



**PANAM**  
ENGINEERING  
BEYOND  
LIMITS

# Ball Valves (300 Series)

Maximum Working Pressure upto  
6000 psi (414 bar)



+91 22 4146 9000

sales@panam.in

www.panam.in

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## Introduction

**PANAM**<sup>®</sup> has emerged as renowned name in Global market for 'Instrumentation Fittings & Valves'. Since its inception in 1998 to present day, **PANAM**<sup>®</sup> has added new product every year and has broadened its product portfolio and its clientele base by supplying to potential customers worldwide. Key core values like Timely Delivery, Quality Consistency, Product Improvisation and after sales service has been instrumental in the phase wise evolution of company. Continuous improvement is the key to success, Customer feedback are taken with positive attitude and product are constantly groomed to a new quality and performance level to cope up with the competition. Our products are known for providing high-quality, high-reliability, low-cost options for the oil and gas industry. Over the year, the company has evolved from a product based company to a complete system solution provider. Over the coming years the entity of the company will attain state of the art operational efficiency for maintaining a competitive edge, with the advent increase in the utilization of its products in oil, gas and power sector.

**PANAM**<sup>®</sup> is having state of the art manufacturing facility span over an area of 65,000 sqft with a fleet of CNC machines, VMC machines, Semi-Automatic Lathe machines, High pressure test bench with SCADA control, Configuration centre for transmitters and dedicated R&D Team.

**PANAM**<sup>®</sup> offers a large variety of 2 and 3 Ways Three - Piece 300 Series Ball Valves from different materials like Stainless Steel, Carbon Steel, Monel, Hastelloy & Brass Materials.

**PANAM**<sup>®</sup> offers 2 and 3 Ways Three - Piece Ball Valves 300 Series with a variety of end connections including NPT Tapered, ISO (BSPT) Tapered, ISO (BSPP) Parallel and Metric Threads. The product meets and even exceeds the requirements of ASME and MSS Series Standards. All materials are supplied in compliance with ASTM Specifications and verified by NABL approved third party laboratories.

**PANAM**<sup>®</sup> 2 and 3 Ways Three - Piece Ball Valves 300 Series are supplied to meet current revision of NACE MR-01-75 (Sour Gas Service). All Valves are 100% factory tested in accordance with MSS-SP-99. Heat Code Traceability and Maximum working pressure upto 6000 psi (414 bar).



## Contents

|                                                                                                   |    |
|---------------------------------------------------------------------------------------------------|----|
| • Introduction .....                                                                              | 1  |
| • Characteristics .....                                                                           | 1  |
| • Benefits .....                                                                                  | 1  |
| • Design and Materials of 2-Way Ball Valves 300 Series for High Pressure .....                    | 2  |
| • End Connections and Sizes of Ball Valves 300 Series for Pressure 6000 psi (414 bar) .....       | 3  |
| • End Connections and Sizes of Ball Valves 300 Series for Pressure 6000 psi (414 bar) .....       | 4  |
| • Design and Materials of Ball Valves 300 Series of Angular Configuration .....                   | 5  |
| • End Connections and Sizes of Ball Valves 300 Series for Pressure 6000 psi (414 bar) .....       | 6  |
| • End Connections and Sizes of Ball Valves 300 Series for Pressure 6000 psi (414 bar) .....       | 7  |
| • Design and Materials of 3-Way Ball Valves 300 Series For High Pressure .....                    | 8  |
| • End Connections and Sizes of 3-Way Ball Valves 300 Series for Pressure 6000 psi (414 bar) ..... | 9  |
| • Pressure v/s Temperature for Ball Valves 300 Series .....                                       | 10 |
| • Sealing Material Characteristics .....                                                          | 10 |
| • Seal Adjustment .....                                                                           | 10 |
| • Testing .....                                                                                   | 11 |
| • Cleaning and Packaging .....                                                                    | 11 |
| • Ordering Information .....                                                                      | 11 |
| • Ordering Information for Spares .....                                                           | 12 |
| • Safety .....                                                                                    | 12 |
| • Other Products .....                                                                            | 16 |

## Introduction

**PANAM**<sup>®</sup> 2 and 3 - Ways three-piece Ball Valves of 300 Series are specially designed and manufactured for use in rugged, corrosive & hazardous environments up to 6000 psi (414 bar).

**PANAM**<sup>®</sup> 2 and 3 - Ways three-piece Ball Valves are used in process control, instrumentation and flow control applications. Valves are precision machined, designed for durability and maximum efficiency and provide high quality, low cost alternatives used in a wide variety of fluid and gaseous control systems. This quality of ball valves meets the stringent requirements of the customers.

**PANAM**<sup>®</sup> ball valves 300 Series are manufactured from high-quality Stainless Steel, Carbon Steel, Monel, Hastelloy & Brass materials.

Valves can be supplied to meet current revision of NACE MR-01-75 (Sour Gas Service). All Valves are 100% factory tested in accordance with MSS-SP-99.

Only nylon handle ball valves are used for panel mounting.

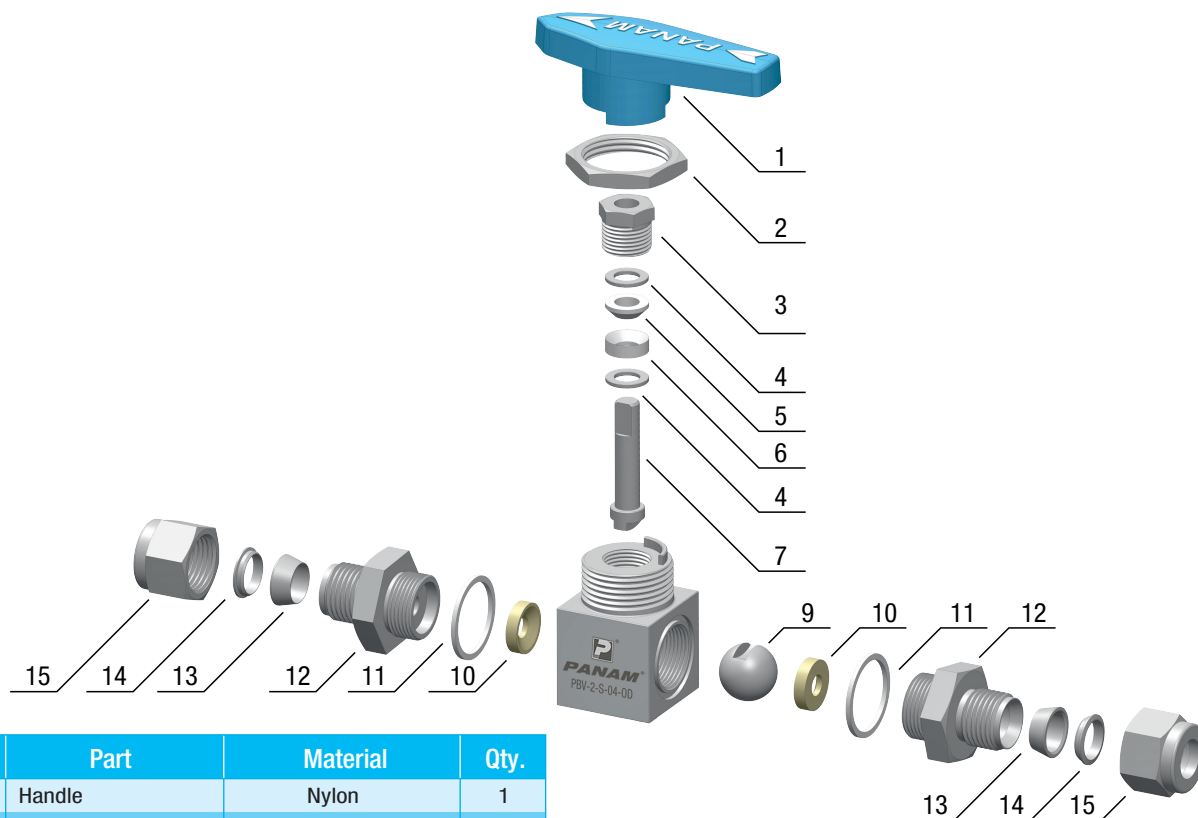
## Characteristics

- Standard body material – Stainless Steel (SS 316).
- Maximum working pressure 3,000 psi (207 bar) with modified PTFE seat.
- Maximum working pressure 6,000 psi (414 bar) with PCTFE, PEEK, DELRIN seat.
- Working temperature from -40°C to +204°C (From -40°F to +400°F) with seat from modified PTFE.
- Working temperature from -54°C to +145°C (From -66°F to +300°F) with PCTFE seat.
- Working temperature from -40°C to 232°C (from -40°F to 450°F) with PEEK seat.
- Working pressure from -18° to 93°C (0 to 200°F) with Delrin seat.
- CV from 0.09 to 1.8.
- End connections from 1/16" to 3/4" (From 3 mm to 18 mm).
- Variety of end connections includes female thread, male thread, male / female and **PANAM**<sup>®</sup> tube end connections.
- Different types of threads: NPT tapered, ISO (BSPT) tapered, ISO (BSPP) parallel, metric thread.

## Benefits

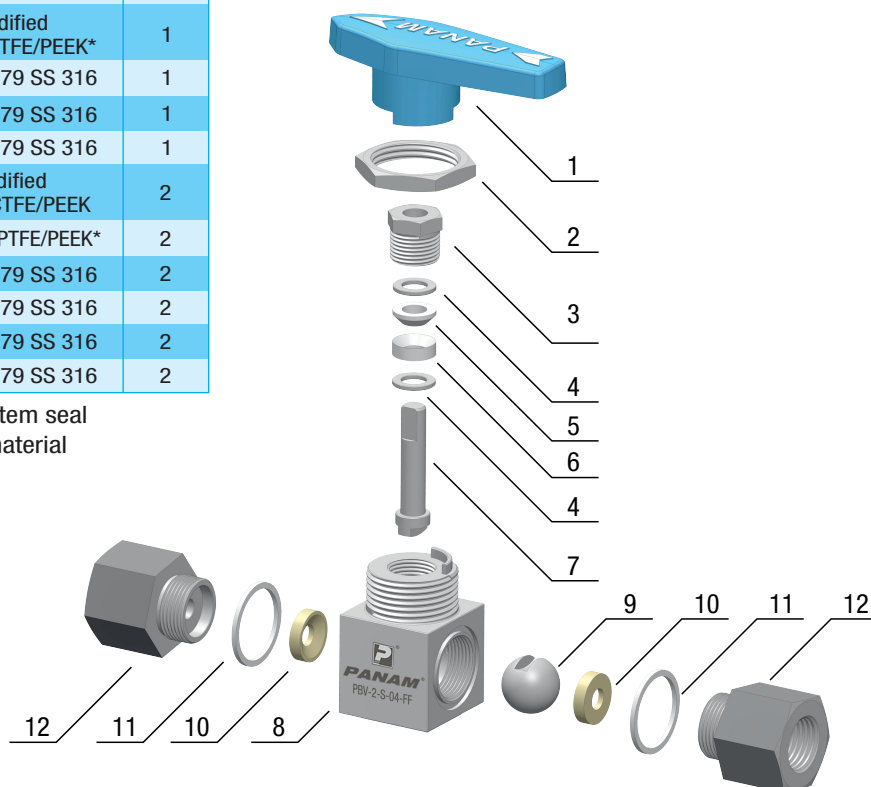
- Three-piece design for easier mounting and maintenance.
- Stainless Steel (SS 316) to ASTM A479 Construction - for high corrosion resistance.
- Modified PTFE - Standard seat material for ball valves for 3000 psi (207 bar).
- Shutoff (2-way valves) or bypass (3-way valves) function.
- Available with compression end connections to exclude tapered threads and sealing materials (Teflon tape).
- Leak-free shutoff.
- Floating ball design for positive sealing and seat wear out.
- Available with nylon handle of different colors or with aluminum handle.
- Standard handle - black colour, nylon.
- Panel Mounting Option Available.
- PTFE stem seal as standard material.

