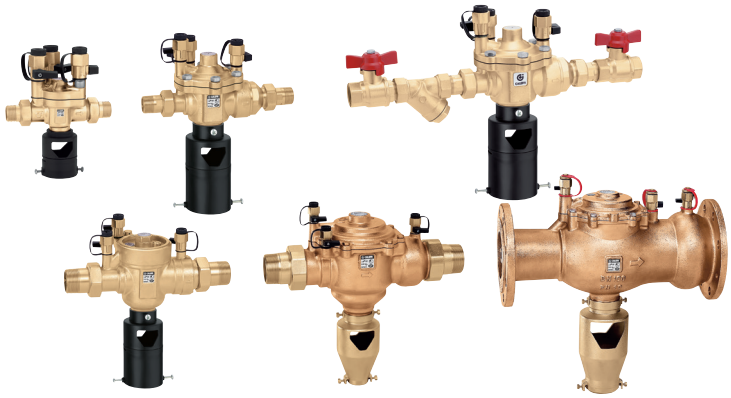
Controllable reduced pressure zone backflow preventer, BA type

574 - 575 - 570 series

01022/25 EN
replaces 01022/22 EN



Function

The backflow preventer is a hydraulic protection device designed to prevent polluted water from flowing back into the mains system. This type of backflow may occur when the pressure in the distribution system changes and causes a reversal of the flow. The backflow preventer is installed between the main water system and the internal user circuit in domestic water distribution systems and creates a separation zone that prevents the water in the two circuits from coming into contact.

SC0933-09

1.57/19919

Product range

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

Technical specifications

574/570 series backflow preventer, threaded

Materials

Body:
- code 574040, 574050, 574006: dezincification-resistant alloy CR EN 12165 CW724R
- code 574004, 574700, 574600: dezincification-resistant alloy CR EN 1982 CB770S
- code 574008: dezincification resistant alloy CR EN 1982 CC768S
- code 574800, 574900: bronze EN 1982 CB499K

Cover:
- code 574004, 574040, 574050, 574006, 574600, 574700, 574008: dezincification-resistant alloy CR EN 12165 CW724R
- code 574800, 574900: bronze EN 1982 CB499K

Check valve stems: stainless steel EN 10088-3 (AISI 303)

Drain valve seat:
- code 574004, 574040, 574050, 574006: dezincification resistant alloy CR EN 12165 CW724R
- code 574600, 574700, 574008, 574800, 574900: stainless steel EN 10088-3 (AISI 303)

Springs: stainless steel EN 10270-3 (AISI 302)

Diaphragm: EPDM

Hydraulic seals: EPDM

Performance

Medium: potable water

Nominal pressure: PN 10

Maximum working temperature: 65 °C

Acoustic group: I (1/2"–1 1/4")

Flanged connections: - code 574004: 1/2" M (ISO 228-1) with union 1/2"–2" M (EN 10226-1) with union

Pressure test port connections: 1/4" F (ISO 228-1)

Backflow preventer 575 series, flanged

Materials

Body: bronze EN 1982 CB499K

Cover: bronze EN 1982 CB499K

Check valve stems: stainless steel EN 10088-3 (AISI 303)

Drain valve seat: stainless steel EN 10088-3 (AISI 303)

Springs: stainless steel EN 10270-3 (AISI 302)

Diaphragm: EPDM

Hydraulic seals: EPDM

Performance

Medium: potable water

Nominal pressure: PN 10

Maximum working temperature: 65 °C

Flanged connections: DN 50–DN 100 flanged PN 16 Can be coupled with counterflanges EN 1092-1

Pressure test port connections: 1/4" F (DN 50) 1/2" F (DN 65–DN 100)

Shut-off valve and strainer, 570 series, threaded connection

Materials

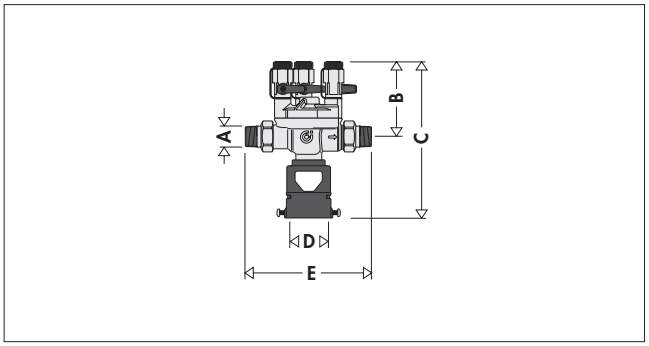
Shut-off valve body: brass EN 12165 CW617N

