

Owner's Manual

R1713 R1723 F1743 F2114 A2124 F2414



Safari Condo®

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Version: June 1, 2021

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A. INTRODUCTION

Welcome !

To New Owner

Congratulations on your purchase of an ALTO travel trailer. This versatile trailer has been carefully conceived by Safari Condo to provide you with many years of pleasure and dependable use.

The Owner's Manual for your new ALTO trailer is designed to respond to the most frequently asked questions about the operation, function and care of the many systems that make modern trailering a joy.

R SERIES/F SERIES

A series indicator appearing in a paragraph indicates that the information is applicable only to the specified series. This denotes items that may be an option on all or specific models. Additionally, some optional items can only be included during the manufacturing phase and cannot be added later. The inclusion of optional items does not imply or suggest the availability, application suitability, or inclusion for any specific unit. This owner manual is intended to explain safe and secure use and maintenance of all the camping equipment aboard your ALTO travel trailer.

Safari Condo realizes that its customers possess varying degrees of expertise in the area of repairing and maintaining the appliances in their trailer. For this reason, the service and troubleshooting information found in this manual is directed towards those with average mechanical skills.

We also realize you may be more familiar in one area than you are in another. Only you know your capabilities and limitations. We want you to use this manual, and hope you will find the information contained in it useful; however, should you ever feel you may be "getting in over your head" please see your dealer to have the repairs made.

A brief explanation of the operation of the appliances such as refrigerators, furnace, water heaters and others are included in this manual. However, you will also find the manufacturers more detailed information supplied in a packet included with this manual.

NOTE: All information, illustrations, photos and specifications contained in this manual are based on the latest product information available at the time of publication approval. If and when new materials and production techniques are developed which can improve the quality of its product, or material substitutions are necessary due to availability, Safari Condo reserves the right to make such changes.

Safari Condo has provided many important safety messages in this manual. Always read and obey all safety messages.



CAUTION:



WARNING:



DANGER:



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

In this manual, these signs indicate recommended safety precautions. When you see these signs, read everything carefully, as serious injury may result.

 In this manual, these signs indicate that incorrect use or handling may result in damage to the ALTO or its equipment.

In this manual, the right and left sides are determined by looking towards the front of the trailer. Read this manual thoroughly along with all the owner manuals of each component installed in your trailer. Before using the components and equipment inside the ALTO, it is recommended that you get to know all operating procedures and related safety measures. It is also recommended that you convey this information to everyone using the trailer.

Upon transfer or sale of the trailer, please hand over all manuals and documentation to the new owner. To help us maintain our customer database up to date, please inform us of any change of ownership and provide us with the new owners' information.

Safety Instructions

You'll find many safety recommendations on this page and throughout this manual. The following recommendations are the ones we consider to be the most important. Most are covered in depth in later sections of this manual.

The following warnings are intended for the prevention of accidents. Read them carefully before using the ALTO.



WARNING: NEVER DRIVE AWAY WITH THE TRAILER IF THE FOLLOWING HAS NOT BEEN DONE:

- The coupler has been closed and locked with a safety pin or a lock on the 2" ball.
- The safety chains are installed and crossed under the coupler (left to right and right to left).
- The electrical connection with the towing vehicle is complete.
- The front and rear jacks are completely raised.
- The front jack wheel has been removed and the jack raised.
- R Series: the roof has been lowered.
- The working conditions of marker lights and turn signal lights has been checked.
- The brakes of the ALTO have been verified to make sure they are working properly.
- The potable water hose, sewage hose and power cord have been disconnected and stored away.
- The retractable step has been closed.
- The table and other mobile objects are stored and secured.
- The doors of the cabinets and fridges are closed and locked securely.
- The windows are closed and locked.
- The wheel chocks have been removed (and levelling blocks picked up).

While camping, make sure the jacks are lowered and that chocks have been installed in front and behind the wheels. Movement of the trailer could cause damage or serious injuries.

Carry out all maintenance of the trailer and its equipment according to the manufacturer's recommendations and instructions.

Never pierce the aluminum chassis of the ALTO for any reason. This would void the warranty.

Transport of Passengers in Trailer When Travelling

Transportation of people in trailers puts their lives at risk and is illegal. The trailer does not have seat belts; therefore, it is not designed to carry passengers.

Reducing Fishtailing or Sway

Sway or fishtailing is the sideways action of a trailer caused by external forces. Excessive sway of your travel trailer can lead to the rollover of the trailer and tow vehicle resulting in serious injury or death. Be sure to follow the instructions in this manual.

Towing and Weight Distribution

Weight distribution is an important factor when loading your travel trailer. A trailer with the cargo distributed properly will result in efficient, trouble-free towing. Be sure to follow the instructions in this manual.

Mould

There are mould and mould spores all over the indoor and outdoor environment. There is no practical way to eliminate all moulds and mould spores in the indoor environment; the way to control indoor mould growth is to control moisture.

Appliances and Equipment

The appliances (stove, refrigerator, water heater, etc.) typically operate on propane gas. Propane gas is flammable and is contained under high pressure. Improper use may result in a fire and/or explosion. Be sure to follow all instructions and warnings in this manual as well as the specific owners' manuals of the appliances and equipment.

Tire Safety

Properly maintained tires improve the steering, stopping, traction, and load-carrying capability of your trailer. Under-inflated tires and overloaded trailers are major causes of tire failure.

Chemical Sensitivity

After you first purchase your new trailer and sometimes after it has been closed up for an extended period of time, you may notice a strong odour and experience chemical sensitivity. This is not a defect in your trailer. Like your home, there are many different products used in the construction of trailers such as linoleum, plywood, insulation, upholstery, etc. Formaldehyde is also the by-product of combustion and numerous household products, such as some paints,



coatings and cosmetics. However, trailers are much smaller than your home; so, the change of air inside a trailer is significantly less than in a home. These products, when new or when exposed to elevated temperatures and/or humidity, may “off-gas” different chemicals, including formaldehyde. This off-gassing, in combination with minimal air exchange, may cause you to experience irritation of the eyes, nose, and throat and sometimes headache, nausea, and a variety of asthma-like symptoms. Elderly persons and young children, as well as anyone with a history of asthma, allergies, or lung problems, may be more susceptible to the effects of off-gassing.

Formaldehyde

Most of the attention regarding chemical off-gassing surrounds formaldehyde. Formaldehyde is a naturally occurring substance and is an important chemical used widely by industry to manufacture building materials and numerous household products. It is also a by-product of combustion and certain other natural processes. Thus, it may be present inside the trailer with some individuals being sensitive to it. Ventilation of the unit normally reduces the exposure to a comfortable level.

Trace levels of formaldehyde are released from smoking, cooking, use of soaps and detergents, cosmetics, and many other household products. Some people are very sensitive to formaldehyde while others may not have any reaction to the same levels of formaldehyde. Amounts released decrease over time.

Your ALTO trailer was manufactured using low formaldehyde emitting (LFE) wood products, which is the typical usage in the RV industry. Formaldehyde has an important role in the adhesives used to bind wood products used in recreation vehicles. The wood products in your trailer are designed to emit formaldehyde at, or lower than industry guidelines and should not produce symptoms in most individuals.

While LFE wood products typically do not emit formaldehyde at a level that would cause symptoms in most individuals, it is possible, though not likely, for that to occur when the trailer is not properly ventilated. Ventilation is an essential requirement for trailer use, for many reasons. Any effects of formaldehyde can be greatly reduced by actions such as opening windows, opening roof vents, running the air conditioner, or some combination thereof. In addition, the emission of formaldehyde by these products naturally decreases rapidly over time.

Safari Condo strongly suggests that you take measures to properly ventilate your trailer on a regular basis. If you have any questions with respect to proper ventilation of your trailer, please do not hesitate to contact your dealer or Safari Condo.

Ventilation

To reduce or lessen exposure to chemicals from off-gassing it is of utmost importance that you ventilate your trailer. Ventilation should occur frequently after purchase and at times when the temperatures and humidity are high. Remember off-gassing is accelerated by heat and humidity. Open windows, exhaust vents, and doors.

Operate ceiling and/or other fans, air conditioners, and furnaces and use a fan to force stale air out and bring fresh air in. Decreasing the flow of air by sealing the trailer increases the formaldehyde level inside. Please also follow the recommendations and tips to avoid

condensation problems. Many of the recommendations will assist in avoiding exposure to chemicals that off gas.

ALTO trailers have a very high level of airtightness when all openings are closed. It is recommended to facilitate natural venting during night-time/sleep, even when it is cold outside and even if the heating is on, to avoid a depletion in oxygen. For example, you can open the cover of the roof fan without the fan rotating AND open a window about 1 inch to allow a slight natural air exchange. You will avoid intoxicating yourself by oxygen depletion because your breathing consumes oxygen and rejects carbon dioxide. A major under-oxygenation can cause asphyxia, injuries and even death.



DANGER: SEVERE UNDER-OXYGENATION CAN LEAD TO ASPHYXIATION, INJURY AND EVEN DEATH.

Do Not Smoke

Finally, we recommend that you do not smoke inside your trailer. In addition to causing damage to your trailer, tobacco smoke releases formaldehyde and other toxic chemicals.

Medical Advice

If you have any questions regarding the health effects of formaldehyde, please consult your doctor or local health department.

Warranty Exclusion

Chemical gassing is not a “Defect” in your trailer and is not covered by the Limited Warranty. Please follow the recommendations in this manual to address this concern.

Weight Distribution

Front, Rear: The 10% Rule

Make sure that when the ALTO is ready to be towed, the tongue weight is between 10 and 15% of the total weight. There should never be less than 10% of the total weight of the trailer on the coupling.

A tongue weight that represents less than 10% of the total weight of the ALTO will cause it to become unstable.

On the contrary, a tongue weight that is higher than 10% will not cause any instability.

The ALTO is designed to be very close to the 10% rule. The placement of baggage in front or behind the axle, however, can alter its weight distribution. Everything placed behind the axle will lower the tongue weight. Everything placed before the axle will increase the tongue weight. Ideally, there should be a balance between both to retain the 10% tongue weight needed.

Indicative Weight Table

Weight Upon Departure	Minimum Tongue Weight (10%)	Maximum Tongue Weight (15%)
1066 kg (2,350 lb)	106 kg (235 lb)	160 kg (352 lb)



Example: If the total weight of the ALTO upon departure is 1066 kg (2,350 lb), the tongue minimum weight should be between 106 kg (235 lb) and 160 kg (352 lb).

To check the tongue weight, place the front jack on a personal scale. Before reading the weight on the scale, make sure the ALTO is level from front to rear by adjusting the front jack.

Weight of Trailers Loaded and Ready to Go

Model	Weight in kg	Weight in lbs
ALTO R1713, R1723 and F1743	Between 1066 and 1225	Between 2350 and 2700
ALTO F2114 OU A2124	Between 1451 and 1587	Between 3200 and 3500
ALTO F2414	Between 1587 and 2041	Between 3500 and 4500

Minimum/Maximum Target Weight on Tongue.

Model	Weight in kg	Weight in lbs
ALTO R1713, R1723 and F1743	Between 122.4 and 183.7	Between 270 and 405
ALTO F2114	Between 158.7 and 238.1	Between 350 and 525
ALTO A2124	Between 167.8 and 251.7	Between 370 and 555
ALTO F2414	Between 204.1 and 306.1	Between 450 and 675

Right - left: driver (left) or passenger (right)

The ALTO tends to weigh more on the driver's side (left). This is mainly due to the refrigerator, the main cabinet unit and its contents. Ideally heavier items should be placed on the passenger (right) side.

Top - Bottom

The heaviest items should be placed as close to floor level as possible. The lower the centre of gravity, the more stable the trailer. The ALTO has one of the lowest centre of gravity in the industry.

B. DETECTORS

Smoke Detector

-  A manual pertaining to the detector is included in the documentation given to you at the dealership. Please read and follow all care, maintenance, and safety information contained in this manual. Store the manual in a safe place for future reference. Pass the manual on to any subsequent users of the detector.
-  **IMPORTANT:** It is strongly recommended that you read the supplied manufacturer's owner manual when purchasing trailer.

The smoke detector is located on the ceiling of the trailer (photo B-1) and is battery-powered.

 **WARNING:** ALARM BATTERY IS SHIPPED DEACTIVATED. CHECK YOUR ALARM FOR PROPER BATTERY INSTALLATION. TO ACTIVATE BATTERY, NEW ALTO OWNER MUST INSTALL INCLUDED BATTERY IN PROPER ORIENTATION.

-  **IMPORTANT:** Verify detector regularly using "test" button and change battery when necessary or according to the recommendations of the manufacturer. Your safety depends on it.



PHOTO B-1
Smoke detector

 **WARNING:** REPLACE BATTERY EACH SPRING.

 **WARNING:** TEST ALL DETECTORS AFTER STORAGE, BEFORE EACH OUTING, AND EVERY WEEK WHILE TRAILER IS IN USE.

-  Never spray cleaning products on these devices, as this will damage them.

 **WARNING:** SMOKE ALARMS HAVE A LIMITED LIFE. THE UNIT SHOULD BE REPLACED IMMEDIATELY IF IT IS NOT OPERATING PROPERLY. YOU SHOULD ALWAYS REPLACE A SMOKE ALARM AFTER 10 YEARS FROM DATE OF PURCHASE. WRITE THE PURCHASE DATE ON THE SPACE PROVIDED ON THE BACK OF THE UNIT.

SERVICE: If service is required or you have not received a smoke alarm user manual, please contact your dealer or Safari Condo.



PHOTO B-2
Carbon monoxide and propane gas detector

Propane (LP Gas) Detector

-  A manual pertaining to the detector is included in the paper work given to you at the dealership. Please read and follow all care, maintenance, and safety information contained in this manual. Store the manual in a safe place for future reference. Pass the manual on to any subsequent users of the detector.
-  **IMPORTANT:** It is strongly recommended that you read the supplied manufacturer's owner manual when purchasing trailer.

The detector is located under the table on the front panel near the fuse box (photo B-2).

The propane detector is powered by the auxiliary battery or by the converter when plugged in. Verify it regularly using "TEST" button.

Remember that this device uses power 24 hours a day. If the trailer is not used for 2 weeks or more, turn it off by removing Detector 3A fuse (photo H-2.1), or turning off main switch if the trailer is so equipped.

LP gas is a mixture of gases produced and sold commercially as a fuel for heating and cooking appliances. LP gas is highly flammable and, as a result, can be explosive if ignited under certain circumstances. LP gas is heavier than air and, if confined in a closed space, will accumulate close to the floor. When the LP gas concentration in your unit exceeds 2000 PPM, the detector will provide a visual and audible alarm by sounding a buzzer and flashing the red LED twice per second.

 **WARNING:** ACTIVATION OF THIS DETECTOR INDICATES THE PRESENCE OF LP GAS, WHICH CAN CAUSE AN EXPLOSION AND/OR FIRE. THIS NORMALLY INDICATES A LEAK IN THE LP GAS INSTALLATION OR A LP GAS APPLIANCE. EXTINGUISH ALL OPEN FLAMES, OPEN YOUR WINDOWS AND DOOR AND EVACUATE THE UNIT IMMEDIATELY. DO NOT ACTIVATE ANY ELECTRICAL SWITCH. TURN OFF THE LPG AT YOUR GAS BOTTLE(S).

 **WARNING:** DO NOT RE-ENTER YOUR UNIT UNTIL A QUALIFIED REPAIR TECHNICIAN HAS CORRECTED THE PROBLEM.

Propane Detector Operation

When the device is operating normally, green LED will be on.

Detector Test

Press the test button according to the manufacturer's instructions.



WARNING: THIS TEST SHOULD BE PERFORMED AFTER PERIODS OF STORAGE, BEFORE EACH TRIP AND AT LEAST ONCE A WEEK DURING NORMAL TRAILER OPERATION.



WARNING: IF IN DOUBT, HAVE A PROFESSIONAL CHECK YOUR SYSTEM.

Carbon Monoxide Alarm



A manual pertaining to the alarm is included in the documentation given to you at the dealership. Please read and follow all care, maintenance, and safety information contained in this manual. Store the manual in a safe place for future reference. Pass the manual on to any subsequent users of the alarm.



IMPORTANT: It is strongly recommended that you read the supplied manufacturer's owner manual when purchasing trailer.

The detector is located under the table on the front panel near the fuse box (photo B-2).

Carbon monoxide (CO)

Carbon monoxide (CO) is a highly poisonous gas which is released when fuels are burnt. It is invisible, has no smell and is therefore very difficult to detect with the human senses. Under normal conditions, in a room where fuel-burning appliances are well maintained and correctly ventilated, the amount of carbon monoxide released by appliances is not dangerous. These fuels include wood, coal, charcoal, oil, natural gas, gasoline, kerosene, and propane.

The carbon monoxide alarm is designed to detect carbon monoxide gas from any source of combustion.

Common appliances are often a source of CO. If they are not properly maintained, are improperly ventilated, or malfunction, CO levels can rise quickly. CO is a real danger in "Airtight" trailers with added insulation, sealed windows, and other weatherproofing which can "trap" CO inside.

The following conditions can result in potentially dangerous CO situations.

- Excessive spillage or reverse venting of fuel-burning appliances caused by outdoor conditions, such as
 - Wind direction and/or velocity: including high gusts of wind. Heavy air in the vent pipes (cold/humid air with extended periods between cycles).
 - Negative pressure differential resulting from use of exhaust fans.
 - Simultaneous operation of several fuel-burning appliances competing for limited internal air.
 - Vibrating loose vent pipe connections from furnaces or water heaters.
 - Obstructions in, or unconventional vent pipe designs which can amplify the above situations.
 - Extended use of unvented fuel burning devices.
 - Temperature increase that can trap exhaust gases near the ground.

Symptoms of Carbon Monoxide Poisoning

- These symptoms are related to CO POISONING and should be discussed with users of the trailer.
 - Mild Exposure - Slight headache, nausea, vomiting, fatigue (“flu-like” symptoms),
 - Medium Exposure - Throbbing headache, drowsiness, confusion, fast heart rate.
 - Extreme Exposure - Convulsions, unconsciousness, heart and lung failure.
- Exposure to carbon monoxide can lead to brain damage or death.



WARNING: ACTIVATION OF YOUR CO ALARM’S AUDIBLE ALARM INDICATES THE PRESENCE OF CARBON MONOXIDE (CO) WHICH CAN KILL YOU.



WARNING: THIS PRODUCT IS INTENDED FOR USE IN ORDINARY INDOOR LOCATIONS OF FAMILY LIVING UNITS. IT IS NOT DESIGNED FOR COMPLIANCE WITH OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA/CNESST) COMMERCIAL OR INDUSTRIAL STANDARDS. INDIVIDUALS WHO ARE AT SPECIAL RISK FROM CARBON MONOXIDE EXPOSURE BY REASON OF AGE, PREGNANCY OR MEDICAL CONDITION MAY CONSIDER USING WARNING DEVICES WHICH PROVIDE AUDIBLE AND VISUAL SIGNALS FOR CARBON MONOXIDE CONCENTRATION UNDER 30 PPM. IF IN DOUBT CONSULT YOUR MEDICAL PRACTITIONER.



WARNING: A CARBON MONOXIDE ALARM IS NOT

- DESIGNED TO DETECT SMOKE, FIRE OR ANY GAS OTHER THAN CARBON MONOXIDE.
- TO BE SEEN AS A SUBSTITUTE FOR THE PROPER SERVICING OF FUEL-BURNING APPLIANCES.
- TO BE USED ON AN INTERMITTENT BASIS, OR AS A PORTABLE ALARM FOR SPILLAGE OF COMBUSTION PRODUCTS FROM FUEL-BURNING APPLIANCES.



WARNING: THE CARBON MONOXIDE ALARM IS DESIGNED FOR INDOOR USE ONLY. DO NOT EXPOSE TO RAIN OR MOISTURE. DO NOT KNOCK OR DROP THE ALARM. DO NOT OPEN OR TAMPER WITH THE ALARM AS THIS COULD CAUSE MALFUNCTION. THE ALARM WILL NOT PROTECT AGAINST THE RISK OF CARBON MONOXIDE POISONING WHEN THE BATTERIES ARE DEAD OR MISSING. THE ALARM WILL ONLY INDICATE THE PRESENCE OF CARBON MONOXIDE GAS AT THE SENSOR. CARBON MONOXIDE GAS MAY BE PRESENT IN OTHER LOCATIONS.

Safari Condo has taken into account the recommendations of Public Health and installed the carbon monoxide alarm as recommended, in or near a fuel burning appliance such as room heaters, water heaters, cookers, grills, etc.

In most cases, carbon monoxide and propane detectors are combined in a single alarm.

Ensure that the alarm can be heard by all those who are intended to hear it. Seek medical help if it is suspected that a user of the trailer is suffering from carbon monoxide poisoning.

If the alarm sounds, make sure to investigate the problem. Ignoring the alarm may result in sickness, injury or death. (CO may be present even if nothing is seen or smelled by the user).

Space should be well ventilated when household cleaning supplies are used as these may cause a false alarm.

These alarms have a limited design service life: see expiration date at the back of the alarm.



WARNING: MANY CAUSES OF REPORTED CARBON MONOXIDE POISONING INDICATE THAT WHILE VICTIMS ARE AWARE THAT THEY ARE NOT WELL, THEY BECOME SO DISORIENTED THAT THEY ARE UNABLE TO SAVE THEMSELVES BY EITHER EXITING THE BUILDING OR CALLING FOR ASSISTANCE. ALSO, YOUNG CHILDREN AND PETS MAY BE THE FIRST TO BE AFFECTED.



WARNING: TEST UNITS USED IN TRAILERS AFTER THE TRAILER HAS BEEN IN STORAGE, BEFORE EACH TRIP AND ONCE A WEEK WHILE IN USE. FAILURE TO TEST UNITS USED IN THE TRAILER AS DESCRIBED MAY REMOVE YOUR PROTECTION.



WARNING: FAILURE TO REPLACE THIS PRODUCT BY THE “REPLACE BY DATE” PRINTED ON THE ALARM COVER MAY RESULT IN DEATH BY CARBON MONOXIDE POISONING. REPLACE BY DATE IS SIX (6) YEARS FROM THE DATE OF MANUFACTURE.

Fire Extinguisher

 A manual pertaining to the fire extinguisher is included in the documentation given to you at the dealership. Please read and follow all care, maintenance, and safety information contained in this manual. Store the manual in a safe place for future reference. Pass the manual on to any subsequent users of the fire extinguisher.

 **IMPORTANT:** It is strongly recommended that you read the supplied manufacturer's owner manual when purchasing trailer.

The fire extinguisher located near the entrance should have the charge checked on a regular basis. Make sure your family, especially the cook, knows how to release the extinguisher storage bracket, and how to properly operate the extinguisher. If you find the directions on the extinguisher unclear, check with your local fire department for professional advice on its operation and use. We're sure they will be happy to assist you and your family.

C. HOOKUPS

Shore Power

Power cord is located inside the exterior storage compartment on the left at the front. It is designed to connect into a 30A (120 V) power outlet at a campground or at home. The other end of the cord must be connected to the round plug located over the wheel well, on the left side of the trailer.

NOTE: To plug the ALTO on a 15A outlet, you will need a 30A to 15A adapter (not supplied) (photo C-1).



⚠ When operating with city power, make absolutely sure that the service is 120 volts and not 240 volts.

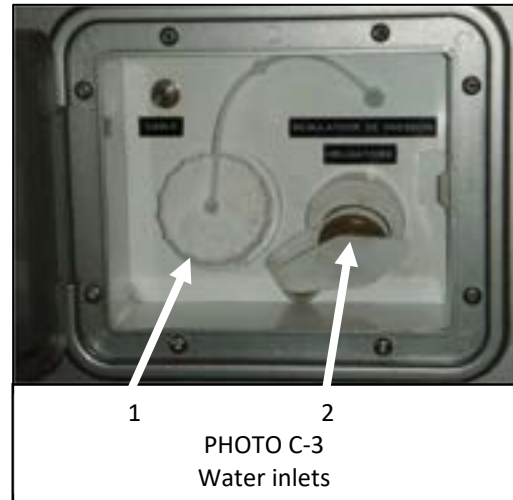
When the three-pronged plug on the shoreline cord is used for shoreline power, there will be no problem with proper polarity or grounding. In some older parks and other locations where three pronged outlets are not available, certain precautions to ensure proper grounding and polarity must be taken.

These precautions are listed below:

- Attach the three-pronged plug to a two-pronged adapter. The third conductor line of this adapter has a short wire lead, which must be grounded.
- For proper grounding connect the short ground lead to a grounded outlet box or to a cold-water pipe. When no water pipe is available, drive a metal rod two feet into the ground and attach the ground lug to it, thus providing the unit with proper grounding. To operate self-contained, simply disconnect the power supply cable.

Potable Water Hookup

There is a hinged hatch on the left side of the ALTO. The potable water fill hatch locks for added (photo C-2). Inside, the large cap on the left (photo C-3.1) covers the potable water fill for the 60 litre (15, 8 US gal) tank for models R1713, R1723 and F1743, and 100 litres (26.4 US gal) tank for models F2114, A2124 and F2414.



On the right of the tank fill opening, the potable water inlet with a metal coupling (photo C-3.2)) is used for a direct connection to a campground or home water supply. Always use a potable water approved $\frac{1}{2}$ " hose. It should be one that is tasteless, odourless and nontoxic and specially designed for trailer use. We suggest you carry two lengths of hose. This way you have the ability to reach hookups further away than normal; and, you have a spare hose should one fail or become damaged unexpectedly. The recommended storage space for the hose is the front exterior storage compartment on the left side.

The potable water level indicator is located inside, on the wall close to the entrance. See Monitor Panel (photo F-1.4) "FRESH" (POTABLE WATER).

- ☞ When connected directly to a water supply, shut off the water pump (see monitor, photo F-1.3).
- ☞ When connected directly to a water supply, always install a water pressure regulator (not supplied) between your hose and the water supply.

Once the system is filled with water and the faucets closed, the water pump will shut off. When a faucet is opened, the pump will come back on automatically. If the faucet is just barely open, it is normal for the pump to cycle on and off rapidly.

Water pressure at some campgrounds may be low. The water pump can be turned on to assist the city water hookup pressure. Be sure there is some water in the potable water tank. The pump will only use the water that is needed out of the tank to bring the pressure up to the usual standard.

Experienced travellers usually fill their tanks with "home" water to avoid strange water that may be distasteful to them.

The amount of water in the tank may be checked on the Monitor Panel (photo F-1.4). You may fill the tank until water overflows out of the fill.

Sewage Hookup

Take the flexible hose located inside the storage tube under the chassis, left side near the valves. Attach hose to PIVOTING sewage connector, located in front of the wheel on left side (photo C-4.1). Lock hose tightly by twisting 1/8 of a turn to the right. Make sure it is locked!

