Backflow preventer with reduced pressure zone DISCOBLOC BA - Series H2 10

Designed to protect drinking water networks from backflow of polluted water due to:
- a pressure drop in the network
- a back pressure from a potentially non potable water network.

Description

- Standard local authority sanitary regulations (art. 16.1) make it obligatory for owners of installations, which are potentially dangerous, to protect public drinking water network and the internal network from the risk of the backflow of polluted water, this being by means of an approved and regularly maintained device.
- Reliability:
  - Controllable check valve with upstream, downstream and intermediate pressure gauge taps,
  - Security air gap with discharge valve, in case of upstream pressure drop,
  - Head loss lower than standard's requirements.
- Anticorrosion protection:
  - Sub set of valve and seat in bronze, stem and spring made of stainless steel,
  - Body in ductile iron with epoxy powder coating.
- Maintenance in situ without dismantling.
- Conformity to standards:
  - EN 12729
  - NF E 29-305-1 and ISO 51752 for face-to-face dimensions.
  - Global EN 1717.
- NF ANTIPOLLUTION mark.

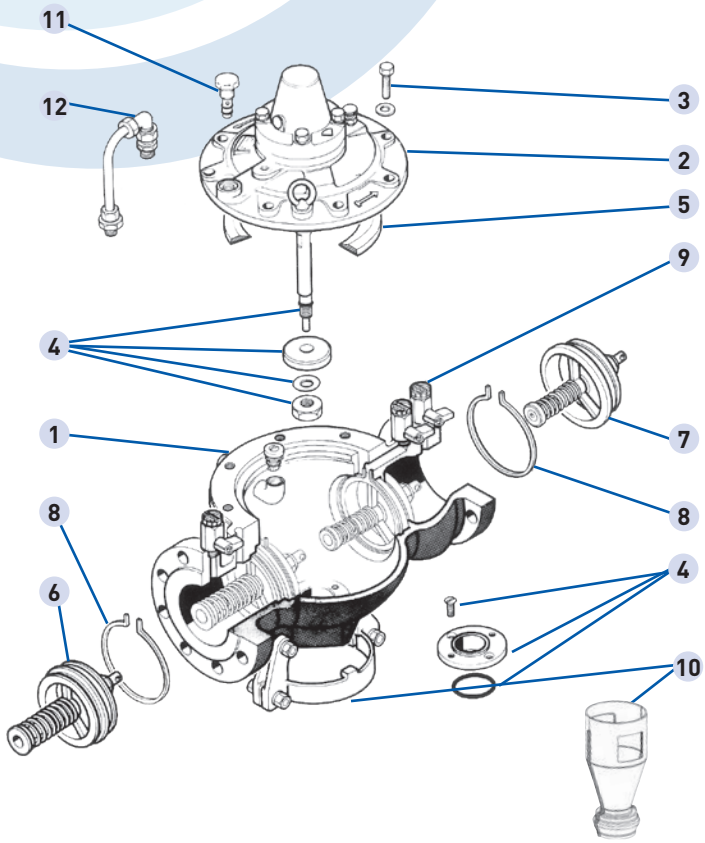
Technical data

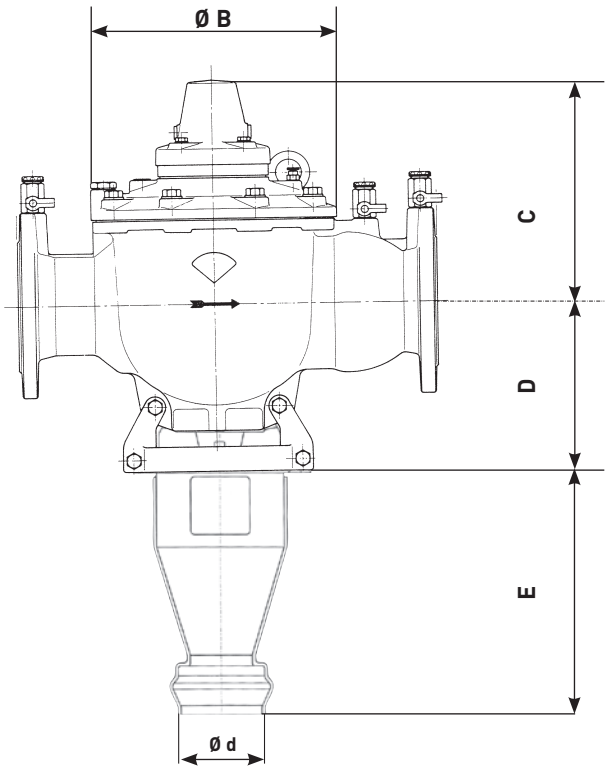
- Range: DN 150 to 250.
- Maximal working pressure: PN 10.
- Temperatures: +10°C to +60°C
  (maximum temperatures for backflow +90°C).
- Flanges: ISO PN10, ISO PN16 on request.

Applications

- Drinkable water networks.

Backflow DISCOBLOC BA - DN 150 to 250





Item	Designation	Qty	Materials	Standards
01	Body	1		
	DN150	-	Cast iron/EN-GJL 250	EN 1561
	DN200 and 250	-	Ductile iron/EN-GJS 450-10	EN 1963
02	Bonnet	1	Bronze/CuSn5Zn5Pb5	EN 1982
