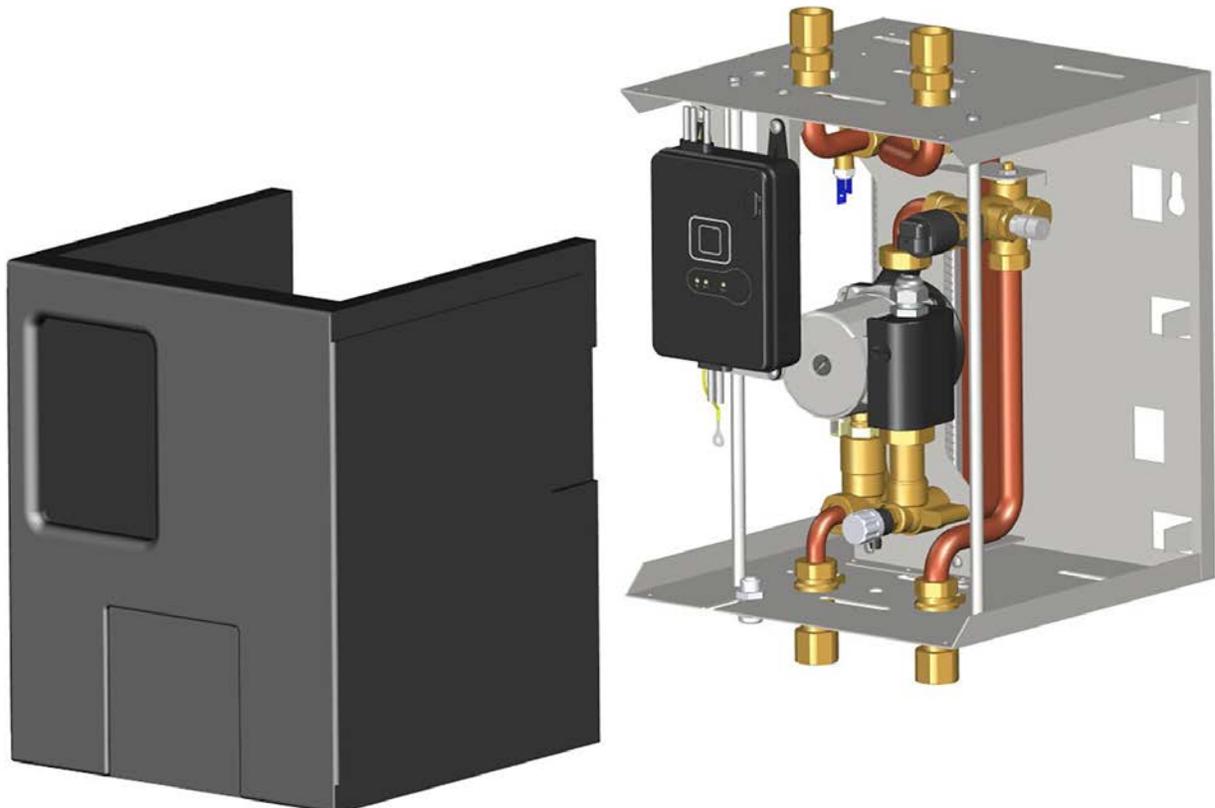


# Domestic Hot Water Module

# 550003792

## INSTALLATION, OPERATION & MAINTENANCE MANUAL



**FOR YOUR SAFETY READ BEFORE INSTALLATION AND OPERATION**

**IMPORTANT SAFETY INFORMATION**

Installation shall be completed by qualified agency.

**⚠ WARNING**

Fire, explosion, asphyxiation and electrical shock hazard. Improper installation could result in death or serious injury. Read this manual and understand all requirements before beginning installation.

**⚠ WARNING**

Do not tamper with or use this kit for any purpose other than its intended use. Failure to follow these instructions could result in death or serious injury. Use only manufacturer recommended parts and accessories.

**⚠ CAUTION**

Laceration, burn hazard. Metal edges and parts may have sharp edges and/or may be hot. Use appropriate personal protection equipment to include safety glasses and gloves when installing or servicing this boiler. Failure to follow these instructions could result in minor or moderate injury.

Become familiar with symbols identifying potential hazards.

 This is the safety alert symbol. Symbol alerts you to potential personal injury hazards. Obey all safety messages following this symbol to avoid possible injury or death.

**⚠ DANGER**

Indicates a hazardous situation which, if not avoided, WILL result in death or serious injury.

**⚠ WARNING**

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

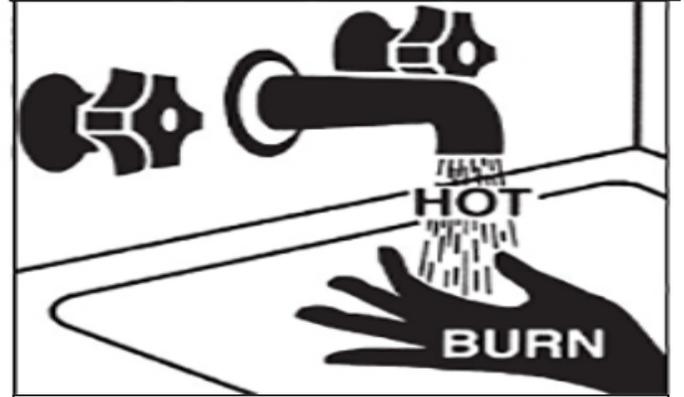
**⚠ CAUTION**

Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

**NOTICE**

Used to address practices not related to personal injury.

**⚠ DANGER**



**Hot Water Can Scald!**

Water heated to temperature for clothes washing, dish washing and other sanitizing needs can scald and cause permanent injury.

Children, elderly, and infirm or physically handicapped persons are more likely to be permanently injured by hot water. Never leave them unattended in bathtub or shower. Never allow small children to use a hot water tap or draw their own bath.

If anyone using hot water in the building fits the above description, or if state laws or local codes require certain water temperatures at hot water taps, you must take special precautions:

- Use lowest possible temperature setting.
- Install some type of tempering device, such as an automatic mixing valve, at hot water tap or water heater. Automatic mixing valve must be selected and installed according to manufacturer's recommendations and instructions.

Water passing out of drain valves may be extremely hot. To avoid injury:

- Make sure all connections are tight.
- Direct water flow away from any person.

Water Temperature Setting	1st Degree Burn Exposure Time For An Adult	2nd and 3rd Degree Burn Exposure Time For An Adult
120° F	1 minute	5 minutes
130° F	5 seconds	30 seconds
140° F	2 seconds	5 seconds
150° F	1 second	1.5 seconds
160° F	Instantaneous	0.5 seconds

**Note:** Warning for Infants, Children, and the Elderly: Great care must be taken when exposing the aforementioned groups to warm or hot water as they can be badly burned in exposure times less than half of the time for an adult.

## **WARNING**

Burn and scald hazard. Components shall be installed by qualified service agency in accordance with manufacturer's instructions and all applicable codes and requirements of authority having jurisdiction. Verify Boiler is off and cooled before component installation. Failure to follow these instructions could result in death or serious injury.

## **WARNING**

Electrical shock hazard. Turn OFF electrical power supply at service panel before making electrical connections. Failure to do so could result in death or serious injury.

- Before carrying out any cleaning or maintenance, turn off the appliance at the power supply by operating the circuit breaker, and from the water supply using the appropriate stopcocks.
- To ensure the appliance functions efficiently it is advisable to have annual maintenance performed by a qualified technician.
- Check the contents after removing the packaging.
- The device shall not be exposed to the weather.
- Data contained in this document is provided for information only. The manufacturer reserves the right to modify it at any time without notice.

## **IMPORTANT SAFETY INFORMATION**

- This installation, operation and maintenance manual, hereinafter the manual, is an integral part of the product and must be kept by the end user.
- Carefully read the warnings in this manual because they provide safety information necessary for installation, use and maintenance.
- The manufacturer is not liable for damage to humans, animals or things caused by incorrect installation, use, poor maintenance and failure to follow the instructions in this manual.
- This appliance must be used only for the purpose for which it was expressly intended. Any other use is to be considered inappropriate and therefore hazardous.
- Make sure the manual always accompanies the appliance should it be sold to a new owner and/or installer.
- The installation and maintenance shall be performed by qualified technical personnel, in compliance with applicable laws and in accordance with the instructions contained in this manual.
- Qualified technical personnel means persons with specific technical skills in the field of heating systems for civil use, for the production of domestic hot water and related components.
- In case of failure and/or malfunction switch off the appliance, avoiding any attempt to repair and/or intervene directly. Contact a qualified technician.
- Any repair of the appliance shall be carried out by qualified personnel using only original spare parts. Failure to do so may impair the operation and safety of the device.