Insert the other end of the hose in the campground sewage hook up. You may need an adapter. Once connected to the sewage system, the grey water valve can be left open (photo C-4.2).

NOTE: The black water connection swivels. When draining, make sure the fitting points downward. When moving, remember to point the fitting upward to increase ground clearance.

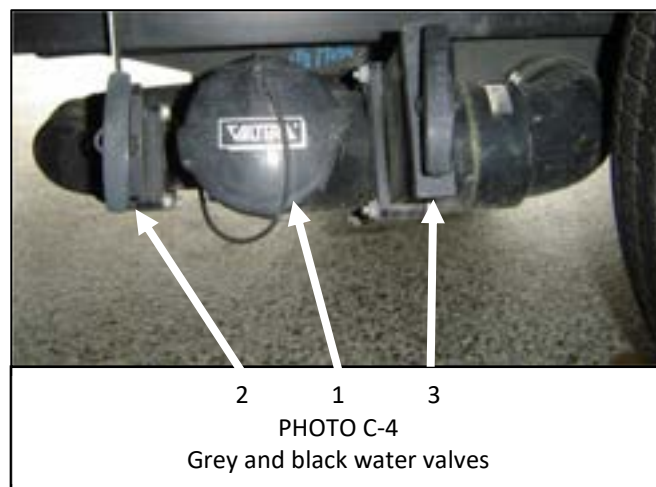
Black water valve (photo C-4.3) should never be left open. Leaving it open will almost surely clog it. Instead, it is better to wait for the black water tank to fill until the level monitor displays 90% full or more (photo F-1.2) (BLACK).

One or two days prior to dumping the black water tank, close the grey water valve. This will let the grey water accumulate so it can be used to rinse the hose after dumping black water tank. This will save potable water, which would have been used simply to rinse the hose.

Draining the black water tank:

1. Open black water valve (photo C-4.3) until tank is empty. This may take between 1 and 2 minutes.
2. Close black water valve.
3. Open grey water valve to rinse hose (photo C-4.2).

The grey water valve may then be left open, and the cycle starts all over again.



D. PRE-SEASON INSPECTION. MAINTENANCE AND PROCEDURES



WARNING: FAILURE TO MAINTAIN YOUR ALTO CAN CAUSE PREMATURE AND UNEXPECTED PARTS BREAKAGE AND/OR ERRATIC OPERATION THAT MAY BE HAZARDOUS.

NOTE: For additional information, see appliance and equipment manufacturers' literature.

SEASONAL

- Grease wheel bearings.
- Lubricate all locks and padlocks with WD40.
- Lubricate door latch with WD40.
- Lubricate worm screw and corner jacks.
- Touch up aluminum extrusions with black semi-gloss paint (Tremclad semi-gloss applied with a brush or spray, masking adequately in the latter case).
- Check safety chains.
- Check wear and proper functioning of brakes.
- Check tire wear and air pressure.
- Check air pressure of spare tire.
- Check water level inside the battery.
- Check detectors.
- Check for propane leaks.
- Check that all propane appliances are in good working order.
- Inspect combustion chamber and smoke duct in the case of propane refrigerator.
- Check that the electric system is in good working order.

Start-Up and Disinfection of Potable Water System with *Truma COMBI ECO* Heating/Water Heater

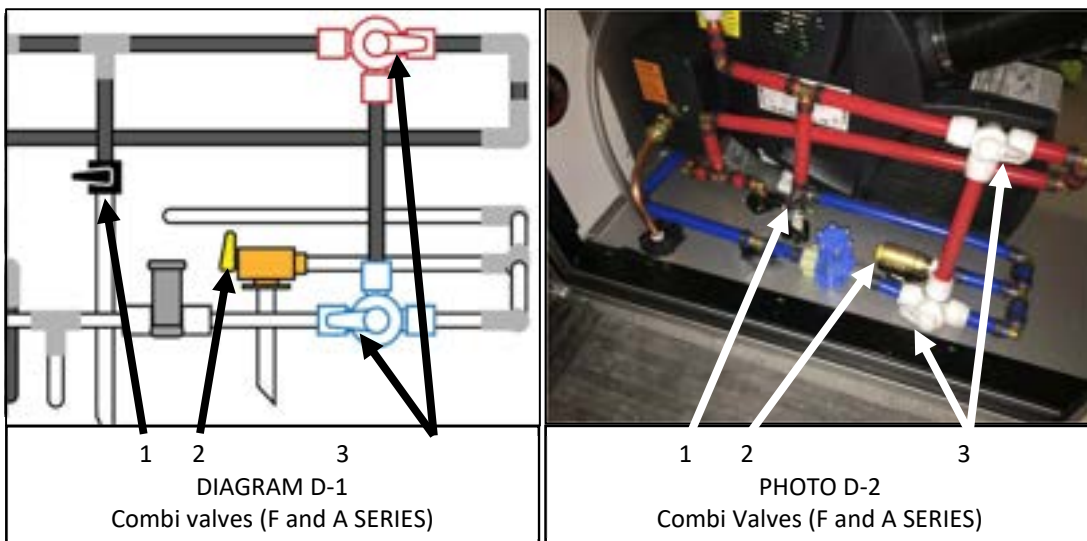
Start-Up and Disinfection

Before beginning the start-up and disinfection procedures, make sure the ALTO is level.

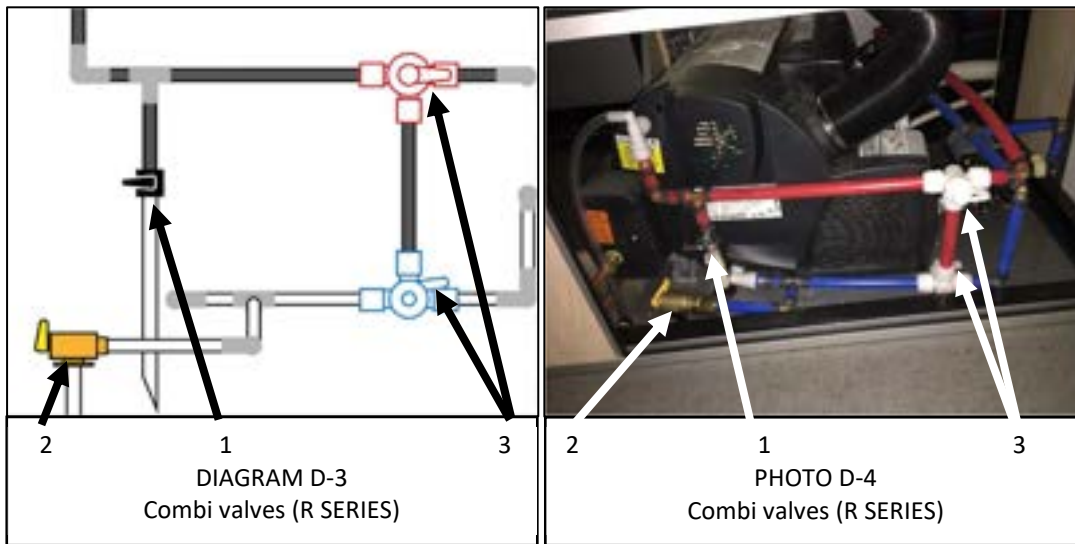
1. Make sure water pump is "OFF" using "PUMP" switch (photo F-1.3) on Monitor Panel. The indicator light must be off.
2. Drain antifreeze from potable water tank by opening the exterior valve (photo E-1.1) located behind the axle, between the wheel and the chassis left side (or near the waste water valves on some models). When the tank is empty, close the valve.
3. Pour bleach in the potable water tank and completely fill the tank with water (60 ml for ALTO 17xx, and 100 ml for ALTO s 21 and 24). (See *DISINFECTION* section).
4. Turn on water pump by turning on "PUMP" switch (photo F-1.3) on Monitor Panel. The indicator light must be on.

5. Open cold water tap on kitchen sink and let water run for 30 seconds to disinfect plumbing system.
6. Open hot water tap on kitchen sink and let water run for 30 seconds to disinfect plumbing system.
7. Let water run 30 seconds in the toilet, and 30 seconds in the toilet wash down spray.
8. Open cold water tap of inside shower for 30 seconds, then the hot water tap for 30 seconds.
9. Open cold water tap of exterior shower for 30 seconds, then the hot water tap for 30 seconds.
10. After 4 hours, repeat steps 1 to 9 without adding bleach in order to drain bleach from the system. To better rinse the system, repeat this process. Only then, go to step 11.
11. Set the 4 valves on the Combi in the following positions:
 - F and A Series: DIAGRAM D-1 ; photos D-2.1, D-2.2 and D-2.3
 - R Series: DIAGRAM D-3, photos D-4.1, D-4.2 and D-4.3
 - o Position both white bypass valves horizontally (photo D-2.3 and photo D-4.3)
 - o Position single chrome valve on red hose drain horizontally (photo D-2.1 and photo D-4.1)
 - o Flip the yellow tab to release the safety valve and leave it perpendicular to brass body (photo D-2.2 and photo D-4.2)
 - F and A SERIES: valves are located behind the sliding panel.
 - R SERIES: the valves are located in the space between the bed and the wall.
12. Open hot water tap to fill the Combi water heater: this can take about 3 minutes. Once filled, let the water run through the hot water tap for 1 minute to ensure that the water heater is full.
13. Dump grey and black water tanks. Fill the potable water tank, now you are ready for the camping season.

F and A SERIES



R SERIES



Start-Up and Disinfection of Potable Water System with *Truma Aquago Comfort Plus* Water Heater (Optional)

Start-Up and Disinfection

Before beginning the start-up and disinfection procedures, make sure the ALTO is level.

1. Make sure water pump is "OFF" using "PUMP" switch (photo F-1.3) on Monitor Panel. The indicator light must be off.
2. Drain antifreeze from potable water tank by opening the exterior valve (photo E-2) located under the trailer, behind the axle, between the wheel and the chassis on left side (or near waste valves on some models). Close valve once empty.
3. Pour bleach in the potable water tank and completely fill the tank with water (60 ml for ALTO 17xx, and 100 ml for ALTO s 21 and 24). (See *DISINFECTION* section).
4. Turn on water pump by turning on "PUMP" switch (photo F-1.3) on Monitor Panel. The indicator light must be on.
5. Open cold water tap of kitchen sink and let water run for 30 seconds to disinfect plumbing system.
6. Open hot water tap of kitchen sink and let water run for 30 seconds to disinfect plumbing system.
7. Let water run in the toilet 30 seconds, 30 seconds in the toilet wash down spray.
8. Open cold water tap of inside shower for 30 seconds, then the hot water tap for 30 seconds.
9. Open cold water tap of exterior shower for 30 seconds, then the hot water tap for 30 seconds.

10. Open the D valve (photo D-5.1) to fill the return line, to push antifreeze out and eventually the bleach out, let it run for at least 1 minute.
11. After 4 hours, repeat t steps 1 to 10 without adding bleach in order to drain bleach from the plumbing system and complete a final potable water fill up. To better rinse the system repeat steps 1 to 10 without adding bleach.
12. To use your Aquago water heater, open the panel, tilt the lever open, reinstall the filter cartridge, tilt the lever back to close, switch the water heater “ON” on the outside switch and close panel.
13. Open the bypass valves A and B (photo D-5.2 and D-5.3)) to horizontal position.
14. Open the E valve (photo D-5.4) of the return line.
15. Open the D valve (photo D-5.1) and let the water run on the ground under the ALTO during about 2 minutes to allow the filling up of the water heater and of the return line.
16. You can now turn your water heater on and use it.
17. Dump grey and black water tanks and fill the potable water tank up. You are now ready for the camping season.

Come winter, see WINTERIZING POTABLE WATER SYSTEM WITH *TRUMA AQUAGO COMFORT PLUS* INSTANT WATER HEATER

🔊 **IMPORTANT:** Make sure water heater is full before turning it on. It is full when water has been running for more than three (3) minutes using hot water tap.



E. POTABLE WATER SYSTEM

To fill the potable water tank, open the exterior access door and remove plastic screw cap (photo C-3.1).

The amount of water in the tank may be checked on the Monitor Panel (photo F-1.4), or you may fill the tank until water overflows out of the fill. Potable water capacities are 60 litres for ALTO 17 and 100 litres for ALTOs 21 and 24.

Once the system is filled with water, turn on pump using “PUMP” switch (photo F-1.3). When a faucet is open, the pump will come back on automatically. If the faucet is just barely open, it is normal for the pump to cycle on and off rapidly.

Water pressure at some campgrounds may be low on city water. The water pump can be turned on to assist the city water hookup pressure. Be sure there is some water in the potable water tank. The pump will only use the water that is needed out of the tank to bring the pressure up to the usual standard.

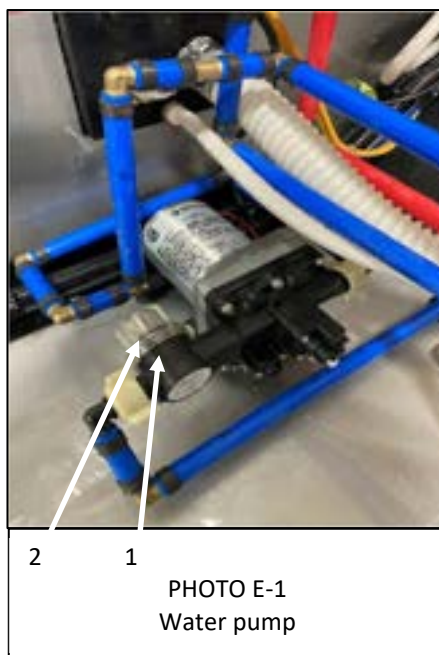
Water Pump and Strainer

The water pump is similar to that found in larger trailers, motor homes and trailers.

The water pump and strainer are located under the rear seat on the left side.

To clean strainer screen (photo E-1.1), unscrew the clear plastic strainer cap counter clockwise (photo E-1.2), remove and clean the screen. After cleaning, replace the screen in the strainer cup and hand tighten the cap snugly. NOTE: DO NOT OVERTIGHTEN. The gasket ring inside the cap performs sealing and too much pressure will only break the strainer cap or ruin the gasket.

Start the pump and check for leaks. If a priming problem develops check all connection for air leaks. The complete strainer assembly can be removed by loosening the threaded disconnect nuts at the pump and strainer inlets.



Disinfection

Potable water systems require periodic maintenance to deliver a consistent flow of potable water. Depending on use and system environment, disinfection is recommended prior to storing and before using the water system after a period of storage. Systems with new components, or ones that have been subjected to contamination, should also be disinfected as follows:

1. Dilute the appropriate amount of bleach (Alto 17 = 60 ml; Alto 21 and 24 = 100 ml) with a little water.
2. Pour the solution (water/bleach) into the tank and fill the tank with potable water.
3. Activate water pump with “PUMP” switch (photo F-1.3) (Indicator light is “ON”). Open all faucets (Hot & Cold) allowing the water to run until the distinct odor of chlorine is detected.
4. The standard solution must have four (4) hours of contact time to disinfect completely. If you double the solution, this concentration drops the time to one (1) hour.
5. When the contact time is completed, drain the tank.
6. Refill with potable water and purge the plumbing of all sanitizing solution.

NOTE: The sanitizing procedure outlined above is in accordance with the approved procedures of RVIA ANSI A119.2 and the US Public Health Service.

NOTE: A valve, located behind the axle between the wheel (left side) and the chassis (or close to the waste valves depending to model) (photo E-2), will drain the potable water tank.

Toilet & Shower

 NOTICE: *Scrubbing Bubbles Bathroom Cleaner, Lysol Basin Tub and Tile Cleaner* and similar products MUST NOT BE USED on soft surfaces such as plastics. Use of these cleaners can result in cracked or severely damaged toilet or shower material.

Drain Valve

The potable water line drain valve is located behind the axle between the wheel (left side) and the chassis (or near the dump valves on some models) (photo E-2).



Emptying Potable Water Tank

Pumping the water out with the self-contained water pump may empty the potable water tank. Simply turn on the pump switch and open a couple of faucets until the water will no longer come out. On all models there is also a drain valve behind the axle between the wheel (left side) and the chassis (or near the dump valves on some models) (photo E-2).

 **IMPORTANT:** To prevent damage to the tank, turn off the water pump as soon as the tank is empty.

NOTE: For winterizing purposes, only the petcock behind (or before) axle needs to be open to drain the tank.

Safety

If your water system is full and cold and the water heater is ignited, the system can see pressures as high as 120 psi (827 kPa) before the relief valve starts to open. Since the water system normally operates in the 40 psi (275 kPa) range, the expanding water does put unusual stress on the system. This normally does not cause any problems, but the stress may be easily alleviated. As the water is heating, simply open any faucet and release as little as one cup of water. Just removing this small amount of water significantly reduces the pressure build-up.

Water Pump

“Pump” switch is located on the level Monitor Panel located by the entrance (photo F-1.3). Once the switch is turned on, the pump will run until the water pressure reaches about 448 kPa (65 Psi). At this point an internal pressure switch will shut it off. When a faucet is opened, the water pressure will drop and the pump will start to run again. The water pump switch should be turned off when the trailer is left unattended.

Water pressure at some campgrounds may be low. The water pump can be turned on to assist the city water hookup pressure. Be sure there is some water in the potable water tank. The pump will only use the water that is needed out of the tank to bring the pressure up to the usual standard.

Pump Switch

To activate water pump, use “PUMP” switch (photo F-1.3) on Monitor Panel located inside by the door. Indicator light is on when pump is “ON”.

The water pump will start automatically every time the hot or cold water tap is turned on.

If your water tank runs dry, the pump will keep running. This will cause damage to the pump after a while.

The “PUMP” switch (photo F-1.3) lets you stop the pump when tank runs dry, or when pump is not in use.

 **IMPORTANT:** Never operate water pump with an empty tank.

 **IMPORTANT:** Before plugging the water heater, make sure water heater is full.



WARNING: HYDROGEN GAS CAN BE PRODUCED IN A HOT-WATER SYSTEM SERVED BY THIS HEATER THAT HAS NOT BEEN USED FOR A LONG PERIOD OF TIME (GENERALLY TWO WEEKS OR MORE). HYDROGEN GAS IS EXTREMELY FLAMMABLE. TO REDUCE THE RISK OF INJURY UNDER THESE CONDITIONS, IT IS RECOMMENDED THAT THE HOT WATER FAUCET BE OPENED FOR SEVERAL MINUTES AT THE KITCHEN SINK BEFORE USING ANY ELECTRICAL APPLIANCE CONNECTED TO THE HOT WATER SYSTEM. IF HYDROGEN IS PRESENT THERE WILL PROBABLY BE AN UNUSUAL SOUND SUCH AS AIR ESCAPING THROUGH THE PIPE AS THE WATER BEGINS TO FLOW. THERE SHOULD BE NO SMOKING OR OPEN FLAME NEAR THE FAUCET AT THE TIME IT IS OPEN.

F. WASTE WATER SYSTEM

Your trailer's drain and waste system features waste-holding tanks made from moulded plastic, free from corrosion problems, and dump valves.

Holding Tanks

R1713, R1723 and F1743

- The grey water tank has a capacity of 60 litres (15.8 US gal).
- The black water tank has a capacity of 46 litres (12 US gal).

F2114, A2124 and F2414

- The grey water tank has a capacity of 90 litres (23.8 US gal).
- The black water tank has a capacity of 54 litres (14.3 US gal).

NOTE: Level indicators for the grey water tank "GREY" (photo F-1.1) are located on the wall by the entrance (see Monitor Panel). When the level indicates 90% or more for either one of the holding tanks, it is time to dump holding tanks.

The black water tank lets you use the toilet for several days away from disposal facilities. Wastewater from the sink, shower, bath and lavatory drain into the grey water holding tank. Each tank has its own dump valve; however, both tanks drain through a common outlet. Therefore, you only need to make one connection when hooking up in a trailer park with sewer facilities. The valves handles are coloured: grey for grey water, and black for black water.

NOTICE: Never put wet paper towels or tissues in your holding tank since they won't dissolve and can "catch" in the dump valve mechanism. Coloured toilet tissue is slower to dissolve than white. Most trailer accessory stores offer specially designed tissue that will completely dissolve.

Never drain tanks at any place other than an approved dumping station.



Emptying Tanks

Almost all campgrounds will have dumping facilities. Park directories such as Woodalls and Rand McNally also list dumping stations.

When Parked and Connected to Sewer Outlet

When you are in a campground and connected to a sewer outlet, keep the black water holding tank dump valve closed, and empty the tank every few days or whenever it becomes almost full.

- ☞ Only by sending a large volume of liquid through the black water holding tank at a time will toilet paper and other solids completely wash away.

This practice will avoid the accumulation of solids in the black water holding tank, which could lead to an unpleasant cleaning job. Should solids accumulate, close the dump valve; fill the tank about half full with water, and then tow the trailer for a few miles. The turbulence and surging of the water will usually dissolve the solids under suspension so the tank can be drained.

When connected to a sewer outlet, keep the grey water tank valve open.

Draining the tanks as described will protect them from freezing during storage or when travelling in winter conditions. When travelling in sub-freezing temperatures and using the drain system, use a winterizing solution designed for trailer use. Follow the directions on the container.

- ☞ All products should be marked approved for ABS drainage systems.

Cleaning Drain System

The only cleaning agents that can be used without causing harm to the system are household ammonia and trisodium phosphate in small quantities. Do not use any product that contains any portion of petroleum distillates. This attacks the rubber seats of your toilet and dump valve. Also, do not use any dish detergent or abrasive cleaners.

There are many deodorizers on the market in tablet, liquid and powder form. These not only combat odour, but also stimulate the bacteria that works to dissolve the solids in your tank.

Dumping Waste Waters

When camping on sites without sewage hook up, waste water accumulates in the tanks. These tanks will then have to be emptied at designated dump stations.

1. Bring the wheel (left side) of the ALTO close to the dump station sewage hook up.
2. Take the flexible hose located in the storage tube under the chassis close to the dump valves.
3. Attach hose to sewage connector, located in front of the wheel (left side). Lock hose tightly by twisting 1/8 of a turn clockwise. Make sure it is locked! (photo C-4.1)
4. Pivot sewage connector outlet downward.
5. Insert the other end of the hose in the dump station sewage hook up.
6. Open black water valve. (photo C-4.3.)

7. Once black water tank is empty, close black water valve.
8. Open grey water valve. (photo C-4.2.)
9. Once grey water tank is empty, close grey water valve.
10. Disconnect the drain hose and rinse it.
11. Pivot sewage connector outlet upwards.
12. Store flexible hose in its storage tube.

 Drain holding tanks only in designated areas.

NOTE: After every 6 or 8 dumps, rinse black water tank by filling it with water after dumping, and dump it again. This will help keep your level monitoring in good working order.

G. PROPANE



WARNING: LEAKING LP GAS MAY IGNITE CAUSING A FIRE OR EXPLOSION WHICH COULD RESULT IN SERIOUS BODILY INJURY, PROPERTY DAMAGE, OR DEATH.

How long a full tank of gas depends on usage. In cold weather, when you are using the furnace, large amounts of hot water, and are doing extensive cooking, you will naturally use more than you will in warm weather or when you do little cooking.



ATTENTION: LPG BOTTLE IS SECURELY MOUNTED ON THE FRONT “A” FRAME OF YOUR TRAILER. IF BOTTLE MUST BE REMOVED FOR SERVICE OR REPLACEMENT, IT IS IMPORTANT THAT IT BE REINSTALLED CORRECTLY IN ORDER TO PREVENT ANY POSSIBILITY OF FALLING OFF OR BECOMING DISLODGED DURING TRAVEL.

LPG Bottle

Single LPG Bottle

The following step-by-step procedure gives you the proper method of removing the bottle:

1. Close the valve on the bottle to be removed (photo G-1);
2. Unscrew the supply hose on the bottle to be removed (photo G-2);
3. Unscrew the bolt holding the tank.

To Install bottle:

1. Set tank in position in front of the trailer;
2. Secure tank by screw bolt holding the tank;
3. Hand tighten supply hose to tank.

Once a year, or after a long storage period, we suggest you take your unit in for a checkup and cleaning of gas-operated appliances.



PHOTO G-1
Propane tank valve and tap

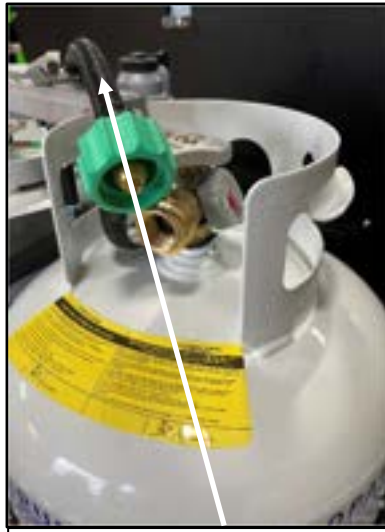


PHOTO G-2
Supply hose



PHOTO G-3
Single propane tank
retaining bolt

Two LPG Bottles

The ALTO F2114, A2124 F2414 come standard with two bottles of propane (ALTO R1713/1723 and F1743 can also be equipped this way as an option).

The proper way to remove bottles on this double bottle set is the following:

1. Close the valve on the bottle to be removed (photo G-1);
2. Unscrew and removed the supply hose from the bottle (photo G-2) ;
3. Unscrew the wing nut on top of threaded rod (photo G-4.1) ;
4. Remove the bracket to free the bottle to be removed (photo G-4.2).

 **ATTENTION:** Do NOT tow your ALTO equipped with a double set of bottles when only one is present.

The proper way to install bottles:

1. Place the bottle in its place on the front of your trailer;
2. Secure the bottle by replacing bracket and tightening retaining bolt;
3. Screw the supply hose back on the bottle, and hand tighten.



2 1
PHOTO G-4
Double propane tank mount

Basic Safety Rules

Safety is mainly based on “common sense”. Be careful with matches, cigarettes, flammable material or any other hazardous material. Avoid open flames inside your trailer.



WARNINGS:

- Your LP tanks must be filled as directed by the tank manufacturer. Instructions are located on a decal near the fill valve. The decal must not be defaced.
- Your LP tank must be, and can only be, placed in the proper position when remounting on the front of the trailer. In any other position, the base of the tank will not fit into the recess.
- Use only the gas bottles provided with your trailer. If replacement is required, it must be a bottle of the same size and design.
- The vent at the bottom of the regulator must be kept free of any obstructions and must be pointed downward. A good habit is to check the vent each time a bottle is removed for filling. It is especially important to check the vent if the trailer has not been used regularly.
- Do not store LP containers inside a trailer. LP containers are equipped with safety devices that vent gas should the pressure become excessive.
- Do not use cooking appliances for comfort heating. Cooking appliances need fresh air for safe operation. Before operation, open an overhead vent or turn on an exhaust fan and open a window.

