



# RP-500 PN 10



## Back Flow Preventer

### Description

The RP-500 Backflow Preventer is designed to supply maximum protection against back flow caused by negative pressure or backpressure. Backflow may cause infiltration of chemicals, fertilizers and/or other pollutants into potable water systems. The RP-500 is reliable and easily maintained, without the need for special tools.

The RP-500 is built with two independent, easily replaceable capsulated spring-loaded check valves. A revolutionary, internal Reduced Pressure Zone, located between the check valves, ensures protection and reliable performance of the relief valve.

### Applications

- Chemical and fertilizer systems in landscape and agriculture.
- Swimming pools
- Dairies and poultry coops

### Operation

During normal flow, the two check valves open to supply water downstream. The Relief Valve is power-activated by upstream pressure and is kept shut by a diaphragm, through the internal control system.

In the zone, the area between the check valves, pressure is maintained at approximately 0.43 bar lower than the water supply pressure. The Outlet Check Valve is spring-loaded to maintain a minimum pressure decrease of 0.07 bar.

When negative pressure or sub-atmospheric conditions occur, the Inlet Check Valve closes to prevent backflow. If the Outlet Check Valve fails, the pressure between the two check valves rises, opening the Relief Valve and releasing the water to the atmosphere.

The Relief Valve operates on differential pressure. Supply pressure on the upstream side of the Inlet Check Valve acts against the diaphragm to close the Relief Valve during normal operation. In the event of backpressure or backsiphonage, the Relief Valve will open to maintain the pressure in the "zone" at 0.14 bar less than the inlet pressure.

**Note:** If water continues to drain from the Relief Valve, check the Troubleshooting section for probable causes and solutions.

### Main Features, Advantages and Benefits

- Working Pressure: 10 bar.
- Sizes: 1/2", 3/4", 1", 1 1/4", 1 1/2", 2".
- Temp: 0.5° to 45° C.
- Made of composite plastic material: resistant to corrosion, scaling, fertilizers, herbicides, insecticides, etc.

- Internal control system ensures reliability and safety.
- Easy and quick installation.
- Economical to operate.
- Light Weight.
- UV resistant.
- Low Head-Loss.
- Variety of installation options.
- Long working life with easy maintenance.

The ARI RP-500 is approved by the following Standards authorities: ASSE 1013, AWWA C511, NSF61, Watermark (Australia) AS2845.1 ACS (France) Approved by the Foundation for Cross Connection Control and Hydraulic Research at the University of Southern California, Listed to Uniform Plumbing Code



### Installation

A. Install the RP-500 Backflow Preventer in a location accessible to periodic field testing and maintenance. Mount the RP-500 in a horizontal position with adequate clearance from walls and/ or obstructions. A 30 cm. to 84 cm. clearance is needed between the lowest portion of the device and floor.

B. Adequate drainage is needed for discharge. A Drainage Funnel is provided so the discharge may be piped away.

**NOTE:** Never place the RP-500 where it may become submerged in standing water.

C. Before installing the RP-500, thoroughly flush all upstream piping to remove debris.

D. When the shut-off valves are supplied separately, install them with a Test Cock on the Inlet Shutoff Valve.

E. It is recommended that a "Y" strainer be installed before the inlet of the RP-500 to prevent debris from entering the device.

F. After installing the assembly, close the Outlet Shut-off Valve, pressurize the RP-500 and release the air through Test Cock #4. Then, open the Outlet Shut-off Valve.

### Recommendations

- Do not install in areas subject to extended periods of freezing temperatures.
- The product must be protected from excessive pressure increases, which are caused by thermal expansion or water hammer and can damage the valve.
- DO NOT USE ANY PIPE DOPE, OIL GREASE OR SOLVENT ON ANY PARTS unless instructed to do so.
- Parts should fit together freely. Do not force parts to fit.

## Maintenance Instructions

### A. Disassembly - RP 500.

1. Close the Outlet Shut-off Valve and then close Inlet Shut-off Valve.
2. Release pressure from the assembly by opening Test Cocks 2, 3 and 4.

**CAUTION: The cover is spring-loaded and should be removed carefully to avoid personal injury.**

3. Use a Phillips-head screwdriver to remove the Relief Valve cover screws while holding down on the cover.
4. Lift the cover straight up.
5. Remove the Relief Valve assembly.
6. Remove the Relief Valve Spring.
7. Remove the Retainer.
8. Remove the Inlet and Outlet Check Valves.

**NOTE:** Clean all the parts that have been removed. Then reassemble, or depending on their condition, discard and replace with new replacement parts. O-rings should be cleaned or replaced as necessary and lightly greased with NSF 61-approved grease.

