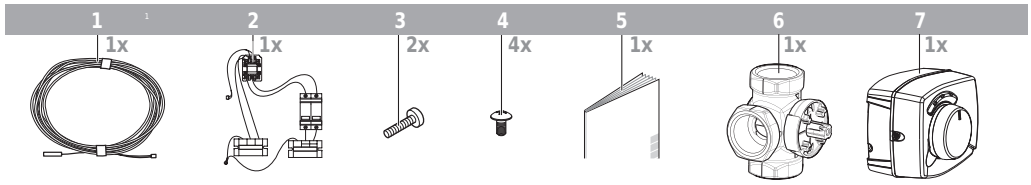
INSTALLATION MANUAL

Domestic hot water tank for air to water heat pump system

EKHWE150A3V3
EKHWET150A3V3
EKHWE200A3V3
EKHWE300A3V3

EKHWE200A3Z2
EKHWE300A3Z2



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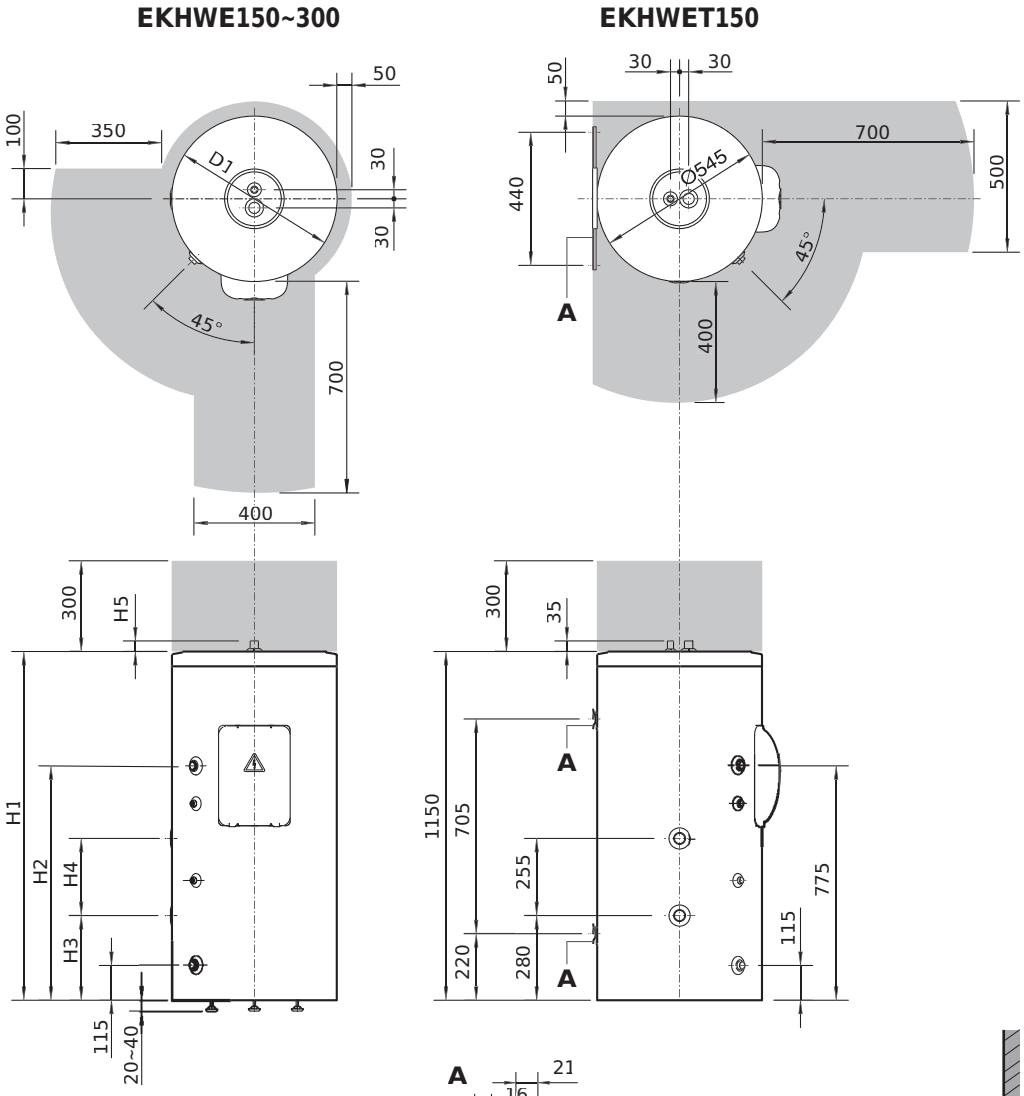
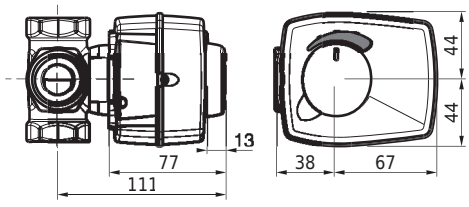


