Controllable reduced pressure zone backflow preventer BA type

575 - 570 series

01245/15 EN

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

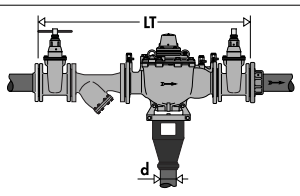
575 series BA type controllable reduced pressure zone backflow preventer ..... sizes DN 150–DN 250
570 series Pre-assembled group with BA type backflow preventer, shut-off valves, strainer ..... sizes DN 150–DN 250

Technical specifications

Materials

Body:	cast iron EN 1561 EN GJL-250 (DN 150) epoxy resin coated cast iron EN 1563 EN GJS-450-10 (DN 200 and DN 250) epoxy resin coated
Cover:	bronze EN 1982 CuSn5Zn5Pb5
Check valve stems:	stainless steel
Drain cock seat:	stainless steel
Springs:	stainless steel
Membrane:	CR
Hydraulic seals:	EPDM
Shut-off valves body:	cast iron EN 1563 EN GJS-400-15 epoxy resin coated
Strainer body:	cast iron EN 1561 EN GJL-250 epoxy resin coated
Strainer cartridge:	stainless steel

Dimensions



Code	DN	LT	d	Mass (kg)
570150	150	1520	Ø 90	255
570200	200	1860	Ø 90	387
570 250	250	2180	Ø 90	564

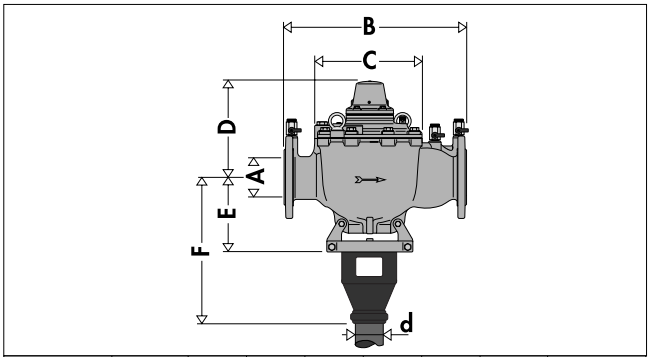
Performance

Medium:	water
Nominal pressure:	PN 10
Max. working temperature:	60°C
Strainer mesh size Ø:	1,55 mm

Connections

Flanged connections:	DN 150–DN 250 flanged PN 16 to be coupled with counterflange EN1092-1
Pressure test port connections:	1/2" F (ISO 228-1)

Dimensions



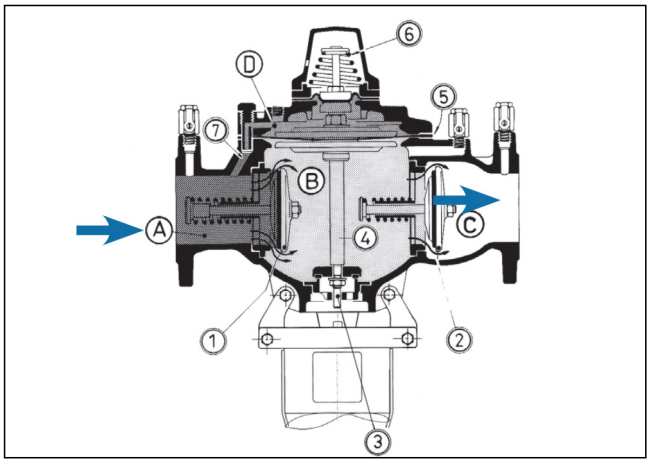
Code	A	B	C	D	E	F	d	Mass (kg)
575150	DN 150	600	294	310	229	529	Ø 90	103
575200	DN 200	780	370	350	272	572	Ø 90	111
575250	DN 250	930	436	350	272	572	Ø 90	142

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).

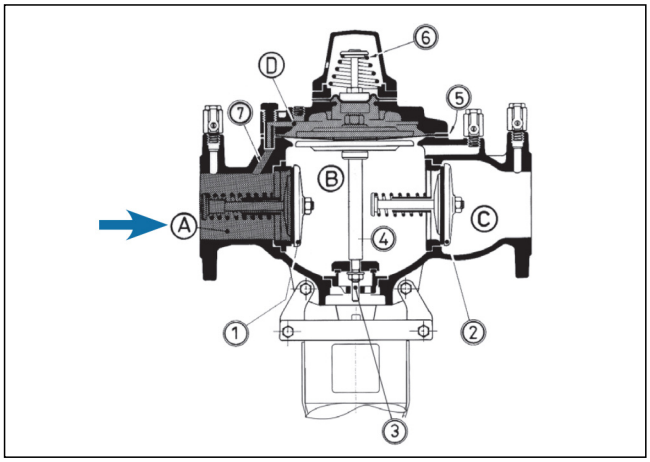
Correct flow conditions

Under normal flow conditions, both check valves are open, while the pressure in the intermediate chamber (B) is always lower that 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.



