



Endorsed by:

BOSS™ FIG 574 & 575 (BA) BACKFLOW PREVENTER RPZ VALVE

Data Sheet

General Description

A **REG4 Certified** 'BA' Backflow Preventer is a verifiable mechanical device designed to prevent contamination of the wholesome water by either back-syphonage due to a reduced or negative pressure in the mains water supply or system back pressure from the water installation within the premises.

SEVERN

TRENT

Technical Specification

FIG 574 - Screwed BSPT		FIG 575 - Flanged PN16	
Sizes	½" to 2"	Sizes	DN50 to DN100
Connections	Screwed Male BSPT (Unions)	Connections	Flanged PN10/ PN16
Max Working Pressure	10 Bar	Max Working Pressure	10 Bar
Max Working Temperature	65°C	Max Working Temperature	65°C
Strainer Mesh Size	0.8mm	Strainer Mesh Size	DN50 - DN65 0.7mm DN80 - DN100 0.9mm
Pressure Test Port Conns	¼" Female	Pressure Test Port Conns	¼" Female

Materials Of Construction

Component	Material
Body and Cover	Dezincification Resistant Alloy 1/2" and 3/4" - DZR CW724R Brass to EN 12165 1" and 1 1/4" - DZR CB752S Brass to EN 1982 1 1/2" & 2" - CB499K Bronze to EN 1982 DN50 - DN100 - CB499K Bronze to EN 1982
Check Valve Spindle	Stainless Steel EN 10088-3 (AISI 303)
Discharge Valve Seat	Dezincification Resistant Alloy 1/2" - 1 1/4" - DZR CW724R Brass to EN 12165 1 1/2" & 2" - Stainless Steel to EN 10088-3 (AISI 303) DN50 - DN100 - Stainless Steel to EN 10088-3 (AISI 303)
Springs	Stainless Steel EN 10270-3 (AISI 302)
Diaphragm	NBR
Hydraulic Seals	NBR

Standards and Approvals

KIWA REG4 Certified

Designed in accordance with BS EN 1717:2000 'Protection against pollution of potable water in water installations and the general requirements of devices to prevent pollution by backflow.'

Warranty

2 year warranty - parts only

Installation Registration

All proposed installations of RPZ valves must be notified in advance to the local Water Supplier by the installer. Details of the proposed work must be sent to the Water Supplier at least ten days before work is due to start. Installing or using an RPZ Valve without the required consent could result in criminal prosecution.

Applications

Proper use of the BA type backflow preventer is regulated by the British and European standard on prevention of pollution from backflow.

BOSS™ 574 & 575 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 types of water contained in water systems are classified in standard BS EN1717:2000, according to the degree of risk to health.

Category 1

Water used for human consumption provided by a water company

Category 2

Fluid which does not present a health hazard, as a category 1, whose quality has been compromised as a result in changes to its temperature, taste, odour or appearance

Category 3

Fluid which presents a slight health hazard due to concentrations of “low toxic” substances

Category 4

Fluid that presents a significant health hazard due to concentrations of “toxic substances”

Category 5

Fluid that presents serious health hazard due to concentrations of “pathogenic organisms radioactive or very toxic substances”

Protection Matrix

To help the designer and/or the installer of the water installation the Water Industry has produced a matrix known as the ‘Protection Matrix’.

The matrix indicates the type of installation or application where a ‘BA’ device is considered to offer an acceptable level of protection to prevent the contamination of the wholesome water supply.

The matrix also identifies high risk installations and applications where a ‘BA’ device is not considered to give sufficient protection where a ‘BA’ device will not be allowed to be installed.

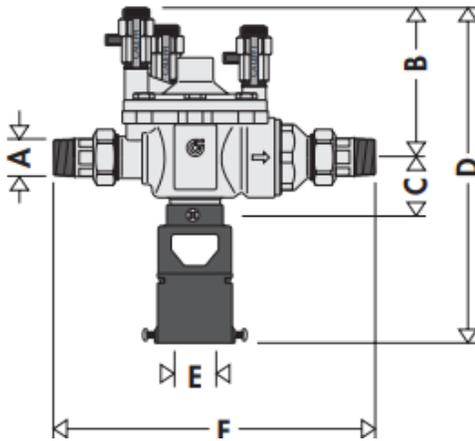
Protection Matrix Chart

BOSS™ 574 & 575 Backflow Preventers (BA type) can be used to protect against the risk of pollution from backflow for types of water up to category 4.

