
FlowShield™ RP Testable reduced pressure principle backflow preventer

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5751 Series

Function



The 5751 FlowShield RP is a testable reduced pressure principle backflow preventer consisting of two independently acting check valves and a differential pressure relief valve. This device protects potable water supply systems from contamination due to backflow conditions caused by back siphonage or backpressure. The 5751 series can be used for both low and high hazard pollution protection applications. During backflow events, the valve assembly automatically discharges contaminated water through the relief valve located at the bottom of the body.

The valve assembly is certified and listed by ASSE to Standard 1013. By CSA Group to CSA Standard B64.4. It meets the performance requirements of AWWA C511 and complies with American and Canadian plumbing codes. The device is constructed of low lead/lead-free materials and meets NSF/ANSI/CAN 61 and NSF/ANSI/CAN 372 requirements, certified and listed by ICC-ES.

Product Certifications



Product Range

5751 series FlowShield™ RP:
size:
connection type:

2", 2½", 3", 4"
ANSI 150 flanged

Technical specifications

Materials

Body:	Epoxy coated cast iron (ASTM A536)
Cover:	Epoxy coated cast iron (ASTM A536)
Diaphragms and seals:	peroxide-cured EPDM
Test Cocks:	Low lead/lead free brass (CW724R)
Check Valves:	
Body:	Low lead/lead free bronze (CB499K)
Obturator:	Stainless steel (AISI 304)
Spring:	Stainless steel (AISI 302)
Relief Valve:	
Diaphragm:	peroxide-cured EPDM
Metal parts:	Low lead/lead free brass (CW724R)
Spring:	Stainless steel (AISI 302)
Shutoff valves	
Body:	Epoxy coated cast iron (ASTM A536)
Disc and seal:	Epoxy coated cast iron (ASTM A536) and peroxide-cured EPDM
Stem:	Stainless steel (AISI 420)
Handle:	Galvanized steel

Performance

Suitable Fluids:	potable water
Maximum working pressure:	175 psi (12 bar)
Maximum working temperature:	150 °F (65 °C)
Connections	
Valve body:	2", 2 1/2", 3", 4" ANSI 150 flange
Test cocks:	1/2" NPT

Certifications

- ASSE 1013, Reduced Pressure Principle Backflow Prevention Assemblies. Listed and certified by ASSE.
- CSA B64.4, Backflow Prevention Devices-Reduced Pressure Principle (RP). Listed and certified by CSA Group.
- NSF/ANSI/CAN 61, Drinking Water System Components for use in potable water systems. Certified by ICC-ES.
- NSF/ANSI/CAN 372, US and Canadian Low-Lead and Lead-Free materials contents laws for drinking water system components. Certified by ICC-ES.

Standard and Code Compliance

- AWWA C511, Reduced Pressure Principle Backflow Prevention Assembly.
- UPC, IPC, IRC, and NPC compliance for use in accordance with U.S. and Canadian plumbing codes.



SAFETY INSTRUCTION / CONSIGNE DE SÉCURITÉ

This safety alert symbol will be used in this manual to draw attention to safety related **instructions**. When used, the safety alert symbol means **ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED! FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN A SAFETY HAZARD.**

Ce symbole d'avertissement servira dans ce manuel à attirer l'attention sur la sécurité concernant instructions. Lorsqu'il est utilisé, ce symbole signifie **ATTENTION ! DEVEZ ALERTE ! VOTRE SÉCURITÉ EST EN JEU ! NE PAS SUIVRE CES INSTRUCTIONS PEUT PROVOQUER UN RISQUE DE SECURITE.**



WARNING: This product can expose you to chemicals including lead, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

AVERTISSEMENT: Ce produit peut vous exposer à des produits chimiques comme le plomb, qui est connu dans l'État de Californie pour causer le cancer, dommages à la naissance ou autre. Pour plus d'informations rendez-vous www.P65Warnings.ca.gov.



WARNING: Caleffi shall not be liable for damages resulting from stress corrosion, misapplication or misuse of its products.

AVERTISSEMENT: Caleffi ne sera pas responsable des dommages résultant de la corrosion sous tension, d'une mauvaise application ou d'une mauvaise utilisation de ses produits.



