

## Choosing the Right System Filter

### Sentinel System Filter and Magnetic Filters Compared

#### Introduction

Most poorly maintained or untreated hot water central heating systems suffer from the accumulation of thick sludge deposits. These deposits are usually a mixture of black iron oxide corrosion products, water hardness scales, casting sand, welding debris, non-ferrous metal flakes, paint particles and other undesirable material. The sludge particles can range in size from very large to less than a micron. The smaller particles typically bond to the interior surfaces of components, often causing wear and premature failure of pumps and valves. The heavier types of debris can settle at points of low water flow causing blockages and upsetting the balance of the system, resulting in loss of boiler efficiency and system effectiveness.

Although much of typical system debris contains iron which can be removed by in-line filter units containing magnets, a significant proportion of this suspended material is non-magnetic and will not be attracted to a magnet. Filter units based solely on a magnetic effect fail to remove most of the circulating debris. A filter which can remove non-magnetic as well as magnetic material provides the most effective way to clean system circulation water.

The following discussion reviews both types of filter, the ordinary magnetic filter and the Sentinel System Filter.

#### Magnetic Filters

A proportion of the undesirable particulate material circulating in a central heating water circuit is black iron oxide and is therefore magnetic in nature (so called 'magnetite') and will

be attracted to a strong magnet. A magnetic filter will therefore remove such suspended materials, helping to protect the heating system from grinding and wearing, with the benefit of increased reliability. However, such filters only remove magnetic material, leaving the greater proportion of non-magnetic debris to continue to circulate and accumulate.

Magnetic filters are designed to remove magnetic particulates from suspension, whilst maintaining the flow rate. However, the simple design of many such filters allows the central magnetic core to become overloaded with debris which can *reduce* the flow rate and even block the unit. Typically, the filter unit needs to be completely dismantled to clean and physically remove the accumulated sludge, which can prove to be a frequent requirement if deposit levels are high.

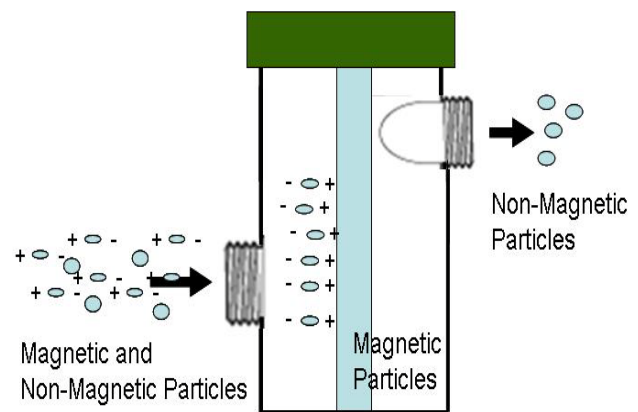


Fig 1. Operation of a Magnetic Filter (schematic)

In-line installation is usually easy, but isolation valves or a bypass loop is necessary to be able to clean the unit.

# Technical Information

A position that allows access for servicing should be selected. Magnetic filters should not be fitted between boiler & vent pipe.

## Sentinel System Filter

The unit is designed to be used in conjunction with the Sentinel range of chemical cleaning and inhibitor products for the control and removal of *all* types of debris commonly associated with wet central heating systems. It provides fast and effective removal of both magnetic *and* non magnetic debris, helping to maintain optimum system operation and efficiency once the flushing and inhibiting process has been performed.

The unit does not rely on magnets, but instead utilises a directed water flow pattern and a special gauze arrangement which together force suspended material down into the bottom of the unit, where it collects ready to be drained away by simply opening the ball valve provided at the base of the unit.

The Sentinel System Filter unit features the following benefits:

- **Removes all types of debris** – The unit filters out all suspended materials, both magnetic and non-magnetic.
- **Optimised flow design** - The unit has been designed to yield a specific flow-through pattern to eliminate blockages whilst ensuring the pressure drop across the unit remains low, providing less strain on the pump and consequently maximising energy-saving.
- **Enhances normal chemical cleaning and treating** – Once the system has been flushed and inhibited, the use of the filter ensures any remaining magnetic and non-magnetic debris is collected quickly, reducing further risk to system components

- **Easy cleaning and maintenance** - Cleaning the unit is easy via a built-in ball valve at the base of the unit to allow it to be emptied without the need for the system to be drained. No dismantling is necessary.
- **Vertical Mounting** – Allows the unit to be sited easily.

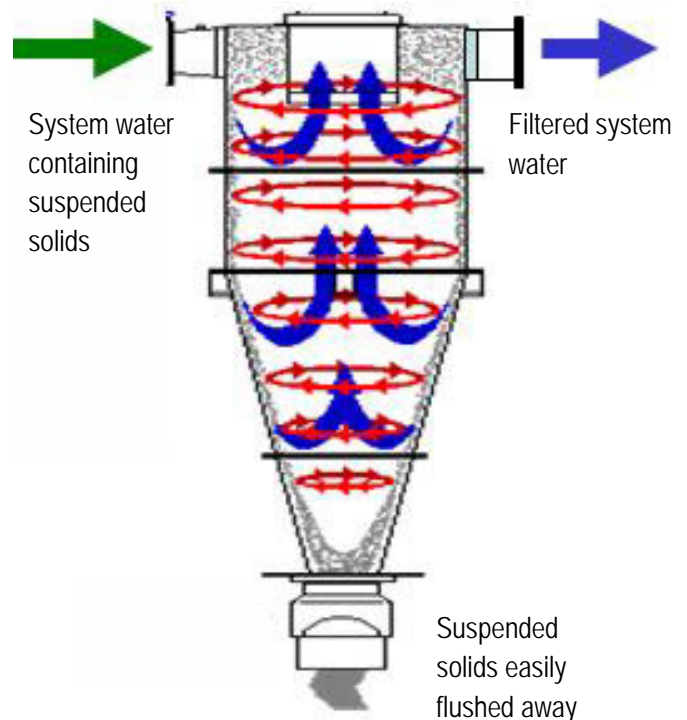


Fig. 2 Operation of the Sentinel System Filter (schematic)

## Comparison of Sentinel System Filter with Magnetic Filters

Feature	Sentinel System Filter	Magnetic Filter
Suitable for all types of Heating Systems	Yes	Yes
Proven technology	Yes	Yes
Removes system debris rapidly	Yes	No
Removes magnetic particles	Yes	Yes
Removes non-magnetic particles	Yes	No
Eliminates sludge build up in the system	Yes	Partially
Will not block	Yes	No
Pressure drop across the unit remains low	Yes	No
Need to dismantle to remove the collected debris	No	Yes
Relies on magnets	No	Yes
Compact design	Yes	No
Easy to Install in a vertical position	Yes	Yes
Can be used in conjunction with complete Sentinel Range of products	Yes	Yes