

Installation, Operating and Maintenance Instructions for Jola Leakage Detectors in the Leckstar Range

**These “Installation, Operating and Maintenance Instructions”
must be handed over together with all the documents of the
user information/instructions to the
fitter/technician/operator/service personnel! All documentation
is to be kept in a safe place where it can be easily consulted if
the need arises!**

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Installation, Operating and Maintenance Instructions for Jola Leakage Detectors in the Leckstar Range

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When using leakage detector systems for liquids that are hazardous to water and that have been generally approved by the construction supervisory authorities, the provisions of the general approval certificate issued by the construction supervisory authorities must always be observed.

The units described in this documentation may only be installed, connected and started up by suitably qualified specialist personnel.

1. Installation, Operating and Maintenance Instructions for Jola Plate Electrodes PE... and WDX...

When using leakage detector systems for liquids that are hazardous to water and that have been generally approved by the construction supervisory authorities, the provisions of the general approval certificate issued by the construction supervisory authorities must always be observed.

1.1 Area of application:

Plate electrodes should only be used in normally dry environments - for example in collection chambers or collection tubs.

It is important to note that plate electrodes may only be used **for detection of electrically conductive liquids** and only in a temperature range from - 20°C to + 60°C.

Never exceed the maximum connecting cable lengths stipulated in the product documentation or the general approval certificate issued by the construction supervisory authorities.

1.2 Installation site:

Plate electrodes are to be installed at the lowest point to ensure rapid leakage detection. The electrode plates must point downwards.

1.3 Mode of installation:

- Plate electrodes PE...:

Plate electrodes PE... can be secured on the floor using screws and plugs. When tightening the screw, make sure that the electrode is not damaged.

Where this mode of fastening is not feasible, the electrode can be laid on the floor. In this case, the cable of the leakage detector in question must be routed through an installation tube in such a way that it cannot move. Other fastening modes are also possible, such as using clips screwed to the wall. The fastening device must always ensure that the electrode cannot be knocked over by external influences.

- Plate electrodes WDX...:

Plate electrodes WDX ... are placed on the floor. The integrated weight ensures that they are fairly stable but it is always advisable to use one of our standard mounting brackets for mounting - or, where this is not feasible, to route the cable of the electrode through an installation tube in such a way that it cannot move. Other fastening modes are also possible, such as using clips screwed to the wall. The fastening device must always ensure that the electrode cannot be knocked over by external influences.

1.4 Response in the event of an alarm:

After every alarm, the electrode in question, the connecting cable and the operating area must be cleaned thoroughly and dried. If the electrode or the cable show signs of mechanical or chemical aggression, the electrode must be replaced.

1.5 Ongoing maintenance:

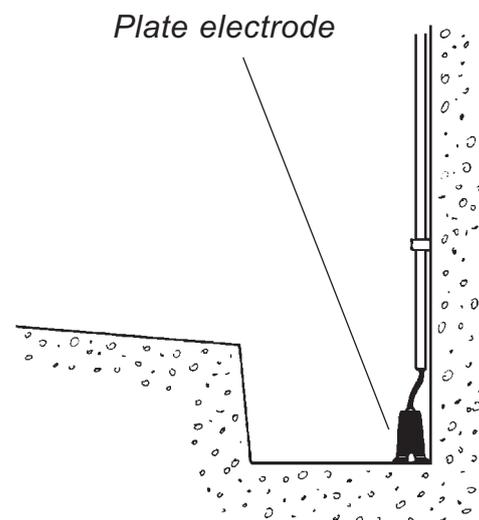
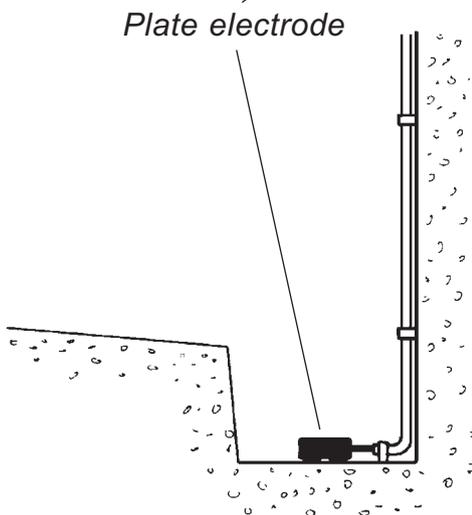
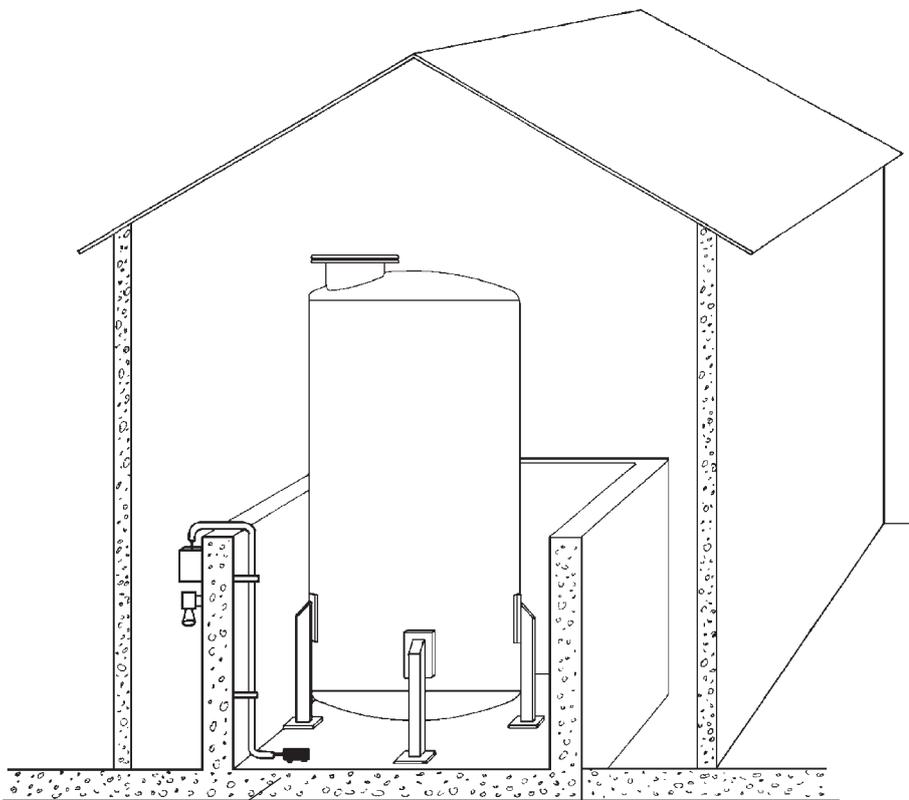
The plate electrodes should be serviced at regular intervals. The intervals depend on the risk of soiling to the electrode and its environment.

However, the unit must be serviced prior to start-up and, subsequently, at the intervals stipulated in the general approval certificate issued by the construction supervisory authorities or, in the case of units without approval from the construction supervisory authorities, at least once a year.

Maintenance work should include the following:

- function check of the cable break monitoring feature in cases where a unit combination with integrated cable break monitoring feature is used:
disconnect an electrode cable directly on the plate electrode PE-Z10. In the case of types PEK-Z10 and WDX-Z10, disconnect an electrode cable in the junction box nearest the plate electrode - or, where the electrode cable is not routed through a junction box, on the electrode relay. Proper functioning of the cable break monitoring feature is signalled by yellow flashing of the LED of the assigned electrode relay;
- cleaning and, where necessary, drying of the electrode and the surrounding area;
- sight check of the electrode to ensure clean, flawless condition;
- function check of the electrode using the liquid to be monitored - or, where this is not possible, using a liquid that is comparable to the liquid to be monitored, followed by cleaning and drying of the electrode.

1.6 Installation examples:



2. Installation, Operating and Maintenance Instructions for Jola Suspension Electrodes EHW... and LWZ...

When using leakage detector systems for liquids that are hazardous to water and that have been generally approved by the construction supervisory authorities, the provisions of the general approval certificate issued by the construction supervisory authorities must always be observed.

2.1 Area of application:

Suspension electrodes should only be used in normally dry environments - for example in collection chambers or collection tubs. It is important to note that suspension electrodes may only be used **for detection of electrically conductive liquids** and only in a temperature range from -20°C to +60°C.

Never exceed the maximum connecting cable lengths stipulated in the product documentation or the general approval certificate issued by the construction supervisory authorities.

2.2 Installation site:

Suspension electrodes are to be installed at the lowest point to ensure rapid leakage detection. The electrode rods must point downwards.

2.3 Mode of installation:

Suspension electrodes are suspended by their connecting cable. Having been lowered to the lowest point, the connecting cable is then fastened in place using suitable fastening materials at the point from which it is suspended. It can be fastened in place using a stuffing gland, a terminal box with integrated stuffing gland or one or more cable fastening clips. Where possible, an installation tube should be used; the tube should be pushed on as close to the electrode as possible, and the electrode cable should be positioned in the tube in such a way that it cannot move, thus preventing the electrode from being knocked over.

You must always ensure that the electrode has reached the lowest point, that it is in an upright position, and that this position cannot be altered due to system-based influences. Alongside the installation modes outlined above, the suspension electrodes can also be fixed in place using our mounting brackets if the installation site is easily accessible.

