MAGONTEC

CORREX® UP 1.9-924

Operating manual

Impressed-current anode system for stainless steel storage water heaters

Go beyond.

Contents

1 General information

1.1 About this operating manual

Publisher

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Application and purpose

This operating manual applies to the CORREX® UP 1.9-924 impressed-current anode system.

The operating manual provides the information necessary for safe, proper use in all phases of life:
- Installation
- Commissioning
- Operation
- Troubleshooting
- Dismantling and disposal

Subject to change without notice

Magontec reserves the right to make changes and additions to the impressed-current anode system CORREX® UP 1.9-924. Deviations from the information in this operating manual are possible.

Target groups

- Qualified specialist personnel, for example sanitary, heating and air conditioning system technicians.
- *chapter 5, Notes for the owner/operator* is aimed at the owner/operator of the storage water heater.

Use of the operating manual

- **You must read and understand the safety chapter and the chapters for the relevant activity in full.**
- Keep the operating manual available for reference at all times.
- Pass on the operating manual when the product changes ownership.

How warning notes are displayed

Danger level	Consequences of disregard	Probability
⚠ DANGER	Fatality or serious injury (irreversible)	Imminently
⚠ WARNING	Fatality or serious injury (irreversible)	Potentially
⚠ CAUTION	Minor injury (reversible)	Potentially
NOTE	Property damage	Potentially

1.2 Copyright protection

2 Description

2.1 Intended use

The CORREX® UP 1.9-924 is used for permanent cathodic corrosion protection of stainless steel storage water heaters for drinking water in closed, dry rooms. The CORREX® UP 1.9-924 must only be used for this purpose and in compliance with this installation and operating manual.

2.2 Principle of operation

Causes of corrosion

Corrosion can occur in the interior of a steel storage water heater due to contact with water. Corrosion is caused by an electrochemical reaction between oxygen dissolved in the water and the metallic material of the storage tank.

Function and effect of the titanium anode

The titanium anodes have the following functions:

- Protective current supply
- Potential measurement

The impressed-current electronics generate a protective current opposite to the corrosion current. This cathodic internal protection, as it is known, stops the progress of the corrosion reaction. The titanium anode acts as the positive pole and the metal of the storage water heater as the negative pole (cathode).

The supply of voltage with the potentiostat causes the titanium anode to work as an impressed-current anode. The anode material is not consumed.

How the electronics work

The potentiostatic electronics automatically vary the driving voltage at the titanium anode until it matches the preset target potential. When the preset target potential has been achieved, the corrosion rate becomes negligible. The interrupter principle ensures that neither under- nor overprotection is applied.

2.3 Technical data

System

Impressed-current anode system for stainless steel storage water heaters

2.3.1 Potentiostat UP 1.9-924

How it works

Interrupter potentiostat with potential-controlled protective current regulation

Mains supply

The potentiostat requires the following electrical supply:

Voltage	230 V ±10%
Frequency	50/60 Hz
Power consumption	< 4 W

Characteristic values

The impressed current of the potentiostat for the titanium anode has the following characteristic values:

Driving voltage, rated value	1,9 V
Rated current (secondary), max.	180 mA
Driving voltage (secondary), max.	11 V at 100 mA

Operation

The following requirements apply to the operation of the potentiostat:

Temperature range	0 °C - 40 °C
Protection class	II (operation in closed rooms)

Housing

The housing of the potentiostat has the following features:

Dimensions (without Euro plug), L × W × H	100 mm × 50 mm × 40 mm
Weight	Approx. 200 g
Type	With Euro plug
Display	1 LED

2.3.2 Titanium anodes

Properties

The titanium anodes have the following properties:

Electrode diameter	2 mm or 3 mm
Electrode length	200 mm - 1200 mm
Coating material	Precious metal mixed oxide (MMO)
Coating length	Variable, according to individual design for the respective storage water heater
Threaded bolt	M8 × approx. 30 mm
Features	With/without touch guard made of water-hygienically approved, special polymer material

2.4 Conformity with directives

EU Declaration of Conformity

By affixing the CE conformity marking to the product CORREX® UP 1.9-924, the manufacturer declares that the product complies with the following European Council directives with regard to design, construction, testing and operation:

- 2014/35/EU (Low Voltage Directive)
- 2014/30/EU (EMC Directive)
- 2011/65/EU (RoHS / Restriction of Hazardous Substances)

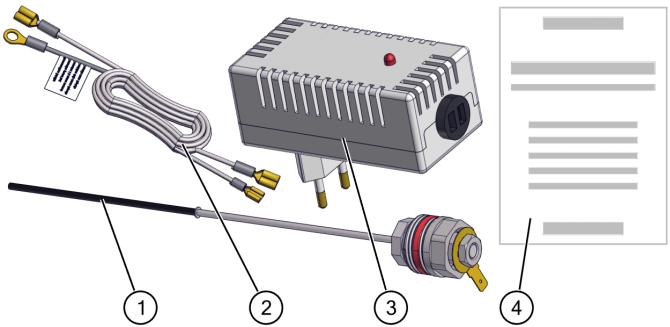
Conformity has been verified and the corresponding documentation as well as the EU Declaration of Conformity are on file with the manufacturer.

2.5 Scope of delivery

The scope of delivery depends on the variants ordered (anode, connection cable, screw plug), and what is shown here is an example. For the exact scope of delivery, see the accompanying documents (e.g. delivery note, order confirmation).

2.5.1 Scope of delivery for socket mounting

Scope of delivery for version with 1 titanium anode, exemplary:



Item	Qty.	Description
1	1	Titanium anode with insulated mounted screw plug and flat blade connector
2	1	Connecting cable with flat blade receptacles - for 1 anode
3	1	Potentiostat with indicator lamp
4	1	Operating manual

Scope of delivery for version with 2 titanium anodes: Second titanium anode and connecting cable for 2 anodes.

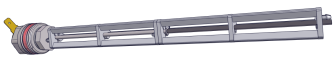
Variants: Screw plug

The screw plug is provided in one of the following variants:

Screw plug G ¾" with PTFE sealing	
Screw plug G ¾" × 14 NPT	

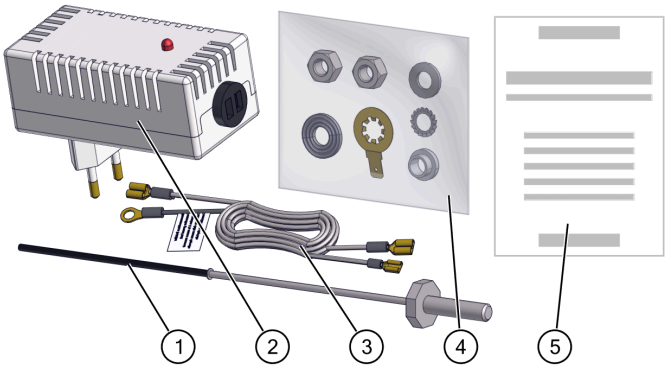
Variants: Titanium anode

The titanium anode is provided in one of the following variants:

Without touch guard	
With touch guard made of plastic	

2.5.2 Scope of delivery for hole mounting

Scope of delivery for version with 1 titanium anode, exemplary:



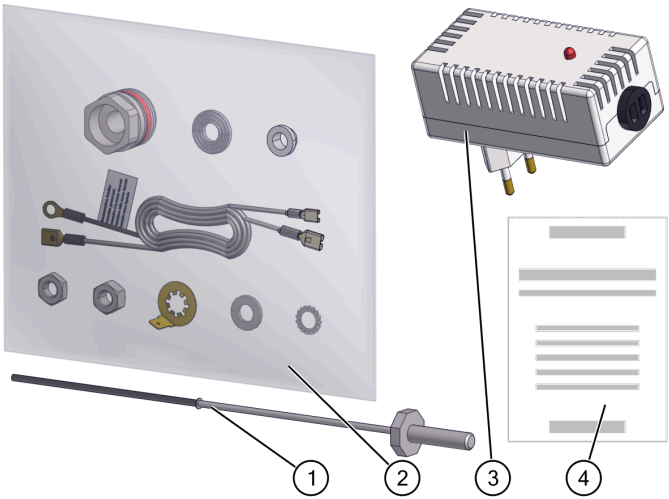
Item	Qty.	Description
1	1	Titanium anode with M8 × 30 threaded bolt and sealing washer
2	1	Potentiostat with indicator lamp
3	1	Connecting cable with flat blade receptacles - for 1 anode
4	1	Bag with mounting accessories, e.g.: – Gaskets – Insulation sleeves – Tooth lock washer – Nuts – Tooth lock washer with flat blade connector

Item	Qty.	Description
5	1	Operating manual

Scope of delivery for version with 2 titanium anodes: Second titanium anode and connecting cable and mounting accessories for 2 anodes.