03	Bolts (bonnet)	-	Steel A2	EN ISO 3506
04	Discharge sub set	1		
	Supporting disc + spring	-	Steel A2/X8CrNiS 18-9 and X10CrNiS 18-9	EN 10088
	Discharge stem	-	Steel/X8CrNiS 18-9	EN 10088
	Upper disc	-	PETP	
	Diaphragm	-	CR	
	Valve holder	-	Copper-alloy/CuZn39Pb3	EN 12164
	Lower disc	-	Steel/X8CrNiS 18-9	EN 10088
	Discharge check valve	-	Elastomer/EPDM	
	Seat	-	Bronze/CuSn12	EN 1982
05	Diaphragm support	1	PETP	
06	Upstream check valve sub set	1		
	Body	-	Bronze/CuSn12	EN 1982
	Axix	-	PTFE coated stainless steel /X8CrNiS 18-9 + PETP	EN 10088
	Check valve	-	EPDM	
	Seat	-	Bronze/CuSn12	EN 1982
	O-rings	-	EPDM	
07	Downstream check valve sub set	1	-	
08	Split ring	2	Steel/X10CrNiS 18-9	EN 10088
09	Pressure cocks	3	PTFE, copper-alloy, plastic	
10	Discharge funnel sub set	1		
	Saddle	-	Ductile iron/EN-GJS 450-10	EN 1963
	Funnel	-	ABS	
	Bolts	-	Steel A2	EN ISO 3506
11	Chamber connecting set DN 150	1		
	Connection	-	Copper-alloy/CuZn39Pb2	EN 12164
	O-rings	-	EPDM	
12	Upstream pressure sub set DN 200 to 250	1		EN 12164
	Connection	-	Copper-alloy/CuZn39Pb2 + Steel/X2CrNiMo17-12-2	EN 10088

DN	L	ØB	C	D	E	Ød	Weight
	mm	mm	mm	mm	mm	mm	kg
150	600	294	310	229	300	90	103
200	780	370	350	272	300	90	111
250	930	436	350	272	300	90	142

Backflow DISCOBLOC BA - DN 150 to 250

Operation principle

Description

The Discobloc consists of a body closed by a bonnet, an upstream spring loaded check valve (1) and a downstream spring loaded check valve (2). The whole delimits 3 different pressure zones : upstream zone A, intermediate zone B and downstream zone C. The intermediate zone contains a discharge device (3) in the lower part and is connected by a spindle to the main diaphragm (4) and to the compensating diaphragm (5).

