DOMESTIC HOT WATER TANK FOR AIR TO WATER HEAT PUMP SYSTEM INSTALLATION INSTRUCTIONS

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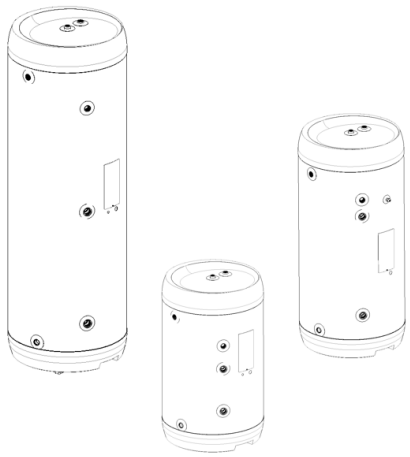
P/N: IO-7037 Date: September 2025



Safety Considerations

The following symbols and labels are used throughout this manual to indicate immediate or potential safety hazards. It is the owner's and installer's responsibility to read and comply with all safety information and instructions accompanying these symbols. Failure to heed safety information increases the risk of personal injury, property damage, and/or product damage.

WARNING

ONLY PERSONNEL THAT HAVE BEEN TRAINED TO INSTALL, ADJUST, SERVICE, MAINTENANCE OR REPAIR (HEREINAFTER, "SERVICE") THE EQUIPMENT SPECIFIED IN THIS MANUAL SHOULD SERVICE THE EQUIPMENT.

THIS EQUIPMENT IS NOT INTENDED FOR USE BY PERSONS (INCLUDING CHILDREN) WITH REDUCED PHYSICAL, SENSORY OR MENTAL CAPABILITIES, OR LACK OF EXPERIENCE AND KNOWLEDGE, UNLESS THEY HAVE BEEN GIVEN SUPERVISION OR INSTRUCTION CONCERNING USE OF THE APPLIANCE BY A PERSON RESPONSIBLE FOR THEIR SAFETY.

CHILDREN SHOULD BE SUPERVISED TO ENSURE THAT THEY DO NOT PLAY WITH THE EQUIPMENT.

THE MANUFACTURER WILL NOT BE RESPONSIBLE FOR ANY INJURY OR PROPERTY DAMAGE ARISING FROM IMPROPER SUPERVISION, SERVICE OR SERVICE PROCEDURES. IF YOU SERVICE THIS UNIT, YOU ASSUME RESPONSIBILITY FOR ANY INJURY OR PROPERTY DAMAGE WHICH MAY RESULT. IN ADDITION, IN JURISDICTIONS THAT REQUIRE ONE OR MORE LICENSES TO SERVICE THE EQUIPMENT SPECIFIED IN THIS MANUAL, ONLY LICENSED PERSONNEL SHOULD SERVICE THE EQUIPMENT. IMPROPER SUPERVISION, INSTALLATION, ADJUSTMENT, SERVICING, MAINTENANCE OR REPAIR OF THE EQUIPMENT SPECIFIED IN THIS MANUAL, OR ATTEMPTING TO INSTALL, ADJUST, SERVICE OR REPAIR THE EQUIPMENT SPECIFIED IN THIS MANUAL WITHOUT PROPER SUPERVISION OR TRAINING MAY RESULT IN PRODUCT DAMAGE, PROPERTY DAMAGE, PERSONAL INJURY OR DEATH.

WARNING

DO NOT BYPASS SAFETY DEVICES

Meaning of warnings and symbols

	DANGER Indicates a situation that results in death or serious injury.
	DANGER: RISK OF ELECTROCUTION Indicates a situation that could result in electrocution.
	DANGER: RISK OF BURNING/SCALDING Indicates a situation that could result in burning/scalding because of extreme hot or cold temperatures.
	WARNING Indicates a situation that could result in death or serious injury.
	CAUTION Indicates a situation that could result in minor or moderate injury

NOTICE

Indicates a situation that could result in equipment or property damage.

INFORMATION

Indicates useful tips or additional information.

UHWS40D3VJ
UHWS50D3VJ
UHWS80D3VJ

Table of contents

1 General safety precautions

1.1 About the documentation

- The original documentation is written in English. All other languages are translations.
- The precautions described in this document cover very important topics, follow them carefully.
- The installation of the system, and all activities described in the installation manual MUST be performed by an authorized installer.

Symbols used on the unit:

Symbol	Explanation
	Before installation, read the installation and operation manual, and the wiring instruction sheet.
	Before performing maintenance and service tasks, read the service manual.
	For more information, see the installer and user reference guide.
	The unit contains rotating parts. Be careful when servicing or inspecting the unit.

Symbols used in the documentation:

Symbol	Explanation
	Indicates a figure title or a reference to it. **Example:** "▲ 1–3 Figure title" means "Figure 3 in chapter 1".
	Indicates a table title or a reference to it. **Example:** "▦ 1–3 Table title" means "Table 3 in chapter 1".

1.2 For the installer

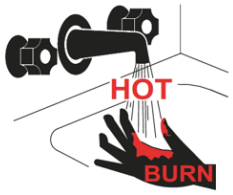
1.2.1 General

If you are NOT sure how to install or operate the unit, contact your dealer.

DANGER: RISK OF BURNING /SCALDING

- **DO NOT TOUCH THE REFRIGERANT PIPING OF HEAT PUMP, WATER PIPING OR INTERNAL PARTS DURING AND IMMEDIATELY AFTER OPERATION. IT COULD BE TOO HOT OR TOO COLD. GIVE IT TIME TO RETURN TO NORMAL TEMPERATURE. IF YOU MUST TOUCH IT, WEAR PROTECTIVE GLOVES.**

DANGER: RISK OF BURNING /SCALDING



WATER TEMPERATURE OVER 125 °F (51 °C) CAN CAUSE SEVERE BURNS INSTANTLY OR DEATH FROM SCALDS.

CHILDREN, DISABLED AND ELDERLY ARE AT HIGHEST RISK OF BEING SCALDED.

SEE INSTRUCTION MANUAL BEFORE SETTING TEMPERATURE AT WATER HEATER. FEEL WATER BEFORE BATHING OR SHOWERING.

TEMPERATURE LIMITING VALVES ARE AVAILABLE, SEE MANUAL.

WARNING

IMPROPER INSTALLATION OR ATTACHMENT OF EQUIPMENT OR ACCESSORIES COULD RESULT IN ELECTRICAL SHOCK, SHORT-CIRCUIT, LEAKS, FIRE OR OTHER DAMAGE TO THE EQUIPMENT. ONLY USE ACCESSORIES, OPTIONAL EQUIPMENT AND SPARE PARTS MADE OR APPROVED BY DAIKIN UNLESS OTHERWISE SPECIFIED.

WARNING

MAKE SURE INSTALLATION, TESTING AND APPLIED MATERIALS COMPLY WITH APPLICABLE CODES (ON TOP OF THE INSTRUCTIONS DESCRIBED IN THE DAIKIN DOCUMENTATION).

WARNING

TEAR APART AND THROW AWAY PLASTIC PACKAGING BAGS SO THAT NOBODY, ESPECIALLY NOT CHILDREN, CAN PLAY WITH THEM. POSSIBLE CONSEQUENCE: SUFFOCATION.

WARNING

PROVIDE ADEQUATE MEASURES TO PREVENT THE UNIT FROM BEING USED AS A SHELTER BY SMALL ANIMALS. SMALL ANIMALS THAT MAKE CONTACT WITH ELECTRICAL PARTS CAN CAUSE MALFUNCTIONS, SMOKE OR FIRE.

CAUTION

WEAR ADEQUATE PERSONAL PROTECTIVE EQUIPMENT (PROTECTIVE GLOVES, SAFETY GLASSES,...) WHEN INSTALLING, MAINTAINING OR SERVICING THE SYSTEM.

CAUTION

DO NOT TOUCH THE HOT WATER PIPING INTO AND/OR OUT OF THE UNIT.

CAUTION

- **DO NOT PLACE ANY OBJECTS OR EQUIPMENT ON TOP OF THE UNIT.**
- **DO NOT SIT, CLIMB, OR STAND ON THE UNIT.**

NOTICE

FOR INSTALLATIONS IN THE STATE OF CALIFORNIA

California law requires that certain residential water heater tanks being installed are braced, anchored, or strapped to resist falling or horizontal displacement due to earthquake motion. At a minimum, any water heater shall be secured in accordance with the California Plumbing Code, or modifications made thereto by a city, county, or city and county pursuant to Section 17958.5.

In accordance with the applicable codes, it might be necessary to provide a logbook with the product containing at least: information on maintenance, repair work, results of tests, stand-by periods, etc.
Also, at least, the following information MUST be provided at an accessible place at the product:
- Instructions for shutting down the system in case of an emergency
- Name and address of fire department, police and hospital
- Name, address and day and night telephone numbers for obtaining service

1.2.2 Installation site

- Provide sufficient space around the unit for servicing.
- Make sure the installation site withstands the weight of the unit.
- Make sure the area is well ventilated. Do NOT block any-ventilation openings.
- Make sure the unit is level.

Do NOT install the unit in the following places:
- In potentially explosive atmospheres.
- In places where there is machinery that emits electro-magnetic waves. Electromagnetic waves may disturb the control system, and cause malfunction of the equipment.
- In places where there is a risk of fire due to the leakage of flammable gases (example: thinner or gasoline), carbon fiber, ignitable dust.

▪ In places where corrosive gas (example: sulphurous acid gas) is produced. Corrosion of copper pipes or soldered parts may cause the water to leak.

1.2.3 Water

The Product is manufactured to suit most public water supplies. However, there are certain water chemistries (outlined below) that can have a detrimental effect on the Product and its life expectancy. If there are uncertainties regarding water quality, the local water supply authority can supply the necessary data.

NOTICE

MAKE SURE WATER QUALITY COMPLIES WITH THE BELOW WATER QUALITY REQUIREMENTS

- The Product has been installed by a professional installer, in accordance with the instructions in the installation manual and all relevant Codes of Practice and Regulations in force at the time of installation.
- The Product has not been modified in any way, tampered with or subjected to misuse and no factory fitted parts have been removed for unauthorized repair or replacement.
- The Product has only been connected to a domestic mains water supply in compliance with Environmental Protection Agency (EPA). The water should not be aggressive, i.e. the water chemistry shall comply with the following:
  - Chloride < 250 mg / L
  - Total Dissolved Solids (TDS): <500 ppm
  - 6.0 < pH level < 9.5
- The immersion heater has not been exposed to hardness levels exceeding 12 grains per gallon (200mg/L) for residential use and 7 grains per gallon (120mg/L) for commercial use.
- Any disinfection has been carried out without affecting the Product in any way whatsoever. The Product shall be isolated from any system chlorination.
- Service and/or repair shall be done according to the installation manual and all relevant codes of practice. Any replacement parts used shall be designated by the manufacturer.
- Any third-party costs associated with any claim must be authorized in advance by Daikin in writing. The purchase invoice and/or installation invoice, a water sample as well as the defective product is made available to Daikin upon request.
- Unit is certified for indoor use only. Do not install outdoors.

