

100 Series Brass Horizontal Float Valve Technical Information



The connection you can trust.

HORIZONTAL FLOAT VALVES

Based on a simple yet effective operating principle, Philmac horizontal float valves are quick and easy to install ensuring a constant water level is maintained.

Philmac's versatile valve range is designed to handle the most demanding domestic, commercial and plumbing applications.

The high quality brass or stainless steel valves and the robust plastic materials are non-toxic, taint free and suitable for drinking water. They can also be used in situations where the tank water is subsequently heated to a maximum of 95° Celsius.

Designed to make the job at hand so much easier and backed by a full range of spare parts, these valves will deliver years of reliable operation.

APPLICATIONS

Agriculture: Stock troughs and water tanks.

Plumbing: Hot and cold water storage tanks for domestic and industrial applications

Industrial: Dishwashers and hospital sterilisers

Commercial: Air-conditioning units.

BENEFITS

Fast and Easy Installation

- **Choice of Threads:** Philmac offers a range of parallel (fastening) threads or tapered (sealing) threads which makes them suited to a variety of installations. This includes troughs/tanks with pre-fitted tapered inlets or tanks where only a pre-drilled hole exists.
- **Easy Disassembly:** The valves have been designed for easy replacement of the rubber seal. Simply remove the pivot pin, disconnect the lever assembly and remove the body cap (where fitted) to allow the piston to slide out and access the seal.
- **Minimum Space Required for Installation:** Based on a compact body design and a range of lever lengths in the ½" range makes them perfect for tight applications such as industrial dishwashers.
- **BSP Inlet Threads:** The Plumbing and Irrigation sectors use British Standard Pipe (BSP) threads as a standard. Philmac also uses these thread types across the valve range to ensure compatibility with other threaded fittings and make installation easy.

Complete Security

- **Corrosion Resistant:**
 - Brass Valve** – The bodies, plungers, lever assemblies, backnuts, collars and pivots pin are manufactured from DZR brass. With a stainless steel seat as standard it means years of hassle free operation.
 - Plastic Valve** – The bodies, seats, backnuts and plungers are manufactured from plastic. The lever assemblies and pivot pins are manufactured from DZR brass ensuring longevity of the valve.
 - Stainless Steel** – All components, except the seal, are manufactured from stainless steel for high chemical resistance.
- **Reliable Operation:** High quality engineered components means years of reliable operation.
- **Positive Shut-Off:** The action between the lever assembly and plunger assembly ensures the plunger assembly provides a complete seal against the water inlet and prevents unwanted loss of water.
- **Approvals:** All valves comply with Australian/New Zealand Standard 4020 which means the valves are suitable for use with drinking water.

High Performance

- **Manufactured from DZR brass:** Philmac brass float valves are manufactured from dezincification resistant (DZR) brass which means the brass is resistant to corrosion involving the loss of zinc leaving a residue of spongy or porous copper.
- **Manufactured from engineering grade thermoplastic materials:** Philmac plastic float valves are Australian made and manufactured from lightweight high performance thermoplastic materials which have excellent impact, UV and corrosion resistance. The material is non-toxic and taint free.
- **High pressure shutoff:** Horizontal float valves are rated to a pressure of 1400 kPa (200 psi) (static shutoff). This is based on using the standard lever arm and recommended float (ball) size.

Complete Coverage

- **Wide range:** The range of float valves is comprehensive and includes sizes from 3/8" to 2" (DN10 to DN50). In addition the ½" range is offered with tapered or parallel thread configurations, and lever lengths.



STANDARDS & TESTS

Philmac's range of horizontal float valves are designed to comply with the following standards and undertake a range of tests to ensure they comply with these standards.

Standards

AS1910: Water Supply – Float control valves for use in hot and cold water.

AS/NZ 4020: Testing of products for use in contact with drinking water.

AS1722.1: Pipe threads of Whitworth form part 1: sealing pipe threads.

AS1722.2: Pipe threads of Whitworth form part 2: fastening pipe threads.

