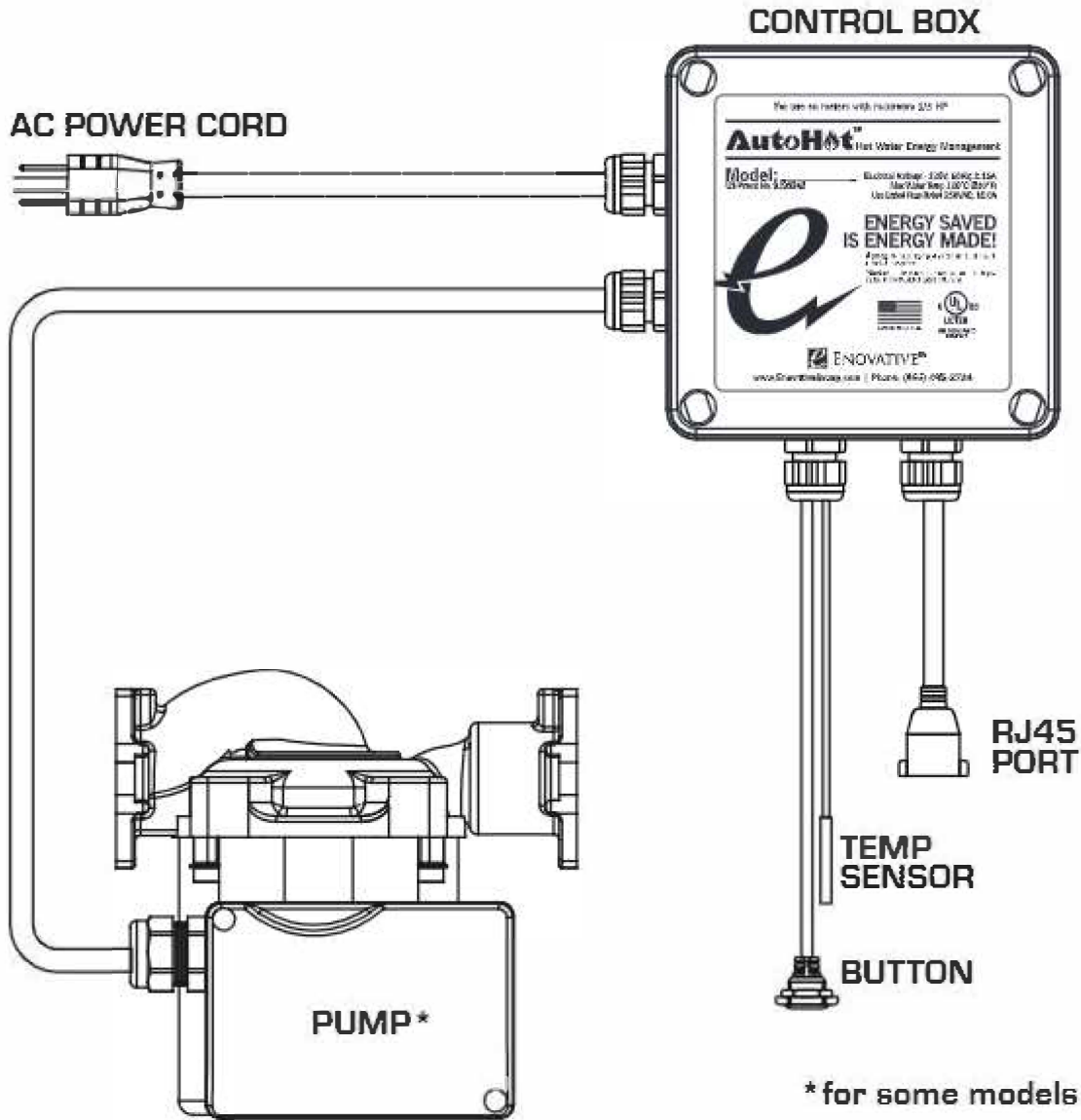




# INSTALLATION AND OPERATIONS MANUAL FOR SINGLE FAMILY RESIDENTIAL



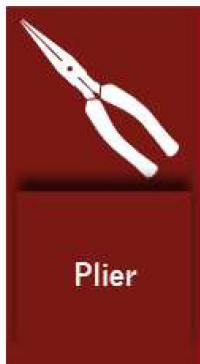
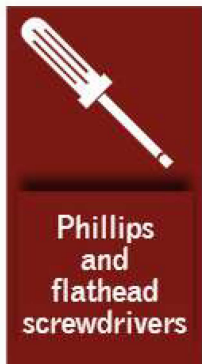
INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S  
INSTRUCTION OR WARRANTY MAY BE VOIDED

