | 1.43 (36.2) | 0.59 (15.0) |
| _D-BO-FN2-3-3W        |                          |                 |          |       |                     |             |             |             |             |             |
| _D-BO-FN2-5-A         |                          | 0.19 (4.8)      | 0.90     | 0.70  | 2.00 (50.8)         | 0.44 (11.2) | 0.44 (11.2) | 1.57 (39.9) | 1.64 (1.7)  | 0.78 (19.8) |
| _D-BO-FN2-5-3W        |                          |                 |          |       |                     |             |             |             |             |             |
| _D-BO-FN4-5-A         | 1/4 FEMALE NPT           | 0.19 (4.8)      | 0.90     | 0.75  | 2.06 (52.3)         | 0.44 (11.2) | 1.03 (26.2) | 1.57 (39.9) | 1.64 (41.7) | 0.78 (19.8) |
| _D-BO-FN5-5-3W        |                          |                 |          |       |                     |             |             |             |             |             |
| _D-BO-FN4-7-A         |                          | 0.28 (7.1)      | 2.60     | 1.70  | 2.50 (63.5)         | 0.56 (14.2) | 1.25 (31.8) | 2.05 (52)   | 2.19 (55.5) | 1.13 (28.6) |
| _D-BO-FN4-7-3W        |                          |                 |          |       |                     |             |             |             |             |             |
| _D-BO-FN6-5-A         | 3/8 FEMALE NPT           | 0.28 (7.1)      | 2.60     | 1.50  | 2.50 (63.5)         | 0.56 (14.2) | 1.25 (31.8) | 2.05 (52)   | 2.19 (55.5) | 1.13 (28.6) |
| _D-BO-FN6-7-3W        |                          |                 |          |       |                     |             |             |             |             |             |
| _D-BO-FN8-10-A        | 1/2 FEMALE NPT           | 0.41 (10.3)     | 6.30     | 3.50  | 3.12 (79.2)         | 0.69 (17.5) | 1.56 (39.6) | 3.13 (79.6) | 2.67 (67.7) | 1.50 (38.1) |
| _D-BO-FN8-10-3W       |                          |                 |          |       |                     |             |             |             |             |             |
| _D-BO-MN2-3-A         | 1/8 MALE NPT             | 0.13 (73.2)     | 0.50     | 0.30  | 1.63 (41.4)         | 0.28 (7.1)  | 0.34 (8.6)  | 1.10 (28.0) | 1.43 (36.2) | 0.59 (15.0) |
| _D-BO-MN2-3-3W        |                          |                 |          |       |                     |             |             |             |             |             |
| _D-BO-MN4-5-A         | 1/4 MALE NPT             | 0.19 (4.8)      | 0.90     | 0.75  | 2.00 (50.8)         | 0.38 (9.7)  | 0.44 (11.2) | 1.57 (39.9) | 1.64 (41.7) | 0.78 (19.8) |
| _D-BO-MN5-5-3W        |                          |                 |          |       |                     |             |             |             |             |             |
| _D-BO-MN6-5-A         | 3/8 MALE NPT             | 0.28 (7.1)      | 2.60     | 1.50  | 2.50 (63.5)         | 0.56 (14.2) | 0.56 (14.2) | 2.05 (52)   | 2.19 (55.5) | 1.13 (28.6) |
| _D-BO-MN6-7-3W        |                          |                 |          |       |                     |             |             |             |             |             |
| _D-BO-MN8-10-A        | 1/2 MALE NPT             | 0.41 (10.3)     | 6.30     | 3.50  | 3.12 (79.2)         | 0.69 (17.5) | 0.69 (17.5) | 3.13 (79.6) | 2.67 (67.7) | 1.50 (38.1) |
| _D-BO-MN8-10-3W       |                          |                 |          |       |                     |             |             |             |             |             |
| _D-BO-FT2-2-A         | 1/8" TUBE                | 0.09 (2.4)      | 0.20     | 0.15  | 2.01 (51.0)         | 0.34 (8.6)  | 0.97 (24.6) | 1.10 (28.0) | 1.43 (36.2) | 0.59 (15.0) |
| _D-BO-FT2-2-3W        |                          |                 |          |       |                     |             |             |             |             |             |
| _D-BO-FT4-5-A         | 1/4" TUBE                | 0.19 (4.8)      | 1.40     | 0.90  | 2.39 (60.7)         | 0.44 (11.2) | 1.29 (32.8) | 1.57 (39.9) | 1.64 (41.7) | 0.78 (19.8) |
| _D-BO-FT4-5-3W        |                          |                 |          |       |                     |             |             |             |             |             |
| _D-BO-FT6-7-A         | 3/8" TUBE                | 0.28 (7.1)      | 6.00     | 2.0   | 3.05 (77.5)         | 0.56 (14.2) | 1.43 (36.3) | 2.05 (52)   | 2.19 (55.5) | 1.13 (28.6) |
| _D-BO-FT6-7-3W        |                          |                 |          |       |                     |             |             |             |             |             |
| _D-BO-FT8-10-A        | 1/2" TUBE                | 0.41 (10.3)     | 6.40     | 3.80  | 3.92 (99.6)         | 0.69 (17.5) | 1.74 (44.2) | 3.13 (79.6) | 2.67 (67.7) | 1.50 (38.1) |
| _D-BO-FT8-10-3W       |                          |                 |          |       |                     |             |             |             |             |             |
| _D-BO-FT12-10-A       | 3/4" TUBE                | 0.41 (10.3)     | 12.0     | 4.60  | 3.92 (99.6)         | 0.69 (17.5) | 1.74 (44.2) | 3.13 (79.6) | 2.67 (67.7) | 1.50 (38.1) |
| _D-BO-FT12-10-3W      |                          |                 |          |       |                     |             |             |             |             |             |

## BO SERIES

| Basic Ordering Number             | Connection Type and Size | Orifice in.(mm) | Cv       |       | Dimension, in. (mm) |             |             |             |             |             |
|-----------------------------------|--------------------------|-----------------|----------|-------|---------------------|-------------|-------------|-------------|-------------|-------------|
|                                   |                          |                 | Straight | Angle | A                   | C           | D           | E           | F           | H           |
| _D-BO-MT3-2<br>_D-BO-MT3-2-3W     | 3MM TUBE                 | 0.09 (2.4)      | 0.20     | 0.15  | 2.01 (51.0)         | 0.34 (8.6)  | 0.97 (24.6) | 1.10 (28.0) | 1.43 (36.2) | 0.59 (15.0) |
| _D-BO-MT6-5<br>_D-BO-MT6-5-3W     | 6MM TUBE                 | 0.19 (4.8)      | 1.40     | 0.90  | 2.39 (60.7)         | 0.44 (11.2) | 1.29 (32.8) | 1.57 (39.9) | 1.64 (41.7) | 0.78 (19.8) |
| _D-BO-MT8-5<br>_D-BO-MT8-5-3W     | 8MM TUBE                 | 0.19 (4.8)      | 1.40     | 0.90  | 2.46 (62.5)         | 0.44 (11.2) | 1.29 (32.8) | 1.64 (41.7) | 1.64 (41.7) | 0.78 (19.8) |
| _D-BO-MT10-7<br>_D-BO-MT10-7-3W   | 10MM TUBE                | 0.28 (7.1)      | 6.00     | 2.00  | 3.05 (77.5)         | 0.56 (14.2) | 1.43 (36.3) | 2.05 (52)   | 2.19 (55.5) | 1.13 (28.6) |
| _D-BO-MT12-10<br>_D-BO-MT12-10-3W | 12MM TUBE                | 0.41 (10.3)     | 6.40     | 3.80  | 3.92 (99.6)         | 0.69 (17.5) | 1.74 (44.2) | 3.13 (79.6) | 2.67 (67.7) | 1.50 (38.1) |
| _D-BO-MT14-10<br>_D-BO-MT14-10-3W | 14MM TUBE                | 0.41 (10.3)     | 6.40     | 3.80  | 3.92 (99.6)         | 0.69 (17.5) | 1.74 (44.2) | 3.13 (79.6) | 2.67 (67.7) | 1.50 (38.1) |
| _D-BO-MT18-10<br>_D-BO-MT18-10-3W | 18MM TUBE                | 0.41 (10.3)     | 12.0     | 4.60  | 3.92 (99.6)         | 0.69 (17.5) | 1.74 (44.2) | 3.13 (79.6) | 2.67 (67.7) | 1.50 (38.1) |

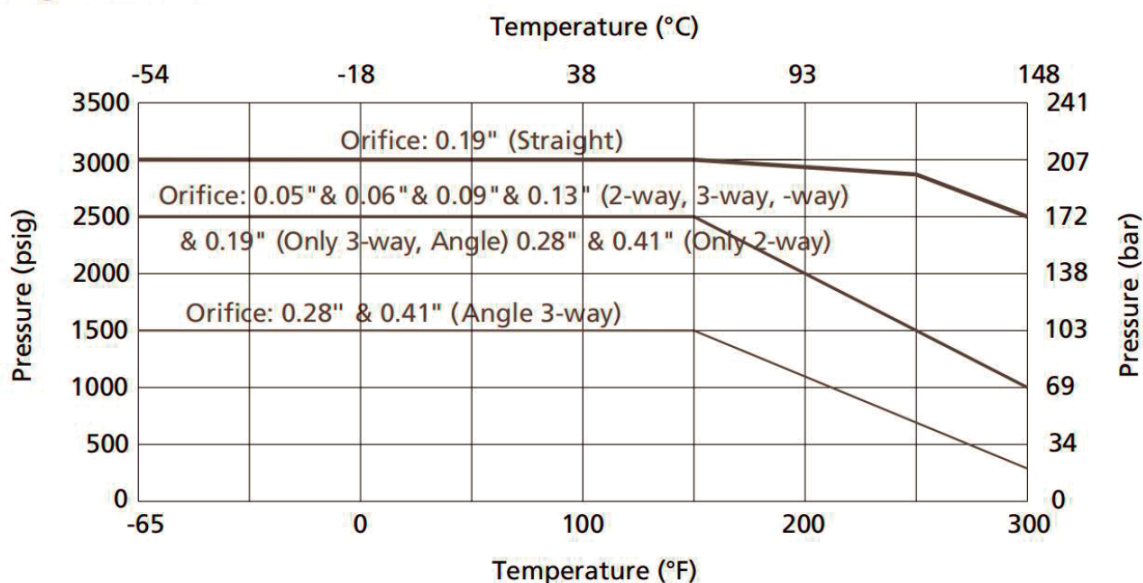
1. Size and types listed are standard. Other sizes and types are available upon request, refer to the ordering information.

