Propane System Guide

Class A, B, and C Motorhomes

thormotorcoach.com

THOR MOTOR COACH

About This Guide

Thank you for choosing Thor Motor Coach (TMC). This Propane System Guide is intended to help you understand and operate the propane system of your new motorhome. It includes information provided by your selling dealer during your new motorhome pre-delivery inspection (PDI), and much more.

THOR MOTOR COACH

Made to fit.

This guide is not intended for use as a service manual, nor is it model specific. Although some information is specific to certain brands and models, it is of a general nature, and the illustrations and descriptions provided may differ from the components installed in your motorhome.

Thor Motor Coach's Continuing Commitment

Thor Motor Coach's continuing commitment is to provide quality and value for our motorhome customers. Features, options, and components will constantly change as new and improved devices become available and designed into TMC's line-up, with the goal of always providing recreational vehicles that meet and exceed expectations.

Contact Us

You are extremely important to us, and you can be assured Thor Motor Coach and your selling dealer will always strive to do everything possible to earn your trust and goodwill. Your selling dealer should be your first source for information regarding any questions or concerns you may have about your motorhome.

You can also contact TMC Customer Care anytime you have a question about your motorhome or the operation of any factory-installed appliance, equipment, or component.

TMC Customer Care representatives are available Monday through Friday, 8:00 am to 5:00 pm EST. by telephone. If you call off-hours, leave a detailed message and a representative will contact you ASAP.

TMC Customer Care representatives are conveniently available via direct email or email through the Thor Motor Coach website. You can also send or fax written requests to the address and number listed below:

Thor Motor Coach
Attn: Customer Care
PO Box 1486
Elkhart IN 46515-1486

Phone: 877-855-2867 (24/7 assistance)
Fax: 574-294-3618
Email: wsupport@tmcrv.com
Website: www.thormotorcoach.com

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TMC Part Number 0428789 Rev 03/26/2021

Propane Component Suppliers:

LP/CO Detector: Atwood Mobile Products: **http://www.askforatwood.com**

Propane Tank: Manchester Tank: **www.manchestertank.com**
YSN Imports: **www.flameking.com**

Propane Regulator: Fairview Fittings:
http://www.fairviewfittings.com/Industries/Rv-Products.html
Manchester Tank: **www.manchestertank.com**

Pilot Lights and
Electronic Igniters

Furnace: Atwood: **www.askforatwood.com**
Dometic: **www.dometic.com/en-us/us**
Suburban: **www.airxcell.com/suburban/**

Water Heater: Atwood: **www.askforatwood.com**
Girard RV: **www.greenrvproducts.com**

Appliances: Atwood: **www.askforatwood.com**
Dometic: **www.dometic.com/en-us/us**
Furrion: **www.furrion.com**
Norcold: **www.norcold.com**

Other Resources:

Thor Motor Coach Customer Care: **877-855-2867**

Thor Motor Coach Customer Resources Web Site:

https://thormotorcoach.com/motorhome-owners-resources/

Thor Motor Coach YouTube Site: **https://www.youtube.com/user/ThorMotorCoach**

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Propane System Introduction

This Propane System Guide provides basic information pertaining to the safe use and operation of the propane (LP) system and appliances of your motorhome. For the safety of you and your traveling companions, please familiarize yourself with the safe operation of the propane system in stalled in your motorhome. Also ensure your traveling companions are aware of the dangers of mishandling propane or misusing any part or component of the propane system.

The Propane System of your motorhome is designed, engineered, and built to safely supply propane fuel to the gas appliances installed in your motorhome. When converted to heat, propane provides warmed air for your comfort, hot water for washing and bathing, energy for food storage and preparation, and is used as fuel source for some electrical generators. Also known as liquid petroleum (LP), or liquid petroleum gas (LPG); propane is a mixture of flammable hydrocarbon gases. When pressurized, propane is in a liquid state, therefore, the propane stored in your motorhome's propane tank is a liquid and converts to a gas as it is released from tank. Propane pressure is controlled by the regulator, then LP gas is delivered to the propane appliances of your motorhome by the propane piping system.

The diagram below illustrates a typical motorhome propane system, consisting of the propane tank, main gas valve, two-stage regulator and several gas appliances and devices. Most TMC motorhome models offer an auxiliary propane quick-connection, which provides a convenient gas supply for an outdoor barbecue grill or other outdoor propane gas appliance. Whether using propane for internal or external gas appliances, it is vitally important to follow all safety and operational instructions provided by the manufacturer of the propane device.

When used properly, propane gas is a safe and reliable energy source for food preparation, comfort heating, and hot water generation.

Additional information about the propane appliances and components of your motorhome's propane system can be found in other TMC systems guides, TMC quick start guides and component manufacturer's instructions included in your Owner's Packet. Information is also available through your personal TMC Owner's Resource account. Sign-up and log-in at:

www.thormotorcoach.com/owner-resource/

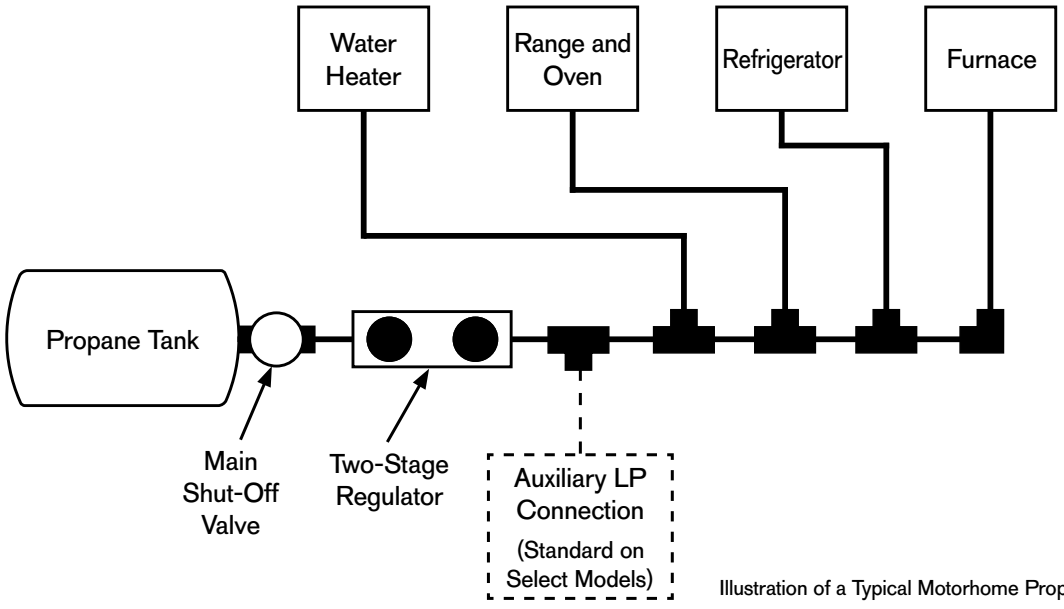


Illustration of a Typical Motorhome Propane System

Safe Use of Propane Gas

Safety labels are affixed throughout your motorhome to provide important information regarding propane safety. Follow all instructions and exercise proper precautions when using gas appliances or any part of the propane system of your motorhome. As with all fuel sources, leaks or malfunctions in the propane system can be very dangerous and could result in an explosion, fire, or death due to suffocation from the gas displacing breathable air. Remember, if any part of the propane system is misused, damaged, or operated in a fashion that it was not designed or intended, corrective action must be taken immediately.

As part of your normal motorhome maintenance schedule, an inspection of the propane system (at least once a year), by a qualified propane service technician, is recommended. Also inspect the propane system if a gas leak is suspected and/or detected and whenever a propane-related component malfunctions.

The manufacturers of propane add a distinct odor agent to this fuel so that is detectable to the human sense of smell. By law, and for the safety of you and your traveling companions, your motorhome is supplied with a detector specifically designed to trigger an alarm if propane (LP) and/or carbon monoxide (CO) is detected in the living space of your motorhome. For the safety of you and the occupants of your motorhome, it is imperative that this detector is maintained in proper working condition, which includes regular testing of the detector to ensure it is functioning as intended. Refer to the LP/CO detector section of this guide.

Any time propane gas is detected by smell or by the LP/CO alarm:

IMMEDIATELY HAVE ALL OCCUPANTS EXIT THE MOTORHOME, and:

1. Do a head count to ensure that all persons are accounted for.
2. Extinguish all open flames, smoking materials and disable possible ignition sources.
3. Do not operate electrical switches. Actuating switches either ON or OFF can cause an electrical arc within the switch, creating a potential ignition source.
4. Locate and close the main propane supply valve (at the propane tank).
5. Open doors, windows, and other ventilating openings; DO NOT USE POWERED VENTILATION FANS, as the motors could create an ignition spark.
6. Do not re-enter the motorhome until the gas has dispersed.
7. Do not turn on the gas supply or operate any gas appliance until the source of the gas leak is determined and repaired.

Warning labels are located in the cooking area to remind you to provide an adequate supply of fresh air for combustion. Unlike a residential home, the available oxygen supply in an RV is limited due to the smaller size of the living space, and proper ventilation must be maintained when using gas cooking appliances.

NOTES:

- Liquefied Petroleum Gas (Propane) is heavier than air and will settle to the lowest point, which is generally the floor of the motorhome.
- To maximize its effectiveness, the LP/CO detector is mounted near the floor. If replacing the detector becomes necessary, always install the new detector in the same location as the original unit.
- The combination LP/CO detector is not a substitute for a smoke alarm. It is NOT designed to detect smoke, other combustible gases, or heat-related hazards.
- Test the LP/CO detector as part of your pre-travel preparations and at least once a week during your travels.
- The reset button only stops the alert from sounding for 60 seconds. This device is intended for detection of propane and carbon monoxide gas ONLY.
- The active sensing element of a LP/CO detector has a limited service life. The detector must be replaced by the expiration date stamped or marked on the detector's housing.
- The LP/CO detector enters a cleaning and initializing mode every time it is powered. If turned OFF for less than 15 minutes, the propane detector may produce several short "chirps" within the first 80 seconds of operation. This is a normal function of the LP/CO detector.
- In an emergency, quick response by emergency personnel is vital. When checking-in to a campground or RV park, always inquire about local emergency services and emergency responders contact information.

Safety Labels, Alerts, and Symbols

Safety labels and decals are placed throughout the motorhome in locations where the potential for a hazardous condition is present. Make sure that you and your traveling companions understand and follow all safety instructions. Never remove safety labels and decals. If a safety label should become damaged, illegible, or removed, it should be replaced as soon as possible. Contact Thor Motor Coach Customer Care for a replacement.

Thor Motor Coach uses the following signal words to warn you of possible safety concerns and to provide information to help prevent personal injury and/or damage to the motorhome:

NOTE: Provides helpful information on the topic being covered in the section.

This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death. This symbol may be used in conjunction with the following signal words and with a color that corresponds with the associated safety label.

⚠ DANGER

Danger indicates an imminently hazardous situation that, if not avoided, will result in death or serious injury. This alert information is limited to the most extreme situations.

⚠ WARNING

Warning indicates a potentially hazardous situation that, if not avoided, may result in death or serious injury.

⚠ CAUTION

Caution indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

NOTICE

A Notice indicates a potential situation that, if not avoided, may result in property damage or damage to your motorhome.

Fire Safety

⚠ DANGER

NO SMOKING

Before dispensing fuel, turn OFF all engines, fuel-burning appliances, and their igniters (see operating instructions).

Do not dispense fuel within 20ft (6.1m) of an ignition source.

Can cause ignition of flammable vapors, which can lead to a fire or explosion and result in death or serious injury.

⚠ DANGER

Vehicles and equipment powered by internal combustion engines and placed in recreation vehicles may cause carbon monoxide poisoning or asphyxiation, which could result in death or serious injury.

The flammable liquids used to power these items can cause a fire or explosion, which can result in death or SERIOUS INJURY.

TO REDUCE RISK:

1. **Do not allow passengers to ride in the vehicle storage area when vehicles and fuel are present.**
2. **Close doors and windows in walls of separation (if installed) when any vehicle is present.**
3. **Run fuel out of engines or stored vehicles after shutting off fuel at the tank.**
4. **Do not store, transport, or dispense fuel inside this vehicle.**
5. **Open the windows, openings, or air ventilation systems provided for venting the transportation area when vehicles are present.**
6. **Do not operate propane appliances, pilot lights, or electrical equipment when motorized vehicles are present.**

⚠ CAUTION

Always replace the fire extinguisher with a similar Class B-C type.

- **Fire extinguishers must be replaced after any use, even if used briefly.**
- **Fire extinguishers have an effective service life. Replace expired fire extinguishers.**

⚠ CAUTION

Ensure the smoke detector and alarm is always kept in good working order. Test this device regularly and immediately replace if it is not functioning properly.

The smoke detector operates on an internal battery. Immediately replace battery when needed and/or on an annual schedule.

For the safety of you and your traveling companions, make sure that everyone traveling in the motorhome is familiar with the location of exits and operation of emergency exits, including emergency exit egress windows. The risk of fire can be reduced by following a few basic fire prevention rules:

Typical Class B-C fire extinguisher

- Know the location of your fire extinguisher(s) and keep them in a state of readiness.
- Never store flammable liquids inside the motorhome.
- Keep cooking surfaces clean and free of obstructions.
- Never use a flammable liquid or material as a cleaning agent.
- Never leave operational cooking appliances unattended.
- Never smoke in bed, around propane appliances and devices, and during fueling of the motorhome and/or propane system.
- Never allow children to play with propane gas or electrical equipment.
- Never use an open flame as an illumination device.
- Immediately repair or discard faulty or damaged wiring and electrical components.
- Never overload electrical circuits.
- Locate and repair propane gas leaks immediately.
- Don't allow rubbish to accumulate inside storage compartments, near or around appliances, propane, and electrical devices or equipment
- Apply flame retardant treatments to interior fabrics; renew treatment at manufacturers recommendations.
- Test and inspect circuit breakers and fuses on a regular basis.
- Maintain fresh batteries in the smoke alarm and perform regular tests to ensure proper operational condition.

NOTE: Know the location of the fire extinguisher installed in your motorhome, become familiar with its use, and keep it in good operating condition. Fire extinguishers have an effective service time-period; always replace expired fire extinguishers.