2.5.3 Scope of delivery with mounting kit for both types of mounting

Scope of delivery for version with 1 titanium anode, exemplary:



Item	Qty.	Description
1	1	Titanium anode with M8 × 30 threaded bolt and sealing washer

Item	Qty.	Description
2	1	Bag with screw plugs and mounting accessories, e.g.: – Screw plug G ¾" – Gaskets – Insulation sleeves – Tooth lock washer – Nuts – Tooth lock washers with flat blade connector – Connecting cable with flat blade receptacles - for 1 anode
3	1	Potentiostat with indicator lamp
4	1	Operating manual

Scope of delivery for version with 2 titanium anodes: Second titanium anode, connecting cable and mounting accessories for 2 anodes.

3 ⚠ Safety

3.1 Basic safety instructions

Importance of the safety regulations

To ensure safe handling of the CORREX® UP 1.9-924, all persons who work with the CORREX® UP 1.9-924 must read, understand and follow the safety regulations.

Safety regulations for handling the CORREX® UP 1.9-924

Use the CORREX® UP 1.9-924 only for the intended use. See → *chapter 2.1, Intended use, page 5*.

Only qualified specialists, for example technicians for sanitary, heating and air conditioning, may carry out the work described here, with the following exceptions → *chapter 5, Notes for the owner/operator, page 19*.

Follow the instructions and warnings in this manual for all work.

4 Installation and commissioning

4.1 Installation requirements

Proper function of the storage water heater

The storage water heater must function properly.

For storage water heaters with electric heating elements:

⚠ WARNING

Risk of electric shock due to defective electrical heating elements
Defective electrical heating elements can apply mains voltage to metal parts of the storage water heater as well as the connections of the titanium anode after it has been installed and cause electric shock with serious injuries or even death.
⇨ Ensure proper functioning of the electrical heating elements.

NOTE

Damage to the storage water heater due to gas accumulation
Gas can accumulate in the storage water heater when an impressed-current anode is operated.
⇨ Install a degassing valve in accordance with DIN EN 12499 at the highest point of the storage water heater.

Sizing of the titanium anodes

NOTE

Damage to the storage water heater due to insufficient corrosion protection.
Incorrectly sized titanium anodes can lead to insufficient corrosion protection.
⇨ Size titanium anodes to be suitable for the storage water heater, if necessary after consulting the customer service department of the storage water heater manufacturer. The following factors can influence the size of the titanium anodes:
  – Total inner surface of the storage water heater in contact with water,
  – Accessories installed in the storage water heater, or their design,
  – Conductivity of the drinking water.
⇨ Define the following properties of the titanium anodes and the potentiostat appropriately:
  – Number and position of the titanium anodes,
  – Diameter, length, coating length of the titanium anodes,
  – Type of potentiostat (Magontec types UP, MP, OP etc.).
⇨ Size and install titanium anodes so that they do not touch the inner wall surface or accessories installed in the storage water heater.

Suitable mains connection

- A mains connection must be available.
- The mains connection must comply with the applicable national regulations.
- The mains connection must be protected with a residual current device (RCD).

- The voltage at the mains connection must correspond to the voltage for the mains supply of the potentiostat. See → *chapter 2.3, Technical data, page 6*.
- The position of the mains connection must allow safe routing of the connecting cable between the potentiostat (at the mains connection) and the connections for the titanium anode on the storage water heater (note the length of the connecting cable).

NOTE

Malfunction due to polarity reversal
Extending the connecting cable can lead to polarity reversal and thus to a malfunction.
⇨ Do not extend the connecting cable.