### B. Assembly - RP 500.

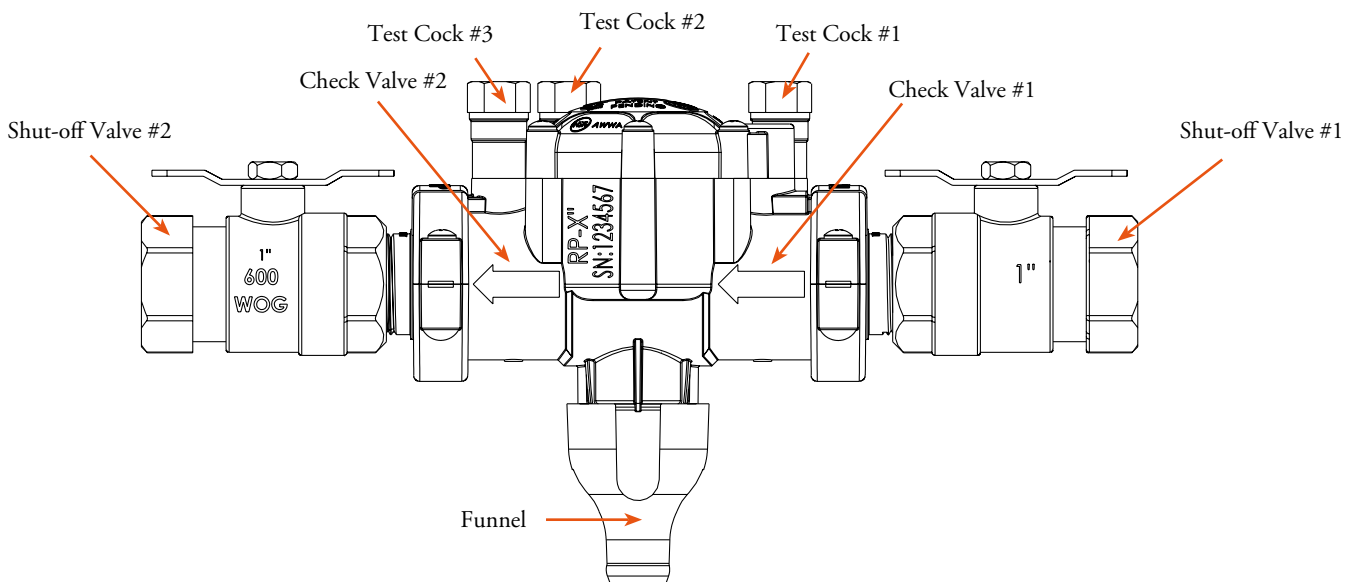
1. Securely install the Inlet and Outlet Check Valves.
2. Install the Retainer.
3. Place the Relief Valve Spring in position.
4. Install the Relief Valve assembly.
5. Put on the cover, hold it down and tighten the screws.

### CAUTION:

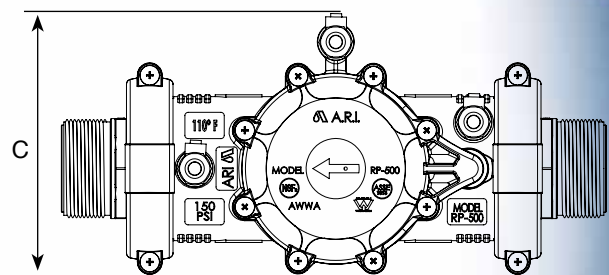
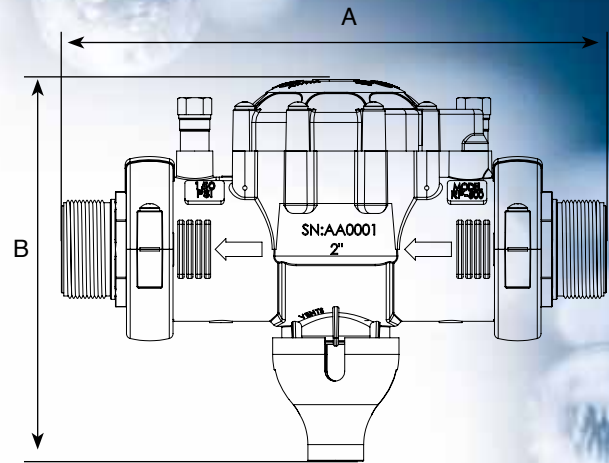
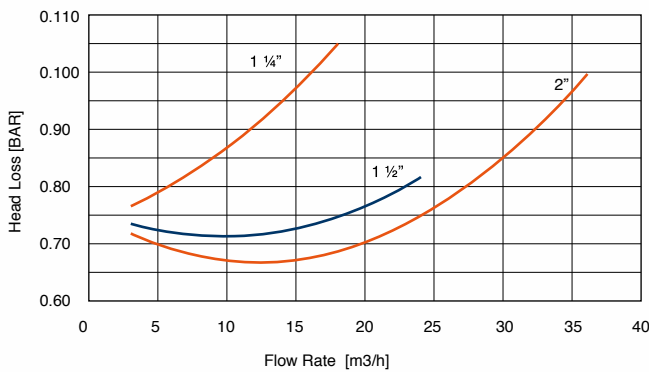
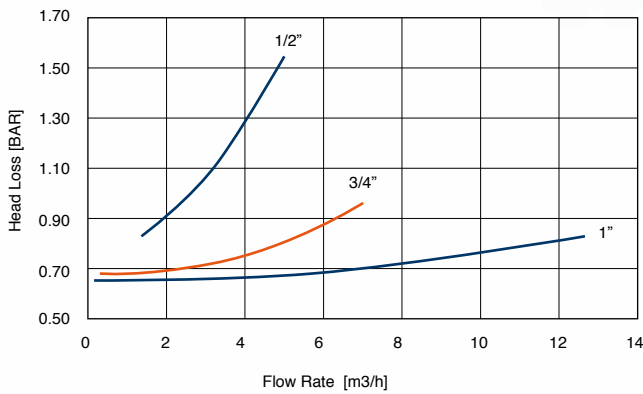
The bolts have to be secured with a recommended torque of:  
2.5 Kg/m. for models ½", ¾", 1"  
9 Kg/m. for models 1½", 1 ¼", 2"