- Portable fuel burning equipment, including wood and charcoal grills and stoves, shall not be used inside the trailer. The use of this equipment inside the trailer may cause fires or asphyxiation.
- A warning label has been located near the LP gas container. This label reads: DO NOT FILL CONTAINER(S) TO MORE THAN 80 PERCENT OF CAPACITY. Overfilling the LP gas container can result in uncontrolled gas flow, which can cause a fire or explosion. A properly filled container will contain approximately 80 percent of its volume as liquid LP gas. Use only certified refill LP stations when filling an LP bottle.
- Do not bring or store LP gas containers, gasoline or other flammable liquids inside the trailer because a fire or explosion may result.
- Unlike homes, the amount of oxygen supply is limited due to the size of the trailer; and, proper ventilation when using the cooking appliances will prevent dangers of asphyxiation. It is especially important that cooking appliances not be used for comfort heating as the danger of asphyxiation is greater when the appliance is used for long periods of time.



WARNING:

If you notice a gas-like smell (similar to a rotten egg smell):

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



WARNING: TANK REFUELLING BY CERTIFIED PERSONNEL ONLY.



WARNING: READ CAREFULLY ALL SAFETY INSTRUCTIONS INCLUDED IN THE MANUFACTURER'S OWNER MANUALS PROVIDED FOR THE VARIOUS PROPANE APPLIANCES.



WARNING: NEVER USE STOVE:

- WHEN THE TRAILER IS CIRCULATING ON THE ROAD.
- WHEN SIDE WINDOW CURTAIN IS DEPLOYED.
- AS SPACE HEATER.



WARNING: WHEN TRAILER IS INSIDE A GARAGE, ALWAYS TURN OFF FURNACE AS THE SYSTEM EMITS CARBON MONOXIDE (CO), WHICH CAN CAUSE FAINTING OR EVEN DEATH.



WARNING: WHEN TRAILER IS INSIDE, ALWAYS CLOSE PROPANE SHUT OFF VALVE.

LPG Gas Regulator (or Pressure Reducer)

Flow rate is extremely important in the operation of this connection. The pressure reducer can activate if the cylinder valve opens quickly. When all appliances are turned off, the propane regulator allows the pressure downstream of the propane regulator to equalize. During pressure equalization, the propane regulator will allow normal gas flow through the system. The equalization occurs about 5 seconds after opening and is completely unnoticeable in most cases. If, however, there is an open appliance or a leak or open valve in the system, the regulator will fail to balance and will block the propane regulator from reopening. The result of this blockage would be a lower-than-normal flame or flame out due to lack of gas, a substantial reduction in flame while another appliance is already on, or pilots that are difficult to light. If this occurs, the following steps should eliminate the condition:

1. Close the propane cylinder valve;
2. Extinguish all flames;
3. Ensure that all gas appliances, including pilot lights, are turned off;
4. Slowly open the propane cylinder valve. Do not open suddenly;
5. Wait at least 15 seconds before lighting any appliance.

If difficulties persist, there may be a leak in the system. Close the propane cylinder valve and have it inspected immediately by a qualified service technician.

LPG Gas Fill Valve

Propane Gas Fill Valve

Trailer is equipped with a propane tank filler valve called an “Acme Type I RV Fitting” (photo G-1). The pivot nut is threaded and is designed for hand tightening only (photo G-2).

The valve has an internal spring module that allows gas to flow from the cylinder only when a positive seal is established at the connection. The Acme outlet valve has a 1-5/16 " thread on the outside and a left hand threaded female POL on the inside. This feature allows the connection of a new Acme trailer connection without a key, or a standard left-handed POL fitting used for propane tank filling.

Additional Information

The green sleeve and brass nipple of the connection (photo G-2) also incorporate new features: the green nylon sleeve pivots on a black heat-sensitive connection. Between 240 °F and 300 °F (116 °C and 149 °C), the connection yields (melts), allowing the spring-loaded module inside the valve to push the brass nipple approximately 1/4" (6.35 mm), close the module and stop the flow of gas from the cylinder. A flow restrictor designed to detect excessive gas flow is located inside the brass nipple. If excessive flow is detected, the flow restrictor reduces the flow to a maximum of 4721 SLPM (10 SCF/hr) or less. It is also called a flow diverter.

Again, make sure all appliances are turned off before opening a propane tank valve.

Exception: When reconnecting a full tank to an automatic switching regulator, it is not necessary to turn off the appliances or close the tank valve already in use.

H. 120-VOLT SYSTEM

Power Supply

The ALTO converter/charger system enables you to use the lights and appliances whether operating on self-contained battery power, or hooked up to 120-volt power. The 12-volt light bulbs give off the same light as regular household bulbs, so that when operating on self-contained battery power, everything works normally except for the 120-volt convenience outlets and 120-volt appliances.

When your trailer is connected to 120-volt AC, the converter system automatically charges the trailer battery and, if the 7-way connector is hooked up to the tow vehicle, the converter will recharge the tow vehicle battery as well. The speed and degree of charge depend on how much power is used for lights and appliances, as only the surplus goes to charging the battery. If you are making an extended stay, then you should, if it is available, keep your trailer hooked up to a 120-volt power supply.

The converter system is designed to maintain constant output voltages regardless of the variances that occur in city power systems. The transformer design eliminates the need for complex electronic sensing systems to charge the battery, minimizing the possibility of failures and greatly increasing its overall reliability.

The 120-volt breakers are located in the centre under the front table (photo H-2.2).

While you are connected to the 120-volt receptacle, the wiring is protected by circuit breakers in the breaker panel. In the event of a failure of a 120-volt circuit, check your circuit breakers first. If a breaker continues to trip after you have reset it several times, your circuit may be overloaded with appliances or there may be a short in the circuit. If lessening the load does not solve the problem consult an ALTO Service Center.

The 120-volt electrical system provides power to operate the air conditioner (optional), the microwave (optional), the electric water heater (Truma), the electrical heating (Truma), the converter and the 120-volt receptacles for portable appliances. The power is carried through the 120-volt yellow power flexible cord to the 120-volt distribution panel, and then is distributed to each appliance or receptacle.

All wires, components, and wiring methods conform to federal, provincial and state requirements.

The breaker panel in your trailer (photo H-2) bears a label to designate the circuits specific to the trailer.

To provide better protection, Safari Condo installs ground-fault interrupters on several outlets.

GFCI Protection

When properly installed, the GFCI circuit breaker provides reliable overload and short circuit protection PLUS protection from ground faults that might result from contact with a “HOT” load wire and ground.

 **IMPORTANT NOTE:** The GFCI circuit breaker will NOT reduce shock hazard if contact is made between a “HOT” load wire and a neutral wire or 2 “HOT” load wires.

Each GFCI circuit breaker is calibrated to trip with a ground current of 5 milliamperes or more. Since most people can feel as little as 2 milliamperes, a distinct shock may be felt if the need for protection exists. However, the shock should be of such short duration that the effects would be reduced to less than the normally dangerous level. However, people with acute heart problems or other conditions that can make a person particularly susceptible to electric shock may still be seriously injured.

While the GFCI circuit breaker affords a high degree of protection, there is no substitute for the knowledge that electricity can be dangerous when carelessly handled or used without reasonable caution.

 **WARNING:** THE GFCI CIRCUIT BREAKER PROVIDES PROTECTION ONLY TO THE CIRCUIT TO WHICH IT IS CONNECTED. IT DOES NOT PROVIDE PROTECTION TO ANY OTHER CIRCUIT.

GFCI s are proven lifesavers, however, consumers need to take a few minutes each month to do this simple test. By taking action on GFCI equipped outlets, you can help protect your family from the risk of electric shock.

- Perform this test on the GFI Breaker each month and record the date on the chart.
- Firmly press “Test” button.
- Firmly press the “Reset” button to restore power.

 **IMPORTANT:** if pilot light stays on when “test” button is depressed or does not turn on when “reset” button is depressed, the GFCI breaker protection is not complete. if this happens, replace the GFCI outlet.



PHOTO H-1
Electrical outlet with GFCI

GFCI TESTING RECORD

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JULY	AUG	SEPT	OCT	NOV	DEC

Fuses and Breakers

The fuse panel is located in the centre under the front table (photo H-2).

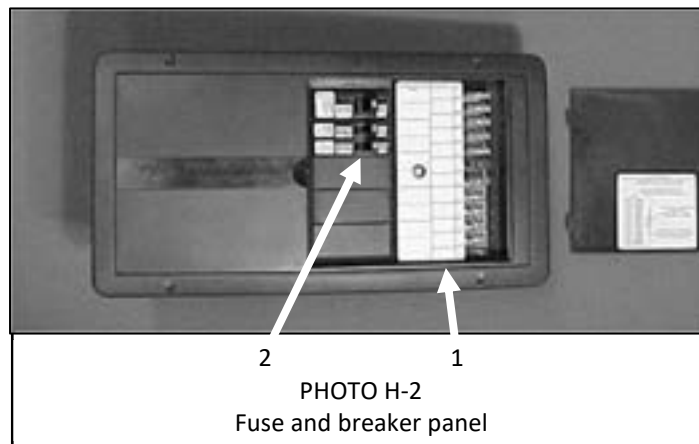


PHOTO H-2
Fuse and breaker panel

120-volt circuit breakers control the following equipment (photo H-2.2):

Item	Circuit	Breaker
1	Main	30 A
2	Microwave, Water Heater, Outlet #1, Inverter (optional)	15 A (or 20A with optional Inverter)
3	Converter/Charger, Fridge	15 A
4	Outlet #2 and Exterior Outlet	15 A
5	Heating (Truma)/Air Conditioning-Heat Pump (optional)	20 A

Inverter (Optional)

When an electrical supply is not available, the inverter converts the 12-volt DC produced by the battery into 120-volt AC to supply electrical appliances (microwave oven and outlet #1 at the end of the counter top).

-  A manual pertaining to the inverter is included in the documentation given to you at the dealership. Please read and follow all care, maintenance, and safety information contained in this manual. Store the manual in a safe place for future reference. Pass the manual on to any subsequent users of the inverter.
-  **IMPORTANT:** It is strongly recommended that you read the supplied manufacturer's owner manual when purchasing trailer.
-  Inverter is useful only when the trailer is not plugged into a power source. It is recommended to equip trailer with 2 solar panels to increase endurance for prolonged camping with no external power source.

Never leave inverter in the "ON" position for prolonged periods of time because it continuously uses power from the battery. Turn it on when required and turn it off again when it is no longer needed.

NOTE: Inverter has a 2000-Watt maximum capacity.

NOTE: Inverter can power either the microwave, or outlet #1 at the end of the counter.

The inverter is located left of shelves in the front central storage compartment (photo H-3). To power the inverter, put inverter switch to "ON". About 10 seconds later the 120 V AC power will be available to power most 120 V electrical appliances, up to a maximum of 2000 W.

The inverter can power only one of the following appliances at a time: the microwave or outlet #1. Select which appliance to power using switches at the end of the counter (photo H-4).



PHOTO H-3
Inverter control panel

When 120 V AC power is no longer needed, put inverter switch to “OFF” to save battery power. Pilot light will go out.

- ❏ IMPORTANT: If inverter is used for high-powered appliances such as a toaster, a coffee machine or a microwave oven, battery will deplete rapidly. To save battery power, use inverter sparingly.
- ❏ IMPORTANT: When not required, always turn inverter “off”, because it continuously uses power from the battery when it is “on”.



PHOTO H-4
Outlet #1/microwave selector
switch

I. 12 VOLT SYSTEM

Power Supply

The major portion of electrical power in your ALTO is 12 volts. The 12-volt current powers: the lights, the ceiling fan, the heat pump controller (optional), the television (optional), the radio (optional), the roof mechanism (R SERIES), the propane heating fan, the heating controller, the propane water heater controller, the water pump, the USB OUTLETS, the 2-way refrigerator controller, the controller of the 12-volt compressor fridge (optional), the ALTO 3 way refrigerator controller and the temporary 12-volt mode refrigeration on the 3-way fridge and the remote-controlled trailer mover.

The following appliances do not work on 12 volts: Truma electrical water heater, Truma electrical heating, the microwave oven, air conditioning, etc. All 12-volt current comes from the battery system in the front of your trailer (or from the converter when connected to 120 V shore power).

The 12-volt distribution panel contains fuses and does not require routine servicing. Should a short occur, the circuit fuse “blows” and you may notice some lights or appliances losing power. If this happens, immediately turn off the lights and appliances on the shorting circuit. Replace fuse. If fuse “blows” again, do not replace fuse until a qualified technician can service your trailer.

The charge in the 12-volt battery is replenished when towing or when plugged into 120-volt shore power or by the solar panels (optional).

Check the following areas for open circuits:

- Loose or corroded connections at lighting device.
- Loose or corroded connections at 7-way connector.
- Improper grounding at the lighting device.

A continuity light or an ohmmeter will help you isolate the “open” point of the circuit. Another cause of failure is a short circuit usually resulting in a blown fuse or circuit breaker tripping at the power source. The wire coming in contact with a sharp edge usually causes a short. The sharp edge wears the wire’s insulation away until the “hot” wire shorts to ground. Only qualified service centres and technicians should troubleshoot and repair electrical systems.

12 Volt Fuses

The fuse and circuit breaker panel is located under the front table in the centre (photo H-2).

They control the following equipment (photo H-2.1):

MODELS	ALTO R1713 and R1723		ALTO F1743		ALTO F2114, A2124 and F2414	
ITEM	CIRCUIT	FUSE	CIRCUIT	FUSE	CIRCUIT	FUSE
1	Lights	5 A	Lights	5 A	Lights	5 A
2	Refrigerator	15 A	Refrigerator	15 A	Refrigerator	20 A
3	Ceiling fan	10 A	Ceiling fan	10 A	Ceiling fan	10 A
4	Air conditioning controller (Optional)	10 A	Furnace	10 A	Air conditioning controller (Optional)	10 A
5	Water pump and tank-level monitor	10 A	Water pump and tank-level monitor	10 A	Water pump and tank-level monitor	10 A
6	12V outlets	15 A	12 V outlets	15 A	12 V outlets	15 A
7	CO and Propane detector	3 A	CO and Propane detector	3 A	CO and Propane detector	3 A
8	Truma COMBI Heating and water heater	10 A	Truma COMBI Heating and water heater	10 A	Truma COMBI Heating and water heater	10 A
9	Rear cushion motor	10 A	Toilet/shower module lighting	5 A	Toilet/shower module lighting	5 A
10	Electrical roof	20 A	12 V outlet for TV	15 A	12V outlet for TV	15 A
11	Trailer 7-way electrical connector	30 A	Trailer 7-way electrical connector	30 A	Trailer 7-way electrical connector	30 A
12	Solar panels	20 A	Solar panels	20 A	Solar panels	30 A

 **IMPORTANT:** Never replace a fuse by one with a greater capacity than indicated on electrical panel (photo H-2).

12 V Circuit

The current in the converter system is 12 volts direct current (12V DC) negative grounded.

Power sources that supply 12V DC current to the system are as follows:

- Main charge line from tow vehicle through 7-way connector;
- Trailer Battery;
- Converter;
- Solar Panels.

The power sources above are all electrically connected to the 12-volt distribution fuse panel that distributes current to interior circuits.

Converter/charger

The 45A converter/charger is located in the front central storage, on the left side of the shelf. When the ALTO is plugged in, it will provide 12 V power to all 12 V equipment. It will also recharge the battery if the battery is in place. Because the converter/charger is a three-step charger, also called intelligent charger, it is safe to leave the ALTO plugged in for prolonged periods of time. It will not damage the battery.

-  Instructions pertaining to the converter/charger are included in the documentation given to you at the dealership. Please read and follow all care, maintenance, and safety information contained in this manual. Store the manual in a safe place for future reference. Pass the instructions on to any subsequent users.
-  **IMPORTANT:** It is strongly recommended that you read the supplied manufacturer's instructions when purchasing trailer.

The inverter is only powered when the trailer is connected to a 120-volt power supply, via the yellow 30-amp cord.

Battery (maintenance type)

The deep cycle battery is located in battery box at front of the trailer.

-  A normal battery can self-discharge in 30 to 40 days when not in use. Therefore, it is necessary to periodically check and charge it as required.

When being towed, the 12-volt battery in your trailer receives a constant charge from the car's alternator through the 7-way connector. Your tow vehicle's voltage regulator controls the charge rate. It is important to keep the 7-way connector clean using "Spra-Kleen".

Whenever possible, use the automatic built-in converter system for charging. The charging circuit automatically controls the current, reducing it as the battery increases in charge.

Neglect is expensive. Care costs little. Check your battery regularly. Follow these guidelines to extend the life of your battery:

- **Maintain Water Level.** ADD DISTILLED WATER TO CELLS AS NECESSARY. Check the electrolyte level at least once a month. When you are travelling steadily and for an extended period of time, or if you are in climates above 90 °F (32° C), check the electrolyte level about every two weeks. Your battery has removable vent caps; you should regularly check the water level and add distilled water when it is low. Do not add water to a battery in freezing temperatures unless the trailer will be put to use at once, otherwise the added water may freeze. Do not fill battery above the split ring in filler opening. **DO NOT MEASURE SPECIFIC GRAVITY IMMEDIATELY** after adding water. The water must mix with the electrolyte by charging or by driving a few miles.
- **Keep Terminals Clean.** Visually inspect the terminals and cables at least once a year, especially in hot temperatures, for signs of corrosion. If dirty or corroded, the battery terminals and the inside portion of the cable connector should be scraped or brushed until both of these surfaces are shiny bright. The cable connectors should then be reconnected to the battery and tightened. This will ensure a good connection. **RECONNECT THE BATTERY CABLES TO THE CORRECT BATTERY POSTS.** The black cable should be connected to the negative (-) post and the red cable to the positive (+) post. The polarity of your tow

vehicle must also be negative (-) ground since it must always match the trailer. Most tow vehicles are negative grounded, but always check your vehicle owner manual to be sure. The complete assembly, battery post and cable connector should be coated with heavy body mineral grease, petroleum grease or petroleum jelly.

- Keep Case Clean. Keep the top of the battery clean of heavy dirt and oil with a cloth dampened by ammonia or a 50/50 solution of baking soda and water. Then rinse with clear water and allow to dry thoroughly. Care must be taken to make sure soda is not allowed to enter battery cells.
- Keep Battery Charged. If your trailer is not used regularly, it may be necessary to charge your battery before use. Lack of use is hard on a battery. Any unused battery, regardless of its chemistry, will self-discharge over time and, if allowed to remain discharged, will undergo severe positive grid corrosion and battery failure. The rate of discharge depends on the type of battery and the storage temperature.

It's important to keep your battery charged by connecting to the shoreline monthly. If you prefer that your mechanic take care of your battery, be sure to ask him to:

1. Maintain the water level, and
2. Keep the connections and case clean of corrosion and dirt.

As batteries age, their maintenance requirements increase. Typically, the specific gravity gets higher and gassing increases due to some battery deterioration and/or loss of reserve capacity. An older battery normally requires more frequent charging.



WARNING: WHEN CHECKING OR FILLING THE ELECTROLYTE LEVEL IN THE BATTERIES, DO NOT ALLOW BATTERY ELECTROLYTE TO CONTACT SKIN, EYES, FABRIC, OR PAINTED SURFACES. THE ELECTROLYTE IS A SULPHURIC ACID SOLUTION, WHICH COULD CAUSE SERIOUS PERSONAL INJURY OR DAMAGE TO THE TRAILER. WEAR COMPLETE SPLASH-PROOF GOGGLES AND CLOTHING PROTECTION WHEN WORKING WITH BATTERIES. AVOID TOUCHING YOUR EYES WHILE WORKING NEAR BATTERIES. THE GASES GENERATED WITHIN A STORAGE BATTERY CELL MAY BE IGNITED BY AN OPEN FLAME OR SPARK IN THE VICINITY OF THE BATTERY. DO NOT USE A MATCH OR FLAME TO PROVIDE LIGHT FOR CHECKING THE LEVEL OF THE WATER.

We suggest checking the battery at least every two weeks in freezing weather. The temperature at which a battery will freeze depends on the condition of its charge. As an example: a fully charged battery with a specific gravity of 1,265 will not freeze until the electrolyte temperature drops to -71.3 °F (-57 °C), while a discharged battery will freeze at +19 °F (-7 °C). The following table shows the freezing points of batteries at various specific gravity readings, temperature corrected 80 °F (27 °C).

Battery Freezing Points

Percentage Charge	Specific Gravity	Freezing Point (°F/°C)	
100	1,265	-59 °C	-75 °F
76	1,225	-37 °C	-35 °F
74	1,200	-27 °C	-17 °F
50	1,150	-15 °C	5 °F
0	1,100	-8 °C	18 °F
<0	1,050	-3 °C	27 °F

During the winter or when your trailer is stored for a long period, the battery should be removed from the trailer. To properly store your battery:

- Remove battery from battery box.
- Clean the battery case and terminals with baking soda and water.
- Check the water level and add water if needed.
- Test your battery with a hydrometer and/or a voltmeter to ensure the battery is fully charged.
- If needed, charge your battery. Batteries stored in a discharged state are susceptible to freezing, sulfation and an increased rate of discharge. A fully charged battery will not freeze unless the temperature reaches approximately -75 °F (-59 °C). But if discharged, it can freeze at 27 °F (-3 °C).
- Store your battery in a dry, cool, well-ventilated area and out of the reach of children and pets.
- Check the water level and state of charge every 45-60 days or every 30 days, if the battery is two years old or more. If needed, add distilled water and charge.

For battery service or replacement, go to any service station or dealer who sells and services the type of deep-cycle battery installed in your trailer.

The battery is the heart of your electrical system.

Use

The deep-cycle battery, also known as a marine battery, provides energy for all the equipment in your trailer. When plugged into a power source, it will recharge automatically. If you are camping without services, however, it is important to measure your electrical consumption. Use only one light at a time, and turn off the light when it is no longer needed. Turn off inverter (if trailer is so equipped) once you are no longer using it. This will maximize the endurance of the battery.

Recharge

When planning to camp with no external power source, it is important to leave with a fully charged battery. There are three ways to recharge the battery: either by plugging the ALTO, or through the connection to the tow vehicle, or with the solar panel(s). The fastest method is to plug the trailer 12 to 24 hours before departure. It is slower to recharge the battery while driving.

At 100 km/h it will take at least 4 to 5 hours to efficiently recharge the battery. The solar panel(s) charges the battery continuously but at a slow rate. (See *Solar Panels* section).

Battery Charge Indicator

The battery charge indicator, used when not plugged into 120-volt power, will indicate the trailer battery condition. When it shows weak or bad condition, you should take every reasonable step to conserve power by using as few lights as possible and switching off appliances. The battery should be charged as soon as practical with the tow vehicle charging system, or by connecting to 120-volt power source.

-  The normal life of a battery is between 3 and 4 years, depending on the number of cycles that it will have gone through. It is therefore important to take good care of it, because unlike a car battery, the deep cycle battery requires maintenance.
-  The endurance of your battery will vary depending on the use of electric equipment in the trailer. Endurance can be as high as 96 hours. This is for new original equipment battery only.
-  Replace your battery with a deep-cycle battery only. Some models may not fit in the box.
-  In cold weather a drained battery will freeze and will become unusable. A battery that froze can be easily identified and will not be covered under warranty.
-  In case of prolonged storage, unplug the battery, store it inside and connect it to a battery maintainer charger.
-  In the case of lead-acid maintenance-free batteries, do not force the cover open, this will destroy the battery.

Lithium Battery (Optional)

If you have a 12 V lithium battery, here are the differences in its usage compared to a standard battery:

- The lifetime of a lithium battery is about 8 years.
- It is possible to drain 80% of the capacity of lithium batteries (20% of energy left).
- A lithium battery is half the weight of a standard battery.
- Lithium batteries can be used/discharged between -20 °C and +60 °C.
- A lithium battery can be recharged between 0 °C and +60 °C.
- This option comes with a battery switch (photo I-1) to disconnect the battery and avoid recharging it when its temperature is below 0 °C.
- Use during three seasons (spring, summer and fall) requires no additional management.
- In winter, if the batteries are not in use, disconnect them with the switch to avoid unnecessary recharging, either by the towing vehicle engine, the built-in charger, or the solar panels (photo I-1).
- Winter use requires more management, such as warming up the lithium batteries so they can be recharged when they are below 0 °C.



PHOTO I-1
Battery switch

Self-Heating Bluetooth Lithium Battery (Optional)

Self-heating lithium batteries have certain specific characteristics.

- A self-heating lithium battery can be recharged between -25°C $+60^{\circ}\text{C}$ (-13°F 140°F), since it has an integrated heating element which will heat the battery before allowing the charge, so it takes more time to recharge as the temperature goes down since it has to be heated first (the heating cycle is fully automatic).
- Using the Volthium Bluetooth application (needs to be downloaded) you have access to the internal temperature of the battery, the status in %, the voltage, the number of full cycles, the charge or discharge current of the battery.
- Three-season use: spring, summer and fall, no additional management compared to a standard battery.
- Winter use: only plan for more charging time. The colder it is, the longer it will take to recharge the battery (at -20°C , the charge will take 2 hours more than during the summer).

NOTE: Bluetooth function works at a very short distance (2 to 6 feet) from the battery compartment.

 No maintenance required. When storing for a long period of time, remove solar panel fuse (if equipped) and disconnect battery.

Lithium Battery Monitor (Optional)

- The lithium battery monitor (photo I-2) displays the charge percentage of the battery to avoid going below the critical threshold which could damage or shorten battery life.

- The monitor shows the charge or discharge power in real time (in Volts and in Amps).



PHOTO I-2
Lithium battery monitor

J. SOLAR PANELS (OPTIONAL)

Solar panels (photo J-1) are used exclusively to recharge the battery of the trailer.



PHOTO J-1
Solar panels

Two 110-Watt Solar Panels (220 Watts)

If trailer is equipped with two solar 110 W panels for a total of 220 Watts, they will provide energy each day, but in variable quantity depending on the amount of sunlight. The trailer will be completely autonomous as long as energy is managed carefully and there is a good amount of sunlight. In this case it will be possible to use the inverter for short periods of time without limiting endurance too severely.

Two 220-Watt Solar Panels (440 Watts)

If trailer is equipped with two solar 220 W panels for a total of 440 Watts, they will provide energy each day, but in variable quantity depending on the amount of sunlight. The trailer will be completely autonomous as long as energy is managed carefully and there is a good amount of sunlight. In this case it will be possible to use the inverter for longer periods of time without limiting endurance too severely.

Important Facts

A small shaded area on the solar panel will have an equivalent impact as a completely shaded solar panel because all cells are connected in series. This means that the electrical output of the solar panel will never be greater than the output of its most shaded cell.

Remember that a solar panel produces energy for only about 8 hours over a 24-hour period. The maximum electrical output of a solar panel is about 3.3 amps/hour in full noontime summer sunlight (6.6 a/h for 2 solar panels). On a rainy day, the electrical output will be reduced to about 0.2 to 0.4 amps/hour.