4.2 Mounting types and relevant mounting chapters depending on the scope of delivery

The following types of mounting are possible:
- Socket mounting
- Hole mounting

The following chapters are relevant, depending on the scope of delivery and type of mounting:

Scope of delivery	Mounting chapter
Scope of delivery for socket mounting, page 8	→ *chapter 4.3.2, Installing the anode in the socket and connecting it, page 14*
Scope of delivery for hole mounting, page 9	→ *chapter 4.4, Hole mounting, page 16*
Scope of delivery with mounting kit for both types of mounting, page 10	Socket mounting: → *chapter 4.3, Socket mounting, page 13* Hole mounting: → *chapter 4.4, Hole mounting, page 16*

4.3 Socket mounting

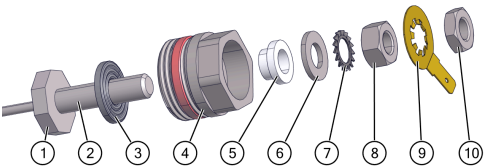
4.3.1 Assembly kit: Assemble anode

Applies for	*Scope of delivery with mounting kit for both types of mounting, page 10*
Mounting type	Socket mounting

Assemble the anode with the socket mounting assembly kit:

1. Assemble parts (3) - (7) on the threaded bolt (2) of the titanium anode.

G ¾"



Important:
° Only use an original gasket (3).
° The narrow end of the insulation sleeve (5) lies in the bore of the screw plug (4).

2. Tighten the M8 nut (8) with a torque spanner as follows:

a) Lock the octagonal disk (1) on the titanium anode for steps b - d.
b) Initially tighten the M8 nut (8) to 8 Nm.
c) Allow the screw connection to settle for approx. 1 minute.
d) Tighten M8 nut (8) by another 3/4 turn (270°).
Important: Torque must remain **less than** 20 Nm.
If torque of 20 Nm is already reached at less than 3/4 turn, check the assembly and eliminate the problem, e.g.:
– Thread dirty,
– Thread damaged,
– Gasket not present.

3. Fasten flat blade connector (9) with flat M8 nut (10), torque to least 5 Nm, maximum 8 Nm.

Important: The first M8 nut (8) must not turn.

Continue with → *chapter 4.3.2, Installing the anode in the socket and connecting it, page 14*.

4.3.2 Installing the anode in the socket and connecting it

Applies for	*Scope of delivery for socket mounting, page 8* or *Scope of delivery with mounting kit for both types of mounting, page 10*
Mounting type	Socket mounting

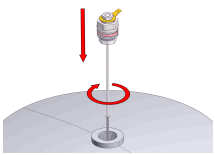
Additional material required	• If necessary, reducing socket made of stainless steel, brass or gunmetal • If necessary, sealing material (PTFE sealing tape, hemp) for socket thread

Requirements

- The storage water heater must be switched off and disconnected from the mains voltage.
- The storage water heater must be empty.
- All magnesium anodes must have been removed.
- There must be a suitable socket on the storage water heater for each anode to be installed.

Installing and connecting the anode

1.

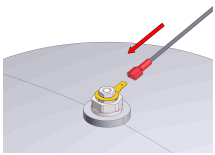


Screw the titanium anode with the screw plug into the threaded socket on the storage water heater so it is pressure-tight.

Important:

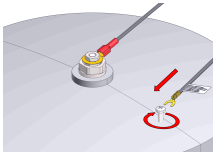
- Screw plug with PTFE sealing is optimized for installation in threaded sockets with inlet chamfer having opening angle of 60°.
- Installation of screw plug with PTFE sealing in threaded socket with a different opening angle is possible, but the PTFE sealing could be damaged. Use sealing material in this case.
- Use sealing material for:
  - Reducing socket,
  - Screw plug with NPT thread,
  - Screw plug with damaged PTFE sealing.

2.

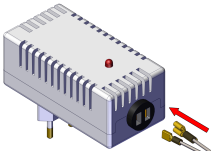


Connect the connection end of the connecting cable to the titanium anode:

- For connection end with flat blade receptacle: Plug the flat blade receptacle onto the flat blade on the titanium anode.
- For connection end with ring eye: Attach the ring eye to the threaded bolt of the titanium anode with a nut.

3. 

Connect the connection end with the “tank ground connection” flag (tank = storage water heater) to the metal of the storage water heater so it is electrically conductive:
- To a grounding screw or other suitable contact connection,
- NOT to plastic piping or enclosures on the storage water heater.

4. 

