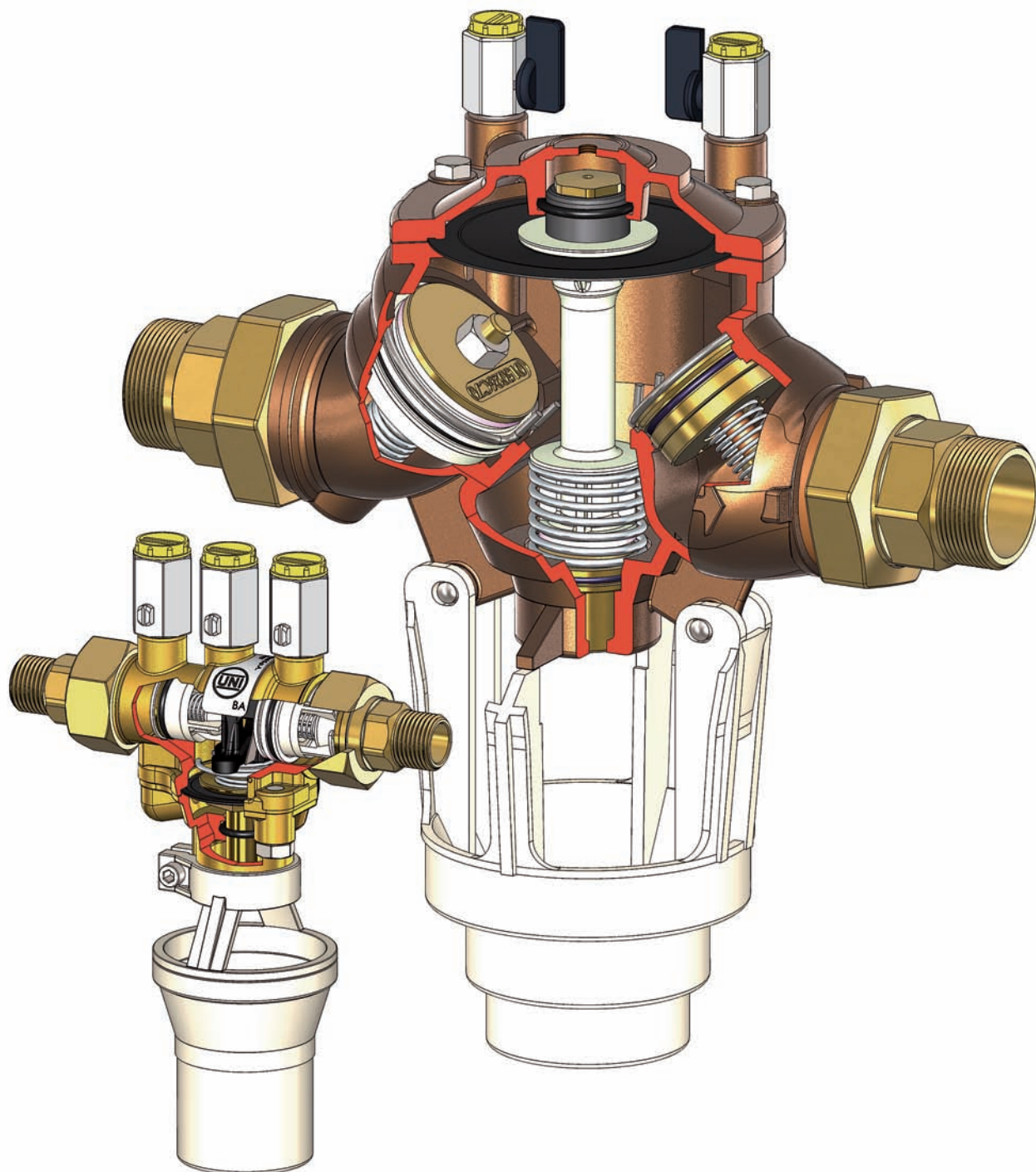


Serie ECO 3T



Threaded end back flow preventer
with controllable reduced pressure zone

Protection



Application fields



WATER



FIRE FIGHTING



DRINKING WATER

The threaded end backflow ECO 3F preventers, with controllable reduced pressure zone type BA EN1717 are approved in conformity with EN12729 and are manufactured in accordance with the most severe product norms and in conformity with the quality requirements of EN ISO 9001. The body of dimension DN 15 is made of brass and the body of dimensions DN 20-50 is made of bronze.

They consist of 2 spring check valves and a chamber situated in between the spring check valves, which contain a security valve, which in the event of "backflow", isolates the primary network from the user network.