2. Dimensions are shown with DSG nuts finger-tightened. All dimensions are for reference only and are subject to change.

3. For dimensions not shown above, please contact the authorized representative or DSG employees.

## PRESSURE VS. TEMPERATURE

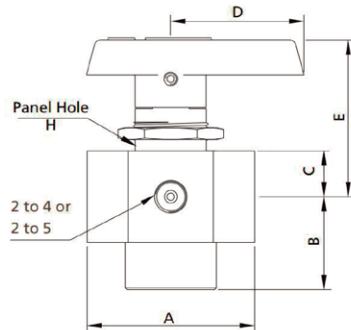
### 2-, 3-way, Angle Valves



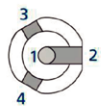
# BO SERIES

## SWITCHING VALVES (4,5,6 AND 7-WAY)

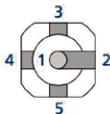
4, 5-way Valve



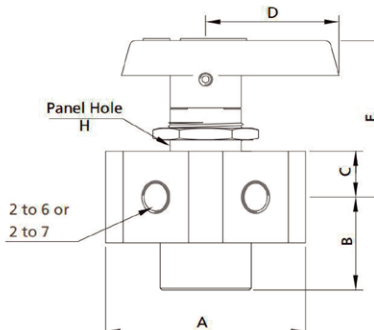
4L Flow Pattern



5L Flow Pattern



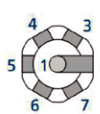
6, 7-way Valve



6L Flow Pattern



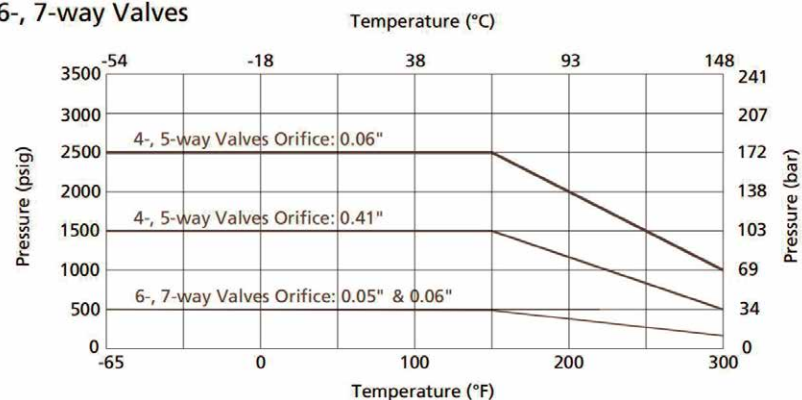
7L Flow Pattern



| Basic Ordering Number              | Connection Type and Size | Orifice in.(mm) | Cv   | Dimension, in. (mm) |             |             |             |             |             |
|------------------------------------|--------------------------|-----------------|------|---------------------|-------------|-------------|-------------|-------------|-------------|
|                                    |                          |                 |      | A                   | B           | C           | D           | E           | H           |
| _D-BO-FN2-2-4L<br>_D-BO-FN2-2-5L   | 1/8 FEMALE NPT           | 0.06 (1.6)      | 0.07 | 1.85 (47.0)         | 0.88 (22.4) | 0.44 (11.2) | 1.57 (39.9) | 1.76 (44.6) | 0.91 (23.1) |
| _D-BO-FN8-10-4L<br>_D-BO-FN8-10-5L | 1/2 FEMALE NPT           | 0.41 (10.3)     | 3.50 | 3.13 (79.5)         | 1.56 (39.6) | 0.69 (17.5) | 3.13 (79.6) | 2.63 (66.7) | 1.50 (38.1) |
| _D-BO-FT2-2-4L<br>_D-BO-FT2-2-5L   | 1/8 TUBE                 | 0.06 (1.6)      | 0.07 | 2.64 (67.0)         | 1.32 (33.5) | 0.44 (11.2) | 1.57 (39.9) | 1.76 (44.6) | 0.91 (23.1) |
| _D-BO-FT2-1-6L<br>_D-BO-FT2-1-7L   | 1/16 TUBE                | 0.05 (1.3)      | 0.05 | 2.64 (67.0)         | 1.32 (33.5) | 0.44 (11.2) | 1.57 (39.9) | 1.76 (44.6) | 0.91 (23.1) |
| _D-BO-FT2-2-6L<br>_D-BO-FT2-2-7L   | 1/8 TUBE                 | 0.06 (1.6)      | 0.07 | 2.64 (67.0)         | 1.32 (33.5) | 0.44 (11.2) | 1.57 (39.9) | 1.76 (44.6) | 0.91 (23.1) |

## PRESSURE VS. TEMPERATURE

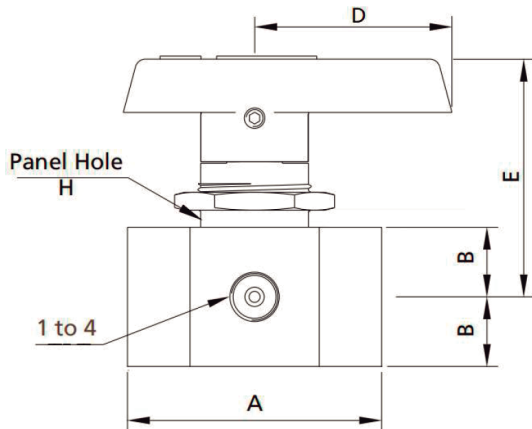
4-, 5-, 6-, 7-way Valves



# BO SERIES

## CROSSOVER VALVES (4-6-WAY)

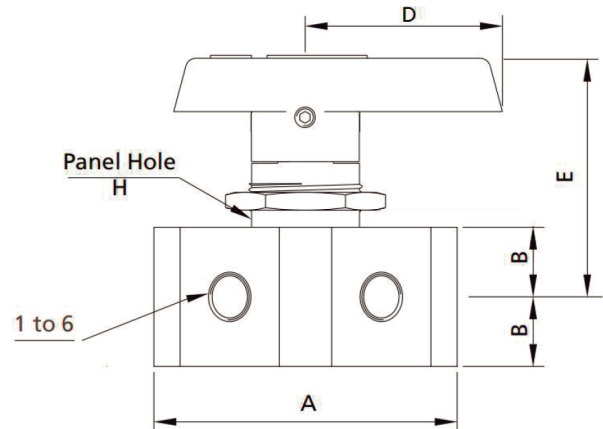
4-way Valve



4C Flow Pattern



6-way Valve



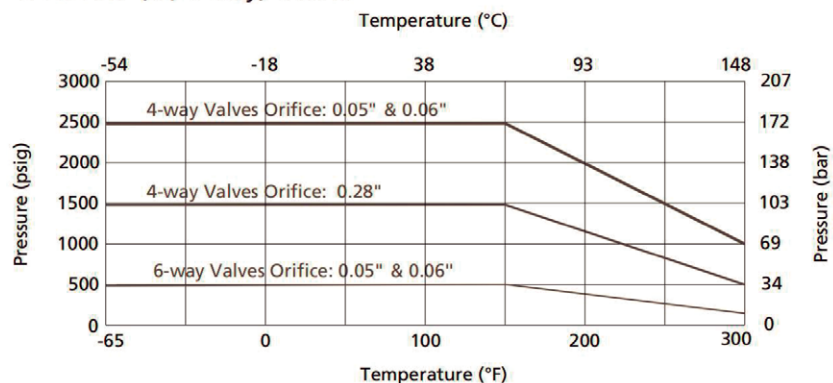
6C Flow Pattern



| Basic Ordering Number | Connection Type and Size | Orifice in.(mm) | Cv   | Dimension, in. (mm) |             |             |             |             |
|-----------------------|--------------------------|-----------------|------|---------------------|-------------|-------------|-------------|-------------|
|                       |                          |                 |      | A                   | B           | D           | E           | H           |
| _D-BO-FN2-24C         | 1/8 FEMALE NPT           | 0.06 (1.6)      | 0.08 | 1.15 (39.4)         | 0.44 (11.2) | 1.57 (39.9) | 1.64 (41.7) | 0.78 (19.8) |
| _D-BO-FN8-7-4C        | 1/2 FEMALE NPT           | 0.28 (7.1)      | 1.60 | 3.13 (79.5)         | 0.69 (17.5) | 3.13 (79.6) | 2.67 (67.7) | 1.50 (38.1) |
| _D-BO-FT1-1-4C        | 1/16 TUBE                | 0.05 (1.3)      | 0.06 | 1.95 (49.6)         | 0.44 (11.2) | 1.57 (39.9) | 1.64 (41.7) | 0.78 (19.8) |
| _D-BO-FT2-2-4C        | 1/8 TUBE                 | 0.06 (1.6)      | 0.08 | 2.61 (66.3)         | 0.44 (11.2) | 1.57 (39.9) | 1.64 (41.7) | 0.78 (19.8) |
| _D-BO-FT1-1-6C        | 1/16 TUBE                | 0.05 (1.3)      | 0.06 | 1.95 (49.6)         | 0.44 (11.2) | 1.57 (39.9) | 1.64 (41.7) | 0.78 (19.8) |
| _D-BO-FT2-2-6C        | 1/8 TUBE                 | 0.06 (1.6)      | 0.08 | 1.95 (49.6)         | 0.44 (11.2) | 1.57 (39.9) | 1.64 (41.7) | 0.78 (19.8) |

## PRESSURE VS. TEMPERATURE

Crossover (4-, 6-way) Valves



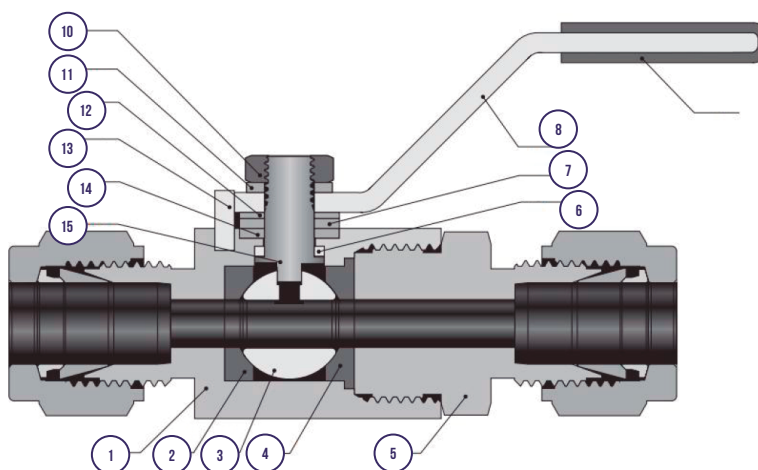
## BH SERIES

### FEATURES

- ° Compact and economical desing
- ° Free floating ball desing for seat wear compesation
- ° Bi-directional flow
- ° Low operating torque
- ° Any reasonable connections available
- ° Options for handle color
- ° Leak-tight performance testing for every valve at the maximum working pressure with nitrogen
- ° In-line inspection and repair after system relieved by top entry design
- ° Maximum working pressure: 2000 psig (138 bar)
- ° Working temperature: -65°F to 300°F (-54°C to 148°C)



