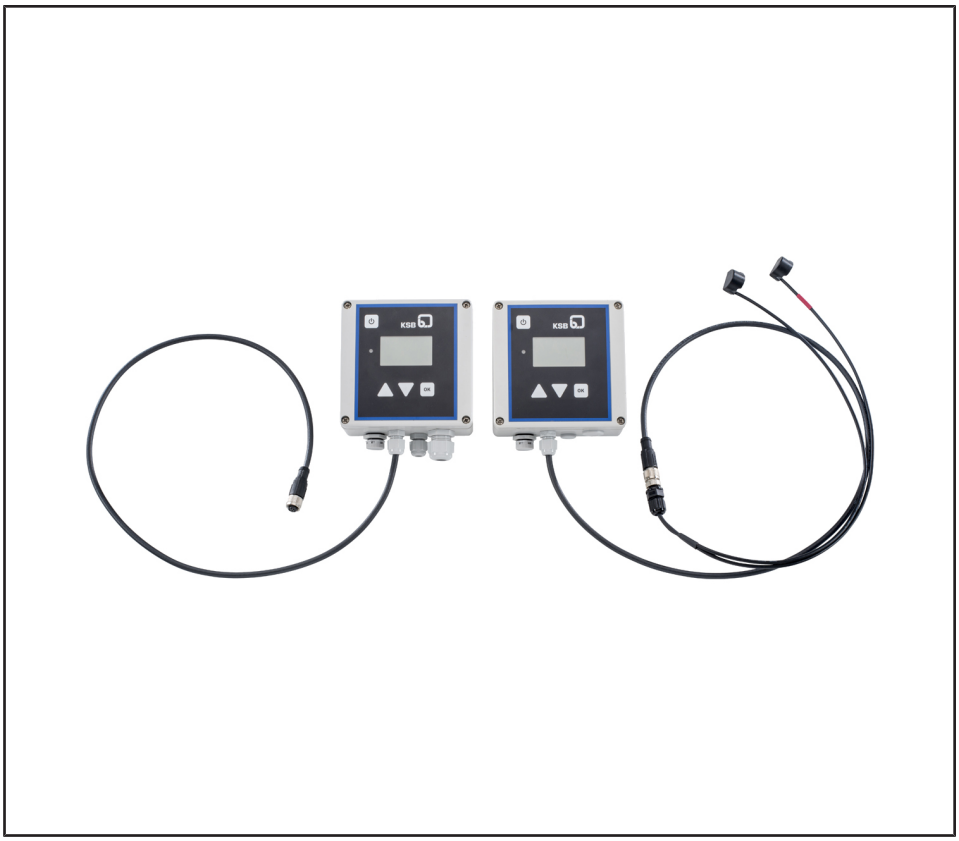
Measuring Computer

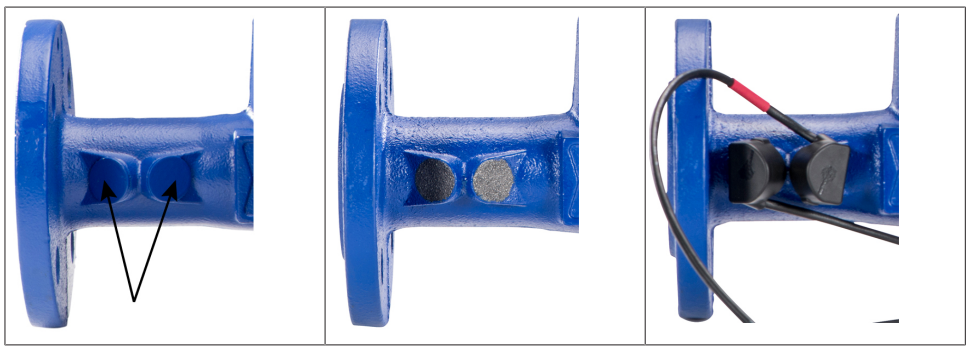
# BOATRONIC MS / BOATRONIC MS-420

Quick-reference Instructions for Measuring
This document does not substitute for reading operating manual 7134.8!



# 1 Preparation

## 1.1 BOA-Control



1. Remove the protective nubs from the measuring cams.
2. Apply coupling grease to the measuring cams. Make sure to apply a sufficient quantity of grease to prevent air pockets from forming when positioning the sensor. Mineral oil-based greases without fillers, such as Klüberlub PHB 71-461 or Addinol LM 2 EP, can be used as coupling grease.
3. Couple the ultrasonic sensors to the measuring cams, ensuring that the sensor with the red marking is affixed "downstream" of the black sensor (on the right in the direction of flow).
4. After the measurement has been taken, clean the measuring cams and re-affix the protective nubs or leave the grease on the measuring cams for corrosion protection.

**NOTE**

If the difference in temperature between the fluid and the environment is > 20 K, insulate the valves to ensure optimum accuracy.

**NOTE**

When installing the BOATRONIC MS-420 measuring computer, the connectors for the sensor cable and the BOATRONIC MS-420 must be firmly screwed together.