Failure to follow these instructions and conditions may result in product failure, and water escaping from the Product.

1.2.4 Electrical

DANGER: RISK OF ELECTROCUTION

- **TURN OFF ALL POWER SUPPLY BEFORE REMOVING THE ELECTRICAL BOX COVER, CONNECTING ELECTRICAL WIRING OR TOUCHING ELECTRICAL PARTS.**
- **DISCONNECT THE POWER SUPPLY FOR MORE THAN 10 MINUTES, AND MEASURE THE VOLTAGE AT THE TERMINALS OF MAIN ELECTRICAL COMPONENTS BEFORE SERVICING. THE VOLTAGE MUST BE LESS THAN 50 V DC BEFORE YOU CAN TOUCH ELECTRICAL COMPONENTS. FOR THE LOCATION OF THE TERMINALS, SEE THE WIRING DIAGRAM.**
- **DO NOT TOUCH ELECTRICAL COMPONENTS WITH WET HANDS.**
- **DO NOT LEAVE THE UNIT UNATTENDED WHEN THE SERVICE COVER IS REMOVED.**

WARNING

CONNECT CIRCUIT BREAKER AS PER WIRING DIAGRAM.

WARNING

- **ONLY USE COPPER WIRES.**
- **MAKE SURE THE FIELD WIRING COMPLIES WITH THE LATEST EDITION OF NFPA 70, NATIONAL ELECTRIC CODE.**
- **INSTALLATION MUST COMPLY WITH THE LATEST EDITION OF NATIONAL, STATE, AND LOCAL CODES.**
- **ALL FIELD WIRING MUST BE PERFORMED IN ACCORDANCE WITH THE WIRING DIAGRAM SUPPLIED WITH THE PRODUCT.**
- **NEVER SQUEEZE BUNDLED CABLES AND MAKE SURE THEY DO NOT COME IN CONTACT WITH THE PIPING AND SHARP EDGES. MAKE SURE NO EXTERNAL PRESSURE IS APPLIED TO THE TERMINAL CONNECTIONS.**
- **MAKE SURE TO INSTALL GROUND WIRING. DO NOT GROUND THE UNIT TO A UTILITY PIPE, SURGE SUPPRESSOR, OR TELEPHONE GROUND. INCOMPLETE GROUND MAY CAUSE ELECTRICAL SHOCK.**
- **MAKE SURE TO USE A DEDICATED POWER CIRCUIT. NEVER USE A POWER SUPPLY SHARED BY ANOTHER APPLIANCE.**
- **MAKE SURE TO INSTALL THE REQUIRED FUSES OR CIRCUIT BREAKERS.**
- **MAKE SURE TO INSTALL A GROUND LEAKAGE PROTECTOR. FAILURE TO DO SO MAY CAUSE ELECTRICAL SHOCK OR FIRE.**

WARNING

- **AFTER FINISHING THE ELECTRICAL WORK, CONFIRM THAT EACH ELECTRICAL COMPONENT AND TERMINAL INSIDE THE ELECTRICAL COMPONENTS BOX IS CONNECTED SECURELY.**
- **MAKE SURE ALL COVERS ARE CLOSED BEFORE STARTING UP THE UNIT.**

CAUTION

- WHEN CONNECTING THE POWER SUPPLY: CONNECT THE GROUND CABLE FIRST, BEFORE MAKING THE CURRENT-CARRYING CONNECTIONS.
- WHEN DISCONNECTING THE POWER SUPPLY: DISCONNECT THE CURRENT-CARRYING CABLES FIRST, BEFORE SEPARATING THE GROUND CONNECTION.
- THE LENGTH OF THE CONDUCTORS BETWEEN THE POWER SUPPLY STRESS RELIEF AND THE TERMINAL BLOCK ITSELF MUST BE AS SUCH THAT THE CURRENT-CARRYING WIRES ARE SECURED BEFORE THE GROUND WIRE IS IN CASE THE POWER SUPPLY IS PULLED LOOSE FROM THE STRESS RELIEF.

NOTICE

PRECAUTIONS WHEN TERMINATING POWER WIRING:

- DO NOT CONNECT WIRING OF DIFFERENT THICKNESSES TO THE POWER TERMINAL BLOCK (SLACK IN THE POWER WIRING MAY CAUSE ABNORMAL HEAT).
- WHEN CONNECTING WIRING WHICH IS THE SAME THICKNESS, DO AS SHOWN IN THE FIGURE ABOVE.
- FOR WIRING, USE THE DESIGNATED POWER WIRE AND CONNECT FIRMLY, THEN SECURE TO PREVENT OUTSIDE PRESSURE BEING EXERTED ON THE TERMINAL BOARD.
- USE AN APPROPRIATE SCREWDRIVER FOR TIGHTENING THE TERMINAL SCREWS. A SCREWDRIVER WITH A SMALL HEAD WILL DAMAGE THE TERMINAL SCREW HEAD AND MAKE PROPER TIGHTENING IMPOSSIBLE.
- OVER-TIGHTENING THE TERMINAL SCREWS MAY BREAK THEM.

Install power cables at least 40” (1m) away from televisions or radios to prevent interference. Depending on the radio waves, a distance of 40” (1m) may NOT be sufficient.

2 Specific installer safety instructions

Always observe the following safety instructions and regulations.

Preparation (see “5 Preparation”)

WARNING

- ALL WIRING MUST BE PERFORMED BY AN AUTHORIZED ELECTRICIAN AND MUST COMPLY WITH THE APPLICABLE NFPA 70.
- MAKE ELECTRICAL CONNECTIONS TO THE FIXED WIRING.
- ALL COMPONENTS PROCURED ON-SITE AND ALL ELECTRICAL CONSTRUCTION MUST COMPLY WITH THE APPLICABLE CODES.

WARNING

ALWAYS USE ARMORED CABLE FOR POWER SUPPLY CABLES TO PRODUCT.

WARNING

THE ELECTRICAL BOX COVER MUST ONLY BE OPENED BY A LICENSED ELECTRICIAN. SWITCH OFF THE POWER SUPPLY BEFORE OPENING THE ELECTRICAL BOX COVER.

Installation (see “6 Installation”)

WARNING

MAKE SURE ALL FIELD WIRING IS INSULATED AND IS RATED FOR TEMPERATURES TO 194°F (90°C).

Commissioning (see “7 Commissioning”)

CAUTION

PRELIMINARY ELECTRICAL SYSTEM CHECKS SUCH AS GROUND CONTINUITY, POLARITY, RESISTANCE TO GROUND AND SHORT CIRCUIT MUST BE CARRIED OUT BY USING A SUITABLE TEST METER BY A COMPETENT PERSON.

Maintenance and service (see “9 Maintenance and service”)

WARNING

- 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.
- MAKE SURE YOU DO NOT TOUCH A CONDUCTIVE SECTION.
- DO NOT RINSE THE OUTSIDE OF THE UNIT. THIS MAY CAUSE ELECTRIC SHOCKS OR FIRE.

CAUTION

WATER COMING OUT OF THE VALVE MAY BE VERY HOT.

Troubleshooting (see “10 Troubleshooting”)

WARNING

- **WHEN CARRYING OUT AN INSPECTION ON THE ELECTRICAL BOX OF THE UNIT, ALWAYS MAKE SURE THAT THE UNIT IS DISCONNECTED FROM THE MAINS. TURN OFF THE RESPECTIVE CIRCUIT BREAKER.**
  - **WHEN A SAFETY DEVICE IS ACTIVATED, STOP THE UNIT AND FIND OUT WHY THE SAFETY DEVICE WAS ACTIVATED BEFORE RESETTING IT. NEVER BYPASS SAFETY DEVICES OR CHANGE THEIR VALUES TO A VALUE OTHER THAN THE FACTORY DEFAULT SETTING. IF YOU ARE UNABLE TO FIND THE CAUSE OF THE PROBLEM, CALL YOUR DEALER.**

WARNING

PREVENT HAZARDS DUE TO INADVERTENT RESETTING OF THE THERMAL CUT-OUT: POWER TO THIS APPLIANCE MUST NOT BE SUPPLIED THROUGH AN EXTERNAL SWITCHING DEVICE, SUCH AS A TIMER, OR CONNECTED TO A CIRCUIT THAT IS REGULARLY TURNED ON AND OFF BY THE UTILITY.

3 About the box

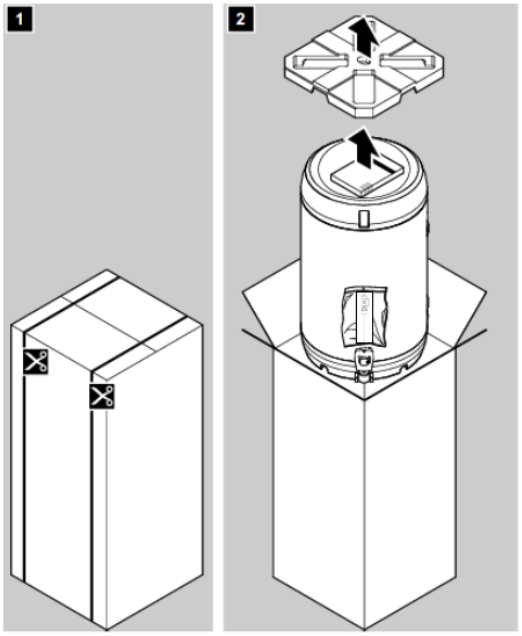
Keep the following in mind:
- At delivery, the unit MUST be checked for damage and-completeness. Any damage or missing parts MUST be reported immediately to the claim’s agent of the carrier.
- Bring the packed unit as close as possible to its final installation position to prevent damage during transport.
- Prepare in advance the path along which you want to bring the unit to its final installation position.

3.1 Domestic hot water tank

INFORMATION

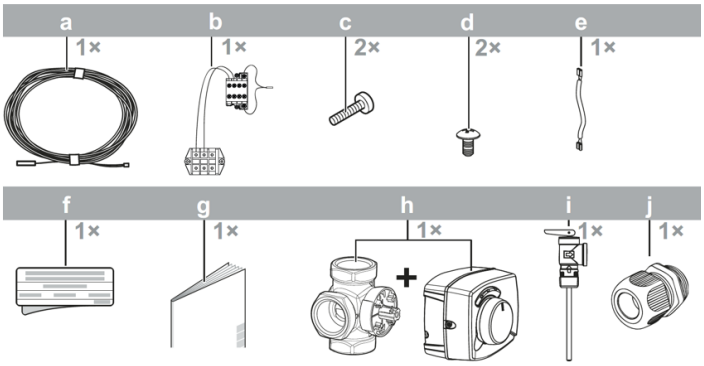
THIS UNIT HAS BEEN TESTED, APPROVED AND CERTIFIED ACCORDING TO UL 174, CSA STD C2202 NO. 110, NSF/ANSI/CAN61 & NSF/ANSI/CAN372

3.1.1 To unpack the domestic hot water tank



3.1.2 Remove the accessories from the domestic hot water tank

Remove the accessories supplied with the domestic hot water tank.



