

# UltraPHIL Float Valve

## Technical Information



**Philmac**<sup>®</sup>

The connection you can trust.

## HORIZONTAL FLOAT VALVES

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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

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**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

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### 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.

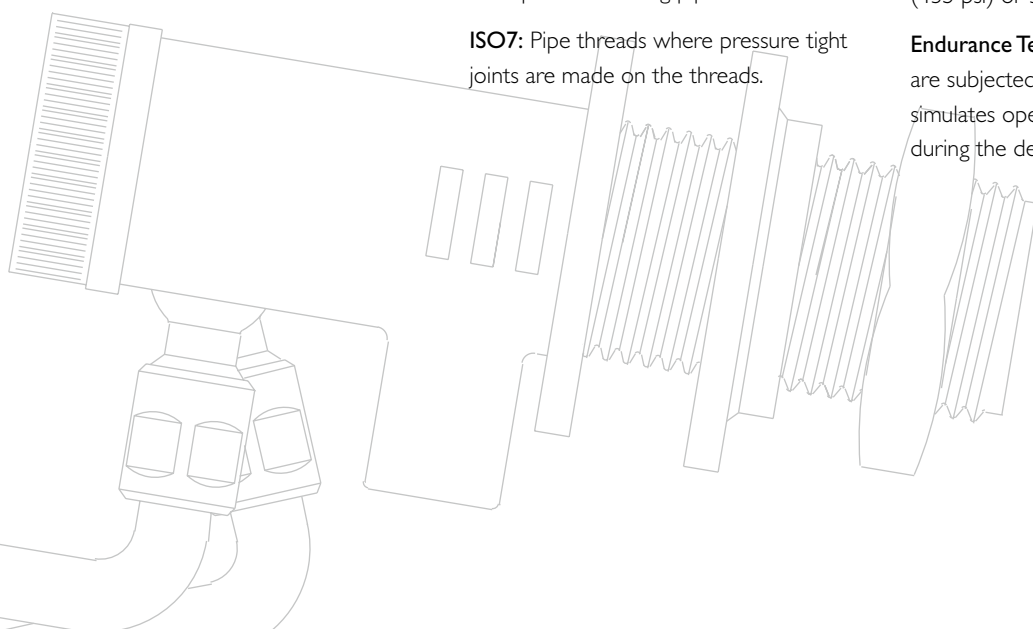
**ISO7:** Pipe threads where pressure tight joints are made on the threads.

