REF. 940

INSTALLATION OPERATING MANUAL BACKFLOW PREVENTER TYPE CA 573 NON CONTROLABLE

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 that prevents the water in the two circuits from coming into contact.
NF Certification with 10 years warranty.
4MS CW617N brass body and EPDM gaskets.
Compact type.

Size : DN1/2" to DN3/4"
Connection : Female BSP
Min Temperature : +5°C
Max Temperature : +65°C
Max Pressure : 10 Bars
Specifications : Compact type
Non Controlable
Nylon disc
With brass female union Ecobrass®

Materials : Brass body CW617N-4MS according to EN12165

*the installation defects and wear defects are not covered by the guarantee

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Information provided as an indication and subject to possible modification

INSTALLATION OPERATING MANUAL BACKFLOW PREVENTER TYPE CA 573 NON CONTROLABLE

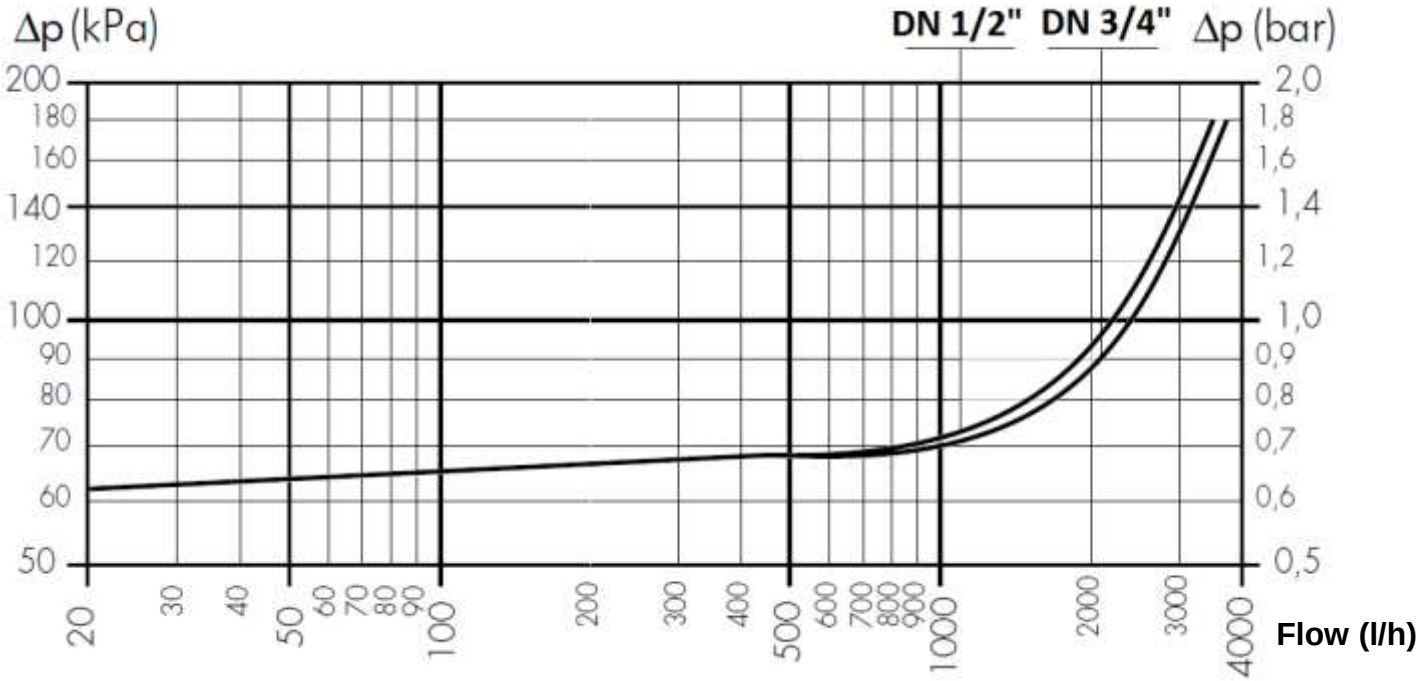
SPECIFICATIONS :

