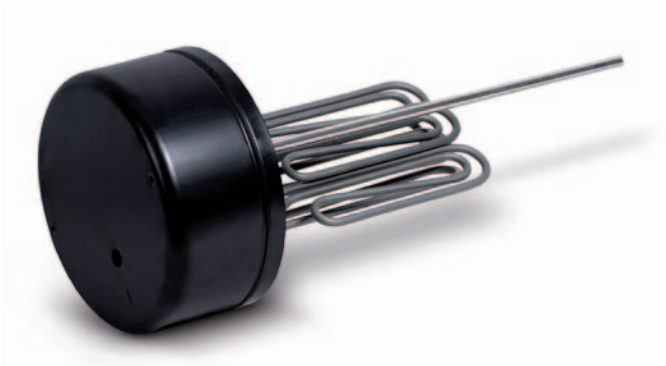


REMKO

FLANGE HEATING CARTRIDGE

For EWS 300 industrial water storage tank

Operation · Technology



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Read these installation instructions carefully before commissioning / using these units!



These instructions are an integral part of the unit and must always be kept in the vicinity of the installation location or on the unit itself.

This operating manual is a translation of the German original.

Subject to modifications; no liability accepted for errors or misprints!

REMKO FLANGE HEATING CARTRIDGE

Safety notes

Carefully read the operating manual before commissioning the unit for the first time. It contains useful tips and  notes such as  hazard warnings to prevent injury and material damage. Failure to follow the directions in this manual can result in endangerment to persons, the environment and the equipment itself and will void any claims for liability.

- Keep this manual in the vicinity of the units.
- The units and components may only be set up and installed by qualified personnel.
- The set-up, connection, and operation of the units and components must be done in accordance with the operating conditions stipulated in this manual and comply with all applicable local regulations.
- Modification of units and components supplied by REMKO is not permitted and can cause malfunctions.
- Units and components may not be operated in areas where there is an increased risk of damage. Observe the minimum clearances.
- The electrical power supply is to be adapted to the requirements of the units.
- The operational safety of units and components is only assured if they are fully assembled and used as intended. Safety devices may not be modified or bypassed.
- Do not operate units or components if there are obvious defects or signs of damage.
- The units and components must be kept at a safe distance from flammable, explosive, combustible, aggressive and dirty areas or atmospheres.
- Installation, repair and maintenance work may be carried out only by authorised specialists. Visual inspections and cleaning can be performed by the operator as long as power is disconnected from the equipment.
- To preclude any danger to persons from the unit, take appropriate precautions when performing installation, repair or maintenance work or cleaning the units.

Environmental protection and recycling

Disposing of packaging

All products are packed for transport in environmentally friendly materials. You can make a valuable contribution to reducing waste and sustaining raw materials by only disposing of packaging at approved collection points.



Disposing of the components

The manufacturing process for the units is subject to continuous quality control. Only high-grade materials are used, the majority of which are recyclable. You can also contribute to environmental protection by only disposing of components in accordance with local regulations and in an environmentally safe manner, e.g. through authorised disposal and recycling specialists or at collection points.

Warranty

The warranty conditions are listed in the "General terms and conditions". Please contact your direct contract partner first.

Intended use

The electric flange heating cartridges are used as auxiliary heating in industrial water storage tanks and are designed for the pressure-tight operation and heating of drinking and heating water. Another or additional use is considered an unintended use. The manufacturer/supplier assumes no liability for damages arising from such use. The user bears the sole risk in such cases.

Intended use also includes working in accordance with the operating manual and installation instructions and complying with the maintenance requirements.

Description

The electric flange heating cartridges are used as auxiliary heating in industrial water storage tanks.

It comprises a high-quality tubular heating element fitted insulated on a D 180 flange plate.

They are intended for the pressure-tight operation and heating of drinking and heating water.

They require no maintenance or care and are easy to operate.