Type Of System	Cat 5	Cat4	Type Of System	Cat 5	Cat 4
General			Medical		
Sprinkler fire fighting systems using antifreeze solution		✓	Medical or dental equipment with submerged inlets	✓	
Industrial cistern	✓		Bedpan washing	✓	
Non-domestic hose union tap	✓		Commercial clothes washing in healthcare premises	✓	
Permeable hoses in other than domestic gardens, laid below or at ground level, with or without chemical additives.	✓		Domestic appliances such as; sinks, baths and wash basins	✓	
Primary circuits and central heating circuits in non domestic property		✓	Hospital dialysing machines	✓	
Reclaimed water systems	✓		Laboratories	✓	
Urinals, WC's and bidets	✓		Mortuary equipment	✓	
Swimming pools	✓		Catering		
Domestic or residential gardens			Bottle washing machinery		✓
Mini irrigation systems without fertilisers or insecticides such as pop-up sprinklers or porous hoses		✓	Drink vending machines in which ingredients or CO2 are injected into the supply or distribution pipe		✓
Food Processing			Dish washing machines in commercial premises		✓
Bottle washing machines		✓	Dish washing machines in healthcare premises	✓	
Butchery and meat processing	✓		Refrigeration equipment		✓
Dairies		✓	Vegetable washing	✓	
Food preparation		✓	Agricultural		
Slaughterhouse equipment	✓		Commercial irrigation with outlets below or at ground level and/or permeable pipes, with or without chemical additives	✓	
Fruit and Vegetable washing	✓		Commercial hydroponic systems	✓	
			Insecticide or fertiliser application	✓	

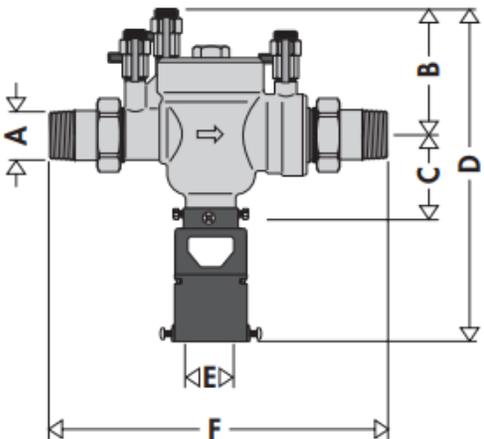
Type Of System	Cat 5	Cat 4		Cat 5	Cat 4
Industrial and Commercial Applications			Industrial and Commercial Applications		
Industrial disinfection plants		✓	Brewery and distillation		✓
Laboratories	✓		Car washing and degreasing plants		✓
Mobile plant, tankers and gully emptiers	✓		Commercial clothes washing plants		✓
Printing and photographic equipment		✓	Drain cleaning plant	✓	
Water storage for agricultural purposes	✓		Dyeing equipment		✓
Animal drinking systems	✓		Industrial and chemical plants	✓	
Water treatment plant or water softeners using product other than salt		✓			
Pressurised water for fire fighting systems		✓			
Water storage or fire fighting purposes	✓				

Dimensional Details



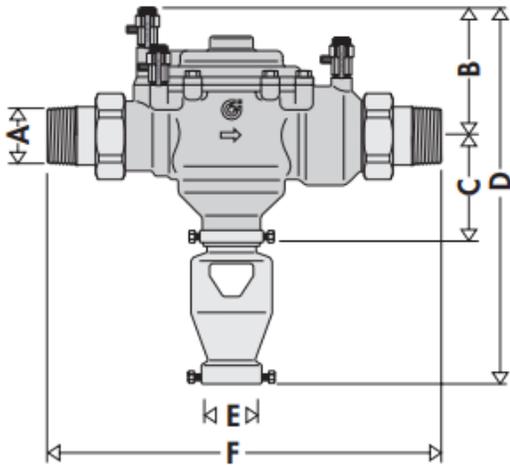
BSS Code	A	B	C	D	E	F	Weight
36700310	1/2"	103	44.5	263	Ø 40	227	2.9Kg
36700321	3/4"	103	44.5	263	Ø 40	227	2.9Kg