It is important to clearly understand that in order to get longer electrical endurance with solar panels, electrical consumption inside the trailer must be reduced to a minimum. This way, the energy provided by the solar panel will be an important share of the total daily electrical

consumption. Keep in mind also that in order to be completely autonomous, the energy consumption in 24 hours must be less than the energy generated by the solar panel in 8 hours.

Solar Panel Monitor

On this monitor (photo J-2/diagram J-2), the battery icon shows a partial or full charging depending on the actual charging power. When the icon shows full (up to the top), then the battery is completely full or charged.

As soon as the charging from the solar panels stops, like in the evening, the icon could start showing a partial fill up, which is normal as the charging has stopped, but when looking at the voltage value below the icon, the battery is indeed full (12.7 volts or more).



PHOTO J-2
Solar panel monitor

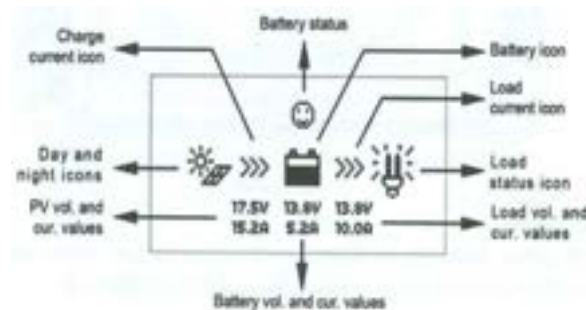


DIAGRAM J-2
Solar panel monitor

K. EQUIPMENT

All appliances are delivered with in-depth instructions. Those instructions are included in the documentation supplied on the day of delivery. The instructions may contain warnings, cautions and operating instructions that should be read and followed before operating the appliances. The information contained in the appliance documentation supersedes any information contained in the ALTO Owner Manual. If you believe contradictory information on appliances appears in this manual, please contact the Safari Condo Customer Service Department.

If any appliance instructions have not been provided with your trailer, contact your dealer, the respective appliance manufacturer, or Safari Condo Customer Service Department for a copy.

Maintenance

Follow the instructions and warnings noted in the appliance and equipment documentation, and those included in this manual.

Annual maintenance should be conducted on propane gas appliances and equipment by an authorized dealer or repair facility.

Insects can build nests in the burners of various appliances and equipment. The burner and burner orifice of the propane gas appliances and equipment should be cleaned out by an authorized dealer or repair facility anytime circumstances or conditions warrant, but no less than on an annual basis.

Tank Monitor

Tank monitor (photos F-1 and K-1 represent the same control panel) shows the level of the various tanks in the trailer. The value in percent (%) will not be progressive because of the shape of the tanks. When you press twice on a button, the display will be prolonged for some time:

- Grey water press "GREY" (photo K-1.1 or F-1.1)
- Black water press "BLACK" (photo K-1.2 or F-1.2)
- Potable water press "FRESH" (photo K-1.4 or F-1.4)
- Water pump switch ((photo K-1.3 or F-1.3) and
- Battery charge-level press "BATT" (photo K-1.5 or F-1.5) (in case of optional solar panels, for a more precise value, read the charge level of the battery on the solar panels monitor).



Toilet

- ☞ Instructions pertaining to the toilet are included in the documentation given to you at the dealership. Please read and follow all provided care, maintenance, and safety information. Store instructions in a safe place for future reference. Pass the documentation on to any subsequent users of the toilet.
- ☞ **IMPORTANT:** It is strongly recommended that you read the supplied manufacturer's instructions when purchasing travel trailer.

Flush lever (photo K-2), located on the rear right corner of the toilet, has two functions:

1. To fill the toilet bowl, pull lever halfway.
2. To rinse and flush, pull lever all the way.

NOTE: To use toilet wash down spray, you must pull lever at either one of the two positions.

The toilet's black water tank-level indicator is on the Tank Monitor near the entrance (BLACK) (photo K-1.2).). As soon as the black water-level indicator on the monitor shows 100%, empty the black water tank. (See Section *Dumping Holding Tanks*.)

NOTE: In case of a problem with the toilet, it is possible to cut off its water supply. The valve is located F SERIES behind the toilet (F SERIES - photo K-2) or R SERIES in the cabinet under the sink (R SERIES - photo K-3).



PHOTO K-2
F Series - Toilet control and plumbing
valve



PHOTO K-3
R Series - Plumbing valve

Lights

Each LED light is powered either through the converter when plugged into a 120 V power source, or through the battery, or through the tow vehicle.

Bench-Bed

ALTO R1713, R1723 and F1743 can sleep three people (or optional four). ALTO F2114 and A2124 can sleep four. ALTO F2414 can sleep four in the basic version and six with the Flex option.

Rear bench bed (photo K-4) can be used either one of two ways on certain models: either as 2 single beds or as 1 large king-size bed when placing the backrests in the centre. It is suggested to sleep with your head towards the rear to facilitate getting out of bed, or when crosswise with queen-size bed, your head on the driver side.

Front Single Bed

To convert front dinette into a bed:

- Remove table top.
- Rest table top between the two front seats.
- Cover table with both front backrests.



PHOTO K-4
Rear bench bed

Bunk Bed

The bunk bed is available as an option only on the R SERIES. This option replaces the top storage compartments included in the base model and eliminates the front window option.

With the bunk bed option, four people can sleep in the ALTO. During the day, the bed is raised against the roof. To use it, simply lower it.

NOTE: This option is not compatible with the front storage cabinet included in the base model or with the optional front window (R SERIES).

Extra Bed

The extra side bed is an option on the F1743 model.

With this option, four people can sleep in the ALTO F1743. During the day, the bed is stored on the passenger side wall near the counter. To use it, pull out the folding frame, lower the bottom support leg to the floor and install both hard-backed cushions in the unfolded frame.

FLEX electrical bed

Optional FLEX electrical bed for the ALTO F2414

If you have this option, here is what you need to know:

- never try to raise or lower the bed when a load of 20 lb (9 kg) or more is on it.
- The Flex bed has a static (no movement) load capacity of 375 lb maximum (170 kg).
- The bed has a maximum dynamic capacity of 60 lb (27 kg) including the platform, the mattress and bedding: so only remains about 20 lb (9 kg) of available load during raising or lowering.
- The switch to raise or lower the bed is on the cabinet on the passenger side near the entrance (photo K-5).
- It is possible to raise or lower the bed manually by using the small crank supplied with the instructions. You need to insert the crank in the hole of the motor cover near the motor cover light switch (photo K-6).

- To use the optional air conditioning, you need to lower the bed partially or totally. The lower the bed, the better the efficiency of the air conditioning.
- The mattress is removable, secured in place by Velcro.
- To use the FLEX bed, lower it at the desired height (a trade-off between lower bed space and upper bed space).
- To climb in the Flex bed, climb on the countertop then onto the bed.
- Use a small step ladder if necessary (not supplied).
- It is advised to read the electrical bed instruction manual supplied in the instructions manual pouch.
- The bed motor is electric. It is protected by a 20-amp fuse in the fuse panel under the table at the front (photo H-2.1).
- **IMPORTANT :** Never raise or lower the bed if someone or a pet is near bed, on bed or under bed.
- **IMPORTANT:** Before setting off with the ALTO, lower bed centre cushions should be stacked in the centre of FLEX bed, then bed should be raised to highest position (photo K -7). Place cushions at back of air conditioner. This avoids the risk of breaking the mechanism.



PHOTO K-5
Electric bed switch

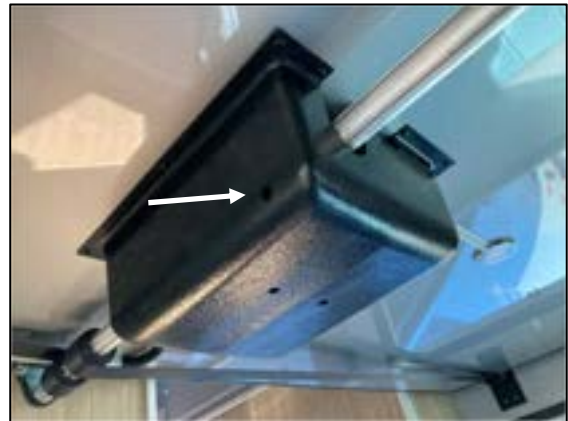


PHOTO K-6
Crank hole-
Manual bed raising and lowering



PHOTO K-7
Bed position for travelling

 **WARNING:** NEVER TRY TO RAISE OR LOWER THE BED WHEN A LOAD OF 20 LB (9 KG) OR MORE IS ON BED.

 **WARNING:** NEVER RAISE OR LOWER THE BED IF SOMEONE OR A PET IS NEAR BED, ON BED OR UNDER BED

Privacy Curtains

Privacy curtains play the same role in this travel trailer as they do at home: they provide privacy at night-time and protection from light and heat in the daytime.

R SERIES:

There are two types of curtains inside the travel trailer: some on sliding tracks and others with snap fasteners.

- When open, rear side curtains should be stored near roof actuators and secured with their straps. Curtains should always be in this position before roof is lowered.
- All curtains should be stored before lowering the roof.

F SERIES:

There are two types of curtains inside the travel trailer: pleated duo and snap fasteners.

 **WARNING:** Never use stove if the curtain for the window above is drawn.

Windows

The windows in your travel trailer are either safety glass or acrylic plastic.

R SERIES Both side windows have a sliding sash lower section.

NOTE: Rear window is designed for emergency exit.

R SERIES

To open:

1. Free velcroed screen bottom (photo K-8.1) to access locks;
2. Turn all four latches $\frac{1}{4}$ turn to release (photo K-8.2);
3. Push window to desired position and tighten hold-open arms.

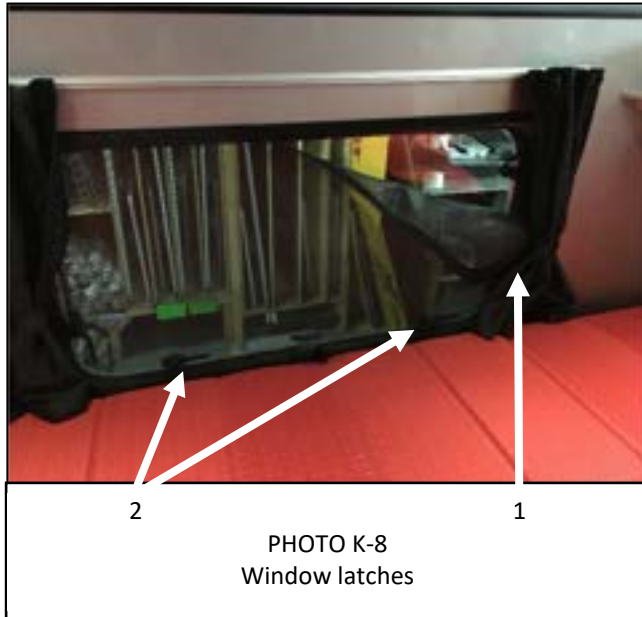
F SERIES

To open:

1. Turn the four latches $\frac{1}{4}$ turn to release (photo K-9.1).
2. Push out until the top-hinged window to the desired position and tighten hold-open arms.

To close the window:

1. Reverse this procedure.



⚠ WARNING: YOU AND ALL YOUR FAMILY SHOULD PRACTISE ESCAPE PROCEDURES SO THEY CAN BE RAPIDLY ACCOMPLISHED EVEN IN TOTAL DARKNESS.

⚠ WARNING: NEVER PARK YOUR TRAVEL TRAILER SO THE ESCAPE WINDOWS CANNOT BE EASILY USED FOR EMERGENCY EXITS. LEAVE A MINIMUM OF 3 FT. (1 M) FROM NEAREST OBSTACLE.



These windows are cleaned in the same manner ordinary windows are. Clean the seals with a damp cloth or mild detergent every three to six months, taking care not to use a strong solvent, as it will damage the seals and acrylic windows. A coat of natural silicone lubricant applied after the seal has dried will keep it flexible. Spread the lubricant evenly with a brush or finger, working it into the surface. This is a good practice for all rubber seals in your ALTO. For replacement of a damaged window contact an ALTO Service Center or the factory.

⚠ WARNING: FAILURE TO PROPERLY CLEAN AND LUBRICATE THE WINDOWS COULD RESULT IN THE WINDOW STICKING TO THE JAMB. WINDOW SEALS THAT BECOME STUCK TO THE WINDOW JAMB SHOULD BE RELEASED BY A QUALIFIED TECHNICIAN TRAINED IN THE PROCEDURE.

⚠ DANGER: DO NOT FORCE, PRY, OR APPLY GREAT PRESSURE TO OPEN THE WINDOW. FAILURE TO HEED THIS WARNING MAY CAUSE THE WINDOW TO SHATTER AND/OR CAUSE PERSONAL INJURY.

Screens

Your screens are easy to maintain. Just clean them occasionally with a damp cloth.

VARIABLE SPEED ROOF VENT

-  Instructions pertaining to the roof vent are included in the documentation given to you at the dealership. Please read and follow all provided care, maintenance, and safety information. Store instructions in a safe place for future reference. Pass the documentation on to any subsequent users of the roof vent.
-  **IMPORTANT:** It is strongly recommended that you read the supplied manufacturer's instructions when purchasing travel trailer.

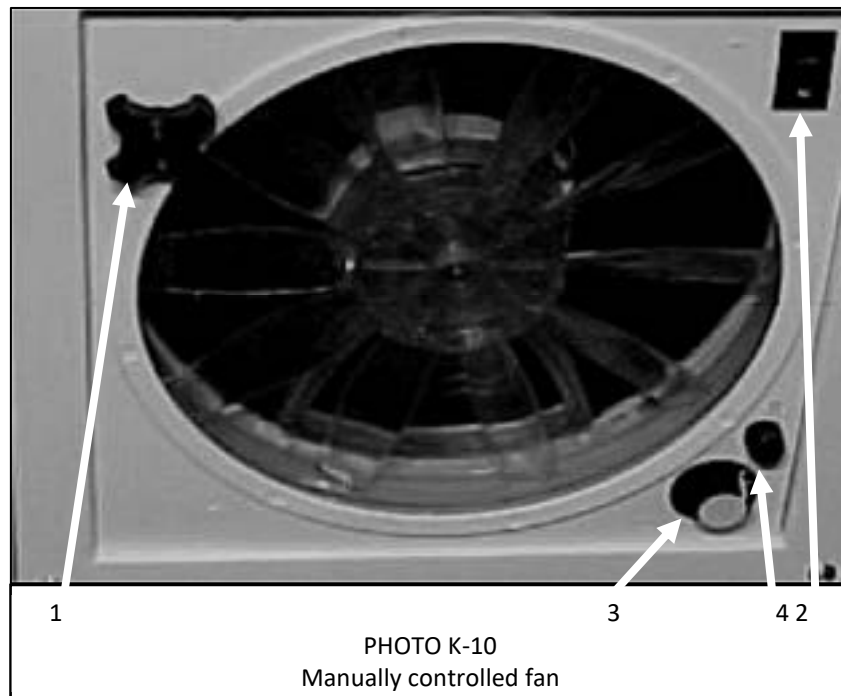
There are three different types of fans for your ALTO: manually controlled fan (standard equipment), automatic with remote control (optional) and MaxxFan with remote control (optional). The variable speed roof vent system is designed to quickly exhaust stale, hot air and

draw in fresh air. It's great to use when the outside temperature really doesn't call for air conditioning, but heat has built up in your travel trailer.

HOW TO USE

Manually Controlled Fan

1. Open vent cover using crank (photo K-10.1).
2. Select direction of vent (in/out) (photo K-10.2).
3. Set fan speed (photo K-10.3).



NOTE: If fan doesn't work, check 4 A fuse (photo K-10.4) or 10 A fuse (photo H-2.1).

Automatic model with remote control (optional)

1. Open fan cover using remote control (photo K-12).
2. Select type of ventilation desired using remote control.
3. Set fan speed using remote control.
4. Select desired temperature or comfort level using remote control temperature buttons. Fan motor will now start & stop automatically as interior temperature of travel trailer exceeds or drops below selected level.

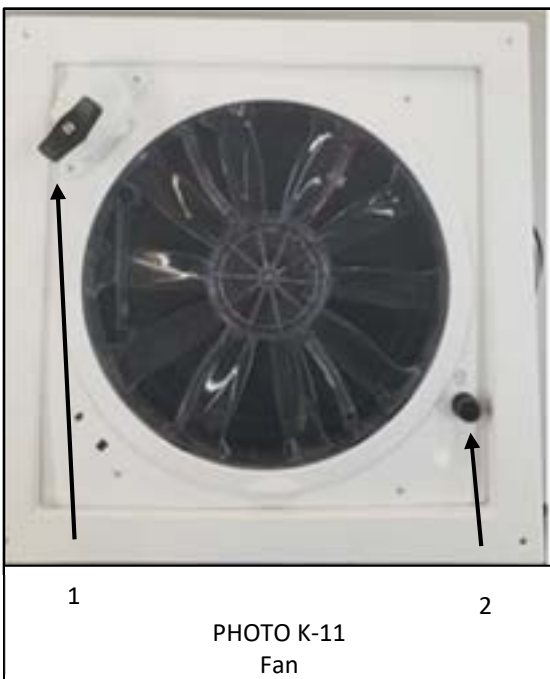
NOTE: Fan motor will not start if selected temperature is higher than temperature inside travel trailer.

NOTE: In case of rain, rain sensor will close vent cover and stop fan. Once rain sensor dries, vent cover will not open. It is possible to cancel this automatic closing feature using remote control, please read the fan manual supplied to you at the dealership.

Manual operation of automatic model (while rain sensor is still wet)

1. To open cover, turn crank slowly (photo K-11.1).
2. Select type of ventilation desired using remote control (photo K-12).
3. Set fan speed using remote control.

NOTE: If fan doesn't work, check 4 A fuse (photo K-11.2) or 10 A fuse (photo H-2.1).



MaxxFan (optional)

1. Open roof vent mini-dome using button on frame or using remote control (photo K-14).
2. Choose type of ventilation, using remote control (photo K-14).
3. Set desired temperature. Fan will start or stop depending on temperature inside ALTO and the temperature you have set. If Auto Mode is "On", frame will show a green light.
4. In Auto Mode - green light on frame – cover may close to keep inside temperature as set.

The MaxxFan will not close automatically when it rains as it is designed to remain open during rain and keep your ALTO dry. However, during violent rain and wind coming from the back of your ALTO, it is recommended to close it or vent in "OUT" mode.



PHOTO K-13
Maxxfan



PHOTO K-14
Maxxfan remote control

NOTE: If vent does not work, check 10A fuse (photo H-2.1).

-  To avoid burning fuse, stop fan before reversing fan rotation (in/out).
-  When leaving trailer, always close roof vent cover (except for automatic or Maxxfan models), or leave a two-inch gap with fan on “out”, to avoid most rain damage.

CLEANING INSTRUCTIONS:

- Turn OFF fan motor (on frame or on remote);
- Locate thumb tab on Pop ‘N Lock Screen, grab it and gently pull it down to unsnap, or turn all 4 locks ½ turn if so equipped;
- Wash Pop ‘N Lock Screen and fan blade with a light non-abrasive soap, then rinse and dry.
- Re-install Pop ‘N Lock Screen by gently snapping it back in place or using all 4 locks.

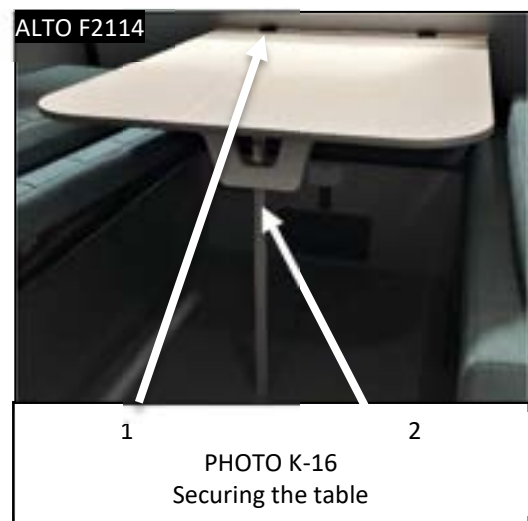
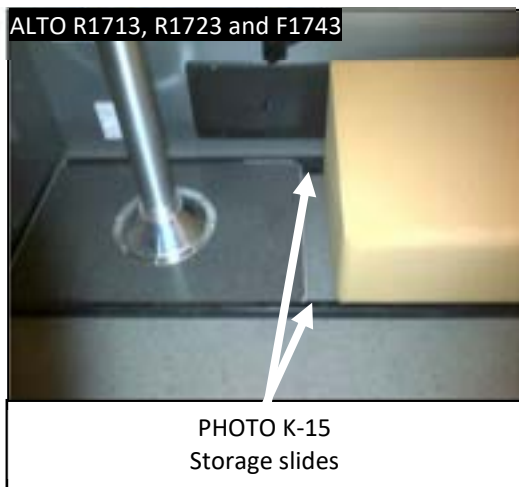
Sliding Front Portable Table

ALTO R1713, R1723 and F1743: Front table slides and pivots to provide access to the front bench. Table is also portable and can be used outside of its tracks and taken to rear of ALTO, or taken outside. Table can also be taken apart and converted to a bed.

ALTO F2114 and F2414: Portable front table can be removed from track and converted to a queen-size bed. There are two tracks, one inside at the front and one outside on the passenger side. Leg can be folded to transport table or to install front bed.

-  NOTE: Do not lower table below horizontal while it is still attached to track as it would damage or break the brackets. Always deploy leg and click it in place when you are setting the table onto the track.

- ✎ ALTO R1713, R1723 and F1743: Before driving off, table must be secured in its tracks. It needs to be inserted in its tracks starting on the passenger side, then completely slide it over to the driver side and finally block it with a backrest support placed on the floor, on the passenger side, to prevent table from sliding to the passenger side, as it could then come out of its tracks. (photo K-15)
- ✎ ALTO F2114 and F2414: Before driving off, table must be secured in its track inside the ALTO (photo K-16.1.). Leg must be deployed and clicked in place (photo K-16.2). Both straps must be attached at the top of the leg (photo K-17).
- ✎ ALTO A2124: Before driving off, tighten the latches of table pivots and use seating cushions to block and prevent the table from moving during travel.
- ✎ Never climb on the table. It was designed solely for meals and recreational activities.



OUTDOOR TABLE (Optional)

There is an optional outdoor table made of composite materials like your ALTO. It can remain outside as it is made to withstand rain (photo K-18). This option is available for all ALTOs.

To install table, hook it onto the exterior track on the passenger side of ALTO (photo K-18), deploy the square bracket below and click it in place (photo K-19.1). It has a rubber pod which will rest on the body of the ALTO (photo K-19.2). Make sure bracket is locked in place.

Table is stored in one of the rear compartments of the ALTO (photo K-20). Slide it in the compartment (bracket nearest you on top), insert the lower part of the table in bottom guides (photo K-20.1), use mini strap at the top to secure table in the compartment (photo K-20.2).



PHOTO K-18
Outdoor table (optional)



1 2
PHOTO K-19
Table locking bracket



1 2
PHOTO K-20
Outdoor table storage

**WARNING :**

- DO NOT LET ANYONE OR ANY ANIMAL CLIMB ONTO THE TABLE BECAUSE OF THE RISKS OF FALL AND/OR DAMAGE TO THE SUPPORTS.
- REMOVE THE OUTDOOR TABLE AND STORE IT IN ITS COMPARTMENT BEFORE DRIVING OFF.
- NEVER MOVE YOUR ALTO WITH THE OUTDOOR TABLE IN PLACE ON EXTERIOR TRACK.

Cabinet Panels

There are two types of panels, sliding or push-button.

NOTE: All cabinet panels are removable by lifting the catch located at the tip of each hinge.



Before driving off, make sure all panels are locked. All push- buttons should be pushed in.

Storage

The kitchen cabinet should have the heaviest items on the bottom and lighter items overhead: frying pans and canned goods should be stored on the floor or on the bottom shelf, cereals and crackers should be placed in the top storage. Use unbreakable type plates and saucers, and consider storing your dish towels around them.

Clothes hung in wardrobes should be kept on hangers that snap over the clothes to keep them from “jumping” off the poles on rough roads. Evening dresses should be kept in dry-cleaning business-type plastic bags. No matter how hard you try, if you travel along dusty roads, the dust will work its way into the trailer and soil your clothes. Try to avoid large bulky coats. Layers of lighter clothing will usually keep you warmer, are more versatile and easier to store.

NOTE: Heavy items should be stored at the bottom, lighter items in the upper cabinets.



WARNING: KEEP FLAMMABLE MATERIALS AWAY FROM THE FURNACE.

Storage Area under Bench-Beds

Storage area under bench-beds is accessible from above by lifting the cushions or from the front through sliding panels:

- R SERIES: The storage under the bench-beds does not include the space between the wall and the aluminum strip. To prevent anything from hindering the roof when lowering, never put anything in this space.
- R SERIES: Do not put anything under the rear cushion because it is mobile and will have to fold down when lowering the roof.
- ALTO F-1743: Two hatches to access the storage under the benches, one at the front on the driver side, one at the rear on the passenger side. An access hatch for the rear storage space on the driver side is optional.
- ALTO F-2114 and F2414: Four hatches to access storage under both benches.
- ALTO A-2124: Five exterior hatches to access four storage spaces.



Front Storage

All three front storage compartments are accessible from the top by lifting the cushions. The storage compartment under the seat on the passenger side is also accessible from the side by opening the panel. Storage under the left seat also has a locked exterior access hatch.

R SERIES: Front Roof Storage Cabinet

Total weight of contents placed in the front roof storage cabinets should not exceed 9 kg (20 lb) per cabinet. This storage is designed for light items such as clothes and towels. Heavy objects should be placed at floor level.

NOTE: This storage is incompatible with the optional front upper bed or the optional panoramic front window.

Exterior Storage Compartment

R SERIES: An exterior storage compartment is located in the front on the driver side. Open by unlocking both locks, then by simultaneously pressing both push buttons. This storage compartment should be used for the power cord, water hose, wheel wedges, jack crank, front jack wheel and electrical extension cords. To close compartment, close the hatch then lock with the key as required.

Exterior storage compartments should always be closed because they provide direct access to the inside of the travel trailer to all types of animals.



WARNING: NEVER TOW THIS TRAILER IF EXTERIOR STORAGE COMPARTMENTS ARE NOT CLOSED AND LOCKED.

Electric Roof

R SERIES ONLY

The electric roof with rigid sides is an exclusive Safari Condo design.

-  Never try to use the electric roof if there is snow on it or if it is stuck in ice.
-  Always oversee raising and lowering operations of the roof: make sure that the left and right sides are functioning simultaneously.
-  If one side stops moving while raising or lowering the roof, stop the ongoing operation immediately.