CAUTION: All work must be performed by qualified personnel trained in the proper application, installation, and maintenance of systems in accordance with all applicable codes and ordinances.

ATTENTION: Tous les travaux doivent être effectués par du personnel qualifié formé à la bonne application, installation et maintenance des systèmes conformément aux codes et règlements locaux.



CAUTION: If the backflow preventer is not installed, commissioned and maintained properly, according to the instructions contained in this manual, it may not operate correctly and may endanger the user.

ATTENTION: Si Disconnecteur n'est pas installé, mis en service et entretenu correctement, selon les instructions contenues dans ce manuel, il peut ne pas fonctionner correctement et peut mettre en danger l'utilisateur.



CAUTION: Make sure that all the connecting pipework is water tight.

ATTENTION: S'assurer que tous les raccordements sont étanches.



CAUTION: When making the water connections, make sure that the backflow preventer connecting pipework is not mechanically over-stressed. Over time this could cause breakages, with consequent water losses which, in turn, could cause harm to property and/or people.

ATTENTION: Lorsque vous effectuez les raccordements d'eau, assurez-vous que la tuyauterie reliant disconnecteur n'est pas mécaniquement des overstressed. Au fil du temps, ceci pourrait causer des ruptures, avec pour conséquence des pertes en eau qui, à leur tour, peuvent causer des dommages à la propriété et/ou les gens.



CAUTION: Water temperatures higher than 120 °F can be dangerous. During the installation, commissioning and maintenance of the backflow preventer, take the necessary precautions to ensure that such temperatures do not endanger people.

ATTENTION: Les températures de l'eau supérieure à 100 °F peut être dangereux. Au cours de l'installation, mise en service et l'entretien de la disconnecteur, prendre les précautions nécessaires afin de s'assurer que de telles températures ne compromettent pas les gens.



CAUTION: In the case of highly aggressive water, arrangements must be made to treat the water before it enters the backflow preventer, in accordance with current legislation. Otherwise the valve may be damaged and will not operate correctly.

ATTENTION: Dans le cas de l'eau fortement agressifs, des dispositions doivent être prises pour traiter l'eau avant qu'elle ne pénètre dans le disconnecteur, conformément à la législation actuelle. Sinon la soupape pourrait être endommagée et ne fonctionnent pas correctement.



WARNING: The outer surface of the device, especially in polymer type components, must not come into contact with any chemical substance, either on purpose or accidentally. The system fluid and any chemical additives used within the water piping system – whether for washing or as protection – must be compatible with the materials used to make the device and with the function it performs.

AVERTISSEMENT: La surface extérieure de l'appareil, en particulier les composants de type polymère, ne doit pas entrer en contact avec des substances chimiques, que ce soit volontairement ou accidentellement. Le produit et les additifs chimiques utilisés dans les canalisations d'eau - que ce soit pour le lavage ou la protection - doivent être compatibles avec les matériaux utilisés pour la fabrication de l'appareil et avec la fonction qu'il remplit.

Caleffi shall not be liable for damages resulting from stress corrosion, misapplication or misuse of its products.

Caleffi ne pourra être tenue responsable des dommages résultant de la corrosion, d'une mauvaise utilisation ou d'une mauvaise utilisation des produits.

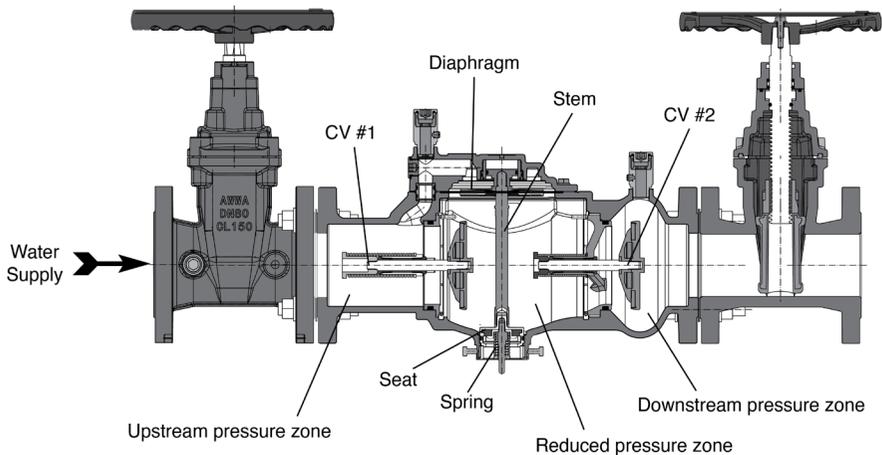
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LAISSEZ CE MANUEL AVEC L'UTILISATEUR**