## Design and Materials of 2-Way Ball Valves 300 Series



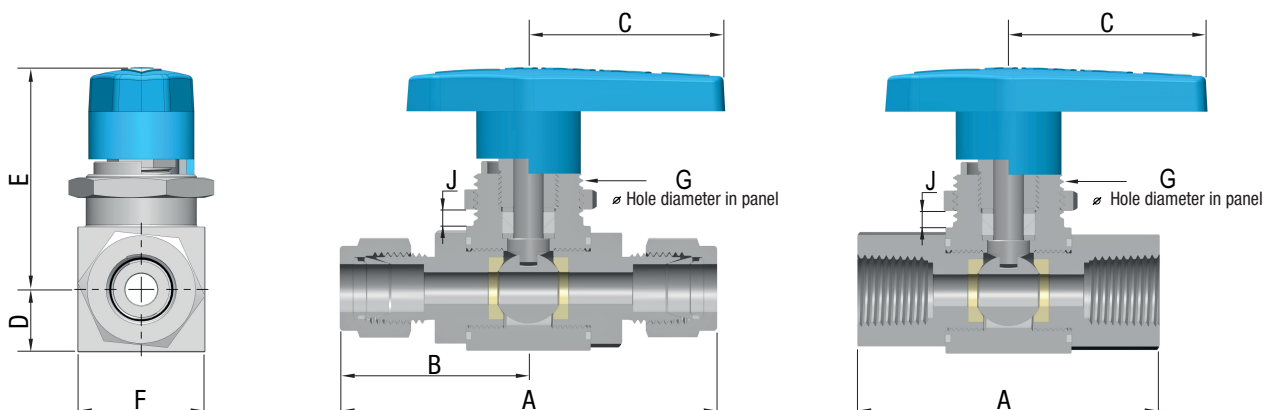
| No | Part                 | Material                  | Qty. |
|----|----------------------|---------------------------|------|
| 1  | Handle               | Nylon                     | 1    |
| 2  | Panel Mounting Screw | ASTM A479 SS 316          | 1    |
| 3  | Clamping Bolt        | ASTM A479 SS 316          | 1    |
| 4  | Stem Seal Washer     | ASTM A479 SS 316          | 1    |
| 5  | Upper Stem Packing   | Modified PTFE/PCTFE/PEEK* | 1    |
| 6  | Lower Stem Packing   | Modified PTFE/PCTFE/PEEK* | 1    |
| 7  | Stem                 | ASTM A479 SS 316          | 1    |
| 8  | Body                 | ASTM A479 SS 316          | 1    |
| 9  | Ball                 | ASTM A479 SS 316          | 1    |
| 10 | Seat                 | Modified PTFE/PCTFE/PEEK  | 2    |
| 11 | Body Seal            | Modified PTFE/PEEK*       | 2    |
| 12 | Adapter              | ASTM A479 SS 316          | 2    |
| 13 | Front Ferrule        | ASTM A479 SS 316          | 2    |
| 14 | Back Ferrule         | ASTM A479 SS 316          | 2    |
| 15 | Washer Nut           | ASTM A479 SS 316          | 2    |

\*Note: Material of upper and lower stem seal and body material depend on seat material



## End Connections and Sizes of Ball Valves 300 Series for Pressure 6000 psi (414 bar)

### 2-Way Straight Ball Valve

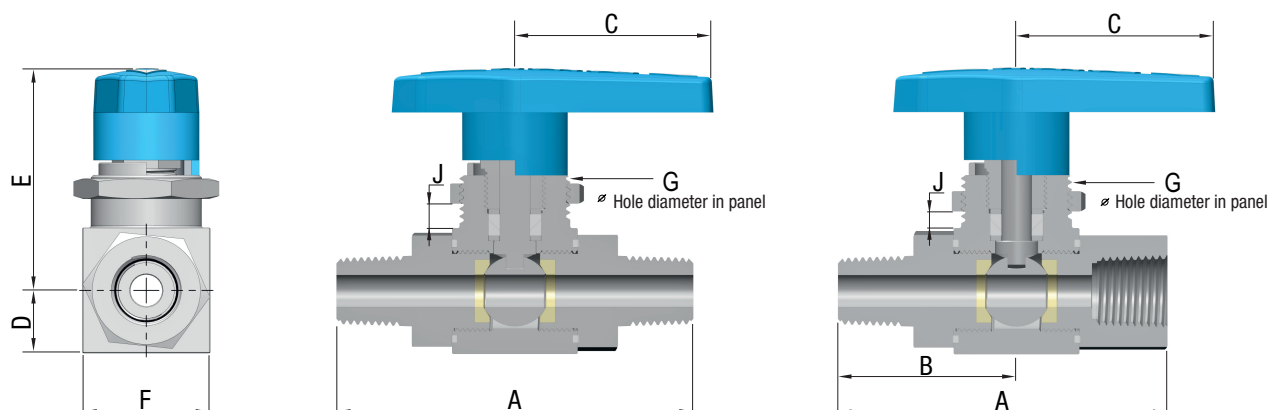


| End connection                            |           | Part Number    | Cv   | Orifice |      | A    |      | B    |      | C    |      | D    |      | E    |      | F    |      | G    |      | J   |      |
|-------------------------------------------|-----------|----------------|------|---------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----|------|
| Type                                      | Size      |                |      | mm      | inch | mm   | inch | mm   | inch | mm   | inch | mm   | inch | mm   | inch | mm   | inch | mm   | inch | mm  | inch |
| <b>PANAM®</b><br>Tube Fitting<br>(Inch)   | 1/16"     | PBV-2-S-01-OD  | 0.06 | 1.3     | 0.05 | 68.0 | 2.68 | 34.0 | 1.34 | 39.5 | 1.56 | 12.5 | 0.49 | 44.0 | 1.73 | 25.4 | 1.00 | 22.5 | 0.89 | 6.5 | 0.26 |
|                                           | 1/8"      | PBV-2-S-02-OD  | 0.21 | 2.4     | 0.09 | 72.6 | 2.86 | 36.3 | 1.43 | 39.5 | 1.56 | 12.5 | 0.49 | 44.0 | 1.73 | 25.4 | 1.00 | 22.5 | 0.89 | 6.5 | 0.26 |
|                                           | 1/4"      | PBV-2-S-04-OD  | 1.04 | 4.8     | 0.19 | 74.4 | 2.93 | 37.2 | 1.46 | 39.5 | 1.56 | 12.5 | 0.49 | 44.0 | 1.73 | 25.4 | 1.00 | 22.5 | 0.89 | 6.5 | 0.26 |
|                                           | 3/8"      | PBV-2-S-06-OD  | 2.34 | 6.4     | 0.25 | 75.7 | 2.98 | 37.8 | 1.49 | 39.5 | 1.56 | 12.5 | 0.49 | 44.0 | 1.73 | 25.4 | 1.00 | 22.5 | 0.89 | 6.5 | 0.26 |
|                                           | 1/2"      | PBV-2-S-08-OD  | 6.42 | 10.3    | 0.41 | 99.0 | 3.90 | 49.5 | 1.95 | 59.0 | 2.32 | 18.0 | 0.71 | 51.6 | 2.03 | 35.0 | 1.38 | 24.5 | 0.96 | 6.5 | 0.26 |
|                                           | 3/4"      | PBV-2-S-12-OD  | 6.42 | 10.3    | 0.41 | 98.4 | 3.87 | 49.2 | 1.94 | 59.0 | 2.32 | 18.0 | 0.71 | 51.6 | 2.03 | 35.0 | 1.38 | 24.5 | 0.96 | 6.5 | 0.26 |
| <b>PANAM®</b><br>Tube Fitting<br>(Metric) | 3mm       | PBV-2-S-M03-OD | 0.21 | 2.4     | 0.09 | 72.6 | 2.86 | 36.3 | 1.43 | 39.5 | 1.56 | 12.5 | 0.49 | 44.0 | 1.73 | 25.4 | 1.00 | 22.5 | 0.89 | 6.5 | 0.26 |
|                                           | 6mm       | PBV-2-S-M06-OD | 1.04 | 4.8     | 0.19 | 74.4 | 2.93 | 37.2 | 1.46 | 39.5 | 1.56 | 12.5 | 0.49 | 44.0 | 1.73 | 25.4 | 1.00 | 22.5 | 0.89 | 6.5 | 0.26 |
|                                           | 8mm       | PBV-2-S-M08-OD | 2.34 | 6.4     | 0.25 | 77.6 | 3.06 | 38.8 | 1.53 | 39.5 | 1.56 | 12.5 | 0.49 | 44.0 | 1.73 | 25.4 | 1.00 | 22.5 | 0.89 | 6.5 | 0.26 |
|                                           | 10mm      | PBV-2-S-M10-OD | 2.34 | 6.4     | 0.25 | 75.7 | 2.98 | 37.9 | 1.49 | 39.5 | 1.56 | 12.5 | 0.49 | 44.0 | 1.73 | 25.4 | 1.00 | 22.5 | 0.89 | 6.5 | 0.26 |
|                                           | 12mm      | PBV-2-S-M12-OD | 6.42 | 10.3    | 0.41 | 99.0 | 3.90 | 49.5 | 1.95 | 59.0 | 2.32 | 18.0 | 0.71 | 51.6 | 2.03 | 35.0 | 1.38 | 24.5 | 0.96 | 6.5 | 0.26 |
|                                           | 14mm      | PBV-2-S-M14-OD | 6.42 | 10.3    | 0.41 | 99.0 | 3.90 | 49.5 | 1.95 | 59.0 | 2.32 | 18.0 | 0.71 | 51.6 | 2.03 | 35.0 | 1.38 | 24.5 | 0.96 | 6.5 | 0.26 |
|                                           | 16mm      | PBV-2-S-M16-OD | 6.42 | 10.3    | 0.41 | 98.4 | 3.87 | 49.2 | 1.94 | 59.0 | 2.32 | 18.0 | 0.71 | 51.6 | 2.03 | 35.0 | 1.38 | 24.5 | 0.96 | 6.5 | 0.26 |
|                                           | 18mm      | PBV-2-S-M18-OD | 6.42 | 10.3    | 0.41 | 98.4 | 3.87 | 49.2 | 1.94 | 59.0 | 2.32 | 18.0 | 0.71 | 51.6 | 2.03 | 35.0 | 1.38 | 24.5 | 0.96 | 6.5 | 0.26 |
| NPT<br>Female                             | 1/8"      | PBV-2-S-02-FF  | 1.04 | 4.8     | 0.19 | 54.0 | 2.13 | 27.0 | 1.06 | 39.5 | 1.56 | 12.5 | 0.49 | 44.0 | 1.73 | 25.4 | 1.00 | 22.5 | 0.89 | 6.5 | 0.26 |
|                                           | 1/4"      | PBV-2-S-04-FF  | 2.34 | 6.4     | 0.25 | 60.0 | 2.36 | 30.0 | 1.18 | 39.5 | 1.56 | 12.5 | 0.49 | 44.0 | 1.73 | 25.4 | 1.00 | 22.5 | 0.89 | 6.5 | 0.26 |
|                                           | 3/8"      | PBV-2-S-06-FF  | 2.34 | 6.4     | 0.25 | 60.0 | 2.36 | 30.0 | 1.18 | 39.5 | 1.56 | 12.5 | 0.49 | 44.0 | 1.73 | 25.4 | 1.00 | 22.5 | 0.89 | 6.5 | 0.26 |
|                                           | 1/2"      | PBV-2-S-08-FF  | 6.42 | 10.3    | 0.41 | 78.5 | 3.09 | 39.3 | 1.55 | 59.0 | 2.32 | 18.0 | 0.71 | 51.6 | 2.03 | 35.0 | 1.38 | 24.5 | 0.96 | 6.5 | 0.26 |
|                                           | 3/4"      | PBV-2-S-12-FF  | 6.42 | 10.3    | 0.41 | 82.5 | 3.25 | 41.3 | 1.62 | 59.0 | 2.32 | 18.0 | 0.71 | 51.6 | 2.03 | 35.0 | 1.38 | 24.5 | 0.96 | 6.5 | 0.26 |
| BSPT<br>Female                            | 1/8"      | PBV-2-S-02R-FF | 1.04 | 4.8     | 0.19 | 54.0 | 2.13 | 27.0 | 1.06 | 39.5 | 1.56 | 12.5 | 0.49 | 44.0 | 1.73 | 25.4 | 1.00 | 22.5 | 0.89 | 6.5 | 0.26 |
|                                           | 1/4"      | PBV-2-S-04R-FF | 2.34 | 6.4     | 0.25 | 60.0 | 2.36 | 30.0 | 1.18 | 39.5 | 1.56 | 12.5 | 0.49 | 44.0 | 1.73 | 25.4 | 1.00 | 22.5 | 0.89 | 6.5 | 0.26 |
|                                           | 3/8"      | PBV-2-S-06R-FF | 2.34 | 6.4     | 0.25 | 60.0 | 2.36 | 30.0 | 1.18 | 39.5 | 1.56 | 12.5 | 0.49 | 44.0 | 1.73 | 25.4 | 1.00 | 22.5 | 0.89 | 6.5 | 0.26 |
|                                           | 1/2"      | PBV-2-S-08R-FF | 6.42 | 10.3    | 0.41 | 78.5 | 3.09 | 39.3 | 1.55 | 59.0 | 2.32 | 18.0 | 0.71 | 51.6 | 2.03 | 35.0 | 1.38 | 24.5 | 0.96 | 6.5 | 0.26 |
|                                           | 3/4"      | PBV-2-S-12R-FF | 6.42 | 10.3    | 0.41 | 82.5 | 3.25 | 41.3 | 1.62 | 59.0 | 2.32 | 18.0 | 0.71 | 51.6 | 2.03 | 35.0 | 1.38 | 24.5 | 0.96 | 6.5 | 0.26 |
| BSPP<br>Female                            | 1/8"      | PBV-2-S-02G-FF | 1.04 | 4.8     | 0.19 | 54.0 | 2.13 | 27.0 | 1.06 | 39.5 | 1.56 | 12.5 | 0.49 | 44.0 | 1.73 | 25.4 | 1.00 | 22.5 | 0.89 | 6.5 | 0.26 |
|                                           | 1/4"      | PBV-2-S-04G-FF | 2.34 | 6.4     | 0.25 | 60.0 | 2.36 | 30.0 | 1.18 | 39.5 | 1.56 | 12.5 | 0.49 | 44.0 | 1.73 | 25.4 | 1.00 | 22.5 | 0.89 | 6.5 | 0.26 |
|                                           | 3/8"      | PBV-2-S-06G-FF | 2.34 | 6.4     | 0.25 | 60.0 | 2.36 | 30.0 | 1.18 | 39.5 | 1.56 | 12.5 | 0.49 | 44.0 | 1.73 | 25.4 | 1.00 | 22.5 | 0.89 | 6.5 | 0.26 |
|                                           | 1/2"      | PBV-2-S-08G-FF | 6.42 | 10.3    | 0.41 | 78.5 | 3.09 | 39.3 | 1.55 | 59.0 | 2.32 | 18.0 | 0.71 | 51.6 | 2.03 | 35.0 | 1.38 | 24.5 | 0.96 | 6.5 | 0.26 |
|                                           | 3/4"      | PBV-2-S-12G-FF | 6.42 | 10.3    | 0.41 | 82.5 | 3.25 | 41.3 | 1.62 | 59.0 | 2.32 | 18.0 | 0.71 | 51.6 | 2.03 | 35.0 | 1.38 | 24.5 | 0.96 | 6.5 | 0.26 |
| Metric<br>Thread                          | M20 x 1.5 | PBV-2-S-20M-FF | 6.42 | 10.3    | 0.41 | 78.5 | 3.09 | 39.3 | 1.55 | 59.0 | 2.32 | 18.0 | 0.71 | 51.6 | 2.03 | 35.0 | 1.38 | 24.5 | 0.96 | 6.5 | 0.26 |

