



## Description

The oil detector/alarm ORGS 11-2 works according to the conductivity measurement principle. The electronic control unit of the ORGS 11-2 is an integral module of its terminal case and controls all functions – external switchgear is therefore **not** required.

A control and alarm unit should be added on downstream of the ORGS 11-2 in order to protect the installations to be cooled and prevent the possibility of oil leakage. The ORGS 11-2 has **two channels** for true fail safe confidence and features NC-type contact relays which will automatically signal alarm condition in the event of a malfunction or mains failure.

## Design

The oil detector/alarm ORGS 11-2 consists of the following components:

**Measuring pot** for separating oil from water. The measuring pot can be isolated and features an automatically-operated quick-action air vent and a plug cock for draining and purging.

**Oil detector/alarm ORGS 11-1**, screwed into the measuring pot. The ORGS 11-2 is of the compact design type, consisting of a four-tip measuring electrode with integral alarm switch. The equipment works according to the level conductivity measurement principle, making use of two channels to detect any ingress of oil.

Use the oil detector/alarm e. g. for cooling water monitoring to detect ingress of oil.

### Type approval

GL 17106-00 HH

When cooling water is used in marine installations for preheating or cooling oil or fuel, an oil detector, which will raise an alarm in the event of ingress of oil, is required according to Germanischer Lloyd.

## Function

A water sample, taken downstream of the location at the highest point where ingress of oil might occur, is fed from below into a measuring pot (see schematic representations Fig. 2 and 3).

In the measuring pot the water-immiscible oil droplets precipitate and ascend, thereby forming an oil film which forces the water level to drop accordingly.

The lowering of the water level is detected by the electrode rods since the oil, which is non-conductive, interrupts the current flow between the two long and two short electrode rods. Two volt-free relay contacts in the terminal box evaluate the information and, if required, trigger an alarm and operate the associated switchgear. The amount of oil necessary to raise an alarm depends on the design of the measuring pot and the length of the electrode rods. The measuring pot is matched to the electrode such that an alarm is given when the oil content limit of approx. 50 ml is reached. The system can detect practically all insoluble, water-immiscible, non-emulsified matter with a lower density than water and a conductivity below the preset response sensitivity. Rust preventing oils which are for instance emulsified in cooling water will not trip an alarm.

## Technical Data

### Oil detector/alarm ORGS 11-2 with measuring pot

**Admissible service pressure**  
6 barg (87 psig)

**Admissible service temperature**  
110 °C (230 °F)

**Flow velocity**  
100 – 300 l/h

**Raising of alarm**  
Oil content limit: approx. 50 ml

**Water inlet, draining**  
Ball valve, screwed connection E0 type 15-L

**Water outlet**  
Ball valve, screwed connection E0 type 12-L/S

**Weight**  
Approx. 7.4 kg

### Electrode ORGS 11-1

#### Electrode

**Connection**  
Screwed 1" BSP (DIN ISO 228-1)

**Material of wetted parts**  
Body: Austenitic S. S. X 6 CrNiMoTi 17 12 2 (DIN ref. 1.4571)

Measuring electrode: Austenitic S. S. X 6 CrNiMoTi 17 12 2 (DIN ref. 1.4571)

Electrode insulation: PTFE  
Ø of measuring electrodes: 5 mm

#### Terminal box

#### Housing

Terminal box with two lids  
Material: aluminium

#### Protection

IP 65 to DIN EN 60529

**Admissible ambient temperature**  
70 °C

#### Cable entry

Cable glands with integral cable clamps  
2 x PG 9, 1 x PG 16

#### Mains supply

115/230 V ± 10 %, 50/60 Hz  
The transformer is of the split-bobbin type according to VDE 0551.

