

Anti-pollution check valves



3045-3046-3047-3048-3041 series



01005/10 GB

replaces dp 01005/00



Function

The anti-pollution check valve is a hydraulic protective device capable of preventing the backflow of polluted water into the public water system. This may occur due to changes in pressure in the distribution network that cause water to flow backwards. The check valve, which is fitted between the public and the user system in water distribution systems, prevents any contact between the water in the two systems, as it closes automatically whenever backflow conditions occur.

The 3045 and 3046 series of anti-pollution check valves are certified as being compliant with the performance specifications set out in European standard EN 13959.



BELGAQUA

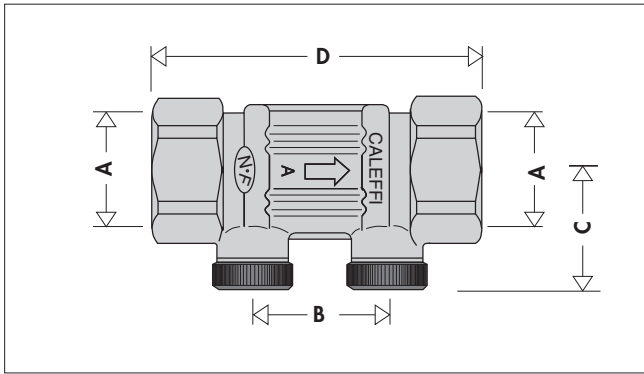
Product range

3045 series	Controllable check valve, EA type	sizes 1/2", 3/4", 1", 1 1/4", 1 1/2", 2"
Code 304601	Controllable compact check valve, EA type	size 3/4"
3046 series	Controllable check valve, EA type	sizes 3/4", 1", 1 1/4", 1 1/2", 2"
3047 series	Non-controllable check valve, EB type	sizes 1/2", 3/4", 1"
3048 series	Controllable double check valve	sizes 1/2", 3/4"
Code 304140	Controllable ball valve with approved built-in check valve	size 3/4"

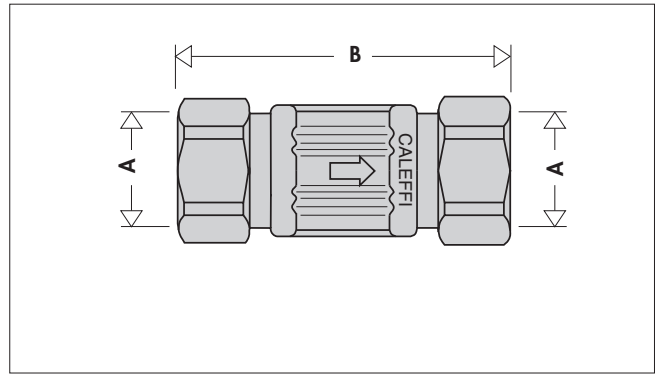
Technical specifications

series	3045-3046	3047-3048-3041
Materials		
Body:	brass EN 12165 CW617N	brass EN 12165 CW617N
Check valve:	POM	POM
Springs:	stainless steel	stainless steel
O-Ring seals:	EPDM, NBR	EPDM, NBR
Union seal:	3046 series: asbestos free NBR fibre	3041 series: asbestos free NBR fibre
Knob:	-	3041 series: EN 12165 CW617N
Ball:	-	3041 series: EN 12164 CW614N, chrome plated
Ball control stem:	-	3041 series: EN 12164 CW614N
Ball seal seat:	-	3041 series: PTFE
Inspection point plug:	3045/3046 series: PA66G30; code 304601: brass EN 12164 CW614N	3048/3041 series: PA66G30
Performance		
Medium:	drinking water	drinking water
Maximum working pressure:	10 bar	10 bar
Min. opening pressure for check valve:	0,5 kPa	0,5 kPa
Maximum working temperature:	90°C	90°C
Connections (and internal check valve DN)	3045 series: 1/2"-2" F (DN 15-50) code 304601: 3/4" F with union for M (DN 15) 3046 series: 3/4"-2" F with union for M (DN 15-40)	3047 series: 1/2"-1" F (DN 15-25) 3048 series: 1/2", 3/4" F (DN 15, 20) 3041 series: 3/4" F with union for M (DN 15)
Inspection point connections	1/4" F; code 304601: 1/8" F	3048/3041 series: 1/4" F