Raising of Roof

1. Press upper part of control switch located on the wall to the left of entrance. It is possible to stop the raising procedure by releasing switch and leaving it in neutral position (photo K-21). Hold switch until the roof comes to a complete stop.

2. Lift rear cushion by either pressing switch located at the end of the counter (photo K-22) or manually pulling black strap in the centre of cushion (photo K-23) to raise cushion past the bottom of the window and gently lower it in position.



PHOTO K-21
Roof control switch



PHOTO K-22
Switch to raise rear cushion



PHOTO K-23
Strap to lift the rear cushion

Lowering the Roof

Before lowering:

1. Remove everything on top of cupboards.
2. Lock television, if applicable.
3. Remove rear cushions.
4. Remove rear backrest supports.
5. Bring rear curtains towards the centre.
6. Make sure there is nothing under the rear cushion, or in space between walls and seats.
7. Make sure rear window is closed and locked and in case of front optional bed, raise the bed up in storage position.
8. Lower rear cushion by EITHER:
 - a. Pressing button located at the end of the counter (photo K-22), OR
 - b. Using black strap in the centre (photo K-23), pulling up on the cushion to disengage, and gently lowering cushion in position.
9. Throughout this procedure, no one should be in the travel trailer except the operator.

Lowering:

1. Press lower part of control switch located on the wall on the left side of entrance (photo K-21). It is possible to stop the closing procedure by releasing switch.
2. Make sure that the rear cushion is fully lowered. Otherwise, the roof will not close.
3. Hold switch until roof comes to a complete stop. Make sure that the roof is properly closed by checking the exterior and making sure the seal is adequately pressed against the walls.

☞ Operator must check that nothing can block the roof on either side before lowering.

☞ ATTENTION! Television (optional) must be locked on its wall mount before closing the roof.



WARNING: NEVER TOW THE TRAILER UNLESS THE ROOF IS LOWERED.

Refrigerators

Dometic 2-Way Refrigerator

-  A manual pertaining to the refrigerator is included in the documentation given to you at the dealership. Please read and follow all care, maintenance, and safety information contained in this manual. Store the manual in a safe place for future reference. Pass the manual on to any subsequent users of the refrigerator.
-  **IMPORTANT:** It is strongly recommended that you read the supplied manufacturer's owner manual when purchasing trailer.

In an absorption refrigerant system, ammonia is liquefied in the finned condenser coil at the top rear of the refrigerator. The liquid ammonia then flows into the evaporator (inside the freezer section) and is exposed to a circulating flow of hydrogen gas, which causes the ammonia to evaporate, creating a cold condition in the freezer.

The tubing in the evaporator section is specifically sloped to provide a continuous movement of liquid ammonia, flowing downward by gravity, through this section. If the refrigerator is operated out-of-level when the trailer is not moving, liquid ammonia will accumulate in portions of the evaporator tubing. This will slow the circulation of hydrogen and ammonia gas, or in severe cases, completely block it, resulting in a loss of cooling. Any time the trailer is parked for several hours with the refrigerator operating the trailer should be levelled to prevent this loss of cooling. The trailer needs to be levelled only so it is comfortable to live in (no noticeable sloping of the floor or walls).

When moving, levelling the trailer is less critical. Rolling and pitching the trailer back and forth across the level will prevent ammonia from accumulating in the tube evaporator, thus avoiding blocking the system.

OPERATION

The refrigerator requires 12-volt current to operate even if running on LPG or 120-volt modes. The 12 volt is used to power the circuit board that directs the refrigerator functions. When running in a mode such as LPG, it means the heat source, by far the largest power requirement to evaporate the ammonia is being provided by an LP Gas burner.



WARNING: MOST LP GAS APPLIANCES USED IN TRAILERS ARE VENTED TO THE OUTSIDE OF THE TRAILER. WHEN PARKED CLOSE TO A GASOLINE PUMP, IT IS POSSIBLE THAT GASOLINE FUMES COULD ENTER THIS TYPE OF APPLIANCE AND IGNITE THE BURNER FLAME, CAUSING A FIRE OR AN EXPLOSION.

Dometic refrigerators for ALTO R1713, R1723 and F1743 are completely automatic. They automatically select the energy source, either LPG or electricity, the latter having priority. The temperature inside the fridge is also set automatically. Therefore, there is no adjustable thermostat on this fridge.

To turn on the fridge, press the button on the left, inside the front panel of the fridge. The second button, found on the right, should be pressed and the “AUTO” light should be on. If this button is not pressed and the “AUTO” light is not on, the fridge is no longer in automatic mode and will work off LPG continuously.

If the “CHECK” light comes on or flashes, it is because the propane ignition of the fridge did not succeed. Probable causes could be an empty propane tank, or a closed propane valve on the tank.



PHOTO K-24
Refrigerator switches

To turn off the fridge, the “ON/OFF” button must be pressed out. All indicator lights should be off.

- ☞ In very humid conditions, fridge will need to be defrosted every 15 days. Although there is a pan to collect the resulting water, check that there is no overflow leaking at the front.
- ☞ After defrosting or shutdown, leave the refrigerator door open to dry out.

NOTE: An absorption fridge may take up to eight hours to start its cooling cycle. Think of starting it the day before.

NOTE: An absorption fridge is level sensitive. Try to put the trailer as level as possible.

NOTE: The yearly fridge maintenance requires to remove the two outside vent grills to clean and dust the space around the heating element and the tubing. Remove all carbon deposits in the burner regularly depending on use of the fridge in propane mode, at least every 2 years (read the Dometic fridge manual).



Frigo Nova Cool 12 Volts Compressor Refrigerator (Optional)

-  Instructions pertaining to the fridge are included in the documentation given to you at the dealership. Please read and follow all provided care, maintenance, and safety information. Store instructions in a safe place for future reference. Pass the documentation on to any subsequent users of the fridge.
-  **IMPORTANT:** It is strongly recommended that you read the supplied manufacturer's instructions when purchasing trailer.

Fridge thermostat and switch are located inside the fridge. To turn off the fridge, set the thermostat to zero and listen for the click. The ideal temperature setting is between 3 and 4. To minimize auxiliary battery discharge, readjust fridge temperature (less cold if freezer is empty) as required.

Dometic 3-Way Refrigerator (ALTO F2114, A2124 and F2414)

This refrigerator can operate automatically or manually between LPG and 120 volts modes. It can also be selected to operate in 12 volts mode but this technology draws an excessive amount of 12-volt power which will rapidly deplete the ALTO battery.

The 12-volt mode can be used when the ALTO is towed as the tow vehicle alternator and battery plus the ALTO battery will have together the capacity to supply enough 12-volt power to operate the refrigerator on a longer period. But do not forget to set the refrigerator OFF if you stop the engine of your tow vehicle for 30 minutes or more.

Propane Stove

-  Instructions pertaining to the propane stove are included in the documentation given to you at the dealership. Please read and follow all provided care, maintenance, and safety information. Store instructions in a safe place for future reference. Pass the documentation on to any subsequent users of the propane stove.
-  **IMPORTANT:** It is strongly recommended that you read the supplied manufacturer's instructions when purchasing trailer.

People using gas ranges in their home will find little difference in the operation of the range in the trailer. Other customers used to electric ranges may be a little apprehensive at first; but will quickly gain confidence. The basic operation of the gas ranges have been the same for many years, but please be sure to read all the directions provided by the manufacturer located in the Owner's Packet. Excellent service and parts manuals are available from the manufacturer.

-  Before using propane stove, read the supplied manufacturer's owner manual as well as the propane section (see Propane).



WARNING: NEVER USE PROPANE STOVE IF CURTAINS ARE NOT TIED UP OR RETRACTED. ALWAYS START ROOF VENT AND OPEN A WINDOW OR THE DOOR.



WARNING: NEVER USE STOVE AS A SPACE HEATER.

Microwave Oven (Optional)



Instructions pertaining to the microwave oven are included in the documentation given to you at the dealership. Please read and follow all provided care, maintenance, and safety information. Store instructions in a safe place for future reference. Pass the documentation on to any subsequent users of the microwave oven.



IMPORTANT: It is strongly recommended that you read the supplied manufacturer's instructions when purchasing trailer.

Only federally certified technicians are permitted to service microwave ovens. For this reason, the only service instructions contained in this manual are for removal of the complete oven. If you have a microwave oven problem please contact the appropriate manufacturer, an authorized ALTO dealer, or the Factory Customer Service Department.

To use microwave, set "OUTLET 1/ MICROWAVE" switch on MICROWAVE (photo H-2). It is located:

- R SERIES: at the end of the counter
- F and A SERIES: above the counter near the entrance.

R SERIES: To remove the microwave from the ALTO

1. Unplug it from the outlet under the counter and remove the extension.
2. Remove the top of the cabinet by unscrewing the two screws found on each side near the back, and by loosening the front by tapping upwards. Front of the cabinet is not screwed in place, but is held by two plastic wedges that are slid tightly into the vertical aluminum extrusions.
3. Under the microwave, unscrew the 4 screws that hold it in place.
4. To reinstall the microwave, reverse operations, but make sure you put sealant (Flextra or silicone) in the 4 screw holes under the microwave before putting in the screws. This will prevent the screws from loosening due to road vibrations.



Before driving off, make sure the glass plate is in its protective packaging or completely secured by any other protective device (large towel). If plate is not secured, it will break and damage the inside of the microwave and could also slam on the door and create more damage.

Air Conditioner

Air conditioner heat pump (optional on ALTO R1713, R1723, R1743, F2114, A2124)

- 🔧 Instructions pertaining to the air conditioner heat pump are included in the documentation given to you at the dealership. Please read and follow all provided care, maintenance, and safety information. Store instructions in a safe place for future reference. Pass the documentation on to any subsequent users of the air conditioner heat pump.
- 🔧 **IMPORTANT:** It is strongly recommended that you read the supplied manufacturer's instructions when purchasing trailer.

The voltage to the air conditioner is critical. We commonly refer to 120 volts, but a check with a voltmeter may reveal a much lower voltage. Your air conditioner will probably not function if the current drops below 105 volts. Low voltage is usually associated with older or poorly maintained trailer parks, but many people have found that their homes, built only twenty or thirty years ago, may not be capable of operating the air conditioner on some receptacles. Parking your trailer so the power cord can be plugged into a receptacle close to the fuse or circuit breaker box can alleviate the problem. Avoid extension cords and adapters whenever possible. If an extension cord must be used, it should be as short and heavy as possible to provide the most current to the air conditioner.

If high temperatures are expected, you should make an effort to park in a shaded area. Starting the air conditioner early in the morning also helps. It is much easier to hold a comfortable temperature than it is to lower the temperature after the interior of the trailer has heated up.

It is important to note that the power for the air conditioner comes from two different sources: a 20A/120 V breaker that controls the main source of power, as well as a 10A/12 V HEATER/AC fuse for the thermostat and AC control.

- 🔧 **IMPORTANT :** If the rear thermostat (photo K-25) is set incorrectly when the ALTO is not plugged in, the thermostat will consume a considerable amount of 12 V DC electricity. This could drain your battery within one or two weeks. When the ALTO is unplugged, make sure that "SYSTEM" switch is in "OFF" position. A sticker placed near the thermostat serves as a reminder of these instructions.



PHOTO K-25
Thermostat

Using air conditioning mode on heat pump:

NOTE: To use the heat pump air conditioning mode, the trailer must be connected to a 30A circuit.

1. Turn the thermostat to the "HEAT PUMP" position by touching the power button on the left (photo K-25).
2. Set the temperature using the 2 buttons on the right (up or down) by simply touching the buttons.
3. Set the fan speed to "HI" or "LOW", using the buttons on the right when the display is in speed selection mode.
4. The compressor will stop and restart as needed, but the fan will remain on.

It is normal that on very hot and sunny days the air conditioning may not suffice in cooling completely to the desired temperature. At night, however, it will always be very efficient, even on the warmest nights.

Using heating mode on heat pump:

NOTE: To operate the heat pump in heating mode, the vehicle must be connected to a 30-amp circuit.

1. Turn the thermostat to the "HEAT PUMP" position by touching the power button on the left (photo K-25).
2. Set the temperature using the 2 buttons on the right (up or down) by simply touching the buttons.
3. Set the fan speed to "HI" or "LOW", using the buttons on the right when the display is in speed selection mode.
4. The compressor will stop and restart as needed, but the fan will remain on.

NOTE: The heat pump in heating mode stops working at a temperature between -1 °C and +4 °C (30 °F to 39 °F). In this case, use the TRUMA heater in electric or LPG mode, which is also silent.

Air Conditioner for ALTO F2414 (Optional):

The ALTO F2414 can be fitted with an air conditioner without a heat pump, as an option. In this case it is located on the roof at the rear and the controls are directly on the device inside the ALTO (photo K-26). Use left button to select vent or cooling mode, and right button to select the desired cooling level.



PHOTO K-26
Air conditioner without heat pump

Awning (Optional)

-  Instructions pertaining to the awning are included in the documentation given to you at the dealership. Please read and follow all provided care, maintenance, and safety information. Store instructions in a safe place for future reference. Pass the documentation on to any subsequent users of the awning.
-  **IMPORTANT:** It is strongly recommended that you read the supplied manufacturer's instructions when purchasing trailer.
-  Keep in mind that the awning is a sun protection, so please roll up your awning in case of heavy rain, wind or snow. The effects of wind and rain on any awning are unpredictable. Severe damage to the trailer and or the awning may result and cannot be covered by warranty!

NOTE: If wind or extended periods of rain are expected, roll up the awning and secure it!

Setting Up Awning

R1713, R1723 and F1743:

1. Unfold awning starting at the front and slide lip in the rail located on the roof of ALTO (photo K27). You will need three posts, three tie-down ropes, and three of the five pegs provided. Insert the long post in central loop of the awning and insert each short one in the side loops.

2. Drive the three pegs into the ground at a distance to create a 45° angle with the posts. Secure the adjustable tie-down ropes to each peg and then to the top of the posts above the awning canvas.
3. Tighten the tie-down ropes as required.



PHOTO K-27
Awning slide

Temporary Closing:

1. Loosen the tie down ropes, remove the three posts by sliding them at their base and removing them from the canvas loops.
2. You may leave the pegs and ropes in place.
3. Roll awning up to the two straps (2 persons are required).
4. Tie up awning.

NOTE: If awning becomes difficult to slide in rail, spray canvas lip with a dry lubricant (Jig-a-Loo).

Setting Up Fiamma Awning

F2114, A2124 and F2414

1. Do not deploy the awning over one metre (3 or 4 feet) without supporting it (requires a second person or the use of posts).
2. Remove the crank from interior of entrance (photo K-28), insert hook into loop at the front of the awning and turn crank to unroll the awning about 1 metre (3 or 4 feet) then stop.
3. In the centre, deploy the foldable posts from the awning cover and slide their hinge out so that you can tilt the posts and let them hang downward.
4. Unscrew the butterfly nut to extend the post extensions so they reach the ground. This will support the awning, and you can set them further away from the ALTO.
5. Unroll another meter and set the post again further away and so on to provide full support of the awning while it is deployed.

6. Secure the posts to the ground with the four stakes provided or anchor the posts in the side latches provided on the chassis, if they cannot be secured to the ground with the stakes. To do this, lift the latch, insert the foot of the pole into the bracket and lower the latch. Ropes and stakes not supplied can be used to secure the awning by tying them to the corners at the top and securing them to the ground with steel stakes.



PHOTO K-28
Awning crank handle storage



PHOTO K-29
Alto awning deployed

Dismantling Awning

To dismantle the awning, follow instructions in reverse order.

- 🔧 Always anchor the awning using guy ropes.
- 🔧 In case of wind, close the awning.
- 🔧 Once the awning is open, always keep tension on it using the guy ropes.

Bike Rack (Optional)

-  Instructions pertaining to the bike rack are included in the documentation given to you at the dealership. Please read and follow all provided care, maintenance, and safety information. Store instructions in a safe place for future reference. Pass the documentation on to any subsequent users of the bike rack.
-  **IMPORTANT:** It is strongly recommended that you read the supplied manufacturer's instructions when purchasing trailer.

Mounting of Bicycles on Rack

1. The first installation of the bikes on the rack must be done with the R SERIES ALTO roof raised to make sure that no part of a bike will be in contact with the roof when it's raised.
2. The first bike to be installed at the back of the rack should be the heavier of the two.
3. Make sure the pedal closest to the ALTO is at the top of its course. This helps to have maximum clearance with the roof.
4. Attach the shorter of the two securing bars to a horizontal or vertical bar on the bike frame.
5. Install the second bike in the opposite direction to the first. If the handles of the second are touching the seat of the first, lower or remove the seat.
6. Attach the longer of the two securing bars to a horizontal or vertical bar on the frame of the bike.
7. Install all four straps that secure the wheels to the support track. During the first installation, adjust all four wheel wedges to prevent bikes from sliding sideways.
8. While towing, always check the bike rack whenever you make a stop.

When the bike rack is not in use, the lower section should be folded up and attached to the vertical section with two of the straps used to secure the wheels to the support track.

If taking down the bike rack is required, remove the two bolts at the base of the rack. Then remove the 2 holding pins close to the ALTO wall (photo K-30).



PHOTO K-30
Bolts and pins to install bike rack

On all ALTO models, it is still possible with the bikes on the bike rack, to completely open the front panoramic window by removing both holding pins of bike rack close to the front wall. The rack can be tilted to the front and rest on the front jack (or on the propane bottle holder in case of a 2-bottle system).

- ⚠ All bolts used to secure the bike rack to the ALTO should never be too tight since they are pivot points. One should be able to hand rotate the bolts.
- ⚠ When bikes are on the bike rack, always be careful when turning sharply so that bikes do not come in contact with the tow vehicle.
- ⚠ Only the bike rack designed by safari condo may be installed on the ALTO.
- ⚠ Never pierce the aluminum chassis of the ALTO. This would void the warranty.

Television With DVD Player (Optional)

- ⚠ Instructions pertaining to the television and wall mount are included in the documentation given to you at the dealership. Please read and follow all provided care, maintenance, and safety information. Store instructions in a safe place for future reference. Pass the documentation on to any subsequent users of the television and wall mount.
- ⚠ **IMPORTANT:** It is strongly recommended that you read the supplied manufacturer's instructions when purchasing trailer.

Using Articulated TV Wall Mount

Unlocking of TV

1. Unlock by pulling the unlock button (photo K-31) that is located on the back of the TV.
2. Keep the button pulled while moving the TV away from the wall.



The articulated arm of the wall mount allows you to watch TV either from the back or the front of the ALTO. It also lets you tilt the screen to get a better contrast adjustment.

Unlocking the TV

1. Make sure the articulated arm is in a straight line and in full extension.
2. TV screen must be parallel to arm.
3. Remove any tilt, either upwards or downward.
4. Carefully bring TV towards the lock.
5. Place both hands on both sides of TV and carefully press against the wall.

🚫 Always lock TV carefully. Never use blunt force or sharp movements as they may twist the aluminum lock and damage TV.

🚫 R SERIES Always lock TV before lowering the roof. Important damages to TV, roof and toilet cabinet could result if television is not locked into place before lowering roof.

Retractable Step

TO RELEASE STEP:

- Slightly lift front of step and pull out.

TO SECURE STEP:

- Slightly lift front of step and push into position.

🚫 Never travel with step extended.

L. TIRES AND WHEELS

Your trailer is equipped at the factory with name-brand trailer tires. If you ever have tire problems under warranty, check on the web for the nearest dealer. Only dealers who handle that particular brand can do this. To get the maximum performance from your tires, check the air pressure regularly, but only when the tires are cool. Never bleed out air immediately after driving.

 If you replace your tires, always replace them with radial tires of the same type and size.

Spare Wheel Carrier

The spare wheel for ALTO R1713, R1723, F1743, A2124 AND F2414 is stored under the front of the trailer. It is secured by a plastic block screwed in its centre and a safety bolt. Unscrew the safety bolt and the plastic block to lower and remove the spare wheel. The lug nuts used on the aluminum rims can be used for a steel spare.

The spare wheel for ALTO F2114 is located at the rear above the bumper (except in case of optional front and rear bike racks, in this case it is placed under the front of the trailer). The spare wheel is attached with lug nuts. Remove the lug nuts and remove the spare wheel. The lug nuts used on the aluminum rims can be used for a steel spare.

Inflation of Tires

Maintaining proper tire inflation pressure is essential for both tire safety and performance.

Tire Inflation Information

The level of air in your tires affects your trailer's overall performance. Not even the highest quality tire will perform well if it's not properly inflated. The correct pressure varies from trailer to trailer.

Recommended Tire Pressure

Each vehicle has a maximum inflation pressure, usually found on a metal tag glued to the outside of the trailer, on the driver side at the front, as well as on the original equipment tires. Never exceed the pressure indicated on the tire when cold.

Cold Inflation Pressure should be adjusted to handle the maximum tire load, and all tires on the axle should carry the same inflation pressure. Cold tire inflation pressure is the tire pressure checked in the morning before you drive more than a few miles or before rising ambient temperatures or the sun's radiant heat affects it. Tire pressure should be checked cold, as tire pressure ratings have been designed with typical running heat/pressure build-up in mind. The recommended inflation pressure is not to be confused with the maximum inflation pressure that is shown on the side of the tire. At the recommended inflation pressure, tires will last longer and be less likely to fail, and the tow vehicle will use less fuel. Serious injury can result from tire failure because of under-inflation or overloading.

The amount of air pressure in a tire determines the load that can be carried safely. Every tire will have the maximum load and inflation moulded into the sidewall of the tire. This load and inflation ratio should never be exceeded since this can cause handling problems, irregular wear, and component failure. The proper amount of air pressure is always determined by the weight of your fully loaded trailer. This weight takes into account all liquids, supplies, and equipment. We must inflate the tire at the recommended pressure indicated on the tire but it is possible to travel 5 psi below this pressure.

Make sure the valves and caps are free of dirt and moisture. Check your tires' air pressures at least once a month, before each trip and each morning you drive during a trip.

How Overloading Affects Your Tires

Tire pressure is what enables your trailer tire to support loads. Overloading your tires can have serious consequences for your trailer. Too much weight can cause stress on your trailer suspension system, brake failure, shock absorber damage, handling and steering problems, irregular tire wear and possible tire failure. Excessive loads or under inflation can lead to an excessive amount of heat and tire failure. If you discover that your tires cannot handle the load, lighten the weight of the load on your tires.

Under-inflation of Tires

Under inflation brings a higher risk of susceptibility to damage due to road hazards, reduces casing durability, and causes a loss in fuel economy, plus uneven or irregular tire wear. Severe under inflation brings about an increased risk of tread separation, handling difficulties, and possibly tire failure caused by overheating.

Tire pressure should never be reduced below the trailer manufacturer's recommended levels. When inflation pressure requirements are not met, tire durability and optimum operation can be affected.

Tips on Tire Care

Any tire, no matter how well built, may fail in use as a result of punctures, impact damage, improper inflation or other conditions resulting from use.

 Tire blowout may create a risk of property damage or personal injury.

To reduce the risk of tire failure we strongly recommend the following:

- Check the pressure in your tires, including your spare, at least monthly when the tires are cool (after the trailer has stopped three hours and then driven less than one mile.) Do not reduce pressure when tires are hot. Use a tire gauge to check pressure and maintain it at the recommended level.
- Never overload your tires. The maximum load-carrying capability of your tires is moulded on the sidewall of the tire.

- Check your tires frequently for scrapes, bulges, separations, cuts or snags resulting from use. See your tire dealer immediately if any such condition is discovered.
- Never operate your vehicle in excess of lawful speeds or the maximum speeds justified by driving conditions, or in excess of speeds recommended for the tire you are using.
- Make every effort to avoid running over objects that may damage the tire through impact or cutting, such as chuckholes, glass, metal, etc.
- Never drive on smooth tires. Tires should be removed when 2/32" inch of tread depth remains. In most places, it is illegal to drive with less than 2/32" inch remaining tread depth.



WARNING: DO NOT EXCEED THE MAXIMUM SPEED RATING ON THE TIRES INSTALLED ON YOUR TRAILER. FAILURE TO HEED THIS WARNING COULD CAUSE CATASTROPHIC TIRE FAILURE RESULTING IN PROPERTY DAMAGE, PERSONAL INJURY AND/OR DEATH.

Tire Care

Tires are a very precisely engineered product designed for specific applications and use. The tire functions as the sole contact between the trailer and the road. Therefore, it must provide several different functions in order for your trailer to handle properly. Most important are traction while moving, grip when steering or stopping, and a comfortable ride for you and your passengers. The tires on your trailer are designed for highway use and must be properly maintained in order to maximize tire life, as well to provide a safe mode of transportation. Always keep your tires clean and properly inflated.



IMPORTANT: It's a common practice for trailer owners to lower tire pressure in their search for a smoother ride. This is not only dangerous, it's relatively ineffective, and as the difference in ride quality is not significant. When minimum inflation pressure requirements are not met, tire durability and optimum road handling are compromised. Tire inflation pressure should always meet at least the minimum guidelines for trailer weight.

- It may be necessary to inflate your tires at a truck stop or truck service centre in order to achieve adequate air pressure for your trailer's needs.
- Be safe - if a tire has been run 20% under inflated, it must be dismantled and inspected by a trained professional. It should not be aired up without a full inspection or without using a safety cage. Use a calibrated gauge.
- Don't bleed air from warm tires to reduce pressure build-up.
- Don't inflate tires to cold PSI rating beyond rim specifications.
- Only permanent air seal metal valve caps should be used.
- If there is a difference between one side of the trailer versus the other, the load must be redistributed so weights are as even as possible.
- Always check air pressure with an accurate air gauge at a cold PSI. Never exceed the maximum cold pressure moulded on the sidewall.

Proper Inspection and Storage of Tires

Before taking your trailer on a trip or following an extended storage period, make it a practice to inspect the overall condition of your tires. Check for any type of condition or damage that might result in failure. A thorough check should include both inside and outside sidewalls, tread area and the condition of hardware such as valve stems, valve caps, and wheels. The tread should be checked for any unusual wear, cracking, penetrations and/or cuts. An uneven wear pattern can indicate misalignment or worn suspension parts.

Since many trailers are used seasonally and sometimes stored for extended times, it is possible that tires will take many years to wear out. Tires, as any rubber product, will age over time. If tires show cracking in the sidewall or tread surfaces that are more than 2/32" deep, they should be replaced before your next trip or vacation. Store your trailer in a cool dry area away from major heat sources and extreme cold. An enclosed area is best with no exposure to electromagnetic sources such as generators or transformers. If you must keep your trailer outside, cover your tires from direct sunlight. Take your trailer to your tire dealer for service to check or correct any of these conditions.

NOTE: When ALTO is not under way, it is wise to protect the tires from the sun's rays with tire covers.