- Brass CW617N-4MS body
- Respect the flow direction indicated by an arrow on the body
- Horizontal position
- Female / female BSP
- Non Controlable
- Low head loss
- With female union Ecobrass®
- Strainer included
- 10 years manufacture warranty (the installation defects and wear defects are not covered by the guarantee)

USE :

- For boiler with a max power of 70Kw
- Water distribution
- Min Temperature Ts : + 5°C
- Max Temperature Ts :+ 65°C
- Max Pressure Ps : 10 bars

HEAD LOSS GRAPH :



FLOW COEFFICIENT Kvs (M3 / h) :

DN	1/2"	3/4"
Kvs (m3/h)	2.2	2.4

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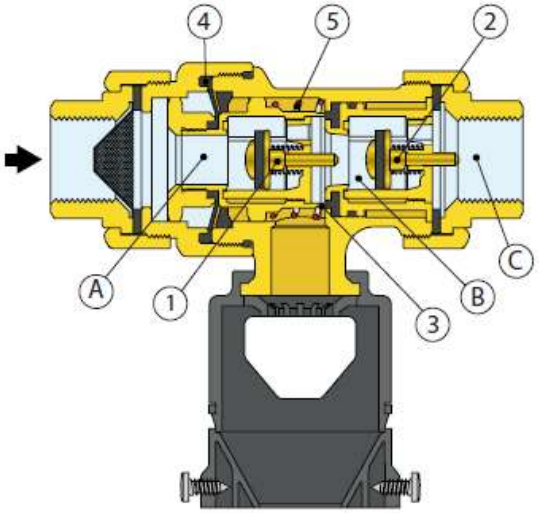
OPERATING PRINCIPLE :

The CA type non-controllable backflow preventer with different pressure zones includes: 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). The discharge device (3) is located in the intermediate zone. The discharge device (3) is connected directly to the diaphragm (4). This mobile assembly is opened and closed by the difference in pressure between upstream and downstream of the check valve and by the counter spring (5).

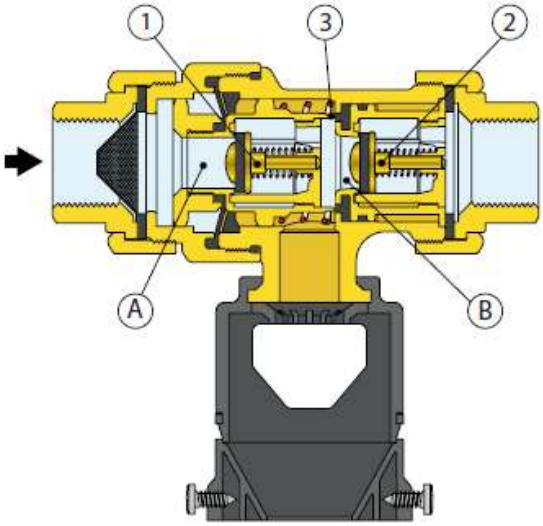
Correct flow conditions

Under correct conditions of flow, both check valves (1 and 2) are open, while the pressure in the intermediate chamber (B) is always lower than the pressure upstream (A) due to a pre-calculated head loss at the first check valve (1). As a result, this pressure difference acts on the internal membrane (4) and generates a force that keeps the drain valve closed (3), communicating with the atmosphere, pressing on the counter spring (5).



No flow conditions

The check valves (1) and (2) are now closed. Due to the difference in pressure that still exists between the upstream zone (A) and the intermediate zone (B), the drain valve (3) remains closed.

