



LEGACY ELITE II

2027 OWNER'S MANUAL

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Welcome to the Oliver family!

Thank you for choosing Oliver Travel Trailers and for letting us be part of your next adventure. We know there are plenty of travel trailers out there, but we genuinely believe you made the right choice. Building a high-quality trailer matters to us, and so does standing behind you with the best customer service we can offer.

This manual is here to help you get the most out of your new trailer. Inside, you'll find answers to common questions and clear instructions to help you use your trailer effectively. Whether this is your first trailer or you've owned several, reading through it will help you feel confident on the road. We want every trip in your Oliver to feel easy and full of the freedom it's meant to bring.

If you'd rather watch than read, we've got you covered there too. Oliver keeps a growing library of videos on our website and YouTube channel covering the basics, maintenance tips, and more, so you'll always have somewhere to turn when something comes up.

And if you ever have a question we haven't answered, please reach out directly to our Oliver support team. We care about your experience long after you take delivery, and we want it to be nothing short of exceptional.





INTRODUCTION

This manual was prepared by Oliver Travel Trailers in conjunction with the component manufacturers. It provides the information and instructions needed for operating and maintaining your travel trailer. Read all component manuals and validate warranties by mailing in the individual warranty cards, as some component manufacturers require. Always keep this owner's manual with your travel trailer for easy reference, ensuring compliance with all applicable notes and warnings. Before your first trip, thoroughly familiarize yourself with the components and systems both inside and outside of your Oliver.

This owner's manual reflects the most current information available at the time your travel trailer was produced. However, since our products are continuously upgraded and improved, some standard items and/or options may vary. If this occurs, follow the separate component manufacturer's instructions provided in their literature. **We reserve the right to change the construction or material of any part(s) at any time without incurring the obligation to install such changes on delivered units.**

Oliver Travel Trailers has provided this manual to guide you through your ownership experience. If further assistance is required, please contact Oliver Travel Trailers directly

COMPONENT INSTRUCTIONS & ADDITIONAL RESOURCES

Some of the equipment shown in this manual may be optional and not included or available with your travel trailer. To access specific information about the standard and optional components listed in this manual, visit:



Scan the QR code to access
Oliver University online

We have created a library of instructional videos to help you become familiar with your travel trailer and its components. See our Delivery Series videos on YouTube at:



Scan the QR code to view our catalog of
how-to videos on **YouTube**

IMPORTANT SAFETY INFORMATION

Throughout this manual, we have placed special emphasis on information that requires your absolute attention. These symbols identify critical safety information of which you must be aware. Failure to heed these cautions or warnings may result in product damage, property damage, serious injury, or death.

**WARNING****CAUTION****DANGER****NOTICE**

WEIGHT RATINGS

GVWR (Gross Vehicle Weight Rating) – The maximum permissible weight of this trailer when fully loaded, including all weight at the axle plus tongue weight.

GAWR (Gross Axle Weight Rating) – The maximum allowable weight that an axle system is designed to support.

UVW (Unloaded Vehicle Weight) – The weight of the trailer as manufactured at the factory. This includes all the weight of the trailer axle and tongue.

CCC (Cargo Carrying Capacity) – Equal to GVWR minus each of the following: UVW, full potable water weight, and full LP Gas weight.

FEDERAL CERTIFICATION LABEL

The Federal Certification label is affixed to the streetside near the front of the unit. It contains the GVWR, GAWR (front and rear), and tire pressure limits.

VIN INFORMATION

The Oliver Travel Trailer VIN (Vehicle Identification Number) is located on the driver's side, towards the lower front of the trailer in the area of the reflector.

SAFETY & INFORMATION LABELS

Labels throughout the trailer will indicate warnings, service instructions, and component identification. Be sure to review all warnings and instructions before operating your recreational vehicle.

INCLUDED ACCESSORIES

You will receive the following items at delivery:

- › **Owner's Manual**
- › **USB Flash Drive with Component Manuals**
- › **Component Remote Controls**
- › **30-AMP Shore Power Cord**
- › **Lug Wrench**
- › **Manual Jack Wrench**
- › **Spare Fuses**

ELITE II SPECIFICATIONS

GVWR	7,000 LBS
DRY WEIGHT (APPROX.)	4,900 LBS
TONGUE WEIGHT (APPROX.)	490 LBS
OUTSIDE LENGTH	24'
OUTSIDE HEIGHT	8' 8"
OUTSIDE HEIGHT (TOP OF A/C UNIT)	9' 8"
OUTSIDE WIDTH	7'
INSIDE HEIGHT	6' 6"
INSIDE WIDTH	6' 7"
FRESH WATER TANK CAPACITY	30 GAL (approx.)
GREY WATER TANK CAPACITY	30 GAL (approx.)
BLACK WATER TANK CAPACITY	15 GAL (approx.)
SEATS	7
SLEEPS	3





WARRANTY INFORMATION

WHAT IS COVERED

Oliver Travel Trailers Inc. (Oliver) provides the following limited warranties with its recreational vehicle (RV) which sets forth what Oliver will cover and what Oliver will do if a defect exists. Neither limited warranty is a guarantee about the RV for any period of time. Oliver Travel Trailers are built in accordance with manufacturer's specifications and any modifications not performed by Oliver will potentially void your warranty.

WARRANTIES

Oliver provides the following limited warranties with its RV, which establishes what Oliver will cover and what Oliver will do if a defect exists:

- **One-year limited warranty** on all components against defects in material or workmanship.
- **Two-year limited warranty** on all components manufactured and installed by Oliver against defects in material or workmanship.
- **Five-year limited warranty** on the fiberglass body and aluminum chassis undercarriage against defects in material or workmanship.

LIMITATIONS OF LIABILITY

Oliver's liability with respect to products sold hereunder will be limited as provided in the Warranties section. Oliver will not be subject to any other obligations or liabilities whatsoever, expressed or implied, whether based on contract, tort, or other theories of law, including implied warranties of merchantability or fitness for any particular purpose, with respect to goods or services furnished by or with respect to any undertakings, acts, or omissions related thereto.

Without limiting the generality of the foregoing, Oliver expressly disclaims any liability for property or personal injury damages, penalties, special or punitive damages, damages for lost profits, loss of use of equipment, cost of capital, cost of substitute products, facilities, or services, or any other type of economic loss or claim. Oliver will not be liable for any damages as a result of any delay or failure to timely deliver for any reason.

Oliver specifically disclaims all consequential, incidental, and contingent damages whatsoever.

WHAT IS NOT COVERED

This Limited Warranty does not provide coverage for any of the following:

- Oliver RV's are manufactured for recreational purposes only and are not intended for commercial, residential, or rental purposes. Use for these purposes will void the warranty.
- Oliver warranty is only extended to the original buyer, not transferable, and begins on the date of original retail delivery.
- Normal deterioration due to wear or exposure, including but not limited to rust, corrosion, oxidation, and cosmetic blemishes.
- Normal maintenance and service items. Examples include but are not limited to bulbs, fuses, lubricants, tires, etc.
- After-market equipment or accessories installed after completion of manufacture by Oliver, or any defects or damage caused by such items.
- Defects or damage caused by, in whole or in part, or in any way related to: Accidents, misuse (including off-road use), or negligence.
- Failure to comply with instructions and maintenance schedules outlined in owners and component manuals.
- Alteration or modification of the RV.
- A force majeure such as acts of God; war; civil commotion; fire, flood, inclement weather; government regulations; pandemics or epidemics; or other causes reasonably beyond Oliver's control.
- Chemicals applied to the RV.
- Condensation and the results of condensation.
- Improper electric power supply.
- Acts or omissions of any person or entity other than Oliver.

INDEMNIFICATION BY BUYER

Buyer will indemnify and hold Oliver harmless from and against any and all losses, damages, legal fees, or expenses of Buyer in whatever form or nature arising out of or in connection with the products sold to Buyer if Oliver is proven to have no cause in the occurrence. This provision does not limit in any way any term, feature, or benefit specified in the Warranties.



CHANGES AND IMPROVEMENTS

Oliver may furnish suitable substitutes for materials or goods unobtainable because of priorities or regulations established by governmental authority or the unavailability of material or goods from suppliers.

Oliver has no obligation to furnish the Buyer with changes in the design or construction of goods previously shipped despite the incorporation of such changes in current shipments. If the particular model of goods ordered by the Buyer has been replaced by a new model, Oliver may at its option ship the new model of such goods.

OWNER OBLIGATIONS

The owner is responsible for all maintenance and upkeep. If a problem occurs which the owner believes is covered by this warranty, the owner shall contact Oliver Travel Trailers, giving them sufficient information to resolve the matter.

The owner is responsible for transport of camper to and from service center for repairs. The owner is also responsible for inspection and maintenance of all seals and joints. (i.e. doors, windows, air units, satellite, television cable connections, plumbing, etc.)



WARNING

The owner's failure to perform such inspections and maintenance which results in water damage or any other damage shall void the warranty.

It is the owner's responsibility to notify Oliver Travel Trailers of a defect in a timely manner. Failure to notify promptly will void all or portions of the limited warranty.

This warranty gives you specific legal rights, and you may also have other rights, which vary from state to state. Dealers or any other persons are not authorized to make modifications to this warranty. Any additional statements concerning this warranty, whether oral or written, are not the responsibility of the manufacturer and should not be relied upon.

HOW TO OBTAIN SERVICE

To obtain service on your travel trailer under this Limited Warranty, contact the Oliver Travel Trailer dealership or our Oliver Customer Support Department at **1-888-526-3978**.

Or visit our service portal to submit a Service Ticket at: support.olivertraveltrailers.com/portal/en/newticket



Scan the QR code to access our service portal online

WARRANTY AUTHORIZATION

For the Buyer to claim any warranty, the Buyer must contact the Oliver Travel Trailers dealership or the Oliver Customer Support Department to obtain authorization for repairs to be made under warranty. Warranty repairs made without authorization may be subject to denial or partial payments. All costs associated with transporting the RV for warranty service are the responsibility of the owner.

Any parts that require replacement that are covered under the terms of the warranty should be retained and returned to the Oliver Travel Trailers Technical support department. Call **1-888-526-3978** to obtain instructions regarding your returns.

Modifications made to your travel trailer without proper authorization can result in reduction or loss of warranty coverage.

NOTICE

Any warranty repairs to installed components must be made within the designated time frame per the manufacturers' warranty.

Notifying Oliver of a warranty issue but not resolving it through the vendor does not meet warranty coverage requirements, and may result in the vendor not honoring the warranty.



SAFETY

LIQUEFIED PETROLEUM (LP) SYSTEM SAFETY

These guidelines cover the safe use of the LP gas system and all associated appliances.

The following warnings are posted throughout your recreational vehicle to provide information on the LP gas system. These labels satisfy regulatory requirements and serve as a standing reminder to use proper caution when working with or around LP gas appliances and equipment. We are listing them here so that you may study them and make sure that you and your family understand and follow them.



WARNING

DO NOT place propane cylinders inside the vehicle. Propane cylinders are equipped with safety devices that relieve excessive pressure by discharging propane into the atmosphere.

Propane gas is highly flammable. Can lead to a fire or explosion and result in death or serious injury.

A Warning label is located near the LP gas container. This label reads:

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

DO NOT fill propane container(s) to more than 80% of capacity. A properly filled container contains approximately 80% 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. Can lead to a fire or explosion, which could result in death or serious injury.



WARNING

The propane regulator must always be installed with the regulator vent facing downward.

The propane regulator cover must be kept in place to minimize vent blockage that could result in excessive propane pressure causing fire or explosion.



WARNING

DO NOT store any items that emit a spark or a flame in the compartment. Failure to adhere to this warning may cause an explosion resulting in personal injury or death.

All items must be completely secured.



DANGER

If you smell propane:

1. Extinguish any open flames, pilot lights 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 or 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.

ALARMS

Your trailer is equipped with two safety alarms: an LP/CO Alarm and a Smoke Alarm. You will see the following warning below the Smoke Alarm.



WARNING

Test smoke alarm operation after vehicle has been in storage, before each trip, and at least once per week during use. Failure to do so can result in death or serious injury.

For operating instructions and troubleshooting, view the manufacturer's manual.

FIRE EXTINGUISHER

In the case of a fire, you will find a Fire Extinguisher mounted on the exterior of the closet door. For operating instructions and troubleshooting, view the manufacturer's manual.

FIRE SAFETY



WARNING

Do not use portable fuel burning equipment, including wood and charcoal grills and stoves, inside the recreational vehicle because the use of such equipment inside the recreational vehicle can cause fires or asphyxiation. Failure to do so can result in death or serious injury.

Fire safety is an important part of owning a recreational vehicle. The following basic rules of fire prevention can reduce the possibility of a fire.

Make sure everyone in your recreational vehicle is familiar with the location of exits. This includes the emergency exit window, which is located at the rear of your travel trailer.

Follow the below safety rules to prevent hazardous situations:

- › Use smoking materials properly. Never smoke in bed.
- › Keep matches or lighters away from children.
- › Keep electrical appliances in good condition and don't overload electrical circuits.
- › Never leave anything cooking on the stove unattended.
- › Keep portable heaters and open flames, like candles, away from flammable materials.
- › Never store flammable liquids in the recreational vehicle.
- › Keep cooking surfaces clean.

- › Never allow children to play with LP gas or electrical equipment.
- › Never use an open flame as a flashlight.
- › Always repair faulty or damaged wiring and electrical components.
- › Locate and repair LP leaks immediately.
- › Do not allow rubbish to accumulate.
- › Never clean with a flammable liquid.

If a fire does start, make sure to follow these basic rules of safety.

1. Have everyone evacuate the recreational vehicle as quickly as possible.
2. After everyone is clear, check the fire to see if you can attempt to put it out. If it is large (cannot get within 10') or the fire is fuel-fed, get clear of the recreational vehicle. Have the fire department handle the emergency.
3. Make sure you know how to use the fire extinguisher. For operating instructions and troubleshooting, view the manufacturer's manual.

Feel doors before opening them to see if they are hot. If the door is cool, open it slowly and check for fire and heat before you proceed. **DO NOT** open a hot door — use an alternate escape route. Stay close to the floor if air is smoky. Take short shallow breaths through a wet cloth if possible. **DO NOT** return to your trailer until fire officials say that it is safe.

4. Once outside, go to your selected meeting place and make sure everyone is there. Call the Fire Department from outside of the travel trailer at a safe location.

REAR WINDOW EMERGENCY EXIT



WARNING

DO NOT operate this RV unless fully set up and emergency exits are accessible. Failure to do so can result in death or serious injury.

In the event of a fire or other emergency, if you cannot exit the trailer from the door, you can escape through the Emergency Egress Rear Window

To exit from the egress rear window:

1. Push the TV up to secure it beneath the cabinet to gain access to the rear egress window.
2. Retract the night shade and day shade to expose the window.
3. Pull the red handle up out of the latching mechanism.
4. Push the window open and exit the trailer.



REPORTING SAFETY DEFECTS

If you believe that your vehicle has a defect, which could cause a crash or could cause injury or death, you should immediately inform the National Highway Traffic Safety Administration (NHTSA) in addition to notifying Oliver Travel Trailers.

If NHTSA receives similar complaints, it may open an investigation and if it finds that a safety defect exists in a group of vehicles, it may order a recall and remedy campaign. However, NHTSA cannot become involved in individual problems between you, your dealer or Oliver Travel Trailers.

To contact NHTSA, you may either call the Vehicle Safety Hotline toll-free at:

1-888-327-4236

(TTY: 1-800-424-9153)

go to: www.safercar.gov

or write to:

Administrator NHTSA

1200 New Jersey Avenue S.E.

Washington, DC 20590

IN CANADA

If you believe your vehicle has an alleged safety defect, you should contact Transport Canada and our Customer Service Department immediately. To file a safety concern, you can complete an on-line form or call to speak with a defect investigator.



Scan the QR code to access the Defect Complaint Form online

For additional information, please refer to the Transport Canada website at

www.tc.gc.ca/recalls

To contact Transport Canada by phone:

1-800-DEFECTS

1-819-420-4300 (Ottawa-Gatineau area or internationally)

Toll free: **1-800-333-0510** (in Canada)

To contact Transport Canada by mail:

Transport Canada -ASFAD

330 Sparks Street

Ottawa, ON K1A 0N5

www.tc.gc.ca/rappels

Téléphone: **819-994-3328** (dans la région de Ottawa-Gatineau et à l'extérieur du pays)

Sans frais: **1-800-333-0510** (au Canada)

Adresse postale:

Transports Canada -ASFAD

330, rue Sparks

Ottawa (Ontario) K1A 0N5





TOWING & SETUP

This section covers coupling, towing, and other important steps to set up your trailer for camping.

TOWING VEHICLE REQUIREMENTS



WARNING

- **An improperly coupled trailer can result in death or serious injury. Use of a tow vehicle with a towing capacity less than the load rating of the trailer can result in loss of control, and may lead to death or serious injury.**
- **DO NOT transport people or pets inside the trailer. The transport of people puts their lives at risk and may be illegal.**
- **Overloaded trailers can result in a loss of control of the vehicle; this could lead to death or serious injury.**
- **DO NOT exceed the trailers gross vehicle weight (GVWR) or an axles gross axle weight rating (GAWR)**
- **The proper selection and condition of the coupler and hitch is essential to the safe towing of your trailer. A loss of coupling may result in death or serious injury.**

Before traveling, ensure the following:

- Replace worn, corroded, or cracked hitch components before coupling the trailer to the tow vehicle.
- Hitch and tow vehicle are rated for the gross vehicle weight rating (GVWR) of your trailer.
- The hitch load rating is equal to or greater than the load rating of the trailer coupler.
- The hitch size is the same as the coupler size.
- All hitch components are tight before coupling the trailer to the tow vehicle.

DRIVING TIPS

GENERAL

Get to know how your tow vehicle handles with the added weight of your RV. Your brake and steering response will be different. Before taking a trip, practice making right and left turns, braking, backing up, and accelerating.

CLEARANCE

Watch for overhanging branches, awnings, or similar obstructions. These can damage your vehicle's roof or equipment/accessories mounted on top of it.

TURNING

Generally, the wheels of your travel trailer are set wider than those of your tow vehicle. To avoid hitting curbs or other vehicles, pull several feet farther ahead before turning. This allows for the extra width and the length of your travel trailer.

Left turns require a wider than normal swing into the new lane of traffic. This keeps the trailer from encroaching into the opposing lane. Use turn signals early to communicate to traffic behind and slow down well in advance of any turn.

PASSING

Avoid sudden maneuvers when passing a slower-moving vehicle. Remember that additional time and distance are required to pass safely. Wait until the road is clear of oncoming traffic.

Check the outside rear-view mirrors and signal lane change before passing. When you have safe clearance, signal lane change and return to your original lane.

BRAKING

Allow a safe distance to stop; follow no closer than one combined tow vehicle – RV length for each ten mph.

Pump the brake pedal lightly to stop on wet or icy roads. If you start to slide, turn the steering wheel in the direction of the slide. DO NOT stomp the brake pedal. A panic stop may increase the slide and could cause your unit to jackknife.

BACKING

When backing your RV, place your right or left hand at the bottom of the steering wheel. To move your trailer to the left, move your hand to the left. To move the trailer to the right, move your hand to the right. If the trailer starts to jackknife, stop, pull forward, and start again.

DOWNGRADES

Reduce speed and shift the transmission to a lower gear to assist in braking on long or steep downgrades. Avoid situations that require excessive and prolonged use of the brakes. Apply and release brakes at short intervals to give them time to cool.

UPGRADES

Reduce speed to 45 MPH or less when climbing a steep upgrade. Shift the transmission to a lower gear to avoid engine overheating.



LOADING & WEIGHT DISTRIBUTION

PROPER WEIGHT DISTRIBUTION

Your recreational vehicle has been designed to carry loads within specified limits. Exceeding these limits will greatly affect the handling of the recreational vehicle. These limits are defined in two ways.

