VOTRONIC

Installation and Operating Manual

Tank Electrode 25 — For Tank Height 10 cm – 25 cm, 12V and 24 V — No. 5538

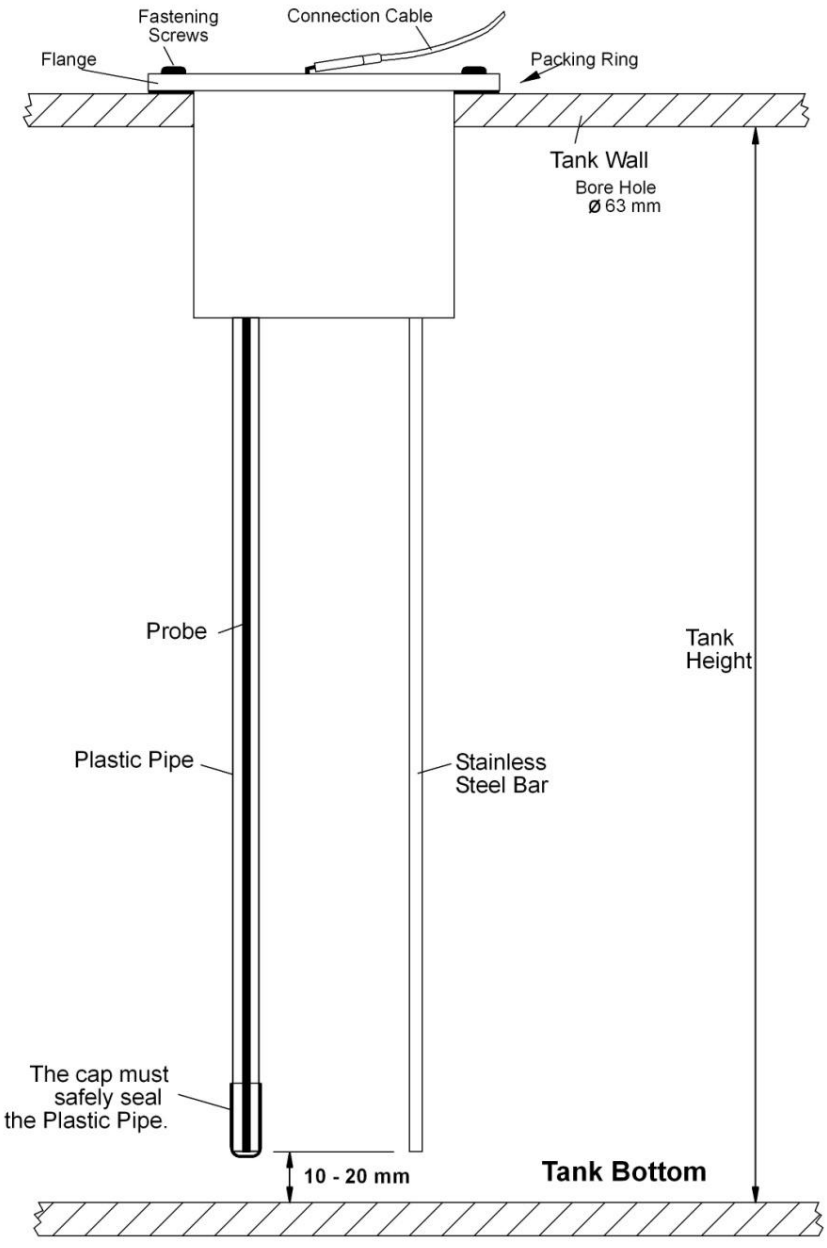
Tank Electrode 35 — For Tank Height 15 cm – 35 cm, 12V and 24 V — No. 5540

Tank Electrode 50 — For Tank Height 20 cm – 50 cm, 12V and 24 V — No. 5542

Tank Measuring Sensor with capacitive measuring method, suitable and required for the VOTRONIC Tank Displays:

Tank Display Units (silver design)**:**	Order No **12 V**	Order No **24 V**
Fresh Water Tank Display S	5311	5311
Sewage Water Tank Display S	5313	5313
Feces Tank Display S	5315	5315
Info Panel Pro	5330	6330
Votronic Bus System VBS 2	all Types	all Types

Previous Tank Display Units (black design)**:**	Order No **12 V**	Order No **24 V**
Fresh Water Tank Display	5212	6012
Sewage Water Tank Display	5213	6013
Feces Tank Display	5215	6115
Info Panel	5216	6111
LCD Tank Monitor Digital 4	1241	1241



The tank electrode has to be mounted directly on the tank (remote measurement). It is suitable for:

- Fresh Water (Please note DIN 2001-2, guidelines for requirements for drinking water)
- Sewage Water
- Feces Sewage Water

- Plastic Tanks
- Metal Tanks (Aluminium, Steel, Stainless Steel, etc.)

