Operating and Installation Instructions

Ribbed pipe heat exchanger **RWT**

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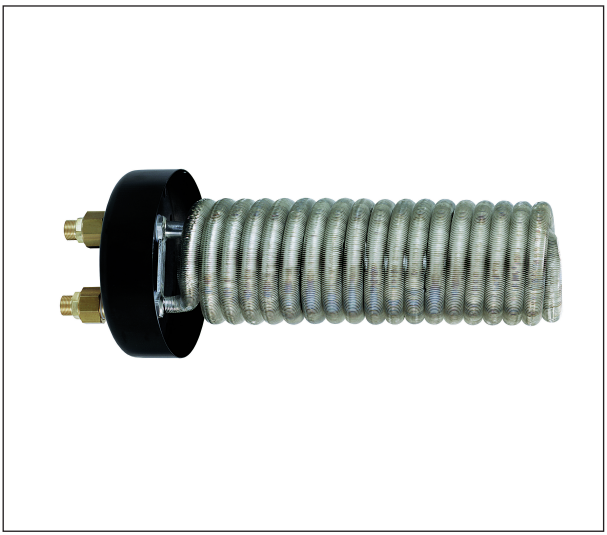

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Id.No.: 179390-3

The heating coils are suitable for the heating of hot water storage tanks with the following heating media:

Heating water, district heating water, district heating steam

Thermal media such as
Antifrogen L, Antifrogen N, PKL 100, PKL 300

Maximum permissible internal operating pressure: 10.0 bar
Maximum permissible external operating pressure: 10.0 bar
Maximum permissible operating temperature: 90 °C

Description

Copper ribbed pipes are manufactured as seamless pipes using a process similar to thread rolling and all connection points are hard soldered with silver solder. After soldering the heating coils are electro-plated with tin, coiled into a spiral form and fitted with a complete set of insulating connection screw joints and mounted, electrically isolated, on a flange plate.

For the reduction of thermal radiation the flange is covered by a lacquered cover of steel plate with a soft foam inlay on the inside. The compact design makes it possible to house high performance heating coils in the lowest area of the hot water storage tank. This is connected to an optimal exploitation of the entire storage volume for thermal absorption. In this way an advantageous circulation of the storage water for heat exchange purposes is also achieved. In addition the heating coils are characterised by a low degree of pressure loss on the inside of the pipe.

In general a circulation pump is required for the heating of the storage tank, which circulates the heating medium between the heat generator and the heating coil. By switching the circulation pump on and off via the temperature regulator, the temperature of the storage water can be regulated.

For installation in upright storage tanks, the ATR charging pump regulator + thermometer combination is suitable for this purpose.

Heating coils can also be arranged in the upper section of the hot water storage tanks and can be used for re-heating the storage water or for thermal extraction.

Through the installation of several independent heat exchangers it is possible to set up multivalent (connection to various energy supply systems) systems (e.g. in the upright storage tank product line, FFM).

Utilisation

Naturally it is possible to upgrade both new storage tanks, regardless of whether these are galvanized, enamelled or plastic coated, and existing systems through the installation of RWT-type ribbed pipe heat exchangers.

In case of extremely hard water and operation of the storage tank at temperatures above 60 °C, precautions should be taken in the form of de-calcification systems or else by implementing a regular cleaning regime (see Maintenance).

Installation Method

RWT-type ribbed pipe heat exchangers are usually installed horizontally in the upright storage tank. With due regard to the particular issues of system bleeding when installing from below, they can also be installed vertically, either from below or from above, whereby the changed flow characteristics need to be taken into consideration.

One thing to consider is that changes to the lengths of connection pipes due to temperature fluctuations need to be allowed for by expansion elements or suitable pipe conduits.