Dimensions are for reference only and subject to change. All sizes in mm unless specified otherwise

## End Connections and Sizes of Ball Valves 300 Series for Pressure 6000 psi (414 bar)

### 2-Way Straight Ball Valve

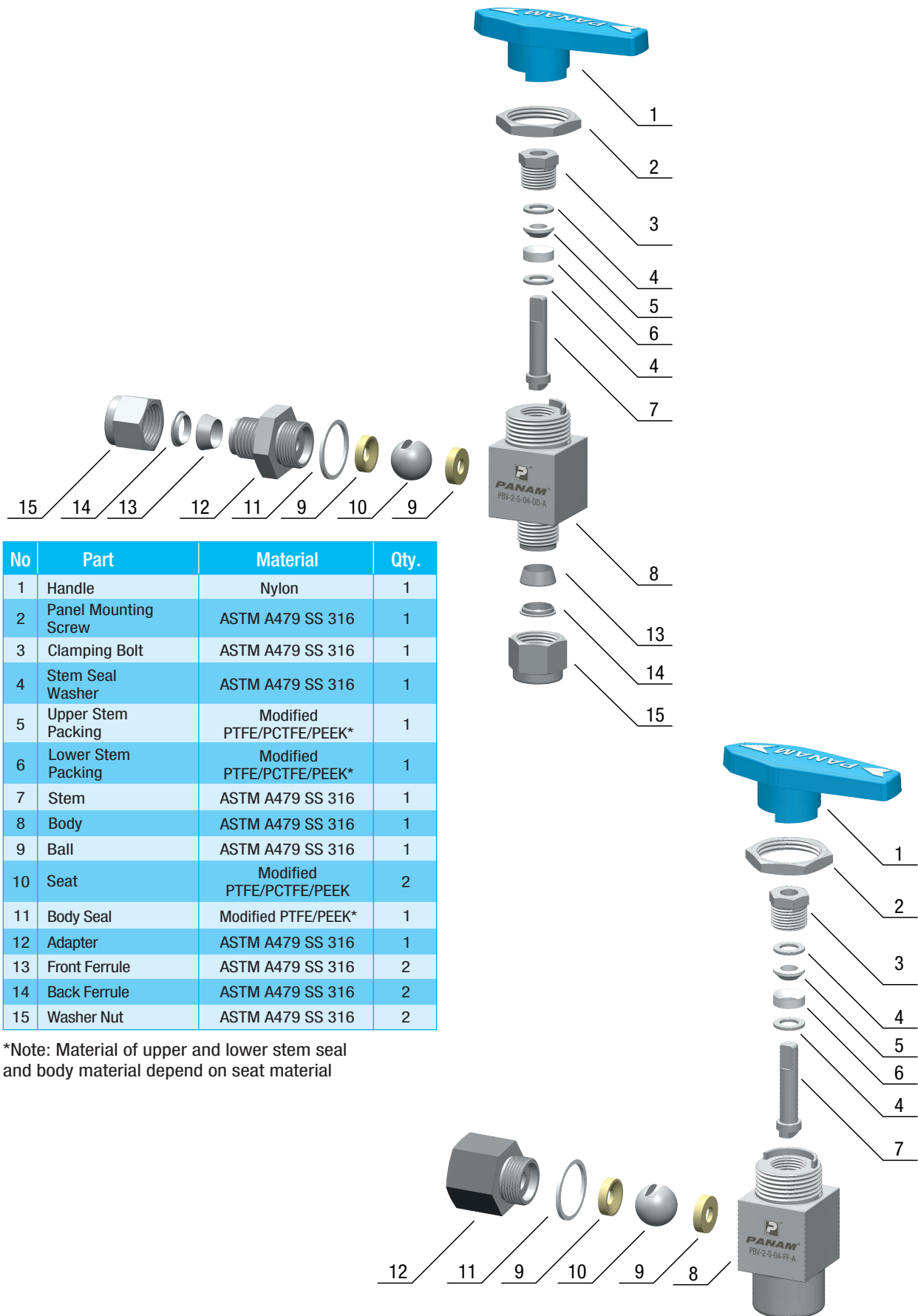


| End Connection          |           | Part Number    | Cv   | Orifice |      | A    |      | B    |      | C    |      | D    |      | E    |      | F    |      | G    |      | J   |      |
|-------------------------|-----------|----------------|------|---------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----|------|
| Type                    | Size      |                |      | mm      | inch | mm   | inch | mm   | inch | mm   | inch | mm   | inch | mm   | inch | mm   | inch | mm   | inch | mm  | inch |
| NPT Male                | 1/8"      | PBV-2-S-02-MM  | 1.04 | 4.8     | 0.19 | 59.0 | 2.32 | 29.5 | 1.16 | 39.5 | 1.56 | 12.5 | 0.49 | 44.0 | 1.73 | 25.4 | 1.00 | 22.5 | 0.89 | 6.5 | 0.26 |
|                         | 1/4"      | PBV-2-S-04-MM  | 2.34 | 6.4     | 0.25 | 71.0 | 2.80 | 35.5 | 1.40 | 39.5 | 1.56 | 12.5 | 0.49 | 44.0 | 1.73 | 25.4 | 1.00 | 22.5 | 0.89 | 6.5 | 0.26 |
|                         | 3/8"      | PBV-2-S-06-MM  | 2.34 | 6.4     | 0.25 | 71.0 | 2.80 | 35.5 | 1.40 | 39.5 | 1.56 | 12.5 | 0.49 | 44.0 | 1.73 | 25.4 | 1.00 | 22.5 | 0.89 | 6.5 | 0.26 |
|                         | 1/2"      | PBV-2-S-08-MM  | 6.42 | 10.3    | 0.41 | 92.5 | 3.64 | 46.3 | 1.82 | 59.0 | 2.32 | 18.0 | 0.71 | 51.6 | 2.03 | 35.0 | 1.38 | 24.5 | 0.96 | 6.5 | 0.26 |
|                         | 3/4"      | PBV-2-S-12-MM  | 6.42 | 10.3    | 0.41 | 92.5 | 3.64 | 46.3 | 1.82 | 59.0 | 2.32 | 18.0 | 0.71 | 51.6 | 2.03 | 35.0 | 1.38 | 24.5 | 0.96 | 6.5 | 0.26 |
| BSPT Male               | 1/8"      | PBV-2-S-02R-MM | 1.04 | 4.8     | 0.19 | 59.0 | 2.32 | 29.5 | 1.16 | 39.5 | 1.56 | 12.5 | 0.49 | 44.0 | 1.73 | 25.4 | 1.00 | 22.5 | 0.89 | 6.5 | 0.26 |
|                         | 1/4"      | PBV-2-S-04R-MM | 2.34 | 6.4     | 0.25 | 71.0 | 2.80 | 35.5 | 1.40 | 39.5 | 1.56 | 12.5 | 0.49 | 44.0 | 1.73 | 25.4 | 1.00 | 22.5 | 0.89 | 6.5 | 0.26 |
|                         | 3/8"      | PBV-2-S-06R-MM | 2.34 | 6.4     | 0.25 | 71.0 | 2.80 | 35.5 | 1.40 | 39.5 | 1.56 | 12.5 | 0.49 | 44.0 | 1.73 | 25.4 | 1.00 | 22.5 | 0.89 | 6.5 | 0.26 |
|                         | 1/2"      | PBV-2-S-08R-MM | 6.42 | 10.3    | 0.41 | 92.5 | 3.64 | 46.3 | 1.82 | 59.0 | 2.32 | 18.0 | 0.71 | 51.6 | 2.03 | 35.0 | 1.38 | 24.5 | 0.96 | 6.5 | 0.26 |
|                         | 3/4"      | PBV-2-S-12R-MM | 6.42 | 10.3    | 0.41 | 92.5 | 3.64 | 46.3 | 1.82 | 59.0 | 2.32 | 18.0 | 0.71 | 51.6 | 2.03 | 35.0 | 1.38 | 24.5 | 0.96 | 6.5 | 0.26 |
| Male BSPP               | 1/8"      | PBV-2-S-02G-MM | 1.04 | 4.8     | 0.19 | 59.0 | 2.32 | 29.5 | 1.16 | 39.5 | 1.56 | 12.5 | 0.49 | 44.0 | 1.73 | 25.4 | 1.00 | 22.5 | 0.89 | 6.5 | 0.26 |
|                         | 1/4"      | PBV-2-S-04G-MM | 2.34 | 6.4     | 0.25 | 66.0 | 2.60 | 33.0 | 1.30 | 39.5 | 1.56 | 12.5 | 0.49 | 44.0 | 1.73 | 25.4 | 1.00 | 22.5 | 0.89 | 6.5 | 0.26 |
|                         | 3/8"      | PBV-2-S-06G-MM | 2.34 | 6.4     | 0.25 | 66.0 | 2.60 | 33.0 | 1.30 | 36.5 | 1.44 | 12.5 | 0.49 | 44.0 | 1.73 | 25.4 | 1.00 | 22.5 | 0.89 | 6.5 | 0.26 |
|                         | 1/2"      | PBV-2-S-08G-MM | 6.42 | 10.3    | 0.41 | 90.5 | 3.56 | 45.3 | 1.78 | 59.0 | 2.32 | 18.0 | 0.71 | 51.6 | 2.03 | 35.0 | 1.38 | 24.5 | 0.96 | 6.5 | 0.26 |
|                         | 3/4"      | PBV-2-S-12G-MM | 6.42 | 10.3    | 0.41 | 90.5 | 3.56 | 45.3 | 1.78 | 59.0 | 2.32 | 18.0 | 0.71 | 51.6 | 2.03 | 35.0 | 1.38 | 24.5 | 0.96 | 6.5 | 0.26 |
| NPT Male / NPT Female   | 1/8"      | PBV-2-S-02-MF  | 1.04 | 4.8     | 0.19 | 56.5 | 2.22 | 29.5 | 1.16 | 39.5 | 1.56 | 12.5 | 0.49 | 44.0 | 1.73 | 25.4 | 1.00 | 22.5 | 0.89 | 6.5 | 0.26 |
|                         | 1/4"      | PBV-2-S-04-MF  | 2.34 | 6.4     | 0.25 | 65.5 | 2.58 | 35.5 | 1.40 | 39.5 | 1.56 | 12.5 | 0.49 | 44.0 | 1.73 | 25.4 | 1.00 | 22.5 | 0.89 | 6.5 | 0.26 |
|                         | 3/8"      | PBV-2-S-06-MF  | 2.34 | 6.4     | 0.25 | 65.5 | 2.58 | 35.5 | 1.40 | 39.5 | 1.56 | 12.5 | 0.49 | 44.0 | 1.73 | 25.4 | 1.00 | 22.5 | 0.89 | 6.5 | 0.26 |
|                         | 1/2"      | PBV-2-S-08-MF  | 6.42 | 10.3    | 0.41 | 85.5 | 3.37 | 46.3 | 1.82 | 59.0 | 2.32 | 18.0 | 0.71 | 51.6 | 2.03 | 35.0 | 1.38 | 24.5 | 0.96 | 6.5 | 0.26 |
|                         | 3/4"      | PBV-2-S-12-MF  | 6.42 | 10.3    | 0.41 | 89.5 | 3.52 | 48.3 | 1.90 | 59.0 | 2.32 | 20.0 | 0.79 | 53.5 | 2.11 | 40.0 | 1.57 | 24.5 | 0.96 | 6.5 | 0.26 |
| BSPT Male / BSPT Female | 1/8"      | PBV-2-S-02R-MF | 1.04 | 4.8     | 0.19 | 56.5 | 2.22 | 29.5 | 1.16 | 39.5 | 1.56 | 12.5 | 0.49 | 44.0 | 1.73 | 25.4 | 1.00 | 22.5 | 0.89 | 6.5 | 0.26 |
|                         | 1/4"      | PBV-2-S-04R-MF | 2.34 | 6.4     | 0.25 | 65.5 | 2.58 | 35.5 | 1.40 | 39.5 | 1.56 | 12.5 | 0.49 | 44.0 | 1.73 | 25.4 | 1.00 | 22.5 | 0.89 | 6.5 | 0.26 |
|                         | 3/8"      | PBV-2-S-06R-MF | 2.34 | 6.4     | 0.25 | 65.5 | 2.58 | 35.5 | 1.40 | 39.5 | 1.56 | 12.5 | 0.49 | 44.0 | 1.73 | 25.4 | 1.00 | 22.5 | 0.89 | 6.5 | 0.26 |
|                         | 1/2"      | PBV-2-S-08R-MF | 6.42 | 10.3    | 0.41 | 85.5 | 3.37 | 46.3 | 1.82 | 59.0 | 2.32 | 18.0 | 0.71 | 51.6 | 2.03 | 35.0 | 1.38 | 24.5 | 0.96 | 6.5 | 0.26 |
|                         | 3/4"      | PBV-2-S-12R-MF | 6.42 | 10.3    | 0.41 | 89.5 | 3.52 | 48.3 | 1.90 | 59.0 | 2.32 | 20.0 | 0.79 | 53.5 | 2.11 | 40.0 | 1.57 | 24.5 | 0.96 | 6.5 | 0.26 |
| Metric Thread           | M20 x 1.5 | PBV-2-S-20M-MM | 6.42 | 10.3    | 0.41 | 92.5 | 3.64 | 46.3 | 1.82 | 59.0 | 2.32 | 18.0 | 0.71 | 51.6 | 2.03 | 35.0 | 1.38 | 24.5 | 0.96 | 6.5 | 0.26 |
|                         | M20 x 1.5 | PBV-2-S-20M-MF | 6.42 | 10.3    | 0.41 | 85.5 | 3.37 | 46.3 | 1.82 | 59.0 | 2.32 | 18.0 | 0.71 | 51.6 | 2.03 | 35.0 | 1.38 | 24.5 | 0.96 | 6.5 | 0.26 |

Dimensions are for reference only and subject to change. All sizes in mm unless specified otherwise

