DIRTMAGPRO® composite dirt separators with magnets

5457 series

01388/21 EN

Function

The dirt separator separates any impurities - such as particles of sand and dirt - circulating within the closed circuits of systems, with extremely limited head loss. These impurities are collected in a large collection chamber that can be cleaned infrequently, and from which they can be removed even while the system is in operation.
The removable magnetic ring and the magnets positioned in the middle of the flow also capture ferromagnetic impurities.
The dirt separator is made using composite material specifically designed for use in air conditioning systems. It is particularly versatile because it can be installed on both horizontal and vertical pipes.

PCT
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Product range

Code 5457.. DIRTMAGPRO® dirt separator in composite material with magnets for horizontal and vertical pipes with threaded connections sizes DN 20 (3/4"), DN 25 (1") and DN 32 (1 1/4")

Code 5457.. DIRTMAGPRO® dirt separator in composite material with magnets for horizontal and vertical pipes with olive fittings sizes DN 20 (Ø 22) and DN 25 (Ø 28) with fittings for copper pipe

Technical specifications

Materials

Body:	PA66G30
Dirt separator cover:	PA66G30
Top cap:	brass EN 12164 CW617N
Purge screw:	brass EN 12164 CW617N
Locking nut for tee fitting:	PPSG40
Tee fitting:	brass EN 1982 CB753S
Internal element:	PA66G30
Hydraulic seals:	EPDM
Drain cock with hose connection:	brass EN 12165 CW617N

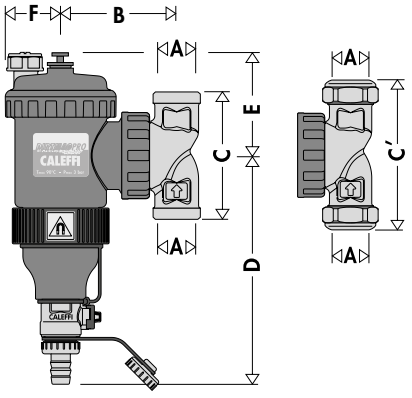
Performance

Medium:	water, glycol solutions
Maximum percentage of glycol:	30 %
Max. working pressure:	3 bar
Working temperature range:	0–90 °C
Ring system magnetic induction:	2 x 0,3 T
Central connection system magnetic induction:	4 x 0,485 T

Connections

Body:	3/4", 1", 1 1/4" F (ISO 228-1) Ø 22 and Ø 28 mm for copper pipe

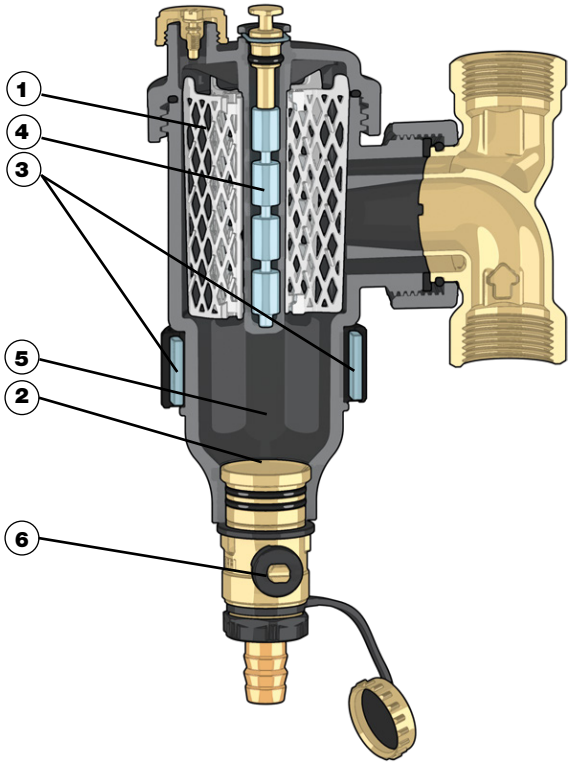
Dimensions



Code	DN	A	B	C	C'	D	E	F	Mass (kg)
545705	20	3/4"	87,5	96	-	172,5	76,6	42	1,46
545706	25	1"	87,5	110	-	172,5	76,6	42	1,50
545707	32	1 1/4"	87,5	131	-	172,5	76,6	42	1,75
545702	20	Ø 22	87,5	-	115	172,5	76,6	42	1,50
545703	25	Ø 28	87,5	-	117	172,5	76,6	42	1,55

