

Anti-pollution check valves



3045-3046-3047-3048-3041 series



01005/17 GB
replaces dp 01005/10GB



Function

The anti-pollution check valve is a protective plumbing device capable of preventing the backflow of polluted water into the mains 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 mains 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.



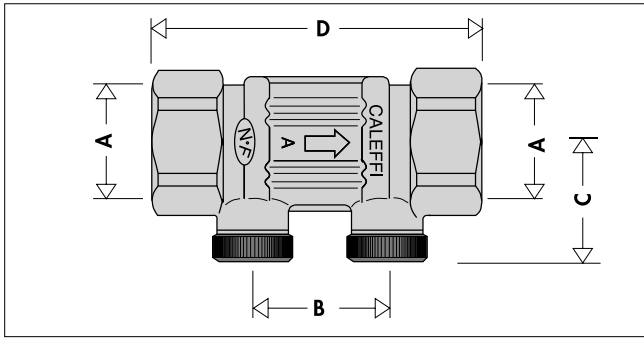
Product range

3045 series	Controllable check valve, EA type	sizes 1/2", 3/4", 1", 1 1/4", 1 1/2", 2"
Code 304601	Compact controllable 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"
3046 series	Angled controllable check valve, EA type	sizes 3/4", 1"
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"
Code 304645	Controllable check valve, EA type	size 3/4"

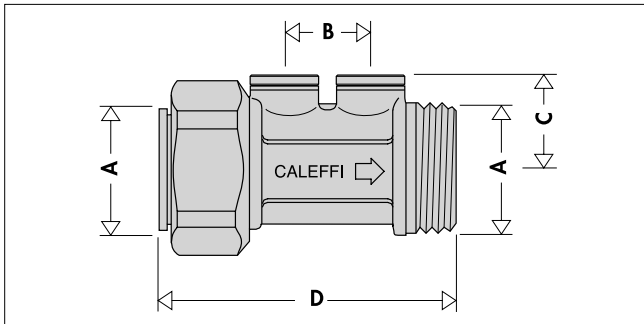
Technical specifications

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: non-asbestos fibre NBR	3041 series: non-asbestos fibre NBR
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
Test port cap:	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 (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) code 304644: 3/4" F with captive nut for M (DN 15) code 304654: 1" F with captive nut for M (DN 20) code 304645: 3/4" F with captive nut for M (DN 15)	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)
Test port connections	1/4" F; code 304601: 1/8" F	3048/3041 series: 1/4" F

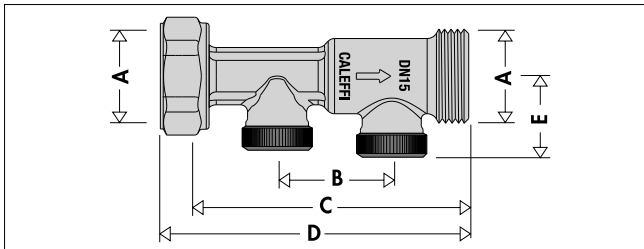
Dimensions



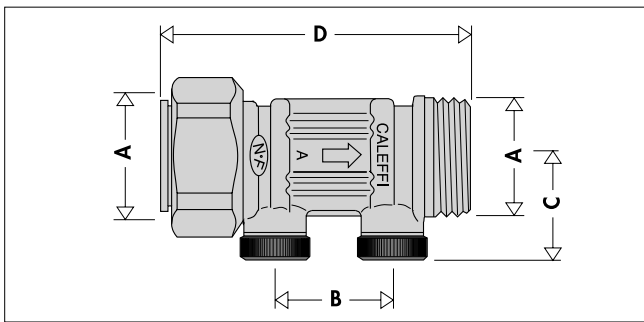
Code	A	DN*	B	C	D	Mass (kg)
304540	1/2"	15	32	27	68	0,16
304550	3/4"	20	32	27,5	78	0,25
304560	1"	25	32	32,5	90	0,40
304570	1 1/4"	32	32	36	110	0,62
304580	1 1/2"	40	40	41,5	120	0,82
304590	2"	50	50	48	150	1,33