Filter body: bronze EN 1982 CB491K

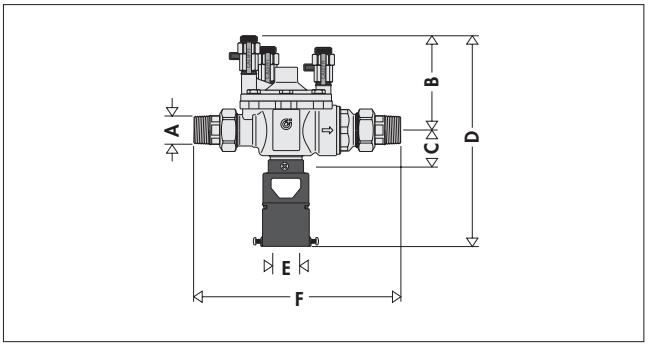
Strainer cartridge: stainless steel

Filter mesh:
- code 570004, 570005, 570006: 0,40 mm
- code 570007, 570008: 0,47 mm
- code 570009: 0,53 mm

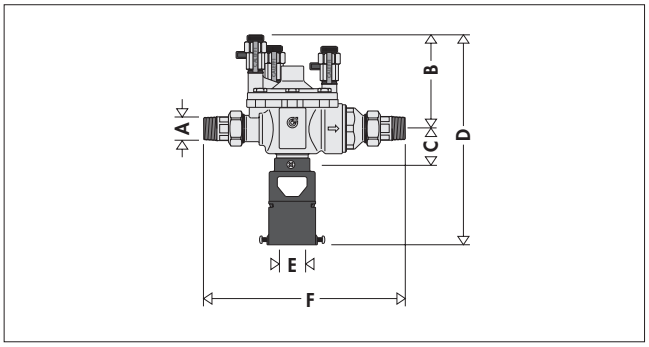
Dimensions



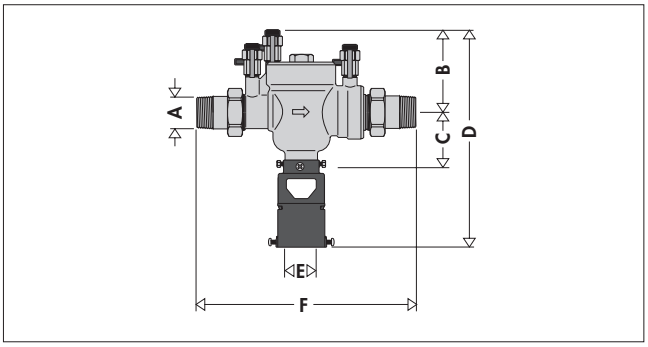
Codes	A	B	C	D	E	Kg
574004	1/2"	77,5	158	Ø 40	130	0,9



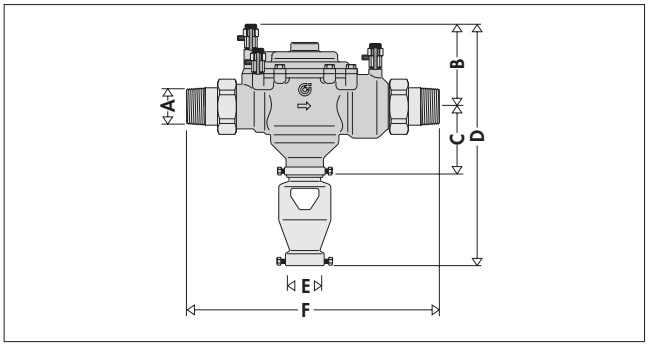
Codes	A	B	C	D	E	F	Kg
574006	1"	103	44,5	263	Ø 40-60	238	3,0



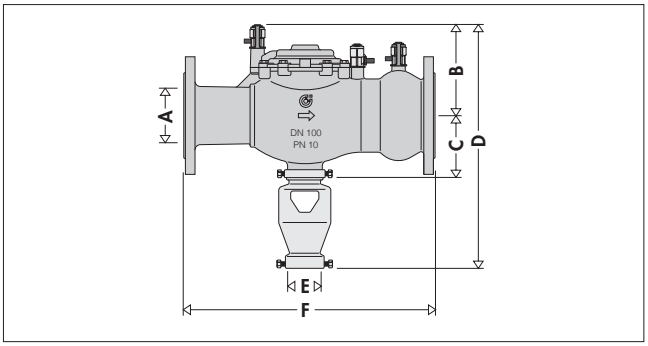
Codes	A	B	C	D	E	F	Kg
574040	1/2"	103	44,5	263	Ø 40-60	227	2,9
574050	3/4"	103	44,5	263	Ø 40-60	223	2,9



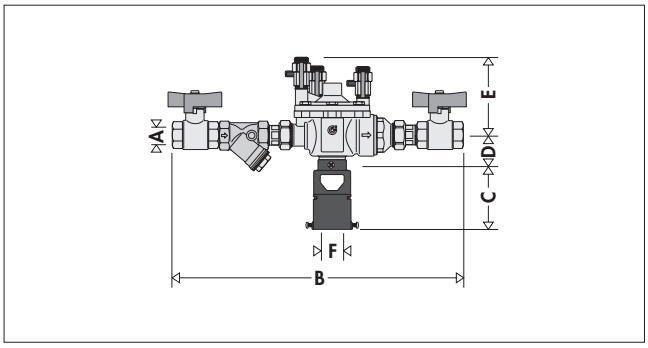
Codes	A	B	C	D	E	F	Kg
574600	1"	100	74,5	292	Ø 40-60	280	4,7
574700	1 1/4"	100	74,5	292	Ø 40-60	280	4,7
574008	1 1/2"	100	74,5	289	Ø 40-60	302,5	5



