

Controllable reduced pressure zone backflow preventer BA type

574 - 575 - 570 series



01022/15 GB

replaces dp 01022/03 GB



Function

The backflow preventer is a hydraulic protection device designed to prevent polluted water from flowing back into the mains supply network. This type of backflow may occur when the pressure in the mains supply network changes and causes a reversal of the flow. The backflow preventer is installed between the mains supply network and the internal consumer circuit in water supply systems and creates a safety zone which prevents the water in the two circuits from coming into contact.



Product range

574 series Controllable reduced pressure zone backflow preventer BA type. Threaded connections _____ sizes DN 15 (1/2"), DN 20 (3/4"), DN 25 (1"), DN 32 (1 1/4"), DN 40 (1 1/2"), DN 50 (2")

575 series Controllable reduced pressure zone backflow preventer BA type. Flanged version _____ sizes DN 50–DN 100

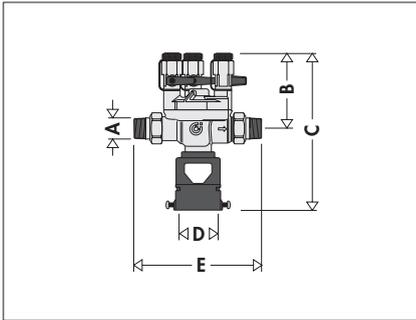
570 series Pre-assembled group with BA type backflow preventer, shut-off valves, strainer. Threaded connections _____ sizes DN 15 (1/2"), DN 20 (3/4"), DN 25 (1"), DN 32 (1 1/4"), DN 40 (1 1/2"), DN 50 (2")

570 series Pre-assembled group with BA type backflow preventer, shut-off valves, strainer. Flanged version _____ sizes DN 50–DN 100

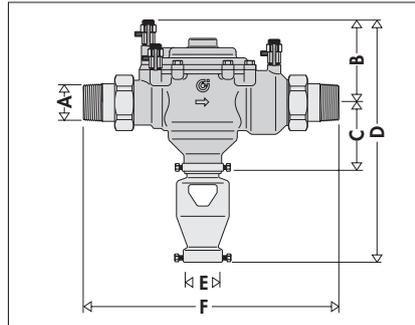
Technical specification

series	574-570 threaded	575-570 flanged
Materials		
Body and cover:	CR dezincification resistant alloy EN 12165 CW724R (1/2" code 574040, 3/4" and 1" code 574006) EN 1982 CB752S (1/2" code 574004, 1" code 574600, 1 1/4") bronze EN 1982 CB499K (1 1/2" and 2")	bronze EN 1982 CB499K
Check valve spindle:	stainless steel EN 10088-3 (AISI 303)	stainless steel EN 10088-3 (AISI 303)
Discharge valve seat:	CR dezincification resistant alloy EN 12165 CW724R (1/2", 3/4" and 1" code 574006) stainless steel EN 10088-3 (AISI 303) (1"-2")	stainless steel EN 10088-3 (AISI 303)
Springs:	stainless steel EN 10270-3 (AISI 302)	stainless steel EN 10270-3 (AISI 302)
Diaphragm:	EPDM (1/2", 3/4", 1" and 1 1/4") NBR (1 1/2"-2")	NBR
Hydraulic seals:	NBR	NBR
Shut-off valve body:	brass EN 12165 CW617N epoxy resin coated	cast iron EN 1563 EN GJS-400-15
Strainer body:	bronze EN1982 CB491K epoxy resin coated	cast iron EN 1561 EN GJL-250
Strainer cartridge:	stainless steel	stainless steel
Performance		
Medium:	potable water	potable water
Nominal pressure:	PN 10	PN 10
Max. working pressure:	65°C	65°C
Strainer mesh Ø:	0,8 mm 0,9 mm (DN 80-DN 100)	0,7 mm (DN 50-DN 65)
Acoustic group:	I (1/2"-1 1/4")	-
Connections	1/2"-2" M with union	DN 50–DN 100 flanged PN 16 to be coupled with counterflange EN 1092-1
Pressure test port connections	1/4" F	DN 50: 1/4" F DN 65–DN 100: 1/2" F

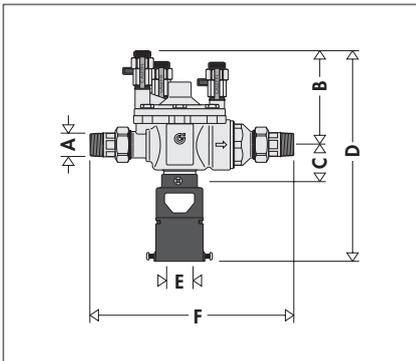
Dimensions



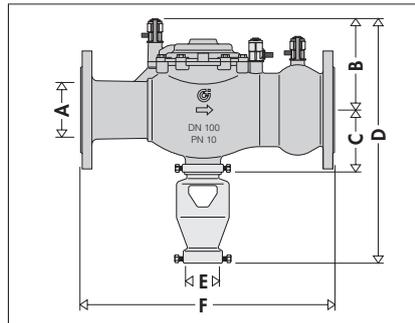
Code	A	B	C	D	E	Mass (kg)
574004	1/2"	77,5	158	∅ 40	130	0,9



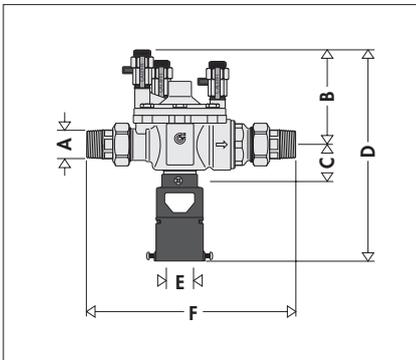
Code	A	B	C	D	E	F	Mass (kg)
574800	1 1/2"	130	108,5	382	∅ 50	387	11,3
574900	2"	130	108,5	382	∅ 50	395	11,4