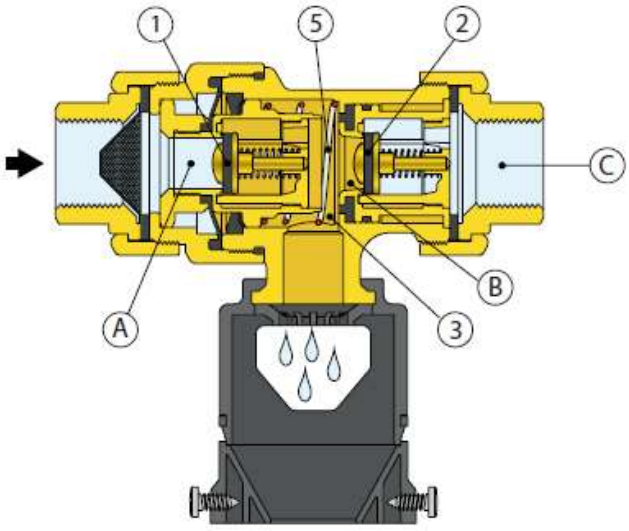


Upstream pressure loss

Both check valves (1 and 2) close as the pressure upstream drops. The drain valve (3) opens at the moment in which the difference in pressure Δp, existing between the upstream (A) and intermediate (B) zones reaches a value just below the one pre-calculated for the counter spring (5). Drainage continues until the intermediate chamber of the backflow preventer is empty.

This creates a (safety) air zone and prevents the contaminated water of the circuit, coming from zone (C), from returning into the water distribution mains, also in case of check valve (2) failure.

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 overpressure

If the pressure in the downstream zone (C) increases until it exceeds the upstream pressure value (A), the check valve (2) closes, thus preventing the water that has already been sent to the user from flowing back towards the water main.

Should check valve (2) have a slight sealing problem, or in general should any other malfunction occur in the backflow preventer, the latter will always shut off (disconnect) the connection between the user and the water main.

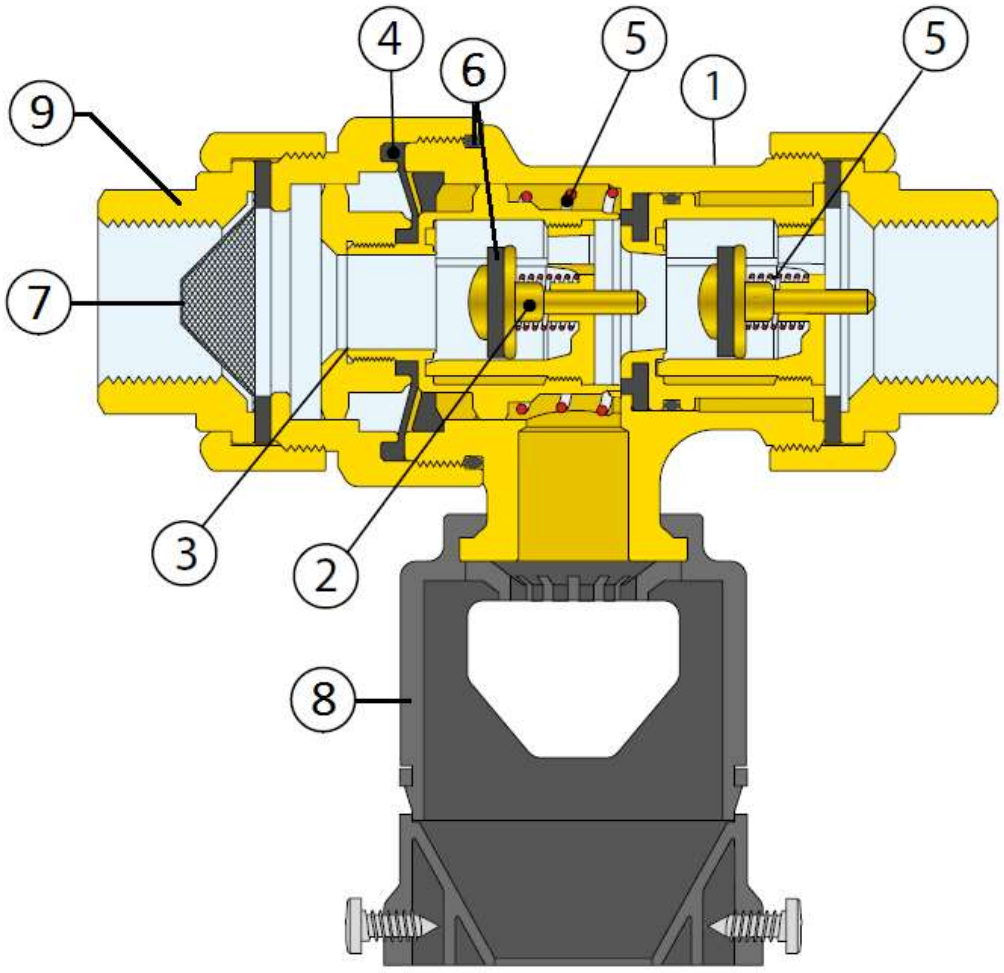
In fact the backflow preventer was designed with all the construction solutions required for a positive action device; the best possible safety conditions are therefore ensured under all conditions.