**IMPORTANT:** Operation of the pump without being plumbed into water lines may damage the pump and void the Warranty.

Parts included depends on the model:

<p>DR000A            1 - Control Box            4 - pairs of screws and wall anchors            1 - insulation tape            1 - manual            1 - hardwired push button assembly</p>	<p>DR055A            1 - Control Box            4 - pairs of screws and wall anchors            1 - insulation tape            1 - manual            1 - hardwired push button assembly            1 - 55 series pump            2 - flanges            4 - bolts and nuts</p>	<p>DR099A            1 - Control Box            4 - pairs of screws and wall anchors            1 - insulation tape            1 - manual            1 - hardwired push button assembly            1 - 99 series pump            2 - flanges            4 - bolts and nuts</p>
<p>DR150A            1 - Control Box            4 - pairs of screws and wall anchors            1 - insulation tape            1 - manual            1 - hardwired push button assembly            1 - 150 series pump            2 - flanges            4 - bolts and nuts</p>	<p>All models with -USK, also include:            -2 stainless steel flex lines            -1 tee with plug            -1 tee with threaded temp sensor assembly</p>	<p><b>**Activation Accessories</b>             All residential systems come with 1 hardwired push button. Any other activation accessories are purchased separately and have instructions on how to connect with the packaging.</p>

**Tools you need:**



## Installation Considerations

**Figure 1: Pump on a return line**



For return line installations, all pumps are flanged (where they mount onto the pipe), please order flanges if you don't already have them.

**Best Location for the Enovative On-Demand Recirculation System:** For those using standard plumbing without a return line, typically, this would be at the fixture farthest away from the water heater, generally the kitchen or master bathroom. If the hot water supply runs in two different directions from the water heater, you may need more than one On-Demand Recirculation System.

For those with a return line (see figure 1), the pump and controller will be installed near the water heater. Please see page 7 for instructions on where and how to install, and disregard steps 3 through 7 that involve installing the tees and flex lines under the furthest sink.

**Electrical Supply:** A 110V electrical supply outlet is required to power the unit. If an outlet is not available, install a 110V outlet in accordance with all local electrical codes.

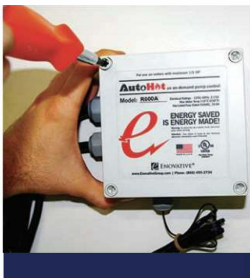
**Caution:** Do not plug in the On-Demand Recirculation System until all plumbing and wiring connections are completed and the water supply is turned on. Running the circulating pump without water may damage internal components and void the warranty.

**Pump Position:** The pump should always be installed in a horizontal position (as shown in Figures 1 and 2) with a capacitor box facing up toward the sink. Be sure the arrow on the pump casing is pointing from left to right (hot water to cold water side) before connecting the flex lines. Note: T's and flex lines supplied by Enovative provide maximum flow and performance. Alternative plumbing parts may restrict flow and delay hot water to fixtures.

### Mount the AutoHot Control Box

AutoHot® can be mounted to a nearby surface using screws. Unscrew lid (avoid power tools as they may strip the screws). Use the same holes as the lid screws to mount the box (make sure the wall screw head fits in the hole, and make sure to have a drill that is long and skinny enough to go all the way in. Drill into a wall.

**Important:** Make sure the location where to mount the box is reachable for all the sensors, cables, and power.



## Installation Under a Sink:



**Note about tees supplied in models that use the -USK accessories to install under the sink.** The two custom adapters "T" are designed to simplify the installation to 1/2" copper hot and cold supply lines. If there is plumbing other than as shown in these instructions, additional fittings may be required. Consult a plumbing professional or call us.