WEIGHT DISTRIBUTION WHEN LOADING

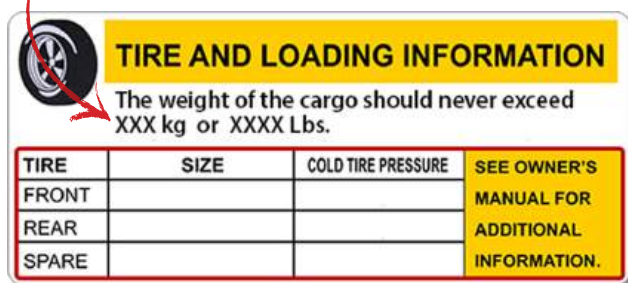
Towing an Oliver Travel Trailer introduces new challenges that call for care and good judgment. Oliver has designed a trailer that, when towed correctly, is safe and dependable. Proper loading and towing practices are your responsibility.

Safe towing starts with knowing the weights involved. Determine how much you are towing and confirm it falls within your capacity limit.

Where you store items matters equally. Let the weight of each item guide its placement. Distributing cargo evenly will help you maintain safe handling.

Secure all items before departure, as loose cargo can cause damage and create a safety hazard. Your cargo carrying capacity is listed on the Tire and Loading Information sticker, located near the front on the streetside of the trailer.

CARGO CARRYING CAPACITY



DO NOT assume that you can fill all tanks and all storage areas and be within the GVWR. Weights of stored items will vary greatly and will affect the total weight of your Oliver Travel Trailer.

Always weigh the Oliver at a certified weigh station equipped with platform scales. Check the telephone directory, online, or with local authorities for the location of weigh stations in your area.

If you find that you have exceeded the GVWR of the Oliver, you will have to remove items until you are within specified limits.

Oliver Travel Trailers weighs each trailer upon completion to capture the vehicle's dry weight. That number is subtracted from the GVWR of the trailer. It is listed on the tag under "The weight of the cargo should never exceed." The total weight of all cargo should never exceed that number. This

includes water, propane, and all aftermarket modifications/additions such as a bike rack hitch or storage basket.

When loading the trailer, keep the following in mind:

- › Gross Vehicle Weight Rating (GVWR)
- › Tire Weight Rating



WARNING

NEVER exceed weight ratings. Your safety depends on not overloading the trailer and tires.

The GVWR for a Legacy Elite II is 7,000 lbs.

The total weight of your trailer, fully loaded, should never exceed the GVWR. To determine how much cargo you are safely allowed to load onto your trailer, subtract the factory dry weight of your trailer from the GVWR.

EXAMPLE:

(GVWR) 7,000 lbs. – (Dry Weight) 4,900 lbs. = Cargo 2,100 lbs.

WEIGHING YOUR OLIVER

Proper weight and load distribution is essential to safe towing. Common recommendations place approximately 9% to 15% of the loaded weight on a travel trailer hitch. Therefore, if you are towing a 6,000 lbs. trailer, the tongue weight should measure approximately 600 lbs.

Oliver Travel Trailers verifies that tongue weight falls within 9% to 15% of dry weight before the trailer leaves the factory. Loading changes this ratio, so verify it again using the weighing steps below.

Too much or too little weight on the hitch may create dangerous driving conditions. These include sway and reduced tow vehicle control. DO NOT exceed the GVWR OR GAWR posted load weights.

Easy weighing of your Oliver, tow vehicle, tongue weight, and tongue weight ratio:

1. Drive your tow vehicle onto the scale but do not drive your trailer axle onto the scale. Record the weight A: (Tow Vehicle Plus Tongue Weight) 7,600 lbs. (See illustration)
2. Pull forward so that both the tow vehicle and the trailer are on the scale. Record the weight B: (Gross Vehicle Weight of Tow Vehicle plus Trailer) 13,000 lbs. (See illustration)
3. Pull tow vehicle off the scale, disconnect the trailer from the tow vehicle while leaving trailer on the scale. Record the weight: C (Gross Vehicle Weight of Trailer) 6,000 lbs. (See illustration)



Calculate Weight of Tow Vehicle:

B minus C equals D or $13,000 - 6,000 = 7,000$ lbs.

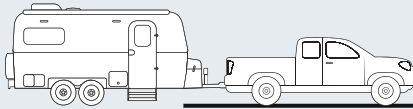
Calculate Tongue Weight:

A minus D or $7,600 - 7,000 = 600$ lbs. tongue weight

Calculate Tongue Weight Ratio:

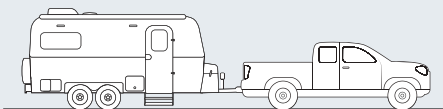
Tongue Weight divided by C or $600/6,000 = 10\%$

STEP 1



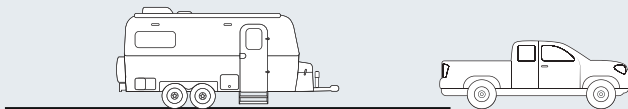
WEIGHT A: 7,600 LBS
(TOW VEHICLE + TONGUE WEIGHT)

STEP 2



WEIGHT B: 13,000 LBS
(GROSS VEHICLE WEIGHT OF TOW VEHICLE + TRAILER)

STEP 3



WEIGHT C: 6,000 LBS.
(GROSS VEHICLE WEIGHT OF TRAILER)

Now that you have these weights recorded, check to see if your tow vehicle can safely pull your Oliver. The GVW (Gross Vehicle Weight) of the trailer must not exceed 7,000 lbs. Your tongue weight should be between 9% and 15% of that weight.

If these weights are within regulation, you are ready to enjoy the open road.

To locate a public CAT scale in your area, follow this link:
www.catscale.com

To check out a ball hitch that measures your tongue weight for you, follow this link:
www.weigh-safe.com

TRAVEL SUGGESTIONS

It is a good idea to empty the holding tanks before leaving on a trip. Do so as often as possible when traveling to keep weight within acceptable limits. A gallon of water weighs about eight pounds, and a full tank weighs about 260 pounds. Try to carry only as much water as you will use when traveling.

All items stored inside and outside the Oliver should be secure, as well as all doors and drawers.

DO NOT add any rack or frame to the Oliver frame or chassis. Doing so may cause unstable handling, create a safety hazard, or damage the trailer. It may also void your warranties.

- › Once familiar with loading your trailer, note which items you carry and how to distribute the weight. Make a list and diagram you can use for future reference.
- › Plan your loading and storage so that emergency items are easily accessed.
- › Place heavier or breakable items on the travel trailer floor and lowest storage compartments for better load stability.
- › Make sure these items are well packed and secured to prevent movement.
- › Take extra care not to overload the front and rear ends of the trailer. Place any light items in the upper cabinets.
- › Make sure to use packing material around breakable items such as plates and glasses in the cupboards if you will be towing over rough roads or terrain.
- › It is a good idea to use nonskid materials under heavier items to help prevent shifting.
- › Most new trailer owners tend to carry more supplies than they need.
- › Always keep in mind that each item added brings extra weight to tow and distribute.

COUPLING

For operating instructions and troubleshooting, view the manufacturer's manual.

Your Oliver Travel Trailer is equipped with a 2" steel coupler rated for the GVWR of your trailer.



CAUTION

Be careful to avoid getting fingers or skin pinched when locking and unlocking the coupler.



SAFETY CHAINS

Once you have the travel trailer coupler properly attached to the hitch ball, the safety chains must be attached. To do so:

1. Cross the safety chains under the tongue and hitch.
2. Attach the hooks to the attachment loops on the tow bar portion of the hitch or to the vehicle frame. Do not fasten to any part of the hitch unless the hitch has holes or loops specifically for that purpose.

NOTICE

If d-links are needed to connect the safety chains to the tow vehicle, each d-link must be rated at 7,000 lbs for Elite II model trailers.



WARNING

Improper rigging of the safety chains can result in loss of control of the trailer and tow vehicle, leading to death or serious injury.

Do not attempt to repair a damaged cable. If the safety chain has been damaged, it must be replaced.

BREAKAWAY SWITCH

This switch is designed to engage the trailer's brakes if the trailer were to become disconnected from the tow vehicle. Always be sure to connect the breakaway cable to the tow vehicle when hooking up.

INSPECTING & TESTING THE BREAKAWAY BATTERY

You should inspect and test the breakaway battery before every use of your trailer.

1. Inspect the breakaway battery box before every use of your trailer to ensure that everything is intact.
2. Check the state of your rechargeable battery before every trip.
3. To do this, press the green "test" button to check the status of the battery.
 - A. If the LED light is GREEN, the battery is fully charged.
 - B. If the LED light is YELLOW, the battery is currently charging.
 - C. If the LED light is RED, the battery is low and needs to be charged.



INSPECTING & TESTING THE BREAKAWAY SWITCH

You should inspect the breakaway switch periodically to ensure proper function of the product/system. Inspect the wires, cables, and switch box for wear or damage. Do a pull test to confirm the pin still comes out and is not broken. Confirm the trailer brakes engage when the pin is pulled. If there is any damage or malfunction, replace the damaged components.

1. Visually inspect the electrical wires from the switch box to their connection points in the battery and brake systems. Make sure the wires are not broken or damaged. Make sure the black coating is not damaged. The copper wire should not be exposed anywhere along the wire or at the connection point. If the wiring is damaged or exposed, replace the switch box and wiring.
2. Visually inspect the breakaway cable. Make sure the cable is not damaged or frayed anywhere along the cable. If damaged, replace the cable.
3. Lastly, test the function of the breakaway switch system. Before doing this, make sure the trailer electrical plug is not connected to the tow vehicle. The breakaway system could otherwise damage the tow vehicle's trailer brake controller or other electrical systems. Then, pull the cable near the pin to remove the pin from the electrical switch box. Be careful to prevent recoil of the cable and pin, which could cause injury. The pin should pull out with a reasonable amount of pull force. Inspect the plastic pin to verify it is not broken or damaged. If the pin is too hard to remove (more than 40 lbs pull force), or is loose and comes out too easily, or is damaged, replace the pin and cable.

Check that the trailer brakes engage once the pin is removed from the switch. One way to do this is to connect the trailer to the tow vehicle. Leave the trailer electrical plug disconnected from the tow vehicle. Then try to gently pull forward with the pin removed from the breakaway switch box. The brakes should engage and prevent the trailer from moving. If the brakes engage and lock the tires, do not try to overpower them by pulling excessively hard with the tow vehicle.

Finally, put the tow vehicle in park and apply the park brake. Insert the pin back into the breakaway switch box. Do not leave the pin out of the switch box for more than a couple of minutes.

**WARNING**

- ▶ **DO NOT** leave the pin out of the breakaway switch for more than a couple minutes. This will result in the brakes being continually engaged and may result in damage to the brakes or wiring.
- ▶ Before your trip, ensure your dedicated breakaway battery is fully charged. Your trailer breakaway switch utilizes a dedicated breakaway battery to engage the trailer breaks in the event of an accidental decoupling from the tow-vehicle.

The breakaway switch will not be able to function as intended without an adequate charge on the batteries.

NOTE: The lack of heavy brake application could be due to the brakes being out of adjustment, low breakaway battery voltage, or a heavily loaded trailer.

The following information is copied from the Zip breakaway cable and switch manual:

- ▶ Loose or corroded connections may cause brake failure. Solder all wire connections.
- ▶ The breakaway switch is connected to the travel trailer's battery system. Low or dead batteries may cause brake failure. Do not use the safety brake system as a parking brake. When parked, secure the trailer with wheel chocks.
- ▶ Test safety brake system for proper operation before each trip. Fatigue and wear may cause shorts or open circuits resulting in brake failure.
- ▶ Obstructions may restrict the breakaway pin from being pulled in an emergency. Install switch and cable in a location that allows the pin to be freely pulled. Do not feed or loop the cable through safety chain(s).
- ▶ Rigid switch attachment may restrict breakaway pin from being pulled in an emergency. Do not over-tighten the installation bolt.
- ▶ Safety chain or hitch ball failure may be the cause of trailer separation. Attach breakaway cable directly to the tow vehicle.

**WARNING**

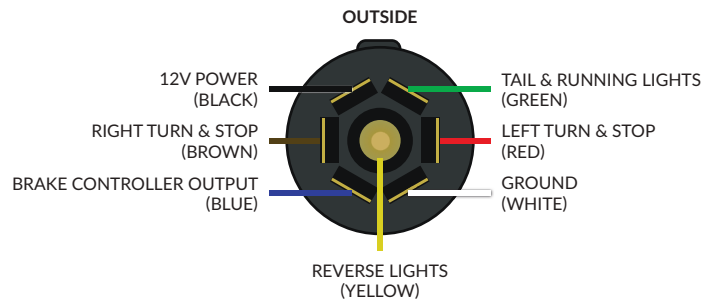
DO NOT attach the breakaway cable to safety chains, hitch ball, or ball mount.

A frayed or damaged cable may result in brake failure. Inspect cable before each trip and replace as needed.

TOW VEHICLE WIRING

You must install a proper electrical connection between the tow vehicle and your travel trailer. The wiring harness on the vehicle side has leads long enough to reach your tow vehicle's electrical system. Use the correct wire gauge and leave sufficient slack between the trailer and tow vehicle to allow for turns without dragging on the ground. Have your tow vehicle dealer and/or hitch installer assist with the installation.

The wiring color code for the connections of the trailer to the tow vehicle is as follows:



Although your travel trailer has been checked at the factory, we still recommend you visually check that all lights are functioning properly before using the trailer.

7-PIN ELECTRICAL HOOK-UP

Plug the travel trailer's 7-pin connector into the socket on the tow vehicle. Be sure there is enough slack to prevent disconnection during a full 90° turn.

7-PIN MAINTENANCE

Periodically check the 7-PIN connector to ensure it is clean and dry. Apply dielectric grease on the connectors as needed.

DC TO DC CHARGER

Your Legacy Elite II includes a DC-to-DC battery charger. This device charges your trailer's house batteries using power from your tow vehicle's alternator while you drive. It activates automatically when you start the tow vehicle and shuts off when you stop. This keeps your house batteries topped off on long drives without drawing from the tow vehicle's starter battery. The charger uses a 3-stage process — bulk, absorption, and float — to bring your batteries to a full charge efficiently and without overcharging.

A few things to keep in mind. The charger has a battery type selector switch; it must be set to match your trailer's battery chemistry. Confirm your battery type before use, as an incorrect setting can damage the batteries and will not be covered under warranty. During normal operation, the charger's fault indicator light is off. If it lights up, a fault has been detected — consult the DC-to-DC charger manual in your documentation package for troubleshooting steps. Each month, do a quick visual check: look for cracked, corroded, or loose wiring at all terminals, and make sure nothing is blocking airflow around the unit.



Before towing, check your tow vehicle owner's manual for any stated limits on current output through the 7-pin trailer connector. Some manufacturers restrict this output. If your tow vehicle has such a limit, the DC-to-DC charger's output amperage must be adjusted to stay within that specification. Operating outside your tow vehicle manufacturer's stated limits may damage electrical components or void your tow vehicle's warranty. Oliver Travel Trailers is not responsible for damage resulting from a failure to follow tow vehicle manufacturer specifications

BRAKE CONTROLLER

Refer to manufacturer for more information on Electronic brake controller adjustment.

NOTICE

A brake controller is required in your tow vehicle which will synchronize your trailer brakes. It may be necessary to adjust the brake controller. Please follow the directions provided by the manufacturer of your brake controller.

ELECTRIC JACK STABILIZATION SYSTEM

For operating instructions and troubleshooting, view the manufacturer's manual. Use the electric stabilization jacks along with wheel chocks and blocks/cribbing to stabilize your trailer.



WARNING

Review all warnings in the manufacturers manual before operating the electric jack stabilization system.

ELECTRIC TONGUE JACK

The electric tongue jack is mounted at the front of the trailer frame. It raises and lowers the front of the trailer so you can hitch and unhitch it from the ball. To operate the jack, press and hold the button pad on top of the motor housing in either the extend or retract position. A built-in LED illuminates the hitch area so you can work after dark. When the trailer is unhitched, the tongue jack and the two rear stabilizing jacks work together to keep it steady from side to side.



CAUTION

At full extension or retraction, the motor stalls and an overload cutoff shuts off power, resetting automatically after 15 seconds. Learn the jack's travel limits and stop it before reaching them.

REAR ELECTRIC JACKS

The left and right rear stabilizing jacks are operated from switches in the basement storage compartment. The switches are on the street side of the travel trailer. To operate, hold the switch in the position you wish to move the jack – either up or down. When released, the switch will automatically return to its center off position.



CAUTION

Do not retract a jack beyond the indicated limit line. Over-travel can drive the lead screw into the internal stop. Repeated over-travel causes metal fatigue and shortens the jack's service life. Stop each jack just before it reaches full extension or retraction.

MANUAL JACK OPERATION

It may be necessary to use the Emergency Hand Crank Wrench if loss of power occurs. This is located in the basement storage or closet at delivery. For further details, please see the manufacturer's manual.

NOTICE

If power has been lost, check the 30 AMP slow blow in-line fuse near the jack in the yellow capsule. If the fuse is blown, be sure to replace it with only the same size AMP fuse.

MANUAL OPERATION OF FRONT JACK

If the tongue jack loses power, you can raise or lower it by hand. Start by removing the twist cap from the access hole at the top center of the housing cover. Insert the included 9/16-inch deep-well socket into that hole and seat it on the drive spindle. Turn the socket clockwise to retract the jack or counterclockwise to extend it. When you are done, pull the socket out and put the twist cap back in place. For further operating instructions or troubleshooting, see the manufacturer's manual.

MANUAL OPERATION OF REAR JACKS

If the rear jacks lose power, you can operate them by hand from inside the trailer. Remove the bedding and cushions on both sides of the trailer, then remove the access panels. Locate the twist cap on top of each rear actuator housing and remove it. Insert the included 11-millimeter deep socket and seat it on the drive spindle. Turn the socket clockwise to retract (raise) the jack or counterclockwise to extend (lower) it. When you are done, remove the socket and reinstall the twist cap.



BRAKING AND BURNISHING BRAKES

To achieve optimal performance, the electric braking system must be burnished according to the manufacturer's instructions. This process allows the brake shoes and magnets to properly seat against the drum surfaces.

1. To burnish the brakes on your travel trailer, apply the brakes 20 to 30 times. Use approximately a 20 mile per hour decrease in speed between each application.
2. Allow ample time for the brakes to cool between applications.

For more information on Dexter axles and braking systems, contact Dexter or visit their website.

PARKING ON A SLOPE

Parking vehicles on an upgrade or downgrade is not recommended. If necessary, apply the brakes and have a passenger place wheel chocks behind the tires of your RV. When they are in place, slowly release brakes until chocks stop the unit. Apply the parking brake and place transmission in park position (place in first gear for manual shift vehicles).

**TOWING CHECKLIST ✓**

1. Close and secure all interior drawers and doors.
2. Close all windows and draw all blinds.
3. Secure the microwave plate.
4. Close the roof vents.
5. Close the backflow preventer valve in the bathroom.
6. Close and lock the storm door and the entry door.
7. Retract all stabilizer jacks.
8. Disconnect and store all power cords, cables, and hoses.
9. Shut off the propane tanks and secure the tank enclosure properly.
10. Secure the awning tightly in its casing and turn off the master power switch. Store the remote.
11. Secure the coupling to the hitch ball and lock the hitch pin.
12. Secure the 7-PIN connector plug to the tow vehicle.
13. Check and secure the safety chains and safety breakaway cable.
14. Raise the steps up and into the storage position.
15. Check the operation of all trailer lights (brake, reverse, marker, etc).
16. Secure any items in the storage basket or any attachments in the accessory receiver.
17. Check the lug nuts for the correct torque (110 ft/lbs).
18. Check the tires for the proper pressure.
19. Secure TV into folded position ensuring mounting catch is engaged to mounting pin.
20. Check dedicated breakaway battery for full charge.

SETUP CHECKLIST ✓

1. Pull or back into the campsite and ensure the trailer is level from side to side using leveling blocks. Chock tires and disconnect safety chains, 7-PIN cable, and breakaway switch.
2. Unlock the trailer coupler from the hitch ball by pushing the lever on the coupler forward.
3. Lower the front jack to raise the trailer off of the hitch ball.
4. Pull the tow vehicle forward so that you can level the trailer front to back using the front jack.
5. Lower rear jacks for stabilization only.
6. Pull out aluminum double step.
7. Make sure all appliances are in the off position.
8. Open propane tanks.
9. Plug in the trailer's 30 AMP shore power cord to the correct 30 AMP, 120-volt source. (In most cases, there is a 30 AMP breaker at the pedestal. Turn it on after hooking up.)
10. If there is a city water source, connect a potable hose to the spigot. Connect the other end to the City Water Inlet at the rear, curbside. Be sure to connect the pressure regulator. Turn the water on.
11. Open the backflow preventer in the bathroom before using any water source in the trailer.