Plug in the connection ends on the potentiostat:
- Small flat blade receptacle, 4.8 × 0.8 mm, of the connecting cable to small flat blade on the potentiostat;
- Large flat blade receptacle, 6.3 × 0.8 mm, of the connecting cable to large flat blade on the potentiostat;

After installation, put the CORREX® UP 1.9-924 into operation and test, see → *chapter 4.5, Commissioning with functional test, page 18*.

4.4 Hole mounting

Applies for	*Scope of delivery for hole mounting, page 9*
Mounting type	Hole mounting

Requirements
- The storage water heater must be switched off and disconnected from the mains voltage.
- The storage water heater must be empty.
- All magnesium anodes must have been removed.
- There must be a suitable installation site in a flange plate on the storage water heater for each anode to be installed. The installation site must be on a flat, i.e. not curved, surface.

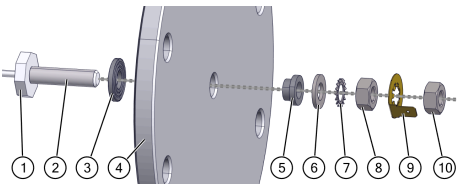
4.4.1 Assembling anode with flange plate

Assemble the titanium anode with the flange plate of the storage water heater:

1. Drill a mounting hole, Ø 10.5 mm, in the flange plate of the storage water heater.

Important:
- The inner surface of the cover must remain flat where the gasket (3; see following figure) makes contact.
- Uneven spots on the gasket can lead to leaks and, for example, to the thermal insulation of the storage water heater becoming soaked.

2. Assemble parts (3) - (7) on the threaded bolt (2) of the titanium anode.



Important:
- Only use an original gasket (3).
- The narrow end of the insulation sleeve (5) must be in the mounting hole of the flange plate (4).

3. Tighten the M8 nut (8) with a torque spanner as follows:

a) Lock the octagonal disk (1) on the titanium anode for steps b - d.
b) Initially tighten the M8 nut (8) to 8 Nm.
c) Allow the screw connection to settle for approx. 1 minute.
d) Tighten M8 nut (8) by another 3/4 turn (270°).
Important: Torque must remain **less than** 20 Nm.
If torque of 20 Nm is already reached at less than 3/4 turn, check the assembly and eliminate the problem, e.g.:
– Thread dirty,
– Thread damaged,
– Gasket not present.

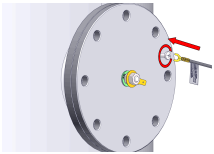
4. Fasten flat blade connector (9) with second M8 nut (10), torque to least 5 Nm, maximum 8 Nm.

Important: The first M8 nut (8) must not turn.

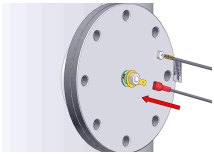
Continue with → *chapter 4.4.2, Installing and connecting the anode, page 17*.

4.4.2 Installing and connecting the anode

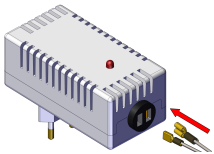
1. Fit the flange plate on the storage water heater.

2. 

Connect the connection end with the “tank ground connection” flag (tank = storage water heater) to the metal of the storage water heater so it is electrically conductive:
- To a grounding screw or other suitable contact connection,
- NOT to plastic piping or enclosures on the storage water heater.

3. 

Connect the anode connection end of the connecting cable to the titanium anode:
- For anode connection end with flat blade receptacle: Plug the flat blade receptacle onto the flat blade on the titanium anode.
- For anode connection end with ring eye: Attach the ring eye to the threaded bolt of the titanium anode with a nut.

4. 

Plug in the connection ends of the connecting cable for the potentiostat:
- Small flat blade receptacle, 4.8 × 0.8 mm, of the connecting cable to small flat blade on the potentiostat;
- Large flat blade receptacle, 6.3 × 0.8 mm, of the connecting cable to large flat blade on the potentiostat;

After installation, put the CORREX® UP 1.9-924 into operation and test, see → *chapter 4.5, Commissioning with functional test, page 18*.

4.5 Commissioning with functional test

Always complete commissioning with a functional test. Corrosion protection cannot be ensured without successful testing.

Requirements

For electrically operated storage water heaters:
- The storage water heater must be disconnected from the mains voltage.