Connection E - Connection to The Drain - Waste Pipe



BSS Code	A	B	C	D	E	F	Weight
36700332	1"	100	74.5	292	Ø 40	280	4.7Kg
36700343	1 1/4"	100	74.5	292	Ø 40	280	4.7Kg

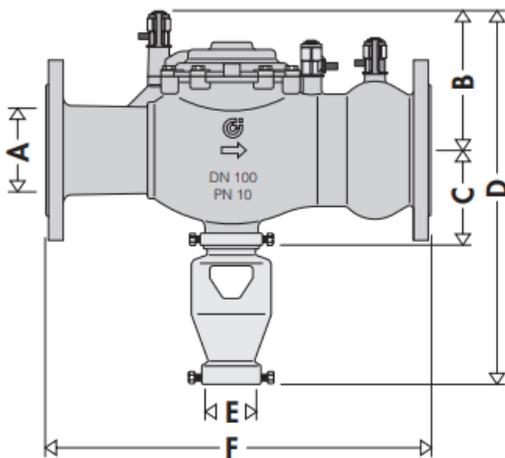
Connection E - Connection to The Drain - Waste Pipe



BSS Code	A	B	C	D	E	F	Weight
36700354	1½"	130	108.5	382	∅ 40	387	11.3Kg
36700365	2"	130	108.5	382	∅ 40	395	11.4Kg

Connection E - Connection to The Drain - Waste Pipe

FIG 575 Flanged Version



BSS Code	A	B	C	D	E	F	Weight
36700376	DN 50	129	108.5	382	∅80	302	13.2kg
36700387	DN 65	132.5	108.5	385	∅80	305	17kg
36700398	DN 80	170	115	484	∅80	470	26.5kg
36700406	DN 100	170	115	484	∅80	470	28kg

Connection E - Connection to The Drain - Waste Pipe

Spares Packs

BSS Code	Description
36700417	BSS BOSS Branded RPZ Spares Pack - 1/2", 3/4"
36700428	BSS BOSS Branded RPZ Spares Pack - 1", 1 1/4"
36700439	BSS BOSS Branded RPZ Spares Pack - 1 1/2", 2" & DN50 RPZ
36700450	BSS BOSS Branded RPZ Spares Pack - DN65 RPZ
36700461	BSS BOSS Branded RPZ Spares Pack - DN80 RPZ
36700472	BSS BOSS Branded RPZ Spares Pack - DN100 RPZ

Installation Guidelines

This additional information applies to new installation and the replacement of existing assemblies.

