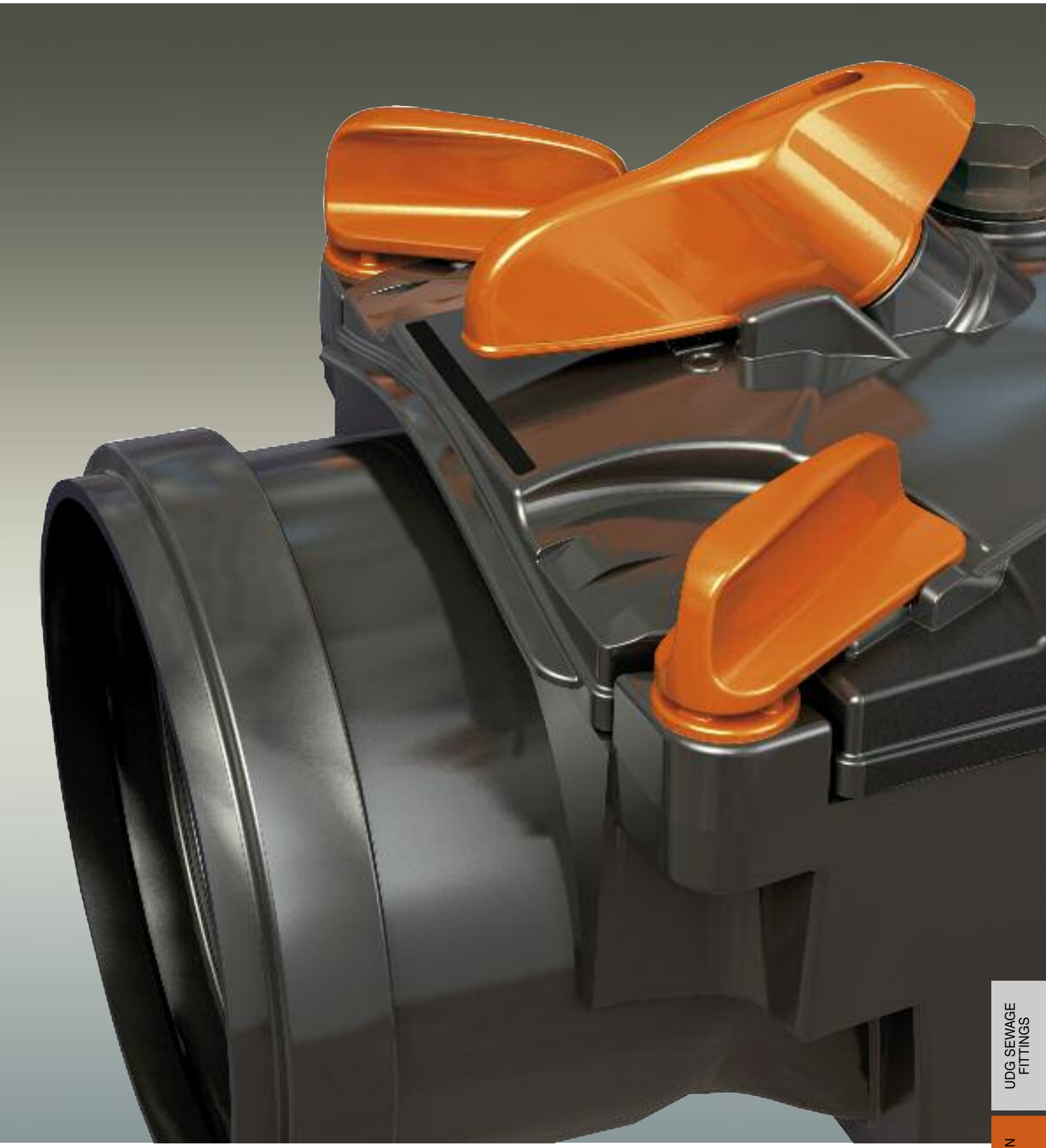
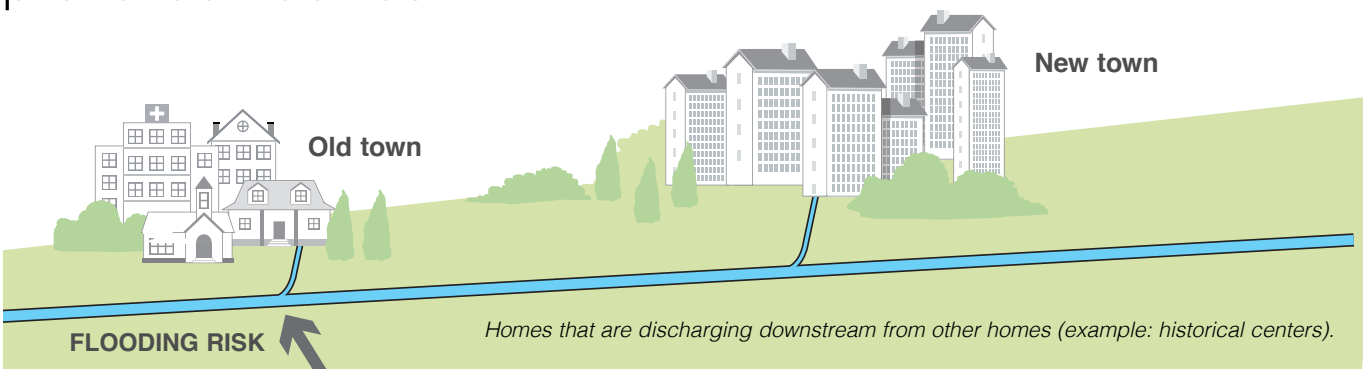


ottima and **Classica** non-return valves

Reasons to install backflow prevention device



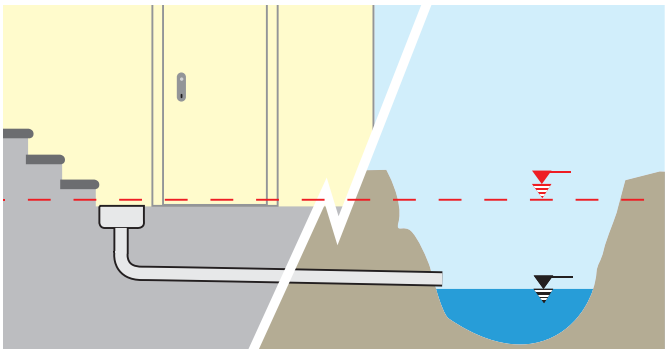
The causes of backflow

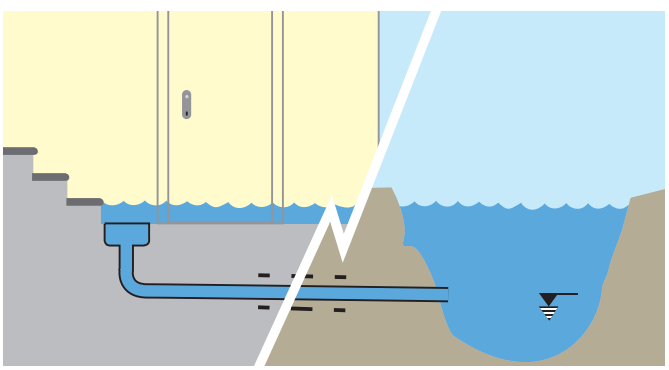
Back flow from the public sewer system is mainly caused by:

- overall under-sizing of the public sewers
- high peak flows in stormwater sewers or combined sewers due to short but intense rainfall (climatic trend throughout the world)
- increase of surface water runoff due to new construction (growing territorial urbanization), causing greater volume of flow
- overflow due to peaks of simultaneous flow in built up areas
- malfunctions or blockages downstream from the grid

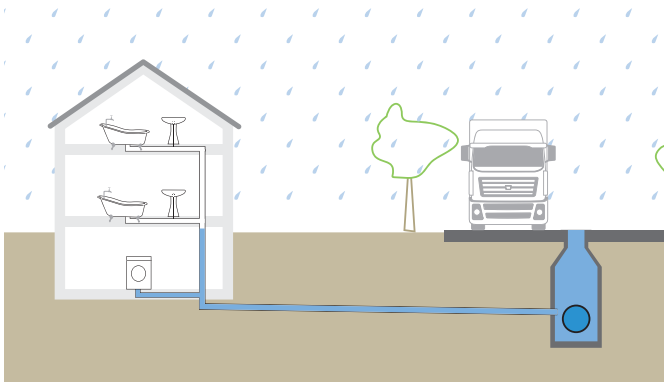
The typical situations that may lead to this problem are various and are related to the urban area involved.
Several examples:

Riverside areas



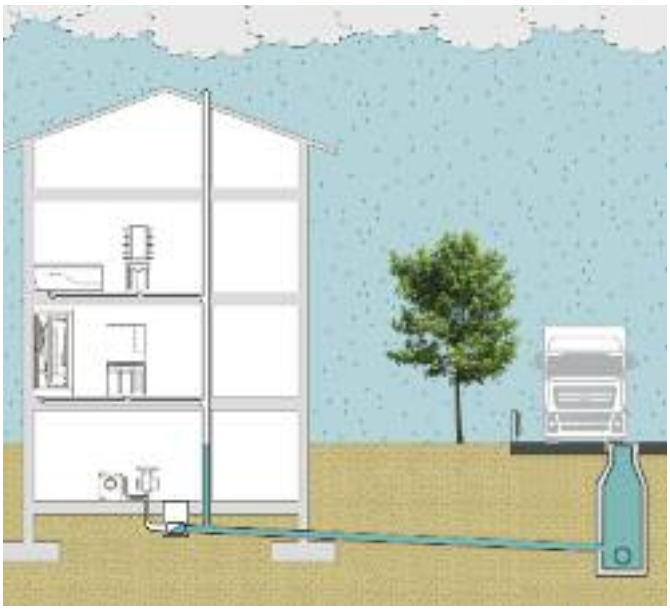


Combined sewers that also collect road drainange.



Basements

These are only some of the many cases in which sewer overflow risk is high and installation of a backflow prevention device is recommended.



Hydraulic principles: reflux level.

On the grounds of the “Communicating Vessels Principle”, water tends to settle at even levels in all branches of the sewer network.
Hence, it is possible to define the concept of “backflow level” as the maximum level in a sewer system before water reflux occurs from the system itself.
All of the utilities below the backflow level of a sewer system (usually basements, cellars and garages, as well as living quarters below street level, face flood risk as grid flows exceed maximum tolerance levels with greater frequency.
Let’s schematically examine the consequences of main sewer backflow.

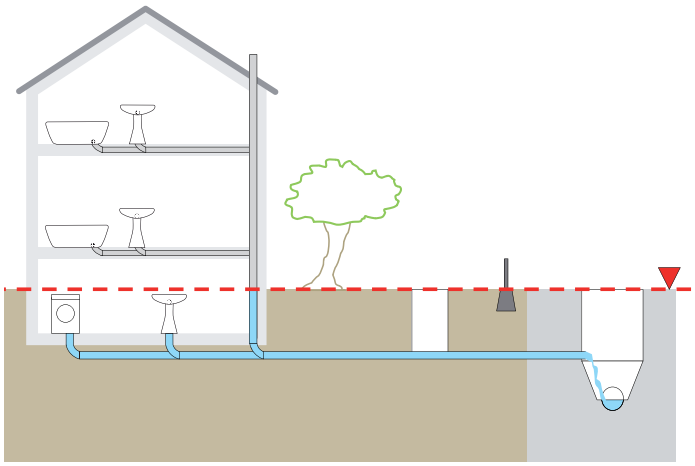
1. Standard use: The main sewer is receptive; the pipes within the home utilities are under safe hydraulic measures.

2. Overlflow use – even temporarily: given that the backflow level in this scheme corresponds with street level (over maximum level, which corresponds to manhole height in this case, fluid may seep from the system), any grid overflow shall lead to the distribution of water in all branches communicating with the main sewer, until reaching a back flow level marked with the red dotted line.

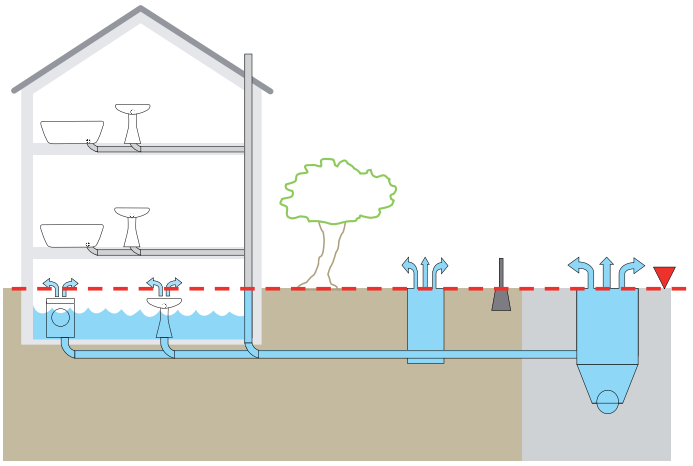
Home risk floods following main sewer overflow.
The non-return valve is active.
In this case the house is protected against flood risk.
This diagram represents a typical scenario that may occur in any home with areas prone to flood risk in regards to the backflow level line.
Unwanted events may take place if the sewer manifold overflows.

Backflow protection may be necessary in separate sewers, where foul and stormwater flow into separate systems, and in cases of combined sewers because backflow typically indirectly involves foul water circuits due to storm water overflow. This problem is normal in areas that do not have separate systems, which concerns the majority of cases.
Discharge water backflow risk is simple to solve by installing a fundamental component in new drainage systems and in modernization of existing grids - the non-return Valve
Its working principle is extremely simple but also very effective.