If a fire does start or smoke is detected, follow these basic rules of safety:

1. IMMEDIATELY evacuate everyone (including pets) from the motorhome!
2. After everyone is accounted for, clear and at a safe distance from the motorhome, call emergency responders.
3. Check the fire or source of smoke to determine if you can attempt to put it out.
4. If it is too large for the fire extinguishing tools you have, or the fire is fuel fed, stay clear of the motorhome and have the fire department and/or emergency responders manage the emergency.
5. ONLY if you have safe access to the shore power stand, turn OFF the main 120/240 VAC circuit breaker at the shore power source and disconnect the shore power cord from this source.
6. ONLY if you have safe access to the Master Battery Switch, turn it OFF.
7. ONLY if you have safe access to the main propane valve located on the propane tank, CLOSE the main propane valve (clockwise direction).
8. ONLY if you have safe access to the battery compartment(s), disconnect the negative battery cable(s) at the house battery and chassis battery
9. DO NOT attempt to use water to put out an electrical or grease fire. Water can spread many types of flammable materials, and electrocution is possible when the fire has an electrical source.

NOTE: Please strictly follow the instructions and heed the warnings of all safety labels affixed to your motorhome.

Electrical Safety

⚠ DANGER

The potential of electrical shock and fatal electrocution is an ever-present danger when working with electricity and electrical components.

⚠ WARNING

Whenever electrical system maintenance is required and before working on the electrical system of the motorhome:

- **Turn OFF the master battery switch**
- **Turn OFF shore power circuit breakers and disconnect the shore line power cord**
- **Turn OFF the generator**
- **Disable the automatic generator start functionality**
- **Disconnect the negative 12 VDC auxiliary (house) battery terminal(s)**
- **Attach an electrical lockout device to the electrical service panel**

Before disconnecting your house and/or chassis batteries, always make sure the master battery switch is turned off, and the inverter/charger (if so equipped) is turned off.

Use extreme caution when using metal tools near electrical system terminals, connections, and components. Short circuits can occur when metal tools bridge between electrical terminals of opposite polarity, causing sparks, possible equipment damage, potential of fire, explosion, bodily injury and/or electrocution.

⚠ CAUTION

Safety precautions must always be observed when using any electrical device or working with electrical wires and connections. Careless handling of electrical components can be fatal. Never touch or use electrical components or appliances while feet are bare, while hands are wet, or while standing in water or on wet ground. Always remove jewelry and wear protective clothing and eye covering. Avoid creating sparks, which could ignite nearby flammable materials.

All installations of the electrical system and components of your motorhome have been made in compliance with industry standards applicable on the date of manufacture. The electrical equipment and associated circuitry are designed and engineered into a dedicated system specific to your motorhome. Do not modify or make changes to the electrical system of your motorhome that are unauthorized by TMC Customer Care. Changes or modifications made after delivery may result in hazardous conditions, cause damage to factory-installed equipment, and may void TMC and equipment manufacturers warranties.

Electrical System Maintenance

NOTICE

The electrical system of the motorhome must be in good working condition; being able to supply 12 volts DC to control circuits of the water heater, furnace, and other gas appliances, along with tank monitors installed on system panels.

Always use extreme caution when performing maintenance or repairs on the electrical system, electrical components, and electrical devices of your motorhome. Service, maintenance, and/or modification of the electrical system should only be performed by qualified electrical technicians using approved materials, components, and installation methods that meet current safety and code requirements. Please consult your dealer's service department or TMC Customer Care for assistance.

Welding and Chassis Repairs

⚠ CAUTION

BEFORE performing welding repairs on the motorhome chassis, disconnect battery ground cables (negative) and ground lugs from all factory-installed wiring harnesses.

If your motorhome's chassis should ever require welding repairs, it is imperative to disconnect the negative cables from the house and chassis batteries and ground lugs from all TMC-installed wiring harnesses BEFORE welding. Disconnecting these ground terminals from the chassis will help prevent damage to sensitive electrical circuits and devices due to arc-welding.

After the welding repairs are completed, ensure all wiring harness ground lugs are properly re-installed BEFORE re-attaching the battery cables.

Diagrams indicating the location of wiring harness ground lugs for the chassis of your motorhome model can be obtained from a TMC Customer Service representative.

NOTE: Your motorhome's electrical system is engineered and tested for safety. Circuit breakers and fuses are designed to protect the electrical circuits from overloading. If you plan to make modifications or additions to the electrical system, TMC strongly recommends consulting a qualified electrician for assistance to ensure continued integrity and safety of the electrical systems.

Please note that any modifications may void the TMC Limited Warranty or appliance and component manufacturers warranties.

⚠ DANGER

IF YOU SMELL PROPANE GAS

1. **Extinguish any open flames and all smoking materials.**
2. **Shut off the propane supply at the container valve(s) or propane supply connection.**
3. **Do not touch or operate electrical switches.**
4. **Open doors and other ventilating openings.**
5. **Leave the area until the odor clears.**
6. **Have the propane system checked and leakage source corrected before using again.**

Ignition of flammable vapors could lead to a fire or explosion and result in death or serious injury.

⚠ DANGER

Do not use gas cooking appliances for comfort heating. Can lead to carbon monoxide poisoning and/or depletion of oxygen, which can cause death or serious injury.

⚠ DANGER

All pilot lights, appliances, and their igniters (see operating instructions) shall be turned off before refueling of motor fuel tanks and/or propane containers.

Can cause ignition of flammable vapors, which can lead to a fire or explosion and result in death or serious injury.

⚠ DANGER

NEVER TRAVEL WITH, AND/OR STORE PROPANE (LP) CONTAINERS OR CYLINDERS INSIDE YOUR MOTORHOME.

Propane cylinders are designed to vent whenever internal pressures reach a certain threshold. Therefore, the potential of a venting propane cylinder presents a gas leak hazard, which, if ignited, could lead to an EXPLOSION, FIRE, AND SERIOUS BODILY INJURY OR DEATH.

⚠ WARNING

ALL PROPANE GAS IS CONTAINED UNDER PRESSURE. DUE TO THE DANGEROUS POTENTIAL OF ANY COMPRESSED GAS, IT IS MANDATORY THAT THE FOLLOWING REQUIREMENTS FOR THE USE OF THIS TANK BE FOLLOWED:

Tanks are to be installed, fueled, and maintained in accordance with the state and local codes, rules, regulations, or laws and in accordance with the NFPA Pamphlet 58, division IV.

⚠ WARNING

Do not fill propane container(s) to more than 80 percent of capacity. A properly filled propane tank contains approximately 80 percent of its volume as liquid propane.

Overfilling the propane container(s) can result in uncontrolled propane flow, which could lead to a fire or explosion and result in death or serious injury.

⚠ WARNING

THIS PROPANE PIPING SYSTEM IS DESIGNED FOR USE WITH PROPANE ONLY:

- **Do not connect natural gas to this system.**
- **Securely cap inlet when not connected for use.**
- **After turning on propane, except after normal cylinder replacement, test propane piping and connections to appliances for leakage with soapy water or bubble solution.**
- **Do not use products that contain ammonia or chlorine to test for leaks. These substances may weaken piping components and cause gas leaks, leading to fire or explosion, which could result in death or serious injury.**

⚠ WARNING

ROAD VIBRATION CAN LOOSEN PROPANE FITTINGS. It is important to check the Propane System for leaks at least every 5,000 miles, and whenever the tank is filled. It is also recommended to have the entire Propane System checked annually by a qualified propane service technician.

⚠ WARNING

Gas cooking appliances need fresh air for safe operation.

BEFORE OPERATING:

- **Open vents or windows slightly or turn on exhaust fan prior to using cooking appliance.**
- **Gas flames consume oxygen, which should be replaced to ensure proper combustion.**
- **Improper use can result in death or serious injury.**

Warning labels are affixed throughout your motorhome to provide required information on propane safety. Read and follow the instructions listed, and exercise proper precautions when using propane and propane appliances.

Familiarize yourself and follow all propane gas safety procedures listed within this document, your Owner's Manual, and the documentation associated with all gas and electrical appliances of your motorhome.

Combination Carbon Monoxide/ Propane Alarm

⚠ WARNING

The carbon monoxide/propane (CO/LP) combination alarm installed is intended for use in ordinary indoor locations of recreation vehicles.

Actuation of this alarm indicates the presence of carbon monoxide and/or propane gas, which is a toxic gas that is colorless and odorless.

Do not disconnect the combination carbon monoxide/ propane alarm from its power source.

Individuals with medical problems may consider using warning devices that provide audible and visual signals for carbon monoxide concentrations under 30 PPM.

This alarm will only indicate the presence of carbon monoxide gas at the sensor. Carbon monoxide gas may be present in other areas.

⚠ WARNING

THE CO/LP COMBINATION DETECTOR OPERATES ON 12 VOLT HOUSE POWER; IT DOES NOT CONTAIN AN INTERNAL BACK-UP BATTERY. IT WILL BE DISABLED WHEN AUXILIARY BATTERIES ARE DISCONNECTED, OR SHORE POWER IS REMOVED, OR IF THE AUXILIARY BATTERY VOLTAGE DROPS BELOW THE OPERATING THRESHOLD VOLTAGE OF THE DETECTOR!

⚠ WARNING

Actuation of this alarm indicates the presence of propane gas and/or carbon monoxide. By displacing available breathable oxygen, the presence of these gases have the potential of causing death by suffocation.

Your motorhome is equipped with a combination carbon monoxide/propane alarm that is listed for use in recreation vehicles. The combination carbon monoxide/ propane alarm will only provide its intended protection if it is maintained in operational condition.

Typical combination carbon monoxide/propane alarm

The combination carbon monoxide/propane alarm is wired directly to the motorhome's 12 volt DC electrical system, with continuous power being supplied by the auxiliary battery. There is not a back-up battery in the combination carbon monoxide/propane alarm. If the auxiliary battery cable is disconnected at the battery terminals, the combination carbon monoxide/propane alarm will not be powered, and therefore, will not function.

This alarm is designed to detect the toxic carbon monoxide gas that results from incomplete combustion, such as those emitted from appliances, furnaces, fireplaces, and auto exhaust, along with propane gas that may be present. A carbon monoxide/propane alarm is NOT A SUBSTITUTE for other combustible gas, fire or smoke detection alarms.

Please note that there are hazards against which carbon monoxide detection may not be effective, such as detection of natural gas and other harmful substances.

Although this alarm is designed to sense the presence of carbon monoxide and/or propane gas, there are other combustible fumes or vapors that may be detected by the sensor including, but not limited to: acetone, alcohol, butane, and gasoline.

These chemicals can be found in commonly used items such as deodorants, colognes, perfumes, adhesives, lacquer, kerosene, glues, wine, liquor, cleaning agents, and the propellants of aerosol cans. Be sure to read, understand, and follow the owner's information from the manufacturer of the combination carbon monoxide/propane alarm. This includes information regarding the limited service life of the alarm.

What to do if the Alarm Sounds

1. Operate the RESET/SILENCE button.
2. Immediately move to fresh air (outdoors, or by an open door or window).
3. Call emergency services (911 in the United States or a local fire department).
4. Do not re-enter the motorhome or move away from the open door or window until the emergency service responders have arrived, the motorhome has been aired out, and the alarm remains in its normal (OFF) condition.

If the alarm reactivates within a 24-hour period, repeat steps 1-through-4 and call a qualified appliance technician to investigate for sources of carbon monoxide and inspect for proper operation of this equipment. An inspection for propane leaks must also be performed. Make sure that motorized vehicle(s) and equipment are not, and have not been operating adjacent to the motorhome.

Have all identified problems corrected immediately. Note equipment inspected by the technician and the repairs that were made. Consult the manufacturer's instructions or contact the manufacturer directly for more information about carbon monoxide safety and this alarm.

Test

⚠ WARNING

Test the combination carbon monoxide/propane alarm after the motorhome has been in storage, before each trip, and at least once per week during motorhome use.

Failure to do so can result in an undetected faulty CO/LP alarm, which could lead to death or serious injury.

With the LP/CO detector ON (powered by the motorhome's 12 volt system), simply press the TEST switch located on the front of the detector. The LED should flash red and the alarm should trigger. Release the switch. This is the only and proper method of testing the detector. The test feature checks the full operation of the detector. If this detector does not test properly, have it repaired or replaced immediately.

The LP/CO detector has a self-check circuit that initiates when the detector is powered. In the event the detector senses an internal fault, a failure alarm will trigger. It is a continuous series of short beeping tones between long intervals and is distinctively different from the gas alarm. Repair or replace the detector if the failure alarm is triggered.

Maintenance

Vacuum the alarm cover at least once a year. Clean the cover by hand using a cloth dampened in clean water. Dry with a soft cloth. Do not spray the front panel of the alarm with cleaning agents or waxes. This action may damage the sensor causing an alarm or cause the alarm to malfunction. Do not paint the face of the alarm.

Replacement

⚠ CAUTION

Be sure to replace your LP/CO detector(s) by the "replace by" date on the cover, or according to the time-frame listed in the detector's user's manual.

The combination carbon monoxide/propane alarm has a limited service life and must be replaced following the alarm manufacturer's instructions and/or the expiration date listed on the device.

Conditions That May Trigger the LP/CO Detector

NEW COACH ODOR

The glues and other materials used in manufacturing the motorhome produce vapors which may be detected when the motorhome is stored for an extended period. Air out the motorhome thoroughly after it has been stored for an extended period of time.

HAIR SPRAY

Most aerosol hair sprays use butane gas as a propellant. Butane, like propane, is heavier than air and will settle to the floor level where it may be detected.

OTHER GASES

Other gases that can cause the detector to trigger an alarm include vapors from any fuel, liquor, alcohol, deodorants, colognes, perfumes, adhesives, lacquer, and solvent-based cleaning agents.

BEEPING NOISE

If you hear beeps about once every minute, even if power to the LP/CO detector is turned off, the source of the beeps may be the smoke alarm, not the LP/CO detector. Unlike the LP/CO detector, which is powered from the house (auxiliary) battery, the smoke alarm operates on an internal 9 volt battery. Replace the battery in the smoke alarm.

SLOW BEEP RATE

This could be the LP/CO detector's built-in failure warning alarm. It is a continuous series of short beeping tones between long intervals and is distinctively different from the alarm. This sound indicates that the LP/CO detector is not working properly and needs to be replaced.

If problems continues with the LP/CO detector, see your RV dealer or qualified propane service center for detector service or replacement.

Common Causes of Apparent LP/CO Detector Malfunctions

Some conditions do exist where the LP/CO detector will produce apparent false alarms. However, your **FIRST** response when an alarm is activated is to **ALWAYS AND IMMEDIATELY, HAVE ALL OCCUPANTS EVACUATE THE MOTORHOME.** Remember, although propane gas has a distinct order, carbon monoxide gas is odorless, and both are deadly.

Check for possible sources of carbon monoxide gas, such as a malfunctioning furnace, clogged furnace or gas refrigerator vents, exhaust fumes from generators or vehicle engines. **NEVER ASSUME THAT THE ALARM IS FALSE, UNTIL ALL POSSIBLE SOURCES OF DEADLY GAS HAVE BEEN THOROUGHLY CHECKED AND DEEMED SAFE.**

The Propane Tank

⚠ DANGER

Always shut OFF the engine while refueling propane tank. Do not smoke. Turn off all appliances with automatic igniters and do not operate other ignition sources while refueling.

