

Installation and Operating Instructions



*Energy tank Storage Master ET 119
Energy tank Indirect Water Heater FT 119*

*Read and follow the installation instructions and safety instructions!
Subject to technical change.*

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1 General Information

Your Froling Storage Master / Indirect Water Heater has been carefully assembled and factory tested to provide years of trouble-free service. In order to insure the service intended, the following information is provided to enable proper installation, operation, safety precautions and maintenance of this product.

Modifying the tank or modifying/deactivating any safety equipment relating to the system is generally prohibited.

Always comply with all fire, building, and electrical regulations when installing or operating the system, in addition to following the operating instructions and mandatory regulations that apply in the country in which the tank is operated.

The instructions in this manual and in supporting documentation (additional instructions, diagrams and component information provided by the importer) must be followed. If the instructions are in conflict with local code requirements, the local code requirements will control. When in doubt, contact your dealer or importer. The manual and supporting documentation must be retained and reviewed by the owner / system operator for reference and future use.

The installer is responsible for familiarizing the owner / system operator with all aspects of safety procedures, monitoring and cleaning requirements and annual maintenance requirements.

NOTICE

Save these instructions!

1.1 Installation and Warranty Requirements

This product is provided with a limited warranty which is described in Chapter 5.4 within this manual. The warranty is contingent upon the successful and legal installation of the Water Heater. At a minimum, the installation, start up, service and maintenance of this product must be performed by a licensed professional heating system installer. Where applicable, the installation must be inspected and accepted by the legally responsible entity. Conditions described in the text of the warranty for keeping it in force must be followed by the owner / system operator.

If the water heater has been purchased through a dealer, the warranty claim must be made to the dealer. Otherwise, claims may be made directly to the importer.

Please read the literature enclosed by the manufacturer regarding the various accessory devices. These devices are warranted by the manufacturer, NOT BY the importer. These accessory devices must be installed and used according to the recommendations of the manufacturer.

2 Safety

The important safeguards and instructions appearing in this manual are not meant to cover all possible conditions and situations that may occur. It should be understood that common sense, caution, and care are factors which cannot be built into every product. These factors must be supplied by the person(s) caring for and operating the unit.

2.1 About Safety Instructions

This manual contains paragraphs that require your special attention. These paragraphs are marked with the symbols described below:



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

 **DANGER**

DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.

 **WARNING**

WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.

 **CAUTION**

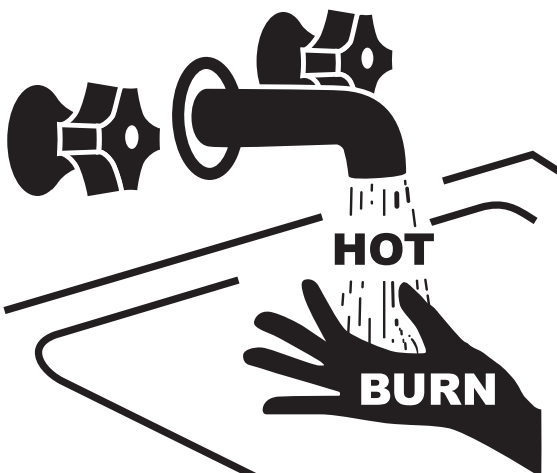
CAUTION, used with the safety alert symbol, indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTICE

NOTICE is used to address practices not related to personal injury.

2.2 General Safety Information

⚠ **DANGER**



Water temperature over 125 °F (52 °C) can cause burns instantly or death from scalds. See instruction manual before setting temperature at water heater. Feel water before bathing or showering. Temperature limiting valves are available. See manual.

Be sure to read and understand the entire Manual before attempting to install or operate this water heater. Pay particular attention to the following General Safety Precautions. Failure to follow these warnings could cause property damage, bodily injury or death. Should you have any problems understanding the instructions in this manual, STOP, and get help from a qualified installer or technician.

Maximum water temperature occurs just after burner or the energy source has shut off. To find hot water temperature being delivered, turn on a hot water faucet and place a thermometer in the hot water stream and read the thermometer.

The following chart details the relationship of water temperature and time with regard to scald injury and may be used as a guide in determining the safest water temperature for your applications.

| TIME VS. TEMPERATURE RELATIONSHIPS IN SCALDS | | | |
|----------------------------------------------|------------------------------|-------------|------------------------------|
| Temperature | Time to Produce Serious Burn | Temperature | Time to Produce Serious Burn |
| 120 °F | More than 5 minutes | 140 °F | Less than 5 seconds |
| 125 °F | 1-1/2 to 2 minutes | 145 °F | Less than 3 seconds |
| 130 °F | About 30 seconds | 150 °F | About 1-1/2 seconds |
| 135 °F | About 10 seconds | 155 °F | About 1 second |

⚠ **DANGER**

There is a hot water scald potential if the aquastat is set too high. When this water heater is supplying general purpose hot water requirements for use by individuals, a thermostatically controlled mixing valve for reducing point-of-use water temperature is recommended to reduce the risk of scald injury. Contact a licensed plumber or local plumbing authority for further information.

2.3 Installation Information



CAUTION

Assembly and installation by untrained personnel!

Risk of injury and damage to equipment!

The instructions and information provided in the instructions should be observed!

Only allow trained staff (heating engineers) to carry out assembly and installation!



2.3.1 Local Installation Regulations

This water heater must be installed in accordance with these instructions and must conform to local, or in the absence of local codes, with the current edition of the National Plumbing Code and the National Electric Code. In any case where instructions in this manual differ from local or national codes, the local or national codes take precedence.

2.3.2 Before Installation

In some jurisdictions the boiler's operating pressure must be limited to 30 psi (200 kPa) by a safety relief valve. When a higher operating pressure level is needed, select a boiler which is certified to operate at the required pressure.

The boiler's output rating must be within the heater's recommended sizing guide specifications. Too low an output rating may cause excessive condensation in the boiler. Too high an output rating may cause a boiler short cycling condition. Either of these conditions could be detrimental to the life and performance of the system.

