



GIRARD PRODUCTS. LLC.

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# Service Manual

**Model: GSWH-1**  
**Model: GSWH-1M**

## LP Gas Tankless Water Heater

**For Recreation Vehicles**

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*This manual is intended solely for use by trained personnel who perform service or repairs on the Model GSWH-1 and GSWH-1M Water Heater on behalf of a Girard Products LLC Authorized Service Center.*

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For Recreation  
Model: GSWH-1 Patent Pending  
Model: GSWH-1M Patent Pending



**CSA Approved**

Girard Products LLC, 1361 Calle Avanzado, San Clemente CA 92673 U.S.A  
Service Manual Part No. 1GWHM9405 - 10/1/2014

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## INTRODUCTION (Must Read!)

The original Girard Water Heater was Model Number 1GWH/1GWHAF. AF indicates (Winter Use Device).

The front portion of this manual will concentrate on the models listed above.

In August 2012 Girard redesigned and replaced the original product and assigned the Model Number GSWH-1M, referred to as the M-Series. The (Winter Use Device) is integrated into all of these water heaters, so there is only one model number instead of two, as before.

The basic operation of both water heaters is the same. Most diagnostic and troubleshooting will be similar. The primary difference will be seen in the way the burners are adjusted from Low to High and the variation of the BTU ratings between the two. Since different methods are used to adjust the BTUs, (the 1-Series uses a switch and the M-Series uses a dial), the components that make this possible are different.

During our frequent seminars within the US and Canada, we compare the Girard Water Heater to an RV furnace, since most technicians are familiar with the furnaces. If you are familiar with the operation and diagnosis of an RV furnace, you will also be familiar with a Girard water heater. While a furnace heats air, we are heating water. As with a furnace, the water heater installation requires certain parameters for its proper operation. These will be discussed later in the manual.

The primary components in the Girard Water Heater are:

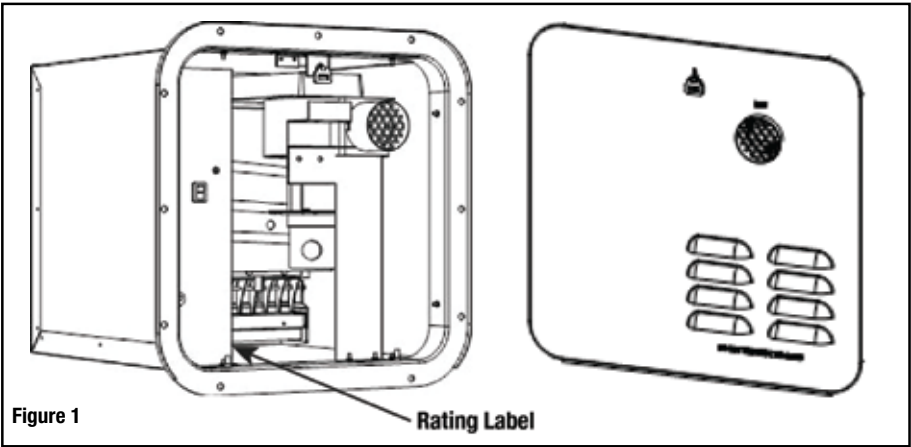
1. 12 volt motor with blower wheel
2. DSI motor control board
3. Electrode
4. Burners
5. Safety switches, ECO, high limit
6. Sail switch
7. Standard 12 volt gas solenoid valve
8. Pressure relief valve
9. Relay

There are a few other components that will be discussed in this manual, but as you can see, most are identical or similar to those found in the furnace.

If you are not familiar with the Girard Tankless Water Heater, please read this manual in advance of attempting any repairs.

**PRODUCT IDENTIFICATION - GSWH-1**

**Water Heater Part Number:** 1GWH / 1GWHAF (w/ Winter Use Device)  
**Door Part Number:** 1GWDH, 1GWDHA6, 1GWDHAS10  
**Serial Number Location:** Rating Label affixed on the inside right of the Controls Housing.



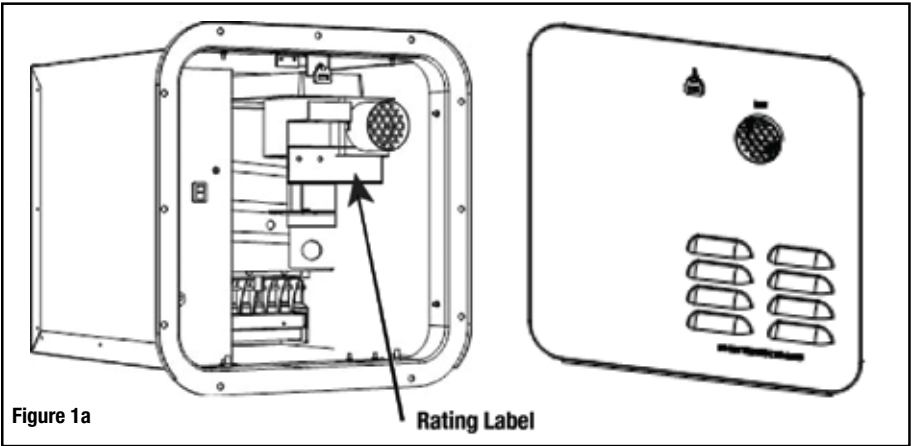
**Specifications**

The main performance specifications of the Model GSWH-1 are:

BTU/HR	27,000 – 34,000
Fuel	Propane (LP Gas)
Inlet Pressure	10.5" WCI Min to 14" WCI Max
Manifold Pressure	8" – 10" WCI
Power Input	12VDC < 3 amp
Water Operating Pressure	125 PSI Max
Max Water Temperature	122 ° F
Dimension	Width: 12.5" - Height: 12.5" - Depth 15.5"
Shipping Weight	22 lbs

**PRODUCT IDENTIFICATION - GSWH-1M**

**Water Heater Part Number:** 1GWH-1M  
**Door Part Number:** 1GWHD, 1GWHDA6, 1GWHDAS10  
**Serial Number Location:** Rating Label affixed to Blower Assembly Housing



**Specifications**

The main performance specifications of the Model GSWH-1M are:

BTU/HR	18,000 – 36,000
Fuel	Propane (LP Gas)
Inlet Pressure	10.5" WCI Min to 14" WCI Max
Manifold Pressure	8" – 10" WCI
Power Input	12VDC < 3 amp
Water Operating Pressure	125 PSI Max
Max Water Temperature	131 ° F
Dimension	Width: 12.5" - Height: 12.5" - Depth 15.5"
Shipping Weight	22 lbs

## DESCRIPTION AND FEATURES

The Girard Products GSWH-1 LP and the GSWH-1M LP Gas Tankless Water Heater are designed to meet ANSI Z21.10.3-2004 and CSA 4.3-2004 and are certified by the Canadian Standards Association (CSA) to meet these standards for use in recreation vehicles.

The design of this product differs from the traditional storage tank water heater units found in RVs. More specifically:

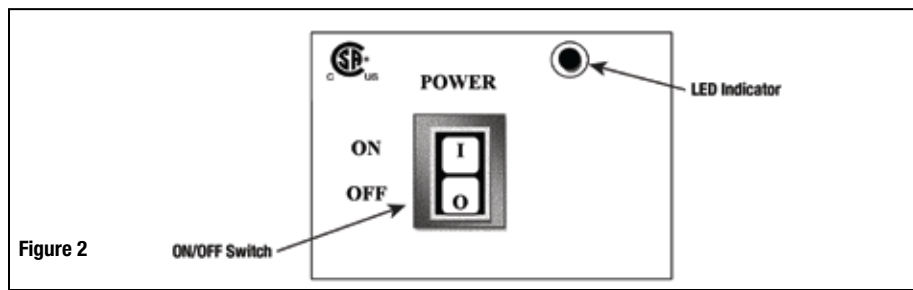
- The Girard Tankless Hot Water System uses a finned copper heat exchanger and nine high efficiency blade burners.
- The Motor Aided Induced Draft enhances combustion for increased efficiency and improved wind resistance.
- The 1-Series dual BTU Gas Valve / w High/Low Switch optimizes the output temperature range based on the temperature of the input cold water and water flow. BTU rating: 27,000 Low, 34,000 High
- The 1M-Series utilizes a DIAL to control a Modulating Valve that provides for total variation of BTUs from 18,000 to 36,000.

When properly installed in a Recreation Vehicle the Girard Tankless Water Heater is connected to:

- The RV's cold water system with its water input from a pressurized (45 psi) source such as a shore connection or a water storage tank with water pump.
- The RV's hot water system (i.e. faucets and shower)
- The RV's LP Gas system capable of supplying the rated BTU requirement.
- The RV's 12VDC Electrical power distribution panel on a 10 amp fused circuit

Please refer to the Owners Manual supplied with the unit for further information. The Owners Manual will allow you to verify if the unit is properly installed and the connections are within the following recommended parameters:

- The pressure of the water supply is between 40 and 60 psi for normal operation
- The LP Gas system is operating within the inlet pressure limits indicated on the rating label (10.5" and 14" WC)
- The DC Voltage applied is greater than 11.5 and less than 14 VDC
- A steady water flow



## NORMAL OPERATION - GSWH-1

A tankless water heater, also referred to as an “on demand” water heater, rapidly heats water as it flows around and through the heat exchanger. The output water temperature depends on the temperature of the input water and the flow established at the faucet by the user; the faster the flow, the cooler the water; the slower the flow, the hotter the water.

The gas control valve of the GSWH-1 and the GSWHAF-1 features a dual BTU solenoid that can operate in HIGH mode (34,000 BTUs) or LOW mode (27,000 BTUs). The BTUs will normally be set to HIGH or LOW depending on the incoming water temperature or normally LOW for summer and HIGH during cooler temperatures.

Prior to normal operation the user must ensure that all air has been purged from the water lines, the Water Heater Power Switch is in the ON position and the REMOTE Mode Switch is set in the desired position (LOW or HIGH). The 12VDC power is normally left ON while the RV is in use with no use of LP gas. In most cases the ON/OFF switch can be left ON the entire camping season. This will not harm the unit in any way.

To start the water heater the user should fully open the HOT water faucet, wait for hot water to flow. IF hotter water is desired, you can slightly reduce the water flow. This will increase the temperature to the desired level.

**Note: As with all water heaters** (even though Girard Water Heaters heat water instantly), there will still be a lag time between time of ignition and warm water coming out of the faucet. Thus, the further the water heater is located from the faucet/shower, the longer it will take the user to feel the hot water.