	EKHWE		
	150	200	300
H1	1150	1525	1525
H2	775	925	851
H3	280	280	210
H4	255	410	410
H5	35	35	27
Ø D1	545	545	660

2



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READ THESE INSTRUCTIONS CAREFULLY BEFORE INSTALLATION. KEEP THIS MANUAL IN A HANDY PLACE FOR FUTURE REFERENCE.

IMPROPER INSTALLATION OR ATTACHMENT OF EQUIPMENT OR ACCESSORIES COULD RESULT IN ELECTRIC SHOCK, SHORT-CIRCUIT, LEAKS, FIRE OR OTHER DAMAGE TO THE EQUIPMENT. BE SURE ONLY TO USE ACCESSORIES MADE BY DAIKIN WHICH ARE SPECIFICALLY DESIGNED FOR USE WITH THE EQUIPMENT AND HAVE THEM INSTALLED BY A PROFESSIONAL.

IF UNSURE OF INSTALLATION PROCEDURES OR USE, ALWAYS CONTACT YOUR DAIKIN DEALER FOR ADVICE AND INFORMATION.

THE UNIT DESCRIBED IN THIS MANUAL IS DESIGNED FOR INDOOR INSTALLATION ONLY AND FOR AMBIENT TEMPERATURES RANGING 0°C~35°C.

INTRODUCTION

General information

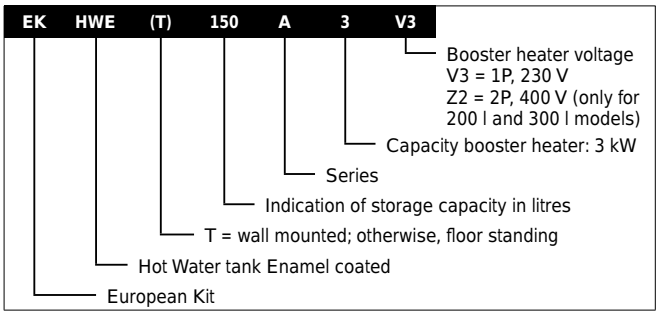
Thank you for purchasing this domestic hot water tank.

The EKHWE domestic hot water tank with integrated 3 kW electrical booster heater must be connected to the unit. The domestic hot water tank is available in three sizes: 150, 200 and 300 litre. All models are floor mounted, while the 150 litre model EKHWET150A3V3 is wall mounted. The 200 and 300 litre models are also available as 400 V versions.

Scope of this manual

This installation manual describes the procedures for unpacking, installing and connecting the EKHWE domestic hot water tanks.

Model identification



ACCESSORIES

Accessories supplied with the domestic hot water tank

See figure 1

1	Thermistor + connection wire (12 m)
2	Contactor - fuse assembly
3	Contactor fixing screw
4	Tapping screw
5	Installation manual
6	3-way valve (Rp 1")
7	3-way valve motor

WARRANTY

Warranty will not be valid if

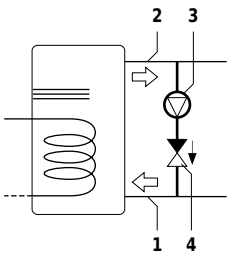
- a pressure relief valve of max. 10 bar is not installed.
- abnormal corrosion occurred due to not installing dielectric couplings.
- incorrect electric connections are made.
- applying electric power to the unit before filling it with water.
- insufficient maintenance, in particular not inspecting the anode every 2 years and replacing if required.