**Figure 2: Pump installed under the sink with the -USK Kit**



For homes without a return line

**Figure 3: Shutoff Water and Remove Angles Stops**



**Figure 4: Install T's and Re-attach Angle Stops**



**Figure 5: Tighten Flange to Pump with Bolts**



**Figure 6: Install Flex Line to T**



**Figure 7: Install Flex Line to Flange**



1. Turn off the house water supply at the main shut-off valve.

2. Open hot and cold faucets at the fixture chosen for installation. This will relieve water pressure from the hot and cold water lines.

3. Remove the hot and cold shut-off valve angle stops from the 1/2" copper pipes located below the sink (see figure 3). Be sure to use a catch basin to drain water from hot and cold lines.

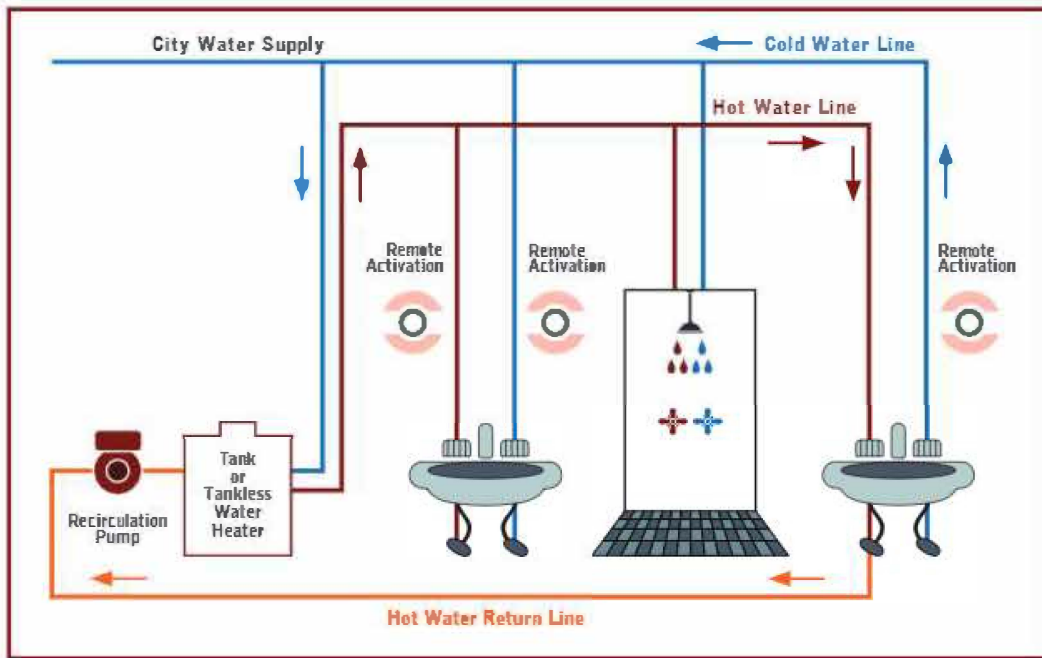
**Warning:** To prevent scalding, use caution when removing valves on hot water lines. For ease of installation, leave the existing compression ring and nut from the angle stops on the hot and cold water lines.

4. The T with the wire coming out of it has a temperature sensor, this T should generally be installed on the hot side which is normally on the left. Remove the compression ring and nut from the adapter tees provided and slide on to the opposite straight copper end. Attach the existing nut and ring to the threaded end of the tee and tighten firmly (**see figure 4**).

5. Connect the shut-off valves to the new compression ring and nut and tighten firmly (**see figure 4**).

6. Assemble shut-off flanges to pump as shown in Figure 5 and tighten firmly. Attach the stainless steel flex lines to the 3/4" threaded connection on the tees and the 3/4" threaded connections on the pump shut-off flanges (see figure 6 and 7).

## Installation on a Return Line (Standard Plumbing)



When installing on a dedicated return line (see figure 1 for an example), an -USK under sink kit is not needed. This assumes the house has a return pipe, which usually means there is an existing recirculation pump. For standard plumbing, install the pump near the water heater between flanges. If the pump is already available, flanges may be already there, otherwise, there might be a need to order plumbing parts that are readily available at any local plumbing supplier to connect the piping to the flanges.

Once the flanges are in place, bolt the pump in between the flanges, and make sure to insert the O-rings or gaskets in between the pump and the flanges to create a watertight seal.

Make sure to relieve any air from the system and so that the pump can move water properly and avoid pump damage. Damage from air is not covered under warranty.

