

# The Worcester Greenstar System Filter

An innovative solution for reducing  
system contaminants



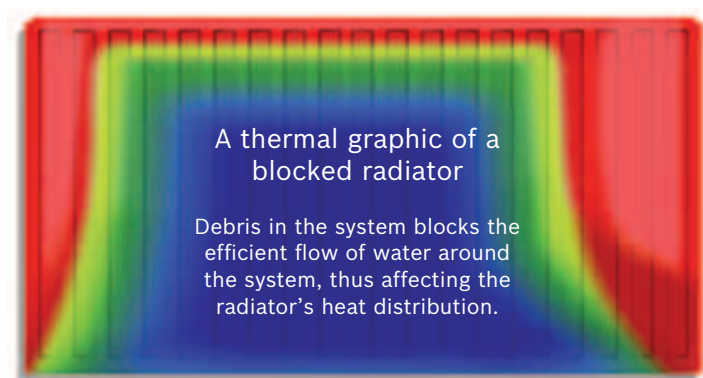
# Protect your customer's heating system with the **Greenstar System Filter**

Modern condensing boilers are precision engineered and designed to run with a clean water-heating system.

Over time, dirty system water will damage a boiler and its components, causing failures which can significantly reduce overall heating efficiency. To help maintain clean system water, Worcester have introduced the Greenstar System Filter, a universal, easy-to-install and service solution, that will help maximise the life of any boiler or heat pump that it is installed with.

## **Damaged** boiler and system components

Contaminated system water is a serious problem for homeowners. Central heating systems can quickly be damaged by a wide range of unwanted system deposits when the system has not been thoroughly flushed and inhibited. Harmful deposits can range from tiny particles such as magnetite and limescale, to larger solder debris and non-ferrous metal flakes. They can quickly cause blockages and/or damage to key components within the boiler and heating system. Heat exchangers can also become blocked by the system contaminants, while components such as pumps and valves will also suffer, increasing the chance of system failure.



## **Reduced** efficiency

When a system is not protected, a build-up of iron oxide (rust) or non-magnetic deposits can occur within just 3 weeks, resulting in significant energy efficiency losses and fuel wastage. This reduction in efficiency can reduce a boiler's SEDBUK efficiency rating from band A down to band D. Such a reduction causes the boiler to work harder when trying to deliver the desired temperature, further increasing the risk of component failure.

Within a non-filtered system, radiators can become blocked, reducing the heat transfer from the system into the property. This dramatically affects the efficiency of the central heating system and the heating comfort the homeowner receives.

With a Greenstar System Filter, homeowners can save up to 6% per year on heating energy bills\* whilst also benefiting from a warmer home and a quieter heating system. A Greenstar System Filter will also help protect the environment by reducing a home's CO<sub>2</sub> emissions.

\*Independent research carried out by GASTEC at CRE.

# A highly effective solution from the brand you can trust



The Worcester Greenstar System Filter has been specifically designed to combat the damaging effects of system debris and pollutants, allowing homeowners to protect their boiler or heat pump for a fraction of its cost.

## Powerful **internal magnet**

At the centre of this innovative design is a highly powerful internal magnet that removes the metallic debris that is present in the system heating water. The central location of the magnet within the system filter ensures that magnetite is collected quickly and retained, maximising the overall protection of the heating system.

**The Greenstar System Filter has been extensively tested in systems proving its effectiveness in removing: iron oxide, magnetite, limescale, casting sand, welding debris, non-magnetic metal flakes, paint particles and other system pollutants.**

**The filter has been specified, designed and tested to Worcester's exacting quality standards. For example, the O-rings are specified using the same compounds that are found on our market leading boilers. The robust filter body has been pressure tested to 45 bar.**

## **High first pass** collection of debris

Any non-magnetic debris is caught by the twin-action cyclonic trap, a proven technology that offers a capacity to collect up to 200g of magnetite a year.