INSTALLATION OPERATING MANUAL BACKFLOW PREVENTER TYPE CA 573 NON CONTROLABLE

RANGE :

- Female - female BSP cylindrical with female union from DN 1/2“ to DN 3/4“ **Ref.940**

MATERIALS :



Item	Designation	Materials
1	Body	Brass CW617N-4MS according to EN 12165
2	Check valves	PSUG20 + dezincification-resistant Brass CR CW724R Ecobrass®
3	Check valve seat	dezincification-resistant Brass CR CW724R Ecobrass® according to EN 12165
4	Diaphragm	EPDM
5	Spring	AISI 302
6	Gasket	EPDM
7	Strainer	AISI 304
8	Evacuation support	Polymer
9	Union fitting	dezincification-resistant Brass CR CW724R Ecobrass® according to EN 12165

INSTALLATION OPERATING MANUAL BACKFLOW PREVENTER TYPE CA 573 NON CONTROLABLE

BACKFLOW :

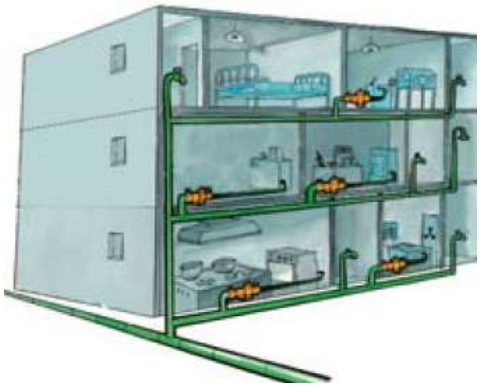
Potable water fed from the mains supply may suffer from hazardous pollution caused mainly by contaminated fluids from plumbing systems flowing back directly into the mains supply. This phenomenon, termed “backflow” occurs when:

- a) the pressure in the mains system is less that in the plumbing circuit receiving the supply (back syphonage). This situation may occur when there is a pipe breaking in the mains system or when demand on the mains supply from consumers is very heavy.
- b) the pressure in the plumbing circuit receiving the supply rises (back pressure) due, for example, to water being pumped from a well.

Risk assessment.

Given the potential dangers of the phenomenon and the requirements of current regulations, the risk of pollution from backflow must be assessed on the basis of the type of system and the characteristic of the fluid that flows in it. An appropriate backflow prevention device must be selected on the basis of that assessment performed by the system designer and the mains supplier. The device must be located along the supply line at those 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 mains supply or in the internal plumbing system. This will prevent polluted water from flowing back in all systems for which direct connection to the mains or an internal supply is considered hazardous.