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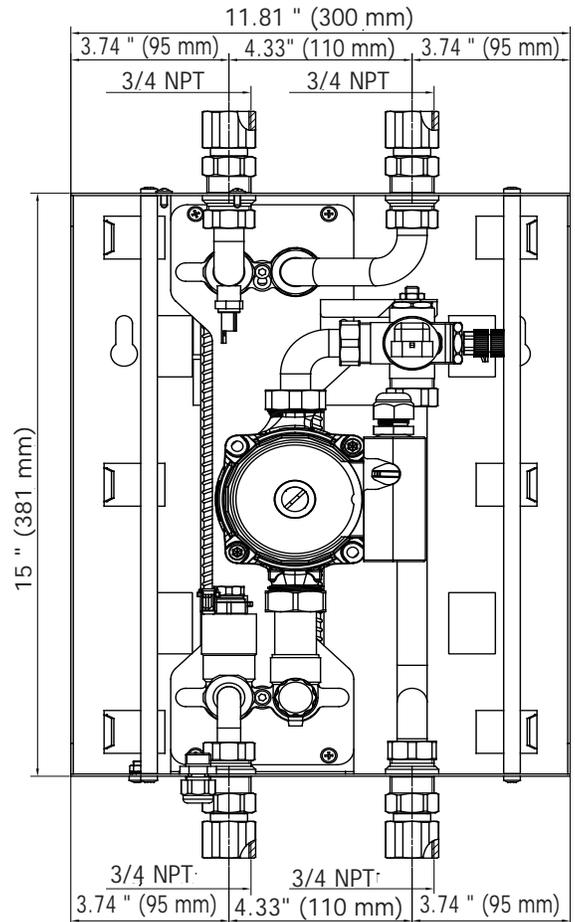
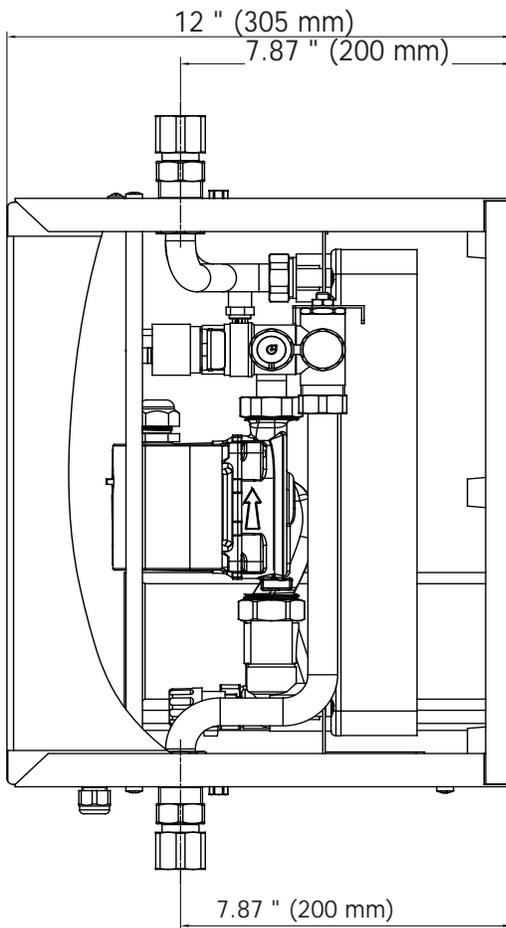
## SPECIFICATIONS

The Domestic Hot Water (DHW) module is an appliance for the production of hot water for domestic use using the heat produced by a boiler.

The main components of the DHW module are a two way valve, a brazed plate heat exchanger, a circulator (electric pump), a flow meter, a temperature sensor and an electronic control regulator (REC). The boiler must include low limit capability to continuously maintain boiler water temperature. The module is mounted on a wall near the boiler.

**Product Range**  
**DHW MODULE**  
 550003792

**Rated Thermal**  
**Btu/h (kW)**  
 228,000 (67)



## Technical Specifications

Transfer Fluid	Water	
Maximum glycol percentage*	40%	
Maximum fluid temperature	194°F / 90° C	
Maximum Operating pressure:	43.5 psi (3 bar)	Boiler Water
	145 psi (10 bar)	Domestic Water
Exchanger rated power	228,000 Btu/h (67 kW)	
Two way valve differential pressure**	Δp 13 psi (0.9 bar)	
Power supply voltage	115 Vac ± 10%, 1 ph, <2 A	
Frequency	60 Hz	
Power Consumption	96 W	
Fuse (Dimensions mm)	250V-4A Fast (5x20)	
Protection level	IP 20	
Pump	Wilo Star 21U15-130	
Actuator	24 V stepper	
Sensor	NTC 10 kΩ	
Flow switch (trip flow rate)	0.53 ± 0.05 gpm (2± 0.2 l/min)	
DHW flow regulator***	3.2 gpm (12 l/min)	
Transportation/Storage Temperature	-4 to 158 °F (-20 to 70 °C)	
Operating Temperature (indoor)	36 to 113 °F (2 to 45 °C)	

## Materials

Components	Brass EN 12165 CW617N-DW
Connection pipes	Copper
Frame	Galvanized steel
Insulation	PPE
Heat Exchanger	Brazed stainless steel
Total Weight	28.5 lb ( 13 kg)

\* Antifreeze solution with up to 40% of inhibited propylene glycol. DHW capacity may fall as much as 10% or more as concentration of antifreeze is increased.

\*\* Maximum differential pressure at which no significant leakage is detected.

\*\*\* Supplied in the package is a 5.3 gpm (20 l/min) flow regulator that can be mounted in place of the factory installed 3.2 gpm (12 l/min) flow regulator.

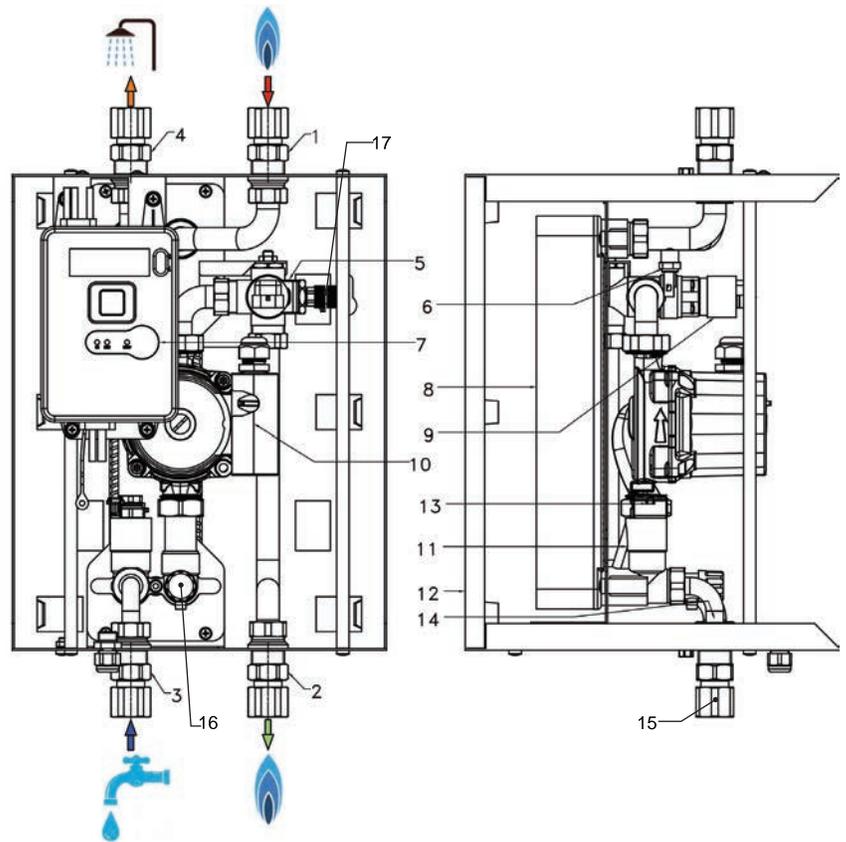
This single wall heat exchanger complies with the 1990 National Standard Plumbing Code provided both of the following are true:

- The boiler water, including additives, is practically non toxic, having a toxicity rating or class of 1 as listed in Clinical Toxicology of Commercial Products, 5th edition.
- The pressure of the boiler water is limited to a maximum of 30 psi by an approved safety or relief valve.

Domestic Hot Water Flow Rates							
Three Pass Boiler Model	Firing Rate		Heating Capacity [Btu/h]	DHW Flow Rate at 77°F Rise	DHW Flow Rate at 70°F Rise	DHW Flow Rate at 60°F Rise	DHW Flow Rate at 50°F Rise
	[gph]	[Btu/h]		[gpm]	[gpm]	[gpm]	[gpm]
4075	0.75	105,000	92,000	2.25	2.48	2.89	3.47
4095	0.95	133,000	114,000	2.85	3.14	3.66	4.39
4110	1.10	154,000	132,000	3.20	3.52	4.11	4.93
5100	1.00	140,000	123,000	3.00	3.30	3.85	4.62
5115	1.15	161,000	139,000	3.50	3.85	4.49	5.39
5135	1.35	189,000	161,000	3.95	4.35	5.07	6.08
6130	1.30	182,000	160,000	4.05	4.46	5.20	6.24
6145	1.45	203,000	176,000	4.50	4.95	5.78	6.93
6165	1.65	231,000	198,000	4.90	5.39	6.29	7.55
7165	1.65	231,000	202,000	5.00	5.50	6.42	7.70
7180	1.80	252,000	217,000	5.35	5.89	6.87	8.24
7190	1.90	266,000	228,000	5.75	6.33	7.38	8.86

## MAIN COMPONENTS

- 1 CH Inlet
- 2 CH Outlet
- 3 DHW Inlet
- 4 DHW Outlet
- 5 Two Way Valve
- 6 Temperature Sensor T1
- 7 Electronic Control Regulator (REC)
- 8 Plate Heat Exchanger
- 9 Stepper Motor
- 10 Wilo Pump Star 21U15-130
- 11 DHW Flow Meter
- 12 Steel Frame
- 13 DHW Flow Sensor
- 14 DHW Flow Regulator
- 15 Pipe Adapter Unions (4)
- 16 Drain Tap
- 17 Air Vent



## INSTALLATION

### **WARNING**

Burn, Scald, Electrical Shock Hazards! Failure to follow the instructions listed below could result in death or serious injury.

### Hazards!

- Before proceeding with the installation check for damage and the integrity of the appliance: in case of damage DO NOT proceed with the installation.
- The appliance is designed for indoor installations, therefore it cannot be installed outside in environments directly exposed to the elements.
- **Outdoor installation can cause malfunction and hazards.**
- The appliance shall not be exposed to dripping water or humidity, direct sunlight, weather, heat sources or strong electromagnetic fields. This appliance cannot be used in areas at risk of explosion or fire.
- Always avoid direct contact with live or potentially dangerous parts during installation and maintenance.
- The appliance must be connected to an independent circuit breaker. Turn off the power supply before working on the appliance. Do not use devices with timed automatic reset, or that can be rearmed by accident.
- Use suitable automatic protection devices, depending on the electrical characteristics of the area in which the appliance is installed and the current regulations.
- The earth connection must always be made before connecting the power. If you need to remove the appliance, the earth connection must always be disconnected after disconnecting the power cables. Check that the building earthing is properly executed in compliance with the current regulations.
- The electrical installation must be performed by a legally qualified technician.
- Water temperatures over 50°C (122°F) can cause severe burns. During installation, start up and maintenance of the appliance, take the necessary precautions so that these temperatures cannot put anyone in danger.