Principle of operation

The 5751 Flowshield RP reduced pressure backflow preventer contains two independently operating check valves separated by a chamber called the "reduced pressure zone." The reduced pressure zone contains a differential pressure relief valve assembly (RV). In cooperation with the upstream check valve (CV #1) and downstream check valve (CV #2), the device controls water flow and discharges water during backflow events.

Under normal static or flowing conditions, the check valves create pressure drops that result in different pressure conditions in the upstream, reduced pressure, and downstream zones. Under normal conditions, the assembly is designed to maintain a 5 psi differential between the upstream and reduced pressure zones, with a minimum 2 psi differential always maintained between these zones. The pressure difference between the upstream and reduced pressure zones exerts force on the relief valve diaphragm through a channel connected to the upstream pressure zone. This force compresses the spring and moves the stem and seat of the relief valve assembly to close the discharge port, maintaining normal operation.

During a backflow event resulting from either back siphonage (upstream pressure drop) or back pressure (rise in downstream pressure), the pressure conditions cause a reversal of flow, forcing either or both check valves to close and prevent contaminated water from entering the potable water supply. The changed pressure conditions allow the relief valve spring to overcome the upstream pressure acting on the diaphragm, moving the seat of the relief valve and opening the relief port to discharge polluted water from the reduced pressure zone. If the diaphragm is damaged, the spring force moves the discharge seat to open the discharge port and the upstream check valve closes, both preventing water from flowing back upstream.



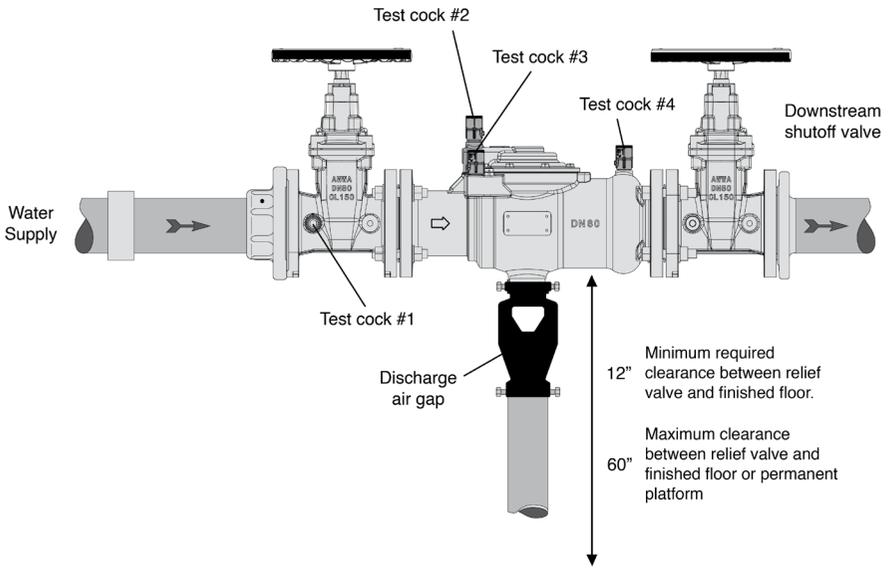
Installation

Installation of the 5751 series FlowShield RP backflow preventer must be performed by qualified personnel in accordance with applicable codes and regulations.