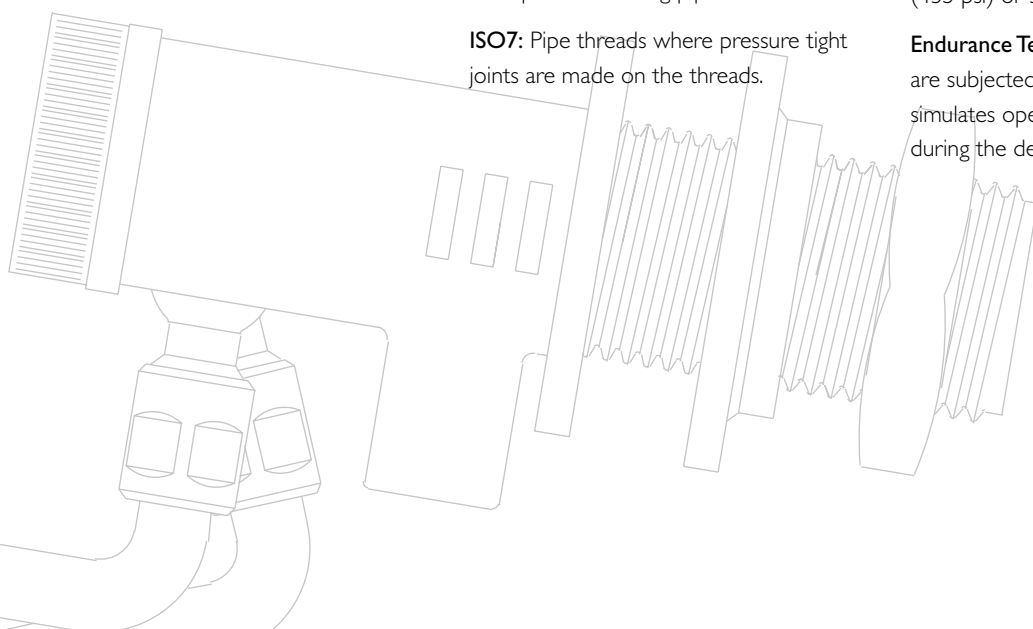
ISO7: Pipe threads where pressure tight joints are made on the threads.

Tests

Shut Off Test: Valves are tested for shut off against a hydrostatic water pressure of 2000 kPa (290 psi) or 20 bar.

Strength Test: Valves are tested for adequate strength for their intended application. This includes testing at the maximum recommended operating temperature and a pressure of 3000 kPa (435 psi) or 30 bar.

Endurance Test: Operating mechanisms are subjected to 50,000 cycles. This simulates opening and closing operations during the design service life of the valve.



HORIZONTAL FLOAT VALVE OPERATION & INSTALLATION INSTRUCTIONS

The Philmac horizontal float valves operate by opening and closing a plunger against a seat through the action of a lever arm attached to a float. The lever arm is interconnected to the plunger via a cam. As the water level drops, the float and lever arm move in a downward direction allowing the plunger to move away from the seat, which opens the valve. When the water level rises, the float and lever arm move in an upward direction and the plunger moves towards the seat until it sits firmly against the seat and shuts the valve off.

Tapered Thread



1. Apply PTFE tape or approved sealant to the thread ensuring a sufficient amount is applied to guarantee a watertight seal.



2. Screw the valve into the female thread by hand until firm*.



3. Using a pipe wrench or multigrips on the body** of the valve, screw it into the female thread until tight. Where necessary ensure the female thread is held stationary to avoid it from moving.

Parallel Thread



1. Remove the backnut and slide the thread through the appropriate sized hole.



2. Where using the stem sleeve to fit the valve into $\frac{3}{4}$ " holes, ensure it is properly located on the valve side of the installation to prevent the valve moving.



3. Refit the backnut and tighten with a spanner. The valve body** can be held in place with a spanner, multi-grips or equivalent.

Adjusting Lever Arm



1. Where necessary bend the lever arm to adjust the water level. This can be done by removing the lever arm assembly by first straightening the tabs on the end of the pivot pin with a pair of pliers then slide it out.



2. By using a pair of multi-grips or equivalent the lever can then be bent to the necessary angle.



3. Adjust the lever arm and then refit. Once the correct lever arm angle is achieved ensure the pivot pin tabs are flared outward by using a small screwdriver.

* For underwater installations it may be necessary to remove the lever arm assembly to prevent it from fouling on the bottom of the tank/trough

**Take care when holding the plastic body that excessive pressure is not applied or the body may be damaged

SYSTEM DESIGN CONSIDERATIONS

Threads: All threads are BSP (Whitworth form).