Codes	A	B	C	D	E	F	Kg
574800	1 1/2"	130	108,5	382	Ø 50	387	11,3
574900	2"	130	108,5	382	Ø 50	395	11,4



Codes	A	B	C	D	E	F	Kg
575005	DN 50	129	108,5	382	Ø 50	302	13,2
575006	DN 65	132,5	108,5	385	Ø 50	305	17,0
575008	DN 80	170	115	484	Ø 80	470	26,5
575010	DN 100	170	115	484	Ø 80	470	28,0



Codes	A	B	C	D	E	F	Kg
570004	1/2"	354	130	44,5	Ø 40-60	103	3,0
570005	3/4"	390	130	44,5	Ø 40-60	103	3,6
570006	1"	475	115	74,5	Ø 40-60	99,5	5,4
570007	1 1/4"	540	162	72,5	Ø 40-60	99,5	6,2
570008	1 1/2"	670	221	103,4	Ø 40-60	129,6	14,4
570009	2"	735	221	103,4	Ø 40-60	129,6	16,5

Backflow

This phenomenon, termed "back flow", occurs when:
a) the pressure in the main water system is less than that in the downstream circuit (back siphoning). For example, when a pipe is broken in the mains system or when consumer demand on the mains supply is very heavy.
b) the pressure has risen in the downstream circuit (counter pressure). For example, for drawing water pumped from a well.

Risk assessment

In view of the hazardous nature of the phenomenon and the specifications set out by current legislation, the designer and the mains supplier, a risk assessment of backflow pollution is required. Depending on the result, a suitable backflow prevention device must be selected and located along the internal distribution system at the 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 main supply or in the internal distribution system.

Use of BA type backflow preventers - reference to European standard EN 1717 and EN 12729

Proper use of the BA type backflow preventer is regulated by the European standards governing prevention of pollution caused by backflow.
The reference standard is *EN 1717: 2000 "Protection against pollution of potable water in hydraulic installations and general requirements of devices to prevent pollution by backflow*".
In this standard, the water in the systems is classified according to the level of risk it represents for human health.

Category 1:
Water to be used for human consumption coming directly from a potable water distribution system.

Category 2:
Medium presenting no human health hazard, as per 1, the quality of which can have undergone a change in taste, odour, colour or temperature.

Category 3:
Medium representing some human health hazard due to the presence of one or more harmful substances.

Category 4:
Medium presenting a 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:
Medium presenting a human health hazard due to the presence of microbiological or viral elements.

According to this classification, suitable backflow prevention devices must be fitted in water distribution system circuits.
BA type backflow preventers are used to protect against risk of contamination by water in categories up to 4.
For category 5 water, use a hydraulic separation tank.

The table opposite, titled "Protection matrix", associates the various types of system with the corresponding categories of medium, and has been drawn up based on the indications provided in the European standard.

European standard EN 12729 -*"Devices to prevent pollution by backflow of potable water". Controllable reduced pressure zone backflow preventer. Family B - Type A"* defines the functional, dimensional and mechanical features required by BA type controllable reduced pressure zone backflow preventers.