During normal operation the hot water faucet behaves somewhat like a typical mixing valve: it (faucet) increases the water temperature when the flow is decreased and decreases the temperature when the flow is increased.

The user may need to mix a small amount of cold water with the hot when the incoming water temperature is very hot (80° F - 90° F). This is not uncommon in the Southern states during the summer months. Remember that the increased total flow of the hot and cold water will reduce the flow of water through the heat exchanger. This can cause the hot water output temperature to increase, defeating the effect of the cold water. In some cases adding cold water may result in “LIMITING”. (See Below)

If the output temperature exceeds 123 ° F an Emergency Cut-Off (ECO) thermostat will shut down the flame in the water heater to prevent scalding. During this time the blower will continue to operate. When the temperature returns to a safe level, the flame will come back on. This is referred to as “LIMITING”

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## NORMAL OPERATION - GSWH-1M

The Girard Tankless Water Heater (M-Series), also referred to as an “on demand” water heater, rapidly heats water as it flows around and through the heat exchanger. The output water temperature depends on the temperature of the incoming water and the flow established at the faucet and the dial setting.

Water flow is critical since the SLOWER the water flows (through the heat exchanger), the HOTTER the water temperature and the FASTER the water flow, the COOLER the water temperature.

The BTU adjustment for the M-Series water heater operates through a modulator rather than the gas valve. The modulator control increases the amount of gas flow to the burners as the dial is turned from LOW to HIGH. On the LOW setting, the water heater operates at approximately 18,000 BTUs. On the high setting, approximately 36,000 BTUs. The LOW setting will increase the water temperature by approximately 20° F from the input water temperature. Placing the dial on the HIGH setting will increase the water temperature by approximately 70° F depending on the input water temperature. A thermostat setting may vary +/-5° F - The ECO setting 131°. Later models with dual ECO/High Limit 131°/167° resettable.

### Prior to Operation

The end user/technician must insure that all air has been purged from all on-board water lines. To purge the system (purging procedure needs to be done at the beginning of the camping season or if any water line is evacuated / drained of water)

1. Verify the switch is in the (Off) position.
2. Turn on the water supply to the unit.
3. Open and then close all the HOT and COLD water faucets at the kitchen, bathroom, inside shower, toilet, outside shower, washer (if equipped) and any other inside or outside faucets.
4. Close the faucets when the water is flowing smoothly.
5. Check for any noticeable water leaks.
6. Confirm the LP gas is turned on.
7. Turn the power switch to the ON position. This switch can be left ON during the entire camping season. This will not harm the unit in any way.
8. Open a hot water faucet to verify that the unit ignites and supplies warm water.

### Operating the Water Heater

To start the water heater the user/technician should fully open the hot water faucet and wait for the water to become warm. The water will become warm as soon as the water from the water heater reaches the faucet. Thus, the distance of the water heater from the faucet determines how long it will take for the water to become warm. When a change is made in water temperature or flow, the distance will also effect this time. As a technician, you will notice that even when the water heater is close to the faucets, sometimes the routing of the water lines might not be a direct line.



## Controlling the Hot Water Temperature

1. The dial makes adjustment to the water temperature very easily. Generally a dial adjustment is all that is required. Turn the dial clockwise to increase the temperature and counter-clockwise to reduce the temperature.
2. If additional adjustment is required, increase or decrease the flow of hot water. Increase the flow to to reduce the temperature slow the flow to increase the temperature.
3. If the water is too hot after making the adjustments mentioned above, you may add a small amount of cold water to reduce the temperature.

One of the most common complaints is that the water temperature cycles between hot and cold. The ECO safety switch is designed to OPEN at 131°. When this occurs, the burners will shut off for a short time until the ECO closes or resets itself, turning the burners back on. There are several reasons when this may occur:

1. The dial is set too high for the incoming water temperature. Turn dial down.
2. Water lines have not been purged, or completely purged. Purge entire RV again, following the information discussed above.
3. Incoming water flow very low. The water heater should have at least 1 GPM for proper operation. Test GPM by setting a 1 gallon container at one of the hot water faucets. If the container fills in 1 minute, there is at least 1 GPM. If it does not fill, there is less than 1 GPM. If the problem of water flow cannot be resolved, place water in the fresh water tank and operate and operate off of the pump.

If the customer has attached a flow restrictor, remove water restrictor from incoming water hose.

If a water filter is in use, be sure that the filter media is not reducing flow because it's too dirty.

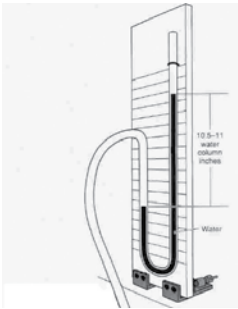
Girard does not require a By-Pass during the installation. If this is a replacement water heater, or if the OEM installs a By-Pass, be sure the By-Pass is set for summer usage. We recommend that the By-Pass stay in this position all year.

# RECOMMENDED TOOLS AND EQUIPMENT

No unusual tools and/or equipment are needed to service the Girard Tankless Water Heater. The following equipment is commonly used for service and is readily available. Be sure that all instruments are regularly calibrated.

## U-Tube or Dial Type Manometer

This device is for measuring the gas pressure. If using a dial type manometer please insure that it is regularly calibrated.



U-Tube Manometer



Dial Type Manometer

## Gas Leak Test Solution

There are many inexpensive solutions on the market that bubble when applied to fittings where a leak is present.

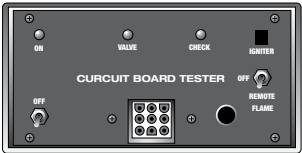
## Multimeter

Used for testing Continuity, Voltage, Current (AC/DC) and Resistance. With a good quality Multimeter you can verify voltage problems and defective components. The entire electronic system can be tested with this meter.



## Fenwal Board Tester or Similar Approved Tester

Used for testing the Circuit Board. This tester will diagnose the power circuit, sense circuit, spark igniter and lock-out mode. Fenwal part # 05-080224-009



## Hand Tools:

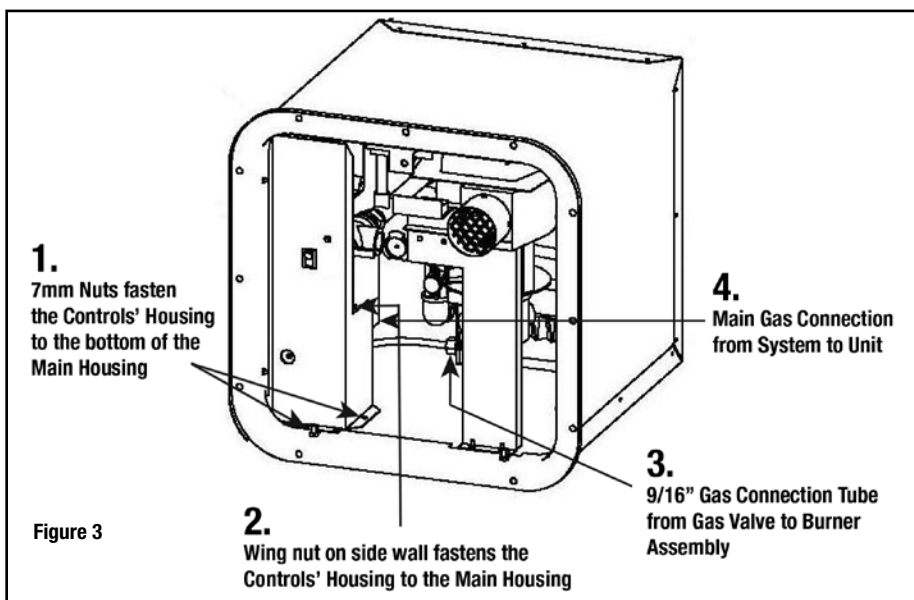
- Phillips and flat head screw drivers
- 9/16", 3/4" and 13/16" S.A.E. open wrenches
- 7mm and 5.5mm nut drivers and/or wrenches.
- Needle nose pliers, wire crimp and cutter.
- Leak Test Solution.

## REMOVING CONTROL HOUSING

No unusual tools and/or equipment are needed to service the Girard Tankless Water Heater. The following equipment is commonly used for service and is readily available. Be sure that all instruments are regularly calibrated.

To gain easy access to the serviceable components of the Water Heater you must first remove the Controls' Housing that shields and supports the following:

- Circuit Board
- Dual BTU Gas Control
- Main Gas Line
- Ground connections
- Power switch with the LED indicator