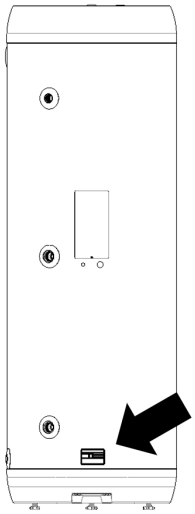
a. Thermistor + connection wire 39’ 4” (12m) in length
b. Contactor K3M – terminal X7M assembly
c. Contactor fixing screw
d. Tapping screw
e. Jumper wire
f. Booster heater power supply sticker
g. Installation manual
h. 3-way valve + motor
i. Temperature and pressure relief valve*
j. Thermistor strain relief

* Not included in NSF certification

4 About the units and options

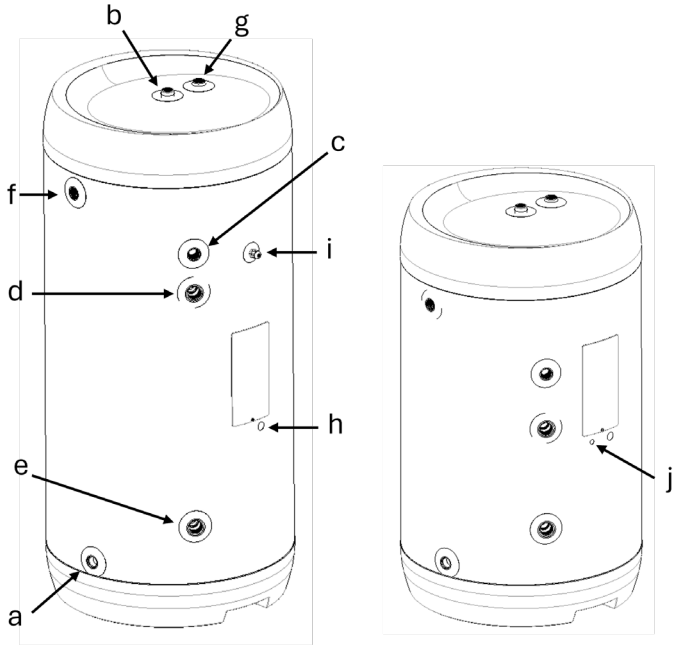
4.1 Identification

4.1.1 Identification label: Domestic hot water tank



Code	Description
U	Product for North America
HWS	Hot water stainless steel tank
40	Storage capacity Gallons
D	Series
3	Booster capacity W
VJ	Power supply: 1ph, 208/230V AC, 60Hz

4.1.2 Identification of tank connections



a. Cold water inlet connection (3/4” NPT F)
b. Hot water outlet connection (3/4” NPT F)
c. Optional recirculation inlet (plugged - 3/4” NPT F)
d. Entering water from heat pump connection (1” NPT F)
e. Returning water to heat pump connection (1” NPT F)
f. Temperature & Pressure relief valve connection (3/4” NPT F)
g. Optional e-anode (plugged - 3/4” NPT F)
h. Power supply cable inlet for armored cable
i. Sensor pocket (UHWS50 model only)
j. Sensor cable inlet (UHWS40 & 80 models only)

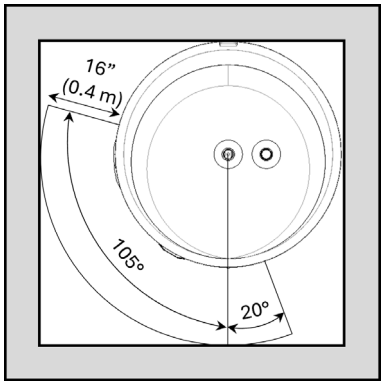
5 Preparation

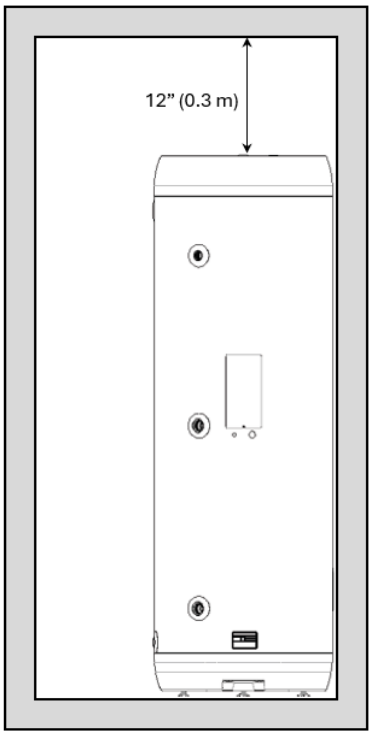
5.1 Overview: Preparation

This chapter describes what you have to do and know before going on-site.
It contains information about:
- Preparing the installation site
- Preparing the water piping
- Preparing the electrical wiring

5.2 Preparing the installation site

5.2.1 Installation site requirements of the domestic hot water tank





- Mind the following spacing installation guidelines:
- The domestic hot water tank is designed for indoor installation only and for ambient temperatures ranging

from 32 to 95 °F (0~35°C).
- The piping to and from this domestic hot water tank should be properly insulated if they might be subject to freezing temperatures.
- Take care that in the event of a leak, water does not cause any damage to the installation space and surroundings.
- A field supplied catch or drain pan is recommended to be installed underneath this domestic hot water tank. This pan must be at least 2” (5.1 cm) larger in diameter than that of the tank. This pan should also have a lip to contain the water before drainage. This pan must be piped to an unobstructed drain in accordance with local codes.

WARNING

TURN OFF THE WATER HEATER AND CALL A SERVICE TECHNICIAN OR A LICENSED PLUMBING CONTRACTOR IMMEDIATELY IF THIS DOMESTIC HOT WATER TANK HAS BEEN SUBJECTED TO FLOOD, FIRE, OVERHEATING OR PHYSICAL DAMAGE.

5.3 Preparing water piping

5.3.1 Water circuit requirements

NOTICE

IN CASE OF PLASTIC PIPES, MAKE SURE THEY ARE FULLY OXYGEN DIFFUSION TIGHT. THE DIFFUSION OF OXYGEN INTO THE PIPING CAN LEAD TO EXCESSIVE CORROSION.

WARNING

DO NOT INSTALL PLUG INTO TEMPERATURE & PRESSURE RELIEF VALVE CONNECTION

CAUTION

PRESSURE RELIEF VALVE LIMITING THE PRESSURE TO 150 PSI/10 BAR MUST BE INSTALLED OR EQUIVALENT.

NOTICE

DO NOT USE THE PRESSURE RELIEF VALVE CONNECTION FOR OTHER PURPOSES.

- Connecting piping – Codes. Make all piping connections in accordance with the applicable codes and the instructions in the “Installation” chapter, respecting the water inlet and outlet.
- Connecting piping – Force. Do NOT use excessive force when connecting the piping. Deformation of the piping can cause malfunctioning of the unit.
- Connecting piping – Tools. Only use appropriate tools to handle brass, which is a soft material, or for connecting the water circuit. Inappropriate tools will cause damage to the pipes.
- Connecting piping – Air, moisture, dust. If air, moisture or dust gets into the circuit, problems may occur. To prevent this:
  - ONLY use clean pipes.
  - Hold the pipe end downwards when removing burrs.
  - Cover the pipe end when inserting it through a wall, to prevent dust and/or particles from entering the pipe.
  - Use a decent thread sealant to seal connections.
  - When using non-brass metallic piping, make sure to isolate both materials from each other to prevent galvanic corrosion.
- Glycol - Please follow the instructions, cautions, and warnings provided in the installer reference guide of the Altherma system.

CAUTION

THIS APPLIANCE INCORPORATES A SINGLE WALL HEAT EXCHANGER, AND SHALL MEET ALL OF THE FOLLOWING REQUIREMENTS:

- THE HEAT-TRANSFER MEDIUM SHALL BE POTABLE WATER OR OTHER NONTOXIC FLUID RECOGNIZED AS SAFE BY THE FDA.
- THE MAXIMUM OPERATING PRESSURE OF THE HEAT EXCHANGER SHALL NOT EXCEED THE MAXIMUM OPERATING PRESSURE OF THE POTABLE WATER SUPPLY.

- Field supply components – Water pressure and temperature. Check that all components in the field piping can withstand the water pressure and water temperature.
- Drainage - Drain Valve (Field Supplied). Install a field supplied drain valve to the cold-water inlet connection (3/4” NPT F) to drain the water tank when needed.
- Non-brass metallic piping. When using non-brass metallic piping, isolate the brass and non-brass properly so that they do NOT make contact with each other. This is to prevent galvanic corrosion.
- Domestic hot water tank - Temperature limiting valves (Field Supplied). A field supplied temperature limiting valve, such as a thermostatic mixing valve, can be used to reduce the risk of scalding. Proper care and caution should be taken when selecting the water temperature coming out of this valve.
- Domestic hot water tank - Mixing valves (Field Supplied). A field supplied mixing valve (manual, thermostatic or electronic) can be used to reduce the water temperature at the point of use by mixing hot and cold water. Proper care and caution should be taken when selecting the water temperature coming out of this valve.
- Domestic hot water tank – Capacity. To avoid stagnation of water, it is important that the storage capacity of the domestic hot water tank meets the daily consumption of domestic hot water.
- Domestic hot water tank – After installation. Immediately after installation, the domestic hot water tank must be

flushed with fresh water by emptying the complete volume of the domestic hot water tank. **This procedure must be repeated at least once a day the first 5 consecutive days after installation.**

- Domestic hot water tank – Standstills. In cases where during longer periods of time there is no consumption of hot water, the equipment MUST be flushed with fresh water before usage by emptying the complete volume of the domestic hot water tank.
- Domestic hot water tank - Idle. If the domestic hot water tank is to remain idle for an extended period of time (two or more weeks), then water and power to this domestic hot water tank should be turned off to conserve energy and prevent the build up of hydrogen gas which is extremely flammable.