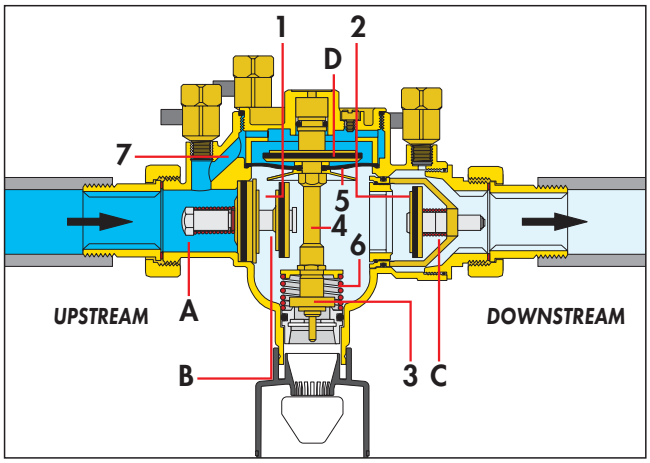
Protection matrix		
System type	**Fluid cat.**	
	4	5
General		
Sprinkler fire fighting systems that use antifreeze solutions	*	
Industrial tanks		*
Taps for non-domestic applications with connection pipe		*
Permeable pipes not for garden use, laid underground or on the ground, with or without chemical additives		*
Primary circuits and central heating systems in buildings not for residential use	*	
Reclassified water systems		*
Heating systems with additives		*
Urinals, WCs and bidets		*
Domestic or residential gardens		
Mini-irrigation systems, without fertilisers or insecticides, such as automatic sprinklers or porous pipes	*	
Food processes		
Bottle washing systems	*	
Butchers and meat suppliers		*
Dairies	*	
Food preparation	*	
Abattoirs		*
Vegetable washing		*
Medical		
Medical or dentistry appliances with under head inlet		*
Bed pan washing systems		*
Clothes washing systems in hospitals		*
Domestic appliances such as washtubs, sinks and hand basins		*
Hospital dialysis machines		*
Laboratories		*
Mortuary appliances		*
Catering		
Bottle washing equipment	*	
Dish-washing machines in commercial buildings	*	
Dish-washing machines in hospitals		*
Drinks dispensers in which ingredients or CO_2 are injected in the inlet or distribution pipe	*	
Refrigeration appliances	*	
Vegetable washing		*
Industrial and commercial applications		
Breweries and distilleries	*	
Car washing and degreasing systems	*	
Commercial clothes washing systems	*	
Drain cleaning systems		*
Dry-cleaning appliances	*	
Industrial and chemical systems		*
Industrial disinfection appliances	*	
Laboratories		*
Mobile tank and sewer emptying systems		*
Printing and photographic appliances	*	
Water collection systems for agricultural applications		*
Drinking systems for animals		*
Water treatment or softening systems that use products other than salt	*	
Fire fighting systems using pressurised water	*	
Water collection systems for fire fighting applications		*
Agriculture		
Commercial irrigation with outlets underneath or level with the ground and/or permeable pipes, with or without chemical additives		*
Commercial hydroponic systems		*
Insecticide or fertilizer application systems		*

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 mark off 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 connection 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 counter-spring (6). The diaphragm (5) marks the limit of the operation chamber (D), which is connected to the upstream zone by the channel (7).

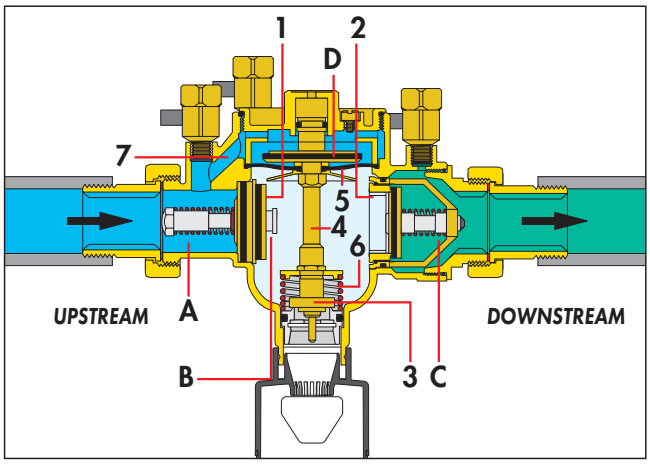
Correct flow conditions

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 drop 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 drain valve is therefore held in the closed position.



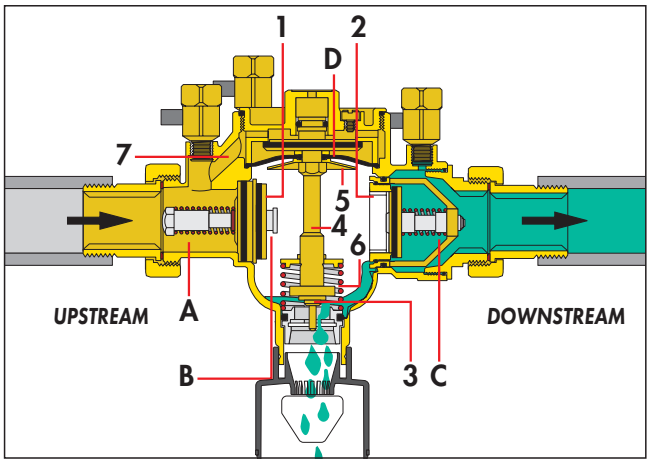
No flow conditions

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 drain valve remains closed.



Upstream pressure loss

Both check valves close as the pressure upstream drops. The drain valve (3) opens at the moment in which the difference in pressureΔp, existing between the upstream and intermediate zones, decreases to reach a value just over 140 mbar.
Under these conditions the action exerted by the pressure difference Δp on the diaphragm (5) becomes weaker than that exerted by the counter-spring (6) and the drain 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 drain valve closes and the backflow preventer is again ready to operate.



Downstream counter 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 to the user 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.