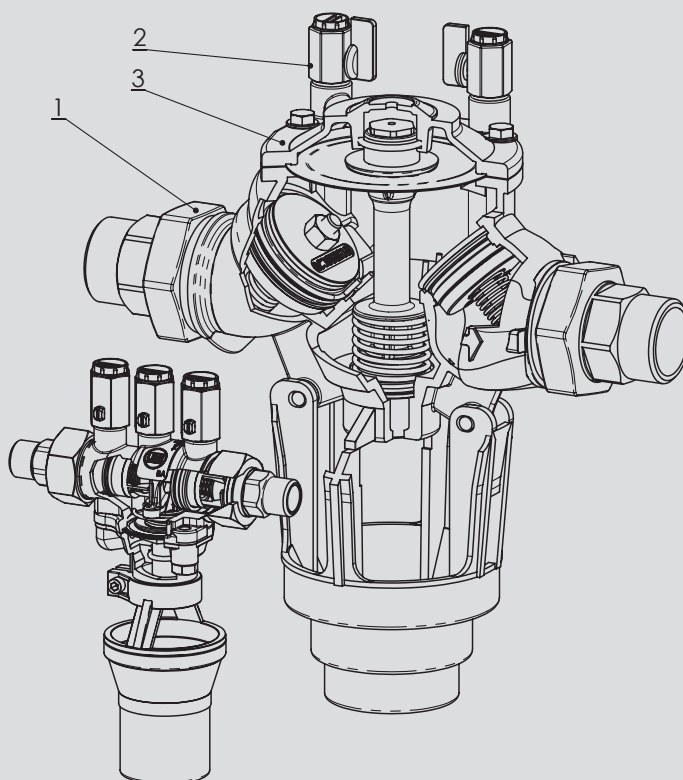
The backflow might be caused by siphoning (the entry pressure decreases due to ruptures in the piping upstream, the water supply is interrupted, draining off parts of the piping due to events upstream) or the build up of counter pressure (the pressure of the user network is higher than the pressure in the primary network due to overpressure caused, for example, by incoming water pumped from a private water well).

Backflow preventers are indispensable to prevent contamination of the distribution network of the drinking water from connect user units (for example, washing machines, boilers, industrial plants, hospitals, laboratories, fire fighting plants).

For correct installation, it is necessary to install a filter upstream with respect to the backflow preventer, in order to avoid problems caused by dirt and residual parts present in the piping, such as shut-off valves upstream and downstream with respect to the backflow preventer.

Series ECO3T backflow preventer, even if marked PN10 for the purposes of reference normative EN12729, due to its design and testing characteristics is suitable for installation in firefighting networks with service pressure of 12 bar.

1. Very compact design, one of the shortest backflow preventers, which allows easy installation in limited spaces.
2. Test points fitted with mini-valves, for checking the absolute and the differential pressure in the upstream and intermediate areas. Together with the ECO3 TEST, these allow verifying the function of the backflow preventer.
3. DN 20-50: Easy maintenance due to removable cover.



Accessories

- ➔ ECO3 TEST: control instrument

Refer to specifications on page 180

Special version

- ➔ Pre-assembled unit

In conformity with EN1717, BA type
Homologated in accordance to EN12729

Construction and testing norms (correspondences):

