Cistern Valve

Philmac
The connection you can trust.

Technical Manual

Chemical Resistance

Philmac's plastic cistern valve is a compact unit offering easy installation and operation guaranteeing constant water level is maintained.

The simple design and features of the cistern valve ensures the filling of the tank is slow and controlled avoiding water hammer. The valve also includes a built-in reservoir tube (baffle) ensuring a silent operation.

Philmac's robust cistern valves are manufactured from high grade quality materials providing corrosion and impact resistance

Applications

Industrial: Commercial airconditioning units and toilet cisterns.

Benefits

Fast and Easy Installation

Easy Disassembly:

The valve has been designed for easy replacement of the rubber seal without having to un-install the valve. Simply remove the pivot pin and the lever assembly then unscrew the pillar cap and remove the plunger/seal.

Minimum Space Required for Installation:

Based on a compact body design the valve is perfect for tight applications such as a small cistern..

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.

High Performance

Manufactured from advanced thermoplastic materials:

Philmac's cistern valve bodies are manufactured from lightweight high performance thermoplastic material which has excellent impact, UV and corrosion resistance. The material is non-toxic and taint free.

Manufactured from DZR brass:

Philmac cistern valves also utilise a brass lever assembly. These are manufactured from dezincification resistant (DZR) brass which means the brass is resistant in soil and water environments to corrosion involving the loss of zinc leaving a residue of spongy or porous copper.

High pressure shutoff:

Cistern valves are rated to a pressure of 1400 kPa (200 psi) or 14 bar (static shutoff). This is based on using a 100mm (4") float (ball).

Quiet operation:

A built-in reservoir tube (noise baffle) minimises noise for a quiet operation.

Complete Security

Reliable Operation:

Consistent high quality injection moulded plastic bodies plus plastic and brass engineered components means years of reliable operation.

Corrosion Resistant:

The body, cap and piston are manufactured from plastic. The seal and O-ring are manufactured from Nitrile rubber. The lever assemblies and pivot pins are manufactured from DZR brass ensuring all components used have a high degree of corrosion resistance.

Approvals:

All valves comply with Australian Standard AS 1172.2 which means that the valves meet performance requirements for backflow prevention, back siphonage and endurance testing, as well as material construction requirements.

Positive Shut-Off:

The action between the lever assembly and piston ensures the piston provides a complete seal against the water inlet and prevents unwanted loss of water.

Chemical Resistance

Philmac's cistern valve has been designed to convey water. However there may be occasions where the water contains chemicals and/or alternative fluids need to be controlled. The following table is provided as a guide only for the compatibility of various chemicals to Philmac's cistern valve. The mixing together of chemicals may affect the compatibility.

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

N=Not Recommended R=Resistant
Empty Cell=No data available
Note recommendations based on fluids at 20^0 C or less

Standards and Tests

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

Standards

ISO 228.1: Pipe threads where pressure tight joints are made on the threads.

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

AS 1172.2: Technical specifications for plumbing and drainage products – cistern inlet valves.

Tests

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

Backflow Prevention / Back Siphonage: The valve is tested to show that no cistern water can return into the main supply when set up to requirements of AS/NZS 3500.1.

System Design Considerations

Threads: Threads suit both BSP (Whitworth form) and NPT threads

Maximum Operating Pressure: 1400 kPa (200 psi) or 14 bar.

Operating temperature: Connection is cold water (less than 200C) rated.

Float (ball): Plastic – cold water rated

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 protected. Brass components are UV resistant.