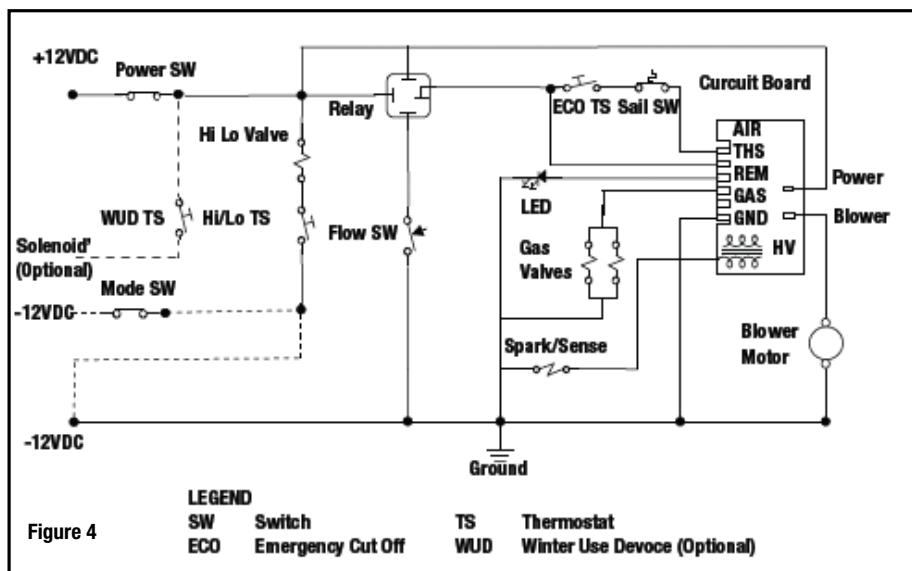


### GSWH-1M

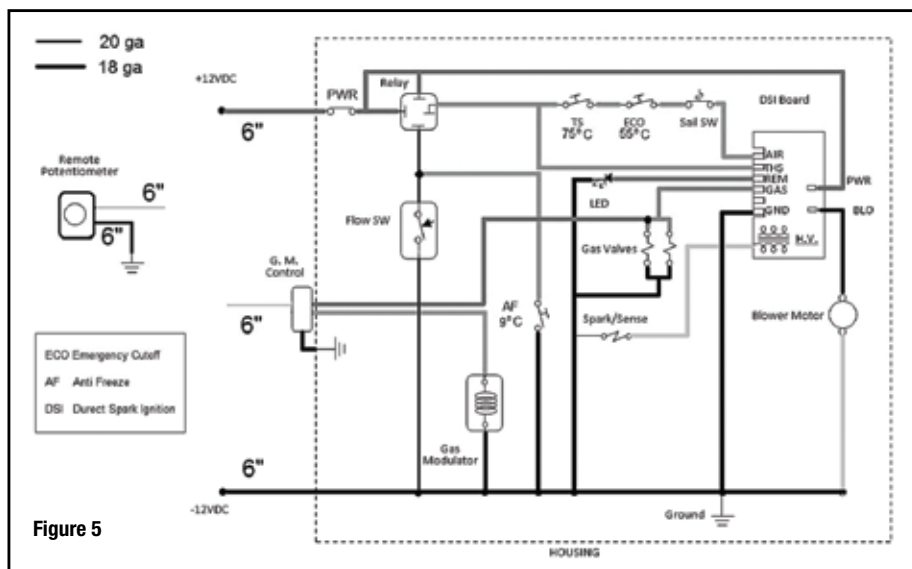
#### Access to Board and Gas Valve

- **BOARD** - Locate the screw at the upper left of the control panel. Remove screw and lift BOARD out of bracket.
- **VALVE ACCESS** - Locate plate at lower right side of control panel. Remove 2 screws holding plate. Remove plate to provide access to GAS VALVE for testing.

## SCHEMATICS AND DIAGRAMS



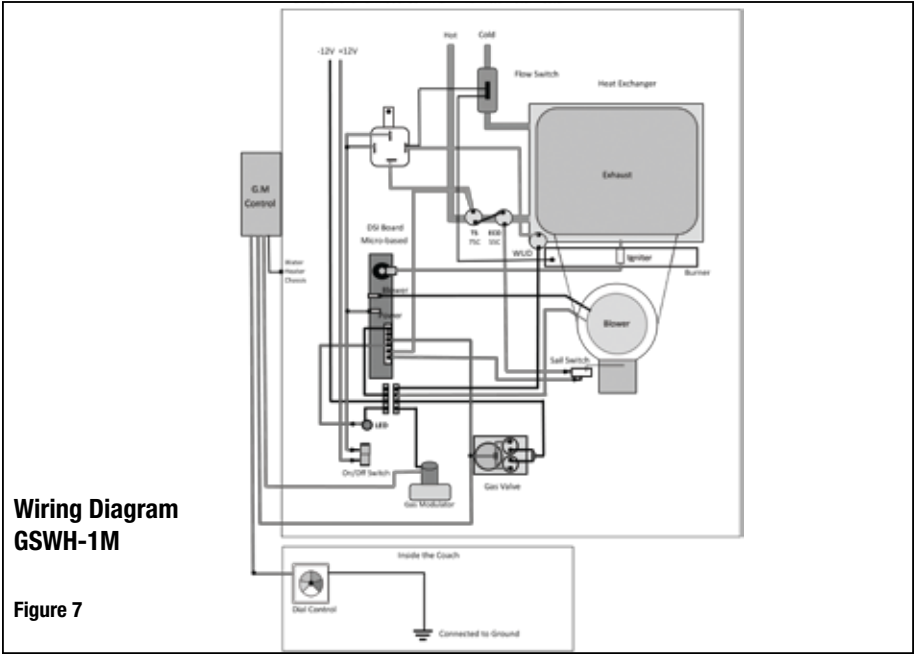
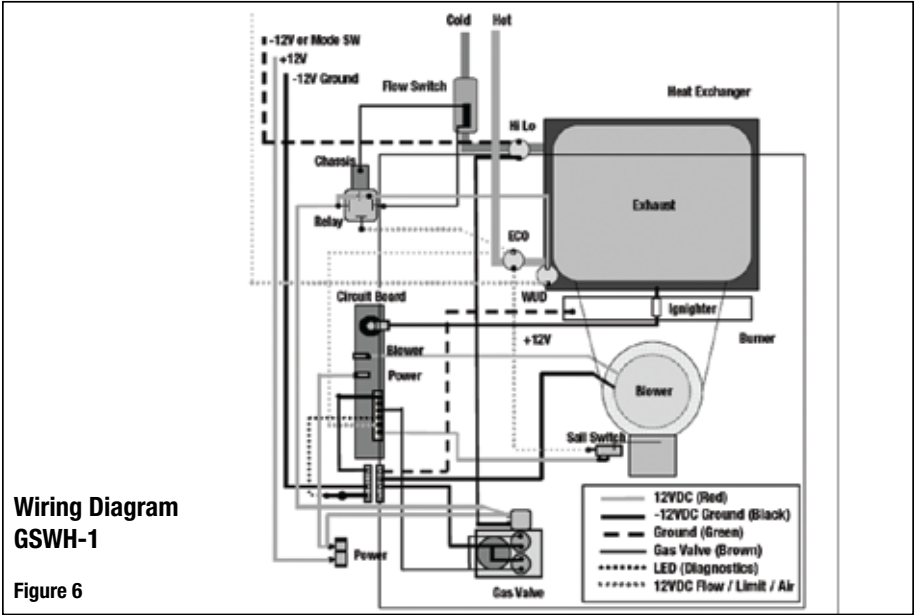
### Ladder Diagram GSWH-1



### Ladder Diagram GSWH-1M

Please refer to the electrical diagram for a functional understanding of the electrical components and of the Circuit Board control functions.

## Wiring Diagrams



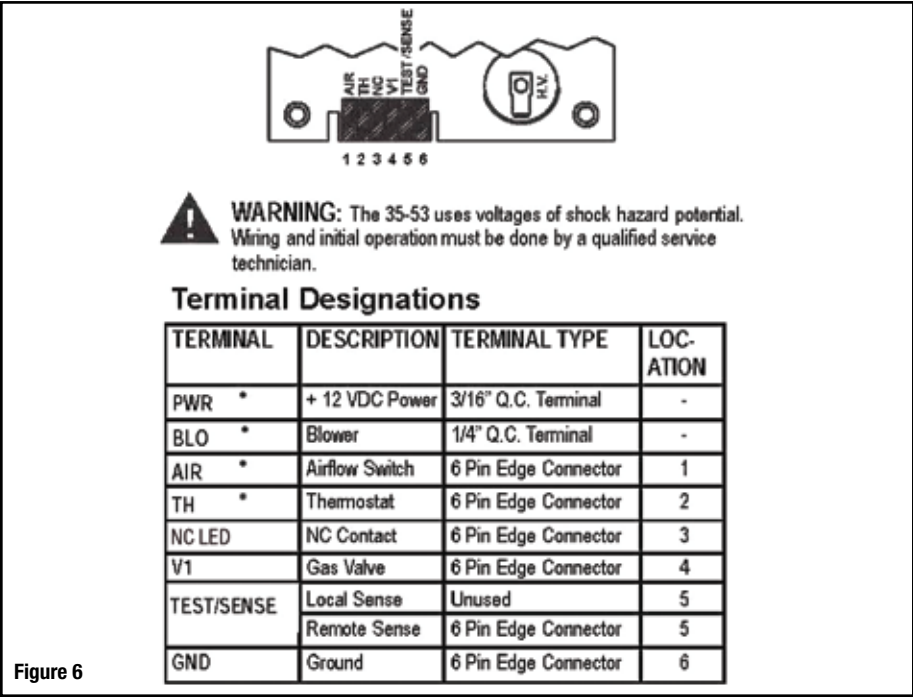
# CIRCUIT BOARD OPERATION

When the user opens a Hot Water faucet, water starts flowing through the unit and activates the Flow Switch which in turn activates the Relay; this applies 12VDC power to the ECO (Emergency Cut-Off Thermostat) and to the "Heat Demand" Connection (5) of the Circuit Board (see below). Change to: ...ECO (Emergency Cut-Off Thermostat) and to the 'TH' Connection (2) of the Circuit Board.

Power is then applied to the Sail Switch that is open when there is no air flow from the blower. The ECO is normally closed. The Circuit Board starts the blower and verifies that the Sail Switch closes: when this occurs the Circuit Board will sense the 12VDC at the Circuit Board indicating that there is sufficient air flow for combustion. The circuit is now complete.

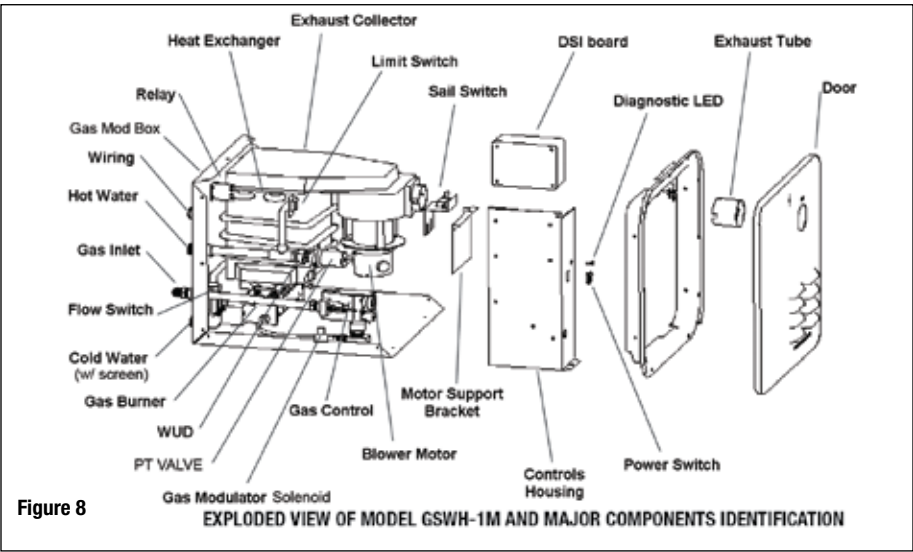
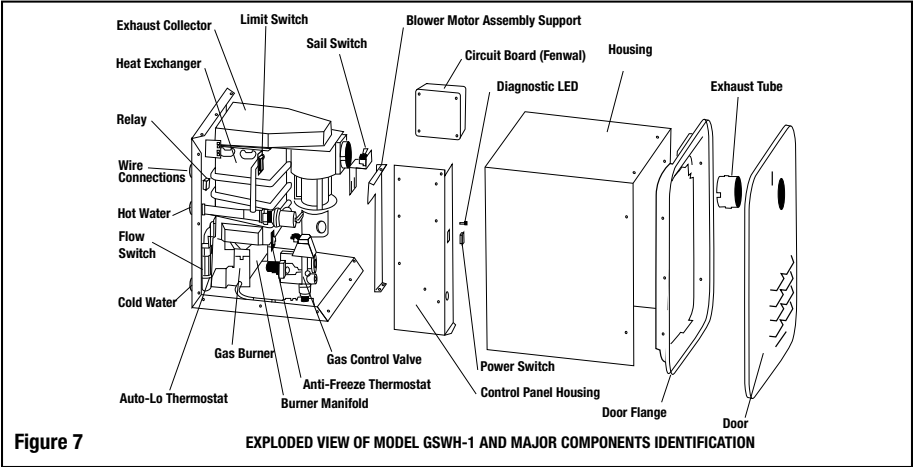
## Try For Ignition (TFI)

The Circuit Board is now ready to try for ignition and applies power to the gas valve through connection (4) and without delay generates a spark of five (5) seconds duration at the igniter. If the Circuit Board does not sense flame at the spark igniter, the gas valve is de-energized and an internal post purge of 15 seconds will occur before a second try is attempted. Two additional tries will be attempted and if no flame is detected in the process the Circuit Board goes into LOCKOUT mode and will make no further attempt to light. Once the system has entered lockout mode, it must be reset. To reset the water heater, turn OFF power to the water heater OR close the faucet (removing the demand for hot water for a period of five (5) seconds.