INSTALLATION OF THE EKHWE DOMESTIC HOT WATER TANK

- The total altherma by DAIKIN system is designed for combination with an altherma by DAIKIN domestic hot water tank. In case another tank is being used in combination with the altherma by DAIKIN unit, Daikin cannot guarantee neither good operation nor reliability of the system. For those reasons Daikin cannot give warranty of the system in such case.
- The equipment is not intended for use in a potentially explosive atmosphere.
- Domestic hot water quality must be according to EN directive 98/83 EC.
- A drain device should be installed on the cold water connection on the domestic hot water tank.
- For safety reasons, it is not allowed to add ethylene glycol to the water circuit. Adding ethylene glycol might lead to contamination of the domestic water if a leakage would occur in the heat exchanger coil.
- It is important that the storage capacity of the domestic hot water tank meets normal daily fluctuations in consumption of domestic hot water without any fall of the water outlet temperature during use.
- Take care that in the event of a leak, water cannot cause any damage to the installation space and surroundings.
- The anode shall be inspected at least every 2 years and, if required, replaced.
- A pressure relief device of max. 10 bar should be installed on the domestic hot water tank.

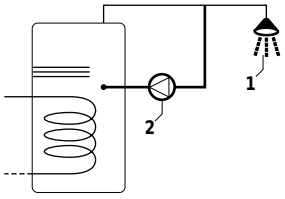
In case of limited consumption of domestic hot water, e.g. at holiday residences or at houses that are occasionally not occupied, the domestic hot water tank installation must be fitted with a shunt pump.

- The shunt pump can be time-controlled,
- the shunt pump must operate to circulate the complete volume of the domestic hot water tank 1.5 times per hour,
- and the shunt pump must operate, or be programmed for operation, during 2 uninterrupted hours per day at least.



1 Cold water connection
2 Hot water connection
3 Shunt pump (field supply)
4 Non-return valve (field supply)

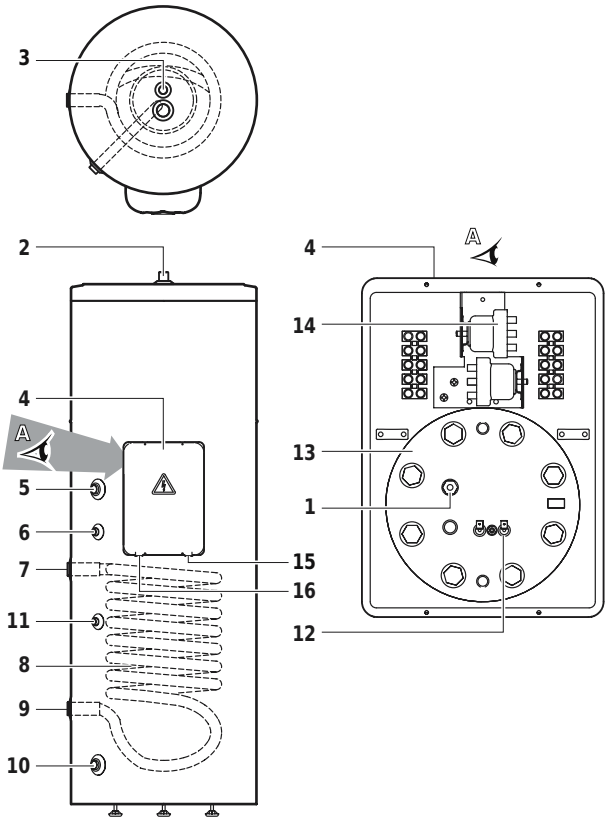
In case of very long field water piping between the domestic hot water tank and the hot water end point (shower, bath, etc.) it can take more time before the hot water from the domestic hot water tank reaches the hot water end point.



1 Shower
2 Recirculation pump

If required connect a recirculation pump in between the hot water end point and the recirculation hole in the domestic hot water tank.

Main components



1 Anode
2 Hot water connection (3/4" MBSP)[a]
3 Pressure relief valve connection (1/2" MBSP)[a]
4 Electrical box
5 Recirculation hole (3/4" MBSP)[a]
6 Thermistor socket
7 Heat exchanger inlet (3/4" FBSP)[b]
8 Heat exchanger coil
9 Heat exchanger outlet (3/4" FBSP)[b]
10 Cold water connection (3/4" MBSP)[a]
11 Thermistor hole for use with solar kit option. Refer to the Installation manual EKSOLHWAV1.
12 Electric heater element
13 Inspection flange
14 Thermal cut out
15 Cable entry from unit
16 Cable entry for use with optional solar kit.

(a) MBSP = Male British Standard Pipe
(b) FBSP = Female British Standard Pipe

Safety devices

- The domestic hot water tank relief valve connections may not be used for other purpose.
- Do not install heaters without thermal cut-outs.

- Thermal protector — The booster heater in the domestic hot water tank is equipped with a thermal protector. The thermal protector is activated when the temperature becomes too high. When activated, the protector has to be reset on the domestic hot water tank by pressing the red button (for access, remove the electrical box cover).