Operating principle

The operating principle of the dirt separator with magnet is based on the combined action of a number of physical phenomena.
The internal element (1) consists of a set of mesh surfaces. The impurities in the water, on striking these surfaces, get separated, dropping into the bottom of the body (2) where they are collected.
Ferrous impurities are also trapped inside the dirt separator body, thanks to the action of the two magnets (3) inserted into a special removable outer ring and the four magnets inserted inside the mesh element (4).
The large internal volume of the DIRTMAGPRO® (5) slows down the flow speed of the medium thus helping, through gravity, to separate the contained particles.
The collected impurities are discharged by opening the drain cock (6).



Construction details

Technopolymer

The dirt separator is made using a technopolymer specifically selected for heating and cooling system applications. The main features of the technopolymer are:

- high strain strength while maintaining good ultimate elongation
- good resistance to crack propagation
- very low humidity absorption, for consistent mechanical behaviour
- high resistance to abrasion due to continuous medium flow
- performance maintained as temperature varies
- compatibility with glycols and additives used in circuits.

These basic material characteristics, combined with the appropriate shaping of the most highly stressed areas, enable a comparison with the metals typically used in the construction of dirt separators.

Low head losses and performance maintained over time

The high performance of the dirt separator is based on the use of the internal element with mesh surfaces. The principle of collision and decantation of particles makes the dirt separation action more efficient if compared to the common strainers. This performance is constant over time, unlike common strainers which instead get clogged by the trapped sludge, thus changing the functional features.

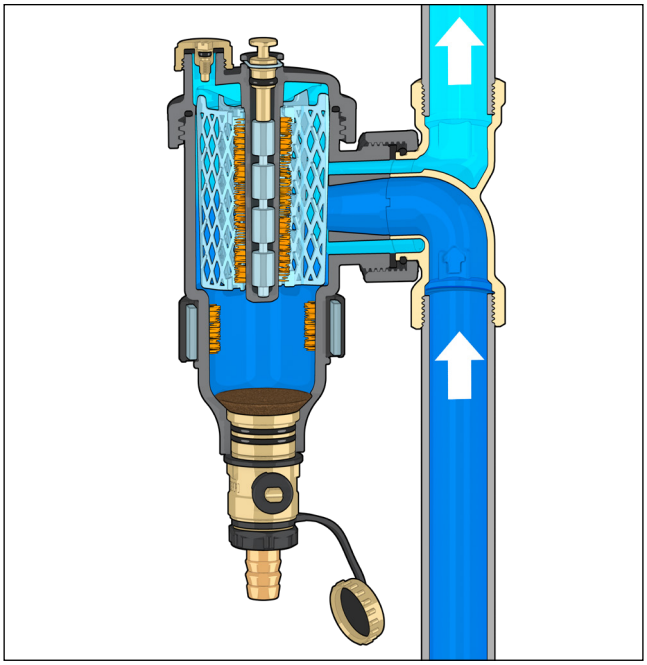
Geometric structure and large dirt collection chamber

The dirt collection chamber has the following features:

- it is located at the bottom of the device, at such a distance from the connections that the collected impurities are not affected by the swirling of the flow through the mesh;
- it is large enough to increase the amount of collected dirt, which means emptying/discharging procedures are required less often (in contrast to strainers, which need to be frequently cleaned);
- it is easy to inspect by unscrewing the top cap for internal element maintenance in the event that it becomes clogged with fibres or large debris.