# TROUBLE SHOOTING GUIDE

This section includes the most common symptoms that may be found in a model GSWH-1 that is not operating normally. Please refer to the following drawing to locate the components in the unit:



- NOTICE:** Before starting the troubleshooting steps suggested below verify that:
- There is power connected to the water heater
  - The power switch is in the ON position
  - The wiring is not damaged in any way
  - All connectors are plugged in (no dangling connectors)
  - Water flowing through the unit when you open a hot water faucet
  - The Sail Switch is moving freely (forward and backward)
  - The gas is connected and the gas tank is not empty

Whenever the Circuit Board senses flame during the ignition trials, sparking stops and the Gas Valve remains energized. The Water Flow Switch, the Sail Switch and the Burner flame are constantly monitored to assure that the system continues to operate properly.

When the Hot Water faucet is closed and the Flow Switch opens, the demand for heat ends and the Gas Valve is de-energized immediately; after the post purge and cool off period of 90 +/- seconds the blower is turned off.

## **Flame Failure**

If the established flame signal is lost while the burner is operating, the control will sense this and respond within 0.8 seconds. The gas valve will stay energized and the Ignition Spark will be energized in an attempt to relight the burner (trial for ignition). If the burner does not light, the control will make two more attempts to relight and then go into lockout (See Try for Ignition - page 10). If flame is established.

## **Combustion Airflow Problems**

If the airflow signal is lost, or the ECO opens during heat mode, the gas valve is immediately de-energized and the blower stays on. If the switch closes again, a normal ignition sequence will resume. If not and this condition persists for more than five minutes, the control will enter lockout (See Try for Ignition - page 10) with the blower off.

## **Water Heater LED Diagnostics**

If the water heater stops operating normally, check the LED indicator on the user panel located behind the water heater door. If the LED is lit or blinking, consult the list below to help diagnose the fault detected by the Circuit Board:

- **Steady On** – Internal Control Fault
- **1 Flash** – Air Fault
- **2 Flashes** – Flame Detection Error
- **3 Flashes** – Lockout
- **4 Flashes** – N/A; Reserved for future diagnostics
- **5 Flashes** – Low voltage

The pattern will be repeated at intervals of **3 seconds**.



## COMPONENT INFORMATION

### On/Off Switch

- Confirm power on incoming side of switch. No power check for blown fuse, broken or disconnected wire, low battery Etc.
- Power coming into switch but not coming out, Replace Switch.

### RELAY, with on/off switch turned on

- The relay has 4 posts, with wires attached.
  - Left---Red with jumper Red
  - Rear---Red
  - Right---Orange/Black
  - Front---Orange, power out of the relay

When the on/off switch is turned but water heater not running, 3 of the posts will have power. Left, rear and right. The flow switch (discussed next) has two small black wires coming out of it. One black wire goes to ground, the other attaches to the orange wire on the right side of the relay. When a hot water faucet is opened the flow switch is activated. The black wire going to the relay loses power and the relay closes. When this happen power flows from the relay through the front orange wire and into the ECO. If this does not happen, confirm power drop at black wire. If power does not drop out, suspect flow valve. If power does drop, with no power to the orange wire, replace relay.

### FLOW SWITCH

The flow switch is where the cold water comes into the water heater. As the water flows through this device a poppet or small cylinder inside the flow switch will move up from the pressure of the incoming water. A magnet in the poppet will energize, completing the circuit in the relay. (Discussed above) On a rare occasion the poppet will stick in the flow valve. This is indicated, when the hot water is turned on, nothing happens. Tap or hit the flow valve to loosen the poppet. If this fixes the problem it should not have to be replaced. It should not happen again unless the water heater has been ideal for a long period of time. Even rarer, I have seen times when the water heater will not shut off when the water is shut off. Again taping the flow valve will shut the W/H down. If either of these situations happen more than once, replace the flow valve.

### To test the flow valve. Using a multimeter.

Disconnect the small black wire from the relay. Using the meter, set for continuity, attach the red lead to the wire from the relay and ground the black wire. There will be no continuity. Turn on the hot water and you should get a reading. If not, replace the flow valve. Another test is to by-pass the flow switch by disconnecting the black wire from the relay and putting ground on the relay with another piece of wire.

## **ECO/ (ECO-Combo, later models)**

To test the ECO with a meter or test lite. When the water heater is turned on, test for power into the switch, from the relay. If no power, go back to the previous information for the relay. If there is incoming power, check the other side of the switch. If there is power in, but no power out, replace the ECO. In the case of the combo switch, (white) with the push button. Push to reset, if the water heater comes on, the problem is fixed, if not fixed, replace. If the customer complains that the water will not get hot enough, check for the calibration of the switch. Jump the wires from the switch. If the water heater operates properly, replace the switch. See Technical Bulletin 092813-A.

## **BOARD, MOTOR**

When a hot water faucet is turned on, the power leaves the ECO, it goes to the board which is always powered, from the red wire on the bottom of the board. As the power enters the board through the orange wire it flows to the on board relay. Power leaves the board though the black wire on the bottom of the board. The motor comes on. If the motor does not come on:

- Confirm that the black motor lead is connected to the board.
- Confirm that the white wire is attached to ground.
- Disconnect both the white and black wires and apply 12 volts directly to the motor, as your power source, you may choose to connect the black wire directly to the ECO outlet connection, when the water heater is energized.
- If the motor does not operate, replace motor. If it does operate, replace the board.

When the motor comes on, if you blow a fuse, check to see that the motor is not stuck or contaminated. If the motor is not turning:

- Remove the flue tube, screw on bottom of flue.
- Turn motor by hand. If it is bent and rubbing on the housing, with the use of a screwdriver carefully bend the blower until it moves freely. Try again.
- If it is contaminated by wasps or something else. Remove the flue tube and the sail switch. Using a screwdriver, loosen up the obstruction. Vacuum out as much as possible. Turn on motor and let it blow the rest of the obstruction out.
- Put it back together and try operation again.

If the motor or chamber have to be replaced, Girard will send the entire (Chamber and Motor) assembly complete. This is much easier to replace than either one by itself.

## **SAIL SWITCH**

The sail switch is activated (moves forward) when the blower comes on. When this happens it completes a circuit into the board, through the RED WIRE. If the blower comes on, but nothing else happens, check the sail switch:

- If the sail switch is forward, test for power into and out of the switch. If no power out, replace sail switch.
- If sail switch does not move forward, check to see if it is stuck in the back position. It is probably rubbing on the slot at the flue tube. Bend bracket until the shaft from the sail switch is in the middle of the slot. Try again.

- If it is not stuck, check for low voltage, or hard to operate switch. If the water heater comes on one time, but will not start the second time, check to see that the sail switch is not stuck in the forward position, when the water heater shuts off. If it is, adjust, as indicated above.

## **MORE ABOUT THE BOARD**

WE HAVE TALKED ABOUT THE BOARD AND THE MOTOR OPERATION. Now we will discuss the remaining functions. There are three locations where wires enter the board:

### **Bottom of board:**

1. Blower (BLO) black wire from board to motor.
2. Power (PWR) red wire into board. As long as the on/off switch is turned on there will be power at this wire.

### **Top of Board:**

On the top there are 5 wires going into the white block:

*When the water heater is activated:*

1. Power comes in on the orange wire from the ECO. If no power here, go back and check ECO.
2. Red Wire, power comes from sail switch, when it is activated. No power, check sail switch.
3. Blue Wire, Light circuit. This is the LED diagnostic lite. This light will flash one time upon ignition. It will stay on for a short time during relight and it will flash multiple times to indicate a problem.
4. Brown Wire, when the board is activated the brown wire sends power to the gas valve. If valve fails to open, check to confirm that all wires are connected to the valve. If wires are connected, confirm power out of the board at the brown wire. If no power, replace board. If there is power, do an OHMS test at each coil. Should be 30 to 50 OHMS. Not proper or no reading, replace valve.
5. Black Wire, this is a ground wire and must be attached to the ground strap.

## **Gas Valve**

To test for proper pressure at the gas valve, there is a tap at the front of the valve. Using a 3/16 allen wrench. Remove the plug from the valve. Install a ¼ inch barb, for the plastic hose for the manometer. Proper pressures listed below.

### **Series 1**

High - 10.5 IWC (Inches of water column)

Low - 7.0 IWC

### **Series M**

High - 10.0 IWC

Low - 11.5 IWC

Before replacing the gas valve, be sure that the (main tank regulator) has been tested. In most cases the problem is on the tank regulator, rather than the water heater valve.

## **WATER PRESSURE**

Since a tankless water heater produces water instantly it should have at least 1 gallon a minute through the hot water lines for good operation. The M-Series is less critical, due to the dial.

There are several factors to consider if the water pressure is low:

1. Check the RV to be sure the customer is not using a flow restrictor on the incoming water line. In most cases they are not required, and they can reduce the flow to much.
2. Look to see if the customer is using an in line water filter. This is not a problem, unless it is really dirty and should be replaced.
3. Be aware of the pressure in the park where you are staying. Many RV parks have very low pressure.