2.4 Response in the event of an alarm:

After every alarm, the electrode in question, the connecting cable and the operating area must be cleaned thoroughly and dried. If the electrode or the cable show signs of mechanical or chemical aggression, the electrode must be replaced.

2.5 Ongoing maintenance:

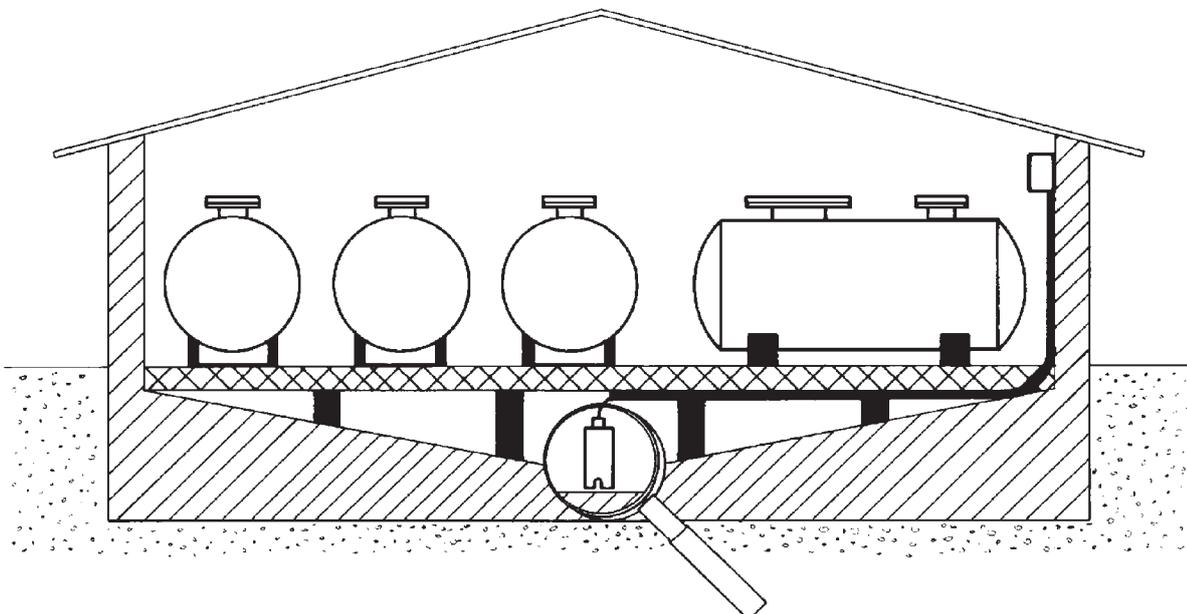
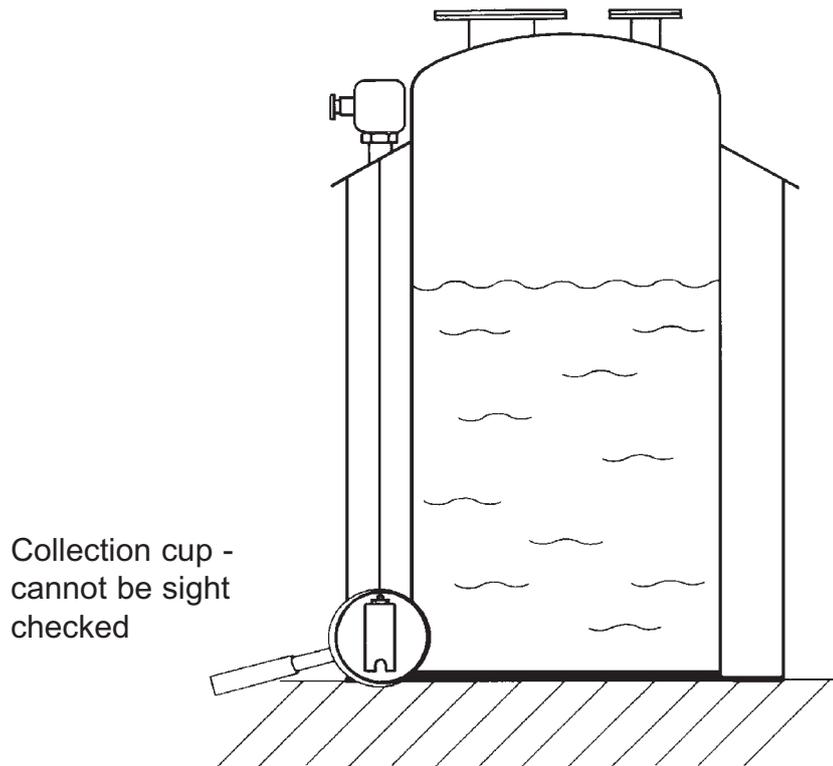
The suspension electrodes should be serviced at regular intervals. The intervals depend on the risk of soiling to the electrode.

However, the unit must be serviced prior to start-up and, subsequently, at the intervals stipulated in the general approval certificate issued by the construction supervisory authorities or, in the case of units without approval from the construction supervisory authorities, at least once a year.

Maintenance work should include the following:

- function check of the cable break monitoring feature in cases where a unit combination with integrated cable break monitoring feature is used:
disconnect an electrode cable in the junction box nearest the suspension electrode - or, where the electrode cable is not routed through a junction box, on the electrode relay. Proper functioning of the cable break monitoring feature is signalled by yellow flashing of the LED of the assigned electrode relay;
- cleaning and, where necessary, drying of the electrode and the surrounding area;
- sight check of the electrode to ensure clean, flawless condition;
- function check of the electrode using the liquid to be monitored - or, where this is not possible, using a liquid that is comparable to the liquid to be monitored, followed by cleaning and drying of the electrode.

2.6 Installation examples:



3. Installation, Operating and Maintenance Instructions for Jola Rod Electrodes SE 2... and S 2...

When using leakage detector systems for liquids that are hazardous to water and that have been generally approved by the construction supervisory authorities, the provisions of the general approval certificate issued by the construction supervisory authorities must always be observed.

3.1 Area of application:

Rod electrodes should only be used in normally dry environments - for example in collection chambers/collection tubs or in double-pipe systems.

It is important to note that rod electrodes may only be used **for detection of electrically conductive liquids** and only in a temperature range from - 20°C to + 60°C.

Never exceed the maximum connecting cable lengths stipulated in the product documentation or the general approval certificate issued by the construction supervisory authorities.

3.2 Installation site:

Rod electrodes are to be installed at the lowest point to ensure rapid leakage detection. They can be installed from the top or from the side. In both cases, you must always ensure that the rods tips are just above the floor to be monitored.

3.3 Mode of installation:

When used in open collection chambers or collection tubs, rod electrodes are to be installed using suitable mounting brackets. We can supply these mounting brackets on request.

When used in closed collection chambers or collection tubs or double-pipe systems, rod electrodes are to be screwed into suitable sleeves and sealed in place using medium-resistant flat gaskets - preferably from the top or, where this is not possible for technical reasons, from the side.

3.4 Response in the event of an alarm:

After every alarm, the electrode in question, the connecting cable and the operating area must be cleaned thoroughly and dried. If the electrode or the cable show signs of mechanical or chemical aggression, the electrode must be replaced.