Maximum Operating Pressure: 1400 kPa (200 psi) or 14 bar at 20° C.

Operating temperature: Connection is cold water (less than 20°C) rated. However the brass and stainless steel valves can be used in an environment where the water is subsequently heated to 95° C in a tank. In these cases a hot water rated float must be used.

Floats (balls)

Plastic – cold water rated

Plastic – hot water rated (95°C)

Copper – cold water rated

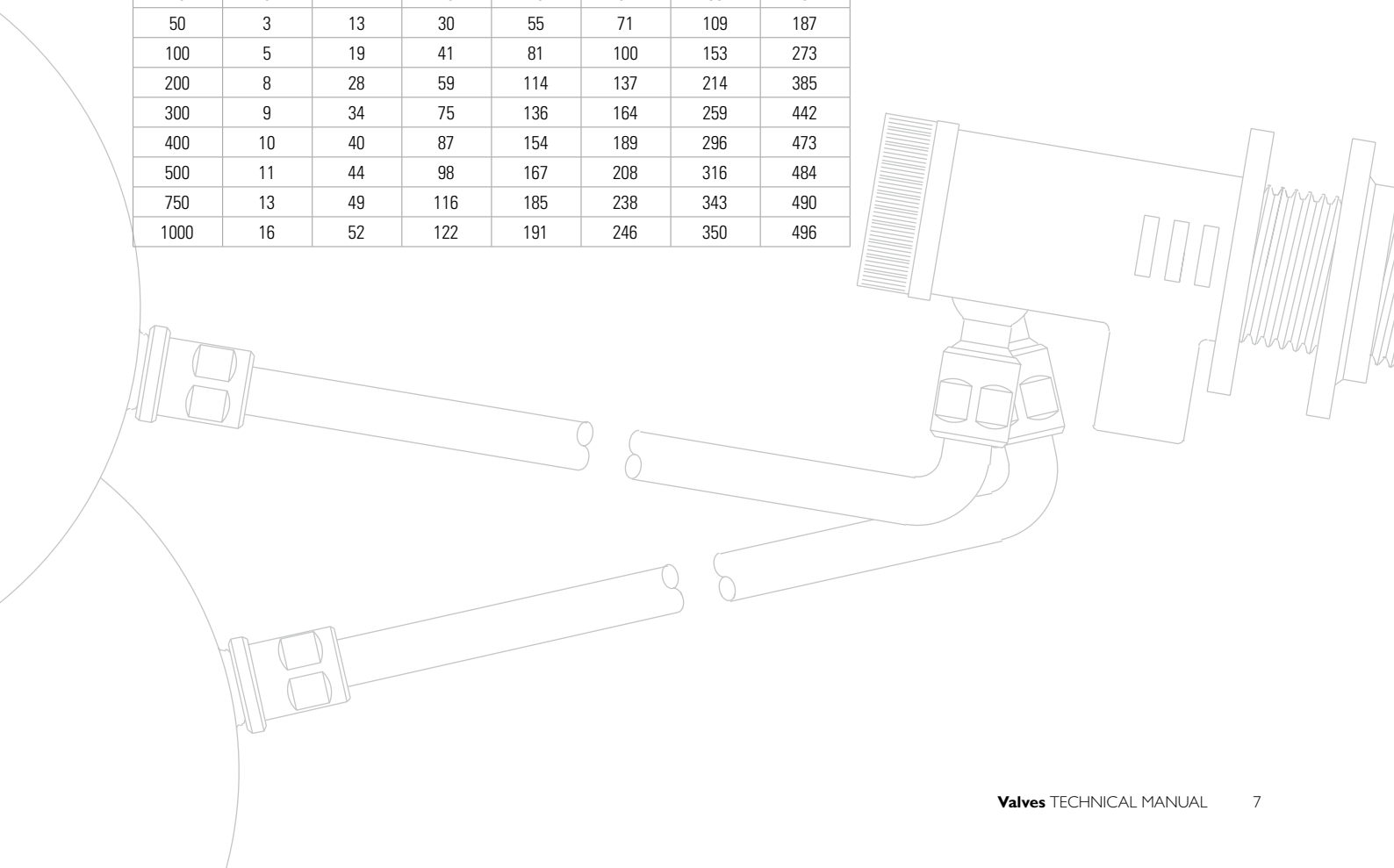
Copper – hot water rated (95°C)

Weathering: All plastic materials used contain pigments to provide excellent protection against degradation from ultra-violet (UV) radiation. However long-term continuous exposure to UV is not recommended and plastic components should ideally be shielded from direct sunlight. Brass components are UV resistant.