⚠ DANGER

Over-filling the propane gas tank can result in uncontrolled gas flow which can cause fire or explosion. A properly filled tank will contain approximately 80% of its volume as liquid propane.

An 80% automatic shut-off valve is installed on the propane gas tank which will automatically prevent further filling when the gas volume has reached 80% of tank capacity.

⚠ WARNING

If you suspect your propane container has been overfilled, contact your selling dealer or a qualified propane technician for assistance immediately. Do not attempt to service or correct a propane container overfill yourself.

⚠ CAUTION

Propane tanks are to be installed, fueled, and maintained in accordance to country, federal, state, and local codes, rules, regulations, laws, or guidelines.

⚠ CAUTION

Never use another LP tank other that the one furnished with the motorhome. If the LP tank must be replaced, check with your dealer for correct LP tank specifications and replacement procedures.

NOTICE

Hand tighten propane gas system valves only; do not use a wrench or pliers as over tightening may damage the valve seals and cause them to leak.

New propane tanks contain an inert gas that helps prevent moisture and other contaminants from entering the tank This gas must be carefully purged before filling the tank with propane.

Typical propane tank

Your motorhome's propane system includes a single, permanently mounted A.S.M.E. (American Society of Mechanical Engineers) approved propane tank, mounted in an exterior compartment, along the chassis rails of the motorhome. Depending on the motorhome's configuration, this compartment may either be on the driver's side or passenger's side of the motorhome. This compartment is designed to remain open to the atmosphere so that any propane venting or unwanted gas discharge will be safely carried away from the vehicle.

Propane is stored under extreme pressure in the tank, with space in the tank to allow for expansion into vapor. Allowing for vapor expansion, a properly-filled propane tank is full at 80% volume. Propane also expands 1.5% for every ten degree increase in ambient temperature. It is imperative to leave sufficient space inside the propane tank to allow for expansion of gas during warmer weather.

Filling the Propane Tank

The propane tank is not designed to be removed from the motorhome, therefore, the motorhome must be driven to a licensed and certified propane filling station in order to fill or service the propane tank. Only allow a qualified propane gas service technician(s) to fill the propane tank.

NEW PROPANE CONTAINERS ARE FILLED WITH AN INERT GAS, WHICH MUST BE CAREFULLY PURGED BEFORE FILLING WITH PROPANE.

THE PROPANE TANK MUST NEVER BE OVERFILLED WITH PROPANE.

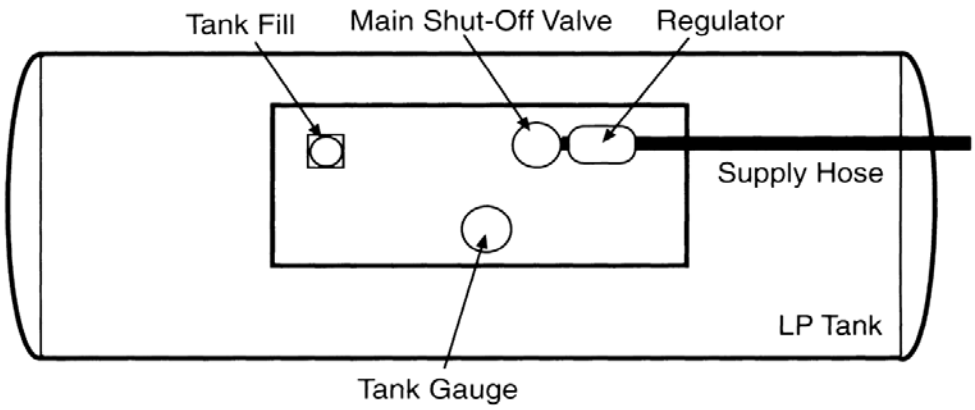


Illustration of a typical motorhome propane tank

Never allow your propane tank to be filled above the maximum safe level as indicated by the fixed liquid level gauge. Do not allow the visible gauge to be used for filling. Overfilling the propane container above the liquid capacity indicated on the container could allow liquid propane to enter the system that is designed for vapor only, creating a hazardous condition.

1. **NEVER** remove the propane gas tank from the motorhome. Always drive the motorhome to the gas supplier for filling or servicing.

2. **BEFORE** entering the propane bulk plant or service/filling station, make sure all pilot lights and igniters are extinguished. Shut **OFF** gas to all appliances by first turning **OFF** each appliance, then close the propane gas main shut-off valve.

3. **EXTINGUISH** open flames and smoking materials.

4. Passengers **SHOULD NOT REMAIN** in the motorhome while filling the propane tank. Have passengers wait a safe distance away from the motorhome and fuel-filling area.

5. The supplier or fueling/service technician, not you, should always connect and disconnect the fill nozzle to the tank inlet fill connection.

6. Always remember to **CLOSE** the main supply valve (at the propane tank) and open the 20% liquid level valve.

7. **NEVER** use a wrench to close the main supply valve or the 20% liquid level valve; always close by hand. If leaking occurs, have the valve repaired or replaced.

8. Drive at least one mile from the propane gas supplier before relighting pilot lights or energizing igniters or appliances. This will allow any minimal leakage, which may have occurred while filling the tank, to safely dissipate.

9. **DO NOT** light pilot lights if you detect the smell of propane gas. Shut off the main supply valve at the propane tank. Allow the motorhome to ventilate for 30 minutes. If you still detect propane odor, have the source of the leak located and repaired.

Even though the tank is equipped with an automatic 80% shut-off which prevents over-filling beyond 80% tank capacity, always have the supplier (fueling/service technician) monitor the 20% liquid gauge, and stop the filling process if liquid does appear. If the tank has been over-filled, make sure the propane supplier bleeds out and recovers any excess fuel.

NOTES:

- The capacity or size of a propane tank is expressed in pounds (lbs.) and correlates to the weight of the propane it is capable of containing when filled to 80% capacity, not the total volume capacity of the tank.
- For example:
  If your motorhome has a 40 pound capacity LP Tank, filling it to 80% = 32 pounds of LP. LP weighs 4.2 lbs/gallon, so the 80% capacity of a 40 pound LP tank is 7.6 gallons (32÷4.2).
- Propane tanks installed in TMC motorhomes range from 40-68 pounds capacity for Class C motorhomes, and 40-105 pounds capacity for Class A motorhomes (specifications subject to change).

Propane Fuel Level

The fuel level of the propane system can be monitored by the gauge mounted on the tank. Some motorhomes may also feature a propane fuel level display located on the monitor panel, which is located inside the motorhome. Propane systems that have this remote monitoring feature will have a propane level sensor installed within the propane tank.

Motorhomes equipped with a multiplex control system will have a propane tank level monitor as part of the user/interface panel. Propane monitoring is usually included on the Home Menu screen. Refer to the TMC Multiplex System Guide for details.

Multiplex switch panel illustrating the LP tank monitoring feature (upper right corner of the display area)

Press the LPG switch. An LED will illuminate; indicating the approximate LP level remaining in the propane tank

LED Fluid Level Indicators:
E = Empty
1/3 Full
2/3 Full
F = Full

Typical Monitor Panel

NOTE: Motorhomes equipped with a multiplex control system have touch-screen panels, uniquely different than the monitor panel shown here.

Monitor panel control features vary due to standard and optional features available by motorhome brand and floor plans.

The Propane Gas Regulator

⚠ WARNING

NEVER ALTER THE POSITIONING OF THE REGULATOR. PROPANE GAS REGULATORS MUST ALWAYS BE INSTALLED WITH THE DIAPHRAGM VENT FACING DOWNWARD. ALSO MAKE SURE TO KEEP THE REGULATOR COVER IN PLACE TO MINIMIZE VENT BLOCKAGE, WHICH COULD RESULT IN EXCESSIVE GAS PRESSURE, CAUSING FIRE OR EXPLOSION.

For the propane gas to be safely used by the motorhome's appliances, the high fuel pressures within the tank must be reduced. Propane gas pressure reduction is a two step process and is accomplished by the propane regulator; virtually two regulators in one unitized body. The propane regulator assures consistent and proper operating gas pressure, regardless of outside weather conditions or altitude (atmospheric pressure).

The propane regulator is located next to the main LP gas valve (on the tank), inside a cover and in-line with the propane gas supply line. It seldom requires service, however, it should always remained covered and protected from the elements.

The high pressure first stage of the regulator is used to reduce the LP gas pressure to approximately 10 to 13 pounds per square inch (PSI) before encountering the low pressure second stage. This second stage regulator reduces the gas pressure further to 11 inches water column, or about 0.5 PSI. The result is an efficient, low pressure gas supply that helps to eliminate problems such as gas line freeze ups and pilot light outages.

The regulator has been preset by the manufacturer and adjustments should not be necessary. However, if adjustments should be required, DO NOT attempt to adjust the regulator yourself. Adjustments must be made with special equipment and by a qualified propane service technician. Have the regulator pressure checked as part of your routine propane system maintenance schedule, or whenever you suspect that incorrect gas pressures could be causing appliance malfunctions.

Atmospheric air is required for proper operation of the regulator, therefore, it is very important that the regulator vent is kept clean and free of dirt and debris. It is very important to keep the vent facing downward and the regulator covered, protecting it from contamination. A toothbrush can be used to clean the vent if it becomes clogged by foreign matter.

If you believe the propane gas regulator has been damaged or otherwise is not functioning properly, have it serviced or replaced by a qualified propane service technician.

NOTE: A device known as a manometer is used to accurately measure small amounts of gas pressure.

A manometer consists of a u-shaped tube and a scale marked in inches. An amount of water is placed in the tube to where the scale equals zero. Then a hose from the from the gas source is connected to the manometer's tube, which forces the water in the tube to move. The distance that the water moves is compared to the scale, giving a pressure comparison measurement in 'inches of water column.'

Preventing Propane Regulator Freeze-up

NOTICE

When filling the tank for cold weather use, ask the propane suppler to add hydrous methanol to the fuel mixture.

During cold weather, it is important to keep ice from forming within the regulator, which if happens, will shut off the flow of propane gas to the appliances.

Regulator freeze-ups can occur in any weather if there is moisture in the tank or if the tank has been over-filled. Always use moisture-free propane fuel and make sure the tank is not filled beyond 80% of capacity. If moisture has entered the tank, have the tank purged, or have hydrous methanol added by an authorized propane gas supplier.

The term regulator freeze-up can be misleading. Regulators and propane gas do not freeze, however, water particles that may be present in the fuel will freeze as the expanding propane gas creates a cooling effect as it passes through the regulator. Freezing moisture can build up and partially or totally block the passage of the gas through the regulator. Regulator restrictions can also occur when outside temperatures are low enough to cause frost to form on or near the regulator.

The source of moisture within the propane fuel is varied. It can occur at the refinery or gas bulk plant, in the rail cars used to transport the fuel, or even within the propane tank itself. Moisture intrusion into the propane tank can occur when a tank service valve is left open while the tank is empty, allowing moist air to enter and become trapped.

TAKE THESE STEPS TO INHIBIT OR PREVENT PROPANE REGULATOR FREEZE-UPS:

1. Make sure that the propane tank is free of moisture before refilling. Ask the filling/service technician if tank purging is recommended.
2. If freezing has occurred, have the propane gas dealer purge the propane gas tank before refilling.
3. DO NOT overfill the propane gas tank.
4. Make sure to keep the main service valve on an empty tank closed.
5. Add hydrous methanol or other approved propane gas antifreeze or de-icing agent to the propane fuel during tank filling.
6. Keep the propane gas regulator covered at all times.

NOTES:

- IF FREEZE-UP DOES OCCUR – Shut off the propane gas at the tank. A frozen regulator may permit propane gas to flow at high pressure, resulting in leaks at appliances or in the lines.
- If a freeze-up does occur, NEVER attempt to thaw with an open flame. Once thawed, be sure to take the proper steps to prevent a re-occurrence. If regulator freeze-up persists, have the system checked by your propane gas supplier.
- As outside temperatures drop, the BTU value of the propane gas is lessened, since the colder liquid propane in the tanks requires the heat from the surrounding air to vaporize. This lowering of BTU value can significantly affect the performance of the propane system.
- In cold weather, you can help insure proper propane system performance by keeping the propane gas tank as full as possible and reviewing the BTU/hr information posted on propane gas appliances.

Pilot Lights and Electronic Igniters

⚠ DANGER

Turn OFF all pilot lights, appliances, and their igniters (see operating instructions) while the motorhome is traveling or in motion, and before refueling the motorhome's fuel tanks and/or propane containers.

Can cause ignition of flammable vapors, which can lead to a fire or explosion and result in death or serious injury.

Nearly all of the gas appliances installed in your motorhome use electronic igniters, which eliminates the need for pilot lights. The furnace, water heater and if installed, the gas/electric refrigerator have automatic electronic igniters that ignite the propane gas when the appliance control systems require to do so.

However, some gas ranges and ovens have gas pilot lights and require manual ighting prior to use. The pilot light gas supply line will remain open as long as the pilot is lit and the thermocouple senses flame. If the pilot goes out, the pilot light has a safety device that will shut off gas flow to the pilot light. Follow the appliance manufacturer's instructions to light and extinguish the pilot.

Whether the ignition system is electronic or is a pilot, the main gas valve at the propane tank must be turned ON before operating any gas appliance. Refer to the appliance manual to determine whether a particular gas appliance in your motorhome has a pilot light or an automatic electronic gas igniter.

Electronic igniters and control circuitry of gas appliances operate on 12 volts DC, so in order to operate the furnace, water heater, and gas refrigerator, the master battery disconnect switch must be ON.

Disableing Electronic Igniters

Electronic igniters are utilized in gas furnaces, water heaters, and gas refrigerators and all must be disabled whenever the motorhome is beng refueled or the LP tank is being filled. Since electronic igniters operate on 12 volts DC, it is rather easy to disable igniters when fueling the motorhome.

Turn OFF the master battery disconnect switch to disable electronic igniters. **HOWEVER, THIS OPERATION WILL NOT TURN OFF PILOT LIGHTS. PILOT LIGHTS MUST BE MANUALLY TURNED OFF.**

Always close the main gas valve on the LP tank before refueling the motorhome.

Using Gas Appliances

General Safety Instructions for Gas-burner Appliances

⚠ DANGER

IF YOU SMELL PROPANE

1. **Extinguish any open flames, pilot lights, and all smoking materials.**
2. **Do not touch electrical switches.**
3. **Shut off the propane supply at the container valve(s) or propane supply connection.**
4. **Open doors and other ventilating openings.**
5. **Leave the area until odor clears.**
6. **Have the propane system checked and leakage source corrected before using again.**

FAILURE TO COMPLY COULD RESULT IN EXPLOSION RESULTING IN DEATH OR SERIOUS INJURY.