3.5 Ongoing maintenance:

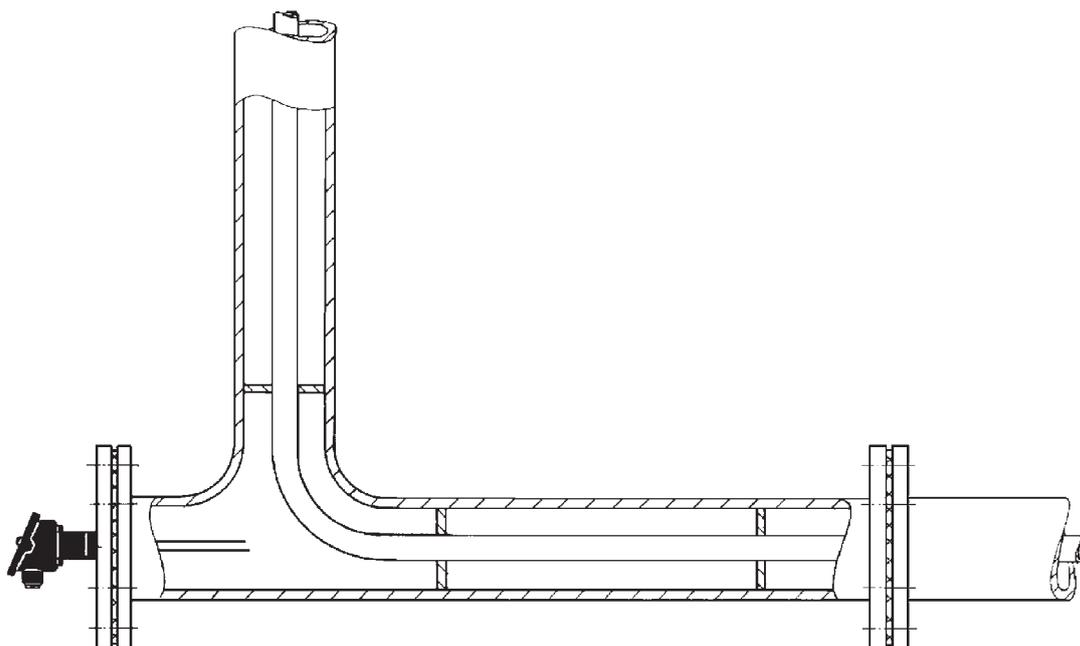
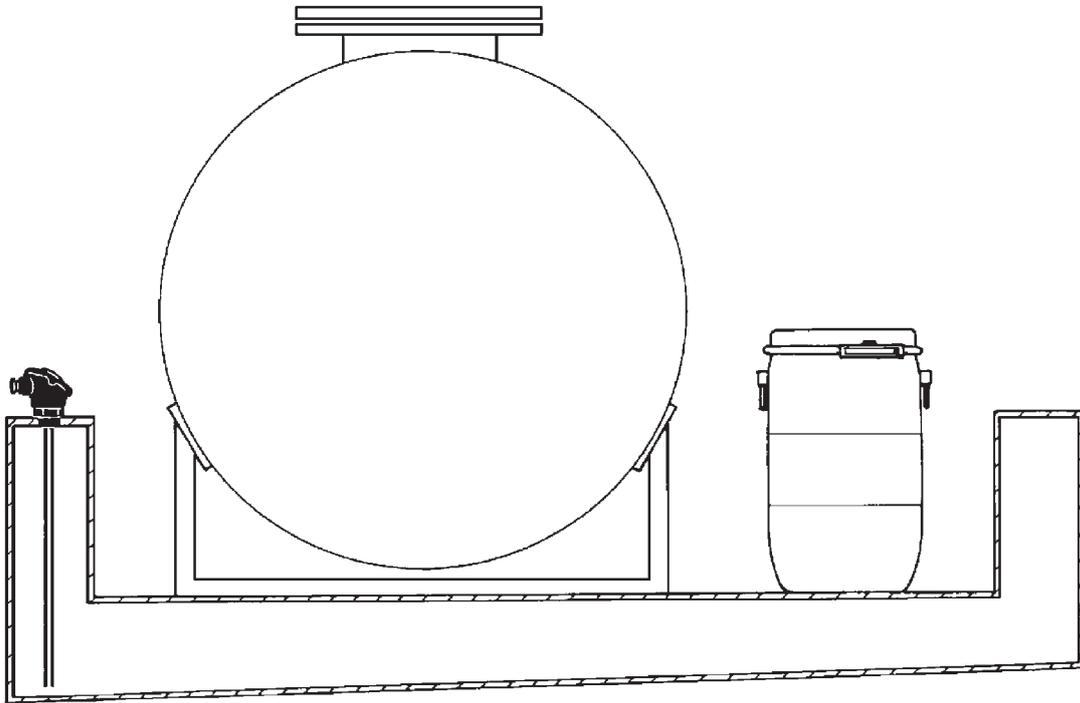
The rod electrodes should be serviced at regular intervals. The intervals depend on the risk of soiling to the electrode and its environment. However, the unit must be serviced prior to start-up and, subsequently, at the intervals stipulated in the general approval certificate issued by the construction supervisory authorities or, in the case of units without approval from the construction supervisory authorities, at least once a year.

Maintenance work should include the following:

- function check of the cable break monitoring feature in cases where a unit combination with integrated cable break monitoring feature is used:
 - disconnect an electrode cable in the rod electrode head or, in the case of a potted rod electrode head, in the junction box nearest the rod electrode - or, where the electrode cable is not routed through a junction box, on the electrode relay. Proper functioning of the cable break monitoring feature is signalled by yellow flashing of the LED of the assigned electrode relay;
- cleaning and, where necessary, drying of the electrode and the surrounding area;
- sight check of the electrode to ensure clean, flawless condition;

- function check of the electrode using the liquid to be monitored - or, where this is not possible, using a liquid that is comparable to the liquid to be monitored, followed by cleaning and drying of the electrode.

3.6 Installation examples:



4. Installation, Operating and Maintenance Instructions for Jola Cable Electrodes KE...

When using leakage detector systems for liquids that are hazardous to water and that have been generally approved by the construction supervisory authorities, the provisions of the general approval certificate issued by the construction supervisory authorities must always be observed.

4.1 Area of application:

Cable electrodes should only be used in normally absolutely dry environments - for example in collection chambers/collection tubs, in double-pipe systems, directly beneath a pipeline or in the insulation beneath a pipeline. It is important to note that cable electrodes may only be used **for detection of electrically conductive liquids** and only in a temperature range from -20°C to $+60^{\circ}\text{C}$.

Never exceed the maximum connecting cable lengths and maximum sensor cable lengths stipulated in the product documentation or the general approval certificate issued by the construction supervisory authorities.

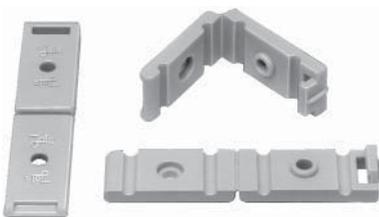
4.2 Installation site:

When installed on the floor, cable electrodes are to be installed at the lowest point to ensure rapid leakage detection. If cable electrodes are to be used in double-pipe systems or directly on a pipeline or a tank, they should also be installed at the lowest point of the potential hazard area which they are intended to monitor. The same applies to cable electrodes used within the insulation of a pipeline or a tank.

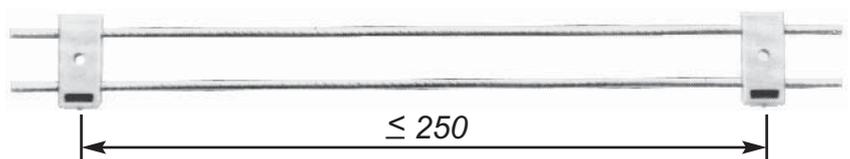
4.3 Mode of installation:

Cable electrodes can be installed in different ways depending on the installation site. **Whichever installation mode is used, you must ensure that the supplied sensor cable spacers are installed at lengthwise spacings less than or equal to 25 cm and that the two sensor cables are laid with a centre-to-centre spacing of less than/equal to 2 cm along the entire detection length. You must also ensure that, in cases in which a unit combination with integrated cable break monitoring feature is used, the cable break monitoring unit remains accessible for inspection purposes.**

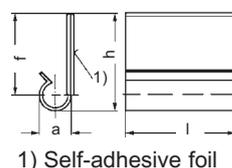
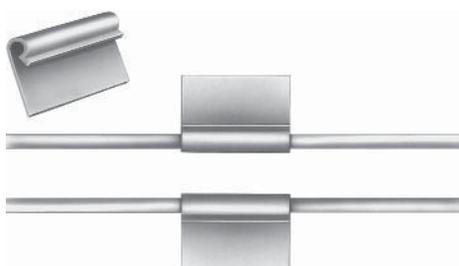
Supplied mounting accessories: sensor cable spacers



Sensor cable with sensor cable spacers



Optional mounting accessories: self-adhesive sensor cable fastening clips



a = 7.6 mm
f = 19.6 mm
h = 22.6 mm
l = 31.8 mm

When installed on the floor, the cable electrodes should be fastened at spacings of at least approx. 0.5 metres to 1 metre at the cable spacers (e.g. using an adhesive or screw and plug) or, alternatively, using additional self-adhesive cable clips. Take care to ensure that the protective sheath of the sensor cables is not damaged.

Fastening methods in which the sensor cables of the cable electrode are pressed against the floor are not suitable. In particular, you should avoid fastening methods in which the sensor cables may be damaged or electrically bridged. One example of this kind of unsuitable fastening method is using the false floor panel beams to press the sensor cables into place in false floors.

When there is a change in the direction, the sensor cables must not be bent but should be laid in an arc.

When the cable electrode is installed in a double-pipe system, it must be routed through the system. Take care to ensure that neither the sensor cables nor the protective sheath of the cables are damaged when fastening the sensor cables and in particular when routing the cables out of the double-pipe system. To prevent damage to the cables when routing them out of the pipe system, we advise you to route only the connecting cable of the cable electrode out of the double-pipe system.

When mounted directly on a pipeline or a tank, the cable electrodes can be secured in place using non-conductive cable ties or cords or using suitable non-conductive cable clips. During mounting, take care to ensure that the cable electrode is only loosely fastened; otherwise, the protective sheath of the sensor cables may be damaged. Moreover, when the cables are mounted on electrically conductive pipelines or tanks, this may result in an insufficient insulation resistance of the cable electrode which could in turn cause false alarms.

To minimise the risk of false alarms, we recommend that you place an insulating foil between the cable electrode and an electrically conductive pipeline/tank.

You should also use a suitable jacket on pipeline/cable electrode or tank/cable electrode to ensure that the cable electrode is rapidly wetted in the event of leakage.

The above also applies **when installing the cable electrodes inside the insulation of a pipeline or tank**. You must additionally ensure that the materials used to secure the insulation are not conductive and do not damage the electrode in any way or come into contact with the stainless steel ropes of the electrodes (N.B. Do not secure using wire materials! Danger of short circuit!). **When installing the cable electrodes between insulation and metal jacket, an additional electrical insulation layer must be fitted between the cable electrode and the electrically conductive metal jacket. This additional electrical insulation layer must also be fitted when mounting the cable electrode on an aluminium foil.**

4.4 Response in the event of an alarm:

After every alarm, the electrode in question, the connecting cable and the operating area must be cleaned thoroughly and dried. If the electrode or the cable show signs of mechanical or chemical aggression, the electrode must be replaced.