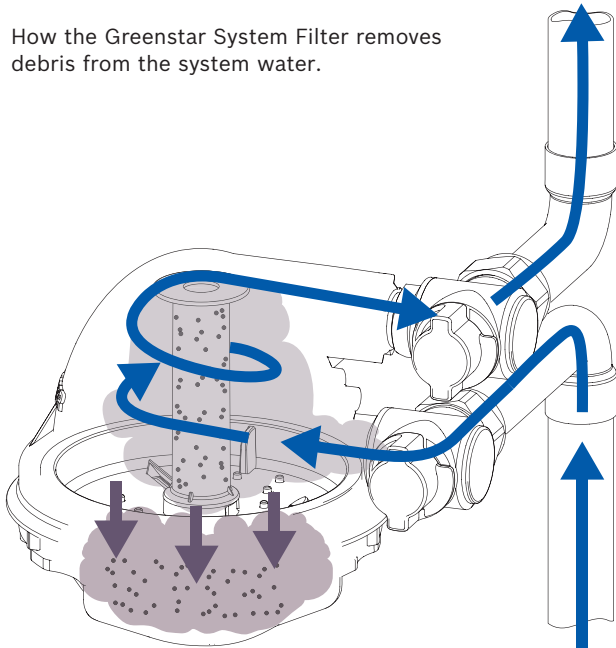


# Principle of operation

## Effective cylindrical design

The effectiveness of the Greenstar System Filter is based on its innovative cylindrical design, which allows the maximum possible surface area of the magnet to be exposed to the heating system water.

How the Greenstar System Filter removes debris from the system water.



This cylindrical shape channels the water in an upwards spinning motion, assisting in the twin-action filtering process, whilst also providing a large capacity for captured system pollutants.

## Maximum debris collection through cyclonic motion

As the diagram demonstrates, the Greenstar System Filter leads system water directly to the highly powerful magnet that is integrated inside. This has the effect of forcing water around the magnet causing the water to move upwards in a cyclonic motion. This motion maximises the contact of the system water with the magnet, whilst also increasing the time that the water remains within the filter. In this process, any magnetic system pollutants or debris will be drawn onto the magnet sheath and will remain there until the filter is cleaned.

Non-magnetic debris are forced over the cyclonic trap which has specifically designed surface inlets that allow both small and large particles to be trapped within the base of the filter. Importantly these inlets are designed in-line with the spinning motion of the system water flow, ensuring no particles escape back into the system.

| Features   | Benefits   |
|--|--|
| Highly effective filter                                      | Safeguards the boiler against damage and protects the efficiency of the system. End users can save up to 6% a year on energy bills*  |
| Prevent blockages in radiators                               | A warmer home and quieter system   |
| High powered internal magnet                                 | Proven technology that can capture up to 200g of magnetic debris   |
| Cylindrical design   | Increased performance – better installation options  |
| Twin-action – magnetic and non-magnetic filtration           | Instantly effective against a wide range of system debris  |
| No power consumption or moving parts                         | No electrical wiring connection or supply needed. Zero running costs and no failure of components                                    |
| Can be installed under the boiler or away from the appliance | Flexibility  |
| One-way valve for adding system chemicals                    | Removes the need to isolate a section of the system when carrying out servicing and maintenance                                      |
| Worcester, Bosch Group specification and design              | Reliability of components and filter   |
| 2 year parts guarantee                                       | Complete peace of mind for the end user. If installed with a Worcester boiler or heat pump, the longest guarantee length will apply. |

| Product info |               |
|--------------|---------------|
| Part number  | 7 716 192 609 |

\*Independent research carried out by GASTEC at CRE.

# An **easy to fit** solution for new and existing installations

Although the Greenstar System Filter shares its name with our high efficiency gas and oil-fired boilers, it can also be fitted to any typical domestic heating system, making it compatible with a wide range of gas and oil boilers as well as heat pumps.

The compact low-profile design, and easy-to-maintain base section of the Greenstar System Filter make it ideally suited for installation directly underneath a wall-hung Greenstar gas-fired boiler. The filter sits in front of the piping, reducing the need for complicated pipe runs and has the

added benefit of including two pre-cut and formed pipe tails. The system end of the pipe tails are pre-formed to allow a 22mm pipe to be pushed into place and soldered directly, with no need for extra fittings, allowing a quick and easy installation.



1. Greenstar System Filter comes with two pre-cut and bent pipe tails for easy installation.



2. Measure, mark and cut out a 70mm section of pipe. The two copper elbows are different, the shorter elbow is fitted on the pipe that returns to the boiler. Prepare the elbows supplied and solder onto the ends of the pipes.



3. Slide the system filter onto the pipework and hand tighten, following the flow direction indicated on the isolation valves.



4. Tighten the compression fittings firmly, but do not overtighten. Then, using a suitable spanner, open the isolation valves. This will then allow you to refill the heating system and run the central heating system and check for leaks.

**When a new system is installed, the system should be flushed and cleaned, inhibitors added and a magnetic system filter should be fitted. A Worcester Greenstar System Filter is recommended on a new boiler installation to prolong the life of key boiler components.**

# ...And easy to service too

The Greenstar System Filter has been designed to make servicing and maintenance simple by using the special spanners supplied and a radiator bleed key.