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

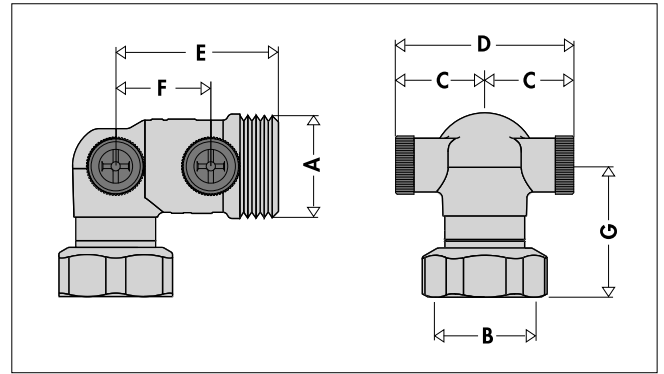


Code	A	DN*	B	C	D	E	Mass (kg)
304645	3/4"	15	32	77,5	86	22	0,14

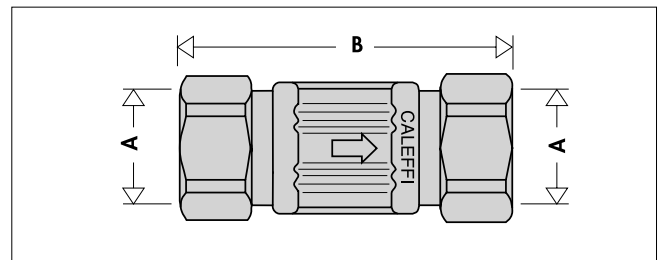


Code	A	DN*	B	C	D	Mass (kg)
304640	3/4"	15	32	27	68	0,20
304650	1"	20	32	27,5	78	0,31
304660	1 1/4"	25	32	32,5	90	0,70
304670	1 1/2"	32	32	36	110	1,10
304680	2"	40	40	41,5	120	1,60

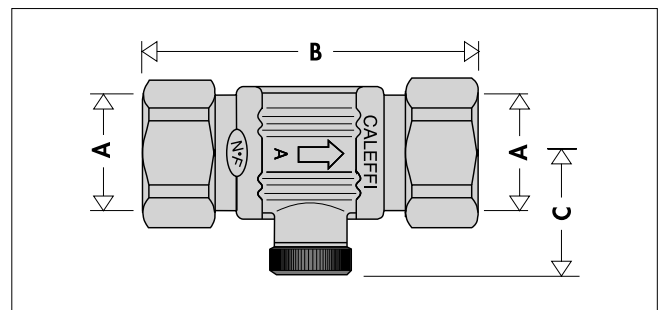
* Internal check valve DN



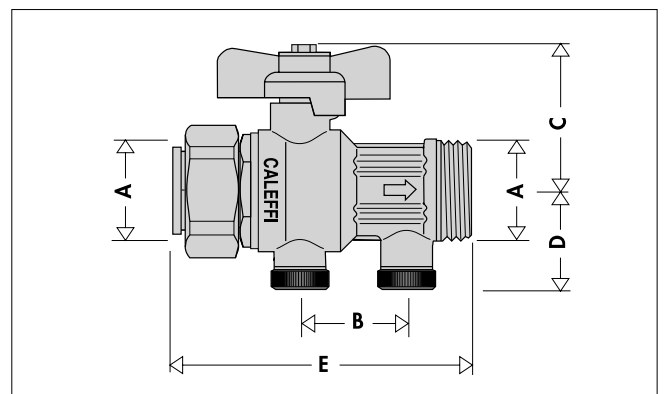
Code	A	B	DN*	C	D	E	F	G	Mass (kg)
304644	3/4"	3/4"	15	25,5	51	50	28,5	36	0,16
304654	1"	1"	20	29	58	54	30,5	43	0,25



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



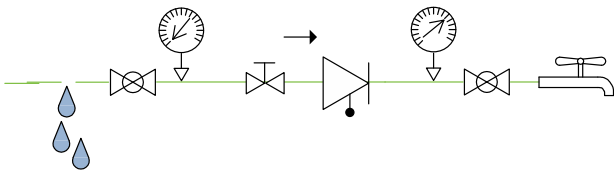
Code	A	DN*	B	C	D	E	Mass (kg)
304140	3/4"	15	32	50,5	30	88	0,40