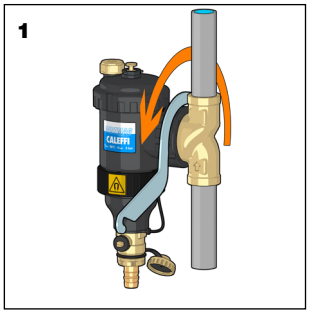
Separation of ferrous impurities

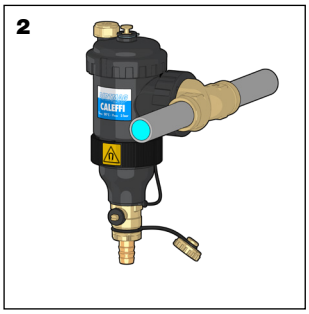
This series of dirt separators, fitted with a magnet, offer greater efficiency in the separation and collection of ferrous impurities. The impurities are trapped inside the dirt separator body by the strong magnetic field created by the magnets inserted in the special outer ring. Plus, as the four magnets inserted inside the mesh element are not in contact with the water, the of the medium may reach a flow speed of up to 1.6 m/s.
The outer ring and internal magnets can be removed from the body, to allow decanting and drainage of the impurities.



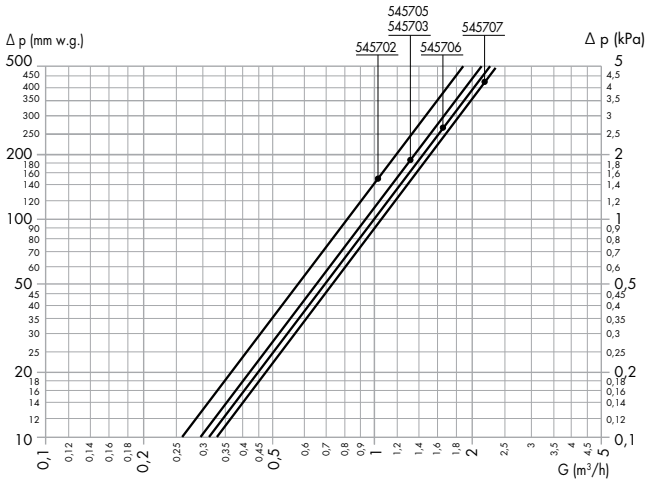
Adjusting the body to horizontal and vertical pipes

Thanks to the special coupling between the locking nut and the tee fitting, the DIRTMAGPRO® dirt separator can be adjusted for installation to both horizontal and vertical pipes or at 45°, retaining the same functional features.





Hydraulic characteristics



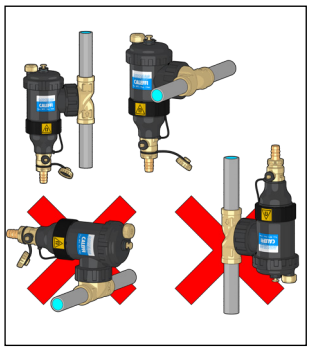
DN	20		25		32
Connections	Ø 22	3/4"	Ø 28	1"	1 1/4"
Code	545702	545705	545703	545706	545707
Kv (m³/h)	8.5	9.5	9.5	10.0	10.5

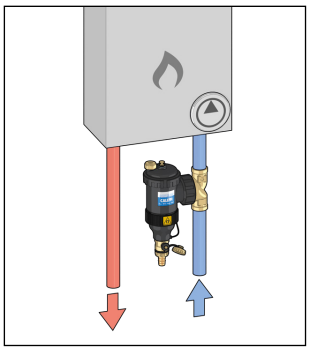
The maximum recommended flow speed at the device connections is~ 1,6 m/s. The following table shows the maximum flow rates in order to meet this requirement.

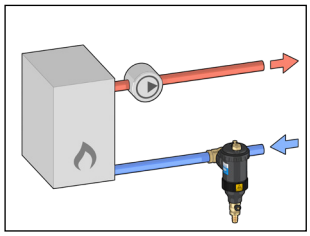
	l/min	m³/h
DN 20	26	1.6
DN 25	30	1.8
DN 32	43	2.6

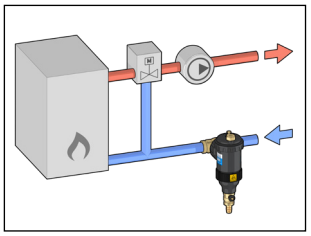
Installation

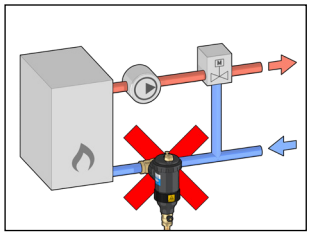
The dirt separator should be installed in accordance with the flow direction indicated by the arrow on the tee fitting and, preferably, on the return circuit upstream of the boiler.
The dirt separator should always be installed upstream of the pump and always with its body in vertical position.