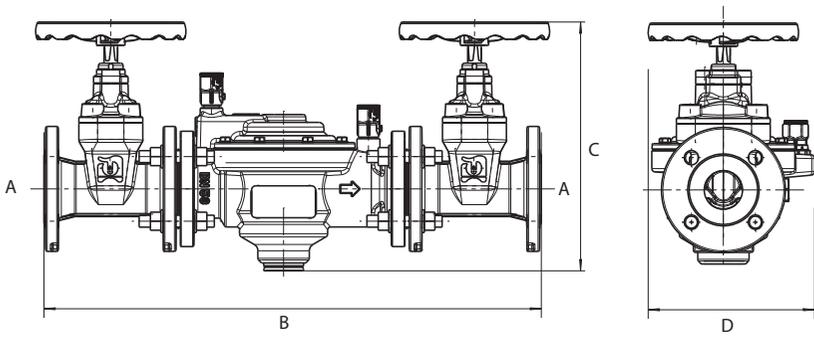
The assembly includes upstream and downstream shut-off valves and must be installed horizontally in an accessible location not susceptible to flooding. Minimum clearance requirements shown in Installation Diagram. System piping should be thoroughly cleaned before installation. It is recommended to install a strainer upstream of the assembly. The air gap must be connected according to local codes (air gap sourced separately, see order information on page 11).

To protect the public water supply, install the backflow preventer downstream of the water meter. For internal system protection, install the unit at potential cross-contamination points such as irrigation or heating system connections.

Installation diagram



Dimensions



Code	A	B	C	D	Wt (lb)
575105A	2" ANSI 150 FLANGE	24 $\frac{1}{16}$ "	13"	8 $\frac{3}{4}$ "	80
575106A	2 $\frac{1}{2}$ " ANSI 150 FLANGE	27 $\frac{5}{16}$ "	14 $\frac{1}{8}$ "	8 $\frac{3}{4}$ "	104
575108A	3" ANSI 150 FLANGE	35"	16 $\frac{1}{16}$ "	10"	170
575110A	4" ANSI 150 FLANGE	37 $\frac{1}{16}$ "	18 $\frac{3}{16}$ "	10"	208

Recommended 3 valve test kit procedure

Step 1: Flush Test Cocks

Install test adapters. Open test cock #4. While trickling, open then close test cocks #3, then #2, then #1 in that order.

Step 2: Connect the Test Kit

Close the high and low side valves on the kit, and open the bypass valve. Attach the high side hose to test cock #2, and the low side hose to test cock #3. Open test cock #2, then the high side valve. Once all air is bled, close the high side valve. Next, open test cock #3, then the low side valve. Once all air is bled, close the low side valve. Attach the bypass hose to test cock #4. Open the low valve, loosen the the bypass hose at test cock #4, then tighten again once all air is bled. Close the low side valve and open the high side valve.

Test #1: Testing the Tightness of the #2 Shutoff and #2 Check Valve with Backpressure

Close the #2 shutoff. Open test cock #4, then close test cock #2. Read the differential gauge. If the gauge reading remains steady, record the #2 shutoff as closed tight. This is simultaneously testing the #2 check with backpressure. If the differential gauge reading remains steady, record #2 check valve as closed tight.

Test #2: Testing the #1 Check Valve Differential Value

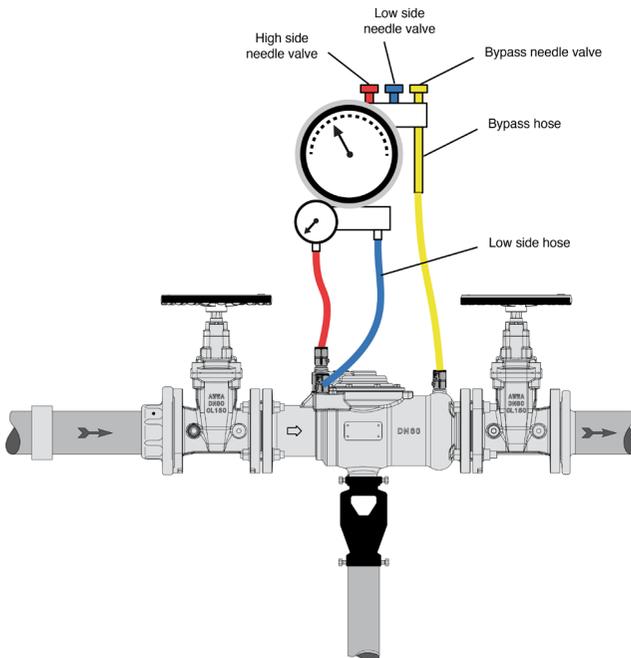
Close test cock #4, then the high side valve on the test kit. Remove the bypass hose from test cock #4. Open test cock #2, then slowly open the low side valve to cause the gauge reading to increase. Close the low valve, and observe the gauge reading. Record that value as the differential pressure across check valve #1. If the reading is 5 PSID or above, record the #1 check as closed tight.

