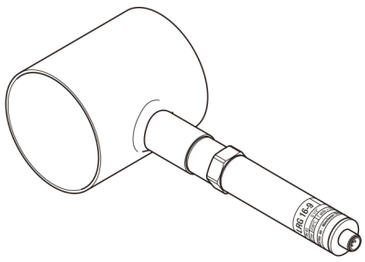
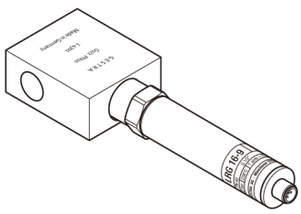
Electrodo de Conductividad LRG16-9



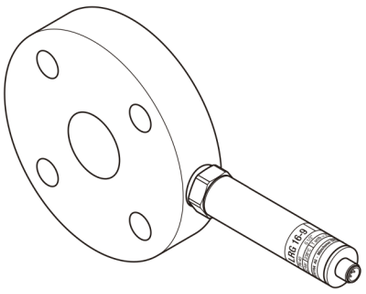
LRG 16-9



LRG 16-9 with on-site socket end
for installation in pipes.



LRG 16-9 with measuring chamber for installation in pipes.



LRG 16-9 with mounting flange for sandwiching
between flanges.

Conductivity Electrode
LRG 16-9

Description

The conductivity electrode LRG 16-9 together with the conductivity switch LRS 1-.. or conductivity controller LRR 1-.. is designed for measuring and monitoring electrical conductivity in conductive fluids.
If used as conductivity limiter or continuous blowdown controller in steam boilers, the conductivity electrode LRG 16-9 can be used with the following equipment:
Conductivity switch LRS 1-7, LRS 1-50,
Conductivity controller LRR 1-50, LRR 1-52

Function

The conductivity electrode LRG 16-9 is used in combination with the following equipment as conductivity limiter and continuous blowdown controller in steam boilers:
Conductivity switch LRS 1-7, LRS 1-50,
Conductivity controller LRR 1-50, LRR 1-52.

In addition the equipment can monitor conductivity in condensate and feedwater systems and in cooling and cleaning water.
The conductivity electrode LRG 16-9 in conjunction with conductivity switch LRS 1-7 is also approved for feedwater monitoring on board of seagoing vessels.
The conductivity electrode works in conjunction with conductivity switches or controllers and monitors the conductivity in conductive fluids.
To measure the fluid temperature a resistance thermometer Pt 100 is integrated in the electrode.
A short circuit or wire breakage in the conductivity electrode will trigger an error message in the conductivity switch or controller.

Directives and standards

Pressure Equipment Directive 2014/68/EU
The conductivity control and monitoring equipment LRG 1.-.., LRS 1-5.., LRR 1-5.. meets the safety requirements of the Pressure Equipment Directive (PED). The conductivity control & monitoring equipment is EC type approved according to EN 12952/EN 12953. These Directives state, among other things, the requirements made on limiting systems and equipment for steam boiler plants and (pressurised) hot-water installations.

VdTÜV Bulletin "Water Monitoring 100"
The conductivity electrode LRG 16-9 in conjunction with the following conductivity switches and controllers is type approved according to VdTÜV Bulletin "Water Level 100": LRS 1-7, LRS 1-50, LRR 1-50 and LRR 1-52.
Type approval: TÜV · WÜL · 09-014, 12-017, 12-018.The VdTÜV Bulletin "Water Monitoring 100" states the requirements made on water monitoring equipment.

Approvals for Marine Applications
The conductivity electrode LRG 16-9 in conjunction with conductivity switch LRS 1-7 is approved for feedwater monitoring on seagoing vessels.
Germanischer Lloyd 60444-09 HH

ATEX (Atmosphère Explosible)
The equipment constitutes a simple item of electrical equipment as defined in DIN EN 50020 section 5.4. According to the European Directive 2014/34/EU the equipment must be equipped with approved Zener barriers if used in potentially explosive areas. Applicable in Ex zones 1, 2 (1999/92/EC). The equipment does not bear an Ex marking.

