

DIRTCAL® - DIRTMAG® dirt separator

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5462 - 5463 -5465 - 5465M - NA5465 - NA5465M Series

Installation, commissioning and servicing instructions



Function

In heating and air conditioning control systems, the circulation of water containing impurities may result in rapid wear and damage to components such as pumps and control valves. It also causes blockages in the heat exchangers, heating elements and pipes, resulting in a lower thermal efficiency within the system. The dirt separator separates off these dirt particles, collecting them in a large collection chamber, from which they can be removed even while the system is in operation. This device is capable of efficiently removing even the smallest particles, with extremely limited head loss.

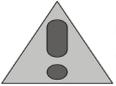
The DIRTMAG® magnetic dirt separator removes both ferrous and non-ferrous impurities continuously, featuring powerful removable magnets that remove up to 95% of the ferrous impurities, including magnetite, that can form in a hydronic system, 2 ½ times the removal performance of a standard dirt separator.

Insulation shells are available separately for brass models.

Product range

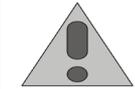
- 5462 Series DIRTCAL® dirt separator with NPT threaded connections, sizes 3/4" - 2"
- 5462 Series DIRTCAL® dirt separator with sweat connections, sizes 1" - 2"
- 5462 Series DIRTCAL® dirt separator with press connections, sizes 1" - 1 ¼"
- 5463 Series DIRTMAG® magnetic dirt separator with NPT threaded connections, sizes 1" - 2"
- 5463 Series DIRTMAG® magnetic dirt separator with sweat connections, sizes 1" - 2"
- 5463 Series DIRTMAG® dirt separator with press connections, sizes 1" - 1 ¼"
- 5465 Series Steel DIRTCAL® dirt separator with ANSI flanged connections, sizes 2" - 4"
- 5465M Series Steel DIRTMAG® magnetic dirt separator with ANSI flanged connections sizes 2" - 4"
- NA5465 Series Steel DIRTCAL® dirt separator with ANSI flanged connections (ASME and CRN Registered), sizes 2 - 6"
- NA5465M Series Steel DIRTMAG® magnetic dirt separator with ANSI flanged connections (ASME Registered) sizes 2" - 6"
- CBN5462 Series Insulation shells for DIRTCAL® series 5462 and DIRTMAG® series 5463, sizes 3/4" - 2".

SAFETY INSTRUCTION

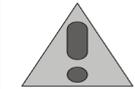


This safety alert symbol will be used in this manual to draw attention to safety related instructions. When used, the safety alert symbol means.

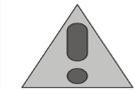
ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED! FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN A SAFETY HAZARD.



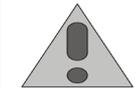
CAUTION: All work must be performed by qualified personnel trained in the proper application, installation, and maintenance of systems in accordance with all applicable codes and ordinances.



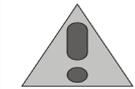
CAUTION: If the DIRTCAL® and DIRTMAG® dirt separator is not installed, commissioned and maintained properly, according to the instructions contained in this manual, it may not operate correctly and may endanger the user.



CAUTION: Make sure that all the connecting pipework is water tight.



CAUTION: When making the water connections, make sure that the pipework connecting the DIRTCAL® is not mechanically over-stressed. Over time this could cause breakages, with consequent water losses which, in turn, could cause harm to property and/or people.



CAUTION: Water temperatures higher than 100°F (38°C) can be dangerous. During the installation, commissioning and maintenance of the DIRTCAL® or DIRTMAG® dirt separator, take the necessary precautions to ensure that such temperatures do not endanger people.

Leave this manual for the user

Technical specifications

Brass body dirt separators and magnetic dirt separators

Connections:	- Main:	3/4", 1", 1 1/4", 1 1/2", 2" NPT female
	- Top:	1"–1 1/4" - 1 1/2" - 2" sweat
	- Drain:	1/2" F (with plug)
		3/4" garden hose connection
		vertical: hose connection
		size 1 inch: 4 3/4"
		size 1 1/4 inch: 5 1/8"
Materials:	- Body, dirt collection chamber and top plug:	brass
	- Internal element:	glass reinforced nylon PA66G30
	- Hydraulic seal:	EPDM
	- Drain valve:	brass
	- Magnet (5463 series):	neodymium rare-earth
Suitable fluids:		water, glycol solution
Max percentage of glycol:		50%
Max working pressure:		150 psi (10 bar)
Temperature range:		32–250°F (0–120°C)
Particle separation capacity:		to 5 µm (0.2 mil)
Ferrous impurities separation efficiency (magnetic models):		up to 100% removal