- It is adjustable to tank heights from
  10 cm to 25 cm or
  14.5 cm to 35 cm or
  20 cm to 50 cm.

Operating Mode:
The level in the tank is measured capacitively. The isolated probe forms with the surrounding water a "capacitor" whose size increases with the level and is measured by the electronics. The compound to the water as a"antipole " is produced here by the stainless steel bar of the conductor.

Fig. 1: Tank Installation

The assembly is done by a central hole (diameter 63 mm) at the tank top, also subsequently.

Preliminary Installation:

The tank electrode is designed for vertical installation from the tank top (Fig. 1). In contrast to sewage water and feces tanks (formation of sludge), an installation from the lower side of the tank is also possible.
The tank electrode should be placed at the topmost location and in the tank centre. Use a conventional circular cutter to drill a hole with a diameter of 63 ± 0.5 mm at this location.

Both stick probes, as well as the plastic pipe are shortened to the same length (metal cutting saw, bolt cutter). It is important to leave a clearance of at least 10 -20 mm between the tank bottom and the probe extremities (formation of sludge, movement of the tank during driving etc., Fig. 1).

Slide the delivered silicone cap on the probe, which is insulated by the plastic tube (Fig. 1.)

Thorough sealing of silicone cap and plastic tube is decisive for proper operation of the tank electrode!

Connection:

Configuration of Connections Tank Electrode (Fig. 2 and Fig. 3):

No. **1 = Battery ─**	**-** Operating Voltage (Minus) or Body Ground,	Cable Cross Section 0.5 - 1 mm²
No. **4 = Tank Signal**	Measurement Signal to the Display Unit Connection 4	Cable Cross Section 0.5 - 1 mm²
No**. 5 = Tank +** (Plus)	+ Operating Voltage to the Display Unit Connection 5	Cable Cross Section 0.5 - 1 mm²

Observe to attaching the female connectors carefully to the cables: All single wires of the strand have to be crimped and the insulation of the strand has also to be crimped. Fig. 2 shows a female connector being correctly attached. Prior to crimping, the enclosed 3 pieces insulating bushes have to be pushed on the female connectors to avoid the risk of short-circuits between two adjacent contacts!
The VOTRONIC Tank Electrode is protected against wrong polarization. It is recommendable to use connection cables of different colours to avoid malfunctions due to mixed up connections.

As soon as the display unit has been installed according to the operating manual, the battery can be connected.

Start-up and Adjustment:

2 adjusting devices are located at the upper side of the tank electrode. **One of the adjusting devices is protected with red paint and should never be changed.**
The second adjusting device is used to adjust the tank electrode to the tank height.

Insert a folding rule into the mounting hole to measure the exact tank depth (inside width) and set the adjusting device for the "water depth" to this value. The adjustment procedure is completed. The functions of the display can now be simulated with several water levels in the tank (or in a bucket being filled with water!) or by withdrawing the tank electrode out of the full tank (or bucket). The adjusted water depth can be corrected or changed at any time.

Final Installation:

Insert before attaching the tank probe the packing ring between flange and tank wall (Fig. 1)!
In case of underfloor installation of the tank, the electric connections (plug-type connections) and the adjusting devices have to be protected against environmental pollution by means of sealant (e.g. Sikaflex).

ATTENTION: Neither use silicone separating acetic acid in connection with metal (rust formation), nor resisting agent containing carbon! The above-mentioned sealant has been proved to be very suitable in practice.

Tips and Tricks:

No reaction of display:

a. Cable **4** = *Tank Signal* withdraw connector by way of trial and direct it to connection 5: The display should increase to 100 % ! **Otherwise:**
b. Battery connection or fuse defective → check !
c. Cable **5 =** *Tank Plus* interrupted → check !
d. Cable **4** = *Tank Signal:* Short-circuit to ground → check !