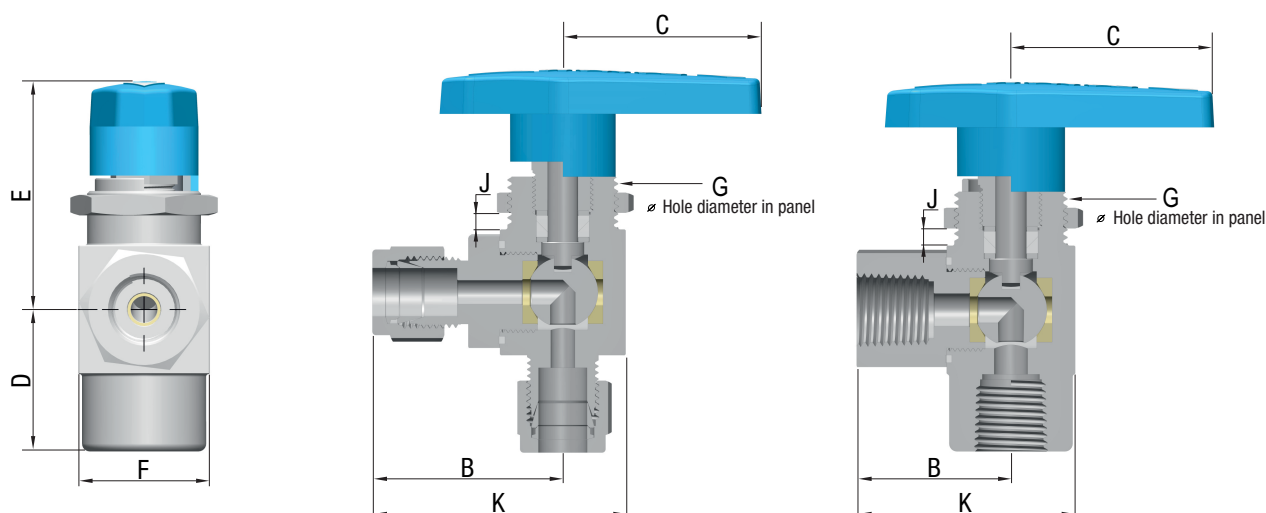


## Design and Materials of Ball Valves 300 Series (Angular Configuration)



## End Connections and Sizes of Ball Valves 300 Series for Pressure 6000 psi (414 bar)

### 2-Way Angular Ball Valve

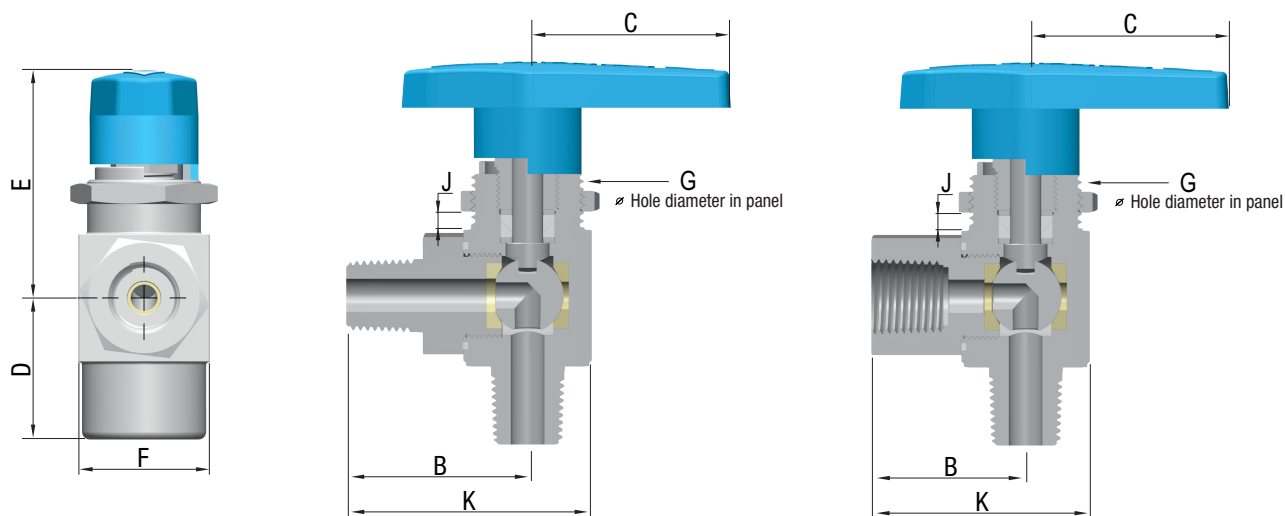


| End Connection                           |           | Part Number      | Cv   | Orifice |      | K    |      | B    |      | C    |      | D    |       | E    |      | F    |      | G    |      | J   |      |
|------------------------------------------|-----------|------------------|------|---------|------|------|------|------|------|------|------|------|-------|------|------|------|------|------|------|-----|------|
| Type                                     | Size      |                  |      | mm      | inch | mm   | inch | mm   | inch | mm   | inch | mm   | inch  | mm   | inch | mm   | inch | mm   | inch | mm  | inch |
| <b>PANAM</b><br>Tube Fitting<br>(Inch)   | 1/16"     | PBV-2-S-01-OD-A  | 0.06 | 1.3     | 0.05 | 46.5 | 1.83 | 34.0 | 1.34 | 39.5 | 1.56 | 27.0 | 1.063 | 44.0 | 1.73 | 25.4 | 1.00 | 22.5 | 0.89 | 6.5 | 0.26 |
|                                          | 1/8"      | PBV-2-S-02-OD-A  | 0.21 | 2.4     | 0.09 | 48.8 | 1.92 | 36.3 | 1.43 | 39.5 | 1.56 | 29.3 | 1.154 | 44.0 | 1.73 | 25.4 | 1.00 | 22.5 | 0.89 | 6.5 | 0.26 |
|                                          | 1/4"      | PBV-2-S-04-OD-A  | 0.70 | 4.8     | 0.19 | 49.7 | 1.96 | 37.2 | 1.46 | 39.5 | 1.56 | 31.2 | 1.228 | 44.0 | 1.73 | 25.4 | 1.00 | 22.5 | 0.89 | 6.5 | 0.26 |
|                                          | 3/8"      | PBV-2-S-06-OD-A  | 0.70 | 6.4     | 0.25 | 50.4 | 1.98 | 37.8 | 1.49 | 39.5 | 1.56 | 31.9 | 1.256 | 44.0 | 1.73 | 25.4 | 1.00 | 22.5 | 0.89 | 6.5 | 0.26 |
|                                          | 1/2"      | PBV-2-S-08-OD-A  | 3.62 | 10.3    | 0.41 | 62.0 | 2.44 | 49.5 | 1.95 | 59.0 | 2.32 | 40.3 | 1.587 | 51.6 | 2.03 | 35.0 | 1.38 | 24.5 | 0.96 | 6.5 | 0.26 |
|                                          | 3/4"      | PBV-2-S-12-OD-A  | 3.62 | 10.3    | 0.41 | 61.7 | 2.43 | 49.2 | 1.94 | 59.0 | 2.32 | 40.0 | 1.575 | 51.6 | 2.03 | 35.0 | 1.38 | 24.5 | 0.96 | 6.5 | 0.26 |
| <b>PANAM</b><br>Tube Fitting<br>(Metric) | 3mm       | PBV-2-S-M03-OD-A | 0.21 | 2.4     | 0.09 | 48.8 | 1.92 | 36.3 | 1.43 | 39.5 | 1.56 | 31.2 | 1.228 | 44.0 | 1.73 | 25.4 | 1.00 | 22.5 | 0.89 | 6.5 | 0.26 |
|                                          | 6mm       | PBV-2-S-M06-OD-A | 0.70 | 4.8     | 0.19 | 49.7 | 1.96 | 37.2 | 1.46 | 39.5 | 1.56 | 31.2 | 1.228 | 44.0 | 1.73 | 25.4 | 1.00 | 22.5 | 0.89 | 6.5 | 0.26 |
|                                          | 8mm       | PBV-2-S-M08-OD-A | 0.70 | 4.8     | 0.25 | 51.3 | 2.02 | 38.8 | 1.53 | 39.5 | 1.56 | 32.5 | 1.28  | 44.0 | 1.73 | 25.4 | 1.00 | 22.5 | 0.89 | 6.5 | 0.26 |
|                                          | 10mm      | PBV-2-S-M10-OD-A | 0.70 | 4.8     | 0.25 | 50.4 | 1.98 | 37.9 | 1.49 | 39.5 | 1.56 | 31.9 | 1.256 | 44.0 | 1.73 | 25.4 | 1.00 | 22.5 | 0.89 | 6.5 | 0.26 |
|                                          | 12mm      | PBV-2-S-M12-OD-A | 3.62 | 10.3    | 0.41 | 62.0 | 2.44 | 49.5 | 1.95 | 59.0 | 2.32 | 40.3 | 1.587 | 51.6 | 2.03 | 35.0 | 1.38 | 24.5 | 0.96 | 6.5 | 0.26 |
|                                          | 14mm      | PBV-2-S-M14-OD-A | 3.62 | 10.3    | 0.41 | 62.0 | 2.44 | 49.5 | 1.95 | 59.0 | 2.32 | 40.3 | 1.587 | 51.6 | 2.03 | 35.0 | 1.38 | 24.5 | 0.96 | 6.5 | 0.26 |
|                                          | 16mm      | PBV-2-S-M16-OD-A | 3.62 | 10.3    | 0.41 | 61.7 | 2.43 | 49.2 | 1.94 | 59.0 | 2.32 | 40.0 | 1.575 | 51.6 | 2.03 | 35.0 | 1.38 | 24.5 | 0.96 | 6.5 | 0.26 |
|                                          | 18mm      | PBV-2-S-M18-OD-A | 3.62 | 10.3    | 0.41 | 61.7 | 2.43 | 49.2 | 1.94 | 59.0 | 2.32 | 40.0 | 1.575 | 51.6 | 2.03 | 35.0 | 1.38 | 24.5 | 0.96 | 6.5 | 0.26 |
| NPT<br>Female                            | 1/8"      | PBV-2-S-02-FF-A  | 0.70 | 4.8     | 0.19 | 39.5 | 1.56 | 27.0 | 1.06 | 39.5 | 1.56 | 24.5 | 0.965 | 44.0 | 1.73 | 25.4 | 1.00 | 22.5 | 0.89 | 6.5 | 0.26 |
|                                          | 1/4"      | PBV-2-S-04-FF-A  | 0.70 | 4.8     | 0.25 | 42.5 | 1.67 | 30.0 | 1.18 | 39.5 | 1.56 | 27.5 | 1.083 | 44.0 | 1.73 | 25.4 | 1.00 | 22.5 | 0.89 | 6.5 | 0.26 |
|                                          | 3/8"      | PBV-2-S-06-FF-A  | 0.70 | 4.8     | 0.25 | 42.5 | 1.67 | 30.0 | 1.18 | 39.5 | 1.56 | 27.5 | 1.083 | 44.0 | 1.73 | 25.4 | 1.00 | 22.5 | 0.89 | 6.5 | 0.26 |
|                                          | 1/2"      | PBV-2-S-08-FF-A  | 3.62 | 10.3    | 0.41 | 51.8 | 2.04 | 39.3 | 1.55 | 59.0 | 2.32 | 35.0 | 1.378 | 51.6 | 2.03 | 35.0 | 1.38 | 24.5 | 0.96 | 6.5 | 0.26 |
|                                          | 3/4"      | PBV-2-S-12-FF-A  | 3.62 | 10.3    | 0.41 | 58.5 | 2.30 | 41.3 | 1.62 | 59.0 | 2.32 | 35.0 | 1.378 | 53.6 | 2.11 | 40.0 | 1.57 | 24.5 | 0.96 | 6.5 | 0.26 |
| BSPT<br>Female                           | 1/8"      | PBV-2-S-02R-FF-A | 0.70 | 4.8     | 0.19 | 39.5 | 1.56 | 27.0 | 1.06 | 39.5 | 1.56 | 24.5 | 0.965 | 44.0 | 1.73 | 25.4 | 1.00 | 22.5 | 0.89 | 6.5 | 0.26 |
|                                          | 1/4"      | PBV-2-S-04R-FF-A | 0.70 | 4.8     | 0.25 | 42.5 | 1.67 | 30.0 | 1.18 | 39.5 | 1.56 | 27.5 | 1.083 | 44.0 | 1.73 | 25.4 | 1.00 | 22.5 | 0.89 | 6.5 | 0.26 |
|                                          | 3/8"      | PBV-2-S-06R-FF-A | 0.70 | 4.8     | 0.25 | 42.5 | 1.67 | 30.0 | 1.18 | 39.5 | 1.56 | 27.5 | 1.083 | 44.0 | 1.73 | 25.4 | 1.00 | 22.5 | 0.89 | 6.5 | 0.26 |
|                                          | 1/2"      | PBV-2-S-08R-FF-A | 3.62 | 10.3    | 0.41 | 51.8 | 2.04 | 39.3 | 1.55 | 59.0 | 2.32 | 35.0 | 1.378 | 51.6 | 2.03 | 35.0 | 1.38 | 24.5 | 0.96 | 6.5 | 0.26 |
|                                          | 3/4"      | PBV-2-S-12R-FF-A | 3.62 | 10.3    | 0.41 | 58.5 | 2.30 | 41.3 | 1.62 | 59.0 | 2.32 | 35.0 | 1.378 | 53.6 | 2.11 | 40.0 | 1.57 | 24.5 | 0.96 | 6.5 | 0.26 |
| BSPP<br>Female                           | 1/8"      | PBV-2-S-02G-FF-A | 0.70 | 4.8     | 0.19 | 39.5 | 1.56 | 27.0 | 1.06 | 39.5 | 1.56 | 24.5 | 0.965 | 44.0 | 1.73 | 25.4 | 1.00 | 22.5 | 0.89 | 6.5 | 0.26 |
|                                          | 1/4"      | PBV-2-S-04G-FF-A | 0.70 | 4.8     | 0.25 | 42.5 | 1.67 | 30.0 | 1.18 | 39.5 | 1.56 | 27.5 | 1.083 | 44.0 | 1.73 | 25.4 | 1.00 | 22.5 | 0.89 | 6.5 | 0.26 |
|                                          | 3/8"      | PBV-2-S-06G-FF-A | 0.70 | 4.8     | 0.25 | 42.5 | 1.67 | 30.0 | 1.18 | 39.5 | 1.56 | 27.5 | 1.083 | 44.0 | 1.73 | 25.4 | 1.00 | 22.5 | 0.89 | 6.5 | 0.26 |
|                                          | 1/2"      | PBV-2-S-08G-FF-A | 3.62 | 10.3    | 0.41 | 51.8 | 2.04 | 39.3 | 1.55 | 59.0 | 2.32 | 35.0 | 1.378 | 51.6 | 2.03 | 35.0 | 1.38 | 24.5 | 0.96 | 6.5 | 0.26 |
|                                          | 3/4"      | PBV-2-S-12G-FF-A | 3.62 | 10.3    | 0.41 | 58.5 | 2.30 | 41.3 | 1.62 | 59.0 | 2.32 | 35.0 | 1.378 | 53.6 | 2.11 | 40.0 | 1.57 | 24.5 | 0.96 | 6.5 | 0.26 |
| Metric<br>Thread                         | M20 x 1.5 | PBV-2-S-20M-FF-A | 3.62 | 10.3    | 0.41 | 51.8 | 2.04 | 39.3 | 1.55 | 59.0 | 2.32 | 35.0 | 1.378 | 51.6 | 2.03 | 35.0 | 1.38 | 24.5 | 0.96 | 6.5 | 0.26 |

Dimensions are for reference only and subject to change. All sizes in mm unless specified otherwise