Commissioning and testing

1. Fill the storage water heater and check for leak tightness.
2. Connect the potentiostat to the mains voltage.

3. Check the indicator lamp on the potentiostat:
   - Indicator lamp is not lit or blinks red: See → *chapter 6, Troubleshooting, page 20*.
   - Indicator lamp is lit green: Potentiostat is ready for operation.
4. Measure the driving voltage with a digital multimeter or CorroScout® anode tester as a DC voltage. To do so, make the following connections:
   - Minus connection “COM” to ground of the storage water heater,
   - Positive connection “V” to the titanium anode.

✓ The potentiostat functions correctly if the driving voltage is greater than or equal to +1,9 V and less than +11 V.

If the driving voltage does not fulfil this requirement, there is a fault. See → *chapter 6, Troubleshooting, page 20*.

5 Notes for the owner/operator

5.1 Maintaining and monitoring functionality

Maintaining functionality

To maintain the corrosion protection:
- When the storage water heater is filled (continuous operation): Leave potentiostat connected to mains voltage.
- When the storage water heater is filled for a limited time (a few hours), e.g. for measurements: Potentiostat can be disconnected from mains voltage. Afterwards reconnect the potentiostat to the mains voltage.
- When the storage water heater has been drained: Potentiostat can be disconnected from mains voltage.

Avoiding property damage

NOTE

Damage to the storage water heater due to gas accumulation

Gas can accumulate in the storage water heater when the impressed-current anode is operated.

⇨ Renew water in the storage water heater regularly, at least every 2 months.

⇨ Install a degassing valve in accordance with DIN EN 12499 at the highest point of the storage water heater.

Regular monitoring

Check the indicator lamp on the potentiostat at least once a month:
- Indicator lamp is lit green: Potentiostat is connected to mains voltage and ready for operation.
- Indicator lamp is not lit or blinks red: Fault elimination by qualified specialist.

6 Troubleshooting

⚠ WARNING

Risk of electric shock due to defective electrical heating elements
Defective electrical heating elements can apply mains voltage to metal parts of the storage water heater and the connections of the titanium anode and cause electric shock with serious injuries or even death.
⇨ If electric heating elements are installed, disconnect them from the power supply before troubleshooting.

6.1 Recognizing and eliminating simple faults

Faults are indicated by the indicator lamp on the potentiostat.

Indicator lamp	Meaning	Action
Is lit green	Potentiostat is feeding current to titanium anode.	–
Blinking red	Malfunction	Check whether the following causes of malfunction are present: 1 Potentiostat malfunction → *Reset potentiostat, page 21*. 2 *Storage water heater not completely filled, page 21*. 3 *Connection between potentiostat and anode or storage water heater defective, page 21*. 4 *Magnesium anode present/not removed, page 22*.
Off	Mains voltage missing	• Plug in the connector. • Check the fuse of the socket circuit.

Reset potentiostat

1. Disconnect the potentiostat from the mains voltage for approx. 30 seconds.
2. Reconnect the potentiostat to the mains voltage.

✓ The potentiostat has been reset.

✓ When the indicator lamp lights up green, the potentiostat is once again ready for operation. Afterwards carry out a functional test, see → *chapter 4.5, Commissioning with functional test, page 18*.

✓ When the indicator lamp is blinking red, continue with the next test.

Storage water heater not completely filled

1. Fill the storage water heater completely with water.

✓ When the indicator lamp lights up green again, the fault has been eliminated. Afterwards carry out a functional test, see → *chapter 4.5, Commissioning with functional test, page 18*.

✓ When the indicator lamp is blinking red, continue with the next test.

Connection between potentiostat and anode or storage water heater defective

1. Check the connecting cable and contacts for visible breaks.
2. Check the electrical continuity with a digital multimeter or CorroScout® anode tester:
   - Between potentiostat and anode:
     - Minus connection “COM” to large flat blade receptacle, 6.3 × 0.8 mm, of the connecting cable at the connection to the potentiostat,
     - Positive connection “V” to the threaded bolt of the titanium anode.
   - Between the potentiostat and ground of the storage water heater:
     - Minus connection “COM” to small flat blade receptacle, 4.8 × 0.8 mm, of the connecting cable at the connection to the potentiostat,
     - Positive connection “V” to the ground of the storage water heater.
3. If there is no continuity: Establish an electrical connection, if necessary, by replacing the connecting cable.

