

Composite dirt separators with DIRTMAG® magnet



01240/19 GB
replaces dp 01240/15 GB

5453 series



Function

The dirt separator separates the impurities, which are mainly made up of sand and rust particles, circulating within the closed circuit systems, with very low head losses. The impurities are collected in a large decantation chamber, that requires low frequency cleaning procedures, from which they can be removed even while the system is in operation. The DIRTMAG® dirt separators are also equipped with a removable magnetic ring for separating ferrous impurities. Made using a composite material specifically designed for use in air-conditioning systems, this dirt separator is especially versatile as it can be installed on both horizontal and vertical pipes.



Product range

- Code 5453.. DIRTMAG® dirt separator in composite material with magnet for horizontal and vertical pipes with threaded connections sizes DN 20 (3/4") and DN 25 (1")
- Code 5453.. DIRTMAG® dirt separator in composite material with magnet for horizontal and vertical pipes with olive fittings sizes DN 20 (Ø 22) and DN 25 (Ø 28) with fittings for copper pipe
- Code 5453.. DIRTMAG® dirt separator in composite material with magnet for horizontal and vertical pipes with shut-off valves sizes DN 20 (3/4"), DN 25 (1") and DN 32 (1 1/4")

Technical specifications

Materials

- Body: PA66G30
- Dirt separator cover: PA66G30
- Top plug: brass EN 12164 CW614N
- Purge screw: brass EN 12164 CW614N
- Locking nut for tee fitting: PPSG40
- Tee fitting:
 - code 545305, 545306, 545302 and 545303: brass EN 1982 CB 753S
 - code 545345, 545346 and 545347: PA66G30
- Internal element: HDPE
- Hydraulic seals: EPDM
- Drain cock with hose connection: brass EN 12165 CW617N
- Shut-off valve:
 - code 545345, 545346 and 545347: brass EN 12165 CW617N

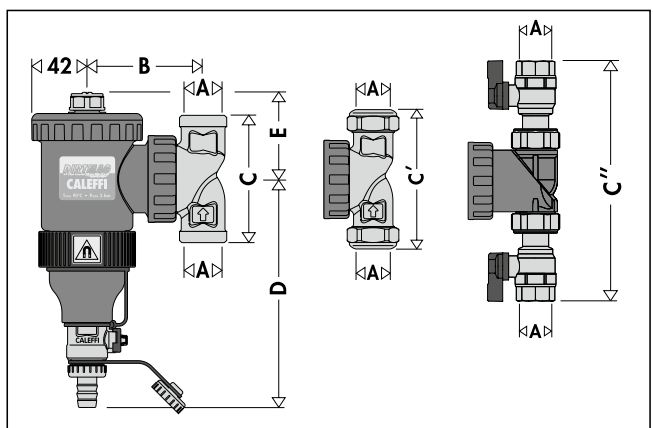
Performance

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

Connections

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

Dimensions



Code	DN	A	B	C	C'	C''	D	E	Mass (kg)
545305	20	3/4"	87,5	96	-	-	172,5	65,5	1,5
545306	25	1"	87,5	141	-	-	172,5	65,5	1,5
545302	20	Ø 22	87,5	-	115	-	172,5	65,5	1,5
545303	25	Ø 28	87,5	-	117	-	172,5	65,5	1,5
545345	20	3/4"	106,5	-	-	214	172,5	65,5	1,2
545346	25	1"	106,5	-	-	221	172,5	65,5	1,3
545347	32	1 1/4"	106,5	-	-	243	172,5	65,5	1,4

