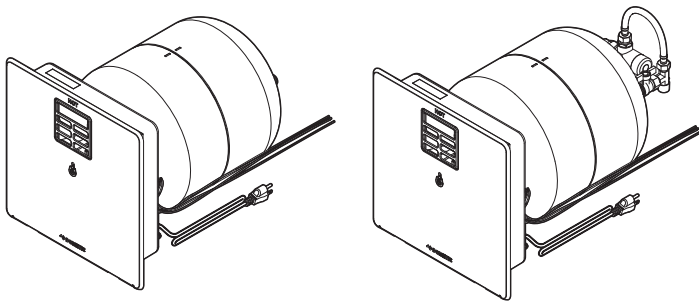


DOMETIC HEATING WATER HEATERS



WH - 6GA, WH - 6GEA, WH - 9GEA

EN	L.P. Gas Water Heater Installation and Operation Manual 2
FR	Chauffe-eau à gaz P.L. Manuel d'installation et d'utilisation 24

⚠ WARNING.
This product can expose you to lead, which is known to the state of California to cause cancer and birth defects or other reproductive harm. For more information, go to www.P65warnings.ca.gov.

⚠ WARNING: BURN HAZARD, FIRE, EXPLOSION, AND/OR CARBON MONOXIDE HAZARD.
Keep the water heater area clear of combustible cleaning materials, gasoline, and other flammable vapors and liquids. Failure to obey this warning could result in death or serious injury.

WARNING: If the information in this manual is not followed exactly, a fire or explosion may result, causing property damage, personal injury, or death.

– Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.

– **WHAT TO DO IF YOU SMELL GAS**

- Evacuate all persons from the vehicle.
- Shut off 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 electric 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.

– Installation and service must be performed by a qualified installer, service agency or the gas supplier.



Service Center & Dealer Locations

Visit: www.dometic.com

Read these instructions carefully. These instructions **MUST** stay with this product.

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1 Explanation of Symbols and Safety Instructions


This manual has safety information and instructions to help you eliminate or reduce the risk of accidents and injuries.


1.1 Recognize Safety Information


 **This is the safety alert symbol.** It is used to alert you to potential physical injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

1.2 Understand Signal Words

A signal word will identify safety messages and property damage messages, and also will indicate the degree or level of hazard seriousness.

 **DANGER**
Indicates a hazardous situation that, if **not** avoided, will result in death or serious injury.

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

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

NOTICE: Used to address practices **not** related to physical injury.

i Indicates additional information that is **not** related to physical injury.

1.3 Supplemental Directives

To reduce the risk of accidents and injuries, please observe the following directives before proceeding to install or operate this appliance:

- Read and follow all safety information and instructions.
- Read and understand these instructions before installing, operating, or servicing this product.
- Installation and service must be performed by a qualified Service Technician, Service Center, OEM, or Gas Supplier.
- The installation must comply with all applicable local or national codes, including the latest edition of the following standards:

U.S.A.

- ANSI/NFPA70, National Electrical Code (NEC)
- ANSI/NFPA 1192, Recreational Vehicles Code
- ANSI Z223.1 National Fuel Gas Code
- Federal Mobile Home Construction & Safety Standard, Title 24 CFR, part 3280, or when this Standard is not applicable, the Standard for Manufactured Home Installations (Manufactured Home Sites, Communities and Set-Ups), ANSI A255.1
- ANSI Z21.10.1, Gas Water Heaters
- A119.5, Park Trailers

Canada

- CSA C22.1, Parts I & II, Canadian Electrical Code
- CSA Z240 RV Series, Recreational Vehicles
- CAN/CGA B149 Installation Codes
- CAN/CSA-2240 MH Series, Mobile Homes
- CSA 4.1 (latest edition)

1.4 General Safety Messages

⚠ WARNING: FIRE AND/OR EXPLOSION HAZARD.
Failure to obey the following warnings could result in death or serious injury:

- Follow the information in this manual exactly.
- Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.

2 Intended Use

This Water Heater is designed and intended for use in a recreational vehicle (hereinafter referred to as "RV") for which it is supplied. This product is designed to heat water and is not intended to be used as a space heater for hydronic heating. Use these instructions to ensure correct installation, operation, and maintenance of the Water Heater. Dometic Corporation reserves the right to modify appearances and specifications without notice.

Dometic Corporation accepts no liability for damage in the following cases:

- Faulty assembly or connections
- Damage to the product resulting from mechanical influences and excess voltage
- Alterations to the product without express permission from the manufacturer
- Use for purposes other than those described in this manual

3 General Information

NOTICE: This section provides reference information regarding the recommended installation tools and materials, the unit components, and the model identification associated with the different water heater models.

i The images used in this document are for reference purposes only. Components and component locations may vary according to specific product models. Measurements may vary ± 0.38 in. (10 mm).

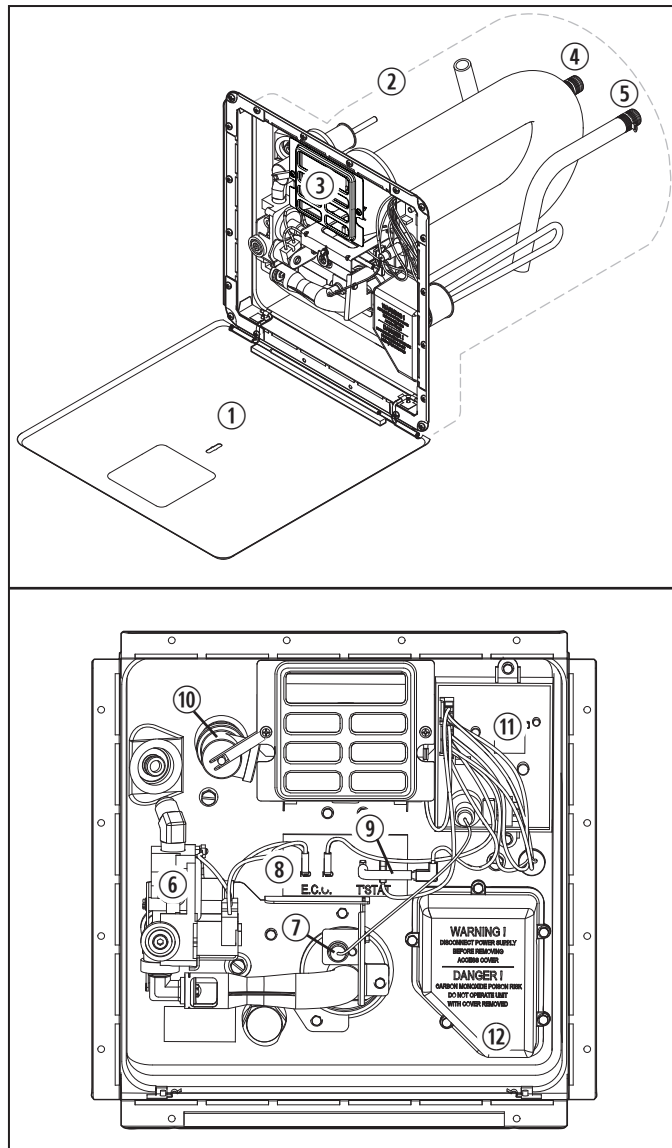
3.1 Tools and Materials

Dometic Corporation recommends that the following tools be used while servicing the Water Heaters.

Recommended Tools and Materials	
Caulk or Butyl tape 1-1/3 in. x 1/8 in. (3.38 cm x 0.32 cm)	No. 8 - 3/4 in. (22.22 cm) round head screws or equivalent
Sealant	2x2 Lumber
12 VDC Battery	Leak Detection Solution

3.2 Component Locations

“Component Locations” on page 4 illustrates the component locations for the Water Heater.

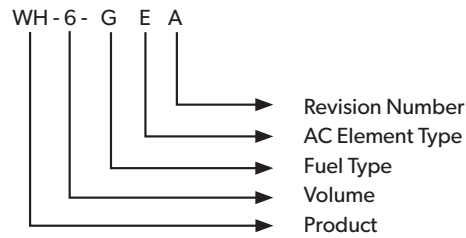


1 Component Locations

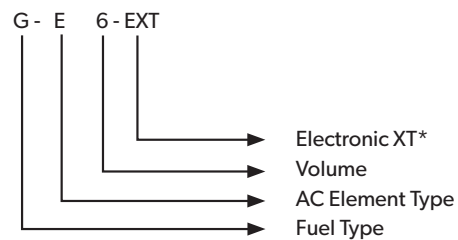
- ① Access Door
- ② Water Heater Tank
- ③ Flue Assembly
- ④ Hot Water Outlet
- ⑤ Cold Water Inlet
- ⑥ Gas Valve
- ⑦ Electrode
- ⑧ E.C.O./Thermostat
- ⑨ Thermal Cut-off
- ⑩ P/T Relief Valve
- ⑪ DSI Control Board
- ⑫ Electric Junction Box/Element Access Cover (this cover must be sealed)

3.3 Model Identification

This section describes the breakdown of the model identification numbers.



Product	WH = Water Heater
Volume	6 = 6 gallons
Fuel Type	G = Gas (Propane)
AC Element Type	E = Electric
Revision	A



Fuel Type	G = Gas (Propane)
AC Element Type	E = Electric
Volume	6 = 6 gallons
Electronic XT	EXT = Electronic XT Included

*EXT indicates Electronic Exothermal (XT) technology.