  The electrical box lid must only be opened by a licensed electrician.

  Switch off the power supply before opening the electrical box lid.

- Pressure relief valve — A pressure relief valve (field supply) in accordance with relevant local and national regulations, and with an opening pressure of maximum 10 bar must be connected to the pressure relief valve connection.

  Water may drip from the discharge of the pressure relief valve device.

Outlook diagram

Outlook diagram, see figure 2.

Installation guidelines

Keep in mind the following guidelines when installing the domestic hot water tank:

- The installation location is frost-free.
- Take care that in the event of a leak, water cannot cause any damage to the installation space and surroundings.
- Make sure to make the piping in size 1" or more (and reduce to 3/4" at the inlet of the tank) as to have sufficient water volume in the piping between unit and domestic hot water tank.
- Locate the domestic hot water tank in a suitable position to facilitate ease of maintenance; remember access is required to the electrical box. Refer to the grey-coloured zones indicated in figure 2.
- Provide a connection for the pressure relief valve blow-off and drain.
- To avoid back siphonage it is advised to install a non-return valve on the water inlet of the domestic hot water tank in accordance with local and national regulations.

Installing the domestic hot water tank

1 Check if all domestic hot water tank accessories (see "Accessories" on page 1) are enclosed.

2 When floor mounting, place the domestic hot water tank on a level surface. If required, adjust the legs at the bottom. When wall mounting (only for EKHWET150A3V3 model), make sure the wall is sturdy. In both cases, make sure the domestic hot water tank is mounted level.

3 Make sure to respect the service space as indicated in figure 2.

Connecting the water circuits

Refer to the chapter "Typical application examples" described in the installation manual delivered with the unit for details on connecting the water circuits and the motorised 3-way valve.

Make sure to insulate all water pipes and connections.

Connecting the 3-way valve

1 Refer to figure 3 before making the connection.

2 Installation position.

It is advised to connect the 3-way valve as close as possible to the unit. It can be installed in accordance with one of the following four configurations.

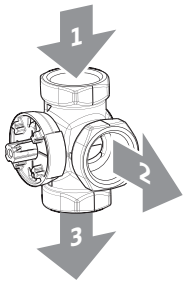


figure A

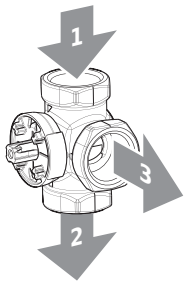


figure B

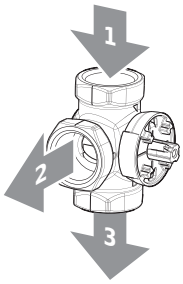


figure C

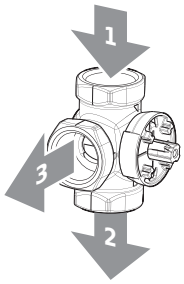
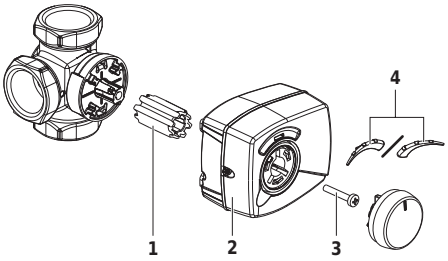


figure D

1 From altherma by DAIKIN unit
2 To domestic hot water tank
3 To room heating

3 Unpack the 3-way valve body and 3-way valve motor.

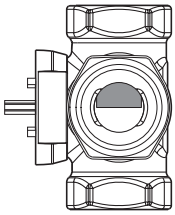
Verify that following accessories are provided with the motor.



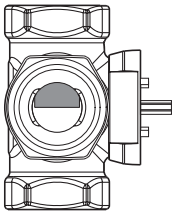
1 Sleeve
2 Valve motor cover
3 Screw
4 Scale

4 Install the 3-way valve body in the pipework.

- Make sure the shaft will be positioned in such a way that the motor can be mounted and replaced.
- Put the sleeve on the valve and turn the valve to the middle position of the scale plate.
  Check that the valve is positioned as in the figure below. It should be blocking the outlet connection to the domestic hot water for 50% and the outlet connection to the room heating also for 50%.