## Water Quality

- If the CH water (i.e. boiler water) is very hard or full of impurities, it must be adequately filtered and treated, otherwise damage and/or malfunction could be caused. Recommended water quality is:
  - o Hardness Less than 8.8 grains per gallon (150 mg/L)
  - o Acidity level 7-8 pH
  - o Sediments Particle size less than 50 micron
- If the water quality is outside these ranges, consult a local water treatment specialist for recommendations.
- If the water is treated, do not use petroleum based products or products containing mineral oil or hydrocarbons in order to avoid likely damage to parts made from rubber compounds (o-rings).

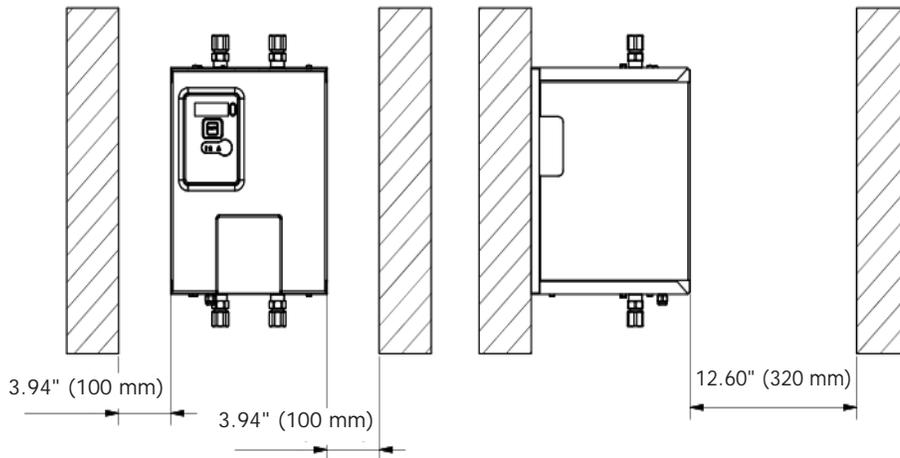
## Preparation

- Remove the appliance from the packaging checking the integrity of the product.
- Remove the insulating cover.
- Proceed with the installation.

## Minimum Installation Distances

To facilitate maintenance operations on the appliance it is necessary to install it with adequate space. Place the appliance and fix it using good practice, with adequate fixings (not supplied).

When installed inside a cabinet or utility room, provide adequate distance between the device and the door.



## Mounting

- DHW kit shall be installed on a wall that is vertically plumb.
- The appliance can be installed in the vertical position (with CH Inlet at the top and CH Outlet at the bottom), horizontal left (with the CH Inlet on the left) and horizontal right (with the CH Inlet on the right).
- The pump axis shall always be in a horizontal position.
- The direction of the water flow shall comply with the indications on the labels found on the appliance frame.
- Be sure the wall or panel can carry the weight of the DHW kit and all associated piping.
- The kit may be mounted on a combustible wall. The water piping shall be a minimum of 1" away from any combustible materials.
- For stud type walls, verify there are studs available in the desired location. Use appropriate fasteners for the wood or metal stud type in use and for the weight capacity.
- For masonry walls, use appropriate type of anchors for material and weight capacity.
- Do not attempt to support the system with anchors driven into sheetrock only.

## HYDRAULIC CONNECTIONS

### NOTICE

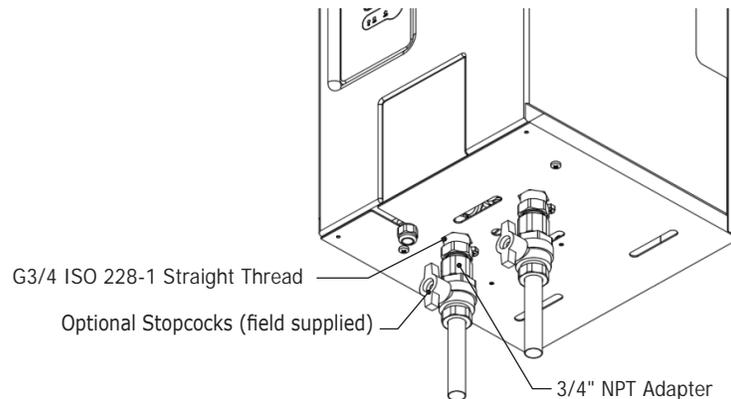
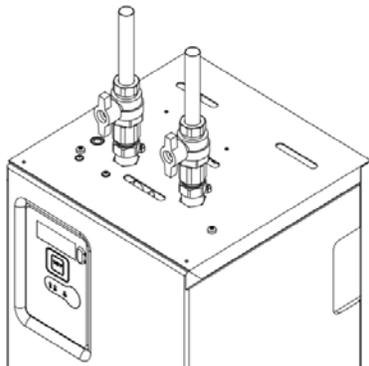
When the system requires the domestic hot water circuit to have a device which prevents water expansion towards the mains (non-return valve, meter, pressure reducer, etc.) it is necessary to install an expansion tank downstream of the device.

- Clean the pipes of any debris, rust, incrustations, lime scale, welding slag and any other contaminants. The hydraulic circuit must be clean.
- The appliance includes four (4) G3/4 ISO 228-1 X 3/4" NPT pipe thread adapters and four (4) gaskets provided loose in a parts bag.
- Use the furnished adapters and gaskets to convert the four (4) G3/4 ISO 228-1 straight thread fittings on the frame of the appliance to 3/4" NPT. The adapters will serve as pipe unions for easy connection and to facilitate future service.
- Make sure to use the gaskets on the G3/4 ISO 228-1 straight thread connections when installing the 3/4" NPT adapters. Otherwise it will leak.

### NOTICE

Do not install 3/4" NPT pipe fittings directly on the G3/4 ISO 228-1 ISO connections. Use the furnished adapters.

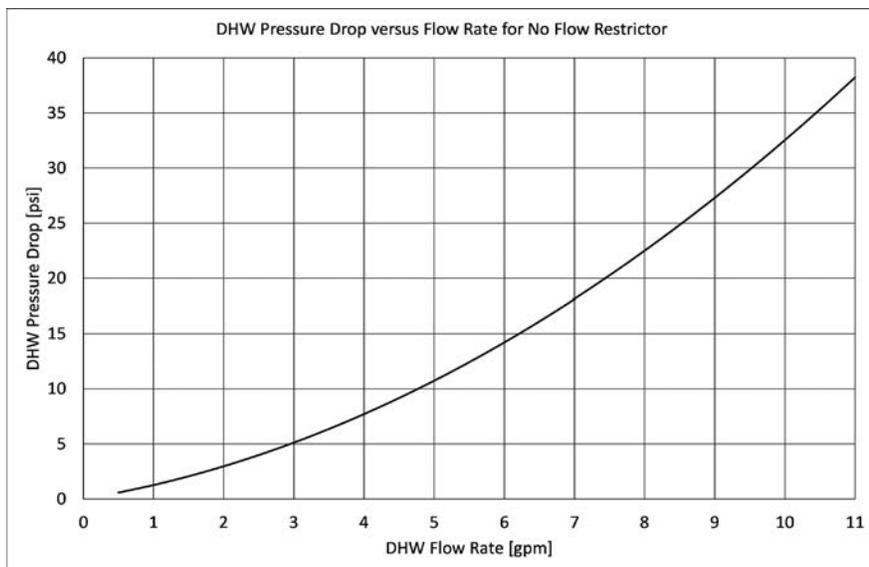
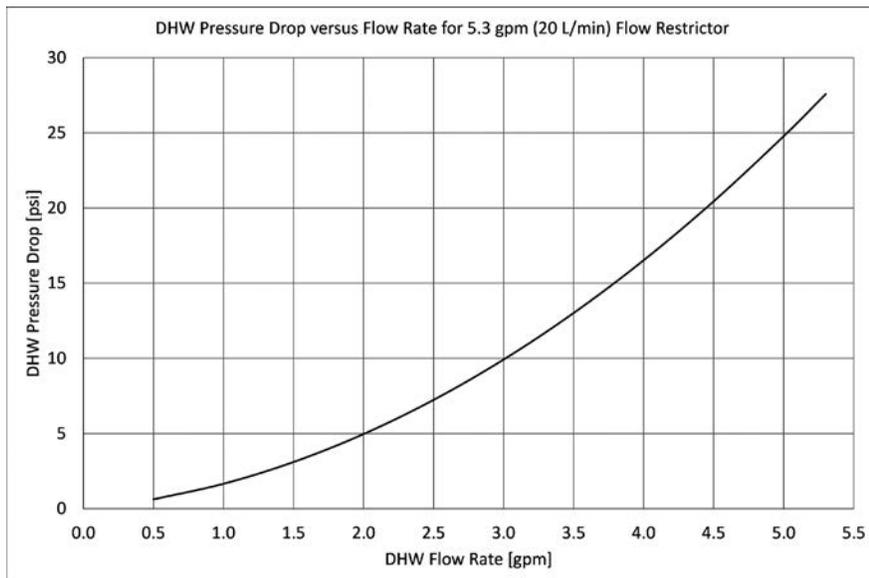
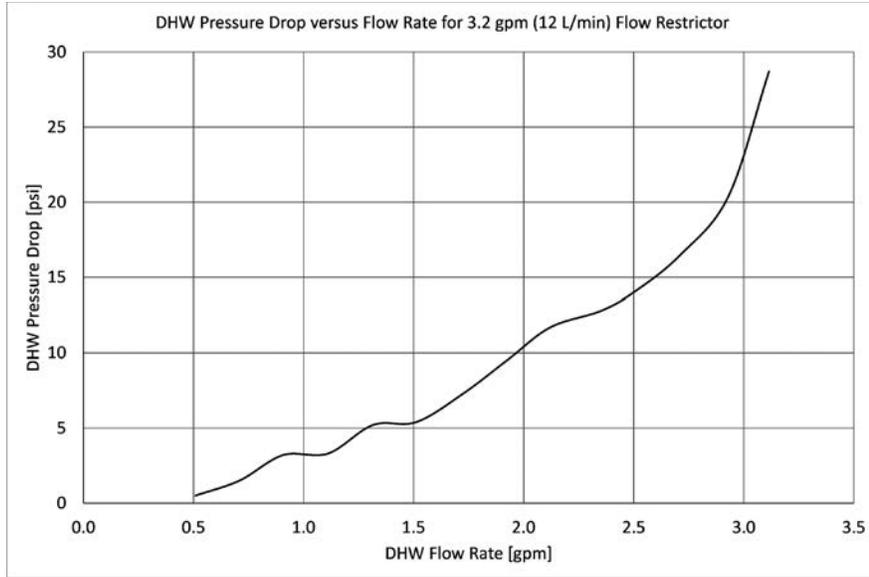
- When making the water connections, take care not to overtighten the threaded fittings. Over time this could cause bursting with hydraulic leakage and damage to things and/or persons.
- Make sure that all fittings are watertight.
- To allow for future maintenance operations without having to drain the CH and DHW circuits, it is manufacturer recommended to install field supplied manual stopcocks (shown) and/or DHW service valves (not shown).
- Refer to all local codes and jurisdictional requirements for installation of anti-scald valves, relief valves and/or domestic hot water expansion tanks.
- The two-way valve in the DHW module is closed when there is no call for domestic hot water, thus preventing reverse CH flow through the DHW loop.