The desired temperature is preselected using a control knob. The heating is switched on automatically by the temperature controller and switched off again when the desired water temperature in the storage tank has been reached. If the water temperature falls, e.g. because water has been let out of the storage tank or because of natural cooling, the unit's heater switches back on until the preselected water temperature in the storage tank has been reached.

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Scope of delivery

- 1 pc. Protective current discharge resistor
- 1 pc. Temperature sensor
- 1 pc. Safety temperature limiter

Operation

In order to operate the flange heating cartridges economically and in an energy-conscious manner, water temperatures in the storage tank should be selected as low as possible.

Only set the infinitely variable temperature to the water temperature you actually need. This saves energy and reduces the buildup of lime deposits in the container.

Depending on the water temperature required, the water temperature in the container can be set using the infinitely variable temperature selector or by using the four marked main steps.

Four main steps are marked on the flange heating cartridge's temperature controller knob as follows to make it easier to set and adjust the temperatures:

- ❖ Prevents the storage tank from freezing
- ◁ approx. 40°C, warm to the touch storage water
- approx. 65°C, moderately hot storage water To prevent an accidental scalding with hot water this setting is recommended. At this setting, the unit works especially economically. Heat losses

are low and the scale buildup is largely avoided.

There is only a low standby energy consumption.

- ... approx. 85°C, hot storage water



CAUTION

The control knob's left stop position does not represent a zero or shutdown setting for the unit heater!



NOTE

When operating with day current, do not set the temperature control any higher than •• (approx. 65°C).

Due to the hysteresis of the temperature control ($\pm 7^{\circ}\text{K}$) and possible radiation losses (cooling of the pipes), the temperature data is subject to an accuracy of $\pm 10^{\circ}\text{K}$.

Care and maintenance

Care

- Only clean the units with a damp cloth (adding, for instance, a liquid household cleaner). Do not use any caustic, scouring or solvent-based cleaners.

Maintenance

- We recommend concluding a maintenance contract with a specialist firm, which includes annual maintenance services.



NOTE

This ensures the operational reliability of your equipment!

- Regularly check the function of the safety valve.

The expansion water amount at maximum heat (approx. 80°C) represents approx. 3.5% of the storage tank capacity.

When the safety valve test knob is lifted or turned to the "Test" position, the water must flow unhindered out of the safety valve body into the drainage funnel.



CAUTION

This can cause the cold water supply and parts of the storage tank connection fitting to become hot!

If the storage tank is not heated or when warm water is removed, water may not drip from the safety valve. If this does occur, either the pressure in the water pipe is greater than the permitted value, or the safety valve is defective. If the pressure in the water pipe is higher than permitted, a pressure relief valve must be used.

In hard water areas, the lime deposits which form in the storage tank's internal vessel and the floating lime deposits must be removed by a specialist after one to two years of operation. Cleaning is performed through the flange opening.

1. Remove the flange heating cartridge.
2. Remove the heating flange.
3. Clean the storage tank.

The special enamelled inner container of the water heater must not come into contact with scaling solvent. Do not use an descaling pump!

4. Thoroughly flush out the unit.
5. Refit the flange, using a new seal. Tighten the bolts diagonally to a torque of 20 Nm.
6. Refit the flange heating cartridge.
7. Observe the heating process as when initially commissioned.

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The installed anode protection must be checked by a specialist no less than every 2 operating years (at the latest however if the material is 3/4 worn) and this inspection must be documented. If servicing tasks are performed, the cleaning and servicing flange should be opened, and the tank inspected for any flooding or contamination.

The external current anode's function must be monitored regularly using the control lamp.

Here :

green = the plant is in order
red, flashing = fault (request assistance from customer service).

The system will not work properly if the container is not filled with water.

Do not damage or remove the current discharge resistor protection during maintenance.

Troubleshooting and customer service

The units and components are manufactured using state-of-the-art production methods and tested several times to verify their correct function. If however malfunctions should occur, please check the functions as detailed in the list below. Please inform your dealer if the unit is still not working correctly after all function checks have been performed!