Installation in a building with multiple outlets



INSTALLATION OPERATING MANUAL BACKFLOW PREVENTER TYPE CA 573 NON CONTROLABLE

BACKFLOW PREVENTER USE, TYPE CA (According to EN 1717 and EN 14367) :

Proper use of the CA type backflow preventer is regulated by the new European standards on prevention of pollution from backflow. The reference standard is EN 1717: 2000 “Protection against polution of drinking water in water systems and general requirements for the devices used 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 used for human consumption provided by a water company.
Category 2 :
Fluid that does not present health hazard, as per 1, the quality of which has been compromised due to changes in temperature, taste, odour or appearance.
Category 3 :
Fluid that represents a slight health hazard due to the presence of one or more harmful substances.
Category 4 :
Fluid that represents a 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 :
Fluid that represents a severe health hazard due to the presence of microbiological or viral elements.

According to this classification, suitable backflow prevention devices must be inserted in water distribution systems.CA Type backflow preventers are used to protect against risk of contamination by waters of up to category 3. For water of category 4, it is necessary to use a backflow preventer of BA type. For water of category 2 on the contrary it is sufficient to use a controllable check valve of EA type or a controllable double check valve of EC type. The table given below, named “Protection matrix”, associates the various types of system with the relative categories of fluid, and has been drawn up based on the indications provided in the European standards. Standard NF P 34.009 and the new European standard EN 14367 – “Devices to prevent pollution by backflow of potable water. Non-controllable backflow preventer with different pressure zones. Family C–Type A ”establishes the functional, dimensional and mechanical requirements that must be satisfied by non-controllable backflow preventers with different pressure zones of CA type.

Protection matrix		
Type of plant	**Fluid cat.**	
	2	3
General		
Hot and cold water mixing devices in domestic water systems	*	
Water cooling devices for air conditioning units, without additives	*	
Sterilisers for packed or disinfected materials		*
Water in primary domestic heating system circuits, without additives		*
Domestic, residential or commercial gardens		
Hand held fertiliser sprayers for use in domestic gardens		*
Watering systems, without fertilisers or insecticides, with sprinkler fixed to the ground at a depth of not more than 150 mm		*
Water softeners		
Domestic water softeners regenerated with common salt	*	
Commercial water softeners (only regenerated with common salt)		*
Commercial applications		
Automatic dispensers **with** injection of ingredients or CO_2		*
Automatic dispensers **without** injection of ingredients or CO_2	*	
Machines to wash out drink distribution pipes in restaurants		*
Hairdresser rinsing systems	*	
Medicine		
X-ray machine cooling systems	*	
Food applications		
Ice-making machines	*	
Large kitchen machines with automatic filling system	*	
Domestic applications		
Water to sinks, baths and showers	*	
Domestic dishwashers and washing machines		*
Flexible pipes with controlled flow spray nozzles or stop cock		*
Domestic dialysis machines		*

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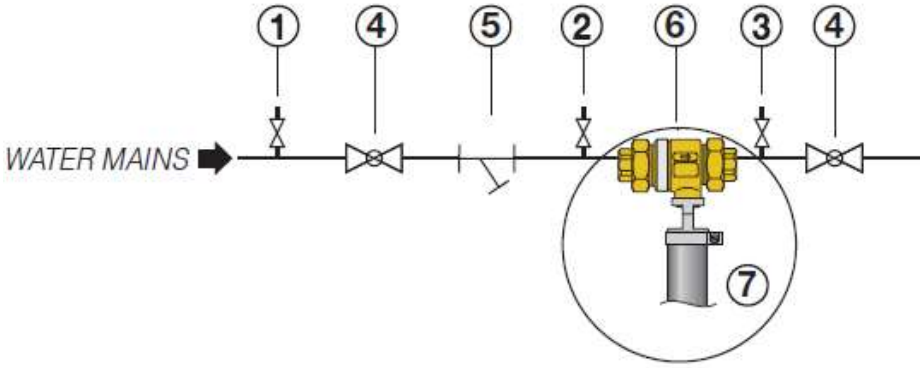
INSTALLATION :

The backflow preventer unit must be installed horizontally after a shut-off valve upstream and an inspectable filter; another shut-offvalve must be installed downstream. The unit must be installed in an accessible area that is large enough to prevent it getting submerged by any accidental flooding. In addition there must be adequate waste pipe for medium drained from the unit to flow away.