4.5 Ongoing maintenance:

The cable electrodes should be serviced at regular intervals. The intervals depend on the risk of soiling to the electrode and its environment.

However, the unit must be serviced prior to start-up and, subsequently, at the intervals stipulated in the general approval certificate issued by the construction supervisory authorities or, in the case of units without approval from the construction supervisory authorities, at least once a year.

Maintenance work should include the following:

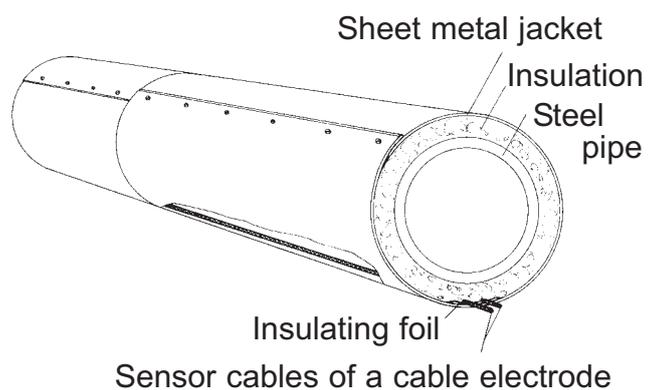
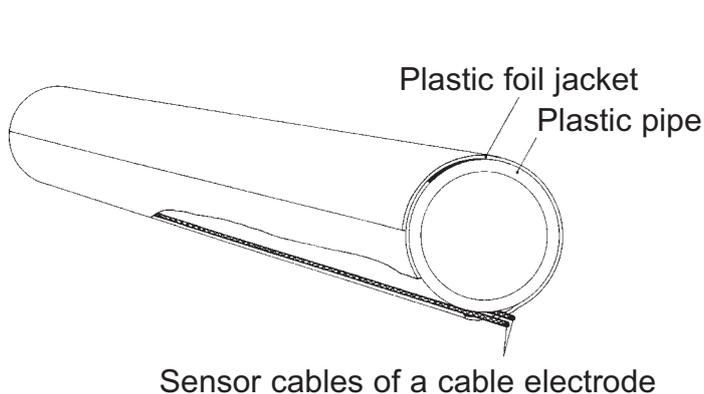
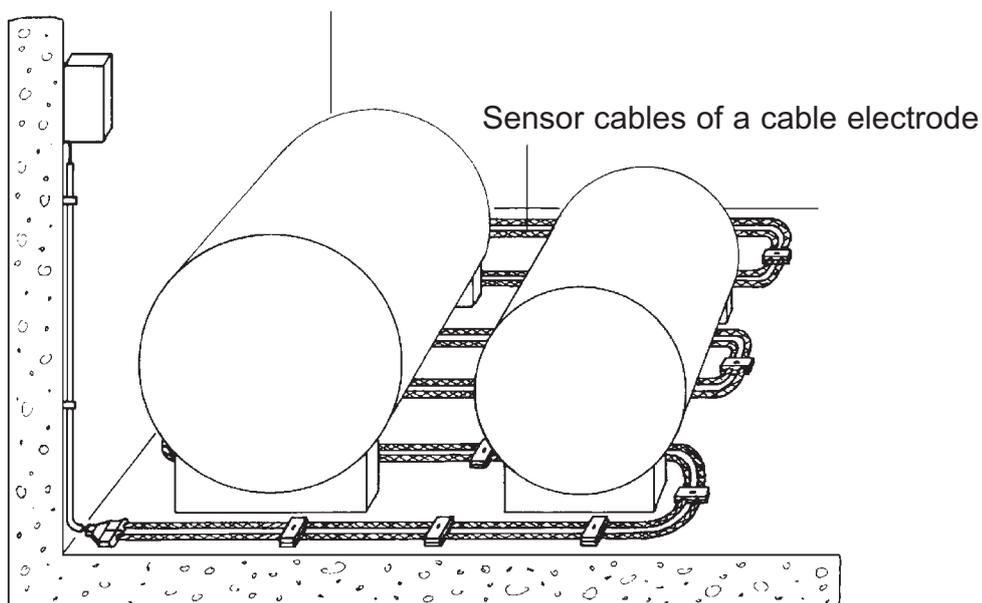
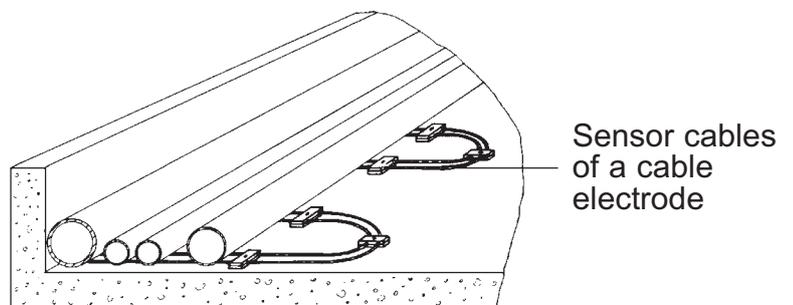
- function check of the cable break monitoring feature in cases where a unit combination with integrated cable break monitoring feature is used:

disconnect the cable break monitoring unit at the end of the cable electrode. Proper functioning of the cable break monitoring feature is signalled by yellow flashing of the LED of the assigned electrode relay.

If the alarm is not activated within 15 seconds after you have disconnected the cable break monitoring unit, this may be due to a moisture bridge between the two sensor cables of the cable electrode. In this event, you should dry the sensor cables and the surrounding area (using hot air, for example) until proper functioning is assured. You should also check whether the cable electrode is suitable for the application in question.

- cleaning of the electrode and the surrounding area to the extent that this is permitted by the installation location;
- sight check of the electrode to ensure clean, flawless condition to the extent that this is permitted by the installation location;
- function check of the electrode using the liquid to be monitored - or, where this is not possible, using a liquid that is comparable to the liquid to be monitored, followed by cleaning and drying of the electrode.

4.6 Installation examples:



5. Installation, Operating and Maintenance Instructions for Jola Tape Electrodes BAE...

When using leakage detector systems for liquids that are hazardous to water and that have been generally approved by the construction supervisory authorities, the provisions of the general approval certificate issued by the construction supervisory authorities must always be observed.

5.1 Area of application:

Tape electrodes should only be used in normally **absolutely dry** environments - for example in collection chambers/collection tubs, in double-pipe systems, directly beneath a pipeline or in the insulation beneath a pipeline. **To avoid false alarms, it is essential that the surroundings of the tape electrodes are normally absolutely dry, as the tape electrodes bind moisture (including high humidity levels in the air) and this can easily result in false alarms in surroundings that are not absolutely dry, particularly in the case of long tape electrodes.** It is important to note that tape electrodes may only be used for detection of electrically conductive liquids and only in a temperature range from - 20°C to + 60°C.

Never exceed the maximum connecting cable lengths and maximum sensor tape lengths stipulated in the product documentation or the general approval certificate issued by the construction supervisory authorities.

5.2 Installation site:

When installed on the floor, tape electrodes are to be installed at the lowest point to ensure rapid leakage detection. If tape electrodes are to be used in double-pipe systems or directly on a pipeline or a tank, they should also be installed at the lowest point of the potential hazard area which they are intended to monitor. The same applies to tape electrodes used within the insulation of a pipeline or a tank.

5.3 Mode of installation:

Tape electrodes can be installed in different ways depending on the installation site. **You must always ensure that, in cases in which a unit combination with integrated cable break monitoring feature is used, the cable break monitoring unit remains accessible for inspection purposes.**

When installed on the floor, the tape electrodes should be fastened at spacings of approx. 0.25 to 0.5 metres (e.g. using an adhesive or nails or screws and plugs). You must ensure that the nails or screws are used in the middle of the tape and do not come into contact with the stainless steel ropes of the electrodes. A further fastening option on the floor is to use self-adhesive tape fasteners that Jola can supply on request.

Fastening methods in which the stainless steel ropes of the tape electrode are pressed against the floor are not suitable. In particular, you should avoid fastening methods in which the tape electrodes may be damaged or electrically bridged. One example of this kind of unsuitable fastening method is using the false floor panel beams to press the tape electrode into place in false floors.

When there is a change in the direction, the tape electrode must not be bent but should be laid in an arc; the tape electrode must run vertically over a small distance.

When the tape electrode is installed in a double-pipe system, it must be routed through the system. Take care to ensure that the sensor tape is not damaged or squeezed when fastening the sensor tape and in particular when routing the sensor tape out of the double-pipe system. To prevent damage to the sensor tape when routing it out of the pipe system, we advise you to route only the connecting cable of the tape electrode out of the double pipe system.

When mounted directly on a pipeline or a tank, the tape electrodes can be secured in place using non-conductive cable ties or cords or using suitable non-conductive cable clips. During mounting, take care to ensure that the tape electrode is only loosely fastened; otherwise, the sensor tape may be damaged. Moreover, when the tape electrodes are mounted on electrically conductive pipelines or tanks, this may result in an insufficient insulation resistance of the tape electrode which could in turn cause false alarms.

To minimise the risk of false alarms, we recommend that you place an insulating foil between the tape electrode and an electrically conductive pipeline/tank.

You should also use a suitable jacket on pipeline/tape electrode or tank/tape electrode to ensure that the tape electrode is rapidly wetted in the event of leakage.

