TwinTemp-2/TwinTemp Junior
Combination RV Heating System

Instantaneous Gas *Water Heater* and Furnace

Installation and Operating Instructions

The *TwinTemp* systems are certified as a power vented automatic instantaneous water heater / furnace, designed to be installed in recreational vehicles or mobile homes. This appliance must be installed in accordance with local codes or in the absence of local codes the following applies:

Manufactured Home: Standard, Title 24 CFR, Part 3280Recreational Vehicle: Standard ANSI A119.2/NFPA 501C-1987

Every *TwinTemp* is inspected and tested before it leaves the factory. In order for this unit to operate safely and effectively, all installation instructions must be followed. Failure to comply with all installation and operating instructions will void the warranty. *PrecisionTemp* will not be responsible for anything that is a result of non-compliance.

FOR YOUR SAFETY WHAT TO DO IF YOU SMELL GAS

- Extinguish any open flame.
- Shut off the gas supply at the gas container or source.
- Do not touch any electrical switch or use any phone or radio in the vehicle.
- Do not start the vehicle's engine or electrical generator.
- Contact the nearest gas supplier or qualified service technician for repairs.
- If you cannot reach a gas supplier or qualified service technician, contact the nearest Fire Department.
- Do not turn on the gas supply until the gas leak(s) has been repaired.

FOR YOUR SAFETY

DO NOT STORE OR USE GASOLINE OR OTHER FLAMMABLE VAPORS AND LIQUIDS IN THE VICINITY OF THIS OR ANY OTHER APPLIANCE.

WARNING!

Improper installation, adjustment, alteration, service or maintenance can cause property damage, personal injury or loss of life. Refer to the installation instructions and/or operating instructions provided with this appliance. A qualified installer service agency or the gas supplier must perform installation and service.

Keep this book with the *TwinTemp* at all times. It contains instructions regarding installation, operation and maintenance of your *TwinTemp*. If you need further information, contact your dealer, your nearest service center or *PrecisionTemp.*

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Please read these instructions thoroughly before starting your installation

Note: These instructions apply to both models. The *TwinTemp-2* is a dual heating zone unit whereas the *Junior* is a single zone. Installation procedure is identical except for the additional zone, optional engine assist and *HotTap* on the TwinTemp-2.

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* system 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

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 inspection and 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 15 square inches of fresh air available from the outside, NOT FROM THE LIVING AREA of the vehicle. 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 be 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. 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 length of the gas line.

Using the template (See illustration 1), determine *TwinTemp* installation location.

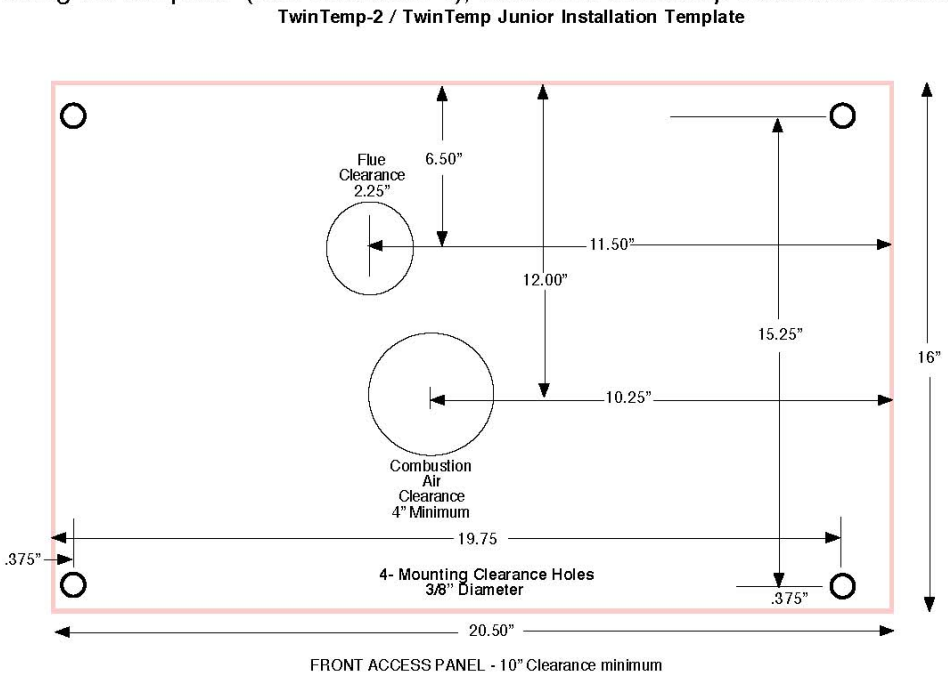


Illustration 1

Note the locations of the flue cut-out and mounting holes. Be sure they will not interfere with any framing members or other wiring or equipment under the coach. Be sure to observe proper clearances around the unit. Drill the 4 – 3/8" 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, these connections must be made prior to mounting the unit. See the sections regarding Plumbing Hook-ups, Wiring Hook-ups and Gas Line Hook-up.