### 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

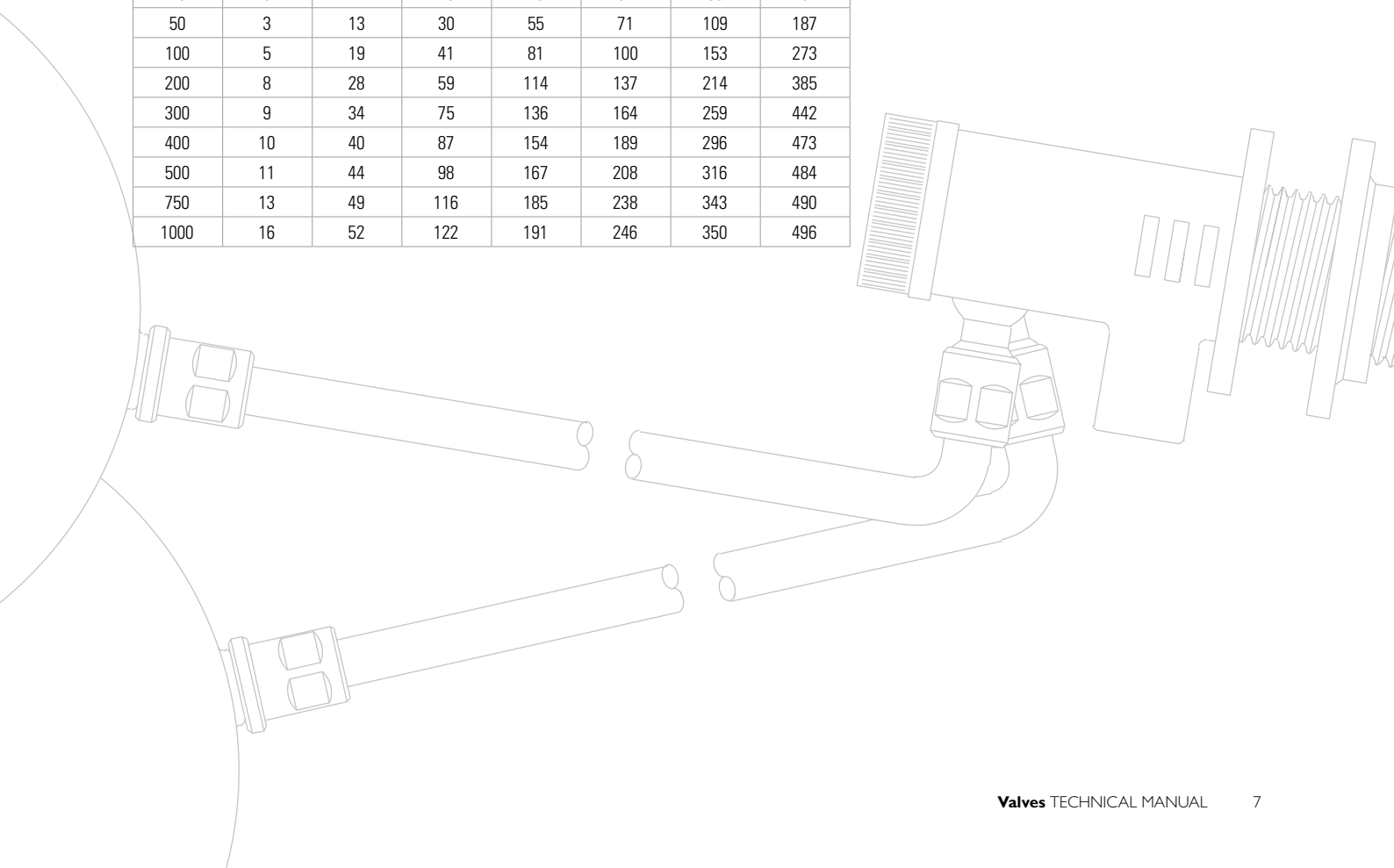
Copper – hot water rated (95°C)

