

5463 dirtmag[®] 5483 dirtmag[®]

brass dirt separators



PTC
International
Application
Pending

altecnic

5463 & 5468 dirtmag® brass dirt separators



Application

In heating and chilled water systems the circulating water will undoubtedly contain debris which entered the pipework during site storage and construction.

The debris may consist of pipe scale, thread turnings, rust particles, thread sealing tape or jointing paste and air borne dust particles.

If left within the pipework this debris may cause erosion to bends and fittings, and cause damage to pumps and control valves. Modern systems contain many small control valves in which the seats could become damaged or blocked, these types of valve require a clean system to work efficiently.

Dirt separators are an efficient way of removing debris and are capable of removing small particles down to 5 µm (microns) in size.

Debris is collected in the large chamber allowing longer periods between cleaning, which can be done whilst the system is operating.

Dirt separators if cleaned regularly have a low pressure loss characteristic, important for reducing energy demands and on going running costs.

Design

The Dirtmag® dirt separator is manufactured from brass with an internal filter element and external magnet.

The magnet is positioned around the body below the flow line for improved collection of ferrous particles.

The conventional method is to position the magnet inside the collection chamber but the Dirtmag® has the magnet positioned around it, helping to maintain a low pressure loss.

Available for installation in horizontal or vertical pipes.

Supplied with female threaded connections, also available with 22 and 28 mm compression ends for vertical pipes.

Supplied with parallel threaded ends complying with BS EN ISO 228-1 and hose union ball blow down valve.

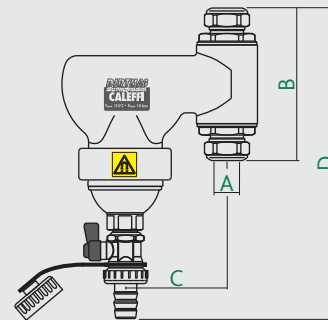
Top connection threaded ½" female supplied with blanking plug.

Construction Details

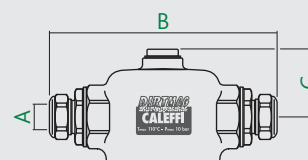
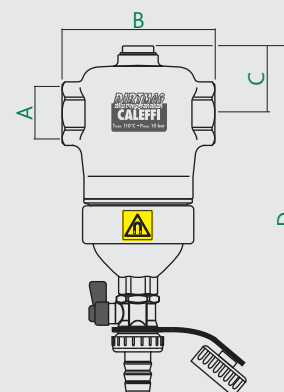
Component	Material	Grade
Body	Brass	BS EN 12165 CB753S
Dirt Collection Chamber	Brass	BS EN 12165 CW617N
Top Plug	Brass	BS EN 12164 CW614N
Internal Element		
Seals	EPDM	
Blowdown Valve	Brass	BS EN 12165 CW614N
Magnet	2600 G	
Insulation	closed-cell PE-X	
Fire Resistance	class B2	(DIN 4102)

Product Code	Pipe Orientation	Size	Connections
546802	Vertical	22 mm	comp. x comp.
546803	Vertical	28 mm	comp. x comp.
546305	Horizontal	¾"	screwed iron f x f
546306	Horizontal	1"	screwed iron f x f
546307	Horizontal	1¼"	screwed iron f x f
546308	Horizontal	1½"	screwed iron f x f
546309	Horizontal	2"	screwed iron f x f
546315	Horizontal	¾"	screwed iron f x f with insulation
546316	Horizontal	1"	screwed iron f x f with insulation
546317	Horizontal	1¼"	screwed iron f x f with insulation
546318	Horizontal	1½"	screwed iron f x f with insulation
546319	Horizontal	2"	screwed iron f x f with insulation
ALT-546322	Horizontal	22 mm	comp. x comp.
ALT-546328	Horizontal	28 mm	comp. x comp.

Dimensions



Prod Code	A	B	C	D	kg
546802	22	121	80	243	2.15
546803	28	121	80	243	2.15



Prod Code	A	B	C	D	kg
546305	G¾"	110	49	248	1.90
546306	G1"	110	49	248	1.90
546307	G1¼"	124	49	268	2.25
546308	G1½"	124	49	268	2.25
546309	G2"	127	55	268	2.39
ALT-546322	22	170	49	248	2.20
ALT-546328	28	186	49	248	2.40

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Technical Data

Medium:	water glycol solution
Max. percentage of glycol:	50%
Max. working pressure:	10 bar
Temperature range:	0 to 110°C
Minimum particle size:	5 µm

Operating Principle

Dirt separators operate by a combination of physical principles.

