

DC-501 Double Check Backflow Preventer

OPERATIONS, MAINTENANCE AND TROUBLESHOOTING GUIDE



Table of Contents

Features, Applications and Specifications	3
Installation	4
Operation.....	5
Testing Procedure.....	6
Maintenance	8
Troubleshooting.....	9
Replacement Parts List	9

Features, Applications & Specifications

The DC-501 Double Check Backflow Preventer consists of:

- Two independent-acting spring-loaded check valves - an inlet and an outlet valve
- Two resilient seated shutoff valves – one on the inlet, the other on the outlet
- Four test cocks

PRODUCT FEATURES

- Compact, lightweight size makes it easy and quick to install
- Requires only a Phillips-head screwdriver to disassemble and reassemble – no special tools needed
- Durable, made of non-corrosive plastic thermal resin material:
 - Withstands the toughest environments
 - Unlike a brass Double Check Valve, the DC-501 is less susceptible to vandalism and theft
 - UV resistant – endures heat and direct sun
- Low head loss – optimizes energy, saving energy costs

The DC-501 is approved by the following Standards Authorities:

ASSE 1015, AWWA C510, NSF61, Watermark (Australia) AS2845.1 ACS (France) Approved by the Foundation for Cross Connection Control and Hydraulic Research at the University of Southern California.



APPLICATIONS

- Protect potable water lines and other installations against backsiphonage and backpressure of contaminated water.
- For irrigation system and water handling applications.

SPECIFICATIONS

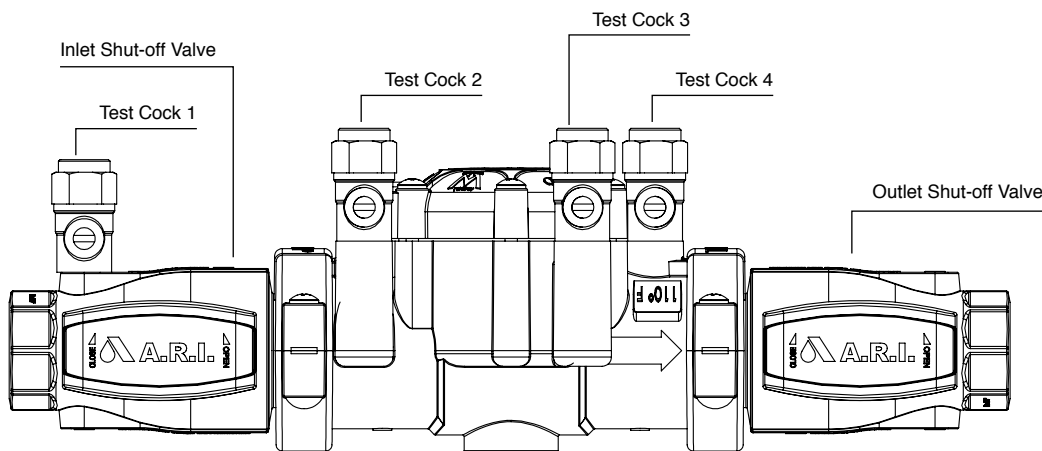
- Operating pressure: up to 150 psi
- Operating temperature: up to 110° F
- Valve sizes: 1/2", 3/4", 1", 1 1/4", 1 1/2", 2"

Installation

GENERAL INSTALLATION GUIDELINES

- A. Install the DC-501 Double Check Valve in a location accessible to periodic field testing and maintenance.
- B. Thoroughly flush all upstream piping to remove debris prior to installing the DC-501.
- C. Mount the DC-501 either in a vertical (for upward flow) or horizontal position. An adequate clearance from walls and/ or obstructions should be provided for ease of maintenance.
- D. It is recommended that a “Y” strainer be installed before the inlet of the DC-501 to prevent debris from entering the device.
- E. After installing the assembly, close the Outlet Shut-off Valve, pressurize the DC-501 and release the air through Test Cock 4.
- F. Open the Outlet Shut-off Valve. (figure 1)