This mobile unit is drawn upwards by an external spring (outside water) (6) with a calculated force, calibrated in factory. Diaphragms (4) and (5) enclose a control chamber D connected to upstream zone A by a chamber connecting set (7) DN 150 or a pressure plug sub set DN 200 and 250.

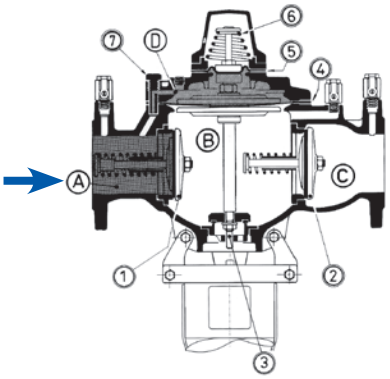


Figure I

Operation

The check valve (1) drawn back by its spring creates a pressure drop which, to comply with Standard EN 12729, must never be less than 1.4mWH.
In normal operation, the pressure in the intermediate zone B is therefore always less by at least 1.4mWH than the upstream pressure. (see Fig. 1 and 2).
This pressure difference which we call Δp, acting on either side of the main diaphragm (4) generates a downward pressure greater than the force of the return spring (6) and holds the discharge (3) closed. The compensating diaphragm (5) which active surface area is equal to that of the discharge, makes this closing force independent of the absolute value of the pressures.
If, for any reason: back pressure in the downstream network and loss of tightness of the downstream check valve (2) or accidental pressure drop of the upstream network, the pressure difference Δp drops and comes closed to the margin 1.4mWH, its action on the diaphragm (4) becomes weaker than that of the return spring (6) which then opens the discharge device (3).
The pressure in the intermediate zone B then decreases as much as is required to maintain the imposed difference.
With a regularly maintained appliance, there is therefore practically no risk of water from the intermediate zone penetrating into the upstream zone, and this is so even if the check valves (1) and (2) have a slight leakage defect.
In such a case, of course, the defect would be indicated by a leakage of water to the discharge and could therefore be repaired without delay.
Also, if the upstream pressure drops below atmospheric pressure, the discharge opens fully and the intermediate zone empties completely. A vacuum breaker accelerates this drainage. There is therefore a safety air gap (see figure III).
Once the situation returns to normal (upstream pressure greater than the downstream pressure) the discharge closes and the appliance is ready for service.