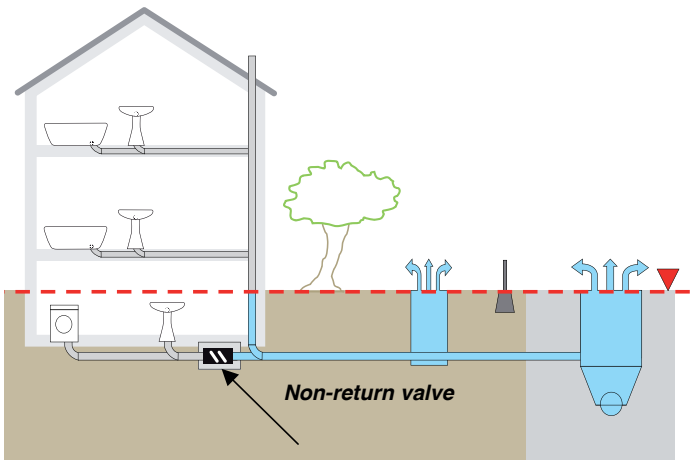
Normal function



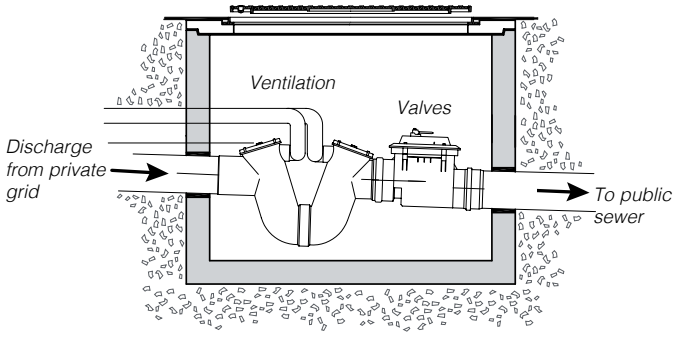
NON PROTECTED **Back flow event: without non-return valve**



PROTECTED **Back flow event: with non-return valve**



Legislative aspects of water grid construction and management



integrated water utility management

In Italy, as throughout Europe, water grid management has been delegated to Integrated Water Services since the start of the 90s. Water grid management passed from the hands of Municipality Management to subjects referred to as Water Companies, which ensure a benchmark level of quality in return for an utility fee, as by the stipulated utility contract. The various Water Companies in Italy are responsible for service provision and system maintenance and good operating conditions. Hence, these utilities have introduced a series of technical guidelines concerning various aspects on design and construction of water grids that serve as condition for public and private subjects that intend to benefit from such systems under Contract.

The technical guidelines include the manner of connection to the sewers by private and public users.

Guidelines

These guidelines must be respected both by enterprises and private citizens alike.

The contractor that executes works for the Utility Company must strictly follow the execution guidelines received. Likewise, the citizen that requires, for example, connection of a new utility must follow these prescriptions according to established procedures.

Duties

In case of not comply with foregoing prescriptions, the Utility Company is free to decline Contract stipulation for use of public sewer systems; and may press for compensation of any damages caused by the infringing party. Currently, many local Water Companies already expect the installation of a backflow prevention valves when connecting a utility to the public sewers to prevent back flow risk. The image above is an example of prescription. It represents the connection before the public sewage.

Ottima non-return valve with STAINLESS STEEL FLAP

The new Ottima non-return valve was designed to meet the highest technological standards on the market.

Ottima is manufactured with modern technology that ensures high-product standards and reliability.

Innovative

The innovation that is expressed through its design, comprises:

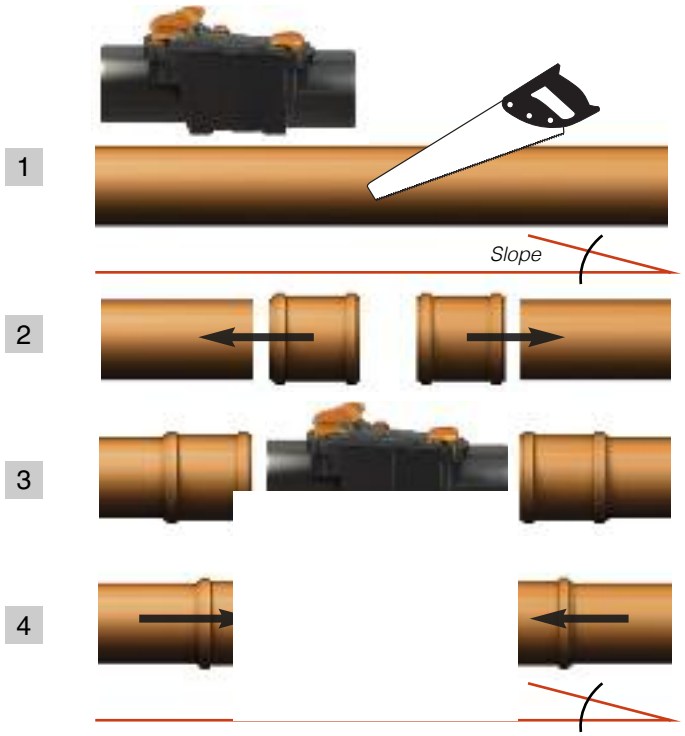
- increased safety
- search for functionality
- improvement of product features
- new technical requirements

Ottima contains a series of new features that make it a new reference product.

M/M version is recommended for renovation and installation on pre-existing pipes.

The M/M version is a real novelty: this feature, along with its low off-set (7mm – for Ø110 version), actually allows installation on pre-existing piping.

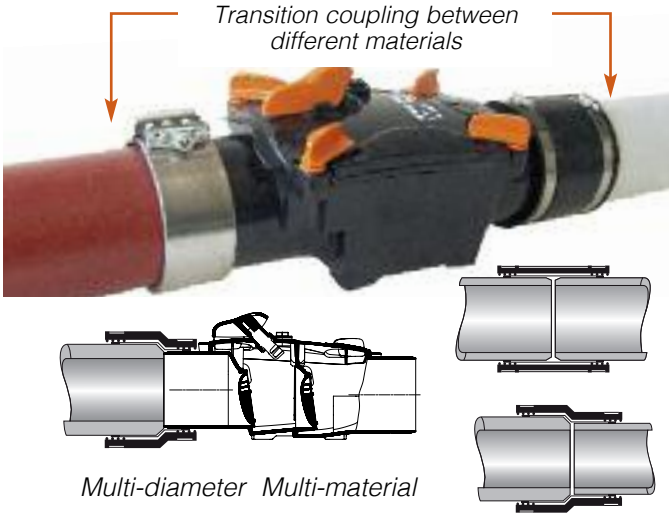
Costant slope before and after installation



Minimum offset (7mm): Thanks to the low off-set, pipe slope remains unchanged, both before and after installation.

Recommended for use with different materials – M/M version: the M/M version can be installed on any sort of material. Thanks to the use of transition sleeves, the valve can be mounted in many different materials.