1 Water mains control cock
2 Upstream control cock
3 Downstream control cock
4 Upstream/downstream shut-off valve
5 Y-strainer
6 Backflow preventer series 573 with inspectable filter at inlet
7 Drain to sewer

Before installing the backflow preventer it will be necessary to clean the piping with a high-capacity jet of water. Poor cleaning of the system can easily impair the operation of the unit. For the protection of the public mains the disconnection unit must be installed after the water meter, whereas in order to protect the tap water 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.

Operating control procedure

1.Drain control operation. When there are drops in pressure in the water supply mains, therefore upstream from the valve, the drainvalve must open and let the water contained in the valve body runout:

- Close the shut-off valves upstream and downstream (4).
- Open the upstream control cock (2).

The water contained in the valve body should now flow out,indicating that the device has tripped and has opened the drainvalve.

2.Check the seal of the second check valve. When back pressure is applied on the downstream side of the valve, the second checkvalve must close to prevent the water from flowing back:

- Close the shut-off valves downstream and upstream from the disconnection unit.
- Open the upstream control cock (2).
- Install a by-pass hose joining the control cock (1) to the other control cock (3) downstream and open them both to carry the mains pressure downstream of the second check valve.

No water must come out of the drain valve, thereby indicating that the second check valve does not leak.

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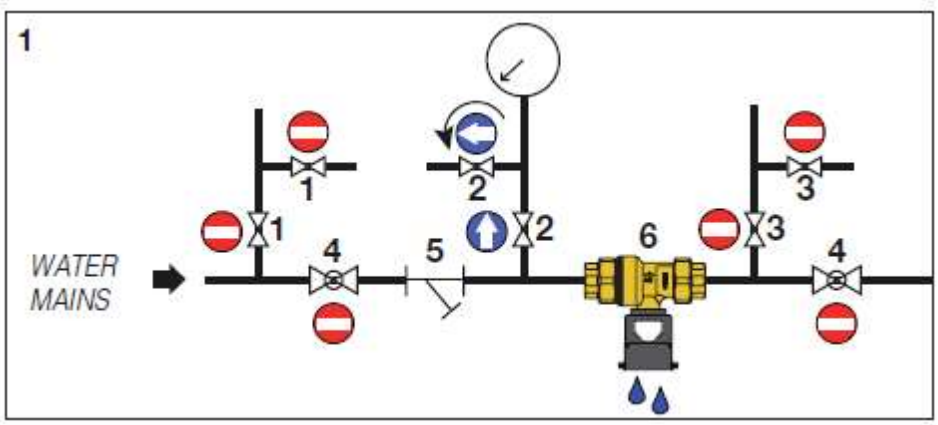
INSTALLATION OPERATING MANUAL BACKFLOW PREVENTER TYPE CA 573 NON CONTROLABLE

MAINTENANCE (Operating check) :

1. Discharge checking operation (disconnection).

A pressure drop in the water mains upstream of the valve must cause the drain valve to open, with consequent emptying of the water contained in the valve body:

a) Close the shut-off valves upstream and downstream (4) of the backflow preventer.
b) Open the control cock (2) to lower the upstream pressure. The device should react by opening the drain valve to discharge the water contained in the valve body.



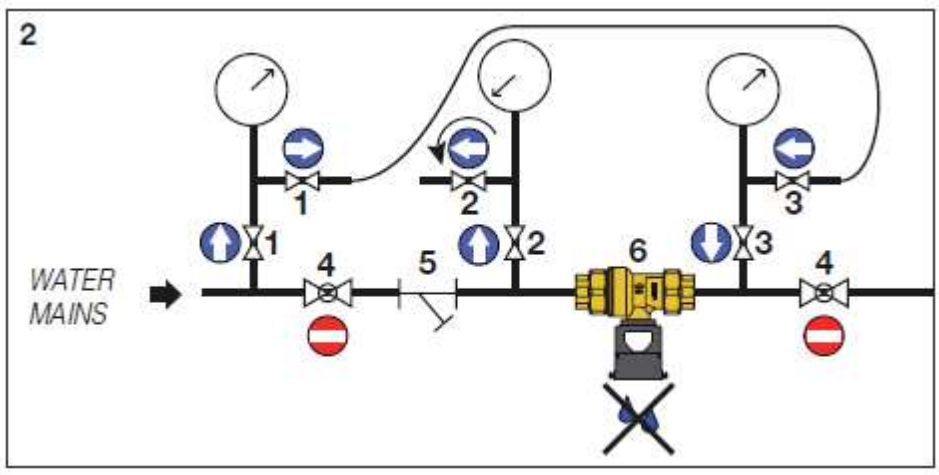
2. Check the tightness of the second check valve.