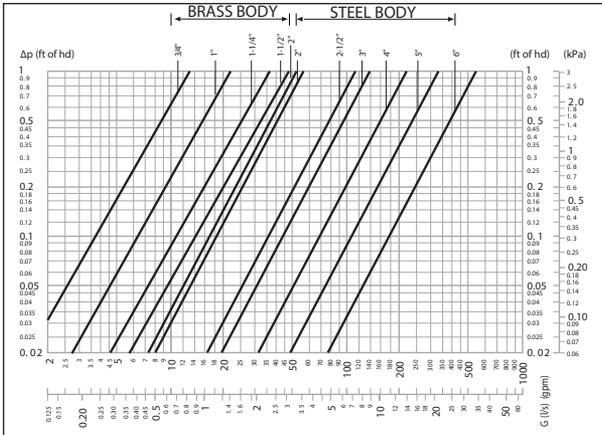
Steel body dirt separators and magnetic dirt separators

Connections: - Main: 2", 2 1/2", 3", 4", 5", 6" ANSI B16.5 150 CLASS RF Flanged
 - NA5465, NA5465M 2", 2 1/2", 3", 4" ANSI B16.5 150 CLASS RF Flanged
 - 5465, 5465M 2", 2 1/2", 3", 4" ANSI B16.5 150 CLASS RF Flanged
 - Top: 3/4" M (with plug)
 - Drain: 1" NPT

Materials: - Body: epoxy resin painted steel
 - Int. element: stainless steel
 (5465M, NA5465M) stainless steel and HDPE
 - Hydraulic seal: non-asbestos fiber
 - Drain valve: brass
 - Magnet (M series): neodymium rare-earth
 - Magnet probe drywell: brass

Suitable fluids: water, glycol solution
 Max percentage of glycol: 50%
 Max working pressure: 150 psi (10 bar)
 Temperature range without insulation: 32–270°F (0–132°C)
 Particle separation capacity: to 5 µm (0.2 mil)
 Ferrous impurities efficiency(magnetic models): up to 100% removal

Hydraulic characteristics



FLOW RATE (DIRTCAL® steel body)							
	Size	2"	2½"	3"	4"	5"	6"
4.0 f/s	GPM	37	63	95	149	259	380
10.0 f/s	GPM	89	150	227	355	816	904
	Cv	88	176	211	328	520	842

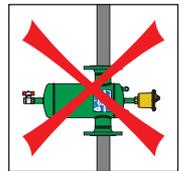
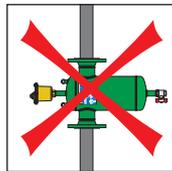
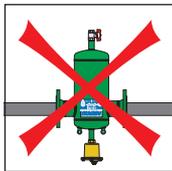
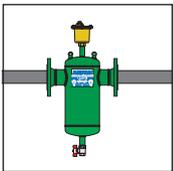
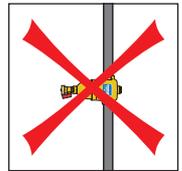
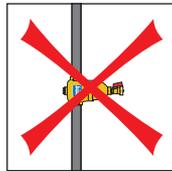
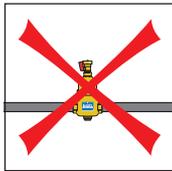
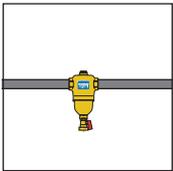
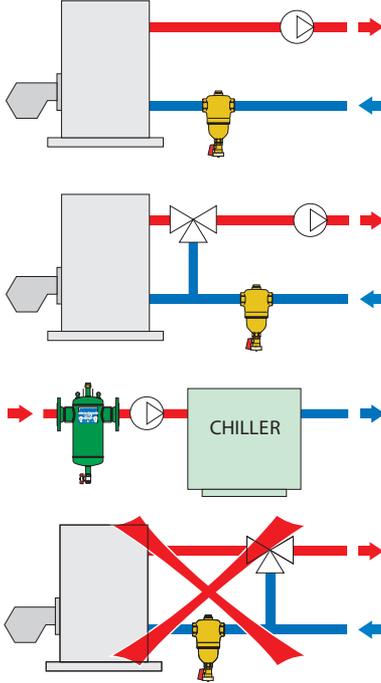
FLOW RATE (DIRTMAG® steel body)							
	Size	2"	2½"	3"	4"	5"	6"
4.0 f/s	GPM	37	63	95	149	259	380
	Cv	88	176	211	328	520	842

FLOW RATE (Brass body)							
	Size	¾"	1"	1¼"	1½"	2"	
4.0 f/s	GPM	6	9	15	24	36	
	Cv	19	32	56	73	81	

Installation

The dirt separator must always be installed in a vertical position, preferably on the return circuit upstream of the boiler (or chiller). This enables it to intercept dirt particles already present in the circuit, particularly when it is first started, before they reach the boiler (or chiller).