If the pressure cannot be resolved, we recommend, filling the fresh water tank and using the on board pump.

A simple way to test the water pressure, using a 1 gallon jug. Using the hot water only. Run water into the gallon container and time how long it takes to fill the jug to 1 gallon. If the jug is filled in less than one minute, you have over 1 gallon per minute. If the water does not fill the jug, in 1 minute, it is less than 1 GPM.

## **HEAT EXCHANGER**

Occasionally, you might see a slight leak at the incoming or outgoing connection on the chamber. If this occurs, using a ¾ inch open end wrench, tighten.

On a rare occasion the chamber might develop a small leak. This is usually caused by freezing. The M-Series includes, in all water heaters a WUD (winter use device). This built in system, is used to protect the (water heater only), from freezing. If a hole develops in the chamber, we will have you return the entire water heater for evaluation. During the 2 year warranty, if the WUD switch is found to be defective we will replace the water heater a no charge. If the switch is working properly, the customer will be responsible for the repair.

## **BURNERS**

On rare occasions if the burners are found to be burning with a lot of yellow flame, they may be contaminated. You may also have times when the burner will not light all 9 sections. They can normally be cleaned by spraying air across the orifices. If more cleaning is required, you should remove the burner for a visual inspection.

Removing the burner assembly:

1. There are 2 screws on each side of the burner. Remove these screws and the burner will drop down.
2. Disconnect the gas line with a 9/16 open end wrench.
3. Remove the ground wire.
4. Disconnect the electrode wire from the board.
5. Simply roll the burner out of the water heater. The orifice bank can be removed (2 screws each side) for easy cleaning.

Drill sizes for orifices:

**Series1** - # 73

**Series M** - # 71

If a thorough cleaning fails to resolve the problem, replace entire burner assembly.

## **ELECTRODE**

If the water heater is not igniting, but you can smell gas through the exhaust flue.

1. Remove the electrode wire from the board. Using an insulated screw driver, turn on the water heater and hold the tip of the screw driver at the point where the electrode wire was plugged in. After several tries, if there is no spark to the screw driver, replace the board.

2. If there is a spark, check the electrode for cracked porcelain, and continuity through the wire. Replace electrode assembly if required.

When replacing the electrode, always replace the entire assembly.

**Remember: The water heater must have GOOD:**

***VOLTAGE***

***GAS PRESSURE***

***WATER PRESSURE / STEADY WATER FLOW***

***FAUCETS THAT ARE NOT RESTRICTED***

# GSWH-1M

## Gas Modulation & Winter Use Device Systems Specifications & Testing



### GSWH-1M Temperature Dials

The gas modulator temperature dials may appear the same but it is crucial that you confirm the dial is the correct resistance for the gas modulator control board. Using the incorrect temperature dial will cause incorrect voltages to the gas modulator valve. This will cause an improper water temperature.



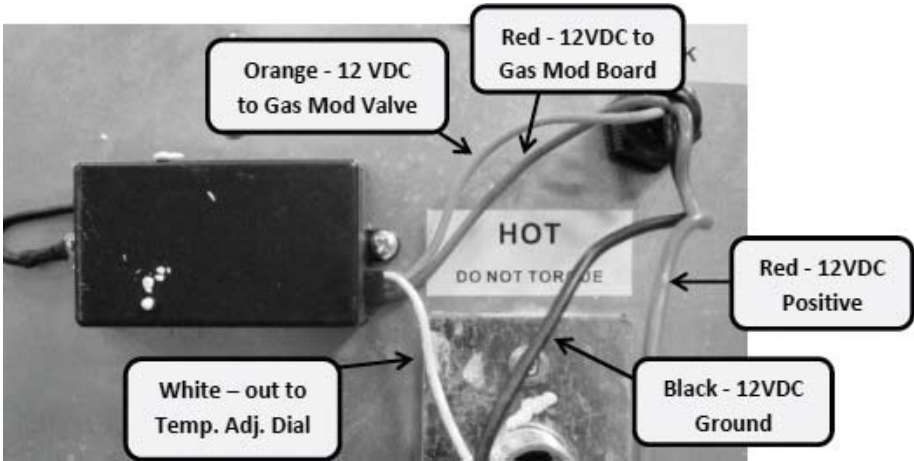
### 1K Ohm and 2.2K Ohm Dials

The back of the dial will be labeled with 1K or 2K2. If the label is too difficult to read then you can identify the type of dial with a resistance check with the dial in the low position.



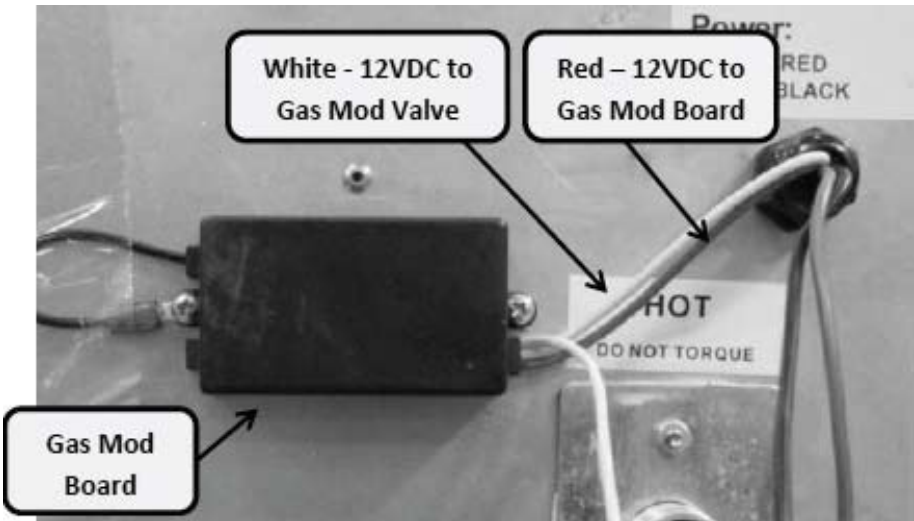
**1 K Modulator Control Board:**

It is impossible to identify the difference between the gas modulator control board for a 1K and a 2.2 K system by the size and shape of the box. The color of the wires going to the board will confirm the type of board. Orange and red wires to the modulator control board identify indicates a 1 K gas modulator board.



**2.2 K Modulator Control Board:**

Red and white wires to the board identify that it is a 2.2 K gas modulator board.



## Gas Modulator System Specifications and Testing

Differentiate between the 1K and 2.2K systems by the color of the wires at the gas modulator valve. Orange and black wires identify the system as a 1K system. White and black wires identify the system as a 2.2 K system.

1. **Verify that the two terminals of the temperature Adjustment dial are connected**  
**The black wire will connect to chassis ground**
  - The white wire will connect to white wire of the gas modulator control board.
2. **Move the temperature adjustment dial to high position and verify (with a voltmeter) the voltage on the coil of the gas modulator valve.**
  - The voltage on the coil of a **2.2 K** system will be approximately **3.0~3.2 volts**
  - The voltage on the coil of a **1 K** system will be approximately **3.0~3.2 volts**
3. **Move the temperature adjustment dial to low position and verify (with a voltmeter) the voltage on the coil of the gas modulator valve.**
  - The voltage on the coil of a **2.2 K** system will be approximately **9.4~9.6 volts**
  - The voltage on the coil of a **1 K** system will be approximately **8.5~8.7 volts**
4. **With an Ohms Meter verify the correct value of the temperature adjustment dial.**
  - The resistance of the **2.2K** temperature adjustment dial in the **High Position** is approximately **500 ohms**.
  - The resistance of the **2.2K** temperature adjustment dial in the **Low Position** is approximately **2.7K ohms**.
  - The resistance of the **1K** temperature adjustment dial in the high position will give you **0 ohms**.
  - The resistance of the **1K** temperature adjustment dial in the low position will give you **1K ohms**.
5. **Verify if the Coil of the GM is in good conditions. Measure the value with an ohms meter; you will get 40 to 50 ohms.**
6. **Confirm the white wire to the temperature adj. dial has not been grounded. Confirm the black wire from the temperature adj. dial is grounded.**

---

### Testing of the 2.2 K Ohm Temperature



Approximately 500  
Ohms on High



Approximately 2.7 K  
Ohms on Low

### Testing of the 1 K Ohm Temperature Dial



Approximately 0  
Ohms on High



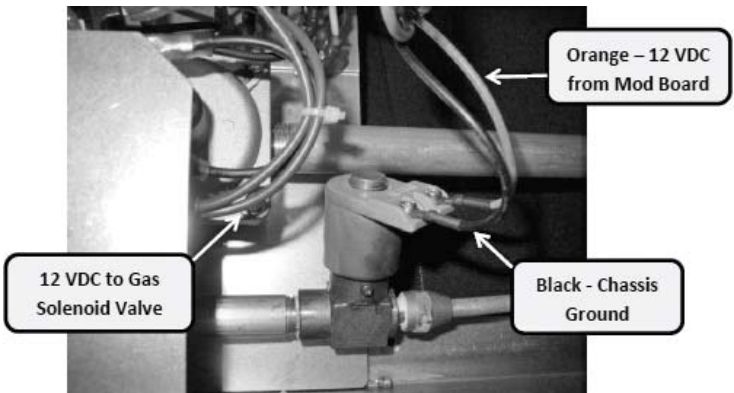
Approximately 1 K  
Ohms on Low



**Gas Modulator Valve**

Coil resistance should be between 40 and 50 ohms.  
The orange (1K system) or white (2.2K system) wire on the gas modulator valve coil is 12 VDC + supplied directly from the gas modulator board. The black wire is chassis ground.

As the voltage increases the valve decreases the amount of gas flow through the gas modulator valve decreasing the output BTU's and decreasing the temperature rise.



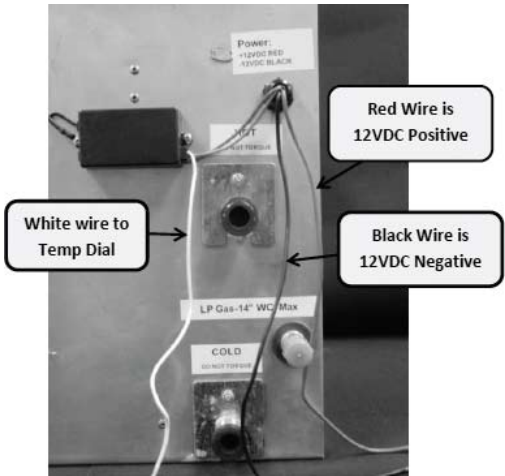
**Gas Solenoid Control**

The gas solenoid valve is a dual redundant valve. Coil resistance between 30 and 50 ohms.