ELECTRICAL

OVERVIEW

Your travel trailer runs on a dual-voltage electrical system: 120-volt AC and 12-volt DC.

- › **120-volt AC System:** This side powers appliances like the air conditioner, microwave, TV, and stove, as well as all 120-volt wall outlets.
- › **12-volt DC System:** This side runs your smaller electronics, fans, water pump, and lights.

Powering Your 120-volt System:

You can supply 120-volt AC power using any of these methods:

- › **Shore Power:** Connecting your 30-amp power cord to a campground power pedestal.
- › **Generator:** Running a portable RV generator.
- › **Inverter:** Using an inverter to convert 12-volt battery power into 120-volt AC power.

Powering and Charging Your 12-volt System:

The 12-volt battery system powers your DC functions. You can recharge your batteries in the following ways:

- › **Power Converter/Charger:** Automatically charges batteries when plugged into shore power.
- › **Generator:** Charges the batteries while running.
- › **Solar Panels:** Utilizes solar power to replenish battery charge.

CONNECTING TO SHORE POWER

Your travel trailer runs on a 120-volt, 30-amp electrical service, providing a total capacity of 3,600 watts. This utilizes a standard three-pronged cord, which is the most common connection type found at campgrounds across the U.S.

Managing Your Power Limit: Because your total power is capped at 30 amps, you must be mindful of how many appliances you run simultaneously:

- › **Single Appliance Use:** You can run any single appliance on its own without trouble.
- › **Multiple Appliance Use:** You may reach the power limit if several appliances run at the same time—especially if they start up together.
- › **Combined Loads:** For example, the air conditioner draws about 14 amps while running, with a maximum draw of 15.5 amps. A microwave or convection oven pulls 11 to 18 amps. Running both at once can overload the circuit and trip a breaker.

The following warning is located near the shore power receptacle(s) on the outside of your travel trailer:



WARNING

This connection is for 110-125 Volt AC, 60 HZ, 30 Ampere supply. DO NOT exceed circuit rating. Exceeding the circuit rating can cause a fire and result in death or serious injury.

A 30-amp shore power cord is provided to connect the travel trailer to a grounded electrical source. The shore power inlet is located on the street side. When not in use, the cord can be neatly stored in the basement storage compartment or closet.

NOTICE

We do not recommend using an extension cord to provide power to your trailer. If necessary, only use a 3-prong, 10 gauge, 30 AMP extension cord with a maximum length of 25'.

CONNECTING TO A GENERATOR

For optimal performance, Oliver Travel Trailers recommends using a 3500-watt generator equipped with a 30-amp connector. While this setup allows you to operate the trailer as usual, you will need to use a neutral-to-ground bonding plug. If the generator is undersized or lacks this plug, your trailer's electrical system and surge protector may not function correctly.

SURGE PROTECTOR

Your travel trailer includes a built-in Electrical Management System (EMS) surge protector to shield internal components and appliances from power spikes. However, this protection only applies downstream of the device. The EMS does not protect the external shore power cord, the inlet connection, or the transfer switch used on trailers with the optional second shore power connection.

NOTICE

If you are concerned about protecting the shore power connection, cord to the surge protector, and transfer switch (if applicable) of the travel trailer, you will need to use an external 30 AMP surge protector that connects between the shore power cord and the power source (e.g., generator or power pole at campsite).

For operating instructions and troubleshooting, view the manufacturer's manual.



BATTERY COMPARTMENT

The battery compartment is located on the street side of your trailer and features a lockable marine-style latch. Inside the compartment, you will find a slide-out battery tray. To extend the tray for battery inspection, first push it inward slightly to relieve pressure on the mechanism, then pull the two side latches to release and slide the tray out. The batteries have been strapped down to prevent them from shifting during transit. Periodically check the battery compartment to ensure the battery straps are tight, battery terminals are clean/corrosion free, and wire connections are tight.

NOTICE

NOT a dry storage compartment! Regular maintenance may be required to protect contents from deterioration.

BATTERY SAFETY



WARNING

- › Keep the battery out of the reach of children.
- › Do not use a defective battery.
- › Wear goggles and protective clothing when working near batteries. Do not touch your eyes.
- › Do not wear metal jewelry, a watch, or other metal objects when working on the battery. A short circuit can cause serious injury.
- › Use only insulated tools, and do not set metal parts on the battery.
- › If your trailer has an inverter, power it down and switch the inverter disconnect to OFF. Do this before connecting or disconnecting a battery.
- › Before working on the electrical system, disconnect the battery cable and the 120-volt power cord.
- › Do not reconnect the cables until all work is finished. This prevents shorting, component damage, or shock.
- › Do not short across the battery terminals.
- › Keep the battery away from water.
- › Keep the battery away from heat sources, open flame, and sparks. Do not smoke near the battery.
- › Do not place the battery near flammable liquids or gases.
- › Never charge a frozen or defective battery. Move it to a frost-free area, let it reach room temperature, then charge it.

For complete battery safety and operating information, see the battery manufacturer's manual.

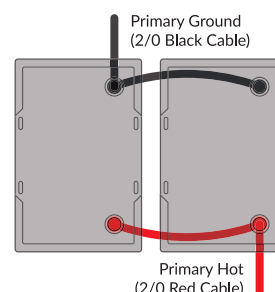
LITHIUM BATTERY SYSTEM

Your Oliver runs on a 12-volt lithium battery system. The standard package includes a single lithium battery paired with a converter/charger. Optional packages add more battery capacity and an inverter/charger for longer stays off-grid. Your options paperwork lists the package installed on your trailer.

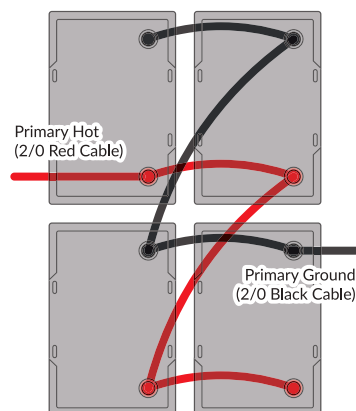
BATTERY MANAGEMENT SYSTEM (BMS)

Each lithium battery has a built-in battery management system, or BMS. The BMS protects the battery automatically as it charges and discharges, keeping it operating within safe limits. You can also monitor the battery's status — through a mobile app or a wired remote display, depending on your package. For full details on the BMS and monitoring, see your battery's manual.

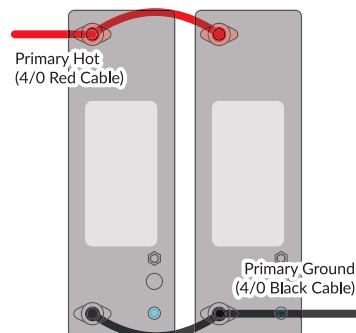
2x ALPHA 1 PRO 100Ah



4x ALPHA 1 PRO 100Ah



2x LITHIONICS 320Ah



CONVERTER/CHARGER

Your Oliver charges its batteries through a converter/charger. It works whenever the trailer is plugged into 120-volt shore power or a generator, keeping the batteries charged and running the 12-volt circuits. The converter/charger is set to the lithium charge profile to match your batteries. For operating instructions and troubleshooting, view the manufacturer's manual.

INVERTER/CHARGER

(Optional Equipment)

Optional battery packages include an inverter/charger with a built-in transfer switch. This one unit does two jobs. When shore power or a generator is connected, it charges the batteries and passes AC power through to your appliances. When outside power is not available, it inverts battery power into 120-volt AC so you can keep using your appliances. The built-in transfer switch handles the change between the two automatically. The inverter/charger is configured at the factory for your lithium batteries. For operating instructions and troubleshooting, view the manufacturer's manual.

INVERTER / CHARGER SETUP

Your optional equipment will be set up before delivery and should not require changes. See the settings chart below for each model & battery type.

INVERTER TRANSITION

The inverter automatically detects whether outside AC power is present. When shore power or generator power drops or becomes unavailable, the inverter switches to battery power and begins supplying AC from the batteries. When stable outside power returns, the inverter switches back to it. The switch happens automatically through the built-in transfer switch.

NOTE: A remote panel inside the trailer monitors and controls the inverter/charger. Its backlit LCD screen shows whether the unit is running on shore power or battery power. It also displays the battery level, load, and voltage. A green or red indicator light shows the unit's status and any fault codes.

NOTICE

Your Oliver camper is equipped with an onboard surge protector that controls incoming shore power and shuts it off when the voltage drops below 104V or goes above 132V. If this happens while your inverter is on, the inverter takes over and keeps powering your 120-volt items. Everything appears normal, so you may not realize you have lost shore power and battery charging. The batteries can run dead.

INVERTER DISCONNECT

The inverter disconnect switch isolates the inverter from the battery bank. You will find it under the street-side bed access panel. Switching it OFF cuts the connection between the inverter and the batteries.

**WARNING**

Power down the inverter, then switch the inverter disconnect to OFF, before you connect or disconnect a battery. Switching the disconnect to OFF prevents sparking at the battery connection. Opening it while the inverter is running interrupts a large DC current and arcs across the switch contacts.

SETTING #	SETTING	LCD Display	2000W 2× Alpha 1 PRO 200Ah	3000W 400Ah / 640Ah
01	INVERTER IGNITION CONTROL	OFF / ON	OFF	OFF
03	AC INPUT VOLTAGE RANGE	APL / UPS	APL	APL
04	BATTERY TYPE	LIB / AGM / USE	LIB	LIB
05	AUTO RESTART (OVERLOAD)	trd / trE	trE	trE
06	AUTO RESTART (OVER TEMPERATURE)	trd / trE	trE	trE
07	OUTPUT FREQUENCY	50 / 60	60	60
08	OUTPUT VOLTAGE	108 / 110 / 120	120V	120V
09	CHARGER CURRENT	5–80A (2K) 5–150A (3K)	80A	100A
13	BUZZER ALARM	bON / bOF	bOF	bOF
14	LCD BACKLIGHT	LON / LOF	LON	LON
15	LOW DC CUT-OFF VOLTAGE	10.5–12.8V	11.9V	11.9V
16	LOW DC RECOVERY VOLTAGE	12.0–16.0V	13.1V	13.1V
17*	BULK CHARGE VOLTAGE	12.0–15.3V	14.4V	14.4V
18*	FLOAT CHARGE VOLTAGE	12.0–15.3V	13.6V	13.6V
21	LOAD SEARCH MODE	nOn / PEn	nOn	nOn

MAINTENANCE

**WARNING**

Switching the inverter/charger to Standby does not disconnect DC battery power from the unit. Disconnect all power sources before working on it or on anything connected to it.

Do these tasks periodically:

- With all power off, wipe the outside of the unit with a damp cloth. This keeps dust and dirt from building up.
- Check that the DC cables are secure and the fasteners are tight.
- Make sure the ventilation openings are not blocked.

Note: This is a basic overview only. For full instructions, see the manufacturer's manual.

ROOF TOP SOLAR PACKAGE

(Optional Equipment)

The optional solar system is a 12-volt system that recharges your batteries off-grid when shore power is not available. Keep in mind that solar does not charge as quickly as a 120-volt shore connection. If the batteries are severely depleted, you may need to connect to a generator or 30 AMP shore connection. When you are off-grid, you should check the battery voltage or state of charge periodically. For operating instructions and troubleshooting, view the manufacturer's manual.

SOLAR AWNING

(Optional Equipment)

If your trailer has the solar awning, you will find it on the curbside, in place of the standard curbside awning. The awning fabric is a solar panel. It charges your batteries whenever the awning is open in the sun. The power switch is on the switch plate just inside the door, on the left. Use the included remote to open and close the awning. A motion sensor retracts the awning automatically to protect it from wind damage. Close the solar awning before you move the trailer. Also close it when heavy rain or high wind is expected. The fabric becomes warm during use, so avoid touching it while it is in the sun. Never use a campfire, grill, or open flame near or under the awning. For operating instructions and troubleshooting, view the manufacturer's manual.

SOLAR DISCONNECT SWITCH

Two disconnect switches isolate your solar panels from the battery bank. You will find both in the upper cabinet to the left of the pantry, on the trailer's street side. Inside the cabinet, the switch on the right isolates the roof solar panels. The switch on the left isolates the solar awning.

**CHARGING IN COLD WEATHER**

Lithium batteries should not take a charge below freezing. Your batteries solve this on their own with a built-in heater. When you charge in freezing temperatures, the battery warms its cells first, then begins accepting the charge. No manual action is needed. The colder the battery, the longer it takes to warm before charging starts.

NOTICE

Charging lithium batteries can draw high current. Do not use a 30-amp- to-15-amp adapter to charge the batteries.

STORAGE

Store your lithium batteries at the charge level and temperature the manufacturer recommends. Correct storage keeps each battery healthy and ready for your next trip. See the manufacturer's manual for the storage procedure.

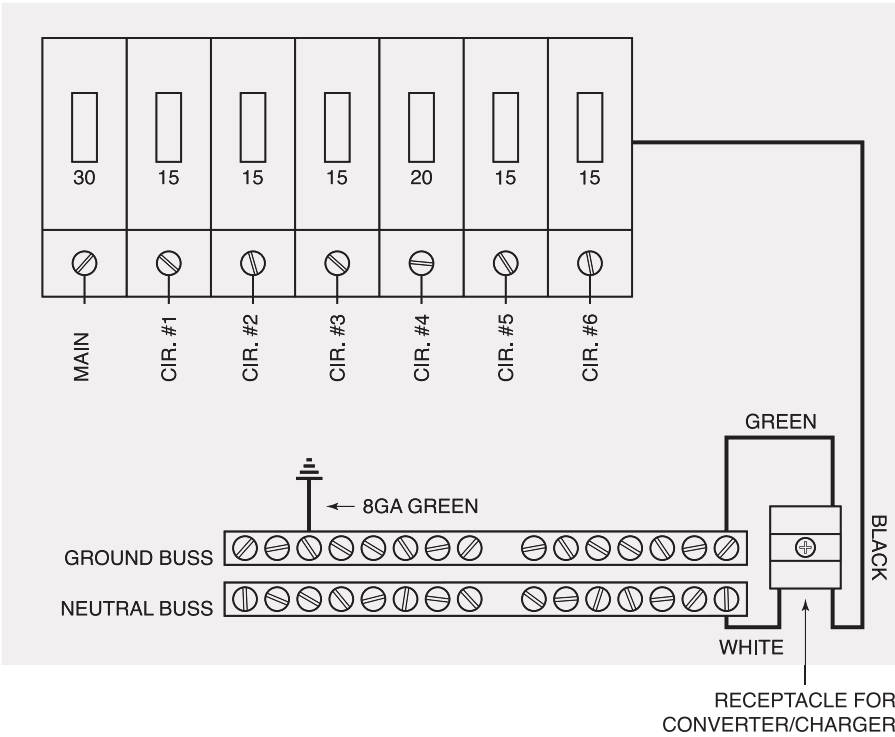
CIRCUIT BREAKERS

Circuit breakers in the AC panel protect the 120-volt system. The panel is under the left front dinette seat. A breaker shuts its circuit off automatically if the load is too heavy or a short circuit occurs. If a breaker trips, do not reset it until you find and fix the cause. Also check the 120-volt GFCI outlet under the dinette. If it has tripped, reset it by pressing the "reset" button on the outlet.

NOTICE

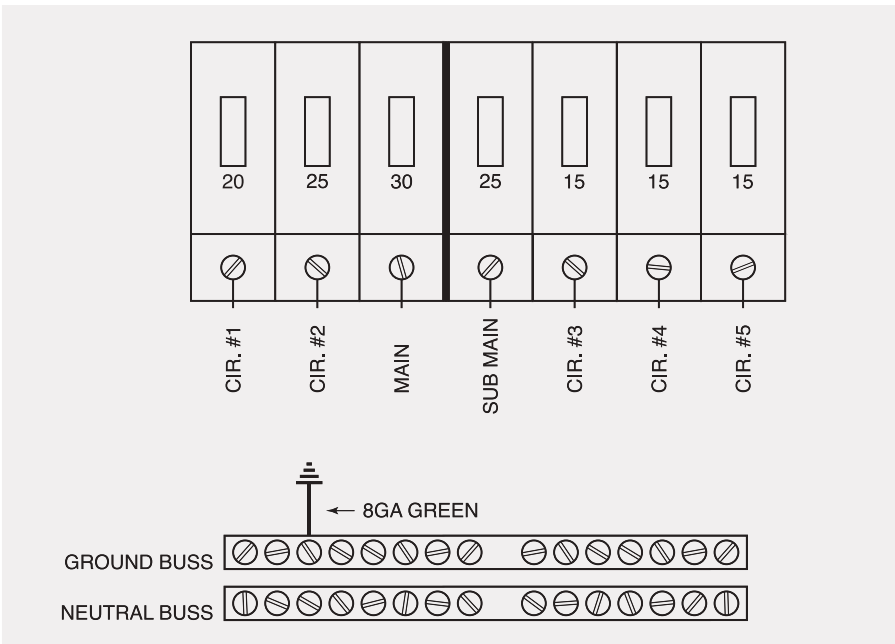
GFCI is only energized when AC power is present.