## End Connections and Sizes of Ball Valves 300 Series for Pressure 6000 psi (414 bar)

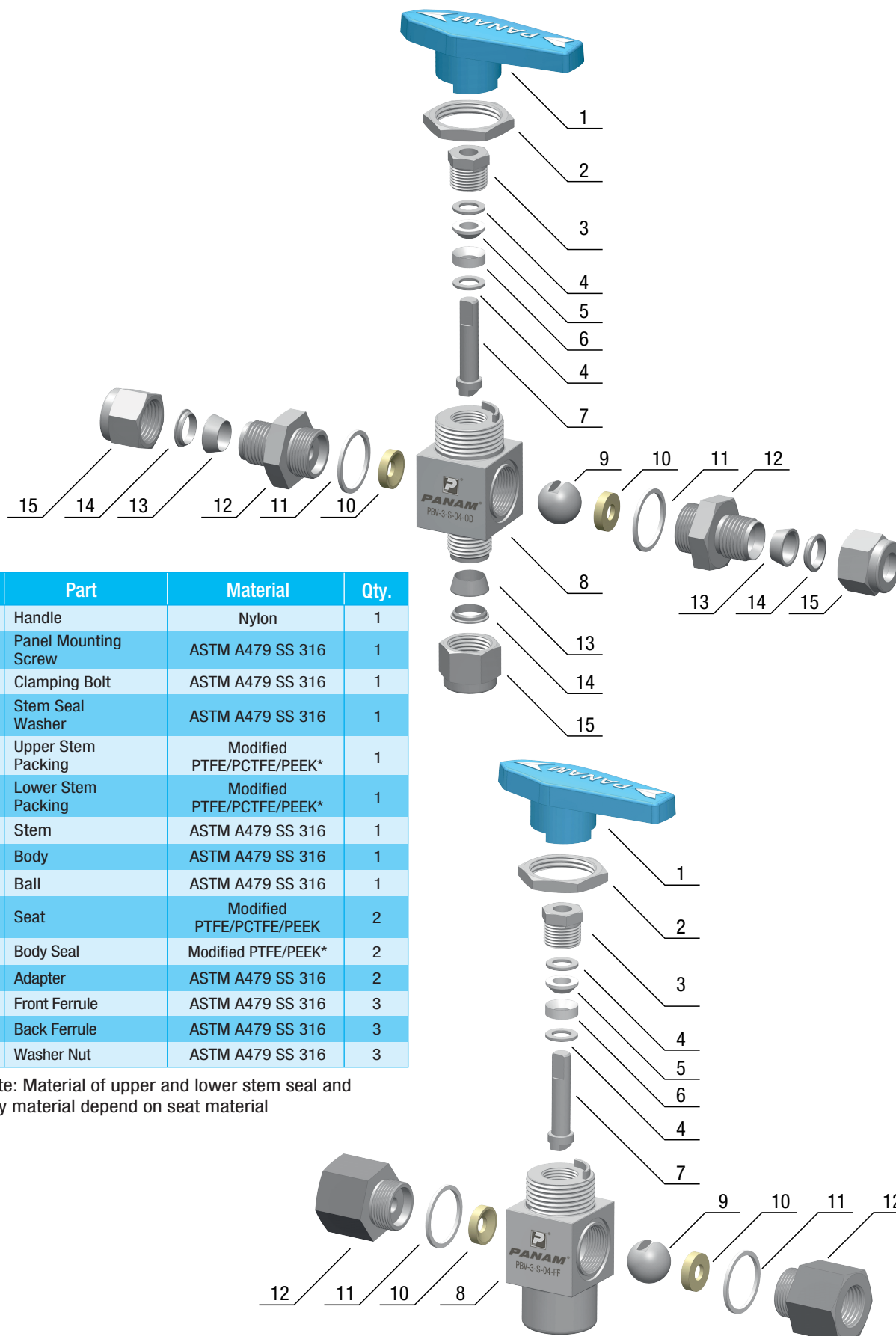
### 2-Way Angular Ball Valve



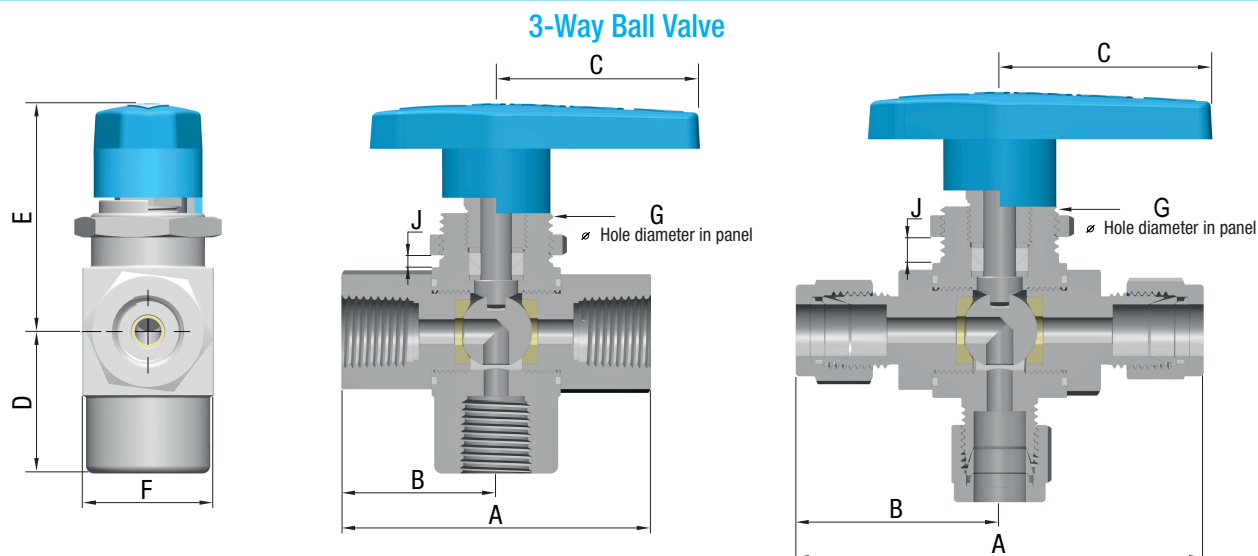
| End Connection             |           | Part Number      | Cv   | Orifice |      | K    |      | B    |      | C    |      | D    |       | E    |      | F    |      | G    |      | J   |      |
|----------------------------|-----------|------------------|------|---------|------|------|------|------|------|------|------|------|-------|------|------|------|------|------|------|-----|------|
| Type                       | Size      |                  |      | mm      | inch | mm   | inch | mm   | inch | mm   | inch | mm   | inch  | mm   | inch | mm   | inch | mm   | inch | mm  | inch |
| NPT Male                   | 1/8"      | PBV-2-S-02-MM-A  | 0.70 | 4.8     | 0.19 | 42.0 | 1.65 | 29.5 | 1.16 | 39.5 | 1.56 | 23.5 | 0.925 | 44.0 | 1.73 | 25.4 | 1.00 | 22.5 | 0.89 | 6.5 | 0.26 |
|                            | 1/4"      | PBV-2-S-04-MM-A  | 0.70 | 4.8     | 0.19 | 48.0 | 1.89 | 35.5 | 1.40 | 39.5 | 1.56 | 27.5 | 1.083 | 44.0 | 1.73 | 25.4 | 1.00 | 22.5 | 0.89 | 6.5 | 0.26 |
|                            | 3/8"      | PBV-2-S-06-MM-A  | 0.70 | 4.8     | 0.19 | 48.0 | 1.89 | 35.5 | 1.40 | 39.5 | 1.56 | 27.5 | 1.083 | 44.0 | 1.73 | 25.4 | 1.00 | 22.5 | 0.89 | 6.5 | 0.26 |
|                            | 1/2"      | PBV-2-S-08-MM-A  | 3.62 | 10.3    | 0.41 | 58.8 | 2.31 | 46.3 | 1.82 | 59.0 | 2.32 | 37.0 | 1.457 | 51.6 | 2.03 | 35.0 | 1.38 | 24.5 | 0.96 | 6.5 | 0.26 |
|                            | 3/4"      | PBV-2-S-12-MM-A  | 3.62 | 10.3    | 0.41 | 58.8 | 2.31 | 46.3 | 1.82 | 59.0 | 2.32 | 37.0 | 1.457 | 51.6 | 2.03 | 35.0 | 1.38 | 24.5 | 0.96 | 6.5 | 0.26 |
| BSPT Male                  | 1/8"      | PBV-2-S-02R-MM-A | 0.70 | 4.8     | 0.19 | 42.0 | 1.65 | 29.5 | 1.16 | 39.5 | 1.56 | 23.5 | 0.925 | 44.0 | 1.73 | 25.4 | 1.00 | 22.5 | 0.89 | 6.5 | 0.26 |
|                            | 1/4"      | PBV-2-S-04R-MM-A | 0.70 | 4.8     | 0.19 | 48.0 | 1.89 | 35.5 | 1.40 | 39.5 | 1.56 | 27.5 | 1.083 | 44.0 | 1.73 | 25.4 | 1.00 | 22.5 | 0.89 | 6.5 | 0.26 |
|                            | 3/8"      | PBV-2-S-06R-MM-A | 0.70 | 4.8     | 0.19 | 48.0 | 1.89 | 35.5 | 1.40 | 39.5 | 1.56 | 27.5 | 1.083 | 44.0 | 1.73 | 25.4 | 1.00 | 22.5 | 0.89 | 6.5 | 0.26 |
|                            | 1/2"      | PBV-2-S-08R-MM-A | 3.62 | 10.3    | 0.41 | 58.8 | 2.31 | 46.3 | 1.82 | 59.0 | 2.32 | 37.0 | 1.457 | 51.6 | 2.03 | 35.0 | 1.38 | 24.5 | 0.96 | 6.5 | 0.26 |
|                            | 3/4"      | PBV-2-S-12R-MM-A | 3.62 | 10.3    | 0.41 | 58.8 | 2.31 | 46.3 | 1.82 | 59.0 | 2.32 | 37.0 | 1.457 | 51.6 | 2.03 | 35.0 | 1.38 | 24.5 | 0.96 | 6.5 | 0.26 |
| BSPP Male                  | 1/8"      | PBV-2-S-02G-MM-A | 0.70 | 4.8     | 0.19 | 42.0 | 1.65 | 29.5 | 1.16 | 39.5 | 1.56 | 23.0 | 0.906 | 44.0 | 1.73 | 25.4 | 1.00 | 22.5 | 0.89 | 6.5 | 0.26 |