Air Gap: When connecting to drinking water the installation should comply with the relevant air gap standards to prevent back siphonage.

Flow Rates (L/min)

| Inlet Pressure (kPa) | Inlet Size | | | | | | |
|----------------------|-------------|-------------|-------------|-----------|---------------|---------------|-----------|
| | 3/8" (DN10) | 1/2" (DN15) | 3/4" (DN20) | 1" (DN25) | 1 1/4" (DN32) | 1 1/2" (DN40) | 2" (DN50) |
| 10 | 1 | 5 | 13 | 23 | 27 | 41 | 65 |
| 20 | 2 | 7 | 19 | 33 | 40 | 65 | 83 |
| 30 | 2 | 10 | 23 | 38 | 51 | 81 | 96 |
| 40 | 3 | 12 | 25 | 48 | 62 | 96 | 162 |
| 50 | 3 | 13 | 30 | 55 | 71 | 109 | 187 |
| 100 | 5 | 19 | 41 | 81 | 100 | 153 | 273 |
| 200 | 8 | 28 | 59 | 114 | 137 | 214 | 385 |
| 300 | 9 | 34 | 75 | 136 | 164 | 259 | 442 |
| 400 | 10 | 40 | 87 | 154 | 189 | 296 | 473 |
| 500 | 11 | 44 | 98 | 167 | 208 | 316 | 484 |
| 750 | 13 | 49 | 116 | 185 | 238 | 343 | 490 |
| 1000 | 16 | 52 | 122 | 191 | 246 | 350 | 496 |



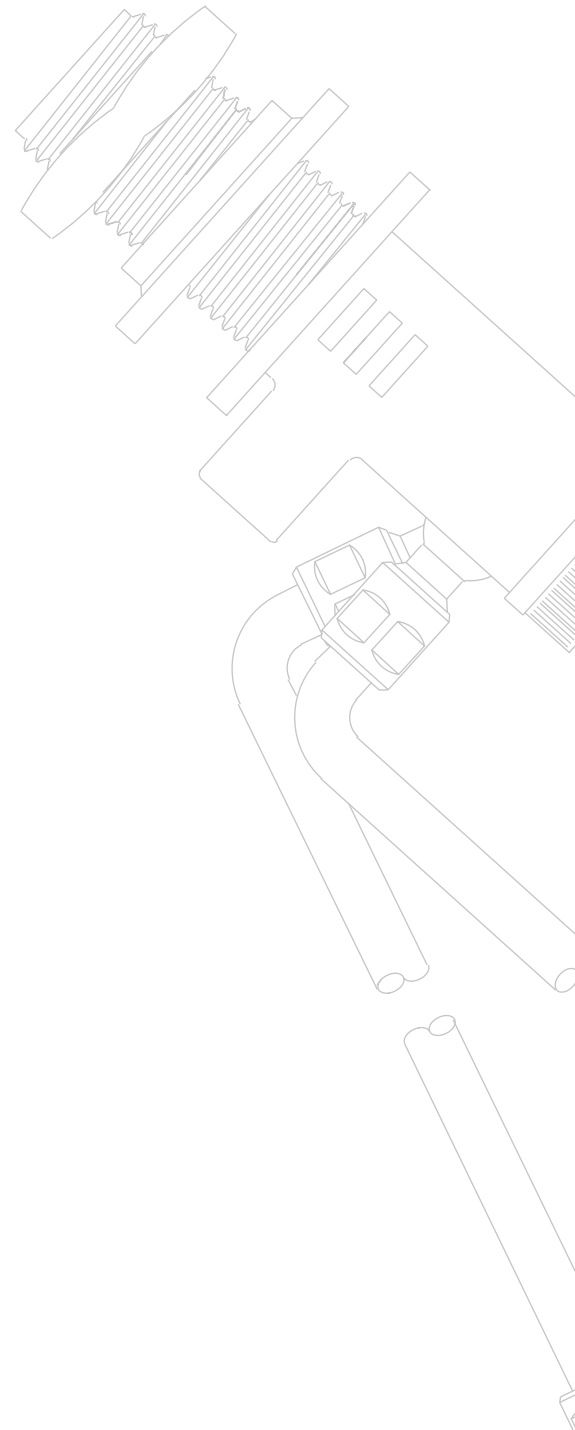
CHEMICAL RESISTANCE

Philmac's horizontal float valves are primarily designed to convey water. However there may be occasions where the water contains chemicals and/or alternative fluids that may need to be controlled. The following table is provided as a **guide only** for the compatibility of various chemicals or alternative fluids to Philmac brass and plastic horizontal float valves. The mixing together of chemicals may affect the compatibility.