Available Models

WH - 6GA = 6 gallon gas only

WH - 6GEA = 6 gallon gas and electric

*WH - 9GEA = 9 gallon effective

* The water heaters actual capacity is 6 gallons respectively. The effective capacity, calculated gallons of 130°F (54°C) moderated water is 9 gallons.

i Regardless of your revision number, these instructions are still generally applicable to your unit. If you have questions, contact your dealer, a Dometic Service Center, or the Dometic Service Department.

3.4 Unit Specifications

The Basic Water Heater Specifications Table provides the unit dimensions and weight specifications for basic 6-gallon water heater models.

Basic Water Heater Specifications Table

Width	Height	Shipping Weight
12.75 in. (32.38 cm)	12.75 in. (32.38 cm)	25 lbs (11.33 Kg)

The EXT Water Heater Specifications Table provides the unit dimensions and weight specifications for EXT 6-gallon water heater models.

EXT Water Heater Specifications Table

Width	Height	Shipping Weight
16 in. (40.64 cm)	12.5 in. (31.75 cm)	25 lbs (11.33 Kg)

The Pressure and Voltage Specifications Table provides the system voltage readings at minimum and maximum gas pressure.

Pressure and Voltage Specifications Table

Gas Pressure	Voltage
Minimum 10 in. W.C.	Minimum 10 VDC
Maximum 13 in. W.C.	Maximum 14 VDC

Category 1 direct vent appliance

The maximum inlet gas pressure must not exceed 13 in. W.C. For input adjustments, the minimum gas pressure must not be below 10 in. W.C.

4 Installation



DANGER! CARBON MONOXIDE POISONING HAZARD.

This product can produce carbon monoxide, which has no odor and can be life-threatening. Avoid improper adjustment, alterations, service, or maintenance. Follow instructions for the proper installation of this appliance. Failure to obey this danger notification can result in improper installation causing carbon monoxide poisoning that will result in death or serious injury.



WARNING: FIRE AND/OR ELECTRICAL SHOCK HAZARD. Failure to obey the following warnings could result in death or serious injury:

- Make sure there are no obstacles (wires, pipes, etc.) inside of the RV roof or walls at the installation locations.
- Shut off the gas supply, disconnect the 120 VAC power from RV, and disconnect the positive (+) 12 VDC terminal from supply battery before drilling or cutting into the RV.



WARNING: ELECTRICAL GROUNDING INSTRUCTIONS.

This appliance is equipped with a three-prong (grounding) plug for your protection against shock hazards and should be plugged directly into a properly grounded three-prong receptacle. Do not cut or remove the grounding prong from this plug. Failure to obey this warning could result in death or serious injury.

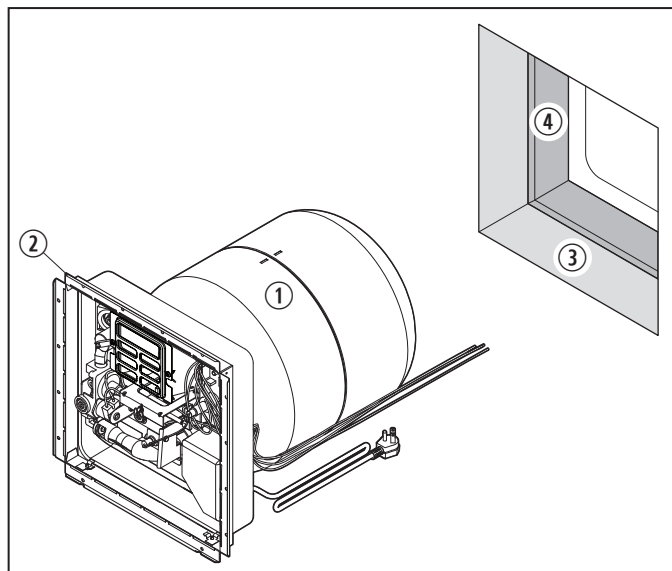


This is a common installation for water heaters. There are other approved methods such as Baggage Compartment and Flush Mount installations. Consult your Field Auditor, Account Manager, or the Dometic Service Department if you have questions.

This section describes how to install the Water Heater and control switch. Please consider the following directives prior to beginning installation:

- This appliance must be installed by a qualified professional installer.
- The water heater tank must be supported at the same level as the bottom of the sidewall cutout. Provide adequate clearance at the rear of the unit for easy service access to the water connections.
- If the appliance is installed where a connection or tank leakage can damage an adjacent area, install a drain pan (which can be drained outside of the RV) under the Water Heater.
- To install the Water Heater on carpeting, install the Water Heater onto a metal or wood panel that extends at least 3 in. (7.62 cm) beyond the total width and depth of the Water Heater.

4.1 Preparing the Installation Location



2 Preparing the Installation

- ① Water Heater
- ② Flange
- ③ Cutout
- ④ Cutout Frame

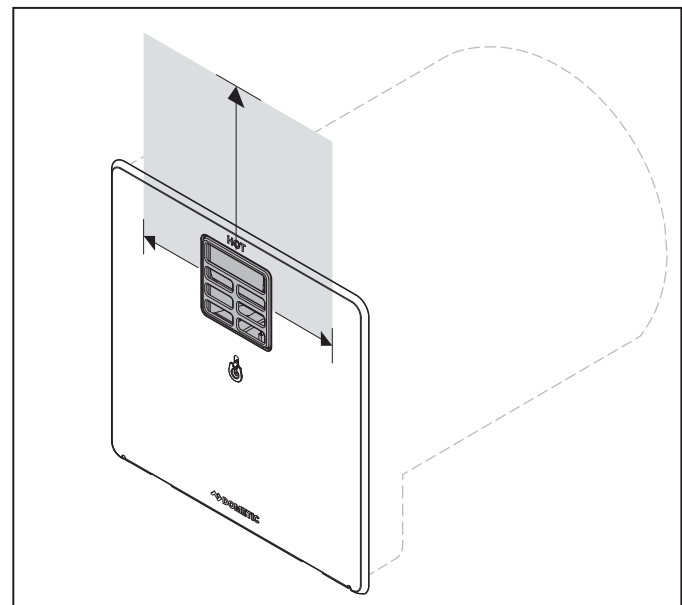
1. Plan the location of the Water Heater within the RV.
2. Erect the side walls and cut the opening. Refer to the tables below for cutout and clearance specifications for basic water heater models.

Model	Cutout Length	Depth
WH - 6GA WH - 6GEA	12.75 in. (31.75 cm)	19.5 in. (49.53 cm)
WH - 9GEA	12.75 in. (31.75 cm)	24 in. (60.96 cm)

The following table shows the requirements for the minimum clearance from combustible construction.

Sides	Back	Top	Bottom
0 in. (0 cm)	0 in. (0 cm)	0 in. (0 cm)	0 in. (0 cm)

The following figure and table show the minimum required clearances between the water heater vent and any projection or plastic part on the side of the RV.

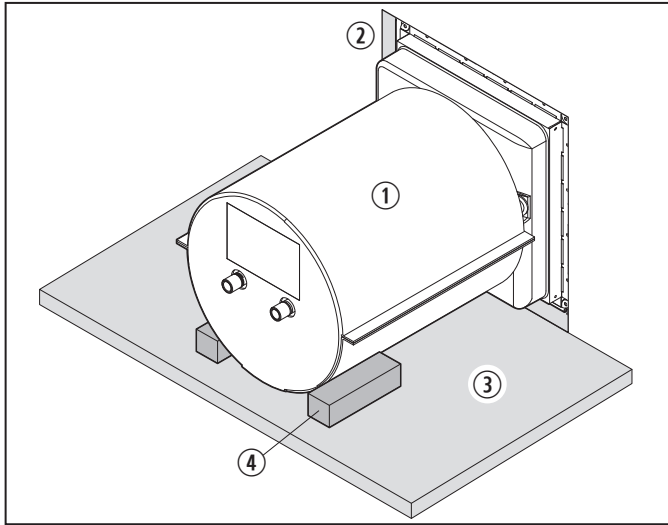


3 Vent Clearances

Sides	Top
3 in. (7.62 cm)	12 in. (30.48 cm)

3. Frame the cutout with 2 in. x 2 in. (5.1 cm x 5.1 cm) lumber or equivalent.
4. Bend all flanges 90° along the scored lines.
5. Block the Water Heater. Refer to "Blocking the Water Heater" on page 7.