Wheel Change

To change a wheel, place a jack under the frame rail. Protect aluminum frame rail by inserting a piece of wood between the jack and the frame.

Be sure to rebalance the wheel assemblies each time tire pressure is changed.



WARNING: ALWAYS SECURE TRAILER TO TOW VEHICLE AND SET HAND BRAKE BEFORE JACKING TRAILER. NEVER ATTEMPT TO CHANGE ANY TIRE WITHOUT SECURELY CHOCKING REMAINING WHEEL. NEVER POSITION YOURSELF IN A MANNER WHERE A RAISED TRAILER CAN COME DOWN ON YOU IF IT SHOULD BECOME DISLODGED FROM A JACK OR RAMP.



WARNING: WHEN REMOVING ALUMINUM-FORGED WHEELS FROM SPINDLE, IT IS VERY IMPORTANT TO MARK THEM TO ASSURE THE WHEEL IS PLACED IN THE SAME POSITION ON THE DRUM WHEN REINSTALLING. IF THE ALUMINUM-FORGED WHEEL IS TO BE MOUNTED ON A DIFFERENT DRUM, IT IS IMPORTANT TO CLEAN ALL LOOSE CORROSION FROM THE MATING SURFACES.

Tire Replacement

Tires used on most trailers are driven with maximum loads during hot weather and then are left idle for months. In normal use oils in the tire come to the surface during flexing and protect the rubber from ultraviolet light. But when left idle, natural aging may cause the rubber to crack prematurely, especially in the sidewall area.

Any tire on a trailer that is over five years old should be inspected by a competent tire professional for cracking and replaced, even if it has no apparent tread wear. This is because a tire on a car or truck might last 80,000 to 120,000 km before it needs to be replaced, but a trailer tire that only

travels 5,000 km per year will not reach such mileage for 20 years. It will need to be replaced much before that !

 It is recommended to replace a tire after eight years even if it is not worn out.

The first step is choosing a tire adequate for the load. The load rating printed on the sidewall will show the maximum load that can be carried at a defined pressure. As the inflation pressure drops, the load that can be carried is less. As speed increases, the amount of load that can be carried also drops. The load rating is also affected by how the tire is used.

Lug Nut Torquing

 **WARNING: IT IS POSSIBLE FOR THE WHEEL TO SEPARATE FROM THE TRAILER IF LUG NUTS ARE NOT TIGHTENED ENOUGH.**

Tighten wheel nuts after first 300 km.

Thereafter, check lug nuts:

- Before each trip.
- Following winter storage.
- Following excessive braking.

In Newton meters (pound feet):

- 13-inch wheels: 115.24 Nm (85 FT-LB)
- 15-inch wheels: 135.58 Nm (100 FT-LB)

NOTICE: Use a torque wrench to tighten lug nuts. Tightening with an impact wrench is not recommended.

See *Specification* Section in this manual for wheel torque ratings.

Proper wheel nut torque is very important to safe and dependable towing of your trailer. The wheel and axle systems used in travel trailers are similar, yet different, in many ways to those used on cars and trucks. These differences are important and require special attention to wheel nut torque both while the trailer is new and throughout the trailer's life.

Trailer wheels must carry much higher loads per wheel than passenger car or truck wheels. Each wheel may carry 1000 pounds and higher. When you go around corners, especially slow, tight ones, the wheels on your trailer are subject to these strong side loads. This tends to flex the wheel and gradually loosen the wheel nuts. Although the materials and manufacturing methods are maximized for this kind of service, these extra loads can cause stress, which can result in flexing and loosening of wheel nuts.

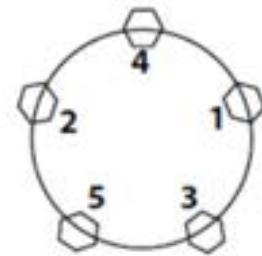


FIGURE L-1
Lug nuts

Before each trip and whenever a wheel is replaced, be sure to tighten the wheel nuts, following the sequence shown in the relevant lug pattern. Set the torque specification (see *Specifications*). If the wheel was replaced, check the torque after 300 km.

If you notice wheel wobbling or hear a rattling sound coming from a wheel, especially at low speeds, a wheel lug nut may have come loose. This problem is usually caused by improper tightening or by faulty or damaged lug bolt threads. If you have a reason to believe a lug nut has come loose, safely stop the vehicle at the side of the road as soon as possible. Put up warning devices. Remove the lug caps and check the tightness of all the lug nuts. Tighten all lug nuts to the specified torque, using a torque wrench. If lug stud threads are damaged or faulty, get professional service help.

Axle systems are installed with hubs and drums that are compatible with many wheels used in the trailer industry that have matching bolt patterns. If the original manufacturer installed equipment is in need of replacement, the wheel manufacturer should be contacted for proof of compatibility prior to replacement and use.

Customers replacing original equipment that has not been tested for compatibility must ensure the replacements are compatible to the hub and drum assembly installed. Such elements of compatibility include, but are not limited to:

- Diameter of the hub-mounting surface.
- Stud length and diameter.
- Location and number of studs.
- Centre hold diameter for the wheel.
- Wheel mounting offset from the rim centre.
- Rated capacity of the wheel.
- Wheel fastener torque.
- Wheel nut size and shape.
- Impact of any added wheel accessories (such as decorative centre caps) that could affect proper seating of the wheel to the hub surface.



WARNING: AVOID MISMATCHED WHEELS AND TIRES THAT COULD RESULT IN A SERIOUS ACCIDENT, INJURY OR DEATH.

Wheel Bearing Inspection

Inspecting the bearings prevents the ball bearings from deteriorating; this ensures optimum durability and can prevent serious accidents.

1. Insert jack under the frame, protect the aluminum side rail with a piece of wood between the jack and the frame, and hoist the trailer.
2. Check for excessive wheel-end clearance by pulling the tire assembly towards you and by pushing the assembly away from you. A slight end-play is acceptable.
3. Rotate tire slowly forward and backwards. The wheel assembly should turn freely and smoothly.
4. Excessive wheel end-play, restriction to rotation, noise, or “bumpy” rotation should be remedied by replacing the bearing unit.

Bearing units should be inspected every year or 12,000 km whichever comes first.

NOTE: A slight amount of grease weeping from the seal area is normal. Excessive leakage may indicate abnormal bearing operation. Each time drum is removed for inspection, always check requirement for additional grease and add as required.

- 🔊 Safari Condo recommends that any bearing end-play inspection, drum removal/installation, and bearing replacement procedures be performed by a qualified service technician due to the need for specialized tools and training.

M. TOWING THE ALTO

Towing Vehicle Equipment

If you plan to buy a new vehicle to tow your travel trailer, we suggest that you include in your purchase the towing options offered by most vehicle manufacturers. These include such things as a heavy-duty alternator and radiator, heavy-duty springs (See Notice below), shock absorbers, transmission cooler, heavy-duty fan and flasher unit and others, depending upon the make of the vehicle.

NOTICE: Be realistic when ordering heavy-duty springs. Only springs heavy enough to support your loaded vehicle (excluding trailer) are necessary. Too harsh a spring rate will only shorten the life of the tow vehicle and trailer, and will make your journeys less enjoyable.

Transmissions may be manual or automatic, but an automatic transmission may prolong your tow vehicle's life and generally does a better job of controlling engine loads than the average driver using a manual shift.

Having adequate power is very important when considering the purchase of a new vehicle or the trailer towing capability of your present one. American manufacturers realize that more than 30% of the vehicles they sell will be used for towing some type of trailer. The dealers are provided with guidelines to use when helping a customer decide on a tow vehicle. The guidelines are not just determined by the power output of the engine. The gear ratio of the differential is also a very part of the guideline.

Inspect vehicle's hitch regularly for loose bolts or nuts, cracked welds, loose ball mounts, worn parts, etc.

New trailerists often carry more food and other supplies than really needed. Remember that every item you take along is one more thing to stow that adds weight to the total load you must pull. Consolidate items in shelves, lockers, and in the refrigerator. It is better to have one full and one empty locker than two half-empty ones. Special care must be taken not to overload the front and rear ends of the trailer.

Electric Brakes

The brakes operated by 12-volt power from your tow vehicle must be hooked up so that you have an integral system with your tow vehicle brakes. To prevent problems and insure satisfactory braking action, install an electronic controller in line with the brakes in your tow vehicle.

An electronic controller installed in your tow vehicle will synchronize the trailer brakes with your tow vehicle brakes. It is designed to apply the trailer brakes along with your tow vehicle brakes.

Your brake controller should be adjusted to provide for a slight lead of the trailer brakes over the tow vehicle brakes. Follow the directions provided with your controller and keep the information for future reference. Don't be afraid to ask questions! If you don't understand the directions, have the installer explain the procedures.

Due to normal brake lining wear, the brakes and the controller settings should be checked and readjusted every six months or 15,000 km (10,000 miles) whichever comes first.

Properly set adjustments will provide for safe comfortable stops. They will also help ensure optimum brake and tire life for both the tow vehicle and the trailer.

Adjustment and Use of the Brake Controller on the Towing Vehicle

The settings of the tow vehicle controller are determined by the driver. When properly set, the braking force of the trailer will provide sufficient braking so the brakes of the towing vehicle are not required to provide any braking force for the trailer. Variations in the controller settings may be required for different road conditions and for changes in trailer load. It is essential to maintain sufficient braking on the trailer on wet or slippery road surfaces. More braking with the trailer will help prevent the possibility of a jack-knife situation or prevent the trailer from swaying or pushing the towing vehicle. The tow vehicle brake controller also allows for manual activation of the trailer brakes independently of the tow vehicle, using the controller's manual override feature.



WARNING: IT IS ESSENTIAL THAT EACH DRIVER READ AND FULLY UNDERSTAND THE TOW VEHICLE BRAKE CONTROLLER OPERATING MANUAL PROVIDED BY THE MANUFACTURER OF THE TOW VEHICLE BRAKE CONTROLLER. FAILURE TO FULLY UNDERSTAND THE USE AND OPERATION OF THE TOW VEHICLE BRAKE CONTROLLER BY EACH DRIVER MAY CAUSE LOSS OF VEHICLE CONTROL. THIS MAY RESULT IN PHYSICAL INJURY AND/OR PROPERTY DAMAGE!

Breakaway Protection

In case of an accidental separation of the tow vehicle and trailer, the breakaway switch will set and lock the trailer brakes for a sufficient length of time to stop the trailer. The switch is activated when the wire attached to it and the tow vehicle pulls out the small pin in the front of the unit. This pin should be regularly pulled out, and lubricated with light household oil.

To prevent corrosion within the breakaway switch, pull the switch's pin straight forward and spray the inside of the switch through the hole with an electric contact cleaner (such as Spra-Kleen) and reinsert pin. A drop of light household oil on the groove near the base of the pin will allow the pin to operate freely. When the trailer is connected to the tow vehicle, the breakaway switch loop should be attached to the permanent frame of your hitch (photo M-1). When disconnecting the trailer from the tow vehicle, remove wire loop from the frame.

 Do not remove the pin from the switch because this will apply the trailer brakes.

NOTICE: Do not use the breakaway switch as a parking brake.



PHOTO M-1
Breakaway switch cable loop

-  **WARNING:** VERIFY THAT YOUR BREAKAWAY SYSTEM FUNCTIONS PROPERLY BEFORE EACH TRIP.
-  **WARNING:** NEVER CRAWL UNDER YOUR TRAILER UNLESS IT IS RESTING ON PROPERLY PLACED JACK STANDS.

Loading

When you tow a trailer, you are subject to new and different challenges on the highway than you may never have previously encountered. Towing a trailer is no small responsibility and should be undertaken with great care with an eye toward safety first. An accident with a tow vehicle and trailer can have much greater consequences than with a small car. Like an airline pilot who is responsible for expensive equipment and many lives, you should take your responsibilities as a tow vehicle driver very seriously and learn all you can about doing the job safely and well. Balancing the load and preparing the trailer and tow vehicle are critical to safe handling.

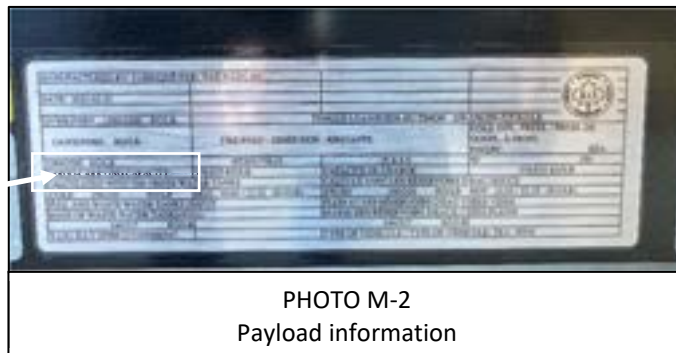
One of the most critical aspects of safely operating a trailer is knowing the weights involved and where they are placed. The first thing to determine is how much is being towed and confirming that it is within the capacities of the equipment being used. Determining where that load is placed is critical to the way your rig will handle on the road.

Do not try to guess what your trailer weighs loaded. Load your trailer including water, propane, etc. and take it to a public scale. Weigh your travel trailer (see *Specifications*). Refer to your axle weight and tire limits to see if you're within a safe range. If you are not overloaded make sure your load is balanced. Do not load too much on one side. A balanced load is much easier to tow. Also, front to back balance is also important. Step back and look at your trailer. Make sure that there is not too much weight on the hitch or on the rear of the trailer. Be sure to secure all items. Loose items can cause damage and be a safety issue if not properly secured.

The Cargo Carrying Capacity tag is installed on every trailer (photo M-2).

Safari Condo weighs the trailer at manufacturing to determine Vehicle Weight. That number is subtracted from the Gross Vehicle Weight Rating (GVWR) of the trailer to give the "Cargo Capacity" on the label. The total weight of any and all cargo, including dealer modifications or additions, water, and propane should never exceed the number listed. GVWR (see *Specifications*). When loading the caravan, it is important to consider the cargo, the gross weight of the caravan, the maximum technical axle weight and the load capacity of the tires (indicated on the tire). These ratings should never be exceeded. Your safety depends on not overloading the trailer, its axle, and its tires. See *Specifications* for a list of maximums.

When loading heavy objects such as tools, skillets, irons, and boxes of canned goods, etc. keep them as low as possible - preferably on the floor. Try to hold additional weight behind the axle to a minimum.



⚠ WARNING: MAKE SURE TO MAINTAIN BETWEEN 10 AND 15% OF TONGUE WEIGHT. WEIGHT BEHIND THE AXLE WILL TEND TO MAGNIFY ANY SWAY THAT MAY OCCUR WHEN PASSING TRUCKS OR IN GUSTY WINDS. WHAT MAY HAVE BEEN AN ALMOST UNNOTICEABLE SWAY TURNS INTO A SEVERE SWAY YOU MAY NOT BE ABLE TO CONTROL.

NOTICE: Damage to your trailer caused by mounting heavy objects on the rear is considered abuse, and is not covered by warranty.

NOTICE: Two-year warranty covers only manufacturing defects, equipment appliance failure and water tightness. The warranty will not cover damage, whichever the reason.

Cargo weight never to be exceeded

Check the load label attached to the Alto's tongue.

- ⚠ WARNING:**
- ALTO R1713, R1723 and F1743: A full load of water equals 60 kg or 132 lb of cargo @ 1 kg/L (8.3 lb/gal).
 - ALTO F2114, A2124 and F2414: A full load of water equals 100 kg or 220 lb of cargo @ 1 kg/L (8.3 lb/gal).

Weight on Trailer Tongue

The allowable personal cargo must be distributed in your trailer in such a manner that the Gross Axle Weight Rating GAWR and the Gross Vehicle Weight Rating GVWR are not exceeded.

To determine this, it is necessary to load all of your allowable personal cargo.

Place the unhitched trailer axle on a scale. If the weight on the axle exceeds the axle system GAWR then some of the personal cargo must be redistributed forward in order to place some of this weight on the tongue, or simply removed.

The tongue weight should be in between 10% and 15% of the trailer's total weight, and must not exceed the tow vehicle or the hitch maximum weight rating. To determine tongue load, unhitch tow vehicle and place the tongue hitch post on a scale. The trailer must be properly loaded as determined above, with your allowable personal cargo.

Use a scale, such as a bathroom scale, that has a higher weight limit than your tongue load, to check tongue weight or see sections *Weight Distribution* and *Specifications*.

NOTE: Be sure trailer is level when you read scales.

Weighing of Travel Trailer

Since a trailer adds to the load on your tow vehicle's tires, it is crucial to properly weigh towed vehicles. A travel trailer should first be weighed with the tongue, while detached from the pulling vehicle. For safe operation, the actual weight of the trailer must be less than or equal to the GVWR, otherwise contents must be removed until the weight is within maximum GVWR limitations. The weight of the attached trailer, excluding the towing vehicle, must also be determined. This will give you the axle weight. If you subtract this weight from the GVWR, you will obtain the tongue weight which should be between 10 and 15% of the total weight. The weight of the attached trailer must also be determined, without the tow vehicle. Each wheel should be weighed while still attached to the towing vehicle, including the tow vehicle wheels to check for overload.

If you determine that the loads on your trailer's tires are uneven, the actual weight of the trailer on each tire must be less than or equal to its maximum load capacity of each tire for safe operation, otherwise contents must be removed until the weight is within maximum load limitations.

Coupling

For ALTO R1713, R1723 and F1743, the top of the 2" hitch ball should be about 17 inches (43 cm) from the ground if ALTO is equipped with 13-inch wheels.

For ALTO F2114, A2124 and F2414, the top of the 2" hitch ball should be about 21 inches (53 cm) from the ground.

If you plan long trips with the trailer heavily loaded, you should check your trailer after loading to determine the optimum height. To check, park the trailer on a level surface and crank the front jack up or down until the measurement from the frame to the ground is the same front and rear. Measure from the ground to the upper surface of the hitch ball coupler. Add one inch (2.5 cm) to

this figure when setting the ball height on the tow vehicle to allow for the suspension settling under the added weight.

Load distribution (torsion bars)

When a trailer is hitched up properly to a tow vehicle with a load equalizing hitch, approximately 1/3 of the trailer's tongue weight will be on the trailer's axle and 2/3 will be transferred to the tow vehicle, 1/3 of this weight transfer will be carried by the front wheels and 1/3 by the rear wheels of the tow vehicle. Thus, the tire load of each wheel on the tow vehicle will be increased by 1/6 of the trailer's tongue weight. The tire air pressure of the tow vehicle should be increased to compensate for this additional weight. Refer to the vehicle's owner manual for this information.



WARNING: TONGUE WEIGHT SHOULD BE APPROXIMATELY 10% TO 15% OF THE TRAILER'S TOTAL WEIGHT, BUT MUST NOT EXCEED THE HITCH RATING LIMIT, AVAILABLE FROM YOUR HITCH INSTALLER.

Connection to towing vehicle

1. Make sure front and rear jacks are raised.
2. Lift the front of the ALTO with front jack so that the coupler may pass freely above the hitch ball.
3. When maneuvering on a hard surface, the ALTO can be manually moved towards the towing vehicle because it is very light. On any other type of surfaces, the towing vehicle should be backed up until the hitch ball is under the coupler. Ask for someone to direct you in this case.
4. Lower coupler on the ball until it rests on it completely.
5. Close coupler by lowering top lever.
6. Lock coupler with a lock or pin inserted through the closed lever.
7. If coupling is equipped with weight distribution bars, raise the trailer/tow vehicle connection about 2" (5 cm) with the help of the jack.
8. Set each weight distribution bar on its pivot, insert into axles and place pins (photo M-3).
9. Raise the front jack until front jack wheel is loose. Remove jack wheel. Finish raising the front jack until crank no longer turns.
10. Attach safety chains, making sure that you cross them under the coupler. The chains should never be less than 6" away from the ground. (photo M-4).
11. Make sure the chains are long enough to allow for a complete turn.
12. Attach break away switch cable safety hook to tow vehicle hitch.
13. Plug electrical connector to tow vehicle.
14. Make sure marker lights and turn signal lights are functioning properly.
15. Check electric brakes by moving slowly forward and by pushing in short bursts on the hand brake button of the controller. A person standing at the side of the ALTO should hear a slight click each time electric brakes are activated.

To uncouple, repeat these steps in reverse order.



PHOTO M-3
Safety pin



PHOTO M-4
Safety chains

Torsion Bars (Weight Distribution Kit) (Optional)

If you purchase the only weight distributing hitch platform for the ALTO approved and sold by Safari Condo, it will also act as an anti-sway device. For any other non-approved systems, consult Safari Condo.

When overtaken by large trucks or when exposed to sudden crosswinds, the trailer will be “pushed” and this action will be felt in the tow vehicle. It’s our understanding the sway control devices will reduce the amount of movement and make towing more comfortable and safe. Follow the torsion bar system manufacturer's instructions.

Hitching up your trailer is something that will become almost second nature with practice. Proper training on connecting your trailer to a tow vehicle is essential for safety. Please see your dealer or other qualified personnel for instruction on the proper hitching of your trailer. Use of safety chains on the hitch is mandatory.

Towing Tips

We want every owner to be a safe and courteous driver. A few hours of towing practice in a large empty supermarket lot will make pulling your trailer over the road much easier. Line up two corners for practising left and right turns. You may also use these corners to practise backing and parking.

Note that the tracks made by the trailer wheels are distinctly different from those made by the tow vehicle. Studying this will make it easier for you to correct mistakes. Truck or trailer type fender or door-grip rear-view mirrors are a must for maximum visibility.

After thoroughly inspecting your hitch, brakes, and tires you should be ready to tow. Check traffic, signal that you are about to pull away, and start slowly. Look often in your mirrors, and observe the action of the trailer, then carefully move into the proper lane of traffic. Remember that the trailer wheels will not follow the path of the tow vehicle wheels; therefore, wider turns are necessary when turning to the left or to the right.

Brake controller is activated when you apply the brakes of the tow vehicle. Your tow vehicle brakes will automatically apply the trailer brakes first when properly adjusted. This will help keep your tow vehicle and trailer in a straight line and make you stop as if you were driving the tow vehicle alone. If swaying or swerving should occur, briefly operating the controller separate from the vehicle brakes may help correct the situation. Practise this maneuver on a clear highway or deserted parking lot. Don't wait for an emergency and then grope for the controller.

When trailering you might encounter a temporary cooling system overload during severe conditions, such as hot days when pulling on a long grade, when slowing down after higher speed driving, or driving long idle periods in traffic jams. If the hot indicator light comes on, or the temperature gauge indicates overheating and you have your air conditioner turned on, turn it off. Pull over in a safe place and put on your emergency brake. Don't turn off the engine. Increase the engine idle speed. Lift the engine hood and check for fluid leaks at the radiator overflow outlet. Check to see that all drive belts are intact and the radiator fan is turning. If you have a problem, have it fixed at the next opportunity. If there is no problem, the light should go off or temperature should come down within one minute. Proceed on the highway a little slower. Ten minutes later resume normal driving.



DANGER: NEVER OPEN A RADIATOR CAP WHEN THE TOW VEHICLE IS HOT. CHECK THE COOLANT LEVEL WHEN THE VEHICLE IS COOL.

When going downhill in dry weather, down shift so that engine compression will slow the whole rig down. Take dips and depressions in the road slowly and do not resume normal driving speeds until you are sure that the trailer wheels are clear of the dip.



WARNING: ON SLIPPERY PAVEMENT DO NOT USE ENGINE DRAG TO HELP SLOW DOWN AS THIS MAY CAUSE THE REAR WHEELS OF THE TOW VEHICLE TO SKID. ON ICY PAVEMENT DRIVE SLOWLY AND IF YOU FEEL THE TOW VEHICLE SKIDDING, GENTLY APPLY THE TRAILER BRAKES ONLY. THIS WILL BRING THE TOW VEHICLE AND TRAILER BACK INTO A SINGLE LINE. CHAINS DO NOT HELP TRAILER WHEELS.

When driving in mud and sand, let the momentum carry the rig through. Apply power gently and use as little as possible. Stay in the tracks of the vehicle ahead and keep the tow vehicle in the highest possible gear. If you get stuck, it is best to tow out the entire rig together without unhitching.

Despite the best hitch, you will notice that whenever a large bus or truck overtakes your rig the displaced air first pushes the trailer rear slightly to the right and then affects the front. It may be necessary to steer very slightly, momentarily, towards the bus or truck to help compensate for the sway induced by the passing vehicle. Do not apply the vehicle brakes, as this can tend to exaggerate the situation. You may find, however, that briefly applying the trailer brakes with your manual control will help eliminate any sway.



DANGER: CHOCK THE TRAILER WHEELS WHEN STOPPING ON A HILL OR SLOPE. LEAVING YOUR TOW VEHICLE IN GEAR IS NOT ENOUGH FOR STANDSTILL SAFETY.

Do not use trailer brakes as parking brakes.

On a two-lane road, cars will be lining up behind you because you travel at a lower speed. It is both courteous and sensible to signal, pull onto the shoulder, and let them pass.

Your trailer is designed to be towed easily at any legal speed, so if you are not careful you may be inclined to forget it is there.

Passing

On freeways or expressways, try to pick the lane you want and stay in it. Always maintain plenty of room between you and the car ahead, at least the length of the tow vehicle plus trailer for every ten miles per hour. Remember that in order to pass another vehicle you will need longer to accelerate. You must also allow for the length of the trailer when returning to the right-hand lane.

Backing Up

In backing up the important thing to remember is to do everything slowly and to correct immediately if you see the trailer turning the wrong way. Concentrate on the rear of the trailer. With your tow vehicle and trailer in a straight line back up slowly and turn the bottom of the steering wheel in the direction you want the trailer to go. Watch out the window or in the mirror until the rear of the trailer is pointing in the desired direction. Your tow vehicle will be following the trailer in an arc. Straighten the tow vehicle and trailer by turning the steering wheel more sharply, and then when they are in line, straighten the steering wheel.

Always try to back up on the driver side because the visibility is much better when you don't make it on the first try, it is usually much easier to pull forward to your original position and start over, or at least pull forward until the rig is straight and then start backing.

If your travelling companion normally directs you when backing, they should position themselves forward of the tow vehicle so the driver can easily see them. Their directions should always indicate to the driver the direction the rear of the trailer should go. A little practice in a parking lot with the person giving directions can save a lot of frustration when backing into a campsite.

Controlling Sway or Fishtailing

Sway or fishtailing is the sideways action of a trailer caused by external forces. It is common for travel trailers to sway in response to strong winds, crosswinds, when overtaken by a semi-tractor and trailer, or driving downhill.



WARNING: EXCESSIVE SWAY OR FISHTAILING OF YOUR TRAVEL TRAILER CAN LEAD TO THE ROLLOVER OF THE TRAILER AND TOW VEHICLE. SERIOUS INJURY OR DEATH CAN OCCUR. IT IS IMPORTANT THAT YOU READ AND UNDERSTAND THE INFORMATION IN THIS SECTION.