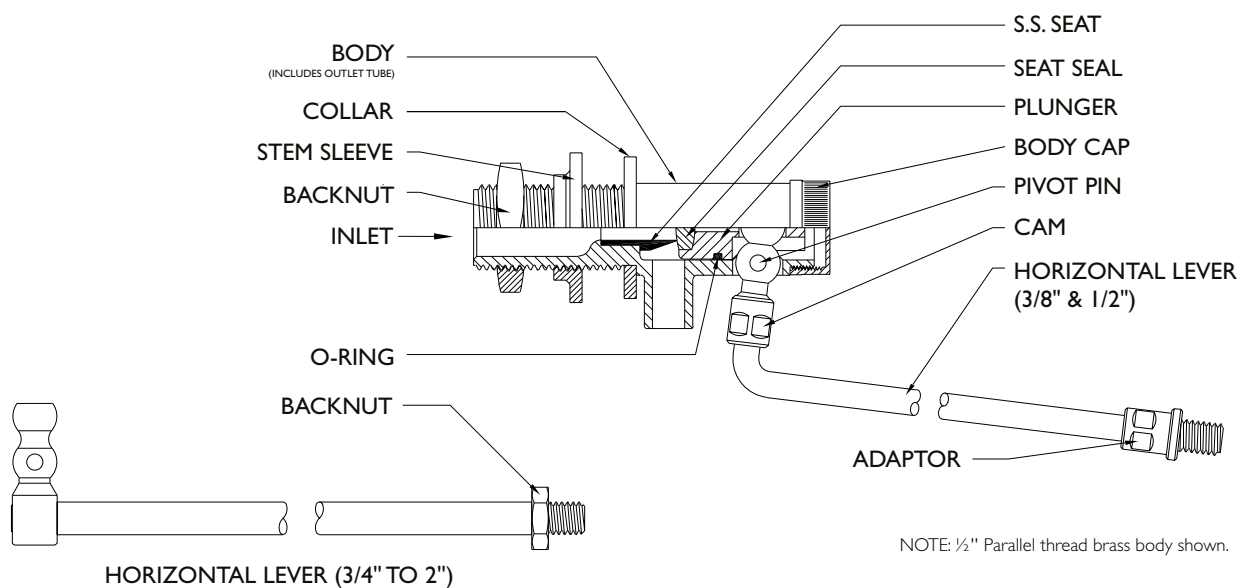
| Chemical | Compatibility | | |
|----------------------------------|-------------------|-----------------------------|---------------------|
| | Brass Float Valve | Stainless Steel Float Valve | Plastic Float Valve |
| Acetic acid (10%) | N | R | R |
| Acetic acid (50%) | N | R | N |
| Alcohol (ethanol) | N | R | N |
| Ammonium nitrate | N | R | R |
| Antifreeze | R | R | R |
| Brine | N | R | R |
| Calcium carbonate | | R | R |
| Calcium chloride | R | R | N |
| Calcium nitrate | | R | N |
| Calcium sulphate | | R | N |
| Chlorine water | N | R | N |
| Citric Acid | N | R | N |
| Copper Sulphate >5% | N | R | N |
| Diesel (fuel) | R | R | R |
| Ethyl alcohol (ethanol) | N | R | N |
| Hydrochloric acid (10%) | N | R | N |
| Hydrochloric acid (30%) | N | N | N |
| Kerosene | R | R | R |
| Lubricating oils (not synthetic) | R | R | R |
| Magnesium nitrate | | R | R |
| Magnesium sulphate | R | R | R |
| Mineral oils | R | R | R |
| Nitric acid (10%) | N | R | N |
| Nitric acid (40%) | N | R | N |
| Olive oil | | R | N |
| Orange juice | | R | R |
| Petrol | | R | R |
| Phosphoric acid (85%) | N | N | N |
| Drinking water | R | R | R |
| Potassium chloride | N | R | R |
| Potassium nitrate | R | R | R |
| Potassium sulphate | N | R | R |
| Sodium bicarbonate | N | R | R |
| Sodium hypochlorite (<10%) | N | R | N |
| Sulphuric acid (10%) | | R | N |
| Sulphuric acid (30%) | | R | N |
| Urea | | R | R |
| Zinc nitrate | | R | |
| Zinc sulphate | R | R | N |