⚠ DANGER

Do not use gas cooking appliances for comfort heating. Can lead to carbon monoxide poisoning and/or depletion of oxygen, which can cause death or serious injury.

⚠ DANGER

All pilot lights, appliances, and their igniters (see operating instructions) shall be turned off before refueling of motor fuel tanks and/or propane containers.

Can cause ignition of flammable vapors, which can lead to a fire or explosion and result in death or serious injury.

⚠ DANGER

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

⚠ DANGER

Prevent any flammable materials, such as clothing, paper or cloth towels, curtains or shades, etc., from becoming close to open flame or hot surfaces.

⚠ WARNING

Follow all safety instructions when using LP Gas appliances and the LP gas system of your motorhome. The risk of fire and/or explosion and bodily injury exists with improper use of LP gas or any other flammable substances.

⚠ WARNING

- **All control knobs must be turned to OFF when not in use. Fire and/or burning hazard may occur if a burner is accidentally left ON.**
- **DO NOT operate range or cooktop if it is damaged or not working properly.**
- **In case of gas detection or other emergency, know where the main propane gas shutoff valve is located and know how to TURN OFF gas supply.**
- **If any burner should extinguish (after initial lighting or due to accidental blow-out), turn all burner knobs to OFF and WAIT 5 MINUTES before attempting to re-light burner.**
- **Open a window and turn on an exhaust fan while using the gas range or oven. This replaces breathable oxygen that is displaced with the open flames of the burners.**
- **DO NOT touch top burners, burner grates, or other areas near top burners during and after use. Do not let clothing or other flammable materials contact top burners or areas near top burners until they have had sufficient time to cool.**
- **Be sure that glass cooking utensils are safe for use on the cooktop. Due to sudden changes in temperatures, only certain kinds of glass utensils are suitable for surface or top burner use.**
- **Never leave top burners unattended. A boil-over could result and cause smoking and greasy spillovers that could ignite.**
- **Turn pan handles inward, but not over other top burners. This reduces the chance of burns due to bumping the pan.**
- **DO NOT leave children alone or unattended in area where range or cooktop is in use. Never allow anyone to sit, stand, or climb on any part of the range cooktop. They could be burned or injured.**
- **DO NOT heat unopened containers; they could explode. The hot contents may cause burns and container particles may cause injury.**
- **Replace range cover only after burners and grate have sufficiently cooled.**
- **DO NOT operate burners with control knob set to the LITE position. Damage to the ignition module and burner electrodes may result.**
- **Top burner flame size should be adjusted so it DOES NOT extend beyond the edge of the cooking utensil.**

⚠ WARNING

Gas cooking appliances need fresh air for safe operation.

BEFORE OPERATING:

- **Open vents or windows slightly or turn on exhaust fan prior to using gas cooking appliance.**
- **Gas flames consume oxygen, which should be replaced to ensure proper combustion.**
- **Improper use can result in death or serious injury.**

Depending on model and floorplan features, your motorhome may be equipped with several gas appliances that are designed to provide exceptional traveling conveniences. Most RV cooktops, ranges, refrigerators, furnaces, and water heaters use propane (LP) gas or a combination of gas/electric to operate. Some appliances may have electronic gas ignition, while others may require a pilot light to be lit before operating.

Become familiar with all safety-related warnings and instructions whenever a propane appliance or device is in use. Routinely, check for gas leaks. If gas is detected, either by smell or by an alarm, know the safety and evacuation procedures. Any gas leaks have the potential of causing explosion or fire, resulting in severe injury or death. Always have gas leaks and appliance malfunctions repaired immediately by a qualified technician. Follow all safety labels affixed throughout your motorhome and included in the manufacturer's owner's manuals for all propane appliances.

NOTE: Some TMC diesel-engined Class C motorhomes feature propane-fueled generators. Operating a propane-fueled generator can deplete the propane fuel supply that may be needed for other gas appliances.

Motorhome owners that have propane-fueled generators should closely monitor the level of available propane so that the furnace, water heater and other gas appliances will have an adequate supply of propane fuel.

Typical propane gas cooktop/range

Using a Propane Cooktop and Oven

Ensure your propane tank is filled and the propane system is ready for operation:

1. Close ALL burner valves, controls and pilot light valves.
2. Open the main propane valve slowly (located on or near the propane tank) to avoid a fast rush of propane vapor, which could cause propane 'freeze-up.' If you experience propane freeze-up, close the main valve and wait 15 minutes before trying again.
3. Listen carefully as propane begins to flow. If a hissing noise is heard for more than a few seconds, close the main valve and contact your selling dealer's service department to have the propane system tested.
4. Rotate the burner knob to the light or ignite positon.
5. Press or rotate the sparker button or knob to light the burner.
6. Adjust the flame and operate appliances as needed, always following the appliance manufacturer's instructions.
7. When finished using the appliance, rotate the burner knob to the OFF positon and CLOSE the main propane valve at the propane tank.

Make sure that you read and follow ALL requirements for safe handling and operating of appliances and the propane system.

NOTE: For additional information regarding the gas appliances installed in your motorhome, refer to the TMC Appliances and Entertainment System Guide, available as a download through your TMC Owners Resource account.

Gas Range and Oven Combination

Similar to the illustration to the right, your motorhome may be equipped with a two or three-burner range and oven combination. This unit requires a pilot light to be lit in order to operate the oven. The oven is designed this way in order to reduce the possibility of unintended ignition.

TO LIGHT THE OVEN PILOT

- Ensure that the LP gas supply is ON at the LP tank.
- Turn the oven control knob to the pilot position and push IN.
- Light the pilot with a match or lighter.
- Hold in the knob for at least 30 seconds until the pilot flame is well established.

THE PILOT WILL NOT COME ON

- Check to determine if the main gas valve is turned ON.
- Is there LP gas in the tank?
- Check for blockage of the orifice, pilot assembly or pilot line.
- Check for kinks in the pilot gas line.

PILOT WILL NOT STAY ON

- Hold oven knob, in the pilot position, for up to 30 seconds.
- Check gas supply; ensure the main valve is ON and there is LP in the tank.
- Confirm that thermocouple is fully inserted into the thermocouple holder.
- Pilot flame out of position; pilot flame is not engulfing thermocouple. Pilot assembly needs to be adjusted so that pilot flame is engulfing thermocouple.

NOTE: The pilot gas line will remain open as long as the pilot is lit and the thermocouple senses flame. If the pilot goes out, a magnet will drop out and shut off gas flow to the pilot.

Typical 3-Burner LP Gas Range and Oven

OVEN OPERATION

- After the pilot is lit, rotate the oven control knob counter-clockwise to the desired temperature setting or to BROIL. The oven will pre-heat in approximately 15 minutes. For best results, always allow adequate time for the oven to come to temperature.
- To extinguish the oven burner, rotate the oven control knob clockwise to PILOT/PUSH/HOLD position. The oven burner will extinguish, but the pilot will remain lit.

USING THE BROILER

- Ensure the pilot is lit.
- Push and rotate the oven control knob to the BROIL position.
- Center the cookpan under the broiler flame. Move and turn food frequently for even browning and cooking.
- When cooking is complete, rotate the oven control knob clockwise to PILOT/PUSH/HOLD position.
- For complete oven shut-down push in the oven control knob and rotate clockwise to the OFF position. Pilot should extinguish. For safety, visually check to confirm that the pilot did, in fact, extinguish.

NOTE: Cooktops and ovens are a source of heat. On hot days, heat from the range and/or oven may cause the cabin temperature to rise to uncomfortable levels.

LIGHTING THE TOP BURNERS MANUALLY

1. All burner controls operate counter-clockwise and must be pressed inward to turn ON or LITE position. Do not attempt to light more than one burner at a time.
2. Immediately light the burner by holding a lit match or hand-held spark igniter designed for this purpose, near the burner ports.
3. To extinguish the top burner flame, turn the appropriate burner knob counterclockwise to OFF.

LIGHTING TOP BURNERS WITH SPARK IGNITERS

1. Turn the appropriate burner knob counterclockwise to ON or LITE. Do not attempt to light more than one burner at a time.
2. Turn the SPARK knob clockwise one "click." If the burner fails to light, continue turning the SPARK knob clockwise until the burner ignites.
3. To extinguish the top burner flame, turn the appropriate burner knob clockwise to OFF.

LIGHTING TOP BURNERS WITH ELECTRONIC IGNITION

1. Turn the appropriate burner knob counterclockwise to ON or LITE. This will automatically activate the ignition system, and all burners will begin to spark repeatedly. This is the "clicking" sound you will hear.
2. The burner will light within five seconds. Once the burner is lit, turn the knob counterclockwise to the desired setting.
3. To extinguish the top burner flame, turn the appropriate burner knob clockwise to OFF.
4. If 12 volts DC power is not available to the ignition module for any reason, top burners may be lit manually (see manual lighting instructions above).

Gas Cooktops

The kitchen of your motorhome may be equipped with a 2 or 3-burner gas cooktop (similar to the illustration here), and instead of a gas oven, your kitchen may be equipped with either a microwave or a combination microwave/convection oven (see microwave oven section).

Typical 2-3 burner gas cooktop

If so equipped, your gas cooktop operates similarly to the gas range burners described previously. Please note all LP gas-related safety instructions when using this or any gas appliance.

TO OPERATE THE GAS BURNERS

- Ensure that the LP gas supply valve at the tank is ON.
- Push in the burner control knob and rotate to the LITE position. The electronic igniter should begin "clicking."
- After burner ignites, rotate knob to adjust flame to the desired level.

TO TURN OFF GAS BURNER

- Rotate burner knob to the OFF position.
- Before traveling, turn OFF the LP gas supply valve at the tank.

NOTE: For complete operating instructions and maintenance details, please refer to the manufacturer's owner's manual, included with your TMC Owner's Packet.

Gas/Electric Refrigerator

⚠ DANGER

DO NOT operate the gas/electric type refrigerator on LP while the vehicle is in motion or refueling.

- **Turn off the LP gas supply at the tank before and during travel.**
- **Be sure the igniter of the refrigerator remains disabled while the motorhome is traveling or refueling.**

TO DISABLE THE IGNITER, FOLLOW EITHER OF THESE METHODS:

- **Turn the front panel selector switch to OFF. Doing so will turn off the entire refrigerator.**
- **Turn the selector switch to AUTO. With the LP gas supply valve closed at the tank, the refrigerator will operate on 120 volts AC. Ensure there is 120 volts AC available, either from the on-board generator or an on-board inverter (master battery switch must be ON).**
- **Turn OFF the master battery disconnect switch. Most, if not all igniters in your motor operate on 12 volts DC, supplied by the auxiliary (house) battery(ies).**

⚠ WARNING

The refrigerator cooling system is under pressure. Do not try to repair or to recharge a defective cooling system. Repairs must be done by a qualified RV service technician only.

At regular intervals, make sure that the refrigerator flue, the burner, the vent areas, and the ventilation air pathway between the vents are completely free from any flammable materials or blockages.

- **After a period of storage, it is especially important to check these areas blockages made by insects or animals.**

⚠ CAUTION

The refrigerator is made to operate within 3° off level side-to-side and 6° off level front-to-back. Operating the refrigerator at more than these limits can cause damage to the cooling system and create a risk of personal injury or property damage.

When parked, make sure the vehicle is level before operating the refrigerator. Off-level during travel usually does not effect refrigerator performance.

NOTICE

The control circuits of the absorption-type refrigerator require 12 volts DC for operation. The house battery master disconnect switch must be ON in order for the refrigerator to operate; independent of the energy mode selected.

Typical gas/electric refrigerator

If your motorhome is equipped with a gas/electric refrigerator, it should only be operated on LP during transit cautiously and only if allowable by transportation laws. **KNOW AND FOLLOW ALL TRANSPORTATION LAWS PERTAINING TO TRANSPORTING PROPANE AND OPERATING PROPANE APPLIANCES WHILE THE VEHICLE IS IN MOTION. SOME LOCAL, STATE OR PROVINCE TRANSPORTATION LAWS MAY PROHIBIT THE OPERATION OF LP APPLIANCES WHILE IN TRANSIT.**

Gas/Electric (Absorption) Refrigerator Operation

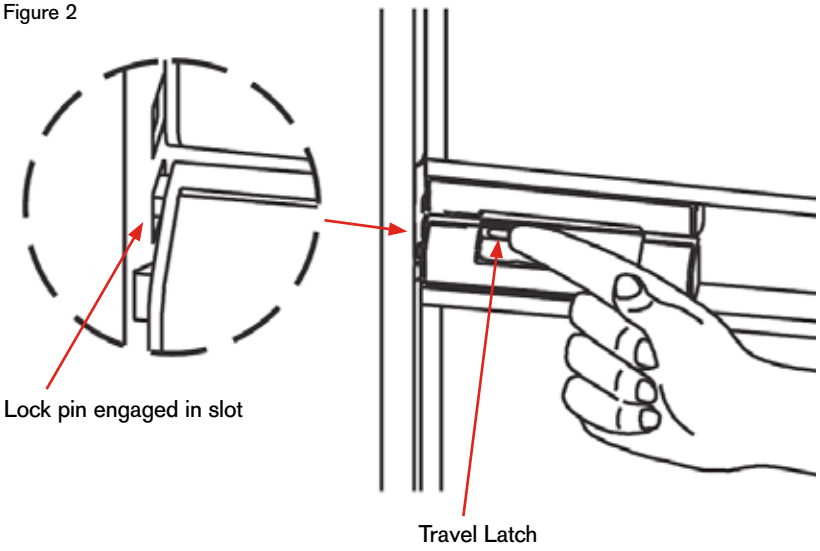
This section describes the basic operation of a gas/electric, absorption-type RV refrigerator. Since this type of refrigerator is a gas appliance, please follow all propane (LP) gas safety-related warnings described in other TMC publications, labels affixed to your motorhome, and provided by the appliance manufacturer, Operating manuals should be included in your TMC Owner's Packet.

Located on the front of the refrigerator is a control panel similar to the illustration (Fig 1). The INDICATOR LIGHTS show when the refrigerator is ON and if gas is present for use. The SELECTOR SWITCH allows you to choose from AUTO, OFF, or GAS operation. The TEMPERATURE SELECTOR allows you to choose the temperature setting for the refrigerator and freezer section in increments of 1-5, where 5 is the coldest setting. The temperature selection is independent of the energy source of the refrigerator (gas or electric).

NOTE: When traveling, engage the travel lock on the refrigerator door. Travel locks vary in style and operation. Some have a sliding mechanism, while others simply engage by depressing the door handle.

- Shut both the freezer and refrigerator doors.
- Slide the travel latch into the slot on the door frame.
- Unlatch travel latch before attempting to open refrigerator door.