4.2 Blocking the Water Heater

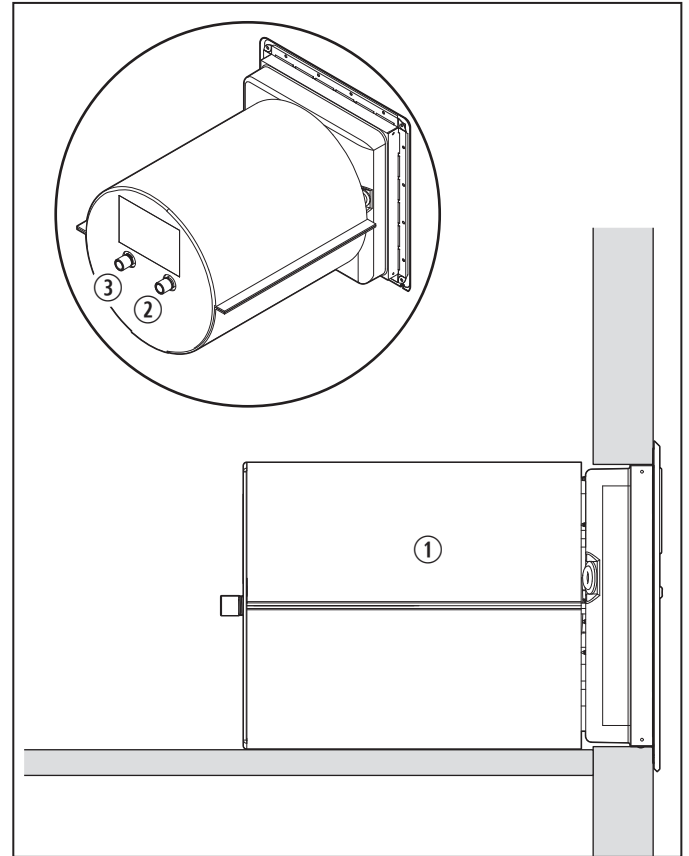


4 Blocking the Water Heater

- | | |
|----------------|---------|
| ① Water Heater | ③ Floor |
| ② Cutout Frame | ④ Block |

1. Place the Water Heater into the cutout location.
2. At the back of the cutout, measure the distance between the side of the cutout and the side of the Water Heater.
3. Remove the Water Heater from the cutout location.
4. Mark the appropriate measured distance taken in step 2 on each side along the back of the cutout.
5. Place a block of wood that is a minimum of 2 in. x 2 in. x 6 in. at each marked location.
6. Secure the wood blocks to the floor.

4.3 Installing the Water Hose



5 Hose Connections

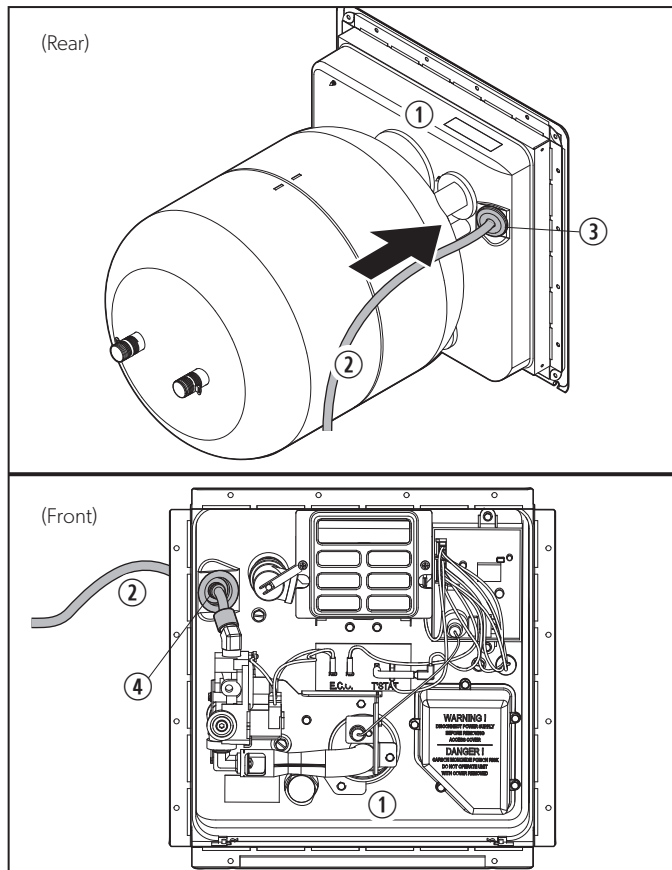
- | | |
|--------------------|--------------------|
| ① Water Heater | ③ Cold Water Inlet |
| ② Hot Water Outlet | |

1. Position the Water Heater onto the planned location on the floor of the RV.
 2. Remove the red thread protector from the 1/2 in. (1.27 cm) hot water outlet.
 3. Apply pipe lubricant to the threads of the 1/2 in. (1.27 cm) National Pipe Tapered (NPT) hot water outlet hose.
 4. Connect the 1/2 in. (1.27 cm) (NPT) hot water outlet hose to the proper fitting on the Water Heater using a suitable fitting.
- NOTICE:** Allow flexibility in the water and gas hoses so you can pull the unit forward through the wall 1 in. (2.54 cm) past the skin.
5. Remove the blue thread protector from the 1/2 in. (1.27 cm) cold water inlet.

6. Apply sealant to the threads of the 1/2 in. (1.27 cm) (NPT) cold water inlet hose.
7. Connect the 1/2 in. (1.27 cm) (NPT) cold water inlet hose to the proper fitting on the Water Heater using a suitable plastic fitting.

4. Pull the 3/8 in. (0.95 cm) gas line and grommet through the opening in the water heater housing.
5. Connect the flare fitting and press the grommet into the opening. Caulk around the grommet if the grommet was cut during the gas line installation.

4.4 Installing The Gas Line



6 Sealing the Gas Line Opening With the Grommet

- | | |
|----------------|-------------------|
| ① Water Heater | ③ Grommet |
| ② Gas Line | ④ Housing Opening |

1. Connect the 3/8 in. (0.95 cm) flared L.P. gas line to the Water Heater.
 2. Slide the grommet onto the 3/8 in. (0.95 cm) tubing.
 3. Flare the gas line as necessary.
- i** If the 3/8 in. (0.95 cm) gas line is already flared, cut the grommet on one side. Place the split grommet over the gas line and press it into the opening in the housing.

4.5 Installing The Control Switch

Dometic recommends that the Water Heater unit be connected directly to a 12 VDC battery or to the filtered side of an AC/DC converter. Avoid connections to the unfiltered side of an AC/DC converter whenever possible. Use a minimum of 18-gauge wire, UL and CSA listed.

- i** The 12 VDC control wiring in the Water Heater is 18-gauge stranded wire rated for 105°C (221°F). This 18-gauge wire should be sufficient for the 12 VDC control wire coming from the Water Heater to the switch and the 12 VDC power source; however, consult all local and national codes relating to your specific installation to verify.

4.5.1 Preparing the Control Switch Installation Location

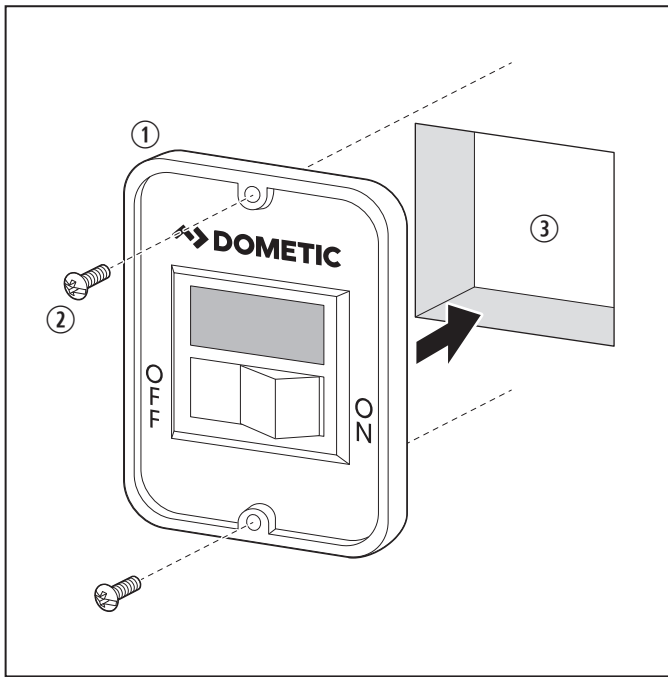
⚠ WARNING: FIRE AND OR ELECTRICAL SHOCK HAZARD. Failure to obey the following warnings could result in death or serious injury.

- Make sure there are no obstacles (wires, pipes, etc.) inside of the RV roof or walls at the installation locations.
- Shut off the gas supply, disconnect the 120 VAC power from RV, and disconnect the positive (+) 12 VDC terminal from supply battery before drilling or cutting into the RV.

- i** An illuminated light on the switch plate indicates a fault condition (no heat).

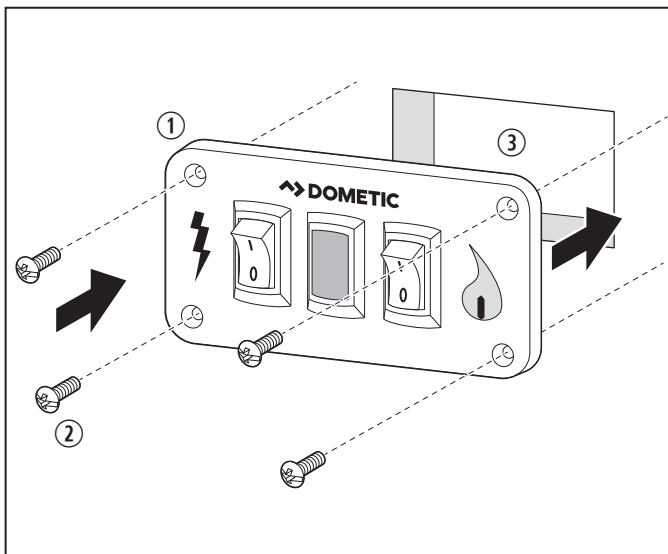
When planning the location of the control switch(es), be sure to choose an easily accessible area for both use and service.

