

# Important Priming Notice

**Proper priming procedures must be followed to avoid damage to the pump.**

1. Summer / Winter valve must be in "Winter" position to fill tank. Turn off power and propane. (see manual)
2. Do not attach the Zone supply lines until the tank is filled with water/antifreeze mix.
3. Fill tank to brim with water/antifreeze mix, approximately 2 gallons then reconnect the Zone supply lines.
4. Turn on 12 volt power switch and for TT2 also turn on zone 2 thermostat.
5. If pump is making noise, it has not primed.
6. Turn power off and on 5-10 times in 3 second cycles. When noise stops pump is primed.
7. Turn on power and continue to fill tank to brim as fluid level drops.
8. Run for 15-20 minutes checking fluid level.
9. Top off the tank as needed.
10. Install radiator cap once fluid level stops dropping.
11. Propane can be turned on and unit is ready for use.  
(refer to start up procedure)

# TwinTemp Installation Manual

*Please read these instructions thoroughly before starting your installation*

Note: These instructions apply to both models. The *TwinTemp-2* is a dual zone heating unit whereas the *Junior* is a single zone. Both also provide continuous hot water. Installation is identical except for the additional zone.

The *TwinTemp* is designed to be installed in a ventilated compartment of the vehicle such as a lower luggage compartment or “basement” and vented through the bottom of that compartment to the outside. The heater must not be mounted in the living area of the vehicle or in a way that receives its combustion air from the living area or flues into the living area of the vehicle. Doing so will void the warranty and cause the heater to malfunction and could cause damage, injury or death.

Please read these instructions before making any modification to the construction of your RV.

## **Installation Overview**

The installation of the *TwinTemp* is done in three steps:

- Installation of main heating unit and exhaust system
- Installation of blower heating units and thermostats
- Routing wiring and high temperature tubing from main heating unit to blowers

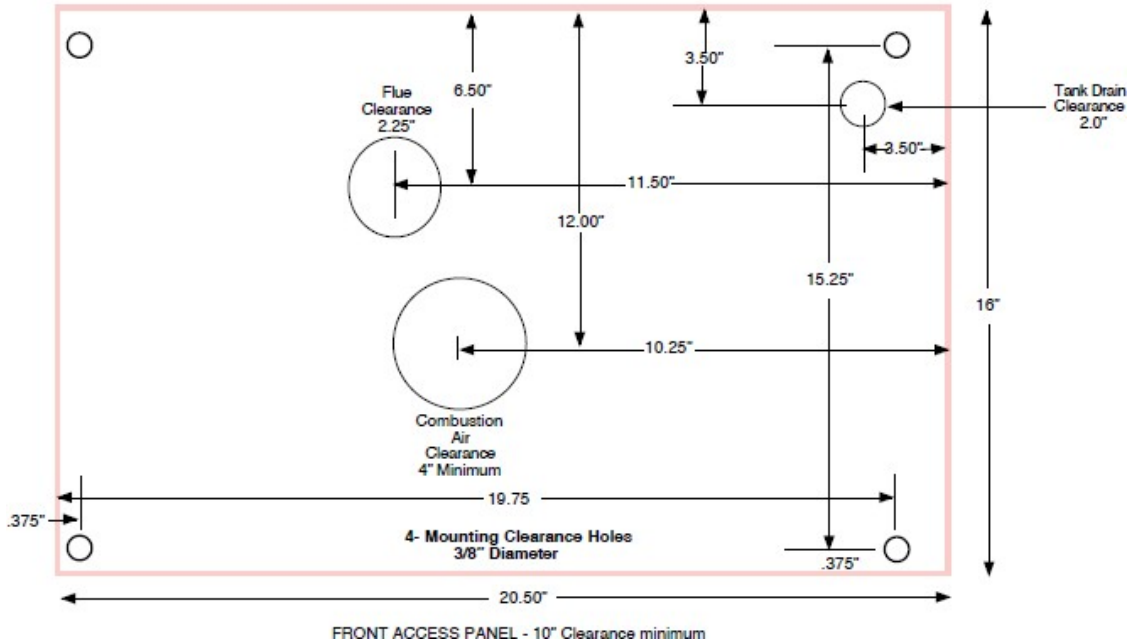
## **Installation of main heating unit and expansion tank**

When selecting an installation location, please note the following installation requirements:

- Surface should be able to support at least 100 pounds
- The front panel of the heater should be accessible for inspections or servicing
- The vent must be able to be installed through the floor without interference with frame members or other equipment.
- The compartment where the heater is installed must not be air tight from the outside. There should be at least 12 square inches of fresh air available from the outside, **NOT** FROM THE LIVING AREA OF THE VEHICLE OR TINY HOUSE.

**Caution:** the combustion air cannot be supplied from any compartment which may contain combustible gases (i.e. battery gases, gasoline fumes, propane fumes, etc.)

- Water, gas and electric line should be able to run to the installation.
- Installation must be done to allow at least 10” access to the front and at least 8” access above the unit.
- There must be access to all plumbing connections on the right side of the heater if they are not made prior to securing the installation into place.
- There should be at least 1” clearance in the back and at least 8” of top clearance is recommended to facilitate startup.
- It is recommended to install the heater as close to the gas supply as practical to minimize the length of the gas line.