The flow of hot boiler water to the water heater can be controlled with either a pump or a motorized valve. If a zone valve is to be used, the space heating system circulator must have an adequate flow rate to allow proper heat transfer of BTUs from the hot boiler water stored in the tank to the domestic water flowing inside the water heater's heat exchanger. Be sure the space heating zone valve chosen has maximum pressure drop to insure proper boiler water flow to the heater. The recommended way to provide adequate boiler water flow through the water heater is to use a separate dedicated circulator. This option may be used even though the heating system utilizes zone valves.

CAUTION

The heat transfer medium must be water or other non-toxic fluid having a toxicity rating or class of 1, as listed in Clinical Toxicology of Commercial Products, 5th edition

2.3.3 Location

The water heater must be installed vertically and should be installed in a clean, dry location as close as practical to the boiler or the heat source. Long hot water lines should be insulated to conserve water and energy. The water heater and water lines should be protected from exposure to freezing temperatures.

All models can be installed on combustible floors and in alcoves. Minimum clearance from combustible construction is 0 inches on all sides. A minimum 3 inch clearance on both sides and in the rear and a minimum 24 inch clearance in front and on top should be available for adequate inspection and servicing.

CAUTION

This unit must be placed where leakage from the relief valve, leakage from the related piping, or leakage from the tank or connections, will not result in damage to the surrounding areas, or to the lower floors of the building. A water heater should always be located in an area with a floor drain or installed in a drain pan suitable for waterheaters. The manufacturer or supplier shall not be held liable for any such water damage.

2.3.4 Plumbing

It is mandatory that all plumbing is done in accordance with all local and state plumbing codes, or warranty will be voided. It is also necessary on all mechanical connections, that you use both thread tape and pipe dope.

WARNING

The manufacturer's warranty does not cover any damage or defect caused by installation or attachment or use of any special attachment other than those authorized by the manufacturer into, onto, or in conjunction with the water heater. The use of such unauthorized devices may shorten the life of the water heater and may endanger life and property. The manufacturer disclaims any responsibility for such loss or injury resulting from the use of such unauthorized devices.

NOTICE

WHEN FILLING THE TANK, MAKE SURE THAT YOU OPEN THE HOTWATER TAP TO RELEASE AIR IN THE TANK AND PIPING.

The boiler supply connection of the tank is to be connected to the "HOT OUTLET" side of the boiler. The boiler return connection of the tank is to be connected to the inlet of the circulator, the outlet of the circulator to the return connection of the boiler. Be sure that the arrow on the circulator is facing toward the flow direction. The return(s) from heating loop(s) should have a flow check or swing check valve installed before the return pipe from the tank.

In a steam boiler, the tank supply must be connected to the boiler, well below the minimum water level. A strainer and a drain valve should be installed at the boiler for periodic draining of scale and sludge. Banging and steam bound traps will occur if the boiler water supplied to heat exchange has steam, or is slightly above the low water cut-out.

Precautions should be taken so that the boiler return is above the boiler manufacturer's lowest recommended temperature. Most hot water heating systems use standard, non-condensing boilers (cast iron or steel), which must be operated above 140°F in order to prevent the corrosion that is associated with flue gas condensation.

2.3.5 Requirements for domestic hot water

To avoid a build-up of scale (precipitation of calcium bicarbonate dissolved in water) in the stainless steel corrugated pipe element, for water hardnesses > 15°dH (267.7 ppm), we recommend that you use softening systems to prepare the drinking water. The maximum chlorine content of drinking water should not exceed 70 mg/L.

This water heater may be connected individually, in multiples with others, or with an external hot water storage tank. If two tanks or more are installed, the piping method to be used to connect the tanks in parallel should be "reverse-return piping", so domestic water flow rate through each tank is equal.

The installation of copper unions or copper alloy unions is recommended on the HOT and COLD water lines, so that the water heater may be easily disconnected for servicing if necessary. Install cut-off (ball) valves for servicing convenience.

WARNING

Never use dielectric unions or galvanized steel fittings on any domestic water connections. Use only copper or brass fittings. Teflon thread sealant must be used on all connections.

Use only clean copper or approved plastic pipe for water connections. Local codes or regulations shall govern the exact type of material to be used.

Cold Water Inlet

Use both thread tape and pipe dope and connect an NPT brass tee. On the branch, install a brass drain valve. In the run, install an NPT male X 3/4" (minimum) tube adapter. A cut-off valve between city water supply and tank inlet is recommended for ease of service at a later date. It may be recommended to use a back flow preventer – check your local codes. If a back flow preventer, or a no return valve is used; a thermal expansion tank must be installed on the cold water supply, between the tank and valve.

Domestic Hot Water Outlet

An automatic temperature & pressure relief valve with a temperature probe of sufficient length must be installed at the time of the installation. No valve of any type should be placed between the T&P relief valve and the water heater. Use a tee to install the relief valve onto the hot water outlet. The pressure rating of the relief valve must not exceed 150 psi. The BTU per hour rating of the relief valve must equal or exceed the BTU per hour input of the boiler(s) or heat source(s) as marked on the boiler(s) rating plate.

Connect the outlet of the relief valve to a suitable open drain. The discharge must exit no higher than 6" above the structural floor; and cannot contact any live electrical parts. The discharge line must pitch downward from the valve to allow complete draining (by gravity) of the relief valve and discharge line, and be no smaller than the outlet of the valve. The end of the discharge line should not be threaded or concealed and should be protected from freezing. No valve of any type, restriction or reducer coupling should be installed in the discharge line. Local codes shall govern the installation of relief valves.

To minimize heat loss during non-draw periods, a heat trap formed from piping can be used. Insulate all pipes containing hot water, especially in unheated areas.

Thermometer(s) should be installed to indicate the temperature of the water at or near the outlet of the water heater and storage tank(s), if provided.

Expansion tank for potable water

Determine if there is a check valve, a back flow preventer, a pressure-reducing valve, a water meter or a water softener in the cold water supply line.

A check valve creates a closed system and prevents the water, as it is being heated, from expanding back into the cold water supply line. Pressure can build up within the water heater, causing the relief valve to operate during a heating cycle. This excessive operation can cause premature failure of the relief valve and possibly of the water heater itself.

