

# 5469 dirtcal<sup>®</sup>

brass dirt separator



**WRAS**  
APPROVED  
PRODUCT

**altecnic**

# 5469 dirtcal<sup>®</sup> brass dirt separator with compression ends



## 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 Dirtcal<sup>®</sup> dirt separator is manufactured from brass with a stainless steel internal element.

Designed for installation in vertical pipes.

Supplied with compression ends complying with BS EN 1252-2 for use with R250 (half hard) copper tube..

Low pressure loss.

Supplied with a hose union ball blow down valve.

## Construction Details

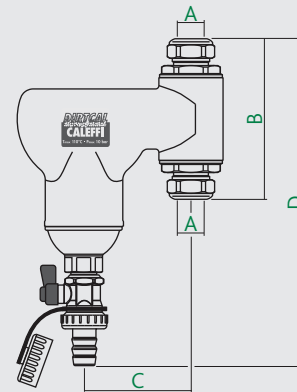
Component	Material	Grade
Body	Brass	BS EN 12165 CB753S
Dirt Collection Chamber	Brass	BS EN 12165 CW617N
Internal Element	Stainless Steel	
Seals	EPDM	
Blowdown Valve	Brass	BS EN 12165 CW614N
Blanking Plug	Brass	BS EN 12164 CW614N

Product Code	Pipe Orientation	Size	Connections
546902	Vertical	22mm	comp. x comp.

## 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
Flow Co-efficient - Kv:	17.0

## Dimensions



Prod Code	A	B	C	D	E	kg
546902	22	22	121	80	233	1.95

## 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 (2).

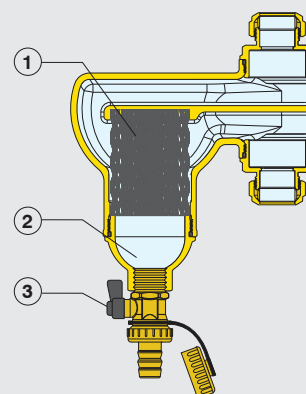
The larger internal volume of the Dirtcal<sup>®</sup>, compared with the area of the pipe, reduces the velocity of flow and with the aid of gravity helps to collect the debris.

The collected debris can be discharge from the dirt separator whilst the system is in operation by opening the blow down valve (3) and flushing through the debris.

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.

The flow can be bi-directional though the Dirtcal<sup>®</sup>.



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## 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 number of times the liquid re-circulates through the device.

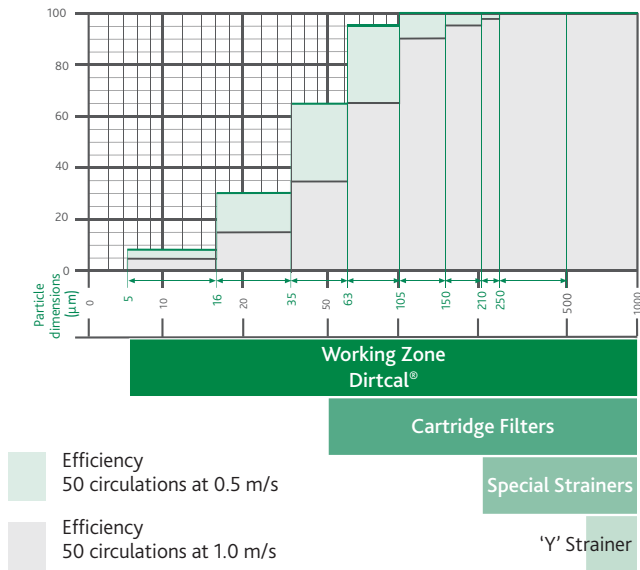
The design of the Dirtcal<sup>®</sup> enables it to collect particles down to a minimum size of 5 µm = 0.005 mm.

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



Efficiency  
50 circulations at 0.5 m/s

Efficiency  
50 circulations at 1.0 m/s

$$\text{Efficiency (\%)} = \frac{\text{Separated quantity}}{\text{Initial quantity}} \times 100$$

Tests conducted by TNO - Science and Industry Laboratory (NL)

## 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.

## E & O.E

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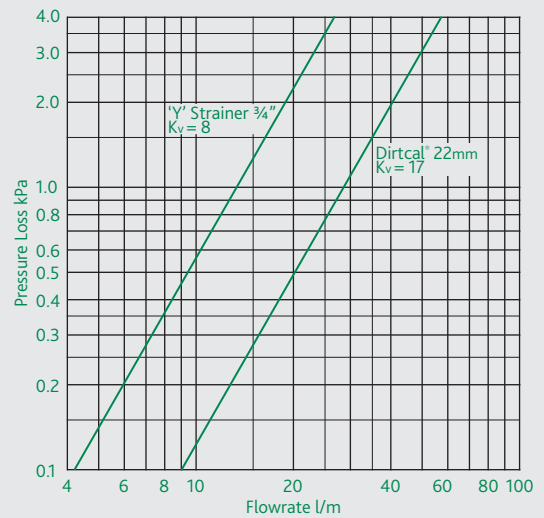
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## Pressure Loss and Comparison Chart



The maximum recommended flow velocity inside the pipe is 1.2 m/s.  
For 22 mm copper pipe complying with BS EN 1057 = 27.8 l/m

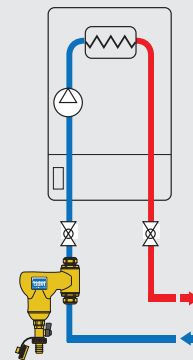
## Installation

The dirt separator is 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.

The vertical dirt separator should always be installed as shown with the blowdown valve beneath the collection chamber.

Dirtcal<sup>®</sup> dirt separators are also available for horizontal pipework.



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