Electrically Isolated Installation and Connection Fittings

In general, magnesium or stray current anodes are built in to enamelled or plastic coated hot water storage tanks of steel in order to protect the base metal from corrosion at points with an insufficient coating. This cathodic corrosion protection is put at risk through the installation of electrically non-insulated heating coils, whereby the anodes will be exhausted within in a relatively short time. The faulty areas combine with the finer material of the heating coils to produce a galvanic element, which can lead to a rapid dissolution of the base material at the faulty area. Insulated connection fittings prevent the generation of these galvanic elements thereby making a significant contribution to the corrosion protection of coated steel hot water storage tanks.

A protective current bleeder resistor is integrated into the heat exchanger to protect it from current leakage corrosion.

Our insulated screw fittings isolate the heating coils both from the walls of the storage heater and from the metal connection pipework and therefore comply with DVGW- Worksheet W 511.

Corrosion Protection with Mixed Installations

The corrosion resistance of the copper to drinking water has been proven through long-term usage. In particular, Cu has proved to be an especially good material in the frequently encountered chloride contents of drinking water. In addition, the heating coils meet the conditions set out in DIN 1988 and DIN 4753.

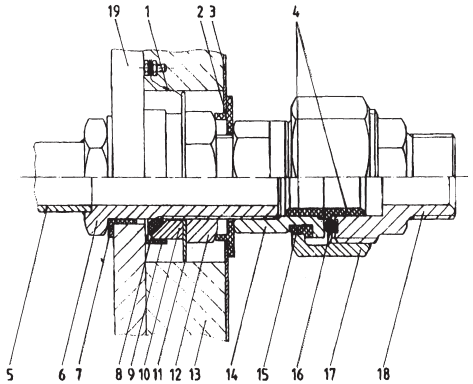
If copper comes into contact with water, the copper ions are released into the water. The copper pipes are not at risk as, within a short period, a bonded protective layer is formed.

However these copper ions released into the water can quickly lead to corrosion damage in downstream galvanized steel pipes.

Therefore to avoid corrosion problems in relation to mixed installations, heating coils are externally electroplated with tin.

Installation

Unscrew the insert **14** from the connection fitting **6** with the complete electrically insulated pipe screw joint (**4, 15, 16, 17, 18**), remove the cover **3**, carefully install the flange plate **19** (in so doing the ribs of the heat exchanger should not be bent when inserting it into the storage tank), place the flange seal in the plastic support disk and press it into position in the flange with 8 M12 x 35 screws, and/or 8 M12 nuts for flanges with Ø = 180 (RWT 1-110) or else with 12 M12 x 35 screws and/or M12 nuts for flanges with Ø = 240 (RWT 2-230, -360, -450). Tighten diagonally to a maximum torque of 3.5 mkp.
Caution: When tightening the screws and/or nuts the protective current bleeder resistor**1** attached to the brass tab **11**must not be damaged.
Fit the soft foam disc **13** (thermal insulation) and the lacquered cover **3** (for insulation purposes both plastic sleeves **2**must be mounted in the cover **3**). Seal in the inlay **14** with the cap nut **17** and the mounted insulating clip **15** and screw it onto the connection fitting **6** till flush with the plastic sleeve **2** and insert the insulating sleeves **4** into the inlay **14** and the connection nipple **18**.
Construct the heating circuit inflow plumbing and seal it at the connecting nipple **18**. Screw the cap nut **17** to the connection nipple **18**. The hexagonal surface on the connection nipple **18** is for holding with a spanner to counter the screw fastening motion. Maximum torque = 1.5 mkp.



1 Resistance 620 Ω
2 Plastic Insulator
3 Cover
4 Insulating Sleeve
5 Heat Exchanger
6 Connection Fitting
7 Insulating Sleeve
8 O-Ring
9 Plastic Bracket
10 Swash Plate
11 Brass Bar
12 Hexagonal Nut
13 Foam Disc
14 Insert
15 Insulating Clip
16 O-Ring
17 Cap Nut
18 Connecting Nipple
19 Flange Plate

Servicing

In the case of extremely hard water, the removal of the boiler scale accumulating in the storage tank's inner boiler must be performed by a professional after one or two years of operation. Cleaning is achieved by removing the ribbed pipe heat exchanger so that the lime-scale covered can be carefully chipped off or else cleaned in a container of boiler scale solvent.
Finally the heater exchanger must be rinsed thoroughly.