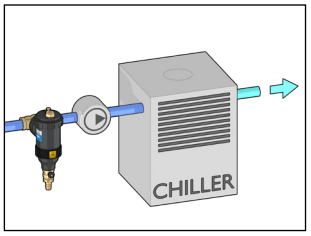






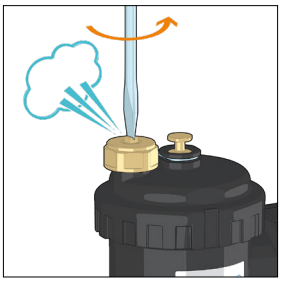






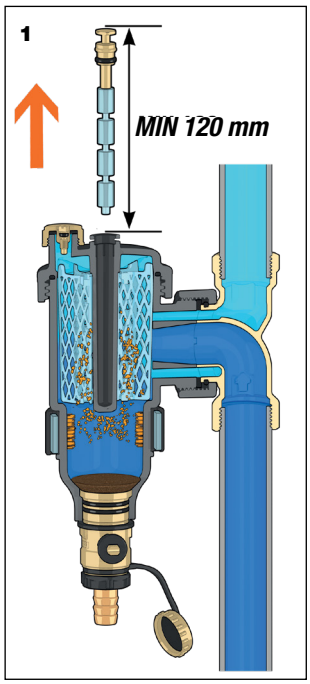
Air vent

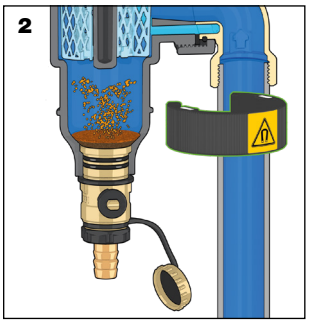
Use a screwdriver or butterfly key to undo the screw on the top plug and purge any air that has collected at the top of the body.

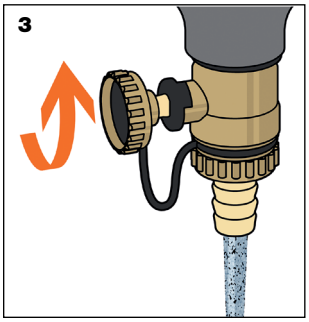


Sludge drain

Switch off the circulator, remove the stem holding the magnets from the top cover (1), remove the ring in which the magnets are housed (2) and drain the impurities, using the special key provided (3).

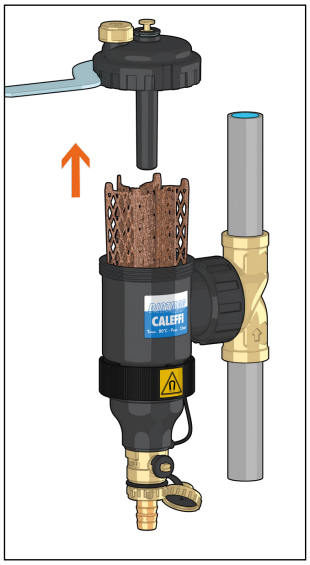






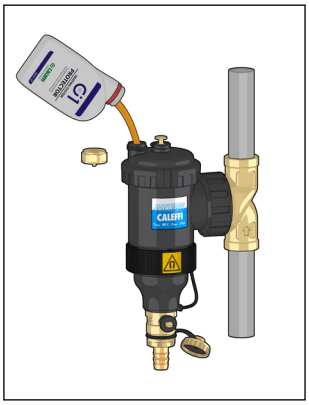
Maintenance

In case of maintenance to the dirt collection chamber, simply unscrew the top cover using the key provided, then extract the internal element, which is attached in the proper way to be removed for cleaning.



Additives dosing

The device can also be used as an access point to inject into the circuit chemical additives designed to protect the system.