Screw the short end of the supplied vibration absorbing mounting studs into the bottom of the *TwinTemp.* These studs are used to secure the *TwinTemp* to a floor 1" thick or less. (Note: See below if floor is more than 1" thick.) 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 all of the mounting studs with the 3/8" mounting holes. Drop unit into place and secure from below with the flat washers and lock nuts. Tighten nuts until a slight compressing of the mounting is felt.

If floor is more than 1" thick the *TwinTemp* must be secured with the proper length 1/4"-20 bolts, but the vibration absorbing pads must still be used under the unit.

- Using a hack saw, cut off the treaded studs from the vibration absorbing pads and place pads on the floor near the mount holes prior to placing the unit.
- Set unit in place on the vibration absorbing pads, align with mounting holes and run bolts from underneath to secure into place.

Exhaust Pipe Installation

The exhaust assembly is supplied in two parts. They are a: 2” aluminized steel elbow and a 2” X 18”aluminized steel pipe. After the *TwinTemp* unit is secured into place the exhaust is installed as follows:

Fit the 18” long pipe into the 2” elbow and push flare side of the elbow up onto the flue tailpiece of the *TwinTemp*.
Locate the 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
Clamp or screw the cut pipe to the elbow and re-position and install to the *TwinTemp* flue tailpiece.
Screw or clamp assembly into place and use a proper exhaust bracket to support to the bottom of the coach. A chrome tailpiece can now be installed.

NOTE: The above procedure is a typical exhaust installation. If the coach floor is more than 1” thick or the tail pipe needs to be longer than 18”, contact PrecisionTemp for additional components and information.

Interior Heat Exchanger (Blower) and Room Thermostat Mounting Locations

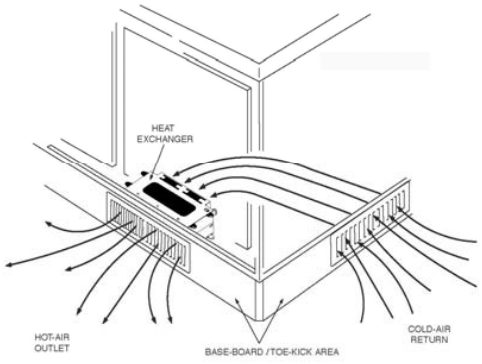
Up to four blowers per zone or a total of eight blowers can be installed in the *TwinTemp-2* system. Up to six blowers can be installed in the *TwinTemp Junior* system. In a two zone system, the living and kitchen areas are generally put on one zone and the bedroom and bath areas on the other zone. Each 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 or dead spots behind doors, radiant heat from the sun or 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 slide outs, it is recommended to place a blower(s) on the opposite side of the coach, pointing towards the slide out. 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 than the outlet-air registers. Return air must be supplied from 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 each outlet-air and return-air register and screw down each heat exchanger permanently into place.

1. Cut out an opening for each heat exchanger and cold-air return.
2. Mount each heat exchanger permanently into place
3. 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.



Mounting location 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.

For best heating results, place the heat 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 5/16" ID or performance of the *TwinTemp* will suffer. The maximum inlet gas pressure must not exceed 13 water column inches and no less that 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 or in excess of 1/2 PSIG* The flare nut on the gas line should be hand connected to the flare connection on the *TwinTemp* to assure it is not cross-threaded.

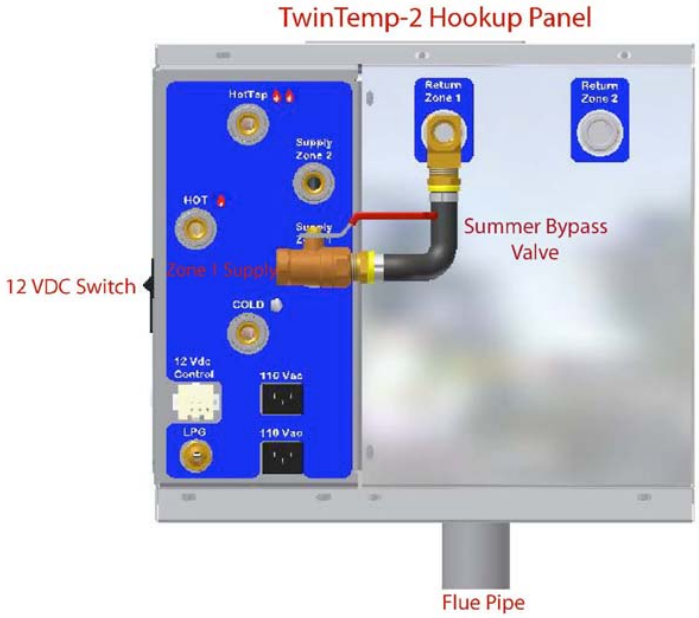


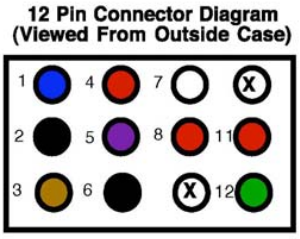
Illustration 3

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 and the wiring sizes and procedure described below. 12 VDC *TwinTemp* power switch should remain OFF through installation.