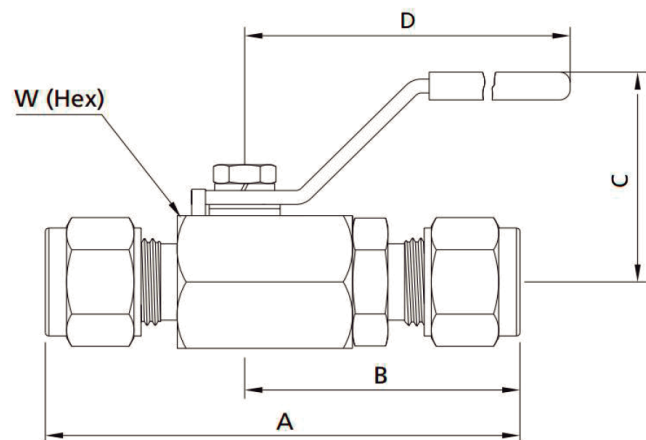
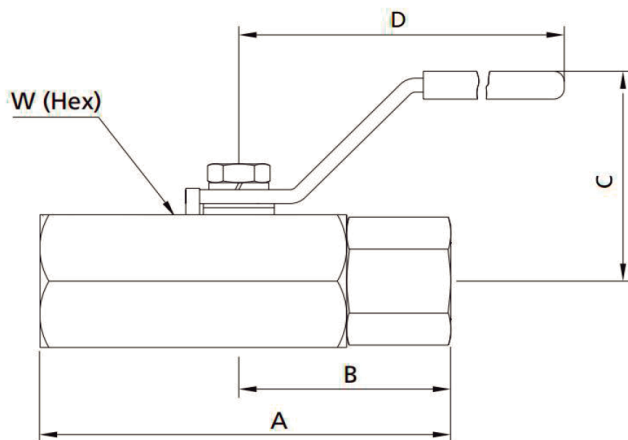
### STANDARD MATERIALS OF CONSTRUCTION



| Item | Component         | Valve Body Material      |             |              |       |
|------|-------------------|--------------------------|-------------|--------------|-------|
|      |                   | 316 SS                   | 304 SS      | 316L SS      | Brass |
| 1    | Body              | 316 SS/A276              | 304 SS/A276 | 316L SS/A276 | Brass |
| 2    | Front Seat        | PTFE/D1710               |             |              |       |
| 3    | Ball              | 316 SS/A276              |             |              |       |
| 4    | Back Seat         | PTFE/D1710               |             |              |       |
| 5    | End Connector     | 316 SS/A276              | 304 SS/A276 | 316L SS/A276 | Brass |
| 6    | Bottom Packing    | PTFE/D1710               |             |              |       |
| 7    | Washer            | 316 SS/A276              |             |              |       |
| 8    | Handle            | 304 SS/A240 or Aluminium |             |              |       |
| 9    | Sleeve            | Vinyl                    |             |              |       |
| 10   | Stem Nut          | Stainless steel          |             |              |       |
| 11   | Gasket            | Stainless steel          |             |              |       |
| 12   | Coned-disk Spring | S17700/A693              |             |              |       |
| 13   | Pin               | Stainless steel          |             |              |       |
| 14   | Top Packing       | PTFE/D1710               |             |              |       |
| 15   | Stem              | 316 SS/A276              |             |              |       |

# BH SERIES

## Dimensions



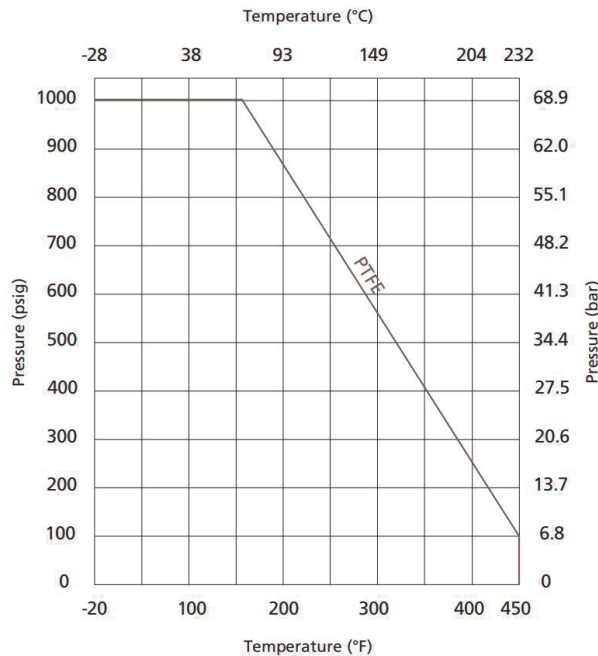
| Basic Ordering Number | Connection Type and Size | Orifice in.(mm) | Cv    | Dimension, in. (mm) |             |              |             |             |
|-----------------------|--------------------------|-----------------|-------|---------------------|-------------|--------------|-------------|-------------|
|                       |                          |                 |       | A                   | B           | C            | D           | W           |
| _D-BH-FN2-5           | 1/8 FEMALE NPT           | 0.19 (4.8)      | 1.25  | 1.85 (47.0)         | 1.08 (27.4) | 2.36 (60.0)  | 1.18 (30.0) | 0.75 (19.1) |
| _D-BH-FN4-5           | 1/4 FEMALE NPT           | 0.19 (4.8)      | 1.25  | 1.85 (47.0)         | 1.08 (27.4) | 2.36 (60.0)  | 1.18 (30.0) | 0.75 (19.1) |
| _D-BH-FN6-7           | 3/8 FEMALE NPT           | 0.28 (7.1)      | 2.50  | 2.03 (51.6)         | 1.18 (30.0) | 2.36 (60.0)  | 1.18 (30.0) | 0.87 (22.2) |
| _D-BH-FN8-9           | 1/2 FEMALE NPT           | 0.35 (8.9)      | 6.25  | 2.08 (53.0)         | 1.18 (30.0) | 3.15 (80.0)  | 1.54 (39.0) | 0.87 (22.2) |
| _D-BH-FN12-12         | 3/4 FEMALE NPT           | 0.47 (12.0)     | 12.65 | 2.39 (60.7)         | 1.20 (30.5) | 3.94 (100.0) | 2.03 (50.7) | 1.26 (32.0) |
| _D-BH-FN16-16         | 1 FEMALE NPT             | 0.63 (16.0)     | 17.35 | 3.00 (76.5)         | 1.50 (38.1) | 3.94 (100.0) | 2.15 (54.8) | 1.50 (38.1) |
| _D-BH-MN4-5           | 1/4 FEMALE NPT           | 0.19 (4.8)      | 1.25  | 1.85 (47.0)         | 1.08 (27.4) | 2.36 (60.0)  | 1.18 (30.0) | 0.75 (19.1) |
| _D-BH-MN6-7           | 3/8 FEMALE NPT           | 0.28 (7.1)      | 2.50  | 2.03 (51.6)         | 1.18 (30.0) | 2.36 (60.0)  | 1.18 (30.0) | 0.87 (22.2) |
| _D-BH-MN8-9           | 1/2 FEMALE NPT           | 0.35 (8.9)      | 6.25  | 2.08 (53.0)         | 1.18 (30.0) | 3.15 (80.0)  | 1.54 (39.0) | 0.87 (22.2) |
| _D-BH-MN12-12         | 3/4 FEMALE NPT           | 0.47 (12.0)     | 12.65 | 2.39 (60.7)         | 1.20 (30.5) | 3.94 (100.0) | 2.03 (50.7) | 1.26 (32.0) |
| _D-BH-MN16-16         | 1 MALE NPT               | 0.63 (16.0)     | 17.35 | 3.00 (76.5)         | 1.50 (38.1) | 3.94 (100.0) | 2.15 (54.8) | 1.50 (38.1) |
| _D-BH-FT4-5           | 1/4 TUBE                 | 0.19 (4.8)      | 1.25  | 2.57 (65.2)         | 1.50 (38.1) | 2.63 (60.0)  | 1.18 (30.0) | 0.75 (19.1) |
| _D-BH-FT6-7           | 3/8 TUBE                 | 0.28 (7.1)      | 2.50  | 2.87 (72.9)         | 1.68 (42.7) | 2.63 (60.0)  | 1.18 (30.0) | 0.87 (22.2) |
| _D-BH-FT8-9           | 1/2 TUBE                 | 0.35 (8.9)      | 6.25  | 3.15 (80.0)         | 1.83 (46.5) | 3.15 (80.0)  | 1.54 (39.0) | 0.87 (22.2) |
| _D-BH-FT12-12         | 3/4 TUBE                 | 0.47 (12.0)     | 12.65 | 3.50 (88.9)         | 2.00 (50.8) | 3.94 (100.0) | 2.03 (50.7) | 1.26 (32.0) |
| _D-BH-FT16-16         | 1 TUBE                   | 0.63 (16.0)     | 17.35 | 4.31 (109.5)        | 2.42 (61.5) | 3.94 (100.0) | 2.15 (54.8) | 1.50 (38.1) |