   Only use an original connecting cable.

✓ When the indicator lamp lights up green, the potentiostat is once again ready for operation. Afterwards carry out a functional test, see → *chapter 4.5, Commissioning with functional test, page 18*.

✓ When the indicator lamp is blinking red, continue with the next test.

Magnesium anode present/not removed

1. Switch off the storage water heater and disconnect it from the mains voltage.
2. Drain the storage water heater.
3. Remove the existing magnesium anode(s).

✓ When the indicator lamp lights up green again, the fault has been eliminated. Afterwards carry out a functional test, see → *chapter 4.5, Commissioning with functional test, page 18*.

✓ If the indicator lamp is blinking red, see → *chapter 6.2, Measurements for troubleshooting, page 22*.

6.2 Measurements for troubleshooting

If the malfunction could not be eliminated by the preceding simple troubleshooting steps, a more detailed analysis using measurements is required.

6.2.1 Driving voltage measurement

Prerequisite

- Storage water heater must be completely filled.

Measurement

1. Measure the driving voltage with a digital multimeter or CorroScout® anode tester as a DC voltage. To do so, make the following connections:
   - ° Minus connection “COM” to ground of the storage water heater,
   - ° Positive connection “V” to the titanium anode.
2. Evaluate measured value of driving voltage:
   - ° 1,9 V (setpoint) to approx. 5 V and indicator lamp is lit green: Potentiostat is working. 1,9 V to 4 V are typical measured values.
   - ° Higher than 5 V: Potentiostat is working. Driving voltages higher than 5 V are possible with water of very low conductivity.
   - ° Close to 0 V: Potentiostat is not working, no corrosion protection. Possible cause: Short circuit between titanium anode and ground of the storage water heater. See
     → *chapter 6.3.1, Titanium anode is in contact with installed accessories or wall in the storage water heater, page 24*,
     → *chapter 6.3.2, Titanium anode not sufficiently insulated, page 24*,

6.2.2 Protective current measurement

Prerequisite

- Storage water heater must be completely filled.

Measurement

1. Measure the protective current in the connecting cable with a digital multimeter or CorroScout® anode tester as a direct current:
   - Connect the meter in series between the potentiostat and the titanium anode.
     Or
   - Connect the meter in series between the potentiostat and the ground of the storage water heater.
2. Evaluate measured value of protective current:
   - 1 mA - 180 mA: Typical readings; potentiostat is working.
   - 180 mA and higher: Potentiostat is overloaded.
     For possible causes and fault elimination, see
     → *chapter 6.3.3, Impressed-current anode system not sized sufficiently, page 25*,
   - 0 mA: Potentiostat is not working, no corrosion protection.
     For possible cause and fault elimination, see
     → *Connection between potentiostat and anode or storage water heater defective, page 21*.

6.2.3 Measuring polarity

Prerequisite

- Storage water heater must be completely filled.

Measurement

1. Measure the polarity with a digital multimeter or CorroScout® anode tester as a DC voltage. To do so, make the following connections:
   - Minus connection “COM” to ground of the storage water heater,
   - Positive connection “V” to the titanium anode.
2. Evaluate sign of measured value for polarity:
   - +1,9 V or greater (note the sign!): Polarity correct.
   - Negative measured value: Polarity incorrect, no corrosion protection but instead accelerated corrosion. Disconnect the potentiostat from the mains!
     See → *chapter 6.3.4, Polarity of the connecting cable is incorrect, page 26*.
   - Other readings: See → *chapter 6.2.1, Driving voltage measurement, page 22*.

6.2.4 Measuring the insulation of the titanium anode

Requirements

- Storage water heater must be disconnected from the mains voltage.
- Storage water heater must be empty.
- Titanium anode and installation point of the titanium anode must be dry.