1. Simply isolate the filter before servicing.



2. Open the bottom of the filter with a radiator bleed key to relieve any pressure from the body.



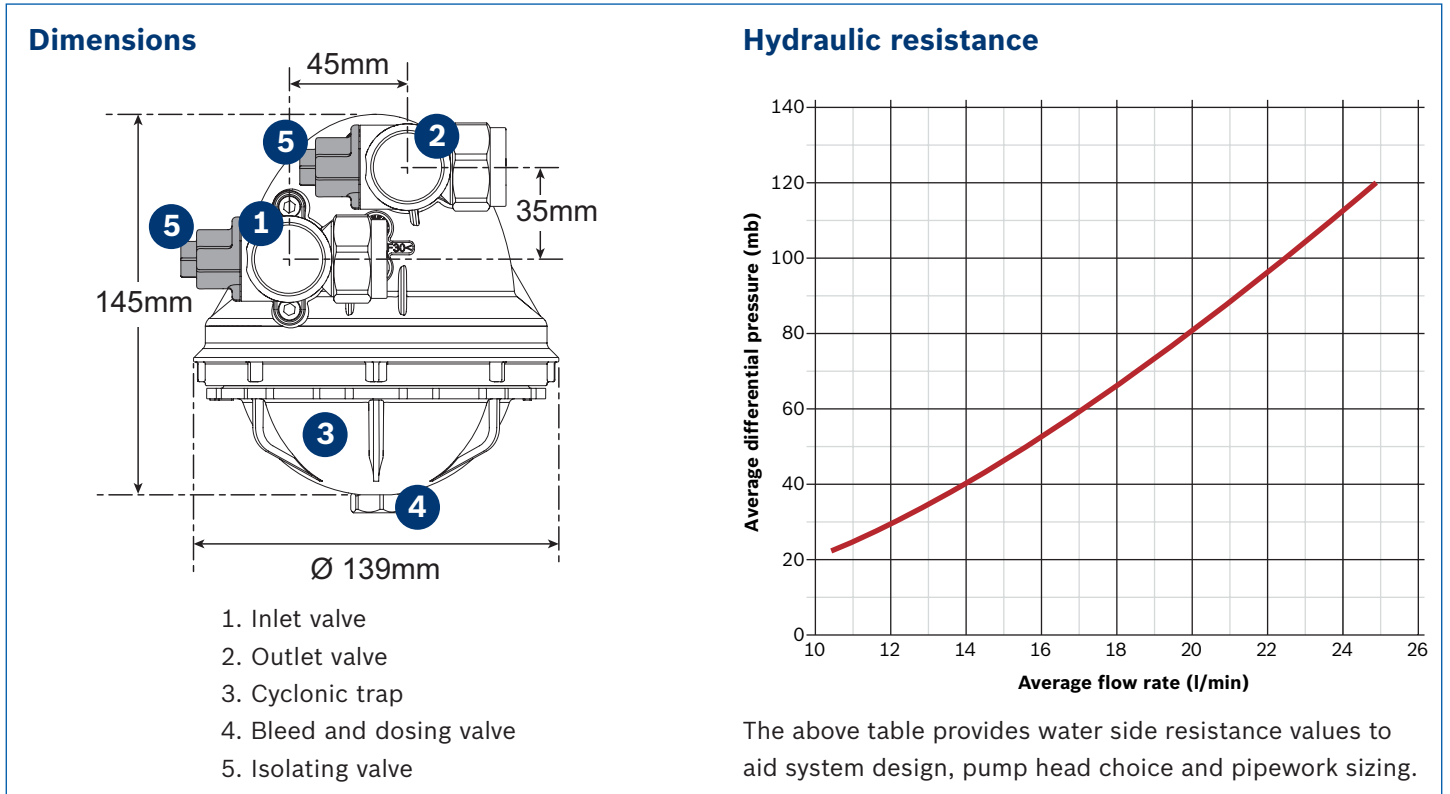
3. The specially supplied spanners are used to open the filter.



