

# magnetic<sup>®</sup> Demineralised heating water basic mobil plus Instructions for Use

Installation  
Function  
Operation  
Service



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**magnetic** GmbH & Co. KG  
Am Richtbach 5  
D-74547 Untermünkheim

Tel. +49 7944 94199-0  
Fax +49 7944 94199-19

info@magnetic-online.de  
www.magnetic-online.de

Managing Shareholder:  
Michael Bader

VAT ID No.: DE 255 018 730  
Commercial Register No.: HRA 571362  
Register Court: Stuttgart

# **magnetic<sup>®</sup>** Demineralised heating water The solution for heating system water treatment!



## **Contents**

The function .....	2
Connection type for system filling .....	3
Connection type for circulation demineralisation .....	4
Operating the measuring computer .....	5
Technical data .....	6
Replacing the mixed bed resin .....	7
Calculating the capacity .....	8
Fault correction .....	9

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## The function of the magnetic® basic mobil plus

Heating and cooling systems use water as a medium for heat transfer. The water circulates from the place of heat production to the consumer units and back again. Even though the system always reuses the same water, limescale (calcium carbonate) and other aggressive substances that can damage modern components already get into the closed water system during the first filling.

The filling station removes limescale (calcium carbonate) and aggressive water constituents, like sulphates, nitrates and chlorides, from the filling water. The device works on the basis of a mixed-bed-resin ion exchanger and delivers a water in fully demineralised quality. That allows damage by limescale and corrosion in the heating system to be effectively prevented.

The filling station is equipped with precise measuring devices for the monitoring of the quality and quantity of the pure water production.

This method does not add any chemical additives to the water.  
The device works without an external power supply.



### Precautionary measures:

Work with the filling station may only be performed by trained personnel.

The operating rules in accordance with these instructions must be observed.

The local regulations must be observed for the connection between sanitary systems and heating systems. The device is equipped with a non-return valve and pressure-reducing valve but a pipe isolator (shut-off valve) must also be installed on the inlet side of the filling station if the place of installation is subject to DIN EN 1717 (Germany).

The device is not designed for a permanent connection under pressure.

The valves at the inlet and outlet must be kept closed and may only be opened for the duration of the system filling.

Demineralised water also contains dissolved gases, of which oxygen and carbon dioxide can trigger an initial corrosion process. The gases are forced out through the heating of the water and that is why a test heating of the system as quickly as possible after the filling is recommendable.

## Connection type for system filling

This connection type is suitable for a direct filling of the heating system with demineralised water.

The inlet for the untreated water is located at the rear right side, the outlet of the demineralised water to the heating system is located at the front behind the measuring computer.

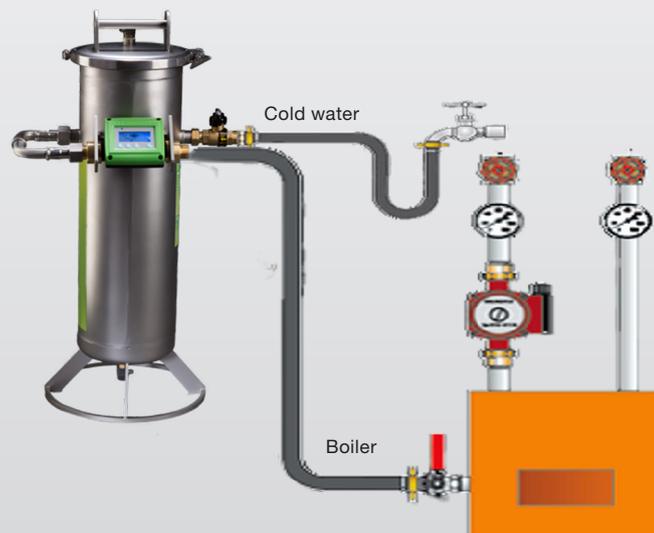
The filling station is equipped with a non-return valve. Untreated water cannot flow through the filling station in the case of an incorrect connection.



A pipe isolator (shut-off valve) must also be installed on the inlet side of the filling station if the place of installation is subject to DIN EN 1717 (Germany).

The filling station may only be pressurised for the duration of the filling. A permanent connection under pressure is not permissible.

Flush out the water content of the cartridge before each use because bacteria can form in the case of a long non-use. When doing that, also check that the water does not accidentally contain mixed bed resin.