Note the locations of the flue cut-out and mounting holes. Be sure they will not interfere with any framing members, wiring or equipment under the coach. Be sure to observe proper clearances around the unit. Drill the four 3/8<sup>th</sup> mounting holes. Next cut the 2.25 minimum hole for the flue and the 4: minimum hole for the combustion air. Be sure they are located where they cannot be covered or blocked.

**NOTE:** If the *TwinTemp* cannot be mounted with sufficient access to the connection side of the unit to make connections after installation, the connections must be made prior to mounting the unit. See sections regarding Plumbing Hook-ups, Wiring Hook-ups and Gas Line Hook-up.

Use the 1/4 20 bolts supplied to attach the hold down strips onto the bottom front and rear of the *TwinTemp*. The hold down strips are used to secure the *TwinTemp* to a floor using wood screws or nuts, bolts and washers depending on type of surface. If the installation is located in a position which allows access to all hookups after installation, the *TwinTemp* can now be installed and secured. Lift the *TwinTemp* into position taking care not to damage the flue transition pipe, protruding from the bottom. Align the flue transition pipe with the flue cutout and hold down strips. Drop the unit into place and secure. Following the instructions on the package, install the expansion tank in the same compartment. Attach and clamp the tube to the bottom barb on the expansion tank and attach the other end to the barb fitting under the radiator cap.

### Exhaust Pipe Installation

- After the *TwinTemp* unit is secured into place, the exhaust (not supplied) is installed as follows:
- Fit a 2"od x 2" id aluminized steel elbow pipe onto the flue tailpiece of the *TwinTemp*.  
**NOTE:** A 2"od x 2" id aluminized transition pipe may be needed if the elbow doesn't reach the flue pipe.
- Locate a 2"od x 2" id aluminized pipe out from under the coach while positioning it so that it points about 30° to the rear of the coach.
- Allowing for about 2" to protrude from under the coach, mark the length, remove and cut to size.
- Screw the cut pipe to the elbow, re-position and install to the *TwinTemp* flue tailpiece.
- Screw the assembly into place using a proper exhaust bracket to support the pipe to the bottom of the coach.  
**NOTE:** The above procedure is a typical exhaust installation contact *PrecisionTemp* for questions concerning this installation. Exhaust pipes can be purchase at all major auto parts stores.

### **Interior Heat Exchanger (Blower) and Room Thermostat Mounting Locations**

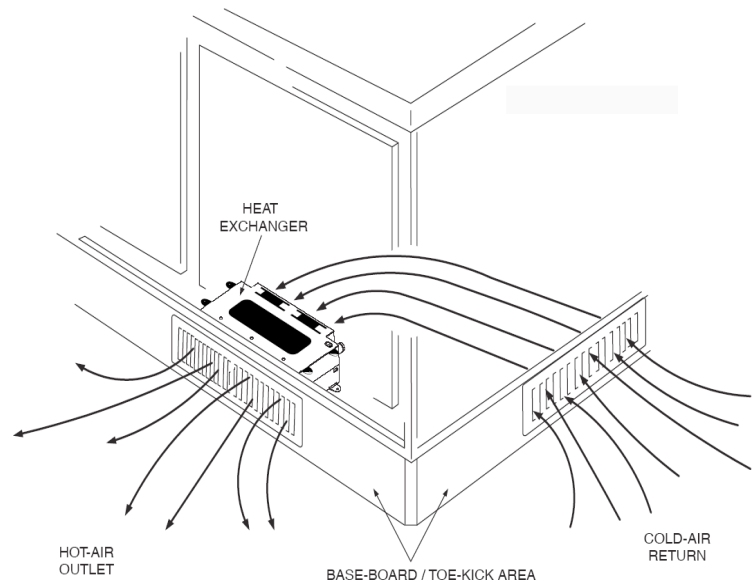
Up to four blowers per zone, or a total of eight blowers, can be installed in the *TwinTemp-2* system. Up to six blowers can be installed in the *TwinTemp Junior* system. In a two zone system, the living and kitchen areas are general put on one zone and the bedroom and bath area on the other zone. Each zone is controlled by its own room thermostat. The mounting locations for the thermostats should be selected carefully to ensure even heat distribution throughout each heating zone. Do not mount the thermostat where it can be affected by drafts, dead spots behind doors, radiant heat from the sun, appliances or unheated areas such as an outside wall behind thermostat.

Locate the heat exchangers so that even heat distribution will be felt throughout the interior. For slideouts, it is recommended to place blower(s) on the opposite side of the coach, pointing towards the slideout. Sufficient return air must be supplied to each interior blower. (See Illustration 2) Mounting blowers without sufficient ventilation will severely reduce their overall heating performance. In order to provide sufficient ventilation, the return air registers must be the same size or larger that the outlet registers. Return air must be supplied from the interior heating zones. Allow for access to all heat exchangers for tubing hook-up and for potential servicing and cleaning.

To mount the blowers once all permanent mounting locations have been selected, cut out the opening for each outlet air and return air register and screw down each heat exchanger permanently into place.

- Cut an opening for each heat exchanger and cold air return.
- Mount each heat exchanger permanently into place.
- Install the hot air outlet and cold air returns.
- There must be complete access to the heat exchangers until the plumbing and electrical hook-ups have been made.