Replacing the relief valve will not correct the problem. One method of preventing pressure build-up is to install an expansion tank for potable water in the cold water supply line between the heater and check valve. Contact your installing contractor, water supplier, local plumbing inspector or plumbing supply house for assistance.

Thermostatic mixing valve

When this water heater is supplying general-purpose hot water requirements for use by individuals, a thermostatically controlled mixing valve is recommended to reduce the risk of scald injury. Contact a licensed plumber or the local plumbing authority for further information. Keep temperature control of the mixing valve at the lowest setting which is satisfactory.

When installing a mixing valve, locate it at the bottom of anti-thermosiphon loop at least 24" high to prevent excessive hot water from entering mixed water supply.

Vacuum breaker (if required)

Install a vacuum breaker (or vacuum relief valve) for water heater protection. A vacuum breaker prevents siphoning of the water from the system and collapse of the water heater.

3 Technology

3.1 Technical description

Layered tank made of sheet steel S235JRG2, upright, with integrated stainless steel corrugated pipe element for hygienic hot water preparation for indirect heating using solid fuel boilers, electric heating, oil or gas boilers.

Domestic hot water preparation uses the flow principle:

The relatively small volume in the corrugated pipe element means that the domestic hot water is always heated to the maximum temperature and very frequently renewed, preventing legionella build-up.

The thermal expansion of the corrugated pipe element prevents limescale deposits; the limescale particles that are created are broken off by the movement of the element pipe and are washed away with the flow of water.

The boiler water in the tank constitutes a store of heat energy ready to heat fresh domestic water. The volume of boiler water stored in the tank provides enough heat to keep your domestic water hot while the boiler heats up. In fact, it acts as a buffer which prevents domestic hot water or boiler water temperature swings.

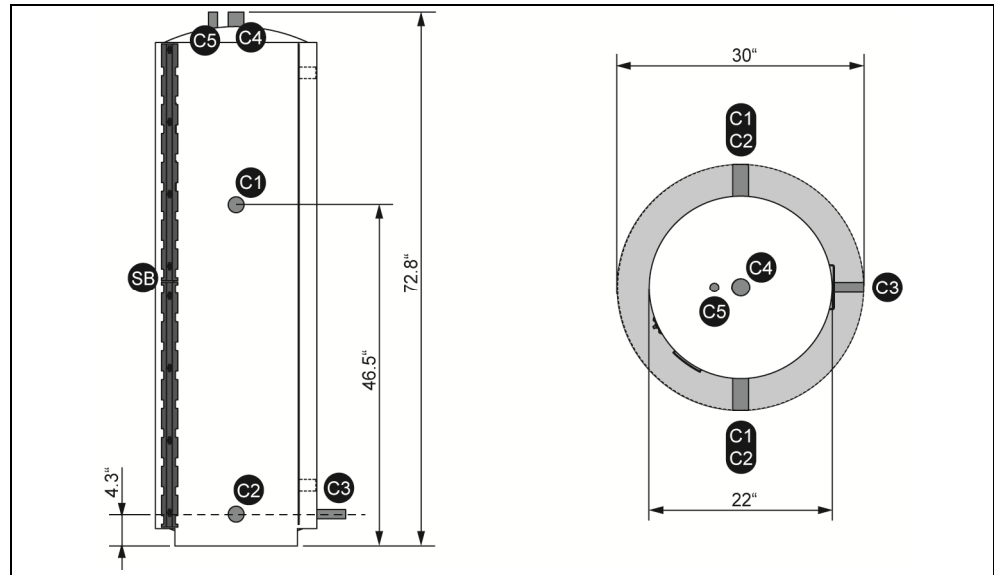
3.2 Technical specifications

| Description | ET 119 | FT 119 | |
|---------------------------------------------------|----------|-------------|---------|
| Capacity (total) | 119 gal | 119 gal | |
| Tank Capacity | | 108 gal | |
| Maximum Tank Pressure | 43.5 psi | 43.5 psi | |
| Maximum Temperature Feed | 230 °F | 230 °F | |
| Weight | 216 lbs | 260 lbs | |
| Specification DHW Coil | | | |
| Heat Exchanger Surface | - | 64.5 sq.ft. | |
| Maximum Coil Pressure | - | 87 psi | |
| Coil Capacity (Domestic Hot Water) | - | 11 gal | |
| Maximum Temperature Domestic Hot Water | - | 203 °F | |
| Recommended Flow Rate | - | 4 gal/min | |
| Pressure Drop (feet) | - | 2.6 psi | |
| 180° Boiler Water First Hour Rating ¹⁾ | - | 140 °F | 103 gal |
| | - | 115 °F | 133 gal |

1) DOE test method base on 90°F. Temperature rise, 50°/140° W/Boiler water at 180°F