**NOTE**

For greater ease of handling, magnets are fitted in the transducers of the sensor system. Direct contact with storage media or other electrical devices sensitive to magnetic fields should be avoided.

## 1.2 BOA-Control IMS

The sensors for the BOA-Control IMS valve are permanently bonded to the measuring cams. BOATRONIC MS and BOATRONIC MS-420 measuring computers can be connected.

## 1.3 BOATRONIC MS/MS-420

**NOTE**

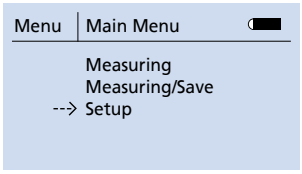
For optimum measurement results with the highest possible degree of accuracy the operating software must be up to date. To this end, KSB regularly provides the latest software for updating the BOATRONIC MS/MS-420 operating software at the following link: http://shop.ksb.com/catalog/de/de/product/ES000464

## 2 Zero Point Calibration

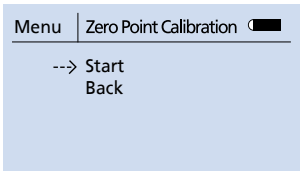
Manual zero point calibration is recommended for a more accurate measurement.[1)] The valve must be closed for this purpose. The measuring computer can only calibrate when the fluid is stationary. The nominal size and the fluid including concentration must be entered.

**NOTE**

Only close the valve when the measuring computer specifically prompts you to do so.




1. Select the "Setup" menu item with the ▲▼ keys in the main menu and confirm with the OK key.




1. In the "Zero Point Calibration" selection menu, select "Start" with the ▲▼ keys and confirm with the OK key.
2. In the following selection menus enter the nominal size DN, the fluid and the concentration with the ▲▼ keys and confirm each with the OK key.
3. Follow the prompt on the display: Close the valve and confirm with the OK key.
4. To start the zero point calibration, choose "Run" in the "Zero Point Calibration" selection menu and confirm with the OK key.
   - ⇨ The calibration starts.
   - ⇨ When the calibration successfully concludes, the display reads "Initialisation Successful" and the measuring computer goes back to the main menu.

⇨ The measurement procedure can now be started.

**CAUTION**

**Zero point calibration still active**

Incorrect measured values or no measurement possible!

- ▹ Manual zero point calibration always applies exclusively to the valve it has been performed on. For a different valve a new calibration is required. For safety reasons the current calibration is always deleted if one of the measurement parameters (DN, fluid, concentration) has been changed, if no sensor is connected (F01), if the error message "No signal" has been displayed for more than 20 seconds (F02) or if a loss of voltage has occurred (BOATRONIC MS only). The error message F09 indicates that the calibration is not valid.
- ▹ On BOATRONIC MS-420 the manual zero point calibration is not deleted in the case of loss of voltage (device switched off, power cut, etc). Once the voltage returns, BOATRONIC MS-420 re-starts in measuring mode with the manual zero point calibration saved.

1) This procedure may take up to one minute.

## 3 Taking Measurements

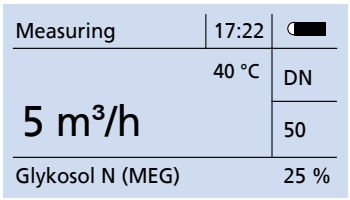
✓ Power supply must be provided. For BOATRONIC MS, insert four AA Mignon batteries (1.5 V); for BOATRONIC MS-420, apply 24 V DC.

✓ The connection between the measuring computer and the ultrasonic transducer must be established.

1. Briefly press the ⏻ key.
   ⇨ The BOATRONIC measuring computer starts automatically.
2. Set the language with the OK key on the welcome screen.

⇨ The main menu appears.


Welcome screen




Measurement

1. Select "Measuring" with the ▲▼ keys in the main menu and confirm with the OK key.
2. Select the nominal size DN (handwheel cap) with the ▲▼ keys in the "Select DN" menu and confirm with the OK key.
3. Select the fluid with the ▲▼ keys in the "Select Fluid" menu and confirm with the OK key.
   ⇨ If the fluid is not known, "Unnamed liquid" can be selected. Lower measurement accuracy is the consequence.
   ⇨ The "Set concentration" step is not required for the "Unnamed liquid" or "Water" selections.
4. Select the concentration with the ▲▼ keys in the "Concentration" selection menu and confirm with the OK key.
   ⇨ The specification in percent defines the percentage of the fluid selected in water (e.g. 25 % Glykosol N in the available water-glycol mixture).
5. Automatic zero point calibration starts automatically after the concentration has been confirmed with the OK key. The display then shows "Calibration" and a percentage as well as the loading symbol.

⇨ Following successful calibration (100 %), the measurement starts automatically. Unless configured otherwise, volume flow rate Q and temperature T are displayed in standard units Q = [m³/h] and T = [°C].

⇨ ▲▼ Change physical unit of primary measurement on measurement screen

⇨ OK End measurements --> Main menu

⇨ If the "No signal" message appears, the measurement must be repeated by pressing the OK key