CAUTION

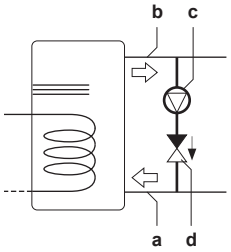
HYDROGEN GAS MAY BE PRODUCED IN A HOT WATER SYSTEM SERVED BY THIS HEATER THAT HAS NOT BEEN USED FOR A LONG PERIOD OF TIME (2 WEEKS OR MORE). HYDROGEN GAS IS EXTREMELY FLAMMABLE. TO REDUCE THE RISK OF INJURY UNDER THESE CONDITIONS, IT IS RECOMMENDED THAT THE HOT WATER FAUCET BE OPENED FOR SEVERAL MINUTES AT THE KITCHEN SINK BEFORE USING ANY ELECTRICAL APPLIANCE CONNECTED TO THE HOT WATER SYSTEM. WHEN HYDROGEN IS PRESENT, THERE WILL PROBABLY BE AN UNUSUAL SOUND SUCH AS AIR ESCAPING THROUGH THE PIPE AS THE WATER BEGINS TO FLOW. THERE SHOULD BE NO SMOKING OR OPEN FLAME NEAR THE FAUCET AT THE TIME IT IS OPEN.

NOTICE

DISINFECTION MODE

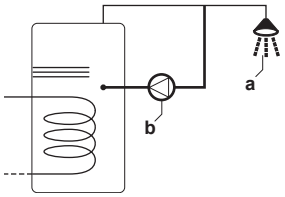
THE DISINFECTION MODE IN THE ALTHERMA HEAT PUMP PERIODICALLY HEATS THE STORED WATER IN THE DOMESTIC HOT WATER TANK >140°F (>60°C) FOR PREVENTATIVE ELIMINATION OF PATHOGENIC BACTERIA (LEGIONELLA) IN THE DOMESTIC HOT WATER TANK. THE ALTHERMA HEAT PUMP COMES WITH A FACTORY-DEFAULT SCHEDULE SET TO RUN THE DISINFECTION MODE ONCE A WEEK, WHICH THE INSTALLER CAN ADJUST DURING START-UP IF NEEDED. THE DISINFECTION MODE ON THE ALTHERMA HEAT PUMP WILL REMAIN ACTIVE EVEN IF THE TANK HEATING OPERATION IS TURNED OFF.

- Domestic hot water tank – Disinfection. In case of limited consumption of domestic hot water, e.g. at vacation residences or at houses that are occasionally not occupied, the domestic hot water tank installation must be fitted with a field supplied DHW pump for disinfection. The disinfection function is foreseen as an installer setting in the Altherma unit. See the installer reference guide for the unit for more information.
  The disinfection pump must circulate the complete volume of the domestic hot water tank 1.5 times per hour and operate for at least 2 uninterrupted hours per day.



a Cold water connection
b Hot water connection
c DHW pump for disinfection (field supplied)
d Check valve (field supplied)

- Domestic hot water tank – Instant hot water (recirculation). 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. If required connect a recirculation pump in between the hot water end point and the recirculation hole in the domestic hot water tank. The instant hot water function is foreseen as an installer setting in the Altherma unit. See the installer reference guide for the unit for more information.



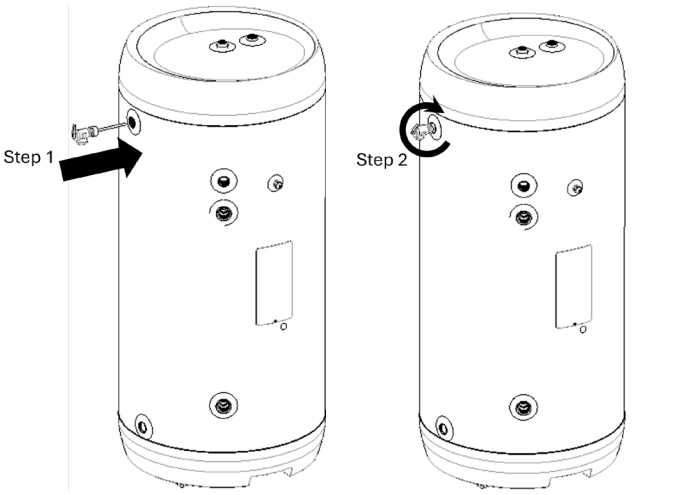
a Shower
b DHW pump for recirculation (field supply)

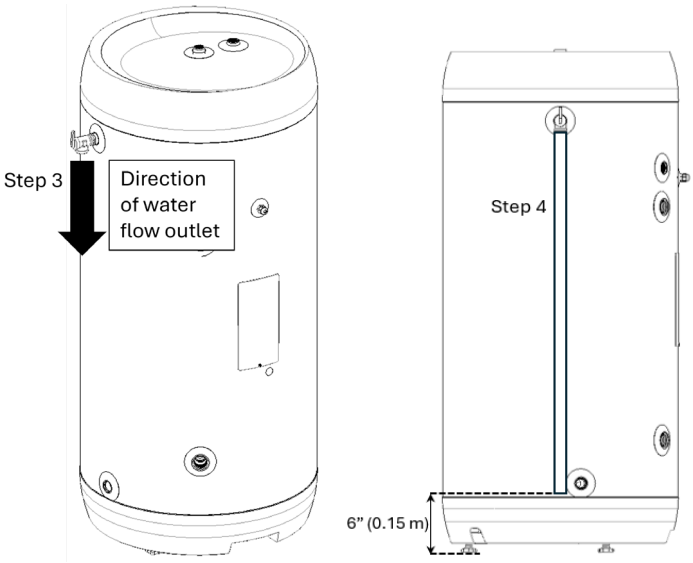
- Domestic hot water tank – Discharge pipe. If a discharge pipe is connected to the pressure relief device it must be installed in a continuously downward direction and in a frost-free environment.
  It must be left open to the atmosphere.
- Domestic hot water tank – Temperature and pressure relief valve. The temperature and pressure relief valve (accessory i) must be connected to the temperature and pressure relief valve connection (connection f).

5.3.2 Installing the temperature and pressure relief valve

CAUTION

TO REDUCE THE RISK OF EXCESSIVE PRESSURES AND TEMPERATURES IN THIS WATER HEATER, INSTALL TEMPERATURE AND PRESSURE PROTECTIVE EQUIPMENT REQUIRED BY LOCAL CODES AND NO LESS THAN A COMBINATION TEMPERATURE AND PRESSURE RELIEF VALVE CERTIFIED BY A NATIONALLY RECOGNIZED TESTING LABORATORY THAT MAINTAINS PERIODIC INSPECTION OF PRODUCTION OF LISTED EQUIPMENT OR MATERIALS, AS MEETING THE REQUIREMENTS FOR RELIEF VALVES AND AUTOMATIC GAS SHUTOFF DEVICES FOR HOT WATER SUPPLY SYSTEMS, ANSI Z21.22. THIS VALVE MUST BE MARKED WITH A MAXIMUM SET PRESSURE NOT TO EXCEED THE MARKED MAXIMUM WORKING PRESSURE OF THE WATER HEATER. INSTALL THE VALVE INTO AN OPENING PROVIDED AND MARKED FOR THIS PURPOSE IN THE WATER HEATER, AND ORIENT IT OR PROVIDE TUBING SO THAT ANY DISCHARGE FROM THE VALVE EXITS ONLY WITHIN 6 INCHES ABOVE, OR AT ANY DISTANCE BELOW, THE STRUCTURAL FLOOR, AND DOES NOT CONTACT ANY LIVE ELECTRICAL PART. THE DISCHARGE OPENING MUST NOT BE BLOCKED OR REDUCED IN SIZE UNDER ANY CIRCUMSTANCES.





WARNING

THE TEMPERATURE AND PRESSURE RELIEF VALVE MUST BE INSTALLED BY A QUALIFIED SERVICE TECHNICIAN OR A LICENSED PLUMBING CONTRACTOR IN ACCORDANCE WITH THE INSTRUCTIONS OUTLINED IN THIS MANUAL, THE INSTRUCTIONS MENTIONED ON THE TEMPERATURE AND PRESSURE RELIEF VALVE TAG AND THE LOCAL PLUMBING CODES AND STANDARDS.

WARNING

THE TEMPERATURE AND PRESSURE RELIEF VALVE IS DESIGNED FOR EMERGENCY SAFETY RELIEF AND MUST NOT BE USED AS AN OPERATING CONTROL.

CAUTION

PRESSURE RELIEF VALVE LIMITING THE PRESSURE TO 150 PSI/10 BAR MUST BE INSTALLED OR EQUIVALENT.

WARNING

THE TEMPERATURE AND PRESSURE RELIEF VALVE MUST BE OPERATED AT LEAST ONCE A YEAR AS PER INSTRUCTIONS MENTIONED ON THE TEMPERATURE AND PRESSURE RELIEF VALVE TAG.

WARNING

IF WATER DOES NOT FREELY FLOW WHEN THE TEMPERATURE AND PRESSURE RELIEF VALVE IS OPERATED, THEN TURN OFF THE WATER HEATER AND CALL A SERVICE TECHNICIAN OR A LICENSED PLUMBING CONTRACTOR IMMEDIATELY.

WARNING

THE TEMPERATURE AND PRESSURE RELIEF VALVE MUST BE INSPECTED AT LEAST ONCE EVERY 2 YEARS BY A SERVICE TECHNICIAN OR A LICENSED PLUMBING CONTRACTOR. FAILURE TO DO SO CAN RESULT IN SERIOUS PERSONAL INJURY OR DEATH AND/OR SEVERE PROPERTY DAMAGE.

WARNING

REPAIR OR ALTERATION OF THE TEMPERATURE AND PRESSURE RELIEF VALVE IS PROHIBITED.

WARNING

IF DISCHARGE FROM THE TEMPERATURE AND PRESSURE RELIEF VALVE OCCURS WITHOUT IT BEING OPERATED, THEN TURN OFF THE WATER HEATER AND CALL A SERVICE TECHNICIAN OR A LICENSED PLUMBING CONTRACTOR IMMEDIATELY.

- To install the temperature and pressure (T&P) relief valve:
- Remove the T&P relief valve (accessory “i”) from its box.
- It’s recommended to use a thread sealant on its threads.
- Insert the T&P relief valve into the T&P connection (connection “f”) as per step 1.
- Keep rotating clockwise until the T&P relief valve is locked in place as per step 2.
- Make sure that the T&P relief valve outlet is pointing downwards as per step 3.
- Connect a discharge line from the outlet of the T&P relief valve that runs to a safe place for water disposal as per step 4.
- The discharge line must terminate through an unthreaded pipe.
- The discharge line must terminate with a 6” (0.15 m) air gap from the safe place for water disposal.
- The discharge line material must conform to local plumbing code or A.S.M.E. requirements.
- No reducing coupling, shut off valve or other restrictions shall be installed between the T&P valve and tank or in the discharge line.
- Do not install a plug into the T&P valve connection.