## BH SERIES

| Basic Ordering Number | Connection Type and Size | Orifice in.(mm) | Cv    | Dimension, in. (mm) |             |              |             |             |
|-----------------------|--------------------------|-----------------|-------|---------------------|-------------|--------------|-------------|-------------|
|                       |                          |                 |       | A                   | B           | C            | D           | W           |
| _D-BH-MT6-5           | 6MM TUBE                 | 0.19 (4.8)      | 1.25  | 2.57 (65.2)         | 1.50 (38.1) | 2.36 (60.0)  | 1.18 (30.0) | 0.75 (19.1) |
| _D-BH-MT8-5           | 8MM TUBE                 | 0.19 (4.8)      | 1.25  | 2.63 (66.8)         | 1.53 (38.8) | 2.36 (60.0)  | 1.18 (30.0) | 0.75 (19.1) |
| _D-BH-MT10-7          | 10MM TUBE                | 0.28 (7.1)      | 2.50  | 2.87 (72.9)         | 1.68 (42.7) | 2.36 (60.0)  | 1.18 (30.0) | 0.87 (22.2) |
| _D-BH-MT12-9          | 12MM TUBE                | 0.35 (8.9)      | 6.25  | 3.15 (80.0)         | 1.83 (46.5) | 3.15 (80.0)  | 1.54 (39.0) | 0.87 (22.2) |
| _D-BH-MT14-9          | 14MM TUBE                | 0.35 (8.9)      | 6.25  | 3.24 (82.2)         | 1.87 (47.5) | 3.15 (80.0)  | 1.54 (39.0) | 0.87 (22.2) |
| _D-BH-MT16-12         | 16MM TUBE                | 0.47 (12.0)     | 12.65 | 3.50 (88.9)         | 2.00 (50.8) | 3.94 (100.0) | 2.03 (50.7) | 1.26 (32.0) |
| _D-BH-MT18-12         | 18MM TUBE                | 0.47 (12.0)     | 12.65 | 3.50 (88.9)         | 2.00 (50.8) | 3.94 (100.0) | 2.03 (50.7) | 1.26 (32.0) |
| _D-BH-MT22-16         | 22MM TUBE                | 0.63 (16.0)     | 17.35 | 3.96 (100.6)        | 2.24 (57.1) | 3.94 (100.0) | 2.15 (54.8) | 1.50 (38.1) |
| _D-BH-MT25-16         | 25MM TUBE                | 0.63 (16.0)     | 17.35 | 4.31 (109.5)        | 2.42 (61.5) | 3.94 (100.0) | 2.15 (54.8) | 1.50 (38.1) |

1. Size and types listed are standard. Other sizes and types are available upon request, refer to the ordering information.
2. Dimensions are shown with DSG nuts finger-tightened. All dimensions are for reference only and are subject to change.
3. For dimensions not shown above, please contact the authorized representative or DSG employees.

## PRESSURE VS. TEMPERATURE



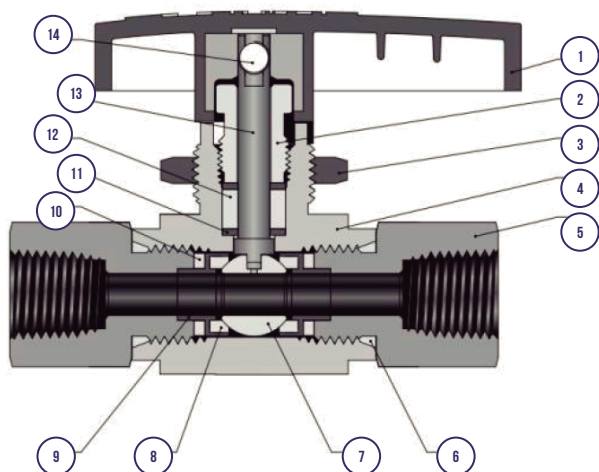
# BP SERIES

## FEATURES

- ° Bi-directional flow for straight valves
- ° Low operating torque
- ° Leak-tight performance testing for every valve at the maximum working pressure with nitrogen
- ° Positive handle stop
- ° Handle as flow direction indicator
- ° Options for handle color
- ° The inlet of 3-way valves and angle pattern valves should be only from the bottom
- ° Maximum working pressure: 6000 psig (414 bar)
- ° Working temperature: -65° F to 450 F (-54 C to 232 C)

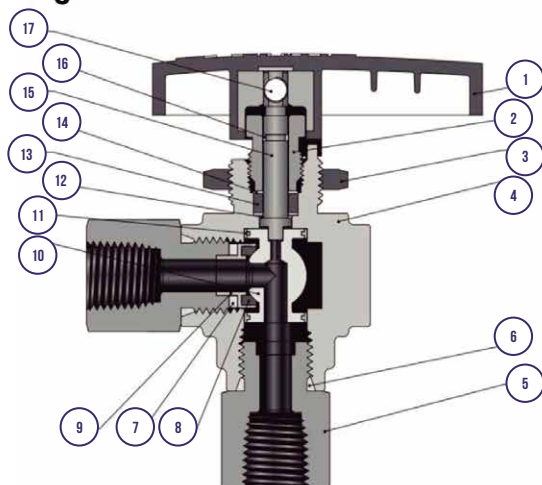


## STANDARD MATERIALS OF CONSTRUCTION

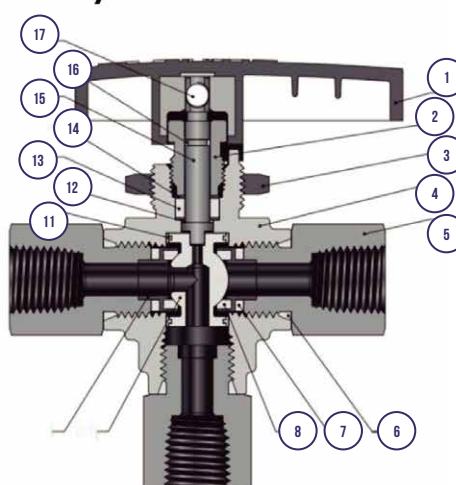


| Item | Component        | Valve Body Material                             |             |
|------|------------------|-------------------------------------------------|-------------|
|      |                  | Stainless steel                                 | Brass       |
| 1    | Handle           | Nylon or Aluminium                              |             |
| 2    | Packing Nut      | PTFE/D1710                                      | PTFE/D1710  |
| 3    | Panel Nut        | 316 SS/A276                                     | 316 SS/A276 |
| 4    | Body             | PTFE/D1710                                      | PTFE/D1710  |
| 5    | End Connector    | 316 SS/A276                                     | 316 SS/A276 |
| 6    | Connector O-ring | PTFE                                            |             |
| 7    | Ball             | 316 SS/A476                                     |             |
| 8    | Seat             | PTFE or PCTFE or PEEK                           |             |
| 9    | Seat Retainer    |                                                 |             |
| 10   | Seat Packing     | PTFE                                            |             |
| 11   | Stem Washer      | 316/A276                                        |             |
| 12   | Stem Packing     | PTFE or Fluorocarbon FKM or Neoprene or Bruna N |             |
| 13   | Stem             | 316 SS/A276                                     |             |
| 14   | Set Screw        | PTFE/D1710                                      |             |

Angle



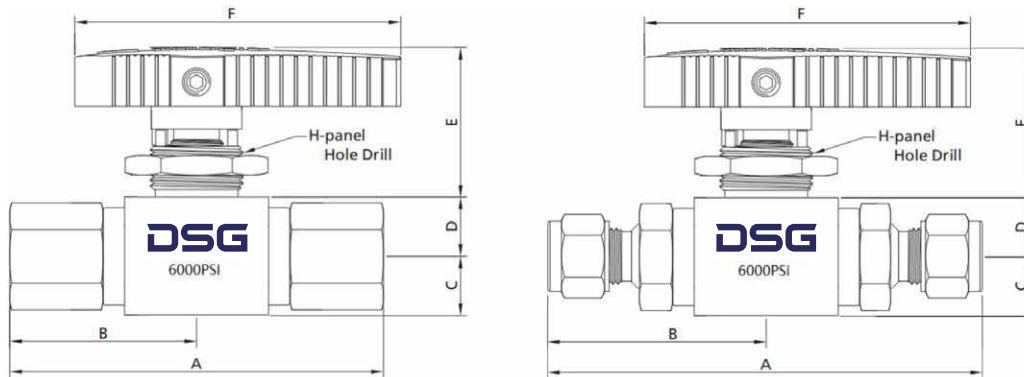
3-way



# BP SERIES

| Item | Component         | Valve Body Material                             |             |
|------|-------------------|-------------------------------------------------|-------------|
|      |                   | Stainless steel                                 | Brass       |
| 1    | Handle            | Nylon or Aluminium                              |             |
| 2    | Packing Nut       | 316 SS/AA276                                    | C34000/B453 |
| 3    | Panel Nut         | 316 SS/A276                                     | C36000/B16  |
| 4    | Body              | CF8M/A351                                       | C37700/B283 |
| 5    | End Connector     | 316 SS/A479                                     | C36000/B16  |
| 6    | Connector O-ring  | PTFE                                            |             |
| 7    | Seat Packing      | PTFE                                            |             |
| 8    | Seat              | PTFE or PCTFE or PEEK                           |             |
| 9    | Seat Retainer     |                                                 |             |
| 10   | Ball              | 316 SS/A479                                     |             |
| 11   | Trunnion Bearing  | PEEK                                            |             |
| 12   | Stem Back-up Ring | PEEK                                            |             |
| 13   | Stem Packing      | PTFE or Fluorocarbon FKM or Neoprene or Bruna N |             |
| 14   | Stem Washer       | 316 SS/A276                                     |             |
| 15   | Stem              | 316 SS/A276                                     |             |
| 16   | Stem Bearing      | PTFE                                            |             |
| 17   | Set Screw         | Stainless steel                                 |             |

## STRAIGHT



| Basic Ordering Number | Connection Type and Size | Orifice in.(mm) | Cv   | Dimension, in. (mm) |             |             |             |             |             |             |
|-----------------------|--------------------------|-----------------|------|---------------------|-------------|-------------|-------------|-------------|-------------|-------------|
|                       |                          |                 |      | A                   | B           | C           | D           | E           | D           | E           |
| _D-BP-FN2-4           | 1/8 FEMANLE NPT          | 0.17 (4.2)      | 0.93 | 2.14 (54.4)         | 1.07 (27.2) | 0.36 (9.2)  | 0.33 (8.5)  | 0.79 (20.0) | 1.97 (50.0) | 0.58 (14.7) |
| _D-BP-FN4-6           | 1/4 FEMALE NPT           | 0.25 (6.4)      | 2.34 | 3.02 (76.8)         | 1.51 (38.4) | 0.48 (12.2) | 0.48 (12.2) | 1.24 (31.5) | 2.64 (67.0) | 0.77 (19.6) |
| _D-BP-FN6-10          | 3/8 FEMALE NPT           | 0.41 (10.3)     | 6.42 | 3.09 (99.0)         | 1.95 (49.5) | 0.75 (19.1) | 0.71 (18.0) | 1.54 (39.0) | 3.78 (96.0) | 0.90 (22.9) |
| _D-BP-FN8-10          | 1/2 FEMALE NPT           | 0.41 (10.3)     | 6.42 | 4.30 (109.2)        | 2.15 (54.6) | 0.75 (19.1) | 0.71 (18.0) | 1.54 (39.0) | 3.78 (96.0) | 0.90 (22.9) |
| _D-BP-FN12-10         | 3/4 FEMALE NPT           | 0.41 (10.3)     | 6.42 | 4.44 (112.8)        | 2.22 (56.4) | 0.75 (19.1) | 0.71 (18.0) | 1.54 (39.0) | 3.78 (96.0) | 0.90 (22.9) |