Flow direction for the DIRTICAL® and DIRTMAG® dirt separators is bi-directional; flow in either direction is permitted.



Draining off dirt and ferrous impurities

The dirt separator collection chamber has a drain valve. Using the handle provided it is possible to drain off the accumulated dirt particles even with the system in operation.

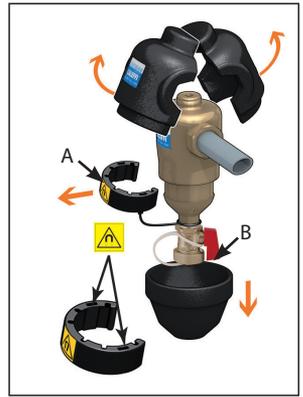
For the brass DIRTMAG®, captured impurities are easily flushed by unclamping the magnetic collar and purging.



Procedure for removing insulation in the DIRTMAG 5463 series; and draining dirt particles in the DIRTMAG 5463 series and 5465M series

WARNING: The symbol  shown on the removable ring (A) indicates the presence of magnets that generate a strong magnetic field. This could cause damages to electronic devices kept in its proximity.

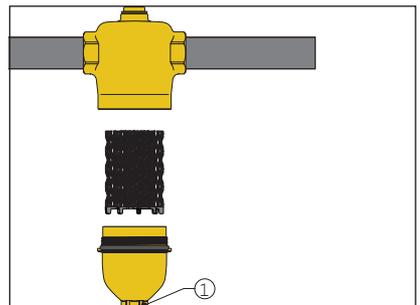
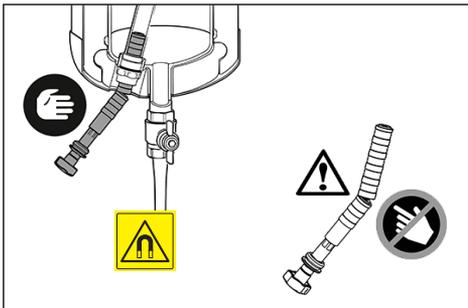
1. Remove the ring (A) containing the two magnets, that during the dirt separation phase retained the ferrous impurities.
2. Carry out the dirt drain of operation by opening the ball shut-off valve (B).



To purge the ferrous impurities in the steel DIRTMAG®, the flexible magnetic stack is removed from the brass dry-well and, with the system still running, the drain valve is opened. Aided by the system pressure, the dirt and ferrous impurities, including magnetite flushes out quickly and effectively.

Maintenance

To perform maintenance, simply use a 26 mm hexagon wrench (1) to unscrew the dirt collection chamber, of the brass DIRTCAL® and DIRTMAG®, to which the inner mesh element is connected for removal and cleaning.

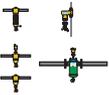
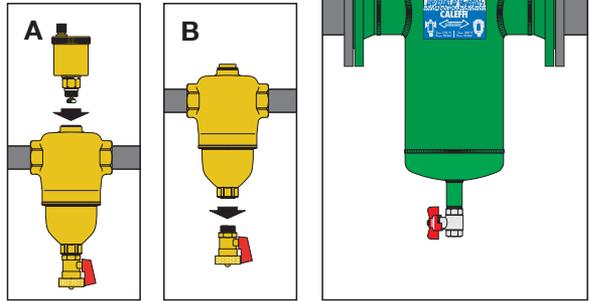


Use of top connector

The connector on top of the dirt separator can be used for optional installation of an automatic air vent valve, Caleffi code 502243A for the threaded or sweat versions- 5462 and 5463 Series (A), replacing the standard 1/2" NPT Male plug (pn NA10044). Use Caleffi code 501502A for the flanged version 5465 and 5465M Series (C) -replacing the standard 3/4" NPT End Cap (pn 41525).

Use bottom connector

The dirt separators come complete with drain valves installed on the bottom port: Caleffi code 538402 FD for horizontal threaded or sweat versions- 5462 and 5463 series (A), code NA39753 for the flanged version - 5465, 5465M, NA5465, and NA5465M series (C).



Safety

The dirt separator must be installed by a licensed plumber in accordance with national regulations and/or relevant local requirements.

Make sure that all connecting joints are water tight.

When making pipe connections take care not to damage the thread in the body of the valve by over tightening. Take care not to apply too much force to the body of the valve when making pipe connections.

Water temperatures greater than 120°F may cause serious burns. When installing, using and maintaining dirt separators take appropriate measure to ensure that these temperatures do not cause harm to persons.

Leave this manual at the service of users for their use



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