Note: In this situation, the system is not near the sink. Another option is to order wireless push buttons and motion sensors that would be placed in each bathroom to remotely activate the pump.

The placement of the temperature sensors should be as follows:

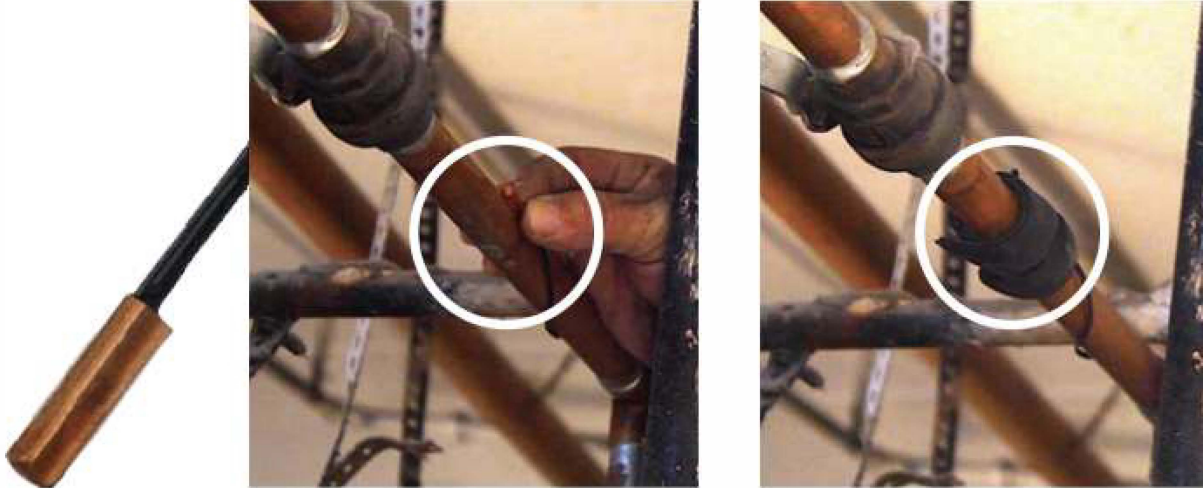
**T1 Placement-** On the return line as far upstream of the pump as the wire length and available return line permit.

This sensor is important to the operation of the pump control, as the lockout temp determines when the pump should and shouldn't run.

\*T2 and T3 are for commercial systems that are not part of the single-family residential model.



**Attach T1 Temperature Sensor:** Use the included insulation tape to attach the temperature sensor, concave side towards the pipe. Zip ties will secure them into place.



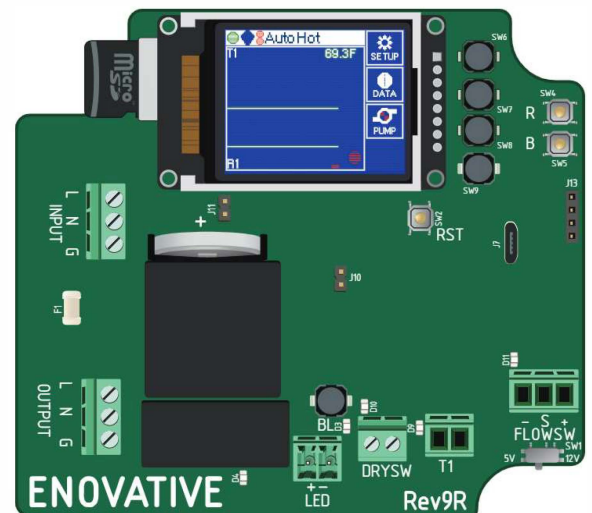
**HB-S-13A**  
(Hardwired Push Button)

### Installing the On-Demand Hardwired Pushbutton (starter button)

The manual starter button is a unique feature of the On-Demand Recirculation System. The "on-demand" start to the circulation pump maximizes energy savings and controls operation only when there is a demand for hot water as compared to automatic timer-controlled systems.



1. Drill a 5/8" hole into the desired location, typically the side or front of a vanity cabinet.
2. Insert the wire from the button through the front side of the hole and connect it to the controller to the port labeled "DRYSW". To get the wire into the control box through the cable gland. Loosen the cable gland, remove the green connector from the end of the wire, insert the wire through the cable gland, reattach the green connector, tighten the cable gland, and connect the green connector to the DRYSW port.
3. Firmly insert the button into the drilled hole.