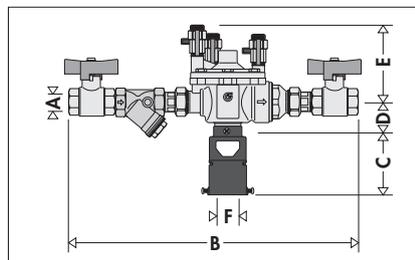
Code	A	B	C	D	E	F	Mass (kg)
574040	1/2"	103	44,5	263	∅ 40-60	227	2,9
574050	3/4"	103	44,5	263	∅ 40-60	227	2,9



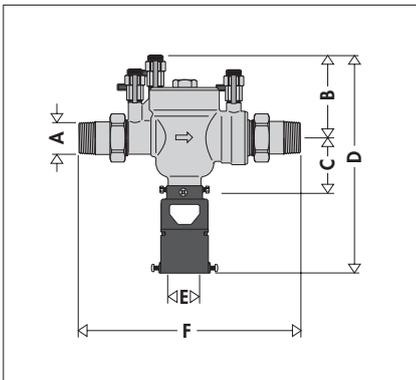
Code	A	B	C	D	E	F	Mass (kg)
575005	DN 50	129	108,5	382	∅ 50	302	13,2
575006	DN 65	132,5	108,5	385	∅ 50	305	17,0
575008	DN 80	170	115	484	∅ 80	470	26,5
575010	DN 100	170	115	484	∅ 80	470	28,0



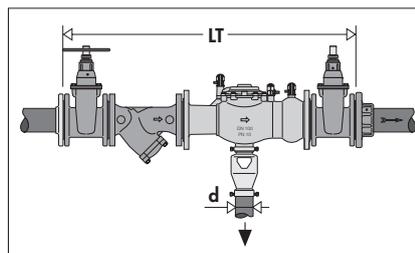
Code	A	B	C	D	E	F	Mass (kg)
574005	3/4"	103	44,5	263	∅ 40-60	238	3,0
574006	1"	103	44,5	263	∅ 40-60	238	3,0



Code	A	B	C	D	E	F	Mass (kg)
570004	1/2"	354	130	44,5	103	∅ 40-60	3,0
570005	3/4"	390	130	44,5	103	∅ 40-60	3,6
570006	1"	430	162	72,5	99,5	∅ 40-60	5,4
570007	1 1/4"	540	162	72,5	99,5	∅ 40-60	6,2
570008	1 1/2"	670	221	103,4	129,6	∅ 40-60	14,4
570009	2"	735	221	103,4	129,6	∅ 40-60	16,5



Code	A	B	C	D	E	F	Mass (kg)
574600	1"	100	74,5	292	∅ 40-60	280	4,7
574700	1 1/4"	100	74,5	292	∅ 40-60	280	4,7



Code	DN	LT	d	Mass (kg)
570050	50	850	∅ 50	70
570060	65	960	∅ 50	80
570080	80	1160	∅ 80	104
570100	100	1220	∅ 80	135

Backflow

Potable water, flowing in the mains supply network, may suffer from hazardous pollution mainly caused by contaminated fluid return, coming back from systems directly connected to the main supply. This phenomenon, termed "backflow" occurs when:

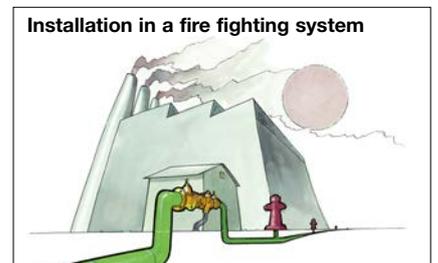
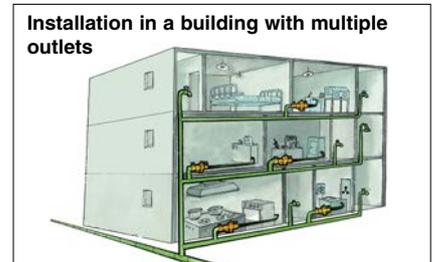
- the pressure in the mains system is lower than the pressure in the downstream hydraulic circuit (back syphonage). This situation may occur when there is a pipe breaking in the mains system or when demand on the mains supply network by consumers is very heavy;
- the pressure in the downstream circuit rises (back pressure) due, for example, to water being pumped from a well.



Risk assessment

Given the potential danger of the phenomenon and the requirements of current regulations, the risk of pollution by backflow must be assessed on the basis of the type of system and the characteristic of the fluid that flows in it. An appropriate backflow prevention device must be selected on the basis of that assessment performed by the system designer and the mains supply Company. The device must be located along the supply line at those points at risk of backflow which would be hazardous to human health.

The protection can be provided by inserting a backflow preventer at critical points in the circuit at the inlet from the mains supply network or in the internal distribution system. This will prevent polluted water from flowing back in all systems for which direct connection to the mains supply network or an internal supply is considered hazardous.



Use of backflow preventers (BA type) according to European standards EN 1717 and EN 12729

Proper use of the BA type backflow preventer is regulated by the European standards on the prevention of pollution by backflow.

The relevant standard is EN 1717: 2000 "Protection against pollution of potable water in water installations and general requirements of devices to prevent pollution by backflow".

The types of water contained in water systems are classified in this standard according to the degree of risk to human health.