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## Connection type for circulation demineralisation

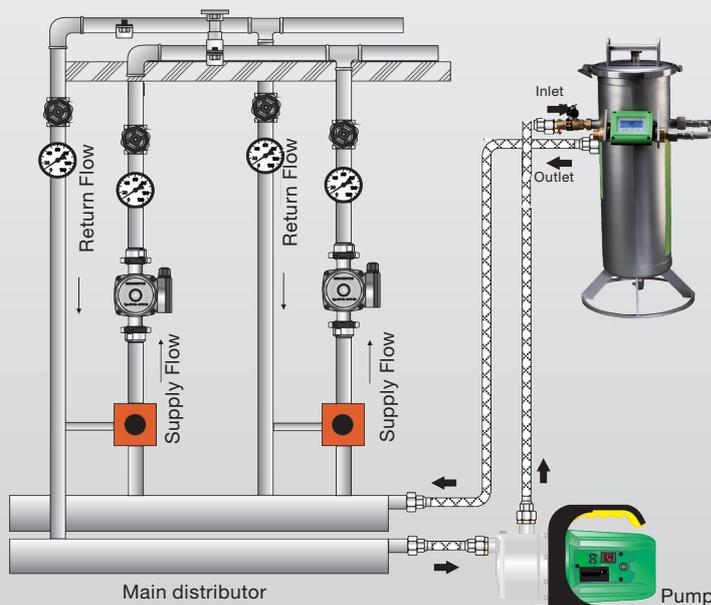
A direct filling via the demineralisation device is unsuitable for heating systems with floor heating systems that can only be vented through flushing. The pump power is not sufficient for forcing the air out of a horizontal pipe. In such a case, we recommend a filling with untreated water and then a circulation demineralisation.

This method is also suitable for a subsequent demineralisation of system water with a too high mineral content in accordance with the specifications of the boiler manufacturer or directives.

For this method, the demineralisation device is integrated into the main circulation of the heating system with the aid of a separate pump (e.g. jet pump, impeller pump, centrifugal pump) and 2 armoured hoses. Which coupling fittings are used for the connection is not of utmost importance, more important is that the circulation pumps are in operation and that all valves are open in order to allow a good mixing of the system water.

The combined meter of the filling station shows when the resin is exhausted. The progress of the demineralisation of the system water in the case of a circulation demineralisation can only be determined with a second measuring computer or with a water sample analysis. The filling station is equipped with a non-return valve. The untreated water cannot flow through the filling station in the case of an incorrect connection. The filling station must be connected to the pressure side of the ancillary pump.

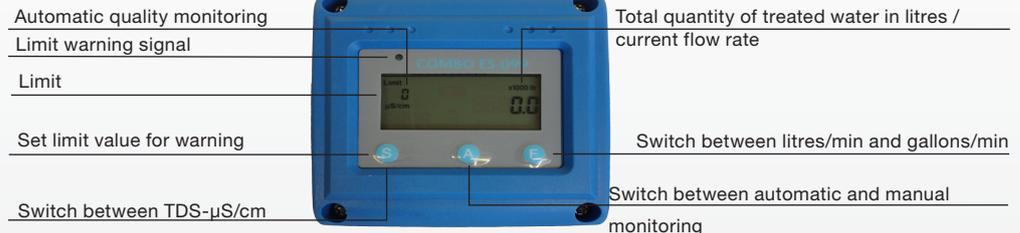
- ⚠ The temperature in the filling station may only reach a maximum of 60°C for a short time if this type of flushing is done whilst the heating system is in operation. The filling station should be connected to a return flow point with a low temperature.
- ⚠ Only hoses with a sufficient pressure and temperature resistance may be used (armoured hoses). The filling station must not be unsupervised when it is pressurised.



## Operating the combined meter

The combined meter is battery-powered. It measures the flow rate in l/min, the total flow in litres and the content of dissolved minerals, either in  $\mu\text{S}/\text{cm}$  (microsiemens/cm) or TDS. It is also possible to set a limit for the maximum still tolerated mineral content in the demineralised water (outlet of the filling station). The limit value and the total quantity value can be reset.