FIGURE 1



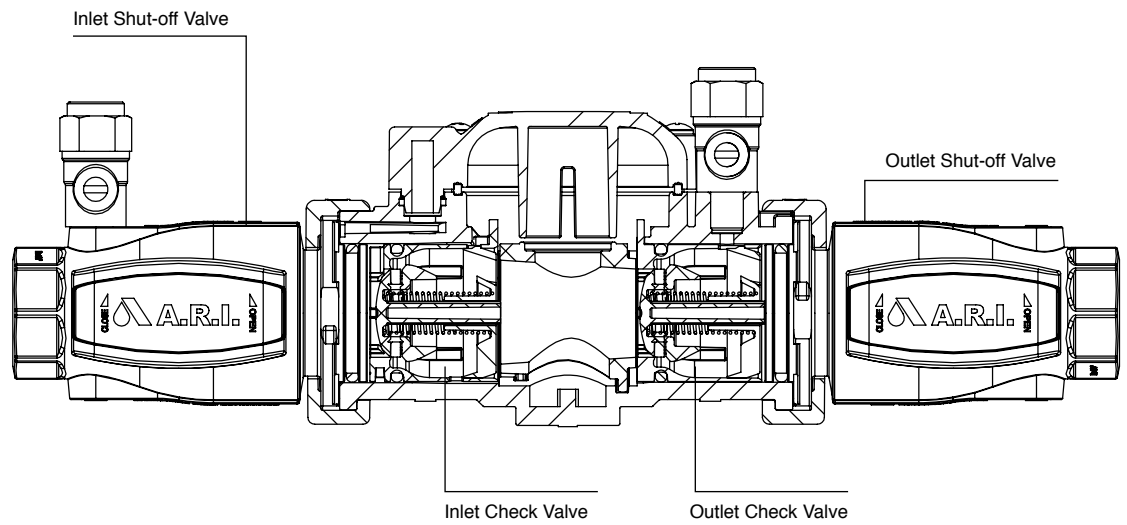
RECOMMENDATIONS

- 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.

Operation

Each check valve is designed to maintain a minimum of 1 psi across the valve during normal operation. If at any time, the pressure downstream of the device increases above the supply pressure, both check valves will close to prevent any backflow from occurring. (FIGURE 2).

FIGURE 2



Testing Procedure

Compliance Testing

To remain in compliance with local codes it is important to periodically test the DC- 501. (As service conditions warrant, it should be tested at least once per year or more.) Test set-up is illustrated in FIGURE 3 on page 7.

Equipment Required: An Approved Test Kit

Test No. 1

Purpose:

To test the Inlet Check Valve for tightness against reverse flow.

Requirement:

The valve shall not permit through leakage in the direction reverse to normal flow under all conditions of a pressure differential.

Procedure:

1. Bleed water through all four Test cocks to flush out all debris.
2. Connect the “high” side (gray) hose to Test Cock 2. Connect the “low” side (yellow) hose to Test Cock 3.
3. Open Test Cocks 2 and 3. Bleed both hoses, making sure to bleed the low side last.
4. Close the Outlet Shut-off Valve, and then close the Inlet Shut-off Valve.
5. Slowly open Test Valve 1 and lower the pressure at Test Cock 2 approximately 2 psi below the pressure at test cock 3. If this pressure differential can be maintained then the Inlet Check Valve is reported as “tight” or “OK”. Proceed to test 2.

Test No. 2

Purpose:

To test the Outlet Shut-off Valve for tightness against reverse flow.

Requirement:

The valve shall not permit through leakage in the direction reverse to normal flow under all conditions of a pressure differential.

Procedure:

Same as test #1 except the “high” side hose (gray) is connected to Test Cock #3 and the “low” side hose (yellow) is connected to Test Cock #4.

Restore Operation:

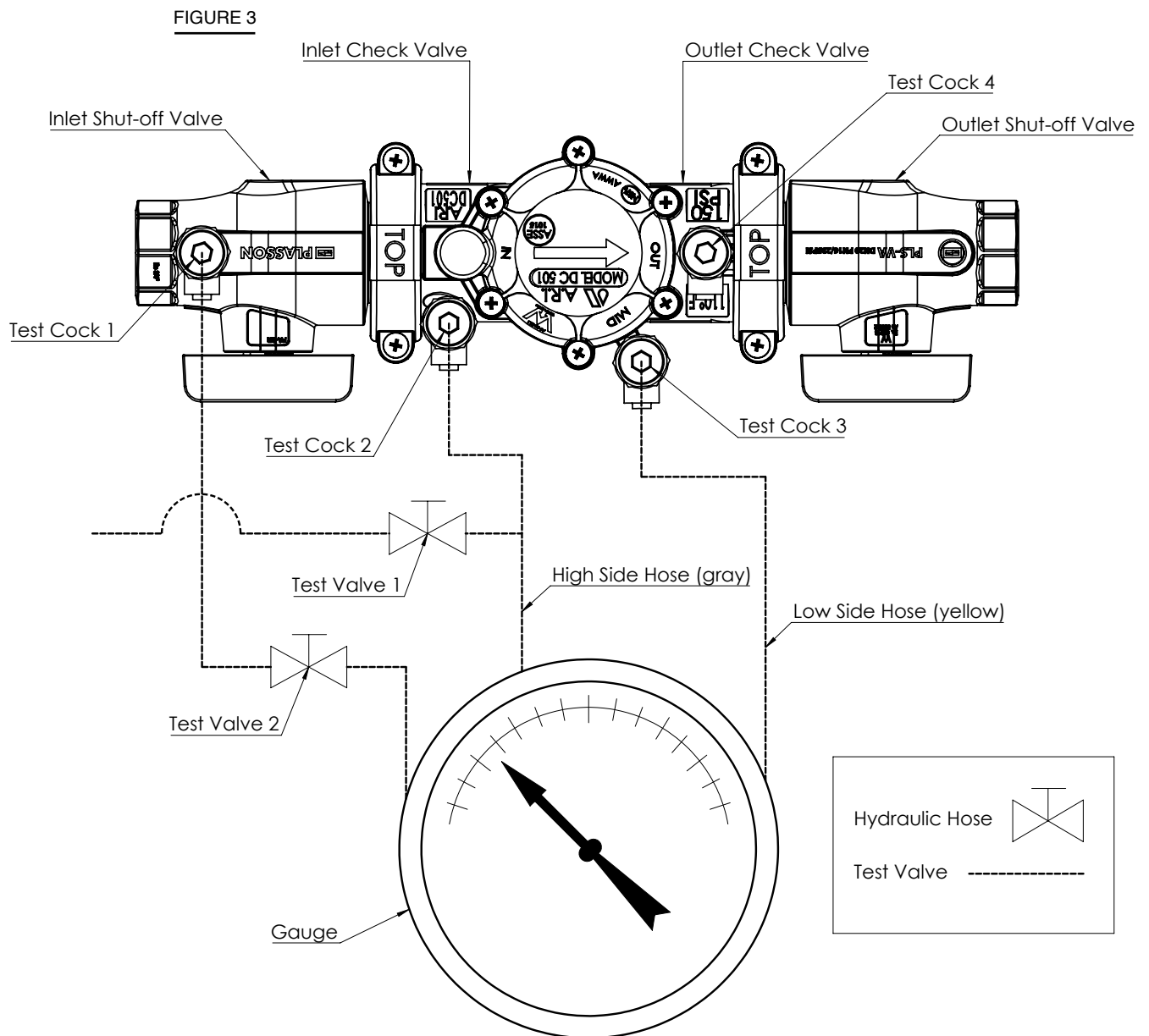
Close all Test Cocks. Remove testing equipment. Open both the Inlet and Outlet Shut-off Valves.

NOTE: The check valves will fail, both the inlet and the outlet, if the Outlet Shut-off Valve leaks excessively. To test for leaks in the Outlet Shut-off Valve, use the following procedure.

Testing Procedure

Test For Leaks In The Outlet Shut-off Valve:

1. Connect the high side hose (gray) to Test Cock 1, low side hose (yellow) to Test Cock 4. Open Test Cock 1 and 4. Close the Inlet and outlet Shut-off Valves.
2. Loosen the connection between the test hose and Test Cock 4, open Test Valves 1 and 3, (close Test Valve 2), and open Test Cock 1, all this in order to remove air from the system, then retighten the connection between the test hose and Test Cock 4.
3. If the differential gauge rises above 0, there is excessive leakage in the Outlet Shut-off Valve. It must be replaced in order to test the DCV.



Maintenance

How to Disassemble the DC-501 (See FIGURE 4)

1. Close the Outlet Shut-off Valve (9), and then close Inlet Shut-off Valve (8).
2. Release pressure from the assembly by opening Test Cocks 2, 3 and 4 (6).
3. Use a Phillips-head screwdriver to remove the cover screws and lift off the cover (1).
4. Remove the Retainer (2).
5. Remove the Inlet and Outlet Check Valves (3), (4).

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 silicone based grease.

How to Assemble the DC-501 (See FIGURE 4)

1. Securely install the Inlet and Outlet Check Valves (3), (4).
2. Install the Retainer (2).
3. Put on the cover, hold it down and tighten the screws (1).

CAUTION:

DC-501 1/2", 3/4", 1" -

Secure the screws with a recommended torque of 1.84 pound force feet (2.5 Nm).

