

MAGNETITE IN HYDRONIC HEATING SYSTEMS

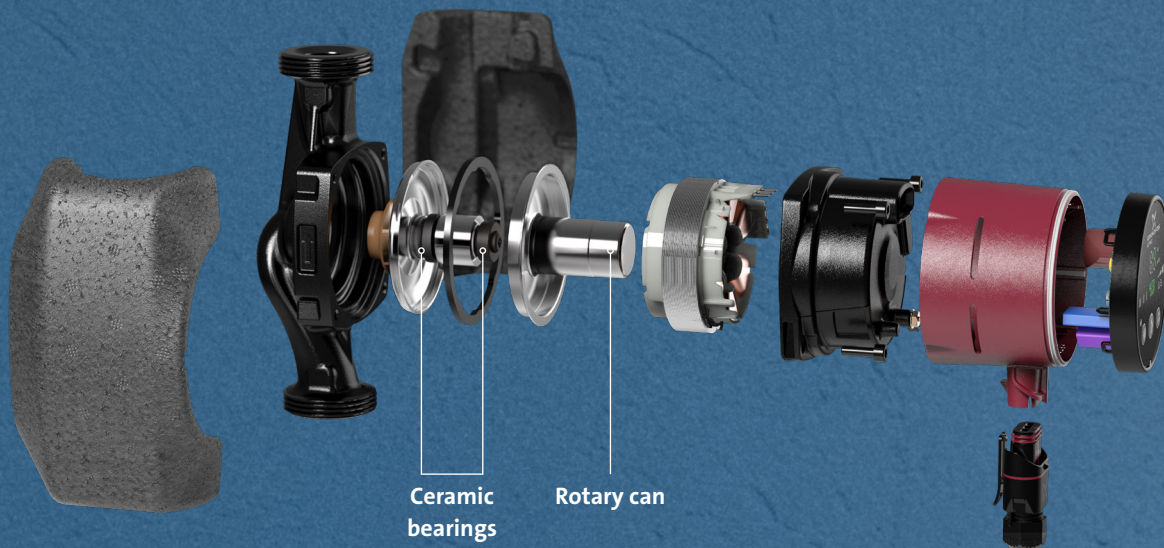
— AND GRUNDFOS CIRCULATOR PRODUCTS

WHAT IS MAGNETITE?

Magnetite, Fe_3O_4 , also known as iron (II, III) oxide or ferrous-ferric oxide, is the most magnetic of all the naturally occurring minerals. It's also the term used for metal fragments found in the water within heating- and hot water systems. It frequently settles as black sludge and is particularly common in lower parts of the heating system.

WHY IS IT A PROBLEM?

Because magnetite is heavier than water, it tends to settle in the pipes and radiators and builds up over time, eventually restricting water flow or blocking waterways altogether.



CERAMIC BEARINGS are made from materials known to be resistant:

- All pump bearings are made from non-magnetic ceramic and carbon materials
- The permanent magnet rotor ensures high energy efficiency while guaranteeing a very strong magnetic field transmission from the stator
- To ensure high immunity towards system impurities, the entire surface of the rotor has is clad in stainless-steel
- The through-going hole in the shaft ensures stable flow, resulting in good radial bearing lubrication and cooling

Flow conditions are designed to minimise large particles entering the **ROTARY CAN** and ensure lubrication and cooling of internal components:

- Components are maintenance free and magnetite resistant
- Small tolerances around the bearings mean very few impurities can enter the rotary can
- Construction obstacles prevent particles from flowing freely
- Minimal flow circulates in the rotary can, providing just enough liquid for the components to be maintenance-free
- Cooling and lubricating properties are always maintained

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HANDLE THE PROBLEM WITH GRUNDFOS CIRCULATORS

TIPS AND FACTS

- Magnetite is the result of corrosion and only occurs when oxygen is present in a “closed” HVAC system. High levels could indicate a leak somewhere
- Ideally, the pH value of heating system water should be alkaline (pH 8.2-9.5) to prevent the build-up.
- Grundfos circulator products are built and tested to resist large amounts of magnetite and general dirt particles
- We recommend that water used in the heating system meets the requirements of accepted water quality standards, such as the German water quality standard VDI 2035



Ceramic shaft used by Grundfos in our circulators



Stainless steel shaft