Figure 2



OPERATING IN AUTOMATIC MODE

When the refrigerator is in AUTO mode, it automatically uses the most efficient energy source that is available for operation. During operation, if a more efficient energy source becomes available, the refrigerator will automatically change energy sources.

THE ENERGY SOURCE PRIORITY IS THIS ORDER:

1. If 120 volts AC is available (shore power or generator), the refrigerator operates on electricity.
2. If 120 volts AC is not available, the refrigerator operates on LP gas (if available).
3. If 120 volts AC and LP gas is not available, the refrigerator is inoperable.

NOTE: Regardless of the energy source, the master battery disconnect switch must be ON in order to operate the refrigerator.

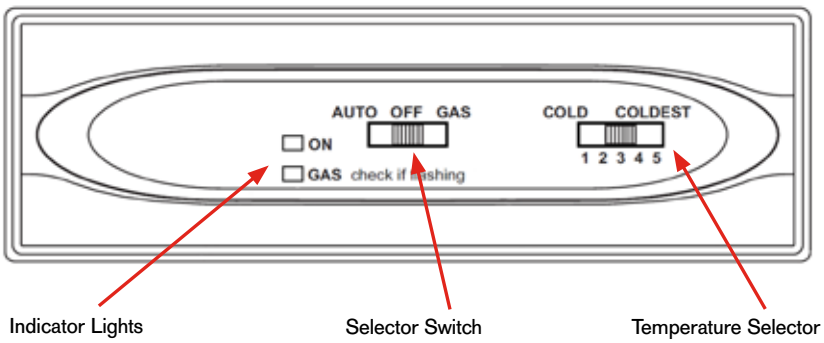
When in AUTO mode and 120 volts AC is available, the ON indicator light illuminates. This indicates that the refrigerator is operating on 120 volts AC.

When in AUTO mode and 120 volts AC is NOT available, both the ON and GAS indicator lights illuminate, indicating that the refrigerator is operating on propane gas.

If the energy source is interrupted, the indicator lights will blink, indicating a fault code. Refer to the manufacturer's owner's manual for FAULT CODE interpretations.

NOTE: When in electric mode, an absorption-type refrigerator will typically consume more electric power than a similarly sized compressor-type refrigerator. If your on-board supply of LP is not a concern, it is usually more energy efficient to operate the refrigerator on LP gas than electricity.

Figure 1: Typical Gas/electric refrigerator control panel. Controls on your refrigerator may differ, but operate similar.



Operating on LP Gas

1. Ensure the master battery disconnect switch is ON.
2. OPEN the main gas valve on the LP tank.
3. Slide the SELECTOR SWITCH to the GAS position. The internal electronic igniter will attempt to ignite the gas burner.
4. When both the ON and GAS indicator lights stay illuminated, the refrigerator is operating on propane gas. If the energy source is interrupted, the indicator lights will flash an error code.

GAS IGNITER

For safety purposes, the gas-fired burner is made to ignite the propane gas within a specific amount of time. When starting the refrigerator for the first time, after storage, or after replacing the LP tank, the gas supply lines can have air in them, causing the burner to fail to ignite within the specified amount of time. If gas ignition does not start immediately:

- Ensure the master battery disconnect switch is ON.
- Make sure that the main propane gas valve is OPEN at the tank.
- Move the selector switch to the GAS position and the refrigerator will start a 30 second trial for ignition.
- During the 30 second trial for ignition, the refrigerator controls open the gas safety valve and the igniter sparks.
- During the 30 second trial for ignition, both the ON and the GAS light illuminate.

When the ON light and the GAS light stay illuminated after 30 seconds, it indicates the gas supply lines are free of air and that the refrigerator is operating on propane gas. If you choose, you may leave the SELECTOR SWITCH on GAS, or move it to AUTO.

REPEAT THE GAS IGNITION ATTEMPT:

If the first 30 second gas ignition attempt fails, the refrigerator control circuits will close the gas safety valve and the igniter stops sparking. Both the ON and GAS indicator lights will flash about once every second.

1. Slide the SELECTOR SWITCH to the OFF position, and then to the GAS position. This will initiate another 30 second gas ignition attempt. Depending on how much air is in the gas supply line, you may need to repeat the 30 second ignition attempt sequence two or three times.
2. If the burner does not ignite on propane after three attempts, stop and ensure there is LP in the tank and that the main gas valve is OPEN. If so, and the refrigerator still fails to ignite, consult your TMC dealer, TMC Customer Care, or an authorized RV refrigerator service center.

Food Compartment and Initial Start-up

Start up the refrigerator and let it cool for eight hours before loading with food. If the refrigerator does not start to cool down after about two hours, there is likely a fault with the refrigerator or energy source. Contact a qualified service center for troubleshooting tips or repairs.

FOR THE BEST COOLING PERFORMANCE:

- Let air move freely inside the entire food compartment
- Do not cover the shelving grate with plastic, paper or other materials

TO DECREASE THE AMOUNT OF ICE THAT COLLECTS ON THE COOLING FINS:

- Cover all liquids and moist foods
- Let all hot foods cool before putting them in the refrigerator
- Do not open the door any longer than necessary

FREEZER COMPARTMENT:

The freezer compartment is made to keep pre-frozen food frozen and not to quick freeze food. Keep pre-frozen foods in the freezer compartment.

Absorption-type Refrigerator Operating Tips

- Since electric heating elements require a moderate-to-high amount of electric energy, operating an absorption refrigerator from an inverter can quickly deplete the house battery(ies). Therefore, it is recommended to operate an absorption-type refrigerator with LP gas or shore-power 120 volts AC, while using inverted 12 volts AC occasionally or during travel.
- Since it takes more energy to cool down refrigerated contents than to maintain coolness, operate the refrigerator on 120 volts AC or LP when stocking the refrigerator.
- When operating on an inverter (converting 12 volts DC to 120 volts AC), minimize opening the refrigerator door.
- An empty refrigerator is not as energy efficient as one that is fully stocked. Keep your RV refrigerator well stocked with items such as bottled water or other dense food items.

NOTE: Stored food items may shift during travel. Use caution when opening the refrigerator door during and after travel.

Effects of High Altitude and Freezing Temperatures on Propane Gas Operation

- When operating the refrigerator on propane gas at altitudes higher than 5,500 feet above sea level, you may experience reduced cooling performance of the refrigerator. You may also experience burner outages. To avoid these possible problems, the refrigerator manufacturer recommends that you operate the refrigerator on 120 volts AC when at altitudes higher than 5,500 feet above sea level.
- A gas absorption refrigerator is not designed to operate in freezing temperatures. If the refrigerator is not equipped for low temperature operation, and if the cooling system of the refrigerator is exposed to temperatures of 32° F. or lower for an extended period of time. The refrigerator operation may be disrupted. The refrigerator operation will resume when the cooling system of the refrigerator warms sufficiently.
- If your refrigerator is equipped for low temperature operation, the refrigerator will operate in temperatures down to 0° F. Check with your TMC dealer to determine if your refrigerator has been equipped for low temperature operation.

NOTE: While operating the refrigerator or other appliances on inverted power and the vehicle is in motion, monitor the charging voltage of the chassis electrical system. This is usually done by reading the voltage gauge on the dash display.

- If the voltage is lower than normal, it usually means that the chassis charging system can not keep up with the electrical demand from the batteries.
- You may need to turn off some electrical appliances so that battery charging voltage remains at a normal level.

For complete instructions on the refrigerator supplied with your motorhome, refer to the manufacturer's instructions provided in your Owner's packet. Also, refer to the TMC Quick Start Guide, Refrigerators, or the TMC Appliance and Entertainment System Guide available through the TMC Owners Resource on-line document service.

Gas Furnaces and Water Heaters

⚠ DANGER

BE SURE THE FURNACE AND ALL IGNITION SYSTEMS ARE 'OFF' DURING ANY REFUELING AND WHILE VEHICLE IS IN MOTION OR BEING TOWED.

⚠ WARNING

Never operate the water heater while the vehicle is in motion. Turn off the propane gas at the tank and turn off the water heater power switch, located on the monitor panel.

⚠ WARNING

Failure to follow propane safety instructions could result in dangerous operation, property damage, serious injury, or death.

- **DO NOT use the furnace cabinet area as a storage compartment.**
- **DO NOT block furnace outlet registers or return air grills.**
- **Keep all insulating materials away from furnace.**
- **Installation, repairs, and preventive maintenance should only be performed by a qualified service technician.**

Propane gas furnaces and water heaters are installed in all but a few select TMC motorhomes. When operated and maintained in accordance to the manufacturer's instructions (printed in the manufacturer's owner's manuals), these devices will provide you with safe and reliable service. Copies of the manufacturer's manuals are included in your TMC Owner's Packet. Instruction manuals are usually available on the appliance manufacturer's web site.

Do not operate the furnace and water heater while the motorhome is in motion and also ensure the main propane gas supply valve is OFF during travel. Keeping the main gas valve closed during travel will help reduce the possibility of gas leaks should the vehicle become involved in a traffic-related accident. For safe furnace and water heater operation, please follow all safety instructions pertaining to the furnace, water heater, propane system, water system, and electrical system printed in the appliance manufacturer's documentation and labels attached to your motorhome.

NOTE: For additional information regarding the gas furnace and water heater installed in your motorhome, refer to the TMC Water System Guide and the TMC HVAC System Guide, available as a download on the TMC web site: www.thormotorcoach.com

Gas Water Heaters: Tank and Tankless Basic Operation

⚠ DANGER

Before operating the water heater, review all manufacturer's information and instructions. If the information provided by the manufacture is not followed exactly, a fire or explosion may result causing property damage, personal injury or loss of life.

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 vehicle.**
- **Shut off gas supply at gas container or source.**
- **DO NOT touch any electrical switch, or use any phone or radio in vehicle.**
- **DO NOT start vehicle's engine or electric generator.**
- **Contact 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 gas supply until gas leak(s) has been repaired**
- **Installation and service must be performed by a qualified installer, service agency, or gas supplier.**

⚠ WARNING

- **Never travel with the water heater ON. Before traveling, always turn the main switch to the water heater OFF and close the propane supply valve at the propane tank.**
- **Traveling with the main propane valve OFF will help prevent propane gas leaks in the event that the motorhome is involved in a vehicular accident.**
- **Gas-fired water heaters have electronic igniters that must be OFF whenever fueling the vehicle or re-filling the propane tank.**
- **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 tube, 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 device.**

Depending on model and floor plan, your motorhome will be equipped with one of these three types of water heaters:

- Tank-type (6 and 10 gallon, Gas/Electric or Gas-only)
- Tank-less (Gas, on-demand)
- Hydronic (diesel or LP, on-demand)

Exterior cover of a typical RV water heater. Peep hole in the cover is used to check for pilot light ignition.

For complete safety information and operational instructions on the particular water heater of your motorhome, please refer to the water heater manufacturer's guide contained in your Owner's Packet, refer to the information available through your TMC Owners Resource Account, or visit the manufacturer's website. Hydronic water heaters are not described in this publication.

ON/OFF Switch: Tank and Tank-less Water Heaters

The main water heater ON/OFF switch is located on the Monitor or Multiplex Panel. It is used to turn on and off the water heater as needed. This switch allows for operating the water heater independently of other 12 volt appliances. Since the electronic controls of the water heater operate on 12 volts DC, the master battery disconnect switch must be ON for the water heater to operate. Refer to the TMC Electrical System Guide or TMC Quick Start Guide for master battery disconnect switch information.

For user convenience, there may also be a water heater switch installed on the bathroom wall. Inquire with your dealer if your motorhome has this feature.

Be certain these two conditions exist BEFORE turning ON the water heater's main power switch:

1. Turn on the water heater ONLY after the motorhome is either connected to a city water supply or the fresh water tank is full **AND** the fresh water system is pressurized. These conditions will ensure there is sufficient water within and flowing to the water heater's supply tank for safe operation.

Water heater switch located on a typical Monitor Panel. Some water heaters are gas-only, while other models may feature both gas and electric heating modes.

Water heater switch on a typical Multiplex control panel. Usually located on the Home Menu Screen, press the soft control to turn ON the water heater, selecting either gas or electric heating modes.

2. Turn on the water heater **ONLY** after the propane gas supply is turned on at the propane tank.

NOTE: For motorhomes with multiplex systems, the water heater control switches are integrated on the user-interface panel of the multiplex control system. Refer to the TMC Multiplex System Guide or the manufacturer's instructions included in your Owner's Packet.

Tank-Type Water Heater

⚠ WARNING

Never operate a tank-type water heater without water in the water heater's supply tank. Severe damage to the water heater and the motorhome could occur.

Never operate a propane-fired water heater or other gas appliance while the vehicle is in motion. Turn OFF the propane gas at the tank and turn OFF the water heater power switch, located on the monitor or multiplex panel.

A tank-type water heater is most commonly used in TMC motorhomes. This type of water heater uses a propane burner to heat a volume of water contained in the water heater's supply tank. Cold water flows into the tank, is heated by the propane burner, then flows to the hot water fixtures when needed. Exiting hot water is continually replaced by incoming cold water, while the temperature sensor cycles the burner to maintain a consistent hot water temperature. Most models have an electronic igniter that will automatically ignite the propane gas-fired burner when the temperature of the water drops to a preset level.

In addition to the gas burner, some water heater models also include an electric element to aid in quicker recovery. The electric element operates on 110 volts AC, therefore, in order to operate in this mode, the motorhome will need to be connected to shore power or have the generator running. If operating on generated power, ensure the total electrical load capacity of the generator is not exceeded while simultaneously using the water heater and other appliances.

Please familiarize yourself with all safety and manufacturer's instructions before using your motorhome's water heater. The following instructions are basic operating and maintenance procedures that pertain to all propane gas-fired water heaters. Your water heater may have unique features or instructions that are not covered in this guide.

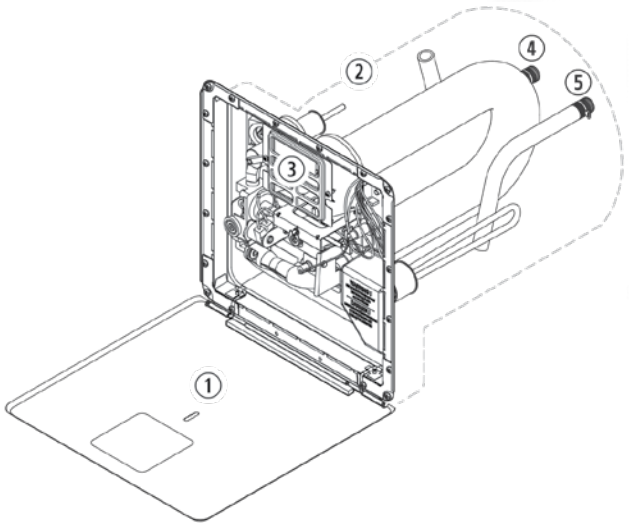
⚠ WARNING

THE WATER HEATER IS SUPPLIED WITH A PRESSURE RELIEF VALVE. THIS VALVE IS A SAFETY COMPONENT AND MUST NOT BE REMOVED FOR ANY REASON OTHER THAN REPLACEMENT.