#### Special voltage

24 V ± 10 %, 50/60 Hz

#### Power consumption

5 VA

#### Fuse

Thermal fuse  $T_{max} = 102 °C$

#### Sensitivity

Range 1: 10 µS/cm  
Range 2: 0.5 µS/cm  
Code-switch selectable

#### Electrode voltage

10 V<sub>SS</sub>

#### Outputs for control circuit

Two volt-free relay contacts, contact material AgNi 0.15 hard gold plated. Max. contact rating with switching voltages of 24/115/230 V a.c.: 8 A resistive/inductive. Max. contact rating with a switching voltage of 24 V d.c.: 8 A

#### Energizing and de-energizing delays

3 seconds, factory set

#### Indicators and adjustors

Two red LEDs to indicate "Electrode rod submerged" and "output relay energized"  
One four pole code switch for selection of sensitivity range

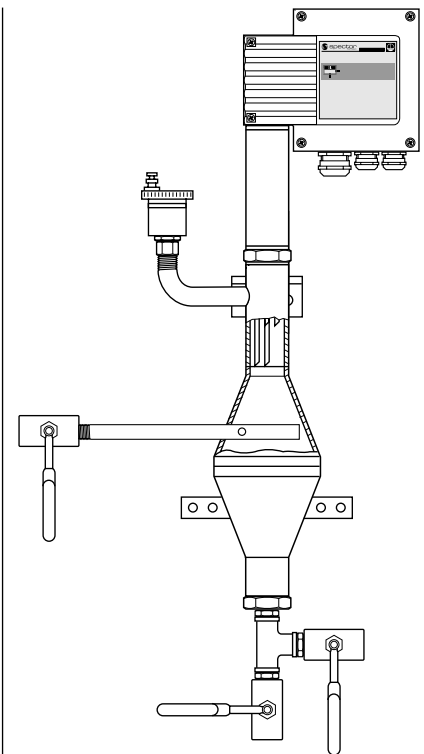


Fig. 1 ORGS 11-2

# B<sub>1</sub>

## Oil Detector for Cooling Water Systems

ORGS 11-2



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Flow Control Division

### Installation

The water sample taken from the cooling water cycle must flow continuously through the measuring pot (Fig. 2 and 3).

The sampling of the cooling water should take place downstream of the potential oil leakage location at the highest point and, if possible, in a horizontal line. The line leading to the measuring pot should be vertically ascending, running direct into the bottom part of the measuring pot. Avoid any narrow parts (< 1/2") since they could give rise to undesired emulsification of the oil. Air accumulated around the electrode will cause a malfunction alarm. Install an automatically operated quick-action air vent in the measuring pot in order to prevent the formation of air.

If space is a consideration and the measuring pot has to be installed at a lower point (see Fig. 3) make sure that the line leading to the measuring pot features sufficiently sized S-type bends in order to prevent emulsification. The discharge line does not have to meet specific requirements and can be installed at a right angle and DN 10 mm.

Insert the discharge line into the centre of the cooling water line in order to increase the suction effect which is a prerequisite for a continuous water sample flow through the measuring pot. To achieve a steady flowrate of approx. 200 l/h in the measuring pot reduce slightly the flow velocity in the cooling water line between the water sampling location and its re-entry point.

### Important Note

Cable required for wiring to the electrode: flexible, multiconductor control cable, min. conductor size 1.5 mm<sup>2</sup>

### Order and Enquiry Specification

GESTRA Oil Detector/Alarm for cooling water ORGS 11-2, PN 6  
Mains supply

The following test certificates can be issued on request, at extra cost: In accordance with DIN EN 10204-2.1, -2.2 and -3.1 B.

All inspection requirements have to be stated with the order. After supply of the equipment certification cannot be established. For tests and inspection charges please consult us.

Supply in accordance with our general terms of business.

Technical modifications reserved.

