



*Elektromotoren und  
Gerätebau Barleben GmbH*



**OPERATING INSTRUCTIONS  
Gas Testing Device ZG 3.1.**



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## 1. Safety instructions

Make sure that any persons installing, taking into operation, operating and maintaining the gas sampling device

- are qualified and competent, and
- fully comply with these operating instructions.

Improper operation or misuse might cause danger to

- life and limb,
- the device and any other property of the operator, and
- the device's proper function.

Safety instruction in this manual are presented in three different forms to emphasize important information:



**NOTE**

**This symbol refers to important information on a specific subject.**



**CAUTION**

**This symbol indicates risks for the device and other property of the operator. Danger to life and limb cannot be excluded.**



**WARNING**

**This symbol indicates serious danger to life and limb. Non-observation of this safety warning may result in serious or even fatal injuries.**

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## 2 Application

The Gas Testing Device serves to check the gases that accumulated in the Buchholz relay. Depending on their chemical composition, the gases enable conclusions to be drawn as to the type of defect thus permitting an assessment of the fault to be made. The check by means of the gas testing device is no substitute of a gas chromatographic analysis. The gas testing device is directly screwed onto the test valve of the Buchholz relay or onto the ZG 1.2. gas sampling device.

## 3 Mode of operation

After opening of the test valve or the shut-off-cock, the gas will flow through No. 1 and then No. 2 indicating pipes. Contained in No. 1 indicating pipe is a 5-percent silver nitrate solution forming a white precipitate that is being transformed into brown as soon as the gas contains decomposition products of oil (mainly hydrocarbon composition).

The test fluid 2 in the indicating pipe 2 is an alkaline silver nitrate solution. In this case, turbidity of the fluid will occur if the gas contains decomposition products (CO) of solid insulating materials (wood, paper, cotton etc.).

## 4 Operating

Preparing the test fluids in the storage bottles supplied along with the equipment. To avoid damage during transit, the test fluid will not be supplied.

Test fluid 1 = 5 grams of silver nitrate (lunar caustic) to be dissolved in 100 cm<sup>3</sup> distilled water.

Test fluid 2 = Same as test fluid 1.

However, ammonia water shall be added in such a quantity that the test fluid will become clear again after initial turbidity. (Ammonia water to be added dropwise)

Stored in dark place, the prepared test fluids will have a life of 5 years.

- Indicating pipe 1 with test fluid 1  
Indicating pipe 2 to be filled with test fluid 2 up to the etched marking.
- Screw the gas testing device onto the test valve or gas sampling device ZG 1.2.
- Allow the gas to slowly escape through the gas testing device
- Record the reaction of the test fluids.
- Unscrew and drain the gas testing device and thoroughly flush the same with distilled water (do not use the drained fluids again!)



**WARNING**

**In the case of oil-insulated transformers or reactors, the gases contained in the Buchholz relay under failure conditions are combustible and might form explosive gas mixtures together with air.**

**Smoking and the use of sparkgenerating tools within the hazardous area are strictly forbidden.**

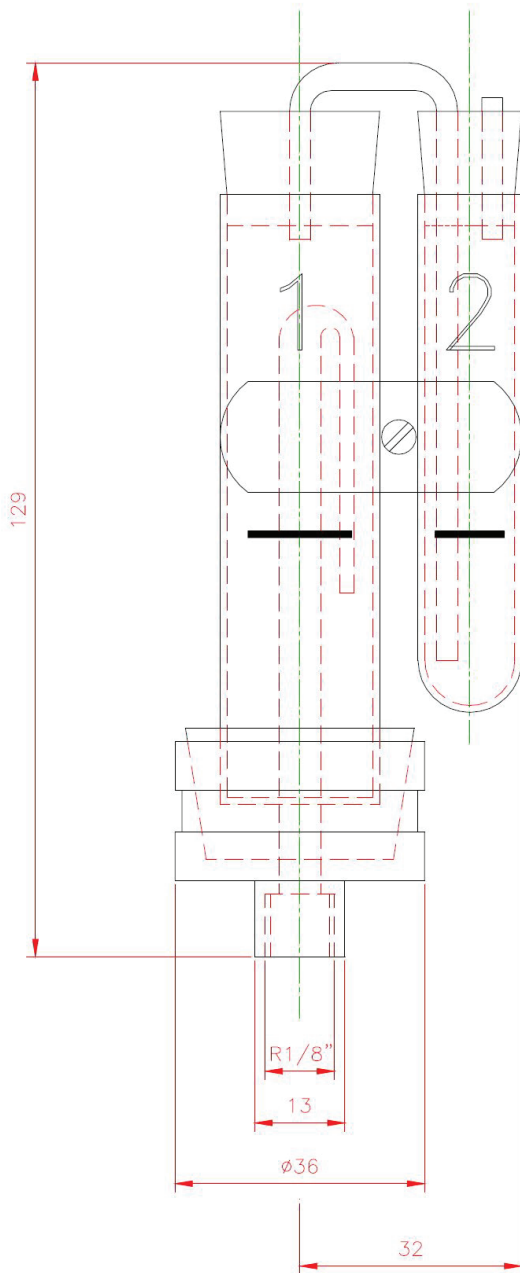


Figure 1 - Gas testing device ZG 3.1.