Category 1:

Water to be used for human consumption coming directly from a potable water distribution system.

Category 2:

Fluid presenting no human health hazard. Fluid recognized as being fit for human consumption, including water taken from a potable water distribution system, which can have undergone a change in taste, odour, color or temperature (heating or cooling).

Category 3:

Fluid representing some human health hazard due to the presence of one or more harmful substances.

Category 4:

Fluid representing human health hazard due to the presence of one or more toxic or very toxic substances or one or more radioactive, mutagenic or carcinogenic substances.

Category 5:

Fluid presenting a human health hazard due to the presence of microbiological or viral elements.

Appropriate backflow prevention devices must be fitted in water supply systems on the basis of this classification.

Backflow preventers (BA type) can be used to protect against the risk of pollution from backflow for types of water up to category 4. For category 5 types of water an air gap separation must be used.

The table on the right, entitled "Protection matrix", relates the categories of water to different types of system. It has been compiled on the basis of indications given by the European standard.

The European standard EN 12729 - "Devices to prevent pollution by backflow of potable water. Controllable backflow preventer with reduced pressure zone.

Family B - Type A" - stipulates the functional, dimensional and mechanical requirements that must be met for controllable reduced pressure zone backflow preventers (BA type).

Protection matrix		
Type of system	Fluido cat.	
	4	5
General		
Sprinkler fire fighting systems using anti freeze solutions	*	
Industrial cisterns		*
Non-domestic taps with connection hose		*
Permeable hoses in others than domestic gardens, laid below or at ground level, with or without chemical additives		*
Primary circuits and central heating systems in other than a house	*	
Systems with conditioned water		*
Heating systems with additives	*	
Urinals, WC's and bidets		*
Residential or domestic gardens		
Mini-irrigation systems without fertilisers or insecticides applications, such as pop-up sprinklers or porous hoses	*	
Food processing		
Bottle washing apparatus	*	
Butchery and meat trade		*
Dairies	*	
Food preparation	*	
Slaughterhouse equipment		*
Vegetable washing		*
Medical		
Medical or dental equipment with submerged inlets		*
Bed-pans washers		*
Commercial clothes washing in health care premises		*
Domestic appliances such as sinks, baths and wash basins		*
Dialysing machines		*
Laboratories		*
Mortuary equipment		*
Catering		
Bottle washing apparatus	*	
Dish washing machines in commercial buildings	*	
Dish washing machines in health care premises		*
Drink vending machines in which ingredients or CO ₂ are injected into the supply or distribution pipe	*	
Refrigerating equipment	*	
Vegetable washing		*
Industrial and commercial applications		
Brewery and distillation	*	
Car washing and degreasing systems	*	
Commercial clothes washing systems	*	
Drain cleaning systems		*
Dyeing equipment	*	
Industrial and chemical plants		*
Industrial disinfection equipment	*	
Laboratories		*
Mobile plant, tankers and gully emptiers		*
Printing and photographic equipment	*	
Water storage for agricultural purposes		*
Animals' drinking systems		*
Water treatment systems or water softeners using products other than salt	*	
Pressurised water fire fighting systems	*	
Water storages for fire fighting systems		*
Agriculture		
Commercial irrigation with outlets below or at ground level and/or permeable pipes, with or without chemical additives		*
Commercial hydroponic systems		*
Insecticide of fertiliser applications		*

Operating principle

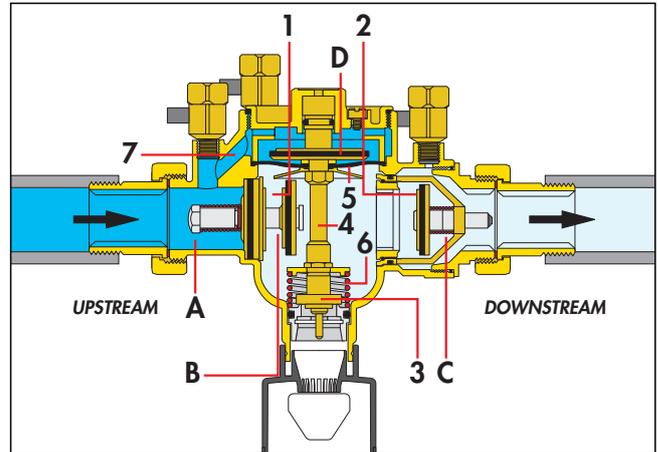
The controllable reduced pressure zone backflow preventer is composed of: a body with an inspection cover, an upstream check valve (1), a downstream check valve (2), a discharge device (3). The two check valves divide three different zones, each of which at a different pressure: an upstream or inlet zone (A); an intermediate zone, also known as the reduced pressure zone (B); a downstream or outlet zone (C). Each of these is equipped with a test port for pressure measurement. A discharge device (3) is located in the lower part of the intermediate zone. The obturator of the discharge device is connected via the valve stem (4) to the diaphragm (5). This mobile unit is pushed upwards by the spring (6). The diaphragm (5) marks the limit of the operation chamber (D), which is connected to the upstream zone by the channel (7).

Normal flow conditions

Under normal flow conditions, both check valves are open, while the pressure in the intermediate chamber (B) is always lower than the inlet pressure by at least 140 mbar due to the pressure loss caused by the check valve (1).

In the operation chamber (D), however, the pressure is the same as in the inlet zone.