NOTE: Illustration 4 shows the *TwinTemp-2* connector. The "Zone 2" terminals are not used for the *Junior.*



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

Illustration 4

All connection should be secure and not in a wet location.

- **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 zoned 1 room thermostat, observing the wire colors in the illustration to assure continuity of operation. 18 gauge minimum wire 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, observes 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 "SJO" 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.

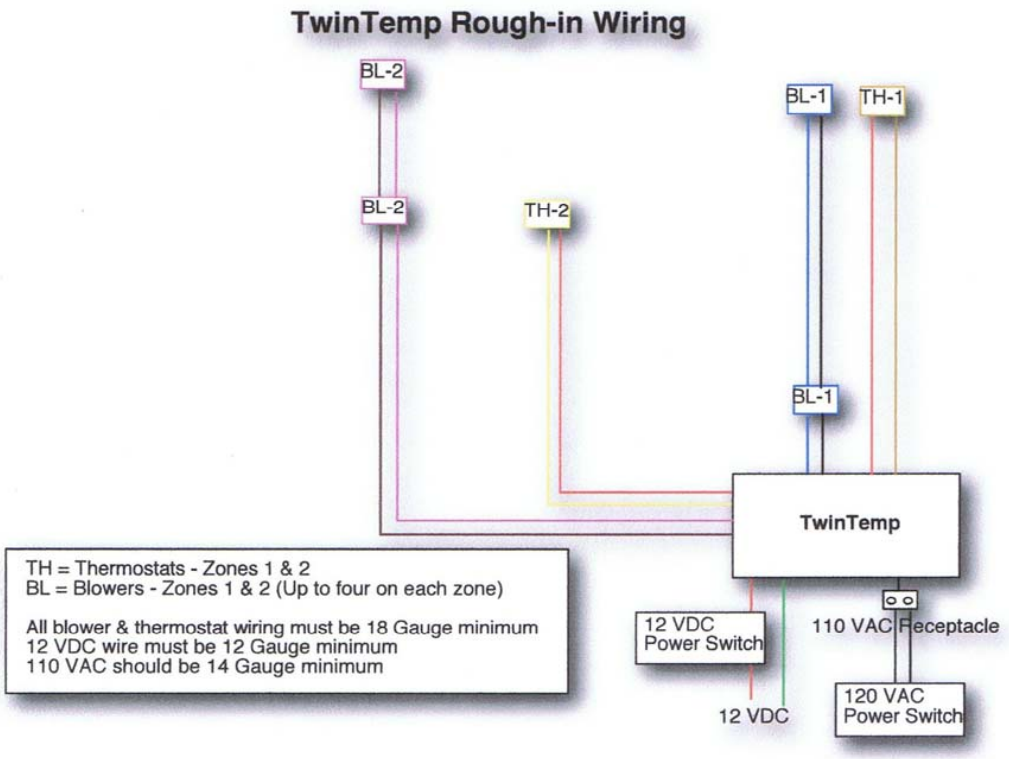


Illustration 5

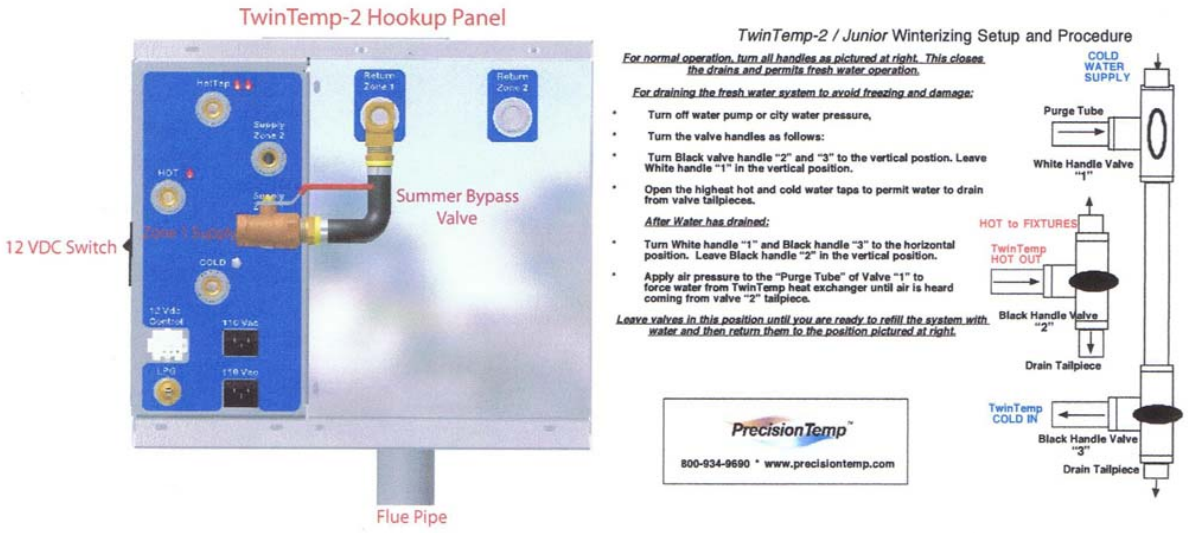


Illustration 6

Plumbing

The Plumbing installation involves three systems:

Zone heating system blowers
Domestic hot water system
HotTap system (Optional)
It is recommended to use 5/8" OD minimum PEX high temperature tubing and push fitting, similar to that *PrecisionTemp* can supply. Otherwise, adapter will be required to make the connections.