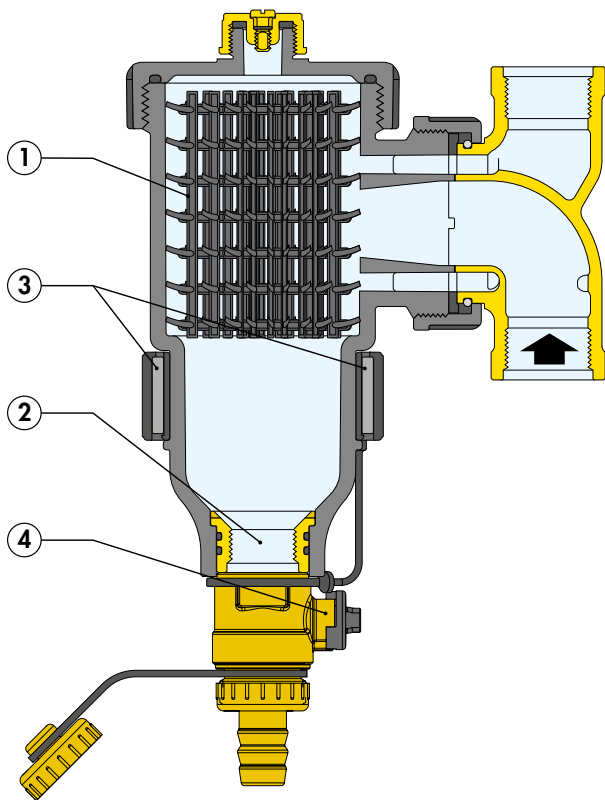
Operating principle

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.

The large internal volume of the DIRTMAG® slows down the flow speed of the medium thus helping, through gravity, to separate the contained particles.

The collected impurities are discharged, even with the system running, by opening the drain cock (4).



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:

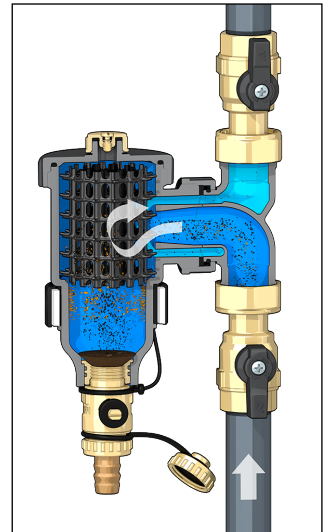
- it is located at the bottom of the device, at such a distance from the connections that the collected impurities are not affected by the swirling of the flow through the mesh;
- it is large enough to increase the amount of collected dirt, which means emptying/discharging procedures are required less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

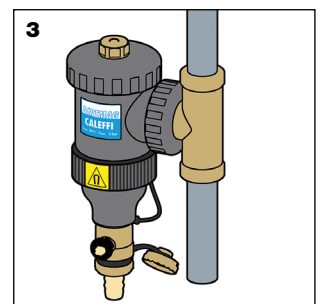
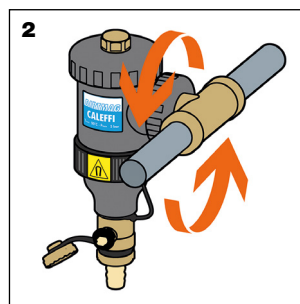
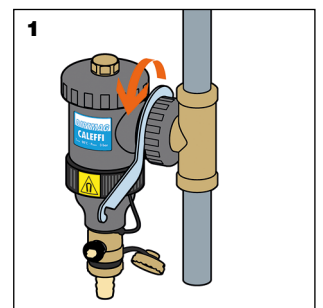
The outer ring can also be removed from the body to allow their decantation and subsequent expulsion while the system is still running.

Since the magnetic ring is positioned outside the dirt separator body, the hydraulic characteristics of the device are not altered.

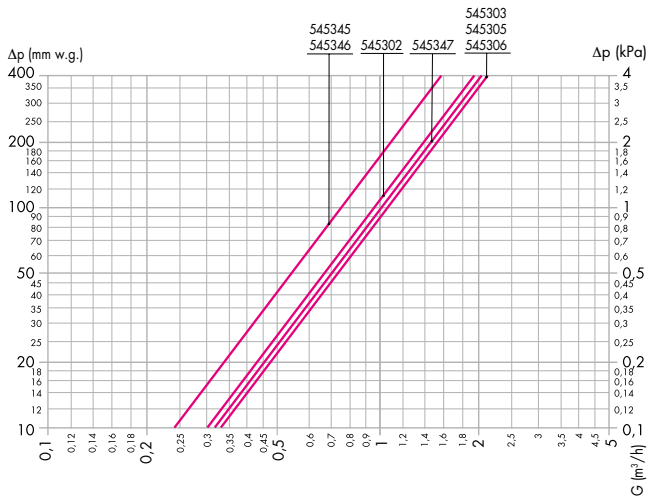


Adjusting the body to horizontal and vertical pipes

Thanks to the special coupling between the locking nut and the tee fitting, the DIRTMAG® dirt separator can be adjusted (1) for installation to both horizontal (2) and vertical (3) pipes or at 45°, keeping the same operating features.