**Modulator Control Board Valve**

The control board is located on the back of the water heater. The red wire to the gas modulator control board supplies +12 VDC. The red wire attaches to one of the brown power wires at the gas solenoid valve. Power will only be supplied to the gas modulator board when the main pc board is powering the gas solenoid control valve. When the resistances of the temperature dial decreases the voltage to the gas modulator valve increases.



## CIRCUIT BOARD TROUBLESHOOTING

The Circuit Board is the electronic controller for the Water Heater. It is very reliable but it is often diagnosed improperly and replaced. Note: in all cases the replacement of the Circuit Board is the last item. We provide here a list of symptoms and their possible causes to help you to determine if the problem is due to a malfunction of the board or other components.

### 1. Dead

- a.** Fuse/Circuit Breaker Bad
- b.** Converter/battery bad
- c.** Mis-wired – Check 'On/Off' Switch for Incoming Power
- d.** No voltage @ POWER or BLOWER connections - Check for Broken Wire
- e.** Bad circuit board: CONFIRM with Approved Board Tester such as Fenwal part # 05-080224-009) – Replace

### 2. Flow Valve Activated - No Blower Output

- a.** Mis-wired or Failed Sail Switch - Check Wiring
- b.** Check Relay
- c.** Check ECO
- d.** Check Wiring to Board
- e.** Defective or Stuck Flow Switch: Tap with Wrench; If Problem not Solved, Replace Flow Switch
- f.** Bad circuit board: CONFIRM with Approved Board Tester such as Fenwal part # 05-080224-009) - Replace

### 3. Sail Switch Input Okay - No Trial for Ignition

- a.** Mis-wired – Confirm Wiring and Connections
- b.** Check Sail Switch for Continuity
- c.** Bad circuit board: CONFIRM with Approved Board Tester such as Fenwal part # 05-080224-009) - Replace

### 4. Gas present but no Spark

- a.** Misaligned Electrode – Ensure Gap Between Electrode Tip and Burner Blade is 1/8" and into Path of Flame
- b.** Check for Continuity on Electrode High Voltage Cable
- c.** Check for Coil on Circuit Board
- d.** Bad circuit board: CONFIRM with Approved Board Tester such as Fenwal part # 05-080224-009) - Replace

### 5. Spark present but no Gas

- a.** Check Gas Supply
- b.** Check Valve Connections
- c.** Check for Proper Voltage - Minimum of 10.5 VDC
- d.** Check Edge Connectors for oxidation - Clean and Replace
- e.** Check Resistance (ohms) Draw on Coils - Should be 30 - 50 ohms
- f.** Bad circuit board: CONFIRM with Approved Board Tester such as Fenwal part # 05 - 080224-009) - Replace

- 6. Flame okay during trial for ignition (TFI), no flame sense (after TFI)**
  - a.** Check Electrode and High Voltage Wire for Continuity
  - b.** Poor ground at burner
  - c.** Bad circuit board (check flame current); CONFIRM with Approved Board Tester such as Fenwal part # 05-080224-009) - Replace

## **GENERAL FAILURES AND POSSIBLE CAUSES AND REMEDIES**

- 1. No Blower, no Spark and no Gas**
  - a.** No or Low Voltage: Correct Power Supply - Minimum 10.5 VDC
  - b.** Defective ON/OFF switch: Check for Power Coming into Switch; If no Power, Replace Switch
  - c.** Defective or Stuck Flow Switch: Tap with Wrench; if Problem not Solved, Replace Flow Switch
  - d.** Check Relay
  - e.** Check ECO
  - f.** Dirty Edge Connector on Circuit Board: Clean Edge Connector
  - g.** Defective circuit board CONFIRM with Approved Board Tester such as Fenwal part # 05-080224-009) - Replace
- 2. No Spark and No Gas (Blower Operating)**
  - a.** Low voltage: Correct Power Supply - Minimum 10.5 VDC
  - b.** Check for Flow of Water
  - c.** Check Relay
  - d.** Check ECO
  - e.** Check for Flow of Power OUT of Sail Switch to Circuit Board
  - f.** Dirty edge connector on circuit board: Clean edge connector
  - g.** Defective circuit board: Confirm with Approved Board Tester such as Fenwal part # 05-080224-009) - Replace
- 3. Water Heater Lockout - Spark present but no gas**
  - a.** Check Gas Pressure: Set inlet pressure at a Minimum 11" W.C. with Two or More Gas Appliances Running.
  - b.** No or Low Voltage: Correct power supply - 10.5 VDC Minimum
  - c.** Loose Wire Connections on Gas Valve. Confirm Connections
  - d.** Test Resistance of Coils - Confirm 30 - 50 ohms
  - e.** Defective gas valve: Replace Coils or Gas Valve
  - f.** Dirty connector on Circuit Board: Clean Edge Connector
  - g.** Defective circuit board: CONFIRM with Approved Board Tester such as Fenwal part # 05-080224-009) - Replace

- 4. Water Heater Lockout – Gas present but no Spark**
  - a.** High Tension Lead Wire Loose: Secure Wire Connection on Circuit Board
  - b.** Poor Ground Connection at Burner: Secure Ground Connection to Main Burner
  - c.** Improper Electrode Gapping: Re-position Spark Gap Between Electrode Tip and Burner Blade to 1/8" and into Path of Flame
  - d.** Dirty Electrode: Clean Electrode
  - e.** Wires Loose in Electrode Porcelain: Replace Electrode
  - f.** Cracked Porcelain on Electrode: Replace Electrode
  - g.** Defective circuit board. CONFIRM with Approved Board Tester such as Fenwal part # 05-080224-009) - Replace
- 5. Water Heater Lockout – Gas and Spark Present**
  - a.** Check Gas Pressure: Set inlet pressure at a Minimum 11" W.C. with Two or More Gas Appliances Running.
  - b.** No or Low Voltage: Correct power supply - 10.5 VDC Minimum
  - c.** Poor Electrical Ground: Secure Electrical Ground
  - d.** Dirty Electrode: Clean Electrode
  - e.** Partial Obstruction in Main Burner: Check for Complete Ignition of Burner Blades through Sight Hole. Remove any Obstructions.
  - f.** Partially Obstructed Burner Manifold: Clean Burner Orifices; Replace if Necessary
  - g.** Dirty Connector on Circuit Board: Clean Edge Connector
  - h.** Defective circuit board. CONFIRM with Approved Board Tester such as Fenwal part # 05-080224-009) - Replace
- 6. Erratic or Uneven Burner Flame**
  - a.** Check Gas Pressure: Set inlet pressure at a Minimum 11" W.C. with Two or More Gas Appliances Running
  - b.** Partial Obstruction in Main Burner: Check for Complete Ignition of Burner Blades through Sight Hole. Remove any Obstructions
  - c.** Obstructed Exhaust Tube Grill. Inspect and Remove any Obstruction
  - d.** Partially Obstructed Burner Manifold: Clean Burner Orifices; Replace if Necessary
- 7. Excessive or Insufficient Water Temperatures; Water Not Hot or Water Cold**
  - a.** Air is present in water lines: Purge Air from Water Lines
  - b.** Thermostat not Seated Against Sensing Tab: Reseat Thermostat and Add Thermal Paste to Insure Good Contact
  - c.** Defective Thermostat: Replace Thermostat
  - d.** In Case of Excessive Temperature, Verify that the Maximum Flow is not Limited by a Flow Restrictor

## ROUTINE MAINTENANCE

We recommend that the GSWH-1 water heater be inspected regularly by the user and at least once a year by a qualified service technician.

Before an inspection make sure that the LP Gas and Water supply are connected and turned on. A routine inspection must include the following items:

1. Inspect the integrity of the sealing (caulking or tape) between the side wall and the door of the water heater and make sure that the unit is solidly mounted to the vehicle.
2. Verify that the air inlet openings (louvers) are completely open and clear of any debris including mud, leaves, twigs, insects etc. Remove all obstructions to allow full air flow.
3. Inspect the Exhaust tube and make sure that it is also unobstructed and that the Exhaust screen is clean.
4. Open the cover and verify that no debris or extraneous combustible materials are present anywhere (especially in the area of the burner and the gas controls); remove any item present and wipe clean the bottom of the housing.
5. Inspect the interior surface of the housing for any cracks or corroded areas that could allow penetration of gases into the interior of the vehicle. Check especially around the Hot Water, Cold Water, Gas and electrical connections.
6. Check that all wire connections are firmly in place and there are no signs of chafing or cracks on the wire insulation. Note that the spark ignition cable between the Circuit Board and the igniter is securely in place and not shorted to any metal component.
7. At least once a year activate the Relief Valve by lifting the lever on top of the valve.

**MAKE SURE THAT THE WATER HEATER HAS NOT BEEN ON RECENTLY AND THE HOT WATER OUTLET IS COLD.**

8. Turn on the power to the water heater and open a hot water faucet to inspect the flame of the burner. The flame should be of the normal bluish appearance that indicates proper combustion. This can be accomplished by observing the flames through the sight hole and looking at the burner under the edge of the heat exchanger (See Figure 9.).

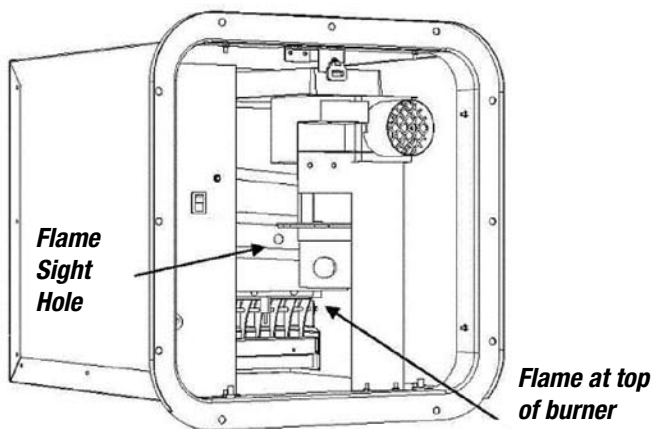


Figure 9

# WINTERIZATION

Freezing of the water heater and its plumbing components will result in severe damage that is not covered by warranty. For this reason it is not advisable to use the standard unit (Part# 1GWH) in the winter **without installing the Winter Use Device (See below for Winter Use Device option).**

At the start of the winter season or before traveling to a location where freezing conditions are likely the unit must be winterized. The very small amount of water present in the heat exchanger does not require the installation of a bypass kit.