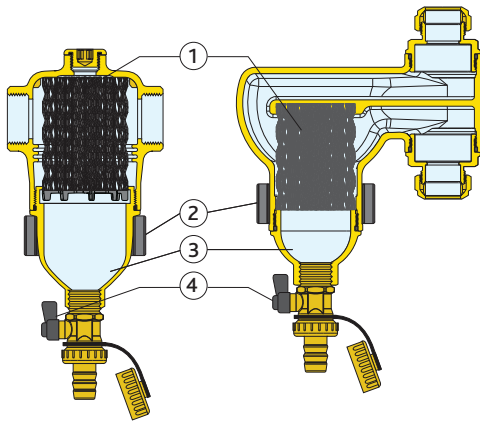
The internal element (1) is constructed to form a radial net shaped element.

Debris in the water strikes the element, causing it to drop to the bottom of the body (3).

The larger internal volume of the Dirtmag®, compared with the area of the pipe, reduces the velocity of flow and with the aid of gravity and the magnetic element (2) helps to collect the debris.

The collected debris can be discharge from the dirt separator whilst the system is in operation by opening the blow down valve (4) and flushing through the debris.

The flow can be bi-directional though the Dirtmag®.



Separation Efficiency

The effectiveness of any device to separate and collect particles of debris from a flowing liquid depends upon:-

- 1 The larger the particles the more effective the device.
- 2 If the flow velocity reduces the particles separate and fall more easily.
- 3 The magnet attracts ferrous particles to fall and collect.
- 4 The number of times the liquid re-circulates through the device.

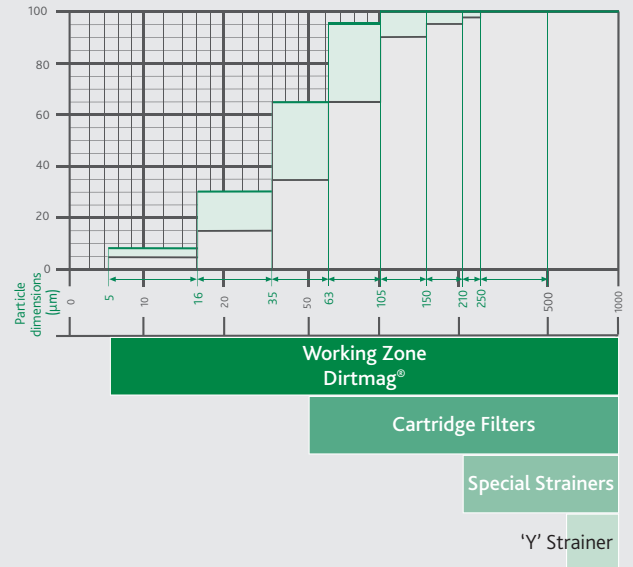
The design of the Dirtmag® enables it to collect particles down to a minimum size of 5 µm = 0.005 mm.

The chart summarises tests conducted to illustrate how quickly particles are collected.

After only 50 circulations, approximately one day of operation, 100% of particles 100 µm = 0.1mm in size and approximately 80% of all particles had been collected.

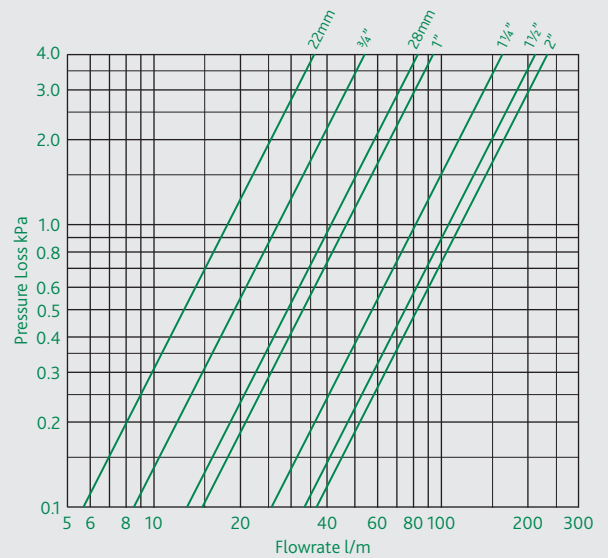
Continued circulation gradually leads to the virtual removal of all particles.