120V PANEL — STANDARD CONFIGURATION



120V BREAKER DESCRIPTIONS		
MAIN	—	30 AMP
CIR. #1	WATER HEATER	15 AMP
CIR. #2	RECEPTACLES	15 AMP
CIR. #3	MICROWAVE RECEPTACLE	15 AMP
CIR. #4	AIR CONDITIONER	20 AMP
CIR. #5	CHARGER	15 AMP
CIR. #6	STOVE	15 AMP

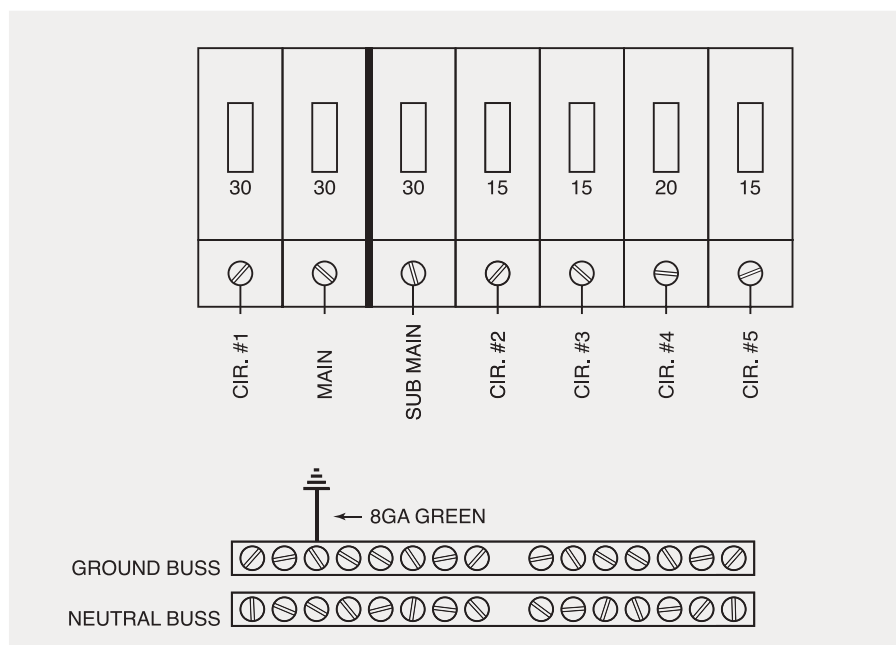
120V PANEL — PRO 2,000W INVERTER CONFIGURATION



120V BREAKER DESCRIPTIONS		
CIR. #1	AIR CONDITIONER	20 AMP
CIR. #2	INVERTER	25 AMP
MAIN	—	30 AMP
SUB-MAIN		25 AMP
CIR. #3	RECEPTACLES	15 AMP
CIR. #4	MICROWAVE RECEPTACLE	15 AMP
CIR. #5	STOVE	15 AMP



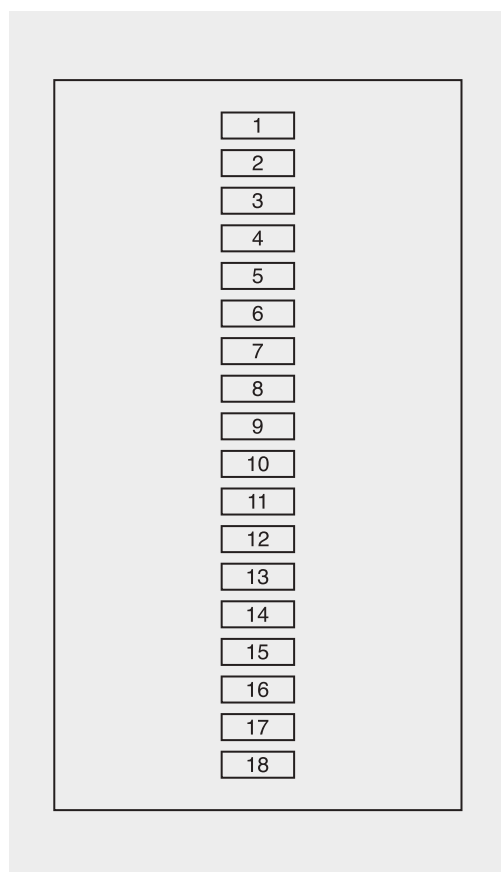
120V PANEL — PRO 3,000W INVERTER CONFIGURATION



120V BREAKER DESCRIPTIONS

CIR. #1	INVERTER	30 AMP
MAIN	—	30 AMP
SUB-MAIN	INVERTER SUBPANEL	30 AMP
CIR. #2	RECEPTACLES	15 AMP
CIR. #3	MICROWAVE RECEPTACLE	15 AMP
CIR. #4	AIR CONDITIONER	20 AMP
CIR. #5	STOVE	15 AMP

12V PANEL CONFIGURATION



12V FUSE DESCRIPTIONS

1	REFRIGERATOR	15 AMP
2	ELECTRONICS*	15 AMP
3	WATER PUMP	15 AMP
4	FURNACE	15 AMP
5	LIGHT MAIN	10 AMP
6	FANS	15 AMP
7	WATER HEATER	5 AMP
8	12V RECEPTACLE / USB**	15 AMP
9	12V RECEPTACLE / USB***	15 AMP †
10	CB AWNING	10 AMP †
11	ST AWNING (OPTIONAL)	10 AMP †
12	CABIN / CABINET LIGHTS	5 AMP †
13	ELECTRIC BLADE VALVE	5 AMP
14	OPEN	
15	OPEN	
16	OPEN	
17	OPEN	
18	OPEN	

* Back-up Camera, Tank Monitor, Speaker.

** 12V Socket/USB at Dinette, 12V socket/USB under attic.

*** 12V Socket in Attic, 12V Socket/USB in Kitchen.

† ATC Style Type 2 Breakers.

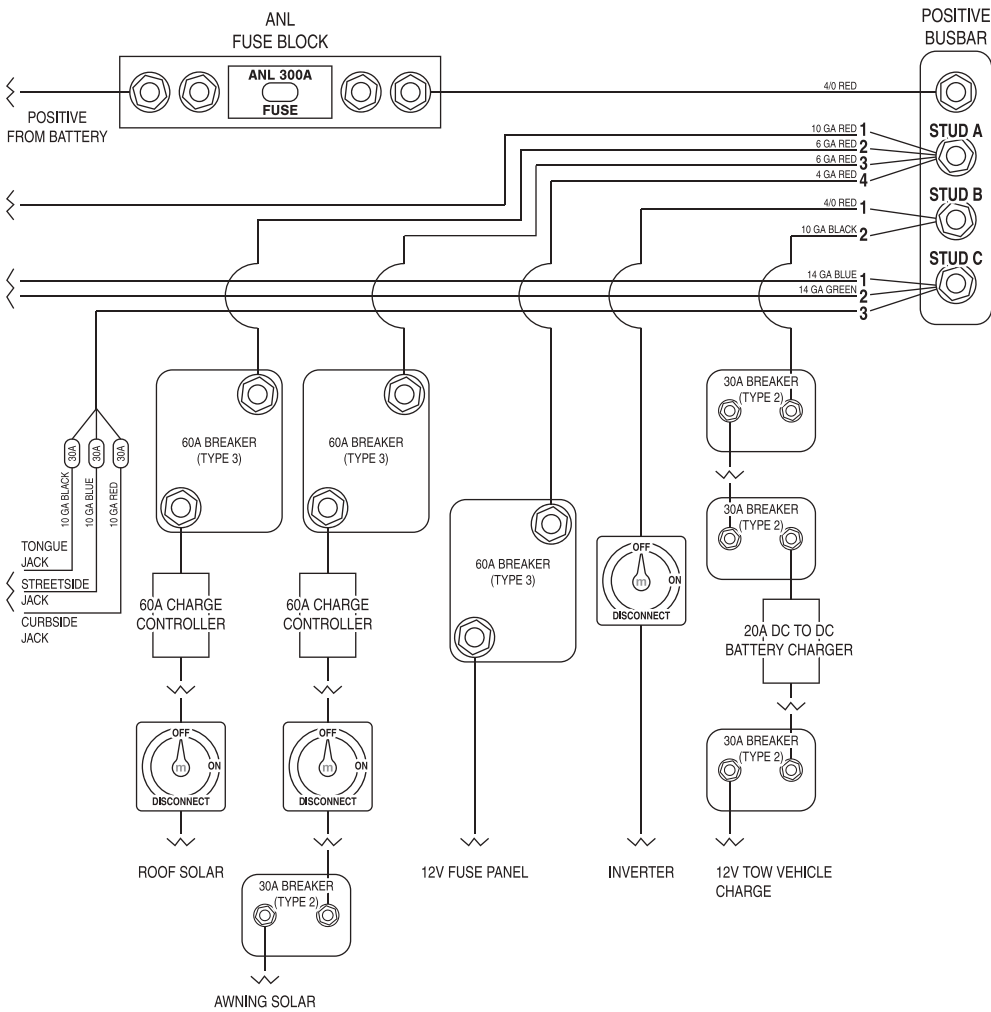
12V FUSES

A 12-volt DC distribution panel is located under the dinette, next to the 120-volt AC breaker panel. The 12-volt panel holds fuses. The fuses protect the trailer's 12-volt circuits.

If a circuit draws more current than its fuse allows, or if a short circuit occurs, the fuse blows. Turn off the 12-volt power before you replace a fuse. Changing a fuse on a live circuit can arc and damage the fuse holder.

Replace a blown fuse with one of the same amp rating. Never use a fuse with a higher amp rating than the one indicated for that circuit. If a fuse keeps blowing, contact Oliver Travel Trailers for assistance. You can buy replacement fuses at service stations, hardware stores, and automotive supply stores.

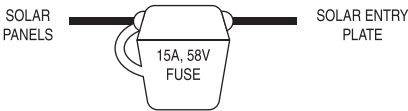
ADDITIONAL BREAKERS & FUSES



BUSBAR CONNECTIONS & ADDITIONAL FUSING / BREAKERING INFO.

STUD A		
1	EXTERIOR SOLAR PORT	15 AMP (ATC FUSE)
2	ROOF SOLAR	60 AMP (TYPE 3 BREAKER)
3	AWNING SOLAR	60 AMP (TYPE 3 BREAKER)
4	DC FUSE PANEL	60 AMP (TYPE 3 BREAKER)
STUD B		
1	INVERTER CHARGER	300 AMP (ANL FUSE)
2	12V TOW VEHICLE CHARGE	30 AMP (TYPE 2 BREAKER)
STUD C		
1	CO/LP DETECTOR POWER	1 AMP (ATC FUSE)
2	COMPOSTING TOILET POWER	2 AMP (GLASS FUSE)
3	ELECTRIC JACKS	30 AMP (SLOW BLOW)

SOLAR PANEL FUSE (ON ROOF OF CAMPER)



OUTLETS AND CHARGING STATIONS

All 120-volt outlets on the receptacle circuit are GFCI protected. The main GFCI outlet is below the right dinette seat. Test your GFCI outlets monthly. Press the test button on the main GFCI outlet, then press the reset button to restore power. If your 120-volt outlets stop working, check the following in order:

- Is the main GFCI outlet under the dinette tripped?
- Is the breaker for the receptacle circuit tripped?
- Is the main breaker for the AC panel tripped?
- Is 120-volt power present, with no errors on the surge protector?

NOTICE

GFCI is only energized when AC power is present.

Reset any of the first three that have tripped. If they trip again, contact Oliver Travel Trailers or a qualified RV service center for assistance.

Charging stations are located throughout the interior of your trailer. Each one has a 12-volt socket and two USB ports for your phones and tablets.



LIGHTING AND SWITCHES

Most of the trailer's light switches are on the switch panel just inside the door. A few switches are located elsewhere, as noted below.

MASTER LIGHTS switch turns power to all light switches on and off.

CABINET LIGHTS switch controls the LED lights in the upper cabinets.

OUTSIDE COURTESY LIGHTS switch turns on and off the outside courtesy lights. These run along both sides of your Oliver near the bottom of the shell.

MAIN CABIN LIGHTS switch controls the main LED lights on the interior roof of the trailer.

CLOSET LIGHTS switch controls the LED light in the closet.

CURB AWNING switch is the master power button for the powered awning on the curbside.

STREET AWNING switch is the master power button for the optional powered awning on the street side.

REAR CAMERA switch provides power to the optional rear backup camera.

PORCH LIGHTS (CURB/STREET) switches turn the LED porch lights on the curbside and street side on and off.

The following switches are on or near the light itself, not on the entry switch panel.

DINETTE, REAR LEFT, and REAR RIGHT LIGHTS each have their own switch on the light.

READING LIGHTS turn on and off with a push switch on each light.

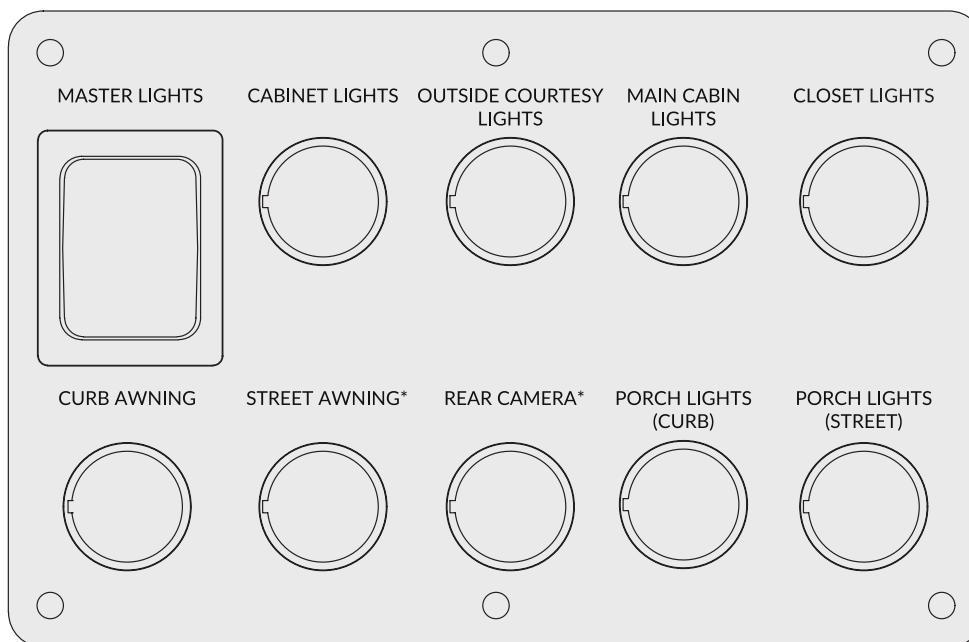
BATHROOM LIGHTS switch is on the bottom of the bathroom cabinet above the toilet.

WATER PUMP switch provides power to the water pump. Your trailer has two: one in the main cabin on the tank monitor panel, and one in the ceiling of the shower caddy below the bathroom sink.

INSIDE COURTESY LIGHTS switch is under the pantry. It controls the LED lights near the floor throughout the interior.

WATER HEATER switch is on the water heater itself, on the outside of the trailer. It provides power to light the burner.

MAIN ENTRY SWITCH PLATE



**Switch will be plugged if not equipped with optional components.*



PLUMBING

OVERVIEW

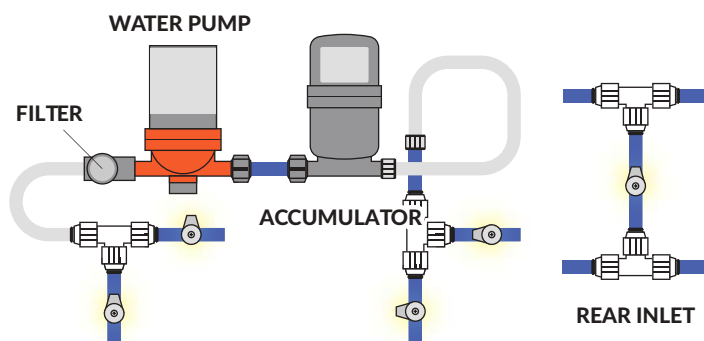
Your travel trailer has two plumbing systems. The freshwater system delivers water for your use. The wastewater system drains and stores the water you have used.

Your plumbing system can draw water from two sources. Use the onboard freshwater tank to stay self-contained, with a digital monitor showing your holding tank levels. Or connect to an external pressurized source at a campground. Either way, the system works much like the plumbing in your home. Follow the instructions in this section to keep the system running efficiently with little maintenance. Freshwater comes from either an external pressurized source or the freshwater storage tank. Both inlets are at the lower rear of the trailer. The freshwater tank fill inlet is on the street side. The city water inlet is on the curbside.

PLUMBING SYSTEM – CURBSIDE ACCESS PANEL

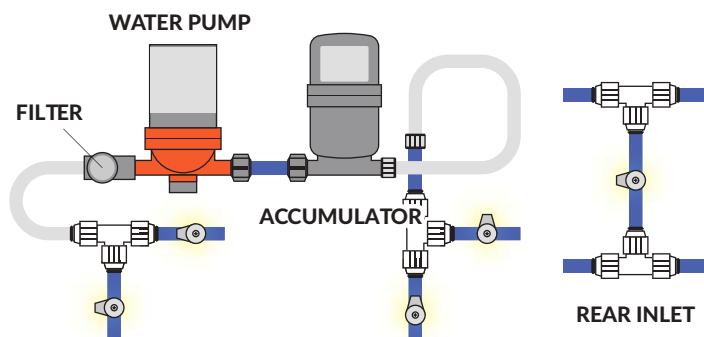
Most of the important plumbing components and valves are under the curbside seating access panels. This section refers to these components throughout. The following diagrams show the Normal Valve, Fresh Tank Fill Valve, and Winterization/Decalcification Valve configurations.

Normal Valve Configuration



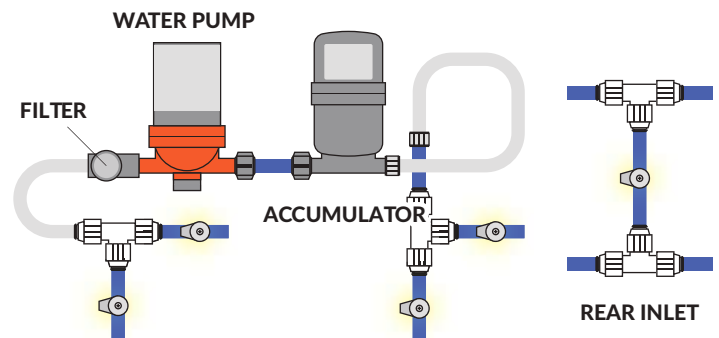
Fresh Tank Fill (Non-Pressurized)

Drawing water from rear inlet to fill fresh tank



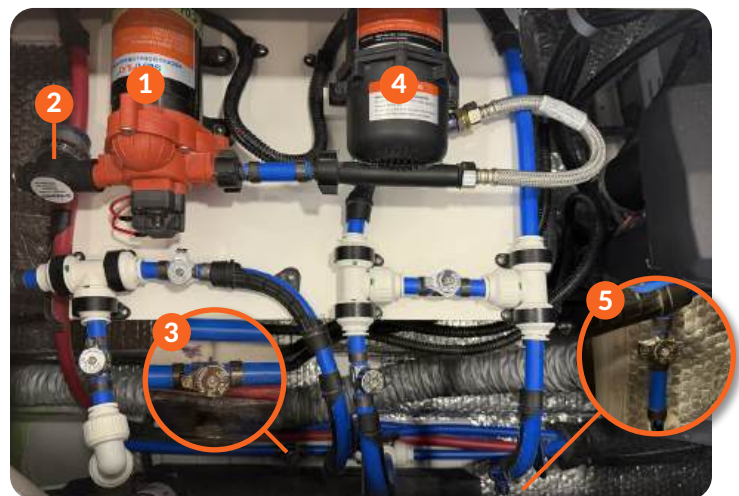
Winterization/Decalcification Valve Configuration

Drawing non-toxic RV anti-freeze from rear inlet directly to faucets and toilet



PLUMBING SYSTEM COMPONENTS & VALVES

Under front curbside seating access panel



1. Water Pump
2. Water Pump Filter
3. Factory Inspection Valve (Always leave open)
4. Accumulator
5. Freshwater Drain Valve



WATER PUMP & ACCUMULATOR

For operating instructions and troubleshooting, view the manufacturer's manual.

You will find the water pump, accumulator, and plumbing valves under the curbside bed access panel. Water drawn from the freshwater tank must be pressurized, and the self-priming 12-volt DC water pump handles that job. The accumulator tank smooths water flow and reduces pulsing at the faucets. It also reduces pump cycling, which makes the system quieter and extends pump life.

The water pump can also draw through the rear water inlet. This pushes water from a portable potable water container into the freshwater tank. You will use the pump during winterization, sanitization, and decalcification as well.

Water pump switch locations:

- › A "PUMP" on/off switch on the tank monitor in the main cabin.
- › A second switch in the ceiling of the shower caddy below the bathroom sink, above the towel bar.

Starting up the self-contained water system:

1. Make sure the freshwater tank is filled with water.
2. Place the pump control switch in the ON position.
3. Allow about 2 minutes for the pump to fill the water heater and fully pressurize the system. The system is then ready for use.

NOTICE

The water pump is designed for intermittent duty. It runs on demand and shuts off when you close the faucets. Running the pump continuously under high pressure can shorten its life and is not covered by the pump manufacturer's warranty.

TANK MONITORING

For operating instructions and troubleshooting, view the manufacturer's manual.

The tank monitor has a display panel that is mounted on an upper cabinet inside the trailer. Sensor probes are spin-welded into the wall of each holding tank. The probes contact the liquid inside the tank and send the level to the panel. The monitor reads the freshwater, grey water, and black tanks.

FRESHWATER INLET

The freshwater inlet is on the lower rear street side of the trailer. Use it to pre-fill your onboard water tank before camping somewhere without an outside water source. The freshwater tank holds approximately 30 gallons.

To fill the freshwater tank from pressurized water:

1. Remove the cap from the freshwater inlet.
2. Attach a freshwater hose to an outside water source.
3. Allow about 2 minutes for the pump to fill the lines and fully pressurize the system. The system is then ready for use.
4. Turn on the water source. Fill until water runs from the freshwater overflow which is located on the curbside, between the aluminum steps and the tire.
5. When the tank is full, turn off and disconnect the outside hose and re-install the water cap.

NOTICE

- › If you notice water leaking under the camper you may need to close the fresh tank drain valve.
- › Always fill the tank with clean water from a known safe source. Make sure to cap the water inlet when the tank is filled. Always fill the system with a hose that you know is clean and is used only for this purpose. Water from tanks is not intended for consumption.

