

Composite under-boiler dirt separator with magnet DIRTMAGSLIM®



01327/17 GB

replaces dp 01327/16 GB

5451 - 5452 - 5454 series



Function

The DIRTMAGSLIM® dirt separator separates off the impurities contained in air-conditioning systems, collecting them in a large decantation chamber from which they can be discharged while the system is running. The removable magnetic ring captures ferromagnetic impurities.

Thanks to its compact size, this dirt separator is specific for installation on horizontal pipes under wall-mounted boilers where, due to problems of space or other reasons, it is not possible to use traditional dirt separators.

The different configurations and accessories allow installation of the dirt separator under wall-mounted boilers using the kit of rigid pipes supplied by the boiler manufacturer or using flexible pipes. Code 545455 has a specific configuration for installation with Vaillant boilers with horizontal connections with a flat template while code 545255 has a specific configuration for installation of Vaillant boilers with an upside-down W template.



Product range

Code 5451..	Composite under-boiler dirt separator with magnet DIRTMAGSLIM® for installation with rigid pipe kit	_____	_____
		size DN 20 (3/4" M - Ø 18 and 3/4" M - Ø 22)	_____
Cod. 545105	Composite under-boiler dirt separator with magnet DIRTMAGSLIM® for installation with flexible pipes.	_____	_____
		size DN 20 (3/4" M x 3/4" F)	_____
Cod. 545205	Composite under-boiler dirt separator with magnet DIRTMAGSLIM® for installation with flexible pipes, with "S" shaped off-centre connection kit	_____	_____
		size DN 20 (3/4" M x 3/4" F)	_____
Code 545455	Composite under-boiler dirt separator with magnet DIRTMAGSLIM® specific configuration for installation with Vaillant boilers having horizontal connections with a flat template	_____	_____
		size DN 20 (3/4" M x 3/4" F)	_____
Code 545255	Composite under-boiler dirt separator with magnet DIRTMAGSLIM® specific configuration for installation with Vaillant boilers having horizontal connections with an upside-down W template	_____	_____
		size DN 20 (3/4" M x 3/4" F)	_____
Code 545100	Protective cover	_____	_____
Code F0000118	Accessory fitting for Ø 22 copper pipe for installation with rigid pipe kit	_____	_____ Ø 22
Code F0000117	Accessory "S" shaped off-centre connection kit for installation with flexible pipes	_____	_____ 3/4" M x 3/4" F
Code F0000401	Accessory connection fitting for installation with flexible pipes	_____	_____ 3/4" F
Code F0000439	Elbow fitting 3/4" F, accessory for composite dirt separator series 5451	_____	_____
Code F0000515	"S" shaped off-centre 3/4" M connection, accessory for composite dirt separator series 5451	_____	_____
Code F0000516	Fitting for Ø 18 pipe, accessory for composite dirt separator series 5451 and 5452	_____	_____
Code F0000574	Fitting with 3/4" M ball valve, accessory for composite dirt separator DIRTMAGSLIM®	_____	_____

Technical specifications

Materials

Body:	PA66G30
Straight fittings:	brass EN 12165 CW617N, chrome plated
- code 545255:	brass EN 12165 CW617N
"S" shaped off-centre fitting	
- code 545205:	brass EN 1982 CB753S, chrome plated
- code 545255 and 545455:	brass EN 1982 CB753S
"Elbow" fitting	
- code 545205:	brass EN 12165 CW617N, chrome plated
Internal element:	HDPE
Deflector:	PA66G30
Hydraulic seals:	EPDM
Drain cock with hose connection:	
	brass EN 12164 CW614N
Shut-off valve:	
- code 545255, 545455:	brass EN 12165 CW617N