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**Notes:**

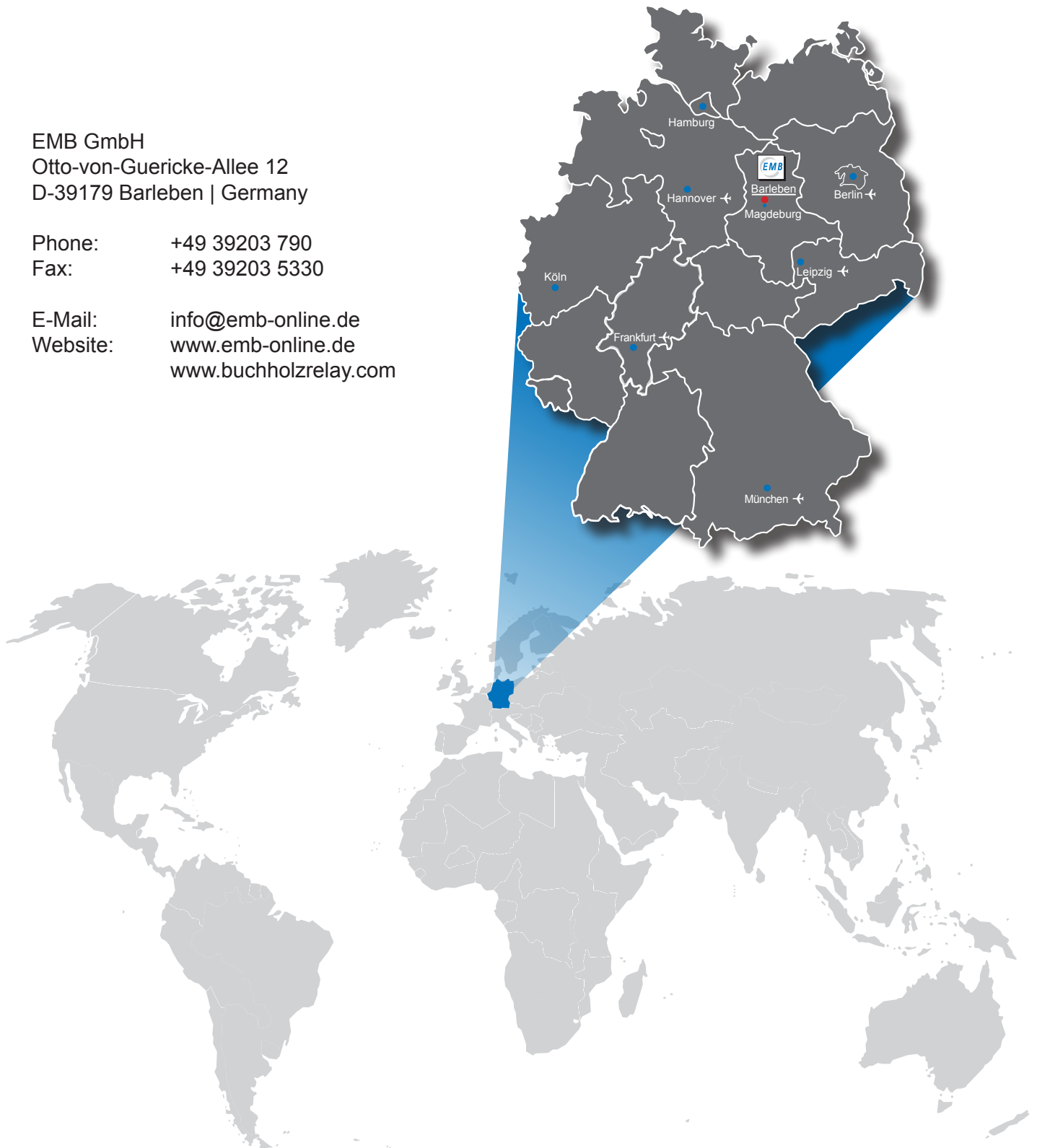


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Due to technical improvement of our products, the information contained in these operating instructions is subject to change without notice. We would like to apologize for any printing errors which have not been found despite of intensive proof-reading.