This device is not designed to be operated by people (including children) with limited physical, sensory or mental capacities or who lack the requisite experience and/or knowledge, unless they are supervised by a person responsible for their safety or have been instructed in the operation of the device by him/her. Children should be supervised in order to ensure that they do not play with the device.

Warranty, Guarantee and Product Liability

The warranty is granted in accordance with the statutory provisions of the Republic of Austria, as well as of the EU.

1. Prerequisite for the provision of warranty services by Austria Email AG (hereinafter referred to as AE AG) shall be the presentation of the paid invoice for the purchase of the device for which the warranty service is claimed, whereby the identity of the device with regard to the model and the manufacturing number must be evident from the invoice and must be documented by the claimant. The General Terms and Conditions, Terms and Conditions of Sale and Delivery of AE AG shall apply exclusively.

2. To the extent required by the law, respectively in the Operator's Manual and Installation Instructions, the assembly, erection, connection and commissioning of the unit for which the claim is presented must have been carried out by a licensed electrician or installation firm, duly observing all applicable rules. The tank (without outer shell and plastic outer shell) must be protected from sunshine to avoid discolouring of the PU foam and potential warping of plastic components.

3. The room in which the device is operated must be free of frost. The unit must be mounted in a location that may reasonably be expected, i.e. it must be possible to access and replace the unit without difficulty for the purpose of necessary maintenance, repairs and possible replacement. The costs for any necessary changes to the structural conditions (e.g. doors and passages too narrow) are not governed by the guarantee and warranty declaration and therefore shall be rejected on the part of AE AG. If the water boiler is set up and operated in uncommon locations (e.g. attics, living rooms with water-sensitive floors, store rooms, etc.), the possibility of water leakage must be taken into account and provisions made for collecting and discharging the water leakage in order to prevent secondary damage within the meaning of product liability.

4. The following is not covered by the warranty and guarantee:
inappropriate transport, normal wear and tear, intentional or negligent damage, use of force of any kind or description, mechanical damage or damage caused by frost or also by exceeding the operating pressure stated on the rating plate, even if only once, use of connection fittings that do not comply with the standard, use of defective tank connection fittings and unsuitable and defective service fittings. Breaking of glass and plastic components, possible colour differences, damage due to improper use, in particular non-observance of the mounting and operating instructions (Operating and Mounting Instructions), damage by external influence, connecting to incorrect voltage, corrosion damage as a consequence of aggressive waters (water not suitable for drinking) in accordance with the national regulations (e.g. Austrian ordinance on drinking water, TWV – Fed. Law Gazette II No. 304/2001), deviations between the actual drinking water temperature at the tank fitting and the specified hot water temperature of up to 10°K (hysteresis of the controller and possible cooling due to pipelines), Insufficient water conductivity (min. 150 µs/cm) operational wear of the magnesium anode (wearing part), natural formation of boiler scale, lack of water, fire, flood, lightning, overvoltage, power failure or other types of force majeure. Use of non-original and company-external components such as e.g. heating elements, reactive anode, thermostat, thermometer, ribbed tube heat exchanger, etc., Parts installed in an uninsulated condition with respect to the storage tank, ingress of foreign particles or electrochemical influences (e.g. mixed installations), failure to observe the design documents, unpunctual and undocumented renewal of the installed protective anode, no or improper cleaning and operation, as well as any deviations from the standard that reduce the value or functionality of the device only slightly. Fundamental compliance with all regulations in ÖNORM B 2531, DIN 1988 (EN 806), DIN 1717, VDI 2035 or the corresponding national regulations and laws must be ensured.

5. In the case of an authorised complaint, this must be reported to the next available customer service location of AE AG. The same reserves the right to decide whether a defect component shall be replaced or repaired or whether a defect device shall be replaced by an equivalent fault-free device. Furthermore, AE AG explicitly reserves the right to request that the rejected device be returned by the buyer.