Zone heating system blowers piping

The heating system consists of two separately controlled zones with up to four blower in each zone (*TwinTemp*-2). Junior can service up to six blowers. The *TwinTemp* has a supply line and a return line connection for each zone (See illustration 6). It is suggested to use the red PEX line for zone 1 and the blue PEX pipe for zone 2 to avoid confusion during hook-ups.

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

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 "flowbender" clamp rather than elbow fittings to reduce restriction. *PrecisionTemp* can supply the flowbenders. Be sure to secure all PEX where necessary, and apply protective shielding in areas where chafing may occur.

As shown in Illustration 6, the 3-way by-pass valve and tee fitting has been installed between the supply and return fitting 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 the Zone 1 supply line from the *TwinTemp* to the by-pass tee and then continue it to the 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 the PEX tube from the outlet fitting of the blower to the inlet fitting of the next blower. Continue this process until all blowers in 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-wayby-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 the *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 tubing.

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 watersystems. (See Illustration 6). The pressure cold water supply is connected 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 using teflon tape 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 6, "Winterizing" drawing to incorporate the winterizing valve setup 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 is not followed.

***HotTap* piping**

The *HotTap* is a dedicated high temperature hot water tap for food and drink preparation. It can dispense water as high as 190° F. and **must not** be installed when or where there is a risk of scalding. The suggested location is on the kitchen sink countertop near the regular water tap. A clearly visible warning sticker (supplied with the *HotTap*), should be placed near the *HotTap*.To install the spigot, follow the instructions packed with your *HotTap*. The piping to the *HotTap* must be 1/4" soft copper tubing. The tubing should be routed from the *TwinTemp* compartment to under the sink area where the *HotTap* is installed.

The copper tubing is connected to the *HotTap* and the *TwinTemp* by the 1/4" compression fittings supplied.

Filling heating system with anti-freeze

Before turning on the power to the *TwinTemp* system, it must be completely filled with an antifreeze /water mixture and completely purged of all air. A 50 /50 mixture of water and a high temperature propylene glycol with inhibitors must be used. *PrecisionTemp* can supply this non-toxic anti-freeze or recommend approved suppliers. Never use automotive or other toxic anti-freeze.
Remove the small access panel on the top of the TwinTemp using a Phillips screw driver.

Fill system as follows:

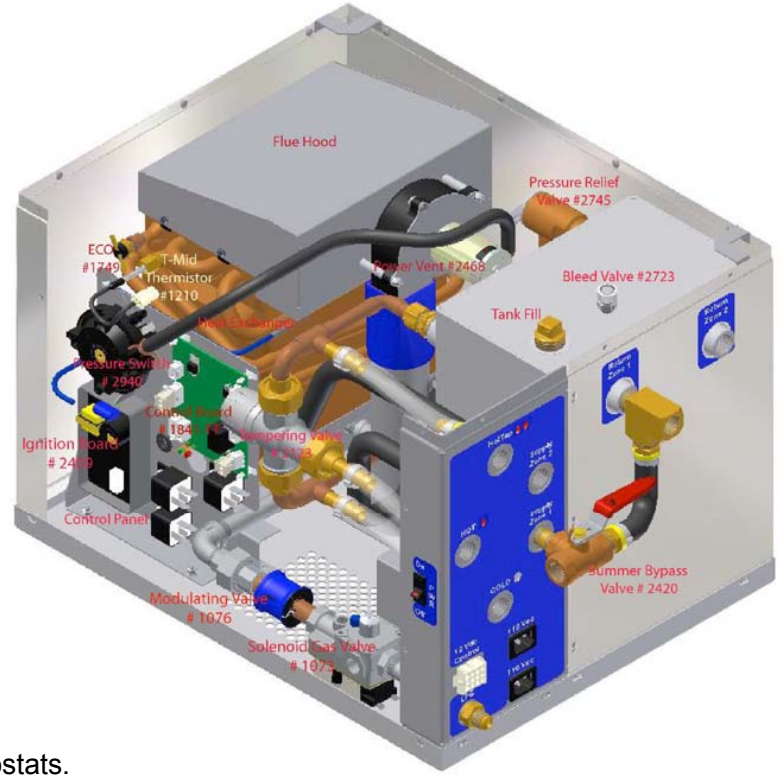
- Remove the cap from the top of the tank. (See Illustration 8)
- Loosen the small cap of the brass air purging device on top of the heat exchanger.
- Using a funnel, fill the tank up to the bottom of the fill fitting with 50/50 anti-freeze/water mix.

This should use about 2.5 gallons. Fill until the tank accepts no more anti-freeze.