- i** Combination single switch models will have two single switches (one for the gas heating element and one for the electric control) that will need to be installed in convenient locations.



7 Installing the Single Switch

- ① Single Switch ③ Wall Cutout
② Wall Mounting Screw



8 Installing the Dual Switch

- ① Dual Switch ③ Wall Cutout
② Wall Mounting Screw

1. Plan the location of the control switch(es).
2. Cut the appropriate size hole to fit the control switch leaving enough room to mount the switch using the proper hardware.

4.5.2 Completing the Control Switch Installation

i Prior to completing the control switch installation, refer to “Wiring the 115 VAC Power Supply” on page 9.

1. Position the wall plate with the letters and symbols oriented properly.
2. Use four screws to mount the control switch. Tighten the screws to hold the control switch(es) firmly in place.
3. Turn the switch(es) to the OFF position.

i For dual control switches, ensure both switches are turned to the OFF position.

4.6 Wiring the 115 VAC Power Supply

⚠ WARNING: FIRE HAZARD.

When a cord and plug connection to the power supply are used on a water heater, the power cord must be UL listed as suitable for damp locations, hard or extra hard usage. The cord must be a flexible type such as S, SO, ST, STO, SJ, SJT, SJTO, HS or HSO described in the National Electric Code ANSI/NFPA 70. The length of the external cord to the water heater, measured to the face of the attachment plug, shall be no less than 2 ft (60.96 cm) and no more than 6 ft (182.88 cm). The supply cord must be a minimum of 14 AWG. The attachment plug must be rated at 15 A. Failure to obey this warning could result in death or serious injury.

NOTICE: Do not route wires around sharp objects or where it could be smashed.

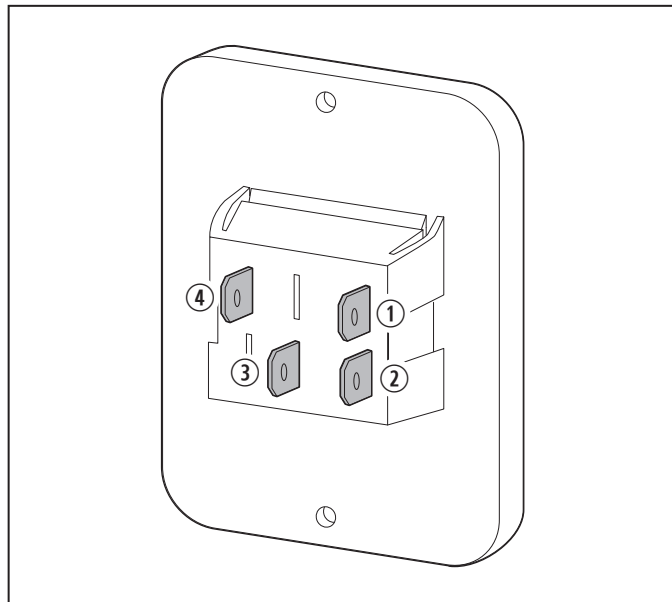
NOTICE: When using Romex® with a bare earth ground, be sure to position the ground wire so it does not contact the heating element terminals. Damage to the ground wire can occur.

i Refer to “Wiring Diagrams” on page 21 for a comprehensive wiring schematic.

Consider the following before wiring the control switch:

- The three-prong plug must be secured to a UL approved, dedicated, minimum 15 A-rated, three-prong receptacle.
- All wiring must comply with applicable electrical codes.
- Use electrical metallic tubing, flexible metal conduit, metal clad cable, or nonmetallic-sheathed cable with a grounding conductor.
- Wires must have a capacity of 1400 W or greater.
- The wiring method must conform to applicable sections of article 551 of National Electrical Code ANSI/NFPA 70.
- The receptacle must be located per all applicable codes and away from any water.

4.6.1 Configuring a Single Control Switch



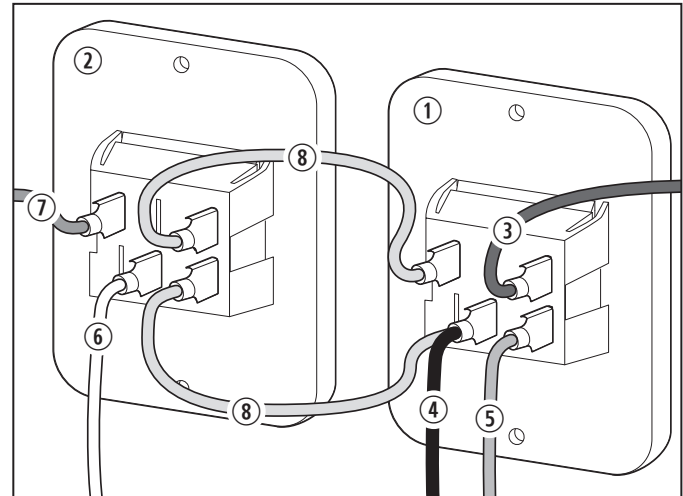
9 Control Switch Wiring

- ① Lock-Out Lamp (Blue)
- ② +12 VDC (Black)
- ③ Control (White/Orange)
- ④ Ground (Green)

1. Install the blue wire for the lock-out lamp from the Water Heater onto the spade connector on the back of the control switch.
2. Install the black +12 VDC wire onto the spade connector on the back of the control switch.

3. Install the white wire or orange wire (depending on the power source) from the Water Heater onto the spade connector on the back of the control switch.
4. Install the green ground wire from the spade connector on the back of the control switch to an appropriate ground location.

4.6.2 Configuring a Single Combination Control Switch



10 Single Combination Switch Wiring

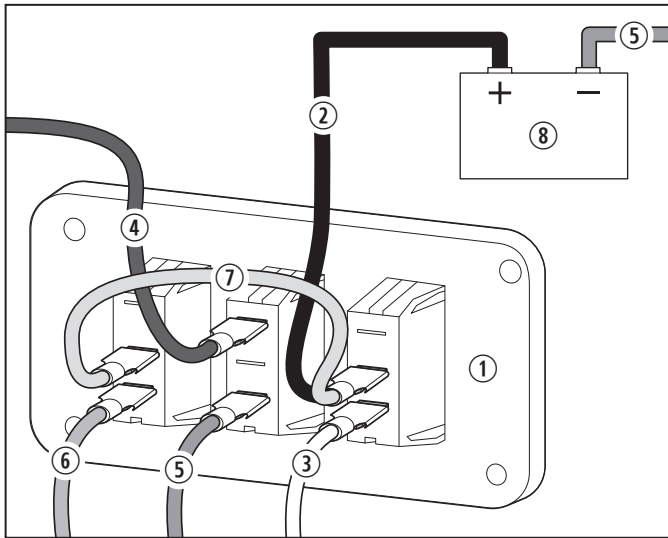
- ① Heating Element
- ② Electronic Control
- ③ Lock-Out Lamp (Blue)
- ④ +12 VDC (Black)
- ⑤ Gas (Orange)
- ⑥ Electronic (White)
- ⑦ Ground (Green)
- ⑧ Jumper Wire

i Single combination control models require the use of two switches. Assign and label one switch for the gas heating element and one switch for electronic control.

1. Install the blue wire for the lock-out lamp from the Water Heater to the proper spade connector on the back of the control switch assigned for the heating element.
2. Install the black +12 VDC wire to the spade connector on the back of the control switch assigned for the gas heating element.
3. Install the orange wire from the Water Heater onto the spade connector on the back of the control switch assigned for the gas heating element.

4. Install a jumper wire onto the spade connectors on the back of each switch.
5. Install another jumper wire onto the spade connectors on the back of each switch.
6. Install the white wire from the Water Heater onto the spade connector on the back of the control switch assigned for electronic control.
7. Install the green ground wire from the spade connector on the back of the control switch assigned for electronic control and to an appropriate ground location.

4.6.3 Configuring a Dual Control Switch



11 Dual Switch Wiring

- | | |
|------------------------|-----------------------|
| ① Control Switch | ⑤ Ground Wire (Green) |
| ② +12 VDC (Black) | ⑥ Gas (Orange) |
| ③ Electronic (White) | ⑦ Jumper Wire |
| ④ Lock-Out Lamp (Blue) | ⑧ Battery |

i The face of the control switch indicates which switch is intended for each control option. The lightning bolt indicates use with the electronic control while the flame indicates use with the gas heating element. It is important to wire the switches accordingly.

1. Install the black +12 VDC wire from the battery onto the spade connector on the back of the electronic control switch.

2. Install the white wire from the Water Heater to the spade connector on the back of the electronic control switch.
3. Install the blue wire from the Water Heater for the lock-out lamp onto the spade connector on the blank port of the control switch.
4. Install the green ground wire from the Water Heater to the negative post on the battery.
5. Install the ground wire from the spade connector on the blank port of the control switch to an appropriate ground location.
6. Install the jumper wire onto the spade connectors between the electronic control switch and the gas heating element switch.
7. Install the orange wire from the Water Heater onto the spade connector on the gas heating element switch.