The above also applies **when installing the tape electrodes inside the insulation of a pipeline or tank**. You must additionally ensure that the materials used to secure the insulation are not conductive and do not damage the electrode in any way or come into contact with the stainless steel ropes of the electrodes (N.B. Do not secure using wire materials! Danger of short circuit!). **When installing the tape electrodes between insulation and metal jacket, an additional electrical insulation layer must be fitted between the tape electrode and the electrically conductive metal jacket. This additional electrical insulation layer must also be fitted when mounting the tape electrode on an aluminium foil.**

5.4 Response in the event of an alarm:

After every alarm, the electrode in question, the connecting cable and the operating area must be cleaned thoroughly and dried. If the electrode or the cable show signs of mechanical or chemical aggression, the electrode must be replaced.

5.5 Ongoing maintenance:

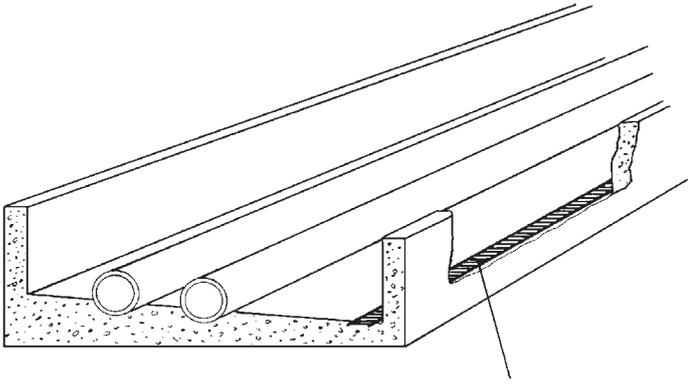
The tape electrodes should be serviced at regular intervals. The intervals depend on the risk of soiling to the electrode and its environment.

However, the unit must be serviced prior to start-up and, subsequently, at the intervals stipulated in the general approval certificate issued by the construction supervisory authorities or, in the case of units without approval from the construction supervisory authorities, at least once a year.

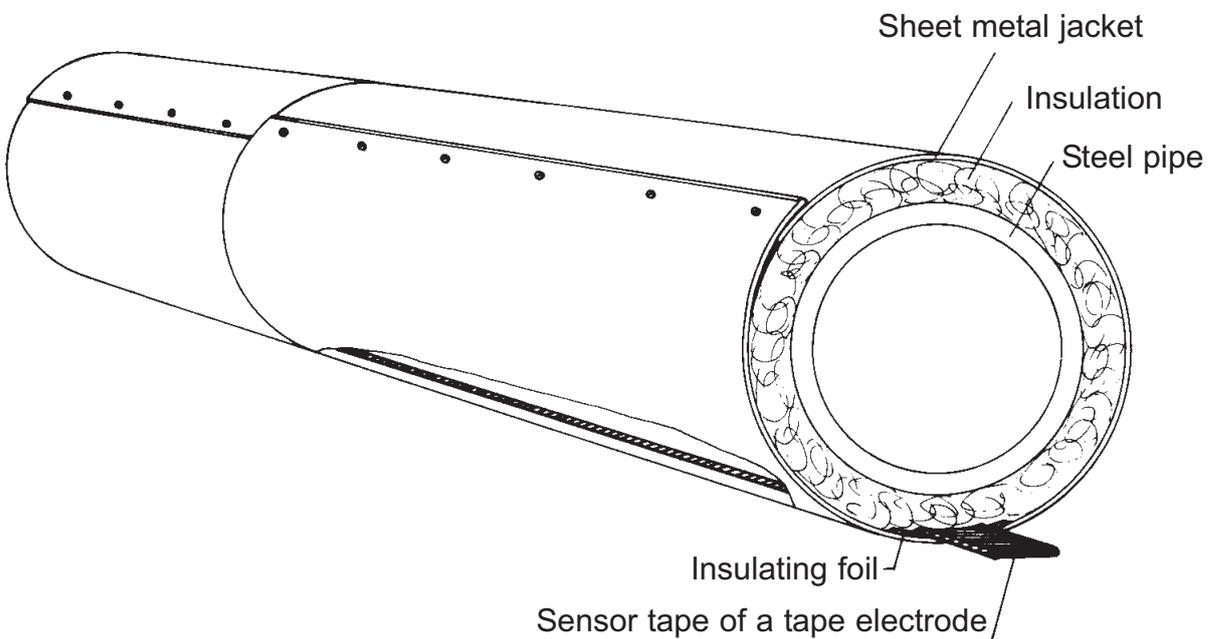
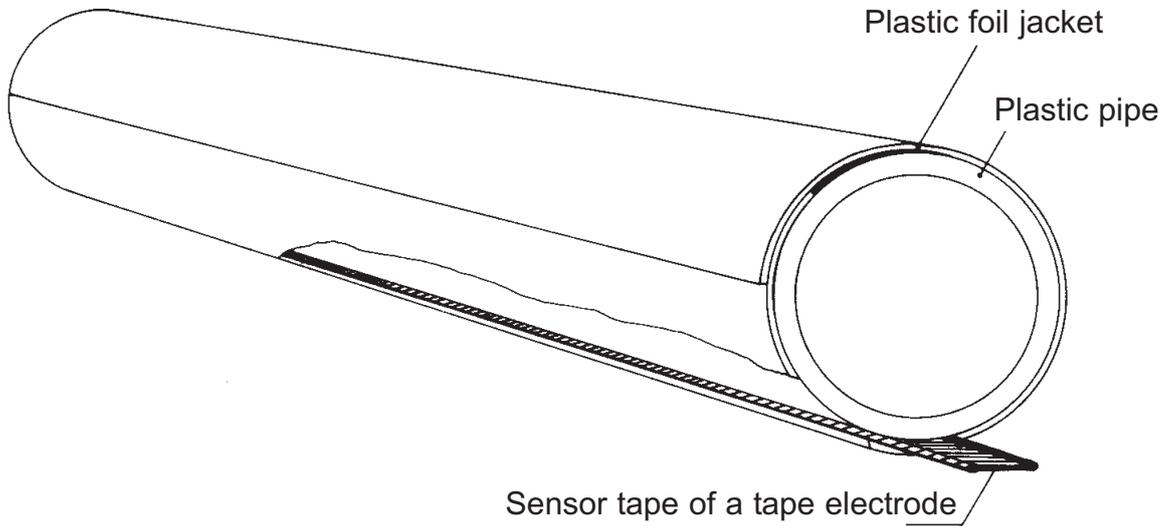
Maintenance work should include the following:

- function check of the cable break monitoring feature in cases where a unit combination with integrated cable break monitoring feature is used:
disconnect the cable break monitoring unit at the end of the tape electrode. Proper functioning of the cable break monitoring feature is signalled by yellow flashing of the LED of the assigned electrode relay.
If the alarm is not activated within 15 seconds after you have disconnected the cable break monitoring unit, this may be due to a moisture bridge between the two sensor cables of the tape electrode. In this event, you should dry the sensor tape and the surrounding area (using hot air, for example) until proper functioning is assured. You should also check whether the tape electrode is suitable for the application in question.
- cleaning and, where necessary, drying of the electrode and the surrounding area to the extent that this is permitted by the installation location;
- sight check of the electrode to ensure clean, flawless condition to the extent that this is permitted by the installation location;
- function check of the electrode using the liquid to be monitored - or, where this is not possible, using a liquid that is comparable to the liquid to be monitored, followed by cleaning and drying of the electrode.

5.6 Installation examples:



Sensor tape of a tape electrode, laid in a pipe duct



6. Installation, Operating and Maintenance Instructions for Jola Electrode Relays Leckstar ...

When using leakage detector systems for liquids that are hazardous to water and that have been generally approved by the construction supervisory authorities, the provisions of the general approval certificate issued by the construction supervisory authorities must always be observed.

6.1 Area of application:

- The electrode relays Leckstar 101, Leckstar 101/S and Leckstar 5 are designed solely for installation in switch cabinets.
- The electrode relay Leckstar 5/G is suitable for surface mounting. **The connecting cables are only to be routed into the unit via the factory-fitted cable entries. Under no circumstances may other cable entries be used. No additional holes may be made in the housing.**

Before connecting the electrode relays, check whether the supply voltage for the mains connection terminals is the same as the voltage specified on the rating plate. Only then should you connect the relays.

The electrode relays may only be used in a temperature range from -15°C to $+60^{\circ}\text{C}$. We recommend, however, that you install the relays in frost-free rooms or in heated protective boxes.

Never exceed the maximum electrode cable lengths stipulated in the product documentation, the general approval certificate issued by the construction supervisory authorities or these installation, operating and maintenance instructions.

Installation must always be performed by suitably qualified personnel in compliance with the relevant IEC regulations and the safety and accident prevention guidelines.

6.2 Ongoing maintenance:

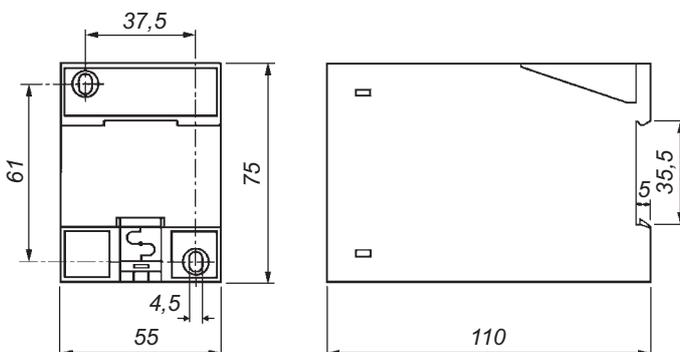
The electrode relays should be included in the regular maintenance of the electrodes.