Bleed valve on top of tank should remain shut at this point.

- Turn on the main 12 VDC power and the power switch on the *TwinTemp*.
- Set the Zone 1 thermostat to its highest setting. Do not turn on propane at this time. The zone 1 pump will start to circulate the anti-freeze through the blower circuit and the anti-freeze level in the tank will drop.
- Top off the tank with anti-freeze solution until the level stops dropping.
- Turn on the Zone 2 thermostat (TwinTemp-2 only) to activate the Zone 2 pump and continue to top off the tank as the fluid level drops. Top off until the level remains at the bottom of the fill fitting.
- Secure the fill cap.
- Allow both pumps to run for about 15 minutes. Now turn off and check fluid level and top off if necessary.
- Check all fitting in heating system for leaks and correct if necessary.

Illustration 8



Startup Instructions

You can now turn on the propane supply and water pressure. The *TwinTemp* is now ready to startup. The power switch should be turned on only after it is assured the system is filled with anti-freeze and there are no leaks. The domestic water system should be pressurized and checked for leaks. The propane system should be turned on and checked for leaks.

- Turn off interior room thermostats.
- Turn on propane supply and 12 VDC power switch. The *TwinTemp* will start to operate. Cycle the power 3-5 times in 10 second intervals. This should purge the air from the propane line and the burner should fire.
- After the burner has run for about five minutes, carefully open the bleed valve on the top of the tank by turning counterclockwise, this relieves the expansion pressure from tank. There will be a hissing sound and steam escaping. Keep fingers clear when opening.
- Just before the hissing stops, close the bleed valve. This will maintain a slight operating pressure on the tank. Again, check system for leaks. The system should be ready to operate.

Sequence of Operation

Before firing up the *TwinTemp* for the first time, it is important to know the proper "Sequence of Operation" to insure understanding of operation. **Sequence of Operation is as follows:**

- The 12 VDC power and switch on *TwinTemp* is turned on.
- Tank thermostat inside unit turns on pump "1" and burner ignites automatically.
- Anti-freeze circulates from burner to Zone 1 blowers and back to tank as it heats.
- Burner remains in high fire until set temperature is approached and gas is modulated to low burn until set temperature is attained.
- Burner & 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*-2 only) thermostat to desired temperature. The corresponding pump and blowers 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 Zone 1 blower will not activate if the tank temperature is below or drops below 150°F. This assures that the hot water function takes priority under heavy usage conditions.

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 the tempering valve (Adjustable 100° - 145°F). (See Illustration 8)

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. Antifreeze circulates from burner and back to tank as it heats. Burner remains in high fire until set temperature is approached and gas modulates burner to low burn until set temperature is attained. Burner & pump shut down and system returns to stand-by mode.

Operating Instructions

<u>To operate the *TwinTemp*:</u>

Hot Water

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

6. 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. Hot water temperature can be changed by adjusting mixing valve. (See Illustration 8)

HotTap (If equipped)

1. Follow procedure 1 -5 above.
2. Depress lever on *HotTap* dispenser until hot water is dispensed. WARNING: WATER IS EXTEMELY HOT AND CAN CAUSE SERIOUS INJURY.
3. Put container under dispenser, taking care to avoid splashing.

Space Heating

1. Follow procedure 3 – 5 of "Hot Water" section above.
2. Set the appropriate zone room thermostat to the desired temperature.
3. Blowers in that zone will provide heat within seconds of being activated.
4. When set temperature is attained, blowers will shut down.

NOTE: The Zone 1 blower will not activate if the tank temperature is below or drops below 150°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 an 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 causing 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 approximate set temperature through all flow rates within the capacity of the heater (88°F temperature rise per GPM).

110 volt heating element

The *TwinTemp-2* is equipped with two 110 VAC electric heating elements and the Junior with one element. These provide small 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 than 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 the 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 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 (See Illustration 8). Turn the adjustment knob **counterclockwise to increase** temperature or **clockwise to decrease** temperature. The setting range is between 100°F to145°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 lever on the 3-way by-pass valve installed in the Zone 1 circuit of the *TwinTemp* should be turned 1/4 turn. When heating is again needed, this lever should be turned 1/4 turn in the opposite direction. This adjustment should only be needed twice a year for summer / winter operation.

