

Translation
Created according to regulations applicable in Germany.

For operation in industrial environments only!

Operation Manual

Screw-in Heater

Type : ERCH/ERCT/ERCB/ERCTB/ERCU
ERKH/ERKT/ERKB/ERKTB/ERKU



ERCH/ERKH



ERCT/ERKT
ERCB/ERKB



ERCTB/ERKTB

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1. Intended use

The unit is used for heating liquid or gaseous media.

The medium, the operating conditions and the installation position are tailored to the respective application and listed in the order confirmation.

The unit is used for heating the medium specified in the order confirmation.

The operating conditions of the order confirmation must be observed.

Deviations from this are not allowed.

2. General SafetyInstructions

This Operation Manual contains basic instructions which must be followed during installation and operation. The operation manual must be read and understood prior to assembly and commissioning.

Keep the Operation Manual for later use.

Pass on the Operation Manual to all subsequent owners and operating companies.

Do not make any modifications to the unit.

Modifications can disable safety devices and cause personal injury and property damage.

Modifications lead to invalidation of conformity.

If an installation position or flow direction of the medium to be heated is specified, this must be taken into account.

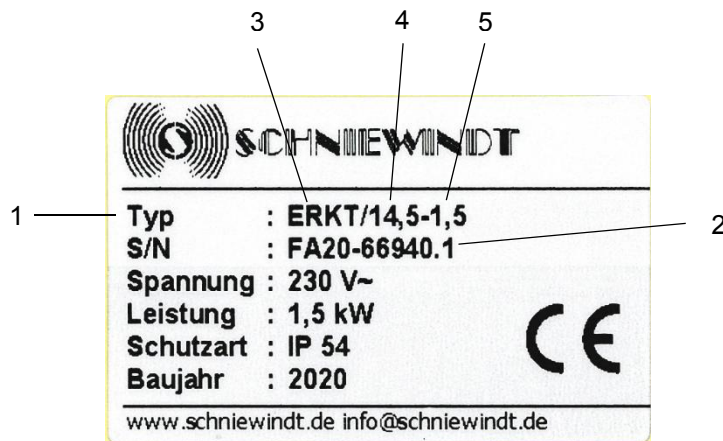
Periodic inspections must be carried out in compliance with the national provisions.

The function of safety-relevant components must be checked prior to commissioning.

Any monitoring devices (e.g. for temperature, minimum flow rate or level) employed as safety devices must be checked to ensure that they function properly in compliance with the relevant provisions.

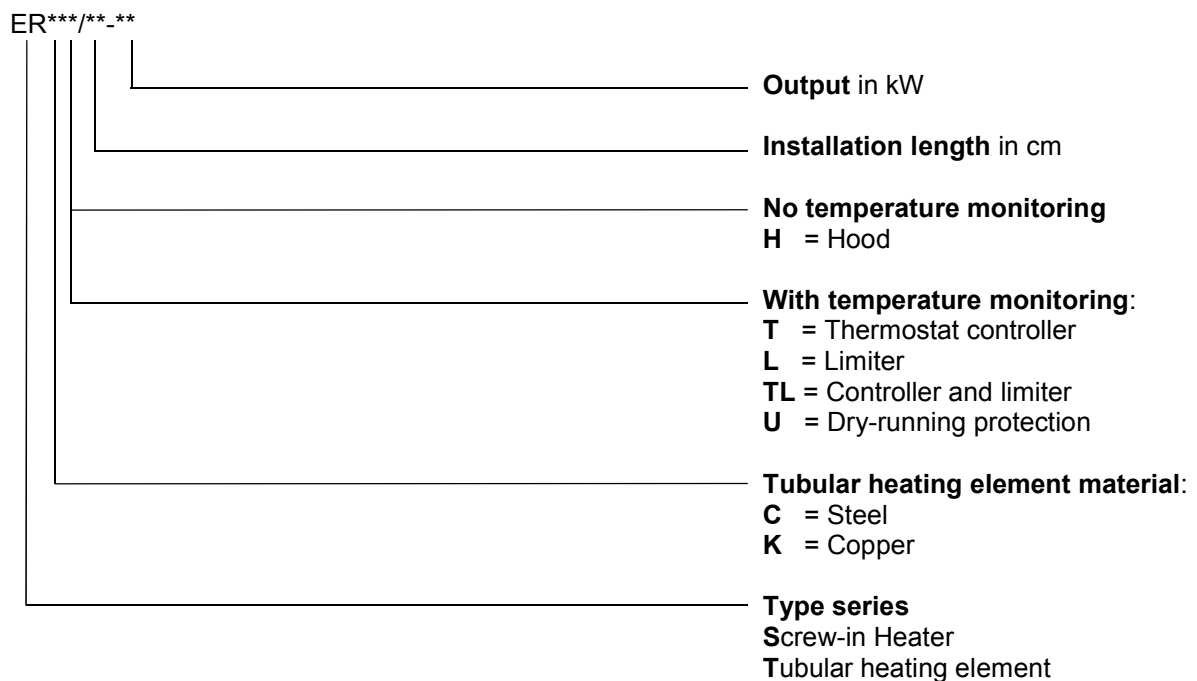
The unit is not suitable for use in potentially explosive atmospheres.