Fig. 2 Example of an ideal measuring pot arrangement

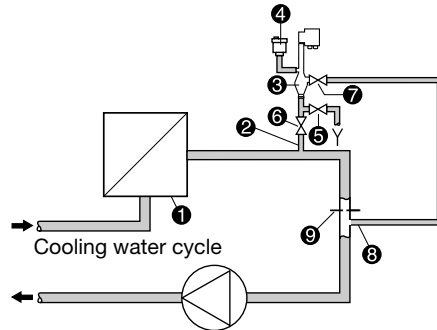
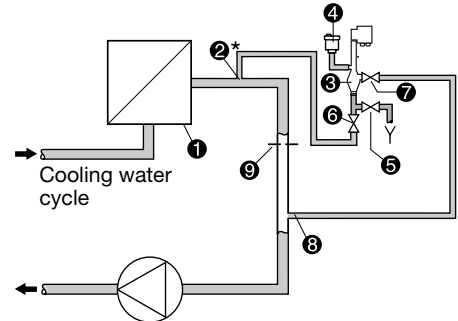


Fig. 3 Example of a measuring pot arrangement at a lower point due to space limitations



- ❶ Preheater or cooler for oil or fuel. ❷ Water sampling point (1/2") on top of the main line. The line leading to ORGS 11-2 should be as vertically ascending as possible, \* otherwise use five 1/2" S-type bends. ❸ Measuring pot with oil detector/alarm. ❹ Automatically operated quick-action air vent. ❺ Drain valve. ❻ Isolating valve for supply line. ❼ Isolating valve for draining and purging. ❽ Re-entry point of water sample, DN 10 mm. ❾ Restrictor plate or throttle valve for generating a steady flowrate of 100 – 300 l/h or creating a differential pressure between valve ❶ and ❷ of approx. 0.1 bar.

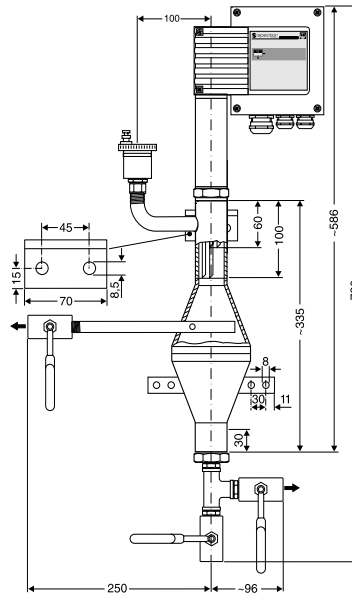


Fig. 4 Oil detector/alarm ORGS 11-2 with electrode type ORGS 11-1

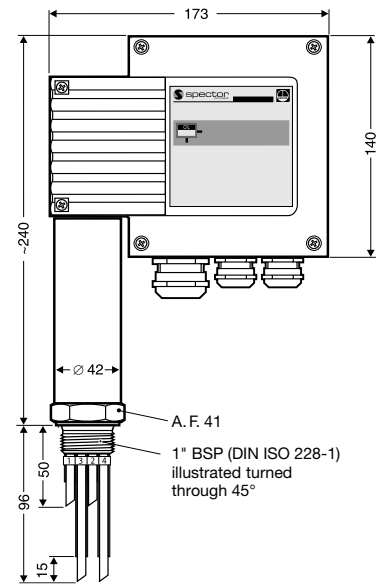


Fig. 6 Electrode type ORGS 11-1

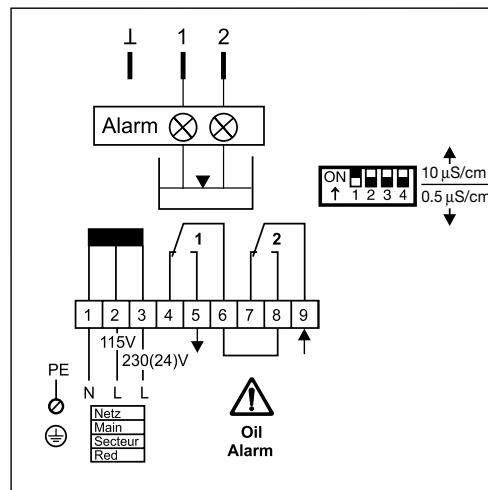


Fig. 5 Wiring diagram for the oil detector/alarm