N = Not Recommended R = Resistant Empty Cell = No data available

Note recommendations based on fluids at 20° C or less



HORIZONTAL FLOAT VALVES MATERIAL & COMPONENTS



Plastic Body with Plastic Seat

| Size | Nominal Size | Part Number | Body | Body Cap | Plunger | Seal | Collar | Back Nut | Lever Assembly |
|------|--------------|-------------|--------|----------|---------|----------------|--------------------|----------|----------------|
| 1/2" | DN15 | 90300200 | Acetal | Nylon | Acetal | Nitrile rubber | Integral with body | Acetal | DZR Brass |
| 1/2" | DN15 | 90300300 | Acetal | Nylon | Acetal | Nitrile rubber | Integral with body | Acetal | DZR Brass |
| 1/2" | DN15 | 90300400 | Acetal | Nylon | Acetal | Nitrile rubber | Integral with body | Acetal | DZR Brass |

Note: Outlet Tube is an integral part of the body

Brass Body with 316 Stainless Steel Seat

| Size | Nominal Size | Part Number | Body | Body Cap | Plunger | Seal | Collar* | Stem Sleeve** | Back Nut | Lever Assembly |
|--------|--------------|-------------|-----------|-----------|-----------|----------------|-----------|---------------|-----------|----------------|
| 3/8" | DN10 | 90300500 | DZR Brass | DZR Brass | DZR Brass | Nitrile rubber | - | - | - | DZR Brass |
| 1/2" | DN15 | 90300700 | DZR Brass | DZR Brass | DZR Brass | Nitrile rubber | - | - | - | DZR Brass |
| 1/2" | DN15 | 90301300 | DZR Brass | DZR Brass | DZR Brass | Nitrile rubber | DZR Brass | - | DZR Brass | DZR Brass |
| 1/2" | DN15 | 90301500 | DZR Brass | DZR Brass | DZR Brass | Nitrile rubber | DZR Brass | - | DZR Brass | DZR Brass |
| 1/2" | DN15 | 90302300 | DZR Brass | DZR Brass | DZR Brass | Nitrile rubber | DZR Brass | Polypropylene | DZR Brass | DZR Brass |
| 1/2" | DN15 | 90303100 | DZR Brass | DZR Brass | DZR Brass | Nitrile rubber | DZR Brass | - | DZR Brass | DZR Brass |
| 3/4" | DN20 | 90304400 | DZR Brass | DZR Brass | DZR Brass | Nitrile rubber | - | - | - | DZR Brass |
| 1" | DN25 | 90304600 | DZR Brass | DZR Brass | DZR Brass | Nitrile rubber | - | - | - | DZR Brass |
| 1 1/4" | DN32 | 90304800 | DZR Brass | DZR Brass | DZR Brass | Nitrile rubber | - | - | - | DZR Brass |
| 1 1/2" | DN40 | 90404900 | DZR Brass | DZR Brass | DZR Brass | Nitrile rubber | - | - | - | DZR Brass |
| 2" | DN50 | 90405000 | DZR Brass | DZR Brass | DZR Brass | Nitrile rubber | - | - | - | DZR Brass |

* A collar is only fitted to valves with parallel threads.