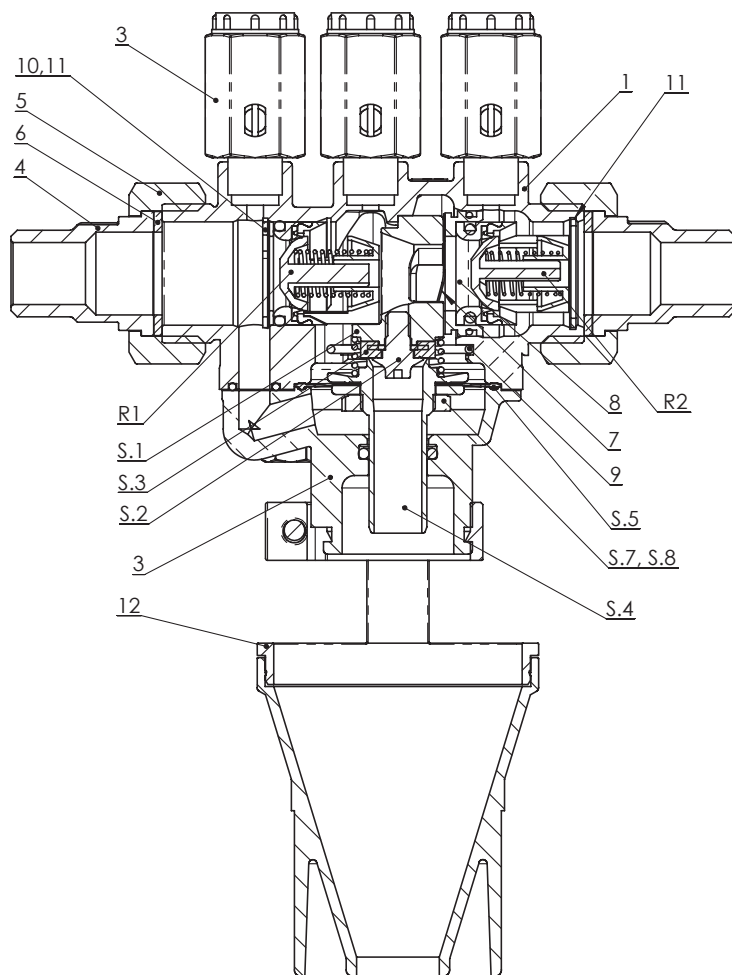
Threading: ISO228/1

Marking: EN19

Testing: 100% testing in accordance with EN12729

Serie ECO 3T - DN 15

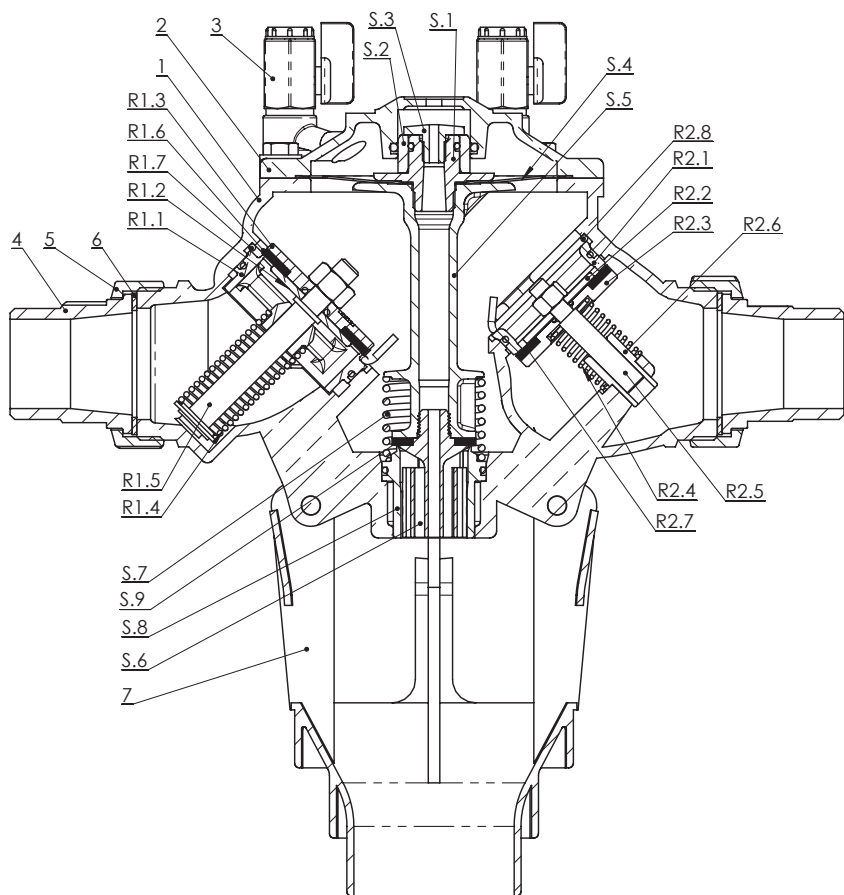
Protection



Materials

	Component	Material
1	Body	OT CW 602N ADZ
2	Bonnet	OT CW 602N ADZ
3	Valve M/F - 1/4"	Brass
4	Connection	OT CW 602N ADZ
5	Ring nut	OT P/Zn40Pb2
6	Gasket	EPDM
7	Spring	AISI 302
8	Downstream check valve bearing	OT CW 602N ADZ
9	Retaining ring	AISI 302
10	Spacer	OT CW 602N ADZ
11	Circlip DIN 472	AISI 304
12	Drain conveyor	Polypropylene
R1.1	Upstream check valve	POM
R2.1	Downstream check valve	POM
S.1	Manifold	PPO Noryl
S.2	Shutter guide	OT CW 602N ADZ
S.3	Relief valve seal	Silicon rubber
S.4	Relief valve Shutter	OT CW 602N ADZ
S.5	Membrane	Neoprene + Nylon
S.6	Relief valve spring	AISI 302
S.7	Hex nut	OT CW 602N ADZ
S.8	Membrane bearing plate	OT CW 602N ADZ
	O-ring	NBR
	Nuts and Bolts	AISI 304