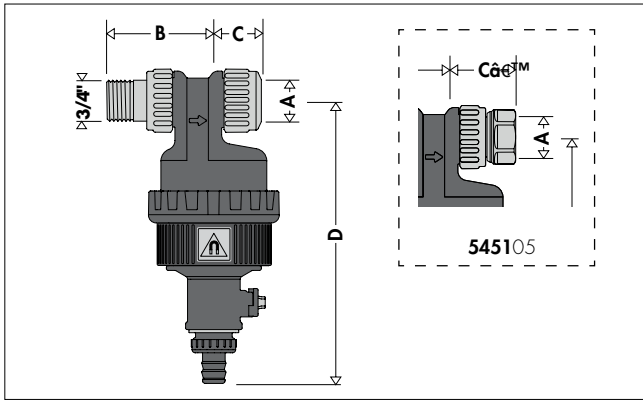
Performance

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

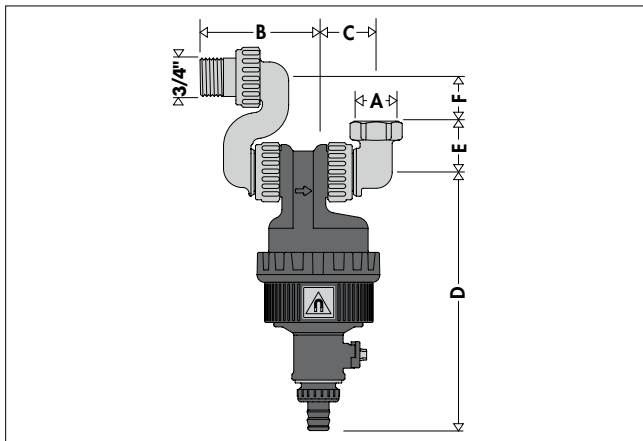
Connections

Body:	- 545101:	3/4" M (ISO 228-1) x Ø 18
	- 545102:	3/4" M (ISO 228-1) x Ø 22
	- 545105 / 545205:	3/4" M x 3/4" F (ISO 228-1)
	- 545255 / 545455:	3/4" M x 3/4" F (ISO 228-1)

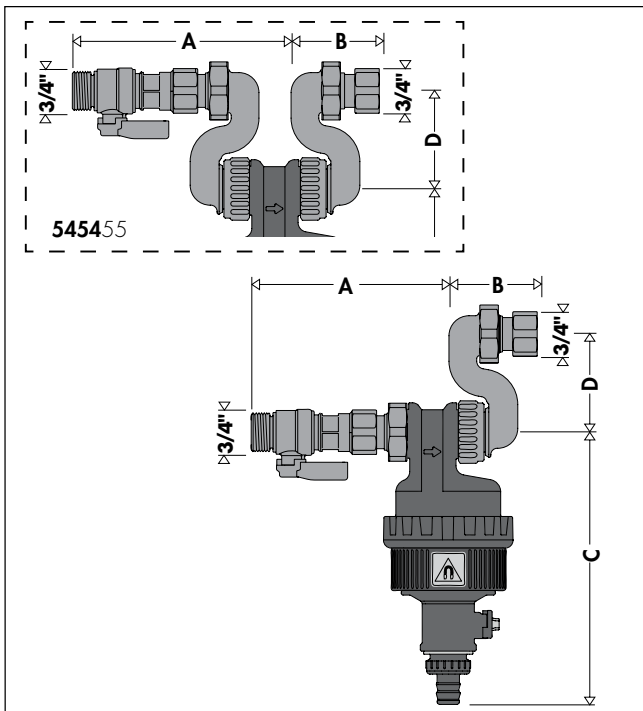
Dimensions



Code	DN	A	B	C	C'	D	Mass (kg)
545101	20	∅ 18	72	30,5	—	185	0,55
545102	20	∅ 22	72	—	—	185	0,53
545105	20	3/4"	72	—	42,5	185	0,55



Code	DN	A	B	C	D	E	F	Mass (kg)
545205	20	3/4"	85,5	39,5	185	35	30	0,95



Code	DN	A	B	C	D	Mass (kg)
545455	20	132	50	185	65	1,10
545255	20	132	50	185	65	1,10