Illustration 2



### **Mounting locations for the water, gray and black tank heat exchanger**

A tank blower should be strategically placed in the domestic water plumbing area to prevent freezing of the plumbing lines and storage tanks. Position the tank heater in the storage tank/ plumbing bay area so even heat distribution will be achieved. **NOTE:** The optional heat exchanger with the built-in thermostat should be used. This blower should be installed in zone one loop. For best heating results, place the exchanger as close to the floor of the plumbing bay as possible (heat will naturally rise). Sufficient ventilation (cold air return) must be supplied. Return air should be supplied from the same compartment.

## Connecting Gas Supply

The gas line should be of approved type and size with a 3/8" female flare nut. If the gas line is very long or has numerous bends, it should not be less than 3/8" ID or performance of the *TwinTemp* will suffer. The maximum inlet gas pressure must not exceed 13 water column inches (WCI) and no less than 10 WCI. This gas line should be one uninterrupted line from the LPG tank regulator with no tees or connections within the coach.

Some standards may require a manual gas shut off valve in the gas line external to the *TwinTemp*. The *TwinTemp* must be isolated from the gas supply system during any pressure testing of that system at test pressures equal to it or in excess of 1/2 PSIG. The flare nut on the gas line should be connected by hand to the flare fitting on the *TwinTemp* to assure it's not cross-threaded.

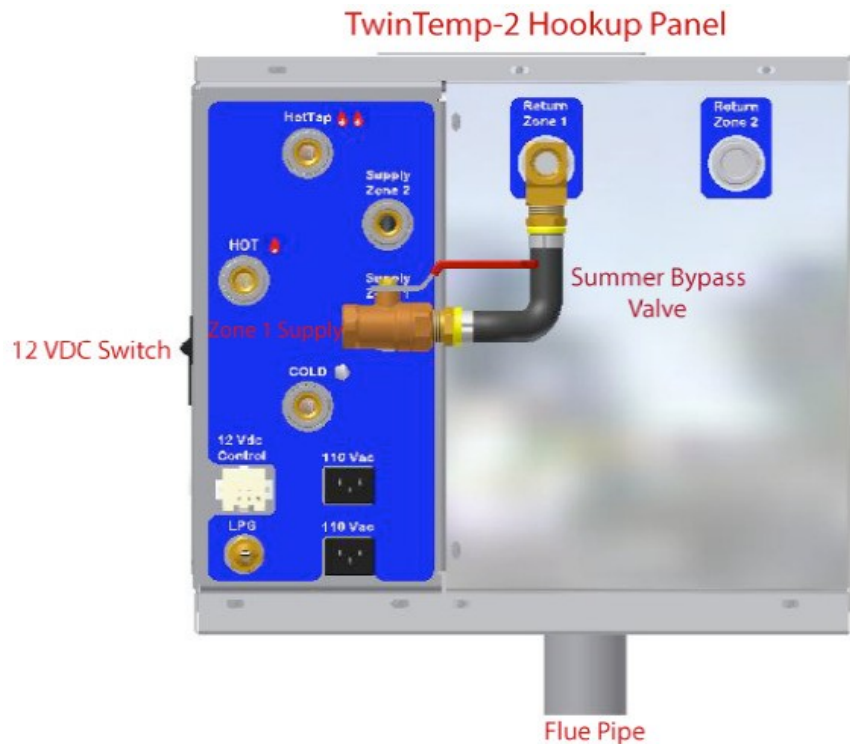


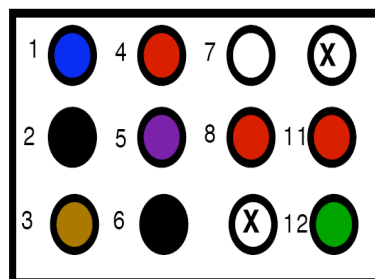
Illustration 3

**No pipe dope should be used on this flare connection.** Tighten with a wrench. This connection should be tested for leaks prior to start up, using soapy water or liquid leak test solution. **Do not use a flame to test for leaks.**

## Wiring

The *TwinTemp* is pre-wired internally with a 12 pin connector for all of the 12 VDC hookups (see Illustration 4). A mating pig tail is supplied to make all field connections. Observe the illustration color codes, the wiring sizes and procedure described below. The 12 VDC *TwinTemp* power switch should remain OFF during installation.

12 Pin Connector Diagram  
(Viewed From Outside Case)



**Note:** Illustration 4 shows the *TwinTemp-2* connector. The Zone 2 terminals are not used for the *Junior*. **All connections should be secure and not in a wet location.**

- |                           |                           |
|---------------------------|---------------------------|
| 1. Blue Zone 2 Blower +   | 6. Black Zone 1 Blower -  |
| 2. Black Zone 2 Blower -  | 7. White Zone 1 T-stat -  |
| 3. Brown Zone 2 T-stat-   | 8. Red Zone 1 T-stat +    |
| 4. Red Zone 2 T-stat +    | 11. Red 12 VDC Supply +   |
| 5. Purple Zone 1 Blower + | 12. Green 12 VDC Supply - |

Illustration 4

## **12 Volt DC Power Hook-up**

This is the main power harness that should be switched at a panel inside the coach on a 15 amp circuit. The wire must not be smaller than 12 gauge. Red is positive (+) and black (or green) is negative (-). Under-sizing this wire will result in the *TwinTemp* malfunctioning.

## **Zone 1 Thermostat and Blower Harness**

Run 18 gauge wires to the Zone 1 room thermostat, observing the wire colors in the illustration to assure continuity of operation. 18 gauge minimum wires should be wired parallel to each blower in the Zone 1 circuit. The black wire is negative (-) and should be connected to the black wire on the blowers and the colored wire is positive and connected to the red wire on the blowers. Again, observe all wire colors in the illustration.