Serie ECO 3T - DN 20÷50

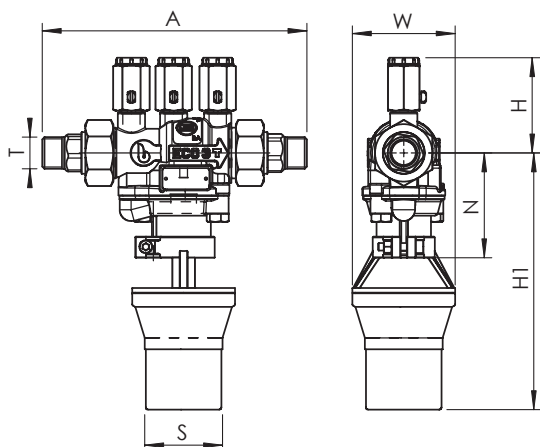


Materials

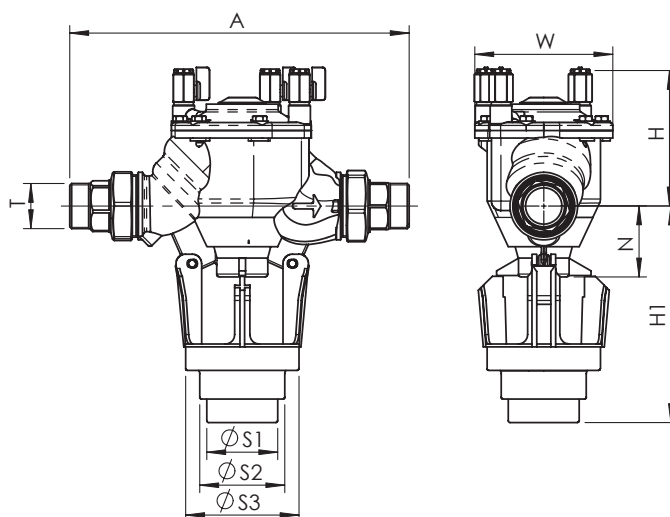
	Component	Material
1	Body	Bronze CuSn5Zn5Pb5 EN 1982
2	Bonnet	Bronze CuSn5Zn5Pb5 EN 1982
3	Valve M/F - 1/4"	Brass
4	Connection	OT CW 602N ADZ
5	Ring nut	OT P/Zn40Pb2
6	Gasket	CELFLEX
7	Drain conveyor	Polypropylene
R1.1	Upstream check valve seat	PPO Noryl
R1.2	Upstream check valve flange	OT CW 602N ADZ
R1.3	Upstream check valve shutter	OT CW 602N ADZ
R1.4	Upstream check valve spring	AISI 302
R1.5	Upstream check valve stem	OT CW 602N ADZ
R1.6	Upstream check valve seal	Silicon rubber
R1.7	Upstream check valve retaining ring	AISI 302
R2.1	Downstream check valve seat	Bronze CuSn5Zn5Pb5 EN 1982
R2.2	Downstream check valve flange	OT CW 602N ADZ
R2.3	Downstream check valve shutter	OT CW 602N ADZ
R2.4	Downstream check valve spring	AISI 302
R2.5	Downstream check valve stem	OT CW 602N ADZ
R2.6	Downstream check valve stem guide	OT CW 602N ADZ
R2.7	Downstream check valve seal	Silicon rubber
R2.8	Downstream check valve retaining ring	AISI 302
S.1	Equalizer	PPO Noryl
S.2	Equalizer bush	PTFE + carbon
S.3	Equalizer cap	OT P/Zn40Pb2
S.4	Membrane	Neoprene + Nylon
S.5	Stem	PPO Noryl
S.6	Relief valve shutter	PPO Noryl
S.7	Relief valve spring	AISI 302
S.8	Relief valve seat	OT CW 602N ADZ
S.9	Relief valve seal	Silicon rubber
	O-ring	NBR
	Nuts and bolts	AISI 304

Threaded end back flow preventer with controllable reduced pressure zone

Serie ECO 3T - DN 15



Serie ECO 3T - DN 20÷50



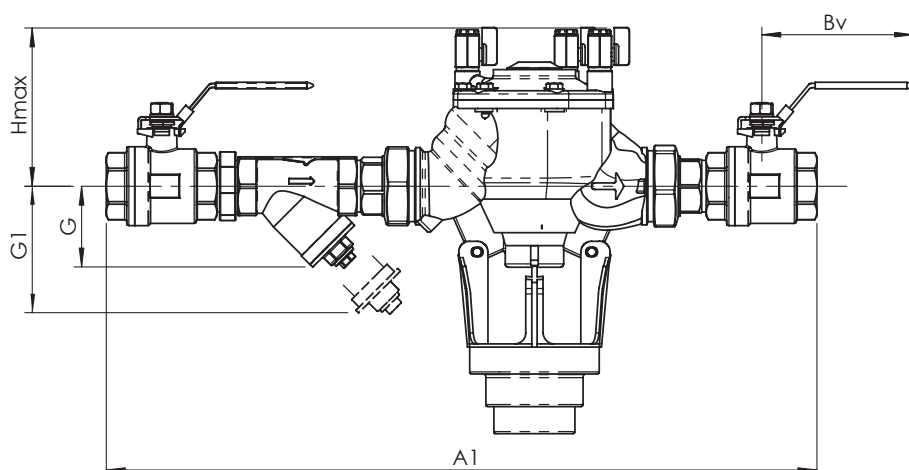
Dimensions (mm)