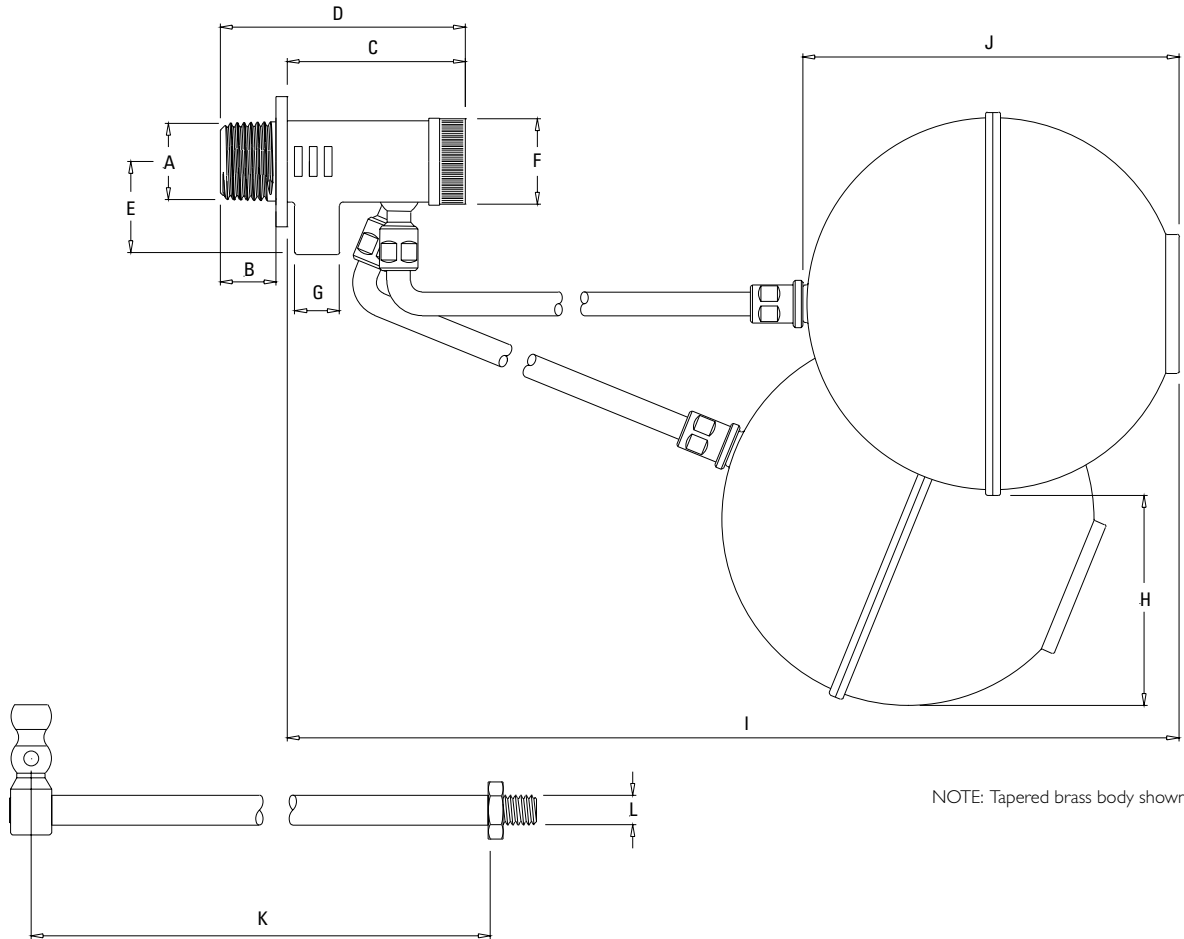
** A stem sleeve is a stepped washer which allows a 1/2" valve to be fitted to a hole that would be used by a 3/4" valve.

Stainless Steel Body with 316 Stainless Steel Seat

| Size | Nominal Size | Part Number | Body | Body Cap | Plunger | Seal | Lever Assembly |
|--------|--------------|-------------|---------|----------|---------|---------|----------------|
| 1/2" | DN15 | 90399100 | 316 S/S | 316 S/S | 316 S/S | Viton A | 316 S/S |
| 3/4" | DN20 | 90399200 | 316 S/S | 316 S/S | 316 S/S | Viton A | 316 S/S |
| 1" | DN25 | 90399300 | 316 S/S | 316 S/S | 316 S/S | Viton A | 316 S/S |
| 1 1/2" | DN40 | 90399400 | 316 S/S | 316 S/S | 316 S/S | Viton A | 316 S/S |

HORIZONTAL FLOAT VALVES RANGE & DIMENSIONS

The following diagram shows dimensions related to the different horizontal valve sizes. (Dimensions are also shown on page 11).