### COMPLETING THE INSTALLATION

Ensure all wires are connected and organized. The control box should be plugged into an outlet, the temperature sensor is plugged into T1, and the activator is plugged into DRYSW or RJ45 port.

Turn on the water supply at the main. Check the system carefully for possible leaks. If it occurs, check all compression and threaded connections and tighten firmly. Open hot and cold fixtures for one to two minutes to flush the system completely.

Make sure the T1 led is off. Create an activation signal (press BL button, activate button, or activation accessory), and see that the pump turns on (Relay 1 LED turns on D4), and turns off once Lockout is met (T1 LED turns on, D9).

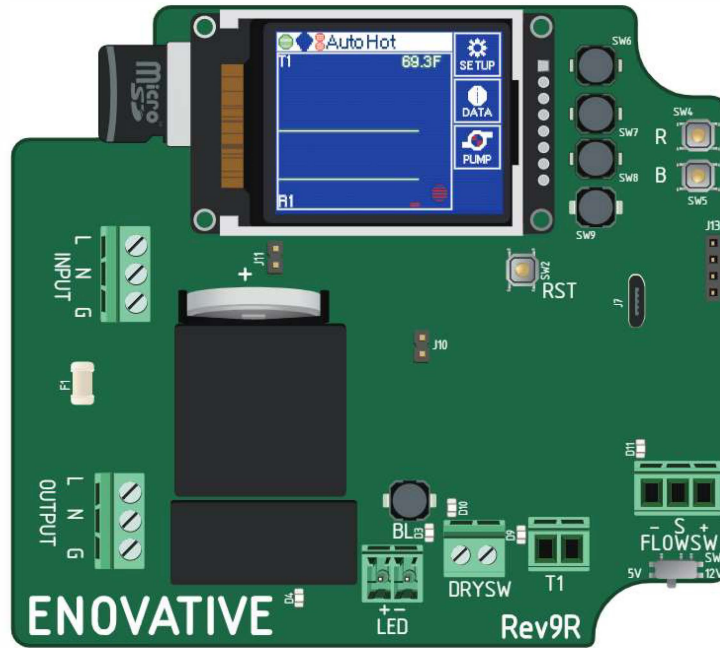
Check hot water at the fixture for the desired temperature. If hot water temperature is not satisfactory, refer to the Troubleshooting checklist section.

## **TROUBLESHOOTING**

<b>PROBLEM</b>	<b>POSSIBLE CAUSE</b>	<b>REMEDY</b>
1. The pump does not run when the push button is pressed.	A. No Power at electrical outlet B. The controller is plugged into an electrical outlet controlled by a wall switch, (such as the outlet under many kitchen sinks that controls the garbage disposal)	<ul style="list-style-type: none"> <li>● Plug the controller into a "hot" outlet</li> </ul>
	C. Power cord is not secured to pump D. Wire to push button is not connected well	<ul style="list-style-type: none"> <li>● Shut off power, then make sure wires have good contact</li> </ul>
	E. The temperature setting is already sensing "hot" water so the pump is not being activated	<ul style="list-style-type: none"> <li>● Call 1-866-495-2734 to reset sensitivity setting</li> </ul>
2. The water is not hot enough	A. The water temperature sensor is loose or dislodged A. B. The temperature sensitivity setting now in place is too low, so the pump is not shutting down soon enough	<ul style="list-style-type: none"> <li>● Check the arrows on the pump casing to make sure they point in the correct direction</li> <li>● Check the piping for obstruction</li> </ul>
3. There is hot water at the cold water tap	A. The water temperature sensor is loose or dislodged B. The temperature sensitivity setting now in place is too low, so the pump is not shutting down soon enough	<ul style="list-style-type: none"> <li>● Check the connection of the water temperature sensor to make sure it is firmly attached to the plug and casing</li> <li>● Call 1-866-495-2734 to reset sensitivity setting</li> </ul>
4. Water is not hot enough when pump shuts down	A. The temperature sensitivity setting now in place is too high, and the pump is turning itself off too soon	<ul style="list-style-type: none"> <li>● Call 1-866-495-2734 to reset sensitivity setting</li> </ul>
5. There is hot water in the cold water lines only	A. The pump is installed backwards	<ul style="list-style-type: none"> <li>● Reinstall the pump correctly</li> </ul>

## CONTROLLER OPERATIONS

**Onboard LED status lights** - There are LED indicators on the board placed next to the relevant component to indicate status. See table for list of LED indicators.