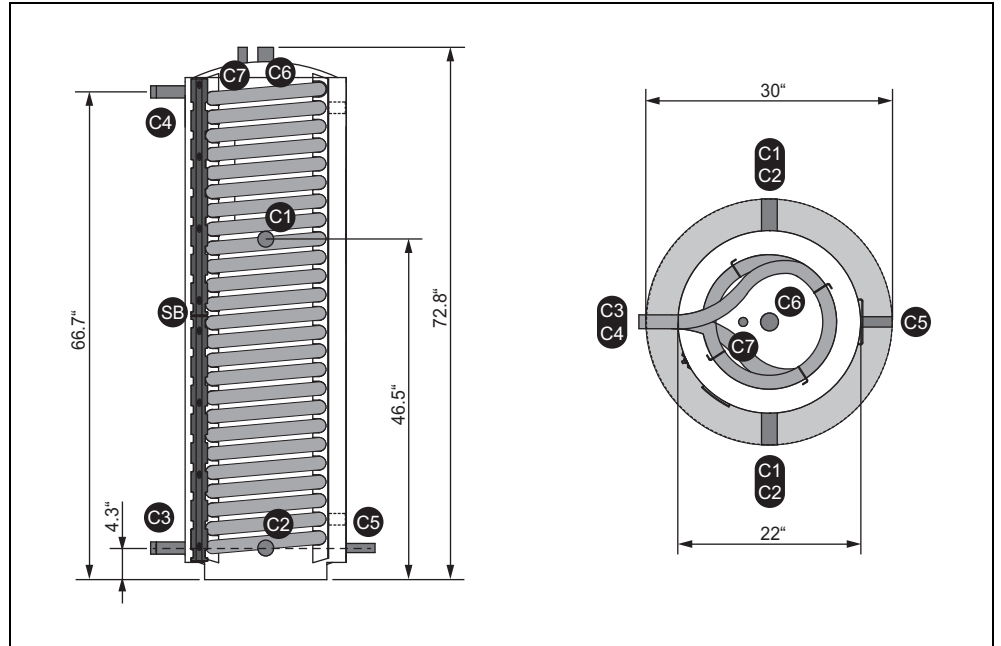
3.3 Dimensions and Connections

3.3.1 Energy tank Storage Master ET 119



| Connections | | |
|-------------|--------------------------|--------|
| C1 | Boiler Supply | 1 1/2" |
| C2 | Boiler Return | 1 1/2" |
| C3 | Drain Valve | 3/4" |
| C4 | Air Vent | 1 1/2" |
| C5 | Safety valve (T&P valve) | 3/4" |
| SB | Sensor bar | |

3.3.2 Energy tank Indirect Water Heater FT 119



| Connections | | |
|-------------|--------------------------|--------|
| C1 | Boiler Supply | 1 1/2" |
| C2 | Boiler Return | 1 1/2" |
| C3 | Cold Water Inlet | 1 1/4" |
| C4 | Hot Water Outlet | 1 1/4" |
| C5 | Drain Valve | 3/4" |
| C6 | Air Vent | 1 1/2" |
| C7 | Safety valve (T&P valve) | 3/4" |
| SB | Sensor bar | |

4 Installation

4.1 Inspect Shipment

Inspect the water heater for possible shipping damage. The manufacturer's responsibility ceases upon delivery of goods to the carrier in good condition. Consignee must file any claims for damage, shortage in shipments, or non-delivery immediately against carrier.

4.2 Transport

The tank is delivered on a pallet.

Move the tank without jarring or jolting

We recommend you take the tank off the pallet to position it

4.2.1 Positioning

- ❑ The tank has recesses on the bottom for transport with a hand lift truck.
- ❑ If the tank cannot be brought in vertically, it can also be transported to the boiler room horizontally.
- ❑ However you should ensure that the threaded connector supports are not damaged.

4.2.2 Temporary storage

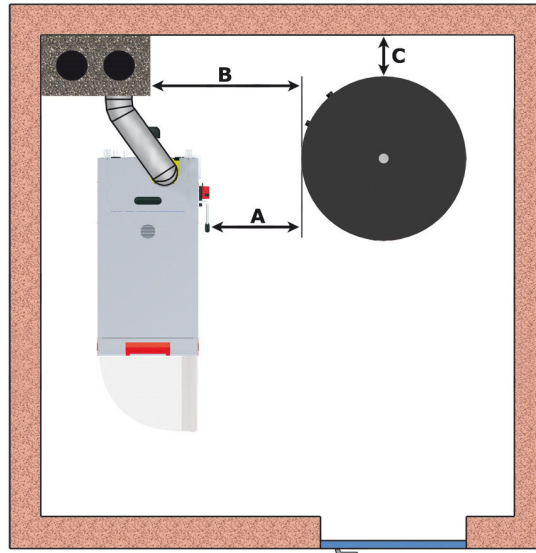
If the system is to be installed at a later date:

- ❑ Store the tank in a safe, dry place and protect from frost
Damp and frost reduce the effectiveness of the insulation

4.3 Setting up in the boiler room

4.3.1 Recommended distances in the boiler room

Set up the boiler according to the applicable standards and regulations. The following distances are recommended:



| | | |
|---|---------------------------------------|-----|
| A | Distance from tank to boiler | 12" |
| B | Distance from tank to Smoke flue pipe | 20" |
| C | Distance from tank to wall | 4" |
| | Clearance in front of the tank | 24" |

4.4 Connecting the tank

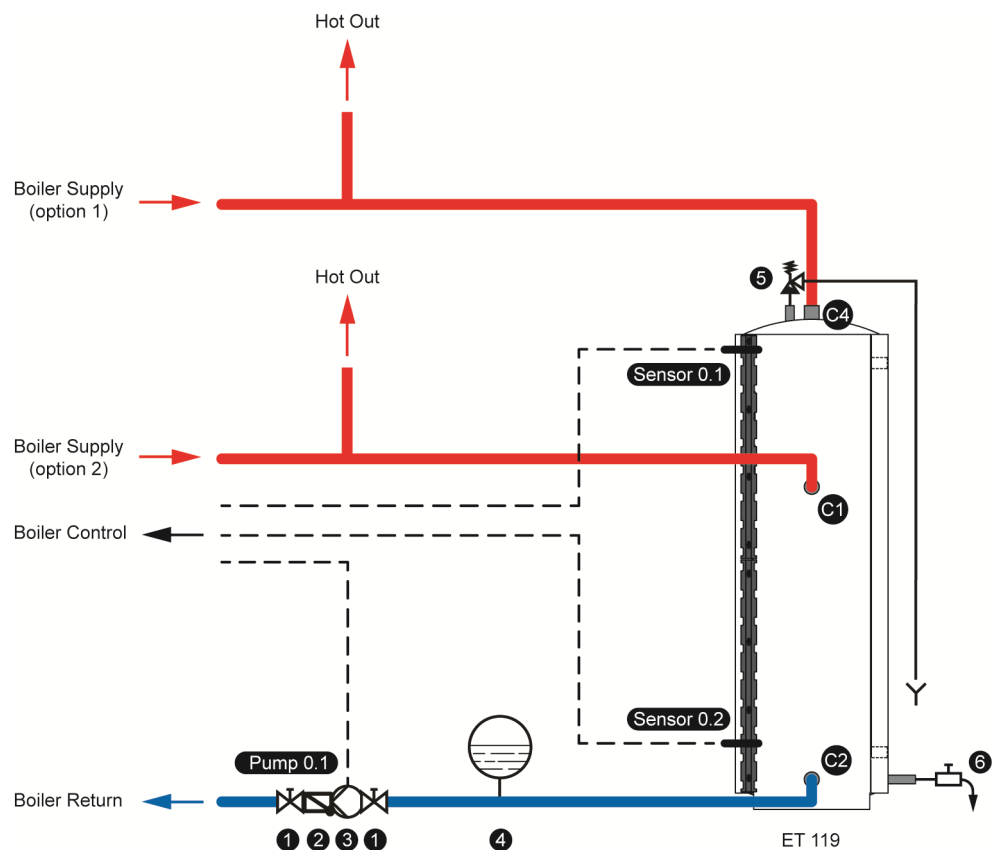
4.4.1 Connecting the heating

The tank should be connected to the heating system at the relevant outfeed and return feed pipes and must be fitted with a tested temperature and pressure relief valve (T&P valve). It is best to install the T&P valve at the top of the tank, so the tank does not have to be emptied to replace it.