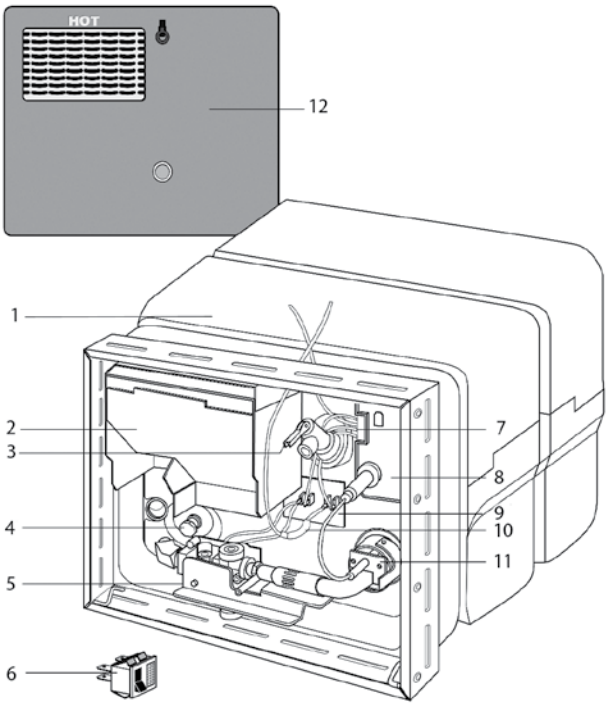
The pressure relief valve complies with the standard for Relief Valves and Automatic Gas Shutoff Devices for Hot Water Systems, ANSI Z21.22.

Illustrated here are the main components of a tank-type water heater. These controls are accessed by removing a service panel located on the exterior of the motorhome. Be cautious when accessing these components. If your water heater is in use, some components will be HOT and present a burn hazard.

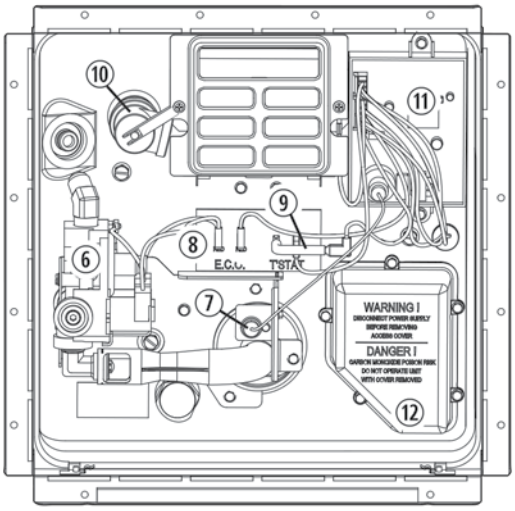
Typical Dometic Water Heater



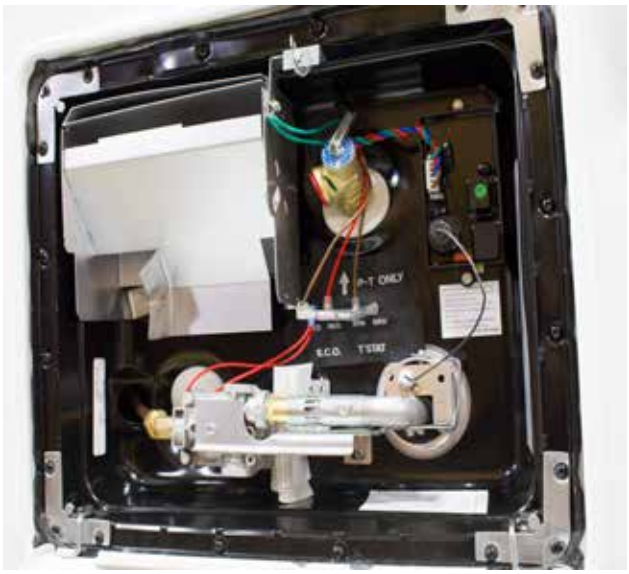
Typical Atwood Water Heater



1	Supply Tank	7	Wiring Harness
2	Flue Box Assembly	8	Circuit Board
3	Pressure Relief Valve	9	Thermostat Control
4	Drain Plug	10	Thermal Cut-off
5	Solenoid Valve	11	Spark Probe
6	On/Off Switch (located on Monitor Panel)	12	External Cover



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 (cover must be sealed



Water heater controls accessed from an exterior cover

Operating the Water Heater

⚠ WARNING

EXPLOSION / BURN INJURY

- **Shut off gas supply at LP tank before disconnecting a gas line.**
- **Keep control compartment clean and free of gasoline, combustible materials, and flammable liquids and vapors.**
- **Do not alter water heater, it will void warranty.**
- **Do not use after-market heating elements, they may lack critical safety controls.**

⚠ WARNING

SCALDING INJURY

- **Turn off water heater and allow time for the water to cool before removing the drain plug to either drain or flush the supply tank.**
- **The mixing valve of the water heater is a safety component and must not be removed or tampered with for any reason other than replacement. Remove and replace by a certified technician only.**

⚠ CAUTION

Never operate the water heater with an empty supply tank. Always ensure the fresh water system is pressurized, either by the system's water pump or by connecting to a pressurized city water supply.

Hydrogen Gas - Do not smoke or have an open flame near an open faucet.

1. Turn ON the master battery disconnect switch.
2. Ensure the water heater supply tank is filled with fresh water.
   - Turn ON the water pump or connect to a pressurized city water source.
   - Open a hot water faucet. When water is continuously flowing, the water heater's tank is supplied with water.
3. Turn ON the propane gas supply at the LP tank. However, before doing so, ensure that all other gas appliances are in a condition of readiness for propane gas.
4. Turn ON the water heater power switch, located on the monitor or multiplex panel. This will initiate the ignition of the water heater gas burner.
5. The water temperature is pre-set at the factory. Allow adequate time for the gas burner to heat the water within the water heater's supply tank. When the water in the supply tank reaches its set temperature, the gas burner will automatically turn off.
6. Open the hot water faucets to use hot water. Adjust to desired temperature by mixing with the cold water faucet.
7. As the water in the supply tank cools or is replaced, the gas burner will automatically cycle on and off to maintain the set water temperature.

ELECTRIC OPERATION

When the electric switch is turned on, the relay at the rear of the unit will close and allows 110 volts AC to the heating element. If the thermostat were to fail, an energy cut-off device (ECO) will open and lockout the system. To correct, check the thermostat to assure good contact with the tank and reset the control by turning the electric switch off, then on.

GAS/ELECTRIC OPERATION

The unit can be run in both gas and electric modes simultaneously for quick recovery. Note: 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 electric switch off. The lamp will then illuminate indicating a lockout has occurred on the gas side. Correct the problem and turn the switches back on.

Additional Information (Tank-type Models)

- The water heater equipped in your TMC motorhome has an electronic igniter and does not use a pilot light. Turning on the water heater power switch will power the control circuitry of the water heater and initiate the water heating cycle. The master battery switch must also be ON.
- The water heater is designed with an ignition safety feature. With the gas supply on and the main power switch on, the water heater will make three attempts to light. For any reason there is no ignition, the unit will lockout and the red lockout lamp will illuminate (located on the monitor panel).
- If the thermostat fails, the unit will also lockout. Determine the reason for no ignition (for instance, the gas supply is off or empty, or insects have nested in the burner tubes), correct it, and reset the gas ignition sequence by turning the main switch OFF, then ON. If your water heater still fails to operate, take it to a qualified service center for inspection and repairs.
- The temperature setting of the water heater is pre-set at the factory and should not be adjusted. If you experience problems with water temperature (too hot or too cold), contact a qualified service center for repairs.
- If the water heater has not been used for more than two weeks, hydrogen gas may form in its internal water lines. Under these conditions and to reduce the risk of injury, open hot water faucets for several minutes at the kitchen sink before using any gas or electrical appliances. If hydrogen gas is present, you will probably hear sounds like air escaping through the pipe as water begins to flow. DO NOT have an open flame near the open HOT water faucet.
- Located on the exterior of your motorhome is a panel that allows access to main components of the water heater. By turning the tab at the top and allowing the door to hinge downward, you will be able to check for insect nests and other maintenance issues. There, you will find a water heater supply tank drain valve (or plug), a safety pop-off valve and other important water service components.
- Exhaust vents can become very hot to the touch. Exercise caution when working with the water heater access panel. Ensure the exhaust vents remain clear of debris and obstructions. If burner vents are clogged or blocked, carbon monoxide gas could leak into the motorhome.

Preparing the Water Heater for Travel

1. Turn OFF the water heater power switch located on the monitor or multiplex panel.
2. Turn off the propane gas supply at the LP Tank. Be sure other gas appliances are also prepared for gas supply shut-off.

Water heater Maintenance

For maintenance and winterization details, refer to the TMC Water System Guide, and the manufacturer's owner's manuals included in your TMC Owner's Packet or through your on-line TMC Owners Resource account.

Gas Furnaces

⚠ DANGER

BE SURE THE FURNACE AND ALL IGNITION SYSTEMS ARE 'OFF' DURING ANY REFUELING AND WHILE VEHICLE IS IN MOTION OR BEING TOWED.

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

⚠ WARNING

CARBON MONOXIDE POISONING WARNING:

- **Doors must be properly sealed and draft cap and assemblies must be adjusted and sealed correctly to prevent carbon monoxide from entering coach.**
- **Combustion air must NOT be drawn from within any living area.**
- **DO NOT vent exhaust into living area or outside into an enclosed porch area.**
- **DO NOT vent any other appliance with venting systems serving the furnace.**
- **DO NOT allow snow or any objects to block exhaust system of furnace.**
- **DO NOT use the furnace cabinet area as a storage compartment.**
- **DO NOT block furnace outlet registers or return air grills.**
- **Keep all insulating materials away from furnace.**
- **Installation, repairs, and preventive maintenance should be done by a qualified service technician only.**
- **Failure to follow safety warnings exactly could result in dangerous operation, serious injury, death or property damage.**

⚠ CAUTION

THIS APPLIANCE IS EQUIPPED WITH AN ELECTRONIC IGNITION DEVICE THAT AUTOMATICALLY LIGHTS THE BURNER. DO NOT TRY TO LIGHT THE BURNER BY HAND.

DO NOT touch exhaust grills when furnace is operating.

Heat registers can reach high temperatures when the furnace is running and can cause a burn if skin is in contact with the register.

Most TMC motorhome models are equipped with a propane-fired, forced-air furnace, appropriately sized for the living space of the motorhome. Also, depending on the size of the living space, the heating system may have multiple registers that facilitate even heating throughout. With a forced-air system, there will be one, centrally located thermostat used to control the air temperature of the motorhome.

Typical forced-air furnace installation

Select Class A motorhomes are equipped with a hydronic heating system. This system uses a diesel-fueled, or with some models, a gas burner (with a supplemental electrical heating element) to heat a volume of fluid (which contains special properties), that is circulated to zoned heat exchangers located throughout the motorhome. The hot fluid enters the heat exchangers, where the fluid passes through a series of coiled tubing. As the coils rise in temperature (due to the hot fluid passing through), a fan blows ambient air across coils, heating the air, which is directed to the living space of the motorhome. Heating zones are separately controlled by individual thermostats, so that the air temperature of specific areas of the motorhome can be individually controlled.

Detailed information regarding the heating and cooling equipment that is uniquely specific to your motorhome is not covered in this manual. Please review and retain all manufacturer's owner's manuals and documentation that is included with your TMC Owner's Packet. The manufacturers of the heating and cooling equipment installed in your motorhome are the best source for information regarding component features, operation, and maintenance.

For safe heating system operation, please follow all safety warnings pertaining to the furnace, hydronic system (if installed), propane system and electrical system printed in all manufacturer's documentation and labels attached to your motorhome. It is also recommended that you read the Propane Systems Guide and become familiar with the entire propane system of your motorhome. If you have questions regarding your heating and cooling system. TMC Customer Care representatives are also available to answer any question you may have; call, toll free at:

877-855-2867

Furnace Operation (propane, forced-air type)

The furnace supplied with your motorhome is equipped with an electronic ignition. Never attempt to light the burner by hand.

Before operating the furnace, smell all around the appliance area for gas. If gas is detected, either by smell or by the CO/LP alarm, DO NOT attempt to operate the furnace. For your safety, gas leaks MUST be repaired before operating any gas or electrical appliance.

WHAT TO DO IF YOU SMELL GAS

- Extinguish all open flames.
- Evacuate all persons and pets from the vehicle.
- Shut off the gas supply at the LP gas tank.
- Do not touch electrical switches or operate electrical devices.
- Contact nearest gas supplier or qualified service technician for repairs.
- Do not turn on gas supply or operate gas or electrical devices until the gas leak has been repaired.

TURNING THE FURNACE ON

1. Ensure the motorhome's 12 volts DC electrical system is on by turning ON the Master Battery Disconnect Switch, connecting to shore power or operating the generator.
2. OPEN the main LP gas valve at the propane tank. Counterclockwise rotation opens the valve; clockwise rotation closes the valve.
3. Check that power to the furnace is ON at the main power distribution panel.
4. Set the thermostat selector switch to HEAT.
5. Set the desired temperature on the thermostat. The furnace should automatically come on if the temperature setting on the thermostat is higher than the ambient air temperature.

TURNING THE FURNACE OFF

- Reduce the temperature setting on the thermostat to its minimum level.
- Set the selector switch on the thermostat to OFF.
- If you are preparing to travel, turn OFF the LP gas supply at the tank.

Typical RV thermostats illustrating Analog and Digital temperature setting

NOTES:

- During the initial operation of the furnace, you may detect slight fumes caused from the burning of residue and oils left from the manufacturing process. This is a normal occurrence and these fumes should subside within several minutes
- If the outside temperature will drop below 32° F (0° C) AND your motorhome is remaining parked, AND is not winterized, allow the furnace to operate in order to prevent the possibility of on-board water freezing and causing damage to the motorhome's water system.
- For additional information regarding heating and cooling systems installed on your motorhome, please refer to the TMC HVAC System Guide and the HVAC manufacturer's product information available through the TMC on-line Owners Resource Document Service:

www.thormotorcoach.com/owner-resource/

Auxiliary Propane Gas Hook-up

⚠ DANGER

Only operate external LP gas appliances for their intended purpose. Follow all safety and operational instructions associated with the appliance. The risk of fire, explosion or severe bodily injury exists.