### DHW Circuit:

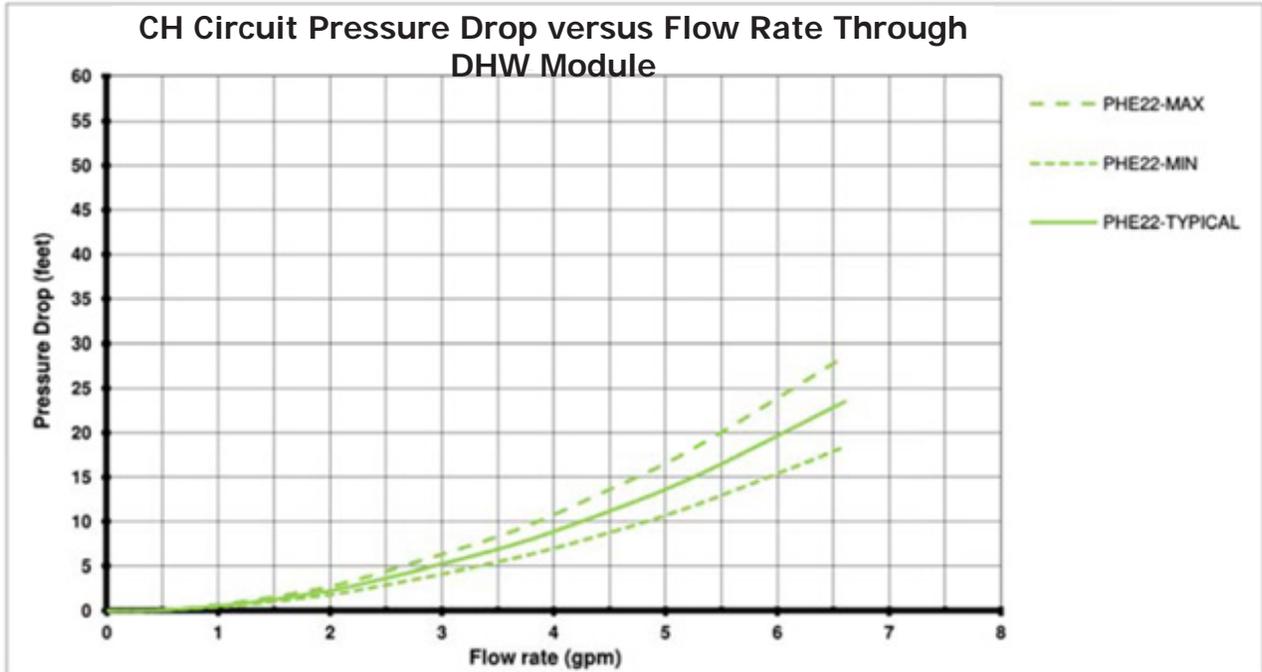
- Piping for the domestic water in and out should be adequately sized for the desired flow rates at each fixture.
- The appliance includes a 3.2 gpm flow regulator factory installed in the DHW inlet to restrict DHW flow. This prevents excessive DHW flow rates that would be beyond the capability of the appliance.
- The 3.2 gpm flow regulator is recommended for use with boilers with Heating Capacities up to 132,000 Btu per hour.
- For larger boilers with higher Heating Capacities, and thus greater ability to produce hot water, a 5.3 gpm flow regulator is furnished loose in the parts bag.
- Instructions to remove and replace the flow regulator can be found in the Maintenance Section.
- For very large boilers, the installer may choose to remove the flow regulator altogether.

Charts below show the pressure drop through the DHW circuit of the DHW module.

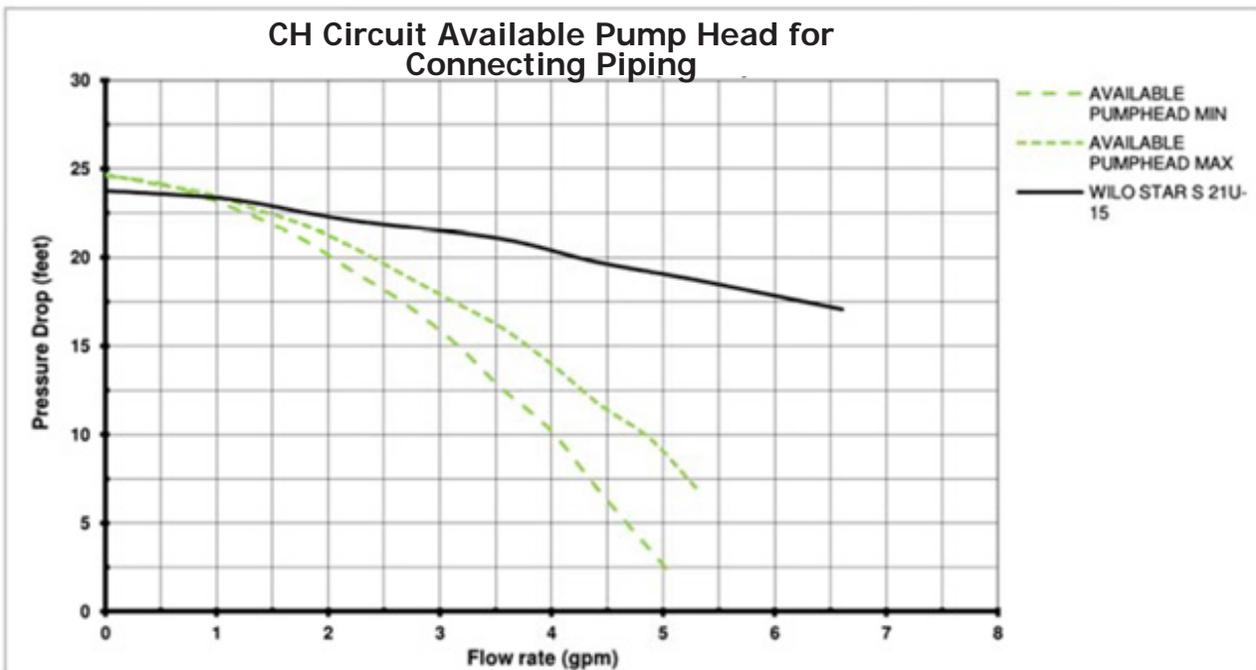


## CH Circuit

- Piping diameter shall not be reduced from the DHW module's provided 3/4" connection size.
- Piping to and from the boiler should be kept as short as possible with minimum number of restrictions such as elbows in order to maximize CH flow and DHW output.
- Increasing CH pipe diameter to boiler to 1" may be beneficial in reducing pressure drop in the connecting piping, further increasing CH flow. This could be helpful if the DHW module is far away from the boiler.
- To simplify air purging, a purge valve may be installed in the CH circuit. In order to purge air the DHW module must be powered and have domestic water flowing in order to open the two way valve and allow CH flow to purge air out of the flat plate heat exchanger.
- Charts below show the pressure drop through the CH circuit of the DHW module, and the remaining available pump head for connecting piping after accounting for that pressure drop.

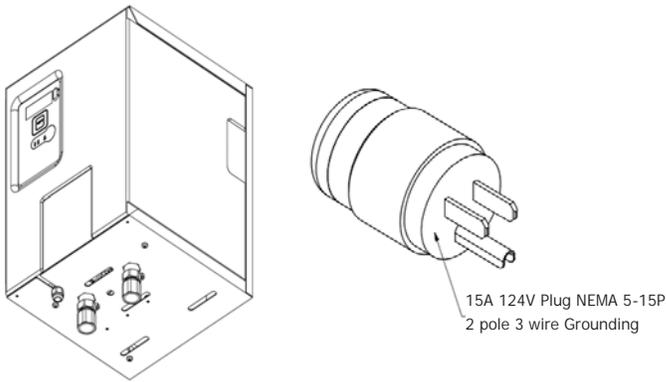


PHE22-MAX represents the pressure drop with the motor at minimum stroke tolerance.  
PHE22-MIN represents the pressure drop with the motor at maximum stroke tolerance.