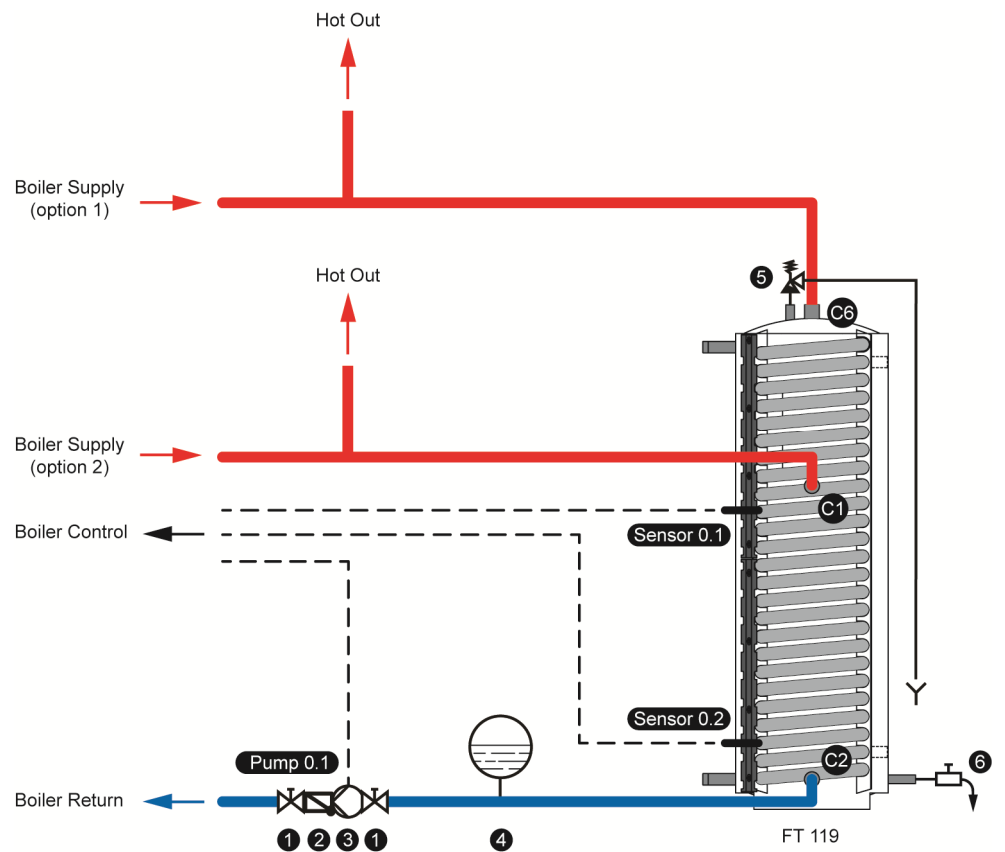
The information on the position and description of the sensors should be taken from the relevant controller instructions.

NOTICE

This is a simplified conceptual drawing only! Plumbing and necessary componentry must be field verified. Proper installation and functionality in the field is the responsibility of the heating contractor.



| | | | |
|-----------|---------------------------------------|-----------|--------------------------|
| 1 | Cut-off valve | 2 | Check valve |
| 3 | Circulator | 4 | Expansion tank |
| 5 | Temperature and pressure relief valve | 6 | Drain Valve |
| C1 | Boiler supply connection (option 2) | C2 | Boiler return connection |
| C4 | Boiler supply connection (option 1) | | |



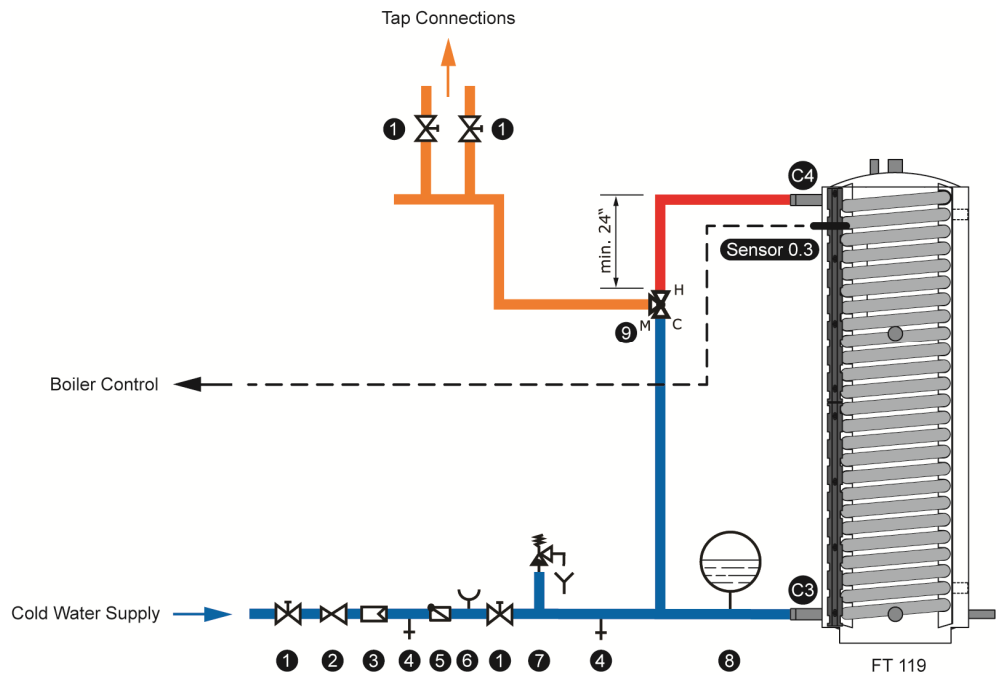
| | | | |
|-----------|---------------------------------------|-----------|--------------------------|
| 1 | Cut-off valve | 2 | Check valve |
| 3 | Circulator | 4 | Expansion tank |
| 5 | Temperature and pressure relief valve | 6 | Drain Valve |
| C1 | Boiler supply connection (option 2) | C2 | Boiler return connection |
| C6 | Boiler supply connection (option 1) | | |