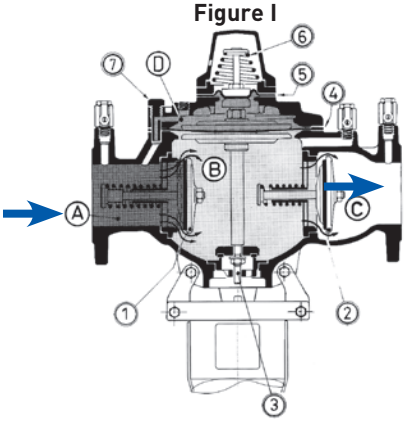


Figure II

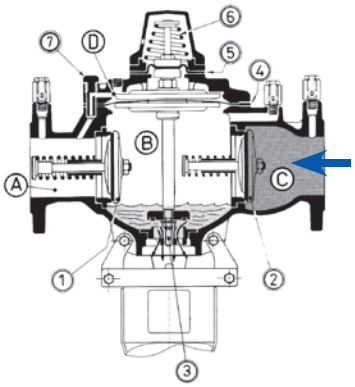


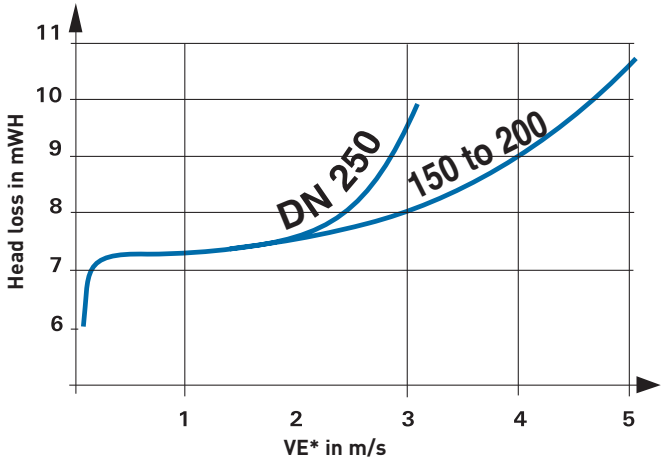
Figure III

Sizing the Discobloc

The diameter of a backflow preventer must be chosen to suit the maximum flow rate and the conditions of use and not according to the diameter of the pipe.

Hydraulic features

Head loss curve



Maximum recommended flowrates

DN	150	200	250
Q l/s	63.1	101.1	145.3

** VE = Equivalent speed = Average speed in the inlet section*
Maximum recommended flow rates, head losses specified by French Standard EN 12729 are 10mWC for DN 80 to 250.

Location of backflow preventer

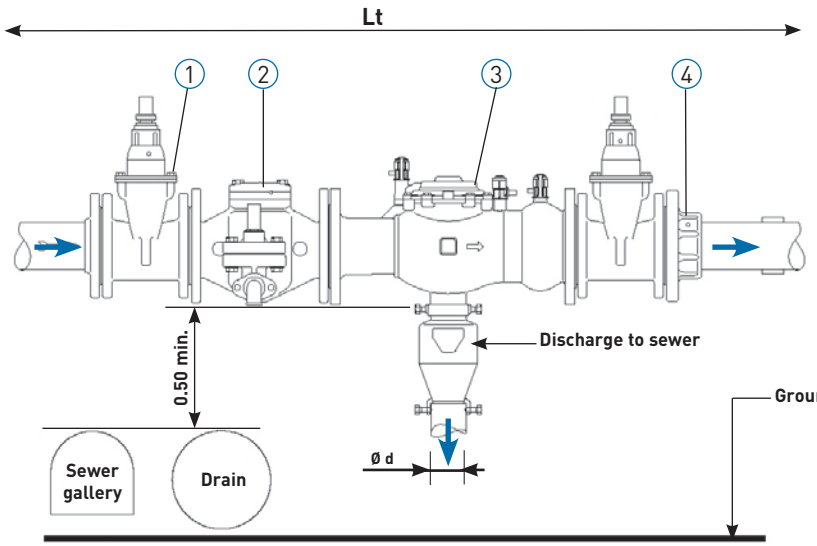
- At the point at which the drinking water is supplied, after the water meter, for protecting the public network, in case of installations which are complex, dangerous and difficult to check: chemical products or metal treatment plants, hospitals, etc.This installation does not exempt the owner from protecting entirely the internal drinking water network.
- On a drinking water network for protecting water supply points for sanitary use: wash-basins, showers, kitchens, etc. the Discobloc is to be located at the limit of pollution generating zones such as : collective central heating, internal fire-fighting networks with stagnant water under pressure, garden watering systems, specialized workshops handling dangerous products, laboratories, etc

Installation

The Discobloc is a sanitary safety appliance. The owner and the fitter may have to assure responsibility in case of incorrect functioning.To avoid any problem, it is essential that the appliance (3) :

- Is installed in compliance with the regulations, that is, in particular after an upstream gate valve (1) and a strainer (2) which can be cleaned with a drain valve, and before the downstream gate valve (1). The whole assembly must be placed in an accessible inspection chamber of a correct size, out of reach of floods and drained (see diagram below),
- Is checked and maintained once a year by an approved specialist,
- It be installed horizontally.

Important remark: before installing the Discobloc and its strainer, it is necessary to clean the pipe by flushing it out with large amounts of water.



DN	Lt m	ød mm
150	2.10	90
200	2.50	90
250	2.95	90

1. Soft sealing gate valve - Series B1 20
2. Strainer box - Series H3 10
3. Discobloc - Series H2 10
4. Flanged adaptor « Major « - Series C1 10, C1 20