4.7 Installing The Unit

⚠ WARNING: CARBON MONOXIDE, FIRE AND/OR EXPLOSION HAZARD. Failure to obey the following warnings could result in death or serious injury:

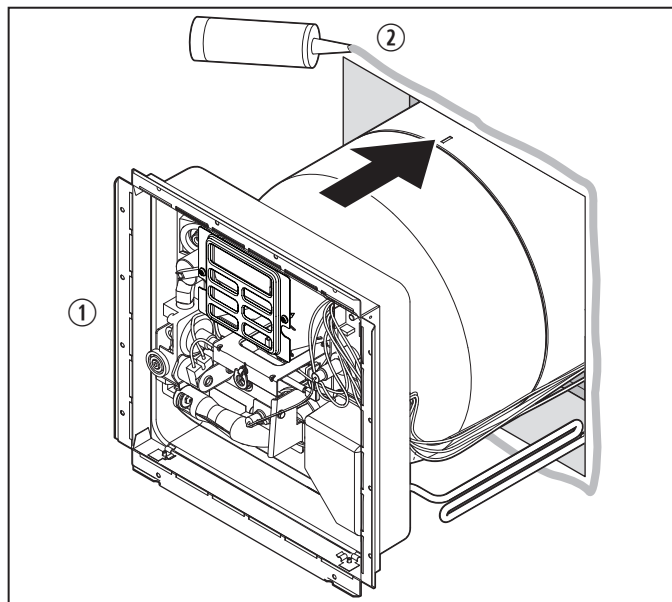
- Be sure the unit is vented and sealed properly to avoid the collection of carbon monoxide inside of the RV.
- All combustion air must be supplied from outside of the RV. All combustion products must be vented to the outside of the RV.
- Do **not** vent the water heater with a venting system that serves another appliance.
- Do **not** vent the water heater to an outside enclosed porch area.
- Protect building material from flue gas exhaust.
- Install the water heater on an exterior wall with access to a door opening to the outdoors.
- Do **not** alter the water heater for a positive grounding system.
- Do **not** high-potential test (HI-POT) the water heater unless the DSI control board has been disconnected (DC HI-POT).

- Do **not** use a battery charger to supply power to the water heater at any time or when testing.

NOTICE: Do **not** modify the water heater in any way.

NOTICE: Do **not** lift, push or misalign the main burner tube. Damage to the burner and the water heater can occur.

- i** Install in recreation vehicles only. RVs are recreation vehicles designed for temporary living quarters for recreation, camping, or travel using their own power or towed by another vehicle.



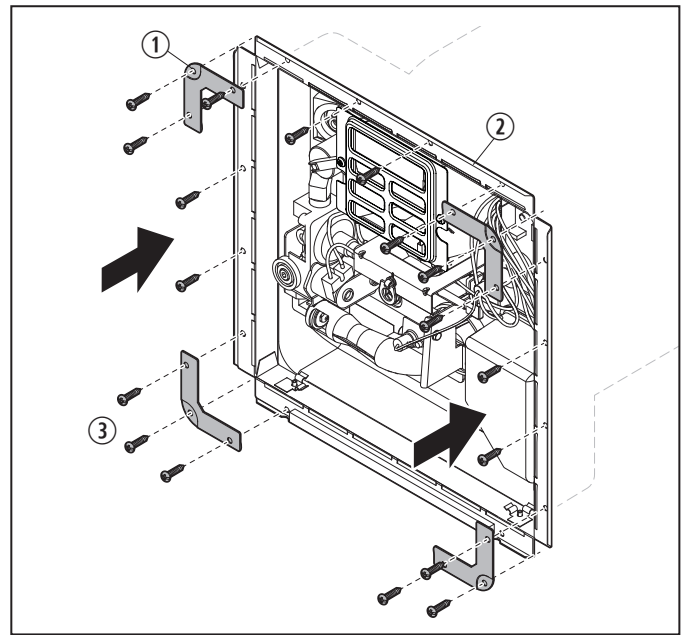
12 Caulking the Unit

- ① Water Heater
- ② Caulk

1. Caulk thoroughly around the opening and the bend slots.

- i** Butyl tape 1-1/3 in. x 1/8 in. (3.37 cm x 0.125 cm) may be substituted for caulking material.

2. Push the unit against the caulking in the cutout.



13 Securing the Corner Brackets and Flange

- ① Corner Bracket
- ② Flange
- ③ #8-3/4 in. Screw

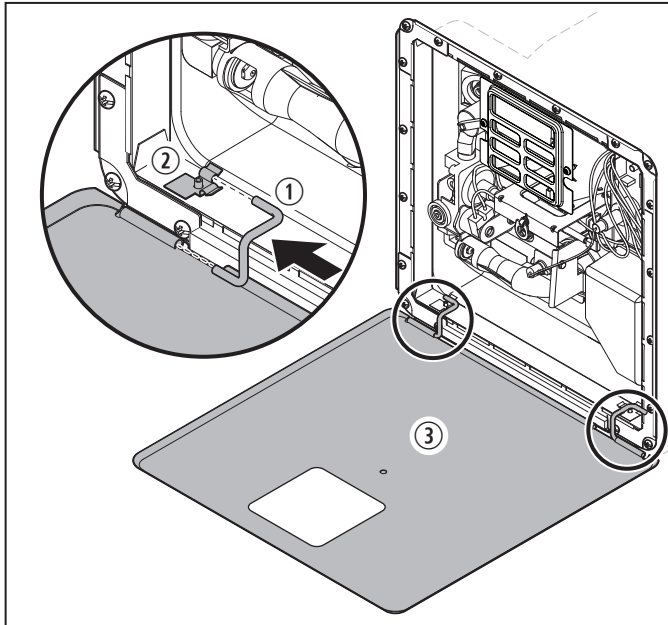
3. Secure the corner brackets for the four corners of the unit to the RV using #8 - 3/4 in. round head screws or equivalent.

- i** The screws are not provided with the unit.

4. Install the #8 - 3/4 in. round head screws or equivalent in the holes around the flange of the water heater housing.

5. Visually inspect all gaskets to ensure that they adhere to the pan and create an air tight seal.

4.8 Installing The Access Door



14 Attaching the Access Door with the Hinge Pin

- ① Hinge Pin
- ② Clip
- ③ Access Door

1. Snap the hinge pin into the clip.
2. Slide the access door onto the hinge pin.
3. Slide the hinge pin into the access door, snapping it into the clip at the same time.

i To remove the hinge pin, support the access door and apply force to the corner of the hinge pin.

4. Seal both corners with caulk.

i It is recommended to apply caulk to the hinge pin and the clip once the door is installed. This will aid in hinge pin retention.

4.9 Performing Leak Testing

⚠ WARNING: FIRE AND/OR EXPLOSION HAZARD.

Do **not** use matches, candles, or other sources of control when checking for gas leaks. Failure to obey this warning could result in death or serious injury.

i Isolate the Water Heater from the gas supply piping system before performing any pressure test equal to or greater than 0.5 PSI (34 mbar).

1. Turn on the gas and check the Water Heater and all of the connections for gas leaks using leak detection solution.
2. Fill the water heater tank with water.
3. Check the tank and all water hose connections for leaks.

5 Operation

⚠ WARNING: BURN HAZARD, FIRE, EXPLOSION, AND/OR CARBON MONOXIDE HAZARD.

Keep the water heater area clear of combustible cleaning materials, gasoline, and other flammable vapors and liquids. Failure to obey this warning could result in death or serious injury.

⚠ WARNING: FIRE AND/OR EXPLOSION HAZARD. Failure to obey this warning could result in death or serious injury:

- Do **not** store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.
- Should overheating occur, or the gas supply fail to shut off, turn the operating switch to the OFF position and remove the red wire from the left hand terminal of the E.C.O. switch or turn the gas off at the L.P. tank.
- Use with L.P. gas only.
- Shut off gas appliances and pilot lights when refueling.
- Turn gas off at the L.P. tank when the vehicle is in motion. This disables all gas appliances and pilot lights.
- Gas appliances must never be operated while the vehicle is in motion. Unpredictable wind currents may be created which could cause flame reversal in the burner tub, which could result in fire damage. The thermal cut off fuse could also be unnecessarily activated resulting in a complete shutdown of the water heater requiring replacement of the thermal cut off.

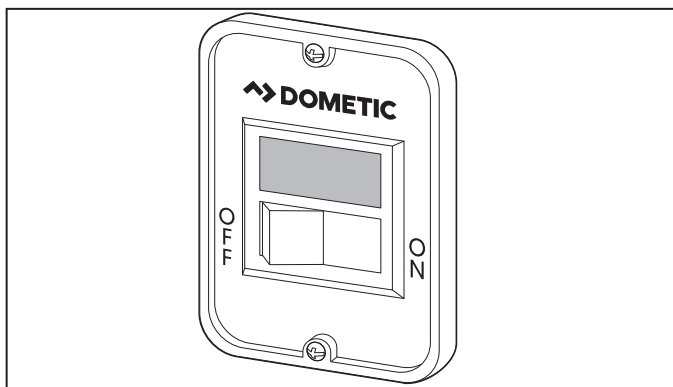
⚠ CAUTION: FIRE HAZARD.

Do **not** smoke or have any flame near an open faucet. Failure to obey this caution could result in minor or moderate injury.

⚠ CAUTION: EXPLOSION HAZARD.

If water heater has not been used for more than two weeks, hydrogen gas may form in the water line. Under these conditions, to reduce the risk of injury, open the hot water faucet for several minutes at the kitchen sink before you use any electrical appliance connected to hot water system. If hydrogen gas is present, you will probably hear sounds like air escaping through the pipe as water begins to flow. Failure to obey this warning could result in death or serious injury.