LED ID	Location	Description
D4	By Relay	<b>On</b> = relay 1 on, which controls pump, meaning pump should be on
D3	By LED port	<b>On</b> = T1 is sensing the lockout temp (or within deadband (2-5F)), and it won't allow pump on (unless in Timer or constant mode), or will turn off pump. <b>Off</b> = below lockout temp and can turn on if there is an activation signal or in Thermo mode. Also indicates the LED port is energized, which means the LED on the lighted button should be on.
D10	By DRYSW	No function
D9	T1 port	<b>On</b> = T1 is sensing the lockout temp (or within deadband (2-5F)), and it won't allow pump on (unless in Timer or constant mode), or will turn off pump. <b>Off</b> = below lockout temp and can turn on if there is a activation signal or in Thermo mode
D11	FLOWSW	<b>On</b> = signal being received on the RJ45 activator port means an activator is connected and signaling the control box to turn on, <b>UNLESS</b> the temperature is locked out preventing the pump from turning on. See LED D3, D9.



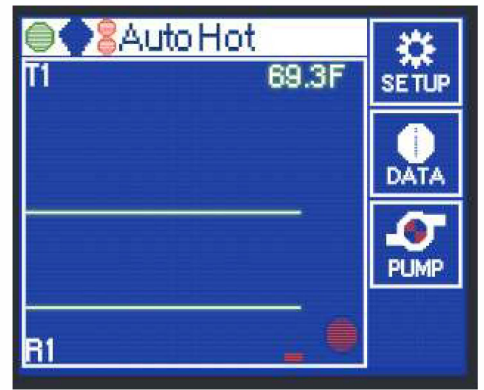
## LCD SETTINGS

**Home screen:** The screen blinks every second, that's normal.

**Large circle** - Indicates the connection between the Mainboard and the LCD screen. Should be green and may indicate an issue if it stays red.

**Diamond** - Indicates signal strength to a wifi connection, black/empty means no Wi-Fi connection, and a full symbol (no black) indicates a strong Wi-Fi signal.

**Snowman** - indicates the connection to the server. 2 red dots indicate no connection and 2 green dots indicate the controller is connected and reporting data to the server for display in the web portal.



### Menu icons

**Setup** - gives the id, firmware version, WiFi network name, mainboard model, ability to send and fetch settings between controller and web portal

**Data** - shows pump runtime totalizer and reset for totalizer

**Pump** - pump control settings such as mode, lockout, Delta, interval

**T1/R1** - The top right shows the current temperature of T1. The yellow line is a graph of the lockout temperature setting. The green line represents T1 temperature as a line graph over time. The bottom red line indicates whether R1 (relay 1, used for return pump actuation) has been running as a line graph over time. The circle is black if the R1 pump is not currently running and red if the controller is actuating R1 to turn on the pump meaning the pump is or should be running.

**Setup Screen: Fetch Settings** - Hold down the button for fetch settings until the black bar beneath is completely blue and it will take any settings saved in the web portal, and save them to this controller. This function also happens every 20 minutes automatically. Only applies to controllers connected to the web portal.

**Send Settings** - Hold down the button for send settings until the black bar beneath is completely blue and it will take the settings currently on the controller and send and save them to the web portal. If this is not done while changing settings at the controller, the settings will revert the next time the controller automatically fetches settings from the server, every 20 minutes. Only applies to controllers connected to the web portal.



**Board model / firmware** - displays the mainboard model and firmware version.

**ID** - displays the ID for this controller.

**LCD firmware** - displays the firmware version of the LCD

**Net** - displays the Wi-Fi network name that the controller is trying to connect to. Only applies to controllers connected to the web portal. Only applies to controllers connected to the web portal.

**Data Screen:** Runtime is the runtime of the relay, which should directly correspond to the runtime of the pump. It counts all the time since the last reset. To reset, hold down the button next to the reset icon until the bar is full, and the runtime should reset to 0 hours of runtime.