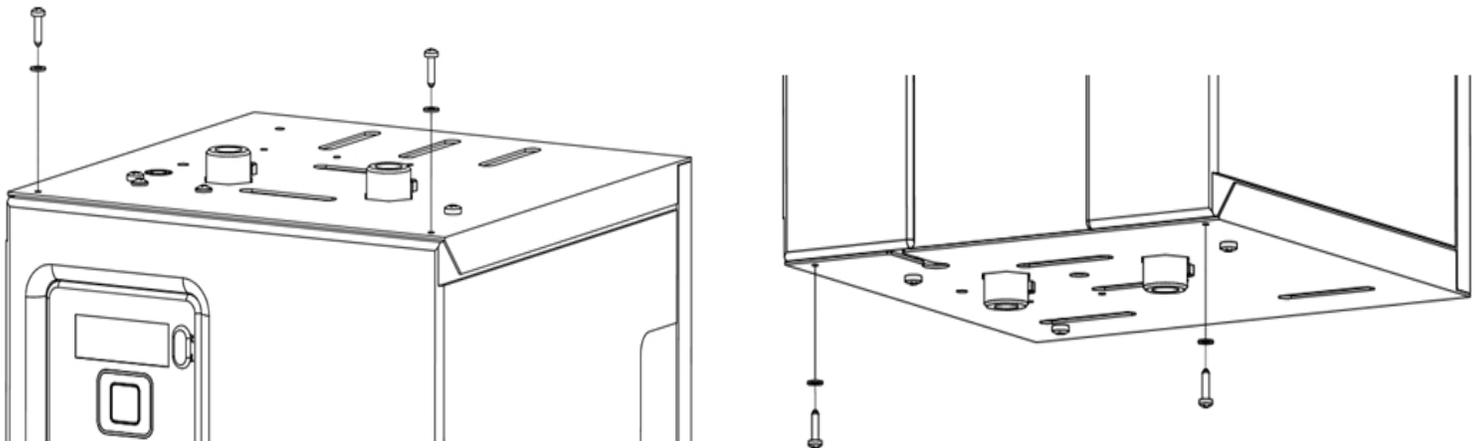
## ELECTRICAL CONNECTIONS

- Electrical wiring shall conform to the requirements of the authority having jurisdiction, or in the absence of such requirements, to the National Electrical Code ANSI/NFPA 70 (United States) or Canadian National Electrical Code CSA C22 (Canada).
- Power supply is 115 volts, 60 hertz, single phase, less than 2 amps.
- The DHW module is supplied with a power cord with a standard 15 amp 125 volt plug.
- The power cord is 31.5 inches in length.
- The DHW module may be connected to the same branch circuit as the associated boiler per National Electrical Code Section 422.12
- If any of the original wiring supplied with the DHW module is replaced, it must be replaced with like wire, size, and type of insulation or equivalent.



## START UP

Before starting the DHW module visually inspect the tightness of the water connections and the electrical wiring. On completion of the checks turn on the power to the appliance and check for any error indications. In the case of an error indication, cancel the error indicator, as described in the USER INTERFACE section of this manual. Fill boiler and CH circuit of the DHW module with water. Initiate DHW flow through the module in order to open the motorized two way valve and allow CH flow from the boiler to purge air out of the flat plate heat exchanger. Check for and repair any leaks. If desired, change the display from Fahrenheit (factory configuration) to Celsius per the USER INTERFACE instructions in this manual. Fit the insulation cover and secure with the four (4) furnished screws and washers as shown below. The screws and washers are shipped in a plastic bag taped to the underside of the insulation cover.



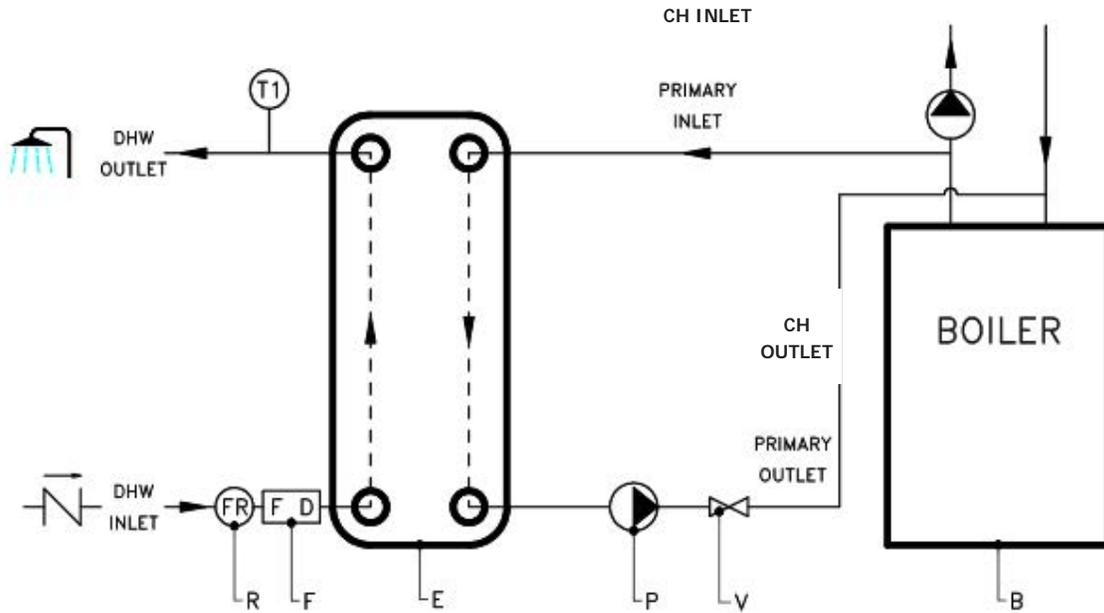
## OPERATION AND USE

The DHW Module shall be piped to a boiler that incorporates a low limit control to maintain boiler water temperature. Limit settings may be varied to meet the requirements of the installation. The low limit setting shall be at least 10°F (5.5 °C) below the high limit setting for proper operation.

The DHW module is specifically designed to control the temperature of the DHW when a DHW request is detected by the flow meter (F), which sends an electrical signal to the REC in order to switch on the pump (P) and control the two way valve (V). The desired DHW temperature setpoint is programmed by the user within the range 108-140°F (42-60°C). DHW temperature is measured by the temperature sensor T1 and it is continuously checked by the REC and kept inside the control band range +/- 5.4°F (+/- 3°C) of set point by action of the two way valve (V) .

The maximum DHW flow rate is controlled by a flow regulator (R). The DHW module is factory equipped with a 3.2 gpm (12 l/min) flow regulator installed in the DHW inlet. A 5.3 gpm (20 l/min) flow regulator is provided loose in the parts bag.

The pump P is solely controlled by the flow meter (F): pump switched on in the presence of domestic flow and switched off in the absence of domestic flow.



- |                              |                             |
|------------------------------|-----------------------------|
| E = Plate Heat Exchanger     | T1 = DHW Temperature Sensor |
| V = Motorized Two Way Valve  | F = DHW Flow Meter          |
| P = Wilo Star 21U15-130 Pump | R = DHW Flow Regulator      |
| B = Boiler                   |                             |

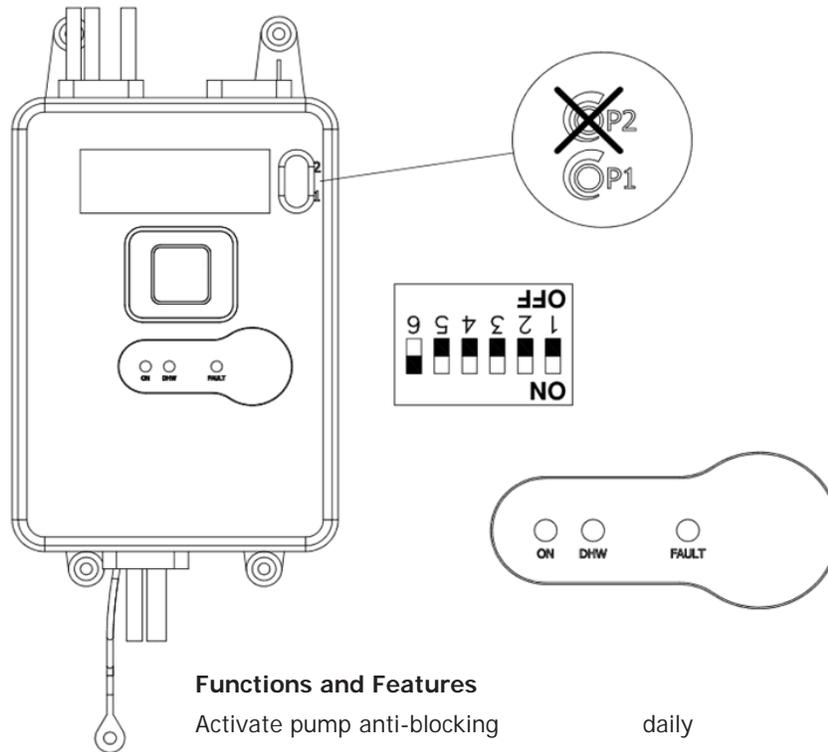
## Temperature Regulation

The set point temperature T1 of the DHW fluid at the heat exchanger outlet is factory set to the default value of 122 °F (50°C). The REC is equipped with trimmer P1, accessible by removing the rubber plug located on the front cover, with which the temperature T1 can be adjusted to a value different from the factory setting.

The set value T1 is displayed.

## Electronic Control Regulator REC

The REC controls all the functions to manage the DHW module and produce domestic hot water.



### Functions and Features

Activate pump anti-blocking	daily
Activate two way valve anti-blocking	daily
Temperature set range	108 -140°F (42 - 60°C)
Control band: T1 Temperature	± 5.4°F (± 3°C)

## Regulator automatic operations

At power up the REC checks the electrical wiring integrity and continues:

- With blocking the DHW MODULE, in the event of a temperature sensor fault.
- With resetting the two way valve.