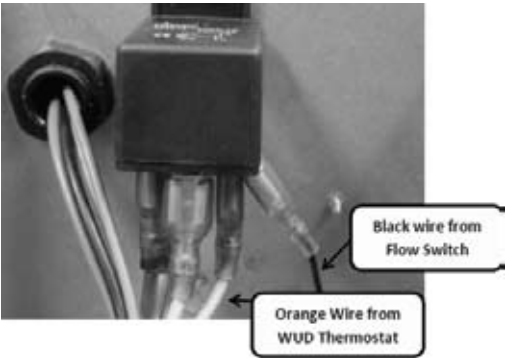
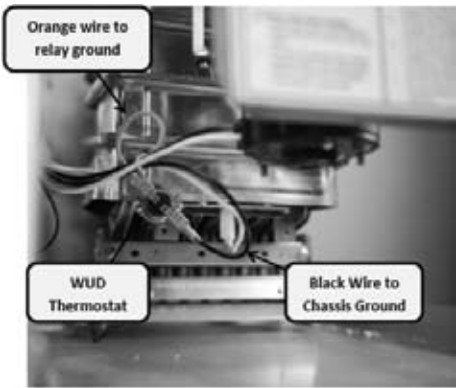
Winterization can be accomplished using one of the two common methods of winterization used for RV water systems:

- **Compressed Air Method:**  
Drain all water from the system opening one tap at a time and using compressed air to purge all remaining water.
- **RV Anti-freeze Method:**  
Follow the recommendations of the Recreation Vehicle manufacturer and fill the system with a non toxic anti-freeze. Make sure that the antifreeze flows from each tap to complete the process.

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## GSWH-1M Winter Use Device

The WUD thermostat closes when the heat exchanger temperature falls below 38 degrees Fahrenheit completing the ground to the relay. The burner will engage for approximately 5 seconds heating the coils to prevent freezing. The time delay relay of the board will keep the fan running several minutes after the burner turns off.



Wired to ground of Relay

## PARTS BREAKDOWN

Item	Name	Part #
1	Burner Assembly Series-1 #73 Orifice	1GWH1000
2	Burner Assembly Series-M #71 Orifice	1GWH1000
3	Igniter/Flame Sensor	1GWH6310
4	Heat Exchanger/Exhaust Assembly w Motor Assembly Series-1	1GWH3700
5	Heat Exchanger/Exhaust Assembly w Motor Assembly Series-M	1GWH3755
6	Cold Water Inlet Assembly	1GWH5100
7	Water Flow Switch	1GWH7100
8	Relay	1GWH6800
9	Hot Water Outlet Assembly (Specify Single ECO or Combo Plate	1GWH5300
10	P/T Relief Valve (1/2"NPT)	1GWH7200
11	Gas Valve Control Series-1	1GWH6100
12	Gas Valve Control Series-M	1GWH6100
13	Circuit Board and Cover	1GWH7300
14	ECO (Limit Switch) 50C	1GWH6500
15	ECO (Limit Switch) 55C	1GWH6550
16	ECO/Combo (Limit Switch) 55C/75/C	1GWH6595
17	Gas Modulator Box 1K	1GWH6801
18	Gas Modulator Box 2K	1GWH6802
19	Solenoid, Gas, Modulator	1GWHM10
20	Sail Switch	1GWH6600
21	Power/Mode Switch (ON/OFF)	1GWH6700
22	Door Assembly	1GWH4400
23	Door Flange	1GWH4300
24	Flue Exhaust tube	1GWH4700
25	Winter Use Device for GSWH-1 (Aftermarket)	1GWH9404
26	Conversion Flange for Atwood 6 Gallon Polar White	1GWHDA6
27	Conversion Flange for Atwood or Suburban 10 Gallon Polar White	1GWHDAS10

**Figure 10**

**FLAT RATE SCHEDULE** *Effective 01/01/2010*

**TIME ALLOWANCE**

(in hours calculated at 1/10th hour - 6 minutes)

**General Trouble Shooting Diagnostic Testing:**

18 minutes (.30 hour)

<b>Replacement of Component:</b>	<b>Hours</b>	<b>Minutes</b>
Complete Water Heater	1.00	60
Door Frame (Flange)	.50	30
Flue Tube	.10	6
Exhaust Bracket	.20	12
Control/Gas Housing Plate	.50	30
Circuit Board	.40	24
Gas Control Valve w/inlet fitting	.40	24
LP Gas tube (from valve to burner)	.10	6
Burner	.40	24
P/T Relief Valve	.40	24
Hot Water Outlet Manifold Assembly	.20	12
Flow Switch	.40	24
Cold Water Inlet Manifold Assembly	.30	18
ECO	.10	6
Sail Switch	.20	12
Relay	.30	18
Power (On/Off) Switch	.10	6
Mode Switch (Hi/Low Burner)	.10	6
Diagnostic LED	.10	6
Winter Use Control Unit	.30	18
Winter Use Thermostat	.10	6

- For any component replacement that does not appear on the above list, contact Girard Products LLC for authorization and instructions.
- To process a warranty claim the Service Center must be an authorized Girard Products, LLC Service Center.
- Authorized Service Centers must obtain prior approval for work that exceeds the flat rate time allowances.
- **Operational failure caused by improper installation or the use of non GSWH-1 components will result in the warranty claim being denied.**



## Service

Your Girard Tankless Water Heater is manufactured to the highest standards and is designed to provide years of trouble free use but in the event you require service please follow the steps outlined below. Remember as an owner, you are required to provide proof of purchase date through a Bill of Sale or other appropriate record.

1. If your RV has its original water heater and is still under the RV manufacturer's warranty, follow the steps suggested by your dealer or the manufacturer of your RV.
2. Contact Girard Products Water Heater Service Center or call the Girard Products Technical Support Department at 949-259-4024 or visit our website at:  
**[www.greenrvproducts.com](http://www.greenrvproducts.com)** for a local recommended service center.
3. Call the service center, describe your problem and make an appointment, if necessary.  
**SERVICE CALLS TO CUSTOMER LOCATION ARE THE RESPONSIBILITY OF THE OWNER. DO NOT PAY THE SERVICE CENTER FOR WARRANTY REPAIRS WITHOUT PRIOR APPROVAL FROM GIRARD PRODUCTS, LLC; SUCH PAYMENTS WILL NOT BE REIMBURSED.** Be sure to provide purchase documentation regarding your Girard Water Heater.

**This Girard Products Water Heater is designed for use in recreation vehicles for the purpose of heating water as stated in the "rating plate" attached to the water heater. Any other use, unless authorized in writing by the Girard Products Engineering Department, voids this warranty.**

## **Addendum - Technical Bulletins**

### **TECHNICAL BULLETIN 040611-A**

#### **CONVERSION DOOR – PART NUMBER 1GWHDas10**

##### **RE: COMPATIBILITY ISSUE WHEN REPLACING AN ATWOOD 10 GALLON WATER HEATER WITH A FLUSH MOUNT DOOR.**

It has come to our attention that our 1GWHDas10 Conversion Door does not cover the corners of the Atwood 10 gallon water heater with a FLUSH MOUNT door. The installer will need to make modifications/fabricate to cover the corners which will require the installer to inspect and then quote the customer on the labor involved to cover the corners.

This issue is only an issue on the Atwood 10 gallon with a FLUSH MOUNT Door.

The 1GWHDas10 does work on the Atwood 10 gallon water heater with a standard door and it works on the Suburban 10 gallon with a FLUSH MOUNT or standard door.

Also, there is no issue with either of the Girard 6 gallon door kits (1GHWD & 1GWHDA6).

Please share this with your customers before they order a 1GWHDas10 so they can confirm which style Atwood 10 gallon water heater door is being replaced.

### **TECHNICAL BULLETIN 042811-A**

#### **FAUCETS**

There are certain faucets used in RV Park Models (and possibly certain RVs) that do not allow for individual flows of the Hot and Cold water. They have a mixing valve that automatically mixes Hot and Cold Water. These faucets also don't allow for flow adjustments so these faucets do not work with the Girard Water Heater.

Girard Water Heater Operating Instruction state how to operate the Water heater by using the only the hot water, do not turn on cold water and adjust the flow of the hot water to the desired temperature.

It is the responsibility of the end user to ensure that their fixtures are applicable to our product. We strongly suggest the selling dealer and/or installing dealer confirm the plumbing fixtures in RV Park Models.

We will not honor refunds, returns or labor charges for these types of claims.

### **TECHNICAL BULLETIN 021014-A**

#### **MAGNETEK - PARALLAX 6300 CONVERTERS**

The 6300 model converter is not a "clean" power converter and will affect the operation of the Girard Water Heater circuit board. If an RV has this type of converter, then a 12V line (to the water heater) needs to be either; run directly from the battery, run from the filtered side of the converter (if the converter has this option) or the converter needs to be replaced.

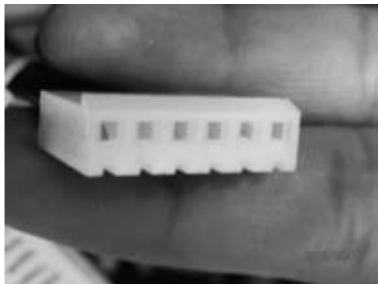
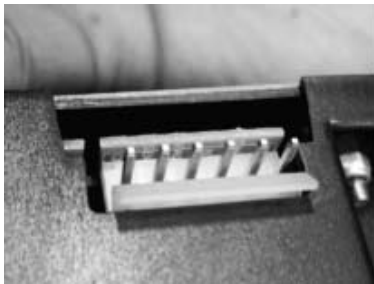
The Magnetek-Parallax 6300 is prevalent on older model RVs (2000 and before) so before installation of a Girard Water Heater, the installer should confirm the converter model and make corrections if the model is a model 6300.

Any damage to a Girard Water Heater and/or the circuit board due to use of the 6300 converter is not a warrantable item.

# Addendum - Technical Bulletins

## TECHNICAL BULLETIN 052814- A DSI BOARD WITH PIN CONNECTORS

The DSI Board for the Girard GSWH-1M has changed from SPADE connectors to PIN connectors. Effective with GSWH-1M serial number 10201.



Please be sure to have the GSWH-1M serial number before ordering a DSI Board or Wiring Harness to ensure the proper DSI Board is shipped.

## TECH BULLETIN 081412-A GSWH-1M DIAL (GMC) CHANGE & IDENTIFICATION

The first production of the GSWH-1M Water Heaters has a Dial (GMC) with different electrical specifications than the all following shipments.