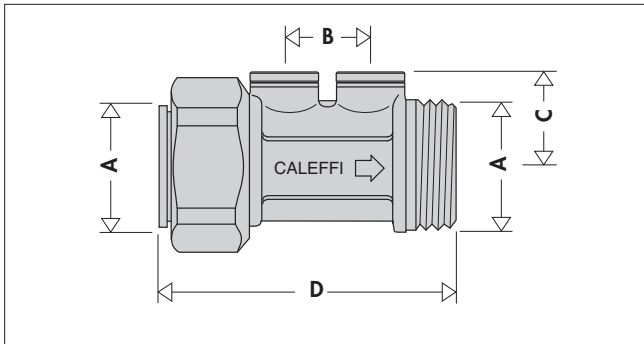
Dimensions



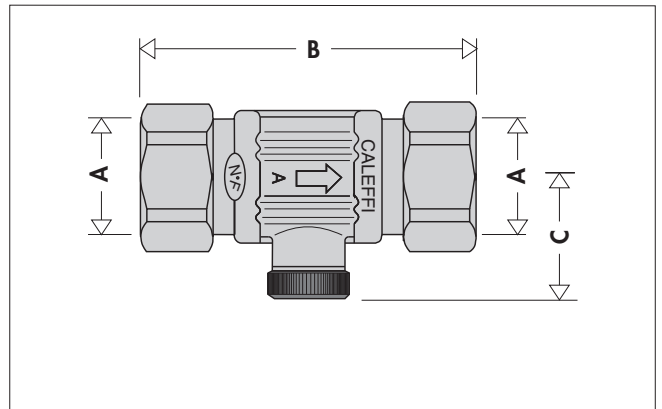
Code	A	DN*	B	C	D	Weight (kg)
304540	1/2"	15	32	27	68	0,16
304550	3/4"	20	32	27,5	78	0,25
304560	1"	25	32	32,5	90	0,40
304570	1 1/4"	32	32	36	110	0,62
304580	1 1/2"	40	40	41,5	120	0,82
304590	2"	50	50	48	150	1,33



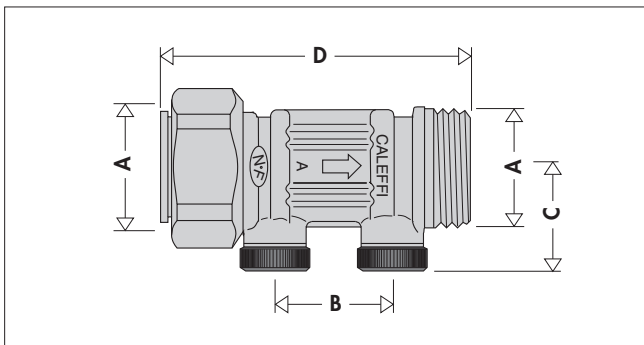
Code	A	DN*	B	Weight (kg)
304740	1/2"	15	68	0,16
304750	3/4"	20	78	0,25
304760	1"	25	90	0,38



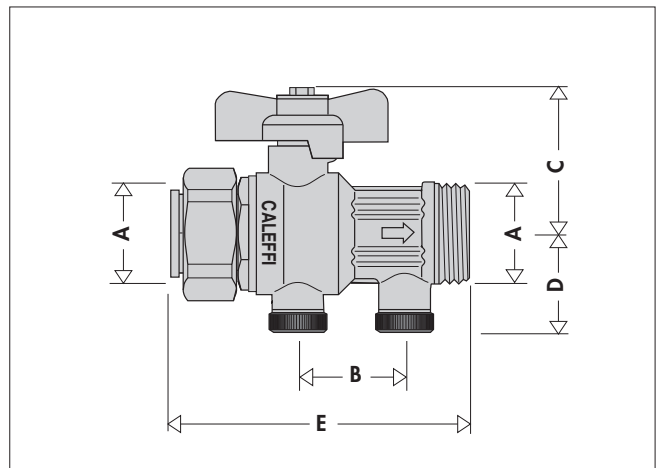
Code	A	DN*	B	C	D	Weight (kg)
304601	3/4"	15	15	18	58	0,16



Code	A	DN*	B	C	Weight (kg)
304840	1/2"	15	71	25,5	0,16
304850	3/4"	20	78	27,5	0,26



Code	A	DN*	B	C	D	Weight (kg)
304640	3/4"	15	32	27	68	0,20
304650	1"	20	32	27,5	78	0,31
304660	1 1/4"	25	32	32,5	90	0,70
304670	1 1/2"	32	32	36	110	1,10
304680	2"	40	40	41,5	120	1,60



Code	A	DN*	B	C	D	E	Weight (kg)
304140	3/4"	15	32	50,5	30	88	0,40

*Internal check valve DN

Backflow

Drinking water supplied by the public network may suffer from hazardous pollution caused mainly by contaminated fluids from plumbing systems flowing back directly into the public network.