6.3 Note on EMC:

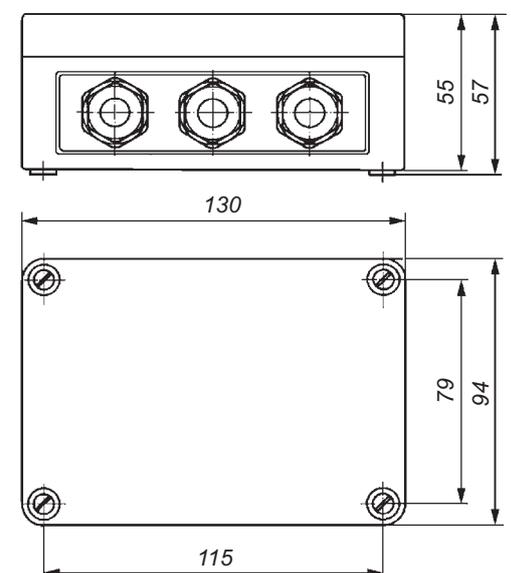
For interference emission in accordance with the appliance-specific requirements for households, business and commerce as well as small companies, and for interference immunity in accordance with the appliance-specific requirements for industrial companies.

Dimensions

Leckstar 101, Leckstar 101/S, Leckstar 5



Leckstar 5/G



6.4 Technical data of Leckstar 101, Leckstar 101/S, Leckstar 5 and Leckstar 5/G electrode relays:

Leckstar 101 Electrode Relay

with cable break monitoring feature and switchable self-hold, for the connection of all conductive electrodes with Z10 cable break monitoring unit

Electrode relay for U-bar mounting or surface mounting, with connection terminals on top, and with 3 built-in LEDs for signalling the operating statuses.

The appliance is designed for switch cabinet installation or mounting in an appropriate protective housing and may therefore not be installed in other locations. It is only suitable for use in clean environments.

Self-hold:

- If the switch for self-hold is switched on, an alarm is stored. The relay continues to signal the alarm even if the cause of the alarm (e.g. the presence of water or a cable break) is no longer present – in other words, if the sensor is dry again or if the line has contact. The alarm is acknowledged by switching off the switch for self-hold.

- If the switch for self-hold is not switched on, the alarm is not maintained when the cause of the alarm has been remedied but is terminated.



Technical data

Leckstar 101

Alternative supply voltages (terminals 15 and 16);

DC execution:

- terminal 15: -
- terminal 16: +

- AC 230 V (delivered if no other supply voltage is specified in the order) or

- AC 240 V or
- AC 115 V or
- AC 24 V or

- DC 24 V or } in these two cases, the unit must only be
 - DC 12 V or } connected to a low safety voltage which
 corresponds to the safety regulations relating
 to the application

- further supply voltages on request
 approx. 3 VA

Power input

Electrode connection (terminals 7 and 8)

- no-load voltage
- short-circuit current
- response sensitivity

Cable break monitoring

Controlled circuit (terminals 9, 10, 11)

2 terminals (under safety extra low voltage SELV) acting on 1 relay with switchable self-hold

18 V_{eff} \square 10 Hz (safety extra low voltage SELV)

0.5 mA_{eff}

approx. 30 kohm or approx. 33 μ S (electric conductance) via Zener diode (Z10) circuit at the end of the sensor line

1 single-pole potential-free changeover contact based on the quiescent current principle

3 LEDs (see next page)

Switching status indicators

Switching voltage

max. AC 250 V

Switching current

max. AC 4 A

Switching capacity

max. 500 VA

Housing

insulating material, 75 x 55 x 110 mm (dimensions see page 13)

Connection

terminals on top of housing

Protection class

IP 20

Mounting

clip attachment for U-bar to DIN 46 277 and EN 50 022 or fastening via two boreholes

Mounting orientation

any

Temperature application range

- 15°C to + 60°C

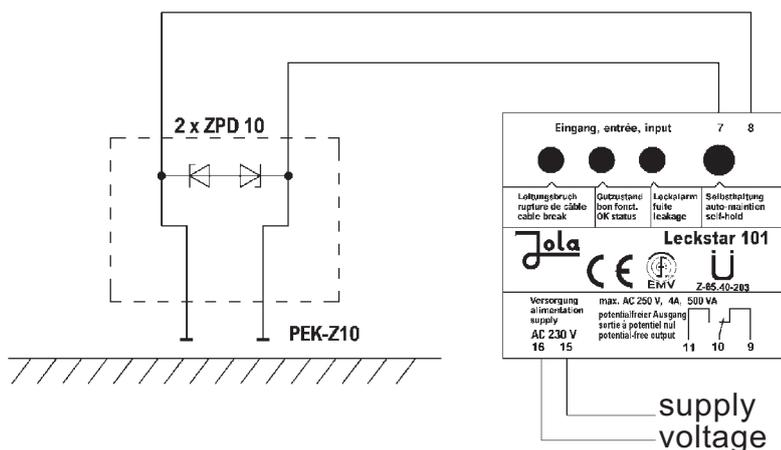
Max. length of connecting cable between electrode relay and Z10 cable break monitoring unit

1,000 metres

for interference emission in accordance with the appliance-specific requirements for households, business and commerce as well as small companies, and for interference immunity in accordance with the appliance-specific requirements for industrial companies.

EMC

Connection diagram - Leckstar 101 electrode relay



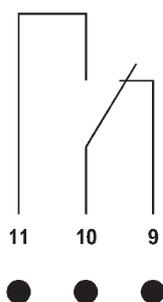
LED flashes yellow = cable break
 LED green = OK status
 LED red = alarm

Due to the design of the unit, only one electrode cable can be monitored for cable break. If several plate electrodes of the type PE.. are to be connected to a common Leckstar 101 electrode relay, only one plate electrode (the last one) may be fitted with the Z10 cable break monitoring unit. All other plate electrodes are to be used without integrated Z10 cable break monitoring unit (see right-hand circuit diagram).

Position of contact when Leckstar 101 without voltage

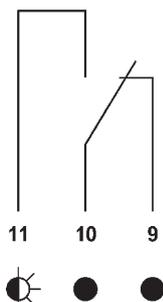
Position of output contact of the Leckstar 101 electrode relay

Relay Leckstar 101 without voltage



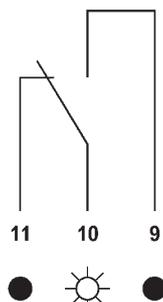
LEDs dark:
 Leckstar 101 without voltage, output relay not energized

Cable break



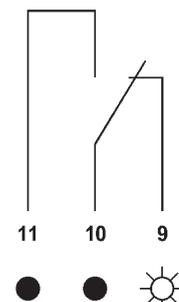
Yellow LED flashes:
 Leckstar 101 under voltage, electrode cable break, output relay not energized

OK status



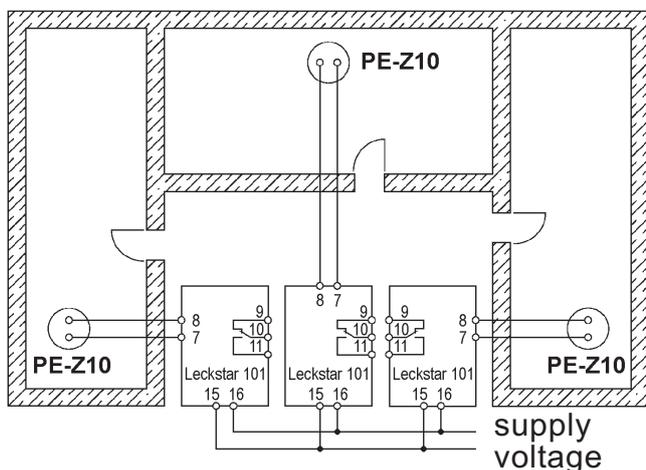
Green LED lit:
 Leckstar 101 under voltage, electrode not energized, output relay energized

Alarm status

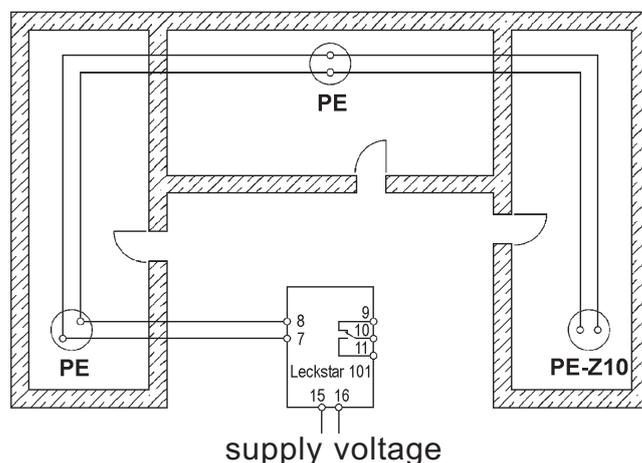


Red LED lit:
 Leckstar 101 under voltage, electrode energized, output relay not energized

Circuit diagrams (position of contacts when Leckstar 101 without voltage)



Connection of several plate electrodes to several Leckstar 101 electrode relays – separate alarms.