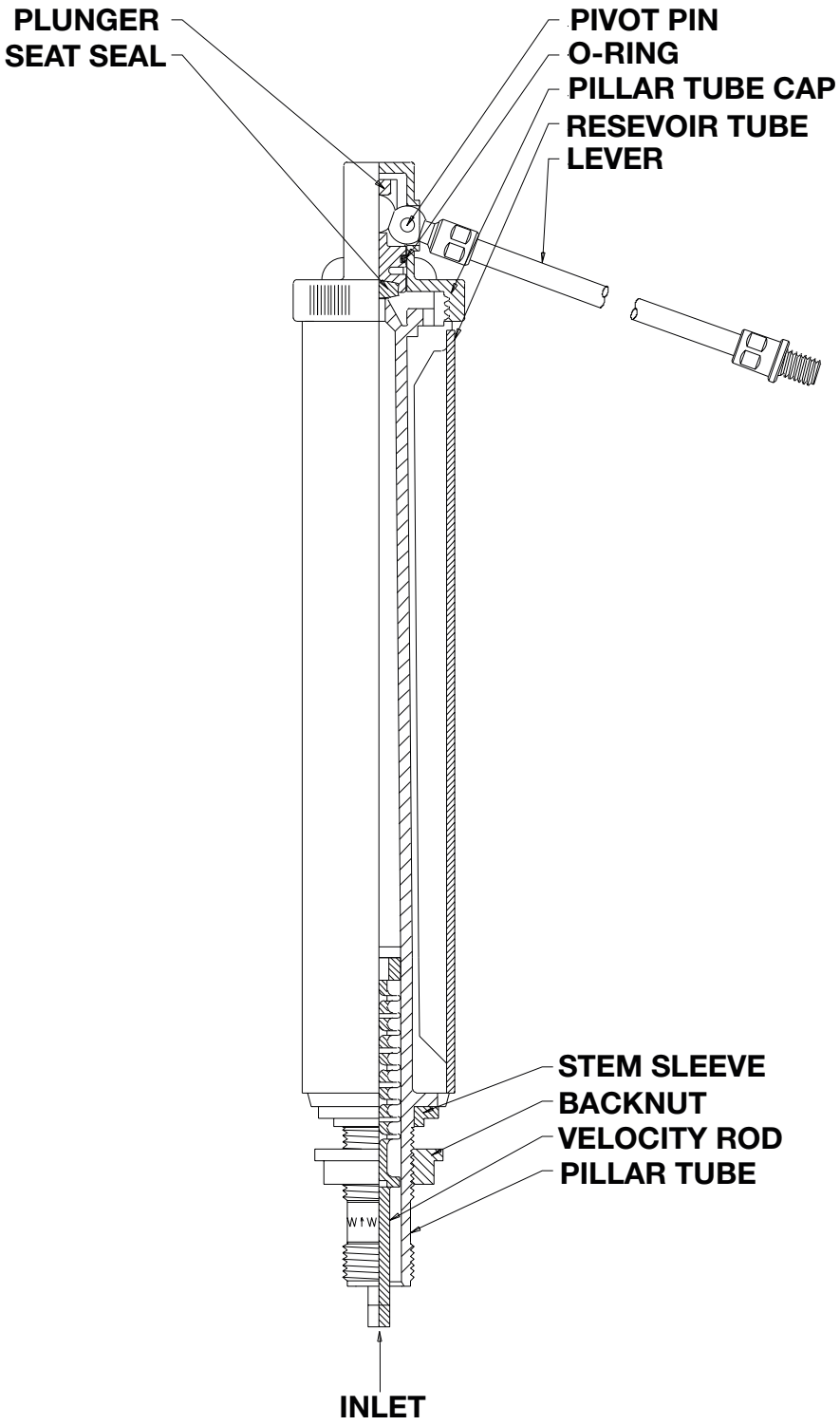
Air Gap: When connecting to drinking water the installation should comply with the relevant air gap standards AS/NZS 3500.1to prevent back siphonage.

Shutoff Pressure: 1400kPa (200psi) or 14 bar with a 100mm (4") float.

Flow Rates (L/min)

Inlet Pressure (kPa)	Flow Rate
25	2.2
50	3.1
75	3.9
100	4.5
150	5.6
200	6.4
250	7.1
300	7.8
400	9.2
500	10.4