## **Zone 2 Thermostat and Blower Harness (*TwinTemp-2* only)**

As in Zone 1, run 18 gauge wires, observing wiring colors of the illustration and be sure both thermostats are turned to their lowest setting during installation. Observe polarity of thermostat.

## **110 Volt AC Electric Elements Cords (Single Element/ Circuit on Junior)**

These wires are provided with a 15 amp “SJT” plug that is to be plugged into a switched outlet “handy box”. These should be dedicated 15 amp circuits that are switched at a panel inside the coach. Keep Power off to this circuit at this time. If this circuit is energized prior to filling the system with antifreeze, severe damage will occur.

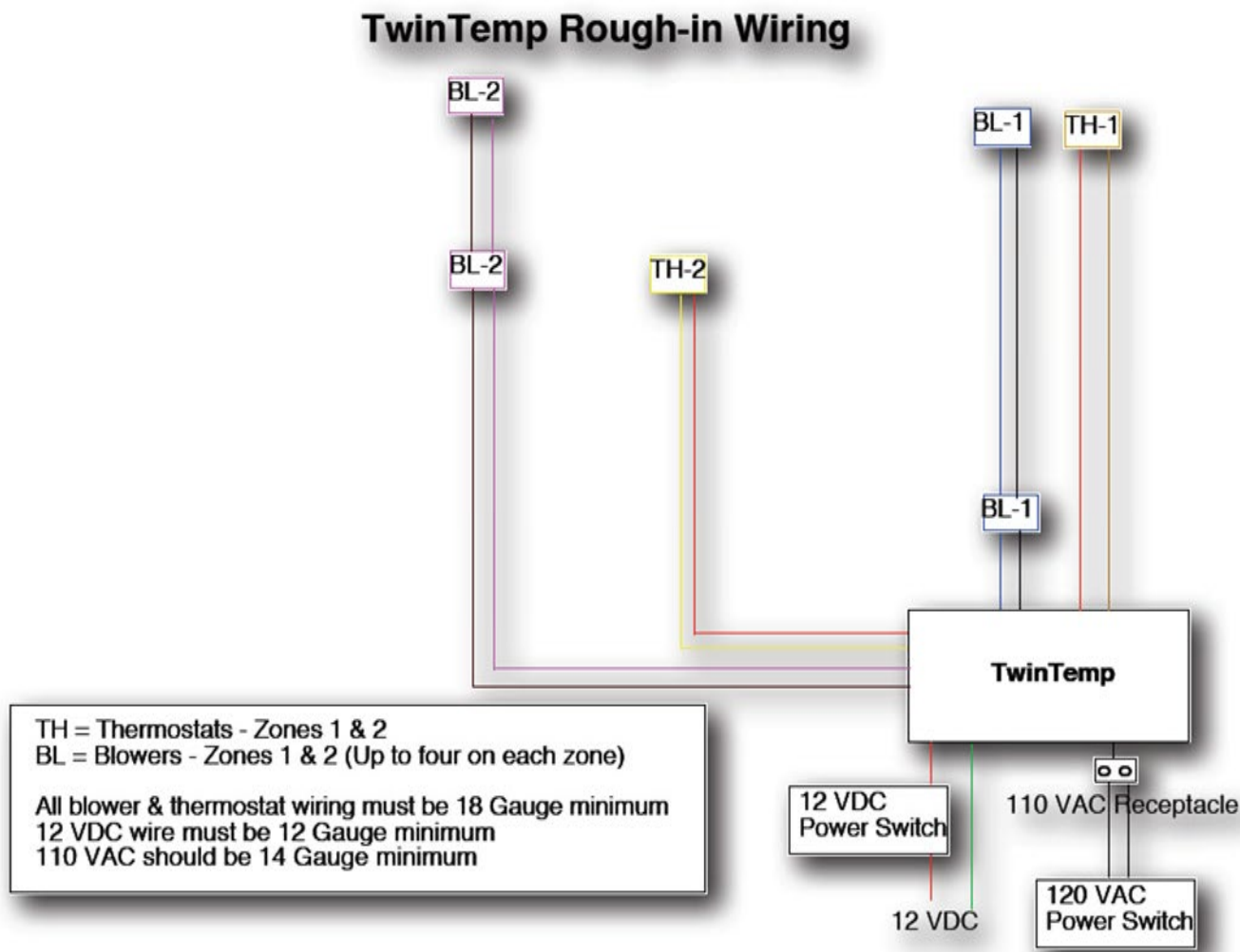


Illustration 5

## Plumbing

The plumbing installation involves two systems:

- Zone heating system blowers
- Domestic hot water system

It is recommended to use 5/8" OD PEX high temperature tubing and push fitting, Otherwise, an adapter will be required to make the connections.

### Zone Heating System Blowers Piping

The Twintemp 2 heating system consists of two separately controlled zones with up to four blowers in each zone. The Twintemp *Junior* has one heating zone and can service up to six blowers.

The *TwinTemp* has a supply line and a return line connection for each zone. It is suggested to use the **red PEX line for Zone 1** and the **blue PEX pipe for Zone 2** to avoid confusion during hookups.