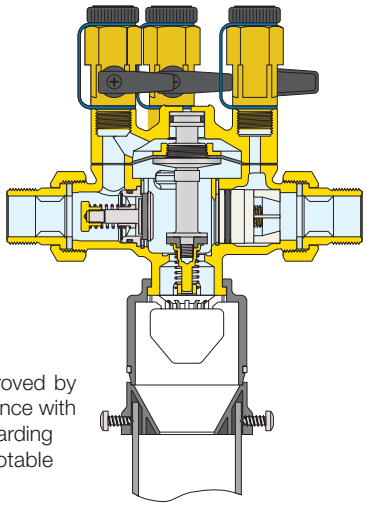
Construction details

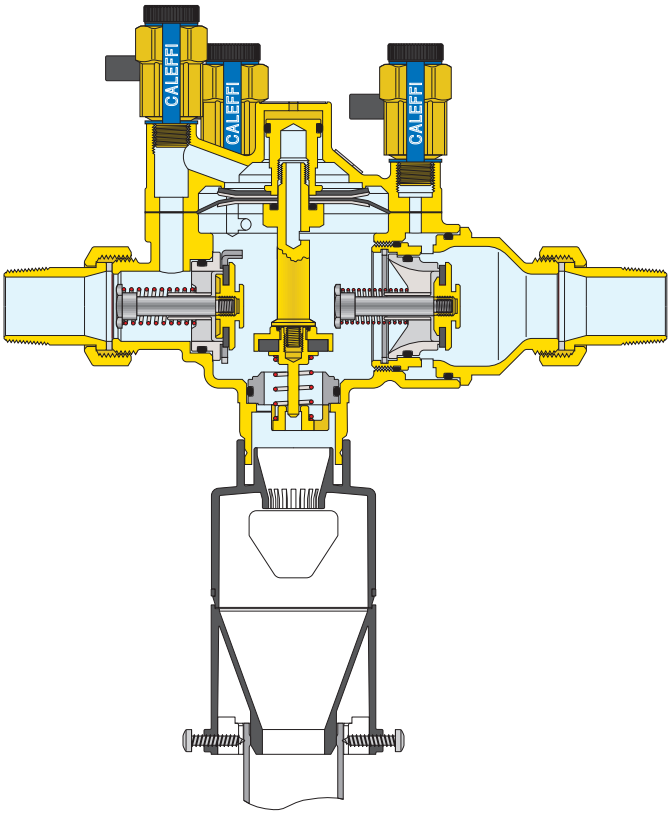
Discharge tundish

In compliance with standard EN 1717, backflow from the connection pipe must be prevented during water discharge from the backflow preventer, and discharge must occur without any water spraying outside. Consequently the tundish connected to the drain pipe must be of an appropriate size with special slits to create the necessary air gap and it must be equipped with a suitable flow conveyor.