## Resetting the two way valve

With this function, the REC makes the stepper motor perform full-stroke in backward position.

## Two Way Valve Anti-Block

With this function, the REC performs a complete valve operation cycle at 24 hour intervals.

The REC first makes the stepper motor perform a full-stroke forward and then a full-stroke backward.

## Pump anti-block

With this function the REC powers the pump for 5 seconds at 24 hour intervals.

## USER INTERFACE

The user interface integrated in the REC consists of the following devices:

- **LCD Display**

Shows programmed DHW set-point temperature T1 and fault codes. The display can be either degrees Fahrenheit (display shows three digits) or Celsius (display shows two digits). The factory setting is Fahrenheit. See Dip Switch section below (dip switch 4) to change display settings.

Fahrenheit Display

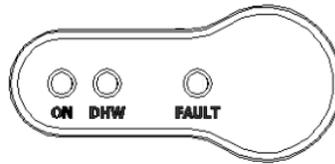


Celsius Display



- **Indicator LEDs**

LEDs on either fixed or flashing, indicate various operations or fault.



- ON** - fixed green, 115 Vac power present, Fahrenheit Display
- ON** - flashing green, 115 Vac power present, Celsius Display
- DHW** - fixed yellow, domestic hot water request
- DHW** - flashing yellow, dip switch 5 set incorrectly, see Dip Switch section below
- FAULT** - flashing red, fault code

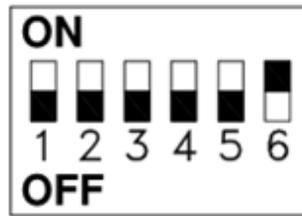
- **DHW Temperature T1 Set Point Trimmer**

This allows the temperature of the DHW fluid to be set in the range between 108-140 °F (42-60°C). Remove the rubber plug near the upper right of the REC cover. Using a small screwdriver, rotate trimmer P1 clockwise to increase T1 or counter-clockwise to decrease T1. The set point DHW temperature T1 is shown in the display. NOTE: Trimmer P2 is not used and has no effect.



- **Dip Switches**

The dip switches are located on the control board inside the REC. The factory configuration is: switches 1-5 in the OFF position and switch 6 in the ON position. Switch 4 toggles the display between Fahrenheit and Celsius. All other switches must remain in their factory configuration.



**To access the dip switches on the REC control board:**

1. Turn off power supply to DHW module.
2. Remove cover from the REC. NOTE: the LCD display in the REC cover is connected to the REC control board with a short cable. Be careful not to stretch or damage the cable.

- **Dip Switch 1-2-3**

These switches enable REC firmware and must be left in the factory configuration.

Combination OFF-OFF-OFF (code 30) is the only firmware available in the REC.

At power up the REC, after the initial operations, shows the code -5 for 1 sec and the code 30 flashing for a few seconds.

POWER CODE



FIRMWARE CODE



If a different dip switches combination is chosen, at power up the REC, after the initial operations, shows two horizontal lines "-" "-" flashing for few seconds and then the firmware fault code 79 with the fault led flashing.

- **Dip Switch 4**

Dip switch 4 enables the LCD temperature display to toggle between Fahrenheit (°F) and Celsius (°C). Dip switch 4 is factory set to the OFF position for Fahrenheit display. Set dip switch 4 to the ON position for Celsius display.

- **Dip Switch 5 FUNCTION NOT USED IN THIS MODULE**

Dip switch 5 enables a preheating function that is not applicable to this DHW module design. It will cause the pump to run periodically when there's no DHW request, wasting energy and running the pump for no reason. When this function is activated, the yellow LED flashes. If the yellow LED is flashing, restore dip switch 5 to the OFF position.

- **Dip Switch 6 FUNCTION NOT USED IN THIS MODULE**

Dip switch 6 sets the REC to receive the DHW flow signal from either a flow turbine (ON) or flow detector (OFF). Dip switch 6 must be left in the factory configuration (ON) because this DHW module uses a flow turbine. If dip switch 6 is OFF, the DHW module will not recognize a DHW request and will not work.

## Fault Codes

The FAULT led indicates the following faults

- **Temperature Sensor T1 Fault, code 6 on the LCD display**

If the T1 sensor fails it immediately interrupts the domestic hot water supply. The fault is indicated by blinking FAULT led and shown on the LCD display with the blinking code 6.

The normal operating condition is automatically enabled by restoring the correct functionality of the sensor.



- **Wrong configuration of the REC firmware, code 79 on the LCD display**

If the dip switches 1-2-3 are in the wrong position (the factory configuration is OFF-OFF-OFF) the module will not work. At power up the REC, after the initial operations, shows two horizontal lines "--" flashing for a few seconds then the firmware fault code 79 with the FAULT led flashing.

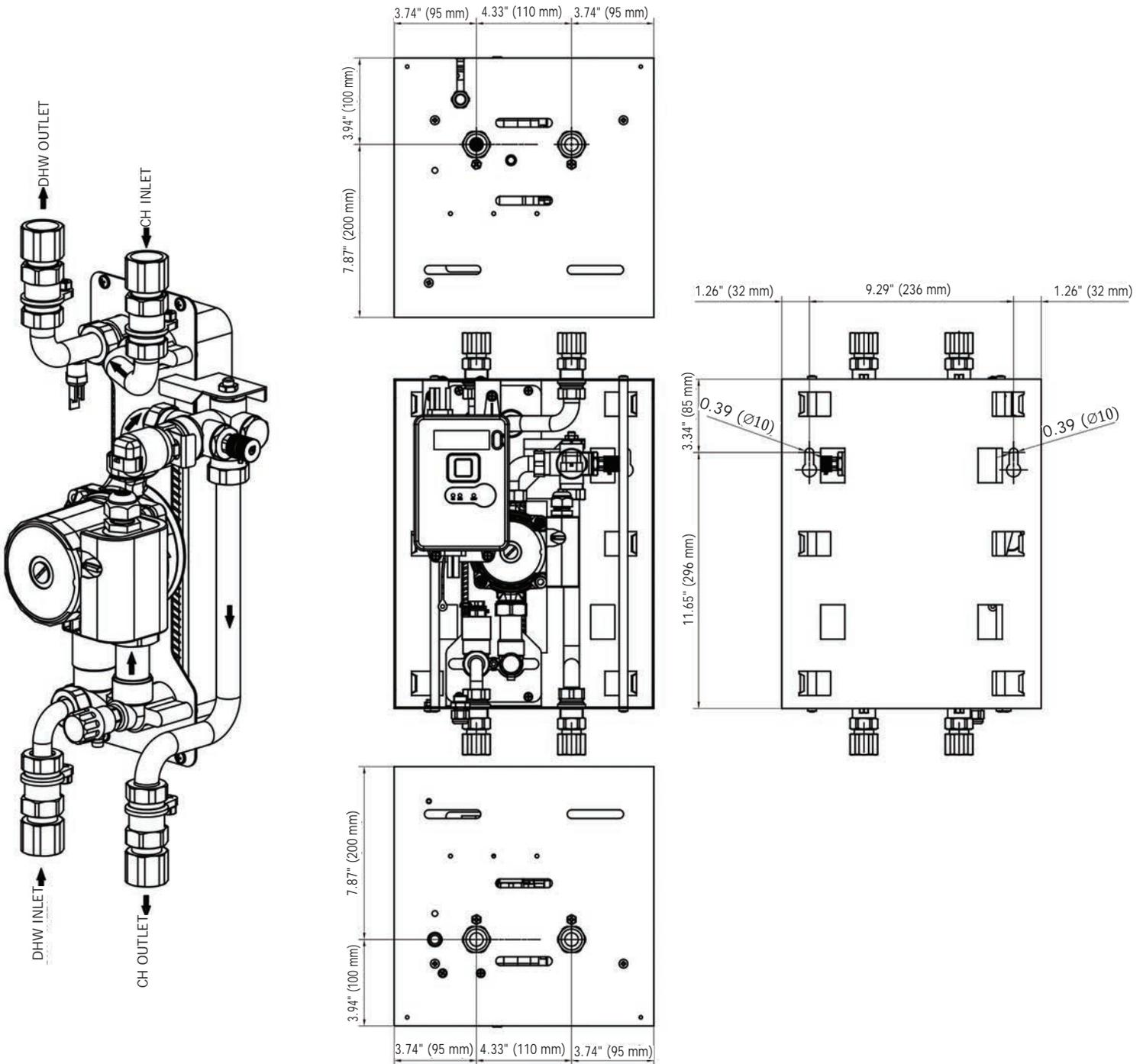
The normal operating condition is automatically enabled by restoring the correct dip switch configuration.



## Pump

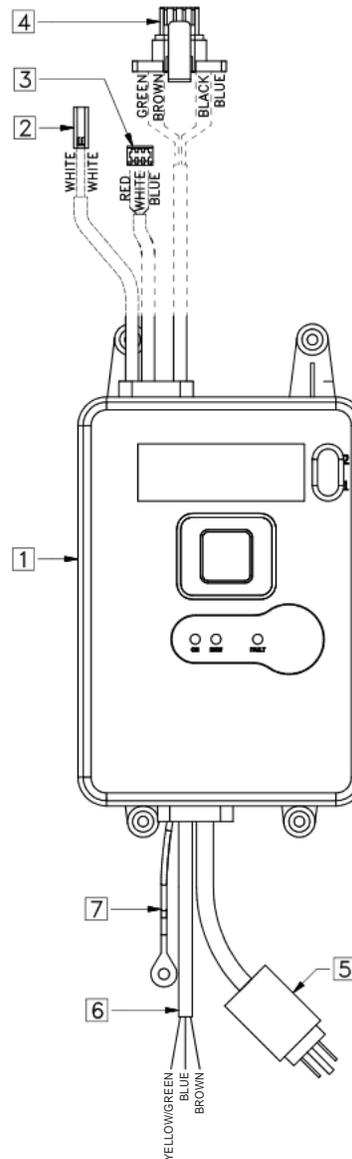
The DHW Module is equipped with a Wilo Star 21U15-130 pump, UL marked.