Fault	Possible cause	Checks	Remedial measures
Water in the storage tank does not heat up	Circuit breaker does not respond	Is the switch in the distributor switched on?	Switch back on
	Fuse does not respond	Is the fuse damaged?	Install a new fuse
	Temperature control set incorrectly	Is the temperature control set correctly?	Adjust the temperature control to the desired operating temperature

Installation instructions for qualified personnel

General installation

- The heating element and the sensor protection tube must be adequately covered with water on all sides.
- The thermal water flow may not be inhibited.
- The units are equipped with a safety temperature limiter which stops the heating of the unit at a temperature of max. 130°C. The choice of connection components (connecting pieces, circulation, safety valve combination, etc.) must be such that, in the event of a malfunction of the temperature control, the connection components will maintain temperatures of 130°C, avoiding possible damage.
- The heating cartridges are designed with insulated heating elements in connection with a current discharge resistor protection for the installation in enamelled storage tanks.
- A space – installation length + 100 mm – for installation etc. must be kept free upstream from the boiler flange.
- Lime deposits inhibit the flange heating cartridge's function. Appropriate precautions must be taken if lime concentrations in the water are too high: e.g. reducing the temperature, installing a water softening device, removing the lime deposits.
- Possible electrochemical processes must be taken into account in accordance with good engineering practice (mixed installations!) when selecting the materials used in the system or the order in which they are used.

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Installing the flange heating cartridge

- Check the contents of the packaging for completeness and check the unit for visible transport damage. Immediately notify your contract partner of any deficiencies.

Install the flange heating cartridge as follows:

1. Remove the protective cap 1.
2. Install the heating flange 2 with the seal 3 into the boiler. The temperature regulator's sensor protection tube must lie above the tube heating elements.
3. Fasten the heating flange 2 with the M 12 flange bolts (the max. torque is 22 Nm). Tighten the flange bolts diagonally. Check the bolt fittings for the heating elements and tighten them as necessary to a torque of 2-3 Nm.

4. Establish the electrical connection as shown in the circuit diagram.



CAUTION

Connect the earth conductor!

5. Replace the protective cap 1 and fasten it with nuts.
6. Put the included regulator knob 4 in place.
7. Do not commission until the container has been filled with water.



NOTE

Installation may only be performed by authorised specialists.

Exploded view of the unit



Installation

General notes

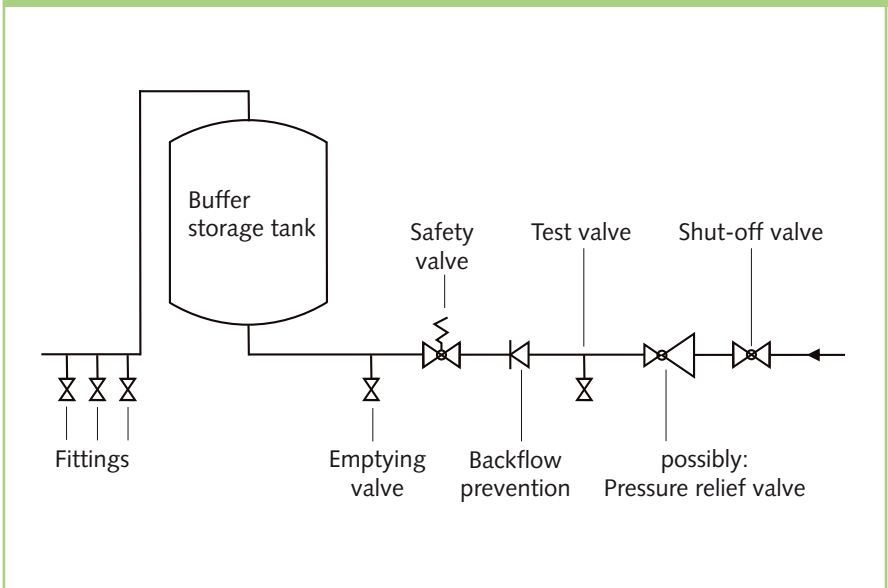
- If aggressive water is present, please note that special models of the storage tank can be tested. (please address all queries to your contract partner)
- In hard water areas, connect a standard descaling device upstream of the storage tank.