Installation in accordance with figure A and figure B



Installation in accordance with figure C and figure D

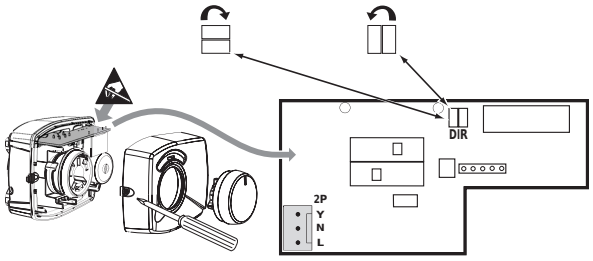
If the valve is not positioned in this way before mounting the motor, the valve will give way to both domestic water and room heating during operation.

5 When installing in accordance with figure A or figure D, open the valve motor cover by loosening the screw and change the jumper so as to change the rotation direction of the valve.

By default the jumper is factory set to apply for installation in accordance with figure B and figure C.

Installation in accordance with figure A and figure D

Installation in accordance with figure B and figure C



Rotation direction of the valve

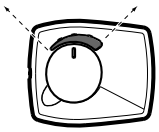
6 Push the motor on the motor sleeve.

Make sure not to rotate the sleeve during this action, so as to maintain the valve position as set during step 4.

7

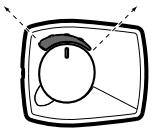
8 Put the scale on the valve as shown below.

Domestic hot water tank Room heating



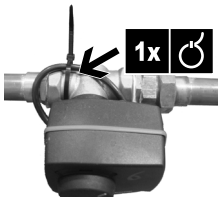
Installation in accordance with figure B and figure C

Room heating Domestic hot water tank

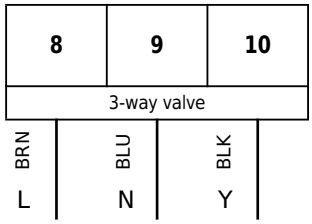


Installation in accordance with figure A and figure D

9 Make sure to firmly fix the power supply cord onto the 3-way valve body with a field supplied cable tie like in illustration below.



10 Perform the wiring in the unit in accordance with the following figure:



Refer also to the drawing on page 6.

Connecting the water circuits

1 Connect the water inlet and water outlet from the heat exchanger.

2 Connect the hot and cold water supply tubes.

Make sure to use dielectric couplings for the connection to avoid galvanic corrosion.

3 Connect the pressure relief valve (field supply, opening pressure maximum 10 bar).

If a discharge pipe is connected to the pressure relief device it must be installed in a continuously downward direction and in a frost-free environment. It must be left open to the atmosphere.

Field wiring

- A main switch or other means for disconnection, having a contact separation in all poles, must be incorporated in the fixed wiring in accordance with relevant local and national legislation.
- All field wiring and components must be installed by a licensed electrician and must comply with relevant European and national regulations.
- The field wiring must be carried out in accordance with the wiring diagram supplied with the unit and the instructions given below.
- The domestic hot water tank must be earthed via the unit.

Power circuit and cable requirements

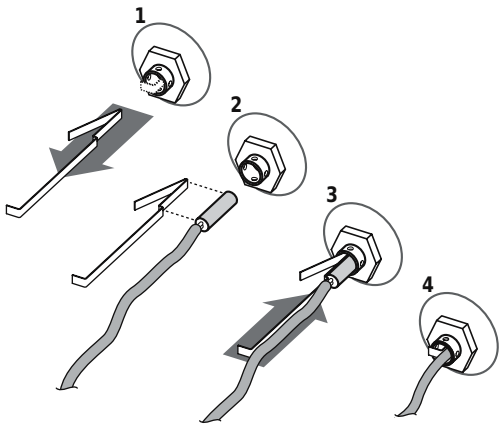
- Be sure to use a dedicated power circuit. Never use a power circuit shared by another appliance.
- Use one and same dedicated power supply for the unit(s), backup heater and domestic hot water tank.

For cable requirements and specifications, refer to "Field wiring" in the unit installation manual supplied with the unit.

NOTE Select the power cable in accordance with relevant local and national regulations.

Thermistor and thermistor cable

Insert the thermistor as deep as possible in the thermistor socket. Fix using the spring provided.



The distance between the thermistor cable and power supply cable must always be at least 5 cm to prevent electromagnetic interference on the thermistor cable.