Hydraulic characteristics



DN	20			25			32
Connections	Ø 22	3/4"	3/4"	Ø 28	1"	1"	1 1/4"
Code	545302	545305	545345	545303	545306	545346	545347
Kv (m³/h)	9,5	10,3	7,5*	10,6	10,5	7,5*	9,9*

*with shut-off valves

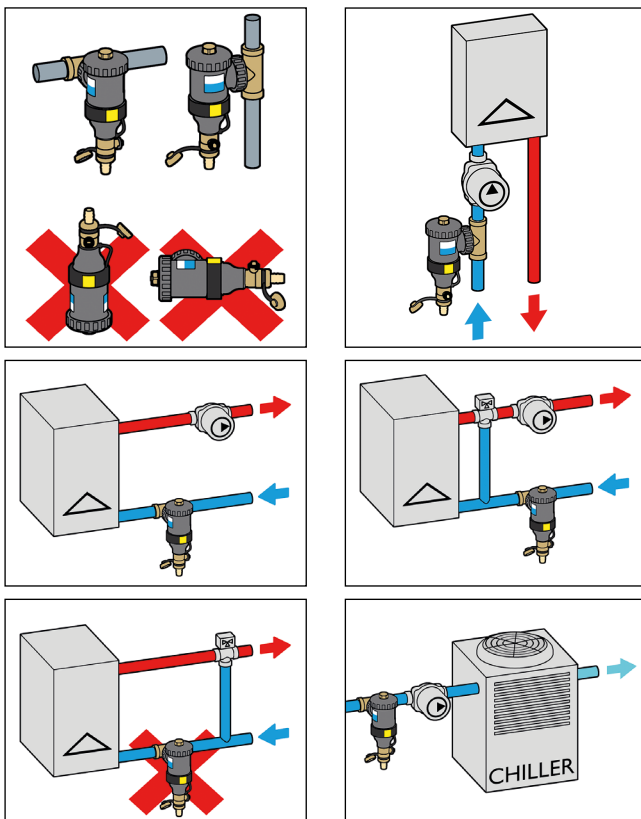
The maximum recommended flow speed at the device connections is ~ 1,2 m/s. The following table shows the maximum flow rates in order to meet this requirement.

	l/min	m³/h
DN 20	21,67	1,3
DN 25	21,67	1,3
DN 32	35	2,1

Installation

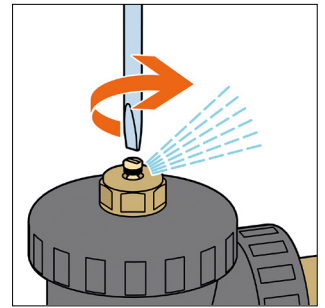
The dirt separator should be installed in accordance with the flow direction indicated by the arrow on the tee fitting and, preferably, on the return circuit upstream of the boiler.

The dirt separator should always be installed upstream of the pump and always with its body in vertical position.



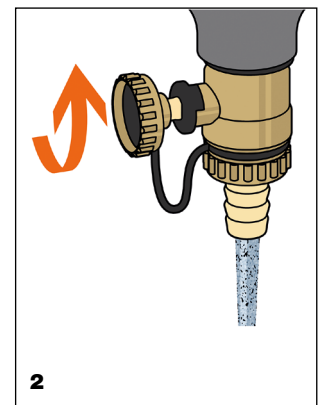
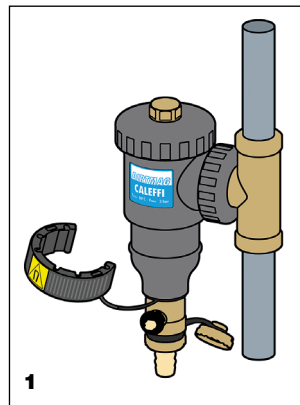
Air vent

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.



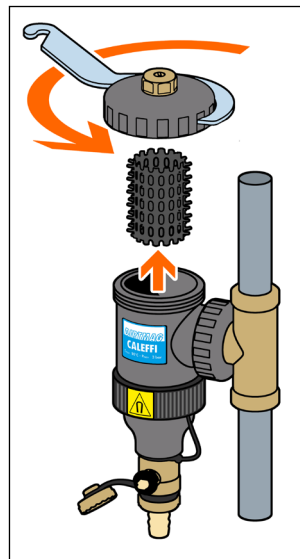
Sludge drain

Remove the ring in which the magnets are housed (1) and drain the impurities, even while the system is running, using the special key provided (2).