Pressure-tight water connection of the container

The water connection may not be provided by a diaphragm safety valve or a diaphragm safety valve combination connection fitting (no piston valve) for pressure-tight tanks!

A safety valve combination comprises a shut-off, test, backflow, drain and safety valve with expansion water runoff and is installed in the buffer tank between the cold water supply line and the cold water feed in the order shown below:

Tank connection in accordance with DIN 1988



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Corrosion protection

The flange heating cartridge is designed to be installed in interior enamelled containers with anode protection.

When shipped, the flange heating cartridge (flange diameter 180 mm) is equipped with a 22 mm Ø anode, 390 mm long!

For enamelled tanks (made by third parties), the boiler must be equipped with appropriate anode protection in accordance with the specifications provided by the manufacturer.

The anode protection should be replaced if more than $\frac{3}{4}$ of the material has been worn off. First inspection after approx. 2 power-on years.

The following is necessary if CrNi (NIRO) tanks or CrNi heat exchangers and inserts are used in plastic coated containers:

- a) Disconnection of the current discharge resistor protection to ensure the insulation when installing the heating element.
- b) Disconnection of the connection cable Anode – earth in accordance with the type of anode.



NOTE

Installation may only be performed by authorised specialists.

Electrical connection

- A mains supply line must be installed on the unit with the correct connection voltage and be properly protected.
- The electrical connection must be carried out in accordance with the connection diagram on the inside of the protective cap.
- Protection must be provided for all of the container's metal components which can be touched.
- An all-poled disconnection device must be provided upstream from the unit with a contact clearance of at least 3 mm. Circuit breakers can also be used as a disconnection switch device.
- The connection cable must be pulled through the attached fitting into the heating cartridge's connection space and secured with a strain relief device against being pulled out or twisted.
- Provide electrical protection for the unit in accordance with the technical data.



CAUTION

All electrical installation work is to be performed by specialist companies. Disconnect the power supply when connecting the electrical terminals.

Before commissioning

Before the warm water storage tank is connected to the mains electricity supply and put into service for the first time, it is vital that it is filled with water.

During the heating process, the expansion water generated in the internal boiler should drip out of the safety valve if there is a pressure-tight connection, and out of the overflow mixer tap if there is an unpressurised connection.



CAUTION

The warm water drain pipe as well as safety equipment components may become hot.

Commissioning



NOTE

Commissioning may only be performed and documented by specially trained personnel.

During initial filling, the discharge valve must be open. The warm water storage tank is fully filled, when water flows out of the discharge pipe without any bubbles.

Once the water has been heated successfully, the set temperature, the actual temperature of the water produced and the temperature shown on any temperature indicator should be approximately the same. Heating the water in the buffer storage tank causes its volume to increase. During the heating process, the expansion water generated in the internal boiler must drip out of the safety valve. This dripping is part of the the function and may not be prevented by tightening the valves.

Check the automatic shutdown of the installed flange heating cartridge.