Routine Maintenance

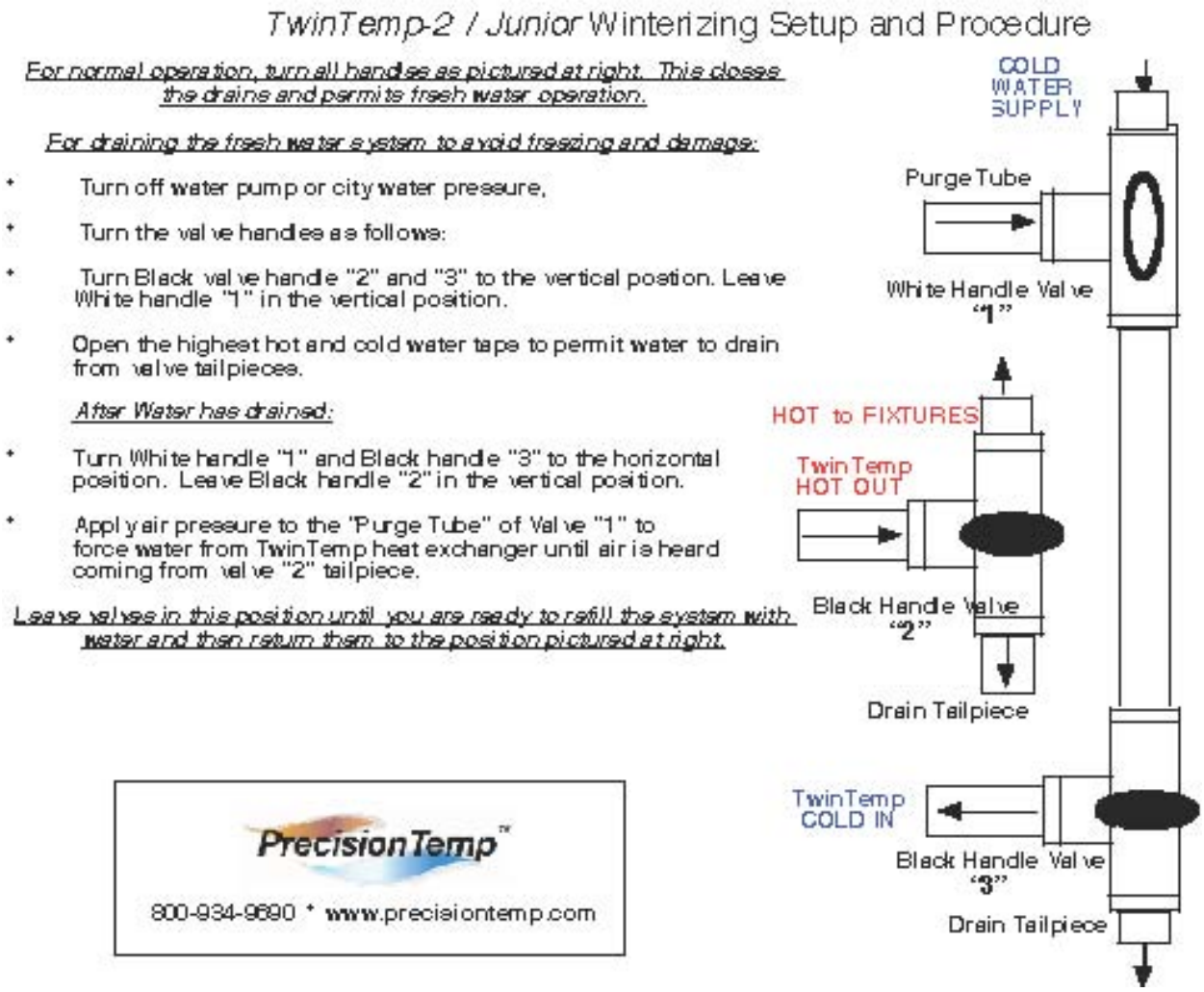
All faucet aerators and showerhead screens in the coach should be cleaned regularly. It is recommended that the *TwinTemp* be inspected by a qualified service technician at least once a year. Particular attention should be paid to the following:

1. 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.
2. Be sure anti-freeze level in tank is up to the bottom of the filler cap. Top off if necessary with 50/50 mix of specified anti-freeze and water.
3. Check that heater mounting is still secure to the coach. Tighten if necessary.
4. Check all water and anti-freeze tubing and fittings on the *TwinTemp* and blowers for potential water leaks and carefully tighten or repair if necessary.
5. Visually inspect wiring & hoses. Be sure there is no chafing of the insulation.

Winter Operation / Winterizing

The *TwinTemp*, like any other water heater can freeze and be severely damage if it is not properly used and winterized. The internal tank, burner heat exchanger and blower heat exchangers are filled with anti-freeze and if it is the proper 50/50 mixture is maintained, these components will not freeze.