4.4.2 Domestic Hot Water connection

The cold water must be connected in accordance with local codes. We also recommend that you install a thermostatic mixing valve at the hot water outlet, as the drinking water can reach the hot water temperature, leading to a risk of scalding (hot water > 125 °F).

NOTICE

This is a simplified conceptual drawing only! Plumbing and necessary componentry must be field verified. Proper installation and functionality in the field is the responsibility of the heating contractor.



| | | | |
|-----------|----------------------------------|-----------|----------------------------------|
| 1 | Cut-off valve | 2 | Pressure-reducing valve |
| 3 | Drinking water filter | 4 | Drain valve |
| 5 | Check valve | 6 | Pressure gauge connection |
| 7 | Pressure relief valve | 8 | Expansion tank for potable water |
| 9 | Thermostatic mixing valve | | |
| C3 | Cold water inlet of heating coil | C4 | Hot water outlet of heating coil |

4.4.1 Domestic Hot Water connection with recirculation line

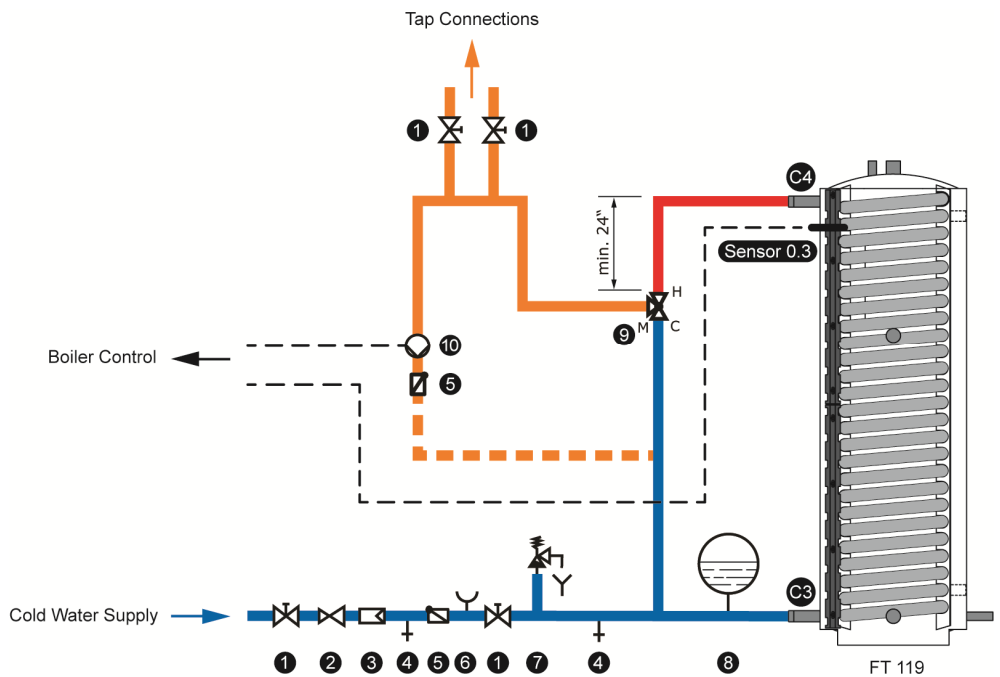
If a recirculation line is installed, the return connection should be made to a tee close to the inlet connection to the tank. A check valve should always be installed in the recirculation line to prevent cold water from entering.

The cold water must be connected in accordance with local codes.

We also recommend that you install a thermostatic mixing valve at the hot water outlet, as the drinking water can reach the hot water temperature, leading to a risk of scalding (hot water > 125 °F).

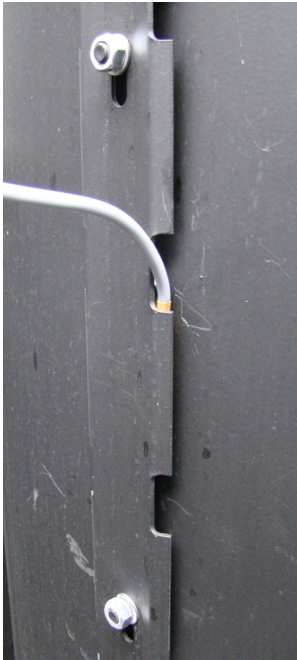
NOTICE

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| | | | |
|-----------|----------------------------------|-----------|----------------------------------|
| 1 | Cut-off valve | 2 | Pressure-reducing valve |
| 3 | Drinking water filter | 4 | Drain valve |
| 5 | Check valve | 6 | Pressure gauge connection |
| 7 | Pressure relief valve | 8 | Expansion tank for potable water |
| 9 | Thermostatic mixing valve | 10 | Circulator |
| C3 | Cold water inlet of heating coil | C4 | Hot water outlet of heating coil |

4.5 Installing the sensors



After the system has been plumbed, you have to install the necessary sensors at the sensor bar.

- ❑ Open the zipper at the outershell
- ❑ Loose fixing screws of the sensor bar
- ❑ Position the sensors according to the plumbing schematics (see chapter 4.4 "Connecting the tank")

- ❑ After positioning of the sensors tighten the fixing screws of the sensor bar carefully
- ❑ Lay sensor cables behind the outershell to the top of the tank
- ❑ Close the zipper at the outershell
- ❑ Lay sensor cables to the boiler by using a cable duct
- ❑ Connect cables according to the manual of the boiler control

5 Operating Information

After the water heater has been plumbed and wired, it is now ready to be set for automatic operation.