DRAINING THE FRESHWATER TANK

You will find a standard T-valve under the curbside bed access panel, below the water pump. See the image on page 25, which shows plumbing system components and valves. Opening this valve drains the freshwater tank before traveling, when winterizing, or whenever else you need to. The water empties below the trailer near the rear bumper. Close the valve after the tank is empty.



WARNING

The water heater may still hold hot water that can scald. Switch the water heater off first. Then run a hot water faucet until the water turns cold. Wait at least 10 minutes before opening the drain valve.

NOTICE

To drain the entire onboard freshwater system, open the faucets and open the water heater drain valve. The valve and its drain tube are outside, on the lower front of the water heater. This equalizes air pressure and allows free water flow. It may be necessary to raise the front stabilizing jack to allow gravity to help drain the freshwater tank.

CITY WATER INLET

The city water inlet is on the lower rear curbside of the trailer. This inlet does more than connect to city water.

Use this water inlet for:

- › Connecting to a pressurized city water supply
- › Filling the freshwater tank from a portable container using the onboard pump
- › Pumping non-toxic RV antifreeze into the water lines when winterizing
- › Sanitizing the plumbing system
- › Decalcifying the plumbing system

Connecting to city water:

1. Remove the cap from the city water inlet on the lower rear curbside of the Oliver.
2. Attach a potable water hose to the outside water source. An external water filter is recommended.
3. Connect the other end of the hose to the city water inlet. Use a pressure regulator rated at a maximum of 55 PSI.



WARNING

Failure to use a pressure regulator may damage the internal water system.

4. Turn on the outside water source. Open the propane tank valves and switch the water heater on. Wait five minutes so any gas can clear before the burner lights.
5. Open the hot and cold faucets gradually to clear air from the lines. Close them when the water flows freely.

NOTICE

DO NOT turn the water pump on when using water from an external pressurized supply. This could result in damage to the water pump.



WARNING

The sanitization and decalcification process should NEVER be done together. Mixing vinegar and bleach can cause a lethal toxic gas.

To fill the freshwater tank from a portable potable water container (non-pressurized):

1. Remove the cap from the city water inlet on the lower rear curbside of the trailer.
2. Attach a potable hose to the curbside rear water inlet. Cut the hose to 2 feet or less.
3. Insert the other end into the potable water container.
4. Go inside to the curbside access panel. Change the water pump valves to the non-pressurized fresh tank fill configuration. See the valve configuration diagrams located under the seat lid covering the water pump compartment.
5. Turn on the main water pump switch. Let it run until all the water moves from the container into the freshwater tank and repeat the process until the freshwater tank is full.
6. Once the tank is full, turn off the water pump. Return the water pump valves to the normal configuration. Disconnect the hose and re-install the inlet cap.

WATER HEATER

For operating instructions and troubleshooting, view the manufacturer's manual.

FAUCETS & SHOWER

BATHROOM FAUCET

The bathroom faucet has a flexible hose for showering and for cleaning the shower. Lift the handle to turn the water on. Rotate the handle counter-clockwise until the water is the desired temperature.

To use the bathroom faucet as a shower, pull the head from the faucet to extend the flexible hose. Place the head in the shower mount on the upper right wall. Toggle the switch on the back of the faucet head to change between spray and stream.



CAUTION

The bathroom faucet hose should only be pulled out to the shower head mount. Pulling it out farther might result in a kinked or damaged hose.

KITCHEN FAUCET

The kitchen faucet has a pull-down spout and a two-way spray head. Pull the handle toward you to turn the water on. Push the handle right or left to adjust the temperature. Toggle the switch on the back of the faucet head to change between spray and stream.

OUTSIDE WASH STATION

The outside wash station is in the basement storage compartment, on the rear street side of the trailer. Pull the white cover down to reach the faucet and controls. Turn the hot (red) and cold (blue) knobs to set the temperature you want. The faucet connects to a flexible hose that stores inside the casing. Push the lever on the back of the shower head to start the water. Push or pull the lever to lock the flow open or closed.



CAUTION

Be sure to close hot and cold knobs on the outside wash station after use. Failure to do so can cause back feeding of water into plumbing lines.

SHOWER CARE

Remove soap film from the shower wall as needed. Use any mild household foam cleaner. Never use harsh chemicals or abrasives on the shower walls or shower base. Leave the bath door open after you shower. This lets humidity and moist air escape. Leave it open when the trailer is not in use as well, so air can circulate and prevent mildew.

TOILET

Your travel trailer is equipped with either a standard porcelain toilet or an optional composting toilet. For operating instructions and troubleshooting, view the manufacturer's manual.

BACK-FLOW PREVENTER

The black T-handle near the bottom of the bathroom wall operates a blade valve. This valve controls the flow of used water from your shower pan and sink into the gray tank.

NOTICE

Open this valve during camping. Close it before traveling. This prevents water left in the gray tank from back-flowing into the shower pan while driving.

DUMPING WASTE

WASTEWATER SYSTEM

Your travel trailer has two separate wastewater systems. The gray water system collects wastewater from the sinks and shower. The black water system collects waste from the toilet. Each system has its own drain lines and holding tank, and each is self-contained.

Both tanks are vented to equalize air pressure and disperse odors from drain water and waste. The gray water system also has drain traps. These traps may empty during transit,

letting gray tank odors into the trailer. Residue in the drain lines can also produce odors. Use an approved deodorizing agent to control gray tank odor. Choose one that dissolves grease and fats and contains a detergent. This helps keep the tank and drain lines clean and free-flowing.

HOLDING TANKS

Your gray tank holds approximately 30 gallons and your black tank holds approximately 15 gallons. Empty each tank often at a dump station designated for this purpose. Most national, state, and private campgrounds have dumping facilities. Many service stations along interstate highways also have these facilities.



To Empty the Holding Tanks:

1. Remove the two pins from both sides of the aluminum bumper. Pull the flexible sewer hose out.
2. Remove the end cap from the drain line and install the flexible drain hose. Position the hose over the dump station inlet. Make sure it is securely attached.
3. Open the backflow preventer in the bathroom. This keeps the gray water tank from air locking.
4. Drain the black water tank first. Open its termination valve in the basement storage compartment. Allow enough time for the tank to drain completely. Then rinse the tank with several gallons of water using the toilet's flush pedal. For a stronger rinse, close the flush pedal, fill the bowl with water, and flush.
5. Drain the gray water tank last. Open its termination valve in the same compartment. The soapy water helps rinse the drain and the flexible hose.
6. Close both termination valves when the tanks are empty. Make sure the backflow preventer is closed before traveling.
7. Remove the flexible drain hose from the dump station inlet. Rinse the hose with the shower hose if needed. Cap it and return it to the storage behind the rear bumper. Secure the bumper and cap the dump station inlet.



If you connect to a campsite sewer inlet, **DO NOT** open the termination valves until the tanks are $\frac{3}{4}$ full. **DO NOT** leave the black water valve open while parked. With the valve open, only liquid drains away and solids stay behind in the tank. The tank needs standing water, and the chemicals need time to break down solids before they can be released.

You may drain the gray water tank directly into a sewer inlet while parked. If you do, close the termination valve for a while before you leave. This lets water accumulate in the tank so you can use it to flush the drain line and flexible hose.

NOTICE

When dumping gray water tank, the backflow preventer must be opened to prevent the gray water tank from air locking. Ensure the backflow preventer is closed before traveling.

WASTE HANDLING

The following guidelines will help to ensure trouble-free operation:

- ▶ Never put anything in the black water tank except toilet paper. Use toilet paper made for RV systems.
- ▶ Always use cleaners made for the RV industry in the black water system.
- ▶ Do not put automotive antifreeze, household toilet cleaners, drain cleaners, or any solid material into the wastewater system.
- ▶ Always keep the drain cap in place and the termination valves closed when you are not dumping your tanks.
- ▶ After every third time you empty the holding tanks, fill and flush both tanks with clean, fresh water. Do this a couple of times to keep them clean and clear.

BLACK TANK FLUSH PORT

Your Oliver comes standard with a black tank flush port on the street side, near the bottom of the trailer. Use it to connect an outside water supply and rinse out your black tank.

1. Hook up the appropriate hose to the black tank flush inlet. The plumbing is designed so waste cannot feed back from the black tank to the inlet. Your hose will not be contaminated.
2. Watch the tank gauge on the tank monitor. Turn the water off before the tank is full.
3. Drain the tank into an approved dumping location.



WARNING

- ▶ **DO NOT overfill the black tank (approx. 15 gallons).**
- ▶ **DO NOT open the black tank dump valve until you are ready to empty the tank in an appropriate sewage location.**



CAUTION

DO NOT use the tank flush valve unless the tank termination valve is in the open position. This can result in an unsanitary condition leading to illness or personal injury.

WATER SYSTEM TROUBLESHOOTING

Your plumbing system may develop problems over time. Planned inspections and regular maintenance prevent most of them. Road vibrations and excessive pressure from some city water sources are common causes of water system damage. Freezing is another. Inspect all plumbing joints, fittings, and connections often. Look for cracks, leaks, and loose fittings. Water leaking from a plumbing joint can cause considerable damage if left unchecked.

If the pump runs while all faucets and valves are closed, the system is losing pressure. Check the pressure side of the plumbing for leaks, including the toilet and valves. Trapped air, a pressure switch out of adjustment, or debris in the check valve can also keep the pump running. See the pump manufacturer's manual for troubleshooting. Turn off any external water source and the water pump before you tighten a leaking fitting.



CAUTION

DO NOT over-tighten. Plastic fittings rarely need to be tightened with a wrench. If these fittings leak after tightening, disconnect the fitting and check for dirt, scale, or other foreign substances that may be causing the leak. Clean the fitting thoroughly and reinstall. If leaking persists, shut off the water supply until the fitting can be properly replaced.

TERMINATION VALVE MAINTENANCE

Use a slide valve lubricant during the camping season. Pour two to four ounces of this water-soluble additive down the drain into the gray tank. Flush the same amount down the toilet into the black tank. The lubricant coats the dump valve blades and the inside of the drains and tanks. This aids complete draining and trouble-free valve operation.

WINTERIZATION

Proper winterization normally prevents freezing damage. Freezing can harm any component of the system, including the water tanks, toilet, pump, and all piping. Follow the winterization process outlined below.

Local climates vary, so your winter maintenance needs may differ. If the travel trailer is used in cold weather and left unheated for an extended period, the water in a tank or drain line may freeze. Take immediate steps to thaw it before the system is damaged. DO NOT continue to use water system components while they are frozen. If damage has occurred, have the system repaired before you use it again.



WARNING

DO NOT use automotive antifreeze. Automotive antifreeze is poisonous and not for use in potable water systems. Only use antifreeze suitable for drinking water systems. Failure to do so could result in serious injury or death.

Objective Summary: Prepare the travel trailer for winterization when it will not be in use to protect from freezing.

Required Tools/Items:

- 3 gallons of non-toxic, concentrated RV antifreeze
- One 24-inch hose with male threaded end
- Antifreeze Hand Pump Kit

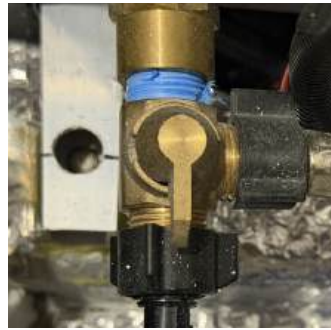
WINTERIZATION PROTOCOL:

Before we begin, please ensure your Black, Gray, and Freshwater tanks are empty.

NOTE: We do not recommend using compressed air to winterize your Oliver. Doing so may damage your plumbing system.

1. Turn off the gas at all propane tanks connected to your travel trailer.
2. Turn off your water heater at the power switch on the unit outside.
3. Run a hot water faucet until the water turns cold. This clears hot water out of the water heater.
4. Turn off the water pump. Then open the hot and cold water at any faucet to depressurize the system. When water stops flowing, close the faucet handles.
5. Close the by-pass valve on the water heater. You will find it near the back of the heater, reachable through the curbside seating access panel. Turn the handle so it points toward the rear of the travel trailer. The photos show the valve in both positions

Rear View of Water Heater



**Valve Open
Normal Operation**

(Allows water into water heater)



**Water Heater Bypassed
Winterization**

(Does not allow water into water heater)



WARNING

The water heater may still hold hot water that can scald. Make sure the heater is switched off and the hot water has run cold. Wait at least 10 minutes before you open the drain valve.

6. Drain the water heater. Open the drain valve on the lower front of the water heater, outside. Residual water drains out through the tube. Close the valve after the water stops draining.
7. Set the water pump valves to the winterization configuration. You will find the pump and valves under the curbside seating access panel. See the valve configuration diagrams on page 24.
8. Attach a 2' hose to the city water inlet on the lower rear curbside of the trailer.



9. Place the end of the hose into a gallon jug of non-toxic RV antifreeze. Do not dilute it. Use only concentrated RV antifreeze. You will need about 3 gallons.
10. Go inside and turn on the water pump.
11. At the kitchen faucet, run the cold water until the flow turns to antifreeze, then turn it off. Repeat with the hot water.

12. At the bathroom vanity sink, run the cold water until the flow turns to antifreeze, then turn it off. Repeat with the hot water.
13. Open the toilet lid and press the flush pedal until the flow turns to antifreeze. Leave some antifreeze in the bowl to keep the seal lubricated.
14. Go to the outside wash station on the rear street side. Run the cold water until the flow turns to antifreeze. Turn it off and repeat with the hot water.
15. Go inside and turn off the water pump.
16. Connect the antifreeze hand pump to the fresh tank fill inlet on the street side, rear of the trailer. Insert the other end into a gallon of RV antifreeze.
17. Prime the hand pump and pump 4 times to fill the line running to the freshwater tank. Disconnect the hose.
18. Connect the hand pump hose to the black tank flush inlet on the street side.
19. Prime the hand pump and pump 5 times to fill the line running to the black tank. Remove the hose.
20. Pour about two cups of antifreeze into the kitchen sink drain. Do the same at the bathroom vanity sink drain and the shower pan. This keeps the P-traps from freezing.
12. Connect a pressurized potable water source to the fresh tank fill inlet and turn on the water.
13. Let the water flow for a few minutes, then turn it off.
14. When all water has drained from the fresh tank, close the fresh tank drain valve.
15. Open the water heater by-pass valve so water can flow into the heater again. Turn the handle to the valve open position shown in the photos in the Winterization section.
16. Reset the water pump valves to the normal valve configuration shown on page 24.
17. Test the smoke/CO alarm and the LP/CO alarm. Press the test button on each. Replace any alarm that fails or has reached its replacement date.
18. Sanitize the plumbing system before you use the camper.

DE-WINTERIZATION

1. Attach a 2' hose to the city water inlet on the lower rear curbside of the trailer.
2. Place the end of the hose into a 5-gallon container of fresh water.
3. Make sure the water heater is still bypassed. The handle should point toward the rear of the travel trailer. You can reach the valve through the curbside seating access panel.
4. Set the water pump valves to the winterization configuration. See the valve configuration diagrams on page 24.
5. Turn on the water pump.
6. At the kitchen faucet, run the cold water until the flow turns from antifreeze to water. Turn it off, then repeat with the hot water.
7. At the bathroom vanity sink, run the cold water until the flow turns from antifreeze to water. Turn it off, then repeat with the hot water.
8. Open the toilet lid and press the flush pedal until the flow turns from antifreeze to water.
9. Go to the outside wash station on the rear street side. Run the cold water until the flow turns from antifreeze to water. Turn it off and repeat with the hot water.
10. Turn off your water pump.
11. Make sure the fresh tank drain valve is open.

SANITIZATION



WARNING

DO NOT mix bleach with vinegar or other acids. Doing so will result in the creation of chlorine gas. Chlorine gas exposure may result in serious injury or death.

Sanitize the plumbing system at least once a year. Also sanitize it in these situations:

- Before initial use
- After de-winterization
- After extended periods of non-use
- Whenever there is suspicion of contamination

NOTE: Do not sanitize the trailer while it is winterized. De-winterize the system first.

1. Make sure the freshwater tank is empty and the fresh tank drain valve is closed.
2. Attach a 2' hose to the city water inlet on the lower rear curbside of the trailer.
3. Place the end of the hose into a solution of 1 gallon of water mixed with 1/2 cup of bleach.



WARNING

DO NOT run bleach solution through the water heater. You must bypass the water heater using the bypass valve.



4. Make sure the water heater is bypassed. Turn the handle so it points toward the rear of the travel trailer. You can reach the valve through the curbside seating access panel. See the images from the Winterization section for proper valve handle orientation.
5. Set the valve configuration to "Fresh Tank Fill."
6. Turn the water pump on and let it pull the bleach solution into the fresh tank.
7. When all the solution has been pumped into the freshwater tank, turn the water pump off.
8. Connect your freshwater hose to the fresh tank fill inlet. Turn the water on and fill the freshwater tank to 100%.
9. Let the solution sit in the full tank for at least 10 to 15 minutes.
10. Change the water pump valves to the "Normal Valve" configuration.
11. Turn the water pump on and let it pressurize the system.
12. Turn on the cold water at the kitchen, bath, and exterior faucets. This pulls bleach solution through the freshwater lines. Repeat with the hot water. About 30 seconds at each faucet is enough.
13. Open the fresh tank drain valve and let the bleach water drain from the tank.
14. Close the valve after the tank is empty.
15. Fill the tank to 100% again.
16. Turn on the cold water at the kitchen, bath, and exterior faucets to pull fresh water through the lines. Repeat with the hot water. About 30 seconds at each faucet is enough.
17. Open the fresh tank drain valve and let the fresh water drain from the tank.
18. Close the fresh tank drain valve.
19. Open the water heater by-pass valve so water can flow into the heater again. Your camper is now ready for use.

DECALCIFICATION OF PLUMBING SYSTEM



WARNING

DO NOT mix bleach with vinegar or other acids. Doing so will result in the creation of chlorine gas. Chlorine gas exposure may result in serious injury or death.