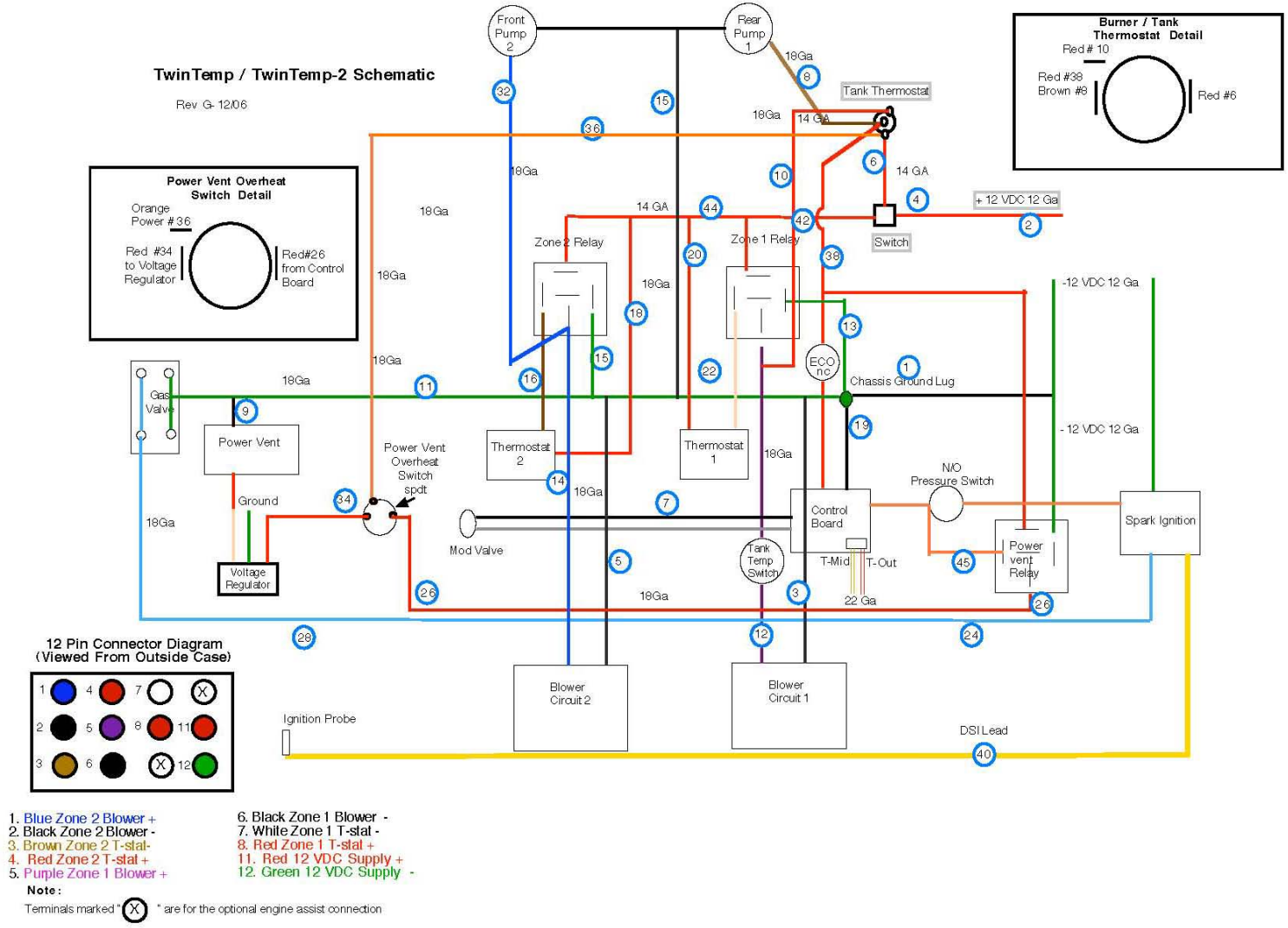
The potable water system contains water during normal use and care must be taken to avoid freezing. In addition to all of the coach plumbing, the potable water heat exchanger embedded inside the *TwinTemp* tank must be winterized when not being used in freezing conditions. This system should be drained not only during winter storage, but anytime the heating system is not on during freezing conditions, whether parked or while being transported. The illustration shows the proper plumbing of the freeze protection system and its usage.