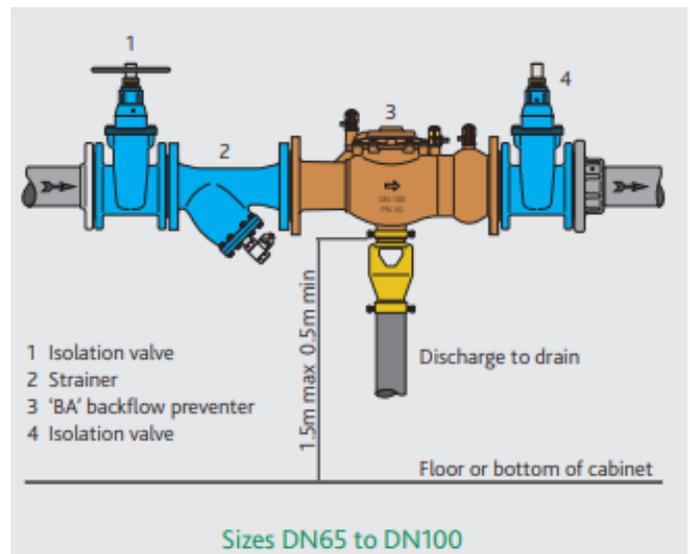
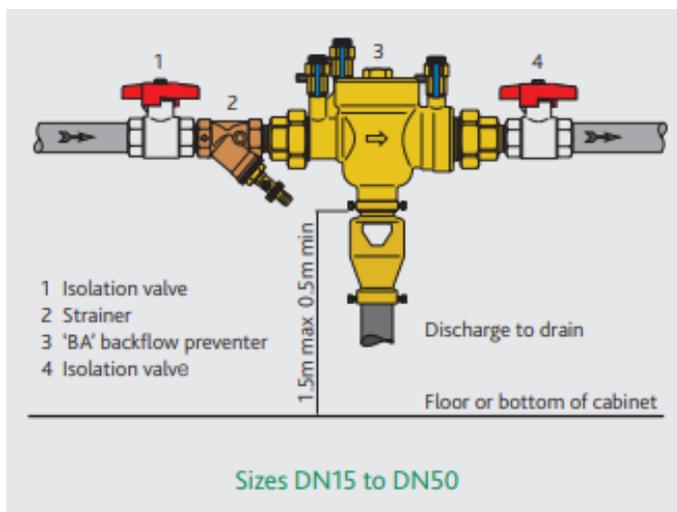
The assembly shall be housed in a tamper free environment or secure cabinet.

There shall be an air gap between the exit port of the relief valve mechanism and the tundish. This air gap dimension will be dependant upon the size of the inlet pipe to the assembly. Adequate drainage from the cabinet must be approved.

The assembly shall be installed horizontally with the discharge from the relief port in a downwards direction.

An in-line strainer shall be installed downstream of the inlet isolating valve and immediately upstream of the 'BA' device so as to prevent debris entering the device which could impair its performance.

Large assemblies should be fitted with additional support brackets as necessary.



The "BA" device shall be installed above ground at a height that enables effective inspection and maintenance.

The minimum height from the floor or base of the cabinet to the underside of the exit port of the relief valve shall not be more than 0.5m and maximum height shall not be more than 1.5m.

Except for the closure of the cabinet doors and lids there shall be free access for maintenance of the assembly and use of the test equipment.

For assemblies of DN15 to DN50 (nominal bore) there shall be a minimum of 50mm horizontal clearance at the rear of the assembly and any rear wall or rear of the cabinet.

For assemblies of DN65 to DN100 there shall be a minimum of 100mm clearance at the rear of the assembly

Sufficient space should be allowed to clean the strainer element using the blow down valve on the cover and for the removal of the strainer element should it become damaged or for more thorough cleaning.

Every assembly should be installed with resilient seat isolation valves at both inlet and outlet to allow isolation of the device.

Following installation the assembly shall be flushed and disinfected in accordance with guideline in BS 6700 'Design installation, testing and maintenance of services supplying water to domestic use within buildings or their curtilages'.

Following flushing and prior to commissioning the accredited tester shall check to ensure the relief valve functions correctly.

With the downstream isolation valve closed, gradually open the upstream test point to release air. The procedure shall be repeated for the intermediate and downstream zones.

When all the air system is removed the upstream isolation valve should be closed.

The upstream test port valve is then eased open, releasing the upstream pressure on the diaphragm. The relief valve should then open automatically, discharging the water in the intermediate zone through the relief valve mechanism.

The exercise must be repeated no less than 4 times to ensure that the relief valve mechanism is not sticking closed or failing to open,