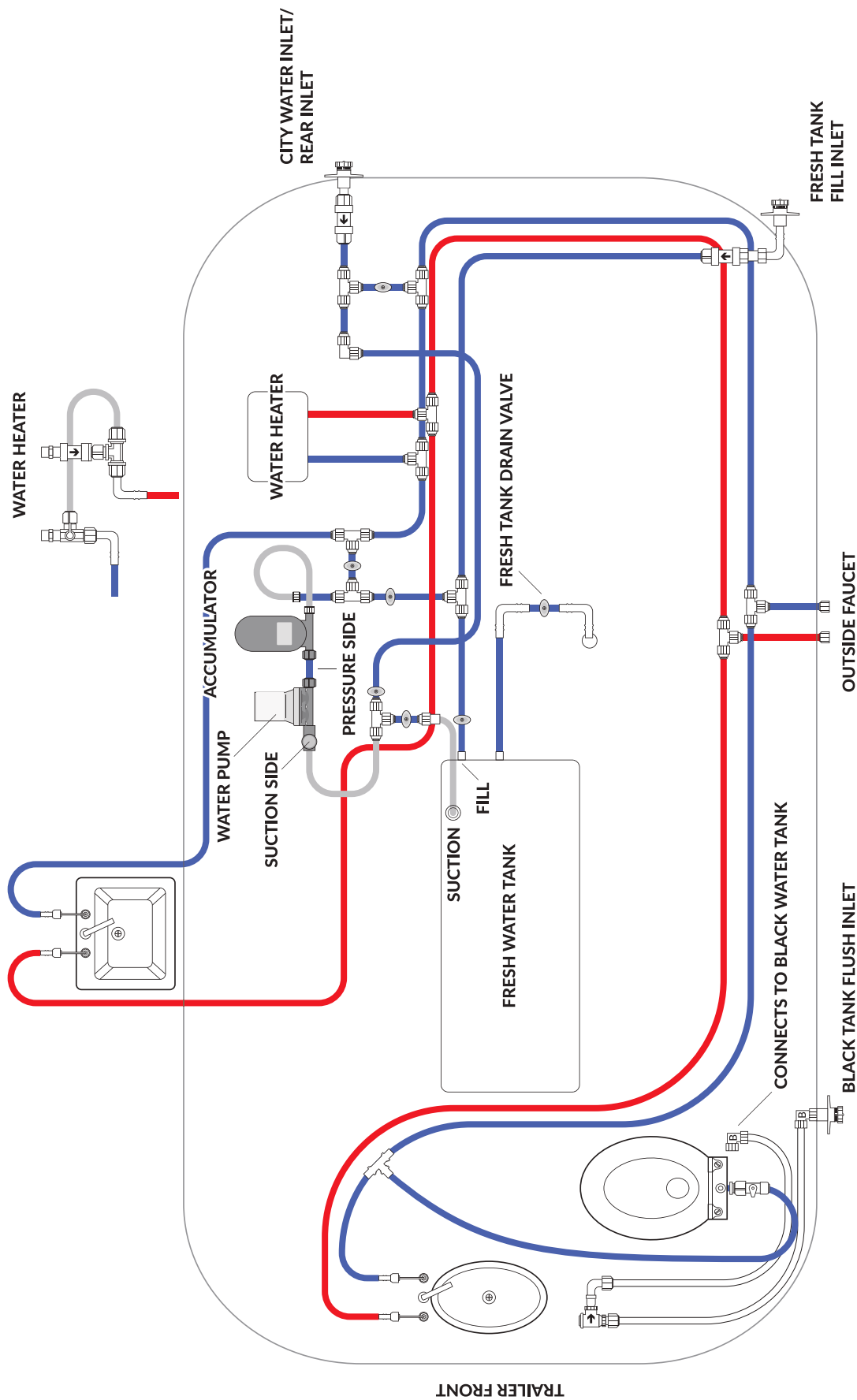
NOTICE

- › **De-calcify the water heater separately from the fresh water fixtures such as the faucets and toilet. Vinegar is used in the main fresh water system lines but should not be used in the water heater.**
- › **You can decalcify the water heater before the vinegar flush or at a completely different time. See the water heater manufacturer's manual.**
- › **The use of a water filter does not protect the plumbing from calcification.**

1. Place 3 gallons of vinegar at the rear water inlet.
2. Attach a 2' hose to the city water inlet on the lower rear curbside of the trailer.
3. Make sure the water heater is bypassed. Turn the handle so it points toward the rear of the travel trailer. You can reach the valve through the curbside seating access panel. See the images from the Winterization section for proper valve handle orientation.
4. Set the valve configuration to "Winterization."
5. Turn the water pump on and let it pressurize the system.
6. Turn on the cold water at the kitchen and bath faucets to pull vinegar through the freshwater lines. Repeat with the hot water. About 15 to 20 seconds at each faucet is enough.
7. Flush the toilet twice.
8. Turn off the water pump and reset the valves to the "Normal Valve" configuration.
9. Connect a pressurized potable water source to the city water inlet and turn it on.
10. Turn on the cold water at the kitchen and bath faucets to pull fresh water through the lines. Repeat with the hot water. About 15 to 20 seconds at each faucet is enough.
11. Open the water heater by-pass valve so water can flow into the heater again. Your camper is now decalcified.

NOTE: You may need more than 3 gallons of vinegar. Calcium can build up in the lines and at the fixtures. If more is needed, start over at step 1. with a new gallon of vinegar. Continue until the system is completely decalcified.

LEGACY ELITE II PLUMBING SYSTEM





PROPANE

OVERVIEW

The propane tanks are housed in the fiberglass tank enclosure at the front of your travel trailer. Your Oliver comes standard with two 20-pound propane tanks.

Propane fuels your water heater and furnace. You can also operate a grill or other propane equipment from the exterior quick connects. Read all manufacturer literature for these appliances. This includes the information on the LP bottles and regulator in your unit packet. Follow the instructions in those manuals.



WARNING

Always turn off your propane tanks while traveling. In a collision, an open tank feeds a broken line. Many tunnels and bridges ban propane. Others require closed valves. Check your route. Fire codes require propane off while refueling.

PROPANE TANK HOUSING

The propane tank housing has a removable lid providing full access to the tanks.

1. Two latches secure the housing lid. To release a latch, pull it back from the top.
2. Once both latches are released, carefully lift the fiberglass lid up and over the propane tanks.
3. Each propane tank is secured in the propane tray mounted to the frame.
4. The same mechanism retains the propane regulator. You can open or close a tank valve without removing the lid. The regulator controls are also accessible this way. Open the round deck port on the front of the lid instead.

USING THE REGULATOR

To supply gas to the propane components, open the valves on the propane tanks. The two-stage automatic changeover regulator controls propane flow through the LP lines.

1. Point the changeover lever left or right to select your primary propane tank. The indicator on the front of the regulator displays green while gas remains in that tank.
2. When the primary tank is depleted, the regulator switches to the reserve tank automatically. The indicator turns red to signal that the primary tank is empty.
3. To check the reserve tank, point the changeover lever toward it and read the indicator.

USING THE QUICK CONNECTS OPTION

Most propane grills and fire pits include a hose that connects directly to a propane bottle. To use the quick connects on your trailer, you need a hose with a 1/4-inch male NPT quick connect fitting. A propane hose is not supplied with your travel trailer.

1. Turn the lever on the quick connect to the OFF position.
2. Remove the dust cap from the quick connect. Push the sleeve back on the connection and insert the male fitting into the female socket.
3. Push the fitting in until it locks.
4. Turn the lever back to the ON position. Propane now flows to your grill or other propane equipment.

REPLACING OR REMOVING THE TANKS

1. Confirm the tank is turned off. Unscrew the hose connection by turning the connector counter-clockwise.
2. Remove the large wing nut between the tanks by turning it counter-clockwise until it clears the threaded rod. Lift the regulator and set it aside.
3. Lift the bar securing the two tanks. Remove it, or allow it to drop between the tanks.
4. Carefully lift the tank out of the propane housing.
5. After the tank is refilled, reverse these steps to secure it inside the propane housing.



EXTERIOR

ENTRY STEPS

Every Oliver Travel Trailer includes a two-step entry system. A detent on each side secures the steps in position.

- › **To extend the steps:** lift up on them and pull forward. Then fold out the bottom step.
- › **To retract the steps:** fold the bottom step up. Lift the steps out of the detent and push them back to the stored position.

Keep your fingers clear of the sliding mechanism while extending or retracting the steps. Confirm the steps are secure in the retracted position before moving the trailer.

ENTRY DOOR

Your trailer has an exterior door and a screen door. Use the screen door for ventilation while the Oliver is parked. Always engage the door retainer latch when leaving the door open. Leaving the door unlatched may damage it.



WARNING

DO NOT attempt to drive or pull your trailer with the doors open.



CAUTION

DO NOT use exterior door retainer during windy conditions.

EXTERIOR STORAGE

The Legacy Elite II includes a basement storage compartment accessible from inside or outside the trailer. From outside, you will find it on the rear street side. A marine-style latch secures the compartment, and you can lock it with the small key on your key ring. An LED light illuminates the entire storage area. Reach inside and toggle the switch built into the light to turn it on or off.

AWNING

Every Oliver Travel Trailer comes standard with a powered curbside awning. On Legacy Elite II models, you can also add an optional awning on the street side. If you ordered the solar awning, it takes the place of the standard curbside awning. Before opening an awning, confirm you have sufficient clearance alongside the trailer to extend it fully.

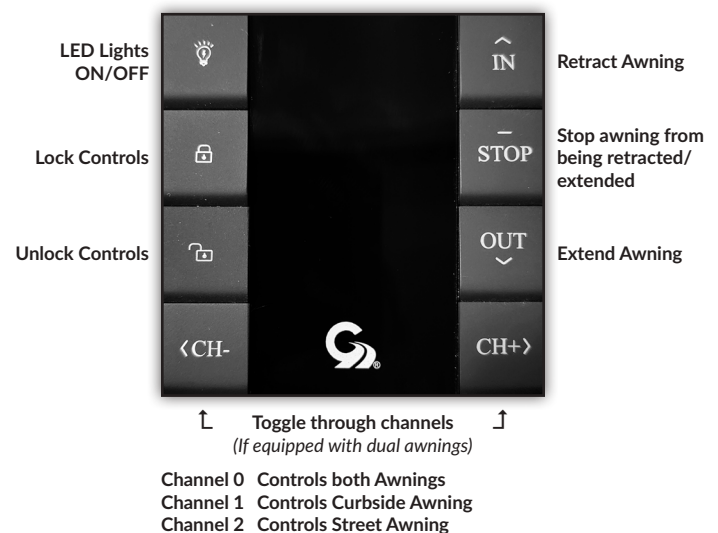


WARNING

- › When periods of rain and/or high wind are expected, the awning must be closed. Never leave the awning open and unattended.
- › All awnings must be closed prior to moving the vehicle for any reason. As an extra safety precaution, a visual check that every awning is fully closed is required.
- › Before using your awning, ensure that the area into which the awning will be deployed is free of obstructions (trees, walls, pillars, posts, other vehicles etc.).
- › Damage caused by failure to comply with these instructions is not covered by warranty.

AWNING REMOTE CONTROL

You will find the remote in one of your galley drawers.



NOTICE

Before using the remote, ensure the awning power switch(es) on the main switch panel are in the ON position. Always close the awning and turn off the power switch before traveling. Be sure to check for debris on the awning before retracting.



On your remote, you will find controls for opening and closing the awning. The remote also includes buttons for the integrated LED lights. The powered awning features a motion sensor. If the sensor detects strong winds, the awning closes automatically. You can adjust the sensor's sensitivity if necessary.

For operating instructions, adjustments, and troubleshooting, view the manufacturer's manual.

STORAGE BASKET

(Optional Equipment)

The optional storage basket mounts on the front of your travel trailer. Use it to transport a generator or other camping equipment.



WARNING

- › Ensure that the contents of the storage basket are properly secured.
- › **DO NOT** exceed the storage basket's **MAXIMUM WEIGHT CAPACITY** of 150 LBS.
- › **NEVER** operate a portable generator in this basket.
- › **CHECK** with your generator's manufacturer to determine a safe operating distance.
- › **ALWAYS CHECK** whether your trailer's weight is properly distributed.

REAR BUMPER ACCESSORY RECEIVER

(Optional Equipment)

This accessory receiver accepts an RV-approved bike rack or other accessories that fit a 2" receiver.



WARNING

- › **DO NOT** exceed this receiver's **MAXIMUM WEIGHT CAPACITY** of 150 LBS. (This includes both racks and baskets, as well as their contents).
- › **ALWAYS CHECK** whether your trailer's weight is properly distributed.
- › **DO NOT** modify this receiver.
- › **DO NOT** exceed a total length of 31" from the end of the receiver to the outside of the attached accessory.

EXTERIOR FOLDING TABLE



WARNING

NEVER exceed the weight limit of 20 lbs on the table.

Your travel trailer includes an exterior folding table, providing a work surface for outdoor cooking.

To raise the table, pull the latch and lift it up. Built-in hardware locks the table in the upright position.

To lower the table, press the clips on the bottom of both arms and push the table down. It locks in the stowed position when pushed fully down.



Exterior table in stowed position



Exterior table in up position

INTERIOR

CABIN FAN

The cabin fan is your primary exhaust while cooking. It clears steam, smoke, and odors, and can also draw fresh air in when set to intake. The 12-volt fan runs from a remote or from the built-in switch panel. You will find the remote in one of the galley drawers. Its curved vent cover lets you keep the fan open in the rain.

For operating instructions and troubleshooting, view the manufacturer's manual.

BATH FAN

The bathroom exhaust fan is in the ceiling and is easy to operate.

For operating instructions and troubleshooting, view the manufacturer's manual.

HEATING & COOLING

Your Oliver comes standard with an air conditioner and a propane furnace. Together they heat and cool your trailer.

AIR CONDITIONER

A built-in heat pump lets your air conditioner heat the trailer as well as cool it, without consuming propane. You can operate it two ways: with the remote control, or with the controls built into the plenum. You will find the remote in one of the galley drawers. While cooling, the air conditioner produces condensate water that drains onto the roof. This is normal.

For operating instructions and troubleshooting, view the manufacturer's manual.

FURNACE

The propane furnace operates from its own thermostat, mounted on the right side of the pantry.

For operating instructions and troubleshooting, view the manufacturer's manual.

GALLEY

The kitchen galley drawers have soft-close slides and a snap-close feature. The snap-close clips add 10 pounds of holding capacity to keep drawers from opening in transit. Always push the drawers fully in before you travel to engage the snap-close clips.



WARNING

Solid surface counter tops are not intended for direct contact with hot pots, pans, etc. Always use a suitable trivet mat.

COOKTOP

For operating instructions and troubleshooting, view the manufacturer's manual.

REFRIGERATOR

Your Oliver is equipped with a 12-volt refrigerator and freezer. It delivers optimum cooling at ambient temperatures between 61°F and 109°F. Cooling performance depends on conditions inside your trailer. Three factors affect how cold the refrigerator can hold.

- Ambient temperature, particularly when the trailer sits in direct sunlight
- The amount of food loaded at one time
- How often the door is opened



WARNING

Before switching on the unit, always make sure that the batteries are in optimal condition.

For operating instructions and troubleshooting, view the manufacturer's manual.

FOOD STORAGE

Before you leave the trailer unused for a while, remove all food from the storage areas and refrigerator. Turn the refrigerator off and prop the door open for ventilation.

MICROWAVE

The microwave is located above the refrigerator.

NOTICE

Stow the microwave plate to prevent it from breaking during transit.

For operating instructions and troubleshooting of the microwave or optional convection microwave, view the manufacturer's manual.

SHOWER CURTAIN PACKAGE

(Optional Equipment)

The optional shower curtain package turns your wet bath into a hybrid dry/wet bath. The curtain covers your shower door and separates the toilet from the shower.



BATH VANITY

The vanity has a waterproof toilet paper dispenser on the side. Below the sink is a shower caddy with a hand towel bar built into it. A second water pump switch is mounted in the ceiling of the caddy, above the towel bar. Turn this switch on when you use bathroom water from your freshwater tank.

BATH LIGHT

The bath light switch is on the bottom of the bathroom cabinet above the toilet.

ENTERTAINMENT SYSTEM

Your Oliver has an entertainment system with an onboard Bluetooth speaker and a smart TV.

TELEVISION

You will find the remote in one of your galley drawers. The TV runs on 120-volt power. If your trailer has an inverter, turn it on to operate the TV while camping off-grid.

- › **To lower the TV:** push up on the bottom of the TV face. This disengages the latch. Then pull the TV down.
- › **To stow the TV:** push it back up into the latching mechanism. The latch re-engages and holds the TV in place.

For operating instructions and troubleshooting, view the manufacturer's manual.

BLUETOOTH SPEAKER

You can hear TV sound through the onboard Bluetooth speaker. To pair the speaker with your TV:

1. Turn the Bluetooth speaker and the TV on.
2. On your TV remote, press the settings button.
3. In the drop-down menu, select Bluetooth devices.
4. Select the Bluetooth speaker from the list.
5. The speaker is now connected and ready to use.

SEATING & SLEEPING**STANDARD FLOOR PLAN**

The standard floor plan has a rear dining table with seating that converts to a bed.

To convert the rear seating into a bed:

1. Retrieve the filler panel from the closet. You will find it secured to the left wall.
2. Lift the tabletop off the legs and set it aside.
3. Turn the collar on each table leg clockwise to loosen it.
4. Turn the leg a quarter turn counterclockwise and remove it.
5. Place the table in the molded ledges on the foam stripping.
6. Use the filler panel to fill the extra space at the front.
7. Move the back cushions to fill in the remaining space.

Reverse these steps when you want to use the rear dining table again.

TWIN BED FLOOR PLAN

The twin bed floor plan has a rear nightstand where you can store personal items. Each twin bed is 75" long and 30" wide.

DINETTE

The dinette has a table and two seats that convert into a sleeping area.

To convert the dinette into a bed:

1. Loosen the two threaded fasteners on the bottom of the table where it connects to the wall.
2. Lift the table out of the brackets and off the table leg. Set it aside.
3. Turn the collar on the table leg clockwise to loosen it.
4. Turn the leg a quarter turn counterclockwise and remove it.
5. Place the table between the bases of the two dinette seats.
6. Use your back cushions to fill in the space.

Reverse these steps when you want to use the dinette as a table with seating for two.

For more information about converting the seating areas to sleeping, see our videos on Oliver University: olivertraveltrailers.com/oliver-university

TWIN BED SEATING DIAGRAM**STANDARD SEATING DIAGRAM****TWIN BED SLEEPING DIAGRAM****STANDARD SLEEPING DIAGRAM**



MAINTENANCE

OVERVIEW

Oliver's limited warranty and the limited warranties issued by component manufacturers require periodic service and maintenance. Failure to perform this maintenance may void warranty coverage for the affected item. Review the Oliver Travel Trailers limited warranty along with the warranties issued by the manufacturers of your component parts. Care and maintenance are important to the safety, dependability, and appearance of your travel trailer. Keep thorough records of all maintenance performed. These records may be required for a warranty claim and can assist with future repairs.

Maintenance frequency depends on how you use the trailer and the climate in which you operate it. Preventive maintenance protects the service life and enjoyment of any recreational vehicle. Regular inspection identifies many problems before they become serious. Contact Oliver Travel Trailers with any question regarding maintenance or care. Always follow the recommendations in each manufacturer's operating manual.

FIBERGLASS

Your Oliver is constructed with finished fiberglass inner and outer shells, which require the same care as an automotive finish. Wash your Oliver at least monthly with warm water and a mild detergent. Avoid spraying water directly into the water heater and furnace vents. Remove tree sap, droppings, insects, and tar promptly to prevent staining. Any finish deteriorates over time. Extreme sunlight, air pollutants, and excessive moisture accelerate dulling and fading. Surface weathering does not diminish the structural strength of the fiberglass.

Regular washing and waxing provide the best protection against fading, yellowing, and chalking. Wax the fiberglass at least annually with standard liquid or paste wax, following the directions from the wax manufacturer. Wash and wax out of direct sun, when exterior surfaces are cool. Storing your Oliver out of direct sun further preserves the finish.

Repair physical damage to the fiberglass promptly. Moisture entering through a break reduces insulation value and can damage interior walls and components. Cover the damage with plastic and seal the edges with tape until proper repairs can be made.

NOTE: Do not use a rubbing compound or any abrasive cleaner or abrasive cloth on the Oliver. If using a tar and insect remover, make sure it is safe for use on fiberglass and gelcoat surfaces.

FRAMES

Sacrificial zinc anodes are installed at several locations along the bottom of the frame to reduce corrosion. Inspect these every few years and replace them as needed. Wash the frame regularly, particularly after towing in winter conditions where road salts are used.

AXLES & SUSPENSION

Your axles use sealed bearing cartridges that never require repacking. Have the bearing units inspected annually or every 12,000 miles, whichever comes first. Grease the wet bolts every 3,000 miles. This lubricates the bronze bushings in the suspension.

See the manufacturer's manual for additional detail.

SEALS & ADHESIVES

Maintain the seals and adhesives on your Oliver to prevent moisture from entering and damaging the camper. Inspect the exterior caulk and reseal as needed. Weather, sun, and road vibration cause seals and caulk to dry, crack, or separate. Oliver recommends resealing the exterior shell at least annually. Refer to the maintenance schedule.

WINDOWS & DOORS

Inspect the seals around the windows and doors at regular intervals. In addition:

- ▶ Adjust and lubricate window latches and moving parts annually.
- ▶ Inspect the condition and operation of the door locks, lubricating as needed.
- ▶ Apply powdered graphite or light oil to moving parts on doors and windows.
- ▶ Keep screens and windows clean and free of debris.
- ▶ Test all windows periodically to confirm proper operation.

DRAINAGE SYSTEM

Inspect the drainage system periodically for damage, including the holding tanks and drain piping. Use a valve lubricant periodically to keep the seals in the blade valves operating smoothly.

UPHOLSTERY

Cushion seats deteriorate with normal use and exposure. Basic protective measures extend fabric life. Vacuum regularly to preserve color and reduce wear.

ELECTRICAL

The electrical system requires minimal maintenance under normal conditions. Most electrical maintenance involves the battery. A properly maintained battery prevents many electrical problems. If you experience electrical problems with your trailer, have a qualified technician inspect it. See the battery manufacturer's manual for further maintenance detail.