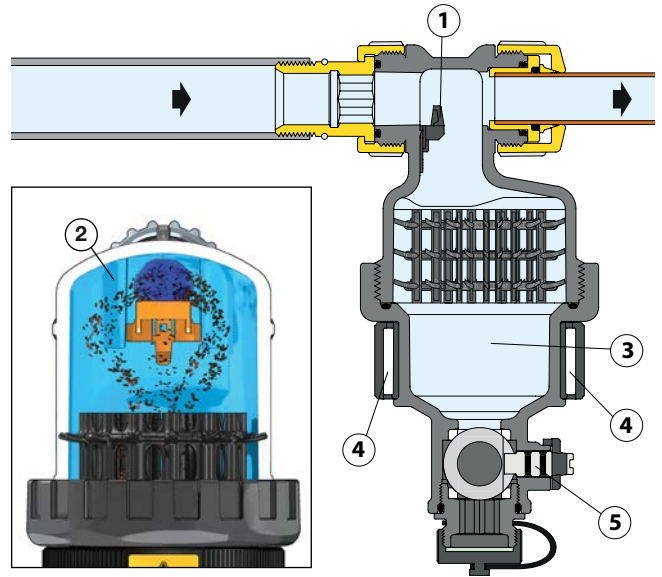
Operating principle

The DIRTMAGSLIM® magnetic dirt separator removes and collects impurities present in the circuit thanks to an internal deflector (1) located in the medium flow. This specific component creates turbulence (2) in the medium that helps to transfer impurities to the decantation chamber (3) where, thanks to their quiet conditions, the particles are captured and unable to return to the circuit.

This operating principle makes it possible to keep the head loss inside the device to the minimum.

Ferrous impurities are trapped inside the dirt separator body, thanks also to the action of the two magnets (4) inserted into a special removable outer ring.

The collected impurities are discharged, even with the system running, by opening the drain cock (5).



Construction details

Technopolymer

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

- high strength to strain, while maintaining good ultimate elongation;
- good resistance to crack propagation;
- very low humidity absorption, for consistent mechanical behaviour;
- high resistance to abrasion caused by continuous medium flow;
- performance maintained over temperature variation;
- 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.

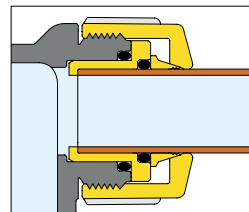
Compact

Thanks to the compactness of the body and to the versions available, the dirt separator can be easily installed in narrow spaces under wall-mounted boilers.

The patented dirt separation system with a deflector allows separation performances equivalent to traditional in-line dirt separators.

Copper-plastic fittings

The dirt separator is equipped with special fittings for copper pipe for combining with the plastic of the valve body without problems of mechanical resistance. The hydraulic and mechanical seal is achieved by means of suitable O-Rings and a pipe clenching ring.



Patented dirt separation system with low head losses

The high performances of the dirt separator are based on the combined action of the deflector and of the collection chamber, inserted in a patented functional system. The deflector (1) produces swirling movements (2) in the medium which cause the suspended particles to slow down and fall by gravity towards the decantation chamber (3).

Head losses remain constant over time because the medium passes through the upper part of the dirt separator, where there is only the deflector, while the particles accumulate in the lower part without the possibility of returning into circulation.

The dirt separator therefore maintains its performance unchanged, unlike ordinary strainers in which the captured sludge alters their functional characteristics over time, by clogging them.

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 flow turbulence caused by the deflector;
- it is capacious to increase the amount of sludge stored and therefore decrease the frequency of emptying/ discharging it (unlike strainers that need to be cleaned frequently);
- 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.