## Trouble Shooting Guide

Symptom	Cause	Corrective Action
1. Relief valve continuously discharges during no-flow conditions.	<ul style="list-style-type: none"> <li>a. Check valve #1 clogged with debris.</li> <li>b. Check valve #2 fouled with debris accompanied by a backpressure condition.</li> </ul>	<ul style="list-style-type: none"> <li>a. Inspect and clean the seat and seal.</li> <li>b. Inspect and clean the seat and seal.</li> </ul>
2. Relief valves discharge continuously during flow and no-flow conditions.	<ul style="list-style-type: none"> <li>a. Relief valve fouled with debris.</li> <li>b. Damaged diaphragm (allowing water to pass through, from inlet to zone).</li> <li>c. Sensing passage to inlet side of diaphragm plugged.</li> </ul>	<ul style="list-style-type: none"> <li>a. Inspect and clean relief valve seat disk and seat.</li> <li>b. Replace the relief valve kit.</li> <li>c. Inspect and clean passage in cover and body.</li> </ul>
3. Relief valve discharges intermittently in a "spitting" action during no-flow condition.	Pressure fluctuations (water hammer) from supply.	Eliminate or reduce pressure fluctuations.
4. Relief valve does not open during field test no.1	<ul style="list-style-type: none"> <li>a. Shut-off valve #2 not closed completely.</li> <li>b. Test equipment improperly installed.</li> </ul>	<ul style="list-style-type: none"> <li>a. Close shut-off valve #2 or inspect for possible through leakage.</li> <li>b. Recheck test procedure.</li> </ul>
5. Check valve #2 fails to hold backpressure.	<ul style="list-style-type: none"> <li>a. Shut-off valve #2 not closed completely.</li> <li>b. Check valve #2 clogged with debris.</li> </ul>	<ul style="list-style-type: none"> <li>a. Close shut-off valve #2 or inspect for possible through leakage.</li> <li>b. Inspect and clean the seat and seal.</li> </ul>
6. Pressure differential across check valve #1 is low during field test no.3 a (does not meet 0.2 bar minimum)	<ul style="list-style-type: none"> <li>a. Check valve #2 clogged with debris.</li> <li>b. Upstream pressure fluctuations causing inaccurate gauge reading.</li> </ul>	<ul style="list-style-type: none"> <li>a. Inspect and clean the seat and seal.</li> <li>b. Eliminate pressure fluctuation.</li> </ul>



## HEAD LOSS



## DIMENSIONS AND WEIGHT

Nominal Size	Dimensions mm			Weight Kg
	A	B	C	
1/2", 3/4", 1"	197	167	99	0.820
1 1/4", 1 1/2", 2"	332	229	157	2.580

\* Dimensions and weight without shut-off depends on shut-off valve model.

## PARTS LIST AND SPECIFICATION

No.	Part
1.	Cover Assembly
2.	Relief Valve Assembly
3.	Relief Valve Spring
4.	Retainer
5.	Inlet Check Valve Assembly
6.	Outlet Check Valve Assembly
7.	Body Assembly
8.	Test Cocks (#1, #2, #3)
9.	Adaptor Assembly
10.	Clamp Assembly
11.	Up stream Shut-Off Valve
12.	Down stream Shut-Off Valve
13.	Funnel