|                            | 1/4"      | PBV-2-S-04G-MM-A | 0.70 | 4.8     | 0.19 | 45.5 | 1.79 | 33.0 | 1.30 | 39.5 | 1.56 | 31.5 | 1.240 | 44.0 | 1.73 | 25.4 | 1.00 | 22.5 | 0.89 | 6.5 | 0.26 |
|                            | 3/8"      | PBV-2-S-06G-MM-A | 0.70 | 4.8     | 0.19 | 45.5 | 1.79 | 33.0 | 1.30 | 36.5 | 1.44 | 31.5 | 1.240 | 44.0 | 1.73 | 25.4 | 1.00 | 22.5 | 0.89 | 6.5 | 0.26 |
|                            | 1/2"      | PBV-2-S-08G-MM-A | 3.62 | 10.3    | 0.41 | 57.8 | 2.27 | 45.3 | 1.78 | 59.0 | 2.32 | 36.0 | 1.417 | 51.6 | 2.03 | 35.0 | 1.38 | 24.5 | 0.96 | 6.5 | 0.26 |
|                            | 3/4"      | PBV-2-S-12G-MM-A | 3.62 | 10.3    | 0.41 | 57.8 | 2.27 | 45.3 | 1.78 | 59.0 | 2.32 | 36.0 | 1.417 | 51.6 | 2.03 | 35.0 | 1.38 | 24.5 | 0.96 | 6.5 | 0.26 |
| NPT Male /<br>NPT Female   | 1/8"      | PBV-2-S-02-MF-A  | 0.70 | 4.8     | 0.19 | 40.8 | 1.60 | 29.5 | 1.16 | 39.5 | 1.56 | 24.5 | 0.965 | 44.0 | 1.73 | 25.4 | 1.00 | 22.5 | 0.89 | 6.5 | 0.26 |
|                            | 1/4"      | PBV-2-S-04-MF-A  | 0.70 | 4.8     | 0.19 | 45.3 | 1.78 | 35.5 | 1.40 | 39.5 | 1.56 | 27.5 | 1.083 | 44.0 | 1.73 | 25.4 | 1.00 | 22.5 | 0.89 | 6.5 | 0.26 |
|                            | 3/8"      | PBV-2-S-06-MF-A  | 0.70 | 4.8     | 0.19 | 45.3 | 1.78 | 35.5 | 1.40 | 39.5 | 1.56 | 27.5 | 1.083 | 44.0 | 1.73 | 25.4 | 1.00 | 22.5 | 0.89 | 6.5 | 0.26 |
|                            | 1/2"      | PBV-2-S-08-MF-A  | 3.62 | 10.3    | 0.41 | 55.3 | 2.18 | 46.3 | 1.82 | 59.0 | 2.32 | 37.0 | 1.457 | 51.6 | 2.03 | 35.0 | 1.38 | 24.5 | 0.96 | 6.5 | 0.26 |
|                            | 3/4"      | PBV-2-S-12-MF-A  | 3.62 | 10.3    | 0.41 | 57.3 | 2.25 | 48.6 | 1.91 | 59.0 | 2.32 | 40.0 | 1.575 | 53.6 | 2.11 | 35.0 | 1.38 | 24.5 | 0.96 | 6.5 | 0.26 |
| BSPT Male /<br>BSPT Female | 1/8"      | PBV-2-S-02R-MF-A | 0.70 | 4.8     | 0.19 | 40.8 | 1.60 | 29.5 | 1.16 | 39.5 | 1.56 | 24.5 | 0.965 | 44.0 | 1.73 | 25.4 | 1.00 | 22.5 | 0.89 | 6.5 | 0.26 |
|                            | 1/4"      | PBV-2-S-04R-MF-A | 0.70 | 4.8     | 0.19 | 45.3 | 1.78 | 35.5 | 1.40 | 39.5 | 1.56 | 27.5 | 1.083 | 44.0 | 1.73 | 25.4 | 1.00 | 22.5 | 0.89 | 6.5 | 0.26 |
|                            | 3/8"      | PBV-2-S-06R-MF-A | 0.70 | 4.8     | 0.19 | 45.3 | 1.78 | 35.5 | 1.40 | 39.5 | 1.56 | 27.5 | 1.083 | 44.0 | 1.73 | 25.4 | 1.00 | 22.5 | 0.89 | 6.5 | 0.26 |
|                            | 1/2"      | PBV-2-S-08R-MF-A | 3.62 | 10.3    | 0.41 | 55.3 | 2.18 | 46.3 | 1.82 | 59.0 | 2.32 | 37.0 | 1.457 | 51.6 | 2.03 | 35.0 | 1.38 | 24.5 | 0.96 | 6.5 | 0.26 |
|                            | 3/4"      | PBV-2-S-12R-MF-A | 3.62 | 10.3    | 0.41 | 57.3 | 2.25 | 48.6 | 1.91 | 59.0 | 2.32 | 40.0 | 1.575 | 53.6 | 2.11 | 35.0 | 1.38 | 24.5 | 0.96 | 6.5 | 0.26 |
| Metric<br>Thread           | M20 x 1.5 | PBV-2-S-20M-MM-A | 3.62 | 10.3    | 0.41 | 58.8 | 2.31 | 46.3 | 1.82 | 59.0 | 2.32 | 37.0 | 1.457 | 51.6 | 2.03 | 35.0 | 1.38 | 24.5 | 0.96 | 6.5 | 0.26 |
|                            | M20 x 1.5 | PBV-2-S-20M-MF-A | 3.62 | 10.3    | 0.41 | 55.3 | 2.18 | 46.3 | 1.82 | 59.0 | 2.32 | 37.0 | 1.457 | 51.6 | 2.03 | 35.0 | 1.38 | 24.5 | 0.96 | 6.5 | 0.26 |