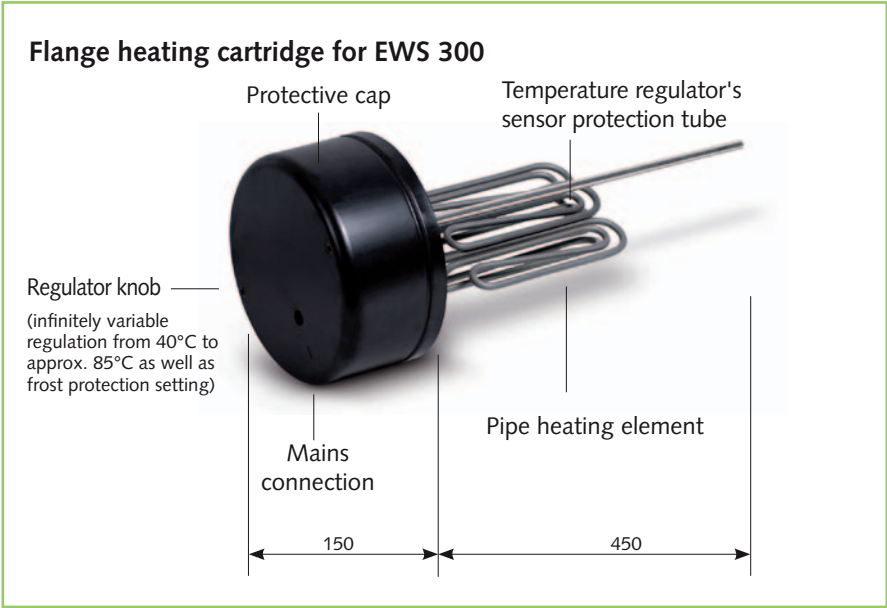


CAUTION

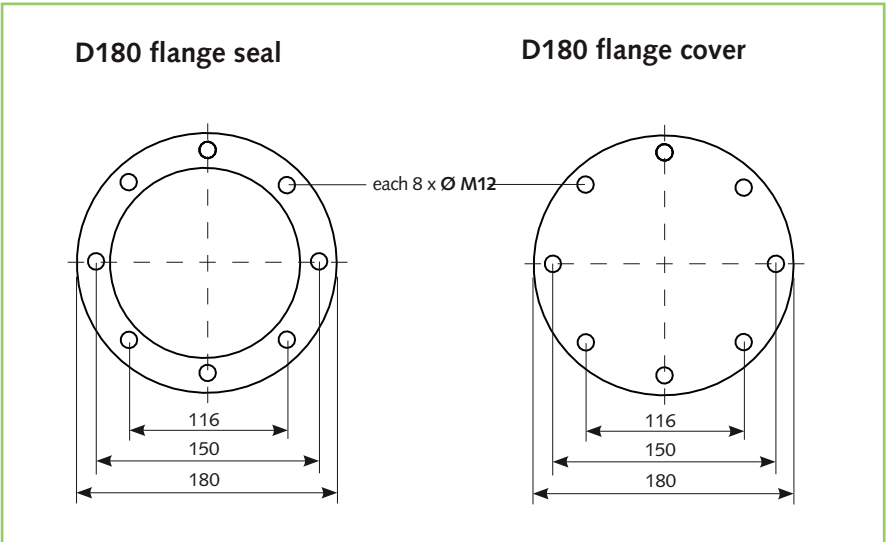
The warm water drain pipe as well as safety equipment components may become hot.

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Exploded view of the unit



Dimension drawing, flange seal and flange cover



We reserve the right to make modifications to the dimensions and to the design which serve the ongoing technical development.

Technical data

Series		Flange heating cartridge for EWS 300
Operating mode		Heating cartridge as main heating for electrically fired hot water heater
Operating limits	°C	+40 to +85
Power supply	V/Hz	400/3~/50
Max. operating pressure	bar	10
Electr. rated power consumption	kW	6
Number of heating elements		3
Installation length	mm	450
Horizontal installation		yes
Vertical installation from below		yes
Installation in horizontal storage tank		no
Flange diameter	mm	180
EDP no.		260160

We reserve the right to make modifications to the dimensions and to the design which serve the ongoing technical development.

REMKO INTERNATIONAL

*... and also right in your neighbourhood!
Benefit from our experience and advice*



REMKO GmbH & Co. KG
Air conditioning and heating technology

Im Seelenkamp 12
Postfach 1827
Telephone
Fax
e-mail
Website

D-32791 Lage
D-32777 Lage
+49 5232 606-0
+49 5232 606-260
info@remko.de
www.remko.de