NOTICE: Do not operate without water in tank, product failure can occur.

5.1 Operating the Electronic Control**15** Control Switch in the ON Position

Place the control switch in the ON position.

i If control switch light stays on longer than 15 seconds place the control switch in the OFF position, wait 5 minutes, and repeat Step 1.

5.1.1 Gas Function**⚠ WARNING: BURN HAZARD, FIRE, EXPLOSION, AND/OR CARBON MONOXIDE HAZARD.**

Keep the water heater area clear of combustible cleaning materials, gasoline, and other flammable vapors and liquids. Failure to obey this warning could result in death or serious injury.

When the gas heating element switch is turned to the ON position, the Water Heater will make three attempts to light. If for any reason there is no ignition, the Water Heater will lockout and the red lockout lamp will illuminate. If the thermostat fails, the E.C.O. will also lockout the Water Heater and a reset will be required. Determine the reason for no control, correct it, and reset the gas control sequence by turning the switch to the OFF position then to the ON position.

5.1.2 Electric Heating Element

When the electric element switch is turned to the ON position, the relay will close and pass 110 VAC to the element. If the thermostat fails, the E.C.O. will open and lockout the system. To correct, check the thermostat to assure good contact with the tank. Reset the control by turning the electric switch to the OFF position then to the ON position.

5.1.3 Gas/Electric Function

The unit can be run in both gas and electronic modes simultaneously for a quick recovery.

i If the gas fails to ignite, the gas mode will lockout, but the lockout lamp will not illuminate since the electric mode is still operational.

Should you notice slow recovery, indicating the gas is not working, turn the electronic control switch to the OFF position. The indicator lamp will illuminate signaling a lockout has occurred on the gas side.

Correct the problem and turn the switches to the ON position.

Refer to "Maintenance And Care" on page 15.

5.2 Clearing a Water Heater Operation Failure

If the Water Heater fails to operate due to high-water temperature, a lockout condition will occur. Investigate the cause of overheating and correct the issue before resetting the Water Heater.

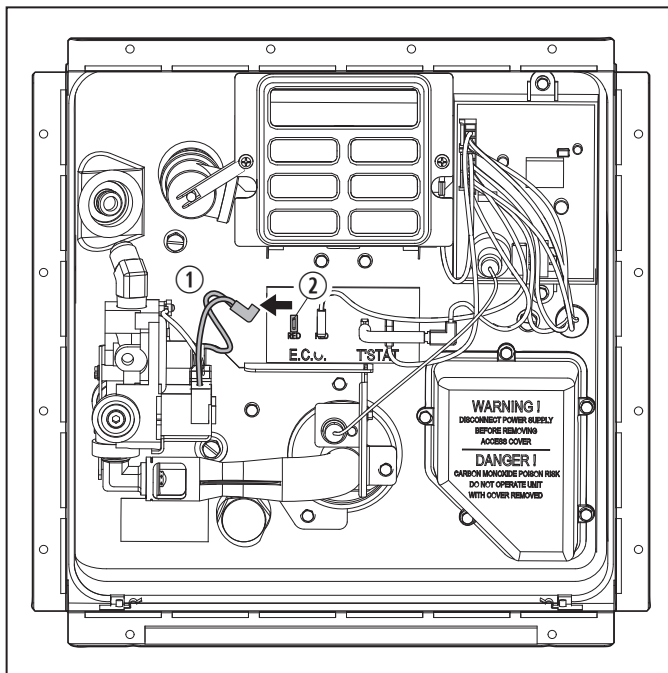
Investigate the cause of the overheating then perform the following to reset the Water Heater:

1. Allow water to cool.
2. Place the control switch in the OFF position and wait 30 seconds.
3. Turn the control switch to the ON position.

If the lockout condition persists:

1. Read the Maintenance and Care Instructions and the Electronic Control Maintenance in this manual.
2. Contact a Dometic Service Center.

5.3 Shutting Down the Water Heater



16 Removing the Red Wire from the E.C.O. Switch

- ① Red Wire
- ② E.C.O. Switch Left Terminal

i Perform these steps before performing any service on the Water Heater.

1. Place the control switch in the OFF position.
2. Remove the red wire from left hand terminal of the E.C.O. switch (E.C.O. to valve).

6 Maintenance And Care

⚠ WARNING: CARBON MONOXIDE POISONING HAZARD.

Gas flames consume oxygen, which must be replaced to assure proper combustion. Provide fresh air during testing, service, and maintenance of this appliance. Failure to obey this warning can result in death or serious injury.

⚠ WARNING: FIRE OR EXPLOSION HAZARD. Failure to obey these warnings could result in death or serious injury:

- When performing any maintenance or care, shut off the gas supply at the L.P. container before disconnecting a gas line.
- Keep the control compartment clean and free of gasoline, combustible material and any flammable liquids and vapors.
- i** During service of the controls, label all wires before disconnecting any wires.
- i** Verify proper operation after servicing.

Have the gas pressure tested periodically. The pressure should be set at 11 in. (27.94 cm) of water column with three appliances running.

Drain the Water Heater at regular intervals (at least one time during the year).

Drain the Water Heater before storing the RV for the winter or when the possibility of freezing exists.

Keep the vent and combustion air grill clear of any obstructions.

Periodically check the main burner flame.

6.1 Servicing the DSI Control Board

The Water Heater comes factory-equipped with a fuse on the DSI control board to protect from wiring shorts.

If the fuse is blown, the Water Heater will not operate.

Before replacing the fuse, check for a short external to the DSI control board.

Once the short is corrected, replace the 2 amp fuse with a mini ATO style fuse.

i Do not install a fuse larger than 3 amps.

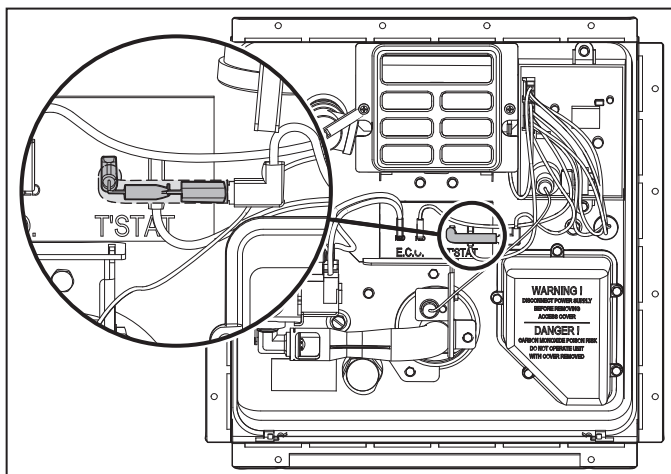
If the fuse is good and the unit is inoperative, check for excessively high voltage to the unit (more than 14 volts).

Check for low voltage, below 10 VDC, on the thermostat line.

Inspect for and remove any debris such as dust, insect nests, or such from the compartment burner and flue assembly. If nests are noticed but cannot be easily removed, contact a qualified service center.

If the previous steps did not solve the problem, check the thermal cut-off

The thermal cut-off is a device installed in the power supply line.



17 Thermal Cut-off

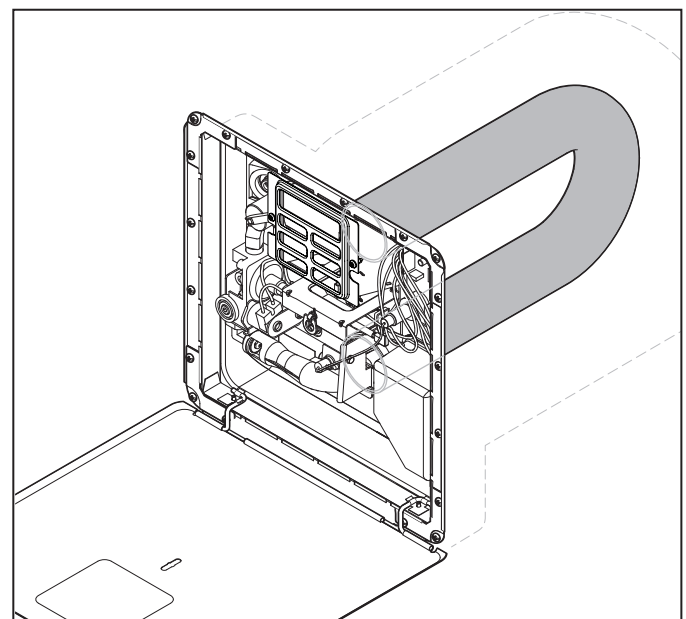
This device will shut off electrical power and stop heater operation when activated. For example, if an obstruction within the flue tube should occur, as described in “Performing Preventative Maintenance” on page 16, the burner flame/heat may contact the cutoff, resulting in a melting of the fuse element incorporated in the thermal cut-off. In order to restore power and proper operation of the Water Heater, the obstruction must be removed and the thermal cut-off must be replaced.

6.2 Performing Preventative Maintenance

Spiders, mud wasps, and other insects can build nests in the burner tube. This will cause poor combustion, delayed control, or flame outside of the combustion tube and the burner assembly.