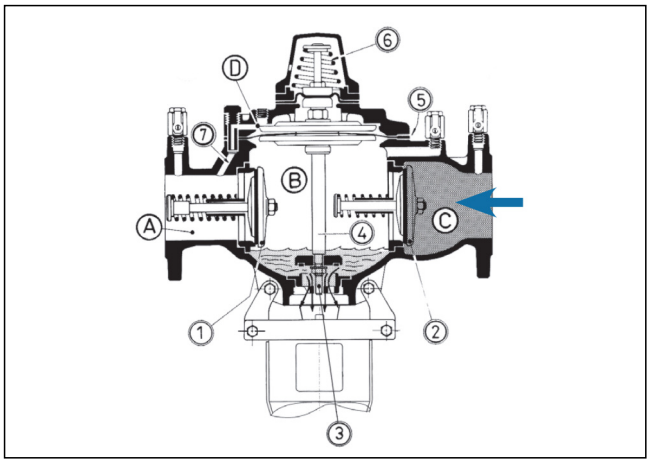
No flow conditions

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 drop

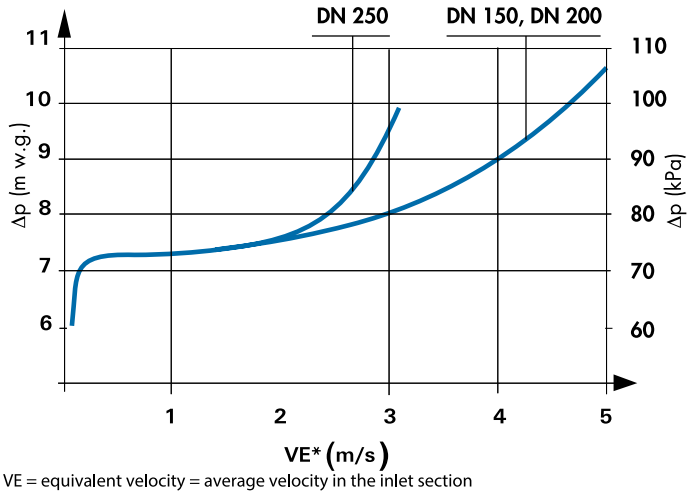
Both check valves close as the pressure upstream drops. The discharge valve (3) opens when the difference in pressure Δp, between the upstream and the intermediate zones, falls reaching a value a little bit higher than 140 mbar.
Under these conditions the action exerted by the pressure difference Δp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

Hydraulic characteristics



* VE = equivalent velocity = average velocity in the inlet section
Maximum recommended flow rate with specified head losses according to EN 12729 of 100 kPa (from DN 150 to DN 250).

Choosing the diameter

The diameter of the device must be chosen based on the maximum flow rate and the conditions of use rather than the diameter of the pipe.

Maximum recommended flow rate			
DN	**150**	**200**	**250**
Q (l/s)	63,1	101,1	145,3

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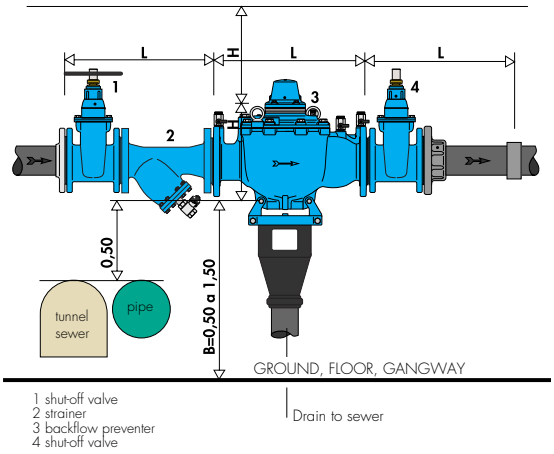
	Kv (m^3/h)		
	DN 150	**DN 200**	**DN 250**
Strainer	526	870	1260
Shut-off valves	2650	5500	8900

Certification

575 series BA type controllable reduced pressure zone backflow preventers are certified as compliant with European product standard EN 12729 by the following bodies: NF-SVGW.