3. Identify unit



- 1 Type designation
- 2 Production number (Please specify when making inquiries)
- 3 Type code (see point)
- 4 Installation length in cm
- 5 Output in kW

4. Type code



5. Product specifications

Name : **Screw-in heater**

For technical details see order confirmation.

Note:

Cable gland temperature range : **-20°C (dynamic) to +100°C.**
-40°C (static, briefly)

The cable glands can be used at temperatures of between **-20°C and -40°C** only if **static stress** is present at the place of use. Static stress means that no other forces (impact, tension, pressure, etc.) may act on the correctly mounted cable gland and its correctly installed line.

The screwing point, cable gland and inserted line must be in an idle position. A fixed cable gland must be used. Instead of considering the cable gland as just a stand-alone component, the user must take the sum total of the prevailing ambient conditions into account at the place of use.

At temperatures below **-40°C**, the sealing ring material CR/NBR starts to harden significantly and the polyamide PA6 used tends to become brittle.

Temperature recording

The units must not be operated without appropriate temperature recording.

Install a suitable temperature control and/or limit on site if this is not installed by the manufacturer.

Refer to your order confirmation for the setting values.

6. Mounting instructions



During operation, the minimum or maximum ambient temperatures at the connection hood specified in these instructions must not be exceeded or fallen short of. If the ambient temperature is different, the unit must be switched off (e.g. a suitable room temperature controller or similar unit should be provided).

The connection head must not be insulated.

Max. permissible temperature in the connection area 80°C.



During operation, the unit must be covered by the medium being heated to prevent the unit from overheating.

For this reason, a **level monitor** should be provided on-site in case of **stationary media** to ensure that the unit can be operated only when the heating element is adequately covered (approx. 50 mm).

In the case of **flowing media**, a flow monitor should be installed on site in the system.

The customer must protect the unit against overheating by appropriate flow and return of the medium. Operation with non-flowing or incorrect medium as well as with a system/housing that is not completely filled is forbidden, even for test purposes.

The medium must cover the heating pipe by a minimum of 50 mm. Air in the system/housing (in the case of liquids) or dry heating can cause an irreparable defect of the heating elements.

7. Mounting

Installation position horizontal

Mounting instruction:

- Use a suitable open-ended spanner.
- Use a suitable seal

The operator is responsible for the compatibility between the medium and the container or seal material.

- Position the open-ended spanner only on the hexagon of the threaded flange.

Never apply force via the connection head.

- The thread must be in perfect condition.
- Firmly screw in the threaded flange.
- Retighten after heating up for the first time. (if necessary)

8. Installation general



The activities described below are reserved for qualified electricians.

The provisions of the DIN VDE 0100 (low voltage systems) and DIN VDE 0298-4 (high-voltage systems) or the locally applicable regulations must be observed when planning projects, selecting and installing the electrical system.

The electrical connections must be made according to the relevant VDE provisions and/or the locally applicable regulations.

We recommend that a fault current monitoring device be provided.

- The connection voltage must match the voltage stated on the rating plate.
- Before opening the unit, it is absolutely essential to ensure that no voltage is present.

8.1. Installation ERCH / ERKH



The position of the cable gland can be adapted.
 To do this, loosen the sleeve nut in the hood.
 However, the hood may only be rotated a maximum of 45° to the right or left.

1. Loosen the sleeve nut
2. Remove the hood.
3. Make sure that the earthing cable has not become detached.



Max. tensile load of the earthing cable 10 N.

4. Insert the cables through the cable glands and into the connection hood. Tighten the cap nut by hand by turning it to the right while holding down the nut below it. Tighten with the specified torque to guarantee strain relief and protection class. (Cables and connections must be compatible in order to guarantee the required protection class.)