Test #3: Relief Valve Opening Value

Close the bypass valve, and open the high side valve. With one hand under the discharge opening, slowly open the low valve on the test kit. Note the value on the test gauge when water starts to drip. If this value is 2 PSID or above, the relief valve has passed.

Restoring the System:

Close all test cocks, and remove all hoses. Open all valves on the test kit to drain any residual water. Restore the #2 shutoff to pre-test condition.



Maintenance

Since the backflow preventer valve is used to ensure the safety of domestic water supplies, it must be inspected per local codes. The first sign that the equipment is not functioning properly, generally associated with the presence of debris or other impurities, is indicated by a constant leakage through the assembly relief valve. This loss is just an initial warning sign and does not completely jeopardize the safety of the check mechanism, but means that the unit should be disassembled and cleaned. A troubleshooting method, which should take less than 15 minutes is described in the table below.

In the event of dripping at the assembly relief valve, it is recommended to create a strong circulation flow for a few minutes by opening several taps. This is usually sufficient to flush out any debris or other impurities to restore normal operation.

TROUBLESHOOTING METHOD

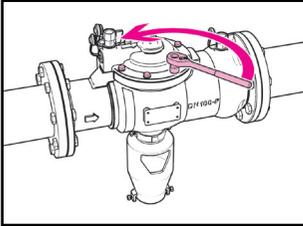
Ensure that the system is under pressure before performing the operations below. Observe the relief valve response at the bottom of the assembly.

OPERATION	EFFECT	LIKELY CAUSE	CORRECTIVE ACTION
1 Close downstream shut-off valve	Continuous relief valve discharge	CV #1 or RV seat not sealed	Perform maintenance procedure
	No continuous discharge		Proceed to operation 2
2 Close the upstream shut-off valve, and open test cock #2.	Relief valve does not open, or discharge continues for longer than 1 minute	Damaged RV spring or RV is plugged with debris	Dismantle maintenance procedure
	Relief valve opens abruptly and assembly empties in less than 1 minute		Proceed to operation 3
3 Open downstream shut-off valve	Continuous relief valve discharge	CV #2 is not sealed	Perform maintenance procedure
	No discharge		Put assembly back into operation

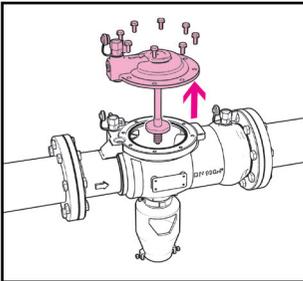
Maintenance Procedure for internal parts

The following illustrations demonstrate the inspection procedure for functional components of the 5751 FlowShield RP backflow preventer.

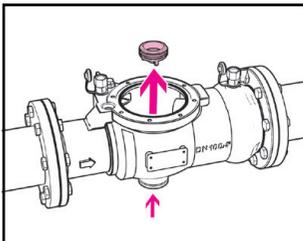
1. Close the downstream shutoff valve, followed by the upstream shutoff valve.
2. Relieve assembly pressure by opening the pressure test cocks, then remove the cover bolts.



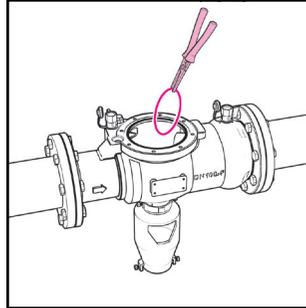
3. Remove the cover and relief valve assembly. **CAUTION:** The relief valve spring is under pressure and may cause the cover to fly off during removal.