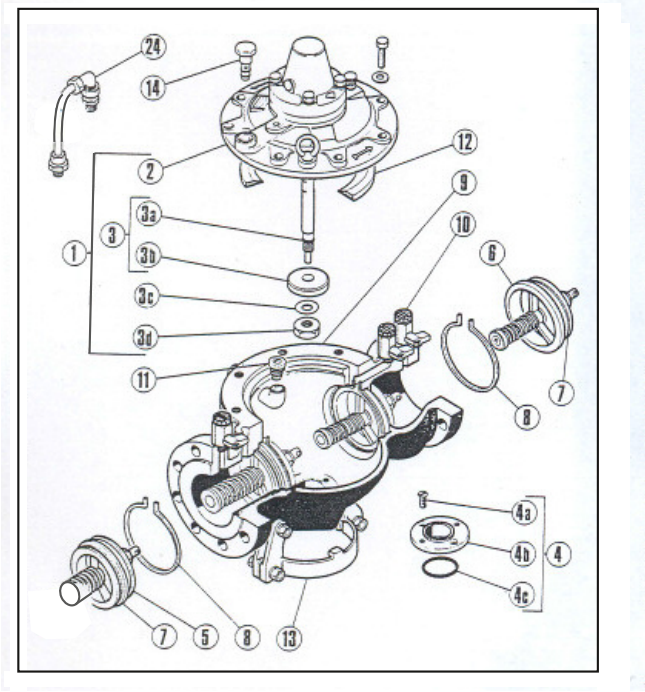
Installation

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 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 installed 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.



1 shut-off valve
2 strainer
3 backflow preventer
4 shut-off valve

Characteristic components



Ref	No.	Description
1	1	Complete discharge
2	1	Cover
3	1	Discharge obturator
4	1	Seat (screw - seat - O-ring)
5	1	Upstream check valve (with O-ring)
6	1	Downstream check valve (with O-ring)
7	1	O-rings of upstream and downstream check valves
8	2	Locking ring
9	1	Body
10	3	Cock
11	1	Check valve for air intake
12	1	Membrane support
13	1	Collar for drain
14	1	Chambers connection for size DN 150
24	1	Chambers connection for sizes DN 200 and DN 250

Maintenance - Disassembly - Reassembly
The entire checking and maintenance procedure starts by disassembling the sub-unit: cover - complete discharge device.
The next step is to disassemble the downstream check valve sub-unit followed by the upstream check valve sub-unit (see figure).
Generally, the operation simply involves cleaning the device.
If any defects are discovered during the procedure, such as a damaged or deformed valve seat or obturator, the device can be temporarily reassembled before ordering the necessary spare part and replacing it as soon as possible.

Removing the cover and drain unit
After isolating the device by closing the upstream and downstream valves:
- disassemble connection (14) from the flange above the upper chamber; for sizes DN 200 and DN 250 this is connection (24).
- undo the fixing screw of the cover (2) on the body and lift the body.
- complete discharge device assembly (1) by gripping it by the lifting rings.
  If the assembly is seized, use a screwdriver to prise between the body and the cover.

Changing the obturator seal
If the obturator seal is deteriorated, proceed as follows:
- use a spanner to hold the central stem then unscrew the nut (3d) and remove the obturator.
  When refitting the obturator take care not to damage the O-ring (3a) on the stem. Grease the O-ring if necessary to facilitate the job.

Disassembly and replacement of the discharge seat
Undo the seat fixing screws (4 mm Allen key) and remove the seat.
If the seat cannot be easily dislodged refit the screws in the two threaded holes and tighten them to apply the necessary force.
On reassembly, fit the O-ring correctly in the groove seat and apply a light film of grease.
Offer up the seat to its housing, orient it to find the holes for the fixing screws. Screw down the fixing screws alternately until they are fully tightened.

Disassembling and replacing the downstream check valve
Open the downstream control cock. Place the PVC protective plate on the drain valve seat (the plate is among the contents of the service case).
Use two fingers to remove locking ring (8) from its seat.
Grasp the check valve assembly by the spring-holder stem and remove it from its housing.
To reassemble the device perform the steps in reverse order (grease the O-ring) and before fixing the locking ring check that it is properly positioned with the aid of the specific tool in the service case.
This tool makes it possible to ensure that the ring is correctly positioned, by checking the distance between the two tips.

Disassembling the upstream check valve
Use the same technique as used for the downstream check valve, except in this case using the knob (in the service case) that screws onto the retaining ring and makes it possible to apply pulling force to extract the check valve assembly.
Reassembly: same procedure as for the downstream check valve.

SPECIFICATION SUMMARY

575 series
BA type controllable reduced pressure zone backflow preventer. Certified to EN 12729 standard. Flanged connections DN 150 (from DN 150 to DN 250) PN 16 EN 1092-1. Cast iron body. Bronze cover. Check valve stems, discharge seat and springs in stainless steel. EPDM seals. Maximum working temperature 60°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 group with backflow preventer. Flanged connections DN 150 (from DN 150 to DN 250) PN 16 EN 1092-1. Maximum working temperature 60°C. Maximum working pressure 10 bar. Complete with:
- Controllable pressure zone backflow preventer. Type BA. Certified to EN 12729 standard. Flanged connections. Cast iron body. Check valve stems, discharge seat and springs in stainless steel. 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.
- Y-strainer. Epoxy resin coated cast iron body. Stainless steel strainer, mesh size 1,55 mm Equipped with drain cock with 1/2" F connection.
- Upstream and downstream shut-off valves. Epoxy resin coated cast iron body. NBR control stem seals.

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.

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