DN		15	20	25	32	40	50
T	ISO 228-1	1/2"	3/4"	1"	1" 1/4	1" 1/2	2"
A		174	258	258	357	357	428
H		58	107	107	140	140	159
H1		169	186	186	230	230	243
N		58	55	55	75	75	88
W		68	106	106	146	146	181
S1/2/3		50	63		75/90/120		

Weight (kg)

DN		15	20	25	32	40	50
kg		1,45	4	4	9	9	13

Serie ECO 3T pre-assembled unit



Dimensions (mm)

DN		15	20	25	32	40	50
G		35	45	57	58	66	78
G1		70	90	110	120	140	160
A1		335	448	479	623	658	781
H max unit		58	107	107	140	140	159
Bv		100	115	115	150	150	180
kg		2	5	6	11	12,6	18,4

Maximum pressure

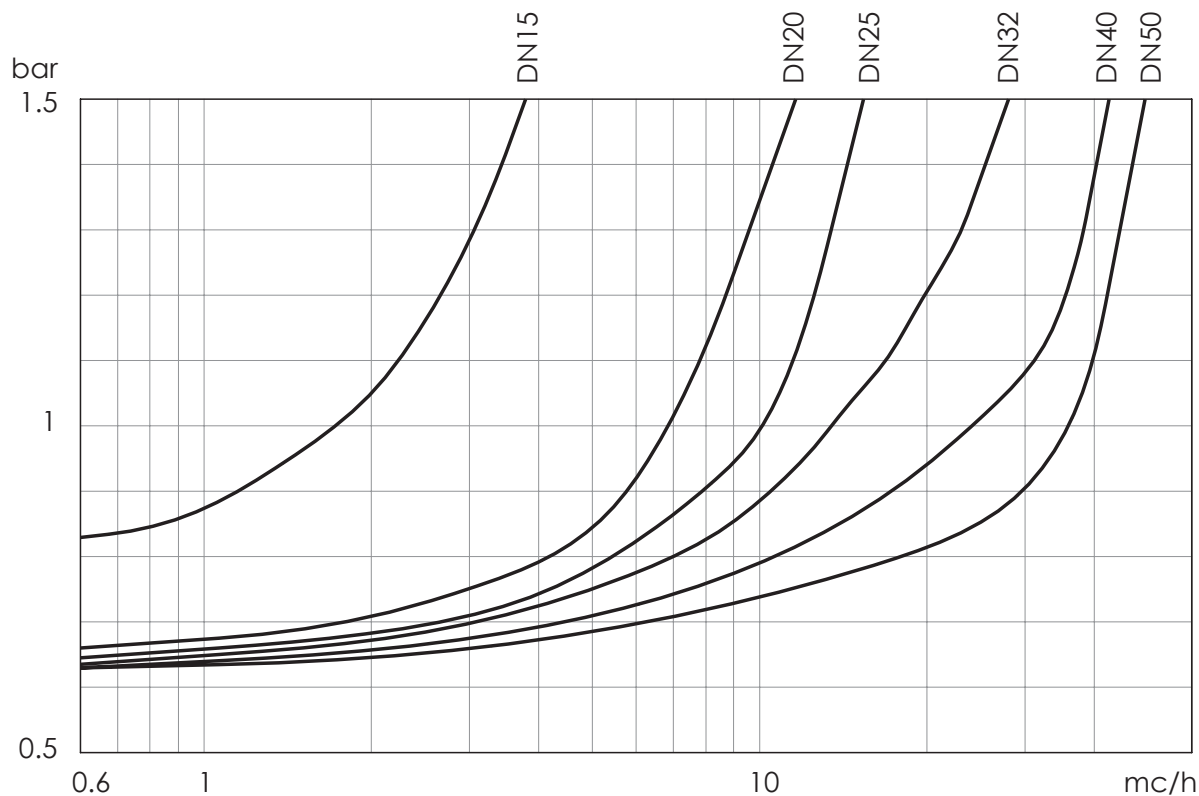
Pressure

10 bar

Temperature

Temperature	min °C	Max°C
	0	65

Head loss Fluid: water (1m H₂O = 0,098bar)



Kv - DN chart

DN	15	20	25	32	40	50
Kv	1,76	6,7	9,7	13,5	25	38,6

Minimum flow rate (mc/h) in function of head loss (according to EN 12729:2002)

DN	15	20	25	32	40	50
Head loss 1 bar	1,9	3,4	5,3	8,7	13,6	21,2
Head loss 1,5 bar	2,9	5,1	7,9/	13	20,3	21,8