UL/cUL (CSA) Approval
The equipment meets the requirements of: UL 508 and CSA C22.2 No. 14-13, Standards for Industrial Control Equipment. File E243189

Technical data

Service pressure
PN 40, max. 32 bar at 238 °C

Mechanical connection
Screwed G ½ A, ISO 228 (also available with NPT thread)

Cell constant
0.5 cm^{-1}

Materials
Screw-in body: 1.4571, X6CrNiMoTi17-12-2
Measuring electrode: 1.4571, X6CrNiMoTi17-12-2
Electrode rod insulation: PTFE

Electrical connection
M 12 sensor connector, 5 poles, A coded

Protection
IP 55 to DIN EN 60529

Ambient temperature at terminal box
Max. 80 °C

Weight
Approx. 0.3 kg

Approvals
TÜV type approvals acc. to VdTÜV Bulletin "Water Monitoring 100": Requirements made on water level monitoring equipment Type approval: TÜV · WÜL · XX-014, XX-017, XX-018.

UL/cUL (CSA) Approval: UL 508 and CSA C22.2 No. 14-13, Standards for Industrial Control Equipment. File E243189.

Marine applications: GL 60444-09 HH

Important Notes

Installation
The conductivity electrode is designed for installation in pipes. The conductivity electrode is installed in a socket end, a measuring chamber or a mounting flange. Measuring chamber and mounting flange available as optional extra.

Electrical connection
The conductivity electrode LRG 16-9 is equipped with M 12 sensor plug-in connectors with 5 poles, A coded. For connecting the electrode preconfigured control cable assemblies (with male and female connectors) of various lengths are available as add-on equipment.
Note that the recommended control cable is not UV-resistant and, if installed outdoors, must be protected by a UV-resistant plastic tube or cable duct.
If you do not use the prefabricated control cable assembly, use screened five-core control cable, e. g. LiYCY 5 x 0.5 mm^2, for connecting the equipment. In addition, connect at the electrode end a screened female connector to the control cable.

Max. cable length between conductivity electrode and switch or controller: 30 m, with conductivities from 1 to 10 µS/cm: max. 10 m.

Make sure that connecting cables leading to the equipment are segregated and run separately from power cables.

Conductivity Electrode
LRG 16-9

Order & Enquiry Specification

GESTRA Conductivity electrode type LRG 16-9
PN 40, screwed ½ A, ISO 228, NPT

Associated conductivity switch/controller

- Conductivity switch LRS 1-7, LRS 1-50
- Conductivity controller LRR 1-50, LRR 1-52

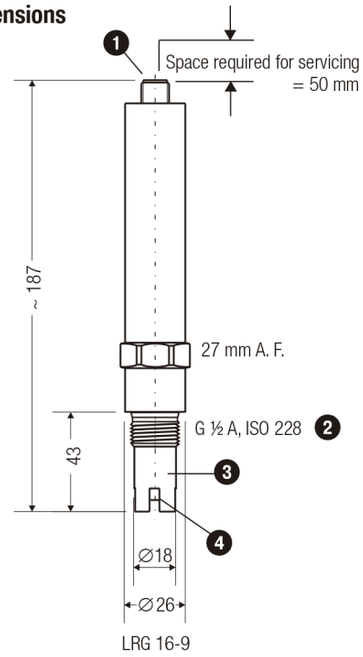
Accessories

GESTRA Measuring chamber, screwed ½ PN 40
GESTRA Mounting flange, DN ... PN 40 DIN EN 1092-01

Key

1. M 12 Sensor connector, 5 poles, A coded
2. Electrode thread G ½ A, ISO 228
3. Measuring tube
4. Measuring surface
5. Resistance thermometer Pt 100
6. Measuring electrode
7. Socket end to EN 10241, heavy design, screwed G ½ A to ISO 228, length 16 mm, provided on site
8. Conductivity electrode LRG 16-9
9. Socket end (not supplied)
10. Drain plug
11. Measuring chamber, G ½, PN 40, 1.4301
12. Mounting flange PN 40, DIN EN 1092-01 with female thread G ½

