

INSTALLATION OPERATING MANUAL NO POLLUTION CHECK VALVE EA

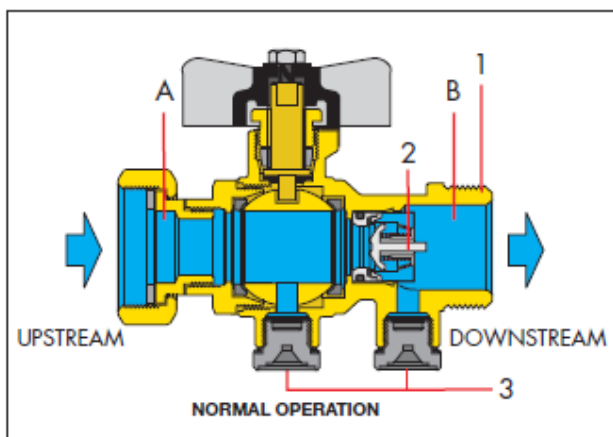
WORKING :

Operating principle

The anti-pollution check valve consists of a valve body (1), a check valve (2) and, if necessary, one or more inspection points (3) for operation checking and system draining procedures. The check valve (2) borders two different zones: one upstream or at the inlet (A) and one downstream or at the outlet (B).

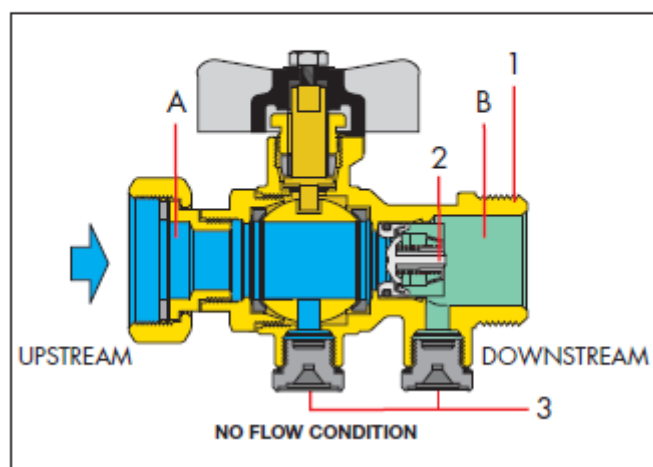
Correct conditions of flow

In correct flow conditions, the check valve (2) opens automatically when the pressure in the flow direction upstream (A) is greater than the downstream value (B).



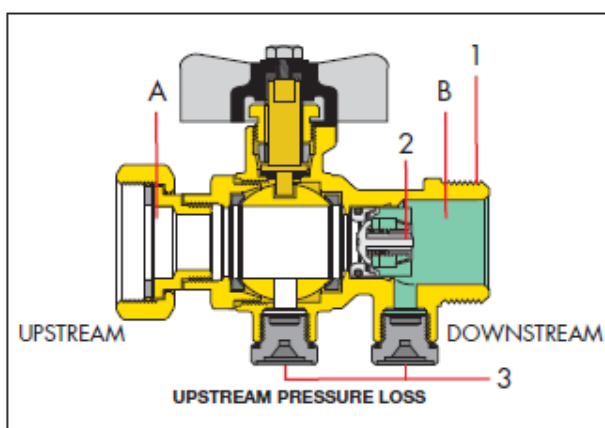
No flow conditions

The check valve (2) closes in advance under the action of the force exerted by the spring when the pressure downstream (B) tends to equal the value upstream (A), after the flow has stopped.



Upstream pressure loss

The check valve (2) remains closed, preventing water which has already been sent to the user from flowing back towards the public network.



Downstream pressure increase

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

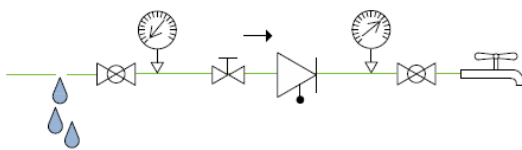
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Backflow

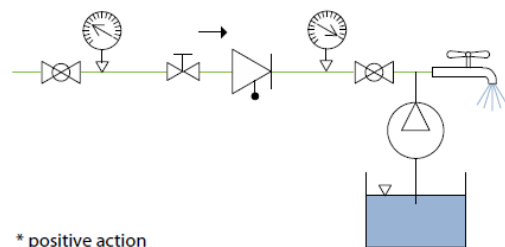
Potable water, flowing in the mains supply network, may suffer from hazardous pollution mainly caused by the return of contaminated medium from downstream systems directly connected to the main supply. This phenomenon, termed "backflow", occurs when:

- a) the pressure in the mains system is lower than the pressure in the downstream hydraulic circuit (back siphonage). This situation may occur when there is a pipe breaking in the mains system or when demand on the mains supply network by consumers is very heavy.
- b) the pressure in the downstream circuit rises (counter pressure/downstream overpressure) due, for example, to the inlet of water pumped from a well.