PROPANE

The hoses, pipes, tubes, and fittings in your LP system withstand pressures far exceeding those the system produces. Environment and time nonetheless cause these components to deteriorate, so inspect them for wear at regular intervals. Look for cracks or loss of flexibility. Refer to the maintenance schedule.



WARNING

Replace LP components only with components of the same type and rating. Using the wrong component could result in serious injury or death. Have a qualified LP gas service technician do this work.



WARNING

Road vibration can loosen LP gas fittings. A gas leak can cause a fire or explosion resulting in serious injury or death. Check your LP system for leaks every 30 days of use or 5,000 miles, whichever comes first. Also check whenever you fill a tank. Have a qualified LP gas service technician inspect the entire system once a year.

INTERIOR COMPONENTS & SURFACES

- › Clean interior surfaces with warm soapy water and a damp cloth. Avoid abrasive cleaners and ammonia-based cleaners.
- › Keep stainless steel surfaces clean and dry to preserve the finish.
- › Do not place hot pans directly on the countertops, as they can scorch or damage the surface.
- › Refer to the literature provided with each appliance and follow its maintenance instructions.

ROOF TOP COMPONENTS

Inspect rooftop components for debris and damage, including vents, the air conditioner, and solar panels. Observe height restrictions while traveling.

LIGHTING

Check the operation of all exterior lights according to the maintenance schedule. Replace nonfunctioning lights and damaged reflectors immediately.

CONDENSATION

If condensation becomes a concern, consider the following:

- › Use a humidity monitor to measure humidity levels.
- › Use a dehumidifier to maintain humidity at 50% or less.
- › Use your exhaust fans when cooking and showering.
- › Use an anti-moisture mattress underlay.

STORING YOUR OLIVER

Observe these precautions when storing your travel trailer.

1. Park the trailer on a level surface.
2. Winterize the Oliver as outlined in the winterization section.
3. Clean the trailer thoroughly, inside and out. Empty and clean the refrigerator, then prop its door open for airflow.
4. Turn off all electrical switches and appliances.
5. Close all window shades to protect the interior from sunlight.
6. Close all windows, doors, and vents. Cover exterior appliance vents to prevent moisture and insects from entering.
7. Inspect the interior periodically while the trailer is in storage. Look for leaks and condensation that could damage interior components. Condensation appears first as moisture on windows and mirrors. See the condensation section for methods to reduce it.
8. Remove snow accumulation from the trailer as often as possible.
9. Refer to the battery manufacturer's manual for proper storage and maintenance.

TIRES

Your tires determine how much load your trailer can safely carry. Inspect them regularly for overall condition and proper inflation to maximize their service life. Measure inflation pressure only when the tires are cold. Tires heated by travel register artificially high readings. Each sidewall lists the maximum inflation pressure and the load carrying capacity of that tire. Inflate your tires to the correct pressure. Do not over-inflate or under-inflate them. Under-inflation causes tires to run hot, shortens their service life, and reduces your Oliver's safe load limit. Over-inflation produces a harsh, bouncing ride that can damage components or cargo. If pressure checks indicate a tire is losing air, inspect for valve leakage or punctures. Also check the wheel and rim for damage.

Driving habits significantly affect tire wear and longevity. High speeds, hard braking, aggressive cornering, and rough roads all accelerate tire failure. Reduce speed on surfaces with holes, rocks, or loose debris, which can damage tires and cause misalignment.

Have a reputable repair facility inspect any tire damage, including bulges, uneven wear, or damage from road debris. They will repair or replace the tire as required.

NOTE: Cold tire inflation pressure is measured on a tire that has not been used for three or more hours, or has been driven less than one mile. Tire inflation pressure of a hot tire may show an increase of as much as 6 psi over a cold tire. Measure and adjust tire pressure when the tires are cold.

**WARNING**

- Some maintenance requires special tools and training. Have a qualified technician service, repair, or work on any axle or brake system. Lack of proper training, failure to follow procedures, or failure to use special tools and safety equipment could result in property damage, serious injury, or loss of life.
- When replacing a tire, make sure to replace it with a tire of the same size and specifications. Never use different types of tires together on the RV (i.e. radial and bias-belted). Mixing of tires can cause handling problems, as well as unusual tire wear, both of which can create unsafe or even dangerous driving conditions. If your spare is of a different size, be especially careful and use only to get to the nearest repair facility.

LUG NUT TORQUE SPECS

Have the wheel nuts inspected regularly to confirm they have not loosened during travel. Follow the maintenance schedule for routine torque checks. If you suspect the wheel nuts have loosened, have them checked and torqued immediately.

Torque the wheel nuts to 110 ft-lbs. Tighten them in a star pattern using three stages: 20-25 ft-lbs., then 50-60 ft-lbs., then final torque. After remounting a wheel, re-torque the wheel nuts at 10 miles, 25 miles, and 50 miles.

WHEEL & TIRE INSPECTION

If you find a cracked or broken wheel stud, have it replaced along with the studs adjacent to it. Those studs have likely been weakened by the additional stress. Have a qualified technician perform this work. Avoid abusive driving habits such as striking curbs or potholes at speed, which damage tires and wheel components.

NOTICE

The proper method of tightening wheel nuts is with a torque wrench, not with an impact wrench or by hand. Because proper torque is critical, have a qualified technician mount and torque your wheels.

CHANGING A TIRE

**WARNING**

- **NEVER** change any tire without securely chocking the remaining wheels.
- Never position yourself under a raised trailer that could fall on you and cause serious injury or even death.
- Failure to re-tighten wheel nuts as required could allow wheels to come off while the vehicle is in motion, causing loss of control, possible collision, serious injury or even death.

STEP 1: SECURE THE TRAILER

- Turn on the tow vehicle's hazard flashers.
- Set the emergency brake.
- If you are near moving traffic, set out flares or warning lights.
- Chock the tire opposite the flat. Leave the trailer hitched to the tow vehicle.
- Extend the tongue jack to stabilize the front end.

STEP 2: RETRIEVE THE SPARE

The spare tire is stored behind the custom formed fiberglass spare tire shell.

- Flip down the license plate holder to access the wing nut.
- Remove the wing nut and washer.
- Remove the tire cover.
- Disconnect the wiring for the license plate light.
- Remove the retainer ring securing the spare tire.
- Remove the spare tire. Inspect it for deterioration or damage before installing it.

STEP 3: CHANGE THE TIRE

- Slightly loosen the lug nuts on the wheel you are removing.
- Locate an approved jack point on the steel sub frame. A sticker above each point marks where your jack should contact the frame.
- Using a bottle or scissor jack, raise the trailer until the tire clears the ground.
- Finish loosening the lug nuts and remove them, then pull off the wheel.
- Push the hubcap out of the flat wheel from the inside. Install it on the spare the same way. Pass it through the center hole from the inside toward the front.



- F. Seat the spare evenly on the wheel studs and hand tighten the lug nuts.
- G. Lower the trailer. Retract the tongue jack to its travel position and remove all external jacks.
- H. Torque the lug nuts to 110 ft-lbs, using the star pattern and three stages described earlier.
- I. Store the flat tire in the spare tire location, reversing Step 2.
- J. Have the damaged tire inspected and repaired or replaced.
- K. Re-torque the lug nuts at 10 miles, 25 miles, and 50 miles.

TIRE SAFETY INFORMATION

This portion of the User's Manual contains tire safety information as required by 49 CFR 575.6.

Section 1.1 contains "Steps for Determining Correct Load Limit – Trailer".

Section 1.2 contains "Steps for Determining Correct Load Limit – Tow Vehicle".

Section 1.3 contains a Glossary of Tire Terminology, including "cold inflation pressure", "maximum inflation pressure", "recommended inflation pressure", and other nontechnical terms.

Section 1.4 contains information from the NHTSA brochure entitled "Tire Safety – Everything Rides On It".

This brochure, as well as the preceding subsections, describes the following items:

- Tire labeling, including a description and explanation of each marking on the tires, and information about the DOT Tire Identification Number (TIN)
- Recommended tire inflation pressure, including a description and explanation of
 - A. Cold inflation pressure.
 - B. Vehicle Placard and location on the vehicle.
 - C. Adverse safety consequences of under inflation (including tire failure).
 - D. Measuring and adjusting air pressure for proper inflation.
- Tire Care, including maintenance and safety practices.
- Vehicle load limits, including a description and explanation of the following items:
 - A. Locating and understanding the load limit information, total load capacity, and cargo capacity.
 - B. Calculating total and cargo capacities with varying seating configurations including quantitative examples showing / illustrating how the vehicles cargo and luggage capacity decreases as combined number and size of occupants' increases. This item

is also discussed in Section 3.

- C. Determining compatibility of tire and vehicle load capabilities.
- D. Adverse safety consequences of overloading on handling and stopping on tires.

1.1 STEPS FOR DETERMINING CORRECT LOAD LIMIT – TRAILER

Determining the load limits of a trailer includes more than understanding the load limits of the tires alone. On all trailers there is a Federal certification/VIN label that is located on the forward half of the left (road) side of the unit. This certification/VIN label will indicate the trailer's Gross Vehicle Weight Rating (GVWR). This is the most weight the fully loaded trailer can weigh. It will also provide the Gross Axle Weight Rating (GAWR). This is the most a particular axle can weigh. If there are multiple axles, the GAWR of each axle will be provided.

If your trailer has a GVWR of 10,000 pounds or less, there is a vehicle placard located in the same location as the certification label described above. This placard provides tire and loading information. In addition, this placard will show a statement regarding maximum cargo capacity. Cargo can be added to the trailer, up to the maximum weight specified on the placard. The combined weight of the cargo is provided as a single number. In any case, remember: the total weight of a fully loaded trailer can not exceed the stated GVWR.

For trailers with living quarters installed, the weight of water and propane also need to be considered. The weight of fully filled propane containers is considered part of the weight of the trailer before it is loaded with cargo, and is not considered part of the disposable cargo load. Water however, is a disposable cargo weight and is treated as such. If there is a fresh water storage tank of 100 gallons, this tank when filled would weigh about 800 pounds. If more cargo is being transported, water can be off-loaded to keep the total amount of cargo added to the vehicle within the limits of the GVWR so as not to overload the vehicle. Understanding this flexibility will allow you, the owner, to make choices that fit your travel needs.

When loading your cargo, be sure it is distributed evenly to prevent overloading front to back and side to side. Heavy items should be placed low and as close to the axle positions as reasonable. Too many items on one side may overload a tire. The best way to know the actual weight of the vehicle is to weigh it at a public scale.

Talk to your dealer to discuss the weighing methods needed to capture the various weights related to the trailer. This would include the weight empty or unloaded, weights per axle, wheel, hitch or king-pin, and total weight.

Excessive loads and/or underinflation cause tire overloading and, as a result, abnormal tire flexing occurs. This situation can generate an excessive amount of heat within the tire.

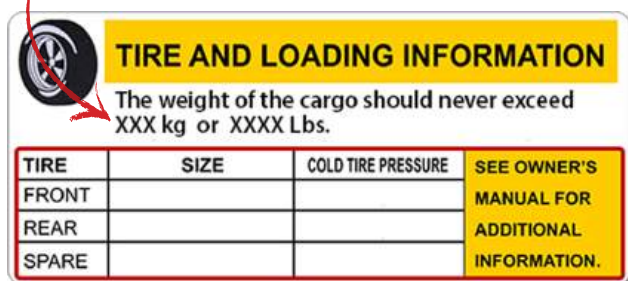


Excessive heat may lead to tire failure. It is the air pressure that enables a tire to support the load, so proper inflation is critical. The proper air pressure may be found on the certification/VIN label and/or on the Tire Placard. This value should never exceed the maximum cold inflation pressure stamped on the tire.

1.1.1. TRAILERS 10,000 LBS. GVWR OR LESS

1. Locate the statement, "The weight of cargo should never exceed XXX kg or XXX lbs.," on your vehicle's placard. See figure 1-1.

CARGO CARRYING CAPACITY



2. This figure equals the available amount of cargo and luggage load capacity.
3. Determine the combined weight of luggage and cargo being loaded on the vehicle. That weight may not safely exceed the available cargo and luggage load capacity

1.1.2. TRAILERS OVER 10,000 LBS. GVWR

(These trailers are not required to have a tire information placard on the vehicle)

The trailer's placard refers to the Tire Information Placard attached adjacent to or near the trailer's VIN (Certification) label at the left front of the trailer.

1. Determine the empty weight of your trailer by weighing the trailer using a public scale or other means. This step does not have to be repeated.
2. Locate the GVWR (Gross Vehicle Weight Rating) of the trailer on your trailer's VIN (Certification) label.
3. Subtract the empty weight of your trailer from the GVWR stated on the VIN label. That weight is the maximum available cargo capacity of the trailer and may not be safely exceeded.

1.2. STEPS FOR DETERMINING CORRECT LOAD LIMIT – TOW VEHICLE

1. Locate the statement, "The combined weight of occupants and cargo should never exceed XXX lbs.," on your vehicle's placard.
2. Determine the combined weight of the driver and passengers who will be riding in your vehicle.

3. Subtract the combined weight of the driver and passengers from XXX kilograms or XXX pounds.
4. The resulting figure equals the available amount of cargo and luggage capacity. For example, if the "XXX" amount equals 1400 lbs. and there will be five 150 lb. passengers in your vehicle, the amount of available cargo and luggage capacity is 650 lbs. (1400- 750 (5 x 150) = 650 lbs.).
5. Determine the combined weight of luggage and cargo being loaded on the vehicle. That weight may not safely exceed the available cargo and luggage capacity calculated in Step # 4.
6. If your vehicle will be towing a trailer, load from your trailer will be transferred to your vehicle. Consult the tow vehicle's manual to determine how this weight transfer reduces the available cargo and luggage capacity of your vehicle.

1.3. GLOSSARY OF TIRE TERMINOLOGY

Accessory Weight: The combined weight (in excess of those standard items which may be replaced) of automatic transmission, power steering, power brakes, power windows, power seats, radio and heater, to the extent that these items are available as factory-installed equipment (whether installed or not).

Bead: The part of the tire that is made of steel wires, wrapped or reinforced by ply cords and that is shaped to fit the rim.

Bead Separation: This is the breakdown of the bond between components in the bead.

Bias Ply Tire: A pneumatic tire in which the ply cords that extend to the beads are laid at alternate angles substantially less than 90° to the centerline of the tread.

Carcass: The tire structure, except tread and sidewall rubber which, when inflated, bears the load.

Chunking: The breaking away of pieces of the tread or sidewall.

Cold Inflation Pressure: The pressure in the tire before you drive.

Cord: The strands forming the plies in the tire.

Cord Separation: The parting of cords from adjacent rubber compounds.

Cracking: Any parting within the tread, sidewall, or inner liner of the tire extending to cord material.

CT: A pneumatic tire with an inverted flange tire and rim system in which the rim is designed with rim flanges pointed radially inward and the tire is designed to fit on the underside of the rim in a manner that encloses the rim flanges inside the air cavity of the tire.

Curb Weight: The weight of a motor vehicle with standard equipment including the maximum capacity of fuel, oil, and coolant, and, if so equipped, air conditioning and additional weight optional engine.

Extra Load Tire: A tire designed to operate at higher loads and at higher inflation pressures than the corresponding standard tire.

Groove: The space between two adjacent tread ribs.

Gross Axle Weight Rating: The maximum weight that any axle can support, as published on the Certification / VIN label on the front left side of the trailer. Actual weight determined by weighing each axle on a public scale, with the trailer attached to the towing vehicle.

Gross Vehicle Weight Rating: The maximum weight of the fully loaded trailer, as published on the Certification / VIN label. Actual weight determined by weighing trailer on a public scale, without being attached to the towing vehicle.

Hitch Weight: The downward force exerted on the hitch ball by the trailer coupler.

Innerliner: The layer(s) forming the inside surface of a tubeless tire that contains the inflating medium within the tire.

Innerliner Separation: The parting of the innerliner from cord material in the carcass.

Intended Outboard Sidewall: The sidewall that contains a white-wall, bears white lettering or bears manufacturer, brand, and/or model name molding that is higher or deeper than the same molding on the other sidewall of the tire or the outward facing sidewall of an asymmetrical tire that has a particular side that must always face outward when mounted on a vehicle.

Light Truck (LT) Tire: A tire designated by its manufacturer as primarily intended for use on lightweight trucks or multipurpose passenger vehicles.

Load Rating: The maximum load that a tire is rated to carry for a given inflation pressure.

Maximum Load Rating: The load rating for a tire at the maximum permissible inflation pressure for that tire.

Maximum Permissible Inflation Pressure: The maximum cold inflation pressure to which a tire may be inflated.

Maximum Loaded Vehicle Weight: The sum of curb weight, accessory weight, vehicle capacity weight, and production options weight.

Measuring Rim: The rim on which a tire is fitted for physical dimension requirements.

Pin Weight: The downward force applied to the 5th wheel or gooseneck ball, by the trailer kingpin or gooseneck coupler.

Non-Pneumatic Rim: A mechanical device which, when a non-pneumatic tire assembly incorporates a wheel, supports the tire, and attaches, either integrally or separably, to the wheel center member and upon which the tire is attached.

Non-Pneumatic Spare Tire Assembly: A non-pneumatic tire assembly intended for temporary use in place of one of the pneumatic tires and rims that are fitted to a passenger car in compliance with the requirements of this standard.

Non-Pneumatic Tire: A mechanical device which transmits, either directly or through a wheel or wheel center member, the vertical load and tractive forces from the roadway to the vehicle, generates the tractive forces that provide the directional control of the vehicle and does not rely on the containment of any gas or fluid for providing those functions.

Non-Pneumatic Tire Assembly: A non-pneumatic tire, alone or in combination with a wheel or wheel center member, which can be mounted on a vehicle.

Normal Occupant Weight: This means 68 kilograms (150 lbs.) times the number of occupants specified in the second column of Table I of 49 CFR 571.110.

Occupant Distribution: The distribution of occupants in a vehicle as specified in the third column of Table I of 49 CFR 571.110.

Open Splice: Any parting at any junction of tread, sidewall, or innerliner that extends to cord material.

Outer Diameter: The overall diameter of an inflated new tire.

Overall Width: The linear distance between the exteriors of the sidewalls of an inflated tire, including elevations due to labeling, decorations, or protective bands or ribs.

Ply: A layer of rubber-coated parallel cords

Ply Separation: A parting of rubber compound between adjacent plies.

Pneumatic Tire: A mechanical device made of rubber, chemicals, fabric and steel or other materials, that, when mounted on an automotive wheel, provides the traction and contains the gas or fluid that sustains the load.

Production Options Weight: The combined weight of those installed regular production options weighing over 2.3 kilograms (5 lbs.) in excess of those standard items which they replace, not previously considered in curb weight or accessory weight, including heavy duty brakes, ride levelers, roof rack, heavy duty battery, and special trim.



Radial Ply Tire: A pneumatic tire in which the ply cords that extend to the beads are laid at substantially 90° to the centerline of the tread.

Recommended Inflation Pressure: This is the inflation pressure provided by the vehicle manufacturer on the Tire Information label and on the Certification / VIN tag.

Reinforced Tire: A tire designed to operate at higher loads and at higher inflation pressures than the corresponding standard tire.

Rim: A metal support for a tire or a tire and tube assembly upon which the tire beads are seated.

Rim Diameter: This means the nominal diameter of the bead seat.

Rim Size Designation: This means the rim diameter and width.

Rim Type Designation: This means the industry of manufacturer's designation for a rim by style or code.

Rim Width: This means the nominal distance between rim flanges.

Section Width: The linear distance between the exteriors of the sidewalls of an inflated tire, excluding elevations due to labeling, decoration, or protective bands.

Sidewall: That portion of a tire between the tread and bead.

Sidewall Separation: The parting of the rubber compound from the cord material in the sidewall.

Special Trailer (ST) Tire: The "ST" is an indication the tire is for trailer use only.

Test Rim: The rim on which a tire is fitted for testing, and may be any rim listed as appropriate for use with that tire.

Tread: That portion of a tire that comes into contact with the road.

Tread Rib: A tread section running circumferentially around a tire.

Tread Separation: Pulling away of the tread from the tire carcass.