5.4 Preparing electrical wiring

5.4.1 About preparing electrical wiring

WARNING

- **ALL WIRING MUST BE PERFORMED BY AN AUTHORIZED ELECTRICIAN AND MUST COMPLY WITH THE APPLICABLE CODES.**
- **MAKE ELECTRICAL CONNECTIONS TO THE FIXED WIRING.**
- **ALL COMPONENTS PROCURED ON-SITE AND ALL ELECTRICAL CONSTRUCTION MUST COMPLY WITH THE APPLICABLE CODES.**

WARNING

ALWAYS USE ARMORED CABLE FOR POWER SUPPLY CABLES TO PRODUCT.

CAUTION

USE WIRE SUITABLE FOR 90°C

5.4.2 Safety device requirements

The electric booster heater in the water tank is equipped with a thermal cut off protector set at 185 °F (85 °C) and a thermostat with an adjustable dial.

CAUTION

HOTTER WATER INCREASES THE RISK OF SCALD INJURY. BEFORE CHANGING TEMPERATURE SETTING. SEE INSTRUCTION MANUAL.

WARNING

THE ELECTRICAL BOX COVER MUST ONLY BE OPENED BY A LICENSED ELECTRICIAN. SWITCH OFF THE POWER SUPPLY BEFORE OPENING THE ELECTRICAL BOX COVER.

NOTICE

DO NOT INSTALL HEATERS WITHOUT THERMAL CUT-OUT.

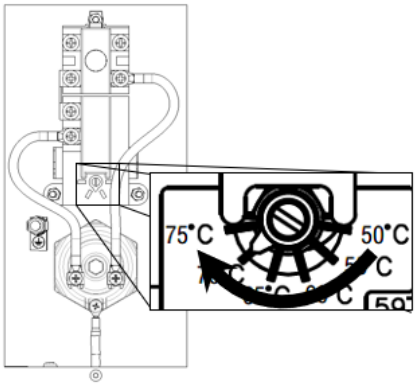
WARNING

HOT WATER CAN PRODUCE 3RD DEGREE BURNS:
IN 6 SECONDS AT 140°F (60°C)
IN 30 SECONDS AT 130°F (54°C)
THERMOSTAT CONTROLS WERE FACTORY SET AT 122°F (50°C)
CONTACT QUALIFIED SERVICE PERSONNEL FOR ADJUSTMENTS.

CAUTION

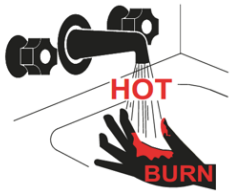
THE THERMOSTAT FOR THE ELECTRIC HEATING ELEMENT ON THE TANK IS FACTORY SET AT 122 °F (50 °C). WHEN INSTALLING THIS TANK AS PART OF THE ALTHERMA SYSTEM:

1) **SET THE THERMOSTAT FOR THE ELECTRIC HEATING ELEMENT TO MAXIMUM 167 °F (75 °C)**
2) **AND USE THE ALTHERMA MMI TO CONFIGURE THE TANK TEMPERATURE SETTINGS**
3) **REFER TO THE ALTHERMA INSTALLATION MANUAL FOR DETAILED INSTRUCTIONS**



When installing the tank as part of the Altherma system, please set the onboard thermostat for the electric heating element to its maximum setting value of 167 °F (75 °C) and use the Altherma MMI to configure the tank temperature setting.

DANGER: RISK OF BURNING /SCALDING



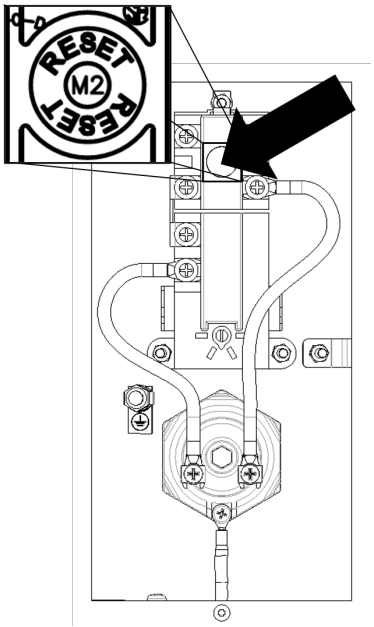
WATER TEMPERATURE OVER 125 °F (51 °C) CAN CAUSE SEVERE BURNS INSTANTLY OR DEATH FROM SCALDS.

CHILDREN, DISABLED AND ELDERLY ARE AT HIGHEST RISK OF BEING SCALDED.

SEE INSTRUCTION MANUAL BEFORE SETTING TEMPERATURE AT WATER HEATER. FEEL WATER BEFORE BATHING OR SHOWERING.

TEMPERATURE LIMITING VALVES ARE AVAILABLE, SEE MANUAL.

To reset the thermal protector: first check possible reasons for the thermal cut-out button being released and when solved press the reset button located on the thermal protector.



The power supply must be protected by the required safety devices, i.e. a main switch, a slow blow fuse and a ground leakage protector in accordance with the applicable codes.
Selection and sizing of the wiring should be done in accordance with the applicable codes based on the information mentioned in the table below.
Make sure that a separate power supply circuit is provided for this unit and that all electrical work is carried out by qualified personnel according to local laws and codes and this manual. An insufficient power supply capacity or improper electrical construction may lead to electric shocks or fire.

NOTICE

FUSES OR CIRCUIT BREAKERS ARE TO BE SIZED LARGER THAN THE EQUIPMENT MINIMUM CIRCUIT AMPACITY, BUT NOT TO EXCEED THE RECOMMENDED FUSE SIZE IN THE TABLE BELOW.

Fuse	Minimum circuit ampacity	Recommended fuses	Power supply
F2B (field supply)	16.25 A	20 A	1ph 60Hz 208/230V AC

6 Installation

6.1 Overview: Installation

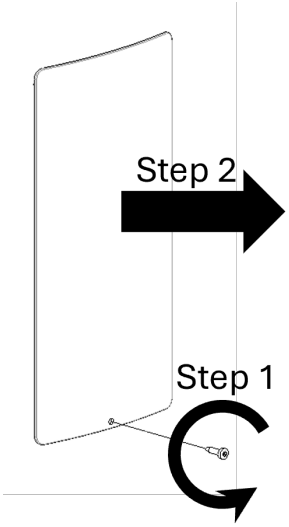
This chapter describes what you have to do and know on-site to install the system.

Typical workflow

Installation typically consists of the following stages:
1 Mounting the domestic hot water tank.
2 Connecting the water piping.
3 Connecting the electrical wiring.
4 Finishing the domestic hot water tank installation

6.2 Opening the units

6.2.1 To open the electrical box cover of the domestic hot water tank



6.3 Mounting the domestic hot water tank

6.3.1 Precautions when mounting the domestic hot water tank

INFORMATION

ALSO READ THE PRECAUTIONS AND REQUIREMENTS IN THE FOLLOWING CHAPTERS:

- **GENERAL SAFETY PRECAUTIONS**
- **PREPARATION**

6.3.2 To install the domestic hot water tank

1 Check if all domestic hot water tank accessories are enclosed.
2 Place the domestic hot water tank on a level surface and make sure the tank is mounted level.
3 If necessary, use legs for adjustment.

6.4 Connecting water piping

6.4.1 About connecting the water piping

Before connecting the water piping

CAUTION

THIS APPLIANCE INCORPORATES A SINGLE WALL HEAT EXCHANGER, AND SHALL MEET ALL OF THE FOLLOWING REQUIREMENTS:

- THE HEAT-TRANSFER MEDIUM SHALL BE POTABLE WATER OR OTHER NONTOXIC FLUID RECOGNIZED AS SAFE BY THE FDA.
- THE MAXIMUM OPERATING PRESSURE OF THE HEAT EXCHANGER SHALL NOT EXCEED THE MAXIMUM OPERATING PRESSURE OF THE POTABLE WATER SUPPLY.

Typical workflow

Connecting the water piping typically consists of the following stages:

1 Connecting the Temperature & Pressure relieve valve to the tank through the temperature and pressure valve connection
2 Connecting the water piping including the field supplied drain valve.
3 Filling the domestic hot water tank.
4 Insulating the water piping.
5 Connecting the 3-way valve.

6.4.2 Precautions when connecting the water piping

INFORMATION

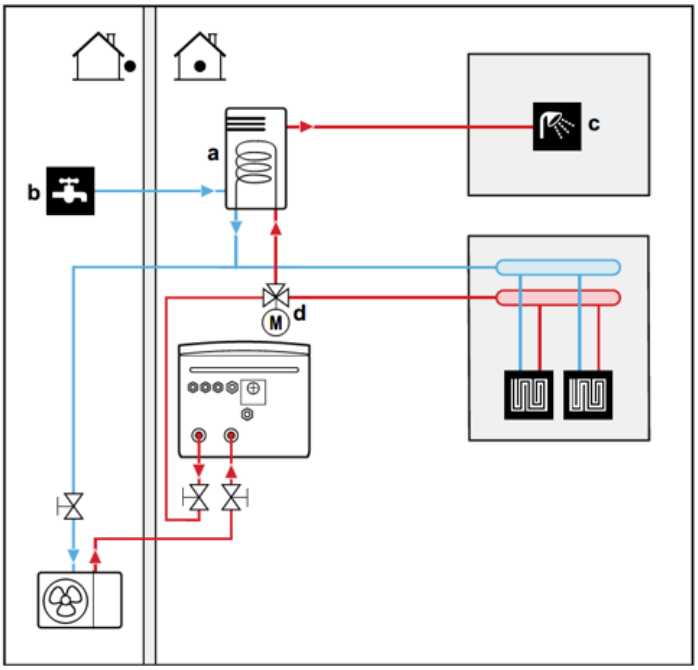
ALSO READ THE PRECAUTIONS AND REQUIREMENTS IN THE FOLLOWING CHAPTERS:

- **GENERAL SAFETY PRECAUTIONS**
- **PREPARATION**

6.4.3 To connect the water piping

See the chapter “Application guidelines” in the installer reference guide of the unit for details on connecting the water circuits and the motorized 3-way valve.

An example of piping with an Altherma 3H system



a DHW tank
b Cold water IN
c Hot water OUT
d Motorized 3-way valve

6.4.4 To fill the domestic hot water tank

1 Open every hot water tap in turn to purge air from the system pipe work.
2 Close the drain valve (field supplied).
3 Open the cold water supply valve.
4 Close all water taps after all air is purged.
5 Check for water leaks.
6 Manually operate the temperature and pressure relief valve (supplied with the domestic hot water tank) and connected to the domestic hot water tank to ensure a free water flow through the discharge pipe.

NOTICE

TO OPERATE THE SYSTEM, THE DOMESTIC HOT WATER TANK NEEDS TO BE FILLED COMPLETELY. TURNING ON THE SYSTEM WHEN THE TANK IS NOT FULL CAN DAMAGE THE INTEGRATED BOOSTER HEATER AND CAUSE ELECTRICAL ERRORS.