Cistern Valve Materials & Components



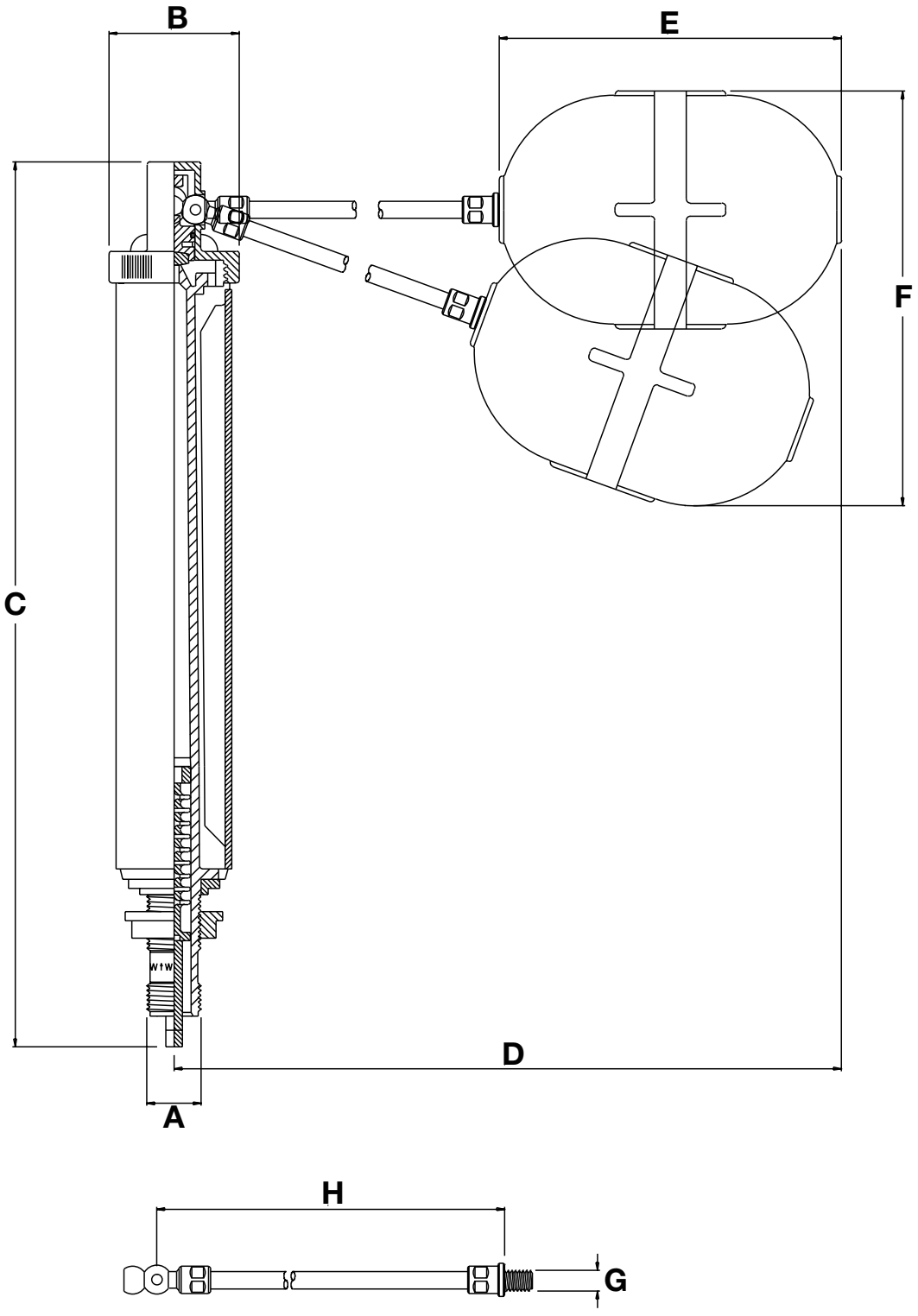
Cistern Valve

Size	Nominal Size	Part Number	Pillar Tube	Pillar Tube Cap	Reservoir Tube	Velocity Rod
½" *	DN15	91 1527 00	GF Nylon	GF Nylon	Polypropylene	GF Nylon

Backnut	Seat Seal	Plunger	Pivot Pin	O-ring	Lever Assembly	Stem Sleeve
GF Acetal	Nitrile Rubber	GF Acetal	DZR brass	EPDM rubber	DZR brass	Rubber

* 1/2" Threads are compatible with both BSP and NPT thread forms

Cistern Valve Range and components



Size (A)	Nominal Size	B	C	D	E	F	G	H
½" *	DN15	48.5	336	395	100	130	5/16" BSW	272

All dimensions in millimetres unless otherwise stated
Notes
* 1/2" Threads are compatible with both BSP and NPT thread forms
Illustrated with recommended float (Part Number 904 994 00) 100mm (4") Cold Water Float (Oval Shape)
Float supplied seperate to valve

Cistern Valves Operation & Installation Instructions

The Philmac cistern 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.

Valve installation

1

Apply PTFE tape or approved sealant to the inlet thread ensuring sufficient is applied to ensure a watertight seal.

2

Screw into female thread by hand until firm.

3

Using a pipe wrench or multigrips on the hex 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.

4

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.

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

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.

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For more informations

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www.philmac.com.au

www.youtube.com/user/PhilmacAustralia