Composite under-boiler dirt separator with magnet DIRTMAGSLIM®

5451 - 5452 - 5454 series

**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 rigid pipe kit size DN 20 (3/4” M - Ø 18 and 3/4” M - Ø 22)
- Cod. 545205 Composite under-boiler dirt separator with magnet DIRTMAGSLIM® for installation with flexible pipes, size DN 20 (3/4” M x 3/4” F)
- Cod. 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 (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 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 ¾” F, accessory for composite dirt separator series 5451
- Code F0000515 “S” shaped off-centre ¾” 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®

**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.

**Technical specifications**

**Materials**

- Body: PA66G30
- Straight fittings: brass EN 12165 CW617N, chrome plated
- “S” shaped off-centre fitting: brass EN 1982 CB753S, chrome plated
- “Elbow” fitting: brass EN 1982 CB753S, chrome plated
- Internal element: HDPE
- Deflector: PA66G30
- Hydraulic seals: EPDM
- Drain cock with hose connection: brass EN 12164 CW614N

- Code 545255 and 545455: brass EN 1982 CB753S

**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” M (ISO 228-1) x Ø 18
- Code 545101: 3/4” M (ISO 228-1) x Ø 18
- Code 545102: 3/4” M (ISO 228-1) x Ø 22
- Code 545205: 3/4” M x 3/4” F (ISO 228-1)
- Code 545255 / 545455: 3/4” M x 3/4” F (ISO 228-1)
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.

Dimensions

<table>
<thead>
<tr>
<th>Code</th>
<th>DN</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>C'</th>
<th>D</th>
<th>Mass (kg)</th>
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<tbody>
<tr>
<td>545101</td>
<td>20</td>
<td>Ø 18</td>
<td>72</td>
<td>30,5</td>
<td>—</td>
<td>185</td>
<td>0.55</td>
</tr>
<tr>
<td>545102</td>
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<td>Ø 22</td>
<td>72</td>
<td>—</td>
<td>—</td>
<td>185</td>
<td>0.53</td>
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<tr>
<td>545105</td>
<td>20</td>
<td>3/4&quot;</td>
<td>72</td>
<td>—</td>
<td>—</td>
<td>42.5</td>
<td>185</td>
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</table>

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<th>DN</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>Mass (kg)</th>
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<td>35</td>
<td>30</td>
<td>0.95</td>
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<th>Code</th>
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<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>Mass (kg)</th>
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<tr>
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<td>50</td>
<td>185</td>
<td>65</td>
<td>1.10</td>
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<td>545255</td>
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<td>132</td>
<td>50</td>
<td>185</td>
<td>65</td>
<td>1.10</td>
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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 spacious 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

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<tr>
<th>Code</th>
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<th>545105</th>
<th>545205</th>
<th>545255</th>
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<td>20</td>
<td>20</td>
<td>20</td>
<td>20</td>
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<td>Kv (m³/h)</td>
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<td>12,2</td>
<td>10,7</td>
<td>5,9</td>
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</table>

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.
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 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).

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

- **Fitting for pipe Ø 18 mm**
  - Code: F0000516

- **Fitting for pipe Ø 22 mm**
  - Code: F0000118

- **Fitting with ball valve for composite dirt separator DIRTMAGSLIM®**
  - Code: F0000574
  - 3/4” M

- **Protective cover.**
  - Code: 545100

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**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**

**Code 545255**
Code 545205

Code 545455

Code F0000117
"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 F0000118
Fitting for Ø 22 copper pipe. Fitting for installation with rigid pipe kit for copper pipe Ø 22 mm.

Code F0000401
Accessory connection fitting for installation with flexible pipes. 3/4" F connection.

Code 545100
Protective cover.

Code F0000439
Elbow fitting 3/4" F, accessory for composite dirt separator series 5451.

Code F0000515

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®.

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.