Constant display of 100 % on the display unit:

a. Cable **4** = *Tank Signal* withdraw it and direct it to ground: No display! **Otherwise:**
b. Cable **4** = *Tank Signal* interrupted → check!
c. Cable **1** = *Battery Minus / Ground* is interrupted or does not have any contact due to paint residues at the body → check!
d. The insulated stick probe is contacting water: The silicone cap is leaky or dropped off, the plastic pipe is damaged → check!

Indication Errors:

a. In case of underfloor installation of the tank: Insufficient protection of the electric connections (humidity, soiling) → seal!
b. Intense soiling and furring of the insulated probe by solids in the sewage water tank and grey water tank → rinse tank or clean tank!

Fig. 2: Top View:

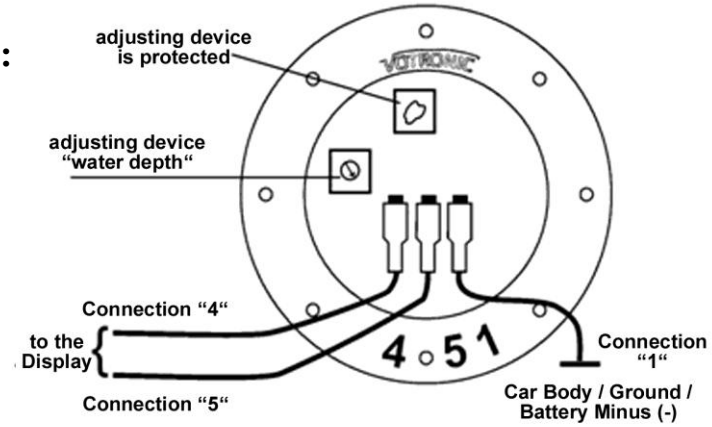


Fig. 3: Connection Plan

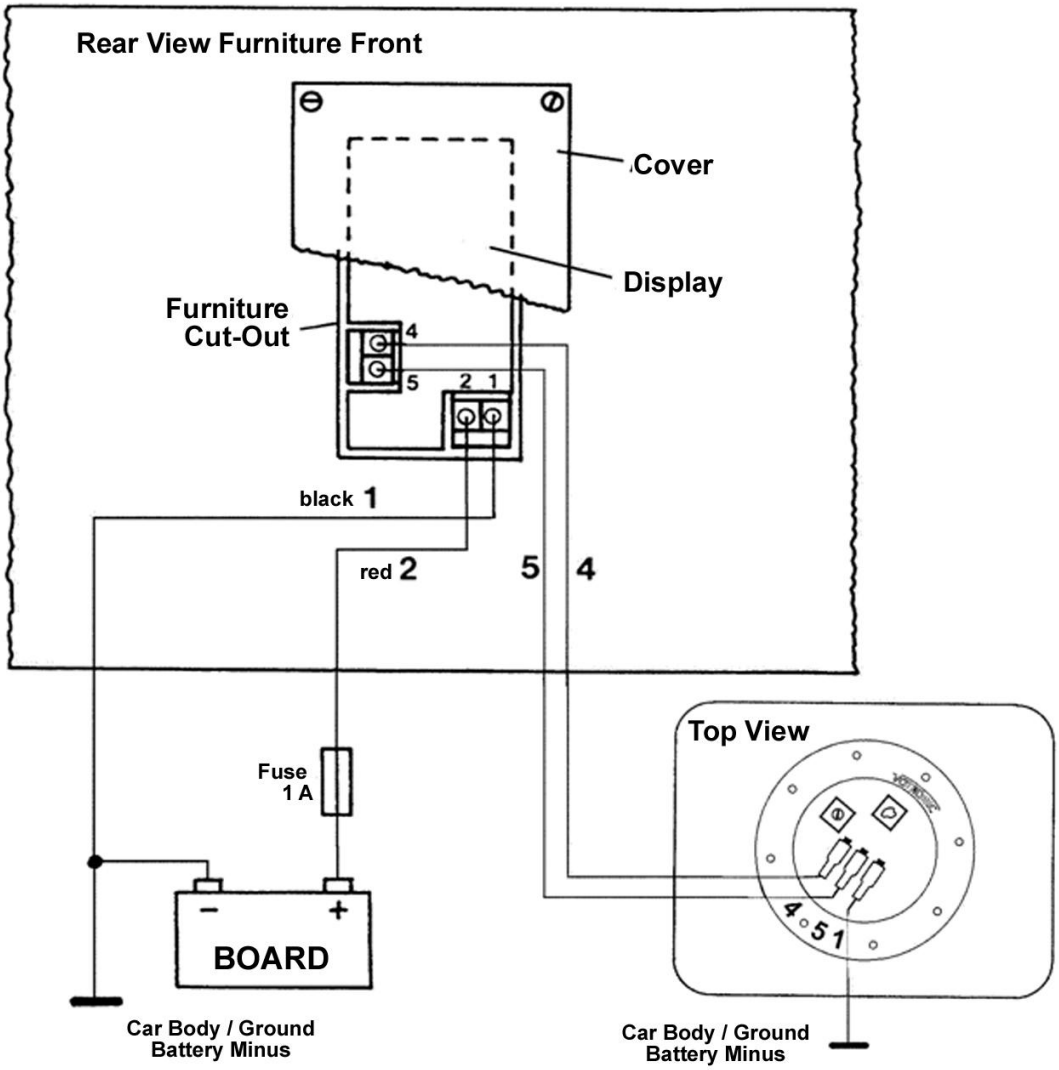
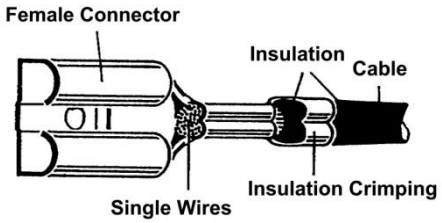