Dimensions are for reference only and subject to change. All sizes in mm unless specified otherwise

## Design and Materials of 3-Way Ball Valves 300 Series



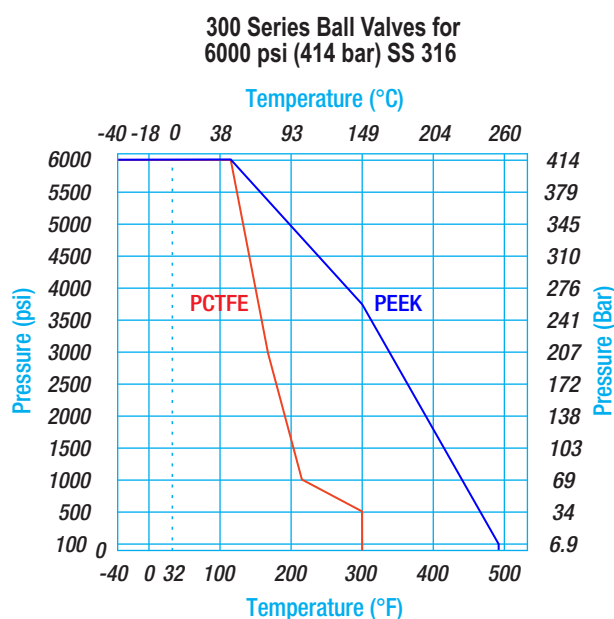
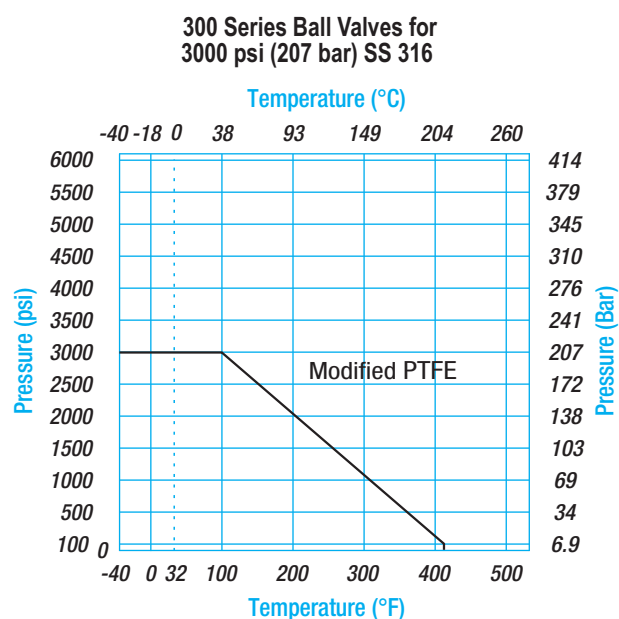
## End Connections and Sizes of 3-Way Ball Valves 300 Series for Pressure 6000 psi (414 bar)



| End Connection                            |           | Part Number    | Cv   | Orifice |      | A    |      | B    |      | C    |      | D    |       | E    |      | F    |      | G    |      | J   |      |
|-------------------------------------------|-----------|----------------|------|---------|------|------|------|------|------|------|------|------|-------|------|------|------|------|------|------|-----|------|
| Type                                      | Size      |                |      | mm      | inch | mm   | inch | mm   | inch | mm   | inch | mm   | inch  | mm   | inch | mm   | inch | mm   | inch | mm  | inch |
| <b>PANAM®</b><br>Tube Fitting<br>(Inch)   | 1/16"     | PBV-3-S-01-OD  | 0.06 | 1.3     | 0.05 | 68.0 | 2.68 | 34.0 | 1.34 | 39.5 | 1.56 | 27.0 | 1.063 | 44.0 | 1.73 | 25.4 | 1.00 | 22.5 | 0.89 | 6.5 | 0.26 |
|                                           | 1/8"      | PBV-3-S-02-OD  | 0.21 | 2.4     | 0.09 | 72.6 | 2.86 | 36.3 | 1.43 | 39.5 | 1.56 | 29.3 | 1.154 | 44.0 | 1.73 | 25.4 | 1.00 | 22.5 | 0.89 | 6.5 | 0.26 |
|                                           | 1/4"      | PBV-3-S-04-OD  | 0.70 | 4.8     | 0.19 | 74.4 | 2.93 | 37.2 | 1.46 | 39.5 | 1.56 | 31.2 | 1.228 | 44.0 | 1.73 | 25.4 | 1.00 | 22.5 | 0.89 | 6.5 | 0.26 |
|                                           | 3/8"      | PBV-3-S-06-OD  | 0.70 | 6.4     | 0.25 | 75.7 | 2.98 | 37.8 | 1.49 | 39.5 | 1.56 | 31.9 | 1.256 | 44.0 | 1.73 | 25.4 | 1.00 | 22.5 | 0.89 | 6.5 | 0.26 |
|                                           | 1/2"      | PBV-3-S-08-OD  | 3.62 | 10.3    | 0.41 | 99.0 | 3.90 | 49.5 | 1.95 | 59.0 | 2.32 | 40.3 | 1.587 | 51.6 | 2.03 | 35.0 | 1.38 | 24.5 | 0.96 | 6.5 | 0.26 |
|                                           | 3/4"      | PBV-3-S-12-OD  | 3.62 | 10.3    | 0.41 | 98.4 | 3.87 | 49.2 | 1.94 | 59.0 | 2.32 | 40.0 | 1.575 | 51.6 | 2.03 | 35.0 | 1.38 | 24.5 | 0.96 | 6.5 | 0.26 |
| <b>PANAM®</b><br>Tube Fitting<br>(Metric) | 3mm       | PBV-3-S-M03-OD | 0.21 | 2.4     | 0.09 | 72.6 | 2.86 | 36.3 | 1.43 | 39.5 | 1.56 | 31.2 | 1.228 | 44.0 | 1.73 | 25.4 | 1.00 | 22.5 | 0.89 | 6.5 | 0.26 |
|                                           | 6mm       | PBV-3-S-M06-OD | 0.70 | 4.8     | 0.19 | 74.4 | 2.93 | 37.2 | 1.46 | 39.5 | 1.56 | 31.2 | 1.228 | 44.0 | 1.73 | 25.4 | 1.00 | 22.5 | 0.89 | 6.5 | 0.26 |
|                                           | 8mm       | PBV-3-S-M08-OD | 0.70 | 4.8     | 0.25 | 77.6 | 3.06 | 38.8 | 1.53 | 39.5 | 1.56 | 32.5 | 1.28  | 44.0 | 1.73 | 25.4 | 1.00 | 22.5 | 0.89 | 6.5 | 0.26 |
|                                           | 10mm      | PBV-3-S-M10-OD | 0.70 | 4.8     | 0.25 | 75.7 | 2.98 | 37.9 | 1.49 | 39.5 | 1.56 | 31.9 | 1.256 | 44.0 | 1.73 | 25.4 | 1.00 | 22.5 | 0.89 | 6.5 | 0.26 |
|                                           | 12mm      | PBV-3-S-M12-OD | 3.62 | 10.3    | 0.41 | 99.0 | 3.90 | 49.5 | 1.95 | 59.0 | 2.32 | 40.3 | 1.587 | 51.6 | 2.03 | 35.0 | 1.38 | 24.5 | 0.96 | 6.5 | 0.26 |
|                                           | 14mm      | PBV-3-S-M14-OD | 3.62 | 10.3    | 0.41 | 99.0 | 3.90 | 49.5 | 1.95 | 59.0 | 2.32 | 40.3 | 1.587 | 51.6 | 2.03 | 35.0 | 1.38 | 24.5 | 0.96 | 6.5 | 0.26 |
|                                           | 16mm      | PBV-3-S-M16-OD | 3.62 | 10.3    | 0.41 | 98.4 | 3.87 | 49.2 | 1.94 | 59.0 | 2.32 | 40.0 | 1.575 | 51.6 | 2.03 | 35.0 | 1.38 | 24.5 | 0.96 | 6.5 | 0.26 |
|                                           | 18mm      | PBV-3-S-M18-OD | 3.62 | 10.3    | 0.41 | 98.4 | 3.87 | 49.2 | 1.94 | 59.0 | 2.32 | 40.0 | 1.575 | 51.6 | 2.03 | 35.0 | 1.38 | 24.5 | 0.96 | 6.5 | 0.26 |
| NPT<br>Female                             | 1/8"      | PBV-3-S-02-FF  | 0.70 | 4.8     | 0.19 | 54.0 | 2.13 | 27.0 | 1.06 | 39.5 | 1.56 | 24.5 | 0.965 | 44.0 | 1.73 | 25.4 | 1.00 | 22.5 | 0.89 | 6.5 | 0.26 |
|                                           | 1/4"      | PBV-3-S-04-FF  | 0.70 | 4.8     | 0.25 | 60.0 | 2.36 | 30.0 | 1.18 | 39.5 | 1.56 | 27.5 | 1.083 | 44.0 | 1.73 | 25.4 | 1.00 | 22.5 | 0.89 | 6.5 | 0.26 |
|                                           | 3/8"      | PBV-3-S-06-FF  | 0.70 | 4.8     | 0.25 | 60.0 | 2.36 | 30.0 | 1.18 | 39.5 | 1.56 | 27.5 | 1.083 | 44.0 | 1.73 | 25.4 | 1.00 | 22.5 | 0.89 | 6.5 | 0.26 |
|                                           | 1/2"      | PBV-3-S-08-FF  | 3.62 | 10.3    | 0.41 | 78.5 | 3.09 | 39.3 | 1.55 | 59.0 | 2.32 | 35.0 | 1.378 | 51.6 | 2.03 | 35.0 | 1.38 | 24.5 | 0.96 | 6.5 | 0.26 |
|                                           | 3/4"      | PBV-3-S-12-FF  | 3.62 | 10.3    | 0.41 | 82.5 | 3.25 | 41.3 | 1.62 | 59.0 | 2.32 | 35.0 | 1.378 | 53.6 | 2.11 | 40.0 | 1.57 | 24.5 | 0.96 | 6.5 | 0.26 |
| BSPT<br>Female                            | 1/8"      | PBV-3-S-02R-FF | 0.70 | 4.8     | 0.19 | 54.0 | 2.13 | 27.0 | 1.06 | 39.5 | 1.56 | 24.5 | 0.965 | 44.0 | 1.73 | 25.4 | 1.00 | 22.5 | 0.89 | 6.5 | 0.26 |
|                                           | 1/4"      | PBV-3-S-04R-FF | 0.70 | 4.8     | 0.25 | 60.0 | 2.36 | 30.0 | 1.18 | 39.5 | 1.56 | 27.5 | 1.083 | 44.0 | 1.73 | 25.4 | 1.00 | 22.5 | 0.89 | 6.5 | 0.26 |
|                                           | 3/8"      | PBV-3-S-06R-FF | 0.70 | 4.8     | 0.25 | 60.0 | 2.36 | 30.0 | 1.18 | 39.5 | 1.56 | 27.5 | 1.083 | 44.0 | 1.73 | 25.4 | 1.00 | 22.5 | 0.89 | 6.5 | 0.26 |
|                                           | 1/2"      | PBV-3-S-08R-FF | 3.62 | 10.3    | 0.41 | 78.5 | 3.09 | 39.3 | 1.55 | 59.0 | 2.32 | 35.0 | 1.378 | 51.6 | 2.03 | 35.0 | 1.38 | 24.5 | 0.96 | 6.5 | 0.26 |
|                                           | 3/4"      | PBV-3-S-12R-FF | 3.62 | 10.3    | 0.41 | 82.5 | 3.25 | 41.3 | 1.62 | 59.0 | 2.32 | 35.0 | 1.378 | 53.6 | 2.11 | 40.0 | 1.57 | 24.5 | 0.96 | 6.5 | 0.26 |
| BSPP<br>Female                            | 1/8"      | PBV-3-S-02G-FF | 0.70 | 4.8     | 0.19 | 54.0 | 2.13 | 27.0 | 1.06 | 39.5 | 1.56 | 24.5 | 0.965 | 44.0 | 1.73 | 25.4 | 1.00 | 22.5 | 0.89 | 6.5 | 0.26 |
|                                           | 1/4"      | PBV-3-S-04G-FF | 0.70 | 4.8     | 0.25 | 60.0 | 2.36 | 30.0 | 1.18 | 39.5 | 1.56 | 27.5 | 1.083 | 44.0 | 1.73 | 25.4 | 1.00 | 22.5 | 0.89 | 6.5 | 0.26 |
|                                           | 3/8"      | PBV-3-S-06G-FF | 0.70 | 4.8     | 0.25 | 60.0 | 2.36 | 30.0 | 1.18 | 39.5 | 1.56 | 27.5 | 1.083 | 44.0 | 1.73 | 25.4 | 1.00 | 22.5 | 0.89 | 6.5 | 0.26 |
|                                           | 1/2"      | PBV-3-S-08G-FF | 3.62 | 10.3    | 0.41 | 78.5 | 3.09 | 39.3 | 1.55 | 59.0 | 2.32 | 35.0 | 1.378 | 51.6 | 2.03 | 35.0 | 1.38 | 24.5 | 0.96 | 6.5 | 0.26 |
|                                           | 3/4"      | PBV-3-S-12G-FF | 3.62 | 10.3    | 0.41 | 82.5 | 3.25 | 41.3 | 1.62 | 59.0 | 2.32 | 35.0 | 1.378 | 53.6 | 2.11 | 40.0 | 1.57 | 24.5 | 0.96 | 6.5 | 0.26 |
| Metric<br>Thread                          | M20 x 1,5 | PBV-3-S-20M-FF | 3.62 | 10.3    | 0.41 | 78.5 | 3.09 | 39.3 | 1.55 | 59.0 | 2.32 | 35.0 | 1.378 | 51.6 | 2.03 | 35.0 | 1.38 | 24.5 | 0.96 | 6.5 | 0.26 |
|                                           | M20 x 1,5 | PBV-3-S-20M-MM | 3.62 | 10.3    | 0.41 | 92.5 | 3.64 | 46.3 | 1.82 | 59.0 | 2.32 | 37.0 | 1.457 | 51.6 | 2.03 | 35.0 | 1.38 | 24.5 | 0.96 | 6.5 | 0.26 |