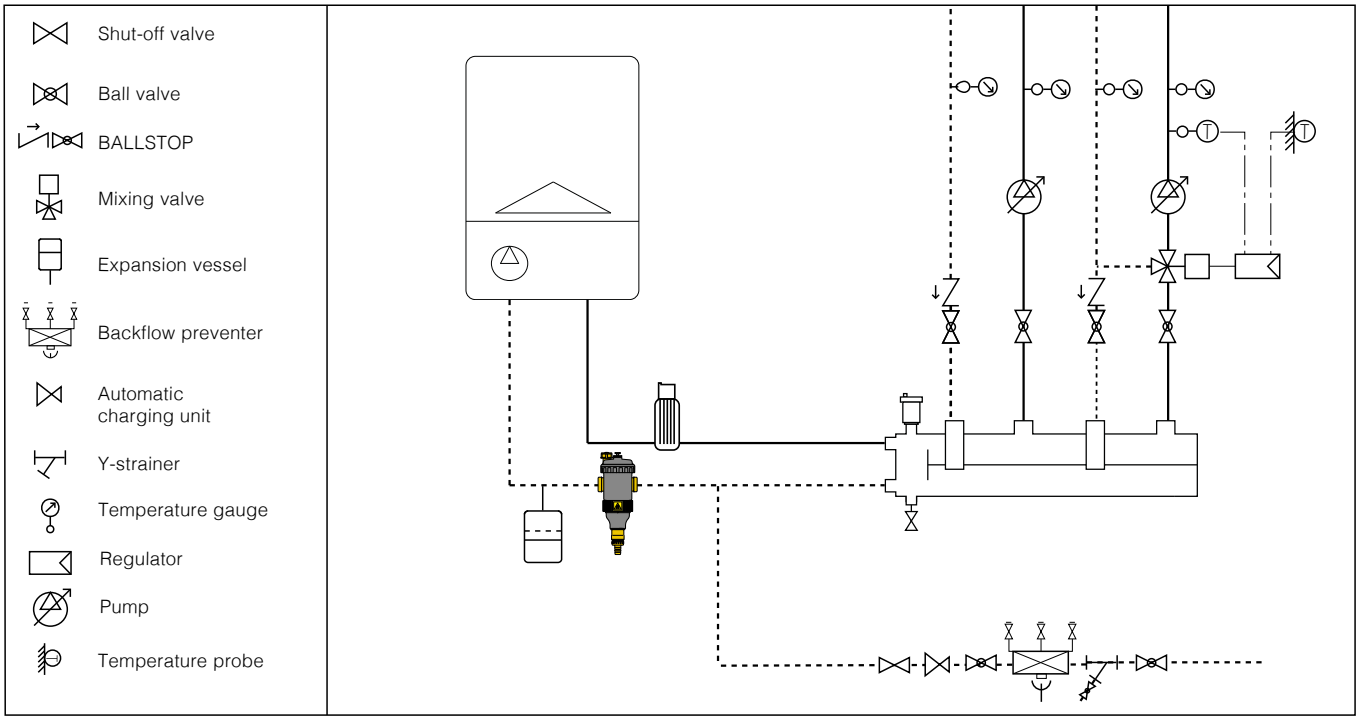


Accessories

Insulation for 5457 series dirt separator.

Code	Utilisation
CBN545305	545705 - 545706 - 545702 - 545703

Application diagram



SPECIFICATION SUMMARY

5457 series composite DIRTMAGPRO®

Dirt separator with magnets. Size DN 20 (DN 25 and DN 32). Adjustable 3/4" (1" and 1 1/ 4") F connections (ISO 228-1). Brass tee fitting, PPSG40 locking nut. Brass drain cock with hose connection. PA66G30 body and cover. PA66G30 internal element. EPDM hydraulic seals. Water and glycol solutions medium; max. percentage of glycol 30 %. Maximum working pressure 3 bar. Working temperature range 0–90 °C. PCT INTERNATIONAL APPLICATION PENDING.

5457 series composite DIRTMAGPRO®

Dirt separator with magnets. DN size 20 (and DN 25). Adjustable connections with olive fittings for Ø 22 mm (and Ø 28 mm) copper pipe. Brass tee fitting, PPSG40 locking nut. Brass drain cock with hose connection. PA66G30 body and cover. PA66G30 internal element. EPDM hydraulic seals. Water and glycol solutions medium; max. percentage of glycol 30 %. Maximum working pressure 3 bar. Working temperature range 0–90 °C. PCT INTERNATIONAL APPLICATION PENDING.

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