Connection of several plate electrodes to one Leckstar 101 electrode relay – group alarm.

Leckstar 101/S Electrode Relay

with separately routed cable break monitoring output and switchable self-hold, for the connection of all conductive electrodes with Z10 cable break monitoring unit

Electrode relay for U-bar mounting or surface mounting, with connection terminals on top, and with 3 built-in LEDs for signalling the operating statuses.

The appliance is designed for switch cabinet installation or mounting in an appropriate protective housing and may therefore not be installed in other locations. It is only suitable for use in clean environments.

One relay (potential-free break contact) is designed to activate an alarm in the event of a leakage or cable break. A further relay (potential-free break contact) is designed to activate a separate alarm in the event of a cable break.

Self-hold: see Leckstar 101



Technical data

Leckstar 101/S

Alternative supply voltages (terminals 15 and 16);

DC execution:
- terminal 15: -
- terminal 16: +

- AC 230 V (delivered if no other supply voltage is specified in the order) or
- AC 240 V or
- AC 115 V or
- AC 24 V or
- DC 24 V or } in these two cases, the unit must only be
- DC 12 V or } connected to a low safety voltage which corresponds to the safety regulations relating to the application
- further supply voltages on request
approx. 3 VA

Power input
Electrode connection (terminals 7 and 8)

- no-load voltage
- short-circuit current
- response sensitivity
Cable break monitoring
1st controlled circuit (terminals 9, 10)

2 terminals (under safety extra low voltage SELV) acting on 2 relays with switchable self-hold
 $18 V_{\text{eff}} \text{ } \overline{\text{---}} \text{ } 10 \text{ Hz}$ (safety extra low voltage SELV)
 $0.5 \text{ mA}_{\text{eff}}$
approx. 30 kohm or approx. 33 μS (electric conductance) via Zener diode (Z10) circuit at the end of the sensor line

1 single-pole potential-free break contact based on the quiescent current principle for alarm activation in the event of a leakage or cable break

2nd controlled circuit (terminals 12, 13)

1 single-pole potential-free break contact based on the quiescent current principle for additional alarm activation in the event of a cable break

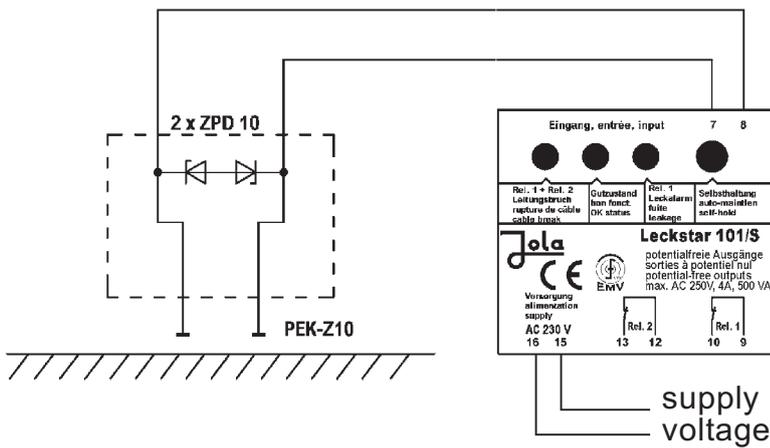
Switching status indicators
Switching voltage
Switching current
Switching capacity
Housing
Connection
Protection class
Mounting

3 LEDs (see next page)
max. AC 250 V
max. AC 4 A
max. 500 VA
insulating material, 75 x 55 x 110 mm (dimensions see page 13)
terminals on top of housing
IP 20
clip attachment for U-bar to DIN 46 277 and EN 50 022 or fastening via two boreholes
any
- 15°C to + 60°C

Mounting orientation
Temperature applic.range
Max. length of connecting cable between electrode relay and Z10 cable break monitoring unit
EMC

1,000 metres
for interference emission in accordance with the appliance-specific requirements for households, business and commerce as well as small companies, and for interference immunity in accordance with the appliance-specific requirements for industrial companies.

Connection diagram - Leckstar 101/S electrode relay



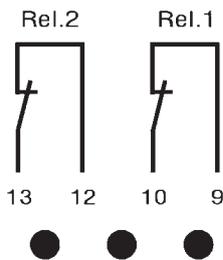
Position of contacts when Leckstar 101/S without voltage

LED flashes yellow = cable break
 LED green = OK status
 LED red = alarm

Due to the design of the unit, only one electrode cable can be monitored for cable break. If several plate electrodes of the type PE.. are to be connected to a common Leckstar 101/S electrode relay, only one plate electrode (the last one) may be fitted with the Z10 cable break monitoring unit. All other plate electrodes are to be used without integrated Z10 cable break monitoring unit (see right-hand circuit diagram).

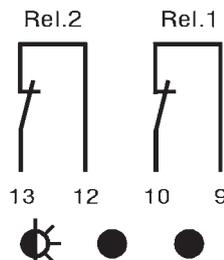
Position of output contacts of the Leckstar 101/S electrode relay

Relay Leckstar 101/S without voltage



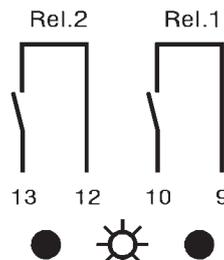
LEDs dark:
 Leckstar 101/S without voltage, both output relays not energized, output contacts closed

Cable break



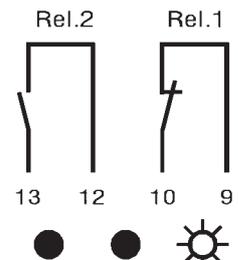
Yellow LED flashes:
 Leckstar 101/S under voltage, electrode cable break, both output relays not energized, output contacts closed

OK status



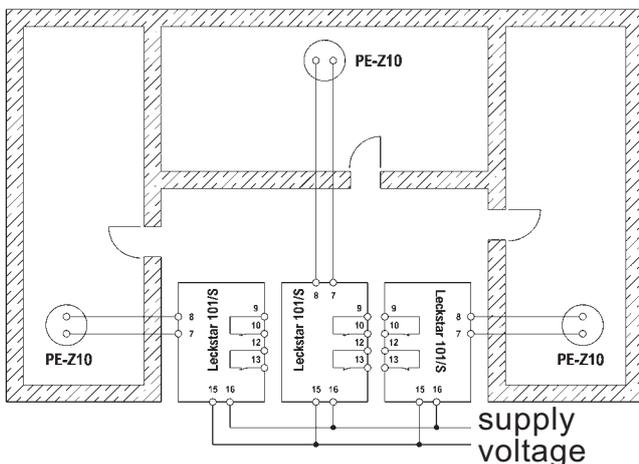
Green LED lit:
 Leckstar 101/S under voltage, electrode not energized, both output relays energized, output contacts open

Alarm status

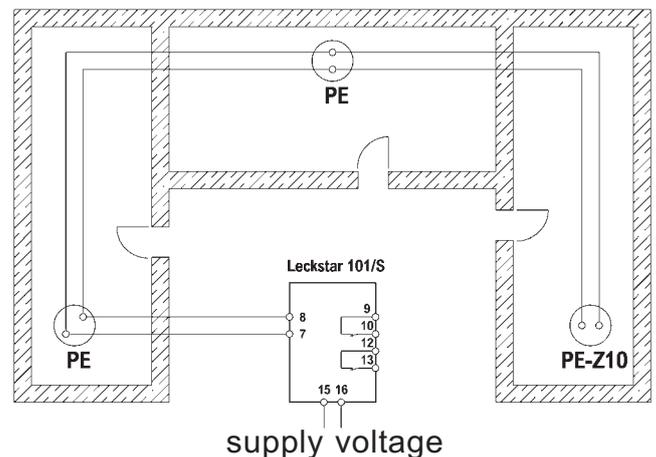


Red LED lit:
 Leckstar 101/S under voltage, electrode energized, output relay 1 not energized, output contact closed, output relay 2 energized, output contact open

Circuit diagrams (position of contacts when Leckstar 101/S without voltage)



Connection of several plate electrodes to several Leckstar 101/S electrode relays – separate alarms.



Connection of several plate electrodes to one Leckstar 101/S electrode relay – group alarm.

Leckstar 5 Electrode Relay

**with switchable self-hold,
for the connection of all conductive electrodes without cable break monitoring unit**

Electrode relay for U-bar mounting or surface mounting, with connection terminals on top, and with built-in LED for signalling the alarm status.

The appliance is designed for switch cabinet installation or mounting in an appropriate protective housing and may therefore not be installed in other locations. It is only suitable for use in clean environments.

Self-hold:

- If the switch **for self-hold is switched on, an alarm is stored**. The relay continues to signal the alarm even if the cause of the alarm (e.g. the presence of water or a cable break) is no longer present – in other words, if the sensor is dry again or if the line has contact. The alarm is acknowledged by switching off the switch for self-hold.

- If the switch **for self-hold is not switched on, the alarm is not maintained** when the cause of the alarm has been remedied but is terminated.