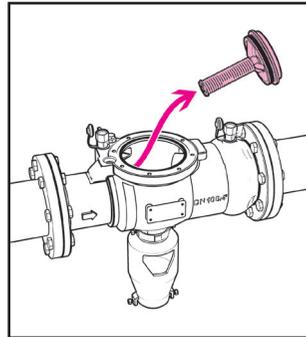
4. Remove the relief valve assembly seat by pushing from the underside of the assembly. Handle carefully to prevent damage. **CAUTION:** If the seat cannot be removed easily, protect it from damage during check valve removal and replacement.



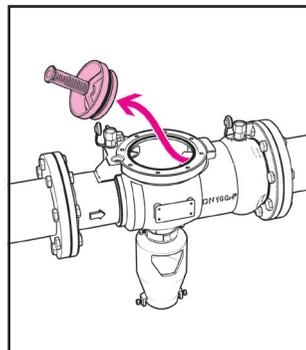
5. Using pliers, remove the split rings securing the check valves.

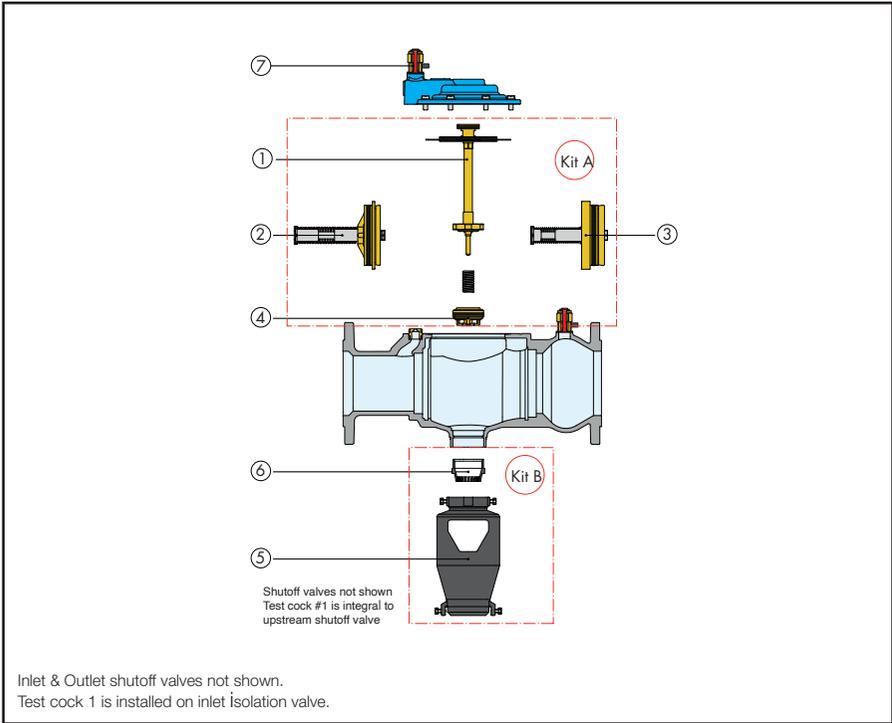


6. Using pliers, remove the upstream and downstream check valves.



7. After inspection and component replacement, ensure split rings are properly seated when reinstalling check valves. Then reinsert seat, relief valve assembly and cover.





Spare parts

Code	575105A	575106A	575108A	575110A
Size	2"	2-1/2"	3"	4"
Kit A	NA11610		NA11612	
Kit B	NA11614		NA11616	
1. Relief valve assembly	59625		59629	
2. Check valve #1	F0002296		F0002298	
3. Check valve #2	F0002299		F0002300	
4. Relief valve seat	59462		F0002294	
5. Air gap	31872		31873	
6. Relief valve flow guide	31875		31876	
7. Replacement test cocks (4 pcs)	NA11618			

Kit A: Internal component rebuild kit, includes check valve #1 and #2 and relief valve assembly with seat.
Kit B: Air gap kit, includes relief valve flow guide and air gap.

LEAVE THIS MANUAL WITH THE USER.

Laissez ce manuel à la disposition de l'utilisateur.



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06-2025

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