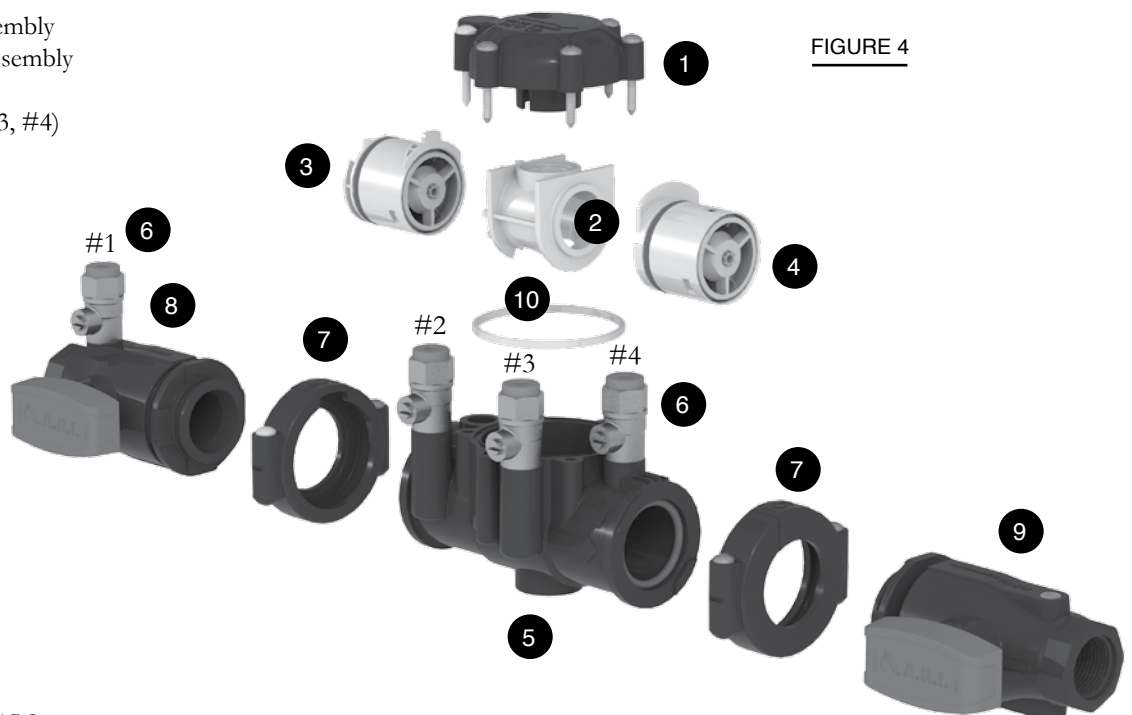
DC-501 1 1/4", 1 1/2", 2" -

Secure the screws with a recommended torque of 6.64 pound force feet (9 Nm).

Part List

No. Part

1. Cover Assembly
2. Retainer
3. Inlet Check Valve Assembly
4. Outlet Check Valve Assembly
5. Body Assembly
6. Test Cocks (#1, #2, #3, #4)
7. Clamp Assembly
8. Inlet Shut Off Valve
9. Outlet Shut Off Valve
10. Body Seal



Troubleshooting Guide

SYMPTOM	CAUSE	SOLUTION
Check Valve fails to hold 1 psi of pressure.	A. Outlet Shut-off valve not closed completely.	A. Close outlet shut-off valve or inspect for possible leakage through the closed valve.
	B. Check valve fouled with debris	B. Inspect and clean the seat and seal.

Replacement Parts List

PART	SIZES 1/2", 3/4", 1"		SIZES 1 1/4", 1 1/2", 2"	
	CATALOG NO.	QNT	CATALOG NO.	QNT
1. Cover Assembly	0465-051-KIT	1	0465-0502-KIT	1
2. Retainer	0266-3101	1	0266-3102AN	1
3. Inlet Check Valve Assembly	0465-0276-IN	1	0465-027602-IN	1
4. Outlet Check Valve Assembly	0466-0276-OUT	1	0466-027602-OUT	1
5. Clamp Assembly	0466-99-KIT	2	0466-9902-KIT	2
6. Inlet Shut Off Valve				
1/2" NPT 1 1/4" NPT	0466-734815NTNR-20	1	0466-734813NTNR-20	1
3/4" NPT 1 1/2" NPT	0466-734834NTNR-20	1	0466-734815NTNR-20	1
1" NPT 2" NPT	0466-734801NTNR-20	1	0466-734802NTNR-20	1
7. Outlet Shut Off Valve				
1/2" NPT 1 1/4" NPT	0466-734850NTNR	1	0466-734813NTNR	1
3/4" NPT 1 1/2" NPT	0466-734834NTNR	1	0466-734815NTNR	1
1" NPT 2" NPT	0466-734801NTNR	1	0466-734802NTNR	1



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