Prior to running the PEX pipe, it is advisable to connect all PEX push fittings to the blowers and the *TwinTemp* water/ anti-freeze connections. Use a high quality Teflon tape on these fittings when making the connections. Take care not to let the Teflon tape get into the system.

The **Zone 1** loop should be used for the longest loop with the most blowers in it, generally the living room/ kitchen loop. Install all PEX pipe and mark with labels at both ends. Arrows should indicate the supply and return lines.

Minimize extreme bends and any extreme rises in height should be avoided. Where possible use "flow bender" clamp rather than elbow fittings the reduce restriction. *PrecisionTemp* can supply the flow benders. Be sure the secure all PEX where necessary and apply protective shielding in areas where chafing may occur.

As shown in Illustration 8, the 3 way by-pass valve and tee fitting has been installed between the supply and return fittings in **Zone 1**. This is to prevent the heated anti-freeze from circulating to the blower units in warm weather, when space heat is not required.

Connect to the **Zone 1** supply line from the *TwinTemp* to the by-pass tee and then continue it to the closest blower unit. Be sure the end of the PEX is cut perfectly square and push it into the push fitting until it bottoms out. Then pull gently on the PEX tube to assure it is tight into the fitting to avoid leaks. Continue this process until all blowers in the **Zone 1** loop have been plumbed (up to four blowers). From the top outlet fitting of the final blower in the **Zone 1** loop, **return the red PEX line to the 3 way by-pass valve and continue back to the *TwinTemp* "Zone 1 in" (return) fitting** of the *TwinTemp*. As above, all PEX tubing should be tightly secured to all of the push fitting on the blowers and *TwinTemp*. (*The junior can accommodate up to six blowers on its single zone.*)  
**Repeat the above process for the Zone 2 loop using blue PEX piping.**

### Domestic Hot Water Piping

Although the *TwinTemp* is capable of delivering continuous hot water on demand, the plumbing system for the domestic hot water is plumbed exactly as it would be with basic recreational vehicle hot water systems. (see Illustration 6). The pressure cold water supply is connected to the "cold" fitting on the *TwinTemp* and the hot water line to the fixtures is connected to the "hot" fitting. As when running the heating system tubing, be sure to secure the push fitting to the *TwinTemp* and cut the PEX tubing square and bottom it out into the push fittings. If the coach is equipped with water pipes other than 5/8" OD PEX tubing, adapters should be used to make the connections to the 1/2" NPT connections on the *TwinTemp*. See Illustration 7 "Winterizing" drawing to incorporate the winterizing valve set into fresh water system this will assure a convenient way to drain the fresh water system and prevent freezing of the *TwinTemp* potable water circuit during freezing conditions. Severe damage can occur if this procedure if not followed.



## TwinTemp Start-up / Testing Procedure

### Filling system with antifreeze

Power, propane and water should be turned off. Turn Thermostats to highest setting.

- Remove radiator cap from TwinTemp tank.
- Turn Summer/Winter valve to winter position.
- Using a funnel fill tank with approximately 2.5 gallons of 50/50 mix of propylene glycol/distilled water. Use a boiler antifreeze made for multiple metals with our Stainless Steel tank ie. Rhogard, Camco, Century Transfer Fluid, etc.) **DO NOT USE RV WINTERIZING ANTIFREEZE**
- Turn on 12 volt power switch located on TwinTemp, **Do not turn on propane**, turn on both zone one and two thermostat to call for heat.
- As the antifreeze level drops, top off the tank with antifreeze mix until level stops dropping. If there is difficulty in priming the pump disconnect the zone one pipe connection and cycle the on/off switch multiple times until fluid starts moving then reconnect zone one pipe.
- After fluid level stops dropping run the TwinTemp an additional 15 minutes to purge all air from hydronic system plumbing.
- Top off tank, reinstall radiator cap and fill expansion tank to the cold line.
- Turn off power and turn on propane, check propane connections for leaks.
- Turn on 12volt power. Cycle power on/off every 15-20 seconds to purge air from propane lines.
- **NOTE:** If pump sounds as if it is cavitating or you hear a knocking or banging noise turn off propane and allow pump to run an additional 10-15 minutes to purge air from hydronic system plumbing. **Never remove radiator cap when fluid is hot.** As unit heats up the antifreeze will expand into the expansion tank. After all expansion has taken place, be sure expansion tank is filled to full line. When the unit is shut off and cools down the fluid level in the expansion tank will lower. When cold, be sure to fill above the "Add" line. If expansion tank is ever empty, check the fluid level in the TwinTemp tank and top off if necessary.

### Start-up and Testing Space Heating

- Turn summer / winter valve in winter position.
- Turn on 12volt power
- Observe that the flame is on and remains on. It should take 8-10 minutes to completely bring the system up to temperature (185 degrees) and burner goes out.
- Turn room thermostats to highest setting and verify all interior heat register blowers come on and deliver heat. NOTE: Tank fluid temperature must reach 160 degrees before heat register blowers will come on
- Turn off thermostats and let system run until burner goes off.



## Testing Water Heating System

- Put Summer/Winter valve in summer position.
- Turn on power and allow the system to heat up until burner shuts off.
- Open hot water tap and purge all air from hot water line
- Water should be hot (approximately 120 degrees) within 30 seconds. Allow hot water to run for 3-5 minutes and verify burner activates to maintain water temperature.
- Turn off water tap and check for water leaks and correct if needed.