**Pump Settings Screen:** To navigate this screen, the work colored in red, indicates the setting that is selected for modification. Pressing the up and down buttons moves the setting up or down, or left or right. Press the next button to highlight in red the next setting that wished to be changed. The settings only are submitted upon hitting the back button. If the web portal is connected, make sure to send the settings to the server so they do not get automatically overwritten because a web-connected controller reads settings from the web portal every 20 minutes, the local settings should be sent, to sync them up so it doesn't change.

**Mode (default: Demand)** - the mode selected in yellow will be the mode select to run. Press the up and down buttons to cycle through the options. See table below for the meaning of the different modes.



Pump Modes	
<b>Demand</b>	This is full demand mode, and most energy efficient. Pump turns on with demand, if lockout temp is not met, and turns off with lockout temp being met or based on interval time being met.
<b>Thermo</b>	This only looks at meeting the target temp of the lockout. It makes a constant demand signal, so that the pump turns on when T1 has fallen below lockout temp by the deadband (2 to 5 degrees), and turns off once lockout setpoint temperature is met.
<b>Timer</b>	This only looks at the demand (activation) signal, it turns on based on an activation signal, and only turns off after the demand signal is gone, plus the interval time. Example: flow sensor sensing flow for 10 minutes, and interval set to 60 seconds, the pump will run for 10 minutes, then an additional 60 seconds, and then turn off.
<b>Constant</b>	This runs the pump 24/7, does not save any energy, but is water efficient and minimizes hot water issues.

**Lockout (Default: 115F)** - is the target temperature for T1, at which point the pump is unable to turn on, or if running, stops running. This only applies to Demand, and Thermo modes, because constant and timer modes ignore temperature in general.

**Delta (Default 6F)** - the temperature rise needed on a return line from T1 needed to turn off the pump. (mostly ignored in commercial/multifamily/houses with return lines)

**Interval (Default 5 min)** - the amount of time before the pump turns off even if the lockout is not met. E.g. a 5-minute interval means even if T1 is not meeting the lockout if it runs for 5 minutes without an activation signal it will turn off.

# AUTOHOT<sup>®</sup> LIMITED WARRANTY

THIS WARRANTY IS APPLICABLE TO THE ORIGINAL OWNER ONLY in accordance with the warranty terms and conditions specified below.

The warrantor will furnish the ORIGINAL OWNER, 1) a replacement AutoHot of identical model or current equivalent model if a component inside the AutoHot control box fails and, 2) a replacement part for any external component part which fails.

THE REPLACEMENT AUTOHOT OR PART WILL BE WARRANTED FOR ONLY THE UNEXPIRED PORTION OF THE ORIGINAL WARRANTY. The warranty period will be determined by the original date of purchase of the AutoHot, or in the absence of a Bill of Sale verifying said date, from the date of manufacture indicated on the rating plate affixed to the AutoHot enclosure. This warranty is not transferable and applies to models listed below:

ITEM	WARRANTY PERIOD
Controller (the control box only, not anything attached to it)	5 years
Pumps (pumps included with the AutoHot)	18 months or OEM warranty length, whichever is greater
Activators/Accessories (activators and accessories included with AutoHot, or sold by Enovative Group, Inc.)	1 year

## CONDITIONS AND EXCEPTIONS

This warranty shall apply only when the AutoHot is installed and operated in accordance with 1) all local fire codes, electrical codes, and plumbing codes, or other ordinances and regulations, 2) the printed instructions provided with it, 3) good industry practices, and 4) proper safety practices.

This warranty shall apply only when the AutoHot is:

- owned by the original purchaser;
- installed for indoor operation only, or if installed for outdoor operation, installed correctly;
- used in a non-corrosive and non-contaminated atmosphere;
- used with factory approved accessories installed;
- in its original installation location;
- in the United States, its territories or possessions, and Canada;
- Has relays sized in accordance with proper sizing techniques for the controlled pump;
- bearing a rating plate which has not been altered, defaced or removed except as required by the warrantor;
- installed with no attempted, nor actual modification or alteration of the AutoHot's design in any way, including but not limited to, the attachment of non-company approved appliances or equipment, including any additional aftermarket equipment introduced into the control, monitoring, or electrical pathways.