Dimensions



LRG 16-9

Fig. 1

Pin assignment connector / socket

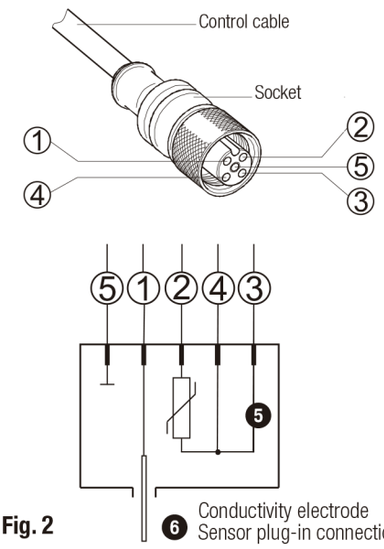


Fig. 2

6 Conductivity electrode
Sensor plug-in connection

Connector / socket	Assignment	Colour of individual conductors
1	Measuring electrode	brown BN
2	Resistance thermometer Pt 100	white WH
3		blue BU
4		black BK
5	Earth	grey GY

Dimensions and examples of installation

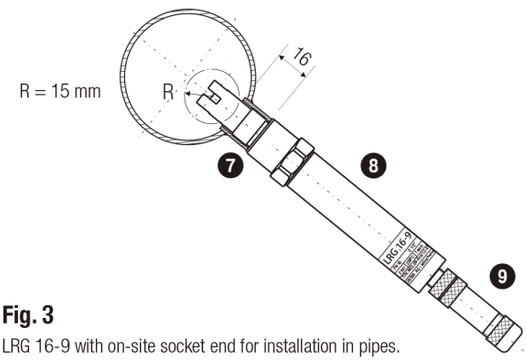


Fig. 3

LRG 16-9 with on-site socket end for installation in pipes.

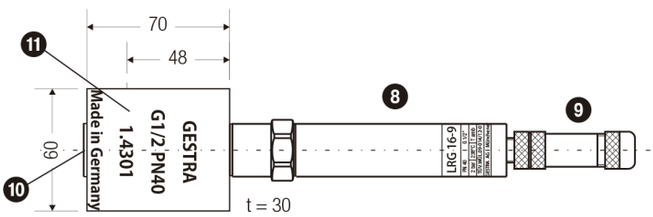
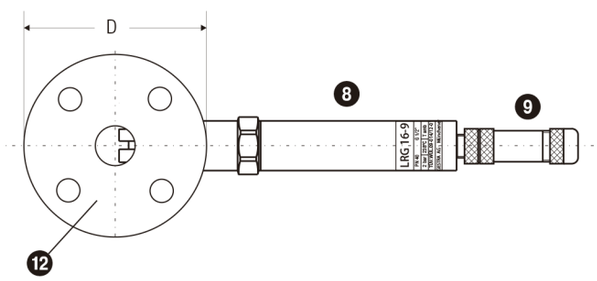


Fig. 4

LRG 16-9 with measuring chamber for installation in pipes.



DN	Flange diameter D	Thickness of flange
15	95	32
20	105	32
25	115	32
40	150	32

Fig. 5

LRG 16-9 with mounting flange for sandwiching between flanges.

Conductivity Electrode
LRG 16-9

Important Notes

Installation

- The conductivity electrode alone or together with the measuring transducer ORGG 12/22 is mounted in a bypass below the main line. This arrangement prevents gas bubbles and flash steam from reaching the equipment. Please see also data sheet for OR 52-5 / OR 52-6.
- A throttling point, e. g. a non-return valve (GESTRA type RK 86) should be installed in the main line.
- To prevent air and dirt particles from getting into the bypass make sure that the bypass is below the main line.