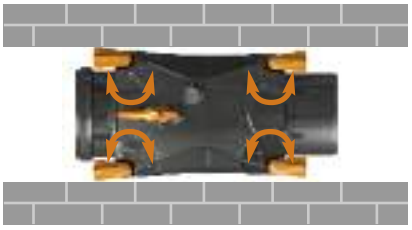
Example of installation on existing pvc or pp pipes.



Multi-diameter Multi-material

Double flaps: Ottima is a Type 2 non-return valve (definition according to standard EN13564), meaning that it is fitted with two automatic protection devices against backflow and with a command seal device. This means double protection in case of backflow and greater guarantee of water-tightness.

Opens in extremely reduced spaces: Ottima's cover can be removed without any tools, screwdrivers or wrenches by directly acting on the sealing levers. The figure shows valve opening in the vicinity of walls of sewer trap edges. They are manufactured in high-stability nylon polymer for excellent resistance in time, though all parts may be replaced.



Standard inox flap: Ottima is fitted with a series of anti-rodent devices in stainless steel; therefore making it impossible for rodents to travel upwards through water pipelines... Additional protective features!

No metal parts: no metal parts ensure resistance to the test of time given the lack of corrosion. All components such as screws, bolts and pins have been eliminated to ensure greater time resistance. The only metal part is the stainless steel anti-rodent device.

No equipment needed: Ottima poses a definitive solution to tools required for maintenance. It is designed for full inspection, disassembly and re-assembly without using special tools. Thanks to the lever seal replacing screws and to its internal design, every part can be easily removed and repositioned without the use of special tools.

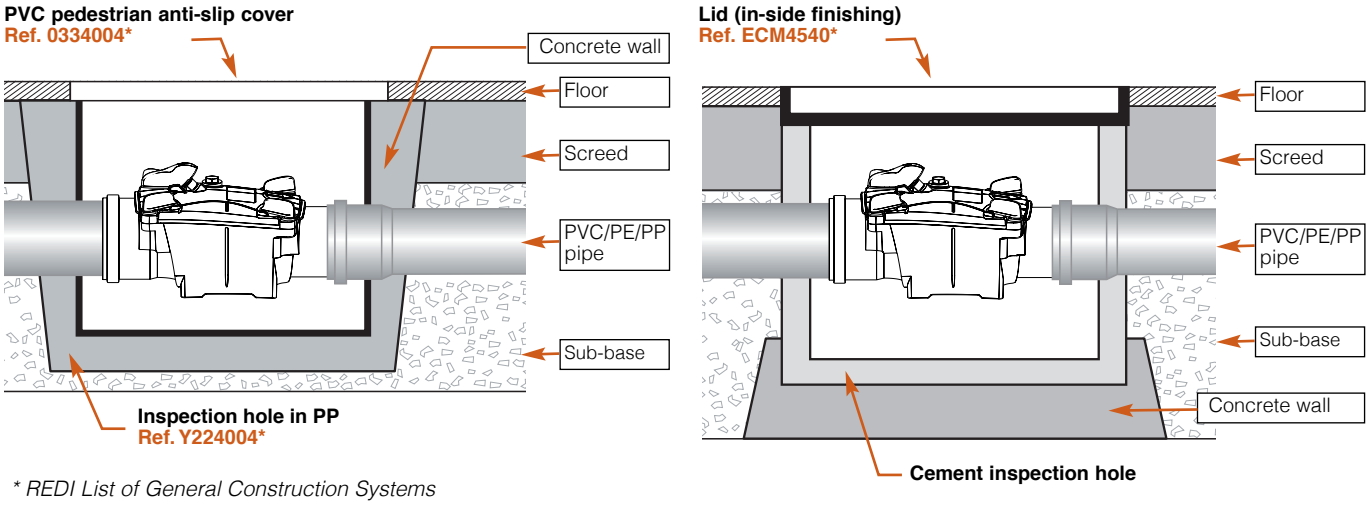
Co-injected gaskets: Ottima is manufactured on a production line that employs management and technology criteria market leading. All seals, spring sheets, lids and couplings are manufactured through direct co-injection. This means that the seals are moulded directly onto the specific part. Therefore, numerous parts are eliminated, water-tightness is increased, maintenance and installation are eased (no gaskets must be removed and remounted, thus eliminating assembly errors).

Stable base: Ottima rests on a stable base that facilitates installation and level check operations. But also helps in maintenance, allowing for a stable support.

Detachable locking lever: the locking lever is detachable. This is an important feature for installation in public-accessible areas to avoid unauthorized tampering or unwanted actuation. Should the lever be lost, the valve can be locked with a monkey wrench thanks to the hexagonal shape of the mechanism rotational axis. Setting the locking lever in sealed position is fundamental during emergencies that require line cut-off. E.g. downstream maintenance, accidental spillage into sewers. Actuation is confirmed by the "click" sound when locked into place.

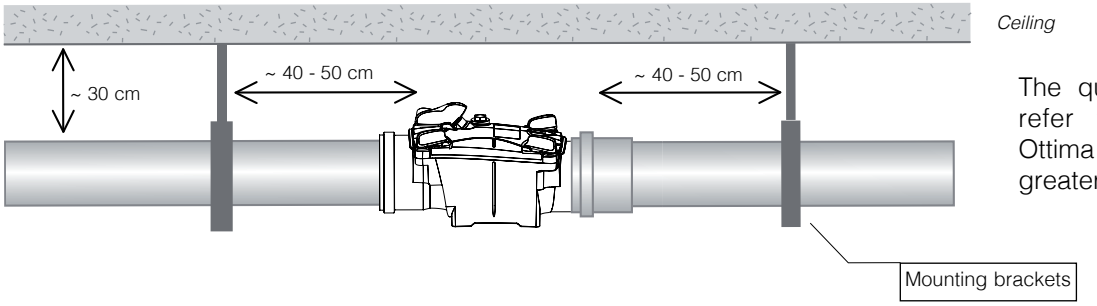
Advice on installation

The non-return valve can be installed both indoors and outside; the installation that allows easy inspection, inside an accessible recess, an inspection pit, or in sight installation on a pipeline with support brackets, is always recommended. Example of indoor installation: in areas such as cellars, washrooms and basements.