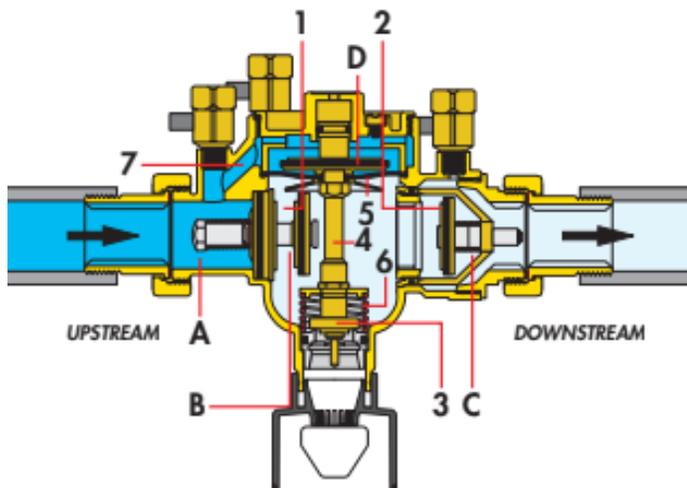
The assembly may now be commissioned and site tested.

A test certificate must be issued by the installer

Note: Specific requirements may apply to fire protection systems.

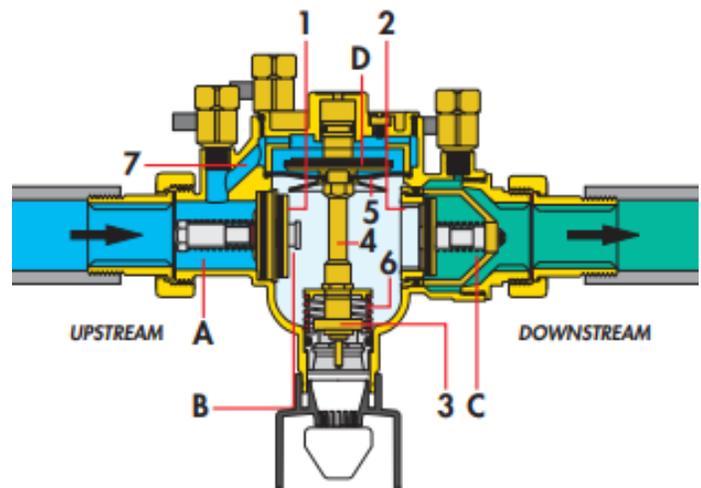
Operating Principles

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).



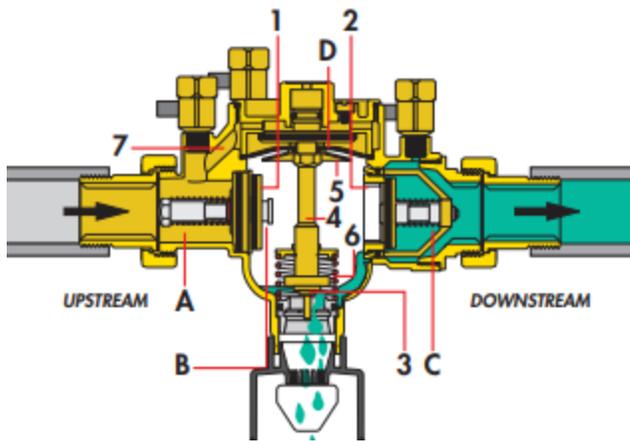
Normal flow conditions

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, drops below 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.