Brass/Stainless Steel

| Size (A) | Nominal Size | C | E | F | G | H | I |
|----------|--------------|------|------|------|------|-----|------|
| 3/8" | DN10 | 36 | 16.5 | 17.5 | 9.5 | 45 | 225 |
| 1/2" | DN15 | 46.5 | 22 | 23.5 | 12.7 | 135 | 365* |
| 3/4" | DN20 | 50.3 | 28 | 30 | 16 | 96 | 444 |
| 1" | DN25 | 62.2 | 33 | 35 | 19 | 189 | 545 |
| 1 1/4" | DN32 | 68.5 | 39 | 43 | 22.2 | 205 | 580 |
| 1 1/2" | DN40 | 73.5 | 44.5 | 44 | 25 | 195 | 685 |
| 2" | DN50 | 88 | 55 | 62 | 32 | 280 | 780 |

* With 200 mm lever
All dimensions in millimetres unless otherwise stated

Plastic Float Valves

| Size (A) | Nominal Size | C | E | F | G | H | I |
|----------|--------------|----|----|----|----|-----|-----|
| 1/2" | DN15 | 44 | 25 | 24 | 12 | 95* | 345 |

* With 200 mm lever
All dimensions in millimetres unless otherwise stated

HORIZONTAL FLOAT VALVES RANGE & DIMENSIONS

(Refer page 10 for diagram).

Plastic Body with Plastic Seat

| Size (A) | Nominal Size | Part Number | Thread Type | B | D | J | K | L |
|----------|--------------|-------------|-------------|----|----|-----|-----|--------|
| ½" | DN15 | 90300200 | Parallel | 41 | 88 | 100 | 250 | ⅝" BSW |
| ½" | DN15 | 90300300 | Parallel | 41 | 88 | 100 | 200 | ⅝" BSW |
| ½" | DN15 | 90300400 | Parallel | 41 | 88 | 100 | 125 | ⅝" BSW |

All dimensions in millimetres unless otherwise stated

Brass Body with 316 Stainless Steel Seat

| Size (A) | Nominal Size | Part Number | Thread Type | B | D | J | K | L |
|----------|--------------|-------------|-------------|----|------|---------|-----|--------|
| ⅜" | DN10 | 90300500 | Tapered | 15 | 50.9 | 80/100* | 125 | ⅝" BSW |
| ½" | DN15 | 90300700 | Tapered | 15 | 61.5 | 100 | 200 | ⅝" BSW |
| ½" | DN15 | 90301300 | Parallel | 38 | 84.2 | 100 | 250 | ⅝" BSW |
| ½" | DN15 | 90301500 | Parallel | 38 | 84.2 | 100 | 200 | ⅝" BSW |
| ½" | DN15 | 90302300 | Parallel | 38 | 84.2 | 100 | 200 | ⅝" BSW |
| ½" | DN15 | 90303100 | Parallel | 25 | 71.2 | 100 | 200 | ⅝" BSW |
| ¾" | DN20 | 90304400 | Tapered | 19 | 69.3 | 150 | 250 | ⅝" BSW |
| 1" | DN25 | 90304600 | Tapered | 19 | 80 | 150 | 355 | ⅝" BSW |
| 1¼" | DN32 | 90304800 | Tapered | 22 | 91 | 175 | 355 | ⅜" BSW |
| 1½" | DN40 | 90404900 | Tapered | 22 | 96 | 200 | 425 | ⅜" BSW |
| 2" | DN50 | 90405000 | Tapered | 25 | 114 | 255 | 455 | ½" BSW |

All dimensions in millimetres unless otherwise stated

* For pressures over 1000kPa the 100mm float is recommended.

Stainless Steel Body with 316 Stainless Steel Seat

| Size (A) | Nominal Size | Part Number | Thread Type | B | D | J | K | L |
|----------|--------------|-------------|-------------|----|------|-----|-----|--------|
| ½" | DN15 | 90399100 | Tapered | 16 | 61.5 | 125 | 255 | ⅝" BSW |
| ¾" | DN20 | 90399200 | Tapered | 18 | 69.1 | 125 | 255 | ⅝" BSW |
| 1" | DN25 | 90399300 | Tapered | 19 | 80.9 | 125 | 355 | ⅝" BSW |
| 1 ½" | DN40 | 90399400 | Tapered | 22 | 94.3 | 200 | 405 | ⅜" BSW |

All dimensions in millimetres unless otherwise stated