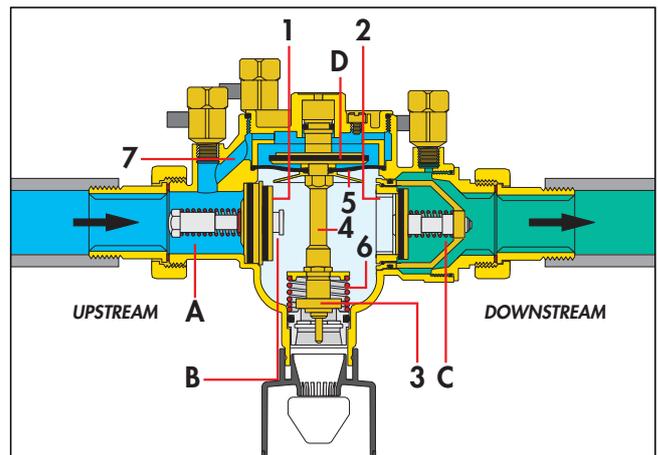
In this situation, the mobile unit consisting of the diaphragm (5), the valve stem (4) and the valve obturator (3) is pushed down by the thrust created by the difference in pressure acting on the diaphragm which is greater than that of the spring (6) acting in the opposite direction. The discharge valve is therefore held in the closed position.



No flow conditions

The check valves (1) and (2) are now closed.

Since the pressure in the upstream zone, and therefore also in the operation chamber (D), is still at least 140 mbar higher than the pressure in the intermediate chamber (B), the discharge valve remains closed.

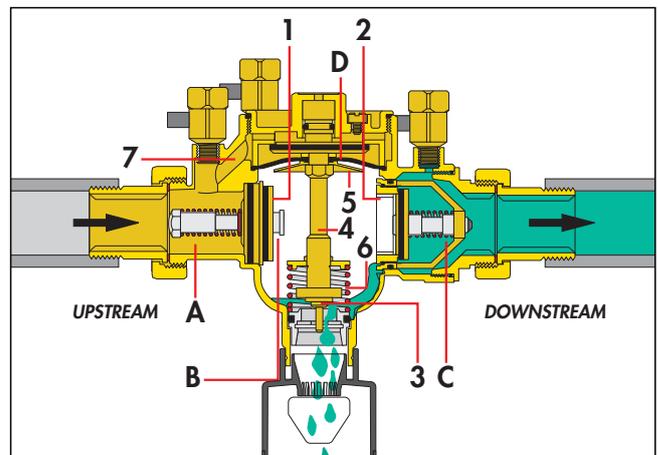


Upstream pressure loss

Both check valves close as the pressure upstream drops. The discharge valve (3) opens when the difference in pressure Δp , between the upstream and the intermediate zones, falls reaching a value a little bit higher than 140 mbar.

Under these conditions the action exerted by the pressure difference Δp on the diaphragm (5) becomes weaker than that exerted by the spring (6) and the discharge valve (3) opens as a result. Discharge then occurs until the body of the backflow preventer is empty.

When the situation returns to normal (pressure upstream greater than pressure downstream), the discharge valve closes and the backflow preventer is again ready to operate.



Downstream back pressure

If the pressure in the downstream zone increases until it is greater than the upstream pressure, the check valve (2) closes and therefore prevents water already delivered from returning back into the mains system.

If the seal of the check valve (2) is slightly defective or in general terms there is any other type of fault in the backflow preventer, the device always interrupts (disconnects) the connection between the mains system and the user system.

The backflow preventer has been designed with all construction details required for a properly functioning positive action device; the best possible safety conditions are therefore ensured under all conditions.

Constructional details

Discharge tundish

In compliance with standard EN 1717, backflow from the connected pipe must be prevented during discharge and this must occur without any water sprinkling to the outside. Consequently the tundish connected to the discharge pipe must be of an appropriate size with special openings to create the necessary air gap and it must be equipped with a proper flow conveyer.