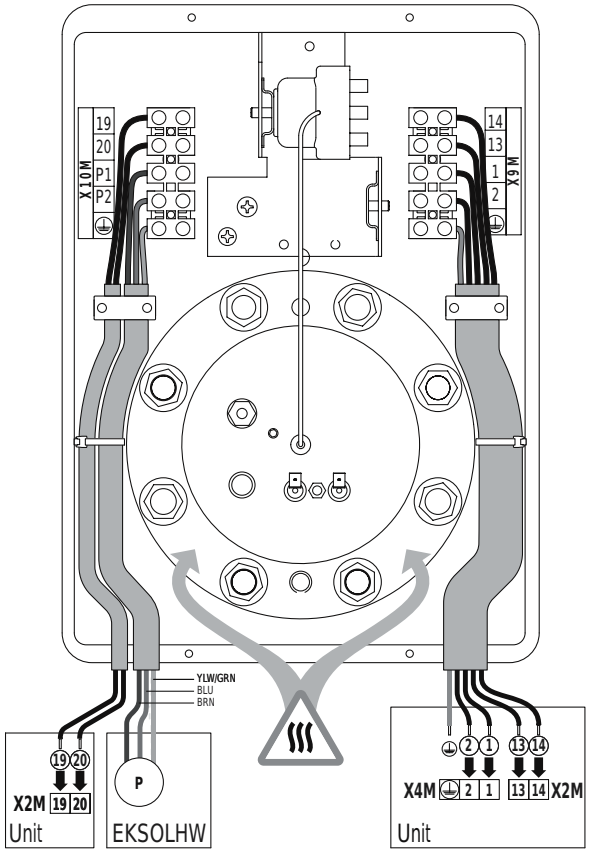
Procedure

Switch off the power supply before making any connections.

Connections to be made in the domestic hot water tank electrical box

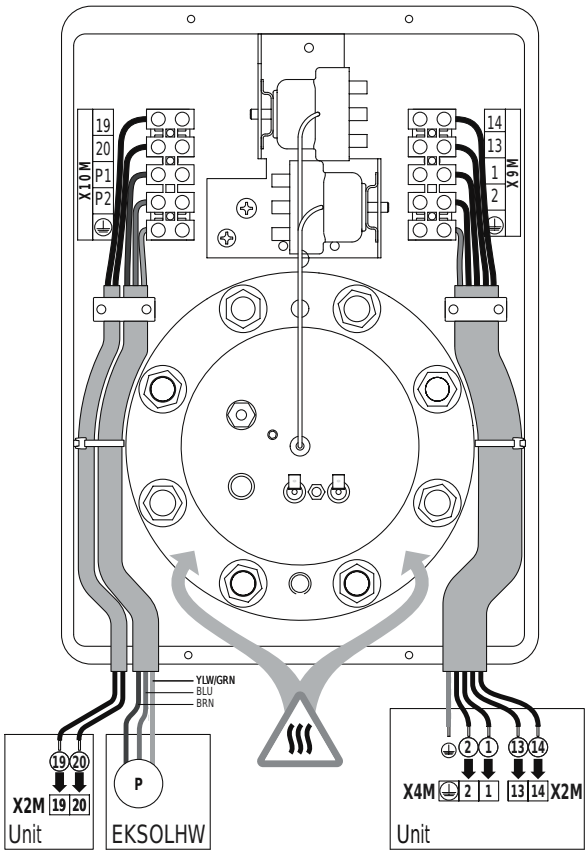
Make sure the power supply cable is insulated from the surface of the inspection hole or can resist temperatures to 90°C.

1 For the EKHWE*V3 model, connect the booster heater power supply and thermal protection cable as shown in the wiring diagram below.



YLW	Yellow	**BRN**	Brown
GRN	Green	**BLU**	Blue
	Can become hot	**Unit**	Unit

For the Z2 models, connect as follows:



YLW	Yellow	**BRN**	Brown
GRN	Green	**BLU**	Blue
	Can become hot	**Unit**	Unit

2 Make sure to ensure strain relief of the cable.

Connections to be made in the unit switch box

3 Mount the prewired contactor (K3M), circuit breaker (F2B) and terminal blocks (X3M, X4M). The contactor must be fixed with the 2 supplied contactor screws and the terminal blocks must be fixed with the 2x 2 supplied tapping screws.

4 Plug the connector connected to the contactor K3M in the socket X13A on the PCB.

5 Plug the thermistor cable connector in the socket X9A on the PCB.

6 Connect the prewired earth wires of the terminal block X3M and X4M to the earthing screw.

7 Connect the booster heater power supply and thermal protection cable (field supply) to terminal X4M earth, 1, 2, and X2M 13, 14.