Measurement

1. Measure the resistance between the titanium anode and ground of the storage water heater with a digital multimeter or CorroScout® anode tester. To do so, make the following connections (or vice versa):
   - ° Minus connection “COM” to ground of the storage water heater,
   - ° Positive connection “V” to the titanium anode.
2. Evaluate the measured value for resistance.
   - ° 100 kΩ or greater: Insulation sufficient
   - ° Less than 100 kΩ: Insulation not sufficient.
     For possible cause and fault elimination, see
     → *chapter 6.3.2, Titanium anode not sufficiently insulated, page 24*,
     → *chapter 6.3.1, Titanium anode is in contact with installed accessories or wall in the storage water heater, page 24*.

6.3 Fault elimination after measurement

6.3.1 Titanium anode is in contact with installed accessories or wall in the storage water heater

Elimination

1. Switch off the storage water heater and disconnect it from the mains voltage.
2. Drain the storage water heater.
3. Correct the position of the installed accessories and titanium anode as needed.
4. For checking, see → *chapter 6.2.4, Measuring the insulation of the titanium anode, page 24*.
5. Functional test, see → *chapter 4.5, Commissioning with functional test, page 18*.

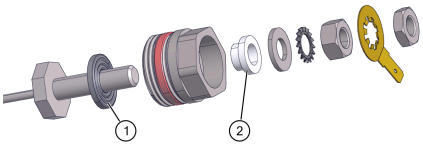
6.3.2 Titanium anode not sufficiently insulated

Elimination

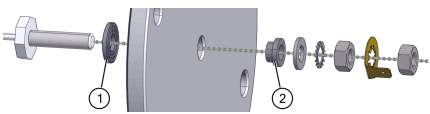
1. Switch off the storage water heater and disconnect it from the mains voltage.
2. Drain the storage water heater.

3. Disconnect the potentiostat from the mains.
4. Remove the connecting cable from the titanium anode.
5. Dismount the titanium anode from the storage water heater, then dismantle the anode. See → *chapter 4.3, Socket mounting, page 13* or → *chapter 4.4, Hole mounting, page 16*.
6. Check the gaskets (1) and insulation sleeves (2) on the titanium anode and replace if necessary. Only use original gaskets and insulation sleeves.

For socket mounting, screw plug G ¾":



For hole mounting:



7. For titanium anode installation, see → *chapter 4.3, Socket mounting, page 13* or → *chapter 4.4, Hole mounting, page 16*.
8. For checking, see → *chapter 6.2.4, Measuring the insulation of the titanium anode, page 24*.
9. Functional test, see → *chapter 4.5, Commissioning with functional test, page 18*.

6.3.3 Impressed-current anode system not sized sufficiently

NOTE

Insufficient sizing of the impressed-current anode system can lead to high protective current, overload and malfunction of the potentiostat.

⇨ Observe the manufacturer's instructions for the storage water heater and Magontec's fitting recommendations.

⇨ If applicable adapt potentiostat type, titanium anode size and number accordingly.

Elimination

1. Proceed in accordance with the manufacturer's instructions for the storage water heater and Magontec's fitting recommendations.
2. Carry out a functional test when putting the unit back into operation, see → *chapter 4.5, Commissioning with functional test, page 18*.

6.3.4 Polarity of the connecting cable is incorrect

Elimination

1. Correct the polarity of the connecting cable.
2. For checking, see → *chapter 6.2.3, Measuring polarity, page 23*.
3. Functional test, see → *chapter 4.5, Commissioning with functional test, page 18*.

7 Dismantling and disposal

7.1 Dismantling

1. Switch off the storage water heater and disconnect it from the mains voltage.
2. Drain the storage water heater.
3. Disconnect the potentiostat from the mains.
4. Remove the connecting cable from the titanium anode.
5. Dismount the titanium anode from the storage water heater and the anode. See → *chapter 4.3, Socket mounting, page 13* or → *chapter 4.4, Hole mounting, page 16*.

7.2 Disposal

Disposal via collection point

Do not dispose of this product in household waste, but at collection points for waste electrical and electronic equipment or for light metals (titanium anode). Information on collection points is provided by municipalities, waste disposal companies or the seller of the product.
Accordingly, the type plate on the potentiostat housing contains the crossed-out dustbin, in accordance with Directive 2012/19/EU (Waste Electrical and Electronic Equipment).
Comply with legal regulations on disposal and contribute to environmentally friendly disposal.

WEEE register number

Magontec is registered in accordance with Directive 2012/19/EU in the Waste Electrical and Electronic Equipment Register (WEEE Reg. No. 21203187).