Anti-corrosion materials

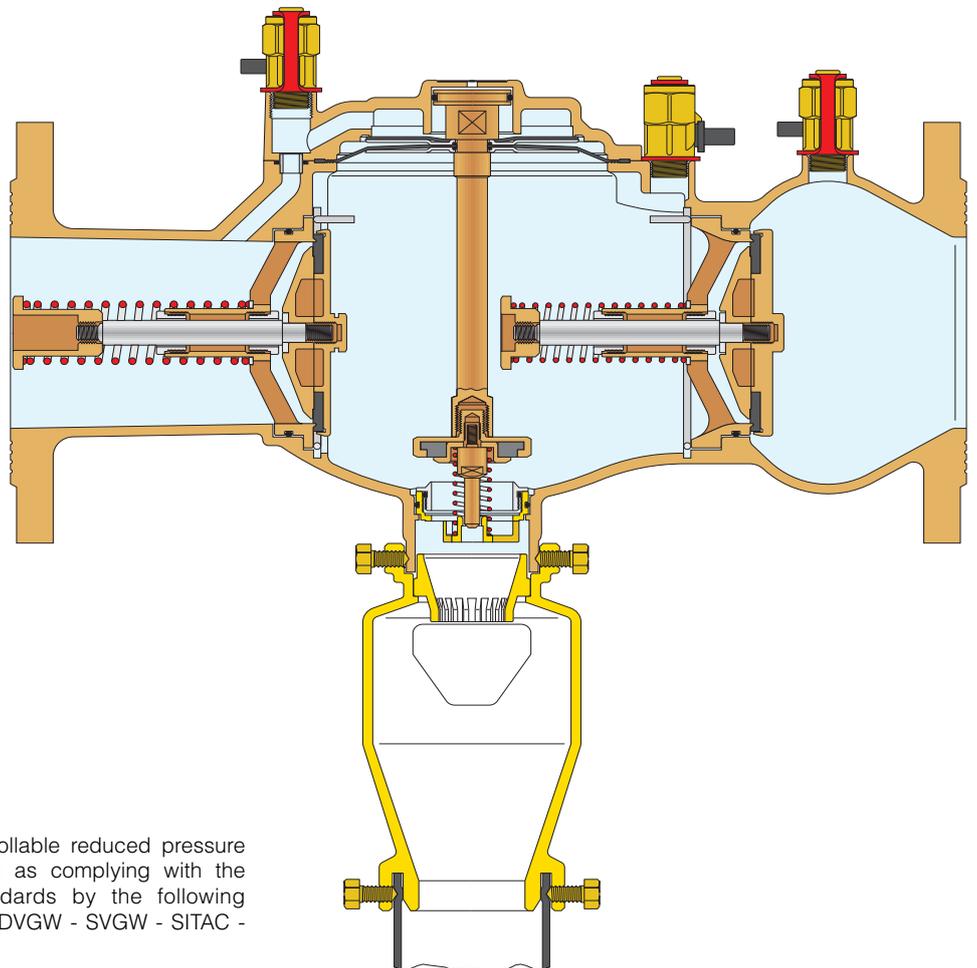
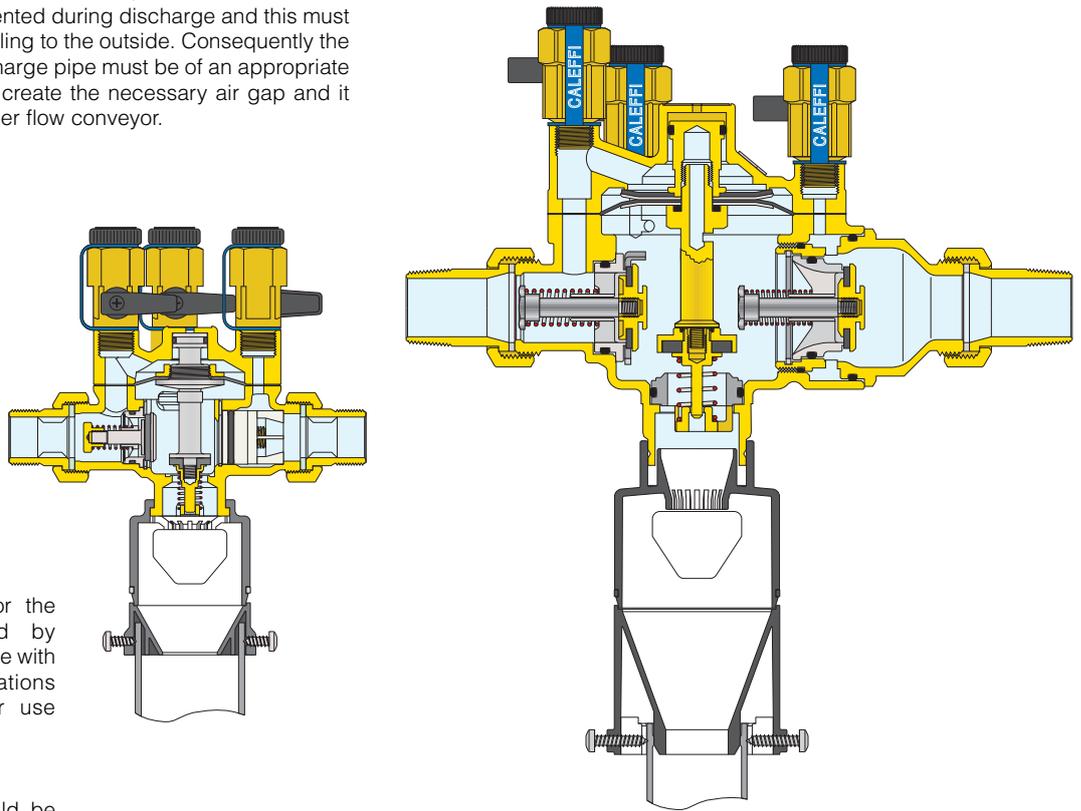
The materials used to manufacture the backflow preventers must be resistant to corrosion due to the contact with potable water. They are therefore constructed using a dezincification resistant alloy **CR**, bronze and stainless steel to ensure high performance over time.

Elastomers complying with food regulations

The elastomers employed for the water seals are approved by Certifying Bodies in compliance with the most recent regulations concerning compatibility for use with potable water.