Treadwear Indicators (TWI): The projections within the principal grooves designed to give a visual indication of the degrees of wear of the tread.

Vehicle Capacity Weight: The rated cargo and luggage load plus 68 kilograms (150 lbs.) times the vehicle's designated seating capacity.

Vehicle Maximum Load on the Tire: The load on an individual tire that is determined by distributing to each axle its share of the maximum loaded vehicle weight and dividing by two.

Vehicle Normal Load on the Tire: The load on an individual tire that is determined by distributing to each axle its share of the curb weight, accessory weight, and normal occupant weight (distributed in accordance with Table I of CRF 49 571.110) and dividing by 2.

Weather Side: The surface area of the rim not covered by the inflated tire.

Wheel Center Member: In the case of a non-pneumatic tire assembly incorporating a wheel, a mechanical device which attaches, either integrally or separably, to the non-pneumatic rim and provides the connection between the non-pneumatic rim and the vehicle; or, in the case of a non-pneumatic tire assembly not incorporating a wheel, a mechanical device which attaches, either integrally or separably, to the non-pneumatic tire and provides the connection between tire and the vehicle.

Wheel Holding Fixture: The fixture used to hold the wheel and tire assembly securely during testing.

1.4. TIRE SAFETY— EVERYTHING RIDES ON IT

The National Traffic Safety Administration (NHTSA) has published a brochure (DOT HS 809 361) that discusses all aspects of Tire Safety, as required by CFR 575.6. This brochure is reproduced in part below. It can be obtained and downloaded from NHTSA, free of charge, from the following web site: www.nhtsa.dot.gov/cars/rules/TireSafety/ridesonit/tires_index.html

Studies of tire safety show that maintaining proper tire pressure, observing tire and vehicle load limits (not carrying more weight in your vehicle than your tires or vehicle can safely handle), avoiding road hazards, and inspecting tires for cuts, slashes, and other irregularities are the most important things you can do to avoid tire failure, such as tread separation or blowout and flat tires. These actions, along with other care and maintenance activities, can also:

- Improve vehicle handling
- Help protect you and others from avoidable breakdowns and accidents
- Improve fuel economy
- Increase the life of your tires

This booklet presents a comprehensive overview of tire safety, including information on the following topics:

- Basic tire maintenance
- Uniform Tire Quality Grading System
- Fundamental characteristics of tires
- Tire safety tips

Use this information to make tire safety a regular part of your vehicle maintenance routine. Recognize that the time you spend is minimal compared with the inconvenience and safety consequences of a flat tire or other tire failure.

1.5. SAFETY FIRST— BASIC TIRE MAINTENANCE

Properly maintained tires improve the steering, stopping, traction, and load-carrying capability of your vehicle. Underinflated tires and overloaded vehicles are a major cause of tire failure. Therefore, as mentioned above, to avoid flat tires and other types of tire failure, you should maintain proper tire pressure, observe tire and vehicle load limits, avoid road hazards, and regularly inspect your tires.

1.5.1 FINDING YOUR VEHICLES RECOMMENDED TIRE PRESSURE AND LOAD LIMITS

Tire information placards and vehicle certification labels contain information on tires and load limits. These labels indicate the vehicle manufacturer's information including:

- › Recommended tire size
- › Recommended tire inflation pressure
- › Vehicle capacity weight (VCW—the maximum occupant and cargo weight a vehicle is designed to carry)
- › Front and rear gross axle weight ratings (GAWR— the maximum weight the axle systems are designed to carry).

Both placards and certification labels are permanently attached to the trailer near the left front.

1.5.2 UNDERSTANDING TIRE PRESSURE AND LOAD LIMITS

Tire inflation pressure is the level of air in the tire that provides it with load-carrying capacity and affects the overall performance of the vehicle. The tire inflation pressure is a number that indicates the amount of air pressure— measured in pounds per square inch (psi)—a tire requires to be properly inflated. (You will also find this number on the vehicle information placard expressed in kilopascals (kpa), which is the metric measure used internationally.)

Manufacturers of passenger vehicles and light trucks determine this number based on the vehicle's design load limit, that is, the greatest amount of weight a vehicle can safely carry and the vehicle's tire size. The proper tire pressure for your vehicle is referred to as the "recommended cold inflation pressure." (As you will read below, it is difficult to obtain the recommended tire pressure if your tires are not cold.) Because tires are designed to be used on more than one type of vehicle, tire manufacturers list the "maximum permissible inflation pressure" on the tire sidewall. This number is the greatest amount of air pressure that should ever be put in the tire under normal driving conditions.

1.5.3. CHECKING TIRE PRESSURE

It is important to check your vehicle's tire pressure at least once a month for the following reasons:

- › Most tires may naturally lose air over time.
- › Tires can lose air suddenly if you drive over a pothole or other object or if you strike the curb when parking
- › With radial tires, it is usually not possible to determine underinflation by visual inspection

For convenience, purchase a tire pressure gauge to keep in your vehicle. Gauges can be purchased at tire dealerships, auto supply stores, and other retail outlets. The recommended tire inflation pressure that vehicle manufacturers provide reflects the proper psi when a tire is cold. The term cold does not relate to the outside temperature. Rather, a cold tire is one that has not been driven on for at least three hours. When you drive, your tires get warmer, causing the air pressure within them to increase. Therefore, to get an accurate tire pressure reading, you must measure tire pressure when the tires are cold or compensate for the extra pressure in warm tires.

1.5.4. STEPS FOR MAINTAINING PROPER TIRE PRESSURE

1. Locate the recommended tire pressure on the vehicle's tire information placard, certification label, or in the owner's manual.
2. Record the tire pressure of all tires.
3. If the tire pressure is too high in any of the tires, slowly release air by gently pressing on the tire valve stem with the edge of your tire gauge until you get to the correct pressure.
4. If the tire pressure is too low, note the difference between the measured tire pressure and the correct tire pressure. These "missing" pounds of pressure are what you will need to add.
5. At a service station, add the missing pounds of air pressure to each tire that is underinflated.
6. Check all the tires to make sure they have the same air pressure (except in cases in which the front and rear tires are supposed to have different amounts of pressure).

If you have been driving your vehicle and think that a tire is underinflated, fill it to the recommended cold inflation pressure indicated on your vehicle's tire information placard or certification label.

While your tire may still be slightly underinflated due to the extra pounds of pressure in the warm tire, it is safer to drive with air pressure that is slightly lower than the vehicle manufacturer's recommended cold inflation pressure than to drive with a significantly underinflated tire. Since this is a temporary fix, don't forget to recheck and adjust the tire's pressure when you can obtain a cold reading.



1.5.5. TIRE SIZE

To maintain tire safety, purchase new tires that are the same size as the vehicle's original tires or another size recommended by the manufacturer. Look at the tire information placard, the owner's manual, or the sidewall of the tire you are replacing to find this information. If you have any doubt about the correct size to choose, consult with the tire dealer.

1.5.6. TIRE TREAD

The tire tread provides the gripping action and traction that prevent your vehicle from slipping or sliding, especially when the road is wet or icy. In general, tires are not safe and should be replaced when the tread is worn down to 1/16 of an inch. Tires have built in treadwear indicators that let you know when it is time to replace your tires. These indicators are raised sections spaced intermittently in the bottom of the tread grooves. When they appear "even" with the outside of the tread, it is time to replace your tires. Another method for checking tread depth is to place a penny in the tread with Lincoln's head upside down and facing you. If you can see the top of Lincoln's head, you are ready for new tires.

1.5.7. TIRE BALANCE AND WHEEL ALIGNMENT

To avoid vibration or shaking of the vehicle when a tire rotates, the tire must be properly balanced. This balance is achieved by positioning weights on the wheel to counterbalance heavy spots on the wheel-and-tire assembly. A wheel alignment adjusts the angles of the wheels so that they are positioned correctly relative to the vehicle's frame. This adjustment maximizes the life of your tires. These adjustments require special equipment and should be performed by a qualified technician.

1.5.8. TIRE REPAIR

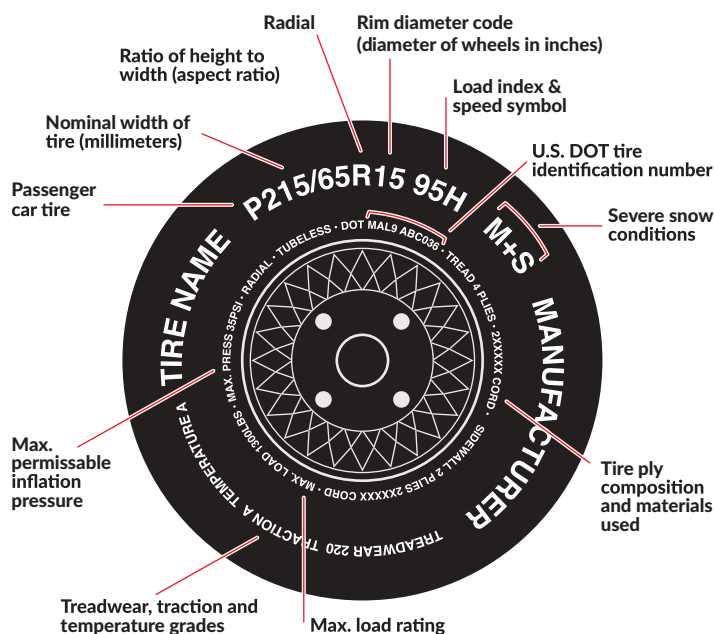
The proper repair of a punctured tire requires a plug for the hole and a patch for the area inside the tire that surrounds the puncture hole. Punctures through the tread can be repaired if they are not too large, but punctures to the sidewall should not be repaired. Tires must be removed from the rim to be properly inspected before being plugged and patched.

1.5.9. TIRE FUNDAMENTALS

Federal law requires tire manufacturers to place standardized information on the sidewall of all tires.

This information identifies and describes the fundamental characteristics of the tire and also provides a tire identification number for safety standard certification and in case of a recall.

1.5.9.1. INFORMATION ON PASSENGER VEHICLE TIRES



P: The "P" indicates the tire is for passenger vehicles

Next Number: This three-digit number gives the width in millimeters of the tire from sidewall edge to sidewall edge. In general, the larger this number is, the wider the tire.

Next Number: This two-digit number, known as the aspect ratio, gives the tire's ratio of height to width. Numbers of 70 or lower indicate a short sidewall for improved steering response and better overall handling on dry pavement.

R: The "R" stands for radial. Radial ply construction of tires has been the industry standard for the past 20 years.

Next Number: This two-digit number is the wheel or rim diameter in inches. If you change your wheel size, you will have to purchase new tires to match the new wheel diameter.

Next Number: This two- or three-digit number is the tire's load index. It is a measurement of how much weight each tire can support. You may find this information in your owner's manual. If not, contact a local tire dealer.

NOTE: You may not find this information on all tires because law does not require it.

M+S: The "M+S" or "M/S" indicates that the tire has some mud and snow capability. Most radial tires have these markings; hence, they have some mud and snow capability.

Speed Rating: The speed rating denotes the intended speed at which a tire is designed for extended periods of driving. The ratings range from 99 miles per hour (mph) to 186 mph.

NOTE: You may not find this information on all tires because law does not require it.



LETTER RATING	SPEED RATING
Q	99 MPH
R	106 MPH
S	112 MPH
T	118 MPH
U	124 MPH
H	130 MPH
V	149 MPH
W	168* MPH
Y	186* MPH

*For tires with a maximum speed capability over 149 mph, tire manufacturers sometimes use the letters ZR.

For those with a maximum speed capability over 186 mph, tire manufacturers always use the letters ZR.

U.S. Dot Tire Identification Number: This begins with the letters "DOT" and indicates that the tire meets all federal standards. The next two numbers or letters are the plant code where it was manufactured, and the last four numbers represent the week and year the tire was built. For example, the numbers 3197 means the 31st week of 1997. The other numbers are marketing codes used at the manufacturer's discretion. This information is used to contact consumers if a tire defect requires a recall.

Tire Ply Composition and Materials Used: The number of plies indicates the number of layers of rubber-coated fabric in the tire. In general, the greater the number of plies, the more weight a tire can support. Tire manufacturers also must indicate the materials in the tire, which include steel, nylon, polyester, and others.

Maximum Load Rating: This number indicates the maximum load in kilograms and pounds that can be carried by the tire.

Maximum Permissible Inflation Pressure: This number is the greatest amount of air pressure that should ever be put in the tire under normal driving conditions.

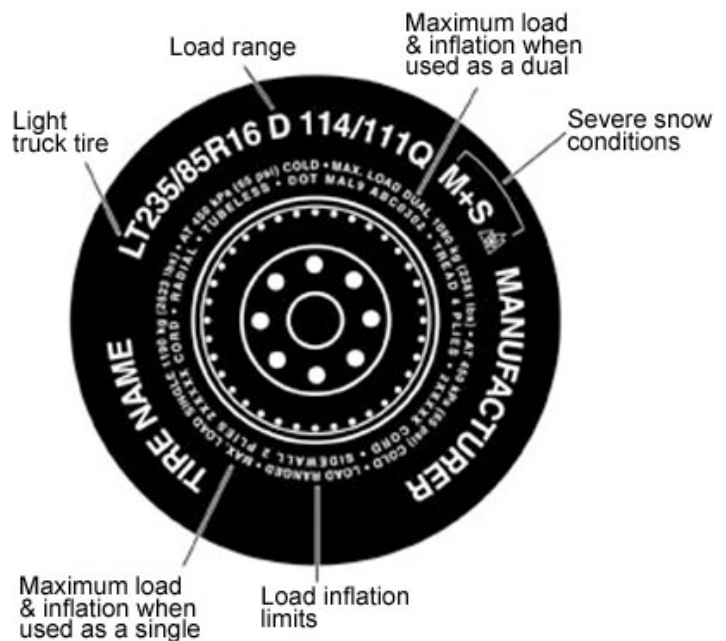
1.5.9.2. UTQGS INFORMATION

Tread Wear Number: This number indicates the tire's wear rate. The higher the tread wear number is, the longer it should take for the tread to wear down. For example, a tire graded 400 should last twice as long as a tire graded 200.

Traction Letter: This letter indicates a tire's ability to stop on wet pavement. A higher graded tire should allow you to stop your car on wet roads in a shorter distance than a tire with a lower grade. Traction is graded from highest to lowest as "AA", "A", "B", and "C".

Temperature Letter: This letter indicates a tire's resistance to heat. The temperature grade is for a tire that is inflated properly and not overloaded. Excessive speed, under inflation or excessive loading, either separately or in combination, can cause heat build-up and possible tire failure. From highest to lowest, a tire's resistance to heat is graded as "A", "B", or "C".

1.5.9.3. ADDITIONAL INFORMATION ON LIGHT TRUCK TIRES



Tires for light trucks have other markings besides those found on the sidewalls of passenger tires.

LT: The "LT" indicates the tire is for light trucks or trailers.

ST: An "ST" is an indication the tire is for trailer use only.

Maximum Load Dual KG (LBS.) at KPA (PSI) Cold: This information indicates the maximum load and tire pressure when the tire is used as a dual, that is, when four tires are put on each rear axle (a total of six or more tires on the vehicle).

Maximum Load Single KG (LBS.) at KPA (PSI) Cold: This information indicates the maximum load and tire pressure when the tire is used as a single.

Load Range: This information identifies the tire's load-carrying capabilities and its inflation limits.

1.6 TIRE SAFETY TIPS

Preventing Tire Damage

- Slow down if you have to go over a pothole or other object in the road.
- Do not run over curbs or other foreign objects in the roadway, and try not to strike the curb when parking.

**Tire Safety Checklist**

- ✓ Check tire pressure regularly (at least once a month), including the spare.
- ✓ Inspect tires for uneven wear patterns on the tread, cracks, foreign objects, or other signs of wear or trauma.
- ✓ Remove foreign objects wedged in the tread.
- ✓ Make sure your tire valves have valve caps.
- ✓ Check tire pressure before going on a long trip.

Do not overload your vehicle. Check the Tire Information and Loading Placard or User's Manual for the maximum recommended load for the vehicle.

MAINTENANCE SCHEDULE

Your trailer came with a flash drive holding the manufacturer's manual for each component. You will find it in one of the galley drawers. This schedule tells you what to maintain and when. Follow the component manual for the steps. When a task calls for a qualified technician, this schedule says so. The following conditions require more frequent maintenance:

- › Heavy usage
- › Dusty environments
- › Coastal or snowy environments
- › Highly mineralized water (hard water)

BEFORE EVERY TRIP:

- ✓ Inspect the tires and tire pressure, including the spare. See the placard.
- ✓ Check that the 7-pin connector is clean and dry. Apply dielectric grease as needed.
- ✓ Inspect the brake, turn signal, reverse, and marker lights.
- ✓ Check that the coupler is locked onto the hitch ball and the hitch pin is in place.
- ✓ Test the breakaway battery charge.
- ✓ Inspect the breakaway battery box.
- ✓ Inspect the breakaway cable for fraying or damage.
- ✓ Test the smoke/CO alarm.
- ✓ Test the LP-CO alarm.

WEEKLY (WHILE IN USE):

- ✓ Test the smoke/CO alarm.
- ✓ Inspect the fire extinguisher. Confirm the safety seal is intact and the bracket holds it firmly. On a gauge model, the pointer should sit in the green range. Recharge or replace it if it has lost pressure.
- ✓ Check and clean the air conditioner filter.

MONTHLY:

- ✓ Inspect the LP system for leaks. Also check at 5,000 miles and whenever you fill a tank.
- ✓ Inspect the furnace exhaust vent, tube, base, and gas piping. If you find soot, shut the furnace off and call a qualified service technician. See manufacture's manual.
- ✓ Inspect the water heater vent for obstructions or soot. If you find soot, shut the water heater down and call a qualified service technician.
- ✓ Check the tire pressure, including the spare.
- ✓ Inspect and clean the water pump filter, under the curbside seating access panel.
- ✓ Lubricate the waste blade valves.
- ✓ Inspect the breakaway switch box and wiring.
- ✓ Pull test the breakaway pin and confirm the brakes engage. Disconnect the trailer electrical plug first. See page 11.
- ✓ Wash the exterior.
- ✓ Inspect the seals and caulk for deterioration.
- ✓ Test the GFCI outlets.
- ✓ Inspect the DC-to-DC charger wiring and ventilation.
- ✓ Inspect the battery compartment. Confirm the straps are tight, the terminals are clean and corrosion free, and the wire connections are tight.

EVERY 3 MONTHS:

- ✓ Inspect the drainage system, holding tanks, and drain piping for damage.
- ✓ Wash the frame. Wash it again after towing on salted roads.
- ✓ Have a qualified technician inspect the suspension.
- ✓ Inverter/charger, if equipped: with all power sources disconnected, wipe the case, check that the DC cables are secure and the fasteners tight, and confirm the vents are clear.

**EVERY 6 MONTHS:**

- ✓ If the trailer sits unused, run the air conditioner 20 to 30 minutes.

EVERY 12 MONTHS:

- ✓ Have a qualified LP gas technician inspect the entire LP system.
- ✓ Have a qualified RV service technician service the furnace.
- ✓ Have a qualified technician inspect the brake linings and magnets.
- ✓ Have a qualified technician clean the water heater burner.
- ✓ Inspect the LP hoses, pipes, tubes, and fittings for cracks or loss of flexibility.
- ✓ Reseal the exterior shell.
- ✓ Wax the exterior.
- ✓ Inspect and grease the jacks.
- ✓ Check the air conditioner roof bolts. Make the first check 3 months after installation.
- ✓ Sanitize the freshwater system.
- ✓ Decalcify the plumbing system.
- ✓ Adjust and lubricate the window latches, door locks, and moving parts.
- ✓ Test all windows for proper operation.
- ✓ Check the replacement dates on the smoke/CO alarm and the LP-CO alarm. Replace either alarm that has reached its date.

EVERY 200 MILES:

- ✓ Check the wheel lug nut torque. The specification is 110 ft-lbs.

EVERY 3,000 MILES:

- ✓ Grease suspension wet bolts

EVERY 12 MONTHS OR 12,000 MILES:

- ✓ Inspect axle bearing units



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