Größe	Durchgangs-Bohrung [mm]	SKINTOP® CLICK Klemm- und Dichtbereich [mm]	SKINTOP® CLICK-R Klemm- und Dichtbereich [mm]	Drehmoment M [Nm]	 Temperaturbereich: -20°C bis +100°C
Ø12	12,3 -0,2	4,5 - 7	3,5-5	1,0	
Ø16	16,3 -0,2	5 - 9	4-7	2,5	
Ø20	20,3 -0,2	7 - 13	5-10	6	
Ø25	25,3 -0,2	9 - 17	6-13	8	
Ø32	32,3 -0,2	11 - 20	7-15	7	

5. Connect the cable according to the enclosed wiring diagram.
6. The customer **must** provide earthing with an open cable lug on the threaded flange. To do this, loosen the countersunk screw in the spanner flat and push on the cable lug.
7. Check the connections for tightness.
8. Attach the hood
9. Fasten using the sleeve nut.

8.2. Installation of units with rotatable element



The position of the cable bushing can be adapted.

To do this, loosen the threaded pins, but do not unscrew them completely.

However, the connection head may only be rotated a maximum of 45° to the right or left.

10. For units with an external adjustment, pull off the scale lever.
11. Loosen the 2 countersunk screws on the front
12. Remove the hood.
13. Make sure that the earthing cable has not become detached.



Max. tensile load of the earthing cable 10 N.

14. Insert the cables through the cable glands and into the rotatable element.
15. Tighten the cable gland nut to guarantee strain relief and protection class. (Cables and connections must be compatible in order to guarantee the required protection class.)
16. Connect the cable according to the enclosed wiring diagram. The wiring diagram is located in the connection hood.
17. The customer **must** provide earthing with an open cable lug on the threaded flange. To do this, loosen the countersunk screw in the spanner flat and push on the cable lug.
18. Check the connections for tightness.
19. Attach the hood
20. Attach the hood with the 2 countersunk screws.
21. For units with an external adjustment, put the scale lever back on

8.3. Installation of units with a red hood

1. Unscrew the cover of the connection head.
2. Make sure that the earthing cable has not become detached.



Max. tensile load of the earthing cable 10 N.

3. Insert the cable through the cable gland and into the connection head.
4. The cable gland nut must be tightened to guarantee the strain relief and protection class.
(Cables and connections must be compatible in order to guarantee the required protection class.)
5. Connect the cable according to the enclosed wiring diagram. The wiring diagram is located in the connection hood.
6. The customer must provide earthing with an open cable lug on the threaded flange. To do this, loosen the countersunk screw in the spanner flat and push on the cable lug.
7. Check the connections for tightness.
8. Screw on the cover of the connection head.

9. Commissioning

1. Before switching on, make sure that all lines are connected properly.
2. Before switching on, make sure that the heated length is fully covered by the medium.
3. Make sure that the temperature limiter (installed or on-site) has been properly connected.
4. Set the temperature controller (installed or on-site) to the required temperature.
5. After the controller has been set, the connection head must be properly sealed.

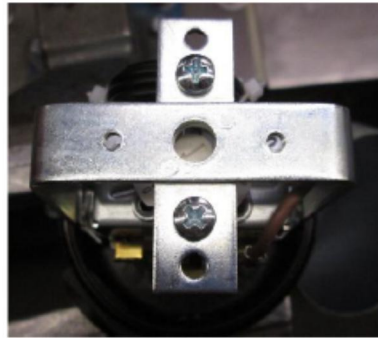
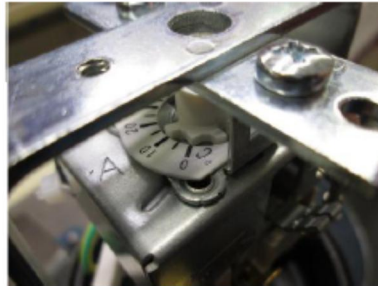
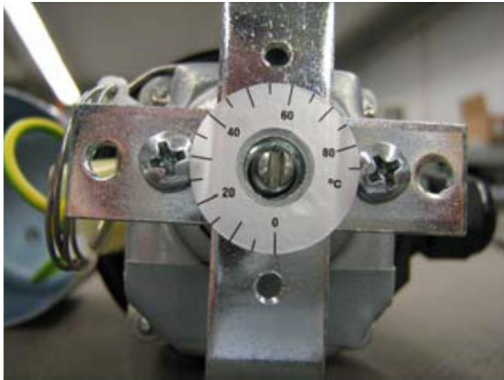
10. Controller setting

The medium temperature is set by the integrated temperature controller.