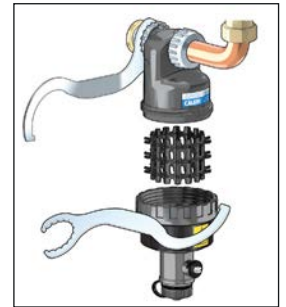
The outer ring can also be removed from the body to allow their decantation and subsequent expulsion while the system is still running. Since the magnetic ring is positioned outside the dirt separator body, the hydraulic characteristics of the device are not altered.



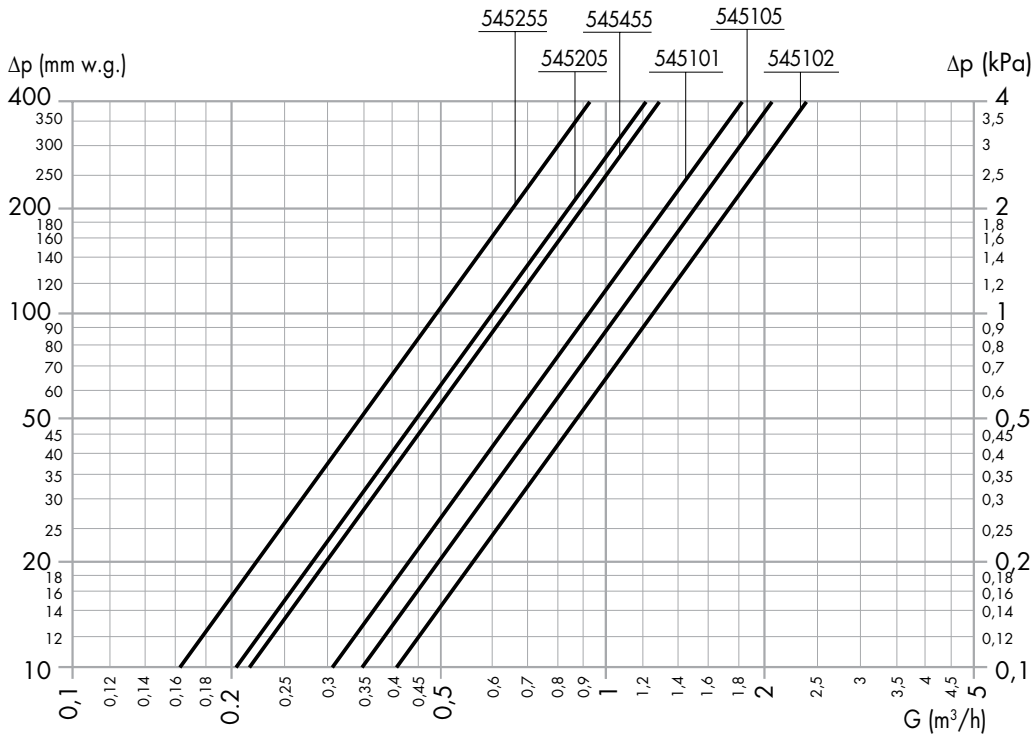
Operating wrench

The dirt separator is supplied with an operating wrench in the pack.

One end of the wrench can be used to tighten the nuts of the fittings on the valve body, while the other end is used to open the valve body to access the internal element in the event of checking or maintenance.



Hydraulic characteristics



Code	545101	545102	545105	545205	545255	545455
DN	20					
Connections	3/4" M x Ø 18 mm	3/4" M x Ø 22 mm	3/4" M x 3/4" F	3/4" M x 3/4" F	3/4" M x 3/4" F	3/4" M x 3/4" F
Kv (m³/h)	9,2	12,2	10,7	5,9	5	6,6

The maximum recommended speed of the medium to 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

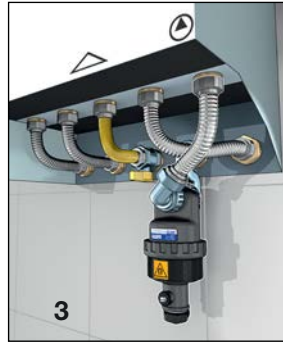
Installation method

The dirt separator must be installed on the boiler return pipe, by respecting the flow direction indicated by the arrow on the valve body. The dirt separator must be installed with the body always in a vertical position, with the drain facing down.