# MECHANICAL DRAWINGS



## INTERNAL WIRING

- 1 Electronic Regulator
- 2 Temperature Sensor
- 3 Flow Sensor
- 4 Two-Way Valve Motor
- 5 Power Supply
- 6 Pump
- 7 Earth



## MAINTENANCE

- Maintenance and troubleshooting shall be performed by qualified technical personnel.
- Regular maintenance ensures better efficiency and helps to save energy.
- Use original spare parts for efficient operation and safety of the appliance.
- Flushing and descaling of DHW side should be conducted based on domestic water quality and performance.

### **⚠ WARNING**

Burn, Scald, Electrical Shock Hazards! Some parts of the appliance can have high surface temperatures (194 °F (90 °C)) and/or be connected to the main voltage. Before carrying out any maintenance or replacing parts proceed as described below. Failure to follow the instructions listed below could result in death or serious injury.

#### **Pre-maintenance Precautions:**

- Disconnect unit from mains power supply by unplugging the unit or using the circuit breaker.
- Make sure the power supply can not be accidentally switched on during maintenance.
- Make sure all parts of the appliance are cold.
- Close the manual stopcocks and/or DHW service valves, if provided.
- Remove the insulating cover.
- Proceed by emptying the unit, avoid letting any water drip on the flow sensor, stepper motor and on the REC.

## MAINTENANCE

### Replacing the Heat Exchanger

- Remove the heat exchanger A by unscrewing the two fixing socket head screw VF.
- Proceed by replacing the heat exchanger and o-rings.
- Place the plate heat exchanger with the arrows of first corrugated plate towards the top.
- Screw 2 screws VF -torque:  $31 \pm 4.5$  inch-pounds (torque:  $3.5 \pm 0.5$  Nm).

### Two Way Valve Cartridge Replacement

- Remove clip C from the stepper motor and pull out the stepper motor M.
- Unscrew and then remove the cartridge CV.
- Insert new cartridge CV and tighten completely - torque:  $106 \pm 9$  inch-pounds ( $12 \pm 1$  Nm).
- Insert stepper motor M and insert clip C with correct orientation.

### Replacing the Stepper Motor

- Disconnect the motor cable by gently pressing the tab on the connector and pulling it out.
- Remove fixing clip C and subsequently stepping motor M.
- Position the new motor M.
- Insert clip C with correct orientation.
- Reconnect the connector.

### Replacing the Flow Meter Cartridge

- Remove flow sensor SF.
- Unscrew and remove the flow meter cartridge CF.
- Insert new flow meter cartridge CF and tighten completely - torque:  $106 \pm 9$  inch-pounds ( $12 \pm 1$  Nm).
- Insert the flow sensor SF take care to position it correctly (see figure).

### Replacing the Flow Sensor

- Remove the flow sensor SF.
- Disconnect the flow sensor cable by pulling out the Lumberg connector.
- Insert the new flow sensor SF taking care to position it correctly (see figure).
- Reconnect the cable.

### Replacing the Temperature Sensor

- Disconnect the temperature sensor cable.
- Unscrew and then remove the temperature sensor ST.
- Insert the new sensor and tighten completely - torque:  $106 \pm 9$  inch-pounds ( $12 \pm 1$  Nm).

### Cleaning the Filter

- Unscrew the 2 nuts D1 and remove the connecting pipe T1.
- Remove the filter F.
- Wash the filter F taking care to remove any deposits.
- Insert the clean filter F.
- Reconnect the pipe T1 previously removed.
- Tighten the 2 nuts D1 - torque:  $133 \pm 18$  inch-pounds ( $15 \pm 2$  Nm).

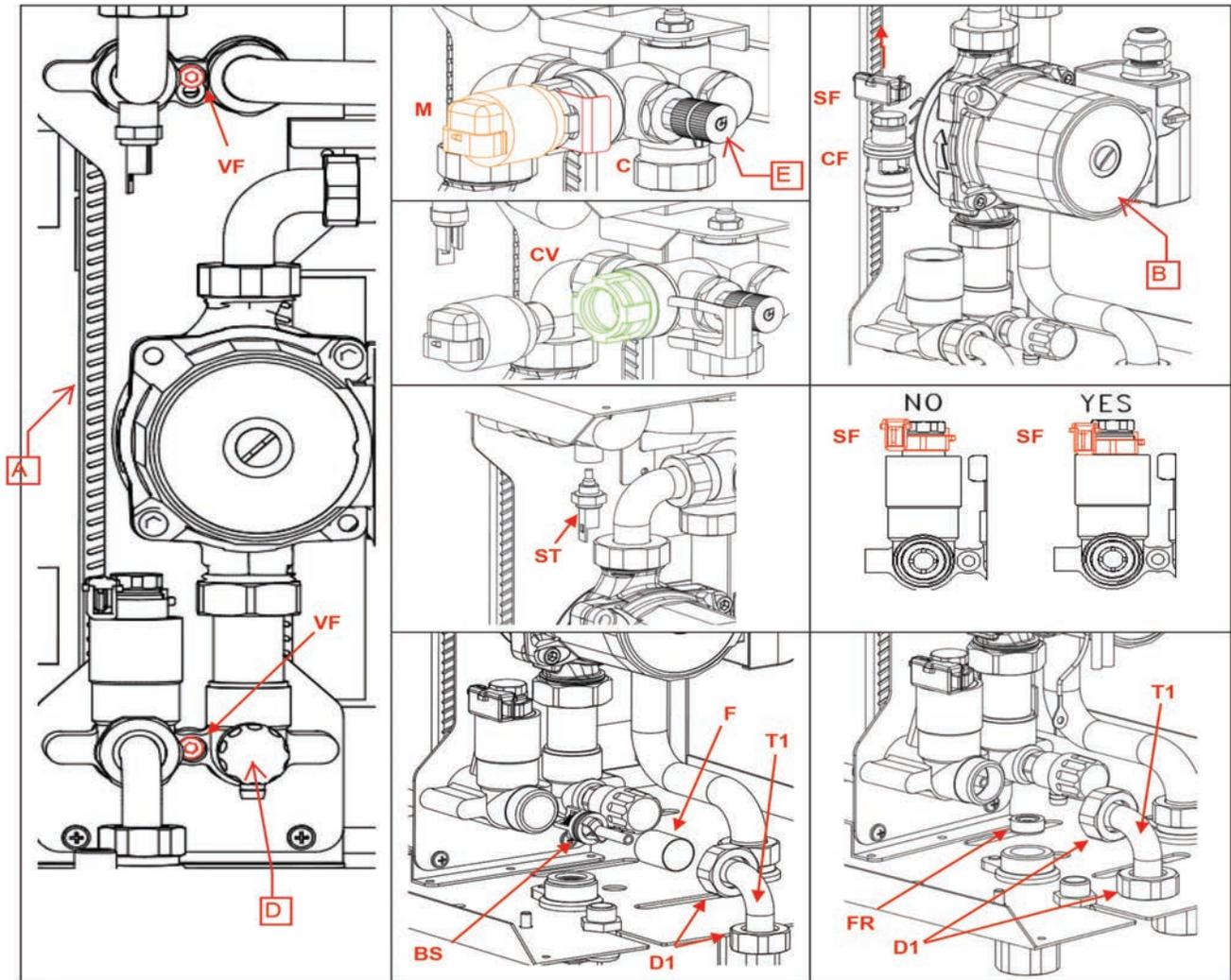
### Replacing the Filter and Domestic By-pass

- Unscrew the 2 nuts D1 and remove the connecting pipe T1.
- Remove the filter F and dispose of it properly.
- Remove flow sensor SF,
- Unscrew flow meter cartridge CF 1.5 turns.
- Remove the by-pass BS by means of the thin brass tube.
- Insert the new by-pass BS and filter F.
- Tighten flow meter cartridge CF - torque  $106 \pm 9$  inch pounds ( $12 \pm 1$  Nm).
- Insert the flow sensor SF and take care to position it correctly (see figure).
- Reconnect the pipe T1 previously removed.
- Tighten the 2 nuts D1 -torque:  $133 \pm 18$  inch-pounds ( $15 \pm 2$  Nm).

### Replacing the Flow Regulator

- Unscrew the 2 nuts D1 and remove the connecting pipe T1.
- Remove the flow regulator FR and dispose of it properly.
- Insert the new flow regulator FR
- Reconnect the pipe T1 previously removed.
- Tighten the 2 nuts D1 - torque:  $133 \pm 18$  inch-pounds ( $15 \pm 2$  Nm).