# BP SERIES

| Basic Ordering Number | Connection Type and Size | Orifice in.(mm) | Cv   | Dimension, in. (mm) |             |             |             |             |             |             |
|-----------------------|--------------------------|-----------------|------|---------------------|-------------|-------------|-------------|-------------|-------------|-------------|
|                       |                          |                 |      | A                   | B           | C           | D           | E           | F           | H           |
| _D-BP-MN2-4           | 1/8 MALE NPT             | 0.17 (4.2)      | 0.93 | 2.36 (60.0)         | 1.18 (30.0) | 0.36 (9.2)  | 0.33 (8.5)  | 0.79 (20.0) | 1.97 (50.0) | 0.58 (14.7) |
| _D-BP-MN6-6           | 1/4 MALE NPT             | 0.25 (6.4)      | 2.34 | 3.24 (82.2)         | 1.62 (41.1) | 0.48 (12.2) | 0.48 (12.2) | 1.24 (31.5) | 2.64 (67.0) | 0.77 (19.6) |
| _D-BP-MN6-6           | 3/8 MALE NPT             | 0.25 (6.4)      | 2.34 | 3.24 (82.2)         | 1.62 (41.1) | 0.48 (12.2) | 0.48 (12.2) | 1.24 (31.5) | 2.64 (67.0) | 0.77 (19.6) |
| _D-BP-MN8-10          | 1/2 MALE NPT             | 0.41 (10.3)     | 6.42 | 4.44 (112.8)        | 2.22 (56.4) | 0.75 (19.1) | 0.71 (18.0) | 1.54 (39.0) | 3.78 (96.0) | 0.90 (22.9) |
| _D-BP-MN12-10         | 3/4 MALE NPT             | 0.41 (10.3)     | 6.42 | 4.44 (112.8)        | 2.22 (56.4) | 0.75 (19.1) | 0.71 (18.0) | 1.54 (39.0) | 3.78 (96.0) | 0.90 (22.9) |
|                       |                          |                 |      |                     |             |             |             |             |             |             |
| _D-BP-FT2-2           | 1/8 TUBE                 | 0.09 (2.4)      | 0.21 | 2.72 (69.0)         | 1.36 (34.5) | 0.36 (9.2)  | 0.33 (8.5)  | 0.79 (20.0) | 1.97 (50.0) | 0.58 (14.7) |
| _D-BP-FT4-4           | 1/4 TUBE                 | 0.17 (4.2)      | 0.93 | 3.48 (88.4)         | 1.74 (44.2) | 0.48 (12.2) | 0.33 (8.5)  | 1.79 (20.0) | 1.97 (50.0) | 0.58 (14.7) |
| _D-BP-FT6-6           | 3/8 TUBE                 | 0.25 (6.4)      | 2.34 | 3.60 (91.4)         | 1.80 (45.7) | 0.75 (19.1) | 0.48 (12.2) | 1.24 (31.5) | 2.64 (67.0) | 0.77 (19.6) |
| _D-BP-FT8-10          | 1/2 TUBE                 | 0.41 (10.3)     | 6.42 | 4.68 (118.8)        | 2.34 (59.4) | 0.75 (19.1) | 0.71 (18.0) | 1.54 (39.0) | 3.78 (96.0) | 0.90 (22.9) |
| _D-BP-FT12-10         | 3/4 TUBE                 | 0.41 (10.3)     | 6.42 | 4.68 (118.8)        | 2.34 (59.4) | 0.75 (19.1) | 0.71 (18.0) | 1.54 (39.0) | 3.78 (96.0) | 0.90 (22.9) |
|                       |                          |                 |      |                     |             |             |             |             |             |             |
| _D-BP-MT2-2           | 8MM TUBE                 | 0.09 (2.4)      | 0.21 | 2.72 (69.0)         | 0.36 (9.2)  | 1.36 (34.5) | 0.33 (8.5)  | 0.79 (8.5)  | 1.97 (50.0) | 0.58 (14.7) |
| _D-BP-MT6-4           | 6MM TUBE                 | 0.17 (4.2)      | 0.93 | 3.48 (88.4)         | 0.48 (12.2) | 1.74 (44.2) | 0.33 (8.5)  | 0.79 (8.5)  | 1.97 (50.0) | 0.58 (14.7) |
| _D-BP-MT8-4           | 8MM TUBE                 | 0.25 (6.4)      | 2.34 | 3.56 (90.3)         | 0.75 (19.1) | 1.78 (45.2) | 0.48 (12.2) | 1.24 (31.5) | 2.64 (67.0) | 0.77 (19.6) |
| _D-BP-MT10-6          | 10MM TUBE                | 0.25 (6.4)      | 2.34 | 3.60 (91.4)         | 0.75 (19.1) | 1.80 (45.7) | 0.48 (12.2) | 1.24 (31.5) | 2.64 (67.0) | 0.77 (19.6) |
| _D-BP-MT12-9          | 12MM TUBE                | 0.37 (9.5)      | 5.57 | 4.68 (118.8)        | 0.75 (19.1) | 2.34 (59.4) | 0.75 (19.1) | 1.54 (39.0) | 3.78 (96.0) | 0.90 (22.9) |
| _D-BP-MT14-10         | 14MM TUBE                | 0.41 (10.3)     | 6.42 | 4.68 (118.8)        | 0.75 (19.1) | 2.34 (59.4) | 0.75 (19.1) | 1.54 (39.0) | 3.78 (96.0) | 0.90 (22.9) |
| _D-BP-MT18-10         | 18MM TUBE                | 0.41 (10.3)     | 6.42 | 4.68 (118.8)        | 0.75 (19.1) | 2.34 (59.4) | 0.75 (19.1) | 1.54 (39.0) | 3.78 (96.0) | 0.90 (22.9) |

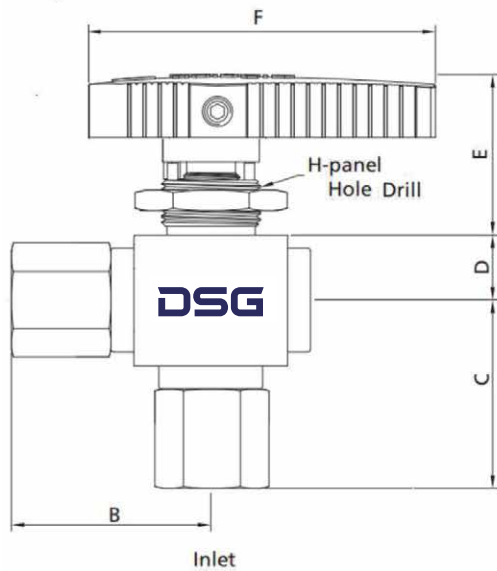
1. Size and types listed are standard. Other sizes and types are available upon request, refer to the ordering information.

2. Dimensions are shown with DSG nuts finger-tightened. All dimensions are for reference only and are subject to change.

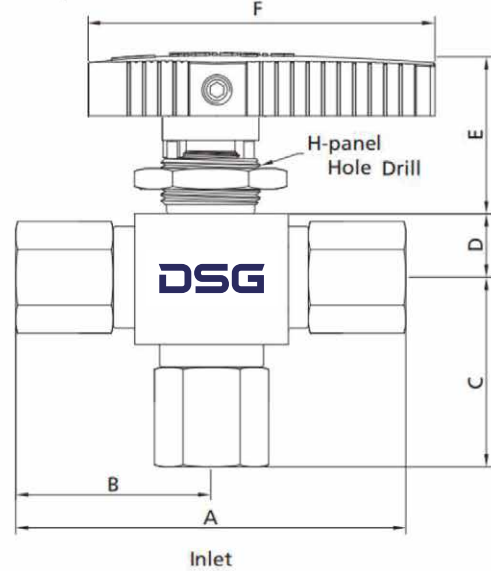
3. For dimensions not shown above, please contact the authorized representative or DSG employees.