The integrated controller is set to the desired temperature by turning the scale lever.

The setting range of the scale lever can be found on the attached scale or in your order confirmation.

ERCT / ERKT



11. Limiter setting

The integrated temperature limiter (TL) protects both the medium and the unit from excessive temperatures.

The TL is set to the smallest value at the factory.

Caution:

The limiter setting takes place under voltage.



DANGER

Lethal danger from electric current
Death/serious bodily injuries/material damage

The TL can be set as follows:

Set the limiter to maximum.

You can do this by turning the adjusting spindle all the way to the right.

Heat up heater until the nominal operating temperature

Turn the adjusting spindle slowly to the left

Define trigger temperature of the TL under these operating conditions

Set the limiter temperature approx. 20 to 30°C above this value using the attached temperature scale.

Release limiter once again by pressing the release button.

11.1. Limiter reset

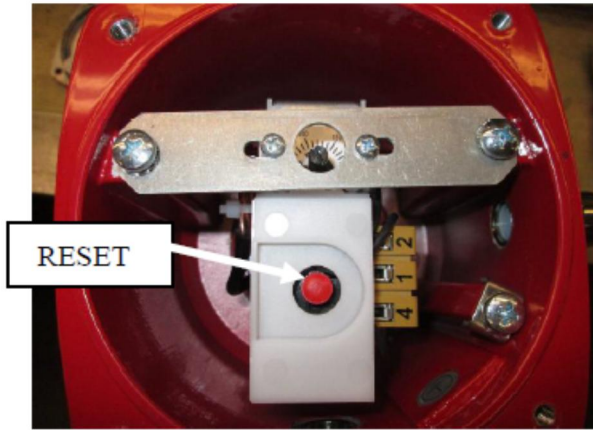
The limiter has triggered and must be reset.

To do this, open the connection hood.

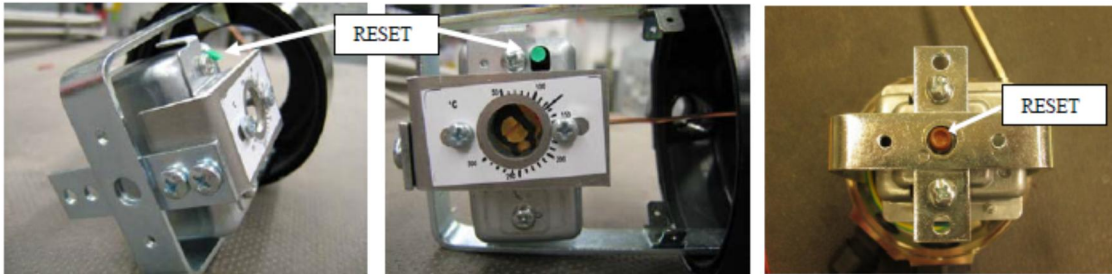
Unlock the TL by pressing the restart button.

To do this, press the restart button.

12. Units with limiter, internal setting ERCB / ERKB



ERCB / ERKB



13. Units with controller and limiter ERCTB / ERKTB

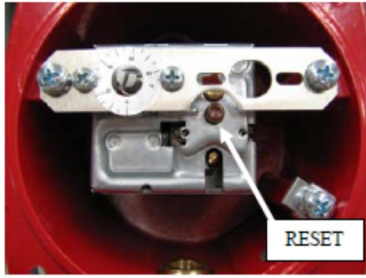


Figure 1

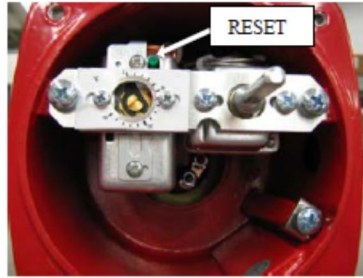


Figure 2

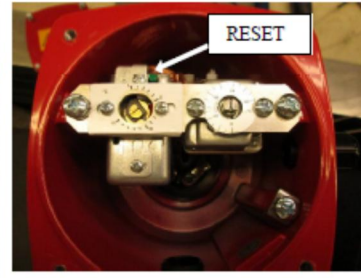


Figure 3

Figure 1:

The 3-pin regulator/limiter combination is available in two versions:

Limiter set permanently to 92°C, controller adjustable within the range from 30°C to 78°C

Limiter set permanently to 100°C, controller adjustable within the range from 30°C to 85°C

Figure 2:

Regulator with external setting, limiter with internal setting.