Versions

Back flow preventer



ECO 3T DN15

Body: Brass ADZ
Temp: 0 +65°C



ECO 3T DN20÷50

Body: Bronze
Temp: 0 +65°C



Accessories

ECO 3 TEST

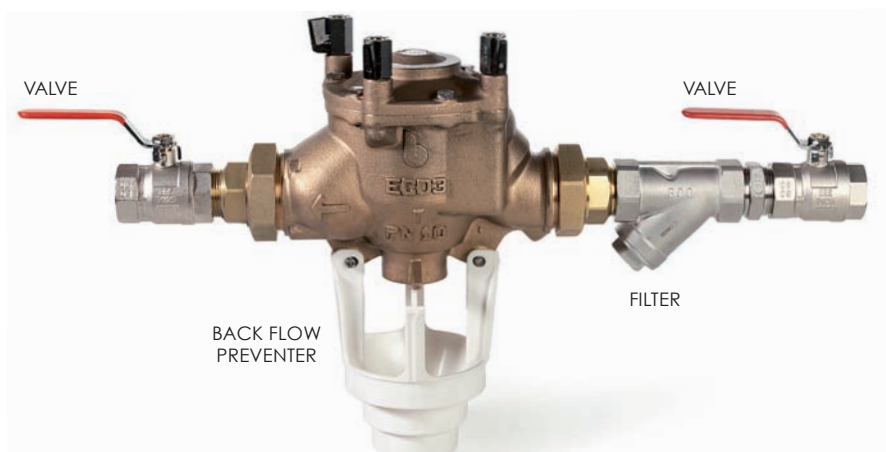
Control instrument. Composed of instruments, pre-assembled circuit, accessories for connection to the valve and the instructions for the testing of the correct working of the back flow preventer.



Special version

Pre-assembled unit

Unit composed of 2 shut-off valves (ball valves, butterfly valves or gate valves), 1 filter, 1 back flow preventer



Instruction and Recommendations

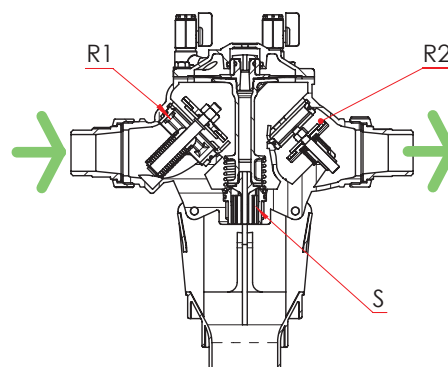
The information provided here is delivered with each product, and contains "Instruction for use and maintenance"; it is also available on our website: www.brandoni.it (download section)

OPERATING PRINCIPLE

NORMAL OPERATION: REGULAR FLOW

Under normal conditions the relief valve is closed and water flows through the 2 check valves (R1 and R2). Due to the head loss of valve 1, the pressure in the intermediate section is at least 140 millibar less than the upstream pressure.

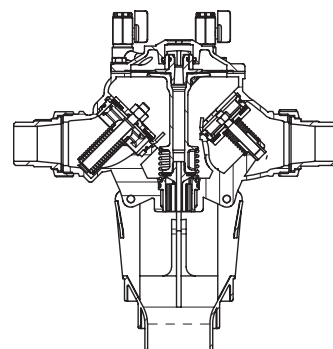
This difference acts upon the membrane and closes the relief valve S.



Protection

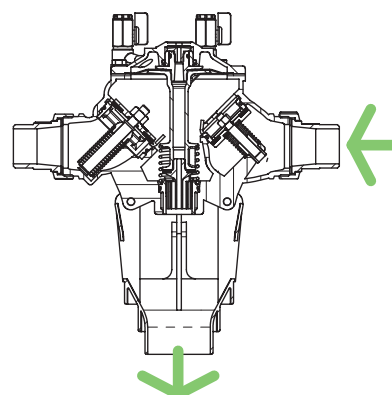
NO FLOW: NORMAL PRESSURE

The check valves (1 and 2) are closed and the relief valve remains closed.



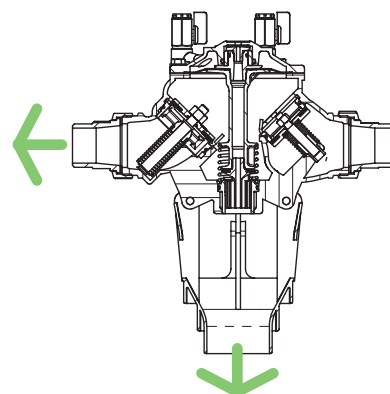
BACK PRESSURE: DOWNSTREAM OVERPRESSURE

The downstream check valve (R2) closes, preventing potentially contaminated water from flowing into the supply pipe. If the downstream check valve is not perfectly watertight, the polluted water can seep into the central chamber. As the pressure in the central chamber increases, the relief valve opens and the polluted fluid discharges.



BACK-SIPHONAGE: UPSTREAM DEPRESSION

If the upstream pressure accidentally decreases, the check valves (1 and 2) automatically close; so the pressure difference between the upstream section and the central section is reduced; the spring opens the relief valve and the central chamber empties. Consequently, the flow between the upstream area and the downstream area is interrupted, making it completely safe. The emptying of the central chamber causes a fall in pressure and brings the valve back to the initial safety conditions.