Back siphonage



Downstream overpressure



* positive action

Risk assessment

Given the potential danger of the phenomenon and the requirements of current regulations, the risk of pollution by backflow must be assessed on the basis of the type of system and the characteristic of the medium 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 supply Company. The device must be located along the supply line at those points at risk of backflow which would be hazardous to human health.

Use of type EA - EB anti-pollution check valves European reference standards EN 1717 and EN 13959

The use of EA and EB type anti-pollution check valve is regulated by the new European standards relating to the prevention of pollution caused by backflow.

The reference standard is EN 1717: 2000 "Protection against pollution of potable water in water installations and general requirements of devices to prevent pollution by backflow".

This standard classifies the water in the systems according to the level of risk it represents for human health.

Category 1: Water to be used for human consumption coming directly from a potable water distribution system.

Category 2: Fluid presenting no human health hazard, as per 1, the quality of which can have undergone a change in taste, odour, colour or temperature.

Category 3: Fluid representing some human health hazard due to the presence of one or more harmful substances.

Category 4: Fluid presenting a human 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 presenting a human health hazard due to the presence of microbiological or viral elements.

According to this classification, suitable backflow prevention devices must be fitted in water distribution circuits.

EA and EB type anti-pollution check valves can be used to offer protection against the risk of water contamination up to category 2.

For category 3 water, it is necessary to use a CA type backflow preventer.

The table below, called the "Protection matrix", associates the various types of system with the related fluid categories, and was created based on the indications provided in European standard EN 1717 and in Local Regulations. The table is not comprehensive, and checks should be conducted at the time of application to ensure compliance with any local standards or regulations.

The European standard EN 13959 – "Anti-pollution check valves from DN 6 to DN 250. Family E, type A, B, C and D." defines the functional, dimensional and mechanical requirements of anti-pollution check valves.

Protection matrix		
System type	Cat. medium	
	2	3
General		
Hot and cold water mixing devices in domestic water systems	*	
Water cooling devices for air conditioning units, without additives	*	
Filling of heating systems, without additives		*
Domestic water softeners regenerated with common salt	*	
Commercial water softeners (only regenerated with common salt)		*
Water in sinks, baths and showers	*	
Domestic dishwashers and washing machines		*
Domestic, residential or commercial gardens		
Hand-held fertiliser sprayers for use in domestic gardens		*
Catering		
Automatic dispensers without injection of ingredients or CO ₂	*	
Ice-making machines	*	
Large kitchen machines with automatic filling systems	*	
Medical		
Domestic dialysis machines		*

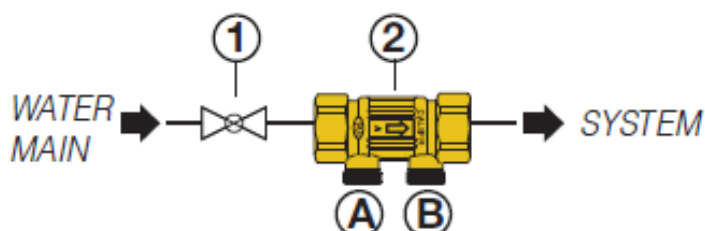
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INSTALLATION :

Before installation, make sure that the device is suitable for protecting the supply system, in relation to the type of fluid used in the system.

The controllable check valve should be installed after a shut-off valve, upstream.

The unit should be installed in an accessible zone.



1	Shut-off valve upstream
2	Controllable check valve
A - B	Inspection points

Before installing the check valve 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 device.

Inspection and operation checking procedure

The inspection and operation checking procedures should be carried out at least once a year.

- 1) Check whether the installation standards still require the application of the same device for the type of fluid used in the system.
- 2) Make sure that the hazard level of the fluid inside the system has not altered over time.
- 3) Check that there are no leaks or areas of corrosion or deterioration.
- 4) Perform the check valve seal operation checking procedure; when the water mains system pressure (and therefore the pressure upstream of the check valve) drops, the valve should close and prevent the water in the system from flowing back into the mains supply:
 - a. in order to maintain the system pressure in the absence of flow, close all the shut-off valves downstream of the valve and the inspection points for the same check valve.
 - b. close the shut-off valve upstream (1) and open the inspection point (A) of the check valve.
The flow should stop after the part of piping, which has been cut off, is emptied.
 - c. if this is not the case, check the seal of the shut-off valve upstream (1) and, if the flow through the inspection point (A) continues, replace the check valve.
 - d. the inspection point (B) (where present) may be used to empty the system.

INSTALLATION OPERATING MANUAL NO POLLUTION CHECK VALVE EA**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 strength 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 tightness 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 ends and tapping are clean.
- Make sure there is enough space so that the disc can be opened totally in the pipe.
- Respect the flow direction indicated by the arrow