Easy maintenance

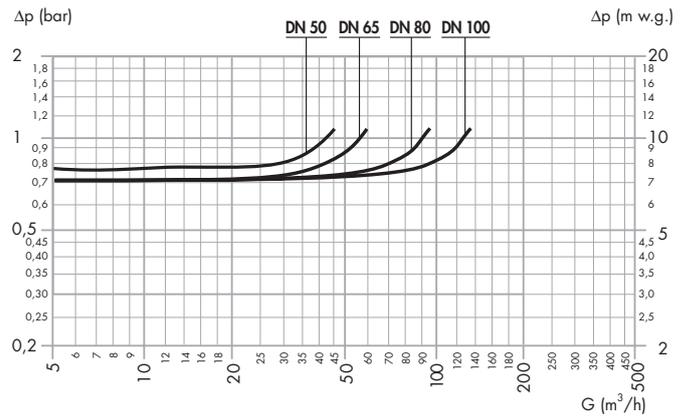
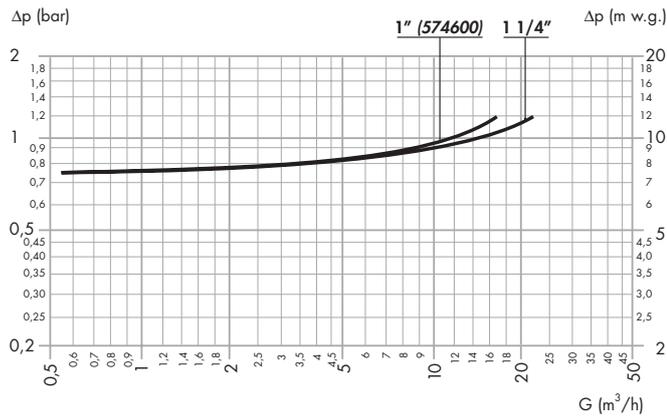
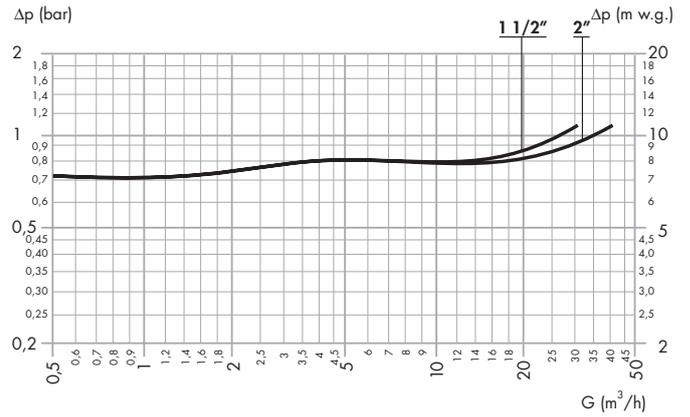
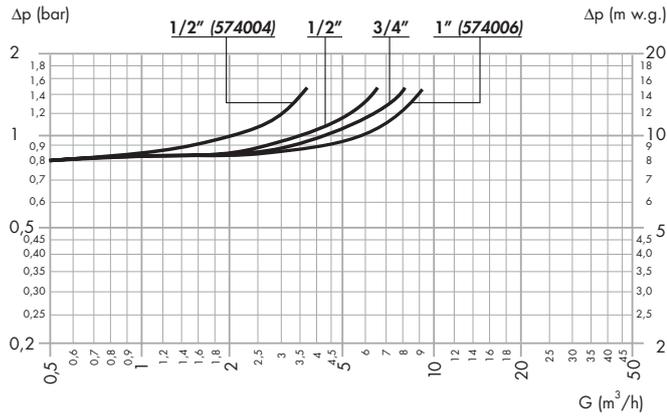
The backflow preventer should be periodically inspected during its normal operating life to check its correct functioning. If necessary, dismantling and maintenance operations are easy to perform thanks to the use of components easy to inspect and replace without uninstalling the valve body from the pipework.



Certification

The 574 and 575 series BA type controllable reduced pressure zone backflow preventers are certified as complying with the National and European product standards by the following Certifying Bodies: NF - WRAS - KIWA - DVGW - SVGW - SITAC - BELGAQUA - ACS - VA.

Hydraulic characteristics



570 series

	Kv (m³/h)									
	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	DN 50	DN 65	DN 80	DN 100
Strainer	4,5	8	11	16	22	25	104	180	258	365
Shut-off valves	7	11	20	35	49	80	300	610	950	1.700

Installation

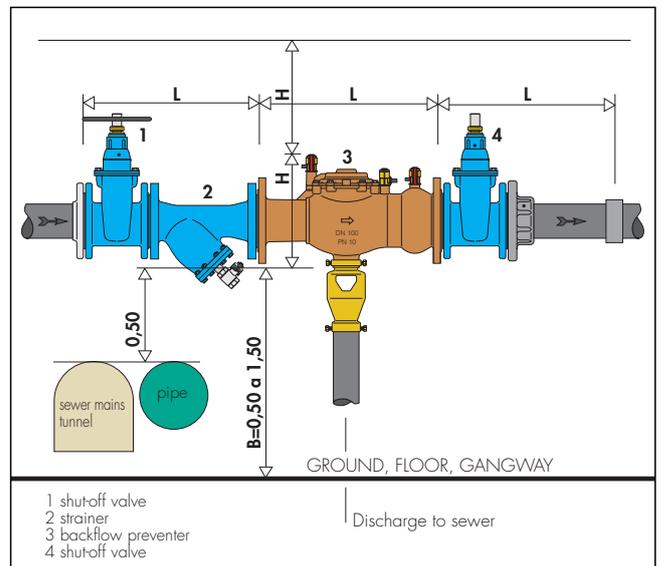
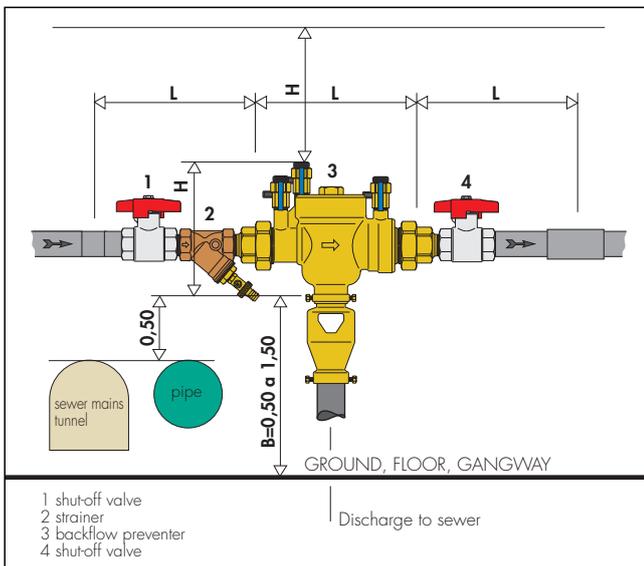
Backflow preventers must be installed by qualified personnel in accordance with current regulations.