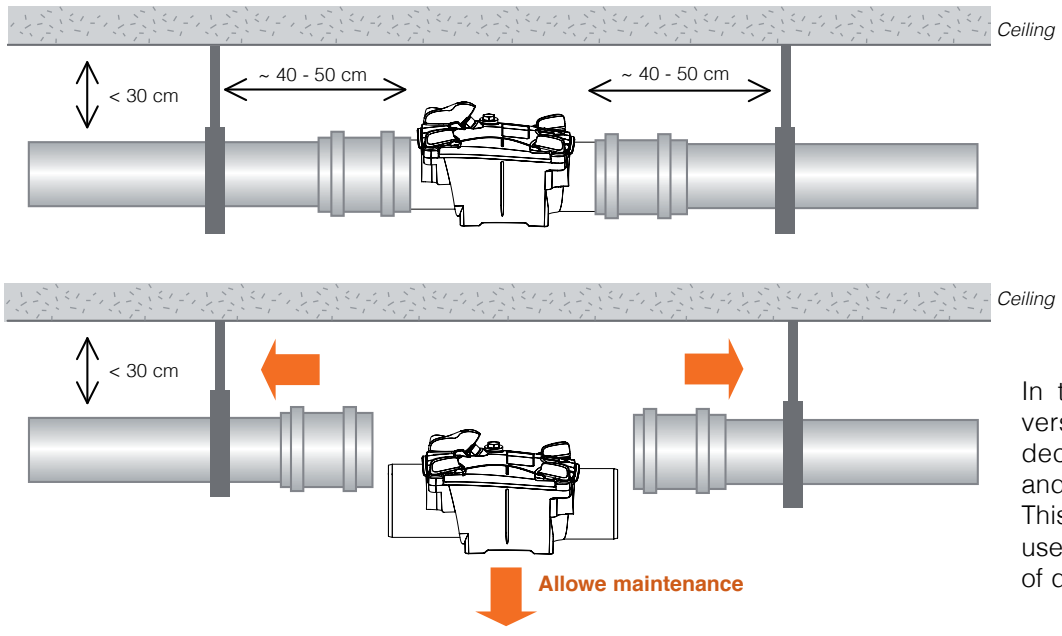
** REDI List of General Construction Systems*

Examples of installation on an overhead pipeline.



The quota in the examples refer to applications with Ottima Ø100-110, which are greater for Ø125-160.

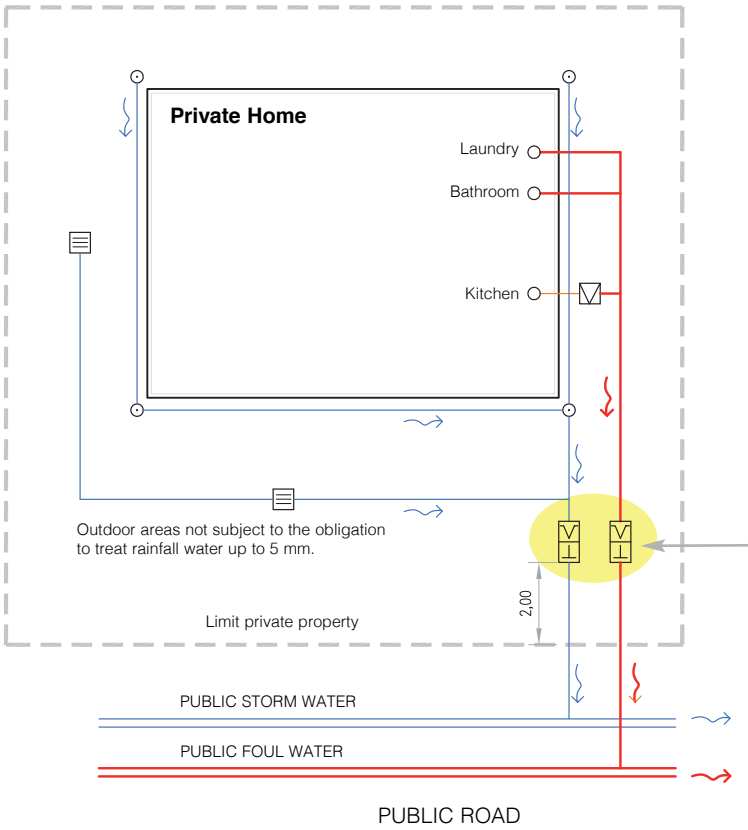
Example of installation in an overhead pipeline near the ceiling.



In this case, the Male/Male version allows rapid valve decoupling for inspection and cleaning.
This manner of installation is useful for all circumstances of difficult access.

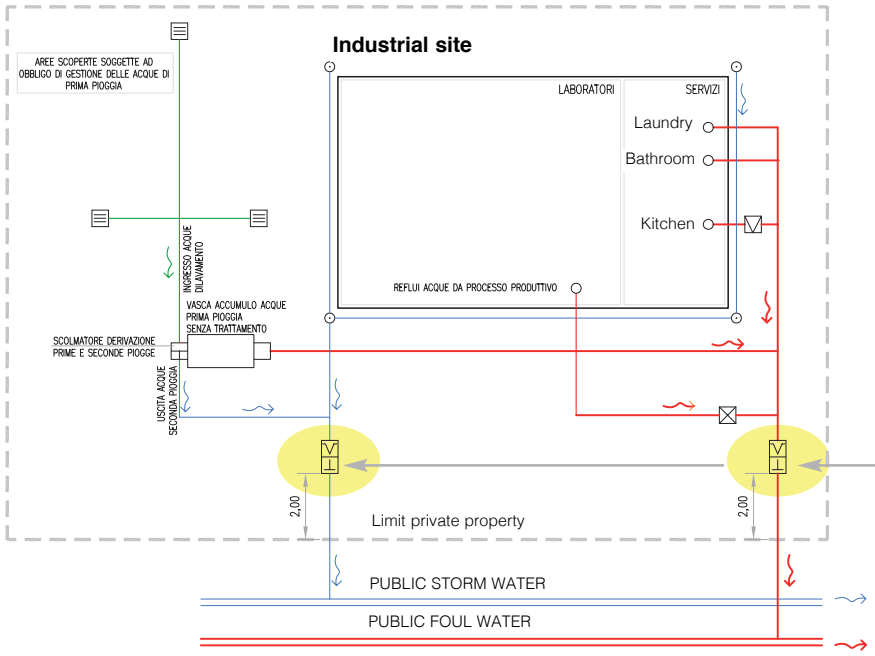
Installation type

Case 1: Home



Two examples of non-return valve installation are provided according to Italian laws in force. The first on shows installation in a private home, the second on a production site.
The non-return valve must be installed both on the storm and foul water circuits.

Case 2: Industrial site



The drawings shown give example of installation in compliance with the most common european standard norms. Regulations may vary according to State and local areas.

Certification

Redi anti-flooding valves DN 100 ÷ 200 are certified by the German Institute LGA (LGA Kitemark).

Certified anti-flooding valves guarantee the following performance levels:
- Regular flow granted by the opening of the flap, even in presence of minimum pressure rates (0.005 bar).
- Non-deformability and tightness of the product after 600 test cycles at variable temperature (60 seconds at 75° / 60 seconds at 15°).
- Effectiveness of Redi anti-flooding device after 35 cycles of backflow of variable duration from 5 up to 10 minutes and pressure rate from 0,01 up to 0.5 bar.
- Water tightness of the entire valve's body, subject to a pressure rate of 0.5 bar.
- Inlet and outlet of the valves are complying with EN1401 and EN1329.