## Testing Electric Heating Element water heating

- Be sure the system is filled with antifreeze then turn on 110vAC electric element(s)
- From a cold start it could take up to 20 minutes to completely heat the tank.
- Check hot water operation.
- Note: The 115vAC element is used for minimal hot water needs since it has only 20% the capacity as the propane operation.

## Sequence of Operation

Before using the *TwinTemp* for the first time, it is important to know the proper sequence of operation to ensure understand of its operation. **Sequence of Operation is as follows:**

- The 12 VDC power switch on the *TwinTemp* is turned on.
- Tank thermostat inside turns on Pump 1 and the burner ignites automatically.
- Anti-freeze circulates from burner to Zone 1 blowers and back to the tank as it heats.
- Burner remains in high fire until set temperature is approached and gas is modulated to a low burn until set temperature is attained.
- Burner and pump shut down when set temperature is attained. This takes about 5-15 minutes depending on ambient temperature.
- *TwinTemp* is now in standby mode until a room thermostat is activated or hot water is called for.

## If Room Heat is Needed

Set Zone 1 or Zone 2 (*TwinTemp* only) thermostat to desired temperature. The corresponding pump and blowers will activate and within seconds heat is delivered from blowers. When tank temperature is below set point the burner will re-light and maintain proper tank temperature. When room reaches set temperature, the pump and blowers for that zone will go off. If tank temperature is below set temperature, pump 1 and the burner will stay on until tank reaches set temperature.

NOTE: the heat register blowers will not activate if the antifreeze tank temperature is below 160° F. This assures that the hot water function takes priority under heavy usage conditions. Blowers will resume operation when tank temperature goes over 160° F.

## If Hot Water is Needed

Once the tank reaches set temperature (5-15 minutes after system is turned on), continuous hot water is delivered when any tap is opened. Delivery temperature is determined by the setting of tempering valve (Adjustable 100° - 145° F).

**Warning: this valve is factory set at approximately 120° F, adjusting temperature any higher could result in severe injury due to scalding.**

Tank thermostat turns pump 1 and burner on automatically when tank temperature starts to drop. Anti-freeze circulates from burner and back to tank as it heats. Burner remains in high fire and gas modulates burner to low burn until set temperature is attained. When set temperature is reached, burner and pump shut down and system returns to stand-by mode.

## Operating Instructions for the *TwinTemp*:

### Hot Water

- Pressurize the water system by turning on pump or city water pressure.
- Purge all air from system by turning on taps until there is a steady stream of water. Turn off taps. Check for leaks.
- Turn on the propane supply at tank and the manual gas valve if installed in system.
- Turn on the 12 VDC power supply and switch on *TwinTemp*. If this is the first time the system has been used, power may have to cycle several times in 5-10 second intervals until air is purged from the gas line. Using sight hole, verify that burner is on.
- It will take about 5-15 minutes for the system to heat up.  
Turn on any hot water tap. Continuous hot water will be delivered in the time it takes to get from the *TwinTemp* to the tap.

### Space Heating

- Follow procedure 3-5 of “Hot Water” section above.
- Set the appropriate zone room thermostat to the desired temperature.
- Once the system is up to operating temperature blowers in that zone will provide heat within seconds of being activated.
- When set temperature is attained, blowers will shut down.

NOTE: the blowers will not activate if the tank temperature is below 160° F. This assures that the hot water function takes priority under heavy usage conditions.

**WARNING: Always turn off the 12-volt power supply to the heater during any fueling operations. Operating the *TwinTemp* or any other ignition source during fueling could cause a fire or explosion, which could result in serious injury or death.**

**NOTE: Should overheating occur or the gas supply fails to shut off, turn off gas valve at the supply tank. Immediately call a qualified service technician.**

**Do not use this appliance if any part has been under water. Immediately contact a qualified service technician to inspect the appliance and replace any part of the control system and any gas control which has been under water.**

**NOTE: When using an “on/off” button on a shower head or and outside wash down box, always turn off the hot and cold water valves when finished. Not doing so will result in cold water bleeding into the hot water system and cold water or alternating warm and cold water will result.**

The *TwinTemp* is designed to give a continuous flow of hot water as long as required and maintain the set temperature through all flow rates within the capacity of the heater (up to 88° F temperature rise per GPM).

### **110 Volt Heating Element**

The *TwinTemp-2* is equipped with two 110 VAC electric heating elements and the *Twintemp junior* has one element. These provide limited amounts of hot water or space heating, such as washing hands or dishes. The electric element can be used with or without the propane burner, but for continuous hot water or space heat, the propane burner must be used. To operate, turn the 110 volt switch(es) on in the coach and be sure the power wire is plugged into the handy box(es) in the *TwinTemp* compartment.

For small amounts of hot water only, there is no need to turn the 12 volt power on to the *TwinTemp*. However, if space heat is required in very cold weather, the 12 volt switch should be turned on. If there is a higher demand for heat that the 110 volt element(s) can provide, the propane burner will activate automatically. For best operation, turn the 110 volt elements on about 30 minutes before turning 12 volt switch on. This allows the tank to come up to temperature utilizing the electric element before the burner can activate. This will help conserve propane.

### **Changing Hot Water Temperature Setting**

The temperature coming from the tempering valve on your *TwinTemp* has been factory set to approximately 120° F. it is not recommended that you set the temperature any higher.