They must be installed downstream from a shut-off valve and from a strainer with a discharge that can be inspected and another shut-off valve must be fitted downstream from it. The unit must be installed in an accessible position, appropriately located to avoid possible immersion due to accidental flooding (see diagram).

The device must be fitted horizontally. The discharge tundish must comply with standard EN 1717 and be connected to the sewage piping.

Before installing the backflow preventer and the strainer, the pipework must be flushed with a large flow rate.

When used to protect the mains supply network, backflow preventers must be installed downstream from the water meter, whereas when used to protect the potable water supply system for internal usage, they are installed at the limit of the zone where pollution might occur, e.g. central heating systems, garden irrigation systems, etc.



Inspection and maintenance

The backflow preventer is a safety device and requires periodical inspection.

The first sign of poor functioning, generally caused by the presence of foreign bodies (sand or other impurities) keeping the upstream check valve in open position, is seen with a constant leakage from the discharge valve. This discharge is only a first alarm and does not mean in any way that the check valve is not safe but the backflow preventer and the upstream strainer require dismantling and cleaning. A quick method of inspection (requires less than 15 minutes) is described in the table below.

N.B. In case of leakage from the discharge valve, a strong flow of water is recommended for some minutes by turning on one or more taps. This operation is often sufficient to expel foreign bodies and return everything to normal conditions.

Control instrumentation (code 575000)



The periodical (annual) control instrumentation consists of the following:

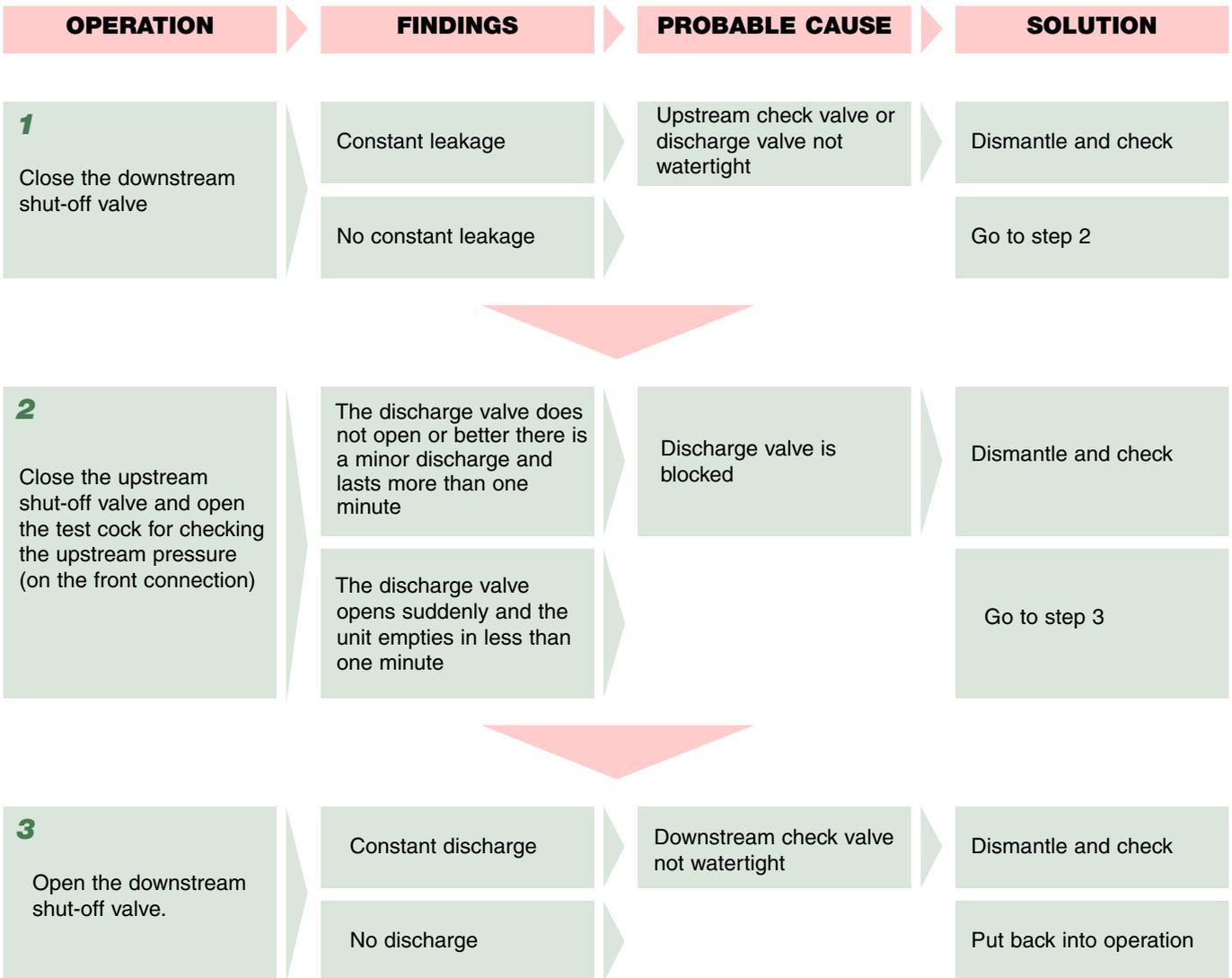
- Upstream pressure gauge
- Downstream pressure gauge
- Differential pressure gauge

The flexible hoses and necessary fittings are included as well as accessories useful for dismantling the unit.