This phenomenon, called "backflow", occurs when:

- a) the pressure in the public network is lower than that in the plumbing circuit receiving the supply (back siphoning). This situation may occur when a pipe is broken in the public system or when other consumer demand on the public network 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 caused by backflow must be assessed on the basis of the type of system and the characteristics of the fluid that flows inside it. A suitable backflow prevention device must be selected on the basis of the assessment performed by the system designer and the public network supplier. The device must be located along the supply line at the points at risk of backflow which would be hazardous to human health.

The protection can be provided by fitting a check valve at critical points in the circuit, at the inlet from the public network or in the internal plumbing system. This will prevent the backflow of polluted water in all systems for which direct connection to the public or an internal network is considered hazardous.

Application of the EA type anti-pollution check valve – with reference to European standard EN 1717 and EN 13959

Proper use of the EA 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 drinking water in hydraulic systems and general requirements for the devices used to prevent pollution caused 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 suitable for human consumption supplied by the water supplier.

Category 2:

Fluid that does not represent a health hazard, as in number 1, the quality of which has been compromised due to changes in temperature, taste, smell or appearance.

Category 3:

Fluid that represents a slight health risk 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 "highly 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 fitted in water distribution plant systems.

EA 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 relative fluid categories and has been created based on the indications provided in the European regulations.

The new 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.

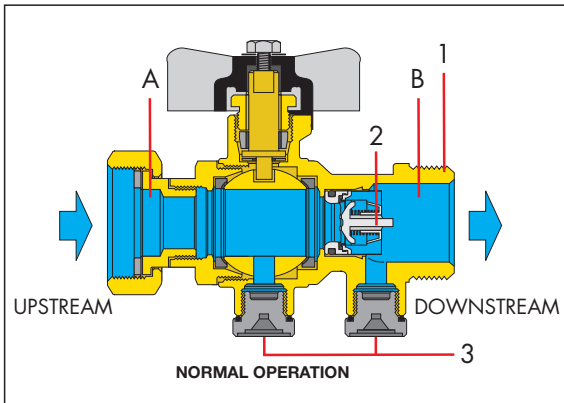
Protection matrix		
Type of system	Cat. of fluid	
	2	3
General		
Hot and cold water mixing devices in domestic water systems	*	
Water cooling devices for air conditioning units, without additives	*	
Sterilisers for packaged or disinfected materials		*
Water in primary domestic heating system circuits, 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	*	
Household applications		
Water in sinks, baths and showers	*	
Domestic dishwashers and washing machines		*
Flexible pipes with controlled flow spray nozzles or stop cock		*
Domestic dialysis machines		*

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).

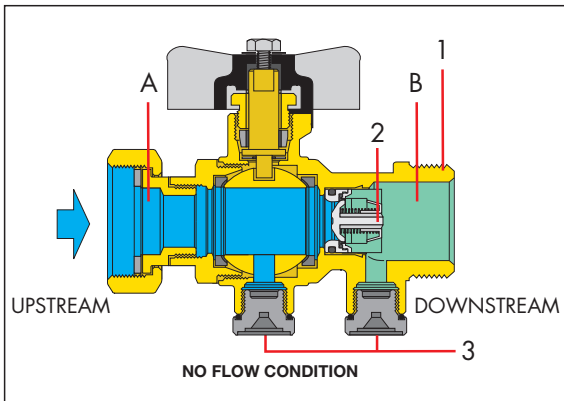
Correct conditions of flow

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).



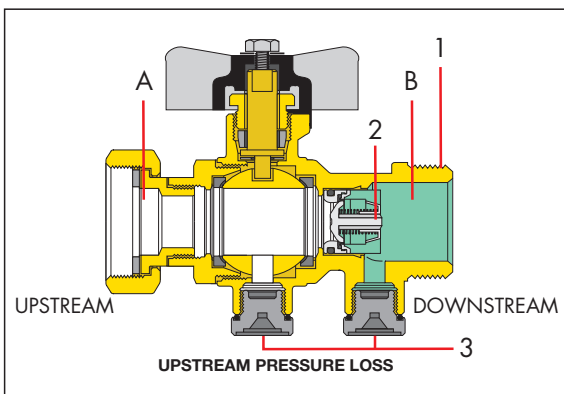
No flow conditions

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.



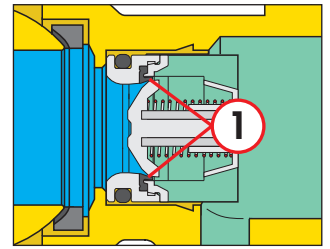
Downstream pressure increase

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.