Sway or fishtailing of your trailer can be controlled and is primarily impacted by four factors:

- Equipment
- Driving
- Corrective measures
- Tongue weight

Equipment

When hitched together, the trailer and the tow vehicle must be level. The tires of both the trailer and tow vehicle should be in good condition and inflated to the recommended pressure as noted on the exterior of the trailer and in the owner manuals of both trailer and tow vehicle.

Your trailer brakes should work in synchronization with your tow vehicle brakes. Never use your tow vehicle or trailer brakes alone to stop the combined load. Your brake controller must be set up according to the manufacturer's specifications to ensure proper synchronization between the tow vehicle and the trailer. Occasionally, you may have to make small adjustments to accommodate changing loads and driving conditions.

Also, we recommend a weight distribution hitch. Please consult your dealer regarding this equipment.

Driving

This is the most important component. The tendencies for the trailer to sway increases with speed therefore, obey all speed limits and reduce speed during inclement weather or windy conditions.

Corrective Measures

When planning trips with the trailer, practice using the hand brake control in an empty parking lot. Do not wait for an emergency to occur before learning how to use it. The location of the hand brake control is important and should be easily accessible.

If sway occurs the following techniques should be used:

- Slow down immediately; remove your foot from the accelerator. Avoid using the tow vehicle brakes unless there is a danger of collision. Reduce speed gradually whenever possible. If you can do so safely, use the brake hand controller (independent of the tow vehicle brakes) to gently and progressively apply the trailer brakes. This will help to keep the vehicle and trailer aligned. Practice using the brake hand controller on a deserted parking lot. Don't wait until an emergency occurs before using it. Location of the brake hand controller is important and should be made easily accessible.
- Steer as little as possible while maintaining control of the vehicle. Because of natural reaction lag time, quick steering movements to counter trailer sway will actually cause increased sway and loss of control.
- Keep both hands on the wheel. Hold the wheel as straight as possible until stability is regained.
- Do not jam on the brakes or attempt to press on the accelerator to speed your way out of the fishtailing. Both actions make the situation worse and could cause severe injury or death.
- Once the swaying is under control, stop as soon as possible. Check tire pressures, cargo weight distribution and look for any signs of mechanical failure. Travel at reduced speeds that permit full control until the problem can be identified and corrected.

Parking an ALTO

1. With the towing vehicle, position the ALTO as you wish on the campsite. Place it close enough to access campsite services.
2. Level left or right if the site has a slant, by backing up or moving forward on wood blocks or levelling blocs.
3. Install chocks in front of and behind each wheel.
4. Uncouple towing vehicle.
5. Level trailer front to back with front jack.
6. Stabilize with front and rear stabilizers. Stabilizers should not be used to level or lift the ALTO.
7. Plug trailer to available services: electricity, water, sewage.

N. CAMPING

Departure Checklist

Inside

- Turn off water pump switch.
- Close windows and vents.
- Lock all interior cabinet doors.
- Latch refrigerator door. (Seal containers)
- Store and stack securely all loose, hard and sharp objects.
- Fasten doors.
- Drain toilet bowl.
- Turn off interior lights.
- Secure table.
- R SERIES: Lower the roof. (See *Lowering the Roof* section.)
- Secure and lock entrance.

Outside

- Retract step.
- Disconnect and stow the electrical hookup cord, the sewer hookup hose (flush out), and the water hookup hose.
- Raise corner stabilizers.
- Check hitch: It must be properly attached.
- Check safety chains and breakaway switch cable.
- Fully retract jack. Remove and stow jack wheel.
- Check clearance, turn, and stop lights.
- Check lug nuts.
- Check tires for correct pressure.
- Adjust tow vehicle mirrors.
- Pull forward some 15 metres (50 ft.), test brakes, and check site for forgotten objects and cleanliness.

Home

- Leave house keys with your neighbours.
- Valuables and important papers should be stored in a safe place.
- Newspaper and other deliveries should be discontinued.
- Ask the Post Office to hold your mail for you.
- Arrange with the telephone company for discontinued or “vacation service”.
- Arrange care for your pets.
- Arrange care for your lawn, garden and houseplants.
- Lock all windows and doors securely. Keep shades open for a lived-in look.
- Cover all food to keep out mice and insects.
- Eliminate all fire hazards. Place matches in a tin box or glass jar.

- Store oil, gasoline and other flammable properly.
- Destroy all newspapers, magazines and oily rags.
- Notify police you will be out of town.

Trailer Equipment and Accessories

- Water hose, ½ in. high pressure, tasteless, odourless, nontoxic (2 × 7.5 metres (25 ft.) sections).
- “Y” connection for water hose.
- Sewer hose with clamp.
- Holding tank cleaner and deodorizer.
- Power cord adapter 30 A capacity.
- 15 m (50 ft.) electric cord, 12-3 wire, 30 A capacity.
- 7.6 m (25 ft.) electric cord, 10-3, 30 A capacity.
- 9 m (30 ft.) electrical extension, 10-3 wire, 30 A
- Wood blocks for levelling.
- Wheel chocks.
- Hydraulic jacks.
- Cross type lug wrench.
- Torque wrench.
- Quality tire gauge.
- Emergency road warning triangle and flares.

Personal

- Tow vehicle insurance to fully cover you and your family.
- Avoid cash. Use credit cards.
- Confirm reservations.
- Sunglasses for everyone.
- Camera, tablet, computer, cell phone and their respective charger or cord.
- Checklist of clothing and toilet articles for everyone.

Motoring Essentials

- Carry tow vehicle and trailer registrations.
- Carry driver’s license, birth certificate or passport, non-residence liability insurance card as required.
- For Mexico, special auto insurance and passport.
- Extra set of the car keys in a separate pocket, or in your wallet.
- Operating flashlight with fresh batteries in the glove compartment.
- Pack the tow vehicle and trailer so that you can reach the tools and spare tires without completely unpacking.
- Keep sharp or hard articles securely packed wherever they may be.
- Do not pack things in the passenger seating area. You need the maximum space for comfort.

- Wear easy wash, drip-dry travelling clothes.
- Do not make your vacation trips a mileage marathon. Stop and relax frequently.
- First-aid kit.
- Pet's dish, food, leash, and health and registration papers.

Safety

As always, safety should be one of your top priorities. Make sure you and everyone travelling with you can use the entrance and emergency exit window rapidly in complete darkness. Contemplate other means of escape in case the designated exits are blocked.

 **WARNING:** R SERIES: THE ESCAPE WINDOW IS LOCATED AT THE REAR AND FEATURES RELEASE HANDLES. LIFTING UP THE SCREEN, THEN TURNING THE LATCHES RELEASES THE ESCAPE WINDOW. REMOVE THE SCREEN. PUSH OUT AND UP ON THE GLASS AND IT WILL SWING CLEAR. THE WINDOW OPERATION SHOULD BE CHECKED EACH TRIP AND THE LATCHES LUBRICATED WITH WD-40 OR EQUIVALENT EVERY SIX MONTHS.

 **WARNING:** F and A SERIES: THE ESCAPE WINDOW IS LOCATED AT THE REAR. SEPARATE THE PLEATED DUO AND STORE BOTH SECTIONS, ONE AT THE TOP AND THE OTHER AT THE BOTTOM OF THE WINDOW. THEN, RELEASE ALL 4 LATCHES AND PUSH OUT WINDOW.

 **WARNING:** AT EACH CAMPSITE MAKE SURE YOU HAVE NOT PARKED IN SUCH A MANNER AS TO BLOCK THE USE OF THE ESCAPE WINDOW BY BEING TOO CLOSE TO TREES, FENCES OR OTHER IMPEDIMENTS. SCENIC VIEWS ARE ONE REASON FOR TRAVELLING, BUT DON'T PARK SO THE BEAUTIFUL LAKE OR STEEP CLIFF IS JUST OUTSIDE YOUR ESCAPE WINDOW.

 **WARNING:** READ THE DIRECTIONS CAREFULLY ON THE FIRE EXTINGUISHER. IF THERE IS ANY DOUBT ON THE OPERATION, YOU AND YOUR FAMILY SHOULD PRACTISE, THEN REPLACE OR RECHARGE THE EXTINGUISHER. YOU WILL FIND YOUR LOCAL FIRE DEPARTMENT WILL BE HAPPY TO ASSIST YOU AND ANSWER ANY QUESTIONS.

 **WARNING:**

- Don't smoke in bed!
- Keep matches out of reach of small children!
- Don't clean with flammable material!
- Keep flammable material away from open flame!
- We have all heard these warnings many times, but they are still among the leading causes of fires.
- Other safety information on the LPG system of your trailer is located in this manual.

Overnight Stop - Extended Stay

ALTO owners have parked virtually every place imaginable from filling stations to farmlands. In time, you'll develop a knack for spying wonderful little roadside locations by turning off the main highway and exploring. There are many modern parks including provincial, state, County and Federal parks with good facilities where you might obtain electrical, water and sewer hookups. Directories are published which describe in detail these parks and specify what is available in the way of services and hookups.

On overnight or weekend trips chances are you will not use up the capacity of the sewage holding tank, deplete the water supply, or rundown the battery which supplies the 12-volt power. When stopping for the night, your ALTO is built to be safely parked in any spot that is relatively level and where the ground is firm. Your facilities are with you. You are self-contained. Unless the tow vehicle is needed for transportation, it is not necessary to unhitch. All you need to do to enjoy the self-contained luxury of your ALTO is to turn on the water heater and furnace as required.

On a longer trip, when you have stayed where sewer connections and utility hookups were not available, it will be necessary for you to stop from time to time to dispose of the waste in the holding tanks and replenish the water supply. Many gas stations (chain and individually owned) have installed sanitary dumping stations for just this purpose. Booklets are available which list these dumping stations.

Making a long trip in your ALTO is not very different from making a weekend excursion. Since everything you need is right at hand, you are at home wherever you go. When packing for an extended trip, take everything you need, but only what you need.

Try to choose a level site as much as possible. For a single overnight stay, stabilizers or chocks are probably not necessary. However, if you choose to put the front wheel on the ground, raise the tongue to relieve the towing vehicle's springs of the weight of the trailer and stabilize the trailer. If you must park on a slope, face down the slope. This will make it easier to level the trailer.

NOTICE: Your trailer is not designed, nor intended, for permanent housing. Use of this product for long-term or permanent occupancy may lead to premature deterioration of interior finishes, fabrics, and curtains. Damage or deterioration due to long-term occupancy may not be considered normal, and may under the terms of the warranty constitute misuse, abuse, or normal wear.

Before moving on, check your campsite both for cleanliness and also to be sure you haven't left anything behind. Make sure everything is properly stowed. Use your Departure Checklist and you are ready for another travel adventure.

Levelling and Stabilization

When you plan to stay in the same place for several days, weeks or months, you will want your trailer to be as level and steady as possible. Check the attitude with a small spirit level set on the inside counter or on the trailer hitch "A-frame". If a correction is necessary then you must level from side to side first. This can be done easily by backing the trailer up one or more 2" x 6" boards. We do not recommend placing tires in a hole for levelling.

Level from front to rear by disconnecting the hitch from the tow vehicle, putting the jack wheel and adjusting the jack up or down until you are level. Block or chock the wheels to keep the trailer from rolling. Use the rear and front stabilizers, to eliminate the natural spring action of the axle.

NOTICE: Stabilizers should only be used to stabilize trailer, never to lift or level it.



WARNING: WHENEVER THE TRAILER MUST BE LIFTED WITH A JACK, AS WHEN CHANGING A WHEEL OR LEVELLING ON VERY ROUGH TERRAIN, ALWAYS PLACE THE LIFTING JACK UNDER THE MAIN FRAME RAIL. NEVER USE STABILIZERS TO LIFT THE TRAILER.

Settling In

- Turn on the water heater and heating, as required.
- When you stay for an extended period where electric or water hookups are not available, you must make regular checks on the condition of your 12-volt battery.
- In the absence of solar panels, hooking up the tow vehicle/trailer electrical connector and running the tow vehicle engine at a fast idle 1 hour per day should provide power for about one day.
- When your waste tank nears capacity, move to a dumping location.
- Exterior cable TV hookup (optional) is located in the potable water fill compartment (photo C-3) on the driver side.

Winter Travel

The ALTO was designed for camping primarily during the spring, summer and fall. Therefore, it is important to consider that some components may be more easily damaged when used in cold temperatures. Travelling in sub-freezing temperatures will require certain precautions to protect the plumbing system and your belongings from being damaged by freezing.

Whenever possible the heat should be kept on at a constant temperature. It is easier for the furnace to keep a constant room temperature than for the trailer temperature to be allowed to drop to 10 °C (50° F) then attempt to raise it to room temperature.

NOTICE: With the air conditioner/heat pump (optional), do not use if temperature remains below 4 °C (39 °F).



WARNING: ALWAYS SHUT OFF THE PROPANE GAS AND BE SURE ALL FLAMES ARE EXTINGUISHED BEFORE GASOLINE IS ADDED TO THE TOW VEHICLE.

Some states do not allow LPG to be turned on while moving. While travelling in these states you must use your common sense. How cold is it? How long will it be before you can turn the heat back on? Is the temperature dropping or rising? Remember, when towing at 80 kph (50 MPH) the wind chill factor will cause the interior of the trailer to cool much faster than a trailer that is parked.

When parked in sub-freezing temperatures, make sure you keep a full supply of LP gas and plug into a 120-volt power source whenever possible. A fully charged battery will last no more than 8 to 10 hours if the furnace is running almost constantly and 120-volt power is not available.

Leave cabinet doors, wardrobes and bed doors partially open to allow warm air to circulate around plumbing lines and fixtures. Insulate and/or wrap your exterior water lines with heat tape.

Impact of Extended Occupancy

Your trailer was designed primarily for recreational use and short-term occupancy. If you expect to occupy the trailer for an extended period, be prepared to deal with condensation and the humid conditions that may be encountered. The relatively small volume and tight compact construction of modern travel trailers mean that the normal living activities of even a few occupants will lead to rapid moisture saturation of the air contained in the trailer and the appearance of visible moisture, especially in cold weather.

Condensation

Just as moisture collects on the outside of a glass of cold water during humid weather, moisture can condense on the inside surfaces of the trailer during cold weather when relative humidity of the interior air is high. This condition is increased because the insulated walls of a travel trailer are much thinner than house walls.

Estimates indicate that a family of four can vaporize up to 12 L (3 gal) of water daily through breathing, cooking, bathing, and washing. Unless the water vapour is carried outside by ventilation, or condensed by a dehumidifier, it will condense on the inside of the windows and walls as moisture, or in cold weather as frost or ice. It may also condense out of sight within the walls or the ceiling.

Appearance of these conditions may indicate a serious condensation problem. When you recognize the signs of excessive moisture and condensation in the trailer, action should be taken to minimize their effects.

Tips for controlling condensation

- To avoid condensation problems, try to follow these tips to help alleviate excess moisture.
- Allow excess moisture to escape to the outside when bathing, washing dishes, hair drying, and using appliances and non-vented gas burners. Always use the roof vent when cooking.
- Do not hang wet clothes in the trailer to dry.
- In hot weather, start the air conditioner early as it removes excess humidity from the air while lowering the temperature.
- Keep the temperature as reasonably cool as possible in cold weather. The warmer the trailer, the colder exterior temperatures and warm interior temperatures will collide on wall surfaces, thus creating condensation.
- Use a fan to keep air circulating inside the trailer so condensation and mildew cannot form in dead air spaces. To allow air to circulate inside closets and cabinets, leave doors partially open. Please keep in mind that a closed cabinet full of stored goods prevents circulation and allows the exterior temperature to cause condensation.
- The natural tendency would be to close the trailer tightly during cold weather. This will actually compound the problem. Simply put, you need to remove some of the humid warm air, and allow some cool dry outside air to get inside the trailer, so the furnace will not recycle the humid interior air.

About Moulds

Moulds are microscopic organisms that naturally occur in virtually every environment, indoors and out. Outdoors, mould growth is important in the decomposition of plants. Indoors, mould growth is unfavourable. Left unchecked, moulds breakdown natural materials, such as wood products and fabrics. Knowing the potential risks is important to protect one's investment.

For mould growth to occur, temperatures, indoors or out, must be between 4 °C and 38 °C (40 °F and 100 °F) and also have a source of moisture, such as humidity, standing water, damp materials, etc. Indoors, the most rapid growth occurs with warm and humid conditions.

How can mould growth be inhibited? By controlling relative humidity, the growth of mould and mildew can be inhibited. In warm climates, use of the air conditioner will reduce the relative humidity. Vent use is advised during food preparation and bathing, even during colder weather. Additionally, opening a window during these activities will assist in ventilation. In extremely humid conditions, the use of a dehumidifier can be helpful.

-  If using a dehumidifier, please read and follow all manufacturer instructions and recommendations in the use and cleaning of the dehumidifier.

Frequent use of your trailer or regular cleaning is an important preventive measure. Further, any spills should be wiped up quickly and dried as soon as possible. Avoid leaving damp items lying about. On safe surfaces, use mould or mildew killing cleaning products. Check sealants regularly, and reseal when necessary to avoid water leaks. Proper preventive maintenance to the trailer and its accessories, as described both in this manual and in accompanying literature, will provide the best protection for your trailer.

Cleaning

As a general rule of thumb, we recommend the trailer be washed every four weeks and waxed in the spring and fall. In coastal and industrial areas cleaning and waxing should be done on a more frequent schedule. When travelling through winter weather, all road treatment chemicals should be removed immediately.

NOTICE: Abrasive polishes or cleaning solvents such as automatic dishwasher detergents or acid etch cleaners are too strong and should never be used.

-  Rinse all grit from surface prior to washing. Do not use wire brushes, steel wool, abrasives or other similar cleaning tools that will mechanically abrade the coating surface. Always test a small inconspicuous area first.

Always clean your trailer in the shade or on a cloudy day when the aluminum skin is cool.

Use soft rags and never rub hard on the coating. Oil, grease, dust and dirt may be removed by washing with a 5% solution in water of commonly used commercial and industrial detergents. Cleaning should be followed by a thorough clean water rinse. Drying the unit with a chamois or a soft cloth may prevent spots and streaks.

After cleaning and drying, application of a liquid wax will increase the life of the finish, especially in coastal areas where the finish is exposed to salt air or in polluted industrial areas. It will also protect the shell from minor scratches and make subsequent cleaning easier.

It is important to remove sap, gum, resin, asphalt, etc. as soon as possible after they appear by washing and waxing. Sunlight and time will bake/harden these materials making them almost impossible to remove without heavy buffing.

To keep your trailer looking new, paint the “A” frame, LPG tanks, and rear frame periodically.

It is recommended that the caulking and sealant used in external seams and joints such as shell segment ends and around window frames, light bezels, beltline and rub rail moulding, etc. be checked regularly. If this material has dried out and become cracked or checked, or if a portion has fallen out, it should be replaced with fresh material to prevent possible rain leaks. Caulking and sealing material is available from your ALTO dealer.

Precautions should be taken to prevent excessive sealant from getting on the coated surfaces. Remove excessive sealant before it cures using DX 330 Acryli-Clean made by PPG Industries.

NOTICE: It may be possible for solvents other than those recommended to extract materials from sealants that could stain the coated surface or could prove harmful to the sealants; therefore, these possible effects must be considered. Test a small area first.

Interior

The interior of all ALTO trailers has been designed for comfort, convenience, durability and appearance. How you use it and how you take care of it naturally depends on you. However, if you learn to use the interior components and take care of them and the trailer properly, this knowledge will add to your pleasure as well as the long life of your trailer.

The aluminum interior skin should be cleaned by following the same cleaning instructions detailed in the Exterior section of this manual for the exterior skin. Do not use abrasive cleaners or utensils on the aluminum skin as it is coated with paint and a clear coat that could be damaged.

Upholstery

All materials should be professionally dry-cleaned to remove any overall soiled condition. Spot clean, using a mild water-free solvent or dry-cleaning product. Do not saturate the fabric. Carefully follow instructions on such product. Clean only in a well-ventilated area. Avoid any product containing carbon tetrachloride, which is highly toxic. Pretest small area before proceeding. Use professional furniture cleaner when an overall soiled condition is reached.

NOTICE: Never remove cushion cover for separate dry-cleaning or washing. Any tumble cleaning method can destroy the backing, shrink or otherwise damage upholstery fabric.



WARNING: KEEP YOUR FURNITURE AND FAMILY SAFE FROM FIRES CAUSED BY CARELESS SMOKING. DO NOT SMOKE WHEN DROWSY. REMOVE IMMEDIATELY ANY FLOWING ASH OR A LIGHTED CIGARETTE, WHICH FALLS ON FURNITURE. SMOULDERING SMOKING MATERIAL CAN CAUSE UPHOLSTERED FURNITURE FIRES.



Vinyl Flooring

The vinyl floor in your travel trailer can be cleaned with liquid floor cleaning solutions recommended for vinyl floors.

Counter Top

The counter around the sink is of a high-pressure laminate and can be cleaned with soap and water, or you can use a common solvent on tough spots. Make sure no abrasive cleaner is used, as there is the possibility it could scratch the surface. A protective pad should always be placed under hot utensils.

Sink

The stainless-steel galley sink can be cleaned with a commercial stainless-steel cleaner available at most stores.

Entrance

A little grease in the striker pockets and slight amount of household oil in the lock mechanisms will keep the locks operating smoothly.

Don't forget to lubricate the hinge pins periodically with household oil. Use sparingly and remove any excess from exterior skin immediately.

CAUTION: When towing, all entrance locks must be secured. If they are not locked, the constant vibration of travel may cause the door to open with possible damage.

O. STORAGE AND END OF SEASON PROCEDURE

Winterizing and Storage

When storing your trailer for short or long periods use the same precautions as you would in your own home in regard to perishables, ventilation and rain protection. In addition, for prolonged storage periods, flush out all the drain lines and the holding tanks. Also drain the entire water system including the water heater and the water storage tank. Instructions for draining the water system are explained in the following paragraphs on winterizing.

-  The main concern in winter is to protect from freezing: the hot and cold water system, the waste water system (including traps), the water holding tanks, the water heater and the battery.

 **WARNING:** REMOVE ALL TRAILER ANTIFREEZE SPILLAGE FROM ALL SURFACE, DRAIN, SINK AND FAUCET PARTS AFTER WINTERIZING. FAILURE TO DO SO COULD RESULT IN DAMAGE TO THE PLUMBING FIXTURE'S FINISH.

Preparing Trailer for Winter

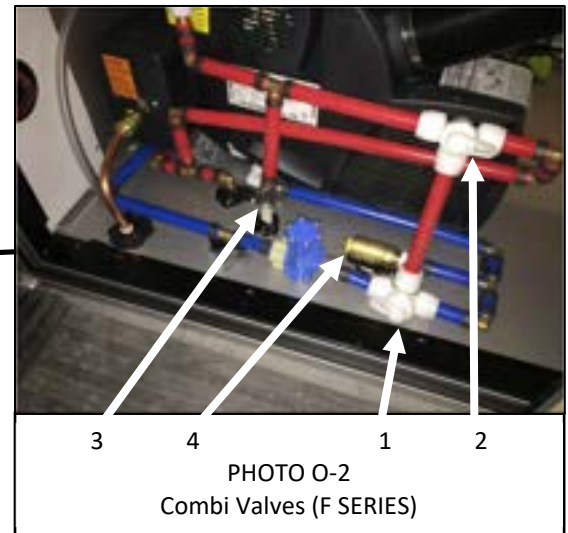
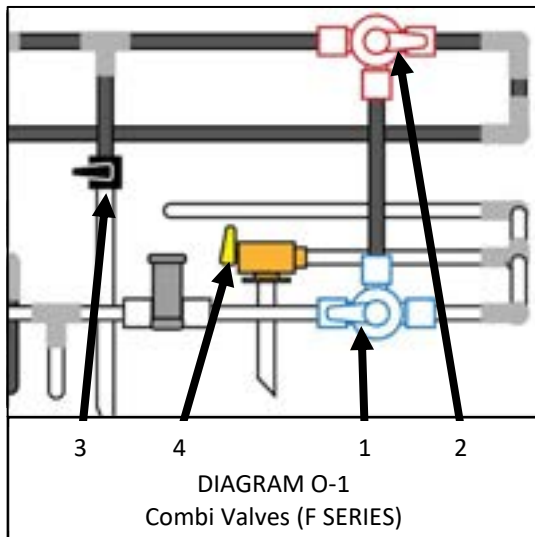
1. Before storing trailer, it is important to recharge the battery to its full capacity by plugging the trailer into a power outlet for at least 24 hours.
2. R SERIES: Make sure ALTO is stored with the roof lowered.
3. Disconnect the battery. It is also possible to remove the battery and store it indoors, but it must not rest directly on a cement floor.
4. Shut off propane (if applicable).
5. If possible, recharge the battery at least once during the winter.
6. Make sure plumbing has been winterized.
7. Park the ALTO in a level position.
8. Do not let more than 25 cm (10 in) of snow accumulate on the roof.
9. If ALTO is equipped with a heat pump/air conditioner, cover the exterior vent with the black plastic cover supplied by Safari Condo so that snow does not penetrate inside.

Winterizing of Potable Water System with *Truma Combi Eco* Heating and Water Heater

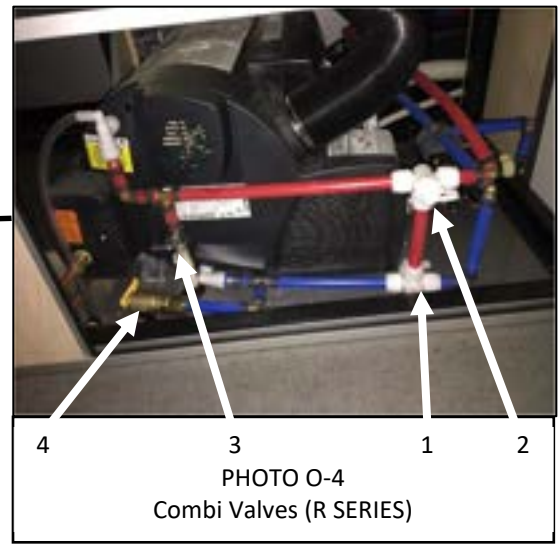
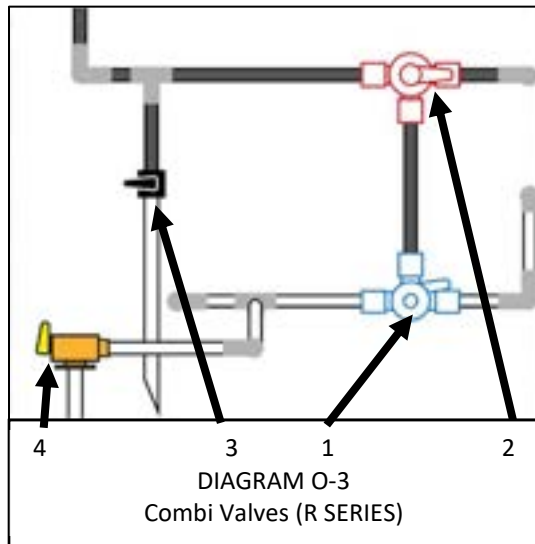
Before beginning the winterizing procedures, make sure the ALTO is level.