Never bypass or defeat the gas regulator installed on the motorhome's propane system.

⚠ WARNING

WHEN USING THE OUTDOOR COOKING AREA:

- **The vehicle must be level and stabilized.**
- **Do not violate manufacturers' instructions on required clearances for cooking appliances during use.**
- **Do not store cooking appliances until cool to the touch.**

Can lead to a fire and explosion and result in death or serious injury.

⚠ WARNING

The Auxiliary Propane Gas Hook-up is equipped with a manual LP gas shut-off valve, located near the quick-disconnect coupler. Always turn OFF this gas valve when this LP source is not in use.

As with the main gas valve, ensure this valve is in the OFF position when traveling.

⚠ CAUTION

- **Ensure that children and pets stay well away from any gas appliance in use or connected to the external propane hook-up.**
- **Do not use or operate appliances designed for outdoor use inside the motorhome.**
- **Potential injuries due to trips, falls, flame and heat exists.**

Most TMC motorhomes are equipped with an auxiliary propane gas hook-up that allows connecting an outside gas appliance, such as a barbecue grill, deep fryer, or an outside space heater, to the propane fuel supply of the motorhome. If installed, this propane connection can be found on a gas manifold, near the right-side rear of the motorhome. Beginning with model year 2018, the auxiliary propane connection may be located behind a small service door, along the bottom edge of the motorhome's exterior.

Typical external propane hook-up with quick-disconnect coupler

Additionally, the auxiliary propane gas hook-up is equipped with a manually-actuated shut-off valve. Always connect the gas appliance or device to the coupler before OPENING the shut-of valve. Turn the valve OFF before disconnecting the gas appliance or device. ALWAYS CLOSE THE SHUT-OFF VALVE WHEN THIS LP SOURCE IS NOT IN USE.

The auxiliary propane gas hook-up is plumbed after the propane gas regulator, so the gas pressure at this gas supply outlet is low, or 11 inches water column (approximately 0.5 PSI). Refer to the manufacturer's instructions of the external gas device to determine the required operating gas pressure of that device.

Your gas device may also need to be fitted with the mating end of the quick-disconnect connector that is part of the motorhome's auxiliary propane hook-up. The device's manufacturer or retailer should be able to provide hook-up recommendations.

Please follow all propane gas safety warnings associated with this propane connection and all external gas appliances. When using external gas devices, be extremely cautious of fire and explosion hazards that may be present. Only use devices that are designed for use outdoors and at the regulated gas pressures of the motorhome's propane system. NEVER BYPASS OR MODIFY THE FACTORY SET PRESSURE OF THE PROPANE REGULATOR OF THE MOTORHOME'S PROPANE SYSTEM .

Be sure all flammable materials remain at a safe distance away from the appliance; including awnings and other fabrics that may be attached to or near the exterior of the motorhome. Keep the device on firm, level ground and at a safe distance from the motorhome in order to prevent any heat-related damage or fire to the motorhome. Be sure all gas supply hoses are out of pedestrian or pet traffic paths. Be sure to warn children and keep them away from potential hot surfaces.

- **ENSURE THIS GAS VALVE IS OFF WHENEVER TRAVELING, RE-FUELING, AND WHEN THE EXTERNAL PROPANE HOOK-UP IS NOT IN USE.**
- **ALWAYS FOLLOW THE GAS APPLIANCE MANUFACTURER'S INSTRUCTIONS FOR SAFE OPERATION OF ALL GAS DEVICES.**
- ALWAYS ENSURE CONNECTION SEATS PROPERLY. NEVER USE THIS LP CONNECTION IF LEAKING LP GAS IS DETECTED.
- DO NOT use external gas appliances if weather conditions would present a risk of tip-over or other unsafe operating condition.
- TURN OFF the propane gas supply to the appliance when the appliance is not in use.
- When stowing the external gas appliance, be sure it is completely cool to the touch. The storage bins of your motorhome could be damaged or worse, a fire could ignite if a hot appliance is placed in the storage bins.
- NEVER operate or use an appliance that is designed to be used out-of-doors inside the motorhome; either as a heat source, for food preparation, or for any other purpose. The risk of SUFFOCATION, FIRE, EXPLOSION, SEVERE INJURY AND DEATH exists.
- Routinely inspect all external gas appliances, devices, and gas supply hoses and connections for leaks, cracks or other damage. DO NOT USE the gas appliance if it is in need of repairs. Only use the gas appliance after proper repairs have been made.

This external propane hook-up has its own manual gas shut-off valve, located directly behind the quick disconnect port.

TO OPERATE THE PROPANE HOOK-UP:

1. Ensure the manual shut-off valve is OFF.
2. Turn ON the main gas valve.
3. Confirm your gas appliance is fitted with a proper gas hose and mating connector, and if so, connect it to the propane quick-release port.
4. Slowly open the manual shut-off valve, listening to ensure there are no gas leaks. **IF A GAS LEAK IS DETECTED, IMMEDIATELY CLOSE THE SHUT-OFF VALVE. DETERMINE AND REPAIR THE SOURCE OF THE LEAK.**
5. When safe to do so, operate the gas appliance.
6. After using the gas appliance, turn OFF the manual shut-off valve.

NOTE: Your outdoor gas appliance may have a gas regulator installed from the factory, which may not be compatible with the regulated gas pressure of the motorhome. Inquire with the manufacturer of the outdoor gas appliance for proper gas supply pressures and safe operating procedures.

The auxiliary propane gas hook-up makes using external gas appliances quick and convenient.

Traveling With Propane

⚠ DANGER

Turn OFF all pilot lights, appliances, and their igniters (see operating instructions) while the motorhome is traveling or in motion, and before refueling the motorhome's fuel tanks and/or propane containers.

Can cause ignition of flammable vapors, which can lead to a fire or explosion and result in death or serious injury.

⚠ DANGER

NEVER TRAVEL WITH, AND/OR STORE PROPANE (LP) CONTAINERS OR CYLINDERS INSIDE YOUR MOTORHOME.

Propane cylinders are designed to vent whenever internal pressures reach a certain threshold. Therefore, the potential of a venting propane cylinder presents a gas leak hazard, which, if ignited, could lead to an EXPLOSION, FIRE, AND SERIOUS BODILY INJURY OR DEATH.

⚠ WARNING

ROAD VIBRATION CAN LOOSEN PROPANE FITTINGS. It is important to check the propane system for leaks at least every 5,000 miles, and whenever the tank is filled. It is also recommended to have the entire propane system checked annually by a qualified propane service technician.

As with all on-board fuel (diesel, gasoline, or other), traveling with propane does present a level of risk, yet risks can be minimized by following a few basic travel precautions.

- Some states prohibit propane appliances to be operated during travel, especially in underground tunnels, across bridges, or on a ferry. While traveling, you may also encounter local restrictions against transporting flammable materials (other than the fuel for the motorhome's engine). Make sure you are familiar with the transportation laws for the areas where you will be traveling, by checking before hand with the state's or province's Department of Transportation (DOT) or similar regulatory office.
- Never travel or stow auxiliary propane gas cylinders inside the motorhome or inside a non-vented storage compartment. All ASME certified propane gas tanks and cylinders have a safety pressure relief system that is designed to vent propane gas to the atmosphere if a certain internal pressure threshold is reached. A hazardous condition exists if gas venting is contained within the motorhome or an enclosed storage compartment.
- Over time, road vibrations can cause gas fittings and connections to loosen. Make it part of your routine motorhome inspection to check all gas fittings, valves, and connections, for looseness and possible gas leaks.
- Keep your LP/CO detector in good working order and test it at the beginning of your travel season and least once a week while traveling.
- Be sure your traveling companions know what to do if propane gas is detected, either by smell or by the sounding of the LP/CO alarm. **TAKE IMMEDIATE SAFETY ACTIONS WHENEVER GAS IS DETECTED.** Review and practice evacuation procedures.
- Operating a gas appliance(s) while traveling presents the risk of fire and/or explosion if the vehicle encounters some type of road hazard or vehicle damage. To reduce risk, always travel with gas appliances OFF and the propane system main valve OFF.
- **EXTINGUISH ALL PILOT LIGHTS AND OPEN FLAMES, AND TURN OFF APPLIANCES WITH ELECTRONIC IGNITERS BEFORE ENTERING A FUELING STATION AND DURING FUELING FOR EITHER VEHICLE FUEL OR PROPANE GAS.**

LP Hoses, Pipes, Tubes, and Fittings

⚠ WARNING

The propane piping system is designed to use with propane only. Do not connect natural gas to this system.

Securely cap the inlet hose when not connected to the regulator (or tank). After turning on propane, except after normal cylinder replacement, test propane and connections for leakage with soapy water or bubble solution.

Do not use products that contain ammonia or chlorine to test for leaks. These compounds can damage piping and fittings, which can lead to a fire or explosion, which could result in death or serious injury.

⚠ WARNING

ROAD VIBRATION CAN LOOSEN PROPANE FITTINGS. It is important to check the propane system for leaks at least every 5,000 miles, and whenever the tank is filled. It is also recommended to have the entire propane system checked annually by a qualified propane service technician.

The hoses, pipes, tubes, and fittings used in your motorhome's propane gas system are designed to be used with propane fuel and will withstand pressures far exceeding the pressure-regulated conditions of the propane system. However, environmental factors and the natural deterioration of materials make it necessary to regularly inspect the propane system for leaks, wear, and malfunctions.

Make sure your propane system is inspected at least annually by a qualified service technician. They are trained to detect incorrect gas pressure, leaks, or other potential hazards, and repair them properly. Do not connect your propane piping to another gas source or attempt to repair propane-related components yourself.

Be sure to inspect propane gas supply hoses before each season and every time the tank is refilled. Look for signs of deterioration, such as cracks or loss of flexibility. When replacing the gas supply hose or other propane component, always replace them with components of the same type and rating. Check with your dealer regarding proper replacement parts and components.

When performing any work or maintenance in the motorhome, ensure that you do not puncture a gas line with a nail, screw, drill bit, or other object. If a puncture in a gas hose or pipe occurs, replace the entire section of hose or pipe. Do not simply attempt a repair by using tape or some other patching method. Always use hose and pipe fittings that are designed for propane gas systems. If thread sealers are used, be sure the sealant is specifically designed for propane gas systems. Be sure fittings are tight, but not overly tight. Over tightening can damage fitting and seals, compromising the connection, which can create gas leaks.

Do not paint propane cylinders, valves, or mounting hardware. This could mask important safety and service labels. Paint may affect valves and seals, which could result in system failures.

Checking The Propane System For Leaks

⚠ DANGER

PROPANE GAS IS HIGHLY VOLATILE AND EXTREMELY EXPLOSIVE. DO NOT USE MATCHES OR A FLAME TO TEST FOR LEAKS. USE ONLY APPROVED PROPANE GAS LEAK TESTING SOLUTIONS FOR LEAK DETECTION.

Unapproved solutions can damage copper tubing and brass fittings. Never attempt to adjust propane gas regulators. Only qualified personnel should perform any maintenance or repair to the propane gas system.

⚠ WARNING

If a propane gas leak is detected, close all gas valves and turn off all igniters.

Do not use any part or component of the propane system until the leak is properly repaired by a qualified technician.

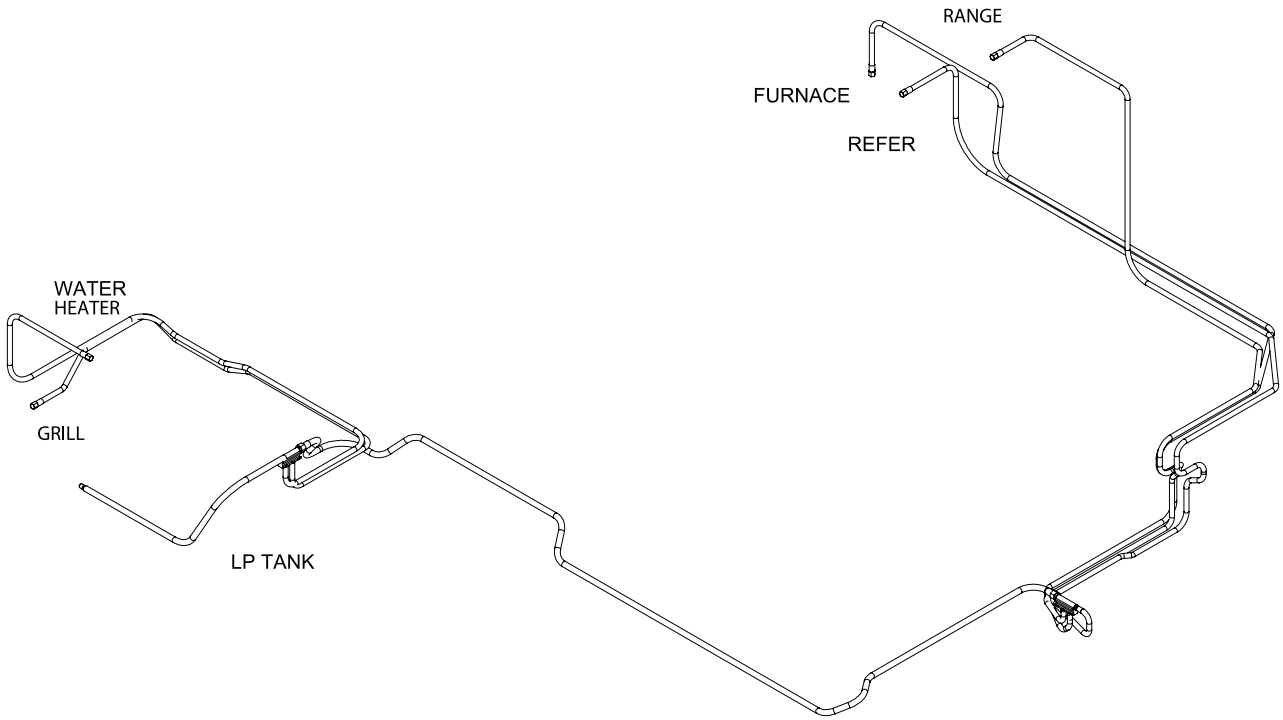
When checking for gas leaks always keep doors and windows open for ventilation. Eliminate and disable all sources and/or potential sources of ignition, such as open flames, smoking materials, electrical-induced sparks from switches and electric motors. Be sure all pilot lights are extinguished and that appliances that use electric igniters are disabled.

Be particularly diligent with inspecting propane hoses and piping that is exposed to weather elements. Hoses deteriorate over time and routinely need to be replaced. Gas lines and fittings that are exposed to weather and road elements are particularly susceptible to corrosion.