# BP SERIES

Angle



3-way



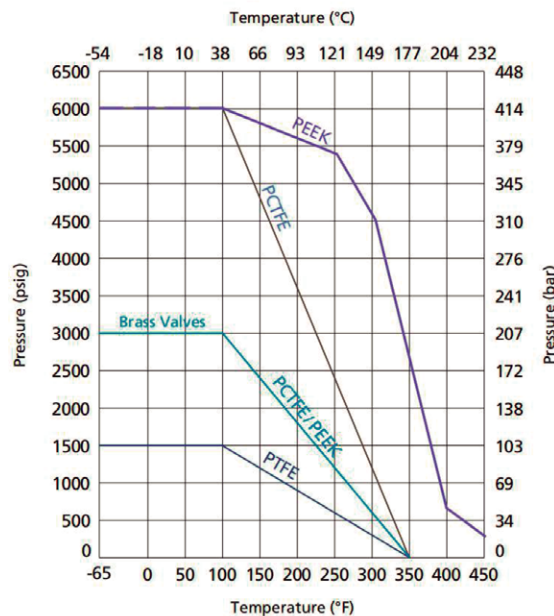
| Basic Ordering Number               | Connection Type and Size | Orifice in.(mm) | Cv   | Dimension, in. (mm) |             |             |             |             |             |             |
|-------------------------------------|--------------------------|-----------------|------|---------------------|-------------|-------------|-------------|-------------|-------------|-------------|
|                                     |                          |                 |      | A                   | B           | C           | D           | E           | F           | H           |
| _D-BP-FN2-3-A<br>_D-BP-FN2-3-3W     | 1/8 FEMALE NPT           | 0.12 (3.0)      | 0.28 | 2.14 (54.4)         | 1.07 (27.2) | 1.12 (28.5) | 0.33 (8.5)  | 0.94 (23.9) | 1.97 (50.0) | 0.58 (14.7) |
| _D-BP-FN4-5-A<br>_D-BP-FN4-5-3W     | 1/4 FEMALE NPT           | 0.19 (4.7)      | 0.70 | 3.02 (76.8)         | 1.51 (38.4) | 1.65 (41.9) | 0.48 (12.2) | 1.24 (31.5) | 2.64 (67.0) | 0.77 (19.6) |
| _D-BP-FN6-9h-A<br>_D-BP-FN6-9h-3W   | 3/8 FEMALE NPT           | 0.39 (9.5)      | 3.48 | 3.90 (99.0)         | 1.95 (49.5) | 2.29 (58.2) | 0.71 (18.0) | 1.54 (39.0) | 3.78 (96.0) | 0.90 (22.9) |
| _D-BP-FN8-9h-A<br>_D-BP-FN8-9h-3W   | 1/2 FEMALE NPT           | 0.39 (9.5)      | 3.48 | 4.30 (109.2)        | 2.15 (54.6) | 0.75 (19.1) | 0.71 (18.0) | 1.54 (39.0) | 3.78 (96.0) | 0.90 (22.9) |
| _D-BP-FN12-9h-A<br>_D-BP-FN12-9h-3W | 3/4 FEMALE NPT           | 0.39 (9.5)      | 3.48 | 4.44 (112.8)        | 2.22 (56.4) | 0.75 (19.1) | 0.71 (18.0) | 1.54 (39.0) | 3.78 (96.0) | 0.90 (22.9) |
|                                     |                          |                 |      |                     |             |             |             |             |             |             |
| _D-BP-MN2-4-A<br>_D-BP-MN2-4-3W     | 1/8 MALE NPT             | 0.12 (3.0)      | 0.28 | 2.14 (54.4)         | 1.07 (27.2) | 1.12 (28.5) | 0.33 (8.5)  | 0.94 (23.9) | 1.97 (50.0) | 0.58 (14.7) |
| _D-BP-MN4-6-A<br>_D-BP-MN4-6-3W     | 1/4 MALE NPT             | 0.19 (4.7)      | 0.70 | 3.24 (82.2)         | 1.62 (41.1) | 1.12 (28.5) | 0.33 (8.5)  | 0.94 (23.9) | 1.97 (50.0) | 0.58 (14.7) |
| _D-BP-MN6-10-A<br>_D-BP-MN6-10-3W   | 3/8 MALE NPT             | 0.25 (6.4)      | 2.34 | 3.24 (82.2)         | 1.62 (41.1) | 0.48 (12.2) | 0.48 (12.2) | 1.24 (25.0) | 2.64 (67.0) | 0.77 (19.6) |
| _D-BP-MN8-10-A<br>_D-BP-MN8-10-3W   | 1/2 MALE NPT             | 0.41 (10.3)     | 2.62 | 4.44 (112.8)        | 2.22 (56.4) | 0.75 (19.1) | 0.71 (18.0) | 1.54 (39.0) | 3.78 (96.0) | 0.90 (22.9) |
| _D-BP-MN12-10-A<br>_D-BP-MN12-10-SW | 3/4 MALE NPT             | 0.41 (10.3)     | 2.62 | 4.44 (112.8)        | 2.22 (56.4) | 0.75 (19.1) | 0.71 (18.0) | 1.54 (39.0) | 3.78 (96.0) | 0.90 (22.9) |
|                                     |                          |                 |      |                     |             |             |             |             |             |             |
| _D-BP-FT2-2-A<br>_D-BP-FT2-2-3W     | 1/8 TUBE                 | 0.09 (2.4)      | 0.21 | 2.72 (69.0)         | 1.36 (34.5) | 0.36 (9.2)  | 0.33 (8.5)  | 0.79 (20.0) | 1.97 (50.0) | 0.58 (14.7) |
| _D-BP-FT4-4-A<br>_D-BP-FT4-4-3W     | 1/4 TUBE                 | 0.17 (4.2)      | 0.93 | 3.48 (88.4)         | 1.74 (44.2) | 0.36 (9.2)  | 0.33 (8.5)  | 0.79 (20.0) | 1.97 (50.0) | 0.58 (14.7) |
| _D-BP-FT6-6-A<br>_D-BP-FT6-6-3W     | 3/8 TUBE                 | 0.25 (6.4)      | 2.34 | 3.60 (91.4)         | 1.80 (45.7) | 0.48 (12.2) | 0.48 (12.2) | 1.24 (25.0) | 2.64 (67.0) | 0.77 (19.6) |
| _D-BP-FT8-10-A<br>_D-BP-FT8-10-3W   | 1/2 TUBE                 | 0.41 (10.3)     | 6.42 | 4.68 (118.8)        | 2.34 (59.4) | 0.75 (19.1) | 0.71 (18.0) | 1.54 (39.0) | 3.78 (96.0) | 0.90 (22.9) |
| _D-BP-FT12-10-A<br>_D-BP-FT12-10-3W | 3/4 TUBE                 | 0.41 (10.3)     | 6.42 | 4.68 (118.8)        | 2.34 (59.4) | 0.75 (19.1) | 0.71 (18.0) | 1.54 (39.0) | 3.78 (96.0) | 0.90 (22.9) |

# BP SERIES

| Basic Ordering Number               | Connection Type and Size | Orifice in.(mm) | Cv   | Dimension, in. (mm) |             |             |             |             |             |             |
|-------------------------------------|--------------------------|-----------------|------|---------------------|-------------|-------------|-------------|-------------|-------------|-------------|
|                                     |                          |                 |      | A                   | B           | C           | D           | E           | F           | H           |
| _D-BP-MT3-2-A<br>_D-BP-MT3-2-3W     | 3MM TUBE                 | 0.09 (2.4)      | 0.21 | 2.72 (69.0)         | 1.36 (34.5) | 0.36 (9.2)  | 0.33 (8.5)  | 0.79 (20.0) | 1.97 (50.0) | 0.58 (14.7) |
| _D-BPMT6-4-A<br>_D-BP-MT6-4-3W      | 6MM TUBE                 | 0.17 (4.2)      | 0.93 | 3.48 (88.4)         | 1.74 (44.2) | 0.36 (9.2)  | 0.33 (8.5)  | 0.79 (20.0) | 1.97 (50.0) | 0.58 (14.7) |
| _D-BP-MT8-4-A<br>_D-BP-MT8-4-3W     | 8MM TUBE                 | 0.25 (6.4)      | 2.34 | 3.56 (90.4)         | 1.78 (45.2) | 0.48 (12.2) | 0.48 (12.2) | 1.24 (31.5) | 2.64 (67.0) | 0.77 (19.6) |
| _D-BP-MT10-6-A<br>_D-BP-MT10-6-3W   | 10MM TUBE                | 0.25 (6.4)      | 2.34 | 3.60 (91.4)         | 1.80 (45.7) | 0.48 (12.2) | 0.48 (12.2) | 1.24 (31.5) | 2.64 (67.0) | 0.77 (19.6) |
| _D-BP-MT12-9h-A<br>_D-BP-MT12-9h-3W | 12MM TUBE                | 0.37 (9.5)      | 5.57 | 4.68 (118.8)        | 2.34 (59.4) | 0.75 (19.1) | 0.71 (18.0) | 1.54 (39.0) | 3.78 (96.0) | 0.90 (22.9) |
| _D-BP-MT14-10-A<br>_D-BP-MT14-10-3W | 14MM TUBE                | 0.41 (10.3)     | 6.42 | 4.68 (118.8)        | 2.34 (59.4) | 0.75 (19.1) | 0.71 (18.0) | 1.54 (39.0) | 3.78 (96.0) | 0.90 (22.9) |
| _D-BP-MT18-10-A<br>_D-BP-MT18-10-3W | 18MM TUBE                | 0.41 (10.3)     | 6.42 | 4.68 (118.8)        | 2.34 (59.4) | 0.75 (19.1) | 0.71 (18.0) | 1.54 (39.0) | 3.78 (96.0) | 0.90 (22.9) |

1. Size and types listed are standard. Other sizes and types are available upon request, refer to the ordering information.
2. Dimensions are shown with DSG nuts finger-tightened. All dimensions are for reference only and are subject to change.
3. For dimensions not shown above, please contact the authorized representative or DSG employees.

## PRESSURE VS. TEMPERATURE



### Temperature Ranges

| Packing Materials | Temperature Range °F (°C) |
|-------------------|---------------------------|
| PTFE              | -65 to 450 (-54 to 232)   |
| Buna-N            | -40 to 250 (-40 to 121)   |
| Fluorocarbon FKM  | -15 to 450 (-26 to 232)   |
| Neoprene          | -40 to 250 (-40 to 121)   |

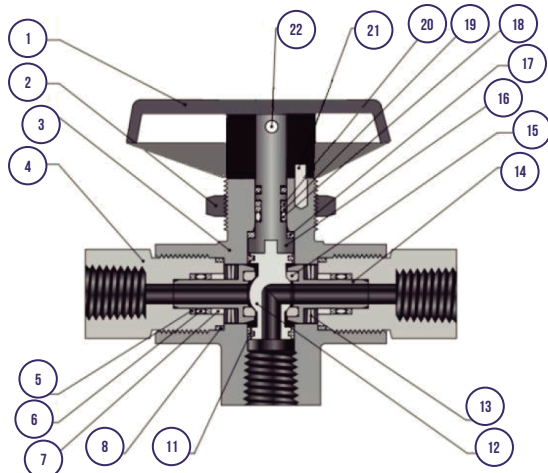
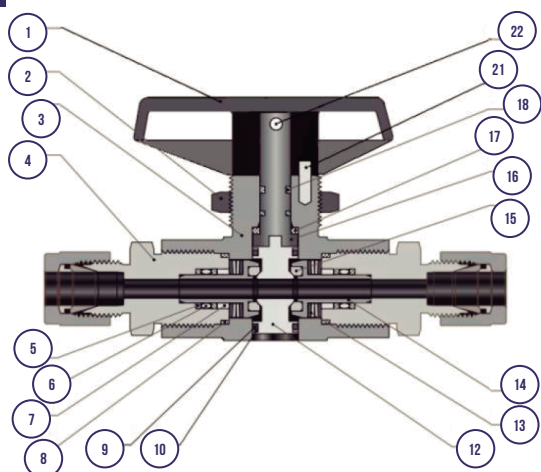
# BT AND BTH SERIES

## FEATURES

- Fixed ball with double sealing
- Automatic compensation of seat sealing
- Low operating torque
- Handle as indicator of flow direction
- Positive handle stop
- Handle color options are available
- Compact maximum-flow design
- Trunnion-style ball: Prevents ball blowout
- 2-or 3-way flow patterns
- Spring-load seats: Provide leak tight integrity in both low and high-pressure systems, reduce seat wear from pressure surges
- Leak-tight performance testing for every valve at the maximum working pressure with nitrogen
- BT Maximum working pressure: 6000 psi (413 bar)
- BTH Maximum working pressure: 10000 psig (689 bar)
- Working temperature: 0°F to 450°F (-18°C to 232°C)