Any accident to the AutoHot or any part thereof (including freezing, fire, floods, or lightning), any misuse, abuse or alteration of it, any operation of it in a modified form, or any damage caused by attempts to repair the AutoHot will void

this warranty. This warranty does not apply to a Commercial AutoHot used in a residential setting, nor does it cover a Residential AutoHot used in a Commercial Setting, without prior written approval from warrantor.

This warranty gives you specific legal rights, and you may have other rights which vary under the laws of each state. If any provision of this warranty is prohibited or invalid under applicable state law, that provision shall be ineffective to the extent of the prohibition or invalidity without invalidating the remainder of the affected provision or the other provisions of this warranty.

## SERVICE AND LABOR RESPONSIBILITY

UNDER THIS LIMITED WARRANTY, THE WARRANTOR WILL PROVIDE ONLY A REPLACEMENT AUTOHOT OR PART THEREOF. THE OWNER IS RESPONSIBLE FOR ALL OTHER COSTS. Such costs may include but are not limited to:

- A. Labor charges for service, removal, or reinstallation of AutoHot or part thereof.
- B. Shipping and delivery charges for forwarding the AutoHot or replacement part from the nearest distributor and returning the claimed defective AutoHot or part to such distributor.
- C. All costs necessary or incidental for handling and administrative charges, and for any materials and/or permits required for installation of the replacement AutoHot or part.

## LIMITATION ON IMPLIED WARRANTIES

Implied warranties, including any warranty of merchantability imposed on the sale of this AutoHot under state law are limited to one year duration for the heater or any of its parts. Some states do not allow limitations on how long an implied warranty lasts, so the above limitations may not apply to you.

**CLAIM PROCEDURE**

Any claim under this warranty should be initiated with the dealer who sold the AutoHot, or with any other dealer handling the warrantor's products. If this is not practical, the owner should contact: Enovative Group, Inc., 340 S Lemon Ave Suite 5425, Walnut, CA 91789. Phone: 1.866.495.2734 or visit our website: [www.autohotusa.com](http://www.autohotusa.com).

Replacement Parts may be ordered through authorized servicers or distributors. Refer to your local Yellow Pages for where to call or contact AutoHot Parts Fulfillment, 340 S Lemon Ave Suite 5425, Walnut, CA 91789. Phone: 1.866.495.2734 or visit our website: [www.autohotusa.com](http://www.autohotusa.com).

The warrantor will only honor replacement with identical or similar AutoHot or parts thereof which are manufactured or distributed by the warrantor.

Dealer replacements are made subject to in-warranty validation by warrantor.

PROOF OF PURCHASE AND PROOF OF INSTALLATION DATE ARE REQUIRED TO SUPPORT WARRANTY CLAIM FROM ORIGINAL OWNER. THIS FORM DOES NOT CONSTITUTE PROOF OF PURCHASE OR PROOF OF INSTALLATION.

**DISCLAIMERS**

NO EXPRESSED WARRANTY HAS BEEN OR WILL BE MADE ON BEHALF OF THE WARRANTOR WITH RESPECT TO THE MERCHANTABILITY OF THE HEATER OR THE INSTALLATION, OPERATION, REPAIR OR REPLACEMENT OF THE HEATER OR PARTS. THE WARRANTOR SHALL NOT BE RESPONSIBLE FOR WATER DAMAGE, LOSS OF USE OF THE UNIT, INCONVENIENCE, LOSS OR DAMAGE TO PERSONAL PROPERTY, OR OTHER CONSEQUENTIAL DAMAGE. THE WARRANTOR SHALL NOT BE LIABLE BY VIRTUE OF THIS WARRANTY OR OTHERWISE FOR DAMAGE TO ANY PERSONS OR PROPERTY, WHETHER DIRECT OR INDIRECT, AND WHETHER ARISING IN CONTRACT OR IN TORT.

Should governmental regulations or industry standards prohibit the Manufacturer from furnishing a comparable model replacement under this warranty, the Owner will be furnished with the closest comparable model meeting the then current governmental regulations and industry standards. A supplementary fee may be assessed to cover the additional cost associated with the changes made to meet applicable regulations and standards.

**IMPORTANT INFORMATION**

Model Number	
Serial Number	
Date Installed	
Installer Company Name	
Installer Address	
Installer Phone Number	
Installer License Number	
Recirculation Pump Model	
Recirculation Pump Serial Number	
Water Heater Model	
Water Heater Serial Number	