Dimensions are for reference only and subject to change. All sizes in mm unless specified otherwise

## Pressure v/s Temperature for Ball Valves 300 Series



## Sealing Material Characteristics

### Modified PTFE (Polytetrafluoroethylene)

- PTFE is an excellent material for applications in clean environments.
- It is highly resistant to the chemical effects of a large number of organic and inorganic reagents and solvents.
- It has a low coefficient of deformation, increased strength and abrasion resistance, and a low friction coefficient as compared with conventional PTFE.

### PCTFE (Polychlorotetrafluoroethylene)

- High chemical resistance and increased temperature working range.
- Very low moisture absorption, resistance to hydrolysis and hot steam, ability to maintain strength and flexibility at low temperatures (range of operating temperatures from -195°C to +150°C (from -319°F to + 302°F).

### PEEK (Polyetheretherketone)

- PEEK is a semi-crystalline polymer with high temperature resistance, high mechanical strength and chemical resistance.
- Excellent material for high pressure and temperature. Resistant to chemically aggressive environments and radiation.
- Withstands temperatures up to + 260°C (up to + 500°F), boiling water or steam maintaining its physical properties.

## Seal Adjustment

Since **PANAM**® Ball Valves are designed for applications in various processes, the seals may be subjected to the adjustment. Factory settings are at 69 bar (1000 psi).

The adjustment procedure is stated in installation and operating procedures for **PANAM**® Ball Valves of each series.

## Testing

Every **PANAM**® valve is hydrostatically tested in accordance with MSS-SP-99. The procedure includes hydrostatic testing of the valve body and stem seal leakage check.

The hydrostatic test is carried out using pure water or other liquids with the same or lower viscosity at pressure 1.5 times higher than maximum working pressure. Pressure leakage test of the seat is carried out at pressure 1.1 times higher than maximum working pressure. The seat and stem seal of every valve is hydraulically tested in nitrogen at 6.9 MPa (1000 psi). Upon request, additional tests can be carried out, e.g. vibration testing, temperature test, leakage test in helium. Cleaning and packaging.

## Cleaning and Packaging

All **PANAM**® Ball Valves of 300 series are cleaned in accordance with Standard Procedure of **Panam Engineers Ltd.** Additionally, a special cleaning of valves from lubrication, if such valves are used in oxygen medium, with subsequent packaging according to **Panam Engineers Ltd.** Special Cleaning and Packaging Procedure.

Note: For valves cleaned of lubricant, the torque is substantially increases.

## Ordering Information

| PBV-2-S-M10-OD-SG                                                                                                                                            |             |                                |                                                                                                                  |                                                                                                                                                                                                                                                       |    |   |   |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|--------------------------------|------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|---|---|---|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| P                                                                                                                                                            | BV          | 2                              | S                                                                                                                | M10                                                                                                                                                                                                                                                   | OD | - | - | - | SG                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>PANAM</b> ®                                                                                                                                               | Ball Valves | 2-2 Way Valve<br>3-3 Way Valve | Body Material<br>S - Stainless Steel 316 SS<br>C - Carbon Steel A 105<br>M - Monel<br>H - Hastelloy<br>B - Brass | Connection Size<br>01 - 1/16<br>02 - 1/8"<br>04 - 1/4"<br>06 - 3/8"<br>08 - 1/2"<br>12 - 3/4"<br>20M - M20 x 1.5<br>M03 - OD 3mm<br>M06 - OD 6mm<br>M08 - OD 8mm<br>M10 - OD 10mm<br>M12 - OD 12mm<br>M14 - OD 14mm<br>M16 - OD 16mm<br>M18 - OD 18mm |    |   |   |   | Options<br>SG - NACE<br>MR-01-75<br>OXY - Cleaning for Oxygen Application<br><br>Configuration<br>- - Straight<br>A - Angular<br>T - Tee Type<br><br>Handle<br>- - Black<br>R - Red<br>B - Blue<br>Y - Yellow<br>G - Green<br>AH - Aluminium<br><br>Seat Material<br>- - Delrin<br>PK - PEEK<br>PCTFE - PCTFE<br>PTFE - Modified PTFE<br><br>End Connections<br>OD - <b>PANAM</b> ® Tube Fittings<br>FF - Female In and Out<br>MF - Male / Female<br>MM - Male In and Out |
| <b>Thread Type*</b><br>- - NPT Threads<br>R - ISO Tapered<br>G - ISO Parallel<br>M - Metric<br>*Other types, sizes and materials are available upon request. |             |                                |                                                                                                                  |                                                                                                                                                                                                                                                       |    |   |   |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

### Handle Options



- - Black Handle



R - Red Handle



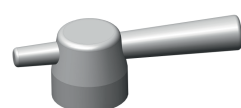
B - Blue Handle



Y - Yellow Handle



G - Green Handle



AH - Aluminum Handle

\* Black nylon handle with SS316 insert is a standard handle



## Ordering Information for Spares

### Repair kit for ball valve

Repair kit – SK, includes seats, stem seals, body seals

Repair kit – SBK, includes seals and a ball.

Driver screw is included in repair kit H

### PSP-300-SK-2-M10-PK

| P             | SP                              | 300                       | SK                                                                        | 2                                                            | M10                                                                                                                                                                                                                                                           | -                                                                                              | PK                                                                                       |
|---------------|---------------------------------|---------------------------|---------------------------------------------------------------------------|--------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
| <b>PANAM®</b> | <b>Spare Part</b><br>(Запчасть) | <b>Ball Valves Series</b> | <b>Kit type</b><br>H - Handle<br>SK - Seal Kit<br>SBK - Seal Kit + A Ball | <b>Configuration</b><br>- - Handle<br>2 - 2 way<br>3 - 3 way | <b>Connection Size</b><br>01 - 1/16"<br>02 - 1/8"<br>04 - 1/4"<br>06 - 3/8"<br>08 - 1/2"<br>12 - 3/4"<br>20M - M20 x 1.5<br>M03 - OD 3mm<br>M06 - OD 6mm<br>M08 - OD 8mm<br>M10 - OD 10mm<br>M12 - OD 12mm<br>M14 - OD 14mm<br>M16 - OD 16mm<br>M18 - OD 18mm | <b>Handle</b><br>- - Black<br>R - Red<br>B - Blue<br>Y - Yellow<br>G - Green<br>AH - Aluminium | <b>Seat Material</b><br>- - Delrin<br>PK - PEEK<br>PCTFE - PCTFE<br>PTFE - Modified PTFE |

PSP-300-H-M10-AH\*

\* Example of ordering an aluminum handle

### Handle Options



\* Black nylon handle with SS316 insert is a standard handle

## Safety

For safe operation of **PANAM®** Ball Valves shall be adequately selected. When choosing materials operating conditions, compatibility of materials, purpose and product specifications shall be considered. Installation and maintenance of products shall be carried out by qualified personnel.

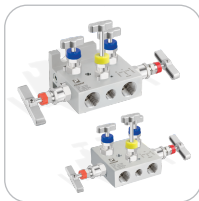
Wrong selection, poor installation or incorrect operation and maintenance may result in accident, cause personal injury and result in material damage.

## Notes

[illegible]

## Notes

## Other Products



2-3-5 VALVE MANIFOLDS



BELLOW SEAL VALVES



GAUGE ROOT VALVES



NEEDLE VALVES



HP NEEDLE VALVES



BALL VALVES



HP BALL VALVES



DOUBLE BLOCK & BLEED VALVES



MONO FLANGE VALVES



CHECK VALVES



RELIEF VALVES



FILTERS



TUBE FITTINGS



PIPE FITTINGS



HP PIPE FITTINGS



SWIVEL FITTINGS



JIC FITTINGS



WELD FITTINGS



HIGH PRESSURE FITTINGS



GAUGE SAVERS



PRESSURE GAUGES



TEMPERATURE GAUGES



PRESSURE TRANSMITTERS



TEMPERATURE TRANSMITTERS



PRESSURE REGULATORS



CONDENSATE POTS



AIR HEADERS



GRAB SAMPLING SYSTEM



PRE-FABRICATED HOOK UPS



FLANGE ADAPTERS



SWIVEL GAUGE ADAPTERS



THERMOWELLS



BLEED PLUGS



DIE-ELECTRIC FITTINGS



TUBING



## ***PANAM ENGINEERS LTD.***

501, Jaisingh Business Center, Parsiwada, Sahar Road, Andheri (East),  
Mumbai - 400 099. BHARAT • Tel.: +91 22 4146 9000 / 4146 9001 / 4146 9002 / 4146 9003 / 4146 9004.

Email: [sales@panam.in](mailto:sales@panam.in) / [sales@panamengineers.com](mailto:sales@panamengineers.com)

Website: [www.panam.in](http://www.panam.in) / [www.panamengineers.com](http://www.panamengineers.com)