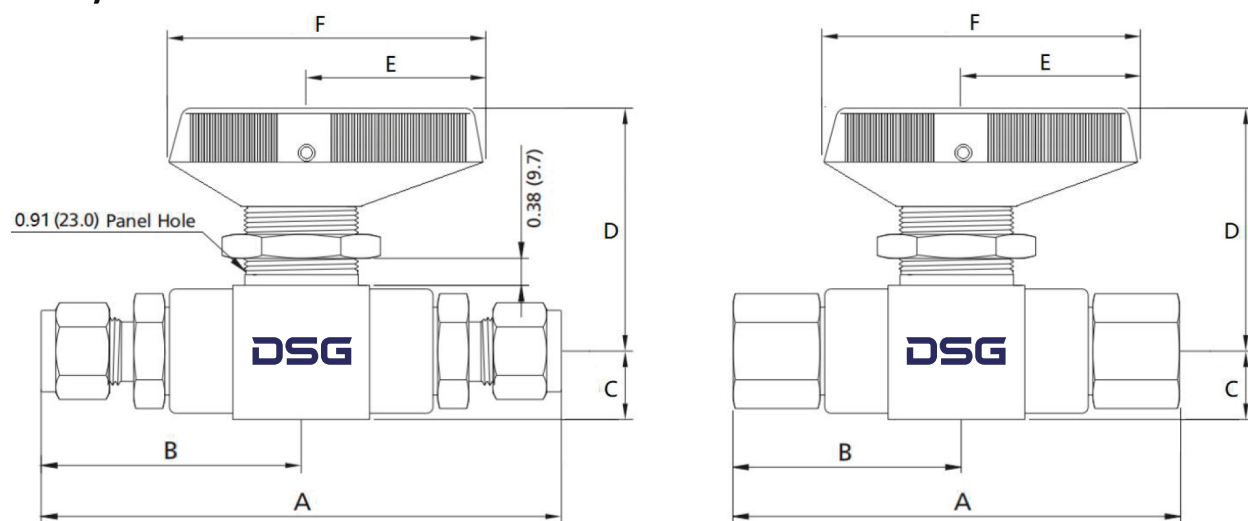
## STANDARD MATERIALS OF CONSTRUCTION



| Item | Component                  | Valve Body Material<br>316 Stainless Steel |             |
|------|----------------------------|--------------------------------------------|-------------|
|      |                            | 2-way                                      | 3-way       |
|      |                            | Material Grade/ASTM Specification          |             |
| 1    | Handle                     | Nylon or Aluminium                         |             |
| 2    | Panel Nut                  | 316 SS/B783                                |             |
| 3    | Body                       | 316 SS/A479                                | 316 SS/A105 |
| 4    | End Connector              | 316 SS/A4796                               |             |
| 5    | Seat Retainer Backup Ring  | Reinforced PTFE                            |             |
| 6    | Seat Retainer O-ring       | Fluorocarbon FKM                           |             |
| 7    | Seat Retainer Guide        | 316 SS/A276                                |             |
| 8    | End Connector Seal         | PTFE/D1710                                 |             |
| 9    | Trunnion O-ring            | Fluorocarbon FKM                           |             |
| 10   | Trunnion Backup Ring       | Reinforced PTFE                            | -----       |
| 11   | Trunnion Bearing           | -----                                      | PEEK        |
| 12   | Ball                       | 316 SS/A276                                | S21800/A276 |
| 13   | Seat Spring                | Alloy X-750/AMS 5542                       |             |
| 14   | Seat Retainer              | 316 SS/A276                                |             |
| 15   | Seat                       | PTFE or PEEK or PCTFE                      |             |
| 16   | Stem                       | 316 SS/A276                                |             |
| 17   | Stem Washer                | Reinforced PTFE                            | PEEK        |
| 18   | Stem O-ring                | Fluorocarbon FKM                           |             |
| 19   | Secondary Stem Backup Ring | -----                                      | PTFE/D710   |
| 20   | Primary Stem Backup Ring   | -----                                      | PEEK        |
| 21   | Pin                        | Stainless Steel                            |             |
| 22   | Set Screw                  | Stainless Steel                            |             |

# BT AND BTH SERIES

## 2-way Valves



## BT SERIES 6000 PSI

| Basic Ordering Number | Connection Type and Size | Orifice in.(mm) | Cv  | Dimension, in. (mm) |             |             |             |             |             |
|-----------------------|--------------------------|-----------------|-----|---------------------|-------------|-------------|-------------|-------------|-------------|
|                       |                          |                 |     | A                   | B           | C           | D           | E           | F           |
| _D-BT-FN2-5           | 1/8 FEMALE NPT           | 0.19 (4.8)      | 1.2 | 2.94 (74.7)         | 1.47 (37.3) | 0.50 (12.7) | 1.88 (47.7) | 1.57 (40.0) | 2.56 (65.0) |
| _D-BT-FN4-5           | 1/4 FEMALE NPT           | 0.19 (4.8)      | 1.2 | 2.94 (74.7)         | 1.47 (37.3) | 0.50 (12.7) | 1.88 (47.7) | 1.57 (40.0) | 2.56 (65.0) |
| _D-BT-FN6-7           | 3/8 FEMALE NPT           | 0.19 (4.8)      | 1.2 | 3.93 (99.8)         | 1.97 (49.9) | 0.50 (12.7) | 1.88 (47.7) | 1.57 (40.0) | 2.56 (65.0) |
| _D-BT-FN8-9           | 1/2 FEMALE NPT           | 0.19 (4.8)      | 1.2 | 4.25 (108)          | 2.13 (54.0) | 0.50 (12.7) | 1.88 (47.7) | 1.57 (40.0) | 2.56 (65.0) |
| _D-BT-FT4-5           | 1/4 TUBE                 | 0.19 (4.8)      | 1.2 | 4.09 (103.8)        | 2.04 (51.9) | 0.50 (12.7) | 1.88 (47.7) | 1.57 (40.0) | 2.56 (65.0) |
| _D-BT-FT6-5           | 3/8 TUBE                 | 0.19 (4.8)      | 1.2 | 4.25 (108)          | 2.13 (54.0) | 0.50 (12.7) | 1.88 (47.7) | 1.57 (40.0) | 2.56 (65.0) |
| _D-BT-FT8-5           | 1/2 TUBE                 | 0.19 (4.8)      | 1.2 | 4.60 (116.8)        | 2.30 (58.4) | 0.50 (12.7) | 1.88 (47.7) | 1.57 (40.0) | 2.56 (65.0) |
| _D-BT-MT4-5           | 6MM TUBE                 | 0.19 (4.8)      | 1.2 | 4.09 (103.8)        | 2.04 (51.9) | 0.50 (12.7) | 1.88 (47.7) | 1.57 (40.0) | 2.56 (65.0) |
| _D-BT-MT8-5           | 8MM TUBE                 | 0.19 (4.8)      | 1.2 | 4.14 (105.2)        | 2.07 (52.6) | 0.50 (12.7) | 1.88 (47.7) | 1.57 (40.0) | 2.56 (65.0) |
| _D-BT-MT10-5          | 10MM TUBE                | 0.19 (4.8)      | 1.2 | 4.25 (108)          | 2.13 (54.0) | 0.50 (12.7) | 1.88 (47.7) | 1.57 (40.0) | 2.56 (65.0) |
| _D-BT-MT12-5          | 12MM TUBE                | 0.19 (4.8)      | 1.2 | 4.60 (116.8)        | 2.30 (58.4) | 0.50 (12.7) | 1.88 (47.7) | 1.57 (40.0) | 2.56 (65.0) |

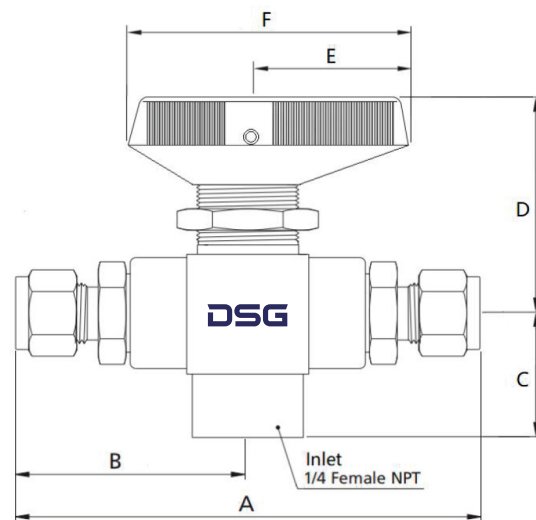
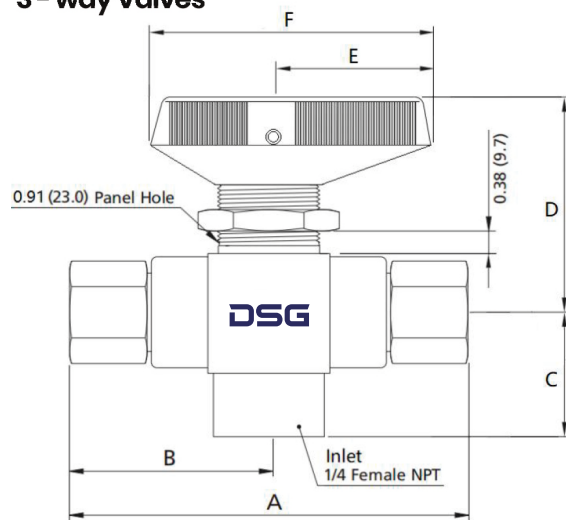
## BTH SERIES 10,000 PSI

| Basic Ordering Number | Connection Type and Size | Orifice in.(mm) | Cv  | Dimension, in. (mm) |             |             |             |             |             |
|-----------------------|--------------------------|-----------------|-----|---------------------|-------------|-------------|-------------|-------------|-------------|
|                       |                          |                 |     | A                   | B           | C           | D           | E           | F           |
| _D-BTH-FN2-5          | 1/8 FEMALE NPT           | 0.19 (4.8)      | 1.2 | 2.94 (74.7)         | 1.47 (37.3) | 0.50 (12.7) | 1.88 (47.7) | 1.57 (40.0) | 2.56 (65.0) |
| _D-BTH-FN4-5          | 1/4 FEMALE NPT           | 0.19 (4.8)      | 1.2 | 3.93 (99.8)         | 1.96 (44.9) | 0.50 (12.7) | 1.88 (47.7) | 1.57 (40.0) | 2.56 (65.0) |
| _D-BTH-FN8-9          | 1/2 FEMALE NPT           | 0.19 (4.8)      | 1.2 | 4.25 (108)          | 2.13 (54.0) | 0.50 (12.7) | 1.88 (47.7) | 1.57 (40.0) | 2.56 (65.0) |