1. Turn off Truma water heater by maintaining the round button on the control panel pressed for 5 seconds.
2. Drain holding tanks (see Holding Tanks). Rinse by filling again with water and draining.
3. Turn water pump off using 'PUMP' switch 'OFF' on Monitor Panel (photo F-1.3). Indicator light must be off.
4. Drain potable water tank by opening the exterior valve (photo E-1) located behind the axle, between the wheel on the driver side and the chassis (or close to the dump valves depending on the model). When empty, close valve.
5. Drain Combi water heater by setting the four valves in this order:
 - F and A SERIES: diagram O-1, photos O-2.1, O-2.2, O-2.3 and O-2.4
 - R SERIES: diagram O-3, photos O-4.1, O-4.2, O-4.3 and O-4.4
 - 2 white bypass valves (1 and 2) TO VERTICAL POSITION,
 - 1 chromed purge valve on red pipe (O-4.3) TO VERTICAL POSITION
 - 1 combined surge/purge valve with yellow tab on brass body (O-4.4) to help empty the water heater, open by pulling the tab up vertical on its brass base.

F SERIES



R SERIES



6. Pour 8 litres (2 US gal) of -50 °C (-58 °F) trailer plumbing antifreeze in potable water tank.
7. Turn on water pump using "PUMP" switch (photo F-1.3) located on Monitor Panel. Indicator light must be on.
8. Open cold water tap at sink and let it run until antifreeze starts coming out, let run for 10 seconds, antifreeze must come out pure in colour.
9. Open hot water tap at sink and let it run until antifreeze starts coming out, let run for 10 seconds, antifreeze must come out purely in colour.
10. Inside shower, let antifreeze run off from cold tap for about 10 seconds then from hot water tap for about 10 seconds which will fill the drain trap and protect it from freezing too. In case of optional corner sink, let antifreeze run in the corner sink drain to protect the drain trap of the sink too.
11. Outside shower, let antifreeze run off the cold water tap for about 10 seconds, then hot water tap for about 10 seconds.
12. Toilet, let antifreeze run off 10 seconds by pulling the water flush lever of the toilet. Don't forget to let antifreeze run off from the wash down spray.
13. Turn water pump off using "PUMP" switch "OFF" (photo F-1.3) on Monitor Panel. Indicator light must be off.

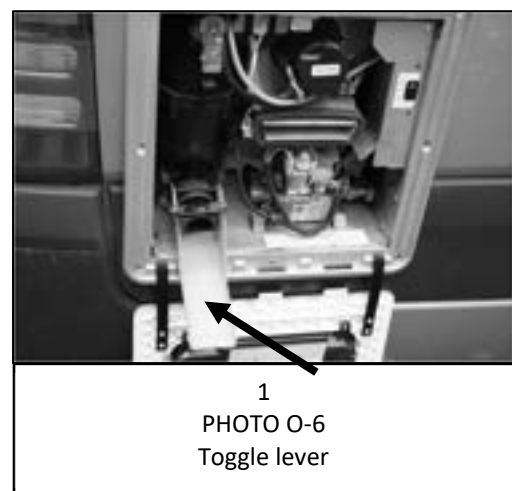
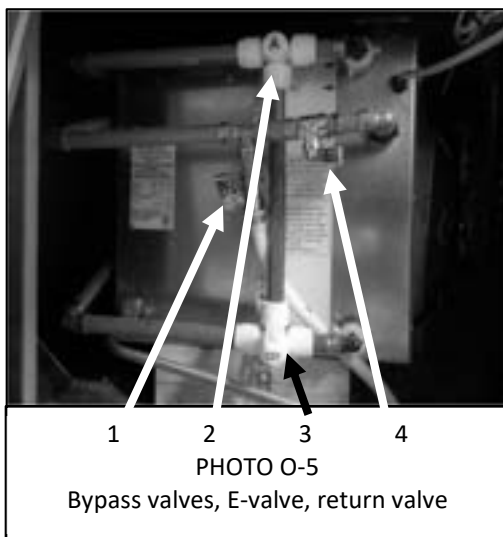
Partial Winterizing of Potable Water System with *Aquago Comfort Plus* Instant Water Heater

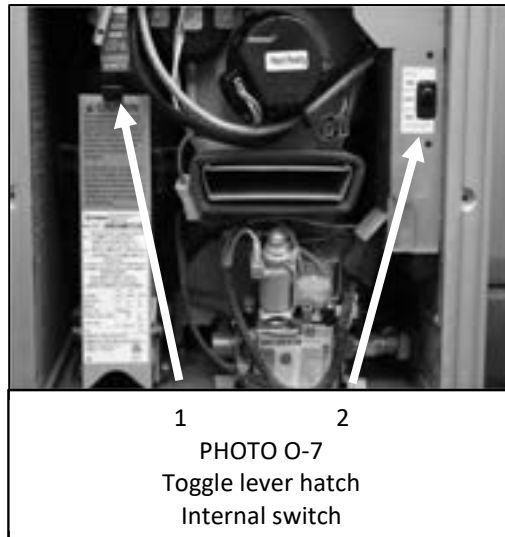
Your Truma Aquago water heater is a very powerful device but it runs a much greater risk of freezing because it does not have this big 15 or 23 litre tank which will be the last to freeze in cold weather.

Even if you do not winterize the vehicle completely, consider winterizing the Aquago water heater as soon as temperatures below the freezing point are forecast.

Quick and Simple Winterizing Procedure

1. Close the pump (photo F-1.3) and heater (photo O-7.2) using their respective switch.
2. **⚠ DANGER - WARNING:** To avoid splashing at step 4, open hot water taps to remove any residual pressure in the pipes.
3. At the rear of the water heater compartment, put the A and B bypass valves (photos O-5.2 and O-5.3) in the winter position, which is vertical, and close the return line E valve (photo O-5.4) (turn 90 degrees to line).
4. Open the heater access door, trigger the toggle lever (photo O-7.1) and keep in a horizontal position until water stops flowing, about 2 minutes (photo O-6).
5. Remove the filter cartridge (photo D-6). And store it in the ALTO.
6. Close the toggle lever (photo O-7.1) and close the access door. Your heater is now protected from freezing but NOT the rest of the plumbing.





Resuming Use of Aquago Confort Plus Water Heater

1. To resume use of your Aquago water heater, open the heater access door, trigger the toggle lever open (photo O-6), reinstall the filter cartridge, close the toggle lever and close access door (photo O-7).
2. Open the A and B bypass valves (photos O-5.2 and O-5.3) to the horizontal position
3. Open return line E valve (photo O-5.4).
4. Put the pump switch to "ON".
5. Open D valve (photo O-5.1) and let about 2 litres of water run on the ground under the vehicle to fill the water heater and return line.
6. You can now turn on your water heater and use it.

Simple Procedure to Prevent Freezing when Using ALTO

1. Turn on your Aquago water heater using the internal switch in ECO mode (photo O-7.2).
2. In this mode, your Aquago will keep the water between 4 °C and 60 °C.
3. Note that in this mode there will be some propane and 12 volts consumption.
4. It is a practical solution for one night but not more as the quick and simple winterizing procedure is recommended for more than 24 hours as it does not use electricity or propane.

Full Winterizing of Potable Water System with *Aquago Comfort Plus* Instant Water Heater

Before starting winterizing, make sure ALTO is level.

1. Close the pump (photo F-1.3) and water heater (photo O-7.2) using their respective switch.
2. **DANGER - WARNING:** To avoid splashing at step 4, open hot water tap to remove any residual pressure in the pipes.
3. At the rear of the water heater compartment, put the A and B bypass valves (photos O-5.2 and O-5.3) in the winter position, which is vertical, and close the return line E valve (photo O-5.4) (turn 90 degrees to line).
4. Open the heater access door, trigger the toggle lever (photo O-7.1) and keep in a horizontal position until water stops flowing (about 2 minutes).
5. Remove the filter cartridge (photo D-6) and store it in your ALTO. Turn the exterior water-heater switch off.
6. Close the toggle lever (photo O-7.1), turn the exterior switch to “OFF” and close the access door. Your heater is now protected from freezing but NOT the rest of the plumbing.
7. Drain waste water tanks (see Holding tanks), rinse them by filling them up with water and drain again.
8. Drain potable water tank by opening the exterior valve (photo E-1) located behind the axle, between the wheel on the driver side and the chassis (or close to the dump valves depending on the model).
9. Close the exterior valve of the potable water tank (photo E-1).
10. Pour 8 litres (2 US gal) of plumbing antifreeze -50 °C in the potable water tank.
11. Turn the water pump “ON” at the “PUMP” switch (photo F-1.3) on tank monitor panel. Indicator light will come on.
12. Open cold water tap at sink during 10 seconds, antifreeze should run pure in colour.
13. Open hot water tap at sink during 10 seconds, antifreeze must run in colour.
14. Interior shower, open cold-water tap let antifreeze run for 10 seconds, then open hot water tap and let run for 10 seconds, this will also fill the shower drain trap with antifreeze to protect it. In case of optional corner sink in the shower module, also fill sink drain trap with antifreeze.
15. Toilet: pull the flush lever and let antifreeze run for 10 seconds. Do not forget to open wash down spray for 10 seconds.
16. Exterior shower, open cold tap for 10 seconds, hot water tap for 10 seconds, until antifreeze flows out for 10 seconds.
17. Open valve D (photo O-5.1) to let antifreeze run under the trailer for 10 seconds.
18. Turn “OFF” water pump using switch (photo F-1.3).

Come spring, see *Start-Up and Disinfection of Potable Water System with Truma Aquago Comfort Plus Water Heater (Optional)*.

Maintenance suggestions



WARNING: TO PREVENT WHEEL SEPARATION:

1. On the first trip, tighten wheel nuts after first 300 km.
2. Thereafter, check lug nuts before each trip.
3. Following winter storage, check lug nuts before beginning a trip.
4. Following excessive braking, inspect lug nuts.
5. See *Specification* in this manual for wheel torque ratings.

Every 1,600 km (1,000 Miles) or 60 Days:

- Check escape window latches and hinge operation.
- Check battery water level.
- Test smoke alarm and replace battery as required.
- Check tire pressure (See *Specifications*).
- Check hitch for loose bolts or unusual wear.
- Test GFI circuit breaker.

Every 8,000 km (5,000 Miles) or 90 Days:

- Lubricate exterior door locks with dry graphite.
- Lubricate exterior hinges with light household oil.
- Lubricate LPG hold down with light household oil.
- Check LPG regulator bottom vent for obstructions.
- Wheel lug nuts: see *Specification section wheel torque ratings*.
- Pull break away switch pin and lubricate with household oil; replace pin immediately.
- Spray 7-way plug with contact cleaner.
- Lubricate hitch ball latch with non-detergent motor oil.
- Lubricate hitch ball with hitch ball lube or wheel bearing grease.
- Lubricate main entrance step moving parts and check.
- Check water level more often as battery ages and becomes less efficient.

Every 16,000 km (10,000 Miles) or 6 Months:

- Inspect brakes, replace as necessary.
- Inspect and rotate tires.
- Lubricate spare tire carrier moving parts.
- Clean window & door seals with mild detergent and coat with "Silicone".
- Wax exterior.
- Lubricate escape window latches with WD-40.
- Check tightness of propane bottle centre holds down rod on A-Frame.

Every Year:

- Clean battery, neutralize and coat terminals with petroleum jelly.
- Paint A-Frame, step, and frame at front and rear.
- Check seams and reseal exterior seams, windows, lights and vents if necessary.
- Check hitch coupler and ball for wear or damage. Make sure all parts operate freely. Replace any component if worn or damaged.

Every 2 or 3 years:

- Have the burner section of the fridge cleaned.

Parts and Lubricants

Here is a list of practical parts to have in order to repair and maintain the travel trailer in case of a problem.

Bulbs



WARNING: Always replace the light bulb on an interior or exterior light fixture with the correct bulb for that light. Failure to heed this warning could cause fire, property damage, personal injury, or death.

Fuses

- 3, 5, 10, 15, 20 and 30 amp

Miscellaneous

- Water hose gaskets.
- Wheel bearing grease (for hitch ball).
- Extra pin clips for hitch.
- Dry graphite.
- WD-40 or equivalent aerosol lubricant.
- Oil can with 30 weight non-detergent oil.
- Silicone lubricant.
- Light household-type oil.
- Spray contact cleaner.
- Sealer.
- Batteries for flashlight.
- Flashlight.
- Rain gear.
- Road hazard signals.

Troubleshooting

R SERIES: Hand Lowering of Rear Cushion

If the rear cushion does not come down when pressing the switch, and its fuse is not blown:

1. Unscrew the bolt at the top of the actuator. It is located under the cushion at the centre towards the back.
2. Once the actuator is resting on the floor, pull on the vertical panel that supports the cushion.
3. The cushion will tilt by itself.

If you have to manually raise the cushion, push on the panel until it is vertical, reposition the actuator and temporarily put the bolt back in its place.

R SERIES: Hand Lowering of Electric Roof

The manual lowering of the electric roof should always be done by 2 or 3 persons, never alone.

1. Lower rear cushion. If the lowering of the rear cushion cannot be done electrically, see *Manually Lowering Rear Cushion*.
2. Cut two pieces of wood (2" × 4") that you will fit between the bumper and both rear corners of the roof. The two persons helping should always keep an eye on these pieces of wood to make sure they remain in place.
3. With a 9/16" socket unscrew the bolt holding the top of the right actuator (motor) to the windowed structure. Make sure that both rear corners are well secured with the pieces of wood before proceeding with this operation. This is very important because if one or both pieces of wood holding the roof slide off, the roof would lose all support and fall on the person inside, causing injuries to this person. Furthermore, by falling on its cylinder, the roof could sustain considerable damage.
4. Screw in the chromed section of the cylinder as soon as you have removed the bolt. The chromed section will screw completely inside the black part of the cylinder. In the event that the chromed section cannot be screwed in, remove the bottom bolt and move the cylinder on the bed or the floor so that it does not hinder the lowering on the roof. If it is impossible to move the cylinder so that it does not hinder the lowering of the roof, cut the electrical wire about 6 inches from the cylinder and remove it completely.
5. Repeat steps 3 and 4 for left side.
6. Go outside and, with the help of the two persons assisting you, go to the rear and hold the roof securely. Remove the pieces of wood supporting it.



CAUTION: MAXIMUM SUPPORTED WEIGHT IS 91 KG (200 LBS.)

7. Manually lower the roof.
8. Reinstall actuator (cylinders) once the roof is completely closed. This operation will lock the roof down. If unable to lock one of the actuators, one will suffice.
9. Upon your return have the roof fixed.

NOTE: ALTO should no longer be used, as the emergency exit is inaccessible when the roof is in the closed position.

Repairs

For repairs to the fridge, consult the manufacturer's brochure for the list of authorized service centres.

P. SPECIFICATIONS

NOTE: All weights listed in the Specification Chart are checked and updated throughout the model year. Your production trailer may vary from the listed weights.

Weight

For precise cargo capacity read the Cargo Carrying Capacity tag on side of trailer. The “WEIGHT OF CARGO SHOULD NEVER EXCEED” numbers shown on the Cargo Carrying Capacity tag on your trailer is the maximum weight of cargo you can load and carry in your specific trailer as built with its options.

This tag is located on the driver side of the trailer.

The Tire & Loading information tag lists the Size and Cold Inflation Pressure of the tires on your trailer, the weight of your trailer as manufactured, and the Gross Vehicular Weight Rating (GVWR).

The Vehicle Manufacturing Tag lists the size of tires and wheel rims, Maximum Cold Inflation pressures, the Vehicle Identification Number (VIN), and Gross Axle ratings (GAWR).

Gross Vehicular Weight Rating (GVWR): is the maximum permissible weight of this trailer when fully loaded. It includes all weight at the trailer axle and tongue or pin.

Gross Axle Weight Rating (GAWR): is the value specified as the load-carrying capacity of a single axle system, as measured at the tire-ground interfaces.

As an additional safety margin on ALTO R/F17XX the axle has a GAWR of 3500 lb (1587 kg), well over the 2700 lb (1224 kg)GVWR.

Tires

TIRE SIZE

- ALTO 17xx : ST175/80R13
- ALTO 21xx : ST205/75R15
- ALTO 2414 : ST205/75R15

MAXIMUM WEIGHT PER TIRE

Model	Weight in kg	Weight in lbs
1713, 1723, 1743 per tire	712 kg	1570 lb
2114 per tire	825 kg	1820 lb
2124 per tire	975 kg	2150 lb
2414 per tire	825 kg	1820 lb

TIRE INFLATION (PSI) COLD

Model	Tire size	Cold pressure in kilopascals	Cold pressure in pound-force per square inch (psi)
1713, 1723, 1743	ST175/80R13	448 kPa	65 psi
2114	ST205/75R15	344 kPa	50 psi
2124	ST205/75R15	448 kPa	65 psi
2414	ST205/75/R15	344 kPa	50 psi

 Follow directives on the tire or on the label in case of discrepancy with this manual.

GVWR (GROSS VEHICLE WEIGHT RATING)

Model	Weight in kg	Weight in lbs
R1713, R1723 and F1743	1224 kg	2700 lb
F2114	1587 kg	3500 lb
A2124	1678 kg	3700 lb
F2414	2041 kg	4500 lb

 Never exceed the maximum total weight with load.

EMPTY WEIGHT

Model	Weight in kg	Weight in lbs
R1713	828 kg	1825 lb
R1723	847 kg	1867 lb
F1743	795 kg	1753 lb
F2114	1068 kg	2356 lb
A2124	1161 kg	2555 lb
F2414	1339 kg	2947 lb

WHEEL NUT TIGHTENING TORQUE (IN NEWTON METERS or POUND-FOOT)

- 13-inch wheels: 115.24 Nm (85 ft lb)
- 15-inch wheels: 135.58 Nm (100 ft lb)

TONGUE WEIGHT

- 10 to 15% of total weight of loaded travel trailer.

HEIGHT OF HITCH BALL

The correct height varies according to the weight carried and the tires used. It is relatively easy to check the height of the trailer, with the trailer on relatively flat ground: distance between the chassis and the ground, front and rear:

- Adjust front jack until measurements are equal.
- Now measure from ground to the inside top of the ball coupler. This figure is the hitch height. The hitch ball is then usually set 1/2" to 1" higher, according to the spring weight of your tow vehicle, to allow for it to settle when the trailer is hitched up.
- Generally, the ball height ALTO 17xx is about 17 inches and for Alto F2114, A2124 and F2414 are about 21 inches.

DIMENSIONS AND CAPACITIES

UNITS USED: METRE (INCH) AND LITRE	R1713	R1723	F1743	F2114*	A2124*	F2414*
OVERALL LENGTH	5.26 m (207)	5.26 m (207)	5.41 m (213)	6.48 m (255)	6.48 m (255)	7.30 m (288)
OVERALL WIDTH	2.11 m (83)	2.11 m (83)	2.18 m (86)	2.18 m (86)	2.18 m (86)	2.18 m (86)
EXTERIOR HEIGHT (ROOF LOWERED)	2.11 m (83)	2.11 m (83)	2.42 m (95.5)	2.54 m (101.5)	2.54 m (101.5)	2.54 m (104.5)
EXTERIOR HEIGHT (ROOF RAISED)	2.56 m (101)	2.56 m (101)	-	-	-	-
INTERIOR HEIGHT (ROOF LOWERED)	1.62 m (64)	1.62 m (64)	1.93 m (76)	1.93 m (76)	1.93 m (76)	1.93 m (76)
INTERIOR HEIGHT (ROOF RAISED)	2.08 m (82)	2.08 m (82)	-	-	-	-
WHEEL BASE (BETWEEN COUPLING AND CENTRE OF WHEELS)	3.04 m (120)	3.04 m (120)	3.12 m (123)	3.91 m (154)	3.91 m (154)	3.91 m (154)
MAIN BED	(72 × 76)	(60 × 76)	(60 × 81)	(80 × 81) irregular	(80 × 81) irregular	(80 × 81) irregular
MAIN BED TWIN BEDS	(2x27x76)	(1x27x76)	-	-	-	-
FRONT BED	(36 × 81)	(36 × 81)	(36 × 81)	(60 × 81)	(52 × 72) irregular	(60 × 81)
POTABLE WATER TANK (L)	60	60	60	100	100	100
GREY WATER TANK (L)	60	60	60	90	90	90
BLACK WATER TANK (L)	46	46	46	54	54	54

NOTE: All weights listed in the Specification Chart are checked and updated throughout the model year. Your production trailer may vary from weights listed. These weights are for base models without options.

* The ALTO F2114, A2124 and F2414 have a height of 2.6 metres (104 inches/8.7 feet) with MaxxFan and 2.73 metres (107.5 inches/8.9 feet) with a TV antenna. The ALTO F2414 with rooftop air conditioner is 2.81 metres (111 inches/9.25 feet) high.

Q. WARRANTY

See the warranty documents issued at time of delivery.

Alto Limited Warranty Details

The two (2) year warranty covers only manufacturing defects, equipment and appliance failure and rain water tightness. In no case will the warranty cover damage, whatever the reason.

The ALTO Limited Warranty is detailed on a Warranty Card. It is filled out by the dealer and presented to the owner during delivery of a new unit. The Limited Warranty card must be presented to a dealer to obtain warranty service. It should be kept in the trailer during the warranty period.

Exclusions

Normal Wear

Items such as tires, curtains, upholstery, floor coverings, windows, door and vent seals will show wear or may even wear out within the two-year warranty period depending upon the amount of usage, weather, and atmospheric conditions.

Accident

We strongly urge our dealers and customers to inspect the trailer upon delivery for any damage caused by accident while being delivered to the dealer, or while it is on the dealer's lot. Damage of this nature becomes the dealer or customer's responsibility upon acceptance of delivery, unless Safari Condo is notified and the person making the delivery verifies the damage. Glass breakage is usually accidental and covered by most insurance policies.

Abuse

Lack of customer care and/or improper maintenance will result in early failure for which Safari Condo cannot be held responsible.

Exposure

Not unlike a car, the steel parts of a trailer can and will rust if subjected to prolonged exposure to moisture, salt air, or corrosive airborne pollutants without repainting. Aluminum oxidizes when unprotected under similar conditions, and refinery chemicals of a sulphurous nature are harmful to finishes if not washed off periodically. Extremely hot or direct sunlight will deteriorate rubber and fade curtains and upholstery. Conditions of this nature, although they may be normal for the area, are beyond Safari Condo's control and become the responsibility of the owner.

It is your responsibility as owner to take such preventative measures as required to maintain the exterior caulking and sealer of your unit. It is your responsibility as owner to use reasonable, prudent care to prevent foreseeable secondary damage from rain, plumbing leaks, and the natural accumulation of moisture in your unit, such as a delaminated floor; stained upholstery, carpeting, or drapes; mould formation and growth; furniture damage, etc. Mould is a natural

growth given certain environmental conditions and is not covered by the terms of the Limited Warranty.

Overload

Damage due to loading, either beyond capacity or causing improper towing because of inadequate balance, is beyond Safari Condo's responsibility. The ALTO trailer is engineered to properly handle the gross vehicle load rating on the certification label. Load distribution has a definite effect upon the towing characteristics and attitudes of the trailer. There are limits to the amount of load that can be safely transported depending upon speed and road conditions, and reasonable cause to believe these factors have been exceeded could void the ALTO warranty. For additional information on the loading of your trailer, consult your Owner Manual or gross vehicle weight rating plate.

The axle is manufactured to a tolerance of 1° camber and 1/8" toe-in. These tolerances will only change if the trailer is subjected to abuse, such as dropping off a sharp ridge, striking a curb, or hitting a deep hole in the road. Such damage could be considered as resulting from an accident which risks are not covered under the warranty. Abnormal tire wear and/or wheel alignment resulting from such damage is not covered under the terms of the warranty.

Chemical Gassing

Chemical gassing is not a "Defect" in your trailer and is not covered by the Limited Warranty. Please follow the recommendations in this manual to address this concern.

Service

Before leaving the factory, each and every vital part of the trailer is tested for performance. Each test is signed and certified by an inspector. After the trailer arrives on your dealer's lot, all of these vital parts and systems are again tested. When you take delivery of your new trailer, you will receive a complete check out. At that time a specified list of performance checks on your trailer equipment will be conducted and any identified deficiencies will be corrected.

Please contact your dealer if you need service. Go to our web site www.safaricondo.com to locate a dealer.

Occasionally dealerships change, or new dealers are added. For this reason, it is suggested that you contact your local dealer from time to time and bring your list up to date.



When you require service from the Safari Condo Factory Service Center, or a Certified Dealer Service Center, please contact the service manager for an appointment, and kindly inform him if you are unable to keep the appointment date or wish to change it.

Service may be arranged at the Factory Service Center by contacting the Service Coordinator at:

SAFARI CONDO
810, rue du Parc
Saint-Frédéric de Beauce
Québec, Canada
G0N 1P0

Phone: 418 426-3666
Toll Free: 1 877 806-3666
Fax: 418 426-1377
email: service@safaricondo.ca

Reporting Safety Defects – Canada

If you believe that your trailer has a defect which could cause a crash or could cause injury or death, you should immediately inform Transport Canada in addition to notifying Safari Condo.

If Transport Canada 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 a corrective campaign. However, Transport Canada cannot become involved in individual problems between you, your dealer, or Safari Condo.

To contact Transport Canada, you may either call at 1 800 333 0510 or 819 994 3328 or go to <http://www.tc.gc.ca> or write to:

Transport Canada
330 Sparks St.
Ottawa, ON
K1A 0N5
Canada

Reporting Safety Defects – the United States

If you believe that your trailer 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 Safari Condo.

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 corrective campaign. However, NHTSA cannot become involved in individual problems between you, your dealer, or Safari Condo.

To contact NHTSA, you may either call the Vehicle Safety Hotline toll-free at 1-888-327-4236 (TTY: 1-800-424-9153); or go to

<http://www.safercar.gov>

or write to:

Administrator
National Highway Traffic Safety Administration (NHTSA)
1200 New Jersey Avenue S.E.,
Washington, DC 20,590 the U.S.A.

You can also obtain other information about motor vehicle safety from:

<http://www.safercar.gov>

SAFARI CONDO
810, rue du Parc
Saint-Frédéric de Beauce
Québec, Canada
G0N 1P0

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Printed in Canada

Version: June 1, 2021

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