CE 11 **EN13564: 2002**
Antiflooding device made of PVC-U

Tested features:
- ☑ Air proof
- ☑ Water proof
- ☑ Effectiveness test
- ☑ Thermal resistance
- ☑ Mechanical resistance
- ☑ Durability

OTTIMA


OTTIMA


OTTIMA

Classica

The certificates shown on this technical handbook may be subject to revisions and updates. Updated certificates for each product are available on request.

Product specifications

OTTIMA
Non-return valve Type 2 - (Type 1)

Twin flaps (or single flap) self-closing non-return valve provided with an emergency locking lever.
The device is CE marked, according to the norm EN13564-1 (LGA). Structure and body of the valve are injected in PVC-U.
Joint dimensions are in compliance with EN1401 and EN1329 norms.
The connection to the main can be effected as follows:
- solvent cement
- push-fit with rubber ring
- spigot/spigot with multi-material connectors.

Rubber seals are certified in accordance with the European norm EN681.
By removing the cover of the valve, the structure can be completely inspected. The co-injected seals on the cover (not removable) guarantee the leakage-tightness.
The valve can be assembled and disassembled without using any tool (such as screwdrivers or spanners).
The valve is manufactured to be installed as recommended in EN12056 norm (Installation and testing, instructions for operation, maintenance and use of Waste-water drainage systems).

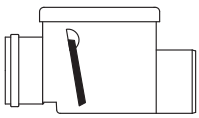
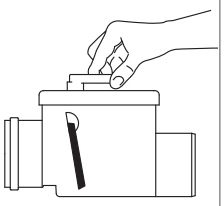
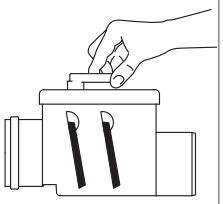
Recommended maintenance
According to EN12056, the valve shall be inspected every 6 months by following the inspection procedure:
- remove the cover
- check gaskets conditions
- remove any sludge or debris which could hinder the correct functioning of the device by obstructing the flaps
- lock and unlock the flaps using the locking lever
- assemble and lock the cover again.

Spare parts available on request.

Classica
Non-return valve

Injection-molded non-return valve made of PVC-U, designed for connections to piping systems conform to EN1329 and EN1401.
One-flap device with locking lever certified EN13564 Type 1.
SCJ or RRJ jointing type (Sealing lip-rings conform to EN681-1 and DIN4060).
Moving parts shall either be detachable or capable of being dismantled on site.
Airtight and watertight sealed cover.
CE marking.
German certification LGA EN13564-1 (DN100 up to DN200)
Suppliers will have to attest that they hold a ISO9001 approved quality system in place as a condition for purchase.

NON-RETURN VALVE EN13564-1

Type	Numbers flaps	Emergency closing	Free	Max Temp.	Tightness	Installation	Features
Type 0 	1	NO	90%	75 C°	0,5 bar	horizzontal pipe	Equipped with one automatic closing device. Single flap.
Type 1 	1	SI	90%	75 C°	0,5 bar	horizzontal pipe	Equipped with one automatic closing device. Single flap. Furthermore it has an emergency closing handle, that can be combined to the flap.
Type 2 	2	SI	90%	75 C°	0,5 bar	horizzontal pipe	Equipped with two automatic closing devices. Twin flaps. The emergency closing handle, can be combined with one of both flaps.

OTTIMA TECHNICAL REQUIREMENTS

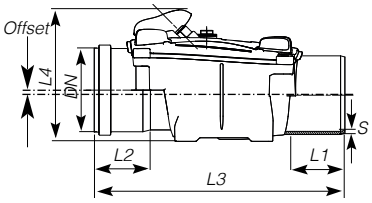
Ottima	Ø100	Ø110	Ø125	Ø160
Valve Type	TYPE 1 TYPE 2	TYPE 1 TYPE 2	TYPE 1 TYPE 2	TYPE 1 TYPE 2
Material	U-PVC	U-PVC	U-PVC	U-PVC
EN1401-1329 compliance	OK	OK	OK	OK
Connection type	Glue - M/F - F/F	Glue - M/F - F/F	Glue - M/F - F/F	Glue - M/F - F/F
Fully inspectable	OK	OK	OK	OK
Cover tigthness	OK	OK	OK	OK
Removable flap	OK	OK	OK	OK
EN681-1 Seal	OK	OK	OK	OK
EN13564-1	OK	OK	OK	OK
Hot/cold test	OK	OK	OK	OK
Flap tightness	OK	OK	OK	OK
LGA TEST	OK	OK	OK	OK
CE Mark	OK	OK	OK	OK

Socket/Spigot lip ring version

TYPE 2

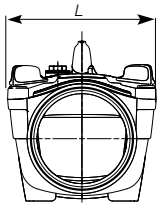
Single Socket - RRJ - All plastic smooth materials ØOD

Clapet anti-retour en PVC injecté M/F à joint - 2 clapets



DN	Reference Black	Pack	S (mm)	L (mm)	L1 (mm)	L2 (mm)	L3 (mm)	L4 (mm)	Offset (mm)	Notes
100	12R1048	1/60	3,0	171	60	57	338	184	7	
110	12R1148	1/60	3,2	171	65	63	350	184	7	
125	12R1248	1/24	3,2	255	73	69	458	226	9	
160	12R1648	1/24	4,0	255	83	82	491	226	9	

Lip Ring CE LGA tested



TYPE 1

Single Socket - RRJ - All plastic smooth materials ØOD

Clapet anti-retour en PVC injecté M/F à joint - 1 clapets

DN	Reference Black	Pack	S (mm)	L (mm)	L1 (mm)	L2 (mm)	L3 (mm)	L4 (mm)	Offset (mm)	Notes
100	11R1048	1/60	3,0	171	60	57	338	184	7	
110	11R1148	1/60	3,2	171	65	63	350	184	7	
125	11R1248	1/24	3,2	255	73	69	458	226	9	
160	11R1648	1/24	4,0	255	83	82	491	226	9	

Lip Ring CE LGA tested

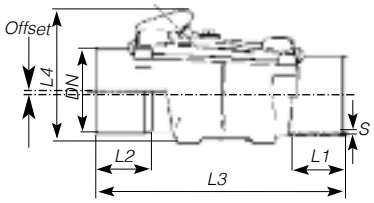
Lip seal version, we recommend to lubricate the gasket to make installation easier

Socket/Spigot solvent welding version

TYPE 2

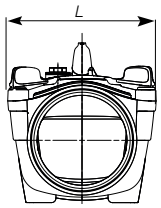
Single Socket - SCJ - PVC

Clapet anti-retour en PVC injecté M/F à coller - 2 clapets



DN	Reference Black	Pack	S (mm)	L (mm)	L1 (mm)	L2 (mm)	L3 (mm)	L4 (mm)	Offset (mm)	Notes
100	12S1008	1/60	3,0	171	60	53	334	184	7	
110	12S1108	1/60	3,2	171	65	63	350	184	7	
125	12S1208	1/24	3,2	255	73	69	458	226	9	
160	12S1608	1/24	4,0	255	83	82	491	226	9	

TYPE 1



Single Socket - SCJ - PVC

Clapet anti-retour en PVC injecté M/F à coller - 1 clapets

DN	Reference Black	Pack	S (mm)	L (mm)	L1 (mm)	L2 (mm)	L3 (mm)	L4 (mm)	Offset (mm)	Notes
100	11S1008	1/60	3,0	171	60	53	334	184	7	
110	11S1108	1/60	3,2	171	65	63	350	184	7	
125	11S1208	1/24	3,2	255	73	69	458	226	9	
160	11S1608	1/24	4,0	255	83	82	491	226	9	

Solvent cement *Colle*

Type	Gr.	Reference
(A)	125	6711200
(B)	250	6712500
(B)	500	6715500
(B)	1.000	6711000

Solvent welding version.