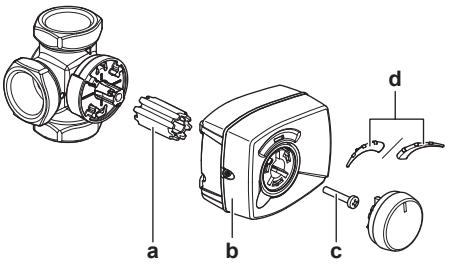
6.4.5 To insulate the water piping

The piping in the complete water circuit MUST be insulated to prevent reduction of the heating capacity.

6.4.6 To connect the 3-way valve

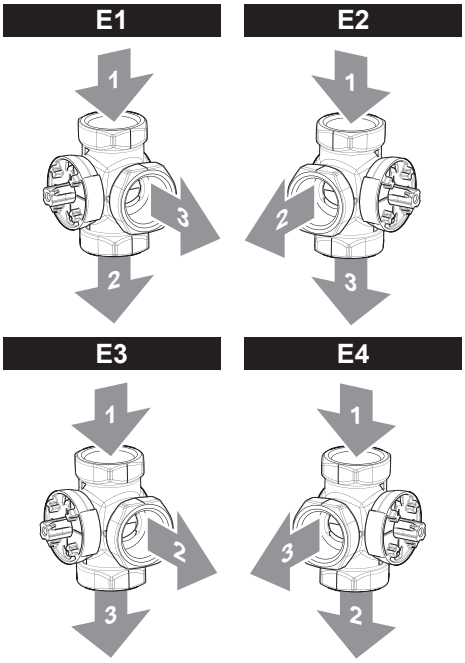
1 Unpack the 3-way valve body and 3-way valve motor and

verify that the following accessories are provided with the motor.



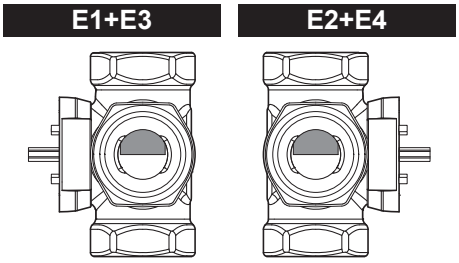
a Sleeve
b Valve motor cover
c Screw
d Scale

2 The 3-way valve can be installed in accordance with one of the following four configurations.

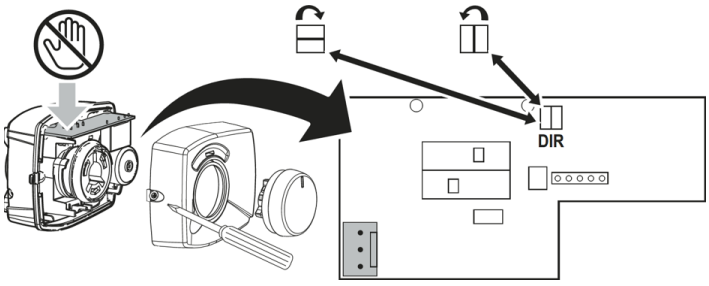


1 From Altherma system (UTBX indoor unit)
2 To DHW tank
3 To space conditioning

3 Install the 3-way valve body in the pipework.
- Position the shaft in such a way that the motor can be mounted and replaced.
- It is advised to connect the 3-way valve as close as possible to the indoor unit (if applicable).
- Put the sleeve on the valve and turn it until the valve is positioned as in the figure below. It should be blocking the outlet connection to the DHW tank for 50% and the outlet connection to the room heating for 50%.



4 When installing in accordance with configurations E3 or E4, open the valve motor cover by loosening the screw and change the jumper so as to change the rotation direction of the valve.

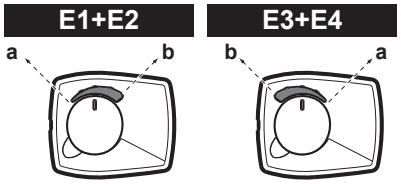


Position of the jumper in case of installation according to configurations E1 and E2.
Position of the jumper in case of installation according to configurations E3 and E4.

INFORMATION

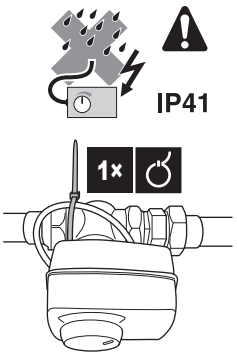
THE JUMPER IS FACTORY-SET TO APPLY FOR INSTALLATION IN ACCORDANCE WITH CONFIGURATIONS E1 AND E2.

5 Put the knob on the motor in a 12 o'clock position and push the motor on the sleeve. Do NOT rotate the sleeve during this action, so as to maintain the valve position as set during step 3.
6 Put the scale on the valve according to the applicable configuration.



a DHW tank
b Space Conditioning

7 To provide stress relief, fix the power supply cable to the 3-way valve body with a cable tie (field supplied). Fix it so that possible condensate cannot enter the 3-way valve motor via the cable.



6.5 Connecting the electrical wiring

WARNING

ALWAYS USE ARMORED CABLE FOR POWER SUPPLY CABLES TO PRODUCT.

6.5.1 About connecting the electrical wiring

WARNING

RISK OF ELECTRIC SHOCK!

CONNECT BRANCH CIRCUIT EQUIPMENT GROUNDING MEANS TO WATER HEATER. FOR DETAILED INFO REFER TO INSTRUCTIONS. USE COPPER CONDUCTORS ONLY.

Before connecting the electrical wiring

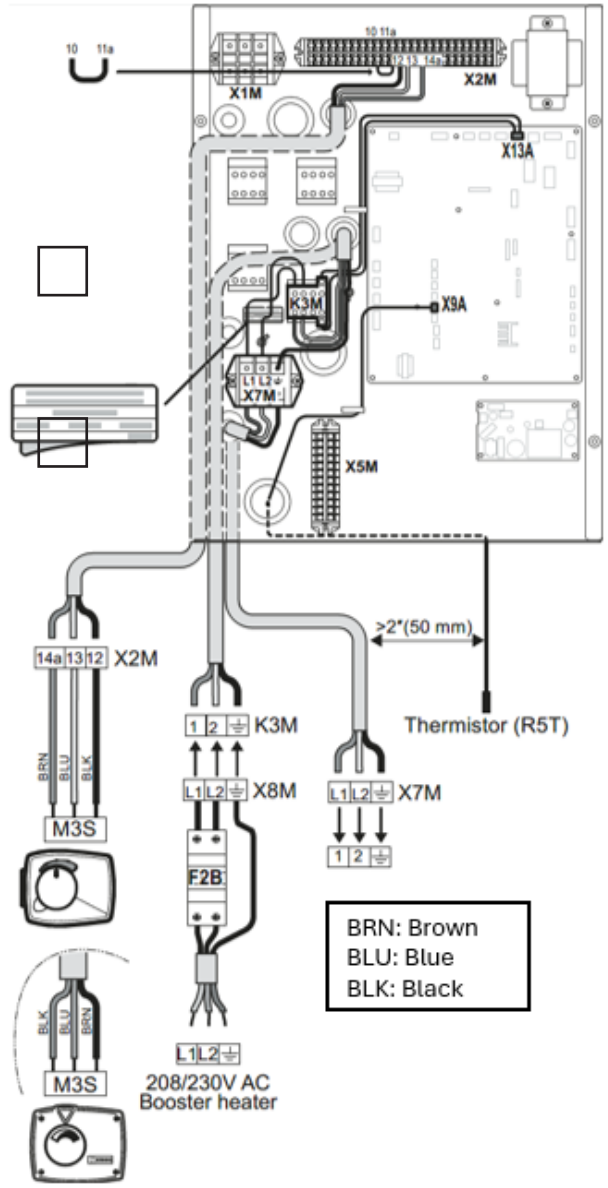
Make sure that the Temperature and Pressure relief valve and all water piping connections are properly connected. Refer to section 4.1.2 Identification of tank connections for information of connections on this tank.

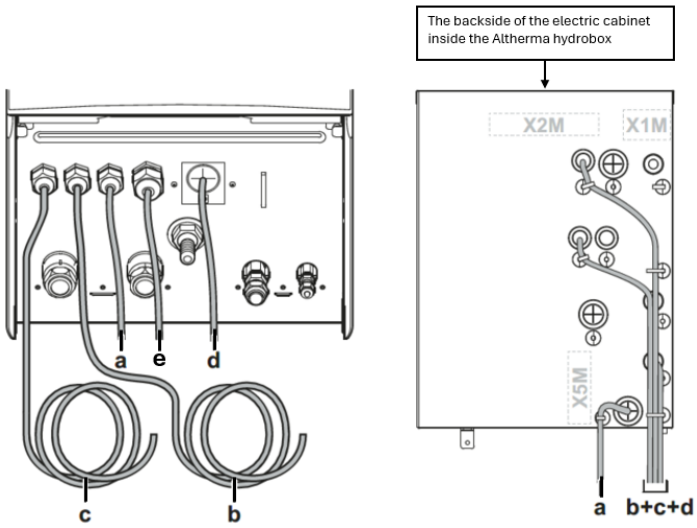
Typical workflow

Connecting the electrical wiring typically consists of the following stages:
1 Connecting the electrical wiring on the Altherma system (UTBX indoor unit).
2 Connecting the electrical wiring on the domestic hot water tank.

6.5.2 To connect the electrical wiring to the Altherma system

1 Install the booster heater power supply sticker in the unit electrical box on the location shown in the illustration below.
2 Mount the contactor K3M and terminal block X7M. Fix the contactor with the 2 contactor fixing screws supplied. Fix the terminal block with the 2 tapping screws supplied.
3 Install the jumper wire from the accessory bag in between terminals X2M/10 and X2M/11a (see illustration below).
4 Route the booster heater power supply cable (field supplied) and the thermistor cable through the electrical box board as shown in the illustration below.
5 Connect the ground wire of the booster heater power supply to the upper ground connection of terminal block X7M.
6 Connect the L1 and L2 wires of the booster heater power supply cable to the lower contactor terminals of K3M.
7 Connect the upper terminals of X7M/L1 and X7M/L2 to the upper contactor terminals of K3M.
8 Plug the connector of the contactor K3M into socket X13A (RED) of the main PCB.
9 Plug the thermistor cable connector (R5T) into socket X9A of the PCB.
10 Connect the booster heater power supply cable (field supplied) to the contactor terminals X7M/L1+L2+ground.
11 Connect the 3-way valve cable to terminals X2M/12, X2M/13 and X2M/14a.
12 Fix the cables to the cable tie mountings with cable ties to ensure strain relief.
13 When routing cables, make sure that these do not obstruct mounting of the unit cover.