Corrosion-proof materials

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



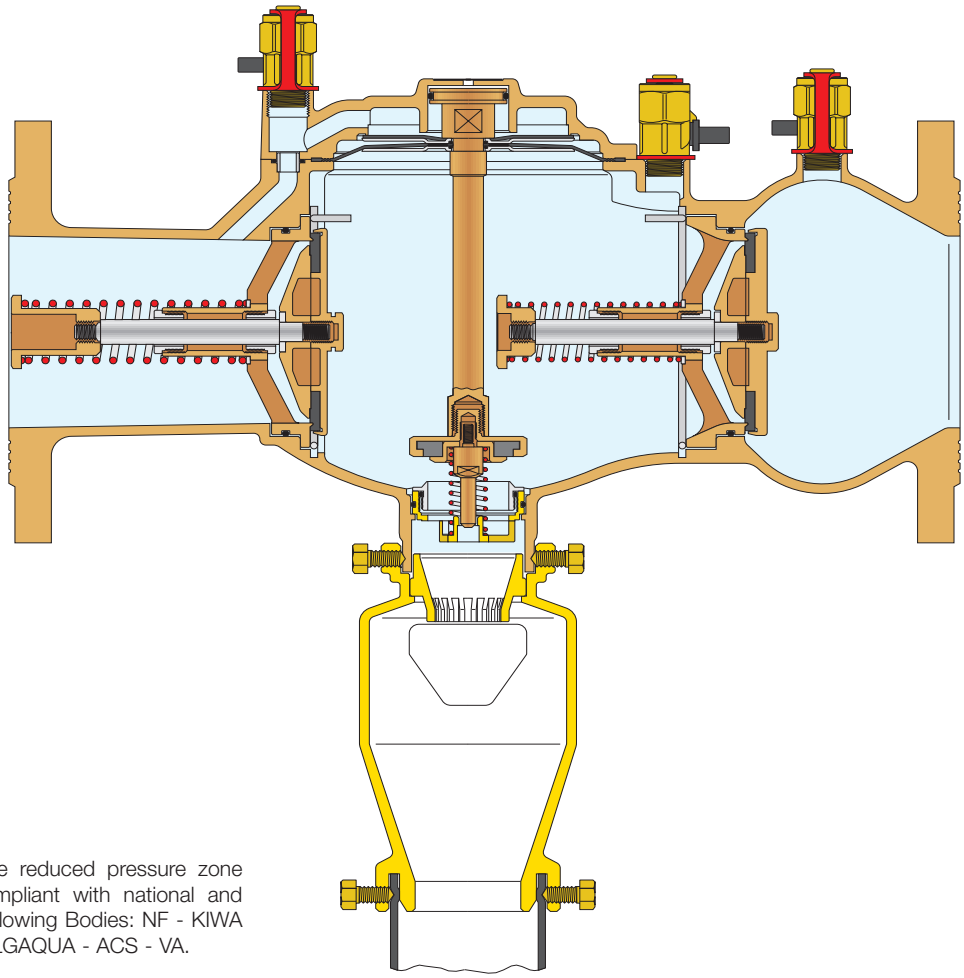


Elastomers complying with food regulations

The elastomers used for the hydraulic seals have been approved by the Certifying Bodies in accordance with the most recent provisions regarding compatibility for use with potable water.

Easy maintenance

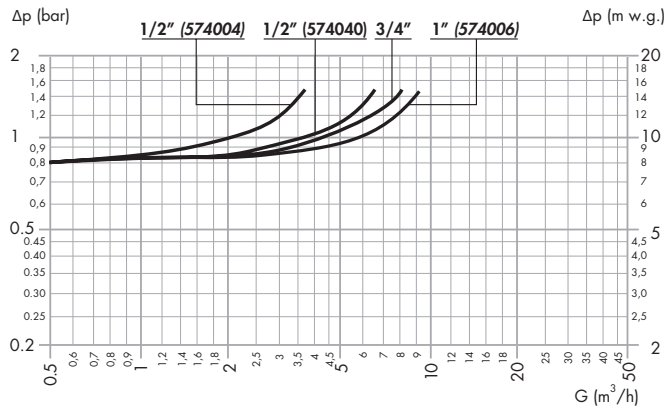
The backflow preventer is a device that must undergo periodic checking of its operating status during its normal working life. When needed any disassembly and maintenance work is easier to perform thanks to the use of components easy to verify and replace without having to disassemble the valve body from the pipe.

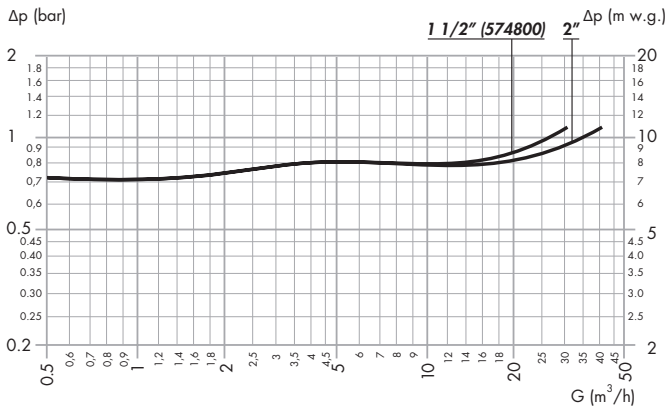


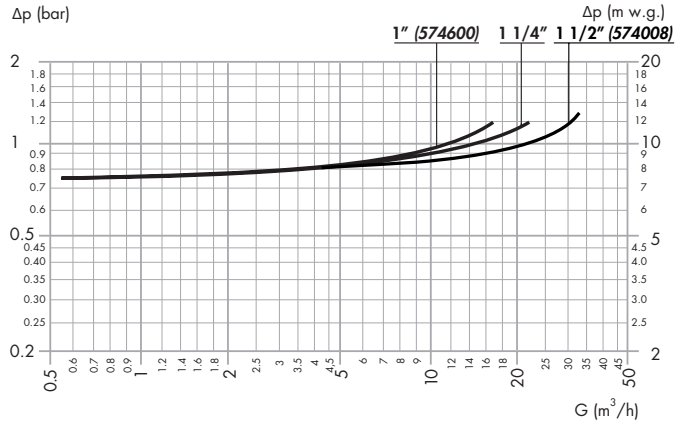
Certification

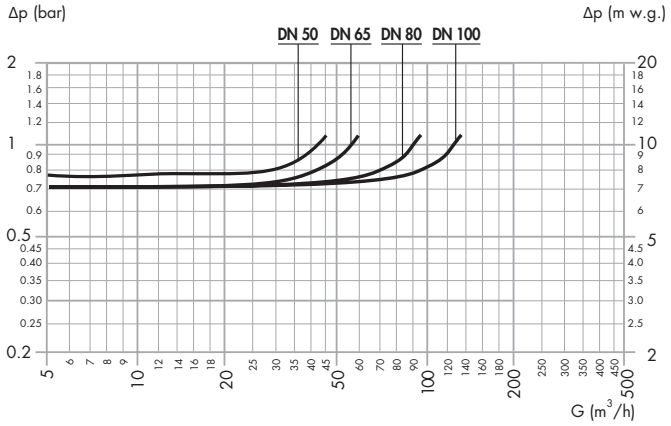
574 and 575 series BA type controllable reduced pressure zone backflow preventers are certified as compliant with national and European product specifications by the following Bodies: NF - KIWA UK - KIWA - DVGW - SVGW - RI.SE - BELGAQUA - ACS - VA.