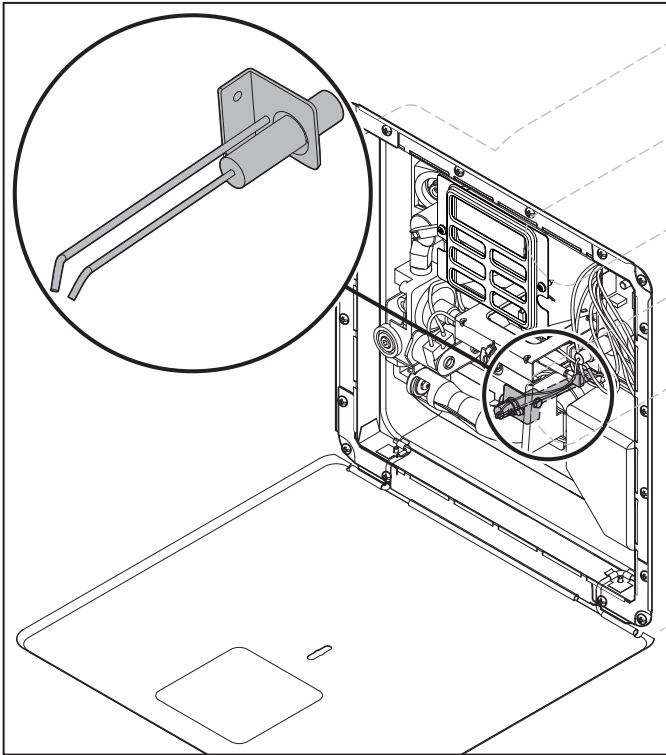
Listen for a change in burner sounds or look for changes in flame appearance from a hard blue flame to a soft lazy flame or one that is very yellow. These are indications of an obstruction in the burner tube or the burner assembly.

Inspect and clean the burner tube on a regular basis. Run a flexible wire brush down the burner tube to remove obstructions or clean the burner tube and the burner assembly.



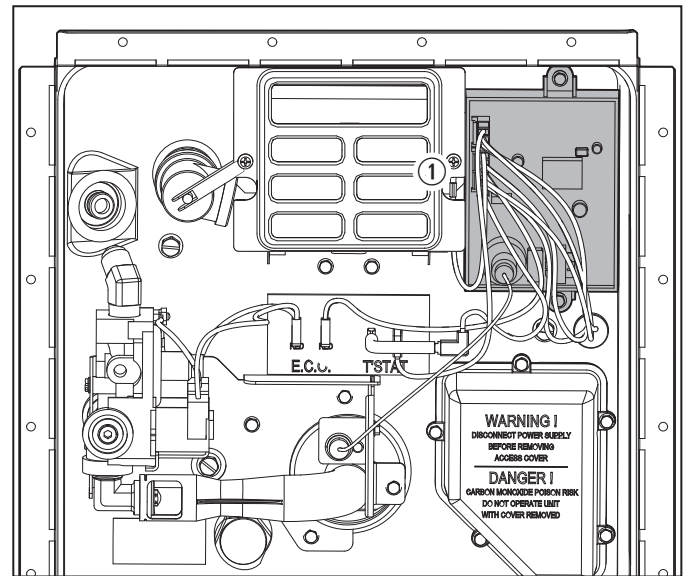
18 Burner Tube

6.3 Electronic Ignition Module Cleaning



19 Inspecting the Electrode

1. Inspect the main burner orifice.
2. Clean and adjust the main burner.
3. Ensure the main burner and the valve manifold are aligned with each other.
4. Inspect the electrode for cracked porcelain.
5. Ensure the electrode gap between the electrode and the ground is 0.125 in. (0.3175 cm).
6. Check for intermittent functionality of the DSI control board. If the DSI control board is experiencing intermittent functionality, remove the DSI control board and clean the terminal block with a pencil eraser.



20 DSI control board

- ① DSI Control Board

6.4 Maintaining the Water Heater Tank

⚠ CAUTION: SCALDING HAZARD.

Turn off the water heater and allow time for the water to cool before removing the drain plug to flush the water heater tank. Failure to obey this caution could result in minor or moderate injury.

6.4.1 Winterizing the Unit

- i** To ensure the best performance of the Water Heater and to extend the life of the tank, periodically drain and flush the water heater tank.
 - i** Drain and flush the tank before long term storage or freezing weather.
1. Turn off the main water supply (the pump, the water supply, or the water hook up source) then lift the handle on the P/T relief valve. This will allow water to flow out of the drain opening.
 2. Drain the water heater tank by removing the drain plug.

After draining the tank, because of the placement of the drain plug, approximately two quarts of water will remain in the tank. This water contains most of the harmful corrosive particles. To remove these harmful corrosive particles, flush the tank with either air or water. Whether using air or water pressure, it may be applied through the inlet or outlet on the rear of the tank or the P/T relief valve. (If using the P/T relief valve, the handle must be pulled straight out). The pressure will force out the remaining water and the corrosive particles.

If you use water pressure, pump fresh water into the tank with the assistance of the on-board pump or use external water for 90 seconds to allow the fresh water to agitate the stagnant water on the bottom of the tank and force deposits through the drain opening. Continue adding water and draining until the particles have been cleared from the water remaining in the tank.

If sporadic water flow is encountered, open the P/T relief valve to allow air into the tank. Using a small gauge wire or coat hanger, poke through the drain opening to eliminate any obstructions.

3. Replace the drain plug and close the P/T relief valve.

i The two quarts of water remaining in the tank after draining the tank will not cause damage to the tank should freezing occur.

6.4.2 Re-establishing the Thermal Expansion Air Pocket

⚠ CAUTION: SCALDING HAZARD.

Turn off the water heater before opening the P/T relief valve to establish air space. Storage water must be cool. Failure to obey this caution could result in minor or moderate injury.

1. Let the water cool or let the water run until it is cool.
2. Turn off the main water supply (the pump or water hook up source).
3. Open the hot water faucet closest to the Water Heater.
4. Pull the handle of the P/T relief valve straight out and allow water to flow until it stops.
5. Allow the P/T relief valve to snap shut.

6. Close the faucet.
7. Turn on the water supply.
8. Turn on the Water Heater and test.

i At least once a year manually operate the P/T relief valve.

9. When the P/T relief valve discharges again, repeat Steps 1–8.

To flush with the P/T relief valve:

1. Lift the P/T relief valve handle.
2. Apply air pressure through the P/T relief valve.

For a permanent solution, Dometic recommends one of the following procedures:

1. Install a pressure relief valve into the cold water inlet line to the Water Heater. Set to relieve at 100–125 PSI (689.47 kPa–861.84 kPa). Refer to “Replacement P/T Relief Valve Parts” on page 20.
2. Attach a drain line from the valve to outside of the RV. When attaching a drain line be sure the water flow is not restricted.
3. Alternatively you can install a diaphragm-type expansion tank in the cold water inlet line. The tank should be sized to allow for expansion of approximately 15 oz. of water and pre-charged to a pressure equal to the water supply pressure. These devices can be obtained from a plumbing contractor or service center.

6.4.3 Flushing the Tank

Use this procedure for general flushing of the water heater tank.

1. Turn off the main water supply (the pump or water hook up source).
2. Remove the drain plug to drain the water from the tank.

i If the water drains sporadically or trickles out of the drain hole, open the P/T relief valve then use a small gauge wire or coat hanger to remove any obstructions from the drain hole.

With the tank drained, approximately two quarts of water remain at the bottom of the tank. This water contains most of the corrosive particles. To remove these particles, use an "RV Water Heater Flushing Tool." The wand of this flushing tool allows the water jet to clean at different angles inside of the tank. Cleaning at different angles inside of the tank will suspend and flush the corrosive particles out of the drain coupling.

3. Continue flushing the tank until the water being flushed from the drain coupling is draining as clear water.
4. Replace the drain plug.

6.4.4 Flushing to Remove Unpleasant Odor

A rotten egg odor (hydrogen sulfide) may be produced when the electro-galvanic action of the cladding material releases hydrogen from the water. If sulfur is present in the water supply, the two will combine and produce an unpleasant smell.

1. Turn off the main water supply.
2. Remove the drain plug to drain the water heater tank.
3. Reinstall the drain plug.
4. Remove the P/T relief valve.
5. Mix a solution of four parts white vinegar to two parts water.
6. With a funnel, carefully pour the solution into the tank.
7. Cycle the Water Heater with the vinegar/water solution, letting it run under normal operation four to five times.
8. Remove the drain plug and thoroughly drain all of the water from the tank.
9. Flush the Water Heater to remove any sediment.

You may flush the tank with air pressure or fresh water. Pressure may be applied through either the inlet or outlet valves on the rear of the tank or through the P/T relief valve coupling located on the front of the unit. If flushing through the P/T relief valve, lift the handle and apply the air pressure.

6.5 Special Requirements for EXT Models

If you experience low flow from the hot water faucet or notice the water is not as hot coming from the Water Heater, the mixing valve may be faulty. Low flow or cold water from the EXT water heater models is a result of corrosion on the seats and/or debris blocking the inlet screen (if equipped) of the mixing valve. Call a technician for repair if this problem occurs.

6.6 Servicing the Mixing Valve

⚠ WARNING: SCALDING HAZARD. Failure to obey these warnings could result in death or serious injury.