4. With a powerful internal magnet, magnetic debris will be collected even on a relatively new system.

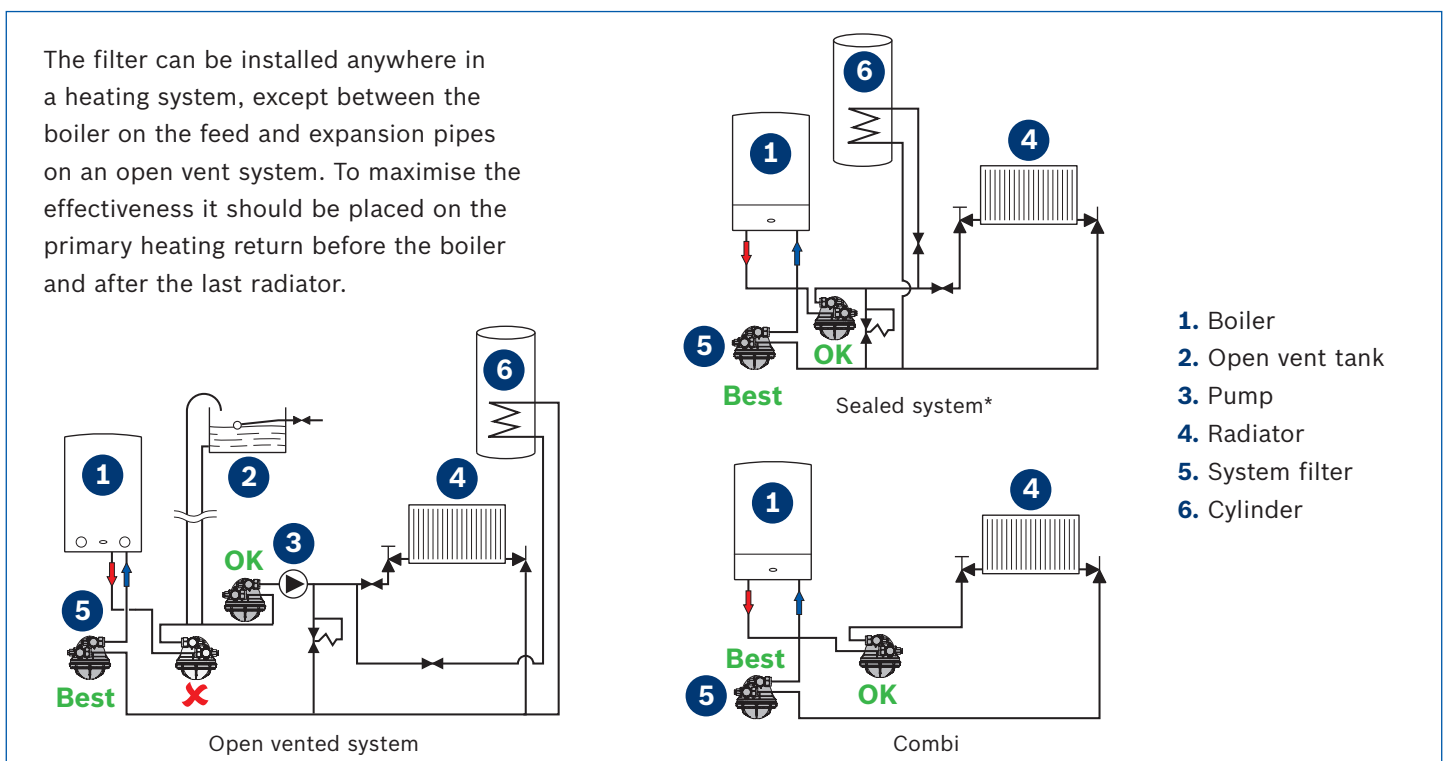
# Specification

The Worcester Greenstar System Filter incorporates a powerful internal magnet with a cyclonic trap that removes both magnetic and non-magnetic particles. The filter has been designed for a typical domestic heating system and is ideally sized for heating systems with a 22mm diameter heating return. The system filter can be installed on larger heating systems with a 28mm diameter return pipe providing there is sufficient residual pump head to overcome the hydraulic resistance at higher flow rates (see graph below).



# System installation

The filter can be installed anywhere in a heating system, except between the boiler on the feed and expansion pipes on an open vent system. To maximise the effectiveness it should be placed on the primary heating return before the boiler and after the last radiator.



\*When a system boiler has an internal diverter valve and two returns, the system filter should be put on the heating return and not the cylinder return.

# Additional **system solutions** from Worcester



## **Worcester CondenseSure**

The Worcester CondenseSure helps prevent external condensate pipes freezing, even in the harshest winter weather conditions.

- Protects against freezing condensate at -15°C for 48 hours
- Low cost and easy to install
- No power consumption or moving parts
- Can be installed on new or existing installations
- Works with any condensing boiler.



## **Worcester Keyless Filling Link**

The new Worcester Keyless Filling Link has been developed to make Greenstar combi boiler system filling quick and easy for both the installer and the end user.

- Quick to install and operate
- Reduced risk of call-outs to top up the system
- Added value for the end user
- Guaranteed Worcester quality
- WRAS approved.



## **Greenstar Wiring Centre**

Intelligent control of heating and hot water for systems using Greenstar 27Ri and 30Ri regular boilers.

- Pump is wired directly into the Wiring Centre and not to the boiler
- Only one low voltage cable between wiring centre and boiler. Separate mains power supplies may be used
- Simple system-type selector (S or Y plan)
- Clear wiring connections
- Reduces installation time
- IP44 safety rating.

[www.worcester-bosch.co.uk](http://www.worcester-bosch.co.uk)

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