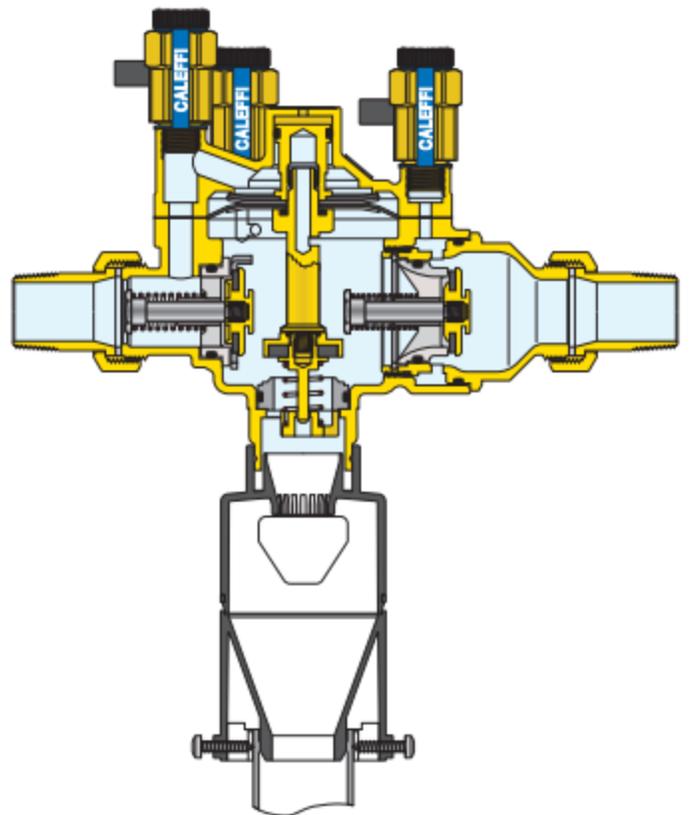
Downstream back pressure

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 receiving 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 funnel

In compliance with standard EN 1717 backflow from the connected pipe must be prevented during discharge and this must occur without any external water spillage. 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 conveyor.



Constructional Details

Anti-corrosion materials

The materials used to manufacture the backflow preventers must be corrosion resistant due to contact with drinking water. They are therefore constructed using an dezincification resistant alloy , bronze and stainless steel to ensure long lasting high performance.

Elastomers complying with food regulations

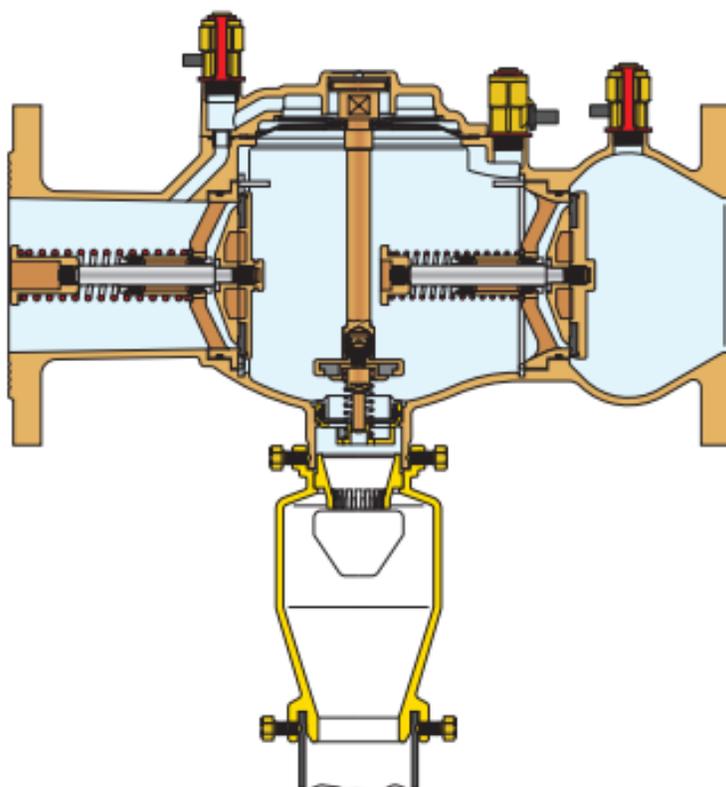
The elastomers employed for the water seals are approved by Certifying Bodies in compliance with the most recent regulations governing compatibility for use with drinking water.

Easy maintenance

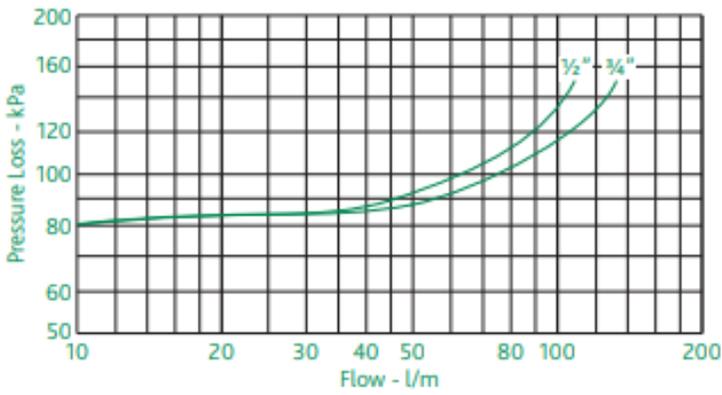
The backflow preventer is inspected periodically during its normal operating life to check that it is functioning correctly. Should the need arise, dismantling and maintenance operations are simple and easy to perform with components that are easy to inspect and replace without disconnecting the valve body from the pipework.