8 Connect the booster heater power supply cable to the terminal block X3M.

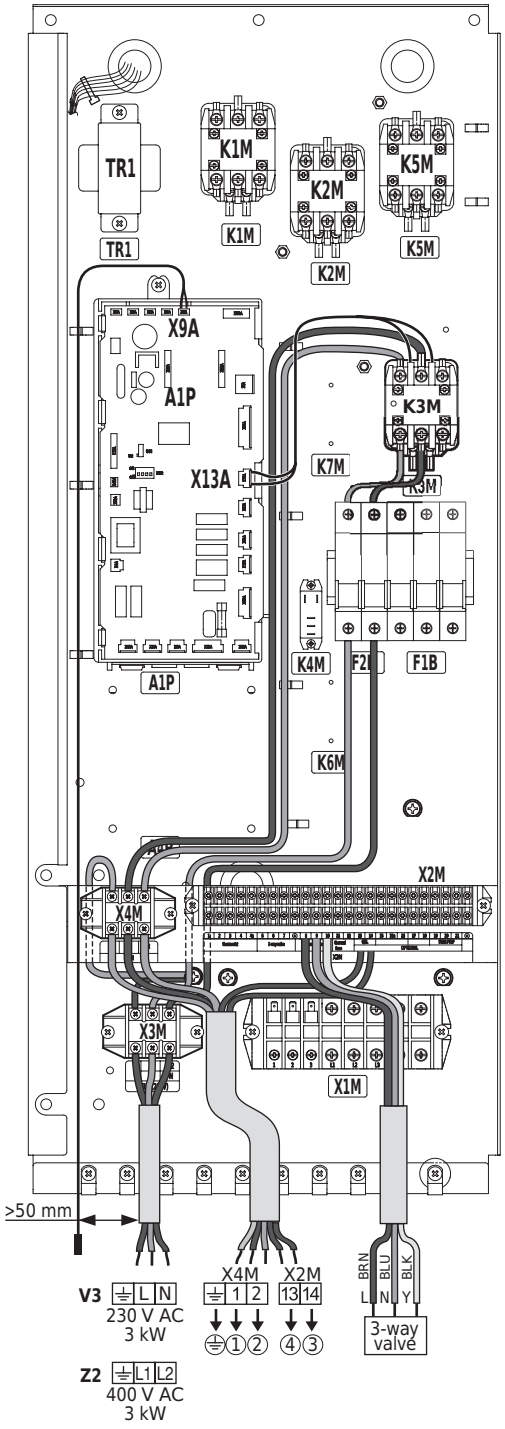
9 Fix the cables to the cable tie mountings with cable ties to ensure strain relief.

10 Set DIP switch SS2-2 on the PCB to ON.

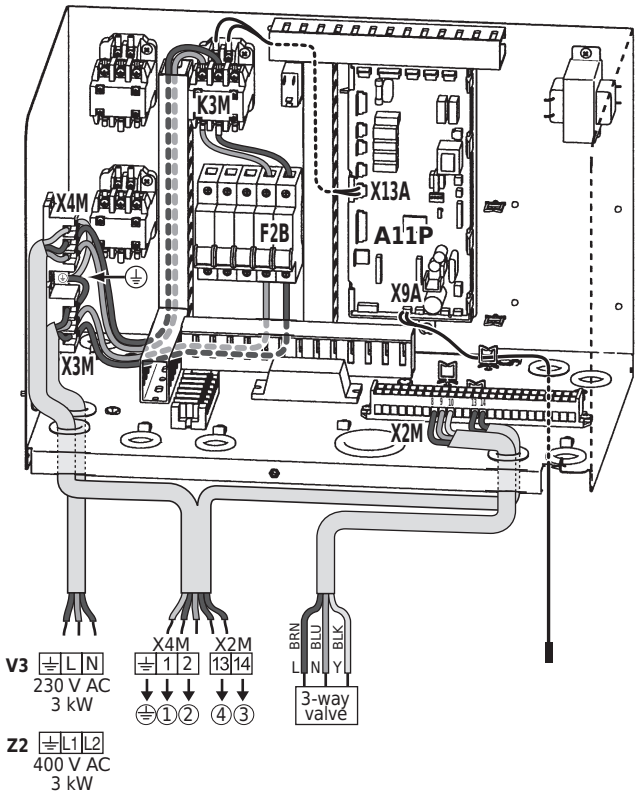
11 When routing out cables, make sure that these do not obstruct mounting of the unit cover.

Note: only relevant field wiring is shown.

- For EKHBH/X units only



- For EDH, EBH, EDL and EBL units only



COMMISSIONING

Before putting power to the unit, make sure:

- the unit is filled with water,
- the sensor of the thermistor cable is mounted correctly in the thermistor socket,
- a pressure relief valve is installed.