**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



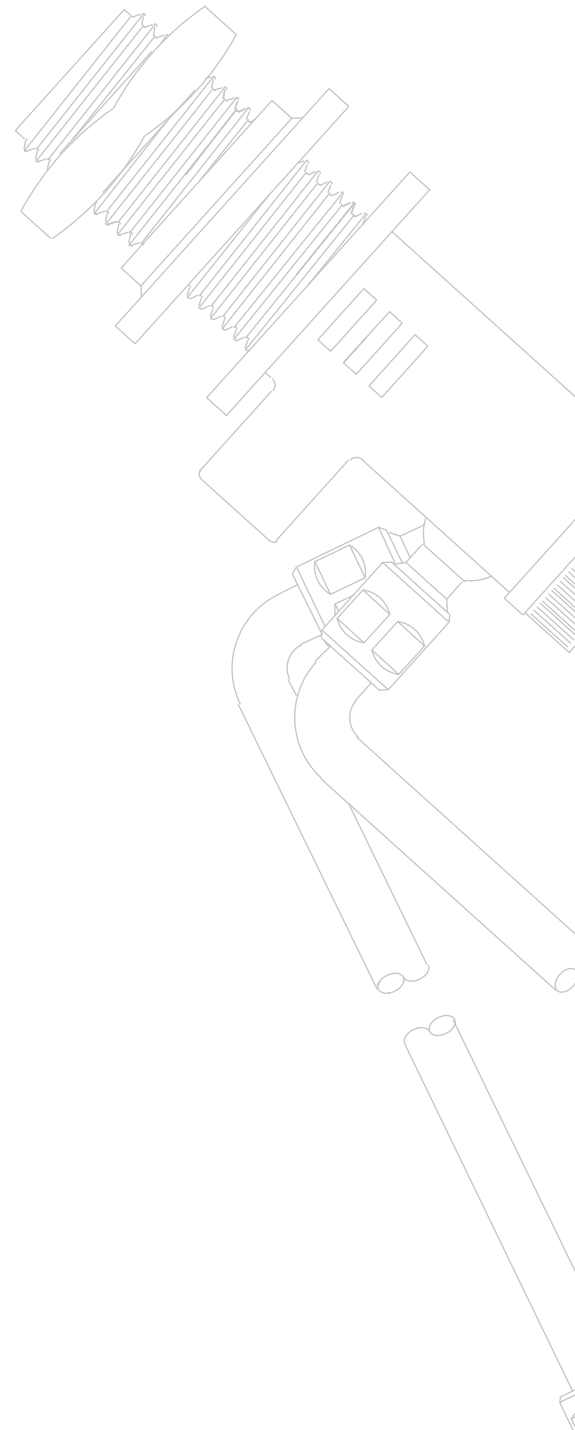
## CHEMICAL RESISTANCE

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.

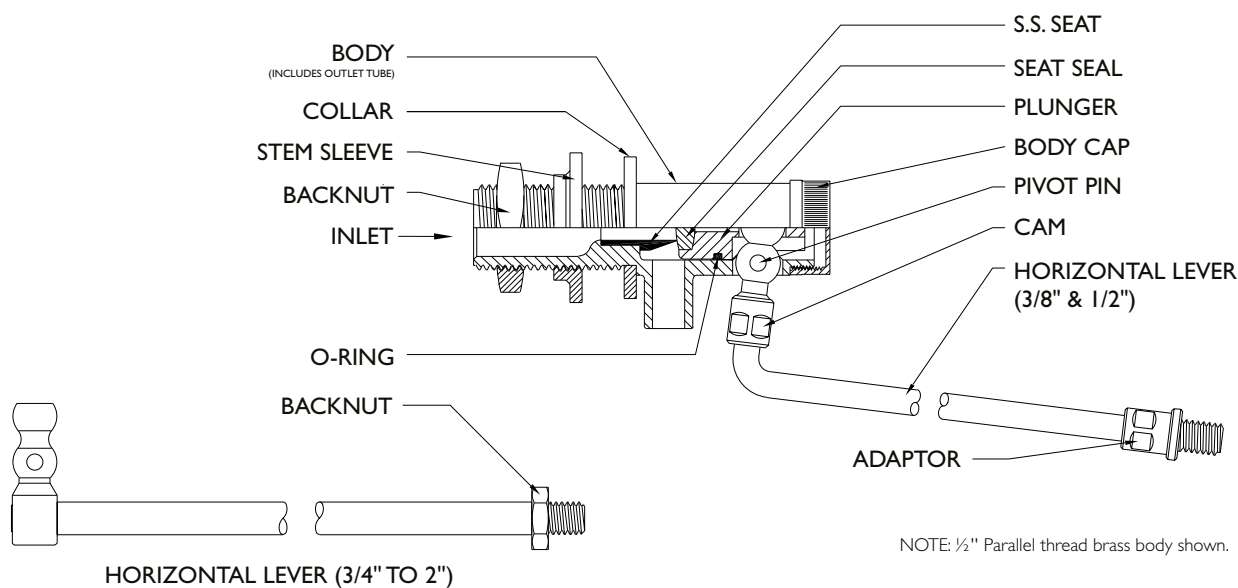
Chemical	Compatibility		
	Brass Float Valve	Stainless Steel Float Valve	Plastic Float Valve
Acetic acid (10%)	N	R	R
Acetic acid (50%)	N	R	N
Alcohol (ethanol)	N	R	N
Ammonium nitrate	N	R	R
Antifreeze	R	R	R
Brine	N	R	R
Calcium carbonate		R	R
Calcium chloride	R	R	N
Calcium nitrate		R	N
Calcium sulphate		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.