Backflow

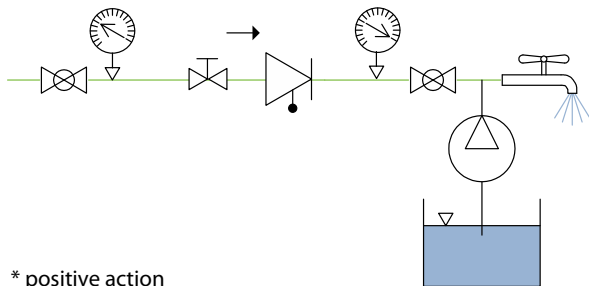
Potable water, flowing in the mains supply network, may suffer from hazardous pollution mainly caused by the return of contaminated medium from downstream systems directly connected to the main supply. This phenomenon, termed "backflow", occurs when:

- 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.
- 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.

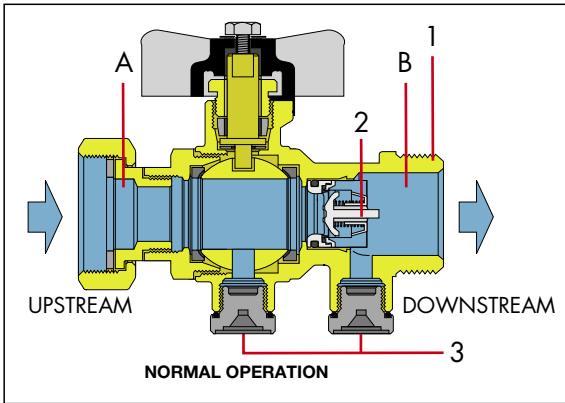
Protection matrix		
System type	Cat. medium	
	2	3
General		
Hot and cold water mixing devices in domestic water systems	*	
Water cooling devices for air conditioning units, without additives	*	
Filling of heating systems, without additives		*
Domestic water softeners regenerated with common salt	*	
Commercial 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 CO2	*	
Ice-making machines	*	
Large kitchen machines with automatic filling systems	*	
Medical		
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) separates two different zones: one upstream or at the inlet (A), and one downstream or at the outlet (B).

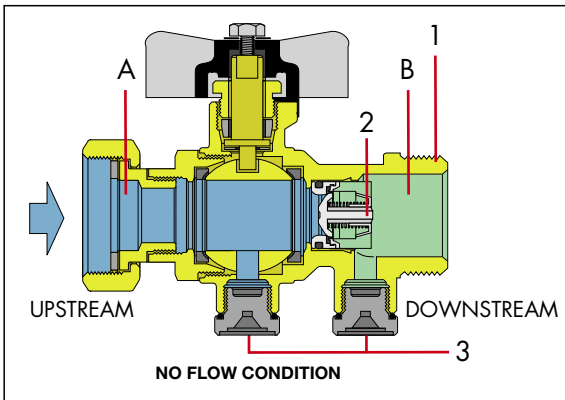
Correct flow conditions

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).



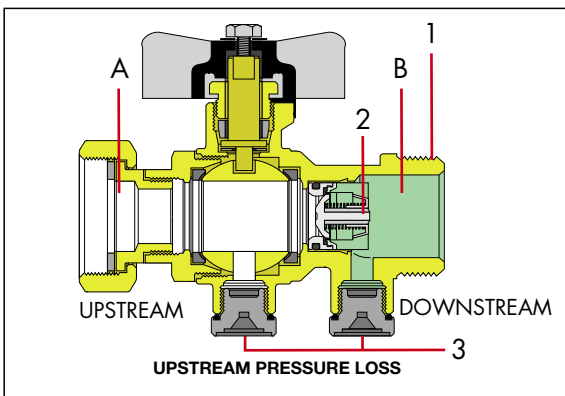
No flow conditions

The check valve (2) closes in advance under the action of the force exerted by the spring when the pressure downstream (B) begins 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 mains water system.



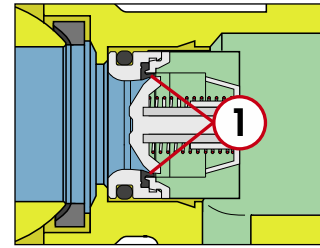
Downstream pressure increase

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.