- The mixing valve is not serviceable and must be replaced if it is found to be faulty.
- The mixing valve must only be replaced by a certified technician.
- Tampering with mixing valve will result in scalding injury.

i Tampering with the mixing valve will void the warranty.

i This valve is a safety component and must not be removed for any reason other than replacement.

The Water Heater is equipped with a mixing (moderating) valve which mixes cold water with higher temperature water to moderate outlet water to approximately 130°F (54°C). It is also equipped with a higher temperature thermostat, raising the storage water temperature.

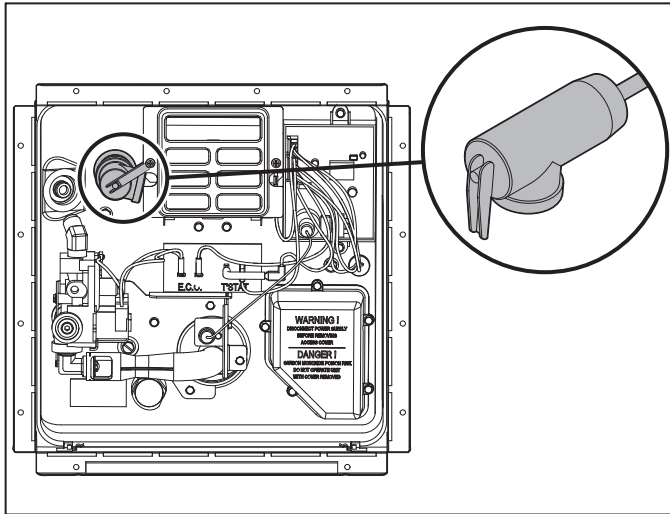
6.7 Servicing the P/T Relief Valve

⚠ WARNING: EXPLOSION OR SCALDING HAZARD. Failure to obey the following warnings could result in death or serious injury.

- Do **not** tamper with the P/T relief valve.
- Do **not** place a valve, plug or reducing coupling on the outer part of the P/T relief valve.

i The P/T relief valve is a safety component and must **not** be removed for any reason other than replacement.

- i** Tampering with the P/T relief valve will void the warranty.



21 P/T Relief Valve

The P/T relief valve is not serviceable. If the P/T relief valve is found to be faulty, replace the valve.

This Water Heater is equipped with a P/T relief valve that complies with the standard for Relief Valves and Automatic Gas Shutoff Devices for Hot Water Systems, ANSI 221.22.

If a discharge line is used, do not use a reducing coupling or other restriction smaller than the outlet of the P/T relief valve. Allow both the valve and the line to completely drain.

A P/T relief valve dripping while the Water Heater is running does not mean it is defective. During normal expansion of water, as it is heated in the closed water system of an RV, may cause the P/T relief valve to drip. The Dometic water heater tank is designed with an internal air gap at the top of the tank to reduce the possibility of dripping. Over time, the expanding water will absorb this air and it must be restored. Due to variations in water quality, the P/T relief valve may have a shorter life and may need replacement within the Water Heater warranty period. If corrosion is detected, it will not be covered under warranty.

Replacement P/T Relief Valve Parts

- Do not install anything less than a combination P/T relief valve certified by a nationally recognized testing laboratory that maintains periodic inspection of product of listed equipment or materials, as meeting requirements for Relief Valves and Automatic Gas Shutoff Devices for Hot Water Supply Systems, ANSI 221.22. The Valve must have a maximum set pressure not to exceed 150 PSI (1034.21 kPa).
- Install the valve into the provided opening marked for this purpose on the Water Heater.
- Installation must conform with local codes or in the absence of local codes, American National Standard for Recreational Vehicles, ANSI A119.2/NFPA 501C.
- For an external electrical source, ground this unit in accordance with National Electrical Code ANSI/NFPA70.

6.8 Using After-Market Water Heating Element Devices

⚠ WARNING: EXPLOSION AND OR BURN INJURY. Failure to obey the following warnings could result in death or serious injury:

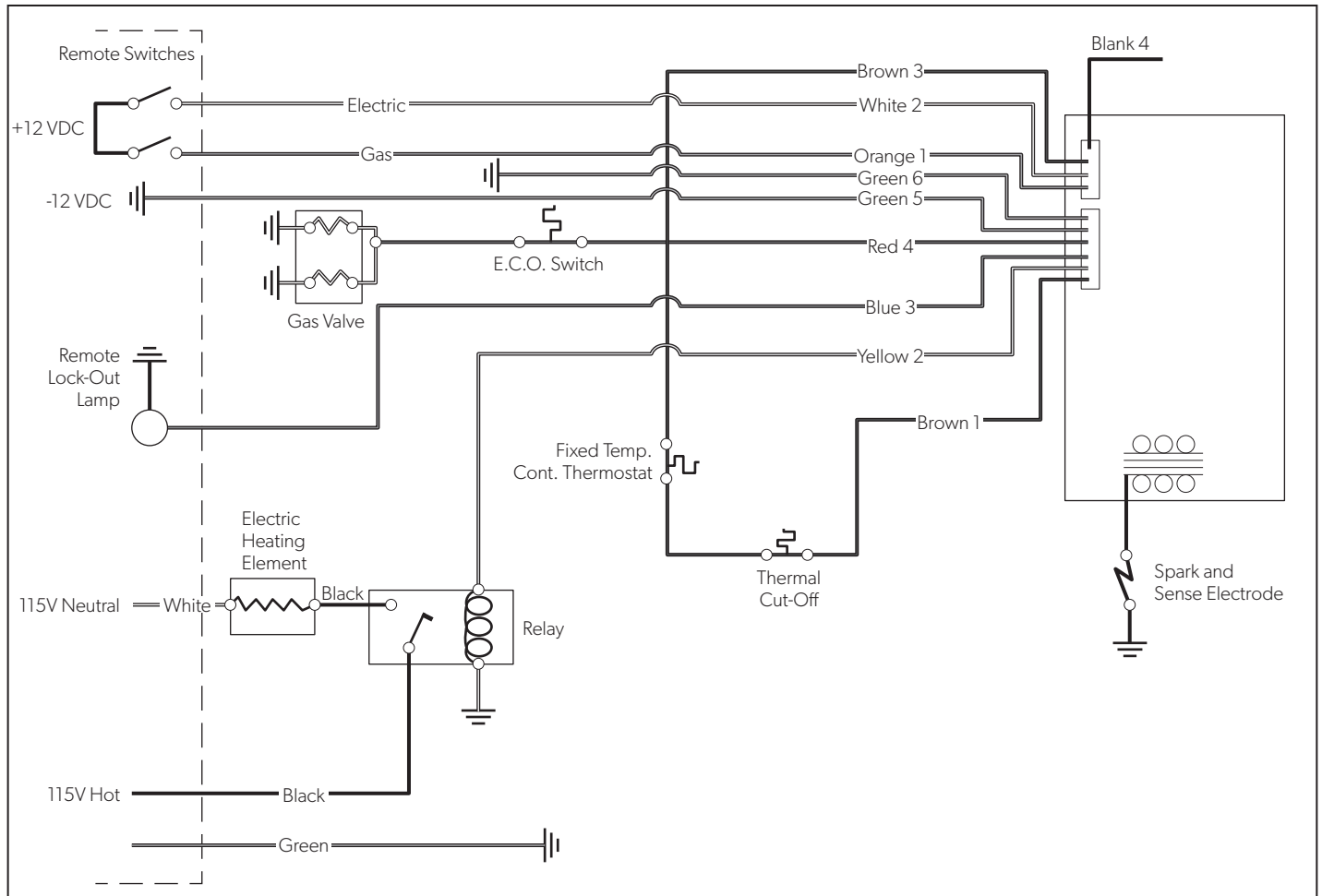
- Do **not** use after-market heating elements. After market heating elements can lack critical safety controls.
- Do **not** use bug screens, anode rods or other non-approved devices with this water heater.
- The use of after-market heating elements can lead to uncontrolled water tank heating and tank explosion.

NOTICE: The use of any after-market heating element devices may result in damage to components or the water heater.

Any alteration, such as the addition of an after-market heating element device, will void the warranty.

7 Wiring Diagrams

i Dotted lines are wired by the customer.



22 Combination Gas/Electric

i Label all wires prior to disconnecting when servicing controls. Wiring errors can cause improper and dangerous operation. Verify proper operation after servicing.

Panther RV Products

8 Disposal



Place the packaging material in the appropriate recycling waste bins, whenever possible. Consult a local recycling center or specialist dealer for details about how to dispose of the product in accordance with all applicable national and local regulations.

9 Warranty Information

Refer to the sections below for information about warranty and warranty support in the US, Canada, and all other regions.

9.1 United States and Canada

LIMITED WARRANTY AVAILABLE AT WWW.DOMETIC.COM/WARRANTY.

IF YOU HAVE QUESTIONS, OR TO OBTAIN A COPY OF THE LIMITED WARRANTY FREE OF CHARGE, CONTACT:

DOMETIC CORPORATION
CUSTOMER SUPPORT CENTER
1120 NORTH MAIN STREET
ELKHART, INDIANA, USA 46514
1-800-544-4881 OPT 1

9.2 All Other Regions

The statutory warranty period applies. If the product is defective, please contact the manufacturer's branch in your region (see the back of the instruction manual for the addresses) or your retailer.

For repair and guarantee processing, please include the following documents when you send in the device:

- A copy of the receipt with purchasing date
- A reason for the claim or description of the fault

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