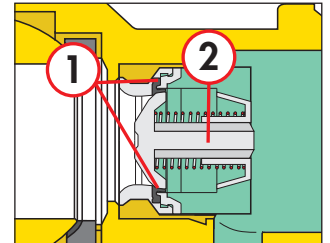
Construction details

Hydraulic seal devices

When the flow stops, the check valve rests on a lip-shaped EPDM seal (1) which guarantees water-tightness, even in the absence of counter pressure.



In the event of strong counter pressure, the obturator (2) alters the shape of the seal and rests on the actual end point. This solution guarantees optimal device durability.



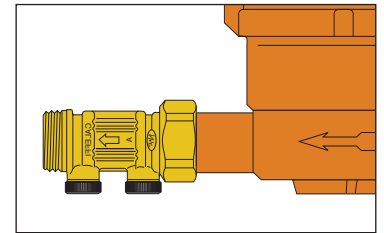
Elastomers complying with food regulations

The elastomers used for the hydraulic seals have been approved by the Certifying Authorities in accordance with the most recent provisions regarding compatibility for use with drinking water.

Versions with captive nut

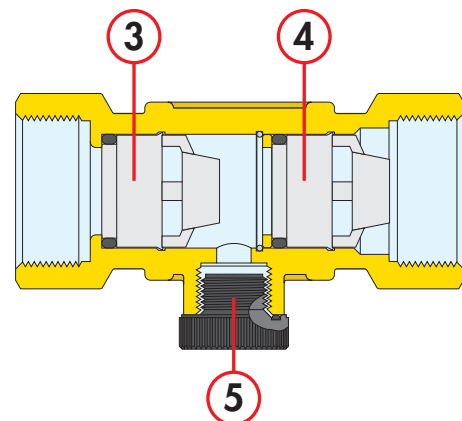
These versions are specifically designed for installation downstream of the water meter.

The captive nut should be mounted directly over the meter body.



Double check valve, 3048 series

The range of products also includes the double check valve version (3) and (4), with inspection point (5).

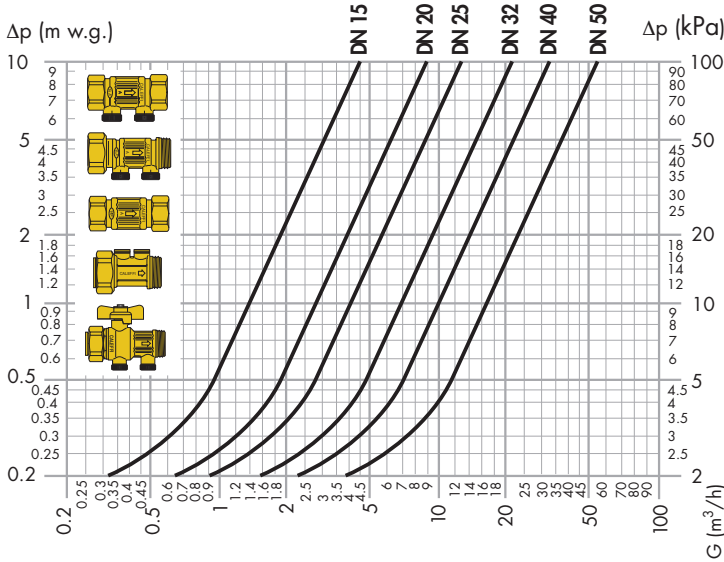


The double check valve may be used, where permitted by current local legislation, as an alternative to the backflow preventer, whenever the water distribution mains has low inlet pressure.

Certification

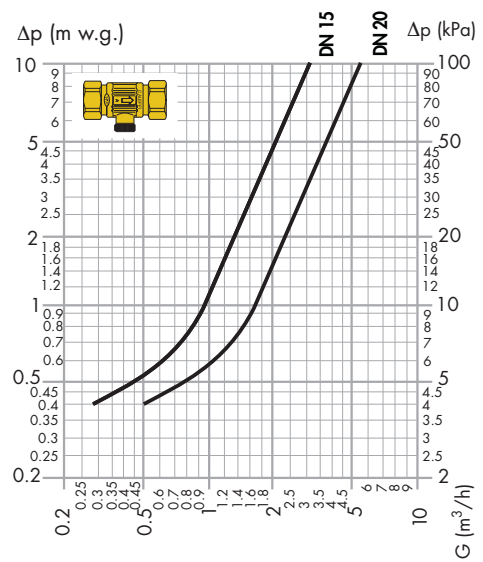
The 3045, 3046 and 3041 series anti-pollution check valves have been certified as compliant with specific national and European product standards by the following bodies: NF-BELGAQUA-ACS.