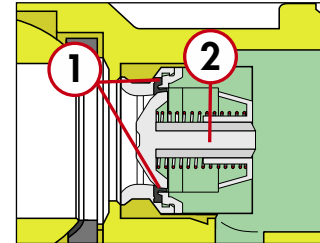
Construction details

Hydraulic seal devices

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



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

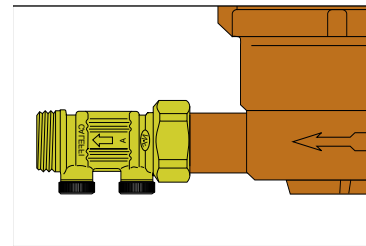


Elastomers complying with food regulations

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 adjustable nut

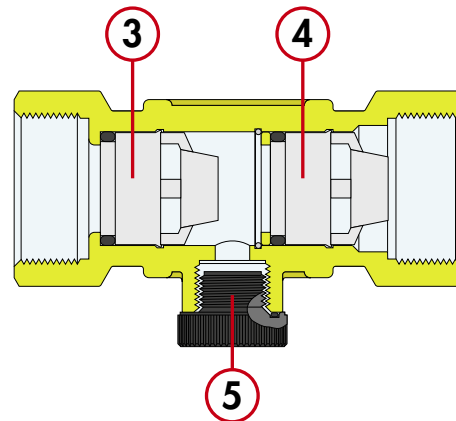
These versions are designed specifically for installation downstream of the water meter.



The adjustable nut should be mounted directly over the body of the meter.

Double check valve, 3048 series

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

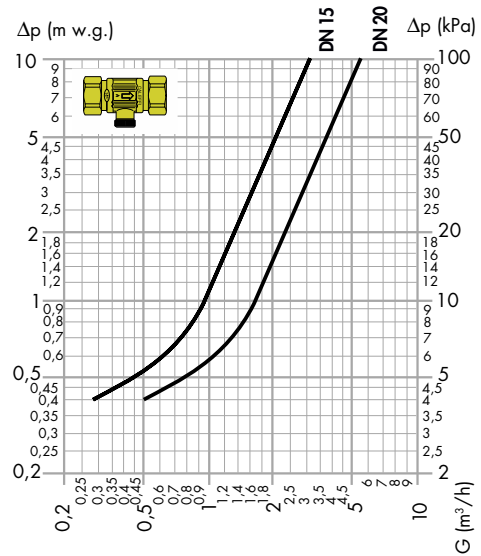
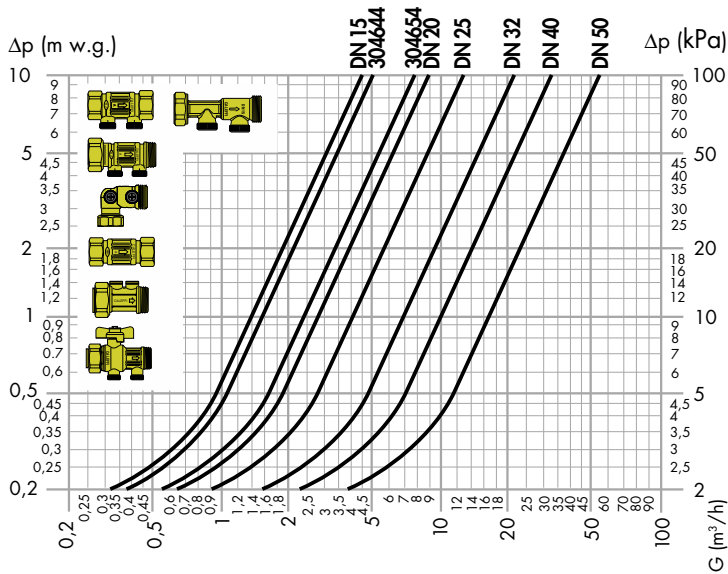


The double check valve may be used, where permitted by current local legislation, as an alternative to the backflow preventer, whenever the water distribution mains has low inlet pressure. The sealing-tightness of the check valve, furthermore, can be tested using the pressure test port in the valve body.

Certification

The anti-pollution check valves in the 3045 and 3046 series have been certified as compliant with specific national and European product standards laid down by the following bodies: NF - BELGAQUA - ACS. The 3041, 3047 and 3048 series are ACS-certified.