The dirt separator code 545101 and 545102 is used when the wall connections correspond to the connections on the boiler, so the connections are made with the kit of rigid pipes supplied by the boiler manufacturer (1).



The dirt separator code 545105 and 545205 is used when the wall connections are not aligned with the connections on the boiler (2 and 3) or when a larger working space is needed under the boiler. The connections are therefore made with stainless steel flexible pipes.

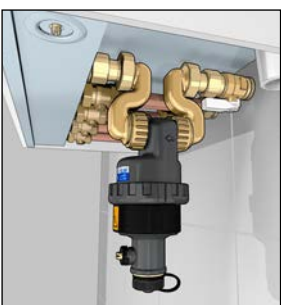


If the space under the boiler does not allow the use of the rigid pipe kit, the "S" shaped off-centre fitting of the dirt separator code 545205 gains working space under the boiler because it shifts the dirt separator farther down (4 and 5). The connections are therefore made with stainless steel flexible pipes.

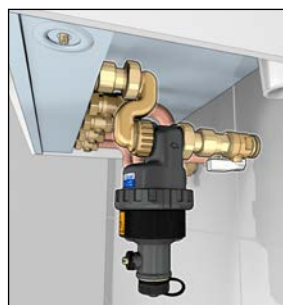


The dirt separator code 545455 545255 has a specific configuration for installation with Vaillant boilers having horizontal connections with a flat template (code 545455) and having horizontal connections with an upside-down W template (code 545255).

Installation code 545455



Installation code 545255

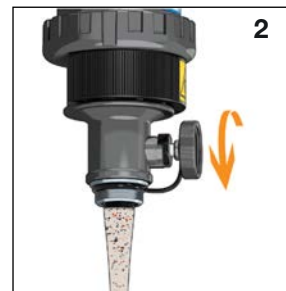


Dirt discharge

Sludge can be discharged while the system is operating, without removing the dirt separator from the pipes. The procedure is as follows:

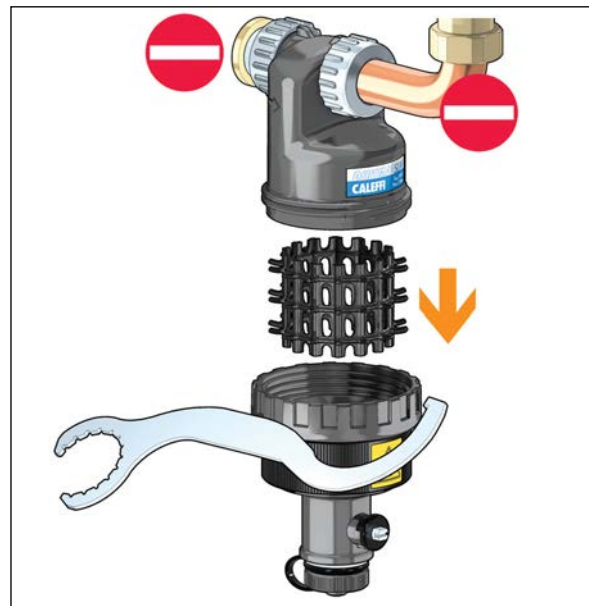
- remove the ring in which the magnets are housed (1);
- drain the impurities by opening the drain cock with the special key provided (2);
- close the drain cock.

When performing the operation, take care to keep the system under pressure. Lowering the pressure during discharge could block the boiler. It is therefore recommended to consult the boiler instructions to evaluate the means of restoring pressure and the need to stop the pump during discharge..



Maintenance

If you want to check the internal element, after shutting the pipes off you can loosen the bottom of the body using the supplied wrench and extract the internal element for cleaning.