In case of counter pressure downstream of the backflow preventer, the second check valve must close to prevent reverse flow of the water:

a) Close the shut-off valves upstream and downstream (4) of the backflow preventer.

b) Open the control cock (2) to lower the upstream pressure.

c) Install a by-pass hose to connect control cock (1) to control cock (3) downstream: open both cocks to carry the mains pressure downstream of the second check valve. If, after having emptied the intermediate chamber, there is no more water discharge from the drain valve, this means that the second check valve is working correctly.



If symptoms of incorrect operation persist after having performed the checking procedure described above, the entire backflow preventer must be replaced with a new device, since it is not possible to access the internal components to replace individual parts.

Maintenance CSTB datasheet :
http://evaluation.cstb.fr/certifications-produits-services/produit/antipollution-des-installations-d-eau/

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INSTALLATION :

The 940 backflow preventer must be installed by trained technicians in accordance with the instructions given in this manual and following current regulations.
If the backflow preventer is not installed, put into operation and serviced correctly in accordance with the instructions in this manual, then it might not work properly and may put the user in danger.
When making the water connections, take care not to subject backflow preventer fittings to excessive mechanical stress.
Over time this could result in breakage, with water leaks causing damage and/or injury.
Water temperatures exceeding 50°C may cause severe burns.
When installing, commissioning and servicing the backflow preventer, take the necessary precautions to ensure these temperatures do not constitute a hazard for people.
In the case of particularly aggressive water, water treatment devices must be provided upstream of the backflow preventer, according to current regulations. Otherwise the valve may be damaged and will not work properly.
Any use other than the intended use is prohibited.

INSTALLATION OPERATING MANUAL BACKFLOW PREVENTER TYPE CA 573 NON CONTROLABLE

INSTALLATION INSTRUCTIONS

GENERAL GUIDELINES :

- Ensure that the check valves to be used are appropriate for the conditions of the installation (type of fluid,pressure and temperature).
- Be sure to have enough valves to be able to isolate the sections of piping as well as the appropriate equipment for maintenance and repair.
- Ensure that the valves to be installed are of correct strenght to be able to support the capacity of their usage.

INSTALLATION INSTRUCTIONS :

- **Before installing the check valves, clean and remove any objects from the pipes** (in particular bits of sealing and metal) which could obstruct and block the valves.

- **Ensure that both connecting pipes either side of the check valve (upstream and downstream) are aligned (if they're not,the valves may not work correctly).**

- **Make sure that the two sections of the pipe (upstream and downstream) match, the check valve unit will not absorb any gaps.Any distortions in the pipes may affect the thightness of the connection,the working of the check valve and can even cause a rupture.**To be sure,place the kit in position to ensure the assembling will work.

- Before starting the fitting, ensure that the threads and tapping are clean.

- **If sections of piping do not have their final support in place,they should be temporarily fixed.This is to avoid unnecessary strain on the check valve.**
- The theoretical lenghts given by ISO/R7 for the tapping are typically longer than required,the lenght of the thread should be limited, and **check that the end of the tube does not press right up to the head of the thread.**
- For the sealing assembly check valve piping, it is essential to use products that are compatible with the requirements of the French water agreement ACS : **plumbers hemp proscribed**.

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