# SPARE PARTS LIST



Component	Item	Description	Part No.
Plate heat exchanger	<b>A</b>	SWEP ET8AS-22P	240012943
Plate heat exchanger screw	<b>VF</b>	SOCKET HEAD SCREW M5X16	201000156
Plate heat exchanger O-ring	*	O-RING 3.6X18.3X25.5	240012944
Pump	<b>B</b>	Wilo Star 21U-15-130	240012945
Two way valve cartridge	<b>CV</b>		240012946
Stepper motor	<b>M</b>	Sonceboz 7217R901	102000194
Motor clip	<b>C</b>		240012947
Temperature sensor	<b>ST</b>	TP01AH1WQL	240012948
Flow meter	<b>CF</b>		240012949
Flow sensor	<b>SF</b>		240012950
Electronic Control Regulator REC (Includes Wiring)	*		240012951
Sanitary By-pass	<b>BS</b>		240012952
Sanitary filter	<b>F</b>		240012953
Drain tap	<b>D</b>		240012954
Air venting tap	<b>E</b>		240012955
Flow regulators 3.2 gpm (12 l/min)	<b>FR</b>		240012956
Flow regulators 5.3 gpm (20 l/min)	<b>FR</b>		240012957
Adapter union G3/4 x 3/4" NPT	*		240012961
Gasket for adapter union, G3/4	*		240012962

\* Not shown

## TROUBLESHOOTING

Description Problem	Warnings	Possible cause of the problem	Things to try
Domestic hot water is not heated	All LEDs are off	Power supply interrupted	Restore power supply
		REC fuse blown	Replace fuse
		Faulty REC	Replace the REC
	FAULT LED flashing	Temperature sensor is disconnected	Insert connector
		Faulty temperature sensor	Replace sensor
		Incorrect REC configuration	Reset dipswitches 1-2-3 to OFF, OFF, OFF
	DHW hot water demand LED off	Flow sensor disconnected	Insert connector
		Faulty flow meter	Replace flow meter
		Cold water inlet filter clogged	Clean or replace filter
	DHW LED on	Circulator blocked	Replace circulator
		Faulty two way valve	Replace two way valve
		Faulty stepper motor	Replace stepper motor
		Stepper motor disconnected	Insert connector
		Faulty temperature sensor	Replace sensor
		Heat exchanger clogged	Descale or replace heat exchanger
Regulation temperature T1 is too low		Increase temperature T1 using trimmer P1	
CH inlet temperature too low		Increase low limit temperature setting	
CH stopcocks closed (if installed)	Open stopcocks		
Hot water flow rate insufficient	DHW LED on	Faulty two way valve	Replace two way valve
		CH stopcocks partially open (if installed)	Open stopcocks
		Cold water flow rate insufficient	Check for correct flow regulator and clogged heat exchanger
No domestic hot water flow	DHW LED off	Stopcocks closed (if installed)	Open stopcocks
		Heat exchanger completely clogged	Descale or replace heat exchanger

**ECR International  
LIMITED WARRANTY**

Effective Date – May 2020

**THIS LIMITED WARRANTY GIVES THE ORIGINAL PURCHASER ONLY SPECIFIC LEGAL RIGHTS AND YOU  
MAY ALSO HAVE OTHER LEGAL RIGHTS WHICH VARY FROM STATE-TO-STATE AND PROVINCE-TO-  
PROVINCE**

Keep this warranty certificate and the installation manual supplied with your DHW Module for future reference.

**Our Warranty**

By this warranty statement (“Limited Warranty”), ECR International, Inc. (“ECR”) issues limited warranties from the date of installation of the applicable ECR International Domestic Hot Water Module (DHW Module) to the Original Purchaser, subject to the terms and conditions stated below. As used in this Limited Warranty “Original Purchaser” shall mean, the end-user that purchased the new DHW Module directly (a) from the ECR brand dealer; or (b) in the case of a newly constructed home, from the contractor who purchased such new DHW Module directly from an ECR brand dealer or wholesaler for installation and use in the newly constructed home.

**Domestic Hot Water Module (DHW Module)**

**RESIDENTIAL 1 YEAR LIMITED WARRANTY**

**The following one (1) year limited warranty shall apply to only the Original Purchaser, at original installation site, of DHW Module in a single or two-family residential dwelling, used without interruption by the Original Purchaser at his or her residence.**

**One Year** – Limited Warranty for Residential Use (Includes Braze Plate Heat Exchanger and Component Parts)

ECR warrants its DHW Module used in residential applications to be free from defects in material and workmanship under normal usage for a period of one (1) years from the date of original installation. In the event that any part of such DHW Module found to be defective in material or workmanship during this one-year period, then ECR will repair or replace, at its option, the defective part. Labor charges to diagnose, troubleshoot, remove and install repaired or replaced parts are the responsibility of the Original Purchaser along with any freight charges.

Note: If Braze Plate Heat Exchanger or components involved is no longer available due to obsolescence or redesign, the value of the proportionate charge, if applicable, will be based on the current net price or net price of the nearest equivalent Braze Plate Heat Exchanger or components. If no equivalent Braze Plate Heat Exchanger or component is available, ECR shall have the option to allow a credit towards the purchase of a new ECR DHW Module. Such credit shall be based upon the net price of the failed Braze Plate Heat Exchanger or component.  
.....

**LIMITATIONS/EXCLUSIONS – APPLIES TO ALL  
WARRANTIES**

1. Under no circumstances will ECR be responsible for any other costs associated with rectifying the defective part,

including, without limitation, costs associated with removing and reinstalling the defective part or its replacement part, and all labor and material costs connected therewith, including, without limitation, costs associated with supplying/returning the defective part to ECR. Replacement material will be invoiced to the distributor in the usual manner and will be subjected to adjustment upon proof of defect.

2. This Limited Warranty will not be applicable if the DHW Module is (i) used or operated over its rated capacity; (ii) installed for uses other than for residential use, as specified by the applicable warranty; (iii) not maintained in accordance with ECR’s recommendation or accepted good practice as determined by industry standards; or (iv) subjected to unauthorized alteration.

3. This Limited Warranty in no way can be considered as a guarantee of workmanship of an installer or repairman connected with the installation or repair of the DHW Module or as imposing on ECR liability of any nature for unsatisfactory performance as a result of faulty workmanship in the installation or service of the DHW Module, which liability is hereby expressly disclaimed.

4. This Limited Warranty will not be applicable if the DHW Module has been damaged as a result of being improperly installed, serviced or operated, including, without limitation, operated with insufficient water; allowed to freeze; improper water conditions or subjected to flood conditions.

5. In order for this Limited Warranty to be effective (i) the DHW Module must have been assembled/installed in strict compliance with installation instructions furnished with the DHW Module by ECR; and (ii) the DHW Module must not have been damaged during shipment and installation.

6. The furnishing of replacement parts under the terms of this Limited Warranty will apply to the original warranty period and will not serve to extend such period.

7. ECR shall not be liable for any damages, defaults or delays in performance under this Limited Warranty caused by any contingency beyond its control, including, without limitation, a shortage or reduced supply of energy or raw materials, freezing, flood, fire, wind or lightning.

8. ECR is in no way liable for any damages that may result from (i) the failure of external wiring, piping, or other attachments and accessory products not integral with the DHW Module; (ii) installation, service or operation that is not in compliance with all applicable federal, state and provincial laws or regulations;

**ECR International  
LIMITED WARRANTY**

Effective Date – May 2020

**THIS LIMITED WARRANTY GIVES THE ORIGINAL PURCHASER ONLY SPECIFIC LEGAL RIGHTS AND YOU  
MAY ALSO HAVE OTHER LEGAL RIGHTS WHICH VARY FROM STATE-TO-STATE AND PROVINCE-TO-  
PROVINCE**

Keep this warranty certificate and the installation manual supplied with your DHW Module for future reference.

(iii) misapplication or the use of the DHW Module for purposes other for which it was designed; or (iv) the use of parts not supplied or designated by ECR.

9. The remedy for breach of this Limited Warranty is expressly limited to the repair or replacement of any part found to be defective under conditions of normal use, and the remedy for breach of this Limited Warranty, statutory duty or by reason of tort (including, without limitation, negligence) does not extend to liability for incidental, special or consequential damages or losses, such as loss for the use of the material, inconvenience or loss of time. The maximum liability of ECR in connection with the sale of this product shall not in any case exceed the price of the part claimed to be defective, or the price of the Module if the entire Module is claimed to be defective. ECR EXPRESSLY DISCLAIMS AND EXCLUDES ANY AND ALL LIABILITY IN TORT AND CONTRACT FOR CONSEQUENTIAL OR INCIDENTAL DAMAGES FOR BREACH OF ANY EXPRESS OR IMPLIED WARRANTY. **Please Note: Some States do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.**

10. For all sales not subject to the Magnuson-Moss Warranty Act or Provincial consumer protection legislation, as applicable, there are no implied warranties of merchantability and/or fitness for any particular purpose all of which are hereby specifically disclaimed. For all other sales, all implied warranties of merchantability and/or fitness for any particular purpose are limited in duration to the period of this Limited Warranty. This Limited Warranty is the complete and exclusive statement of warranty terms. **Please Note: Some States do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you.**

11. ECR warranties shall apply to the original purchaser at the time of the original installation, used without interruption. Warranties are non-transferable.

**MISCELLANEOUS**

The Magnuson-Moss Warranty Act applies to “consumer” sales as contrasted with “commercial” sales. A consumer sale is one to a buyer for personal, family or household purposes and not for the purpose of resale.

By “implied warranties” we mean ones the law presumes to have been given by the seller even though they are not set out in writing.

“Fitness for a particular purpose” means the seller knows the particular purpose for which the buyer requires the goods, and the buyer relies on the seller’s skill and judgment in making the purchase.

“Merchantable” means that the product is fit for the ordinary purposes for which that kind of product is used.

“Incidental” damages include expenses of inspection, obtaining substitute goods, transportation, etc.

“Consequential” damages include injury to persons or property resulting from a breach of warranty, and any loss from general or particular requirements known to us and which you cannot reasonably prevent.

If any provision of this Limited Warranty shall be determined to be illegal, unconscionable or unenforceable, all other terms and provisions hereof shall nevertheless remain effective and shall be enforced to the fullest extent permitted by law. The warranties made under this Limited Warranty are exclusive and may not be altered, enlarged or changed by a distributor, dealer, or other person whatsoever.

**PROCEDURE FOR OBTAINING WARRANTY  
SERVICE**

For prompt warranty service, notify the installer who, in turn, will notify the ECR distributor from whom such installer purchased the DHW Module. If this action does not result in warranty service, the Original Purchaser or installer should contact ECR Customer Service (see contact information below), giving full particulars in support of the claim. Alleged defective part(s) must be returned through trade channels in accordance with ECR’s procedure currently in force for handling returned goods for the purpose of inspection or determining the cause of failure. ECR will furnish the new part(s) to an authorized ECR distributor who, in turn, will furnish the part(s) to the heating contractor who installed the DHW Module.

**ECR International, Inc.**

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Ph: 315/797-1310

Customer Service Fax: 315/724-9319

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All specifications subject to change without notice.

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