6. Repairs under warranty must be performed exclusively by persons authorised to do so by AE AG. Replaced parts shall remain the property of AE AG. If a repair of the hot water heater should be required in connection with necessary service work, the Manufacturer shall invoice these as repair and prorated material costs.

7. Any intervention by third parties without our express instruction, even if performed by a licensed electrician, shall have the effect of voiding the warranty. Costs for repairs carried out by third parties shall be replaced only if AE AG has previously been requested to remove the defect and if AE AG shall have failed to satisfy its obligation to replace the defective item or repair the defect or if it shall have failed to do so within a reasonable period of time.

8. Neither the performance of works under warranty or guarantee, nor the performance of service and maintenance works shall renew or extend the term of warranty.

9. Transport damage shall be investigated and possibly accepted only if it is reported to AE AG in writing on the next following workday after delivery at the latest.

10. Claims over and above the warranty, if legally permissible, in particular claims with respect to compensation of damages and consequential damages, shall be excluded. Prorated labour time for repairs as well as the costs of restoring the original condition of the unit must be paid in full by the buyer. In accordance with this warranty declaration, the warranty shall apply only to repair or replacement of the unit. The provisions of the Terms and Conditions of Sale and Delivery of AE AG shall, unless amended by these Terms and Conditions of Warranty, remain fully in place.

11. Services that are not performed within the scope of these Terms and Conditions of Warranty shall be charged.

12. No claims under warranty shall be considered by AE AG unless full payment for the device has been made to AE AG and unless the claimant has fully satisfied all obligations arising to him vis-à-vis the seller.

13. The enamelled internal boiler for water heaters is warranted for the specified period from the delivery date provided all warranty terms described under Points 1 to 12 are observed with in full. If the warranty terms have not been met, the legal warranty requirements of the respective country from which the appliance was shipped shall prevail.

14. With regard to the assertion of claims pursuant to the Austrian Product Liability Act it must be noted:
    Potential claims under the title of product liability relating to the regulation of damages due to a defective product (e.g. a human's body is injured, his health is damaged or any corporeal property differing from the product is damaged) shall only be justified if all the prescribed measures and requirements for flawless and normal operation of the unit have been fulfilled.
    These include e.g. the mandatory and documented anode replacement, the connection to the correct operating voltage, any damage due to improper use must be avoided, etc. These standards are based on the assumption that if all the regulations (standards, assembly and operating instructions, general guidelines, etc.) are observed, the defect in the unit or product causal for occurrence of the secondary damage would not have occurred. It is further imperative that all the documentation necessary for handling of a claim, such as e.g. the type and fabrication number of the unit, the vendor's invoice and the invoice of the licensed electrician or installation firm, as well as a description of the malfunction be provided, as well as the defective unit itself for examination in the lab (absolutely necessary, as the unit will be investigated by an expert and the cause of the defect analysed). In order to exclude any possibility of mistaken identity of the unit during transportation, the unit must be labelled with a clearly legible label (ideally with the end customer's address and signature). Appropriate photographic documentation of the extent of damage, the installation (cold water inflow, hot water outflow, heating inflow and outflow, safety fittings, expansion vessel if applicable), as well as the defective part of the tank is required. AE AG further expressly reserves the right to demand the submission of documentation and units or unit components by the buyer for the purpose of clarification.
    The damaged party's full burden of proof that the damage was caused by the product of AE AG is prerequisite for the payment of any benefits under the title of product liability. Claims for damages pursuant to the Austrian Product Liability Act are moreover justified only for any amount exceeding the amount of 500 euros (deductible amount). Until all the facts and circumstances as well as the problem causally underlying the defect have been ascertained, any possible fault on the part of AE AG shall be ruled out explicitly. Any non-observance of the operating and assembly instructions as well as the relevant standards shall be deemed negligence and shall result in an exclusion of any liability for damages.

The figures and data are not binding and may be amended without notice in the interest of technical improvement.
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Notes

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