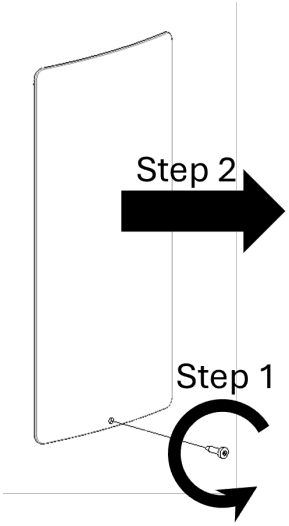
a. Thermistor cable
b. Booster heater power supply cable (going to the contactor on indoor unit)
c. 3-way valve cable
d. Booster heater cable (going to DHW tank)
e. Thermostat cable (optional control option of Altherma system)

6.5.3 To connect the electrical wiring to the domestic hot water tank

WARNING

MAKE SURE ALL FIELD WIRING IS INSULATED AND IS RATED FOR TEMPERATURES TO 194 °F (90 °C).

1 Remove the electrical box cover from the tank.



2 Route the booster heater power supply cable through the power supply cable inlet (component “h”) on tank diagram via a field supplied strain relief.

CAUTION

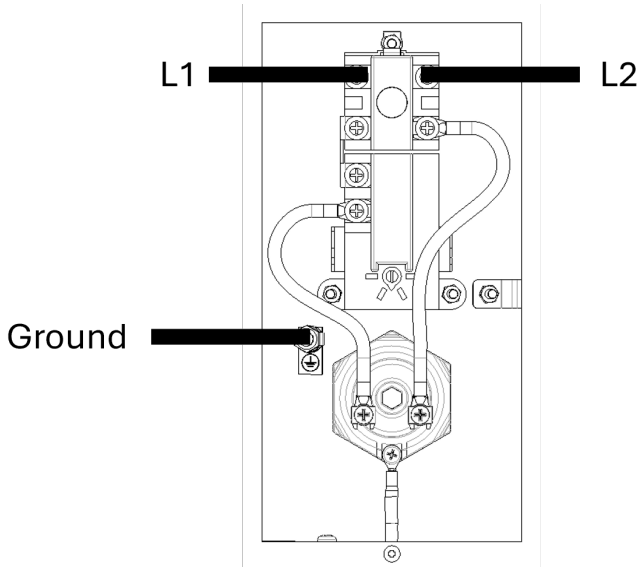
THE THERMOSTAT FOR THE ELECTRIC HEATING ELEMENT ON THE TANK IS FACTORY SET AT 122 °F (50°C). WHEN INSTALLING THIS TANK AS PART OF AN ALTHERMA SYSTEM PAY ATTENTION TO THE INSTALLATION MANUAL FOR DETAILED INSTRUCTIONS.

CAUTION

WHEN A SUPPLEMENTAL HEAT SOURCE IS CONNECTED TO THE CERTIFIED HOUSEHOLD ELECTRIC STORAGE TANK WATER HEATER, PROVISION MUST BE MADE TO LIMIT THE HEAT SOURCE TEMPERATURE NOT TO EXCEED THAT OF THE WATER HEATER THEMOSTAT SETTING.

IF THE WATER HEATER HAS BEEN RETROFITTED WITH SUPPLEMENTAL HEATING EQUIPMENT, YOU MUST ADJUST BOTH THE THERMOSTAT CONTROLLING THE SUPPLEMENTAL HEAT SOURCE (LOCATED IN THE WATER PIPING) AND THE THERMOSTAT ON THE WATER HEATER (BEHIND THE ACCESS PANEL) TO THE SAME TEMPERATURE. FAILURE TO ADJUST BOTH THERMOSTATS TO THE SAME TEMPERATURE CAN CAUSE LOSS OF PROPER TEMPERATURE CONTROL.

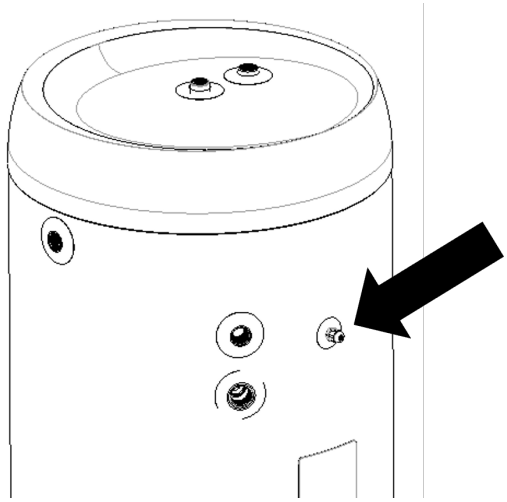
An NEC (for USA) or CEC (for Canada) approved strain relief is to be used at this entry point (diameter of hole is 7/8" (22 mm)). The wire is to be sized in accordance with the minimum circuit ampacity value in section 5.4.2 "Safety device requirements" of this manual. Some areas require the supply wire to be enclosed in conduit. Consult your local codes.



6.5.4 To connect the thermistor to the tank

- For UHWS40 & 80 models only, route the thermistor cable through the sensor cable inlet (component "j") on the tank diagram via the included strain relief.
- Insert the thermistor tip into the thermistor clip (component "q")
- Tighten the screw on the thermistor clip to ensure proper thermal contact between the thermistor and the tank wall.

- For UHWS50 model only, loosen the nut at the entrance of the sensor pocket (component "i").
- Insert the thermistor tip and wire into the sensor pocket.
- Push the thermistor to the end of the pocket, approximately 4.53" (0.115m), to ensure proper thermal contact between the thermistor and the tank wall.
- Secure the thermistor wire in place by tightening the nut at the entrance of the sensor pocket.

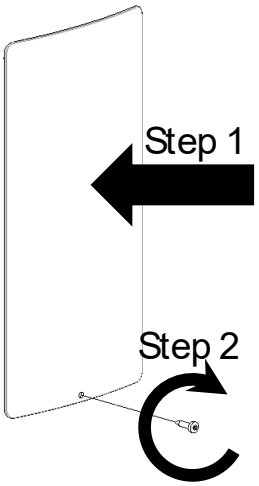


- Install electrical box cover

6.6 Finishing the domestic hot water tank installation

6.6.1 To close the domestic hot water tank electrical box cover

1 Close the electrical box cover.



7 Commissioning

CAUTION

PRELIMINARY ELECTRICAL SYSTEM CHECKS SUCH AS GROUND CONTINUITY, POLARITY, RESISTANCE TO GROUND AND SHORT CIRCUIT MUST BE CARRIED OUT BY USING A SUITABLE TEST METER BY A COMPETENT PERSON.

7.1 Checklist before commissioning

1 After the installation of the unit, check the items listed below.
2 Close the electrical box of the unit.
3 Power up the unit.

☐	You read the complete installation instructions, as described in this Installation Manual and in the installer reference guide of the Altherma Unit
☐	The domestic hot water tank is properly mounted.
☐	The system is properly grounded and the ground terminals are tightened
☐	The fuses or locally installed protection devices are installed according to this document, and have NOT been bypassed.
☐	The power supply voltage matches the voltage on the identification label of the unit.
☐	There are NO loose connections or damaged electrical components in the electrical box.
☐	The booster heater circuit breaker (field supplied) in the switch box is turned ON.
☐	There is NO water leak on the connections of the domestic hot water tank.
☐	The shut-off valves are properly installed and fully open
☐	The pressure relief valve (space heating circuit) purges water when opened. Clean water MUST come out.
☐	Refer to the Altherma Installer Reference Guide for the minimum water volume required for the Altherma system operation.
☐	Field Wiring Be sure that the field wiring has been carried out according to the instructions described in the chapter “6.5 Connecting the electrical wiring” 4[10], according to the wiring diagrams and according to the applicable codes

7.2 Checklist during commissioning

☐	To perform a wiring check

8 Hand-over to the user

Once the test run is finished and the unit operates properly, make sure the following is clear for the user:
- Make sure that the user has the printed documentation and ask him/her to keep it for future reference. Inform the user that he/she can find relevant documentation by checking the Daikin website or discussing with the local dealer.
- Explain to the user how to properly operate the system and what to do in case of problems.
- Show the user what to do for the maintenance of the unit.

9 Maintenance and service

NOTICE:

MAINTENANCE MUST BE DONE BY AN AUTHORIZED INSTALLER OR SERVICE AGENT.
WE RECOMMEND PERFORMING MAINTENANCE AT LEAST ONCE A YEAR. HOWEVER, APPLICABLE CODES MIGHT REQUIRE SHORTER MAINTENANCE INTERVALS.

9.1 Maintenance safety precautions

WARNING

- **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.**
- **MAKE SURE YOU DO NOT TOUCH A CONDUCTIVE SECTION.**
- **DO NOT RINSE THE OUTSIDE OF THE UNIT. THIS MAY CAUSE ELECTRIC SHOCKS OR FIRE.**

NOTICE: RISK OF ELECTROSTATIC DISCHARGE

BEFORE PERFORMING ANY MAINTENANCE OR SERVICE WORK, TOUCH A METAL PART OF THE UNIT IN ORDER TO ELIMINATE STATIC ELECTRICITY.

9.2 Checklist for yearly maintenance of the domestic hot water tank

Check the following at least once a year:
- Temperature and pressure relief valve
- Pressure reducing valve
- Drain valve (field supplied)
- Descaling
- Chemical disinfection
- Electrical box
- Temperature and Pressure relief valve tubing
- Booster heater of the domestic hot water tank

Temperature and pressure relief valve
Check for correct operation of the temperature and pressure relief valve. Manually operate the temperature and pressure relief valve to ensure free water flows through discharge pipe. Be mindful of the water temperature in the tank.

WARNING

WATER COMING OUT OF THE VALVE MAY BE VERY HOT.

Pressure reducing valve (field supplied)
Depending on local water conditions, annual inspection of the integral line strainer, pressure reducing valve cartridge and seating may be necessary.

- Check if nothing blocks the water in the valve or in between piping. The water flow coming from the relief valve must be high enough.
- Check if the water coming out of the relief valve is clean. If it contains debris or dirt:
  - Open the valve until the discharged water does not contain debris or dirt anymore.
  - Flush and clean the complete tank, including the piping between the relief valve and cold water inlet. To make sure this water originates from the tank, check after a tank heat up cycle.

INFORMATION

IT IS RECOMMENDED TO PERFORM THIS MAINTENANCE MORE THAN ONCE A YEAR.

Descaling

Depending on water quality and set temperature, scale can deposit on the heat exchanger inside the domestic hot water tank and can restrict heat transfer. For this reason, descaling of the heat exchanger may be required at certain intervals.

Chemical disinfection
If the applicable codes require a chemical disinfection in specific situations, involving the domestic hot water tank, please be aware that the domestic hot water tank is a stainless steel cylinder with a connection for an optional anode. We recommend using a nonchloride based disinfectant approved for use with water intended for human consumption.