Check the operation of the 3-way valve: make sure that when the unit is in domestic water mode it sends hot water to the tank; when it is in room heating mode, it sends water to the room (feel the tubes by hand).

MAINTENANCE

In order to ensure optimal availability of the unit, a number of checks and inspections on the unit and the field wiring have to be carried out at regular intervals.

- Before carrying out any maintenance or repair activity, always switch off the circuit breaker on the supply panel, remove the fuses or open the protection devices of the unit.
- For EKHBH/X only

  Make sure that before starting any maintenance or repair activity, also the power supply to the outdoor unit is switched off.

1 The pressure relief device valve is to be operated regularly as to remove lime deposits and to verify that it is not blocked.

2 **Once a year**: Descaling

Depending on the water and set temperature, scale will deposit on the heat exchanger and booster heater inside the domestic hot water tank.

This will restrict heat transfer and can cause burn out of the booster heater. For this reason, descale the booster heater and the heat exchanger.

Do not use sharp metal tools or strong acid to remove the scaling. Only use commercially available cleaning and scale removal agents for copper and enamelled surfaces.

After removing the scale, rinse the domestic hot water tank by water jet.

3 **Once every 2 year**: Anode.

Check if the anode is not deteriorated. If the diameter of the anode has decreased with 10 mm or more, make sure to replace it (original diameter is 33 mm).

It is of the utmost importance that the anode is in good contact with the domestic hot water tank. For this reason, after replacing the anode or other servicing, make sure that the anode is connected with the earthing screw.

TROUBLESHOOTING

This section provides useful information for diagnosing and correcting certain troubles which may occur in the unit.

General guidelines

Before starting the troubleshooting procedure, carry out a thorough visual inspection of the unit and look for obvious defects such as loose connections or defective wiring.

Before contacting your local dealer, read this chapter carefully, it will save you time and money.

When carrying out an inspection on the supply panel or on the switch box of the unit, always make sure that the circuit breaker of the unit is switched off.

When a safety device was activated, stop the unit and find out why the safety device was activated before resetting it. Under no circumstances safety devices may be bridged or changed to a value other than the factory setting. If the cause of the problem cannot be found, call your local dealer

General symptoms

Symptom 1: No water flow from hot taps

POSSIBLE CAUSES	CORRECTIVE ACTION
The main water supply is off.	Check that all shut off valves of the water circuit are completely open.

Symptom 2: Water from hot taps is cold

POSSIBLE CAUSES	CORRECTIVE ACTION
The thermal cut-out(s) has/have operated	• Check and reset button(s). • Put the thermostat setting for domestic hot water on the unit to ≤75°C. • Check if thermistor is correctly installed in thermistor socket.
The unit is not operating.	Check the unit operation. Refer to the manual delivered with the unit. If any faults are suspected, contact your local dealer.

TECHNICAL SPECIFICATIONS

Domestic hot water tank specifications

	EKHWE150A3V3	EKHWET150A3V3	EKHWE200A3V3	EKHWE200A3Z2	EKHWE300A3V3	EKHWE300A3Z2
Volume	150 l	150 l	200 l	200 l	300 l	300 l
Internal heat exchanger volume	2 l	2 l	3 l	3 l	3 l	3 l
Overall dimensions (Ø x H)	545 x 1150 mm	545 x 1150 mm	545 x 1525 mm	545 x 1525 mm	660 x 1525 mm	660 x 1525 mm
Booster heater, power supply	230 V 50 Hz 1P	230 V 50 Hz 1P	230 V 50 Hz 1P	400 V 50 Hz 2P	230 V 50 Hz 1P	400 V 50 Hz 2P
Booster heater, running current	13 A	13 A	13 A	7.5 A	13 A	7.5 A
Booster heater, capacity	3 kW	3 kW	3 kW	3 kW	3 kW	3 kW
Connections	Refer to "Main components" on page 2					
Weight (empty)	80 kg	82 kg	104 kg	104 kg	140 kg	140 kg
Mounting	Floor	Wall	Floor	Floor	Floor	Floor
Maximum pressure	10 bar	10 bar	10 bar	10 bar	10 bar	10 bar
Maximum domestic hot water temperature	75°C	75°C	75°C	75°C	75°C	75°C
Maximum temperature through heat exchanger	110°C	110°C	110°C	110°C	110°C	110°C

NOTES

NOTES

EAC

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