WARNING

Before operating this water heater, be sure to read and follow these instructions, as well as the warnings printed in this manual. Failure to do so can result in unsafe operation of the water heater resulting in property damage, bodily injury, or death. Should you have any problems reading, following or difficulty in understanding the instructions in this manual, STOP, and get help from a qualified person. Do not turn on the water heater unless it is filled with water. Do not turn on water heater if cold water supply cut-off valve is closed.

5.1 Initial startup of the tank

The initial startup must be performed by the system designer or a specialist technician designated by the designer. In addition, the owner must be informed of the need for regular maintenance.

The whole system should be carefully rinsed out before the initial startup. Foreign matter in the system may affect the operating safety of the device.

5.1.1 Filling the Heater Coils

Initially the domestic hot water coil should be filled with cold water.

- Make sure all drains valves on the cold or hot water supply piping are closed.
- Open the nearest hot water faucet and any cut-off valves on the domestic hot water supply piping from the heater's domestic hot water outlet (the top copper pipe connection).
- Open the cut-off valve on the cold water supply piping to the heater's domestic cold water inlet.
- Pressure-check the safety valve in the cold water supply line for operability.
 - ➡ A safety valve, which is not operating perfectly, can lead to damage from excessive pressure.
- When water discharges from faucet, close it.
- Check for system leaks and repair if necessary.
- Any other water faucets fed by this heater should be opened to purge air from their supply piping, and then shut off after a steady flow of water is observed from the faucet.

5.1.2 Filling the Heater Tank

NOTICE

The Heater Tank must be filled only after filling the domestic hot water coil!

- ❑ Open the cut-off valve on the supply piping from the boiler. (and on a zone valve system, manually open zone valve)
- ❑ Open cold water supply valve (fill or makeup water valve) to boiler.
- ❑ To let the air out of the tank during the fill process open the relief valve on top of the tank
- ❑ Leave all cut-off valves open.
- ❑ After filling the system return zone valve to automatic operation.
- ❑ Check system for leaks and repair if necessary.
- ❑ Purge air from the remaining zones, if necessary.
- ❑ Check boiler pressure gage reading afterwards.
 - ➔ 15 psi is normal for most installations

5.2 Operating the tank

After the system has been manually purged of its air, and all components (valves, vents, controllers) have been set properly, the boiler can be started. Never operate this heater until this has been done.

The system installer must train the operator to operate the system. The installer must also familiarize the operator with the modes of operation, with special emphasis on the function and meaning of the safety devices and their maintenance requirements.

The outlet line of the safety valve must always remain open.

The temperature and pressure relief valve must be periodically checked for correct functioning by releasing the pressure.

When there is a danger of freezing, the tank must either be heated up or completely emptied.

NOTICE

For long absences or periods of inactivity (vacations) hot water preparation should be deactivated. When doing this, however, ensure that the temperatures at the installation location of the hot water preparer and in the connected piping system are above the freezing point to prevent damage due to freezing. In case of prolonged stagnation in the pipes and the tank, the water quality can be affected by increased build-up of germs. For this reason, before starting up the system again after prolonged absence, we recommend that you heat the water to at least 140 °F through rarely used tap connections and allow it to circulate freely for around 5 minutes before use.

5.3 Maintenance of the tank

5.3.1 Cleaning the tank

External Cleaning:

A damp cloth is sufficient for cleaning the external parts. Cleaning agents that are abrasive or contain solvents should be avoided.

Internal Cleaning:

The internal cleaning of the domestic hot water coil including its potable water connections may only be performed by a licensed professional heating contractor or all warranties shall be deemed voided.

NOTICE

If a water softener or other water treatment system is used in the domestic cold water inlet piping into the tank, the water treatment system should be inspected (serviced) at the same time. If a drinking water filter is used in the main line, the filter cartridge should also be investigated. All external equipment must be serviced regularly and function properly

5.3.2 Water piping

Check all piping annually for signs of leakage at joints, unions and cut-off valves.

5.3.3 Temperature and pressure relief valve

Check the T&P valve annually.

⚠ WARNING

Following installation of the T & P Relief Valve, the valve lever **MUST** be operated **AT LEAST ONCE A YEAR** by the water heater owner to ensure that waterways are clear. Certain naturally occurring mineral deposits may adhere to the valve, blocking waterways, rendering it inoperative. When the lever is operated, hot water will discharge if the waterways are clear. **PRECAUTIONS MUST BE TAKEN TO AVOID PERSONAL INJURY FROM CONTACT WITH HOT WATER AND TO AVOID PROPERTY DAMAGE. BEFORE operating lever, check to see that a discharge line is connected to the valve, directing the flow of hot water from the valve to a proper place of disposal. If no water flows when the lever is operated, replacement of the valve is required. TURN THE WATER HEATER "OFF" AND CALL A PLUMBER IMMEDIATELY.**

This device is designed for emergency safety relief and shall not be used as an operating control. A relief valve functions, in an emergency, by discharging water. Therefore, it is essential that a discharge line be piped from the valve in order to carry the overflow to a safe place of disposal. The discharge line must be same size as the valve outlet must pitch downward from the valve and terminate at least 6" above a drain where any discharge will be clearly visible.

⚠ CAUTION

RE-INSPECTION OF TEMPERATURE AND PRESSURE RELIEF VALVES: Temperature and Pressure Relief Valves should be inspected AT LEAST ONCE EVERY THREE YEARS, and replaced, if necessary, by a licensed plumbing contractor or qualified service technician, to ensure that the product has not been affected by corrosive water conditions and to ensure that the valve and discharge line have not been altered and are operating properly. Certain naturally occurring conditions may corrode the valve and its components over time, rendering the valve inoperative. Such conditions can only be detected if the valve and its components are physically removed and inspected. Do not attempt to conduct an inspection on your own. Contact your plumbing contractor for a re-inspection to assure continuing safety.

⚠ DANGER

WARNING: FAILURE TO RE-INSPECT THIS VALVE AS DIRECTED COULD RESULT IN UNSAFE TEMPERATURE OR PRESSURE BUILDUP WHICH CAN RESULT IN SERIOUS INJURY OR DEATH AND/OR SEVERE PROPERTY DAMAGE.