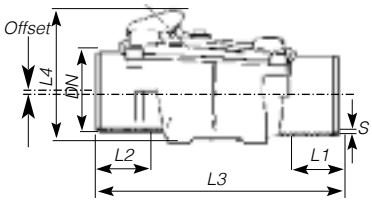
Spigot/Spigot version

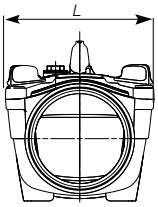
TYPE 2

Spigot/Spigot - All materials/PVC (**Recommended for renovation*)

Clapet anti-retour en PVC injecté M/M - 2 clapets

DN	Reference Black	Pack	S (mm)	L (mm)	L1 (mm)	L2 (mm)	L3 (mm)	L4 (mm)	Offset (mm)	Notes
100	12M10M8	1/60	3,0	171	60	60	355	184	7	
110	12M11M8	1/60	3,2	171	65	65	365	184	7	
125	12M12M8	1/24	3,2	255	73	73	455	226	9	
160	12M16M8	1/24	4,0	255	83	83	468	226	9	





TYPE 1

Spigot/Spigot - All materials/PVC (**Recommended for renovation*)

Clapet anti-retour en PVC injecté M/M - 1 clapets

DN	Reference Black	Pack	S (mm)	L (mm)	L1 (mm)	L2 (mm)	L3 (mm)	L4 (mm)	Offset (mm)	Notes
100	11M10M8	1/60	3,0	171	60	60	355	184	7	
110	11M11M8	1/60	3,2	171	65	65	365	184	7	
125	11M12M8	1/24	3,2	255	73	73	455	226	9	
160	11M16M8	1/24	4,0	255	83	83	468	226	9	

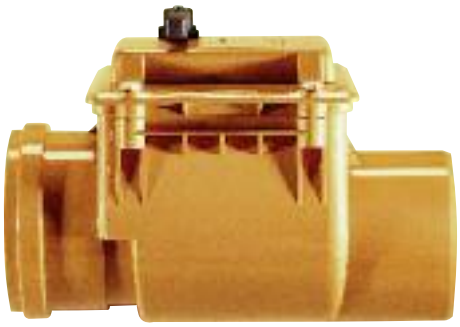
Example of installation

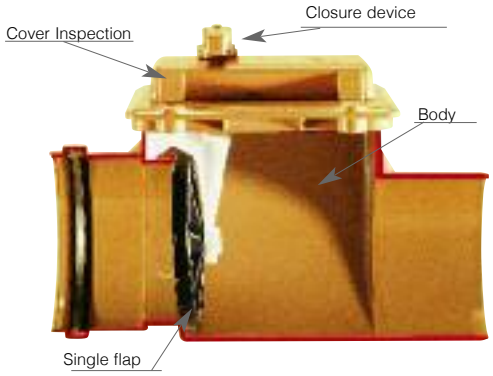
Installation with non-plastic materials

Push-fit installation (plastic only)

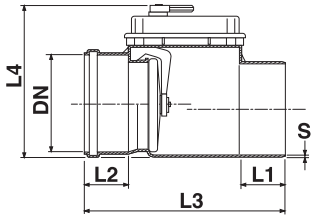
CLASSICA
non-return valve
(1 flap)

TYPE 1

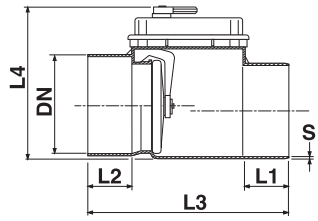




Non-return valve
Clapet anti-retour



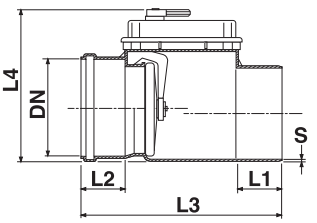
DN	S	L1	L2	L3	L4	Reference RAL 8023 Red	Pack.	Note
100	4.0	58	56	300	230	1555052*	1/56	With Lip-ring *Colour: Grey
110	4.0	61	61	307	230	1555551	1/56	With Lip-ring
125	4.0	68	65	318	230	1556051	1/56	With Lip-ring
160	4.0	74	74	337	255	1551691	1/30	With Lip-ring
200	4.5	100	86	451	300	1552091	1/24	With Lip-ring



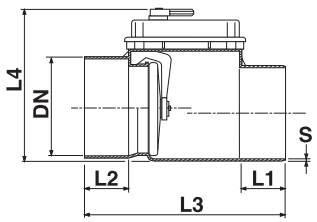
100	4.0	58	56	300	230	1555001	1/56	Solvent cement socket
110	4.0	61	61	307	230	1555501	1/56	Solvent cement socket
125	4.0	68	65	318	230	1556001	1/56	Solvent cement socket
140	4.0	69	65	325	255	1551401	1/30	Solvent cement socket
160	4.0	74	74	337	255	1551601	1/30	Solvent cement socket
200	4.5	100	86	451	300	1552001	1/24	Solvent cement socket

Lip Ring CE

Non-return valve stainless steel flap
Clapet anti-retour

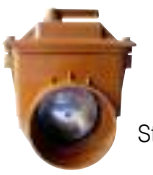


DN	S	L1	L2	L3	L4	Reference RAL 8023 Red	Pack.	Note
110	4.0	61	61	307	230	1555651	1/56	With Lip-ring
125	4.0	68	65	318	230	1556151	1/56	With Lip-ring
160	4.0	74	74	337	255	1551791	1/30	With Lip-ring



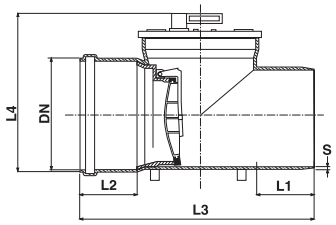
100	4.0	61	57	300	230	1555101	1/56	Solvent cement socket
110	4.0	61	61	307	230	1555601	1/56	Solvent cement socket
125	4.0	68	65	318	230	1556101	1/56	Solvent cement socket
140	4.0	69	65	325	255	1551501	1/30	Solvent cement socket
160	4.0	74	74	337	255	1551701	1/30	Solvent cement socket