Threaded end back flow preventer with controllable reduced pressure zone

IMPORTANT: PRIOR TO INSTALLATION

A correct example of how to install the backflow preventer is shown in Fig. A.

1. The device must be located in a common, easily accessible area of the building, it must be ventilated and not subject to flooding. (The preventer should preferably be placed outside the building works and above the soil).
2. The backflow preventer must be located away from every area that may be flooded, always considering the highest level that water may reach in adjacent areas, in case of frequent flooding.
3. Around the device, there must be enough room to enable easy installation or removal. It must be easily accessible for repair work and working tests.
4. When the device is placed in an installation which may pollute the drinking water supply network, all networks supplying sanitary or food processing systems must be installed upstream with respect to the backflow preventer and the downstream network must be marked with the conventional safety signs and colours, in accordance with UNI 5634P regulations.
5. The opening of relief valve must enable the water to drain off as a result of gravity.
6. When running a test with the ECO3TEST device, pressure gauges must be at the same height as the backflow, to ensure correct measurement by the differential pressure gauge.
7. The discharge device must not give off toxic fumes into the room. The discharged waters must not be harmful to the environment: the health authorities should be consulted in the cases established by the current regulations.
8. The leakage recovery system, located under the bleed valve outlet, and the discharge water recovery works, must have a minimum section, corresponding to the following values:

DN	1/2"	3/4"	1"	1" 1/4	1" 1/2	2"
Internal diameter of drain pipe	50	63	75 / 90 / 120			

INSTALLATION

Follow the directions as shown in Fig B.

1. Install an interception valve X upstream with respect to the backflow preventer.
2. Install an interception valve Y downstream with respect to the backflow preventer.
3. When the valves are closed, install a strainer with a bleed plug upstream with respect to the preventer, making sure that water flows in the direction indicated on the body.

WARNING. The strainer is essential if the preventer is to work properly. Make sure that, during the installation, there are no residual parts in the pipes that could seriously damage the device.

4. Install the backflow preventer between the strainer and the downstream valve, always following the direction displayed on the product.
5. Close valves 1-2-3
6. Remove the plastic protection cap located under the bleed valve.
7. Fix the bleed pipe.
8. Slowly open the upstream valve X.
9. Slowly open the preventer valves following the 3-2-1 order, from downstream to up upstream, let them bleed and close.
10. Slowly open the downstream valve Y.
11. The backflow preventer is now working. Make sure that the relief valve does not leak. In case of leakage, check if there are pressure decreases in the upstream section.

FIG. A

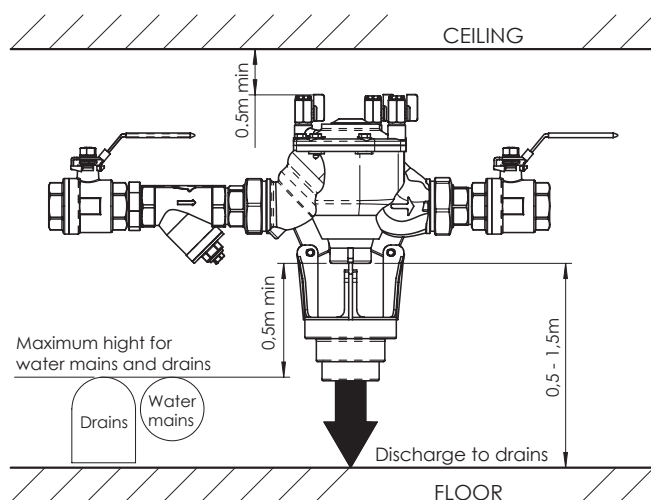
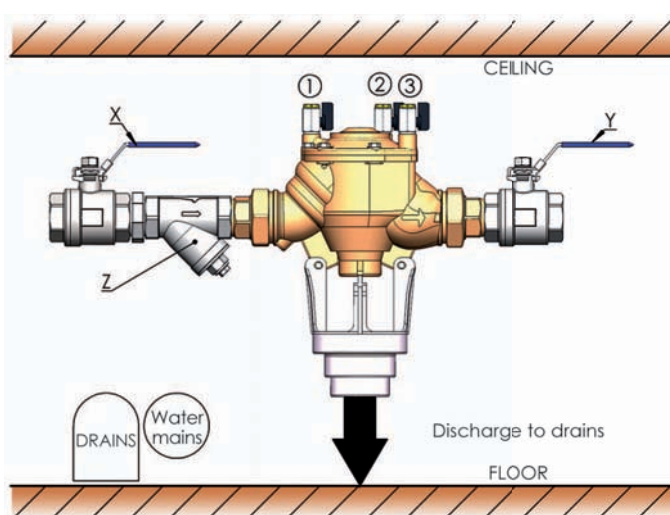