Key

8 Conductivity electrode LRG 16-9
11 Measuring chamber, G ½, PN 40, 1.4301
13 Non-return valve
14 Ball valve G ½
15 Ball valve G $^{3}/_{8}$
16 Measuring sensor ORG 12 / 22

Supply in accordance with our general terms of business.

Dimensions and examples of installation

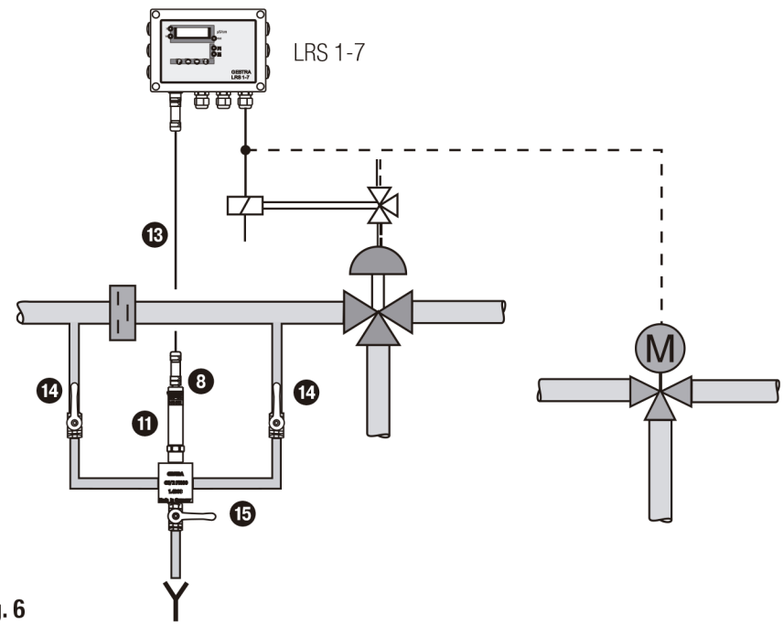


Fig. 6
Conductivity electrode LRG 16-9 with measuring chamber for installation in a bypass

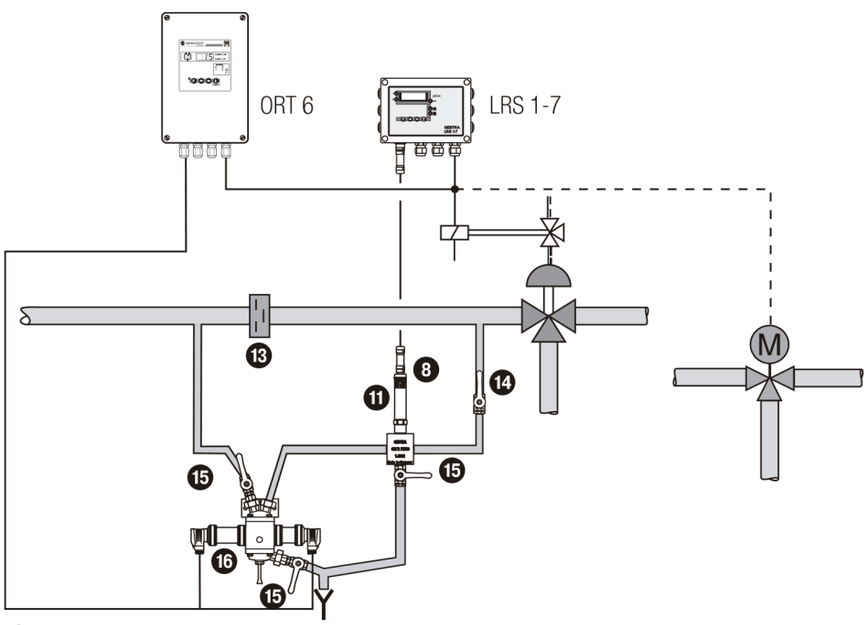


Fig. 7
Conductivity electrode LRG 16-9 with measuring chamber for installation in a bypass together with the measuring sensor ORG 12/22 of the oil & turbidity detector OR 52-5 / OR 52-6.