Technical data

Leckstar 5

Alternative supply voltages (terminals 15 and 16);
DC execution:

- terminal 15: –
- terminal 16: +

- AC 230 V (delivered if no other supply voltage is specified in the order) or
- AC 240 V or
- AC 115 V or
- AC 24 V or
- DC 24 V or } in these two cases, the unit must only be
- DC 12 V or } connected to a low safety voltage which
- corresponds to the safety regulations relating to the application

Power input

- further supply voltages on request
- approx. 3 VA

Electrode connection (terminals 7 and 8)

2 terminals (under safety extra low voltage SELV) acting on 1 relay with switchable self-hold

- no-load voltage
- short-circuit current
- response sensitivity

18 V_{eff} \square 10 Hz (safety extra low voltage SELV)
max. 0.5 mA_{eff}
approx. 30 kohm or approx. 33 μS (electric conductance)

Controlled circuit (terminals 9, 10, 11)

1 single-pole potential-free changeover contact based on the quiescent current principle

Switching status indicator

1 red LED lights when the sensor is wet/relay is not energized

Switching voltage

max. AC 250 V

Switching current

max. AC 4 A

Switching capacity

max. 500 VA

Housing

insulating material, 75 x 55 x 110 mm (dimensions see page 13)

Connection

terminals on top of housing

Protection class

IP 20

Mounting

clip attachment for U-bar to DIN 46 277 and EN 50 022 or fastening via two boreholes

Mounting orientation

any

Temperature application range

- 15°C to + 60°C

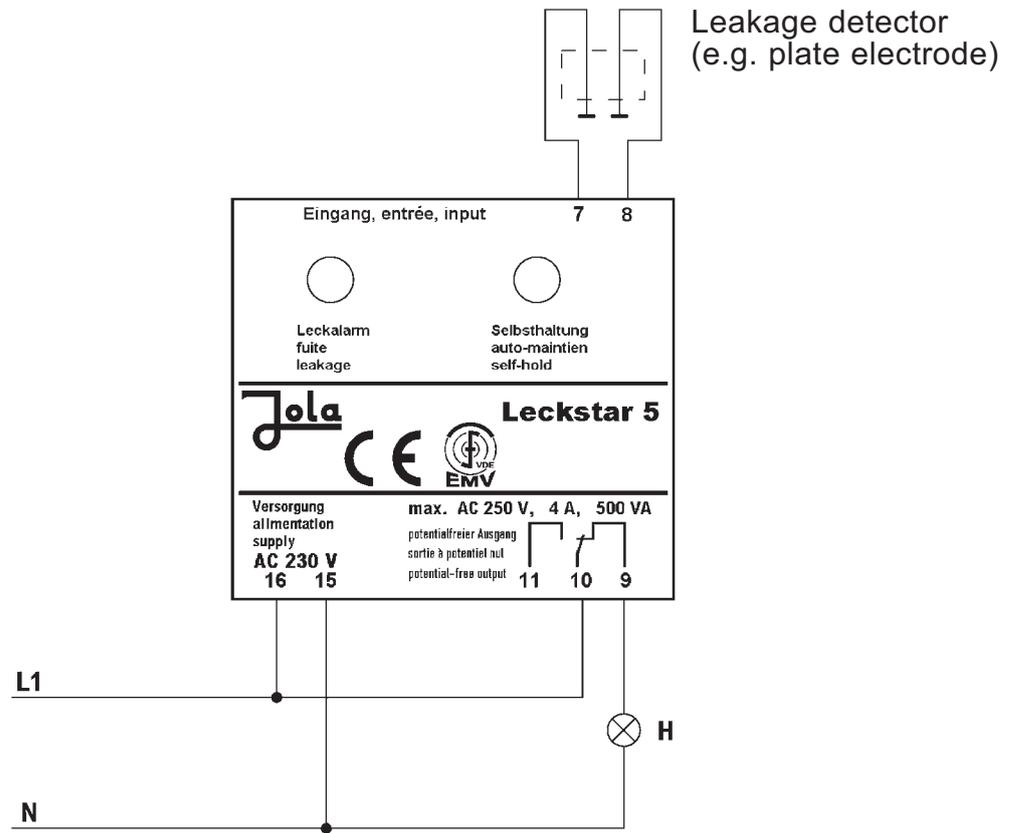
Max. length of connecting cable between electrode relay and electrode(s)

1,000 metres

EMC

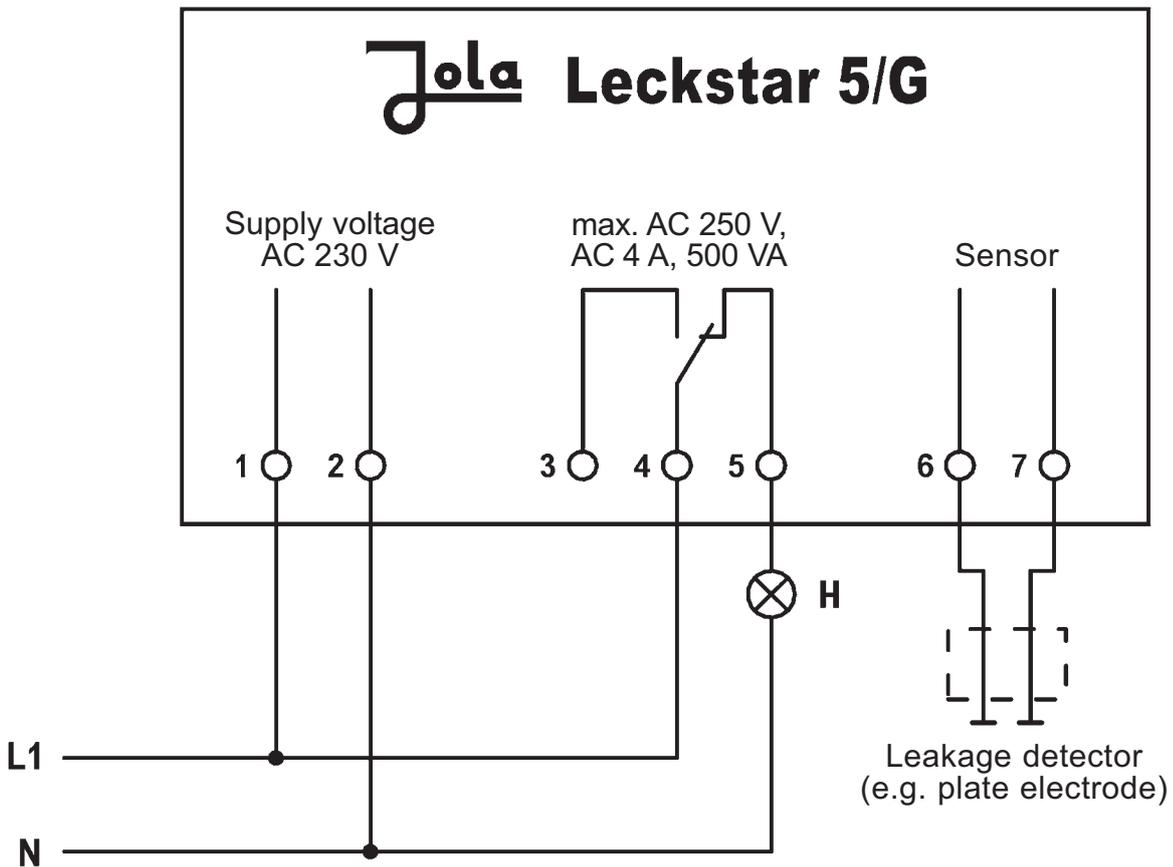
for interference emission in accordance with the appliance-specific requirements for households, business and commerce as well as small companies, and for interference immunity in accordance with the appliance-specific requirements for industrial companies.

Connection diagram - Leckstar 5 electrode relay



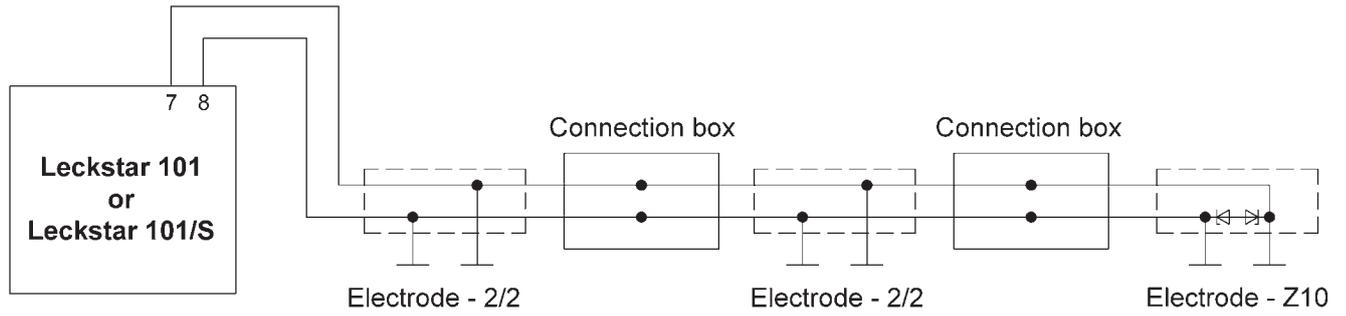
Position of contact when Leckstar 5 without voltage or with activated sensor (alarm) and normal mains operation

Connection diagram - Leckstar 5/G electrode relay



Position of contact when Leckstar 5/G without voltage or with activated sensor (alarm) and normal mains operation

Connection diagram: conservation of the cable break monitoring by fitting out the electrodes with a 2 x 2-core cable



Connection diagram: conservation of the cable break monitoring by fitting out the electrodes with a 4-core cable (colours of cores for input and output: see rating plate)