Hydraulic characteristics





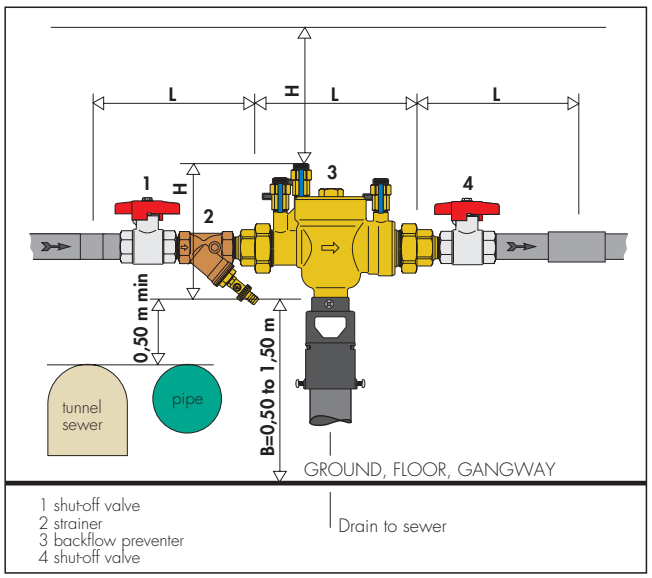


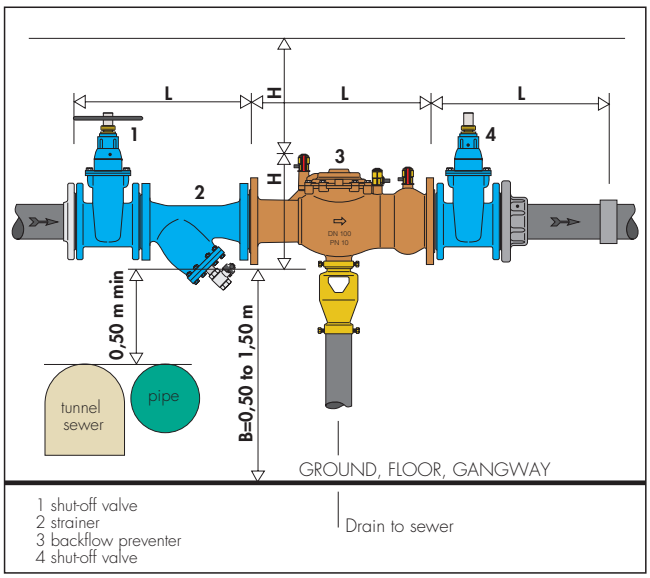


570 series	Kv (m³/h)					
	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"
Strainer	4.5	8	11	16	22	25
Shut-off valves	7	11	20	35	49	80

Installation

Backflow preventers must be installed by qualified personnel in accordance with current regulations.
The backflow preventer must be installed downstream from a shut-off valve and from an inspectable strainer with drain; another shut-off valve must be fitted downstream from it. The unit must be installed in an accessible position, appropriately sized to avoid possible immersion due to accidental flooding (see diagram).
The device must be installed horizontally. The discharge tundish must comply with standard EN 1717 and be connected to the sewage piping.
Before installing the backflow preventer and strainer, flush the pipe with a high flow rate.
For the protection of the main water system the backflow preventer must be installed after the water meter, whereas in order to protect the domestic use outlets of the internal network it should be installed at the limit of the areas where there may be contamination, for example: central heating, watering gardens, etc.





Inspection and maintenance

The backflow preventer unit is a health and safety device and therefore requires periodical inspection.
The first indication of poor operation, generally caused by foreign matter (sand or other debris) that is blocking the upstream check valve in an opened position, is revealed with a permanent leak from the drain. This leak is merely an early warning and definitely does not put the safety of the check valve at risk, but it requires removing and cleaning the unit and the strainer upstream. A quick method of inspection (taking less than 15 minutes) is described in the following table.
N.B. In the event of leakage from the drain, it is advisable to open one or more taps for a few minutes to create a strong circulation flow; this is often sufficient to expel any foreign matter and bring everything back to normal.

QUICK CHECKING METHOD

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

OPERATION	DEFECT DETECTED	LIKELY CAUSE	ACTION TO BE TAKEN
1 Close the downstream shut-off valve	Permanent leakage	Upstream check valve or drain valve not sealed	Dismantle and check
	No permanent leakage		Proceed to operation 2
2 Close the upstream shut-off valve and open the upstream pressure control cock (on the front connection)	Drain does not open, or preferably pressure drop is minimal and lasts more than one minute	Drain blocked	Dismantle and check
	Drain opens abruptly and equipment is emptied in less than one minute		Proceed to operation 3
3 Open the downstream shut-off valve	Continuous drainage	Downstream check valve not sealed	Dismantle and check
	No discharge		Put the equipment back into operation

N.B. : In normal operation the appliance must not present any permanent leakage. Otherwise dismantle and verify.