Dirt Separation Efficiency - Particle Size



Tests conducted by TNO - Science and Industry Laboratory (NL)
*Test results based on Horizontal Models only

Pressure Loss Chart



Size	22mm	28mm	¾"	1"	1¼"	1½"	2"
Kv - m³/h	10.7	24.7	16.2	28.1	48.8	63.2	70.0

The maximum recommended flow velocity inside the pipe is 1.2 m/s. The following shows the maximum flow rates to meet this requirement.

Size	Ø22	Ø28	¾"	1"	1¼"	1½"	2"
l/m	23.1	38.8	26.5	42.4	73.6	99.7	159.4

Based on BS EN 1057 copper tube and BS EN 10255 steel pipe.

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Lower Pressure Loss

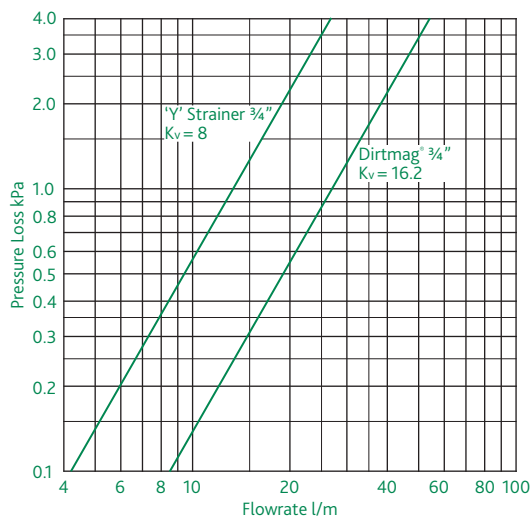
A conventional 'Y' strainer performs its function via a mesh or perforated sheet element, the size of the holes selected to collect the smallest specified particle size.

The strainer therefore has an initial pressure loss which increases as the basket fills, especially when more than half full.

The dirt separator functions by particles striking the element and dropping into the collection chamber.

The pressure loss is greatly reduced and is not affected by the amount of debris collected.

Note: Both devices require cleaning as part of a planned maintenance programme.



Blowdown Valve

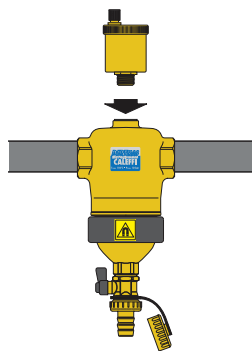
Dirtmag[®] dirt separators are equipped with a hose union ball isolating blowdown valve.

This valve allows debris in the collection chamber to be flushed through with the system still running, by connecting a suitable hose to the union connection and opening the ball valve.

A blanking cap is provided for long term security.

Automatic Air Vent

The threaded connection on the top of the horizontal version can be used to install an automatic air vent, the Altecnic Minical[®] code 502040.



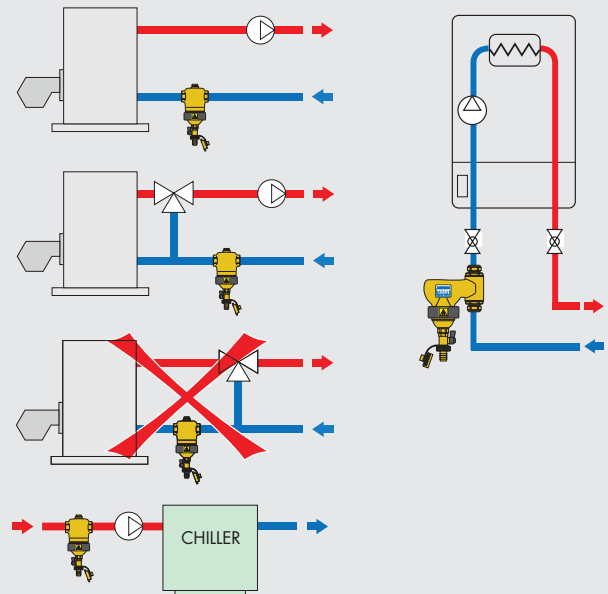
Installation

Dirt separators are easy to install and should preferably be installed in the return circuit upstream of the boiler.

This enables debris already present in the pipework to be intercepted before it reaches the boiler, particularly during system flushing.

Dirt separators should always be installed as shown with the blowdown valve beneath the collection chamber.

Dirtmag[®] dirt separator are bi-directional and the appropriate model should be selected for horizontal or vertical pipework.



Insulation

The Dirtmag[®] for horizontal pipes can be supplied with an individually moulded insulated cover to minimise heat loss and thus save energy.

The insulated cover can be fitted easily and quickly and does not require removal when using the blowdown valve.



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