

(BA Type) Backflow Preventer RPZ Valve FIG 574 & FIG 575

Applications

The backflow preventer can be used in all systems where there is danger of the wholesome water supply system being contaminated. A reduced pressure zone backflow preventer (BA type) will stop backflow contamination from the downstream installation even under accidental negative pressure from the water supply distribution network conforming to BS EN 12729.



Technical Specification

- Materials
 - Body
 - Dezincification resistant alloy
 - EN 12165 CW724R (1/2" and 3/4")
 - EN 1982 CB752S (1" and 1 1/4")
 - Bronze EN 1982 CB499K (1 1/2", 2", DN 50–DN 100)
 - Cover
 - Dezincification resistant alloy
 - EN 12165 CW724R (1/2"-1 1/4")
 - Bronze EN 1982 CB499K (1 1/2", 2", DN 50–DN 100)
 - Check valve stem and springs
 - Stainless steel
 - Diaphragm and seals
 - NBR
 - Medium
 - Wholesome water

36700406 DN100

- Nominal pressure
 - PN 10
- Maximum working temperature
 - 65°C
- Pressure test ports
 - Upstream
 - Intermediate
 - Downstream
- Threaded connections
 - ISO 7/1
 - 1/2" 3/4" 1" 1 1/4" 1 1/2" 2" M with union
- Flanged connections
 - DN 50, DN 65, DN 80 and DN 100 EN 1092-2 PN10 / PN16
- Complies with standards
 - NF, DVGW, KIWA, WRAS, SVGW, BELGAQUA, ACS, SITAC
 - BS EN 1717:2000
- Certification
 - EN 12729
- Acoustic Group
 - I (1/2"-1 1/4")

Hydraulic Characteristics











Operation

The backflow preventer consists of two check valves (4) and (5), a chamber known as "reduced pressure zone" (B) and a discharge valve connected to the latter (3). The water entering the backflow preventer opens the upstream check valve (4) and at the same time through the channel (1) acts on the diaphragm (2) which closes the discharge valve (3) by means of the rod and then opens the downstream check valve (5). The pressure in the intermediate chamber under normal operating conditions is always lower than the upstream pressure by at least 140 mbar (14 Kpa) as a result of a pre-calculated pressure loss on the first check valve. This difference in pressure (ΔP) between the upstream (A) and intermediate (B) areas can be specified exactly, so as the discharge valve is opened when the upstream pressure is still



greater than the pressure in the intermediate area by at least 140 mbar (14Kpa). Moreover in the event of damage to the diaphragm the safety gasket, under the tension of the contrast spring (3), prevents the return of the water upstream from the discharge since there is no more pressure equilibrium between the two areas. N.B. To ensure correct operation all air needs to be purged from the upmost side of the diaphragm, this is done by means of the relief screw.

Installation

The installation of backflow preventer should only be carried out by competent personnel in accordance with current legislation (AIM-08-01). The backflow preventer must be installed after an upstream isolating valve and a serviceable strainer; another isolating valve should be fitted downstream. RPZ valve shall not be installed in a place or position which is,

- Liable to flooding
- Above electrical equipment
- Liable to mechanical or other damage
- Exposed to freezing, unless measure are taken to prevent the assembly from freezing.
- Concealed

Installation design considerations should be made when pressure upstream of the RPZ is liable to fluctuation, an additional single check valve may be necessary. The equipment must be installed horizontally. Before physically installing the backflow preventer additional components the pipework should be adequately flushed and if needed chemically treated in accordance of BS 6700. The RPZ valve shall be installed to enable effective inspection, testing and maintenance. The height from the ground, base or floor level of any cabinet (permanently available working platforms can be considered) to the underside of the exit port of the relief valve shall be >500mm and <1500mm.

Installation Diagram



Inspection and testing,

Site testing of the RPZ valve must only be carried out by an accredited tester approved by the Water Supply Industry as being competent to test the assembly. Testing shall be carried out at least annually but this can become more frequent if specified by the Water Supplier. Subject to agreement with the Water Supplier the device may be tested prior to the expiry of the current test period, permissible timings are,

- Up to 30 days prior to expiry where a service period is 6 months or more.
- Up to 14 days prior to expiry where a service period less than 6 months.

The testing certification can be dated to start from the expiry period of the old certificate. Testing should accommodate installation environment, if RPZ value is installed on hot water then testing should be completed under normal operating conditions; if moved from one premises to another the value shall be re-commissioned.

Inspection of the RPZ valve should establish,

- Accessibility
- The measurements of air gaps at drain ports
- Cleanliness of upstream strainer
- Conformity to AIM-08-01

Function of the RPZ valve and associated fittings should be tested and recorded by an accredited tester to ensure correct function and performance of the valve. If correct function cannot be achieved the RPZ valve shall be repaired or replaced within 72 hours, however, if unachievable the water supplier should be notified and further actions may be required to ensure installation does not contaminate supply.