5.4 Warranty information**LIMITED WARRANTY - FOR USE ONLY IN UNITED STATES**

Tarm Biomass warrants the Fröling 119 gallon Energy Tank and heat exchanger (coil) against defects in material and workmanship under ordinary consumer residential use and service **TO THE ORIGINAL RESIDENTIAL OR COMMERCIAL PURCHASER AT THE ORIGINAL INSTALLATION SITE** in the United States for a period of 5 years from date of purchase. If a leak develops in the tank or coil and occurs within this limited warranty period due to defective material or workmanship, and the leak is verified by an authorized company representative, at the sole option of Tarm Biomass, Tarm Biomass will repair or replace the failed unit with the nearest comparable model at the time of replacement. **THE ORIGINAL PURCHASER IS RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH THE REMOVAL AND REINSTALLATION OF THE UNIT AND SHIPPING AND HANDLING TO AND FROM TARM BIOMASS.**

TARM BIOMASS' LIMITED EXPRESS WARRANTY IS ONLY EXTENDED TO AND COVERS THE TARM BIOMASS PRODUCT'S END USER WHO OWNS THE BUILDING IN WHICH THE TARM BIOMASS PRODUCT IS INSTALLED, AND COVERS ONLY REPAIRS OR REPLACEMENTS RESULTING FROM DEFECTS IN MATERIALS AND WORKMANSHIP. THERE ARE NO WARRANTIES THAT EXTEND BEYOND THE DESCRIPTION IN THIS LIMITED WARRANTY, AND TARM BIOMASS' LIMITED WARRANTY IS IN LIEU OF AND TO THE EXCEPTION OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, WARRANTIES OF MERCHANTABILITY OR WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE. EXCEPT AS OTHERWISE PROVIDED BY THIS LIMITED WARRANTY, TARM BIOMASS TAKES NO RESPONSIBILITY FOR THE QUALITY OF TARM BIOMASS PRODUCTS OR THAT THE GOODS WILL BE FIT FOR ANY PARTICULAR PURPOSE FOR WHICH YOU MAY BE BUYING THESE GOODS. UNDER NO CIRCUMSTANCES SHALL TARM BIOMASS BE SUBJECT TO INCIDENTAL, CONSEQUENTIAL, INDIRECT, SPECIAL, PUNITIVE, ENHANCED COMPENSATORY, EXEMPLARY, OR CONTINGENT DAMAGES, WHETHER A CLAIM IS BASED ON CONTRACT, TORT, STRICT LIABILITY, OR ANY OTHER THEORY OF LAW, ALL SUCH DAMAGES, REMEDIES, AND CLAIMS BEING SPECIFICALLY DISCLAIMED.

Tarm Biomass' limited warranty is void if a Tarm Biomass product is installed by someone other than a qualified contractor whose principal occupation is the sale or installation of plumbing and heating equipment, or if the original purchaser fails to have the Energy Tank serviced or inspected at least once every two years by an experienced and qualified service person. Repairs or replacements under this limited warranty must be performed by your dealer or someone authorized by him. You may be required to present this limited warranty to the dealer before any work is performed. You must pay for any work performed that is not covered by this limited warranty or that is not authorized by the dealer. Tarm Biomass' limited warranty shall be construed under the laws of New Hampshire. Any dispute arising out of this warranty shall be tried only in a court in the State of New Hampshire, including the United States District Court for the State of New Hampshire. If any legal action is brought in connection with this limited warranty, the prevailing party shall be entitled to recover all reasonable expenses it incurs in the action, including its reasonable attorneys' fees, from the nonprevailing party.

TARM USA'S LIMITED WARRANTY EXPRESSLY EXCLUDES COVERAGE FOR THE FOLLOWING:

1. Ordinary wear and tear and repairs or replacements necessitated by normal use.
2. Defects or malfunctions resulting from installation, repair, maintenance, and/or usage that is not done in conformity with the manufacturer's installation manual.
3. Defects or malfunctions resulting from installation, maintenance, or repairs that are not done in accordance with local codes and/or the local authority having jurisdiction.
4. Defects or malfunctions resulting from deficient installation, maintenance, or repair or resulting from consumer damage (including, but not limited to, improper maintenance, misuse, abuse, accident, or alteration).
5. Installation in which a relief valve is not installed or is not functioning properly, or when a relief valve is not connected to a drain to avoid damage to the property.
6. Installation in which liquid circulating in the tank does not remain in closed circuit or installation in which piping is leaking.
7. Installation in which the flow rate through the coil exceeds 4 GPM US.
8. Installations of polybutylene pipe or radiant heating installation using non-oxygen barrier tubing.
9. Repairs or replacements arising from corrosion including, but not limited to, the effects of a corrosive water supply.
10. Installation in which the domestic water contains abnormal levels of particulate matter or water exceeding 10.5 grains per gallon.
11. Your home contains any type of water softener system and the unit is not installed and maintained in accordance with the manufacturer's specifications.
12. When installed with a low pressure steam boiler, if sludge is allowed to accumulate in the Energy Tank tank and boiler water acidity is lower than pH 7.0 or higher than pH 8.5.
13. The Energy Tank is subjected to modifications not specifically authorized in writing by Tarm Biomass.
14. Defects or malfunctions resulting from storage or handling that occurs other than in a Tarm Biomass Warehouse.
15. Damage caused by the repair or replacement of any component not authorized in writing by Tarm Biomass or damage caused by the functioning or malfunctioning of any such component.
16. The serial number is removed or obliterated.

This warranty gives you specific legal rights. You may also have other rights that vary from state to state. This warranty shall not be construed as inconsistent with any federal, state, or municipal law, regulation, or code that was applicable to the original installation site on the date the Tarm Biomass product was installed.

Questions regarding this warranty may be referred to:

Tarm Biomass, 4 Britton Lane, Box 285, Lyme, NH 03768 U.S.A. (603) 795-9100

KEEP THIS INFORMATION FOR YOUR RECORDS:

Model: _____ **Place of Purchase:**

Serial No.: _____ **Installation Date:**