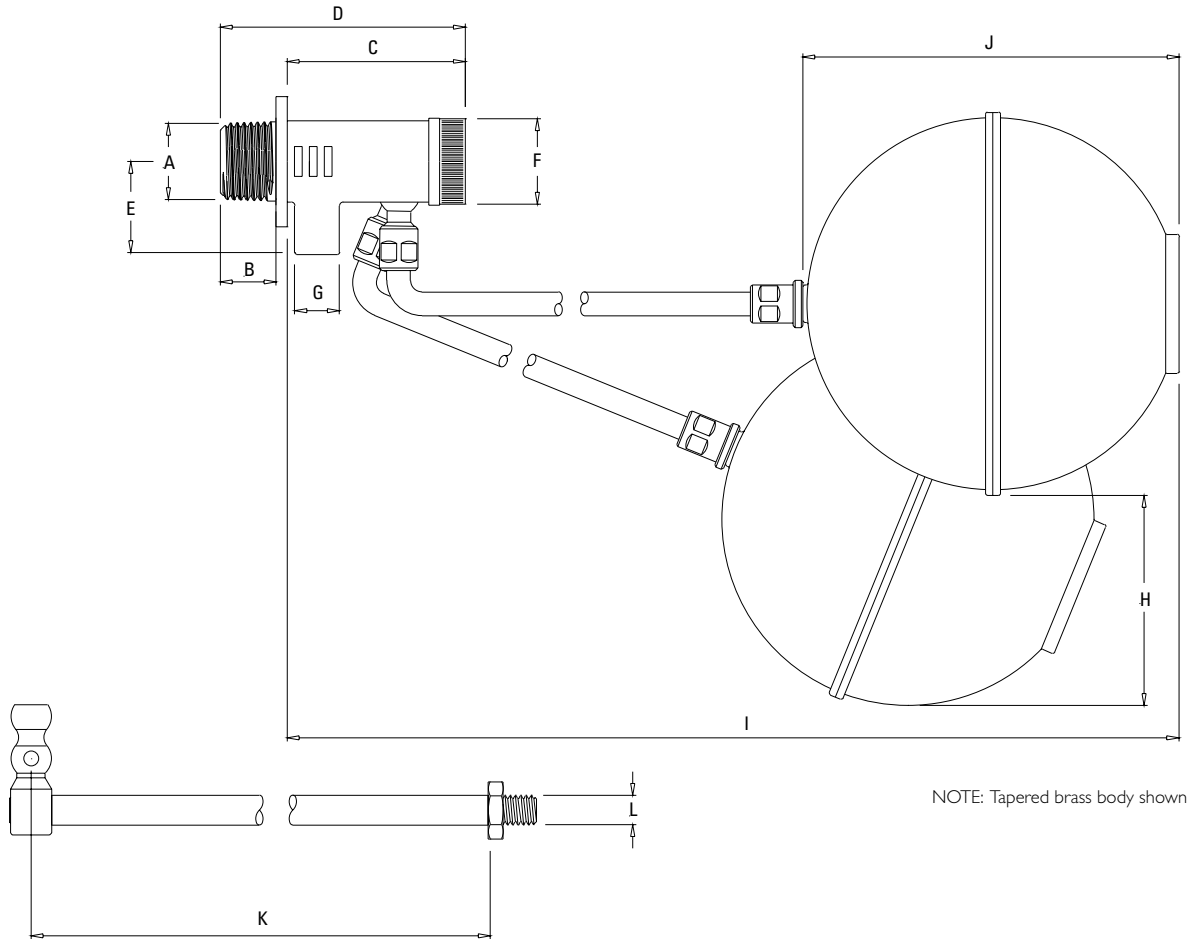
\*\* A stem sleeve is a stepped washer which allows a 1/2" valve to be fitted to a hole that would be used by a 3/4" valve.

### 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