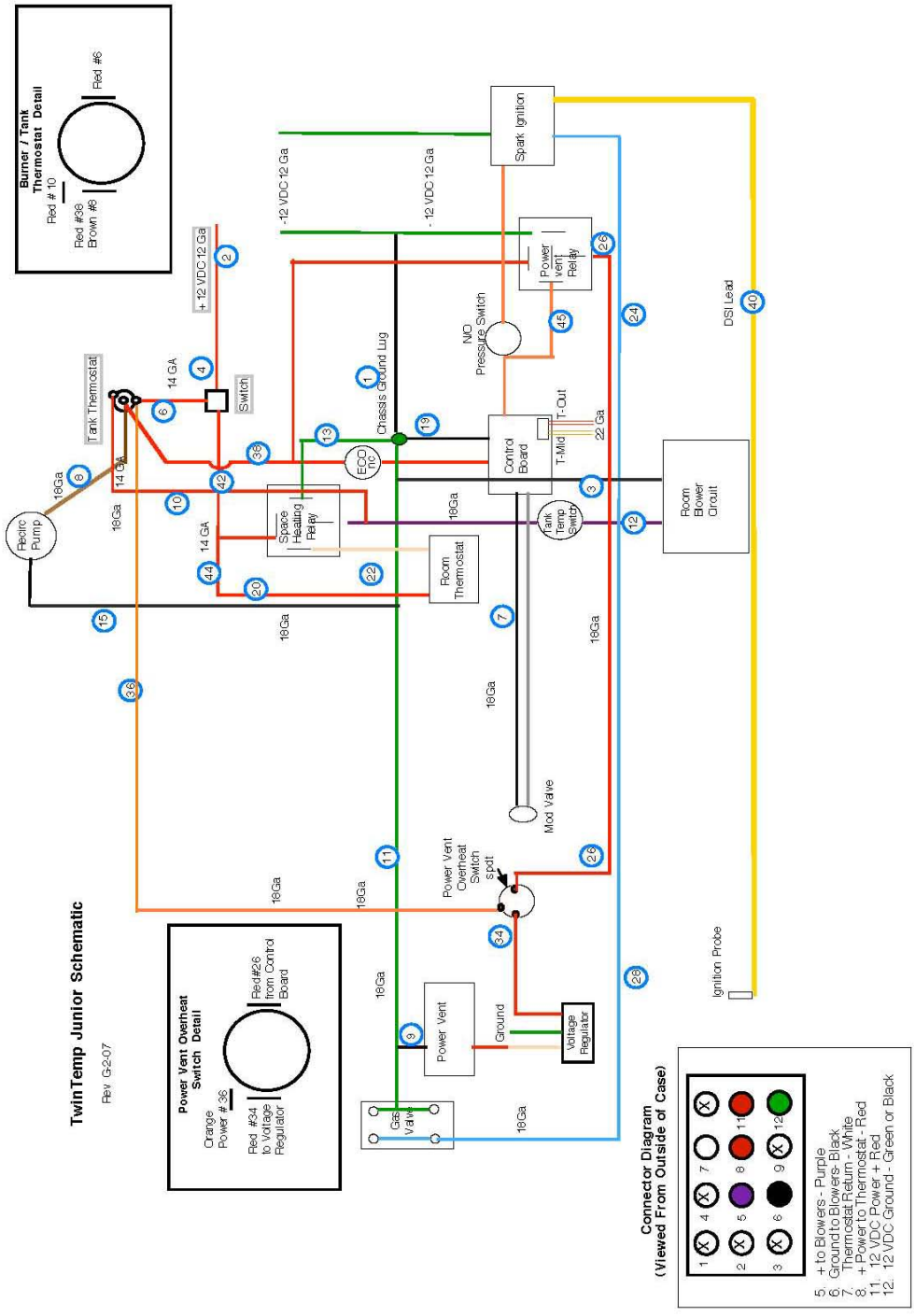


If there are any questions regarding operation or servicing of the *TwinTemp*, please contact:

PrecisionTemp™

800-934-9690 - Fax 513-641-0733 - www.precisiontemp.com


TwinTemp / TwinTemp-2 Schematic
Rev G- 12/06
Front Pump 2
Rear Pump 1
Tank Thermostat
Burner / Tank Thermostat Detail
Red # 10
Red #38 Brown #9
Red #6
Power Vent Overheat Switch Detail
Orange Power # 36
Red #34 to Voltage Regulator
Red#26 from Control Board
Zone 2 Relay
Zone 1 Relay
Switch
+ 12 VDC 12 Ga
-12 VDC 12 Ga
- 12 VDC 12 Ga
Chassis Ground Lug
ECO nc
Gas Valve
Power Vent
Power Vent Overheat Switch spdt
Thermostat 2
Thermostat 1
Ground
Voltage Regulator
Mod Valve
Control Board
N/O Pressure Switch
Spark Ignition
Power vent Relay
Tank Temp Switch
T-Mid
T-Out
22 Ga
Blower Circuit 2
Blower Circuit 1
Ignition Probe
DSI Lead
18Ga
14 GA
12 Pin Connector Diagram (Viewed From Outside Case)
1. Blue Zone 2 Blower +
2. Black Zone 2 Blower -
3. Brown Zone 2 T-stat-
4. Red Zone 2 T-stat +
5. Purple Zone 1 Blower +
6. Black Zone 1 Blower -
7. White Zone 1 T-stat -
8. Red Zone 1 T-stat +
11. Red 12 VDC Supply +
12. Green 12 VDC Supply -
Note:
Terminals marked "X" are for the optional engine assist connection


TwinTemp Junior Schematic
Rev G-2-07
Burner / Tank Thermostat Detail
Red #6
Red # 10
Red #38
Brown #8
Power Vent Overheat Switch Detail
Orange Power #36
Red#26 from Control Board
Red #34 to Voltage Regulator
+ 12 VDC 12 Ga
- 12 VDC 12 Ga
Spark Ignition
Power vent Relay
NO Pressure Switch
Tank Thermostat
14 GA
Switch
Chassis Ground Lug
Control Board
T-Out
T-Mid
22 Ga
DSI Lead
Pedrc Pump
16Ga
14 GA
Space Heating Relay
ECO nc
Room Thermostat
Tank Temp Switch
Room Blower Circuit
Mod Valve
Power Vent Overheat Switch spdt
Power Vent
Ground
Voltage Regulator
Gas Valve
Ignition Probe
Connector Diagram
(Viewed From Outside of Case)
5. +to Blowers - Purple
6. Ground to Blowers- Black
7. Thermostat Return - White
8. + Power to Thermostat - Red
11. 12 VDC Power + Red
12. 12 VDC Ground - Green or Black