Certification

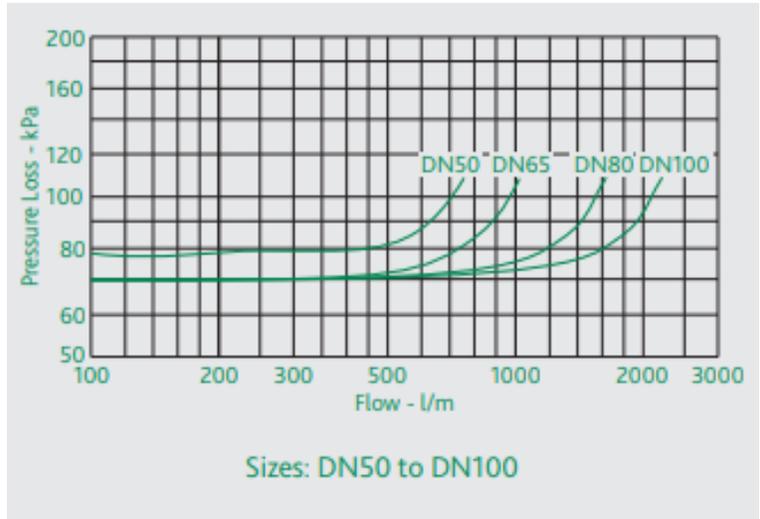
The BOSS FIG 574 and FIG 575 BA type controllable reduced pressure zone backflow preventers are KIWA REG4 Certified products.



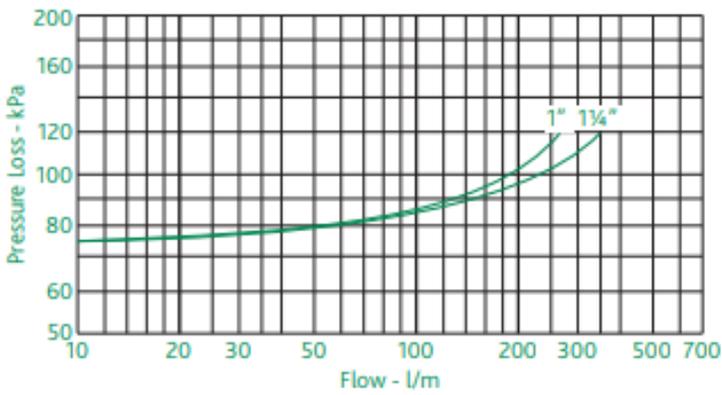
Flow Characteristic



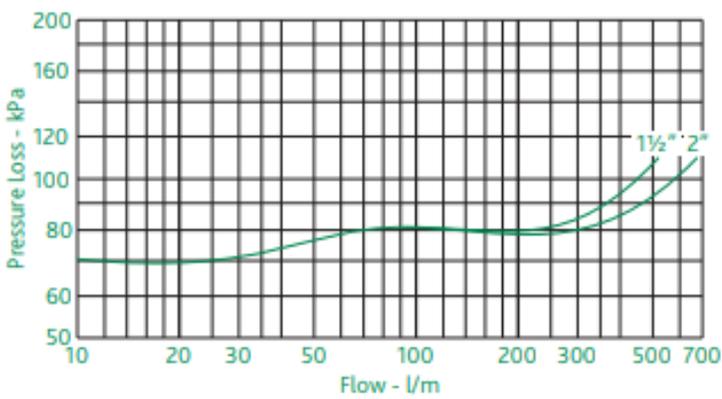
Sizes: 1/2" & 3/4"



Sizes: DN50 to DN100



Sizes: 1" & 1 1/4"



Sizes: 1 1/2" & 2"