The instrumentation comes in its own case.

QUICK INSPECTION METHOD

Check that the system is under pressure before each operation and watch the discharge valve located on the lower part of the device (use a mirror if necessary).



N.B. : During normal operation there should be no constant discharge. In case of constant discharge dismantle and inspect the device.

SPECIFICATION SUMMARY

Code 574004

Controllable reduced pressure zone backflow preventer. BA type. Certified to EN 12729. Size DN 15. Threaded connections 1/2" M with union. Body, cover and discharge valve seat in dezincification resistant alloy. Check valve in PSU-POM. Springs in stainless steel. Seals in NBR. Maximum working temperature 65°C. Maximum working pressure 10 bar. Complete with upstream, intermediate and downstream pressure test ports and discharge tundish with collar fitting to pipe. Acoustic group I.

Code 574040/574050

Controllable reduced pressure zone backflow preventer. BA type. Size DN 15 (and DN 20). Threaded connections 1/2" (and 3/4") M with union. Body, cover and discharge valve seat in dezincification resistant alloy. Check valve spindle and springs in stainless steel. Seals in NBR. Maximum working temperature 65°C. Maximum working pressure 10 bar. Positive action safety device in compliance with standard EN 12729. Complete with upstream, intermediate and downstream pressure test ports and discharge tundish with collar fitting to pipe. Acoustic group I.

Code 574005/574006

Controllable reduced pressure zone backflow preventer. BA type. Size DN 20 (and DN 25). Threaded connections 3/4" (and 1") M with union. Body, cover and discharge valve seat in dezincification resistant alloy. Check valve spindle and springs in stainless steel. Seals in NBR. Maximum working temperature 65°C. Maximum working pressure 10 bar. Positive action safety device in compliance with standard EN 12729. Complete with upstream, intermediate and downstream pressure test ports and discharge tundish with collar fitting to pipe. Acoustic group I.

Code 574600/574700

Controllable reduced pressure zone backflow preventer. BA type. Size DN 25 (and DN 32). Threaded connections 1" (and 1 1/4") M with union. Body and cover in dezincification resistant alloy. Check valve spindle, discharge valve seat and springs in stainless steel. Seals in NBR. Maximum working temperature 65°C. Maximum working pressure 10 bar. Positive action safety device in compliance with standard EN 12729. Complete with upstream, intermediate and downstream pressure test ports and discharge tundish with collar fitting to pipe. Acoustic group I.

Code 574800/574900

Controllable reduced pressure zone backflow preventer. BA type. Size DN 40 (and DN 50). Threaded connections 1 1/2" (and 2") M with union. Body and cover in bronze. Check valve spindle, discharge valve seat and springs in stainless steel. Seals in NBR. Maximum working temperature 65°C. Maximum working pressure 10 bar. Positive action safety device in compliance with standard EN 12729. Complete with upstream, intermediate and downstream pressure test ports and discharge tundish with collar fitting to pipe.

575 series

Controllable reduced pressure zone backflow preventer. BA type. Flanged connections DN 50 (DN 50–DN 100) PN 16 EN 1092-1. Body and cover in bronze. Check valve spindle, discharge valve seat and springs in stainless steel. Seals in NBR. Maximum working temperature 65°C. Maximum working pressure 10 bar. Positive action safety device in compliance with standard EN 12729. Complete with upstream, intermediate and downstream pressure test ports and discharge tundish with collar fitting to pipe.

570 series

Pre-assembled backflow preventer group. Threaded connections 1/2" (from 1/2" to 2") F. Maximum working temperature 65°C. Maximum working pressure 10 bar. Composed of:

- Controllable reduced pressure zone backflow preventer. BA type. Threaded connections M with union. Body in dezincification resistant alloy. Check valve spindle, discharge valve seat and springs in stainless steel. Discharge valve seat in dezincification resistant alloy for sizes 1/2", 3/4" and 1" (code 574006). Seals in NBR. Positive action safety device in compliance with standard EN 12729. Complete with upstream, intermediate and downstream pressure test ports and discharge tundish with collar fitting to pipe. Acoustic group I (1"-1 1/4").
- Y strainer. Bronze body. Stainless steel cartridge. Seal in Saital K. Mesh size 0,8 mm.
- Upstream and downstream shut-off valves. Brass body.

570 series

Pre-assembled backflow preventer group. Flanged connections DN 50 (from DN 50 to DN 100) PN 16 EN 1092-1. Maximum working temperature 65°C. Maximum working pressure 10 bar. Composed of:

- Controllable reduced pressure zone backflow preventer. BA type. Body and cover in bronze. Check valve spindle, discharge valve seat and springs in stainless steel. Seals in NBR. Positive action safety device in compliance with standard EN 12729. Complete with upstream, intermediate and downstream pressure test ports and discharge tundish with collar fitting to pipe.
- Y strainer. Epoxy resin coated cast iron body. Stainless steel cartridge, mesh size 0,7 mm (DN 50 and DN 65), 0,9 mm (DN 80 and DN 100). Equipped with discharge cock 1/2" F.
- Upstream and downstream shut-off valves. Epoxy resin coated cast iron body. Control stem seals in NBR.

5750 series

Periodical (annual) control instrumentation for backflow preventers. Complete with: upstream pressure gauge 0-10 bar; downstream pressure gauge 0-10 bar; differential pressure gauge 0-1000 mbar; hoses and connection fittings to pressure test ports; case.

We reserve the right to make changes and improvements to the products and related data in this publication, at any time and without prior notice.