Fig. 4:



Safety Regulations:

Appropriate Application:
The VOTRONIC Tank Electrode FL has been designed according to the valid safety regulations.

Appropriate application is restricted to:

1. **Level measuring of water and hydrous media.**
2. **In fixed installed 12 V / 24 V DC (direct current) systems / on-board power supply systems.**
3. **In consideration of the indicated cable cross sections.**
4. **Observing the indicated fuse rates for the supplied operating voltage.**
5. **Technically faultless condition.**

- Cables are always to be laid in such a way that damage is excluded. Observe to fasten them tightly.
- Never lay 12 V (24 V) cables and 230 V mains supply cables into the same cable conduit (empty conduit).
- Check live cables or leads periodically for insulation faults, points of break or loosened connections. Occurring defects must be remedied immediately.
- The unit is to be disconnected from any connection prior to execution of electrically welding or work on the electric system.
- If the non-commercial end-user is not able to recognize the characteristic values being valid for a unit or the regulations to be observed, a specialist is always to be consulted.
- The user/buyer is obliged to observe any construction and safety regulations.
- The unit is not equipped with parts, which can be replaced by the user.
- Keep children away from the tank probe and measuring sensor.
- Non-observance may result in injury or material damage.
- The warranty period is 24 months from the purchase date (against presentation of the sales slip or invoice).
- The warranty will be void in case of any inappropriate utilisation of the unit, if it is used beyond the technical
- specification, in case of improper operation or external intervention. We do not assume any liability for any damage resulting hereof. The liability exclusion is extended to any service being executed by third, which has not been ordered by us in writing. Service is to be effected exclusively by VOTRONIC Lauterbach / Germany.

CE **Declaration of Conformity:**
According to the stipulations of the regulations 2006/95/EG, 2004/108/EG, 95/54/EG this product corresponds to the following standards or standardized documents:
EN55014; EN55022 B; DIN14685; DIN40839-1; EN61000-4-2; EN61000-4-3; EN 61000-4-4.

Disposal of the product in the normal household waste is not allowed.

Pb RoHS 2002/95/EC The product conforms to RoHS. Thus, it complies with the directives for Reduction of Hazardous Substances in Electrical and Electronic Equipment.

Quality Management System
DIN EN ISO 9001

Technical Data:

Operating Voltage:	12 V-/ 24 V–DC Board mains supply (from display unit)
Measuring Method:	capacitive
Built-in Diameter:	63 mm
Flange Diameter:	89 mm
For Tank Heights:	10 – 25 cm, 14.5 – 35 cm or 20 – 50 cm

Delivery Scope:
- Tank Electrode with Silicone Cap
- 3 ea. Female Connectors 2.8 mm
- 3 ea. Insulating Bushes
- 8 ea. Fastening Screws
- 1 Packing ring
- Mounting Instructions

Subject to misprints, errors and technical modification without notice.

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