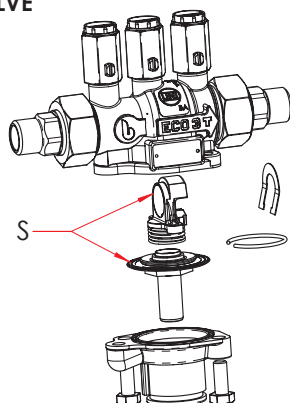
FIG. B



MAINTENANCE DN 15

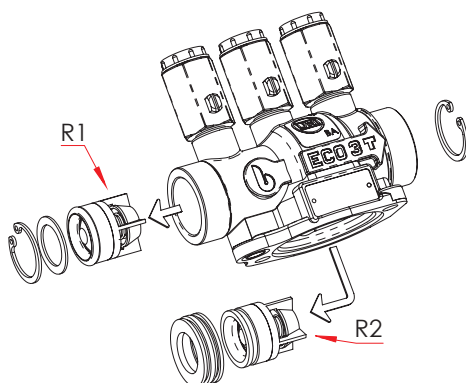
MAINTENANCE OF THE BLEED VALVE

- Unscrew the bonnet bolts
- Take out and replace the CLOSING DEVICE S



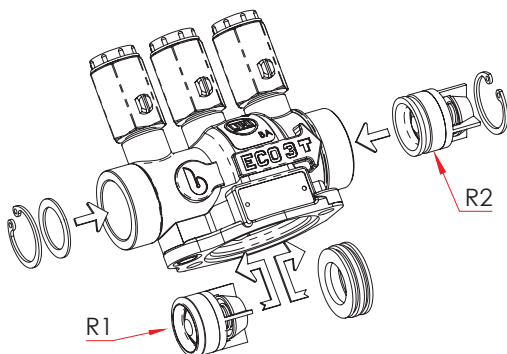
EXTRACTION OF THE CHECK VALVES

- Remove end connections
- Remove the circlips
- Remove the bonnet and the closing device
- Acting in the directions shown by arrows, remove the upstream check valve R1 and the downstream check valve R2



ASSEMBLING THE VALVES

- Acting in the directions shown by arrows, replace the upstream check valve R1 and downstream check valve R2
- Put the circlips in place
- Put the closing DEVICE S in place and mount the bonnet
- Reassemble the end connections



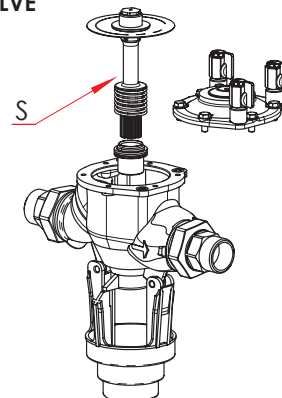
SPARE PARTS (CODES)

SPARE PARTS	ECO3T - DN15
R1	K005900C70
R2	K005910C70
S	K005998C70

MAINTENANCE DN 20÷50

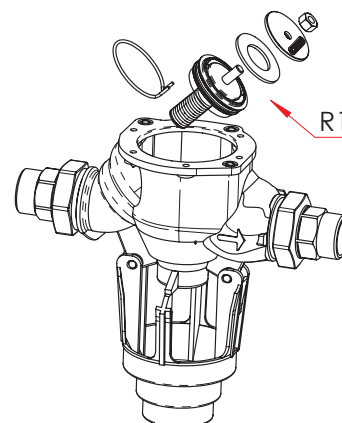
MAINTENANCE OF THE BLEED VALVE

- Unscrew the bonnet bolts
- Take out and replace the CLOSING DEVICE S



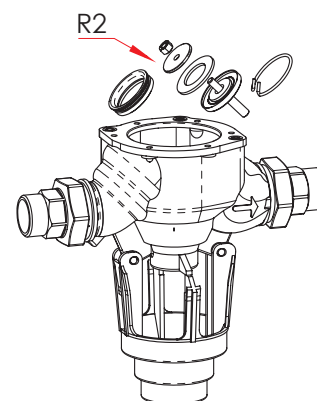
MAINTENANCE OF THE UPSTREAM CHECK VALVE

- Remove the retaining ring and take out the shutter of upstream valve R1
- Unscrew the nut
- Replace the seal



MAINTENANCE OF THE DOWNSTREAM CHECK VALVE

- Remove the retaining ring and take out the upstream valve R2
- Unscrew the nut
- Replace the seal



SPARE PARTS (CODES)

SPARE PARTS	ECO3T.020 ECO3T.025	ECO3T.032 ECO3T.040	ECO3T.50
R1	K010996C70	K015996C70	K020996C70
R2	K010997C70	K015997C70	K020997C70
S	K010998C70	K015998C70	K020998C70
Upstream valve seal	010071C70	015071C70	020071C70
Downstream valve seal	010078C70	015078C70	020078C70