**WARNING: Changing this setting could result in dangerously hot temperatures that could result in severe injury.**

If it is necessary to change the setting it can be done as follows: Open access door on the front of the heater. Locate the tempering valve. Back out the screw in the center of the adjustment knob and turn **counterclockwise to increase temperature** or **clockwise to decrease temperature**. The setting range is between 100° F to 145°F.

### **Summer Operation**

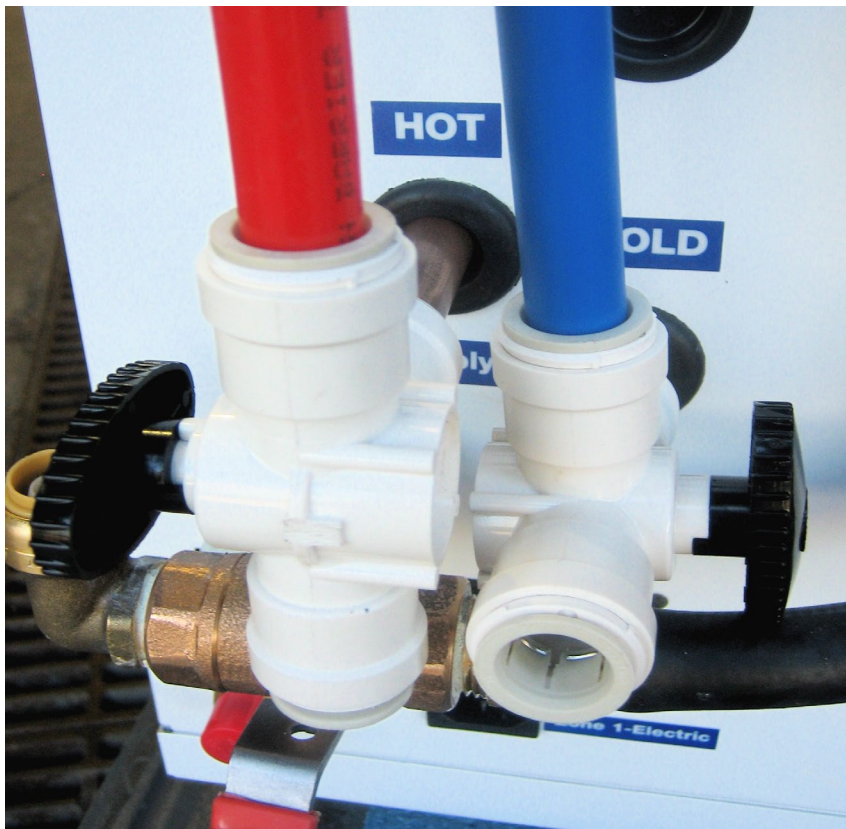
When the space heating function of the *TwinTemp* is not needed, the heated anti-freeze should not be circulated to the blowers. To prevent this circulation, the Summer/Winter by-pass valve (see figure 8) should be turned to the Summer position. When heating is again needed, this lever should best turned to the Winter position.

## TWINTEMP WATER SYSTEM DRAINING/WINTERIZING INSTRUCTIONS

**Note:** Even though the heating system of the Twintemp is filled with antifreeze the water heat exchanger inside the tank is filled with water and must not be allowed to freeze. Freezing can cause severe damage not covered by the Twintemp warranty. When traveling in freezing temperatures or in storage or not being used the plumbing system containing water must be drained.

Turn off water pump or city water pressure. Turn the black hot and cold valve handles to the opposite position as pictured below. Open all hot and cold water faucets to permit the water system to drain from both valves. After water has drained close all faucets. Apply air pressure to the hot winterizing drain valve to force water from the Twintemp heat exchanger until air is heard from the cold drain valve. Leave valves in this position until you are ready to refill the system with water. When you're ready to use the system again turn the valves to the position shown in the picture below.

### Winterizing water valves (Illustration 7)









## **TwinTemp Hydronic Heating & Water Heating Operating Instructions**

For maximum heat and hot water output, it is recommended to use the LPG mode of operation in addition to the 120 volt electric element. Electric element operation should be used for minimal hot water demand such as washing hands or dishes. It is not necessary to have the water system filled to use the space heating system, but the heating system must be filled with anti-freeze.

### **To Start Up System:**

- Turn on the propane supply.
- Turn on 12 volt power switch on the right side of the TwinTemp cabinet.
- Turn on 12 volt power switch on coach, if applicable.
- Burner will start-up and system will be up to operating temperature in approximately 10-15 minutes depending on position of Summer/winter valve.

### **Summer Operation:**

Position Summer/Winter valve in Summer position.

When the space heating function for Zone one of the TwinTemp is not needed, the heated anti-freeze should not be circulated to the blowers. To prevent this circulation, the Summer/Winter by-pass valve should be turned ¼ turn. When heating is again needed, this valve handle should be turned ¼ quarter turn from the Summer position to the Winter position. This adjustment should only be needed twice a year for summer/ winter operation.



**Summer**

**Illustration 8**



**Winter**

### **For Space Heating:**

Position Summer/Winter valve in WINTER position.

Turn on main coach thermostat for Zone one or two and set to desired temperature.

When the system reaches set temperature the blowers will turn on and heat is delivered.

When room reaches set temperature, the pump and blowers for that zone will go off. If tank temperature is below set temperature the burner will stay on until tank reaches set temperature.

NOTE: the heat register blowers will not activate if the tank temperature is below 160° F. This assures that the hot water function takes priority under heavy usage conditions. Blowes will resume operation when tank returns to operating temperature.