### The display:



### The keys:

#### Switching from electrical conductivity to TDS

The factory setting of the combined meter is electrical conductivity, displayed in " $\mu\text{S}/\text{cm}$ ". To switch to a measurement in TDS in ppm hold the "S" key pressed when inserting the last battery until a tone is heard. The combined meter now displays "ppm" (instead of " $\mu\text{S}/\text{cm}$ ").

#### Measuring the flow

When water flows through the combined meter, it displays the flow rate in real-time. You can switch between a display of the current flow rate and a display of the total water flow quantity by pressing the "F" key. The display is in  $\text{m}^3$  ( $0.0 \times 1000$  litres).

Example: If the display shows a value of 0.3, that corresponds to a water quantity of  $0.3 \times 1000$  litres, i.e. 300 litres. The total water flow quantity can be reset to zero by a longer pressing of the "F" key.

The maximum water flow quantity is  $9999.9 \times 1000$  litres (or  $9999.9 \times 1000$  gallons)

#### Manual measuring of the conductivity

Press the "A" key to display the current conductivity value. The maximum settable conductivity value is  $1999 \mu\text{S}/\text{cm}$ .

#### Switching between automatic and manual monitoring

Press the "A" key to switch from automatic mode to manual mode and reset the measured value of the automatic monitoring.

#### Automatic monitoring of the conductivity

Press the "S" key to set the conductivity limit value in the display. The increase step value is  $15 \mu\text{S}/\text{cm}$ . Press the "S" key for a longer time to reset the set limit value to zero. Switch to automatic mode after you have set a limit value.

Switch to automatic mode by pressing the "A" key in order to first do a manual test. Then press the "A" key again to switch to the automatic mode. "AUTO" will now be shown in the middle of the display. The conductivity will then be measured again every 40 litres. If the measured value is below the previously set limit value, the LED in the upper left corner of the display will blink green for 30 seconds. If the measured value is above the set limit value, the LED will blink red and an alarm tone will be given.

#### Switching between measuring units

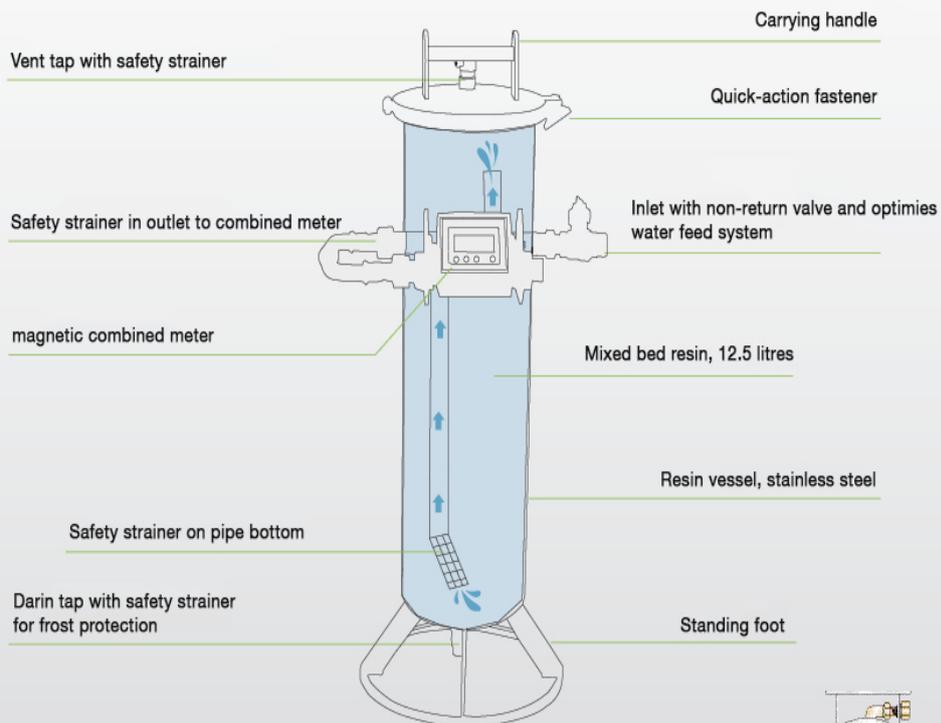
Conductivity: " $\mu\text{S}/\text{cm}$ " – "TDS (ppm)": hold the "S" key pressed when changing the batteries.