SPECIFICATION SUMMARY

Code 574004
Controllable reduced pressure zone backflow preventer. BA Type. Certified to EN standard 12729. DN size 15. Threaded 1/2" M connections (ISO 228-1) with union. Body, cover and relief seat in dezincification resistant alloy. Check valves in PSU-POM. Stainless steel springs. EPDM seals. Maximum working temperature 65 °C. Maximum working pressure 10 bar. Complete with upstream, intermediate and downstream pressure test ports and discharge tundish with pipe fixing collar. Acoustic group I.

Code 574006
Controllable reduced pressure zone backflow preventer. BA Type. DN size 25. Threaded 1" M connections (EN 10226-1) with union. Body, cover and relief seat in dezincification resistant alloy. Check valve stems and springs in stainless steel. EPDM seals. Maximum working temperature 65 °C. Maximum working pressure 10 bar. Positive action safety device compliant with standard EN 12729. Complete with upstream, intermediate and downstream pressure test ports and discharge tundish with pipe fixing collar. Acoustic group I.

Code 574008
Controllable reduced pressure zone backflow preventer. BA Type. DN size 40. Threaded 1 1/2" M connections (EN 10226-1) with union. Dezincification resistant alloy body and cover. Check valve stems, relief seat and springs in stainless steel. EPDM seals. Maximum working temperature 65 °C. Maximum working pressure 10 bar. Positive action safety device compliant with standard EN 12729. Complete with upstream, intermediate and downstream pressure test ports and discharge tundish with pipe fixing collar.

Code 574040/574050
Controllable reduced pressure zone backflow preventer. BA Type. DN size 15 (and DN 20). Threaded connections 1/2" (and 3/4") M (EN 10226-1) with union. Body, cover and relief seat in dezincification resistant alloy. Check valve stems and springs in stainless steel. EPDM seals. Maximum working temperature 65 °C. Maximum working pressure 10 bar. Positive action safety device compliant with standard EN 12729. Complete with upstream, intermediate and downstream pressure test ports and discharge tundish with pipe fixing collar. Acoustic group I.

Code 574600/574700
Controllable reduced pressure zone backflow preventer. BA Type. DN size 25 (and DN 32). Threaded 1" (and 1 1/4") M connections (EN 10226-1) with union. Dezincification resistant alloy body and cover. Check valve stems, relief seat and springs in stainless steel. EPDM seals. Maximum working temperature 65 °C. Maximum working pressure 10 bar. Positive action safety device compliant with standard EN 12729. Complete with upstream, intermediate and downstream pressure test ports and discharge tundish with pipe fixing collar. Acoustic group I.

Code 574800/574900
Controllable reduced pressure zone backflow preventer. BA Type. DN size 40 (and DN 50). Threaded 1 1/2" (and 2") M connections (EN 10226-1) with union. Brass body and cover. Check valve stems, relief seat and springs in stainless steel. EPDM seals. Maximum working temperature 65 °C. Maximum working pressure 10 bar. Positive action safety device compliant with standard EN 12729. Complete with upstream, intermediate and downstream pressure test ports and discharge tundish with pipe fixing collar.

575 series
Controllable reduced pressure zone backflow preventer. BA Type. Flanged connections DN 50 (DN 50–DN 100) PN 16, can be coupled with counterflanges EN 1092-1. Brass body and cover. Check valve stems, relief seat and springs in stainless steel. EPDM seals. Maximum working temperature 65 °C. Maximum working pressure 10 bar. Positive action safety device compliant with standard EN 12729. Complete with upstream, intermediate and downstream pressure test ports and discharge tundish with pipe fixing collar.

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

- Controllable reduced pressure zone backflow preventer. BA Type. M threaded connections with union. Dezincification resistant alloy body.
  Check valve stems, relief seat and springs in stainless steel. Relief seat in dezincification resistant alloy for sizes 1/2", 3/4" and 1" (code 574006). EPDM seals. Positive action safety device compliant with standard EN 12729. Complete with upstream, intermediate and downstream pressure test ports and discharge tundish with pipe fixing collar. Acoustic group I (1"-1 1/4").
- Y-strainer. Bronze body. Stainless steel mesh. Seal in Saital K. Strainer mesh 0,40 mm (1/2" - 1"), 0,47 mm (1 1/4" - 1 1/2"), 0,53 mm (2").
- Upstream and downstream ball shut-off valves. Brass body.

We reserve the right to make changes and improvements to our products and the related technical data in this publication, at any time and without prior notice. The website www.caleffi.com always has the most up-to-date version of the document, which should be used for technical verifications.

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