The limiter setting and controller range can be found on the connection diagram or in your order confirmation.

Figure 3:

Regulator and limiter with internal setting.

The limiter setting and controller range can be found on the connection diagram or in your order confirmation.

14. Units with dry-running protection ERCU / ERKU

Intended use:

Units with dry-running protection are used to heat water in containers and storage tanks with strongly fluctuating filling levels.

Operating conditions: max. 100°C at max. 10 bar

Other operating conditions are only permissible if they are in your order confirmation.

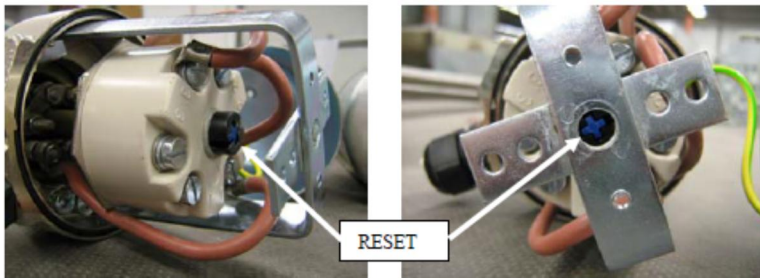
The integrated dry-running protection prevents the unit from burning out if the filling level is too low.

Mounting

The units must be screwed horizontally into a hole with an internal thread G1 ½".

The dry-running protection sensor must be at the highest point of the installed unit.

ERCU / ERKU



15. Repairs

Contact the manufacturer before carrying out repairs.

Repairs must be carried out by trained personnel in compliance with established regulations

Only use spare parts approved by the manufacturer.

Improper repairs can lead to personal injury and damage to property

16. Remedying malfunctions

The activities described below are reserved for qualified electricians.

Malfunction: Unit does not warm up

Remedy:

- Check fuses
- Check connection voltage

Switch off the system and secure it to prevent unintentional restart. Open the connection head and inspect the heating insert for electrical continuity. In the absence of continuity, contact the manufacturer to request a new heating insert. The part can be replaced without draining the medium.

- Restart the unit once the malfunction has been remedied.

17. Repairs and maintenance

Visually inspect the unit every year.

We recommend initially carrying out the inspections and checks stated below at short intervals.

To ensure faultless operation, the unit must be examined as follows:

- ✓ Measure the insulation values.
- ✓ Measure the resistance values (Ω).
- ✓ Check that the temperature regulator and/or limiter is functioning properly, test.
- ✓ Visual inspection for damage.
- ✓ Visual inspection for deposits or encrustations on the heating elements.
- ✓ Visual inspection for leaks.
- ✓ Visual inspection of the electrical connection space
(moisture, rust, .. insulation values reduced and must be removed.)

Deposits or encrustations on the heating elements can destroy the unit and must be removed.

Cleaning must be carried out carefully to prevent damage to the surface of the heating elements.

Carry out an annual function inspection of the safety devices.

At shorter intervals, depending on the level of use and ambient conditions.

18. Dismantling

- Switch off the system and secure it to prevent unintentional restart.
- Allow the unit to cool down to room temperature.
- Disconnect connection cable and remove.
- The system must be depressurised.
- Drain the medium beforehand and dispose of accordingly.

19. Storage

The storage room must be dry and dust-free.

Make sure that the storage temperatures are between -40°C and +40°C.

Before storing, it must be ensured that no moisture has penetrated into the terminal compartment during transportation or during intermediate storage.

All openings must be sealed tightly in order to avoid penetration of dust/moisture.

The terminal compartment must be sealed tightly and the cable entries must be provided with blind plugs, if applicable.

Insert a suitable drying agent in the terminal compartment to absorb any existing moisture.

Only use chemically neutral drying agents (e.g. silica gel).

Replace the drying agent at the prescribed intervals. Observe the instructions of the drying agent manufacturer.

When storing over longer periods of time (several months), the insulation resistance can be expected to decrease due to the system.

The heater may only be put into operation after ensuring that the insulation resistance in accordance with the standard DIN 44874, Section 1, Paragraph 5.3 is greater than

$$\text{Riso} \geq \frac{2 \text{ M}\Omega}{\text{Number of installed tubular heating elements}}$$

Measured in cold condition with 500V DC voltage.

20. Disposal

- Remove problematic deposits in accordance with local regulations.
- Dispose of the unit in accordance with local regulations.
- Clearly separate metals and plastics for recycling or scrapping.