# BT AND BTH SERIES

| Basic Ordering Number | Connection Type and Size | Orifice in.(mm) | Cv  | Dimension, in. (mm) |             |             |             |             |             |
|-----------------------|--------------------------|-----------------|-----|---------------------|-------------|-------------|-------------|-------------|-------------|
|                       |                          |                 |     | A                   | B           | C           | D           | E           | F           |
| _DTH-FT4-5            | 1/4 TUBE                 | 0.19 (4.8)      | 1.2 | 4.09 (103.8)        | 2.04 (51.9) | 0.50 (12.7) | 1.88 (47.7) | 1.57 (40.0) | 2.56 (65.0) |
| _DTH-FT6-5            | 3/8 TUBE                 | 0.19 (4.8)      | 1.2 | 4.25 (108)          | 2.13 (54.0) | 0.50 (12.7) | 1.88 (47.7) | 1.57 (40.0) | 2.56 (65.0) |
| _DTH-FT8-5            | 1/2 TUBE                 | 0.19 (4.8)      | 1.2 | 4.60 (116.8)        | 2.30 (58.4) | 0.50 (12.7) | 1.88 (47.7) | 1.57 (40.0) | 2.56 (65.0) |
| _DTH-MT4-5            | 6MM TUBE                 | 0.19 (4.8)      | 1.2 | 4.09 (103.8)        | 2.04 (51.9) | 0.50 (12.7) | 1.88 (47.7) | 1.57 (40.0) | 2.56 (65.0) |
| _DTH-MT8-5            | 8MM TUBE                 | 0.19 (4.8)      | 1.2 | 4.14 (105.2)        | 2.07 (52.6) | 0.50 (12.7) | 1.88 (47.7) | 1.57 (40.0) | 2.56 (65.0) |
| _DTH-MT10-5           | 10MM TUBE                | 0.19 (4.8)      | 1.2 | 4.25 (108)          | 2.13 (54.0) | 0.50 (12.7) | 1.88 (47.7) | 1.57 (40.0) | 2.56 (65.0) |
| _DTH-MT12-5           | 12MM TUBE                | 0.19 (4.8)      | 1.2 | 4.60 (116.8)        | 2.30 (58.4) | 0.50 (12.7) | 1.88 (47.7) | 1.57 (40.0) | 2.56 (65.0) |

## 3-way Valves



## BT SERIES 6000 PSI

| Basic Ordering Number | Connection Type and Size | Orifice in.(mm) | Cv   | Dimension, in. (mm) |             |             |             |             |             |
|-----------------------|--------------------------|-----------------|------|---------------------|-------------|-------------|-------------|-------------|-------------|
|                       |                          |                 |      | A                   | B           | C           | D           | E           | F           |
| _D-BT-FN2-5-3W        | 1/8 FEMALE NPT           | 0.19 (4.8)      | 0.75 | 2.94 (74.7)         | 1.47 (37.3) | 1.06 (26.9) | 1.88 (47.7) | 1.57 (40.0) | 2.56 (65.0) |
| _D-BT-FN4-5-3W        | 1/4 FEMALE NPT           | 0.19 (4.8)      | 0.75 | 2.94 (74.7)         | 1.47 (37.3) | 1.06 (26.9) | 1.88 (47.7) | 1.57 (40.0) | 2.56 (65.0) |
| _D-BT-FN7-3W          | 3/8 FEMALE NPT           | 0.19 (4.8)      | 0.75 | 3.93 (99.8)         | 1.97 (49.9) | 1.06 (26.9) | 1.88 (47.7) | 1.57 (40.0) | 2.56 (65.0) |
| _D-BT-FN9-3W          | 1/2 FEMALE NPT           | 0.19 (4.8)      | 0.75 | 4.25 (108)          | 2.13 (54.0) | 1.06 (26.9) | 1.88 (47.7) | 1.57 (40.0) | 2.56 (65.0) |
| _D-BT-FT4-5-3W        | 1/4 TUBE                 | 0.19 (4.8)      | 0.75 | 4.09 (103.8)        | 2.04 (51.9) | 1.06 (26.9) | 1.88 (47.7) | 1.57 (40.0) | 2.56 (65.0) |
| _D-BT-FT6-5-3W        | 3/8 TUBE                 | 0.19 (4.8)      | 0.75 | 4.25 (108)          | 2.13 (54.0) | 1.06 (26.9) | 1.88 (47.7) | 1.57 (40.0) | 2.56 (65.0) |
| _D-BT-FT8-5-3W        | 1/2 TUBE                 | 0.19 (4.8)      | 0.75 | 4.60 (116.8)        | 2.30 (58.4) | 1.06 (26.9) | 1.88 (47.7) | 1.57 (40.0) | 2.56 (65.0) |
| _D-BT-MT4-5-3W        | 6MM TUBE                 | 0.19 (4.8)      | 0.75 | 4.09 (103.8)        | 2.04 (51.9) | 1.06 (26.9) | 1.88 (47.7) | 1.57 (40.0) | 2.56 (65.0) |
| _D-BT-MT8-5           | 8MM TUBE                 | 0.19 (4.8)      | 0.75 | 4.14 (105.2)        | 2.07 (52.6) | 1.06 (26.9) | 1.88 (47.7) | 1.57 (40.0) | 2.56 (65.0) |
| _D-BT-MT10-5          | 10MM TUBE                | 0.19 (4.8)      | 0.75 | 4.25 (108)          | 2.13 (54.0) | 1.06 (26.9) | 1.88 (47.7) | 1.57 (40.0) | 2.56 (65.0) |
| _D-BT-MT12-5          | 12MM TUBE                | 0.19 (4.8)      | 0.75 | 4.60 (116.8)        | 2.30 (58.4) | 1.06 (26.9) | 1.88 (47.7) | 1.57 (40.0) | 2.56 (65.0) |

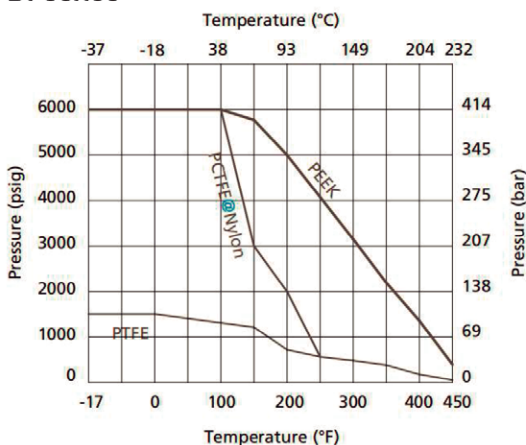
# BTH SERIES

| Basic Ordering Number | Connection Type and Size | Orifice in.(mm) | Cv   | Dimension, in. (mm) |             |             |             |             |             |
|-----------------------|--------------------------|-----------------|------|---------------------|-------------|-------------|-------------|-------------|-------------|
|                       |                          |                 |      | A                   | B           | C           | D           | E           | F           |
| _D-BTH-FN2-5-3W       | 1/8 FEMALE NPT           | 0.19 (4.8)      | 0.75 | 2.94 (74.7)         | 1.47 (37.3) | 1.06 (26.9) | 1.88 (47.7) | 1.57 (40.0) | 2.56 (65.0) |
| _D-BTH-FN4-5-3W       | 1/4 FEMALE NPT           | 0.19 (4.8)      | 0.75 | 2.94 (74.7)         | 1.47 (37.3) | 1.06 (26.9) | 1.88 (47.7) | 1.57 (40.0) | 2.56 (65.0) |
| _D-BTH-FN8-9-3W       | 1/2 FEMALE NPT           | 0.19 (4.8)      | 0.75 | 4.25 (108)          | 2.13 (54.0) | 1.06 (26.9) | 1.88 (47.7) | 1.57 (40.0) | 2.56 (65.0) |
| _D-BTH-FT4-5-3W       | 1/4 TUBE                 | 0.19 (4.8)      | 0.75 | 4.09 (103.8)        | 2.04 (51.9) | 1.06 (26.9) | 1.88 (47.7) | 1.57 (40.0) | 2.56 (65.0) |
| _D-BTH-FT6-5-3W       | 3/8 TUBE                 | 0.19 (4.8)      | 0.75 | 4.25 (108)          | 2.13 (54.0) | 1.06 (26.9) | 1.88 (47.7) | 1.57 (40.0) | 2.56 (65.0) |
| _D-BTH-FT8-5-3W       | 1/2 TUBE                 | 0.19 (4.8)      | 0.75 | 4.60 (116.8)        | 2.30 (58.4) | 1.06 (26.9) | 1.88 (47.7) | 1.57 (40.0) | 2.56 (65.0) |
| _D-BTH-MT4-5-3W       | 6MM TUBE                 | 0.19 (4.8)      | 0.75 | 4.09 (103.8)        | 2.04 (51.9) | 1.06 (26.9) | 1.88 (47.7) | 1.57 (40.0) | 2.56 (65.0) |
| _D-BTH-MT8-5-3W       | 8MM TUBE                 | 0.19 (4.8)      | 0.75 | 4.14 (105.2)        | 2.07 (52.6) | 1.06 (26.9) | 1.88 (47.7) | 1.57 (40.0) | 2.56 (65.0) |
| _D-BTH-MT10-5-3W      | 10MM TUBE                | 0.19 (4.8)      | 0.75 | 4.25 (108)          | 2.13 (54.0) | 1.06 (26.9) | 1.88 (47.7) | 1.57 (40.0) | 2.56 (65.0) |
| _D-BTH-MT12-5-3W      | 12MM TUBE                | 0.19 (4.8)      | 0.75 | 4.60 (116.8)        | 2.30 (58.4) | 1.06 (26.9) | 1.88 (47.7) | 1.57 (40.0) | 2.56 (65.0) |

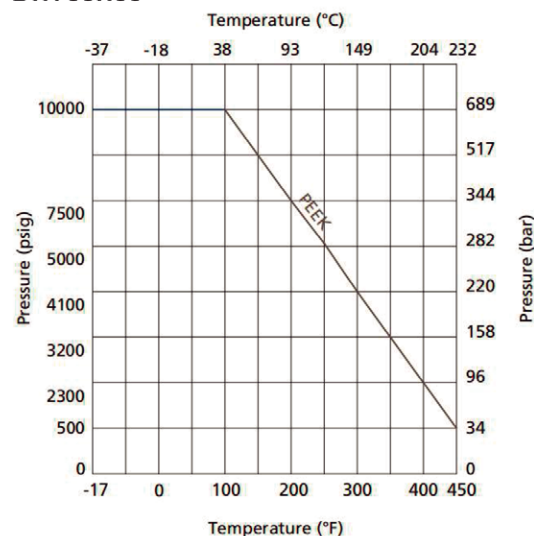
1. Size and types listed are standard. Other sizes and types are available upon request, refer to the ordering information.
2. Dimensions are shown with DSG nuts finger-tightened. All dimensions are for reference only and are subject to change.
3. For dimensions not shown above, please contact the authorized representative or DSG employees.

## PRESSURE VS. TEMPERATURE

BT Series



BTH Series



1. Seal kits contain components of the same material as original valve. See standard material of construction.



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