Flow: "Litres/min." – "Gallons/min.": Hold the "F" key pressed.

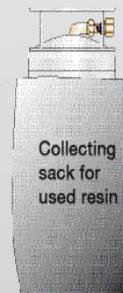
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## Technical data: magnetic<sup>®</sup> basic mobil plus

Capacity, 12.5-litres filling:	Approx. 24000 litres at 1°dH or 2400 litres at 10°dH
Max. flow rate:	1000 litres/h at 3-4 bar supply pressure
Max. filling temperature:	60 °C
Screw coupling:	DN 20 ¾" outer thread
Total height:	1022 mm
Diameter:	170 mm
Weight ready-for-use:	23 kg



Emptying the resin



**Modern heating systems are highly effective.  
They therefore also need high-quality filling water!**

## Replacing the mixed bed resin

The resin must be replaced when the content of dissolved substances in the treated water, measured by the combined meter, exceeds 60  $\mu\text{S}/\text{cm}$  or 40 TDS.

- ① 1. Close all valves.
- ② 2. Remove the lid from the filling station.
- ③ 3. Pull a collecting sack over the resin container for emptying.
- ④ 4. Pour the resin into the collecting sack, mix the resin residue with fresh water and then pour it into the sack.
- ⑤ 5. Dispose of the used resin with the collecting sack with the domestic waste.
- ⑥ 6. Refill with new resin.
- ⑦ 7. Then vent the device again.

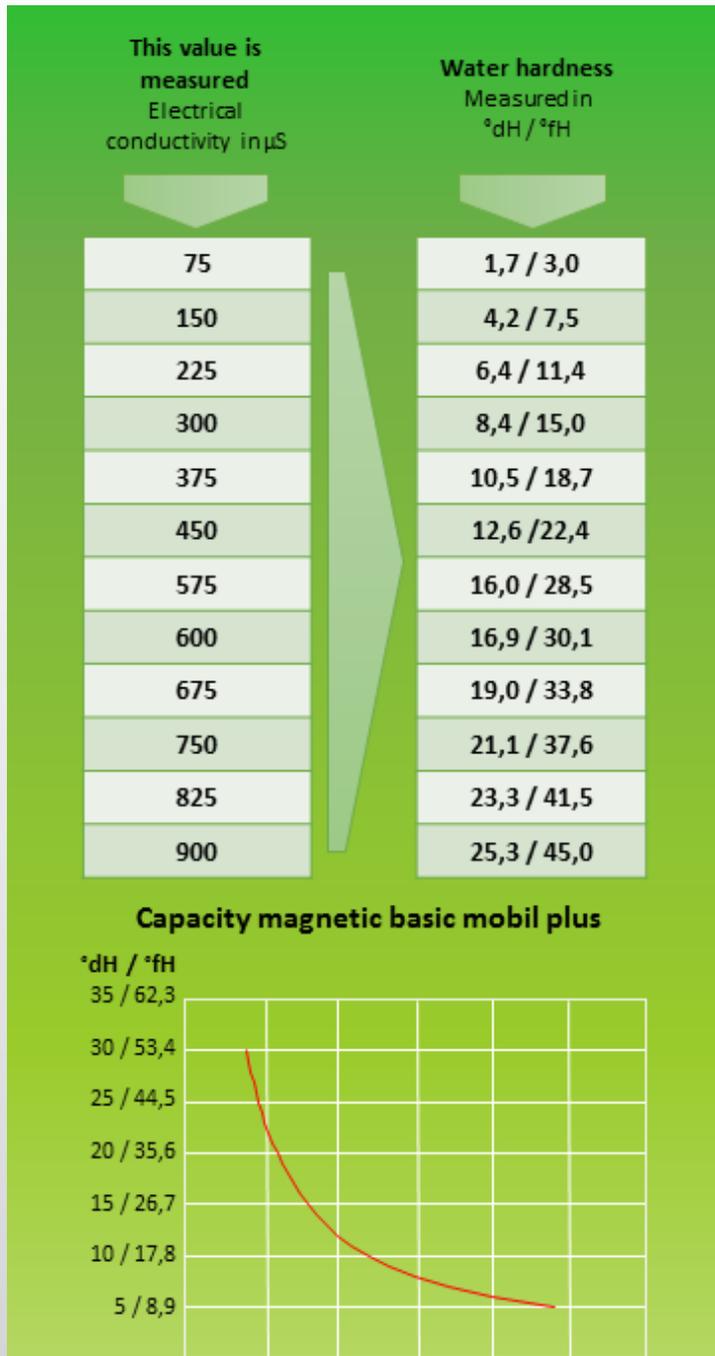
 Take care that no resin is spilled onto the floor. Danger of slipping. Spilled resin must be carefully and thoroughly removed.