Hydraulic characteristics



Series*	3045	304540	304550	304560	304570	304580	304590
	3046	304640	304650	304660	304670	304680	
	3047	304740	304750	304760			
	3046	304601					
	3041	304140					
Internal check valve DN	15	20	25	32	40	50	
Kv (m³/h)	4,50	8,80	13,40	21,40	33,20	53,00	

* single check valve



Series**	3048	304840	304850
Internal check valve DN		15	20
Kv (m³/h)		3,10	5,40

** double check valve

Installation and operation checking procedures

EA - EC TYPE	EB TYPE						
<p>Installation</p> <p>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.</p> <p>The controllable check valve should be installed after a shut-off valve, upstream.</p> <p>The unit should be installed in an accessible zone.</p> <table border="1"> <tr> <td>1</td> <td>Shut-off valve upstream</td> </tr> <tr> <td>2</td> <td>Controllable check valve</td> </tr> <tr> <td>A - B</td> <td>Inspection points</td> </tr> </table> <p>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.</p> <p>Inspection and operation checking procedure</p> <p>The inspection and operation checking procedures should be carried out at least once a year.</p> <ol style="list-style-type: none"> 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: <ol style="list-style-type: none"> 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. 	1	Shut-off valve upstream	2	Controllable check valve	A - B	Inspection points	<p>Installation</p> <p>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.</p> <p>The check valve should be installed in an accessible zone.</p> <p>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.</p> <p>Inspection and operation checking procedure</p> <p>The inspection and operation checking procedures should be carried out at least once a year.</p> <ol style="list-style-type: none"> 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) Replace the valve every 10 years.
1	Shut-off valve upstream						
2	Controllable check valve						
A - B	Inspection points						

SPECIFICATION SUMMARY

3045 series

Controllable check valve. EA type. Threaded connections 1/2" (from 1/2" to 2") F, internal check valve DN 15 (from DN 15 to DN 50). Certification to standard EN 13959. Brass body. POM check valve. Stainless steel spring. EPDM and NBR O-Ring seals. Medium drinking water. Maximum working pressure 10 bar. Minimum opening pressure for check valve 0,5 kPa. Maximum working temperature 90°C. Inspection point plugs in PA66G30, 1/4" F connections.

Code 304601

Controllable compact check valve. EA type. Threaded connections 3/4" F union x M, internal check valve DN 15. Certification to standard EN 13959. Brass body. POM check valve. Stainless steel spring. EPDM and NBR O-Ring seals. Asbestos free fibre NBR union seal. Medium drinking water. Maximum working pressure 10 bar. Minimum opening pressure for check valve 0,5 kPa. Maximum working temperature 90°C. Brass inspection point plugs, 1/8" F connections.

3046 series

Controllable check valve. EA type. Threaded connections 3/4" F union x M (from 3/4" to 2"), internal check valve DN 15 (from DN 15 to DN 40). Certification to standard EN 13959. Brass body. POM check valve. Stainless steel spring. EPDM and NBR O-Ring seals. Asbestos free fibre NBR union seal. Medium drinking water. Maximum working pressure 10 bar. Minimum opening pressure for check valve 0,5 kPa. Maximum working temperature 90°C. Inspection point plugs in PA66G30, 1/4" F connections.

3047 series

Non-controllable check valve. EB type. Threaded connections 1/2" (from 1/2" to 1") F, internal check valve DN 15 (from DN 15 to DN 25). Brass body. POM check valve. Stainless steel spring. EPDM O-Ring seals. Medium drinking water. Maximum working pressure 10 bar. Minimum opening pressure for check valve 0,5 kPa. Maximum working temperature 90°C.

3048 series

Controllable double check valve. Threaded connections 1/2" (and 3/4") F, internal check valve DN 15 (and DN 20). Brass body. POM check valve. Stainless steel spring. EPDM and NBR O-Ring seals. Medium drinking water. Maximum working pressure 10 bar. Minimum opening pressure for check valve 0,5 kPa. Maximum working temperature 90°C. Inspection point plug in PA66G30, 1/4" F connection.

Code 304140

Controllable ball valve with approved built-in check valve. Threaded connections 3/4" F union x M, internal check valve DN 15. Brass body. POM check valve. Stainless steel spring. EPDM and NBR O-Ring seals. Asbestos free fibre NBR union seal. Brass knob. Chrome plated brass ball. Brass ball control stem. PTFE ball seal seat. Medium drinking water. Maximum working pressure 10 bar. Minimum opening pressure for check valve 0,5 kPa. Maximum working temperature 90°C. Inspection point plugs in PA66G30, 1/4" F connections.

We reserve the right to change our products and their relevant technical data, contained in this publication, at any time and without prior notice.



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