THE FIRST PRODUCTION RUN OF GSWH-1M WATER HEATERS AND GMC DIALS ARE “OEM INSTALLED” UNITS AND SHOULD NOT BE APPLICABLE TO AFTERMARKET INSTALLATIONS. Below are pictures of the first production dials (back side) and all following production dials (back side).



**1ST SHIPMENT  
DIAL “2K2”**



**2ND & UP PROD.  
DIAL “1K”**



**GSWH-1M 1ST  
PROD. W/DOT**



**GSWH-1M BOX  
1ST PROD.**

# Addendum - Technical Bulletins

## TECH BULLETIN 081412-A GSWH-1M DIAL (GMC) CHANGE & IDENTIFICATION (Continued)

**THE 1ST PRODUCTION OF THE GSWH-1M WATER HEATERS AND GMC DIALS ARE NOT INTERCHANGEABLE WITH ALL FOLLOWING PRODUCTION OF GSWH-1M WATER HEATERS & GMC DIALS.**

THERE ARE APPROXIMATELY 600 OF THE FIRST PRODUCTION GSWH-1M WATER HEATERS. THEY CAN BE IDENTIFIED BY:

- THE GMC DIAL NUMBERS (ON BACK SIDE OF DIAL – SEE ABOVE)
- AN ORANGE DOT ON THE BACK OF THE GMC DIAL (SEE ABOVE). AN ORANGE DOT ON THE FRONT OF THE GSWH-1M WATER HEATER (SEE ABOVE).
- AN ORANGE DOT ON EXTERIOR OF GSWH-1M WATER HEATER BOX (SEE ABOVE). IF NO ORANGE DOTS ARE PRESENT:

REFER TO THE GSWH-1M WATER HEATER SERIAL NUMBER.  
APPLICABLE SERIAL NUMBERS: 1GWHM00001 TO 1GWHM00619.  
CONTACT GIRARD TECHNICAL SUPPORT DEPARTMENT FOR FURTHER ASSISTANCE IN IDENTIFYING THE 1ST PRODUCTION GMC DIALS AND THE WATER HEATERS.

## GSWH-1M TECH BULLETIN 092813-A New additional 75 Degree C/167 Degree F Limit Switch

On the Girard GSWH-1M Water Heaters from serial number 1GWHM05682 and higher there is an additional limit switch on the hot water outlet line. This limit switch (75C - 167° F) was added per CSA requirements to ensure flame shut off if the 55C limit switch (ECO) fails to shut off at 55C (131° F).

### TESTING LIMIT SWITCHES






75C has a reset button which can be reset if flame shut off occurs under 131° F. If the flame continues to cut off then the 55C limit switch is defective. You can also jump the 55C limit switch to check if defective.

NOTE: Both Limit Switches are replaced when replacing a defective Limit Switches.




75C Limit Switch – White Switch  
55C Limit Switch – Black Switch












## Addendum - GSWH-1 & GSWH-1M Spare Parts List

Description	Part Number	UPC Number	Photo
Burner Assm. - GSWH-1 (Orifice #73 Drill Bit)	1GWH1100	846611000127	
Burner Assm. - GSWH-1M (Orifice #71 Drill Bit)	1GWHM1100	846611000134	
Burner Bracket Left	1GWH1300	846611000141	
Burner Bracket Right	1GWH1200	846611000158	
Door Latch Assembly	1GWH4401	846611000165	
Heat Exch/Blower Assm. GSWH-1	1GWH3700	846611000172	
Heat Exch/Blower Assm. GSWH-1M	1GWH3755	846611000189	
Heat Ex. Mtg. Brackets	1GWH2200	846611000196	
Heat Ex. Support	1GWH2300	846611000202	
Control Housing	1GWH4900	846611000219	
Mode Switch	1GWH6800	846611000226	












## Addendum - GSWH-1 & GSWH-1M Spare Parts List

Description	Part Number	UPC Number	Photo
Power Switch	1GWH6700	846611000233	
LED Light	1GWH6900	846611000240	
GMC Dial - Black 1K	1GWHM6700	846611000257	
GMC Diall - White 1K	1GWHM6701	846611000264	
GMC Dial - Black 2K	1GWHM67002	846611000271	
GMC Dial - White 2K	1GWHM67012	846611000288	
DSI control board w/cover	1GWH7300	846611000295	
Flue Tube/Exhaust Tube	1GWH4600	846611000301	
Relay	1GWH1989	846611000318	
Sail Switch	1GWH6600	846611000325	
Sail Switch Bracket	1GWH4800	846611000332	

## Addendum - GSWH-1 & GSWH-1M Spare Parts List

Description	Part Number	UPC Number	Photo
Hot Water Assm. w/Valve (1 Plate)	1GWH5550	846611000349	
Hot Water Assm. w/Valve (Combo Plate)	1GWH5500	846611000356	
Flow Switch Assembly	1GWH7100	846611000363	
ECO 50C	1GWH6500	846611000370	
ECO 55C	1GWH6550	846611000387	
ECO COMBO 55C/75C	1GWH6595	846611000394	
Inlet T-Switch 25C (option)	1GWH6400	846611000400	
WUD Solenoid Valve	1GHWAF10	846611000417	
Thermostat WUD - 9C	1GWHAF20	846611000424	
Gas Mod. Box 1K GSWH-1M	1GWHM6801	846611000431	
Gas Mod. Box 2K GSWH-1M	1GWHM6802	846611000448	

**Addendum - GSWH-1 & GSWH-1M Spare Parts List**

Description	Part Number	UPC Number	Photo
Gas Mod. Solenoid GSWH-1M	1GWHM10	846611000455	
Gas Control Valve GSWH-1	1GWH6100	846611000462	
Gas Control Valve GSWH-1M	1GWHM6100	846611000479	
Gas Inlet and Tube	1GWH5400	846611000486	
Wire Harness - w/DSI wires	1GWH8100	846611000493	
Igniter w/wire Assembly & Brkt.	1GWH6300	846611000509	
Rubber Grommet - Gas Line	1GWH9100	846611000516	
Strain Relief	1GWH9200	846611000523	
Owner's Packet	1GWH9400	846611000530	
Door - Only - 1GWHD	1GWH4400	846611000547	
Flange - Only - 1GWHD	1GWH4300	846611000554	



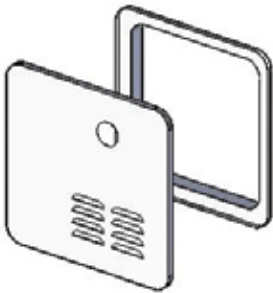
# Addendum - General Information

## DOOR/FLANGE ASSEMBLIES

### DOOR/FLANGE ASSEMBLY

#### Part # 1GWHD - POLAR WHITE

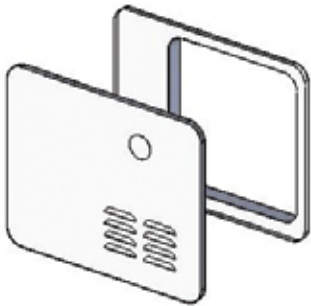
For new installations. Also applicable conversion door for the Suburban 6 gallon water heater.



### DOOR/FLANGE ASSEMBLY

#### Part # 1GWHD - POLAR WHITE

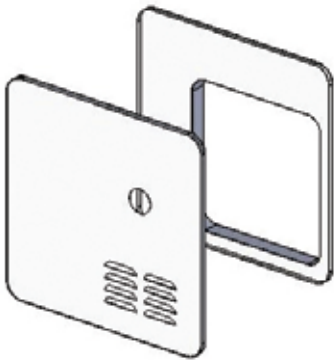
For new installations. Also applicable conversion door for the Suburban 6 gallon water heater.



### DOOR/FLANGE ASSEMBLY CONVERSION

#### Part # 1GWHAS10 - POLAR WHITE

Applicable conversion door for the Atwood or Suburban 10 gallon water heater.



## Addendum - General Information

### TANKLESS WATER HEATER Model GSWH-1

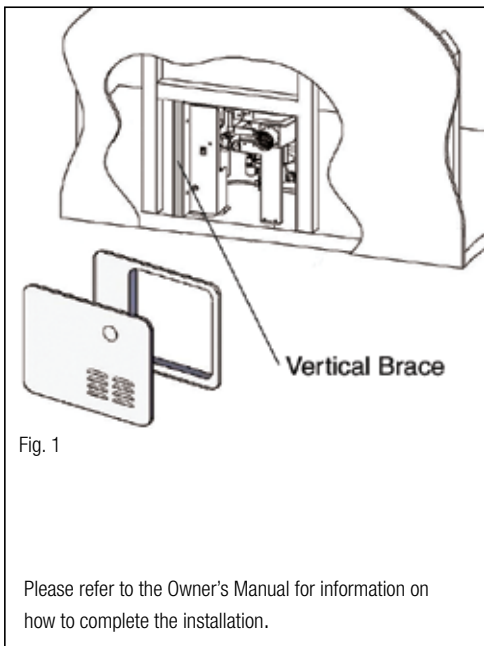
#### REPLACEMENT OF AN ATWOOD 6 GA. UNIT DOOR/FLANGE ASSEMBLY - Part #1GWHDA6

The existing cut-out for a 6 gal. Atwood water heater measures 16 1/4" (W) x 12 5/8" (H).

The cut out needed for your GSWH-1 is only 12 3/4" x 12 3/4" and its flange MUST be supported on all sides by a wooden frame so that it may be mounted rigidly with #8 3/4" flat head screws.

The flange will fit vertically into the existing opening, but a horizontal gap of 3 1/2" will be left between the new flange and the side of the opening.

A properly cut piece of 2" by 2" must be added as a vertical brace located at 12 3/4" from the right edge of the cut out. (See Fig. 1)



#### REPLACEMENT OF AN ATWOOD OR A SUBURBAN 10 GA. UNIT DOOR/FLANGE ASSEMBLY - Part #1GWHDA10

The existing cut out for a 10 gal Atwood water heater measures 16 1/4" by 15 3/4" and for a 10 gal Suburban unit measures 16 1/4" by 16 1/4" .

The cut out needed for your GSWH-1 is only 12 3/4" by 12 3/4" and its flange MUST be supported on all sides by a wooden frame so that it may be mounted rigidly with #8 3/4" flat head screws.

A horizontal gap of 3 1/2" and a vertical gap of 3" will be left between the new flange and the sides of the opening.

Two properly cut piece of 2" by 2" must be added as a vertical brace located at 12 3/4" from the right edge and 12 3/4" from the bottom edge of the cut out. (See Fig. 2)