Hydraulic characteristics



Series*	3045	304540	304550	304560	304570	304580	304590
	3046	304640	304650	304660	304670	304680	
	3046	304644	304654				
	3047	304740	304750	304760			
	3046	304601					
	3046	304645					
	3041	304140					
Internal check valve DN	15	20	25	32	40	50	
Kv (m³/h)	4,70	7,35					
	(304644)	(304654)					
	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 procedure

EA - EC TYPE

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 in an accessible position downstream of a shut-off valve. Before installing the backflow preventer flush the pipe with a high capacity flow rate: the lack of cleaning can easily result in impaired operation of the product. Inspection and maintenance (operation check) procedures should be carried out at least once a year, in accordance with EN 806-5.

1	Upstream shut-off valve
2	Controllable check valve
A - B	Pressure test ports

Inspection
Check whether the installation standards still require the application of the same device for the type of fluid used in the system. Make sure that the hazard level of the fluid inside the system has not altered over time. Check that the surrounding environment is clean, the valve is accessible and that there are no leaks, corrosion or deterioration.

Maintenance (operation check)
To test the seal of the check valve, check that the valve closes each time the pressure in the upstream water supply so as to prevent water from the installation flowing back into the supply system:

- to maintain pressure in the installation in the absence of flow, close all shut-off valves or users downstream of the valve. Using the downstream test port (B), check that the pressure is greater than 0,5 bar.
- close the shut-off valve upstream (1) and open the test port (A) of the check valve. The flow should stop once the upstream section of pipe has emptied;
- if not, check the sealing-tightness of the upstream shut-off valve (1): if this valve is sealing correctly but the flow from the test port (A) continues, replace the check valve, as the flow can only be caused by imperfect sealing of the valve;
- test port (B) (if present) can be used with a pressure gauge to test system pressure downstream of the check valve.

EB TYPE

Installation
The EB check valve installation procedure is the same as that for the EA valve.

Inspection and maintenance (operation check)
Inspection and operation check procedures should be carried out at least once a year, in accordance with EN 806-5.

Inspection
The EB check valve inspection procedure is the same as that for the EA valve.

Maintenance (operation check)
Replace the valve every 10 years.

SPECIFICATION SUMMARY

3045 series

Controllable check valve. EA type. 1/2" threaded connections (from 1/2" to 2") F, internal check valve DN 15 (from DN 15 to DN 50). Certification to 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. Test port caps in PA66G30, 1/4" F connections.

Code 304601

Controllable check valve. EA type. Threaded 3/4" F union connections for 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. Non-asbestos 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. Test port caps in brass, 1/8" F connections.

3046 series

Controllable check valve. EA type. Threaded 3/4" F union connections for M (from 3/4" to 2") F, internal check valve DN 15 (from DN 15 to DN 40). Certification to EN 13959. Brass body. POM check valve. Stainless steel spring. EPDM and NBR O-Ring seals. Non-asbestos 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. Test port caps in PA66G30, 1/4" F connections.

Code 304644 - 304654

Controllable check valve with angled connections. EA type. 3/4" (and 1") F threaded connections with captive nut for M, internal check valve DN 15 (and DN 20). Certification to EN 13959. Brass body. POM check valve. Stainless steel spring. EPDM and NBR O-Ring seals. Non-asbestos 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. Test port caps in PA66G30, 1/4" F connections.

Code 304645

Controllable check valve. EA type. 3/4" F threaded connections with captive nut for 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. Non-asbestos 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. Test port caps in PA66G30, 1/4" F connections.

3047 series

Non-controllable check valve. EB type. 1/2" threaded connections (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. 1/2" (and 3/4") F threaded connections, 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. Test port cap in PA66G30, 1/4" F connection.

Code 304140

Controllable ball valve with approved built-in check valve. Threaded 3/4" F union connections for M, internal check valve DN 15. Brass body. POM check valve. Stainless steel spring. EPDM and NBR O-Ring seals. Non-asbestos fibre NBR union seal. Brass knob. Brass ball, chrome plated. 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. Test port caps in PA66G30, 1/4" F connections.

We reserve the right to make changes and improvements to the products and related data in this publication, at any time and without prior notice.