### **For Hot Water:**

TwinTemp unit and water system pump must be turned on or connect to city water system.

Turn on hot water tap.

**Note:** During heavy heat and hot water demand, the hot water system takes priority and the heat register blowers may shut off briefly to maintain hot water supply. Hot water temperature is factory set at approximately 120 degrees. To change temperature, consult the operating manual.



Once the tank reaches set temperature (5-15 minutes after system is turned on), continuous hot water is delivered when any tap is opened. Delivery temperature is determined by the setting of tempering valve **Warning: this valve is factory set at about 120° F. adjusting temperature any higher could result in severe injury due to scalding.**

Tank thermostat turns pump 1 and burner on automatically when tank temperature starts to drop. Anti-freeze circulates from burner and back to tank as it heats. Burner remains in high fire and gas modulates burner to low burn until set temperature is attained. When set temperature is reached, burner and pump shut down and system returns to stand-by mode.

### **Winter Mode Hot Water Production**

During winter operation if the system has been dormant for more than 20 minutes turn on interior thermostat to call for heat. When the heat register blowers come on turn off thermostat and turn on hot water tap. Preheating the system is required in winter mode for hot water production due to 3 gallons of cold fluid in the hydronic loop suddenly being returned to the TwinTemp tank lowering the fluid (boiler antifreeze) temperature required for hot water production. Once fluid temperature reaches set temperature the system will make continuous hot water.

### **To Use With 110 Volt Heating Element**

Turn on 110 volt element switch located inside coach.

Let the unit heat up for a minimum of 30-60 minutes.

**Note:** In the 110 volt mode of operation the electric element supplies the heat until demand exceeds its capacity at which time gas burner automatically ignites.

The *TwinTemp Jr.* is equipped with one 110 VAC electric heating element. The element provides limited amounts of hot water or space heating, such as washing hands or dishes. The electric element can be used with or without the propane burner, but for continuous hot water or space heat, the propane burner must be used. To operate, turn the 110 volt switch on in the coach. For small amounts of hot water only, there is no need to turn the 12 volt power on to the TwinTemp. However, if space heat is required in very cold weather, the 12 volt switch should be turned on. If there is a higher demand for heat than the 110 volt element(s) can provide, the propane burner will activate automatically. For best operation, turn the 110 volt element on about 30 minutes before turning 12 volt switch on. This allows the tank to come up to temperature utilizing the electric element before the burner can activate. This will help conserve propane

## **Routine Maintenance**

All faucet aerators and showerhead screens in the coach should be cleaned regularly. It is recommended that the *TwinTemp* be inspected by a qualified service technician at least once a year. Particular attention should be paid to the following:

- Be sure that the air inlet openings and flue area are clear of any debris or obstructions (leaves, bugs, nests, spider webs etc.). Be sure nothing is stored against the unit that would block air or access.
- Inspect boiler anti-freeze level in reservoir tank. Top off if necessary with a **50/50** mix of specified boiler anti-freeze and distilled water.
- Check that heater mounting is still secure to the coach. Tighten if necessary.
- Visually inspect wiring and hoses. Be sure there is no chafing of the insulation.
- Drain boiler antifreeze every 24-36 months for units with stainless steel tanks and install new boiler antifreeze. (system holds approximately 4-6 gallons of a **50/50** boiler antifreeze/distilled water mix)
- Inspect for evidence of antifreeze leaks at internal and external plumbing connections and correct if needed. Test radiator cap and inspect the overflow reservoir hose connections.
- Rotate mixing valve temperature adjustment knob several times clockwise and counter clockwise direction to end stops twice each year.

# **IMPORTANT**

## **COLD WEATHER PROTECTION INFORMATION**

**WARNING:** **Do not** disconnect or turn off the electrical supply to include 12vDC and 120vAC electric element. Do not turn off the propane supply when temperatures are near or below freezing. **The TwinTemp hot water heating system will freeze if the electrical power source or propane is disconnected.**

### **WINTERIZING**

1. Turn off the power and gas supply to the TwinTemp.
2. Turn off main water supply.
3. Open all hot water taps. (Bathroom, kitchen, laundry, etc.)
4. Drain water from plumbing lines.
5. Follow the fresh water winterizing instructions attached to the TwinTemp winter drain valves on the plumbing manifold side of the cabinet.

## **TwinTemp Preventive Maintenance Schedule**

- 1. Clean interior of *TwinTemp* cabinet including combustion air intake grill. \***
- 2. Inspect all wiring connectors for corrosion and tighten or repair if needed. \***
- 3. Performance test heating and hot water functions and rotate mixing valve temperature adjustment knob several times clockwise and counter clockwise direction. \***
- 4. Check for fluid leaks at interior and exterior plumbing connections, radiator cap and overflow reservoir. \*\***
- 5. Check propane connections for leaks. \*\***
- 6. Check boiler antifreeze level in overflow tank. \*\*\*\***
- 7. Drain and refill boiler antifreeze. \*\*\***  
(Use a boiler antifreeze made for multiple metals with our Stainless Steel tank ie. Rhogard, Camco, Century Transfer Fluid, etc.) **DO NOT USE RV WINTERIZING ANTIFREEZE**

**\* Annual inspection**

**\*\* Bi-Annual inspection**

**\*\*\* Every 24-36 months**

**\*\*\*\* Bi-Monthly**



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