The first sign that the equipment is not functioning properly, which is generally associated with the presence of foreign bodies (sand or other impurities), will be indicated by a permanent leakage

through the discharge. This loss is just an initial warning sign and does not jeopardize the safety of the check mechanism but means that the unit should be dismantled and both the equipment and the upstream filter should be cleaned. A rapid inspection method (less than 15 minutes are required) is described in the table below. N.B. In the event of a loss at the discharge it is recommended to cause a strong circulation flow for a few minutes by opening one or more taps. This will often be sufficient to expel any foreign bodies and to get equipment to operate normally again.

Rapid Inspection Procedure

Operation	Defect Detected	Cause	Action To Be Taken
Close downstream isolating valve	 Permanent Leakage No Leakage 	Upstream valve or discharge valve not watertight	Dismantle and check
Close upstream isolating valve and open upstream pressure test cock	 Discharge does not open. Leakage is minimal and lasts more than 1 minute. Discharge opens abruptly and equipment is emptied in less than 1 minute. 	Discharge blocked	Dismantle and check
Open downstream isolating valve	Continuous dischargeNo discharge	Downstream check valve not watertight	Dismantle and check Put equipment back in operation

Checks on and where necessary replacements for the internal parts of the backflow preventer. For $\frac{1}{2}$ " and $\frac{3}{4}$ "

The following drawings show the required operations to check the functional inner parts of backflow preventer, sizes $\frac{1}{2}$ and $\frac{3}{4}$ "

1. Release the pressure using the cocks fitted to the backflow preventer. Remove the cover bolts.	2. Pull out the central assemble and contrast spring	3. Pull out the seat of the discharge valve by pushing it from the outside whilst handling it with care so as not to damage it. Caution: If it should not be removed protect it from possible damage which could result from changing the check valves.
4. Remove the split rings holding the check valves in place with a pair of long-jaw pliers.	5. Remove the upstream and downstream check valves using a common pipe wrench or suitable size pliers.	6. After carrying out the inspection and after replacing any necessary components when refitting the check valves make sure that the split rings are perfectly located in the seat.

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Checks on and where necessary replacements for the internal parts of the backflow preventer. For 1" and 1 1/4".

The following drawings show the required operations to check the functional inner parts of backflow preventer, sizes 1" and 1 $\frac{1}{4}$ ".



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7. To close the backflow preventer, follow backwards the operations described in points 3 and 2. To screw the cover, proceed as follows: Place the threading correctly into its seat, press the central rod through a pointed tool, fully screw the cover with an hexagonal wrench while keeping it pressed.



Checks on and where necessary replacements for the internal parts of the backflow preventer. For 1 $\frac{1}{2}$ " and 2".

The following drawings show the required operations to check the functional inner parts of backflow preventer, sizes 1 $\frac{1}{2}$ " and 2".



Checks on and where necessary replacements for the internal parts of the backflow preventer. For DN50 , DN65, DN80 and DN100

The following drawings show the required operations to check the functional inner parts of backflow preventer, sizes DN 50, DN 65, DN 80 and DN 100.

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Components

1	Discharge Assembly
2	Upstream Check Valve
3	Downstream Check Valve
4	Discharge Valve Seat
5	Tundish
6	Deflector
7	Test Cock
8	Inspection Cover
9	Split Ring
10	Body
11	Gasket
12	Tailpiece
13	Nut

36700354 1 ¹⁄₂" and 36700365 2"

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36700376 DN50, 36700387 DN65, 36700398 DN80 and 36700406 DN100

1	Discharge Assembly	
2	Upstream Check Valve	
3	Downstream Check Valve	
4	Discharge Valve Seat	
5	Tundish	
6	Deflector	
7	Test Cock	
8	Inspection Cover	
9	Split Ring	
10	Body	

Spare Parts

BSS Code	Altecnic Code	Description	Component
36700417	B-123-3001	BSS BOSS Branded RPZ Spares Pack - 1/2", 3/4"	Upstream Check Valve
			Downstream Check Valve
			Discharge Valve Assembly
			Valve Seat
36700428	B-123-3002	BSS BOSS Branded RPZ Spares Pack - 1", 1 1/4"	Upstream Check Valve
			Downstream Check Valve
			Central Seater Assembly
			Bottom Seat
36700439	B-123-3003	BSS BOSS Branded RPZ Spares Pack - 1 1/2", 2" & DN50 RPZ	Upstream Check Valve
			Downstream Check Valve

			Central Seater Assembly
			Bottom Seat
36700450	B-123-3004	BSS BOSS Branded RPZ Spares Pack - DN65 RPZ	Upstream Check Valve
			Downstream Check Valve
			Central Seater Assembly
			Bottom Seat
36700461 B-123-3 & 36700472	B-123-3005	-3005 BSS BOSS Branded RPZ Spares Pack - DN80 RPZ	Upstream Check Valve
			Downstream Check Valve
			Central Seater Assembly
			Check Valve Seat

Safety

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. Make sure that all the connecting pipework is watertight. 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. Water temperatures higher than 50°C can cause serious burns. During the installation, commissioning and maintenance of the backflow preventer, take the necessary precautions to ensure that such temperatures do not endanger people. 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 device may be damaged and will not operate correctly.

Leave this manual as a reference guide for the user

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