Leaks may be found easily with a soapy water solution. Do not use a solution containing ammonia or chlorine when searching for leaks. These products are corrosive to copper gas lines and brass fittings, which could result in deterioration of the copper and brass components.

CHECKING FOR LEAKS:

1. OPEN all windows and non-motorized vents.
2. OPEN the main propane gas valve, located on or near the propane tank.
3. Apply the soapy solution to the outside of the gas piping fittings. If a leak is present, the soapy solution will 'bubble' at the leak point.
4. If a leak is detected, tighten the connection with two open end wrenches until bubbling stops. DO NOT over tighten or use excessive force.
5. If the leak persists, CLOSE the propane gas main valve, located on or near the propane tank and immediately contact your selling dealer's service department or qualified propane service representative to arrange repairs.. DO NOT use the propane system or gas appliances until the leak is properly repaired.
6. To confirm the propane system is performing as designed, contact the motorhome dealer or a qualified propane service facility to perform an 11 inch water column pressure test.



Typical motorhome propane piping

Propane System for Class B Motorhomes

Propane Gas Safety

⚠ DANGER

IF YOU SMELL PROPANE GAS

1. **Extinguish any open flames and all smoking materials.**
2. **Shut off the propane supply at the container valve(s) or propane supply connection.**
3. **Do not touch electrical switches.**
4. **Open doors and other ventilating openings.**
5. **Leave the area until the odor clears.**
6. **Have the propane system checked and leakage source corrected before using again.**

Ignition of flammable vapors could lead to a fire or explosion and result in death or serious injury.

⚠ DANGER

Do not use gas cooking appliances for comfort heating. Can lead to carbon monoxide poisoning, which can lead to death or serious injury.

⚠ DANGER

All pilot lights, appliances, and their igniters (see operating instructions) shall be turned off before refueling of motor fuel tanks and/or propane containers.

Can cause ignition of flammable vapors, which can lead to a fire or explosion and result in death or serious injury.

⚠ WARNING

THIS PROPANE PIPING SYSTEM IS DESIGNED FOR USE WITH PROPANE ONLY.

- **Do not connect natural gas to this system.**
- **Securely cap inlet when not connected for use.**
- **After turning on propane, except after normal cylinder replacement, test propane piping and connections to appliances for leakage with soapy water or bubble solution.**
- **Do not use products that contain ammonia or chlorine to test for leaks. These substances may weaken piping components and cause gas leaks, leading to fire or explosion, which could result in death or serious injury.**

⚠ CAUTION

Several main propane system components are installed underneath the vehicle. Due to their location, these components may be subjected to damage caused by road hazards or other travel-related circumstances.

Regularly inspect the propane system for possible damage and do not use the propane system until all damage is properly repaired.

NOTICE

Become familiar with all safety-related warnings and instructions whenever a propane appliance or device is in use. Routinely, check for gas leaks. If gas is ever detected, either by smell or by an alarm, know the safety and evacuation procedures.

Any gas leaks have the potential of causing explosion or fire, resulting in severe injury or death. Always have gas leaks repaired immediately by a qualified and certified technician.

Follow all propane-related warning labels affixed throughout your motorhome and included in the manufacturer's owner's manual for each appliance. For further information on the Propane (LP) Gas System of your motorhome, please refer the Propane Systems Guide, available on the Thor Motor Coach website.

Propane or liquefied petroleum (LP) gas is a clean and efficient source of energy that provides fuel for cooking, heating, hot water, and generating electricity (by a propane-fueled generator, if equipped). Propane is also used as an energy source for refrigeration (evaporative-type RV refrigerators).

Propane is a colorless and odorless gas that, when under pressure, is in a liquefied state. An odorant (usually a sulfur compound) is added as a detection agent. If you smell propane within or around your motorhome, or hear the propane alarm (LP/CO alarm), quickly and carefully perform the procedures listed on the safety alerts at the beginning of this section, listed in Section 3, Vehicle Safety, and safety labels affixed to your motorhome.

Strictly adhere to all propane safety warnings and operational guidelines printed on propane appliances, devices, and included in propane appliance manufacturer's operational manuals.

Always be mindful that propane gas can be hazardous if used improperly. Propane is heavier than air, and if leaking, the gas tends to flow and accumulate in low areas, such as the floor. Ensure the combination LP/CO detector is properly maintained and operational. Observe and follow proper handling and safety precautions when using propane gas and propane appliances.

The propane system installed in your motorhome is comprised of numerous components such as the propane tank, main gas valve (solenoid-actuated), gas hoses, propane gas regulator, gas piping, gas appliances, and copper (or steel) tubing lines within each gas appliance.

As part of your normal maintenance routine (at least once a year), have a qualified propane service technician perform an inspection of your entire propane system, including a system pressure test (appliances, tank, regulator, hoses, piping, and fittings).

Propane Tank

⚠ DANGER

Always shut OFF the motorhome's engine while refueling propane tank. Do not smoke. Turn off all appliances with automatic igniters and do not operate other ignition sources while refueling.

⚠ WARNING

Do not fill propane container(s) to more than 80 percent of capacity. A properly filled container contains approximately 80 percent of its volume as liquid propane.

Overfilling the propane container(s) can result in uncontrolled propane flow, which could lead to a fire or explosion and result in death or serious injury.

If you suspect your propane container has been overfilled, immediately contact your selling dealer or a qualified propane technician for assistance. Do not attempt to service or correct a propane container overfill yourself.

⚠ CAUTION

Propane tanks are to be installed, fueled, and maintained in accordance to country, federal, state, and local codes, rules, regulations, laws, and guidelines.

NOTICE

New propane containers are filled with an inert gas, which must be carefully purged before filling with propane. The propane tank must NEVER BE OVERFILLED with propane.

A permanently mounted A.S.M.E. (American Society of Mechanical Engineers) approved propane container (tank) is mounted under the floor of your motorhome. A fill port with a main LP gas shut-off switch is located on the LP access panel, positioned along the lower left side of the vehicle. Propane expands 1½ percent for every ten degrees Fahrenheit of increase in temperature. When filling, it is imperative to leave sufficient space inside the container to allow for natural expansion of gas during warmer weather.

Monitoring Propane Levels

The amount of propane remaining in the propane tank can be monitored by pressing the appropriate monitor buttons on the motorhome's main multiplex system panel. Refer to Electrical System Section.

Filling and Servicing the Propane Tank

Given that the propane tank is not removable, the motorhome will need to be driven to a qualified propane facility for filling and servicing. Only an authorized propane service technician(s) should be near the motorhome while the propane tank is being filled. Drivers and passengers should wait at a safe distance away from the motorhome until LP filling and servicing is complete.

NEVER OVERFILL THE PROPANE TANK!

Never allow your propane tank to be filled above the maximum safe level as indicated by the fixed liquid level gauge (if equipped). Overfilling the propane container above the liquid capacity indicated on the gauge could allow liquid propane to enter the system that is designed for vapor only, creating a hazardous condition.

NOTE: The capacity or size of a propane tank is expressed in pounds (lbs.) and correlates to the weight of the propane it is capable of containing when filled to 80% capacity, not the total volume capacity of the tank.

⚠ WARNING

Gas cooking appliances need fresh air for safe operation. Before operating:

- **Open vents or windows slightly or turn on exhaust fan prior to using cooking appliance.**
- **Gas flames consume oxygen, which should be replaced to ensure proper combustion.**
- **Improper use can result in death or serious injury.**

⚠ WARNING

RANGE COVERS MUST BE OPEN WHEN THE SURFACE BURNERS ARE IN OPERATION.

IF YOUR MOTORHOME HAS A PRIVACY CURTAIN WITHIN 6 FEET OF THE GAS COOKTOP; do not operate unless the privacy curtain is secured away from the appliance or removed.

Do not store combustible materials on or near gas appliances.

May cause a fire, which could result in death or serious injury.

NOTICE

Some appliances, such as furnaces, water heaters and refrigerators, are equipped with automatic propane igniters, while some stove or oven models may require lighting a pilot light before operating the appliance.

MAKE SURE THAT YOU READ AND FULLY UNDERSTAND ALL SAFETY REQUIREMENTS FOR HANDLING AND OPERATION OF ALL GAS APPLIANCES AND DEVICES OF THE PROPANE SYSTEM.

Main Gas Valve

The main propane gas valve installed on this vehicle is controlled by an electrical solenoid. The actuation switch for the gas valve is located on the propane access panel, positioned along the lower left side of the vehicle. This panel also contains the propane tank fill port and a propane tank bleeder valve.

TURNING ON THE PROPANE GAS

1. Ensure the master battery disconnect switch is ON.
2. Ensure ALL burner valves, controls, and pilot light valves are closed.
3. Turn ON the main gas valve switch. When the red light on the switch illuminates, it indicates that the main gas valve is OPEN.

Propane access panel, positioned along the lower left side of the vehicle

4. Listen carefully as propane begins to flow. If a hissing noise is heard for more than one or two seconds, THERE MAY BE A GAS LEAK! Turn OFF the main gas valve switch and contact your selling dealer's service department to have the propane system tested.
5. Operate the gas appliance(s) and devices as needed, following the appliance manufacturer's instructions.

TURNING OFF THE PROPANE GAS

1. CLOSE and turn OFF all burner valves, controls, and pilot lights to all gas appliances and devices.
2. Turn OFF the main gas valve switch. The red light on the switch will extinguish, indicating the gas valve is CLOSED.

NOTES:

- The main propane valve installed on this vehicle is controlled by a rocker switch, controlling a gas-valve solenoid. It has a built-in red light that when illuminated, indicates the main gas valve is OPEN. To close the gas-valve, turn OFF the gas valve switch (red light extinguishes).
- The main propane valve solenoid is only powered by the auxiliary battery (12 volts DC). It is NOT powered through shore power or the generator (via the converter). The Master Battery Disconnect switch must be ON in order to use of the propane system. Loss of auxiliary battery voltage will close the main propane gas valve solenoid, HOWEVER, if battery voltage is restored AND the gas rocker switch was left in the ON POSITION, the gas solenoid valve will OPEN.
- The furnace/water heater installed in this vehicle may include a separate gas shut-off valve switch located on the unit. Refer to the manufacturer's instructions for safe and proper gas operating procedures.

External Propane Hook-up

⚠ WARNING

WHEN USING THE OUTDOOR COOKING AREA:

- **The vehicle must be level and stabilized.**
- **Do not violate manufacturers' instructions on required clearances for cooking appliances during use.**
- **Do not store cooking appliances until cool to the touch.**

Can lead to a fire and explosion and result in death or serious injury.

⚠ WARNING

The Auxiliary Propane Gas Hook-up is equipped with a manual LP gas shut-off valve, located near the quick-disconnect coupler. Always turn OFF this gas valve when this LP source is not in use.

As with the main gas valve, ensure this valve is in the OFF position when traveling.

⚠ CAUTION

Ensure that children and pets stay well away from any gas appliance in use or connected to the external propane hook-up.

Do not use or operate appliances designed for outdoor use inside the motorhome.

Potential injuries due to trips, falls, flame and heat exists.

External propane hook-up

Your vehicle may be equipped with an external propane quick connect/quick disconnect. This low-pressure gas source is useful as a convenient propane connection for an external gas appliance, such as a gas grill, fryer, or other gas device.

Additionally, the auxiliary propane gas hook-up is equipped with a manually-actuated shut-off valve. Always connect the gas appliance or device to the coupler before OPENING the shut-of valve. Turn the valve OFF before disconnecting the gas appliance or device. ALWAYS CLOSE THE SHUT-OFF VALVE WHEN THIS LP SOURCE IS NOT IN USE..

- ENSURE THIS GAS VALVE IS OFF WHENEVER TRAVELING, RE-FUELING, AND WHEN THE EXTERNAL PROPANE HOOK-UP IS NOT IN USE.
- ALWAYS FOLLOW THE GAS APPLIANCE MANUFACTURER'S INSTRUCTIONS FOR SAFE OPERATION OF ALL GAS DEVICES.
- ALWAYS ENSURE CONNECTION SEATS PROPERLY. NEVER USE THIS LP CONNECTION IF LEAKING LP GAS IS DETECTED.
- DO NOT use external gas appliances if weather conditions would present a risk of tip-over or other unsafe operating condition.
- TURN OFF the propane gas supply to the appliance when the appliance is not in use.
- When stowing the external gas appliance, be sure it is completely cool to the touch. The storage bins of your motorhome could be damaged or worse, a fire could ignite if a hot appliance is placed in the storage bins.
- NEVER operate or use an appliance that is designed to be used out-of-doors inside the motorhome; either as a heat source, for food preparation, or for any other purpose. The risk of SUFFOCATION, FIRE, EXPLOSION, SEVERE INJURY AND DEATH exists.
- Routinely inspect all external gas appliances, devices, and gas supply hoses and connections for leaks, cracks or other damage. DO NOT USE the gas appliance if it is in need of repairs. Only use the gas appliance after proper repairs have been made.

TO OPERATE THE PROPANE HOOK-UP:

1. Ensure the manual shut-off valve is OFF.
2. Turn ON the main gas valve.
3. Confirm your gas appliance is fitted with a proper gas hose and mating connector, and if so, connect it to the propane quick-release port.
4. Slowly open the manual shut-off valve, listening to ensure there are no gas leaks. **IF A GAS LEAK IS DETECTED, IMMEDIATELY CLOSE THE SHUT-OFF VALVE. DETERMINE AND REPAIR THE SOURCE OF THE LEAK.**
5. When safe to do so, operate the gas appliance.
6. After using the gas appliance, turn OFF the manual shut-off valve.

NOTE: Your outdoor gas appliance may have a gas regulator installed from the factory, which may not be compatible with the regulated gas pressure of the motorhome. Inquire with the manufacturer of the outdoor gas appliance for proper gas supply pressures and safe operating procedures.

Propane Resources

Please familiarize yourself with the safe operation of each gas appliance BEFORE taking to the road. If you are unsure how to operate a gas appliance or gas-fired device, there are several helpful resources available for you.

- Your RV dealer is well qualified to help assist you with safe operational instructions for all the features and appliances of your motorhome.
- Contact TMC Customer Care at the number listed in this guide. TMC Customer Care representatives know your motorhome thoroughly and are able to help you with any questions or concerns you may have regarding your motorhome.
- Review the information included with your TMC Owner's Packet. It contains operational manuals for all factory-installed appliances equipped in your motorhome.
- TMC Quick Start Guides and TMC System Guides are designed to give you useful operational information for the appliances and systems of your motorhome.
- Visit propane-specific web sites to learn about propane gas and its safe use:

  www.propanecouncil.org, or

  www.propane.com

- TMC on-line Owner's Resource Center is a wealth of on-line information pertaining to all aspects of your motorhome, its features and factory installed appliances, equipment, and devices. It can be accessed by setting your web browser to:

www.thormotorcoach.com/owner-resource/

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