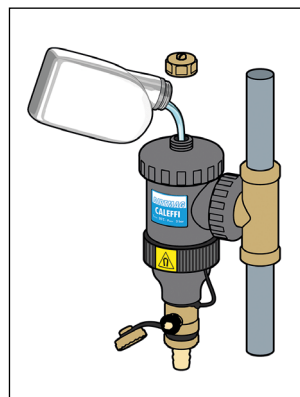
Maintenance

In case of maintenance to the dirt collection chamber, simply unscrew the top cover using the provided key, 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 dirt separator
code 54534..

Code

CBN545345

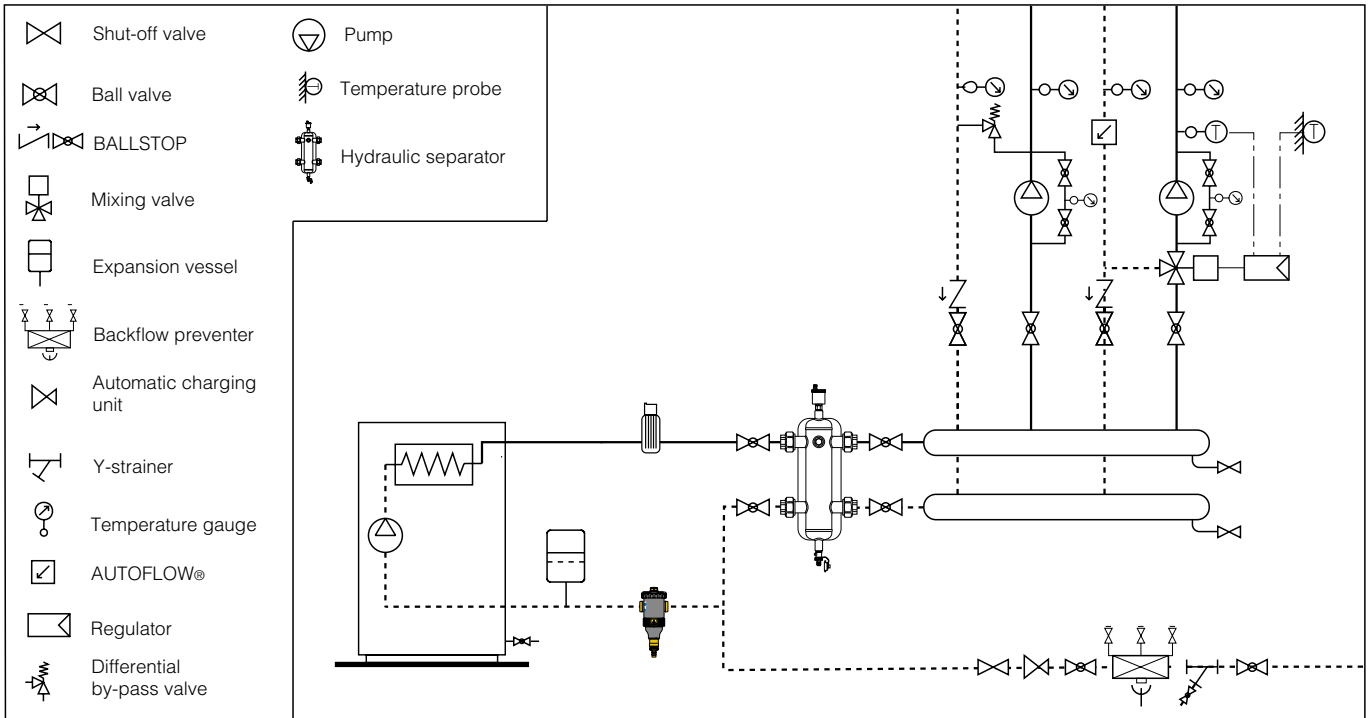


Insulation for dirt separator
5453 series.

Code

CBN545305

Application diagram



SPECIFICATION SUMMARY

5453 series composite DIRTMAG®

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

5453 series composite DIRTMAG®

Dirt separator with magnet. Size DN 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. HDPE internal element. EPDM hydraulic seals. Medium water and glycol solutions; maximum percentage of glycol 30 %. Maximum working pressure 3 bar. Working temperature range 0–90 °C. PCT INTERNATIONAL APPLICATION PENDING.

5453 series composite DIRTMAG®

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

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