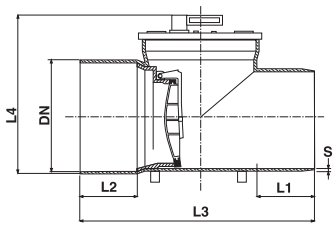
Lip Ring CE



Stainless stel flap

Non-return valve
Clapet anti-retour





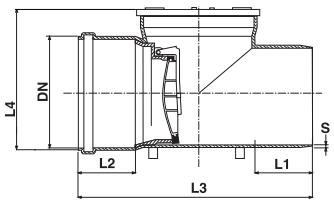
DN	S	L1	L2	L3	L4	Reference RAL 8023 Red		Note
250	6.2	130	102	520	374	1552591	1/12	With Lip-ring
315	7.7	160	125	615	440	1553091	1/8	With Lip-ring
250	6.2	130	102	520	374	1552501	1/12	Solvent cement socket
315	7.7	160	125	615	440	1553001	1/8	Solvent cement socket

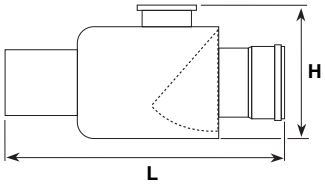
Lip Ring

Non-return valve without emergency closure device
Clapet anti-retour sans levier de verouillage

DN	S	L1	L2	L3	L4	Reference RAL 8023 Red	Pack.	Note
400	9.8	245	140	800	480	1554091	1/4	With Lip-ring

Lip Ring





Non-return valve

Clapet anti-retour

DN	H	L	Reference RAL 8023 Red		Pack.	Note
500	750	1400	T555191	* SN2	1	With Lip-ring
630	1100	1700	T556391	* SN2	1	With Lip-ring

Lip Ring * Fabricated

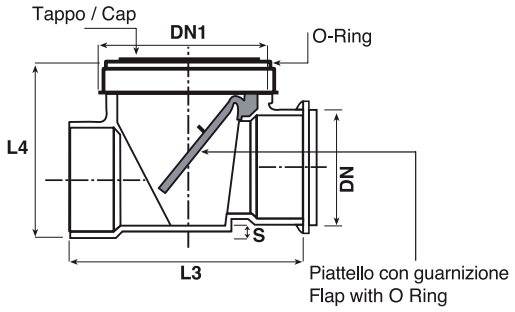
TYPE 0

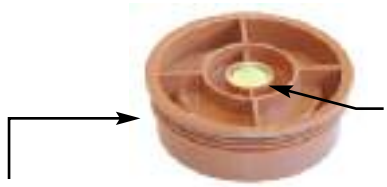
Non-return valve without emergency closure device

Clapet anti-retour

DN	L3	L4	DN1	S	Reference RAL 8023 Red	Pack.	Riser	Note
110	280	170	154	20	NC879E1	1/90	PVC pipe Ø160 SN2 EN1401	Plastic flap
125	290	170	154	20	NC887E1	1/90	PVC pipe Ø160 SN2 EN1401	Plastic flap
160	396	257	236	25	NC919E1	1/24	PVC pipe Ø200 SN2 EN1401	Plastic flap

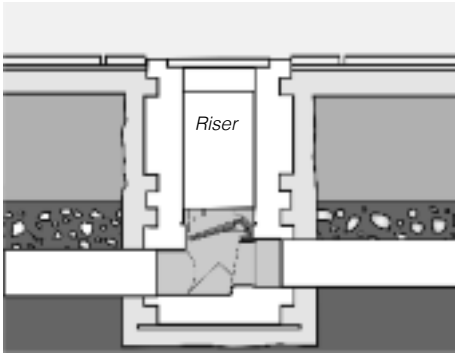
Lip Ring CE





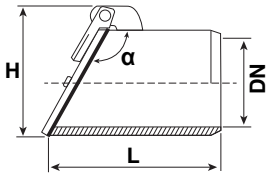
Type"0" cap with spirit level for a correct installation.

O'RING GASKET guarantees an hermetic seal



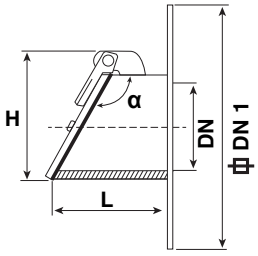
FLAP VALVE

The flap valves allow the waste water to flow out from a pipe to either a ditch or a pond, preventing back flooding at the same time.
The flap is opened by waste water's thrust. Flap's weight and 11° slant keep the device closed when not working.
- body: PVC-U complying to EN1401
- colour: Red RAL 8023 (body)
- White PP flap: White colour prevents discoloration due to sun light.
- NBR elastomeric gasket (thicknes 2 mm), replaceable, covering flap's internal surface.
- self-cleaning and self-centering flap hinge (stainless steel).
- REDI trade mark engraved on each part.
- packaging in cardboard boxes.



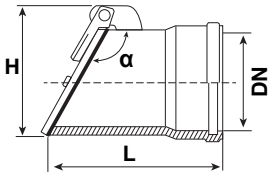
Flap valve - Male
Clapet de nez

DN (mm)	Reference	Pack.	L (mm)	H (mm)	α	Notes
110	P5510M1	1/144	160	155	11°	
125	P5512M1	1/96	160	170	11°	
160	P5516M1	1/96	180	205	11°	
200	P5520M1	1/36	200	245	11°	
250	P5525M1	1/12	275	305	11°	
315	P5530M1	1/8	330	370	11°	
400	P5540M1	1/1	350	450	11°	
500	P5550M1	1/4	380	550	11°	
630	P5563M1	1	440	685	11°	* on request



Flap valve - Flange
Clapet de nez

DN (mm)	DN1 Φ	Reference	Pack.	L (mm)	H (mm)	α	Note
110	160	P551001	1/144	110	155	11°	
125	160	P551201	1/-	110	170	11°	
160	210	P551601	1/96	120	205	11°	
200	250	P552001	1/36	150	245	11°	
250	320	P552501	1/24	210	305	11°	
315	370	P553001	1/18	260	370	11°	
400	480	P554001	1/1	290	450	11°	
500	600	P555001	1/10	330	550	11°	
630	710	P556301	1	390	685	11°	*on request



Flap valve - Soket
Clapet de nez

DN (mm)	Reference	Pack.	L (mm)	H (mm)	α	Note
110	P5510F1	1/144	160	155	11°	
125	P5512F1	1/168	160	170	11°	
160	P5516F1	1/96	180	205	11°	
200	P5520F1	1/36	200	245	11°	
250	P5525F1	1/12	275	305	11°	
315	P5530F1	1/20	330	370	11°	
400	P5540F1	1/1	350	450	11°	
500	P5550F1		380	550	11°	
630	P5563F1		440	685	11°	*on request