Accessories



Accessory kit for composite dirt separator 5451 series.

code

F0000117 Off-centre connection kit



Accessory for composite dirt separator 5451 and 5452 series.

code

F0000401 3/4" F fitting



Accessory for composite dirt separator 5451 and 5452 series.

code

F0000516 Fitting for pipe Ø 18 mm

F0000118 Fitting for pipe Ø 22 mm



Fitting with ball valve for composite dirt separator DIRTMAGSLIM®

code

F0000574 3/4" M



Protective cover.



code

545100

SPECIFICATION SUMMARY

Code 5451..

Composite under-boiler dirt separator with magnet DIRTMAGSLIM® for installation with rigid pipe kit. Size DN 20. Connections 3/4" M (ISO 228-1) x Ø 18 and 3/4" M (ISO 228-1) x Ø 22. Chrome plated brass fittings. Brass drain cock with hose connection. Body and internal deflector in PA66G30. 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. Ring system magnetic induction 2 x 0,3 T. PCT INTERNATIONAL APPLICATION PENDING.

Code 545105

Composite under-boiler dirt separator with magnet DIRTMAGSLIM® for installation with flexible pipes. Size DN 20. Connections 3/4" M x 3/4" F (ISO 228-1). Chrome plated brass fittings. Brass drain cock with hose connection. Body and internal deflector in PA66G30. 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. Ring system magnetic induction 2 x 0,3 T. PCT INTERNATIONAL APPLICATION PENDING.

Code 545255

Composite under-boiler dirt separator with magnet DIRTMAGSLIM® specific configuration for installation with Vaillant boilers having horizontal connections with a flat template. Size DN 20. Connections 3/4" M x 3/4" F (ISO 228-1). Brass "S" shaped off-centre connection fitting and straight fitting. Brass drain cock with hose connection. Body and internal deflector in PA66G30. HDPE internal element. Shut-off valve: - code 545255, 545455: brass EN 12165 CW617N. EPDM hydraulic seals. Medium water and glycol solutions; maximum percentage of glycol 30%. Maximum working pressure 3 bar. Working temperature range 0–90°C. Ring system magnetic induction 2 x 0,3 T. PCT INTERNATIONAL APPLICATION PENDING.

Code 545205

Composite under-boiler dirt separator with magnet DIRTMAGSLIM® with "S" shaped off-centre connection kit. Size DN 20. Connections 3/4" M x 3/4" F (ISO 228-1). Chrome plated brass fittings. Brass drain cock with hose connection. Body and internal deflector in PA66G30. 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. Ring system magnetic induction 2 x 0,3 T. PCT INTERNATIONAL APPLICATION PENDING.

Code 545455

Composite under-boiler dirt separator with magnet DIRTMAGSLIM® specific configuration for installation with Vaillant boilers having horizontal connections with a flat template. Size DN 20. Connections 3/4" M x 3/4" F (ISO 228-1). Brass "S" shaped off-centre connection fitting. Brass drain cock with hose connection. Body and internal deflector in PA66G30. 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. Ring system magnetic induction 2 x 0,3 T. PCT INTERNATIONAL APPLICATION PENDING.

Code F000117

"S" shaped off-centre connection kit. Spare kit or kit for transforming code 545101 and 545102 (dirt separator for installation with rigid pipe kit) into code 545205 for installation with flexible pipes. Size 3/4" M x 3/4" F. Chrome plated brass body.

Code F000118

Fitting for Ø 22 copper pipe. Fitting for installation with rigid pipe kit for copper pipe Ø 22 mm.

Code F000401

Accessory connection fitting for installation with flexible pipes. 3/4" F connection.

Code 545100

Protective cover.

Code F000439

Elbow fitting 3/4" F, accessory for composite dirt separator series 5451.

Code F000515

"S" shaped off-centre 3/4" M connection, accessory for composite dirt separator series 5451.

Code F000516

Fitting for Ø 18 pipe, accessory for composite dirt separator series 5451 and 5452.

Code F000574

Fitting with 3/4" M ball valve, accessory for composite dirt separator DIRTMAGSLIM®.

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.