Electrical box
- Carry out a thorough visual inspection of the electrical box and look for obvious defects such as loose connections or defective wiring.
- Check for correct operation of contactor K3M by use of an ohmmeter. All contacts of this contactor must be in open position.

Pressure relief valve tubing
Check the condition and routing of the tube. Water must drain appropriately from the hose.

Booster heater of the domestic hot water tank
It is recommended to remove lime buildup on the booster heater to extend its life span, especially in regions with hard water. To do so, drain the domestic hot water tank, remove the booster heater from the domestic hot water tank and immerse in a bucket (or similar) with lime-removing product for 24 hours.

10 Troubleshooting

10.1 Overview: Troubleshooting

This chapter describes what you have to do in case of problems.
It contains information about solving problems based on symptoms.

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

10.2 Precautions when troubleshooting

WARNING

- **WHEN CARRYING OUT AN INSPECTION ON THE ELECTRICAL BOX OF THE UNIT, ALWAYS MAKE SURE THAT THE UNIT IS DISCONNECTED FROM THE MAINS. TURN OFF THE RESPECTIVE CIRCUIT BREAKER.**
- **WHEN A SAFETY DEVICE IS ACTIVATED, STOP THE UNIT AND FIND OUT WHY THE SAFETY DEVICE WAS ACTIVATED BEFORE RESETTING IT. NEVER BYPASS SAFETY DEVICES OR CHANGE THEIR VALUES TO A VALUE OTHER THAN THE FACTORY DEFAULT SETTING. IF YOU ARE UNABLE TO FIND THE CAUSE OF THE PROBLEM, CALL YOUR DEALER.**
- **THE THERMOSTAT DIAL HAS TO BE SET TO THE MAXIMUM SETTING BY TURNING THE DIAL IN THE CLOCKWISE DIRECTION TO THE MAXIMUM TEMPERATURE INDICATION. THIS STEP SHOULD BE PERFORMED FOR EACH INSTALLATION IN COMBINATION WITH AN ALTHERMA SYSTEM. FAILURE TO PERFORM THIS STEP WILL RESULT IN DEGRADED PERFORMANCE AND/OR ERROR CODES.**

WARNING

DISCONNECT POWER BEFORE SERVICING.

WARNING

PREVENT HAZARDS DUE TO INADVERTENT RESETTING OF THE THERMAL CUT-OUT WHILE SERVICING THE SYSTEM: POWER TO THIS APPLIANCE MUST NOT BE SUPPLIED THROUGH AN EXTERNAL SWITCHING DEVICE, SUCH AS A TIMER, OR CONNECTED TO A CIRCUIT THAT IS REGULARLY TURNED ON AND OFF BY THE UTILITY.

10.3 Solving problems based on symptoms

10.3.1 Symptom: No water flow from hot taps

Possible causes	Corrective action
The main water supply is OFF	The cold water inlet pressure reducing valve is not fitted properly
The strainer is blocked	Turn OFF the water supply, remove and clean the strainer of the Inlet control group (field supplied).
The cold water inlet pressure reducing valve is not fitted properly	Check and refit as required

10.3.2 Symptom: The water from the hot taps is cold

Possible Causes	Corrective action
The thermal cut-out has tripped	Check reasons for the thermal cut-out button being released and when solved press the reset button located on the thermal protector
The unit is NOT operating	Check unit operation. Refer to the manual delivered with the unit. If any faults are suspected, contact your dealer

10.3.3 Symptom: Intermittent water discharge

Possible causes	Corrective action
Thermal control failure(water will be hot).	• Turn OFF the power to the unit • When discharge has stopped, check the thermal controls and replace if faulty • Contact your local dealer
The expansion vessel is broken (field supplied/if applicable)	Replace the expansion vessel (field supplied/If applicable)

10.3.4 Symptom: Continuous water discharge

Possible causes	Corrective action
Cold water inlet pressure	Check the pressure reducing valve. Replace the pressure reducing valve if the measured pressure is >30.5 psig (2.1 bar)
Temperature and pressure relief valve actuates	Check reasons for the temperature and pressure relief valve being open. Replace if faulty valve

11 Disposal

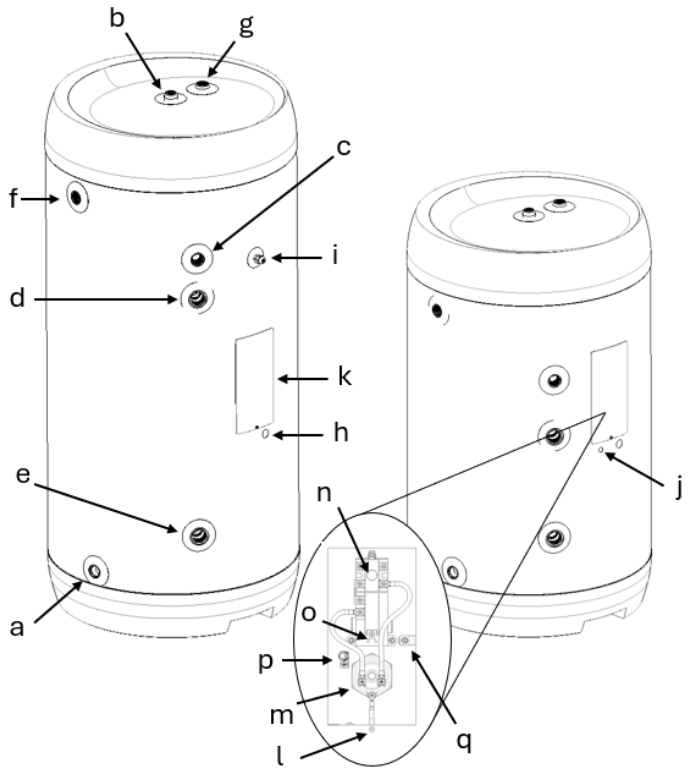
NOTICE

DO NOT TRY TO DISMANTLE THE SYSTEM YOURSELF: DISMANTLING OF THE SYSTEM, AND OTHER PARTS MUST COMPLY WITH APPLICABLE CODES. UNITS MUST BE TREATED AT A SPECIALIZED TREATMENT FACILITY FOR REUSE, RECYCLING AND RECOVERY.

12 Technical data

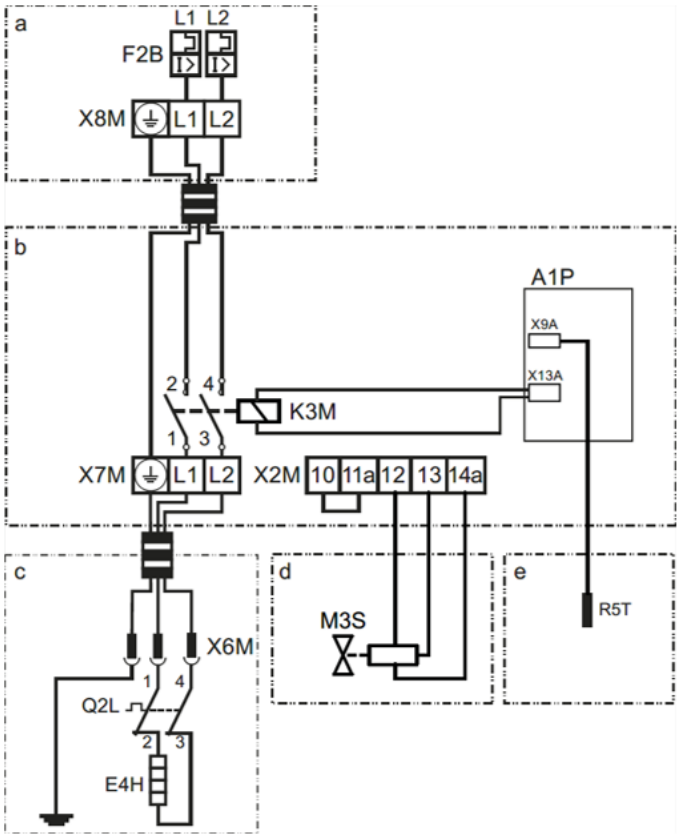
Check the Daikin website or with your local dealer for relevant data of interest.

12.1 Components: Domestic hot water tank



a. Cold water inlet connection (3/4” NPT F)
b. Hot water outlet connection (3/4” NPT F)
c. Optional recirculation inlet (plugged - 3/4” NPT F)
d. Entering water from heat pump connection (1” NPT F)
e. Returning water to heat pump connection (1” NPT F)
f. Temperature & Pressure relief valve connection (3/4” NPT F)
g. Future optional e-anode (plugged - 3/4” NPT F)
h. Power supply cable inlet for armored cable
i. Sensor pocket (UHWS50 model only)
j. Sensor cable inlet (UHWS40 & 80 models only)
k. Cover of electrical box
l. Screw hole for electrical box cover
m. Booster heater
n. Thermal protector reset button
o. Thermostat (refer to section 5.4.2 for proper setting)
p. Ground electric connection terminal
q. Thermistor clip (UHWS40 & 80 models only)

12.2 Wiring diagram: Domestic hot water tank



a.	Field supplied
b.	Unit electrical box
c.	Domestic hot water tank electrical box
d.	3-way valve
e.	Domestic hot water tank
A1P	Main PCB
E4H	Booster heater
F2B	Fuse Booster heater (field supplied)
K3M	Contactor booster heater
L1,L2	Two poles on an AC power supply
M3S	3-way valve
Q2L	Thermal protector
R5T	Thermistor domestic hot water
X2M	Terminal block
X6M	Terminals on booster heater
X7M	Terminal block
X8M	Terminal block (field supplied)
	Protective ground
	Field wiring

13 Glossary

Dealer
Sales distributor for the product.

Authorized installer
Technically skilled person who is qualified to install the product.

User
Person who is owner of the product and/or operates the product.

Applicable legislation
All national and local directives, laws, regulations and/or codes that are relevant and applicable for a certain product or domain.

Service company
Qualified company which can perform or coordinate the required service to the product.

Installation manual
Instruction manual specified for a certain product or application, explaining how to install, configure and maintain it.

Operation manual
Instruction manual specified for a certain product or application, explaining how to operate it.

Maintenance instructions
Instruction manual specified for a certain product or application, which explains (if relevant) how to install, configure, operate and/or maintain the product or application.

Accessories
Labels, manuals, information sheets and equipment that are delivered with the product and that need to be installed according to the instructions in the accompanying documentation.

Optional equipment
Equipment made or approved by Daikin that can be combined with the product according to the instructions in the accompanying documentation.

Field supplied
Equipment NOT made by Daikin that can be combined with the product according to the instructions in the accompanying documentation.

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CUSTOMER FEEDBACK
Daikin is very interested in all product comments.
Please fill out the feedback form on the following link:
https://daikincomfort.com/contact-us
You can also scan the QR code on the right to be directed to the feedback page.

P/N: IO-7037

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