The resin granulate is supplied in vacuum-sealed plastic bags. Opened bags must be quickly used. The resin can be stored in a cool and dark place for 12 months. Improper storage can result in a capacity loss and bacteria formation.



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## Calculating the capacity of the mixed bed resin



1. To ascertain the resin quantity needed for the demineralisation of the system water.

2. To estimate the working time of a resin filling.

A capacity of  $24 \text{ m}^3$  at  $1^{\circ}\text{dH}$ , means that in the case of a water hardness of  $20^{\circ}\text{dH}$ , the value of 24 must be divided by 20 to calculate a capacity of  $1.2 \text{ m}^3$ . The capacity would be  $2.4 \text{ m}^3$  for a water hardness of  $10^{\circ}\text{dH}$ .

 The conversion from  $\mu\text{S}/\text{cm}$  to water hardness gives only an approximate value and is only possible for untreated drinking water. Other water types contain not only limescale (calcium carbonate) but also other dissolved minerals. The capacity would then be less because the filling station

## Troubleshooting

### Fault

The display of the measured value is deleted after about 10 seconds.

No display or battery symbol appears.

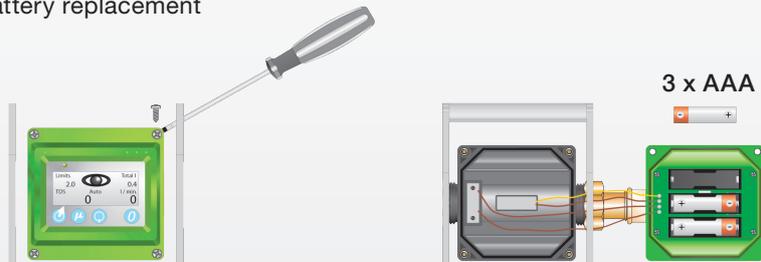
The resin is exhausted quicker than calculated.

The flow is weak despite fully open supply line

### Solution

The automatic switch-off of the combined meter preserves the battery life. The ON key must be pressed again for each measurement in manual mode. The device can also be switched to automatic mode (press the ON key twice). The last measured value will then be permanently displayed.

#### Battery replacement

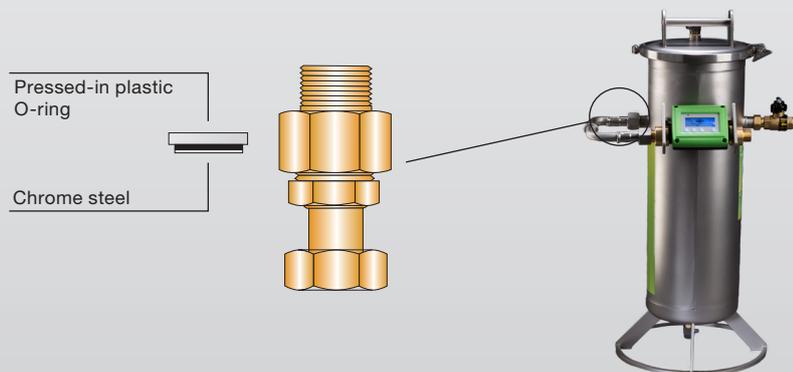


Remove the screws on the front side

Carefully remove the front side of the combined meter and then replace the batteries.

There is probably no fault. It could be that the untreated water contains not only limescale (calcium carbonate) but also other dissolved substances (sulphates, nitrates, chlorides) which are removed and thus reduce the capacity.

The filling station has 2 safety strainers to prevent the mixed bed resin from getting into the heating system. Regularly clean the safety strainer at the outlet.



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Tel. +49 7944 94199-0  
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info@magnetic-online.de  
www.magnetic-online.de

Managing Shareholder:  
Michael Bader

VAT ID No.: DE 255 018 730  
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